START

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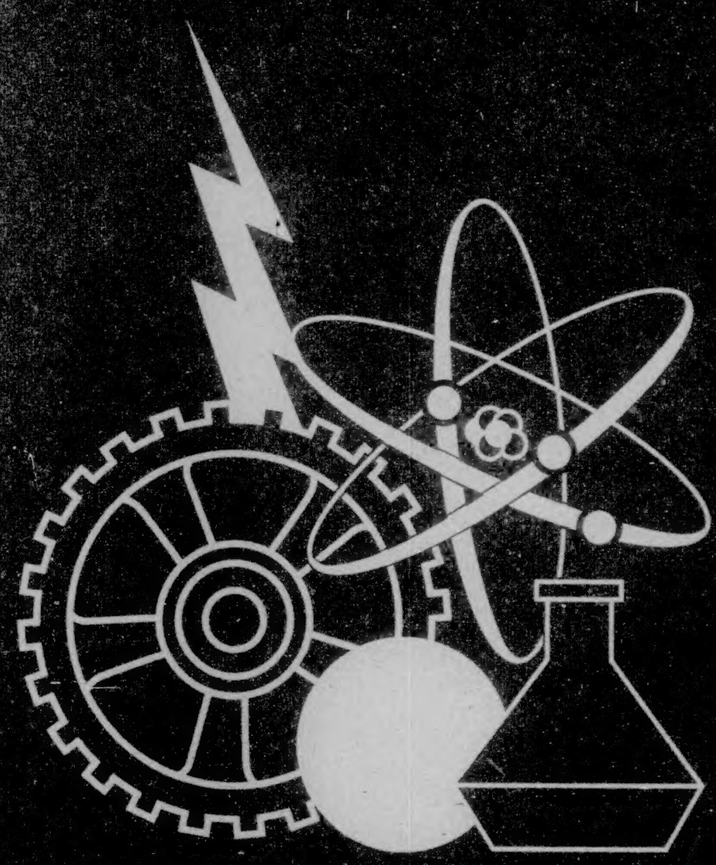
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Vol. 1171 Number 1

OFFICIAL GAZETTE

of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS
February 7, 1995



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
February 7, 1995 Volume 1171 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1168 O.G. 100, on Nov. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Jan. 1, 1995, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation)	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	604.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	147.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	147.00
—Confirmation fee	73.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	185.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 12, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 4, 1992 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

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Utility Patents 5,084,914 through 5,086,513
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 9, 1988 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,722,098 through 4,723,321
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 31, 1984 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,428,079 through 4,429,418
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED November 30, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,538	07/011,557	11/10/87
(4,624,050)	(06/776,972)	(11/25/86)
Re. 34,226	07/713,405	04/20/93
(4,972,807)	(07/357,473)	(11/27/90)
Re. 34,546	07/947,851	02/15/94
(4,973,625)	(07/100,191)	(11/27/90)
4,360,935	06/300,289	11/30/82
4,360,944	06/240,805	11/30/82
4,360,953	06/259,045	11/30/82
4,360,958	06/224,622	11/30/82
4,360,961	06/277,795	11/30/82
4,360,973	06/267,068	11/30/82
4,360,976	06/224,017	11/30/82
4,360,982	06/239,634	11/30/82
4,360,998	06/248,618	11/30/82
4,361,023	06/269,451	11/30/82
4,361,062	06/233,152	11/30/82
4,361,063	06/262,087	11/30/82
4,361,085	06/272,142	11/30/82
4,361,094	06/244,956	11/30/82
4,361,103	06/215,654	11/30/82
4,361,113	06/295,315	11/30/82
4,361,121	06/254,557	11/30/82
4,361,132	06/280,944	11/30/82
4,361,142	06/294,445	11/30/82
4,361,179	06/235,139	11/30/82
4,361,247	06/283,899	11/30/82
4,361,249	06/238,271	11/30/82
4,361,257	06/219,461	11/30/82
4,361,259	06/226,964	11/30/82
4,361,276	06/263,769	11/30/82
4,361,323	06/232,262	11/30/82
4,361,327	06/242,974	11/30/82
4,361,361	06/253,122	11/30/82
4,361,428	06/288,808	11/30/82
4,361,438	06/227,017	11/30/82
4,361,439	06/296,599	11/30/82
4,361,444	06/245,659	11/30/82
4,361,445	06/277,762	11/30/82
4,361,451	06/252,088	11/30/82
4,361,459	06/256,392	11/30/82
4,361,462	06/268,999	11/30/82
4,361,465	06/289,670	11/30/82
4,361,473	06/315,919	11/30/82
4,361,479	06/301,087	11/30/82
4,361,484	06/232,037	11/30/82
4,361,495	06/243,315	11/30/82
4,361,496	06/226,269	11/30/82
4,361,500	06/264,802	11/30/82
4,361,503	06/220,923	11/30/82
4,361,511	06/225,746	11/30/82
4,361,521	06/228,656	11/30/82
4,361,539	06/245,981	11/30/82
4,361,540	06/319,314	11/30/82
4,361,554	06/261,002	11/30/82
4,361,556	06/307,961	11/30/82
4,361,564	06/232,650	11/30/82
4,361,565	06/334,689	11/30/82
4,361,570	06/300,202	11/30/82

Patent Number	Serial Number	Issue Date
4,361,571	06/226,841	11/30/82
4,361,574	06/307,710	11/30/82
4,361,580	06/259,232	11/30/82
4,361,595	06/229,150	11/30/82
4,361,602	06/302,133	11/30/82
4,361,608	06/261,030	11/30/82
4,361,618	06/265,187	11/30/82
4,361,624	06/227,130	11/30/82
4,361,630	06/293,783	11/30/82
4,361,632	06/266,437	11/30/82
4,361,636	06/256,338	11/30/82
4,361,640	06/308,056	11/30/82
4,361,641	06/320,142	11/30/82
4,361,654	06/290,182	11/30/82
4,361,656	06/373,948	11/30/82
4,361,659	06/265,639	11/30/82
4,361,666	06/336,747	11/30/82
4,361,668	06/249,515	11/30/82
4,361,673	06/286,138	11/30/82
4,361,680	06/331,691	11/30/82
4,361,683	06/267,125	11/30/82
4,361,685	06/269,222	11/30/82
4,361,687	06/297,100	11/30/82
4,361,688	06/255,520	11/30/82
4,361,692	06/304,777	11/30/82
4,361,693	06/281,528	11/30/82
4,361,694	06/336,317	11/30/82
4,361,696	06/332,672	11/30/82
4,361,697	06/265,905	11/30/82
4,361,704	06/242,691	11/30/82
4,361,705	06/278,822	11/30/82
4,361,708	06/241,343	11/30/82
4,361,718	06/319,663	11/30/82
4,361,747	06/264,255	11/30/82
4,361,757	06/224,437	11/30/82
4,361,764	06/292,317	11/30/82
4,361,770	06/216,203	11/30/82
4,361,773	06/216,688	11/30/82
4,361,835	06/244,357	11/30/82
4,361,845	06/244,381	11/30/82
4,361,867	06/224,135	11/30/82
4,361,891	06/218,899	11/30/82
4,361,910	06/273,481	11/30/82
4,624,017	06/743,689	11/25/86
4,624,019	06/674,412	11/25/86
4,624,020	06/754,589	11/25/86
4,624,021	06/700,099	11/25/86
4,624,025	06/608,621	11/25/86
4,624,030	06/718,991	11/25/86
4,624,031	06/800,699	11/25/86
4,624,033	06/787,661	11/25/86
4,624,037	06/783,811	11/25/86
4,624,038	06/532,745	11/25/86
4,624,040	06/737,683	11/25/86
4,624,043	06/427,243	11/25/86
4,624,048	06/638,314	11/25/86
4,624,052	06/491,435	11/25/86
4,624,053	06/816,302	11/25/86
4,624,054	06/763,295	11/25/86
4,624,055	06/745,938	11/25/86
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4,624,061	06/719,844	11/25/86
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4,624,074	06/681,863	11/25/86
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4,624,082	06/749,391	11/25/86
4,624,090	06/694,446	11/25/86
4,624,093	06/599,492	11/25/86
4,624,094	06/653,690	11/25/86
4,624,100	06/767,263	11/25/86
4,624,103	06/767,625	11/25/86
4,624,105	06/720,034	11/25/86
4,624,108	06/675,043	11/25/86
4,624,113	06/749,231	11/25/86
4,624,115	06/715,823	11/25/86
4,624,129	06/723,476	11/25/86
4,624,131	06/773,440	11/25/86
4,624,132	06/722,165	11/25/86
4,624,133	06/726,379	11/25/86
4,624,142	06/709,257	11/25/86
4,624,146	06/707,688	11/25/86
4,624,148	06/778,194	11/25/86
4,624,150	06/748,465	11/25/86
4,624,151	06/624,711	11/25/86
4,624,152	06/733,787	11/25/86
4,624,156	06/741,825	11/25/86
4,624,160	06/760,045	11/25/86
4,624,162	06/784,945	11/25/86
4,624,164	06/727,608	11/25/86
4,624,166	06/788,918	11/25/86
4,624,169	06/720,989	11/25/86
4,624,175	06/770,097	11/25/86
4,624,179	06/582,740	11/25/86
4,624,184	06/593,952	11/25/86
4,624,187	06/774,338	11/25/86
4,624,196	06/764,209	11/25/86
4,624,201	06/808,189	11/25/86
4,624,202	06/808,190	11/25/86
4,624,203	06/715,556	11/25/86
4,624,207	06/695,964	11/25/86
4,624,211	06/743,781	11/25/86
4,624,216	06/818,535	11/25/86
4,624,218	06/731,493	11/25/86
4,624,224	06/643,935	11/25/86
4,624,226	06/673,919	11/25/86
4,624,228	06/741,961	11/25/86
4,624,230	06/683,702	11/25/86
4,624,236	06/802,148	11/25/86
4,624,238	06/677,582	11/25/86
4,624,240	06/769,162	11/25/86
4,624,245	06/639,462	11/25/86
4,624,246	06/794,062	11/25/86
4,624,250	06/730,931	11/25/86
4,624,261	06/771,995	11/25/86
4,624,263	06/643,620	11/25/86
4,624,265	06/758,518	11/25/86
4,624,266	06/562,830	11/25/86
4,624,276	06/512,606	11/25/86
4,624,277	06/783,573	11/25/86
4,624,278	06/628,749	11/25/86
4,624,281	06/697,366	11/25/86
4,624,293	06/733,271	11/25/86
4,624,299	06/749,783	11/25/86
4,624,300	06/726,628	11/25/86
4,624,302	06/626,793	11/25/86
4,624,303	06/728,303	11/25/86
4,624,304	06/801,444	11/25/86
4,624,313	06/748,039	11/25/86
4,624,318	06/691,998	11/25/86
4,624,319	06/682,769	11/25/86
4,624,323	06/699,047	11/25/86
4,624,325	06/632,192	11/25/86
4,624,328	06/773,185	11/25/86
4,624,329	06/752,024	11/25/86
4,624,332	06/677,268	11/25/86
4,624,334	06/646,371	11/25/86
4,624,336	06/670,688	11/25/86
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4,624,353	06/647,771	11/25/86
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4,624,365	06/717,242	11/25/86
4,624,371	06/659,642	11/25/86
4,624,372	06/567,841	11/25/86
4,624,376	06/561,895	11/25/86
4,624,377	06/797,762	11/25/86
4,624,380	06/804,912	11/25/86
4,624,382	06/578,913	11/25/86
4,624,383	06/788,622	11/25/86
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4,624,386	06/798,813	11/25/86
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4,624,391	06/543,877	11/25/86
4,624,394	06/556,023	11/25/86
4,624,396	06/791,984	11/25/86
4,624,397	06/752,604	11/25/86
4,624,402	06/458,898	11/25/86
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4,973,167	07/225,935	11/27/90
4,973,174	07/484,494	11/27/90
4,973,175	07/448,768	11/27/90
4,973,177	07/432,369	11/27/90
4,973,181	06/736,564	11/27/90
4,973,183	07/504,936	11/27/90
4,973,184	07/335,763	11/27/90
4,973,186	07/329,286	11/27/90
4,973,187	07/399,998	11/27/90
4,973,195	07/428,207	11/27/90
4,973,197	07/359,660	11/27/90
4,973,203	07/361,328	11/27/90
4,973,205	07/451,632	11/27/90
4,973,216	07/377,204	11/27/90
4,973,225	07/405,682	11/27/90
4,973,234	07/424,946	11/27/90
4,973,237	07/362,508	11/27/90
4,973,238	07/446,149	11/27/90
4,973,243	07/384,215	11/27/90
4,973,244	07/204,015	11/27/90
4,973,250	07/322,785	11/27/90
4,973,251	07/388,511	11/27/90
4,973,253	07/453,697	11/27/90
4,973,254	07/397,032	11/27/90
4,973,255	07/405,781	11/27/90
4,973,260	07/400,250	11/27/90
4,973,263	07/334,040	11/27/90
4,973,265	07/383,374	11/27/90
4,973,266	07/230,476	11/27/90
4,973,272	07/455,090	11/27/90
4,973,273	07/410,870	11/27/90
4,973,276	07/406,021	11/27/90
4,973,282	07/471,842	11/27/90
4,973,285	07/417,435	11/27/90
4,973,287	07/369,521	11/27/90
4,973,290	07/395,900	11/27/90
4,973,298	07/327,970	11/27/90
4,973,308	07/194,970	11/27/90
4,973,309	07/457,769	11/27/90
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4,973,334	07/366,657	11/27/90
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4,973,357	07/444,844	11/27/90
4,973,362	07/456,041	11/27/90
4,973,371	07/225,364	11/27/90
4,973,378	07/485,445	11/27/90
4,973,389	07/326,023	11/27/90
4,973,390	07/217,764	11/27/90
4,973,394	07/241,110	11/27/90

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4,973,404	07/403,109	11/27/90
4,973,427	07/178,670	11/27/90
4,973,431	07/319,507	11/27/90
4,973,433	07/387,168	11/27/90
4,973,435	07/265,690	11/27/90
4,973,438	07/408,553	11/27/90
4,973,440	07/324,215	11/27/90
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4,973,470	07/371,524	11/27/90
4,973,473	07/370,468	11/27/90
4,973,475	07/254,955	11/27/90
4,973,490	07/375,663	11/27/90
4,973,492	07/510,003	11/27/90
4,973,498	07/420,906	11/27/90
4,973,500	07/421,517	11/27/90
4,973,501	07/349,442	11/27/90
4,973,505	07/358,408	11/27/90
4,973,521	07/222,291	11/27/90
4,973,528	07/521,515	11/27/90
4,973,529	06/794,872	11/27/90
4,973,533	07/364,798	11/27/90
4,973,550	07/128,354	11/27/90
4,973,554	07/160,698	11/27/90
4,973,559	07/462,928	11/27/90
4,973,560	06/818,852	11/27/90
4,973,576	07/165,741	11/27/90
4,973,588	07/308,523	11/27/90
4,973,592	07/243,942	11/27/90
4,973,593	07/081,428	11/27/90
4,973,595	07/362,992	11/27/90
4,973,598	07/314,681	11/27/90
4,973,599	07/323,583	11/27/90
4,973,600	07/304,252	11/27/90
4,973,601	07/201,143	11/27/90
4,973,606	07/273,723	11/27/90
4,973,608	07/316,381	11/27/90
4,973,616	07/485,189	11/27/90
4,973,619	07/343,568	11/27/90
4,973,639	07/426,562	11/27/90
4,973,653	07/302,660	11/27/90
4,973,661	07/357,237	11/27/90
4,973,672	07/331,085	11/27/90
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4,973,686	07/240,789	11/27/90
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4,973,691	07/430,293	11/27/90
4,973,694	07/394,905	11/27/90
4,973,704	07/338,909	11/27/90
4,973,718	07/247,300	11/27/90
4,973,719	07/263,728	11/27/90
4,973,721	07/420,592	11/27/90
4,973,726	07/444,649	11/27/90
4,973,732	07/012,231	11/27/90
4,973,733	07/012,229	11/27/90
4,973,734	07/325,806	11/27/90
4,973,735	07/402,838	11/27/90
4,973,736	07/395,192	11/27/90
4,973,745	07/345,716	11/27/90
4,973,753	07/320,145	11/27/90
4,973,768	07/319,189	11/27/90
4,973,771	07/146,260	11/27/90
4,973,772	07/146,257	11/27/90
4,973,774	07/430,945	11/27/90
4,973,776	07/448,972	11/27/90
4,973,778	07/139,219	11/27/90
4,973,783	07/324,004	11/27/90
4,973,784	07/449,169	11/27/90
4,973,786	07/110,248	11/27/90
4,973,794	07/264,912	11/27/90
4,973,796	07/392,109	11/27/90
4,973,808	07/355,190	11/27/90
4,973,820	07/337,961	11/27/90
4,973,846	07/322,085	11/27/90
4,973,847	07/389,263	11/27/90
4,973,849	07/406,539	11/27/90
4,973,854	07/275,916	11/27/90
4,973,856	07/267,559	11/27/90
4,973,868	07/387,331	11/27/90
4,973,880	07/356,874	11/27/90
4,973,891	07/504,257	11/27/90
4,973,892	07/481,942	11/27/90
4,973,894	07/210,871	11/27/90
4,973,895	07/360,940	11/27/90
4,973,899	07/397,865	11/27/90
4,973,902	07/448,251	11/27/90
4,973,905	07/380,905	11/27/90
4,973,906	07/395,001	11/27/90
4,973,910	07/314,286	11/27/90
4,973,914	07/418,612	11/27/90
4,973,916	07/420,665	11/27/90
4,973,920	07/438,288	11/27/90
4,973,924	07/312,762	11/27/90
4,973,931	07/364,446	11/27/90
4,973,944	07/354,898	11/27/90
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4,973,956	07/288,374	11/27/90
4,973,958	06/831,526	11/27/90
4,973,964	07/469,289	11/27/90
4,973,965	07/466,427	11/27/90
4,974,015	07/456,867	11/27/90
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4,974,050	07/358,215	11/27/90
4,974,079	07/344,300	11/27/90
4,974,085	07/346,442	11/27/90
4,974,086	07/359,173	11/27/90
4,974,089	07/298,456	11/27/90
4,974,095	07/433,852	11/27/90
4,974,103	07/270,948	11/27/90
4,974,107	07/259,490	11/27/90
4,974,109	07/081,651	11/27/90
4,974,114	07/309,162	11/27/90
4,974,116	07/448,898	11/27/90
4,974,123	07/407,001	11/27/90
4,974,124	07/533,386	11/27/90
4,974,125	07/486,357	11/27/90
4,974,126	07/450,488	11/27/90
4,974,127	07/497,980	11/27/90
4,974,132	07/468,270	11/27/90
4,974,139	07/500,964	11/27/90
4,974,141	07/394,115	11/27/90
4,974,142	07/481,283	11/27/90
4,974,148	07/070,283	11/27/90
4,974,155	07/231,928	11/27/90
4,974,157	07/396,815	11/27/90
4,974,161	07/079,064	11/27/90
4,974,165	07/276,787	11/27/90
4,974,168	07/183,709	11/27/90
4,974,181	07/182,266	11/27/90
4,974,182	07/378,483	11/27/90
4,974,186	07/300,884	11/27/90
4,974,191	07/080,456	11/27/90
4,974,192	07/391,625	11/27/90
4,974,210	07/345,315	11/27/90
4,974,224	07/432,944	11/27/90
4,974,227	07/421,992	11/27/90
4,974,244	07/390,584	11/27/90
4,974,246	07/249,854	11/27/90
4,974,247	07/124,625	11/27/90
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NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,563,332	06/489,030	01/07/86	04/27/83	12/27/94
4,570,940	06/603,706	02/18/86	04/25/84	12/13/94
4,598,367	06/551,130	07/01/86	11/09/83	12/30/94
4,600,067	06/635,744	07/15/86	11/29/83	11/28/94
4,605,883	06/345,972	08/12/86	02/05/82	12/27/94
4,606,324	06/687,054	08/19/86	12/28/84	11/30/94
4,783,673	06/896,608	11/08/88	08/13/86	12/13/94
4,795,447	07/070,079	01/03/89	07/06/87	12/08/94
4,822,006	07/080,346	04/18/89	07/31/87	11/23/94
4,843,527	07/141,695	06/27/89	01/07/88	12/08/94
4,846,643	07/133,806	07/11/89	12/16/87	12/13/94
4,853,183	07/090,657	08/01/89	08/28/87	08/25/94
4,894,134	07/125,938	01/16/90	11/27/87	12/13/94
4,917,796	07/239,539	04/17/90	09/01/88	10/28/94
4,930,651	06/686,704	06/05/90	12/27/84	12/08/94
4,946,963	07/264,695	08/07/90	10/31/88	12/08/94
4,953,503	07/292,900	09/04/90	01/03/89	12/13/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,111,226, Re. S.N. 08/238,733, May 5, 1994, Cl. 354/195.1, OPERATION CONTROL APPARATUS OF ELECTRIC ZOOM CAMERA, Toshiyuki Nakamura, et. al., Owner of Record: *Nikon Corp., Tokyo, Japan,* Attorney or Agent: Nelson H. Shapiro, Ex. Gp.: 2101

5,123,723, Re. S.N. 08/269,041, June 29, 1994, Cl. 303/100, ANTILOCK BRAKE CONTROL APPARATUS, Masaru Sakuma, et. al., Owner of Record: *Tokico Ltd., Kanagawa-Ken, Japan,* Attorney or Agent: John S. Sensny, Ex. Gp.: 3103

5,151,387, Re. S.N. 08/316,035, Sept. 29, 1994, Cl. 437/191, POLYCRYSTALLINE SILICON CONTACT STRUCTURE, James Brady, et. al., Owner of Record: *SGS-Thomson Microelectronics, Inc., Carrollton, Tex.,* Attorney or Agent: Robert Groover, Ex. Gp.: 1104

5,155,516, Re. S.N. 08/321,410, Oct. 11, 1994, Cl. 354/219, VIEW FINDER OPTICAL SYSTEM WITH EYE DIRECTION DETECTION DEVICE, Osamu Shindo, Owner of Record: *Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Bruce H. Bernstein, Ex. Gp.: 2101

5,159,039, Re. S.N. 08/298,759, Aug. 31, 1994, Cl. 526/263, SEPARATION MEDIA CONTAINING ACYL DIAZEPINES, Henry S. Kolesinski, Owner of Record: *Polysep Surface Technologies Inc., Acton, Mass.,* Attorney or Agent: Robert J. Schiller, Ex. Gp.: 1511

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,687,663, Reexam. No. 90/003,665, Dec. 9, 1994, Cl. 424/052, DENTAL PREPARATION, ARTICLE AND METHOD FOR STORAGE AND DELIVERY THEREOF, Hans A. Schaeffer, Owner of Record: *Chesebrough Ponds U.S.A. Co., Greenwich, Conn.,* Attorney or Agent: Milton Honig, Unilever U.S., Inc., Edgewater, N.J., Ex. Gp.: 1205, Requester: Colgate Palmolive Co., c/o Connolly & Hutz, Wilmington, Del.

5,114,598, Reexam. No. 90/003,667, Dec. 20, 1994, Cl. 507/126, METHOD OF MAKING DRILLING FLUID CONTAINING ASPHALTITE IN A DISPERSED STATE, Jerry J. Rayborn, et. al., Owner of Record: *Sun Drilling Products, Inc., Belle Chasse, La.,* Attorney or Agent: Thomas W. Banks, Finnegan, Henderson, Farbow, Garrett & Dunner, Wash. D.C., Ex. Gp.: 2203, Requester: Owner

5,356,198, Reexam. No. 90/003,666, Dec. 19, 1994, Cl. 297/195.1, BICYCLE AND EXERCISER SEAT, Bradley E. Hughes, Owner of Record: *Western States Import Co., Inc., Camarillo, Calif.,* Attorney or Agent: Edward A. Sokolski, Torrance, Calif., Ex. Gp.: 3501, Requester: Trico Sports, Inc., Pacoima, Calif.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED DECEMBER 26, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
95,959	71/061,109	03/24/1914
95,964	71/066,696	03/24/1914
95,968	71/065,184	03/24/1914
311,220	71/343,142	03/20/1934
311,230	71/343,156	03/20/1934
311,244	71/343,024	03/20/1934
311,255	71/343,184	03/20/1934
311,270	71/344,238	03/20/1934
311,295	71/343,777	03/20/1934
311,308	71/344,181	03/20/1934
311,318	71/343,958	03/20/1934
311,344	71/344,163	03/20/1934
311,362	71/342,011	03/20/1934
311,409	71/342,873	03/20/1934
311,414	71/342,902	03/20/1934
311,434	71/327,155	03/20/1934
587,158	71/545,026	03/23/1954
587,161	71/581,503	03/23/1954
587,163	71/592,767	03/23/1954
587,164	71/598,138	03/23/1954
587,165	71/598,139	03/23/1954
587,166	71/598,914	03/23/1954
587,169	71/604,887	03/23/1954
587,178	71/611,550	03/23/1954
587,182	71/616,858	03/23/1954
587,194	71/621,390	03/23/1954
587,200	71/624,465	03/23/1954
587,202	71/624,614	03/23/1954
587,205	71/624,903	03/23/1954
587,212	71/628,228	03/23/1954
587,221	71/631,923	03/23/1954
587,226	71/633,036	03/23/1954
587,227	71/633,232	03/23/1954
587,234	71/637,146	03/23/1954
587,260	71/641,612	03/23/1954
587,262	71/641,654	03/23/1954
587,266	71/642,647	03/23/1954
587,271	71/643,123	03/23/1954
587,274	71/643,487	03/23/1954
587,286	71/644,541	03/23/1954
587,287	71/644,658	03/23/1954
587,292	71/645,015	03/23/1954
587,295	71/645,160	03/23/1954
587,299	71/645,283	03/23/1954
587,300	71/645,470	03/23/1954
587,303	71/645,800	03/23/1954
587,305	71/645,988	03/23/1954
587,307	71/646,273	03/23/1954
587,315	71/647,055	03/23/1954
587,316	71/647,074	03/23/1954
587,317	71/647,075	03/23/1954
587,319	71/647,373	03/23/1954
587,320	71/647,411	03/23/1954
587,323	71/647,614	03/23/1954
587,325	71/647,647	03/23/1954
587,336	71/648,120	03/23/1954
587,351	71/648,874	03/23/1954
587,353	71/648,962	03/23/1954
587,356	71/649,015	03/23/1954
587,357	71/649,124	03/23/1954
587,362	71/649,331	03/23/1954
587,369	71/649,559	03/23/1954
587,373	71/649,786	03/23/1954
587,386	71/625,375	03/23/1954
587,393	71/632,162	03/23/1954
587,406	71/642,348	03/23/1954
587,424	71/612,220	03/23/1954
587,429	71/618,701	03/23/1954
587,435	71/626,854	03/23/1954
587,440	71/631,935	03/23/1954
587,444	71/633,452	03/23/1954
587,445	71/633,827	03/23/1954
587,453	71/636,344	03/23/1954
587,455	71/637,862	03/23/1954
587,465	71/641,338	03/23/1954
587,472	71/652,459	03/23/1954
978,308	72/443,347	02/05/1974
980,116	72/453,229	03/05/1974
980,645	72/441,778	03/19/1974
980,655	72/420,651	03/19/1974
980,658	72/435,870	03/19/1974
980,664	72/405,388	03/19/1974
980,670	72/423,199	03/19/1974
980,671	72/439,824	03/19/1974
980,676	72/448,472	03/19/1974
980,680	72/452,753	03/19/1974
980,681	72/452,754	03/19/1974
980,685	72/419,333	03/19/1974
980,686	72/429,238	03/19/1974
980,690	72/431,941	03/19/1974
980,692	72/393,993	03/19/1974
980,693	72/396,429	03/19/1974
980,696	72/384,199	03/19/1974
980,697	72/407,679	03/19/1974
980,703	72/431,631	03/19/1974
980,704	72/446,597	03/19/1974

Errata

"All reference to Patent No. D. 354,005 to Ming-Jeng Wang of Taiwan for 'DESK CLOCK' appearing in the *Official Gazette* of January 3, 1995 should be deleted since no patent was granted."

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Designer Spoofs Inc., Birmingham, Mich.; Reg. No. 1,529,802 for the mark DESIGNER SPOOFS, Canc. No. 20,765.

Eucarbon Corporation; New York, N.Y., Reg. No. 198,187 for the mark EUCARBON, Canc. No. 22,879.

JEAN BROWN
Administrator,
Trademark Trial and
Appeal Board,
for Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

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Smartdata Corporation, Salt Lake City, Utah, Reg. No. 1,587,119, for the mark "SMARTBENEFITS", Canc. No. 23,356.

JEAN BROWN
Administrator,
Trademark Trial and
Appeal Board,
for Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Department of Commerce
Patent and Trademark Office

Notice of Hearing and Request for Comments on Changes to a Twenty-Year Patent Term and Its Effects on Patent Expiration Dates and Patent Term Extensions

Agency: Patent and Trademark Office, Commerce

Action: Notice of public hearing and request for comments

Summary: In a Notice published on December 12, 1994 [59 FR 63951], the Patent and Trademark Office ("PTO") announced a public hearing on proposed changes related to the 20-year patent term contained in the Uruguay Round Agreements Act ("URAA"), Pub. L. 103-465.

Concurrently with the hearing scheduled for February 16, 1995, PTO also seeks comments on several additional issues that are relevant to the Food and Drug Administration's interpretation and application of current provisions of the Federal Food, Drug, and Cosmetic Act ("FDCA") and its implementing regulations in light of the changes to title 35, United States Code, effected by passage of the URAA. The specific provisions of the FDCA that would be affected govern the submission of patent information related to new drug applications ("NDAs") and the submission and approval of abbreviated new drug applications ("ANDAs") for generic equivalents of listed drugs in anticipation of the expiration of patent protection for the listed drugs. (See 21 U.S.C. 321; 21 CFR Part 314, Subparts C and D.) Similarly affected may be FDCA provisions related to the submission of new animal drug applications ("NADAs") and the submission and approval of abbreviated new animal drug applications ("ANADAs"). (See 21 U.S.C. 360b). Because the changes to title 35 may affect the effective date of ANDA and ANADA approval under the FDCA and are relevant to the issues that will be discussed at the public hearing to be held on February 16, 1995, PTO will set aside a portion of the meeting to address these issues.

In addition, PTO seeks comments on the URAA's effect on existing patent term extensions under 35 U.S.C. 156.

Dates: The public hearing will be held on February 16, 1995, at 9:30 a.m. in the Commissioner's Conference Room 912, Crystal Park 2, 2121 Crystal Drive, Arlington, Virginia. Oral testimony on issues addressed in this notice will begin at 1:00 p.m. Requests to present oral testimony should be received on or before February 14, 1995. Written comments must be submitted on or before February 17, 1995.

Addresses: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Stephen G. Kunin, Deputy Assistant Commissioner for Patent Policy and Projects, Crystal Park 2, Suite 919, or by fax to (703) 305-8825. Persons with comments on the issues raised in this notice should also forward copies of those comments to the Food and Drug Administration, Attention: Dockets Management Branch (HFA-305), Room 1-23, 12420 Parklawn Dr., Rockville, Md. 20857, identified with docket number 95N-0005.

For Further Information Contact: H. Dieter Hoinkes by telephone at (703) 305-9300, by fax at (703) 305-8885, through electronic mail to hoinkes@uspto.gov, or by mail marked to his attention addressed to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231. Persons may also contact Brian Malkin by phone at (301) 443-1382, by fax at (301) 443-0232 or by mail marked to his attention and addressed to the Food and Drug Administration, Office of Health Affairs, HFY-20, 5600 Fishers Lane, Rockville, Md. 20857.

Supplementary Information:

I. The Effect of URAA on the FDCA's ANDA Approval Process

Background

As described in detail in the Federal Register Notice published on December 12, 1994, the URAA was signed into law on December 8, 1994 (Pub. L. 103-465). The amendments to title 35, United States Code, in the URAA that relate to patent terms will become effective June 8, 1995. Certain provisions of the URAA patent amendments will change the term of existing patents from 17 years from the date of patent grant to 20 years from the date of filing of the patent application. If the patent application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term will end 20 years from the date on which the earliest application relied on was filed. Patents that are in force on, or applied for by, June 8, 1995, will be entitled to the longer of 17 years from the date of the grant of the patent, or 20 years from the date of filing of the application. In addition, the URAA patent amendments provide for the extension of patents (up to a maximum of five years) in certain specified instances where there was delay in the issuance of the patent. This extension is separate from, and in addition to, the patent term extension available under 35 U.S.C. 156.

Section 532(c)(2) of the URAA patent amendments also limits the remedies available to a patent holder for patent infringement under certain circumstances. Specifically, a patent holder may not obtain an injunction or monetary damages, currently provided under title 35, for "acts which (A) were commenced or for which substantial investment was made before [June 8, 1995] and (B) became infringing by reason of [any amendment to a patent term resulting from the new 20-year provision]." Instead, the patent holder may only collect an "equitable remuneration" under such circumstances.

These amendments to title 35 may affect the drug approval process. Under the FDCA, pharmaceutical companies seeking to market pioneer drugs must first obtain FDA approval through the filing of an NDA (see, 21 U.S.C. 355(a) and (b)). In addition to data demonstrating the safety and effectiveness of the drug, an NDA applicant is required to submit to FDA information on any patent which claims the drug or a method of using such drug for which a claim of patent infringement could reasonably be asserted against an unauthorized party (see, 21 U.S.C. 355(b)(1) and (c)(2)). The patent information must include the patent number and date of expiration. FDA publishes this required information in its official publication, *Approved Drug Products with Therapeutic Equivalence Evaluations* (commonly referred to as the "Orange Book").

Under section 505(j)(2)(A)(vii) of the FDCA (21 U.S.C. 355(j)(2)(A)(vii)), an ANDA must include a certification, in the opinion of the applicant and to the best of the applicant's knowledge with respect to each patent which claims the listed drug, (I) that such patent information has not been filed, (II) that such patent has expired, (III) of the date on which such patent will expire, or (IV) that such patent is invalid or will not be infringed by the manufacture, use, or sale of the new drug for which the application is submitted. In addition, an ANDA applicant, who certifies that a patent is either invalid or will not be infringed, must provide notice of this filing to each owner of the patent as well as to the holder of the approved NDA for the listed drug which is claimed by the patent (see 21 U.S.C. 355(j)(2)(B)(i)). This notice must contain a statement of the legal and factual grounds that support the applicant's opinion that the patent is not valid, unenforceable, or will not be infringed (see 21 U.S.C. 355(j)(2)(B)(ii); 21 CFR 314.52(c)(6)).

Under the FDCA, an ANDA approval shall be made effective on the date certified by the ANDA applicant to be the date on which a patent expires (see 21 U.S.C. 355(j)(4)(B)(ii)), or immediately if certified by the ANDA applicant (1) that patent information has not been filed or that the patent has expired (see 21 U.S.C. 355(j)(4)(B)(i)); or (2) that the patent is invalid or will not be infringed, unless an action is brought within 45 days after the ANDA applicant gives notice to the patent holder under section 505(j)(2)(B)(i) of the FDCA (see 21 U.S.C. 355(j)(4)(B)(iii)). The FDCA and implementing regulations provide no other mechanism by which to stay the effective date of an ANDA approval.

Under the FDCA, similar provisions apply to NADAs and ANADAs. Upon the approval of an NADA, FDA publishes required NADA patent information in its official publication, *FDA Approved Animal Drug Products* (referred to as the "Green Book"). (See 21 U.S.C. 360b(b)(1)). ANADAs are subject to patent certification requirements (see 21 U.S.C. 360b(n)(1)(H)) and to approval effective dates (see 21 U.S.C. 360b(c)(2)(D)), similar to the ANDA provisions described above. The effective approval date of an ANADA, similar to an ANDA, is stayed only if an action is brought within 45 days after the ANADA applicant gives notice to the patent holder under 21 U.S.C. 360b(n)(2)(B)(i), that the patent is not valid or will not be infringed. The FDCA provides no other mechanism by which to stay the effective date of an ANADA.

Issues Upon Which Comments Are Sought

Comments are requested regarding the effect of the URAA patent amendments upon the filing and approval of ANDAs and ANADAs. Specifically, comments are requested on the following questions:

1. Should FDA revise the patent term expiration dates currently listed in the Orange Book and Green Book for those patents entitled to a longer term under the URAA, because they are in force on June 8, 1995?

2. Should PTO, at the request of NDA or NADA holders, certify (or alternatively, verify) new patent expiration dates under the URAA for patents currently listed in the Orange Book and the Green Book?

3. Should NDA and NADA holders be required to submit to FDA revised patent expiration dates for those patents currently listed in the Orange Book and Green Book that will have a longer term under URAA? If so, should such submissions be required to be made (1) by June 8, 1995, (2) only after PTO certifies or verifies the claimed patent term expiration date, or (3) within some other specified time period?

4. If revised patent term expiration dates are published in the Orange Book and the Green Book, then if PTO does not certify or verify the patent term expiration date identified by the NDA or NADA holder, what submission, if any, should FDA require to verify the date? Should FDA publish the revised patent term expiration date submitted by the NDA or NADA holder without verification?

5. If revised patent term expiration dates are published in the Orange Book and the Green Book, what revisions to patent certifications, if any, should applicants with pending ANDAs or ANADAs be required to make? When should such revisions to patent certifications be made? What type of information related to substantial investment, if any, should ANDA and ANADA applicants be required to make with such revisions?

II. The Effect of URAA on Existing Patent Term Extensions under 35 U.S.C. 156

Under 35 U.S.C. 156, patent term extensions are issued for eligible patents from the original expiration date of the patent. Since this provision was enacted in 1984, the PTO has issued 195 certificates of patent term extension in accordance with section 156. Under the URAA, patents in force on June 8, 1995, are entitled to a patent term of 17 years from grant or 20 years from filing, whichever is longer. The PTO estimates that 93 patents whose terms were extended under section 156 would be entitled to such longer patent term. The PTO has assumed, for the purpose of evaluating the number of extended patents that may be affected by the 20-year patent term, that a patent that would have expired (under the original 17-year patent term) before June 8, 1995, but has received a patent term extension for a period beyond June 8, 1995 (with the rights prescribed in 35 U.S.C. 156(b)), is a patent "in force" on June 8, 1995.

There are several ways to interpret the provision of the URAA that grants the longer of a 17 or 20-year patent term to patents in force on June 8, 1995, and that have been or will be extended under section 156. First, the extension already issued by the PTO could simply be added to the longer of the 17 or 20-year patent term. No action would be required by the PTO. Second, the extension already issued by the PTO could be interpreted to operate from "the original expiration date of the patent" (35 U.S.C. 156(a)), which could be interpreted as the expiration date of the 17-year patent term. Again, no action would be required by the PTO. A third interpretation could be that the appropriate extension under section 156 would be added to the longer of the 17 or 20-year patent term. This third interpretation would require the PTO to revise the extension granted in some cases, as the 14-year limitation of a patent term counted from the date of market approval (35 U.S.C. 156(c)(3)) would be applicable to the extended patent term regardless of whether the original expiration date of the patent was 17 years from grant or 20 years from the filing date. The PTO seeks comments from the public on the appropriate course of action with respect to patents that have been or will be issued term extensions under section 156 of title 35, United States Code.

Questions:

1. Should PTO take any action with respect to existing patent term extensions under section 156?

2. What approach should PTO take with respect to the calculation of new patent term extensions under section 156 where the patent is entitled to the longer of the 17 or 20-year patent term under the URAA?

Comments on any other issues relevant to the relationship between the URAA and the FDCA or existing patent term extensions under 35 U.S.C. 156 are also invited.

January 11, 1995

MICHAEL K. KIRK
Deputy Assistant Secretary
of Commerce and Deputy
Commissioner of Patents
and Trademarks

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before March 25, 1995.

Fox, David A., 1104 W. Ruth Ave., Phoenixville, Pa. 19460
Harris, John D., 380 Third Ave., Ottawa, Ont., K1S 2K5, Canada
Malyszko, Thomas E., 1630-39 St., S.W., Suite 201, Calgary, Alb., T3C 1V6, Canada
Page, Margaret J., 5802 Wescott Hills Way, Alexandria, Va. 22315

January 13, 1995

KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

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Certificates of Correction For Week of February 7, 1995

D. 351,721	5,190,982	5,278,693	5,313,218	5,329,537	5,346,386	5,355,736	5,363,060
D. 352,959	5,194,623	5,283,638	5,314,436	5,329,881	5,346,861	5,356,191	5,363,082
Re. 34,293	5,202,592	5,285,963	5,314,896	5,330,129	5,347,118	5,356,238	5,363,473
Re. 34,747	5,212,047	5,284,989	5,315,556	5,330,149	5,347,408	5,356,550	5,363,513
P. 7,939	5,212,246	5,287,021	5,317,409	5,330,473	5,347,598	5,356,581	5,363,635
4,853,186	5,214,060	5,288,497	5,318,570	5,330,642	5,347,665	5,356,930	5,363,970
4,872,559	5,215,926	5,288,511	5,320,414	5,330,904	5,348,595	5,357,121	5,364,750
4,886,326	5,217,820	5,288,640	5,320,514	5,331,024	5,348,283	5,357,473	5,365,484
4,889,700	5,219,892	5,290,138	5,320,625	5,331,385	5,348,819	5,357,535	5,365,007
4,958,712	5,226,242	5,291,307	5,320,673	5,331,421	5,349,646	5,357,701	5,365,150
4,975,725	5,227,049	5,291,338	5,320,881	5,331,568	5,349,792	5,358,201	5,365,654
5,037,083	5,231,442	5,294,824	5,321,478	5,331,622	5,349,956	5,358,029	5,365,889
5,047,344	5,235,007	5,295,859	5,321,811	5,332,635	5,350,584	5,358,069	5,366,427
5,082,954	5,235,087	5,297,030	5,322,916	5,333,501	5,350,621	5,358,291	5,366,448
5,097,672	5,235,878	5,298,919	5,323,363	5,335,032	5,350,780	5,358,627	5,366,940
5,098,396	5,236,706	5,299,568	5,324,320	5,335,333	5,351,048	5,358,653	5,367,163
5,112,757	5,237,823	5,299,613	5,324,774	5,335,420	5,351,162	5,358,986	5,367,548
5,124,477	5,256,503	5,303,561	5,324,859	5,335,983	5,351,751	5,359,736	5,367,792
5,128,753	5,258,166	5,304,124	5,325,189	5,336,560	5,352,019	5,359,998	5,368,294
5,128,895	5,260,173	5,305,347	5,325,214	5,337,046	5,352,218	5,360,124	5,368,316
5,130,162	5,260,444	5,305,742	5,325,386	5,337,270	5,352,401	5,360,236	5,368,718
5,133,951	5,260,916	5,307,195	5,325,492	5,340,327	5,352,588	5,360,613	5,368,813
5,141,762	5,261,568	5,308,499	5,326,875	5,341,076	5,352,595	5,360,835	5,368,815
5,141,887	5,261,895	5,309,784	5,327,366	5,341,221	5,352,756	5,361,027	5,368,938
5,145,773	5,261,956	5,310,595	5,327,494	5,341,846	5,352,823	5,361,204	5,369,101
5,147,439	5,264,174	5,311,011	5,327,635	5,342,616	5,353,263	5,361,352	5,369,197
5,158,941	5,268,486	5,311,102	5,328,689	5,342,619	5,353,265	5,361,547	5,369,373
5,163,958	5,271,078	5,311,147	5,329,141	5,342,676	5,353,844	5,361,750	5,369,443
5,165,002	5,272,067	5,311,289	5,329,284	5,343,156	5,353,945	5,361,755	5,370,039
5,172,419	5,273,850	5,311,685	5,329,293	5,343,280	5,354,368	5,362,003	5,370,236
5,183,728	5,277,911	5,312,180	5,329,514	5,344,016	5,354,655	5,362,032	5,370,749
				5,344,231	5,355,168	5,362,068	
				5,344,397	5,355,372	5,362,576	
				5,346,306	5,355,629	5,362,868	

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

December 5-9, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
12-5	E:X (R)	74/268,093	Packer Foods, Inc.	2(d)	Request for Reconsideration Denied [Refusal Affirmed]		"FRUIT BELT" [canned and frozen fruits and vegetables]	"BELT" [citrus fruits, namely, oranges, lemons and grapefruit in their natural state]	No
12-5	E:X (R)	74/238,753	One Market Restaurant Partners, LP	2(d)	Request for Reconsideration Denied [Refusal Affirmed]		"ONE MARKET" [restaurant services]	"MARKET" [restaurant services]	No
12-6	E:X E:X	74/363,957 74/363,958	Mission Pharmacal Co., Inc	2(d)	Refusal Affirmed (in both cases)		"D-TOX" and "DE-TOX" [orally administered anti-oxidants, namely, a combination of vitamins C and E with beta-carotene, for treatment of arterial lipoprotein particles against oxidation with electronically charged free-radical oxygen in the blood stream to avoid production of cholesterol-laden plaque foam cells]	"HERBAL DETOX" [vitamins and dietary food supplements]	No
12-7	OPP	R2,764	Cash Station, Inc. v Money Station, Inc	2(d)	Opposition Sustained	"CASH STATION" [banking services, namely, automatic teller	"MONEY STATION" [and design] [electronic funds transfer and consumer banking automated teller machine and point of sale terminal services]		No

[1]EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ FOR RECONSIDERATION

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Box Sequence	Submission of diskette for biotechnical application.
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Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
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	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
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Connecticut	New Haven: Science Park Library	(203) 786-5447
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	Tampa Campus Library, University of South Florida	(813) 974-2726
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Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2873
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
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	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
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	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

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North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-9740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

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PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	01/06/94
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	11/04/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	03/22/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	01/20/94
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/16/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	11/17/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	05/31/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	12/07/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—Vacant	308-0771	12/13/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/14/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	05/20/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	03/16/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	12/20/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	11/30/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	01/06/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	07/16/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	09/30/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during January 1995 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,065,812 to 4,071,911 inclusive
Plant Patents.....4,174 to 4,205

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Jan. 1, 1995

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/26/94	11/14/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/05/94	10/19/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/05/94	09/19/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/01/94	10/12/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/28/94	11/02/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/12/94	09/21/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/19/94	10/18/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/19/94	09/23/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/28/94	08/25/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/21/94	11/17/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/14/94	11/14/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/09/94	11/01/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/15/94	09/06/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	07/14/94	—0—
Renewals (All Classes)	11/17/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

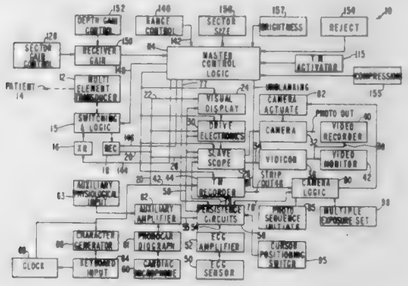
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REEXAMINATIONS

FEBRUARY 7, 1995

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,274,422 (2465th)
SECTOR SCANNER DISPLAY AND RECORDING SYSTEM FOR ULTRASONIC DIAGNOSIS
Weston A. Anderson; Lloyd D. Clark, both of Palo Alto, and William L. Beaver, Los Altos Hills, all of Calif., assignors to Diasonics Delaware, Inc.
Reexamination Request No. 90/002,715, May 4, 1992.
Reexamination Certificate for Patent No. 4,274,422, issued Jun. 23, 1981, Ser. No. 914,323, Jun. 12, 1978.
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.04



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

New claims **10–18** are added and determined to be patentable.

1. An ultrasonic patient diagnostic device comprising means including a phased array transducer means for generating and displaying a fan shaped, two-dimensional, real time, operator viewable image of a region of a patient being examined from ultrasonic energy directed into and reflected out of said patient region, and means responsive to said means for generating said image for effecting, simultaneously with said real time image, a TM recording corresponding to a preselected region of said real time image viewable during patient examination.

B1 4,399,407 (2466th)
ENGINE ANALYZER WITH CONSTANT WIDTH DIGITAL WAVEFORM DISPLAY
Michael J. Kling, Mequon, and Joseph A. Marino, Waukesha, both of Wis., assignors to Bear Automotive Service Equipment Co., Milwaukee, Wis.
Reexamination Request No. 90/003,244, Nov. 5, 1993.
Reexamination Certificate for Patent No. 4,399,407, issued Aug. 16, 1983, Ser. No. 327,511, Dec. 4, 1981.
Int. Cl.[6] F02P *17/00*
U.S. Cl. 324—379

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **7**, **17** and **20** are determined to be patentable as amended.

Claims **2–6**, **8–16**, **18**, **19** and **21**, dependent on an amended claim, are determined to be patentable.

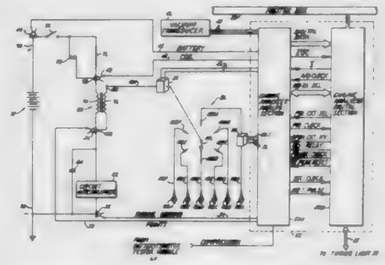
New claims **22–37** are added and determined to be patentable.

1. A test system for testing operation of a selected system or component of an internal combustion engine, the test system comprising:

means for providing a periodic analog input waveform representative of operation of the system or component of the internal combustion engine under a test condition, the periodic analog input waveform having a period which varies as a function of engine speed;

analog-to-digital (A/D) converter means for sampling the analog input waveform periodically at a data sample rate and converting each sample to a digital value;

means for controlling the data sample rate of the analog-to-digital converter means as a function of the period of the input waveform to produce a predetermined number of digital values representative of the input waveform;



data memory means for storing the predetermined number of digital values; [and]

point addressable display means for displaying a *reconstructed* simulated *analog* visual representation of the input waveform based upon *digital display data which is a function of* the stored predetermined number of digital values, the *reconstructed* simulated [visual representation being] *waveform having an appearance of a continuous analog waveform* representative of operation of the system and component of the internal combustion engine under the test condition; *and*

means for generating the digital display data representing pixels on the point addressable display means which produce the reconstructed simulated waveform so that is has the appearance of a continuous analog waveform, the digital display data including data corresponding to pixels representing individual sampled points of the waveform defined by the predetermined number of digital values and data corresponding to intermediate pixels between the individual sampled points of the waveform.

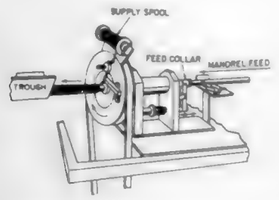
B1 4,791,708 (2467th)
ABRASION AND HYDROLYSIS RESISTANT JOINING MEANS FOR FABRIC SEAMS
H. Dana Smolens, Norristown, Pa., assignor to Asten Group, Inc., Devon, Pa.
Reexamination Request No. 90/002,970, Feb. 25, 1993.
Reexamination Certificate for Patent No. 4,791,708, issued Dec. 20, 1988, Ser. No. 874,640, Jun. 16, 1986.
Int. Cl.[6] F16G *3/00*
U.S. Cl. 24—33 C

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AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–7 and 8 are confirmed.

1. Means for joining the ends of a flat woven heat sensitive industrial fabric into an endless papermaker's belt, said means comprising at least two fabric connecting elements, having a heat set temperature different from the heat set temperature of the interwoven threads of said flat woven industrial fabric and greater than 400° F., and a joining element, each of said con-



necting elements being a preformed and heat set coil of polyetheretherketone continuous filament having a preformed and heat set final height dimension which is no greater than the maximum thickness of the final finished papermaker's belt, whereby the connecting elements are secured to the respective ends of the flat woven fabric and are intermeshed to form a passage way for receiving the joining element therethrough and establishing the endless papermaker's belt, said connecting elements being heat set and preformed prior to use as a connecting element so as to avoid damage to said fabric from heat setting.

B1 4,908,850 (2468th)

VOICE SERVICES NETWORK WITH AUTOMATED BILLING

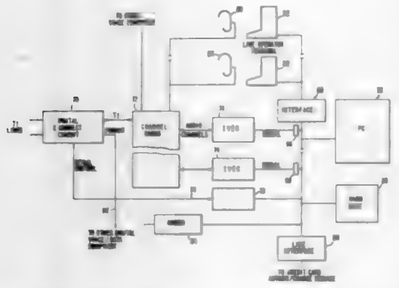
Ronald K. Masson, Topanga, and Michael W. Edelson, Simi Valley, both of Calif., assignors to American Communications & Engineering, Inc., Simi Valley, Calif.

Reexamination Request No. 90/003,109, Jun. 29, 1993.

Reexamination Certificate for Patent No. 4,908,850, issued Mar. 13, 1990, Ser. No. 142,676, Jan. 11, 1988.

Int. Cl.[6] H04M *3/50, 3/56, 3/58*

U.S. Cl. 379—88



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–56 are cancelled.

[17. A method of communication comprising the steps of

(a) providing at least one voice message system coupled to at least one phone line for receiving incoming calls on said at least one phone line, providing verbal prompts to the callers from predetermined messages stored in digitized form, and for receiving information from callers over said at least one phone line in touch tone coded form in response to the verbal prompts, and

(b) providing a data base computer coupled to the at least one voice message system for receiving information from the voice message system relating to each call and storing the same in a form organized at least in part by reference to each respective caller, said data base computer being coupled to a line to a credit verification service and automatically communicating with the credit verification service for credit verification purposes for callers for which such information is not already stored in the data base computer.]

[50. A method of communication comprising the steps of:

(a) providing at least one voice message system coupled to at least one phone line for automatically receiving incoming calls on said at least one phone line, providing verbal prompts to the callers from predetermined messages stored in digitized form, and for receiving information from callers over said at least one phone line in touch tone coded form in response to the verbal prompts, the voice message system having the capability of communication with a banking card service;

(b) receiving incoming calls by the voice message system and providing verbal prompts to each caller to encourage the same to enter the caller's banking card information by way of the touch tone keyboard;

(c) receiving in touch tone form and detecting the banking card information from a caller;

(d) automatically communicating with the banking card service to authorize credit in accordance with the banking card information; and

(d) switching the respective one of the calls to a voice mail system;

(f) all of the foregoing steps (b) through (e) being accomplished without operator intervention.]

B1 5,107,274 (2469th)

COLLOCATED NON-INTERFERING DUAL FREQUENCY MICROWAVE FEED ASSEMBLY

Rodney A. Mitchell, Tujunga, and Gerry B. Blachley, Simi Valley, both of Calif., assignors to Antenna Down Link, Inc., Las Vegas, Nev.

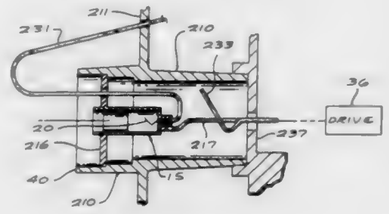
Reexamination Request No. 90/003,422, May 5, 1994.

Reexamination Certificate for Patent No. 5,107,274, issued Apr. 21, 1992, Ser. No. 405,548, Sep. 11, 1989.

Continuation of Ser. No. 105,135, Oct. 2, 1987, Pat. No. 4,903,037

Int. Cl.[6] H01Q *13/02*

U.S. Cl. 343—756



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–20 is confirmed.

1. A coaxial feed assembly for receiving incident electromagnetic signals and conveying them to an associated signal utilization means outside of said coaxial feed assembly comprising:

a feed assembly body having a boundary wall defining a first elongated waveguide cavity having a first axis, said wall defining a first aperture at a forward end of said cavity and defining a rearward end of said cavity;

a first probe mounted within said first waveguide cavity for receiving electromagnetic energy in a first preselected band of frequencies;

means supporting said first probe in a rearward portion of said first waveguide cavity;

first signal conducting means for conducting electromagnetic energy received by said first probe to the exterior of said body;

whereby electromagnetic energy detected by said first probe may be conducted to a signal utilization means;

means defining a second elongated waveguide cavity of smaller dimension than said first waveguide cavity, said second waveguide cavity having a second axis and having a second aperture at a forward end thereof and being closed at a rearward end thereof;

a second probe mounted within said second waveguide cavity for receiving electromagnetic energy in a second preselected band of frequencies, said second preselected band of frequencies being higher than said first band of frequencies;

means supporting said second probe in said second waveguide cavity;

means mounting said second waveguide cavity coaxially within said first waveguide cavity between said first aperture and said first probe and spaced from the boundary wall of said first waveguide cavity, said first waveguide cavity providing a continous, uninterrupted signal path within said first waveguide cavity, around said second waveguide, for conveying incident electromagnetic signals from said first aperture to said first probe; and

second signal conducting means extending into said first waveguide cavity for conducting electromagnetic energy received by said second probe to the exterior of said body.

B1 5,158,231 (2470th)

MINI-SPRINKLER STAKE ASSEMBLY AND MINI-SPRINKLER UNIT AND DEFLECTOR THEREFORE

Hans D. Christen, La Verne, and Howard E. Thornton, Glendora, both of Calif., assignors to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Reexamination Request No. 90/003,124, Jul. 9, 1993.

Reexamination Certificate for Patent No. 5,158,231, issued Oct. 27, 1992, Ser. No. 719,747, Jun. 24, 1991.

Int. Cl.[6] B05B *1/26, 15/00*

U.S. Cl. 239—276

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 33–39 is confirmed.

Claims 1, 4, 14, 15, 18–20, 23, 24 and 40–43 are cancelled.

Claims 2, 5, 6, 16, 21, 25 and 44 are determined to be patentable as amended.

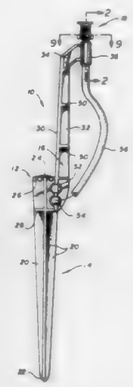
Claims 3, 7–13, 17, 22 and 26–32, dependent on an amended claim, are determined to be patentable.

2. *A mini-sprinkler irrigation stake assembly for use in spraying water over the ground from a supply tube coupled with a source of pressurized water, said stake assembly comprising:*

an elongated support stake having a ground penetrating portion adapted to be embedded in the ground and a mini-sprinkler support portion adapted to project above the ground, said support portion including a generally C-shapedelongated support channel;

a tubular mounting adapter dimensioned to be releasably received and retained in said C-shaped channel and including an inlet end portion adapted to be coupled with said supply tube and an outlet end portion projecting above said C-shaped channel;

a mini-sprinkler unit for receiving pressurized water and ejecting said water outwardly away from said unit as a water spray of predetermined shape; and



means for releasably coupling said mini-sprinkler unit to said outlet end portion of said adapter [A stake assembly as set forth in claim 1 wherein said means for releasably coupling comprises] *comprising* a twist-lock coupling formed by cooperating means on said outlet end portion of said adapter and on said mini-sprinkler unit[.] *whereby water received by said adapter from said supply tube is communicated to said mini-sprinkler unit and ejected thereby over the ground with said predetermined shape.*

B1 5,170,257 (2471st)

METHOD AND APPARATUS FOR CALIBRATING HALFTONE OUTPUT FROM AN IMAGE-SETTING DEVICE

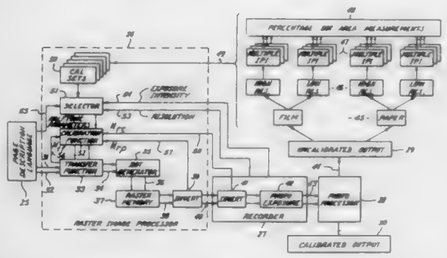
James M. Burns, Austin, Tex., assignor to Southwest Software, Inc., Austin, Tex.

Reexamination Request No. 90/003,294, Dec. 22, 1993.

Reexamination Certificate for Patent No. 5,170,257, issued Dec. 8, 1992, Ser. No. 592,022, Oct. 2, 1990.

Int. Cl.[6] H04N *1/23*

U.S. Cl. 358—298



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 11–14 is confirmed.

Claim 6 is cancelled.

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Claims **1**, **3**, **7**, **8**, and **9** are determined to be patentable as amended.

Claims **2**, **4**, **5** and **10**, dependent on an amended claim, are determined to be patentable.

1. A method of calibrating halftone output images form an imagesetting device, comprising:

providing a halftone input image, each said input image including a plurality of requested gray value densities, each said input image being a function of image resolution, exposure intensity and screen frequency;

reproducing said halftone images onto a photographic media;

chemically processing said media to manifest the exposure thereon;

measuring the density of each said requested gray value of each said halftone input image by a densitometer;

generating a plurality of calibration sets in accordance with said measuring step, each said calibration set corresponding to any variation between said requested gray value density and said respective measured density reading for each said halftone input image at various said image resolutions, said exposure intensity and said screen frequency; and,

converting a subsequent plurality of halftone input images to a respective plurality of calibrated halftone output images according to changes made to said subsequent halftone input images by said calibration sets, *by programmably selecting a particular calibration set of said plurality of calibration sets to be used to convert one of said subsequent plurality of halftone input images depending upon said imagesetting device current settings of said image resolution, said exposure intensity and said screen frequency.*

B1 5,199,962 (2472nd)

PROCESS FOR REMOVING CONDENSABLE COMPONENTS FROM GAS STREAMS

Johannes G. Wijmans, Menlo Park, Calif.

Reexamination Request No. 90/003,225, Oct. 25, 1993.

Reexamination Certificate for Patent No. 5,199,962, issued Apr. 6, 1993, Ser. No. 837,244, Feb. 14, 1992.

Continuation of Ser. No. 649,305, Jan. 30, 1991, Pat. No. 5,089,033, which is a continuation of Ser. No. 432,592, Nov. 7, 1989, abandoned

Int. Cl.[6] **B01D** *53/22, 71/24*

U.S. Cl. 95—39

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **11** and **24–26** are determined to be patentable as amended.

Claims **2–10**, **12–23** and **27–35**, dependent on an amended claim, are determined to be patentable.

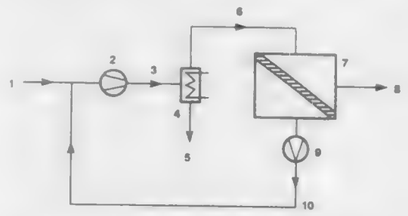
New claims **36–126** are added and determined to be patentable.

36. A process for recovering a condensable component from a gas stream, comprising the steps of:

(a) providing an incoming gas stream containing a condensable component, characterized by a boiling point higher than −100° C.;

(b) performing a condensation step, characterized in that said incoming gas stream has not passed through a vacuum pump immediately prior to said condensation step, comprising:

bringing said incoming gas stream and a recycled stream from step (d) to a pressure and temperature condition



characterized in that the concentration of said condensable component is greater than its saturation concentration at said condition, so that condensation of a portion of said condensable component occurs;

withdrawing a condensed stream comprising said condensable component in liquid form;

withdrawing a non-condensed stream depleted in said condensable component compared with said incoming gas stream;

(c) performing a membrane separation step, comprising:

providing a membrane having a feed side and a permeate side;

providing a pressure difference between the permeate and feed sides of the membrane;

contacting said feed side with said non-condensed stream from said condensation step;

withdrawing from said permeate side a permeate stream enriched in said condensable component compared with said non-condensed stream;

(d) recycling said permeate stream to said condensation step (b).

STATUTORY INVENTION REGISTRATIONS

PUBLISHED FEBRUARY 7, 1995

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1411

MAGNESIUM-LITHIUM ALLOYS HAVING IMPROVED CHARACTERISTICS

Uday V. Deshmukh, 92-F Elder Dr., Pacheco, Calif. 94553

Filed Nov. 12, 1992, Ser. No. 975,370

Int. Cl.[6] **C22C** *23/00*

U.S. Cl. 75—249 **8 Claims**

1. A magnesium lithium alloy corresponding to the formula

$$Mg_wLi_xM_yI_z$$

wherein M is an element selected from the group consisting of aluminum, zinc, calcium, tin, yttrium, silver, titanium, zirconium, cerium and neodymium and mixtures thereof; I represents impurities; w represents the weight percent of Mg in the alloy; x represents the weight percent of Li in the alloy; y represents the weight percent of M in the alloy; z represents the weight percent of impurities in the alloy; $w+x+y+z=100$; the value of w is at least about 50 and no greater than about 88; the value of x is at least about one and no greater than about 50; the value of y is from zero to about 10; and the value of z is from zero to about 5, prepared by mechanical alloying.

H1412

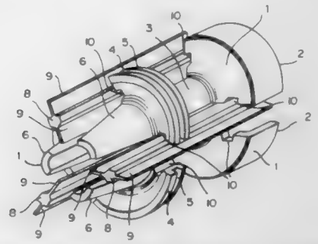
SABOT STIFFENER FOR KINETIC ENERGY PROJECTILE

Roy W. Kline, Newton, and Chiu H. Ng, Wharton, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1994, Ser. No. 197,783

Int. Cl.[6] **F42B** *14/06*

U.S. Cl. 102—521 **7 Claims**



1. A sabot for a kinetic energy projectile comprising:

a plurality of sabot petals;

said plurality of sabot petals fitting together to form an annulus about said kinetic energy projectile;

a stiffener, radially disposed between each pair of adjacent edges of said sabot petals; and

stiffening means in each of said stiffeners for resisting a bending of said kinetic energy projectile, whereby an aiming dispersion is reduced.

6. A method for manufacturing a sabot for a kinetic energy projectile comprising:

forming an annular sabot;

radially cutting said annular sabot at a plurality of locations to form a plurality of sabot petals;

the step of radially cutting removing a predetermined width of material from said annular sabot;

assembling said plurality of sabot petals into an annulus;

the step of assembling including placing a stiffener between each adjacent pair of edges of said plurality of sabot petals; and

said stiffener having a thickness substantially equal to said predetermined width, whereby said annulus has a diameter substantially equal to a diameter of said annular sabot before the step of radially cutting.

H1413

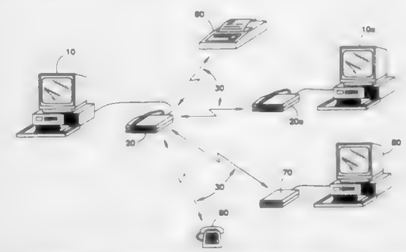
ESCAPE METHODS FOR MODEM COMMUNICATIONS

Timothy D. Gunn, 8120 Red Oak Ct., Mounds View, Minn. 55432

Filed Jan. 8, 1993, Ser. No. 1,855

Int. Cl.[6] **H04B** *1/38;* **H04L** *5/16*

U.S. Cl. 375—8 **1 Claim**



1. A method of controlling a modem connected to a personal computer, comprising the steps of:

sending a <BREAK> signal to a modem;

buffering the <BREAK> signal in the modem;

starting a timer to wait for a <CR>;

sending "ATS0=1<CR>" to the modem;

buffering "ATS0=1<CR>" at the modem;

identifying "ATS0=1<CR>" as a valid command at the modem;

causing the modem to escape to COMMAND mode;

executing the command "ATS0=1<CR>"; and

returning the modem to ON-LINE mode.

H1414

NONVOLATILE MEMORY SYSTEM FOR STORING A KEY WORD AND SENSING THE PRESENCE OF AN EXTERNAL LOADER DEVICE AND ENCRYPTION CIRCUIT

Gary S. Borgen, Port Hueneme, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 12, 1991, Ser. No. 654,452

Int. Cl.[6] **H04L** *9/00*

U.S. Cl. 380—4 **22 Claims**

1. A nonvolatile memory system for sensing the presence of an external loader device and then receiving a key word of up to 1024 digital data bits from said external loader device, for storing said key word therein for a period of time of up to three years and then transferring said key word to said encryption circuit, said nonvolatile memory system comprising:

erasable programmable read-only memory means for providing a plurality of program instructions, each of said program instructions being provided by said erasable programmable read-only memory means in response to a binary address supplied to said erasable programmable read-only memory means, said program instructions controlling a sequencing of operations within said nonvolatile

memory system, each of said program instructions having at least eight digital data bits;

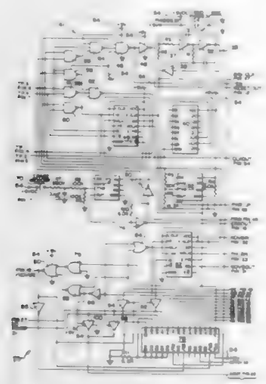
nonvolatile static digital data storage means for receiving said key word from said encryption circuit and storing said key word therein, said nonvolatile static digital data storage means having first and second data input/outputs, a write enable input and a nonvolatile enable input;

first address generating means for supplying each binary address to said erasable programmable read-only memory means;

second address generating means for supplying sequential binary addresses to said nonvolatile static digital data storage means, each sequential binary address supplied to said nonvolatile static digital data storage means selectively allowing said nonvolatile static digital data storage means to store therein two digital data bits of said key word from said external loader device or allowing two digital data bits of said key word to be retrieved from said nonvolatile static digital data storage means for transfer to said encryption circuit;

clock generating means for providing a system clock signal;

counter means for generating PHI0, PHI1, PHI2, PHI3 and



PHI012 clock signals in response to the system clock signal being provided to said counter means by said clock generating means and for providing a first reset signal;

said first address generating means being incremented by the PHI012 clock signal generated by said counter means and being reset by the first reset signal provided by said counter means;

first, second, and third program instruction storage means for latching therein said plurality of program instructions provided by said erasable programmable read-only memory means, each of said program instructions being latched into said first, second and third program instruction storage means respectively by said PHI0, PHI1 and PHI2 clock signals;

said first program instruction storage means providing a power down signal, said power down signal setting said nonvolatile static digital data storage means at a power down standby state to allow for retention of said key word within said nonvolatile static digital data storage means for said period of time of up to three years;

multiplexer means for sensing the presence of said external loader device and if said external loader device is not present testing for the presence of said encryption circuit, said multiplexer means providing a first digital logic signal indicating the presence of said external loader device or the presence of said encryption circuit, said multiplexer means being enabled to sense for the presence of said external loader device by one of the plurality of program instructions latched within said first program instruction storage means and being selectively enabled to sense for the presence of said encryption circuit by another of the plurality of program instructions latched within said first program instruction storage means;

control circuit means for providing a parallel load signal to said first address generating means in response to the first digital logic signal provided by said multiplexer means, said parallel load signal effecting the parallel loading of the program instruction latched within said second program instruction storage means into said first address generating means, one of said plurality of program instructions when parallel loaded into said first address generating means initiating the transfer of the key word from said external loader device to said nonvolatile static digital data storage means and another of said plurality of program instructions when parallel loaded into said first address generating means initiating the transfer of the key word from said nonvolatile static digital data storage means to said encryption circuit;

said control circuit means providing a second reset signal for resetting said second address generating means and an increment second address generating means clock signal for incrementing said second address generating means so that said second address generating means provides said sequential binary addresses to said nonvolatile static digital data storage means;

said control circuit means providing a read/write digital logic signal to said nonvolatile static digital data storage means for controlling storage of said key word in said nonvolatile static digital data storage means and retrieval of said key word from said nonvolatile static digital data storage means;

demultiplexer means for effecting the transfer of said key word from said external loader device to said nonvolatile static digital data storage means, said demultiplexer means being enabled to effect the transfer of said key word from said external loader device to said nonvolatile static digital data storage means by one of the plurality of program instructions latched within said first program instruction storage means;

flip-flop means for effecting the transfer of said key word from said nonvolatile static digital data storage means to said encryption circuit; and

said control circuit means providing an increment flip-flop means clock signal to effect the transfer of said key word from said nonvolatile static digital data storage means to said encryption circuit.

H1415

SIGNAL PROCESSOR/ANALYZER WITH A NEURAL NETWORK COUPLED TO AN ACOUSTIC CHARGE TRANSPORT (ACT) DEVICE (ACT)

Ronald F. K. Merryman, Beavercreek, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

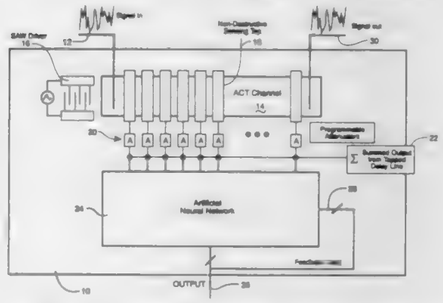
Filed Oct. 26, 1992, Ser. No. 966,483
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—22 3 Claims

MICROFICHE APPENDIX INCLUDED
(07 Microfiche, 966483 Pages)

1. A signal processor/analyzer for real-time analysis of analog signals, comprising an acoustic charge transport device (ACT) and an artificial neural network processor, combined on a single, monolithic GaAs substrate;

wherein the acoustic charge transport device comprises a channel, a surface acoustic wave driver coupled to the channel, an input contact coupled to a signal input line for an analog signal, a plurality of taps for sensing the charge of a signal in the channel, and an output contact coupled to a signal output line at which the analog signal can exit;

each tap of the acoustic charge transport device being coupled via an attenuator to means for summing and to an input of the artificial neural network processor, a summed output being created in the summing means, the artificial neural network processor having an output which can be



fed back to the artificial neural network processor for training and other purposes.

H1416

METHOD FOR EXTENDING THE LIFE OF A CURVED SECTION IN A PIPE FOR THE TRANSPORT OF FINELY DIVIDED FLUIDIZED PARTICULATE SOLIDS

Jon A. Berge, 24261 Sparrow St., Lake Forest, Calif. 92630

Filed Jun. 27, 1994, Ser. No. 265,906
Int. Cl.[5] B65G *51/18, 53/52*
U.S. Cl. 406—193 4 Claims

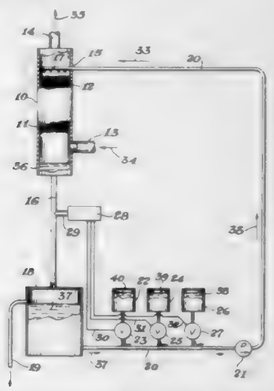
1. In a method for extending the life of a curved section in a pipe wherein finely divided particulate solids are transported in fluidized flow by positioning pre-rotation vanes upstream of said curved section, the improvement comprising the use of pre-rotation vanes fabricated of steel and hardened by boron vapor diffusion hardening.

H1417

PROCESS FOR REMOVING HALOGEN GASES FROM A GAS STREAM CONTAINING CARBON DIOXIDE

Engin D. Yalvac; Robert A. Bredeweg, and Douglas C. Greminger, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 27, 1993, Ser. No. 10,088
Int. Cl.[6] C01B *7/00*
U.S. Cl. 423—240 R 3 Claims



1. A process for removing halogen gases from a gas stream containing a concentration of halogen gases and a concentration of carbon dioxide, the process comprising the steps of:

(a) flowing fresh absorption liquid to a gas-liquid contactor at a flow rate, the fresh absorption liquor comprising soft water, a concentration of base and a concentration of thiosulfate;

(b) flowing the gas stream to the gas-liquid contactor at a flow rate:

(c) contacting the fresh absorption liquor and the gas stream in the gas-liquid contactor to form a contacted gas stream and a contacted absorption liquor, the flow rate of fresh absorption liquor, the concentration of base in the fresh absorption liquor and the concentration of thiosulfate in the fresh absportion liquor relative to the flow rate of the gas stream, the concentration of halogen gases in the gas stream and the concentration of carbon dioxide in the gas stream being sufficient to remove more than half of the halogen gases from the gas stream by a chemical reaction with the fresh absorption liquor, more than half of the carbon dioxide from the gas stream not being removed from the gas stream;

(d) flowing the contacted gas stream from the gas-liquid contactor to from an exhaust gas stream from the process, the exhaust gas stream containing less than half the halogen gas than the gas stream contained, the exhaust gas stream containing more than half the carbon dioxide than the gas stream contained; and

(e) flowing the contacted absorption liquor from the gas-liquid contactor to form a stream of used absorption liquor, the stream of used absorption liquor having a thiosulfate concentration of about 100 parts per million.

H1,418

Patent Not Issued For This Number

H1419

FUNCTIONALIZED MODIFIED HIGH MELT FLOW POLYOLEFINS

Dale J. Wilpers, Houston; Charles C. Hwo, Sugar Land; Robert W. Lee; William H. Korcz, both of Houston, all of Tex., and Simon Mostert, Santa Fe, N. Mex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 16, 1992, Ser. No. 961,966
Int. Cl.[6] C08L *23/00*
U.S. Cl. 525—240 9 Claims

1. A polymer composition having and exhibiting improved bonding and printability comprising functionalized polybutylene having a melt flow of up to 1500 g/min., and unfunctionalized polypropylene.

H1420

METHOD FOR ATTACHING DISCRETE, STRETCHED ELASTIC STRANDS TO PREDETERMINED ISOLATED PORTIONS OF DISPOSABLE ABSORBENT PRODUCTS

James W. Richardson, 6100 Center Hill Rd., Cincinnati, Ohio 45224

Filed Apr. 30, 1992, Ser. No. 876,338
Int. Cl.[6] A61F *13/16;* A32B *31/00*
U.S. Cl. 604—385.2 21 Claims

10. A method for manufacturing a disposable absorbent article having at least one obstructing element and having at least one elasticized leg cuff, said method comprising the steps of:

providing a chassis having end edges, longitudinal side edges; a periphery substantially adjacent said end edges and said longitudinal side edges; a first waist region; a second waist region; and a crotch region extending between said first waist region and said second waist region; said chassis comprising: a liquid pervious topsheet, a liquid impervious backsheet associated with said topsheet, and absorbent core positioned between said topsheet and said backsheet; and at least one obstructing element comprising construction adhesive joined to at least a portion of said second waist region of said chassis;

providing at least one elastomeric member in a stretched

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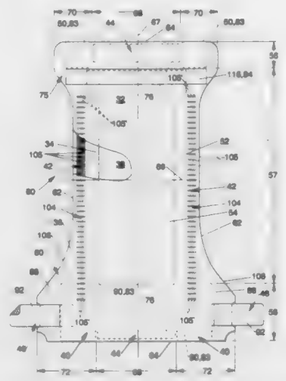
condition, said elastomeric member having a first portion and a second portion;

applying a release agent to at least said second portion of said elastomeric member;

applying an elastic adhesive to said first portion of said elastomeric member;

joining said elastomeric to a periphery of said chassis adjacent one of said longitudinal side edges such that at least part of said second portion superposes said obstructing element and said first portion becomes joined to at least a portion of said crotch region of said chassis; and

relaxing said elastomeric member from a stretched condition so that said first portion of said elastomeric member contracts at least a portion of said crotch region and said second portion becomes relaxed, inactive, and non-functional without being restrained by said obstructing element.



REISSUES

FEBRUARY 7, 1995

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

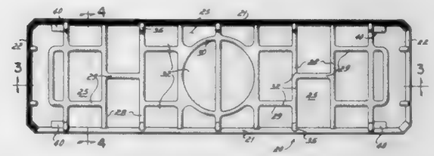
Re. 34,846
LIQUID RETAINING TRAY FOR CASKET

Keith D. McGuire, Batesville, Ind., assignor to Batesville Casket Company, Batesville, Ind.

Original No. 5,092,060, dated Mar. 3, 1992, Ser. No. 592,203, Oct. 3, 1990. Application for reissue Feb. 18, 1994, Ser. No. 198,885

Int. Cl.[6] A61G *17/04*

U.S. Cl. 27—19 12 Claims



9. A tray for the bottom of a casket comprising a sheet of plastic material having:

a bottom wall,

longitudinal side walls connected to said bottom wall, and transverse end walls connected to said bottom wall and said side walls,

said bottom wall having a plurality of interconnected upstanding ribs forming a plurality of discrete isolated compartments for the retention of liquids.

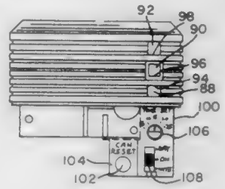
Re. 34,847
METERED AEROSOL FRAGRANCE DISPENSING MECHANISM

Kenneth J. Muderlak, Shorewood, and Patrick D. Maloney, Madison, both of Wis., assignors to Technical Concepts, Inc., Elk Grove Village, Ill.

Original No. 5,038,972, dated Aug. 13, 1991, Ser. No. 412,937, Sep. 26, 1989. Application for reissue Aug. 11, 1993, Ser. No. 105,862

Int. Cl.[6] B67D *5/06*

U.S. Cl. 222—25 34 Claims



1. An apparatus and controlling circuitry for periodically operating an aerosol container at discrete dispensing intervals to disperse a discrete quantity of the aerosol contents thereof *into the atmosphere as a spray*, including powered means for periodically actuating an aerosol dispensing means of said container, said circuitry controlling said powered means, [for a predetermined number of actuations, and first warning means for indicating the probable total evacuation of container contents and the necessity for termination of said dispensing operation when the actuation count reaches said predetermined number], and further including mode switching means for setting said circuitry into a plurality of different operating modes, said plurality of different operating modes comprising at least three modes, including a continuous intermittent operation, a controlled daytime operation *responsive to the relative presence of ambient light*, and a controlled night operation *responsive to the relative absence of ambient light.*

Re. 34,848

Patent Not Issued For This Number

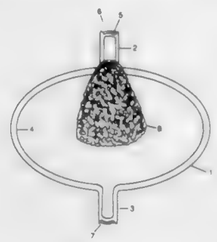
Re. 34,849
LEAF BAGGING EQUIPMENT

Stephen Sanders, 1569 Harpers Cove La., Reston, Va. 22094

Original No. 5,066,143, dated Nov. 19, 1991, Ser. No. 605,000, Oct. 29, 1990. Continuation-in-part of Ser. No. 388,505, Aug. 2, 1989, abandoned. Application for reissue Nov. 15, 1993, Ser. No. 151,948

Int. Cl.[6] B65D *30/10, 33/06, 33/28*

U.S. Cl. 383—4 4 Claims



1. A single flat-lying substantially circular flexible [plastic] sheet with two handle shaped extensions, hereafter referred to as handles, located diametrically opposite each other along the perimeter of the said [plastic] sheet, said sheet completely covering the area within its entire said perimeter, said sheet being hemmed at substantially the entire said perimeter thereof to form a channel, a continuous draw string or draw tape, hereafter referred to as draw string, enclosed in said channel, openings in said channel at said handles to expose said draw string, the length of said draw string being less than the length of the said perimeter of the said sheet, said draw string used to form said sheet into a bag.

Re. 34,850
DIGITAL SIGNAL PROCESSOR

Tokumichi Murakami; Koh Kamizawa, and Masatoshi Kameyama, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Original No. 4,920,480, dated Apr. 24, 1990, Ser. No. 164,257, Mar. 4, 1988. Application for reissue Dec. 6, 1991, Ser. No. 803,457

Claims priority, application Japan, Mar. 5, 1987, 62-50755

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—800 9 Claims

6. A digital signal processor, comprising:

a bus structure including a program bus for instruction transfer, a data bus for internal data transfer, and a data input/output bus for data input and output, said buses being separated from each other;

a program memory which stores instructions and which is connected to said program bus;

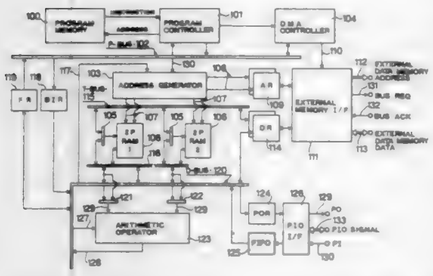
controller means for executing instruction transfer, internal operations and data input/output in parallel fashion;

an internal data memory having at least one input port and least one output port connected to said data bus and said data input/output bus so as to enable concurrent data reading and writing to and from said internal data memory via said data bus and said data input/output bus;

an arithmetic operator unit connected to said data bus and

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having at least two inputs and one outputs for executing internal operations; and



an address generator which concurrently generates at least three memory addresses associated with said internal operations in parallel with execution of internal operations by said arithmetic operator unit.

Re. 34,851

BIOSYNTHESIS OF 2 KETO-L-GULONIC ACID

Ronald F. Manning, Livingston, N.J., and Maria S. Kahn, Seattle, Wash., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Original No. 5,082,785, dated Jan. 21, 1992, Ser. No. 8,993, Jan. 30, 1987. Application for reissue Sep. 25, 1992, Ser. No. 950,523

Int. Cl.[6] C12N *1/21, 15/00;* C12P *7/60, 7/58*

U.S. Cl. 435—252.32 5 Claims



4. A transformed gluconobacter which has been obtained from a gluconobacter which produces L-sorbosone dehydrogenase but not L-sorbose dehydrogenase wherein said transformed gluconobacter:

1) had been transformed with Tn5 which inactivates the 2-keto-L-gulonic acid reductase, and

2) has a recombinant plasmid which plasmid has been modified to contain a DNA sequence from the L-sorbose dehydrogenase gene region of Gluconobacter oxydans UV10 (Accession Number FERM BP-1267) wherein said DNA sequence is selected from the group consisting of pUR H80, pUR 010, and uPR P88;

so that *L-sorbose is converted to 2-keto-L-gulonic acid.*

Re. 34,852

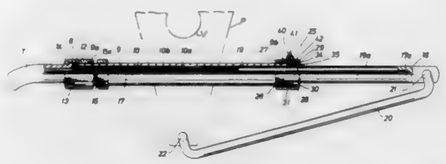
CONTROL CABLE HOUSING SEAL AND LUBRICANT FOR MARINE STEERING SYSTEM

Thomas C. Burroughs, Houston, Tex., assignor to Worldwide Marine Distribution Company, Houston, Tex.

Original No. 5,061,213, dated Oct. 29, 1991, Ser. No. 566,035, Aug. 13, 1990. Application for reissue Jan. 15, 1993, Ser. No. 5,153

Int. Cl.[6] B63H *5/12*

U.S. Cl. 440—63 7 Claims



5. A lubricant and seal arrangement for the control cable and control cable housing of a marine steering system wherein the control cable is connected to a tubular member that is telescopically movable in and out relative to the control cable housing in response to rotation of the steering wheel of the marine steering system, said lubricant and seal arrangement comprising:

an adapter having a longitudinally extending body;

said body having a bore extending from one end of said body terminating in spaced relation to the other end of said body;

threads in said bore for securing said body;

said body having a counterbore extending from the other end of said body which counterbore intersects said body bore and is of a smaller internal diameter than the diameter of said threaded body bore;

an annular shoulder surface formed by the intersection of said body bore and said counterbore;

an annular recess between the other end of said longitudinal body and the intersection of said body bore and counterbore;

seal means for said annular recess;

a lateral opening extending through said longitudinal body; and

a hydraulic fitting for positioning in said opening.

Re. 34,853

PREPARATION OF MONOLITHIC CATALYST SUPPORTS HAVING AN INTEGRATED HIGH SURFACE AREA PHASE

Thomas P. DeAngelis, East Amherst, and Irwin M. Lachman, Corning, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Original No. 4,637,995, dated Jan. 20, 1987, Ser. No. 712,885, Mar. 18, 1985. Application for reissue Oct. 9, 1990, Ser. No. 594,076

Int. Cl.[6] B01J *20/28, 35/00*

U.S. Cl. 502—439 25 Claims

1. A method of preparing a monolithic catalyst support which comprises:

(a) providing a substantially homogeneous body comprising an admixture of

(i) a first phase sinterable ceramic matrix material, in particulate form finer than 200 mesh, selected from the group consisting of cordierite, mullite, alpha-alumina, lithium aluminosilicate, and mixtures of these, and

(ii) a second phase high surface area catalyst-support material having a crystalline size no larger than 0.2 microns and a surface area of at least 40 m^2/g, said catalys-support material consisting of transition metal sulfide; a mixture of transition metal sulfides; porous oxide selected from the group consisting of [alumina,] zirconia, spinel, silica, zeolite, titania, [and] mixtures of these, *and mixtures of the preceeding with alumina;* or a mixture of said sulfide and said oxide materials;

(b) forming the resultant body into a desired shape; and

(c) heating the shaped body at a temperature sufficient to sinter the first phase matrix material.

PLANT PATENTS

GRANTED FEBRUARY 7, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,052

HYBRID TEA ROSE PLANT NAMED MELBICO

J. Heursel, Melle, Belgium, assignor to DeRuiter's Nieuwe Rozen B.V., Hazerswoude, Netherlands

Filed Nov. 4, 1993, Ser. No. 147,854

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described.

9,053

"AUGUST LION II" NECTARINE TREE

Donald M. Serimian, and Lionel M. Serimian, both of 11024 E. Dinuba Ave., Selma, Calif. 93662

Filed Jun. 15, 1994, Ser. No. 260,041

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—41.1 **1 Claim**

1. A new and distinct variety of nectarine tree substantially as illustrated and described which is somewhat similar to the "Red Lion" nectarine tree (U.S. Plant No. 5,591) from which it was derived as a cross with the "Summer Lion" nectarine tree (U.S. Plant Pat. No. 6,544), but from which it is distinguished by producing fruit which are mature for commercial harvesting and shipment approximately August 1 to August 8, or about eight days before, the "Red Lion" nectarine tree, in the San Joaquin Valley of central California and which has an intense red blush skin coloration.

9,054

CHRYSANTHEMUM PLANT NAMED DESERT ISLE

Peter S. Hesse, Nipomo, Calif., assignor to Clearwater Nursery, Inc., Nipoma, Calif.

Filed Jan. 7, 1994, Ser. No. 178,875

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—82.3 **1 Claim**

1. A new and distinct Chrysanthemum plant named Desert Isle substantially as herein described and shown, characterized by its yellow-orange ray floret coloration and exceptional upright to spreading habit.

9,055

CHRYSANTHEMUM PLANT NAMED PACIFIC ISLE

Peter S. Hesse, Nipoma, Calif., assignor to Clearwater Nursery, Inc., Nipoma, Calif.

Filed Jan. 7, 1994, Ser. No. 179,040

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—82.4 **1 Claim**

1. A new and distinct Chrysanthemum plant substantially as herein described and shown, characterized by its lavender ray floret coloration and exceptional upright to spreading habit.

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PATENTS

GRANTED FEB. 7, 1995

ERRATA

For CLASS	See PATENT NO.
004–213	5,386,594
312–319	5,386,636
043–042	5,386,658
451–005	5,386,665
451–005	5,386,666
451–344	5,386,667
451–091	5,386,668
062–025	5,386,691
062–025	5,386,692
249–016	5,386,963
267–140	5,386,972
267–140	5,386,973
406–145	5,387,058
408–226	5,387,059
434–156	5,387,104
454–004	5,387,151
024–016	5,387,250
451–513	5,387,251
062–006	5,387,252
073–117	5,387,253
073–024	5,387,254
074–551	5,387,255
099–286	5,387,256
102–226	5,387,257
126–021	5,387,258
128–630	5,387,259
198–798	5,387,260
400–490	5,387,261
117–085	5,387,309
117–101	5,387,310
252–049	5,387,346
429–012	5,387,476
429–026	5,387,477
429–059	5,387,478
429–126	5,387,479
427–126	5,387,481
526–279	5,387,632
800–002	5,387,742
800–200	5,387,743
424–235	5,387,744
504–116	5,387,745
514–012	5,387,746
514–233	5,387,747

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ERRATA–CONTINUED

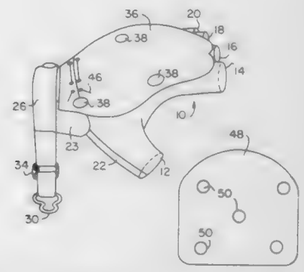
For CLASS	See PATENT NO.
514–254	5,387,748
525–053	5,387,749
528–052	5,387,750
549–534	5,387,751
568–831	5,387,752
568–864	5,387,753
178–018	5,387,765
367–025	5,387,767
327–026	5,387,825
345–147	5,387,896
363–149	5,388,031
364–146	5,388,032
364–156	5,388,033
348–606	5,388,081
365–218	5,388,083
365–226	5,388,084
359–122	5,388,088
370–061	5,388,089
370–013	5,388,091
370–032	5,388,092
372–020	5,388,106
378–058	5,388,136

PATENTS

GRANTED FEBRUARY 7, 1995

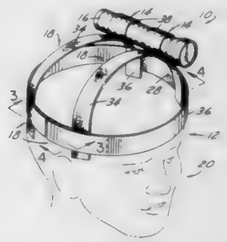
GENERAL AND MECHANICAL

5,386,591
DISCUS TRAINING GLOVE
Karen J. Canan, P.O. Box 115, Bloomery, W. Va. 26817
Filed Aug. 13, 1992, Ser. No. 928,745
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—160 **7 Claims**



1. A discus training glove for enhancing the competitive ability of discus throwers, comprising, a smooth palm portion for releasing a discus and formed of a suitable fabric, a backhand portion formed of a suitable fabric and having at least two layers, a thumb stall, a forefinger stall, a middlefinger stall, a ringfinger stall, a littlefinger stall, an elastic strap means for joining said fabric of said palm portion and said fabric of said backhand portion on the exterior portion of said thumb stall, between said forefinger stall and said middlefinger stall, and also between said ringfinger stall and said littlefinger stall, a cushion pad means for protecting a user's hand against bruising and soreness in critical areas, a strap means for tightly securing said glove to said user's hand, a pouch means for the addition of a weighted material on to the back side of said user's hand, a metal plate means positioned between said layers of said fabric of said backhand portion for evenly distributing and balancing said weighted material, an interlocking member means positioned in said pouch for opening said pouch and allowing entrance of and containing said weighted material in said pouch, and an additional weighted pad attachment for fastening to a top portion of said pouch means.

5,386,592
HEADBAND AND FLASHLIGHT HOLDING CONSTRUCTION
Mark Checkeroski, 3423 Wedgewood Dr., Rochester Hills, Mich. 48306
Filed Sep. 7, 1993, Ser. No. 117,780
Int. Cl.[6] A42B *1/24*
U.S. Cl. 2—209.13 **12 Claims**



1. An apparatus for holding and supporting a flashlight and worn on the head of the wearer, with the flashlight oriented to project a light beam in a forward direction, generally in the direction the wearer is facing comprising:

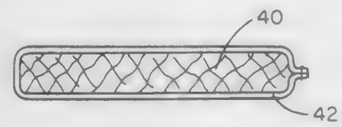
an adjustable headband for encircling the head of the wearer and having front and back interconnected head straps, said head straps having inner and outer surfaces, the inner surfaces of said front and back head straps being provided with loop-type material, said front and back head straps having end portions, with the end portions on said front head strap being spaced from the end portions on said back head strap;

a pair of fasteners for adjustably connecting said spaced apart end portions of said head straps together, said fasteners having inner and outer surfaces which are provided with hook-type material, the outer hook-type material of said fasteners engaging the loop-type material provided on said front and back head straps, said fasteners being located at the sides of the head of the wearer;

a plurality of spaced apart cross straps, each cross strap having a pair of ends and extending across the head of the wearer from one side of the head to the other side, said cross straps having upper and lower surfaces, with the upper surfaces of said cross straps having loop-type material extending between said ends and intermeshed with the hook-type material provided on the inner surfaces of said fasteners; and

a pair of removable flashlight holding devices, one for each cross strap, each flashlight holding device having an exterior surface provided with hook-type material for intermeshing with the loop-type material provided on the upper surface of the corresponding cross strap to hold a flashlight in a removably fixed position on the head of the wearer of the apparatus.

5,386,593
FIREMAN'S BELT WITH PADDING AND FIRE-RESISTANT CONSTRUCTION
H. Leonard Kleinman, Waite Hill, Ohio, assignor to Ramwear, Inc., Mentor, Ohio
Division of Ser. No. 464,302, Jan. 12, 1990. This application Jan. 30, 1992, Ser. No. 828,207
Int. Cl.[6] A41F *9/00*
U.S. Cl. 2—322 **11 Claims**



1. A belt for use with firefighter's pants, the belt comprising:

a strap portion having a first end and a second end, the strap portion made entirely of inelastic material, the strap portion comprising a centrally located padding layer and further comprising an outer layer completely covering the padding layer, the outer layer being made of a flame-retardant material; and,

a fastening means for fastening said belt first end to said belt second end, the fastening means fixed to an end of the strap portion and selectively fastening the first end of the strap portion to the second end of the strap portion, whereby the firefighter's pants are secured around the firefighter's waist.

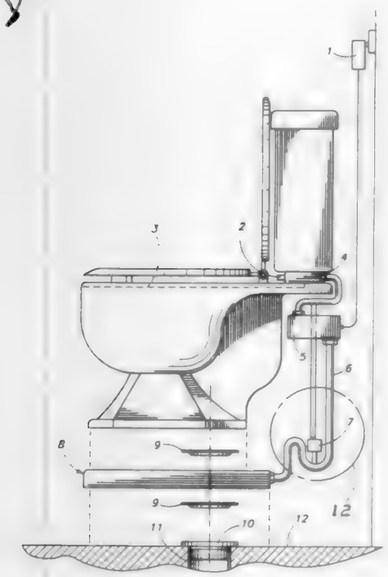
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5,386,594

TOILET VENTILATING MANIFOLD SYSTEM

David D. Hilton, S. 3824 Sherman, Spokane, Wash. 99203

Filed Mar. 30, 1994, Ser. No. 220,363
Int. Cl.[6] E03D *9/052*
U.S. Cl. 4—213 4 Claims



1. A toilet ventilating system for use on a combination closet bowl and tank where the closet bowl has a water channel around at least a portion of the bowl periphery with openings leading from the channel to the bowl interior and where the tank is mounted on the bowl and having a passageway extending from the tank to the water channel for passage of tank water to the bowl water channel, said system comprising:

a) a tank manifold adapted to be mounted between the bowl and tank and having an access cylinder to be positioned in the passageway and an intake port communicating with said access cylinder and extending to an exterior surface of said manifold;

b) a bowl manifold adapted to be mounted between the toilet bowl and a sewer pipe, said bowl manifold having a through passageway communicating the bowl outlet with the sewer pipe and having an exhaust port leading from said bowl manifold through said passageway to an exterior surface of said bowl manifold;

c) a conduit communicating said intake port with a fan housing, another conduit communicating said fan housing through a trapway to said exhaust port, a further conduit connected to said conduit upstream of said fan housing and extending via a reservoir to said trapway, a fan located in said fan housing;

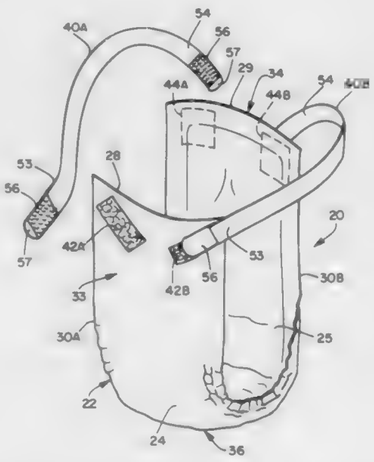
d) wherein when the toilet tank is flushed a portion of the flushing water will pass from tank through said access cylinder through said intake port through said further conduit to said reservoir and subsequently form a pool in said trapway, actuation of said fan will force said pool of water from said trapway into said exhaust port and extract air from said toilet bowl through said tank manifold, said conduit, said fan housing said another conduit into said exhaust port; upon cessation of said fan, water in said reservoir will reform a pool in said trapway.

5,386,595

GARMENT ATTACHMENT SYSTEM

David A. Kuen, Neenah, and Alan F. Schleinz, Appleton, both of Wis., assignors to Kimberly-Clark, Neenah, Wis.

Continuation of Ser. No. 998,496, Dec. 30, 1992, abandoned.
This application Jul. 15, 1994, Ser. No. 275,936
Int. Cl.[6] A41D *13/04;* A61F *13/15*
U.S. Cl. 2—400 9 Claims



1. A garment comprising:

a garment shell having opposite inner and outer surfaces, opposite first and second ends, longitudinal sides extending between the ends, corners at the intersections of the ends and the sides, a first waist section adjacent the first end, and a second waist section adjacent the second end, the garment shell defining a longitudinal axis and a transverse axis;

a pair of first attachment pads attached to the outer surface in the first waist section and comprising a loop material, each of the first attachment pads having a longitudinal axis directed generally toward the nearest corner of the garment shell and forming an angle of from 25 to 45 degrees with the transverse axis of the garment shell, wherein each first attachment pad has a loop tip orientation that is directed toward the first end and is perpendicular to the longitudinal axis of the first attachment pad;

a pair of second attachment pads attached to the outer surface in the second waist section and comprising a loop material, each of the second attachment pads having a longitudinal axis directed generally toward the nearest corner of the garment shell and forming an angle of from 15 to 45 degrees with the transverse axis of the garment shell, the angle formed between the longitudinal axis of each second attachment pad and the transverse axis of garment shell being less than the angle formed between the longitudinal axis of each first attachment pad and the transverse axis of the garment shell, wherein each second attachment pad has a loop tip orientation that is directed toward the second end and is perpendicular to the longitudinal axis of the second attachment pad; and

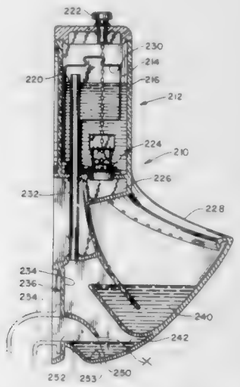
a pair of strap members, each strap member having a forward end portion and a rearward end portion with a fastener comprising a hook material attached to each of the forward and rearward end portions, the fasteners being releasably engagable with the first and second attachment pads.

5,386,596

WATER SAVER TOILET

Arnold Hennessy, Wellington, Canada, assignor to Fluidmaster, Inc., Anaheim, Calif.

Continuation-in-part of Ser. No. 870,569, Apr. 17, 1992, which is a continuation-in-part of Ser. No. 618,170, Nov. 26, 1990, Pat. No. 5,142,712. This application Sep. 20, 1993, Ser. No. 124,388
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[6] E03D *3/10, 11/18*
U.S. Cl. 4—328 6 Claims



1. A vacuum assist toilet for connection to a drain comprising:

a water and vacuum apparatus within which water is held and which has an outlet through which water exits during a toilet flushing;

a bowl which can be flushed, said bowl having an inlet and an outlet, said bowl outlet including an upper trap device extending from said bowl, a trapway extending generally downwardly from said upper trap device, and a lower trap device extending from said trapway to extend to said drain;

a flush valve which couples said water and vacuum apparatus outlet to said bowl inlet;

said water and vacuum apparatus including a vacuum source which is coupled to said trapway and which is constructed to apply a vacuum thereto during at least part of the time when water flows from said flush valve into said toilet bowl and from said toilet bowl to said trapway;

said lower trap device is unobstructed to the flow of gas therethrough when no water is flowing through said lower trap device, but is obstructed to the flow of gas therethrough during at least a portion of a flushing when water is flowing into said bowl outlet, to contain said vacuum in said trapway so said vacuum can help draw water and debris out of said bowl.

5,386,597

GEOMETRIC FORM-FITTED SPA COVER PROTECTOR

John C. O'Neill, 3500 Esperanza Dr., Concord, Calif. 94519

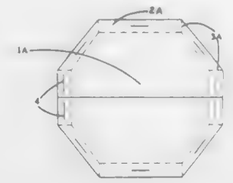
Filed Jun. 30, 1993, Ser. No. 84,025
Int. Cl.[6] E04H *4/10*
U.S. Cl. 4—498 1 Claim

1. A spa cover protector, for use in combination with a spa cover of any geometric shape, size, or form, said spa cover protector comprising:

a first piece of weatherproof, canvas-like material, having a perimeter, and cut to a geometric shape, so as to correspond to the geometric shape of the spa cover;

a second piece of said material attached to said first piece of said material at said perimeter and extending outwardly therefrom, said second piece being of sufficient length so as to extend around the entire perimeter of said first piece;

a plurality of hook-and-loop type fasteners attached to an interior side of said second piece and arranged to mate



with receiving hook-and-loop type fasteners adapted to be mounted on said spa cover, whereby,

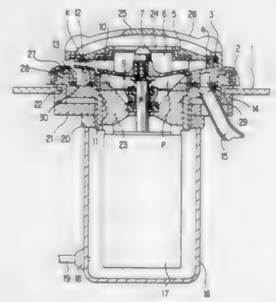
said spa cover protector effectively encloses said spa cover, protecting said spa cover from adverse climatic conditions and deteriorating due to environmental exposure.

5,386,598

WHIRLPOOL BATHTUB WITH DEVICES FOR GENERATING JETS OF WATER AND/OR AIR

Heinz-Werner Mersmann, Ahlen, Germany, assignor to Franz Kaldewei GmbH & Co., Germany

PCT No. PCT/EP92/01694, § 371 Date May 3, 1993, § 102(e) Date May 3, 1993, PCT Pub. No. WO93/04656, PCT Pub. Date Mar. 18, 1993
PCT Filed Jul. 25, 1992, Ser. No. 50,139
Claims priority, application Germany, Sep. 3, 1991, 4129217
Int. Cl.[6] A61H *33/02*
U.S. Cl. 4—541.4 24 Claims



1. In a whirlpool bathtub having a plurality of devices for generating a plurality of jets of at least one of water and air which are supplied to the tub interior at a plurality of places of the tub wall, one of said devices powered for generating said jet being disposed at each of said plurality of places and being fixedly mounted by a base part in an opening in the tub wall and charged with propulsive power from the outside of the tub, each of said devices having a pump housing with a pump chamber, an impeller wheel disposed in said pump chamber on a rotatable seated drive shaft extending perpendicularly to the tub wall, the pump chamber covered towards the tub interior with a nozzle screen, the impeller wheel aspirating water axially from the tub interior through at least one centered aspiration opening of the nozzle screen and returning it through at least one return conduit originating in the pump chamber into the tub interior, said at least one return conduit extending from a portion of the pump chamber which encloses the periphery of the impeller wheel, and the impeller wheel having at least one radially directed feed conduit extending from the axial aspiration opening,

the improvement comprising:

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said portion of the pump chamber (P) forming said at least one return conduit (K) comprising a separate adjustment part (4) rotatable with respect to the housing base part (23), to allow adjustment of the orientation of the return conduit, and

said at least one return conduit (K) itself forming a jet outlet opening.

5,386,599

PORTABLE SOFA AND BATHING UNIT

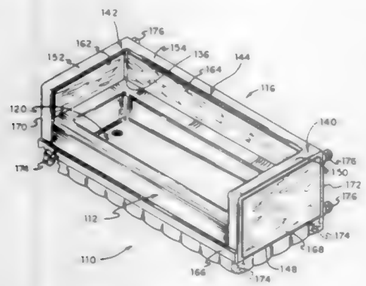
Floyd Cartwright, 310 Gelpi Dr., Lake Charles, La. 70601

Continuation-in-part of Ser. No. 116,505, Sep. 3, 1993, Pat. No. 5,343,575. This application Mar. 29, 1994, Ser. No. 219,730

The portion of the term of this patent subsequent to Sep. 6, 2011, has been disclaimed.

Int. Cl.[6] A61H *33/02*; A47K *4/00*

U.S. Cl. 4—547 27 Claims



1. A portable unit comprising:

a bathing section, a sofa section, and a housing;

said bathing section including:

a bath tub supported by said housing and having a bathing chamber;

said sofa section including:

a cover member removably mounted on said bathing chamber;

a seat cushion supported by said cover member, and

a back cushion; and

said housing including:

a frame having a bottom on which said bath tub is supported;

a back wall extending upwardly from said bottom, and substantially above said bath tub, said back wall defining a continuous rear flat surface, said back cushion being removably supported by said back wall;

end walls extending upwardly from said bottom, and substantially above said bath tub; and

a plurality of casters mounted on said bottom of said frame and also mounted on said rear flat surface, whereby

said portable unit is rolled either upright or on its side.

5,386,600

LATCHING FOOT PEDAL ACTUATED TAP WATER FLOW CONTROLLER

Robert V. Gilbert, Sr., 221 Albania Dr., Luling, La. 70070

Filed Apr. 14, 1993, Ser. No. 45,712

Int. Cl.[6] F16K *31/62*

U.S. Cl. 4—677 11 Claims

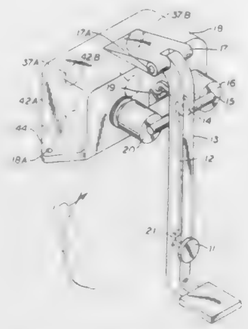
1. A foot pedal actuated fluid flow controller assembly comprising:

a valve body having at least one fluid inlet port adapted for connection to a fluid source and at least one fluid outlet port adapted for connection to a fluid conduit and at least one internal fluid flow passageway extending between each said fluid inlet port and said fluid outlet port;

valve means movably positioned in each said fluid flow passageway and movable between a normally closed position and an open position to regulate a flow of fluid therethrough;

a foot pedal having an upper portion pivotally connected to said valve body and a lower portion wherein said foot pedal is engageable; with said valve means for moving said valve means between the normally closed position and the open position;

releasable latch means connected to said foot pedal for selectively maintaining said foot pedal in a depressed position engaged with said valve means to maintain said valve means in the open position; and



latch actuator connected to said releasable latch means to selectively move said releasable latch means to a latched position to maintain said foot pedal in said depressed position and selectively movable to an unlatched position to allow said valve means to assume the normally closed position whereby said latch means is selectively engageable with said valve body upon depressing said foot pedal and said latch actuator a first time to maintain said foot pedal in said depressed position engaged with said valve means for maintaining said valve means in the open position and is selectively disengaged from said valve body upon depressing said foot pedal a second time.

5,386,601

FOLDING BED

Bernd Köhl, Diehlmannsweg 14, 63667 Nidda, Germany

PCT No. PCT/DE92/00341, § 371 Date Oct. 26, 1993, § 102(e) Date Oct. 26, 1993, PCT Pub. No. WO92/19134, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 29, 1992, Ser. No. 140,105

Claims priority, application Germany, May 7, 1991, 4114897

Int. Cl.[6] A47C *19/12*

U.S. Cl. 5—174 9 Claims

1. A folding bed comprising:

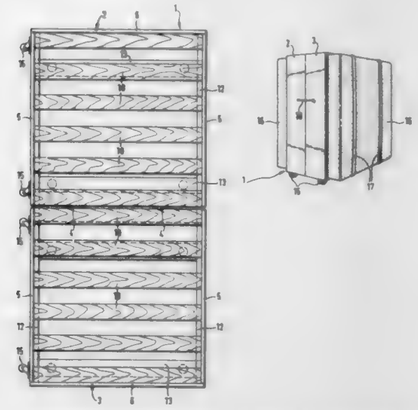
a rectangular frame bed stand having a symmetry plane and including a pair of substantially symmetrical halves, each of the halves comprising:

a respective pair of spaced apart outer and inner narrow sides, the narrow inner side lying along symmetry planer

a respective pair of elongated sides bridging the narrow sides, and

at least one respective swingable caster mounted on at least one of the elongated sides;

hinge means for pivotally interconnecting the inner sides of the halves to fold the bed stand from a use position corresponding to the respective elongated sides of the halves aligned with one another to a transport position corresponding to the halves face one another; and



a mattress mounted on the bed stand and foldable therewith, the bed stand along with the mattress being movable in the transport position on the casters.

5,386,602

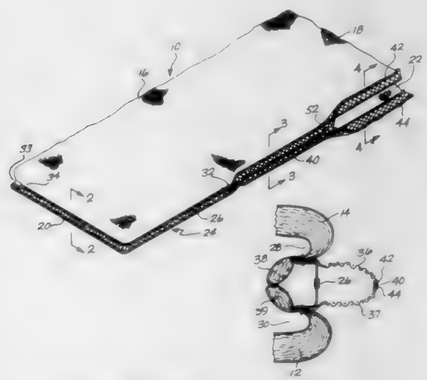
SLEEPING BAG WITH ADJUSTABLE/REMOVABLE MESH PANEL

Leo M. Krenzler, 1142 Industry Dr., Seattle, Wash. 98188

Filed Mar. 29, 1993, Ser. No. 38,459

Int. Cl.[6] A47C *17/64*

U.S. Cl. 5—413 17 Claims



1. A ventilated sleeping bag, comprising:

a sleeping bag having opposed front and back layers, and an elongated opening defined by edge portions of said front and back layers;

the front and back layers defining an interior for accommodating a person, the elongated opening being of sufficient size to accommodate ingress and egress of a person into and out of said elongated opening

a closure mechanism along said edge portions for opening and closing said elongated opening by separating said edge portions and bringing said edge portions together; and

an elongated mesh panel secured to said edge portions of said opening such that said mesh panel spans between said edge portions when said elongated opening is not closed by said closure mechanism, the closure mechanism being positioned interior of the sleeping bag with respect to the mesh panel.

5,386,603

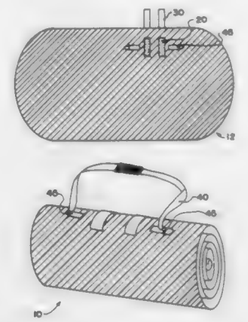
WATERPROOF BACKED BLANKET

Rosann Drust, 593 Irmea, Wood Dale, Ill. 60191

Filed Apr. 25, 1994, Ser. No. 232,606

Int. Cl.[6] A47G *9/06*

U.S. Cl. 5—417 1 Claim



1. A blanket comprising a waterproof layer; a non-waterproof layer; a plurality of adhesive belts attached to a side of said blanket; and an attachable carrying strap and two strap bases to which said carrying strap can be attached; said waterproof layer being constructed of a vinyl material, having a plurality of adhesive belt bases; and being integrally joined with said non-waterproof layer; said blanket being generally oval in shape with two parallel sides and two opposing semicircular sides; and said adhesive belts and said belt bases being oriented such that when said blanket is folded three times and then rolled up, the belts and belt bases will be aligned.

5,386,604

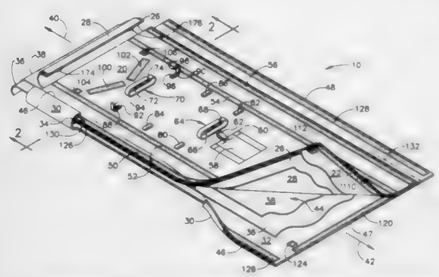
PATIENT RESCUE BAG

Robert A. Ricketts, Box 1077, Polson, Mont. 59860

Filed Jun. 4, 1993, Ser. No. 71,538

Int. Cl.[6] A61G *7/10*

U.S. Cl. 5—625 16 Claims

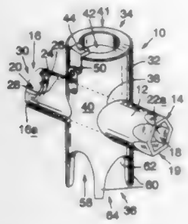


1. A rescue bag, comprising an upper layer and a lower layer wherein a supine person can be placed therebetween, each of said upper and lower layers having a perimeter, edges at their perimeter wherein said edges have a first portion and a second portion, means for releasably securing said first portion of the edges to one another at all locations of said first portion, said second portion of the edges being non-attaching to one another; and two sheets, one of said sheets being releasably secured to the top surface of said lower layer, the other of said

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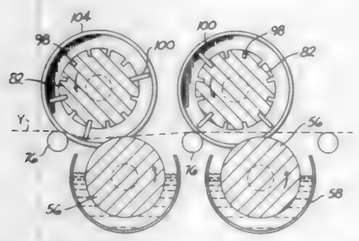
sheets being releasably secured to the bottom surface of said upper layer, said two sheets each comprising a layer of waterproof material and a layer of liquid-absorbing material.

5,386,605
DEVICE FOR ATHLETIC SHOE CLEAT CARE
Terry D. Murphy, 3447 SW. Breatwood Dr., Portland, Oreg. 97201
Filed Aug. 30, 1993, Ser. No. 113,179
Int. Cl.[6] B25B *13/00*
U.S. Cl. 7—138 23 Claims



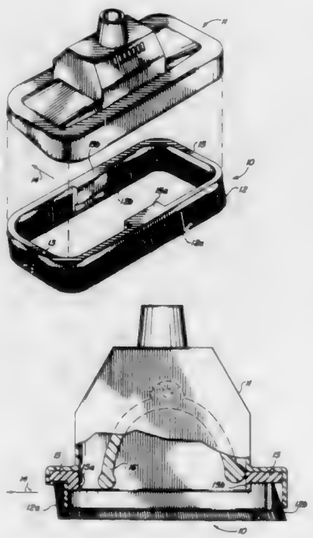
1. A wrench device for shoe cleat care, the device comprising:
a member including outwardly extending end regions, a first end region having a cleat cleaner and a second end region having a cleat burr remover, the cleat burr remover comprising a first hollow region for receiving a cleat and a blade including an edge, the blade positioned on the member such that the edge extends into the first hollow region to remove burrs from the cleat as relative rotation is effected between the cleat and the device.

5,386,606
YARN DYEING METHOD
Jack G. Haselwander, Chattanooga, Tenn., assignor to Manufacturing Designs & Solutions, Inc., Chattanooga, Tenn.
Division of Ser. No. 91,644, Jul. 14, 1993, Pat. No. 5,339,658.
This application Apr. 7, 1994, Ser. No. 224,320
Int. Cl.[6] D06B *1/14*
U.S. Cl. 8—149 6 Claims



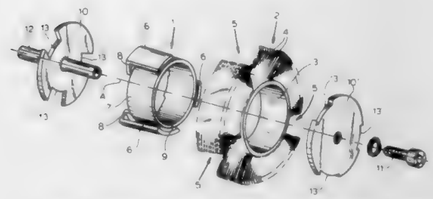
4. A method of space dyeing yarn comprising feeding strands of yarn from an upstream station to a downstream station in a horizontal path above the surface of a dye applicator roll, rotating said roll through a dye pan about a first axis of rotation to apply a selected dye to the surface of said roll, disposing a selected number of paddles at selected locations on a drum disposed above and upstream of said dye applicator roll, rotating said drum about an axis of rotation parallel to said first axis to sequentially move each paddle into and out of said path while upstream of said roll for contacting and deflecting the strands of yarn into frictional engagement with the surface of the dye applicator roll to transfer dye from the surface of said roll to said yarn strands.

5,386,607
GROUND ENGAGING MEANS FOR A SUBMERSIBLE CLEANING DEVICE
Pavel Sebor, 45 Highcliff Way, Northcliff Extension 12, Johannesburg, Transvail, South Africa
Continuation of Ser. No. 880,662, May 11, 1992, abandoned.
This application Oct. 4, 1993, Ser. No. 131,318
Claims priority, application South Africa, Feb. 28, 1992, 92/1504
Int. Cl.[6] F04H *3/20*
U.S. Cl. 15—1.7 8 Claims



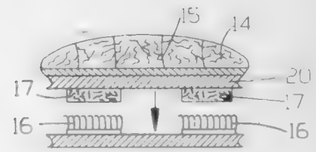
1. A submersible swimming pool cleaner for cleaning a submerged surface comprising:
an elongated, hollow cleaner body having a front, a rear and a generally horizontal bottom and having an oscillator with opposing sides pivotally mounted within the body for engaging in an oscillatory to and fro movement in response to fluid flow past the oscillator so that said opposing sides of the oscillator impact with said cleaner body during use to thereby impart motion to the cleaner, said cleaner body including an opening in the bottom;
first and second opposed plastic buffer means, each buffer means inserted between said cleaner body and an adjacent side of said oscillator for receiving and buffering alternate impacts from the oscillator;
surface engaging means extending generally vertically from the bottom and at least partially surrounding the opening, said surface engaging means forming a linear forward portion adjacent the front of the cleaner body and a rearward portion adjacent the rear of the cleaner body, said forward portion of the surface engaging means extends rearwardly from the bottom at a first angle from vertical and said rearward portion of the surface engaging means extends rearwardly from the bottom at a second angle from vertical that is greater than said first angle when said surface engaging means is in an unbiased position so as to enhance the climbing ability of the cleaner through a radiased curve; and wherein
the oscillator and the surface engaging means cooperate together during operation of the cleaner so that the cleaner body only moves in a forward motion with the front leading the cleaner body in that forward motion.

5,386,608
ROTARY BRUSH ASSEMBLY
Werner Montabaur, Königswinter, and Detlef Thomas, Köln, both of Germany, assignors to Monti-Werkzeuge GmbH, Bonn, Germany
Filed Feb. 19, 1993, Ser. No. 19,554
Claims priority, application Germany, Feb. 21, 1992, 4205265
Int. Cl.[6] A46B *7/10, 13/02*
U.S. Cl. 15—179 15 Claims



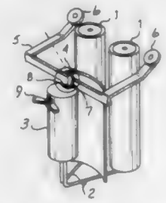
1. A brush assembly adapted to be rotated about an axis, the assembly comprising:
a brush having
a flexible, annular and generally cylindrical collar generally centered on the axis and having a predetermined and generally uniform radial thickness, a predetermined inside diameter, and a predetermined axial length, and
a plurality of arrays of radially projecting bristles fixed in and angularly equispaced about the collar and defining a plurality of axially throughgoing and angularly equispaced bristle-free zones; and
a holder having
a core body defining a plurality of surface portions radially equispaced from and angularly equispaced about the axis and in turn defining a cylinder centered on the axis and having a predetermined outside diameter substantially smaller than the inside diameter of the collar,
axially spaced inner and outer end flanges axially flanking the core body and spaced axially apart by a predetermined axial distance longer than the axial length of the collar, whereby the collar can be received with axial play between the flanges, and
a respective retaining tongue extending axially from one of the flanges toward the other flange in each of the bristle-free zones of the brush, the tongues having radially inwardly directed inner surfaces spaced radially outward from the cylinder of the core body by a radial spacing substantially greater than the radial thickness of the collar, whereby the collar can be received with radial play between the surface portions and the tongues.

5,386,609
BACK WASHING DEVICE
Dennis D. Xenos, 3601 W. 26th St., Chicago, Ill. 60623
Filed Aug. 2, 1993, Ser. No. 100,721
Int. Cl.[6] A47K *7/02*
U.S. Cl. 15—222 8 Claims



1. An apparatus for cleansing and massaging the back of a person having:
an elongated loofah pad element for scrubbing and cleansing;
a thin flexible sheet of pad backing material approximately the same size as the elongated loofah pad element with said pad backing material bearing upon said loofah pad element wherein said pad backing material and said loofah pad element are attached together by stitching;
two elongated handle members, said elongated handle members each having outer marginal edges;
a central pad support element joining together the two elongated handle members;
two gripping members located along each of the outer marginal edges of the elongated handle members for grasping by the user to manipulate the loofah pad element;
fastening means for removably fastening the central pad support element to the pad backing material whereby the loofah pad element may be replaced when worn.

5,386,610
MULTIPLE ROLLER EDGER
Milorad Batanjski, 49250 Gratiot, Chesterfield, Mich. 48051
Filed Jun. 1, 1993, Ser. No. 69,516
Int. Cl.[6] B05C *17/02;* B25G *1/04*
U.S. Cl. 15—230.11 2 Claims



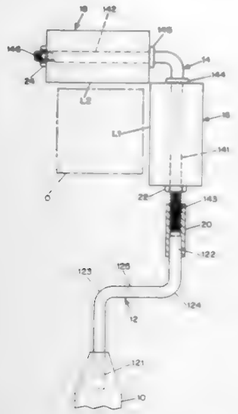
1. A paint applicator for painting a surface having an inside edge comprising:
an elongated handle having a longitudinal axis;
at least two paint applicator rollers having axes of rotation disposed parallel to one another and parallel to said longitudinal axis of said handle, said paint applicator rollers connected to and support from said handle;
guide means adjustably connected to said handle for guiding said paint applicator rollers with respect to said inside edge of said surface, said guide means extendible along an axis parallel to said longitudinal axis of said handle to adjustably set a desired distance between said inside edge and said paint applicator rollers, said guide means having at least two rollers engageable with said inside edge and spaced from one another on opposite sides of said two paint applicator rollers, said guide means rotatable about a hinge having an axis perpendicular to said longitudinal axis of said handle;
means for tightening said hinge to prevent rotational movement of said guide means from a desired angular position;
means for holding said guide means in a desired extended position; and
a shield between said handle and said at least two paint applicator rollers to protect against paint overspray.

5,386,611
PAINT ROLLER
Ho C. Kim, 105 Windham Loop, Staten Island, N.Y. 10314
Filed Dec. 20, 1993, Ser. No. 170,425
Int. Cl.[6] B05C *17/02*
U.S. Cl. 15—230.11 4 Claims

1. A paint roller support assembly comprising an elongated handgrip member having an axis, a roller-supporting rod member attached to and extending distally from the handgrip member and having a distal end and having an internally threaded sleeve on said distal end, and a roller-receiving rod member

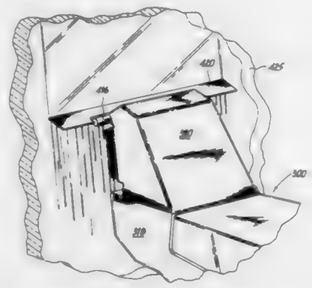
VOL 1171 ISS 1 FEB 7 1995 UMI

detachably joined to the distal end of the roller-supporting rod member, the roller-receiving rod member having a first leg portion adjacent to the distal end of the roller-supporting rod member, the first leg portion having on an end portion thereof external threads detachably received in the threaded sleeve on the roller-supporting rod member, and the roller-receiving rod member further having an axis substantially parallel to the axis of the handgrip member, and being adapted to receive a first paint roller assembly for rotation about its axis in a fixed position axially of the first leg portion, and a second leg portion having an axis substantially perpendicular to the axis of the first leg portion and adapted to receive a second paint roller assembly for rotation about its axis in a fixed position axially of the second leg portion, the positions for the first and second paint roller assemblies on the respective first and second leg portions being such that when the roller assemblies are received on the leg portions, longitudinal elements of the roller surfaces in the plane of the leg portion and nearest to the handle form an internal corner, and the position of the first paint roller assembly on the first leg portion being established at one end of the first paint roller assembly by a threaded fastener received on the external threads on said first leg portion of the roller-receiving rod member and at the other end of the first paint roller assembly by an abutment on the first leg portion.



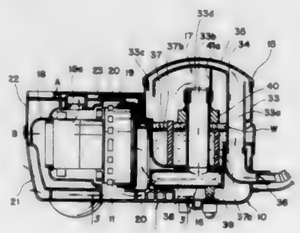
5,386,612
PORTABLE STEAM VACUUM CLEANER
John C. K. Sham, Room 1508, Block C, 19 Broadwood Road, Hong Kong, Hong Kong
Continuation-in-part of Ser. No. 942,308, Sep. 9, 1992. This application Apr. 23, 1993, Ser. No. 52,147
Int. Cl.[6] A47L *7/00*
U.S. Cl. 15—320 24 Claims

1. An apparatus for cleaning flat surfaces comprising:
a) a housing having a handle portion and a nozzle portion;
b) means for scrubbing said flat surface mounted on said housing adjacent said nozzle portion;
c) a squeegee assembly mounted to said housing adjacent said nozzle portion for wiping a flat surface; and



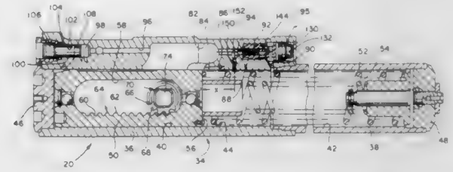
d) collection means for drawing liquid from the surface into said nozzle portion.

5,386,613
WATER AND AIR SEPARATING MECHANISM
Han-Jin Woo, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Nov. 20, 1992, Ser. No. 979,767
Claims priority, application Rep. of Korea, Nov. 25, 1991, 91-21096
Int. Cl.[6] A47L *7/00*
U.S. Cl. 15—326 4 Claims



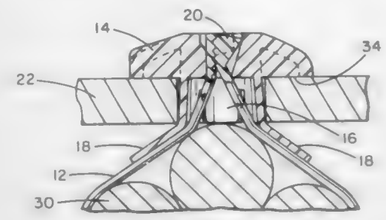
1. A water/air separating mechanism for separating dirty water from air, comprising:
a housing having a main inlet for receiving a mixture of dirty water and air, said housing including a front end and an oppositely disposed rear end, said main inlet located adjacent said front end;
a chamber located in said housing for storing the dirty water;
a suction generator mounted in said housing for generating a suction and including a motor disposed adjacent said rear end of said housing, with said chamber disposed between said main inlet and said suction generator;
a first passage disposed in said housing for connecting said suction generator with said chamber to transmit suction to said chamber, said first passage including a vertical tube disposed in said chamber and defining an air inlet at its upper end;
a second passage disposed in said housing for connecting said chamber with said main inlet to transmit suction from said chamber to said main inlet which draws dirty water and air into said chamber, said second passage defining a water/air outlet in said chamber which is spaced horizontally from said air inlet to form an interruption between said first and second passages, whereby air emerging from said water/air outlet travels to said air inlet, and dirty water emerging from said water/air outlet gravitates downwardly within said chamber;
a filter disposed in said housing for filtering dust from the air after said air enters said air inlet and before said air reaches said motor;
noise damping packing disposed adjacent said motor for damping noise; and
a wave suppression member disposed in said chamber comprising a plate extending horizontally across said chamber and including water passage openings, and at least one bar projecting downwardly from said plate.

5,386,614
DOOR CLOSER
Zakhary Fayngersh, Hartford, Conn., assignor to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 8, 1993, Ser. No. 1,959
Int. Cl.[6] E05F *3/04*
U.S. Cl. 16—51 4 Claims



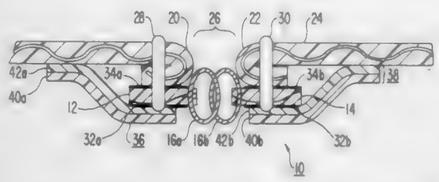
1. A door closer for connecting to and controlling the selective application of a counterforce to the opening of a door, which comprises:
a housing;
a chamber formed within the housing for containing a fluid therein, the chamber being formed with a first portion and a second portion;
a piston element located in a normal position in the first portion thereof when the door is closed, and movable within, the chamber;
the piston element formed with a forward face;
means responsive to forces externally of the chamber for moving the piston element toward the second portion of the chamber to initiate compression of the fluid therein;
at least a first passageway formed in said housing and extending a preselected distance from the forward face of the piston element when the piston element is in the normal position;
said preselected distance being representative of the door beings opened less than ninety degrees from a door position when the door is closed;
at least a second passageway formed in the housing a prescribed distance from the forward face of the piston element when the piston element is in the normal position;
the prescribed distance being representative of the door being opened at least ninety degrees from a door position when the door is closed;
the first and second passageways being in communication with the chamber to allow at least portions of the compressing fluid to be forced out of the chamber and through the passageways upon movement of the piston element within the chamber from its position normally in the first portion of the chamber and until the forward face is respectively moved past the first and second passageways; and
means for developing a counterforce to the continued opening of the door after the forward face has been moved past the second passageway.

5,386,615
BUTTONHEAD TIE WITH SPLIT CENTERING PILOT
William A. Bernard, Darien, Ill., assignor to Panduit Corp., Tinley Park, Ill.
Filed Oct. 6, 1993, Ser. No. 132,721
Int. Cl.[6] B65D *63/00*
U.S. Cl. 24—16 PB 21 Claims



1. A fastener for securing a bundle of wires to an apertured mounting surface, comprising:
a buttonhead member having a top side and an underside and including a strap accepting aperture formed therethrough;
an elongate strap having a free end and a second end extending from the underside of the buttonhead member and having a plurality of teeth formed on an inner planar side and including a locking head formed at the second end;
strap locking means formed on the locking head for securing the free end of the strap
centering means disposed on the underside of the buttonhead member;
protecting means extending from the centering means for protecting the strap from contacting sharp edges of the mounting surface.

5,386,616
WATER RESISTANT CLOSURE AND METHOD FOR APPLYING SAME
Jean Norvell, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.
Filed Apr. 8, 1993, Ser. No. 44,518
Int. Cl.[6] A44B *19/00*
U.S. Cl. 24—389 16 Claims



1. A slide fastener for providing a water resistant closure between two parallel longitudinal edges defining an opening in waterproof fabric which comprises
a pair of stringer tapes, each having an inside surface and an outside surface, a row of cooperating slide fastener elements mounted on each of the stringer tapes, and a slider cooperating with the fastener elements on the stringer tapes to open and close the slide fastener;
a thin and flexible water resistant polymeric coating on both the inside and outside surfaces of the stringer tapes, the coating selected from the group consisting of polyamide, polyethylene, polyester, polyurethane, natural rubber, nitrile rubber, and butyl rubber;
a stitched seam to assist in attaching each of the stringer tapes to one of the longitudinal edges of the fabric; and
a water resistant sealing tape covering the stitched seam and a portion of the stringer tapes having the polymeric coat-

ing thereon, the sealing tape including an adhesive coating to secure it to the stringer tape, and wherein the adhesive coating is adhesively compatible with the polymeric coating on the stringer tape;

wherein the polymeric coating and sealing tape are positioned to permit smooth and unencumbered operation of the slide fastener; and

wherein an effective water resistant seal is formed between the edges of the fabric without the need for an additional barrier layer covering the opening.

5,386,617

CLOSURE LEVER, PARTICULARLY FOR SPORTS SHOES

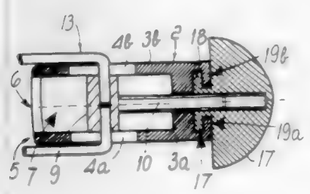
Roberto Gorza, Feltre; Renato Serafin, Vedelago, and Mirco Battistella, Spresiano, all of Italy, assignors to Nordica S.p.A., Trevignano, Italy

Filed Sep. 16, 1993, Ser. No. 121,488

Claims priority, application Italy, Sep. 23, 1992, TV92A000103

Int. Cl.[6] A43C *11/00*

U.S. Cl. 24—68 SK **16 Claims**



1. Closure lever, particularly for sports shoes, comprising a hollow body with which a pivot member is axially associated, said pivot member having, at one end, engagement means for at least one traction element and, at the other end, engagement means for a knob which is rotatably associable with said body, said body having at least one seat for a complementarily shaped tab which is temporarily associable therewith and protrudes axially with respect to said knob wherein said hollow body has, at its rear lateral surface, a rectangular opening connected to a cavity formed inside said hollow body.

5,386,618

YARN STRETCHING CHAMBER ARRANGEMENTS

Felix Graf, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Aug. 3, 1992, Ser. No. 924,165

Claims priority, application Switzerland, Sep. 23, 1991, 02820/91

Int. Cl.[6] D02J *1/22*

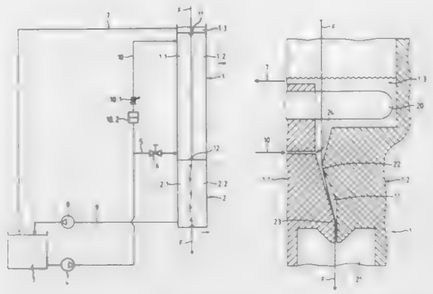
U.S. Cl. 28—246 **20 Claims**

1. A yarn stretching chamber arrangement comprising

a stretching chamber having a stretching compartment, a yarn entrance duct for passage of at least one yarn into said compartment and a yarn exit duct for exiting of the yarn from said compartment;

means for feeding a liquid into said compartment for filling the chamber for passage of the yarn therethrough;

means for removing liquid from said compartment after passage of the yarn therethrough; and



premoistening means for moistening the yarn independent of the liquid filling level in said compartment prior to the yarn entering said compartment.

5,386,619

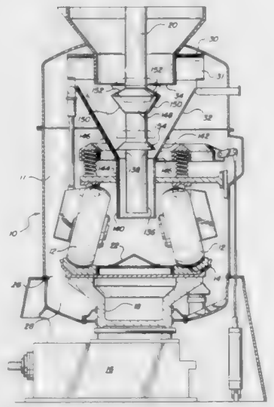
COAL PULVERIZER AND METHOD OF IMPROVING FLOW THEREIN

Rickey E. Wark, Longview, Tex., assignor to Sure Alloy Steel Corp., Madison Heights, Mich.

Filed Oct. 13, 1993, Ser. No. 135,726

Int. Cl.[6] B23P *17/04*; B02C *15/04*

U.S. Cl. 29—401.1 **11 Claims**



1. In a coal pulverizer having classifier system, the system including a coal feedpipe to deliver raw coal to pulverizing structure from an outlet spaced above the pulverizing structure, a classifier cone positioned around the feedpipe to deliver oversize ground coal to the pulverizing structure via intermittent discharge structure from an outlet spaced above the pulverizing structure, and a combustion delivery chute positioned around the feedpipe above the classifier cone, the pulverizing structure delivering ground coal to an upper end of the classifier cone by an upwardly-directed stream of air traveling around and above the pulverizing structure, a method for improving the flow of coal throughout the classifier system, comprising the following steps:

extending the feedpipe into the pulverizing structure to a point where the coal exiting the feedpipe is isolated from the flow of air up and around the pulverizing structure;

replacing the intermittent discharge structure in the classifier cone with a classifier cone extension extending from the classifier cone outlet around the feedpipe extension into the pulverizing structure to a point where coal flow from the classifier cone extension is isolated from the flow of air up and around the pulverizing structure.

5,386,620

PUNCHING AND SHAPING MACHINE TOOL WITH CAM GEAR

Gerhard Hinterlechner, Pforzheim, and Ulrich H. Gäbel, Neuenbürg, both of Germany, assignors to AATEC Assembling Automations Technik GmbH, Pforzheim, Germany

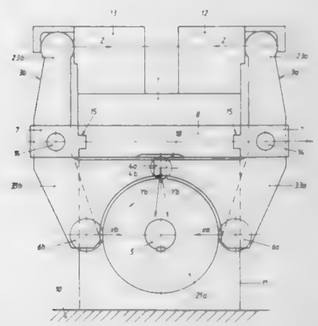
PCT No. PCT/EP92/01449, § 371 Date Jan. 14, 1994, § 102(e) Date Jan. 14, 1994, PCT Pub. No. WO93/02539, PCT Pub. Date Feb. 4, 1993

PCT Filed Jun. 27, 1992, Ser. No. 182,139

Claims priority, application Germany, Jul. 16, 1991, 4123512

Int. Cl.[6] B23P *23/00*; B21F *1/00*

U.S. Cl. 29—566.3 **42 Claims**



1. Machine tool with tools for carrying out punching, cutting, embossing and shaping work, in particular for punching and shaping the lead-outs of integrated circuits,

having a frame (**10**),

having a cam gear, supported-in the frame (**10**), with several pairs of coaxially arranged cam tracks on the circumferential surface of one or a plurality of cam plates (**22***a*, **22***b*) for driving the tools along a guide surface (**1**), each tool having two tool halves (**12**, **13**) for whose actuation two pivotably supported two-arm levers (**3***a*, **3***b*) are provided on a stationary part (**8**) of the cam gear, which levers (**3***a*, **3***b*) are connected at their first arm (**23***a*, **23***b*) to the tool halves (**12**, **13**) and carry on their second arm (**33***a*, **33***b*) a freely rotating roller (**6***a*,**6***b*), of which one (**6***a*) is in contact with a cam track (on **22***a*) and the other (**6***a*) is in contact with the other cam track (on **22***b*) of a cam track pair,

characterised in that cam track pairs are provided which consist of a first cam track (on **22***a*, **22***b*) and of a further cam track (on **21***a*, **21***b*) which is rigidly connected to it, has a cam shape complementary to it and is offset relative to it in the direction of rotation and that the two levers (**3***a*, **3***b*) additionally carry on their second arm (**33***a*, **33***b*) a second, freely rotating roller (**4***a*, **4***b*) which is in contact, with a corresponding offset, with the complementary cam track on the peripheral area of a cam plate (**21***a*, **21***b*) and that the positions of the cam tracks (on **22***a*, **22***b*, **21***a*, **21***b*) in the direction of rotation are matched to one another in such a way that it is true for at least some of the tool halves (**12**, **13**) that the acceleration phase of one tool half coincides with the deceleration phase of another tool half.

5,386,621

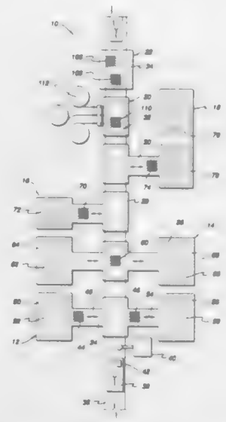
FLEXIBLE ASSEMBLY CELL

Jerry H. Fluegge, Manitou Beach; Francis G. King, Bloomfield Hills; William H. Schank, Jr., Howell, and Laura P. Olson, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 16, 1993, Ser. No. 106,739

Int. Cl.[6] B23P *21/00*

U.S. Cl. 29—705 **16 Claims**



1. A flexible assembly cell for adding a selected one of a plurality of available components to one of at least two different types of motor vehicle subassembly which may be presented, the flexible assembly cell comprising:

a work station including a platen having a head magnetically mounted thereto and movable thereover;

a supply of first components accessible to the head;

a supply of second components accessible to the head;

conveyor means for presenting a subassembly to the work station; and

mechanical identification means for determining whether the subassembly is of a first type or a second type;

the head moving to retrieve one of the first components from the supply of first components if the identification means determines that the subassembly is of the first type or to retrieve one of the second components from the supply of second components if the identification means determines that the subassembly is of the second type, and to present the retrieved component for addition to the subassembly.

5,386,622

DEVICE FOR CHUCKING A ZIGZAG SPRING

Eiji Susaki; Matsuo Majima; Yaushi Kaku, and Hiroshi Takagi, all of Akishima, Japan, assignors to Tachi-s Co., Ltd., Akishima, Japan

Filed Oct. 19, 1993, Ser. No. 139,226

Int. Cl.[6] B23Q *15/14*

U.S. Cl. 29—717 **6 Claims**

1. A device for chucking a zigzag spring, for use in a system for automatically mounting a zigzag spring onto a frame, said device comprising:

a first pawl element adapted to be engageable with one end portion of said zigzag spring, said first pawl element being normally stopped at a reference fixed position corresponding to said one end portion of said zigzag spring;

a second pawl element adapted to be engageable with another end portion of said zigzag spring, said second pawl element being movable toward and away from said reference fixed position to a selected one of plural positions

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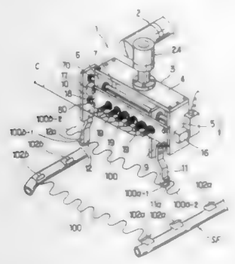
which corresponds to said another end portion of said zigzag spring;

a plurality of detecting means, each defining one of said plural positions, adjacent said second pawl element;

a first drive means for causing movement of said first pawl element from said reference fixed position; and

a second drive means which is operable in conjunction with said plurality of detecting means to cause movement of said second pawl element toward said selected one of plural positions;

wherein when said second drive means is operated in conjunction with said detecting means, said second pawl



element is moved to said selected one of said plural positions, so that both said first and second pawl elements are positioned for engagement with respective said one and another ends of said zigzag spring in accordance with a particular length of said zigzag spring, whereafter said pawl elements are moved to engage respective end portions of said zigzag spring, and when said first and second drive means are subsequently operated, said first and second pawl elements are moved away from each other so as to expand said zigzag spring lengthwise more than said particular length, thereby chucking said zigzag spring in a length which allows the same to be properly mounted onto said frame.

5,386,623

PROCESS FOR MANUFACTURING A MULTI-CHIP MODULE

Yoshihiko Okamoto, Ohme, and Hideyuki Yamada, Tokorozawa, both of Japan, assignors to Hitachi, Ltd. and Hitachi Computer Engineering Co., Ltd., Kanagawa, Japan

Filed Nov. 7, 1991, Ser. No. 789,249
Claims priority, application Japan, Nov. 15, 1990, 2-309259
Int. Cl.[6] B23P *17/00*; H05K *3/30, 3/02*
U.S. Cl. 29—832 22 Claims

1. A process for manufacturing a multi-chip module, comprising the steps of:

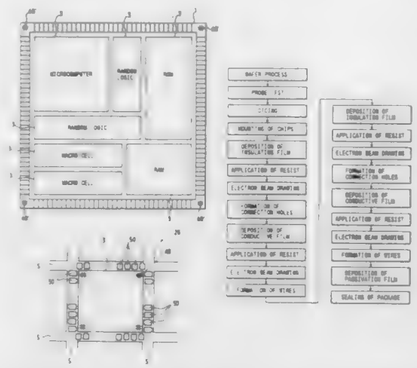
mounting on a substrate first and second semiconductor chips formed with a plurality of semiconductor elements on circuit forming surfaces and having different functions, and each of said first and second semiconductor chips having a mark;

measuring the position of said marks of said first and second semiconductor chips to obtain measured data of said marks;

transforming said measured data of said marks into positional coordinates in relation to said substrate to obtain transformed data of said marks;

forming an insulating film over said circuit forming surfaces of said first and second semiconductor chips;

forming first and second connection holes in said insulating film over said circuit forming surfaces of said first and second semiconductor chips using said transformed data of said marks of said first and second chips; and



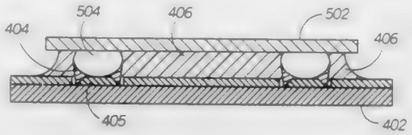
forming a wiring layer across said first and second connection holes to connect said first and second semiconductor chips electrically.

5,386,624

METHOD FOR UNDERENCAPSULATING COMPONENTS ON CIRCUIT SUPPORTING SUBSTRATES

Reed A. George, Lake Worth; Richard L. Mangold, and Richard K. Brooks, both of Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1993, Ser. No. 85,890
Int. Cl.[6] H05K *3/30*
U.S. Cl. 29—832 12 Claims



1. A method for underencapsulating a component on a substrate, comprising the steps of:

robotically placing a pre-cut underencapsulant film on at least one surface of a first surface of a component and a second surface of a substrate, the first and second surfaces substantially opposing each other when the component is placed on the substrate;

placing the component on the substrate to dispose the underencapsulant film between the first and second surfaces; and

bonding the component to the substrate with the underencapsulant.

5,386,625

TAB TYPE IC ASSEMBLING METHOD AND AN IC ASSEMBLED THEREBY

Kenji Tsukamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

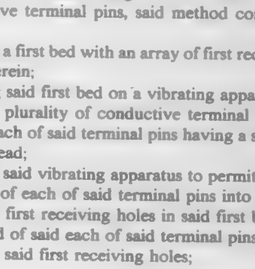
Continuation of Ser. No. 18,517, Feb. 17, 1993, abandoned. This application Mar. 9, 1994, Ser. No. 208,079
Claims priority, application Japan, Feb. 17, 1992, 4-029429
Int. Cl.[6] H05K *3/30*
U.S. Cl. 29—835 2 Claims

1. A method of assembling an IC device by a TAB system, comprising the steps of:

(a) producing a TAB tape having leads each including a first width in a first region to be adjacent to an IC, a second width narrower than said first width in a second region farther away from said IC than said first region, and a third width wider than said second width in a third region at outer end portions of said leads;

(b) connecting said leads to said IC;

(c) separating said leads from said TAB tape such that a predetermined number of said leads are connected at said portions thereof;



(d) positioning said IC on predetermined pads provided on a circuit board;

(e) soldering said leads of said IC to said pads while pressing said leads;

(f) bending said leads at said second region; and

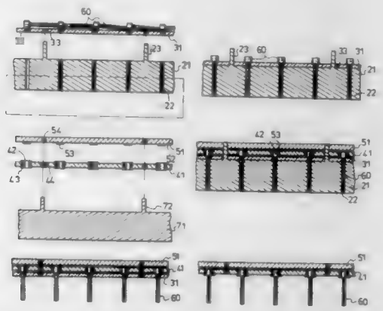
(g) after said bending step, removing said end portions of said leads from said leads.

5,386,626

METHOD FOR MANUFACTURING A CIRCUIT BOARD WITH A PLURALITY OF CONDUCTIVE TERMINAL PINS

Hing-Liang Cheng, Taipei, Taiwan, Prov. of China, assignor to Cen Tronic Co., Ltd., Taipei, Taiwan, Prov. of China

Filed Sep. 10, 1993, Ser. No. 118,715
Int. Cl.[6] H05K *3/00*
U.S. Cl. 29—843 7 Claims



1. A method for manufacturing a circuit board with a plurality of conductive terminal pins, said method comprising the steps of:

(a) providing a first bed with an array of first receiving holes formed therein;

(b) providing said first bed on a vibrating apparatus;

(c) placing a plurality of conductive terminal pins on said first bed, each of said terminal pins having a shank and an enlarged head;

(d) operating said vibrating apparatus to permit insertion of said shank of each of said terminal pins into a respective one of said first receiving holes in said first bed, said enlarged head of said each of said terminal pins being sized larger than said first receiving holes;

(e) providing a fiber glass reinforcing plate formed with an array of through-holes;

(f) providing a fiber glass circuit board body having a bottom side formed with an array of connectors;

(g) superimposing said reinforcing plate and said circuit board body on said first bed such that each of said connectors of said circuit board body and said head of said each of said terminal pins extend in a corresponding one of said through-holes in said reinforcing plate and abut against each other; and

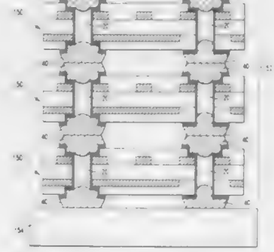
(h) heating said first bed, said reinforcing plate and said circuit board body under pressure so as to provide a firm bond between said reinforcing plate and said circuit board body and between each of said connectors and said head of a corresponding one of said terminal pins.

5,386,627

METHOD OF FABRICATING A MULTI-LAYER INTEGRATED CIRCUIT CHIP INTERPOSER

Richard B. Booth, Wappingers Falls; Robert H. Gephard, Poughkeepsie; Bradley S. Gremban, Lake Katrine, all of N.Y.; Janet E. Poetzinger, Rochester, Minn., and David T. Shen, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 953,427, Sep. 29, 1992, abandoned. This application Nov. 17, 1993, Ser. No. 154,225
Int. Cl.[6] H05K *3/46, 3/42*
U.S. Cl. 29—852 7 Claims



1. A method of fabricating an integrated circuit chip interposer having at least one interposer layer, said interposer layer formed by the steps of:

a) forming a di-electric layer of an insulating material,

b) circuitizing a top surface and a bottom surface of said di-electric layer;

c) laminating an adhesive layer over said circuitized surfaces;

d) drilling said di-electric layer, thereby forming a plurality of vias, each of said vias having a wall extending through said di-electric layer;

e) blanket sputtering a conductive material thereby coating each said wall of said plurality of vias with said conductive material;

f) screening a conductive paste into said vias; and,

g) sub-etching said conductive material from said adhesive layer.

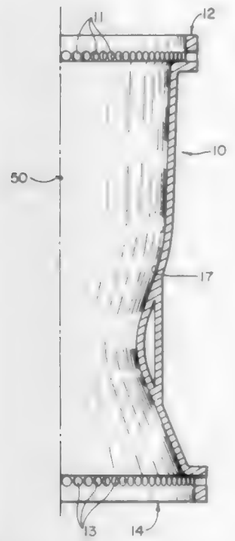
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5,386,628

METHOD OF MAKING A DIFFUSION BONDED ROCKET CHAMBER

Mark L. Hartman, Tequesta, and Daniel A. Bales, Palm City, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1991, Ser. No. 812,319
The portion of the term of this patent subsequent to Dec. 13, 2011, has been disclaimed.
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—890.01 12 Claims



1. A method of making a component having tubular passages therein comprising:

providing a structural jacket having first and second opposed ends and a plurality of first and second holes extending through the jacket adjacent the first and second ends, respectively;

positioning a plurality of tubes within the jacket, each tube having a first tube end positioned in one of the first holes and a second tube end positioned in one of the second holes, thereby forming a tube bundle;

sealingly welding the jacket to each tube end at each hole thereby plugging each hole with the tube therein;

positioning a mandrel within the tube bundle;

sealingly welding the perimeter of the first and second ends of the jacket to the mandrel, thereby defining an isolated volume bounded by the mandrel, the jacket, and the outside of each of the tubes, said isolated volume communicating with the outer surface of the jacket solely through a purge line;

evacuating the isolated volume and sealing the purge line;

placing the jacket, tubes and mandrel as an assembly into a hot isostatic pressure chamber and heating the assembly to a temperature at which plastic or superplastic deformation of the tubes can take place;

raising the pressure of the chamber thereby inflating each tube into intimate contact with immediately adjacent tubes, the jacket, and the mandrel; and,

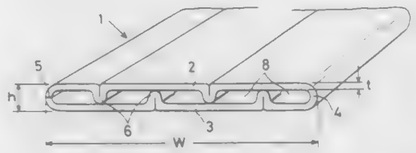
maintaining the pressure and temperature until each of the tubes bonds to the adjacent tubes and the inner surface of the jacket.

5,386,629

TUBE FOR HEAT EXCHANGERS AND A METHOD FOR MANUFACTURING THE TUBE

Wataru Ouchi, Shimodateshi; Katsuhisa Suzuki, Utsunomiyashi; Toshinori Tokutake, Oyamashi, and Hirosaburo Hirano, Utsunomiyashi, all of Japan, assignors to Showa Aluminum Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 961,611, Oct. 15, 1992, abandoned, which is a division of Ser. No. 693,955, Apr. 29, 1991, Pat. No. 5,186,250. This application Mar. 17, 1994, Ser. No. 210,749
Claims priority, application Japan, May 11, 1990, 2-122289; Jul. 27, 1990, 2-200206
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.046 8 Claims



1. A method of manufacturing a tube for a heat exchanger, said method comprising the step of:

(a) bending a flat, elongate sheet with a predetermined width to form at least one curved lug that extends along the length of the sheet and outwardly of one face of the sheet;

(b) folding the sheet along its length to form an elongate, flat tube defining opposite walls disposed in face-to-face relation and having an elongate cross-section with:

(i) opposite edge portions of the sheet contacting each other,

(ii) the face from which the lug extends defining the inner surface of the tube,

(iii) the lug extending from one of the two opposite walls, and

(iv) the distal end of the lug contacting the other of the two opposite walls;

(c) fixedly securing the contacting edge portions of the sheet to each other; and

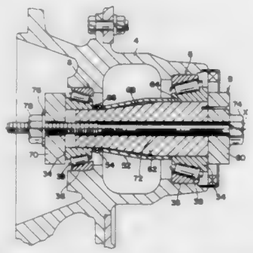
(d) fixedly securing the distal end of the lug to the wall that the distal end contacts.

5,386,630

PROCESS AND TOOL FOR ADJUSTING BEARINGS

Gerald P. Fox, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Sep. 27, 1993, Ser. No. 126,982
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—898.09 17 Claims



1. A process for adjusting a bearing assembly located between a first machine component which rotates relative to a second machine component, the bearing assembly essentially including raceways which are carried by the first component in a fixed position on that component, races carried by the second component, but being detachable from that component

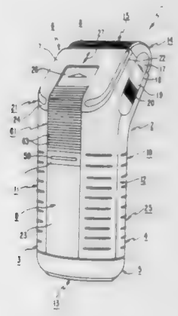
with each race having a raceway that is presented toward one of the raceways on the first component, and rolling elements arranged in two rows between the raceways of the first component and the raceways on the races of the second component, the raceways and rolling elements being configured to transmit radial loads between the components and to further transfer thrust loads in both axial directions between the components, whereby the spacing between the detachable races determines the setting for the bearing; said process comprising: with the detachable races detached from the second machine component, fitting the races to the raceways of the first component with the rolling elements between the raceways of the first component and the raceways of the races; installing a spacer between the detachable races, with the spacer initially being long enough to place the bearing assembly in a condition of excessive end play, the spacer being collapsible under a force which the races will withstand without collapsing; applying an axially directed force to the two races, the direction of which causes the assembly to approach a condition of preload; monitoring the drag torque of the bearing assembly; and terminating and removing the axially directed force on the races when the drag torque reaches a prescribed magnitude.

5,386,631

SHAVING APPARATUS WITH A MOVABLE TRIMMER

Jan F. Van Asten, Wölfnitz, Austria; Francis Chu, Eindhoven, Netherlands, and Ingo Müller, Klagenfurt, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1993, Ser. No. 62,678
Claims priority, application Austria, May 19, 1992, A 1025/92
Int. Cl.[6] B26B *19/02, 19/38*
U.S. Cl. 30—34.1 4 Claims



1. A shaving apparatus having a housing surrounding a head area and a remote area, said head area having a longitudinal axis extending to said remote area and said head area being inclined away from said remote area in a direction approximately of said axis,

said housing comprising side walls bounding said head area and said remote area, at least one of said side walls, in its area adjoining said head area being inclined away from said remote area in said direction approximately of said axis, said at least one side wall comprising a first wall portion and a second wall portion, said wall portions subtending an obtuse angle and being interconnected by a transitional wall portion curved in accordance with the inclination of said side wall and having a shaving head mounted in the housing surrounding said head area,

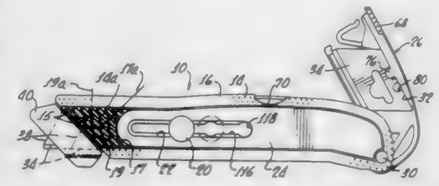
said shaving head being inclined in accordance with said side wall, having a trimmer which is arranged at the location of said first wall portion and which trimmer is movable between at least two positions relative to said first wall portion, said trimmer comprising a cutter support carrying a first toothed cutter, said first toothed cutter being stationary in operation, and a second toothed cutter, said second toothed cutter being driven to reciprocate in operation and adapted to cooperate with said first toothed cutter, having an actuating element arranged to be movable on the housing at the location of said second wall portion, said cutter support being moved upon the actuation of said actuating element, and having a coupling device movably arranged between said actuating element and said cutter support, said coupling device controlling the movement of said cutter support by its movement upon actuation of said actuating member, characterized in that said coupling device is formed at a single flexible coupling member, said coupling member extending over said transitional wall portion of said inclined side wall, adapted to the curvature of said transitional wall portion and movably connected to said transitional wall portion and said coupling member being connected to said actuating element and to said cutter support.

5,386,632

ERGONOMIC UTILITY KNIFE/BOX CUTTER AND METHOD OF MAKING

Gregory G. Schmidt, Newport Beach, Calif., assignor to Pacific Handy Cutter, Inc., Costa Mesa, Calif.

Filed Jan. 12, 1993, Ser. No. 3,504
Int. Cl.[6] B26B *1/08, 5/00*
U.S. Cl. 30—125 15 Claims



1. A utility knife comprising:

an ergonomically-shaped handle portion defining a longitudinal cavity at a forward end, a top surface and an aft recess substantially adjacent said top surface,

a channel member received in said cavity, said channel member defining a pair of longitudinal grooves and a pair of longitudinal edge surfaces, said handle portion having plural longitudinal ribs respectively engaging said grooves and edge surfaces to support the channel member in opposition to cutting forces,

a blade carrier member received in said channel member for receiving a cutting blade defining a cutting edge, the blade being received such that said cutting edge faces substantially away from said top surface,

a lock to retain said blade carrier in a selected position relative said handle portion, and

a spare blade holder member pivotally received into said aft recess.

5,386,633

HAMBURGER PATTY KNIFE WITH BLADE ATTACHMENT

Yukio Kanno, 260 Garth Rd., Apt. 6B4, Scarsdale, N.Y. 10583

Filed Dec. 27, 1993, Ser. No. 172,907
Int. Cl.[6] A47J *43/28*
U.S. Cl. 30—169 1 Claim

1. A hamburger patty knife which comprises:

a) an elongate handle;

b) a transition piece at one end of said handle forming an angle with the longitudinal axis of said handle;

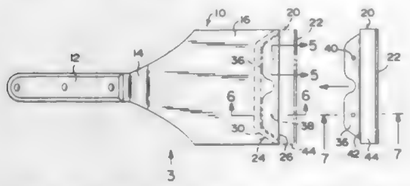
c) a flat plate extending away from said transition piece in a forward longitudinal direction and having a width dimension extending transversely of a longitudinal axis at least as great as a length dimension extending along the axis, said

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flat plate having a top, flat, patty supporting surface and a bottom surface, and a pair of spaced apart projections on the bottom surface;

d) a plate-like securing member attached in spaced apart relation to the bottom surface and extending across the width dimension of said flat plate at an edge thereof distal from the handle and facing in a forward longitudinal direction, with the pair of spaced apart projections extending towards said securing member;

e) a blade attachment having a front edge portion bevelled to form a pointed edge and having a width dimension extending transversely of the longitudinal axis equal to the width dimension of the flat plate and a length dimension extending along the axis which is small relative to the width dimension, a tongue on said blade attachment facing in a rearward longitudinal direction and a pair of spaced apart apertures in said tongue, said tongue being insertable between said plate-like securing member and said distal



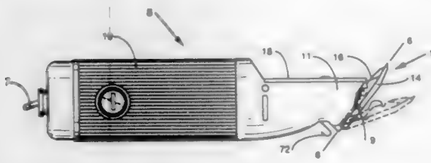
edge of said plate so that said projections enter said apertures to help retain said tongue within said plate-like securing member wherein said blade attachment is removably secured to the distal edge of the flat plate, said tongue of said blade attachment including a step up portion, so that when said tongue is inserted within said plate-like securing member in a first position, a forward portion of said blade attachment is flush with said top surface of said plate, with the pointed edge lowermost, whereby said beveled front edge of said blade attachment can pick up and turn over a hamburger patty without disrupting the shape of the hamburger patty, and when said tongue is inserted within said plate-like securing member in a second alternative, upside down position, with the pointed edge uppermost, the forward portion of said blade attachment is flush with a bottom surface of said plate-like securing member whereby said bevelled front edge can clean a dirty cooking surface.

5,386,634

MEANS FOR PREVENTING THE INTERCHANGING OF CUTTING HEAD ASSEMBLIES WITH UNSUITABLE CLIPPER BODIES AND VICE VERSA

Frank L. Ogle, McMinnville; Charles R. Baker, Spencer, and Kenneth M. Campbell, McMinnville, all of Tenn., assignors to Sunbeam Corporation, Fort Lauderdale, Fla.

Filed Jun. 2, 1993, Ser. No. 71,660
Int. Cl.[6] B26B *19/02*
U.S. Cl. 30—208 20 Claims



1. An electric hair clipper comprising:

a clipper body having a support tongue pivotally mounted on a front end of said clipper body, said support tongue having an upper surface;

a first cutting head assembly releasably and operably engageable with said clipper body, said first cutting head assembly having a tongue-receiving socket for releasably receiving said support tongue, comprising a strap disposed on a bottom blade of said first cutting head assembly, said strap having a central portion with a bottom end; and

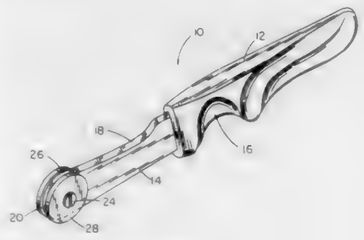
means for preventing said clipper body from being releasably and operably engaged with cutting head assemblies other than said first cutting head assembly, said means comprising at least one projection disposed on said upper surface of said support tongue and at least one slot having an open end defined by said bottom end of said central portion wherein said projection is received in said slot when said support tongue is inserted into said tongue-receiving socket to releasably and operably engage said first cutting head assembly with said clipper body.

5,386,635

HUNTING KNIFE HAVING BLADE WITH COVERED TOP

Michael Sheba, 8984 Clarkson Drive, Black Creek, B.C., Canada V9J1B2

Filed Jun. 27, 1994, Ser. No. 265,782
Int. Cl.[6] B26B *29/02*
U.S. Cl. 30—294 4 Claims



1. A hunting knife, comprising:

a handle;

a blade supported by said handle;

said blade having an elongate cutting edge for gutting game;

said blade having a distal free end;

an aperture formed in said distal free end;

an axle means disposed through said aperture;

a pair of washers disposed on opposite ends of said axle means in sandwiching relation to said distal free end;

means for maintaining said washers in sandwiching relation to said distal free end;

whereby said washers cover and protect the distal free end of said knife.

5,386,636

STORAGE DEVICE FURNISHED WITH SAFETY FUNCTION

Kazunori Asano, Kamakura, Japan, assignor to Kato Hatsujo Kaisha, Ltd., Kanahawa, Japan

Filed Mar. 9, 1993, Ser. No. 28,160
Claims priority, application Japan, Mar. 16, 1992, 4-022207
Int. Cl.[6] E05C *3/06;* B60N *3/12;* A47B *88/00*
U.S. Cl. 312—319.2 4 Claims

1. A storage device, comprising:

a housing having an inside bottom;

a storage cabinet movably disposed inside said housing, said storage cabinet having an outside bottom;

a spring constantly biasing said storage cabinet in an opening direction relative to said housing;

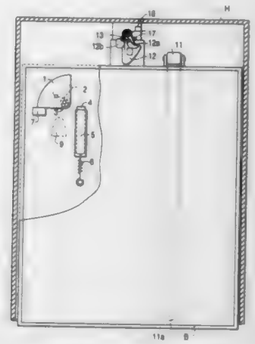
a switching lock means for locking said storage cabinet in a locked state and at a shut position in said housing and for releasing said storage cabinet from the locked state at the shut position in response to said storage cabinet being pushed into said housing in a direction opposite to the

opening direction such that said storage cabinet is moved in the opening direction by said spring;

a dead space located between and defined by said inside bottom of said housing and said outside bottom of said storage cabinet in the shut position of said storage cabinet;

a rotary member provided on said inside bottom of said housing in said dead space having a means for exerting a rotary force on said rotary force in one direction;

an inertia follower provided on said inside bottom of said housing in said dead space, said inertia follower being



movable between a waiting position and an operating position; and

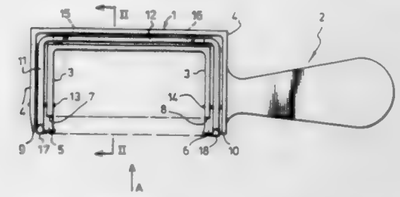
a protuberance provided on said outside bottom of said storage cabinet in said dead space, wherein said protuberance is located so as to engage and rotate said rotary member in a reverse direction opposite to said one direction when said storage cabinet is pushed into said storage cabinet to be released, and wherein said inertia follower is located so as to move to the operating position thereof to prevent said rotary member from rotating in the reverse direction only during the presence of an inertial force.

5,386,637

BLADE HOLDING DEVICE

Lawrence C. Saddoo, Cheadle Hulme, and Robert M. Williams, Hazel Grove, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 21, 1993, Ser. No. 140,582
Claims priority, application United Kingdom, Oct. 29, 1992, 9222748
Int. Cl.[6] B26B *1/00*
U.S. Cl. 30—338 17 Claims



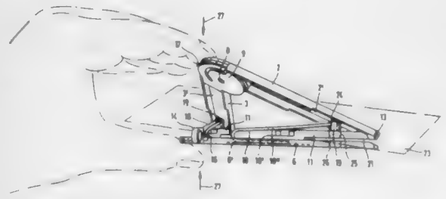
1. A blade holder for a manual cutting tool comprising a rigid open-ended frame shaped to provide means for supporting a blade between two opposite ends of the frame so that a cutting edge of the blade extends beyond the ends of the frame, a clamp pivotally mounted on the frame and spring means mounted on the frame and acting on the clamp, whereby the clamp is moveable between an open position wherein manual pressure on the clamp against the spring means forces the clamp apart from the ends of the frame to leave a gap for insertion or removal of the blade and a closed position wherein on releasing the manual pressure the spring means holds the clamp against the ends of the frame, thereby providing a means for retaining the blade in position between the clamp and the frame during a cutting operation, in which the frame has a channel which has inner and outer sidewalls, the inner sidewall of the channel terminating short of the outer sidewall of the channel at each end of the frame to provide surfaces against which an edge of the supported blade opposite the cutting edge abuts and surfaces against which a face of the supported blade is held by the clamp.

5,386,638

PAPER PUNCH

Karl Weber, Stuttgart, Germany, assignor to Heinrich Meyer-Gotz, Stuttgart, Germany

PCT No. PCT/EP92/00037, § 371 Date Aug. 19, 1993, § 102(e) Date Aug. 19, 1993, PCT Pub. No. WO92/14589, PCT Pub. Date Mar. 9, 1992
PCT Filed Jan. 10, 1992, Ser. No. 104,093
Claims priority, application Germany, Feb. 19, 1991, 9101864[U]
Int. Cl.[6] B26F *1/36*
U.S. Cl. 30—358 14 Claims



1. A paper punch, comprising:

a pair of pivotably connected top struts;

a pair of pivotably connected bottom struts, said top struts being so that each top strut is adjacent a respective bottom strut pivotably connected to said bottom struts, and each pair of struts being movable to cause the struts in each pair of struts to fold against each other;

a die operatively disposed between each adjacent top and bottom strut; and

a spring situated between each adjacent top and bottom strut for biasing each of said adjacent top and bottom struts away from each other as the pairs of struts are moved away from each other wherein

each of said pairs of struts defining spaced apart guide openings and having aligned spaced apart die openings, each receiving a respective one of said dies, and

said dies moving through their respective guide and die openings when said pairs of struts are moved toward each other and in a direction opposing the bias of each spring.

5,386,639

MULTI-AXLE VEHICLE SIDESLIP TESTER

Nicholas J. Colarelli, III, Creve Coeur, and Paul G. Marting, Chesterfield, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

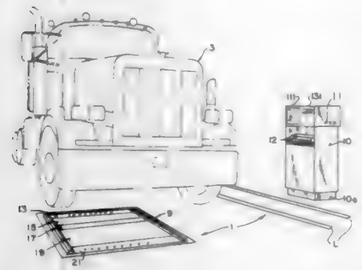
Filed Apr. 23, 1993, Ser. No. 52,114
Int. Cl.[6] G01B *7/24, 7/30*
U.S. Cl. 33—203.14 26 Claims

16. A sideslip tester for determining the sideslip of a vehicle having a steering axle and at least one pair of tandem axles separate from said steering axle, said sideslip tester comprising:

at least one measurement plate movable laterally with respect to the direction of travel of a vehicle under test as a tire of said vehicle passes over said measurement plate, said measurement plate being moved laterally as a result of lateral forces acting upon said tire;

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at least one lateral movement sensor operatively connected to said measurement plate to sense the amount of lateral movement of the measurement plate as said vehicle tire passes over said plate, said lateral movement sensor pro-



viding an output corresponding to the amount of lateral movement measured;

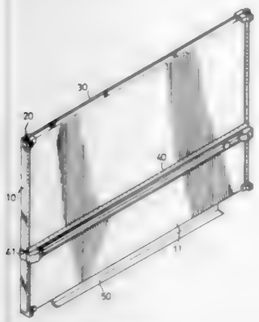
means for determining when tires of said at least one pair of tandem axles are passing over said measurement plate.

5,386,640

DRAFTING DEVICE

Chiang-Ming Chen, and Kun-Mao Chen, both of No. 3, Lane 50 Chung Nan, Kuang Hsung Rd., Tai Ping Hsiang, Taichung Hsien, Taiwan, Prov. of China

Filed Jun. 1, 1994, Ser. No. 252,205
Int. Cl.[6] B43L *13/02*
U.S. Cl. 33—444 5 Claims



1. A drafting device comprising:

a base frame (**10**) having an upper surface, a lower surface, and four corners;

a pair of magnetic boards (**11**) securely mounted to said upper and lower surfaces of said base frame (**10**) respectively;

a ruler (**40**) movably engaged on one of said magnetic boards (**11**);

a pair of cavities (**13**) defined in each of the four corners of said lower surface of said base frame (**10**), a protrusion (**12**) being formed between said pair of cavities (**13**);

a guiding member (**20**) securely mounted to each of the four corners of said base frame (**10**) and including:

a locking block (**21**) having a first wall member (**22**) and a second wall member (**23**) mounted on said upper and lower surfaces of said base frame (**10**) respectively, a slot (**230**) being defined in said second wall member (**23**) through which said protrusion (**12**) is received; and

a recess (**24**) defined in an underside of said locking block (**21**) between said first and second wall members (**22**) and (**23**), said recess (**24**) having a width equal to the distance between a bottom face of said cavity (**13**) and said upper surface of said base frame (**10**); and

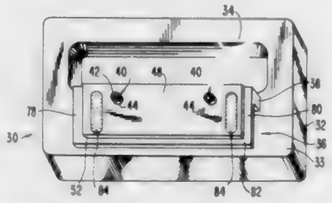
a guiding line (**30**) looping around each of said guiding members (**20**) and passing through two ends of said ruler (**40**).

5,386,641

TAPING ALIGNMENT TOOL FOR PRINTED CIRCUIT BOARDS

Raymond C. Hladovcak, Seneca, Ill., assignor to AT&T Corp., Murray Hill, N.J.

Filed Oct. 28, 1993, Ser. No. 144,595
Int. Cl.[6] B25H *7/00*
U.S. Cl. 33—645 28 Claims



1. A taping alignment tool for aligning tape on a printed circuit board having a set of finger connectors, said taping alignment tool comprising:

a base having a first surface;

a tape alignment and cutting member mounted on said first surface of said base, said tape alignment and cutting member including:

base leg means for mounting said tape alignment and cutting member on said base, and

extension leg means, extending from said base leg means in spaced relation above said first surface of said base, for forming a groove between said extension leg means and said first surface of said base to receive the set of finger connectors of the printed circuit board therein, said extension leg means having an exposed surface with guide means therein for guiding a knife to cut the tape applied on the printed circuit board and said extension leg means, in a pattern around said set of finger connectors; and

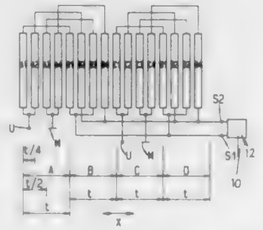
securement means for securing said base leg means on said first surface of said base.

5,386,642

POSITION MEASURING INSTRUMENT

Alfons Spies, Seebruck, and Gerald Metz, St. Georgen, both of Germany, assignors to Dr. Johannes Heidenhain GmbH, Germany

Filed Feb. 4, 1993, Ser. No. 13,704
Claims priority, application Germany, Feb. 4, 1992, 4203073
Int. Cl.[6] G01B *7/14*
U.S. Cl. 33—708 30 Claims



1. A position measuring instrument for measuring the rela-

tive position of a first object and a second object movable relative to one another, comprising:

a periodic measurement scale division having a period t and secured to said first object;

a scanner unit secured to said second object, wherein said scanner unit and said periodic measurement scale division move relative to one another in a measuring direction;

said scanner unit comprising four groups (A–D) each comprising at least four magnetoresistive elements (A_n–D_n) (n=1, 2, 3, 4, . . .), wherein said at least four magnetoresistive elements (A_n–D_n) (n=1, 2, 3, 4, . . .) of each of said four groups (A–D) are interconnected in the form of series-parallel circuits to form two half bridge circuits having an upper branch and a lower branch;

wherein said upper branch comprises a magnetoresistive element from each group (A–D) and said lower branch comprises a corresponding magnetoresistive element from each group (A–D);

said magnetoresistive elements of said upper branch are offset from the corresponding magnetoresistive elements of said lower branch by t/2; and

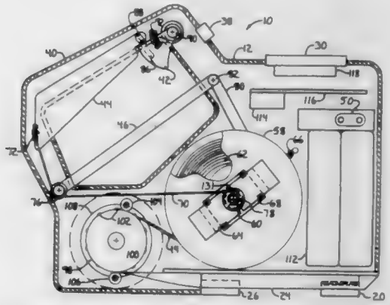
an evaluation device to form position measurement values from position-dependent output signals generated by said magnetoresistive elements in response to relative movement between said periodic measurement scale division and said scanner unit.

5,386,643

DIGITAL DISPLAY TAPE MEASURE

Bradley H. Corcoran, 6580 Lakeview, Apartment 14107, Westland, Mich. 48185

Filed Apr. 23, 1993, Ser. No. 52,482
Int. Cl.[6] G01B *3/10*
U.S. Cl. 33—762 24 Claims



1. A digital display tape measure comprising:

a housing;

a tape wound on a real within the housing, said tape including a series of substantially equally spaced and equally dimensioned holes along a common line;

a sprocket rotatable on a shaft positioned within the housing, the rotatable sprocket including a series of strategically positioned pins such that when the tape is extracted or retracted from the housing, the pins engage the holes in the tape and cause the sprocket to rotate;

means for providing a signal indicative of the rotation of the pinned sprocket;

a display device operable to receive the signal from the means for providing a signal and converting the signal to a linear digital readout; and

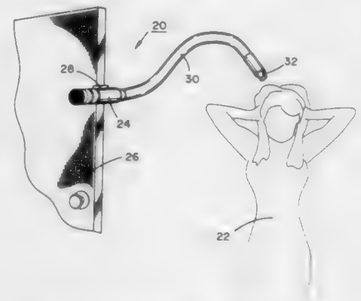
an indexing arm, said indexing arm activating an indexing mechanism that causes the reel on which the tape is wound to be incremented.

5,386,644

HANDS FREE HAIR DRYER AND HAIR DRYER ACCESSORY

Lina A. Lawall, Cheshire, and Robert R. Hellman, Jr., Oxford, both of Conn., assignors to Intelligent Designs, Inc., Cheshire, Conn.

Continuation of Ser. No. 749,264, Aug. 23, 1991, Pat. No. 5,279,048. This application Dec. 21, 1992, Ser. No. 993,404
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—90 9 Claims



1. A hands free hair dryer unit, comprising;

(a) a generally hollow body;

(b) an inlet opening defined in the distal end of said body for the entrance thereinto of air;

(c) air-conveying means, said air-conveying means being infinitely positionable, self-supporting, and hollow, and having its proximal end attached to the proximal end of said body and having its distal end selectively spatially positionable; and

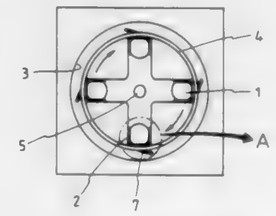
(d) said air-conveying means being self-supporting such that, once positioned, said hair dryer-unit may be employed for the drying of hair without said distal end of said air-conveying means or an intermediate portion thereof being attached to separate supporting structure or touched by the user of said hair dryer unit during said drying of hair.

5,386,645

ROTARY-TYPE WAFER DRYING APPARATUS WITH ANTI-DEFLECTION COVER

Dae I. Park; Weon G. Kim; Sang H. Park, and Hee C. Son, all of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Aug. 30, 1993, Ser. No. 113,013
Claims priority, application Rep. of Korea, Aug. 31, 1992, 92-16444
Int. Cl.[6] F26B *5/08*
U.S. Cl. 34—317 4 Claims



1. A rotary-type wafer drying apparatus used in a manufacturing process of semiconductors and having a rotor rotating around a shaft, a plurality of cradles mounted to an inner

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portion of said rotor for conveying a wafer being dried, each cradle including at least first and second longitudinal sides, and a cylinder surrounding the plurality of cradles and the rotor for protecting the cradles and rotor from the ambient atmosphere,

further comprising a protecting plate mounted to one longitudinal side of an outer surface of the cradle,

said protecting plate extending beyond an opposing longitudinal side of the cradle,

a free end of said protecting plate being spaced apart from the opposing longitudinal side of the cradle to provide a passage between an inner surface of said protecting plate and the outer surface of the opposing longitudinal side of the cradle,

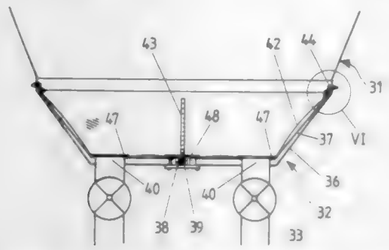
said protecting plate being mounted to the cradle for rotation together with the cradle when said rotor is rotated to perform the drying process.

5,386,646

ASH SILO FLUIDIZATION CLOTH

Jukka Saariketta, Kustee Adolfinkatu 78, SF-67200 Kokkola, Finland

Continuation-in-part of Ser. No. 815,498, Dec. 30, 1991, Pat. No. 5,230,226. This application Jul. 26, 1993, Ser. No. 97,294
Claims priority, application Finland, Jun. 30, 1989, 893199
Int. Cl.[6] B01D *39/08;* D04B *1/14*
U.S. Cl. 34—582 10 Claims



9. An improved fluidization cloth in combination with an ash silo, the ash silo including an inlet section for receiving a granular, powder-like substance known as ash, a discharge section for discharging ash from the silo and a foot section located between the inlet and discharge sections; said foot section being defined in part by a generally conically-shaped perforated surface through which compressed air is communicated, the cloth being mounted above the perforated surface, and ash being contiguous with the upper surface of the cloth, the improvement comprising the cloth being formed as a double-sided knit having in-lay threads and all made from high temperature resistant aramid fibers and wherein the cloth permits air to pass through it and mix with the ash in order to fluidize the ash during discharge of the ash from the silo.

5,386,647

THIN, SELF-CLEANING GAS DISTRIBUTION DECK IN FLUIDIZED BED DRYER

Robert G. Bauer, Gillette, Wyo.; Michael W. Shackelford, Carmel, Ind., and Mark H. Berggren, Golden, Colo., assignors to Amax Coal West, Inc., Gillette, Wyo.

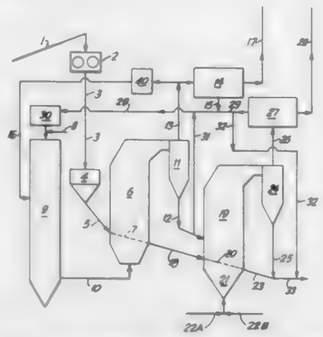
Continuation of Ser. No. 21,346, Feb. 23, 1993, abandoned, and a continuation of Ser. No. 678,191, Apr. 1, 1991, abandoned. This application Sep. 20, 1993, Ser. No. 123,814
Int. Cl.[6] F26B *17/00*
U.S. Cl. 34—582 9 Claims

1. A fluidized bed reactor, comprising:

a housing defining an enclosed reactor space;

a gas distribution plate having a plate thickness and a plurality of openings extending therethrough, each said opening having an effective diameter which is at least as great as said plate thickness, wherein said gas distribution plate separates said housing into upper and lower chambers;

at least one solids inlet and at least one solids outlet through said housing in said upper chamber above said gas distribution plate;



at least one fluidizing medium inlet through said housing in said lower chamber below said gas distribution plate;

at least one fluidizing medium outlet through said housing in said upper chamber above said gas distribution plate; and

a fluidizing medium supply system.

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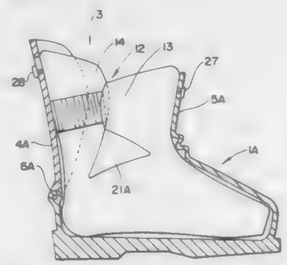
Patent Not Issued For This Number

5,386,649

SKI BOOT WITH LINER HAVING FRONT AND REAR STRADDLING PORTIONS

Jean Paris, Sevrier, France, assignor to Salomon S.A., Metz-Tessy, France

Filed Jul. 19, 1993, Ser. No. 92,986
Claims priority, application France, Aug. 14, 1992, 92 10111
Int. Cl.[6] A43B *5/04*
U.S. Cl. 36—117 16 Claims



1. A ski boot comprising:

a shell base;

an upper extending upwardly from said shell base, said upper comprising a front portion and a rear portion;

means for enabling at least one of said front portion of said upper and said rear portion of said upper to pivot along a generally transverse axis with respect to said shell base between a closed position, whereby said upper substantially surrounds the lower leg of the skier, and a maximum open position of insertion of the foot and lower leg of the skier within said boot;

a liner comprising a pad positioned within shell base and within said upper, said liner comprising a body for enveloping the foot of the skier and, extending upwardly from said body and further comprising a front wedge portion and a rear wedge portion, said front wedge portion being positioned forwardly of the lower leg of the skier when the lower leg is inserted within said boot, said rear wedge portion being positioned rearwardly of the lower leg of the skier when the lower leg is inserted within said boot, said front wedge portion and said rear wedge portion having respective parts spaced apart a predeterminate distance in said closed position of said upper for receiving between said respective parts the lower leg of the skier, said front wedge portion having at least one straddling zone, said rear wedge portion having at least one straddling zone, said straddling zone of said front portion straddling said straddling zone of said rear portion along a predeterminate length in said closed position of said upper to thereby define a mutual straddling zone of said front and rear portions of said upper; and

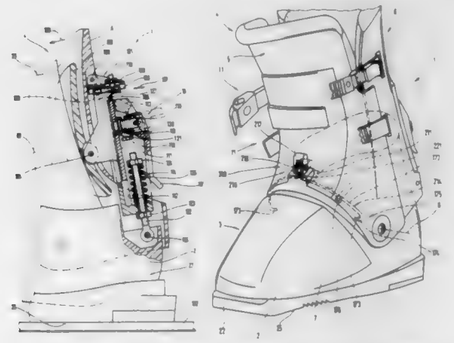
means for maintaining said straddling of said straddling zone of said front portion and said straddling zone of said rear portion in said maximum open position of said upper, said means comprising at least one elastic extensible connection element extending from a portion of said front wedge portion to a portion of said rear wedge portion for exerting an elastic biasing force in a direction to close said liner around the lower leg of the skier.

5,386,650

SKI BOOT WITH A DAMPING DEVICE BETWEEN THE SHELL AND SHAFT

Achim Storz, Zell/See, Austria, assignor to Kneissl Dachstein Sportartikel Aktiengellschaft, Molln, Austria

Continuation of Ser. No. 474,797, Jul. 27, 1990, abandoned. This application Sep. 2, 1993, Ser. No. 116,538
Claims priority, application Austria, Nov. 27, 1987, 3128/87
Int. Cl.[6] A43B *5/04*
U.S. Cl. 36—118 10 Claims



1. An improved composite shell-type ski boot having an outer shell for enclosing a foot, a shaft pivotally coupled to the outer shell for enclosing a lower part and ankle of a lower leg, the shaft including a rear flap pivotally coupled to the outer shell and a front flap pivotally coupled to the outer shell, wherein the improvement comprises:

an adjustment device for adjusting the shaft to a forward position with respect to the outer shell, said adjustment device including an adjustable damping device connected between said outer shell and said shaft for providing damping between the shaft and the outer shell and for adjusting the damping force therebetween, said adjustment device including:

(i) a guide plate connected to the rear flap of the shaft and movable relative to the outer shell, said guide plate including a bore; and

(ii) a coupling device disposed adjacent to said guide plate, said coupling device including:

(a) a locking tab cooperatively shaped and dimensioned slightly smaller than the bore to be inserted into the bore and into contact with said guide plate for releasably locking said guide plate to said outer shell to provide damped relative movement therebetween;

(b) biasing means mounted on said locking tab for continuously biasing said locking tab toward said and

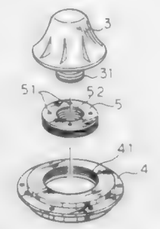
(c) a guide slit with said guide plate of the rear flap being freely movable along said guide slit when said coupling device is in an unlocked position.

5,386,651

FITTING STRUCTURE OF SPIKES OR THE LIKE FOR SPORT SHOES

Mutsue Okamoto, Hyogo, Japan, assignor to Hyogo Shoes Co., Ltd., Hyogo, Japan

PCT No. PCT/JP90/00431, § 371 Date Oct. 7, 1991, § 102(e) Date Oct. 7, 1991, PCT Pub. No. WO90/11699, PCT Pub. Date Oct. 18, 1990
Continuation of Ser. No. 768,850, Oct. 7, 1991, abandoned. This PCT application Mar. 30, 1990, Ser. No. 213,838
Claims priority, application Japan, Apr. 7, 1989, 1-89267
Int. Cl.[6] A43B *5/00;* A43C *15/16*
U.S. Cl. 36—134 9 Claims



1. A fitting structure of spikes for sport shoes in which spikes are detachably fitted to a sole forming a bottom of a shoe body, comprising:

a mounting base formed of a metal material and embedded and fixed in said sole;

an inner threaded opening in said mounting base defining an insertion hole;

a joint nut to be engaged detachably in a screwed manner with the inner threaded opening of said mounting base in which a nut screwed part opening downward is formed; and

a locking bolt for fixing said spike to said mounting base, to be engaged detachably in a screwed manner with the nut screwed part of said joint nut, wherein a material of said joint nut is weaker in deforming strength than the material of said mounting base for absorbing deformation at the joint nut prior to absorbing deformation at said mounting base.

5,386,652

CYLINDER GUARD

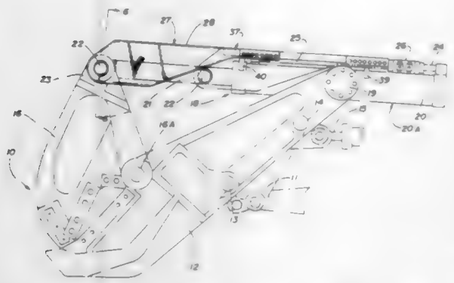
John Ramun, Youngstown, Ohio, assignor to Allied Gator, Inc., Youngstown, Ohio

Filed Nov. 12, 1993, Ser. No. 151,299
Int. Cl.[6] E02F *9/24*
U.S. Cl. 37—406 7 Claims

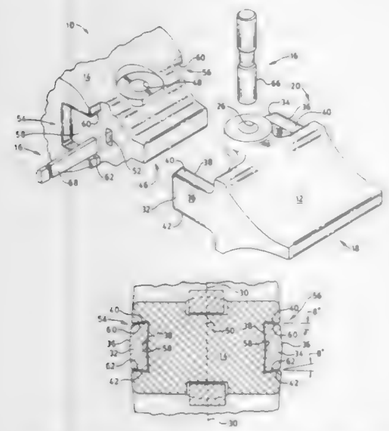
1. A cylinder and piston rod guard for use on a hydraulic piston and cylinder, the piston rod is movable such that a portion of the piston rod extends outwardly from said cylinder, said cylinder guard having a rod engagement portion and a guide portion, a sleeve partially surrounding the piston rod along its extended length, said rod engagement portion being connected to the piston rod so as to move therewith, said guide portion movably positioned on said cylinder so as to move thereon in accordance with the axial advancement of said piston rod from said cylinder, a pair of guide channels secured to said cylinder, movable guide shoes extending from said

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guide portion of said cylinder guard, said guide shoes registerable within said respective guide channels, means for supporting said guide shoes on said cylinder guard and means for interconnecting said rod engagement portions of said cylinder guard to the piston rod.

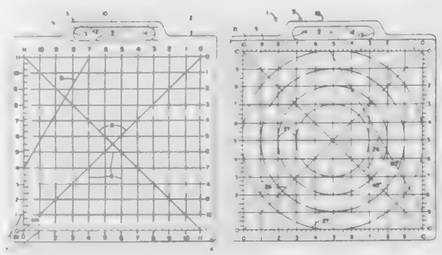


5,386,653
TOOTH TO ADAPTER INTERFACE
Erwin D. Cornelius, Bloomington, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Jun. 1, 1993, Ser. No. 69,491
Int. Cl.[6] E02F 9/28
U.S. Cl. 37—454 8 Claims



1. A tooth assembly having a tip, an adapter, and a retainer assembly, a longitudinal plane being defined through the tip and the adapter of the tooth assembly, comprising:
the tip defining a pair of aligned openings and a cavity disposed in a rearward end portion of said tip, a pair of opposed ears extending rearwardly adjacent the cavity, each ear of the pair of ears having a pair of opposed side surfaces and a pair of opposed edge surfaces, the edge surfaces are angled one relative to the other so that the side surface nearest the longitudinal plane has a width greater than the width of the opposed side surface; and
the adapter having a nose portion operative to mate with the cavity of the tip and defining, a pin opening, a retainer opening that intersects the pin opening, and a pair of opposed slots adjacent the nose portion, each slot of the pair of opposed slots has a side surface oriented substantially parallel with the longitudinal plane and a pair of opposed edge surfaces, the edge surfaces are angled one relative to the other so that the edge surfaces of the pair of opposed slots are spaced farthest apart at the intersection with the side surface, the pair of opposed edge surfaces of the pair of opposed ears are in closely spaced relation with the pair of opposed edge surfaces of the respective pair of opposed slots of the adapter.

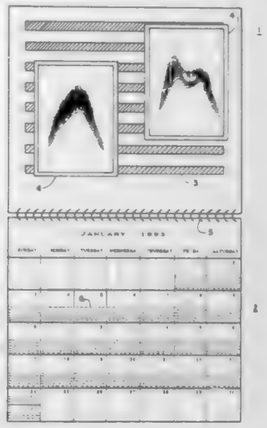
5,386,654
INTEGRATED CUTTING AND PRESSINC BOARD INCLUDING MARKING SCALE ON THE HANDLE
June E. Kroenke, West Bend, Wis., assignor to June Tailor Inc., Richfield, Wis.
Filed Sep. 23, 1993, Ser. No. 126,066
Int. Cl.[6] D06F 81/00; B26D 7/20; A41H 1/00
U.S. Cl. 38—141 19 Claims



1. A cutting and pressing board unit for cutting, blocking and pressing of fabric in preparation of fabric parts for assembling of the same with other similar fabric parts, comprising a relatively flat cutting mat formed of a solid plastic and having a cutting face and a back face, said cutting surface including measuring indicia with related numerical identification of said measuring indicia, a cushioned pressing board unit interconnected to the back face of said cutting mat and including a support board secured abutting the mat and an outer resilient pad interconnected to said board and an outer cover enclosing said board and pad, said cover including a grid of measuring indicia with appropriate numerical identification of said last named measuring indicia.

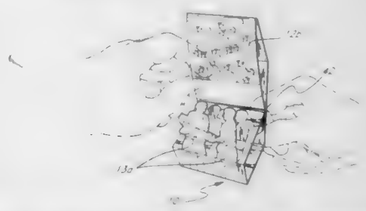
5,386,655
BIOGRAPHICAL CALENDAR
Kathleen A. Jones, 693 S. Indiana Ave., Kankakee, Ill. 60901
Filed Sep. 23, 1993, Ser. No. 125,234
Int. Cl.[6] G09D 3/00
U.S. Cl. 40—119 2 Claims

1. A biographical calendar comprising a calendar having at least one page and an album having an equal number of pages as said calendar, said album being pivotally connected to said calendar, said album having, on each page, a plurality of spaced adhesive portions and a plurality of detachable strips of paper covering said adhesive portions, so that when said strips are torn off, said adhesive will be exposed to enable attachment thereto of photographs, said calendar having dotted horizontal lines associated with date type indicia for writing notes concerning an event occurring on a particular date, said pivotal connection between said album and said calendar comprising



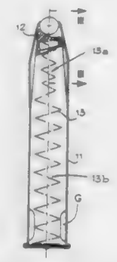
spaced holes along an edge of each page and a spiral member extending therethrough.

5,386,656
PLAY CARD
Stephen Bergman, 10675 Providence Dr., Villa Park, Calif. 92667
Filed Jan. 24, 1994, Ser. No. 185,139
Int. Cl.[6] G09F 1/00
U.S. Cl. 40—539 20 Claims



16. A play card which has a folded configuration and an unfolded configuration displaying a raised figure on a base for the card, said play card comprising
a generally rectangular sheet having a predetermined length, a central longitudinal axis, and leading and trailing edges,
said sheet having a plurality of score lines that are perpendicular to the longitudinal axis and are each respectively positioned inward from said leading and trailing edges, said sheet being folded inward along predetermined ones of said score lines to provide a base section, a central section, a back section including a front panel, a connector panel, and a top panel having a portion of said figure cut into a plane of the top panel in outline form,
said central section being folded inward along another predetermined one of said score lines to bring the connector panel into an abutting relationship with a portion of the central section, said connector panel being attached to said portion of the central section to provide a collapsible box-like base structure with a gap between the connector panel and said portion which is adapted to receive and hold the leading edge of the sheet when the card is in the unfolded configuration,
said box-like base structure, when the card is in the folded configuration, collapsing upon itself into a generally flat condition with said portion of the figure lying in the plane of the top panel, and, when the card is in the unfolded configuration, said box-like base structure supporting the unfolded card in an upright position with said portion of the figure assuming an erect upright condition,
said back section being folded inward along still another predetermined one of said score lines to enable the leading edge to be inserted into said gap when the card is in the unfolded configuration.

5,386,657
CAPACITY MAGAZINE FOR HANDGUNS
Edoardo Racheli, Gardone V.T., Italy, assignor to MEC-GAR S.r.l., Gardone V.T., Italy
Continuation-in-part of Ser. No. 959,667, Oct. 13, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 93,780
Claims priority, application Italy, Jul. 17, 1992, BS/92/A/000089
Int. Cl.[6] F41A 9/65
U.S. Cl. 42—50 9 Claims



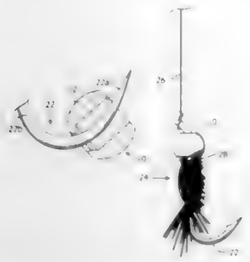
1. A magazine for firearms with cartridges, for use with automatic or semi-automatic pistols, the magazine comprising: a magazine housing for ammunition having a magazine housing bottom; a follower and spring provided within said magazine housing for moving the cartridges upward away frown the bottom, the follower including a curved upper edge with a radius larger than a radius of the cartridges, said curved upper edge connecting with a curved top tapered edge of the follower to form an inclined upper side, said follower having a base with an inclined surface and a cavity for receiving coils of the spring, a wall of said cavity and said inclined upper side meeting at an edge of said inclined surface at a beveled region, said spring having an upper tapered part fit into said cavity of said follower when the magazine is fully loaded with cartridges.

5,386,658
BEAD WITH DUAL-DIAMETER BORE
Kenneth A. Ferguson, and William J. Black, both of Roseburg, Oreg., assignors to Spirit River, Inc., Roseburg, Oreg.
Filed May 24, 1993, Ser. No. 66,762
Int. Cl.[6] A01K 85/00
U.S. Cl. 43—42.25 6 Claims

6. An artificial fly comprising:
a fish hook having a barb, curved shank, and eye;
a metallic bead positioned on the shank of the fish hook adjacent to the hook eye, the bead comprising a generally spherical body having a bore extending through the body and sized to freely receive the barb and shank of the hook, the bore having a first portion positioned adjacent to the eye of the hook and with a first diameter sized smaller than the hook eye, and a second portion with a second diameter greater than the first diameter; and

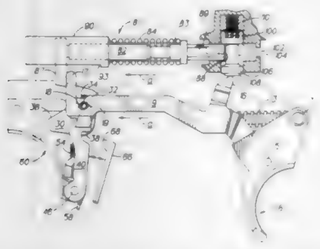
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an artificial fly body attached to the shank of the hook with the bead adjacent to the hook eye and a portion of the fly



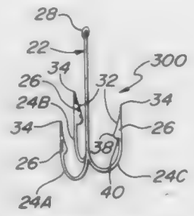
body positioned in the second portion of the bore of the bead.

5,386,659
FIRE CONTROL MECHANISM FOR SEMIAUTOMATIC PISTOLS
Pardip K. Vaid, Hatfield; Lee M. Lenkarski, Ware, and Kevin G. Foley, Springfield, all of Mass., assignors to Smith & Wesson Corp., Springfield, Mass.
Filed Dec. 17, 1993, Ser. No. 168,148
Int. Cl.[6] F41A *19/32, 19/38*
U.S. Cl. 42—69.02 11 Claims



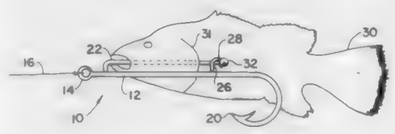
1. A fire control mechanism for a striker operated double action, semiautomatic handgun including a frame, a barrel mounted on the frame having a chamber at its breech end, a slide reciprocably mounted on the frame and including a breech block and a firing pin and having a forward position in which the breech block closes the breech chamber end of the barrel, a recoil spring for returning the slide to its forward position, the firing pin being movable longitudinally relative to the slide, a trigger and a trigger bar also movable longitudinally in response to movement of the trigger which has a rearward stroke from an initial position to a terminal position, the improvement comprising a sear pivotably disposed on the frame between forward and rearward positions and including at least one cam surface for displacing the sear downwardly of the firing pin, said sear being movable generally in a plane of motion and including an edge portion for controlling the operation of the firing pin by cocking and then releasing said firing pin in response to angular and translatory movement of the sear to a predetermined point of release of said firing pin, a spring yieldably urging the sear toward its forward position, said firing pin including an extension adapted to be disposed in said plane of movement of the controlling edge portion of the sear for engagement and disengagement therewith at said point of release of said firing pin by the sear, said point of release corresponding to said terminal position of the trigger in response to actuation of the trigger, said trigger bar including a disconnector portion disposed for moving the trigger bar downwardly in coplanar relation with the plane of motion of said edge portion of the sear in response to recoil of the slide whereby said sear will be released by the trigger bar for return by said spring to its forward position with said extension of the firing pin in said initial position.

5,386,660
FISHING HOOK WITH CURVED BARB
John M. Levin, 412 Fairview Rd., Narberth, Pa. 19072
Filed Aug. 3, 1993, Ser. No. 101,185
Int. Cl.[6] A01K *83/00*
U.S. Cl. 43—43.16 11 Claims



1. A fishing hook comprising a shank portion, a bent return portion, and a barb, said return portion having a longitudinal axis, said barb being located at the upper end of said return portion and terminating in a sharply pointed free end formed by an edge surface, means for preventing the accidental dislodgement of a fish once hooked and for permitting the easy removal of said fish from said barb, said means comprising said edge surface comprising a first portion extending backward from said point at an acute angle to said longitudinal axis, a rounded curved second portion contiguous with said first portion and spaced laterally from said longitudinal axis, and a slightly undercut third portion contiguous with said second portion and merging with said return portion at an acute angle, said edge surface of said first, second and third portions forming a continuous curved surface, with said shank portion, said return portion, and said barb being co-planar.

5,386,661
LIVE BAIT FISH HOOK
Franklin Davis, 4330 Harbor Blvd., Port Charlotte, Fla. 33952
Filed Aug. 13, 1993, Ser. No. 105,429
Int. Cl.[6] A01K *83/06*
U.S. Cl. 43—44.8 11 Claims



1. A fish hook for carrying a live bait fish, said fish hook comprising:

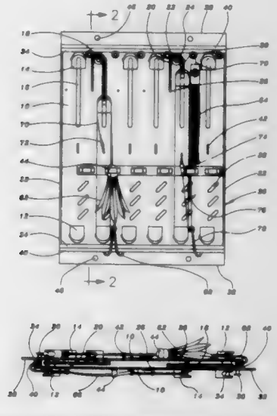
a curved primary shaft having means connected to an upper end thereof for attaching said fish hook to a fishing line, and a barbed, pointed section connected to a lower end thereof;

a secondary shaft flexibly interconnected to and extending from said primary shaft and being insertible through the mouth and gill of the live bait fish, said secondary shaft having a rounded, bulbous distal end which enables said secondary shaft to be inserted through the mouth and gill of the bait fish without causing serious injury to the fish; and

clasp means for selectively interconnecting said primary shaft and a distal portion of said secondary shaft to restrict removal of said secondary shaft from the live bait fish, said clasp means including a hook element carded by said primary shaft for selectively engaging and holding said

distal portion when said distal portion is closed relative to said primary shaft.

5,386,662
LURE AND LEADER HOLDER
Robert L. Vader, and Erik J. Vader, both of San Clemente, Calif., assignors to Vader Marine, San Clemente, Calif.
Filed Aug. 11, 1993, Ser. No. 105,876
Int. Cl.[6] A01K *97/06*
U.S. Cl. 43—57.2 5 Claims



1. A lure and leader holder comprising two identical rectangular rigid panels, each of said panels having an outside surface and an inside surface; a plurality of parallel slots; sliding spools with penetrating bosses constrained to slide in said slots; a corresponding plurality of fixed spools attached adjacent to a first edge of each panel farthest from said sliding spools; means to provide a force biasing said sliding spools away from said fixed spools so as to automatically adjust to leader length; means secured near said first edge of each panel to receive the pointed ends of the hooks of a lure; means located intermediate said sliding spools and fixed spools to attach the end of the leader of the lure to each panel, wherein the inside surfaces of said panels are secured together in spaced relationship such that said fixed and said sliding spools are located on the outside surfaces of said panels, and a second edge of each said panel opposite said first edge protruding beyond said first edge of the other panel thereby defining tongues for engaging said lure and leader holder with grooves of another structure and providing protection for hooks of lures mounted on said lure and leader holder.

5,386,663
MULTIPLE LIVE MOUSE TRAP
Grover C. Fields, 17572 St.-Rte. 160, Ewington, Ohio 45686
Filed Feb. 2, 1994, Ser. No. 190,377
Int. Cl.[6] A01M *23/08*
U.S. Cl. 43—66 9 Claims

1. An animal trap, comprising:

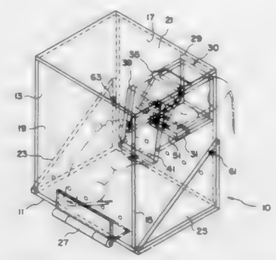
a) a housing defining an internal chamber having a floor;

b) an entrance to said chamber spaced above said floor and including:

i) an opening allowing access to a passageway having a lower surface spaced above said floor;

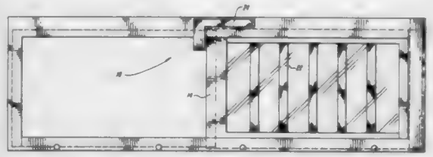
ii) a gate pivotably mounted in said passageway on a generally horizontally disposed pivot, said gate being normally closed within said passageway above said lower surface and having at least one bait-receiving hole therein;

iii) said passageway openly terminating beyond said gate whereby an animal may enter said passageway, may open said gate, pass therethrough and fall into said chamber, said gate closing to prevent escape of said animal through said opening; and



iv) said animal trap further including a bait plate mounted adjacent a termination of said passageway, said bait plate having at least one hole therethrough adapted to receive bait therein.

5,386,664
WINDOW SECURITY SYSTEM
Peter Lumenello, Lowell, Mass., assignor to Anthony L. Lumenello, Malden, Mass.
Continuation of Ser. No. 913,306, Jul. 14, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 117,244
Int. Cl.[6] E05D *15/06*
U.S. Cl. 49—404 6 Claims



1. A sliding window assembly, comprising:

an outside window sash slidably mounted within an outside channel of a window frame for horizontal movement:

an inside window sash slidably mounted within an inside channel of a window frame for horizontal movement:

a window frame having inside and outside channels encircling the frame and housing the inner and outer window sashes, the top portion of each channel having a depth greater than the side and bottom portions of each channel sufficient to allow window sashes mounted within the channels to be lifted within the upper channel such that a bottom portion of each window sash is able to be removed from a bottom portion of the channel to allow the window sash to be removed from the window frame; and

a locking member consisting of an L-shaped member having a long portion and a short portion integrally joined at substantially a right angle to each other, the member being removably and replaceably mountable by hand to a top portion of the inner sash, at a portion of the inner sash proximal to a central point of the window frame, the long portion of the member being mountable against the top portion of the inner sash, within the upper portion of the inner channel and having a height sufficient to prevent the inner sash from being raised within the top portion of the inner channel to a height sufficient to allow removal of the inner sash from the channel while still allowing normal sliding operation of the window sash.

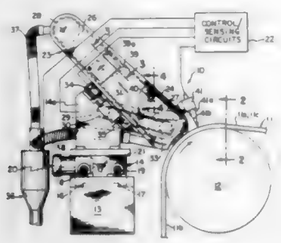
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AUTOMATED/REMOTE CONTROL APPARATUS AND METHOD FOR GRINDING RUBBER BELTS USED TO COMPACT PAPER AND OTHER WEB MATERIAL

Albert Heim, Oberagl, Switzerland, assignor to Clupak, Inc., New York, N.Y.

Filed Sep. 28, 1992, Ser. No. 951,107
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—5 5 Claims



1. Grinding apparatus for incrementally reducing the thickness of a wide, thick rubber belt about a continuous curvilinear path while the working surface of said belt is subjected to heat and steam to produce compacted web, after said working surface has become irregular and the belt has become uneven in thickness, comprising:

a) means for moving said grinding apparatus toward said working surface for effecting selective incremental contact between said apparatus and said working surface during movement of said belt about said continuous curvilinear path and for moving said grinding apparatus away from said surface to discontinue such contact;

b) means for moving said grinding apparatus transversely and incrementally across the working surface of said belt during movement of said belt about said continuous curvilinear path;

c) means carried by said grinding apparatus for sensing the thickness and variations in thickness of said belt; and

d) control and sensing means positioned sufficiently remotely from the working surface of said belt to be unaffected by heat and steam emanating therefrom, for controlling and sensing the respective grinder apparatus moving means under paragraphs (a) and (b) hereof, firstly: to position said grinding apparatus in close proximity to said working surface as sensed by the sensing means of paragraph (c) hereof, secondly; to move said grinding apparatus incrementally transversely across the working surface of said belt while the sensing means of paragraph (c) hereof senses variations in thickness of said working surface; and thirdly: to move said grinding apparatus into contact with said working surface in successive incremental overlapping transverse passes to grind said surface smooth and to render said belt thereunder uniform in thickness.

5,386,666

AUTOMATED SYSTEM FOR CONTROLLING TAPER LENGTH DURING THE LAPPING OF AIR BEARING SURFACE OF MAGNETIC HEADS

Robert A. Cole, Newark, Calif., assignor to Read-Rite Corporation, Milpitas, Calif.

Filed Feb. 11, 1993, Ser. No. 16,272
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—5 10 Claims

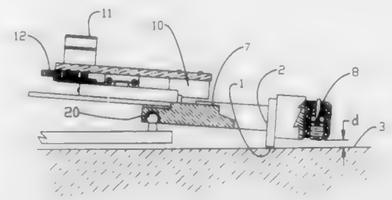
1. An automated system for lapping a taper upon thin film magnetic heads disposed in a row on a ceramic bar comprising:

a transfer tool to which said bar is mounted;

a lapping assembly including a rotary lapping plate;

a fixture for securing the transfer tool such that said bar is in apposition to said lapping plate;

a closed loop feedback system including means coupled to said fixture on each side of the ceramic bar for producing signals representing the height of the leading edge of the bar on each side of the bar; and



means for comparing the signals produced during lapping to a reference for generating an error signal; and

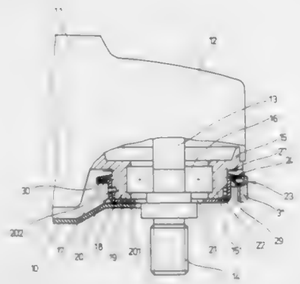
means for moving a weight or for varying the pressure across said fixture during lapping in response to said error signal to achieve uniform taper length across said bar.

5,386,667

PORTABLE MACHINE TOOL

Friedrich Häusslein, Leinfelden-Echterdingen; Peter Röhrup, Ulbersdorf, and Egbert Steinbrück, Sebnitz, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE92/00332, § 371 Date Oct. 21, 1993, § 102(e) Date Oct. 21, 1993, PCT Pub. No. WO92/19423, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 24, 1992, Ser. No. 137,179
Claims priority, application Germany, Apr. 26, 1991, 4113641
Int. Cl.[6] B24B *23/00*
U.S. Cl. 451—344 18 Claims



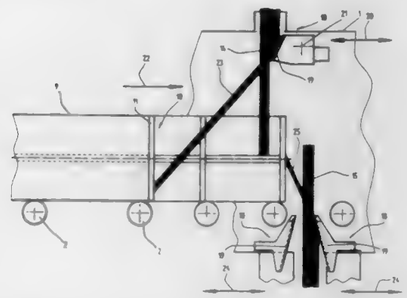
1. A portable machine tool, comprising a drive spindle provided with a tool receiver; a bearing flange which mounts said drive spindle and has a clamping neck; a protective hood which at least partially covers a tool and is held securely against rotation on said clamping neck; and means for connecting said protective hood and said clamping neck, said connecting means including a sleeve-shaped plug-on collar provided on said protective hood and having radial projections, an annular groove provided in said clamping neck so that radial projections can engage in said annular groove, and also axial grooves provided in said clamping neck and extending from a free end face of said clamping neck into said annular groove, said axial grooves being arranged and formed so that said radial projections of said plug-on collar can pass through said axial grooves in a plugging-on position which is turned relative to a position of use of said protective hood.

5,386,668

BLASTING PLANT HAVING BLAST WHEELS ABOVE AND BELOW FOR BLASTING ELONGATED WORKPIECES

Hans-Jürgen Mügge, Karlsruhe; Bernhard S. A. Neumaier, Linkenheim-Hochstetten, and Wolfgang Heiss, Stutensee, all of Germany, assignors to BMD Badische Maschinenfabrik Durlach GmbH, Karlsruhe, Germany

Filed May 13, 1993, Ser. No. 59,963
Claims priority, application Germany, May 15, 1992, 4216108
Int. Cl.[6] B24C *5/00*
U.S. Cl. 451—91 11 Claims



1. A blasting plant for elongated components comprising a blast cabinet, a conveyor for conveying the elongated components substantially horizontally through the blast cabinet, centrifugal blast wheels located below and above the blast cabinet for directing blast medium jets against the elongated components as the respective components are conveyed through the blast cabinet at least one deflecting device associated with at least one centrifugal blast wheel for deflecting the blast medium jet of said at least one centrifugal blast wheel, wherein the at least one deflecting device is adjustable between an inoperative position outside the blast medium jet and an operative position deflecting the blast medium jet with respect to a vertical plane in a conveying direction of the conveyor, and wherein at least one second deflecting device is associated with said at least one centrifugal blast wheel and is adjustable between an inoperative position outside the blast medium jet and an operative position deflecting the blast medium jet with respect to the vertical plane so as to direct the blast medium jet in a direction counter to a conveying direction of the conveyor.

5,386,669

CORROSION RESISTANT LEAKPROOF PLASTIC MANHOLE SYSTEM

Antonio V. Almeida, 18927 Fortson, Dallas, Tex. 75252

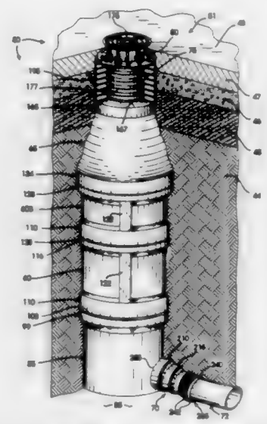
Filed Mar. 15, 1993, Ser. No. 31,340
Int. Cl.[6] E02D *29/14*
U.S. Cl. 52—19 6 Claims

1. A modular, plastic manhole comprising a plurality of separate, independent, electrically non-conductive units custom installed and permanently configured within an appropriate excavation at a job site proximate an undergound sewer line, said manhole vertically extending between a bottom of the excavation adjacent the sewer line and a surface thereabove, said manhole comprising:

a leakproof, corrosion resistant base disposed upon said bottom, said base comprising integral, spaced apart, generally coaxial inner and outer shells, each of said shells comprising a cylindrical wall and a floor intersecting said wall, said inner and outer shells defining an annular cavity therebetween for receiving a desired amount of filler;

corrosion resistant, electrically non-conductive segmented reducer means for flexibly coupling said base to said sewer line;

at least one leakproof, corrosion resistant, electrically non-conductive riser snap fitted to said base to form a flexible leakproof juncture therebetween, each riser comprising integral inner and outer shells defining an annular cavity therebetween adapted to receive a desired amount of



filler, said last mentioned annular cavity separate from said base annular cavity; and,

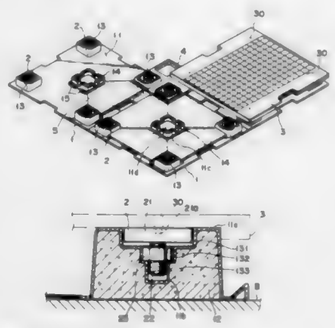
a leakproof, corrosion resistant cone snap fitted to a riser to form a flexible leakproof juncture therebetween, said cone extending vertically upwardly towards said surface and comprising integral, inner and outer, generally coaxial spaced apart shells defining an annular cavity therebetween adapted to receive a desired amount of filler.

5,386,670

METHOD FOR MANUFACTURING SYSTEM FLOOR AND FLOOR BASE FOR SYSTEM FLOOR

Fumio Takeda; Yoshio Kojima; Yutaka Ishibashi; Isako Tsushima, all of Tokyo; Kenji Sugimoto, Chigasaki; Hideo Tanaka, Kamakura; Hidetoshi Takahashi, Yokohama, and Fumio Sumiyoshi, Iruma, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 29, 1991, Ser. No. 799,935
Claims priority, application Japan, Nov. 29, 1990, 2-333075; Nov. 29, 1990, 2-333076
Int. Cl.[6] E04B *5/00*
U.S. Cl. 52—126.6 13 Claims



1. A system floor, comprising:

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a rectangular floor base having four corners and having a convex prop, integral to said base, at each of said corners, each of said convex props having a concave portion on an upper surface thereof, each of said props further having a support position;

a height adjusting means, embedded in the concave portion of each of said props, for variably adjusting a height of the support position of each of said props within a predetermined range between a position lower than the upper surface of a respective one of said props and a position higher than the upper surface of the respective one of said props; and

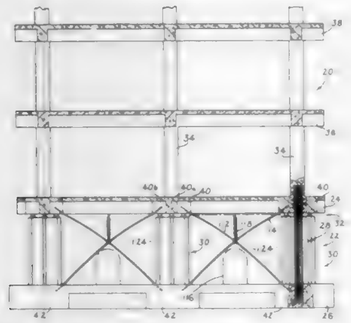
a floor panel, having four corners, supported by each of said props at the support positions of said props, and having a through hole at each of said corners of said floor panel through which the height adjusting means is accessed to adjust the support positions of said props.

5,386,671

STIFFNESS DECOUPLER FOR BASE ISOLATION OF STRUCTURES

Kuo-Kuang Hu; Philip G. Kirmser, and Stuart E. Swartz, all of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Continuation of Ser. No. 677,159, Mar. 29, 1991, abandoned.
This application Oct. 7, 1992, Ser. No. 957,756
Int. Cl.[6] E04H *9/02*
U.S. Cl. 52—167.3 22 Claims



1. A stiffness decoupling assembly adapted to be used between a structure and an underlying foundation, the assembly comprising:

a plurality of elongated, relatively flexible, hollow pipes rigidly connected adjacent the upper ends thereof to the structure and extending downwardly toward the foundation, at least certain of the pipes being substantially filled with material for damping induced movement of the pipes;

a coupling means operatively coupling at least certain of the pipes to the foundation for resisting overturning of the structure;

a primary load-bearing member located in spaced relationship to the plurality of pipes, the load-bearing member resting upon the foundation and extending upward toward the structure and presenting an upper end; and

a decoupling means for decoupling the lateral stiffness of the structure from the load-bearing strength so that the load of the structure is transferred to the load-bearing member without transferring shear or :moment forces,

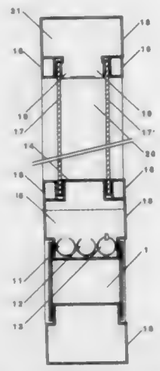
the decoupling means including bearing means interposed between the upper end of the load-bearing member and the structure for permitting the structure to bear on the load-bearing member while allowing relative lateral movement between the upper end and the structure.

5,386,672

MULTIPLE PERFORMANCE GLAZING

François Iselin, Chemin de la Girarde 15, 1066 Epalinges, Switzerland

PCT No. PCT/CH92/00030, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO92/14899, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 17, 1992, Ser. No. 938,216
Claims priority, application Switzerland, Feb. 20, 1991, 532/91
Int. Cl.[6] E06B *3/66*
U.S. Cl. 52—171.3 20 Claims



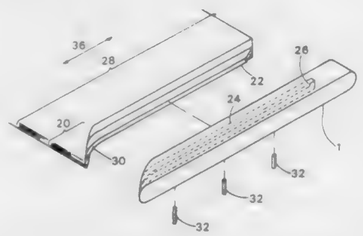
1. Multiperformance glazing comprising at least one enclosure which has at least two transparent, translucent or opaque walls and is arranged to receive filling matter, wherein the filling matter is a foam obtained from a liquid that becomes a foam when gas is introduced into the liquid and that thereafter becomes a liquid when gas either escapes or is removed from the foam, and means to introduce gas into the liquid including at least one distributor immersed in the liquid having means to selectively produce gas bubbles of different sizes, whereby foams having different physical characteristics can be selectively produced, and means to remove gas from the foam.

5,386,673

SUPPORTED RETURNED STAIR TREAD WITH MOISTURE-COMPENSATING JOINT AND METHOD FOR MAKING SAME

René P. Bellegarde, Lambton, Canada, assignor to Lambton Manufacturing Ltd., Quebec, Canada

Filed Apr. 29, 1991, Ser. No. 692,604
Int. Cl.[6] E04F *11/00*
U.S. Cl. 52—182 36 Claims



1. A returned stair tread for use on an open stairway or on an open portion of a stairway, said returned stair tread comprising:

a stair tread constructed of wood and having at least one side edge fashioned to fit flush against an opposing surface of a

return nosing to form an exposed joint between said stair tread and nosing along a forward end portion of said tread and nosing;

a return nosing fitting flush against said side edge, said stair tread and nosing being slidably connected to one another by tongue and groove construction extending along at least a rear portion of said side edge rearward of said exposed joint; and,

means for securing said nosing to said stair tread, wherein said means comprises:

a rigid securing means joining said nosing to said stair tread only in the region containing said exposed joint which is located on a forward end portion of said tread forward of said slidably connected construction, which rigid securing means is adapted to prevent gaping or other deformation of said exposed joint as said stair tread expands or contracts in width over a range due to changing ambient temperature and humidity conditions; and,

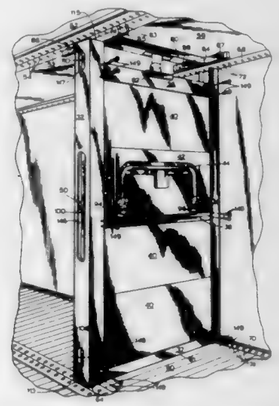
a non-rigid securing means joining said nosing to said stair tread along the length of their mutual juncture, which non-rigid securing means is adapted to secure the continued contact of said nosing and stair tread while permitting each to expand and contract in width over a range due to changing ambient temperature and humidity conditions.

5,386,674

TWO PIECE BULKHEAD DOOR FOR RAIL CARS AND THE LIKE

Alexander Sfirakis, Highland, Ind., and Herman J. Yost, Hinsdale, Ill., assignors to Joseph T. Ryerson & Son, Inc., Chicago, Ill.

Filed Sep. 17, 1992, Ser. No. 947,513
Int. Cl.[6] B61D *45/00*
U.S. Cl. 52—243.1 25 Claims



1. A relatively light weight cargo separator for use in a movable cargo transporting vehicle, said cargo separator having a front side and a rear side and comprising:

a vertically disposed, substantially rectangular metallic, outer frame having a yield strength of at least about 140,000 psi;

and a plurality of panels each having an inner core structure supported within said frame;

said panels comprising front and rear planar outer members and an inner core member sandwiched between said outer members to form said panel;

each of said outer members on said panels being composed of structurally-reinforced, rigid polymeric sheet material; and

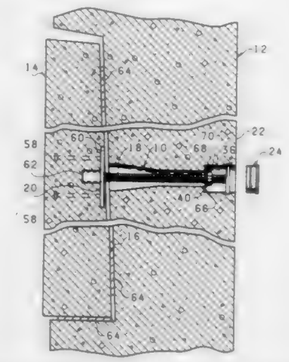
said inner core structure on each of said panels being formed from structurally-reinforced rigid polymeric material in a corrugated shape to contact both the front and rear outer members.

5,386,675

CONCRETE BEAM CONNECTION SLEEVE

Kenneth C. Baur, and Thomas E. Keiser, both of Mohnton, Pa., assignors to High Industries, Inc., Lancaster, Pa.

Filed Jul. 12, 1993, Ser. No. 87,643
Int. Cl.[6] E04B *1/41*; E04G *17/00*
U.S. Cl. 52—250 22 Claims



1. A concrete beam connection sleeve comprising an elongate one-piece tubular plastic body having a hollow interior extending along the length of the body open at each end, said body including:

A) a circumferential funnel portion having a large dimension end and a small dimension end;

B) a circumferential first large dimension portion joined to the small dimension end of the funnel portion; and

C) a bolting step located between the first large dimension portion and the funnel portion and facing the first large dimension portion, an opening in said step, said opening communicating the interior of the funnel portion and the interior of the first large dimension portion.

5,386,676

ADJUSTABLE PACKED PANEL JOINT END COVER

Raymond G. Kidaloski, Canal Fulton; Roger A. Detzel, Norton, and R. Jeffrey Warrick, Jackson Township, Stark County, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 7, 1993, Ser. No. 44,994
Int. Cl.[6] E04C *3/00*
U.S. Cl. 52—582.1 11 Claims

1. A method for providing an adjustable joint for packed panels forming a housing structure of a heat recovery steam generator, comprising:

fixing a plurality of collar studs to a cold pressure casing;

placing an insulating layer over the cold pressure casing, an end of the insulating layer extending beyond at least one edge of the cold pressure casing;

placing a liner plate over the cold pressure casing such that the liner plate is spaced away from the cold pressure casing by the collar studs and the insulating layer, the collar studs supporting the liner plate above the cold pressure casing, to form a first packed panel;

securing an end cover bent at an angle to the liner plate and over the insulating layer at the at least one edge of the first packed panel, such that both the insulating layer and the end cover extend beyond the at least one edge of the cold pressure casing to form an extension, and such that the end

cover is movably mounted to the liner plate to accommodate thermal growth of the first packed panel;

repeating the above-listed steps to form a second packed panel;

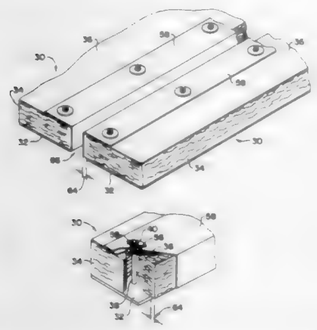
positioning the extensions of each packed panel adjacent to each other such that the end cover and the cold pressure casing of the first packed panel is aligned adjacently with the end cover and the cold pressure casing of the second packed panel;

compressing the extension of the first packed panel against the extension of the second packed panel until the cold pressure casings of each packed panel are adjacent to each other; and

welding the cold casings of these adjoining packed panels at the aligned end covers to form an adjustable joint between the packed panels.

5. An adjustable joint for packed panels forming a housing for a thermal structure, comprising:

first and second cold pressure casings for housing the thermal structure;



an insulating layer provided on each cold pressure casing and extending beyond at least one edge of each cold pressure casing;

a liner plate seated on each insulating layer;

means for attaching each liner plate to its associated cold pressure casing to form a first and a second packed panel;

an end cover movably mounted to the liner plates on at least one end of each packed panel, each end cover extending from its associated liner plate and bent over its associated insulating layer towards the cold pressure casing at an angle and extending beyond an edge of its associated cold pressure casing; and

a weld securing the cold pressure casings of the first and second panels to each other when the packed panels are positioned adjacent to each other, each packed panel positioned such that the end cover of the first packed panel contacts and compresses against the end cover of the second packed panel, the welds at the cold pressure casings securing the packed panels to each other.

5,386,677

GOODS ARRANGEMENT METHOD AND APPARATUS

Manabu Kobuki; Teruaki Miyamoto, and Kenshi Watari, all of Kasuya, Japan, assignors to Seibu Electric & Machinery Co., Ltd.; Japan Tobacco Inc. and JT Engineering Inc., Japan

Filed Apr. 22, 1993, Ser. No. 39,300

Claims priority, application Japan, Aug. 23, 1991, 3-237085; Aug. 23, 1991, 3-237086

Int. Cl.[6] B65B *5/10, 35/24, 69/00;* **B65G** *1/08*

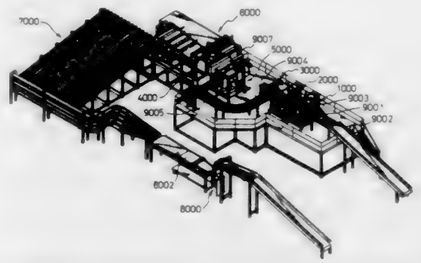
U.S. Cl. 53—251 **14 Claims**

1. A goods arrangement system, comprising:

a goods takeout apparatus for taking out a plurality of goods from a container;

a goods storage arrangement apparatus capable of storing the taken-out goods temporarily and discharging a specified number of the goods simultaneously, said goods storage arrangement apparatus including a gradient storage shelf having at least one inlet and at least one outlet;

a goods feeder for feeding the goods taken out by said goods takeout apparatus to the inlet of said gradient storage shelf;



a goods input apparatus for putting the goods, which have been arranged and discharged by said goods storage arrangement apparatus, in an arrangement container; and

at least one arrangement conveyor located between said outlet of said gradient storage shelf and said goods input apparatus.

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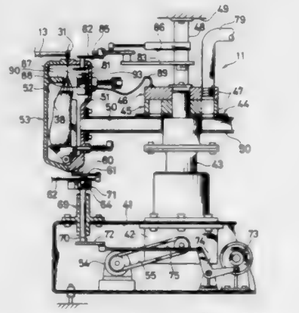
METHOD AND APPARATUS FOR VACUUM PACKAGING

Eitaro Kujubu, Mihara, Japan, assignor to Furukawa Mfg. Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1993, Ser. No. 89,855

Int. Cl.[6] B65B *31/02*

U.S. Cl. 53—434 **2 Claims**



1. A vacuum packaging method for a bag having an upper opening with a pair of edges comprising the steps of:

suspending the bag by clamping each of said edges from a clamper and intermittently transferring the suspended bag and clamper along a first endless track;

filling said bag with an article while the bag is being intermittently transferred along said first endless track;

intermittently transferring a pressure chamber along a second endless track positioned below said first endless track and having a point overlapping with said first endless track, said pressure chamber comprising a chamber body having a vertical open side and a cover plate for opening and closing said open side by turning about a vertical axis on one edge of said open side;

opening the cover plate from the chamber body on the second endless track at a position before said point where the first endless track and the second endless track overlap each other;

closing the cover plate after receiving the bag immediately before release thereof from the clamper into the chamber body at said point where the first endless track and the second endless track overlap each other and positioning the bag in said open side of said chamber body;

holding the bag between an upper edge of the chamber body and an upper edge of the cover plate at a position lower than the clamping position by the clamper and suspending the bag inside the pressure chamber when the cover plate is closed;

releasing the hold of the bag by the clamper and transferring the bag onto the second endless track; and

forming a notch at an upper end portion of the bag in said pressure chamber under transfer on said second endless track, exhausting the air in the bag through the notch by depressurizing the inside of the pressure chamber, and sealing the bag at a position lower than said notch.

5,386,679

METHOD AND DEVICE FOR FEEDING A WRAPPING MACHINE WITH PORTIONS OF WRAPPING MATERIAL

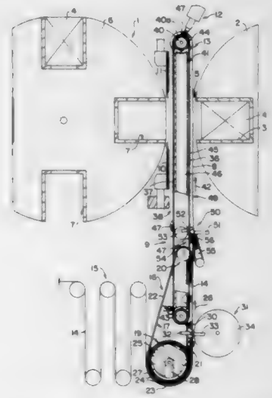
Silvano Boriani, and Alessandro Minarelli, both of Bologna, Italy, assignors to G. D. Societa' Azioni, Bologna, Italy

Filed Dec. 2, 1992, Ser. No. 985,179

Claims priority, application Italy, Dec. 3, 1991, B091 A 000452

Int. Cl.[6] B65B *11/00, 41/00*

U.S. Cl. 53—461 **24 Claims**



1. A method for feeding portions (**8**) of wrapping material to a transfer station (**5**), wherein said transfer station (**5**) defines a position between a supply pocket (**3**) and a wrapping seat (**7**) in a wrapping machine (**1**), said method comprising the steps of:

bringing said portions (**8**) of wrapping material into engagement with a gripping means (**47**) integral with and extending from a looped conveying means (**38**);

gripping said portions (**8**) of wrapping material with said gripping means (**47**); and

transporting said portions (**8**) of wrapping material, via said looped conveying means (**38**), along a transportation surface (**49**) and through said transfer station (**5**), such that, in use, each said portion (**8**) of wrapping material will interfere with a product (**4**) that is movable from said supply pocket (**3**) to said wrapping seat (**7**) through said transfer station (**5**) in a direction substantially perpendicular to said transportation surface (**49**).

5,386,680

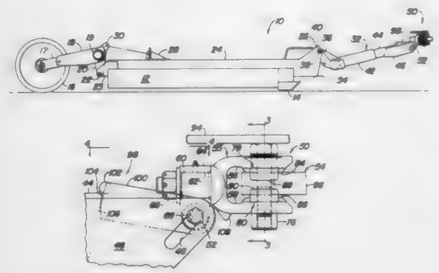
CLEVIS ASSEMBLY FOR TOWED IMPLEMENT

Henry Friesen, Niagara Falls, Canada, assignor to Deere & Company, Moline, Ill.

Filed Jun. 14, 1993, Ser. No. 75,422

Int. Cl.[6] A01D *34/07*

U.S. Cl. 56—14.9 **14 Claims**



1. A clevis assembly, comprising: a clevis having first and second parallel legs that are spaced apart for receiving a tractor drawbar therebetween; said legs each being provided with a hitch pin hole with the holes being axially aligned with each other; a first jaw member including a interiorly threaded bushing portion axially shiftably received in the hitch pin hole in the first clevis leg and having a clamping surface facing the second clevis leg; and a hitch pin extending through the hitch pin hole in the second clevis leg and including a head at one end and an opposite threaded end received in the threaded bushing portion so that by turning the hitch pin in a direction for advancing its threads into the bushing portion the jaw member together with its clamping surface will be moved toward the first leg of the clevis, whereby the clamping surface of said first jaw member is adapted for being drawn against a drawbar disposed between the clamping surface and said first clevis leg and having a coupling hole aligned with the holes in the clevis legs and receiving said hitch pin.

5,386,681

GARDENING TOOL FOR REMOVING WEEDS

Roger Trahan, and Denise Gazaille, both of 924 route 116, Acton Vale, Quebec, Canada J0H 1A0

Filed Sep. 7, 1993, Ser. No. 116,995

Int. Cl.[6] A01C *11/00*

U.S. Cl. 56—239 **17 Claims**

1. A tool for use to remove weeds from a lawn or turf, said tool comprising, in combination:

a) a rectangular frame having an upper rod-like member, a lower rod-like member extending parallel to the upper member and a pair of parallel, spaced-apart lateral rod-like members joining said upper and lower members, said rectangular frame being of such a dimension that its upper member defines a handle and its lower member is wide enough to give room to the foot of an operator and thus to define a footstep, the lateral members of the frame being spaced apart at such a distance as to give room to the knee of the operator whose foot is on the footstep;

b) a tapered extraction tube externally secured to one of the lateral members of the frame adjacent the lower footstep defining member for use to extract plugs of soil and earth in which are embedded the weeds to be removed, said extraction tube extending in a direction substantially parallel to the lateral member to which it is secured and having an upper end of wider diameter and a lower end of narrower diameter projecting away from said lower member, said lower end having a piercing and cutting edge; and

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c) a basket for collecting the plugs of earth or soil extracted with the extraction tube from the lawn or turf, said basket having a width substantially identical to the distance between the lateral members and comprising:

first attachment means to removably attach the basket to the frame adjacent the upper end of the extraction tube in such a position as to receive and collect the plugs that



are pushed in the extraction tube and fall out of the upper end of said tube when other plugs are being extracted; and

second attachment means to removably attach the basket to the frame between the lateral members of the same in such a position as to occupy a minimum of space when the tool is not in use.

5,386,682

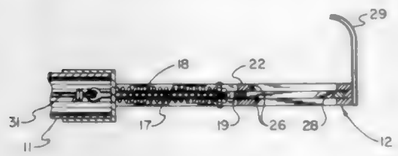
FRUIT PICKER APPARATUS

Victor W. Rodman, P.O. Box 620114, Orangevale, Calif. 95662

Filed Jan. 24, 1994, Ser. No. 185,258

Int. Cl.[6] A01D *46/24*

U.S. Cl. 56—338 **6 Claims**



1. A fruit picker apparatus comprising:

an elongate support shaft including an outermost end and having a first lug fixedly and orthogonally mounted to the support shaft;

a cutter frame mounted to the outermost end, the cutter frame being longitudinally aligned relative to the support shaft, the cutter frame including spaced parallel tracks, the cutter frame further having a first opening directed therethrough and a second opening directed therethrough, with the first opening and the second opening being longitudinally aligned through the cutter frame, the second opening having first and second ends;

a fixed cutter pair mounted at said first end of said second opening;

a slide plate slidably directed along the spaced parallel tracks, the slide plate having a second lug fixedly and orthogonally mounted to the slide plate within the first opening, the slide plate having a slide plate cutter in facing relationship relative to the fixed cutter pair;

a slide rod mounted to the second lug and slidably directed through the first lug;

a return spring captured between the first lug and the second lug, the return spring being concentrically positioned about the slide rod;

a pull cable having a cable first end secured to the slide rod and a cable second end spaced from the cable first end;

a lever axle directed into the support shaft;

an actuator lever pivotally mounted about the lever axle, with the cable second end secured to the actuator lever, whereupon pivoting of the actuator lever effects tensioning of the pull cable and displacement of the slide plate to direct the slide plate from a first position spacing the first lug and the second lug apart to a second position directing the first lug and the second lug together, whereupon displacement of the slide plate to the second position directs the slide plate cutter into respective cooperation with the fixed cutter pair.

5,386,683

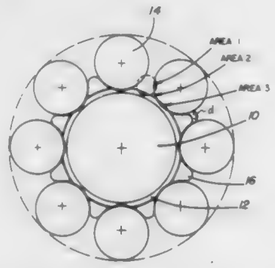
METHOD FOR MAKING A WIRE ROPE HAVING A PLASTIC JACKETED CORE WITH WORMINGS

Joe Misrachi, Côte St. Luc, Canada, assignor to Wire Rope Industries Limited, Pointe-Claire, Canada

Continuation-in-part of Ser. No. 873,190, Apr. 24, 1992, abandoned. This application Nov. 23, 1993, Ser. No. 156,042

Int. Cl.[6] D02G *3/36*; **D07B** *1/06*

U.S. Cl. 57—003 **8 Claims**



1. A method for making a wire rope comprising a core; a plastic jacket placed over the core; a plurality of outer strands laid on the circumference of said jacketed core; and a plurality of substantially round wormings, the method comprising the steps of:

i) extruding the plastic jacket over the core;

ii) simultaneously laying on the circumference of the jacketed core a plurality of loose and substantially round wormings, and a plurality of outer strands, in such a manner that the wormings are compressed by the outer strands to substantially fill the voids comprised between two adjacent outer strands and the core.

5,386,684

DATA EXCHANGE COORDINATING APPARATUS FOR A TEXTILE MACHINE

Karsten Simon, and Norbert Coenen, both of Moenchengladbach, Germany, assignors to W. Schlafhorst & Co., Moenchengladbach, Germany

Continuation of Ser. No. 880,298, May 5, 1992, abandoned, which is a continuation of Ser. No. 771,802, Oct. 7, 1991, abandoned, which is a continuation of Ser. No. 448,682, Dec. 11, 1989, abandoned. This application Dec. 1, 1992, Ser. No. 984,277

Claims priority, application Germany, Dec. 9, 1988, 3841464

Int. Cl.[6] D01H *9/10, 7/86*

U.S. Cl. 57—264 **10 Claims**

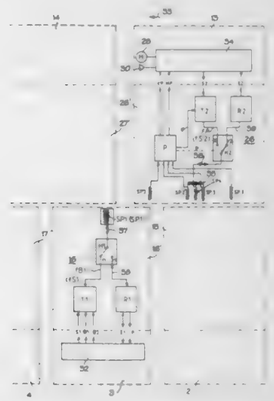
1. In a textile machine of the type having a plurality of work stations for individually handling a textile material and at least one traveling service unit for servicing the work stations, the

work stations having operating control means for controlling the operations of the work stations and the at least one traveling service unit having drive means for driving the service unit to and between the work stations along a travel path and control means for controlling the operation of the traveling service unit including means for controlling the drive means to effect positioning of the service unit at a service position at a respective work station for servicing of the work station by the service unit, a data exchange apparatus for effecting the exchange of data between the traveling service unit and a work station, comprising:

antenna means disposed on a selected one of the traveling service unit and a work station for the bi-directional exchange of data signals between the traveling service unit and the work station;

a pair of conductor means each for producing voltage in response to signals received from said antenna means, said conductor means being disposed on the other of the traveling service unit and the work station and being spaced from one another in generally linear alignment relative to the longitudinal extent of travel path of the traveling service unit;

voltage evaluating means communicated with said conductor means and the control means of the traveling service unit for evaluating the voltage produced by said conductor means;



work station signal means mounted to the work station and operatively connected to the operating control means of the work station for selectively transmitting signals to the traveling service unit from the operating control means using a selected one of said antenna means and said conductor means for receiving and relaying incoming signals from the traveling service unit to the operating control means; and

service unit signal means mounted to the traveling service unit and operatively connected to the control means of the traveling service unit for selectively transmitting signals from the traveling service unit to the work station and for receiving signals from the work station operating control means, said work station signal means and said service unit signal means each being spaced a predetermined distance from one of said pair of conductor means and said antenna means associated with the respective work station and traveling service unit, said work station signal means and said service unit signal means each being operable to transmit and receive signals in wireless manner when they are positioned in operative alignment with one another within a predetermined spacing along the travel path of the traveling service unit,

said antenna means, said pair of conductor means and said voltage evaluating means cooperating together to effect positioning of said work station signal means and said service unit signal means in operative alignment with one another with the voltage produced by each conductor means corresponding to the spacing between said antenna means and the respective conductor means such that the voltage produced correspondingly increases or decreases as the spacing between said antenna means and the respective conductor means increases or decreases and said conductor means each being operable to produce a characteristic voltage in correspondence with the alignment of said work station signal means and said service unit signal means in an operative alignment with one another and said voltage evaluating means being operable to signal the traveling service unit control means in response to a determination that an evaluated voltage corresponds to said characteristic voltage associated with each conductor means, each said characteristic voltage being representative of the operative alignment of said work station signal means and said service unit signal means, whereby the control means of the traveling service unit controls the drive means of the service unit to effect positioning of said work station signal means and said service unit signal means in operative alignment with one another for the exchange of data between the work station and the traveling service unit relating to the servicing requirements of the work station and the servicing operations of the service unit.

5,386,685

METHOD AND APPARATUS FOR A COMBINED CYCLE POWER PLANT

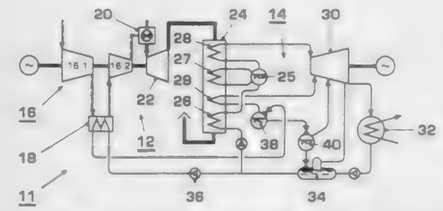
Hans U. Frutschi, Riniken, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Nov. 5, 1993, Ser. No. 147,531

Claims priority, application Germany, Nov. 7, 1992, 4237665

Int. Cl.[6] F02C *6/18*

U.S. Cl. 60—39.02 **9 Claims**



1. A method for operating a combined gas turbine and steam turbine installation, comprising the steps of:

compressing air for the gas turbine in at least two stages;

cooling compressed air from a first compressor stage prior to further compression with water in a cooling unit;

evaporating to steam at least part of the water heated by the compressed air in at least a first stage;

heating further the steam from the first stage in a waste heat boiler;

supplying the further heated steam to the steam turbine;

condensing exhaust steam from a steam turbine;

collecting the condensed steam in a combined feed water tank and evaporation unit;

directing heated water not evaporated to steam to the feed water tank and evaporation unit; and,

supplying water from the feed water tank and evaporation unit to the compressor cooling unit.

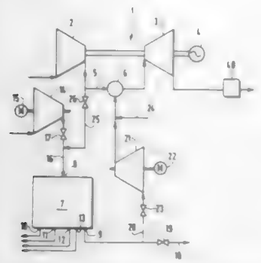
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5,386,686

PROCESS FOR THE OPERATION OF A GAS TURBINE GROUP AND THE PRODUCTION OF AT LEAST ONE AIR GAS

Denis Chrètien, Saint Mandé, France; Jean-Louis Girault, Liege, Belgium, and Bernard Darredeau, Sartrouville, France, assignors to l'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Continuation of Ser. No. 49,457, Apr. 16, 1993, abandoned. This application Jan. 15, 1994, Ser. No. 261,216
Claims priority, application France, Apr. 29, 1992, 92 05281
Int. Cl.[6] F02C *6/00*
U.S. Cl. 60—39.02 13 Claims



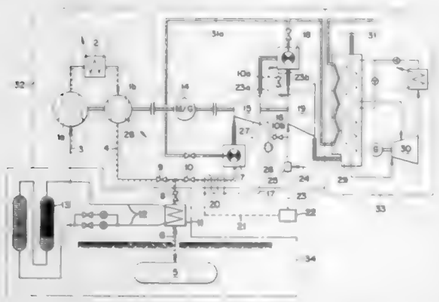
1. A method of operating a gas turbine group comprising at least a first air compressor and at least one gas turbine employing combustion gases produced by a combustor burning fuel with a selected mixture of gas components from air, the gas turbine group coupled operationally to at least one air separation unit producing at least one of said gas components from air, comprising adjusting the composition of the selected mixture in dependence of at least the temperature of ambient air of the gas turbine group so as to cause the gas turbine to operate around a design point.

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METHOD OF OPERATING A GAS TURBINE GROUP

Hans U. Frutschi, Riniken, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Continuation of Ser. No. 36,270, Mar. 24, 1993, abandoned. This application Mar. 10, 1994, Ser. No. 208,184
Claims priority, application Germany, Apr. 21, 1992, 4213023
Int. Cl.[6] F02C *7/16*
U.S. Cl. 60—39.04 14 Claims



1. A method of operating a gas turbine group, having at least one compressor, at least a high pressure gas turbine, a low pressure gas turbine and at least one electrical machine, comprising the steps of:

operating a first heat generator upstream of the high pressure gas turbine;

operating a second heat generator downstream of the high pressure gas turbine;

extracting a partial mass flow from the high-pressure turbine;

cooling this partial mass flow by a cooler medium; and,

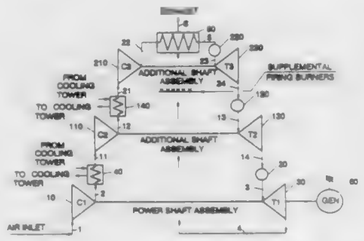
passing the cooled partial mass flow through the structures of at least one of the second heat generator and a low pressure turbine as a cooling medium.

5,386,688

METHOD OF GENERATING POWER WITH HIGH EFFICIENCY MULTI-SHAFT REHEAT TURBINE WITH INTERCCOOLING AND RECUPERATION

Michael Nakhamkin, Mountainside, N.J., assignor to Cascaded Advanced Turbine Limited Partnership, Mountainside, N.J.

Continuation-in-part of Ser. No. 52,948, Apr. 23, 1993, Pat. No. 5,347,806. This application May 12, 1994, Ser. No. 242,081
Int. Cl.[6] F02C *3/04*
U.S. Cl. 60—39.04 14 Claims



1. A method of efficiently providing power with an electric power generating system, the generating system including a generator, a single power shaft assembly having a compressor, an expansion turbine, a combustor feeding said expansion turbine, and structure for coupling said expansion turbine to drive said compressor and the electric generator, the method including the steps of:

providing at least one additional shaft assembly including at least one combination of a compressor and an intercooler feeding cooled air to said compressor thereof, at least one combination of an expansion turbine and a combustor feeding said expansion turbine thereof, and means for coupling at least one expansion turbine of said at least one additional shaft assembly to drive at least one compressor of said at least one additional shaft assembly;

providing a heat recuperator;

connecting said single power shaft assembly, said at least one additional shaft assembly, and said recuperator so as to define a thermal cycle with an air and gas path that passes through the compressor of said single power shaft assembly, through the at least one intercooler and compressor combination of said at least one additional shaft assembly, through the heat recuperator, through the at least one combustor and expansion turbine combination of said at least one additional shaft assembly, through the combustor and expansion turbine of said single power shaft assembly, and through the recuperator and to an exhaust;

ensuring that a total compression pressure ratio of all compressors of the at least one additional shaft assembly is greater than a total expansion pressure ratio of all expansion turbines of the at least one additional shaft assembly; and

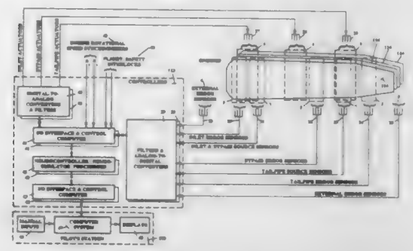
ensuring that said compressor of the single power shaft assembly has a compressor pressure ratio lower than an expansion pressure ratio of the expansion turbine of said single power shaft assembly, thereby pressure unloading said compressor of said single power shaft assembly so that said expansion turbine of said single power shaft assembly supplies more of its power to the electric generator.

5,386,689

ACTIVE GAS TURBINE (JET) ENGINE NOISE SUPPRESSION

Daniel J. Bozich, San Diego, Calif., and Robert Wagenfeld, Westport, Conn., assignors to Noises Off, Inc., White Plains, N.Y.

Filed Oct. 13, 1992, Ser. No. 961,612
Int. Cl.[6] F02G *1/00*; A61F *11/06*; H04R *3/02*
U.S. Cl. 60—39.33 14 Claims



1. A system for reducing the acoustic levels of internal and external sound fields generated by gas turbine engines of a jet aircraft having an aircraft fuselage, wings, nacelles, tail, and stabilizer structures, said system comprising

a plurality of actuator means to generate sound,

a plurality of sensor means to measure said acoustic levels, said sensor means comprising microphone means located in and around the engines, and on a plurality of aircraft structures selected from among the aircraft fuselage, wings, nacelles, tail, and stabilizer structures,

one or more controller means to control said actuators to generate sound in order to effect the reduction of the internal and external sound field as measured by the plurality of sensors

wherein said actuator means comprises an air modulator-based acoustic source that receives a flow of compressed air derived from compression stages of one or more of said engines.

5,386,690

CATALYTIC SYSTEM

Eugene Shustorovich, Pittsford, N.Y.; Veniamin Kalner, Moscow, U.S.S.R.; Konstantin Solntsev, Moscow, U.S.S.R.; Nikolai Moiseev, Moscow, U.S.S.R.; Yuri Buslayev, Moscow, U.S.S.R.; Richard Montano, Vienna, Va., and Aleksandr Bragin, Moscow, U.S.S.R., assignors to Blue Planet Technologies Co., L.P., New York, N.Y.

Continuation of Ser. No. 841,357, Feb. 25, 1992, abandoned. This application Sep. 8, 1993, Ser. No. 118,835
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—274 4 Claims

1. A method for converting emissions from a combustion chamber comprising:

(a) providing (i) a source of three-way metal catalysts containing one or more metals selected from the group consisting of Group VIIA metals and Group VIIIA metals, (ii) a combustion system, and (iii) a catalyst collector;

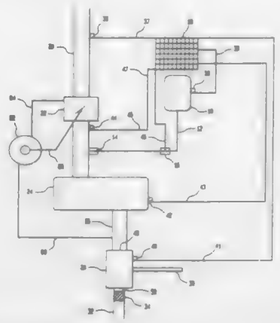
(b) monitoring a plurality of system conditions selected from the group consisting of the air intake temperature of the combustion system, the catalyst source temperature, the catalyst collector temperature, and the engine speed;

(c) in response to the monitored system conditions, adding the metal catalysts to the combustion system upstream of the combustion chamber at a controlled rate and amount;

(d) transporting the metal catalysts to the catalyst collector located downstream of the combustion chamber;

(e) depositing the metal catalysts by adsorption onto a surface in the catalyst collector; and

(f) converting emissions from the combustion chamber by contacting the emissions and the deposited metal catalysts in the collector such that three-way catalytic reactions are carried out in the collector to oxidize carbon monoxide



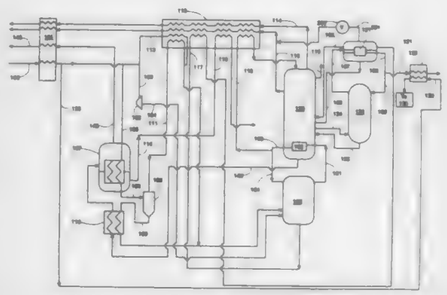
and unburned hydrocarbons and to reduce nitrogen oxides.

5,386,691

CRYOGENIC AIR SEPARATION SYSTEM WITH KETTLE VAPOR BYPASS

Dante P. Bonaquist, Grand Island; Robert A. Beddome, Tonawanda, and Michael J. Lockett, Grand Island, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jan. 12, 1994, Ser. No. 181,150
Int. Cl.[6] F25J *3/02*
U.S. Cl. 62—25 6 Claims



1. A method for the separation of feed air by cryogenic rectification comprising:

(A) condensing feed air and introducing the liquefied feed air into a first column operating at a pressure within the range of from 60 to 200 psia;

(B) separating feed air by cryogenic rectification within said first column into nitrogen-enriched fluid and oxygen-enriched liquid, and passing nitrogen-enriched fluid into a second column operating at a pressure less than that of said first column;

(C) partially vaporizing oxygen-enriched liquid to produce oxygen-enriched vapor and remaining oxygen-enriched liquid, and passing remaining oxygen-enriched liquid into the second column;

(D) separating the fluids passed into the second column by cryogenic rectification into nitrogen-rich vapor and oxygen-rich liquid;

(E) vaporizing oxygen-rich liquid by indirect heat exchange with feed air to carry out the condensation of step (A);

(F) recovering vapor resulting from the heat exchange of step (E) as product oxygen gas; and

(G) removing at least some of the oxygen-enriched vapor

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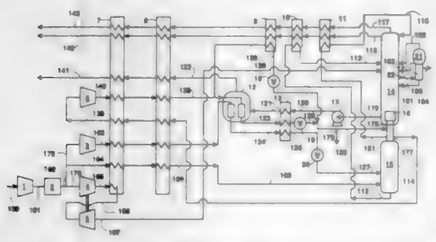
produced as a result of the partial vaporization of step (C) without passing it into the second column.

5,386,692

CRYOGENIC RECTIFICATION SYSTEM WITH HYBRID PRODUCT BOILER

Craig S. Laforce, Amherst, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Feb. 8, 1994, Ser. No. 193,584
Int. Cl.[6] F25J *3/02*
U.S. Cl. 62—25 7 Claims



1. A method for producing oxygen gas by the cryogenic rectification of feed air using a column system comprising a first column and a second column, said method comprising:

(A) transition-cooling feed air and passing resulting feed air into the first column operating at a pressure within the range of from 60 to 450 psia;

(B) separating feed air in the first column by cryogenic rectification into nitrogen-enriched vapor and oxygen-enriched liquid;

(C) passing oxygen-enriched liquid into the second column operating at a pressure less than that of the first column.

(D) transition-cooling nitrogen-enriched vapor and passing at least some of the resulting nitrogen-enriched fluid into the top of the first column;

(E) separating the fluids passed into the second column by cryogenic rectification into nitrogen-rich vapor and oxygen-rich liquid;

(F) increasing the pressure of the oxygen-rich liquid and thereafter transition-warming pressurized oxygen-rich liquid by indirect heat exchange with feed air and with nitrogen-enriched vapor to carry out the transition-cooling of steps (A) and (D) to produce oxygen gas; and

(G) recovering oxygen gas as product.

5,386,693

ENGINE AIR/FUEL CONTROL SYSTEM WITH CATALYTIC CONVERTER MONITORING

Daniel V. Orzel, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 27, 1993, Ser. No. 127,148
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—274 10 Claims

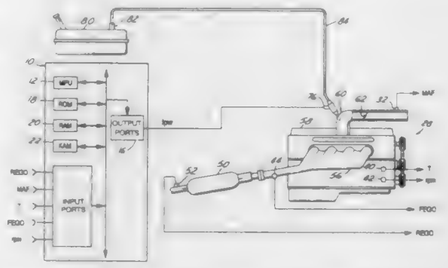
1. A method far controlling engine air/fuel ratio and concurrently monitoring efficiency of a catalytic converter positioned in the engine exhaust, comprising the steps of:

integrating an output of an exhaust gas oxygen sensor positioned upstream of the catalytic converter to generate a feedback variable;

controlling fuel delivery to the engine in response to at least said feedback variable;

generating a first monitoring ratio related to a ratio of frequency of transitions in said feedback variable to frequency in transitions of an output from an exhaust gas oxygen sensor positioned downstream of the catalytic converter during a test period;

generating a second monitoring ratio related to a ratio of amplitude of said feedback variable to amplitude of said downstream exhaust gas oxygen sensor output during said test period; and



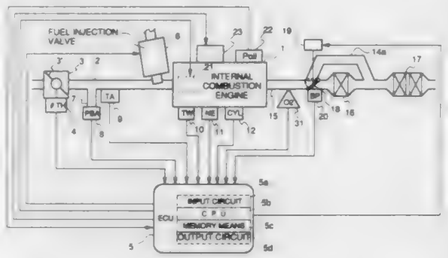
indicating degradation in efficiency of the converter when at least both first monitoring ratio and said second monitoring ratio are beyond preselected values during said test period.

5,386,694

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Ken Ogawa; Yasunori Ehara, and Kei Machida, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1993, Ser. No. 110,776
Claims priority, application Japan, Aug. 24, 1992, 4-247371; Aug. 26, 1992, 4-250665
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—276 7 Claims



1. A control system for controlling operation of an internal combustion engine including an exhaust passage, a first catalytic converter arranged in said exhaust passage, a second catalytic converter arranged in said exhaust passage at a location downstream of said first catalytic converter, a bypass passage bypassing said first catalytic converter, and exhaust mode-changeover means for performing changeover of an exhaust mode between a first exhaust mode in which exhaust gases are guided through said first catalytic converter and a second exhaust mode in which exhaust gases are guided through said bypass passage, the control system comprising:

exhaust mode-detecting means for detecting which of said first and second exhaust modes is selected by said exhaust mode-changeover means; and

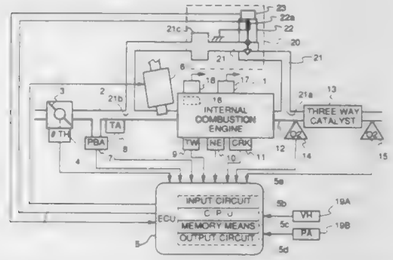
control mode-changeover means responsive to an output from said exhaust mode-detecting means for determining a control mode in which the operation of the engine is to be controlled by said control system.

5,386,695

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING CATALYTIC CONVERTER DETERIORATION-DETECTING FUNCTION

Yoichi Iwata; Toshihiko Sato; Yasunari Seki; Tsuyoshi Takizawa, all of Wako, and Takayoshi Nakayama, Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaihsa, Tokyo, Japan

Filed Jan. 21, 1994, Ser. No. 183,750
Claims priority, application Japan, Jan. 21, 1993, 5-026286
Int. Cl.[6] F01N *3/22*
U.S. Cl. 60—276 6 Claims



6. An air-fuel ratio control system for an internal combustion engine having an exhaust system, and catalytic converter means arranged in said exhaust system, comprising:

air-fuel ratio sensor means arranged in said exhaust system downstream of said catalytic converter means;

air-fuel ratio correction amount-calculating means for calculating an air-fuel ratio correction amount, based at least on an output from said air-fuel ratio sensor means;

catalytic converter deterioration-detecting means for detecting deterioration of said catalytic converter means, based on said output from said air-fuel ratio sensor means when the engine is in a predetermined operating condition; and

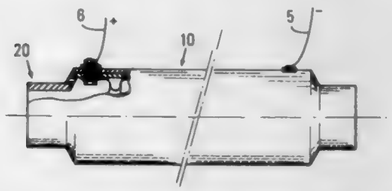
deterioration detection-inhibiting means for inhibiting operation of said catalytic converter deterioration-detecting means when said air-fuel ratio correction amount falls outside a predetermined range.

5,386,696

EXHAUST MANIFOLD WITH CATALYTIC WALL FOR INTERNAL-COMBUSTION ENGINES

Michel Prigent; Daniel Durand, both of Rueil Malmaison, and Jean Favennec, Elancourt, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Feb. 16, 1993, Ser. No. 18,151
Claims priority, application France, Feb. 14, 1992, 92 01801
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—300 10 Claims



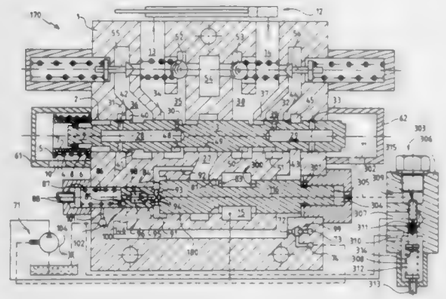
1. An exhaust pipe for the catalytic treatment of exhaust gases of an internal-combustion engine, which comprises a catalytic layer in direct contact with the exhaust gases; a metallic outer tube; and at least one inner tube arranged substantially coaxial to said outer tube and defining at least one space with the outer tube; an inner surface of said inner tube being coated with said catalytic layer and said inner tube having a corrugated profile defining parallel corrugations arranged transversely to a longitudinal axis of the inner tube and forming said inner surface; the space between the inner tube and the outer tube being an annular space containing a cylindrically shaped insulating element which insulates the inner tube thermally and electrically from said outer tube; and means for passing electrical current through the inner tube in order to provide preheating of the inner tube and the catalytic layer.

5,386,697

UNIT FOR CONTROLLING A PLURALITY OF HYDRAULIC ACTUATORS

Jean-Louis Claudinon, Andrezieux-Boutheon, and André Rousset, St Priest en Jarrez, both of France, assignors to Marrel, France

Filed Jul. 27, 1993, Ser. No. 98,225
Claims priority, application France, Aug. 4, 1992, 92 09658
Int. Cl.[6] F15B *13/08*
U.S. Cl. 60—420 10 Claims



1. A unit for controlling a plurality of hydraulic actuators supplied by a single flow-rate generator comprising a plurality of proportional directional valves, each hydraulic actuator of said plurality of hydraulic actuators being connected to said flow-rate generator through a corresponding one of said proportional directional valves, each of said proportional directional valves comprising:

a controlled spool, the position of said controlled spool determining a cross section of a first throttle;

a compensating spool for regulating a pressure difference between upstream and downstream of said first throttle by producing upstream, a second throttle with an appropriate cross section; and

means for actuating said compensating spool, in order to cause said compensating spool to automatically adopt a position in which said compensating spool produces said second throttle with an appropriate cross section, in response to several pressures acting respectively in a direction of opening and in a direction of closing; and

said unit further comprising at least one auxiliary valve fed by said flow-rate generator and producing a pressure which is normally equal to a regulation pressure increased by a constant, and in each of said proportional directional valves, said means for actuating said compensating spool being forced in the direction of opening by the pressure downstream of said first throttle and by the pressure produced by said at least one auxiliary valve and in the direction of closing by the pressure upstream of said first throttle, by said regulation pressure, and by a substantially constant force.

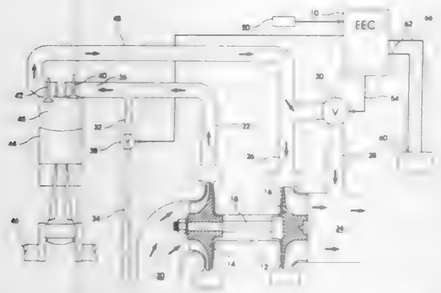
VOL 1171 ISS 1 FE 7 1995 UMI

5,386,698

CONTROL SYSTEM AND METHOD FOR GOVERNING TURBOCHARGED INTERNAL COMBUSTION ENGINES

Mostafa M. Kamel, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 13, 1993, Ser. No. 166,204
Int. Cl.[6] F02D *23/00*
U.S. Cl. 60—603 **19 Claims**



1. A method for governing an internal combustion engine having a turbocharger, comprising the steps of;

monitoring the speed of said engine;

limiting exhaust gas flow through the turbocharger in response to an engine speed above a pre-programmed first predetermined engine RPM limit; and

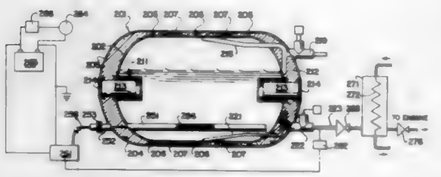
restricting fuel flow into the engine in response to an engine speed above a pre-programmed second predetermined engine RPM limit until the engine reaches a pre-programmed third predetermined engine RPM limit, wherein said second predetermined RPM limit is higher than said first predetermined RPM limit.

5,386,699

METHOD AND APPARATUS FOR LIQUIFYING NATURAL GAS FOR FUEL FOR VEHICLES AND FUEL TANK FOR USE THEREWITH

Albert H. Myers, Port Angeles, Wash.; Raymond E. Tate, Jr., Los Gatos, Calif.; Harold M. Lee, Los Gatos, Calif., and Dragos Sfinteanu, Los Gatos, Calif., assignors to American Gas & Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 60,269, May 12, 1993, Pat. No. 5,327,730. This application Mar. 17, 1994, Ser. No. 210,155
Int. Cl.[6] F25J *1/00*
U.S. Cl. 62—9 **6 Claims**



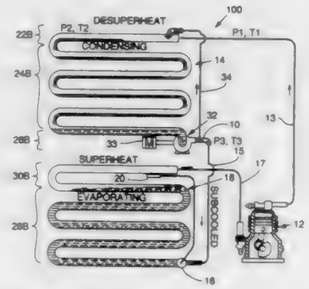
1. A tank for use on a vehicle driven by liquid natural gas, comprising an outer vessel, an inner vessel disposed within the outer vessel, support means disposed within the outer vessel and for supporting the inner vessel within the outer vessel so that the wall of the inner vessel is spaced apart from the wall of the outer vessel and to provide a space therebetween, means for evacuating the space between the outer vessel and the inner vessel, the inner vessel having a bottom wall, a heater well disposed in the inner vessel in close proximity to the bottom wall of the inner vessel and being surrounded by liquid natural gas, said heater well being accessible through the outer vessel, a removable heating element disposed in the heater well and means for supplying electrical energy to the heater element in the heating well to maintain a substantially constant vapor pressure in the inner vessel so that a vapor of natural gas can be supplied to the engine of the motor vehicle at a substantially constant pressure regardless of the requirements of the engine of the vehicle.

5,386,700

LIQUID PRESSURE AMPLIFICATION WITH SUPERHEAT SUPPRESSION

Robert E. Hyde, 18448 SE. Pine St., Portland, Oreg. 97233-4859

Division of Ser. No. 948,300, Sep. 21, 1992, Pat. No. 5,291,744, which is a division of Ser. No. 666,251, Mar. 8, 1991, Pat. No. 5,150,580. This application Mar. 7, 1994, Ser. No. 207,287
The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.
Int. Cl.[6] F25B *41/04*
U.S. Cl. 62—224 **12 Claims**



1. An air-conditioning or refrigeration system comprising: a compressor, a condenser, an expansion valve, an evaporator, and conduit means interconnecting the compressor, condenser, expansion valve and evaporator in series in a closed loop for circulating refrigerant therethrough, the conduit means including:

first conduit means coupling an outlet of the compressor to an inlet to the condenser to convey superheated vapor refrigerant from the compressor into the condenser at a first pressure and temperature;

a magnetic drive pump having an inlet coupled to an outlet of the condenser for receiving condensed liquid refrigerant at a second pressure less than said first pressure and boosting the second pressure of the condensed liquid refrigerant by a substantially constant increment of pressure within a predetermined range to discharge the condensed liquid refrigerant from an outlet of the pump at a third pressure greater than said second pressure;

second conduit means coupling the outlet of the pump to an inlet to the expansion valve to transmit a first portion of the condensed liquid refrigerant from outlet of the pump at said third pressure through the expansion valve into the evaporator to vaporize and effect cooling for air conditioning or refrigeration; and

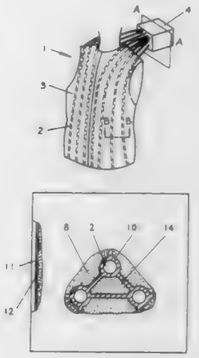
third conduit means coupling the outlet of the pump to the condenser to transmit a second portion of the condensed liquid refrigerant from an outlet of the pump into condenser together with superheated vapor refrigerant to vaporize therein and effect cooling of the superheated vapor refrigerant entering the condenser to a reduced temperature, thereby reducing said first pressure, the second and third conduit means being proportioned so that the second portion of refrigerant is sufficient to reduce the first temperature of the superheated vapor refrigerant to a reduced temperature close to a saturation temperature of the refrigerant.

5,386,701

HUMAN BODY COOLING SUIT WITH HEAT PIPE TRANSFER

Yiding Cao, 10900 SW. 104th St. #118, Miami, Fla. 33176

Filed Feb. 3, 1994, Ser. No. 191,215
Int. Cl.[6] F25D *23/12*
U.S. Cl. 62—259.3 **3 Claims**



1. A human body cooling suit said human body cooling suit includes a flexible heat pipe, said heat pipe having an evaporator section and a condenser section means to transfer heat from said evaporator section to said condenser section, said heat transfer means include placing said condenser section to a higher level than that of said evaporator section, means to adjust the operating temperature of said flexible heat pipe, said flexible heat pipe includes plastic smooth and corrugated tubes as the shell of said heat pipe, a phase-change material (PCM) module, means to facilitate heat exchange between said PCM module and said heat pipe condenser section, said means include disposal of said PCM module at a higher level than that of said heat pipe evaporator section, and arrangement of said heat pipe condenser section within said PCM module, and means to replace a thawed PCM in said PCM module with a frozen PCM, suit clothing materials, said clothing materials consisting of an outer cover and an inner lining, said outer cover is made of thermal insulating materials, means to shield off the heat from the environment to the human body, said outer cover and inner lining sandwich said heat pipe evaporator section, means to facilitate heat exchange between said inner lining and said heat pipe evaporator section, said means include air circulation in the space formed by said outer cover, said inner lining, and said heat pipe evaporator section wherein said PCM module is comprised of a container having a sleeve arranged within said container and said heat pipe condenser is arranged within said sleeve; thereby defining means to secure good thermal contact between said sleeve and said heat pipe condenser; means for easy removal of said heat pipe condenser from said sleeve; and means to adjust the thermal resistance between said sleeve and said heat pipe condenser.

5,386,702

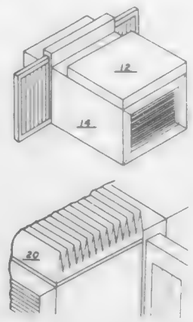
NOISE INHIBITING ARRANGEMENTS FOR ROOM AIR-CONDITIONERS

Bernard Wiesen, 15 Beach Rd., Great Neck, N.Y. 11023

Filed Jun. 10, 1993, Ser. No. 74,912
Int. Cl.[6] F24F *13/08*; E04B *1/84*
U.S. Cl. 62—262 **3 Claims**

1. Synthetic sponge to absorb the physical impact of rain drops and dripping water:

A method to absorb the physical impact of rain drops and dripping water comprising synthetic sponge joined with



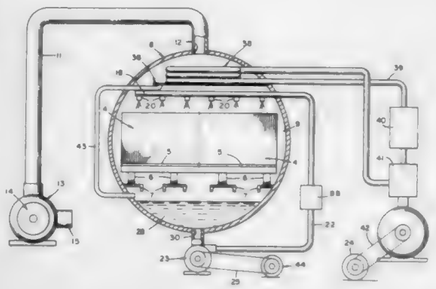
the upper surface of an air conditioning cabinet to inhibit the creation of the noise that would otherwise occur.

5,386,703

APPARATUS AND METHODS FOR VACUUM COOLING FRESH PRODUCE

Roger C. Later, 1427 Euclid St., Santa Monica, Calif. 90404, assignor to Roger Carson Later, Santa Monica, Calif.

Continuation-in-part of Ser. No. 845,892, Mar. 4, 1992. This application Apr. 14, 1993, Ser. No. 48,570
Int. Cl.[6] F25B *19/00*
U.S. Cl. 62—268 **16 Claims**



1. A produce cooler comprising:

a vacuum chamber including a support for produce in said chamber;

means for forming a partial vacuum in said chamber;

means in said chamber for discharging water onto said produce to minimize water infiltration onto said produce and to allow said water to flow downwardly over said produce;

means for cooling and condensing water vapor in said chamber;

means for collecting condensed water vapor and for preventing said condensed water vapor from flowing directly onto said produce;

means for subjecting said condensed water vapor to at least one member from the group consisting of ozone, peroxide and UV radiation to remove a majority of the biological contaminants from said condensed water vapor; and

means for releasing said partial vacuum within said chamber to minimize damage to said produce and to minimize water dispersion onto said produce during said releasing.

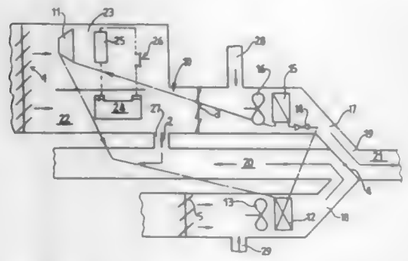
VOL 1171 ISS 1 FE 7 1995 UMI

5,386,704

APPARATUS FOR AIR CONDITIONING AN ELECTRIC VEHICLE

Olusegun Benedict, Les Ulis, France, assignor to Valeo Thermique Habitacle, Le Mesnil-Saint-Denis, France

Filed Apr. 13, 1993, Ser. No. 46,446
Claims priority, application France, Apr. 16, 1992, 92 04712
Int. Cl.[6] F25D *17/00*
U.S. Cl. 62—325 6 Claims



1. Temperature regulating apparatus for the cabin of a vehicle, comprising:
an air conditioning apparatus defining an air circuit having a first branch and a second branch, each said branch having a respective upstream end and downstream end;
two inlets for external air, associated, respectively, with the upstream ends of said first and second branches;
an air outlet duct for evacuating air to the outside of the vehicle and having an upstream end, and a cabin air inlet, the upstream ends of the evacuation duct and cabin air inlet being connected to the downstream ends of said first and second branches;
an upstream branch subdivided into two parallel ducts and interposed between the first branch and its associated air inlet, with components of the vehicle to be cooled being disposed in said upstream branch, said components including a power supply battery disposed in said first duct and a compressor disposed in said second duct;
an evaporator in the first branch;
a condenser in the second branch; and
a refrigerant fluid circuit including the evaporator and condenser, said refrigerant circuit arranged for flow of a refrigerant fluid in one direction in which the evaporator is followed by the condenser in the refrigerant circuit, so that said fluid can receive heat in the evaporator from an air stream in the first branch and yield heat in the condenser to an air stream in the second branch, wherein the apparatus further includes means for selectively bringing each of said first and second branches into communication with a corresponding one of the cabin air inlet and the air evacuation duct, whereby the airstream is selectively cooled by contact with the evaporator or heated by contact with the condenser before being delivered into the cabin.

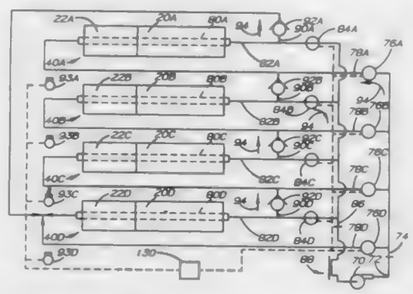
5,386,705

STAGED REGENERATIVE SORPTION HEAT PUMP

Jack A. Jones, Los Angeles, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Aug. 27, 1993, Ser. No. 113,611
Int. Cl.[6] F17C *11/00*
U.S. Cl. 62—480 34 Claims

1. A regenerative sorbent heat pump process for cooling and heating an interior space comprising:
(a) providing a working fluid;
(b) confining a sorbent for the working fluid in a plurality of compressor zones, the number of compressor zones being at least eight, at least four of the compressor zones being included in a first stage operating over a first pressure region, and at least four of the compressor zones being included in a second stage operating over a second pressure region which is different and higher than the first pressure region;
(c) introducing the working fluid vapor from an evaporation zone into at least one of the first stage compressor zones and sorbing the working fluid vapor on the sorbent therein at a predetermined first pressure P_L, and
desorbing the working fluid vapor from the sorbent in at least one of the second stage compressor zones and removing working fluid vapor therefrom at a predetermined second pressure P_H which is higher than P_L;
(d) desorbing the working fluid vapor from the sorbent in at least one of the first stage compressor zones at a predetermined third pressure P_M which is higher than P_L but lower than P_H, and
introducing the desorbed working fluid vapor therefrom into at least one of the second stage compressor zones and sorbing the working fluid vapor on the sorbent therein at a pressure of about P_M;
(e) minimizing the thermal capacitance differences between the first stage compression zones;
(f) minimizing the thermal capacitance differences between the second stage compression zones;
(g) condensing working fluid vapor removed from the second stage compressor zone at a pressure of about P_H and transferring heat from the working fluid to the environment when cooling an interior space, or to the interior space when heating the interior space, thereby forming a working fluid liquid;



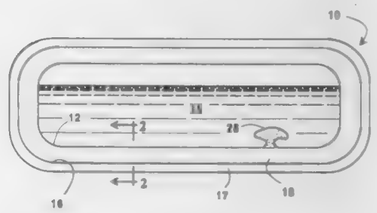
(h) expanding and evaporating the working fluid liquid and forming the working fluid vapor in the evaporation zone at a pressure of about P_L by transferring heat from the interior space when cooling the interior space, or from the environment when heating the interior space, to the evaporation zone thereby cooling or heating the interior space;
(i) circulating a heat transfer fluid in a closed loop which comprises a heat removal zone and the first stage and second stage compressor zones while preventing the heat transfer fluid from directly contacting the sorbent;
(j) transferring heat from the heat transfer fluid in the heat removal zone to the environment;
(k) adding heat from a heat source over a predetermined period of time to the first stage compressor zone which is desorbing the working fluid vapor at P_M;
(l) adding heat from a heat source over a predetermined period of time to the second stage compressor zone which is desorbing the working fluid vapor at P_H;
(m) transferring heat from the sorbent in the compressor zones which are sorbing working fluid vapor to the heat transfer fluid, and from the heat transfer fluid to the sorbent in the compressor zones which are desorbing working fluid vapor thereby regenerating heat;
(n) repeating the steps sequentially in each of the other first and second stage compressor zones;
(o) wherein the amount of sorbent in the first stage compression zones is M_1, the amount of sorbent in the second stage compression zones is M_2, and adjusting the ratio M_2/M_1 to a predetermined value which is approximately equal to $(C_B-C_D)/(C_F-C_H)$, wherein the adsorptive capacity of the sorbent for the working fluid at P_L and the lowest temperature in the first stage compression zones is C_B, the adsorptive capacity of the sorbent for the working fluid at P_M and the highest temperature in the first stage compression zones is C_D, the adsorptive capacity of the sorbent for the working fluid at P_M and the lowest temperature in the second stage compression zones is C_F, the adsorptive capacity of the sorbent for the working fluid at P_H and the highest temperature in the second stage compression zones is C_H; and
(p) maintaining the P_H/P_M ratio approximately equal to the P_M/P_L ratio.

5,386,706

LOW HEAT-LEAK, COHERENT-AEROGEL, CRYOGENIC SYSTEM

Victor E. Bergsten, East Amherst; John Notaro, West Seneca; Richard B. Mazzarella, Grand Island, and Christian F. Gottzmann, Clarence, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 10, 1993, Ser. No. 74,766
Int. Cl.[6] F17C *1/00*
U.S. Cl. 62—45.1 20 Claims



1. A low heat-leak cryogenic system comprising:
(a) a cryogenic fluid;
(b) a first lamina having an external side facing said cryogenic fluid and an internal side facing away from said cryogenic fluid;
(c) a second lamina spaced apart from said internal side of said first lamina, said second lamina having an internal side facing toward said first lamina and an external side facing away from said first lamina; and
(d) at least one block or layer of coherent aerogel having a density of about 20 kg/m^3 to about 100 kg/m^3 extending from said internal side of said first lamina to said internal side of said second lamina.

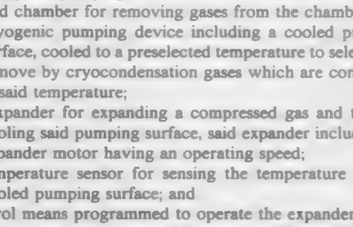
5,386,707

WITHDRAWAL OF CRYOGENIC HELIUM WITH LOW IMPURITY FROM A VESSEL

Thomas R. Schulte, and Robert E. Goelz, Jr., both of Grand Island, N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 31, 1992, Ser. No. 999,430
Int. Cl.[6] F17C *9/02*
U.S. Cl. 62—50.2 13 Claims

1. A method for withdrawing a quantity of helium fluid from a vessel for delivery to a user, said method comprising:
(a) providing a vessel containing cryogenic helium fluid;
(b) admitting near the top of the vessel from an external source helium pressurizing fluid having a concentration of at least one objectionable impurity greater than the limit desired in helium fluid withdrawn from the vessel, the helium pressurizing fluid from the external source being admitted to a pressure in the vessel not less than that at the user;
(c) opening a port near the bottom of the vessel and withdrawing helium fluid at a temperature not greater than the temperature at which the concentration of said at least one objectionable impurity equals the limit desired in said withdrawn helium fluid; and



(d) conveying said withdrawn helium fluid from said port to the user.

5,386,708

CRYOGENIC VACUUM PUMP WITH EXPANDER SPEED CONTROL

Huruli D. Kishorenath, San Jose; Johan E. de Rijke, Cupertino, and Mark O. Foreman, Stockton, all of Calif., assignors to Ebara Technologies Incorporated, Santa Clara, Calif.

Filed Sep. 2, 1993, Ser. No. 115,860
Int. Cl.[6] B01D *8/00*
U.S. Cl. 62—55.5 3 Claims

1. Apparatus with suppressed vibrations, for vacuum pumping one or more selected gaseous components of an enclosed chamber, comprising:
a cryogenic pumping device in fluid communication with said chamber for removing gases from the chamber, said cryogenic pumping device including a cooled pumping surface, cooled to a preselected temperature to selectively remove by cryocondensation gases which are condensed at said temperature;
an expander for expanding a compressed gas and thereby cooling said pumping surface, said expander including an expander motor having an operating speed;
a temperature sensor for sensing the temperature of said cooled pumping surface; and
control means programmed to operate the expander motor in an operational range of frequencies different from the natural resonance frequencies of said apparatus to suppress vibrations of such apparatus as compared to operation of said expander motor at said resonance frequencies, said control means also being responsive to the sensed temperature of said cooled first stage pumping surface for

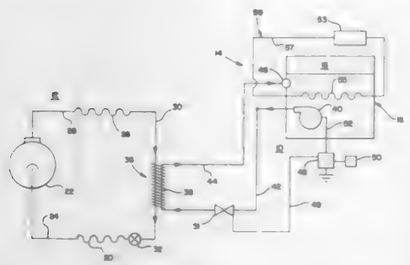
controlling the operating speed of said expander motor in said operational range of frequencies to produce said preselected temperature at said cooled pumping surface.

5,386,709

SUBCOOLING AND PROPORTIONAL CONTROL OF SUBCOOL.NG OF LIQUID REFRIGERANT CIRCUITS WITH THERMAL STORAGE OR LOW TEMPERATURE RESERVOIRS

David A. Aaron, Reisterstown, Md., assignor to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed Dec. 10, 1992, Ser. No. 988,547
Int. Cl.[6] F25B *7/00, 1/00*
U.S. Cl. 62—199 24 Claims



1. An assembly for subcooling liquid condensate of a refrigerant fluid in a refrigerant circuit to provide increased refrigerant-circuit thermal capacity and efficiency, said refrigerant circuit having at least one apparatus operable to refrigerate at least one of a material and volume, said assembly comprising:
thermal storage media, said storage media being one of a chilled fluid and a combination of chilled fluid and frozen material;
means for storing said storage media, said storing means having a housing,
said storage media in said housing,
said at least one refrigerant-operable apparatus having means for condensing said refrigerant fluid to a condensate,
said condensate having a first temperature downstream of said condensing means;
means for coupling;
means for heat exchanging for each said apparatus, each said heat exchange means coupled to said refrigerant circuit by said coupling means for communication of said downstream condensate at said first temperature through said heat exchange means and for return to said refrigerant circuit at a second temperature lower than said first temperature;
said thermal storing means coupled to said heat exchange means by said coupling means;
means for pumping said one of chilled fluid and said combination of chilled fluid and frozen material of said storage media, which storage media is at a third temperature less than said condensate first temperature,
said pumping means coupled between said means for thermal storing and said heat exchange means, and operable to communicate said one of said chilled fluid and, said chilled fluid and frozen material to said heat exchange means to reduce said refrigerant condensate temperature to said second and lower temperature in said heat exchange means,
said one of said chilled fluid and combination of chilled fluid and frozen material downstream of said pump and said heat exchange means communicated to said housing by said coupling means; and,
means for recharging said thermal storage means, said recharging means operable to reduce said media temperature below said first condensate temperature upstream of said heat exchanger.

5,386,710

FOOT JEWELRY

Alberta M. Moore, 21 Seminary Ave., Hopewell, N.J. 08525

Filed Sep. 25, 1992, Ser. No. 951,384
Int. Cl.[6] A44C *25/00*
U.S. Cl. 63—2 19 Claims



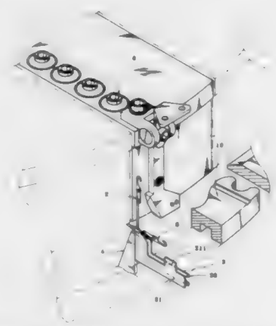
1. An article of foot jewelry comprising first attaching means for attaching said foot jewelry to a wearer's ankle; second attaching means for attaching said foot jewelry to a wearer's toe; third attaching means for attaching said first attaching means to said second attaching means; at least one decorative bead affixed to at least one of said attaching means by at least one strand of elastic yarn which passes through said at least one decorative bead; and cushioning means for providing a cushion between said at least one decorative bead and a wearer's foot, said cushioning means including a portion of said at least one strand of elastic yarn which extends alongside said at least one decorative bead, and said portion of said at least one strand of elastic yarn being looped to thereby enhance its cushioning effect.

5,386,711

DOUBLE KNIT MACHINE FOR KNITTING CONSTRUCTIVE FABRICS

Wan-Yih Chen, Taipei, Taiwan, Prov. of China, assignor to Pai Lung Machinery Mill Co., Ltd., Taipei, Taiwan, Prov. of China

Filed Oct. 27, 1993, Ser. No. 141,509
Int. Cl.[6] D04B *9/06, 15/06*
U.S. Cl. 66—19 1 Claim



1. A double knit machine of the type having a series of horizontal dial needles and a series of vertical cylinder needles alternatively reciprocated by a cam drive mechanism to knit a double-faced fabric, and further having a plurality of sinker

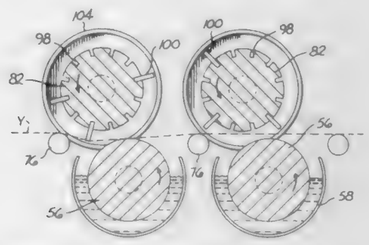
assemblies radially arranged in a horizontal plane, each sinker assembly comprising:
a) a fixed sinker affixed to the double knit machine and comprising a sinker rib extending from one end thereof having a fabric formation surface for guiding out the duly knitted fabric; and,
b) a presser sinker comprising:
i) a projecting head on one end thereof spaced from said sinker rib of said fixed sinker for pressing the duly knitted fabric during a raising stitch of the respective cylinder needle; and
ii) an upright guide strip inserted into the cam drive mechanism of the double knit machine, such that said presser sinker is reciprocated radially as the respective cylinder needle is reciprocated vertically, the projecting sinker head of said presser sinker being pressed on the duly knitted fabric against the sinker rib of the respective fixed sinker as the respective cylinder needle is extended out, and the projecting sinker head of said presser sinker is removed from the duly knitted fabric as the respective cylinder needle is received back.

5,386,712

YARN DYEING APPARATUS

Jack G. Haselwander, Chattanooga, Tenn., assignor to Manufacturing Designs & Solutions, Inc., Chattanooga, Tenn.

Continuation of Ser. No. 91,644, Jul. 14, 1993, Pat. No. 5,339,658. This application May 3, 1994, Ser. No. 237,448
Int. Cl.[6] D06B *1/14*
U.S. Cl. 68—203 4 Claims



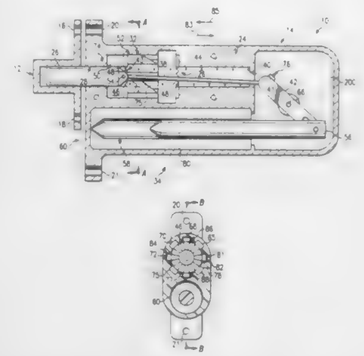
1. Apparatus for space dyeing yarns comprising yarn support means over which a plurality of yarn strands may be fed in a horizontal path in a feed direction from a first end to a second end of said apparatus, a plurality of dye applicator rolls spaced apart in said feed direction each having a peripheral surface, a dye pan containing a liquid dye corresponding to each roll means for rotatably mounting each roll about a respective axis of rotation with at least a portion of the peripheral surface in a respective dye pan and with the peripheral surface disposed relative to said support means for contacting yarn fed over said support means, yarn deflecting means for deflecting selected portions of said yarn strands from said horizontal path for forcibly engaging said selected portions with the peripheral surface of selected dye applicator rolls to transfer dye to said selected portions, said yarn deflector means comprising a pattern roll corresponding to each applicator roll, means for rotatably mounting each pattern roll for rotation about an axis of rotation parallel to and above and offset in the feed direction toward said first end relative to the axis of rotation of the corresponding applicator roll, drive means for rotating said dye applicator rolls and said pattern rolls at selected speeds, a plurality of elongated yarn deflecting members associated with each pattern roll, and mounting means for mounting said yarn deflecting members at selected spaced apart circumferential dispositions on respective pattern rolls.

5,386,713

REMOTE CONTROL CAR DEADBOLT LOCK

Bert Wilson, 400 Lake St., #209, Huntington Beach, Calif. 92648

Continuation of Ser. No. 667,600, Mar. 7, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 81,886
Int. Cl.[6] E05B *47/06*
U.S. Cl. 70—280 15 Claims



1. A car deadbolt lock for locking a car door, comprising:
a lock housing mountable within said car door and adjacent to a car door facing; and
a locking mechanism within said lock housing, said locking mechanism comprising,
a deadbolt mounted to reciprocate between a locked position and an unlocked position,
a solenoid,
a spring actuator,
a cam member, and
a select mechanism having a plurality of teeth and grooves,
wherein said spring actuator controls the unlocked and locked condition of the lock,
wherein said select mechanism causes said deadbolt and said cam member to rotate about a longitudinal axis and reciprocate between said locked and said unlocked positions, and
wherein when said deadbolt and said cam member move in response to an electrical signal, a toothed portion on said cam member engages said plurality of teeth of said select mechanism and a projection on said cam member engages one of said plurality of grooves of said select mechanism.

5,386,714

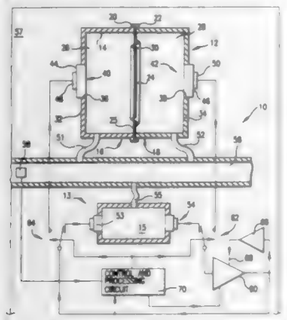
RESONANT CAVITY GAS DENSITY SENSOR

Andrew N. Dames, Milton, England, assignor to Schlumberger Industries Limited, London, United Kingdom

PCT No. PCT/GB91/02156, § 371 Date Jul. 22, 1993, § 102(e) Date Jul. 22, 1993, PCT Pub. No. WO92/11532, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 5, 1991, Ser. No. 75,576
Claims priority, application United Kingdom, Dec. 22, 1990, 9027989
Int. Cl.[6] G01N *29/02, 4/00;* G01L *9/08*
U.S. Cl. 73—24.05 28 Claims

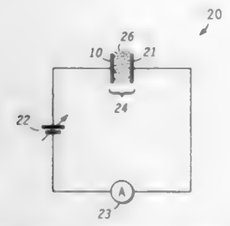
1. A sensor for use in determining the density of a gas, the sensor comprising:
a cavity arranged to receive the gas whose density is to be determined; and
dividing means dividing the cavity into two distinct chambers, the dividing means being at least partly movable within the cavity;

the sensor being characterised by:
excitation means for exciting the gas in the cavity into resonant vibration in a mode in which the dividing means vibrates with the gas;
pick-up means for sensing the frequency of said resonant vibration; and



means for producing a signal representative of the velocity of sound in the gas,
whereby the density of the gas may be determined from said frequency and said signal representative of the velocity of sound in the gas.

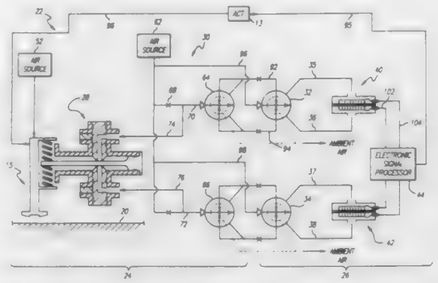
5,386,715
GAS VAPOR SENSOR
Keenan L. Evans; Young S. Chung, both of Tempe; William Glaunsinger, Chandler, and Ian W. Sorensen, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 6, 1993, Ser. No. 161,624
Int. Cl.[6] H01L *29/60;* G01N *27/00*
U.S. Cl. 73—31.05 9 Claims



1. A gas vapor sensor element comprising:
a substrate having a surface;
a gold-palladium alloy layer on the surface, the alloy layer having an as applied by volume palladium concentration of approximately 1 percent to 20 percent.

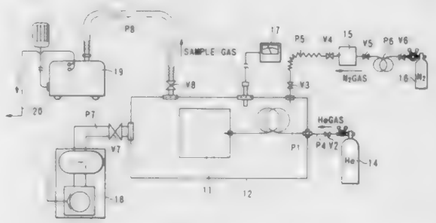
5,386,716
FLUIDIC PROXIMITY SENSOR AND RELATED PROCESS
John F. Thurston, Mesa; Ernest W. Cassaday, Apache Junction, and George W. Carrie, Scottsdale, all of Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.
Continuation-in-part of Ser. No. 144,936, Oct. 28, 1993, abandoned. This application Jan. 26, 1994, Ser. No. 187,427
Int. Cl.[6] G01B *13/12*
U.S. Cl. 73—37.5 10 Claims

1. Proximity sensing apparatus, comprising in combination:
a sensor head having an air inlet and an air outlet;
pneumatic differential amplifier means for forming first and second air gaps; the amplifier means being operatively associated with the sensor head whereby movement of the sensor head relative to the amplifier means is accompanied by dimensional variation in the air gaps;



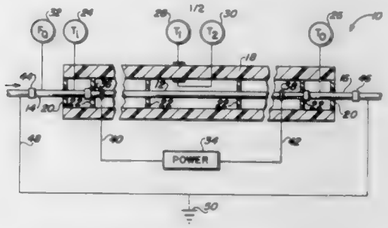
fluidic oscillator means in fluid communication with the amplifier means for outputting first and second fluidic pressure signals collectively indicative of the dimensional variation.

5,386,717
GAS LEAKAGE TESTING METHOD
Hiromitsu Toda, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan
Continuation-in-part of Ser. No. 830,835, Feb. 4, 1992, abandoned. This application Sep. 8, 1993, Ser. No. 118,011
Claims priority, application Japan, Feb. 8, 1991, 3-039350
Int. Cl.[6] G01M *3/20*
U.S. Cl. 73—40.7 5 Claims



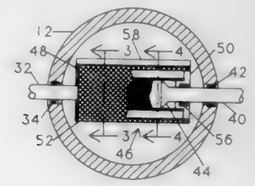
1. A method of testing gas leakage comprising the steps of:
storing a testing specimen in an air filled testing container;
evacuating the testing container of air to a predetermined low pressure, and then, purging said testing container with a substitute gas which does not contain helium, wherein an evacuating process and a purging process are repeatedly carried out a predetermined number of times, said predetermined number of times depending on said predetermined low pressure;
thereafter, detecting density of the helium gas in said testing container so as to obtain a background value representing a background noise for a detection of gas leakage;
introducing the helium gas into said testing specimen; and
detecting density of the helium gas in said testing container so as to determine whether or not the helium gas has leaked from said testing specimen on the basis of said background value.

5,386,718
METHOD FOR FLUID ANALYSIS
Arthur C. Proffitt, and William C. Barron, both of Cody, Wyo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Jun. 2, 1992, Ser. No. 892,298
Int. Cl.[6] G01N *25/20;* F24D *13/02*
U.S. Cl. 73—61.44 12 Claims



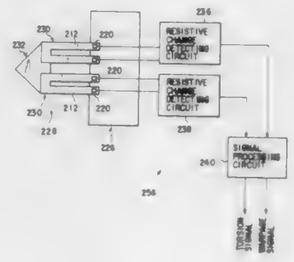
1. A method of determining the ratio of fluids in a fluid mixture consisting of two different fluids, comprising the steps of:
providing a fluid mixture comprised of two different fluids;
flowing the fluid mixture through a conduit insulated by a layer of insulation;
adding a measured amount of energy to the flowing fluid mixture to heat the same;
measuring the volumetric or mass flow rate of the fluid mixture directly with a flowmeter during the addition of energy to the fluid mixture;
determining the temperature differential of the fluid mixture within the conduit insulated by said layer of insulation which is caused by the addition of energy thereto;
measuring the temperature differential across the layer of insulation during said addition of energy;
determining the heat loss from the conduit to the surrounding environment from a known relationship between said heat loss and said measured temperature difference across the layer of insulation;
determining the specific heat of the fluid mixture from the thermodynamic relationship that the added heat is equal to the product of the flow rate and temperature differential of the fluid mixture minus the heat loss; and
determining from a known relationship between the specific heat of the fluid mixture and the composition thereof the composition of the fluid mixture and the ratio of the two fluids, the known relationship being obtained from published data or from a plot of the concentration of one of the components in the fluid mixture against the specific heat of the fluid mixture.

5,386,719
DEBRIS REDUCING TEST CELL FOR THREE PHASE METERS
John D. Marrelli, Houston, and Joseph D. Stafford, Bellaire, both of Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Apr. 11, 1994, Ser. No. 226,195
Int. Cl.[6] G01N *22/00*
U.S. Cl. 73—61.44 9 Claims



1. In a three phase fluid monitor having a microwave energy source and microwave detector means, an improved test cell comprising:
test cell housing means providing fluid flow therethrough;
first antenna means mounted in said test cell and connected to the microwave source means for irradiating the fluid stream flowing through the test cell means with microwave energy;
second antenna means mounted in said test cell in spaced opposition to said first antenna means for receiving microwave energy that has passed through the fluid stream and passing it to said detector means;
cage means spatially arranged defining a cylinder enclosing both antenna means for reducing an amount of debris in a portion of the fluid stream flowing between both antenna means, cage means said mounted for rotation at a rate related to fluid velocity; and
microwave modulation means mounted within said cage means whereby rotation of said cage causes interruption of said microwave energy with the frequency and shape of said modulation being related to the velocity of the flowing fluid.

5,386,720
INTEGRATED SPM SENSOR
Akitoshi Toda, Tokyo; Michio Takayama, Nagano, Katsuhiro Matsuyama, Tokyo, Nobuaki Sakai, Tokyo; Yasuskhi Nakamura, Yamanashi-ken; all of Japan
Continuation-in-part of Ser. No. 998,912, Dec. 30, 1992, abandoned. This application Feb. 16, 1994, Ser. No. 197,352
Claims priority, application Japan, Jan. 9, 1992, 4-002278; May 8, 1992, 4-115899; Sep. 25, 1992, 4-256855; Mar. 23, 1993, 5-063547
Int. Cl.[6] H01J *37/26;* G01B *5/28*
U.S. Cl. 73—105 21 Claims



1. An integrated SPM sensor comprising:
an elastically deformable cantilever having a free end portion;
first detecting means for detecting displacement of a right side portion of said cantilever, with respect to a central longitudinal axis of said cantilever, and for producing a first detection signal which is a function of a detected displacement of said right side portion; and
second detecting means for detecting displacement of a left side portion of said cantilever, with respect to said central longitudinal axis of said cantilever, and for producing a second detection signal which is a function of a detected displacement of said left side portion; and
whereby torsion of said cantilever is detected on the basis of said detection signals obtained from said first and second detecting means.

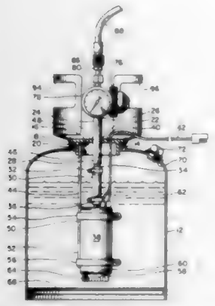
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5,386,721

DIAGNOSTIC TOOL

Jacinto G. Alvizar, 7565 Lankershin, North Hollywood, Calif. 91605

Filed Nov. 15, 1993, Ser. No. 151,959
Int. Cl.[6] G01M *15/00;* G01F *1/00;* F02M *65/00*
U.S. Cl. 73—116 5 Claims



1. A portable diagnostic tool for distinguishing problems in an internal combustion motor caused by defects in the carburetor or the fuel injectors from problems caused by the motor fuel pump and its related components, comprising a tank holding an auxiliary fuel supply for said motor, a fuel pump mounted in the tank, said tank having an upper cap receiving opening and a bottom wall, a leak proof closure cap connected to and covering said opening for closing it off, a conduit, a conduit receiving opening extending through said closure cap, said conduit having an upper end and a lower end, the lower end of said conduit connected to said fuel pump in said tank, the upper end of said conduit extending through said conduit receiving opening in said closure cap and adapted to be connected to the fuel lines of the motor, a continuously adjustable valve and a fuel flow meter mounted on said closure cap, said fuel flow meter connected to said adjustable valve for indicating the fuel flow through said valve, said conduit extending through said adjustable valve to the fuel lines of the motor, whereby the said valve can be adjusted while the motor is operating until the fuel flow meter indicates that the fuel flow through said adjustable valve and conduit to said motor using the diagnostic tool is the same as the fuel flow into the motor when the motor is operating without the diagnostic tool.

5,386,722

METHOD AND APPARATUS FOR STATISTICALLY DETERMINING KNOCK BORDERLINE AND EVALUATING KNOCK INTENSITY IN AN INTERNAL COMBUSTION ENGINE

Daniel L. Meyer, Dearborn; Michael Smokovitz, and Patrick A. Kaluzny, both of Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 24, 1993, Ser. No. 36,574
Int. Cl.[6] F02P *5/15;* G01L *23/22;* G01M *15/00*
U.S. Cl. 73—117.3 20 Claims

1. A method of detecting knock borderline and evaluating knock intensity in an internal combustion engine having at least one cylinder, comprising the steps of:

detecting combustion pressure fluctuations in said at least one cylinder;

generating a plurality of electrical input signals corresponding to said detected pressure fluctuations;

determining engine cycle phasing;

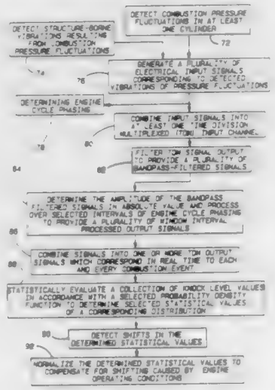
combining said input signals into at least one time-division multiplexed (TDM) input channel in accordance with said determined engine cycle phasing;

filtering said at least one TDM channel over a selected bandwidth to attenuate undesired frequency components and amplify desired frequency components therein so as to produce a plurality of bandpass filtered signals;

determining the amplitude of said bandpass filtered signals in absolute value;

processing said determined amplitude values over selected intervals of engine cycle phasing to produce a plurality of window interval processed output signals;

recombining said output signals into at least one time-division multiplexed (TDM) knock level channel to produce a plurality of TDM output signals, said TDM output signals corresponding in real time to the knock level values of each and every combustion event;



statistically evaluating a continuous sequence of said knock level values corresponding to a one-to-one sequence of individual cylinder combustion events to determine the numerical average (MEAN) and standard deviation (SD) of the knock level for said engine;

determining the coefficient of variation (COV) of knock level in accordance with the formula COV=SD/MEAN; and

normalizing said determined MEAN and SD values in real time to compensate for statistical shifts due to changes in engine operating conditions.

5,386,723

DEVICE FOR DETECTING FAULTY FIRING IN AN INTERNAL-COMBUSTION ENGINE

Manfred Wier, Wenzenbach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 26, 1993, Ser. No. 97,126
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—115 5 Claims

1. A device for detecting faulty firing in an internal-combustion engine, comprising:

pressure sensors each being assigned to a respective cylinder for emitting a pressure signal corresponding to a combustion-chamber pressure;

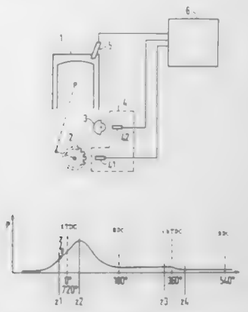
a position sensor system generating at least one crankshaft signal and camshaft signal at a particular piston position; and

an evaluation section connected to said pressure sensors and to said position sensor for determining faulty firing of a cylinder from the pressure signal and the crankshaft position signal;

said evaluation section having means for:

inquiring into the pressure signal of each cylinder at two crankshaft positions before and after each top dead center and forming a pressure differential from them,

determining that a faulty firing has taken place if the pressure differential at an ignition top dead center between a compression stroke and a power stroke is less than a first limiting value, and



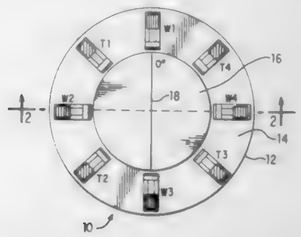
determining that an error in the pressure measurement has occurred if the pressure differential at a charge-change top dead center between an exhaust stroke and an induction stroke is greater than a second limiting value.

5,386,724

LOAD CELLS FOR SENSING WEIGHT AND TORQUE ON A DRILL BIT WHILE DRILLING A WELL BORE

Pralay K. Das, and Haoshi Song, both of Sugar Land, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Aug. 31, 1993, Ser. No. 115,285
Int. Cl.[6] E21B *47/00*
U.S. Cl. 73—151 36 Claims



1. A load cell for sensing forces on a drill bit during the drilling of a well bore with a drill collar connected in a drill string above the bit, the drill collar having a radial pocket therein for receiving said load cell, said load cell comprising:

a) a substantially solid cylinder having a diameter such that said cylinder fits snugly in a radial pocket in a drill collar;

b) first, second, third, and fourth force sensors mounted on said solid cylinder at ninety degree intervals, said sensors each providing an electrical resistance which varies according to a magnitude of force applied, wherein

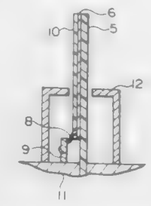
said first and third sensors are electrically coupled to each other to form a first sensor pair, and said second and fourth sensors are electrically coupled to each other to form a second sensor pair, each of said first and second sensor pairs having an electrical resistance which is the sum of the electrical resistance of each said sensor in said pair and said sensor pairs being electrically coupled to each other such that the electrical resistance of said second sensor pair is subtracted from the electrical resistance of said first sensor pair to provide a first output for said load cell.

5,386,725

HEAT-SENSITIVE FLOW RATE SENSOR

Tomoya Yamakawa, and Yuuji Kishimoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1993, Ser. No. 110,961
Claims priority, application Japan, Aug. 28, 1992, 4-229896
Int. Cl.[6] G01F *1/68*
U.S. Cl. 73—204.21 4 Claims



1. A heat-sensitive flow rate sensor comprising:

a tubular housing which defines a principal flow passage for a fluid;

a detecting tube disposed at a predetermined position inside said tubular housing wherein a longitudinal axis of said detecting tube is substantially parallel with a longitudinal axis of said tubular housing;

an elongated flow velocity probe disposed in said detecting tube and provided with a heat sensitive resistor;

a fluid temperature sensor disposed in said detecting tube;

resistors connected to said elongated flow velocity probe and said fluid temperature sensor so as to form a bridge circuit; and

a fluid shield which shields a part of said flow velocity probe nearest the detecting tube so as to prevent an associated portion of said heat-sensitive resistor from being directly subjected to a fluid of varying flow velocity, wherein said fluid shield comprises an inverted canister having an open circumferential end secured to an inner wall of said detecting tube, and having an opening in an end opposite said open end, said flow velocity probe extending through the opening, a central axis of the opening being substantially perpendicular to said longitudinal axis of said detecting tube.

5,386,726

VIBRATORY GYROSCOPE

Kokichi Terajima, Tokyo, Japan, assignor to Akai Electric Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1990, Ser. No. 591,693
Claims priority, application Japan, Oct. 3, 1989, 1-256946; Oct. 19, 1989, 1-270366
Int. Cl.[6] G01P *9/04*
U.S. Cl. 73—505 25 Claims

1. A vibratory gyroscope comprising, with respect to an XYZ coordinate system,

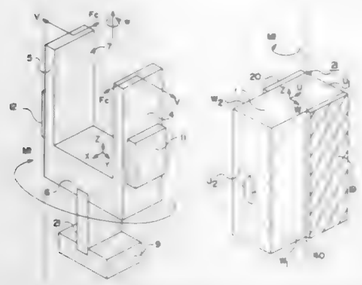
a tuning fork formed from a non-piezoelectric material having two arm members connected at ends thereof to a base member, said two arm members extending in parallel from said base member in the direction of the Z-axis and being separated from each other by a predetermined distance in the direction of the Y-axis,

a pickup member comprising a body of piezoelectric ceramic material and extending from said base member in the direction of the Z-axis, said pickup member constituting a sole support member for said base member,

said pickup member being polarized in the direction of the Z-axis, and at least a first pair of first and second electrodes disposed respectively on surfaces of said pickup

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member which are parallel to the Z-axis, at least said first electrode being asymmetrically positioned to one side of a



center line on one of said surfaces, said center line being parallel to the Z-axis.

5,386,727

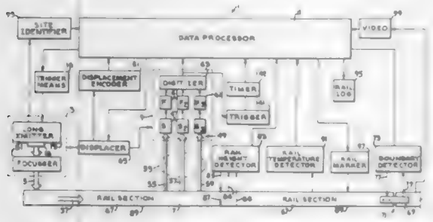
DYNAMIC RAIL LONGITUDINAL STRESS MEASURING SYSTEM

Donald S. Searle, St. Joseph, Mo., assignor to Herzog Contracting Corporation, St. Joseph, Mo.

Continuation-in-part of Ser. No. 892,183, Jun. 2, 1992, Pat. No. 5,341,683. This application Mar. 3, 1993, Ser. No. 25,937

Int. Cl.[6] G01N *29/26*

U.S. Cl. 73—602 **43 Claims**



1. An apparatus for measuring the longitudinal stress in a section of railroad rail, comprising:

(a) transmitting means for transmitting an ultrasonic signature signal into said section of rail;

(b) receiving means spaced from said transmitting means for receiving the transmitted ultrasonic signature signal from said section of rail, said received signature signal having been altered by said rail section depending upon the longitudinal stress within said rail section;

(c) means for processing the altered ultrasonic signature signal to generate a variable dependent upon the longitudinal stress in said rail section; and

(d) means for calculating the longitudinal stress in the rail section based upon said generated variable.

5,386,728

VIBRATOR FOR SUBJECTING AN OBJECT TO VIBRATION

Peter Norton, Southfield, Mich., and David S. Breed, Boonton Township, Morris County, N.J., assignors to Automotive Technologies International, Inc., Denville, N.J.

Filed Feb. 24, 1992, Ser. No. 840,762

Int. Cl.[6] G01M *7/04*

U.S. Cl. 73—668 **12 Claims**

1. A vibrator for subjecting an object to vibration comprising:

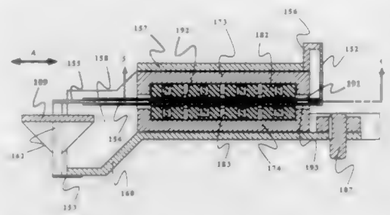
a) a housing containing at least one magnet;

b) means within said housing to conduct magnetic flux from said magnet to form a magnetic circuit containing at least two air gaps through which magnetic flux passes;

c) a substantially planar, spirally wound, electrically conducting coil;

d) electric power means to cause an electric current to flow in said planar coil;

e) means to support said coil and to position a portion of said



planar coil within and perpendicular to said air gaps wherein the interactions of said electric current and said magnetic flux in said gaps produce forces on said coil;

f) mounting structure adapted to support the object to be vibrated; and

g) means to attach said mounting structure to said coil, said attachment means causing said mounting structure to move in response to said force on said coil.

5,386,729

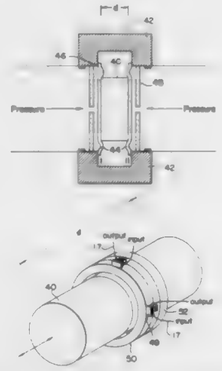
TEMPERATURE COMPENSATED MICROBEND FIBER OPTIC DIFFERENTIAL PRESSURE TRANSDUCER

Stuart E. Reed, Homeworth, Ohio; John W. Holman, Jamestown, Pa., and John W. Berthold, Salem, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 22, 1993, Ser. No. 124,894

Int. Cl.[6] G01L *13/02*

U.S. Cl. 73—705 **13 Claims**



1. A differential pressure transducer that eliminates use of fill fluid, comprising:

a housing;

a pair of spaced diaphragms, each diaphragm being connected around a circumference, each to a portion of the housing, the diaphragms having an outer surface and an inner surface, the outer surface of each diaphragm being exposed to a pressure;

a single beam connected to the diaphragms at the inner surfaces of the diaphragms for mechanically coupling the diaphragms and reacting to pressure forces, said single beam being constructed to support the diaphragms to prevent them from rupturing;

a pair of diaphragm stops positioned in the housing, one diaphragm stop near each of the outer surfaces of each diaphragm to prevent over-travel and rupture of the diaphragm;

sensing means positioned on the beam for sensing beam displacement in response to changes in differential pressure; and

signal processor means in communication with said sensing means for providing differential pressure indicating signals based on beam displacement.

5,386,730

PRESSURE SENSOR HAVING A SEALED WATER-RESISTANT CONSTRUCTION

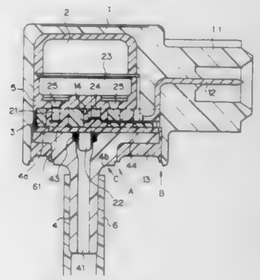
Kazuhisa Ikeda, Chiryu; Minoru Tokuhara, Okazaki, and Hironobu Baba, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 23, 1993, Ser. No. 80,216

Claims priority, application Japan, Jun. 25, 1992, 4-050548; Jul. 10, 1992, 4-048493

Int. Cl.[6] G01L *7/00*

U.S. Cl. 73—706 **16 Claims**



1. A pressure sensor comprising:

a housing having an opening;

a pressure sensing element disposed in said housing and having a pressure intake;

a pressure guide having a pressure path and a flange, the flange being fitted to said opening of said housing with an end of the pressure path being connected to said intake of said sensing element; and

a wiring board interposed between said sensing element and said flange of said pressure guide,

wherein said pressure path of said pressure guide and said intake of said pressure sensing element are connected to each other and penetrate through said wiring board to form a pressure passage and a clearance is formed between said wiring board and said flange of said pressure guide, said clearance being filled with potting material and terminals of said pressure sensing element are provided on a side of said pressure sensing element where said intake is disposed.

5,386,731

METHOD AND APPARATUS FOR MEASURING THE TENSILE STRENGTH OF POWDERS

Duane H. Pontius, Gardendale, and Todd R. Snyder, Birmingham, both of Ala., assignors to Southern Research Institute, Birmingham, Ala.

Continuation of Ser. No. 832,681, Feb. 7, 1992, abandoned, which is a continuation of Ser. No. 579,860, Sep. 7, 1990, abandoned. This application Nov. 5, 1993, Ser. No. 149,130

Int. Cl.[6] G01N *3/08*

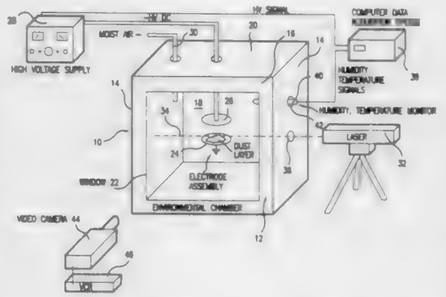
U.S. Cl. 73—834 **4 Claims**

1. A method for determining the tensile strength of a dust aggregate comprising the steps of:

a) placing a sample of said dust aggregate on the lower of two spaced, parallel, horizontally disposed plate electrodes, wherein said plates and said sample are in a gaseous environment;

b) creating an electric field between said two plate electrodes, wherein the magnitude of the field is below that which will produce a corona discharge;

c) varying said electric field;



d) detecting when effusion of particles from said sample begins;

e) measuring and recording the value of said electric field when said effusion begins; and

f) calculating said tensile strength using said measured value of electric field.

5,386,732

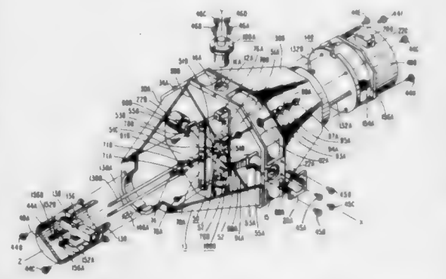
MODULAR SYSTEM OF LOW COST FORM OF CONSTRUCTION FOR APPLICATION-OPTIMIZED FLUENT DENSITY AND MASS FLOW SENSORS

Dominick Scotto, Plainview, N.Y., assignor to miniMaxinc, Forest Hills, N.Y.

Filed Jul. 8, 1993, Ser. No. 89,127

Int. Cl.[6] G01F *1/78, 1/84*

U.S. Cl. 73—861.38 **20 Claims**



1. An apparatus for measuring mass density of matter including:

a) a frame having a plurality of interface ports, where through matter can enter and exit, and three mutually orthogonal axes, respectively designated x, y, and z, said axes having a common predetermined origin;

b) at least one conduit with ends respectively positioned in said interface ports:

c) a plurality of stays coupled to said frame and said at least one conduit to secure said at least one conduit to said frame, each stay having a length, width, area, and cross section transverse to said length, each cross section having a predetermined ratio of section modulus to length and a predetermined ratio of cross section area to length, such that each stay has a structural compliance characteristic equivalent to that of a string;

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d) motor means coupled to said conduit for exerting a torque thereon; and

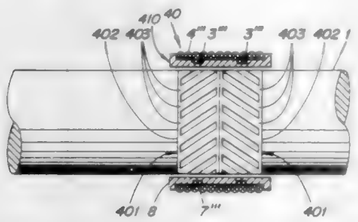
e) motion transducer means coupled to said conduit for detecting angular motion of said conduit around at least one of said axes.

5,386,733

SENSOR AND METHOD FOR MEASURING TORQUE AND/OR AXIAL STRESSES

Tore Hesthamar; Fredrick Althoff, both of Mölndal, and Thomas Larsson, Västra Frölunda, all of Sweden, assignors to Scan Sense A/S, Husoysund

Filed Jun. 29, 1992, Ser. No. 905,365
Claims priority, application Sweden, Jul. 8, 1991, 9102122
Int. Cl.[6] G01L *3/00*
U.S. Cl. 73—862.333 7 Claims



1. Method for measuring forces applied to a non-magneto elastic object, said method comprising the following steps:

providing the object, with sensor means comprising a magnetoelastic material,

attaching said sensor means onto the object prior to applying the forces to the object,

arranging a sensing device to at least partly encompass or cover the sensor means, said sensing device comprising a coil system for carrying out both an excitation and a pick-up function,

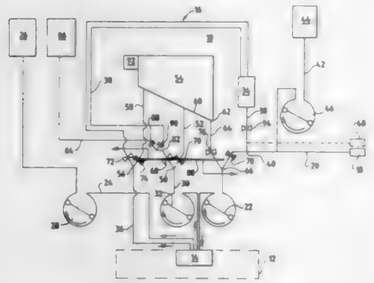
using an excitation frequency such that the predominating process of magnetization of the magnetoelastic material is small angle magnetization rotation.

5,386,734

CENTRIFUGE SYSTEM FOR THE SEPARATION OF BLOOD INTO ITS COMPONENTS

Thomas Pusinelli, Altenstadt-Waldsiedlung, Germany, assignor to Fresenius AG, Bad Homburg, Germany

Filed Aug. 20, 1993, Ser. No. 109,676
Claims priority, application Germany, Aug. 21, 1992, 4227695
Int. Cl.[6] G01N *33/49*
U.S. Cl. 73—863.21 7 Claims



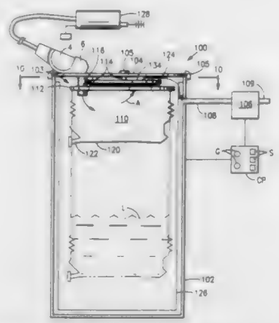
1. A centrifuge system for separating blood into its components, said centrifuge system comprising at least one sampling device for blood, an inlet line connected between the sampling device and a centrifuge and a blood pump disposed in the inlet line, a first discharge line connected between the centrifuge and a first collecting container and a pump disposed in the first discharge line, and a discharge line system for recycling blood components, wherein the discharge line system comprises a plasma discharge line and a pump disposed in the plasma discharge line, a plasma branch line which branches off from the plasma discharge line at a first branching point, the plasma branch line being connected to a storage container, an erythrocyte discharge line and an erythrocyte branch line which branches off from the erythrocyte discharge line at a second branching point, the erythrocyte branch line being connected to the storage container, a collecting line connected between the storage container and the inlet line at a third branching point upstream of the blood pump, and locking means which, in a blood collection cycle, closes the collecting line, the plasma discharge line downstream of the first branching point and the erythrocyte discharge line downstream of the second branching point and opens, in a recirculation cycle, the collecting line, the plasma discharge line downstream of the first branching point and the erythrocyte discharge line downstream of the second branching point and closes in the recirculation cycle, the inlet line upstream of the third branching point, the plasma branch line and the erythrocyte branch line and opens, in the collection cycle, the inlet line upstream of the third branching point, the plasma branch line and the erythrocyte branch line.

5,386,735

APPARATUS FOR COLLECTING A FLUID SAMPLE FROM A PATIENT AND CONTAINER FOR STORING THE SAME

Robert S. Langdon, Bedford, N.H., assignor to Langdon Medical, Inc., Bedford, N.H.

Filed Dec. 15, 1992, Ser. No. 990,900
Int. Cl.[6] G01N *1/00*
U.S. Cl. 73—863.23 16 Claims



1. A portable fluid container assembly, for use with a rigid container having an open end, for collection of a desired fluid sample, said portable fluid container assembly comprising:

a fluid container having an inlet for allowing conveyance of a fluid sample into said fluid container, and an outlet for allowing desired fluid to exit said fluid container;

a selective filter completely covering and sealingly engaging said outlet for allowing, during use, only said desired fluid to exit said fluid container through said outlet while retaining liquid and any desired particles within said fluid container; and

means for sealing said fluid container with the open end of the rigid container to facilitate conveyance of a said desired fluid sample through said inlet into said fluid container by application of a partial vacuum to the interior of the rigid container; wherein

a portion of said fluid container is rigid and said outlet is formed in that rigid portion; and

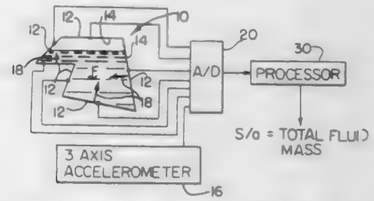
the remainder of said fluid container is flexible and said flexible portion is permanently sealingly attached to said rigid portion to form said container assembly.

5,386,736

FLUID TANK WITH INTEGRAL FLUID QUANTITY GAUGING

William B. Spillman, Jr., Charlotte, Vt., assignor to Simmonds Precision Products, Inc., Akron, Ohio

Continuation of Ser. No. 966,924, Oct. 27, 1992, abandoned.
This application May 2, 1994, Ser. No. 237,944
Int. Cl.[6] G01G *9/00*
U.S. Cl. 73—865 12 Claims



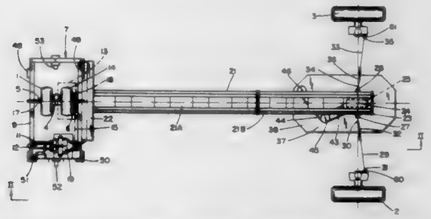
1. A system for determining mass of liquid held in a container under a varying acceleration, comprising a plurality of force-responsive detectors disposed correspondingly at a like plurality of planar surface areas that define the container, each of said detectors sensing the total fluid force exerted across its respective surface area and producing a first electrical signal representative thereof; an accelerometer for sensing said varying acceleration of the container and producing a second electrical signal corresponding thereto; and processing circuit means for receiving said first and second electrical signals and modifying each of said first electrical signals by both a corresponding predetermined surface area orientation signal and said second electrical signal; said processing means combining the modified first electrical signals to produce a signal representative of the mass of liquid in the container.

5,386,737

PORTABLE AIRCRAFT RCS VERSUS AZIMUTH MEASUREMENT APPARATUS

Walter S. Soeder, Patchogue, and John J. Proscia, Northport, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jun. 25, 1993, Ser. No. 83,647
Int. Cl.[6] G01S *13/68;* B64F *1/24*
U.S. Cl. 73—865.9 8 Claims



1. Portable RCS versus azimuth measurement apparatus for an aircraft to be tested, said aircraft being on a surface and having an axis of rotation, a nose landing gear wheel and main landing gear wheels, said apparatus comprising

dolly means;

nose wheel adapter means mounted on said dolly means for replacing said nose wheel of said aircraft with a spare nose wheel and rotating 90° so that said spare nose wheel is substantially perpendicular to the main landing gear wheels;

synchronizing gearbox means positioned under said aircraft substantially at the axis of rotation of said aircraft and substantially rigidly coupled to said dolly means, said synchronizing gearbox means having an output shaft and sensing rotation of said aircraft about said axis of rotation of said aircraft, sensed rotation of said aircraft being indicated by rotation of said output shaft;

synchronous anchor means on said surface beneath said output shaft of said synchronizing gearbox for restraining rotation of said output shaft relative to the surface; and

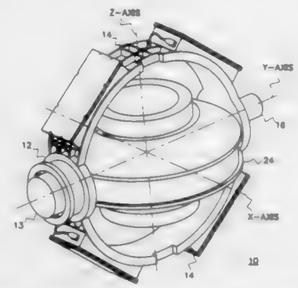
control means electrically connected to said dolly means and to said synchronizing gearbox means for utilizing a radar computer signal to compare signals from said dolly means and from said synchronizing gearbox means to produce an output command to said dolly means for rotating said spare nose wheel thereby rotating said aircraft about an axis substantially at said output shaft of said synchronizing gearbox, said synchronizing gearbox transmitting signals indicating sensed rotation of said aircraft to said control means thereby providing data for RCS versus azimuth measurement.

5,386,738

DIRECT TORQUE CONTROL MOMENT GYROSCOPE

Douglas D. Havenhill, Peoria, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 22, 1992, Ser. No. 995,477
Int. Cl.[6] G01C *19/24*
U.S. Cl. 74—5.22 20 Claims



1. A control moment gyroscope which applies directional torque to a vehicle comprising:

a gimbal;

gimbal support means mechanically attached to the vehicle which allows rotation of said gimbal about a gimbal axis;

a rotor;

means to magnetically levitate said rotor within said gimbal;

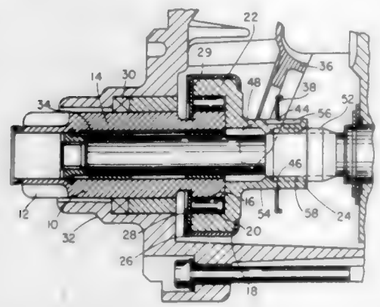
means for inducing angular rotation of said rotor about a rotor axis which is normal to the gimbal axis;

means for generating a magnetic field which induces torque on said rotor about an output axis normal to both the rotor axis and the gimbal axis, the torque on said rotor is transferred to the vehicle through said gimbal support means;

sensing means to detect the proximity of said rotor to said gimbal; and

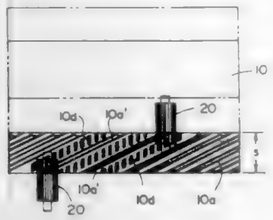
rotation means connected to said sensing means for rotating said gimbal so as to follow precession of the rotor about the gimbal axis and avoid contact between the gimbal and said rotor.

5,386,739
RETURN DEVICE FOR A STARTER HEAD FOR AN INTERNAL COMBUSTION ENGINE
Jean-Francois Serrano, Saint Priest, and Viviane Bonin, Villefontaine, both of France, assignors to VALEO Equipments Electriques Moteur, Creteil, France
Filed Feb. 18, 1993, Ser. No. 19,087
Claims priority, application France, Feb. 20, 1992, 92 01924
Int. Cl.[6] F02N *15/06*
U.S. Cl. 74—7 A 8 Claims



1. A starter head for an internal combustion engine, comprising a motor shaft, a starter pinion mounted on said motor shaft for sliding movement along said shaft, a free wheel surrounding said motor shaft, and a drive sleeve surrounding said motor shaft, together with a shroud securing said starter pinion, said free wheel and said drive sleeve together, said drive sleeve having an end portion defining an outer periphery of said end portion having a groove formed in said outer periphery, the starter head further including a return device that has a ring member having an inner periphery defining a plurality of resiliently deformable teeth therein, with said teeth cooperating with said groove of the drive sleeve by snap action.

5,386,740
ROTARY FEED MECHANISM
Hiroshi Nomura, and Norio Sato, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 29, 1992, Ser. No. 953,025
Claims priority, application Japan, Sep. 30, 1991, 3-320859; Sep. 30, 1991, 3-320860; Sep. 30, 1991, 3-320861; Sep. 30, 1991, 3-320862
Int. Cl.[6] F16H *27/02;* G02B *7/02*
U.S. Cl. 74—89.16 23 Claims

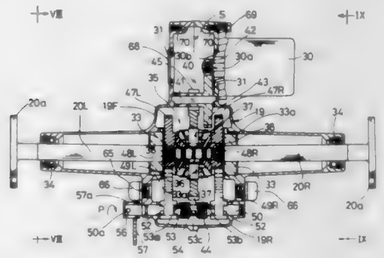


1. A rotary feed mechanism comprising:
an inner ring having an outer peripheral surface;
gears provided on said outer peripheral surface of said inner ring;
male threads on said outer peripheral surface of said inner ring;
an outer ring having female threads which engage with said male threads of said inner ring;
said gears being inclined in the same direction as a multiple male thread with respect to the axis of said inner ring; and
wherein at least one male thread formed between the gears of said inner ring is engaged with a female thread provided on said outer ring, and at least one pinion engages with at least one of said gears to rotate said inner ring relative to said outer ring, regardless of the axial position of said inner ring, and wherein said inner ring is moved in an optical axis direction, in accordance with the engagement between said male threads and said female threads.

5,386,741
ROBOTIC SNAKE
Brian G. Rennex, 431 Muddy Branch Rd., #101, Gaithersburg, Md. 20878
Filed Jun. 7, 1993, Ser. No. 72,853
Int. Cl.[6] A61B *1/00;* B25J *3/00, 17/00*
U.S. Cl. 74—490.05 33 Claims

1. A robotic snake comprising:
a plurality of articulation units, serially connected, including a top articulation unit and a bottom articulation unit wherein:
each of said articulation units comprises a rear section, a fore section, and a lengthwise interconnect section, wherein the fore section of one of said articulation units comprises the rear section of the succeeding articulation unit, and wherein said rear section and said fore section are rotatable relative to each other, wherein said rear section and said fore section are equivalent structures except for positional considerations within said robotic snake and the general term for rear section or base section is defined to be base section,
said rear section comprising three base joint vertices interconnected by three base interconnect elements,
said fore section comprising three base joint vertices interconnected by three base interconnect elements,
said lengthwise interconnect section comprising six lengthwise actuators, also referred to as actuators, wherein each of said base joint vertices of said rear section is coupled to two of said lengthwise actuators and each of said two lengthwise actuators is coupled to a different one of said base joint vertices of said fore section,
a sensor system for interrogation of the surrounding environment and for determination of the location of said robotic snake with respect to said surrounding environment,
a control system, and
a signal transmission system, wherein said control system incorporates information from said sensor system to cause electrical signals to be sent via said signal transmission system to activate said lengthwise actuators to achieve a pre-determined motion of said robotic snake.

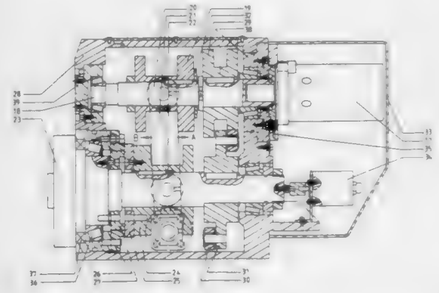
5,386,742
TRANSAXLE ASSEMBLY HAVING AN AXLE-LOCKING MECHANISM
Koji Irikura, Kobe, Japan, and Keith J. Andrews, Morristown, Tenn., assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan and Tuff Torq Corporation, Morristown, Tenn.
Filed Jul. 22, 1993, Ser. No. 96,050
Int. Cl.[6] F16H *57/10*
U.S. Cl. 74—665 F 20 Claims



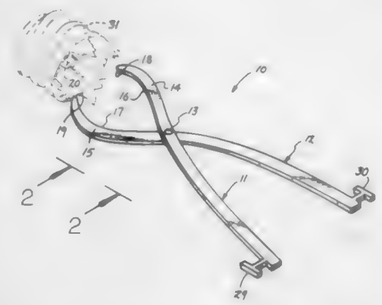
8. A transaxle assembly comprising:
an axle casing (**19**);
a motor means (**30**) fixedly mounted on said axle casing (**19**) and having a motor shaft (**30***a*) which extends into said axle casing;
co-axially disposed left and right wheel axles (**20L**, **20R**) which are journalled in said axle casing (**19**);
a differential gearing (**35**) disposed between said left and right wheel axles (**20L**, **20R**) and including left and right differential side gears (**38**) which are fixedly mounted on said left and right wheel axles;
a speed-reduction gearing (**40**) disposed between said motor shaft (**30***a*) and said differential gearing (**35**);
lockable left and right rotors (**47L**, **47R**) fixedly mounted on said left and right wheel axles (**20L**, **20R**) in a side-by-side relationship with said left and right differential side gears (**38**);
movable left and right locking members (**49L**, **49R**) which are supported within said axle casing (**19**) and are operable to engage said left and right rotors (**47L**, **47R**) so as to lock said rotors non-rotatably; and
a control member (**50**) disposed within said axle casing (**19**) and connected operatively to said left and right locking members (**49L**, **49R**) for moving both of said locking members to their lock-operating positions at a same time, one end (**50***a*) of said control member extending outwardly of said axle casing.

5,386,743
TURRET INDEXING DEVICE
Win-Jim Su; Ching-Yuan Lin, and Jung-Hong Huang, all of Hsinchu Hsien, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China
Filed Jul. 13, 1993, Ser. No. 90,511
Int. Cl.[6] B23B *29/24*
U.S. Cl. 74—813 L 3 Claims

1. A turret indexing device, comprising:
a housing;
an input shaft rotatable mounted onto said housing and driven by a hydraulic motor controlled by a controlling unit;
a first cam member and a second cam member fixedly mounted on said input shaft;
an output shaft rotatably mounted onto said housing, said output shaft having a head end adapted to hold an indexing head on which a plurality of tools are mounted;
a thrust collar slidably mounted on said output shaft and operable by said first cam member through a lever mechanism;
an indexing disc fixedly mounted on said output shaft and operable by said second cam member to rotate a predetermined angle when said second cam member rotates one rotation o 360 degrees; and
coupling means comprising a first gear member fixedly mounted on said thrust collar, a second gear member fixedly mounted onto said housing, and a third gear member fixedly mounted onto said head end of said output shaft; wherein each one of said first gear member, said second gear member, and said third gear member has a same number gear teeth, and the gear teeth of said first gear member are capable of engaging with and disengaging from said teeth of said second gear member and the gear teeth of said third gear member.



5,386,744
BROKEN BULB REMOVAL TOOL
Alfredo M. Garcia, 1220 Magnolia, Rantoul, Ill. 61866
Filed Oct. 20, 1993, Ser. No. 138,724
Int. Cl.[6] H01K *3/32*
U.S. Cl. 81—53.11 2 Claims



1. A broken bulb removal tool, comprising,
a first leg and a second leg, having a pivot axle pivotally mounting the first leg to the second leg in a scissor-like relationship, wherein the first leg and the second leg include respective first and second arcuate jaws respectively arranged in a facing relationship relative to one another, having respective first and second concave surfaces, with the first leg arcuate jaw and the second leg arcuate jaw terminating in a respective first tip and second tip and arranged to engage a central bulb element,
the first leg includes a first leg second end, and the second leg includes a second leg second end, the first leg second end and the second leg second end include a first abutment and second abutment respectively permitting positioning

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of an individual's fingers between the first abutment and the first leg and the second abutment and the second leg, with a first resilient elongate sleeve mounted onto the first leg arcuate jaw, and a second elongate sleeve crossing and intersecting the first elongate sleeve, with the second elongate sleeve mounted onto the second leg arcuate jaw.

5,386,745

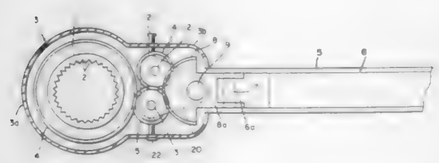
MOTION CONVERTING MECHANISM AND ROTARY TOOL

Mitsuhide Inokuchi, Nagoya, Japan, assignor to Tokuden Kosumo Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 859,520, Jun. 11, 1992, abandoned. This application Jul. 28, 1993, Ser. No. 104,477

Int. Cl.[6] **B25B** *17/00*

U.S. Cl. 81—57.3 **6 Claims**



1. A mechanism for converting a reciprocating arcuate motion into interrupted rotary motion in one direction comprising:

an arcuate gear segment provided for reciprocating arcuate motion about a pivot;

first and second pinions engaged with said arcuate gear and selectively engageable with an output shaft to provide rotary motion thereto;

first and second one-way clutch mechanisms provided in a motion transmission path from each of said pinions to said output shaft;

said first one-way clutch mechanism including means to rotate idly during movement of said arcuate gear in one direction, and the second one-way clutch mechanism including means to rotate idly during movement of said arcuate gear in the opposite direction; and

a motion transmission path from said two one-way clutch mechanisms to said output shaft including means such that said output shaft may be rotated in the same direction when either of said two one-way clutch mechanisms is engaged.

5,386,746

APPARATUS FOR MAKING AND BREAKING JOINTS IN DRILL PIPE STRINGS

Thomas D. Hauk, Los Alamitos, Calif., assignor to Hawk Industries, Inc., Long Beach, Calif.

Filed May 26, 1993, Ser. No. 67,216

Int. Cl.[6] **B25B** *13/50*

U.S. Cl. 81—57.34 **11 Claims**

1. A power jaw apparatus for applying high torques to sections of threadedly connected pipe, which comprises:

(a) at least one set of jaws adapted to apply torque in only a single direction to a section of threaded pipe,

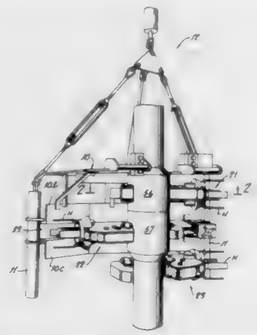
said jaw set having a head element through which is provided an opening, said jaw set also having a hook element,

said hook element having a shank extending through said opening in said head element, said hook element also having a hook end connected to said shank on one side of said head element, said hook end and said head element defining between them a gap adapted to receive a pipe section, said hook end and said head element being adapted to grip a pipe section when it is in said gap,

(b) adjustable means to pivotally associate said hook element with said head element for pivotal movement of said hook element relative to said head element about a predetermined axis, said adjustable means also effecting movement of said shank through said opening to thereby increase and decrease the size of said gap whereby to adapt the power jaw apparatus for torquing of different diameters of pipe sections,

said adjustable means comprising a nut and further comprising thread means to rotatably and threadedly mount said nut on said shank on the other side of said head element,

a portion of the exterior of said nut being a surface of revolution about the axis of said nut,



said adjustable means further comprising first bearing means such that rotation of said nut relative to said shank effects movement of said shank through said opening,

said adjustable means further comprising second bearing means provided on said head and operatively associated with said surface of revolution, in such manner as to effect said pivotal movement of said hook element relative to said head element about said predetermined axis, and

(c) power means to exert a large force on said head to thereby rotate said head about a pipe section that is gripped in said gap for high-torque torquing of said pipe section about the axis of said pipe section, and for energization of said hook end and said head to achieve tighter gripping of said pipe section in said gap.

5,386,747

QUICK RELEASE RATCHET WITH SAFETY LATCH

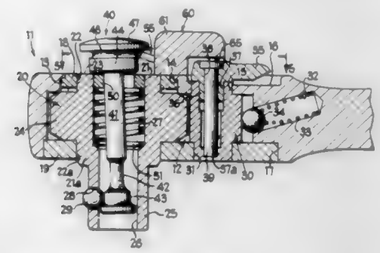
Donald A. Grover, Kenosha, Wis., assignor to Snap-on Incorporated, Kenosha, Wis.

Filed Nov. 30, 1993, Ser. No. 159,000

Int. Cl.[6] **B25B** *13/46*

U.S. Cl. 81—63 **16 Claims**

1. A drive tool comprising: a drive body adapted for releasable coupling to an associated drive element, a release mechanism carried by said drive body and shiftable between coupling and release conditions relative to the associated drive element, first latch structure on the drive body, second latch structure on the release mechanism, and bias means for resiliently urging said first and second latch structures into latching engagement with each other when the release mechanism is in its coupling condition for inhibiting movement of the release mechanism to the release condition thereof, said release mechanism including an elongated control rod having a longitudinal axis, and support structure supporting said control rod for movement substantially parallel to said axis between said coupling and release conditions of said release mechanism and for movement later-



ally of said axis between the latched and unlatched conditions of said latch structure.

5,386,748

OIL FILTER CUP

Gary H. Kilgore, 206 Laurel Heights Pl., San Antonio, Tex. 78212

Filed Jul. 29, 1993, Ser. No. 99,131

Int. Cl.[6] **B25B** *23/00*

U.S. Cl. 81—180.1 **1 Claim**



1. An oil filter tool comprising:

a cylindrical liquid containment vessel having a first closed end, and a second open end for slipping over an oil filter;

a square male attachment and rotating means extending through an opening in the first closed end of said vessel and having a first end extending within said vessel for engagement with an ordinary oil filter socket, and having a second end;

a block attached to the second end of said square male attachment and rotating means, said block having a square female attachment and rotating means exterior of said vessel for receiving an ordinary socket wrench, said block being fixedly attached to said vessel; and

seal means between said block and said vessel;

wherein oil seepage is contained within said vessel as an oil filter is removed.

5,386,749

SOCKET FOR WRENCH

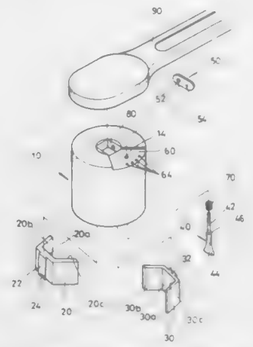
Kwang-Moo Kim, 755-3, Kyomoon-Dong, Koori, Kyunggi-Do, Rep. of Korea

Filed Jul. 16, 1993, Ser. No. 92,526

Claims priority, application Rep. of Korea, Jan. 12, 1993, 93-349; Feb. 13, 1993, 93-1948; Mar. 10, 1993, 93-3486; May 29, 1993, 93-9190

Int. Cl.[6] **B25B** *13/58*

U.S. Cl. 81—185 **12 Claims**



1. A socket for a socket wrench comprising:

a socket body;

a vertically extending socket cavity formed at a lower portion of said socket body;

a pair of facing half sockets each with different thicknesses fitted in said socket cavity and vertically slidable therein, wherein each of said half sockets has a central portion and a pair of opposite side end portions extending angularly from respective opposite ends of said central portion, said central portion having a thickness larger than those of said side end portions; and

an adjusting mechanism provided at an upper portion of the socket body and adapted to selectively adjust the vertical slide movements of said half sockets.

5,386,750

REMOVABLE COMB ATTACHMENT FOR DISPOSABLE RAZORS

David J. Morrison, 2123 W. Isthmus Loop, Mesa, Ariz. 85202

Filed Mar. 9, 1993, Ser. No. 28,289

Int. Cl.[6] **B26B** *21/12*

U.S. Cl. 83—13 **25 Claims**

22. A method of trimming hair using a disposable safety razor, said disposable safety razor having a handle, a shaving head mounted at one end of the handle, and at least one razor blade mounted in the shaving head said razor blade having a cutting edge, a first side facing said handle, and a second side facing away from said handle, said method, comprising,

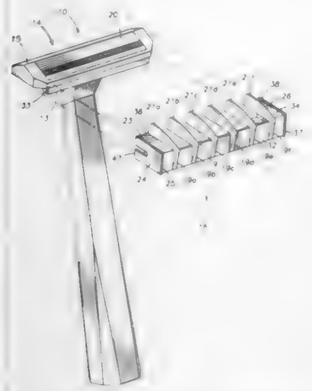
mounting a detachable trim attachment over the shaving head of said disposable safety razor,

said trim attachment comprising a frame having end portions, a connecting member extending between the end portions, an opening exposing the second side and the cutting edge of the razor blade, and a plurality of spaced, parallel teeth extending from the connecting member across said opening and perpendicular to said blade to partially cover the cutting edge and the second side of the razor blade,

maintaining the trim attachment immovably on the shaving head,

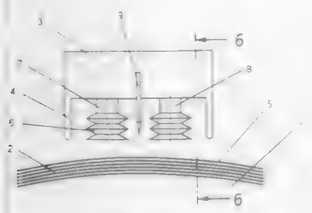
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drawing the shaving head of said disposable safety razor with the trim attachment in place over the hair to be



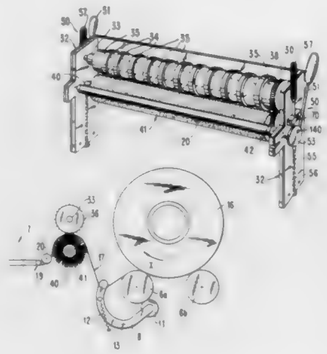
trimmed in a manner such that the teeth guide the hair to the blade, thereby cutting said hair, and
removing the trim attachment from the shaving head.

5,386,751
METHOD AND APPARATUS FOR FORMING AND GRIPPING A WEB BEGINNING OF A REPLACEMENT ROLL
Norbert Dylla, Stadtbergen, and Michael Wörner, Neusäss, both of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach, Germany
Filed Mar. 23, 1993, Ser. No. 37,973
Claims priority, application Germany, Apr. 10, 1992, 4212095
Int. Cl.[6] B26D *7/14*; B26F *3/00*
U.S. Cl. 83—18 23 Claims



1. A method of forming and gripping a new beginning of a web of a replacement roll including an outer web layer and having an axis, the method comprising the steps of: a) providing a support having support arms directed at the replacement roll; b) arranging at least one suction ledge on the support between the support arms; c) placing the at least one suction ledge and the support arms on the outer layer so that the suction ledge extends parallel to the axis of the roll, the suction ledge having a first side in close proximity to one of the support arms of the support and an oppositely directed second side; d) raising the outer layer with the suction ledge, so that the outer layer is tensioned; e) cutting the tensioned outer layer parallel to the suction ledge on the second side of the suction ledge; and f) lifting off the outer layer with the suction ledge, steps d)–f) being carried out between the support arms of the support.

5,386,752
PERFORATION APPARATUS AND METHOD FOR USE WITH SEALING DEVICES
Martin Siegel, Englewood Cliff, N.J., assignor to Weldotron of Delaware, Inc., Wilmington, Del.
Filed Nov. 4, 1992, Ser. No. 971,720
Int. Cl.[6] B26F *1/24*
U.S. Cl. 83—30 17 Claims



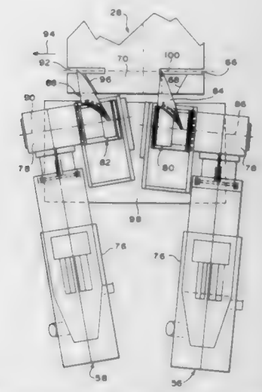
1. A method for perforating shrink-wrap film as the film moves along a film path, comprising:
setting at least one microperforator means along a first shaft to punch a desired pattern of holes;
setting the lateral tension of the film by adjusting a plurality of gripper wheels connected to the first shaft;
threading the film between a biasing means connected to a second shaft and the microperforator means;
pulling the film to wrap an item such that the film passes between the biasing means and the microperforator means; and
punching a plurality of pores in the film.

5. A perforating device for punching pores in shrink-wrap film as it moves along a film path, comprising:
a first housing;
a plurality of adjustable gripper wheels connected to a perforator shaft which is connected to the first housing, for creating lateral tension on the film between adjacent gripper wheels;
at least one microperforator means connected to the perforator shaft between adjacent gripper wheels and disposed along the film path; and
a biasing means connected to a rotary shaft and disposed along the film path for biasing the shrink-wrap film into the microperforator means.

5,386,753
TAB CUTTING
Michael P. Baron, Phoenix; John R. Harrison, Baltimore, and William F. Ward, Jr., Cockeysville, all of Md., assignors to Ward Holding Company, Inc., Wilmington, Del.
Filed May 14, 1993, Ser. No. 62,784
Int. Cl.[6] B26D *1/153*
U.S. Cl. 83—335 12 Claims

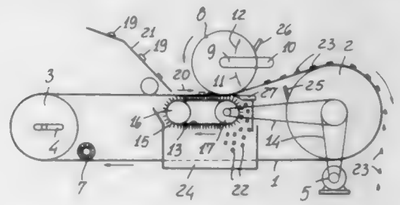
1. Apparatus for forming tabs on sheets, comprising:
a conveyor for conveying the sheets in a forward direction;
first and second cutters rotatable about first and second axes, respectively;
first and second motors drivingly connected to said first and second cutters, respectively, for independent rotation of said cutters;
said cutters being spaced apart in said forward direction adjacent one side of said conveyor;

each cutter having a cutting edge curved about the respective axis of that cutter;
each cutter having an inoperative position in which the cutting edge is spaced from a passing sheet being conveyed by said conveyor;
rotation of each cutter from the inoperative position bringing the cutting edge into engagement with an outside edge of the passing sheet, further rotation of said cutters moving the cutting edges through the passing sheet in a direction transverse to said forward direction towards an opposite edge of the passing sheet to progressively cut the ends



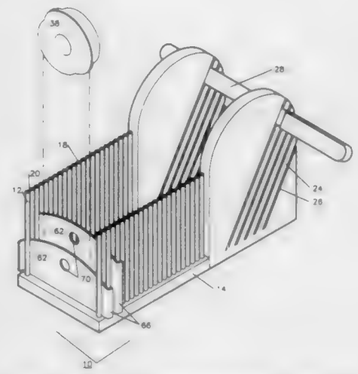
of an edge tab being formed on the passing sheet, and further rotation of said cutters removing said cutting edges from the passing sheet;
means for causing said first and second motors to be rotated in timed relationship to effect cutting of opposite ends of said edge tab respectively by said first and second cutters, and
a rotary slotter section located upstream of said cutters with respect to said forward direction, said rotary slotter section including two slotter blades for making slots in each sheet adjacent said opposite ends of said edge tab.

5,386,754
CUBE MAKING AND PEELING MACHINE
Luigi Rastelli, Villanova Sull 'Arda, Italy, assignor to Valfor S.r.l., Fornovo Taro, Italy, a part interest
Filed May 26, 1993, Ser. No. 67,747
Int. Cl.[6] B26D *7/06*
U.S. Cl. 83—408 6 Claims



1. A fruit and vegetable cubing and peeling machine, comprising a first conveyor belt including a plurality of equispaced parallel cutting cables for cutting through fruits or vegetables, a cross extruder roller arranged above said cutting cables for downward pressing the fruits or vegetables to be diced against said cutting cables for cutting through said fruits or vegetables in a substantially longitudinal direction, and a second conveyor belt arranged under at least a portion of said first conveyor belt and provided with a plurality of cross cutting blades closely adjoining said cables of said first conveyor belt and providing an upwardly directed cutting pressure for further cutting through said fruits or vegetables in a direction substantially transverse to said longitudinal direction so as to provide fruit or vegetable dices.

5,386,755
DEVICE TO ENSURE UNIFORM SLICING OF BREAD
Raymond J. Schneider, and Nicolle D. Schneider, both of 4344 SW. 3rd Ave., Cape Coral, Fla. 33914
Filed May 3, 1993, Ser. No. 55,380
Int. Cl.[6] B26D *3/16*
U.S. Cl. 83—762 5 Claims



1. A bread slicing box for ensuring uniform slicing of bakery items comprising; a base of predetermined proportions having an upper surface, two opposing ends and two opposing sides, two opposing side members each attached to one of the two opposing sides of the base and extending vertically upward from the base, each of the side members having a plurality of extension members incorporated within their design, each extension member having a predetermined geometric shape, each adjacent set of extension members forming a side slot each side slot extending from the base upward to terminate at an open end, two side slots one on each of the two opposing side members capable of receiving insertion of a knife blade at their open ends and acting to guide the knife blade downward to slice a bakery item resting upon the upper surface of the base and positioned between the two opposing side members till contact is made with the upper surface of the base.

5,386,756
SAW CHAIN FOR A MOTOR-DRIVEN CHAIN SAW
Hans P. Stehle, Winnenden; Norbert Apfel, Waiblingen, and Hans-Joachim Beyer, Ennigerloh, all of Germany, assignors to Andreas Stihl, Waiblingen, Germany
Filed Aug. 27, 1993, Ser. No. 112,222
Claims priority, application Germany, Aug. 27, 1992, 4228509
Int. Cl.[6] B27B *33/14*
U.S. Cl. 83—830 38 Claims

5. A saw chain for a motor-driven chain saw equipped with a guide bar and a drive motor for imparting a force to the saw chain for moving the latter around the guide bar in a predetermined running direction (F), the chain saw being further equipped with lubricating oil supply means for supplying lubricating oil to the saw chain into which oil unwanted particles become entrained during the movement thereof around the guide bar, the saw chain comprising:
a plurality of cutting links, a plurality of driving links and a plurality of side links, the links being pivotally interconnected by rivets to define the saw chain;
each of said driving links having two side flanks;
each of said cutting links having a lower portion defining a

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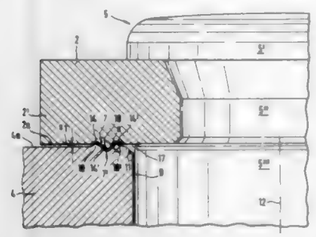
cutting link side flank facing one of said driving link side flanks thereby providing a first pair of mutually adjacent side flanks through which one of the rivets passes;

each of said side links having a side link side flank facing the other one of said driving link side flanks thereby providing a second pair of mutually adjacent side flanks through which said one of the rivets passes;

said first pair of mutually adjacent side flanks defining a first spacing gap for conducting a portion of the oil to the rivet;

said second pair of mutually adjacent side flanks defining a second spacing gap for conducting a portion of the oil to the rivet;

said first and second spacing gaps extending in said running direction (F);



hold-back means disposed in at least one of said spacing gaps adjacent the rivet for holding back the entrained particles while allowing the lubricating oil to reach the rivet;

said hold-back means being a first hold-back means disposed in said first spacing gap and said saw chain further including a second hold-back means disposed in said second spacing gap; and,

each of said hold-back means including two annular projections formed on one of said side flanks and one annular projection formed on the side flank adjacent to said one side flank so as to be directed toward said two annular projections to define a labyrinth pass-through gap for the lubricating oil.

5,386,757

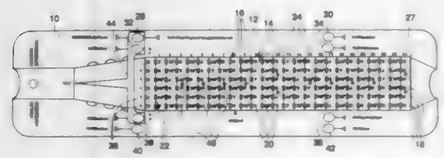
UNIVERSAL MUSICAL SCALE, SCALE PATTERN, AND CHORD INDICATOR

Daniel Derrick, 3245 Gavilan La., Las Vegas, Nev. 89122

Filed Mar. 16, 1993, Ser. No. 31,950

Int. Cl.[6] G09B *15/02*

U.S. Cl. 84—473 **1 Claim**



1. A universal musical scale, scale pattern, and chord indicator for use in teaching a preselected musical scale and for simplifying the task of locating a multiplicity of ascending and descending points for learning finger positioning of the scale as it relates in a series of pattern voicings to a fingerboard of a fretted musical instrument, comprising:

(a) an improved slide rule type device including a housing having an aperture and a series of at least eight display windows thereon, at least seven said display windows of which further having indicia indicative of a scale degree respectively printed correlatively adjacent thereto, and further including a transparency positioned within one of said display windows, said transparency having indicia printed thereon to simulate said fingerboard, and further having an imprinted series of position alignment indicia and an imprinted index of tone letters,

(b) a displaceable medial sliding member having an aggregate of color coded dots thereon, said aggregate including an imprinted index of finger position indicia wherein a number of said dots are characteristically divided into two contrasting colors and are arranged and printed on said member in a predetermined manner by which insertion of said member into said aperture of said housing and through which discretionary alignment causes the two contracting colors of each of said dots to correspond with respective said tone letters of said transparency whereby indicating single fingering positions contained within two opposed said pattern voicings and further enabling simultaneous correspondence to said multiplicity by way of said aggregate, and

(c) an imprinted series of both straight and curved interconnecting lines located on said housing which serves to isolate at least three of said display windows, and said member further having an imprinted system of at least four tone indicators thereon which individually consist of a series of laterally spaced letter delineations for musical tones, each of which is arranged and printed in a predetermined manner by which said insertion of said member into said aperture of said housing and through which said discretionary alignment further causes correspondence of each of said tone indicators respectively with at least one of said display windows, said tone indicators thereby maintaining a definite relationship with said imprinted series whereby effecting simultaneous indications in reference to tonality.

5,386,758

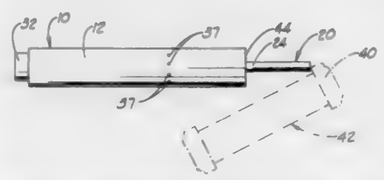
APPARATUS AND METHOD FOR DISARMING PIPE BOMBS

Kenneth A. Conley, 1812 N. Timber, Bethany, Okla. 73008

Filed Sep. 13, 1993, Ser. No. 120,608

Int. Cl.[6] F42B *33/00*

U.S. Cl. 86—50 **9 Claims**



1. A method for disarming a pipe bomb having at least one end cap comprising the steps of:

locating the pipe bomb with an end cap exposed; then

striking the exposed end cap of the pipe bomb with sufficient force to suddenly displace the end cap away from the pipe bomb, thereby dispersing the contents of the pipe bomb and rendering the pipe bomb incapable of detonation.

5,386,759

FLYING OBJECT ACCELERATION METHOD BY MEANS OF A RAIL-GUN TYPE TWO-STAGE ACCELERATING APPARATUS

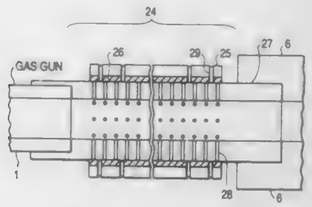
Masanori Onozuka, and Yasushi Oda, both of Kobe, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 963,043, Oct. 19, 1992, abandoned, which is a continuation of Ser. No. 638,435, Jan. 7, 1991, abandoned. This application Nov. 16, 1993, Ser. No. 152,697

Claims priority, application Japan, Jun. 28, 1990, 2-168557; Jun. 29, 1990, 2-169999; Jul. 2, 1990, 2-172665; Jul. 2, 1990, 2-172666; Jul. 2, 1990, 2-172667; Jul. 3, 1990, 2-174395; Sep. 3, 1990, 2-230570

Int. Cl.[6] F41B *6/00*

U.S. Cl. 89—8 **1 Claim**



1. A two-stage railgun accelerating apparatus for accelerating an object, said apparatus comprising:

an initial accelerating device including a gas gun having means for generating acceleration gas under pressure to initially accelerate an object in the apparatus;

a railgun section including a pair of spaced apart rails defining a flying object passageway therebetween;

an introducing pipe extending between said initial accelerating device and said railgun section so as to direct the initially accelerated object toward the flying object passageway, said introducing pipe including an inner introducing pipe having holes extending radially therethrough, and an outer introducing pipe extending around said inner introducing pipe, said outer introducing pipe having holes extending radially therethrough, and said outer introducing pipe being rotatable relative to said inner introducing pipe so that the pressure of accelerating gas passing through the introducing pipe is adjustable by rotating the outer introducing pipe relative to the inner introducing pipe;

power supply means for applying a voltage between the rails of said railgun section.

5,386,760

BRAKE BOOSTER WITH REACTION DISK RETAINER

Hiroya Goto, and Tohru Satoh, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1993, Ser. No. 160,953

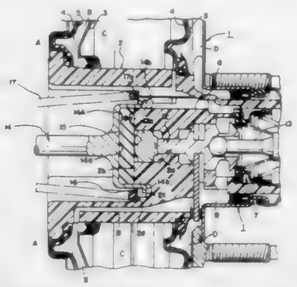
Claims priority, application Japan, Dec. 11, 1992, 4-353413

Int. Cl.[6] F15B *9/10*; **F16J** *1/10*

U.S. Cl. 91—369.2 **8 Claims**

1. A brake booster comprising a valve body slidably disposed within a shell, an annular projection formed on the valve body, an output shaft having a recess formed in its one end in which a reaction disc is received and which is slidably fitted over the annular projection on the valve body, and a return spring disposed between the shell and the valve body for returning the valve body to its inoperative position;

characterized in that a retainer which is formed into an annular configuration is interposed and held between one end of the return spring and an end face of the valve body, while the outer periphery of the recess formed in one end of the output shaft is formed with a stop which projects radially outward, with the stop being engaged with the



retainer to thereby prevent the recess from being disengaged from the annular projection on the valve body.

5,386,761

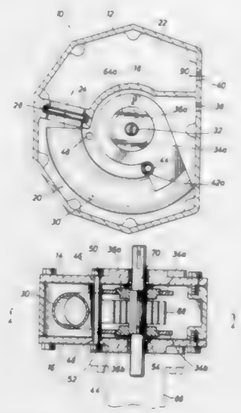
ROTARY VALVE ACTUATOR

Edward G. Holtgraver, Spring, Tex., assignor to Savings by Design, Inc., Spring, Tex.

Continuation-in-part of Ser. No. 917,155, Jul. 20, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 76,479

Int. Cl.[6] F01C *9/00*

U.S. Cl. 92—120 **20 Claims**



1. A rotary valve actuator for rotating the valve shaft of a valve between first and second positions comprising a housing having a continuous, open ended side wall and first and second end plates at opposite ends of the side wall to seal the space within the side wall, said end plates having aligned openings to receive and support an output shaft, a partition extending across the space between the end plates dividing the space into first and second compartments, an arcuate piston assembly including an arcuate piston, an output shaft for mounting in the end plates for supporting the arcuate piston for movement along an arcuate path, and lever arm means connecting the piston to the shaft, said assembly located in the housing with the output shaft positioned in the aligned openings in the end plates to support the piston for movement along an arcuate path, an opening in the partition through which the arcuate piston moves as the arcuate piston travels the arcuate path, the arcuate piston assembly being movable into and out of the first compartment in the housing through the open end of the side wall when one of the end plates is removed, and means for

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urging the arcuate piston to move along the arcuate path and to rotate the valve shaft between first and second positions.

7. A removable piston assembly comprising

an arcuate piston engaged to an output shaft by a lever arm means, the output shaft having a hexagonal middle portion, the lever arm means having a hexagonal aperture surrounding the output shaft,

a means for positioning and securing the lever arm means to the output shaft, the means for positioning and securing the lever arm means having a first, second, and third section,

the first section having an opening for accommodating the output shaft,

the second section being hexagonal and having a hexagonal aperture for accommodating the hexagonal middle portion of the output shaft,

the third section being circular and having a hexagonal aperture for accommodating the hexagonal middle portion of the output shaft,

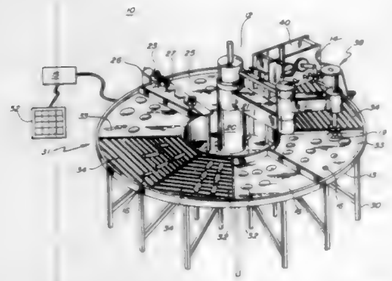
the second section also being of sufficient dimensions such that the second section fits into the hexagonal aperture of the lever arm means.

5,386,762

ROBOTIC CHEF

Phillip E. Gokey, 1145 N. Parker Dr., Janesville, Wis. 53545

Continuation-in-part of Ser. No. 944,298, Sep. 14, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 218,248
Int. Cl.[6] A47J *37/00, 37/06*
U.S. Cl. 99—326 13 Claims



1. An apparatus for automatically cooking a multiplicity of individual food items having an annular cooking area, a feeding system, a robot, and a programmable controller comprising

a) the annular cooking area having multiple removable segments formed thereon; and a means for heating said cooking area to a settable temperature;

b) the feeding system having a dispenser magazine with a plurality of food carriers and a means for accepting a plurality of food carriers, each of said food carriers containing a multiplicity of food items and a means for presenting the individual food carriers for access by the robot to access each individual food item:

c) the robot having a plurality of individually selectable and attachable end effectors each of said end effectors adapted for selecting and obtaining the individual food items, manipulating the individual food items from the feeding system during cooking, or removing each of said multiplicity of individual food items from said cooking area;

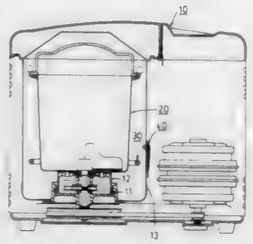
d) the programmable controller for settably controlling, coordinating and synchronizing the operation and heating of the rotating annular cooking area, the feeding system and the robot whereby the programmable controller receives the input from an operator selecting a food item for cooking and commands the robot to select and cook the food item while maintaining control over the robot so that the programmable controller instructs the robot to turn, manipulate, or remove the selected food item at selectable predetermined times.

5,386,763

AUTOMATIC BAKING MACHINE WITH PREHEATING CAPABILITY AND METHOD FOR CONTROLLING OPERATION THEREOF

Shang-Hsien Chen, No. 27, Sec. 3, Chung-Shan Rd., Tan-Tzu Hsiang, Taichung Hsien, Taiwan, Prov. of China

Filed Jan. 27, 1994, Ser. No. 186,960
Int. Cl.[6] A47J *27/00*
U.S. Cl. 99—327 4 Claims



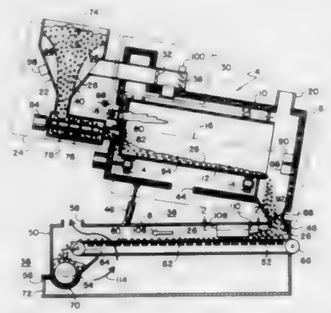
1. An automatic baking machine including a hollow housing, a container disposed in said housing for containing dough therein, a temperature sensing unit disposed in said housing for detecting temperature of said container, said temperature sensing unit detecting an initial container temperature of said container when said automatic baking machine is activated, and a heating device operable so as to heat said container, wherein the improvement comprises: means, connected to said temperature sensing unit and said heating device, for controlling said heating device to preheat said container up to a preheating temperature corresponding to said initial container temperature for a predetermined time period when said initial container temperature detected by said temperature sensing unit is lower than a predetermined temperature, wherein said preheating temperature is inversely proportional to said initial container temperature.

5,386,764

GRAIN ROASTER/COOLER WITH PREHEATER

William J. Ratajczek, P.O. Box 1173, Trempealeau, Wis. 54661

Filed Jul. 27, 1993, Ser. No. 97,878
Int. Cl.[6] A23N *12/10*
U.S. Cl. 99—483 8 Claims



1. A temperature conditioning apparatus for processing grain; comprising:

a grain transferring device adapted to pass said grain therethrough, said grain transferring device having a transfer inlet adapted to receive said grain at a first temperature,

said grain transferring device having a transfer outlet adapted to expel said grain at a second temperature with said second temperature being greater than said first temperature to provide a preheat temperature differential;

a roaster having a rotatable drum adapted to pass said grain therethrough, said drum being open at one end to define a roaster inlet coupled to said transfer outlet and being adapted to receive said grain at said second temperature, said drum being open at an opposite end to define a roster outlet adapted to expel said grain at a third temperature with said third temperature being greater than said second temperature to provide a roaster temperature differential;

a heat source adapted to discharge heat into said rotatable drum to directly heat said grain passing therethrough;

a shell disposed over a portion of said drum, said shell having portions spaced apart from said drum to define an air gap therebetween; and

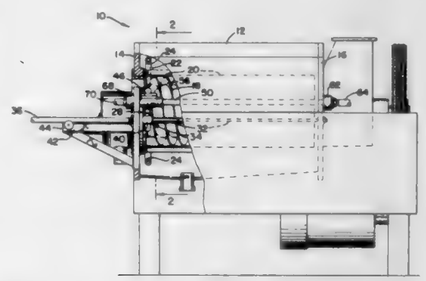
a preheater in heat absorbing relationship with said roaster and in heat emitting relationship with said grain transferring device, said preheater being adapted to force heated air at a fourth temperature from said air gap and toward said grain transferring device, whereby said grain in said grain transferring device is preheated before entering said rotatable drum of said roaster.

5,386,765

AUTOMATIC SPRAY RING FOR USE IN A JUICE FINISHER

Gregory J. Olusczak, and Michael L. Suter, both of Lakeland, Fla., assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 837,223, Feb. 18, 1992, Pat. No. 5,193,446. This application Dec. 18, 1992, Ser. No. 993,267
Int. Cl.[6] A23N *1/00;* B30B *9/14;* B08B *3/02, 9/00*
U.S. Cl. 99—486 5 Claims



1. In a finisher, having an internal screen supported between end wall bulkheads, for separating pulp from a raw juice stream, the improvement comprising:

a perforated spray ring mounted outboard of the screen of said finisher, said ring encircling said screen and capable of horizontally traversing said screen without contact with said screen;

a guide means extending horizontally from one of said bulkheads to a second of said bulkheads;

a fixture carried on said guide means and connected to said perforated spray ring, said fixture having a fluid inlet port and a fluid outlet port allowing fluid to flow from the interior of said fixture to the interior of said spray ring;

a linear rodless cylinder, having a piston carried in the cylinder, mounted between said end wall bulkheads, said rodless cylinder having a yoke portion supporting a bracket, said bracket connected to said perforated spray ring;

means for supplying low pressure fluid to said linear rodless cylinder to cause the piston to move linearly;

means for supplying fluid under high pressure to said spray ring;

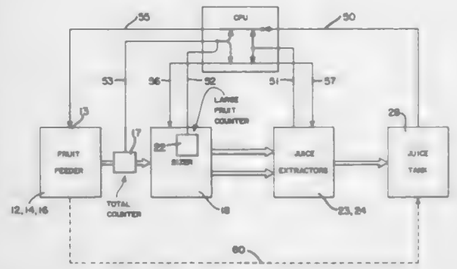
control means, including a sensor, for cycling said perforated spray ring longitudinally along the length of said internal screen of said finisher and for supplying high pressure fluid to said spray ring.

5,386,766

AUTOMATIC JUICE EXTRACTION SYSTEM

Guillermo T. Segredo, and Michael L. Suter, both of Lakeland, Fla., assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 20, 1993, Ser. No. 49,892
Int. Cl.[6] G01N *33/14*
U.S. Cl. 99—495 9 Claims



1. A method of controlling extractor cycle optimization of juice extractors in a juice extraction system comprising the steps of:

determining the total quantity of fruit coming into the system,

determining the number of fruit of a first given size coming into the system,

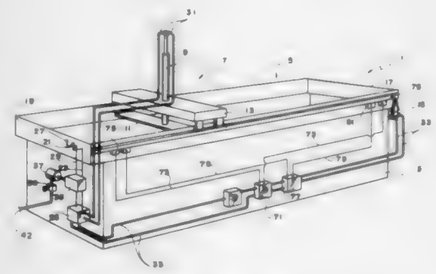
adjusting the cycle speed of an extractor, said extractor provided with a variable speed drive allowing the extractor to be driven between a maximum cycle speed and a cycle speed more than fifty percent less than the maximum speed, when the number of fruit of a first given size is proportionately different from an optimized proportion of fruit of a first given size to the total fruit coming into the system.

5,386,767

AUTOMATIC CONTROLLER FOR COTTON MODULE BUILDERS

James K. Edinburgh, 327 S. Ivy, Crosbyton, Tex. 79322

Filed Sep. 29, 1993, Ser. No. 128,248
Int. Cl.[6] B30B *15/16*
U.S. Cl. 100—48 11 Claims



1. A cotton module builder comprising:

a bin for containing cotton deposited through a top open end thereof;

tamping means mounted on said top open end for performing a tamping function by compacting cotton contained

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within said bin, said tamping means including a tamping platen for performing said tamping function and a vertical drive means for selectively moving said tamping platen in a downward direction towards any cotton contained in said bin and in an upward direction away from any cotton contained in said bin;

horizontal drive means for allowing said tamping means to move horizontally along said top open end of said bin when activated in a predetermined mode, said predetermined mode selectively adjustable between a forward mode for moving said tamping means in a first horizontal direction toward a first end of said bin and a reverse mode for moving said tamping means in a second horizontal direction opposite said first horizontal direction toward a second end of said bin opposite said first end of said bin; and

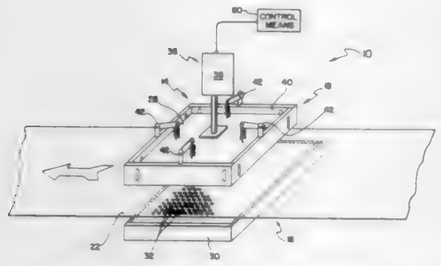
controller means for automatically and continuously operating said vertical drive means and said horizontal drive means in predetermined cycles.

5,386,768

APPARATUS FOR DEWATERING SLUDGE

Heinz Goetz, Pittsburgh, Pa., assignor to Roediger Pittsburgh, Inc., Allison Park, Pa.

Filed Mar. 26, 1993, Ser. No. 37,252
Int. Cl.[6] B30B *15/14, 9/24*
U.S. Cl. 100—50 10 Claims



1. An apparatus for dewatering sludge comprising:

pressure plate means for compressing the sludge on a belt, said pressure plate means comprising a first plate disposed on a first side of the belt and a second plate disposed in an opposing relationship with the first plate on a second side of the belt, said pressure plate means comprising means for moving the first plate towards the second plate such that the sludge is compressed there between, said moving means fixedly attached to a top surface of the first plate; and

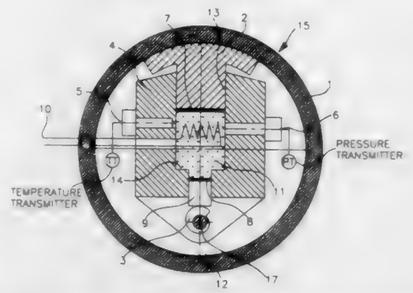
means for confining the sludge within a predetermined area on the surface as the pressure plate means compresses the sludge; said confining means disposed adjacent to said pressure plate means, said confining means comprises a sealing frame which surrounds the perimeter of the first plate and seals against the belt to confine the sludge as the first plate moves to compress the sludge, said sealing frame directly attached to only the top surface of the plate with a plurality of independent linkages which independently apply a corresponding greater force against the frame to hold the sludge as the first plate applies greater force, said linkages remote from the moving means, said linkages applying a force to the sealing frame only from the action of the first plate.

5,386,769

ADJUSTABLE PRESS ROLLER USING SILICONE ELASTOMER AS PRESSURE MEDIUM

Erkki Rinne, Kylatie 9A1, SF-00320 Helsinki, Finland

Continuation-in-part of Ser. No. 592,270, Oct. 3, 1990, Pat. No. 5,174,585. This application Nov. 30, 1992, Ser. No. 983,394
Claims priority, application Finland, Oct. 3, 1989, 894671
Int. Cl.[6] B30B *15/34, 3/04*
U.S. Cl. 100—93 ORP 12 Claims



1. An adjustable press roller for adjusting and controlling roller deflection and nip pressure between the press roller and a counter surface, said press roller comprising:

a stationary yoke defining at least one opening surrounded by side walls and a bottom wall;

a hollow cylindrical shell arranged rotatably around the stationary yoke, and being disposed for pressing the nip of the rollers, a pressing member mounted in the at least one opening of the yoke in slidable engagement with the side walls and for pressing against an inner wall of said shell to deflect the shell such that it radially presses on the nip and under tension, said pressing member and said inner wall of said shell having a sliding engagement therebetween, said pressing member and said opening defining a space;

a pressure medium disposed in the space for expanding and deforming to transmit a force to the pressing member and for returning to its initial state upon release of pressure thereon, wherein the pressure medium comprises a room temperature vulcanizing silicone elastomer compound, the silicone serving as a hydraulic fluid replacing pressure medium; and

a pressure creating member for applying pressure on the silicone such that the silicone, by way of its expansion and deformation in response thereto, transmits pressure to the pressing member which is, in turn, pressing against the inner wall of said shell, which shell thus deflects radially pressing said nip, and upon releasing said pressure, the silicone resumes its initial state, assisted by the tension of the deflected shell.

5,386,770

INSTALLATION FOR COMPACTING WASTE AND WASTE ASSEMBLY

Steven B. De Boer, Akkerweg 26; P.O. Box 1068., 1270 BB Huizen, Netherlands

PCT No. PCT/NL91/00082, § 371 Date Nov. 5, 1993, § 102(e) Date Nov. 5, 1993, PCT Pub. No. WO92/20516, PCT Pub. Date Nov. 26, 1992
PCT Filed May 17, 1991, Ser. No. 140,160
Int. Cl.[6] B30B *5/00*
U.S. Cl. 100—177 9 Claims

1. Installation for compacting waste, comprising: a chamber having an inlet and an outlet; a rotary element housed in said chamber, said rotary element including a partition drum and a plurality of partitions; means for moving said rotary element in a direction along an interior wall of the chamber in order to define a space between the wall and the rotary chamber, said space decreasing in the direction of movement of the rotary



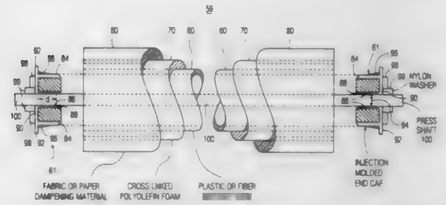
element; and means for closing the inlet such that said means form a part of the wall of the chamber.

5,386,771

DISPOSABLE UNITARY DAMPENING ROLLER

David J. McCartney, 26A Worlds Fair Dr., Somerset, N.J. 08873, and Anthony Sorresso, West Babylon, N.Y., assignors to David J. McCartney, Somerset, N.J.

Filed Oct. 28, 1993, Ser. No. 144,837
Int. Cl.[6] B41L *25/18*
U.S. Cl. 101—148 6 Claims



1. A unitary, disposable dampening roller assembly for use in a lithographic press assembly comprising:

a rigid cylindrical and relatively thin-walled support tube having an inner surface and an outer surface; the difference between the inner and outer surfaces defining the thickness of the wall of the tube, and the thickness of the wall of the tube being no more than one tenth the inner diameter of the cylindrical support tube;

a layer of resilient material fixedly bonded to the outer surface of said support tube;

a layer of moisture absorbent material fixedly bonded to an outer surface of said layer of resilient material; and

a pair of end caps, one end cap being fixedly mounted within each end of said support tube, each end cap having a radially extending flange engaging a respective end of said support tube, and said end caps including means for removably mounting the assembly on a rotatable axle of a lithographic press.

5,386,772

HIGH SPEED MEDIA MANAGEMENT DEVICE

Charles V. Tolle, Encino; Mark A. Hitz, Granada Hills; Robert P. Johnson, St. Clarita, and Steven C. Szabo, La Canada-Flintridge, all of Calif., assignors to Datametrics Corporation, Woodland Hills, Calif.

Filed Jun. 15, 1993, Ser. No. 77,289
Int. Cl.[6] B41F *13/24*
U.S. Cl. 101—248 16 Claims

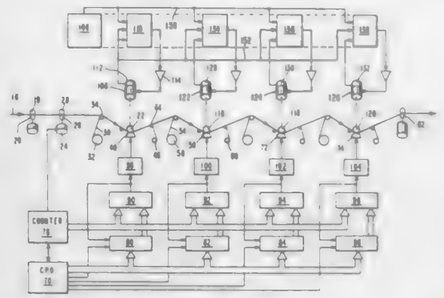
1. An improved web transport apparatus comprising:

a. tractor means for moving the web in a desired direction of travel, said tractor means including at least one deformable driving capstan roller and further including bias means urging said capstan roller against said web treatment means;

b. web tensioning means cooperating with said tractor means to maintain the web under substantial tension throughout a transport path;

c. counting means in contact with the web when placed in motion by said transport means, for generating count signals corresponding to and representative of the passage of an incremental length of web through the apparatus and including counter means for accumulating count signals;

d. first settable register means including comparator means



coupled to receive signals from said counter means corresponding to the count stored therein, said register means being adapted to receive a count representative of a first predetermined distance for generating a first actuating signal when the distance travelled increment of web, as represented by counter means signals, is equal to the predetermined distance from the location of said counting means; and

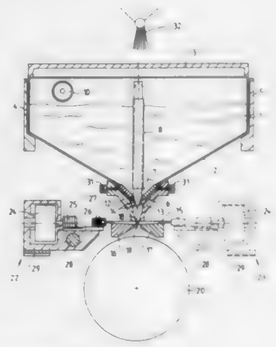
e. first web treatment means at a first work station displaced from said counting means in the direction of web travel, connected to said comparator means and operable in response to said first actuating signal to initiate a treatment activity on the web.

5,386,773

INK DOSING APPARATUS FOR PRINTING PRESS

Gregor Flade, Meckesheim, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Dec. 10, 1993, Ser. No. 166,087
Claims priority, application Germany, Dec. 11, 1992, 4241809
Int. Cl.[6] B41F *31/02, 31/08*
U.S. Cl. 101—366 17 Claims



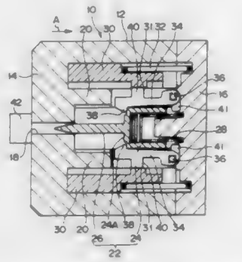
1. A printing press comprising:

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a frame;
a plate cylinder being rotatably mounted on said frame;
a plurality of ink applicator rollers for being engaged with said plate cylinder and for applying ink to said plate cylinder;
a plurality of inking rollers for applying ink to said plurality of ink applicator rollers;
said plate cylinder having a printing width for accommodating ink, and said plurality of inking rollers having an inkable width corresponding to the printing width of said plate cylinder;
said plurality of inking rollers defining a plurality of zones along the inkable width thereof;
means for supplying ink to said plurality of inking rollers;
a receiving roller for receiving ink from said ink supplying means and for distributing the ink among said plurality of inking rollers, said receiving roller having an inkable width corresponding to the inkable width of said plurality of inking rollers;
said ink supplying means comprising:
means for holding a supply of ink;
said holding means having a lower portion disposed towards said receiving roller;
at least one opening disposed in said lower portion of said holding means, said at least one opening being positioned to supply ink to said receiving roller over substantially the entire inkable width of said receiving roller;
a plurality of slides being slidably mounted below said at least one opening;
said plurality of slides being configured for varying the flow of ink to each of said zones, each of said slides corresponding to one of said zones;
means for selectively positioning said slides to adjust said slides to vary the flow of ink to the zones corresponding to said slides;
each of said slides comprising at least one open area for permitting the flow of ink therethrough;
said at least one open area Of each said slide being adjustable with respect to said at least one opening of said holding means to vary the flow of ink to the zone corresponding to each said slide; and
said positioning means comprising actuator means for sliding each of said slides to adjust said at least one open area of each said slide with respect to said at least one opening of said holding means to vary the flow of ink to the zone corresponding to each said slide.

5,386,774
MECHANICAL SENSOR
Toshimasa Yamamoto; Seiji Nishide; Yasuho Kitazawa; Keiichi Katoh, and Kenji Matsui, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokairika-Denki-Seisakusho, Aichi, Japan
Filed Sep. 24, 1993, Ser. No. 125,806
Claims priority, application Japan, Sep. 28, 1992, 4-067428; Aug. 31, 1993, 5-047331; Aug. 31, 1993, 5-047407
Int. Cl.[6] F42C *1/04;* B60R *21/08;* H01H *35/14;* C06D *5/00*
U.S. Cl. 102—274 20 Claims

11. An acceleration sensor for activating an ignition means at a time of sudden deceleration of a vehicle comprising:
an inertial body that moves during said sudden deceleration of said vehicle;
a firing pin that is employed to strike said ignition means;
trigger means being pivotally provided for holding said firing pin in a position separated from said ignition means during a normal state of said vehicle, and releasing said firing pin when said inertial body moves;
urging means for urging said firing pin in a striking direction of said ignition means; and
means for maintaining engagement of said trigger means with said firing pin until said inertial body is moved a predetermined amount, by acceleration, and for moving said trigger means quickly and sharply away from said firing pin one in which said inertial body has moved said

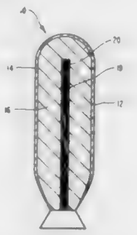


predetermined amount, parallel to a direction of an axis of said firing pin.

5,386,775
AZIDE-FREE GAS GENERANT COMPOSITIONS AND PROCESSES
Donald R. Poole, Woodinville, and Patrick C. Kwong, Seattle, both of Wash., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.
Filed Jun. 22, 1993, Ser. No. 81,013
Int. Cl.[6] C06B *95/00*
U.S. Cl. 102—289 21 Claims

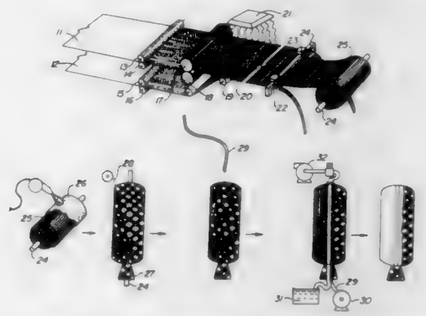
1. An azide-free gas generating composition that forms gases on combustion useful for inflating an automobile or aircraft safety restraint device comprising at least one relatively low energy nitrogen containing fuel and at least one burn rate accelerator comprising alkali metal salts of organic acids.

5,386,776
BORE MITIGANTS FOR SOLID PROPELLANT ROCKET MOTORS
Robert L. Hatch, Wellsville; Robert D. Taylor, Hyrum, and Jerald C. Hinshaw, Ogden, all of Utah, assignors to Thiokol Corporation, Ogden, Utah
Filed Feb. 24, 1993, Ser. No. 22,180
Int. Cl.[6] C06B *45/00*
U.S. Cl. 102—290 25 Claims



1. A method for mitigating the effect of unintended impact on a rocket motor, comprising the steps of:
providing a rocket motor having a casing, a grain of propellant placed within said casing, and an internal bore disposed within said propellant grain; and
placing within said core a sufficient quantity of a material mitigant such that if the rocket motor receives an unintended impact, the material mitigates the effects of the impact, said material mitigant having a density of not less than approximately 0.06 grams/cc.

5,386,777
ROCKET MOTOR CONSTRUCTION FROM POROUS BINDER CORE
Richard L. Lou, Rocklin; Norman Mittermaier, Placerville, and George M. Clark, Orangevale, all of Calif., assignors to Aero-Jet General Corporation, Rancho Cordova, Calif.
Filed Feb. 10, 1992, Ser. No. 833,235
Int. Cl.[6] C06D *5/06;* F42B *33/00*
U.S. Cl. 102—291 52 Claims



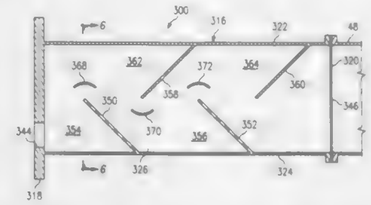
1. A method for the manufacture of a solid propellant-based rocket motor, said method comprising:
(a) forming a body of solid foraminous poly(vinyl alcohol) in the shape of a propellant grain of a solid propellant-based rocket motor with an axial passage;
(b) encasing said body of solid foraminous poly(vinyl alcohol) in a solid inert shell;
(c) with said axial passage blocked, filling the interstitial volume of said body of solid foraminous poly(vinyl alcohol) with a liquid oxidizer; and
(d) permitting said liquid oxidizer to permeate said poly(vinyl alcohol) and to thereby form a solid continuous mass.

5,386,778
PROCESS FOR VISUALIZATION OF A BLAST WAVE
John D. Sullivan, Jr., Edgewood, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 11, 1993, Ser. No. 3,063
Int. Cl.[6] F42D *3/00;* F42B *13/44*
U.S. Cl. 102—302 9 Claims

1. A process of visualization of a blast wave by observing disturbance contours on a cloud, comprising in combination, the following steps:
setting up and dispensing an interceptive medium having an observable broadside,
detonating an explosive charge in the vicinity of the medium, using a means for creating the disturbance contours on the cloud,
an image of the broadside of the medium being formed, projecting the formed image onto a recording means and copying the recorded image, and
graphically plotting distance and time pertaining to the recorded image thereby producing data related to the visualization of the explosive wave.

5,386,779
PASSIVE AIR BLAST ATTENUATORS AND VENTILATORS
Quentin A. Baker, San Antonio, Tex., assignor to Wilfred Baker Engineering, Inc., San Antonio, Tex.
Filed Aug. 14, 1992, Ser. No. 930,723
Int. Cl.[6] F42D *5/00;* F42B *3/00*
U.S. Cl. 102—303 21 Claims

1. An air blast attenuator and ventilator comprising a hollow housing defining a flow passageway including:
a front wall having a first orifice extending therethrough;
a rear wall having a second orifice extending therethrough; and
chamber forming means located in said housing for forming a gas receiving chamber disposed between said front wall



and said rear wall, said chamber forming means including a baffle wall located to prevent flow directly between said first and second orifices, said baffle wall having an opening aligned with said first orifice permitting flow directly from said first orifice into said chamber.

5,386,780
METHOD AND APPARATUS FOR EXTENDED TIME DELAY OF THE DETONATION OF A DOWNHOLE EXPLOSIVE ASSEMBLY
Dieter N. Klein, Houston, Tex., assignor to Halliburton Company, Houston, Tex.
Filed Oct. 21, 1992, Ser. No. 964,172
Int. Cl.[6] F42B *3/00;* C06D *5/04*
U.S. Cl. 102—313 19 Claims



1. A system for detonating an explosive in a well, said system comprising:
(a) a firing head assembly, said firing head assembly including
(1) an assembly housing,
(2) an actuation mechanism, said actuation mechanism contained within said assembly housing, said actuation mechanism operable to receive an actuation signal and to generate an ignition signal in response thereto,
(3) a delay mechanism, said delay mechanism contained within said assembly housing, said delay mechanism including a plurality of delay portions arranged to be sequentially operative, at least two of said plurality of delay portions arranged in generally coextensive relation to one another, said delay mechanism operable to receive said ignition signal and to generate a detonation signal after said ignition signal has been communicated sequentially through said plurality of delay portions; and
(b) an explosive operably coupled to said firing head assembly, said explosive operable to receive said detonation signal and to detonate when said detonation signal is received.

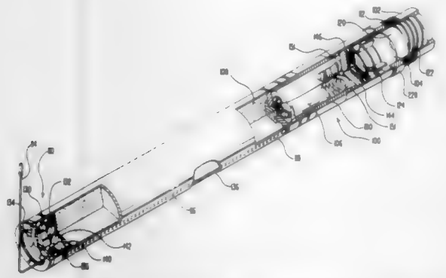
VOL 1171 ISS 1 FE 7 1995 UMI

5,386,781

PARACHUTE DEPLOYMENT SYSTEM

Evan E. Day, Brigham City, Utah, assignor to Thiokol Corporation, Ogden, Utah

Filed Nov. 12, 1992, Ser. No. 976,207
Int. Cl.[6] F42B 4/28
U.S. Cl. 102—340 25 Claims



1. A parachute deployment system for use in a warhead, comprising:
- a warhead including a motor adapter configured for separably attaching a motor to the warhead;
- a main parachute coupled to said warhead;
- a fabric deflector being positioned within the warhead;
- a pusher plate;
- a first extraction line coupling said motor adapter to said pusher plate; and
- a second extraction line coupling said pusher plate to said fabric deflector such that upon separation of the warhead from the motor adapter, said fabric deflector is extracted from the warhead and causes radial forces to act upon the motor adapter to alter the direction of travel of the motor.

11. A parachute deployment system for use with a warhead, comprising:
- a warhead including an extraction implement capable of separation from the warhead to promote deployment of the system;
- a main parachute pack including a main parachute arranged within a main chute cover;
- a drogue parachute pack including a drogue parachute arranged within a drogue chute cover, said main parachute pack and said drogue parachute pack configured to be positioned in a side-by-side, detached relationship within the warhead;
- an extraction line coupling said drogue parachute pack to the extraction implement; and
- a support line coupling said drogue parachute pack to said main parachute pack and coupling said main parachute pack to the warhead such that upon separation of the extraction implement from the warhead, said drogue parachute pack is extracted from the warhead prior to extraction of said main parachute pack.

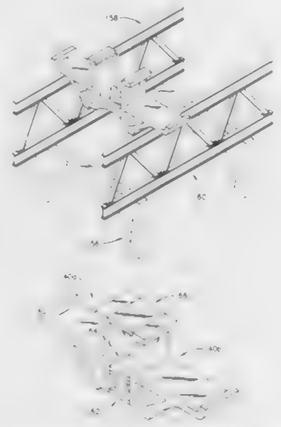
5,386,782

RAPID TRANSIT VIADUCT SYSTEM WITH CENTRAL PLATFORM STATION

Antonio Dinis, La Jolla, and Gerard Sauvageot, Poway, both of Calif., assignors to J. Muller International, San Diego, Calif.

Continuation-in-part of Ser. No. 839,858, Feb. 21, 1992, Pat. No. 5,231,931, which is a continuation-in-part of Ser. No. 824,502, Jan. 23, 1992, abandoned. This application Aug. 2, 1993, Ser. No. 100,726
Int. Cl.[6] B61B 5/00
U.S. Cl. 104—124 10 Claims

6. A rapid transit viaduct system with central station platform comprising:
- a plurality of precast concrete viaduct segments, each segment including;
- a central load bearing body;
- a pair of lateral vehicle support structures mounted to opposite side portions of said central body, said vehicle support structures being configured to support a least one pair of vehicle support rails; and
- said central body extending upwardly from said lateral vehicle support structures to provide a barrier between said pairs of vehicle support rails disposed on each of said vehicle support structures;



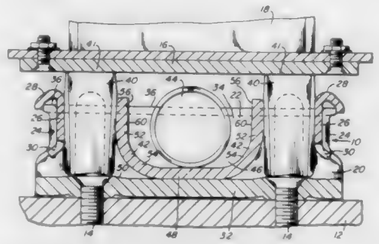
- a plurality of upright piers disposed below and supporting said viaduct segments;
- said central station platform including:
- some of said precast concrete viaduct segments being vertically divided and spaced apart a selected distance;
- a plurality of spacer blocks disposed between said spaced apart viaduct segments; and
- a plurality of platform slabs disposed between said spaced apart viaduct segments, above said spacer blocks.

5,386,783

RAILWAY TRUCK SIDE BEARING

Dennis Rhen, McMurray; James F. Wright, Washington, and Bruce E. Henderson, Harmony, all of Pa., assignors to Hansen Inc., Pittsburgh, Pa.

Continuation of Ser. No. 630,336, Dec. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 473,307, Feb. 1, 1990, abandoned. This application May 4, 1993, Ser. No. 57,441
Int. Cl.[6] B61F 5/14
U.S. Cl. 105—199.3 33 Claims



1. In a railway vehicle side bearing having a rigid elongated housing which is adapted to be carried by a railway truck to support a railway car body with the housing having laterally spaced, upwardly projecting side walls and longitudinally spaced, upwardly projecting end walls with respective upper-

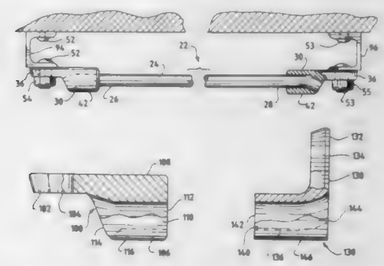
most edges, such side and end walls enclosing an upwardly open elongated cavity, a bearing assembly adapted to be received within such elongated cavity for engagement with a wear plate carried by such railway car body comprising:
- compliant bearing means adapted to be disposed within such elongated cavity adjacent at least one of such walls and having an upper end surface means disposed vertically above such uppermost edges;
- said compliant bearing means including at least one upstanding, resiliently deformable elastomeric bearing element having a vertically extending surface portion;
- a rigid, elongated spacer means adapted to be disposed within such elongated cavity adjacent said vertically extending surface portion;
- said spacer means including an upwardly facing surface means extending thereon, and an upstanding abutment means which is cooperable with at least some of such walls and engagable with said vertically extending surface portion to at least partially confine said elastomeric element within such cavity;
- rigid bearing means supported on said upwardly facing surface means and being moveable thereon in opposed directions within predetermined limits;
- said rigid bearing means being of an overall vertical height that, when supported upon said upwardly facing surface means with said spacer means disposed within such cavity, said rigid bearing means has an uppermost extent located above such uppermost edges of such side and end walls;
- said elastomeric element being vertically deformable in compression and having an overall vertical height when disposed within such elongated cavity that said upper end surface means of said compliant bearing means is disposed vertically above said uppermost extent of said rigid bearing means to maintain a vertical spacing between said rigid bearing means and such wear plate throughout a range of vertically downwardly directed loadings applied to said elastomeric element by engagement of said compliant bearing means with such wear plate and to permit such wear plate to engage said rigid bearing means when said vertically downwardly directed loading on said elastomeric element equals a given load; and
- said abutment means being engagable with said vertically extending surface portion at an elevation above such uppermost edges of such side walls and end walls to confine at least a portion of said elastomeric element above such side walls and end walls under such vertically downwardly directed loadings.

5,386,784

RAILROAD CAR HAND HOLD ASSEMBLY

Charles W. Meier, 3100 Canterbury Ln., Topeka, Kans. 66604

Filed Jun. 7, 1993, Ser. No. 73,167
Int. Cl.[6] E06C 5/00
U.S. Cl. 105—461 17 Claims



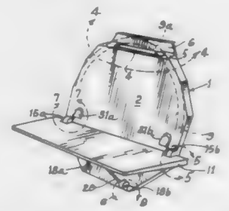
1. A system including a wall and an assembly for installing a hand hold on said wall comprising:
- an elongated rod having two ends;
- said rod being structured and dimensioned to be cut to an appropriate length and to be contorted into a desired configuration;
- a first mount and a second mount, each mount having a support flange with an aperture through which an attachment means is provided for securing said mount flush against an exterior portion of said wall and a cylindrical socket through which a bore extends, said bore being sufficiently large to receive one of said ends of said rod;
- each of said ends of said rod including a forged part formed in said bore of said first and second mounts, respectively, to integrally interconnect said rod with said mounts; and
- said first mount and said second mount being independently selected from the group consisting of:
- (a) an offset mount for connecting one of said ends perpendicular to said wall; and
- (b) a straight mount for connecting one of said ends parallel to said wall.

5,386,785

COMBINED SUPPORT AND ARTICLE-SUPPORT PANEL FOR USE IN CONJUNCTION WITH A VEHICLE STEERING WHEEL

Peter Naor, 17581 Caminito Canasto, San Diego, Calif. 92127

Filed Jul. 22, 1992, Ser. No. 918,281
Int. Cl.[6] A47B 23/00
U.S. Cl. 108—44 8 Claims



1. A combination of support means and an article-support panel for sustaining objects in a practical suspended manner upon a vehicle steering wheel, comprising:
- a support means, said support means including:
- a top panel, said top panel possessing approximately axially symmetrical shape about its perpendicular center line; said top panel having a plurality of peripheral margins, said margins having downward depending flanges therefrom to define a bottom opening; whereby said bottom opening spans over and receives a vehicle steering wheel;
- a detachability mounting means integrally provided along an upper extremity of said top panel for detachability mounting of said support means upon said vehicle steering wheel; said detachability mounting means including:
- a first flange means, rearward extending and perpendicularly disposed from an upper extremity of said top panel;
- a second flange means, said second flange oriented substantially in parallel relationship with said top panel, upwardly extending and perpendicularly disposed from an end of said first flange means;
- a slot provided in said first flange means for receiving a top segment of said steering wheel, said slot terminated by a pair of oppositely-disposed curved slot margins;
- whereby said slot in said first flange means is adapted to engage said steering wheel at said slot margins, and said slot margins define a length of a top segment of said steering wheel adapted to project through said slot;
- whereby said second flange means is abutting a posterior side of said top segment of said steering wheel, for stabilizing said support means upon the steering wheel;
- a first team of bearing means, downwards of said detachability mounting means, integrally provided on said top panel of said support means; each said first bearing means upwardly extending from the surface at opposing sides of

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said top panel; each said first bearing means having a plurality of bore means, longitudinally aligned and oppositely disposed on said first bearing means upwardly extending surfaces;

a second team of bearing means, downwards of said first team of bearing means, integrally provided on said top panel of said support means; each said second bearing means upwardly extending from the surface at opposing sides of said top panel; each said second bearing means having a plurality of bore means, longitudinally aligned and oppositely disposed on said second bearing means upwardly extending surfaces;

an article-support panel, generally planar having a front and rear side, a left and right side and side flanges depending thereof; said article support panel having a top and a bottom side, said bottom side having an underside surface, said article-support panel includes:

a plurality of apertures extending part-way from said rear side toward said front side of article-support panel; said apertures having downward extending inner flanges; said downward inner flanges surfaces having a plurality of bore means, said bore means longitudinally aligned and oppositely disposed;

a guide aperture means, said guide aperture means including:

a linear rod affixed to said bottom side of said article-support panel, centrally extending from rear to front thereof, providing an aperture between said bottom underside surface to said linear rod; said linear rod having a rear affixing point and a front affixing point;

an adjustable stop means comprising: a block of rigid material having a first bore through it and a second bore perpendicularly disposed thereto, said second bore being threaded to receive a quick-acting torque screw means thereto; said quick-acting torque screw means having a lever means to facilitate manual rotation;

whereby said linear rod extends trough said first bore and said block is sliding upon said linear rod; thereby rotating said lever of said quick-acting torque screw in a tightening direction, said quick-acting torque screw fasten upon said linear rod to stop any sliding motion thereof; whereby said guide aperture means extent is infinitely variable between said linear rod rear affixing point to said adjustable stop means;

whereby said first team of bearing means extend into said apertures of said article-support panel and said apertures at said rear side of said article-support panel is adapted to interlace with said first team of bearing means;

a shaft means of predetermined diameter is extending through each said bore means of said apertures and through each said bore means of said first team of bearing means; thereby pivotally couple said article-support panel onto said support means; whereby said article-support panel is selectively foldable upon said shaft means toward and apart from said top panel of said support means;

a V-shaped rod of predetermined proportions is routed through said guide aperture means, said V-shaped rod having a closed end and a plurality of spaced-apart extending arms, a plurality of ends of said spaced-apart extending arms being bent and horizontally aligned, said closed end abutting said linear rod and said spaced-apart extending arms point down and the extending arms ends pivotally engage in said bores of said second team of bearing means;

whereby the length of said guide aperture means restricts the travel range of said closed end of said V-shaped rod from said rear affixing point of said linear rod to said block of said adjustable stop means;

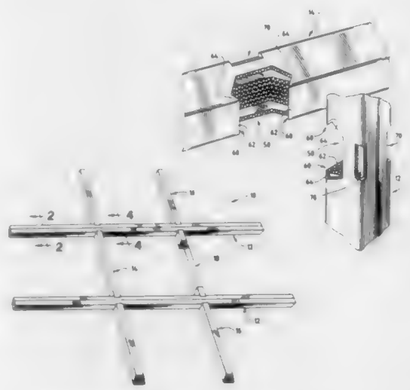
thereat said article-support panel is selectively foldable apart from said top panel of said support means, said closed end of said V-shaped rod moves in said guide aperture means toward said adjustable stop means to bring about physical contact thereto; thereby prods said article-support panel in a presettable position.

5,386,786

PREDOMINANTLY PAPERBOARD SPACER COMPRISING INTERLOCKED BEAMS

Ted D. Kilpatrick, Ponte Vedra Beach, Fla.; Arthur M. Wagner, Geneva, Ill., and Jerome A. Wilson, Valparaiso, Ind., assignors to Gate Pallet Systems, Inc., Crown Point, Ind.

Filed Mar. 25, 1994, Ser. No. 217,937
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.3 **7 Claims**



1. A spacer comprising two interlocked beams, each beam being folded from a single sheet of paperboard material so as to have a base panel and panels on each side of a plane intersecting the base panel approximately at a right angle and so that the panels on each side of the intersecting plane include

(a) a side panel attached at a fold in the sheet to and extending from the base panel,

(b) an outer panel attached at a fold in the sheet to and extending inwardly from the side panel, toward and approximately to the intersecting plane,

(c) a series of inner panels including an inner panel attached at a fold in the sheet to and extending from the inwardly extending outer panel, toward and approximately to the base panel,

each beam having a notch opening at the base panel of said beam and extending toward the inwardly extending outer panels of said beam, the notch receiving a portion of the other beam and having a profile conforming generally to the profile of the other beam except that each beam has a tongue projecting partly over the notch of said beam, the projecting tongue including a projecting portion of the base panel of said beam, and each beam having a recess extending along the fold where one of the outer panels of said beam is attached to another of the outer panels of said beam, the recess receiving the projecting tongue of the other beam so as to interlock the beams.

5,386,787

SLIDABLE WORK SURFACE SYSTEM

Donald M. Hall, P.O. Box 1247, Progress St., Kingston, N.Y. 12401

Filed Mar. 1, 1993, Ser. No. 24,010
Int. Cl.[6] A47B *11/00*
U.S. Cl. 108—143 **19 Claims**

1. A movable work surface mounting system comprising:

a) a frame;

b) a support member slidably disposed on said frame;

c) a work surface member provided on said support member;

d) a brake disposed between said frame and said support member;

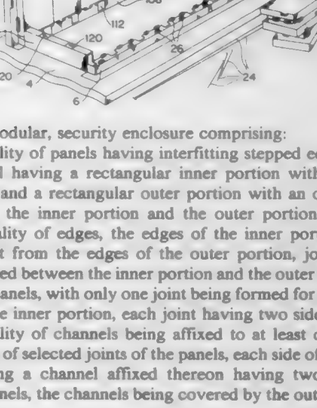
e) said brake having an engaged and a disengaged position;

f) said brake restricting movement of said support member relative to said frame when said brake is in its engaged position;

g) an upper track is disposed on said frame;

h) an upper roller is disposed on said support member;

i) said upper roller engages said upper track and is oriented for transmitting substantially only vertical forces from said support member to said upper track;



j) a lower track is disposed on said frame;

k) a lower roller is disposed on said support member; and

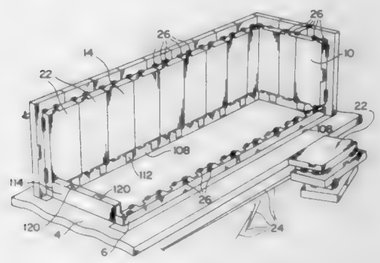
l) said lower roller engages said lower track and is oriented for transmitting substantially horizontal forces from said support member to said lower track.

5,386,788

MODULAR, SECURITY ENCLOSURE AND METHOD OF ASSEMBLY

Kevin L. Linker, and John W. Moyer, both of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Nov. 12, 1992, Ser. No. 975,048
Int. Cl.[6] E04B *2/08*
U.S. Cl. 109—58 **22 Claims**



1. A modular, security enclosure comprising:

a plurality of panels having interfitting stepped edges, each panel having a rectangular inner portion with an inner face and a rectangular outer portion with an outer face, both the inner portion and the outer portion having a plurality of edges, the edges of the inner portion being offset from the edges of the outer portion, joints being formed between the inner portion and the outer portion of the panels, with only one joint being formed for each edge of the inner portion, each joint having two sides;

a plurality of channels being affixed to at least one of the sides of selected joints of the panels, each side of the joints having a channel affixed thereon having two rows of channels, the channels being covered by the outer portion to be concealed and inaccessible from an exterior of the enclosure; and

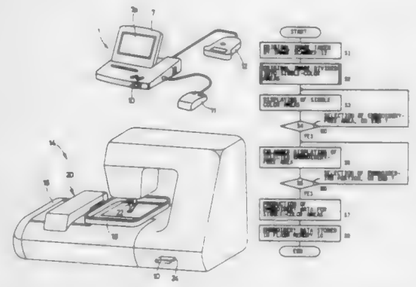
elongated pins extending through the channels along the joints when the panels are interfit together, said elongated pins extending generally parallel to the joints in which the pins are located, the elongated pins being readily insertable into and readily removable from the channels in a predetermined sequence, the pins being concealed and inaccessible from the inner and outer faces of the panels when the pins are in the channels, the outer portion of the panels being movable in a direction away from where the channels receive the pins when the elongated pins are removed to expose the channels to the exterior of the enclosure.

5,386,789

EMBROIDERY DATA PRODUCING APPARATUS FOR CONTROLLING A SEWING MACHINE

Masao Futamura, Nagoya; Mitsuyasu Kyuno, Aichi; Yukiyoshi Muto, Nagoya, and Masahiro Mizuno, Kasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 6, 1994, Ser. No. 254,790
Claims priority, application Japan, Jun. 14, 1993, 5-141847
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—121.12 **46 Claims**



1. An apparatus for producing embroidery data to control a sewing machine to form an embroidery on a work sheet, the apparatus comprising:

dividing means for dividing, based on image data representing a color image, said color image into a plurality of color areas each of which has a corresponding one of a plurality of different colors, and producing a plurality of sets of color-area data each of which represents a corresponding one of said color areas;

a color-area specifying device which is operable by an operator for specifying one of said color areas as an embroidery-free area; and

producing means for producing, based on said sets of color-area data, said embroidery data to control the sewing machine to embroider said color areas except for said embroidery-free area specified by said specifying device.

5,386,790

WAISTBELT END GRIPPING APPARATUS

Satoshi Nakamura, Chofu, Japan, assignor to Juki Corporation, Tokyo, Japan

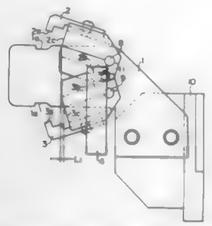
Filed May 19, 1993, Ser. No. 64,765
Claims priority, application Japan, May 20, 1992, 4-152627
Int. Cl.[6] D05B *35/08*
U.S. Cl. 112—121.27 **7 Claims**

1. A sewing machine for sewing a waistbelt, which includes a sewing head for sewing the waistbelt of trousers after an end portion of the waistbelt has been tucked into the waistbelt, setting means insertable into the waistbelt of the trousers to position the waistbelt of the trousers prior to tucking of the end portion of the waistbelt into the waistbelt, tuck-in means insert-

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able into the waistbelt while the waistbelt is engaged by said setting means to tuck the end portion of the waistbelt, and holder means engageable with upper and lower outer side surfaces of the waistbelt to grip the waistbelt, comprising:

waistbelt end pinching means for pinching from above and beneath said waistbelt end portion,



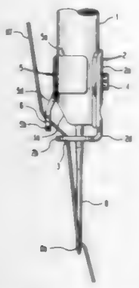
whereby said waistbelt end portion is positioned by said setting means to allow said pinching means to grip said waistbelt end portion from both above and beneath until said waistbelt end portion is gripped by said holder means.

5,386,791

NEEDLE BAR THREAD GUIDE DEVICE

Shuichi Sato, and Norio Komori, both of Tochigi, Japan, assignors to The Singer Company, N.V., Curacao, Netherlands Antilles

Filed Dec. 30, 1993, Ser. No. 175,460
Claims priority, application Japan, May 28, 1993, 5-033140
Int. Cl.[6] D05B *97/00*; B65H *57/04*
U.S. Cl. 112—302 1 Claim



1. In combination with a sewing machine having a vertical needle bar, the bar having a lower-end portion chamfered on the side near the passage of the needle thread, and a vertical needle secured to the lower end of the bar and extending therebelow, the needle having a thread receiving opening in its lower end, a needle bar thread guide device comprising:

a needle bar thread main guide having an upper vertical mounting section detachably secured to the bar in a vertically adjustable position opposite the chamfered portion; an integral lower end thread guide section extending at right angles to the upper section, and an integral central section interconnecting the upper and lower sections, the central section having an L shaped thread introducing route, the lower section having a first thread receiving opening communicating with the thread introducing route and having an opening through which said needle extends; and

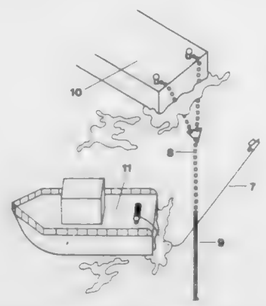
an auxiliary thread guide having an upper vertical mounting section slidably engaging the bar in a position above the chamfered portion but oppositely disposed with respect to the upper vertical mounting section of the main guide and securable in the desired slidable position on the bar, the auxiliary guide having an integral lower section which extends inclinedly downward and outward from the lower end of the upper section of the auxiliary guide and then extends vertically downward, the vertically downward extension having a second thread receiving opening, whereby the thread can extend downwardly to the second thread receiving opening, then inclinedly downward through the thread introducing route and the first thread receiving opening along side of the needle to extend through the opening in the lower end of the needle.

5,386,792

HOOK ASSEMBLY FOR BROKEN TOW LINE RETRIEVAL AND EMERGENCY MARINE TOWING

Lee E. Richardson, Port St. Lucie, Fla., assignor to Lee Richardson, Port St. Lucie, Fla.

Continuation of Ser. No. 881,464, May 11, 1992, Pat. No. 5,241,920. This application Jun. 4, 1993, Ser. No. 74,651
The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.
Int. Cl.[6] B63B *21/66*
U.S. Cl. 114—246 6 Claims



1. A towable integrated hook assembly for retrieving a hanging towline from a marine vessel by retrieval from a towing vessel, said integrated hook assembly comprising:

(a) a hook member dimensioned to receive and intermediately capture and retain for retrieval or emergency towing a substantially vertically hanging towline below the surface without sliding on or cutting the towline, and

(b) a side planing member connecting with the hook member to carry the hook member substantially outside the line of motion of the towing vessel laterally towards the hanging towline when said hook assembly is towed, and

(c) a reversing system for rotating at least part of the assembly to a retrieval or emergency towing position.

5,386,793

LINE HANDLING APPARATUS

Anthony V. Gaudiano, and Will C. Cowan, Jr., both of Panama City, Fla., assignors to Unisys Corporation, Blue Bell, Pa.

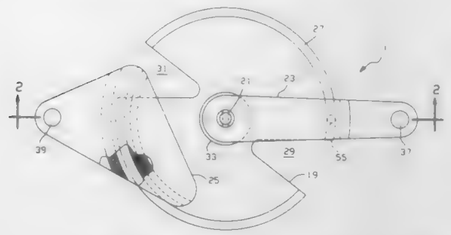
Filed Aug. 18, 1993, Ser. No. 108,405
Int. Cl.[6] B63B *21/04*
U.S. Cl. 114—253 14 Claims

1. Apparatus for passing a line therethrough, comprising:

a rigid wheel having a center and two sides and including a circumferential projection concentric with the wheel, and

at least one radially oriented opening through the projection;

an axle passing through the center of said wheel;



a first member disposed about said wheel and rotatably connected to said axle on each side of said wheel; and

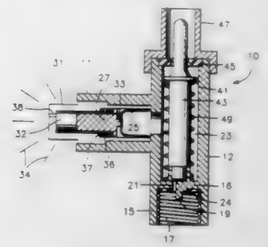
a second member contacting said projection of said wheel.

5,386,794

TIRE PRESSURE INDICATOR

Arthur J. Foss, Mesa, Ariz., and Philip J. Milanovich, 2450 S. 4th Ave., Yuma, Ariz. 85364, assignors to Philip J. Milanovich, Butte, Mont.

Filed Mar. 1, 1993, Ser. No. 24,451
Int. Cl.[6] B60C *23/06*
U.S. Cl. 116—34 R 7 Claims



1. A pressure indicator for a pneumatic tire, said tire having a filler valve with a threaded end, said indicator comprising:

a first sleeve having a first end and a second end;

an expandable diaphragm connected across and closing said second end;

a lens attached to said first end, said lens having a hollow interior;

a movable marker fitting within said sleeve and said lens, said marker having a first end and a second end, wherein said first end of said marker has a shape complementary to said interior and said marker substantially fills said interior when the air pressure in said tire exceeds a predetermined amount;

a spring for moving said marker within said first sleeve in a direction away from said lens;

wherein said diaphragm applies a force to aid marker in a direction toward said lens in accordance with the air pressure within said tire when said sleeve is coupled to said threaded end of said filler valve;

a second sleeve for coupling said first sleeve to said threaded end or said filler valve, wherein said second end of said first sleeve abuts on said second sleeve and said second sleeve has a hole where said second end of said first sleeve abuts on said second sleeve;

wherein said first sleeve is approximately orthogonal to said second sleeve;

wherein said lens includes a skirt fitting within and partially lining said sleeve, wherein said marker fits within said skirt; and

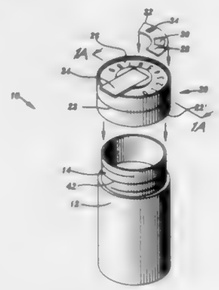
wherein said skirt has a first end and said diaphragm is held between said first end of said skirt and said second sleeve.

5,386,795

COMBINATION PILL BOTTLE CAP AND INDICATOR DEVICE

Donald D. Bartholomew, Mt. Clemens, Mich., assignor to Proprietary Technology, Inc., Clinton Township, Macomb County, Mich.

Continuation of Ser. No. 13,439, Feb. 4, 1993, abandoned, which is a continuation of Ser. No. 733,345, Jul. 22, 1991, Pat. No. 5,216,975. This application Jan. 11, 1994, Ser. No. 179,877
Int. Cl.[6] G09F *9/40*
U.S. Cl. 116—308 8 Claims



1. A cap for a bottle used for containing pharmaceutical products such as pills, tablets or the like, said cap comprising

a first hollow cylindrical member having a closed end and an open end;

an annular wall and a circular boss extending from said closed end of said first hollow cylindrical member, said closed end, said circular boss and said annular wall defining an annular cavity;

a plurality of indicia disposed on said closed end and within said annular cavity of said first hollow cylindrical member;

an annular movable member disposed within said annular cavity and movable within said annular cavity for selecting one of said plurality of indicia to indicate that said pharmaceutical product has been or should be taken.

5,386,796

METHOD FOR TESTING QUALITY OF SILICON WAFER

Izumi Fusegawa; Hirotoshi Yamagishi; Nobuyoshi Fujimaki, and Yukio Karasawa, all of Gunma, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 850,916
Claims priority, application Japan, Mar. 14, 1991, 3-074733
Int. Cl.[6] C30B *15/00*
U.S. Cl. 117—13 2 Claims



1. A method for testing a silicon wafer, characterized by a procedure which comprises pulling a silicon semiconductor

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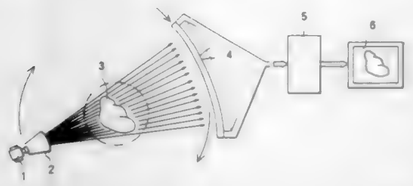
single crystal bar by the Czochralski method or the float zone method, cutting a wafer of a prescribed thickness from said single crystal bar, etching the surface of said wafer with a mixture of hydrofluoric acid and nitric acid thereby relieving said wafer of strain, selectively etching the surface of said wafer in a mixture of $K_2Cr_2O_7$, hydrofluoric acid, and water, and taking count of scale-like patterns consequently appearing on the surface thereby rating the crystallinity of said wafer with reference to lattice defects, wherein said scale-like patterns occur when gas produced by a chemical reaction in the areas of pits leaks upward and disrupts the evenness of the etching.

5,386,797

SINGLE CRYSTAL OF COMPOUND, LASER ROD, LASER OSCILLATOR, SCINTILLATOR, CT SCANNER, COLOR DISPLAY AND PROCESS FOR PREPARING THE SAME

Kazuto Yokota, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 26, 1993, Ser. No. 37,109
Claims priority, application Japan, Mar. 27, 1992, 4-068895
Int. Cl.[6] C30B *13/16*
U.S. Cl. 117—41 12 Claims



1. A process for preparing a single crystal of a compound in which at least part of the compound decomposes at a temperature around the melting point of the compound, which comprises the steps of:

deaerating and sealing powder of a starting material of said single crystal in a first sealable vessel made of a high melting point substance having low reactivity with said starting material at a temperature around a sintering temperature;

sintering the deaerated and sealed powder to form a polycrystalline sintered body at a temperature of ⅔ or higher of the melting point of said starting material in terms of the absolute temperature and at high pressure;

deaerating and sealing said polycrystalline sintered body in a second sealable vessel made of a high melting point substance which has low reactivity with the sintered body at a temperature during a process for single crystallization and having an inner shape corresponding to the shape of said sintered body; and

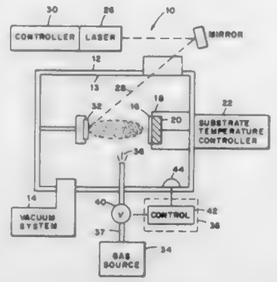
heating the deaerated and sealed polycrystalline sintered body at a temperature from the melting temperature of said starting material to 1.05 times the melting temperature of said starting material under pressure to form the single crystal of the compound by using a zone melting method or a vertical melting method.

5,386,798

METHOD FOR CONTINUOUS CONTROL OF COMPOSITION AND DOPING OF PULSED LASER DEPOSITED FILMS

Douglas H. Lowndes, and James W. McCamy, both of Knoxville, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Oct. 6, 1993, Ser. No. 132,528
Int. Cl.[6] C03B *31/20*
U.S. Cl. 117—50 8 Claims



1. A method for growing a thin-film II-VI deposit upon a substrate including the steps of:

positioning a target and a substrate in a low-pressure gas atmosphere;

heating the substrate to an elevated temperature so that a film can be grown and the gas of the atmosphere may dissociate to an atomic or smaller molecular level;

irradiating the target with a laser so that the near-surface of the target is ablated from the remainder of the target and deposited upon the heated substrate, together with the atoms of the gas; and

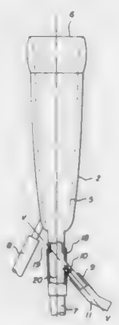
controlling the pressure of the gas of the atmosphere so that the composition of the thin-film deposit is controlled continuously.

5,386,799

TEAT CUP HAVING CLEANING FLUID LINE BRANCHING THEREFROM ADJACENT CONNECTION WITH MILK LINE

Berthold J. T. Dietrich, Rietdekkerweg 25, 7213 XM Gorssel, Netherlands

Filed Nov. 19, 1992, Ser. No. 976,919
Claims priority, application Netherlands, Nov. 22, 1991, 9101961
Int. Cl.[6] A01J *5/06*
U.S. Cl. 119—14.51 10 Claims



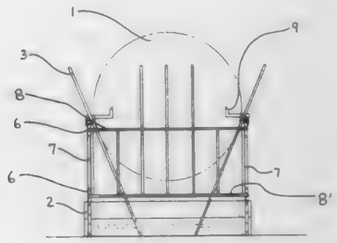
1. A teat cup for pneumatic milking of cows comprising a liner which is open at one end and has another end connected to a milk line, said liner being integral with at least a portion of said milk line connected to said other end of said teat cup, means at said other end of said teat cup for connecting said teat cup to a source of alternating vacuum, a branch line connected to a source of cleaning medium and connected to said milk line at the connection to said teat cup, and a non-return valve in said branch line adjacent said milk line which opens only in a direction to permit a flow of cleaning medium into said milk line and into said teat cup.

5,386,800

MANGER FOR ROUND HAY BALES

Henry T. Pirok, 11405 Lake Rd., Highland, Ill. 62249

Filed Jun. 17, 1994, Ser. No. 262,010
Int. Cl.[6] A01K *1/10*
U.S. Cl. 119—58 4 Claims



1. A manger for large round bales of hay, comprising:

(a) a lower box having an essentially square cross-section;

(b) vertical posts located at each corner of said box and upper and lower horizontal cross braces connecting said vertical posts forming an essentially four-sided frame about said box;

(c) a plurality of downwardly and inwardly slanted bars, the upper portion of which are attached to said upper horizontal cross braces, for supporting a round bale of hay;

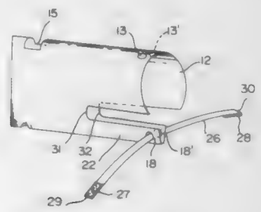
(d) at least two L-shaped hooks attached to opposite horizontal braces and extending inwardly and upwardly therefrom for supporting a round bale of hay.

5,386,801

DOG DROPPINGS CATCHER APPARATUS

Edward Y. Chinn, and Gladys C. Chinn, both of 6111 51st Ave. S., Seattle, Wash. 98118

Filed Jan. 26, 1994, Ser. No. 186,630
Int. Cl.[6] A01K *23/00*
U.S. Cl. 119—95 1 Claim



1. A dog droppings catcher apparatus, said dog wearing a collar and having a tail, a back, two hind legs and a waist, said apparatus comprising:

a bag and

a belt,

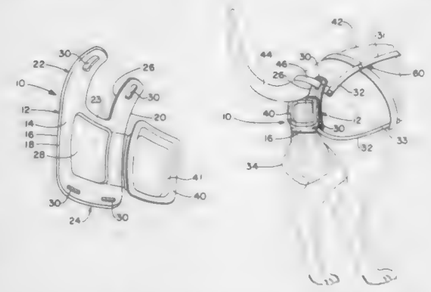
said bag having a length and two sides, a top edge, a bottom edge, a closed end and an open end, said two sides being joined at said top and bottom edges and said closed end, said bag further having a first hole in said upper edge near said closed end for said tail, second holes near said bottom edge and near said closed end, a cut-out into said open end, said cut-out having upper and lower cut-out edges, a cut-out length and a cut-out width, said lower cut-out edge being parallel to said bottom edge and a distance from said bottom edge in the range of ½ inch to 2 inches, said cut-out width being in the range of 0 to 1½ inches, said cut-out length being in the range of ½ to ¾ of said length of said bag, said cut-out forming a folded tie strap having a free end, said bag further having a tie strap hole in said free end of said folded tie strap, whereby said apparatus is placed on said dog with said tail through said first hole, said tie strap between said hind legs, said belt through said tie strap holes and fastened around said waist, and said top edge along said back.

5,386,802

ANIMAL EXCREMENT COLLECTOR

Lee Hang-Fu, 753 Firestone Dr., Avon Lake, Ohio 44012

Filed Feb. 10, 1994, Ser. No. 194,253
Int. Cl.[6] A01K *23/00*
U.S. Cl. 119—95 10 Claims



1. A device for accepting and retaining primarily animal feces wherein said device is designed to be worn by a dog or other animal having a torso, a tail, buttocks, and an anus, wherein said device comprises:

(a) a substantially rigid curved contact member being designed to conform to at least the general shape of said buttocks, said member having a first surface designed to fit adjacent to said buttocks of said animal., a second surface, a periphery, an upper portion, a lower portion, an aperture therein, and a notch formed in said upper portion of said curved contact member and open to said periphery, and being of sufficient dimensions to encompass a substantial portion of said tail when said curved member is secured adjacent to said buttocks of said animal;

(b) harness means for retaining said curved contact member adjacent to said buttocks of said animal so that said aperture essentially circumscribes at least the anus of said animal;

(c) attachment means for attaching said curved contact member to said harness means;

(d) container means for collecting animal feces comprising a body portion, and an opening in said body portion;

(e) a retaining insert shaped to correspond to said aperture, said retaining insert capable of frictionally securing said container means to said curved contact member, such that said opening in said container means is essentially concentric with and secured adjacent to said aperture in said curved member, and said body portion of said container means extends outward from said second surface of said curved contact member.

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5,386,803

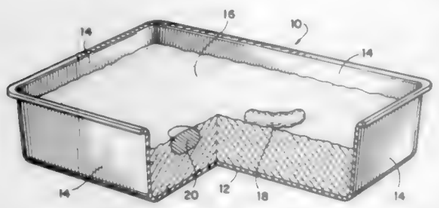
ANIMAL DROSS ABSORBENT AND METHOD

John Hughes, Arlington Hgts., Ill., assignor to American Colloid Company, Arlington Heights, Ill.

Continuation-in-part of Ser. No. 297,471, Jan. 13, 1989, Pat. No. 5,000,115. This application Oct. 18, 1989, Ser. No. 423,193

Int. Cl.[6] A01K *1/015*

U.S. Cl. 119—173 26 Claims



1. An improved animal litter product comprising a combination of about 11% to about 50% by weight of sodium bentonite particles of a size ranging from about 50 microns to about 3350 microns and about 50% to about 89% by weight of calcium bentonite particles of a size ranging from about 50 microns to about 3350 microns, said product being characterized by the property that when contacted with urine at least one wetted agglomerated mass consisting of sodium bentonite, calcium bentonite and urine is formed which can be removed from the balance of the litter without disintegration.

5,386,804

PROCESS FOR THE ADDITION OF FERROCENE TO COMBUSTION OR MOTOR FUELS

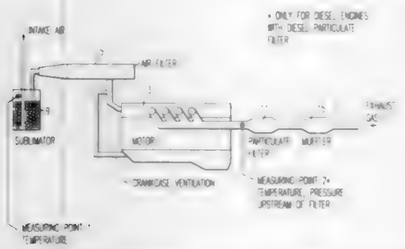
Hansjuergen Guttmann, Schermbeck; Dieter Hoehr, Wesel; Heinz-Kuno Schaedlich, Essen; Kurt-Peter Schug, Dorsten, and Walter Thuenker, Bottrop, all of Germany, assignors to Veba Oel Aktiengesellschaft, Gelsenkirchen, Germany

Filed Nov. 19, 1992, Ser. No. 978,755

Claims priority, application Germany, Nov. 21, 1991, 4138216

Int. Cl.[6] F02B *75/12*

U.S. Cl. 123—1 A 17 Claims



1. A process for adding ferrocene to motor fuels for improving the combustion of the motor fuels with oxygen-containing gases, the process comprising the steps of:

admitting a carrier gas stream of combustion gas at pressure and temperature values in a range of coexistence between solid and gaseous phase ferrocene into a sublimator having pellets made of ferrocene crystals therein;

passing a vaporous ferrocene through sublimation in said sublimator into said carrier gas stream of combustion gas and

leading the ferrocene-containing carrier gas stream from the sublimator into a combustion chamber of a diesel engine.

5,386,805

COOLING SYSTEM OF AN INTERNAL COMBUSTION ENGINE

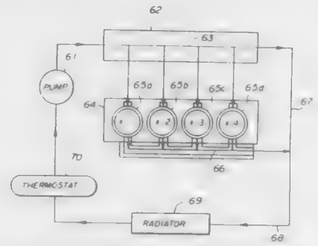
Shizuo Abe; Masato Kawauchi, both of Mishima; Kiyoshi Nakanishi; Masayoshi Tokoro, both of Susono, and Yoshimasa Watanabe, Shizuoka, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 890,172, May 29, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 150,798

Claims priority, application Japan, Jun. 6, 1991, 3-135147; Jul. 1, 1991, 3-160496; Jul. 1, 1991, 3-160497; Nov. 28, 1991, 3-314777

Int. Cl.[6] F02B *75/18*

U.S. Cl. 123—41.28 15 Claims



1. An internal combustion engine comprising:

a cylinder block having at least two separate chambers, each of said two separate chambers being configured to receive a cylinder liner therein;

a plurality of cylinder liners, each of said plurality of cylinder liners being provided in one of said at least two separate chambers and having grooves provided on their outer surface;

a plurality of separate coolant flow passage means; wherein each of said plurality of coolant flow passage means is formed between each of said at least two chambers and its associated cylinder liner for directing a flow of coolant therein;

delivering means for individually delivering coolant to each of said plurality of coolant flow passage means; and

a cylinder head defining therein a cylinder head coolant passage, wherein

said delivering means comprises a portion of said cylinder head coolant passage and a plurality of branch passages,

each of said plurality of branch passages are connected to said cylinder head coolant passage and one of said plurality of coolant flow passage means, and wherein the coolant delivered into each coolant flow passage means is heated during flow of the coolant through said cylinder head coolant passage before and upon being branched out into each coolant passage at said plurality of branch passages.

5,386,806

CAM MECHANISMS

Jeffrey Allen, Attleborough, United Kingdom, and William J. Hurr, Graz, Austria, assignors to Group Lotus Limited, Norfolk, United Kingdom

PCT No. PCT/GB91/00232, § 371 Date Dec. 1, 1992, § 102(e) Date Dec. 1, 1992, PCT Pub. No. WO91/12415, PCT Pub. Date Aug. 22, 1991

Continuation of Ser. No. 920,388, Dec. 1, 1992, abandoned. This PCT application Feb. 15, 1991, Ser. No. 95,816

Claims priority, application United Kingdom, Feb. 16, 1990, 9003603

Int. Cl.[6] F01L *1/24, 1/34*

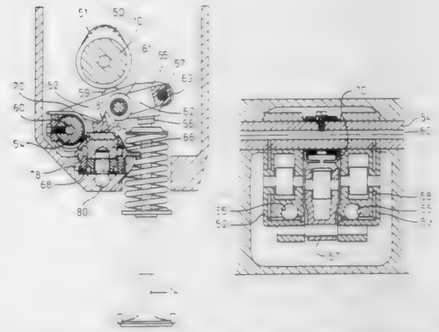
U.S. Cl. 123—90.16 15 Claims

1. An internal combustion engine having valve means and a cam mechanism for controlling the valve means comprising camshaft means having first and second cam means mounted

thereon for rotation therewith and first and second finger followers rockable about fulcrum means, wherein

the first finger follower has first follower means arranged to follow the surface of the first cam means when the first finger follower is held in engagement with the first cam means,

the second finger follower has a first end portion, an intermediate portion and a second end portion, the second finger follower being pivotally connected at the first end portion thereof to the first finger follower and the second finger follower having arranged in the intermediate portion thereof second follower means arranged to follow the surface of the second cam means when the second finger follower is held in engagement with the second cam means,



the first cam means, the first follower means and the first finger follower comprise a first short duration cam mechanism for low speeds of the engine,

the second cam means, the second follower means and the second finger follower comprise a second long duration cam mechanism for high speeds of the engine,

the fulcrum means comprises movable fulcrum means on which the second finger follower is mounted at the second end portion thereof, said movable fulcrum means being movable between a first position wherein the second follower means is out of engagement with the second cam means and a second position where the second follower means is in engagement with the second cam means, and

the fulcrum means comprises fixed fulcrum means about which the first finger follower is rockable for all positions of the movable fulcrum means.

5,386,807

DEVICE FOR ADJUSTING THE ROTATIONAL ANGLE RELATIONSHIP BETWEEN A CAMSHAFT AND ITS DRIVE ELEMENT

Ernst Linder, Mühlacker, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE92/00334, § 371 Date Jan. 5, 1993, § 102(e) Date Jan. 5, 1993, PCT Pub. No. WO92/20906, PCT Pub. Date Nov. 26, 1992

PCT Filed Apr. 25, 1992, Ser. No. 966,149

Claims priority, application Germany, May 17, 1991, 4116169

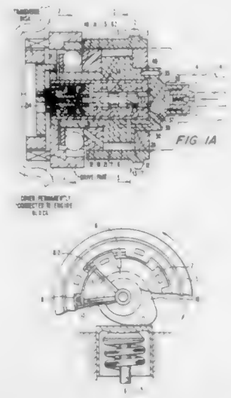
Int. Cl.[6] F01L *1/34*

U.S. Cl. 123—90.17 19 Claims

1. Adjustment device for continuously adjusting an angular orientation of a camshaft of an internal combustion engine relative to a drive element of the internal combustion engine, said adjustment device comprising:

servomotor means connectable to receive a pressurized medium for adjustment of the angular orientation of the camshaft relative to the drive element, said servomotor means being provided with at least one first pair of working chambers (8.1, 8.2; 9.1, 9.2) for said pressurized medium, said first working chambers being connectable in pairs in operation to allow a flow of said pressurized medium between said working chambers of each of said pairs and being defined by enclosed volumes in said servomotor means, said volumes being changeable by predetermined volume amounts as a result of a flow of said pressurized medium between said working chambers;

pump means for feeding an additional pressurized medium to and from at least one second pair of working chambers (6.1, 6.2) of the servomotor means, said pump means being located in the drive element of the internal combustion engine;



first control valve means (20) connected to the pump means for controlling supply of the additional pressurized medium to and from the pump means of said at least one second pair of working chambers (6.1, 6.2); and

second control valve means connected to the servomotor means for selecting said at least one first pair of said working chambers and for connecting said working chambers of said at least one first pair of working chambers to allow a flow of said pressurized medium between said working chambers of said working chamber pairs so selected as a result of torque alterations imposed by the cam drive and thus to provide an adjustment of said angular orientation of said camshaft relative to said drive element.

5,386,808

CAMSHAFT DRIVE FOR AN INTERNAL-COMBUSTION V-ENGINE

Alfred Koch, Weissach, Germany, assignor to Dr. Ing, h.c.f. Porsche AG, Weissach, Germany

PCT No. PCT/EP91/00151, § 371 Date Aug. 13, 1993, § 102(e) Date Aug. 13, 1993

PCT Filed Jan. 26, 1991, Ser. No. 104,064

Int. Cl.[6] F01L *1/02*

U.S. Cl. 123—90.31 5 Claims

1. A camshaft drive for an internal-combustion V-engine that has at least two cylinder banks, comprising:

at least one overhead camshaft for each cylinder bank;

a crankshaft;

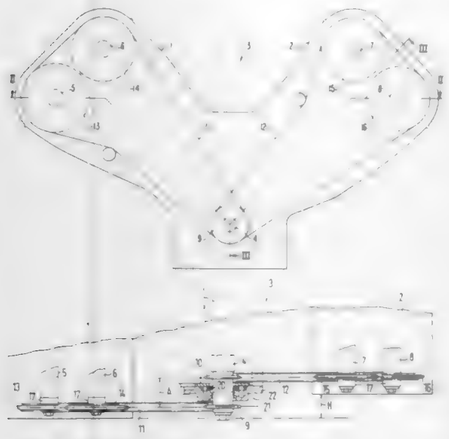
a first output wheel non-rotatably mounted on the crankshaft and drivingly connected with the camshaft of one cylinder bank and a second output wheel non-rotatably mounted on the crankshaft and drivingly connected with the camshaft of the other cylinder bank;

first and second driving wheels mounted on the camshafts and driveably coupled to at least one of the first and second output wheels; and

an additional output arranged between the first and second output wheels:

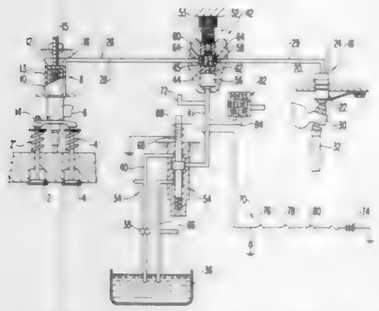
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wherein the cylinder banks are offset from one another in a longitudinal direction of the V-engine, and the first and second output wheels are separated from one another in



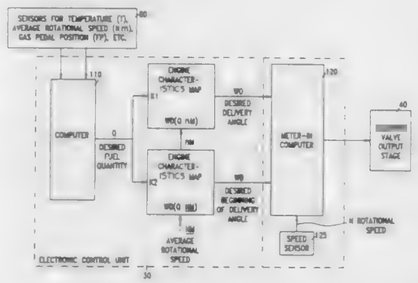
the longitudinal direction on the crankshaft by a distance that is approximately identical to the offset of the cylinder banks, and the driving wheels are identical parts.

5,386,809
PRESSURE RELIEF VALVE FOR COMPRESSION ENGINE BRAKING SYSTEM
Steven W. Reedy, and David A. Vittorio, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Filed Oct. 26, 1993, Ser. No. 141,064
Int. Cl.[6] F02D *31/00*
U.S. Cl. 123—320 **14 Claims**



1. A braking system for an internal combustion engine having at least one piston reciprocably mounted within a cylinder for cyclical successive compression and expansion strokes and an exhaust valve operable to open against a closing bias to exhaust gas from the cylinder in variable timed relationship to the piston strokes to operate the engine in either a power mode or a braking mode and having an engine component mechanically actuated near the end of each compression stroke of the piston when the engine is operated in the power mode, said braking system comprising:
a fluid pressurizing means mechanically linked with the engine component for pressurizing a fluid in response to the mechanical actuation of the engine component whenever the engine is operated in the braking mode;
an actuating means fluidically connected to said pressurizing means and mechanically connected to the exhaust valve for opening the exhaust valve whenever the level of pressurization of the fluid is sufficient to overcome all forces biasing the exhaust valve to a closed position;
a high pressure circuit containing the fluid and fluidically connecting said fluid pressurizing means and said actuating means;
a low pressure circuit connected to said high pressure circuit for delivering low pressure fluid to said high pressure circuit;
a control valve means positioned along said low pressure circuit for controlling the flow of fluid between said low pressure circuit and said high pressure circuit; and
a pressure relief valve means fluidically connected to said low pressure supply circuit, said pressure relief valve means operable to be placed in an open position to vent fluid from said low pressure circuit, wherein the engine may be continuously operated in the braking mode while said pressure relief valve means is in said open position.

5,386,810
SYSTEM AND METHOD FOR CONTROLLING A SOLENOID-VALVE-CONTROLLED FUEL-METERING DEVICE, PARTICULARLY FOR A DIESEL GASOLINE ENGINE
Roland Gronenberg, Stuttgart; Helmut Laufer, Gerlingen; Werner Fischer, Heimsheim; Dietbert Schoenfelder, Gerlingen, and Joachim Berger, Winterbach, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed May 12, 1993, Ser. No. 61,415
Claims priority, application Germany, May 12, 1992, 4215581
Int. Cl.[6] F02M *7/00*
U.S. Cl. 123—436 **16 Claims**

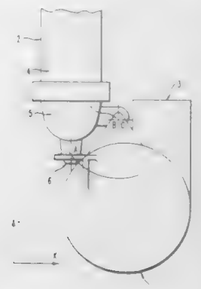


1. A system for controlling a solenoid-valve-controlled fuel-metering device for an engine, comprising:
a control unit for generating a trigger signal to control a fuel-metering operation of the fuel-metering device, the control unit generating the trigger signal as a function of a load on the engine and a predicted rotational speed of the engine during a current fuel metering operation, the predicted rotational speed being based upon at least an actual rotational speed of the engine during a preceding fuel-metering operation.

5,386,811
DEVICE FOR RECOVERY OF FUEL VAPORS
Bertrand Rochette, Jouy en Josas, France, assignor to Regie Nationale Des Usines Renault, Boulogne-Billancourt, France
Filed Sep. 23, 1993, Ser. No. 125,217
Claims priority, application France, Sep. 18, 1992, 92 11138
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—519 **7 Claims**

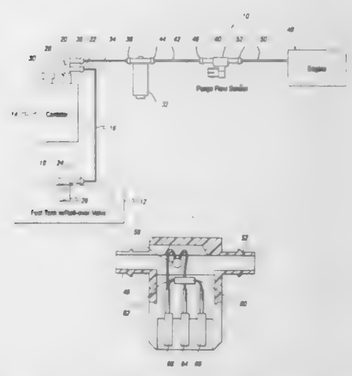
1. Device for recovery of fuel vapors from a fuel tank in a motor vehicle having an engine cooling system including a heat exchanger which heats a flow of air, comprising:
a filter unit including a regenerable fuel vapor adsorption material;

a first pipe communicating said filter unit to a fuel tank so as to supply fuel vapors to the fuel vapor adsorption material; and
a second pipe supplying a source of regenerative air to the



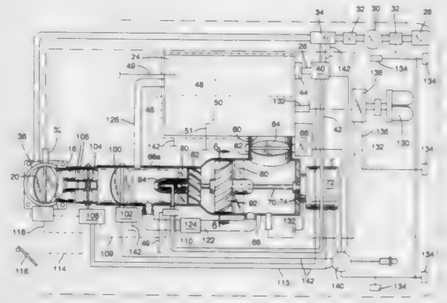
fuel vapor adsorption material, wherein said second pipe has an intake opening for the regenerative air, said intake opening being positioned directly behind said radiator and adjacent the flow of heated air so as to draw a portion of the flow of heated air into said second pipe.

5,386,812
METHOD AND SYSTEM FOR MONITORING EVAPORATIVE PURGE FLOW
Patrick J. Curran, Farmington Hills; Paul M. Niessen, Canton, and Bryce A. Schwager, Ypsilanti, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 20, 1993, Ser. No. 138,111
Int. Cl.[6] F02M *33/02*
U.S. Cl. 123—520 **2 Claims**



1. For use in a motor vehicle having a fuel tank, an evaporation canister, an internal combustion engine having an intake manifold, and a purge solenoid all in fluid communication, and an Electronic Engine Control (EEC) assembly in electrical communication with said purge solenoid, a method of determining malfunctions in said purge solenoid, comprising:
providing a thermistor circuit in fluid communication with said purge solenoid valve and said intake manifold and in electrical communication with said EEC, said thermistor circuit including a ceramic PTC thermistor in series electrical communication with a resistor;
retaining said purge solenoid in an open position;
measuring the analog voltage across said series resistor at 100% purge within a selected range of engine load, inferred manifold vacuum, vehicle speed and ambient air temperature and converting said analog voltage to a first flow reading in digital counts;
ramping said purge solenoid closed over a selected time delay;
measuring the analog voltage across said series resistor at 0% purge within said selected range of engine load, inferred manifold vacuum, vehicle speed and ambient air temperature and converting said analog voltage to a second flow reading in digital counts;
determining the digital count difference between said first and second flow readings;
comparing said determined count difference to a calibrated count difference corresponding to a predetermined purge flow; and
indicating determined malfunctions in said purge solenoid if said determined count difference is less than said calibrated count difference.

5,386,813
FUEL SAVING DEVICE
Monty J. LeBlanc, 2830C River Rd. South, Salem, Oreg. 97302
Filed Oct. 18, 1993, Ser. No. 137,728
Int. Cl.[6] F02M *31/00*
U.S. Cl. 123—557 **9 Claims**



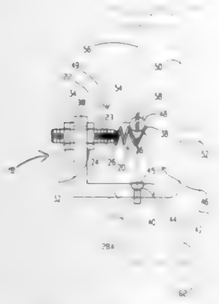
1. Fuel saving device for internal combustion engines having a fuel pump, fuel mixing means for mixing fuel and air to be fed to the engine, and a throttle, said fuel saving device comprising:
a vaporization chamber having an inlet and an outlet,
fuel line means capable of connecting the inlet of said chamber in communication with the pump for receiving fuel to be vaporized,
heating means associated with said vaporization chamber for heating said chamber to substantially an upper limit of 400° F. for complete vaporization of the fuel,
means associated with the outlet of said vaporization chamber directing said heated vaporized fuel to the vehicle engine manifold,
and heat sensors in said fuel saving device and fire extinguishing means disposed at selected positions in said device under the control of said sensors.

5,386,814
ADJUSTABLE ARROW REST ASSEMBLY
Don Denton, 37054 Ave. 17 1/2, Madera, Calif. 93638
Filed Oct. 9, 1992, Ser. No. 944,489
Int. Cl.[6] F41B *5/00*
U.S. Cl. 124—44.5 **20 Claims**

1. An adjustable arrow rest assembly for an arrow being shot from an archery bow by an archer, while holding said bow up with a bowarm, said archery bow having a handle including a sidewall and a shelf, a bowstring, and a set of limbs, said adjustable arrow rest assembly comprising:
a mounting base; an arrow rest support;
a single pivotally attached resilient arrow rest arm spaced

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from and extending laterally toward said sidewall, having on one end spaced arrow receiving point portions, said arrow receiving point portions being located to receive and support said arrow on said bowhandle in position for shooting, and a means for attaching said arm to said arrow



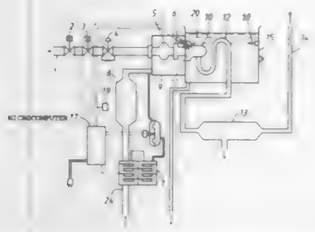
rest support, a means to attach said arrow rest support to said mounting base, means attaching said mounting base to said bowhandle at a preselected location; whereby upon release of the bowstring, said arrow rest arm will move away from said arrow.

5,386,815

ELECTRIC CONTROL APPARATUS FOR PULSE COMBUSTION DEVICE

Susumu Ejiri, and Hiroshi Nishino, both of Nagoya, Japan, assignors to Paloma Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 16, 1992, Ser. No. 957,769
Claims priority, application Japan, Oct. 18, 1991, 3-299775
Int. Cl.[6] F23C *11/04*; A47J *27/00*
U.S. Cl. 126—391 **3 Claims**



1. An electric control apparatus in combination with a pulse combustion device of the type which includes a combustion chamber mounted within a liquid vessel of a liquid heating apparatus, fuel and air inlet valves arranged to supply therethrough a mixture of fuel and air into said combustion chamber, a tailpipe connected at one end thereof to an exhaust port of said combustion chamber and immersed in an amount of liquid stored in said vessel, ignition means arranged to ignite said mixture of fuel and air supplied into said combustion chamber through said fuel and air inlet valves, and an electrically operated air intake blower arranged to supply fresh air into said combustion chamber through said air inlet valve,

wherein said electric control apparatus comprises:

detection means for detecting an instant temperature of said liquid in said vessel and for producing an electric signal indicative of the temperature of said liquid;

means responsive to said electric signal from said detection means for activating said air intake blower when said liquid temperature is lower than a predetermined value in a condition where a first predetermined time has lapsed after previous activation of said pulse combustion device;

means for activating said ignition means after activation of said blower;

means for deactivating said ignition means when a flame in said combustion chamber has been detected;

means for maintaining activation of said blower after deactivation of said ignition means for a second predetermined time during which combustion of said mixture is stabilized; and

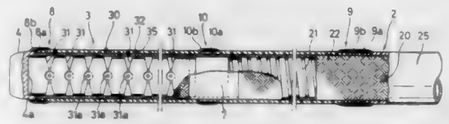
means for deactivating said blower upon lapse of said second predetermined time.

5,386,816

ENDOSCOPE

Masahiro Inoue, and Kunihiko Miyagi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,155
Claims priority, application Japan, Oct. 4, 1991, 3-283928
Int. Cl.[6] A61B *1/00*
U.S. Cl. 128—4 **9 Claims**



1. An endoscope comprising:

(a) a body having a manipulation member mounted thereon;

(b) an insertion portion extending from said body, said insertion portion comprising a first inner structure of a tubular shape, and a first protective tube covering said first inner structure, and said first inner structure determining the length of said insertion portion;

(c) a bending portion extending from a front end of said insertion portion, said bending portion being remotely bendable by said manipulation member, said bending portion comprising a second inner structure of a tubular shape, and a second protective tube covering said second inner structure, said second inner structure determining the length of said bending portion, said second protective tube being softer than said first protective tube, and a front end of said first inner structure and a rear end of said second inner structure being connected together to provide a connection portion; and

(d) a rigid tip member mounted on a front end of said bending portion;

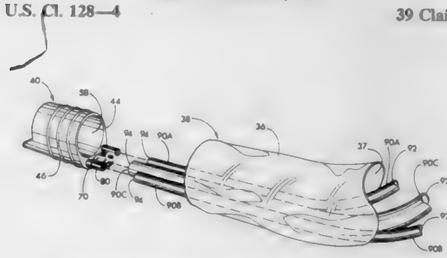
(e) wherein said second protective tube is longer than said second inner structure, and a rear end of said second protective tube is disposed a predetermined distance rearwardly from said connection portion; said first protective tube is shorter than said first inner structure, and a front end of said first protective tube is disposed at generally the same position as the rear end of said second protective tube; said second protective tube covers the whole of said second inner structure, said connection portion and a front end portion of said first inner structure; a front end portion of said insertion portion covered by said second protective tube is more flexible and bendable than the other portion of said insertion portion, and serves as an insertion guide portion; a front end portion of said second protective tube is fixed to an outer periphery of at least one of said tip member and a front end portion of said second inner structure; a rear end portion of said second protective tube is fixed to an outer periphery of said first inner structure; an intermediate portion of said second protective tube intermediate the opposite ends thereof if fixed to the outer periphery of at least one of said first and second inner structures and said connection portion; and said insertion guide portion is sufficiently long so that said insertion guide portion can be easily bent when said bending portion is abutted against a curved portion of a body cavity.

5,386,817

ENDOSCOPE SHEATH AND VALVE SYSTEM

Jeffrey S. Jones, Salem, Va., assignor to EndoMedical Technologies, Inc., Roanoke, Va.

Continuation-in-part of Ser. No. 713,178, Jun. 10, 1991, Pat. No. 5,201,908. This application Apr. 5, 1993, Ser. No. 42,985
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[6] A61B *1/00*
U.S. Cl. 128—4 **39 Claims**



1. A protective covering adapted for use on a conventional endoscope which includes an elongated substantially cylindrical portion having a distal end and a proximal end, wherein the distal end has substantially the same diameter as the cylindrical portion of the endoscope, the endoscope further including an optical element and a light source, the covering comprising:

(a) an elongated hollow sheath having a wall of flexible material, the material being substantially gas and water impervious, the sheath including a main channel adapted to contain the elongated portion of the endoscope in a loose fitting manner, a proximal end and a distal end, wherein the distal end of the sheath comprises an end-fitting cap having a first end, second end, a substantially cylindrical sidewall, forming an internal endoscope receiving chamber, wherein the chamber has a diameter slightly larger than the diameter of the distal end of the conventional endoscope such that the end-fitting cap is adapted to receive the distal end of the endoscope in a snug-fit relationship, and at least one access channel, the first end including an optically clear element having an external surface and internal surface, and wherein the second end of the cap is in sealing engagement with the distal end of the sheath; and

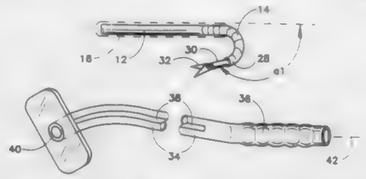
(b) at least one axially-directed access tube, the access tube being adapted to extend alongside and exterior to the elongated substantially cylindrical portion of the endoscope, the access tube having a distal and a proximal end, wherein the access tube is separate from the sheath and adapted to be tangentially located on the elongated substantially cylindrical portion of the endoscope, wherein the access tube is adapted to extend axially between the elongated substantially cylindrical portion of the endoscope and the wall of the sheath, and wherein the main channel of the sheath has a sufficiently greater diameter, when unstretched, than the sidewall of the end-fitting cap to allow the access tube to move freely over the substantially cylindrical portion of the endoscope.

5,386,818

LAPAROSCOPIC AND ENDOSCOPIC INSTRUMENT GUIDING METHOD AND APPARATUS

Cary W. Schneebaum, 230 Brinckerhoff Ct., Englewood, N.J. 07631, and Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Filed May 10, 1993, Ser. No. 59,629
Int. Cl.[6] A61B *1/00*
U.S. Cl. 128—4 **17 Claims**



1. An endoscopic or laparoscopic assembly comprising:

an elongate endoscope or laparoscope insertion tube with a longitudinally extending biopsy channel;

an elongate tubular member inserted into said channel, said tubular member being provided with a distal end portion having an internal spring bias tending to form said distal end portion into an arcuate configuration in the absence of an external straightening force on said distal end portion, said tubular member being longitudinally slidable in said channel, whereby said distal end portion may be alternately maintained in a relatively straightened configuration in a distal end of said channel and moved outside of said channel to assume said arcuate configuration; and

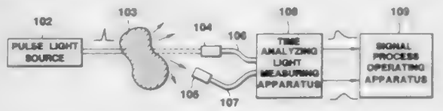
an elongate flexible endoscopic or laparoscopic instrument having an operative tip, said instrument being slidably inserted into said tubular member so that said operative tip may project outwardly from said distal end portion upon an ejection of at least a part of said distal end portion of said tubular member from said channel.

5,386,819

METHOD AND APPARATUS FOR INHIBITING A SCATTERED COMPONENT IN A LIGHT HAVING PASSED THROUGH AN EXAMINED OBJECT

Mamoru Kaneko, Hachioji; Katsuyuki Yamamoto, and Koichi Shimizu, both of Sapporo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 589,556, Sep. 28, 1990, abandoned. This application Apr. 14, 1993, Ser. No. 46,929
Claims priority, application Japan, Mar. 29, 1990, 2-81552; May 8, 1990, 2-119468
Int. Cl.[6] A61B *1/06*
U.S. Cl. 128—6 **10 Claims**



1. A method of inhibiting a scattered component in a light having passed through the interior of an examined object, comprising:

radiating a modulated light to the examined object;

after passage of said irradiated light through the interior of said examined object, (a) detecting the sum of a straight advancing light component and a scattered light component of said light to give a first detected output, and (b) detecting only said scattered light component of said light to give a second detected output and

extracting a phase component corresponding to said straight light component of said sum of said light having passed through the interior of said examined object by an operation using said first detected output and said second detected output.

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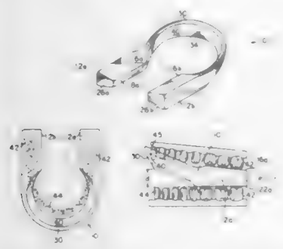
Patent Not Issued For This Number

5,386,821

BITE BLOCK FOR ORAL PASSAGEWAY

Karl A. Poterack, 4422 Shavano Cross, San Antonio, Tex. 78230

Filed Jun. 8, 1993, Ser. No. 73,537
Int. Cl.[6] A61M *16/00;* A62B *9/06;* A61C *5/14*
U.S. Cl. 128—200.26 9 Claims



1. A bite block for use with an endotracheally intubated patient, the bite block comprising:

a first wedge-shaped body for contacting only the patient's molars on one side of the patient's jaws and a second wedge-shaped body for contacting only the molars on the other side of the patient's jaws, said two bodies being substantially similar in shape, each body having a proximal end and a distal end, a generally planer top surface for contacting only upper molars and a generally planer bottom surface for contacting only lower molars, and generally planer walls defining an inner surface and an outer surface, said wedge-shaped bodies being thicker at said proximal end thereof than at said distal end thereof; and

a solid rib, said rib being generally U-shaped and having no air passage orifice therein, said U-shaped rib having a first leg and a second leg, said first leg connected to said first wedge-shaped body at said proximal end thereof and said second leg connected to said second wedge-shaped body at the proximal end thereof, the legs of said rib connected by a curved ridge such that said bite block is bilaterally symmetrical about an axis centrally located on said ridge, said curved ridge having walls defining an upper edge and a lower edge said rib having a rise sufficient to accommodate an endotracheal tube beneath said rib;

wherein said bite block is insertable into the mouth of the patient and dimensioned to be held in place by compressional contact of only the patient's molars on said first and said second wedge-shaped bodies such that said rib is not subject to compressional contact.

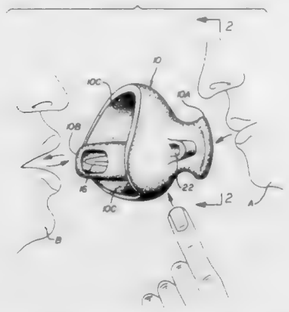
5,386,822

RESUSCITATION APPARATUS

Martin E. Jones, 3117 Nelson Ave., North Las Vegas, Nev. 89030

Filed Aug. 29, 1991, Ser. No. 751,749
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—203.11 1 Claim

1. Resuscitation apparatus including a one-piece housing having a first end and a second end and defining a first mouth piece at said first end to be inserted into the mouth of a person administering the resuscitation and defining a second mouth piece at said second end to be inserted into the mouth of a person receiving the resuscitation, said housing also forming a cup-shaped mask at said second end surrounding said second mouthpiece configured and positioned to encompass the mouth of the receiving person, and said housing forming a central portion defining a first passage between the first and second mouth pieces; and said housing further defining a flutter valve means extending across said first passage for permitting air to flow through said first passage in one direction only from the first mouthpiece to the second mouthpiece; said housing having at least one outlet therein, and said housing defining a second passage around the periphery of said central portion to provide a communication between said second mouthpiece and said outlet to permit fluid flow from said second mouthpiece to said outlet.

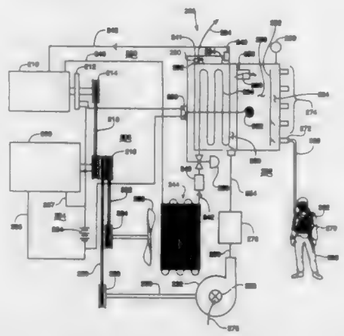


5,386,823

OPEN LOOP COOLING APPARATUS

Yasu T. Chen, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 1, 1992, Ser. No. 907,279
Int. Cl.[6] A61M *16/00;* A62B *7/00;* F24F *5/00;* F25D *23/12*
U.S. Cl. 128—204.15 9 Claims



1. Open loop portable personal cooling apparatus for work and cleanup assistance in a chemical warfare agent contaminated elevated temperature and elevated humidity ambient environment comprising the combination of:

chemical protection suit means for isolating a wearer from ambient environment;

a prime mover source of rotational mechanical energy;

refrigeration apparatus including an evaporator coil and a mechanical compressor member and a condenser fan member energized from said prime mover energy source;

electrically energized clutch means including a mechanical torque transmitting clutch member for intermittently communicating rotational mechanical energy between said prime mover source of mechanical energy and said mechanical compressor member;

air communication means including a centrifugal blower member of eleven inches of water column pressure capability energized from said prime mover mechanical energy source for communicating a predetermined volume of cooled and dried ambient air from said evaporator coil portion of said refrigeration apparatus into said chemical protection suit means;

said predetermined volume of cooled and dried air being distributed in a perspiration evaporating moving predetermined pattern of distribution over torso and facial portions of said wearer; and

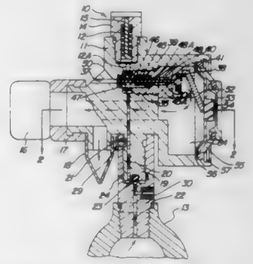
pressurized air cleansing means disposed between said centrifugal blower member and said evaporator coil portion of said refrigeration apparatus for removing ambient air contaminating chemical warfare agent from an output stream flow from said centrifugal blower member.

5,386,824

LIGHTWEIGHT BREATHING DEVICE

Guy S. Nelepka, 2327 N. Tustin Ave., Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 528,248, May 24, 1990, Pat. No. 5,099,835, which is a continuation-in-part of Ser. No. 293,071, Jan. 3, 1989, Pat. No. 4,928,686. This application May 6, 1993, Ser. No. 58,462
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—204.18 11 Claims



1. An air breathing device comprising:

a.) a main body including a fill port for supplying air to an air supply tank mounted on the breathing device;

b.) a rotatable cylinder stem defining a first orifice bore, the cylinder stem being mounted on the breathing device and attached to the air supply tank, the first orifice bore being connected to the air supply tank;

c.) an on-off valve mounted on the cylinder stem and defining a second orifice bore, the first and second orifice bores forming an air communication upon sufficient rotation of the cylinder stem, thereby turning on and admitting air from the air supply tank to the device;

d.) an air regulator housing mounted within the main body and connecting from the second orifice bore to a popper bore cavity;

e.) piston means mounted within the main body and connected to the regulator housing and the air supply tank, the piston means reducing air pressure from the air supply tank and the air regulator;

f.) an elongate, spring loaded poppet means defining a longitudinal, axial bore, one end of the poppet means seating into an atmospheric bore, and an opposed end of the poppet means, including a poppet head, seating into and sealing the poppet bore cavity, and a poppet stem mounted and secured within the longitudinal, axial bore;

g.) a body portion mounted in the on-off valve and providing an air connection between the valve and the popper means of the air regulator housing;

h.) a breathing mouthpiece and exhaust port mounted on the air breathing device, the breathing mouthpiece being air connected through the body portion to the air regulator, housing and the poppet bore cavity, the exhaust port being connected to the body portion; and,

i.) a lever adapted to actuate the stem of the popper means, the poppet stem being connected to the lever through a popper stem cavity contiguous with the popper bore cavity and secured in the popper seem cavity by a shoulder on the poppet stem; whereby:

i. when the on-off valve is turned on, and a user inhales on the mouthpiece, sufficient suction is produced to unseat the popper valve from the popper bore cavity and admit air to the user from the air supply tank and through the connected first orifice bore, and then through the body portion;

ii. when the user exhales on the mouthpiece, the popper closes and exhaust air passes through the body portion to the exhaust port; and,

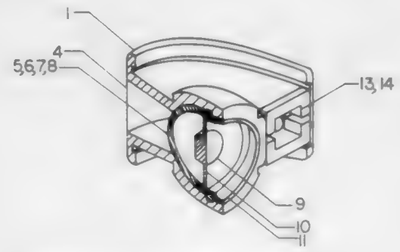
iii. when the lever is pressed, the poppet will be unseated ad release or blow out water and moisture through the body portion and exhaust port.

5,386,825

RESPIRATORY BREATHING FILTER APPARATUS AND METHOD

Charles W. Bates, 450 E. 126th St., Los Angeles, Calif. 90061

Filed May 20, 1993, Ser. No. 63,776
Int. Cl.[6] A62B *7/10*
U.S. Cl. 128—205.27 3 Claims



1. A respiratory filter apparatus comprising:

an arcuate body to be received within a user s mouth;

said arcuate body having upper and lower grooves to receive the user's teeth for removably holding the body within the mouth of the user;

means for removing large particles from an inhaled airstream, said means for removing large particles comprising a mesh material or cloth extending across a forward end of the arcuate body adjacent said upper and lower grooves;

means for preventing increased carbon dioxide levels with the filter apparatus, said means for preventing increased carbon dioxide levels comprising two one-way valves and at least one retaining ring, said one-way valves having a first position during exhalation wherein said one-way valves are open, and a second position during inhalation wherein said one-way valves are closed;

means for holding an evaporable medicament within said filter apparatus;

means for removing small particles within an inhaled airstream comprising a concave member spaced behind and apart from said means for removing large particles, said concave member including a loose filtering chemical encased in mesh or screen and further comprising a first layer of mesh, second layer of carbon filtering materials, and a third layer of mesh or screen; said means for holding an evaporable medicament comprising a sterile screen positioned behind and away from said means for removing small particles, a retaining ring and a groove to receive said retaining ring on an interior surface of said arcuate body; and

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means for varying air flow characteristics of an inhaled airstream.

5,386,826

TRACHEAL TUBE ASSEMBLIES

Timothy J. J. Inglis, Leeds, and Michael R. Millar, Wincester, both of Great Britain, assignors to Smiths Industries Public Limited Company and University of Leeds Industrial Services Limited, London, England

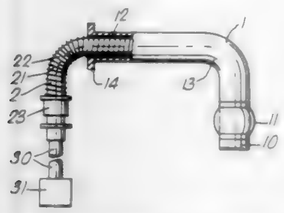
PCT No. PCT/GB91/00234, § 371 Date Apr. 29, 1992, § 102(e) Date Apr. 29, 1992, PCT Pub. No. WO91/12844, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 15, 1991, Ser. No. 781,138

Claims priority, application United Kingdom, Feb. 21, 1990, 9003857; Feb. 21, 1990, 9003859

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—207.14 **10 Claims**



1. A tracheal tube assembly for use in ventilation of a patient, said assembly being sized for location in the trachea of a patient and comprising an outer tube and an inner cannula that is insertable within and removable from the outer tube, said inner cannula having an inner surface of a first material to which respiratory secretions will cling, and an outer surface of a second material that is different from said first material and provides said outer surface with a lower coefficient of friction than said inner surface to facilitate insertion of said inner cannula into, and removal of said inner cannula from, said outer tube.

5,386,827

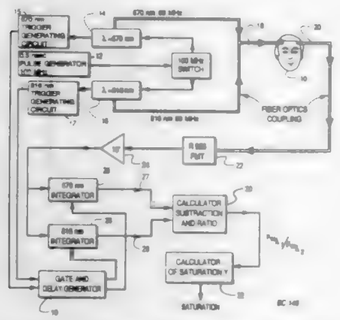
QUANTITATIVE AND QUALITATIVE IN VIVO TISSUE EXAMINATION USING TIME RESOLVED SPECTROSCOPY

Britton Chance, Marathon, Fla., and Kenneth J. Kaufmann, New Providence, N.J., assignors to NIM Incorporated, Philadelphia, Pa.

Filed Mar. 30, 1993, Ser. No. 40,168

Int. Cl.[6] A61B *6/00*

U.S. Cl. 128—633 **30 Claims**



16. A system for examination of biological tissue of a subject, the scattering and absorptive properties of the examined tissue being determined by photons migrating between an optical input port and an optical detection port, said system comprising:

an optical input port located at a first location to introduce light to the biological tissue;

an optical detection port located at a second location spaced apart from said input port to detect light that has migrated through the biological tissue;

the source means for introducing into the tissue, at the input port, pulses of electromagnetic radiation of a selected wavelength in the visible or infra-red range, said pulses having duration on the order of a nanosecond or less;

detector means for detecting, at the detection port, photons of modified pulses that have migrated in the tissue from the input port;

integrator means, coupled to said detector means, for integrating said photons over at least two selected time intervals separately spaced over the arrival time of said modified pulses; and

processor means, coupled to said integrator means, for determining a physiological property of the examined tissue based on the number of photons integrated over each time interval.

5,386,828

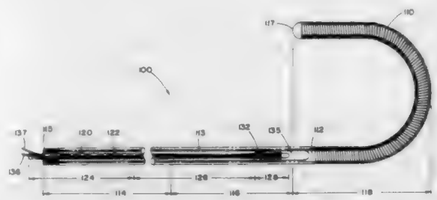
GUIDE WIRE APPARATUS WITH LOCATION SENSING MEMBER

Robert C. Owens, Forest Lake, and Theodore A. Johnson, St. Paul, both of Minn., assignors to SIMS Deltec, Inc., St. Paul, Minn.

Continuation of Ser. No. 813,881, Dec. 23, 1991, abandoned. This application Aug. 17, 1993, Ser. No. 108,177

Int. Cl.[6] A61B *5/05*

U.S. Cl. 128—653.1 **20 Claims**



18. A guide device suitable for invasive use in a patient, comprising:

a guide wire having proximal, center, and distal portions and a lumen therethrough; and

a sensing member housed within the lumen of the guide wire, and having distal, center and proximal sections, said center section of said sensing member proximate said center portion of said guide wire, each of said sections having an associated cross section, and a current conductor sensor element means which is located on the distal section for interacting with an externally-generated electromagnetic field so as to provide a current in the current conducting sensor element means, the associated cross section of the center section having at least in part a smaller dimension than the associated cross section of the distal and proximal sections.

5,386,829

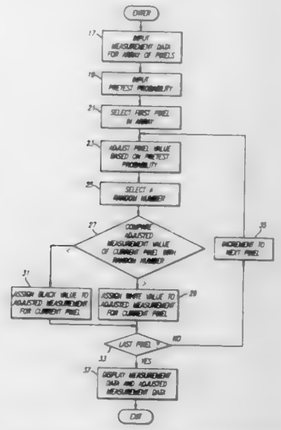
METHOD FOR ADJUSTING AN IMAGE ACCORDING TO A PRIORI PROBABILITIES

George A. Diamond, Los Angeles, Calif., assignor to Cedars-Sinai Medical Center, Los Angeles, Calif.

Filed Sep. 17, 1992, Ser. No. 946,748

Int. Cl.[6] A61B *5/00*; **G06K** *15/22*

U.S. Cl. 128—653.1 **14 Claims**



1. A method for providing a two-dimensional display representative of the significance of the results of a prescribed test administered to evaluate the possible presence of a predetermined condition, the method comprising the steps of:

determining a pretest probability that the predetermined condition is present;

administering a prescribed test to generate a test measurement bearing a predetermined relationship to the predetermined condition;

adjusting the test measurement based on the pretest probability determined in the step of determining, to produce an adjusted measurement; and

providing a first two-dimensional display having a parameter that varies according to the adjusted measurement.

5,386,830

ULTRASONIC PULSED DOPPLER FLOW MEASUREMENT SYSTEM WITH TWO DIMENSIONAL AUTOCORRELATION PROCESSING

Jeffry E. Powers, Lake Stevens, Wash., and Thanasis Loupas, McMahons Point, Australia, assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Oct. 25, 1993, Ser. No. 142,784

Int. Cl.[6] A61B *8/00*

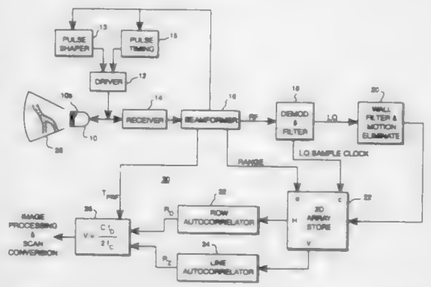
U.S. Cl. 128—661.09 **19 Claims**

1. Ultrasonic diagnostic apparatus for estimating flow velocity at a sample volume by Doppler estimation comprising:

means for repetitively insonifying said sample volume with pulses of ultrasonic waves;

means for acquiring ultrasonic echo information as a function of depth from insonifications of said sample volume;

means for performing two dimensional autocorrelation of said ultrasonic echo information corresponding to depth and insonification repetition; and



means responsive to said autocorrelation means for producing a velocity estimate.

5,386,831

REMOTE NONINVASIVE PATIENT TEMPERATURE MONITOR AND WARNING SYSTEM

Lewis Gluck, 14 Fox Run, Wappingers Falls, N.Y. 12590

Filed Mar. 11, 1994, Ser. No. 209,570

Int. Cl.[6] A61B *6/00*

U.S. Cl. 128—664 **1 Claim**



1. A remote noninvasive patient temperature monitor and warning system comprising an infrared temperature transducer, a pan/tilt motor mechanism including a first electric drive motor for panning and a second electric drive motor for tilting, said infrared temperature transducer being mounted on said pan/tilt motor mechanism, a power circuit to said pan/tilt motor mechanism, said pan/tilt motor mechanism having adjustable limit switch means which control the range of motion of both pan and tilt motions and which reverse the respective drive motor direction for each of said pan and said tilt motions as said limit switch means are tripped, a remote control central processing unit receiving temperature information from said infrared transducer, said processing unit having means to store a first temperature value and a second temperature value higher than said first temperature value, means operable by a signal from said central processing unit to interrupt said power circuit to said pan/tilt motor mechanism when said first temperature value is reached and connect it when a lower temperature value is not detected, means operable by said central processing unit to connect a power source to an alarm device when said second temperature value is detected or when said first temperature value is not detected within a predetermined time period.

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5,386,832

LIVER FUNCTION BREATH TEST USING AROMATIC AMINO ACIDS

David A. Wagner, Acton, Mass.; Martin A. Baker, Mahwah, N.J.; Peter A. Burke, Belmont, Mass.; R. Amour Forse, Brookline, Mass.; John D. Palombo, Medfield, Mass., and Bruce R. Bistrian, Ipswich, Mass., assignors to New England Deaconess Hospital, Boston and Metabolics Solutions, Inc., Acton, both of Mass.

Filed Jun. 11, 1993, Ser. No. 75,662
Int. Cl.[6] A61B *5/08, 6/00*
U.S. Cl. 128—665 9 Claims

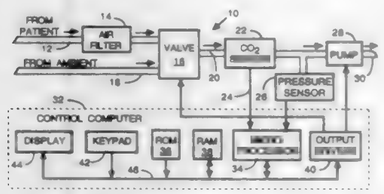
1. A method of determining hepatic functional activity in a subject comprising the steps of:
orally administering an effective amount of ^{13}Carbon labeled phenylalanine to said subject;
allowing said ^{13}Carbon labeled phenylalanine to be oxidized in said subject;
collecting expired breath from said subject;
measuring the amount of said ^{13}Carbon in said expired breath; and
comparing said amount of expired ^{13}Carbon with a standard;
whereby said comparison yields a measure of hepatic functional activity.

5,386,833

METHOD FOR CALIBRATING A CARBON DIOXIDE MONITOR

David Uhen, Burlington, Wis., assignor to Biochem International, Inc., Waukesha, Wis.

Filed Dec. 23, 1993, Ser. No. 173,522
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—719 21 Claims



1. A method for calibrating a monitor which measures an amount of carbon dioxide in breath of an animal, steps of said method comprising:
periodically measuring carbon dioxide content of air flowing into and out of the animal;
producing an indication of a need for calibration of the monitor, in response to the carbon dioxide content of air flowing into or out of the animal;
detecting when the animal is inhaling; and
in response to the indication being produced, determining a measurement offset value for the monitor when the animal is inhaling.

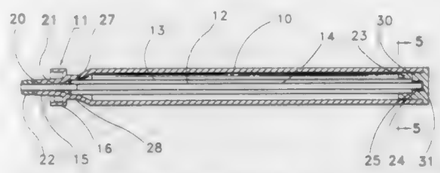
5,386,834

APPARATUS FOR WITHDRAWING ARTERIAL BLOOD

Manfred Schwarz, Bachern, Germany, assignor to AVL Medical Instruments AG, Schaffhausen, Switzerland

PCT No. PCT/CH91/00234, § 371 Date Oct. 22, 1993, § 102(e) Date Oct. 22, 1993, PCT Pub. No. WO93/09714, PCT Pub. Date May 27, 1993
PCT Filed Nov. 14, 1991, Ser. No. 87,782
Int. Cl.[6] A61B *5/14*
U.S. Cl. 128—765 7 Claims

1. Apparatus for withdrawing arterial blood comprising
a protective tube (**10**) having a mounting member (**11**) on one end of said tube (**10**), said mounting member including a conical seat (**15**) for the receipt of a hollow needle,
connecting member (**23**) mounted on the other end of said tube (**10**);
first and second capillaries (**12, 13**) having respective ends, and being positioned within said tube (**10**). The first capillary (**12**) being arranged concentrically within the second capillary (**13**) such that an annular space (**14**) is formed between said first and said second capillaries, said first



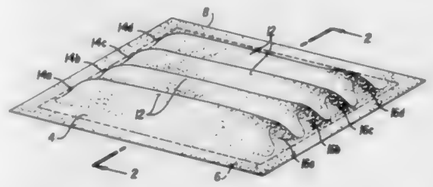
capillary projecting beyond both ends of said second capillary, and one end of each of said first and said second capillaries being mounted in said mounting member (**11**), said first capillary (**12**) being connectable to a hollow needle, and the other end of each of said first and said second capillaries being mounted in said connecting member (**23**) thereby providing communication between said first and said second capillaries.

5,386,835

BARRIER MEANS

Kevin J. Elphick, 96 Mullaloo Drive, Kallaroo, Western Australia 6025, and Ilene F. Watters, 1/197 Walter Road, Dianella, Western Australia 6062, both of Australia

Continuation-in-part of Ser. No. 490,670, Mar. 30, 1990, Pat. No. 5,152,282. This application Apr. 27, 1992, Ser. No. 873,825
Int. Cl.[6] A61F *5/37;* A61B *19/00*
U.S. Cl. 128—846 21 Claims



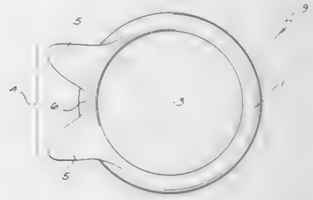
1. A barrier means for connection to a body part to prevent the body part from becoming wet when liquid is externally applied to or near the body part, the barrier means comprising:
a web formed of flexible and liquid impervious material and having two surfaces and a periphery;
a strip of liquid impervious adhesive extending about the periphery on one surface of the web for connecting and sealing the periphery of the web to the body part;
the web being dimensioned and shaped so that the area of said one surface of the web is greater than the area of the footprint of the web thereby providing slack in the web when the web is connected and sealed to the body part, whereby the slack reduces the magnitude of tensile forces created in the web in response to movement of the body part and adjacent body areas to a level below that necessary to pull the periphery of the web away from the body part.

5,386,836

URINARY INCONTINENCE DEVICE

Nicholas Biswas, New South Wales, Australia, assignor to Zedlani Pty Limited, Parramatta, Australia

Continuation of Ser. No. 695,441, May 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 448,166, Dec. 8, 1989, Pat. No. 5,036,867, which is a continuation-in-part of Ser. No. 108,276, Oct. 13, 1987, Pat. No. 4,920,986. This application Jul. 9, 1993, Ser. No. 89,422
Claims priority, application Australia, Oct. 14, 1986, PH8486; May 3, 1990, PJ9967; Oct. 25, 1990, PK3010
Int. Cl.[6] A61F *2/00*
U.S. Cl. 128—885 18 Claims



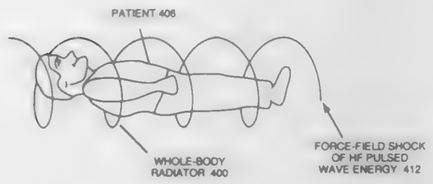
1. In an entirely intra-vaginal urinary incontinence device comprising a resilient circular base portion of a planar configuration defining a plane, an improvement wherein:
said circular base portion has integrally formed thereupon a bladder support portion extending away from the plane of the base portion, the bladder support portion forming a cradle for receiving and supporting, at least indirectly, a neck of a bladder of a patient in raised position, and the base portion being flexible so as to be insertable into a vagina of the patient, but resilient so that it returns to the planar configuration when in position in the vagina,
wherein the cradle is formed by two projections having a bridge section therebetween.

5,386,837

METHOD FOR ENHANCING DELIVERY OF CHEMOTHERAPY EMPLOYING HIGH-FREQUENCY FORCE FIELDS

Fred Sterzer, Lawrence Township, Mercer County, N.J., assignor to MMTC, Inc., Princeton, N.J.

Filed Feb. 1, 1993, Ser. No. 11,817
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—898 14 Claims



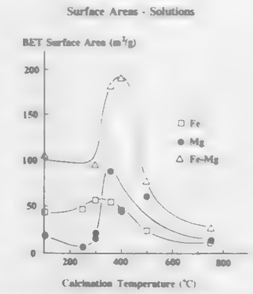
1. In an electrochemotherapeutic treatment method comprising the steps of (1) systemically administering an agent which includes at least one of a drug agent and a chemotherapeutic agent to a patient, and (2), a short time after the systemic administration of said agent, applying force-field shock pulses to at least one site of said patient of sufficiently high-intensities to open large transient pores in plasma membranes of cells of each site to which said force-field shock pulses are applied, thereby permitting said agent to enter said cells of that site through said pores and result in locally enhanced therapeutic effect; the improvement wherein said step (2) comprises the step of:
a) applying at least one of said force-field shock pulses that comprises a burst of high-frequency wave energy to a given site of said patient of sufficiently high-intensity to open large transient pores in plasma membranes of cells of said given site.

5,386,838

HIGH SURFACE AREA IRON-MAGNESIUM SMOKE SUPPRESSIVE COMPOSITIONS

Roger B. Quincy, III, Alpharetta, and William F. Cartwright, Roswell, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 9, 1993, Ser. No. 90,348
Int. Cl.[6] A24D *1/02*
U.S. Cl. 131—365 41 Claims



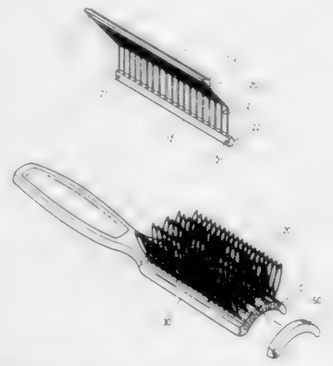
1. A composition for suppressing smoke comprising a solid solution comprising iron in an amount of approximately 5 mol % of the composition and magnesium in an amount of approximately 95 mol % of the composition, the composition having a surface area of approximately 225 m^2/gram when heated to between approximately 350° C. and approximately 400° C.

5,386,839

COMB

Hong Y. Chen, P.O. Box 82-144, Taipei, Taiwan, Prov. of China

Filed Dec. 24, 1992, Ser. No. 996,563
Int. Cl.[6] A45D *24/38*
U.S. Cl. 132—152 2 Claims



1. A comb comprising, in combination:
a) at least one comb element;
said at least one comb element having an initial flat configuration and having a left member and a right member engagable with each other;
said left member having a plurality of holes along an inner

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side of its length and an elongated projection on an outer side thereof;

said right member having a plurality of protuberances on an inner side of its length, said protuberances being spaced at locations to engage with said holes of said left member when said left and right members are engaged with each other, said plurality of holes and said plurality of protuberances forming retaining elements for retaining the left and right members in a mated relationship, said right member having an elongated projection on an outer side of an identical shape and size as said elongated projection of said left member;

a plurality of line members connecting said left member and said right member, each line member having a cut at an intermediate portion to allow said line member to bend about said cut, said line members forming a plurality of elliptical loops when said left and right members are engaged; and

b) a comb frame;

said comb frame having an open end at one end and a handle portion at the other end, said comb frame having at least one groove formed therein, said at least one groove being sized and shaped to match and slidably receive said at least one comb element and engage said elongated projections of said at least one comb element when said left and right members are engaged;

whereby said at least one comb element is formed by engaging said left and right members and is slidably inserted into said at least one groove in said comb frame to form a completed comb assembly.

5,386,840

FLOATABLE TOOTHPICK ASSEMBLY

Terry Lane, 1925 Brickell Ave., Apt. D810, Miami, Fla. 33129

Continuation-in-part of Ser. No. 116,577, Sep. 7, 1993. This application Jan. 12, 1994, Ser. No. 180,287

Int. Cl.[6] A45D *8/18*

U.S. Cl. 132—329 **9 Claims**



1. A floatable toothpick assembly comprising: an elongate segment having a lower end zone with a pointed tip, an upper opposite end zone and a main length of generally cylindrical uniform cross-section between the end zones, and

a buoyant float means with a) an upper surface, b) a lower end, and c) a side surface extending between the upper surface and the lower end, said float means being disposed on said main length adjacent said upper opposite end zone, and said float means being sufficiently buoyant so as to float in a beverage with the upper opposite end zone extending above a top level of a beverage when a garnish is piercingly captivated adjacent the lower end zone,

the upper end zone including an upper end segment adapted to be matingly secured to the float means, the float means including an axial slot extending downwardly from the upper surface of the float means wherein an attachment end of the upper end segment is disposed, and

the upper end segment including an accessible finger gripping surface for use in lifting the assembly and the garnish thereon from a floating disposition in the beverage.

5,386,841

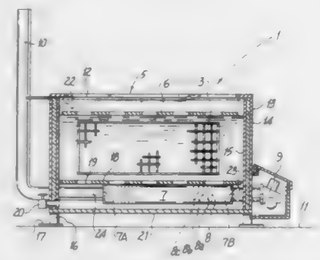
NON-CHEMICAL LOBSTER TRAP CLEANING APPARATUS

Edward Stilwagen, P.O. Box 556, East Marion, N.Y. 11939, and Edward Rodman, 7 High Hollow La., Miller Place, N.Y. 11764

Filed May 19, 1993, Ser. No. 64,415

Int. Cl.[6] B08B *3/10*

U.S. Cl. 134—57 R **18 Claims**



1. A chemical free lobster trap cleaning apparatus for use on board a boat at sea, said lobster trap cleaning apparatus comprising a base, a hollow water containing chamber having a bottom floor, a plurality of upwardly extending walls and an open top opening between a top edge of each of said upwardly extending walls, a means for heating the lobster trap at atmospheric pressure, at a water temperature below boiling point of water temperature measured at 212 degrees F. at sea level, said means comprising a heating element within said water containing chamber, said chamber holding water for cleaning the lobster traps immersed therein to permit convenient and effective cleaning of marine organisms and debris at a lobster trap site at sea, said water containing chamber supporting the lobster trap above the said heating element within said water containing chamber, said heating element being capable of heating the water to a temperature below the water temperature boiling point of 212 degrees F. at sea level within said water containing chamber, said heating element communicating at an input end of said chamber with a heat source and at an output end of said chamber with an exhaust means, said heating element producing a heating flame therein, said heating element further having a guidance means for directionally guiding the heating flame therethrough.

5,386,842

UMBRELLA, IN PARTICULAR LARGE UMBRELLA

Klaus Becher, Gummersbach, Germany, assignor to Becher Textil- und Stahlbau GmbH, Germany

PCT No. PCT/DE92/00153, § 371 Date Oct. 27, 1992, § 102(e) Date Oct. 27, 1992, PCT Pub. No. WO92/15217, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 25, 1992, Ser. No. 940,896

Claims priority, application Germany, Feb. 27, 1991, 4106221

Int. Cl.[6] A45B *13/00*

U.S. Cl. 135—20.3 **20 Claims**

1. An umbrella comprising an umbrella pole (2), a pole part (3) displaceable telescopically relative to said umbrella pole (2), a first crown (4) carried by an upper end portion of said pole part (3), a plurality of roof rods (5) connected for articulated movement to said first crown (4), a plurality of supporting struts (7) having opposite first and second end portions connected respectively to said roof rods (5) and a runner (6) displaceable along said umbrella pole (2), a stay crutch unit (24) carrying a second crown (20) and including a plurality of stay crutches (22), a roof covering (21) connected between said second crown (20) and said roof rods (5), a threaded spindle (10) within said umbrella pole (2), said threaded spindle (10) carrying a threaded member (13) selectively movable in opposite directions along said threaded spindle (10) upon selective rotation of said threaded spindle (10), a deflection roller (16) carried by said umbrella pole (2), a flexible drawing element (15) entrained about said deflection roller (16) and having



opposite ends connected to said threaded member (13) and said pole part (3) respectively, said crutch unit (24) being displaceable relative to said pole part (3), means (23) for guiding said stay crutches (22) during displacement of said crutch unit (24) relative to said pole part (3), and means (25) carried by said umbrella pole (2) for supporting said stay crutch unit (24) at least in one of closed and open positions of the umbrella.

5,386,843

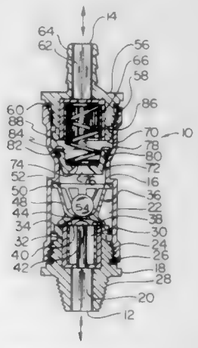
VENTING APPARATUS AND SYSTEM FOR MARINE CRAFT FUEL TANK

John F. Church, Modesto, Calif., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 922,367, Jul. 29, 1992, abandoned, which is a continuation of Ser. No. 877,688, May 1, 1992, abandoned. This application Jun. 15, 1994, Ser. No. 260,168

Int. Cl.[6] F16K *24/04*

U.S. Cl. 137—202 **30 Claims**



1. Apparatus enabling the discharge of vapor therethrough to atmosphere from the headspace of a vehicle fuel tank while preventing the passage of liquid therethrough, and for enabling passage of vapor from the atmosphere therethrough to said headspace, comprising:

an enclosed chamber;

a first opening in said chamber, said first opening in fluid connection with said headspace;

a second opening in said chamber, said second opening in fluid connection with atmosphere;

an orifice in said chamber, said orifice disposed between said first and second openings;

a movable body in said chamber, said body configured to block said second opening when disposed adjacent thereto, and wherein said movable body floats in said liquid;

a retainer in said chamber extending between said second opening and said orifice, said retainer having an interior area, said body movable in said interior area of said retainer between an undisplaced position adjacent said orifice and a blocking position abutting said second opening, and wherein said retainer prevents movement of said body in a traverse direction from said orifice and directs said body into centered relation with said orifice when said body moves adjacent thereto; wherein when vapor flows through said chamber from said first opening to said second opening, vapor flow through said orifice produces an attractive force holding said body away from said second opening.

5,386,844

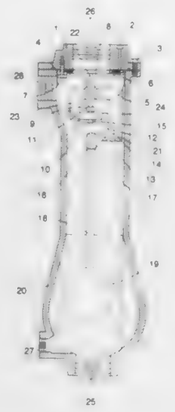
FLOAT ACTUATED COMBINATION AIR AND VACUUM VALVE

Paul G. Kennedy, Horseheads, N.Y., assignor to Penn Troy Machine Co., Inc., Troy, Pa.

Filed Dec. 12, 1991, Ser. No. 807,046

Int. Cl.[6] F16K *31/34, 33/00*

U.S. Cl. 137—202 **8 Claims**



2. A combination gas and vacuum valve for a pressurized liquid and gas system comprising:

(a) a valve body having at each extremity at least one opening; one opening at bottom of said body being an input including pressurized liquid and gas and being continuously open when in use; the other opening at upper part of said body being an outlet for gas when system is not under pressure as measured in the valve;

(b) a valve poppet for opening and closing said gas outlet; said poppet containing a gas outlet aperture within its stem for the release of accumulated gasses when said valve is in operation and under pressure;

(c) a float and rod connected operatively thereto in a vertical orientation for allowing said valve poppet to close and open said gas outlet;

(d) a seat frame for guiding the stem of said valve poppet to allow an open and closed position based on buoyancy of float;

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(e) a double arm mechanism comprising a needle pivot arm, tie arm, and float pivot arm to which said float rod is attached; said double arm mechanism containing two fulcrum axes through which a force of buoyancy moves said poppet to closed position;

(f) a valve poppet seat attached to said needle pivot arm moving said valve poppet to closed position through its stem, and closing said gas outlet aperture within said poppet stem through buoyant force of said float in the pressurized liquid;

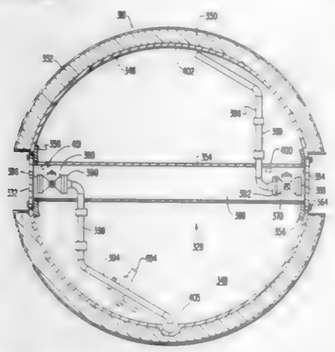
(g) said fulcrum axis of said needle pivot arm containing a torsion spring which assists the buoyancy effect of said float; said torsion spring with tension rotating said needle pivot arm and said poppet seat upward against stem of said poppet, thereby providing an additional force which would be equivalent to that created by a larger float so that the size and the force of said spring in turn minimizes the size of the float, the valve and its overall design.

5,386,845

FLUID TRANSPORT APPARATUS WITH SIDE RECESSED FITTING WELL

Donald L. Zink, Billings, Mont., assignor to Montana Sulphur & Chemical Company, Billings, Mont.

Division of Ser. No. 802,699, Dec. 5, 1991, Pat. No. 5,251,650, which is a continuation of Ser. No. 595,464, Oct. 10, 1990, abandoned. This application Sep. 24, 1993, Ser. No. 125,755
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[6] F16K *24/00*
U.S. Cl. 137—350 **20 Claims**



1. A fluid transport vessel, comprising:

an elongated tank having a tank interior, opposite tank ends, opposite first and second tank sides, a tank top and a tank bottom, one of said tank sides having a generally lateral through-opening;

a wheel assembly supporting at least in part said tank;

a well secured to said tank, recessed into said tank interior, and having a well interior communicable with said through-opening;

a vessel fitting protectively mounted in said well interior; and

a cover positionable in a closed position secured tight to said tank over said through-opening and an alternative open position providing operative access from outside of said tank to said fitting through said through-opening;

wherein said well extends diametrically across said tank interior from said first side to said second side and is secured thereto.

5,386,846

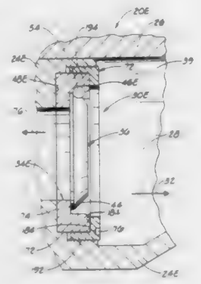
Patent Not Issued For This Number

5,386,847

TOP-ENTRY CHECK VALVE WITH THREADED FASTENERS

John P. Scaramucci, 10724 Woodridden, Oklahoma City, Okla. 73170

Division of Ser. No. 108,146, Aug. 17, 1993, Pat. No. 5,307,835, which is a continuation of Ser. No. 961,106, Oct. 14, 1992, abandoned, which is a division of Ser. No. 762,540, Sep. 18, 1991, Pat. No. 5,161,570. This application Jan. 13, 1994, Ser. No. 181,639
Int. Cl.[6] F16K *15/03*
U.S. Cl. 137—454.2 **3 Claims**



1. A top entry check valve comprising:

a disc having at least one hinge pin extending along a tangent thereto;

a unitary seat and cage having an upstream end, a downstream end and a seating surface, the seating surface facing downstream and being shaped to mate with said disc; and having a pair of hinge pin supports receiving the opposite end portions of the hinge pin;

a body having an upstream end, a downstream end, a valve chamber therein communicating with the upstream and downstream ends thereof, and an access opening in a side wall thereof communicating with the valve chamber of a size to accommodate the entry and removal of said disc and said unitary seat and cage therethrough, said body also having an annular shoulder therein facing downstream sized to engage the upstream end of said unitary seat and cage and prevent said unitary seat and cage from moving upstream;

a bonnet removably attached to said body over said access opening forming a wall of the valve chamber; and

a retainer ring having an inwardly extending annular shoulder and an upstream end with a threaded outer periphery;

wherein the body has an inner counterbore and a threaded outer counterbore, a portion of said unitary seat and cage extends into the inner counterbore, and the threaded end of the retainer ring screws into the threaded outer counterbore such that the inwardly extending annular shoulder of the retainer ring engages said unitary seat and cage and prevents said unitary seat and cage from moving downstream.

5,386,848

PNEUMATIC CHECK VALVE AND METHOD FOR MAKING SAME

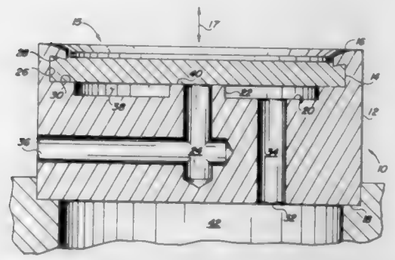
Raymond T. Gilchrist, and Kevin McCoy, both of Tucson, Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Feb. 22, 1994, Ser. No. 199,865
Int. Cl.[6] F16K *27/02, 7/17*
U.S. Cl. 137—510 **2 Claims**

1. A check valve comprising in combination:

a circular diaphragm; and

an integral cylindrical member having first and second axial ends, a portion near the first axial end having a C-shaped cross section and forming opposing annular lands; an annular peripheral portion of the diaphragm being captively retained between the opposing annular lands and the diaphragm being directly exposed to ambient pressure; the member forming a central annular boss projecting toward the diaphragm and terminating at an annular valve seat; the diaphragm abutting the valve seat to form the valve; the member cooperating with the diaphragm to form an annular chamber circumscribing the annular boss; the member having an outlet port, a first passageway extending from the outlet port to the annular boss, an inlet port, and a second passageway extending from the inlet port to the annular chamber.

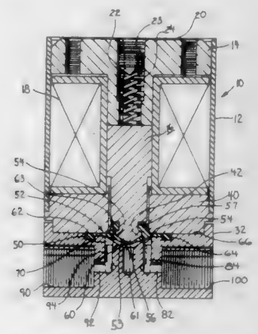


5,386,849

SOLENOID VALVE

Jon P. Gilchrist, South Bend, Ind., and William C. Klebusch, Nashua, N.H., assignors to South Bend Controls, Inc., South Bend, Ind.

Continuation of Ser. No. 36,143, Mar. 24, 1993, Pat. No. 5,333,643. This application Apr. 21, 1994, Ser. No. 230,641
Int. Cl.[6] F16K *31/06*
U.S. Cl. 137—605 **1 Claim**



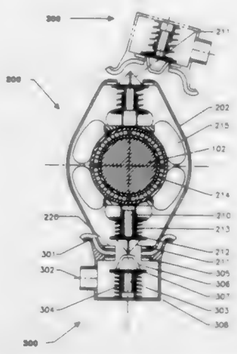
1. A solenoid valve comprising a valve body having a valve cavity, said valve body having a first port defining a first passageway communicating with said valve cavity, and a second port defining a second passageway communicating with said valve cavity and said first passageway, a valve seat disposed between and including said first and second ports and aligned with said valve cavity, electrically operated solenoid means mounted on said valve body for alternatively opening and closing said valve, said solenoid means including a solenoid coil and an armature including a poppet disposed in said cavity for movement between a retracted open position spaced from said valve seat and an extended closed position adjacent said valve seat, elastomeric diaphragm means mounted in said valve body and disposed between said poppet and said valve seat for sealing said valve cavity from said first and second passageways, said valve seat having an obliquely angled contact face, and means for urging said armature means into said closed position to compress said diaphragm means between said poppet and said valve seat, said valve body further including a third port within said valve seat defining a third passageway communicating with said valve cavity and said first and second passageways, said valve body having a groove formed therein, said groove being defined as extending between said first and third passageways when said diaphragm is compressed against said valve seat by poppet to allow communication between said first and third passageways.

5,386,850

ROTATABLE DOUBLE-ENDED QUICK CONNECT VALVE AND METHOD OF OPERATION

Roy W. Emery, 1 Donino Court, Toronto, Ontario, Canada M4N 2H6

Filed May 20, 1994, Ser. No. 247,086
Int. Cl.[6] F16L *37/28*
U.S. Cl. 137—614.04 **5 Claims**



1. A rotatable double-ended quick connect valve comprised of a main valve body mounted on a shaft between a back plate and a spring-mounted pressure plate, said back plate and said pressure plate being mounted in fixed positions on said shaft, and said valve body being rotatably mounted and pressed between them, said valve body being fitted with two quick connect valves, one at each end of said valve body, said back plate being fitted with a pipe connection outlet, the interior of said valve body forming a circumferential flow chamber surrounding said shaft between said two quick connect valves, and the back of said flow chamber having an exterior gasket rubbing against said back plate, and a series of closely spaced openings around its entire circumference and through said gasket to provide a continuous flow connection with said pipe connection outlet on said fixed back plate as said valve body rotates about said shaft in relation to the fixed position of said outlet on said back plate on said shaft.

5,386,851

TWO DIMENSIONAL MODULATED BURNER STAGING VALVE

Martin A. Clements, and Robert M. Darby, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 84,648, Jun. 28, 1993, abandoned. This application Jan. 12, 1994, Ser. No. 180,519
Int. Cl.[6] F16K *11/078;* **F02C** *1/00*
U.S. Cl. 137—625.17 **5 Claims**

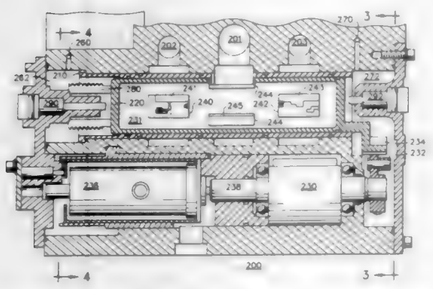
1. A fuel valve comprising

a main fuel valve connected to a burner staging valve such that fuel flow from the main fuel valve is divided between pilot and main domes of a dual annular combustor;

said burner staging valve including a movable spool located within a fixed sleeve such that said spool may be moved both laterally and rotated within predetermined limits;

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said movable spool and sleeve including pilot, main and inlet windows arranged such that said inlet windows receive fuel from said main fuel valve and said pilot and said main windows split the fuel flow between said pilot and main domes;



said burner staging spool being movable within said sleeve such that movement of said spool changes the area of said pilot and said main windows; and

said sleeve windows comprising groups of small, metering windows adapted to provide predetermined fuel splits for specified spool positions.

5,386,852

FLOW-RATE LIMITING DEVICE IN A SINGLE-CONTROL MIXER CARTRIDGE FOR HOT AND COLD WATER

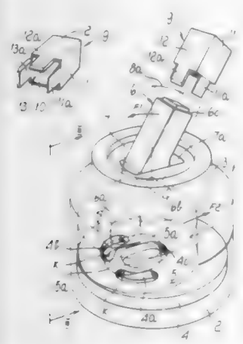
Orlando Bosio, Casaloldo, Italy, assignor to AMFAG S.r.l., Castelgoffredo, Italy

Filed Apr. 28, 1993, Ser. No. 53,279

Claims priority, application Italy, Apr. 30, 1992, MN92 A 000011

Int. Cl.[6] F16K *11/078, 51/00*

U.S. Cl. 137—625.17 **8 Claims**



1. In combination, a single-control mixer cartridge for hot and cold water and a flow-rate limiting device, said single-control mixer cartridge comprising;

a bottom;

openings for separate inflow of hot and cold water formed in said bottom;

an opening for outflow of hot, cold or mixed water formed in said bottom;

a fixed plate superimposed on said bottom;

water flow openings formed in said fixed plate opposite to said openings for separate inflow of hot and cold water and said opening for outflow of hot, cold or mixed water formed in said bottom;

a movable plate superimposed on said fixed plate and movable to assume different positions with respect to the fixed plate;

a mixing chamber defined internally of said movable plate;

a body connected to said bottom, said bottom and said body together accommodating said fixed plate, said movable plate, and said plate cover;

a coupling rotatably mounted within said body and connected to said movable plate;

a flat stroke-limiting abutment wall defined by said coupling;

an actuation lever connected to said movable plate and pivotally connected to said coupling, and;

a flat wall defined by said lever facing said flat stroke-limiting abutment wall of said coupling;

said flow-rate limiting device comprising:

a bush connected to and selectively positionable on said lever, said bush having a first planar wall, a second planar wall, a third planar wall, and a fourth planar wall, said flat wall being engageable with said flat stroke-limiting abutment wall upon selectively positioning said first planar wall at said flat wall for allowing a maximum excursion of said lever with respect to said coupling;

a first protrusion protruding linearly from said second planar wall and being selectively positionable at said flat wall for abutment engagement with said flat stroke-limiting abutment wall for reducing excursion of said lever with respect to said coupling;

a second protrusion protruding linearly from said third planar wall and having a thickness greater than said first protrusion, said second protrusion being selectively positionable at said flat wall for abutment engagement with said flat stroke-limiting abutment wall for further reducing excursion of said lever with respect to said coupling, and;

a third protrusion protruding linearly from said fourth planar wall and having a thickness greater than said second protrusion, said third protrusion being selectively positionable at said flat wall for abutment engagement with said flat stroke-limiting abutment wall for even further reducing excursion of said lever with respect to said coupling.

5,386,853

GRIPPER LOOM WITH PNEUMATIC GRIPPER CLEANING APPARATUS

Francisco Speich, Gipf-Oberfrick, Switzerland, assignor to Textilma AG, Hergiswil, Switzerland

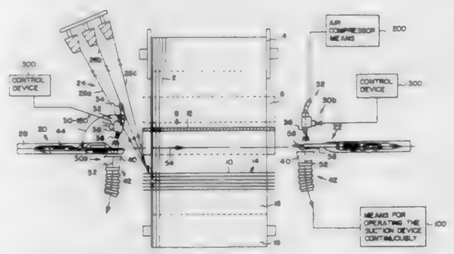
PCT No. PCT/CH92/00009, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO92/15738, PCT Pub. Date Sep. 17, 1992

PCT Filed Jan. 16, 1992, Ser. No. 946,446

Claims priority, application Switzerland, Mar. 8, 1991, 710/91

Int. Cl.[6] D03J *1/00;* **D03D** *47/20*

U.S. Cl. 139—1 C **17 Claims**



1. A gripper loom, comprising:

at least one gripper associated with a blower nozzle of a blowing device outside of a weaving area, wherein said blowing device is located on a first side of said gripper, and further wherein a suction nozzle of a suction device is associated with said blowing nozzle, and further wherein said suction device is located on a side of said gripper which is opposite said first side, wherein said blowing nozzle is directed against an opening of the suction nozzle, and wherein said gripper includes means for passing air from said blowing nozzle to said suction nozzle, wherein an axis of said blowing nozzle and an axis of said suction nozzle lie at least approximately on a common axis which extends parallel to a fabric web, wherein said common axis forms an angle of 30° to 150° with a running direction of said gripper.

5,386,854

COMPACT JACQUARD TYPE SEAM-WEAVING MACHINE

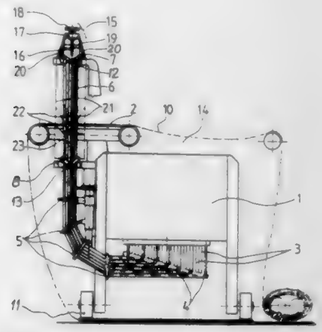
Hans E. Hacker, Reutlingen, Germany, assignor to Novatech GmbH Siebe und Technologie Fur Papier, Reutlingen, Germany

Filed Nov. 10, 1993, Ser. No. 149,726

Claims priority, application Germany, Nov. 12, 1992, 9215427[U]

Int. Cl.[6] D03D *3/00, 3/04*

U.S. Cl. 139—85 **4 Claims**



1. A seam-weaving machine for making a plastics woven fabric endless by means of a woven seam comprising a Jacquard machine for the formation of a weaving shed, the Jacquard machine being arranged slightly offset underneath the weaving shed, tension springs secured in said machine above the weaving shed and connected to a plurality of harness cords extending vertically downwardly from the Jacquard machine and guide means carried by said machine for deflecting the harness cords 180° prior to passage through the weaving shed to the tension springs.

5,386,855

DEVICE FOR AUTOMATICALLY VARYING THE POSITION OF THE SHED VERTEX IN A LOOM

Luciano Corain, Vicenza; Spanevello Roberto, Schio, and Marco Novella, Valdagno, all of Italy, assignors to Nuovopignone-Industrie Meccaniche E Fonderia SpA, Florence, Italy

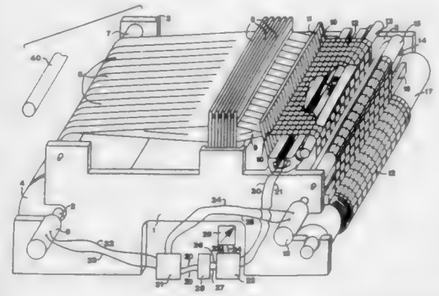
Filed Oct. 14, 1993, Ser. No. 136,450

Claims priority, application Italy, Oct. 23, 1992, MI92A 002424

Int. Cl.[6] D03D *51/00, 49/10*

U.S. Cl. 139—99 **2 Claims**

1. In a loom that has a drive shaft, a device for automatically varying, during the transient states following loom stoppages, the shed vertex position in said loom, in which the loom has a warp feed beam operated by a first electric motor synchronized with the loom drive shaft, a reed for beating up a weft against said shed vertex, a fixed bar for deviating the fabric under formation and a take-up roller operated by a second electric motor also synchronized with the loom drive shaft, the device comprising a sensor for determining the beat-up pulse intensity of said reed by measuring the deformation of said fixed bar for deviating the fabric under formation and connected to a predetermined set value comparator having an output, which comparator also has means for receiving said predetermined set value corresponding to the beat-up pulse intensity of said reed, the output of said comparator being a



difference signal used, via a memory unit, to drive said first and second electric motors operating said beam and said take-up roller, said sensor having measured the deformation of said fixed bar for deviating the fabric under formation, whereby said comparator output synchronously drives said first and second electric motors to vary the shed vertex position.

5,386,856

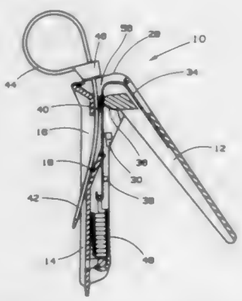
TENSION LIMITING STRAP TOOL

Roy A. Moody, Flossmoor, and Larry A. Hillegonds, New Lenox, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Aug. 6, 1993, Ser. No. 103,015

Int. Cl.[6] B21F *9/00*

U.S. Cl. 140—123.5 **22 Claims**



1. A strap tensioning tool for tightening a cable tie having a strap and a locking head, comprising:

a top and a bottom handle pivotally attached and biased apart; a cam surface integrally formed on the top handle; a handle return member having strap gripping barb means positioned adjacent the cam surface so that the strap gripping barb means is forced onto a strap end when the top and bottom handles are pivoted together; and

means for tightening the cable tie, actuated by the pivoting together of the top and bottom handles.

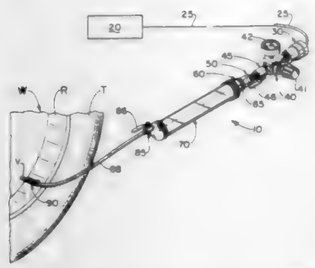
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5,386,857

METHOD OF AND APPARATUS FOR INTRODUCING PULVERULENT MATERIAL INTO A TIRE

Robert D. Fogal, Sr., Chambersburg, Pa., and Lester A. Beatty, Islington, Canada, assignors to International Marketing, Inc., Chambersburg, Pa.

Filed Mar. 30, 1993, Ser. No. 40,289
Int. Cl.[6] B60C *19/00*
U.S. Cl. 141—5 23 Claims



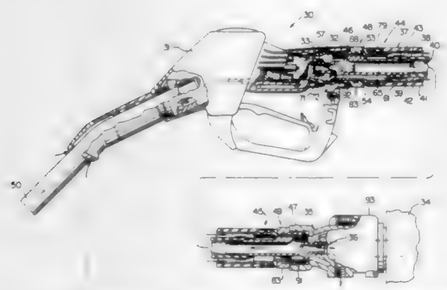
1. A method of introducing a pulverulent material into a tire through a tire valve stem comprising the steps of
(a) confining a predetermined amount of pulverulent material,
(b) subjecting the confined pulverulent material to pressurized cyclonic air currents moving along a generally horizontal flow path,
(c) progressively altering the generally horizontal flow path to an inclined flow path, and
(d) introducing the pulverulent material into a tire through an associated tire valve stem under the influence of the pressurized cyclonic air currents.

5,386,858

FUEL DISPENSING SYSTEM, HOSE ASSEMBLY AND COUPLINGS THEREFOR AND METHODS OF MAKING THE SAME

John D. Sanders, Springfield, Mo., and Gary R. Long, Stourport-on-Severn, Great Britain, assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 849,265, Mar. 11, 1992, Pat. No. 5,285,826.
This application Sep. 16, 1993, Ser. No. 123,018
Int. Cl.[6] B65B *31/00*
U.S. Cl. 141—59 36 Claims



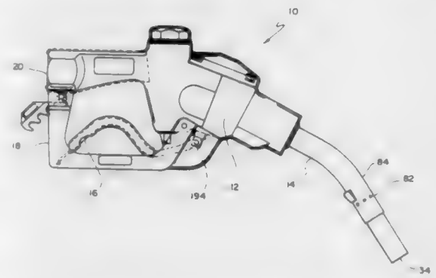
1. In a fuel dispensing system comprising a fuel dispensing nozzle construction having a central coupling axis of rotation therein and having an outer fuel receiving inlet and an inner vapor outlet disposed radially closer to said central coupling axis of rotation thereof than said outer fuel receiving inlet, a fuel dispensing pump construction having a central coupling axis of rotation therein and having an outer fuel dispensing outlet and an inner vapor inlet disposed radially closer to said central coupling axis of rotation thereof than said outer fuel dispensing outlet, and a hose assembly having a first fluid passage therein for conveying fuel from said outer fuel dispensing outlet to said outer fuel receiving inlet and a second fluid passage therein for returning vapors from said inner vapor outlet to said inner vapor inlet, said hose assembly comprising a flexible inner hose having an outer peripheral surface and defining an inner fluid passage therein, and a flexible outer hose having an inner peripheral surface and being disposed around said inner hose, said inner peripheral surface of said outer hose and said outer peripheral surface of said inner hose defining an outer fluid passage therebetween, the improvement wherein said inner fluid passage comprises said first fluid passage and said outer fluid passage comprises said second fluid passage.

5,386,859

FUEL DISPENSING NOZZLE HAVING TRANSPARENT BOOT

James W. Healy, Hollis, N.H., assignor to Healy Systems, Inc., Hudson, N.H.

Continuation-in-part of Ser. No. 946,409, Sep. 16, 1992, Pat. No. 5,327,944, which is a continuation-in-part of Ser. No. 706,807, May 29, 1991, Pat. No. 5,174,346. This application Feb. 4, 1994, Ser. No. 192,231
The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.
Int. Cl.[6] B67D *5/378*
U.S. Cl. 141—59 8 Claims



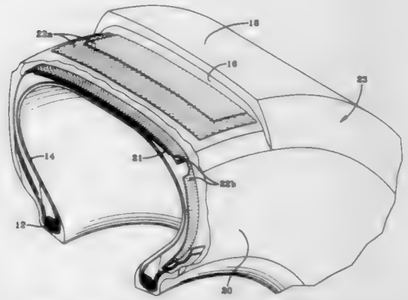
1. In a fuel dispensing nozzle for delivering fuel into a fuel tank by way of a fill pipe, said nozzle comprising
a nozzle body,
a spout housing,
a spout extending from said spout housing,
a fuel conduit defined by said nozzle and leading to said spout,
a vapor conduit defined by said nozzle, said vapor conduit associated with said spout for withdrawing displaced vapors from the fuel tank being filled and transporting them to a remote vapor collection system,
a fuel valve for controlling flow of fuel through said fuel conduit, and
a boot disposed about said spout and having a first closed end and a second open end, said second open end defined by a rim disposed for sealing engagement with a surface about a fuel tank fill pipe when said spout is inserted therein, said boot having a body portion defining a volume for receiving fuel vapor displaced from a fuel tank during delivery of fuel, said volume in communication with said vapor conduit,
the improvement wherein
said body portion of said boot comprises a transparent polymeric material, and
said fuel dispensing nozzle further comprises
a vapor regulator valve in said vapor conduit operable in response to a predetermined first vapor pressure condition in said nozzle body, said vapor regulator valve comprising a diaphragm mounted in said nozzle with a first surface facing said vapor conduit, said diaphragm blocking said vapor conduit in a first position and not blocking said vapor conduit in a second position, and biasing means urging said diaphragm to said second position, said diaphragm having a second surface facing a chamber, said nozzle further defining a vent linking said chamber with the ambient exterior of said nozzle, and
vapor flow controlling means comprising
a vapor flow control valve element disposed for movement within said vapor conduit relative to a valve seat defined by said conduit, a vapor flow orifice between said vapor flow control valve element and said valve seat having an area variable with the position of said vapor flow control valve element, and
vapor flow control valve element positioning means comprising sealing means associated with said vapor flow control valve element, said sealing means having at least one surface exposed to fuel pressure in said fuel conduit.

5,386,860

CUT RESISTANT TIRE

Johnny D. Massie, II, Lexington, Ky.; Paul W. Hobart, Wadsworth, Ohio; Jerry Malin, Akron, Ohio, and Richard H. Reisinger, North Canton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 964,229, Oct. 21, 1992. This application Jun. 3, 1993, Ser. No. 71,898
Int. Cl.[6] B60C *9/00, 9/18, 9/20*
U.S. Cl. 152—198 5 Claims



1. A heavy duty pneumatic tire comprising at least a pair of parallel annular beads, at least one carcass ply wrapped around said beads, reinforcement plies disposed radially over said at least one carcass ply in a crown area of the tire, tread disposed radially over said reinforcement plies, and sidewalls disposed between said tread and said beads, the improvement wherein continuous monofilament wires having a diameter of 0.4 to 1.2 mm are disposed in parallel relation to one another in calendered rubber sheets and said calendered rubber sheets are included in or under said tread and sidewalls, and substantially cover said at least one carcass ply substantially from bead to bead while remaining radially above said beads.

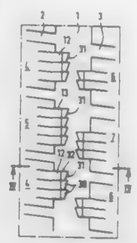
5,386,861

TREAD PATTERN FOR VEHICLE TIRE

Dietrich Overhoff, Gross-Umstadt, and Otto Sallein, Breuberg-/Odenwald, both of Germany, assignors to Pirelli Reifenwerke GmbH, Hoechst/Odenwald, Germany

Filed Nov. 24, 1992, Ser. No. 980,772
Claims priority, application Germany, Nov. 25, 1991, 4138688
Int. Cl.[6] B60C *11/11*
U.S. Cl. 152—209 R 5 Claims

1. A tire with a tread, comprising:
a tire body having a tread surface;
at least one circumferential longitudinal groove formed in said tire body;
transverse grooves extending from said longitudinal groove in said tire body and defining tread blocks between said transverse grooves;
said tread blocks having sidewalls limiting said longitudinal groove laterally;
projections formed on said tread blocks and projecting into said longitudinal groove, each of said projections being formed centrally with respect to said tread blocks, having a projection length of approximately $\frac{1}{4}$ to $\frac{3}{4}$ of the length of



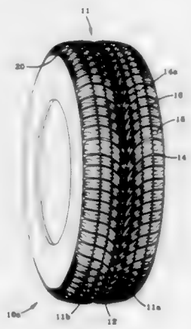
one of said tread blocks, and have transverse edges extending perpendicularly away from said sidewalls of said tread blocks; and
said tread surface of said tread blocks having sipes cut therein extending across said projections to a front edge of said projections; and
wherein said projections are main projections having inner sidewalls, and said main projections have sub-projections extending from said inner sidewalls and expanding in a V-shape towards a bottom of said longitudinal groove, said sub-projections having a saw-tooth-like graduation as seen in circumferential direction of said longitudinal groove.

5,386,862

PNEUMATIC TIRE HAVING IMPROVED WET TRACTION

William E. Glover, Akron; John S. Attinello, Hartville, and Samuel P. Landers, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 955,961, Oct. 2, 1992, Pat. No. 5,327,952.
This application Aug. 18, 1994, Ser. No. 181,728
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[6] B60C *11/04*
U.S. Cl. 152—209 R 7 Claims



1. A tire for use on a paved surface comprising a tread having a footprint net-to-gross ratio of 50% to 70% and having lugs defined by lateral grooves and circumferential grooves wherein said lugs have a leading groove wall angle of 3° to 8°

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and a trailing groove wall angle of 0° to 2°, said tire having a footprint comprising two distinct contact patches when said tire is inflated and loaded at design pressure and load, each said contact patch having a substantially trapezoidal shape wherein the two contact patches are oriented longer base to longer base, wherein said contact patches are separated by a void area that comprises 10% to 20% of the footprint width, and wherein each contact patch demonstrates lateral grooves longer than the width of said contact patch.

5,386,863

PNEUMATIC TIRE AND WHEEL WITH ASYMMETRIC STRUCTURE

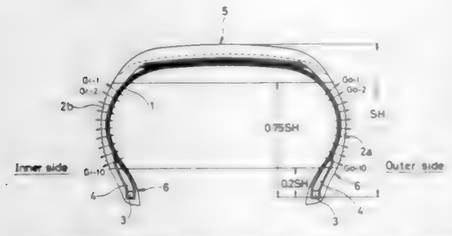
Yoshiaki Hashimura, Isehara; Masakazu Okihara, Hiratsuka; Yusaku Miyazaki, Hiratsuka; Zenichiro Shida, Hiratsuka; Naoyuki Katsura, Hiratsuka, and Tomohiko Kogure, Minami-Ashigara, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1993, Ser. No. 2,362

Claims priority, application Japan, Jan. 22, 1992, 4-009224

Int. Cl.[6] B60C *3/06, 13/00*

U.S. Cl. 152—454 6 Claims



1. A pneumatic tire in combination with a wheel, said wheel having a rim, a disc connected to the rim at a position offset from a center of the width of the rim in a direction toward an outer side of the wheel when mounted on a vehicle, an offset side rim end and an anti-offset side rim end, said tire comprising: a tread, outer and inner side walls continuing from both sides of said tread, and bead portions continuing from the end portions of said side walls, said outer side wall being fitted to the offset-side rim end of the wheel and said inner side wall being fitted to the anti-offset side rim end of the wheel, wherein a ratio Ho/Hi of a first attenuation coefficient Ho=Go×tanδo determined on the basis of a first multi-spot averaged thickness Go of said outer side wall of said tire and a loss factor tanδo of the rubber of said outer side wall to a second attenuation coefficient Hi=Gi×tanδi determined on the basis of a second multi-spot averaged thickness Gi of said inner side wall of said tire and a loss factor tanδi of the rubber of said inner side wall is set in the range of 1.2–6.5; said first and second multi-spot averaged thicknesses are determined by dividing a portion of the respective side wall between 20% to 75% of radial height SH of a cross-section of the tire measured from a radially inner edge of a bead core to an outer radial surface of said tread into ten equal parts, measuring the thickness of rubber of each part along a straight line passing a circumferentially intermediate portion therein and reaching an outer surface of an underlying member at right angles thereto, and arithmetically averaging the values of thickness of the ten divisional parts with respect of the respective intermediate points; first multi-spot averaged said thickness Go of said outer side wall of said tire is set larger than said second multi-spot averaged thickness second Gi of said inner side wall thereof; and said first multi-spot averaged thickness Go of said outer side wall of said tire is set to 2.5–4.0 mm with said second multi-spot averaged thickness Gi of said inner side wall thereof set to 1.5–2.5 mm.

5,386,864

TIRE INNERLINER COMPOSITION

Bernard J. Costemalle, St. Genese, Belgium, and James V. Fusco, Red Bank, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 917,556, Jul. 21, 1992, Pat. No. 5,333,662, which is a continuation of Ser. No. 840,675, Feb. 21, 1992, abandoned, which is a continuation of Ser. No. 554,747, Jul. 18, 1990, abandoned. This application Apr. 26, 1994, Ser. No. 233,176

Int. Cl.[6] B60C *5/02;* C08L *27/00;* C08F *210/10*

U.S. Cl. 152—510 12 Claims

1. A vulcanized tire comprising an innerliner, at least a portion of said innerliner comprising a composition comprising: (a) about 40 to about 70 weight percent of a halogen-containing random copolymer of a C_4 to C_7 isomonoolefin and a para-alkylstyrene, said para-alkylstyrene comprising 0.5 to about 20 weight percent of said copolymer, (b) about 20 to about 45 weight percent carbon black; and (c) about zero to about 25 weight percent of a plasticizer oil.

5,386,865

TIRE WITH RUBBER SIDEWALL

Paul H. Sandstrom, Tallmadge; Thomas J. Segatta, Fairlawn, and Johnny D. Massie, II, Hudson, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 21, 1991, Ser. No. 779,668

Int. Cl.[6] C08L *9/00, 7/00;* B60C *13/00*

U.S. Cl. 152—525 1 Claim

1. A pneumatic rubber tire having an outer rubber sidewall layer where said outer layer is comprised of, based on 100 pans by weight rubber, (i) about 5 to about 10 parts by weight of a trans 1,4-polybutadiene rubber and, correspondingly about 95 to about 90 parts by weight of at least one additional rubber; wherein said trans 1,4-polybutadiene rubber is characterized by having 75 to 85 percent trans 1,4-content, a molecular weight (Mn) of about 205,000 and prepared by polymerizing 1,3-butadiene in an organic solvent in the presence of a catalyst of cobalt octoate and triethylaluminum with p-dodecylphenol modifier; and wherein said additional rubber is selected from at least one of natural rubber and/or synthetic cis 1,4-polyisoprene rubber, cis 1,4-polybutadiene rubber, styrene/butadiene copolymer rubber, styrene/isoprene/butadiene terpolymer rubber and 3,4-polyisoprene rubber.

5,386,866

RADIAL TIRE WITH BAND FORMED FROM PLURAL RIBBONS

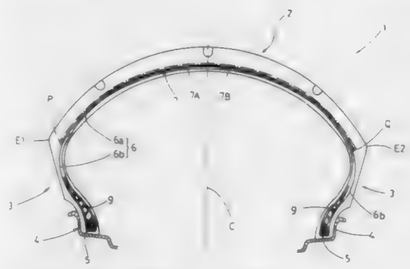
Shigehiko Suzuki, Amagasaki, and Ryozo Okada, Takarazuka, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Aug. 8, 1991, Ser. No. 742,036

Claims priority, application Japan, Aug. 24, 1990, 2-223392; Jul. 16, 1991, 3-202332

Int. Cl.[6] B60C *9/18, 9/20*

U.S. Cl. 152—531 9 Claims



1. A motorcycle radial tire comprising

a toroidal carcass extending between a pair of bead portions and turned up around a bead core disposed in each of said bead portions,

a belt reinforcement disposed radially outside the carcass and inside a tread having a pair of tread edges,

said belt reinforcement comprising a first band layer formed by a plurality of ribbons of rubber in which one cord or two parallel cords are embedded, each of the ribbons having a rectangular cross-sectional shape,

the plurality of ribbons being wound spirally and arranged side by side to have a plurality of ends in the region of each said tread edge, and

said plurality of ends of the plurality of ribbons shifted equiangularly in the circumferential direction of the tire.

5,386,867

VENETIAN BLIND

Milton Chen, Taichung, Taiwan, Prov. of China, assignor to Care Mate International Co., Ltd., Taichung, Taiwan, Prov. of China

Filed May 20, 1993, Ser. No. 63,706

Int. Cl.[6] E06B *9/26*

U.S. Cl. 160—168.1 3 Claims



1. A Venetian blind, comprising:

a head rail;

a tilting device mounted pivotally in said head rail;

two or more tilt cords, each of which has one end that is fastened to said tilting device and another end that is suspended, and each of said tilt cords comprising two slings parallel to each other and having therebetween a plurality of equidistantly spaced connection lines;

a bottom rail fastened to a bottom end of each of said tilt cords and parallel to said head rail;

a plurality of slats, each of which is arranged between said two slings of said tilt cords and braced by said connection lines, said each of said slats having two or more through holes, said through holes of adjacent slats being being aligned when said adjacent slats are arranged between said two slings, said slats being adjustably mounted in such a manner that said slats can be shifted from a horizontal position to an upright position by means of said tilting device capable of regulating an upward movement and a downward movement of said slings;

a plurality of draw cords corresponding in number to said through holes of said each of said slats, with each of said draw cords having one end that is fastened to said bottom rail and having another end that emerges from said head rail from said through holes of said adjacent slats; and

a cord pulley retainer mounted in one side of said head rail for retaining and locating said draw cords;

wherein said through holes of said each of said slats are located on the same side of a center line of said each of said slats; and wherein a distance between said connection lines is smaller than a distance between said through holes and a farthest edge of said slats relative to said through holes, wherein said through holes of a slat are obscured by a lower edge of another slat located over said slat when said slats are in an upright position.

5,386,868

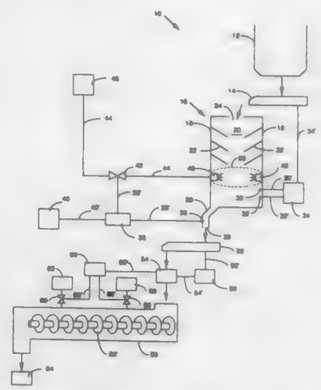
APPARATUS AND METHOD OF COOLING REFRACTORY SAND BASED ON DEW POINT TEMPERATURE

Jack R. Kingman, Wampum, and Gordon Perkins, Carlisle, both of Pa., assignors to The Frog, Switch & Manufacturing Co., Carlisle, Pa.

Filed Dec. 10, 1993, Ser. No. 165,755

Int. Cl.[6] B22C *5/08, 5/18*

U.S. Cl. 164—456 19 Claims



1. An apparatus for making sand molds comprising:

means for determining a dew point temperature;

a chamber having an inlet and an outlet for, respectively, receiving and discharging sand therefrom;

means for sensing the temperature of sand discharged from said chamber;

means for introducing a flow of cooling medium into said chamber based on said sensed temperature to contact and reduce the temperature of said sand; and

means for controlling the flow of said cooling medium in response to said sensed sand temperature such that said sand is maintained within a predetermined temperature range above the dew point temperature to prevent moisture condensation in said sand.

12. A method for making molds comprising the steps of:

determining a dew point temperature;

supplying sand to a chamber;

measuring the temperature of said sand;

introducing a flow of cooling medium into said chamber to contact and reduce the temperature of said sand;

controlling the flow of said cooling medium into said chamber to maintain the temperature of the sand within a desired temperature range above said dew point temperature to provide a temperature controlled sand;

supplying said temperature controlled sand, a binder and a catalyst into a mixing device to produce a mold making mixture having a predetermined bench life and a controlled tensile strength; and

supplying said mold making mixture to a mold.

5,386,869

VARIABLE FLANGE BEAM BLANK AND METHOD OF CONTINUOUS CASTING

William J. Wilde, Bath, Pa., assignor to Bethlehem Steel Corporation, Del.

Filed Jul. 1, 1993, Ser. No. 86,074

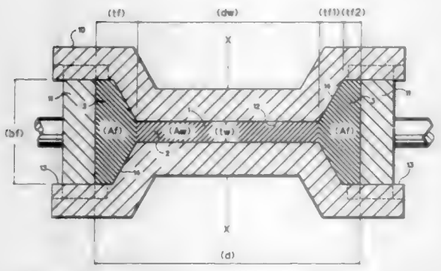
Int. Cl.[6] B22D *11/10*

U.S. Cl. 164—491 15 Claims

1. A method of continuously casting a beam blank for direct finish rolling as-cast into any finished beam size within a beam family, the steps of the method comprising:

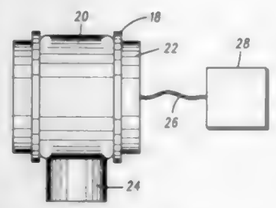
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a) providing a caster mold having;
i) adjustable end walls,
ii) a web opening extending through said caster mold, said web opening including a fixed cross-sectional area (Aw) within said caster mold, and
iii) at least one flange opening extending through said caster mold, said flange opening adjacent said web opening and including a variable cross-sectional area (Af) within said caster mold,



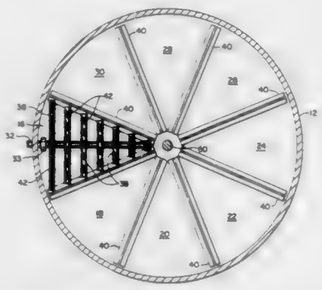
b) adjusting at least one end wall toward or away from said web opening to vary said cross-sectional area (Af) and provide an (Aw/Af) ratio equal to an (Aw/Af) ratio of a finished beam within said beam family,
c) pouring liquid steel into said web opening and said flange opening extending through said caster mold,
d) casting said beam blank, and
e) rolling a finished beam having an (Aw/Af) equal to said (Aw/Af) ratio of said caster mold.

5,386,870
HIGH THERMAL CONDUCTIVITY CONNECTOR HAVING HIGH ELECTRICAL ISOLATION
Ralph C. Nieman, Downers Grove; John D. Gonczy, Oak Lawn, and Thomas H. Nicol, St. Charles, all of Ill., assignors to University of Chicago, Chicago, Ill.
Filed Jul. 12, 1993, Ser. No. 90,425
Int. Cl.[6] F28F *7/00*
U.S. Cl. 165—1 20 Claims



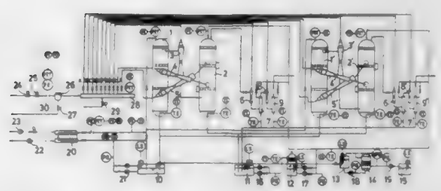
1. A method of connecting a heat source to a heat sink, comprising the steps of:
providing an electrical isolating means having a portion disposed substantially within a first thermally conductive means;
providing a second thermally conductive means having a portion disposed substantially within said electrical isolating means;
securely connecting said electrical isolating means to both of said thermally conductive means with a thermal interference fit, said connecting step occurring by producing a thermal gradient between at least one of said thermally conductive means and said electrical isolating means; and
coupling one portion of said connector to a heat source and coupling another portion of said connector to a heat sink.

5,386,871
THERMAL ENERGY STORAGE AND RECOVERY SYSTEM
Bashir I. Master, Wayne, N.J., and Adrianus C. J. Jansen, Rijn, Netherlands, assignors to ABB Lummus Crest Inc., Bloomfield, N.J.
Filed Nov. 24, 1992, Ser. No. 980,671
Int. Cl.[6] F28D *7/16*
U.S. Cl. 165—10 9 Claims



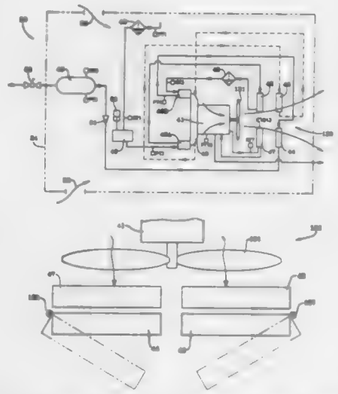
1. Heat storage apparatus comprising:
a. a vertically oriented vessel having a generally circular cross-section and having a vertically oriented centerline, said vessel adapted to contain a heat storage medium;
b. a plurality of sector-shaped heat exchange modules located adjacent to each other around said centerline; each module comprising:
i. a bottom radially extending horizontal distribution manifold located at the bottom of said module and a top radially extending horizontal distribution manifold located at the top of said module;
ii. a plurality of bottom secondary horizontal manifolds extending perpendicular and connected to said bottom radially extending distribution manifold by vertical connecting means and a plurality of top secondary horizontal manifolds extending perpendicular and connected to said top radially extending distribution manifold by vertical connecting means whereby respective ones of said bottom and top secondary manifolds form manifold pairs;
iii. a plurality of vertically extending heat exchange tubes extending between each of said manifold pairs;
iv. radially extending bottom support beams extending between each pair of adjacent modules and extending partially under said bottom secondary manifolds whereby said modules are supported on said radially extending bottom support beams by said bottom secondary manifolds;
v. radially extending top alignment beams extending between each pair of adjacent modules and adapted to align the top of each module;
vi. a support column extending along said vertically oriented centerline, said support column being supported at the bottom end thereof and including means at the top end thereof adapted to support said top alignment beams;
vii. means for feeding a fluid into and out of said bottom and top radially extending horizontal distribution manifolds whereby said fluid flows vertically through said connecting means and horizontally through bottom and top secondary manifolds and vertically through said heat exchange tubes in heat exchange relationship with the heat storage medium thereby forming a flow path for said fluid which permits gravity drainage of condensate out through said bottom radially extending horizontal distribution manifolds.

5,386,872
WASTED HEAT DRIVEN REFINERY'S PETROLEUM GAS RECOVERY APPARATUS
Wei-Min Chang, 3th Fl., No. 131, Alley 17, Lane 72, Kang-Leh St., Taipei, Taiwan, Prov. of China
Filed Feb. 4, 1993, Ser. No. 13,585
Int. Cl.[6] F25B *29/00*
U.S. Cl. 165—47 2 Claims



1. A refinery petroleum gas recovery apparatus driven by normally wasted heat, comprising:
a water cooling system comprising an evaporator, a main condenser, a first stage ejector, a second stage ejector, a third stage ejector, a first auxiliary ejector, a first auxiliary condenser, a second auxiliary ejector, and a second auxiliary condenser; the water cooling system further including a peripheral system comprising a cooling water tank, a water supply tank, a cooling tower, a complementary water tank, a pressure filter tank, and a water storage tank; and further including a water feeding pump provided between the water supply tank and the cooling tower, a water feeding pump for the cooling tower provided between the cooling tower and the main condenser, an auto-back washing pump for the pressure filter tank provided between the complementary water tank and the pressure filter tank, and a complementary water feeding pump provided between the pressure filter tank and the water storage tank; wherein water in the water supply tank is fed through the water feeding pump to the cooling tower, then flows through water spreading nozzles and spreading plates to the bottom of the cooling tower, a cooling fan on the top of the tower is activated to lower the temperature in the cooling tower by means of auxiliary air cooling, the cooling water in the cooling tower is fed through the water feeding pump of the cooling tower to the condensers and to flow through nozzles on the top of the condensers, the water is then sprayed to the bottom of the condenser in order to condense high pressure steams ejected from the ends of the first, second, and third stage ejectors so that the steam is condensed into water to flow back to the water supply tank;
a heat exchanging petroleum gas recovery system comprising a heat exchanger, a pressure pump provided between the heat exchanger and the cooling water tank, a liquid petroleum gas transporting pump provided between the heat exchanger and a storage tank, and a whirlwind type fan for petroleum gas connected to the heat exchanger;
peripheral auxiliary equipment including an explosion proof motor/membrane operated valve fed from a vapor source, a self-controlled pressure maintenance valve in line with the explosion proof motor/membrane operated valve, a steam/water separator in line with the self-controlled pressure maintenance valve, a drain valve in line with the steam/water separator, a steam manifold cylinder in line with the steam/water separator with multiple valves of the steam manifold cylinder connected to the cooling system, the steam manifold cylinder including a safety valve.

5,386,873
COOLING SYSTEM FOR ENGINE-DRIVEN MULTI-STAGE CENTRIFUGAL COMPRESSOR
William H. Harden, III, Yadkinville; Daniel T. Martin, Clemmons, and Devin D. Biehler, Mocksville, all of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jun. 9, 1993, Ser. No. 73,902
Int. Cl.[6] F28D *1/00*; B60K *11/04*
U.S. Cl. 165—47 13 Claims



1. An air cooling system for an engine driven, multi-stage compressor, the cooling system comprising:
a fan;
a housing which encloses the engine driven, multi-stage compressor, the housing having a forward portion, a rear portion, a cooling area exhaust, and an ambient air intake;
an intercooler having a predetermined height dimension, the intercooler receiving heated, compressed, interstage air;
an oil cooler having a predetermined height dimension which is substantially less than the height dimension of the intercooler;
first means for balancing pressure, and wherein the first pressure balancing means is disposed in a void defined by the height differential between the intercooler and the oil cooler, the first pressure balancing means matching a predetermined cooling airstream pressure drop across the oil cooler;
an engine radiator; and
an aftercooler which receives final stage compressed air, and wherein the intercooler, the oil cooler, the radiator, and the aftercooler are arranged in two banks, each bank comprising two cooling cores juxtaposed one to each other, the intercooler and the engine radiator defining the first bank which is positioned substantially adjacent to the fan, and the oil cooler and the aftercooler defining the second bank, and wherein the oil cooler is positioned behind the intercooler and the aftercooler is positioned behind the radiator.

5,386,874
PERPHOSPHATE VISCOSITY BREAKERS IN WELL FRACTURE FLUIDS
Steven B. Laramay, Marlow; Ronald J. Powell, Duncan, and Samuel D. Pelley, Rush Springs, all of Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Nov. 8, 1993, Ser. No. 148,486
Int. Cl.[6] E21B *43/267*
U.S. Cl. 166—300 8 Claims

1. A method for fracturing subterranean formations penetrated by a well bore comprising the step of:
pumping a fracture fluid down the well bore at a pressure

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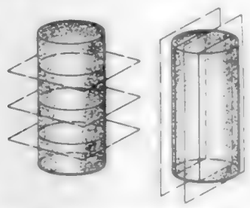
and rate of flow sufficient to fracture the subterranean formation, wherein the fracturing fluid comprises water, a polysaccharide viscosifier, a polysaccharide crosslinking agent, and a viscosity breaker selected from the group consisting of perphosphate esters $\{(RO)_2P(O)O\}_2$ in which R is an alkyl or aryl radical and perphosphate amides $\{(R_2N)_2P(O)O\}_2$ in which R is an alkyl or aryl radical.

5,386,875

METHOD FOR CONTROLLING SAND PRODUCTION OF RELATIVELY UNCONSOLIDATED FORMATIONS

James J. Venditto; William E. Martch, and J. Michael Wilson, all of Duncan, Okla., assignors to Halliburton Company

Continuation-in-part of Ser. No. 992,847, Dec. 16, 1992. This application Aug. 18, 1993, Ser. No. 108,368
The portion of the term of this patent subsequent to Nov. 1, 2011, has been disclaimed.
Int. Cl.[6] E21B *43/26*
U.S. Cl. 166—308 14 Claims



1. A method for controlling the flow of sand and other solids from a wellbore, comprising the steps of:

determining the azimuthal direction of the maximum horizontal stress field within a formation having a wellbore formed therein;

orienting a perforating device capable of perforating said formation Within said wellbore such that perforations produced by said perforating device are substantially aligned with said azimuthal direction of said maximum horizontal stress field; and

actuating said perforation device so as to perforate said formation in the direction of said azimuthal direction of said maximum horizontal stress field; and

supplying a particle retaining compound to said formation proximate said perforated formation.

5,386,876

MACHINE FOR REMOVING WIDE STRIPS LAID OUT ON THE GROUND

Guy Lavo, Sancheville, France, assignor to Sarl DL System, Sancheville, France

Filed May 26, 1992, Ser. No. 888,767
Claims priority, application France, May 24, 1991, 91 06293; Feb. 18, 1992, 92 01832
Int. Cl.[6] B65H *18/00;* A01D *33/08*
U.S. Cl. 171—43 16 Claims

1. A machine for removing longitudinal strips laid out on the ground, comprising:

transversal rotary reception means for receiving a longitudinal strip raised from the ground, said reception means positioned transversely of a direction of elongation of the strip, and including mandrel means for winding the longitudinal strip at a distance from the ground to form a reel;

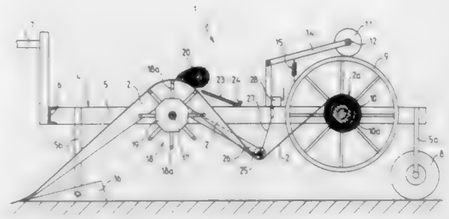
means for driving said reception means for rotation;

means for adjusting a rotational speed of said reception means, said adjusting means having an adjusting member acting on said driving means;

a transversal rotary drum disposed transversely of said direction of elongation and ahead of said reception means, the strip passing onto said drum before reaching said reception means;

said adjusting means including transverse roller sensing means which are arranged after said drum and ahead of said reception means in said direction of elongation and in contact with the strip, said sensing means being connected to said adjusting member, so that as the strip rises from the ground the strip passes over said drum and under said sensing means before reaching said reception means and wherein said sensing means acts on the strip and is sensitive to a lateral displacement of the strip in the direction of a thickness thereof, between said drum and said reception means;

rotary brushing means disposed laterally of said drum to contact said strip; and



means for driving said brushing means for rotation, so that as the strip rises from the ground and passes between said brushing means and said drum, the strip is applied onto said drum by said brushing means and a displacement of the strip towards said reception means causes said drum to rotate,

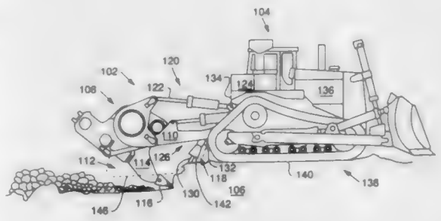
said brushing means including at least two cylindrical brushes each being arranged on either side of a median radial plane of said drum and axes of said brushes being inclined with respect to the direction of elongation of the strip in such a way that adjacent ends of said brushes are, with respect to the direction of advance of the strip, forward of other ends of said brushes, said brushes being driven in rotation in such a way as to brush the strip in the direction of the displacement thereof and in the direction of edges thereof.

5,386,877

HIGH VOLTAGE RIPPING APPARATUS

George G. Codina, Van Nuys, Calif.; Robert J. Price, Dunlap, Ill.; Liliana Grajales, Blacksburg, Va., and Thomas J. Richards, Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/0884, § 371 Date Dec. 2, 1991, § 102(e) Date Dec. 2, 1991, PCT Pub. No. WO93/11309, PCT Pub. Date Jun. 10, 1993
PCT Filed Dec. 2, 1991, Ser. No. 829,028
Int. Cl.[6] A01B *13/08*
U.S. Cl. 172—699 52 Claims



26. An apparatus to assist an earthmoving vehicle in the fracture of material, said earthmoving vehicle having an engine, comprising:

a ripping structure having a frame, at least one ripper, and an electrode, said ripping structure being movably connected to said earthmoving vehicle, said ripper and said electrode being pivotally connected to said frame;

means for heating the surface of said material;

means for moving said ripping structure into a penetrating relationship with said material; and

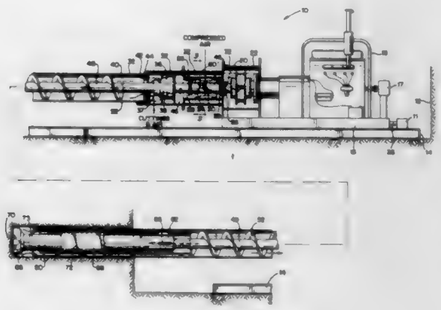
means for generating electrical energy and discharging said electrical energy into said material through said ripping structure.

5,386,878

ROCK BORING PROCESS AND APPARATUS

Keith J. Rowekamp, Woodward, Okla., assignor to UTI Energy Corp., Wayne, Pa.

Filed Apr. 29, 1994, Ser. No. 235,340
Int. Cl.[6] E21B *7/08*
U.S. Cl. 175—62 16 Claims



1. An earth boring machine comprising:

a bore machine;

a cylindrical rotary flow member having front and rear end portions, wherein the front end is rotatably mounted on said bore machine, said rotary flow member having at least one air inlet along the length thereof for passage of air into the interior of said rotary flow member;

a cylindrical rotary flow sleeve member coaxially mounted and spaced radially outwardly from the exterior of said rotary flow member, said sleeve member having an air inlet and with sealing means for providing air tight engagement of the ends of said sleeve member with said rotary flow member; and

means for maintaining said sleeve member in a fixed, nonrotating condition with respect to said rotary flow member.

5,386,879

STEERING ANGLE RATIO VARYING DEVICE FOR A VEHICLE

Tasuo Shimizu, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

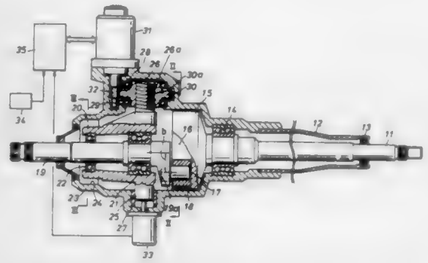
Filed Feb. 7, 1994, Ser. No. 192,577
Claims priority, application Japan, Feb. 8, 1993, 5-044699
Int. Cl.[6] B62D *3/12*
U.S. Cl. 180—79 6 Claims

1. A steering angle ratio varying device for a vehicle adapted to be connected between an input shaft for applying a steering input and an output shaft from which a steering output is obtained, comprising:

a first shaft rotatably supported by a first support member;

a second shaft rotatably supported by a second support member in parallel relationship to said first shaft;

adjustment means for moving said second support member relative to said first support member so that an axial center line of said second shaft may be moveable laterally in a plane containing an axial center line of said first shaft while maintaining both of said axial center lines in parallel with each other; and



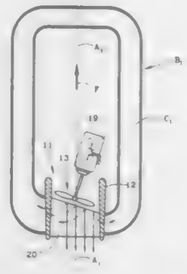
crank arm means which transmits angular movement of one of said first and second shafts to the other at a point radially offset from said axial center lines of said first and second shafts.

5,386,880

SELF-PROPELLED GROUND EFFECT MACHINE

Ralph K. Dubose, 4226 Milton St., Houston, Tex. 77005-2470

Filed Mar. 14, 1994, Ser. No. 209,267
Int. Cl.[6] B60V *1/14*
U.S. Cl. 180—117 12 Claims



1. A self-propelled ground effect machine having an elongated body on the underside of which is an air plenum chamber which when provided with sufficient air flow will support said machine on a cushion of air above the surface of ground or water across which machine is to be propelled and motor driven fan means carried by said body for directing air flow to said air plenum chamber and generally rearwardly of said machine to propel said machine in a forwardly direction characterized in that said motor driven fan means comprises:

a generally cylindrical shroud having a flow axis which is generally parallel with the longitudinal axis of said elongated body;

a fan which includes a plurality of radially projecting fan blades for rotation within said shroud;

motor means for rotating said fan; and

a shaft one end of which is connected to said motor means for rotation thereby and to which is attached said fan for rotation thereof, said shaft being mounted so that its axis, relative to a vertical plane passing through said longitudinal axis of said elongated body, lies at an inclined angle therewith.

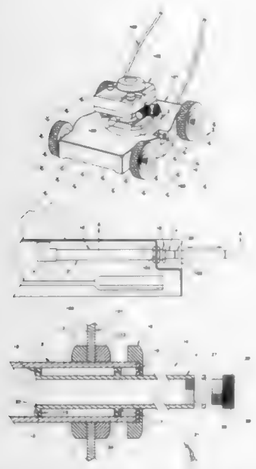
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5,386,881

LAWN MOWER ENGINE OIL DRAIN EXTENSION APPARATUS

Walter L. Eshelman, 22 Carroll St., Apt. #1, Thurmont, Md. 21788

Filed May 3, 1994, Ser. No. 237,385
Int. Cl.[6] F16C *3/14*
U.S. Cl. 184—1.5 6 Claims



1. A lawnmower oil sump drain extension apparatus, for a lawnmower having a blade housing and an engine having an oil sump, comprising:

(a) an oil sump drain elbow tube connected into a drain hole of the oil sump;

(b) an outer extension tube connected to the elbow tube and extending through a port in the blade housing and into a blade housing extension tube receiving chamber in the blade housing;

(c) an inner extension tube telescopingly placed within the outer extension tube; and

(d) a sealing plug connected to one end of the inner extension tube.

3. A lawnmower oil sump drain extension apparatus, for a lawnmower having a blade housing and an engine having an oil sump, comprising:

(a) an oil sump drain elbow tube threadingly connected into a drain hole of the oil sump;

(b) an outer extension tube threadingly connected to the elbow tube and extending through a port in the blade housing and into a blade housing extension tube receiving chamber in the blade housing;

(c) a locking member, threadingly connected to the outer extension tube, to secure the outer extension tube to the blade housing;

(d) an inner extension tube telescopingly placed within the outer extension tube;

(e) at least one sealing member, having a replaceable resilient seal thereon, on the inner extension tube to provide a seal between the inner extension tube and the outer extension tube;

(f) a stop member on the inner extension tube;

(g) an inner extension tube locking member, threadingly connected to the outer extension tube and having a resilient gripping washer placed therein, releasingly gripping the inner extension tube; and

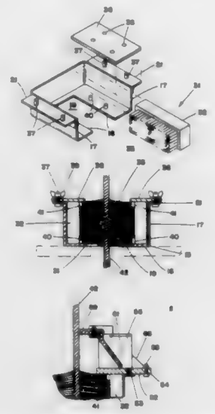
(h) a sealing plug connected to one end of the inner extension tube.

5,386,882

WIRE ROPE CLEANING BRUSH APPARATUS

Jeff Friend, P.O. Box 2315, Alameda, Calif. 94501

Filed Dec. 6, 1993, Ser. No. 161,419
Int. Cl.[6] F16N *7/16;* A46B *15/00;* B21B *45/02*
U.S. Cl. 184—15.3 14 Claims



1. A wire rope cleaning assembly, including;

a pair of rope cleaning brushes, each of said brushes including a plurality of bristles disposed in generally parallel array;

frame assembly means for supporting said pair of brushes with said bristles of said brushes in confronting, tip-to-tip relationship and mutually impinging at a nominal plane;

said wire rope extending in said nominal plane and translatable through said bristles to clean said wire rope;

a generally U-shaped open frame having a pair of opposed, spaced apart legs, each of said legs configured to support and retain one of said pair of brushes; and,

a pair of cap plates, and means for securing each of said cap plates to one of said legs and to secure one of said pair of brushes to a respective one of said legs.

5,386,883

AUTOMATIC LUBRICANT DISPENSER

Walter Graf, Euerdorf, Germany, assignor to Satzinger GmbH & Co., Euerdorf, Germany

Filed Mar. 16, 1993, Ser. No. 33,630
Claims priority, application Germany, Mar. 26, 1992, 4209776
Int. Cl.[6] F16N *11/10*
U.S. Cl. 184—39 15 Claims

1. An automatic pressurizable lubricant dispenser comprising:

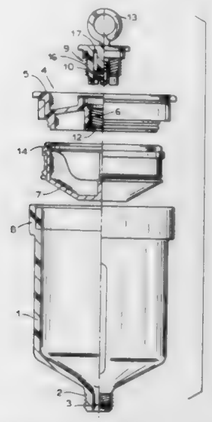
a vessel adapted to hold a supply of a fluent lubricant and having one side formed with an outlet adapted to be connected via a conduit to a machine to be lubricated and another open side;

a cover engaged over the other side and fitted with a cap fittable like a piston in the vessel and forming with the cover a substantially closed compartment holding a supply of a reactive liquid, the cover being formed with a seat opening into the compartment;

a gas-generating cartridge fittable into the seat and having an element capable of reacting with the liquid and forming a gas;

a removable partition closing the seat and segregating it from the liquid-holding compartment; and

means in the cartridge including at least two arms on the cartridge engageable with the partition to break it out and pivotal on displacement into the seat between a retaining position holding the element and a position releasing the element for removing the partition and contacting the element with the liquid for generating gas in the compartment and forcing the cap like a piston away from the cover into the vessel to pressurize the fluent lubricant therein.

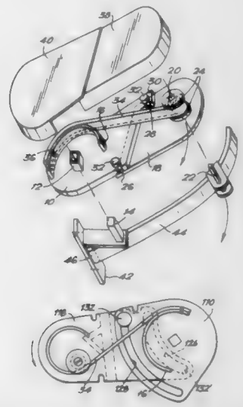


5,386,884

SPRING ASSEMBLIES

David Chisholm, Louisville, Ky., assignor to Tensator Ltd., Bucks, England

Filed Aug. 20, 1993, Ser. No. 109,499
Claims priority, application United Kingdom, Aug. 21, 1992, 9217888
Int. Cl.[6] E05F *1/10;* F03G *1/02*
U.S. Cl. 185—39 12 Claims



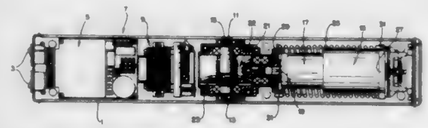
1. A spring assembly for attachment to an independently assembled pair of first and second members which are moveable with respect to one another, said spring assembly comprising a coil strip spring member, a first support member having mounted thereon means defining an arcuate path of support for the spring member such that the spring member may be wound against its natural coiling direction by rotation of said means through a part circle and a second support member carrying an abutment member against which said spring member runs so as to force unwinding of said spring coil when said spring member is reverse wound over the arcuate path of support, means interconnecting said first and second support members such as to prevent relative movement thereof which would allow said spring member to coil further, means for attaching said first support member to a said first member, and means for attaching said second support member to a said second member, whereby to provide spring loading for said movement of said first and second members.

5,386,885

ELECTRO-MECHANICAL PIVOT WING DRIVE FOR PIVOTING WINGS OF DOORS OR THE LIKE

Helmut H. Bunzl, Fehraltorf; Hansrudolf Bisang, Regensdorg; Hans Minder, and Daniel Burgi, both of Fehraltorf, all of Switzerland, assignors to Record Turautomation GmbH, Wuppertal, Germany

PCT No. PCT/EP92/00013, § 371 Date Sep. 8, 1993, § 102(e) Date Sep. 8, 1993, PCT Pub. No. WO92/12318, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 4, 1992, Ser. No. 84,262
Claims priority, application Germany, Jan. 8, 1991, 4100335
Int. Cl.[6] F03G *1/08;* E05F *15/12*
U.S. Cl. 185—40 R 19 Claims



1. An electro-mechanical rotary leaf drive for pivotal leaves for doors comprising:

an elongated housing,

an electric motor and a transmission adjoining said electric motor as an axial extension thereof and in said housing,

said transmission having an intermediate output shaft drivingly connected with a bevel transmission, said bevel transmission having an output drive shaft arranged transversely of said elongated housing and adapted for coupling with a linkage for driving a pivotal leaf,

a restoring spring unit acting on the output drive shaft,

said restoring spring unit comprising a helical spring having at least thirty turns and a spring moment during an opening movement of the rotary leaf which increases less than 100% as a maximum, said helical spring surrounding one of said electric motor and said transmission and at a drive output end thereof bearing against an entrainment means, said entrainment means being connected in such manner as to prevent relative rotation with said intermediate shaft, and

means for deenergizing said electric motor during the entire closing phase of the pivotal leaf to obtain a generator effect and consequent damping during the door closing phase.

5,386,886

ELEVATOR DOOR LOCK MECHANISM

Osamu Kobayashi, Yotsukaido, and Ryuichi Ishibashi, Chiba, both of Japan, assignors to Otis Elevator Company, Farmington, Conn.

Filed Aug. 27, 1993, Ser. No. 112,486
Int. Cl.[6] B66B *13/00*
U.S. Cl. 187—335 9 Claims

1. A door lock mechanism for a sliding door of an elevator, comprising:

a first lock member, pivotly mounted, having

an arm, said arm having a weight attached to an end, said arm also having a tapered surface at one end and a perpendicular surface at another end,

a first portion of sensing means being disposed intermedi-

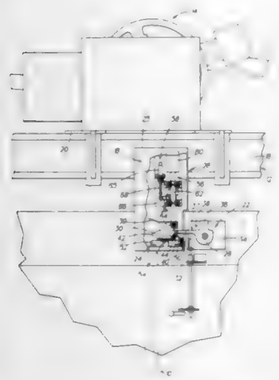
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ate of said tapered surface and said perpendicular surface, and

a cam surface attached to said arm;

a second lock member, having

a second portion of said sensing means; and means for selectively engaging said cam surface of said first lock member;



wherein said engaging means may be selectively operated to pivot said first lock member away from said second lock member, thereby uncoupling said lock members and permitting said sliding door to be opened, and said cam surface is guided by said engaging means when said arm of said first lock member is pivoted away from said second lock member.

5,386,887

BRAKE-ADJUSTING SYSTEM, ESPECIALLY FOR MOTOR VEHICLES

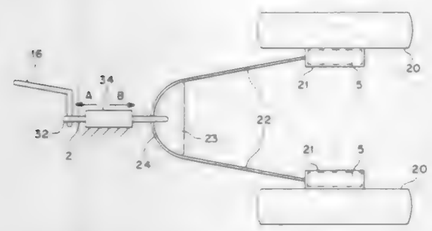
Gunter Hilgert, Wetzlar; Reiner Moritz, Ehringshausen, and Armin Perner, Asslar, all of Germany, assignors to Kuster & Co. GmbH, Ehringshausen, Germany

Filed Aug. 12, 1993, Ser. No. 104,768

Claims priority, application Germany, Aug. 12, 1992, 4226568; Dec. 9, 1992, 4241389

Int. Cl.[6] B60T *11/04;* **F16C** *1/22;* **G05G** *7/02*

U.S. Cl. 188—2 D **10 Claims**



1. An adjusting system for a braking mechanism connected to an emergency brake on a motor vehicle, the braking mechanism including a brake lever, an actuating element for the emergency brake, and the adjusting system for adjusting an effective length of a brake cable extending between the actuating element and the brake, said adjusting system comprising first and second freewheel units, said second freewheel unit located between and locking the relative position of the brake lever with respect to the actuating element while tensioning the brake cable, and at least three stops to adjust a position of the actuating element, said first freewheel unit being mounted between two of the three stops of the adjusting system, wherein said first freewheel unit mounted between the two stops comprises at least one insertable locking element, said locking element being inserted to enable a brake adjustment operation and removed to disable said brake adjustment operation.

5,386,888

ANTI-SKID DEVICE FOR MOTOR VEHICLES

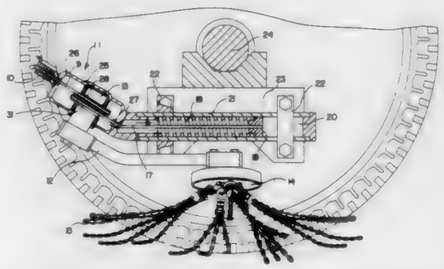
Peter W. Hofmann, Aalen-Unterkochen, Germany, assignor to Rud-Kettenfabrik Rieger & Dietz GmbH.u.Co., Aalen, Germany

Filed May 6, 1993, Ser. No. 58,526

Claims priority, application Germany, May 8, 1992, 4215371

Int. Cl.[6] B60T *1/00*

U.S. Cl. 188—4 B **12 Claims**



1. In an anti-skid device for motor vehicles, said device including a plurality of chain lines (**15**) fastened to a holder (**14**) selectively movable from a non-operating position and into an operating position, said holder being driven by a tire of said motor vehicle into said operating position for rotating said holder; said plurality of chain lines having ends facing away from said holder and being propelled in a direction away from said holder and into a region of contact surface between said vehicle tire and the ground as a result of centrifugal forces when said holder is rotating in said operating position thereof; a pivoting unit (**11**) for a jib arm (**12**) for carrying the holder (**14**), said pivoting unit (**11**) for said jib arm arranged on a carrying part (**21**) fastened to the vehicle, said carrying part defining a cavity (**20**); first means comprising a first pull line (**9**), and means for actuating said first pull line for moving said jib arm (**12**) out of said non-operating position of said holder and into said operating position of said holder; and second means comprising a return spring (**18**) for moving said jib arm (**12**) out of said operating position of said holder and into said non-operating position of said holder; the improvement comprising:

a first driving pulley (**28**) fastened to one end of said first pull line (**9**), said first driving pulley (**28**) connected to a pivot axle (**13**) of said pivoting unit (**11**) and surrounding said first driving pulley (**28**) over at least a portion of the circumference thereof; said jib arm (**12**) being movable out of said operating position and into said non-operating position, said second means further comprising a second pull line (**17**) operatively associated with said return spring (**18**), said return spring (**18**) being arranged in said cavity (**20**) defined in said carrying part (**21**) for said pivoting unit (**11**), and a second driving pulley (**29**) fastened to one end of said second pull line (**17**), said second driving pulley (**29**) connected to said pivot axle of said pivoting unit (**11**) and surrounding said second driving pulley (**29**) over at least a portion of the circumference thereof.

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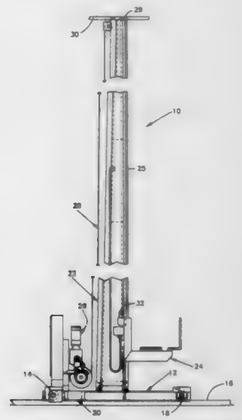
BRAKE MECHANISM FOR A STORAGE AND RETRIEVAL VEHICLE

George R. Pipes, Salt Lake City, Utah, assignor to Eaton-Kenway, Inc., Salt Lake City, Utah

Filed Aug. 4, 1993, Ser. No. 102,182

Int. Cl.[6] B65H *59/10*

U.S. Cl. 188—67 **4 Claims**



1. A brake apparatus for a load carriage mounted for vertical movement along an elongated mast, comprising a brake block attached to said mast; one or more wedge members acting between said brake block and said mast, said one or more wedge members being movable between a first position permitting relative movement between said load carriage and said mast and a second position preventing relative movement between said load carriage and said mast; spring means biasing said one or more wedge members into said second position; permanent magnet means attached to said one or more wedge members in position to apply a magnetic attractive force to said mast; retracting means operable to apply a force to said one or more wedge members opposing said spring means to hold said one or more wedge members in said first position; and means responsive to the speed of said load carriage relative to said mast to remove said opposing force at a predetermined relative speed; said retracting means comprising one or more electromagnets attached to said brake block in position to apply a magnetic attracting force to said one or more wedge members.

5,386,890

DISK BRAKE HAVING MEANS TO PREVENT UNEVEN BRAKE PAD WEAR

Satoru Itsuaki, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 3,125, Jan. 12, 1993, abandoned. This application Feb. 28, 1994, Ser. No. 206,201

Claims priority, application Japan, Jan. 13, 1992, 4-004016

Int. Cl.[6] F16D *55/18*

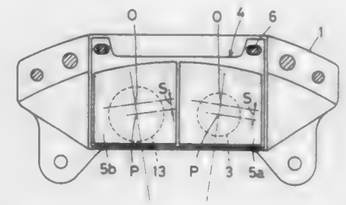
U.S. Cl. 188—73.35 **3 Claims**

1. A disk brake, comprising:

a brake pad having first and second frictional surfaces thereon, each said frictional surface having a center;

a disk having a center and a leading side and a trailing side relative to said brake pad, wherein each said center of said first and second frictional surfaces is located on a respective radius of said disk, one said radius being located on a leading side of said brake pad and the other said radius being located toward a trailing side of said brake pad; and

a pair of brake pistons for biasing said brake pad against said disk, said pair of brake pistons comprising a first brake piston located toward the leading side of said brake pad and a second brake piston located toward the trailing side of said brakepad, wherein said first brake piston has a greater pressure bearing area than said second brake piston, wherein said first brake piston provides a biasing force centered on a location on said brake pad that is between said center of said disk and a line passing through said center of said first frictional surface and perpendicular to the one said radius, and wherein said second brake piston provides a biasing force centered on a location on said brake pad that is between said center of said disk and a line passing through said center of said second frictional surface and perpendicular to the other said radius;



wherein said locations of the centered biasing forces of said first and second brake pistons are disposed on the one said radius and the other said radius, respectively.

5,386,891

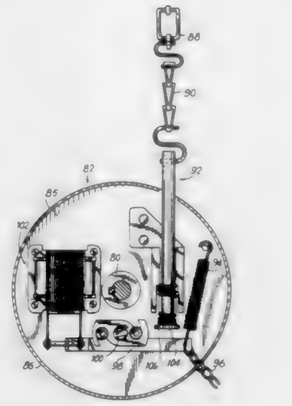
MECHANISM FOR CONTROLLING THE RAISING AND LOWERING OF A DOOR

Tsung-Wen Shea, Taipei, Taiwan, Prov. of China, assignor to Anchuan Corporation, Taipei, Taiwan, Prov. of China

Continuation of Ser. No. 979,797, Nov. 19, 1992, abandoned, which is a division of Ser. No. 859,833, Mar. 30, 1992, Pat. No. 5,203,392. This application Jun. 3, 1994, Ser. No. 253,615

Int. Cl.[6] B60T *13/04*

U.S. Cl. 188—171 **7 Claims**



1. A brake comprising:

a brake shoe moveable between a braking position for preventing rotation of a shaft and a released position for allowing rotation of said shaft;

temperature sensitive means for detecting a temperature;

an actuator; and

means for releasing said brake shoe comprising an elongate member having a central portion secured to said brake shoe, a first end portion coupled to said temperature sensi-

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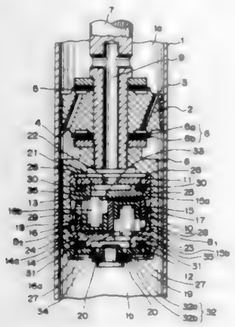
tive means, a second end portion coupled to said actuator, said elongate member being pivotable about said central portion, said central portion being located substantially midway between said first and second end portions, said means for releasing said brake shoe causing said brake shoe to move from the braking position to the released position in response to one of (1) said temperature sensitive means upon said temperature reaching a predetermined temperature and (2) said actuator.

5,386,892

HYDRAULIC SHOCK ABSORBER WITH SHUTTERS

Masahiro Ashiba, Kanagawa, Japan, assignor to Tokico, Ltd., Kanagawa, Japan

Filed Sep. 17, 1993, Ser. No. 128,764
Claims priority, application Japan, Sep. 18, 1992, 4-275305; Jul. 15, 1993, 5-197893
Int. Cl.[6] F16F *9/44, 9/50*
U.S. Cl. 188—282 3 Claims



1. A hydraulic shock absorber including a cylinder having a hydraulic fluid sealed therein and defining two cylinder chambers, main hydraulic fluid passage and first and second bypass passages for communicating said cylinder chambers with each other, and a piston slidably fitted in said cylinder, wherein flow of the hydraulic fluid in said main hydraulic fluid passage and said first and second bypass passages caused by sliding movement of said piston generates damping force, and passage areas of said first and second bypass passages are regulated to adjust damping force characteristics, said hydraulic shock absorber comprising:

a first check valve provided in said first bypass passage to allow the hydraulic fluid to flow only from one toward the other of said two cylinder chambers;

a first shutter mechanism including a guide means and a first shutter slidably fitted in said guide means to define two chambers in said guide, said first shutter mechanism being arranged such that when said first shutter moves toward one side, said first bypass passage is opened, whereas, when said first shutter moves toward the other side, said first bypass passage is closed;

a first spring abutting at one end thereof on said first shutter and at the other end thereof on said guide means to bias said first shutter toward said one side;

a first communicating passage for providing communication between the chamber defined in said guide means on said one side of said first shutter and one of said two cylinder chambers;

a second communicating passage for providing communication between the chamber defined in said guide means on the other side of said shutter and the other of said two cylinder chambers;

a first orifice provided in at least one of said first and second communicating passages;

a second check valve provided in said second bypass passage to allow the hydraulic fluid to flow only from the other toward the one of said two cylinder chambers;

a second shutter mechanism including said guide means and a second shutter slidably fitted in said guide means to define two chambers in said guide means, said second shutter mechanism being arranged such that when said second shutter moves toward one side, said second bypass passage is opened, whereas, when said second shutter moves toward the other side, said second bypass passage is closed;

a second spring abutting at one end thereof on said second shutter and at the other end thereof on said guide means to bias said second shutter toward said one side;

a third communicating passage for providing communication between the chamber defined in said guide means on one side of said second shutter and the other of said two cylinder chambers;

a fourth communicating passage for providing communication between the chamber defined in said guide means on the other side of said second shutter and said one of the two cylinder chambers; and

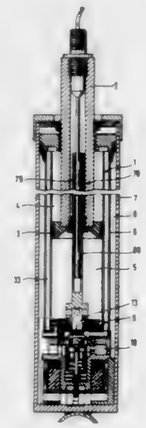
a second orifice provided in at least one of said third and fourth communicating passages.

5,386,893

CONTROLLABLE HYDRAULIC VIBRATION ABSORBER

Hans-Joerg Feigel, Rosbach, Germany, assignor to Alfred Teves GmbH, Germany

Filed Sep. 28, 1992, Ser. No. 952,018
Claims priority, application Germany, Sep. 27, 1991, 4132262
Int. Cl.[6] B60G *17/08;* F16F *9/46;* G01H *17/00*
U.S. Cl. 188—299 15 Claims



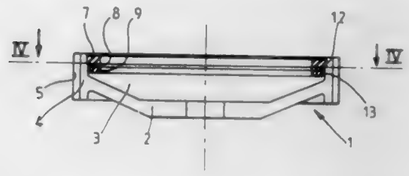
1. A controllable hydraulic vibration absorber for automotive vehicles with a power cylinder defining an interior space subdivided by means of a piston being slidable by a piston rod into a first and second power chamber, a connecting tube which is approximately positioned coaxially with said power cylinder and which jointly with the power cylinder defines a connecting duct, an external tube which is approximately positioned coaxially with said power cylinder and said connecting tube, and which jointly with said connecting tube defines a balancing chamber which is partly filled with oil and which is in connection with said first power chamber through said connecting duct and in connection with said second power chamber through a non-return valve, a switching valve which is subject to the pressure existing within said second power chamber and a controllable vibration absorber valve which affords variations of a vibration absorbing power, said non-return valve and said switching valve forming a valve assembly, said controllable vibration absorber valve being configured to include a slide valve to allow flow through said absorber valve in one direction only and operatively positioned in said valve assembly between said connecting duct and said balancing chamber, said switching valve being inserted between said second power chamber and said connecting duct, wherein said connecting tube is axially, slidingly, and rotatably positioned with respect to said power cylinder.

5,386,894

VIBRATION DAMPING DEVICE

Didier Barca, 43, quai Aristide Briand, 78510 Triel-sur-Seine, France

Filed Jul. 9, 1991, Ser. No. 727,484
Claims priority, application France, Jul. 12, 1990, 90 08887
Int. Cl.[6] F16F *7/10;* B60B *17/00*
U.S. Cl. 188—379 8 Claims



1. An emitter assembly comprising

an emitter rotatable about an axis, said emitter having an annular retaining groove concentric to said axis,

an elastically deformable first open ring which is seated in said retaining groove under radial stress,

a viscoelastic material bonded to said first open ring independently of said emitter, and

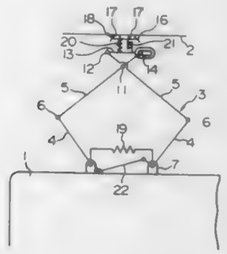
a stressing element in the form of a second open ring bonded to said viscoelastic material, said viscoelastic material being sandwiched between said stressing element and said first open ring, said stressing element being isolated from said emitter by said viscoelastic material.

5,386,895

CURRENT COLLECTOR

Eiichi Ohuchi, Kakogawa, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jun. 17, 1993, Ser. No. 77,631
Claims priority, application Japan, Jun. 18, 1992, 4-186266
Int. Cl.[6] B60L *5/30*
U.S. Cl. 191—60.5 3 Claims



1. A current collector attached to a movable body and receiving current from a feeder; said current collector comprising:

a frame having a top end and a base end, the base end being mounted on said movable body;

a current collector shoe assembly mounted on the top end of said frame and contacting the feeder;

a first spring for applying a spring force to said frame so as to urge the top end of said frame toward the feeder;

a second spring arranged between said frame and said current collector shoe assembly for pressing said current collector shoe assembly to said feeder; and

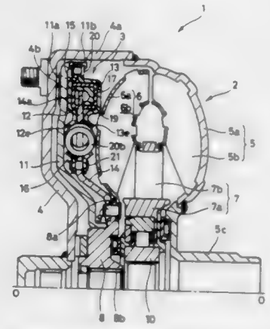
a damper disposed in parallel to said second spring for applying a damping force to damp the vibration of said current collector shoe assembly.

5,386,896

TORSIONAL VIBRATION DAMPING DEVICE AND LOCK-UP CLUTCH IN TORQUE CONVERTER

Yoshihiro Matsuoka, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Jun. 30, 1993, Ser. No. 85,615
Claims priority, application Japan, Jul. 6, 1992, 4-046861[U]; Oct. 23, 1992, 4-286479
Int. Cl.[6] F16D *33/00*
U.S. Cl. 192—3.29 40 Claims



1. A torsional vibration damping device in a power transmission comprising:

a drive plate interconnected with and twistable relative to a driven plate;

a case, made of metal, and connected to said drive plate, said case extending circumferentially and containing fluid; and

a slider, made of resin, and connected to said driven plate and disposed to be circumferentially slidable within said case; wherein

a clearance is provided between an inside wall of said case and said slider; and

coefficient of thermal expansion of said slider is greater than that of said case, said coefficient of thermal expansion of said slider is determined such that when operating temperature of said fluid rises, said slider expands, narrowing said clearance.

5,386,897

DELAY RESTORING TYPE LIMIT-TORQUE COUPLING MECHANISM

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan, Prov. of China

Filed May 27, 1993, Ser. No. 67,965
Int. Cl.[6] F16D *7/06*
U.S. Cl. 192—56 R 1 Claim

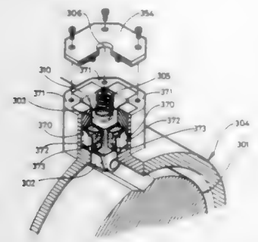
1. A limit torque mechanism comprising:

a) a first relative motion body defining an indentation in a surface thereof;

b) a second relative motion body located adjacent to the first relative motion body, the second relative motion body defining: an air chamber having a first end opening towards the first relative motion body and a second end

defining an air hole; and at least one recess opening into the air chamber;

c) a forced reversing mechanism comprising: an element configured to engage the indentation on the first relative motion body; and a piston attached to the element and slidably located in the air chamber;



d) first biasing means acting on the piston to exert a static pressure on the piston so as to urge the element into the indentation in the first relative motion body;

e) a friction block located in the at least one recess; and

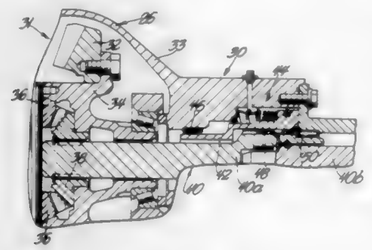
f) second biasing means acting on the friction block so as to urge the friction block into contact with the piston so as to dampen the return movement of the piston when the element has been disengaged from the indentation.

5,386,898

VACUUM ACTUATED AXLE DISCONNECT

David R. Weilant, and Jack F. Engle, both of Muncie, Ind., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Nov. 5, 1993, Ser. No. 147,615
Int. Cl.[6] B60K *17/354*; F16D *11/14, 25/061*
U.S. Cl. 192—67 R 14 Claims



1. An axle disconnect comprising:

an axle housing rotatably supporting an inner axle shaft and a coaxial outer axle shaft,

a clutch sleeve non-rotatably and translatably mounted on one of the inner and outer axle shafts so that the clutch sleeve translates between a first position where clutch teeth of the clutch sleeve engage clutch teeth of the other of the inner and outer axle shafts and a second position where the clutch teeth disengage, and

shift means for shifting the clutch sleeve from the first position to the second position and vice-versa,

the shift means comprising a piston that is an integral part of the clutch sleeve and slidably disposed in a cylinder of the axle housing so as to form an expandable and contractible vacuum motor,

a return spring disposed in the vacuum motor biasing the clutch sleeve to one of the first and second positions, and

the clutch sleeve being shifted to the other of the first and second positions against the bias of the return spring when the vacuum motor is evacuated.

12. An axle disconnect comprising:

an axle housing rotatably supporting an inner axle shaft and a coaxial outer axle shaft,

a clutch sleeve non-rotatably and translatably mounted on one of the inner and outer axle shafts so that the clutch sleeve translates between a first position where clutch teeth of the clutch sleeve engage clutch teeth of the other of the inner and outer axle shafts and a second position where the clutch teeth disengage, and

shift means for shifting the clutch sleeve from the first position to the second position and vice-versa,

the shift means comprising a piston that is coaxially arranged with respect to the inner and outer axle shafts and slidably disposed in a cylinder of the axle housing so as to form an expandable and contractible vacuum motor, and

a float valve disposed in the vacuum motor for sealing a vacuum port of the vacuum motor when the vacuum motor is filled with lubricant.

5,386,899

CLUTCH PLATE MECHANICAL STABILIZER

Maurice Sterling, and Duane Morgan, both of 1901 Laurel Rd., Oceanside, Calif. 92054

Continuation-in-part of Ser. No. 914,739, Jul. 20, 1992, abandoned. This application Nov. 17, 1993, Ser. No. 154,759
Int. Cl.[6] F16D *3/14*
U.S. Cl. 192—106.1 12 Claims



1. A clutch assembly having a device for reducing vibration and noise during clutch disengagement comprising: a plurality of drive plates each having an outer circumferential edge; wherein said drive plates are each provided with at least two radially extending diametrically opposite key notches at said circumferential edge; said key notches each having two spaced notch walls parallel to one another; a groove is provided in each notch wall on alternate key notches; an O-ring notch is provided in said circumferential edge of each drive plate adjacent to and circumferencially spaced from each side of the drive plate key notches; and a plurality of rubber O-rings are mounted on said circumferential edge of each drive plate such that each O-ring is retained in said groove in each notch wall and said adjacent O-ring notch by a force created from stretching each O-ring between said groove and O-ring notch.

5,386,900

ADJUSTABLE INFEED DESIGN

Roland D. Horth, Conifer, and Ronald G. Knaub, LaSalle, both of Colo., assignors to Aluminum Company of America, Pittsburgh, Pa.

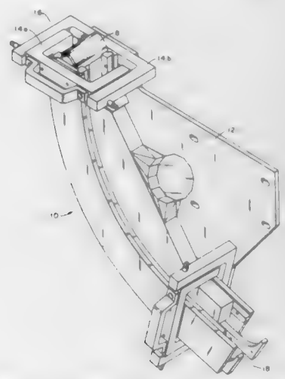
Filed Aug. 25, 1993, Ser. No. 111,997
Int. Cl.[6] B65G *11/00*
U.S. Cl. 193—2 R 20 Claims

1. An adjustable can conveyor apparatus for transporting a can from a first location to a second location comprising:

a supporting frame member at least partially extending between said first and second location;

a fixed trackwork assembly including at least two outer collars mounted on said supporting frame member, each said outer collar having track means;

a moveable trackwork assembly having at least two inner collars, each said inner collar including track rail guide means that slidably engage said track means of each said



outer collar such that said moveable trackwork is supported relative to said fixed trackwork; and

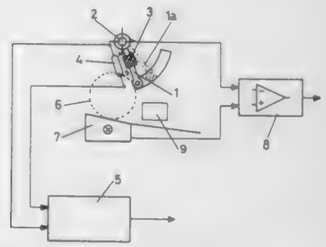
locking means operatively associated with said outer and inner collars for securing said moveable trackwork in one of at least two predetermined fixed positions relative to said fixed trackwork.

5,386,901

COIN SELECTOR

Jesüs E. Ibarrola, and Josë L. P. Insausti, both of Pamplona, Spain, assignors to Azkoyen Industrial S.A., Peralta, Spain

Filed Jun. 11, 1993, Ser. No. 75,242
Claims priority, application Spain, Jun. 12, 1992, 9201228
Int. Cl.[6] G07D *5/08*
U.S. Cl. 194—244 2 Claims



1. A coin selector apparatus comprising:

a path defined by the selector along which a coin travels when introduced into the selector, the path having at least one of an optical sensor and an electromagnetic sensor for detecting the validity and value of the coin;

a rocker arm disposed adjacent the entrance to the path for directing the coin to the path, the rocker arm including a permanent magnet, the rocker arm and permanent magnet being movable from a position of rest to a position of activation upon the passage of a coin;

a fixed magnetic relay disposed near the permanent magnet and being connected to a connection circuit for a power supply to the at least one sensor;

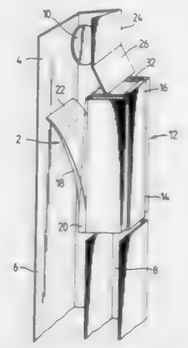
wherein the relative position between the permanent magnet and the magnetic relay varies as the rocker arm moves between said two positions so as to vary the action of the magnetic field of the permanent magnet on the magnetic relay, and the connection circuit is activated by the relay as a consequence of the variations in said magnetic field caused by the relative movement between the permanent magnet and the magnetic relay due to the presence of a coin in the selector.

5,386,902

COIN ROUTING GATE

Richard G. Bointon, Reading, and Timothy P. Waite, Esher, both of United Kingdom, assignors to Mars Incorporated, McLean, Va.

PCT No. PCT/GB92/01413, § 371 Date Jan. 25, 1994, § 102(e) Date Jan. 25, 1994, PCT Pub. No. WO93/03459, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 30, 1992, Ser. No. 185,868
Claims priority, application United Kingdom, Jul. 31, 1991, 9116512
Int. Cl.[6] G07F *1/04*
U.S. Cl. 194—346 22 Claims



1. A coin routing gate comprising a solenoid having a solenoid armature which is integral with a member which is movable upon actuation and deactuation of the solenoid to reconfigure a coin path, wherein the member is flexible and is mounted so that actuation of the solenoid tends to flex the member as it moves, with an increasing angle of flexure along its length.

5,386,903

COIN FILL AND DELIVERY SYSTEM FOR GAMING MACHINES

Wayne H. Rothschild, Wheeling; Gregory J. Tastad, Stone Park; Herbert H. Hausmann, Lincolnshire, and Bradley T. Burke, Rockford, all of Ill., assignors to WMS Gaming Inc., Chicago, Ill.

Filed Sep. 17, 1993, Ser. No. 123,538
Int. Cl.[6] G07F *1/04, 9/06*
U.S. Cl. 194—350 12 Claims

1. A gaming machine, comprising:

a) a game cabinet supporting a game display and a payout receptacle;

b) a coin hopper located in said cabinet for storing a quantity of coins;

c) means for delivering coins from the hopper to the payout receptacle; and

d) means for communicating the hopper with the exterior of the cabinet to allow the hopper to be filled with coins including an opening located in the cabinet and a chute connecting said opening with the hopper, said opening

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and said hopper being dimensioned to allow a quantity of coins to be poured therein,



whereby the game operator can supply the hopper with a quantity of coins quickly and easily.

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ESCALATOR APPARATUS AND METHOD OF OPERATION

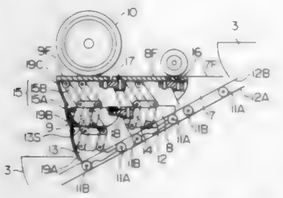
Kazuhira Ojima, Kasama; Chuichi Saito, Katsuta; Kazutoshi Takeda, Katsuta, and Toshiyuki Tamatsu, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Mito Engineering, Katsuta, both of Japan

Continuation of Ser. No. 924,459, Aug. 4, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 193,605

Claims priority, application Japan, Aug. 5, 1991, 3-195224

Int. Cl.[6] B66B *23/12*

U.S. Cl. 198—333 **13 Claims**



1. An escalator apparatus including bases adapted to run on a guide rail, and steps having movable step boards supported by said bases and adapted to be raised to provide a surface for carrying a wheelchair, wherein said movable step boards include at least two adjacent steps arranged to be movable upwardly and downwardly together with a step board of an upper step disposed adjacent thereto at an upper side thereof, and an inclination suppressing means is provided between said movable step boards and the bases thereof to suppress inclinations of said movable step boards when said movable step boards are in their raised positions.

5,386,905

COTTON MODULE COVER

Kenneth L. Porter, 4623 Hillsdale, Olive Branch, Miss. 38654

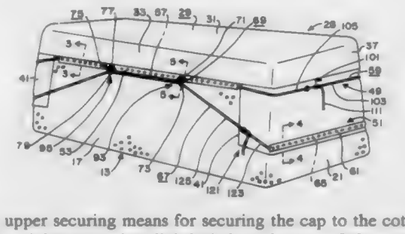
Filed Mar. 5, 1992, Ser. No. 846,604

Int. Cl.[6] B65D *71/06*

U.S. Cl. 206—83.5 **5 Claims**

1. A cover for protecting at least a portion of a cotton module having a top, first and second side walls, and first and second end walls, the cover comprising:

a) a cap for covering the top of a cotton module; the cap including a top member for covering the top of the cotton module, a first side wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the first side wall of the cotton module, a second side wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the second side wall of the cotton module, a first end wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the first end wall of the cotton module, and a second end wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the second end wall of the cotton module; said cap including upper channel means and lower channel means; the upper channel means including a first upper channel member on the first side wall member at a point slightly below the top member, the first upper channel member having a passageway therethrough; the upper channel means including a second upper channel member on the second side wall member at a point slightly below the top member, the second upper channel member having a passageway therethrough; the lower channel means including a first lower channel member on the first end wall member at a spaced distance below the upper channel means, the first lower channel member having a passageway therethrough; the lower channel means including a second lower channel member on the second end wall member at a spaced distance below the upper channel means, the second lower channel member having a passageway therethrough;



b) upper securing means for securing the cap to the cotton module at a point slightly below the top of the cotton module; the upper securing means being attached to at least one of the wall members at a point slightly below the top member; the upper securing means including elongated strap means for extending through the passageway in the first upper channel member, through the passageway in the second upper channel member, and around the side and end walls of a cotton module at a point slightly below the top of the cotton module;

c) lower securing means for securing the cap to the cotton module at a spaced distance below the upper securing means; the lower securing means being attached to at least one of the wall members at a spaced distance below the upper securing means; the second securing means including elongated strap means for extending through the passageway in the first lower channel member, through the passageway in the second lower channel member, and around the side and end walls of a cotton module at a spaced distance below the upper securing means;

d) hanger means for hanging the elongated strap means of the lower securing means from the elongated strap means of the upper securing means; the hanger means including a first hanger member having an upper end coupled to the elongated strap means of the upper securing means at a point along the first side wall of a cotton module between the first end wall of the cotton module and the center of the first side wall of the cotton module, the first hanger member having a lower end,coupled to the elongated strap means of the lower securing means; the hanger means including a second hanger member having an upper end coupled to the elongated strap means of the upper securing means at a point along the first side wall of the cotton module between the second end wall of the cotton module and the center of the first side wall of the cotton module, the second hanger member having a lower end coupled to the elongated strap means of the lower securing means; the hanger means including a third hanger member having an upper end coupled to the elongated strap means of the upper securing means at a point along the second side wall of a cotton module between the first end wall of the cotton module and the center of the second side wall of the cotton module, the first hanger member having a lower end coupled to the elongated strap means of the lower securing means; and in which the hanger means includes a fourth hanger member having an upper end coupled to the elongated strap means of the upper securing means at a point along the second side wall of the cotton module between the second end wall of the cotton module and the center of the second side wall of the cotton module, the second hanger member having a lower end coupled to the elongated strap means of the lower securing means; the first upper channel member having a first notch therein at a point along the first side wall member between the first end wall member and the center of the first side wall member for allowing the first hanger member to extend therethrough into the passageway of the first upper channel member and about the elongated strap means of the upper securing means; the first upper channel member having a second notch therein at a point along the first side wall member between the second end wall member and the center of the first side wall member for allowing the second hanger member to extend therethrough into the passageway of the first upper channel member and about the elongated strap means of the upper securing means; the second upper channel member having a first notch therein at a point along the second side wall member between the first end wall member and the center of the second side wall member for allowing the third hanger member to extend therethrough into the passageway of the second upper channel member and about the elongated strap means of the upper securing means; the second upper channel member having a second notch therein at a point along the second side wall member between the second end wall member and the center of the second side wall member for allowing the fourth hanger member to extend therethrough into the passageway of the second upper channel member and about the elongated strap means of the upper securing means.

2. A cover for protecting at least a portion of a cotton module having a top, first and second side walls, and first and second end walls, the cover comprising:

a) a cap for covering the top of a cotton module; the cap including a top member for covering the top of the cotton module, a first side wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the first side wall of the cotton module, a second side wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the second side wall of the cotton module, a first end wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the first end wall of the cotton module, and a second end wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the second end wall of the cotton module; said cap including upper channel means and lower channel means; the upper channel means including a first upper channel member on the first side wall member at a point slightly below the top member, the first upper channel member having a passageway therethrough; the upper channel means including a second upper channel member on the second side wall member at a point slightly below the top member, the second upper channel member having a passageway therethrough; the lower channel means including a first lower channel member on the first end wall member at a spaced distance below the upper channel means, the first lower channel member having a passageway therethrough; the lower channel means including a second lower channel member on the second end wall member at a spaced distance below the upper channel means, the second lower channel member having a passageway therethrough;

b) upper securing means for securing the cap to the cotton module at a point slightly below the top of the cotton module; the upper securing means being attached to at least one of the wall members at a point slightly below the top member; the upper securing means including elongated strap means for extending through the passageway in the first upper channel member, through the passageway in the second upper channel member, and around the side and end walls of a cotton module at a point slightly below the top of the cotton module; a portion of the elongated strap means of the upper securing means being fixed to the first side wall member at a point slightly below the top member; a portion of the elongated strap means of the upper securing means being fixed to the second side wall member at a point slightly below the top member; and

c) lower securing means for securing the cap to the cotton module at a spaced distance below the upper securing means; the lower securing means being attached to at least one of the wall members at a spaced distance below the upper securing means; the second securing means including elongated strap means for extending through the passageway in the first lower channel member, through the passageway in the second lower channel member, and around the side and end walls of a cotton module at a spaced distance below the upper securing means; a portion of the elongated strap means of the lower securing means being fixed to the first side wall member a spaced distance below the elongated strap means of the upper securing means; a portion of the elongated strap means of the lower securing means being fixed to the second side wall member a spaced distance below the elongated strap means of the upper securing means.

3. A cover for protecting at least a portion of a cotton module having a top, first and second side walls, and first and second end walls, the cover comprising:

a) a cap for covering the top of a cotton module; the cap including a top member for covering the top of the cotton module, a first side wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the first side wall of the cotton module, a second side wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the second side wall of the cotton module, a first end wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the first end wall of the cotton module, and a second end wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the second end wall of the cotton module; said cap including upper channel means and lower channel means; the upper channel means including a first upper channel member on the first side wall member at a point slightly below the top member, the first upper channel member having a passageway therethrough; the upper channel means including a second upper channel member on the second side wall member at a point slightly below the top member, the second upper channel member having a passageway therethrough; the lower channel means including a first lower channel member on the first end wall member at a spaced distance below the upper channel means, the first lower channel member having a passageway therethrough; the lower channel means including a

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second lower channel member on the second end wall member at a spaced distance below the upper channel means, the second lower channel member having a passageway therethrough;

b) upper securing means for securing the cap to the cotton module at a point slightly below the top of the cotton module; the upper securing means being attached to at least one of the wall members at a point slightly below the top member; the upper securing means including elongated strap means for extending through the passageway in the first upper channel member, through the passageway in the second upper channel member, and around the side and end walls of a cotton module at a point slightly below the top of the cotton module; the upper securing means including upper fastening means for fastening the elongated strap means of the upper securing means about the perimeter of a cotton module; the elongated strap means of the upper securing means having a first end and a second end; the upper fastening means including a first ring means attached to the first end of the elongated strap means of the upper securing means, a second ring means attached to the second end of the elongated strap means of the upper strap means, and tongue means having a first end for being attached to the first end of the elongated strap means of the upper securing means and having a second end for extending first through the second ring means of the upper fastening means and then through the first ring means of the upper fastening means for causing the first and second ends of the elongated strap means of the upper securing means to be simultaneously pulled in opposite directions toward one another when the tongue means of the upper fastening means is pulled in one direction; and

c) lower securing means for securing the cap to the cotton module at a spaced distance below the upper securing means; the lower securing means being attached to at least one of the wall member at a spaced distance below the upper securing means; the second securing means including elongated strap means for extending through the passageway in the first lower channel member, through the passageway in the second lower channel member, and around the side and end walls of a cotton module at a spaced distance below the upper securing means; the lower securing means including lower fastening means for fastening the elongated strap means of the lower securing means about the perimeter of the cotton module; the elongated strap means of the lower securing means having a first end and a second end; the lower fastening means including a first ring means attached to the first end of the elongated strap means of the lower securing means, a second ring means attached to the second end of the elongated strap means of the lower strap means, and tongue means having a first end for being attached to the first end of the elongated strap means of the lower securing means and having a second end for extending first through the second ring means of the lower fastening means and then through the first ring means of the lower fastening means for causing the first and second ends of the elongated strap means of the lower securing means to be simultaneously pulled in opposite directions toward one another when the tongue means of the lower fastening means is pulled in one direction.

4. A cover for protecting at least a portion of a cotton module having a top, first and second side walls, and first and second end walls, the cover comprising:

a) a cap for covering the top of a cotton module; the cap including a top member for covering the top of the cotton module, a first side wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the first side wall of the cotton module, a second side wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the second side wall of the cotton module, a first end wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the first end wall of the cotton module, and a second end wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the second end wall of the cotton module;

b) upper channel means including a first upper channel member on the first side wall member at a point slightly below the top member and a second upper channel member on the second side wall member at a point slightly below the top member, the first and second upper channel members having passageways therethrough;

c) upper securing means for securing the cap to the cotton module at a point slightly below the top of the cotton module; the upper securing means being attached to at least one of the wall members at a point slightly below the top member; the upper securing means including elongated strap means for extending through the passageways in the first and second upper channel members and around the side and end walls of a cotton module at a point slightly below the top of the cotton module;

d) lower channel means including a first lower channel member on the first end wall member at a spaced distance below the upper channel means and a second lower channel member on the second end wall member at a spaced distance below the upper channel means, the first and second lower channel members having passageways therethrough;

e) lower securing means for securing the cap to the cotton module at a spaced distance below the upper securing means; the lower securing means being attached to at least one of the wall members at a spaced distance below the upper securing means; the second securing means including elongated strap means fop extending through the passageways in the first and second lower channel members and around the side and end walls of a cotton module at a spaced distance below the elongated strap means of the upper securing means;

f) hanger means for hanging the elongated strap means of the lower securing means from the elongated strap means of the upper securing means; the hanger means including a first hanger member having an upper end coupled to the elongated strap means of the upper securing means at a point along the first side wall of a cotton module between the first end wall of the cotton module and the center of the first side wall of the cotton module, the first hanger member having a lower end coupled to the elongated strap means of the lower securing means; the hanger means including a second hanger member having an upper end coupled to the elongated strap means of the upper securing means at a point along the first side wall of the cotton module between the second end wall of the cotton module and the center of the first side wall of the cotton module, the second hanger member having a lower end coupled to the elongated strap means of the lower securing means; the hanger means including a third hanger member having an upper end coupled to the elongated strap means of the upper securing means at a point along the second side wall of a cotton module between the first end wall of the cotton module and the center of the second side wall of the cotton module, the first hanger member having a lower end coupled to the elongated strap means of the lower securing means; the hanger means including a fourth hanger member having an upper end coupled to the elongated strap means of the upper securing means at a point along the second side wall of the cotton module between the second end wall of the cotton module and the center of the second side wall of the cotton module, the second hanger member having a lower end coupled to the elongated strap means of the lower securing means; first upper channel member having a first notch therein at a point along the first side wall member between the first end wall member and the center of the first side wall member for allowing the first hanger member to extend therethrough into the passageway of the first upper channel member and about the elongated strap means of the upper securing means; the first upper channel member having a second notch therein at a point along the first side wall member between the second end wall member and the center of the first side wall member for allowing the second hanger member to extend therethrough into the passageway of the first upper channel member and about the elongated strap means of the upper securing means; the second upper channel member having a first notch therein at a point along the second side wall member between the first end wall member and the center of the second side wall member for allowing the third hanger member to extend therethrough into the passageway of the second upper channel member and about the elongated strap means of the upper securing means; the second upper channel member having a second notch therein at a point along the second side wall member between the second end wall member and the center of the second side wall member for allowing the fourth hanger member to extend therethrough into the passageway of the second upper channel member and about the elongated strap means of the upper securing means.

5. A cover for protecting at least a portion of a cotton module having a top, first and second side walls, and first and second end walls, the cover comprising:

a) a cap for covering the top of a cotton module; the cap including a top member for covering the top of the cotton module, a first side wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the first side wall of the cotton module, a second side wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the second side wall of the cotton module, a first end wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the first end wall of the cotton module, and a second end wall member attached to the top member and depending downwardly from the top member for covering at least a portion of the second end wall of the cotton module;

b) upper securing means for securing the cap to the cotton module at a point slightly below the top of the cotton module; the upper securing means being attached to at least one of the wall members at a point slightly below the top member; the upper securing means including elongated strap means for extending around the side and end walls of a cotton module at a point slightly below the top of the cotton module; the upper securing means including upper fastening means for fastening the elongated strap means of the upper securing means about the perimeter of a cotton module; the elongated strap means of the upper securing means having a first end and a second end; the upper fastening means including a first ring means attached to the first end of the elongated strap means of the upper securing means, a second ring means attached to the second end of the elongated strap means of the upper strap means, and tongue means having a first end for being attached to the first end of the elongated strap means of the upper securing means and having a second end for extending first through the second ring means of the upper fastening means and then through the first ring means of the upper fastening means for causing the first and second ends of the elongated strap means of the upper securing means to be simultaneously pulled in opposite directions toward one another when the tongue means of the upper fastening means is pulled in one direction; and

c) lower securing means for securing the cap to the cotton module at a spaced distance below the upper securing means; the lower securing means being attached to at least one of the wall members at a spaced distance below the upper securing means; the second securing means including elongated strap means for extending around the side and end walls of a cotton module at a spaced distance below the upper securing means; the lower securing means including lower fastening means for fastening the elongated strap means of the lower securing means about the perimeter of the cotton module; the elongated strap means of the lower securing means having a first end and a second end; the lower fastening means including a first ring means attached to the first end of the elongated strap means of the lower securing means, a second ring means attached to the second end of the elongated strap means of the lower strap means, and tongue means having a first end for being attached to the first end of the elongated strap means of the lower securing means and having a second end for extending first through the second ring means of the lower fastening means and then through the first ring means of the lower fastening means for causing the first and second ends of the elongated strap means of the lower securing means to be simultaneously pulled in opposite directions toward one another when the tongue means of the lower fastening means is pulled in one direction.

5,386,906

BALL HOLDER

Shih-nan Lai, 11F, No. 67, Sec. 1, Ho-ping East Road, Taipei, Taiwan, Prov. of China

Filed Apr. 18, 1994, Ser. No. 229,306
Int. Cl.[6] A63B *47/00*
U.S. Cl. 206—315.9 **1 Claim**



1. A ball holder, comprising a first holding member, a second holding member, a string, and a fastening plate; said first and said second holding members both consisting of a first end surface, a second end surface, and an inclined side wall; grooves being formed on said first-end surfaces which face outward when said first and said second holding members are assembled with said string to clamp a ball between them; said grooves each having through holes formed at two ends thereof to each correspond to an elongated hole axially formed on said side walls of said first and said second holding members; a fastening means being provided on said side wall of said first holding member at a predetermined position for said string to pass through and wind about it; said fastening plate being located below said fastening means and being able to be pressed against said fastening means by pulling said string threaded through said fastening means and said fastening plate and thereby tightening them together; two fixing holes being additionally provided on said side wall of said second holding member at positions corresponding to said fastening means; said string being threaded through said through holes, elongated holes, and fixing holes via a predetermined route so as to detachably connect said first and said second holding members together to receive a ball between them; said fastening means being provided with dents to firmly clamp and locate said string passing therethrough so that a portion of said string between said fastening means and said additional fixing holes can serve as a carrying means; and a cradle-like inflator support being provided on said side wall of said first holding member opposite to said fastening means.

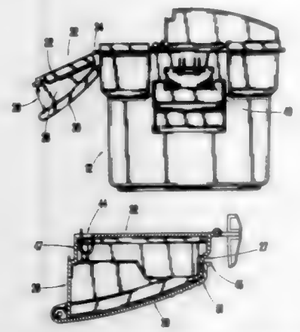
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5,386,907

CONTAINER HAVING PIVOTAL COMPARTMENT

W. Henry Kahl, Wooster, and John Koenig, Columbus, both of Ohio, assignors to Rubbermaid Specialty Products Inc., Wooster, Ohio

Filed Jun. 28, 1993, Ser. No. 92,982
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—315.11 14 Claims



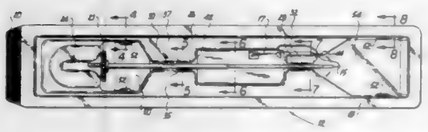
1. A portable container comprising a bottom section secured to four side sections, and at least one cover section, said cover section pivotally secured to one of said side sections, said cover section comprising one interior portion defined by a top wall, bottom wall and sidewalls, said interior portion being accessible through said top wall and said bottom wall of said cover section.

5,386,908

PACKAGE FOR ENDOSCOPIC SUTURE SYSTEM

Hans-Jurgen F. Sinn, Fairfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Mar. 25, 1993, Ser. No. 37,984
Int. Cl.[6] B65D *85/20*
U.S. Cl. 206—363 10 Claims



1. A package for an endoscopic suture system, said system including an elongated body, a suture, a suture retainer and a needle attached to said suture and said retainer, the package comprising:

a substantially rigid instrument holding member having a base; an elongated body channel in the base of the instrument holding member for receiving said elongated body,

a retainer channel in the base of the instrument holding member for receiving said retainer, said body and retainer channels each defined by a pair of oppositely positioned side walls, a bottom wall and an open top, said body channel being formed in a first plane and said retainer channel being formed in a second plane below said first plane;

a pair of oppositely positioned body flanges for frictionally engaging said body in said body channel, said body flanges each extending from said body channel side walls across a portion of said body channel open top;

a pair of oppositely positioned retainer flanges for frictionally engaging said retainer in said retainer channel, said retainer flanges extending from said retainer channel side walls into a portion of said retainer channel, said body flanges configured to be rigid enough to retain said tubular body, yet flexible enough to deflect when said elongated body or retainer is pulled through said elongated body flanges;

a release channel for facilitating the gripping of a first portion of said elongated body and said retainer, and further facilitating its removal from the package;

a second release channel for facilitating the gripping of a second portion of said elongated body; and

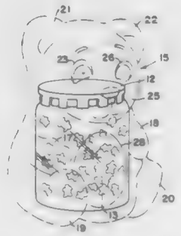
a cover member adapted to be mounted to and to enclose the instrument holding member.

5,386,909

DISPLAY PACKAGE FOR SHAPED CANDY PIECES

Donald Spector, 380 Mountain Rd., Union City, N.J. 07080

Filed Nov. 1, 1993, Ser. No. 144,347
Int. Cl.[6] B65D *73/00*
U.S. Cl. 206—457 9 Claims



1. A display package for storing and displaying small candy pieces, said package comprising:

A. a transparent cylindrical container having an externally threaded neck, said container being loaded with said candy pieces;

B. a screw-on cap received on said neck to seal said container;

C. a hollow three-dimensional figure molded of synthetic plastic material having a humanoid or animal-like shape, said figure being defined by a body section forming a torso and appendages of the figure whose cavity communicates with a top side opening, and a complementary head section forming the shaped head of the figure whose cavity communicates with a bottom opening, said container being fixedly seated within the cavity of the body section with its neck projecting above said top side opening; said cap being fixedly socketed within the bottom opening of the head section whereby the figure is completed when the cap is screwed onto the neck, access to the candy pieces being had when the head section is detached from the body section, the cavity of the body section having a front side viewing port therein which exposes the candy pieces stored in the transparent container, said body section having a substantially larger girth than said cylindrical container to give the impression that the entire figure is loaded with candy pieces, not just the container.

5,386,910

CONTAINER FOR PLASTIC BAGS

Olle G. Liss, Sturegatan 9, S-753 14 Uppsala, Sweden

PCT No. PCT/SE91/00647, § 371 Date Mar. 26, 1993, § 102(e) Date Mar. 26, 1993, PCT Pub. No. WO92/06020, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 26, 1991, Ser. No. 30,282
Claims priority, application Sweden, Sep. 27, 1990, 9003064
Int. Cl.[6] B65D *85/16, 83/08;* A47G *29/00*
U.S. Cl. 206—554 1 Claim

1. A container for storing bags for re-use comprising:

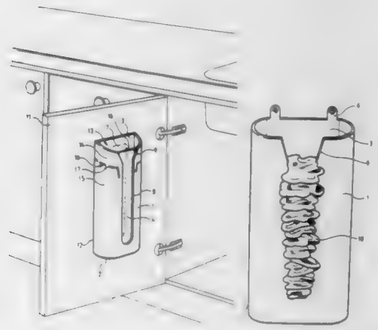
a substantially flat rear mounting portion that extends in a lengthwise direction and is provided for attachment to a supporting surface;

a pair of opposing side walls that are joined with the mounting portion, extend in the lengthwise direction, and have inward extending, opposing inner edges opposite the mounting portion;

a bottom portion joined to the mounting portion and to each of the side walls;

said side walls defining a receiving and holding opening that extends from a top of the container to the bottom portion and between the side walls;

a slit that extends lengthwise between the inner edges of the side walls and into the receiving and holding opening;



said side walls and said receiving and holding opening enabling a user to insert the bags from above into the receiving and holding opening and to store the bags for re-use between the side walls;

said side walls and said lengthwise extending slit allowing a hand of a user to reach between the side walls through and over the entire lengthwise extent of the slit and to remove arbitrary ones of the bags from the container through the slit;

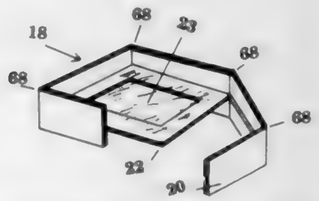
said container being divided into at least an upper and a lower portion by a perforation that extends around the side walls and mounting portion, said upper portion being removable from the lower portion along the perforation.

5,386,911

VARIABLE DEPTH MEMBRANE PACKING

Thomas M. Payne, 12 Bennington Dr., Tappan, N.Y. 10983

Filed Jun. 7, 1993, Ser. No. 72,728
Int. Cl.[6] B65D *81/02, 85/30*
U.S. Cl. 206—583 7 Claims



1. An apparatus for packing a solid or semisolid object, in combination with an outer container, comprising:

a first frame assembly comprising a first rigid frame having a central aperture which is substantially enclosed within a pliable membrane, and a first collar of flat, semirigid material which has been slotted in such a manner as to hold said first frame in a position other than centered when said first collar is formed around the first frame and being of sufficient dimension to provide stand off from one side of said outer container;

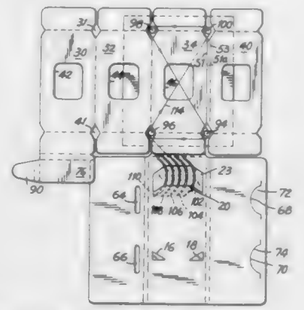
a second frame assembly comprising a second rigid frame of similar dimension as the first frame, said second rigid frame having a central aperture which is substantially enclosed within a pliable membrane, a second collar of similar dimension as said first collar thus providing a means for varying the spacing between opposing first and second frames by choice of orientation of the opposing assemblies and thus a supporting means to a variety of objects positioned between said frames when two frame assemblies are placed in opposition within an outer container.

5,386,912

PACKAGE FOR MULTIPLE SUTURES

Henry A. Holzwarth, Weston, and Christopher M. Scanlon, Milford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 746,492, Aug. 16, 1991, Pat. No. 5,277,299, which is a continuation-in-part of Ser. No. 629,114, Dec. 17, 1990, abandoned. This application Aug. 2, 1993, Ser. No. 101,128
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[6] A61B *17/06;* B65D *85/24*
U.S. Cl. 206—63.3 29 Claims



1. A suture package which comprises:

a) a first row of a plurality of panel members of substantially similar shape foldably connected to each other and arranged to fold upon each other to form at least three individual suture compartments between pairs of adjacent panel members, each said compartment being arranged to accommodate at least one flexible suture therein; and

b) a second row of a plurality of panel members connected to one panel member of said first row of panel members, said second row of panel members foldably connected to each other and foldable independent of said first row, said second row of panel members further being foldable in a manner to substantially enclose said first row of panel members folded upon each other.

29. A suture package for storing at least two flexible suture portions, which comprises at least two rows of panel members connected to each other, at least a first row of said at least two rows including a plurality of panel members arranged to fold upon each other to form at least three individual suture compartments between pairs of adjacent panel members, each said compartment dimensioned to accommodate a single flexible suture therein, at least a second row of said at least two rows of panel members foldable independent from the remaining rows and arranged to fold in a manner to at least partially encompass the remaining rows of panel members folded upon each other.

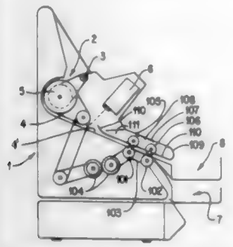
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DOCUMENT TRANSPORT SELECTION DEVICE FOR SCANNERS AND CLASSIFIERS OF DOCUMENTS, ESPECIALLY BAR CODE BEARING DOCUMENTS

Roberto M. Taylor, Calle 53 No. 728, La Plata, Province of Buenos Aires, Argentina

Filed Dec. 1, 1992, Ser. No. 983,727
Claims priority, application Argentina, Dec. 3, 1991, 321,305
Int. Cl.[6] B07C 5/00; B65H 39/10
U.S. Cl. 209—583 12 Claims



1. A document transport selection device for use with document scanners and classifiers, comprising:

a document supply;

a first travel path for supporting documents travelling from said document supply;

a reading element for reading and classifying documents travelling along said first travel path;

a first traction means for transporting documents from said travel path to one of a plurality of bypass transport surfaces, the first traction means comprising a first traction roller and a first idler roller urged in mating engagement by a retaining element, whereby the documents pass between the surface of the first traction roller and the first idler roller;

a second traction means for transporting documents from said one of said plurality of bypass transport surfaces to one of a plurality of document receptors corresponding to said one of a plurality of bypass transport surfaces, the second traction means comprising a second traction roller and a second idler roller urged in mating engagement by a retaining element, whereby documents pass between the surface of the second traction roller and the second idler roller; and

a moveable surface which pivots about a fixed point in response to a signal from said reading element to direct documents along one of said plurality of transport surfaces, said moveable surface comprising an intermediary portion and a pair of lateral arms forming a substantial U-shape, wherein said second traction means is able to pass between said lateral arms to allow said moveable surface to pivot unopposed by said second traction means.

5,386,914

APPARATUS FOR SCATTERING FIBROUS MATERIAL, E.G. CHIPS

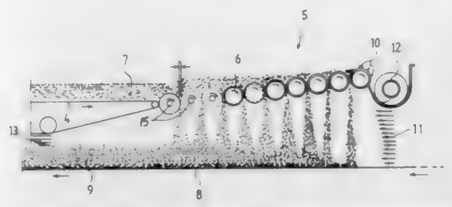
Markku Erämaja; Pentti Raura, both of Valko, and Jarmo Sali, Ummeljoki, all of Finland, assignors to Defibrator Loviisa Oy, Valko, Finland

Continuation of Ser. No. 785,336, Oct. 30, 1991, abandoned.
This application Oct. 18, 1993, Ser. No. 139,618
Claims priority, application Finland, Oct. 30, 1990, 905361; Sep. 25, 1991, 914515
Int. Cl.[6] B07B 13/07
U.S. Cl. 209—673 10 Claims

1. An apparatus for scattering fibrous material of different sizes, such as chips together with a binder, onto a receiving surface to form a precisely controlled blanket of said material, the apparatus compromising:

transfer means having an input and a discharge end, for transferring said material to be scattered toward said discharge end;

a set of movable rolls positioned proximate discharge end to receive said material from said discharge end of said transfer means, all of said rolls being mutually parallel and aligned transversely to a transfer direction of said material, said material moving over external circumferential surfaces of said rolls, the external circumferential surfaces of each two neighboring rolls being spaced from each other in said transfer direction to form slots therebetween, and being movable relative to one another so said slots can be adjusted to selected widths, the material being scattered through said slots onto said receiving surface,



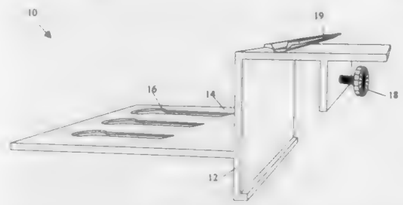
said rolls being positioned to provide progressively increased widths in said transfer direction of said slots between the rolls, said scattered material being of generally smaller size proximate said discharge end of said transfer means and becoming progressively larger in said transfer direction.

5,386,915

AIR TOOL RACK

Eddie Sirhan, 2410 Olympic Dr., So. San Francisco, Calif. 94080

Filed Nov. 3, 1993, Ser. No. 147,076
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—70.6 2 Claims



1. A tool rack for storing air powered tools, each air powered tool including a male air hose connector having a flanged end, said flange comprising a neck region and a flange region, said neck region having a diameter less than that of said flange region, said tool rack comprising:

a first surface having a plurality of capture regions therein, each tool capture region including first and second regions, said first region having an opening sufficient to allow the passage of said flange region therethrough and said second region comprising a slot having an opening less than the diameter of said flanged region but greater than the diameter of said neck region;

means for connecting said surface to a wall; and

clip means for storing a socket used by at least one of said air powered tool.

5,386,916

ADJUSTABLE STRIP MERCHANDISER

Stanley C. Valiulis, Rockford, Ill., assignor to Southern Imperial, Inc., Rockford, Ill.

Filed Aug. 24, 1993, Ser. No. 111,206
Int. Cl.[6] A47F 5/00
U.S. Cl. 211—113 8 Claims



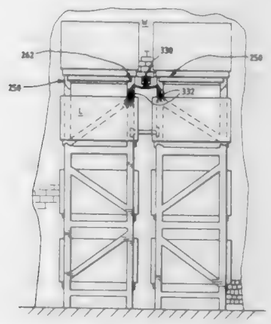
1. A strip merchandiser for supporting merchandise items, said merchandiser comprising an integrally formed elongated and upright plastic strip having vertically spaced integral means for supporting said items, said strip having a plurality of vertically spaced and transversely extending weakened lines extending substantially across the entire width of the strip, said lines dividing said strip into a top section, at least one intermediate section, and a bottom section, the upper end portion of said top section having a first hole to permit said strip to be suspended from a hanger inserted through said hole, and an additional hole formed through said strip below each of said lines for optionally receiving said hanger, said plastic strip being sufficiently flexible along each of said lines to permit any section of said strip to be folded into face-to-face relation with an adjacent section along the line between such sections.

5,386,917

STORAGE RACK SYSTEM WITH FIRE EXTINGUISHING DEVICE

William L. Clark, Pinehurst, N.C., and William T. Guiher, Greenbrier, Tenn., assignors to UNR Industries, Inc., Chicago, Ill.

Division of Ser. No. 95,607, Jul. 21, 1993, Pat. No. 5,368,174, which is a continuation-in-part of Ser. No. 926,458, Aug. 7, 1992, abandoned. This application Apr. 6, 1994, Ser. No. 223,970
Int. Cl.[6] A47F 5/00
U.S. Cl. 211—183 3 Claims



1. A storage rack system comprising:

(a) a storage rack including a support beam for supporting a load, said support beam being located in a fixed position and at a predetermined elevation above a support surface, the support beam being tubular and including an outer wall defining a generally flat, inclined surface facing outwardly and downwardly, said inclined surface being inclined at an angle in a range from about 10° to about 80° relative to a vertical plane and constituting a means for deflecting fluids, said support beam having a lowermost edge, said inclined surface having a lower edge which defines the lowermost edge of said support beam; and

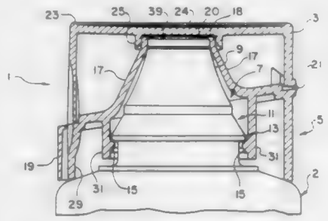
(b) a fire extinguishing device arranged to discharge a fluid, spaced horizontally from said inclined surface, and located in a fixed position relative to the storage rack, and above the lower edge of said inclined surface, such that when the fire extinguishing device is discharging a fluid in a direction toward the inclined surface, the discharged fluid impinges upon said inclined surface, and said inclined surface deflects the impinging fluid downwardly and inwardly beyond the lowermost edge of said support beam.

5,386,918

CLOSURE WITH TAMPER EVIDENCE STRUCTURE

George J. Neveras, Kendall, N.J., and Claude Blasin, Brussels, Belgium, assignors to Colgate-Palmolive Co., New York, N.Y.

Filed Apr. 22, 1993, Ser. No. 52,024
Int. Cl.[6] B65D 41/32, 41/62
U.S. Cl. 215—235 14 Claims



1. A closure for a container having a dispensing nozzle, comprising:

two parts hingedly connected:

a closure base part having a side wall and a top surface and a locking structure for the purpose of locking the closure to a container and a dispensing channel projecting upwardly from said top surface, said dispensing channel having a cross-sectional dimension to accept a dispensing nozzle of a container therein and having a sealing surface adjacent an exit opening thereof to contact said dispensing nozzle;

a closure lid part, cooperatively acting with said closure base so as to seal said opening when the closure lid is in a closed position; .

hinge structure connecting said closure base to said closure lid, the closure lid moving between an open and said closed position by movement around an axis of the hinge structure; and

tamper evidence structure attached to one of said two parts hingedly connected and cooperatively acting with the other of said two parts to which it is not attached, to lock the closure lid to the closure base until removal of the tamper evidence structure.

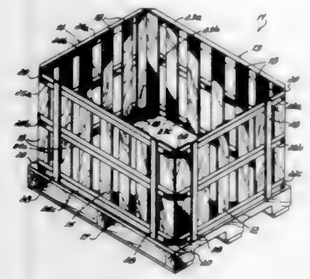
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5,386,919

FULLY COLLAPSIBLE BOX WITH REVERSE MITRED CLEATS

Rodney W. Long, 1644 Kirby Rd., Lebanon, Ohio 45036

Filed May 21, 1993, Ser. No. 65,670
Int. Cl.[6] B65D *19/10*
U.S. Cl. 217—36 7 Claims



1. A collapsible box comprising

four substantially vertical sidewalls meeting at four corners when the sidewalls are arranged in a rectangular configuration;

each sidewall including a plurality of vertical slats and a plurality of generally horizontally disposed cleats vertically spaced along each of the sidewalls, each of the cleats having ends located at the corners, the walls further including at least two pairs of corner slats, each pair of corner slats located at one of a first pair of diagonally opposite corners, each said pair of corner slats including two adjacently located slats partially defining the respective corner; and

means for tightly interconnecting the adjacent ends of cleats of adjacently located sidewalls at each of the corners;

wherein the ends of the cleats located at said first diagonally opposite corners of the rectangular configuration have reverse outwardly facing miters lying in a common vertical plane when in an erected position and the corner slats at each of said first pair of diagonally opposite corners are not secured directly together, whereby the sidewalls may be hingedly collapsed with the adjacent cleat ends remaining interconnected at each of the four corners without adversely affecting the tightness of interconnection between adjacently located cleats.

5,386,920

VACUUM PACKAGE TUBELESS ENCLOSURE WITH SELF-WELDED FLANGES

Timothy S. Romano, Goleta; Robert E. Zahuta, Lompoc; Karl H. Neumann, Santa Barbara, and Leonard E. Peck, Jr., Goleta, all of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed Aug. 18, 1993, Ser. No. 108,413
Int. Cl.[6] B23K *20/02*
U.S. Cl. 220—2.2 17 Claims

1. A method for preparing a vacuum package assembly, comprising the step of:

providing a first housing having a first peripheral flange with a first flange self-welding member;

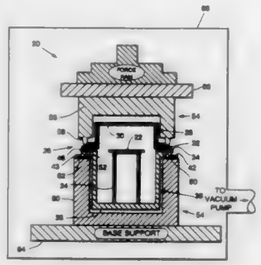
providing a second housing having

a second peripheral flange with a second flange self-welding member sized for mating engagement with the first flange self-welding member, and

a backing ring against which the second flange self-welding member rests, the backing ring having an annular ridge thereon to concentrate force during bonding;

placing the first housing and the second housing into a vacuum chamber and evacuating the vacuum chamber;

placing the first flange self-welding member into facing engagement with the second flange self-welding member; and



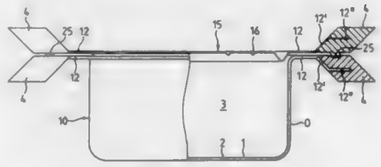
applying a force to the first peripheral flange and the second peripheral flange sufficient to cause the first flange self welding member and the second flange self-welding member to self-weld together.

5,386,921

METAL UTENSIL

Jacques Kuhn, Tösstal, Switzerland, assignor to Heinrich Kuhn Metallwarenfabrik AG, Rikon, Switzerland

Continuation of Ser. No. 859,969, Mar. 30, 1992, Pat. No. 5,307,951. This application Feb. 7, 1994, Ser. No. 192,991
Int. Cl.[6] A47J *37/00*
U.S. Cl. 220—771 2 Claims



1. A metal utensil set comprising

a first container formed from a single unitary sheet of metal material deep-drawn into a vessel having

a circular wall with an inner surface at a first diameter defining an interior volume, said circular wall having an outer surface and an upper edge defining an open top,

a continuous first flange extending radially outwardly from said upper edge and terminating at a distal edge having a second diameter, and

means comprising first and second continuations of said first flange extending radially outwardly from opposite sides of said distal edge of said first flange forming root portions of handles each having a manually graspable handle portion, each said root portion being elongated so that a user's hand grasping said handle portion is spaced from said outer surface;

a second container formed from a single unitary sheet of metal material deep-drawn into a second vessel having

a second circular wall with an upper edge and a third outer diameter smaller than said first diameter,

a continuous second flange extending radially outwardly from said upper edge of said second vessel, and

means comprising first and second continuations of said second flange extending radially outwardly from opposite sides of said second flange forming root portions of handles each having a manually graspable handle portion by which said second container can be manually grasped, said root portions extending to a diameter greater than said second diameter,

a lid having a central portion, a continuous third flange extending radially outwardly from said central portion to a diameter substantially equal to the diameter of said second flange and means comprising first and second continuations of said third flange extending radially outwardly from opposite sides of said third flange forming root portions of handles, each said root portion having a manually graspable handle portion by which said lid can be manually grasped; and

means at each handle portion of said second container and said lid forming positioning surfaces for positioning said lid on said second container so that when said lid is placed on said second container with said handle portions of said lid and second container aligned, said second and third flanges are spaced apart and when said lid is placed on said second container with said handles separated by at least a predetermined angle, said second and third flanges abut,

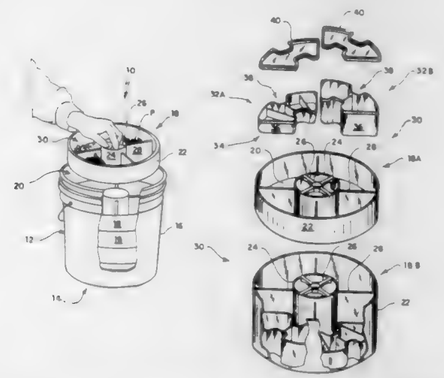
whereby when said second container is placed in said first container with said handles of said containers separated by at least a predetermined angle, said root portions of said second container rest on said first flange of said first container with a gap between said first and second flanges.

5,386,922

CONTAINER WITH STACKABLE TRAYS

Raymond L. Jordan, P.O. Box 4472, Annapolis, Md. 21403

Filed Sep. 17, 1993, Ser. No. 122,297
Int. Cl.[6] B65D *21/02*
U.S. Cl. 220—23.83 15 Claims



1. A partitioning arrangement for a storage and dispensing receptacle comprising:

a bucket;

a plurality of vertically stackable trays, each of said trays having:

a bottom and an upstanding, perimetric wall,

each of said trays having a configuration conforming to the configuration of the bucket and is inserted thereinto,

each of said trays having a height dimension, at least one of said trays having a low said height dimension, and at least one of said trays having a high said height dimension, wherein the bucket holds said trays; and

a plurality of inserts removably inserted into said trays, each of said inserts having:

a floor;

an upstanding, outer wall having a constricted neck portion extending to said floor,

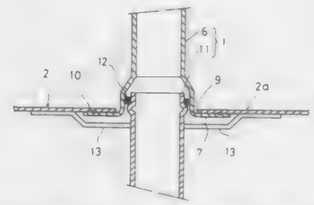
each of said inserts being dimensioned and configured to cooperate with other said inserts such that at least two of said inserts are insertable into any one said tray, whereby the bucket is vertically divided into tiers, and each tier is subdivided into adjacent compartments.

5,386,923

JOINT STRUCTURE OF CONTAINER AND PIPE

Hitoshi Nakashima; Seiichi Fujino, and Kenji Ishiwari, all of Hiroshima, Japan, assignors to Kurata Corporation, Hiroshima, Japan

Filed Jan. 28, 1994, Ser. No. 187,904
Int. Cl.[6] B65B *3/00*
U.S. Cl. 220—86.2 10 Claims



1. A joint structure of a metallic container and a metallic pipe extending and passing through a wall part of the container, said metallic pipe comprising:

an outer pipe arranged outside of and having a first end extending and passing through said wall of said container and including an integrally formed flange on said first end, said flange positioned adjacent said container wall part and connected to said wall part via an annular projection weld;

an inner pipe arranged inside of said container and having a first end extending and passing through said wall part of said container and inserted into said first end of said outer pipe;

said inner pipe supported from said wall part of said container by means of a bracket; and

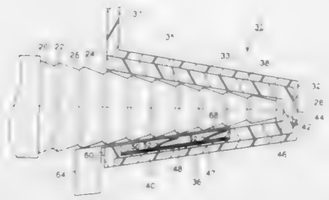
the inner periphery of said first end of said outer pipe and the outer periphery of said first end of said inner pipe being in sealing relationship.

5,386,924

CAP FOR GAS OUTLET NOZZLES

Frank J. Flinta, 6099 Farmstead Ln., Mississauga, Ontario, Canada L5N 2Z1 , and Garrey D. Green, 31 Georian Cres., Kitchener, Ontario, Canada N2B 3N8

Filed May 10, 1994, Ser. No. 240,524
Int. Cl.[6] B65D *55/02*
U.S. Cl. 220—284 16 Claims



1. A cap member for fitment over a gas outlet nozzle having a plurality of serrations on the exterior thereof, said cap member comprising:

a peripherally disposed main body portion having an inner surface and an outer surface, said inner surface defining a nozzle receiving recess;

an open first end;

a generally closed second end;

a lock member mounted in operative relation to said main body portion and having at least one projecting lock portion on said lock member, which lock portion is movable between a first locking position and a second unlocking position;

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wherein, when said cap member is in place on said gas outlet nozzle and said at least one projecting lock portion is in said first locking position, said at least one projecting lock portion projects into said nozzle receiving recess so as to be in interfering relation with one of said plurality of serrations on the exterior of said gas outlet nozzle, so as to thereby lock said cap member in place and preclude said cap member from being removed from said nozzle;

wherein, when said cap member is in place on said gas outlet nozzle and said at least one projecting lock portion is in said second unlocking position, said at least one projecting lock portion no longer projects into said nozzle receiving recess so as to no longer be in interfering relation with any of said plurality of serrations on the exterior of said gas outlet nozzle, so as to thereby permit said cap to be removed from said nozzle; and

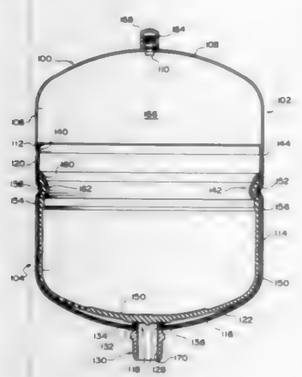
wherein said cap member further comprises an access passageway in said peripherally disposed main body portion, which access passageway is shaped and dimensioned to removably receive a co-operating key member therein, so as to permit access by said key member to said at least one projecting lock portion of said lock member, to thereby allow said key member to contact and thereby move said at least one projecting lock portion from its first locking position to its second unlocking position.

5,386,925

EXPANSION TANK

Joseph A. Lane, Taunton, Mass., assignor to Amtrol Inc., West Warwick, R.I.

Filed Jun. 21, 1993, Ser. No. 78,837
Int. Cl.[6] F16L *55/04*
U.S. Cl. 220—530 2 Claims



1. An expansion tank comprising:

a pair of hollow body members, each hollow body member having an end wall and a tubular side wall having an end portion, said end portions of the tubular side walls being in end to end relation;

a continuous retaining ring having a first peripheral portion and a second peripheral portion, said end portions of the tubular side walls being united to said first peripheral portion so as to form a tank, said second peripheral portion being located interior to said first peripheral portion, the first peripheral portion of the retaining ring having an outward extending peripheral protrusion which aligns with the end portions of the tubular side walls of the hollow body members, said outward extending peripheral protrusion not being a weld; and

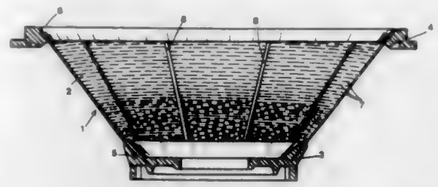
a flexible diaphragm in and spanning said tank and having a peripheral portion in peripheral engagement with the end portion of the tubular side wall of one of the hollow body members, the second peripheral portion of the retaining ring engaging and holding the peripheral portion of the diaphragm in peripheral engagement with said side wall, the end region of the diaphragm having a continuous bead, said end portion of the tubular side wall of one of the hollow body members having a continuous outward facing groove which corresponds with said bead of the diaphragm, and the second peripheral portion of the retaining ring having a continuous outward facing groove which corresponds and mates with said bead of the diaphragm, thereby securing the diaphragm and a liner to the tubular side wall in a liquid-tight sealing manner.

5,386,926

BASKET FOR DOMESTIC CENTRIFUGE AND PROCESS FOR THE MANUFACTURE OF SUCH A BASKET

Michel R. M. Assier, Alencon, France, assignor to Moulinex (Societe Anonyme), Bagnolet, France

Filed Jun. 2, 1993, Ser. No. 71,388
Claims priority, application France, Jun. 5, 1992, 92 06886
Int. Cl.[6] B01D *29/00*
U.S. Cl. 220—676 9 Claims



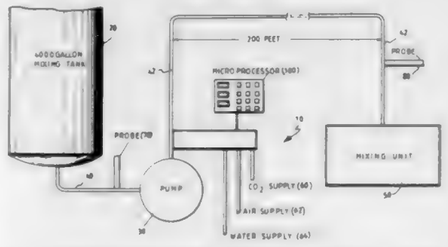
1. A basket for a domestic centrifuge comprising: a screen (2) of plastic material which forms a surface of revolution, said screen comprising an outer surface and an inner surface and having fine perforations (7, 10, 10') extending through said surface of revolution, said fine perforations having been obtained by a process of mechanical cutting out and having borders with sharp edges which extend radially inwardly from said inner surface, said screen further comprising two annular reinforcing rings (3, 4) disposed on circular borders of the basket.

5,386,927

APPARATUS AND METHOD FOR SYRUP FLOW LINE CLEARING

Adolf Janssen, 150-59 Hoover Ave., Jamaica, N.Y. 11432

Filed Feb. 22, 1994, Ser. No. 199,490
Int. Cl.[6] B67D *1/08*
U.S. Cl. 222—1 6 Claims



6. A method for preventing waste in a bottling operation utilizing flavored syrups comprising the steps of:

providing a dispensing tank, a syrup flow line, and a mixing chamber for the mixing of predetermined ratios of the syrup with carbonated water;

providing a pump to impel the syrup within the syrup flow line from said dispensing tank towards said mixing chamber where said pump defines a first section and a second section of said syrup flow line;

providing a pressurized gas inlet port within said second section of said syrup flow line;

providing processing means for controlling said pump, said mixing chamber, and said pressurized gas inlet port;

sensing air in said first section of said syrup flow line, indicating that the syrup supply in said dispensing tank has been depleted;

signalling said processing means of the lack of syrup in said first section of said flow line;

deactivating said pump by said processing means;

opening said pressurized gas inlet port in said second section of said flow line to allow the gas thus admitted to urge any remaining syrup towards said mixing chamber;

sensing gas in said second section of said flow line, said sensing step being performed proximate to and upstream from said mixing chamber;

signalling said processing means of the gas sensed in said second section of said flow line;

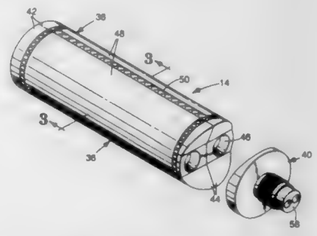
deactivating said mixing chamber, thus stopping the mixing and bottling process.

5,386,928

DUAL COLLAPSIBLE TUBE DISPENSING ASSEMBLY

Russell E. Blette, Hastings, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 15, 1993, Ser. No. 152,739
Int. Cl.[6] B65D *35/22*
U.S. Cl. 222—94 11 Claims



1. An assembly for use in a single elongated barrel of an applicator and for dispensing materials made of two or more components comprising:

a first tube having a first chamber for receiving a first component, said first tube including a first collapsible wall portion and a separate relatively rigid first end piece connected to said first collapsible wall portion, said first end piece including an outlet port in communication with said first chamber; and

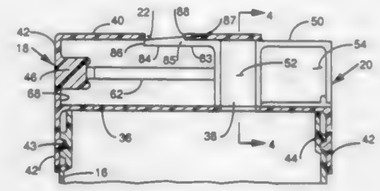
a second tube having a second chamber for receiving a second component, said second tube including a second collapsible wall portion and a separate relatively rigid second end piece connected to said second collapsible wall portion, said second end piece including an outlet port in communication with said second chamber, said first tube and said second tube being connected to one another and oriented in side-by-side relation and together forming an elongated, generally cylindrical shape, such that said first end piece and said second end piece remain next to each other as said first wall portion and said second wall portion are collapsed in a direction along the longitudinal axis of said generally cylindrical shape.

5,386,929

PORTION DISPENSING CAPS

Herbert V. Dutt, Sarasota, Fla.; Gary L. Mengeu, Wheeling, W. Va.; Frederick P. Minkemeyer, Tiltonsville, Ohio; Rodney O. Skaggs, McMechen, W. Va., and Douglas R. Ziegler, Cambridge, Ohio, assignors to Continental Plastics, Inc., Triadelphia, W. Va.

Filed Oct. 18, 1993, Ser. No. 137,423
Int. Cl.[6] B67D *5/33*
U.S. Cl. 222—153 18 Claims



14. A portion dispensing cap comprising:

a closure adapted to be secured to a container holding a material to be dispensed therefrom, said closure having (i) an inner endwall defining a first opening, (ii) an outer endwall axially spaced from said inner endwall and defining a second opening, said second opening being laterally offset from said first opening; and (iii) a skirt extending axially from at least a portion of said inner and outer endwalls; and

a sliding member comprising:

a sliding member-body portion defining a portion control chamber and an enclosed space, said enclosed space being formed by a plurality of walls, at least one of said walls being hingedly connected to an adjacent said wall, said hingedly connected wall having a free end opposite said hingedly connected portion, said enclosed space being formed by moving said hingedly connected wall from an open position wherein said free end is unattached to any of said walls to a closed position wherein said free end engages an adjacent said wall to form said enclosed space;

said sliding member being movable between said inner endwall and said outer endwall of said closure from a loading position wherein said portion control chamber is generally aligned with said first opening to a dispensing position wherein said portion control chamber is generally aligned with said second opening such that material to be dispensed from said container is able to fill said portion control chamber through said first opening when said sliding member is in said loading position and only said material contained in said portion control chamber can be dispensed from said portion control chamber through said second opening when said sliding member is in said dispensing position; and

biasing means for biasing said sliding member to said loading position.

5,386,930

STORING AND DISPENSING DEVICE FOR GRANULAR FOODSTUFF, PARTICULARLY DOGFOOD

David Shani, 38, Keren Kayemet Street, Kiryat, Tivon, Israel

Filed Jul. 7, 1993, Ser. No. 88,248
Claims priority, application Israel, Jul. 15, 1992, 102515
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—185 12 Claims

1. A storing and dispensing device for granular foodstuff, comprising:

bin means for containing foodstuff, said bin means including a top portion with an opening for filling said bin means with said foodstuff,

a substantially vertical channel downwardly continued from

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said opening, said substantially vertical channel having an open bottom which forms an outlet for said foodstuff;

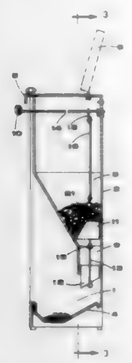
valve assembly means movable in said bin means and said channel between a bottom position thereof for preventing foodstuff from entering said channel from said bin means, and a top position thereof for permitting foodstuff to enter said channel from said bin means while preventing foodstuff from leaving said channel through said outlet, said valve assembly means including:

a substantially vertical axle adapted to be forcefully raised from a bottom position thereof to a top position thereof,

upper valve body means for normally closing an upper end of said channel, said upper valve body means being slidingly mounted on said axle,

spring means, surrounding said axle, for urging said upper valve body means in a downward direction,

lower valve body means for maintaining the bottom of said channel in an open state in a bottom position thereof, said lower valve body means being fixedly connected to a lower portion of said axle and having a



shape of a chute closely fitting into said channel and coaxially movable in said channel,

stop means, height-adjustably positioned on said axle between said upper valve body means and said lower valve body means, for adjusting the quantity of foodstuff to be dispensed at every operation of said valve assembly means; and

a valve operating mechanism including manually operated means for:

raising said axle into the top position thereof so as to open said upper valve body means upon contact with said stop means and thereby let foodstuff flow from said bin means into said channel and so as to close said channel bottom by raising said lower valve body means into said channel, and

lowering said axle into the bottom position thereof so as to close said channel by said upper valve body means and effect release of a predesignated quantity of foodstuff from said channel through an opening in said lower valve body means.

5,386,931

MATERIAL DISPENSING TOOL FOR TUBULAR CARTRIDGES

Kenneth H. Jacobsen, 921 N. Quentin Rd., Palatine, Ill. 60067, and Louis F. Cole, 672 Constitution Dr., Unit 93-5, Palatine, Ill. 60074

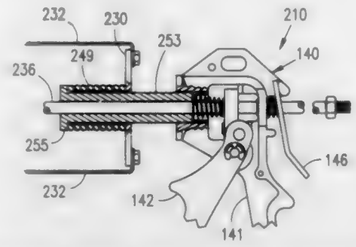
Filed Nov. 19, 1993, Ser. No. 155,425
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—327 8 Claims

1. A tool for dispensing material from a cartridge having a tubular body with a closure wall and nozzle at one end and an open opposite end closed by a wiper slidable within the tubular body, comprising the combination of

restraining and rear walls spaced apart to receive the cartridge therebetween with the closure wall against the restraining wall, a plunger sized to fit within the open end of the cartridge and against the wiper, and an elongated rod projecting forwardly and rearwardly beyond the rear wall for supporting the plunger for movement generally between the restraining and rear walls;

power means having a frame and means to manually actuate the power means including a trigger movable relative to the frame and including said elongated rod being moved incrementally relative to the frame responsive to actuation of said trigger;

linkage means coupling the power means frame and restraining wall relative to one another, said linkage means includ-



ing spaced respective maximum and minimum stops effective to limit the possible movement of the power means frame and restraining wall relative to one another between respective maximum and minimum positions of relative separation, and a spring concentrically arranged on the elongated rod operable to bias these components relative to one another, said spring being strained its minimum when the minimum stops are bottomed and being strained its maximum when the maximum stops are bottomed; and

the linkage means allowing output movement of the elongated rod relative to the power means substantially independently of the plunger movement relative to the cartridge, and providing resilient dynamic force conditions when the neither set of stops is bottomed; and the spring generating sufficient resilient dynamic forces to move the plunger forwardly within the cartridge for discharging the material from the cartridge nozzle.

5,386,932

SELF-TIGTENING, BELT-ATTACHABLE FISHING ROD HOLDER

Charles E. Gross, 112 Maxwell Dr., Bristol, Tenn. 37620

Filed Feb. 28, 1994, Ser. No. 202,739
Int. Cl.[6] A01K *97/00*
U.S. Cl. 224—200 21 Claims

1. A belt-attachable holder for a rod, comprising:

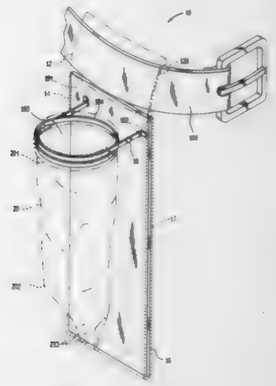
an upper portion forming an integral belt-attaching means;

a lower portion suspended from said upper portion, said lower portion including a substantially stiff planar member extending downward from said upper portion in a substantially vertical orientation;

a coil having at least one full turn sized to receive said rod therethrough when said coil is in a relaxed state, said coil further having first and second ends fixed to said stiff planar member; and

a sleeve being open at a top portion thereof and sized at said top portion to receive said rod, said top portion being made from flexible material, said sleeve terminating at a substantially closed bottom maintained in a fixed relationship to said lower portion a vertical distance below said coil, said top portion having its perimeter aligned with and supported by said at least one full turn of said coil,

wherein said rod can be inserted into said sleeve through said top portion and said at least one full turn to extend to



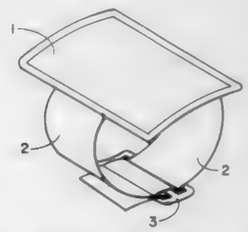
said substantially closed bottom, and wherein the weight of said rod causes said at least one full turn to tighten around said rod along with said top portion.

5,386,933

MAP MOUNTING SYSTEM FOR STRAP APPLICATION

Alan D. Greene, 62 Willow Ridge Rd., N. Andover, Mass. 01845; Phillips T. Greene, 25 Canterbury Rd., Winchester, Mass. 01890, and C. Richard Williams, 66 Captain Hills Rd., Duxbury, Mass. 02332

Filed Nov. 8, 1993, Ser. No. 148,577
Int. Cl.[6] A45F *3/14*
U.S. Cl. 224—219 2 Claims



1. A mounting system for printed matter comprised of:

a transparent sheet;

a sheet having printed matter on a front surface thereof adhered to said transparent sheet such that the printed matter can be seen through said transparent sheet;

a first strip adhered to a surface of said sheet of printed matter opposite said front surface;

a second strip positioned over said first strip;

a backing sheet overlying said second strip and adhered to said transparent sheet to thereby form a laminate sandwich which encloses said printed matter; and

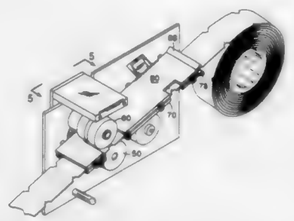
slits cut in the backing sheet and the second strip to form sleeves which are adapted to receive a wrist strap.

5,386,934

TICKET DISPENSER RETROFIT

Robert T. Lawrence, Princeton, Mass., assignor to Rachelco, Inc., Boston, Mass.

Filed Sep. 13, 1993, Ser. No. 120,933
Int. Cl.[6] B65H *17/10*
U.S. Cl. 226—181 15 Claims



1. A ticket dispenser retrofit comprising:

a feed slide having a full width that provides for snug insertion within an automated ticket dispenser, said feed slide having longitudinal guide means protruding up from said feed slide, a smooth top surface adjacent the longitudinal guide means and narrower in width than the full width of said feed slide, a first opening in an edge of the top surface near an input end of said feed slide and a second opening in the smooth top surface near an output end of said feed slide, said feed slide being insertable within an automated ticket dispenser for guiding a web of tickets on the top surface along the longitudinal guide means; and

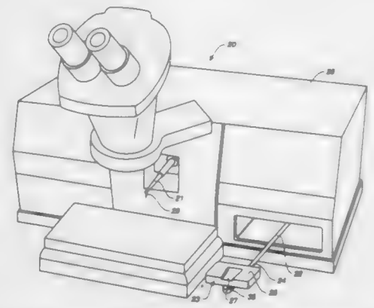
a top slide closure having a flat bottom surface for resting upon the longitudinal guide means of said feed slide, a first opening for orientation in alignment with the first opening of said feed slide and a second opening for orientation with the second opening of said feed slide.

5,386,935

CONFORMED CONTROL KNOB FOR FINGERTIP OPERATION OF A MANIPULATING LEVER

Gordon de Leon, Sunnyvale, and Mary L. Reiber, Los Altos, both of Calif., assignors to Anza Technology, Inc., Los Altos, Calif.

Filed Jul. 20, 1993, Ser. No. 94,567
Int. Cl.[6] B23K *3/02*
U.S. Cl. 228—1.1 11 Claims



1. In an apparatus having an arm to be controlled and a manipulating lever operably coupled to said arm for proportional precision movement of said arm through manual manipulation of a control knob positioned on an end of said manipulating lever, the improvement in said apparatus comprising:

said control knob including an upwardly facing and substantially planar support surface formed for supporting at least one fingertip of an operator's hand thereon, said support

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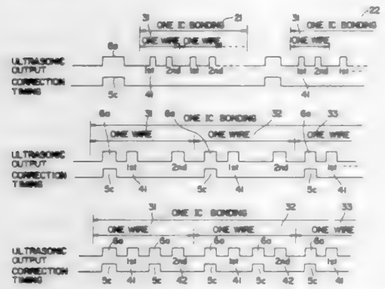
surface having a recess formed therein to receive said at least one fingertip, said surface defining said recess being sufficiently cupped and said manipulating lever being upwardly biased to transmit both lateral and vertical movement of said operator's hand to said manipulating lever.

5,386,936

WIRE BONDING METHOD

Tooru Mochida, Oume, and Yoshimitsu Terakado, Hachioji, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Aug. 11, 1993, Ser. No. 105,514
Claims priority, application Japan, Aug. 12, 1992, 4-236382
Int. Cl.[6] B23K *20/10*
U.S. Cl. 228—102 2 Claims



1. A wire bonding method for integrated circuit devices in which an ultrasonic output is corrected so that differences in transducer characteristics are corrected for, said method comprising the steps of:

initially storing in memory a first correction timing pattern for each integrated circuit device by which the ultrasonic oscillation output is corrected prior to initiation of wire bonding to a first bonding point that is done by a first bonding wire on an integrated circuit device, a second correction timing pattern for each bonding wire by which the ultrasonic oscillation output is corrected prior to the initiation of wire bonding to a first bonding point by a bonding wire, and a third correction timing pattern for each bonding point by which the ultrasonic oscillation output is corrected prior to wire bonding to a first wire bonding point and prior to wire bonding to a second bonding point which are done by a bonding wire; and

automatically correcting ultrasonic oscillation output by selecting one of said first, second or third correction timing patterns.

5,386,937

CARTON FOR HOUSING NAILS AND LIKE SHARP OBJECTS

Darwin L. Crawford, Newberry, S.C., assignor to Packaging Corporation of America, Evanston, Ill.

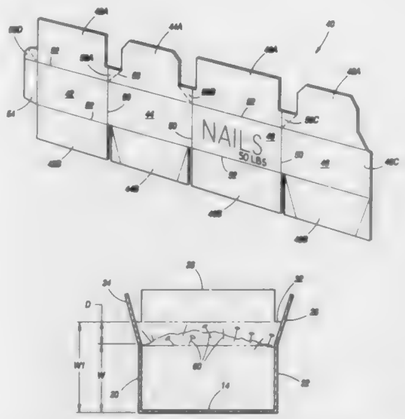
Continuation of Ser. No. 862,321, Apr. 2, 1992, abandoned. This application Mar. 4, 1993, Ser. No. 29,353
Int. Cl.[6] B65D *5/08*
U.S. Cl. 229—138 3 Claims

1. A paperboard carton formed from a uniform continuous paperboard blank for housing nails or sharp projecting objects, the carton comprising:

opposing top and bottom sides and two pairs of opposing side walls, said top side defined by a pair of opposing side closure flaps and a pair of opposing end closure flaps which extend from corresponding edges of said side walls, and wherein said side closure flaps and said end closure flaps

(i) extend outwardly beyond a vertical plane of said side walls to define an opening and facilitating filling the carton with nails or sharp objects, and

(ii) are placed into mutual engagement when said carton is closed so as to define said top side and contain said nails or sharp objects within said carton, said end closure flaps being provided with minor flaps integral therewith and attached to said side closure flaps adjacent said end closure flaps, said minor flaps extending outwardly and cooperating with said end closure flaps and said side



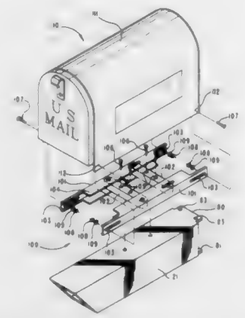
closure flaps which extend outwardly to effectively extend the depth of said carton by a predetermined amount, each of said minor flaps being provided on an end of one of said end closure flaps and connected thereto by means of an angular line of weakness whereby said minor flaps fold inwardly to overly said end closure flaps, when said carton is closed, so that said top side is defined by said mutual engagement of said side closure flaps and said end closure flaps without being obstructed by said minor flaps.

5,386,938

MAIL BOX POST MOUNT

Ronald R. West, 545 E. 200 North, Provo, Utah 84606

Division of Ser. No. 856,639, Mar. 24, 1992, Pat. No. 5,307,598. This application Jan. 31, 1994, Ser. No. 188,799
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—39 3 Claims



1. A mail box mount comprising, a mount formed from a pair of parallel brackets wherebetween a pair of straight spaced bars are mounted at right angles to form a rectangular frame,

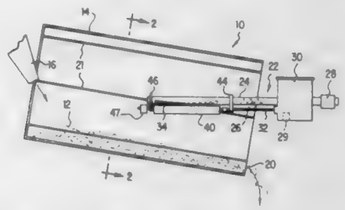
said parallel brackets each include a web member with parallel flanges extending at right angles from along web member opposite parallel edges; means for coupling each said bar ends between said parallel bracket flanges; openings formed through said parallel bracket webs for receiving fasteners that have passed through a lower edge of a mail box; and holes formed through mid-portions of each said bar each for receiving a fastener passed therethrough and into a top end portion of a square or rectangular post.

5,386,939

APPARATUS AND METHOD FOR DISTRIBUTION OF SEASONINGS AND THE LIKE FOR THE UNIFORM DISTRIBUTION OF SEASONINGS OR LIKE GRANULAR/POWDERED MATERIALS

Richard J. Ruegg, Coppell, Tex., assignor to Recot, Inc., Plano, Tex.

Filed May 30, 1991, Ser. No. 707,822
Int. Cl.[6] A23P *1/08*; B05C *19/00*
U.S. Cl. 239—7 10 Claims



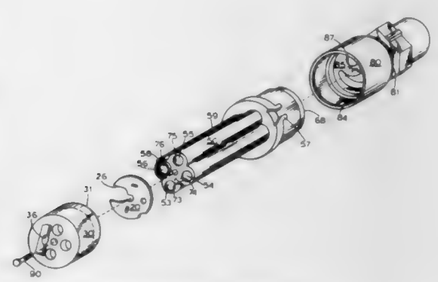
7. A method of uniformly distributing metered seasoning and like granular/powdered materials being dispensed from opening means in a metering tube, the method comprising positioning a cylindrical bar adjacent and below the opening means, contacting seasoning material falling from the opening means with the cylindrical bar, rotating the cylindrical bar at a surface speed faster than a drop speed of the seasoning material, so that a falling curtain of the seasoning material is sheared and directed by the force of the impact on the rotating bar in a generally horizontal direction to uniformly distribute the material.

5,386,940

MULTIPLE SPRAY PATTERN NOZZLE ASSEMBLY

Robert C. Berfield, Jersey Shore, Pa., assignor to Shop Vac Corporation, Williamsport, Pa.

Continuation of Ser. No. 931,597, Aug. 18, 1992, abandoned. This application Apr. 29, 1994, Ser. No. 236,665
Int. Cl.[6] B05B *1/16*
U.S. Cl. 239—394 18 Claims



1. A spray nozzle assembly comprising:

a barrel that has multiple channels through which liquid can flow and that can be moved with respect to a liquid flow so that the flow can be directed into a selected one of the channels; and

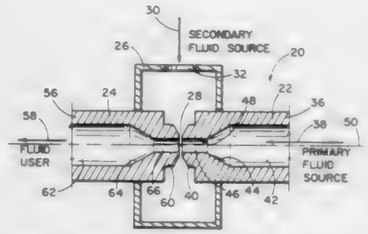
a distinctly formed, hard, flat, plate that is permanently fixed to a plate end of the barrel by rotational alignment securing means and a fastener and that has a first aperture aligned with one of the channels and configured to produce a spray of a desired pattern, and a second aperture aligned with another of the channels.

5,386,941

FLUID INJECTION DEVICE AND METHOD

Henry T. Haynes, 105 E. G St., Jenks, Okla. 74037

Continuation-in-part of Ser. No. 46,646, Apr. 13, 1993, Pat. No. 5,284,298. This application Dec. 30, 1993, Ser. No. 176,801
Int. Cl.[6] B05B *7/00*
U.S. Cl. 239—427.3 71 Claims



1. A fluid injection device for injecting a secondary fluid into a primary fluid, comprising:

(a) an upstream conduit having a first end connectable to a primary fluid source, a second end, and an upstream passageway extending through the first and second ends, the upstream passageway comprising:

an acceleration nozzle disposed in the upstream passageway for accelerating the velocity of the fluid flow so that the pressure exerted by the primary fluid on the walls of the upstream passageway is substantially reduced; and

an upstream throat, extending between the acceleration nozzle and the second end of the upstream conduit, for maintaining the accelerated velocity of the fluid flow from the acceleration nozzle;

(b) a downstream conduit having a first end connectable to a fluid user, a second end, and a downstream passageway extending through the first and second ends, the downstream passageway comprising:

a deceleration nozzle disposed in the downstream passageway for decelerating the velocity of the fluid flow; and

a downstream throat, extending between the deceleration nozzle and the second end of the downstream conduit, for receiving the accelerated fluid from the upstream throat and the injected secondary fluid, the cross-sectional areas of the downstream throat and passageway being selected to maintain the flow of the received fluids through the downstream throat at substantially the same velocity as the velocity of the primary fluid exiting the upstream throat;

(c) support means for holding the upstream and downstream conduits with the upstream and downstream throats aligned and for maintaining a gap between the upstream and downstream conduits and between the upstream and downstream throats; and

(d) a secondary fluid source connectable to the gap for injecting secondary fluid into the gap and downstream throat at a preselected higher pressure than the primary fluid exiting the upstream throat.

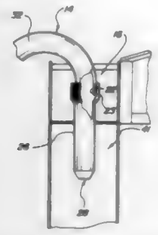
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5,386,942

ROOF GUTTER AND DOWNSPOUT CLEANER

Carroll E. Dietle, 1860 Coronada Dr., Ann Arbor, Mich. 48103

Filed Feb. 9, 1994, Ser. No. 194,349
Int. Cl.[6] B05B *1/14, 12/04*
U.S. Cl. 239—532 6 Claims



1. A cleaning device for cleaning clogged debris from elevated structures, for example gutters and downspouts, comprising

an elongated rigid tubular body having a reverse bend at an outlet end and a pressurized fluid supply coupling at an inlet end, said outlet end further providing a body outlet end coupling connector;

a flow control valve provided adjacent said inlet end in fluid communication with said tubular body at a first end and a source of pressurized fluid at a second end, said control valve operable to regulate fluid flow from said source through said tubular body and to said outlet end; and

a flow regulating outlet device having a flow nozzle and a releasable coupling connector for mating and demating with said body outlet end coupling connector;

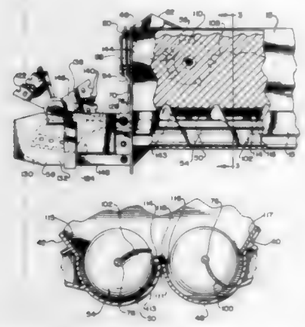
wherein said outlet device is a flexible hose having a distal end releasable coupling connector for sealably engaging with said body outlet end coupling connector and a fluid flow nozzle at a distal end for regulating pressurized fluid flow therethrough.

5,386,943

ALL PURPOSE V-SHAPED MANURE SPREADER

Kenneth J. Peeters, Bear Creek, Wis., assignor to H & S Manufacturing Co., Inc., Marshfield, Wis.

Filed Jul. 23, 1992, Ser. No. 919,363
Int. Cl.[6] A01C *15/00, 23/00*
U.S. Cl. 239—675 11 Claims



1. An agricultural implement for transporting and spreading manure, having a tank for holding the manure, the tank having a discharge end, an opposed end, a pair of inwardly and downwardly sloped sidewalls therebetween, and a lowermost conveyor trough, comprising;

auger means rotatably carried within the conveyor trough for directing manure through the conveyor trough towards the tank discharge end, the auger means including a first auger member having a first auger member rotatable longitudinal shaft and a generally spiral first auger member blade for rotation therewith including a first auger member inner blade edge operably coupled to the first auger member shaft and a first auger member outer blade edge presenting a first auger member outer circumference;

wiper means comprising a first elongated wiper bar extending generally parallel to said first auger member longitudinal shaft; and

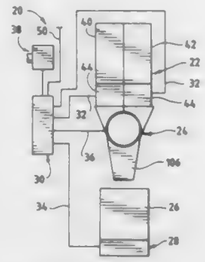
wiper mounting means for adjustably mounting the wiper bar adjacent the auger means in operable, adjustable wiping engagement with the first auger member spiral blade, whereby said wiper bar can be adjustably, laterally shifted into wiping engagement with said first auger member outer blade edge for regulating the buildup of manure on the first auger member as it rotates in the conveyor trough.

5,386,944

WEIGHT CONTROLLED GRINDER AND METHOD OF GRINDING COFFEE BEANS

John T. Knepler, Chatham; William E. Midden, and David F. Ford, both of Springfield, all of Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Feb. 17, 1994, Ser. No. 198,225
Int. Cl.[6] B02B *5/00;* B02C *9/00, 25/00*
U.S. Cl. 241—6 23 Claims



1. A method of grinding coffee beans for producing a selected weight of ground coffee comprising the steps of:

generating a selected weight signal corresponding to a selected weight of ground coffee to be produced;

dispensing coffee beans into a grinding mechanism;

discharging ground coffee from said grinding mechanism to a receptacle;

generating an actual weight signal corresponding to the weight of ground coffee collected in said receptacle;

comparing said actual weight signal to said selected weight signal during the grinding of coffee beans by said grinding mechanism;

decreasing the dispensing rate of beans into the grinding mechanism in response to a comparison of said actual weight signal and said selected weight signal as said actual weight signal and said selected weight signal achieve parity;

ceasing dispensing of coffee beans into said grinding mechanism prior to achieving said selected desired weight of ground coffee; and

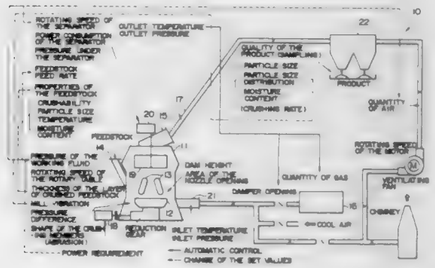
operating said grinding mechanism for a period of time after ceasing dispensing of coffee beans.

5,386,945

METHOD FOR CONTROLLING A ROLLER MILL

Kazuo Nose, Kobe; Masaki Hamaguchi, Takasago; Toshiyuki Ueda, Takasago, and Norio Fukuhara, Takasago, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 28, 1993, Ser. No. 102,988
Claims priority, application Japan, Jul. 28, 1992, 4-201312; Mar. 4, 1993, 5-043564; May 21, 1993, 5-119464
Int. Cl.[6] B02C *25/00*
U.S. Cl. 241—30 40 Claims



1. A roller mill control method which controls an operating condition of a roller mill during operation thereof by adjusting values of operating parameters of the roller mill on the basis of values of operating condition variables representing the operating condition of the roller mill, said roller mill control method comprising the steps of:

repeatedly detecting the values of the operating condition variables representing the operating condition of the roller mill;

determining new values for the operating parameters by applying changes or ratios in the values of the operating condition variables to a roller mill characteristic model representing relation between changes or ratios in the values of the operating condition variables and changes or ratios in the values of the operating parameters; and

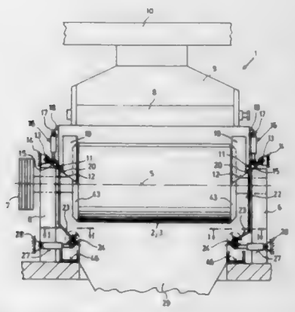
selecting new values for the operating parameters, so as to optimize the operating condition of the roller mill.

5,386,946

FLAKING MILL WITH A PRODUCT CHANNEL ON EACH OF THE AXIAL ENDS OF THE ROLLERS

Wilhelm Fetzer, Niederuzwil, Switzerland, assignor to Buhler AG, Uzwil, Switzerland

Filed Jan. 18, 1994, Ser. No. 182,821
Claims priority, application Switzerland, Jan. 20, 1993, 00159/93
Int. Cl.[6] B02C *25/00, 4/28*
U.S. Cl. 241—34 20 Claims



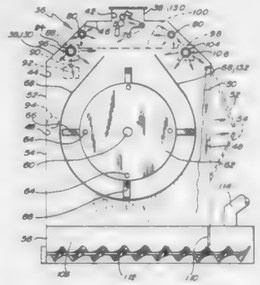
1. A flaking roller mill for processing particles, comprising at least two rollers, the rollers being pressed against one another by means of a pressure device, with each of the axial ends of the rollers, having arranged, opposite to frontal areas of the rollers, a product channel, with each of the product channels having an inclined guide surface adapted for diverting those particles which tend to flow beyond the axial length of the rollers, back to a converging gap between the rollers, wherein the guide surfaces form a portion of a movable rocker arm so that the guide surfaces are movable from an operating position into a discharge position and back into the operating position; and wherein the product channel is stationary and the rocker arm is elastically deformable and adjoins the product channel.

5,386,947

HAMMERMILL FOR REDUCED SHINGLES

James S. Omann, 11235 Park Dr., Rogers, Minn. 55374

Division of Ser. No. 27,277, Mar. 5, 1993. This application Nov. 22, 1993, Ser. No. 156,065
Int. Cl.[6] B02C *13/26, 23/24*
U.S. Cl. 241—41 14 Claims



1. An improved hammermill for reducing at production levels sticky waste materials, comprising:

(a) a housing with a materials flow inlet into a mill chamber having a ceiling and an inner wall;

(b) a curved screen spaced inward from the inner wall and in flow communication with the materials flow inlet;

(c) a plurality of rotatable coaxial discs spaced inward from the curved screen pivotally supporting between their peripheries spaced hammers which pulverize the waste materials and force the pulverized waste material through the screen;

(d) a discharge chamber below the screen to receive the pulverized waste materials from which it is removed from the hammermill; and

(e) a compressed air manifold with apertures therein within the mill chamber for intermittently discharging compressed air which impinges upon the inner wall and screen to dislodge and knock off sticky, pulverized waste materials clinging to the inner wall and screen to avoid sticking, clogging and plugging of the sticky, pulverized waste materials within the hammermill and to assist the sticky, pulverized waste materials in discharging from the hammermill.

5,386,948

BAITCASTING REEL HAVING A REMOVABLE SPOOL

Jun Sato, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jan. 25, 1993, Ser. No. 8,706
Claims priority, application Japan, Jan. 28, 1992, 4-002489[U]
Int. Cl.[6] A01K *89/0155*
U.S. Cl. 242—313 6 Claims

1. A baitcasting reel comprising:

a frame;

first and second side bodies disposed on right and left sides, respectively, of said frame;

a spool rotatably supported within said frame and between said first and second side bodies for taking up a fishing line;

VOL 1171 ISS 1 FEB 7 1995 UMI

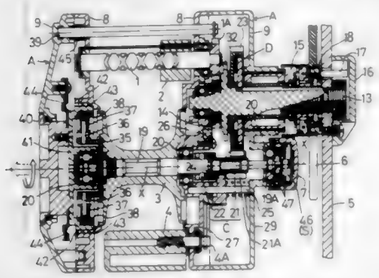
a spool shaft for rotatably supporting said spool to said first and second side bodies;

a handle supported by one of said first and second side bodies for rotating said spool in a direction to take up said fishing line;

an opening formed in at least one side face of said frame for allowing insertion and withdrawal of said spool from said frame, said opening being exposed by displacing an entire one of said first and second side bodies; and

engaging means including,

a small diameter portion defined in said spool shaft, said small diameter portion having a smaller diameter than a large diameter portion defined in said spool shaft adjacent



said small diameter portion on a side opposite to said spool, and

a restricting member provided in one of said first and second side bodies opposite said opening and adjacent to said small diameter portion, said restricting member having a portion thereof interposed between an outer face of said small diameter portion and an outer face of said large diameter portion with respect to a direction normal to an axis of said spool shaft, at least a portion of said restricting member being elastically deformable;

wherein said engaging means prevents said spool from being inadvertently withdrawn from said frame through said opening, and by a manual operation, said engaging means allows said spool to be withdrawn from said frame through said opening through elastic deformation of said restricting member.

5,386,949

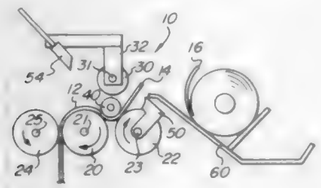
Patent Not Issued For This Number

5,386,950

APPARATUS AND METHOD FOR PREPARING INDIVIDUAL WOUND ROLLS FROM A SLITTED WEB OF MATERIAL

Richard Abt, 28 Featherbed La., Branford, Conn. 06405

Filed Jun. 8, 1992, Ser. No. 895,268
Int. Cl.[6] B65H *18/20*
U.S. Cl. 242—532 5 Claims



2. An apparatus for preparing individual wound rolls from a slitted web of material, comprising:

a driver roller which rotates about a central axis and feeds the web of material about said driver roller;

an idler roller which freely rotates about a central axis, said idler roller flanking said driver roller wherein the central axis of said idler roller lies in approximately the same plane as the central axis of said driver roller, such that the web of material is fed about said driver roller and into contact with said idler roller;

a core disposed in relation to said driver roller and said idler roller such that the web of material passes between and into contact with said driver roller and said core, and said idler roller and said core;

a tucking means for tucking the web of material about said core after the web of material has contacted said idler roller, wherein said tucking means comprises:

a first tucker which guides a leading edge of the web of material between said core and a reciprocating roller, wherein said first tucker comprises a first tucking bar extending at least the width of the web of material, said first tucking bar having a leg at each end which extends to a shaft which defines the central axis of said idler roller, such that said first tucker pivots about said central shaft to guide the web of material between said core and said reciprocating roller; and

a second tucker which guides the leading edge of the web of material between said core and said driver roller, said second tucker comprising a second tucking bar extending at least the width of the web of material, said second tucking bar mounted on an extending rod such that extension of said extending rod causes said second tucker to guide the web of material between said core and said driver roller,

wherein said first tucker and said second tucker cooperate to first guide the web of material between said core and said reciprocating roller and then guide the web of material between said core and said driver roller in order to assist in initiating winding of the web of material about said core, and

wherein each of said first tucker and said second tucker is withdrawn from its tucking position after the slitted web of material is tucked about said core;

said reciprocating roller being rotationally driven for driving said core to initiate tucking and winding of slitted web of material about said core, means for moving said reciprocating roller towards and away from said core and for rotationally driving said reciprocating roller regardless of its position with respect to said core, and wherein said reciprocating roller is drivably moved into position to drive said core immediately after said first tucker has guided the web of material between said core and said reciprocating roller, and rotatably drives said core to initiate winding of the web of the material about said core as said second tucker is guiding the web of the material said core and said driver roller.

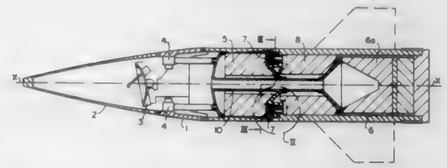
5,386,951

SPIN RATE VARIATION OF SPINNING BODIES

John E. Gaywood, Stevenage, England, assignor to British Aerospace Public Limited Company, London, England

Filed Jul. 11, 1985, Ser. No. 788,550
Claims priority, application United Kingdom, Jul. 11, 1984, 8417706
Int. Cl.[6] F42B *10/66*
U.S. Cl. 244—3.22 4 Claims

1. A body, which spins in flight about a spin axis, including a source of pressure fluid, efflux outlet means in flow connection with said source, the efflux outlet means comprising at least two nozzle members symmetrically spaced about the spin axis, each nozzle member being pivotally mounted on the body, and means responsive to the prevailing spin rate effective to pivot the nozzle members such that the effective radius centred upon the spin axis at which the thrust generated by the efflux from the nozzle members is operative can be varied whereby the torque applied to the body about the spin axis can



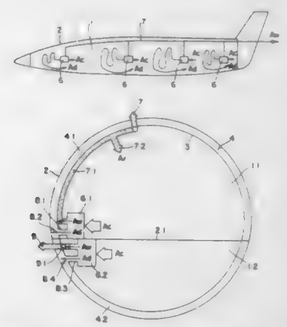
be varied without the necessity of measuring the spin rate or effecting throttling of the efflux.

5,386,952

METHOD AND MEANS TO PREVENT CONDENSATION IN MONOCOQUE STRUCTURES

Christer Nordström, Hallingstorp, S-590 54 Sturefors; Tomas Axelsson, Snickarestigen 4, S-240 13 Genarp, and Thomas White, Tryggs väg 2, S-610 55 Stigtomta, all of Sweden

PCT No. PCT/SE91/00098, § 371 Date Aug. 31, 1992, § 102(e) Date Aug. 31, 1992, PCT Pub. No. WO91/13803, PCT Pub. Date Sep. 19, 1991
PCT Filed Feb. 13, 1991, Ser. No. 923,790
Claims priority, application Sweden, Mar. 6, 1990, 9000779
Int. Cl.[6] B64D *13/00*
U.S. Cl. 244—118.1 15 Claims



1. A method of preventing condensation of water vapor from air in an intermediate space in a monocoque structure provided between and defined by an outer hermetic shell and an inner partition thereof and for removing any existing water from said intermediate space, said inner partition defining an inner space within the structure, said method comprising the steps of passing humid air from said inner space through at least one dehumidifying device so as to provide dry air having a relative humidity of less than 50%, and then passing said dry air into said intermediate space.

5,386,953

SPACECRAFT DESIGNS FOR SATELLITE COMMUNICATION SYSTEM

James R. Stuart, Louisville, Colo., assignor to Calling Communications Corporation, West Covina, Calif.

Continuation-in-part of Ser. No. 790,748, Nov. 8, 1991, abandoned. This application Aug. 18, 1992, Ser. No. 931,625
Int. Cl.[6] B64G *1/00*
U.S. Cl. 244—158 R 4 Claims

1. A spacecraft apparatus capable of being placed in a low Earth orbit using a launch vehicle (L) and also being capable of operating as one of a constellation of communications satellites in a low Earth orbit for providing communications among said constellation of communications satellites and among a plurality of portable, mobile, and fixed terminals comprising:

an antenna array (12);

said antenna array (12) including a plurality of substantially hexagonal, planar antenna panels (14) and having an interior (11) which is substantially enclosed by said plurality of substantially hexagonal, planar antenna panels (14);

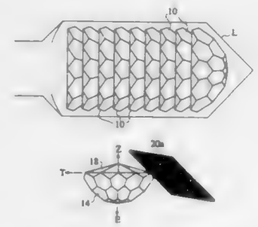
said plurality of substantially hexagonal, planar antenna panels (14) being maintained in an orbital orientation which aims said plurality of substantially hexagonal, planar antenna panels (14) generally toward the Earth's surface;

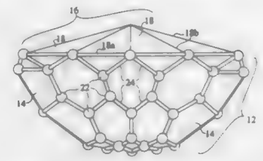
a plurality of spherical connector elements (22) and tubular connector elements (24); said plurality of spherical and tubular connector elements (22 & 24) being used to mechanically couple

said plurality of substantially hexagonal, planar antenna panels (14) in a generally contiguous pattern which approximates the contour of a partially oblate hemisphere; and

said antenna array (12) being capable of being stowed in a coaxially nested arrangement with other antenna arrays (12) for transportation in said launch vehicle (L);

a space-facing array (16);





said space-facing array (16) including a plurality of substantially polygonal, planar segments (18); each of said plurality of substantially polygonal, planar segments (18)

being maintained in an orbital orientation which aims said plurality of substantially polygonal, planar segments (18) generally away from the Earth's surface;

having a hinged boundary (18*a*); said hinged boundary (18*a*) residing generally adjacent to said antenna array (12); and

further having a plurality of movable boundaries (18*b*); each of said plurality of movable boundaries being capable of moving in a circular path toward said antenna array (12) to provide access to said interior (11) of said antenna array (12);

said space-facing array (16) also partially enclosing said interior (11) of said antenna array (12); and

a solar panel (20) for supplying power to said antenna array (12);

said solar panel (20) being capable of being stowed substantially within said interior (11) of said antenna array (12);

said solar panel (20) being capable of being deployed outside said antenna array (12) and unfurled to a fully extended position (20*b*) after said space-facing array

(16) is opened by moving said plurality of substantially polygonal, planar segments (18);

said solar panel (20) including a layer of amorphous silicon solar cells;

said solar panel (20) being mechanically connected to said antenna array (12); and

said solar panel (20) being capable of being rotated about its longitudinal axis (A) to optimize the collection of solar radiation.

5,386,954

AIRCRAFT FLIGHT PROCESS WHEN MAINTAINING THE SPEED BY ACTION ON THE ELEVATOR

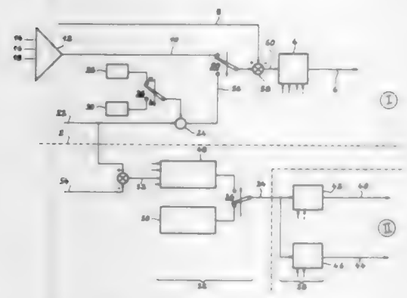
Bernard Bissey, Blagnac, and André Cazenave, Brax, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed Feb. 25, 1993, Ser. No. 23,208

Claims priority, application France, Feb. 28, 1992, 92 02388

Int. Cl.[6] B64C *13/16*; G05D *1/08*

U.S. Cl. 244—181 7 Claims



1. Process for flying an aircraft, during altitude changes, at a nominal speed within the known performance limits of the aircraft, said aircraft having an engine automation thrust instruction computer, a pilot rule computer and an elevator for autopilot control characterized in that the nominal speed is transmitted in a continuous manner to the engine thrust instruction computer with the process performed during two successive sequences, comprising:

a first sequence during which the elevator only receives an instruction to put the nose up (on climbing) or dive (on descending) and priority is given to said elevator by transmitting to the engine automatic thrust instruction computer a nominal speed equal to or higher than the instantaneous speed of the aircraft on climbing, or equal to or below the instantaneous speed of the aircraft on descending, so that said thrust continuously increases on climbing or continuously decreases on descending until the maximum thrust is obtained in the first case and the minimum thrust in the second and

a second sequence, following the first, during which the real nominal speed is supplied to the elevator instruction computer and said same nominal speed, increased (when climbing) or decreased (when descending) by a margin is supplied to the automatic thrust instruction computer.

5,386,955

CONTROL OF FLUID FLOW

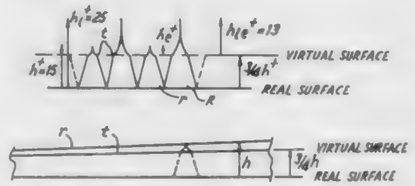
Anthony M. Savill, Cambridge, England, assignor to Rolls-Royce plc, London, England

Continuation-in-part of Ser. No. 670,520, Mar. 18, 1991, abandoned, which is a continuation of Ser. No. 493,450, Mar. 14, 1990, abandoned, which is a continuation of Ser. No. 372,153, Jun. 27, 1989, Pat. No. 4,930,729, which is a continuation of Ser. No. 52,867, May 22, 1987, abandoned. This application Nov. 14, 1991, Ser. No. 794,372

Claims priority, application United Kingdom, May 22, 1986, 8612485; May 22, 1986, 8612486; May 22, 1986, 8612487; Mar. 19, 1987, 8706554

Int. Cl.[6] B64C *21/10*

U.S. Cl. 244—200 25 Claims



1. An aerodynamic or hydrodynamic wall surface provided with a series of elongate projections extending in the direction of fluid flow relative to the surface to modify the interaction of a boundary layer of said flow with said surface, said projections comprising spaced larger height projections between each successive pair of which are a plurality of smaller height projections, whereby in operational use the smaller height projections inhibit turbulent eddy motions in the boundary layer from penetrating deep between adjacent projections, and whereby in operational use the larger height projections constrain spanwise distribution of streaks in the boundary layer.

5,386,956

ADJUSTABLE WRIST SUPPORT FOR USE WITH OFFICE MACHINES HAVING A KEYBOARD

David M. Hatcher, Buffalo, N.Y., assignor to Posting Equipment Corporation, Buffalo, N.Y.

Filed Mar. 18, 1993, Ser. No. 33,335

Int. Cl.[6] B43L *15/00*

U.S. Cl. 248—118 20 Claims



1. A hand support device positionable on a support surface and adapted for use by a user seated adjacent to a front edge of the support surface for supporting the user's hands in a comfortable position while the user works at the work station, which comprises:

(a) a pair of spaced apart support means each having a plurality of correspondingly similar sides that are positionable on the support surface, wherein a cross-section of each of the support means normal to a first axis of the hand support device, which first axis is generally parallel with and spaced from the front edge of the support surface, is selected from the group consisting of a parallelogram and a convex polygonal with the first axis comprising a central axis of the pair of support means when the cross-section is the parallelogram; and

(b) an elongate hand rest means extending to and supported between the pair of support means, the hand rest means being spaced a sufficient vertical height above the support surface and being aligned along the first axis when the cross-section of the support means is the convex polygonal and aligned along a second axis that is spaced from and parallel with respect to the first axis when the cross-section of the support means is the parallelogram and wherein the hand rest means is rotatable about the first axis of the convex polygonal and about the second axis of the parallelogram by appropriate rotational movement of the hand rest means about a rotation means connected between the hand rest means and the support means to provide for adjusting an angle of inclination of the hand rest means and wherein the hand support device is rotatable about the respective first axis of the convex polygonal and about the second axis of the parallelogram to provide for adjusting the vertical height of the hand rest means with the pair of support means positionable on the support surface on one of their various correspondingly similar sides to thereby provide the comfortable hand position when the hands are supported on the hand rest means.

5,386,957

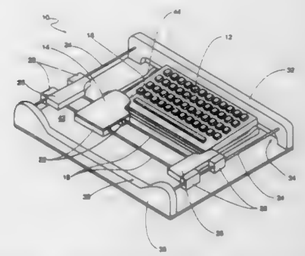
HAND GLIDING SUPPORT

George V. Miller, 704 Vassar, SE., Albuquerque, N. Mex. 87106

Filed Sep. 7, 1993, Ser. No. 116,748

Int. Cl.[6] B43L *15/00*

U.S. Cl. 248—118.5 2 Claims



1. Apparatus for supporting and positioning a hand of a user over a computer keyboard, comprising:

support means operably configured for supporting said hand while enabling a selected digit on said hand to extend beneath said support means for contacting said keyboard;

first glider means for moving said support means parallel to said keyboard;

second glider means for moving said support means perpendicular to said keyboard; and

a frame for supporting said first and second glider means for movement of said support means above said keyboard, where said frame includes a first member parallel to said keyboard and defining a surface lower than said support means for support said arm during movement of said hand over said keyboard.

5,386,958

FEEDING TUBE SUPPORT APPARATUS

Albert R. Amato, 299 Hawthorne Ave., Uniondale, N.Y. 11553

Filed Jun. 21, 1993, Ser. No. 78,924

Int. Cl.[6] A47G *23/00*

U.S. Cl. 248—146 3 Claims

1. A feeding tube support apparatus, comprising,

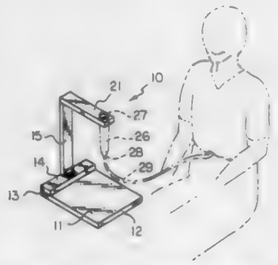
a base plate, the base plate having a base plate first end spaced from a base plate second end, and

a pedestal fixedly mounted to the base plate in adjacency to the base plate second end, and

a support legs having a support leg first end and a support second end with a first hinge mounted to the support leg first end and to the pedestal, and

first latch means secured to the support leg adjacent the support leg first end for securement of the support leg first end relative to the base plate second end, and

a further support leg hingedly mounted to the support leg second end about a second hinge, and second latch means mounted to the further support leg for securement to the further support leg in a latch arrangement relative to the support leg, and the further support leg having a support leg opening directed through the further support leg



adjacent a further support leg free distal end spaced from the further support leg latch means for receiving a feed tube through the further support leg opening, and

the first latch means includes a latch bolt slidably mounted relative to the support leg first end, and a latch bolt tube mounted to the base plate second end for receiving the latch bolt therewithin, and the second latch means includes a securement strap mounted to the support leg, the securement strap having a securement strap opening, and a lug mounted to the support leg, adjacent the support leg second end, with the lug arranged for reception through the securement strap opening.

5,386,959

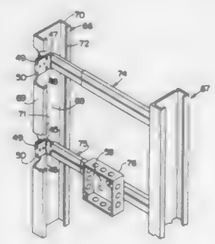
BOX SUPPORT

Raymond S. Laughlin, Cuyahoga Falls, and Martin F. Delmore, Seven Hills, both of Ohio, assignors to Erico International Corporation, Solon, Ohio

Continuation of Ser. No. 283,577, Dec. 14, 1988, abandoned. This application Jan. 15, 1992, Ser. No. 820,762

Int. Cl.[6] E04G *3/00*

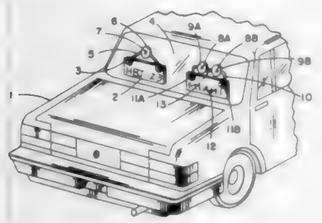
U.S. Cl. 248—205.1 26 Claims



1. An electrical box support for stud wall construction comprising telescoping overlapping struts forming an adjustable width horizontal strut assembly, each strut having a face to which the electrical box may be secured, bendable tabs on the end of each strut in the same plane as the face adapted to be shipped flat and field bent to enable the ends of each strut to be secured to studs, and means located on the tabs to facilitate the field bending of each tab at at least two different locations whereby a flange formed by the bendable tab may vary to

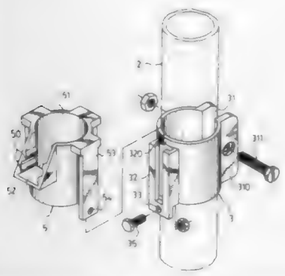
support electrical boxes of different depth substantially flush with the edges of the studs.

5,386,960
TEMPORARY HOLDER FOR LICENSE TAGS AND OTHER PLATES
Shaughn F. O'Brien, 202 Lady Susan Ct., Casselberry, Fla. 32707
Filed Sep. 28, 1992, Ser. No. 952,569
Int. Cl.[6] F16B *47/00*
U.S. Cl. 248—205.5 12 Claims



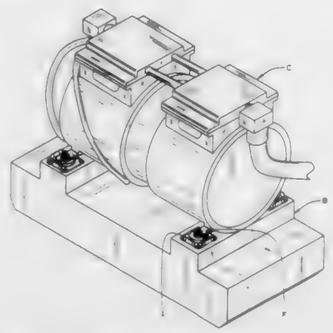
5. A holder for temporary and secure attachment of license tags and plates to a surface consisting of:
two suction cups, each having a neck and a cup portion for attachment to the surface;
a wire attached through the neck of each suction cup such that wire extends beyond each suction cup an equal distance with a downward bend near each end of the wire;
a connecting portion on each end of the wire; and
means for connecting each end of the wire to a plate or tag.

5,386,961
MULTI-DIRECTIONAL MOUNTING UNIT FOR MOUNTING A BICYCLE LOCK ON A TUBULAR FRAME
Francisco Lu, Kaohsiung Hsien, Taiwan, Prov. of China, assignor to Interseng Hardware Company L.T.D., Kaohsiung Hsien, Taiwan, Prov. of China
Filed Apr. 26, 1993, Ser. No. 52,715
Int. Cl.[6] A47F *5/00*
U.S. Cl. 248—223.4 6 Claims



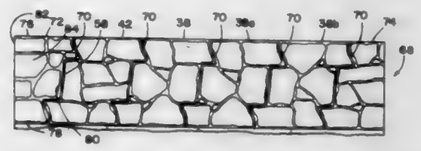
1. A multi-directional mounting unit for mounting a bicycle lock on a tubular frame, said bicycle lock including an elongated lock body and a U-shaped shackle, said mounting unit comprising:
a tubular mounting part formed with an axially extending slit and a spaced pair of outward flanges disposed on two sides of said slit, said mounting part further having a screw fastener that extends across said outward flanges so as to secure tightly said mounting part on said tubular frame; and
a separate tubular retaining part which confines a receiving space to receive one end of said lock body therein, said retaining part having a retaining notch that extends from a top edge to an intermediate part thereof, each of two opposite side walls that confine said retaining notch being provided with a spaced pair of rounded stop projections for retaining said shackle in said retaining notch;
one of said mounting part and said retaining part having an outer wall surface which is formed with at least one axially extending positioning rail that confines a longitudinal slide groove therein;
the other one of said mounting part and said retaining part having an outer wall surface which is formed with at least one axially extending insert projection, a selected one of said insert projections being inserted into a selected one of said positioning rails so as to secure said retaining part on said mounting part.

5,386,962
SHOCK AND VIBRATION ABSORBING MOUNTS
Kyle Adriance, St. Charles; Charles D. Kimbro, O'Fallon, and Douglas A. Webb, St. Peters, all of Mo., assignors to Puritan Bennett Corporation, St. Charles, Mo.
Filed Nov. 15, 1993, Ser. No. 151,738
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—624 7 Claims



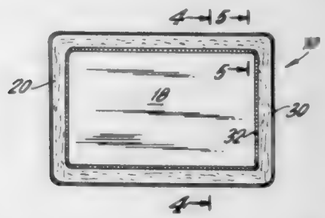
1. A mount for a device which sits on a base, the mount being securable to the base and the device sitting on the mount, the mount including:
a top surface which is securable to a base and defining a well having a floor, said well floor defining an opening;
a pair of generally perpendicular walls extending upwardly from said top surface;
a shaft received in said well and extending through said well floor opening and above said upper surface, said shaft including a lower flange forming means position below said well floor and having a diameter greater than said hole, an upper flange positioned above said top surface and having a diameter greater than said well, and a spring position between said well floor and said top flange;
means for securing said device to said mount above said top flange; and
said shaft defines an upper shoulder and includes an upper, threaded end extending above said upper shoulder, said upper flange comprising a washer means which sits against said upper shoulder and is held in place by a threaded means.

5,386,963
FORM LINER
Peter A. Nasvik, West St. Paul, Minn., and Paul C. Nasvik, Hudson, Wis., assignors to Concrete Design Specialties, Inc., St. Paul, Minn.
Division of Ser. No. 611,179, Nov. 7, 1990, Pat. No. 5,232,646.
This application Jun. 30, 1993, Ser. No. 85,963
Int. Cl.[6] B28B *7/36*
U.S. Cl. 249—16 12 Claims



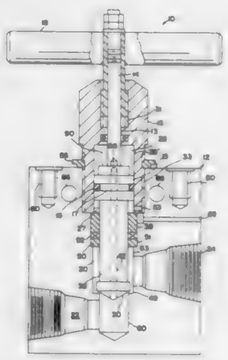
6. A gang form liner for use in forming a wall having a natural stone wall contour from hardenable construction material comprising:
a) first and second form liners each having:
i) a first non-linear mating edge; and
ii) a lateral relief mold face surrounded at least partially by said first non-linear mating edge, said first non-linear mating edge being contiguous with said lateral relief mold face, said first non-linear mating edge forming an edge of said lateral relief mold face, said lateral relief mold face including a plurality of interlocking contoured relief portions adapted to provide said natural stone wall contour, said interlocking contoured relief portions including:
A) first surface portions having contours adapted to form interlocking mortar regions; and
B) second surface portions having contours adapted to form non-planar stone regions said second surface portions at least partially surrounded by said first surface portions; and
b) means for mounting each of said form liners adjacent to one another to form a gang form liner wherein said mating edge of said first liner and said mating edge of said second liner are mated to form a continuous molding surface.

5,386,964
DESK PAD COMPRISING A FIBROUS BACKING AND A SUBSTANTIALLY SMOOTH FACING
Steve Mayo, Bronx, N.Y., assignor to Artistic Desk Pad & Novelty Co., Inc., Bronx, N.Y.
Filed Jan. 27, 1993, Ser. No. 9,625
Int. Cl.[6] A47B *91/00*
U.S. Cl. 248—346 3 Claims



1. A desk pad for use on a writing surface comprising;
a fibrous backing layer, a substantially smooth facing layer, the backing layer and facing layer being bonded to one another peripherally and bonded at a distance inwardly from the peripheral bond to form a bond ring which is concentric to said peripheral bond to thereby form a central zone having a central pocket and a peripheral zone having a peripheral pocket;
a central filler disposed within and substantially filling said central pocket which comprises a relatively rigid top layer positioned below said smooth facing layer and a compressible base layer positioned below said rigid top layer;
a peripheral filler disposed within and substantially filling said peripheral pocket which comprises a compressible top layer positioned below said smooth facing layer, and a relatively rigid base layer positioned below said compressible top layer;
wherein the rigid top layer of said central zone is of the same material as the rigid base layer of said peripheral zone, and the compressible base layer of the central zone is of the same material as the compressible top layer of the peripheral zone such that the peripheral zone provides a soft support for a writer's arm while the central zone provides a firm writing support.

5,386,965
HIGH PRESSURE FLOW VALVE WITH PRESSURE ASSIST VALVE SEAL
Francis V. Marchal, Erie, Pa., assignor to Ber-Lo Manufacturing Company, Inc., Erie, Pa.
Filed Jun. 4, 1993, Ser. No. 70,905
Int. Cl.[6] F16K *39/02*
U.S. Cl. 251—282 22 Claims



1. A high pressure control valve comprising a valve body, a stem, a piston on said stem, a gland and operating means attached to said stem;
said valve body having a central bore terminating therein, an inlet and an outlet;
said central bore having a counterbore,
said counterbore terminating in a valve seat;
said inlet being connected to said central bore;
said outlet being connected to said counterbore with said valve seat between said inlet and said outlet;
said central bore being disposed between said inlet and said outlet connecting said inlet to said outlet;
said gland being attached to said valve body;
said gland having a bore;
a pressure assist chamber in said gland communicating with said central bore;
said stem extending through said bore of said gland into said pressure assist chamber and to said inlet;
said stem having a stem tip made of a material having substantially the properties of resiliency of polyamide thereon adapted to engage said valve seat thereby stopping flow of fluid from said inlet to said outlet;
said piston being disposed in said pressure assist chamber and sealingly engaging said gland;
a part of said stem tip being adapted to be engaged by fluid in said inlet urging said stem away from said valve seat by a force of fluid under pressure; and,

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a communication port in said stem connecting said inlet through said stem to said pressure assist chamber whereby said fluid from said inlet communicates with said pressure assist chamber and fluid pressure from said inlet exerts a pressure on said piston urging said stem tip toward said valve seat with a force approximately equal to said force urging said stem away from said valve seat; and,

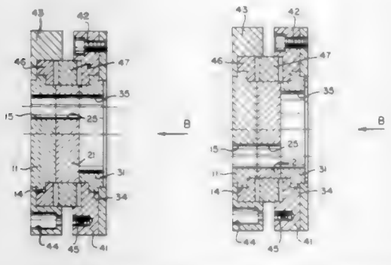
a spring is connected to said stem urging said stem toward said valve seat whereby a resultant closing force is exerted on said stem.

5,386,966

ROTARY SLIDE VALVE FOR METALLURGICAL VESSELS

Rolf Gosch, Thalheim Bei Wels, Austria, assignor to EB Bruhl Aluminiumtechnik GmbH, Brühl, Germany

Filed Feb. 15, 1994, Ser. No. 197,382
Claims priority, application Germany, Feb. 16, 1993, 4304621
Int. Cl.[6] F16K 5/00
U.S. Cl. 251—304 18 Claims



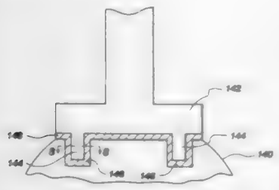
1. A valve, particularly a discharge valve for metallurgical vessels, comprising a plurality of valve elements including two which are shiftable relative to one another, each of said valve elements having an opening for the passage of fluid therethrough, and a selected valve element of said plurality being movable between a first position and a second position, said openings being arranged so that, in each of said positions, the openings of all valve elements can be in register and, alternatively, at least two openings can be out of register.

5,386,967

BALL VALVE COUPLING

Dan O. Enniss, Sandy; Robert E. Gooch, Orem, and Stephen R. Chipman, Provo, all of Utah, assignors to Valtek Incorporated, Springville, Utah

Filed Jun. 21, 1993, Ser. No. 80,281
Int. Cl.[6] F16K 5/06
U.S. Cl. 251—315.04 15 Claims



1. A coupling for use in a fluid control valve having a fluid control element which controls the flow of fluid through the valve by rotation of the fluid control element about an axis, the fluid control element having a perimeter, the valve further comprising a shaft which is actuated to cause rotation of the fluid control element, the coupling functioning for transmitting the torque applied to the shaft to the fluid control element via an interface, the interface having a first side and a second side, the coupling comprising:

a first interengaging means for fixing the first side and the second side in a fixed relationship such that as the first side is rotated the second side rotates in the direction of the first side, the first interengaging means comprising a first protrusion and a complementary and opposing first depression such that the first protrusion is received into the first depression;

a second interengaging means for fixing the first side and the second side in a fixed relationship such that as the first side is rotated the second side rotates in the direction of the first side, the second interengaging means comprising a second protrusion and a complementary and opposing second depression such that the second protrusion is received into the second depression;

cushion means interposed between the first protrusion and the first depression and between the second protrusion and the second depression;

wherein the first interengaging means and the second interengaging means are each positioned away from the axis such that as torque is applied to the shaft the flow control element rotates without breakage.

5,386,968

AIRCRAFT WING DE-ICERS WITH IMPROVED HOLDOVER TIMES

David A. Coffey; Samir S. Ashrawi, and Edward C. Nieh, all of Austin, Tex., assignors to Texaco Chemical Inc., White Plains, N.Y.

Filed Oct. 21, 1993, Ser. No. 139,138
Int. Cl.[6] C09K 3/18
U.S. Cl. 252—70 15 Claims

1. A de-icing composition comprising:

at least 45 wt. % of an alkylene glycol component;

a nonionic alkylphenol ethoxylate surfactant; and

about 0.001 to about 0.01 meq/g of an alkylaryl sulfonate hydrotrope, where the alkyl group has six carbons or less;

where said deicing composition excludes a thickener;

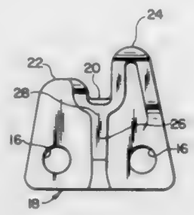
where the de-icing composition exhibits Newtonian rheology.

5,386,969

PLASTIC LOAD REST FOR A JACK

David J. Popowich, Toronto, Canada, assignor to Ventra Group Inc., Ontario, Canada

Filed May 19, 1994, Ser. No. 246,080
Int. Cl.[6] B66F 3/12
U.S. Cl. 254—133 R 1 Claim



1. An integral plastic load rest to be fastened to an upper portion of a pantograph jack comprising:

a laterally extending channel sized to engage a downwardly projecting vehicle lip, said channel lying between a low shoulder and a high shoulder to assist in location of the channel under said vehicle lip;

first and second flanges spaced apart laterally to bracket a saddle portion of said upper portion of a jack, each said flange having a pair of holes to receive fasteners to connect the load rest to said saddle and each said flange having a central, outwardly extending buttress underlying said channel;

a reinforced seat centrally positioned under said channel to transfer vehicle load to the saddle of the jack; and

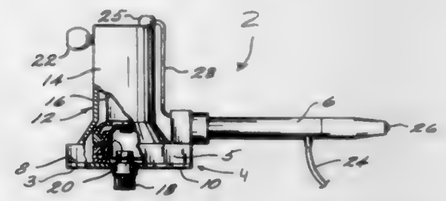
clearance gaps positioned on either side of said seat under said channel to permit jack gear teeth to turn under said load rest.

5,386,970

PORTABLE WINCH POWER DRIVE

Carl Trant, Rte. 20, Palmer, Mass. 01069

Filed Feb. 14, 1990, Ser. No. 479,649
Int. Cl.[6] B66D 1/00
U.S. Cl. 254—362 16 Claims



1. A power handle for operating a marine winch, said winch having a capstan mounted for rotation about a central axis; and said capstan including a socket for receiving a star stub to removably secure a winch handle to the capstan comprising:

a housing including a flat plate having a top surface and an opposed bottom surface and having a bore through the plate from the top surface to the bottom surface;

drive means operatively associated with said housing for rotating said capstan relative to said housing, said drive means secured to the top surface of the plate, said drive means including star stub output means, extending from the drive means through the bore and projecting beyond the bottom surface of the plate, for removably securing the power handle to the capstan; and

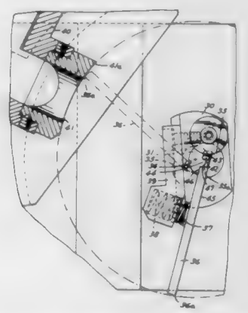
handle means for manually securing said housing to prevent rotation of the housing relative to the central axis.

5,386,971

PLASTIC PELLET DELIVERY SYSTEM AND METHOD OF USE

Keith W. Ingram, Holland, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Jul. 22, 1993, Ser. No. 95,463
Int. Cl.[6] B29C 47/08
U.S. Cl. 264—148 5 Claims



4. The method for providing delivery of a pellet comprising providing an extruder nozzle comprising a body having an orifice through which an extrudate is delivered and an arcuate concave substantially cylindrical surface intersected by said orifice,

providing a rigid cutting blade having a free edge,

providing a rotating shaft rotatable about an axis parallel to the axis of the cylindrical surface,

mounting said rigid cutting blade on said shaft such that a free edge of said cutting blade is moved past said orifice surface and engages said surface,

providing a resiliently supporting means for said rigid cutting blade on said shaft wherein said blade has limited angular movement circumferentially along its free edge which engages said surface and is yieldingly urged in a direction corresponding to the direction of rotation of the shaft such that when the shaft is rotated, said blade is rotated,

supplying extrudate through the orifice of said nozzle,

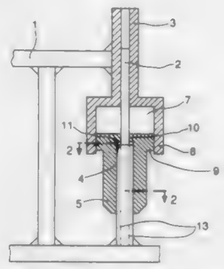
rotating said shaft such that said surface is engaged by the free edge of the cutting blade and the cutting blade is deflected angularly with respect to said shaft in the direction opposite to the direction of rotation and the free edge moves radially inwardly to conform to the arcuate cylindrical surface and sever a pellet from the extrudate.

5,386,972

SPRING ARRANGEMENT FOR A WHEELCHAIR

Peter Hoehner, Stemshorn; Josef Dultmeyer, Steinfeld, and Michael Wahle, Wachenheim, all of Germany, assignors to Elastogram GmbH, Lemforde, Germany

Filed May 14, 1993, Ser. No. 60,973
Claims priority, application Germany, May 27, 1992, 4217536
Int. Cl.[6] F16M 7/00; A61G 5/02
U.S. Cl. 267—140 3 Claims



1. A spring arrangement in combination with a wheelchair said wheelchair comprising a frame and a wheel axle, said spring arrangement comprising a spring element with a progressive force-deflection characteristic, good damping and the ability to absorb high specific forces, which is connected on the one hand via a support to the frame of the wheelchair and on the other hand via a supporting tube acting as a bearing support to the wheel axle, wherein both the support on the frame side and the bearing support on the axle bearing side are tubular parts and, like the spring element, are arranged coaxially with respect to a guide rod fastened on frame members, said guide rod having, in the region where it passes through the bearing support, a non-circular cross-section, the bearing support being axially movable and rotationally immovable due to its being closely adapted to the non-circular cross-section of the guide rod, and the superposed supports enclosing the spring element received in a pot-shaped widening of the support on the frame side, said pot-shaped widening closely overlapping at least part of the bearing support so as to close the spring element off from the outside.

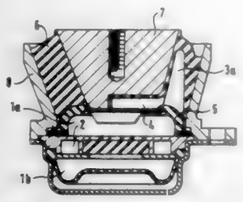
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5,386,973

ELASTOMERIC BEARING

Heinrich Breuner, Ahrweiler, and Heinrich Meyer, Königswinter, both of Germany, assignors to BOGE AG, Eitorf, Germany

Filed May 17, 1993, Ser. No. 62,284
Claims priority, application Germany, May 15, 1992, 4216185
Int. Cl.[6] F16F *9/10*
U.S. Cl. 267—140.13 5 Claims



1. A hydraulically damped elastomeric bearing for damping transmission of vibrations between a first object and a second object, said bearing comprising:

first attachment means for attaching said bearing to the first object;

second attachment means for attaching said bearing to the second object;

means for connecting said first attachment means to said second attachment means;

said means for connecting comprising cavity means therein;

said bearing comprising within said cavity means:

first hydraulic damping means for damping transmission of vibrations in a first direction; and

second hydraulic damping means for damping transmission of vibrations in a second direction;

said first hydraulic damping means being configured to be substantially independent from said second hydraulic damping means;

said second hydraulic damping means being configured to be substantially independent from said first hydraulic damping means; and

said first direction being disposed at a substantial angle from said second direction;

said first hydraulic damping means comprises:

a first fluid chamber;

a second fluid chamber separate from said first fluid chamber;

damping fluid disposed within each of said first fluid chamber and said second fluid chamber; and

a first connecting passage fluidly connecting said first fluid chamber to said second fluid chamber for flow of damping fluid between said first fluid chamber and said second fluid chamber;

said first fluid chamber and said second fluid chamber of said first hydraulic damping means being substantially aligned in said first direction;

said second hydraulic damping means comprises:

a third fluid chamber;

a fourth fluid chamber separate from said third fluid chamber;

damping fluid disposed within each of said third fluid chamber and said fourth fluid chamber; and

a second connecting passage fluidly connecting said third fluid chamber to said fourth fluid chamber for flow of damping fluid between said third fluid chamber and said fourth fluid chamber;

said third fluid chamber and said fourth fluid chamber of said second hydraulic damping means being substantially aligned in said second direction;

said bearing further comprises means for separating said first and second fluid chambers of said first hydraulic damping means from said third and fourth fluid chambers of said second hydraulic damping means;

said first direction and said second direction are disposed substantially perpendicularly to one another;

said bearing defines a bearing axis disposed along said second direction;

said first hydraulic damping means and said second damping means being substantially aligned along said bearing axis;

said means for connecting said first attachment means to said second attachment means comprises an elastomeric member disposed between at least a portion of said first attachment means and at least a portion of said second attachment means;

said elastomeric member comprises said first fluid chamber and said second fluid chamber of said first hydraulic damping means therein;

at least a portion of said second attachment means is disposed radially around said bearing axis forming an interior space within said second attachment means, said second attachment means comprising an interior surface disposed towards said interior space;

at least a portion of said first attachment means is disposed concentrically within said interior space of said second attachment means, said at least a portion of said first attachment means defining an exterior surface disposed towards said second attachment means;

said elastomeric member is disposed concentrically between said interior surface of said second attachment means and said exterior surface of said at least a portion of said first attachment means within said interior space of said second attachment means;

said at least a portion of said first attachment means disposed within said interior space has a first side portion and a second side portion disposed diametrically opposite one another in said first direction;

one of said first fluid chamber and said second fluid chamber of said first hydraulic damping means being disposed adjacent one each of said first side portion and said second side portion of said at least a portion of said first attachment means between said exterior surface of said at least a portion of said first attachment means and said interior surface of said second attachment means;

said at least a portion of said first attachment means disposed within said interior space further comprises a base portion extending from said first side portion to said second side portion;

said base portion comprises channel means therein extending from said first fluid chamber to said second fluid chamber of said first hydraulic damping means, said channel means forming at least a portion of said first connecting passage connecting said first fluid chamber to said second fluid chamber of said first hydraulic damping means;

said first fluid chamber, said second fluid chamber and said first connecting passage are open in the vicinity of the base portion of said at least a portion of said first attachment means within said interior space;

said means for separating comprises a first surface disposed towards said first hydraulic damping means, and a second surface disposed towards said second hydraulic damping means;

said base portion of said at least a portion of said first attachment means within said interior space is disposed in contact with said first surface of said means for separating;

said first surface of said means for separating defines at least a portion of each of said first fluid chamber, said second fluid chamber and said first connecting passage;

said third fluid chamber of said second hydraulic damping means is disposed adjacent said second surface of said means for separating;

said second connecting passage connecting said third fluid chamber to said fourth fluid chamber is disposed circumferentially about said bearing axis around at least a portion of said bearing;

said bearing further comprises partition means for separating said third fluid chamber and said fourth fluid chamber of said second hydraulic damping means;

said partition means comprises said second connecting passage connecting said third fluid chamber to said fourth fluid chamber;

at least one of: the first fluid chamber, the second fluid chamber, the third fluid chamber and the fourth fluid chamber additionally comprises a decoupling membrane;

said partition means further comprises said decoupling membrane, said decoupling membrane being disposed between said third fluid chamber and said fourth fluid chamber;

said fourth fluid chamber comprises a volume-compensating equalization chamber;

said first attachment means is movable axially within said second attachment means in a direction along said bearing axis

vertically, and said first direction disposed parallel to a longitudinal direction of the motor vehicle; and

an engine bearing configured for being mounted in the motor vehicle to have said second direction disposed vertically, and said first direction disposed transverse to the longitudinal direction of the motor vehicle;

said pressure activated valve in said at least one bypass passage comprises an elastomeric flap;

said first fluid chamber and said second fluid chamber are molded into said elastomeric member;

said bearing has a periphery about said bearing axis and defined by said second attachment means, and said periphery of said bearing is one of:

round; and

rectangular;

said bearing further comprises an expandable bellows disposed adjacent to, and spaced apart from said second surface of said partition means, said expandable bellows being expandable in a direction away from said partition means;

said second attachment means has a first end adjacent said first attachment means, and a second end opposite to said first attachment means;

said second end of second attachment means further comprises a protective cap spaced apart from said expandable bellows for protecting said expandable bellows and limiting expansion of said expandable bellows in said direction away from said partition means, said protective cap defining an air chamber between said protective cap and said expandable bellows;

said protective cap further comprises an opening therethrough for passage of air into and out of said air chamber for pressure equalization;

said second attachment means comprises a first peripheral wall portion defining said interior space and said protective cap, said protective cap extending away from said first peripheral wall portion;

said means for separating and said partition means each comprising a peripheral edge;

said peripheral edge of said means for separating comprising a rigid reinforcement for retaining a peripheral shape of said means for separating;

said second attachment means defining groove means between said peripheral wall portion and said protective cap adjacent said interior surface of said second attachment means;

said groove means for receiving said peripheral edge of each of said means for separating and said partition means therein;

said peripheral wall portion and said protective cap being configured to clamp said peripheral edge of each of said means for separating and said partition means therebetween in said groove means to fixedly retain said means for separating and said partition means within said bearing;

said protective cap further comprises a stepped portion, stepped inwardly towards said bearing axis adjacent said groove means;

said expandable bellows comprises a peripheral edge, and said stepped portion of said protective cap being configured to clamp said peripheral edge of said bellows between said peripheral cap and said partition means;

said partition means has a central portion disposed about said bearing axis, said central portion of said portion means having an opening therein, and said partition means comprising said decoupling membrane extending across said central opening;

said second connecting passage extends circumferentially about said decoupling membrane;

said first surface of said partition means comprises an opening connecting said third fluid chamber with said second connecting passage, and said second surface of said partition means comprises an opening connecting said fourth fluid chamber with said second connecting passage;

said means for separating additionally comprises a central portion and a peripheral portion disposed about said central portion, said peripheral portion comprising said peripheral edge and said stop means;

said central portion of said means for separating comprising a plate member;

said peripheral portion of said means for separating comprising an elastomer;

said plate member comprises a peripheral edge, and said peripheral edge of said plate member is embedded in said elastomer of said peripheral portion of said means for separating;

said peripheral portion of said means for separating being arcuate and extending from said peripheral edge away from said partition means to form said third fluid chamber between said means for separating and said partition means;

said plate member comprises said opening therethrough for passage of damping fluid between said first hydraulic damping means and said second hydraulic damping means;

said first connecting passage is configured as one of:

a straight passage extending between said fluid chambers of said first hydraulic damping means; and

a curvilinear passage extending between said fluid chambers of said first hydraulic damping means;

said second attachment means comprises flange means extending away from said bearing axis, said flange means having bores therethrough for receiving fastening means therethrough to fasten said second attachment means to one of said first object and said second object;

said first attachment means comprises block means for being disposed within said interior space of said second attachment means; towards said partition means separating said third chamber from said fourth chamber;

said second surface of said means for separating comprises stop means for limiting movement of said first attachment means towards said partition means;

said damping bearing further comprising at least one fluid bypass passage disposed at at least one of:

between said first fluid chamber and said second fluid chamber in addition to said first connecting passage, and

between said third fluid chamber and said fourth fluid chamber in addition to said second connecting passage;

said at least one bypass passage comprises a pressure activated bypass valve configured to open under a predetermined fluid pressure differential between connected chambers;

said means for separating further includes an opening therethrough for passage of damping fluid between said first hydraulic damping means and said second hydraulic damping means, said opening having a cross-sectional dimension;

said first connecting passage having a cross-sectional dimension; and

said second connecting passage having a cross-sectional dimension;

said cross-sectional dimension of said opening being substantially less than said cross-sectional dimension of said first

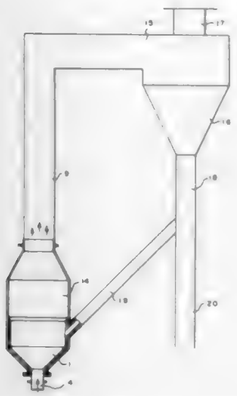
connecting passage and said cross-sectional dimension of said second connecting passage to substantially maintain said substantial independence of said first hydraulic damping means and said second hydraulic damping means.

5,386,974

APPARATUS FOR TREATING GASES AND PARTICULATE SOLIDS IN A FLUID BED

Gregory J. Hardie, East Fremantle; John M. Ganser, Attadale; Ian D. Webb, Port Kembla, all of Australia; Timo Hyppänen, Karhula, Finland; Kari Myöhänen, Karhula, Finland, and Ismo Nopanen, Summa, Finland, assignors to Hismelt Corporation Pty Limited, Kwinana, Australia and A. Ahlstrom Corporation, Karhula, Finland

Division of Ser. No. 939,917, Sep. 3, 1992, Pat. No. 5,330,556.
This application May 10, 1993, Ser. No. 58,232
Claims priority, application Germany, Sep. 25, 1991, 4131962
Int. Cl.[6] C22B *5/14*
U.S. Cl. 266—157 20 Claims



1. Apparatus for treating gases and solids in a fluid bed, comprising:

a fluidized bed reactor comprising a mixing chamber, a gas feed conduit for introducing gases into said mixing chamber in a given direction, a riser pipe for removing gases with entrained particles from said mixing chamber, and a lower conical section portion of said mixing chamber adjacent said gas feed conduit;

a particles/gas separator connected to said riser pipe;

a particles return conduit connected between said particles/-gas separator and said mixing chamber for returning separated particles to said mixing chamber; and

wherein said gas feed conduit is distinct from particles introducing conduits or means, has a length dimension (1) parallel to the direction of introduction of gases from said gas feed conduit into said mixing chamber, and a width dimension (D) perpendicular to said length dimension, and wherein $l/D > 1$, so as to prevent particles from falling from said mixing chamber into said gas feed conduit; and

wherein said lower conical section of said mixing chamber makes a cone angle with respect to said width dimension of 70 degrees or less, also so as to prevent particles from falling from said mixing chamber into said gas feed conduit.

5,386,975

GAS DIE CYLINDERS

Bernard J. Wallis, 2215 Dacosta, Dearborn, Mich. 48128

Continuation of Ser. No. 715,594, Jun. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 627,699, Dec. 14, 1990, Pat. No. 5,197,718. This application Dec. 8, 1993, Ser. No. 164,428
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[6] F16F *9/02, 9/34*
U.S. Cl. 267—119 1 Claim



1. A gas cylinder for use in a die system comprising

a one-piece cylindrical body having a base wall and a peripheral wall,

a rod having a lower end and an upper end with a portion extending upwardly into the cylindrical body and moves within said body such that the body completely encircles and encloses the upper end of the rod,

said rod having a flat base on the lower end thereof for engaging a flat surface on said die system,

said base having an outer diameter greater than the diameter of the portion of the rod that moves within the body,

said cylindrical body and said rod including interengaging means limiting axial outward movement of the cylindrical body relative to the rod,

fastener means on said base for connecting said flat base of said rod to a flat surface to said die system,

said rod being hollow,

charging valve means on said base of said rod and relief valve means on the base wall of said cylindrical body,

said fastener means comprising axial openings in said portion of said base of said rod for receiving fasteners extending through said openings into said die system.

5,386,976

HYDRAULICALLY DAMPED RUBBER ENGINE MOUNT

Axel Rudolph, Bensheim, Germany, assignor to Firma Carl Freudenberg, Weinheim/Bergstr., Germany

Filed Apr. 6, 1993, Ser. No. 43,288
Claims priority, application Germany, Jul. 9, 1992, 4222486
Int. Cl.[6] F16F *13/00*
U.S. Cl. 267—140.12 15 Claims

1. Hydraulically damping engine mount comprising

an inner support body having a central axis,

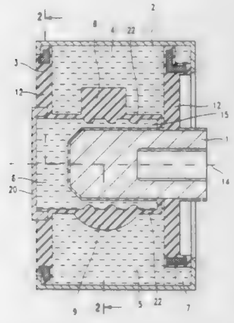
an outer support body surrounding said inner support body and spaced radially from said inner support body,

an elastomeric wall surrounding said inner support body between said inner support body and said outer support body,

a first chamber on one side of said axis between said elastomeric wall and said outer support body, said first chamber being bounded by said elastomeric wall and said outer support body,

a second chamber between said elastomeric wall and said outer support body opposite said axis from said first chamber, said second chamber being bounded elastomeric wall and said outer support body,

a third chamber between said elastomeric wall and said inner support body, said elastomeric wall bounding said third chamber and serving as a flexible diaphragm separating said first chamber from said third chamber, and as a flexible diaphragm separating said second chamber from said third chamber.



damping fluid in said first, second, and third chambers, and

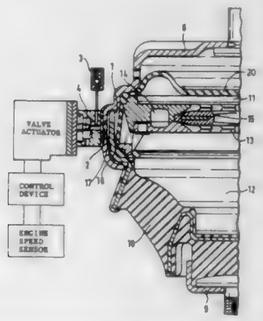
passage means connecting said first and second chambers to permit fluid transfer between said first and second chambers, said passage means being separate and distinct from said third chamber.

5,386,977

HYDRAULICALLY DAMPING ENGINE MOUNTING

Jörn-Rainer Quast, Sinzig, Germany, assignor to Boge GmbH, Bonn, Germany

Filed Nov. 16, 1993, Ser. No. 153,583
Claims priority, application Germany, Nov. 17, 1992, 4238752
Int. Cl.[6] F16F *13/00*
U.S. Cl. 267—140.13 6 Claims



1. A hydraulic damping engine mount for damping transmission of vibrations between an engine and a frame to which the engine is mounted, said mount having a damping rigidity, and said mount comprising:

first attachment means for attaching said mount to a frame;

second attachment means for attaching said mount to an engine;

at least one elastic wall disposed between and connecting said first attachment means and said second attachment means;

said first attachment means, said at least one elastic wall and said second attachment means comprise exterior surface portions of the mount and enclose an interior space within the mount, said interior space being bordered by an interior surface;

a first flexible member disposed within said interior space in spaced apart relationship from the interior surface, said first flexible member defining a first chamber within said interior space between said flexible member and said interior surface;

a fluid within said first chamber;

valve means for releasing fluid from said first chamber to increase the damping rigidity of said mount and for admitting fluid back into said first chamber to decrease the damping rigidity of said mount;

means for controlling said valve means to control release of fluid from said first chamber and control admission of fluid back into said first chamber;

said valve means being disposed immediately adjacent the exterior of said mount;

said mount defines a longitudinal axis extending through said first fastening means and said second fastening means

said mount further comprises:

partition means disposed within said interior space,

said partition means dividing said interior space into second and third fluid chambers;

damping fluid disposed within said second and third fluid chambers; and

passage means disposed through said partition means for passage of the damping fluid between said second and third fluid chambers;

said second and third fluid chambers are disposed axially adjacent one another along said longitudinal axis;

said first flexible member is disposed within said second chamber to separate said first chamber from said second charier;

said at least one elastic wall substantially surrounds said second chamber;

said mount is configured for movement of said first fastening means towards said second fastening means via said at least one elastic wall to compress said second chamber and increase pressure in said first chamber via said first flexible member;

said valve means comprises a check valve, said check valve being configured for providing one-directional flow of fluid out of said first chamber at a first predetermined fluid pressure within said first fluid chamber to evacuate said first chamber and increase the rigidity of said mount;

said valve means further comprises a control valve for admitting air back into said first chamber, said control valve having an open position and a closed position, said control valve in said closed position being configured for evacuation of said first chamber via said check valve, and said control valve in said open position being configured for admitting air back into said first chamber to decrease the rigidity of said mount;

said means for controlling comprises means for moving said control valve between said open and closed positions;

said valve means further comprises:

a first fluid passage providing fluid communication between said first chamber and the exterior of said mount;

a second fluid passage exterior of said mount and in fluid communication with said first fluid passage, said second fluid passage comprising said check valve;

a third fluid passage exterior of said mount and in fluid communication with said first fluid passage, said third fluid passage comprising said control valve; said means for moving comprises one of:

manual activation means,

electromagnetic activation means,

hydraulic activation means, and

pneumatic activation means,

for moving said control valve between said open and closed position;

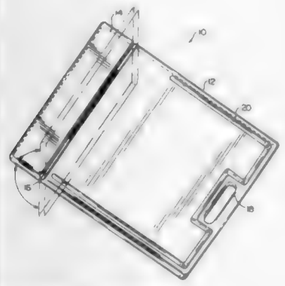
said mount comprises an engine mount for mounting an engine in a motor vehicle, the engine being configured to move the motor vehicle;

said means for controlling is configured to close said control valve at at least a first operating speed of a motor vehicle

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engine, and to open said control valve at at least an idling speed of a motor vehicle engine;
said means for controlling further comprises means for automatically opening said control valve after a motor vehicle has been stationary for a predetermined period of time;
said first chamber is disposed circumferentially about said longitudinal axis and circumferentially about at least a portion of said second chamber;
said partition comprises a second flexible member;
said first flexible member and said second flexible member each have a rigidity;
said rigidity of said first flexible member is less than the rigidity of the second flexible member for movement of said first flexible member before movement of said second flexible member;
said first flexible member is configured to be movable during evacuation of said first chamber until at least a portion of said first flexible member contacts said interior surface of said mount; and
said second flexible member is configured to be movable after said at least a portion of said first flexible member contacts said interior surface.

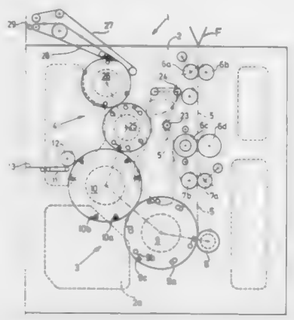
5,386,978
CUTTING BOARD
Todd O. Ladwig, 5985 Afton Rd., Excelsior, Minn. 55331
Filed Apr. 21, 1993, Ser. No. 49,325
Int. Cl.[6] A47J *43/00*
U.S. Cl. 269—289 R **1 Claim**



1. A cutting board comprising:
a. a rectangular member;
b. said rectangular member including an upper portion;
c. a lower portion;
d. a living hinge therebetween wherein said lower portion is of a smaller surface area than said upper portion;
e. having a locking tab operated about a living hinge for locking of said upper and lower rectangular portions with respect to each other; and,
f. said lower rectangular portion can be locked by said locking tab to said upper rectangular portion to provide a slanted cutting surface.

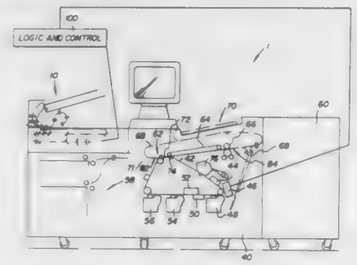
5,386,979
ROTARY FOLDING APPARATUS WITH A SPECIAL CYLINDER ARRANGEMENT FOR WEB-FED ROTARY PRINTING PRESSES
Hans Müller, Leimen, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany
Filed Mar. 16, 1993, Ser. No. 33,151
Claims priority, application Germany, Apr. 16, 1992, 4208353
Int. Cl.[6] B41L *43/08;* **B41F** *13/58*
U.S. Cl. 270—42 **16 Claims**

1. Folding apparatus for signatures having a given format and including at least a first longitudinal folding device and at least a second longitudinal folding device, as well as respective first and second cross-fold systems operatable independently of one another on respective web lengths separately fed to each thereof, each of the first and second cross-fold systems including respective pairs of signature-guiding cylinders, one of the cylinders in the second cross-fold system comprising means for cutting the respective web length fed to the second cross-fold



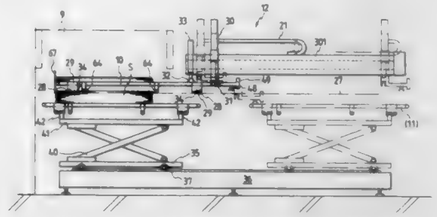
system in an operation performed independently of the first cross-fold system, and means for forming a second cross-fold in an operation performed in combination with the first cross-fold system.

5,386,980
IMAGE FORMING APPARATUS AND SHEET INVERTER PROVIDING INCREASED SHEET BEAM STRENGTH
Gregory P. Mahoney, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 16, 1994, Ser. No. 213,642
Int. Cl.[6] B65H *85/00, 29/00*
U.S. Cl. 271—3 **5 Claims**



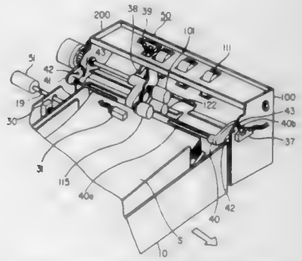
1. A sheet inverter for inverting a receiving sheet moving in an intrack direction, the receiving sheet having leading and trailing edges, said inverter comprising:
a chute for receiving the receiving sheet,
input means for feeding the receiving sheet into the chute, leading edge first,
output means adjacent the input means for feeding the receiving sheet out of the chute, trailing edge first, and
edge engaging means for engaging the leading edge of the receiving sheet in the chute as or after the sheet leaves the input means, and for pushing the sheet into the output means,
characterized in that the chute is shaped to bend the leading edge of the sheet into a crosstrack curve while the trailing edge is not curved.

5,386,981
AUTOMATIC PAPER PROCESSING METHOD AND CUT-SHEET FEED ROTARY PRESS HAVING AUTOMATIC PAPER PROCESSING APPARATUS
Seiji Sugimoto, Chiba; Takemasa Shibata, Tokyo; Yutaka Hitani, Kanagawa, and Katsunori Kadokura, Chiba, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan
Filed Dec. 11, 1992, Ser. No. 992,966
Int. Cl.[6] B65H *5/22*
U.S. Cl. 271—3.1 **23 Claims**



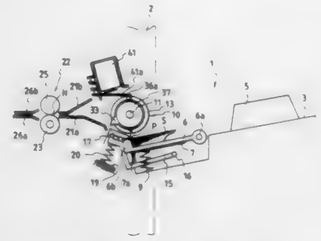
1. A method for automatically processing printed paper in a cut-sheet feed rotary printing press by a pair of successively operated receiving means, comprising the steps of:
receiving on said receiving means printed paper sheets discharged from printing units of said press at a paper discharge, one printed paper sheet on another until a predetermined number of printed sheets is received on each of said receiving means successively;
employing a first moving means to move said receiving means successively in a direction from said paper discharge to a position remote therefrom;
employing a second moving means to move said receiving means successively in a direction from said remote position to said paper discharge;
successively withdrawing said received printed paper from each of said receiving means at said remote position; and
transferring said withdrawn printed sheets from said remote position to a further processing station for performance of a further processing step on said withdrawn printed sheets.

5,386,982
PAPER FEEDING APPARATUS
Hiroshi Kawano, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Dec. 3, 1993, Ser. No. 160,805
Claims priority, application Japan, Dec. 3, 1992, 4-324327
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—10 **24 Claims**



1. A paper sheet feeding apparatus comprising:
a main body;
a movable paper tray; and
a paper holding member for restraining curling of an end portion of paper disposed in the paper tray, said paper holding member mounted on the main body, wherein said paper holding member is located at a higher position than a top end portion of paper disposed in said paper tray so as not to touch paper sheets which have no curl.

5,386,983
SHEET FEEDING APPARATUS WITH REDUCED GENERATION OF STATIC ELECTRICITY
Masao Ando, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 728,286, Jul. 11, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 44,081
Claims priority, application Japan, Jul. 13, 1990, 2-185622
Int. Cl.[6] B65H *3/06*
U.S. Cl. 271—118 **43 Claims**



1. A sheet feeding apparatus, comprising:
sheet supporting means for supporting sheets;
rotatable sheet supply means for supplying sheets supported by said sheet supporting means;
first biasing means for generating a first bias pressure between the sheets supported by said sheet supporting means and said rotatable sheet supply means;
separating means provided independently of said sheet supporting means for separating sheets supplied by said rotatable sheet supply means one by one;
second biasing means for generating a second bias pressure between said separating means and said rotatable sheet supply means;
conveying means disposed downstream of said separating means for conveying a sheet separated by said separating means; and
pressure releasing means for releasing the first and second bias pressures generated by said first and second biasing means after a sheet reaches said conveying means so that the sheet conveyed by said conveying means is not subjected to a load generated by the bias pressures.

5,386,984
SEPARATING DEVICE
Mauro Dal Toso, Rapallo; Mauro Levaro, and Michele Scarnera, both of Genoa, all of Italy, assignors to Finmeccanica S.p.A., Rome, Italy
Filed Nov. 26, 1993, Ser. No. 157,251
Claims priority, application Italy, Apr. 9, 1993, TO93A000246
Int. Cl.[6] B65H *3/52*
U.S. Cl. 271—122 **20 Claims**

1. A separating device for mail items, particularly flat, rectangular mail items, comprising:
a) first and second belts having respective first and second substantially straight portions facing each other and defining an acute angle (α);
said straight portions of said first and second belts contacting each other at a contact portion corresponding to the apex of said angle (α);
said first belt having a higher friction coefficient as compared with said second belt;
said first belt traveling in the opposite direction to said

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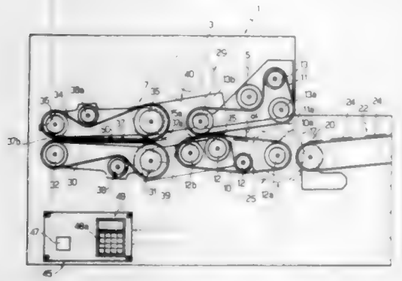
second belt by virtue of drive means, said second belt including a drive means;

said contact portion terminating in a separating portion at which said belts diverge to define a separating output;

b) a conveyor system including at least two powered belts having adjacent surfaces defining a conveyor portion extending from an input facing said separating output and at which said belts converge with each other;

said separating device adapted to receive a number of mail items into a V-shaped opening defined by said first and second straight portions;

the mail items being fed one at a time through said contact portion by said first belt and into said input of said con-



veyor system, which provides for conveying a stream of mail items having mutually spaced adjacent portions;

c) sensor means located along a path extending between said separating output and said input of said conveyor system;

said sensor means detecting at least the gap (Gi) between the items traveling along said path;

d) an electronic control unit having an input and an output, said input of said electronic control unit operably connected to said sensor means said drive means connected to said control unit output whereby said sensor means driving said drive means; and

said control unit including means for controlling the output of said drive means to adjust the operation of said first belt on the basis of information supplied by said sensor means.

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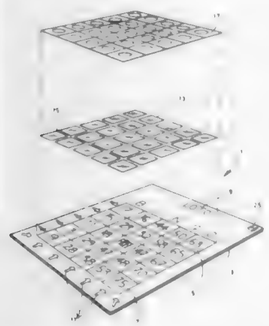
INSTANT BINGO GAME CARD

Michel Paris, St-Léonard, Canada, assignor to Les Technologies Babn Inc., Montréal, Canada

Filed Mar. 15, 1994, Ser. No. 212,853

Int. Cl.[6] A63F *3/06*

U.S. Cl. 273—269 **16 Claims**



1. An instant game card comprising:

a substrate having printed thereon at least one series of playing numbers;

an unscratchable translucent varnish applied onto said substrate so as to surround at least each of said playing numbers; and

a scratchable rub-off coating applied onto said varnish in such a manner as to surround each of said playing numbers without hiding the same;

whereby, in use, when numbers are called, scratching of said scratchable rub-off coating that surrounds the playing numbers that correspond to those that are called, allows a player to visualize the position of the playing numbers that were so called in each of said series.

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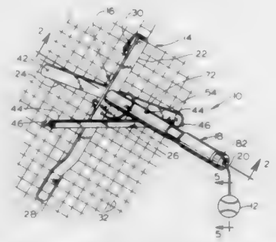
BASEBALL BATTING PRACTICE DEVICE

Ricardo Gamboa, 4323 Hauck St., Los Angeles, Calif. 90063

Filed Feb. 4, 1993, Ser. No. 13,635

Int. Cl.[6] A63B *69/40*

U.S. Cl. 273—26 E **14 Claims**



1. A system for supporting a ball in a free-swinging mode, said system the device comprising:

a chain-link fence a base and a rigid arm;

said rigid arm having a first end fixed to said base and a second end having a tether means attaching a ball thereto;

means for securing said base to said chain-link fence without the use of tools to thereby support said arm generally perpendicular to said chain-link fence, said base includes a primary support bar configured to slip between adjacent wire portions of said fence and to securely hook, thereto, a stabilizing crossbar generally perpendicular to the primary support bar, and an elastic band connected at one end to the crossbar, and connectable at a second end to a portion of the chain-link fence.

5,386,987

TWO-IN-ONE BATTING TEE

John P. Rodino, Jr., 17730 Fairview Dr., Fontana, Calif. 92336

Filed Apr. 13, 1994, Ser. No. 226,827

Int. Cl.[6] A63B *69/40*

U.S. Cl. 273—26 R **15 Claims**

1. A batting practice tee comprising:

a substantially planar standard having an overlying cover, said cover defining a periphery representative of that of a baseball home plate,

a tubular protrusion extending upwardly from said standard,

a lower post attached to said tubular protrusion,

a resilient sleeve surrounding said lower post,

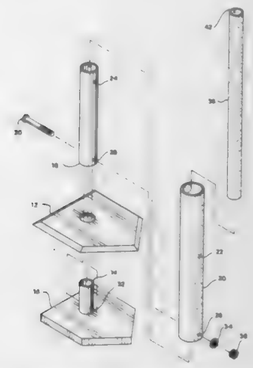
an upper post telescopically engaging said lower post, said upper post having a top end and a bottom end selectively positionable at various elevations relative said lower post,

an arm provided with an inner end opposite an outer end, said arm extending laterally of said upper post with said arm inner end affixed to said upper post top end,

a flexible tether attached to said arm outer end and having a ball suspended therefrom,

said lower post and resilient sleeve provided with mating

holes selectively alignable upon vertical displacement of said upper post relative to said lower post, and



a lock device engageable with said mating holes to retain said upper post at a fixed elevation relative to said lower post.

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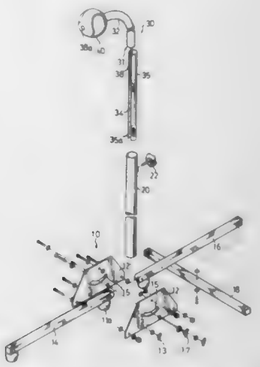
TENNIS PRACTICE DEVICE

Lan C. Sung, No.126, Lane 192, Sec. 1, Feng Hsing Rd., Tan Tzu Hsiang, Taichung Hsien; Chin M. Huang, No. 10, Lane 227, Li Jen Rd., Ta Li Hsiang, Taichung Hsien, and Lan K. Sung, 4th Fl., No. 24-3, Lane 74, Sec. 4, Hsing Lung Rd., Taipei, all of Taiwan, Prov. of China

Filed Jun. 3, 1993, Ser. No. 70,886

Int. Cl.[6] A63B *69/00*

U.S. Cl. 273—29 A **4 Claims**



1. A tennis practice device comprising: a base frame assembly; a tube mounted pivotally on said base frame assembly; a ball returning means including:

a straight lower rigid portion received telescopically in said tube and a curved upper elastomeric portion extending out of said tube and having an upper end,

a connecting member in said lower rigid portion and extending through the upper elastomeric portion and having an enlarged head end for retaining a tennis ball between said head and said upper end,

a spring having a first spring end attached to a tail end of said connecting member and a second spring end attached to a lower end of said lower rigid portion; and

means for retaining releasably said lower rigid portion in said tube, said base frame assembly including a pair of spaced mount plates spaced parallel to each other, a first beam aligned with an extending outwardly from the mount plates and having a first proximal end mounted pivotally to first margins of the mount plates, a second beam aligned with and extending outwardly from the mount plates in a direction opposite to that of the first beam and having a second proximal end mounted pivotally to second margins of the mount plates, and a third beam mounted transversely to a distal end of said second beam.

5,386,989

ELASTICIZED BALL GAME

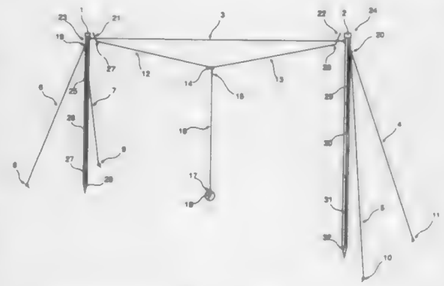
Robert M. Broadway, 2700 Aquitaine Avenue, Suite 2212, Mississauga, Ontario, Canada L5N 3J6

Filed Mar. 15, 1994, Ser. No. 212,943

Claims priority, application Canada, Mar. 18, 1993, 2091914

Int. Cl.[6] A63B *69/38*

U.S. Cl. 273—29 A **5 Claims**



1. An elasticized ball game comprising:

two spaced apart securement means,

a ball,

three elastic cords, each having a first end and a second end, the first ends of the three cords being connected together, the second end of one cord being connected to the ball, and the second ends of the other two cords being supported respectively from the two securement means, and a relatively non-elastic cord strung under tension between said securement means, the support of the second ends of the other two cords being effected by attaching said second ends to two swivel devices secured on said non-elastic cord at locations respectively adjacent the opposed ends of said non-elastic cord, each said swivel device including a) a substantially cylindrical portion mounted for rotation with respect to said non-elastic cord, b) limiting means restraining the cylindrical portion against longitudinal movement with respect to the non-elastic cord, and c) two relatively stiff arms fixed with respect to the cylindrical portion and extending in substantially opposed directions away from the axis of said cylindrical portion to respective distal ends; the second end of the respective cord being attached through a swivel means to the distal end of one stiff arm, and a counterbalancing weight being provided at the distal end of the other stiff arm.

5,386,990

GOLF COURSE TIMING METHOD AND SYSTEM

Matt H. Smith, 3247 Highlawn Dr., Twin Falls, Id. 83301

Filed Dec. 28, 1993, Ser. No. 175,197

Int. Cl.[6] A63B *69/36;* **G04F** *3/02*

U.S. Cl. 273—32 H **7 Claims**

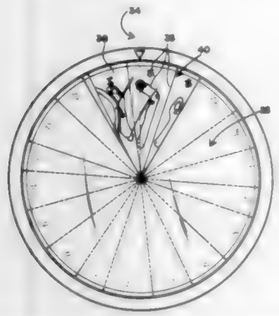
1. A golf course timer for use by golfers and golf course agents to regulate the time spent by the golfers on individual golf course holes, the timer comprising:

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a timing mechanism for operating to measure passage of time;

a timer face connected to the timing mechanism, the timer face having an exterior surface;

a starting means connected to and cooperating with the timing mechanism and accessible by the golf course agent



for starting operation of the timing mechanism to coincide with the golfer's start of play; and

a hole indicator connected to the timer face exterior surface and visible to the golfer, the hole indicator for cooperating with the timing mechanism to indicate the hole of the golf course that the golfer should be playing at the time measured by the timing mechanism.

5,386,991

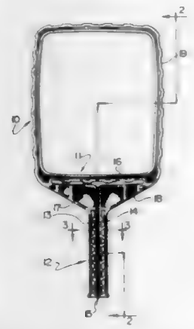
GAMES RACKETS

Robert C. Rochette, 6550 Richer Drive, Gloucester, Ontario, Canada K1C 3G4

Continuation of Ser. No. 954,367, Sep. 30, 1992, abandoned. This application Mar. 31, 1994, Ser. No. 220,944

Int. Cl.[6] A63B *59/00*

U.S. Cl. 273—67 R 7 Claims



1. A games racket having a strung head frame connected to a shaft with a distal end comprising: a longitudinal slit open from the distal end to the head frame dividing said shaft into halves;

a transversal slit along an edge of said head frame and communicating with said longitudinal slit;

and flat rubber band strings installed around the head frame through the longitudinal and transversal slits to provide a striking surface of said games racket.

5,386,992

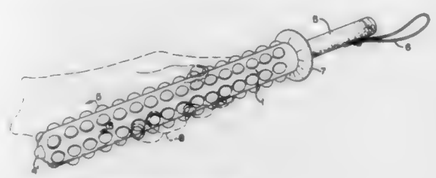
POLICE BATON WITH BALL BEARING STRIKING SURFACE

John Jaghab, 31 Highland Ridge Rd., Manalapan, N.J. 07726

Filed Mar. 9, 1994, Ser. No. 207,736

Int. Cl.[6] F41B *15/02*

U.S. Cl. 273—84 R 4 Claims



1. A police baton comprising:

(a) A cylindrical shaft having two opposed ends, with a handle at one end and a striking section at the other end, the striking section containing a multiple of spherical indentations throughout its length and at an end;

(b) A hollow spherical plastic insert inserted into each indentation, such that it is flush with the surface of the shaft;

(c) A ball bearing inserted into each hollow spherical plastic insert, such that it protrudes beyond the surface of the shaft;

(d) An annular ring guard surrounding the baton at the junction of the handle and club;

(e) A wrist strap attached to the handle.

5,386,993

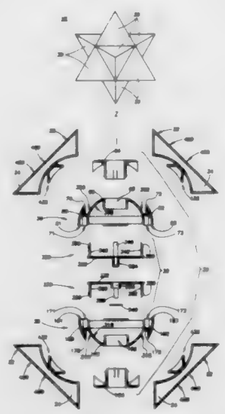
ROTATABLE PUZZLE WITH OCTAHEDRAL BASE AND CONNECTED TETRAHEDRAL MEMBERS

Bernardo H. Apsan, Rua Caconde 546, Apt. 182, Cep 01425 Sao Paulo-SP, Brazil

Filed May 23, 1994, Ser. No. 247,594

Int. Cl.[6] A63F *9/08*

U.S. Cl. 273—153 S 11 Claims



1. A three-dimensional puzzle, rotatable about three orthogonal axes, the three orthogonal axes consisting of a vertical axis, a first horizontal axis, and a second horizontal axis, the three-dimensional puzzle comprising:

(a) a hollow spherical base member comprising:

a first hemispherical base member;

a second hemispherical base member; and

a pivotable connection means for connecting said first hemispherical base member to said second hemispherical base member and for allowing said first hemispherical base member and said second hemispherical base member to rotate in a plane defined by the first horizontal axis and the second horizontal axis;

(b) a track means formed by an outer surface of said spherical base member;

(c) a plurality of sliding truncated trapezoidal covers slidably mounted in said track means, each of said trapezoidal covers having a radially outward surface which forms one of the eight faces of said octahedral base member; and

(d) a plurality of tetrahedral members, one tetrahedral member pivotally mounted on the radially outward surface of each of said sliding truncated trapezoidal covers.

5,386,994

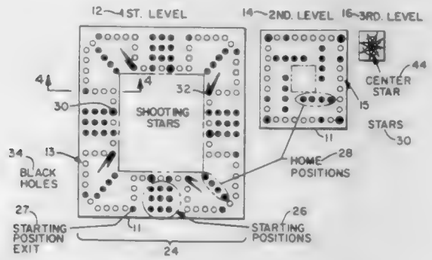
BOARD GAME

Garry L. Baranowski, 3130 16th St., Bakersfield, Calif. 93301

Filed Feb. 9, 1994, Ser. No. 194,161

Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—249 12 Claims



1. A board game, having a plurality of marbles, and a game board having four sides and a periphery, comprising:

a) at least two player groupings, each player grouping comprising:

i) a starting position, having more than one hole, where each hole holds a marble, and having a starting position exit; and

ii) a home position, having approximately the same number of holes as in the starting position, for receiving the marbles from the starting position;

b) a continuous hole path for receiving the marbles extending around the game board and past all of the player groupings, the starting position and home position adjacent to the continuous hole path, and the starting position exit being disposed in the continuous hole path, the home position having holes for one less marble than the starting position has holes for, and further comprising a center star having a hole for holding a marble; and

c) a die, for selecting the relative movement of the marbles around the continuous hole path of the game board, and for selectively allowing a marble to enter the continuous hole path from the starting position exit.

5,386,995

GAME MEDIUM CIRCULATION CONTROL SYSTEM

Takatoshi Takemoto, and Kazunari Kawashima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

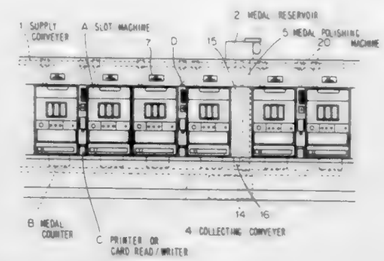
PCT No. PCT/JP91/01355, § 371 Date Apr. 4, 1994, § 102(e) Date Apr. 4, 1994, PCT Pub. No. WO93/06902, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 4, 1991, Ser. No. 211,422

Int. Cl.[6] A63F *7/22*

U.S. Cl. 273—148 R 5 Claims

1. A game medium circulation control system having a plurality of game machines, which controls game mediums to be used in the game machines, comprising: a game medium counter for counting said game mediums, which is provided in each of said plurality of game machines; and a distributing/collecting means for distributing said game mediums which are used commonly in said plurality of game machines into each of



said plurality of game machines and collecting the same from each of said game medium counters.

5,386,996

GOLF CLUB HEAD

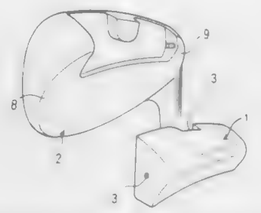
Masaomi Hiruta, Tokyo; Ikuo Aoki, Chiba; Ryohei Uji, Tokyo; Hirato Shimasaki, Tokyo; Hiroshi Ezaki, Tokyo; Hideyuki Ishii, Tokyo, and Hidekimi Inoue, Kanagawa, all of Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 85,278

Claims priority, application Japan, Jul. 3, 1992, 4-200427

Int. Cl.[6] A63B *53/04*

U.S. Cl. 273—174 10 Claims



1. A golf club head made of at least a first and second head components formed integrally with each other, wherein:

the club head is a wood club head and at least a sole portion thereof is made of the first head component;

a metallic material of the first head component being different in kind from that of the second head component;

an anti-disjoining means being formed as a part of the head, on all or a part of an end face of the first head component, which is to join the second head component; and

a metallic material having a melting point 200° C. or more below that of the metallic material of the first head component being cast to the first head component to integrally join the end portions of the first and second head components, thereby forming the second head component.

5,386,997

PORTABLE GOLF PRACTICE APPARATUS

George C. Smith, 1738 Edeline Ave., McKinleysville, Calif. 95521

Filed Sep. 13, 1993, Ser. No. 120,398

Int. Cl.[6] A63B *69/36*

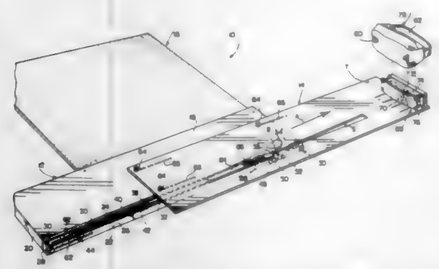
U.S. Cl. 273—198 34 Claims

26. A golf practice apparatus comprising:

an upper platform having a tee and a target located forwardly of the tee; a golf ball arranged at the tee above said platform for striking towards the target area, said golf ball having one end of a tether attached thereto, said tether extending through a slot in said upper platform, with the other end of the tether being secured to elastic bands

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anchored to a lower platform at a location rearwardly of the tee area; and a plurality of bearings located in said tee area and supported on said lower platform, and arranged so that said tether engages at least two of said plurality of



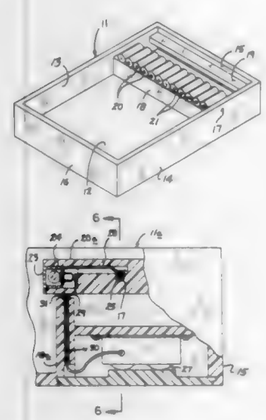
bearings; the tether having a sleeve attached thereto which is adapted to engage an undersurface of said upper platform, and thereby generate friction between said upper platform and said sleeve when the ball is struck.

5,386,998

MATH GAME APPARATUS

Rosemary L. Mader, and Leonard J. Mader, both of 16534 Franklin Trail #2A, Prior Lake, Minn. 55372

Filed Sep. 20, 1993, Ser. No. 123,048
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—237 4 Claims



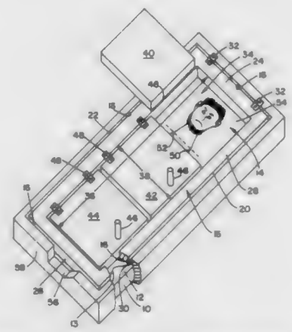
1. A math game apparatus, comprising,
a container, the container having a floor, a first side wall spaced from a second side wall, and a first end wall spaced from a second end wall, and
an axle extending between the first side wall and the second side wall spaced above the floor, and between the first end wall and the second end wall, and
a row of peg members rotatably mounted about the axle, each peg member having a peg member numbered end wall, with each numbered end wall including a digital enumeration imparted therein, and
at least one dice member, with the at least one dice member directed to generate a predetermined number total and to replicate that number total by rotation of sufficient of said peg members to duplicate the total, each said numbered end wall of said sufficient peg members equalling said total, and
a first support wall extending between the first side wall and the second side wall and between the axle and the second end wall for receiving each peg member thereon in the first position, wherein the first support wall is positioned between the axle and the floor, and a second support wall oriented between the axle and the first end wall for receiving each peg member upon rotation of each said peg member to a second position from a first position, wherein each said peg member of said row of peg members is received upon said first support wall, and
at least one of said peg members having a transparent window in said numbered end wall of said at least one of said peg members, and illumination means in said at least one of said peg members for directing illumination through said transparent window in said first position.

5,386,999

APPARATUS AND METHOD OF PLAYING A GAME

Michael J. Rice, 130 W. Main St., Jonesborough, Tenn. 37659

Filed Apr. 25, 1994, Ser. No. 231,797
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—287 6 Claims



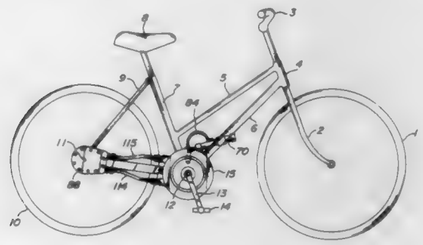
1. A drawing game board for non-competitive, socialized activity, comprising base means having a substantially flat upper surface for supporting drawing paper, border means on said base means extending upwardly from said upper surface thereof and defining a paper location area, frame means having a substantially rectangular shape provided by side sections and end sections, said frame means having an upper surface and a lower surface and being dimensioned to easily fit within said border means, said lower surface providing hold down means adapted to contact said drawing paper when said frame means is moved downwardly within said border means and hold said paper in place on said base means, said frame means being configured to provide a substantially rectangular drawing opening having a longitudinal dimension and a lateral dimension and bordered by said side and end sections, and a plurality of substantially rectangular shutter means each being laterally dimensioned to be placed between said side sections and each being longitudinally dimensioned such that when all of said shutter means are longitudinally juxtaposed, said paper will be substantially blocked from view, each said shutter means having removal means whereby it can individually be removed readily from or placed in its view blocking position within said frame means.

5,387,000

HYDRAULIC DRIVE SYSTEM FOR BICYCLES AND THE LIKE

Yasunori Sato, 2-1-607, Ohkura 1-Chome, Setagaya-Ku, Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 93,739
Claims priority, application Japan, Jul. 22, 1992, 4-195378
Int. Cl.[6] B62M *19/00*
U.S. Cl. 280—216 6 Claims



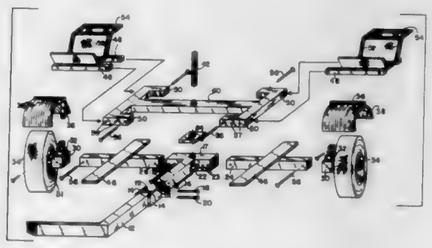
1. A hydraulic drive system for bicycles, comprising:
a casing adapted for enclosing a hanger portion of a bicycle;
a rotatable crankshaft extending through said casing;
planetary gear type speed up gears including a carrier which is integral with said crankshaft so as to rotate in unison with said crankshaft, a sun gear rotatably disposed on said crankshaft, and a plurality of planetary gears supported and driven by said carrier, said plurality of planetary gears engaging said sun gear to transmit an increased rotational speed to said sun gear with respect to said crankshaft;
an eccentric cam assembly including an outer eccentric cam and an inner eccentric cam driven by said sun gear of said speed up gears; and
a variable displacement hydraulic pump having plungers driven by the outer eccentric cam of the cam assembly and provided at an input portion of the drive system, said speed up gears, said eccentric cam assembly and said variable displacement hydraulic pump being housed in said casing.

5,387,001

COMBINATION VEHICLE TOWING DOLLY AND FLATBED TRAILER

Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434; Jacques L. Cote, and Robert B. Shelley, both of Box 10049, Zephyr Cove, Nev. 89448

Filed Dec. 14, 1992, Ser. No. 991,854
Int. Cl.[6] B60P *1/28, 3/077*
U.S. Cl. 280—402 15 Claims



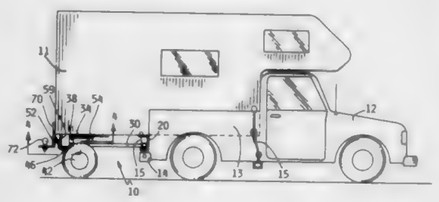
1. A towing aid for wheeled vehicles comprising: a pair of ground engaging wheels rotatably supported by a pair of independent axles, said axles being fixed to a first pair of square tubular wheel mounts, a second pair of elongated square tubular wheel mounts, an elongated square tubular tongue having first, second and third sections, said first and second sections of said tongue being interconnected by hinge means, said first section of said tongue having an elongated square tubular cross member affixed to its distal end forming a T, said second and third sections of said tongue having a sliding relationship, means to removably affix said second and third sections of said tongue together in multiple positions, said third section having at its distal end a means for hitching the towing aid to a wheeled vehicle, said second pair of elongated tubular members having a sliding relationship with said cross member, means to removably affix said second pair of elongated square tubular members in multiple positions to said cross member, and means to removably affix each of said second pair of independent elongated square tubular members to a respective one of said wheel mounts, a substantially I shaped member, said I shaped member being formed of multiple square sectioned tubular members having means for removably and pivotally mounting said I shaped member to said cross member, a pair of wheel wells, said pair of wheel wells each having a ramp at one of its ends, said pair of wheel wells each being affixed to at least a pair of elongated square tubular support members, said I shaped member having means to removably affix said pairs of support members to outer extremities of said I shaped member in multiple selective positions.

5,387,002

WHEELED SUPPORT FOR SLIP-IN CAMPER

John J. Grevich, R.R. 1, Box 80, Star Prairie, Wis. 54026

Filed Oct. 1, 1993, Ser. No. 131,404
Int. Cl.[6] B60P *3/335*
U.S. Cl. 280—406.2 20 Claims



1. A combination wheeled trailer support device, slip-in camper, and pickup truck, the combination wheeled trailer support device comprising:
a. a bracket having a towing ball, said bracket being affixed to said slip-in camper;
b. an elongate frame having a towing arm engaged on said towing ball;
c. a support platform affixed on said frame and having an engagement face;
d. a pair of support wheels and support means mounting said wheels on said frame; and
e. a sliding bearing means affixed to said slip-in camper and engaging said engagement face of said platform permitting said platform and said frame to swing from side to side about said towing ball during travel of said truck and camper.

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5,387,003

Patent Not Issued For This Number

5,387,004

COUPLING ROD FOR JOINTED ATTACHMENT OF A U-SHAPE STABILIZER ARM

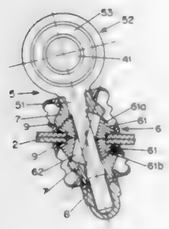
Michael Engel, Gifhorn/Winkel, Germany, assignor to Volkswagen AG, Wolfsburg, Germany

PCT No. PCT/EP88/00326, § 371 Date Sep. 24, 1993, § 102(e) Date Sep. 24, 1993, PCT Pub. No. WO89/09705, PCT Pub. Date Oct. 19, 1989

PCT Filed Apr. 16, 1988, Ser. No. 585,148

Int. Cl.[6] B60G *21/04*

U.S. Cl. 280—673 **10 Claims**



1. A coupling rod for jointed attachment of a U-shaped stabilizer arm in a motor vehicle comprising a coupling rod head to accommodate the stabilizer arm and a coupling rod pin separate from the head with a bearing associated therewith for spherically movable attachment to a cooperating member, the coupling rod pin being in the form of a member capable of being inserted into the coupling rod head and held in position therein, the bearing comprising a body capable of being connected in geometrically fixed relation to the cooperating member and having a through-bore of double-truncated cone shape traversed by the coupling rod pin, the smallest diameter of the bore corresponding approximately to the diameter of the coupling rod pin and being located generally centrally in the bearing body, and two spherical-shaped sliding shells carried by the coupling rod pin and enclosing a portion of the essentially spherical outer periphery of the bearing body, the sliding shells and the bearing body traversed by the coupling rod pin being held in sliding connection with each other, permitting relative spherical movements.

5,387,005

SUSPENSION CONTROL SYSTEM USING A VARIABLE THRESHOLD VALUE TO LIMIT THE AMPLITUDE OF VERTICAL VIBRATIONS

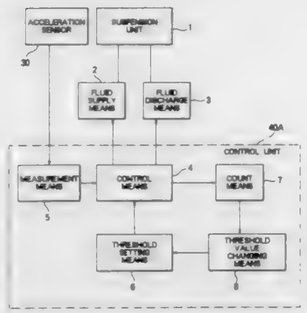
Kenji Hayase, Toyoake; Shunichi Wada, Himeji; Shigeki Ohtagaki, Himeji, and Yoshihiro Tsuda, Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Mitsubishi Jidosha Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Oct. 26, 1993, Ser. No. 141,201

Claims priority, application Japan, Oct. 30, 1992, 4-315971

Int. Cl.[6] B60G *17/015, 17/08*

U.S. Cl. 280—707 **5 Claims**



1. A suspension control system comprising:

a suspension unit interposed between a wheel and a body of a vehicle and having a fluid suspension function;

fluid supply means for supplying a fluid to said suspension unit;

fluid discharge means for discharging the fluid from said suspension unit;

amplitude measurement means for measuring the amplitude of vertical vibrations of the vehicle body;

threshold value setting means for setting a threshold value of the amplitude of vertical vibrations of the vehicle body;

control means for cancelling expansion and contraction of said suspension unit by controlling said fluid supply means and said fluid discharge means when the amplitude of vertical vibrations measured by said amplitude measurement means is equal to or larger than the threshold value;

count means for counting the number of times said fluid supply means and said fluid discharge means are controlled by said control means in a predetermined period of time; and

threshold value changing means for changing, when a count value counted by said count means is equal to or larger than a reference number of times, the threshold value in said threshold value setting means to a value equal to or smaller than an upper limit value but larger than a value to which the threshold value was set at a preceding time, and for changing the threshold value in said threshold value setting means to a value equal to or larger than a lower limit value but smaller than the value at the preceding time, when the count value is smaller than the reference number of times.

5,387,006

AIR BAG ARMING DEVICE INCLUDING STEERING SHAFT ROTATION SENSOR

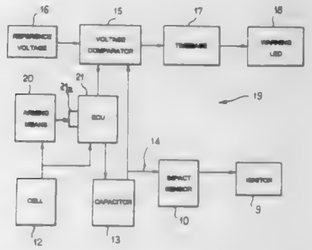
Kyriakos Vavalidis, Ferrieres en Bray; Denis Bourcart, Gournay-en-Bray, both of France, and Thomas Gornig, Dachau, Germany, assignors to Autoliv Klippan S.N.C., Paris, France

Filed Apr. 6, 1993, Ser. No. 43,528

Claims priority, application France, Apr. 10, 1992, 92 04423

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—731 **14 Claims**



1. In an inflatable safety cushion device (7) for a vehicle, in particular an airbag, comprising an electrical arming device (19, 42) capable of detecting a dangerous situation and of very rapidly actuating a pyrotechnic gas generator (8) for triggering said safety cushion device (7), this electrical arming device (11, 19, 42) comprising a circuit (14) powered by a cell (12) and comprising, mounted in series, at least one sensor (10) for closing said circuit (14) when the dangerous situation is detected, and an electric ignitor (9) for being fired in order to actuate the pyrotechnic gas generator (8) under the action of the electrical current which flows in the circuit (14) as soon as the sensor (10) closes said circuit (14), the cell (12), the sensor (10) and the ignitor (9) being located together and being connected by a very short circuit (14); the improvement comprising arming means (20, 22, 35, 42; 21) for detecting a use of the vehicle in order automatically to arm said device (19, 42) as soon as it is detected that said vehicle is being used, and means (21*a*) for interrupting the armed state as soon as, for a predetermined length of time, no use of the vehicle has been detected.

5,387,007

GAS GENERATOR OF THIN-WALLED STRUCTURE

Akihisa Ogawa, and Osamu Muramatsu, both of Hyogo, Japan, assignors to Dalcel Chemical Industries, Ltd., Japan

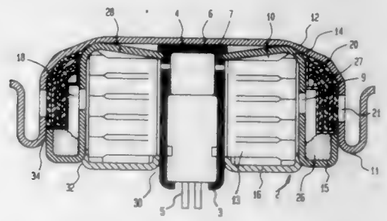
PCT No. PCT/JP92/00792, § 371 Date Mar. 29, 1993, § 102(e) Date Mar. 29, 1993, PCT Pub. No. WO93/00233, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 22, 1992, Ser. No. 983,562

Claims priority, application Japan, Jun. 21, 1991, 3-150366

Int. Cl.[6] B60R *21/28*

U.S. Cl. 280—740 **20 Claims**



1. A gas generator of a thin-walled structure, having a central cylindrical holder in which a squib or enhancer is housed, a combustion chamber surrounding said holder and holding gas generants therein, a filter and coolant chamber formed annularly so as to surround said combustion chamber, and adapted to allow the entry thereinto of a gas which has passed through openings thereof communicating with said combustion chamber, and gas outlet ports formed at said filter and coolant chamber and through which the gas which has passed through a filter and a coolant rushes into an air bag, characterized in that said combustion chamber (10) is formed with a combustor cup (14) having an annular top wall fixed at an inner edge portion thereof to a circumferential edge of a top wall of said central cylindrical holder (4) by riveting, a combustor plate (16) being welded at an outer edge thereof to an inner edge portion of a flange at an outer circumference of said combustor cup, and at an inner edge thereof to an opposite edge portion of said holder, so as to close said combustion chamber, a diffuser (12) being provided so as to cover said top wall of said central cylindrical holder and a top wall which continues therefrom of said combustor cup, whereby a double wall for said combustion chamber is formed, an extended portion of said diffuser and said flange at the outer circumference of said combustor cup forming said filter and coolant chamber, a free end portion of said flange at the outer circumference of said combustor cup being welded to the inner wall of said extended portion of said diffuser, said outlet ports for a gas flow from said filter and coolant chamber being provided in said extended portion of said diffuser.

5,387,008

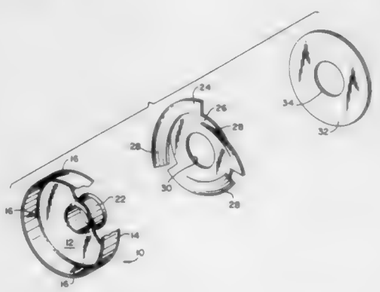
GENERANT PRELOAD AND TOLERANCE TAKEUP ASSEMBLY FOR VEHICULAR AIRBAG INSTALLATION

Donald R. Lauritzen, Hyrum, and Joseph L. Ralston, North Ogden, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Mar. 14, 1994, Ser. No. 512,258

Int. Cl.[6] B60R *21/28*

U.S. Cl. 280—741 **19 Claims**



12. A preload for the gas generant of an automotive airbag installation, which generant has first and second ends and is housed within a cylindrical filter having first and second ends, which comprises:

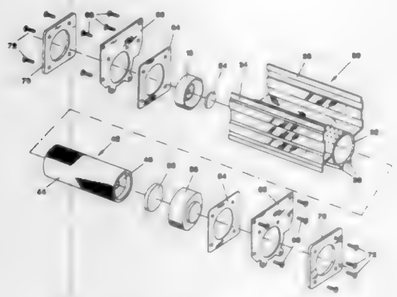
a metallic cup-shaped body having a sidewall seatable securely within the first end of said filter, substantially coaxial therewith, and a substantially circular base bounded by said sidewall;

a metallic contact member engageable with the first end of said generant; and

metallic spring means intermediate said base and contact member for maintaining an axial compressive force against the first end of said gas generant.

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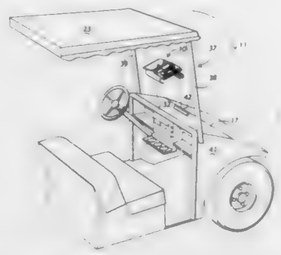
5,387,009
END BASE ASSEMBLY FOR VEHICLE AIRBAG MODULE
Donald R. Lauritzen, Hyrum, and Larry D. Rose, Layton, both of Utah, assignors to Morton International, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 213,176, Mar. 14, 1994. This application Jun. 15, 1994, Ser. No. 259,852
Int. Cl.[6] B60R *21/28*
U.S. Cl. 280—741 12 Claims



1. An inflator for a motor vehicle passenger-side airbag module which comprises:
a substantially cylindrical inflator housing having first and second ends and a ported sidewall for venting inflating gas to an airbag;
a generant assembly within said inflator housing including a substantially cylindrical filter having first and second ends and enclosing a gas generant therein;
a substantially cup-shaped first end base having a circular main body closing the first end of said inflator housing, a cylindrical outer wall surrounding the first end of said filter and enclosed within the sidewall of said inflator housing, and a cylindrical inner wall extending from the main body parallel to said outer wall;
a pre-load member intermediate, and compressed between, said inner wall and said gas generant;
a substantially cup-shaped second end base having a circular main body closing the second end of said inflator housing, a cylindrical outer wall surrounding the second end of said filter and enclosed within the sidewall of said inflator housing, and a cylindrical inner wall extending from the main body parallel to said outer wall in contact with said gas generant, and means for retaining an initiator within said inner wall;
each of said first and second end bases being free of positive restraints against rotational movement about the longitudinal axis of said cylindrical filter; and
means for compressing each of said first and second end bases against the respective ends of said cylindrical filter and sealing the junction of said outer wall with said inflator housing.

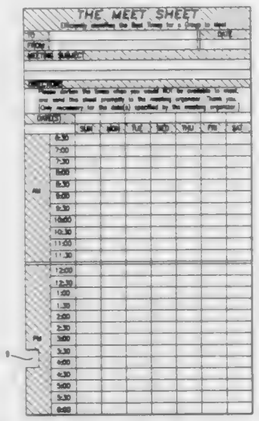
5,387,010
APPARATUS FOR SECURING LOOSELEAF PAGES TO A GOLF CART
Christopher G. Mohr, Rte. 1, Norwood, Ga. 30821
Filed Sep. 22, 1993, Ser. No. 125,419
Int. Cl.[6] B42D *17/00*
U.S. Cl. 281—43 6 Claims

1. A device for mounting to a golf cart for supporting and displaying looseleaf pages, the golf cart of the type having a front cowl and a dash with an edge formed at a junction of the cowl and the dash, said device comprising:
a base for supporting the looseleaf pages at an oblique angle relative to the cowl;
ring binder means secured to said base for holding the looseleaf pages;
a first attachment means for attaching said base to the cowl



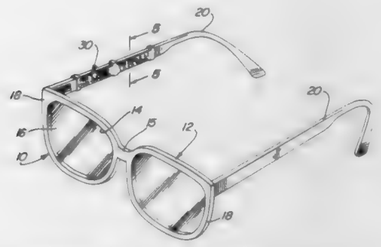
adjacent the edge, said first attachment means comprising a hook-like member to be hooked over the edge; and
a second attachment means, distal from said first attachment means, for attaching said base to the cowl.

5,387,011
SYSTEM AND METHOD FOR SCHEDULING A MEETING
William D. Freund, St. Louis, Mo., assignor to Nextech Incorporated, Boston, Mass.
Filed Sep. 27, 1993, Ser. No. 127,151
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—61 27 Claims



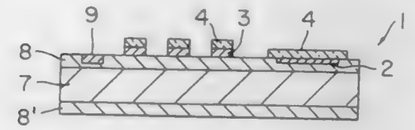
1. A system for scheduling a meeting comprising a plurality of at least partially translucent sheets, each of which includes a plurality of blocked areas, each blocked area corresponding to predetermined date and a predetermined time period, and each blocked area being capable of being marked by a user, whereby said plurality of at least partially translucent sheets can be stacked and aligned so that blocked areas from said plurality of at least partially translucent sheets corresponding to a same predetermined time period and a same predetermined date are aligned with each other, thereby allowing the determination of blocked areas on the plurality of at least partially translucent sheets that have not been marked.

5,387,012
OWNER IDENTIFICATION FOR EYEWEAR
Dawn W. Hibbs, 10 Monserrat, Foothill Ranch, Calif. 92610
Filed Dec. 10, 1993, Ser. No. 165,084
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—75 2 Claims



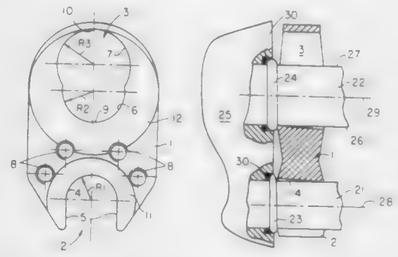
1. In combination, a pair of eyeglasses comprising a frame structure having frame members including a pair of peripheral frame members that are separated by a bridge and a pair of temple members, wherein the improvement comprises an owner identification means mounted on one of said temple members, identifying indicia printed thereon, and means for attaching said owner identification means to said frame structure;
wherein said owner identification means comprises a flat sheet of metal foil having a surface on which said identifying indicia is printed, and said attaching means is defined by a plurality of ear members formed on said flat sheet of metal foil for removably attaching to said temple member.

5,387,013
HEAT TRANSFER RECORDING MEDIA
Mineo Yamauchi, and Tamami Iwata, both of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan
Continuation of Ser. No. 582,216, Oct. 1, 1990, Pat. No. 5,267,755. This application Sep. 9, 1993, Ser. No. 118,210
Claims priority, application Japan, Jan. 31, 1989, 1-22346; Feb. 13, 1989, 1-33455; Feb. 13, 1989, 1-33456; Nov. 20, 1989, 1-299774; Nov. 20, 1989, 1-299775; Nov. 20, 1989, 1-299776; Nov. 27, 1989, 1-304844; Nov. 27, 1989, 1-304845
The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—86 8 Claims



1. A method for making heat transfer recordings on a substrate comprising heat transferring a first heat transfer image onto a surface of the substrate and transferring a second heat transfer image onto the surface of the substrate simultaneously with, or in superposed relation to, said first heat transfer image.
2. The method of claim 1, wherein said substrate is in the form of a card.

5,387,014
CLAMPING PLATE FOR A MOTOR VEHICLE AIR CONDITIONING INSTALLATION
Christophe Chevallier, Le Mans, France, assignor to Valeo Thermique Habitacle, Le Mesnil Sant Denis, France
Filed Oct. 12, 1993, Ser. No. 135,229
Claims priority, application France, Oct. 12, 1992, 92 12160
Int. Cl.[6] F16L *41/12, 39/00*
U.S. Cl. 285—26 7 Claims



1. A fluid circuit assembly comprising:
two substantially parallel tubular elements having a first end and a free second end; means joining the tubular elements together at said first end, said second end of each tube defining an annular bead; a circuit component receiving said free tube ends; sealing gasket means interposed between said beads and said circuit component; and means for urging said beads towards the said circuit component so as to compress said gasket means, the assembly further including a clamping plate in the form of a strut, for the simultaneous attachment of said tube elements to said circuit component, the strut being adapted to engage on said beads and comprising an elongated plate defining a first through aperture and a second through aperture, said first aperture comprising a notch open in one end of said plate, each said aperture being adapted to receive a respective one of said tubular elements, the plate having a first and a second substantially semicircular region partly defining said first and said second aperture respectively, with a profile matching the circumference of the corresponding said tubular element, said notch defining between the corresponding end of the plate and said first semicircular region a slot having parallel sides substantially tangential to the first semicircular region, wherein the material of the plate surrounds said second aperture over the whole periphery of the second aperture, defining a widened region of the second aperture whereby said bead of the corresponding tubular element can pass through said widened region, the widened region being joined directly to said second substantially semicircular region.

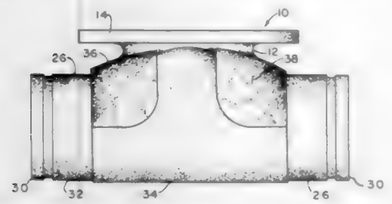
5,387,015
HOPPER TEE
David E. Sisk, 7353 Hillsboro Rd., Bonne Terre, Mo. 63628
Filed Jan. 10, 1994, Ser. No. 178,732
Int. Cl.[6] F16L *9/14*
U.S. Cl. 285—55 4 Claims

1. An integral one-piece cast hopper tee comprising:
a first hollow pipe section having a lateral outwardly directed flange at an upper end thereof for attachment to the bottom of a hopper, said first hollow pipe section having a cylindrical section extending downwardly from said flange, said cylindrical section having an integral cylindrical wall of predetermined internal circumference, said cylindrical section having a length extending vertically within the first hollow pipe section, said cylindrical section terminating in a flared section internally of said first hollow pipe section, said flared section having an internal

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circumference substantially greater than the internal circumference of the said cylindrical section of the first hollow pipe section;

a second hollow pipe section extending generally transversely relative to said first hollow pipe section and being integrally attached through casting to the first hollow pipe section at the flared section thereof, said second hollow pipe section extending on opposite sides beyond said first hollow pipe section and terminating at opposite free ends for attachment to pipeline tubing, said second hollow pipe section having an internal cylindrical wall extending for some horizontal length approximately of the same predetermined internal circumference as that of said cylindrical section of said first hollow pipe section;



wear resistant means integrally formed between the vertically extending first hollow pipe section and the horizontally extending second hollow pipe section so as to increase the wall thickness of the vertically extending pipe section and said flared section at the juncture with the horizontally extending pipe section; and said flared section of said first hollow pipe section is elliptically formed, and providing a substantially longitudinally flattened frusto-elliptical area of smooth transition between said first and second hollow pipe sections.

5,387,016

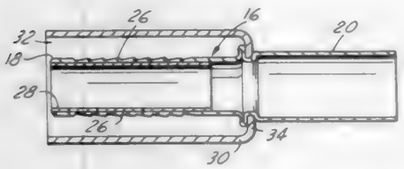
TUBULAR COUPLING

Thomas J. Joseph, Commerce; Brett W. Kalem, Dearborn Heights; David C. Letteer, Brighton; Timothy J. Udell, Royal Oak; Glen W. Ostahowski, Canton, all of Mich., and Claudia M. Anderson, Richmond, Ind., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 29, 1994, Ser. No. 219,563

Int. Cl.[6] F16L *55/00*

U.S. Cl. 285—174 **5 Claims**



1. A connector for joining together a pair of fluid carrying hose members in an automotive vehicle, comprising:

a generally tubular body having a first end, a radially outward flared second end adapted to matingly engage a quick connect coupling formed on one of said fluid carrying hose members and a shoulder interposed therebetween, said first end including a plurality of angled barbs projecting from an outer surface thereof and being adapted to be inserted into one of said hose members;

a generally tubular liner having a predetermined length press-fit into said first end of said body and being fabricated from a material different from that of said body;

a generally cylindrical, cup-shaped collar surrounding the outer surface of said first end of said body, said collar having an open end and a terminating end, said terminating end abutting said shoulder of said body, said collar being adapted to be crimped over the other of said fluid carrying hose members such that a plurality of axially spaced crimp projections are formed therein to resist axial movement of said hose member; and

means for resisting axial displacement of said collar on said body, said means comprising a roll formed bead formed against an interior surface of said collar terminating end.

5,387,017

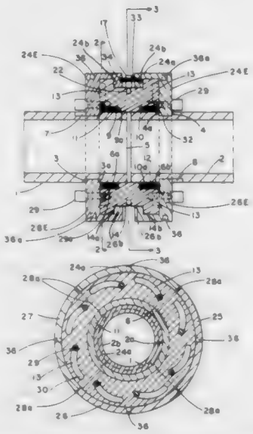
COUPLING FOR ATTACHMENT TO THE END OF A PIPE FOR SECUREMENT TO THE PIPE OR FOR JOINING PIPES TOGETHER

Ajit S. Gill, 4169 Bennion Rd., Salt Lake City, Utah 84119

Filed May 14, 1993, Ser. No. 62,240

Int. Cl.[6] F16L *21/06*

U.S. Cl. 285—322 **23 Claims**



1. A coupling for attachment to the end portion of a pipe wherein the end portion of the pipe has a circumferential shoulder spaced from and facing away from the end of the pipe, comprising;

a coupling body to closely receive an end portion of a pipe therein and to extend over the end portion of the pipe at least to the edge of a circumferential shoulder provided in the end portion of the pipe;

a set of jaw members;

means movably mounting the jaw members on the coupling body for movement toward the pipe received in the coupling body with simultaneous circumferential movement partially around the pipe in one direction and movement away from the pipe received in the coupling body with simultaneous circumferential movement partially around the pipe in the opposite direction, whereby when the jaw members of the set move toward the pipe to a closed position they engage the shoulder to secure the coupling body to the pipe and when the jaw members of the set move away from the pipe to an open position they disengage the shoulder so the pipe can be removed from the coupling body; and

means for moving the jaw members of the set with respect to the coupling body.

5,387,018

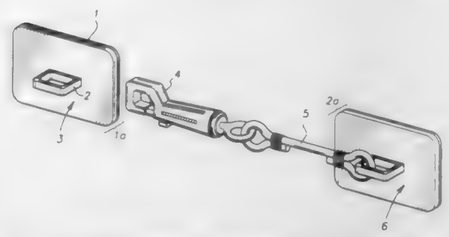
CHILD PROOF REFRIGERATOR DOOR LATCH

William R. Pinkerton, 1024 Calle Escondida, Brownsville, Tex. 78521

Filed Oct. 25, 1993, Ser. No. 140,851

Int. Cl.[6] E05C *19/18*

U.S. Cl. 292—259 R **4 Claims**



1. A device for making a refrigerator door or other closure child resistant, comprising:

first and second mounting plates each having front and back sides and each being from 2 square inches to 100 square inches in area and from one sixteenth inch to one half inch thick and each having lanyard attaching means comprising a loop mounted to its front side in a perpendicular plane relative to the plane of the mounting plate and an adhesive surface on said back side of each mounting plate;

a length of shock cord hereafter referred to as, lanyard, having first and second ends with said lanyard first end mounted to said loop on said second mounting plate and

a spring clasp mounted to said lanyard second end for attaching said lanyard second end to said first mounting plate.

5,387,019

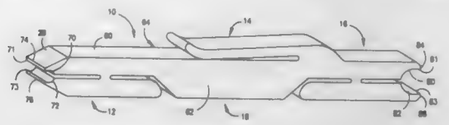
DRILL HANDLING TOOL

Robert W. Britzke, II, Rogers, Ark., assignor to Rogers Tool Works, Inc., Rogers, Ark.

Filed Dec. 2, 1993, Ser. No. 160,726

Int. Cl.[6] B25B *9/02*; B25J *15/12*

U.S. Cl. 294—2 **20 Claims**



1. A gripping tool comprising:

a main body having a plurality of tool gripping ends;

a first body arm integral to and extending outwardly from said main body at a first tool gripping end, said first body arm being substantially parallel to said main body;

a first upper jaw formed on said first body arm;

a first clamping arm flexibly mounted to said first body arm by a first pivot member;

a first lower jaw formed on said first clamping arm;

a first outer channel formed between said first body arm and said first clamping arm, extending from said first pivot member to said first upper and lower jaws; and

a first inner channel formed between said first body arm and said first clamping arm, extending from said first pivot member away from said first upper and lower jaws.

5,387,020

Patent Not Issued For This Number

5,387,021

CABLE GRASPING TOOL

David E. Brewer, 16675 Beulah Rd., Dawsonsprings, Ky. 42408

Filed Jul. 9, 1993, Ser. No. 88,376

Int. Cl.[6] B66C *1/62*

U.S. Cl. 294—19.1 **3 Claims**



1. A cable grasping tool, comprising,

an outer sleeve, the outer sleeve including a sleeve first end spaced from a sleeve second end, with a first end collar fixedly mounted adjacent to the outer sleeve first end, and

a handle mounted to the outer sleeve second end, with an elongate bushing directed through the first end collar and coaxially aligned with the outer sleeve, and

a slide rod slidably received within the bushing, with the slide rod extending from the bushing and the outer sleeve from the outer sleeve first end, with a slide rod jaw fixedly mounted to the slide rod exteriorly of the outer sleeve, and

a pivot axle orthogonally directed through, the slide rod jaw adjacent the slide rod, with a pivot jaw pivotally mounted about the pivot axle, with the pivot jaw in a facing relationship relative to the slide rod jaw, with the pivot jaw including an extension rod extending from the pivot jaw beyond the pivot axle, and

a collar flange fixedly mounted to the first end collar, with the collar flange extending laterally of the first end collar, and

an actuator link having a link first axle pivotally mounting the actuator link to the pivot jaw extension rod, and the actuator link including an actuator link second axle pivotally mounting the actuator link to the collar flange, whereupon displacement of the outer sleeve relative to the slide rod effects movement of the pivot jaw towards the slide rod jaw.

5,387,022

PACK FOR FOOD PRODUCTS IN PORTIONS

Caroline Soumah, Beauvais, France, assignor to Nestec S.A., Vevey, Switzerland

Filed May 27, 1993, Ser. No. 68,627

Claims priority, application European Pat. Off., Jun. 29, 1992, 92110951

Int. Cl.[6] A47G *23/06*; B65D *1/36*

U.S. Cl. 294—159 **14 Claims**

1. A package assembly for containing a food product in portions comprising:

a support element comprising a base and a stem wherein the base has a central base portion and at least two shaped plate portions which extend from the central base portion and which are spaced-apart and separated by open space therebetween and wherein the central base portion and plate portions form a planar base surface and wherein the stem is connected to and extends from a centrally disposed portion of the base surface so that a central longitudinal axis of the stem extends in a direction perpendicular to the base surface;

a covering shell comprising a sidewall portion and a cover portion wherein the sidewall portion has a sidewall edge

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which circumscribes a shell base opening and is configured in an outline shape of the plate portions for being positioned adjacent the plate portions for encompassing food product portions positioned on the base surface of the plate portions and wherein the cover portion extends from the sidewall portion at a position displaced from the sidewall edge and opposes the shell base opening and has a centrally disposed opening defined by a cover portion edge shaped for engaging the stem, and wherein the sidewall portion extends for a distance sufficient to provide, upon the shell being positioned so that the cover portion



shaped edge engages the stem and so that the sidewall edge is positioned adjacent the plate portions, a space between the base surface and cover portion for encompassing food product portions positioned on the base surface of the plate portions; and

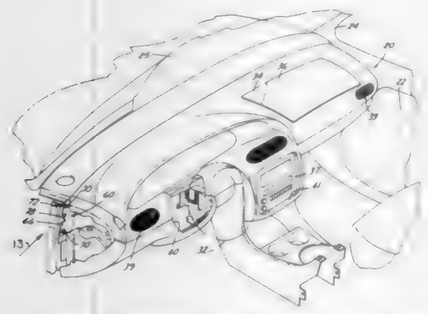
wherein the stem extends for a distance so that, upon the shell being positioned so that the cover portion shaped edge engages the stem and so that the sidewall edge is positioned adjacent the plate portions, the stem extends through the cover portion opening for a distance sufficient for being gripped.

5,387,023

REINFORCED INSTRUMENT PANEL ASSEMBLY

Kenneth S. Deneau, Troy, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 18, 1994, Ser. No. 228,624
Int. Cl.[6] B60K *37/00*
U.S. Cl. 296—72 4 Claims



1. A reinforced instrument panel assembly capable of being pre-assembled and then installed as a unit in a motor vehicle having laterally spaced interior side frame members adjacent the front of the passenger compartment, said instrument panel assembly comprising:

(a) an elongated instrument panel,

(b) a plurality of motor vehicle instruments,

(c) an elongated, rigid reinforcing bar having opposite ends and extending lengthwise of said instrument panel,

(d) means mounting said instrument panel and said instruments on said reinforcing bar, and

(e) a bracket secured to each end of said reinforcing bar,

(f) said brackets each having at least one mounting flange, said mounting flanges lying in planes generally parallel to the length of said reinforcing bar and, when said instrument panel assembly is in installed position in the motor vehicle, being so disposed as to be generally upright and to extend transversely of the motor vehicle and to overlie the respective side frame members of the motor vehicle in positions readily accessible to an installer occupying the passenger compartment,

(g) and fasteners for securing said mounting flanges to said respective side frame members,

(h) said instrument panel assembly being installed by being moved forwardly until said mounting flanges overlie the side frame members of the motor vehicle in the aforesaid readily accessible positions,

(i) the side frame members having hook-receiving, locating openings,

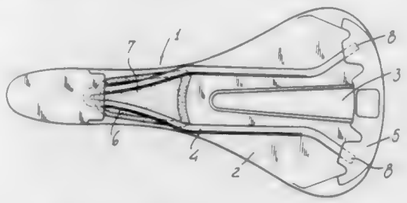
(j) and said mounting flanges having hooks receivable in said respective openings of the side frame members to locate said mounting flanges when said instrument panel assembly is moved forwardly to the installed position.

5,387,024

SADDLE FOR SPORT BICYCLES

Giuseppe Bigolin, Via Aldo Moro, 7, 36028 - Rossano Veneto (Vicenza), Italy

Filed Dec. 15, 1993, Ser. No. 168,017
Claims priority, application Italy, Dec. 16, 1992, MI92 U 001067
Int. Cl.[6] B62J *1/00*
U.S. Cl. 297—202 2 Claims



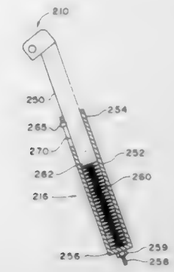
1. An improved saddle for sport bicycles, comprising a plastic material framework covered by a coating material and supported by a curved tubular element,said framework including a small width front portion merging with a larger width outwardly diverging rear portions wherein in said framework there is defined a throughgoing slot extending along a longitudinal axis of said framework and having a length substantially corresponding to a longitudinal extension of said outwardly diverging rear portion,said slot having an outer end portion thereof defining an interruption of an outer curved profile of said outwardly diverging rear portion, said curved tubular element being provided with a front V-shaped narrow portion merging, through a rectilinear middle even width portion,with a rear outwardly diverging portion having two free end portions,a bridging element being provided having a curved profile mating with said curved profile of said saddle outwardly diverging rear portion for engaging therewith and being provided with two recesses for engaging therein said two free end portions of said rear portion of said tubular element, said saddle framework further including in front of said slot, a cavity having a width larger than the width of said slot and in which is engaged a cushioning element.

5,387,025

BICYCLE SEAT

Richard A. Denisar, 20 Dans Rd., Browns Mills, N.J. 08015

Continuation-in-part of Ser. No. 543,026, Jun. 25, 1990, abandoned. This application Jun. 25, 1991, Ser. No. 719,694
Int. Cl.[6] B62J *1/06*
U.S. Cl. 297—209 3 Claims



2. A seat for a pedal operated device, comprising:

mounting post means, having a longitudinal axis and a mounting end, for mounting said seat to said pedal operated device, said mounting post means including:

a receiving portion having a tightening rod hole at one end and an insertion post receiving hole at the other end;

a spring insertable into said receiving portion via said insertion post receiving hole;

an insertion post connectable to said post cap means at one end and having a threaded tensioning rod receiving hole at the other end;

a tensioning rod having two ends, the first end being insertable through said tensioning rod hole and threadable into said threaded tensioning rod receiving hole; and

a tensioning rod nut, threadable onto said second end of said tensioning rod, to enable tightening or loosening of said spring;

post cap means, coupled to said mounting end of said mounting post means, for enabling rotation of said post cap means about said longitudinal axis of said mounting post means, said post cap means including:

a post cap, having a post cap mounting hole formed therethrough; and

a post cap mounting bolt, insertable through said post cap mounting hole, to couple said post cap to said mounting post means so that said post cap can rotate about said longitudinal axis of said mounting post means;

axle means, having a longitudinal axis and fixedly attached to said post cap means, for enabling rotation of objects mounted on said axle means about said longitudinal axis of said axle means; and

support means, mounted on said axle means, for supporting a rider of said pedal operated device.

5,387,026

SUPPORT STRUCTURE FOR ACOUSTIC OSCILLATION TRANSFERRING DEVICE

Kazuhiro Matsuhashi, Hiroshima; Koji Takada, Otake, and Yoshikazu Okamoto, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

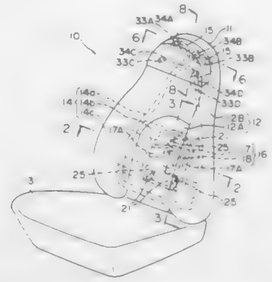
Filed Jun. 28, 1993, Ser. No. 82,573
Claims priority, application Japan, Jul. 10, 1992, 4-183568
Int. Cl.[6] A47C *7/62*
U.S. Cl. 297—217.4 10 Claims

1. A support structure for an acoustic oscillation transferring device used with a seat of an automobile comprising:

a cushion, forming a part of the seat of the automobile, said cushion having an open space defined therein;

a frame supporting the acoustic oscillation transferring device surrounding said open space;

a seat frame, forming another part of the seat of the automobile; and



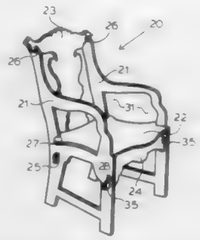
an unstretchable but flexible band for securing said frame supporting the acoustic oscillation transferring device to said seat frame.

5,387,027

TAKE APART FURNITURE

Timothy J. Maloney, Strasburg, Va., assignor to One Design Inc., Winchester, Va.

Filed Apr. 1, 1993, Ser. No. 41,170
Int. Cl.[6] A47C *7/00*
U.S. Cl. 297—440.13 13 Claims



1. A furniture structure for chairs, benches and the like consisting of substantially planar members which interlock and reversibly unlock without the use of tools or separate fasteners, comprising:

two sides, a seat member, a back and a front, the sides each having an upper edge, and the seat member including a forward edge and a rear edge; and

means on each of the sides for interlocking with the seat member, the back and the front without the need for tools or separate fasteners, the interlocking means including:

first and second means on each of the sides for frictionally engaging the forward and rear edges of the seat member, respectively, in opposite directions;

third means on each of the sides for frictionally engaging the seat member in a direction substantially perpendicular to the opposite directions;

back lock means on each of the sides for interconnecting the back to each of the sides, including upper back means and lower back means, the lower back means being separated from the upper back means at least by a distance equal to the distance between the upper edges of the sides when the structure is in a fully assembled condition; and

front lock means on each of the sides for interlocking the front to each of the sides.

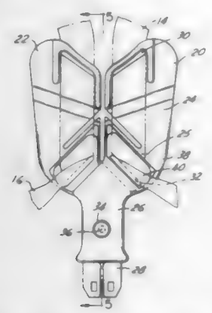
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5,387,028

OCCUPANT HARNESS

Lyada K. Fulgenzi, Dearborn Heights, and Jeffrey L. Goins, New Haven, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1993, Ser. No. 162,250
Int. Cl.[6] B60R *22/14*
U.S. Cl. 297—470 11 Claims



1. An occupant harness for an occupant seat in a motor vehicle, the motor vehicle including a pair of belts secured thereto at opposite ends of each belt and a buckle device secured to the motor vehicle, said harness comprising:

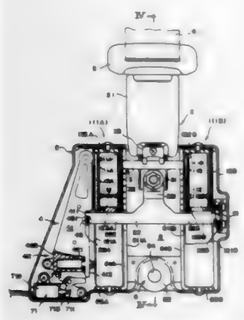
a pair of tongue members each interlaced with a respective one of said belts, said pair of tongue members being pivotably connected to each other so as to pivot from a first open position not in engagement with said buckle device to a second closed position so that each tongue member engages said buckle device.

5,387,029

BUCKLE PRETENSIONER FOR VEHICLE SEAT BELT SYSTEMS

Koji Hiramatsu, and Muneo Nishizawa, both of Shiga, Japan, assignors to Takata Corporation, Japan

Filed May 18, 1993, Ser. No. 63,524
Claims priority, application Japan, May 19, 1992, 4-150143
Int. Cl.[6] B60R *22/34*
U.S. Cl. 297—480 3 Claims



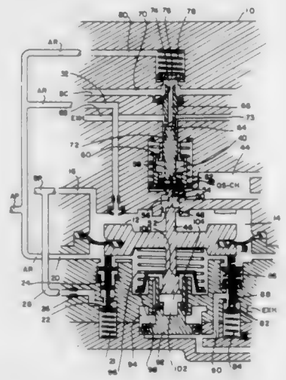
3. A buckle pretensioner for a vehicle seat belt system of the type that is mounted on a vehicle seat and has a driving device for applying a force to a buckle to which a seat belt is attached to move the buckle and apply pretension to the seat belt, an inertial starting mechanism including a movable member that is arranged to normally prevent the driving device from moving the buckle and that is movable in response to an inertial force to permit the driving device to move the buckle, and a blocking member for preventing the movable member from moving, characterized in that the blocking device includes a solenoid and an electric power circuit for energizing the solenoid, and in that the power circuit includes a switch responsive to insertion of a buckle tongue into the buckle for controlling the energy state of the solenoid such that the blocking device prevents movement of the movable member when the buckle tongue is not inserted into the buckle.

5,387,030

PLURAL SERVICE RATE SENSITIVITY CONTROL VALVE

Robert Gayfer, and Heinz-Jürgen Listl, both of Watertown, N.Y., assignors to Knorr Brake Holding, Westminster, Md.

Filed Sep. 10, 1993, Ser. No. 118,737
Int. Cl.[6] B60T *17/06*
U.S. Cl. 303—30 20 Claims



1. A brake control valve system operating a vehicle's air brakes in response to brake pipe pressure in a brake pipe, comprising:

a housing including a quick braking volume;

piston means in said housing and subject to brake pipe pressure on one side thereof for assuming a plurality of positions in response to said brake pipe pressure on said one side;

first valve means in said housing for reducing brake pipe pressure by connecting brake pipe pressure to said quick braking volume when open to accelerate the response of said piston means to a drop in brake pipe pressure;

operator means for controlling the opening of said first valve means in response to the position of said piston means;

first restriction means for defining a first rate of flow through said first valve means insufficient to reduce said brake pipe pressure alone to cause said piston means to assume a braking position for a first range of first valve open positions of said piston means; and

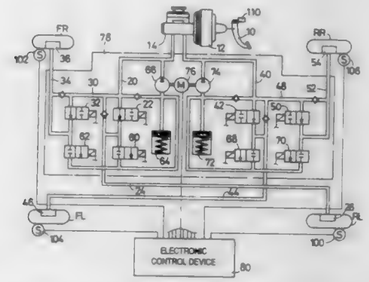
second restriction means for defining a second rate of flow through said first valve means greater than said first rate of flow to accelerate said piston means to said braking position for a second range of first valve open positions of said piston means subsequent to said first range of piston means positions.

5,387,031

ANTI-LOCK/TRACTION CONTROL BRAKE SYSTEM WHEREIN WHEEL BRAKE PRESSURE IS CONTROLLED BASED ON WHEEL SPEEDS RELATIVE TO VEHICLE SPEED

Masao Watanabe, Nagoya, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 11, 1994, Ser. No. 208,591
Claims priority, application Japan, Mar. 31, 1993, 5-098926
Int. Cl.[6] B60T *8/32, 8/70*
U.S. Cl. 303—109 29 Claims



1. An apparatus for preventing excessive slipping of a wheel of a motor vehicle, said apparatus comprising:

pressure regulating means for regulating a brake force for braking the wheel;

wheel speed obtaining means for obtaining the rotating speed of the wheel;

vehicle speed obtaining means for obtaining a running speed of the vehicle;

relative speed change obtaining means for obtaining, as a kind of said amount of change of the rotating speed of the wheel, a relative wheel speed change amount which corresponds to an amount of change of a difference between the speeds of the wheel and the vehicle obtained by said wheel speed obtaining means and said vehicle speed obtaining means, respectively; and

controlling means for controlling said pressure regulating means in accordance with at least said relative wheel speed change amount.

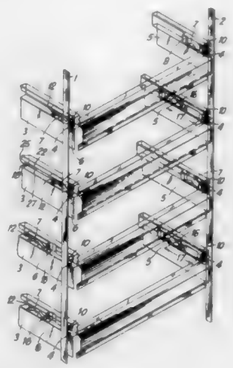
5,387,032

CLOSING MECHANISM FOR CABINETS WITH DRAWERS

Günter Reisbeck, Nagold, Germany, assignor to Hafele GmbH & Co.

Filed Apr. 20, 1993, Ser. No. 50,522
Claims priority, application Germany, Apr. 25, 1992, 9205640[U]
Int. Cl.[6] E05C *17/10*
U.S. Cl. 312—221 13 Claims

1. A closing mechanism for a cabinet having a plurality of drawers slidable out of the cabinet from a closed position, the drawers having sides, each side having a longitudinal direction, at least one vertically displaceable closing rod being mounted on one of the sides of the drawers, a cam piece mounted on the side of each drawer, the at least one closing rod having pins projecting from the closing rod toward the sides of the drawers the cam piece having an inclined surface for displacing the closing rod into a displaced position when the cam piece is moved past one of the pins of the closing rod, the cam piece comprising a stop member mounted on a level equal to a level of the pin when the closing rod is in the displaced position, the cam piece being displaceable in the longitudinal direction of the side of the drawer and comprising clamping means for clamping the cam piece in a selected position along the longitudinal direction of the side of the drawer, wherein the cam pieces of the plurality of drawers are clamped at positions



having different distances from the closing rods when the drawers are in the closed position.

5,387,033

LATERALLY ADJUSTABLE MOUNTING BRACKET FOR USE IN A DESK OR CABINET DRAWER AND WITH A DRAWER GUIDE HAVING A BENT TONGUE

Georg Domenig, Kernersville, N.C., assignor to Grass America, Inc., Kernersville, N.C.

Filed Feb. 23, 1993, Ser. No. 21,519
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—334.5 29 Claims



1. A laterally adjustable mounting bracket for use in a desk or cabinet drawer and with a drawer guide having a tongue portion, the bracket comprising: a base having portions defining an aperture; opposing retaining flanges secured to the base and cooperatively receiving the drawer guide tongue portion for lateral adjustment; an insert receivable by the aperture for engaging the drawer guide tongue portion limiting the lateral movement of the drawer guide and carried drawer; and means supporting said base on the desk or cabinet.

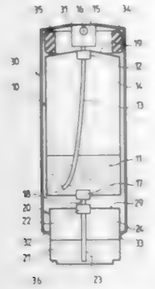
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5,387,034

MIXING DEVICE FOR THE PACKAGING AND DISPENSING OF A MIXTURE OF TWO PRODUCTS ISOLATED FROM EACH OTHER BEFORE THE DISPENSING OPERATION

Daniel Bauer, Le Raincy; Gérard Braque, Mitry-le-Neue, and Dominique Esclar, Herpy L'Arlesienne, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 6, 1993, Ser. No. 161,544
Claims priority, application France, Dec. 14, 1992, 92 15012
Int. Cl.[6] B01F *15/02*
U.S. Cl. 366—130 9 Claims



1. A device for mixing a first product (11) and a second product (21) and for dispensing a mixture (41) of the two products (11, 21), the device comprising a casing (30) and in the casing a first container (10) containing said first product (11) and a second container (20) containing said second product (21), a push-button (15) and a nozzle (16) on a side of said first container (10) opposite said second container (20), actuation of said push-button (15) permitting said mixture (41) to leave said device through said nozzle (16), the two containers (10, 20) being axially slidable in and relative to the casing and relative to each other from a first position in which said containers are spaced apart a first distance and said push-button and nozzle are retracted within said casing and said containers are out of communication with each other, and a second position in which said push-button and nozzle extend out of said casing and are accessible to a user of the device and said first and second containers are spaced apart a second distance less than said first distance, and means responsive to movement of said containers from said first position to said second position to establish communication between said first and second containers whereby the contents of said second container can enter said first container and mix with the contents of the first container to produce said mixture and said mixture can then be dispensed through said nozzle upon operation of said push-button.

5,387,035

Patent Not Issued For This Number

5,387,036

ORGANIC MATERIAL COMPOSTING SYSTEM

Daniel J. Hagen; Charles Olsen, both of Stratham, N.H.; Norman J. Blais, Fiskdale, and Clifford E. Nelson, Holden, both of Mass., assignors to International Process Systems, Inc., Hampton, N.H.

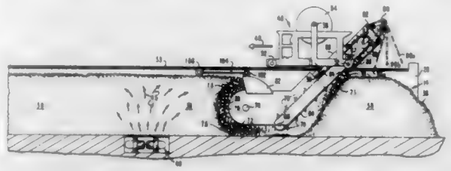
Filed Jul. 31, 1992, Ser. No. 923,265
Int. Cl.[6] B01F *15/00*
U.S. Cl. 366—346 15 Claims

1. An agitator for travelling through a bed of composting material in an elongate bay for aerating and rearwardly displacing the composting material in the bay, comprising:

conveyor means for conveying and rearward airborne discharge of the composting material behind the agitator as it progresses through the bed in the bay;

feed means forward of the conveyor means for taking composting material from the bed forward of the agitator and rearwardly feeding it to the conveyor means; and

adjustable composting material discharge regulating means for selectively regulating rearward airborne displacement of the composting material by the agitator, comprising a moveable member rearward of the conveyor means in the



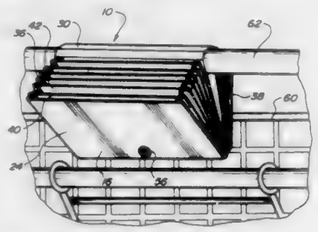
path of airborne rearward discharge of the composting material, the moveable member being adjustable to vary airborne deflection of the composting material to selectively increase and decrease its rearward displacement distance as the agitator progresses in the bay to produce a substantially level bed of composting material in the bay behind the agitator.

5,387,037

COUPON ORGANIZER

Beverly Daitch, 29145 Forest Hill Ct., Farmington Hills, Mich. 48331

Filed Jul. 22, 1993, Ser. No. 96,016
Int. Cl.[6] B65D *30/20, 30/22, 33/14*
U.S. Cl. 383—7 11 Claims



1. A reversible coupon organizer, comprising:

a base having an inner surface and an outer surface;

first and second panels separated by a selectively reversible hinge, said first and second panels including an extendable envelope disposed along said inner surface, said envelope having accordion side walls and at least one divider extending between said side walls to thereby form pockets for receiving coupons;

fastening means for maintaining said coupon organizer in an open, operative position; and

fastening means for maintaining said coupon organizer in a closed position.

5,387,038

DUST-PROOFING STRUCTURE OF MINIATURE LINEAR GUIDE

Yasushi Abe, and Toru Tsukada, both of Gunma, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jun. 21, 1994, Ser. No. 262,867
Claims priority, application Japan, Jun. 21, 1993, 5-33339[U]
Int. Cl.[6] F16C *29/06, 29/08*
U.S. Cl. 384—15 3 Claims

1. A miniature linear guide comprising:

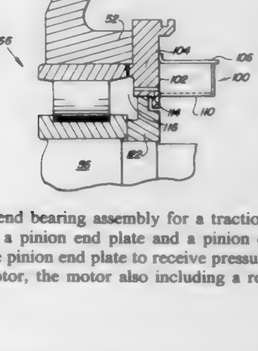
a guide rail U-shaped in section which is extended axially, said guide rail including a first load ball rolling groove formed on an inner surface of a side wall of said guide rail and extended axially;

a slider including:

a slider body U-shaped in section which is adapted to be fitted in said guide rail, said slider body including a second load ball rolling groove formed on an outer surface of a side wall of said slider body and confronted with said first load ball rolling groove of said guide rail;

a circulator having a non-load ball circulating path which is extended axially, said circulator being fitted in said slider body; and

a holding plate interposed between said slider body and said circulator; and



a plurality of balls fitted to roll in a space defined by said first and second load ball rolling grooves and said non-load ball circulating path of said circulator; and

a dust-proofing structure including:

a protrusion formed in an axial end portion of said holding plate and bent substantially at right angle to an upper surface of said holding plate; and

a seal member having a sealing protrusion formed on an outer surface of said protrusion so that said sealing protrusion is fitted in said first load ball rolling groove of said guide rail to sealingly close a gap formed between said guide rail and said slider mounted in said guide rail.

5,387,039

AC TRACTION MOTOR WITH DRIVE END BEARING ASSEMBLY FOR LOCOMOTIVE

Paul R. Bien, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 1, 1993, Ser. No. 160,515
Int. Cl.[6] F16C *33/80*
U.S. Cl. 384—477 12 Claims

1. A drive end bearing assembly for a traction motor, the motor having a pinion end plate and a pinion end chamber forward of the pinion end plate to receive pressurized cooling air for the motor, the motor also including a rotatable shaft which extends rearward through an aperture formed in the end plate, the assembly comprising:

bearing means operably supported within the aperture for rotatably supporting the shaft, the bearing means being disposed within a bearing cavity;

a housing attached to a forward face of the pinion end plate, the shaft extending through the housing;

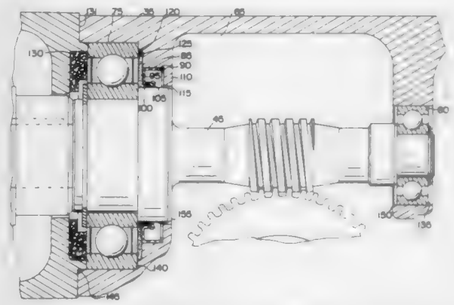
a rotatable element attached to and circumscribing the shaft between the housing and shaft, the housing and rotatable element forming an interface whereby air from the pinion end chamber may flow to the bearing cavity, the housing and rotatable element configured to form a plurality of labyrinth sealing means for restraining the flow of the air along the interface, the housing and rotatable element also configured to form a plurality of venting chambers along the interface among the labyrinth sealing means with at least one venting chamber being disposed between adjacent labyrinth sealing means, the housing forming portions of venting passageways extending between a corresponding venting chamber and a first low pressure reservoir whereby air flowing into the venting chambers is vented off to the reservoir.

5,387,040

SEALING SYSTEM

Charles R. Firestone, Greer, S.C., and Donald E. Broadus, North Vernon, Ind., assignors to Reliance Electric Industrial Company, Del.

Filed Apr. 30, 1993, Ser. No. 54,955
Int. Cl.[6] F16C *33/76*
U.S. Cl. 384—477 15 Claims



1. An improved sealing system for sealing an input shaft in a housing of a mechanical device with a shaft input opening, said shaft being supported in said housing on at least one bearing assembly in said opening at said input side, said sealing system comprising:

a seal arranged in said shaft input opening for surrounding said input shaft, said seal being located between said at least one bearing assembly and the interior of said housing whereby said seal will be exposed to lubricant from the interior of said housing but such lubricant will be prevented from leaking from said housing at said shaft input opening;

a grease filled chamber between said seal and said bearing, said grease filled chamber further preventing leakage of lubricant through said sealing system; and

a packing gland located adjacent said bearing on the side of said bearing opposite said seal and said grease filled chamber.

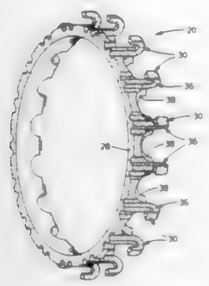
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5,387,041

CLOSE PACKED PLASTIC BEARING BALL SEPARATOR

Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 2, 1994, Ser. No. 236,318
Int. Cl.[6] F16C *33/38, 33/44*
U.S. Cl. 384—531 3 Claims



1. A moldable, one piece, open profile bearing ball cage for retaining and separating a closely packed complement of bearing balls having a predetermined pitch circle, predetermined chord length lines interconnecting the centers of said balls, and a central axis around which said balls are arrayed, comprising,

a generally annular spine concentric to said central axis,

a plurality of ball seats integral to said spine and equal in number to said balls, each of said ball seats lying generally on a sphere coextensive with one of said balls, on one side of a plane through said pitch circle, and facing in one axial direction, and,

a plurality of generally hook shaped fingers equal in number to said balls plus one and extending in adjacent pairs axially from said spine and wrapping around, and clear of, said chord length lines, each of said fingers having a pair of side surfaces that extend axially and intersect at a ball contact zone located on the opposite side of said pitch plane, facing in the opposite axial direction, and lying generally on a sphere coextensive with one of said balls, said contact zones having no circumferential or radial overlap with said ball seats,

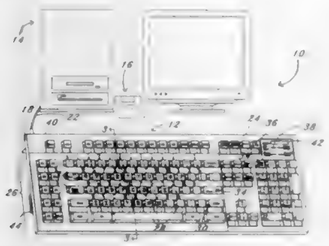
whereby, a ball pocket is provided for each ball between each ball seat and respective pair of ball contact zones, with the chord length lines remaining unobstructed by solid cage material, while said cage may also be molded by an axial draw technique.

5,387,042

MULTILINGUAL KEYBOARD SYSTEM

Carl W. Brown, 3452 Shangri-La Rd., Lafayette, Calif. 94549

Filed Jun. 4, 1993, Ser. No. 71,697
Int. Cl.[6] B41J *5/00, 5/10*
U.S. Cl. 400—477 9 Claims



1. A keyboard and template combination adapted to be utilized as input to processing devices for receiving keyboard input in the form of signals corresponding to the condition of the individual keys thereon, comprising:

a keyboard member having a plurality of keys arrayed thereon in a keyboard layout, the keyboard and the keyboard layout conforming in size, arrangement and shape to conventional keyboards utilized for such purposes, the keys having a keytop corresponding in size, shape and contour to conventional keytops, at least some of the keytops including key labels displaying a primary character typically generated by the processing devices in response to depressing the associated key, at least certain ones of the keys being further provided with a template detent formed underneath a front portion of the keytop, the template detent having a vertical extent greater than the range of vertical motion of the key during usage;

at least one template member adapted to mate with said keyboard member, said template member including a plurality of alternating key windows and label panels, the key windows being adapted to fit over selected ones of the keys and the label panels being adapted to rest within the template detents in such a manner that the label panels do not physically interfere with the travel of the keys during use, the label panels being provided with alternate key labels, each alternate key label corresponding to the desired alternate output of the one of the keys with which the alternate key label is associated and in the template detent of which key the label panel rests; and

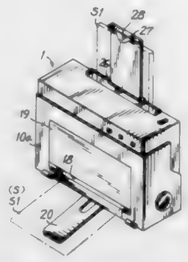
switching means for causing the processing devices to interpret keystrokes from said keyboard as either a default keyboard character set, corresponding to the key labels, or an alternate character set, corresponding to the alternate key labels, depending on the condition of said switching means.

5,387,043

COMPACT PRINTER

Satoshi Fujioka, and Masayuki Ono, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 85,710
Claims priority, application Japan, Jul. 1, 1992, 4-197581; Sep. 3, 1992, 4-263196
Int. Cl.[6] B41J *29/06*
U.S. Cl. 400—691 14 Claims



1. A compact printer comprising:

a printer body including an upper surface, a bottom surface, a rear end face and a sheet discharging outlet;

the intersection of said upper surface and said rear end face defining a first edge, the intersection of said bottom surface and said rear end face defining a second edge;

said sheet discharging outlet being near said first edge;

a stand and stack member rotatably and slidably mounted on said rear end face of said printer body so as to be selectively positioned relative to said rear end face,

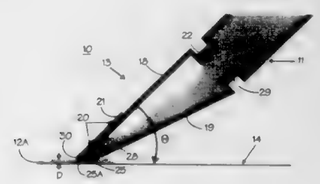
said stand and stack member being positionable in at least two positions, a stack position at which at least a portion of said stand and stack member projects beyond said first edge for receiving a recording sheet discharged through said sheet discharging outlet, and a first standing position wherein at least a part of said stand and stack member projects beyond one of said first and second edges for stabilizing said printer body when said printer body is positioned in an upright position at which said rear end face faces downwardly.

5,387,044

SCREEN FILLER APPLICATOR FOR THE SCREEN PRINTING INDUSTRY

Thomas A. Accardo, 109 Cambridge St., Winchester, Mass. 01890

Filed Dec. 15, 1993, Ser. No. 166,888
Int. Cl.[6] B43K *8/00;* B41L *13/00*
U.S. Cl. 401—5 9 Claims



1. A screen filler applicator comprising:

a dispenser defining a liquid receiving end at a top part thereof and a liquid dispensing opening at the bottom part thereof;

an upstanding pin extending from an exterior surface of said dispenser for attaching a squeegee blade, said squeegee blade having radial-shaped sides and an aperture for capturing said upstanding pin and holding said squeegee blade against said exterior surface whereby said liquid exits from said liquid dispensing opening and is trapped between an edge of said squeegee blade and a substrate surface.

5,387,045

RESERVOIR WAND

Ronald P. Anderson, 3655 W. Broadway, Robbinsdale, Minn. 55422

Filed Nov. 5, 1993, Ser. No. 148,001
Int. Cl.[6] A47L *1/08*
U.S. Cl. 401—205 1 Claim



1. A reservoir wand comprising:

a. an outer tube with a plurality of holes along a first axis and elongated hole adjacent a mid-point of said tube, and a handle affixed to a mid-point of said outer tube;

b. a vent hole at each end of said outer tube;

c. an inner tube with a plurality of second holes along a second axis for aligning with the first pluraility of holes;

d. an actuating lever affixed to said inner tube; and,

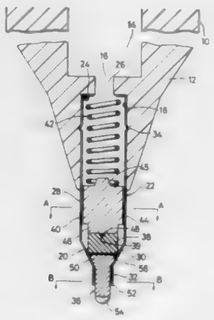
e. a spring between an outer end of said inner tube and an inner end of said outer tube whereby said spring biases said actuating lever against one end of said elongated hole for retaining the reservoir wand with a washing fluid and when said spring is compressed by biasing of said actuating lever, provides for filling of the reservoir wand with washing fluid for later wetting of a surrounding washing cloth which resides over a majority portion of said outer tube.

5,387,046

APPLYING IMPLEMENT HAVING AN APPLICATION TIP SHIFTABLE INDEPENDENTLY OF A VALVE MEMBER

Akira Danno, Osaka, Japan, assignor to Kabushiki Kaisha Mikado Seisakusho, Osaka, Japan

Filed Oct. 25, 1993, Ser. No. 142,539
Claims priority, application Japan, Mar. 26, 1993, 5-068412; Jun. 23, 1993, 5-152033
Int. Cl.[6] B43K *8/00, 8/16, 8/18*
U.S. Cl. 401—260 19 Claims



14. An applying implement comprising:

a main body having an application fluid storage;

a hollow head cylinder mounted on said main body, said hollow head cylinder including a front end portion having an opening, a rear end portion having a communication hole communicating with said application fluid storage, and a tapered portion formed between said front and rear end portions so as to increase its radius as it advances rearward;

a valve body means in said hollow head cylinder, said valve body means comprising a valve body member of a soft and resilient material accommodated inside said hollow head cylinder so as to be slidable in an axial direction;

an urging means in said hollow head cylinder for resiliently urging said valve body means forward so that said valve body means can be firmly pressed against the inside surface of the tapered portion by the urging force of said urging means; and

an application tip in said hollow head cylinder provided in front of and independent of said valve body means so as to be shiftable in the axial direction until said application tip protrudes out of said hollow head cylinder, said application tip being spaced from a front edge of said valve body means when said application tip is shifted to an outermost position, said application tip having an engaging portion engageable with the inside surface of the tapered portion of said hollow head cylinder.

5,387,047

DOUBLE ECCENTRIC FASTENER DEVICE

John G. Korpi, Livonia, Mich., assignor to The United States of America as represented by The Secretary of the Army, Washington, D.C.

Filed Sep. 23, 1993, Ser. No. 127,902
Int. Cl.[6] B60D *1/00*
U.S. Cl. 403—4 9 Claims

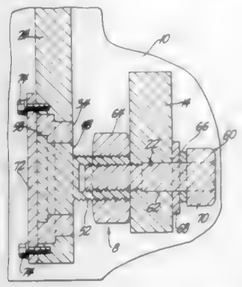
1. A fastening mechanism for releasably mounting one device to another device where mounting locations on the other device vary in positional relation to one another, the fastening mechanism comprising:

a first and a second mounting location on the other device;

means at the first mounting location for connecting the one device to the other device;

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a first eccentric member having a stepped outer diametrical surface;
a first collar on the first eccentric member;
connective means fixed to the one device at the second mounting location for engaging the first eccentric member, the connective means defining a stepped bore closely and concentrically receiving the stepped outer diametrical surface of the first eccentric member;
a second collar on the first eccentric member fixed to and



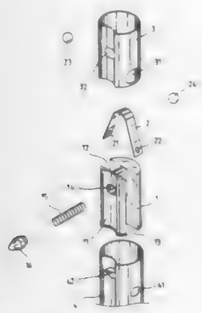
eccentric with respect to the first collar, the first and second collars defining the stepped outer diametrical surface;
a second eccentric member having a circular portion;
a flange affixed concentrically to the circular portion, the circular portion and flange closely fit in the second collar of the first eccentric member;
a socket on the second eccentric member eccentric relative to the circular portion;
fastener means for attaching the other device to the socket.

5,387,048

SECURING MEANS FOR TELESCOPIC STICKS OF A MULTIPLE-FOLD UMBRELLA

Cheng M. L. Kuo, 18, Alley 15, Lane 582, Sea Ta Road, Hsinchu, Taiwan, Prov. of China

Filed Aug. 3, 1993, Ser. No. 101,010
Int. Cl.[6] A45B *19/04*
U.S. Cl. 403—109 **1 Claim**



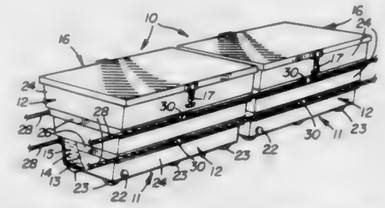
1. A tubular telescopic umbrella securement system comprising:
(a) an outer tubular member having an outer tubular positioning hole and a pair of opposing outer tube openings formed through an outer tubular member sidewall;
(b) an inner tubular member telescopically received within said outer tubular member, said inner tubular member having an inner tubular positioning hole and a pair of opposing inner tube openings formed through a sidewall thereof for respective alignment with said outer tube positioning hole and said pair of opposing outer tube openings;
(c) a stub member insertable within said inner tubular member having a stub member recess formed in a sidewall thereof for alignment with said outer and inner tube openings, said stub member having vertically extending grooves formed within opposing sidewalls thereof;
(d) a spring biased locating plunger displaceable through said outer and inner tubular positioning holes and within said stub member recess; and,
(e) a U-shaped resilient member having a pair of detent ball members secured to end sections of a pair of leg members, said U-shaped resilient member being mounted within said stub groove over an upper surface of said stub member for alignment of said detent ball members with said inner and outer tube openings.

5,387,049

ROADWAY BARRIER MODULE, SYSTEM AND METHOD

John W. Duckett, Carson City, Nev., assignor to Barrier Systems, Inc., Carson City, Nev.

Filed Jun. 29, 1993, Ser. No. 84,002
Int. Cl.[6] E01F *15/00*
U.S. Cl. 404—6 **19 Claims**



1. A barrier module adapted to be connected in series with other modules to form a continuous barrier system for collectively absorbing high-impact loads imposed thereon, said module comprising
an open-top container having upstanding sidewalls and a horizontally disposed and contiguous bottom wall defining a chamber adapted to be at least partially filled with a shock-absorbing medium, the sidewalls and bottom wall of said container being composed of a flexible, high-impact plastic material,
at least one horizontally disposed continuous band means completely surrounding said sidewalls for at least substantially uniformly distributing said impact loads to and around said module, and
lug means secured to said band means for detachably connecting a cable to said band means and module whereby said cable will be adapted to connect a series of said modules together in tandem relationship relative to each other.

5,387,050

EXTRUDED ETHYLENIC POLYMER FOAM CONTAINING BOTH OPEN AND CLOSED CELLS

Edward E. Hovis, Newark; Eric D. Johnson, Wilmington, and Michael J. Schroeder, Newark, all of Del., assignors to Nomaco Inc., Zebulon, N.C.

Division of Ser. No. 760,149, Sep. 16, 1991, Pat. No. 5,098,782, which is a division of Ser. No. 526,629, May 22, 1990, Pat. No. 5,059,631, which is a division of Ser. No. 365,838, Jun. 14, 1989, Pat. No. 4,931,484, which is a continuation-in-part of Ser. No. 257,510, Oct. 13, 1988, abandoned. This application Jan. 16, 1992, Ser. No. 821,671
Int. Cl.[6] E01C *11/02*
U.S. Cl. 404—74 **6 Claims**

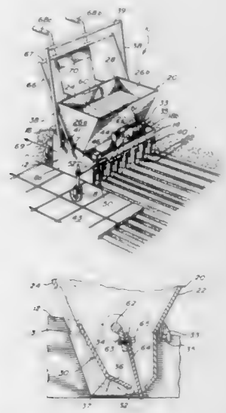
1. A polymer foam sealant backer rod adapted to be compressed between and provide a seal between two surfaces, said sealant backer rod being cellular, with the greatest percentage of the cells being open, and an integral skin covering the foam for preventing sealant from passing through the backer rod.

5,387,051

LEVELLED CEMENT SPREADER FOR LAYING TILES

Pietro Valente, Windsor, Canada, assignor to Antonietta Investments Ltd., Windsor, Canada

Filed Apr. 2, 1993, Ser. No. 41,990
Claims priority, application Canada, Apr. 15, 1992, 2066089
Int. Cl.[6] E01C *19/43*
U.S. Cl. 404—84.05 **14 Claims**



1. An apparatus for producing onto a floor surface, a level surface of a cementitious material comprising:
a base adapted for displacement on the floor surface, and a container surmounting said base and resting thereon, and adapted to receive the cementitious material,
said container having a front wall, a rear wall and a bottom opening, said rear wall including a downward extension which is pivotally mounted on said rear wall,
means for causing pivoting of said downward extension to thereby enlarge or reduce the size of the bottom opening of said container and vary the amount of cementitious material discharged from said container into said base depending on required amounts thereof,
said base having an opening which trails the discharged cementitious material from said container on the floor surface when said apparatus is operatively displaced, said base opening being defined by a front wall of said base which is vertically spaced from the floor surface,
a gate movably mounted on said base front wall to be vertically displaced for selectively enlarging or reducing said opening,
sensor means detecting irregularities in said floor surface, and
control means responsive to said sensor means enabling to move said gate for spreading the cementitious material passing therethrough to produce said level surface.

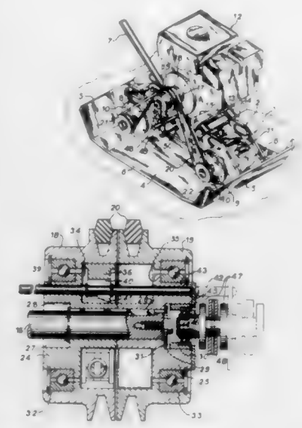
5,387,052

DRIVE MECHANISM FOR A VIBRATORY COMPACTOR

Thomas G. Artzberger, Hartford, Wis., assignor to M-B-W Inc., Slinger, Wis.

Filed Mar. 9, 1993, Ser. No. 28,318
Int. Cl.[6] E01C *19/38;* **F16H** *33/20;* **F16D** *43/24*
U.S. Cl. 404—133.1 **16 Claims**

1. A vibratory compactor, comprising a frame, compaction means mounted on the frame and adapted to engage in material to be compacted, drive means mounted on the frame and including a drive shaft, a first support member and a second support member mounted on the drive shaft, a pair of eccentric shafts mounted for rotation on the frame, a third support member connected to a first of said eccentric shafts, a fourth support member connected to a second of said eccentric shafts,



and a single endless flexible connecting member operably connecting the first, second, third and fourth support members, said connecting member being constructed and arranged so that both eccentric shafts rotate simultaneously and in the same direction.

5,387,053

SPILL CONTROL APPARATUS FOR USE ON OFFSHORE OIL WELL DRILLING PLATFORMS

Pat Williamson, Morgan City, La., assignor to B & P Environmental Services, Inc., Morgan City, La.

Filed Sep. 15, 1993, Ser. No. 122,059
Int. Cl.[6] A47L *9/00*
U.S. Cl. 405—52 **9 Claims**



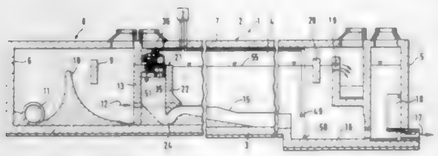
1. A spill-control kit comprising:
a) a structural frame made of chemical resistant material that supports a cabinet with an interior for holding at least a plurality of spill control articles;
b) the frame providing a first rack portion externally of the interior;

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c) the frame providing second rack portion externally of the interior;
d) a first plurality of storage drums removably secured to a selected area of the racks;
e) an absorbent material contained within at least one of the drums;
f) a polyurethane foam dispensing system for dispensing foam to form a barrier around a spill; and
g) wherein the frame has a load capacity of at least one thousand pounds.

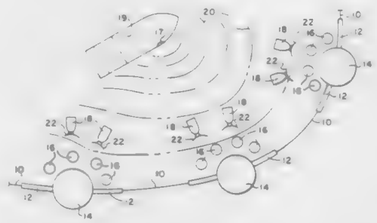
9. A method of containing a chemical or hydrocarbon spill, comprising the following steps:
a) transporting a spill control kit into the vicinity of the spill, the spill control kit comprising:
i) a cabinet, made of a chemical-resistant material and having an interior for holding spill control articles;
ii) at least one support rack;
iii) a wet/dry vacuum cleaner means supported externally of the interior;
iv) at least one storage drum removably secured to the rack;
v) absorbent material contained within the drum;
vi) a polyurethane foam dispensing system for dispensing at least one hundred (100) board feet of polyurethane foam;
vii) multiple articles of protective clothing for protecting an operator's hands, arms, head, torso;
b) using the wet/dry vacuum cleaner to vacuum up at least part of the spill;
c) using absorbent material contained in the first drum to absorb at least some of the spill;
d) using the foam to form a barrier around at least a portion of the spill.

5,387,054
SCOURING SYSTEM FOR AUTOMATICALLY SCOURING AN EMPTY LIQUID RESERVOIR
Michael Richter, Taunusstein, Germany, assignor to Alloy-Tech Altiengesellschaft, Vaduz, Liechtenstein
Filed Jun. 28, 1993, Ser. No. 83,989
Claims priority, application Germany, Jul. 1, 1992, 4221569
Int. Cl.[6] E02F *1/00;* **B08B** *3/00*
U.S. Cl. 405—53 **4 Claims**



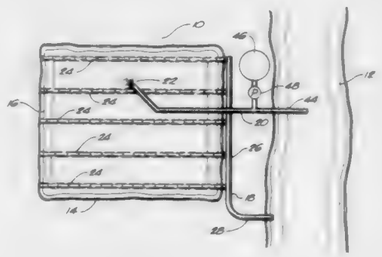
1. A scouring system for automatically scouring an empty liquid reservoir, the scouring system comprising at least one scouring liquid chamber arranged at an area of a highest point of a floor of the liquid reservoir, the scouring liquid chamber having a ceiling for closing the chamber in an air-tight manner, the scouring liquid chamber further having a siphon-like scouring duct with an inlet opening in communication with the scouring liquid chamber and an outlet opening in communication with the liquid reservoir, an upper edge of the inlet opening being located below a lower edge of the outlet opening, the scouring liquid chamber further comprising an air outlet opening with a check valve for discharging air displaced during filling of the scouring liquid chamber, an air inlet opening of the scouring liquid chamber, the air inlet opening defining a valve seat, a valve member for closing the air inlet opening and for opening the air inlet opening for initiating a scouring procedure, the valve member comprising a diaphragm of an elastically deformable material, means for applying increased pressure to the diaphragm for pressing the diaphragm from inside the scouring liquid chamber against the valve seat for closing the air inlet opening, and a pressure compensating line with a control valve connecting the means for applying increased air pressure with the liquid reservoir.

5,387,055
OIL RECOVERY APPARATUS AND METHOD
John T. Jenkins, Irving, Tex., assignor to Oil Recovery Systems International, Irving, Tex.
Continuation of Ser. No. 596,779, Oct. 12, 1990, Pat. No. 5,139,363. This application Aug. 12, 1992, Ser. No. 929,157
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[6] E02B *15/04*
U.S. Cl. 405—63 **15 Claims**



11. Apparatus for confining material from a body of water within a predetermined recovery zone, comprising:
barrier means for confining at least some of the material within a predetermined recovery zone; and
means operative in the recovery zone for urging material toward said barrier means, said urging means including at least one marine vehicle having a pushing device mounted on a bow portion thereof for deflecting material ahead of the vehicle and having mounting structure, connected between the bow portion of the vehicle and the pushing device, comprising means for maintaining at least a portion of the pushing device in alignment with the bow of the vehicle.

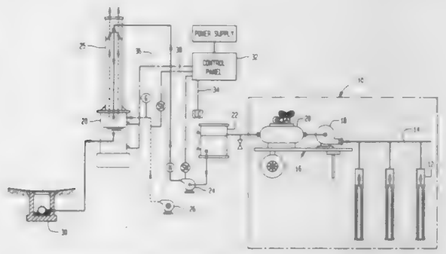
5,387,056
METHOD FOR TREATING DREDGING SPOILS FOR SALT CONTAMINATION
Joseph A. DeLuca, Galveston, Tex., assignor to DeLuca Services, Inc., Galveston, Tex.
Filed Jul. 19, 1993, Ser. No. 92,783
Int. Cl.[6] C02F *1/00*
U.S. Cl. 405—128 **15 Claims**



1. A method of treating dredging spoils for salt contamination comprising the steps of:
passing the dredging spoils in a flow to a containment area, said dredging spoils having a solid component and a liquid component;

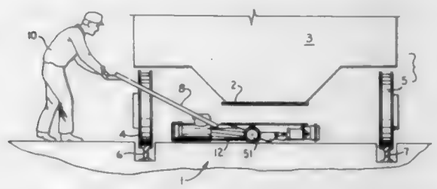
pumping a solution of calcium and nitrate ions into the flow of the dredging spoils;
reacting said solution with the dredging spoils; and
draining said liquid component and salt from said containment area.

5,387,057
CONTAMINATED GROUND SITE REMEDIATION SYSTEM
Anthony DeLoach, 1631 Jewel Dr., Sarasota, Fla. 34240
Filed Nov. 9, 1993, Ser. No. 149,313
Int. Cl.[6] B09B *3/00*
U.S. Cl. 405—128 **13 Claims**



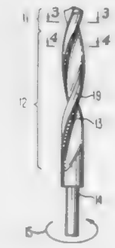
1. A contaminated ground site remediation system temporarily deployable to remove volatile contaminants comprising:
a plurality of elongated dewatering points embedded into the contaminated ground in a spaced array, each said dewatering point extending into and below the contaminated ground and below a water table level of the contaminated ground;
a water manifold operably connected to an upper end of each said dewatering point;
a dewatering pump means operably connected to said water manifold for removal of ground water being drawn into said water manifold by said pump means through said plurality of dewatering points to lower the level of the ground water downward below the contaminated ground;
a plurality of vapor extraction wells embedded into the contaminated ground in a spaced array, each said vapor extraction well extending into the contaminated ground above the water table level;
an air manifold operably connected to an upper end of each said vapor extraction well;
a vacuum pump means operably connected to said air manifold for suction removal of air containing volatile contaminants from the contaminated ground.

5,387,058
AIRLIFT RAILCAR DISCHARGE ADAPTOR
David K. Smoot, Overland Park, Kans., assignor to Smoot Company, Kansas City, Kans.
Filed Mar. 31, 1993, Ser. No. 40,890
Int. Cl.[6] B65G *53/08*
U.S. Cl. 406—145 **22 Claims**



1. A discharge adaptor for connection to a receptacle for unloading material from said receptacle, comprising:
(a) a discharge inlet adapted to be connected to a discharge outlet of said receptacle;
(b) a discharge chute connected at one end to said discharge inlet and removably connectable at an opposite end to a conveyor;
(c) a pair of wheels, each of which is connected to a respective side of said discharge inlet and chute to provide support and mobility therefore;
(d) a handle connected to said discharge inlet and chute, said handle being positioned to allow a single workman to move and manipulate said adaptor from a standing position;
(e) a pair of jacks with each said jack attached to a respective one of said wheels for selectively lowering and raising each of said wheels such that said adaptor can be raised and lowered thereby; and
(f) control means including a pair of independent controls positioned proximate said handle for selectively and independently controlling respective ones of said jacks whereby said adaptor can be selectively raised and lowered and elevation adjusted from side to side by said workman while in said standing position.

5,387,059
DRILL BIT WITH IMPROVED STABILITY
George E. Borzemsky, 211 Oakdene Ave., Teaneck, N.J. 07666
Filed Aug. 24, 1993, Ser. No. 110,967
Int. Cl.[6] B23B *51/02;* **A61C** *3/02*
U.S. Cl. 408—226 **4 Claims**



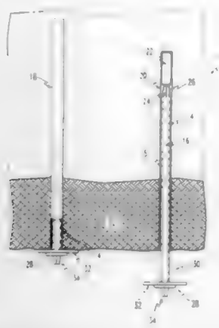
1. A fluted drill bit comprising:
first and second ends;
a shank portion located at said first end;
a constant diameter fluted portion having at least one flute, connected to said shank portion, said fluted portion including a hole cutting portion and a guiding portion;
said hole cutting portion located at said second end and including at least one radial cutting edge, said at least one flute in said cutting portion including a sharp, side-cutting leading edge connected to said at least one radial cutting edge; and
said guiding portion located between said cutting portion and said shank portion, said at least one flute in said guiding portion having a non-side-cutting leading edge, wherein said guiding portion comprises a majority of said constant diameter fluted portion.

5,387,060
TUBULAR MINING BOLT
Frank M. Locotos, McMurray, Pa., assignor to F. M. Locotos Equipment & Design Co., Bridgeville, Pa.
Filed Mar. 26, 1993, Ser. No. 37,812
Int. Cl.[6] E21D *21/00, 20/00*
U.S. Cl. 405—259.6 **2 Claims**

1. A system for supporting rock within a mine having a bore hole comprising:
a mining bolt having a round metal tube which has a completely hollow interior and all cross sectional dimensions

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less than that of the bore hole, said metal tube having a first end and a second end which are swaged closed to permanently close off the completely hollow interior so the bolt can crush and deform during movement of the rock when in place therein, said swaged second end having a square cross section to allow a tool to turn the mining bolt in the bore hole from the second end, said mining bolt having a metal washer flange fixedly attached to the metal tube adjacent to the swaged second end;



a bearing plate disposed between the rock and the flange; and

a resin cartridge for bonding the mining bolt to the rock within a bore hole, said metal tube having spiral ribbing disposed on the outer surface to mix resin from the resin cartridge as the mining bolt is turned in the bore hole from the swaged second end.

5,387,061

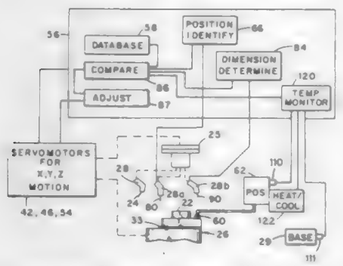
PARAMETER MONITORING COMPENSATION SYSTEM AND METHOD

William E. Barkman, Oak Ridge; Edwin F. Babelay, Knoxville; Paul D. DeMint, Kingston; Thomas L. Hebble, Oak Ridge; Richard E. Igou, Knoxville; Richard R. Williams; Edward J. Klages, both of Oak Ridge, and William H. Rasnick, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 628,525, Dec. 14, 1990, Pat. No. 5,255,199. This application Sep. 24, 1992, Ser. No. 950,194

Int. Cl.[6] G05B *19/42*

U.S. Cl. 409—80 **4 Claims**



1. In a computer-controlled machining apparatus having a controller and including a cutting tool and a workpiece holder which are movable relative to one another along a preprogrammed path during a machining operation for effecting a cut in a workpiece held by the workpiece holder wherein the preprogrammed path of relative movement between the cutting tool and workpiece holder is based upon an assumed temperature of the workpiece at a preselected stage of the machining operation, and the apparatus includes means for dispensing a coolant upon the workpiece during a machining operation, the improvement comprising:

a database associated with the controller including criteria relating to a predetermined range of acceptable temperatures of the workpiece at the preselected stage of the machining operation;

means for obtaining the actual temperature of the coolant at the preselected stage of the machining operation;

means for comparing the actual temperature of the coolant to temperatures within the predetermined range of temperatures; and

means for altering the temperature of the coolant to bring the coolant temperature within the predetermined range when the actual coolant temperature is determined to be outside of the predetermined range.

5,387,062

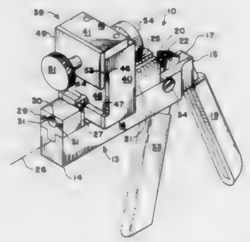
HAND HELD DEVICE FOR CODE CUTTING KEY BLANKS

Ricky L. King, and Robert F. Robinson, both of 3528 Maryland Ct., Richmond, Va. 23233

Filed Nov. 29, 1993, Ser. No. 158,206

Int. Cl.[6] B23D *5/00;* **B26F** *1/12*

U.S. Cl. 409—277 **7 Claims**



1. In a portable hand-held device for cutting notches in a key blank pursuant to a code specifying the spacing, depth and angle of said notches, said device comprising a body elongated between forward and rearward extremities, and a handle downwardly directed from said rearward extremity, the improvement comprising:

a) a removable punch rod mounted for reciprocating axial movement along said body and having a key-shearing forward end constituting a punch,

b) a removable anvil disposed at said forward extremity and having an aperture in alignment with said punch,

c) a removable hand lever pivotably mounted on said body adjacent said handle and adapted to urge said punch rod forwardly,

d) a track beam extending orthogonally upward from said body and having means for adjusting notch depth in the form of a circular drum having a plurality of peripheral detents of varied depth, and a ball bearing disposed above said drum in a manner to enter the uppermost detent, said ball bearing being spring urged toward said drum such that the elevation of said carriage upon said track beam is dependent upon the depth of the detent occupied by, the ball bearing,

e) a carriage mounted for sliding reciprocal motion upon said track beam,

f) a removable key-gripping vise slidably held by said carriage in a manner permitting reciprocal motion transverse to said punch rod, and

g) means interactive between said key-gripping vise and said carriage for stepwise control of said transverse motion, thereby controlling spacing of the notches.

5,387,063

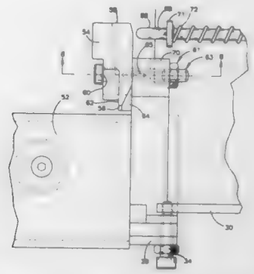
INDIRECT LOCK AND LOCK RELEASE MECHANISM

Susan M. Napierkowski; Arthur T. Nagare, both of Erie, and Richard J. Verga, Cranesville, all of Pa., assignors to American Sterilizer Company, Erie, Pa.

Continuation-in-part of Ser. No. 868,911, Apr. 15, 1992. This application Oct. 21, 1992, Ser. No. 964,451

Int. Cl.[6] B60P *1/64*

U.S. Cl. 410—67 **6 Claims**



1. Apparatus for remotely permitting or prohibiting travel of a movable device such as a loading car comprising:

at least one track for guiding the movable device;

a blocking member mounted adjacent to said track for movement about an axis parallel to a longitudinal axis of the track between a first position for blocking a path of travel of the movable device along said track and a second position clear of said path of travel of the movable device;

an actuating member having a longitudinal axis with a first end proximate said blocking member and a second end remotely situated from said blocking member;

means for biasing said actuating member away from operative contact with said blocking member;

means remotely situated from said blocking member for cooperating with said second end of said actuating member for moving said first end of said actuating member along its longitudinal axis into operative contact with said blocking member to effectuate movement of said blocking member between a locked position and an unlocked position; and

a horizontal member with a recess in which said actuating member is retained in order to maintain said blocking member in said locked or unlocked positions; and

a rotating member on a pivot that moves said actuating means out of the recess to automatically release said actuating member upon contact with the movable device.

5,387,064

MOVABLE SHELF STRUCTURE FOR TRUCK

John B. Cardinal, White Bear Lake, Minn., assignor to Cardinal Materials Flow, Inc., St. Paul, Minn.

Filed Dec. 16, 1993, Ser. No. 167,183

Int. Cl.[6] B60R *9/55*

U.S. Cl. 410—89 **7 Claims**

1. A truck having a forward seating cab and an enclosed rear compartment, having in combination

a side wall at each side of said compartment,

a movable shelf substantially rectangular in plan view extending between said side walls,

a ledge along each of said side walls formed by inward projections of exterior wheel wells of said truck,

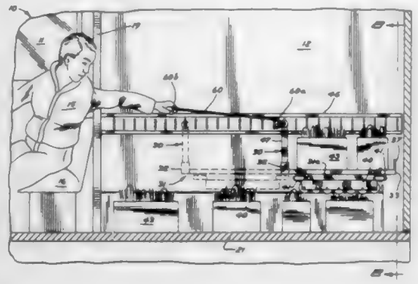
vertically disposed rollers underlying said shelf positioned to engage and roll on said ledge,

horizontally disposed rollers underlying said shelf positioned to respectively engage said side walls to space said shelf therefrom and to guide said shelf for free forward and rearward movement in said compartment,

a rail along each side wall positioned above the level of said shelf,

each said rail having horizontally spaced slots therein,

a spring loaded slot engaging device at each side of said shelf having pins adapted to engage slots in alignment therewith to restrain said shelf from movement along said ledge, means for mounting said slot engaging device,



a cable interconnecting said slot engaging devices for withdrawing said pins from said slots for movement of said shelf along said ledge,

an open window from said cab into said rear compartment, and

engaging means for an operator in said cab to reach through said window to engage said cable to thereby disengage said pins from said slots and move said shelf to be accessible to said operator.

5,387,065

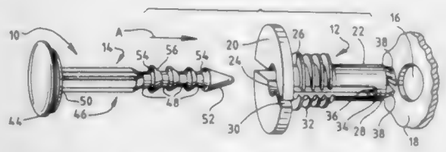
REUSABLE PIN AND GROMMET FASTNER

Kathleen A. Sullivan, Kankakee, Ill., assignor to Illinios Tool Works Inc., Glenview, Ill.

Filed Jun. 29, 1993, Ser. No. 84,384

Int. Cl.[6] F16B *13/06*

U.S. Cl. 411—48 **12 Claims**



1. A reusable pin and grommet fastener, comprising:

a grommet having a head member, a shank member, and an axial bore extending through said head member and said shank member, said shank member having a first proximal end integrally formed with a back side of said head member and a second distal end extending longitudinally away from said head member, a slot extending through the center of said head member, said shank member, and said bore and terminating at a position proximate said distal end of said shank member so as to divide said grommet into two substantially similar halves which are flexibly interconnected together at said distal end of said shank member by two bridge portions, disposed upon opposite sides of said bore and formed by a remaining portion of said shank member defined between a bottom portion of said slot, said bore, and said distal end of said shank member, for permitting said grommet to be easily inserted into an aperture of an article with a first minimal insertion force, and a pair of legs flexibly hinged to said distal end of said shank member upon the opposite longitudinal side of said two bridge portions as that of said slot; and

a pin having a shank portion, including a first proximal end and a second tapered distal end, for insertion within said

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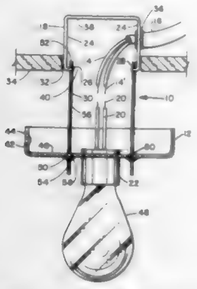
bore of said grommet so as to expand said halves of said grommet into contact with sidewall portions of said aperture of said article whereby said grommet is retained within said aperture of said article, and a plurality of grooves formed about peripheral portions of said second tapered distal end of said pin shank portion for alternatively outwardly flexing and accommodating said legs of said shank member of said grommet so as to permit said pin to be accommodated within said grommet and to retain said pin within said grommet with a second substantial retaining force that nevertheless enables removal of said pin from said grommet without damaging either said pin or said grommet.

5,387,066

ELECTRICAL FIXTURE INSTALLATION ASSIST METHOD AND MEANS

Gerald I. Zekowski, 8256 E. Praire, Skokie, Ill. 60076

Filed Aug. 27, 1992, Ser. No. 936,578
Int. Cl.[6] F16B *35/00*
U.S. Cl. 411—390 16 Claims



1. Electrical fixture installation assist means for assisting in the installation of an electrical fixture to a structurally mounted electrical junction box having attachment tabs and electrical lead wires extending therefrom, the electrical fixture being of the type carrying an electrical device and having a mounting surface carrying at least a pair of spaced through openings, the electrical device having electrical wires adapted to be coupled to the electrical lead wires for effecting electrical connection therebetween, the attachment tabs provided with attachment holes alignable with at least One of the through spaced openings for receiving said installation assist means therethrough for engagement therein, said electrical fixture installation assist means comprising:

at least one partially threaded elongate attachment rod having a predetermined length, at least one threaded end engagable within an attachment hole of an attachment tab and an opposite end;

manually effectable separation means at a predetermined selected location along the length of said attachment rod between the ends and spaced from said opposite end thereof enabling separation of said attachment rod at said predetermined selected location, said selected location being chosen at a predetermined distance from the attachment tabs of the structurally mounted electrical junction box;

said at least one threaded end being a threaded remnant end of said attachment rod formed upon separation of said attachment rod at a time subsequent to completion of an electrical connection between the electrical wires of the electrical device carried by the fixture and the electrical lead wires of the junction box;

said elongate attachment rod being arranged to accommodate slidable movement of the fixture along the length thereof past said manually effectable separation means to a location between said attachment tabs and said manually effectable separation means at a time subsequent to completion of said electrical connection but prior to operation of said manually effectable separation means so as to position said threaded remnant end of said attachment rod through the through opening of the fixture subsequent to operation of said manually effectable separation means; and,

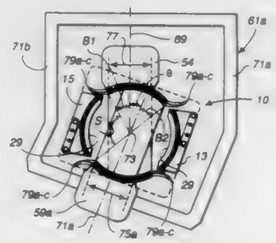
retaining means being a fastening member movably positioned at the opposite end of said elongate attachment rod supporting the fixture temporarily prior to completion of the electrical connection at a distance from said attachment tabs providing access sufficient to enable manipulation of said electrical wires and electrical lead wires so as to effect said electrical connection and engagable with said threaded remnant end of said attachment rod subsequent to operation of said manually effectable separation means permanently to support the electrical fixture whereby to complete the installation thereof.

5,387,067

DIRECT LOAD/UNLOAD SEMICONDUCTOR WAFER CASSETTE APPARATUS AND TRANSFER SYSTEM

Howard E. Grunes, Santa Cruz, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Jan. 14, 1993, Ser. No. 4,331
Int. Cl.[6] B65G *1/07*
U.S. Cl. 414—217 20 Claims



1. A wafer cassette that can be loaded/unloaded in a first direction by a first wafer transfer blade having a first known width and moveable along a first axis and that can be loaded-/unloaded in a second direction by a second wafer transfer blade having a second known width and moveable along a second axis, the second axis intersecting the first axis at an acute angle and at an intersection point substantially concurrent with a wafer support center point, the cassette comprising:

at least one first wafer support, on a first side of the intersection point, for supporting an edge portion of each wafer loaded into said cassette and having a proximal and a distal edge with respect to the first direction; and

at least one second wafer support, on a second side of the intersection point, for supporting a second edge of said wafer and having a proximal and a distal edge with respect to the first direction;

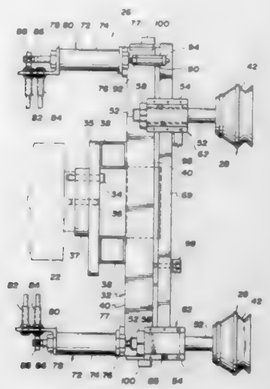
wherein said first and second wafer supports are disposed in positions relative to said first and second axes to define a first wafer loading/unloading port between the proximal edges of the first and the second wafer supports respectively and a second wafer loading/unloading port between the distal edges of the first and the second wafer supports respectively, whereby the first and second loading/unloading ports are large enough for both said first and second transfer blades to each pass through both the first and second ports to load/unload the wafer.

5,387,068

METHOD AND SYSTEM FOR LOADING RIGID SHEET MATERIAL INTO SHIPPING CONTAINERS AT A WORK STATION AND END EFFECTOR FOR USE THEREIN

Thomas E. Pearson, Grosse Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1993, Ser. No. 162,546
Int. Cl.[6] B65G *59/00*
U.S. Cl. 414—404 18 Claims



1. A system for loading a desired number of rigid sheets of material into a shipping container from a storage container at a work station, the system comprising:

a program-controlled robot having an arm provided with an end effector movable with respect to controlled axes, wherein the end effector includes a base frame coupled to the arm of the robot and at least one material handling device supported on the base frame to receive and retain at least one sheet of material; and

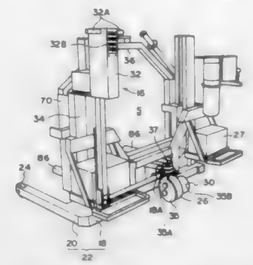
a controller for (1) causing the robot to move the end effector with respect to the control axes to pick up the at least one sheet of material from the storage container and place the at least one sheet of material in the shipping container; (2) causing the at least one material handling device to receive, retain and then release the at least one sheet of material so that the at least one sheet of material is supported on a floor of the shipping container at a bottom edge of the at least one sheet of material; and (3) generating first and second control signals and wherein the end effector further includes a compliance device for supporting the at least one material handling device on the base frame to allow the at least one material handling device to move freely relative to the base frame in an upward direction substantially opposite a downward direction of the base frame upon engagement of the bottom edge of the at least one sheet of material with the floor of the shipping container and prior to release of the at least one sheet of material by the at least one material handling device; and locking means responsive to the first and second control signals for selectively locking the compliance device in response to the first control signal to prevent relative movement between the at least one material handling device and the base frame wherein passive compliance provided by the compliance device is locked out in response to the first control signal and passive compliance provided by the compliance device is released in response to the second control signal, the locking means allowing the compliance device to operate so that the at least one material handling device can move freely relative to the base frame in the upward direction.

5,387,069

SELF-PROPELLED TIRE DOLLY

Masayuki Asaumi; Tokio Kanatomi, both of Tokyo, and Fumio Kamanoi, Chiba, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 27, 1993, Ser. No. 67,794
Claims priority, application Japan, May 28, 1992, 4-136821
Int. Cl.[6] B60B *29/00*
U.S. Cl. 414—427 16 Claims



13. A self-propelled tire dolly for transporting a tire in a working area for performing tire removal and mounting services, comprising:

a pair of castors and a drive wheel driven by a drive unit;

a base having a first portion and a second portion, said first portion being supported by said pair of castors, said second portion being located on a line extending from a central point between said pair of castors in a backward direction of travel, and being supported by said drive wheel, so as to travel while being supported at three points on a surface of the working area;

a tire-supporting section for supporting the tire;

a lifting device for supporting said tire-supporting section and rendering said tire-supporting section liftable with respect to said base;

steering means for steering said drive wheel; and

a retaining roller for retaining an upper end of the tire and supported by said tire-supporting section movably in a vertical direction, said retaining roller being supported movably between a position for retaining the upper end of the tire and a retracted position.

5,387,070

COUPLING SYSTEM FOR MOTORIZED VEHICLES

James E. Roeling, 1924 Thomas St., Beloit, Wis. 53511

Filed Jun. 18, 1993, Ser. No. 79,460
Int. Cl.[6] B60P *7/06, 1/28*
U.S. Cl. 414—483 11 Claims



1. A coupling device adapted for use in catching and immobilizing a moving motored vehicle equipped with a coupling unit to a vehicular transport equipped with a bed adjusted to an inclined ramping position for driving the vehicle onto the bed by coupling the coupling unit to said device, the device comprising:

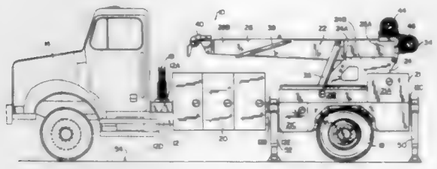
a) anchoring means for firmly anchoring said coupling device at a fixed position onto said bed at a coupling position for coupling to the coupling unit;

b) a housing defining a coupling zone for receiving and stopping the coupling unit of the moving vehicle;

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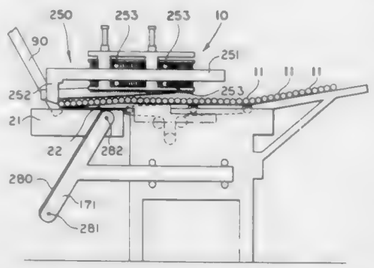
c) coupling means for coupling the coupling unit of the vehicle to the device;
d) detecting means for detecting the moving vehicle within the coupling zone;
e) releasing means for releasing and immobilizing the vehicle within the coupling zone by coupling the coupling means to the coupling unit in response to said detecting means detecting the moving vehicle within said coupling zone wherein the coupling means comprises a first plate, a coupling pin slidably mounted to the first plate and actuated by said releasing means to move said pin from an unreleased position to a released position, and a second plate for receiving and securely retaining the coupling pin upon release of said pin by said releasing means, the coupling pin not residing in or being retained by the second plate when the pin is in said unreleased position; and
f) an unloading restraining unit for mechanically restraining the coupling means in an uncoupled position so as to permit unloading of an uncoupled vehicle from the bed.

5,387,071
ROTATABLE RECOVERY VEHICLE
Donald L. Pinkston, 12295 Spruce La., Perry, Mich. 48872
Filed Jun. 29, 1993, Ser. No. 84,806
Int. Cl.[6] B60P *3/12*
U.S. Cl. 414—563 **17 Claims**



1. A recovery vehicle which comprises:
(a) a frame having a distal end and a proximal end and sides between the ends;
(b) a cab for the vehicle mounted at the proximal end of the frame;
(c) a rotatable hoist means with a 360° rotatable turntable means mounted on the frame between the cab and the distal end of the frame wherein the hoist means has a telescoping boom means supporting a securing means for use in the recovery and wherein the boom means is able to be located behind the cab for storage;
(d) at least one axle supporting wheels adjacent the sides of the frame with the axle mounted on an underneath portion of the frame and beneath the turntable means; and
(e) four telescopically retractable and extensible stabilizer means, two each mounted on a pivot means adjacent a side of the frame on opposite sides of each of the wheels and each stabilizer means is pivotable away from the sides of the frame, so that the stabilizer means can extend and engage the ground to stabilize the vehicle when the boom means is in use and wherein the stabilizer means are pivotable so as to fold toward the underneath portion of the frame and wherein a first two of the stabilizing means are pivotable away from the distal end of the frame so as to engage the ground behind the recovery vehicle.

5,387,072
APPARATUS FOR STACKING TUBE AND RELATED METHOD
Paul J. Gepfert, Cleveland, Ohio, and Yukio Kusakabe, Kobe, Japan, assignors to XTH Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 776,821, Oct. 15, 1991, Pat. No. 5,222,859. This application Jun. 28, 1993, Ser. No. 83,995
Int. Cl.[6] B65G *57/03*
U.S. Cl. 414—794.3 **13 Claims**



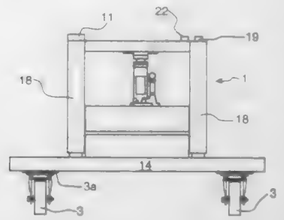
1. An apparatus for stacking a plurality of rows of tube into a stack of predetermined shape, comprising:
a main frame k;
generally laterally movable fork means for delivering a predetermined quantity of successive rows of tube to the stack, said fork means movable for a preselected distance;
a laterally movable stop means engageable with the lead tube of a given row as the row of tube is delivered by said fork means;
block means affixed to said fork means and releasably engageable with said stop means, such that as said fork means is moved said preselected distance said block means engages said stop means causing said stop means to be moved to a preselected position;
a tube restraining assembly positioned generally proximate said fork means and the stack, and having a plurality of retractable, free floating finger means engageable with the tube on said fork means;
such that the quantity of tube delivered to the stack in a given row and the location of the tube in the given row is determined by the preselected position of said stop means;
the remaining tube on said fork means being restrained thereon by at least one of said finger means.

5,387,073
SHUTTLECAR UNLOADING DEVICE
Michael Etherington, Abingdon, and Michael R. Walker, Bristol, both of Va., assignors to Dosco Overseas Engineering Ltd., Notts, England
Filed Aug. 9, 1993, Ser. No. 103,356
Int. Cl.[6] B65G *67/24*
U.S. Cl. 414—353 **20 Claims**



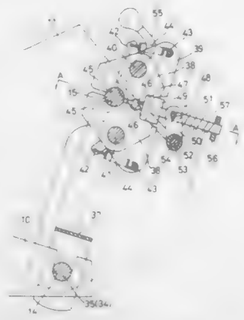
19. Apparatus for unloading loose material from an elongated wheel mounted haulage vehicle having a finite length, said apparatus including an elongated hopper device having a total length at least as long as the finite length of an elongated haulage vehicle to be unloaded, said elongated hopper device adapted to receive an elongated haulage vehicle to be unloaded prior to initiating the unloading of the haulage vehicle, said elongated hopper device having a plurality of individual sections including at least an entry section and a discharge section connected to said entry section, each of said plurality of sections of said elongated hopper having a first end connected to a first end of an adjacent section, said entry section having a second inlet end, said discharge section having a second exit end, an elongated hopper conveyor extending substantially from said inlet end of said entry section to said exit end of said discharge section of said elongated hopper device, whereby an elongated haulage vehicle to be unloaded is driven completely into said hopper device prior to initiating the discharge of substantially all of the loose material from the haulage vehicle conveyor directly onto said elongated hopper conveyor.

5,387,074
PIANO LIFT AND DOLLY
Jeffrey R. Brown, 16717 Shea La., Gaithersburg, Md. 20877
Filed Apr. 5, 1993, Ser. No. 42,638
Int. Cl.[6] B66F *5/04*
U.S. Cl. 414—589 **4 Claims**



1. A piano lift and dolly for grand pianos, comprising:
a first lower frame supported on wheels, and including four vertically extending upright posts;
a second upper frame for engaging the piano and including a tube for each of the upright posts of the lower frame wherein each post and tube combination provides a telescopic joint extending vertically;
a centrally disposed jack having a base and extendible ram, wherein the base is fixed to the lower frame and the ram is fixed to the upper frame for vertically raising the upper frame member with respect to the lower frame member without intermediate linkages;
said upper frame member having at least two supporting means comprising first and second beams spaced apart from one another, wherein a surface of said first beam is lower in vertical height than a surface of said second beam with respect to a floor such that said first beam surface is engageable with a rearward portion of a keybed of a grand piano and said second beam surface is engageable with an underside portion of braces of the piano spaced rearwardly from the keybed, wherein:
said lower frame is a lower H-frame having a first cross member with a first center point and third and fourth beams, said hydraulic jack being supported at said first center point;
said four upright posts extend, respectively, from end portions of said third and fourth lower H-frame beams;
and wherein said first and second beams of said upper frame member are part of an upper H-frame construction that has a second cross member extending between said beams in alignment with said first cross member and having a second center point aligned with said first center point, said ram of said jack being fixed directly to said second center point of said second cross beam so that as said ram extends, said upper H-frame moves a vertical distance with respect to said lower H-frame equal to the extension distance of said ram and a lifting force of said upper H-frame with respect to said lower H-frame is generated along a line extending between said center points, said tubes extend respectively from end portions of said first and second beams.

5,387,075
LATCHING MECHANISM FOR A FRONT END LOADING TRACTOR
Tuyoshi Aoki, 3-13-3, 504 Niwashirodai, Sakai-shi, Osaka, Japan
Filed Feb. 22, 1993, Ser. No. 20,812
Claims priority, application Japan, Feb. 26, 1992, 4-039724
Int. Cl.[6] E02F *9/00*
U.S. Cl. 414—686 **7 Claims**



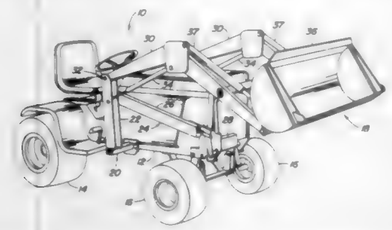
1. A latching mechanism for connecting a working implement to a front end loading tractor or other heavy load carrying machinery, comprising:
a plate assembly attachable to said working implement;
a pivotal coupling assembly including a coupling formed on said plate assembly, and a receiver mountable on said tractor for relatively rotatably receiving said coupling;
a cross rod mountable on said tractor;
latch means including:
a first, upper pivotable member and a second, lower pivotable member attached to said plate assembly to be pivotable between a first position and a second position, said first and second pivotable members defining downwardly and upwardly facing recesses, said recesses defining a cross rod-receiving region when said pivotal members are in said second position, said recesses having an opening for receiving said cross rod when in said first position, said opening being closed when said pivotable members are in said second position to retain said cross rod received;
said recesses of said first and second pivotable members including cam means to be operable by a pressing force of said cross rod to pivot said first and second pivotable members toward said second position; and
bias means for biasing said first and second pivotable members toward said first position; and
lock means for maintaining said first and second pivotable members in said second position.

5,387,076
STRUCTURE FOR ATTACHING A LOADER TO A TRACTOR
Daniel R. Fuzzen, Welland, Canada, assignor to Deere & Company, Moline, Ill.
Filed Aug. 23, 1993, Ser. No. 110,443
Int. Cl.[6] B66C *23/36*
U.S. Cl. 414—686 **6 Claims**

1. In a loader including a pair of transversely spaced upright posts respectively releasably secured to a pair of rear supports carried by and projecting transversely opposite one another from a longitudinally extending tractor frame, the improvement comprising: each of said supports having a cross section including a major dimension lying along a fore-and-aft extending line inclined upwardly from a rear to a front location of the cross section; said posts each having a downwardly opening receptacle at the lower end thereof delimited, as viewed from

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the side, by front and rear contact surfaces engaged with respective surfaces of an associated one of the rear supports at respective locations below said fore-and-aft extending line; and



the distance between said front and rear contact surfaces being less than said major dimension, whereby the contact surfaces of a given receptacle act to secure the associated post to an associated one of the supports.

5,387,077

APPARATUS FOR HANDLING SIGNATURES

Kou Yatsuka, Amagasaki, and Shigenori Tashima, Osaka, both of Japan, assignors to Gunze Limited, Ayabe, Japan

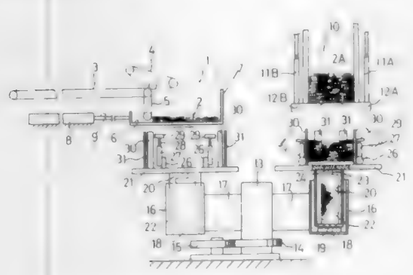
PCT No. PCT/JP92/00592, § 371 Date Mar. 3, 1993, § 102(e) Date Mar. 3, 1993, PCT Pub. No. WO93/01060, PCT Pub. Date Jan. 21, 1993

PCT Filed May 6, 1992, Ser. No. 980,793

Claims priority, application Japan, Jul. 4, 1991, 3-51798[U]; Jul. 4, 1991, 3-164700

Int. Cl.[6] **B65G** *57/08*

U.S. Cl. 414—791 **5 Claims**



1. A signature handling apparatus which comprises:

a first stacker for accumulating small stacks of signatures;

a second stacker for piling a plurality of the small stacks of signatures accumulated by the first stacker, and

a pair of third stackers arranged below the first stacker and below the second stacker respectively, the pair of third stackers being reciprocatingly revolvable beneath the first and second stackers, and

a transfer mechanism for transferring the small stacks of signatures on the first stacker to one of the third stackers when said one of the third stackers is beneath the first stacker and for transferring signatures as stacked on the other third stacker to the second stacker when the other third stacker is located beneath the second stacker wherein the transferring mechanism comprises a support member rotatable about a vertical axis and a first and second rotary member mounted on the support member, the first and second rotary members each have a cylinder movable upward and downward and each includes a lift member, the third stacker has a base member with an aperture formed therein through which the lift member upwardly passes, and

wherein each of the third stackers is provided with pressing pieces which are upwardly movable with the lift member while pressing a stack of signatures from above.

5,387,078

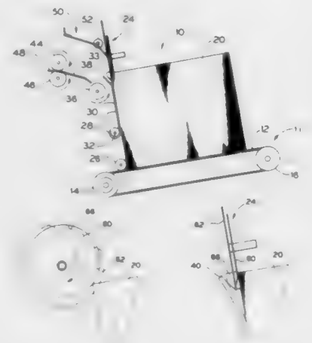
DISK LIFT SEPARATOR

Frank A. Todaro, Old Saybrook, Conn., assignor to General Binding Corporation, Northbrook, Ill.

Filed Nov. 10, 1993, Ser. No. 150,219

Int. Cl.[6] **B65H** *3/32*; **B65G** *59/00*

U.S. Cl. 414—798.9 **13 Claims**



1. An apparatus for separating a substack of sheets from a stack of sheets comprising:

a rotatable axle;

a front disk arranged eccentrically on said axis and arranged to penetrate said stack of sheets; and

a rear disk arranged on said axle on a back side of said front disk and arranged to support said substack temporarily, said rear disk rotatable with said front disk, a distance between said front disk and said rear disk defining a thickenss of said substack to be removed from said stack of sheets.

5,387,079

PUMPING STATE TURBOMOLECULAR PUMPS

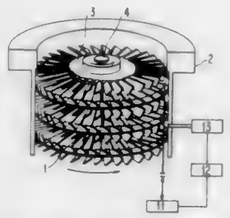
Giampaolo Levi, Turin, Italy, assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 903,439, Jun. 24, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 140,699

Claims priority, application Italy, Jul. 10, 1991, T091A000536

Int. Cl.[6] **F01D** *1/36*

U.S. Cl. 415—90 **6 Claims**



1. A turbomolecular pump comprising a housing having a plurality of pumping stages disposed therein, each of said stages comprising a rotor disk and a stator disk, said stator disk integral with the pump housing and centrally aligned therewith, said stator disk further comprising a plurality of radially directed blades, each of said blades having a radially directed longitudinal axis, said stator blades adaptedly mounted to said

housing for rotation about said radially directed axis, whereby, the pivotal movement of said stator blades is dynamically controlled by at least one operating mechanism.

6. The method of operating a turbomolecular pump comprising a plurality of pumping stages, each respective stage having a rotor disk and a stator disk, said stator disk further comprising a plurality of radially directed blades, said method comprising the steps of;

(a) rotating said rotor disk of the pumping stage whereby to direct gas molecules toward a stator disk of a said pumping stage along a path having a substantial axial component,

(b) redirecting gas molecules impelled by said rotor with said stator disk, said stator disk having each of its respective blades disposed at a first angle to the plane of rotation of said rotor to create a baffle effect within said stage,

(c) measuring the pressure within said pump stage, and

(d) changing said first angle to another angle of said stator blades in cooperation with the result of said measuring.

5,387,080

ROTATIONALLY GUIDED CONTROL RING FOR PIVOTABLE VANES IN A TURBOMACHINE

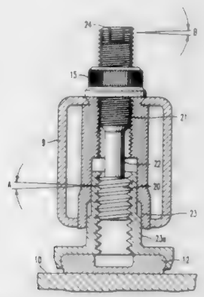
Yassin Bouhennicha, Corbeil, and Daniel J. Marey, Soisy sur Seine, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA", Paris, France

Filed Dec. 22, 1993, Ser. No. 171,699

Claims priority, application France, Dec. 23, 1992, 92 15539

Int. Cl.[6] **F04D** *29/60*

U.S. Cl. 415—150 **7 Claims**



1. A control ring for a stage of pivotable vanes in a turbomachine, said control ring carrying a plurality of shoes for contacting arcuate reference surfaces on said turbomachine to guide rotation of said control ring, and respective mounting means adjustably mounting said shoes on said control ring, each of said mounting means comprising a bush rigidly connected to said control ring, means defining a passage through said bush, said passage having an internally screw-threaded first portion and a second portion, a shoe holder to which the respective shoe is securely fixed, a rod on said shoe holder received slidably and non-rotatably in said second portion of said passage, an internally screw-threaded bore in said rod axially aligned with said first portion of said passage, and a double screw having first and second screw-threaded portions, said first screw-threaded portion of said double screw engaging and cooperating with said internally screw-threaded first portion of said passage, and said second screw-threaded portion of said double screw engaging and cooperating with said internally screw-threaded bore of said rod, the pitch of said first screw-threaded portion being close to the pitch of said second screw-threaded portion.

5,387,081

COMPRESSOR DIFFUSER

Andre D. LeBlanc, St. Bruno, Canada J3V 4P3 , assignor to Pratt & Whitney Canada, Inc., Quebec, Canada

Filed Dec. 9, 1993, Ser. No. 164,339

Int. Cl.[6] **F04D** *29/44*

U.S. Cl. 415—208.1 **23 Claims**



1. In a gas turbine engine having a combustor;

a confining case defining an annular air supply volume communicating with said combustor;

a centrifugal air compressor supplying air to said supply volume, having a centrifugal final stage and an annulus receiving air from said final stage;

a plurality of diffusers receiving air tangentially from said annulus, and extending tangentially toward said case;

the improvement comprising:

each diffuser of truncated conical shape having an apex end and a base end;

said base end spaced from said case and open, establishing a base flow area; and

a side cut removing a portion of said conical diffuser contiguous with said base end, said side cut producing a side flow area at least equal to said base flow area.

5,387,082

GUIDE WAVE SUSPENSION FOR AN AXIAL-FLOW TURBOMACHINE

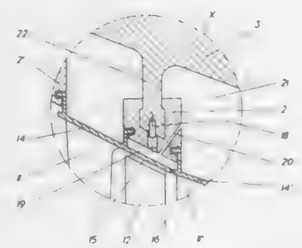
Kamil Matyscak, Brenden, Germany, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Sep. 15, 1993, Ser. No. 121,317

Claims priority, application European Pat. Off., Oct. 5, 1992, 92116970

Int. Cl.[6] **F04B** *29/60*

U.S. Cl. 415—209.2 **5 Claims**



1. An axial-flow turbomachine, comprising:

machine casing having a plurality of ribs depending radially inward from the casing;

a plurality of vane carrier segments suspended coaxially on the ribs;

a plurality of guide vanes arranged in at least two axially

spaced guide rows and mounted by roots to the vane carrier segments, the root of each guide vane engaging two vane carrier segments adjacent one another in an axial direction of the casing;

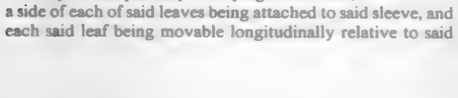
wherein the root of each guide vane includes a collar which forms part of a flow limiting surface bounding a flow duct and extends in the axial direction to one of at least an inlet plane of an axially adjacent rotor blade lying upstream of the guide vane and to an outlet plane of an axially adjacent rotor blade lying downstream of the guide vane, and the collar having means to seal the collar against a root of a guide vane adjacent the rotor blade.

5,387,083

HELICOPTER SERVOFLAP ACTUATOR HAVING MECHANICAL STOP AND OIL PUMP

Lowell V. L. Larson, Huntington Beach, and Mark Trutanich, San Pedro, both of Calif., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Dec. 23, 1992, Ser. No. 993,872
Int. Cl.[6] B64C *27/615*
U.S. Cl. 416—23 **17 Claims**



1. A servoflap system for a helicopter blade, comprising:

at least one servoflap;

hinging means for hinging said at least one servoflap to said blade near said blade's tip; and

at least one self-lubricating actuator, located near said blade tip, for controlling the angular position of said at least one servoflap.

5,387,084

FLAT FOLDING FAN WITH ENVELOPE HANDLE

Gretchen G. Walberg, P.O. Box 130, Sunbury, Pa. 17801

Filed Jun. 16, 1993, Ser. No. 54,742
Int. Cl.[6] A45B *27/00*
U.S. Cl. 416—70 A **17 Claims**



1. A folding fan comprising:

a longitudinally-extending sleeve defining a cavity open at the top; and,

a pair of fan leaves mounted at least partially within said cavity and movable relative to said sleeve,

each of said leaves having an overall width greater than the width of said sleeve and including a longitudinal fold line along which the said leaf may be folded so that the sides thereof on opposite sides of the longitudinal fold line thereof overlie each other and the effective width thereof when folded along said longitudinal fold line is not greater than the width of said sleeve,

a portion of the side of each of said leaves on one side of the longitudinal fold line thereof being within said cavity and said portions partially overlying each other,

a side of each of said leaves being attached to said sleeve, and

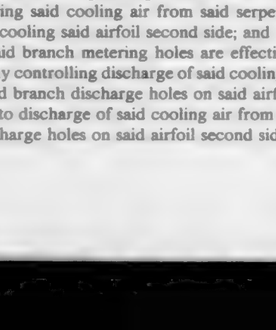
each said leaf being movable longitudinally relative to said sleeve between an extended position in which both more than half of the said side thereof that is attached to said sleeve and the side thereof on the other side of said longitudinal fold line thereof are outside said sleeve cavity, and a retracted position in which the said leaf is folded along said longitudinal fold line and more than half of both sides thereof are within said cavity.

5,387,085

TURBINE BLADE COMPOSITE COOLING CIRCUIT

Theodore T. Thomas, Jr., Maineville, and Ching-Pang Lee, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 7, 1994, Ser. No. 183,620
Int. Cl.[6] F01D *5/08*
U.S. Cl. 416—97 R **10 Claims**



1. A gas turbine engine blade comprising:

an airfoil having opposite first and second sides joined together at leading and trailing edges, and extending radially from a root to a tip;

a serpentine cooling circuit disposed in said airfoil and having a first leg extending from said root toward said tip for channeling cooling air outwardly therethrough, a first reverse bend disposed adjacent to said tip in flow communication with said first leg for redirecting said cooing air therefrom inwardly from said tip toward said root, and a second leg extending inwardly and disposed in flow communication with said first reverse bend for channeling said cooling air inwardly therefrom;

a discrete branch cooling circuit disposed in said airfoil adjacent to said serpentine circuit and extending radially from said root to said tip;

a plurality of branch metering orifices disposed in flow communication with said serpentine circuit for channeling therefrom to said branch circuit in parallel flow a portion of said cooling air channeled through said serpentine circuit;

a plurality of branch discharge holes disposed in flow communication with said branch circuit and extending through said airfoil first side for discharging said cooling air portion from said branch circuit for film cooling said airfoil first side;

a plurality of discharge holes for said serpentine circuit disposed in flow communication with said serpentine circuit and extending through said airfoil second side for discharging said cooling air from said serpentine circuit for film cooling said airfoil second side; and

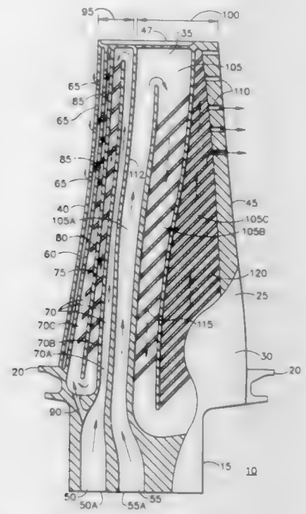
wherein said branch metering holes are effective for independently controlling discharge of said cooling air portion from said branch discharge holes on said airfoil first side relative to discharge of said cooling air from said serpentine discharge holes on said airfoil second side.

5,387,086

GAS TURBINE BLADE WITH IMPROVED COOLING

David A. Frey, West Chester, and Mark E. Ulliman, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 19, 1993, Ser. No. 93,165
Int. Cl.[6] F01D *5/18*
U.S. Cl. 416—97 R **8 Claims**



1. A turbine blade structure comprising:

a base section including first and second cooling medium conduits for providing cooling air, said first and second cooling medium conduits being coupled to first and second air inlet ports respectively;

an airfoil section attached to said base section and including a pressure side wall and a suction side wall, said airfoil section including a leading edge at which said pressure and suction side walls are joined, said airfoil section including a trailing edge at which said pressure and suction side walls are also joined, thus forming a leading edge flow region and a trailing edge flow region, said airfoil section having a tip and further including:

an inner cavity situated within said leading edge flow region, said inner cavity including a plurality of passageways which together exhibit a serpentine geometry, said inner cavity having an end coupled to said first conduit to receive airflow therefrom, such that cooling air flows from said first conduit toward said leading edge;

a leading edge cavity situated adjacent said leading edge and including a plurality of air film holes at said leading edge; a first wall between said inner cavity and said leading edge cavity, said first wall including a plurality of impingement holes for permitting airflow from said inner cavity to said leading edge cavity and to said air film holes, one of the passageways of the inner cavity being designated the passageway closest the leading edge cavity, and

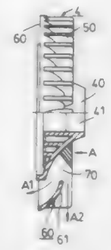
a refresher passageway coupling said first conduit to said passageway closest the leading edge cavity to refresh the airflow toward said leading edge in said inner cavity after said airflow has flowed part way through said inner cavity toward said leading edge and has become warmed.

5,387,087

FAN CAPABLE OF DIRECTING AIR FLOW IN BOTH AXIAL AND RADIAL DIRECTIONS

Li-Mei Chen, Te-Li No. 3-3, Kuang-Hsing Rd., Tai-Ping Hsiang, Taichung Hsien, Taiwan, Prov. of China

Filed Mar. 28, 1994, Ser. No. 219,026
Int. Cl.[6] F04D *29/22, 29/30*
U.S. Cl. 416—188 **3 Claims**



1. A fan capable of directing air passing between upstream and downstream ends of said fan to flow in both axial and radial directions, said fan comprising:

a hub shaped as a truncated cone with a wide upstream end and a narrow downstream end;

a plurality of fan blades, each of which having an upstream edge, an outer end and an inner end connected to said hub, said fan blades projecting radially and outwardly from said hub and being spaced circumferentially; and

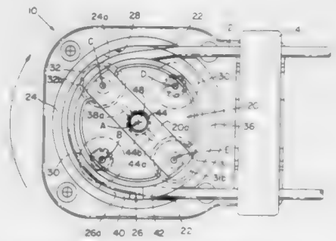
a ring which is disposed at said upstream edges of said fan blades and which interconnects said outer ends of said fan blades, said ring being formed with a plurality of curved strips which extend respectively between two adjacent said fan blades to permit air flow in the radial direction, said curved strips cooperating with said hub to form passages which permit air flow in the axial direction, said curved strips being shaped as sections of a parabolic surface which opens toward said upstream end of said hub.

5,387,088

PERISTALTIC PUMP TUBE LOADING ASSEMBLY

Tracey E. Knapp, Hanover; James R. Loible, Foxborough; Andrew P. Lanciano, Plymouth; Victor Sacco, Jr., Burlington, all of Mass., and Nicholas D. Baruch, North Smithfield, R.I., assignors to Haemonetics Corporation, Braintree, Mass.

Filed Jan. 18, 1994, Ser. No. 183,483
Int. Cl.[6] F04B *43/08*
U.S. Cl. 417—53 **17 Claims**



1. A peristaltic pump assembly comprising:

a loop of tubing;

a pump housing having a curved surface; and

a pump rotor extending along and rotatable about a longitudinal axis for progressively and intermittently compressing the loop of tubing against the curved surface, the pump rotor having a first portion extending beyond the

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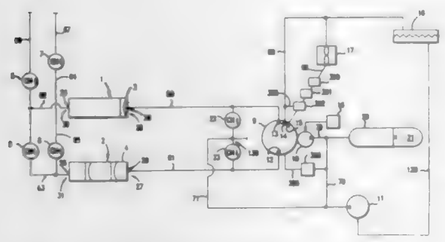
housing along the longitudinal axis and concentric thereto and a second portion extending along the longitudinal axis adjacent to the curved surface of the housing, with a groove formed in the first rotor portion and a flange provided between the groove and second rotor portion, said groove encircling the rotor about the first rotor portion for retaining the loop of tubing opposite the curved surface, a notch in the flange extending between the groove and the second rotor portion which, as the rotor is rotated during loading, progressively captures the tubing to urge it downward between the curved surface and the second portion of the rotor.

5,387,089

METHOD AND APPARATUS FOR COMPRESSING GASES WITH A LIQUID SYSTEM

John Stogner, Westminster; Steve Westmoreland, Aurora, and Dan Kicker, Castle Rock, all of Colo., assignors to Tren Fuels, Inc., Austin, Tex.

Continuation of Ser. No. 760,502, Sep. 17, 1991, Pat. No. 5,169,295. This application Dec. 4, 1992, Ser. No. 985,682
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.[6] F04B *35/02*
U.S. Cl. 417—54 **40 Claims**



1. A gas compression system, comprising:
a first accumulator;
a second accumulator;
a gas-supplying conduit connected to the accumulators;
a gas-receiving conduit connected to the accumulators;
a reversible pump operable to alternatively pump compression liquid from the first accumulator to the second accumulator for forcing gas from the second accumulator during use, and from the second accumulator to the first accumulator for forcing gas from the first accumulator during use;
a compression liquid control system operable to signal the reversible pump to switch compression liquid flow from the first accumulator to the second accumulator during use, and from the second accumulator to the first accumulator during use; and
a liquid supply pump connected to supply compression liquid to the reversible pump during use at a pressure below the pressure of gas in the gas-supplying conduit.

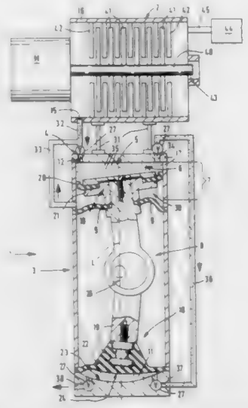
5,387,090

TWO-STAGE POSITIVE DISPLACEMENT PUMP

Erich Becker, Bad Krozingen, Germany, assignor to KNF Neuberger GmbH, Freiburg-Munzingen, Germany

Filed Apr. 11, 1994, Ser. No. 226,165
Claims priority, application Germany, Apr. 15, 1993, 9305554[U]; Jun. 24, 1993, 4320963
Int. Cl.[6] F04B *23/08*
U.S. Cl. 417—203 **10 Claims**

1. A multi-stage pump having an output-side positive displacement pump, said multi-stage pump (1) comprising a turbomolecular pump (2), a reciprocating displacement pump (5), and a diaphragm displacement pump (10), said reciprocating pump being connected in series downstream of the turbomolecular pump (2), said reciprocating pump (5) having a piston-cylinder space (7) which is sealed off with respect to a crank area (8) by means of a sealing membrane (9), said diaphragm



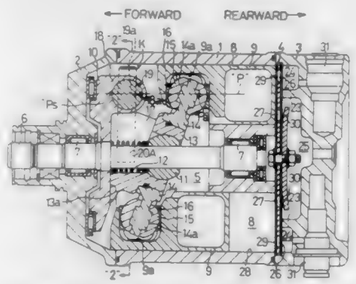
pump (10) being connected in series downstream of the reciprocating pump (5), and said diaphragm pump having a displacement area (11) which is appreciably smaller than a displacement area (6) of the reciprocating pump (5) .

5,387,091

VARIABLE CAPACITY TYPE SWASH PLATE COMPRESSOR

Masahiro Kawaguchi; masanori Sonobe; Shigeki Kanzaki; Tomohiko Yokono, and Kenji Takenaka, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Aug. 12, 1993, Ser. No. 105,746
Claims priority, application Japan, Aug. 21, 1992, 4-222758
Int. Cl.[6] F04B *49/00;* **F01B** *3/02*
U.S. Cl. 417—222.2 **13 Claims**



1. A variable capacity type swash plate compressor, comprising:
a housing including a crank chamber, a suction chamber, a discharge chamber, and a plurality of cylinder bores connected to the chambers, each of which is defined and formed therein;
a plurality of pistons disposed reciprocally in said cylinder bores;
a driving shaft disposed rotatably in said housing;
a rotor disposed synchronously rotatably on said driving shaft, and placed in said-crank chamber;
a swinging swash plate disposed about said driving shaft axially and inclinably positionable relative thereto and rotatable therewith;

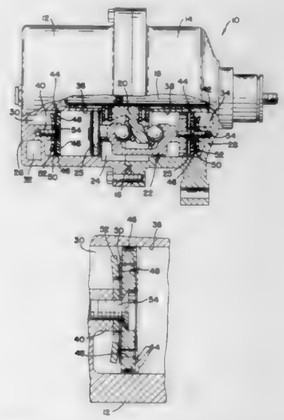
hinge means disposed between said rotor and said swinging swash plate, said hinge means including:
a supporter arm disposed on said rotor projectably toward said swinging swash plate, and including a main guide hole extending in a direction perpendicular to the axial direction of said driving shaft;
a main guide pin inserted rotatably into said main guide hole; and
an auxiliary guide pin extending and crossing perpendicularly with the main guide pin, said auxiliary guide pin having one end slidably inserted into an auxiliary guide hole formed in one of the main guide pin and said swinging swash plate, and having its other end fixed to the other one of said main guide pin and said swinging swash plate;
connecting means disposed between said pistons and said swinging swash plate, and adapted to convert swinging movements of said swinging swash plate-into reciprocal movements of said pistons; and
means for controlling the pressure in said crank chamber for controlling the inclination of said swinging swash plate to vary the discharge capacity of the compressor.

5,387,092

A/C COMPRESSOR WITH INTEGRALLY MOLDED HOUSINGS

Edward D. Pettitt, Burt, and Kurt R. Mittlefehldt, Amherst, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 20, 1994, Ser. No. 247,193
Int. Cl.[6] F04B *1/12*
U.S. Cl. 417—269 **3 Claims**



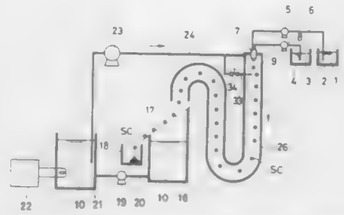
1. An automotive air conditioning compressor, comprising,
an integrally formed, generally cylindrical first housing having a discharge chamber formed in one end and an internal cylinder bore opening at an outer end into said discharge chamber and opening at an unobstructed inner end outside of said first housing and further including a mounting member located centrally of and near said cylinder bore inner end,
a circular discharge valve having a perimeter edge with a diameter substantially equal to the inner surface of said cylinder bore so as to be sealingly engageable with said inner surface and so as to be insertable axially through said cylinder bore through open inner end and into abutment with said mounting member,
fastening means for securing said valve to said mounting member,
a piston reciprocable within said cylinder bore so as to create a pressurized space between said piston and discharge valve, and,
a second housing securable to said first housing after said valve and piston have been assembled to provide a sealed interior compressor space,
whereby said discharge valve may be installed through said cylinder bore and secured to said mounting member prior to assembly of said piston and second housing.

5,387,093

APPARATUS FOR MANUFACTURING SEAMLESS CAPSULES

Narimichi Takei, Sugito, Japan, assignor to Freund Inphachem Inc., Los Angeles, Calif.

Continuation of Ser. No. 950,015, Sep. 24, 1992, abandoned, which is a division of Ser. No. 706,230, May 28, 1991, Pat. No. 5,186,948. This application Dec. 16, 1993, Ser. No. 168,911
Int. Cl.[6] B29B *9/00*
U.S. Cl. 425—5 **4 Claims**



1. An apparatus for manufacturing seamless capsules comprising:
a main flow path for a hardening liquid;
a multiple nozzle through which a multilayer liquid is blown to form multilayer liquid drops which are brought into contact with said hardening liquid flowing through said main flow path, at least a portion of said multiple nozzle being disposed within said main flow path;
an auxiliary flow path asymmetrical to said main flow path for said hardening liquid extending in a direction intersecting said main flow path and connected to said main flow path;
means for adjusting a flow rate of said hardening liquid in said auxiliary flow path; and
means for biasing a flow of said hardening liquid through said main flow path in a direction intersecting the main flow path to adjust the relative speed between said multilayer liquid drops blown out of said multiple nozzle and the flow of said hardening liquid in said main flow path, said biasing means comprising one of a flow of said hardening liquid into said main flow path from said auxiliary flow path and a discharge of said hardening liquid from said main flow path into said auxiliary flow path.

5,387,094

TIRE VULCANIZING PRESS

Katsumi Ichikawa, and Kashiro Ureshino, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobeseikosho, Kobe, Japan

Filed Nov. 22, 1993, Ser. No. 150,065
Claims priority, application Japan, Mar. 24, 1992, 4-98716; Aug. 10, 1992, 4-213064; Sep. 30, 1992, 4-262072
Int. Cl.[6] B29C *33/22;* **B30B** *15/04*
U.S. Cl. 425—34.1 **7 Claims**

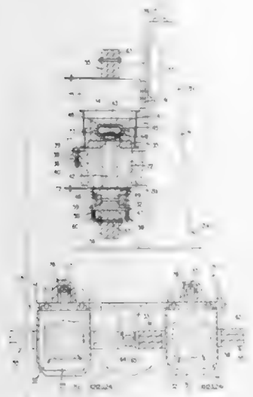
1. A tire vulcanizing press comprising:
a main body frame including a lower frame, and at least one side frame erected on said lower frame;
a lower mold mounting member mounted on said lower frame for fixing a lower mold;
an upper mold mounting member for fixing an upper mold in surface-contact with said lower mold;

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a guide member disposed on one side of said upper mold mounting member for supporting said upper mold mounting member on said side frame in a cantilever state, and which travels to be lifted/lowered; and

a drive body for freely vertically lifting/lowering said upper mold mounting member relatively to said lower mold mounting member by traveling of said guide member;

wherein said guide member includes rail bases attached to one of said side frame or upper mold mounting member, said rail bases having a plurality of rail grooves and extending in a vertical direction, said guide member further including moving bases attached to the other of said side frame or upper mold mounting member, said moving bases being incorporated with a plurality of ball rows rotating around their axes while revolving within said rail grooves of said rail bases



said vulcanizing press further comprising:

a mold pressurizing apparatus for pressurizing said upper and lower molds and vertically provided together with said upper and lower mold mounting members, wherein said upper and lower mold mounting members, said upper and lower molds, and said mold pressurizing apparatus are provided within a pressurizing frame, said pressurizing frame being operationally mounted to said side frame so as to be movable between a pressurizing position in which said pressurizing frame is vertically aligned with said upper and lower molds and said upper and lower mold mounting members for pressurizing said upper and lower molds, and an escape position in which said pressurizing frame is spaced from said upper and lower molds and said upper and lower mold mounting members.

5,387,095

APPARATUS FOR INJECTION MOLDING HIGH-VISCOSITY MATERIALS

Timothy I. Mahoney, Ridgecrest, Calif.; Kirk E. Newman, Yorktown; James A. Gusack, Williamsburg, both of Va., and George J. Sallade, Springville, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 7, 1993, Ser. No. 43,706
Int. Cl.[5] B29C *45/06*
U.S. Cl. 425—145 11 Claims

1. Apparatus for injection molding high-viscosity materials, comprising

means defining a degassing station,

means defining a first chamber positioned at the degassing station,

means for supplying high-viscosity material to the first chamber at the degassing station,

means for evacuating the first chamber to degas the high-viscosity material supplied to the first chamber,

means defining an injecting station displaced from the degassing station,

means defining a second chamber displaced from the degassing station,

means for moving the first chamber from the degassing station to the injecting station while moving the second chamber to the degassing station,

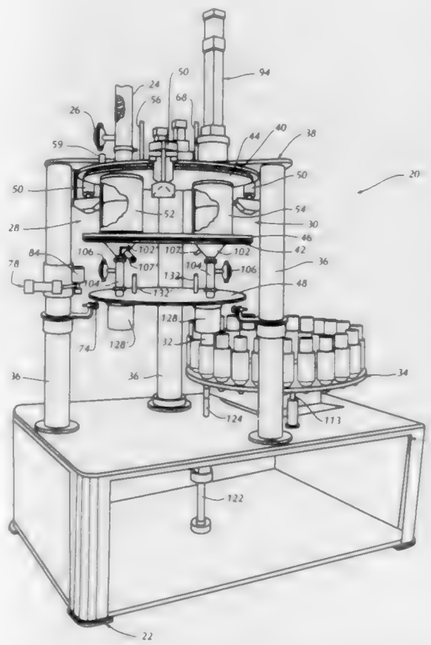
a plurality of molds,

means for registering a first mold with the injecting station,

means for evacuating the first mold,

means for establishing open communication between the first mold and the first chamber,

means for injecting the high-viscosity material from the first chamber into the first mold,



means for controlling the high-viscosity material injected at a quantity sufficient to fill the first mold and for stopping the injecting means when the first mold is filled,

means for closing the open communication between the first mold and the first chamber,

means for moving the first mold out of registration with the injecting station and for serially moving additional molds of the plurality of molds into registration with the injecting station for evacuation and filling like the first mold,

means for detecting an insufficient quantity of said material to fill another mold remaining in the first chamber at the conclusion of filling of a mold, and

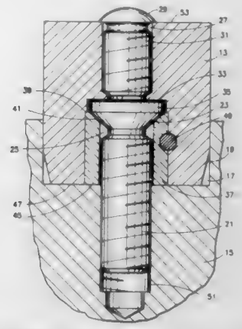
means responsive to the detecting means for moving the first chamber away from the injecting station while moving the second chamber from the degassing station to the injecting station for filling said additional molds of the plurality of molds.

5,387,096

REMOVABLE INSERT FOR CASTING MOLDS, AND CASTING MOLD FOR PRODUCING MOLDED PARTS

Marianna Wieser, Hofweg 43, D-8780 Gemünden/Main, Germany

PCT No. PCT/EP91/02461, § 371 Date Jul. 29, 1993, § 102(e) Date Jul. 29, 1993, PCT Pub. No. WO90/08022, PCT Pub. Date Jul. 26, 1990
PCT Filed Dec. 19, 1991, Ser. No. 81,337
Claims priority, application Germany, Dec. 21, 1990, 4041330
Int. Cl.[6] B29C *33/00*
U.S. Cl. 425—190 9 Claims



1. A removable insert for a casting mold, having

a fastening screw (**21**) for fastening the insert (**13**) in

a hollow defined by said mold (**15**), the screw (**21**) being movable between an unsecured position and a fastening position by means of a screwdriver engaging an engagement region (**35**) of said screw (**21**),

wherein

the engagement region (**35**) of the fastening screw (**21**) is oriented toward the hollow of the mold, and the fastening screw, in said fastening position, engages in an inner wall (**15, 51**) of the hollow of the mold,

the insert (**13**) has a cavity (**25**) for the fastening screw (**21**), in which the fastening screw is supported and which is accessible to the screwdriver from the hollow of the mold,

the cavity (**25**) receiving the fastening screw (**13**) is closable (**29, 31**) in a manner free of undercutting with respect to the hollow of the mold;

the fastening screw (**21**) is supported axially both ends in the cavity (**25**) of the insert (**13**);

the fastening screw (**21**) has a head (**23**) which is received rotatably between two axially opposed shoulders (**33, 41**) of the insert (**13**), which limit axial movement of said screw, and actuation of said screw by rotating said head in one of two predetermined rotational directions, selectively driven the insert (**13**) toward or away from the wall (**15**) of the casting mold.

5,387,097

SELF-SEALING SPIN PACK

Herbert Scheiber, Kleinwallstadt, and Wolfgang Peschke, Obernburg, both of Germany, assignors to Akzo NV, Netherlands

Filed Dec. 7, 1992, Ser. No. 986,298
Claims priority, application Germany, Dec. 6, 1991, 4140269
Int. Cl.[6] D01D *4/00*
U.S. Cl. 425—382.2 11 Claims

1. A self-sealing spin pack for a spinner head of a spinning machine for spinning endless filaments from a viscous spinning liquid at high pressure, comprising:

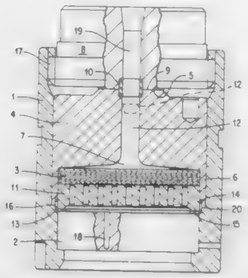
a spinneret holder having a spinneret inserted in a holder bottom portion of said spinneret holder, said spinneret being covered by a filter pack;

a thrust piece, axially movable in the spinneret holder, said thrust piece having a central channel extending from a top portion of said thrust piece toward a thrust piece bottom portion of said thrust piece, said top portion of the thrust piece bordering a block bottom portion of a distributor block, said distributor block having a channel therein communicating with said central channel;

a top seal between the thrust piece and the distributor block;

a middle seal to seal the filter pack against the spinneret holder; and

a bottom flat ring seal disposed directly above said spinneret and between said spinneret and said filter pack for sealing said holder bottom portion of the spinneret holder, wherein the top seal has a tubular shape and an internal diameter which corresponds to a diameter of the central channel of the thrust piece and of the channel of the



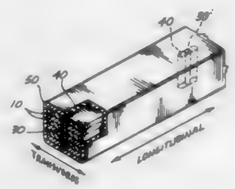
distributor block, said top seal extending into both of said channels, the top portion of the thrust piece being disposed tightly against the block bottom portion of the distributor block under operating conditions, wherein the thrust piece has a potlike shape at said thrust piece bottom portion for receiving the filter pack, said potlike shape engageable with a shoulder of the holder to limit movement of the thrust piece within the holder, said potlike shape disposed radially between said filter pack and said spinneret holder, the middle seal being disposed partially inside a bottom portion of said potlike shape and partially inside the spinneret holder and having a tubular shape, said middle seal covering and sealing an annular gap between the shoulder of the spinneret holder and the potlike shape of the thrust piece.

5,387,098

FLEXIBLE REUSABLE MANDRELS

Kurtis S. Willden, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 23, 1992, Ser. No. 874,474
Int. Cl.[6] B29C *53/82, 67/14*
U.S. Cl. 425—393 2 Claims



1. A flexible mandrel for use in curing of composite materials which may be extracted after use comprising:

a stack of a plurality of laminate sheets;

a flexible casing enveloping and applying pressure to said stack, thereby maintaining stack cross-sectional area; and

means for preventing movement of said stack in the trans-

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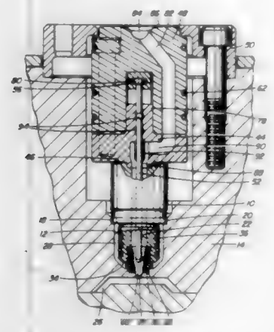
verse direction while permitting shift of said stack of a plurality of laminate sheets in the longitudinal direction; wherein said means for preventing movement of said stack in the transverse direction comprises pins disposed in slots along the longitudinal direction of said stack.

5,387,099

INJECTION MOLDING VALVE MEMBER SEALING BUSHING WITH A THIN COLLAR PORTION

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1

Filed Mar. 7, 1994, Ser. No. 206,712
Claims priority, application Canada, Feb. 14, 1994, 2115613
Int. Cl.[6] B29C *45/23*
U.S. Cl. 425—564 5 Claims



1. In a valve gated injection molding apparatus having at least one heated nozzle seated in a mold, the heated nozzle having a rear end and a central bore extending therethrough in alignment with a gate in the mold leading to a cavity, a melt passage extending through a manifold and the central bore in the heated nozzle to convey melt to the gate, an elongated valve member having a front end and a rear end extending through the central bore of the nozzle, the rear end of the valve member being driven to reciprocate the valve member between a retracted open position and a forward closed position in which the front end of the valve member is seated in the gate, and a valve member sealing bushing being mounted rearwardly of the heated nozzle and having a valve member bore extending therethrough in alignment with the central bore of the nozzle whereby the elongated valve member extends through the valve member bore in the sealing bushing into the melt passage in alignment with the gate, the improvement wherein:

the valve member sealing bushing has a thin collar portion which extends a predetermined distance forwardly into the melt passage in the manifold and fits around the valve member, the collar portion of the sealing bushing being sufficiently thin whereby injection pressure of the surrounding melt in the melt passage in the manifold compresses the collar portion of the sealing bushing around the valve member to form a seal against substantial leakage of melt rearwardly along the reciprocating valve member.

5,387,100

SUPER OFF-STOICHIOMETRIC COMBUSTION METHOD

Hisashi Kobayashi, Putnam Valley, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

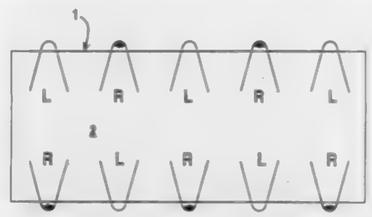
Filed Feb. 17, 1994, Ser. No. 197,991
Int. Cl.[6] F23M *3/04*
U.S. Cl. 431—10 9 Claims

1. A combustion method comprising:

(A) forming a rich stream by injecting into a combustion zone first oxidant, being a fluid having an oxygen concentration of at least 30 volume percent, and first fuel in a ratio within the range of from 5 to 50 percent of stoichiometric;

(B) forming a lean stream by injecting into the combustion zone second oxidant and second fuel in a ratio of greater than 200 percent stoichiometric;

(C) combusting first oxidant and first fuel within the combustion zone and producing combustion reaction products;



(D) combusting second oxidant and second fuel within the combustion zone and producing products of complete combustion and remaining oxygen; and

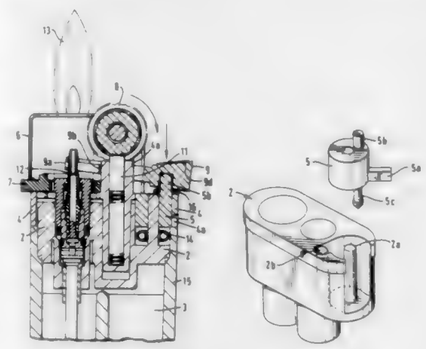
(E) mixing remaining oxygen with combustion reaction products within the combustion zone and combusting said remaining oxygen with said combustion reaction products.

5,387,101

CIGARETTE LIGHTERS

Leung Chan, Shatin, Hong Kong, assignor to The Cli-Claque Company Ltd., New Territories, Hong Kong

Filed Jul. 19, 1993, Ser. No. 93,003
Claims priority, application United Kingdom, Jul. 24, 1992, 9215726
Int. Cl.[6] F23D *11/36*
U.S. Cl. 431—153 27 Claims



1. A cigarette lighter comprising:

a tank for a combustible gas under pressure;

a valve which is normally closed, thus preventing exit of the combustible gas from the tank, but which can be opened to allow gas to escape from the tank through a nozzle;

a valve actuator which when operated engages and opens the valve;

spark means operable to produce a spark in the vicinity of the nozzle thereby causing ignition of gas escaping from the tank when the valve is engaged and opened by the valve actuator;

a finger plate for a user to engage with the user's finger to cause opening of said valve when said spark means is operated;

a moveable safety device having an operating member separate from said finger plate, for a user to engage with the user's finger, a normal first position in which the safety device disengages the valve actuator from the valve and a second position, to which the safety device can be moved with the operating member, in which the safety device engages the valve actuator to engage and open the valve; and

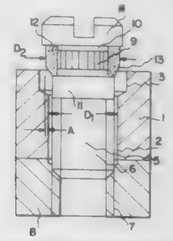
a resilient means which automatically disengages the valve actuator from the valve after use of the cigarette lighter.

5,387,102

LOCKING SCREW

Reiner Wagner, and Otto Lehnert, both of Ispringen, Germany, assignors to OBE-Werk Ohnmacht & Baumgartner GmbH & Co. KG, Ispringen, Germany

Continuation-in-part of Ser. No. 843,521, Feb. 28, 1992, abandoned. This application Dec. 30, 1992, Ser. No. 999,576
Claims priority, application Germany, Nov. 9, 1991, 9114045[U]
Int. Cl.[6] A61C *8/00*; F16B *39/34*; G02C *5/00*
U.S. Cl. 433—173 20 Claims



1. In a locking screw for connecting first and second closing lugs, wherein the first closing lug has an unthreaded through bore and the second closing lug has a tapped bore open to the unthreaded bore, the locking screw has a head to bear on the first closing lug, a screw-threaded shank to be screwed into the tapped bore, and a neck disposed between and recessed from the head and the shank, the improvement comprising:

the neck surrounded by a plastic ring, which protrudes from the shank and frictionally engages the unthreaded through bore; and

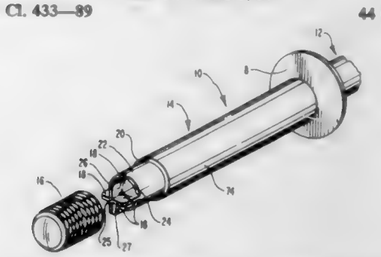
the shank having an unthreaded portion adjoining the plastic ring.

5,387,103

SYRINGE APPARATUS FOR DELIVERING TOOTH COMPOSITES AND OTHER SOLID YET PLIABLE MATERIALS

Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah

Filed Feb. 16, 1993, Ser. No. 19,268
Int. Cl.[6] A61C *5/04*
U.S. Cl. 433—89 44 Claims



1. A syringe apparatus for delivering a material of a type that is essentially solid, yet pliable, comprising:

barrel means for containing the material, said barrel means comprising an inlet end and an outlet end;

plunger means for slidable movement through the barrel means, said plunger means entering the barrel means at said inlet end and effecting delivery of the material at said outlet end as the plunger means is pushed through the barrel means; and

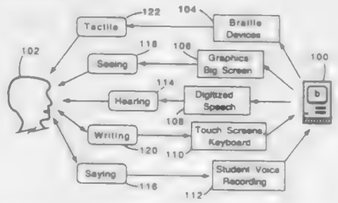
said barrel means further comprising divider means defining separate compartments for sectionalizing portions of the pliable material as it is pushed through the barrel means, and for individually compartmentalizing the sectionalized portions of the pliable material as it is pushed by said plunger means to the outlet end of said barrel means, such that the pliable material is presented beyond the outlet end of said barrel means in a plurality of individualized sections, each said individualized section being contained in a separate compartment of the divider means, and each said separate compartment having a support surface extending beyond said outlet end of said barrel means to accommodate removal of a selected portion of the sectionalized and compartmentalized part of the material, and wherein said divider means has a common longitudinal axis with said barrel means, and further comprises at least two planar cutting plates radially extending outward from said common longitudinal axis, each said planar cutting plate having a proximal end and a distal end, the distal end of each said planar cutting plate extending beyond the outlet end of the barrel means and serving as a cutting surface for at least one of said individualized sections.

5,387,104

INSTRUCTIONAL SYSTEM FOR IMPROVING COMMUNICATION SKILLS

Paul R. Corder, 522 Hillhurst Dr., Baytown, Tex. 77521

Continuation of Ser. No. 863,687, Apr. 1, 1992, Pat. No. 5,302,132. This application Feb. 7, 1994, Ser. No. 192,497
Int. Cl.[6] G09B *19/00*
U.S. Cl. 434—156 6 Claims



1. Apparatus for teaching communication skills utilizing language constructs comprising:

a computer including processing means, memory means, input means, and output means, and

a program stored in the memory means of said computer for

(a) evaluating a student's communication skills using computer-generated stimuli requiring the student to respond thereto and the student's previous response data from the memory means, wherein the stimuli and the student's response thereto utilize touch, movement, sight, sound, or speech, or combinations of touch, movement, sight, sound, or speech;

(b) selecting a target instructional objective for mastering a language construct, wherein the target instructional objective is selected from the group consisting of (1) a plurality of hierarchically ranked objectives stored in the memory means of said computer, the target instructional objective sequentially following from an objective previously mastered by the student or (2) by a teacher supervising use of said computer;

(c) using at least one of the evaluated results to prepare an optimal cognitive strategy to achieve the target objective, wherein the optimal strategy employs touch, movement, sight, sound, or speech, or combinations of touch, movement, sight, sound, or speech as the student

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progressively encounters subsequent objectives to develop proficiency;
(d) testing the student's ability, wherein the ability is to reproduce, recognize, write, type, hand sign, speak, spell, use, or translate the target instructional objective, by using decision rules stored in the memory means of said computer for comparing the results of the testing to a first predetermined performance criterion stored in the memory means of said computer, whereby said computer presents test stimuli and receives the response of the student to the stimuli;
(e) repeating steps (c) and (d) if the test results do not exceed the first predetermined performance criterion;
(f) when the first predetermined performance criterion has been exceeded, repeating steps (b) through (e) with the next higher hierarchically ranked objective; and
(g) repeating steps (b) through (f) until the student exceeds a second predetermined performance criterion for the next higher hierarchically ranked target instructional objective.

5,387,105

DENTAL IMAGE FORMATION AND ORGANOSILOXANE

Emery W. Dougherty, York, Pa., and Wu-Lan Wang, Milford, Del., assignors to Dentsply Research & Development Corp., Milford, Del.

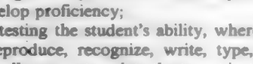
Continuation of Ser. No. 649,188, Feb. 4, 1991, Pat. No. 5,137,488, which is a continuation of Ser. No. 177,819, Apr. 8, 1988, abandoned, which is a division of Ser. No. 881,473, Jun. 30, 1986, abandoned, which is a continuation of Ser. No. 636,138, Jul. 31, 1984, abandoned. This application Apr. 24, 1992, Ser. No. 872,814

The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.

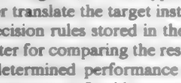
Int. Cl.[6] A61C *9/00*

U.S. Cl. 433—214 **9 Claims**

1. A method of forming a dental prosthetic part comprising:
(a) engaging a composition that is flowable and at least substantially free of memory with a surface in the oral cavity that is to be reproduced as a negative dental surface, said composition comprising a compound that has acryl ethylenic unsaturated pendent groups that polymerize through free radical reaction, said compound having the general formula:

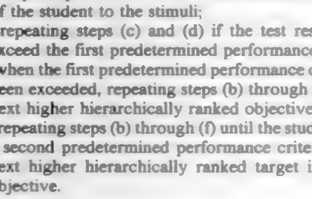


$R-A_x-B_y-R$ X = 2 to 100, Y = 2 to 100



A =

R = 1a, 2a, or 3a



1a) $CH_2=C(R_1)-C(=O)-O-R_2-$

2a) $CH_2=C(R_1)-C(=O)-O-R_2-O-$

3a) $CH_2=C(R_1)-C(=O)-O-R_2-N(H)-C(=O)-O$

R_1=H, alkyl, sub alkyl, F, CN, aryl, sub aryl;
R_2=alkylene, sub alkylene, arylene, sub arylene;
B=an organic radical substituent selected from the group consisting of alklyene, arylene, urethane, sulphone, oxyalkylene, and substituted compounds thereof; and
wherein the compound of the general formula is a block copolymer and it being further understood that the backbone of the block copolymer may be an alternate block or random block copolymer of A and B, and A and/or B may be the same or different for each n within the compound;
(b) forcing said composition against the surface until some of said composition flows into good conformity with said surface to form said composition into an accurate negative impression of said surface;
(c) impinging actinic light on said negative impression; and
(d) photopolymerizing said composition to a degree that said composition assumes a permanent elastomeric remembered form of the negative of said surface.

5,387,106

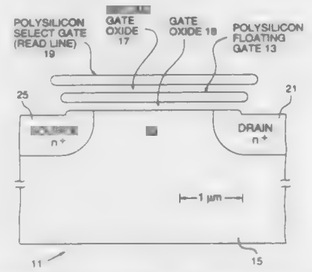
SOLID STATE ARTIFICIAL CORNEA AND METHOD FOR UV LASER SCULPTING

Brian W. Mackenzie; Walter W. Duley, both of King City, and Melih Ogmen, Mississauga, all of Canada, assignors to Powerlasers Ltd., Ontario, Canada

Filed Apr. 6, 1992, Ser. No. 864,257

Int. Cl.[6] G09B *23/28*

U.S. Cl. 434—271 **4 Claims**



1. An artificial cornea for sensing and integrating UV radiation in real time, comprising:
(a) an EPROM array adapted to be exposed to said UV radiation and having individual bits, said individual bits of said EPROM array being set prior to being exposed to said UV radiation, whereby in response to being exposed to said UV radiation predetermined ones of said individual bits are erased;
(b) means for monitoring, in real time, the locations of said predetermined erased bits and in response forming a record of the energy distribution of said UV radiation across said EPROM array,
said individual bits of said EPROM array are stored on a plurality of MOS transistors each comprising a substrate, a source region, a drain region, a select gate overlying a channel region of said substrate intermediate said drain region and said source region, an insulting layer intermediate said channel region and said select gate, and a floating gate buried in said insulating layer, whereby charge stored on said floating gate alters the threshold voltage of said MOS transistor as detected at said select gate.

5,387,107

PERSONALIZED INTERACTIVE STORYBOOK AND METHOD OF TEACHING A READER A DESIRED BEHAVIORAL PATTERN

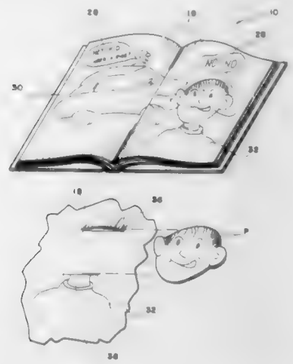
Larry J. Gunter, P.O. Box 637, Archer City, Tex. 76351, and Tracie D. A. Williams, Pecanway, Wichita Falls, Tex.

Filed Aug. 23, 1993, Ser. No. 110,722

Int. Cl.[6] G09B *19/00*

U.S. Cl. 434—238 **7 Claims**

6. A method for teaching a reader a desired behavioral pattern, said method comprising the steps of:
providing a story book having a plurality of pages and including a story therein related to a theme intended to teach a reader a desired behavioral pattern;
providing a likeness of the reader;



attaching a likeness of the reader to certain of the plurality of pages; and
reading the story book.

5,387,108

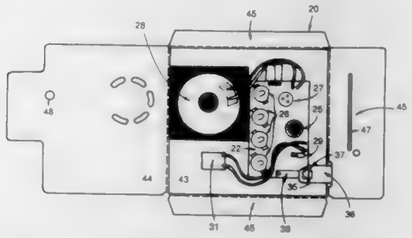
MULTI-PURPOSE, UNIVERSALLY APPLICABLE RE-RECORDABLE, AUDIBLE, MESSAGE DELIVERY SYSTEM

Christopher S. Crowell, 80 Plains Rd., Essex, Conn. 06426

Filed Feb. 5, 1993, Ser. No. 14,369

Int. Cl.[6] G09B *5/04*

U.S. Cl. 434—319 **12 Claims**



1. A multi-purpose, re-recordable, audible message delivery system for enabling individuals to specialize or personalize a message for delivery to another, said system comprising
A. circuit means
a. constructed for repeatedly recording and retaining an audio signal and delivering said recorded signal,
b. responsive to a play activation signal for activating said circuit means to deliver a previously recorded audio signal,
c. responsive to a record activation signal for enabling said circuit means to receive and record an audible message,
d. comprising a speaker electronically connected to the circuit for delivering the audible message,
e. a microphone mounted to the circuit means in interconnected, cooperating relationship with the message recording circuit thereof for receiving the audible message and delivering the audible message to the recording means, and
f. an LED mounted to said circuit means and constructed for being activated in response to the activation of at least one switch means, thereby enabling the user to immediately know when said switch means has been moved from its normally off position to its on position;
B. first switch means
a. movable between an off position and an on position, and
b. connected to said circuit means for transmitting thereto said play activation signal whenever said switch means is in its on position;
C. second switch means
a. movable between an off position and an on position, and
b. connected to the circuit means for transmitting thereto said record activation signal whenever the second switch means is in its on position; and
D. a housing constructed for
a. supportingly retaining and protecting the circuit means,
b. providing easy access to said first and second switch means, and
c. being movably positionable in a plurality of alternate positions and locations.
whereby a multi-purpose, re-recordable audible message delivery system is attained which is capable of being easily employed by any individual for recording any desired audible message as well as delivering the audible message upon demand whenever desired.

5,387,109

FRUCTOSYLAMINE DEGLYCASE AND A METHOD OF PRODUCING IT

Atsushi Ishikawa; Yoshifumi Ohshima; Mikio Yamada; Hajime Okumura, all of Handa, and Yoshiya Kawamura, Kohnan, all of Japan, assignors to Nakano Vinegar Co., Ltd., Handa, Japan

Filed May 24, 1993, Ser. No. 66,499

Claims priority, application Japan, Jun. 5, 1992, 4-169938; Sep. 25, 1992, 4-279292

Int. Cl.[6] C12N *9/04, 9/06, 9/08*

U.S. Cl. 435—191 **5 Claims**

1. A fructosylamine deglycase having the following physico-chemical properties:
(a) effect and substrate specificity: the fructosylamine deglycase acts on amadori compounds, especially effectively on an ϵ-amino acid amadori compound to catalyze oxidation of the amadori compounds to produce an α-ketoaldehyde, an amine compound and hydrogen peroxide;
(b) optimum pH and pH stability: the fructosylamine deglycase is stable at a pH of 5.0 to 8.0 with respect to a substrate of di-fructosyl-lysine, and having an optimum pH with respect to the substrate of 7.0 to 8.0 in a phosphate buffer;
(c) range of reaction temperature: the range of the reaction temperature of the fructosylamine deglycase is 15° to 45° C.;
(d) thermostability: the fructosylamine deglycase is stable to heat treatment of 40° C. for 10 minutes, and when the fructosylamine deglycase is heated at 50° C. for 10 minutes, 80% or more of the fructosylamine deglycase is inactivated;
(e) molecular weight: the fructosylamine deglycase has a molecular weight of about 43000, as measured by gel filtration on a column of a porous, semirigid, spherical gel.

5,387,110

REVERSIBLE DUAL MEDIA ADAPTER CABLE

Edward A. Kantner, Raleigh, and Kenneth D. Schultz, Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1993, Ser. No. 149,885

Int. Cl.[6] H01R *29/00*

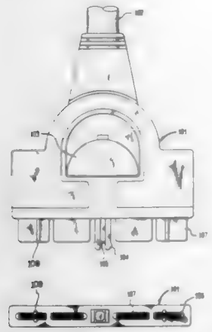
U.S. Cl. 439—59 **15 Claims**

1. An adapter cable assembly comprising:
a plug connector having a housing in which a plurality of contacts are arranged about a center point, the contacts being operable for the plug connector mating with a receptacle connector in either a first position or a second position, with the first position and the second position

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being displaced 180 degrees relative to rotation about the center point; and

at least one electrical cable connected to the housing, the electrical cable having at least a first group of signal conductors electrically connected to a first set of selected contacts of the plurality of contacts for transmitting electrical signals if the plug connector is oriented in the first position, the electrical cable also having at least a second group of signal conductors electrically connected to a second set of selected contacts of the plurality of contacts for transmitting electrical signals if the plug connector is oriented in the second position.

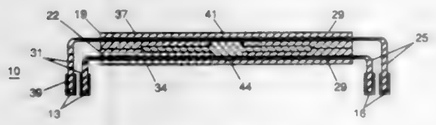


5,387,111

ELECTRICAL CONNECTOR

John A. DeSantis, N. Lauderdale; Giovanni Jaramillo, Plantation, and David C. Everest, III, Tamarac, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1993, Ser. No. 131,238
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—65 **6 Claims**



4. A circuit board assembly comprising:

a first circuit board having a first electrical socket thereon;

a second circuit board adjacent to the first circuit board, the second circuit board having a second electrical socket thereon; and

a low-profile, high density, electrical connector, electrically connecting the first circuit board to the second circuit board, the connector comprising:

a first layer and a second layer of substantially parallel electrical conductors, the electrical conductors each having a planar portion, and spaced ends angling away from the planar portion, the planar portions of the electrical conductors being flattened to reduce height, the planar portions of the electrical conductors being insulated with an insulating material, the spaced ends of the electrical conductors on each layer forming a row of connector pins;

the first layer being overlaid on the second layer and attached thereto along the insulated planar portions of the conductors to form a substantially rigid, low profile, multilayered structure;

an electrical shield disposed between the first and second layers along the planar portions, which breaches the insulating material of the at least one conductor on the first layer and the at least one conductor on the second layer to electrically couple the shield, thereby providing electrical shielding for at least some of the conductors on the first and second layers;

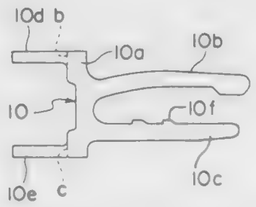
the connector having a first plurality of connector pins engaging the first socket and a second plurality of connector pins engaging the second socket.

5,387,112

VERSATILE TERMINAL MEMBERS FOR RIBBON CABLE CONNECTORS

Masamitsu Chishima, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jul. 30, 1993, Ser. No. 99,562
Claims priority, application Japan, Sep. 16, 1992, 4-064513[U]
Int. Cl.[6] H05K *1/00*
U.S. Cl. 439—67 **3 Claims**



1. A generally bifurcated versatile terminal member of one-piece construction for use in a surface mounted flexible ribbon cable connector, which comprises:

a generally elongated stem,

contact and positioning prongs extending generally parallel to each other from a generally intermediate portion of the stem in one direction; and

a pair of lead elements for making electrical contact with a surface of another element, said pair of lead elements extending generally parallel to each other from opposite ends of the stem in a direction counter to said one direction, at least one of said lead elements being adapted to be trimmed off from the stem depending on the type of ribbon cable connector in which the versatile terminal member is to be mounted, so that when one of said lead elements is trimmed off, the contacting and positioning prongs may extend parallel to the surface of the other element with the other of said pair of lead elements contacting the surface of the other element, and when both of said pair of lead elements are trimmed off, the contacting and positioning prongs extend perpendicular to the surface of the other element with the stem contacting the surface of the other element.

5,387,113

COMPOSITE SHIELD JACKET FOR ELECTRICAL TRANSMISSION CABLE

Marvella Dickerson, Simpsonville, and Douglas E. Piper, Greenville, both of S.C., assignors to Woven Electronics Corp., Simpsonville, S.C.

Filed Sep. 24, 1992, Ser. No. 949,987
Int. Cl.[6] H01B *7/34;* **H01R** *13/648*
U.S. Cl. 439—98 **28 Claims**

1. A shielded electrical transmission cable assembly having improved flexibility and shielding against unwanted electrical noise, emissions and susceptibility said assembly comprising:

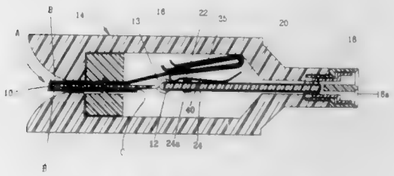
a flat electrical transmission cable having a plurality of insulated longitudinal conductors arranged generally side by side across a width of said cable, said flat cable having a generally planar first side and a generally planar second side defining oppositely facing exterior faces;

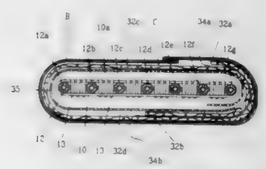
an electrical connector member terminating one end of said electrical transmission cable including a housing and a multi-position connector carried by said housing;

a conductive shield cloth wrapped about said electrical transmission cable for conducting unwanted electrical noise;

said shield cloth including a highly flexible fibrous web continuously surrounding and enclosing said flat cable to define a first shield side coplanar and copending across and along the entire first side of said cable, and said fibrous web having a second shield side coplanar and coextending across and along the entire second side of said cable;

said fibrous web having an overlapping edge sealed along its entire length;





a generally flat elastomeric cover bonded to said fibrous web and continuously surrounding said fibrous web and flat cable;

said overlapping edge of said fibrous web being bonded together with said elastomeric cover;

termination means for terminating said shield cloth to said multi-position connector; and

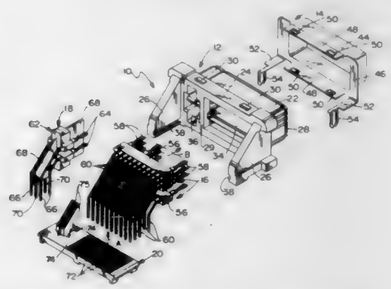
said fibrous web is formed from one of a woven web and non-woven web composed of metalized fibers providing a highly flexible electrical shield jacket with increased durability when secured with said elastomeric cover in said cable assembly.

5,387,114

ELECTRICAL CONNECTOR WITH MEANS FOR ALTERING CIRCUIT CHARACTERISTICS

David L. Brunker, Naperville, and Richard A. Nelson, Glen Ellyn, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 22, 1993, Ser. No. 95,890
Int. Cl.[6] H01R *4/66*
U.S. Cl. 439—108 **20 Claims**



1. A right-angled electrical connector, comprising:

a dielectric housing having a front mating face and a rear face with terminal-receiving passageway means extending therebetween;

a plurality of terminals, each having a forwardly projecting contact portion in said passageway means and a tail portion projecting rearwardly from the housing, said tail portion having a board mounting portion at an angle to said contact portion and a transition portion extending from said board mounting portion to said contact portion and including at least one bent region, a cross section of said tail portion being defined by four sides along the length thereof, at least a first of said tail portions being longer than a second of the tail portions whereby their respective terminals have circuit paths of different lengths;

a ground plate extending alongside of and spaced from a first side of both of said first and second tail portions; and

a dielectric member located between the ground plate and a selected one of said first and second tail portions for controlling a circuit characteristic of the circuit path through the terminal of which said one tail portion is a part, said dielectric member extending along said first said first side of said selected tail portion and only air immediately adjacent a second side opposite said first side of said selected tail portion.

5,387,115

ELECTRONIC SURFACE MOUNT MODULE SOCKET WITH EJECTOR LATCH

Charles Kozel, McHenry; Steven Hiller, Elk Grove Village, and Joseph Ufheil, Chicago, all of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Jun. 7, 1993, Ser. No. 73,168
Int. Cl.[6] H01R *13/629*
U.S. Cl. 439—157 **7 Claims**



1. An electronic module socket for interconnecting an electronic module to a circuit board, the electronic module socket comprising:

an elongated insulative housing including,

an elongated central cavity for receiving an electronic module having,

a plurality of opposed contacts located along both sides of said central cavity configured to establish electrical contact with said electronic module upon insertion of said electronic module within said central cavity;

said contacts each defining a first and second section which resides within said central cavity exerting frictional force against said electronic module upon insertion, sufficient to retain said electronic module in said central cavity, said contacts also each defining a third contact section positioned exterior and transversely to the base of said socket to engage conductive members of a circuit board when said socket is carried thereon;

said third contact section extending beyond the side of said socket, whereby said third contact sections are exposed in the upward perpendicular direction while the socket is carded on a circuit board;

said housing includes a latch means positioned at each end of said central cavity, pivotally mounted on said housing for movement between a latched positioned in which support is provided for said electronic module upon insertion, and an eject position in which said electronic module is ejected from said socket;

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said latch means includes an actuating surface for moving the latch from said latched position to said eject position and a detent which locks said electronic module by frictionally engaging said electronic module when said latch means is rotated toward said electronic module from said eject position to said latched position, said detents limiting movement of said electronic module upon insertion in said central cavity;

said latch means includes a camming surface positioned at the base of said latch means for exerting upward pressure at the base of said electronic module upon movement of said latch from said latched position to said eject position to eject said electronic module, and said base of said electronic module to contact said camming surface upon insertion of said electronic module in said central cavity providing downward pressure on said camming surface to rotate said latch from said eject position to said latched position;

said housing includes enlarged right-angle tabs positioned exterior and transversely to the base of said socket to engage solder pads of a circuit board; and

said right angle tabs being integral with a securement member.

5,387,116

AUTO TERMINATION BNC T ADAPTOR

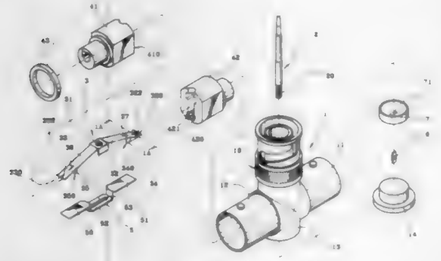
Tsan-Chi Wang, 1 Fl., No. 13, Lane 312, Chung Cheng Rd., Hsin Tien, Taipei Hsien, Taiwan, Prov. of China

Filed Jul. 2, 1993, Ser. No. 85,116

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[6] H01R *29/00*

U.S. Cl. 439—188 **4 Claims**



1. An auto termination BNC T adaptor, comprising:

a) a housing having BNC jacks;

b) a male contact having connection means on a bottom portion extending into the housing;

c) a female contact located in the housing and attached to the bottom portion of the male contact by the connection means, the female contact having a socket and wing panels which extend obliquely downward from two lateral sides of the socket, each wing panel having an oblique guide plane counter-folded at an extreme end thereof, and also having an arc-shaped section defining a downward facing opening located on counter-folding points of the guide plane;

d) a pair of contact feet facing one another and extending downwardly from each of the wing panels between the socket and the guide plane, the contact feet defining contact points which extend below a line connecting the two counter-folding points;

e) a conductive element located in the housing having a contact section and conductive pieces extending outward from two lateral sides of the contact section;

f) a ceramic resistance in electrical contact with the contact section of the conductive element;

g) insulation means located in the housing so as to electrically insulate the housing from the male and female contacts, the conductive element and the ceramic resistance; and,

h) a conductive voltage cover located in a bottom of the adapter so as to be in contact with the ceramic resistance.

5,387,117

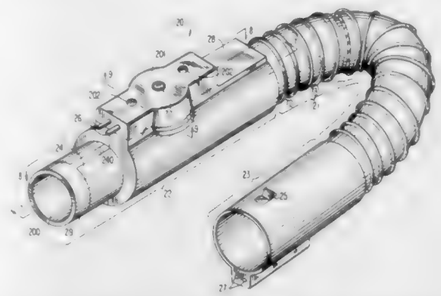
UNIVERSAL CENTRAL VACUUM CLEANER HOSE END FITTING

George C. Moyher, Jr., Bluff City, Tenn.; Randall D. Gill, Bristol, Va.; Peter Hoekstra, Bristol, Tenn.; Leonard E. Bowerman, Abingdon, Va., and Jeffrey H. Ingerman, West Orange, N.J., assignors to Electrolux Corporation, Atlanta, Ga.

Filed Nov. 12, 1993, Ser. No. 151,289

Int. Cl.[6] H01R *4/60*

U.S. Cl. 439—191 **24 Claims**



1. An end fitting for a first end of a central vacuum cleaner hose for connecting said hose to a wall outlet of a central vacuum cleaner system, said wall outlet having a vacuum port, said hose having a fluid passage and having conductors for transmitting electrical power from said first end thereof to an accessory at a second end thereof, said end fitting comprising:

a body having a bore therethrough, said body having a hose end at which said hose is attached with said bore in fluid communication with said fluid passage, and having a wall end opposite said hose end for insertion into said vacuum port; and

an electrical connecting portion on said body, said connecting portion:

having a plurality of contacts each electrically connected to one of said conductors, and

being rotatably and permanently affixed to said body for rotation between a first position in which said contacts face said wall end of said body for use when said wall outlet has a source of electrical power for supplying electrical power to said accessory, and a second position in which said contacts face said hose end of said body for use with an auxiliary power cord for supplying electrical power to said accessory from a source spaced from said wall outlet.

5,387,118

SOCKET FOR IC PACKAGE

Nobuaki Kishi; Makoto Hoshi; Tetsuya Osawa, and Ichiro Matsuo, all of Saitama, Japan, assignors to Chichibu Fuji Co., Ltd., Satama, Japan

Filed Aug. 10, 1993, Ser. No. 103,756

Claims priority, application Japan, Apr. 30, 1993, 5-104178; Jun. 28, 1993, 5-157310

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—266 **5 Claims**

1. A socket for an IC package, including:

a base member having a receptacle space for the IC package;

a plurality of contacts arranged in parallel rows along the sides of said receptacle space of the base member, each of said contacts having a contact portion for contact with a corresponding lead of the IC package received in said receptacle space, and a spring for urging said contact portion inwardly to obtain a contact pressure against said lead;

a connecting shaft supported vertically and pivotally along each row of the contacts; and

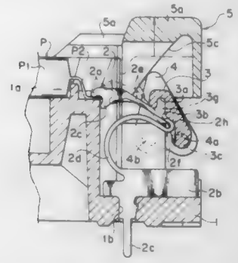
a cover mounted to cover said base member,

said connecting shaft being moved pivotally by depression of said cover to displace the contact portion of each said contact outwards away from the corresponding lead of the IC package against a biasing force of said spring,

each spring having a curved, first spring portion extending upwardly and inwardly from an inside edge of a plate portion placed on said base member and is bent outwardly, a second spring portion being bent inwardly from a front end of the first spring portion and contiguous to said contact portion, and a projection formed on an upper surface of the second spring portion,

said connecting shaft having an engaging recess for engagement with said projection and an engaging face for engagement with an area of said second spring portion behind said projection, said connecting shaft further having support shafts at both ends thereof, said support shafts being pivotally supported by elongated holes formed in movable cams, said movable cams being pivotally supported on both right and left sides of each row of the contacts, and

said cover having an inclined surface for allowing said movable cams to move pivotally outwardly.



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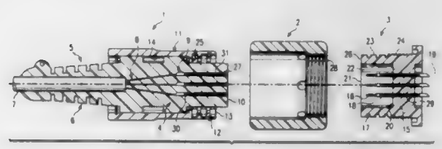
WATERPROOF ELECTRICAL CONNECTOR

Richard G. Wood, Magnolia, Tex., assignor to Tescorp Seismic Products, Inc., Houston, Tex.

Filed Oct. 8, 1993, Ser. No. 134,075

Int. Cl.[6] H01R *13/52*

U.S. Cl. 439—281 **12 Claims**



1. An electrical connector assembly for use in marine and corrosive environments comprising: a connector body formed of a relatively soft plastic material; a connector core formed of a relatively hard and rigid plastic material, said body and core being configured to allow telescoping interaction together when assembled; said core being integrally formed with a tubular walled outer portion that is closed at one end and open at the other and having a plurality of electrical contact members encapsulated in said core, each of said contact members having a predetermined length that is surrounded by a sheath along a portion of said length, sheath being formed as one piece with the core, said contact members each being arranged for engagement with a respective electrical sleeve disposed in a corresponding socket molded in said body, each of said sockets having at least one radially inwardly extending sealing rib integrally formed on an internal wall surface thereof and forming a waterproof seal between a respective socket and a respective sheath disposed therein solely in response to inserting the contact members into electrical contacting engagement with the sleeves disposed in said sockets; and an electrical conductor connected to each of said contact members and said sockets.

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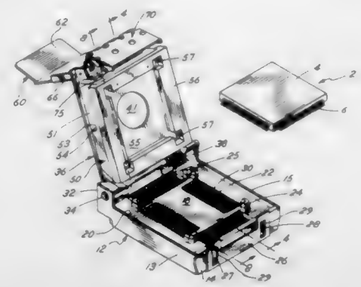
LATCHING IC CONNECTOR

Richard L. Marks, and Donald W. Milbrand, Jr., both of Mechanicsburg, Pa., assignors to Wells Electronics, Inc., South Bend, Ind.

Filed Feb. 19, 1993, Ser. No. 19,552

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—331 **15 Claims**



1. A connector for housing an integrated circuit, said integrated circuit including a body and a plurality of leads extending outwardly of said body, said connector comprising:

a base defining a central cavity means for accommodating said integrated circuit;

a plurality of resilient electrically conductive contacts housed within said base;

latching means pivotally connected to said base between a latched position and an unlatched position for securing said integrated circuit to said base;

press means pivotally attached to said latching means for uniformly urging said leads against said contacts; and

means for aligning said press means with said leads, prior to said press means contacting said leads.

5,387,121

ZERO INSERTION FORCE SOCKET

Edward A. Kurz, 172 Pinebank Rd., Flemington, N.J. 08822

Filed Sep. 13, 1993, Ser. No. 119,563

Int. Cl.[6] H01R *4/52*

U.S. Cl. 439—342 **23 Claims**

1. A socket for connecting to a plurality of dependent pins on an electrical element, comprising:

an insulative base having a plurality of receptacles each adapted to receive an electrical contact;

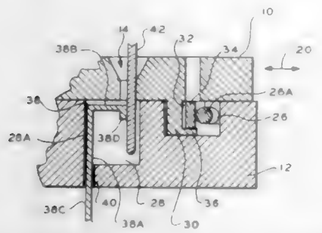
a plurality of discrete contacts separately mounted in corresponding ones of said receptacles in said insulative base;

a plate mounted upon said insulative base to slide between an engaged position and a released position, said plate having a plurality of pin insertion holes distributed in a pattern matching that of said receptacles in said insulative base, said plate in said released position allowing insertion of said dependent pins without deflecting said contacts in said receptacles, said plate being spaced from said contacts

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to allow said plate to slide between said engaged and said released position without touching said contacts;

biasing means mounted between said plate and said base for urging said plate toward said engaged position; and



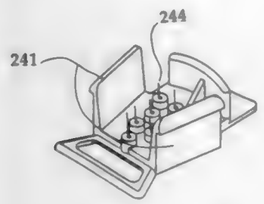
drive means mounted between said base and said plate for relatively driving them.

5,387,122

PULSE OXIMETER PROBE CONNECTOR

Daniel S. Goldberger, Boulder; Timothy A. Turley, Highlands Ranch, and Kirk L. Weimer, Louisville, all of Colo., assignors to Ohmeda Inc., Liberty Corner, N.J.

Continuation-in-part of Ser. No. 781,891, Oct. 24, 1991, Pat. No. 5,249,576. This application May 18, 1993, Ser. No. 63,398
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—353 12 Claims



1. A connector for electrically connecting first and second sets of conductors to exchange signals therebetween, comprising:

first connector segment, having a top side, a bottom side and at least one edge, comprising:

a plurality of sockets located on said bottom side of said first connector segment and configured in a predetermined pattern, each of said plurality of sockets being connected to a one of said first set of conductors,

first and second apertures in said bottom side of said first connector segment, second connector segment, having a top side and a bottom side, comprising:

a like plurality of pins located on said top side of said second connector segment and configured in said predetermined pattern, each of said plurality of pins being connected to a one of said second set of conductors,

first projection located along a first side of said predetermined pattern of pins, and mating with said first aperture in said bottom side of aid first connector segment,

second projection located along a second side of said predetermined pattern of pins, and mating with said second aperture in said bottom side of said first connector segment, and

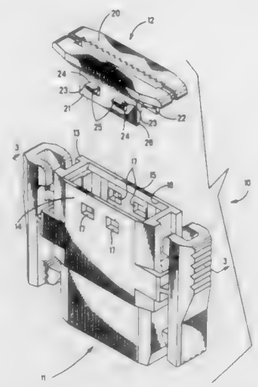
alignment projection located on said top side of said second connector segment engagable with said edge on said first connector segment and cooperatively operative with said first and second projections for positioning said first and second connector segments to align said plurality of pins with said plurality of sockets, said first and second projections in combination with said alignment projection forming a substantially U-shaped configuration of elements to partially encircle said plurality of pins that project from said top side of said second connector segment.

5,387,123

PROTECTIVE COVER FOR HEADER

Dean A. Puerner, Maracopa, Ariz., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 83,407, Jun. 25, 1993, abandoned. This application Jun. 6, 1994, Ser. No. 254,452
Int. Cl.[6] H01R *13/53*
U.S. Cl. 439—460 5 Claims



1. An improved cable connector for use with high voltage flat wide cable including a dielectric housing and a dielectric protective rear cover, the housing having a cable receiving face, a first wide sidewall and an opposite second wide sidewall joined by end walls, an opening being formed between said sidewalls and endwalls; the protective rear cover being a one-piece member having a pair of transverse cable engagement sections associated with said sidewalls and with the wide major surfaces of the cable, the cover being securable to said housing to extend across the cable receiving face thereof adjacent rearward exposed ends of terminal members within said housing, each transverse cable engagement section having at least two spaced-apart latching projections disposed forwardly thereof on respective arms with the arms spaced apart from side to side not less than the nominal thickness of the cable, in order that said cover is securable to the rearward end of the connector after the cable is secured therein and each of said projections may be secured in respective corresponding latch apertures in each of the first and second housing sidewalls, the latching projections and apertures being adjacent the exposed rearward terminal ends, the improvement comprising:

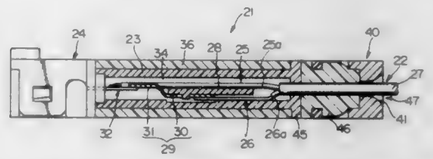
flanges extending laterally from said arms for covering said apertures in the housing to prevent arcing through said apertures in the presence of high voltage when said protective rear cover is secured to said housing and said latching projections are secured in said housing apertures.

5,387,124

CABLE TERMINATION ASSEMBLY

Tomoyuki Shinohara, Chiba; Ken Yasuoka, Tokyo; Shigeru Ashida, Chiba; Tsuyoshi Hirahara, Chiba; Koji Ueda, Chiba, and Hideki Zako, Chiba, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 50,961
Claims priority, application Japan, Apr. 24, 1992, 4-106969; Jun. 1, 1992, 4-140739
Int. Cl.[6] H01R *9/07*
U.S. Cl. 439—497 7 Claims



1. A cable termination assembly having a forward end and a rearward end for electrically connecting a plurality of cables to an electrical device through a coupling section disposed at the forward end of said assembly, wherein each cable includes at least one first wire and a second wire, said assembly comprising:

(a) a casing in which terminal ends of said plurality of cables are disposed laterally at the rearward end of said casing;

(b) a plurality of first wires extending forwardly from said terminal ends of said plurality of cables and a plurality of second wires extending forwardly from said terminal ends of said plurality of cables;

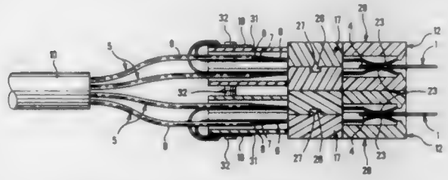
(c) an insulation plate having a flat, top, major surface extending from said rearward end to said forward end disposed in a connection section of the assembly between said plurality of first wires and said plurality of second wires; wherein said first wires and said second wires are electrically connected to said coupling section and the space surrounding the connection section of said first wires, second wires with said coupling section is filled with a molding, said insulation plate supports the plurality of first wires on said flat, top, major surface.

5,387,125

CONNECTOR FOR FLEXIBLE FLAT CABLE

Larry L. Davis, West Linn, and Michael L. Demeter, Vernonia, both of Oreg., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 29, 1993, Ser. No. 99,029
Int. Cl.[6] H01R *9/07*
U.S. Cl. 439—497 9 Claims



1. An electrical connector comprising:

multiple electrical cables in two cable rows, multiple electrical signal contacts extending in two contact rows,

wire connecting portions of the signal contacts in the same contact row being connected to signal wires of the electrical cables in the same cable row,

a ground bus corresponding to each of the cable rows being connected to conductive shields Of the electrical cables in the same cable row,

at least one electrical ground contact of each ground bus extending in one of the contact rows,

insulating holders each holding the ground and signal contacts in the same contact row apart from one another, the insulating holders being connected together to oppose the contacts of one row with the contacts of the other row,

the opposed contacts being adapted to clamp a flexible flat cable,

contact portions on the ground and signal contacts of the two contact rows frictionally connect with respective conductor traces on opposite sides of a flat cable when the ground and signal contacts of the two contact rows clamp the flat cable,

the insulating holders attach to each other,

insulating cover plates adapted to attach to respective insulating holders the contacts being between the cover plates,

a conductive shield on at least one of the cover plates, bendable portions of each said ground bus projecting from between the cover plates and being bent to impinge against the conductive shield,

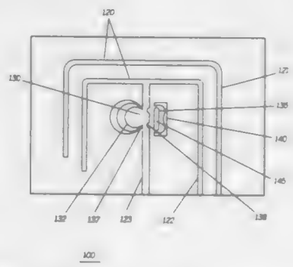
and a conductive grounding plate removable from the bendable portions of at least one said ground bus, and the grounding plate attaches to one of the cover plates and connects with the conductive shield.

5,387,126

CONFIGURABLE CIRCUIT SUBSTRATE

Michael M. Austin, Pompano Beach; Steven R. Fischl, Sunrise; Mark S. Bresin, Coral Springs; Alay Mehta, Plantation; Raymond J. Kleinert, III, Ft. Lauderdale, and Willard F. Amero, Jr., Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 16, 1993, Ser. No. 106,670
Int. Cl.[6] H05K *1/00*
U.S. Cl. 439—516 14 Claims



1. A configurable circuit, comprising:

a flexible substrate having an electrical circuit pattern;

a separable segment integral to said substrate, said separable segment containing a portion of said circuit pattern;

an extraction initiator portion integral to said substrate, said extraction initiator portion being pivotable between a first position and a second position; and

an extraction terminator portion located adjacent to said separable segment and opposite to said extraction initiator portion, and comprising a reinforced area of said substrate about said separable segment having a higher tolerance for mechanical stress than portions of said substrate about said reinforced area.

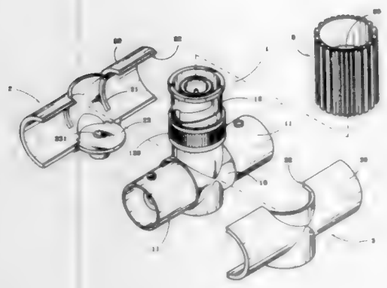
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5,387,127

SHIELDING DEVICE FOR T-TYPE BNC CONNECTORS

Tsan-Chi Wang, 1 Fl., No. 13, Lane 312, Chung Chen Rd., Hsin Tien City, Taipei Hsien, Taiwan, Prov. of China

Filed Aug. 26, 1993, Ser. No. 111,788
Int. Cl.[6] H01R *13/658*
U.S. Cl. 439—582 4 Claims



1. A shielding device for a T-type BNC connector comprised of a T-shaped shell having two BNC jacks transversely disposed in reversed directions and a BNC plug vertically disposed in the middle at the top, the shielding device comprising a four-way shielding tube covered around said T-shaped shell and said BNC jacks, and an insulative tubular shield covered around said BNC plug, said four-way shielding tube being comprised of a first insulative shield and a second insulative shield respectively made in the shape of a half-round tube and connected together through a sealing process, said four-way shielding tube comprising symmetrical ribs raised from an inside wall thereof clamped on said T-type BNC connector with an annular gap retained between said four-way shielding tube and said BNC jacks for inserting a respective external BNC connector to connect to either BNC jack, a block plate blocked on said T-shaped shell of said T-type BNC connector at the bottom, and an earth terminal inserted in a center through hole on said block plate and connected to said four-way shielding tube, said insulative tubular shield being comprised of a tubular taper body fitted around a rotating ring on said BNC plug.

5,387,128

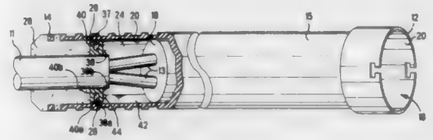
Patent Not Issued For This Number

5,387,129

SEALED ELECTRICAL CONNECTOR AND METHOD OF MAKING THE SAME

Gheorghe Hotea, Griesheim, Germany, assignor to The Whitaker Corporation, Wilmington, Del.

Filed May 26, 1993, Ser. No. 67,375
Claims priority, application United Kingdom, Jun. 16, 1992, 9212732
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—587 17 Claims



1. A sealing insert for use in an electrical connector having an inner wall which defines an inner passageway; said sealing insert comprising:

a body portion comprising an inner sealing surface adapted to be in sealing engagement with a cable;

said body portion also comprising an outer sealing lip having a predetermined configuration which is adapted for slidable receipt within said inner wall;

said predetermined configuration permitting a sealing material which is introduced into said inner passageway to seal a terminal area of said inner passageway; and

wherein said predetermined configuration comprises a groove in said outer sealing lip for receiving said sealing material.

5,387,130

SHIELDED ELECTRICAL CABLE ASSEMBLY WITH SHIELDING BACK SHELL

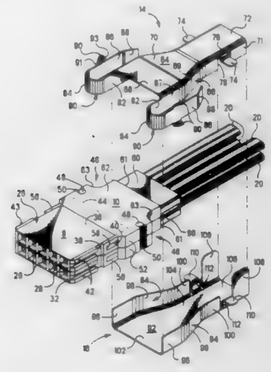
James L. Fedder, Etters, and John R. Shuey, Mechanicsburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 29, 1994, Ser. No. 219,314
Int. Cl.[6] H01R *9/03*
U.S. Cl. 439—610 20 Claims

1. A shielded electrical connector assembly, comprising;

a forward electrical connector having a forward insulative housing with a mating forward face and a rear face, first electrical terminals in the forward housing each having a forward portion for mating with a mating second terminal by way of the mating face, and a rearward connecting portion connected to a lead of a shielded electrical cable extending from the rear face of the forward housing;

a rear insulative housing block securable to the forward housing and surrounding the leads of the shielded cable, comprising at least one lead strain relief member projecting rearwardly from the rear insulating housing and overmoulded to said leads;



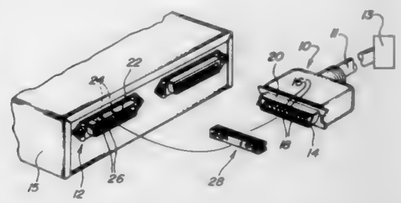
and a back shell having first and second back shell parts which are securable about the strain relief members and the leads, the back shell being clinchable to the shield of the shielded cable.

5,387,131

NETWORK CONDITIONING INSERT

Kevin G. Foreman, Sandia Park; Sean M. Rieb, and Paul J. Miller, both of Albuquerque, all of N. Mex., assignors to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 938,111, Aug. 31, 1992, Pat. No. 5,290,191, which is a continuation-in-part of Ser. No. 895,148, Jun. 5, 1992, Pat. No. 5,181,859, which is a continuation of Ser. No. 694,262, Apr. 29, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 54,658
Int. Cl.[6] H01R *13/703*
U.S. Cl. 439—620 24 Claims



1. A device for use with a first electrical connector of the type having at least one row of finger contacts, said device comprising:

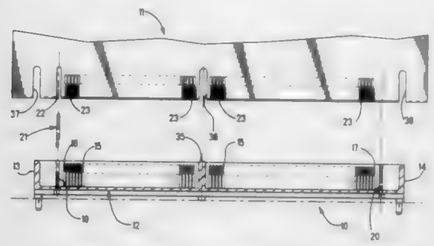
an insulating substrate; at least one surface of the substrate having a series of contact strips thereon aligned with the fingers of the first connector; circuit means on the substrate and connected to at least one of the contact strips for conditioning electrical signals on the fingers of the first connector; and said substrate being removably insertable and configured to fit substantially upon a post of the first connector so that the contact strips engage the fingers of the first connector and such that a second connector may be mated with the first connector.

5,387,132

KEYED CARD EDGE CONNECTOR

Douglas R. Sarver, Millerstown; Mark R. Thumma, Oberlin, and David P. Wike, Hummelstown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 9, 1993, Ser. No. 149,690
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—633 7 Claims



1. A card edge connector for connection to a circuit board, the connector comprising a housing having a first end wall and an opposite second end wall, a row of separated contacts having an initial contact and a terminal contact, the initial contact spaced from the first end wall, the terminal contact spaced from the second end wall, a longitudinal slot formed in the housing, a first key position formed in the housing between the first end wall and the initial contact, a second key position formed in the housing between the second end wall and the terminal contact, at least one key disposed in at least one of the key positions in the housing, the circuit board being disposed perpendicularly to the connector and being removably received in the longitudinal slot in the housing, the circuit board having at least one key slot formed therein, wherein when the circuit board is received in the connector, the at least one key in the connector cooperates with and is received in the at least one key slot in the circuit board.

5,387,133

TERMINAL FOR LOW PROFILE EDGE SOCKET

Robert J. Tondreault, Louisville, Ky., and James F. DePriest, New Albany, Ind., assignors to Robinson Nugent, Inc., New Albany, Ind.

Continuation of Ser. No. 759,409, Sep. 13, 1991, Pat. No. 5,254,017. This application Sep. 13, 1993, Ser. No. 120,656
Int. Cl.[6] H01R *23/70*
U.S. Cl. 439—637 16 Claims

1. A terminal for use in an electronic connector including a housing having a plurality of spaced apart walls defining a plurality of terminal-receiving cavities for establishing electrical contact with a conductive surface on a circuit board and an upwardly opening slot for receiving a circuit board therein, the terminal comprising:

a generally L-shaped base including a generally vertical first leg section aligned substantially parallel to the upwardly opening slot of the housing and a generally horizontal second leg section, the first leg section having a proximal

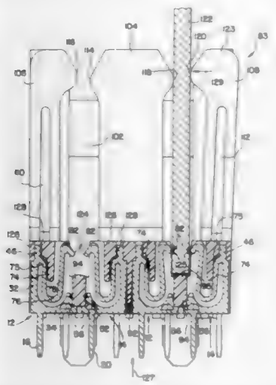
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end and a distal end, and the second leg section having a proximal end and a distal end, the proximal end of the second leg section being coupled to the proximal end of the first leg section;

first retaining means coupled to the distal end of the first leg section for retaining the first leg section of the base a terminal-receiving cavity of the housing;

second retaining means coupled to the distal end of the second leg section for retaining the second leg section of the base in the terminal-receiving cavity of the housing; and

a contact including a downwardly extending section coupled to the distal end of the first leg section of the base and



aligned generally parallel to the first leg section, a generally U-shaped section coupled to the downwardly extending section, and an upwardly extending section coupled to the generally U-shaped section, the upwardly extending section including a contact section for engaging a conductive surface formed on a side of the circuit board facing the first leg section of the terminal, the contact being cantilevered from the first leg section so that the downwardly extending section is movable upon insertion of the circuit board into the housing, the contact applying a biasing force to the contact section against the conductive surface of the circuit board in a direction away from the first leg section of the terminal.

5,387,134

ELECTRICAL CONNECTOR SYSTEM

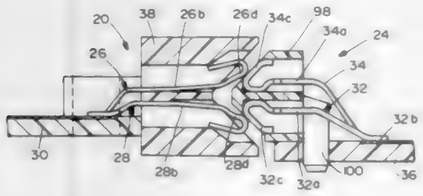
Brian Bryce, Limerick; Patrick G. Casey, Kerry; Thomas W. Cruise, Limerick; Paul M. O'Brien, Co. Clare, and Matthew Wilhite, Dooravoyle Limerick, all of Ireland, assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 9, 1993, Ser. No. 90,394

Claims priority, application Ireland, Oct. 9, 1992, 2722/92

Int. Cl.[6] H01R *23/24*

U.S. Cl. 439—660 **5 Claims**



1. In an electrical connector system which includes first and second electrical connectors mateable in a given general direction, each connector including a housing having a mating end and at least a pair of terminals mounted on the respective housing, the pair of terminals of each connector having spring contact portions engageable with the spring contact portions of the pair of terminals of the other connector, wherein the improvement comprises terminals of the first connector having spring arm portions defining the spring contact portions being configured to diverge at angles to said mating direction toward the mating end of the first connector in a generally V-shaped configuration, each first connector terminal further having a generally U-shaped end extending from said spring contact portion, said U-shaped end bent outwardly of the respective spring arm portion ending in a generally planar leg directed generally opposite said mating direction, said U-shaped end adapted so that, during the mating of the connectors, a surface of said planar leg engages a respective surface of wall means in said first connector housing, said wall surface configured to diverge at an angle to said mating direction toward the mating end of the first connector, after the planar leg bends the U-shaped ends storing energy therein upon mating of the connectors, whereby further mating of the connectors will compress the U-shaded ends further storing energy therein, and the spring contact portions of the terminals of second connector being configured to converge at angles to said mating direction toward the mating end of the second connector in a generally V-configuration.

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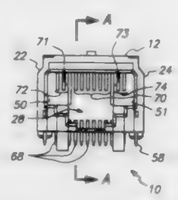
SPECIAL PURPOSE MODULAR RECEPTACLE JACK

David W. Shen, Cupertino; Robert A. Howard, Mountain View; Robert A. Riccomini, Saratoga; Steven J. Young, Milpitas, all of Calif.; Robert E. L. Cox, Croissy-sur-Seine; Philippe Le Bars, Elancourt, both of France, and Keiichi Tsukinari, Mission Viejo, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 9, 1993, Ser. No. 73,724

Int. Cl.[6] H01R *23/02*

U.S. Cl. 439—676 **21 Claims**



1. A special purpose modular receptacle jack for coupling with either a standard male connector plug or a modified male connector plug, the receptacle jack comprising:

a housing having a first end, a second end, a first side, a second side, a top side and a bottom side, the housing defining a cavity having a first recessed region, the cavity begin disposed on the first end of the housing, the cavity shaped to accommodate a standard modular connector plug, the cavity and first recessed region together shaped to accommodate a modified modular connector plug with an additional set of contacts;

a first set of contacts, each contact having a first end and a second end, the first ends of the first set of contacts disposed along a first plane within the cavity proximate the first end of the housing, each first end of the first set of contacts providing a means for electrical coupling with the male connector plug, each second end of the first set of contacts providing a means for attachment to circuitry external to the housing; and

a second set of contacts, each contact having a first end and a second end, the first ends of the second set of contacts being disposed along a second plane within the first recessed region of the cavity that is not coplanar with the first plane, each first end of the second set of contacts providing a means for electrical coupling with the male connector plug and being accessible through the first recessed region of the cavity, each second end of the second set of contacts providing a means for attachment to circuitry external to the housing.

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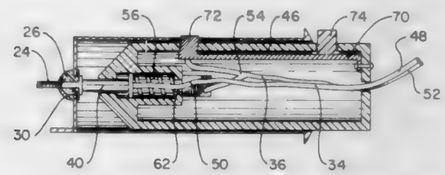
CIGARETTE LIGHTER ADAPTER PLUG

Glenn A. Britton, P.O. Box 83, Schererville, Ind. 46375

Filed Nov. 1, 1993, Ser. No. 143,650

Int. Cl.[6] H01R *17/18*

U.S. Cl. 439—668 **4 Claims**



1. An adapter plug for an automobile cigarette lighter socket comprising:

a sleeve with a body insertable into the sleeve, the sleeve further comprising:

(i) a first tube having a sealed bottom end, an open top end, and a locking hole disposed thereon, the sealed bottom end having a socket hole disposed thereon and a terminal peg coupled thereto, the terminal peg adapted to be coupled to a negative terminal of a vehicle electrical system, the top end adapted to receive the body, and the locking hole adapted to receive a locking pin of the body;

(ii) a first terminal pin disposed in the socket hole of the first tube, the first terminal pin adapted to be coupled to a positive terminal of a vehicle electrical system and adapted to be coupled to a second terminal pin of the body;

(iii) an insulation detent coupling the first terminal pin to the first tube and electrically isolating the first terminal pin from the first tube;

the body further comprising:

(i) a positive wire having a first end and a second end, the first end adapted to be coupled to a positive terminal of an electrical accessory;

(ii) a negative wire having a first end and a second end, the first end adapted to be coupled to a negative terminal of an electrical accessory;

(iii) a second tube having a conically sealed bottom end, a sealed top end, and a cavity disposed therein, the sealed bottom end having a tip hole disposed thereon with the tip hole adapted to receive a second terminal pin, the top end having a wire hole disposed thereon, with the second end of the positive wire and second end of the negative wire disposed therethrough, and the cavity adapted to receive a spring and a second terminal pin, the cavity having a sealed top end and an open bottom end, the bottom end aligned with the tip hole, the sealed top end having a cavity hole disposed thereon, with the second end of the positive wire disposed therethrough, the second tube further having a contact hole, a pin hole, and a button hole disposed thereon, the contact hole adapted for receipt of a contact pin, the pin hole adapted for receipt of a locking pin, and the button hole adapted for receipt of a push button;

(iv) a second terminal pin slidably disposed within the cavity such that it extends from the cavity through the tip hole, the second terminal pin coupled to the second end of the positive wire and adapted to contact the first terminal pin of the sleeve;

(v) a spring slidably disposed within the cavity and adapted for urging the second terminal pin through the tip hole to couple with the first terminal pin;

(vi) a contact pin coupled to the second tube and second end of the negative wire, the contact pin disposed through the contact hole such that it projects beyond the periphery of the body in order to frictionally engage the sleeve and resist movement of the body within the sleeve; and

(vii) a switch disposed within the second tube, the switch further comprising:

(a) a flexible metal strip having a first end and a second end, the first end of the strip coupled to the top end of the second tube;

(b) a metal locking pin coupled to the metal strip and the second end of the negative wire, the locking pin disposed through the pin hole such that it projects beyond the periphery of the body when at a rest position; and

(c) a push button coupled to the metal strip, the push button disposed through the button hole such that it projects beyond the periphery of the body, whereby when the push button is depressed the locking pin retracts to a position essentially equal with the periphery of the body, thereby allowing the body to be inserted into and removed from the sleeve, such that when the body is inserted into the sleeve and push button is released, the locking pin returns to the rest position through the locking hole of the sleeve, coupling the body to the sleeve such that the plug is energized.

5,387,137

ELECTRICAL CONNECTOR HAVING A BODY SURROUNDING THE CONNECTING PINS

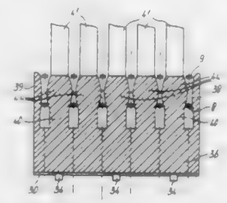
Johan H. P. Bouwknegt, Utrecht, and Petrus W. H. Schalk, Drunen, both of Netherlands, assignors to Berg Technology, Inc., Reno, Nev.

Filed Apr. 14, 1993, Ser. No. 45,783

Claims priority, application Netherlands, Apr. 22, 1992, 9200736

Int. Cl.[6] H01R *13/405*

U.S. Cl. 439—736 **15 Claims**



1. An electrical connector, comprising a housing of electrically insulating material provided with a plurality of contact elements of electrically conducting material, each having a contact side for making contact to a further connector and a connecting side in the form of connecting pins extending outside the housing and having a connecting end for mounting on a printed circuit board, and having a body of plastically deformable synthetic material provided with parts which extend between said connecting pins, wherein, after fitting the body over the connecting pins, one or more of the parts of the body extending between the connecting pins being plastically deformed such that a barrier is formed to prevent removal of the body with the body being slidable on the connecting pins.

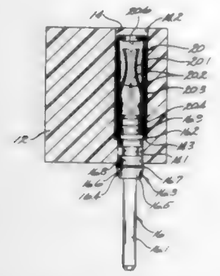
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5,387,138

PRINTED CIRCUIT CONNECTOR APPARATUS AND METHOD FOR MAKING SAME

Austin S. O'Malley, Rehoboth, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 727,749, Jul. 9, 1991, abandoned. This application Jun. 25, 1992, Ser. No. 905,492
Int. Cl.[6] H01R *13/42*
U.S. Cl. 439—751 6 Claims



1. A connector for mounting a component and for electrically connecting component terminals to circuit paths on a circuit board comprising an electrically insulating body having a plurality of openings extending from a first side of the body through the body to a second opposite side of the body, and electrical contact members mounted in the respective openings having respective post portions at one end extending from the openings at one of the sides of the body to be soldered to selected circuit paths on a circuit board and having respective terminal portions adjacent an opposite end of the body for electrically engaging respective component terminals, characterized in that the terminal portions are confined entirely within the openings below the surface of the opposite end, and the terminal portions and the openings at said one of the sides are bores having a selected diameter, said bores extend from a shoulder at said one of the sides, and the contact members having a solid entry portion which forms an interference fit with the openings at said one of the sides, the entry portion being disposed outside the body and said contact members having a longitudinal axis, an outwardly extending flange formed on the contact members at a location along the longitudinal axis of the contact member so that the distance between the entry portion and the flange is slightly longer than the distance between the shoulder and said one of the sides of the body to permit the contact members to move along the longitudinal axis.

5,387,139

METHOD OF MAKING A PIN GRID ARRAY AND TERMINAL FOR USE THEREIN

Michael J. McKee, New Cumberland, and Joseph M. Pawlikowski, Lancaster, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

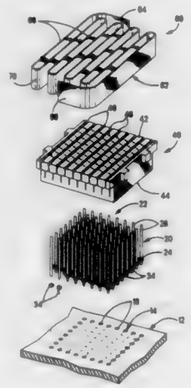
Division of Ser. No. 132,013, Oct. 5, 1993, Pat. No. 5,336,118, which is a division of Ser. No. 55,657, Apr. 30, 1993, Pat. No. 5,279,028. This application Apr. 15, 1994, Ser. No. 229,877
Int. Cl.[6] H01R *4/02*
U.S. Cl. 439—876 2 Claims

1. A fixture for use in assembling a plurality of terminals into a grid array thereof secured to respective circuit termini on a surface of a circuit-bearing electrical article with a fusible electrically conductive material usable in conjunction with a source of constant amplitude high frequency alternating current of known frequency, said fixture comprising:

a dielectric body having an upper surface, a lower surface and a plurality of rows of terminal receiving apertures extending therebetween, said apertures being adapted to slidingly receive and hold the terminals in position during the assembly process while allowing said fixture to be removed from the secured terminals without straining the interconnections between the secured terminals and the circuit termini;

said body further includes a plurality of continuous conductor receiving grooves extending into said body from the upper surface thereof and alongside and in between and spaced from each of the rows of terminal receiving apertures and in communication with opposed side surfaces of said fixture body, thereby enabling a continuous conductor to be interposed between each row of terminal receiving apertures, whereby

upon placing terminals having Curie point heater body



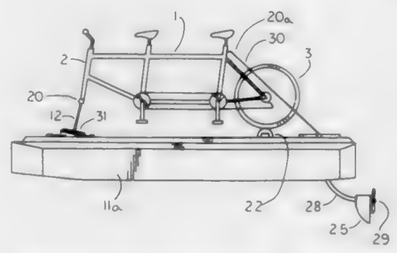
sections into respective ones of said terminal receiving apertures through the lower body surface, disposing fusible electrically conductive material on each terminal proximate the lower body surface; interposing said continuous conductor between the rows of terminals, connecting said conductor to said source of alternating current, and activating said source of alternating current and subjecting said heater body sections to said constant current of known frequency, said heater body sections resultingly generating and transferring said sufficient thermal energy from said heater body section to melt said fusible material disposed therealong thereby electrically and mechanically interconnecting said first connecting portion to said corresponding and respective circuit terminus.

5,387,140

FLOATATION APPARATUS FOR USE WITH ANY STANDARD BICYCLE

Bruce D. Cunningham, R.R. #1, Box 2035, Huntington, Vt. 05462

Filed Jul. 25, 1994, Ser. No. 280,347
Int. Cl.[6] B63H *16/20*
U.S. Cl. 440—12 8 Claims



1. A floatation apparatus for use with any standard bicycle,

for use in allowing an individual the ability have a self propelled water craft, comprising:

floatation means;

said floatation means comprising means with a sufficient area of buoyancy to allow a standard bicycle and rider to maintain their balance on the surface of the water;

said floatation means having frame means for permitting said bicycle to have a support base;

said frame means comprising means for attaching a bicycle frame to said floatation means;

said support base having an adjustable support frame connected to said base support plate;

said adjustable support frame having guide tracks positioned on said floatation means for allowing said adjustable support frame to slide into the desired position to receive said bicycle frame;

said adjustable support frame further having quick release means;

said frame attaching means having bicycle frame receiving means;

said frame means further having directional control means;

said directional control means comprising a steering control pulley;

said directional control means further comprising adjustable line means looped around said steering control pulley;

said frame means further having drive means;

said drive means comprising means for receiving the rear wheel of a bicycle;

said wheel receiving means comprising a rotatable drum means for permitting said rear wheel of said bicycle positioned on said rotatable drum and allow free rotation of said rear wheel;

said rotatable drum means having transmission means;

said transmission means comprising belt means;

said transmission means further comprising pulley means;

said drive means having a propeller contacting said transmission means through a flexible shaft means; and

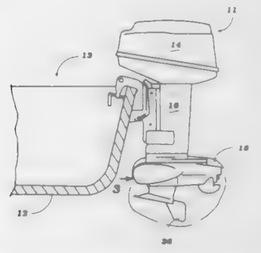
said flexible shaft means having both said transmission pulley means of said drive means and said steering control pulley of said directional control means positioned on said flexible shaft means.

5,387,141

NAVIGATION STABILIZING SYSTEM FOR WATER JET PROPULSION VESSEL

Makoto Toyohara, and Kiyonobu Kobayashi, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 18, 1992, Ser. No. 853,502
Claims priority, application Japan, Mar. 19, 1991, 3-081447
Int. Cl.[6] B63H *11/08, 11/107*
U.S. Cl. 440—41 12 Claims



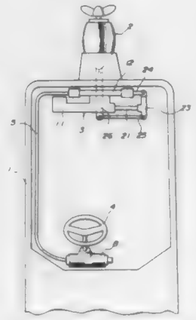
1. A navigation stabilizing system for a watercraft powered by a water jet unit comprising a housing having a water inlet port and a water discharge port positioned to the rear of said water inlet port and a water passage communicating the inlet port with the discharge port, an impeller rotatably supported within the water passage for drawing water in the inlet port and discharging the water out of the discharge port, at least one grille element extending across a portion of the water inlet port, and a rudder carried by said housing adjacent to one side of said water inlet port forwardly of said discharge port and extending lower than said at least one grille element and off-center and to one side only of the center line of the watercraft when the watercraft is set for straight-ahead operation.

5,387,142

POWER STEERING DEVICE FOR OUTBOARD ENGINE

Hisao Takayanagi, and Yasuo Funami, both of Saitama, Japan, assignors to Kabushiki Kaisha Showa Seisakusho, Saitama, Japan

Filed Nov. 10, 1992, Ser. No. 974,115
Claims priority, application Japan, Nov. 11, 1991, 3-322516
Int. Cl.[6] B63H *5/12*
U.S. Cl. 440—61 1 Claim



1. A power steering device for steering an outboard engine, comprising:

a hydraulic cylinder unit for angularly moving a steering arm of the outboard engine, said hydraulic cylinder unit having a cylinder, a piston slidably disposed in said cylinder, and a piston rod joined to said piston and adapted to be connected to the steering arm, said piston dividing said cylinder into a first oil chamber through which said piston rod extends and a second oil chamber remote from said piston rod;

a directional control valve actuatable in response to operation of a steering wheel for supplying a hydraulic pressure to said hydraulic cylinder unit to move said piston rod, said directional control valve having an oil passage which interconnects said first and second oil chambers when the directional control valve supplies the hydraulic pressure to said second oil chamber; and

wherein said directional control valve comprising a spool valve having an axially movable spool and further comprising a neutral position sensor for detecting when said axially movable spool is in a neutral position, and producing a signal when the axially movable spool is out of the neutral position, and a pump responsive to the signal from said neutral position sensor for supplying the hydraulic pressure to said directional control valve.

5,387,143

HAND GRIP FOR AN OAR

Lockett C. Pitman, R.R. 1, Box 276 A-65, Wimberley, Tex. 78676

Filed Dec. 2, 1993, Ser. No. 161,127
Int. Cl.[6] B03H *16/04*
U.S. Cl. 440—101 5 Claims

1. An oar grip, an oar having a generally cylindrical shaft with a blade member on an outboard end of said shaft, and a handle on an inboard end of said shaft, said blade member having a first face and a second face, said grip comprising:

an elongated elastic tubular body having a first end open to

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a hollow chamber inside said body, a second closed end, and a generally flat side extending from said open end to said closed end, said open end adapted to receive said handle of said oar;

a plurality of contiguous finger grooves formed circumferentially along an outer surface of said tubular body opposite said flat side, said plurality of contiguous finger grooves extending diagonally across said outer surface;



a thumb depression in said outer surface of said tubular body at said closed end; and

an alignment indicia on said flat side of said tubular body for aligning said flat side of said tubular body with a centerline of said first face of said blade member thereby generally aligning said grooves with said second face of said blade member when said handle is received into said grip.

5,387,144

STABILIZER FOR SPAR BUOY

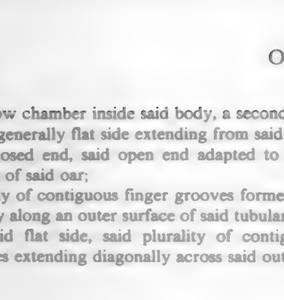
Hiroshi Aso; Tadahiro Arimura; Junichi Harada, all of Osaka; Mikio Fukutomi, Tokyo; Mitsuaki Yokomine, Tokyo, and Tsuyoshi Nakazawa, Tokyo, all of Japan, assignors to Zeni Lite Buoy Co., Ltd., Osaka, Japan

Filed Sep. 2, 1993, Ser. No. 115,842

Claims priority, application Japan, Sep. 19, 1992, 4-275537

Int. Cl.[6] B63B *22/18*

U.S. Cl. 441—22 **4 Claims**



1. A stabilizer for a spar buoy having a column moored at a bottom end of the column to a sinker sunk at a water floor by a mooring device for pulling a buoy provided halfway of the column into the water so that the water line comes halfway of the column above the buoy, said stabilizer for a spar buoy comprising:

at least two arms extending in opposite directions to each other from the column below the buoy; and

blades arranged at end portions of the arms so that the blades incline downward from inner edges of blades to outer edges thereof with respect to the arms, thereby making angles α between the arms and the blades.

5,387,145

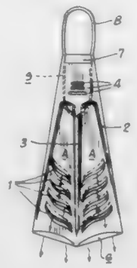
SWIM FINS

John L. Wagner, 1212 H. St., SP193, Ramona, Calif. 92065

Filed Jul. 7, 1993, Ser. No. 88,515

Int. Cl.[6] A63B *31/08*

U.S. Cl. 441—64 **6 Claims**



1. A foot-mounted swimming aid comprising:

a. a hollow foot chamber open at the heel having an exterior surface of flexible material and of sufficient size to accommodate a human foot and ending in an elongated strip of flexible material to go around the ankle and having a ventral lining of soft flexible material having a series of elongated holes to vent the chamber;

b. a blade portion of flexible material which is relatively stiffer than the flexible material of said foot chamber that connects to said foot chamber and extends past the foot chamber and broadens and tapers outward toward the end forming a flexible triangular shaped web having thickened support areas along the sides and in the center to add support and tapering downwards towards the end and in between said thickened support areas hollowed-out sections in the shape of curved, elongated slots set at two different angles in the triangular web; and

c. a thin layer of flexible material extending from the beginning of the blade portion across the top of the blade generally to the end of the blade and connected to the blade at the thickened support areas creating openings between the side and center support areas and in between said thin layer that goes across the top and the blade portion thereby directing water to the elongated curved slots.

5,387,146

INFANT FERRIS WHEEL

Jeffrey S. Smith; Dayna L. Smith, both of 5601 Maplewood St., Arlington, Tex. 76018, and Larry L. Uland, P.O. Box 166, Argyle, Tex. 76226

Filed Nov. 16, 1993, Ser. No. 153,436

Int. Cl.[6] A63H *30/00, 33/22;* **F21V** *7/04*

U.S. Cl. 446—175 **20 Claims**

1. A crib toy, comprising:

a housing;

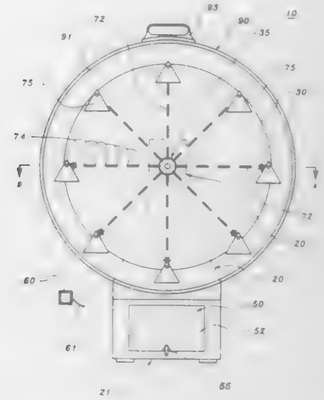
a cover attached to the housing;

a rotatable shaft extending from the housing into the cover;

a disk mounted on the shaft within the cover;

means for rotating the shaft and the disk;

a light source mounted within the housing;



a plurality of optical fibers having a forward end attached to the disk and a rearward end near the light source.

5,387,147

WATER-SOLUBLE BALLOON

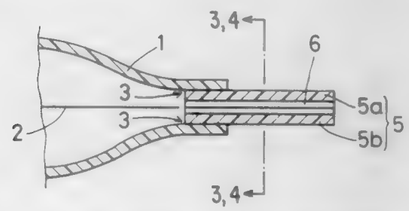
Masatake Ohshima, Saitama; Yasuhiro Ohsone, Tokyo, and Masanori Satoh, Saitama, all of Japan, assignors to Mitsui Co., Ltd., Tokyo, Japan; Mitsui Plastics, Inc., White Plains, N.Y. and Aicello Chemical Co., Ltd., Aichi, Japan

Filed May 19, 1993, Ser. No. 63,419

Claims priority, application Japan, May 20, 1992, 4-154355

Int. Cl.[6] A63H *3/06;* **B65D** *30/02, 30/00, 30/24*

U.S. Cl. 446—224 **5 Claims**



1. A water-soluble balloon including a sealable inflation neck adapted to retain gas under pressure within confines of said balloon, formed from a water-soluble expandable elastic film material which consists essentially of a polyvinyl alcohol having a degree of saponification ranging from 70 to 98 mol %, and a degree of polymerization ranging from 500 to 3,000, thereby resulting in a balloon that will disintegrate upon contact with liquid water.

5,387,148

GRAB FOR A TOY CRANE

Erling T. Dideriksen, Billund, and Kim Pagel, Vandel, both of Denmark, assignors to Interlego A.G., Baar, Switzerland

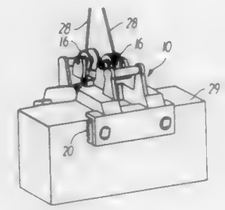
PCT No. PCT/DK91/00370, § 371 Date Jun. 29, 1993, § 102(e) Date Jun. 29, 1993, PCT Pub. No. WO92/10257, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 3, 1991, Ser. No. 70,436

Claims priority, application Denmark, Dec. 4, 1990, 2872/90

Int. Cl.[6] A63H *33/30, 17/12;* **B66C** *1/00*

U.S. Cl. 446—424 **10 Claims**



1. A grab for a toy crane, comprising two, two-armed levers, said levers having a common axis of rotation and arranged to overlap so as to engage in a releasable, rotatable snap-fit connection with each other at the axis of rotation, said arms being mutually hinged at at least two points along the axis of rotation, wherein each lever comprises a first arm and a second arm each said lever comprising engagement means to engage suspension means from a toy crane, said arms of each lever being contiguous essentially on one side of a central plane of the grab which is perpendicular to said axis whereby the grab is adapted to grip an object by mutual movement of the levers about the axis of rotation.

5,387,149

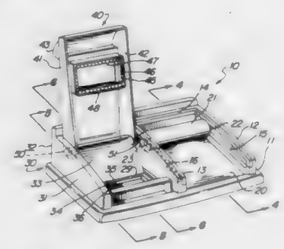
PIE MAKING TOY

Martin J. Caveza, Redondo Beach, Calif., assignor to Mattel, Inc., El Segundo, Calif.

Filed Nov. 1, 1993, Ser. No. 143,668

Int. Cl.[6] A63H *33/30;* **A21C** *9/06;* **B30B** *7/00*

U.S. Cl. 446—479 **6 Claims**



1. A toy pie maker comprising:

a base member defining a generally planar roller bed surface, a pair of raised sidewalls, an upwardly angled rest surface and a raised front wall forming a recessed area therebetween;

a roller movably supported upon said base and rollable across said roller bed surface for flattening a bread slice;

a stationary die supported upon said base within said recessed area and having an upwardly extending first cutting edge and a downwardly extending recess encircled by said first cutting edge, said upwardly extending first cutting edge being substantially lower than said raised sidewalls, said upwardly angled surface and said front wall;

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a crimper pivotally coupled to said base movable between a raised position generally removed from said stationary die and a lowered position generally overlying said stationary die, said crimper including a handle having an underside cavity therein for receiving said front wall in said lowered position; and

a crimping die supported by said crimper and extending downwardly therefrom, said crimping die being moved into alignment with said stationary die when said crimper is pivoted to said lowered position and defining a second cutting edge slightly greater in size than said first cutting edge,

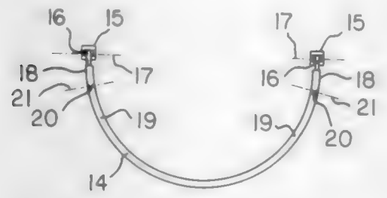
said stationary die and said crimping die mating when said crimper is moved to said lowered position such that a flattened bread slice folded double upon said stationary die and enclosing a deposit of filling material is trimmed and crimped to form a bread slice pie enclosing the filling material and said sidewalls and said front wall of said base member cooperating with said handle of said crimper to enclose said stationary die and said crimping die and prevent a user's fingers from reaching said dies in said lowered position.

5,387,150

UNDERWIRE BRA

Linda L. C. Terrell, 322 Camp Livingston Rd., Pineville, La. 71360

Filed Apr. 14, 1993, Ser. No. 45,728
Int. Cl.[6] A41C *3/10, 3/14*
U.S. Cl. 450—41 7 Claims



1. A new and improved underwear bra which comprises: a bra having a pair of fabric breast cups; each of said fabric breast cups having a bottom base portion and an upper edge portion; first and second U-shaped underwires extending around the base portion of each said breast cup and being enclosed in the fabric of said bra; each of said first and second underwires having first and second opposed ends; first, second, third and fourth fastening members proximal to the the upper edge portions of each of said breast cups, respectively, and fastened to the fabric thereof to receive and secure the first and second opposed ends of each of said U-shaped underwires therein, respectively; and first, second, third and fourth pivotal coupling members attached to the opposed ends of said underwires, respectively, for permitting the opposed ends of said underwire to be affixed to said first, second third and fourth fastening members, respectively, and for permitting each opposed end of said first and second underwires, respectively, to pivot relative to the other end thereof and to the other ends of the other underwire.

5,387,151

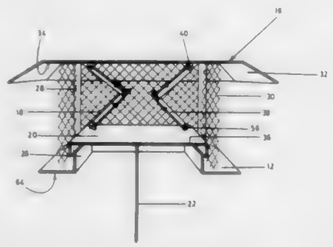
TOP SEALING CHIMNEY CAP

Walter Sexton, Foster, Ky., assignor to Lyemance International, Inc., Jeffersonville, Ind.

Continuation-in-part of Ser. No. 924,730, Aug. 3, 1992, Pat. No. 5,295,901. This application Sep. 1, 1993, Ser. No. 115,896
Int. Cl.[6] F23L *17/02*
U.S. Cl. 454—4 4 Claims

1. An improved chimney damper and chimney cap system for use with a chimney flue comprised of

(a) a support base securable to the top of the chimney flue;
(b) a support frame secured to the support base extending upward from the support base;
(c) a chimney cap secured to the support frame;
(d) a bracket means with first and second ends, the first end of which is secured to the chimney cap;
(e) a spring means connected to the bracket means;



(f) a chimney damper cover plate secured to the second end of the bracket and spring means, wherein the bracket and spring means biases the cover plate toward the chimney cap; and
(g) a damper cable secured to the chimney damper cover plate.

5,387,152

COIN DEPOSIT APPARATUS

Ervin E. Packer, and Beverly A. Diener-Packer, both of 404 Dogwood Ave., Brighton, Colo. 80601

Filed Jul. 30, 1993, Ser. No. 99,526
Int. Cl.[6] G07D *1/00*
U.S. Cl. 453—52 6 Claims



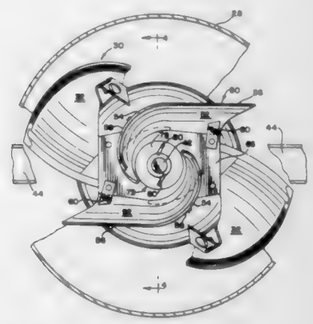
1. A coin deposit apparatus, comprising,
a housing, with the housing including spaced side walls, a top wall, a forward wall, and a rear wall, with an upper rear wall extending from the rear wall to the top wall, and
a guide tube integral with the housing extending intermediate the top wall and the forward wall, with the guide tube symmetrically oriented about a predetermined axis,
a piston rod coaxially aligned with the axis slidably received through the upper rear wall, having a handle mounted at a rearwardmost distal end of the piston rod, and
a forwardmost end of the piston rod including a piston plate orthogonally oriented relative to the axis, and
a semi-cylindrical lower magazine tube mounted to the guide tube coaxially aligned with the axis, with the piston plate slidably received within the lower magazine, and
a lid having a lid hinge, with the lid hinge mounted to the top wall in adjacency to the lower magazine, with the lid having a semi-cylindrical configuration arranged for contiguous communication with lower magazine side walls when the lid is in a first position in contiguous communication with the lower magazine side walls, with the lid arranged for pivoting about the lid hinge when the lid is raised relative to the lower magazine, and the lid including a lid forward flange spaced from the lower magazine in the first position permitting reception of a coin receiving plate between the lid forward flange and the lower magazine, with the piston plate arranged to direct coins within the lower magazine beyond the lower magazine.

5,387,153

ROTARY COMBINE

Dale R. Tanis, Naperville, Ill., assignor to Case Corporation, Racine, Wis.

Filed Apr. 6, 1993, Ser. No. 43,256
Int. Cl.[6] A01F *7/06, 12/10*
U.S. Cl. 460—68 11 Claims



5. A rotary combine comprising:
a mobile frame;
an elongated generally cylindrical casing supported by said frame;
a threshing rotor arranged substantially within said casing and defining an elongated axis of rotation, said rotor being supported at opposite ends by said frame and including a shaft journalled within a bearing at a forward end of said rotor;
an impeller assembly attached to a forward end of said rotor, said impeller assembly including a plurality of equally spaced impeller blades for drawing crop materials into the rotor for threshing, each impeller blade having a material engaging surface beginning at a forward end of the rotor and sloping rearwardly thereof; and
inlet feed flighting arranged at a forward end of the rotor in combination and for rotation with said impeller assembly, said inlet feed flighting including two or more inlet feed flights equally spaced about the rotational axis of said rotor, with each inlet feed flight including a leading edge lying in a plane extending generally normal to the axis of rotor rotation at a foremost end of said rotor and a material engaging surface having a generally concave configuration extending rearwardly from the leading edge of the flighting, and wherein, in the direction of rotor rotation, the material engaging surface on the inlet feed flights initially begins substantially closer to the axes of rotor rotation than does the beginning of the material engaging surface area of each impeller blade and whereby the remaining configuration of the material engaging surfaces on the inlet feed flighting enhances movement of crop materials away from the center of the rotor and toward the material engaging surfaces on the impeller blades thereby inhibiting the crop materials from interfering with said bearing.

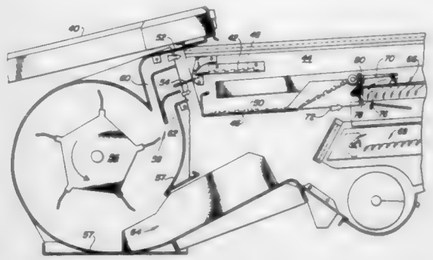
5,387,154

TWO OUTLET CLEANING FAN

Loren W. Peters, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 10, 1993, Ser. No. 59,541
Int. Cl.[6] A01F *12/48*
U.S. Cl. 460—99 3 Claims

1. An agricultural combine comprising:
a supporting structure;
ground engaging means extending from the supporting structure for transporting the supporting structure across a field;
a threshing system for threshing grain from harvested crop material;
a separating system for separating grain from threshed crop material;
a cleaning system having a cleaning shoe that is provided with a chaffer, a conditioning pan and a step pan, grain and chaff is directed from the threshing system to the step pan, the grain and chaff falls from the threshing system onto the step pan, the step pan and the separating system direct grain and chaff to the conditioning pan, the grain



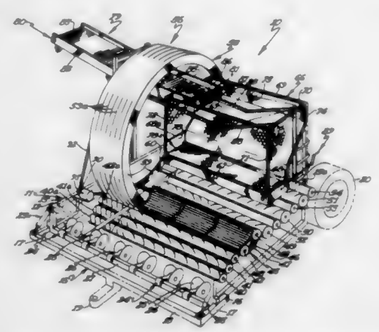
and chaff falls from the step pan onto the conditioning pan, from the conditioning pan grain and chaff is directed to the chaffer, grain and chaff falls from the conditioning pan and the separating system onto the chaffer; and
a cleaning fan having a first outlet and a second outlet, the first outlet has two ducts, the first duct directs a primary air blast from the cleaning fan through grain and chaff falling from the threshing system to the step pan, the second duct directs a secondary air blast from the cleaning fan through the grain and chaff falling from the step pan and separating system to the conditioning pan, the second outlet directs a chaffer air blast to the chaffer for grain and chaff received by the chaffer.

5,387,155

BEET HARVESTER

Paul F. Dietz, Wahpeton, N. Dak., assignor to Red River Service Center Inc., Wahpeton, N. Dak.

Filed Apr. 14, 1993, Ser. No. 45,885
Int. Cl.[6] A01D *25/04*
U.S. Cl. 460—132 10 Claims



1. A beet harvester including a main frame, ground engaging wheels on said main frame, a lifter wheel assembly for excavating and directing beets, potatoes, carrots and similar root crops in a rearward direction,
a front set of grab rollers positioned rearwardly of the lifter

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wheel assembly and including a plurality of elongate similar revolvably driven front grab rollers disposed in side by side parallel relation and extending transversely of and journaled in said frame, said grab rollers having a helical element thereon and being provided with a coating of high impact plastic material, said grab rollers when revolved moving the crop received from the lifter wheel assembly laterally and rearwardly while simultaneously cleaning the harvested crop,

a rear set of grab rollers positioned rearwardly of said front set of grab rollers,

conveyor means interposed between said front and rear sets of grab rollers for conveying harvested crop in a rearward direction from the front set of grab rollers to the rear set of grab rollers,

said rear set of grab rollers including a plurality of elongate revolvably driven rear grab rollers disposed in side-by-side relation and extending transversely of said main frame, certain of said rear grab rollers having helical elements thereon and being provided with a coating of high impact plastic material, said rear grab rollers when revolved moving the harvested crop rearwardly and laterally in a direction opposite to the front set of grab rollers to continuously clean the harvested crop,

a vertically disposed discharge wheel assembly including a support frame secured to said main frame, a vertically disposed discharge wheel, means revolvably mounting said discharge wheel on the support frame for vertical rotation about a horizontal axis extending transversely of the main frame, a plurality of transversely extending circumferentially spaced apart lifter elements secured to the inner circumferential surface of the lifter wheel for lifting the harvested crop during rotation of the wheel, means for rotating said discharge wheel,

an upwardly opening holding tank mounted on the rear end portion of the main frame,

an elongate driven reversible discharge conveyor having an outer end and an inner end, means mounting said conveyor on said main frame to position the discharge conveyor such that the conveyor projects through the discharge wheel adjacent the upper portion thereof, said inner end of said discharge conveyor being positioned above the holding tank whereby said discharge conveyor when driven in one direction, discharging the harvested crop received from the discharge wheel from the outer end for discharging to a truck, and when driven in the opposite direction discharging the harvested crop into the holding tank.

5,387,156

ELASTIC COUPLING, INCLUDING A HOUSING HAVING A BOTTOM, HAVING RUBBER MEMBERS EXTENDING BETWEEN WINGS OF A DRIVING OR DRIVEN HUB AND BUSHES OF A DRIVEN OR DRIVING MEMBER

Kenichi Naito, Kanagawa, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 651,837, Feb. 7, 1991, abandoned. This application May 19, 1993, Ser. No. 64,725

Claims priority, application Japan, Feb. 10, 1990, 2-30671

Int. Cl.[6] F16D *3/64*

U.S. Cl. 464—93 **5 Claims**

1. In an elastic coupling comprising:

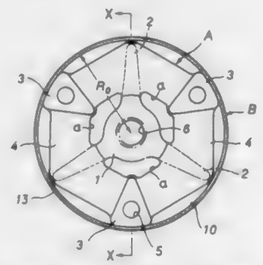
a main body having a flange with wings extending radially outwardly from the center of the main body and having radially outer ends and an outer radius, bushes arranged between said wings and having outer surfaces located radially outwardly of said ends of said wings, and elastic members connecting said wings and said bushes;

and a pressing means for pressing said bushes toward the center of the main body from the outer circumference of the main body; the improvement wherein

said pressing means comprises a permanently affixed round housing with an annular flange, the annular flange having an inner surface, and the housing having a bottom connected to said annular flange, said bottom extending radially inwardly of said annular flange and having a central opening for receiving one of a driven and a driving shaft, said main body having a central hole;

an area between said flange and said elastic members having a passage;

said bushes having a radially outer surface with an outer radius:



said annular flange having an inner radius that is larger than the radii of the radially outer ends of the wings but smaller than the radii of the radially outer surface of the bushes in the unassembled state of said coupling, said annular flange being mounted with its inner surface directly engaging radially outer surfaces of the bushes, whereby said housing forces said bushes radially inwardly to compress said elastic members in the assembled state of said coupling.

5,387,157

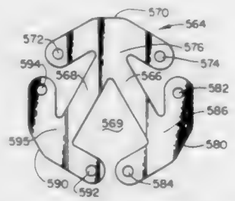
FLEXIBLE DISC-LIKE COUPLING ELEMENT

Frank J. Nameny, Staunchfield, Minn., assignor to Zero-Max, Inc., Minneapolis, Minn.

Division of Ser. No. 688,901, Apr. 19, 1991, Pat. No. 5,221,232, which is a continuation-in-part of Ser. No. 511,735, Apr. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 296,577, Jan. 12, 1989, abandoned. This application Mar. 19, 1993, Ser. No. 33,825

Int. Cl.[6] F16D *3/79*

U.S. Cl. 464—98 **15 Claims**



1. A flexible disc-like coupling element, comprising:

(a) a hub portion comprising at least a first and a second substantially linear member which are Joined at a junction and which diverge from the junction to define an aperture, each substantially linear member configured to carry a columnar load:

(b) a plurality of lobes spaced away from the hub portion;

(c) connector portion means corresponding to each lobe for connecting at equally spaced increments the corresponding lobe to the hub portion; and

(d) each lobe having a pair of substantially arcuate shaped arms joined together at one end of each arm adjacent its corresponding connector portion means, extending away from one another in substantially opposite directions, and terminating in free ends, the free ends of the arms having attachment means for attaching the disc-like coupling element to other elements of a drive train apparatus, the attachment means being located at a substantially identical radial distance from the defined aperture of the disc-like coupling element.

5,387,158

ALL AROUND PLAYGROUND KIT

Victor J. Bertrand, Ile Bizard, Canada, assignor to The Ritvik Group Inc., Quebec, Canada

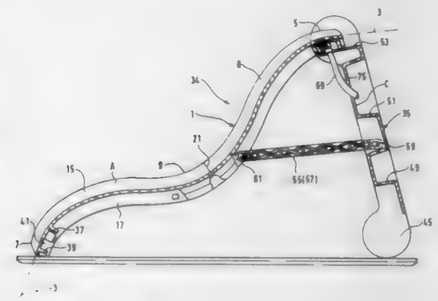
PCT No. PCT/CA91/00331, § 371 Date Mar. 23, 1993, § 102(e) Date Mar. 23, 1993, PCT Pub. No. WO92/04091, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 6, 1991, Ser. No. 983,870

Claims priority, application Canada, Sep. 7, 1990, 2024854

Int. Cl.[6] A63B *9/00*

U.S. Cl. 472—117 **16 Claims**



1. A play kit comprising:

an elongated playboard (**1**) having a longitudinal axis (**3**) lying a flat plane, and two end portions (**5**,**7**), said playboard (**1**) being shaped as a slide having a central flat part (**11**) and two side protection ramps (**13**, **15**) extending lengthwise of and on the lateral edges of said central flat part, said central flat part (**11**) and ramps (**13**,**15**) being symmetrical with respect to said longitudinal axis;

two releasable playboard attachment means (**41**), comprising one attachment means provided on each of said two playboard end portions (**5**, **7**);

a support (**35**) having releasable support attachment means at one end thereof for releasably coupling with said playboard attachment means (**41**) in order to hold said playboard (**1**) in upright position and make it useful as a slide (FIGS. 3 and **4**), said support (**35**) comprising footsteps (**49**, **51**, **53**) in order for said support to act as a ladder for said slide; and

means (**83**, **84**, **91**) for dismountably joining said playboard at mid-length thereof to a base lying on the ground, said joining means being constructed to allow said playboard to teeter (see FIG. **8**) about at least one central axis (**79**) normal to said longitudinal axis (**3**), wherein

said playboard (**1**) is made of plastic material and has, in the lengthwise direction, a wavy configuration made up of two short end portions (**5**, **7**) of equal length, interconnected by a central curved portion (**9**), said end portions and central portion gradually merging one into the other, said playboard (**1**) being symmetrical with respect to a central transverse plane (**21**) normal to said longitudinal axis (**3**) and flat plane;

said two playboard attachment means (**41**) are identical with one another and symmetrical with respect to said longitudinal axis and transverse plane (**21**);

said support (**35**) is made of plastic material and is molded with said footsteps (**49**, **51**, **53**) and said support (**35**) also forms said base to which said playboard (**1**) may be joined to allow said playboard to teeter, and further comprising:

plastic strut means, said strut means being releasably connectable at the end thereof to said playboard (**1**) and said support (**35**) in order to prevent said playboard and support from unfolding when they are used as a slide and ladder;

a pair of plastic seat constructions (**97**), each plastic seat construction being dismountably fixable to one of said end portions (**5**, **7**) of said playboard (**1**) to make the same useful as a teeter assembly (FIG. **8**) when it is joined to said support (**35**) by said joining means (**83**, **84**, **91**) and identical water sprinkler means (**63**, **65**) at each of said playboard end portions (**5**, **7**), symmetrically disposed with respect to said transverse plane (**21**) the water sprinkler (**63**, **65**) means comprising, at each end of said playboard;

means defining a water connector (**65**) beneath said central flat part (**11**) of said slide-shaped playboard, said connector being threaded at one end for connection with a water hose (**69**); and

said central flat part being formed with sprinkler holes (**63**) in communication with said connector (**65**).

5,387,159

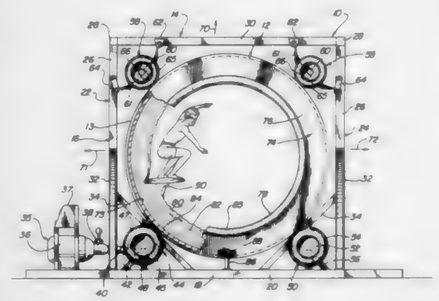
CONTINUOUS WAVE GENERATING APPARATUS FOR SIMULATED SURFRIDING

Rick L. Hilgert, 1501 Haven Pl., Newport Beach, Calif. 92663, and Raymond G. Simpson, 983 Paularino Ave., Costa Mesa, Calif. 92626

Filed Aug. 30, 1993, Ser. No. 113,243

Int. Cl.[6] A63G *31/02*

U.S. Cl. 472—128 **9 Claims**



1. A wave-generating apparatus, wherein a continuous wave is formed suitable for various surfriding sports including surfing, boogie-boarding and bodysurfing, said apparatus comprising:

a carriage-support means having a carriage frame structure including a base frame on which said carriage frame structure is mounted;

an elongated tube rotatably cradled in said carriage support means and having oppositely disposed open ends;

a cap member mounted over each of said open ends of said tube and including an access opening;

a reservoir formed in said tube by said cap members to hold a given amount of water within said tube during the rotation thereof;

means for rotatably supporting said tube in a horizontal position within said carriage support means; and

drive means for rotating said tube to create a centrifugal force, wherein the water is forced outwardly to define a cylindrical wall of water about the interior surface of said tube, whereby a continuous wave is formed in the upwardly rotating side of said wall of water.

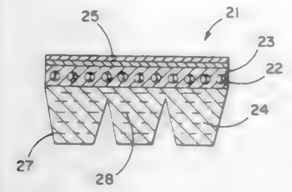
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5,387,160

HEAT RESISTANT RUBBER COMPOSITIONS AND BELTS MADE THEREFROM

Masayoshi Nakajima; Kazutoshi Isida, and Kazuhiro Takeda, all of Kobe, Japan, assignors to Mitsuboshi Belting Ltd., Nagata, Japan

Filed Feb. 9, 1993, Ser. No. 15,370
Claims priority, application Japan, Feb. 10, 1992, 4-057399; May 12, 1992, 4-146294
Int. Cl.[6] F16G *13/02*
U.S. Cl. 474—205 12 Claims



3. A toothed belt capable of being used with a motor, the toothed belt comprising:

a toothed portion; and

a back portion, at least one of the toothed and back portions being made from a heat resistant rubber composition comprising:

hydrogenated acrylonitrile-butadiene rubber (HNBR) having a percentage of butadiene saturation of not less than about 80 mole percent (%);

a copper dithiocarbamate salt compound; and

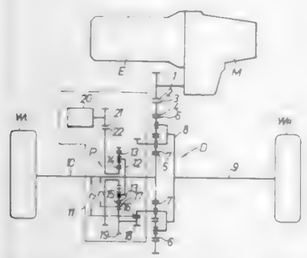
sulfur.

5,387,161

TORQUE DISTRIBUTING MECHANISM IN DIFFERENTIAL

Yasuji Shibahata, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1992, Ser. No. 832,847
Claims priority, application Japan, Apr. 19, 1991, 3-088174
Int. Cl.[6] F16H *1/42*
U.S. Cl. 475—5 16 Claims



1. A torque distributing mechanism in a differential, said differential including a single input element and two output elements for distributing torque applied to said input element of said differential to said two output elements at a predetermined proportion, said torque distributing mechanism comprising:

a drive source; and

a planetary gear mechanism, including

(a) a ring gear,

(b) a sun gear, and

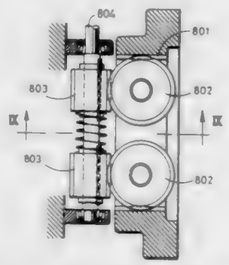
(c) a planetary carrier carrying a planetary gear meshed with said ring gear and said sun gear, a first one of three elements including said ring gear, said sun gear and said planetary carrier being coupled to one of said two output elements of said differential through a spur gear, a second one of the three elements including said ring gear, said sun gear and said planetary carrier being connected to the other of said two output elements of said differential, and a third one of the three elements including said ring gear, said sun gear and said planetary carrier being connected to said drive source.

5,387,162

PLANETARY WORM TYPE GEAR AND APPLICATION DEVICE

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan, Prov. of China

Filed May 27, 1993, Ser. No. 67,942
Int. Cl.[6] F16H *55/24, 1/16*
U.S. Cl. 475—333 10 Claims



1. A planetary worm type gear system comprising:

a) a shaft having a plurality of sun worms attached thereto so as to rotate therewith, at least one sun worm of the plurality of sun worms being axially movable relative to the shaft;

b) a plurality of sets of parallel planetary worms, each set having a plurality of worms each in engagement with one of the plurality of sun worms;

c) an external gear having internal worm teeth in engagement with each of the worms of the plurality of sets of planetary worms; and

d) anti back lash means comprising pre-compressed spring means acting on the at least one axially movable sun worm urging the at least one axially movable sun worm in a direction to eliminate back lash in the gear system.

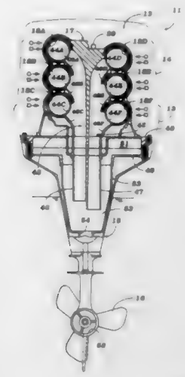
5,387,163

VERTICAL TYPE MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Osamu Sakamoto, and Chitoshi Saito, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 26, 1993, Ser. No. 67,220
Claims priority, application Japan, May 27, 1992, 4-160344
Int. Cl.[6] F16H *59/70*
U.S. Cl. 477—100 26 Claims

1. An internal combustion engine having at least two cylinders one positioned vertically above the other and driving a crankshaft rotatable about a vertical axis, an exhaust outlet for each cylinder, an exhaust system for receiving the exhaust gases from said exhaust outlets and discharging the exhaust gases to a position below said cylinders, charge forming means for delivering a fuel charge to each of said cylinders, and



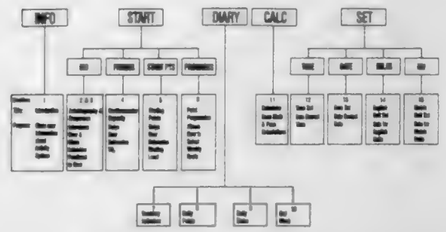
means responsive to a predetermined condition for supplying a leaner charge to the lower cylinders than the upper cylinder.

5,387,164

ACTIVITY GUIDEANCE DATA PROCESSING METHOD

Richard L. Brown, Jr., Eugene, Oreg., assignor to Leap, Incorporated, Eugene, Oreg.

Continuation of Ser. No. 404,675, Sep. 8, 1989, abandoned. This application Nov. 13, 1991, Ser. No. 793,485
Int. Cl.[6] A63B *71/00*
U.S. Cl. 482—9 1 Claim



1. A method for scheduling and monitoring physical activities of an individual over an interval of time to tend to achieve progressively improved levels of fitness, while minimizing the individual's chance of injury and loss of fitness, the interval of time extending a plurality of multiday calendar periods, the method comprising the steps of:

(a) displaying on a display output of a data processing system a plurality of biographic/fitness-level prompts adapted to elicit biographic/fitness-level data from an individual for calculating a starting-fitness-level fitness-level point total for the individual, the starting-fitness-level fitness-level point total representing an estimate of an amount of physical activity which if performed by the individual over the course of a multiday calendar period would tend to improve the fitness level of the individual;

(b) calculating a sequence of fitness-level-progression point-total preliminary goals for the individual with the data-processing system from biographic/fitness-level data entered into the data-processing system in response to the biographic/fitness-level prompts, each of the sequence of fitness-level-progression point-total preliminary goals corresponding in turn to one of the multiday calendar periods, with the fitness-level-progression point-total preliminary goal corresponding to the initial multiday calendar period being the starting-fitness-level fitness-level point total, a fitness-level point-total goal for the initial multiday calendar period being defined to be the starting-fitness-level fitness-level point total, the fitness-level-progression point-total preliminary goals generally differing one from another and representing estimates of amounts of physical activity which if performed by the individual in the corresponding calendar periods in sequence would tend to result in progressively improved levels of fitness for the individual;

(c) for each of a plurality of days in a multiday calendar period, displaying on the display output of the data-processing system a plurality of daily-physical-activity-accomplishment prompts adapted to elicit daily-physical-activity accomplishment information from the individual, the daily-physical-activity accomplishment information including an identification of each type of a plurality of types of physical activity engaged in during the day by the individual and, for each type of physical activity so identified, the time and intensity of the physical activity carried out during the day;

(d) for each of such plurality of days in such multiday calendar period, calculating a daily fitness-level point-total with the data-processing system from daily-physical-activity accomplishment information entered into the data-processing system in response to the daily-physical-activity accomplishment prompts for that day in accordance with predetermined fitness-benefit formulas, the daily fitness-level point total being representative of the cumulative physical benefits of the various specific types of physical activity engaged in by the individual for that day;

(e) for each of such plurality of days in such multiday calendar period, calculating with the data-processing system a fitness-level-points-remaining difference between a cumulative sum of the daily fitness-level point totals calculated for days to date during the multiday calendar period and a fitness-level-point-total goal defined for the calendar period and displaying fitness-level-points-remaining data on a display output of the data-processing system;

(f) for each of such plurality of days in such multiday calendar period, calculating comparison data between the daily fitness-level point total for that day and the fitness-level point-total goal for the calendar period with the data-processing system, and, in the event the comparison indicates that the daily fitness-level point total is excessive relative to a predetermined limit fraction of the fitness-level point-total goal, displaying a caution message on the display output of the data-processing system to minimize the individual's chance of injury and loss of fitness, the caution message cautioning against excessive activity by the individual;

(g) in correspondence with the conclusion of each multiday calendar period, generating with the data-processing system a new fitness-level point-total goal defined for the following multiday calendar period, the new fitness-level point-total goal being based on the fitness-level-progression point-total preliminary goal corresponding to such following multiday calendar period as possibly modified in accordance with an outcome of a comparison carried out in the data-processing system between a cumulative sum of the daily-fitness-level point totals for the multiday calendar period just concluded and the fitness-level point-total goal for such calendar period, so that in the event the cumulative sum of the daily-fitness-level point totals for the calendar period just concluded substantially equals or exceeds the fitness-level point-total goal for such calendar period, the new fitness-level point-total goal is defined to be a value which generally equals or exceeds the fitness-level-progression point-total preliminary goal for the following calendar period to tend to induce progressive improvement in the level of fitness of the individual, and, in the event the cumulative sum of the daily-fitness-level point totals for the calendar period just concluded is sig-

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nificantly lower than the fitness-level point-total goal for such calendar period, the new fitness-level point-total goal is defined to be a value which is generally lower than the fitness-level-progression point-total preliminary goal for the following multiday calendar period; and

(h) displaying the new fitness-level point-total goal for the multiday calendar period on the display output of the data-processing system.

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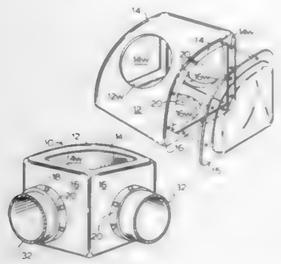
RECREATIONAL EQUIPMENT JUNCTION BOX

Mitchell R. Warren, Charlotte, N.C., assignor to Soft Play, Inc., Charlotte, N.C.

Continuation of Ser. No. 954,825, Oct. 1, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 192,771

Int. Cl.[6] A63B *17/00;* **F16D** *1/00;* **A01K** *1/00*

U.S. Cl. 482—35 **4 Claims**



1. A connective junction box for tubular recreational equipment, comprising:

(a) a hollow quarter cylindrical box having substantially thin sides;

(b) one or more of said sides being formed with a substantially cylindrical opening surrounded by an integrally formed connective neck adapted for the connection of an external tube;

(c) a tube securely connected to each said connective neck and extending outwardly of said box; and

(d) at least one of said sides having an opening covered by a substantially transparent panel adapted to provide visibility for a child within said box.

5,387,166

RECOILING EXERCISE BENCH

Ned Gvoich, Beamsville, Canada, assignor to Kor-One, Tempe, Ariz.

Filed Dec. 8, 1993, Ser. No. 164,014

Int. Cl.[6] A63B *22/04*

U.S. Cl. 482—52 **11 Claims**

1. An exercise device comprising:

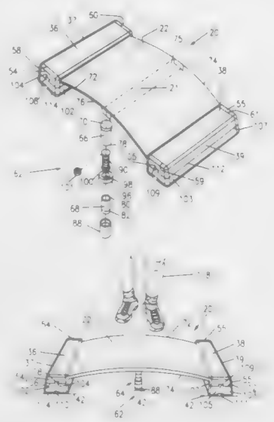
a platform having a thickness, a top side, a bottom side, a first edge and a second edge extending along a length dimension, and a third edge and a fourth edge extending along a width dimension;

a left housing having a top wall, a bottom wall, a first side wall and a second side wall, the housing extending along the third edge of the platform and the second side wall having a first channel of predetermined height and length formed therein;

a right housing having a top wall, a bottom wall, a first side wall and a second side wall, extending along the fourth edge of the platform, the second side wall having a first channel of pre-determined height and length formed therein;

the third edge and fourth edge of the platform each having a retainer bar attached thereto each retainer bar having a cross-sectional dimension greater than the thickness of the platform, and of the height of said first channels, respectively; and

a floor surface engagable vertical recoil assembly positioned on the bottom side of the platform intermediate said third



edge and said fourth edge and including means to resist forces applied to the platform from the direction of its top side to its bottom side sufficient to function as a platform resistive and restoring force during operation.

5,387,167

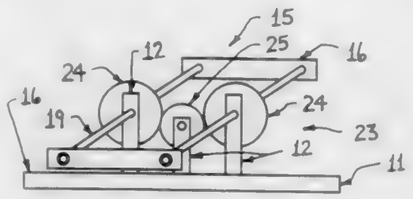
FOOT OPERATED ROTATIONAL ASSEMBLY

Gary L. Johnston, P.O. Box 183, Cowarts, Ala. 36321

Continuation-in-part of Ser. No. 970,168, Nov. 2, 1992. This application Oct. 13, 1993, Ser. No. 136,102

Int. Cl.[6] A63B *21/00*

U.S. Cl. 482—57 **3 Claims**



1. A foot engageable rotational assembly comprising:

a frame structure;

a rotation assembly mounted on said frame structure, wherein said rotation assembly includes at least two rotatable members, said rotatable members being operatively connected together by an intermediate rotatable member, said intermediate rotatable member being in rolling contact with said rotatable members, thereby causing said rotatable members to rotate at the same angular velocity and acceleration; and

foot engagement means connected to said rotational assembly, wherein said foot engagement means includes connection members and two foot engaging members, each of said foot engaging members being connected to one side of each of said rotatable members through said connection members such that both foot engaging members remain in a substantially horizontal position as the rotatable members rotate, said foot engaging members and said connection members being attaches along horizontal axes restricting relative movement to rotation about said axes;

whereby a user may perform a cycling routine while in a standing position.

5,387,168

STABILIZING BELT FOR CROSS-COUNTRY SKIING EXERCISE APPARATUS

James R. Bostic, Watertown, Minn., assignor to NordicTrack, Inc., Chaska, Minn.

Filed Dec. 16, 1992, Ser. No. 990,883

Int. Cl.[6] A63B *69/18*

U.S. Cl. 482—70 **9 Claims**



1. A striding exercise apparatus, comprising:

a frame designed to rest upon a floor surface;

a pair of foot members movably mounted relative to said frame;

a pelvis support mounted relative to said frame to support the pelvis of a person standing on said pair of foot members;

a pair of fixed handles mounted on said frame proximate said pelvis support; and

a belt including two belt segments, each of said segments having a looped end designed to mount on one of said pair of fixed handles, and a portion extending away from said looped end to a common connector that adjustably interconnects each said portion to hold the person's pelvis against said pelvis support.

5,387,169

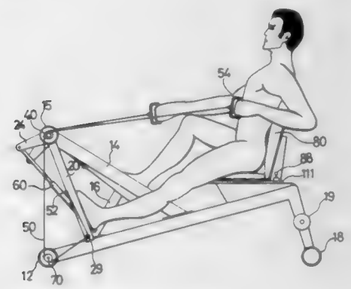
HORIZONTAL STEPPER

Leao Wang, Taichung Hsien, Taiwan, Prov. of China, assignor to Greenmaster Industrial Corp., Taiping Hsiang, Taiwan, Prov. of China

Filed Jan. 25, 1994, Ser. No. 186,115

Int. Cl.[6] A63B *21/00*

U.S. Cl. 482—73 **4 Claims**



1. A horizontal stepper comprising:

a) a base frame having a top portion disposed in a sloping position, a front transverse tube and a rear transverse tube at opposite ends of the base frame, a horizontal foot rod disposed above the rear transverse tube, a bevel support member mounted on the top portion and at the middle thereof, a brace supporting the bevel support member, a horizontal top rod mounted on the bevel support member, and a seat mounting disc mounted on the top portion at one end thereof above the horizontal foot rod;

b) a seat, means for mounting the seat on the seat mounting disc and means for locking the seat in a desired position;

c) a pair of hinges secured to opposite ends of the horizontal top rod and a pair of first pulley assemblies secured to the hinges;

d) a pair of second pulley assemblies secured to opposite ends of the front transverse tube;

e) a pair of hollow pedals rotatably mounted to opposite ends of the horizontal top rod, each pedal including a barrel at a first end of the pedal, with each barrel being mounted around an end of the horizontal top rod, a bent tube at an opposite end of each pedal, and an access hole and a plurality of spaced hanging holes at a bottom of each pedal; and

f) a pair of ropes, each rope having one end inserted through a bent tube of a pedal and provided with a hook for detachably hooking the one end on a selected hanging hole of the pedal, an opposite end inserted through a second pulley assembly, and a handle coupled with the opposite end.

5,387,170

RESISTANCE TRAINING MACHINE

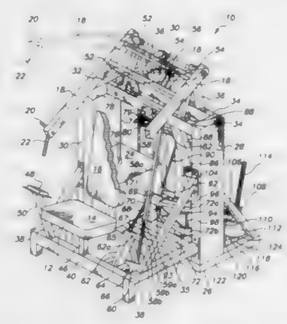
R. Lee Rawls, Woodinville, Wash., and Jeffrey T. Prince, Grass Valley, Calif., assignors to Stairmaster Sports/Medical Products, Inc., Kirkland, Wash.

Filed Oct. 2, 1992, Ser. No. 955,675

The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.

Int. Cl.[6] A63B *21/08*

U.S. Cl. 482—97 **30 Claims**



1. An exercise device for a human user, comprising:

a first member movable by the user between an initial position and a displaced position, the user achieving exercise by the application of a moving force thereto to move said first member from said initial position to said displaced position, and by the application of a resisting force thereto to resist return movement of said first member from said displaced position toward said initial position, movement of said first member from said initial position to said displaced position and return movement therefrom to said initial position comprising an exercise cycle;

a resistance member providing a resistance member force which resists movement of said first member from said initial position to said displaced position when the user is applying said moving force, and which moves said first member from said displaced position toward said initial position when the user is applying said resisting force;

a conversion member operatively engaging said first and

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resistance members to transmit a selectable portion of said resistance member force between said first member and said resistance member as said conversion member moves along a prescribed path within a conversion member plane having a selectable angular orientation, said conversion member being restrained to move along said path within said conversion member plane, said angular orientation of said conversion member plane being selectively adjustable to a plurality of angular orientations between first and second end limit of adjustment angular orientations, said conversion member being arranged such that adjustment of said conversion member plane angular orientation to selected angular orientations between said first and second orientations selectively changes the amount of said resistance member force transmitted by said conversion member between said first member and said resistance member, adjustment of said conversion member plane angular orientation from said first orientation toward said second orientation selectively increasing said resistance member force transmitted by said conversion member between said first member and said resistance member, and adjustment of said conversion member plane angular orientation from said second orientation toward said first orientation selectively decreasing said resistance member force transmitted by said conversion member between said first member and said resistance member, thereby the user moving force required to move said first member from said initial position toward said displaced position and the user resisting force required to resist return movement of said first member from said displaced position toward said initial position can be selectively increased or decreased by adjusting said conversion member plane angular orientation;

an adjustment member operable to selectively adjust said conversion member to change said selectable portion of said resistance member force transmitted by said conversion mender between said first member and said resistance member;

a sensor which senses movement of said first member during at least a portion of one exercise cycle and generates an indicator indicative of the movement of said first member during said sensed portion of said exercise cycle; and

a controller which controls operation of said adjustment member, said controller receiving said sensor indicator and in response thereto operating said adjustable member to adjust said conversion member plane angular orientation to a different angular orientation to change said selectable portion of said resistance member force transmitted if a preselected condition of movement is indicated by said sensor indicator.

5,387,171

VARIABLE RESISTANCE BAND EXERCISE MACHINE

Michael E. Casey, Lakewood, and Timothy G. Krivanek, Parma, both of Ohio, assignors to National Barbell Supply, Inc., Beachwood, Ohio

Filed Jan. 14, 1994, Ser. No. 182,289
Int. Cl.[6] A63B *21/04*
U.S. Cl. 482—130 3 Claims

1. A variable resistance band exercise machine, comprising:

a support frame including a base member, an upright back support frame member secured at a lower end to said base member and having a back support, and a seat support frame member secured at a rear end to said upright back support to cantilever outward therefrom above said base member towards the front end of machine, said seat support frame having a seat mounted thereon;

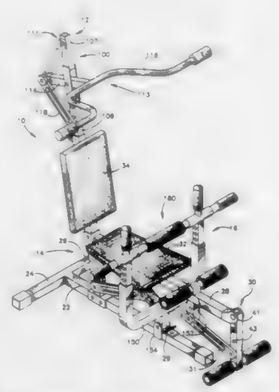
arm training components mounted to the upper end of said upright support frame member, said arm training components including:

a vertical support member adjustably mounted to said upright support frame member and a handle component pivotally attached to said vertical support member; and

means for removably connecting a resistance band between said handle component and said upright support frame member to resist the movement of said handle component; and

waist training components located forward of said seat on said seat support frame member; said waist training components including:

a U-shaped member pivotally mounted to said base member;



adjustable handles adjustably mounted in said U-shaped member;

a horizontal abdominal bar dismountably connected to said adjustable handles; and

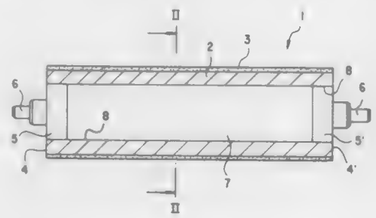
means for removably connecting a resistance band between said U-shaped member and said base member to resist the movement of said adjustable handles.

5,387,172

FIBER-REINFORCED PLASTIC CYLINDER WITH AN OUTER WEAR-RESISTANT LAYER OF FILLER-CONTAINING PLASTIC AND A METHOD FOR PRODUCING THE SAME

Hinrich Habenicht, Gersthofen, and Bernd Wohletz, Meitingen, both of Germany, assignors to Sigri Great Lakes Carbon GmbH, Meitingen, Germany

Filed Aug. 13, 1993, Ser. No. 106,136
Claims priority, application Germany, Aug. 13, 1992, 4226789
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—50 16 Claims



1. A cylinder or roller, comprising:

a base body of fiber-reinforced plastic having an outer roller surface; and

a wear-resistant layer at least partially covering and adhering to the outer roller surface in an undetachable manner;

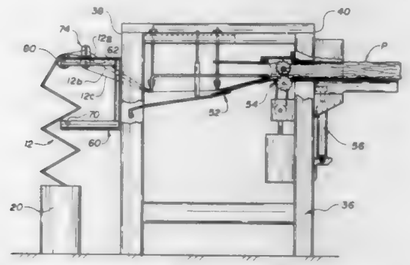
said wear-resistant layer being formed of a mixture of a synthetic resin and 20 to 70% by volume of a wear-resistant pulverized filler, relative to the total mixture in a hardened state.

5,387,173

FAN-FOLDED STOCK MATERIAL FOR USE WITH A CUSHIONING CONVERSION MACHINE

James A. Simmons, Jr., Painesville, Ohio, assignor to Ranpak Corp., Concord Township, Ohio

Filed Dec. 22, 1992, Ser. No. 994,940
Int. Cl.[6] B65H *45/00*; B31F *1/00*
U.S. Cl. 493—407 22 Claims



1. A method of converting fan-folded stock material into a cushioning product, said method comprising the steps of:

providing a stack of fan-folded stock material;

providing a conversion assembly for converting the fan-folded stock material into the cushioning product;

supplying the fan-folded stock material from the stack to the conversion assembly; and

converting the sheet-like stock material into the cushioning product,

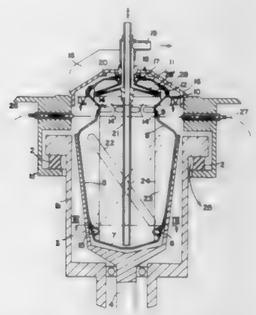
said step of converting the fan-folded stock material including the step of permanently deforming the fan-folded stock material into a nonplanar configuration to provide the cushioning product with a density less than the density of the stock material from which it is formed.

5,387,174

CENTRIFUGAL SEPARATOR WITH DISPOSABLE BOWL ASSEMBLY

Jean-Denis Rochat, Mies, Switzerland, assignor to Elp Rochat, Mies, Switzerland

Filed Dec. 21, 1993, Ser. No. 170,808
Claims priority, application Switzerland, Jan. 29, 1993, 276/93
Int. Cl.[6] B04B *7/02, 7/08*
U.S. Cl. 494—10 14 Claims



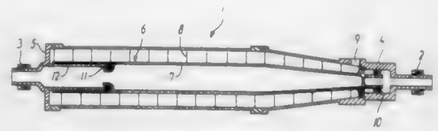
1. A centrifugal separator for fluids, comprising: a housing having mounted therein a rotatable driving cup, and a disposable centrifugal bowl made of an elastomeric material, said centrifugal bowl having an external shape matching that of the cup and being press fitted before operation inside said driving cup, said centrifugal bowl including an upper annular bead and a lower annular bead, each of said beads being provided with vertical passages, said centrifugal bowl being closed at a peripheral upper end by a metallic bowl cover, a centrifugal separator cover cooperating with the housing for closing the centrifugal separator above said centrifugal bowl, a flexible rotatable seal integral with said centrifugal separator cover and being in contact with said bowl cover, a tube positioned vertically inside said centrifugal bowl, extending through the centrifugal separator cover and integral therewith, said tube having an open end located close to the bottom of said centrifugal bowl for supplying fluid to be treated, and said tube carrying two conical circular components defining a space therebetween, said circular components acting as suction lips, and said space being in fluid communication with a discharge conduit.

5,387,175

DECANTER CENTRIFUGE WITH IMPROVED CONVEYER BEARING SUPPORT

Niels F. Madsen, Bagsvaerd, Denmark, assignor to Alfa Laval Separation A/S, Soborg, Denmark

PCT No. PCT/DK90/00345, § 371 Date Jun. 23, 1992, § 102(e) Date Jun. 23, 1992, PCT Pub. No. WO91/09680, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 27, 1990, Ser. No. 862,769
Claims priority, application Denmark, Dec. 29, 1989, 6730/89
Int. Cl.[6] B04B *1/20, 9/00*
U.S. Cl. 494—53 4 Claims



1. A decanter centrifuge comprising:

a drum rotatably journalled at each end thereof;

a separating compartment defined inside the drum by two end walls, one of said end walls being located at each end of the drum, said separating compartment having a ratio of length to largest diameter greater than four; and

a conveyor rotatably journalled in the drum in two conveyor bearings and extending throughout the separating compartment,

wherein at least one of the conveyor bearings is supported at a free end of a trunnion extending into the conveyor beginning at one of the end walls, and the runnion has a length from 0.5 to 3 times the largest diameter of the separating compartment.

5,387,176

TREATMENT OF ACUTE DISEASES AS CAUSED BY THE SPORTS-TYPE INJURIES OF THE MUSCULOSKELETAL SYSTEM EXCLUDING FRACTURES WITH MAGNETIC FIELD THERAPY

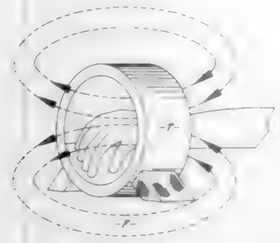
Richard Markoll, Middlebury, Conn., assignor to Bio-Magnetic Therapy Systems Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 519,410, May 4, 1990, Pat. No. 5,131,904. This application Apr. 13, 1992, Ser. No. 867,362
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[6] A61N *1/00*
U.S. Cl. 600—14 7 Claims

1. A treatment of acute disease of a body organ of the musculoskeletal system as caused by a sports-type injury excluding fractures with magnetic field therapy, the process performed in the absence of any electrical field and including the step of subjecting the diseased body organ to an electromagnetic field of under 20 Gauss and generated by an annular coil inside

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which the body organ is placed, the coil being driven by a pulsed DC voltage having a rectangular wave form consisting



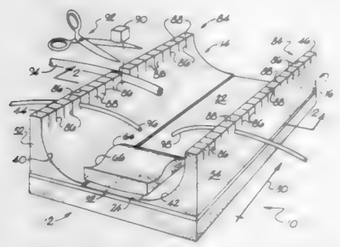
of an abruptly rising and abruptly deteriorating current pulsing at the rate of 1–30 pulse bursts per second.

5,387,177

ADJUSTABLE PEDIATRIC INCUBATOR NEST

Christopher E. Dunn, Greer, S.C., assignor to Span-America Medical Systems, Inc., Greenville, S.C.

Filed May 13, 1993, Ser. No. 61,571
Int. Cl.[6] A61G *11/00*
U.S. Cl. 600—22 41 Claims



1. An adjustable pediatric incubator nest, comprising:

a resilient base member, having an upper support surface for receiving a pediatric patient thereon, and having first securement means provided on said upper support surface for removably securing further nest members thereto at selected positions thereon; and

a pair of resilient foam adjustable side wall members, having respective lower support surfaces with respective second securement means thereon for selectively cooperating with said first securement means for removably securing said side wall members to said base member upper support surface, with said side wall members adjustably positioned in substantially opposing relationship to one another at a selected interval, so that said side wall members protectively partially enclose a pediatric patient on said upper support surface without impeding caregiver access to such patient.

5,387,178

MULTI-STIMULI CHAIR

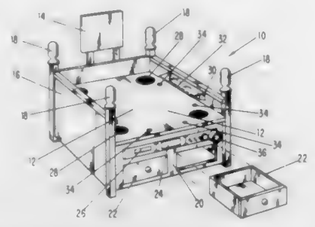
Gary L. Moses, 440 Bledsoe Rd., NW., Albuquerque, N. Mex. 87107

Filed Nov. 23, 1992, Ser. No. 980,653
Int. Cl.[6] A61M *21/00*
U.S. Cl. 600—27 46 Claims

1. A multi-stimuli chair comprising:

immobile seating means for providing upright sitting by a user further including magnets;

means for providing sound to said chair;



means for providing light to said chair; and

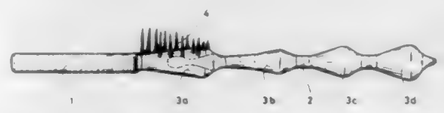
means for providing aroma to said chair.

5,387,179

MODIFIED ERECTION RING

Jurgen Crivellaro, Reinbeker Strabe 10 a, 2000 Stapelfeld, Germany

PCT No. PCT/EP91/00680, § 371 Date Feb. 6, 1992, § 102(e) Date Feb. 6, 1992, PCT Pub. No. WO91/15173, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 10, 1991, Ser. No. 776,288
Claims priority, application Germany, Apr. 10, 1990, 4138767
Int. Cl.[6] A61F *5/00*
U.S. Cl. 600—38 4 Claims



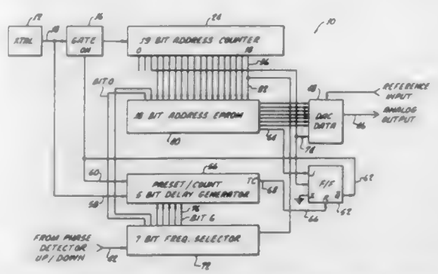
1. A stimulation device comprising an erection ring having a rectal rod integral with and extending from said ring, said device being made from a plastic material that is physiologically harmless and has a Shore hardness of between approximately 30 and 60.

5,387,180

ULTRASONIC FREQUENCY SYNTHESIZER FOR PHACO SURGERY

Donald E. Lehmer, Berkeley, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed May 20, 1993, Ser. No. 65,141
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—2 17 Claims



1. A method of generating wave forms for a phaco surgical handpiece, each wave form having a different frequency, said method comprising the steps of:

storing a plurality of sets of digital information, each set corresponding to a different specific frequency;

selecting a set of digital information in response to an input corresponding to a resonance frequency of said phaco surgical handpiece;

reading said selected digital information in a manner producing a digital output having a corresponding frequency equal to or lower than the frequency corresponding to the selected set of digital information; and

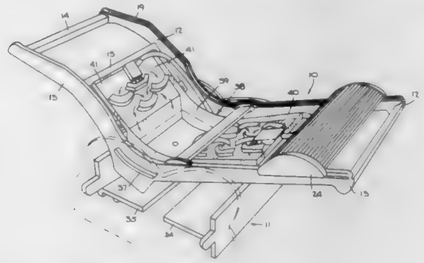
converting the digital output into an analog wave form for driving said phaco surgical handpiece.

5,387,181

ENVIRONMENTALLY-CONTROLLED LOUNGE CHAIR

Robert J. Olsen, 70 Irving Pl., 5C, New York, N.Y. 10003

Filed Jun. 11, 1992, Ser. No. 897,025
Int. Cl.[6] A61M *9/00*
U.S. Cl. 601—155 14 Claims



1. A lounge chair comprising:

(a) a base;

(b) a couch mounted on the base and including a frame supporting an array of parallel dowels in spaced relation forming a bed on which an occupant of the chair may recline, said array being contoured to define an intermediate region to accommodate the posterior of the occupant, a front region to accommodate the thighs and legs of the occupant, and a rear region to accommodate the back and head of the occupant;

(c) a water trough supported in said frame below the bed, said trough being contoured to define a sump section and front and rear waterfall sections, each having an input; and

(d) pump means supported on said base to supply water into the inputs of the front and rear waterfall sections, said waterfall sections including means to break up water flow and to cause the water to cascade into and be collected in the sump section from which it is returned to the pump means for recirculation, the breakup of water flow resulting in the sounds simulating those of a running brook.

5,387,182

FAUCET MOUNTED WATER JET DENTAL HYGIENE APPARATUS

Tony U. Otani, 12438 Eckleson St., Cerritos, Calif. 90701

Filed Mar. 15, 1993, Ser. No. 31,598
Int. Cl.[6] A61H *9/00*
U.S. Cl. 601—165 2 Claims

1. A water jet dental hygiene apparatus for being connected with a spout of a faucet having at least one valve, said water jet dental hygiene apparatus comprising:

a two-component coupling, comprising:

a first component having a threaded portion for being threadably engaged with the spout of the faucet, said first component having an axial aperture;

a second component having a blind internal hollow, said blind internal hollow having an open end and a blind end, said blind end of said blind internal hollow being permanently sealably closed, said second component having a first connector connected thereto, said first connector having a first central aperture communicating with said blind internal hollow between said open and blind ends thereof; and

selectively releasable connection means for sealably seating said second component with respect to said first component, said open end of said blind internal hollow communicating with said axial aperture when said first component is sealably seated with respect to said second component; said selectively releasably connection means comprising:

a plunger movably connected with respect to said second component between a first position and a second position;

biasing means connected with said second component for resiliently biasing said plunger toward said first position; and

ball and detent means connected with said first and second components, wherein said ball and detent means provides selective connection of said first component responsive to movement of said plunger component responsive to movement of said plunger between said first position and said second position;

a flexible tube having a first end and a second end, said first end of said flexible tube being connected with said first connector; and

a hand-held nozzle, comprising:

a handle portion having an internal cavity, said handle portion having connected thereto a second connector, said second connector having a second central aperture communicating with said internal cavity, said second end of said flexible tube being connected with said second connector; and

a nozzle portion sealably connected with said handle portion, said nozzle portion having a nozzle passage therealong which communicates with said internal cavity, said nozzle portion having a tip, said tip having an orifice for providing therefrom a water jet spray when the at least one valve of the faucet is opened.

5,387,183

MULTI-PLY SUPPORT BELT

Robert W. Jones, 9807 Fredericksburg Rd., San Antonio, Tex. 78240

Filed Jun. 23, 1993, Ser. No. 81,552
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—19 11 Claims

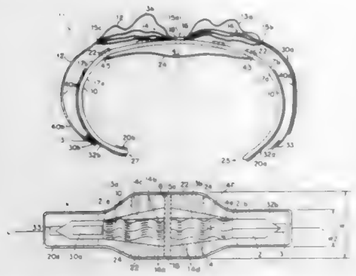
1. A multi-ply support belt for back and abdominal support of a wearer's body, said belt comprising:

an elastic primary ply having a right end and a left end and an outer surface and an inner surface, said inner surface of said primary ply adapted to urge against said wearer's body and provide a first compressional support when said belt is wrapped around said body such that said right end of said primary ply overlaps said left end of said primary ply;

a secondary non-elastic ply having a right end and a left end and an outer surface and an inner surface, said inner sur-

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face having side sections adapted to lie against said outer surface of said primary ply when said belt is wrapped around said body, said left end of said secondary ply overlapping said right end of said primary ply and said right end of said secondary ply overlapping said left end of said secondary ply when said belt is wrapped around said body;



an elastic tertiary ply fixably attached to a back section of said inner surface of said secondary ply such that said secondary ply is gathered in a first non-tensioned position and cooperates with said secondary ply to provide a second compressional support along said wearer's sacral area when said secondary ply is fully extended around said body.

5,387,184
ORTHOPAEDIC DEVICE OF THE NON-ISCHIAL WEIGHT BEARING KIND

Michael W. Seitz, Pretoria, South Africa, assignor to Technology Finance Corporation (Proprietary) Limited, Sandton, South Africa

Filed Jul. 1, 1993, Ser. No. 86,628
Claims priority, application South Africa, Jul. 1, 1992, 92/4894
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—23 **4 Claims**



1. A non-ischial weight bearing orthopedic device for use with an orthopedic caliper, comprising:

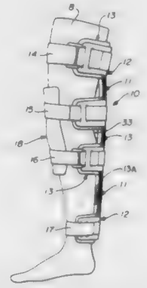
a stiff lower portion to which depending components of an orthopedic caliper may be attached in use, said lower portion having an abutment surface positionable to abut the rear of a thigh of a user; and

an upper portion attached to said lower portion such as to create an extension from said lower portion which provides buttock support in use, said upper portion having an upper extremity adapted to be positioned higher than an ischial tuberosity of the user on the user's buttock, and comprising a moulding having a shape which is concave and generally complementary to the upper rear portion of the user's thigh and the lower portion of the user's buttock when the user is standing, said upper portion being of a stretch resistant material which is deformable so as to conform to the shape of the upper portion of the user's thigh and the user's lower buttock when the user is seated, wherein the concave shape and the position of said upper extremity of said upper portion in use causes said upper portion to exert a force having a horizontal component against the buttock and the back of an ischium of the user when the user is standing.

5,387,185
KNEE IMMOBILIZER SPLINT

Glenn W. Johnson, Jr., Summit, and Henry J. McVicker, Chatham, both of N.J., assignors to Aircast, Incorporated, Summit, N.J.

Filed Nov. 8, 1993, Ser. No. 148,937
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—26 **12 Claims**



1. A hingeless immobilization splint for optimal extension of the knee of a leg comprising:

a single elongated hingeless rigid spine for longitudinal alignment with the posterior of an associated leg and having portions adapted to extend above and below the knee and having an included angle formed at about mid-length thereof such that said angle provides a space between the rigid spine and the back of the associated knee; and

fastening devices operatively coupled to said spine, both above and below the area of the spine near the associated knee, for holding said spine in longitudinal alignment at the posterior of the associated leg such that by tensioning said fastening devices, pressure is applied to the anterior aspect of the leg both above and below the knee thereby to press the knee into the desired extension, while leaving space between the rear of the knee and said spine.

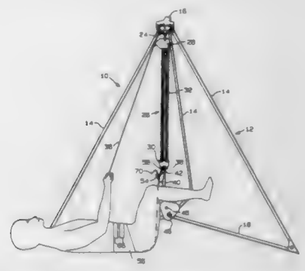
5,387,186
SELF-STANDING TRACTION APPARATUS

Mitchell R. Edland, 6605 Rolling Vista, Dallas, Tex. 75248

Filed Oct. 15, 1993, Ser. No. 136,154
Int. Cl.[6] A61H *1/02*
U.S. Cl. 602—36 **6 Claims**

1. Traction apparatus for the human body adapted to place the spine under tension comprising, in combination, a self-standing support having an upper region, an anchor defined upon said support upper region, an extendable and retractable block and tackle unit suspended from said anchor including an upper block attached to said anchor and a lower block suspended from said upper block by a tension member, a T-bar mounted on said lower block having a pair of arms transversely extending in opposite directions from a column having an upper end affixed to said lower block, a contoured cushioned leg support mounted on each arm, a belt having a central bottom, inner and outer surfaces, and lateral sides, fastening means defined on said belt lateral sides permitting said belt to lockingly embrace the lower torso of a patient, an elongated flexible strap affixed to said belt central bottom and extending therefrom, a buckle mounted on said lower block receiving

said strap and adjustable along the length thereof, said tension member including an operating tail extending from said upper block a releasable lock mounted upon said upper block selectively locking said block and tackle unit tail against movement in a block and tackle unit extending direction upon release of a predetermined tension within said tail and releasing said tail upon said pre-determined tension occurring within said tail permitting bi-directional movement of said tail to selectively extend and retract said block and tackle unit and raise and

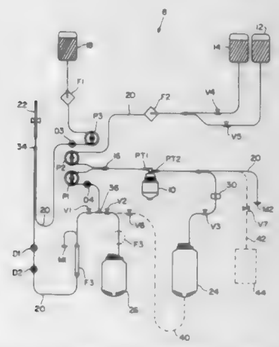


lower said leg supports, said releasable lock mounted on said upper block including a V-shaped groove defined on said upper block selectively receiving said operating reception of said tail within said groove preventing movement of said tail and tension member in a block and tackle unit extension direction, and a spring biased tail deflector mounted on said upper block biasing said tail toward reception into said groove, the biasing force of said deflector being less than said pre-determined tension within said tail to release said tail from said releasable lock.

5,387,187
RED CELL APHERESIS METHOD

Claude Fell, Nyon, Switzerland, and Jean Papillon, Germaine-en-laye, France, assignors to Haemonetics Corporation, Braintree, Mass.

Continuation of Ser. No. 984,029, Dec. 1, 1992, abandoned. This application Mar. 1, 1994, Ser. No. 203,884
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—6 **13 Claims**



1. A method of automatically separating blood from a single donor via a single phlebotomy needle into constituent components comprising the steps:

a) drawing a first collection of whole blood with said phlebotomy needle from said donor into a separation chamber;

b) centrifugally separating a low density component from said first collection of whole blood from higher density components in the separation chamber, the higher density components from the first collection including white blood cells;

c) displacing the low density component from the first collection to a first container for subsequent extracorporeal use;

d) terminating the separation process in the chamber;

e) returning the higher density components from the first collection remaining in the separation chamber to the donor via said phlebotomy needle, utilizing the returning higher density components with dilutent solution after exiting the separation chamber, the dilutent solution being Dumped into the higher density components at a rate high enough such that the higher density components can be returned to the donor at an elevated rate;

f) drawing a second collection of whole blood from the same donor into the separation chamber;

g) centrifugally separating a low density component from higher density components from said second collection of whole blood in the separation chamber;

h) displacing the low density component from the second collection to the first container;

i) terminating the separation process in the chamber;

j) removing the phlebotomy needle from the donor;

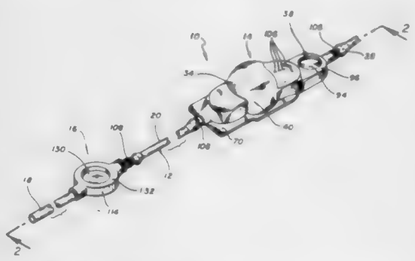
k) displacing the higher density components from the second collection remaining in the separation chamber to a second container for subsequent extracorporeal use, thereby collecting amounts of both higher density components and low density components in a relatively short period of time with increased yield and less inconvenience than if collected separately; and

l) filtering white blood cells from the higher density components from the second collection before the higher density components enter the second container.

5,387,188
PULSATILE FLOW-ACCOMMODATING FLUID SHUNT

David A. Watson, Goleta, Calif., assignor to Pudenz-Schulte Medical Research Corporation, Goleta, Calif.

Filed May 10, 1993, Ser. No. 59,897
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—8 **15 Claims**



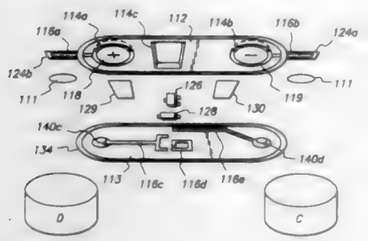
1. A capacitive element in a physiologic fluid shunt, for reducing overdrainage of fluid due to the pulsatile nature of fluid flow, the capacitive element comprising:

a reservoir having an inlet in fluid communication with a cerebrospinal fluid source, and an outlet in fluid communication with means for restricting the flow of fluid through the shunt; and

means for accommodating the pulsatile nature of fluid flow between the fluid source and the flow restricting means by varying the fluid capacity of the reservoir, the accommodating means including a flexible diaphragm having an outer surface which forms an exterior surface of the reservoir, and an inner surface in contact with and subject to pressure variations of fluid within the reservoir.

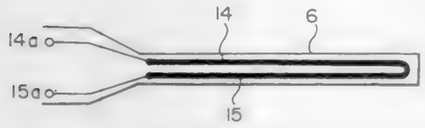
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5,387,189
ELECTROTRANSPORT DELIVERY DEVICE AND METHOD OF MAKING SAME
J. Richard Gory, San Jose, and John R. Peery, Stanford, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.
Filed Dec. 2, 1993, Ser. No. 161,371
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—20 21 Claims



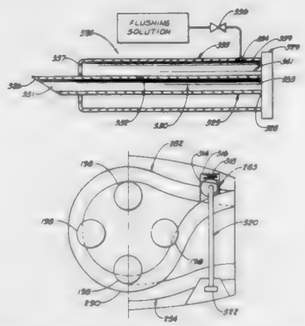
1. A sealed electrical power network for powering an electrotransport device for delivery of a beneficial agent though a body surface of a patient, the power network including one or more electrical components, two or more power network outputs, means for electrically connecting the electrical component to the power network outputs, and means for electrically connecting at least one of said power network outputs to an electrode holding a liquid, further comprising:
a liquid-tight chamber sealed to surround and enclose the power network, the chamber providing liquid-tight passage for the power network outputs, whereby the power network is seal ed from contacting said liquid.

5,387,190
PROBE BREAK DETECTOR FOR AN ULTRASONIC ASPIRATOR
Masakazu Gotanda, Sagamihara; Tatsuya Kubota, Machida; Tetsumaru Kubota; Yuichi Ikeda, both of Hachioji; Toshihiko Hashiguchi, Sagamihara; Hitoshi Karasawa, Hachioji, and Tadao Hagino, Yokohama, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 829,575, Feb. 3, 1992, abandoned, which is a continuation of Ser. No. 713,025, Jun. 7, 1991, abandoned, which is a continuation of Ser. No. 265,630, Nov. 1, 1988, abandoned. This application Apr. 15, 1994, Ser. No. 228,005
Claims priority, application Japan, Dec. 9, 1987, 62-312665; Aug. 3, 1988, 63-194001
Int. Cl.[6] A61B *17/36*
U.S. Cl. 604—22 11 Claims



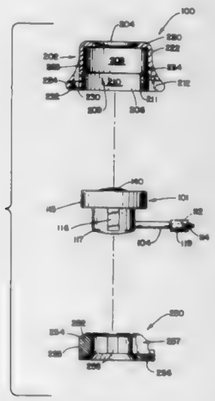
1. An ultrasonic aspirator comprising:
a probe, in a form of a pipe, as an ultrasonic vibration transmitting member provided on a base side with an ultrasonic vibrator which only transmits vibrations to a tip of said probe, said tip being used to contact a treated part which is an object tissue within a body cavity, said transmitted vibrations breaking the treated part into pieces, said probe further being provided with an inside path for aspirating the pieces of the treated part and for discharging the pieces outside the probe;
an ultrasonic vibrator oscillating driving means for oscillating and for driving said ultrasonic vibrator;
a probe break detecting means for detecting a break of said probe when said ultrasonic vibrator oscillating driving means operates, wherein said probe break detecting means includes a component which is enclosed within said probe; and
an ultrasonic vibrator controlling means for stopping oscillation and drive of said ultrasonic vibrator by a detecting signal of said probe break detecting means.

5,387,191
FLUSHING NEEDLE
George P. Hemstreet, Oklahoma City; Tom J. Love, Jr., and Karl H. Bergey, both of Norman, all of Okla., assignors to Board of Regents of the Univ. of Okla., Norman, Okla.
Division of Ser. No. 602,580, Oct. 24, 1990, Pat. No. 5,081,999, which is a continuation of Ser. No. 307,403, Feb. 6, 1989, Pat. No. 4,982,739. This application Oct. 21, 1991, Ser. No. 779,699
Int. Cl.[6] A61M *11/00*
U.S. Cl. 604—93 2 Claims



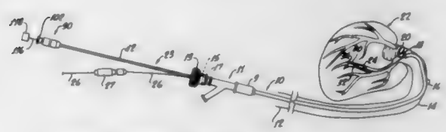
1. A flushing needle for use with a needle receiving member wherein a portion of the needle receives flushing substances from a flushing substance reservoir and delivers a portion of the flushing substance to a biosample extracted from a biosite in a subject, comprising:
a first shaft comprising a first end characterized by a tip capable of extracting a biosample from the biosite, a second end attachable to the needle receiving member, and a duct having a first end and a second end, said duct extending through both the first end and the second end of the first shaft, the first end of the duct and the second end of the duct in corresponding alignment with and extending through both the first end and the second end of the first shaft, said duct being capable of containing a biosample;
a second shaft having a first end and a second end, the first end of the second shaft connected to the first shaft near the first end thereof, the second end of the second shaft adapted to be connected to the needle receiving member, a flushing substance space formed between the first shaft and the second shaft, the second shaft telescoped over and enclosing a substantial portion of the first shaft via an airtight connection of the second shaft to the first shaft,
wherein both the first shaft and the second shaft comprise means for receiving a flushing substance;
means for delivering an effective amount of the flushing substance to the duct in the first shaft such that a biosample contained within said duct is contacted by said flushing substance; and
means for causing a suction to be formed within the duct in the first shaft thereby causing both a biosample and said flushing substance contained within said duct to be moved toward the needle receiving member.

5,387,192
HYBRID PORTAL AND METHOD
Jerald Glantz, Lake Elmo; Mark D. Anderson, Stacy; Theodore A. Johnson, St. Paul; William L. Beling, New Brighton, and Cai Qingsheng, St. Paul, all of Minn., assignors to SIMS Deltec, Inc., St. Paul, Minn.
Filed Jan. 24, 1994, Ser. No. 186,171
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—93 34 Claims



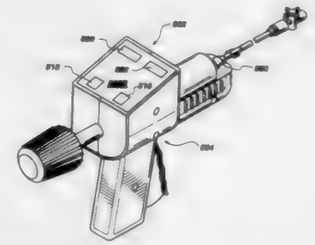
1. A hybrid port, comprising:
a metallic reservoir having an open top, a closed bottom, and a septum sealingly received in said open top, said reservoir further including a chamber accessible through said septum;
a non-metallic cowl including a septum opening, said cowl further including a flange positioned adjacent said top of said reservoir, said septum being accessible through said septum opening; and
a non-metallic base including a reservoir opening, said reservoir operably received through said reservoir opening of said base; said base and said cowl being positioned and arranged as to define a forming zone; said base and said cowl connected at said forming zone.

5,387,193
BALLOON DILATION CATHETER WITH HYPOTUBE
Manouchehr Miraki, Aliso Viejo, Calif., assignor to Baxter International Inc., Deerfield, Ill.
Filed Feb. 9, 1994, Ser. No. 194,086
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 16 Claims



1. A dilation catheter comprising:
a body tube having distal and proximal ends and having a guide wire port adjacent said distal end,
a relatively stiff hypotube in said body tube having a proximal end and having an open distal end adjacent said guide wire port, said body tube and hypotube collectively forming inner and outer nested fluid flow passages,
a dilation balloon fixed to said distal end at a position distally of said guide wire port and in fluid communication with the inner and outer nested fluid flow passages to facilitate inflation of said dilation balloon,
a connection fixture at the proximal ends of said body tube and hypotube for flowing fluid through said inner and outer flow passages simultaneously, and
a stiffening wire section fixed to the distal end of said hypotube and extending axially therefrom across said guide wire port to provide enhanced stiffening of said catheter in the area of said guide wire port.

5,387,194
REMOTE DISPLAY OF PATIENT MONITORED DATA
Eli Williams, North Salt Lake; Evan Call, Bountiful, and Arlee Swensen, Layton, all of Utah, assignors to Surgical Technologies, Inc., Salt Lake City, Utah
Continuation-in-part of Ser. No. 791,475, Nov. 12, 1991, Pat. No. 5,215,523, and Ser. No. 866,835, Apr. 10, 1992, abandoned. This application Nov. 12, 1992, Ser. No. 974,404
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—97 13 Claims



1. Apparatus providing wireless transmission of a sensed parameter to a remote display unit, in combination with a medical device of the kind including a sensor for sensing a desired parameter, comprising:
a sensor operably associated with said medical device for sensing an operating condition of said medical device or a tissue condition of a patient to whom said medical device is affixed, and providing a sensor signal reflective of said condition;
transmitter means connected to said sensor to receive said sensor signal, and having means to wirelessly transmit a line-of-sight sensor message communicative of said condition, said transmission means including a wireless transmitter;
a power source connected to power said transmitter means; and
a remote display device placeable at a distance from said transmitter means, connectable to a second power source to receive operating power, and including:
signal reception means for receiving said line-of-sight sensor message and providing a message display signal in response thereto, and
message display means connected to said signal reception means for receiving said message display signal and providing a display reflective thereof.

5,387,195
NO SHARE SYRINGE
Charles D. Hicks, 326 Luna Dr., Nashville, Tenn. 37211-4131
Filed Dec. 23, 1992, Ser. No. 995,684
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 1 Claim

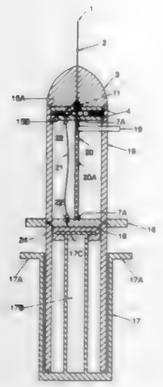
1. A one time use disposable syringe where said syringe is incapable of further use once said syringe is removed from a patent comprising:
a pair of elongated cylindrical barrels each having an interior cylindrical bore said barrels each being composed of

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a suitable rigid material where said barrels are defined sectionally as a forward and are aft barrel;

a cylindrical insert within said barrels composed of a rigid material and which seals said forward and said aft barrels together at one end and includes a fluid passage tube which extends within said forward barrel;

said aft barrel including a plunger assembly composed of rigid material having an inner bore located centrally within an elongated barrel with a circumference which is larger than that of said aft barrel allowing for a semiloose fit over said aft barrel with are outward extension at a forward end of said plunger assembly of an adequate size to serve as finger holds, a plunger shaft centrally located within said plunger barrel having at, endcap, and a common syringe plunger having an inner slot corresponding to said endcap which is instrumental in providing filling, clearing and discharging fluids through said syringe;



said forward barrel including a rigid syringe endcap at an end opposite end where said aft and said forward barrels are sealed through which fluid passes and includes a means for controlling fluid flow;

a fluid passage assembly which includes a valve and a progressively cooperative means contained within said forward barrel where said cooperative means controls the opening and closing of said valve allowing for one time bi-directional flow of fluid into said aft barrel and a one time partial of full discharge of said fluid from said aft barrel; and

a needle assembly means within said syringe endcap including a needle composed of rigid or flexible material and where said means provides a one time penetration into and one time withdrawal from the patient by sliding said needle into and out of said forward barrel when said valve is open or closed, respectively.

5,387,196

CANNULA ASSEMBLY HAVING CONDUCTIVE CANNULA

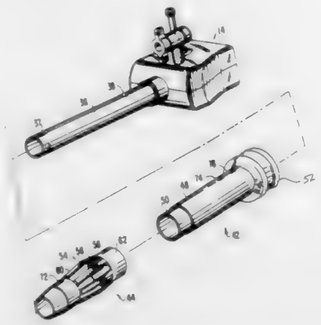
David T. Green, Westport; H. Jonathan Tovey, Milford; Robert C. Smith, Watertown, all of Conn., and Henry Bolanos, East Norwalk, assignors to United States Surgical Corporation, Norwalk, Conn.

Filed May 19, 1992, Ser. No. 885,467
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—158 **14 Claims**

1. A cannula assembly, which comprises:

a) cannula housing means having a first opening formed at a distal end thereof and second opening formed at a proximal end thereof, for receiving endoscopic instruments;

b) cannula means for receiving the endoscopic instrument, said cannula means having a proximal end engaged with said first opening of said cannula housing means and an outer surface portion adapted to engage body tissue, wherein at least said outer surface portion of said cannula means is formed of a material having an electrical conductivity value which is at least fifty percent the conductivity value of silver so as to facilitate dissipation of electrical energy thereon through the body tissue; and



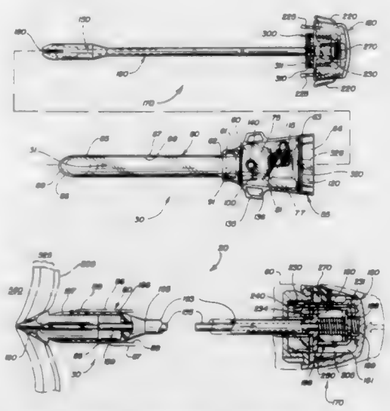
c) tissue gripping means associated with said cannula means for securing said cannula assembly within the body tissue, said tissue gripping means having an exterior wall formed at least in part of a material having an electrical conductivity value which is at least fifty percent the conductivity value of silver, said exterior wall being configured to engage the body tissue so as to facilitate dissipation of electrical energy thereon through the body tissue.

5,387,197

TROCAR SAFETY SHIELD LOCKING MECHANISM

Richard S. Smith, Loveland; Kevin L. Houser, Centerville; Charles A. Hansford, Hamilton; Pamela K. Jacobs, Loveland, and Richard F. Schwemberger, Cincinnati, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Filed Feb. 25, 1993, Ser. No. 21,935
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—164 **24 Claims**



1. A trocar obturator assembly, comprising:

a hollow obturator handle;

an elongated obturator shaft having a proximal end and a distal end, the proximal end of the obturator shaft slidably mounted in the handle;

a piercing tip mounted to the distal end of the obturator shaft;

a safety shield slidably mounted on the obturator shaft, said safety shield concentrically disposed about the obturator shaft, and moveable to an extended position and a retracted position, said safety shield comprising an elongated tube member having a proximal end and distal end and said safety shield further comprising a flange mounted to the proximal end;

biasing means mounted in the handle and acting upon the flange of the safety shield for moving the safety shield to an extended position;

locking means mounted in the handle for locking the safety shield in an extended position; and,

actuating means mounted in the handle for locking the safety shield in an extended position; and,

actuating means mounted in the handle for actuating the locking means in response to axial, proximal motion of the obturator shaft.

5,387,198

Patent Not Issued For This Number

5,387,199

POLYMER BLENDS FOR TORQUE TRANSMITTING CATHETERS

Jaime E. Siman, Santa Ana; Clement Lieber, Yorba Linda, and Nancy Shadforth, Trabuco Canyon, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 840,427, Feb. 24, 1992, abandoned. This application Mar. 2, 1994, Ser. No. 204,796
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—282 **22 Claims**

1. A catheter useful for accessing body cavities during therapeutic and diagnostic medical procedures, said catheter comprising:

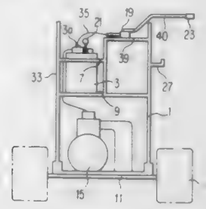
an elongated tubular member having at least one lumen, said elongated tubular member formed of a heat extruded homogeneous polymer blend of polyetherurethane and polyetherester, wherein said polymer blend provides the catheter with enhanced torque retention and balanced rebound properties.

5,387,200

PORTABLE APPLICATOR FOR APPLYING SKIN PROTECTION FLUIDS

Samuel W. Kronstadt, Ellicott City, Md., assignor to Sun-Safe Technologies Limited Partnership, Ellicott City, Md.

Filed Jan. 10, 1994, Ser. No. 179,208
Int. Cl.[6] A61M *35/00*
U.S. Cl. 604—290 **11 Claims**



7. An apparatus for applying a variety of skin protection fluids on an individual's skin, the apparatus comprising:

a plurality of pressure containers, each one of said pressure containers containing a skin protection fluid having a different skin protection factor each in the range of 2–45 and an outlet for discharging said skin protection fluid, each of said pressure containers being operatively connected to a control valve for controlling a flow of said skin protection fluid from said pressure container;

an air compressor operatively connected to each of said pressure containers to provide a discharge pressure for discharging said skin protection fluid from the pressure container through said outlet;

a single nozzle for applying the skin protection fluid discharged from said pressure container to an individual's skin, said single nozzle having an adjustable orifice and being fluidly connected to each of said control valves of said pressure containers; and

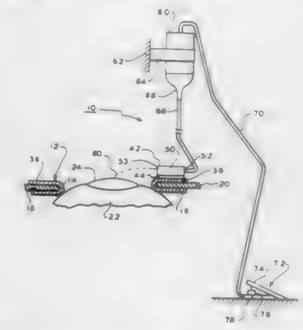
an adjustable pressure regulator operatively connected to each one of said pressure containers for adjusting the discharge pressure from said air compressor based on at least a viscosity of the skin protection fluid selected to be discharged and applied to the individual's skin, wherein a size of said orifice of the nozzle is adjusted based on the selected discharge pressure and the selected skin protection fluid.

5,387,201

EYE SURGERY IRRIGATION DEVICE

Bernard J. Fowler, 216 Engle St., Englewood, N.J. 07631

Filed May 6, 1994, Ser. No. 238,894
Int. Cl.[6] A61M *7/00*
U.S. Cl. 604—290 **19 Claims**



1. Irrigation system for irrigating an eye during surgery, the system comprising:

a manifold having a cavity for receiving eye irrigation fluid and having at least one aperture communicating between the manifold cavity and the ambient atmosphere;

means for pressurizing the received fluid in said manifold cavity to create at least one stream of said fluid through the aperture; and

means for securing the manifold adjacent to the eye so that the at least one stream is directed onto the eye cornea during the surgery while leaving the eye substantially obstacle free for the surgery.

5,387,202

EYE DROP DISPENSING DEVICE

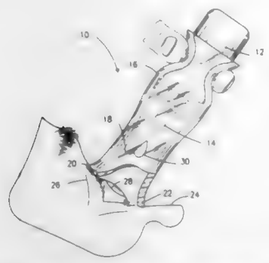
Brian F. Baron, Largo, Fla., assignor to Aaron Medical Industries, St. Petersburg, Fla.

Continuation of Ser. No. 88,094, Jul. 1, 1993, abandoned, which is a continuation of Ser. No. 915,299, Jul. 20, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,487
Int. Cl.[6] A61M *35/00*
U.S. Cl. 604—300 **1 Claim**

1. A method for dispensing eye drops into a user's eye through the use of an eye drop dispensing device including a pliable compressible hollow tubular housing movable between a first uncompressed and second compressed position having a distal end portion and a proximal end portion formed on opposite ends thereof including a channel having a distal opening and a proximal opening formed at opposite ends thereof to operatively house a dispensing nozzle and a major portion of a pliable ophthalmic solution container therein, and a skirt having a proximal end with a proximal skirt opening and a distal

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end with a distal skirt opening extending outwardly from said proximal end portion and including a skirt channel in open communication with said channel wherein the cross-sectional area of said skirt channel increases from said distal end to said proximal end such that the circumference of said proximal skirt-opening is greater than the circumference of said distal skirt opening, said method comprising inserting the pliable opthalmic solution container having an opthalmic solution



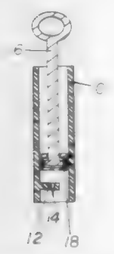
therein into the channel, aligning a dispensing nozzle of the pliable ophthalmic solution container in spaced relationship relative to the person's eye by placing the proximal end of the shirt on the user's face in surrounding relationship relative the eye to be treated and dispensing eye drops directly into the user's eye through the nozzle by squeezing the pliable compressible hollow tubular housing so that the housing moves from said first position to said second position, thereby compressing the pliable opthalmic solution container.

5,387,203

SUBCUTANEOUS EXTRACTOR

Hubert J. Goodrich, 3313 Westleigh Ave., Las Vegas, Nev. 89102

Filed Jun. 28, 1993, Ser. No. 83,446
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—313 2 Claims



1. A device for removing pus, blood and other materials from in and beneath the skin comprising:

(a) a housing of sufficient thickness and strength so that it does not collapse when a partial vacuum is created in the housing and has an opening at the bottom, and

(b) a means for creating variable negative pressure in the housing, said means capable of creating negative pressure of sufficient strength to draw skin into the housing through the bottom opening

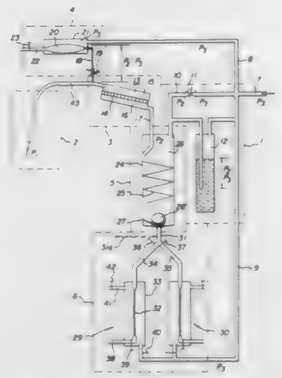
(c) a piercing means fixedly secured within the housing with said piercing means recessed above the bottom opening of said vacuum chamber approximately in the center, said piercing means recessed from the bottom opening such that skin drawn into the housing can be pierced by a fine point or edge of the piercing means such that the skin is stretched to the extent that damage done to the skin by the piercing means is minimized whereby an operator of said device can place the bottom opening of said housing over skin which has material to be removed underneath and by controlling the negative pressure the operator can increase the vacuum pressure to draw the underlying skin into said housing where the skin is pierced by said piercing means and the material to be removed from beneath the skin is extracted into said housing.

5,387,204

METHOD AND APPARATUS FOR DOSING AN ADDITIVE AT COLLECTION OF LIQUID

Per Olsson, and Lennart Strömberg, both of Stockholm, Sweden, assignors to Medical Projects HB, Saltsjobaden, Sweden

PCT No. PCT/SE92/00048, § 371 Date Jul. 27, 1993, § 102(e) Date Jul. 27, 1993, PCT Pub. No. WO92/13582, PCT Pub. Date Aug. 20, 1992
PCT Filed Oct. 22, 1993, Ser. No. 94,007
Claims priority, application Sweden, Feb. 1, 1991, 9100326
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—317 20 Claims



1. A method for sucking a gas-liquid mixture and for dosing the liquid of the gas-liquid mixture comprising the steps of:

generating a first negative pressure and a second negative pressure which is less negative than the first negative pressure but more negative than a third pressure at which the gas-liquid mixture is found;

connecting the second negative pressure to a suction hose having a suction nozzle to create a sucking pressure in the suction hose;

exerting the first negative pressure on an additive in a dosage container of a dosage device;

connecting the dosage container in which the additive contained directly to the suction hose through a connection device;

sucking up the gas-liquid mixture with the suction nozzle which causes a variation in the suction pressure in the suction hose depending on the amount of liquid being sucked up in the gas-liquid mixture; and

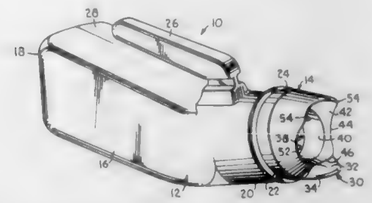
dosing the additive to the gas-liquid mixture in the suction hose with the connection device in proportion to the amount of liquid sucked up through the suction hose which proportional dosing is caused by pressure differences between the first negative pressure exerted on the additive in the dosage container and the varying suction pressure in the suction hose.

5,387,205

SELF-CONTAINED URINE COLLECTING DEVICE FOR USE BY FEMALES

Richard F. Cummins, Lawrence, Kans., assignor to Rosinante, Inc., Eudora, Kans.

Filed Oct. 13, 1993, Ser. No. 135,907
Int. Cl.[6] A61F *5/44*
U.S. Cl. 604—329 18 Claims



1. A self-contained urine collecting device for use by females and adapted for placement at the user's urethral orifice, vaginal orifice, and septal tissue, said septal tissue being located between said urethral and vaginal orifices, said device comprising:

a hollow body, one end of said body being closed and an other end of said body being open;

an upwardly extending neck disposed at said open end of said body;

a mouth positioned in an essentially vertical plane disposed at an open end of said neck; and

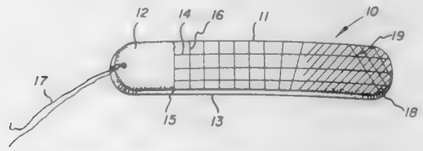
an interface extending from said mouth and comprising a protuberance extending outwardly from a lower portion of said interface and adapted for insertion into said vaginal orifice of said user to block entry of urine into said vaginal orifice, an opening defined by an upper portion of said interface and adapted for placement adjacent said urethral orifice of said user when the protuberance is inserted into the vaginal orifice, a laterally extending ridge disposed between said opening and said protuberance and adapted for positioning adjacent said septal tissue separating said urethral orifice and said vaginal orifice, and a lateral valley coextensive with said ridge and adapted for positioning adjacent said septal tissue separating said urethral orifice and said vaginal orifice, said valley acting in coordination with said ridge and said protuberance to provide a liquid-tight seal with respect to the vaginal orifice of the user.

5,387,206

MECHANICAL TREATMENT OF DRY SPONGE MATERIAL TO IMPART FLEXIBILITY

Douglas R. Valentine, Oakdale, Conn., and Arthur A. Gertzman, Bridgewater, N.J., assignors to Merocel Corporation, Mystic, Conn.

Filed Aug. 27, 1993, Ser. No. 112,462
Int. Cl.[6] A61F *13/15, 13/20*
U.S. Cl. 604—358 24 Claims



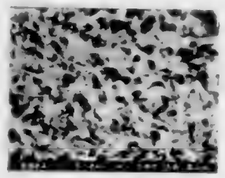
21. A medical sponge comprising a sterile rigid absorbent linearly shaped sponge body, said body being provided with a plurality of staggered flex lines running into said body from opposing sides, said staggered flex lines being positioned substantially parallel to each other with the ends of said staggered flex lines terminating near a central midpoint linear axis of the body.

5,387,207

THIN-UNIT-WET ABSORBENT FOAM MATERIALS FOR AQUEOUS BODY FLUIDS AND PROCESS FOR MAKING SAME

John C. Dyer; Thomas A. DesMarais, both of Cincinnati; Gary D. LaVon, Harrison; Keith J. Stone, Fairfield; Gregory W. Taylor, West Chester, and Gerald A. Young, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 743,838, Aug. 12, 1991, abandoned, Ser. No. 743,839, Aug. 12, 1991, Pat. No. 5,260,345, Ser. No. 743,951, Aug. 12, 1991, Pat. No. 5,352,711, and Ser. No. 935,935, Aug. 27, 1992, Pat. No. 5,198,472, which is a division of Ser. No. 830,159, Feb. 3, 1992, Pat. No. 5,149,720, which is a continuation-in-part of Ser. No. 743,947, Aug. 12, 1991, abandoned, and a continuation-in-part of Ser. No. 935,938, Aug. 27, 1992, Pat. No. 5,318,554, which is a continuation of Ser. No. 743,950, Aug. 12, 1991, Pat. No. 5,147,345. This application Dec. 11, 1992, Ser. No. 989,270
Int. Cl.[6] A61F *13/15, 13/20*
U.S. Cl. 604—369 23 Claims



1. A collapsed polymeric foam material which, upon contact with aqueous body fluids, expands and absorbs said fluids, said polymeric foam material comprising a hydrophilic, flexible, nonionic polymeric foam structure of interconnected open cells, which foam structure has:

A) a specific surface area per foam volume of at least about 0.025 m^2/cc;

B) at least about 0.1% by weight of said polymeric foam material of a toxicologically acceptable hygroscopic, hydrated salt incorporated therein:

C) in its collapsed state, an expansion pressure of about 30 kPa or less; and

D) in its expanded state, a density when saturated at 88° F. (31.1° C.) to its free absorbent capacity with synthetic urine having a surface tension of 65±5 dynes/cm of from about 10 to about 50% of its dry basis density in its collapsed state.

5,387,208

ABSORBENT CORE HAVING IMPROVED DRY/WET INTEGRITY

Gregory Ashton, Markham, Canada; John T. Cooper, West Chester, Ohio, and Craig A. Hawkins, Toronto, Canada, assignors to The Procter & Gamble Co., Cincinnati, Ohio

Filed Jul. 26, 1993, Ser. No. 97,634
Int. Cl.[6] A61F *13/15, 13/20*
U.S. Cl. 604—378 16 Claims

1. An absorbent article comprising:

a) a liquid pervious topsheet;

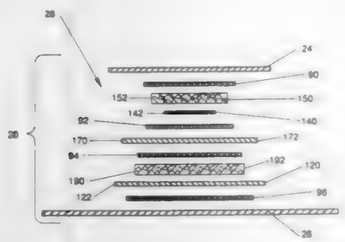
b) a liquid impervious backsheet joined to said topsheet;

c) an absorbent core positioned between said topsheet and said backsheet, said absorbent core having a garment facing surface, a body facing surface, and side edges; and

d) a primary core integrity layer enveloping at least a longitudinal portion of said side edges and at least a portion of one of said surfaces, said primary core integrity layer being joined to said topsheet, said primary core integrity

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layer comprising a continuous mesh of strands of melt-blown material, said strands being sinuous and oriented in



substantially the same direction with some crosswise linking to form an intertwining web of the strands.

5,387,209

BODY FLUID ABSORBENT ARTICLE

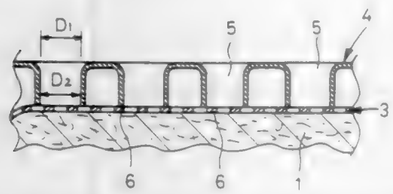
Masamitsu Yamamoto; Masaki Murakami, and Satoshi Mizutani, all of Kawanoe, Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Continuation of Ser. No. 983,743, Dec. 1, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 166,089

Claims priority, application Japan, Dec. 4, 1991, 3-348223

Int. Cl.[6] A61F *13/15, 13/20*

U.S. Cl. 604—384 **1 Claim**



1. A body fluid absorbent article comprising a layered composite that includes

(A) a topsheet (**4**) consisting of a thickness of hydrophobic film having an upper surface and a lower surface which between them define the thickness of the material forming the topsheet (**4**), said topsheet (**4**) comprising (a) a first portion which is generally planar and (b) a second portion which comprises a plurality of tubular passageways (**5**) located at spaced apart points in said first portion and which extend downwardly from said planar portion a distance which is greater than the thickness of said topsheet (**4**), the walls of said tubular passageways (**5**) being composed of portions of said topsheet that have been deformed downwardly in relation to said planar portion, the lower end of each tubular passageway (**5**) having a ragged edge contour,

(B) a meshy sheet (**3**) composed of hydrophobic plastic film having an upper surface and a lower surface, said film having been treated with a surfactant to make it hydrophilic, said meshy sheet (**3**) being split into a plurality of spaced apart fibers (**6**) that define between them a plurality of mesh openings that are smaller than the openings in the lower ends of each tubular passageway (**5**), the upper surface of said meshy sheet (**3**) being bonded integrally to the lower ends of each tubular passageway (**5**) so that said fibers (**6**) will extend across the lower ends of said tubular passageways (**5**) to thereby divide each of said lower openings into a plurality of smaller openings, and

(C) an absorbent core (**1**) having an upper surface and a lower surface, said upper surface being covered by the lower surface of said meshy sheet (**3**).

5,387,210

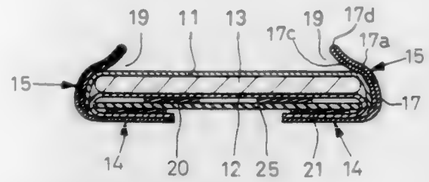
SANITARY NAPKIN

Masaki Murakami, Kawanoe, Japan, assignor to Uni-Charm Co., Ltd., Ehime, Japan

Filed Jun. 15, 1992, Ser. No. 859,739

Int. Cl.[6] A61F *13/15, 13/20*

U.S. Cl. 604—396 **5 Claims**



1. A sanitary napkin comprising

(A) a liquid-permeable topsheet (**11**),

(B) a liquid-impermeable backsheet (**12**),

(C) a liquid absorbent core (**13**) sandwiched therebetween,

(D) spaced apart flaps (**15**) extending outwardly from opposite side edges of the said absorbent core, each of said flaps (**15**) comprising

(a) a pair of first flap sections that extends laterally outwardly from the sides of said absorbent core (**13**), each said first flap section comprising a first outer extension (**12***a*) of said backsheet (**12**) that is joined to an outer extension (**11***a*) of said topsheet (**11**),

(b) a pair of second flap sections in the form of a pair of wings (**14**) extending outwardly from opposite side edges of said first flap section at about the longitudinally central area of said core (**13**), each said wing (**14**) comprising a second outer extension of said backsheet (**12**) and an overlying liquid barrier backsheet (**17**),

said liquid barrier sheet (**17**) having an inner edge (**17***d*) and an outer edge, said inner edge (**17***d*) overlying said absorbent core (**13**) and being unbonded to either said first or second flap section, said outer edge being bonded to said second flap section, said barrier sheet (**17**) also being bonded to said first flap section along a bonding line (**18**) that is intermediate the said outer and inner edges of said barrier sheet (**17**) to thereby form a pocket area (**19**) underneath said barrier sheet (**17**) when said wing (**14**) are folded toward each other around the crotch area of the underpants of a user, and

(E) areas of adhesive (**21**) on the bottom surface of each wing (**14**) for bonding each wing to the underpants of a user.

5,387,211

MULTI-HEAD LASER ASSEMBLY

Vahid Saadatmanesh, Irvine, and Marvin P. Loeb, Huntington Beach, both of Calif., assignors to Trimedyne, Inc., Irvine, Calif.

Filed Mar. 10, 1993, Ser. No. 28,839

Int. Cl.[6] A61N *3/00*

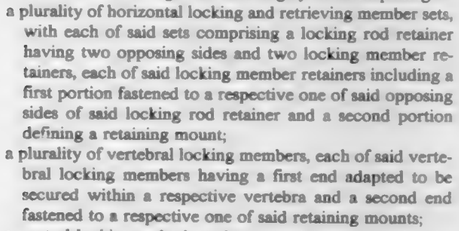
U.S. Cl. 606—10 **19 Claims**

17. A laser device for co-axial positioning of plural laser beams along a single axis, which device comprises:

at least two laser oscillators for producing a laser beam by each oscillator;

rotary reflector means positioned for intercepting at least one of said produced laser beams and directing the intercepted laser beam separately from, but along a single axis defined by, the other laser beam; and

control means for operating one of said oscillators to emit a pulse of said one laser beam only as a beam reflecting member rotates through a path interception region so as to reflect said one beam pulse along said single axis and for operating another of said oscillators to emit a pulse of said other laser beam only when said reflector means has rotated beyond said path interception region so that said other beam pulse passes unobstructed along said single axis.



5,387,212

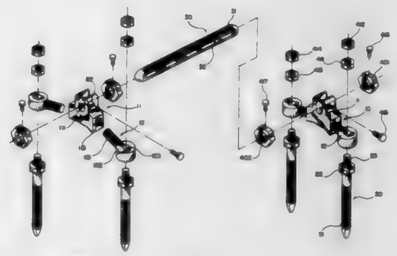
VERTEBRAL LOCKING AND RETRIEVING SYSTEM WITH CENTRAL LOCKING ROD

Hansen A. Yuan, 5066 Pine Valley Dr., Fayetteville, N.Y. 13066, and Chih-I Lin, 513 S. Golden Pardoe Dr., Diamond Bar, Calif. 10765

Filed Jan. 26, 1993, Ser. No. 9,043

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—61 **11 Claims**



1. A vertebral locking and retrieving system comprising:

a plurality of horizontal locking and retrieving member sets, with each of said sets comprising a locking rod retainer having two opposing sides and two locking member retainers, each of said locking member retainers including a first portion fastened to a respective one of said opposing sides of said locking rod retainer and a second portion defining a retaining mount;

a plurality of vertebral locking members, each of said vertebral locking members having a first end adapted to be secured within a respective vertebra and a second end fastened to a respective one of said retaining mounts;

a central locking rod adapted to extend between and to be mounted to said locking rod retainers; and

connecting means for fastening the second ends of said vertebral locking members to respective retaining mounts of said locking member retainers and for fastening said central locking rod to said locking rod retainers of said horizontal locking and retrieving member sets;

wherein a horizontal locking of a vertebra is achieved by said horizontal locking and retrieving member sets while a longitudinal locking of said vertebra is attained by said central locking rod connecting said horizontal locking and retrieving member sets.

5,387,213

OSSEOUS SURGICAL IMPLANT PARTICULARLY FOR AN INTERVERTEBRAL STABILIZER

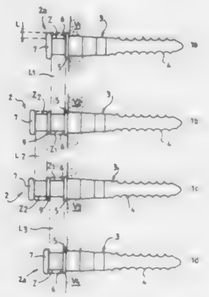
Francis H. Breard, Paris, and Henry Graf, Lyons, both of France, assignors to Safir S.A.R.L., Montrouge, France

Continuation of Ser. No. 830,936, Feb. 4, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 109,701

Claims priority, application France, Feb. 5, 1991, 91 01288

Int. Cl.[6] A61B *17/56;* **A61F** *2/08, 2/44*

U.S. Cl. 606—61 **17 Claims**



1. A surgical implant for connecting two supple ligaments to a vertebra, comprising:

an intra-osseous rod having a first end for implanting into a vertebra and an extra-osseous head extending outwardly of the vertebra,

said extra-osseous head having two stepped portions with peripheral surfaces defining two ligament retaining zones with sides,

each of said two ligament retaining zones having a shoulder forming an axial ligament abutment on the sides of said two ligament retaining zones closest to said first end,

two supple ligaments, each supple ligament having an initial tension and being retained between two different consecutive vertebrae,

one of said ligament retaining zones retains one of said supple ligaments axially spaced from the vertebra by the corresponding shoulder,

the other of said ligament retaining zones retains the other of said supple ligaments axially spaced from the one supple ligament by the corresponding shoulder, and

wherein said shoulders prevent progressive wear of said supple ligaments due to friction with the vertebrae and each other, so that the initial tension of the ligaments on the extra-osseous head is maintained and anatomical defects are corrected without impeding natural movement of the vertebrae.

5,387,214

BOLT FOR BEING DRIVEN INTO BONE TISSUE

Philipp R. Kropf, Chliwisstrasse 21, CH-8142 Uitikon, and Albert Geisser, Stationsstrasse 33, CH-6373 Ennetbürgen, both of Switzerland

Filed Sep. 10, 1993, Ser. No. 119,612

Claims priority, application Switzerland, Sep. 23, 1992, 2971/92

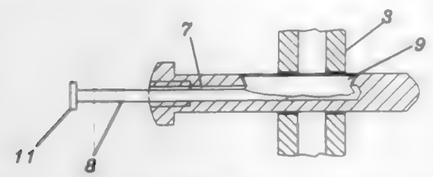
Int. Cl.[6] A61B *17/58*

U.S. Cl. 606—64 **11 Claims**

1. A combination of bone-fixing elements comprising an intramedullary nail having a transverse aperture therein and therethrough and a cooperating locking bolt, said locking bolt having a head portion and shank means for extending into and through said aperture at an angle to said intramedullary nail, said locking bolt comprising means for enlarging a diameter of at least a part of said shank means when said shank means is

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present in and extends transversely through said aperture, thereby to lock said bolt in said aperture in said intramedullary



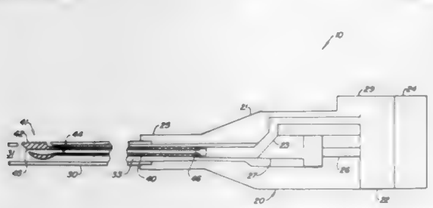
nail and to lock said intramedullary nail in place in a bone when located therein.

5,387,215

SURGICAL INSTRUMENT FOR CUTTING HARD TISSUE AND METHOD OF USE

Michael G. Fisher, Folsom, Calif., assignor to Sierra Surgical Inc., Rancho Cordova, Calif.

Filed Feb. 12, 1992, Ser. No. 834,408
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—79 4 Claims



1. A surgical instrument for cutting and removing medium to hard body tissue such as cartilage and bone from a joint region or similar restricted interior space within a body, said instrument comprising:

a) cutting means having a first end and a second end, said cutting means provided at the first end with a cutter comprising a blade terminally positioned and a rasping pad rearward of the blade, said cutting means further provided with an axial conduit terminating in a plurality of openings on or proximate to the cutter;

b) drive means connected to the second end of said cutting means, said drive means operative to move the cutter in a linearly reciprocating fashion to cut away pieces of tissue; and

c) vacuum means operative to produce a suction force at the openings of the axial conduit of said cutting means for removing cut away tissue pieces from the interior space.

5,387,216

INTRAMEDULLARY BASED INSTRUMENT SYSTEMS FOR TOTAL KNEE REVISION

Thomas S. Thornhill, 8 Main St., Dover, Mass. 02030, and Michael B. Martyn, 63 Circuit St., Norwell, Mass. 02061

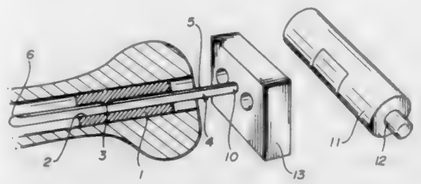
Filed Feb. 18, 1993, Ser. No. 18,978
Int. Cl.[6] A61F *5/04*
U.S. Cl. 606—88 5 Claims

1. An instrument for use in preparing bone for receipt of a prosthesis comprising:

a) a rod having a longitudinal length, a distal end and a proximal end and a pre-determined diameter;

b) a slot formed in the outer surface of said rod and extending along the longitudinal length of said rod from the proximal end to a position near the distal end and terminating short of the distal end of said rod at a slot distal end, and at the distal end of said slot, said slot extends transversely about the circumference of said rod to a position approximately opposite the longitudinally extending portion of said slot and then extends along a pre-determined length back towards the proximal end of said rod;

c) a bearing having pre-determined outer diameter and defining an inner bore of predetermined diameter for receipt of said rod;



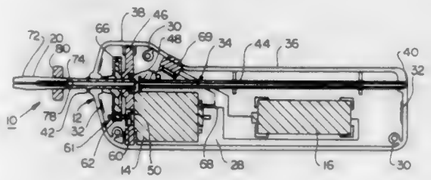
d) a follower formed on the inner surface of said bearing for receipt within the slot of said rod for guiding said bearing along the length of said rod.

5,387,217

DISPOSABLE BONE WIRE DRIVER

Frank Sefcik, 701 Westmont Dr., and Ranbir Singh, 542 Whiteoak St., both of Asheboro, N.C. 27203

Filed Feb. 11, 1993, Ser. No. 16,424
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—103 12 Claims



1. A disposable wire driver comprising:

(a) a casing having a front end and a back end, the front end having a front opening;

(b) a wire passageway in the casing communicating with the front opening, and aligned therewith to receive a wire;

(c) a motor within the casing operatively associated with the wire passageway;

(f) a battery non-removably enclosed within the casing and coupled to the motor for selectively supplying the motor with electricity;

(g) a collet extending from the front opening and aligned with the wire passageway; and

(h) a pinion-and-gear assembly having a pinion connected to the motor and a gear operatively connected to the collet, the pinion-and-gear assembly being arranged for rotating the collet.

5,387,218

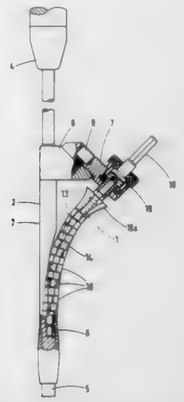
SURGICAL INSTRUMENT FOR SHAPING A BONE

Jayantilal M. Meswania, Middlesex, United Kingdom, assignor to University College London, London, United Kingdom

PCT No. PCT/GB91/02159, § 371 Date Feb. 23, 1993, § 102(e) Date Feb. 23, 1993, PCT Pub. No. WO92/10138, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 5, 1991, Ser. No. 910,017
Claims priority, application United Kingdom, Dec. 6, 1990, 9026592
Int. Cl.[6] A61F *2/46*
U.S. Cl. 606—80 10 Claims

1. A surgical instrument for shaping a bone or cavity which comprises a curved rod whose curvature corresponds in one

plane to that of a desired surface to be shaped for said bone or cavity, a plurality of cutting heads, each of which having a plurality of cutting surfaces, said cutting heads being individually and sequentially mounted on said rod lengthwise thereof



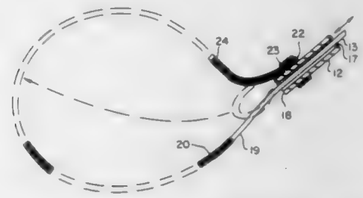
so as to be rotatable thereon and to provide said cutting surfaces lengthwise of the rod, said cutting heads being drivably interconnected so that rotation of one of said heads causes a head adjacent to said one of said heads to rotate.

5,387,219

MEDICAL RETRIEVAL SNARE WITH COIL WRAPPED LOOP

Alan H. Rappe, Sun Prairie, Wis., assignor to Target Therapeutics, Fremont, Calif.

Continuation of Ser. No. 950,263, Sep. 23, 1992, abandoned. This application Dec. 30, 1993, Ser. No. 175,500
Int. Cl.[6] A61B *19/00, 17/22*
U.S. Cl. 606—108 12 Claims



1. A medical retrieval device for capturing and removing a body from a site within a vessel comprising:

(a) a first elongated member having a proximal end, a distal end, and a lumen extending therebetween, said first elongated member being capable of being advanced through the vessel to the site of the body; and

(b) a second elongated member having a proximal end and a distal end that is received through the lumen of the first elongated member with the distal end of the second elongated member extending distally of the distal end of the first elongated member and being looped back and affixed to the distal end of the first elongated member to form a loop whose size may be adjusted by longitudinal movement of the second elongated member relative to the first member;

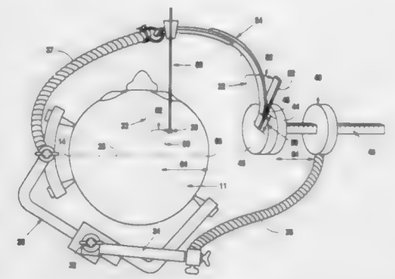
said second elongated member having (i) a flexible proximal section between about 50–250 cm in length and having an outer diameter of between about 10–40 mils, (ii) a more flexible intermediate section having a length between about 20–60 cm and having a diameter of between about 4–20 mils, and (iii) a most flexible distal end section having a length between about 1–10 cm and having a diameter of between about 2–6 mils; at least a portion of said distal end section being wrapped with coil.

5,387,220

STEREOTACTIC FRAME AND LOCALIZATION METHOD

Maohaven Pisharodi, 942 Wild Rose La., Brownsville, Tex. 78520

Filed Jun. 15, 1993, Ser. No. 77,026
Int. Cl.[6] A61B *19/00*
U.S. Cl. 606—130 31 Claims



1. A method of stereotactic localization of a target point in a patient's head comprising the steps of:

a. establishing a first orbitomeatal line on a first side of a patient's head, said first orbitomeatal line extending from a first orbital ridge to a center point of a first external auditory meatus;

b. establishing a second orbitomeatal line on a second side of said patient's head, said second orbitomeatal line extending from a second orbital ridge to a center point of a second external auditory meatus;

c. establishing an orbitomeatal plane, said orbitomeatal plane formed by connecting said first orbitomeatal line and said second orbitomeatal line;

d. establishing a central axis in said orbitomeatal plane, said central axis formed by connecting said center points of said first external auditory meatus and said second external auditory meatus;

e. establishing a vertical plane perpendicularly intersecting said orbitomeatal plane along said central axis;

f. using said orbitomeatal plane, said vertical plane, and said central axis to form a spherical coordinate system to locate said target point in said patient's head.

5,387,221

SET OF TOOLS FOR SUTURING IN DEEP SURGICAL APERTURES OR BODY CAVITIES

Therkel Bisgaard, Ahornvej 3, DK-8370 Hadsten, Denmark

PCT No. PCT/DK92/00010, § 371 Date Jul. 13, 1993, § 102(e) Date Jul. 13, 1993, PCT Pub. No. WO92/12674, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 14, 1992, Ser. No. 87,762
Claims priority, application Denmark, Jan. 17, 1991, 0081/91
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 10 Claims

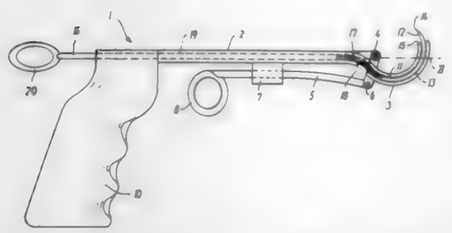
1. A set of tools for suturing in deep surgical apertures or body cavities, said set comprising:

a needle driving device having an elongated needle holder support member and a curved needle holder with a curved channel for accommodating a curved surgical needle provided with a thread, said needle holder being arranged at one end of the elongated needle holder support member, said needle driving device further including an elongated rod having a flexible foremost end attached to an

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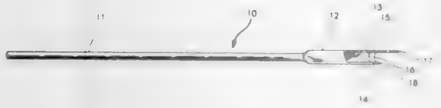
end thereof for driving the needle out of the needle holder and being arranged within said elongated needle holder support member, and

a gripping member for gripping and extracting the needle into a position outside the surgical aperture or body cavity and including an elongated support member, wherein the needle holder is mounted pivotally at said one end of the elongated needle holder support member, actuating means for pivoting the needle holder and the flexible foremost



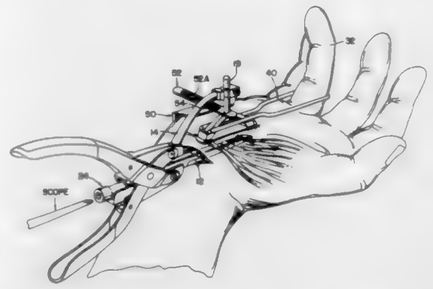
end of the elongated rod are provided at an opposite end of the elongated needle holder support member, and wherein the set of tools further comprises a thread conducting member having an elongated thread guide support member with two prongs arranged in a V-shape at one end thereof and a handle is provided at an opposite end thereof, and a thread guide is provided in a free end of each of the prongs and comprises means to guide said thread in the free end of each prong.

5,387,222
CARPAL TUNNEL TOME AND CARPAL TUNNEL RELEASE SURGERY
James W. Strickland, 7979 S. 1000 East, Zionsville, Ind. 46077
Filed May 14, 1993, Ser. No. 61,855
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—167 9 Claims



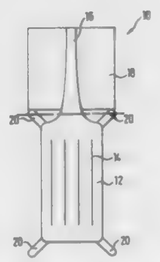
1. A method of performing carpal tunnel release surgery comprising the steps of:
making an incision in the patient's palm adjacent the distal edge of the transverse carpal ligament;
retracting the incision until the distal portion of the transverse carpal ligament is visable;
providing a carpal tunnel tome having a blade shielded on its ends by a pair of blunt protuberances projecting away from the blade;
positioning a portion of the carpal tunnel tome in the incision so that protuberances straddle the transverse carpal ligament and the blade is positioned against the ligament;
advancing the carpal tunnel tome toward the patient's wrist until the transverse carpal ligament is completely divided; and
withdrawing the carpal tunnel tome from the patient.

5,387,223
INSTRUMENT FOR MESH CUTTING OF THE FLEXOR RETINACULUM
John M. Agee, 77 Scripps Dr., Sacramento, Calif., and Francis King, Sacramento, Calif., assignors to John M. Agee, Sacramento, Calif.
Filed Sep. 24, 1993, Ser. No. 126,257
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—186 31 Claims



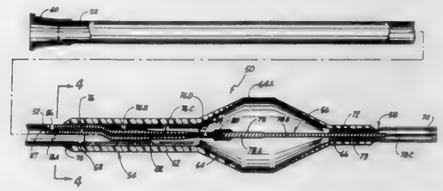
1. An instrument for selective cutting of the transverse carpal ligament of a patient, the instrument comprising:
(a) a plurality of spaced-apart teeth members supported on a first arm member; wherein said teeth members are in spaced-apart rows on said first arm member;
(b) protector means carried by said first arm member for shielding said teeth members; wherein said protector means is retractable from said teeth members;
(c) a press member carried by a second arm member in opposing relation to said teeth members; and
(d) handle means for selectively moving said teeth members and said press member towards each other; wherein said first and second arm members are connected to said handle means.

5,387,224
ADHESION PROPHYLAXIS
Kurt Semm, Kiel, Germany, assignor to WISAP Gesellschaft fur wissenschaftlichen Apparatebau, Sauerlach, Germany
Filed Nov. 18, 1992, Ser. No. 976,930
Claims priority, application Germany, Nov. 19, 1991, 4138100
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—191 15 Claims



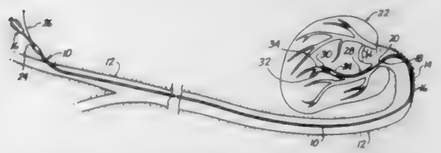
1. A mechanical adhesion prophylaxis adapted for being rolled up onto a slotted applicator and for being unrolled for placing inside a closed body cavity during endoscopic abdominal surgery comprising at least two sheets interconnected at least in a marginal area thereof, forming an inflatable, cushion-like sleeve (**12**), an inflating area (**16**) for inflating the sleeve (**12**) located on the sleeve (**12**), at least one fixing area (**20**) for fixing the sleeve (**12**) to body tissue of a body cavity, to which the adhesion prophylaxis (**10**) is to be applied, and a for folding the adhesion prophylaxis line at which the adhesion prophylaxis is rolled up onto the slotted applicator.

5,387,225
DILATATION CATHETER WITH TRANSITION MEMBER
Charles L. Euteneuer, St. Michael, and Peter T. Keith, Fridley, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.
Division of Ser. No. 769,901, Nov. 22, 1991, which is a continuation of Ser. No. 433,711, Nov. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 162,004, Feb. 29, 1989, Pat. No. 4,943,278. This application Dec. 12, 1991, Ser. No. 806,588
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—194 2 Claims



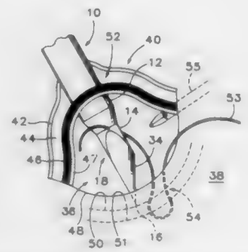
1. An angioplasty catheter comprising:
a shaft segment defined by a metal tube, the shaft having a proximal end and a distal end;
a balloon;
a thermoplastic shaft segment connected between the distal end of the shaft and the balloon;
the shaft segments having an inflation lumen defined therethrough to provide inflation pressure to the balloon;
a core member having varying flexibility along its length, part of the core member being disposed in the thermoplastic shaft segment and extending distally from a point of attachment proximate the distal end of said metal shaft through said balloon wherein the flexibility of said core member increases distally both within said thermoplastic shaft segment and said balloon; and,
a tubular member wherein the core member comprises a solid wire core attached to said tubular member and said tubular member includes an end which defines an opening to the exterior of the catheter shaft.

5,387,226
RAPID EXCHANGE CATHETER
Manouchehr Miraki, Aliso Viejo, Calif., assignor to Baxter International Inc., Deerfield, Ill.
Filed Jan. 14, 1994, Ser. No. 181,686
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—194 20 Claims



1. An elongate balloon dilatation catheter comprising:
a shaft portion having a proximal end and a distal end;
a mono-rail guide section adjacent said distal end of said shaft portion, said mono-rail guide section including an axial passage communicating with a guidewire port through which an elongate guide wire may pass to be exposed outwardly of said catheter proximally of said mono-rail guide section, said axial passage defining a mono-rail length for said catheter;
an expansible dilatation balloon positioned about said mono-rail guide section; and
a mono-rail sheath member slidably movable axially along said shaft portion proximal of said dilatation balloon, said sheath member comprising a proximal end, a distal end, and a guidewire port positioned between said proximal and distal ends;
wherein said sheath member is slidably movable along said shaft portion between a first position sheathing the guide wire proximally of said mono-rail guide section and cooperating therewith to effectively increase the mono-rail length of the catheter and a second position in which said sheath member port is aligned with said guidewire port of said shaft portion to allow the guidewire to be exposed outwardly of said catheter and said sheath member proximally of said aligned ports.

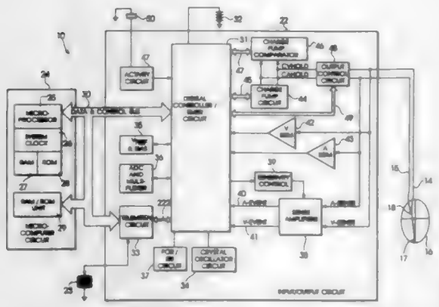
5,387,227
METHOD FOR USE OF A LAPARO-SUTURE NEEDLE
O. Drew Grice, 701 Newman Rd., New Bern, N.C. 27562
Filed Sep. 10, 1992, Ser. No. 944,205
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—222 25 Claims



1. A method for suturing muscle tissue of a patient at the site of a wound, comprising the steps of:
(a) attaching a suture to a needle having a distal end and a proximal end, gripping means adjacent the distal end and operating means adjacent the proximal end for actuating the gripping means to grip said suture, said suture being attached to said needle by said gripping means;
(b) forcing said needle through muscle tissue adjacent a first side of said wound so as to guide said suture therethrough;
(c) after said suture has been guided through said muscle tissue in step (b), releasing said suture from said needle using said operating means;
(d) forcing through muscle tissue adjacent a second side of said wound a needle having a distal end and a proximal end, gripping means adjacent the distal end and operating means adjacent the proximal end for actuating the gripping means to grip said suture;
(e) gripping said suture within the body of the patient using the needle used in step (d); and
(f) withdrawing the needle used in step (e) from said muscle tissue adjacent said second side of said wound so as to guide said suture from within the body of the patient therethrough.

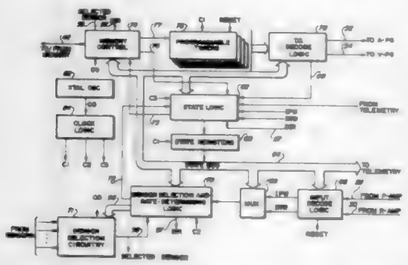
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5,387,228
CARDIAC PACEMAKER WITH PROGRAMMABLE OUTPUT PULSE AMPLITUDE AND METHOD
Michael B. Shelton, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Jun. 22, 1993, Ser. No. 81,911
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—11 6 Claims



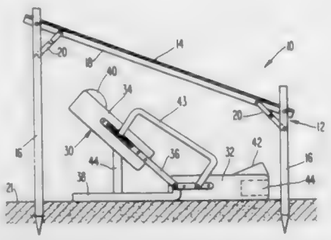
1. A method of operating a cardiac pacemaker having a battery and an output capacitor for storing a stimulation pulse voltage, said method comprising the steps of:
(a) monitoring said battery's depletion level;
(b) when said battery's depletion is below a predetermined level, activating a charging circuit to charge said output capacitor to a voltage proportional to said battery's voltage;
(c) when said battery's depletion exceeds said predetermined level, activating said charging circuit and a reference voltage comparator circuit to charge said output capacitor to a voltage proportional to a reference voltage.

5,387,229
MULTI-SENSOR CARDIAC PACEMAKER WITH SENSOR EVENT RECORDING CAPABILITY
John W. Poore, South Pasadena, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.
Filed Jan. 21, 1993, Ser. No. 7,648
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—18 16 Claims



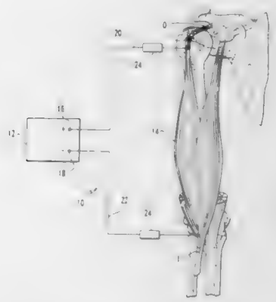
1. A method of determining an optimum sensor indicated rate (SIR) signal for use with a multi-sensor rate-responsive pacemaker implanted in a patient, said pacemaker having: a plurality of sensors, each being adapted to sense a physiologic-related parameter and to generate a physiological signal indicative of such sensed physiologic-related parameter; a sense amplifier that senses natural cardiac contractions; a pulse generator that selectively generates stimulation pulses on demand at a rate determined by the SIR signal; and a memory circuit, said method comprising the steps of:
(a) having the patient perform a specified exercise protocol;
(b) sampling each of the plurality of sensors to obtain a respective sampled physiological signal while the patient is performing the specified exercise protocol;
(c) generating a plurality of sensor byte signals, each sensor byte signal comprising respective sampled physiological signals appropriately time stamped to indicate when the sampled physiological signals were obtained relative to specified exercise protocol performed in step (b), and storing the sensor byte signals in the memory circuit;
(d) terminating the specified exercise protocol;
(e) downloading the stored sensor byte signals from the pacemaker memory circuit to an external programmer;
(f) extracting the physiological signals and time stamped information from the downloaded sensor byte signals, evaluating the extracted physiological signals in light of the time stamped information that indicates when the extracted physiological signals were obtained relative to the specified exercise protocol, and defining said SIR signal to be a specified function of said physiological signals; and
(g) uploading said specified function to the memory circuit of said pacemaker;
whereby said specified function thereafter defines said SIR signal.

5,387,230
SUNBATHING PROTECTION APPARATUS
Nathaniel Minor, 5835 Beaumont St., Philadelphia, Pa. 19143
Filed Oct. 22, 1993, Ser. No. 142,246
Int. Cl.[6] A61N *5/06*
U.S. Cl. 607—95 27 Claims



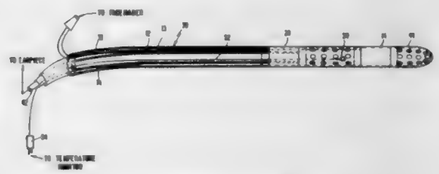
1. A sunbathing kit adapted for filtering any predetermined wavelength or wavelengths of light from passing therethrough; the sunbathing kit comprising:
frame means adapted for providing a rigid support structure;
interchangeable panel means removably engaging the frame means adapted for filtering the predetermined wavelength or wavelengths of light, wherein the interchangeable panel means comprises a plurality of separate panel members, with each panel member filtering a particular wavelength or wavelengths of light, whereby each panel member is adapted for being placed into engagement one at a time with the frame means by a user, with the frame means supporting the panel members on assembly, wherein the user chooses the particular panel member to be used depending on the wavelength or wavelengths of light which are desired to be filtered from passing therethrough and into contact with the user wherein each panel member is further capable of being removed by the user from the frame means following use of the device for disassembly.

5,387,231
ELECTROTHERAPY METHOD
Patsy Sporer, Box 90, Heufner Rd., Marble, Pa. 16334
Continuation of Ser. No. 918,831, Jul. 21, 1992, abandoned. This application Jun. 3, 1994, Ser. No. 253,616
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—48 26 Claims



1. An electrotherapy treatment method for influencing the relative state of contraction of selected muscles of a patient's anatomy comprising the steps of:
providing an electrical stimulus comprised of an electrical current of a continuously negative voltage and having superposed AC and DC components and the characteristics of negative polarity and a current value in the range of about 10 microamperes to about 100 microamperes, with said AC component having the further characteristic of a frequency in the range of about 0.01 hertz to about 150 hertz, and;
applying said electrical stimulus to such a patient's body at locations corresponding to insertion and origin portions of such muscles in a manner to pass said electrical current through such muscles from said insertion portion toward said origin portion thereof.

5,387,232
METHOD AND APPARATUS FOR ESOPHAGEAL PACING
Dennis R. Trailer, Tampa, Fla., assignor to Synchrotech Medical Corporation, Tampa, Fla.
Continuation-in-part of Ser. No. 531,418, May 31, 1990, Pat. No. 5,154,387. This application Oct. 8, 1992, Ser. No. 957,587
The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—124 14 Claims



1. An apparatus for continuously pacing the heart of a patient comprising:
a flexible catheter for insertion into the esophagus of said patient, said catheter having a proximal end and a distal end, said catheter comprising a hollow flexible exterior tube and a hollow flexible interior tube inserted into said exterior tube;
first and second pacing electrodes coupled to said catheter, said first pacing electrode being located closer to the distal end of said catheter than said second pacing electrode;
a pacing generator for generating electrical pulses used to pace the patient's heart, wherein each of said electrodes is of sufficient surface area to prevent injuring said patient's esophagus during continuous emergency pacing; and
a pair of electrical conductors located between said exterior tube and said interior tube, one of said pair being connected between said first pacing electrode and said pacing generator for conducting said pulses to said first pacing electrode and the other of said pair being connected between said second pacing electrode and said pacing generator for conducting said electrical energy between said second pacing electrode and said pacing generator.

5,387,233
INTRAVENOUS CARDIAC LEAD WITH IMPROVED FIXATION AND METHOD
Clifton A. Alferness, and John R. Helland, both of Redmond, Wash., assignors to InControl, Inc., Redmond, Wash.
Continuation-in-part of Ser. No. 2,138, Jan. 11, 1993, abandoned. This application Nov. 3, 1993, Ser. No. 147,330
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—126 18 Claims



1. An intravenous lead for use with a cardiac device implantable beneath the skin of a patient, said lead comprising:
an inner stylet coil;
an outer electrically insulative jacket coaxial with and overlying said inner stylet coil; and
an electrode overlying said electrically insulative jacket, said inner stylet coil being coiled for forcing at least a section of said lead into a coiled configuration.

5,387,234
MEDICAL ELECTRODE DEVICE
Jakub Hirschberg, Taeby, Sweden, assignor to Siemens-Elema AB, Solna, Sweden
Filed May 19, 1993, Ser. No. 63,569
Claims priority, application Sweden, May 21, 1992, 9201559
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—129 11 Claims

1. An implantable electrode device adapted for connection to a medical apparatus for delivering electrical energy in vivo to tissue, said electrode device comprising:
a catheter containing an electrical conductor, each of said catheter and electrical conductor having a first end and a second end and said catheter and electrical conductor having a connection contact disposed at said first ends; and
a flat, flexible electrode carrier consisting of electrically insulating material disposed at said second ends of said catheter and said electrical conductor, said electrode carrier containing at least one electrode conductor electrically connected to said electrical conductor and arranged

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in a predetermined path on said electrode carrier to define an electrode surface, said electrode carrier having an



opening at least partially surrounded by said predetermined path.

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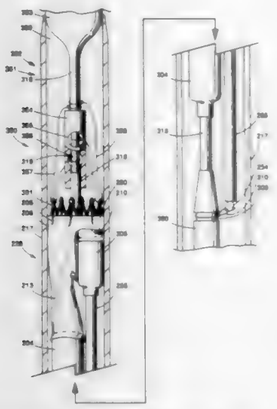
EXPANDABLE TRANSLUMINAL GRAFT PROSTHESIS FOR REPAIR OF ANEURYSM

Timothy A. Chuter, Pittsford, N.Y., assignor to Cook Incorporated, Bloomington, Ind.

Continuation-in-part of Ser. No. 868,795, Apr. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 782,696, Oct. 25, 1991, abandoned. This application Oct. 21, 1992, Ser. No. 959,758

Int. Cl.[6] **A61F** *2/06, 2/04;* **A61M** *29/02, 29/00*

U.S. Cl. 623—1 **17 Claims**



1. A transluminal arrangement comprising:

main container means containing in a compressed state a main spring assembly of a prosthesis assembly, said prosthesis assembly including a bifurcated endovascular graft having a main body and a first and a second limb extending therefrom, said main body including a main bore extending longitudinally therein and having a cranial orifice, said first limb including a first bore extending longitudinally therein, communicating with said main bore, and having a first caudal orifice, said second limb including a second bore extending longitudinally therein, communicating with said main bore and having a second caudal orifice, said main spring assembly radially expanding said main body of said graft to substantially conform said main body of said graft on an interior wall of a main lumen of a bifurcated lumen when said prosthesis assembly is positioned at a particular position in the bifurcated lumen and said main spring assembly is released from said compressed state, the bifurcated lumen including the main lumen and a first and a second branch lumen communicating with and extending from the main lumen;

first container means separated from said main container means containing in a compressed state a first spring assembly of said prosthesis assembly, said first spring assembly radially expanding said first limb of said graft to substantially conform said first limb of said graft on an interior wall of the first branch lumen of the bifurcated lumen when said prosthesis assembly is positioned at the particular position in the bifurcated lumen and said first spring assembly is released from said compressed state;

retainer means positioned in said main and said first bore of said graft for retaining said prosthesis assembly at the particular position in the bifurcated lumen while said main container means is withdrawn from said prosthesis assembly releasing said main spring assembly from said compressed state.

5,387,236

VASCULAR PROSTHESIS, MANUFACTURING METHOD OF THE SAME, AND SUBSTRATE FOR VASCULAR PROSTHESIS

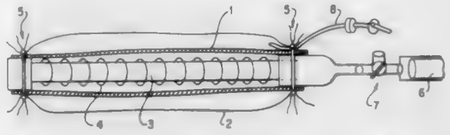
Yasuhara Noishiki, Tottori, and Teruo Miyata, Tokyo, both of Japan, assignors to Koken Co., Ltd., Tokyo, Japan

Division of Ser. No. 508,618, Apr. 13, 1990, Pat. No. 5,171,261. This application Dec. 10, 1992, Ser. No. 988,777

Claims priority, application Japan, Apr. 17, 1989, 1-95238; Dec. 28, 1989, 1-338543

Int. Cl.[6] **A61F** *2/06*

U.S. Cl. 623—1 **4 Claims**



1. The process for manufacturing a laminated vascular prosthesis substrate comprising the steps of:

providing a laminated vascular prothesis having a lower porosity layer impermeable to passage of one of biological tissues fragments, vascular cells and combinations thereof and a higher porosity layer permeable to passage of the one of biological tissues, fragments, vascular cells and combinations thereof,

providing a pressure differential between an inside and an outside of the laminated vascular prosthesis; and

introducing a dispersed solution of the one of biological tissue fragments, vascular cells and combinations thereof to a higher pressure side of the substrate and depositing and capturing the one of tissue fragments, vascular cells and combinations thereof between the lower and higher porosity layers.

5,387,237

BIOARTIFICIAL PANCREAS

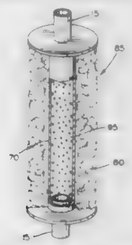
Ronald L. Fournier, Sylvania; Peter J. Goldblatt, Toledo; James M. Horner, Sylvania, and Jeffrey G. Sarver, Rossford, all of Ohio, assignors to The University of Toledo, Toledo, Ohio

Continuation-in-part of Ser. No. 922,562, Jul. 30, 1992, abandoned. This application Jul. 21, 1993, Ser. No. 94,946

Int. Cl.[6] **A61F** *2/02, 2/00;* **A61M** *37/00, 5/32*

U.S. Cl. 623—11 **9 Claims**

1. A bioartificial organ for implantation into an animal comprising a housing having a first enclosed chamber containing metabolically active cells, at least one vascularizing chamber having an opening on one end thereof that provides access to surrounding tissue, inlet means for supplying cells to the first chamber, outlet means for removing cells from the first chamber, and a semi-permeable membrane separating and in communication with the first chamber and vascularizing chamber, the membrane providing immunoprotection of the active cells from the vascular area within the vascularizing chamber and around the implanted device, the membrane allowing passage of small molecules including nutrients and waste products between the first and vascularizing chambers and not allowing passage of agents of an immune system to the first chamber, and a biocompatible fibrous or porous foam matrix having fibers or foam in the vascularizing chamber to provide a neovascular formation region for enhancing growth of small capillaries for providing efficient mass transfer of substances between first chamber and the capillaries in the vascularizing chamber, the fibrous or foam matrix having a porosity of about 40 to 95 percent and interconnecting passageways of about 10 to 120 microns, the fibers and foam being of an organic material or inorganic material, the organic material composed principally of carbon, oxygen, and hydrogen atoms, or sulfur atoms, oxygen atoms and hydrogen atoms, or carbon atoms, oxygen atoms, hydrogen atoms and nitrogen atoms, the inorganic materials being composed of at least one of carbon, titanium, silica, sodium, calcium, strontium, magnesium, zinc and boron atoms, there being baffle means in the first enclosed chamber for assisting in even distribution of the metabolically active cells.



5,387,238

Patent Not Issued For This Number

5,387,239

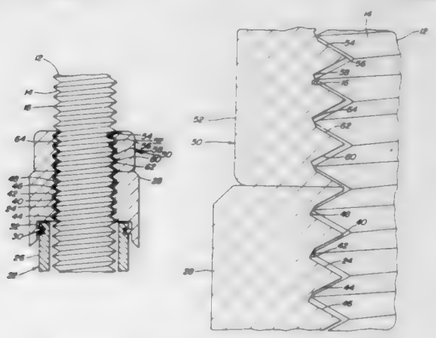
ADJUSTABLE LENGTH PROSTHETIC IMPLANT

Peter T. Bianco, Newton, Mass., and Roy S. Boggan, Cordova, Tenn., assignors to Wright Medical Technology, Inc., Arlington, Tenn.

Filed Apr. 19, 1993, Ser. No. 49,756

Int. Cl.[6] **A61F** *2/30*

U.S. Cl. 623—18 **7 Claims**



1. An adjustable length prosthetic implant for attaching to a bone, said implant comprising: an axially extending stem including a male screw having a helical thread crest; stem fixation means having an end portion shaped, sized and configured to extend into bone for mounting the stem to the bone; an implant body axially receiving the stem and including a female screw threadably engaging the male screw, the female screw having a helical wedge ramp for engaging the thread crest of the male screw; body fixation means for mounting the implant body at a location spaced from the stem fixation means; and locking means reactive between the implant body and the stem for forcibly maintaining the thread crest in pressed contact with the wedge ramp to lock the stem in an axially adjusted position relative to the implant body while uniformly distributing stresses through the male screw and the female screw.

5,387,240

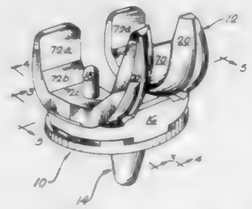
FLOATING BEARING PROSTHETIC KNEE

Lawrence Pottenger, and Louis F. Draganich, both of Chicago, Ill., assignors to Arch Development Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 613,331, Nov. 14, 1990, abandoned. This application Nov. 16, 1992, Ser. No. 976,803

Int. Cl.[6] **A61F** *2/38*

U.S. Cl. 623—20 **26 Claims**



1. An implantable prosthetic device performing a joint between a pair of human or animal bones, comprising:

first fixation means adapted for fixation to one of the bones;

a first bearing surface on said first fixation means, said first bearing surface including at least two, convex, laterally adjacent, arcuate bearing portions of differing radii;

second fixation means adapted for attachment to the other bone;

a second bearing surface on said second fixation means, said second bearing surface lying in a plane generally perpendicular to a longitudinal axis of said second fixation means; and

a bearing element between said first bearing surface and said second bearing surface and having a complementary arcuate surface on one side for engaging the first bearing surface and an opposite surface for engaging said second bearing surface in a predefined range of anterior-posterior sliding engagement and in independently rotatable engagement with said second bearing surface.

5,387,241

RIBBED AUGMENT FOR A PROSTHETIC IMPLANT

Kevin B. Hayes, Milford, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Jan. 28, 1994, Ser. No. 190,744

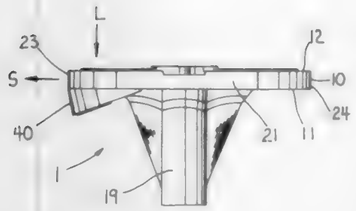
Int. Cl.[6] **A61F** *2/38*

U.S. Cl. 623—20 **6 Claims**

1. A prosthetic joint implant for replacing a portion of a bone having a base member with a first surface for positioning toward a surface of the bone, said first surface comprising a shallow recessed portion and a raised peripheral rim at an outer edge of the recessed portion, said rim having an inner shoulder, and having a separate augment member having a first face adapted to be selectively positioned against the first surface of the base member and wherein the first face includes a peripheral outer edge thereabout and an elongated raised rib having an outer shoulder, which abuts the inner shoulder of the raised rim of the base member, and wherein the elongated raised rib

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is spaced inwardly from the peripheral outer edge to form a lower border portion between the peripheral outer edge of the first face and the outer shoulder of the rib, and wherein the raised rib extends only about halfway or less around the peripheral outer edge of the augment member, wherein the first



surface of the base member includes an anterior side and an oppositely located posterior side and first and second connecting sides,and wherein the rib of the augment extends around only one of the first and second connecting sides of the first surface of the base member when selectively positioned thereagainst.

5,387,242

Patent Not Issued For This Number

5,387,243

METHOD FOR CONVERTING A CEMENTABLE IMPLANT TO A PRESS FIT IMPLANT

Thirumalai Devanathan, Warsaw, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

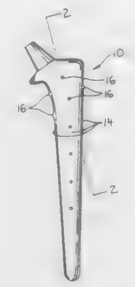
Filed Nov. 23, 1992, Ser. No. 975,757
Int. Cl.[6] A61F *2/28*
U.S. Cl. 623—23 3 Claims

1. A method of converting an implant intended for cemented fixation to a bone to an implant intended for non-cemented fixation to a bone, said method comprising the steps of:

a) providing an orthopaedic implant having generally smooth outer walls, said implant being configured for insertion within a cement filled intramedullary canal;

b) providing a porous pad, said pad having a solid metal layer with a porous layer bonded to one side of the metal layer, a second side of the metal layer carrying a thin film of thermoplastic polymer;

c) placing said porous pad in contact with one of the generally smooth walls of said orthopaedic implant configured for insertion within a cement filled intramedullary canal such that said thin film of thermoplastic polymer is between the metal plate and the wall of the implant;



d) heating said implant and said porous pad to cause said thin film of thermoplastic polymer to become molten, wherein said thermoplastic polymers exhibit adhesive characteristics when molten to bond said porous plate to said implant; and

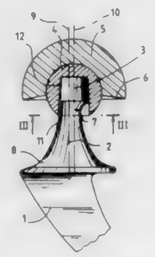
e) cooling said implant with porous pads bonded thereto, wherein said implant with porous pad attached is configured for a press fit insertion within a non-cement filled intramedullary cavity.

5,387,244

ARTIFICIAL HIP JOINT

Francis Breard, Paris, France, assignor to Science et Medecine (SEM), Montrouge, France

Filed Feb. 25, 1993, Ser. No. 23,205
Int. Cl.[6] A61F *2/34*
U.S. Cl. 623—23 18 Claims



1. An artificial hip joint adapted for placement between a femur and a pelvis having a large rotational clearance on a medial side of the joint, comprising:

an acetabular cup for anchoring to the pelvis;

a femoral prosthesis having a proximal end and an elongated stem for anchoring to the femur; a neck extending outwardly from said proximal end and terminating in an end part opposite said proximal end of said stem; and a head portion configured to be supported on said end part and shaped to be pivotally mounted within said acetabular cup, said head and said end part having a common central axis, said neck including a surface on the medial side that is laterally offset toward said common central axis in a direction away from the medial side; and

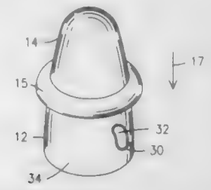
wherein said acetabular cup is rotatable in the medial direction to a maximum rotated position in which it contacts said laterally offset surface with said stem fully anchored in the femur.

5,387,245

INFLATABLE PROSTHESIS LINER

John N. Fay, and Cheryl A. Fay, both of 1120 Boca Ciega Isle, St. Petersburg, Fla. 33706

Continuation-in-part of Ser. No. 814,969, Dec. 23, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 40,237
Int. Cl.[6] A61F *2/80, 2/76*
U.S. Cl. 623—37 4 Claims



1. A method for cushioning the contact between a prosthesis socket and an amputation stump received therewithin, comprising the steps of:

first placing a flexible, elastomeric inner liner in overlying relation to the amputation stump;

next delineating at least one region on said inner liner where a bladder is required;

next circumscribing said delineated region with an application of adhesive that has a narrow width with respect to its extent;

next placing a flexible, elastomeric outer liner into overlying relation to said inner liner so that said adhesive is positioned between said inner and outer liners and bonds them together along the extent of said adhesive when it dries, thereby forming a bladder bounded by said adhesive; and

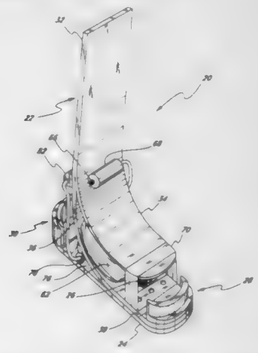
next placing a valve means in fluid communication with said bladder so that air can be selectively added to the bladder and withdrawn therefrom.

5,387,246

PROSTHETIC SKI LEG

Van L. Phillips, 5499 Maravillas, Rancho Santa Fe, Calif. 92067

Continuation-in-part of Ser. No. 977,654, Nov. 17, 1992, which is a continuation of Ser. No. 337,374, Apr. 13, 1989, Pat. No. 5,181,932, and a continuation-in-part of Ser. No. 662,783, Feb. 28, 1991, Pat. No. 5,290,319. This application Feb. 12, 1993, Ser. No. 17,245
Int. Cl.[6] A61F *2/66*
U.S. Cl. 623—56 33 Claims



28. A prosthetic foot for use by an amputee, said prosthetic foot being adapted to be secured directly to a ski for use in skiing, comprising:

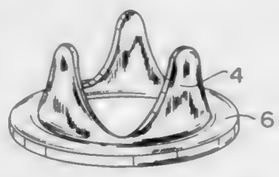
a prosthetic foot member extending from a rearward heel section to a forward toe section, said foot member adopted to be operatively secured to the amputee's stump, wherein a first ski binding mount is secured to said heel section, and a second ski binding mount is secured to said toe section, said binding mounts functioning to secure said prosthetic foot directly to ski bindings such that the need for a ski boot to secure said prosthetic foot to a ski is eliminated.

5,387,247

PROSTHETIC DEVICE HAVING A BIOCOMPATIBLE CARBON FILM THEREON AND A METHOD OF AND APPARATUS FOR FORMING SUCH DEVICE

Franco Vallana, and Pietro Arru, both of Turin, Italy, assignors to Sorin Biomedia S.p.A., Saluggia, Italy

Continuation of Ser. No. 391,658, Aug. 8, 1989, abandoned, which is a continuation of Ser. No. 80,205, Jul. 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 801,753, Nov. 26, 1985, abandoned, which is a continuation of Ser. No. 799,651, Nov. 20, 1985, abandoned, which is a continuation of Ser. No. 545,292, Oct. 25, 1983, abandoned. This application Jan. 3, 1990, Ser. No. 462,849
Int. Cl.[6] A61F *2/54, 2/68*
U.S. Cl. 623—66 13 Claims



1. A prosthetic device comprising a substrate, and a triode cathodic sputtered, essentially continuous, uniform coating of biocompatible turbostratic carbon having a density of at least 2.2 g/cm^3 and a thickness of from about 0.2 to about 0.8 microns deposited directly on and firmly adherent to said substrate without degradation of said substrate.

5,387,248

Patent Not Issued For This Number

5,387,249

SELF-CONTAINED ADJUSTABLE CHEMICAL INJECTION DEVICE

Vincent Wiecorek, 5415 SE. 52 Ave., Stuart, Fla. 34997

Filed May 10, 1993, Ser. No. 60,029
Int. Cl.[6] E03D *9/03*
U.S. Cl. 4—225.1 4 Claims

1. A chemical injection device for use with a toilet having a tank and a bowl, the tank including a refill tube and an overflow pipe, the chemical injection device in combination therewith comprising:

a container receptive to a chemical for treating refill water entering the bowl from the overflow pipe, said container having an inlet near a lower end thereof and having an

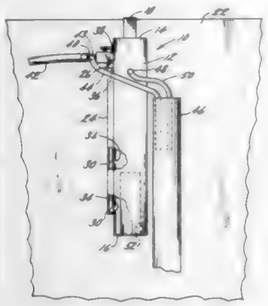
VOL 1171 ISS 1 FE 7 1995 UMI

outlet, said outlet in communication with the overflow pipe of the tank;

bracket means mounted to said container for attaching said container to the tank;

a conduit disposed on and extending longitudinally along a substantial portion of said container, said conduit connected at one end thereof to said inlet of said container:

valve means mounted directly to the external surface of a sidewall of said container, said valve means having an inlet connected to the refill tube of the tank and an outlet



connected to the other end of said conduit, said valve means for regulating flow from the refill tube through said conduit and into said container; and

bypass means for bypassing said valve means and said container wherein a portion of flow from the refill tube flows directly into the overflow pipe;

whereby said valve means provides for adjustment of a volume of the chemical entering the bowl from the overflow pipe without restricting a total volume of refill water entering the bowl from the overflow pipe.

5,387,250

FASTENING MEMBER FOR FASTENING A COVER AND TOOL THEREFOR

Peter Sølbeck, Rungsted Kyst, Denmark, assignor to Polysheet A/S, Herlev, Denmark

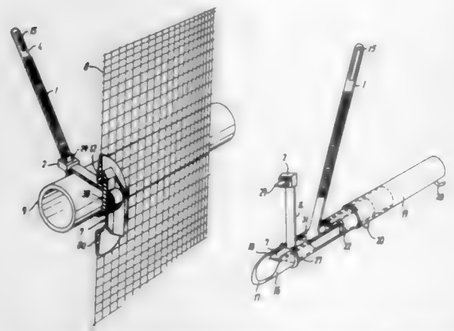
PCT No. PCT/DK91/00092, § 371 Date Sep. 4, 1992, § 102(e) Date Sep. 4, 1992, PCT Pub. No. WO91/14842, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 25, 1991, Ser. No. 920,600

Claims priority, application Denmark, Mar. 27, 1990, 780/90; European Pat. Off., Sep. 20, 1990, 90610062

Int. Cl.[6] B65D *63/00;* **B26F** *1/00*

U.S. Cl. 24—16 PB **22 Claims**



1. A fastening member for fastening a protecting or shielding cover to a supporting structure, comprising:

an anchor pin (7) adapted for insertion through the cover from the surface of the cover (8) facing the supporting structure, and a flexible, flat strap (1) of elastic material which has two major surfaces and is connected with the anchor pin (7), and said strap having a clamping member at a first end with a slit or opening (3) formed therein in which a second or free insertion end (4) of the strap may be inserted, said strap having on at least part of its length a contoured surface for preventing the strap from being retracted after insertion through said slit or opening, said anchor pin (7) being arranged to extend substantially transverse with respect to said strap at a distance (a) from said clamping member (2) conforming to a dimension of a member of the supporting structure, the anchor pin (7) being designed with two uniform parts positioned on opposite sides of the strap, and said uniform parts being connected with an intermediate member having opposite external and internal lateral surfaces extending essentially at right angles to said major surfaces of said strap and said opposite external and internal lateral surfaces are firmly connected with a first part of the strap which includes the clamping member and a second part of the strap which includes the free end of the strap, respectively, and the intermediate member further defining an opening suitable for retracting the free strap end to allow both parts of the strap to extend from the external lateral surface of the intermediate member.

5,387,251

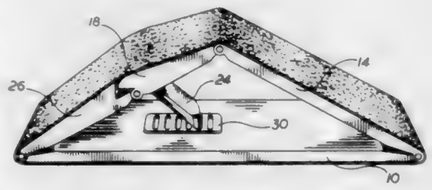
ENDLESS BELT SANDING BLOCK

Evan D. Rouse, 31 Wildwood La., Perkinston, Miss. 39573

Filed May 2, 1994, Ser. No. 237,006

Int. Cl.[6] B24D *15/00*

U.S. Cl. 451—513 **20 Claims**



1. An endless belt sanding block comprising:

(a) a plurality of supports of sufficient width, combined length, and rigidity for supporting the width and circumference of an endless sanding belt;

(b) a plurality of hinge means for connecting said supports end to end so as to form a multiply sided closed loop which is foldable about said hinge means to a predetermined configuration suitable for placement inside said endless sanding belt;

(c) a leverage means located on the outer surface of said closed loop with the fulcrum at one of said hinge means wherein said leverage means begins prying outward against said endless belt after said closed loop is unfolded from a concave position to a convex position at the fulcrum of said leverage means; whereby the tension on said endless belt varies according to what degree the fulcrum is unfolded in the convex direction; and

(d) a brace means for bracing one of said supports against another of said supports in order to secure said closed loop while said endless sanding belt is held under tension.

5,387,252

CRYOGENIC REFRIGERATOR

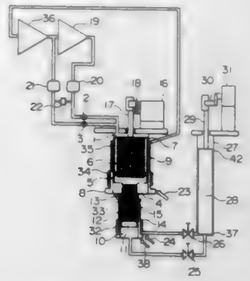
Masashi Nagao, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 39,816

Claims priority, application Japan, Mar. 31, 1992, 4-076864; Mar. 17, 1993, 5-056817

Int. Cl.[6] F25B *9/00*

U.S. Cl. 62—6 **4 Claims**



1. A cryogenic refrigerator comprising: a first compressor; a first expander having at least one accumulator using an accumulating material comprising a rare earth alloy or compound which has a large specific heat at 10 K. or below or an accumulating material comprising helium; a second expander which effects further expansion of a working fluid introduced thereto from an expansion space of the first expander; and a second compressor which comprises the working fluid;

wherein the second expander includes a displacement-type expander body, an inlet valve, an outlet valve, and a power absorption mechanism.

5,387,253

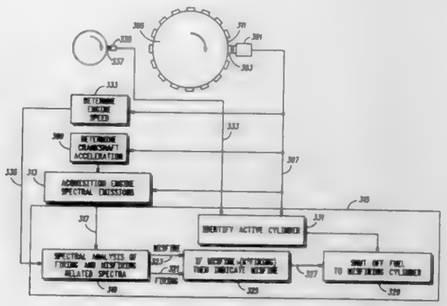
SPECTRAL MISFIRE DETECTION SYSTEM AND METHOD THEREFOR

Donald J. Remboski, Jr., Dearborn; Kevin J. Bush, Northville; John F. Foley, Novi; David Frankowski, Woodhaven, and Steven L. Plee, Brighton, all of Mich., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 28, 1992, Ser. No. 997,431

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—117.3 **32 Claims**



1. A system for detecting a misfire condition by interpreting acceleration activity of a running engine comprising:

means for measuring an acceleration of said running engine, and for providing a composite signal representative of said engine's acceleration;

acceleration discrimination means for receiving the composite signal provided by said means for measuring, and for providing a normal firing signal, corresponding to acceleration behavior attributable to a portion of the composite signal representative of a normal firing condition and, concurrent to the provision of the normal firing signal, for providing a misfire signal, corresponding to acceleration behavior attributable to another portion of the composite signal representative of a misfiring condition; and

comparison means for receiving the normal firing signal and the misfire signal, both signals provided by said acceleration discrimination means, and for providing a misfire indication when a magnitude of the misfire signal exceeds a magnitude of the normal firing signal.

5,387,254

HUMIDITY MEASURING DEVICE AND A HEAT COOKER EMPLOYING THE DEVICE

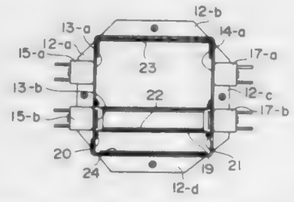
Haruo Matsushima, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 5, 1993, Ser. No. 27,076

Claims priority, application Japan, Mar. 6, 1992, 4-049230; May 11, 1992, 4-117118

Int. Cl.[6] G01N *29/02*

U.S. Cl. 73—24.04 **17 Claims**



1. A humidity measuring device comprising a first chamber for accommodating reference air and a second chamber for accommodating air in which the humidity is to be determined, each of said chambers having a wall of an ultrasonic wave absorbable material; an ultrasonic wave generating means disposed at one end of each chamber; separate ultrasonic wave receiving means at the opposite end of each chamber in which the distance between the ultrasonic wave generating means and the ultrasonic wave receiving means in each chamber is the same; and a phase difference detecting means at the output of the ultrasonic wave receiving means of both chambers to detect any difference between the time of transmission of the ultrasonic waves in each chamber so that any difference detected can be used to provide the humidity condition in the second chamber.

5,387,255

STEERING BEARING ASSEMBLY FOR A BICYCLE

Douglas Chiang, No. 32, Lane 35, Tung-Jung Rd., Ta-Li Hsiang, Taichung Hsien, Taiwan, Prov. of China

Filed Jan. 26, 1994, Ser. No. 186,556

Int. Cl.[6] B62K *21/16;* **F16B** *7/10*

U.S. Cl. 74—551.1 **3 Claims**

1. A steering bearing assembly for a bicycle, comprising:

a head tube connected to a bicycle frame;

a steerer tube inserted through said head tube and having a first end that is adapted to be connected to a front wheel fork of said bicycle frame and a second end that extends out from said head tube;

a bearing assembly provided between said steerer tube and said head tube, said bearing assembly including a lower race fixedly connected to said head tube, an upper race associated with said steerer tube, and a plurality of ball bearings encased between said lower and upper races to permit relative rotation therebetween, said upper race further having an inner circular periphery and a tubular protrusion that extends axially from said inner periphery

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toward said second end of said steerer tube, said tubular protrusion having an externally threaded wall that tapers gradually to said second end of said steerer tube and being formed with a plurality of axial splits;

said bearing assembly further including a positioning seat mounted around said steerer tube so as to be disposed on said upper race with said tubular protrusion extending through said positioning seat, said positioning seat having an internally threaded wall to complement said externally threaded wall of said tubular protrusion so as to compress said tubular protrusion radially and inwardly, thereby firmly engaging said steerer tube upon tightening of said positioning seat;

a mounting stem for connecting a handle bar of the bicycle frame to the steerer tube, said mounting stem having a tubular connector mounted around said steerer tube and above said tubular protrusion of said upper race;



a resilient hollow member press-fitted into said second end of said steerer tube and having an internal wall which extends therethrough axially along said steerer tube and which tapers gradually toward said second end of said steerer tube;

a truncated cone-shaped inserter which is formed with an axially extending threaded bore and which is inserted into said tapered inner wall of said resilient member; and

a locking bolt with a head provided on said steerer tube above said tubular connector, said locking bolt being threadedly connected to said truncated coneshaped inserter in said threaded bore, said resilient member expanding radially and outwardly to abut against said steerer tube while said head simultaneously forces said tubular connector to compress said tubular protrusion of said upper race in said bearing assembly to retain said steerer tube vertically in said bearing assembly when said locking bolt is tightened.

5,387,256

SMALL-CAPACITY COFFEE ROASTER

Kazuo Enomoto, 7-1-5 Sumiyoshi-miyacho, Higashinada, Kobe, Hyogo 658, Japan

Filed Dec. 4, 1992, Ser. No. 986,113

Claims priority, application Japan, Dec. 4, 1991, 3-348870

Int. Cl.[6] A47J *31/42*

U.S. Cl. 99—286 **5 Claims**

1. A small-capacity coffee roaster for roasting small quantities of raw coffee beans, comprising:

an aluminum roasting container for receiving said raw coffee beans including an upper part, a bottom, a bottom wall and a top wall;

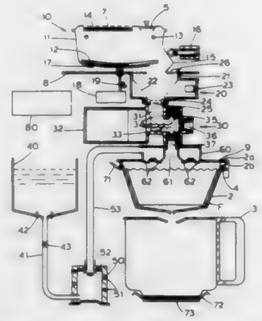
a ring shaped heater provided at said upper part of said container;

an exhaust opening in said top wall;

a smoke-removal filter in said top wall;

a temperature sensor for detecting the temperature of said container provided on the underside of said bottom wall of said container;

means for switching off said heater when said temperature



sensor detects a temperature of between 170° C. and 200° C.; and

means for providing a bean burst open time interval of at least 40 seconds between the time said container reaches a temperature sufficient to begin to burst open said coffee beans and the time said heater is switched off.

5,387,257

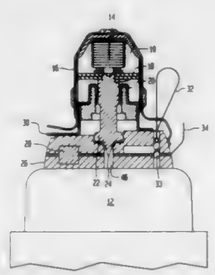
SELF-DESTRUCT FUZE FOR IMPROVED CONVENTIONAL MUNITIONS

Michael Tari, Sparta; Louis J. Adimari, Montague, and Frank Diorio, Hopatcong, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 5, 1994, Ser. No. 177,493

Int. Cl.[6] E42C *11/06, 14/06*

U.S. Cl. 102—226 **5 Claims**



1. A self-destruct fuze which comprises:

means for mechanically exploding a submunition grenade upon inertial impact which includes:

a fuze housing member operatively connected to said submunition;

a ribbon stabilizer disposed in said housing;

a packable slide lock aerodynamically removable from said housing;

an arming screw attached to said ribbon stabilizer having a firing pin located on a bottom end of said arming screw;

an inertia weight threadedly attached to said arming screw;

a spring loaded slide assembly operatively supporting said arming screw;

a stab detonator positioned in said slide assembly and in alignment with said firing pin when said fuze has been aerodynamically armed;

means for electrically self-destructing said submunition

when said mechanical means fails to explode said submunition after a fixed time period;

wherein said means for electrically self-destructing said submunition includes:

means for aerodynamically electrical arming said grenade at submunition ejection; and electro-explosive means for initiating said slab detonator when said means for mechanically exploding fails to do so after a fixed interval of time; and

wherein said means for aerodynamically electrical arming includes:

a spiral safety member aerodynamically removed from said slide member at cargo ejection;

an electrical shunt member aerodynamically removed from said slide member at cargo ejection;

a reserve battery operatively disposed in said slide assembly; and

a spring loaded lever actuator operatively placed adjacent to said reserve battery for initiating said reserve battery when said spiral safety member is aerodynamically removed.

5,387,258

SELF-CLEANING OVEN

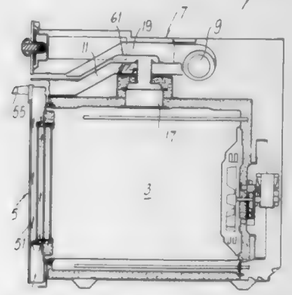
Orio Puricelli, Gallarate, Italy, assignor to Fulgor S.P.A., Gallarate, Italy

Continuation-in-part of Ser. No. 990,448, Dec. 15, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 119,907

Claims priority, application Italy, Dec. 30, 1991, MI91U001135

Int. Cl.[6] F24C *15/32;* **A21B** *1/00*

U.S. Cl. 126—21 A **6 Claims**



1. A self-cleaning oven comprising a cooking compartment, a hinged door and a venting assembly, said venting assembly having a fan connected to an aspiration duct, said aspiration duct being connected to an interspace provided in said door, said fan being also connected to a venting duct arranged parallel to said aspiration duct and having an outlet arranged above said door, said interspace of said door having an inlet for drawing air from the outside, and an outlet connected to said aspiration duct, said fan being adapted to draw air from the outside through said interspace and to discharge said air through said outlet of said venting duct;

said self-cleaning oven further comprising a venting device connecting said cooking compartment to said venting assembly, said venting assembly also having an auxiliary venting duct coupled to said venting device inside said venting duct, and means for preventing moisture from being discharged at said venting duct outlet in the form of water; and

wherein said auxiliary venting duct is substantially V shaped and comprises two branches connected to a manifold, said manifold being coupled to said venting device, each of said branches having an end, each said end associated with a tray formed in said venting duct, so as to prevent moisture from being discharged at said venting duct outlet in the form of water.

5,387,259

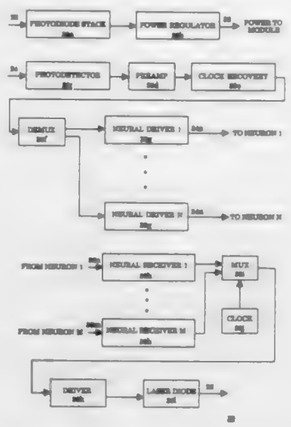
OPTICAL TRANSDERMAL LINKING METHOD FOR TRANSMITTING POWER AND A FIRST DATA STREAM WHILE RECEIVING A SECOND DATA STREAM

Howard L. Davidson, San Carlos, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 963,654, Oct. 20, 1992, Pat. No. 5,320,098. This application Jan. 12, 1994, Ser. No. 180,638

Int. Cl.[6] A61B *1/00*

U.S. Cl. 128—630 **17 Claims**



1. A method for transmitting power and a first data stream while receiving a second data stream, the method comprising the steps of:

providing power to an external module, the external module located external to biological tissue;

modulating, according to the first data stream, an external optical transmitter, of the external module, thereby driving the external optical transmitter and causing the external optical transmitter to transmit a modulated first data stream optical signal;

receiving the modulated first data stream optical signal from the external optical transmitter using an internal optical receiver of an internal module embedded within the biological tissue and converting the modulated first data stream optical signal into a first data stream modulated electrical signal;

extracting the first data stream from the modulated first data stream electrical signal;

providing the first data stream as output from the internal module;

extracting power from the modulated first data stream electrical signal to power an internal optical transmitter of the internal module;

modulating the internal optical transmitter according to the second data stream thereby driving the internal optical transmitter and causing the internal optical transmitter to transmit a modulated second data stream optical signal;

receiving the modulated second data stream optical signal using an external optical receiver of the external module and converting the modulated second data stream optical signal into a second data stream modulated electrical signal;

extracting the second data stream from the modulated second data stream electrical signal; and

providing the second data stream as output from the external module.

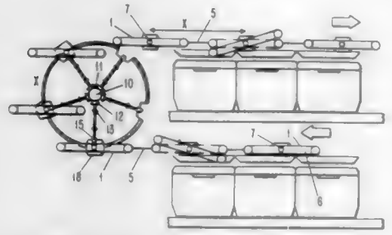
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5,387,260

HANDLING-SWITCHING MACHINE WITH DEVICE FOR KEEPING CONVEYOR TABLES IN A HORIZONTAL POSITION

Nedo Gennari, and Andrea Faure, both of Genoa, Italy, assignors to Finmeccanica S.p.A., Rome, Italy

Filed Jan. 18, 1994, Ser. No. 181,336
Claims priority, application Italy, Feb. 19, 1993, MI93 A 000308
Int. Cl.[6] B65G *17/18*
U.S. Cl. 198—798 4 Claims



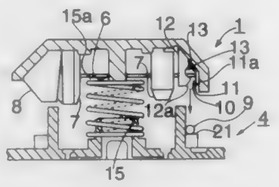
1. A handling-switching machine comprising:
a frame having opposite ends;
a pair of drive wheels mounted for rotation about a horizontal axis at each end of the frame;
a first gear fixed to each drive wheel for rotation with each drive wheel;
a pair of chains each engaged around one of the wheels at one end of the frame and one of the wheels at an opposite end of the frame, each chain forming a closed loop path having upper and lower horizontal sections and opposite ends;
a plurality of carriages connected between said pair of chains and movable along said closed loop path, each carriage having a carpet movable thereon;
a carriage shaft extending through and fixed to each carriage;
a pair of second gear wheels fixed to opposite ends of each carriage shaft; and
a plurality of radially extending shafts rotatably mounted to each drive wheel, each radially extending shaft having a third gear meshed with said first gear at one end of each radially extending shaft, and a fourth gear at an outer end of each radially extending shaft positioned to engage said second gear of each carriage shaft as each carriage shaft moves adjacent a pair of said drive wheels at one end of said frame, rotation of said drive wheels moving said carriages around an end of said closed loop path so that, with rotation of said first gears caused by rotation of said drive wheels, said radially extending shafts are rotated to cause rotation of said carriage shafts to maintain a horizontal position of each carriage as each carriage moves around each end of said closed loop path.

5,387,261

KEYBOARD SWITCH ASSEMBLY

Kazunori Yamada; Fumio Watanabe, and Hidemasa Sakurada, all of Tokyo, Japan, assignors to SMK Corporation, Tokyo, Japan

Filed Oct. 1, 1993, Ser. No. 131,201
Claims priority, application Japan, Oct. 1, 1992, 4-074433[U]
Int. Cl.[6] B41J *5/12*
U.S. Cl. 400—490 12 Claims



1. A keyboard switch assembly, comprising:
a key cap;
a key seat, separate from said key cap;
means for limiting a movement of said key cap to a specified distance from said key seat;
means for urging said key cap away from said key seat until movement is stopped by said means for limiting;
a swing rod;
a center portion on said swing rod;
a first arm affixed to a first end of said center portion;
a second arm affixed to a second end of said center portion;
said first and second arms extending at angles from said center portion;
a first tip on said first arm;
said first tip extending parallel to said center portion;
a second tip on said second arm;
said second tip extending parallel to said center portion, and collinear with said first tip;
means for rotatably securing said first and second tips to said key seat;
means for supporting said center portion on said key seat; and
grasping means, on said key cap, for snapping onto said center portion, supported by said means for supporting, when said key cap is urged forcibly toward said key seat.

5,387,262

PROCESS FOR INCREASING THE LIGHTFASTNESS OF DYED FABRICS

Larry W. Nelson, Pinnacle, N.C., assignor to Surry Chemicals, Mt. Airy, N.C.

Filed Sep. 25, 1992, Ser. No. 951,453
Int. Cl.[6] D06P *5/02, 5/04*
U.S. Cl. 8—442 2 Claims

1. A composition for increasing the lightfastness of dyed fabric materials consisting essentially of 0.01 to about 10.0 wt. % cinnamic acid ester, a nonionic surfactant and water in an amount of about 90% to 97% by weight.

5,387,263

METHOD FOR TREATMENT OF YARN IN PACKAGE FORM

Jack W. Marlowe, Reidsville; Ralph B. Monk, Roxboro, and Rene A. Eckert, Greenboro, all of N.C., assignors to Uhifi, Reidsville, N.C.

Filed Dec. 16, 1993, Ser. No. 168,671
Int. Cl.[6] D06P *5/02*
U.S. Cl. 8—494 6 Claims

1. A method for applying a lubricant to a plurality of yarn packages directly in a dye bath in a package dyeing machine, said method including the steps of:
(a) placing said plurality of yarn packages into a package dyeing machine;
(a1) heating said dye bath to a temperature sufficient for dye fixation;
(b) dyeing said plurality of yarn packages in said package dyeing machine;
(c) cooling the dye bath to about room temperature prior to applying said lubricant to said plurality of yarn packages in said package dyeing machine;
(d) applying said lubricant to said plurality of yarn packages in said package dyeing machine, wherein said lubricant is a wax emulsion based on paraffin wax with a melting point of between about 138° F. to 143° F.; and
(e) removing said plurality of yarn packages from said package dyeing machine.

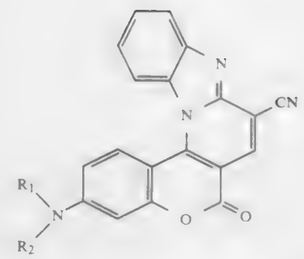
5,387,264

METHOD FOR DYEING OR COLORING ORGANIC MACROMOLECULAR SUBSTANCE BY USING COUMARIN COMPOUND OR COLORING MATERIAL

Yasuo Murakami, Kawaguchi; Ryuzo Orita, Showa; Tadaaki Sugimoto, Kawaguchi, and Masao Ohnishi, Saitama, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1994, Ser. No. 220,883
Claims priority, application Japan, Apr. 7, 1993, 5-103757; Apr. 19, 1993, 5-114169
Int. Cl.[6] C09B *57/02*
U.S. Cl. 8—648 8 Claims

1. A method for dyeing or coloring an organic macromolecular substance characterized by contacting said substance with a coumarin compound represented by the general formula (1):



(1)

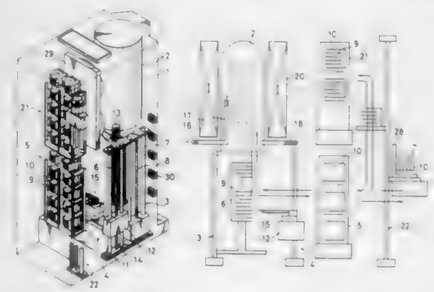
wherein R_1 and R_2 independently represent each a hydrogen atom or an alkyl group having 1 to 4 carbon atoms;

5,387,265

SEMICONDUCTOR WAFER REACTION FURNACE WITH WAFER TRANSFER MEANS

Satoshi Kakizaki; Toshikazu Karino; Shoichiro Izumi; Mikio Koizumi; Makoto Ozawa; Fumihide Ikeda; Tohru Yoshida, and Ryoji Saito, all of Tokyo, Japan, assignors to Kokusai Electric Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1992, Ser. No. 966,721
Claims priority, application Japan, Oct. 29, 1991, 3-309794
Int. Cl.[6] H01L *21/68;* C23C *16/00*
U.S. Cl. 29—25.01 14 Claims



1. A semiconductor manufacturing apparatus, comprising a cassette stocker for accommodating wafer cassettes loaded with wafers, a reaction furnace provided with heating means, a reaction gas introducing means for introducing reaction gas into the reaction furnace, a gas discharging means for discharging exhaust gas from the reaction furnace, a boat which is located above the cassette stocker for supporting wafers, a buffer cassette stocker for storing unprocessed wafers, a boat elevating means for placing the boat into and pulling the boat from the furnace, a wafer transfer means for transferring the wafers between the boat and the wafer cassettes in the cassette stocker, wherein the wafer transfer means includes a lifting base which moves up and down to service the cassette stocker and the buffer cassette stocker, a cassette receiver mounted on said lifting base through a link mechanism, rotatable around a horizontal rotating shaft by 90°, and movable back and forth by said link mechanism with respect to the buffer cassette stocker and the cassette stocker, and a wafer cassette transfer means for transferring wafer cassettes between the buffer cassette stocker and the cassette stocker.

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MANNICH BASE DERIVATIVES, AND THE PRODUCTION AND USES THEREOF

John T. Loper, Richmond, Va., assignor to Ethyl Corporation, Richmond, Va.

Filed Jun. 11, 1993, Ser. No. 76,460
Int. Cl.[6] C10L *1/22;* C07C *275/00*
U.S. Cl. 44—415 30 Claims

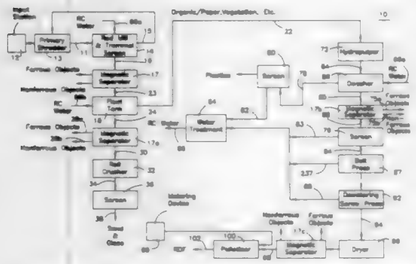
1. A compound in which a phenolic moiety is linked by a Mannich base linkage to an alkylene-poly(oxyalkylene) moiety, and a polyamine moiety is linked to the alkylene-poly(oxyalkylene) moiety by a urea linkage involving one of the nitrogen atoms of the polyamine moiety.

5,387,267

PROCESS AND APPARATUS FOR TREATING HETEROGENEOUS WASTE TO PROVIDE A HOMOGENEOUS FUEL

Jack D. Warf, Manassas, Va., and John J. Limbach, deceased, late of Warrenton, Va. by Francis Cecilia Limbach, executrix , assignors to Modular Energy Corporation, Bealeton, Va.

Filed Aug. 25, 1993, Ser. No. 111,462
Int. Cl.[6] C10L *5/00*
U.S. Cl. 44—589 24 Claims



1. A method for processing waste into a clean fuel, the waste comprising an organic portion and an inorganic portion, the fuel comprising primarily the organic portion, said method comprising the steps of:

a) maintaining a body of liquid of a selected depth within a float tank;

b) introducing the waste into the float tank and the body of liquid therein, the liquid body having a bottom and an upper surface, the liquid depth being selected to be sufficiently large to permit the separation of the waste into the organic and inorganic portions;

c) cleaning the waste within the liquid body by separating the inorganic portion from the organic portion, the organic portion floating to the upper surface of the liquid body, the inorganic portion settling towards the bottom of the liquid body, whereby the inorganic portion is physically separated from the floating organic portion;

d) removing the cleaned organic portion from the liquid surface and the inorganic portion from the bottom; and

e) extracting sufficient liquid from the cleaned, separated organic portion to provide the clean fuel.

5,387,268

SINTERED ALUMINA ABRASIVE GRAIN AND ABRASIVE PRODUCTS

Tadashi Hiraiwa, and Fumiyoshi Ono, both of Nagano, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP92/01352, § 371 Date Jun. 16, 1993, § 102(e) Date Jun. 16, 1993, PCT Pub. No. WO93/08138, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 16, 1992, Ser. No. 75,569
Claims priority, application Japan, Oct. 16, 1991, 3-296375
Int. Cl.[6] C09C *1/68;* C04B *35/10*
U.S. Cl. 51—309 9 Claims



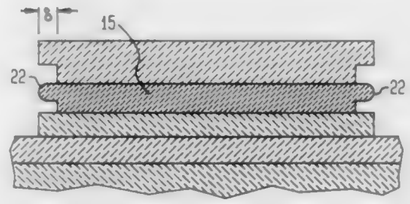
1. A sintered alumina abrasive grain comprising 70 to 97% by weight of alpha-alumina crystals and 3 to 30% by weight of a spinel crystalline phase which does not form a continuous phase but which comprises finely divided discrete crystals which are deposited on triple points in crystal boundaries and are substantially uniformly distributed over the sintered alumina abrasive grain.

5,387,269

METHODS FOR MAKING PLANAR WAVEGUIDES WITH REMOVAL OF A SACRIFICAL MEMBER WHICH SURROUNDS THE CORE

Casimir R. Nijander, Lawrenceville; Wesley P. Townsend, Princeton, and Yiu-Huen Wong, Summit, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 3, 1993, Ser. No. 115,628
Int. Cl.[6] C03C *15/00*
U.S. Cl. 65—386 6 Claims



1. A method for making an optical waveguide comprising the steps of: forming successively of light transmitting materials a first clad layer, a core layer upon the first clad layer, and a second clad layer upon the core layer, the core layer having a higher refractive index than that of the first and second clad layers to form an optical waveguide, whereby the core layer can transmit light along a length thereof; wherein the improvement comprises:

forming a sacrificial member of polysilicon surrounding at least a first end portion of the core layer;

the first and second clad layers and the core layer are made of glass;

selectively removing the sacrificial member, whereby the first end portion of the core layer is separated from the first and second clad layers;

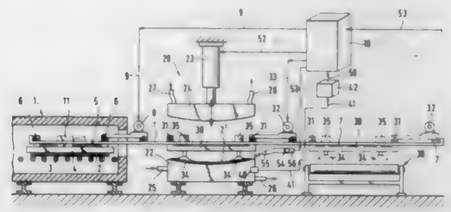
and forming a lens on the first end portion of the core layer, whereby light may be more effectively coupled to or from the core layer.

5,387,270

METHOD AND APPARATUS FOR PRESSING AND CONTACT TOUGHENING GLASS SHEETS

Carsten Bremer, Wassenberg; Hans-Werner Nowoczyn; Horst Mucha, both of Aachen; Werner Diederen, Herzogenrath, and Hans-Werner Kuster, Aachen, all of Germany, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Sep. 8, 1993, Ser. No. 117,700
Claims priority, application Germany, Sep. 12, 1992, 4230611
Int. Cl.[6] C03B *23/03, 27/004*
U.S. Cl. 65—29.12 8 Claims



1. A method of controlling a device for pressing and contact toughening of glass sheets, the method comprising the steps of:

heating a glass sheet in a horizontal furnace;

conveying said heated glass sheet into a press;

pressing and contact toughening said glass sheet in said press;

removing said glass sheet from said press; and

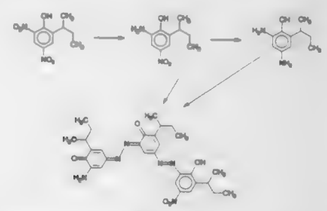
detecting a breakage of a glass sheet in the press by using an acoustic signal resulting from the breakage to trigger a control circuit controlling the conveying, pressing and contact toughening and removing steps in a manner that when said acoustic signal occurs, the conveying, pressing and contact toughening and removing steps are interrupted.

5,387,271

BIOLOGICAL SYSTEM FOR DEGRADING NITROAROMATICS IN WATER AND SOILS

Donald L. Crawford, Moscow, Id.; Todd O. Stevens, Richland, Wash., and Ronald L. Crawford, Moscow, Id., assignors to Idaho Research Foundation, Inc., Moscow, Id.

Continuation-in-part of Ser. No. 508,056, Apr. 11, 1990, abandoned. This application Jul. 23, 1993, Ser. No. 96,735
Int. Cl.[6] C05F *11/08;* C02F *3/00;* C05G *3/00*
U.S. Cl. 71—9 55 Claims



1. A method for degrading nitroaromatic compounds present as contaminants in a fluid medium to reduce the concentrations of the nitroaromatic compounds in the fluid medium, the method comprising: (a) adding to the fluid medium an inoculum of carbohydrate-fermentative microorganisms resistant to the types and respective concentrations of contaminant nitroaromatic compounds present in the fluid medium, wherein the carbohydrate-fermentative microorganisms are selected from the group consisting of aerobic and facultative microorganisms Comprising genera selected from the group consisting of Klebsiella, Enterobacter, Lactobacillus, Bacillus, Clostridium, and Pseudonomas, and mixtures thereof;

(b) adding to the fluid medium a carbohydrate fermentable by the carbohydrate-fermentative microorganisms;

(c) maintaining the fluid medium containing said carbohydrate-fermentative microorganisms and carbohydrate under conditions suitable for growth of said carbohydrate-fermentative microorganisms in the fluid medium, accompanied by fermentation by said microorganisms of a portion of said carbohydrate, thereby depleting the concentration of dissolved oxygen in the fluid medium, so as to render the fluid medium anaerobic;

(d) after the fluid medium has been rendered anaerobic, adding to the fluid medium an inoculum of anaerobic microorganisms capable of utilizing the carbohydrate as a carbon and energy source and degrading said nitroaromatic compounds, the anaerobic inoculum being a consortium comprising genera selected from the group consisting of Klebsiella, Enterobacter, Bacteroides, Fusobacterium, Desulfovibrio, Desulfuromonas, Clostridium, Desulfotomaculum, Sporosarcina, Lactobacillus, Bacillus, Clostridium, Pseudomonas, Veillonella, Acidaminococcus, Methanobacterium, Methoanococcus, and Archaeoglobus, and mixtures thereof; and

(e) maintaining anaerobic conditions in the fluid medium for a time sufficient for the anaerobic microorganisms to degrade the contaminant nitroaromatic compounds.

5,387,272

HIGHLY DUCTILE SINTERED ALUMINUM ALLOY, METHOD FOR PRODUCTION THEREOF AND USE THEREOF

Yasuo Kamitsuma, Mito; Yusaku Nakagawa; Mitsuo Chigasaki, both of Hitachi; Tadashi Iizuka, Ashikaga; Kooichi Inaba, Tochigi; Keiichi Nakamura, Tokyo; Masaki Minabe, and Tsuyoshi Kagaya, both of Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Powdered Metals Company, Limited, Chiba, both of Japan

Filed Apr. 8, 1992, Ser. No. 865,264
Claims priority, application Japan, Apr. 12, 1991, 3-079643
Int. Cl.[6] C22C *29/00*
U.S. Cl. 75—230 17 Claims

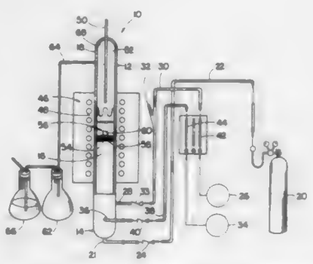
1. A highly ductile sintered Al alloy which comprises, by weight, 0.1–20% of an element of Group IIIa, 0.01–5% of at least one element of Groups IVa and Va, 5 ppm to 1500 ppm of oxygen, the balance being substantially Al.

5,387,273

PROCESS FOR REMOVING COPPER IN A RECOVERABLE FORM FROM SOLID SCRAP METAL

Alan D. Hartman; Laurance L. Oden, and Jack C. White, all of Albany, Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 28, 1993, Ser. No. 174,081
Int. Cl.[6] C22B *7/00*
U.S. Cl. 75—401 4 Claims



1. A process for removing copper in a recoverable form

from a copper/solid ferrous scrap metal mix, comprising the steps of:

(a) placing a copper/solid ferrous scrap metal mix into a reactor vessel;

(b) purging the atmosphere within said reactor vessel with an inert or oxidizing gas;

(c) heating said reactor vessel to raise the temperature within said reactor vessel to a temperature within a range between 600 to 927 degrees C.;

(d) introducing air into said reactor vessel and thereafter introducing hydrogen chloride into said reactor vessel to obtain a desired air-hydrogen chloride mix operable to form an oxidizing and chloridizing atmosphere which provides a protective oxide coating on the surface of the solid ferrous scrap metal in the mix and simultaneously oxidizes/chloridizes the copper in the mix to convert said copper to a copper monochloride gas for transport away from said solid ferrous scrap metal; and

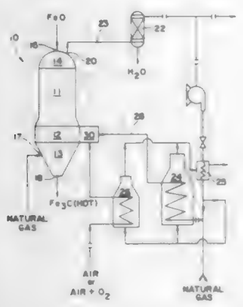
(e) collecting said copper monochloride gas for conversion to a recoverable copper species.

5,387,274

PROCESS FOR THE PRODUCTION OF IRON CARBIDE

Oscar G. Dam G., and Henry R. Bueno C., both of Edo Bolivar, Venezuela, assignors to C.V.G. Siderurgica Del Orinoco, C.A., Matanzas-Edo. Bolivar, Venezuela

Filed Nov. 15, 1993, Ser. No. 152,295
Int. Cl.[6] C21B *13/14*
U.S. Cl. 75—495 26 Claims



1. A process for the conversion of iron oxides to iron carbide at low pressure, comprising the steps of:

(a) providing a reforming-reduction-carburizing reactor operating at a pressure of between about 1.15 to about 1.45 bars and having a bed of partially metallized iron oxide material, a bed of direct reduced iron and a bed of iron carbide within said reactor;

(b) feeding metal oxide material containing iron to said reactor;

(c) providing a feed gas having a methane content of at least about 8.5% by volume;

(d) heating said feed gas to a temperature of between about 650° C. to about 850° C. to form a reheated feed gas and a combustion flue gas;

(e) mixing air at a temperature of between about 650° C. to about 850° C. with said heated feed gas in a mixing chamber to form a mixture of air and feed gas;

(f) partially combusting said mixture of air and feed gas to a temperature greater than about 850° C. to form a partially combusted gas mixture wherein said partially combusted gas mixture has a degree of oxidation of between about 0.27 to about 0.32 and a reducing power of between about 2 to about 3;

(g) feeding said partially combusted gas mixture to said direct reduced iron in said reactor so as to form a reformed reducing gas having an oxidation degree of between about 0.05 to about 0.09;

(h) contacting said iron oxide material with said reformed reducing gas so as to form direct reduced iron;

(i) contacting said direct reduced iron with a carburizing agent in said reactor at a temperature of between about 550° C. to about 750° C. so as to form iron carbide having between about 40% wt to about 5.5% wt carbon and at least about 80% wt iron wherein a reactor top gas is formed;

(j) recycling reactor top gas from said reactor so as to provide a feed gas having a methane content Of at least about 8.5% by volume; and

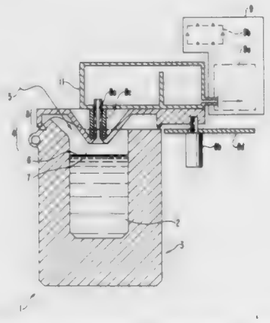
(k) repeating steps (a), (b) and (d) through (j).

5,387,275

PROCESS FOR EXTRACTING ZINC PRESENT IN LIQUID CAST IRON, MEANS FOR THE IMPLEMENTATION OF THE PROCESS, AND PRODUCTS THUS OBTAINED

Jean C. Tissier; Jean Y. Dauphin, both of Fretin, and Pierre Perrot, Roubaix Cedex, all of France, assignors to Ecole Centrale de Lille, Villeneuve d'Ascq, France

PCT No. PCT/FR91/00776, § 371 Date Sep. 17, 1993, § 102(e) Date Sep. 17, 1993, PCT Pub. No. WO92/06222, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 3, 1991, Ser. No. 39,006
Claims priority, application France, Oct. 9, 1990, 90 12651
Int. Cl.[6] C21C *1/04*; C22B *9/04*
U.S. Cl. 75—508 6 Claims



1. Process for extracting zinc in solution in a liquid cast iron bath containing zinc (2) held in a container (3) for the casting of foundry parts;

said container also holds, above free surface (6) of the cast iron bath which is at a specific temperature, a gaseous volume (7) which communicates to said bath through the intermediary of the above-mentioned free surface, a pressure which is also specific and primarily atmospheric pressure, with the zinc in solution having a given vapor pressure at said temperature;

said process comprising before the bath is used for the casting of parts:

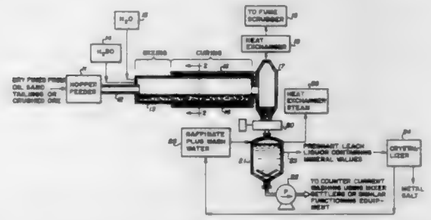
- in a first stage, gaseous volume (7) located in container (3) above cast iron bath (2) is confined in a sealed manner;
- in a second stage, the confined atmosphere is placed under a partial vacuum which can be varied in a controlled manner so that it can be adjusted constantly to a predetermined value as a function of the evolution over time of the saturating vapor pressure of the zinc in solution in the cast iron at the temperature of the bath, said predetermined value being at least slightly higher than said saturating vapor pressure; and
- said zinc is trapped.

5,387,276

METHOD OF LEACHING MINERAL VALUES FROM OIL SAND TAILINGS

John S. Rendall, Albuquerque, N. Mex., assignor to Solv-Ex Corporation, Albuquerque, N. Mex.

Filed Dec. 10, 1993, Ser. No. 165,974
Int. Cl.[6] C22B *3/00*
U.S. Cl. 75—743 11 Claims



1. A method of leaching mineral values from oil sand tailings comprising the steps of:

feeding a supply of dry oil sand fines containing metals into an elongated rotational mixer;

feeding a supply of concentrated sulphuric acid into said mixer;

continuously rotating said mixer to perform mixing of an agglomeration of said fines and acids to form a quantity of mixed agglomerates within said mixer and then heating said mixed agglomerates within an elongated portion of said mixer to elevate the temperature of said mixed agglomerates within said mixer to a temperature of approximately 170° C. or greater;

continuously advancing said mixed agglomerates longitudinally along said heated portion of said mixer; and

discharging cured mixed agglomerates from said mixer into a water/leach liquor bath to thicken leached solids and form a slurry; and

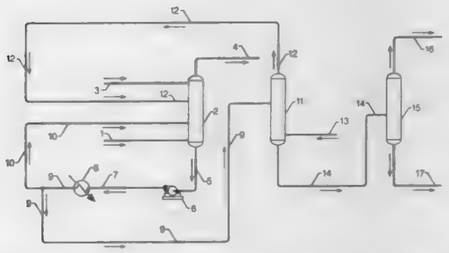
removing concentrated leach liquor and crystalizing said concentrated leach liquor for crystal metal salt removal.

5,387,277

PROCESS FOR THE RECOVERY OF AN ACID GAS FROM A GASEOUS STREAM CONTAINING ACID GAS

Robert S. Brasier, Mount Prospect, Ill., assignor to UOP, Des Plaines, Ill.

Filed Nov. 29, 1993, Ser. No. 158,321
Int. Cl.[6] B01D *53/00*
U.S. Cl. 95—159 6 Claims



1. A process for the recovery of an acid gas from a gaseous stream containing a normally gaseous hydrocarbon, hydrogen and said acid gas which process comprises:

(a) contacting said gaseous stream with a lean aqueous solution in an absorption zone to produce a first stream comprising normally gaseous hydrocarbons, hydrogen and having a reduced concentration of acid gas;

(b) recovering a first rich aqueous solution comprising at least a portion of said acid gas, normally gaseous hydrocarbon and hydrogen from said absorption zone;

(c) contacting at least a portion of said rich aqueous solution resulting from step (b) with a hydrogen-rich gaseous stream to selectively strip at least a portion of said normally gaseous hydrocarbons from said rich aqueous solution to produce a hydrogen-rich gaseous stream containing normally gaseous hydrocarbons and a second rich aqueous solution comprising acid gas and having a reduced concentration of normally gaseous hydrocarbons;

(d) introducing at least a portion of said hydrogen-rich gaseous stream containing normally gaseous hydrocarbons recovered in step (c) into said absorption zone in step (a); and

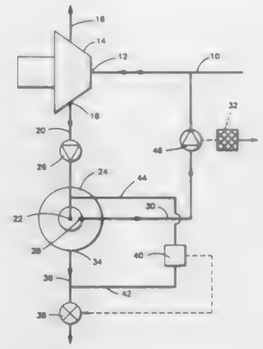
(e) recovering said second rich aqueous solution comprising acid gas and having a reduced concentration of normally gaseous hydrocarbons produced in step (c).

5,387,278

AIR-LIQUID SEPARATOR ASSEMBLY AND SYSTEM

John K. Mangialardi, Seabrook, Tex., assignor to Grumman Aerospace Corporation, Long Island, N.Y.

Filed Jul. 20, 1992, Ser. No. 915,329
Int. Cl.[6] B01D *19/00*; B04B *5/08, 5/12*
U.S. Cl. 96—174 22 Claims



1. A system for separating an air-liquid mixture in a low gravity environment comprising:

a) a first, rotatable separator coupled to means capable of effecting high speed separator rotation and having an air-liquid mixture inlet, an air outlet and a liquid outlet;

(a) a second, rotatable separator coupled to means capable of effecting relatively lower speed separator rotation and having a mixture inlet connected to the liquid outlet of the first separator, an air bleed outlet and a liquid discharge outlet, the second separator comprising a debubbler to remove air bubbles entrained in the liquid discharaged from the first separator;

c) pressure actuated check valve means operatively interposed in a conduit connecting the liquid outlet of the first separator to the mixture inlet of the second separator such that liquid may only flow from the first separator toward the second separator, the check valve opening to allow such flow at a pressure of P_1;

d) a pressure actuated bleed valve operatively located in a conduit connected to the air bleed outlet of the second separator, the bleed valve opening at a pressure P_2 to permit flow through the conduit such that $P_2 > P_1$, thereby maintaining a positive air pressure within the second separator;

e) outlet valve means operatively associated with the liquid discharge outlet of the second separator to control the flow of liquid from the second separator: and,

f) pressure sensing control means operatively associated

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with the second separator and the outlet valve means to sense the pressure of the liquid in the second separator and open the outlet valve means when the pressure of the liquid reaches a predetermined value.

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LITHOGRAPHIC DAMPENING SOLUTION

Ronald S. Conti, New Lenox; Donatas Ramanauskas, Villa Park, and Terry L. Dwyer, Des Plaines, all of Ill., assignors to Varn Products Company, Inc., Oakland, N.J.

Filed Apr. 12, 1993, Ser. No. 44,703
Int. Cl.[6] C09K *3/18*
U.S. Cl. 106—2 **13 Claims**

1. An improved lithographic dampening solution comprising a diluted dampening solution concentrate having mixed therein a micro-emulsion formulation which spontaneously emulsifies upon mixing with said diluted dampening solution concentrate, said micro-emulsion formulation comprising from about 20% wt. to about 60% wt. of a mono-, di-, or tripropylene glycol or another glycol having at least 3 carbons, from about 5% wt. to about 50% wt. of a partially water soluble mono-, di-, or tripropylene glycol C_1–C_6 alkyl ether, from about 2% wt. to about 50% wt. of a wholly or partially water soluble polymer having an acid value of from about 5 to about 50 and from about 1% wt. to about 10% wt. of a nonionic surfactant of HLB 2-10.

5,387,280

CERAMIC CORE FOR INVESTMENT CASTING AND METHOD FOR PREPARATION OF THE SAME

Steven Kennerknecht, Laval sur la Lac, Canada, assignor to Pechiney Recherche, Courbevoie (Hautes de Seine), France

Filed Jan. 18, 1994, Ser. No. 182,354
Int. Cl.[6] B28B *7/34*
U.S. Cl. 106—38.3 **9 Claims**

7. A green mix for preparing a fired acid soluble ceramic core for investment casting comprising:

an alkaline earth borate acid soluble binder in an amount from about 20% to about 50% by weight of said mix;

a refractory filler selected from the group consisting of silicon nitride, silicon carbide and aluminum nitride present in an amount from about 50% to about 80% by weight of said mix; and

a carrier material.

5,387,281

COMPOSITIONS BASED ON 2,9-DICHLOROQUINACRIDONE PIGMENTS

Fridolin Babler, Hockessin, and Charles G. Orange, Bear, both of Del., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 1, 1993, Ser. No. 159,642
Int. Cl.[6] C09B *48/00*
U.S. Cl. 106—495 **21 Claims**

1. A process for the preparation of a pigment composition, which comprises:

(a) premilling a pigment mixture comprising 2,9-dichloroquinacridone and bis-(4,5,6,7-tetrachloroisoindolin-1-on-3-ylidene)-phenylene-1,4-diamine to form a premilled pigment;

(b) subsequently heating a suspension of the premilled pigment in a polar solvent at an elevated temperature above about 60° C. for a period of at least about 1 hour; and

(c) isolating the pigment composition.

5,387,282

STRUCTURAL CEMENTITIOUS COMPOSITION AND METHOD OF MANUFACTURING THE SAME

Karl W. Jakel, 3924 Park Pl. #4, Montrose, Calif. 91120

Continuation-in-part of Ser. No. 868,846, Apr. 16, 1992, Pat. No. 5,290,355, Ser. No. 876,382, Apr. 30, 1992, Pat. No. 5,323,581, Ser. No. 881,845, May 12, 1992, Pat. No. 5,210,989, and Ser. No. 891,803, Jun. 1, 1992, abandoned. This application Jun. 18, 1993, Ser. No. 78,041
Int. Cl.[6] C04B *7/02*
U.S. Cl. 106—675 **19 Claims**

1. A structural article of manufacture having a specific gravity less than about 1.5, composed of a compressed, dry cementitious composition comprising a particulate aggregated free from particles smaller than about minus 80 mesh, said composition comprised of Portland cement and an aggregate containing perlite and an additive selected from the group consisting of pumice, expanded shale and mixtures thereof, the weight ratio of aggregate to cement being greater than about 1.3 and less than 1.9.

5,387,283

PROCESS FOR PRODUCING A HYDRAULIC CEMENT BINDER FOR BOTH GENERAL AND SPECIAL APPLICATIONS

William D. Kirkpatrick, and Carole W. Kirkpatrick, both of 1431 S. Ocean Blvd., #10, Pompano Beach, Fla. 33062

Continuation of Ser. No. 66,702, May 27, 1993. This application Jun. 29, 1994, Ser. No. 267,590
Int. Cl.[6] C04B *14/04*
U.S. Cl. 106—709 **14 Claims**

1. A cement making process which comprises, (1) mixing:

from about 14.52 to 21.77 percent water,

from about 0.10 to 1.25 percent boric acid set-suspending agent,

from about 0.20 to 2.80 percent borax set-suspending agent,

from about 0 to 8.00 percent ground silica,

together with two or more hydraulic cementitious components selected from the group consisting of subbituminous class C fly ash, portland cement, and slag; with the total of said hydraulic cementitious components containing from about 77.00 percent to about 95.00 percent subbituminous class C fly ash; whereby the components in (1) provide the means to:

a. suspend the set of the hydraulic cementitious components,

b. temper the hydraulic cementitious components, during the period of set-suspension, thereby creating an inorganic reactant, (2) activating at the time of placement said inorganic reactant by mixing with:

about 0.25 to 2.83 percent citric acid accelerator, and

about 0.30 to 11.00 percent alkali metal activator, selected from the group consisting of: potassium hydroxide, potassium carbonate, sodium hydroxide, and sodium carbonate; and whereby the components in (2) provide the means to:

a. terminate the set-suspension of the cementitious components,

b. create 3 different periods of time for placement following activation, by changing the order of introduction of components (2).

5,387,284

APPARATUS AND METHOD FOR FORMING CORELESS PAPER ROLL PRODUCTS

John R. Moody, Antioch, Calif., assignor to James River Paper Company, Inc., Richmond, Va.

Filed Mar. 7, 1994, Ser. No. 206,644
Int. Cl.[6] B05C *1/00*
U.S. Cl. 118—220 **6 Claims**

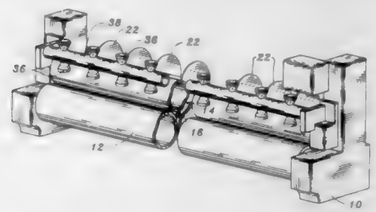
1. Apparatus for forming coreless paper roll products, said apparatus comprising, in combination:

a rotatable, elongated winder shaft having an outer peripheral surface of a predetermined configuration;

web transport means for transporting a paper web to said elongated winder shaft for winding about said elongated winder shaft upon rotation of said elongated winder shaft;

slitter means adjacent to said elongated winder shaft for slitting said paper web during transport of said paper web to said elongated winder shaft to form web segments having side edges defining a predetermined web segment width;

winder shaft rotating means for rotating said elongated winder shaft to wind the slit paper web about the outer peripheral surface of the elongated winder shaft with the side edges of adjacent web segments positioned immediately adjacent to one another and located at predetermined spaced locations along said elongated winder shaft to form a plurality of coreless paper roll products aligned with each other, extending axially along said elongated



winder shaft, and having coreless paper roll product ends at said predetermined spaced locations;

a rider roll forming a nip with the elongated winder shaft bearing against said web segments and cooperable with said elongated winder shaft to exert opposed compressive forces on said web segments as the web segments are wound about said elongated winder shaft; and

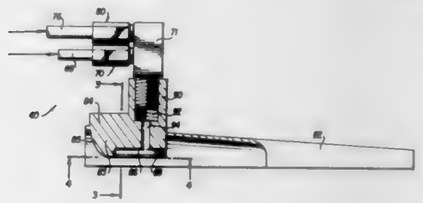
liquid applicator means located adjacent to the elongated winder shaft for applying liquid to the web segments only at the side edges thereof during winding of said web segments about said elongated winder shaft and while the web segments are on the elongated winder shaft to moisten the side edges only of web segments on the elongated winder shaft to facilitate molding of the web segment side edges to the predetermined configuration of the elongated winder shaft outer peripheral surface under the opposed compressive forces exerted by said elongated winder shaft and said rider roll.

5,387,285

APPARATUS FOR INJECTING A FLUID INTO FILTER TOW

Ernest E. Rivers, Pfafftown, N.C., assignor to R. J. Reynolds Tabacco Company, Winston-Salem, N.C.

Filed Jun. 2, 1992, Ser. No. 892,082
Int. Cl.[6] B05B *7/00*
U.S. Cl. 118—325 **17 Claims**



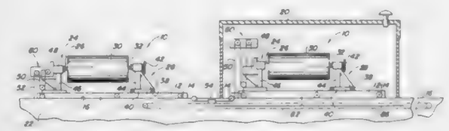
1. Apparatus for injecting a fluid into an advancing filter tow used in the manufacture of tobacco smoke filters, comprising tongue means for converging and compressing the tow into a continuous rod-like member, said tongue means having a wall forming a converging throat through which the tow is adapted to pass along a path of travel, nozzle means rigidly affixed to said tongue means and extending into said converging throat for injecting a fluid into the tow as it travels through said converging throat, said nozzle means comprising a nozzle block rigidly affixed to the wall of said tongue means and extending radially inwardly from said wall into the throat along the path of travel of the tow, a conduit formed in said nozzle block substantially along said path, a plurality of feed holes disposed in said nozzle block and communicating said conduit with the throat of said tongue means, and means for supplying said fluid to said conduit.

5,387,286

TANK COATING APPARATUS AND METHOD

Arlington D. Manor, Orlando, Fla., assignor to Modern Welding Company, Inc., Owensboro, Ky.

Filed Sep. 3, 1993, Ser. No. 116,904
Int. Cl.[6] B05C *13/00*
U.S. Cl. 118—500 **19 Claims**



1. A tank coating apparatus comprising:

means for rotatably supporting a tank, for rotation about an axis of the tank, said supporting means adjustable for receiving tanks of varying dimensions;

means for rotating the tank, the rotating means communicating with the supporting means, the rotating means using hydraulics for driving the rotating means;

means for moving the supporting means from a first position within an enclosed building to a second position outside the building; and

means for delivering the hydraulics to the tank rotating means, the delivery means automatically maintaining a position to continuously supply hydraulic pressure as the moving means passes from its first position to the second position, the delivery means including means cooperating with the moving means for taking up excess hose as the moving means passes from the first position within the enclosed building to the second position outside the building.

5,387,287

APPARATUS FOR HOLDING SOLID COMPACT MEDICAMENTS DURING PROCESSING

Thomas C. Reiter, Hilton; Peter A. Pastecki, and Charles W. Pierson, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 7, 1993, Ser. No. 88,501
Int. Cl.[6] B05C *13/00;* **B25B** *1/20;* **B23Q** *3/00;* **A61K** *9/00*
U.S. Cl. 118—503 **16 Claims**

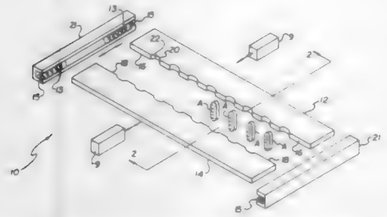
1. Apparatus for holding at least a portion of a solid compact medicament during processing including coating, the apparatus comprising:

first and second substantially parallel, planar members, said members having opposed edge portions each of said edge portions having at least one notch opposed to and aligned with a notch in the other edge, said notches each having an interior wall;

an urging means cooperatively associated with said first and second members for displacing said members relative to one another between a first position wherein said interior walls of said opposed notches define an open gripping jaw for receiving and subsequently releasing said solid compact medicament, and a second position wherein said open

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gripping jaw closes upon and thereby captures a circumferential portion of said solid form medicament to be coated and exposes another portion of said medicament for coating; and,



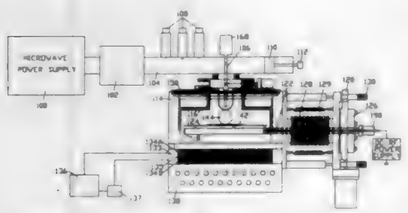
means for holding said members in a substantially parallel and planar relationship when said gripping jaw is in said first or second position.

5,387,288

APPARATUS FOR DEPOSITING DIAMOND AND REFRACTORY MATERIALS COMPRISING ROTATING ANTENNA

Steven C. Shatas, Santa Clara, Calif., assignor to Modular Process Technology Corp., Santa Clara, Calif.

Filed May 14, 1993, Ser. No. 62,975
Int. Cl.[6] C23C *16/50*
U.S. Cl. 118—723 AN 23 Claims



1. A plasma CVD apparatus suitable for forming a layer of material on a substrate comprising:

a microwave generator means for generating microwave radiation;

a waveguide means for guiding said microwave radiation from said microwave generator;

a process chamber including a means for receiving a reactant gas for forming a plasma and further including means for holding said substrate;

coupling antenna means moveable about a axis of rotation with at least two degrees of freedom for coupling said microwave radiation from said waveguide into said process chamber and for controllably directing said plasma to a locus of positions defining an optimal plasma to substrate contact with respect to said substrate to form a uniform layer of said material thereon.

5,387,289

FILM UNIFORMITY BY SELECTIVE PRESSURE GRADIENT CONTROL

Johannes J. Schmitz, Sunnyvale; Raymond L. Chow, Cupertino; Sien G. Kang, Tracy; Edward J. Rode, San Ramon, and Frank O. Uher, Los Altos, all of Calif., assignors to Genus, Inc., Sunnyvale, Calif.

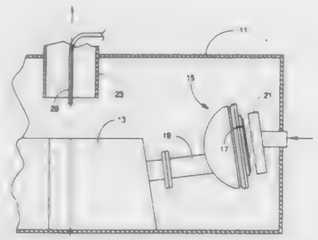
Filed Sep. 22, 1992, Ser. No. 950,088
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—725 9 Claims

1. A system for providing a film of a material on a surface of a substrate by a CVD process performed in a CVD chamber, comprising:

a plurality of supports within the CVD chamber for supporting one or more substrates during processing, the supports arranged substantially equidistant radially around a central axis of the CVD chamber;

heaters associated with the supports for heating the substrate to facilitate deposition of the film;

at leas one injector for providing coating gas into the CVD chamber, the coating gas comprising at least one substance reactive to produce the film of material; and



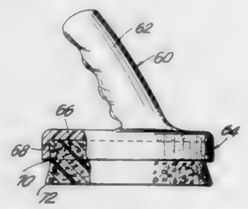
a control gas injector positioned at a point substantially on the central axis, for injecting a control gas into the CVD chamber, providing a concentration gradient of the control gas proximate and substantially parallel to the surface to be coated on the substrate, the deposition rate of the material forming the film in the CVD process being a function of the concentration of said control gas in said CVD process.

5,387,290

HAND POLISHING TECHNIQUE FOR AUTOMOBILES AND OTHER VEHICLES

Jay N. Kolinsky, Old Stone Hill Rd., Pound Ridge, N.Y. 10576

Continuation-in-part of Ser. No. 958,608, Oct. 8, 1992, abandoned, which is a continuation of Ser. No. 766,027, Sep. 26, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 12,880
Int. Cl.[6] A47L *13/16*
U.S. Cl. 134—32 11 Claims



1. A method of cleaning or polishing surfaces of a vehicle with a polishing apparatus comprising a polishing pad and a handle that are friction fit together to be separable by deformation of the pad from lateral forces on the handle upon exceeding a predetermined friction force from a dry surface that is produced between the pad and the surface being cleaned or polished, the method comprising the steps of:

(a) selecting a surface to be cleaned or polished;

(b) applying a cleaning or polishing agent to at least one of the pad or a portion of the surface;

(c) spreading the cleaning or polishing agent over the surface by moving the polishing pad fitted to the handle over the surface while exerting a downward force on the handle thereby producing a friction force between the pad and the surface; and

(d) stopping the application of the agent to the surface when the pad is separated from the handle upon the friction force exceeding a predetermined friction force.

5,387,291

PROCESS FOR PRODUCING ALLOY POWDER MATERIAL FOR R-FE-B PERMANENT MAGNETS AND ALLOY POWDER FOR ADJUSTING THE COMPOSITION THEREFOR

Yuji Kaneko, Uji, and Koki Tokuhara, Otsu, both of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Mar. 17, 1993, Ser. No. 32,101
Claims priority, application Japan, Mar. 19, 1992, 4-093779; Apr. 8, 1992, 4-116977
Int. Cl.[6] H01F *1/02*
U.S. Cl. 148—101 19 Claims

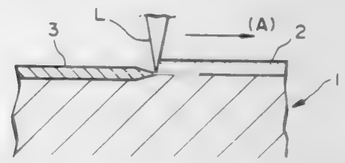
1. A process for producing a starting alloy powder material for fabricating an R—Fe—B permanent magnet, characterized by that an alloy powder comprising an R_2Fe_{17} phase for adjusting the composition and containing 50% by atomic or less of R (where R represents at least one selected from rare earth elements inclusive of yttrium) and balance iron (where at least one of cobalt and nickel may be present as a partial substitute for iron) with unavoidable impurities is added to a principal phase alloy powder which comprises an $R_2Fe_{14}B$ phase as the principal phase and containing from 10 to 30% by atomic of R (where R represents at least one of rare earth elements inclusive of yttrium), from 6 to 40% by atomic of boron, and balance iron (where at least one of cobalt and nickel may be present as a partial substitute for iron) with unavoidable impurities.

5,387,292

CORROSION RESISTANT STAINLESS STEEL

Norio Morishige, Yokosuka; Kenji Hirano, Yokohama; Kiyofumi Ishikawa, Hiratsuka, and Shuji Furuya, Yokohama, all of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Division of Ser. No. 914,025, Jul. 15, 1992, Pat. No. 5,196,272, which is a continuation of Ser. No. 561,072, Aug. 1, 1990, abandoned. This application Aug. 24, 1992, Ser. No. 933,664
Claims priority, application Japan, Aug. 1, 1989, 1-199919; Aug. 1, 1989, 1-199920; Aug. 1, 1989, 1-199921; Sep. 8, 1989, 1-234231; Sep. 21, 1989, 1-245682
Int. Cl.[6] C23C *28/00*
U.S. Cl. 148—276 9 Claims



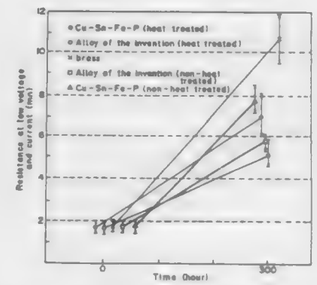
1. A method for improving corrosion resistance of stainless steel, comprising the steps of: smoothing a surface of stainless steel; applying a coating material onto the surface of said stainless steel to form a coating film, said coating material comprising a mixture of a metal powder containing a chromium-based composite and a binder for adhesively holding said metal powder on the surface of said stainless steel; and burning the coating film by irradiating with a laser to form a cladding layer, wherein said binder comprises, based on the total weight of said binder, 10–60 weight % SiO_2, 20–50 weight % carbon, less than 40 weight % Al_2O_3, and less than 2 weight % hydrogen.

5,387,293

COPPER BASE ALLOYS AND TERMINALS USING THE SAME

Takayoshi Endo; Kenji Takenouchi, both of Shizuoka; Mikio Nishihata, Tokyo; Toshio Asano, Tokyo, and Akira Sugawara, Tokyo, all of Japan, assignors to Dowa Mining Co., Ltd.; Yazaki Corporation, both of Tokyo and Nihon Bell Parts Co., Ltd., Yachiyo, all of Japan

Continuation-in-part of Ser. No. 821,707, Jan. 16, 1992, abandoned. This application Mar. 24, 1993, Ser. No. 36,489
Claims priority, application Japan, Jan. 17, 1991, 3-18337
Int. Cl.[6] C22C *9/02*
U.S. Cl. 148—412 9 Claims



1. In a connector terminal, wherein the improvement comprises said connector terminal being made of a plate material of a copper alloy that consists essentially, on a weight basis, of 1.10% Ni, 0.05% P and 1.48% Sn with the remainder being Cu and incidental impurities, and that has a tensile strength of at least 50 kgf/mm^2, a spring limit of at least 40 kgf/mm^2, a stress relaxation of not more than 10% and an electrical conductivity of at least 30% IACS, said copper alloy having uniformly dispersed therein fine particles of a Ni-P compound.

5,387,294

HARD SURFACING ALLOY WITH PRECIPITATED METAL CARBIDES AND PROCESS

Samuel C. DuBois, Troy, Mich., assignor to Wall Comonoy Corporation, Madison Heights, Mich.

Continuation of Ser. No. 696,836, May 7, 1991, Pat. No. 5,141,571. This application May 19, 1992, Ser. No. 886,044
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[6] C22C *19/05, 32/00*
U.S. Cl. 148—427 8 Claims



1. A hard surfacing alloy having a Rockwell C hardness of greater than about 50 and including tungsten carbide, chromium carbide and bi-metallic chromium tungsten carbide crystals consisting essentially of from about 12% to about 20% tungsten, from about 13% to about 30% chromium, an effective amount of carbon for forming carbides with the tungsten and chromium, from about 2% to about 5% iron, from about 2% to about 5% boron and from about 2% to about 5% silicon, with the balance being nickel wherein chromium and tungsten are present in a ratio of from 0.65:1 to 1.4:1, wherein said alloy includes precipitated carbides of chromium, tungsten and

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bimetallic tungsten chromium carbides having a size of from about 25 to about 100 microns interspersed therethrough and metallurgically bonded therein, and wherein said alloy has a porosity which when coated on a substrate is not visible at a magnification of ten times.

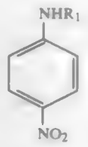
5,387,295

STABILIZERS FOR CROSS-LINKED COMPOSITE MODIFIED DOUBLE BASE PROPELLANTS

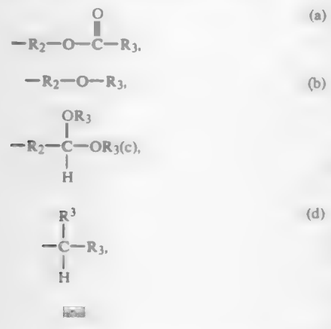
James D. Gibson, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 5, 1977, Ser. No. 757,115
Int. Cl.[6] C06B *45/10*
U.S. Cl. 149—19.4 7 Claims

2. An isocyanate cross-linked composite modified double base propellant composition containing from about 1% to 5% by weight, based upon the weight of the propellant composition, of a thermal stabilizer of the formula:



wherein R_1 is selected from the group consisting of:



(a)

(b)

(d)

(c)

wherein R_2 is a straight or branched chain alkene radical having 1 to 3 carbon atoms, R_3 is a straight or branched chain alkyl radical having 1 to 3 carbon atoms, n is an integer from 1–3, m is an integer from 1–3, and y is an integer from 1–3.

5,387,296

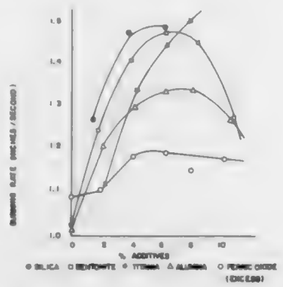
ADDITIVE APPROACH TO BALLISTIC AND SLAG MELTING POINT CONTROL OF AZIDE-BASED GAS GENERANT COMPOSITIONS

Robert D. Taylor, Hyrum, and Lewis R. Huntsman, Williard, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 749,032, Aug. 23, 1991, Pat. No. 5,143,567. This application Aug. 5, 1992, Ser. No. 926,119
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[6] C06B *35/00*
U.S. Cl. 149—35 20 Claims

1. A composition for generating nitrogen gas and suitable for inflating vehicle occupant restraint systems, consisting essentially of (all percents by weight):

A. between about 65 and 74 percent azide fuel,
B. between about 17 and 29.5 percent of a primary oxidizer selected from the group consisting of iron oxide, chromium oxide, manganese oxide, cobalt oxide, copper oxide, vanadium oxide and mixtures thereof,
C. between about 1.0 and 6.0 percent co-oxidizer selected from the group consisting of metal nitrites, nitrates and mixtures thereof;



D. between about 2.34 and 8.0 percent of a mixture of metal oxides selected from the group consisting of SiO_2, Al_2O_3 and TiO_2,
E. up to about 6.0 percent bentonite, and
F. up to about 4.0 percent molybdenum disulfide,
said composition having a burning rate between about 0.8 and 1.5 inches per second.

5,387,297

2,4-DINITROIMIDAZOLE- A LESS SENSITIVE EXPLOSIVE AND PROPELLANT MADE BY THERMAL REARRANGEMENT OF MOLTEN 1,4 DINITROIMIDAZOLE

Reddy Damavarapu, Hackettstown; Keerti Jayasuriya; Theodore Vladimiroff, both of Newton, and Sury Iyer, Randolph, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 949,914, Sep. 24, 1992, abandoned. This application Nov. 26, 1993, Ser. No. 170,654
Int. Cl.[6] C07D *487, 100;* D03D *23/00, 43/00*
U.S. Cl. 149—109.6 5 Claims

4. In a process of making an article of manufacture wherein the article contains an explosive or propellant and is adapted for use as ordnance, the improvement comprising melting 1,4-dinitroimidazole (DNI-14) and maintaining said molten condition so that said DNI-14 undergoes a thermal rearrangement to DNI-24 in an amount sufficient to provide a thermally stable, shock insensitive, powerful energetic composition as the explosive or propellant.

5,387,298

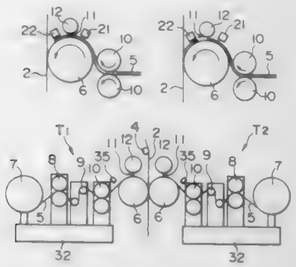
APPARATUS AND METHOD FOR BONDING SHEET MATERIAL AND ITS APPLICATION TO MANUFACTURE OF FLEXIBLE FLAT CABLE

Masazumi Takagi; Toshio Onuma; Tatsuya Watanabe; Toshiaki Enami, all of Chiba; Kazuo Tanihira, Aomori; Hirotaka Sawada, Chiba; Kuni Yoshinuma, Chiba, and Hiroaki Komatsuda, Chiba, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 50,593
Claims priority, application Japan, Apr. 23, 1992, 4-104962; May 22, 1992, 4-131091; May 22, 1992, 4-131092; May 22, 1992, 4-131093; Jul. 23, 1992, 4-197264
Int. Cl.[6] H01B *13/18;* H02N *13/00*
U.S. Cl. 156—47 8 Claims

1. A method for manufacturing a flexible flat cable, comprising the steps of:

transferring a plurality of electric conductors arranged in an elongated manner;
transferring a pair of insulating tape sheets towards said electric conductors;
causing said electric conductors and said insulating tape sheets to run between a pair of hot rolls to thermally bond said conductors and said tape sheets;



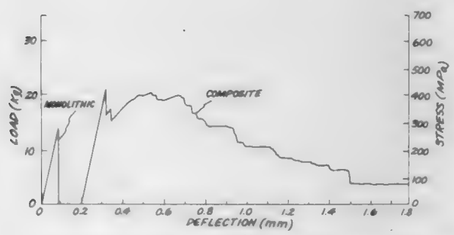
cutting discrete tapes from said insulating tape sheets adhered to said hot rolls prior to bonding; and
generating static electricity on said insulating tape sheets to cause said sheets to adhere to said hot rolls, whereby said discrete tapes are prevented from falling from said hot rolls prior to bonding.

5,387,299

CERAMIC COMPOSITE CONTAINING COATED FIBROUS MATERIAL

Raj N. Singh, Schenectady, and Achuta R. Gaddipati, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1988, Ser. No. 290,552
Int. Cl.[6] C04B *33/39;* B05D *1/36;* B32B *3/26*
U.S. Cl. 156—89 40 Claims



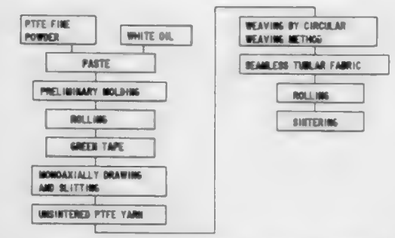
1. A process for producing a composite containing at least about 10% by volume of boron nitride coated fibrous material and having a porosity of less than about 20% by volume which comprises:
(a) forming a slurry of infiltration-promoting material and organic binding material in a liquid medium;
(b) depositing a coating of boron nitride on fibrous material leaving no significant portion thereof exposed;
(c) depositing a silicon-wettable coating on said boron nitride-coated fibrous material leaving no significant portion of said boron nitride exposed;
(d) providing the resulting coated fibrous material substantially as a layer;
(e) casting said slurry onto said coated fibrous material in an amount sufficient to form a tape therewith;
(f) evaporating said liquid medium forming a tape;
(g) firing said tape to remove said organic binding material producing a porous body;
(h) contacting said porous body with silicon-associated infiltrating means whereby said silicon is infiltrated into said porous body;
(i) heating the resulting assembly in a partial vacuum to a temperature at which said silicon is molten and infiltrating said molten silicon into said porous body to produce an infiltrated product; and
(j) cooling said product producing said composite.

5,387,300

METHOD OF MANUFACTURING A SEAMLESS TUBULAR WOVEN ARTICLE INCLUDING POLYTETRAFLUOROETHYLENE YARN

Atsushi Kitamura, 30, Izumi-Hommachi 5-chome, Kanazawa-shi, Ishikawa 921, Japan

PCT No. PCT/JP92/01091, § 371 Date Apr. 30, 1993, § 102(e) Date Apr. 30, 1993, PCT Pub. No. WO93/05218, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 27, 1992, Ser. No. 39,444
Claims priority, application Japan, Sep. 4, 1991, 3-254633
Int. Cl.[6] B29C *67/04;* B29D *31/00;* B03D *3/02, 15/00*
U.S. Cl. 156—148 1 Claim



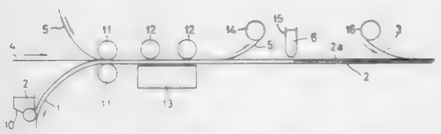
1. A method of manufacturing a seamless tubular article comprising
weaving a seamless tubular fabric, by a circular weaving method, using an unsintered polytetrafluoroethylene yarn at least as part of a warp and/or filling,
wherein said unsintered polytetrafluoroethylene yarn is obtained by drawing a preliminary molding, either as such or after rolling, which preliminary molding is obtained by subjecting a fine powder of polytetrafluoroethylene to paste extrusion or calendering,
performing a rolling operation on said seamless tubular fabric after weaving, and
sintering said seamless tubular fabric after said rolling operation.

5,387,301

METHOD OF MANUFACTURING A PREPREG

Makiji Miyao, and Makoto Takezawa, both of Saitama, Japan, assignors to Tonen Corporation, Tokyo, Japan

Filed Nov. 29, 1993, Ser. No. 157,596
Claims priority, application Japan, Nov. 30, 1992, 4-343162
Int. Cl.[6] C09J *5/02;* B29B *15/08, 11/16;* B29K *105/08*
U.S. Cl. 156—179 20 Claims



1. A method of manufacturing a prepreg comprising:
coating a release paper with a matrix resin having a low viscosity;
supplying reinforcing fibers in between said release paper

coated with the matrix resin and a release paper which is not coated with the matrix resin;
impregnating said reinforcing fibers with the matrix resin by heating and pressing the release papers while arranging the reinforcing fibers on the matrix resin layer;
separating one of the papers;
subsequently, applying a room-temperature curing type hardener onto a surface of the matrix resin layer to cure the surface layer of the matrix resin layer; and
thereafter, covering said matrix resin layer with a cover film.

5,387,302

METHOD OF AUTOMATICALLY AND CONTINUOUSLY LABELLING ARTICLES SUCH AS FRUIT OR VEGETABLES, AND APPARATUS FOR IMPLEMENTING THE METHOD

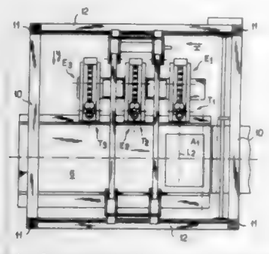
Jacques Bernard, Saint Philbert du Peuple, and Laurent Koenig, Angers, both of France, assignors to DISPAC, Corne, France

Filed Oct. 8, 1993, Ser. No. 134,299

Claims priority, application France, Oct. 12, 1992, 92 12455

Int. Cl.[6] B32B *31/00*; G05G *15/00*

U.S. Cl. 156—352 **8 Claims**



1. A method of automatically and continuously labelling articles such as fruit or vegetables, which method consists in placing said articles in indented trays having parallel rows of indentations, in disposing the trays in single file on a continuously moving conveyor, said rows being disposed perpendicularly to an advance direction of the conveyor, and in moving at least one labelling head in a first direction parallel to said direction at a velocity equal to that of the conveyor, and in a second direction perpendicular to said advance direction over a row of indentations such that a label is placed successively on each article in said row, and then in renewing said operation for each of said rows.

5,387,303

METHOD AND APPARATUS FOR FORMING RUBBER SHEET HAVING CORDS THEREIN

Toshio Azuma, Higashiyamato, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 725,858, Jul. 2, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 83,321

Claims priority, application Japan, Jul. 18, 1990, 2-189713

Int. Cl.[6] B32B *31/08, 31/10, 31/20, 31/30*

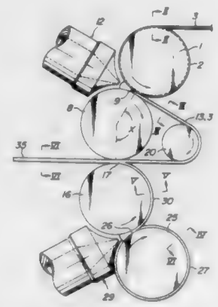
U.S. Cl. 156—179 **10 Claims**

1. A method of forming a rubber sheet having cords therein, comprising the steps of: supplying a plurality of cords into individual circumferential grooves, which are formed in the outer surface of a grooved roll and are equally spaced from one another by a predetermined pitch in an axial direction of the grooved roll, to arrange the cords so that the cords are equally spaced from one another by said predetermined pitch; pressure-joining a first rubber sheet with a half of each of the cords which are restrained in the individual grooves in a first pressure-joining position between the grooved roll and a pressure-joining roll to form a rubber cord sheet; guiding and moving the rubber cord sheet from the first pressure-joining position to guiding means in a plane which is perpendicular to a plane including a rotating axis of the pressure-joining roll and the grooved roll, and which includes the first pressure-joining position, and guiding the rubber cord sheet with the guiding means to a second pressure-joining position between the pressure-joining roll and a forming roll, said second pressure-joining position being angularly spaced by a predetermined angle in a circumferential direction about the pressure-joining roll away from the first pressure-joining position; supplying a second rubber sheet into the second pressure-joining position, said second rubber sheet having formed on at least one surface thereof a plurality of longitudinal grooves spaced equally from one another by said predetermined pitch and corresponding to each of the cords; and pressure-joining the rubber cord sheet and second rubber sheet with each other such that each half of the cords projecting from the first rubber sheet are buried into the longitudinal grooves of the second rubber sheet to form the rubber sheet having the cords therein.

7. A method of forming a rubber sheet having two rows of cords therein, comprising the steps of:

supplying a first plurality of cords into individual circumferential grooves of a first grooved roll, wherein said grooves of said first grooved roll are formed in the outer surface of the first grooved roll and are equally spaced from one another by a predetermined pitch in an axial direction of the first grooved roll to arrange the first plurality of cords so that the first plurality of cords are equally spaced from one another by said predetermined pitch;

supplying a second plurality of cords into individual circumferential grooves of a second grooved roll, wherein said



grooves of said second grooved roll are formed in the outer surface of the second grooved roll and are equally spaced from one another in an axial direction of the second grooved roll by said predetermined pitch, to arrange the second plurality of cords so that the second plurality of cords are equally spaced by said predetermined pitch;

pressure joining a first rubber sheet with a half of each of the first plurality of cords which are restrained in the individual grooves of the first grooved roll in a first pressure-joining position to form a first rubber cord sheet, wherein said first pressure-joining position is formed between the first grooved roll and a first pressure-joining roll;

pressure joining a second rubber sheet with a half of each of the second plurality of cords which are restrained in the individual grooves of the second grooved roll in a second pressure joining position to form a second rubber cord sheet, wherein said second pressure joining position is formed between the second grooved roll and a second pressure joining roll;

moving the first rubber cord sheet and second rubber cord sheet to a third pressure-joining position;

supplying a third rubber sheet to the third pressure-joining position, said third rubber sheet having formed on a first and second surface thereof a plurality of longitudinal grooves spaced equally from one another by said predetermined pitch, said third pressure-joining position being formed between the first and second pressure joining rolls; and

pressure-joining the first and second rubber cord sheets with the third rubber sheet such that the longitudinal grooves on the first surface and second surface of the third rubber sheet receive the first plurality of cords and the second plurality of cords, respectively, and so as to form the rubber sheet having two rows of cords formed therein.

5,387,304

APPLICATION OF A PAINTED CARRIER FILM TO A THREE-DIMENSIONAL SUBSTRATE

Godwin Berner, Binningen, and Ljubomir Misev, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 783,445, Oct. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 411,338, Sep. 22, 1989, abandoned. This application Mar. 15, 1993, Ser. No. 32,152

Claims priority, application Switzerland, Sep. 27, 1988, 3574/88

Int. Cl.[6] B32B *27/16*

U.S. Cl. 156—212 **18 Claims**

1. A method of applying a painted carrier film to a three dimensional substrate of solid material, which carrier film is coated on one side with paint and on the other side with an adhesive, and then heating said carrier film and applying it, while hot, by stretching and deep drawing, with the adhesive coated side to said substrate, wherein the paint used is both a radiation and heat curable :paint which is cured in a first step after application to the carrier film, prior to application to the substrate, into a tack-free thermoplastic state by irradiation and is heat-crosslinked in a second step after application of the carrier film to the substrate.

5,387,305

METHOD FOR PRODUCING A THEROELECTRICALLY WELDABLE ZONE IN A THERMOPLASTIC MATERIAL

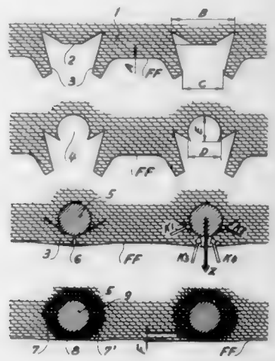
Alfred Streng, Niederhasli, Switzerland, assignor to Streng Plastic AG, Niederhasli, Switzerland

Filed Sep. 10, 1993, Ser. No. 120,156

Claims priority, application Switzerland, Sep. 22, 1992, 02959/92

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—257 **11 Claims**



1. A method for producing a thermoelectrically weldable zone in a body of thermoplastic material comprising the steps of

cutting a surface of the material to concurrently form a first incision generally perpendicular to the surface and second incisions extending laterally from the first incision a preselected depth from the surface, thereby forming flaps,

bending the flaps outwardly to form between the flaps a channel having a bottom at the preselected depth from the surface of the body,

removing material to form a groove shaped and dimensioned to closely receive a heating wire,

placing the heating wire in the groove, and

returning the flaps into the channel substantially to the positions occupied by the material of the flaps before formation of the first and second incisions.

5,387,306

MANUFACTURING INTEGRATED CIRCUIT CARDS

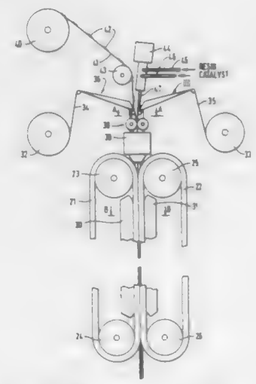
Charles R. Jarvis, Bewdley, United Kingdom, assignor to GEC Avery Limited, Warley, United Kingdom

Continuation-in-part of Ser. No. 473,981, Apr. 23, 1990, abandoned. This application Aug. 28, 1991, Ser. No. 750,597

Claims priority, application United Kingdom, Jun. 21, 1988, 8814664; Jan. 19, 1989, 8901189

Int. Cl.[6] B29C *45/14, 69/02*

U.S. Cl. 156—292 **6 Claims**



1. A method of manufacturing integrated circuit cards, each comprising at least one electronic component and data input-/output means encapsulated within a plastics body having high tensile skins on two opposing main faces thereof, the method comprising the steps of:

a) forming a pair of high tensile plastics webs into a tube and guiding said tube between an opposed pair of moving endless belts whose faces are adapted to co-operate to form a moving mold cavity therebetween;

b) attaching said electronic components and said data input-/output means to at least one elongate flexible member and guiding said at least one member within said tube between said endless belts such that said components and said data input/output means are disposed at predetermined positions within said mold cavity;

c) injecting a reaction injection, moldable plastics material into said tube before it passes between said endless belts, such that the mold cavity is filled by said plastics material within said tube;

d) curing said plastics material during passage between said belts to produce a continuous band of said integrated circuit cards; and

e) separating said continuous band into discrete integrated circuit cards.

5,387,307

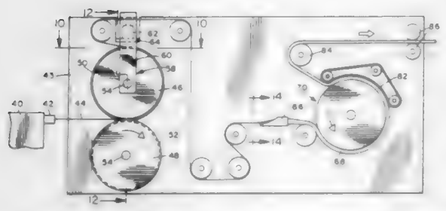
DRIP IRRIGATION TAPE AND METHOD OF MANUFACTURE

James C. Roberts, 700 Ranchero Dr., San Marcos, Calif. 92069-3093

Continuation of Ser. No. 15,080, Feb. 8, 1993, Pat. No. 5,318,657, which is a continuation of Ser. No. 722,535, Jun. 27, 1991, abandoned, which is a division of Ser. No. 485,778, Feb. 22, 1990, abandoned, which is a continuation of Ser. No. 332,588, Apr. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 156,413, Feb. 16, 1988, abandoned. This application Feb. 14, 1994, Ser. No. 194,854

Int. Cl.[6] B05B *15/00;* B29C *53/08*

U.S. Cl. 156—466 5 Claims



1. An apparatus for fabricating drip irrigation tape, comprising:

extruding means for extruding a heated strip of flexible material;

a pair of opposing shaping drums for shaping the heated strip of flexible material to form an indented groove of predetermined, serpentine shape extending along one side edge portion of the strip, a first one of the shaping drums having a smooth annular rim surface and a mandrel projecting outwardly from said rim surface adjacent one side edge of said first drum, the mandrel being shaped to correspond to the desired serpentine shape of the indented groove, the second one of the shaping drums having a smooth annular rim surface opposing the smooth rim surface of said first shaping drum and an annular channel on said rim surface adjacent one side edge of said rim surface and extending inwardly from said smooth rim surface for receiving the mandrel as the drum rotates, the annular channel comprising a straight, linear channel having a width substantially equal to the maximum width of the projecting serpentine mandrel;

the opposing smooth annular rim surfaces of the shaping drums comprising means for guiding the heated strip between the drums and the projecting mandrel and opposing annular channel comprising means for deforming a portion of the strip located between the mandrel and channel out of the plane of the remainder of the strip to form the indented groove;

a folding device for folding the strip lengthwise with the opposite side edge portions of the strip overlapping to cover the groove and form a first conduit within the folded strip;

a sealing device for joining the overlapping edge portions together in face-to-face contact at least along opposite sides of the groove;

and port forming means for providing a series of inlet ports between the first conduit and a secondary conduit defined by the groove, and a series of outlet ports between the secondary conduit and the exterior of the tape.

5,387,308

CARPET STRIPPER

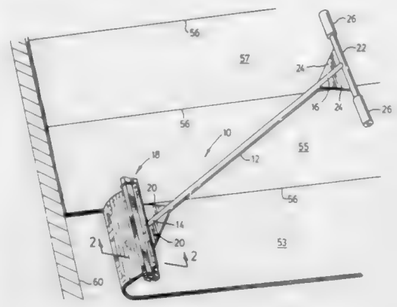
Patrick Heavrin, 1575 Marionville Dr., Mississauga, Ontario, Canada L5E 2Y4

Filed Jan. 21, 1994, Ser. No. 184,531

Claims priority, application Canada, Jan. 21, 1993, 2087774-0

Int. Cl.[6] B32B *35/00*

U.S. Cl. 156—584 10 Claims



1. A carpet stripper comprising:

an elongate, rigid handle having a distal end portion; a gripping assembly rigidly attached to the distal end portion and extending transversely on either side of the handle, the gripping assembly having an elongate lower jaw including a plurality of longitudinally spaced-apart spikes extending upwardly therefrom, an inverted, U-shaped upper jaw hingeably attached to a first end of the lower jaw to swing down over the spikes, and a releasable locking member connected between a second opposed end of the lower jaw and the upper jaw to lock the upper jaw in position covering the spikes.

5,387,309

PROCESS FOR THE MEASUREMENT OF THE THICKNESS AND REFRACTIVE INDEX OF A THIN FILM ON A SUBSTRATE, AND AN APPARATUS FOR CARRYING OUT THE PROCESS

Friedrich Böbel, Uttenreuth, and Norbert Bauer, Erlangen, both of Germany, assignors to Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.v., Munich, Germany

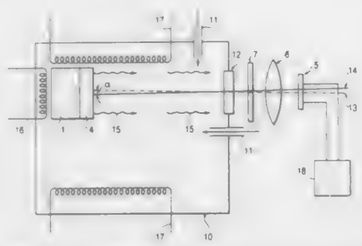
PCT No. PCT/DE91/00461, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992, PCT Pub. No. WO91/19025, PCT Pub. Date Dec. 12, 1991

PCT Filed May 29, 1991, Ser. No. 952,834

Claims priority, application Germany, May 30, 1990, 4017440

Int. Cl.[6] C30B *25/16*

U.S. Cl. 117—85 21 Claims



1. A process for enabling spatially resolved measurement of a thickness of a thin film on a substrate, comprising the steps of utilizing thermal radiation of the substrate as a source of electromagnetic radiation, causing at least two bundles of electromagnetic radiation exhibiting a phase difference after passing through different path lengths in the thin film to emanate from thin film at different points in a planar direction of the thin film, filtering from the at least two bundles of electromagnetic radiation all frequency proportions other than an approximately monochromatic proportion out of a continuous spectrum of the thermal radiation, interfering the at least two filtered bundles of electromagnetic radiation, measuring the intensities of the interfering bundles of electromagnetic radiation, and evaluating the measured intensities so as to at least obtain the spatially resolved measurement of the thickness of the thin film on the substrate in the planar direction of the thin film.

5,387,310

METHOD FOR PRODUCING SINGLE CRYSTAL DIAMOND FILM

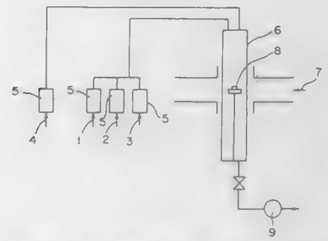
Hiromu Shiomi, and Naoji Fujimori, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 489,517, Mar. 7, 1990, abandoned. This application Apr. 16, 1993, Ser. No. 47,384

Claims priority, application Japan, Mar. 7, 1989, 1-54477

Int. Cl.[6] C30B *29/04*

U.S. Cl. 117—101 4 Claims



1. A method for producing a single crystal diamond film, which comprises the steps of:

decomposing a raw material gas comprising a hydrogen gas and a carbon containing compound, and

epitaxially growing a single crystal diamond film on a (100) plane of a single crystal diamond substrate in a vapor phase, wherein a molar ratio of the carbon atoms in the carbon-containing compound to the hydrogen is from 2:100 to 10:100.

5,387,311

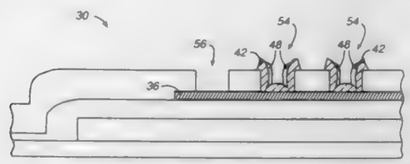
METHOD FOR MANUFACTURING ANTI-FUSE STRUCTURES

Stacy W. Hall, and Miguel A. Delgado, both of San Antonio, Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 16, 1993, Ser. No. 17,542

Int. Cl.[6] H01L *21/306*

U.S. Cl. 156—630 10 Claims



1. A method for forming a plurality of anti-fuse structures comprising:

providing a conductive substrate;

depositing an oxide layer over said conductive substrate;

providing a plurality of via holes through said oxide layer to said conductive substrate, wherein at least one of said vias is a link via;

depositing an anti-fuse material over said oxide layer and within said vias;

depositing spacer material over said anti-fuse material;

performing a first etch process to provide spacers within said vias such that spacer material is essentially removed over said anti-fuse material between said spacers but extraneous material remains at least partially on said anti-fuse material on surfaces outside said vias such that spacer material is not overetched in said vias, whereby said anti-fuse material in said vias is not thinned and an anti-fuse programming voltage associated with each of said vias is not reduced;

masking a plurality of vias designated as anti-fuse vias;

performing a second etch process to remove said extraneous material from areas not designated as anti-fuse vias.

5,387,312

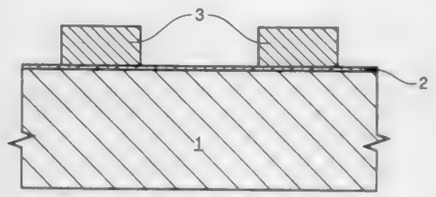
HIGH SELECTIVE NITRIDE ETCH

David J. Keller, Boise, and Debra K. Gould, Nampa, both of Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Jul. 9, 1993, Ser. No. 89,205

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—662 20 Claims



1. An etch process for improving etch uniformity, comprising the following steps of:

bombarding a substrate with an ionized halogen-containing compound, said substrate having a silicon oxide layer and a silicon nitride layer and a patterned mask disposed thereon, said layered substrate is bombarded with NF_3 ions in combination with said ionized halogen-containing compound; and

thereafter, bombarding said substrate with a nitrogen plasma, said layered substrate is bombarded with NF_3 ions in combination with said nitrogen plasma, said halogen containing compound and said nitrogen plasma removing unmasked portions of said layer, thereby creating substantially straight sidewalls in said layer.

5,387,313

ETCHANT CONTROL SYSTEM

Roland Thoms, Cortland, N.Y., assignor to BMC Industries, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 973,679, Nov. 9, 1992. This application Jul. 23, 1993, Ser. No. 95,400

Int. Cl.[6] B05B *3/00;* C23F *1/00*

U.S. Cl. 156—626 15 Claims

1. The method of spray etching on a metal web comprising:

establishing a first grid pattern of oscillatable nozzles for etching the metal web from a first side of a metal web in accordance with a first waveform;

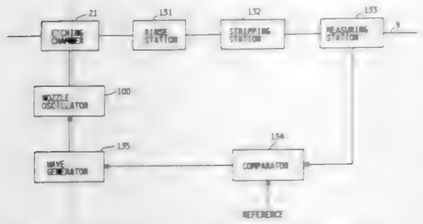
establishing a second grid pattern of oscillatable nozzles for etching the metal web from the first side of the metal web in accordance with a second waveform, said second grid pattern offset from said first grid pattern;

establishing a third grid pattern of oscillatable nozzles for etching the metal from the first side of the metal web in

accordance with a third waveform with said third grid pattern offset from said second grid pattern;

etching the metal web to form openings in the metal web by spraying etchant through said nozzles while oscillating at least some of said nozzles in accordance with the first waveform;

measuring the size of the openings formed in,the metal web to obtain measurements of the opening; and



oscillating the nozzles in accordance with a different waveform in response to the measurements to change the etchant flow distribution on the metal web without changing the etchant flow rate to the oscillating nozzles to compensate for changes in etching conditions or metal web thickness.

5,387,314

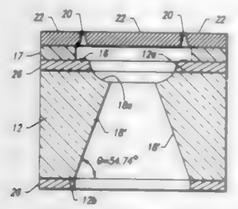
FABRICATION OF INK FILL SLOTS IN THERMAL INK-JET PRINTHEADS UTILIZING CHEMICAL MICROMACHINING

Kit C. Baughman; Jeffrey A. Kahn, both of Corvallis; Paul H. McClelland, Monmouth; Kenneth E. Trueba, and Ellen R. Tappon, both of Corvallis, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 25, 1993, Ser. No. 9,151

Int. Cl.[6] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **B29C** *37/00*

U.S. Cl. 156—643 **18 Claims**



1. A method for fabricating ink fill slots for fluidically communicating with ink feed channels in thermal ink-jet printheads, comprising:

(a) providing a silicon substrate having a <100> or <110> crystallographic orientation and two opposed, substantially parallel major surfaces, defining a primary surface and a secondary surface;

(b) forming an insulating dielectric layer on both said surfaces;

(c) patterning said insulating dielectric layer on said secondary surface to expose underlying portions of said silicon substrate;

(d) etching part way through said silicon substrate with an anisotropic etchant at said exposed portions to thereby form a portion of said ink fill slot;

(e) forming and defining thin film resistor elements and conductive traces on said insulating dielectric layer on said primary surface;

(f) precisely etching from said primary surface to connect with said portion of said ink fill slot to thereby completely form said ink fill slot and to controllably extend the portion of said ink fill slot terminating at said primary surface toward said ink feed channels to cause a widening thereof; and

(g) forming a barrier layer on the major surface of said dielectric material and defining openings therein to expose said resistor elements to define a drop ejection chamber and to provide said ink feed channels from each said resistor element to a terminus region, said terminus region fluidically communicating with said ink fill slot for introducing ink from a reservoir to said drop ejection chamber.

5,387,315

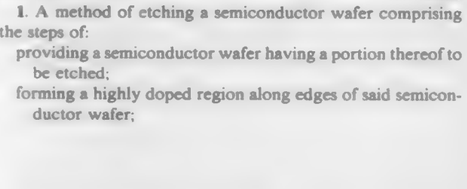
PROCESS FOR DEPOSITION AND ETCHING OF COPPER IN MULTI-LAYER STRUCTURES

Gurtej S. Sandhu, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Oct. 27, 1992, Ser. No. 968,056

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—646 **7 Claims**



1. An integral process for depositing copper onto and etching copper from a multi-layer structure having at least one major surface, comprising:

placing the multi-layer structure in a vacuum chamber;

introducing a copper precursor of $XCuY_2$ into the vacuum chamber wherein X is a halogen and wherein Y is selected from a group consisting of $P(CH_3)_3$, $P(C_2H_5)_3$, $P(i\text{-}C_3H_8)_3$, $P(CH(CH_3)_2)_3$and $P(C_4H_9)_3$;

depositing onto the at least one major surface of the multi-layer structure a film comprising copper from the copper precursor, a temperature of the multi-layer structure in the vacuum chamber being maintained above a decomposition temperature of the copper precursor during the step of depositing;

introducing a decomposition product of the copper precursor, 2Y, into the vacuum chamber;

lowering the temperature of the multi-layer structure in the vacuum chamber below the decomposition temperature of the copper precursor;

etching at least a portion of the deposited film on the at least one major surface of the multi-layer structure with an etchant material comprising the

decomposition product.

5,387,316

WAFER ETCH PROTECTION METHOD

Ronald C. Pennell, Chandler; Ira E. Baskett, Tempe, and Lynn W. Ford, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 9, 1992, Ser. No. 987,848

Int. Cl.[6] H01L *21/00*

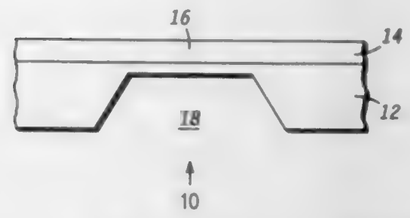
U.S. Cl. 156—647 **16 Claims**

1. A method of etching a semiconductor wafer comprising the steps of:

providing a semiconductor wafer having a portion thereof to be etched;

forming a highly doped region along edges of said semiconductor wafer;

etching said portion of said semiconductor wafer to be etched with an etchant; and



wherein said highly doped region of said semiconductor wafer is etch resistant to said etchant relative to said portion of said semiconductor wafer being etched.

5,387,317

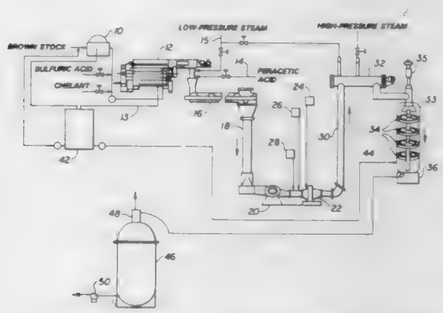
OXYGEN/OZONE/PERACETIC AICD DELIGNIFICATION AND BLEACHING OF CELLULOSIC PULPS

Venketa R. Parthasarathy, and Glenn F. Rudie, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jan. 28, 1993, Ser. No. 10,533

Int. Cl.[6] D21C *9/147, 9/153, 9/16*

U.S. Cl. 162—65 **13 Claims**



1. A method for delignification and bleaching of cellulosic pulp which comprises:

adding a solution of peracetic acid to a cellulosic pulp slurry in an amount of about 0.5 to 5% based on the weight of O.D. pulp and heating said pulp to about 50° to 60° C., said slurry having a consistency of at least about 20% and a pH of about 1 to 5, wherein said peracetic acid reacts with said pulp;

introducing a gaseous mixture of ozone and oxygen to said cellulosic pulp under said acidic pH at a pressure of about 40 to 120 psi thereby principally reacting said ozone with said pulp until said ozone has substantially completely reacted with said pulp; and thereafter reacting said oxygen with said pulp under acidic pH at a pressure of about 90 to 120 psi and a temperature of about 90° to 120° C. thereby delignifying said pulp.

5,387,318

WATER SOLUBLE GRAFT COPOLYMERS FOR LASER PRINT DEINKING LOOP CLARIFICATION

Wen P. Liao, Warminster, Pa.; John C. Harrington, Jacksonville, Fla.; Walter J. Burgess, Phoenixville, and Fu Chen, Newtown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

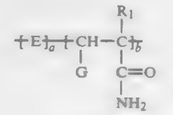
Continuation-in-part of Ser. No. 773, Jan. 5, 1993, Pat. No. 5,298,566, which is a division of Ser. No. 691,206, Apr. 25, 1991, Pat. No. 5,211,854. This application Dec. 17, 1993, Ser. No. 169,819

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

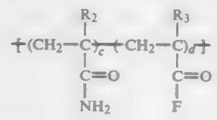
Int. Cl.[6] C02F *1/56*

U.S. Cl. 162—5 **13 Claims**

1. A method of clarifying laser print deinking loop water of a papermaking process comprising adding to the clarifier influent from about 0.5 ppm to about 500 ppm of a water soluble graft copolymer having the structure:



wherein E is the repeat unit obtained after polymerization of an α,β ethylenically unsaturated compound, the molar percentage of a:b is from about 95:5 to 5:95, with the proviso that the sum of a and b equals 100%; G comprises the structure:



wherein d is a cationic monomer, R_1, R_2 and R_3 are the same or different and are hydrogen or a lower alkyl group having C_1 to C_3, F is the salt of an ammonium cation and the molar percentage of c:d is from 95:5 to 5:95 with the proviso that the sum of c and d equals 100%.

5,387,319

PROCESS FOR MANUFACTURING A FLAT, FIBROUS, SUPPLE SUBSTRATE, DIFFICULT TO TEAR AND SUBSTRATE OBTAINED

Fernand Mora, Frangy, and Claude R. Riou, Menthon St. Bernard, both of France, assignors to Societe Anonyme: Aussedat-Rey, France

Continuation of Ser. No. 523,013, May 14, 1990, abandoned. This application Mar. 16, 1993, Ser. No. 32,722

Claims priority, application France, May 18, 1989, 89 06760

Int. Cl.[6] D21H *13/02*

U.S. Cl. 162—146 **8 Claims**

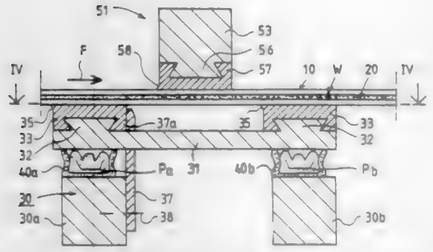
1. A process for manufacturing a flat, fibrous, supple substrate having improved tear-resistance comprising preparing natural cellulosic fibers by fibrillation to a sufficient extent to a obtain a drainability greater than about 80° Schopper-Riegler, mixing said fibrillated natural cellulosic fibers in water with artificial fibers including one or more ingredients selected from the group consisting of polyolefins, polyamides, polyesters, viscose and acetate of cellulose, said mixture comprises an amount of said artificial fibers ranging from 50% to 70% by weight on dry matter with respect to the whole of said natural cellulosic and artificial fibers, providing said mixture of fibrillated natural cellulosic fibers and artificial fibers in a head box for a paper-making machine, and flowing said mixture from said head box and onto a paper-making machine to produce said substrate.

5,387,320

TWIN-WIRE WEB FORMER IN A PAPER MACHINE

Jyrki Jaakkola, Korpilahti, Finland, assignor to Valmet Paper Machinery, Inc., Helsinki

Filed Jun. 24, 1992, Ser. No. 903,603
Claims priority, application Finland, Jun. 26, 1991, 913112
Int. Cl.[6] D21F *1/00, 1/54, 1/48*
U.S. Cl. 162—301 20 Claims



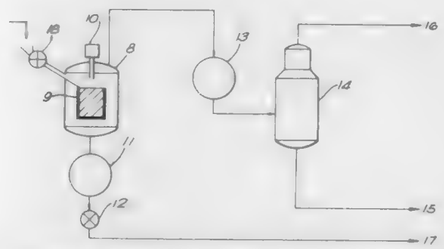
1. A twin-wire web former in a paper machine comprising
a carrying wire,
a covering wire, said carrying wire and said covering wire defining a twin-wire forming zone,
a forming unit located in said twin-wire forming zone, said forming unit comprising
a forming board located on one side of said carrying and said covering wires, said forming board having a plurality of transverse loading ribs and a plurality of ribbed shoes, each of said ribbed shoes comprising
a pair of successively arranged ones of said transverse loading ribs arranged at a distance from each other in the direction of travel of a web to define an open space therebetween,
machine direction ribs connecting a first one of said successively arranged transverse loading ribs and a second one of said successively arranged transverse loading ribs such that said first transverse loading rib is connected by said machine direction ribs only to said second transverse loading rib, said machine direction ribs being spaced apart from one another to define spaces therebetween,
loading means for loading said first and second transverse loading ribs with an adjustable loading force, said loading means comprising
two transverse frame beams, and
loading hoses for producing a dewatering pressure to dewater the web, one of said loading hoses being arranged on each of said transverse frame beams, the web former further comprising
a drainage box placed opposite said forming board on the other side of said carrying and said covering wires, said drainage box comprising a plurality of ribs defining spaces therebetween and means for applying negative pressure into said drainage box, the web being dewatered by the effect of the negative pressure applied into said drainage box, said ribs on said drainage box structured and arranged to operate as back-up members for loading forces provided by said loading hoses, and
said forming unit structured and arranged such that in the area of said forming unit dewatering takes place both through said covering wire and through said carrying wire and also toward said forming board through the open space located between said first and second transverse loading ribs of said forming board.

5,387,321

APPARATUS FOR WASTE PYROLYSIS

Kenneth M. Holland, Ashwood, Wynwoods, Campbell Close, Rise Park, Romford, Essex, United Kingdom

Continuation-in-part of Ser. No. 558,706, Jul. 27, 1990, Pat. No. 5,084,140, which is a continuation-in-part of Ser. No. 335,210, May 15, 1989, abandoned. This application Jan. 27, 1992, Ser. No. 826,020
Claims priority, application United Kingdom, May 13, 1987, 8711257; Nov. 11, 1987, 8726396
Int. Cl.[6] C10B *1/04*
U.S. Cl. 202—99 9 Claims



1. Apparatus suitable for carrying out the microwave pyrolysis of waste material which is not itself susceptible to heating by microwave radiation, which apparatus comprises:
a) retaining means substantially inert to microwave radiation which is capable of retaining a bed of pulverulent material and permitting the pulverulent material to overflow from the retaining means;
b) a reaction chamber arranged to surround the retaining means such that pulverulent material overflows the retaining means within the confines of the reaction chamber and gases evolved on pyrolysis of waste material in the retaining means flow into the reaction chamber;
c) means for feeding waste material through the reaction chamber to an upper part of the bed of pulverulent material retained in the retaining means such that, in use, the waste material will sink through the bed of pulverulent material;
d) a microwave radiation generating means communicable with the retaining means through the reaction chamber, the radiation generating means and the retaining means being relatively positioned such that microwave radiation emitted by the generating means can cause heating of the pulverulent material and substantial pyrolysis of the waste material as the latter sinks through the bed of pulverulent material;
e) means for controlling the atmosphere in said reaction chamber such that flame generation is substantially prevented in the reaction chamber; and
f) means for removal of gases from the reaction chamber that are evolved on pyrolysis of the waste material in the retaining means.

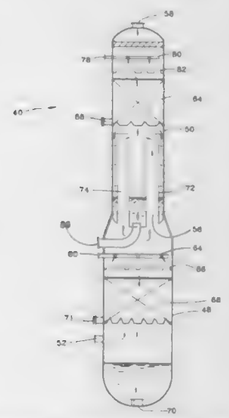
5,387,322

FUSEL OIL STRIPPING

Edward J. Cialkowski, Houston; Girish C. Joshi, Sugar Land, and Robert V. Schneider, III, The Woodlands, all of Tex., assignors to The M. W. Kellogg Company, Houston, Tex.

Filed May 14, 1993, Ser. No. 61,870
Int. Cl.[6] B01D *3/26*
U.S. Cl. 252—158 1 Claim

1. A unitized stripping column for stripping both fusel oil and process condensate produced in a methanol plant, said stripping column comprising:
a lower stripping section within the stripping column for removing volatile components from the process condensate, the lower stripping section including an upper process condensate inlet, a lower stripping steam inlet, vapor/liquid contact elements disposed between the inlets, and a process condensate distribution means disposed between the process condensate inlet and the vapor/liquid contact elements for distributing the process condensate over the vapor/liquid contact elements;
an outlet disposed at a lower end of the lower stripping section for removing steam stripped process condensate therefrom;
an upper stripping section within the stripping column for removing volatile components from the fusel oil, the upper stripping section including an upper fusel oil inlet, a lower liquid collector for receiving liquid from the upper stripping section, vapor/liquid contact elements disposed between the fusel oil inlet and the liquid collector, and a



fusel oil distribution means disposed between the fusel oil inlet and the vapor/liquid contact elements;
a liquid outlet in fluid communication with the liquid collector for removing liquid therefrom;
a passage through the liquid collector for vapor to pass from the lower stripping section to the upper stripping section to strip fusel in the upper stripping section;
a vapor outlet adjacent a top of the upper stripping section to recover a vapor stream comprising steam and volatile components stripped from both the process condensate and fusel oil; and
a conduit in fluid communication with the vapor outlet for recycling the recovered vapor stream from the upper stripping section of the stripping column to an inlet of a reforming reactor.

5,387,323

PROCESS FOR PREPARING FLUOROCHEMICALS

Richard M. Minday, Stillwater, Minn.; Thomas M. Barrett, Prescott; Charles F. Kolpin, River Falls, both of Wis., and John C. Smeltzer, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 31, 1993, Ser. No. 115,202
Int. Cl.[6] C25B *3/08*
U.S. Cl. 204—59 F 16 Claims

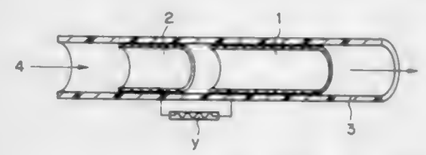
1. A process for preparing fluorochemical compounds, which comprises
(a) forming a mixture comprising at least one fluorinatable, non-functional organic starting compound and at least one other compound, wherein said other compound is present in an amount to enable the formation of a separate liquid fluorochemical phase, and said other compound is selected from the group consisting of
(i) perfluorochemical compounds which boil at a higher temperature than either said fluorinatable, non-functional organic starting compound or the fluorochemical compound resulting from the subsequent fluorination of said fluorinatable, non-functional organic starting compound; and
(ii) precursor compounds which can be fluorinated in situ to produce said perfluorochemical compounds; and
(b) subjecting said mixture to Simons electrochemical fluorination in anhydrous hydrogen fluoride.

5,387,324

METHOD FOR PROVIDING AN IONIC CHANGE IN FLUID

Jack K. Ibbott, 17-7; Nishiazabu 4-chome, Minato-ku, Tokyo 106, Japan

Filed Jul. 21, 1992, Ser. No. 916,254
Int. Cl.[6] C02F *1/46, 5/00*
U.S. Cl. 204—150 5 Claims



1. A method of providing an ionic change in fluid containing a compound in solution in said fluid, said method comprising:
providing a tube of electrically insulative material;
providing a positive electrode of electrically conductive material in said tube;
providing a negative electrode of electrically conductive material, comprising an element which is the same as an element included in a compound in solution in the fluid and having an electrochemical potential different from that of the electrically conductive material of said positive electrode, in said tube with at least some of the electrically conductive material of one of said electrodes being disposed downstream of all of the electrically conductive material of the other of said electrodes in the axial direction of said tube and with the electrically conductive materials of said positive and said negative electrode being electrically isolated from each other; and
causing the fluid to flow through said tube in said axial direction so as to first contact the electrically conductive material of said other of said electrodes and then contact said at least some of the electrically conductive material of said one of said electrodes such that the fluid forms the only electroconductive connection between the electrodes, whereby ions of said element come into solution with the fluid and act on said compound in solution in the fluid to effect an ionic change in the fluid.

5,387,325

DISCONTINUOUS AND NONSEQUENTIAL POLYMERIC GEL SYSTEMS FOR SEPARATION OF MACROMOLECULES

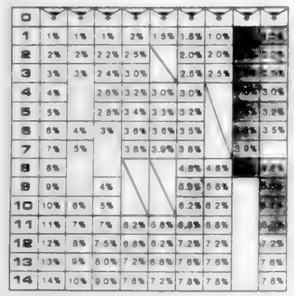
Jan J. Oppit, 17364 Falling Water Rd., Strongsville, Ohio 44136

PCT No. PCT/US91/09348, § 371 Date Jun. 9, 1993, § 102(e) Date Jun. 9, 1993, PCT Pub. No. WO92/10277, PCT Pub. Date Jun. 25, 1992
Continuation-in-part of Ser. No. 627,054, Dec. 13, 1990, abandoned. This PCT application Dec. 13, 1991, Ser. No. 74,847
Int. Cl.[6] B01D *61/46*
U.S. Cl. 204—299 R 1 Claim

1. A system of multilayered, discrete, discontinuous, nonsequential gels for molecular electrophoresis of biologic particles and macromolecules, comprising at least about five discrete separating gel-layers, wherein each gelous layer is defined by specific separation coefficients represented by K_D and K_R for the analyzed group of molecules, which direct the concentration of the medium and density of netting of each gelous layer, and wherein the value of K_D and K_R for each discrete separat-

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ing gel layer differs from an adjacent layer by a significant discontinuous and nonsequential value and wherein one or



more distinct intermediate gelous layers having a concentration of acrylamide polymer, ranging in amounts from about 1.5% to 2.5% T are inserted between the separating gels.

5,387,326

METHOD AND ARRANGEMENT FOR STABILIZING AN ARC BETWEEN AN ANODE AND A CATHODE PARTICULARLY FOR VACUUM COATING DEVICES

Rainer Buhl, Sargans, and Christoph Hasler, Azmoos, both of Switzerland, assignors to Balzers AG, Furstentum, Liechtenstein

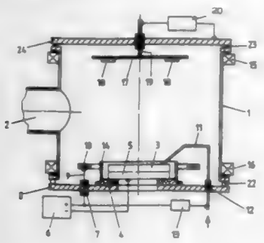
Continuation of Ser. No. 422,581, Oct. 17, 1989, Pat. No. 5,215,640, which is a continuation-in-part of Ser. No. 151,470, Feb. 2, 1989, abandoned. This application Jan. 21, 1993, Ser. No. 7,630

Claims priority, application Switzerland, Feb. 3, 1988, 00403/87

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[6] C23C *14/24*

U.S. Cl. 204—192.38 **21 Claims**



1. A cathode arrangement for vacuum evaporation apparatus, wherein evaporation is performed by at least one electric arc generated between an anode and a cathode of said arrangement, said arrangement comprising a bordering structure means, said bordering structure means bordering said cathode which is to be evaporated by said electric arc, said bordering structure means being formed of substantially magnetically non-permeable material and having a conductivity along its surface of at least 3×10^5 S/cm, said bordering structure means not being part of an induction coil structure with at least two windings, said bordering structure means for reacting to and acting on said electric arc, prior to the arc leaving the cathode surface, by eddy currents, induced by said electric arc, within said bordering means to maintain said electric arc within said surface area of said cathode.

5,387,327

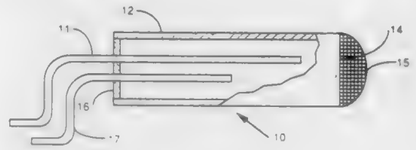
IMPLANTABLE NON-ENZYMATIC ELECTROCHEMICAL GLUCOSE SENSOR

Shahed U. M. Khan, Pittsburgh, Pa., assignor to Duquesne University of the Holy Ghost, Pittsburgh, Pa.

Filed Oct. 19, 1992, Ser. No. 962,667

Int. Cl.[6] G01N *27/404*

U.S. Cl. 204—403 **7 Claims**



1. An implantable unit adapted for delivering insulin in response to detection of blood glucose levels exceeding a predetermined set point, said unit comprising a non-reactive semiconductor measurement electrode, said electrode energized by an electrical power source and disposed within a sleeve member having an opening permitting glucose molecules to pass therethrough to said measurement electrode, but resisting the passage therethrough of molecules of predetermined greater size, said measurement electrode being connected to monitoring means for monitoring current density at said measurement electrode, in response to glucose molecules oxidation or glucose molecules reduction reactions at said measurement electrode, said monitored current density being translated into a blood glucose level by said monitoring means, said unit further including an insulin reservoir and insulin pump for delivering insulin from said reservoir to a patient in response to a signal from said monitoring means that the blood glucose level of said patient has exceeded said set point.

5,387,328

BIO-SENSOR USING ION SENSITIVE FIELD EFFECT TRANSISTOR WITH PLATINUM ELECTRODE

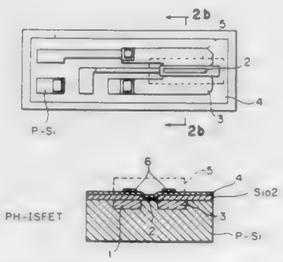
Byung-ki Sohn, Daegu, Rep. of Korea, assignor to Sensor Technology Research Center of Kyungpook National University, Daegu, Rep. of Korea

Filed Apr. 15, 1993, Ser. No. 46,751

Claims priority, application Rep. of Korea, Jan. 15, 1993, 93-492

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—403 **3 Claims**



1. A bio-sensor employing an ion-sensitive field effect transistor (ISFET) comprising:

a substrate comprising a source and a drain;

an ion sensing gate disposed between the source and the drain;

an ion-sensitive film formed on the surface of the substrate and the ion sensing gate;

a Pt electrode domain formed on the ion-sensitive film surrounding the periphery of the ion sensing gate; and

an immobilized enzyme membrane disposed on the ion-sensitive film and the Pt electrode domain.

5,387,329

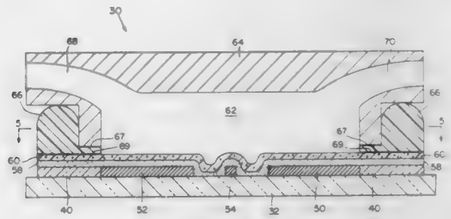
EXTENDED USE PLANAR SENSORS

Joseph S. Foos, Needham; Peter G. Edelman, Franklin; James E. Flaherty, Attleboro, all of Mass., and Joseph Berger, Basel, Switzerland, assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Apr. 9, 1993, Ser. No. 45,847

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—415 **89 Claims**



1. A solid-state planar oxygen sensor comprising:

an electrically nonconductive substrate;

a first electrically conductive material adhered to a first portion of said substrate, at least a portion of said first conductive material being covered with an electrically insulating dielectric coating and at least one portion of said first conductive material remaining uncovered by said electrically insulating dielectric coating, said uncovered portion of said first conductive material defining a working electrode area;

a second electrically conductive material adhered to a portion of the substrate, a portion of said second conductive material being covered with the electrically insulating dielectric coating and at least one portion of said second conductive material remaining uncovered by said electrically insulating dielectric coating, said uncovered portion of said second conductive material defining a counter electrode area;

a hygroscopic solid electrolyte provided on at least the working electrode area and the counter electrode area, said electrolyte having a swell value of less than two times its dry volume when provided with water;

a semipermeable membrane covering said electrolyte having an oxygen permeability of less than 8 Barrers;

a cover member covering said semipermeable membrane and having a recess formed therein, said recess having a perimeter facing the membrane and at least one passageway connected to the recess; and

a gasket contacting the recess perimeter and the membrane to form a seal therebetween, the gasket, cover member, and membrane defining a sample chamber.

5,387,330

MIXED IONIC CONDUCTORS

Noboru Taniguchi, Osaka; Junji Niikura, Hirakata; Kazuhito Hatoh, Daitou, and Takaharu Gamo, Fujiidera, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 17, 1992, Ser. No. 913,958

Claims priority, application Japan, Jul. 17, 1991, 3-176700

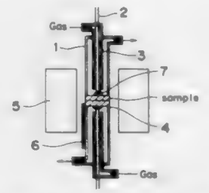
Int. Cl.[6] G01N *27/406, 27/407*

U.S. Cl. 204—421 **5 Claims**

1. A mixed ionic conductor which comprises an ion conductive oxide represented by the formula:

$$BaCe_{1-x}M_xO_{3-\alpha} \quad (I)$$

wherein M is a rare earth element selected from the group consisting of Gd, Tb, Dy, Ho and Er; $1>x>0$ and $1.5>\alpha>0$, and comprising at least a proton conductivity and a perovskite crystal structure which is an orthorhombic crystal structure, wherein said orthorhombic structure has at least one of the



lattice constant ratios b/a, c/a and b/c which exhibits a peak value resulting from the adjustment of the amount of M and particularly the lattice constant ratio of b/c is more than 1.010 as a result of such adjustment.

5,387,331

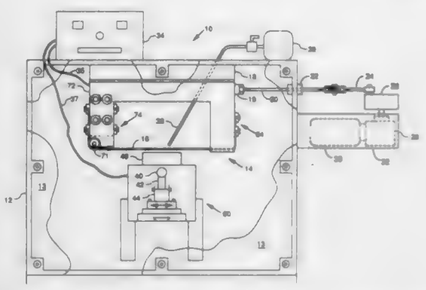
WAFER CUTTING DEVICE

Brian S. Ahern, Boxboro; David W. Weyburne, Maynard; Gerald W. Iseler, Chelmsford, and Harry R. Clark, Jr., Townsend, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 19, 1994, Ser. No. 246,899

Int. Cl.[6] B23H *7/06, 7/10, 7/30*

U.S. Cl. 204—224 M **9 Claims**



1. A wafer cutting device, said wafer cutting device comprising:

a support structure, said support structure providing a closed environment;

a guide track, said guide track attached to a top of said support structure, said guide track having an electrically insulating material thereon;

means for holding cutting wires, said holding means including means for monitoring tension in said cutting wires, means for adjusting the tension in said cutting wires, and means for placing a voltage on said cutting wires;

means for reciprocating said holding means, said reciprocating means attached fixedly to said support structure and flexibly connected to said means for holding;

means for holding a crystal, said means for holding said crystal translatably mounted to said support structure, said means for holding said crystal being adjustable;

means for providing a preselected electrolyte, said electrolyte being placed in an area where said cutting wires are cutting said crystal; and

electronic control means, said electronic control means providing at least a controllable voltage to said means for reciprocating, providing a controllable voltage to a means for translating said holding means upon said support struc-

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ture, and providing a controllable voltage to said crystal and cutting wires.

5,387,332

CLEANER/CONDITIONER FOR THE DIRECT METALLIZATION OF NON-CONDUCTORS AND PRINTED CIRCUIT BOARDS

Martin Straus, 815 Merry La., Oak Brook, Ill. 60007

Filed Jul. 14, 1993, Ser. No. 90,923
Int. Cl.[6] C25D *5/56*
U.S. Cl. 205—125 **2 Claims**

1. A process for the metallization of a non-conductive substrate by direct electroplating which comprises the steps of:
   a. contacting the substrate with an aqueous cleaner/conditioner composition comprising a quaternary ammonium surfactant compound having a molecular weight below 1,000, and additionally comprising a non-ionic surfactant, an alkali metal salt or a non-chelating acid, said cleaner/conditioner composition being free of chelating agents,
   b. contacting the treated substrate with a catalytic composition comprising palladium and tin, and
   c. cathodically and electrolytically treating the substrate to provide a coating of a desired metal.

5,387,333

PROCESS FOR PRODUCING OPTICALLY ISOTROPIC PITCH

Toshio Tamaki, Ibaraki, Japan, assignor to Petoca Ltd., Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,613
Claims priority, application Japan, Apr. 4, 1991, 3-097922
Int. Cl.[6] C10L *3/04*
U.S. Cl. 208—44 **3 Claims**

1. A process for producing a pitch for a raw material for carbon fibers or activated carbon fibers, suitable for a raw material for carbon fibers or activated carbon fibers containing substantially no optically anisotropic component, having a QI content of 25% or less, and having a softening point of at least 260° C., which comprises:
   (a) a first heat-treatment stage for heat-treating a pitch at a constant temperature and at about atmospheric pressure while blowing therein an oxygen-containing gas, and stopping said heat treatment just before optically anisotropic components are formed, to obtain an intermediate optically isotropic pitch having a QI content of 25% or less, and
   (b) a second heat-treatment stage for heat-treating the intermediate pitch under a reduced pressure of not more than 100 mmHg at a constant temperature while blowing therein an oxygen-containing gas to obtain an optically isotropic pitch having a softening point of at least 260° C.

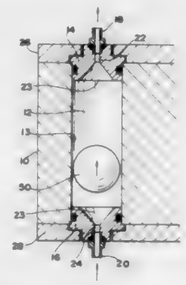
5,387,334

APPARATUS FOR REGULATING LIQUID TEMPERATURE

Toshiaki Kuroda, Takasagoshi, and Hiroyuki Inoue, Kakogawa-shi, both of Japan, assignors to Toa Medical Electronics Co., Ltd., Kobe, Japan

Continuation of Ser. No. 791,018, Nov. 13, 1991, abandoned.
This application Dec. 28, 1992, Ser. No. 997,130
Claims priority, application Japan, Feb. 15, 1991, 3-013186[U]; Apr. 23, 1991, 3-036978[U]
Int. Cl.[6] B01D *17/12*
U.S. Cl. 210—121 **10 Claims**

1. An apparatus for regulating the, temperature of a liquid specimen, and for maintaining the liquid specimen at a constant temperature, comprising:
   a ceramic body, comprised mainly of silicon carbide, said body including an inner wall defining a passage which penetrates said body, an inlet at one end of said passage through which the liquid specimen flows into said passage from outside the body, and an outlet at the other end of said passage through which the liquid specimen flows out of said passage;
   a heat source operable for supplying heat or absorbing heat to or from said body;
   temperature detecting means for detecting the temperature of said body;
   temperature control means operatively associated with said heat source and said temperature detecting means for controlling the operation of said heat source, as a function



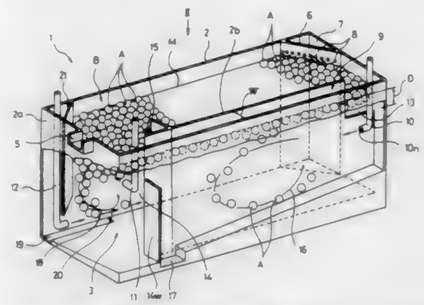
of the temperature reading obtained from said temperature detecting means, such that the temperature of the liquid specimen flowing out of said passage through said outlet is at a desired temperature; and
   a liquid separating member disposed to form a gap with the inner wall of said passage and to move in said passage along with the flow of liquid specimen in said passage so as to separate liquid specimen flowing into said passage from liquid specimen flowing out of said passage.

5,387,335

FILTER CIRCULATING TYPE SEWAGE DISPOSAL APPARATUS

Isamu Iwai, 12-14, Shimosueyoshi 1-chome, Tsurumi-ku, Yokohama-shi, Kanagawa-ken, and Chikatsu Nirasawa, 13-7, Bunka 1-chome, Sumida-ku, Tokyo, both of Japan

PCT No. PCT/JP90/01514, § 371 Date May 14, 1993, § 102(e) Date May 14, 1993, PCT Pub. No. WO92/09533, PCT Pub. Date Nov. 6, 1992
PCT Filed Nov. 21, 1990, Ser. No. 50,362
Int. Cl.[6] C02F *3/08*
U.S. Cl. 210—151 **15 Claims**



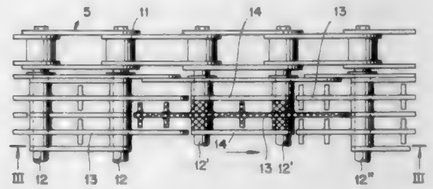
1. A circulating filter type sewage treatment apparatus, comprising:
   a septic tank having an upstream extremity, a downstream extremity and a multiplicity of buoyant filter media accommodated therein to form a filter bed in which sewage flows downstream;
   a filter moving means for returning the filter media to the upstream extremity from the downstream extremity of the septic tank; and
   a first current forming means at the upstream extremity of the septic tank for generating a vortex current and a second current forming means at the upstream extremity of the septic tank for generating a straight jet stream current;
   wherein filter media separated from the filter bed at the downstream extremity of the septic tank are brought back to the upstream extremity of the septic tank by the filter moving means, while filter media brought back to the upstream extremity are returned to the bottom layer of the filter bed by the vortex current from the first current forming means and the straight jet stream current from the second current forming means.

5,387,336

SCREENING RAKE

Horst Bormet, Mittelstr. 8, D-6108 Weiterstadt, and Erich Fink, Dieburg, both of Germany, assignors to Horst Bormet, Weiterstadt, Germany

PCT No. PCT/EP92/00186, § 371 Date Oct. 8, 1993, § 102(e) Date Oct. 8, 1993, PCT Pub. No. WO92/18221, PCT Pub. Date Oct. 29, 1992
PCT Filed Jan. 29, 1992, Ser. No. 129,124
Claims priority, application Germany, Apr. 13, 1991, 9104551
Int. Cl.[6] B01D *33/04*
U.S. Cl. 210—158 **5 Claims**



1. Sieve rake for the removal of solid matter from a waste water current, with a driven sieve belt positioned in the waste water, which sieve belt comprises two lateral link chains between which run a plurality of support rods which support groups of sieve members which are provided with hooks for capturing solid matter and are positioned one beside the other forming interstices through which the waste water flows, wherein each group of sieve members is positioned on two support rods independent of the preceding and succeeding group of sieve members, and whereas the sieve members (13) of each group comprises extensions which extend beyond the two corresponding support rods in the belt's direction of travel and opposite thereto, and intermeshing with the member extensions of the preceding and succeeding groups of sieve members.

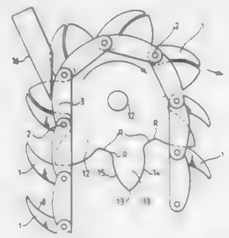
5,387,337

SCREENING APPARATUS

Edward V. Byers, Kinoulton, Great Britain, assignor to Haigh Engineering Company Ltd., Herefordshire, United Kingdom

PCT No. PCT/GB91/01433, § 371 Date Apr. 14, 1993, § 102(e) Date Apr. 14, 1993, PCT Pub. No. WO92/03209, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 23, 1991, Ser. No. 39,220
Claims priority, application United Kingdom, Aug. 25, 1990, 9018733
Int. Cl.[6] B01D *33/333, 35/16*
U.S. Cl. 210—159 **4 Claims**

1. An apparatus for separating solids from liquids comprising: an endless rotatably mounted band of collecting arms (1) for collecting screened solid material, said rotatably mounted band of collecting arms (1) further comprising a plurality of collecting arms (1), each of the collecting arms (1) having a leading collecting face (8) and two opposite sides adjacent said leading collecting face (8) and being mounted on support rods (2) which are arranged in spaced relationship around the band; link pieces (3) rigidly attached to the collecting arms (1) for linking one support rod (2) to the next, such that the link pieces (3) form continuous chains around the band, and separate the collecting arms (1) one from the other to form slots (11) between the link pieces (3), said link pieces (3) being rotatable on the support rods (2) to which they are attached, wherein each leading collecting face (8) of each collecting arm lies on a circle, the center of which is the axis of rotation of a support



rod (2) to which a link piece (3) of the collecting arm (1) is attached; and a plurality of sprocket wheels (12) having a set of discharging teeth (13), said discharging teeth (13) further including a trailing flank (14) and an advancing flank (15) which taper to an edge (13') which passes along and close to the surface of said leading collecting faces (8) of said collecting arms (1) along a respective row as the band revolves and being arranged to cooperate with and drive said movable band by entering the slots (11) as the band rotates to move along the leading collecting faces (8) of the collecting arms (1), thereby to remove collected material gathered at the slots (11) and from said leading collecting faces (8) of the collecting arms (1).

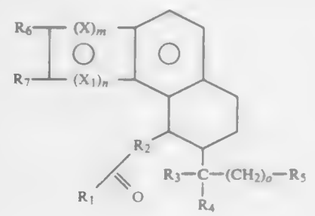
5,387,338

SEPARATION OF ENANTIOMERS OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS AND CHIRAL SELECTOR THEREFOR

William H. Pirkle, Champaign; Christopher J. Welch, Northbrook, both of Ill., and Bo R. Lamm, Gothenburg, Sweden, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

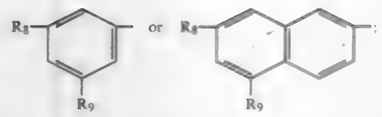
Division of Ser. No. 847,449, Mar. 9, 1992, Pat. No. 5,256,293, which is a continuation-in-part of Ser. No. 763,043, Sep. 20, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 89,861
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—198.2 **11 Claims**

1. A chiral selector useful as a chiral stationary phase having the formula:



wherein
R_1 is

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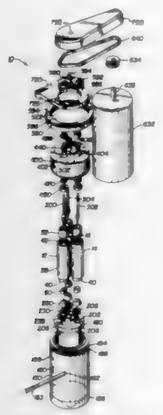
R_2 is O, S or NH;
R_3 and R_4 are each independently hydrogen or lower alkyl;
R_5 is hydrogen or $CH{=}CH_2$;
R_6 and R_7 are each independently hydrogen, lower alkyl or R_6 and R_7 are attached to form a 6 member aromatic ring;
X is O, S, NH or CH;
X_1 is O, S, NH or CH;
m is 0 or 1;
n is 0 or 1; and
R_8 and R_9 are each independently NO_2, $N(R_{10})_3^+$, CN, $COOR_{11}$, SO_3H or COR_{12}, wherein R_{10}, R_{11} and R_{12} are each independently hydrogen or lower alkyl; and
o is 0 or an integer from 1 to 12, said compound being an R or an S enantiomer or a mixture of R and S enantiomers.

5,387,339

HIGH EFFICIENCY LIQUID FILTRATION SYSTEM AND METHOD FOR USING THE SAME

Sun Y. Lee, Arvada, and Edward R. Lappin, Golden, both of Colo., assignors to Coors Brewing Company, Golden, Colo.

Filed Dec. 17, 1993, Ser. No. 168,954
Int. Cl.[6] B01D *33/073*
U.S. Cl. 210—326 **20 Claims**



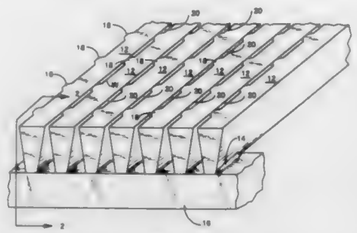
1. A high efficiency liquid filtration system comprising:
a primary housing comprising at least one inlet port therein;
a plurality of elongate filter cartridge units positioned within said housing, each of said cartridge units comprising a longitudinal axis, an upper end, a closed lower end, a tubular side wall portion comprised of filter material, and an interior region therein surrounded by said side wall portion for receiving fluid materials which pass through said side wall portion, each of said cartridge units being rotatable around said longitudinal axis thereof and further comprising at least one outlet at said upper end for allowing said fluid materials within said interior region to pass outwardly therefrom;
a plurality of tubular shaft members, each of said shaft members being connected to one of said cartridge units and comprising an open first end, a closed second end, and a medial portion between said first end and said second end, said medial portion comprising a tubular outer wall and an internal passageway therein surrounded by said outer wall, said outer wall further comprising at least one port therethrough between said first end and said second end of each of said shaft members, said port providing access to said internal passageway, said first end of each of said shaft members terminating at, and being connected to said upper end of one of said cartridge units; and
drive means operatively connected to said second end of each of said shaft members and positioned outside of said primary housing for simultaneously rotating each of said cartridge units around said longitudinal axis thereof, said second end of each of said shaft members being positioned outside of and above said primary housing so that said second end of each of said shaft members may be operatively connected to said drive means, said rotating of said cartridge units by said drive means causing said cartridge units to filter solid materials from said fluid materials with increased efficiency.

5,387,340

WIRE FILTER ELEMENT AND METHOD OF MANUFACTURE

Carl D. Ackerman, 1160 Woodhill Dr., Gibsonia, Pa. 15044

Filed Jul. 15, 1993, Ser. No. 91,284
Int. Cl.[6] B01D *29/48, 29/54*
U.S. Cl. 210—497.01 **11 Claims**



1. A filter element, including, in combination:
a plurality of generally parallel spaced elongated first filter wire member each having a generally trapezoidal cross-sectional shape, each of said first filter wire members defining an upper surface and a lower surface;
a plurality of generally parallel spaced elongated second filter wire members each having a generally rectangular cross-sectional shape and having on both side surfaces thereof a plurality of spaced ridges each of a pre-determined lateral dimension equivalent to a desired filtering slit opening, each of said second filter wire members defining an upper and lower surface,
one each of said second filter wire members being arranged between each pair of said first filter wire members with said ridges being in engagement with at least the upper side surface of an adjacent first filter wire member; and
support means engaging said first and second filter wire members for securing said first and second filter wire members in place.

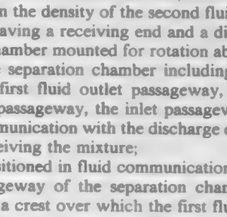
5,387,341

DISK-TYPE OIL COLLECTOR

Helmut L. Remy, R. Marie Satzke, 140, and Carlos W. Von Wieser, Marie Satzke 106, both of Sao Paulo, Brazil

Filed Dec. 21, 1993, Ser. No. 171,231
Int. Cl.[6] E02B *15/04*
U.S. Cl. 210—523 **6 Claims**

1. An improved disk-type oil collector comprising at least one alignment of oleophile disks, wherein each oleophile disk of said disks is furnished with at least one surrounding rim whose peripheral edge is provided with a plurality of teeth,



with the said surrounding rim being connected to the periphery of the oleophile disk by means of an annular sector.

5,387,342

CENTRIFUGAL SEPARATOR AND METHOD

Ernest E. Rogers, Pleasant Grove, and Kevin E. Collier, Kaysville, both of Utah, assignors to Charles W. Taggart, Salt Lake City, Utah

Continuation-in-part of Ser. No. 896,185, Jun. 10, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 149,994
Int. Cl.[6] B01D *21/26*
U.S. Cl. 210—512.3 **25 Claims**

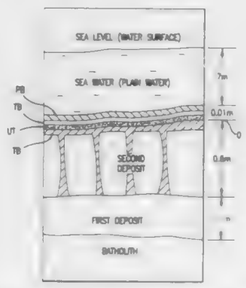
1. A separator for separating a first fluid from a second fluid through rotation about an axis of rotation, the first fluid having a density less than the density of the second fluid, comprising:
an inlet duct having a receiving end and a discharge end;
a separation chamber mounted for rotation about the axis of rotation, the separation chamber including an inlet passageway, a first fluid outlet passageway, and a second fluid outlet passageway, the inlet passageway positioned in fluid communication with the discharge end of the inlet duct for receiving the mixture;
a first weir positioned in fluid communication with the first outlet passageway of the separation chamber, the first weir having a crest over which the first fluid may pass;
the second fluid outlet passageway having an inlet end and an exit end, the inlet end being in fluid communication with the separation chamber at a location radially outwardly from the crest of the first weir, the second fluid outlet passageway extending generally toward the axis of rotation, the exit end at least partially defined by a second weir having a crest over which the second fluid may pass to exit the second fluid outlet passageway;
a fluid pressure chamber positioned radially outwardly from the crest of the second weir to receive the second fluid as it exits the second fluid outlet passageway over the second weir, the fluid pressure chamber partially defined by an exit weir having a crest over which the second fluid may pass to exit the fluid pressure chamber;
a gas chamber positioned in fluid communication with the exit end of the second fluid outlet passageway and extending radially outwardly to the fluid pressure chamber, the gas chamber including a gas escape passageway through which excess gas may escape from the gas chamber such that a gas barrier may be formed to maintain the fluid level between the gas chamber and the fluid pressure chamber at the radial level of the gas escape passageway;
a gas introduction passageway through which gas may be introduced into the gas chamber;
means for introducing a flow of gas into the gas introduction passageway; and
rotation means for rotating the separation chamber about the axis of rotation.

5,387,343

METHOD FOR IMPROVING BOTTOM AND WATER QUALITY IN WATER AREAS AND A SET OF AGENTS USED IN THE METHOD

Shigehisa Iwai; Michiharu Kobayashi, both of Kyoto; Chihiro Uchida, Tazimi; Koji Kuroda, and Shigeru Toda, both of Ono, all of Japan, assignors to Biochem Industrial Ltd., Hyogo, Japan

Filed Jul. 26, 1993, Ser. No. 114,232
Claims priority, application Japan, Aug. 20, 1992, 4-245596; May 18, 1993, 5-116213
Int. Cl.[6] C02F *11/02*
U.S. Cl. 210—610 **5 Claims**



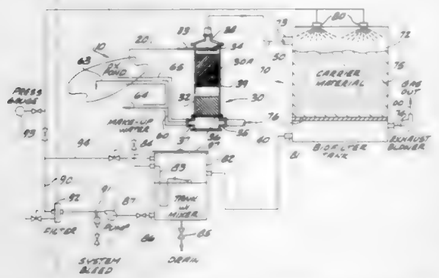
1. A method for improving the quality of bottom and water in water areas where sludge is deposited on the bottom, comprising the steps of:
spreading activated sludge and anaerobic sludge in a sample water area;
spreading lime after spreading the activated sludge and anaerobic sludge in the sample water area;
spreading activated sludge and anaerobic sludge after spreading the lime in the sample water area;
spreading diatomaceous earth or zeolite after spreading the lime in the sample water area; and
spreading photosynthesis bacteria solution after spreading the lime in the sample water area.

5,387,344

PROCESS FOR TREATING WASTE WATER OXIDATION PONDS TO ABATE MALODORS

David E. McCombs; Colin N. Dougald, and Martin L. Rapp, all of St. Louis, Mo., assignors to Monsanto Enviro-Chem Systems, Inc., St. Louis, Mo.

Filed Nov. 13, 1992, Ser. No. 975,664
Int. Cl.[6] C02F *3/06*
U.S. Cl. 210—617 8 Claims



1. A process for treating a body of waste water, said waste water containing volatile contaminants and a microbial population for the biodegradation of said contaminants, the process comprising:

withdrawing a water stream from the body of waste water;

contacting the water stream with an air stream in an air—water contact apparatus to produce an aerated water stream and an off-gas stream;

returning at least a portion of the aerated water stream to the body of waste water to promote aerobic biodegradation of said volatile contaminants by the microbial population in the body of waste water; and

passing the off-gas stream through a fixed bed type biofilter comprising a porous filter bed containing microorganisms in a biofilm supported by a carrier material.

5,387,345

CELLULOSE ACETATE MEMBRANES

Gustav Dünweg, Wuppertal; Lothar Steinfeld, Schwelm, and Wolfgang Ansorge, Essen, all of Germany, assignors to AKZO NV, Arnhem, Netherlands

Filed May 19, 1993, Ser. No. 63,331
Claims priority, application Germany, May 20, 1992, 4216658
Int. Cl.[6] B01D *11/00, 33/21, 39/00*
U.S. Cl. 210—645 10 Claims

1. A dialysis membrane in the form of a hollow fiber with a continuous internal cavity, comprised of cellulose acetate or a cellulose acetate derivative, said membrane having a maximum sieving coefficient of 0.04 for albumin with a molecular weight of 68,000.

2. A dialysis membrane according to claim 1, wherein when the membrane is used for a 4-hour hemodialysis process in a dialyzer having an effective dialyzer area of $1M^2$, at a blood flow of 100 ml/min, less than 5 g of alubumin with a molecular weight of 68,000 are removed.

5,387,346

AUTOMATIC TRANSMISSION FLUIDS AND ADDITIVES THEREFOR

Rolfe J. Hartley, and Douglas R. Chrisope, both of St. Louis, Mo., assignors to Ethyl Petroleum Additives, Inc., Richmond, Va.

Continuation of Ser. No. 972,862, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 512,406, Apr. 23, 1990, abandoned. This application Jul. 19, 1993, Ser. No. 94,482
Int. Cl.[6] C10M *111/04, 111/02*
U.S. Cl. 252—49.9 20 Claims

1. A lubricant composition especially adapted for use as an automatic transmission fluid, which composition consists essentially of:

a) from 50 to 85 weight percent of a mineral oil having a viscosity at 100° C. in the range of 3 to 5 centistokes;

b) from 5 to 35 weight percent of a poly-α-olefin lubricating oil having a viscosity at 100° C. in the range of 1 to 8 centistokes; and

c) from 8 to 15 weight percent of a combination of alkenyl succinimide dispersant, viscosity index improver and antioxidant;

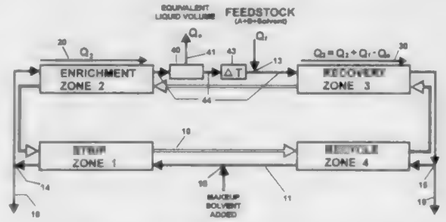
said composition being further characterized in that it contains less than 7.0 weight percent of viscosity index improver and in that the composition has a Brookfield viscosity at −40° C. of no more than 20,000 cP.

5,387,347

METHOD AND APPARATUS FOR CONTINUOUS CHROMATOGRAPHIC SEPARATION

Ronald D. Rothchild, c/o Center for Concept Development, 33 State Rd., Princeton, N.J. 08540

Filed Sep. 15, 1993, Ser. No. 120,777
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—659 9 Claims



1. In a method for separating and purifying first and second components dissolved in a solvent, comprising a feedstock, by circulating a liquid flow through multiple zones in series, said zones being defined by the locations of inlet and outlet ports to said circulating flow and each zone containing an adsorbent packing, adding said feedstock to said circulating flow at an inlet port in a conduit between two of said zones, effectively circulating said packing through said zones in direction counter to the flow of said circulating liquid, and adjusting the effective flow rates of said packing and of said circulating liquid so that said first component tends to be carried upstream, with reference to said circulating liquid, by said packing, while said second component tends to be carried downstream by said liquid, the improvement which comprises diverting a portion of said circulating flow in said conduit to a separator and removing a flow of said solvent from it, said portion having volume flow rate at least about twice the volume flow rate of said feedstock.

5,387,348

METHOD OF MIXED-BED FILTRATION AND DEMINERALIZATION WITH ION-EXCHANGE RESINS

Masahiro Hagiwara; Hideo Kawazu, and Takeshi Izumi, all of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 790,754, Nov. 12, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 24,111
Claims priority, application Japan, Nov. 9, 1990, 2-302587; Nov. 8, 1991, 3-319645
Int. Cl.[6] C02F *1/42*
U.S. Cl. 210—662 6 Claims

1. A method of regenerating a mixture of exhausted anion and cation exchange resins from a mixed bed demineralizer in a condensation cleanup system in a power plant, in which method water containing suspended impurities including iron oxide is passed through the demineralizer to entrap said impurities in the resin mixture of the demineralizer and in which the treated water is then recovered from an outlet of the demineralizer, comprising the steps of:

(a) backwashing the exhausted anion and cation exchange resins in the demineralizer at a time either when an increase in differential pressure of water passage due to entrapping of suspended impurities in the mixture has come to lie within a range of 0.2–0.8 kg/cm^2 or when an amount of iron oxide entrapped in the mixture has exceeded 1 g per liter of the resins based on an amount of boundary-deposited iron, or when a concentration of suspended impurities at an outlet of the demineralizer exceeds 1.5 ppb; and

(b) passing a chemical reagent through the demineralizer at a time either when regeneration by the backwashing (a) fails to decrease a concentration of suspended impurities at the outlet of the demineralizer to below 1.5 ppb, or when the amount of iron oxide has exceeded 9 g per liter of the resins based on an amount of matrix-diffused iron;

wherein

(1) said cation exchange resin has a dual structure with a skin layer being present to a depth of at least 0.1–10 μm from the surface;

(2) both said resins comprise particles in a true spherical form having a diameter of 0.2–1.2 mm, said cation exchange resin having an effective specific surface area of 0.02–0.20 m^2 per each gram of the dry resin, and said anion exchange resin having an effective specific surface area of 0.02–0.10 m^2 per each gram of the dry resin, with the effective specific surface area being measured on the basis of the amount of adsorption of krypton;

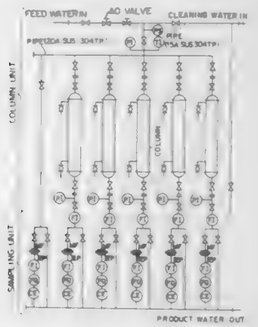
(3) said cation exchange resin has such a surface layer structure wherein unit granules having a size of 0.1–1.0 μm are seen to bind with one another when examined under a scanning electron microscope in a field of view ranging from a magnification of 50 to 200,000;

(4) said cation exchange resin has a honeycomb and/or scaly surface structure with grooves in the surface, unit honeycombs and/or scales each having a unit surface area of 1–50 μm^2 and which together with each other form an irregular surface structure and morphology, with the surface being such that the individual unit honeycombs and/or scales are adjacent to one another via grooves having a width of 0.1–5.0 μm and a depth of 0.1–5.0 μm, said grooves having an overall length of 100–1,000 mm/mm^2;

(5) both said resins have a crosslinking degree of from 3 to 8%;

(6) said cation exchange resin has a surface pH of 1.50–1.90 in a wet state, and said anion exchange resin has a surface pH of 11.50–13.80 in a wet state; and

(7) said cation exchange resin has an interfacial electrokinetic potential of −20 to −40 mV in a powder state, and said anion exchange resin has an interfacial electrokinetic potential of +20 to +45 mV in a powder state.

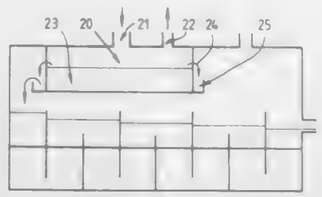


5,387,349

LIQUID PHASE REACTION PROCESS

Stuart G. Trotter, and Ralph J. Doy, both of Cleveland, England, assignors to Imperial Chemical Industries plc, London, England

Filed Oct. 26, 1992, Ser. No. 966,900
Int. Cl.[6] C02F *1/20*
U.S. Cl. 210—750 9 Claims



1. A process for the continuous catalytic decomposition of hypochlorite ions in an aqueous influent, comprising establishing continuous flow of an aqueous medium containing hypochlorite ions through a plurality of serially connected reaction volumes each containing a bed of particulate catalyst effective to cause decomposition of hypochlorite ions with the evolution of gas, thereby effecting said decomposition with the evolution of gas in said reaction volumes each of which has an upper liquid surface from which said evolved gas disengages, and continuously feeding said influent to an inlet of the first of said reaction volumes and discharging from an outlet of the last of the reaction volumes an aqueous effluent having, as a result of the decomposition occurring in said reaction volumes, a decreased quantity of hypochlorite ions, the influent being fed to said inlet of the first reaction volume at such a rate that the volumetric flow rate of the influent divided by the total volume of catalyst in all said reaction volumes is in the range 0.02 to 10 hr^{-1}, and the concentrations of hypochlorite ions in said influent and effluent being such that at least 0.5 volumes of gas are evolved for each volume of influent fed to the process, and the amount of decomposition occurring in each reaction volume being such that the gas disengages from said upper liquid surface of that reaction volume at a rate that is less than 0.05 m^3.s^{-1} per m^2 of said upper liquid surface of that reaction volume, said reaction volumes being disposed so that said aqueous medium flows downwards through the catalyst bed in at least one of the reaction volumes counter-current to the evolution of gas.

5,387,350

METHOD AND APPARATUS FOR TREATING AND DISINFECTING INFECTIOUS WASTES

James A. Mason, Theodore, Ala., assignor to George L. Williamson, Daphne, Ala.

Continuation-in-part of Ser. No. 898,509, Jun. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 876,292, Apr. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 763,185, Sep. 20, 1991, Pat. No. 5,122,282, which is a continuation-in-part of Ser. No. 579,167, Sep. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 438,847, Nov. 20, 1989, abandoned. This application Aug. 16, 1993, Ser. No. 106,882
The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.
Int. Cl.[6] C02F *1/76*
U.S. Cl. 210—754 21 Claims

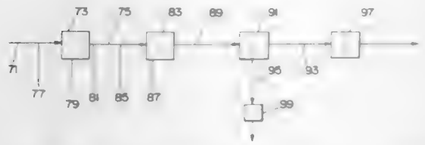
1. In a process for treating and disinfecting infectious wastes which includes introducing an aqueous solution into a chamber

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containing infectious wastes the improvement comprising the steps of:

(a) introducing into the chamber containing said infectious wastes an aqueous solution prepared by mixing (1) an organic hydroxy acid or carboxylic acid and (2) an alkali metal or alkaline earth metal chlorite;

(b) sealing the contents of said chamber from the atmosphere;



(c) pressurizing the contents of said chamber to a pressure greater than atmospheric pressure; and,

(d) detaining the contents of said chamber for a period of time of no more than 15 minutes whereby substantially all bacteria, microbes and other pathogenic organisms are destroyed in said infectious wastes.

5,387,351

LUBRICATING GREASE COMPOSITION AND PROCESS FOR PREPARING SAME

Anoop Kumar; Eltepu Sayanna; Amar S. Verma; Kanta P. Naithani; Madan M. Rai; Akhilesh K. Bhatnagar, all of c/o Indian Oil Corporation Limited, R&D Centre Sector 13, Faridabad (121007), India, and Madan M. Rai

Filed May 25, 1993, Ser. No. 66,667
Int. Cl.[6] C10M *129/06*
U.S. Cl. 252—32 10 Claims

1. A lubricating grease composition comprising 2 to 20% by weight of titanium alkoxide, 2 to 20% by weight of carboxylic acids other than fatty acids. 5.0 to 35.0% by weight of fatty acids, 0.0 to 5.0% by weight of water and 20 to 90% by weight of an oil selected from the group consisting of mineral and synthetic oils.

5,387,352

PHOSPHORUS-CONTAINING COMPOSITIONS

Ramnath N. Iyer, Chesterfield, Mo., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 26, 1993, Ser. No. 157,462
Int. Cl.[6] C10M *137/00*
U.S. Cl. 252—32.5 70 Claims

51. A lubricant composition which comprises a major amount of at least one oil of lubricating viscosity and a minor antiwear/extreme pressure amount of at least one oil-soluble amine salt of a benzenediolbis(monohydrocarbylphosphate) wherein the amine is an aliphatic hydrocarbyl monoamine.

5,387,353

LUBRICITY ADDITIVES FOR HIGH TEMPERATURE LUBRICANTS

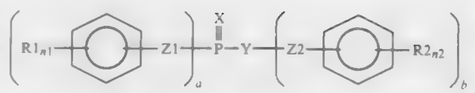
Bassam S. Nader, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1993, Ser. No. 146,564
Int. Cl.[6] C10M *137/00*
U.S. Cl. 252—46.6 19 Claims

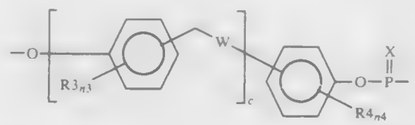
1. A composition useful for lubricating aircraft turbines, comprising:

(a) a lubricating fluid base stock and

(b) a phosphorus-containing compound of Formula I:



wherein a equals 1 or 2, b equals 1 or 2, X is oxygen or sulfur; Z1 and Z2 are independently in each occurrence a covalent bond or oxygen; Y is a covalent bond or is a diradical group of Formula II:



wherein c equals 0 or 1; R1, R2, R3 and R4 are independently in each occurrence aryl of up to 12 carbons, alkyl of up to 6 carbons, alkoxy of up to 6 carbons, polyhaloalkyl of up to 6 carbons, polyhaloalkyoxy of up to 6 carbons, halo or aryloxy of up to 12 carbons wherein if R1, R2, R3 or R4 is aryloxy the aryloxy can be substituted by one or more R1, R2, R3 or R4; W is a covalent bond, O, SO_2, $C(CH_3)_2$, $C(CF_3)_2$, or 9,9'-fluorene; n1 is 0 to 5; n2 is 0 to 5; n3 is 0 to 5; n4 is 0 to 5; with the provision that R1, R2, R3 and R4 are not hydroxy and with the provision that phosphorus is bonded to at least two oxygens and with the provision that a phosphorus atom is bonded to no more than three oxygens.

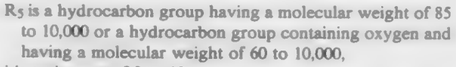
5,387,354

POLYALKYLENE GLYCOL POLYCARBONATE BASED LUBRICANT OIL COMPOSITION

Kinya Mizui, Ichihara; Yoshihisa Kiso, Kuga; Tetsuo Hayashi, Kuga, and Masahide Tanaka, Kuga, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 588,833, Sep. 27, 1990, Pat. No. 5,238,590.
This application Jan. 13, 1993, Ser. No. 3,733
Claims priority, application Japan, Sep. 29, 1989, 1-256032; Dec. 12, 1989, 1-321825; Apr. 27, 1990, 2-112210; Apr. 27, 1990, 2-112211; Apr. 27, 1990, 2-112212; Jun. 7, 1990, 2-148955
Int. Cl.[6] C10M *107/26;* C09K *5/04*
U.S. Cl. 252—52 A 2 Claims

1. A lubricant oil comprising a polyalkylene glycol polycarbonate represented by the general formula (VI)



(VI)

wherein

R_5 is a hydrocarbon group having a molecular weight of 85 to 10,000 or a hydrocarbon group containing oxygen and having a molecular weight of 60 to 10,000,

j is an integer of 3 to 10,

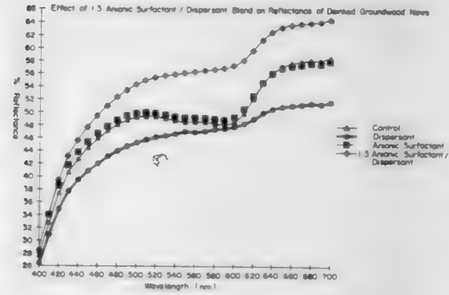
each R_6 is independently a lower alkyl group selected from the group consisting of methyl, ethyl, isopropyl and n-butyl, or an alkyloxyalkylene group selected from the group consisting of an ethylene glycol monomethyl ether group, a diethylene glycol monomethyl ether group, a triethylene glycol monomethyl ether group, a propylene glycol monomethyl ether group, a dipropylene glycol monoethyl ether group and a tripropylene glycol mono-n-butyl ether group.

5,387,355

USE OF ANIONIC SURFACTANT/DISPERSANT BLENDS FOR THE DEINKING OF GROUNDWOOD NEWSPRINT

Mary Beth Letscher, Jacksonville, Fla., assignor to Betz Laboratories, Inc., Trevose, Pa.

Continuation of Ser. No. 790,323, Nov. 12, 1991, Pat. No. 5,281,348, which is a division of Ser. No. 584,955, Sep. 19, 1990, Pat. No. 5,094,716. This application Jan. 21, 1994, Ser. No. 184,723
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.[6] B01F *17/02;* B03D *1/012, 1/016;* D21C *5/02*
U.S. Cl. 252—60 4 Claims



1. A composition for allowing greater ink removal from groundwood newsprint and increasing the brightness and reflectance of pulp, said composition consisting essentially of a combination of (a) an anionic surfactant selected from the group consisting of an ammonium or sodium salt of a sulfated ethoxylate derived from a C12–C18 primary alcohol blend, sodium N-methyl-N-oleoyltaurate, and sodium N-methyl-N-tall oil acid taurate, and (b) a sulfonated naphthalene-formaldehyde condensate dispersant with a molecular weight of from about 600–4000, wherein the weight ratio of (a):(b) is from about 1:3.

5,387,356

PROCESS OF PRODUCING CALCINED MATERIALS FOR FERRITE MAGNET

Atsushi Hamamura, Kyoto, Japan, assignor to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Mar. 30, 1994, Ser. No. 219,999
Claims priority, application Japan, Sep. 28, 1993, 5-265869
Int. Cl.[6] C04B *35/26*
U.S. Cl. 252—62.58 7 Claims

1. A process of producing calcined materials for a ferrite magnet of the formula $MO{\cdot}nFe_2O_3$ where M is Sr or Ba and n=5.0 to 6.2, comprising subjecting mill scales milled into a mean particle size of 20 μm or less to a primary oxidation treatment at 600° to 900° C. in an atmosphere containing O_2 or in air to effect an oxidation percentage of the mill scales to 95% or higher, mixing the so oxidized mill scales with an oxide or carbonate of Sr or Be, subjecting said mixture to a secondary oxygen treatment in an inclined rotary kiln at a temperature up to 700° C. in an atmosphere of O_2 content of 8 to 10% at the charging side of the mixture in said kiln to effect complete oxidation of the mill scales, and calcining the so-treated mixture at 1275° to 1300° C. in an oxidizing atmosphere.

5,387,357

AZEOTROPIC OR AZEOTROPE-LIKE COMPOSITIONS OF AMMONIA AND HYDROFLUOROCARBONS

Mark B. Shiflett, Newark, and Akimichi Yokozeki, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 25, 1992, Ser. No. 951,734
Int. Cl.[6] C09K *5/04*
U.S. Cl. 252—67 4 Claims

1. An azeotrope-like composition consisting essentially of about 10 to 40 weight percent ammonia and about 60 to 90 weight percent pentafluoroethane, wherein said composition boils at 0° C. when the pressure is adjusted to about 82.5 to 87.3 psia, wherein the composition exhibits a difference in dew point and bubble point vapor pressures of less than about 10 percent at 0° C.

5,387,358

ALKALINE EARTH METAL SODIUM ACETATE, A PROCESS FOR ITS PREPARATION AND ITS USE

Johannes Himmrich, Hürth; Günther Schimmel, Erftstadt, and Klaus Pöllmann, Burghausen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 2, 1993, Ser. No. 161,776
Claims priority, application Germany, Dec. 17, 1992, 4242698
Int. Cl.[6] C09K *3/18*
U.S. Cl. 252—70 2 Claims

1. An alkaline earth metal sodium acetate consisting essentially of

18 to 22% by weight of calcium (Ca^{++}),

0 to 1% by weight of magnesium (Mg^{++}),

4 to 7% by weight of sodium (Na^{+}),

66 to 75% by weight of acetate (CH_3COO^{-}),

0 to 7% by weight of water;

said alkaline earth metal sodium acetate having the following X-ray diffraction pattern:

d/A	Intensity	d/A	Intensity
12.75 +— 0.2	s	2.39 +— 0.02	w
9.30 +— 0.1	m	2.29 +— 0.02	w
6.00 +— 0.08	m	2.23 +— 0.02	mw
4.65 +— 0.05	w	2.13 +— 0.02	m
3.61 +— 0.04	w	2.04 +— 0.02	w
3.40 +— 0.04	vs	1.96 +— 0.02	mw
3.28 +— 0.04	m	1.87 +— 0.02	w
3.12 +— 0.03	w	1.84 +— 0.02	w
2.88 +— 0.03	mw	1.80 +— 0.02	mw
2.65 +— 0.03	w	1.70 +— 0.02	w
2.55 +— 0.02	w	1.57 +— 0.02	w

vs = very strong
s = strong
m = medium
mw = medium-weak
w = weak

5,387,359

ALKALINE EARTH METAL POTASSIUM ACETATE, A PROCESS FOR ITS PREPARATION AND ITS USE

Johannes Himmrich, Hürth; Günther Schimmel, Erftstadt, and Klaus Pöllmann, Burghausen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 2, 1993, Ser. No. 161,777
Claims priority, application Germany, Dec. 17, 1992, 4242697
Int. Cl.[6] C09K *3/18*
U.S. Cl. 252—70 2 Claims

1. An alkaline earth metal potassium acetate, consisting essentially of

14 to 19% by weight of calcium (Ca^{++}),

0 to 1% by weight of magnesium (Mg^{++}),

11 to 16% by weight of potassium (K^{+}),

62 to 71% by weight of acetate (CH_3COO^{-}),

0 to 7% by weight of water;

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said alkaline earth metal potassium acetate having the following X-ray diffraction pattern:

d/A	Intensity	d/A	Intensity
13.95 +— 0.03	mw	3.33 +— 0.04	vs
11.45 +— 0.30	ms	3.26 +— 0.04	vs
10.88 +— 0.30	vs	3.21 +— 0.04	m
7.13 +— 0.10	w	3.05 +— 0.03	m
6.65 +— 0.10	w	2.83 +— 0.03	mw
5.68 +— 0.08	mw	2.75 +— 0.03	mw
5.56 +— 0.08	mw	2.42 +— 0.02	s
4.22 +— 0.06	w	2.17 +— 0.02	mw
4.02 +— 0.06	w	2.05 +— 0.02	mw
3.57 +— 0.04	m		

vs = very strong
s = strong
ms = medium-strong
m = medium
mw = medium-weak
w = weak.

5,387,360

ENGINE ANTIFREEZE COOLANT COMPOSITION

Hideharu Uekusa, and Kouzou Matsuzaki, both of Ichihara, Japan, assignors to Ethylene Chemical Co., Ltd., Chiba, Japan

Filed Oct. 5, 1993, Ser. No. 132,042
Claims priority, application Japan, Oct. 7, 1992, 4-291952
Int. Cl.[6] C09K *5/00*
U.S. Cl. 252—73 4 Claims

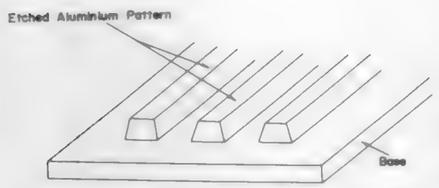
1. In a glycol engine antifreeze coolant composition, the improvement which comprises the composition containing at least one corrosion inhibitor other than silicate and containing about 0.005 to about 0.5% by weight of at least one member of the group consisting of citric acid and citric acid salt.

5,387,361

ETCHING LIQUID FOR ALUMINIUM, METHOD OF ETCHING ALUMINIUM AND ETCHED ALUMINIUM PRODUCT

Ichiro Kohara; Masakatu Takaishi, both of Nara; Hideaki Ishitobi, Yamatokoriyama; Kiyoshi Kondo, Itami, and Hiroya Ito, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha and Oogi Chemical Industry Co., Ltd., both of Osaka, Japan

Filed Oct. 6, 1992, Ser. No. 956,968
Claims priority, application Japan, Oct. 9, 1991, 3-290646
Int. Cl.[6] H01L *21/00*
U.S. Cl. 252—79.1 6 Claims



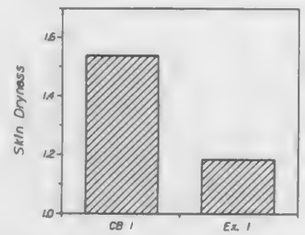
1. An etching liquid for aluminium, comprising an aqueous solution containing (1) 0.1 to 15 mol/liter of acid consisting of an amine hydrofluoride and (2) 0.02 to 10 mol/liter of an oxidizing agent, wherein said amine is one of an aliphatic amine having 12 carbon atoms or less and a heterocyclic amine, said amine having no other acid group or basic group other than amino group, the etching liquid having a pH within the range from 4 to 9, wherein said oxidizing agent oxidizes aluminium into an aluminum oxide which is dissolved by said amine hydrofluoride.

5,387,362

PERSONAL CLEANSING BAR WITH TAILORED BASE SOAPS WITH MIXED COUNTERIONS FOR IMPROVED MILDNESS AND PROCESSABILITY WITHOUT LATHER NEGATIVES

Fernando R. Tollens, Cincinnati; Philip J. Kefauver, Loveland, and Scott W. Syfert, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 13, 1992, Ser. No. 959,876
Int. Cl.[6] C11D *13/18, 9/30*
U.S. Cl. 252—108 3 Claims



1. A personal cleansing soap bar composition comprising: A mixture of sodium, potassium and magnesium soaps at levels of about 64%, 24% and 12%, respectively, by weights of total soap; and wherein said soaps have the following fatty acids chains:

Fatty Acids Chains	In Bar Wt. Parts	In Soap Wt. %
C_8	1.33	(1.94)
C_{10}	1.09	(1.59)
C_{12}	8.75	(12.73)
C_{14}	4.08	(5.94)
C_{16}	30.00	(43.66)
C_{18}	11.95	(17.39)
$C_{18:1}$	10.45	(15.21)
$C_{18:2}$	1.07	(1.55)

and wherein said bar composition has about 68 parts total soap, about 26 parts water and about 1 part salt by wt. of said bar.

5,387,363

WATER IN OIL EMULSIONS

John Distaso, Orange, Calif., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation of Ser. No. 892,458, Jun. 2, 1992, abandoned. This application Aug. 25, 1993, Ser. No. 111,812
Int. Cl.[6] C09D *9/02*
U.S. Cl. 252—163 13 Claims

1. A paint stripper formulating process for preparing a paint stripper comprising benzyl alcohol, water and a natural or synthetic wax; characterized in that the process comprises the step of adding from 0.02 to 5.0 percent by weight wax to a continuous benzyl alcohol phase of a water-in-oil emulsion to retard evaporation of water from a discrete aqueous phase, wherein the wax is slightly in excess of the amount which would saturate the benzyl alcohol phase.

5,387,364

METHOD OF CONTROLLING FOAM

Beatrice Nedelec, Chaville, France; Franck A. D. Renauld, Gistoux, and George C. Sawicki, Rixensart, both of Belgium, assignors to Dow Corning S.A., Seneffe, Belgium

Filed Jun. 25, 1993, Ser. No. 81,719
Claims priority, application United Kingdom, Jul. 9, 1992, 9214569
Int. Cl.[6] C11D *1/82*
U.S. Cl. 252—174.15 17 Claims

9. A detergent composition in powder form comprising a detergent component and a foam control agent comprising (A) from 5 to 90 parts by weight of an organopolysiloxane of which the siloxane units consist essentially for 0 to 60% of units of the general formula (i)

$$R_aSiO_{\frac{4-a}{2}}$$

wherein R denotes a hydrocarbon group having up to 8 carbon atoms and a has a value of from 0 to 3, and for 40 to 100% of units of the general formula (ii)

$$R_bR_c''SiO_{\frac{4-b-c}{2}}$$

wherein R'' denotes a group —Z_z—R', wherein R' denotes an alkyl group having from 9 to 35 carbon atoms, Z denotes a linking group between silicon and R' and z has a value of 0 or 1, b has a value of 0, 1 or 2, c has a value of 1 or 2, and b+c has a value of 1, 2 or 3, provided more than 70% by weight of the carbon content of the organopolysiloxane is due to the groups R'', (B) from 0.1 to 30 parts by weight of a finely divided hydrophobic particulate material, (C) from 5 to 95 parts by weight of a hydrocarbon oil and (D) from 0 to 20 parts by weight of an organosilicon resin consisting essentially of triorganosiloxane groups and $SiO_{4/2}$ groups.

5,387,365

METAL SCAVENGERS FOR TREATING WASTE WATER

Masafumi Moriya, Iwakura; Kazuo Hosoda, Katsushika; Masatoshi Yoshida, Katsushika, and Masayoshi Tsukanome, Katsushika, all of Japan, assignors to Miyoshi Yushi Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 837,609, Feb. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 574,067, Aug. 29, 1990, abandoned. This application Nov. 3, 1992, Ser. No. 970,876
Claims priority, application Japan, Dec. 20, 1989, 1-330089; Jul. 13, 1990, 2-186744
Int. Cl.[6] C02F *5/10*
U.S. Cl. 252—180 7 Claims

1. A metal scavenger comprising:
a polyamine derivative formed from a polyamine having a molecular weight not higher than 500, said polyamine derivative containing, per molecule of said polyamine, at least one dithiocarboxyl group or a salt thereof as an N-substituting group or a salt thereof for an active hydrogen atom of said polyamine such that from about 56% to about 99% of substitutable active hydrogen atoms contained in the polyamine are substituted by said dithiocarboxyl group or a salt thereof; and
a polyethyleneimine derivative formed from a polyethyleneimine having an average molecular weight of at least 5,000, said polyethyleneimine derivative containing, per molecule of said polyethyleneimine, at least one dithiocarboxyl group or a salt thereof as an N-substituting group substituted for an active hydrogen atom of said polyethyleneimine, such that from about 43% to about 99% of substitutable active hydrogen atoms contained in the polyethyleneimine are substituted by said dithiocarboxyl group or a salt thereof;
wherein the mixing ratio of the polyamine derivative to the polyethyleneimine derivative is about 9:1 to 7:3.

5,387,366

AQUEOUS CADMIUM OXIDE PASTE OF HIGH FLOWABILITY FOR THE VIBRATION FILLING OF FOAM-STRUCTURE AND FIBER-ELECTRODE PLAQUES

Klaus von Benda, Nürtingen; Gábor Benczúr-Ürmössy, Stuttgart, and Gerhard Berger, Deizisau, all of Germany, assignors to Deutsche Automobilgesellschaft mbH, Germany

Continuation of Ser. No. 873,691, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 357,253, May 26, 1989, abandoned. This application Apr. 1, 1993, Ser. No. 41,333
Claims priority, application Germany, May 26, 1988, 3817827
The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.
Int. Cl.[6] H01M *4/36, 4/52*
U.S. Cl. 252—182.1 4 Claims

1. An aqueous cadmium oxide paste of high flowability for the vibration filling of porous foam structure and fiber structure electrode plaques, comprising
a) a cadmium oxide content of from 25 to 35% by volume,
b) a pH value of from 10 to 12.5,
c) a content of from 0.5 to 2.5% by weight, based on the cadmium oxide, of a nickel salt of 1 -hydroxyethane-1,1-diphosphonic acid (HEDP) of the formula $Ni_xM_yH_z$ (HEDP), wherein M is an alkali metal, 2x+y+z=4, and x may have values between 0.5 and 1.2, y may have values between 1 and 2.5 and z may have values between 0 and 1, as the dispersing agent,
d) a plastic viscosity of from 0.1 to 1 Pa.s and a yield value of between 10 and 120 Pa.

5,387,367

NONAQUEOUS POLYISOCYANATE FORMULATION

Karl Haeberle, Neustadt; Lothar Maempel, Breuhl, and Ulrich Filges, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 763,813, Sep. 23, 1991, abandoned. This application Mar. 7, 1994, Ser. No. 206,893
Claims priority, application Germany, Nov. 20, 1990, 4036927
Int. Cl.[6] C08G *18/30;* C09K *3/00*
U.S. Cl. 252—182.22 7 Claims

1. A nonaqueous polyisocyanate formulation having an improved shelf life containing:
a) one or more aliphatic polyisocyanates having a mean NCO functionality of from 2.5 to 3.5; and
b) an effective amount of a reaction product of i) with ii) which ensures that the polyisocyanate is dispersible in an aqueous medium, wherein
i) is a diisocyanate selected from the group consisting of tetramethylene diisocyanate, hexamethylene diisocyanate, dodecamethylene diisocyanate, 1,4-diisocyanatocyclohexane, 4,4'-di-(isocyanatocyclohexyl)-methane, diisocyanatotrimethylhexane, diisocyanatotetramethylhexane, 1-isocyanato-3,3,5-trimethyl-5-(isocyanatomethyl)-cyclohexane, toluylene 2,4- and 2,6-diisocyanate, tetramethylxylylene diisocyanate, p-xylylene diisocyanate, 2,4'- and 4,4'-diisocyanatodiphenylmethane, and mixtures thereof, and
ii) is a monohydroxy or dihydroxy polyalkylene ether alcohol containing at least one alkylene ether group with 2 to 4 carbon atoms and which contains a polyether chain having 8 or more ethylene ether units,
with the proviso that the reaction product is obtained by reacting the diisocyanate with the polyalkylene ether alcohol using from 80 to 120 equivalent %, based on the NCO groups of the diisocyanate, of OH groups of the polyalkylene ether alcohol.

5,387,368

OXYGEN-SCAVENGING COMPOSITION

Toshiaki Nishimura; Kazumi Tanaka; Masahiro Harada; Kiichiro Seki, and Shuta Kihara, all of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,894
Claims priority, application Japan, Nov. 15, 1991, 3-300618
Int. Cl.[6] C09K *15/18*
U.S. Cl. 252—188.28 4 Claims

1. An oxygen-scavenging composition comprising an intimate mixture of (A) an effective oxygen-scavenging amount of a compound of the following formula (I)-b



(1)-b

wherein each of R^1, R^2, R^3 and R^4 is independently selected from the group consisting of a hydrogen atom and an alkyl group having 1 to 2 carbon atoms, (B) a transition metal compound and (C) a phosphorus compound, said transition metal compound (B) being present, based on the entire amount of the composition, in an amount of 1 to 10,000 ppm as a transition metal and said phosphorus compound (C) being present, based on the entire amount of the composition, in an amount of 1 to 10,000 ppm as phosphorus.

5,387,369

SUPERTWIST LIQUID CRYSTAL DISPLAY

Georg Weber, Erzhausen; Herbert Plach, Darmstadt, both of Germany; Takamasa Oyama, Fukami, Japan; Hiroki Yoshitake, Atsugi, Japan; Bernhard Scheuble, Yokohama, Japan; Reinhard Hittich, Modautal, Germany; Hans A. Kurmeier, Seeheim-Jugenheim, Germany; Eike Poetsch, Mühltal, Germany, and Klaus P. Stahl, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

Continuation of Ser. No. 865,716, Apr. 8, 1992, abandoned, which is a continuation of Ser. No. 458,689, Jan. 5, 1990, abandoned. This application Dec. 29, 1992, Ser. No. 997,834
Claims priority, application Germany, Oct. 20, 1988, 3835804
The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.
Int. Cl.[6] C09K *19/52, 19/12;* G02F *1/13*
U.S. Cl. 252—299.01 21 Claims

1. A supertwist liquid crystal display having two plane-parallel carrier plates which, with an edging, form a cell,

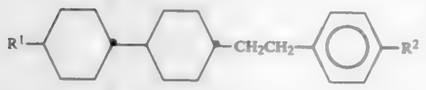
a nematic liquid crystal mixture of positive dielectric anisotropy in the cell,

electrode layers with superimposed orientation layers on the insides of the carrier plates,

an angle of incidence between the longitudinal axis of the molecules on the surface of the carrier plates and the carrier plates of about 1 degree to 30 degrees and

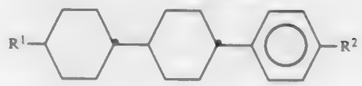
a twisting angle of the liquid crystal mixture in the cell from orientation layer to orientation layer, according to the amount, of between 160° and 360°, wherein the nematic liquid crystal mixture contains

a) at least one component chosen from group A consisting of compounds of the formulae AIII and AV:



AIII

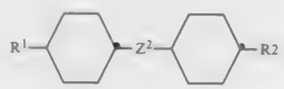
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AV

wherein R^1 and R^2 each independently of one another are each R and R is alkyl having 1–12 C atoms, wherein one or two nonadjacent CH_2 groups can also be replaced by —O—, —CH=CH—, —CO—, —O—CO— or —CO—O—,

b) at least one component chosen from group B1, consisting of the compounds of the formulae BIII and BIV:

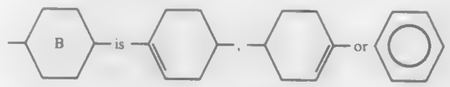


IIIII



BIV

wherein R^1 and R^2 each independently of one another have the meaning given for R, Z^2 is $—CH_2CH_2—$, —CO—O—, —O—CO— or a single bond and



c) 10–80% by weight of a liquid crystal component C, consisting of one or more compounds having a dielectric anisotropy of more than +1.5,

d) 0% by weight of compounds having a dielectric anisotropy of less than −1.5 and

e) an optically active component E, in an amount such that the ratio between the layer thickness (separation of the plane-parallel carrier plates) and the natural pitch of the chiral nematic liquid crystal mixture is about 0.2 to 1.3, and in that the nematic liquid crystal mixture has a nematic phase range of at least 60° C., a viscosity of not more than 30 mPa's and a dielectric anisotropy of at least +5, the dielectric anisotropies of the compounds and the parameters relating to the nematic liquid crystal mixture being based on a temperature of 20° C.

5,387,370

ELECTROVISCOUS FLUID

Hirotaka Tomizawa; Makoto Kanbara, and Tetsuo Miyamoto, all of Ohi, Japan, assignors to Tonen Corporation, Tokyo, Japan

PCT No. PCT/JP92/00944, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993, PCT Pub. No. WO93/02166, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 24, 1992, Ser. No. 30,022
Claims priority, application Japan, Jul. 24, 1991, 3-184496; Dec. 26, 1991, 3-344922; Dec. 26, 1991, 3-344924
Int. Cl.[6] C09K *19/52, 5/00;* H01B *3/24*
U.S. Cl. 252—299.01 6 Claims

1. An electroviscous fluid, comprising ferroelectric liquid crystals with no azomethine bonding that have spontaneous polarization of 3×10^{-9} C/cm^2 or more.

5,387,371

FERROELECTRIC LIQUID-CRYSTALLINE MEDIA, AND THEIR USE IN ELECTRO-OPTICAL DEVICES

Axel Pausch, Seeheim-Jugenheim; Ulrich Finkenzeller, Plankstadt; Juliane Suermann, Darmstadt-Eberstadt, all of Germany, and David Coates, Dorset, Great Britain, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed Sep. 29, 1993, Ser. No. 128,189
Claims priority, application Germany, Sep. 30, 1992, 4232788
Int. Cl.[6] C09K *19/12;* G02F *1/13*
U.S. Cl. 252—299.65 13 Claims

1. A ferroelectric liquid-crystalline medium exhibiting low-temperature behavior and bistability and comprising:

an achiral base material having a broad smectic C phase, and at least one chiral dope which induces a spontaneous polarization of 5–40 nCcm^{-2} in said achiral base material,

wherein said achiral base material contains laterally fluorinated phenyl biphenyl carboxylates, laterally fluorinated phenyl benzoates, and laterally fluorinated terphenyls,

wherein said medium has a phase sequence containing the phases isotropic, cholesteric, smectic A and chiral smectic C, and

said medium has a chiral smectic C phase which is stable at at least −30° C. and has a phase width of at least 70° C.

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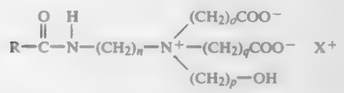
COMPOSITION FOR CLEANSING BODY WITH HIGH FOAMING ACTION

Dean T. Su, Princeton Junction, N.J., assignor to Colgate-Palmolive Company, Piscataway, N.J.

Filed Mar. 5, 1993, Ser. No. 26,924
Int. Cl.[6] C11D *1/94, 1/32, 9/36*
U.S. Cl. 252—544 12 Claims

1. An aqueous composition comprising

a. about 5–10 wt % of



wherein R is alkyl and/or alkenyl having an average of from about 8 to 18 carbon atoms, inclusive;

n is 1, 2 or 3;

o, p and q are the same or different and are 1, 2 or 3;

X is an alkali metal or amine cation;

b. about 1 to 8 wt % of

$R^1—(OCH_2CH_2)—_mOSO_3—Y+$

wherein R^1 is alkyl and/or alkenyl of about 8 to 18 carbon atoms, inclusive;

m is 0 or 1–10,

y is an alkali metal or amine cation;

c. about 0.5 to 5 wt % of a soap;

d. about 1 to 5 wt % of an acylated hydrolyzed protein salt wherein the acyl group is alkyl or alkenyl carboxy acyl having an average number of carbon atoms of about 8 to 20 carbon atoms, inclusive;

e. about 0.1–5 wt % of an acyl glutamate salt wherein the acyl group is alkyl and/or alkenyl carboxy acyl having an average number of carbon atoms of from about 8 to 20 carbon atoms, inclusive; and

f. about 0.2–2 wt % of an ethoxylated dimethicone copolyol.

5,387,373

DETERGENT COMPOSITIONS

Appaya R. Naik, Birkenhead, United Kingdom, assignor to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Jan. 25, 1993, Ser. No. 8,460
Claims priority, application United Kingdom, Jan. 24, 1992, 9201519
Int. Cl.[6] C11D *1/14, 1/75, 1/88*
U.S. Cl. 252—546 11 Claims

1. A stable detergent composition in liquid or gel form containing from 10 to 80% by weight of an active detergent mixture and also containing water, the active detergent mixture comprising:

primary alkyl sulphate in an amount of 15 to 75% by weight of the active detergent mixture betaine, amine oxide or mixtures thereof,

in an amount of 10 to 40% by weight of the active detergent mixture and which is at least two thirds of the amount by weight of any primary alkyl sulphate having carbon atom chains of 12 carbon atoms or longer, wherein at least 75% by weight of the primary alkyl sulphate has a carbon atom chain length of 11 carbon atoms or at least 40% by weight of the primary alkyl sulphate has a chain length of 10 carbon atoms and in the latter case at least 25% by weight of the primary alkyl sulphate has a chain length of 12 to 14 carbon atoms.

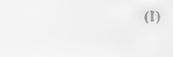
5,387,374

GUERBET CARBONATES

Alfred Westfechtel, Hilden; Frank Bongardt, Duesseldorf, and Achim Ansmann, Erkrath, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Filed Jun. 15, 1993, Ser. No. 78,211
Claims priority, application Germany, Dec. 15, 1990, 4040154
Int. Cl.[6] C10M *105/48;* C07C *69/96*
U.S. Cl. 252—56 S 6 Claims

1. A Guerbet carbonate of the formula



(I)

in which R^1 and R^2 are branched alkyl radicals from Guerbet alcohols containing from 16 to 20 carbon atoms.

5,387,375

HIGH FOAMING NONIONIC SURFACTANT BASED LIQUID DETERGENT

Rita Erilli, Rocourt, Belgium; Gilbert S. Gomes, Somerset, N.J.; Ronald Kern, Buttzville, N.J., and Stephen Repinec, Flemington, N.J., assignors to Colgate Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 893,138, Jun. 3, 1992, abandoned. This application Jul. 9, 1993, Ser. No. 91,514
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[6] C11D *1/831, 1/84*
U.S. Cl. 252—546 9 Claims

1. A high foaming, nonionic surfactant-based, light duty, liquid detergent comprising approximately by weight:

(a) 10% to 30% of a water soluble nonionic surfactant selected from the group consisting of primary and secondary C_8–C_{18} alkanol condensates with 5 to 30 moles of ethylene oxide, condensates of C_8–C_{18} alkylphenol with 5 to 30 moles of ethylene oxide, and propylene oxide having a weight ratio of alkylene oxide content of 60% to 85% by weight and condensates of 2 to 30 moles of ethylene oxide with sorbitan mono and tri-C_{10}–C_{20} alkanoic acid esters having an HLB of 8 to 15;

(b) 1% to 10% of at least one water-soluble or water-dispersible anionic surfactant selected from the group consisting of a C_8–C_{18} alkyl sulfates, C_8–C_{18} alkyl benzene sulfo-

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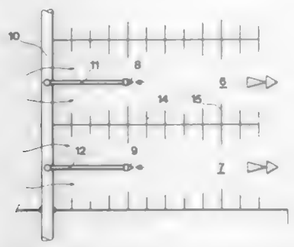
nates, C_{10-20} paraffin sulfonates, C_{10}–C_{24} alpha olefin sulfonates and C_8–C_{18} ethoxylated alkyl ether sulfates;
(c) 0.5% to 8% of a water-soluble betaine;
(d) 0.5% to 8% of a dialkyl sulfosuccinate ester; and
(e) balance being water as an aqueous medium in which said nonionic surfactant, said anionic detergent, said dialkyl sulfosuccinate ester and said betaine are solubilized in said water, wherein said composition does not contain any polymeric thickener, clay, silica or alkanol amide, said composition having a Brookfield viscosity at room temperature using a #2 spindle at 30 rpm of about 100 to about 1,000 cps.

5,387,376

PROCESS AND APPARATUS FOR MASS TRANSFER BETWEEN LIQUID AND GASEOUS MEDIA

Hermann Grsser, Frauenfeld, Switzerland, assignor to Galipag, Frauenfeld, Switzerland

Continuation of Ser. No. 34,655, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 820,266, Jan. 14, 1992, abandoned. This application May 2, 1994, Ser. No. 236,167
Claims priority, application Switzerland, Jan. 17, 1991, 00129/91
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—78.2 8 Claims



1. A process for mass transfer between liquid and gaseous media comprising the steps of:
passing a gaseous medium in a direction of flow through successive spaced apart flow restrictions of a flow path; and
spraying a liquid medium by means of one high-pressure nozzle in co-current flow into the flow of the gaseous medium only after the gaseous medium has passed through at least one restriction;
wherein two of said successive restrictions of the flow path define a cavity, such that the restrictions and at least one of the cavities cause changes in velocity and pressure of the gaseous medium to obtain said mass transfer while minimizing flow resistance.

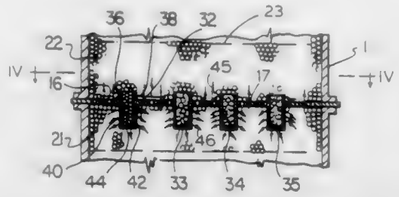
5,387,377

ACTIVE LIQUID DISTRIBUTOR CONTAINING PACKED COLUMN

Karl T. Chuang, Edmonton, Canada, assignor to The Governors of the University of Alberta, Edmonton, Canada

PCT No. PCT/CA92/00049, § 371 Date Jul. 27, 1993, § 102(e) Date Jul. 27, 1993, PCT Pub. No. WO92/13620, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 5, 1992, Ser. No. 94,103
Claims priority, application Canada, Feb. 5, 1991, 2035701
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—97 8 Claims

1. A packed column for use in gas/liquid mass transfer operations, said column including:
a) an upwardly extending casing having,
i) an uppermost liquid receiving, casing interior portion,
ii) an intermediate, casing interior portion forming a flow path for the flow of active liquid downwardly therethrough and the flow of gas upwardly therethrough, and
iii) a lower, liquid collecting, casing interior portion,
b) a gas outlet from the casing above the liquid receiving, casing interior portion,
c) means for distributing liquid across the liquid receiving, casing interior portion,
d) a liquid outlet from the liquid collecting, casing interior portion,
e) a gas inlet to the liquid collecting, casing interior portion,
f) a series of spaced apart porous trays partitioning transversely the whole of the flow path in the intermediate casing interior portion at different levels, each tray having perforations across the whole partitioning area thereof, and for supporting a packed bed thereon,
g) a plurality of discrete, gas/liquid contacting, packing elements supported on each tray,
h) the improvement being characterized in that:
i) the packing elements forming packed beds with each packed bed filling the whole of the partitioned part of the intermediate, casing interior portion above the tray on which that packed bed is supported, and



ii) the trays are active liquid frothing and distributing trays, to provide in operation a desired degree of controlled liquid level on each tray to promote frothing above the tray and within the packing whereby each tray, together with substantially the whole of each packed bed, and thus substantially all of the intermediate, casing interior portion, contributing significantly to gas/liquid contact in the casing,
iii) each of said trays providing said desired degree of controlled liquid level by virtue of a perforated area in the tray which permits downflow of liquid while retaining on said plate said liquid level whereby upward flow of vapours through said perforated area causes frothing of said liquid in said packing and
iv) each tray including a plurality of parallel spaced apart troughs having perforated sides to distribute the liquid into the packing, with weirs to define a plurality of downcomers in said tray, said weirs being of a height to develop and maintain a sufficient liquid level which is frothed by the upflowing vapours.

5,387,378

INTEGRAL ASYMMETRIC FLUOROPOLYMER PERVAPORATION MEMBRANES AND METHOD OF MAKING THE SAME

Peter N. Pintauro, and Kangzhuang Jian, both of New Orleans, La., assignors to Tulane University, New Orleans, La.

Filed Apr. 21, 1993, Ser. No. 51,050
Int. Cl.[6] B29C *65/00;* B05D *5/00*
U.S. Cl. 264—48 28 Claims

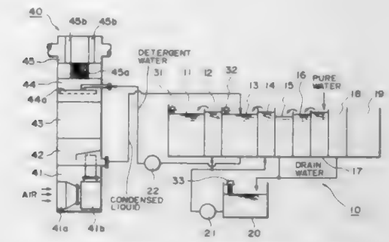
1. A method for fabricating an asymmetric fluoropolymer membrane comprised of a fluoropolymer material, the membrane having a first surface comprised of a dense layer of the fluoropolymer material, and an opposite second surface comprised of a porous layer of the fluoropolymer material, comprising the steps of:
(a) dissolving a fluoropolymer material in a solvent mixture comprised of a low boiling point solvent and a high boiling point solvent to form a solution;
(b) depositing the solution on a casting surface; and
(c) removing the solvent mixture from the solution, thereby precipitating the asymmetric fluoropolymer membrane therefrom such that the first surface of the membrane precipitates at the interface of the casting surface and the solution.

5,387,379

WASHING METHOD FOR WORKPIECE

Yasunori Atarashi, Ibaraki; Kojiro Shirahata, and Hirofumi Murata, both of Toride, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,392
Claims priority, application Japan, Jul. 16, 1991, 3-175516; Jul. 16, 1991, 3-175520
Int. Cl.[6] B29C *71/00*
U.S. Cl. 264—37 1 Claim



1. A method for washing a workpiece, said method comprising the steps of:
washing unnecessary matters adhering to the workpiece by a detergent water which is stored in a washing bath;
rinsing the workpiece washed in the washing step, by a water which is stored in a rinsing bath;
supplying the used rinse water to the detergent water used in the washing step;
supplying a pure water to the washing bath and the rinsing bath;
dewatering the workpiece which has been washed in the washing bath and rinsed in the rinsing bath;
drying the workpiece dewatered in the dewatering step; and
separating the detergent water used in the washing step into a condensed liquid of a detergent and water vapor, said separating comprising the steps of:
(i) heating outside air up to a predetermined temperature;
(ii) contacting the heated air with the detergent water used in the washing step to evaporate water contained therein thereby separating the detergent water into the condensed liquid of the detergent and the water vapor;
(iii) discharging the water vapor to the atmosphere; and
(iv) returning the condensed liquid of the detergent to the washing bath.

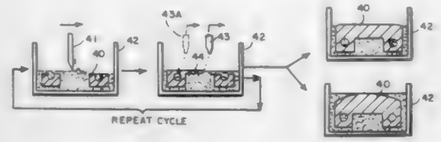
5,387,380

THREE-DIMENSIONAL PRINTING TECHNIQUES

Michael Cima, Lexington; Emanuel Sachs, Somerville; Tailin Fan, Cambridge; James F. Bredt, Watertown; Steven P. Michaels, Melrose; Satbir Khanuja, Cambridge; Alan Lauder, Boston; Sang-Joon J. Lee, Cambridge; David Brancazio, Cambridge; Alain Curodeau, Cambridge, and Harald Tuerck, Cambridge, all of Mass., assignors to Massachusetts Institute of Technology

Continuation-in-part of Ser. No. 447,677, Dec. 8, 1989, Pat. No. 5,204,055. This application Jun. 5, 1992, Ser. No. 894,100
Int. Cl.[6] B29C *67/00*
U.S. Cl. 264—69 58 Claims

1. A process for making a component comprising the steps of
(1) depositing a preselected quantity of a powder material;
(2) spreading said powder material in a layer of preselected thickness over a predetermined confined region;
(3) applying a further material to selected regions of said layer of powder material which will cause said layer of powder material to become bonded at said selected regions;



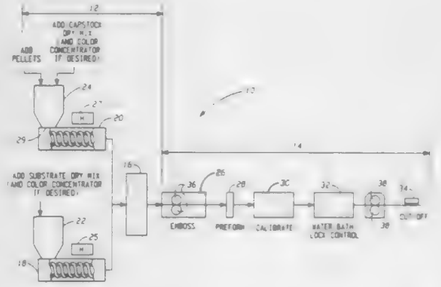
(4) repeating steps (1), (2) and (3) a selected number of times to produce a selected number of successive layers, said further material causing said successive layers to become bonded to each other;
(5) removing unbonded powder material which is not at said one or more selected regions to provide the component.

5,387,381

METHOD FOR EXTRUDING PLASTIC WITH ACCENT COLOR PATTERN

Thomas J. Saloom, Plainsboro, N.J., assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Continuation of Ser. No. 447,264, Dec. 7, 1989, abandoned. This application May 1, 1991, Ser. No. 696,338
Int. Cl.[6] B29C *47/06*
U.S. Cl. 264—75 18 Claims



1. A method of producing a plastic extrudate with a base color and at least one accent color, comprising the steps of:
a) introducing into an extruder a base color producing material and an accent color producing material, said base color producing material comprising powder sized material, said accent color producing material comprising pellets which (i) are larger than the powder sized material of said base color material, (ii) have a higher deflection temperature than said base color material; and (iii) wherein said base color producing material comprises polyvinylchloride and wherein said accent color producing material comprises a material selected from the group consisting of acrylics, polycarbonates and mixtures thereof;
b) extruding said base color producing material and said accent color producing material through an extrusion die to form the plastic extrudate under processing temperatures whereby the accent color carrying pellets cause delayed introduction and restricted dispersion of the accent color into the plastic extrudate;
c) introducing into said extrusion die a substrate producing material, and co-extruding said substrate producing mate-

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rial with said base color producing material and said accent color producing material.

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METHOD FOR MANUFACTURING INTERIOR FITTED PART FOR MOTOR VEHICLE

Walter Föttinger; Hansjörg Grimm; Michael Hauber, all of Weinheim; Hans Hettenbach, Ladenburg; Patra Hofmann, Heidelberg, and Gerhard Schaut, Hemsbach, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Continuation of Ser. No. 14,963, Feb. 8, 1993, abandoned. This application Feb. 15, 1994, Ser. No. 196,826

Claims priority, application Germany, Feb. 22, 1992, 4205464

Int. Cl.[6] B29C *43/02*

U.S. Cl. 264—113 16 Claims

1. A method for manufacturing an interior fitted part for motor vehicles comprising:

carding a fabric comprising a matrix component and at least about 40% by weight of a binding component, said matrix component comprising drawn polyethylene terephthalate matrix fibers having a staple length of about 15 to about 100 mm and a titer of about 4 to about 30 decitex, said binding component comprising binding fibers selected from undrawn polyethylene terephthalate fibers and co-polyester fibers, said binding fibers having a staple length of about 15 to about 100 mm, a titer of about 4 to about 30 decitex and a melting point that is about 30° to about 120° C. lower than that of said matrix fibers;

pre-compacting said fabric using a technique selected from needle punching, surface heating, and a combination of needle punching surface heating;

preheating said fabric in a preheating oven for a period of about one to about five minutes at a temperature which lies about 10° to about 30° C. above the melting temperature of said binding fibers and below the melting temperature of said matrix fibers;

subjecting said fabric to a molding pressure in a form tool at a temperature which lies at least about 10° C. below the melting point of said binding fibers; and

annealing said fabric at a temperature ranging from about 140° to about 240° C. and for a duration ranging from about two hours down to about one minute.

5,387,383

PROCESS OF MAKING SHEATH/CORE COMPOSITE PRODUCTS

John R. Collier, and Billie J. Collier, both of Baton Rouge, La., assignors to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Division of Ser. No. 857,374, Mar. 25, 1992, Pat. No. 5,272,005. This application Dec. 13, 1993, Ser. No. 166,071

Int. Cl.[6] B05D *3/10, 7/02;* D01F *8/02*

U.S. Cl. 264—129 16 Claims

9. A process for making a composite material, comprising the steps of:

(a) treating a core with an adhesion promoter which will bind to the core, wherein the adhesion promoter is difunctional and is sterically hindered; and

(b) reacting the adhesion promoter with a cellulosic material which will bind to the adhesion promoter;

whereby a composite material is formed in which the adhesion promoter binds a cellulosic skin to the core.

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METHOD OF AND APPARATUS FOR MAKING CUSTOMIZED INSOLES FOR FOOTWEAR

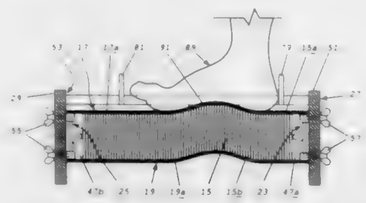
Leslie F. Irving, 60, New Road, Bromsgrove, Worcestireshire B60 2TX, Great Britain

Filed Apr. 30, 1992, Ser. No. 875,833

Claims priority, application United Kingdom, May 1, 1991, 9109387

Int. Cl.[6] B29C *33/40*

U.S. Cl. 264—138 13 Claims



1. A method of manufacturing a customized contoured insole for footwear using a mold apparatus comprising a plurality of parallel rod elements the ends of each of which are respectively connected to first and second flexible membranes, the rod elements extending between said membranes parallel to one another in frictional contact with one another, and the membranes are supported along opposite marginal portions thereof by peripheral supporting means, comprising the steps of:

(a) initially realigning the rod elements to flatten the first and second membranes;

(b) placing above one of the membranes a template having an aperture having the shape and size of the plantar surface of a subject foot;

(c) marking the outline of the template aperture in the membrane surface below the template and thereafter removing the template;

(d) bringing the outlined surface of said one membrane and the plantar surface of the subject foot to contact;

(e) applying pressure to the membrane with the plantar foot surface to produce a depression in the surface of the outlined membrane wherein the rod elements produce a positive shape of the plantar foot surface in the opposite membrane surface;

(f) clamping the rod elements to maintain the shape caused by the impression;

(g) placing the mold such that the surface of said other membrane is upright;

(h) placing the template above said other membrane surface such that the outlines of the template aperture and the positive form created in said other membrane are in registration;

(i) applying limp sheet material over the template;

(j) deforming the sheet material throughout an area corresponding to the outline of the template such that a casting mold is formed having a bottom surface corresponding to the positive shape of the membrane surface and peripheral walls corresponding to the outline of the template aperture;

(k) placing a flexible sheet material into the casting mold such that the flexible sheet material is pressed against the contour of the membrane having the positive shape and a portion of the side wall of the casting mold;

(l) pouring a settable cushion-forming material into the casting mold wherein the cushion-forming material bonds to the flexible sheet material upon setting;

(m) setting the cushion-forming material so as to form the insole albeit in an untrimmed condition;

(n) removing the untrimmed insole from the casting mold; and,

(o) trimming the insole to form an outline conforming to the aperture in the template.

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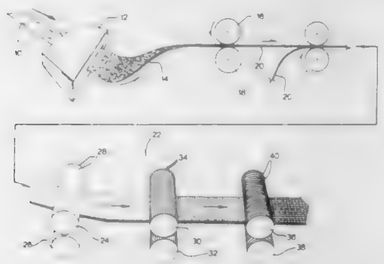
METHOD OF MAKING HIGHLY ABSORBENT AND FLEXIBLE CELLULOSIC PULP FLUFF SHEET

Zulfikar Murji, Montreal, and Henri Brisebois, Lachenaie, both of Canada, assignors to Johnson & Johnson Inc., Canada

Division of Ser. No. 637,404, Jan. 4, 1991, Pat. No. 5,242,435. This application Jun. 15, 1993, Ser. No. 77,976

Int. Cl.[6] D04H *1/00*

U.S. Cl. 264—160 17 Claims



1. A method of manufacturing a highly absorbent and flexible article, comprising the steps of:

a) uniformly densifying a cellulosic pulp fluff sheet by mechanical compression; and

b) embossing the densified cellulosic pulp fluff sheet of step (a) to impart thereto a fiber density profile of alternating high fiber density and low fiber density zones while impressing hinge areas for increasing the flexibility of the densified cellulosic pulp fluff sheet.

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EXTRUSION METHOD AND APPARATUS

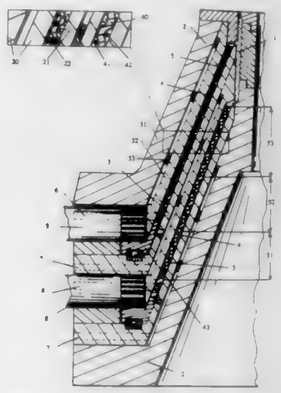
Kari Kirjavainen, Kivenlahdenkatu 11 A 4, SF-02320 Espoo, Finland

Continuation of Ser. No. 613,892, Feb. 4, 1991, abandoned. This application May 13, 1993, Ser. No. 61,813

Claims priority, application Finland, Jun. 6, 1988, 882653

Int. Cl.[6] B29C *47/80, 47/52*

U.S. Cl. 264—173 24 Claims



1. An extrusion device for processing extrudable material, said extrusion device comprising:

a central extrusion channel for the extrudable material;

at least two stator means, with each said stator means including a conically tapered portion which tapers in the direction of said central extrusion channel, and a heating means for heating said stator means and thereby heating the material to be extruded, wherein each said stator means includes a first element, and a second element connected to said first element by at least one distance piece, with an intermediate space defined between said first and second elements;

at least one rotor means rotatably positioned between said stator means, with each said rotor means including a conically tapered portion which tapers in the direction of said central extrusion channel; and

at least one feed defile positioned between said rotor means and said stator means and coupled to said central extrusion channel, wherein each said feed defile has a diameter which decreases in the direction of said central extrusion channel.

16. A method for processing extrudable material comprising the steps of:

a) feeding extrudable material, which is in solid form and includes plastic mixed with fibers or polymer forming fibers to an extrusion device which includes a central extrusion channel, at least two stator means with each said stator means including a conically tapered portion which tapers in the direction of said central extrusion channel, each said stator means includes a first element, and a second element connected to said first element by at least one distance piece, with an intermediate space defined between said first and second elements, at least one rotor means rotatably positioned between said stator means, with each said rotor means including a conically tapered portion which tapers in the direction of said central extrusion channel, and at least one feed defile positioned between said rotor means and said stator means and coupled to said central extrusion channel, wherein said feed defile has a diameter which decreases in the direction of said central extrusion channel, wherein said extrudable material is supplied into a feeding zone of said feed defile from several equally spaced points about the periphery of said rotor means;

b) melting said extrudable material in a melt zone of said feed defile with a heating means positioned within said intermediate space formed in each said stator means, wherein the pressure is higher within said melt zone than said feed zone;

c) compressing said extrudable material in a compression zone of said feed defile to a final extrusion pressure which is higher than the pressure with said melt zone; and

d) extruding said material through said central extrusion channel.

5,387,387

METHOD AND APPARATUS FOR DRY SPINNING SPANDEX

Alexander James, Greenville, and Daniel C. James, Spartanburg, both of S.C., assignors to Alex James & Associates, Inc., Greenville, S.C.

Filed Sep. 30, 1993, Ser. No. 128,401

Int. Cl.[6] D01D *4/02, 5/04;* D01F *6/78*

U.S. Cl. 264—205 7 Claims

1. The method of dry spinning spandex filaments utilizing a flow of hot inert gas in an elongated upright heated tube for receiving a polymer in a liquid medium for forming filaments in the tube comprising the steps of:

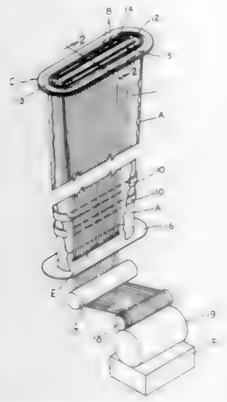
arranging spinnerettes each delivering the liquid medium for forming a bundle of filaments substantially linearly along an elongated spinneret plate;

positioning said elongated spinneret plate across an entrance end of an upright heated tube;

providing a horizontal cross-section in said tube corresponding to said elongated spinneret plate for receiving said liquid medium forming bundles of filaments in said heated tube by positioning a pair of substantially flat opposed aligned sides forming said tube so that said filaments are arranged in at least one elongated substantially straight row, said filaments being generally equally spaced with

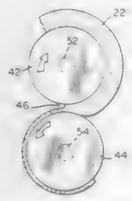
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respect to next adjacent filaments intermediate and in substantial alignment with said sides;
distributing said flow of hot inert gas about said spinnerettes and into said tube;
removing said filaments from an elongated slot at an exit end of said tube; and



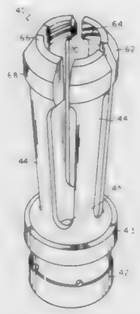
winding said filaments passing through said elongated slot;
whereby a flow of hot inert gas is evenly distributed relative to said filaments in the tube, avoiding a central hollow devoid of filaments, and increasing production due to an increased number of spinnerettes.

5,387,388
METHOD FOR PRODUCING ORIENTED PLASTIC STRAP
Donald L. Van Erden, Wildwood; Manuel C. Enriquez, Morton Grove, and Donald W. Noren, Glenview, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.
Filed Oct. 9, 1992, Ser. No. 958,803
Int. Cl.[6] B29C *43/22*
U.S. Cl. 264—280 **19 Claims**



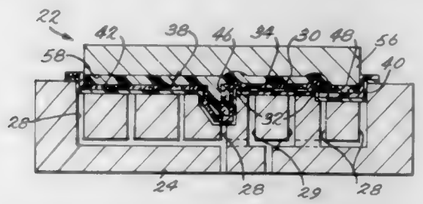
1. A method of producing a plastic strap, comprising the steps of:
providing a pair of rollers such that said rollers rotate in opposite directions and at different lineal surface velocities, and wherein said pair of rollers are spaced apart with respect to each other so as to define a nip therebetween; and
feeding a solid sheet of material, having a thickness which which is greater than said nip defined between said pair of rollers, into said nip defined between said pair of rollers so as simultaneously mill and stretch said solid sheet of material substantially at said nip defined between said rollers during a single pass of said solid sheet material through said nip defined between said rollers rotating in said opposite directions and at said different lineal surface velocities.

5,387,389
INJECTION MOLDING METHOD AND SYSTEM WITH EXPANDABLE CAVITY ELEMENT
Paul Catalanotti, West Newton, and Sassan Tarahomi, North Chelmsford, both of Mass., assignors to Roehr Tool Corporation, Hudson, Mass.
Filed Dec. 23, 1993, Ser. No. 172,856
Int. Cl.[6] B29C *45/44*
U.S. Cl. 264—318 **26 Claims**



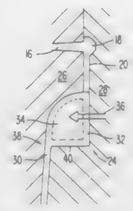
1. A method for the molding of a molded article with an exterior surface having an opening therein or projections thereon, which method comprises:
a) providing a mold having a first mold part and a second mold part, the mold parts adapted to move between a closed molding position and an open, article recovering position and which mold defines a mold cavity for an article to be molded, the mold including:
i) an expandable cavity element, integrally formed of a spring steel metal and having a base with an opening therethrough and a plurality of generally vertically biased arms extending from the base and about the opening, to an one open end, the arms at said one end extending into the mold cavity and having an extended tapered exterior surface and an interior surface to form the projection or opening on the exterior surface of the article to be molded, the arms of the expandable cavity element adapted to move at the one end between an open, relaxed, extended, non-forced, biased position with the ends of the arms in an open, non-contacting, non-molding position, and a closed end, side arm-contacting, mechanically force-retained molding position;
ii) a mandrel element having a one and other end and adapted to move within the base and arms of the expandable cavity element between an extended position, when one end forms with the interior surface of the expandable element a portion of the mold cavity for the formation of the article and a non-use position; and
iii) the second mold part having a sleeve means with a surface portion tapered, so that in the closed, molding position of the mold the tapered surface portion mechanically forces the one end of the biased arms of the expandable cavity element into the closed, forced position on movement of the second mold part;
b) moving the mold parts to a closed molding position and forcing the one open end of the biased arms of the cavity element in the mold cavity into a closed, mechanically force-retained molding use position within the mold cavity by the movement of the second mold part and sleeve means against the exterior surface of the biased arms and placing the one end of the mandrel element in the closed use position within the core element to form with the mandrel element the mold cavity for the article to be molded;
c) injecting a molding material into the mold cavity to form a molded article in the mold cavity with an opening in or a projection on the exterior surface of the article;
d) moving the second mold part to an open article-recovery position to permit the arms of the expandable core element to spring open without the use of mechanical force to the relaxed, open, extended, biased position, and moving the mandrel to the non-use position;
e) positive expander ejection sleeve to mechanically open the arms in the event the arms are held closed by the plastic part and the spring-force of the arms is not sufficient to open the arms; and
f) recovering from the mold in the open position the article so molded.

5,387,390
METHOD OF MOLDING A VEHICLE DOOR PANEL WITH A SOFT ARM REST
Walter P. Kornylo, Livonia, Mich., assignor to Atoma International Inc., Newmarket, Canada
Filed Apr. 26, 1993, Ser. No. 51,543
Int. Cl.[6] B29C *67/22*
U.S. Cl. 264—46.8 **7 Claims**



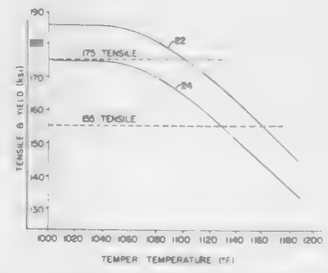
1. A method of making an interior panel of an automotive vehicle door having an exterior surface which is to face toward the interior of the automotive vehicle when installed therein, said method utilizing a mold assembly including cooperating opposed mold components having opposed mold surfaces shaped to form the exterior surface of the panel and an opposed surface thereof, the mold component with the mold surface shaped to form the exterior surface of the panel being a vacuum mold component having a mold surface arm rest portion defining an arm rest portion of the panel, said method comprising the steps of
heating a laminate sheet comprising (1) an outer layer of vinyl sheet and (2) a layer of relatively soft foamed material bonded thereto,
vacuum forming said heated laminate sheet in said vacuum mold component oriented so that an arm rest portion of the laminate sheet is defined by a surface of the vinyl sheet engaged with said mold surface arm rest portion,
mounting a preformed pad of foamed elastomeric material having a density in the range of 30 to 45 pounds per cubic foot on a surface of the arm rest portion of the heated laminate sheet opposite the engaged vinyl sheet surface,
placing a reinforcing mat over the mold surface defining the exterior surface of the panel and the heated laminate sheet vacuum formed thereon,
adding foamable polyurethane material onto the reinforcing mat, and
heating, foaming and curing the foamable polyurethane material while all of the mold components are in cooperating relation so as to form a panel which includes (1) a substrate defining the opposite surface thereof, (2) an arm rest portion defined on its exterior surface by said vinyl sheet and backed up therebelow by said layer of relatively soft foamed material and said pad of foamed elastomeric material.

5,387,391
PROCESS OF MAKING A RESIN PANEL
Yukio Satoh, Muroran, Japan, and Owen R. Maher, Grosse Point, Mich., assignors to Nissan Motor Co., Ltd., Tokyo, Japan and General Electric Co., N.Y.
Filed Jun. 28, 1993, Ser. No. 84,042
Int. Cl.[6] B29D *22/00*
U.S. Cl. 264—572 **7 Claims**



1. A method of producing a resin panel in an injection mold, comprising:
introducing a short shot of molten resin material from the top of the mold through a sprue and a primary runner;
filling a secondary runner in the area of the panel which requires reinforcement in a longitudinal direction with resin material using a sprue;
sending said resin material uniformly from said secondary runner;
supplying a gas to said secondary runner, said gas forming a hollow section therein, said gas pushing said resin material from said secondary runner downward to fill the remainder of the mold with molten resin material;
cooling the mold; and
removing the panel from the mold whereby a panel is produced which has an integral molding truss formed by the hollow section and the panel is stiffened thereby.

5,387,392
HIGH STRENGTH, HIGH TOUGHNESS STEEL GRADE AND GAS CYLINDER THEREOF
Bruce L. Bramfitt, Bethlehem, Pa., and Leonard C. Luscomb, Longview, Tex., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.
Filed Aug. 25, 1993, Ser. No. 111,546
Int. Cl.[6] C22C *38/12, 38/04*
U.S. Cl. 420—105 **20 Claims**



1. High strength, high toughness steel comprising:
a) from about 0.32 to about 0.36 percent by weight carbon;
b) from about 0.40 to about 0.60 percent by weight manganese;
c) from about 0.15 to about 0.35 percent by weight silicon;
d) from about 0.80 to about 1.10 percent by weight chromium;
e) from about 0.55 to about 0.70 percent by weight molybdenum;

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f) from about 0.01 to about 0.05 percent by weight aluminum;
g) no more than about 0.008 percent by weight sulfur; and
h) the balance being iron.

5,387,393

PREVENTION OF CRACKING AND BLISTERING OF REFINERY STEELS BY CYANIDE SCAVENGING IN PETROLEUM REFINING PROCESSES

Veronica K. Braden, Sugar Land, Tex., and Manian Ramesh, Naperville, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 989,297, Dec. 11, 1992, abandoned. This application Sep. 8, 1993, Ser. No. 118,022
Int. Cl.[6] C23F *11/04*
U.S. Cl. 422—12 **20 Claims**

1. A method of preventing cyanide induced corrosion, cracking, and blistering of steel and iron vessels and pipelines comprising the step of adding to water containing refinery streams contaminated with cyanide, either as free acid or salts thereof, an effective corrosion, cracking, and blistering inhibiting amount of a cyanide reactive scavenger comprising at least one amine-aldehyde reaction product.

5,387,394

OPHTHALMIC COMPOSITIONS AND METHODS FOR PRESERVING AND USING SAME

John C. Baker, Irvine, Calif., assignor to Allergan, Inc., Irvine, Calif.

Continuation of Ser. No. 905,628, Jun. 29, 1992, abandoned. This application May 11, 1993, Ser. No. 59,522
Int. Cl.[6] A01N *25/02;* **A61L** *2/18*
U.S. Cl. 422—28 **20 Claims**

1. A method for disinfecting a contact lens comprising:
contacting a contact lens with a composition comprising a liquid aqueous medium having an ophthalmically acceptable pH and an effective disinfecting amount of grapefruit seed extract in the range of about 0.001% to about 5% by weight per volume of said liquid aqueous medium at conditions effective to disinfect said contact lens, said grapefruit seed extract including essential oils which exhibit antimicrobial activity in said composition.

5,387,395

FLUID DISTRIBUTION MANIFOLD

Peter J. Coassin, San Juan Capistrano; William H. Shope, Santa Ana, and Clement P. Aime, Huntington Beach, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 6, 1992, Ser. No. 909,553
Int. Cl.[6] F16K *15/14, 21/04*
U.S. Cl. 422—81 **15 Claims**



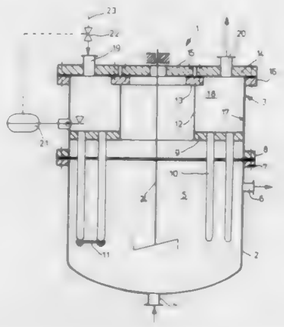
5. An automated chemical processing system comprising:
a plurality of containers containing chemical reagents;
means defining a location for a chemical reaction in flow communication with the plurality of containers;
means for gas pressurizing the plurality of containers to dispense the chemical reagents to the reaction location, said means comprising:
a source of pressurized gas;
a first manifold including a single body having a first surface, a second surface and a plurality of channels, each said channel including a first end proximate the first surface and a second end proximate the second surface;
an input tube connected to the source and a plurality of output tubes attached to the single body in communication with the channels and the plurality of containers;
first means, connecting to the second surface, for defining a plenum, said plenum being in constant flow communication with the second end of each said channel;
elastomeric checkvalves positioned in the single body between the plurality of output tubes and the plenum which allow the pressurized gas to flow through the elastomeric checkvalves from the plenum to the plurality of output tubes but restrict flow in a reversed direction, said pressurized gas from the plenum pressurizing the chemical reagents in the containers;
means for controlling dispensing of the chemical reagents to the reaction location in a predetermined sequence to accomplish a desired chemical reaction.

5,387,396

REACTOR FOR CARRYING OUT EXOTHERMIC REACTIONS

Hermann Dallmeyer, Odenthal, and Harald Stein, Schmallenberg, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 106,077, Oct. 7, 1987, abandoned. This application May 22, 1991, Ser. No. 704,575
Claims priority, application Germany, Oct. 16, 1986, 3635217
Int. Cl.[6] G05D *9/00;* **F28D** *7/00*
U.S. Cl. 422—106 **4 Claims**



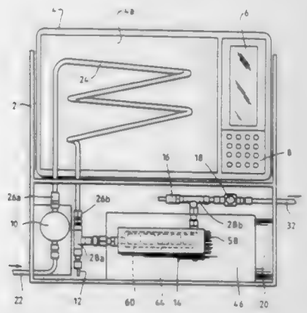
1. A reactor for carrying out exothermic reactions comprising a closed container having:
i) a partition in which downwardly projecting, single wall, boiling tubes closed at their lower end are fixed,
ii) a reaction chamber situated underneath said partition, said reaction chamber having a) an inlet opening for introduction of substances which are to undergo reaction and b) an outlet opening for removal of reaction product,
iii) a distributing and condc sate collecting chamber situated above said partition, said chamber acting to distribute cooling fluid over said partition while at the same time collecting condensate,
iv) an inlet tube for introducing cooling fluid into said distributing and condensate collecting chamber, said inlet tube opening into said distributing and condensate collecting chamber,
v) an outlet tube for removing vapor from said distributing and condensate collecting chamber, said outlet tube opening into said distributing and condensate collecting chamber,
vi) a valve arranged in said inlet tube, and
vii) a filling level regulator associated with said distributing and condensate collecting chamber, said regulator acting on said valve.

5,387,397

METHOD AND APPARATUS FOR CONTINUOUS CHEMICAL REACTIONS

Christopher R. Strauss, North Balwyn, and Alan F. Faux, Footscray, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

Division of Ser. No. 477,963, May 31, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 892,996
Int. Cl.[6] B01J *8/00*
U.S. Cl. 422—129 **7 Claims**



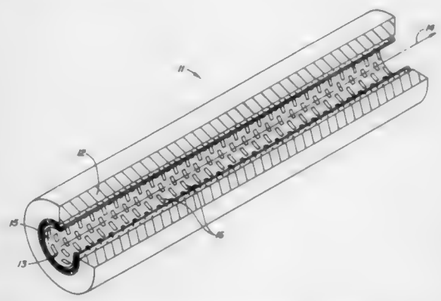
1. Apparatus for performing chemical reactions on a continuous basis comprising:
i) liquid transport and containment means for continuously transporting and containing a chemical reaction having an inlet section, an elongated non-linearly disposed intermediate section and outlet effluent section,
ii) supply means for continuously feeding a liquid or slurry at a controllably variable rate through the liquid transport and containment means,
iii) a microwave generator to supply microwave energy to the intermediate section for continuously carrying out a chemical reaction in said intermediate section,
iv) temperature measurement means associated with the intermediate or effluent sections to measure the temperature of the products of a chemical reaction,
v) pressure control means associated with said liquid transport and containment means for controlling the pressure of said liquid or slurry therein,
vi) heat exchange means in the effluent section to cool the effluent feed and entrained reaction products substantially immediately on exit from the intermediate section, and
vii) control means operatively interconnecting said supply means, said microwave generator, said temperature measurement means and said pressure control means to control the chemical reactions.

5,387,398

SUPERCRITICAL WATER OXIDATION REACTOR WITH WALL CONDUITS FOR BOUNDARY FLOW CONTROL

H. Harry Mueggenburg, Carmichael; Donald C. Rousar, Fair Oaks, and Marvin F. Young, El Dorado Hills, all of Calif., assignors to Aerojet General Corporation, Rancho Cordova, Calif.

Filed Dec. 3, 1993, Ser. No. 162,582
Int. Cl.[6] B01D *53/34*
U.S. Cl. 422—168 **25 Claims**



1. A reactor tube for supercritical water oxidation, comprising:
a source of water, an elongate tube having a tube wall comprised of a laminate of platelets, each platelet less than about 0.100 inch in thickness and etched in a pattern such that the etched regions of all platelets overlap to form a plurality of flow passages communicating the exterior of said tube wall with the interior thereof, each said flow passage defining a direction of flow toward said interior and each said flow passage comprising:
a flow metering channel of substantially uniform cross section and elongate and unbranched in shape, the length and cross section of said flow metering channel selected to offer a preselected resistance to flow therethrough, said flow metering channel in fluid communication with said source of water, and
a distribution section to receive water emerging from said flow metering channel and causing said water to flow in directions parallel to said tube wall, said distribution section having a cross section expanding in said direction of flow and terminating in an elongate exit port which is transverse relative to lift elongate tube and shaped to direct said water to flow in a sheet along the interior of said tube wall, said distribution section containing flow diverters to distribute said water substantially uniformly over the width of said elongate exit port,
the elongate exit ports of all said flow passages being arranged to supply water along the interior of said tube wall in a substantially continuous film.

5,387,399

CATALYTIC COMBUSTION APPARATUS

Toshio Nishida, Nara; Hiroki Sadamori, Kashihara; Shinichi Adachi, Sanda; Akira Hidaka, Itami; Mamoru Aoki, Kobe, and Toshio Matsuhisa, Shimonoseki, all of Japan, assignors to Osaka Gas Co., Ltd., Osaka; Kobe Steel, Ltd., Hyogo and Catalysts and Chemicals Inc., Tokyo, all of Japan

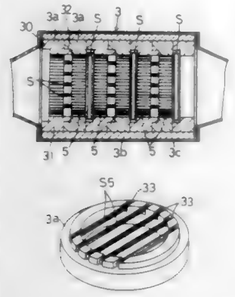
Filed Dec. 22, 1992, Ser. No. 994,680
Claims priority, application Japan, Dec. 26, 1991, 3-343731; Nov. 27, 1992, 4-318129
Int. Cl.[6] B01D *53/34*
U.S. Cl. 422—171 **7 Claims**

1. A catalytic combustion apparatus comprising:
a cylindrical housing defining a fluid passage, said cylindri-

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cal housing including a plurality of immovable support cylinders axially and successively arranged in said cylindrical housing;

a plurality of combustion catalytic bodies transversely disposed in said cylindrical housing and defining numerous bores extending along said fluid passage, wherein said combustion catalyst bodies are loosely fitted in said cylindrical housing to allow for thermal expansion and contraction of said combustion catalyst bodies; and



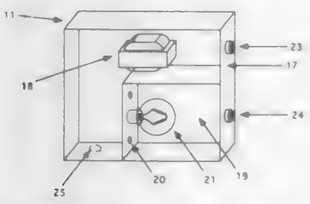
a plurality of holders in said cylindrical housing extending transversely of said fluid passage and respectively contacting end surfaces of said combustion catalyst bodies for preventing axial movement of said combustion catalyst bodies along said fluid passage, said holders comprising bridging elements having ends thereof loosely fitted in grooves formed in said support cylinders, wherein said bridging elements are supported by said support cylinders and are disposed at a plurality of axial positions on said cylindrical housing.

5,387,400

APPARATUS AND METHOD FOR WATER PURIFICATION USING OZONE GENERATED BY ULTRAVIOLET RADIATION WITH A CONTINUOUS FILAMENT BULB

Dennis E. Pelster, 4743 Jay Rd., Boulder, Colo. 80301

Filed Mar. 25, 1994, Ser. No. 218,268
Int. Cl.[6] C02F *1/32*
U.S. Cl. 422—186.03 20 Claims



1. A water purification apparatus comprising:

(a) a means for introducing a gas containing oxygen into an ultraviolet ozone generating device,

(b) a light bulb means in said ultraviolet ozone generating device for producing ultraviolet light at wave lengths for changing said oxygen into ozone gas,

(c) said light bulb means having a continuous filament and,

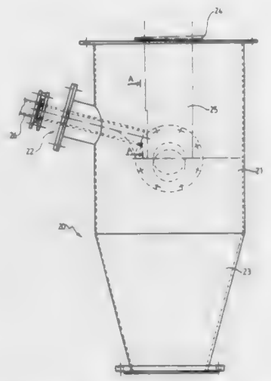
(d) a means for introducing said ozone gas into water.

5,387,401

METHOD AND AN INSTALLATION FOR PRODUCING GRANULATED TRIPLE SUPERPHOSPHATE (TSP)

El H. Kendili, Maroc, Morocco, assignor to Maroc-Chimie, Maroc, Mass.X

Division of Ser. No. 911,193, Jul. 9, 1992. This application May 26, 1993, Ser. No. 67,549
Claims priority, application France, Jul. 11, 1991, 91 08732
Int. Cl.[6] B01J *8/00*; B01F *15/02*
U.S. Cl. 422—187 4 Claims



1. An installation for producing granulated triple superphosphate, comprising:

measuring-out equipment for measuring out previously ground phosphate;

premixing means for intermixing the measured out ground phosphate with a solution of phosphoric acid to ensure premixing of the phosphate within said premixing means without clogging, said premixing means comprising a vertically oriented cylindrical member and a tapered portion extending from said cylindrical member with said cylindrical member having an opening at the top end thereof for receiving said measured out phosphate;

flexible and resilient axial hollow sleeve means for guiding said ground phosphate into the opening of said premixing means, said hollow sleeve means extending into said cylindrical member and having an upper end connected to said cylindrical member in common with the opening at said premixing means at the top end thereof and having an unconnected free lower end and an opening therein and

at least one phosphoric acid solution sprayer positioned for injecting said solution of phosphoric acid under pressure into said flexible sleeve means through said opening in said sleeve means at an angle relative to the direction of the phosphate so as to cause the unconnected free lower end thereof to randomly move about said premixing means;

a mixing reactor tank located downstream of said premixing means for receiving the premixed phosphate and phosphoric acid solution from said premixing means to allow the phosphoric acid solution in the tank to attack the granulated phosphate to form a slurry;

a granulating drum for granulating the slurry leaving the mixing reactor tank;

a drying device for drying the granulated product;

a plurality of separators for separating said granulated product by grain size;

scrubbing devices for scrubbing the reaction gases, the drying gases, and the waste gases generated from the premixing means and reactor tank; and

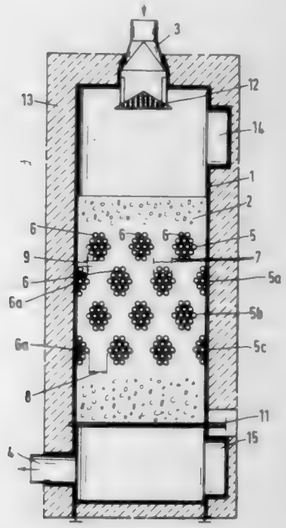
a recycling circuit for recycling to the granulating drum rejected finished product after grain size separation.

5,387,402

CONTACT REACTOR FOR A QUASI-ISOTHERMAL CATALYTIC OXIDATION OF SO_2 TO SO_3 AND METHOD OF OPERATING SAME

Michael Tacke, Friedrichsdorf; Peter Ahrens, Seligenstadt; Hugo Grimm, Miltenberg; Heinz Neumann, Bad König; Egon Winkler, Schwalbach; Arend Werner, Bad Dürkheim; Walter Beitelschmidt, and Bruno Triebskorn, both of Ludwigshafen, all of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main and BASF Aktiengesellschaft, Ludwigshafen, both of Germany

Filed May 21, 1993, Ser. No. 66,301
Claims priority, application Germany, May 26, 1992, 4217317
Int. Cl.[6] F28D *7/00*; F01N *3/10*; B01D *50/00*
U.S. Cl. 422—201 9 Claims



1. A contact reactor for a quasi-isothermal conversion of SO_2 in an SO_2-containing gas to SO_3, said apparatus comprising:

an elongated reactor vessel;

means forming a gas inlet at one end of said vessel and a gas outlet at an opposite end of said vessel whereby an SO_2-containing gas traverses said vessel from said one end to said opposite end in a flow direction;

a bed of catalyst bodies in said vessel between said inlet and said outlet and traversed by said SO_2-containing gas and capable of reacting SO_2 to SO_3; and

a plurality of spaced-apart banks of cooling tubes in said bed and traversed by a cooling fluid, said banks:

being arranged in a plurality of consecutive rows in said direction with the banks being offset from row to row so that banks of one row register with spaces between banks of a next preceding row and with the rows spaced apart by 1.5 to 5 centimeters,

being spaced apart by 10 to 50 centimeters in each row,

having a mutual spacing of tubes preventing penetration of said bodies into interiors of said banks,

having a gas pressure drop of said SO_2-containing gas traversing said banks which is approximately the same as a pressure drop in said bed between said banks, and

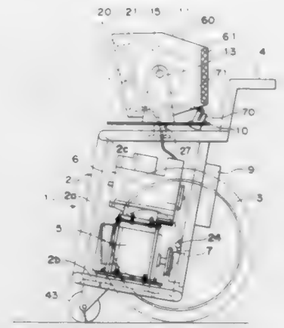
having a spacing between neighboring banks of each row which does not exceed a width of the banks in said direction.

5,387,403

AUTOMATIC STERILIZING APPARATUS

Hiroshi Ikeuchi, Ashiya; Yoshinari Iwamura, Kobe; Akira Kawayoshi, Nishiwaki, and Shoji Hida, Suita, all of Japan, assignors to H. Ikeuchi & Co., Ltd., Osaka, Japan

Filed Jun. 15, 1993, Ser. No. 76,849
Int. Cl.[6] A61L *2/00*
U.S. Cl. 422—292 12 Claims



1. An automatic sterilizing apparatus comprising:

a cart;

a disinfectant supply tank mounted on said cart;

a compressed air supply mounted on said cart;

a support plate rotatably mounted on said cart for rotation about a vertical axis;

a pair of side plates mounted on and extending upwardly from said support plate;

a rotary casing interposed between and rotatably mounted to said side plates for rotation about a horizontal axis;

a nozzle-installing pipe mounted to and disposed in said rotary casing, said nozzle-installing pipe being operably connected with said disinfectant supply tank and said compressed air supply;

a plurality of nozzles arranged on said nozzle-installing pipe and constituting means for spraying a mixture of disinfectant supplied from said disinfectant supply tank and compressed air supplied from said compressed air supply in the form of disinfectant particles having an average diameter of 10 μm or less, each of said nozzles comprising twin nozzle heads;

driving means mounted on said cart for rotating said support plate about said vertical axis and for rotating said rotary casing about said horizontal axis; and

control means for controlling operation of said driving means.

5,387,404

PROCESS AND APPARATUS FOR HEAT DISINFECTING SOFT CONTACT LENSES

Barry S. Kutner, Wilton; Daniel A. Latowicki, Newtown, both of Conn., and Kenneth E. Malech, Briarcliff Manor, N.Y., assignors to Flexiclave, Inc., Briarcliff Manor, N.Y.

Continuation-in-part of Ser. No. 835,309, Feb. 14, 1992, Pat. No. 5,248,478, which is a continuation-in-part of Ser. No. 692,736, Apr. 29, 1991, which is a continuation-in-part of Ser. No. 184,246, Apr. 21, 1988, Pat. No. 5,019,344. This application Feb. 10, 1993, Ser. No. 16,581
The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.
Int. Cl.[6] A61L *2/12*
U.S. Cl. 422—299 16 Claims

1. An apparatus for heat disinfecting soft contact lenses, comprising:

a vessel having an interior, said vessel being at least partially

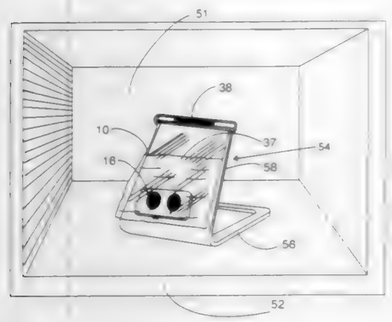
VOL 1171 ISS 1 FE 7 1995 UMI

formed of material transparent to microwave electromagnetic radiation;

disinfecting solution receivable within said vessel;

means for irradiating said disinfecting solution within said vessel with microwave electromagnetic radiation; and

shielding means for dividing the interior of said vessel into at least one shielded interior portion which is substantially



free of microwave electromagnetic radiation during irradiation of said disinfecting solution within said vessel by said irradiating means, and an unshielded interior portion in fluid communication with said shielded portion and which is exposed to said microwave electromagnetic radiation during irradiation of said vessel by said irradiating means, said shielded interior portion being receivable of contact lenses.

5,387,405

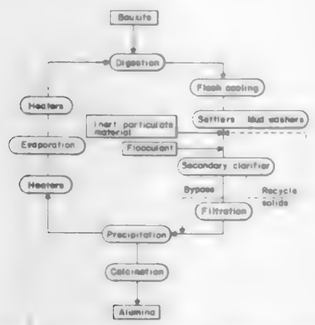
BAYER LIQUOR POLISHING

Lawrence J. Connelly, Oak Lawn; Robert P. Mahoney, Glendale Heights; Ralph W. Kaesler, Clarendon Hills, and Robert L. Wetegrove, Winfield, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation of Ser. No. 857,213, Mar. 25, 1992, abandoned. This application Jun. 24, 1993, Ser. No. 82,145

Int. Cl.[6] C01F *7/00*; C02F *1/56*

U.S. Cl. 423—122 6 Claims



1. A method of preparing a primary clarifier overflow liquor for further processing to recover alumina trihydrate which method comprises the addition to the primary clarifier overflow liquor of both a soluble carbohydrate polymer having a molecular weight of at least about 5,000 and a particulated solid which is insoluble in the overflow liquor, both carbohydrate polymer and particulated solid being added at a concentration of at least 0.1 mg per liter of overflow liquor.

5,387,406

METHOD AND DEVICE FOR THE ADSORPTION AND CHEMISORPTION, RESPECTIVELY, OF GASEOUS COMPONENTS IN A GAS STREAM

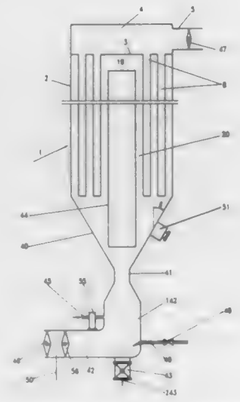
Günter Ruoff, Köln, Germany, assignor to Walther & Cie AG, Cologne, Germany

Continuation-in-part of Ser. No. 761,260, Sep. 17, 1991. This application Mar. 18, 1993, Ser. No. 33,006

Claims priority, application Germany, Sep. 17, 1990, 4029395

Int. Cl.[6] B01D *53/00, 53/06, 46/00*

U.S. Cl. 423—210 29 Claims



1. A method for sorptive separation of gaseous materials out of a raw gas stream comprising

forming a separator structure including a first filter chamber operating as a first fabric bag filter collector and including a second filter chamber operating as a second fabric bag filter collector;

opening a first valve lock;

feeding a raw gas mixture after passing the opened first valve lock from a bottom into a first pipe extending vertically;

adding dusty adsorbent and recycled dusty adsorbent dust after separation and cleaning of the recycled dusty adsorbent to the raw gas mixture moving in upward direction in the first vertically extending pipe;

accelerating the raw gas stream in a first neck forming a first nozzle at an upper end of the first pipe extending vertically;

feeding the raw gas mixture and the dusty adsorbent to the first filter chamber including a plurality of fabric filter compartments;

maintaining a part of the raw gas mixture in the first fabric bag filter collector by passing the raw gas mixture through a first trap shaft after accelerating with the first nozzle;

opening a second valve lock;

feeding a raw gas mixture after passing the opened second valve lock from a bottom into a second pipe extending vertically;

adding dusty adsorbent and recycled dusty adsorbent after separation and cleaning of the recycled dusty adsorbent to the raw gas mixture moving in upward direction in the second vertically extending pipe;

accelerating the raw gas stream in a second neck forming a second nozzle at an upper end of the second pipe extending vertically;

feeding the raw gas mixture and the fresh dusty adsorbent to the second filter chamber including a plurality of fabric filter compartments;

maintaining a part of the raw gas mixture in the second fabric bag filter collector by passing the raw gas mixture through a second trap shaft after accelerating with the second nozzle;

closing the first valve lock;

stopping the feeding of the raw gas mixture to the bottom of the first pipe extending vertically;

closing a first output valve connected to a first output of the first filter chamber;

subjecting the first filter chamber to a cleaning while said first filter chamber is off-line for the separation operation from the raw gas stream;

separating the reaction product including the dusty adsorbent and the adsorbed material out of the first filter chamber by extracting said reaction product from the filter bags and by passing said reaction product downwardly through the first neck and a dusty adsorbent outlet, and operating simultaneously the second filter chamber in on-line operation, wherein all the dusty adsorbent falling from the filter bags during gas infeeding is put into circulation; and

employing a dusty adsorbent return by recirculating a volume from about 20 to 80 times more recycled adsorbent from the first filter chamber as compared to the weight of the fresh adsorbent added to the process per time unit.

5,387,407

PROCESS FOR THE RECOVERY OF AMMONIA FROM FLUE GASES

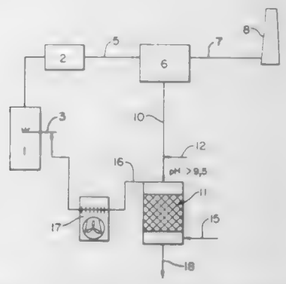
Hans Ruegg, Wohlen, and Rene Vock, Bonstetten, both of Switzerland, assignors to Von Roll AG, Gerslafingen, Switzerland

Filed May 8, 1990, Ser. No. 521,513

Claims priority, application Switzerland, Aug. 9, 1988, 3365/88

Int. Cl.[6] C01B *21/00*; C01C *1/00, 1/02*

U.S. Cl. 423—352 15 Claims



1. Process for the recovery of ammonia during the separation of nitrogen oxides (NO_x) from the flue gases produced during the combustion of materials, including fossil fuels in a firing plant, comprising the steps of:

feeding an aqueous solution of ammonia (NH_3) into a flue gas flow in a reaction zone so that nitrogen oxide gases is reduced to elementary nitrogen (N_2);

washing the flue gas flow after a reaction phase in a wet washer so that unreacted ammonia or ammonium salt is removed from the flue gas flow, resulting in an enriched wash water;

raising the pH value of the enriched wash water to above 9.5 by introducing a liquor; and

desorbing the physically dissolved ammonia (NH_3) which has become free in the enriched wash water through its neutralization for recovery of the ammonia (NH_3).

5,387,408

COPPER OXIDE-ALUMINUM OXIDE-MAGNESIUM OXIDE CATALYSTS FOR CONVERSION OF CARBON MONOXIDE

Michael Schneider, Ottobrunn; Karl Kochloefl, Bruckmühl-/Heufeld, and Gerd Maletz, Bruckmühl, all of Germany, assignors to Sud-Chemie A.G., Munich, Germany

Filed Dec. 17, 1992, Ser. No. 992,496

Claims priority, application Germany, Dec. 23, 1991, 4142900

Int. Cl.[6] C01B *3/16*

U.S. Cl. 423—656 4 Claims

1. A process for converting carbon monoxide and water to carbon dioxide and hydrogen at a temperature in the range of about 150° to about 450° C. using a catalyst which, before reductive activation, is comprised of a chemical composition corresponding to the formula

$$CU_{0.04\text{-}6}Al\ Mg_{0.1\text{-}10}O_x$$

wherein x denotes the number of oxygen atoms required to maintain electroneutrality per formula unit, and wherein the intensity ratio between the x-ray diffraction lines of the spinels $CuAl_2O_4$ and $MgAl_2O_4$ at d=0.244 nm and copper oxide at d=0.232 nm, defined as the ratio of reflex height, ranges from about 0.05 to about 0.5.

5,387,409

BORONIC ACID ADDUCTS OF RHENIUM DIOXIME AND TECHNETIUM-99M DIOXIME COMPLEXES CONTAINING A BIOCHEMICALLY ACTIVE GROUP

Adrian D. Nunn, Ringoes; Karen E. Linder, Kingston, both of N.J.; Silvia Jurisson, Columbia, Mo., and William C. Eckelman, Bethesda, Md., assignors to Bracco International B.V., Amsterdam, Netherlands

Continuation-in-part of Ser. No. 466,884, Jan. 18, 1990, abandoned. This application Jan. 7, 1992, Ser. No. 818,705

Int. Cl.[6] A61K *49/02, 43/00*

U.S. Cl. 424—1.45 51 Claims

1. A boronic acid adduct of technetium dioxime or rhenium dioxime complexes having the formula

$$MX(Y_3)Z$$

wherein M is a radionuclide of technetium or rhenium; X is an anion; Y is a vicinal dioxime having the formula



or a pharmaceutically acceptable salt thereof,

wherein R_1 and R_2 are each independently hydrogen, halogen, alkyl, aryl, amino or a 5- or 6-membered nitrogen or oxygen containing heterocycle, or together R_1 and R_2 are $-(CR_8R_9)_n-$ wherein n is 3, 4, 5 or 6 and R_8 and R_9 are each independently hydrogen or alkyl; and Z is a boron derivative of the formula

$$B-(A_1)_p-R_3$$

wherein R_3 is, or contains, a biochemically active group selected from the group consisting of hypoxia-mediated nitro-heterocyclic groups, steroids or molecules with an affinity for a steroid receptor site, sugars, barbiturates, monoamine oxidase substrates and inhibitors, antihypertensives, substrates for muscarinic receptors and substrates for dopamine receptors, and wherein $(A_1)_p$ is absent when p is zero or is a spacer group when p is an integer ≧one, wherein, when p is an integer greater than zero, the various A_1 units (which form a straight or branched chain) are independently selected from $-CH_2-$, $-CHR_4-$, $-CR_4R_5-$, $-CH=CH-$, $-CH=CR_4-$, $-CR_4=C-$

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R_5—, —C≡C—, cycloalkyl, cycloalkenyl, aryl, heterocyclo, oxygen, sulfur,



—NH—, —HC=N—, —CR_4=N—, —NR_4—, or —CS—, in which R_4 and R_5 are independently selected from alkyl, alkenyl, alkoxy, aryl, 5- or 6-membered nitrogen or oxygen containing heterocycle, halogen, hydroxy or hydroxyalkyl.

5,387,410

METHOD FOR ENHANCING MAGNETIC RESONANCE WITH COMPOSITIONS CONTAINING PARAMAGNETIC ELEMENTS CARRIED BY LIPOSOMES

Mark E. Bosworth, and Ronald M. Hopkins, both of St. Louis, Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Continuation of Ser. No. 114,159, Oct. 27, 1987, abandoned, which is a continuation of Ser. No. 832,356, Feb. 24, 1986, abandoned, which is a division of Ser. No. 476,565, Mar. 18, 1983, abandoned. This application Feb. 15, 1989, Ser. No. 311,163

Int. Cl.[6] A61B *5/055*

U.S. Cl. 424—9 **15 Claims**

1. A method for enhancing NMR imaging of body organs and tissues which comprises administering a substantially non-toxic paramagnetic image altering agent to a living animal body in a sufficient amount to provide enhancement of NMR images of said body organs and tissues, said paramagnetic image altering agent containing a chelate of a paramagnetic element carried by a liposome.

5,387,411

ANTIPERSPIRANT CONTAINING A HYDROPHOBIC MACROPOROUS POLYMER AS THE SUSPENDING AGENT

Eric S. Abrutyn, Midland, Mich., and Tina M. Gressani, Wappinger Falls, N.Y., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 5, 1990, Ser. No. 593,821

Int. Cl.[6] A61K *7/32, 7/34, 7/38, 9/12*

U.S. Cl. 424—47 **14 Claims**

1. In an antiperspirant composition containing as components thereof at least one material selected from the group consisting of astringent antiperspirant compounds, a volatile carrier, a suspending agent, emollients, and perfumes, the improvement comprising incorporating into the composition as the suspending agent thereof a hydrophobic macroporous crosslinked polymer, the hydrophobic macroporous polymer being free of in situ entrapped active ingredients.

5,387,412

1,2-PROPYLENE GLYCOL SHAVING SOLUTION AND METHOD OF USE THEREOF

Milton D. Moore, P.O. Box 300445, Houston, Tex. 77230-0445

Continuation of Ser. No. 573,465, Aug. 27, 1990, abandoned. This application Aug. 3, 1993, Ser. No. 102,315

Int. Cl.[6] A61K *7/15, 7/06*

U.S. Cl. 424—73 **5 Claims**

1. A method of shaving a human skin area comprising the steps of:

flooding the human skin area to be shaved with an aqueous solution consisting of from about fifty percent by volume to about eighty percent by volume of 1,2-propylene glycol in combination with water, as active ingredients; and

shaving the flooded skin area.

5,387,413

METHOD OF INHIBITING THROMBUS FORMATION BY THE 7E3 MONOCLONAL ANTIBODY

Barry S. Coller, Dix Hills, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 474,293, Feb. 2, 1990, abandoned, which is a continuation of Ser. No. 851,711, Apr. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 745,415, Jun. 14, 1985, abandoned. This application Sep. 27, 1991, Ser. No. 767,114

Int. Cl.[6] A61K *39/395;* **C07K** *151/28*

U.S. Cl. 424—858 **2 Claims**

1. A method of preventing occlusion by thrombus in the circulatory system by administering intravenously a therapeutically effective amount of a solution of a fragment of a monoclonal antibody designated 7E3, produced by the ATCC HB 8832 hybridoma, which antibody fragment:

a) completely blocks the interaction of fibrinogen with platelets;

b) prevents thrombus formation;

c) readily reacts with both normal human platelets and dog platelets;

d) fails to react with thrombasthenic human platelets or human platelets whose GPIIb/IIIa complex is dissociated with EDTA; and

e) reacts more rapidly with ADP activated platelets.

5,387,414

RECOMBINANT ANTICOCCIDIAL VACCINE

David E. Harwood, and Glenda Hamby, both of Fayetteville, Ark., assignors to British Technology Group USA Inc., Gulph Mills, Pa.

Continuation of Ser. No. 667,293, Mar. 14, 1991, abandoned. This application Apr. 7, 1993, Ser. No. 43,760

Int. Cl.[6] C07K *13/00;* **C12R** *1/90;* **A61K** *35/68, 39/012*

U.S. Cl. 424—191.1 **8 Claims**

1. A substantially pure immunogenic peptide corresponding to a peptide encoded by a DNA sequence, wherein said DNA sequence is contained in a recombinant bacteriophage deposited under ATCC Accession No. 68450. said recombinant bacteriophage consisting of bacteriophage lambda gt11, having a unique EcoRI site, and said DNA sequence, which is inserted at said unique EcoRI site.

5,387,415

ALOE VERA JUICE CONTAINING PELLETS PROCESS FOR PRODUCTION THEREOF AND THE USE THEREOF AS PHARMACEUTICAL, COSMETIC AND PERORAL AGENTS

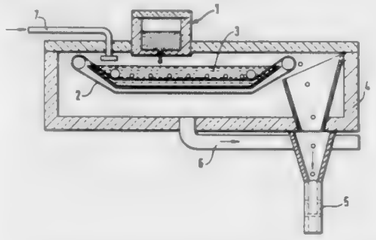
Jens-Christian Wunderlich, Heidelberg; Ursula Schick, Wiesloch; Jurgen Freidenreich, Schriesheim, and Jurgen Werry, Ludwigshafen, all of Germany, assignors to Alfatec Pharma GmbH, Heidelberg, Germany

Filed Apr. 30, 1992, Ser. No. 876,876

Claims priority, application Germany, Jan. 17, 1992, 4201172

Int. Cl.[6] A01N *65/00;* **A61K** *9/20*

U.S. Cl. 424—195.1 **23 Claims**



1. Aloe vera juice containing dried cryopellets comprising aloe vera juice the activity and amount whereof is essentially undiminished by the cryopelleting dispersed in a matrix comprising substantially at least 50% w/w of a skeleton forming water soluble hydrophilic macromolecular material selected from the group consisting of collagen, gelatin, fractionated gelatin, collagen hydrolysates, succinylated gelatin, plant proteins, plant protein hydrolysates, elastin hydrolysates and mixtures thereof.

5,387,416

TOBACCO COMPOSITION

Jackie L. White, Pfafftown, and Thomas A. Perfetti, Winston-Salem, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jul. 23, 1993, Ser. No. 97,350

Int. Cl.[6] A61K *31/465*

U.S. Cl. 424—197.1 **9 Claims**

1. A tobacco composition for oral use, the composition comprising:

(i) a tobacco extract; and

(ii) a water soluble carrier wherein the carrier includes processed rice.

5,387,417

NON-GREASY PETROLATUM EMULSION

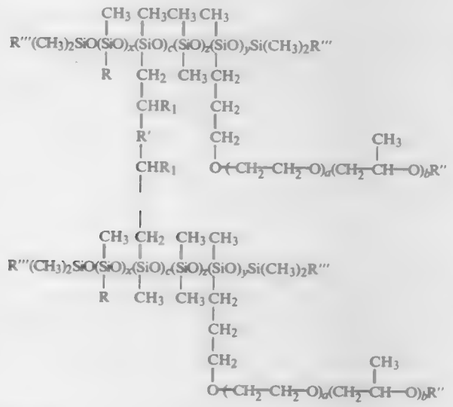
Stefan F. Rentsch, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 22, 1991, Ser. No. 751,361

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—401 **4 Claims**

1. An emulsion comprising 1–75 percent by weight of a discontinuous phase comprising a polar liquid; and 5–50 percent by weight of a continuous phase comprising petrolatum, 1–20 percent by weight of a cyclic polydimethylsiloxane fluid, and 0.2–9 percent by weight of a crosslinked emulsifier in which at least two organopolysiloxane-polyoxyalkylene molecules are crosslinked by a crosslinking radical; the discontinuous phase and the continuous phase having refractive index measurements which are matched within 0.01 to provide translucency, the crosslinked organopolysiloxane-polyoxyalkylene emulsifier having the formula:



wherein

R is an aliphatic radical having 2to 25 carbon atoms;

R′ is an organic or organosiloxane group which does not contain bydrolyzabe bonds;

R″ is a terminal group;

R‴ is independently an aliphatic radical having 1 to 25 carbon atoms;

R_1 is independently selected from the group consisting of hydrogen and an aliphatic radical containing 1–3 carbon atoms; x is an integer from 0 to 100; c is an integer from 1 to 5;

z is an integer from 0 to 600;

y is an integer from 1 to 10;

x+y+z>40;

a is an integer from 4 to 40;

b is an integer from 0 to 40;

a/b>1, and in which the cyclic polydimethylsiloxane fluid has the formula $[(CH_3)_2SiO]_x$ wherein x is an integer having a value of 3–6.

5,387,418

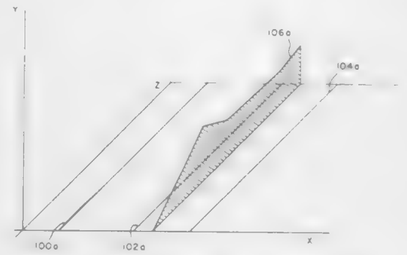
METHOD FOR REPELLING *AEDES AEGYPTAE* USING OXY-SUBSTITUTED CARBOCYCLIC COMPOUNDS

Anna B. Marin, Long Branch; Craig B. Warren, Rumson, both of N.J., and Jerry F. Butler, Gainesville, Fla., assignors to International Flavors & Fragrances Inc., New York, N.Y. and The University of Florida, Gainesville, Fla.

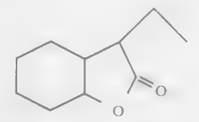
Filed Mar. 17, 1994, Ser. No. 214,184

Int. Cl.[6] A01N *25/08, 31/06*

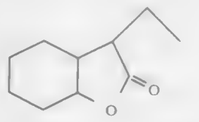
U.S. Cl. 424—409 **5 Claims**



1. A method for repelling *Aedes aegyptae* consisting essentially of the step of exposing a three dimensional space inhabitable by *Aedes aegyptae* to an *Aedes aegyptae*-repelling effective concentration and quantity of the compound having the structure:



wherein said compound having the structure:



(a) is present in a microporous polymer at the level of from about 0.5% up to about 45% by weight of the polymer;

(b) is present in the candle body of a burning candle in an amount of from about 0.8% up to about 2.0%; or

(c) is present in a soap being applied in use in an amount of from 10 up to 30% by weight of the soap.

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5,387,419

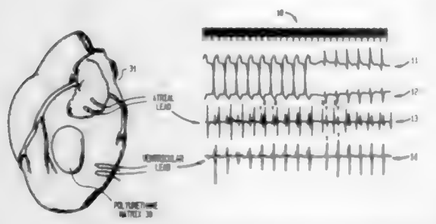
SYSTEM FOR CONTROLLED RELEASE OF ANTIARRHYTHMIC AGENTS

Robert J. Levy, and Amnon Sintov, both of Ann Arbor, Mich., assignors to The University of Michigan, Ann Arbor, Mich.

Division of Ser. No. 647,931, Jan. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 173,534, Mar. 31, 1988, abandoned. This application Mar. 26, 1993, Ser. No. 37,810

Int. Cl.[6] A61K *9/00*

U.S. Cl. 424—422 1 Claim



1. A method of making a device for controlled release of an antiarrhythmic drug comprising:

(a) forming a mixture of about 4 parts lidocaine hydrochloride; 10 parts polyurethane prepolymer, said polyurethane prepolymer comprising about 0.21 parts diisocyanate monomer and about 0.79 parts polyether monomer; and about 0.74 μM $FeCl_3$/g polyether monomer;

(b) forming the mixture into a desired shape; and

(c) curing the formed mixture at a temperature in the range of 50° C. to 60° C. for a period of time ranging from about 24 hours to 3 days.

5,387,420

MORPHINE-CONTAINING EFFERVERSCENT COMPOSITION

Robin P. Mitchell, Brussels, Belgium, assignor to May & Baker Ltd., Essex, England

Continuation of Ser. No. 758,702, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 398,940, Aug. 28, 1989, abandoned. This application Jan. 8, 1993, Ser. No. 2,514

Claims priority, application United Kingdom, Aug. 26, 1988, 8820327

Int. Cl.[6] A61K *9/46*

U.S. Cl. 424—466 7 Claims

1. An effervescent morphine-containing composition comprising a mixture of discrete stable morphine-containing basic granules and discrete acidic granules in physical contact with one another, said discrete morphine-containing basic granules comprising morphine or a pharmaceutically acceptable salt thereof bound in admixture with a source of carbonate, and said discrete acid granules containing a physiologically acceptable acid that reacts with said source of carbonate in the presence of water to release carbon dioxide.

5,387,421

MULTI STAGE DRUG DELIVERY SYSTEM

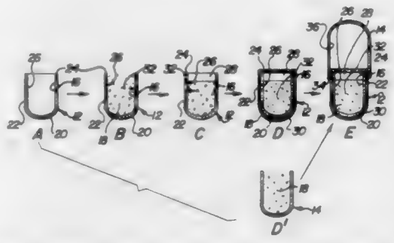
Gordon L. Amidon; Glen D. Leesman, and Lizbeth B. Sherman, all of Ann Arbor, Mich., assignors to TSRL, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 826,253, Jan. 27, 1992, abandoned, which is a continuation of Ser. No. 648,968, Jan. 31, 1991, abandoned. This application May 31, 1994, Ser. No. 251,731

Int. Cl.[6] A61K *9/22*

U.S. Cl. 424—472 18 Claims

1. A drug delivery system (10) consisting essentially of; a first container (12) defining at least one inner chamber (16) for containing drug (18) therein and having a passageway (26) opening to an external environment thereof, said container (12) being fluid permeable; a second container (14) having an open end (34) releasably mounted on said first container (12) and closed thereby for forming a closed second chamber (36) therewithin for containing drug (18), said second container (14) being releasable from said first container (12) upon ingestion to release drug (18), and a fluid impermeable plug (28) disposed in said passageway (26) for plugging said opening (24) closed, said plug (28) being slidably releasable from said opening (24) upon the application of fluid pressure from within said inner



chamber (16), said plug being selected from the group consisting of higher fats, waxes, fatty esters, said container (12) including an osmotic reagent for increasing the pressure within said inner chamber (16) when disposed in a fluid environment and forcing said plug (28) to slide out of said passageway (26) to release the drug (18) from said inner chamber (16) and out of said passageway (26) in a pulse of minutes to about 15 hours from initial contact of said container (12) with the fluid.

5,387,422

PROTEOLYTIC FUNGAL ENZYME FOOD SUPPLEMENT COMPOSITION

Richard A. Handel, Ridgewood, and Rodger R. Rohde, Jr., Wayne, both of N.J., assignors to Triarco Industries, Inc., Paterson, N.J.

Filed Mar. 11, 1993, Ser. No. 30,596

Int. Cl.[6] A23L *1/28*

U.S. Cl. 426—2 8 Claims

1. A method of using an enzyme food supplement composition to convert, in the gastrointestinal system of a human being, ingested dietary protein into free amino acids and short chain peptides, wherein the improvement comprises using a combination of at least one acid protease fungal enzyme and at least one semi-alkaline protease fungal enzyme such that enzymatic activity occurs throughout the gastrointestinal pH spectrum associated with a human digestive system.

5,387,423

LOW CALORIE FOOD MATERIAL AND METHOD OF MANUFACTURING THE SAME

Mitsuo Emoto, Otsu; Masatoshi Mizuno, Shiga; Sadaichi Takagi, Otsu; Tetsuya Akazawa, Otsu; Sadao Fujii, Otsu; Madoka Murai, Kyoto, and Yoshihito Nakai, Osaka, all of Japan, assignors to Otsuka Foods Co., Ltd., Osaka, Japan

Filed Jul. 23, 1993, Ser. No. 95,001

Claims priority, application Japan, Jul. 24, 1992, 4-198712; Jul. 24, 1992, 4-198720; Oct. 9, 1992, 4-271907; Dec. 28, 1992, 4-348591; Dec. 28, 1992, 4-348597; Feb. 2, 1993, 5-015358

Int. Cl.[6] A23L *1/0522, 1/0534*

U.S. Cl. 426—104 11 Claims

1. A low calorie food material comprising a granular matter obtained by gelling granular material with an alkali agent, followed by heating, wherein said granular material comprises processed starch having a peak viscosity of Brabender viscosity of 600 to 800 Bu, 0.003 to 7 times of a gelling agent selected from the group consisting of a refined powder of konjak and konjak mannan, and 0.03 to 20 times of a white turbid matter comprising a cellulose powder, to the processed starch weight.

5,387,424

PROCESS FOR BONDING FORMED MEAT TO BONE

Von T. Mendenhall, Hyde Park, Utah, assignor to Utah State University, North Logan, Utah

Filed Mar. 23, 1994, Ser. No. 217,482

Int. Cl.[6] A23L *1/31;* A23P *1/10*

U.S. Cl. 426—272 50 Claims

1. A process for bonding formed meat to bone, which comprises:

treating pieces of meat so that protein is released from the pieces to form an adhesive substance on the surfaces of the pieces;

immersing a bone having a thin layer of meat attached thereto in a solution that releases protein from meat when such meat is subsequently tumbled or massaged;

removing the bone from the solution; and

promptly pressing the pieces of meat together about the bone to create a desired appearance.

5,387,425

METHOD AND COMPOSITION FOR ENHANCING FOAM PROPERTIES OF FERMENTED MALT BEVERAGES

Wen P. Hsu; Timothy W. Foley, both of Chicago, and Helga J. Haller, Lincolnwood, all of Ill., assignors to Rhone-Poulenc Specialty Chemicals Co., Cranbury, N.J.

Continuation of Ser. No. 829,906, Feb. 3, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 106,421

Int. Cl.[6] C12C *5/02*

U.S. Cl. 426—329 41 Claims

1. A method of making a fermented malt beverage with enhanced foam properties comprising the steps of:

obtaining malt beverage ingredients;

processing said malt beverage ingredients to make a fermented malt beverage;

obtaining an isohumulone extract in a process independent of the malt beverage making process;

adding said isohumulone extract in an amount of between about 0.1 ppm and about 20 ppm by weight of the beverage;

obtaining foaming proteins in a process independent of the malt beverage making process; and

adding said foaming proteins in an amount of between about 2 ppm and about 250 ppm by weight of the beverage.

5,387,426

METHOD OF PREPARING REDUCED FAT FOODS

Donald W. Harris; Jeanette A. Little, and Keith D. Stanley, all of Decatur, Ill., assignors to A.E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 918,862, Jul. 30, 1992, Ser. No. 918,861, Jul. 30, 1992, Ser. No. 918,951, Jul. 30, 1992, Ser. No. 918,952, Jul. 30, 1992, and Ser. No. 908,728, Jul. 6, 1992, which is a continuation of Ser. No. 578,994, Sep. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 483,208, Feb. 20, 1990, abandoned, said Ser. No. 918,862, and Ser. No. 918,861, each is a continuation-in-part of Ser. No. 746,381, Aug. 16, 1991, abandoned, and Ser. No. 798,291, Nov. 26, 1991, abandoned, said Ser. No. 918,951, is a continuation-in-part of Ser. No. 798,292, Nov. 26, 1991, abandoned, said Ser. No. 918,952, is a continuation-in-part of Ser. No. 746,432, Aug. 16, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 968,979

Int. Cl.[6] H23L *1/0522*

U.S. Cl. 426—573 21 Claims

1. A method of preparing a heat-treated and fragmented amylose starch hydrolysate comprising:

gelatinizing and retrograding an amylose starch in the presence of an aqueous medium to prepare an aqueous slurry of retrograded amylose;

hydrolyzing said retrograded amylose to a degree sufficient to permit physical fragmentation to form a particle gel comprised of a minor amount of said retrograded amylose in a major amount of an aqueous medium;

physically separating said hydrolyzed and retrograded amylose from an aqueous medium at an elevated temperature to remove a water-soluble hydrolysate fraction with said aqueous medium to produce a hydrolyzed and retrograded amylose essentially free of water-soluble hydrolysate products; and

physically fragmenting by mechanical disintegration a minor amount of said hydrolyzed and retrograded amylose free of water-soluble hydrolysate products in a major amount of an aqueous medium to produce a particle gel thereof.

7. A foodstuff having a reduced level of fat and/or oil comprising a mixture of a foodstuff and a particle gel as a replacement for at least a substantial portion of the fat and/or oil of said foodstuff, said particle gel comprising a minor amount of a retrograded, hydrolyzed, heat-treated, and fragmented by mechanical disintegration, amylose starch and a major amount of an aqueous liquid.

5,387,427

INLAID DAIRY PRODUCTS AND PROCESSES

Jeanette Lawrence, Parlin; Antoine F. Coutant, Jersey City, and Frederick Swayhoover, Kendall Park, all of N.J., assignors to Rhone-Poulenc Specialty Chemicals Co., Cranbury, N.J.

Filed Dec. 30, 1992, Ser. No. 998,216

Int. Cl.[6] A23L *1/0532, 1/072;* A23C *9/137*

U.S. Cl. 426—573 11 Claims

1. A solid or semi-solid milk product composite comprising milk product and distinct pieces or inlays of a subdivided gel, in a ratio of 1:10 to 3:1 gel to milk product, said gel having 2–14% solids and comprising from 0.8 to 3.0% of xanthan gum and mannan or galacto-mannan gum in a ratio of 1:10 to 10:1; 0.1 to 1.0% of organic acid and/or salt thereof; 0 to 1.0% metal acid salt; 3.0 to 20.0% bulking agent; and water, all of the percentages being weight percentages based on the total aqueous gel weight.

5,387,428

METHOD FOR MAKING A BASE FOR A HOLLANDAISE-TYPE SAUCE AND PRODUCTS THEREOF

Scott M. Chapman, 1580 SW. 14th Dr., Boca Raton, Fla. 33486

Filed Oct. 18, 1993, Ser. No. 135,843

Int. Cl.[6] A23L *1/39, 1/32*

U.S. Cl. 426—573 17 Claims

1. A method for preparing a frozen sauce base for a Hollandaise-type sauce having an extended shelf life and which, when subsequently thawed and whipped with liquid whole butter, produces an edible foamy butter sauce that does not settle upon standing at room temperature, said method comprising: A. mixing together prescribed quantities of lemon juice, sugar, seasonings, and egg yolks to produce a sauce-base mixture, said mixture being free from egg whites, butter and butter substitutes, B. freezing said sauce-base mixture to produce said frozen sauce base, consisting essentially of a rheologically stable gel, and C. storing said frozen gelled sauce base.

5,387,429

REDUCED CALORIE COCOA BUTTER SUBSTITUTES

Charles F. Cooper, Paoli, Pa., assignor to Arco Chemical Technology, L.P., Greenville, Del.

Filed May 20, 1992, Ser. No. 886,571

Int. Cl.[6] A23D *9/02*

U.S. Cl. 426—611 20 Claims

1. A reduced calorie chocolate flavored confectionary product having a fat component, said fat component comprising a fatty acid-esterified propoxylated glycerin composition having an average number of oxypropylene units per equivalent of glycerin of from 3 to 16, a fatty acid acyl group content such that at least 50 mole percent of the fatty acid acyl groups are derived from no more than two different C_{12}–C_{24} saturated

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linear fatty acids, an iodine number less than 30, and a ratio of average number of fatty acid acyl group carbons per equivalent of glycerin to average number of oxypropylene units per equivalent of glycerin such that the composition has a solid fat index as measured by dilatometry of more than 50 at 20° C. and less than 10 at 37° C.

5,387,430

BY-PRODUCT FRACTIONS FROM DEBRANNED WHEAT

Joseph J. Tkac, Port Colborne, Canada, assignor to Tkac & Timm Enterprises Limited, Ontario, Canada

Continuation-in-part of Ser. No. 286,347, Dec. 19, 1988, Pat. No. 5,240,733, which is a continuation-in-part of Ser. No. 64,067, Jun. 18, 1987, abandoned. This application Aug. 30, 1993, Ser. No. 114,271
Claims priority, application Canada, Dec. 16, 1988, 586260
Int. Cl.[6] A23L *1/10*
U.S. Cl. 426—627 9 Claims



1. A composition of matter comprising seed coat, nucellar and aleurone layers of bran coat removed from wheat kernels, the composition having an amount of protein between 18 and 30% by weight on a dry basis and an amount of starch greater than 10% by weight.

5,387,431

SACCHARIDE-BASED MATRIX

Richard C. Fuisz, Great Falls, Va., assignor to Fuisz Technologies Ltd., Chantilly, Va.

Continuation-in-part of Ser. No. 782,430, Oct. 25, 1991, abandoned. This application Mar. 5, 1992, Ser. No. 847,595
The portion of the term of this patent subsequent to Mar. 17, 2009, has been disclaimed.
Int. Cl.[6] C09D *105/00*; A23P *1/12*
U.S. Cl. 426—658 27 Claims

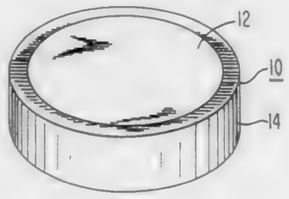
1. An edible product comprising a substantially solid saccharide-based matrix resulting from a feedstock comprising a mixture of maltodextrin and an oleaginous material being subjected to conditions of force and temperature which induce flash flow of said feedstock whereby said matrix possesses physically or chemically altered structure from said feedstock.

5,387,432

METHOD FOR MAKING METAL OXIDE VARISTORS COATED WITH PASSIVATING COATING

Mohammad A. Alim, Medina, and Karen C. Beal, Peninsula, both of Ohio, assignors to Hubbell Incorporated, Orange, Conn.

Division of Ser. No. 209,919, Mar. 14, 1994. This application Jun. 28, 1994, Ser. No. 265,061
Int. Cl.[6] H01C *7/10*
U.S. Cl. 427—101 8 Claims



1. A method for manufacturing a zinc oxide varistor disk having a glass collar around the periphery thereof which comprises the steps of providing a zinc oxide varistor disk, applying as a passivating coating to the periphery of said disk a coating composition comprising a mixture of 64–74 parts by weight of a glass powder, 22–35 parts by weight of water, and 0.5–2 parts by weight of an additive comprising fumed silica, clay and urea, and then curing.

5,387,433

PROTECTIVE LAYER ON A CONDUCTIVE SUBSTRATE

Pierre Balian, Paris; Georges Zagdoun, La Garenne-Colombes, and Maurice Trouve, Saint Pierre, all of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 837,936, Feb. 20, 1992, abandoned. This application Aug. 16, 1993, Ser. No. 106,779
Claims priority, application France, Feb. 20, 1991, 91 02002
Int. Cl.[6] B05D *1/00*
U.S. Cl. 427—126.3 32 Claims

1. A process for manufacturing a product comprising a glass substrate, a transparent conductive layer of an oxygen substoichiometric metallic oxide on said glass substrate and a metallic oxide overlayer which protects the conductive layer from oxidation on said oxygen substoichiometric metallic oxide, comprising:

a) depositing said conductive layer in its oxygen substoichiometric state on said glass substrate, and

b) depositing said metallic oxide overlayer on said conductive layer while the metallic oxide of said conductive layer is in its oxygen substoichiometric state,

said step b) not involving any reducing step of said conductive layer,

thereby preserving the oxygen substoichiometry of the conductive layer.

5,387,434

ANTI-GRAFFITI COATING MATERIAL AND METHOD OF USING SAME

Robert H. Black, New Rochelle, N.Y., assignor to Bat Technologies Inc., Yonkers, N.Y.

Filed Sep. 1, 1993, Ser. No. 115,572
Int. Cl.[6] B05D *3/00*
U.S. Cl. 427—154 15 Claims

1. A method of treating surfaces to facilitate removal of graffiti markings, the method comprising:

applying a coating of anti-graffiti material to a surface to form thereon a graffiti barrier, the anti-graffiti material being substantially free of organic solvents and comprising water and a member selected from the group consisting of waxes, sodium silicate, rosins, gums and combinations thereof, the member being present in an amount effective to prevent graffiti markings applied to the coated surface from penetrating through the graffiti barrier to the underlying surface; and

power washing the coated surface, after graffiti markings have been applied thereto, using heated pressurized water having a pressure in excess of 250 psi to remove the graffiti markings from the coated surface.

5,387,435

Patent Not Issued For This Number

5,387,436

METHOD OF COATING RED-LUMINESCING PHOSPHOR PARTICLES WITH HEMATITE

Cornelis Ronda, Aachen; Guido Hütten, Aachen-Walheim; Michael Bredol, Aachen; Ulrich Kynast, Roetgen, and Thomas Rink, Zettnigen, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1993, Ser. No. 153,381
Claims priority, application Germany, Nov. 26, 1992, 4239747
Int. Cl.[6] B05D *7/00*
U.S. Cl. 427—215 17 Claims

1. A method of coating red-luminescing phosphor particles, subject to chemical attack by acidic non-complexed iron (III) salts, with hematite (αFe_2O_3) while preventing attack of said particles by acidic non-complexed iron (III) salts, said method comprising combining an iron (III) salt, a complexing agent for said salt and water, said complexing agent and the concentration thereof are chosen so that complex ions are formed with Fe^{3+} ions, which complex ions do not start to precipitate at a first pH-value which is at least 0.5 higher than the value at which said phosphor particles just fail to be chemically attacked by acidic non-complexed iron (III) salts and which complex ions are dissociable to form $Fe(OH)_3$ at a higher pH value, adjusting the pH of said resultant solution to said first value, adding a substance to said solution, which substance dissociates upon heating to form a base, in an amount sufficient to provide a sufficient amount of said base to increase the pH of said solution to a value at which said complex ions just start to dissociate so as to precipitate $Fe(OH)_3$, adding said phosphor particles to the resultant solution and increasing the temperature of the resultant phosphor particle containing suspension at a rate whereby said substance forms said base at a rate such that the rate of increase of the pH of said phosphor particle containing suspension and of the resultant precipitation of $Fe(OH)_3$ results in the formation of a homogeneous coating of $Fe(OH)_3$ on said phosphor particles, separating said coated phosphor particles from said suspension and heating said particles to convert said $Fe(OH)_3$ to hematite (αFe_2O_3).

5,387,437

PEELING STRENGTH ON BREATHABLE COATING FABRICS

Shin-Chuan Yao, Taipei, Taiwan, Prov. of China, assignor to China Textile T&R Institute, Taipei, Taiwan, Prov. of China

Filed Nov. 26, 1993, Ser. No. 157,272
Int. Cl.[6] B05D *3/02, 5/00*
U.S. Cl. 427—245 2 Claims

1. A method to improve the peeling strength of breathable coated fabrics including the steps of:

(a) establishing a trilobal nylon taffeta substrate to be coated by applying pretreatment steps of designing, presetting, calendaring; and adding repellent and drying treatment to a pick-up rate of 40%,

(b) preparing a coating solution which includes:

polyester polyurethane resin	100 g
anion surfactant	3 g
nonionic surfactant	3 g
improved crosslinking agent	5 g
paste (TiO_2)	10 g

(c) applying the coating solution to the substrate at the rate of 250 g/m,

(d) coagulating in a coagulation bath at 40 degrees Celsius for a period of time approximating 10 minutes,

(e) hot washing for 10 minutes between 70–80 degrees Celsius, and

(f) drying and setting.

5,387,438

METHOD FOR THE SELECTIVE DEPOSITION OF TUNGSTEN ON A SILICON SURFACE

Christoph Werner, Krailling, Germany, and Ignacio Ulacia, Guadalajara, Mexico, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 795,177, Nov. 18, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 73,622
Claims priority, application Germany, Dec. 6, 1990, 4038990
Int. Cl.[6] C23C *16/04, 16/08*
U.S. Cl. 427—253 3 Claims

1. A method for the selective deposition of tungsten on a silicon surface comprising the steps of:

providing the silicon surface with a masking structure composed of SiO_2;

implementing deposition of tungsten from a vapor phase in a chemical vapor deposition (CVD) reactor from a mixture of process gases containing H_2 and WF_6 such that the masking structure remains essentially free of tungsten; and

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calculating the process parameters of temperature, pressure and flow-through rates of the process gases for the selective deposition for a prescribed deposition rate by iteratively solving an equation system using different values of temperature, pressure and flow-through rates until a preselected value of the prescribed deposition rate of tungsten on the silicon surface is achieved, and using in the equation system conservation laws for mass, for chemical constituents participating in the deposition reaction, for momentum and for energy, and taking into consideration in the equation system boundary conditions of the CVD reactor and effects of thermodiffusion and multi-constituent diffusion, the equation system consisting of the following equations;

$$\frac{\partial \rho m_i}{\partial t} = div\left(\rho m_i \bar{v} - \delta \sum_j D_{ij} \nabla m_j - D_i^T \nabla(\ln T)\right) + G_{ij}$$

$$j_{WFx} = k_1 \theta\{WF_6\} - k_2\{WF_x\};$$

$$n = (1 - \theta)\, k_3\{WF_x\};$$

$$\frac{d\theta}{dt} = (1 - \theta) 2\pi R_w \int_o^t n(t')(t - t')\, R_w dt';$$

$$R_w =$$

$$\left(\left(\frac{1}{P_w} D_{WF6} \frac{N_{WF6}'}{\delta}\right)^{-1} + \left(k_o \exp\frac{-E_a}{kT} P_{H2}\right)^{-1}\right)^{-1}$$

where

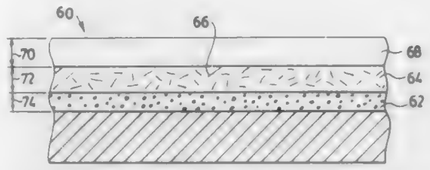
ρ is density in the medium,
m_i is mass fraction of a particle i,
t is time,
$\bar{v}$ is velocity,
D_{ij} is a coefficient for multi-constituent diffusion,
D^T_i is a coefficient for thermodiffusion,
T is temperature,
G_i is generation rate of the particle i,
j_{WFx} is flow of WF_x,
$k_1 = 10^{-5}$ kg/(ms),
Θ is portion of the surface that is covered with tungsten,
$k_2 = 10^{-3}$ kg/(ms),
n is a nucleation rate per surface unit,
$k_3 = 10^{13}{}_8{}^{-1}$ m^{-2},
R_w is a deposition rate of tungsten,
ρ_w is density of the CVD tungsten,
D_{WF6} is a diffusion coefficient of WF_6 in H_2 under operating conditions,
N'_{WF6} is a concentration of WF_6 at a location under consideration,
δ is a distance of the location from the silicon surface,
P_{H2} is a pressure of H_2,
$k_0 = 4.08 \times 10^6$ (nm min^{-1} Pa^{-1}),
E_a is activation energy,
WF_6 is a mass fraction of the particle WF_6, *and*
WF_x is a mass fraction of the particle WF_x; and
depositing tungsten on said silicon surface at the prescribed deposition rate using the process parameters of temperature, pressure and flow-through rates that were calculated by iteratively solving the equation system.

5,387,439

PROCESS FOR MAKING A CHEMICALLY-RESISTANT PORCELAIN ENAMEL

Thomas R. Roberts, Rochester, N.Y., assignor to Pharaoh Corporation, Rochester, N.Y.

Filed Apr. 15, 1994, Ser. No. 228,595
Int. Cl.[6] B05D *3/02*
U.S. Cl. 427—376.2 **15 Claims**



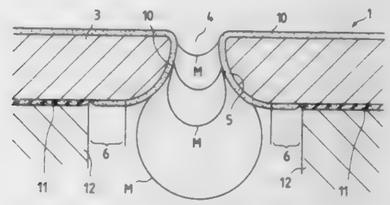
1. A process for preparing a chemically-resistant coating upon a substrate, comprising the steps of sequentially:
(a) contacting said substrate with a first slurry to produce a first coated substrate with a wet film thickness of from about 0.3 to about 0.75 millimeters, wherein:
1. said first slurry contains from about 60 to about 70 weight percent of solid material and has a particle size distribution such that at least about 5 weight percent of the particles in said first slurry are smaller than 44 microns and at least about 20 weight percent of the particles in said first slurry are larger than 150 microns,
2. said solid material in said first slurry is comprised of, by weight of dry solid material, from about 48 to about 58 weight percent of silica, from about 12 to about 22 weight percent of boric oxide, from about 1 to about 9 weight percent of potassium oxide, and from about 1 to about 9 weight percent of alumina,
(b) drying said once coated substrate to a moisture content of less than about 10 weight percent, thereby producing a once dried substrate,
(c) subjecting said once dried substrate to a temperature of from about 810 to about 910 degrees Centigrade for at least about 20 minutes, thereby producing a once fired substrate,
(d) contacting said once fired substrate with a second slurry to produce a second coated substrate with a wet film thickness of from about 0.75 to about 1.5 millimeters, wherein:
1. said second slurry is comprised of from about 60 to about 75 weight percent solid material and has a particle size distribution such that at least 10 weight percent of the particles in such second slurry are larger than 150 microns and less than about 10 percent of the particles in such second slurry are smaller than 44 microns,
2. said solid material in said second slurry is comprised of from about 2 to about 10 weight percent of inorganic fiber by total weight of solid material and at least about 90 weight percent of frit, wherein:
(a) said frit is comprised, by dry weight of frit, of from about 68 to about 74 weight percent of silica, from about 0.5 to about 2.5 weight percent of alumina, from about 7 to about 15 weight percent of sodium oxide, from about 1 to about 5 weight percent of lithium oxide, and from about 2 to about 9 weight percent of zirconium oxide,
(b) said inorganic fiber has a softening point in excess of 950 degrees Centigrade, an average length of from about 100 to about 750 microns, an average diameter of from about 5 to about 15 microns, and an average aspect ratio of from about 10:1 to about 75:1,
(e) drying said twice coated substrate to a moisture content of less than about 10 weight percent, thereby producing a twice dried substrate,
(f) subjecting said twice dried substrate to a temperature of from about 750 to about 850 degrees Centigrade for at least about 20 minutes, thereby producing a twice fired substrate,
(g) contacting said twice fired substrate with a thrice slurry which is substantially identical to said twice slurry with the exception that it does not contain any of said inorganic fiber, wherein to produce a thrice coated substrate with a wet film thickness of from about 0.75 to about 1.5 millimeters, wherein
1. said third slurry is comprised of from about 60 to about 75 weight percent solid material and has a particle size distribution such that at least 10 weight percent of the particles in such third slurry are larger than 150 microns and less than about 10 percent of the particles in such third slurry are smaller than 44 microns,
(h) drying said thrice coated substrate to a moisture content of less than about 10 weight percent, thereby producing a thrice dried substrate, and
(i) subjecting said thrice dried substrate to a temperature of from about 740 to about 840 degrees Centigrade for at least about 20 minutes.

5,387,440

NOZZLE PLATE FOR INK JET RECORDING APPARATUS AND METHOD OF PREPARING A SAID NOZZLE PLATE

Kiyohiko Takemoto; Miharu Yoshida; Shuichi Yayaguchi; Takeshi Kobayashi; Masanori Kamijo, and Akio Yamamori, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 858,633, Mar. 27, 1992. This application Mar. 29, 1993, Ser. No. 38,631
Claims priority, application Japan, Mar. 28, 1991, 3-089522; Mar. 19, 1992, 4-093720
Int. Cl.[6] G01D *15/18*
U.S. Cl. 427—443.1 **3 Claims**



1. A method of preparing a nozzle plate having at least one nozzle hole in which a meniscus is formed for an ink jet recording apparatus, comprising the steps of:
coating a rear surface of a nozzle plate with a coating material excluding both said nozzle hole thereof and a portion around said nozzle hole; and
providing an ink-repellent coating film uniformly on a front surface of said nozzle plate, an inner surface of said nozzle hole contiguous to said front surface, and said portion around said nozzle hole contiguous to a rear surface of said nozzle plate, said film having a surface condition such that a stable substantially spherical surface of the meniscus is maintained.

5,387,441

METAL-CERAMIC JOINT

Tha Do-Thoi, Röthenbach/P., and Peter Stingl, Lauf-Kuhnhof, both of Germany, assignors to Hoechst CeramTec Aktiengesellschaft, Selb, Germany

Filed Apr. 3, 1992, Ser. No. 863,129
Claims priority, application Germany, Apr. 6, 1991, 4111189
Int. Cl.[6] B05D *1/00;* **C25D** *7/00*
U.S. Cl. 427—443.2 **5 Claims**

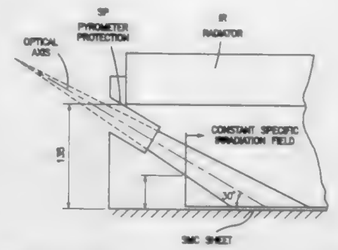
1. A process for electrolessly depositing or electrodepositing a solder layer composed of copper and silver and having an overall composition of silver/copper of from 75:25 to 70:30 and a total layer thickness of 15 to 100 μm on a metallized ceramic, which comprises applying copper layers and silver layers alternately to the metallized ceramic, the number of layers applied being at least 6 and the individual layer thicknesses being in the range from 5 to 10 μm.

5,387,442

METHOD OF COATING HEAT SENSITIVE MATERIALS WITH POWDER PAINT

Rolf Kroeger, Luvinate, Italy; Konrad Ortlieb, Stuttgart, Germany, and Sergio Gazzea, Romano D'Ezzelino, Italy, assignors to Hoechst Italia S.p.A., Milan, Italy

PCT No. PCT/EP91/01322, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO92/01517, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 12, 1991, Ser. No. 961,906
Claims priority, application Italy, Jul. 18, 1990, 20970A/90
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—521 **6 Claims**



1. Method of coating a heat sensitive substrate with a thermosetting powder paint, said method consisting of:
applying a coating of a said thermosetting powder paint to said substrate;
heating said paint coating and substrate to cause melting, filmation and curing of the paint coating using infrared radiation having a wavelength of between about 0.76 and about 2.0 μm and having an irradiation power of at least about 40 kW/m^2;
maintaining the application of said infrared radiation for a period of time less than about one minute;
cooling said paint coating and substrate;
re-heating said paint coating and substrate; and
re-cooling said paint coating and substrate.

5,387,443

LASER CVD METHOD FOR SYNTHESIZING DIAMOND

Nobuhiro Ota; Naoji Fujimori, and Kenichi Watanabe, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 8, 1993, Ser. No. 90,282
Claims priority, application Japan, Jul. 9, 1992, 4-182617
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—586 **10 Claims**

1. A laser CVD method for synthesizing diamond on a base material from a vapor phase comprising the following steps:
(a) using a raw material gas prepared by diluting a compound consisting essentially of saturated hydrocarbon with gaseous hydrogen,
(b) irradiating said raw material gas or said base material with a laser beam satisfying at least one of the following conditions: maintaining during oscillation a spread angle within a range of at least about 1×10^{-2} mrad and not more than about 5×10^{-1} mrad, or a half-power band width within a range of at least about 1×10^{-4} nm and not more than about 1×10^{-1} nm with respect to a band width of an oscillation having a wavelength within a range of about 190 nm to 360 nm for decomposing said compound

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and said gaseous hydrogen to form decomposed raw material gas; and

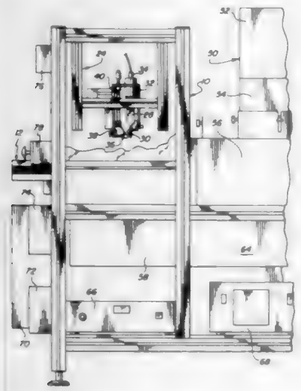
(c) depositing the diamond on said base material from said decomposed raw material gas.

5,387,444

ULTRASONIC METHOD FOR COATING WORKPIECES, PREFERABLY USING TWO-PART COMPOSITIONS

Andrew G. Bachmann, Harwinton, Conn., assignor to Dymax Corporation, Torrington, Conn.

Filed Feb. 27, 1992, Ser. No. 842,459
Int. Cl.[6] B05D *1/40*
U.S. Cl. 427—600 15 Claims



1. In a method for coating a workpiece, the steps comprising:

(a) providing a system including:

(I) support means; and

(II) ultrasonic coating means including:

(1) at least one spray head mounted on said support means and oriented to vibrate on an axis, said head having first and second, non-intersecting surfaces, extending substantially in the direction of vibration and terminating at one end of said head, for receiving and causing to issue from said one end, as atomized sprays, liquid coating materials delivered thereto, said head being so dimensioned and configured as to cause the sprays to intersperse and initially combine outwardly of said one end, and together to cover a first area of substantially constant dimensions intersected by said axis;

(2) means for ultrasonically vibrating said spray head on said axis; and

(3) first and second delivery means for delivering a liquid coating material to said first and second surfaces of said spray head;

(b) operating said delivery means to effect simultaneous delivery of a liquid coating material to each of said first and second surfaces of said spray head;

(c) disposing a workpiece in spaced relationship to said one end, within said first area; and

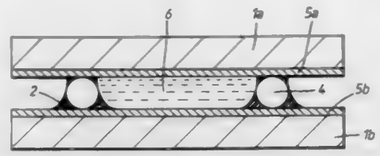
(d) operating said coating means so as to cause it to vibrate on said axis and to thereby cause a spray to issue separately from each of said first and second surfaces at said one end of said head, and to cause said sprays to so intersperse and combine and to deposit together upon said workpiece, said coating material delivered to said one surface comprising one part of a two-part composition, and said coating material delivered to said second surface comprising the other part thereof.

5,387,445

LIQUID CRYSTAL DISPLAY DEVICE

Shin Horiuchi; Sumio Wakabayashi, and Takahisa Doba, all of Ibaraki, Japan, assignors to Zeneca Limited, London, England

Filed Mar. 9, 1992, Ser. No. 847,170
Claims priority, application Japan, Mar. 8, 1991, 3-069348
Int. Cl.[6] G02F *1/1339*
U.S. Cl. 428—1 4 Claims



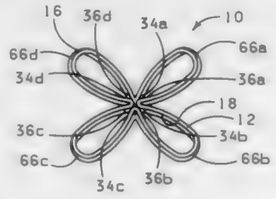
1. A liquid crystal display device including two electrically insulating substrates, electrodes on the inner surfaces of the substrates, a film of liquid crystal material contained between the electrodes and a resinous material as sealant, encapsulant or inner structural component characterised in that the resinous material is the product of light-curing a light-curable resin composition comprising at least one compound having two or more non-aromatic carbon-carbon unsaturated bonds per molecule, at least one compound having two or more mercapto groups per molecule and a photoinitiator.

5,387,446

RIBBON ASSEMBLY FORMING CURVED SEGMENT FOR MAKING A BOW OR RUFFLE

Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.

Filed Aug. 3, 1993, Ser. No. 101,210
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—4 9 Claims



1. A ribbon assembly comprising:

a strip of material having an upper surface and a lower surface and a strip width extending between a first strip side and a second strip side, the strip of material being divided into a plurality of strip segments with each strip segment having a first segment end and a second segment end with the second segment end of each strip segment being disposed about adjacent the first segment end of the adjacent strip segment;

elastic means disposed on the strip of material for substantially forming the strip of material into curved segments, the elastic means having a stretched condition and an unstretched condition, the strip of material being extendable in about a straight line in the stretched condition of said elastic means and said elastic means pulling the first segment end toward the second segment end of each strip segment to form each strip segment into (a) one of the curved segments wherein the portion of the strip of material defining each curved segment extends along a curved path in the unstretched condition of said elastic means.

5,387,447

METHOD FOR PRODUCING UNIFORM CYLINDRICAL TUBES OF CVD DIAMOND

David E. Slutz, Columbus, and Friedel S. Knemeyer, Granville, both of Ohio, assignors to General Electric Company, Worthington, Ohio

Division of Ser. No. 832,300, Feb. 7, 1992, abandoned. This application Oct. 19, 1993, Ser. No. 138,888
Int. Cl.[6] B28D *5/04*
U.S. Cl. 428—34.1 5 Claims



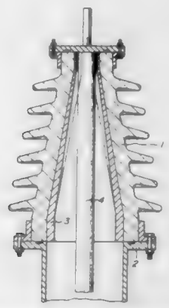
1. A wire die comprising an annularly shaped diamond body with a central opening having an interior surface with a uniform diameter, said body comprising diamond grains having columar growth extending in a radial direction from said interior surface wherein said diamond grains are smaller near said interior surface and larger with increasing distance along a radial direction away from said interior surface, said diamond grains having plurality of grain boundaries adjacent said interior surface.

5,387,448

EXPLOSION-PROOF PORCELAIN HOUSINGS FOR GAS-FILLED INSULATING APPARATUSES

Akihiro Watanabe, Hashima, and Keiichi Asai, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Sep. 18, 1992, Ser. No. 946,573
Claims priority, application Japan, Sep. 24, 1991, 3-273386
Int. Cl.[6] H01B *17/26*
U.S. Cl. 428—34.7 4 Claims



1. An explosion-proof porcelain housing for a gas-filled insulating apparatus, said porcelain housing comprising:

a hollow porcelain housing body having a tapered inner surface thereby defining a first end having a first inner diameter, and a second end having a second inner diameter, said second inner diameter being smaller than said first inner diameter; and

a scatter reducing resin layer lined on the inner surface of the porcelain housing body, wherein a thickness of the resin lining decreases along the inner surface from said first end to said second end and wherein the maximum stress σ acting upon said resin layer at each portion of said tapered porcelain housing is substantially constant.

5,387,449

COMPOSITES OF PLASTIC FILMS AND PACKAGING MADE THEREOF

Peter Kunz, Kreuzlingen, Switzerland; Joachim Roncoroni, Radolfzell, and Andreas Rothschink, Konstanz, both of Germany, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Filed May 12, 1993, Ser. No. 60,800
Claims priority, application Switzerland, May 22, 1992, 1661/92
Int. Cl.[6] B32B *1/08, 7/00, 15/08, 27/06*
U.S. Cl. 428—35.4 14 Claims

1. Composites of plastic films, including a permeability barrier layer, in which said composites comprise

a_o) a polyester film of thickness 6 to 23 μm,

a) a polyester film of thickness 6 to 23 μm,

c) a polyolefin film of thickness 15 to 200 μm, wherein one ceramic layer b) selected from the group consisting of silicon oxide having the formula SiO_x, where x is a number from 1.1 to 1.9 and aluminum oxide having the formula AlyOz wherein y/z is a number from 0.2 to 1.5 of thickness 10 to 500 nm, is provided between the layers a_o) and a) .

5,387,450

TEMPERATURE-ACTIVATED ADHESIVE ASSEMBLIES

Ray F. Stewart, Redwood City, Calif., assignor to Landec Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 497,940, Mar. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 350,723, May 11, 1989, Pat. No. 5,156,911. This application Feb. 27, 1992, Ser. No. 842,873
Int. Cl.[6] C09J *7/02*
U.S. Cl. 428—40 29 Claims

1. A temperature-sensitive adhesive assembly which comprises

(1) a body member:

(2) secured to the body member, a layer of a polymeric composition which

(a) comprises 40 to 100% by weight of at least one crystalline polymer which (i) begins to melt at a temperature T_0, where T_0 is 5° to 50° C., (ii) completes melting at a peak melting temperature T_m which is at most (T_0+15)° C., and (iii) is a side-chain crystallizable polymer which has a heat of fusion of at least 20 Joules/g and contains at least 50% by weight of repeating units of the formula



wherein

M is an atom forming part of the backbone of the polymer

S is a spacer unit, and

C is a crystallizable group,

(b) has an ASTM D2979 tack value of less than 25 g.cm/sec at a temperature below T_0, and

(c) has an ASTM D2979 tack value of at least about 100 g.cm/sec over a range of temperatures above T_m;

said assembly having one or more of the following characteristics I to VI:

I. the layer of polymeric composition has a thickness of at least 0.001 inch:

II. the crystalline polymer contains units derived from at least two monomers;

III. the crystalline polymer has been crosslinked:

IV. the polymeric composition comprises at least two polymers;

V. the body member is a woven fabric, a non-woven fabric,

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paper, wood, metal, glass, a medical immobilization device, an electrode, a surgical dressing, or a transdermal drug delivery patch; and

VI. the assembly further comprises

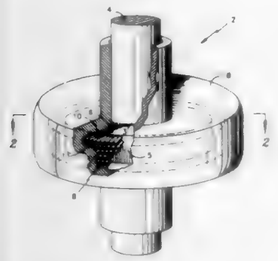
(3) a release layer which covers the surface of the polymeric composition remote from the body member.

5,387,451

FLYWHEEL CONTAINMENT DEVICE

Robin M. Miller, Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 13, 1993, Ser. No. 90,730
Int. Cl.[6] B32B *1/06*
U.S. Cl. 428—65 18 Claims



1. A flywheel containment device comprising:

(a) a shaft defining an axis of rotation,

(b) a flywheel having an annular shaped cross-section perpendicular to the axis of rotation, wherein the flywheel is connected to the shaft and has an outer diameter and an inner diameter,

(c) an annular shaped honeycomb structure with an annular shaped honeycomb layer having an outer diameter and an inner diameter greater than the outer diameter of the flywheel, wherein the honeycomb layer comprises a plurality of pores that are open on the inner diameter of the honeycomb layer to trap dust created if the flywheel fails and is positioned around the outer diameter of the flywheel such that the honeycomb structure is independent from the flywheel,

(d) means for supporting the honeycomb structure such that the honeycomb structure is capable of rotating independently from the flywheel, and

(e) a containment vessel positioned around the outer diameter of the honeycomb structure.

5,387,452

PROCESS FOR PREPARING THERMOINSULATING AND/OR STRUCTURAL DOUBLE-WALLED MOLDED BODIES AND PRODUCTS THEREBY OBTAINED

Antonio Addeo, Novara, and Annibale Vezzoli, Como, both of Italy, assignors to Centro Sviluppon Settori Impiego, Milan, Italy

Division of Ser. No. 904,832, Jan. 26, 1992, Pat. No. 5,308,557.
This application Dec. 22, 1993, Ser. No. 171,652
Claims priority, application Italy, Jun. 28, 1991, MI91A001797
Int. Cl.[6] B32B *5/18*
U.S. Cl. 428—71 3 Claims

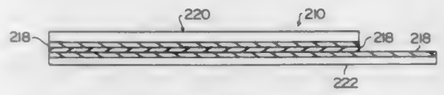
1. A thermoinsulating and/or structural molded body, which comprises an inner thermoplastic expanded pre-mold thermosoldered between two sheets of thermoplastic polymer thermoformed on said expanded pre-mold after the premold had been cooled in a refrigerated environment.

5,387,453

LAP SEAL PACKAGING BAND

Robert G. Cummisford, 3260 Pleasant View Ct., Brookfield, Wis. 53045

Continuation-in-part of Ser. No. 695,456, May 3, 1991, abandoned. This application Dec. 31, 1992, Ser. No. 999,150
Int. Cl.[6] B32B *7/12*
U.S. Cl. 428—77 10 Claims



1. A removable lap seal band comprising:

a) a first elongated strip;

b) a second elongated strip;

c) said strips at least partially overlying each other in a longitudinally offset manner, at least one of said strips of a non-woven material;

d) a surface of at least one of said strips which faces the other of said strips coated with a water borne pressure sensitive bonding agent:

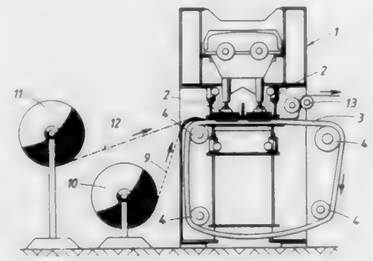
e) a combination of said strips and said coating forming a manually rendable packaging band substrate.

5,387,454

PROCESS OF MAKING A VELOUR NEEDLE FELT

Rudolf Werner, Linz, Austria, assignor to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft, Leonding, Austria

Filed Mar. 28, 1994, Ser. No. 218,571
Claims priority, application Austria, Apr. 13, 1993, A726/93
Int. Cl.[6] B32B *3/02*
U.S. Cl. 428—85 8 Claims



1. In a process of making a velour needle felt, wherein a staple fiber non-woven web is applied to a revolving brushlike support and while lying on said support is needled to form a pile on the side facing said support,

wherein the improvement comprises the steps of

applying a layer having a higher resistance to distortion than said web to said support before said staple fiber non-woven web is applied, and

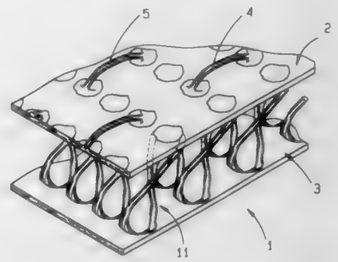
needling said staple fiber non-woven web to pull pile fibers of said web through said layer.

5,387,455

COMPONENT MADE OF RESINIFIED SPACE-LAYER FABRIC, AND A METHOD OF PRODUCING A LAGGING

Friedrich Hörsch, Ulm, Germany, assignor to Vorwerk & Co. Interholding GmbH, Wuppertal, Germany

PCT No. PCT/EP92/00659, § 371 Date Oct. 5, 1993, § 102(e) Date Oct. 5, 1993, PCT Pub. No. WO92/17661, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 25, 1992, Ser. No. 129,072
Claims priority, application Germany, Apr. 5, 1991, 91041441[U]
Int. Cl.[6] B32B *3/12*
U.S. Cl. 428—116 8 Claims



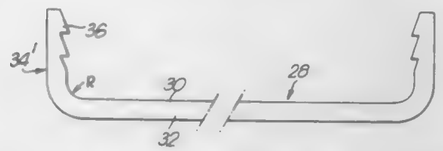
1. A structural part consisting of a cured, resinified spaced-layer fabric consisting of industrial fibers drawn from the class of non-conductive or nearly non-conductive fibers consisting of glass fibers, ceramic fibers or the like, the structural part having a first layer and a second layer which are liquid-tight and are spaced apart by cross-pieces, and conductive threads, wherein the conductive threads are incorporated in the spaced-layer fabric and extend alternately between the layers.

5,387,456

METHOD FOR PRODUCING TRANSPARENT PANEL UNITS A PANEL UNIT THUS PRODUCED AND A CALENDAR ROLL THEREFOR

Nir Ben-Zvi, and Shaul Giovoni, both of Upper Galilee, Israel, assignors to Dan Pal, Galilee, Israel

Filed May 20, 1992, Ser. No. 885,954
Claims priority, application Israel, May 21, 1991, 98195
Int. Cl.[6] B32B *3/02, 5/14*
U.S. Cl. 428—119 2 Claims



1. A solid, optical-quality, transparent panel produced from a strip-shaped plastic extrusion, comprising:

two fully transparent calendered major surfaces of optical quality constituting an effective panel portion, and

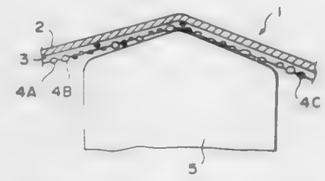
two translucent flange members of lesser optical quality than said panel portion, said flange members being raised by bending action from said strip-shaped extrusion and integrally connected to said panel portion, at least one surface of each of said flange members being provided with surface features, with at least some of said surface features being dimensioned and arranged for facilitating the joining of said panel to a similar, adjacent panel and wherein at least the inside corners formed by said bending action between said effective panel portion and said flange members are rounded.

5,387,457

ABRASIVE TAPE AND METHOD FOR POLISHING MAGNETIC HEADS

Masami Sato, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 814,807, Dec. 31, 1991, abandoned. This application May 5, 1993, Ser. No. 56,943
Claims priority, application Japan, Jan. 9, 1991, 3-001045
The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.
Int. Cl.[6] B32B *5/16;* G11B *5/84*
U.S. Cl. 428—141 16 Claims



1. An abrasive tape, for polishing a laminated amorphous head, comprising a flexible substrate and an abrasive layer which is overlaid on said flexible substrate and which contains abrasive grains and a binder,

wherein said abrasive grains comprise:

i) first abrasive grains, which have a mean grain diameter falling within the range of 0.07 μm to 0.40 μm and a Mohs hardness falling within the range of 5 to 7.

ii) second abrasive grains, which have a mean grain diameter falling within the range of 0.20 μm to 0.60 μm and a Mohs hardness not lower than 8.5, and

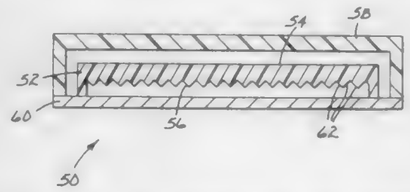
iii) fine diamond grains, which have a mean grain diameter falling within the range of 0.50 μm to 3.0 μm.

5,387,458

ARTICLES EXHIBITING DURABLE FLUORESCENCE WITH AN ULTRAVIOLET SCREENING LAYER

Lee A. Pavelka, Cottage Grove; David M. Burns, Woodbury; Raymond P. Johnston, Lake Elmo, and Edward S. Shinbach, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 975,113, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 624,195, Dec. 6, 1990, abandoned. This application May 9, 1994, Ser. No. 240,074
Int. Cl.[6] B32B *27/20;* G02B *5/12*
U.S. Cl. 428—141 19 Claims



1. A fluorescent article comprising a color layer having first and second sides and a screen layer disposed to said first side of said color layer, wherein:

a) said color layer comprises daylight fluorescent dye dissolved in a polymeric matrix, said fluorescent dye comprising one or more of the following: thioxanthene dye, thioindigoid dye, benzoxazole coumarin dye, or perylene imide dye, said polymeric matrix being one or more of the following: polycarbonate, polyacrylic imide, or polyester, and said color layer containing between about 0.01 and about 1.0 weight percent of said dye; and

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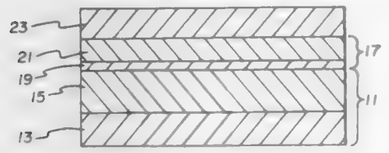
b) said screen layer being substantially transparent to visible light and comprising means for screening substantial portions of ultraviolet radiation incident thereto.

5,387,459

MULTILAYER STRUCTURE HAVING AN EPITAXIAL METAL ELECTRODE

Liang-Sun Hung, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,214
Int. Cl.[6] B32B *3/00*; H01B *3/12*
U.S. Cl. 428—209 31 Claims



1. A multilayer structure comprising in order:
an oriented single crystal semiconductor substrate;
an epitaxial buffer layer, wherein said buffer layer has a 1 to 1 sublattice mismatch to said semiconductor substrate of less than 15 percent, and said buffer layer defines a buffer layer superlattice dimension equal to 3 times the sublattice spacing of said buffer layer;
an epitaxial metal electrode, wherein said metal electrode defines an electrode superlattice dimension equal to 4 times a sublattice spacing of said metal electrode, said metal electrode superlattice dimension being within 15 percent of said buffer layer superlattice dimension; and
an epitaxial metal oxide upper layer deposited on said metal electrode.

5,387,460

THERMAL PRINTING INK MEDIUM

Susumu Hirakata; Eiichi Akutsu; Toru Okamoto; Hiroh Soga, and Shigehito Ando, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 959,438
Claims priority, application Japan, Oct. 17, 1991, 3-298262
Int. Cl.[6] B32B *7/02*
U.S. Cl. 428—212 16 Claims



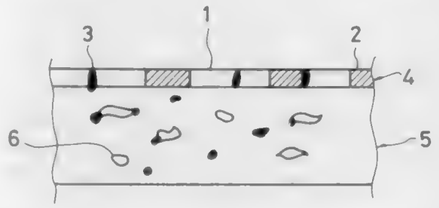
1. A thermal printing ink medium which electrically generates heat to transfer an ink thereof to a transfer material to form an image thereon, which comprises a first heating element layer having a volume resistivity of from 10^{-2} to 10^{4} Ωcm and a thickness of from 150 Å to 200 μm, a second heating element layer having a volume resistivity of from 10^{-1} to 10^{10} Ωcm and a thickness of from 500 Å to 200 μm in contact with said first heating element layer, said second heating element layer having a volume resistivity at least twice that of said first heating element layer and a smaller thickness than said first heating element, a conductive layer having a volume resistivity of not more than 10^{-2} Ωcm and a thickness of from 500 Å to 3 μm in contact with said second heating element layer, an ink layer provided on the side of said conductive layer opposite to said second heating element layer, and an adhesion-improving layer formed on the interface between said conductive layer and second heating element layer by interaction between said conductive layer and said second heating element layer.

5,387,461

SLIDING-BEARING MATERIAL

Soji Kamiya, and Yuji Yokota, both of Aichi, Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

PCT No. PCT/JP91/01636, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992
PCT Filed Nov. 28, 1991, Ser. No. 915,824
Claims priority, application Japan, Nov. 29, 1990, 2-325325; Feb. 8, 1991, 3-37819
Int. Cl.[6] F16C *33/10*
U.S. Cl. 428—216 11 Claims



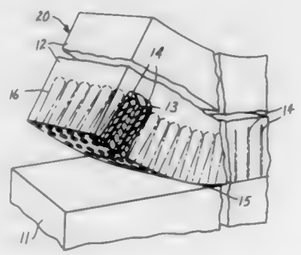
1. A sliding bearing material, which comprises a lining consisting of aluminum bearing-alloy containing 3–25% of Sn, and a first coating formed on the surface of the lining, having a thickness of from 0.1 to 5 μm, and consisting essentially of a mixed phase of aluminum oxide and tin oxide which oxides are present from the top surface to bottom surface of said first coating, wherein said first coating consists of 95 to 75% by area of aluminum oxide and from 5 to 25% by, area of tin oxide.

5,387,462

SENSORS BASED ON NANOSTRUCTURED COMPOSITE FILMS

Mark K. Debe, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 681,332, Apr. 5, 1991, Pat. No. 5,238,729. This application Jun. 3, 1993, Ser. No. 72,183
Int. Cl.[6] B32B *5/00*
U.S. Cl. 428—245 12 Claims



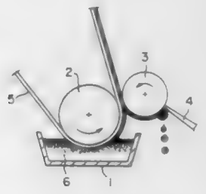
1. A composite article with an electrically conductive surface, comprising an encapsulating layer having a regular or random array of discrete microstructures, each microstructure has an aspect ratio of 3:1 to 100:1 and is comprised of a whisker-like structure and an optional conformal coating enveloping said whisker-like structure, wherein said array of discrete microstructures has an areal number density of 40–50/μm^2 and is partially encapsulated in said encapsulating layer, such that one end of each microstructure is embedded within said encapsulating layer and the other end of each microstructure is exposed and coincident with the surface of said encapsulating layer.

5,387,463

TRANSPARENT PROTECTIVE SUBSTRATE PROVIDED WITH HARD COATING HAVING GLARE REDUCING PROPERTY, METHOD FOR PRODUCING THE SAME AND POLARIZING PLATE

Norinaga Nakamura, and Yugo Noritake, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 3,970, Jan. 21, 1993, abandoned. This application Jun. 15, 1994, Ser. No. 261,222
Claims priority, application Japan, Jan. 24, 1992, 4-10882
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—327 13 Claims



1. A method for producing a transparent protective article provided with a hard coat having a glare reducing property, comprising the steps of:
coating the surface of a transparent substrate material with an uncured coating composition comprising resin beads having a refractive index of 1.40 to 1.60 and an ionizing radiation curing acrylic resin composition, said resin beads comprising a resin selected from the group consisting of PMMA (polymethyl methacrylate) beads, polycarbonate beads, polystyrene beads, polyacrylstyrene beads and polyvinyl chloride beads; and
irradiating the surface of the uncured coating composition with an ionizing radiation to cure the coating to form a hard coat having transparency and a glare reducing property.

5,387,464

MAGNETIC RECORDING MEDIUM

Kazuo Kato; Kenichi Masuyama; Hironki Araki, and Hiroshi Hashimoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 5, 1992, Ser. No. 925,032
Claims priority, application Japan, Aug. 23, 1991, 3-212389
Int. Cl.[6] G11B *5/00*
U.S. Cl. 428—328 8 Claims

1. A magnetic recording medium comprising a non-magnetic support having provided thereon at least one magnetic layer comprising a ferromagnetic powder dispersed in a binder and an undercoating layer having a dry thickness of from 0.01 to 0.1 μm disposed between the non-magnetic support and the at least one magnetic layer, wherein the undercoating layer consists essentially of a polyester resin or polyurethane resin having at least one polar group selected from the group consisting of $—SO_3M$, $—OSO_3M$, —COOM, and $—OPO_3M_2$ (wherein M represents a hydrogen atom, an alkali metal, or an ammonium base, and M in different polar groups or plural M's within the polar group $—OPO_3M_2$ may be the same or different) and having a glass transition temperature (Tg) of from 40° to 80° C.; the magnetic layer contains a binder resin having at least one polar group selected from the group consisting of $—SO_3M$ and $—OSO_3M$, wherein M represents a hydrogen atom, an alkali metal, or an ammonium base; the non-magnetic support is selected from the group consisting of polyethylene terephthalate, polyethylene naphthalate and polyamide; and the undercoating layer is in contact with the non-magnetic support.

5,387,465

PAPER ADHESIVE RELEASE SYSTEM

Gordon T. Van Vleck, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jul. 30, 1992, Ser. No. 922,280
Int. Cl.[6] B32B *7/06, 7/12*
U.S. Cl. 428—352 2 Claims

1. An adhesive release system comprising a paper substrate, a continuous coating of a weak acid having a pKa 10^{-3} or below selected from the group consisting of saturated carboxylic acids, unsaturated carboxylic acids, halo-substituted carboxylic acids, cyano substituted carboxylic acids, unsubstituted aromatic acids, substituted aromatic acids, carbonic acid, phosphoric acid and boric acid applied to said substrate, a silicone release coating formed from an acid catalyzed ultraviolet light curable epoxy silicone composition applied on said continuous coating of a weak acid and and pressure sensitive adhesive in direct contact with said silicone release coating.

5,387,466

WATER ABSORBENT PRESSURE SENSITIVE ADHESIVE

Donald J. Therriault, York, Pa., and Herbert M. Hand, Sr., Bel Air, Md., assignors to Adhesives Research, Inc., Glen Rock, Pa.

Continuation-in-part of Ser. No. 114,046, Aug. 31, 1993, abandoned. This application May 31, 1994, Ser. No. 251,241
Int. Cl.[6] C09J *7/02*; C08L *33/06*
U.S. Cl. 428—355 11 Claims

1. A water-absorbent and water-permeable pressure sensitive adhesive composition comprising:
(a) a continuous phase comprised of a copolymer of a hydrophobic monomer and a hydrophilic monomer, said monomers being present in said copolymer in a weight ratio of from about 50:50 to about 90:10, respectively; and
(b) a non-particulate discontinuous phase comprised of domains of a hydrophilic homopolymer or a copolymer of a hydrophilic monomer and a hydrophobic monomer with said hydrophilic monomer being present in said copolymer in a weight ratio of hydrophilic:hydrophobic monomer of at least 50:50, said domains being dispersed throughout said continuous phase and said discontinuous phase being present in said composition in an amount of at least about 10 percent by weight, based on the total weight of the continuous and discontinuous phases.

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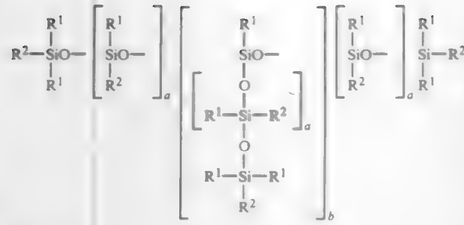
METHOD FOR MODIFYING THE SURFACE OF FINELY DIVIDED PARTICLES BY THE APPLICATION OF ORGANOFUNCTIONAL POLYSILOXANES

Werner Höhner, Velbert, and Dietmar Schnefer, Hattingen, both of Germany, assignors to Th. Goldschmidt AG, Essen, Germany

Filed Dec. 3, 1992, Ser. No. 984,752
Claims priority, application Germany, Dec. 11, 1991, 4140794
Int. Cl.[6] B32B *25/20*
U.S. Cl. 428—391 4 Claims

1. A method for modifying the surface of a particle which comprises applying to the particle, an organosiloxane with ester groups and long-chain alkyl groups linked over carbon atoms to silicon atoms and having the general formula

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wherein

R^1 is an alkyl group with 1 to 4 carbon atoms or a phenyl group, with the proviso that at least 90% of the R^1 groups are CH_3,

R^2 is selected from the group consisting of R^1, R^3 and R^4 with the proviso that 50 to 99% of the R^2 groups have the same meaning as R^1 the remaining groups being R^3 and R^4, whereby each R^3 is a group of the formula $—(CH_2)_n—CO—OR^5$, where R^5 is an alkyl group with 1 to 4 carbon atoms and n is a number from 6 to 16, and R^4 is a linear or branched alkyl group with 6 to 30 carbon atoms, with the proviso that

(a) the ratio of R^3 to R^4 is within the range of 1:25 to 10:1,

(b) at least one R^3 group and at least one R^4 group must be present in the average molecule,

a is a number from 1 to 500, and

b is a number from 0 to 10.

5,387,468

SIZE COMPOSITION FOR IMPREGNATING FILAMENT STRANDS

Jean-Claude Pollet, Granville; Gary L. Williams; Gordon P. Armstrong, both of Newark; Martin C. Flautt, and David L. Shipp, both of Granville, all of Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

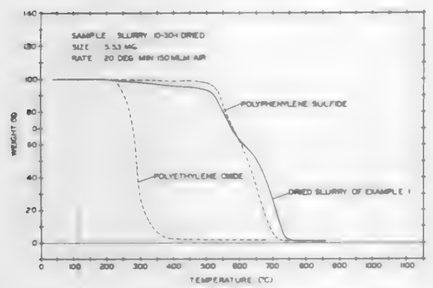
Continuation of Ser. No. 722,431, Jun. 27, 1991, abandoned, which is a continuation of Ser. No. 269,088, Nov. 9, 1988, abandoned, which is a continuation of Ser. No. 24,951, Mar. 12, 1987, abandoned. This application Jan. 21, 1993, Ser. No. 6,558

The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.

Int. Cl.[6] B32B *9/00*; D02G *3/00*

U.S. Cl. 428—392 2 Claims

TGA



1. An impregnated strand of glass fibers having a coating thereon, the coating being present on the strand in an amount ranging from 20 to 26.2 weight percent based on the weight of the impregnated strand wherein the coating is a dried slurry of an aqueous composition consisting essentially of:

Material	Amount By Weight Percent
Polyphenylene sulfide thermoplastic resin powder having an average particle size of about 125 microns or less	30 to 50
diamine silane coupling agent	0.05 to 5.0
polyethylene oxide thickener material	0.05 to 5.0
water	balance to 100%

5,387,469

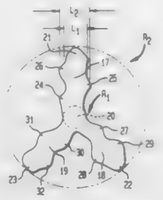
MULTILOBAL FIBER WITH PROJECTIONS ON EACH LOBE FOR CARPET YARNS

Elbert K. Warren, Candler, N.C., assignor to BASF Corporation, Parsippany, N.J.

Continuation-in-part of Ser. No. 967,003, Oct. 27, 1992, abandoned. This application May 9, 1994, Ser. No. 239,498

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—397 20 Claims



1. A synthetic fiber, having a multilobal cross section, each lobe of said multilobal cross section having a first end and a second end and a one side and an opposite side, the first end of each of said lobes being connected to the first end of the other lobes, the second end of each of said lobes radiating outwardly, each lobe having a plurality of projections such that each projection of one side of each lobe has no direct counterpart on the opposite side of said lobe, and wherein the fibers has a modification ratio of from about 2.5 to about 7.

5,387,470

PACKAGING FILM

Colin D. Parnell, Cellina Di Leggiuno, and Tito A. Fornasiero, Milan, both of Italy, assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Mar. 2, 1990, Ser. No. 487,557

Int. Cl.[6] B32B *27/08, 27/30*

U.S. Cl. 428—215 20 Claims

1. A multi-layer film comprising (a) a first core layer comprising a linear low density polyethylene or a very low density polyethylene; (b) first and second outer layers each comprising an ionomer.

5,387,471

WEAR-RESISTANT COATING FOR A NICKEL ALLOY PART

Emmanuel Kerrand, Villabe; Vincent Le Castrec, Charenton le Pont, and Didier Boucachard, Belfort, all of France, assignors to European Gas Turbines SA, Paris, France

Filed Aug. 26, 1993, Ser. No. 111,921

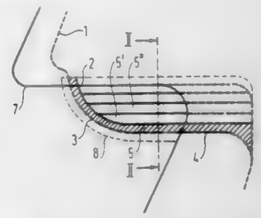
Claims priority, application France, Aug. 27, 1992, 92 10317

Int. Cl.[6] B22F *7/04*

U.S. Cl. 428—553 2 Claims

1. A coating for a part made of a nickel alloy of the following type: Cr: 15% to 20%, Co: 8% to 20%, Mo: 1.5% to 4%, Ti: 3% to 5%, Al: 3% to 3.5%, W: ≦3.8%, Fe: ≦1.2%, Nb: ≦0.9%, C: ≦0.1%, B: ≦0.01%, and Ta: ≦2.8%, the remainder being Ni, the coating having hardness of about 400 HV and

including a plurality of layers (5', 5'') of a wear-resistant cobalt-containing material of the following type: C: <1%, Cr: 26% to 30%, W: 18% to 21%, Ni: 4% to 6%, V: 0.75% to 1.15%, Fe: ≦3%, Mn ≦1%, Si: ≦1%, and B: ≦0.05%, the remainder being Co, said coating being characterized in that a buffer layer



(5) is disposed between the part and the cobalt-containing layers (5', 5''), which buffer layer is made from a pre-alloyed powder having the following composition: Si: 0.7% to 2.9%, Cr: 11% to 26%, Fe: 0.5% to 3%, C: 0.35% to 0.85%, B: 0.3% to 1.35%, Ni: 20% to 69%, W: 3.6% to 16.8%, Mn ≦0.8%, and Co: 16% to 41.5%.

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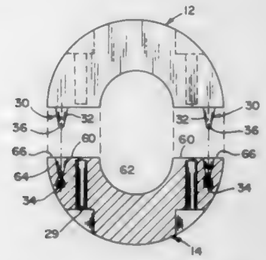
MATED MOLDED PARTS ASSEMBLY AND METHOD FOR MAKING SAME

Dennis S. Shimmell, Hudsonville, Mich., assignor to Nelson Metal Products Corporation, Grandville, Mich.

Continuation-in-part of Ser. No. 886,694, May 20, 1992, Pat. No. 5,313,703. This application Dec. 21, 1992, Ser. No. 994,272

Int. Cl.[6] B32B *3/30*

U.S. Cl. 428—571 11 Claims



1. An assembly of mated molded parts comprising:

a first part having first and second mating surfaces, each of said mating surfaces having at least one protrusion extending therefrom and terminating in a head, said protrusions being fracturable;

a second part having first and second surfaces, each of said mating surfaces of said first part mating with said first and second mating surfaces, respectively, of said second part, said first and second surfaces on each of said first and second parts being disposed on different sides of a void;

each of said mating surfaces of said second part having a recess enveloping said protrusion and interlocking with said head, whereby said first part may be separated from said second part by readily breaking said protrusion creating break lines, and further whereby said first and second parts may be precisely realigned following breaking along the break lines.

5,387,473

WELDABLE BLACK STEEL SHEET WITH LOW-GLOSS APPEARANCE

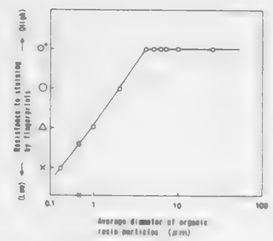
Naoto Yoshimi; Masaaki Yamashita, and Toyofumi Watanabe, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,991

Claims priority, application Japan, Mar. 31, 1992, 4-105528; Sep. 8, 1992, 4-265330

Int. Cl.[6] B32B *15/08*

U.S. Cl. 428—623 32 Claims



1. A weldable black steel sheet with low gloss appearance comprising a steel sheet plated with zinc or a zinc alloy, and carrying a chromate film formed on a surface of said plated sheet and having a coating weight of 1 to 200 mg/m^2 in terms of metallic chromium, and a black film formed on at least said chromate film on one side of said sheet from a composition comprising 100 parts by weight of a thermosetting base resin, 1 to 200 parts by weight of a black dye and 1 to 150 parts by weight of organic resin particles, said base resin and said dye being soluble in an organic solvent, said black film having a thickness of 0.3 to 5.0 microns.

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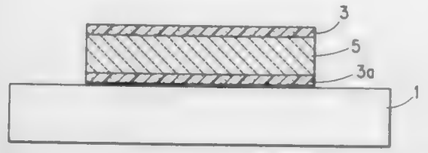
GREEN CERAMIC COMPOSITE AND METHOD FOR MAKING SUCH COMPOSITE

Kurt R. Mikeska, Wilmington, and Daniel T. Schaefer, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 591,192, Oct. 4, 1990, Pat. No. 5,254,191. This application Aug. 6, 1993, Ser. No. 100,530

Int. Cl.[6] B32B *7/00*

U.S. Cl. 428—688 8 Claims



1. A composite comprising an unfired ceramic body comprising an admixture of finely divided particles of ceramic solids and sinterable inorganic binder dispersed in a volatilizable solid polymeric binder having affixed and closely conformed to a surface of said ceramic body a flexible constraining release layer comprising finely divided particles of non-metallic inorganic solids dispersed in a volatilizable solid polymeric binder, the sinterable inorganic binder of the ceramic body being such that Penetration of said binder into said inorganic constraining release layer during subsequent firing is no more than 50 μm and said constraining release layer being affixed and closely conforming such that upon firing X-Y shrinkage of the ceramic body is reduced.

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5,387,475

CATALYTIC COATING FOR COOKING SURFACES

Detlef Baresel, Stuttgart; Peter Scharner, Leonberg, and Helmut Janku, Traunreut, all of Germany, assignors to Bosch-Siemens Hausgeraete GmbH, Munich and Robert Bosch GmbH, Stuttgart, both of Germany

PCT No. PCT/EP90/02172, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992
PCT Filed Dec. 13, 1990, Ser. No. 862,534
Claims priority, application Germany, Dec. 21, 1989, 3942236
Int. Cl.[6] B32B *9/00, 33/00;* B01J *21/00*
U.S. Cl. 428—689 2 Claims

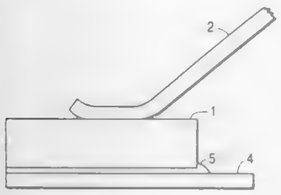
1. An article having a cooking surface coated with a catalyst coating which is a sintered composition which comprises in admixture a base enamel and a compound selected from the group consisting of a boride, carbide, silicide or nitride of a metal selected from the group consisting of metals of the fourth, fifth or sixth sub-group of the periodic table.

5,387,476

POWER CONNECTION ELEMENT FOR SOLID-ELECTROLYTE FUEL CELLS

Alfred Koch, Meersburg; Richard Spaeh, Ueberlingen, and Wolfgang Schaefer, Friedrichshafen, all of Germany, assignors to Dornier GmbH, Germany

Filed Mar. 11, 1994, Ser. No. 208,746
Claims priority, application Germany, Mar. 11, 1993, 4307666
Int. Cl.[6] H01M *8/02*
U.S. Cl. 429—12 11 Claims



1. A power connection element for planar fuel cells having a solid electrolyte on a ZrO_2 base, said power connection element comprising:

a ceramic plate having the composition

$$La_{1-x}Me^1{}_xCr_{1+\sigma-y}Me^2{}_yO_3$$

wherein $0.0 \leqq x \leqq 0.3$; $0 \leqq y \leqq 0.5$; $0 \leqq \sigma \leqq 0.05$, and wherein Me^1 is one of Ca, Sr and mixtures thereof, and Me^2 is one of Al, Mg, Co, Fe, and mixtures thereof;

an intermediate layer made of conductive glass which has a coefficient of thermal expansion of between $8 \cdot 10^{-6}K^{-1}$ and $12 \cdot 10^{-6}K^{-1}$ in the temperature range of from 20° C. to a transformation temperature of below 1,000° C., and a minimum conductivity of 0.1 $S.cm^{-1}$ at 1,000° C., said conductive glass containing alkalis or alkaline earths in an amount of from 1.0 to 20% by weight, and at least one metal oxide with several valency stages in an amount of from 10 to 85% by weight; and

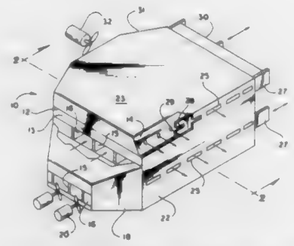
a current collector plate made of a material having a thermal expansion coefficient of between $8 \cdot 10^{-6}K^{-1}$ and $12 \cdot 10^{-6}K^{-1}$ in the temperature range of 20° to 1,000° C., which material consists of a base alloy which is one of chromium, iron, nickel and cobalt, and which contains additional alloy elements in an amount of from 0.10 to 40% by weight, and dispersed oxides in an amount of from 0.02 to 10% by weight.

5,387,477

AIR MANAGER SYSTEM FOR METAL-AIR BATTERY

Michael C. Cheiky, Santa Barbara, Calif., assignor to Dreisbach Electromotive Inc., Santa Barbara, Calif.

Continuation of Ser. No. 916,360, Jul. 17, 1992, abandoned. This application Jun. 25, 1993, Ser. No. 83,204
Int. Cl.[6] H01M *8/04*
U.S. Cl. 429—26 19 Claims



1. An air manager system for a metal-air battery pack including a pair of metal-air cells each including an air cathode positioned along one side of the cell and an anode positioned adjacent to the opposite side of the cell, comprising:

means for defining a reactive air plenum adjacent to each of said air cathodes:

means for directing a reactant air flow through said reactive air plenums;

means for defining a cooling air passageway adjacent to each of said anodes:

means for directing a cooling air flow through said cooling air passageways;

means for positioning said cells with the cathode side of one cell facing the anode side of the other cell; and

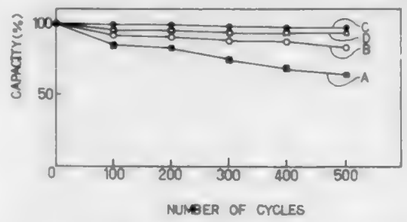
a heat-exchanging material separating said reactive air plenum from said cooling air passageway.

5,387,478

HYDROGEN STORAGE ELECTRODE AND PROCESS FOR PRODUCING THE SAME

Mitsuharu Muta, Kariya; Tetsuo Sakai, Amagasaki; Hiroshi Miyamura, Shin-senni-nishi; Nobuhiro Kuriyama, Osaka, and Itsuki Uehara, Osaka, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya and Government Industrial Research Institute, Osaka, both of Japan

Filed Jul. 15, 1993, Ser. No. 92,212
Claims priority, application Japan, Jul. 21, 1992, 4-194212
Int. Cl.[6] H01M *4/38*
U.S. Cl. 429—59 11 Claims



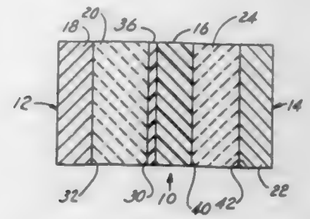
1. A process for producing a hydrogen storage electrode comprising in combination the steps of preparing particles of hydrogen storage alloy powder with a maximum particle size of 50 μm, plating said particles of alloy powder with copper amounting to 10% to 20% by weight with respect to the sum of the alloy powder and the plating copper, and pressing in the absence of a binder the copper-plated alloy powder and an electric current collector set in contact therewith for bonding the plated particles to each other and to the current collector compacting the plated powder to such an extent that the porosity of the pressed alloy powder in the resulting electrode falls in the range of 10% to 25%.

5,387,479

ELECTRODES FOR RECHARGEABLE LITHIUM BATTERIES

Rene Koksbang, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Jun. 16, 1993, Ser. No. 78,664
Int. Cl.[6] H01M *4/62*
U.S. Cl. 429—126 21 Claims



1. A battery comprising:

a) an electrolyte;

b) a negative electrode having an active material consisting essentially of lithium or alloys thereof and being in the form of a solid body having a major surface facing the electrolyte; and

c) a layer between the major surface of the electrode and the electrolyte for reducing passivation of the electrode body, said layer comprising particles of carbon retained in a binder matrix material.

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HIGH DIELECTRIC CONSTANT COATINGS

Loren A. Haluska, and Keith W. Michael, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 28,063, Mar. 8, 1993. This application Aug. 9, 1993, Ser. No. 103,371
Int. Cl.[6] B32B *9/00, 19/00*
U.S. Cl. 428—698 17 Claims

1. A method of forming a coating with a dielectric constant of at least 8 on a substrate comprising:

applying a coating composition comprising hydrogen silsesquioxane resin and about 5 to about 90 weight percent of a filler having a dielectric constant of at least 8 onto a substrate; and

heating the coated substrate at a temperature sufficient to convert the coating composition into a ceramic coating having a dielectric constant of at least 8.

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METHOD OF PREPARING A SWITCHABLE SHIELD

Kenneth C. Radford, North Huntingdon, and Deborah P. Partlow, Forest Hills, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 961,047, Oct. 14, 1992, Pat. No. 5,274,241, which is a continuation of Ser. No. 843,113, Feb. 28, 1992, abandoned, which is a continuation of Ser. No. 555,341, Jul. 19, 1990, Pat. No. 5,103,103. This application Mar. 15, 1993, Ser. No. 31,452
Int. Cl.[6] B05D *5/12, 1/40, 3/02*
U.S. Cl. 427—126.3 5 Claims

1. A method of preparing a switchable film layer of an oxide of vanadium upon a substrate comprising:

(a) preparing a solution containing vanadium alkoxide in a solution concentration of about 2 to 6 weight percent equivalent VO_2;

(b) applying said solution to said substrate to dispose a thickness of about 2,000 to 10,000 Angstroms of continuous film of the solution upon the substrate;

(c) drying said film in a moisture free environment;

(d) first heating said dried film in an oxidizing atmosphere to remove the organic components from said film to produce a polycrystalline film which is substantially vanadium pentoxide;

(e) secondly heating the polycrystalline vanadium pentoxide film in a reducing atmosphere to convert said film to the desired oxide of vanadium; and

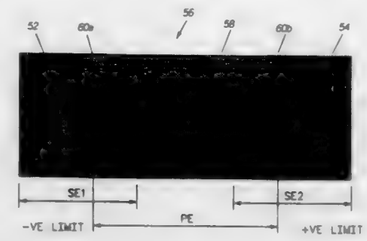
(f) wherein the solution concentration and the applied film thickness are such that following drying, first heating and second heating the resulting vanadium oxide film is switchable from an opaque reflective mode to a transmissive mode.

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MULTILAYERED ELECTROLYTE AND ELECTROCHEMICAL CELLS USED SAME

Anaba A. Anani, Lauderhill, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 26, 1993, Ser. No. 157,500
Int. Cl.[6] A01M *6/18*
U.S. Cl. 429—191 18 Claims



1. A multilayered electrolyte for use in an electrochemical cell, comprising:

a primary electrolyte layer including at least a polymer substrate and an active ingredient impregnated therein; and

a secondary electrolyte disposed on at least one side of said layer of primary electrolyte wherein said secondary electrolyte is fabricated of a material different than said primary electrolyte.

5,387,483

PROCESSING OF LITHOGRAPHIC PRINTING MATERIAL AND DEVELOPER USED THEREIN

Yoshihiro Takagi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 3, 1993, Ser. No. 160,826
Claims priority, application Japan, Dec. 11, 1992, 4-353027
Int. Cl.[6] G03C *5/54*
U.S. Cl. 430—204 4 Claims

1. A method for processing a lithographic printing material which has been imagewise exposed to light with a developer in accordance with a diffusion transfer process, said lithographic printing material comprising at least a silver halide emulsion layer and a physical development nucleus layer on a support

said developer containing a silver halide solvent and at least 30 gram/liter of hydroquinone and having a pH value of up to 11.8.

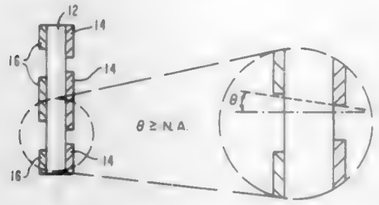
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TWO-SIDED MASK FOR PATTERNING OF MATERIALS WITH ELECTROMAGNETIC RADIATION

Fuad E. Doany, Katonah, and Douglas S. Goodman, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 7, 1992, Ser. No. 909,886
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 16 Claims



1. A mask for blocking a radiation beam directed thereon comprising:

a radiation transmissive two-sided substrate having a back side disposed to be located facing toward a radiation beam source,

a first patterned layer of radiation reflective material disposed on the front side of said substrate opposite said back side, said patterned layer of radiation reflective material having radiation transparent areas therein to permit radiation passing through said substrate to also pass through said patterned layer, and wherein said remainder of said patterned layer is composed of a pattern of said reflective material to reflect radiation passing through said substrate back through said substrate;

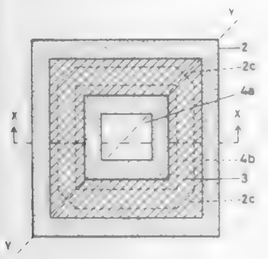
and a second patterned layer of radiation blocking material disposed on said back side of said substrate, said second patterned layer having radiation transparent areas therein at the same corresponding positions as said radiation transparent areas in said first layer of radiation reflective material on said front side of said substrate wherein said radiation transparent areas in said second patterned layer are larger than the said corresponding radiation transparent areas in said first patterned layer on said front side of said substrate, said second patterned layer functioning to reflect radiation prior to impinging on said back side of said substrate.

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PHASE SHIFT PHOTOMASK

Makoto Sukegawa, and Naoya Hayashi, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1993, Ser. No. 158,210
Claims priority, application Japan, Nov. 27, 1992, 4-339519
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 3 Claims



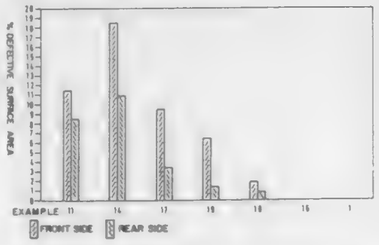
1. A phase shift photomask having a first opening pattern (4*a*) formed by partially removing a light-shielding film (2) provided on a transparent substrate (1), a second opening pattern (4*b*) with a very small width which is annularly provided in a peripheral region adjacent to said first opening pattern (4*a*) by partially removing said light-shielding film (2), and a phase shifter layer (3) provided over either of the first or second opening patterns (4*a*, 4*b*), said phase shift photomask comprising a light-shielding film (2*c*) left in each of four corners of said second opening pattern (4*b*) so as to limit light transmitted through the four corners.

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RADIATION-POLYMERIZABLE MIXTURE AND PROCESS FOR PRODUCING A SOLDER RESIST MASK

Michael Emmelius, Mainz; Walter Herwig, Bad Soden; Kurt Erbes, Floersheim, and Rudolf Decker, Bodenheim, all of Germany, assignors to Morton International, Inc., Chicago, Ill.

Division of Ser. No. 585,642, Sep. 20, 1990, Pat. No. 5,264,324.
This application Oct. 27, 1993, Ser. No. 144,115
Claims priority, application Germany, Sep. 21, 1989, 3931467
Int. Cl.[6] G03C 3/00
U.S. Cl. 430—18 1 Claim



1. A soldered printed circuit board produced by

(A) depositing a solution or dispersion of a radiation-polymerizable mixture comprising:

(a) a first compound having at least two terminal ethylenically unsaturated groups which are capable of forming a crosslinked polymer by a free radical-initiated, addition-type chain polymerization;

(b) a polymeric binder consisting of:

(1) at least one unit of methacrylic acid,

(2) at least one unit of a methacrylic acid ester,

(3) at least one unit of a styrene selected from the group consisting of styrene, O-, m-, or p-vinyltoluene, a vinylethylbenzene, an α-methylstyrene, an α-chlorostyrene, an o-, m-, or p-chlorostyrene, and a vinyanisole, and

(4) an optional monomer selected from the group consisting of an acrylic acid, an acrylic acid ester, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, and a vinylheterocyclic compound, wherein said styrene is present in an amount of about 40 to 65% by weight and said methacrylic acid ester is present in an amount of about 5 to 40% by weight, in each case relative to the weight of said polymeric binder and wherein said methacrylic acid is present in an amount sufficient to confer an acid number from 110 to 280 to said polymeric binder;

(c) from 20 to 50% of a finely divided silicate- or silicic acid-based mineral pigment;

(d) from 0.1 to 15% of a radiation activatable polymerization initiator;

(e) from 10 to 30% of a second compound having at least two epoxy groups in its molecule; and

(f) from 0.2 to 1.0% of a thermally activatable polymerization initiator for epoxy groups;

the percentages of components (a), (b), (c),(d),(e), and (f) being

based on the total amount of non-volatile ingredients of the mixture;

(B) drying the resultant coated printed circuit board,

(C) exposing the coated board to actinic radiation to form an image,

(D) washing out the non-irradiated coated regions with a developer,

(E) heating the resultant solder mask to an elevated temperature, and

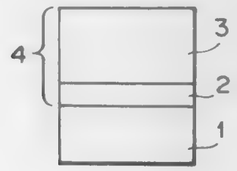
(F) subjecting the resultant circuit board to at least one soldering process.

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ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Masayuki Shoshi, Yokohama; Masakatsu Shimoda, Kurume; Masahiro Taniucchi, Yokohama; Akio Kojima, Mitaka; Masao Yoshikawa, and Tetsuro Suzuki, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,773
Claims priority, application Japan, Aug. 30, 1991, 3-220060; May 13, 1992, 4-120451
Int. Cl.[6] G03G 5/06
U.S. Cl. 430—58 7 Claims



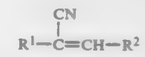
1. An electrophotographic photoconductor comprising:

i) an electroconductive support; and

ii) a photoconductive layer formed on said electroconductive support comprising:

a) a charge generating material; and

b) a charge transport material consisting of an α-cyano compound of the formula (I):

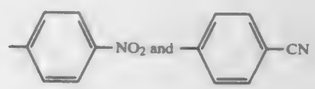


(I)

wherein R^1 is



in which R^3 is selected from the group consisting of a methyl group, a trifluoromethyl group and chlorine, and R^2 is selected from the group consisting of



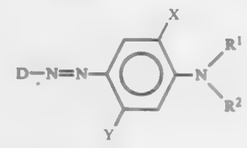
5,387,488

TONER FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

Yoshikazu Kaneko, Numazu, and Takayuki Hoshina, Fuji, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

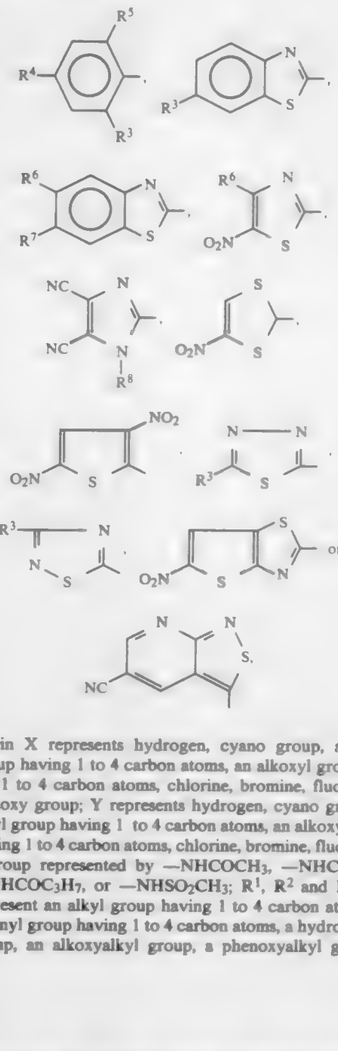
Filed Mar. 30, 1993, Ser. No. 39,798
Claims priority, application Japan, May 15, 1992, 4-148489
Int. Cl.[6] G03G 9/09
U.S. Cl. 430—106 16 Claims

1. A toner for developing latent electrostatic images to visible toner images, comprising toner particles which comprise a thermoplastic resin and a compound with formula (I) serving as a coloring agent:



(I)

wherein D represents



wherein X represents hydrogen, cyano group, an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1 to 4 carbon atoms, chlorine, bromine, fluorine, or acetoxy group; Y represents hydrogen, cyano group, an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1 to 4 carbon atoms, chlorine, bromine, fluorine, or a group represented by —NHCOCH$_3$, —NHCOC$_2$H$_5$, —NHCOC$_3$H$_7$, or —NHSO$_2$CH$_3$; R^1, R^2 and R^8 each represent an alkyl group having 1 to 4 carbon atoms, an alkenyl group having 1 to 4 carbon atoms, a hydroxyalkyl group, an alkoxyalkyl group, a phenoxyalkyl group, a

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cyanoalkyl group, a chloroalkyl group, a bromoalkyl group, an acyloxyalkyl group, an alkoxycarbonyloxyalkyl group, benzoyloxyalkyl group, a phenoxycarbonyloxyalkyl group, an alkoxycarbonylalkyl group, a phenoxycarbonylalkyl group, a carbonylesteralkyl group, a chlorohydroxyalkyl group, an aryl group, cyclohexyl group, or benzyl group; and R^3, R^4, and R^5 each represent hydrogen, cyano group, nitro group, chlorine, bromine, fluorine, trifluoromethyl group, an alkyl group having 1 to 8 carbon atoms or an alkoxyl group having 1 to 6 carbon atoms; and R^6 and R^7 each represent hydrogen, an alkyl group having 1 to 6 carbon atoms, cyano group, nitro group, chlorine, bromine, or fluorine.

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PROCESSES FOR THE PREPARATION OF DEVELOPER COMPOSITIONS

Timothy J. Fuller, W. Henrietta; James R. Larson, Fairport, and Frank J. Bonsignore, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 28, 1993, Ser. No. 98,150
Int. Cl.[6] G03G *9/135*
U.S. Cl. 430—115 **22 Claims**

1. A process for preparing a liquid or dry electrophotographic developer comprising:

(a) forming a melt mixture comprised of a polymer resin or resins, a colorant, a charge director, and a nonaqueous solvent to obtain a first suspension of colored polymeric particles with a volume average diameter of from about 5 to about 100 microns; and

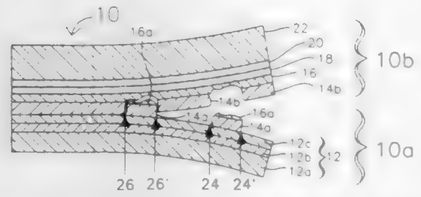
(b) homogenizing with a dairy piston homogenizer said first suspension under pressure of from about 100 to about 500 Bars to obtain a second suspension containing colored polymeric particles with a volume average diameter of from about 0.1 to about 5 microns.

5,387,490

METHOD OF PREPARING A LAMINAR THERMAL IMAGING MEDIUM

Iris B. K. Bloom, Waltham, and Richard A. Minns, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 923,720, Jul. 31, 1992, Pat. No. 5,275,914. This application Jul. 23, 1993, Ser. No. 96,662
Int. Cl.[6] G03C *3/00*
U.S. Cl. 430—253 **8 Claims**



1. A method of preparing a laminar thermal imaging medium which comprises the steps of:

providing a first element comprising a first sheet transparent to image-forming radiation and having at least a surface zone or layer of polymeric material heat-activatable upon subjection of the thermal imaging medium to brief and intense radiation, the first element carrying a layer of porous or particulate image-forming substance having cohesivity in excess of its adhesivity for the polymeric heat-activatable layer, and, on the opposed side of the layer of porous or particulate image-forming substance from the surface zone or layer, a first layer of adhesive;

providing a second element comprising a second sheet carrying a second layer of adhesive:

one of the first and second layers of adhesive comprising a polymeric hardenable adhesive comprising a macromolecular organic binder having amino or substituted amino groups, and a photopolymerizable monomer;

laminating the first and second elements together with the first and second layers of adhesive in contact with one another and with the first and second sheets outermost and forming a unitary laminar medium in which the hardenable adhesive remains in its unhardened condition and serves to reduce the tendency for the unitary laminar medium to delaminate on application of stresses to the medium; and

subjecting the unitary laminar medium to actinic radiation effective to cause polymerization of the photopolymerizable monomer, thus hardening the hardenable adhesive into a durable polymeric layer, and forming said thermal imaging medium,

said thermal imaging medium being capable of absorbing said image-forming radiation at or near the interface of said surface zone or layer with said layer of porous or particulate image-forming substance, converting the absorbed radiation into heat sufficient in intensity to heat activate said surface zone or layer, such that upon cooling exposed portions of said layer of porous or particulate image-forming substance are more firmly attached to said first sheet,

said thermal imaging medium being adapted to image formation by imagewise exposure of portions of said thermal imaging medium to said image-forming radiation of sufficient intensity to attach exposed portions or said layer of porous or particulate image-forming substance firmly to said first sheet, and by removal to said second sheet, upon separation of said first and second sheets after said imagewise exposure, of unexposed portions of said layer of porous or particulate image-forming substance, thereby to provide first and second images, respectively, on said first and second sheets.

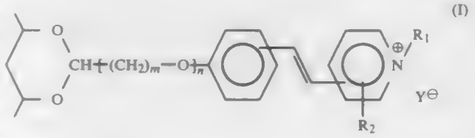
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PHOTOSENSITIVE TRANSFER SHEET

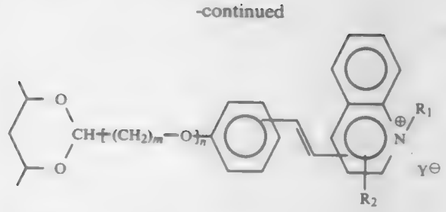
Toshihiko Takada; Norio Yabe, and Masahide Takano, all of Higashimatsuyama, Japan, assignors to Nippon Paper Industries, Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1994, Ser. No. 215,472
Claims priority, application Japan, Aug. 25, 1993, 5-232467
Int. Cl.[6] G03C *1/805*
U.S. Cl. 430—259 **5 Claims**

1. A photosensitive transfer sheet to be used for the multicolor image-forming method comprising a release layer, a colored photosensitive layer being water-soluble and insolubilized by light and a heat-seal layer provided in turn on a supporter, the colored photosensitive layer containing modified poly(vinyl alcohol) having at least one kind selected from stilbazolium group and stilquinolinium group represented by general formulae (I) and (II), respectively.



-continued



(wherein R_1 and R_2 denote hydrogen atoms or alkyl groups independently one another, Y^- denotes a conjugated chlorinic ion of acid, m denotes an integer of 1 to 6, and n denotes 0 or 1), as a photosensitivity-adding group.

5,387,492

ENERGY-CURABLE CYANATE COMPOSITIONS

Fred B. McCormick; Katherine A. Brown-Wensley, and Robert J. DeVoe, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 9,888, Jan. 27, 1993, Pat. No. 5,294,517, which is a division of Ser. No. 234,464, Aug. 19, 1988, Pat. No. 5,215,860. This application Dec. 20, 1993, Ser. No. 170,522
Int. Cl.[6] C08G *73/00*
U.S. Cl. 430—270 **25 Claims**

1. An energy polymerizable or oligomerizable composition comprising at least one cyanate monomer or oligomer comprising an organic radical bonded through a carbon atom to at least one —OCN group and as curing agent a transition metal-containing organometallic compound in which at least one carbon atom of an organic group is bonded to the metal atom.

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PHOTOSENSITIVE RESIN COMPOSITION FOR FORMING CONDUCTOR PATTERNS AND MULTILAYER CIRCUIT BOARDS USING SAME

Shinichiro Imabayashi; Hitoshi Oka, both of Yokohama; Isamu Tanaka, Yokosuka; Hiroshi Kikuchi, Zushi, and Makio Watanabe, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1990, Ser. No. 599,428
Claims priority, application Japan, Oct. 25, 1989, 1-275993
Int. Cl.[6] G03C *1/492*
U.S. Cl. 430—280 **16 Claims**

1. A photosensitive resin composition for forming conductor patterns comprising 100 parts by weight of a photo curable resin, 0 to 30 parts by weight of a polyfunctional unsaturated compound, 0.5 to 12 parts by weight of a photopolymerization initiator, 3 to 35 parts by weight of a thermosetting resin, 2 to 30 parts by weight, per 100 parts by weight of the thermosetting resin, of a curing agent for the thermosetting resin, and 10 to 150 parts by weight of photosensitive semiconductor particles which form plating catalyst for electroless plating at time of forming conductor patterns.

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WATERBORNE PHOTORESISTS HAVING POLYSILOXANES

Robert K. Barr, Laguna Niguel, and Gene A. Derrico, Mission Viejo, both of Calif., assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 199,037, Feb. 18, 1994, which is a continuation-in-part of Ser. No. 186,875, Jan. 25, 1994, abandoned. This application Mar. 30, 1994, Ser. No. 221,313
Int. Cl.[6] G03C *1/73*
U.S. Cl. 430—281 **5 Claims**

1. A photoimageable composition that can be borne in water comprising

A) between about 30 and about 80 wt % of a latex binder polymer having carboxylic acid functionality which provides an acid number of between about 50 and about 250;

B) between about 15 and about 50 wt % of a fraction of alpha, beta-ethylenically unsaturated monomers;

C) between about 0.1 and about 25 wt % of a photoinitiator or photoinitiator chemical system which generates free radicals;

D) between about 1 and about 40 wt % of a neutralizing base and/or a polyether polyurethane associate thickener in an amount sufficient to stabilize an emulsion of said latex binder polymer; and,

E) between about 0.1 and about 10 wt % of a poly(siloxane) or mixture of (poly siloxanes) said weight percentages being based on total weight of components A–E.

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SEQUENTIAL MULTILAYER PROCESS FOR USING FLUORINATED HYDROCARBONS AS A DIELECTRIC

James C. K. Lee; Arshad Ahmad, both of Santa Clara County; Chune Lee, San Francisco County; Myrna E. Castro, and Francisca Tung, both of Santa Clara County, all of Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 372,684, Jun. 28, 1989, abandoned. This application Apr. 6, 1992, Ser. No. 864,375
Int. Cl.[6] G03C *5/00*
U.S. Cl. 430—315 **20 Claims**

11. A method of making a multilayered printed wiring board pattern on a planar substrate, said multilayered printed wiring board pattern including a pattern of electrically conductive horizontal buried lines running parallel to said substrate and electrically conductive vertical posts perpendicular to said substrate, said method including the steps of:

coating the surface of said substrate with an insulating layer of tetra-fluoroethylene,

depositing a seed layer of highly conductive material over said insulating layer,

depositing a first layer of one or more conductive lines parallel to a top surface of said substrate to form said buried horizontal lines, said layer of tetra-fluoroethylene insulating said one or more conductive lines from said substrate,

patterning layers of photoresist having a dielectric constant in the range 2.0 to 2.1 to define the location and direction of said horizontal lines and said vertical posts, said posts being located to overlie selected locations on said one or more conductive lines, forming said lines and said posts, and

applying liquid consisting essentially of fluorinated hydrocarbon around said lines and said posts to provide isolation between said lines and said posts, whereby a multilayered board is formed without lamination of successive layers or drilling holes.

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INTERLAYER FOR LASER ABLATIVE IMAGING

Charles D. DeBoer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 30, 1993, Ser. No. 99,972
Int. Cl.[6] G03C *5/16, 7/26*
U.S. Cl. 430—322 **7 Claims**

1. A process of forming a single color, dye ablation image having an improved D-min comprising imagewise-heating by means of a laser, a dye-ablative recording element comprising a support having thereon a dye layer comprising an image dye dispersed in a polymeric binder and an infrared-absorbing material, said laser exposure taking place through the dye side of said element, and removing the ablated image dye material to obtain said image in said dye,ablative recording element, wherein said element also contains an interlayer containing poly(vinyl alcohol) and an infrared-absorbing material and which is located between said support and said dye layer.

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HIGH RESOLUTION LITHOGRAPHY METHOD USING HYDROGEN DEVELOPING REAGENT

Monte A. Douglas, Coppell, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 738,699, Jul. 31, 1991, abandoned. This application Jan. 4, 1994, Ser. No. 177,634

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—325 **20 Claims**

1. A method for forming patterned features, said method comprising:

a. forming a layer of resist on a substrate, said layer having a thickness;

b. patterning said resist by selective exposure to a first energy source to modify the developing properties of portions of said resist, leaving an amount of said thickness unexposed; and

c. developing said resist wherein said developing is done with a second energy source and a developing reagent which comprises hydrogen.

5,387,498

POSITIVE-ACTING PHOTOTHERMOGRAPHIC MATERIALS COMPRISING A PHOTO-ACID GENERATOR

Richard J. Ellis, Great Dunmow, Great Britain, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 959,298, Oct. 9, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 185,293

Claims priority, application United Kingdom, Oct. 14, 1991, 9121795

Int. Cl.[6] G03C *5/16, 1/00, 3/00*

U.S. Cl. 430—353 **15 Claims**

1. A positive-acting photothermographic element having a photosensitive medium which is free of silver halide comprising a reducible silver source, a photo-acid generator, a binder and a reducing agent for silver ion, in which exposure of the element to actinic radiation causes the production of acidic species in the exposed regions which inhibit reduction of the silver source by the reducing agent.

5,387,499

METHOD AND APPARATUS FOR PHOTOGRAPHIC PROCESSING

Anthony Earle, Harrow Weald; James I. Dunlop, Harrow; Edward C. T. S. Glover, London; Peter D. Marsden, North Harrow, all of Great Britain, and Roger Baretll, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/00266, § 371 Date Aug. 14, 1992, § 102(e) Date Aug. 14, 1992, PCT Pub. No. WO91/12567, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 11, 1991, Ser. No. 920,299

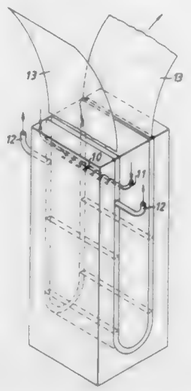
Claims priority, application United Kingdom, Feb. 14, 1990, 9003282

Int. Cl.[6] C03C *5/30, 5/31;* **G03F** *3/02*

U.S. Cl. 430—399 **20 Claims**

1. A method of processing an imagewise exposed photographic material in a processing solution comprising the steps of:

circulating a processing solution through a tank at a rate of 1 to 5 tank volumes per minute, wherein said processing solution comprises a color developing agent and a reducing agent and is unstable to the extent that said processing solution deteriorates without external reaction;



converting said exposed photographic material through said tank, whereby said photographic material is contacted with said processing solution; and

replenishing said processing solution.

5,387,500

COLOR PHOTOGRAPHIC ELEMENTS CONTAINING A COMBINATION OF PYRAZOLOAZOLE COUPLERS

Hans G. Ling, Rochester, and Drake M. Michno, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

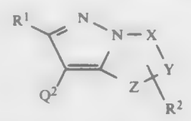
Continuation of Ser. No. 82,073, Jun. 24, 1993, abandoned. This application May 27, 1994, Ser. No. 250,353

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—506 **20 Claims**

1. A photographic element comprising a support and at least two green-sensitive silver halide emulsion layers of different sensitivity which are not separated by an imaging silver halide emulsion layer sensitive to red or blue light,

each green-sensitive emulsion layer comprising a two-equivalent pyrazoloazole magenta dye-forming coupler having a structure according to formula I



(I)

wherein

R^1 is a substituent in the 6-position which does not adversely affect the desired properties of the coupler,

Q^2 is a coupling-off group,

X, Y, Z are individually carbon or nitrogen atoms necessary to complete an azole ring, with unsaturated bonding being present in the ring as needed,

R^2 denotes the group



R^3, R^4 are individually hydrogen or unsubstituted or substituted alkyl or aryl, at most one of R^3 and R^4 being hydrogen,

n is 1 or 2,

R^5, R^6 are individually hydrogen, unsubstituted or substituted alkyl or aryl, —C(O)—R^7 or —SO_2R^7, at most one of R^5 and R^6 being hydrogen,

R^7 is unsubstituted or substituted alkyl or aryl or —NH—R^8, and

R^8 is unsubstituted or substituted alkyl or aryl,

wherein the activity of said dye-forming coupler present in the layer of lower sensitivity is less than the activity of said dye-forming coupler present in the layer of higher sensitivity,

and wherein the layer of lower sensitivity has the lowest sensitivity of any green-sensitive layer containing a magenta dye-forming coupler present in the element.

5,387,501

SUPPORT FOR PHOTOGRAPHIC MATERIAL

Takatoshi Yajima; Kenji Nakanishi; Hiromitsu Araki; Hideyuki Kobayashi, all of Hino; Yoshioki Okubo, Hohfu; Tetsutaro Hashimura, Hohfu, and Hiroshi Naito, Hohfu, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 49,139, Apr. 19, 1993, abandoned. This application Apr. 7, 1994, Ser. No. 224,061

Claims priority, application Japan, Apr. 27, 1992, 4-134195

Int. Cl.[6] G03C *1/76*

U.S. Cl. 430—533 **14 Claims**

1. A support for a photographic material which comprises a multilayer film in which a layer of a copolymerized polyester is laminated on at least one surface of a polyester layer,

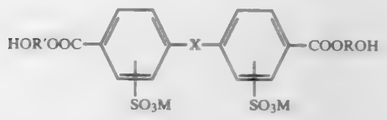
wherein said polyester is obtained by reacting a first aromatic dibasic acid selected from the group consisting of terephthalic acid, isophthalic acid and 2,6-naphthalenedicarboxylic acid, with a glycol selected from the group consisting of ethylene glycol, propylene glycol, butanediol, neopentyl glycol, 1,4-cyclohexanedimethanol, diethylene glycol and p-xylene glycol,

wherein said copolymerized polyester comprises:

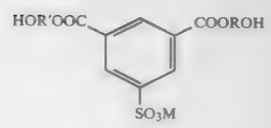
a) said first aromatic dicarboxylic acid,

b) said glycol,

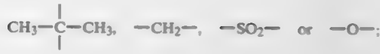
c) a second aromatic dicarboxylic acid selected from the group consisting of terephthalic acid, isophthalic acid, 2,6-naphthalenedicarboxylic,



and



wherein X represents



R and R^1 each represent —$(CH_2)_n$— where n represents an integer of 1 to 20; M represents sodium, potassium or lithium, wherein said terephthalic acid, said isophthalic acid or said 2,6-naphthalenedicarboxylic acid has a metal sulfonate group, and an amount of said second aromatic dicarboxylic acid is 2 to 7 mole % based on all ester bond units of said copolymerized polyester, and further

d) a polyalkylene glycol selected from the group consisting of a polyethylene glycol, a polypropylene glycol and a polytetramethylene glycol, in an amount of 3 to 10% by weight based on the total weight of said copolymerized polyester,

wherein each of said first and second aromatic dibasic acids, said glycol, said polyethylene glycol and said polytetramethylene glycol may have a substituent,

wherein a ratio of the total copolymerized polyester layer thickness d_2 to the total polyester layer thickness d_1 is $0.7 \leqq d_2/d_1 \leqq 3$.

5,387,502

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Yoshio Inagaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

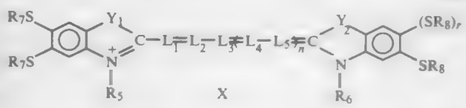
Continuation of Ser. No. 943,034, Sep. 10, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 113,359

Claims priority, application Japan, Sep. 11, 1991, 3-258733

Int. Cl.[6] G03C *1/20*

U.S. Cl. 430—584 **2 Claims**

1. A silver halide photographic material comprising a support having formed thereon at least one silver halide emulsion layer, wherein said silver halide emulsion layer contains a dye represented by formula (III):



(III)

wherein L_1, L_3 and L_5 each represents a methine group; L_2 and L_4 each represents a methine group or L_2 and L_4 may combine with each other to form a ring; n represents 1; and X represents a charge-balancing ion; Y_1 and Y_2 each represents O, S, or Se; R_5 and R_6 each represents a substituted or unsubstituted lower alkyl group having from 1 to 6 carbon atoms; R_7 and R_8 each represents a lower alkyl group having from 1 to 6 carbon atoms; and r represents 0 or 1; and a hydrogen atom replaces the thioalkyl group SR_8 when r is 0.

5,387,503

ASSAY METHOD USING INTERNAL CALIBRATION TO MEASURE THE AMOUNT OF ANALYTE IN A SAMPLE

Johan Selmer, Farum, and Fritz Poulsen, Hillerød, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd

PCT No. PCT/DK91/00151, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO91/19196, PCT Pub. Date Dec. 12, 1991

PCT Filed Jun. 6, 1991, Ser. No. 938,039

Claims priority, application Denmark, Jun. 6, 1990, 1380/90

Int. Cl.[6] G01N *33/543, 33/566, 33/569*

U.S. Cl. 435—5 **55 Claims**

1. An assay for determining the amount of a test analyte contained in a sample, comprising the following sequential steps:

(a) providing a mixture of a known volume of said sample and a known amount of a calibrator analyte, wherein said calibrator analyte is foreign to said sample and the behavior of said calibrator analyte is comparable to that of said test analyte under the same assay conditions;

(b) contacting said mixture with a solid support, wherein said solid support comprises a first reagent capable of selectively binding said test analyte bound to a first discrete area of said solid support and a second reagent capable of selectively binding said calibrator analyte bound to a second discrete area of said solid support;

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(c) contacting said solid support with a first labelled substance capable of selectively binding said test analyte and a second labelled substance capable of selectively binding said calibrator analyte, wherein said first and second labelled substances use an identical label; and

(d) determining the amount of said test analyte in said sample by comparing the level of said first labelled substance bound to said test analyte and of said second labelled substance bound to said calibrator analyte.

5,387,504

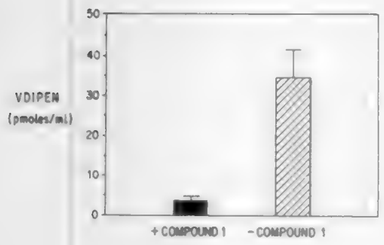
MONOSPECIFIC ANTIBODIES AND ASSAY SYSTEM FOR DETECTING STROMELYSIN CLEAVAGE PRODUCTS

Richard A. Mumford, Red Bank; Michael W. Lark, East Windsor; Ellen B. K. Bayne, Westfield, and Lori A. Hoerrner, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 30, 1992, Ser. No. 954,213

Int. Cl.[6] **C12Q** *1/37;* **G01N** *33/536, 33/543, 33/573*

U.S. Cl. 435—7.1 **9 Claims**



1. A method of evaluating the efficacy of an inhibitor of stromelysin comprising:

a) combining a stromelysin substrate containing aggrecan with a stromelysin inhibitor;

b) reacting combined stromelysin substrate and stromelysin inhibitor of step a) with stromelysin in a reaction mixture for a time sufficient to generate stromelysin-cleaved aggrecan peptide fragments from the substrate, wherein stromelysin cleaves aggrecan at a site between Asn and Phe residues of an aggrecan amino acid sequence comprising Asp He Pro Glu Asn Phe Phe Gly Val Gly (SEQ. ID. NO: 4) thereby producing said fragments;

c) contacting a sample of the reaction mixture with a monospecific antibody which specifically binds to an epitope at a terminus of said stromelysin-cleaved aggrecan peptide fragments, wherein said antibody does not bind to uncleaved aggrecan, for a time sufficient for the antibody to bind said fragments present in said sample;

d) determining an amount of stromelysin-cleaved aggrecan peptide fragments in said sample bound by the antibody in step c) as a measure of a level of said fragments generated in step b); and,

e) comparing the level of said fragments measured in step d) to a level of fragments measured in a control assay, wherein stromelysin inhibitor was not combined with the stromelysin substrate, as an indication of the efficacy of the inhibitor.

5,387,505

PREPARATION AND ISOLATION OF SINGLE-STRANDED BIOTINYLATED NUCLEIC ACIDS BY HEAT AVIDIN-BIOTIN CLEAVAGE

Annie L. Wu, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 4, 1990, Ser. No. 519,533

Int. Cl.[6] **C12D** *1/08;* **C07H** *5/04, 17/00*

U.S. Cl. 435—6 **21 Claims**

1. A method for the amplification of a target nucleic acid, said method comprising:

A. amplifying a target nucleic acid in a specimen using a polymerase chain reaction and at least one biotinylated primer to form a biotinylated target nucleic acid,

B. contacting said biotinylated target nucleic acid with a substrate having covalently attached thereto molecules of avidin or a derivative thereof,

so as to form a water-insoluble complex of avidin or a derivative thereof and said biotinylated target nucleic acid on said substrate,

C. separating uncomplexed materials from said water-insoluble complex,

D. breaking the avidin-biotin bonds in said water-insoluble complex to release the resulting biotinylated target nucleic acid,

said breaking consisting essentially of heating said water-insoluble complex to above about 65° C. for at least 5 minutes, and

E. collecting said released biotinylated target nucleic acid.

5,387,506

USE OF GENETIC MARKERS TO DIAGNOSE FAMILIAL DYSAUTONOMIA

Anat Blumenfeld, Brookline, and James F. Gusella, Framingham, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed May 29, 1992, Ser. No. 890,719

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **16 Claims**

1. A method for detecting the presence in a subject of a polymorphism linked to a gene associated with familial dysautonomia which comprises:

analyzing human chromosome 9 of the subject and detecting the presence of a polymorphism located between HXB and D9S109 inclusive and linked to the gene associated with familial dysautonomia and wherein the presence of the polymorphism is indicative of carriers of a gene associated with familial dysautonomia.

Lod Scores Between Dysautonomia and Chromosome 9 Markers

	Recombination Value						
Marker	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	∞	-5.54	-1.76	0.53	0.76	[illegible]	[illegible]
[illegible]	∞	5.54	5.43	3.85	[illegible]	0.60	[illegible]
[illegible]	∞	5.58	[illegible]	3.82	2.04	[illegible]	[illegible]
[illegible]	∞	8.88	7.21	4.82	2.44	0.68	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	6.47	[illegible]	[illegible]	[illegible]
[illegible]	∞	[illegible]	6.05	[illegible]	[illegible]	[illegible]	6.21
[illegible]	∞	[illegible]	5.89	4.27	[illegible]	0.70	[illegible]
[illegible]	∞	6.09	[illegible]	4.79	[illegible]	[illegible]	[illegible]
[illegible]	∞	-5.07	-1.64	[illegible]	[illegible]	[illegible]	[illegible]

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Patent Not Issued For This Number

5,387,509

ETHYLATED AVERMECTINS

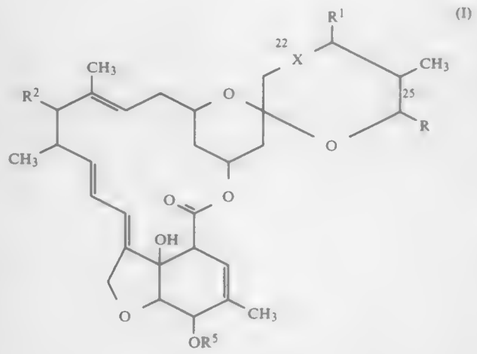
Steven J. Hawrylik, North Stonington, and S. Edward Lee, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 118,684, Nov. 9, 1987, abandoned. This application Jun. 26, 1989, Ser. No. 371,153

Int. Cl.[6] **C12P** *19/62;* **A61K** *31/71;* **C07H** *17/08*

U.S. Cl. 435—76 **19 Claims**

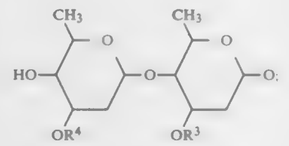
1. A compound having the formula



wherein X is a single or double bond;

R^1 is H or OH; provided that when X is a single bond, R^1 is H or OH, and when X is a double bond R^1 is absent;

R^2 is a disaccharide moiety having the formula



wherein R^3 and R^4 are each CH_3 or C_2H_5; with the proviso that at least one of R^3 and R^4 is C_2H_5; R^5 is H or CH_3; and

R is an alpha-branched C_4–C_8 alkyl which may be substituted by a C_1–C_4 alkyl group, alkenyl, alkynyl, alkoxyalkyl, alkylthioalkyl, C_5–C_8 cycloalkylalkyl group wherein the alkyl moiety of said group is C_2–C_5 alkyl, C_3–C_8 cycloalkyl or C_5–C_8 cycloalkenyl group either of which may be substituted by methylene or C_1–C_4 alkyl groups; or a 3 to 6 membered oxygen or sulfur containing heterocyclic ring which may be saturated, or fully or partially unsaturated and which may be substituted by a C_1–C_4 alkyl group or a halo atom; with the proviso that when R is alkyl it is not sec-butyl.

16. A method of treating a host suffering from parasitic infections or infestations which comprises contacting the organism responsible for said infection or infestation with an antiparasitic amount of a compound according to claim 1.

5,387,508

DETECTION OF CYTOTOXIC AGENTS USING TETRAMITUS ROSTRATUS

Robert L. Jaffe, Long Island City, N.Y.

Filed May 14, 1992, Ser. No. 883,257

Int. Cl.[6] **C12Q** *1/00, 1/02;* **C12N** *1/10, 1/00*

U.S. Cl. 435—32 **17 Claims**

1. A method for the detection of cytotoxic agents in a sample comprising the steps of:

(a) adding the sample to a living culture of *Tetramitus rostratus* in flagellate form;

(b) determining the growth rate of the flagellate *Tetramitus rostratus* culture in the presence of the sample; and

(c) comparing the growth rate of the flagellate *Tetramitus rostratus* culture in the presence of the sample to a standard growth rate, wherein a decrease in growth rate of the culture in the presence of the sample is indicative of the presence of cytotoxic agents in the sample.

5,387,510

DETECTION OF AMPLIFIED NUCLEIC ACID USING SECONDARY CAPTURE OLIGONUCLEOTIDES AND TEST KIT

Annie L. Wu, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1991, Ser. No. 769,624
Int. Cl.[6] C12Q *1/68;* C07H *17/00;* C12P *19/34*
U.S. Cl. 435—91.2 17 Claims

1. A method for amplification and detection of a double-stranded nucleic acid comprising:

A. after denaturation of a target double-stranded nucleic acid, amplifying said target nucleic acid using a thermostable DNA polymerase, complementary primers and dNTPs,

B. forming a water-insoluble hybridization product of said amplified target nucleic acid with a water-insoluble capture probe which is not detectably labeled, said capture probe comprising a water-insoluble polymeric particle to which is covalently attached an oligonucleotide complementary and specific to a first sequence of said amplified target nucleic acid, said oligonucleotide being from 15 to 20 nucleotides in length, and

simultaneously or prior to said product formation, contacting said amplified target nucleic acid with one or more water-soluble, unlabeled, distinct secondary oligonucleotides, each of said secondary oligonucleotides being complementary and specific to a sequence of said amplified target nucleic acid other than said first sequence, and each of said secondary oligonucleotides having a length which is equal to or greater than the length of said capture probe oligonucleotide,

to hybridize said secondary oligonucleotides with said amplified target nucleic acid, and

C. detecting the resulting hybridized product formed from said amplified target nucleic acid and said water-insoluble capture probe, said detection being accomplished in one of the following ways:

1) using a a detectably labeled detection probe which is commlementary and specific to said amplified target nucleic acid in a region thereof other than to which said capture probe and second secondary oligonucleotides hybridize,

2) using at least one detectably primer as one of said complementary primers in amplification stem A), or

3) using a detectably labeled dNTP in amplification Step A).

5,387,511

EXTRACTION PROCEDURE FOR *CHLAMYDIA* AND *NEISSERIA* ANTIGENS

Ian W. Davidson, Bedfordshire, and Paul Sheard, Northants, both of England, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Continuation of Ser. No. 623,971, Dec. 13, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 911,378
Claims priority, application United Kingdom, Apr. 14, 1989, 8908548; Mar. 5, 1990, 9004845
Int. Cl.[6] C12P *19/04, 21/04*
U.S. Cl. 435—101 2 Claims

1. A procedure for extracting solubilized lipopolysaccharide antigen from *Chlamydia trachomatis, C. psittaci* or *C. twar* cellular material or proteinaceous antigen from *Neisseria gonorrhoeae* cellular material which comprises treating the cellular material with an aqueous extraction solution with a pH of about 7 to 9 containing at least about 0.1% by weight of CHAPS, CHAPSO or mixtures thereof, together with bovine serum albumin, EDTA, ascorbic acid and sodium chloride, in the absence of divalent cations and at a temperature in excess of about 50° C. for at least about 5 minutes sufficient to solubilize the antigen and recovering the thus solubilized antigen.

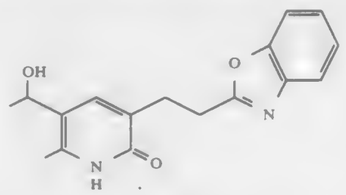
5,387,512

PREPARATION OF 3-[Z-BENZOXAZOL-2-YL)ETHYL]-5-(1-HYDROXYETHYL)-6-METHYL-2-(1H)-PYRIDINONE BY BIOTRANSFORMATION

Suresh K. Balani, Hatfield; Steven M. Pitzenberger, Lansdale, and Harri G. Ramjit, Lansdale, all of Pa., assignors to Merck & Co. Inc., Rahway, N.J.

Continuation of Ser. No. 712,317, Jun. 7, 1991, abandoned. This application Feb. 24, 1992, Ser. No. 841,240
Int. Cl.[6] C12P *17/16*
U.S. Cl. 435—118 1 Claim

1. A method of preparing the compound



or ester thereof, comprising the steps of

(1) providing a quantity of 3-[2-(benzoxazol-2-yl)ethyl]-5-ethyl-6-methyl-2-(1H)-pyridinone,

(2) incubating the compound of step 1 with rat liver slices, and

(3) isolating the compound.

5,387,513

MICROBIOLOGICAL PRODUCTION OF POLYESTERS HAVING C_8 AND/OR C_{10} MONOMER REPEAT UNITS

Alistair J. Anderson, Hull; Edwin A. Dawes, Humberside; Geoffrey W. Haywood, Hull, and David Byrom, Cleveland, all of England, assignors to Zeneca Limited, London, England

Division of Ser. No. 507,842, Apr. 12, 1990, Pat. No. 5,296,362. This application Dec. 16, 1993, Ser. No. 167,021
Claims priority, application United Kingdom, Apr. 12, 1989, 8908214; May 19, 1989, 8911577; Oct. 4, 1989, 8922362
Int. Cl.[6] C12P *7/62*
U.S. Cl. 435—135 4 Claims

1. A microbiologically produced polymer of a hydroxyalkanoic acid comprising monomer repeat units, in which the modal number of carbon atoms contained in said monomer repeat units is at least 10.

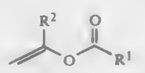
5,387,514

ACYLATION OF ALCOHOLS WITH *PSEUDOMONAS LIPASE* IMMOBILIZED ON A POLYSTYRENE RESIN

Manfred Schudok; Gerd Fülling, both of Frankfurt am Main, and Gerhard Kretzschmar, Eschborn, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

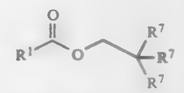
Continuation of Ser. No. 806,310, Dec. 13, 1991, abandoned. This application Dec. 28, 1993, Ser. No. 173,938
Claims priority, application Germany, Dec. 24, 1990, 4041777
Int. Cl.[6] C12P *7/62, 7/02;* C12N *11/08, 9/20*
U.S. Cl. 435—135 6 Claims

1. A process for the acylation of alcohols, which comprises reacting a vinyl ester of formula I



(I)

in which R^1 is hydrogen, C_1–C_{18} -alkyl which is optionally substituted by halogen, or is phenyl or (C_1–C_3)-alkoxy-(C_1–C_4)alkyl and R^2 is hydrogen or methyl, or reacting a carboxylic ester of formula II



(II)

in which R^1 has the above-mentioned meaning, and R^7 is either fluorine, chlorine or hydrogen, where all R^7 must be identical, or R^7 is fluorine, chlorine, bromine or cyano and hydrogen, where two R^7 must be hydrogen or is fluorine R^7 is fluorine or chlorine and hydrogen, where only one R^7 is hydrogen and the two other substituents are identical, or one of a cyclic carboxylic anhydride selected from the group consisting of succinic anhydride and glutaric anhydride

with an alcohol in the presence of immobilized Pseudomonas lipase

wherein the Pseudomonas lipase is immobilized on a polystyrene-based adsorber resin having a surface area of 100–1000 m^2/g, a pore volume of 25 to 75% and a pore diameter of 25–1200 Å.

5,387,515

PROCESS FOR PROVIDING A 6-KETONE FROM MORPHINE OR AN ETHER DERIVATIVE THEREOF USING MORPHINE DEHYDROGENASE

Neil C. Bruce, Cambridge; Lauren D. G. Stephens, Royston, and Christopher R. Lowe, Saffron Walden, all of England, assignors to British Technology Group Limited, London, England

Continuation of Ser. No. 784,445, Nov. 12, 1991, Pat. No. 5,298,414. This application Jan. 19, 1994, Ser. No. 183,307
Claims priority, application United Kingdom, May 12, 1989, 8910958
Int. Cl.[6] C12P *17/18, 7/26*
U.S. Cl. 435—148 2 Claims

1. A process for preparing a 6-ketone from morphine or a methyl or ethyl ether thereof, which process comprises the step of oxidizing morphine or said ether in the presence of a morphine dehydrogenase enzyme and $NADP^+$ cofactor therefor to produce said 6-ketone, said enzyme being one wherein:

(1) its first 25 amino acids from the N-terminus have sequence ID No: 1:

Ala Gly Lys Ser Pro Leu Ile Asn Leu Asn Asn Gly Val Lys Met
1 5 10 15

Pro Gly Leu Gly Leu Gly Val Phe Ala Ala;
20 25

(2) with $NADP^+$ as cofactor it oxidizes morphine to morphinone;

(3) with the same cofactor it also oxidizes codeine and ethylmorphine but has no significant enzymatic action on heroin, 6-acetylmorphine, thebaine, oxycodone, morphine glucuronide pholcodeine or ethanol;

(4) its molecular weight is about 32,000 Daltons, as determined by gel filtration; and

(5) in glycine-NaOH buffer it exhibits optimal reactivity with morphine at pH. about 9.5; and its isoelectric point, determined by flat bed isoelectric focussing in a gel, is 4.2.

5,387,516

HEAT STABLE DEBRANCHING ENZYME FROM A BACILLUS MICROORGANISM

Michiyo Kawai; Shigeharu Mori; Susumu Hirose, and Hiroji Tsuji, all of Aichi, Japan, assignors to Amano Pharmaceutical Co., Ltd., Aichi, Japan

Filed Feb. 25, 1993, Ser. No. 22,163
Claims priority, application Japan, Feb. 26, 1992, 4-076181
Int. Cl.[6] C12N *9/44, 1/20, 1/00;* C12P *19/16*
U.S. Cl. 435—210 2 Claims

1. A substantially pure heat-stable debranching enzyme isolated from a Bacillus microorganism having the following properties:

1) Activity: Acts on α1,6-glucoside bonds to produce straight chain amylose,

2) Substrate Specificity: Acts on pullulan and also acts on relatively long chain saccharides, wherein when said substrate specificity for activity on pullulan is set at 100, the activity of said enzyme on soluble starches relative to said activity on pullulan is from about 20 to 40, the activity of said enzyme on glycogen relative to said activity on pullulan is from about 30 to 60, and the activity of said enzyme on amylopectin relative to said activity on pullulan is from about 10 to 30,

3) Optimum pH: from about 4.5 to about 6.0,

4) Optimum temperature: from about 60° C. to about 70° C.,

5) Molecular Weight: about 98 KD as measured by SDS-PAGE, and

6) Isoelectric point: about 2.9.

5,387,517

THIOL ACTIVATED PROTEASE FROM STEM BROMELAIN FOR TREATING DEVITALIZED TISSUE

John K. Cini, Bethlehem, Pa., assignor to Ethicon, Inc., Somerville, N.J.

Filed Mar. 23, 1994, Ser. No. 217,341
Int. Cl.[6] C12N *9/48;* D06M *16/00*
U.S. Cl. 435—212 1 Claim

1. A purified thiol activated protease obtained from bromelain stem extract capable of debridement of devitalized mammalian tissue, said protease having an isoelectric point of about pI 4.6 to about pI 5.0 and a molecular weight of about 17,000 daltons to about 21,000 daltons as determined by SDS-polyacrylamide gel electrophoresis.

5,387,518

ALKALINE PROTEASE HAVING STABILITY IN SOLUTION WITH ANIONIC SURFACTANT, METHOD FOR PRODUCING THE SAME, USE THEREOF AND MICROORGANISM PRODUCING THE SAME

Toyoji Sawayanagi; Mina Saito; Toshi Tsuzuki; Yoshio Fujiwara, and Yoshitaka Noguchi, all of Tokyo, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 873,168
Claims priority, application Japan, Apr. 26, 1991, 3-125457
Int. Cl.[6] C12N *9/50, 9/52, 9/54;* C11D *17/00*
U.S. Cl. 435—221 3 Claims

1. An isolated alkaline protease from a microorganism belonging to the genus Bacillus and having the following properties:

(1) an activity for hydrolyzing proteins;

(2) an optimum pH of from about 11 to 11.5 as measured after reaction at 30° C. for 10 minutes using casein as a substrate;

(3) an optimum temperature of about 60° C. as measured after reaction at pH 10 using casein as a substrate;

(4) a heat resistance in terms of a half inactivation temperature of about from 55° to 57° C. as measured after incubation at pH 10 for 10 minutes;

(5) a molecular weight of 29,000±2,000 as measured by using SDS polyacrylamide electrophoresis; and

(6) a half-life of activity in a solution of 2000 ppm of the

anionic surfactant, n-dodecylbenzenesulfonate, and 4 ppm calcium, pH 10, at 40° C. of longer than 10 minutes.

5,387,519

RECOMBINANT AVIPOXVIRUS

Noboru Yanagida, Kawasaki; Sakiko Saeki, Tokyo; Ryobei Ogawa, and Kouichi Kamogawa, both of Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 168,959, Mar. 16, 1988, abandoned.
This application Sep. 3, 1991, Ser. No. 752,982
Claims priority, application Japan, Mar. 27, 1987, 62-73568; Sep. 14, 1987, 62-229972; Mar. 11, 1988, 63-57947
Int. Cl.[6] C12N *7/01, 15/39, 15/86*
U.S. Cl. 435—235.1 8 Claims



1. A recombinant avipoxvirus containing an exogenous DNA under the control of a promoter, said exogenous DNA being inserted into a region non-essential to proliferation of avipoxvirus as a result of homologous recombination with a non-essential region DNA fragment, wherein said non-essential region DNA fragment is a fragment of dovepoxvirus NP having the restriction map shown in FIGS. 1(*a*), (*b*) or (*c*), or a part of said fragment sufficient to undergo homologous recombination with an avipoxvirus.

5,387,520

TREATMENT OF TUMOR CELLS IN VITRO WITH NEUROTROPHIC FACTORS AND CELL PROLIFERATION INHIBITORS

Patrizia LoPresti, Stony Brook, N.Y.; Wojciech Poluha, Shrewsbury, Mass.; Dorota K. Poluha, Shrewsbury, Mass., and Alonzo H. Ross, Shrewsbury, Mass., assignors to Worcester Foundation for Experimental Biology, Shrewsbury, Mass.

Filed Aug. 27, 1992, Ser. No. 936,923
Int. Cl.[6] A61K *37/02, 37/36;* C07H *15/00*
U.S. Cl. 435—240.2 17 Claims

1. A method for treating a cultured neuroblastoma cell comprising the steps of:

(a) contacting the neuroblastoma cell with a neurotrophic factor and a sublethal dose of an inhibitor of cell proliferation selected from the group consisting of aphidicolin, hydroxyurea, and thymidine for about 1 to 15 days, the neurotrophic factor being nerve growth factor; and

(b) maintaining the neuroblastoma cell in contact with the neurotrophic factor for about 1 to 15 days,

wherein the inhibitor enhances neurotrophic factor-induced differentiation of the neuroblastoma cell into a neurite-extending neuron.

5,387,521

GENE EXPRESSION IN BACILLI

Eugenio Ferrari, San Bruno, Calif., assignor to Genencor International, Inc., Rochester, N.Y.

Continuation of Ser. No. 692,108, Apr. 26, 1991, abandoned.
This application Jun. 2, 1993, Ser. No. 71,210
Int. Cl.[6] C12N *1/21, 9/00, 9/42, 9/54*
U.S. Cl. 435—252.31 5 Claims

1. A Bacillus for use in the hyperproduction of an enzyme comprising:

a) an enzyme structural gene;

b) a functional promoter sequence selected from the group consisting of Bacillus aprE and nprE wherein the promoter is operably linked to the enzyme structural gene; and

c) a combination of two or more mutated transcriptional regulatory genes involved in the transcriptional regulation of the promoter, wherein the combination is selected from the group consisting of a catA mutation and a sacQ(Hy) mutation, and a scoCl mutation and a sacQ(Hy) mutation.

5,387,522

APPARATUS HAVING A BIPHASIC SPRAY HEAD FOR ENTRAPPING BIOLOGICAL MATERIAL IN A HYDROPHILIC GEL

Paul J. Vasington, Norwood, Mass.; Maurice M. Lynch, Warwock, R.I., and Maureen E. Frye, Mansfield, Mass., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 453,048, Dec. 13, 1989, abandoned, which is a continuation of Ser. No. 829,121, Jan. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 616,534, Jun. 1, 1984, Pat. No. 4,778,749. This application Jul. 22, 1991, Ser. No. 734,070
Int. Cl.[6] C12M *1/00, 1/40;* C12N *11/10, 5/00*
U.S. Cl. 435—287 6 Claims

1. An apparatus for entrapping a biological material comprising:

a) a biphasic spray head;

b) means for admixing the biological material with a hydrophilic gel-forming material;

c) means for delivering the admixture to the spray head;

d) means for delivering a controlled source of air to the spray head; and

e) means for receiving droplets formed by the spray head.

5,387,523

MULTISTAGE PROCESS FOR DEEP DESULFURIZATION OF FOSSIL FUELS

Daniel J. Monticello, The Woodlands, Tex., assignor to Energy BioSystems Corporation, The Woodlands, Tex.

Continuation-in-part of Ser. No. 669,914, Mar. 15, 1991, Pat. No. 5,232,854. This application Jul. 29, 1993, Ser. No. 99,100
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[6] C10G *32/00;* C12S *1/00;* B66D *1/20;* C10L *5/00*
U.S. Cl. 435—282 9 Claims

1. A method for the deep desulfurization of a liquid fossil fuel containing organic sulfur, said organic sulfur comprising aromatic sulfur-bearing heterocycles, comprising the steps of:

(a) subjecting the liquid fossil fuel to hydrodesulfurization (HDS), whereby sulfur susceptible to the removal by HDS is removed from the liquid fossil fuel;

(b) contacting the liquid fossil fuel obtained from step (a) with a biocatalyst in an aqueous medium in an amount and under conditions sufficient for the conversion of the organic sulfur of the aromatic sulfur-bearing heterocycles to inorganic sulfur, wherein the biocatalyst comprises enzymes that catalyze the removal of sulfur from aromatic sulfur-bearing heterocycles obtained as a lysate, extract, fraction or subfraction of one or more microorganisms that catalyze the removal of sulfur from aromatic sulfur-bearing heterocycles thereby preparing a deeply desulfurized liquid fossil fuel; and

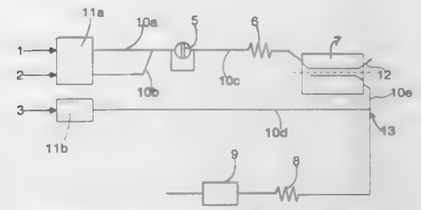
(c) separating the deeply desulfurized liquid fossil fuel from the aqueous medium.

5,387,524

METHOD FOR QUANTITATIVE FLOW INJECTION ANALYSIS OF METALS IN BODY FLUIDS

Yutaka Hayashibe; Minoru Takeya, and Yasumasa Sayama, all of Saitama, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 81,617
Int. Cl.[6] G01N *21/75, 33/50*
U.S. Cl. 436—74 4 Claims



1. A quantitative flow injection analysis method for determining the concentration of metals contained in body fluids, which comprises:

introducing a carrier solution, a protein-release reagent comprising a protein-precipitating agent and a body fluid sample into a tubule;

reacting said solutions with one another in said tubule, to form a reacted solution comprising precipitated protein and a liquid phase containing said metals;

introducing said reacted solution into a separating membrane, said separating membrane facilitates seperation and liberation of said protein contained in said body fluid sample, by preventing passage of said protein through said membrane; and

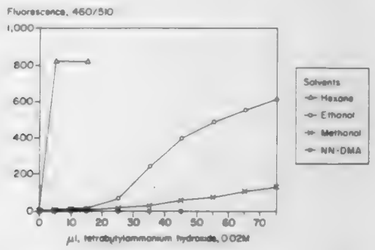
introducing said liquid phase into a quantitative analysis means for determining and measuring the concentration of metals in body fluids.

5,387,525

METHOD FOR ACTIVATION OF POLYANIONIC FLUORESCENT DYES IN LOW DIELECTRIC MEDIA WITH QUATERNARY ONIUM COMPOUNDS

Christiane Munkholm, Salem, Mass., assignor to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Sep. 3, 1993, Ser. No. 116,436
Int. Cl.[6] G01N *33/00*
U.S. Cl. 436—111 18 Claims



1. A method for activating the fluorescence of a polyanionic fluorescent dye in low dielectric media comprising

a. incorporating said fluorescent dye in a low dielectric medium, such dye being quenched in such medium,

b. adding an activation compound including a quaternary onium compound which interacts with the quenched fluorophore in a manner to restore the fluorescence and create an activated fluorophore in the low dielectric medium, and

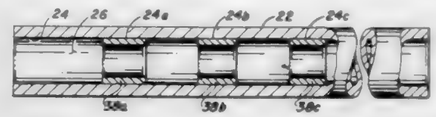
c. measuring the fluorescence or fluorescent-related parameter generated.

5,387,526

COATED CAPILLARY TUBE FOR THE CONTROLLED RELEASE OF REAGENT

Harold R. Garner, Encinitas; Orenda F. Tusson, and Larry S. Peranich, both of San Diego, all of Calif., assignors to General Atomics, San Diego, Calif.

PCT No. PCT/US91/06567, § 371 Date Mar. 30, 1993, § 102(e) Date Mar. 30, 1993
Continuation-in-part of Ser. No. 581,521, Sep. 11, 1990, abandoned. This PCT application Sep. 11, 1991, Ser. No. 30,445
Int. Cl.[6] G01N *21/03*
U.S. Cl. 436—169 11 Claims



1. A container, which is constructed so as to be mounted in a spectrometer and which is used for detecting the presence of or quantifying the amount of a biopolymer or biopolymers in a sample solution that is introduced into the container, comprising:

a micropipette or capillary tube that is transparent to at least a portion of the electromagnetic spectrum emitted and detected by a spectrometer and that is constructed so as to be mounted in the spectrometer whereby light passes through the walls of said tube; and

a coating composition deposited on the inner wall of said tube, wherein:

the coating contains one or more reagents and a binding agent;

wherein the binding agent delays distribution of the reagent in the sample solution for at least about 5 seconds to permit uniform dissolution upon filling, and which said binding agent contains one or more ingredients selected from the group consisting of a sugar, a polysaccharide, a gelatin, a polyacrylamide, and agarose,

the reagent specifically interacts with one or more biopolymers in the sample solution to form complexes, whereby, upon exposure to electromagnetic radiation emitted by the spectrometer through the walls of the tube, the complexes absorb or emit electromagnetic radiation; and

the coating contains a sufficient amount of the reagent(s) in the coating to permit detection of the complexes by the spectrometer.

5,387,527

USE OF PH DEPENDENCE FOR SCATTER CORRECTION IN FLUORESCENT METHODS

James C. Sternberg, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 26, 1992, Ser. No. 905,263
Int. Cl.[6] G01N *33/542, 33/543*
U.S. Cl. 436—518 36 Claims

1. A method for determining a corrected emission light value for a sample comprising an extrinsic fluorophore, said fluorophore having a dependent fluorescence and being bound to a chemical entity capable of reacting in a specific binding reaction, said method comprising the following steps:

a) obtaining a first emission light value by irradiating the sample and the fluorophore with excitation light in the

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absorption band of said fluorophore and detecting emission light,

b) adding an amount of a pH altering substance to said sample, said amount of pH altering substance being sufficient to alter the pH of the sample to a value sufficiently low to quench the fluorescence,

c) obtaining a second emission light value by irradiating the sample, the fluorophore and the pH altering substance with excitation light in the absorption band of said fluorophore and detecting emission light, and

d) subtracting the value obtained from step (c) from the value obtained from step (a), wherein the result of step (d) is an the corrected emission light value for said sample.

5,387,528

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING AN INSULATED GATE FIELD EFFECT DEVICE

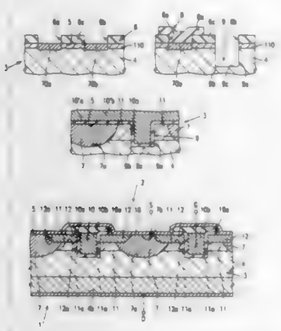
Keith M. Hutchings, Groombridge; Andrew L. Goodyear, Redhill, and Andrew M. Warwick, Stockport, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 22, 1993, Ser. No. 95,972

Claims priority, application United Kingdom, Jul. 23, 1992, 9215653

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—40 **12 Claims**



1. A method of manufacturing a semiconductor device comprising an insulated gate field effect device, which method comprises providing a semiconductor body having a first region of one conductivity type adjacent one major surface, forming on the one major surface a first masking layer comprising at least one first mask window spaced from a second mask window, introducing into the semiconductor body through the first masking layer impurities for forming regions of the opposite conductivity type to the first region, providing on the first masking layer a second masking layer which is selectively removable with respect to the first masking layer, patterning the second masking layer to leave a mask area covering the first mask window, etching the semiconductor body through the second mask window to form a recess extending into the first region beneath the second mask window while leaving the introduced impurities in the semiconductor body beneath the masked first mask window to form a relatively highly doped second region of the opposite conductivity type, removing the first and second masking layers, providing an insulated gate structure by forming a gate insulating layer in the recess and providing a gate conductive region on the insulating layer, providing a relatively lowly doped third region of the opposite conductivity type extending between the relatively highly doped second region and the insulated gate structure to provide a conduction channel area adjacent the insulated gate structure, and providing a fourth region forming a potential barrier with the relatively lowly doped third region so that the conduction channel area provides a conductive path controllable by the insulated gate structure between the fourth and first regions.

5,387,529

PRODUCTION METHOD OF A MESFET SEMICONDUCTOR DEVICE

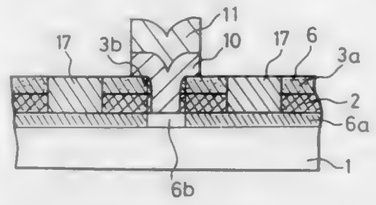
Tomoki Oku, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 950,762, Sep. 24, 1992, Pat. No. 5,300,445, which is a division of Ser. No. 687,294, Apr. 18, 1991, abandoned. This application Nov. 16, 1993, Ser. No. 152,963

Claims priority, application Japan, Sep. 20, 1990, 2-252709

Int. Cl.[6] H01L *21/338*

U.S. Cl. 437—40 **7 Claims**



1. A process for producing a semiconductor device comprising:

forming an active region in a semiconductor substrate;

depositing a thermohardening resin on the active region in said semiconductor substrate;

producing a photoresist pattern on said thermohardening resin;

irradiating said thermohardening resin with a particle beam using said photoresist pattern as a mask to harden said thermohardening resin where irradiated;

after irradiating said thermohardening resin, implanting ions producing one of donors, acceptors, and deep levels in said semiconductor substrate using said photoresist pattern as a mask so that the ions penetrate through said hardened thermohardening resin and penetrate into said semiconductor substrate to produce spaced apart ion implanted regions in said semiconductor substrate;

removing said photoresist pattern and the portion of said thermohardening resin not irradiated by the particle beam, leaving an aperture defined by remaining hardened thermohardening resin; and

transferring the pattern of said remaining hardened thermohardening resin onto said semiconductor substrate by depositing a metal in the aperture, forming a Schottky barrier with said semiconductor substrate.

5,387,530

THRESHOLD OPTIMIZATION FOR SOI TRANSISTORS THROUGH USE OF NEGATIVE CHARGE IN THE GATE OXIDE

Brian S. Doyle, Framingham, Mass., and Ara Philipossian, Redwood Shores, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 29, 1993, Ser. No. 85,002

Int. Cl.[6] H01L *21/265*

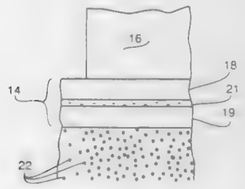
U.S. Cl. 437—45 **1 Claim**

1. A method, comprising the steps of:

forming a silicon-on-insulator (SOI) substrate having an active region thickness of approximately 1000 angstroms;

forming on said SOI substrate a gate insulator layer having a thickness of approximately 65 angstroms and including an inner layer located in approximately the middle thereof and having an areal density of negative charge of approximately 1.5×10^{12} electrons per square centimeter; and

doping the region of said substrate beneath said gate insulator layer with an n-type dopant to a volumetric dopant



density of approximately 5×10^{16} dopant atoms per cubic centimeter.

5,387,531

HOLE CAPACITOR FOR DRAM CELL AND A FABRICATION METHOD THEREOF

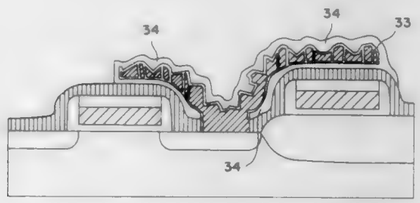
Sa K. Rha, and Dong W. Kim, both of Seoul, Rep. of Korea, assignors to Gold Star Electron Co., Ltd., Chungcheongbuk, Rep. of Korea

Filed Sep. 9, 1992, Ser. No. 942,228

Claims priority, application Rep. of Korea, Sep. 9, 1991, 91-15725

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—52 **4 Claims**



1. A method for making a hole capacitor for DRAM cell, comprising the steps of:

(a) depositing an insulating layer, and opening a buried contact hole in said insulating layer, after forming a MOS transistor upon a semiconductor substrate;

(b) sequentially depositing an in-situ doped non-crystalline silicon layer, an undoped non-crystalline silicon layer, and a hemispherical polysilicon layer with a plurality of domes, each having a thickness of at least 1500 Å;

(c) depositing an upper oxide layer, and etching back the upper oxide layer until peaks of the hemispherical polysilicon domes are exposed;

(d) etching said silicon layers and said polysilicon layer by using portions of said upper oxide layer remaining on the valleys of the hemispherical polysilicon domes as a mask, in order to form a plurality of holes perforated from the peaks of the domes to said insulating layer;

(e) removing said upper oxide layer, patterning said silicon layers and said polysilicon layer to form a lower electrode of the capacitor, and etching said insulating layer; and

(f) coating a dielectric layer on the surface of the lower electrode, and forming an upper electrode in match with said lower electrode on said dielectric layer.

5,387,532

SEMICONDUCTOR MEMORY HAVING CAPACITOR ELECTRODE FORMED ABOVE BIT LINE

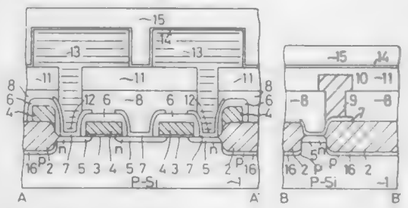
Takeshi Hamamoto, Kawasaki; Fumio Horiguchi, Tokyo, and Katsuhiko Hieda, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 831,657, Feb. 7, 1992, Pat. No. 5,234,199, which is a continuation of Ser. No. 328,374, Mar. 24, 1989, abandoned. This application Aug. 10, 1993, Ser. No. 103,663

Claims priority, application Japan, Mar. 25, 1988, 63-069626

Int. Cl.[6] H01L *21/70, 27/00*

U.S. Cl. 437—52 **10 Claims**



1. A method of manufacturing a semiconductor memory having memory cells, each composed of a transistor and a capacitor formed on a semiconductor substrate, the method comprising the steps of:

forming a gate electrode on a gate insulation film in each memory cell region where said memory cells are to be formed on the semiconductor substrate;

forming source and drain regions in the memory cell region by doping the semiconductor substrate with impurities, using the gate electrode as a mask;

forming a bit line for the memory cell region and connecting the bit line to one of the source and drain regions;

forming pad electrodes for the memory cell region, for connecting the bit line with one of the source and drain regions of the transistor and for connecting the electrode with the other of the source and drain regions of the transistor, wherein said pad electrode for connecting the bit line with one of the source and drain regions of the transistor is formed so as to be separated from the memory cell region;

forming a first capacitor electrode for the memory cell region above the bit line and connecting the first capacitor electrode to the other of the source and drain regions which is not connected to the bit line; and

forming a second capacitor electrode for the memory cell region on an insulation film formed on the first capacitor electrode.

5,387,533

METHOD OF MAKING DYNAMIC RANDOM ACCESS MEMORY

Hong S. Kim, Dae-dong 109-27, dong-ku, Taejeon-si, Rep. of Korea

Filed Aug. 20, 1993, Ser. No. 109,520

Claims priority, application Rep. of Korea, Aug. 25, 1992, 1992-15306

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—52 **16 Claims**

1. A method of making a DRAM comprising the steps of:

(a) forming first and second field insulation films with a constant interval on a top surface of a semiconductor substrate, to define an active region;

(b) forming word lines uniformly spaced from each other respectively on said first and second field insulation films and said active region, wherein each word line includes side wall insulation films at side walls thereof;

(c) forming a third insulation film for a capacitor contact by exposing a third insulation pattern on said top surface and

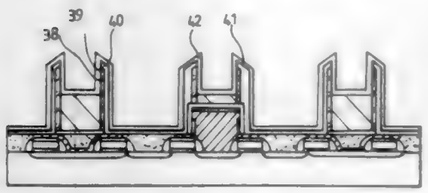
then removing portions formed between the word lines of the active region and the word lines of said first and second field insulation films, of said third insulation film, to form capacitor contact holes;

(d) implanting an impurity on the semiconductor substrate through the capacitor contact holes, to form impurity regions in the surface of the semiconductor substrate;

(e) forming a first conductor of a predetermined thickness for a plug by exposing a first conductor pattern on said top surface and then etching-back the first conductor for said plug until said third insulation film for the capacitor contact is exposed, thereby forming plug conductors on the surface of said third insulation film for the capacitor contact and in the capacitor contact holes and planarizing the entirety of said top surface;

(f) forming a fourth insulation film for a buffer layer by exposing a fourth insulation pattern on said top surface and removing a portion formed between two word lines of the active region, of said fourth insulation film for the buffer layer, the remaining third insulation film for the capacitor contact and the plug conductors, to form a bit line contact;

(g) forming a second conductor for a bit line contact hole and a fifth insulation film for bit line definition, in this order, by exposing a second conductor pattern and a fifth insulation pattern on said top surface so that the bit line contact hole is filled by said second conductor and said fifth insulation film, wherein the second conductor for the bit line contact hole and the fifth insulation film for bit line definition have planarizing surfaces, respectively;



(h) covering a first etch mask having a width wider than a width of the bit line contact on the upper portion of the bit line contact hole, of the surface of the fifth insulation film for the bit line definition, and then etching the fifth insulation film for bit line definition, the second conductor for the bit line and the fourth insulation film for the buffer layer to form a bit line;

(i) removing said first etch mask and then forming a sixth insulation film for bit line insulation, and forming a third conductor for a plate node having a planarizing surface and a seventh insulation film for capacitor definition, in this order, by exposing a sixth insulation pattern, a third conductor pattern and a seventh insulation pattern on said top surface;

(j) forming a second etch mask having a width that is the same as a width of the first etch mask at an upper part of the bit line, of the surface of the seventh insulation film for capacitor definition, and then etching the third conductor for the plate node and the seventh insulation film for capacitor definition;

(k) forming a first dielectric film for capacitor dielectric and a fourth conductor for the storage node, in this order, by exposing a first dielectric pattern and a fourth conductor pattern on said top surface and then etching said first dielectric film and said fourth conductor together with the sixth insulation film for bit line insulation so that portions formed at the side walls of the remaining third conductor for the plate node and the seventh insulation film for capacitor definition merely remain;

(l) forming a fifth conductor for the storage node by exposing a fifth conductor pattern on said top surface and then patterning said fifth conductor to merely remove a portion formed at the surface of the remaining seventh insulation film for capacitor definition and thus complete the storage node;

(m) forming a second dielectric film for a capacitor dielectric by exposing a second dielectric film pattern on said top surface and then removing the remaining seventh insulation film for capacitor definition and the second dielectric film formed on the seventh insulation film to complete a capacitor dielectric; and

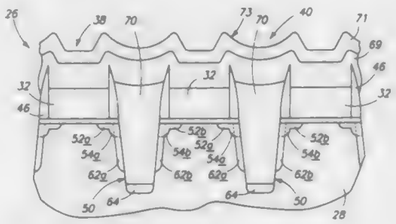
(n) forming a sixth conductor by exposing a sixth conductor pattern on said top surface to complete the plate node.

5,387,534

METHOD OF FORMING AN ARRAY OF NON-VOLATILE SONOS MEMORY CELLS AND ARRAY OF NON-VIOLATILE SONOS MEMORY CELLS

Kirk Prall, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed May 5, 1994, Ser. No. 238,474
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—52 **9 Claims**



1. A method of forming an array of SONOS memory cells; the array including a pair of adjacent non-volatile, single gate SONOS memory cell transistors having electrically isolated adjacent source/drain regions; the method comprising the following steps:

providing a pair of spaced, adjacent SONOS gates atop a silicon substrate within an array area;

etching into the silicon substrate between the adjacent pair of gates to form a trench therebetween, the trench having opposing downwardly elongated sidewalls and a base;

angle doping into the opposing elongated trench sidewalls with a conductivity enhancing impurity of a first conductivity type to form separated source/drain diffusion regions in between and adjacent the respective gates of the pair;

after the angle doping, filling the trench with an effectively electrically insulating material;

depositing and patterning an electrically conductive material outwardly of and in electrical connection with the SONOS gates to form a word line commonly connecting the adjacent pair of SONOS gates;

providing respective contact openings to the separated source/drain diffusion regions; and

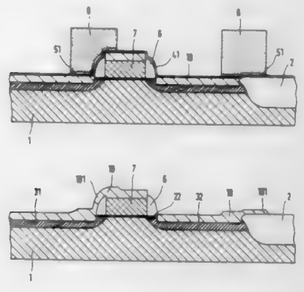
depositing and patterning an electrically conductive material which fills the contact openings to form separate bit lines which separately engage the respective contacts of the pair.

5,387,535

METHOD OF FABRICATING SEMICONDUCTOR DEVICES IN CMOS TECHNOLOGY WITH LOCAL INTERCONNECTS

Klaus Wilmsmeyer, Denzlingen, Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Germany

Filed Feb. 14, 1994, Ser. No. 196,060
Claims priority, application Germany, Jun. 15, 1992, 4219529
Int. Cl.[6] H01L *21/72*
U.S. Cl. 437—57 **10 Claims**



1. A method of fabricating CMOS devices with local interconnects during CMOS processing, characterized by the following steps:

a) sputtering a layer (**4**) of heat-resistant metal;

b) a first annealing step for forming a metal-silicide layer (**10**);

c) selective etching of the unconverted metal layer (**4**);

d) a second annealing step;

e) sputtering another layer (**41**) of heat resistant metal and an overlying layer (**51**) of amorphous alpha silicon;

f) a photolithographic process for patterning the silicon layer (**51**), followed by photoresist stripping, and another first annealing step for forming the metal-silicide layers (**101**);

g) etching away the remainder of the metal layer (**41**); and

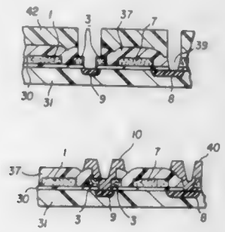
h) another annealing step.

5,387,536

METHOD OF MAKING A LOW CAPACITANCE FLOATING DIFFUSION STRUCTURE FOR A SOLID STATE IMAGE SENSOR

Robert M. Guidash, Rush, and Antonio S. Ciccarelli, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1994, Ser. No. 188,500
Int. Cl.[6] H01L *31/18*
U.S. Cl. 437—3 **5 Claims**



1. A method for producing a low capacitance floating diffusion structure of a solid state image sensor having an output amplifier provided with a gate electrode, comprising the steps of:

(a) growing a gate oxide on a substrate of a given conductivity type;

(b) forming said gate electrode for said output amplifier on said gate oxide and patterning said gate electrode so as to create an opening through it;

(c) introducing through said opening a dopant of a conductivity type opposite to said given conductivity type so as to create a floating diffusion region in said substrate; and

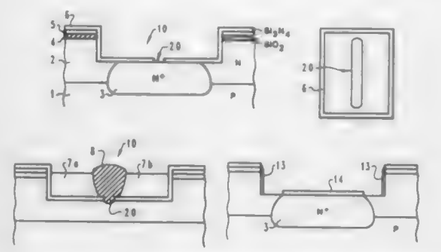
(d) creating an ohmic contact between said floating diffusion region and said gate electrode.

5,387,537

PROCESS FOR MANUFACTURING ISOLATED SEMICONDUCTOR COMPONENTS IN A SEMICONDUCTOR WAFER

Joseph Borel, St. Egreve, France, assignor to Soclete pour l'Etude et al Fabrication de Circuits Integres Speciaux E.F.-C.I.S., Grenoble, France

Continuation of Ser. No. 794,591, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 933,248, Nov. 21, 1986, abandoned, which is a continuation of Ser. No. 621,733, Jun. 18, 1984, Pat. No. 4,679,309. This application Aug. 20, 1992, Ser. No. 933,014
Claims priority, application France, Jun. 21, 1983, 8310243
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—62 **12 Claims**



1. A process for manufacturing isolated semiconductor components on a monocrystalline semiconductor wafer, comprising the following steps:

partially hollowing out or recessing the monocrystalline wafer in zones of chosen parameter defined by means of a first insulating masking layer;

depositing on the wafer a second insulating masking layer;

opening locally a window in said second insulating layer at the bottom of said recessed zones;

depositing polycrystalline silicon in said recessed zones;

epitaxying said polycrystalline silicon using as a germ of crystal the underlying wafer at the location of said windows; and

locally oxidizing said epitaxied polycrystalline zone at the location of said windows.

3. A method for fabricating isolated regions on a monocrystalline semiconductor wafer, comprising the steps of:

removing a selected region in the wafer to a depth below an upper surface of the wafer to form a hollow region having sides and a bottom;

forming an insulating layer on the sides and bottom of the hollow region;

removing a portion of the insulating layer on the bottom of the hollow region to expose a portion of the wafer therethrough;

forming a region of polycrystalline silicon in hollow region, such polycrystalline region substantially filling the hollow region and having an upper surface approximately coplanar with the wafer upper surface;

recrystallizing the polycrystalline silicon to form epitaxial silicon using as a seed the portion of the wafer exposed through the opening in the insulating layer; and

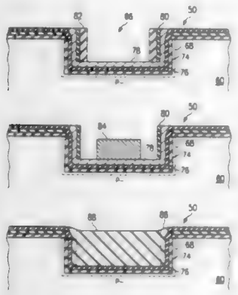
forming a region of insulating material within the epitaxial silicon to cover the opening in the insulating layer.

5,387,538

METHOD OF FABRICATION OF INTEGRATED CIRCUIT ISOLATION STRUCTURE

Mehrdad M. Moslehi, Dallas, Tex., assignor to Texas Instruments, Incorporated, Dallas, Tex.

Filed Sep. 8, 1992, Ser. No. 941,383
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—67 14 Claims



1. A method for forming a semiconductor device isolation structure, comprising the steps of

(a) forming a trench field isolation region in a semiconductor substrate;

(b) forming a buffer layer within said trench field isolation region;

(c) forming a seed region layer within said trench field isolation region and over said buffer layer;

(d) forming a disposable sidewall spacer in said field isolation region;

(e) selectively growing a semiconductor island on said seed region layer, wherein said disposable sidewall spacer limits the lateral dimensions of said semiconductor island;

(f) removing said disposable sidewall spacer to create air gaps laterally adjacent said semiconductor island; and

(g) oxidizing said semiconductor island to form a field oxide region separated from said semiconductor substrate by said buffer layer.

5,387,539

METHOD OF MANUFACTURING TRENCH ISOLATION

Hong S. Yang, Ichonkun, and Sung K. Kwon, Seodaimunku, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Ichonkun, Rep. of Korea

Filed Jun. 18, 1993, Ser. No. 79,673
Claims priority, application Rep. of Korea, Jun. 18, 1992, 1992-10558
Int. Cl.[6] H01L *21/302, 21/76*
U.S. Cl. 437—67 4 Claims

1. A method of manufacturing a trench isolation on a semiconductor substrate, comprising the steps of:

sequentially forming a first oxide layer, a nitride layer and a first photoresist layer on the substrate,

forming narrow trenches and wide trenches to have a depth,

forming a first thermal oxide layer on the side and bottom face of trenches,

forming a second oxide layer to have a depth on the entire structure,

depositing a first polysilicon layer to have a depth on the second oxide layer,

filling in the trenches by oxidizing the first polysilicon layer to form a second thermal oxide layer,

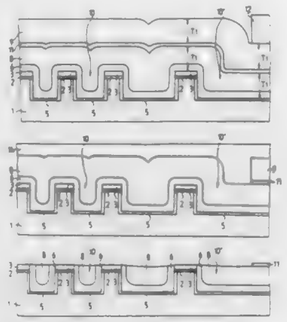
forming a second polysilicon layer on the second thermal oxide to have a depth,

forming a third oxide layer to have a thickness extending from the nitride layer to the second thermal oxide layer, on the entire resulting structure,

coating a second photoresist on the wide trenches,

etching the third oxide layer by using the resulting exposed portion of the second photoresist as etch barrier,

eliminating the second polysilicon layer and the second photoresist,



flatly coating a third photoresist or BPSG on the entire structure,

etching the third photoresist or BPSG,

etching the third oxide layer until the second polysilicon layer and nitride layer are exposed, and

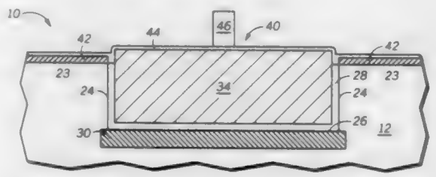
eliminating the second polysilicon layer of the wide trenches and the nitride layer to form trenches including the first thermal oxide layer and the second thermal oxide layer.

5,387,540

METHOD OF FORMING TRENCH ISOLATION STRUCTURE IN AN INTEGRATED CIRCUIT

Stephen S. Poon, and Hsing-Huang Tseng, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 30, 1993, Ser. No. 130,052
Int. Cl.[6] H01L *21/76, 21/302*
U.S. Cl. 437—67 39 Claims



1. A method for forming a trench isolation structure in an integrated circuit comprising the steps of:

providing a semiconductor substrate, the semiconductor substrate having a trench isolation region and an active region formed therein, the trench isolation region abutting the active region to form a trench corner;

forming a first dielectric layer overlying the active region, wherein the first dielectric layer is formed only on the active region and abuts the trench corner;

forming a second dielectric layer overlying the trench corner, wherein the first dielectric layer and the second dielectric layer form a gate dielectric layer, the gate dielectric layer having a thickness of less than 20 nanometers; and

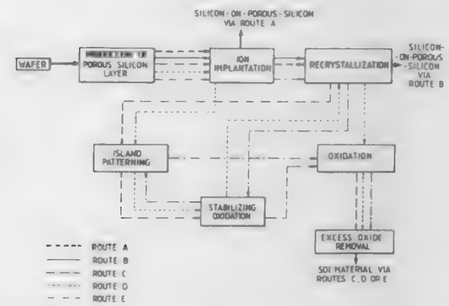
forming a transistor gate electrode overlying the trench corner, wherein the gate dielectric layer lies between the trench corner and the transistor gate electrode.

5,387,541

METHOD OF MAKING SILICON-ON-POROUS-SILICON BY ION IMPLANTATION

Alison M. Hodge, and John M. Keen, both of Worcestershire, England, assignors to The Secretary for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB91/02029, § 371 Date May 11, 1993, § 102(e) Date May 11, 1993, PCT Pub. No. WO92/09104, PCT Pub. Date May 29, 1992
PCT Filed Nov. 18, 1991, Ser. No. 50,401
Claims priority, application United Kingdom, Nov. 20, 1990, 9025236
Int. Cl.[6] H01L *21/302*
U.S. Cl. 437—71 21 Claims



18. A method of producing silicon-on-porous-silicon comprising the steps of:

(i) manufacturing a porous silicon region on a silicon wafer such that the silicon wafer has a porous silicon surface and a non-porous silicon surface; and

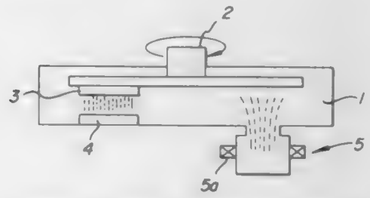
(ii) applying an implantation ion dose to at least a portion of the porous silicon surface to form a layer of amorphous silicon on a remaining region of porous silicon.

5,387,542

POLYCRYSTALLINE SILICON THIN FILM AND LOW TEMPERATURE FABRICATION METHOD THEREOF

Kenji Yamamoto, and Yoshifumi Okamoto, both of Kobe, Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan

PCT No. PCT/JP92/01491, § 371 Date Jul. 12, 1993, § 102(e) Date Jul. 12, 1993, PCT Pub. No. WO93/10555, PCT Pub. Date May 27, 1993
PCT Filed Nov. 16, 1992, Ser. No. 87,759
Claims priority, application Japan, Nov. 14, 1991, 3-326887
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—101 6 Claims



1. A thin film comprising polycrystalline silicon together with a positive amount of hydrogen up to not more than about 5 atomic percent, based on the total film,

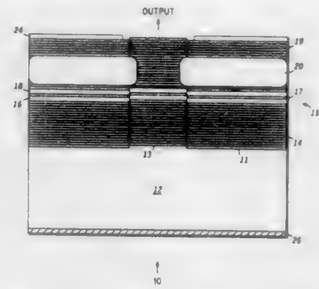
which film has a (110) orientation and has an orientation strength ratio of (220)/(111), as measured by X-ray diffraction, of not less than about 10.

5,387,543

METHOD OF MAKING A VCSEL WITH LATERAL INDEX GUIDE

Donald E. Ackley, Lambertville, N.J., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 20,959, Feb. 22, 1993, Pat. No. 5,337,329.
This application Mar. 28, 1994, Ser. No. 218,402
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—129 6 Claims



1. A method of manufacturing a vertical cavity surface emitting laser having an operating wavelength at which light emission occurs, the method comprising the steps of:

providing a supporting substrate having a surface lying in a first plane;

forming a substantially centrally located offset area in the surface lying in a second plane parallel to the first plane and spaced therefrom;

positioning a first mirror stack on the surface of the substrate so as to overlie the offset area and a portion of the surface surrounding the offset area;

positioning an active region including at least a layer parallel and in overlying abutting engagement with the first mirror stack and substantially coextensive therewith;

positioning a second mirror stack parallel and in overlying abutting engagement with the active region and substantially coextensive therewith; and

further positioning the first mirror stack, the active region and the second mirror stack so that first portions of the active region and the first and second mirror stacks are offset from second surrounding portions of the active region and the first and second mirror stacks by the offset area in the surface of the substrate so as to define a lateral waveguide.

5,387,544

METHOD OF MAKING A SEMICONDUCTOR DEVICE INCLUDING CARBON AS A DOPANT

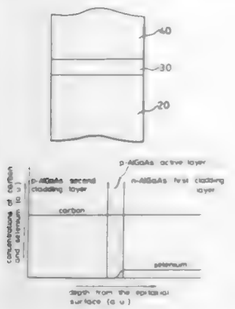
Norio Hayafuji, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 928,746, Aug. 13, 1992, Pat. No. 5,315,133.
This application Mar. 21, 1994, Ser. No. 216,022
Claims priority, application Japan, Jan. 30, 1992, 4-46253
Int. Cl.[6] H01R *21/22*
U.S. Cl. 437—151 4 Claims

1. A method for producing a III–V compound semiconductor device having a p-n junction including depositing a p type region from first and second source gases respectively includ-

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ing group III atoms and group V atoms and a gas including carbon and subsequently depositing an n type region by adding



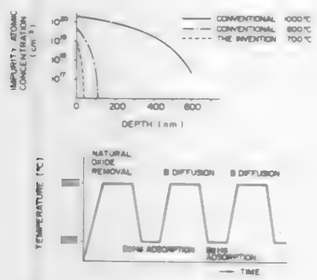
a gas containing an n type dopant to said first and second gases and said gas including carbon.

5,387,545

IMPURITY DIFFUSION METHOD

Yukihiro Kiyota, Kodaira; Tohru Nakamura, Mitaka; Takahiro Onai, Ome, and Taroh Inada, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 12, 1991, Ser. No. 805,969
Claims priority, application Japan, Dec. 20, 1990, 2-404153
Int. Cl.[6] H01L *21/223*
U.S. Cl. 437—165 **16 Claims**



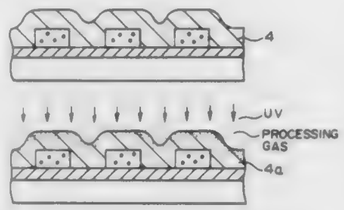
1. An impurity diffusion method for forming a diffusion layer by diffusing an impurity of a first conductivity type into a semiconductor material, which comprises removing natural oxides from the surface of the semiconductor material with an atmosphere gas containing a deoxidizing gas, then passing an impurity gas comprising a compound containing the impurity and hydrogen to the surface of the semiconductor material while passing the atmosphere gas thereto, thereby diffusing the impurity into the surface of the semiconductor material directly from a gas phase where a flow rate or concentration of impurity of the impurity gas is set, so that the impurity atomic concentration of the diffusion layer is controlled by the flow rate or the concentration of impurity of the impurity gas.

5,387,546

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Kazuo Maeda; Noboru Tokumasu, and Yuko Nishimoto, all of Tokyo, Japan, assignors to Canon Sales Co., Inc.; Alcan-Tech Co., Ltd. and Semiconductor Process Laboratory Co., Ltd., all of Japan

Filed Jun. 22, 1992, Ser. No. 902,095
Int. Cl.[6] H01L *21/306*
U.S. Cl. 437—174 **19 Claims**



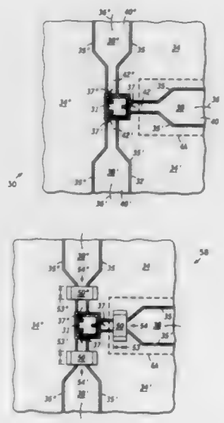
1. A method for forming an insulating film comprising the steps of:
a) forming an insulating film on a substrate by chemical vapor deposition, said insulating film being formed of a material selected from the group consisting of SiO_2, PSG, BSG and BPSG;
b) heating said substrate to an elevated temperature of 200°–240° C.;
(c) thereafter irradiating said insulating film with ultraviolet rays while maintaining said substrate at said elevated temperature to densify said film over its entire thickness.

5,387,547

PROCESS FOR ADJUSTING THE IMPEDANCE OF A MICROWAVE CONDUCTOR USING AN AIR BRIDGE

Richard M. Dougherty, Scottsdale; Ronald F. Kielmeyer, Jr., Tempe; Michael Dydyk, and Lyle A. Fajen, both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 792,568, Nov. 15, 1991, Pat. No. 5,194,833.
This application Oct. 23, 1992, Ser. No. 965,319
Int. Cl.[6] H01L *21/58, 21/60*
U.S. Cl. 437—182 **16 Claims**



16. A method for forming a microwave apparatus comprising:

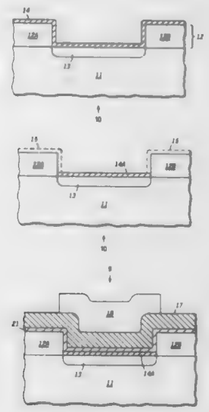
providing a first coplanar microwave conductor region having a first characteristic impedance;
providing a second coplanar microwave conductor region coupled to the first coplanar microwave conductor region and having a second characteristic impedance different than the first characteristic impedance;
providing an airbridge conductor extending over at least part of the second microwave conductor region thereby providing a fourth characteristic impedance for the combination of the airbridge conductor and the second conductor region wherein the magnitude of the fourth characteristic impedance is closer to a third characteristic impedance than the second characteristic impedance, wherein the third characteristic impedance is associated with a terminal of an electronic element, and wherein the airbridge has a length along the second conductor region that is at least about equal to a wavelength of a signal propagating along the second conductor region; and
providing the electronic element so that the terminal thereof is proximate to an end of the second coplanar microwave conductor region and electrically coupled thereto, wherein the terminal of the electronic element presents the third characteristic impedance to the second coplanar microwave conductor region.

5,387,548

METHOD OF FORMING AN ETCHED OHMIC CONTACT

Jaeshin Cho, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 902,244, Jun. 22, 1992, abandoned.
This application Oct. 4, 1993, Ser. No. 131,920
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—184 **18 Claims**



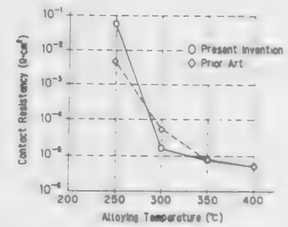
1. A method of forming an etched ohmic contact comprising:
providing a gallium arsenide substrate having a surface;
covering the surface of the substrate with a first dielectric;
forming an opening through the first dielectric thereby exposing a portion of the surface of the substrate;
doping the portion of the surface of the substrate for forming a preohmic area;
covering the first dielectric and the preohmic area with a contact layer consisting essentially of nickel or palladium;
forming the contact layer into an etch resistant area and an etch susceptible area wherein the etch resistant area is formed by alloying the preohmic area with the contact layer that is covering the preohmic area and wherein the etch susceptible area includes the contact layer that is covering the first dielectric;
leaving the etch resistant area covering the preohmic area while removing the etch susceptible area by selectively etching the etch susceptible area;
covering the first dielectric and the etch resistant area with a refractory metal;
etching portions of the refractory metal covering the first dielectric for the purpose of removing the portions of the refractory metal while leaving refractory metal covering the etch resistant area; and
forming an ohmic contact between the etch resistant area and the preohmic area by alloying the etch resistant area and the preohmic area.

5,387,549

PROCESS FOR FABRICATING OHMIC CONTACT

Toshimasa Kobayashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 13, 1994, Ser. No. 242,430
Claims priority, application Japan, May 14, 1993, 5-136708
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—184 **3 Claims**



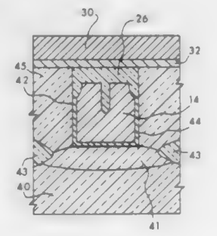
1. A process for forming an ohmic electrode, comprising:
forming a first metallic layer comprising indium or an indium alloy on a compound semiconductor layer;
forming a second metallic layer comprising a gold-germanium alloy on said first metallic layer; and
subjecting said first and second metallic layers thus obtained to alloying treatment at a temperature of 350° C. or lower.

5,387,550

METHOD FOR MAKING A FILLET FOR INTEGRATED CIRCUIT METAL PLUG

David F. Cheffings, and Martin C. Roberts, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 7, 1992, Ser. No. 832,349
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—189 **12 Claims**



9. A method of fabricating a semiconductor device comprising the steps of:
providing a semiconductor wafer having an upper surface;
forming a well having a depth in said upper surface;
depositing a blanket of metal to overfill said well and cover said upper surface, said blanket of metal being more conductive than polysilicon;

etching said blanket of metal to expose said upper surface and provide a metal plug only partially filling said well, wherein said metal plug includes an irregular upper surface;

creating a layer of doped silicon having a lower surface filling irregularities in said irregular surface of said metal plug and having a smooth upper surface planar with said upper surface of said semiconductor wafer, said layer of doped silicon forming a fillet;

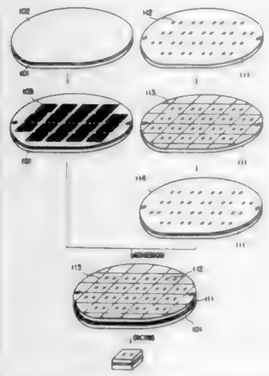
forming a conductive layer making electrical contact with said upper surface of said fillet.

5,387,551

METHOD OF MANUFACTURING FLAT INDUCTANCE ELEMENT

Tetsuhiko Mizoguchi, Yokohama; Atsuhito Sawabe, Yokosuka; Hiromi Fuke, Kawasaki, and Toshiro Sato, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 4, 1993, Ser. No. 26,027
Claims priority, application Japan, Mar. 4, 1992, 4-047217
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—209 **14 Claims**



1. A method of manufacturing a planar inductance element, comprising the steps of:

forming a planar coil;

forming a magnetic film on a substrate; and

adhering said planar coil and said substrate to one another such that said magnetic film on said substrate faces said planar coil.

5,387,552

METHOD OF FABRICATION OF PNP STRUCTURE IN A COMMON SUBSTRATE CONTAINING NPN OR MOS STRUCTURES

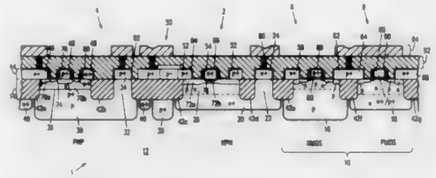
Ali A. Iranmanesh, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 673,629, Mar. 22, 1991, Pat. No. 5,169,794. This application Sep. 14, 1992, Ser. No. 944,593
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—31 **9 Claims**

1. A method of fabricating an integrated circuit device, comprising the steps of:

simultaneously implanting p-type dopants into first, second, and third regions of a substrate, said first, second, and third regions forming at least a portion of a buried layer of a pnp transistor, a well region of a NMOS transistor, and a p-type channel stop;

forming an epitaxial silicon layer over at least said first and said second regions, a first portion of said epitaxial silicon layer forming a base region of said pnp transistor, a second portion of said epitaxial silicon layer forming a channel region of a PMOS transistor, a third portion of said epitaxial layer forming a channel region of said NMOS transis-



tor, and a fourth portion of said epitaxial layer forming a sink region of said pnp transistor;

forming an emitter region in contact with said base region of said pnp transistor; and

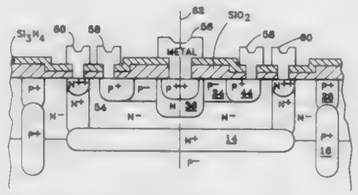
forming source and drain regions in contact with channel regions of said NMOS and PMOS transistor.

5,387,553

METHOD FOR FORMING A LATERAL BIPOLAR TRANSISTOR WITH DUAL COLLECTOR, CIRCULAR SYMMETRY AND COMPOSITE STRUCTURE

Tor W. Moksvold, Poughkeepsie, N.Y.; John Altieri; Ching-Tzuen Tarn, both of San Jose, Calif., and Colleen M. Snavely, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 856,433, Mar. 24, 1992. This application Jul. 15, 1994, Ser. No. 276,222
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—32 **6 Claims**



1. A method of making a lateral bipolar transistor comprising:

providing a substrate including a semiconductor portion of a first conductivity type;

growing an epitaxial semiconductor layer of a second conductivity type on said substrate, said epitaxial layer having an outer surface;

forming a mask having an opening therein on said epitaxial layer;

doping said epitaxial layer with a first dopant material, of said first conductivity type, through said opening to form a first doped region, of said first conductivity type;

forming an oxide layer on said epitaxial layer;

forming a circular opening in said oxide layer located substantially over the center of said first doped region;

doping said first doped region with a second dopant material, of said second conductivity type, through said circular opening to form a second doped region, of said second conductivity type, within said first doped region;

doping said second doped region with said first dopant material through said circular opening to form a third doped region, of said first conductivity type, within said second doped region;

forming an annular opening in said oxide layer concentric with said second and third doped regions and thereby exposing the outer surface of said first doped region; and

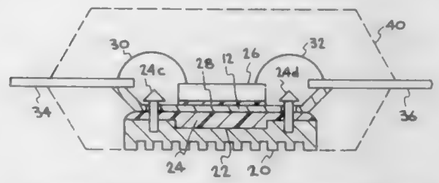
doping said first doped region with said first dopant material through said annular opening to form a fourth doped region, of said first conductivity type, within said first doped region, concentric with and spaced from said second doped region and having a dopant concentration substantially higher than the dopant concentration of said first doped region.

5,387,554

APPARATUS AND METHOD FOR THERMALLY COUPLING A HEAT SINK TO A LEAD FRAME

Louis H. Liang, Los Altos, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Division of Ser. No. 943,272, Sep. 10, 1992, abandoned. This application Jul. 23, 1993, Ser. No. 97,243
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—209 **5 Claims**



1. A method for cooling an integrated-circuit die which is covered and in contact with molded-plastic material forming a molded-plastic package body, comprising the steps of:

attaching an integrated-circuit die to one side of a central die-attach paddle of a lead frame;

resiliently fixing a heat sink member to the other side of said die-attach paddle with a layer of viscous thermal grease disposed between said heat sink member and said other side of said die-attach paddle;

coarsely positioning said heat sink with respect to said other side of said die-attach paddle, wherein said step of coarsely positioning said heat sink with respect to said other side of said die-attach paddle includes the steps of:

fixing one or more studs to said heat sink; and

loosely engaging said one or more studs in respective one or more holes which are formed in said lead frame;

forming a molded-plastic package body of molded-plastic material which covers and which is in contact with said integrated circuit die attached to said central die-attach paddle, wherein said molded-plastic material substantially fills the entire available inner volume of said package body so that the molded-plastic material directly contacts the integrated circuit die with substantially no voids within the inner volume of said package body.

5,387,555

BONDED WAFER PROCESSING WITH METAL SILICIDATION

Jack H. Linn, Melbourne; Robert K. Lowry, Melbourne Beach; George V. Rouse, Indiatlantic, all of Fla., and James F. Buller, Austin, Tex., assignors to Harris Corporation, Melbourne, Fla.

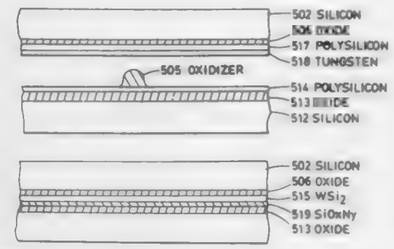
Filed Sep. 3, 1992, Ser. No. 939,786
Int. Cl.[6] H01L *21/30, 21/46*
U.S. Cl. 437—225 **8 Claims**

1. A method of wafer bonding to produce a silicon-on-insulator structure, comprising the steps of:

(a) providing a device wafer and a handle wafer;

(b) joining a surface of said device wafer to a surface of said device wafer with silicide precursors therebetween;

(c) providing a liquid oxidizer on one of said surfaces; and



(d) heating said wafers in the presence of said liquid oxidizer wherein said wafers bond together through silicide formation.

5,387,556

ETCHING ALUMINUM AND ITS ALLOYS USING HCl, Cl-CONTAINING ETCHANT AND N_2

Diana M. Xiaobing, San Jose, and Charles S. Rhoades, Los Gatos, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Feb. 24, 1993, Ser. No. 21,831
Int. Cl.[6] H01L *21/283*
U.S. Cl. 437—228 **48 Claims**

41. A process for removing material containing aluminum from a silicon wafer comprising the steps of:

(a) placing a silicon wafer into a chamber, the silicon wafer having an aluminum-containing layer thereon, a portion of the aluminum-containing layer having resist thereon;

(b) introducing a process gas consisting essentially of HCl, Cl_2, and N_2 into the chamber at a volumetric flow rate less than about 500 sccm, the volumetric flow ratio of Cl_2 to HCl being from about 10:1 to about 0.1:1, and the volumetric flow ratio of Cl_2 to N_2 being from about 10:1 to about 0.1:1;

(c) generating a plasma in the chamber to generate from the process gas an etch gas that etches aluminum on the substrate to create a volatile aluminum-containing compound, the etch gas etching aluminum in preference to the resist material; and

(d) removing the volatile aluminum-containing compound from the chamber,

wherein the process gas contains sufficient N_2 that substantially no aluminum below the resist is etched and substantially only anisotropic etching of the aluminum occurs.

5,387,557

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICES USING HEAT-TREATMENT VERTICAL REACTOR WITH TEMPERATURE ZONES

Mikio Takagi, Kanagawa, Japan, assignor to F. T. L. Co., Ltd., Kawasaki, Japan

Filed Oct. 22, 1992, Ser. No. 964,609
Claims priority, application Japan, Oct. 23, 1991, 3-302718; Feb. 20, 1992, 4-069319; Sep. 7, 1992, 4-264183
Int. Cl.[6] H01L *21/469*
U.S. Cl. 437—247 **16 Claims**

1. A method for manufacturing semiconductor devices comprising steps of:

introducing a wafer or wafers into a vertical thermal reactor from its lower end;

heating by an electric heating means a first region of the vertical thermal reactor to a first temperature, said first region extending over a first depth;

heating by another electric heating means a second region of

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the vertical thermal reactor, said second region extending over a second depth and having a second temperature higher than the first temperature;

setting a temperature in an intermediate region between said first region and said second region;

maintaining said first temperature, said second temperature and said temperature gradient simultaneously in the vertical reactor in the steps set forth below;

subjecting the wafer or wafers to a first heat treatment for manufacturing the semiconductor devices on said semiconductor wafer or wafers, in said first region of the vertical thermal reactor at the first temperature;



moving the wafer or wafers upwards from the first region to the second region through said intermediate region having said temperature gradient for manufacturing the semiconductor devices on said semiconductor wafer or wafers;

subjecting the wafer or wafers to a second heat treatment in the second region of the vertical thermal reactor at the second temperature; and,

reverting the wafer or wafers to the first region having the first temperature through said intermediate region; and

adjusting a staying time of the wafer or wafers in the first region, which wafer or wafers reverted to the first region, to a time which is at least so long not to cause slip lines on the wafer or wafers.

5,387,558

COLORED GLASS-CERAMIC ARTICLES

David G. Groesman, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed May 2, 1994, Ser. No. 236,088
Int. Cl.[6] C03C *10/16*
U.S. Cl. 501—3 12 Claims

1. A glass-ceramic article having a predominant crystal phase of tetrasilicic fluormica and which exhibits a yellow coloration in visible light and fluoresces with a yellow coloration while being exposed to ultraviolet radiation, said article containing a color package comprising by weight on the oxide basis of 0.05–0.5% V_2O_5, 0.25–5% CeO_2, and 0.1–1% Tb_2O_3 which provides the yellow coloration.

5,387,559

RESISTIVE PASTE

Keisuke Nagata, and Hiroji Tani, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed May 28, 1993, Ser. No. 68,959
Claims priority, application Japan, May 28, 1992, 4-136888
Int. Cl.[6] H01C *7/00*
U.S. Cl. 501—20 14 Claims

1. In a resistive paste comprising (a) a mixture of a resistive material having a composition of $Nb_xLa_{1-x}B_{6-4x}$, wherein x is from 0.1 to 0.9 mol, and non-reducing glass frit and (b) an organic vehicle, the improvement which comprises the presence of (c) at least one additive selected from the group consisting of Li_2O, MgO, CaO, TiO_2, MnO_2, CuO, SrO and BaO in an amount of from 1 to 10% by weight based on said mixture (a), whereby the temperature coefficient of resistivity is shifted in the minus direction by the presence of additive (c).

5,387,560

GLASSES FOR SUBSTRATES INTENDED FOR ELECTRONICS AND RESULTANT PRODUCTS

Christine Ponthieu; Denis Petitmaire, both of Paris; Didier Jousse, Saint-Leu La Foret, and Pascal Fournier, Senlis, all of France, assignors to Saint Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 908,281, Jul. 2, 1992, abandoned. This application Mar. 17, 1994, Ser. No. 210,091
Claims priority, application France, Jul. 2, 1991, 91 08201
Int. Cl.[6] C03C *3/091, 4/16*
U.S. Cl. 501—66 7 Claims

1. Glass substrate for use in the production of electronic equipment, characterized in that the substrate consists essentially of the following constituents within limits expressed below as cation percentages:

$SiO_2 + B_2O_3$	about 57 to 67%
with B_2O_3	about 5 to 20%
Al_2O_3	about 14 to 18%
RO (CaO + MgO + BaO + SrO)	about 18 to 25%
where CaO/RO ≧ 0.7 and CaO ≧ 18%	
$Na_2O + K_2O$	about 0 to 0.5%
TiO_2	about 0 to 2.5%
Fe_2O_3	about ≦0.5%
F_2	about 0 to 3%

where F_2 is a cation,

wherein the glass substrate has a strain point greater than 630° C. and a coefficient of thermal expansion lower than about 55×10^{-7}/° C.

5,387,561

TITANIUM CARBIDE/NITRIDE-ZIRCONIUM OXIDE-BASED HIGH-TOUGHNESS CERAMICS

Tadahiko Watanabe, Tosu, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,741
Claims priority, application Japan, Oct. 12, 1992, 4-300345
Int. Cl.[6] C04B *35/56, 35/58*
U.S. Cl. 501—87 6 Claims

2. A titanium carbide/nitride-zirconium oxide-based high-toughness ceramic prepared by sintering a powdered mixture consisting of 1 to 10% by weight of the total weight of the mixture of either or both of titanium and titanium oxide added in admixture to basic components consisting of 90 to 5% by weight of titanium carbide and titanium nitride containing carbon and nitrogen in the mole ratios of 1:9 to 9:1 and 10 to 95% by weight of monoclinic zirconia.

5,387,562

SILICON SLIP-CASTING COMPOSITION, AND PROCESS FOR THE PREPARATION THEREOF

Reinhard Dillinger, and Jürgen Heinrich, both of Selb, Germany, assignors to Hoechst CeramTec Aktiengesellschaft, Selb, Germany

Filed Aug. 26, 1992, Ser. No. 935,196
Claims priority, application Germany, Aug. 28, 1991, 4128496
Int. Cl.[6] C04B *35/58*
U.S. Cl. 501—97 17 Claims

1. A silicon-containing slip-casting composition comprising from 25 to 50% by weight of an aqueous phase and a pulverulent solid component which comprises silicon and inorganic sintering aids, where the aqueous phase has a pH in the range from 8 to 9.5, wherein the solid component comprises from 65 to 88% by weight of silicon, from 5 to 24% by weight of Y_2O_3, from 2 to 9.6% by weight Al_2O_3 and from 1 to 5% by weight SiO_2 on the surface of the Si particles, and wherein the mean particle size of the solid component is at most 5 μm .

5,387,563

Patent Not Issued For This Number

5,387,564

MOLDING AND CALCINING OF ZEOLITE POWDER

Tatsuro Takeuchi, Tsukuba; Motoya Mouri, Tsuchiura; Saji Okabayashi, and Shoichi Miyamura, both of Kitakanbara, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka and Mizusawa Industrial Chemicals, Ltd., Tokyo, both of Japan

PCT No. PCT/JP91/01226, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/12104, PCT Pub. Date Jul. 23, 1992
PCT Filed Sep. 13, 1991, Ser. No. 917,115
Claims priority, application Japan, Jan. 7, 1991, 3-000272
Int. Cl.[6] B01J *29/04*
U.S. Cl. 502—62 25 Claims

1. A moldable composition of zeolite which comprises:

(a) zeolite powder;

(b) a β-1,3-glucan in an amount of 0.1–20 parts by weight in relation to 100 parts by weight of the zeolite powder; and

(c) a 1:1 layer clay mineral and a 2:1 layer clay mineral in a total amount of 5–50 parts by weight in relation to 100 parts by weight of the zeolite powder.

5,387,565

CATALYTIC ALLOY MATERIAL AND CATALYTIC DEVICE CONTAINING THE SAME

Jack H. Taylor, Jr., 6250 Valley Wood Dr., Reno, Nev. 89523

Continuation-in-part of Ser. No. 783,877, Oct. 29, 1991, Pat. No. 5,288,674. This application Feb. 17, 1994, Ser. No. 197,979
Int. Cl.[6] B01J *21/16, 23/00*
U.S. Cl. 502—63 24 Claims

1. A catalytic alloy material comprising a mixture of a mineral component and a metal, said mineral component comprising plagioclase feldspar in an amount greater than 50 wt % based on the weight of the mineral component, said feldspar mainly comprising albite and anorthite minerals.

3. The catalytic alloy material as claimed in claim 1, wherein said metal is selected from the group consisting of copper, iron, steel, stainless steel, brass, titanium, cast iron, aluminum and magnesium.

5,387,566

BINDING AND SHAPING OF CRACKING CATALYST FINES

Randall A. Porter; Jesse R. Harris, and Donald H. Kubicek, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 24, 1994, Ser. No. 217,473
Int. Cl.[6] B01J *29/06, 37/00*
U.S. Cl. 502—64 20 Claims

1. A process for making a shaped composition from catalytic cracking catalyst fines which comprises the steps of:

(a) contacting zeolite-containing catalytic cracking catalyst particles having an average particle size of about 10 microns to about 100 microns with an aqueous acid solution comprising at least one acid selected from the group consisting of sulfuric acid, nitric acid, hydrochloric acid, and carboxylic acids containing 1–8 carbon atoms per molecule for a time period of at least about 10 minutes,

(b) substantially separating said aqueous acid solution from the acid-treated catalyst particles obtained in step (a),

(c) substantially drying the separated, acid-treated catalyst particles obtained in step (b),

(d) mixing the substantially dried, acid-treated catalyst particles obtained in step (c) with calcium aluminate, at least one sodium silicate, phosphoric acid and water so as to prepare a shapable mixture,

(e) shaping the mixture obtained in step (d),

(f) substantially drying the shaped particles obtained in step (e), and

(g) calcining the substantially dried, shaped particles obtained in step (f) at a temperature of about 500° C. to about 900° C. for a time period of at least about 0.5 hour.

17. A shaped composition obtained by the process of claim 1.

5,387,567

CATALYST COMPONENTS FOR POLYMERIZATION OF OLEFINS

Yoshio Tajima; Naoki Kataoka; Yosuke Numao; Takashi Seki, and Kazuo Matsuura, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,803
Claims priority, application Japan, Jun. 27, 1991, 3-183271; Sep. 27, 1991, 3-276672
Int. Cl.[6] B01J *31/00*
U.S. Cl. 502—103 9 Claims

1. A catalyst component for use in the polymerization of olefinic hydrocarbons, said catalyst component comprising a compound (A) of the formula

$$Me^1(OR^1)_pR^2_qX^1_{4-p-q}$$

wherein R^1 and R^2 each are hydrocarbon moieties of 1–24 carbon atoms; X^1 is a halogen atom; Me^1 is Ti, Zr or Hf; $0\leqq p\leqq 4$; $0\leqq q\leqq 4$; and $0\leqq p+q\leqq 4$; and an organosilicon compound (B) of the formula

$$(Cp)_LSiR_{4-L}$$

wherein Cp is a cyclic hydrocarbon having two or more conjugated double bonds and a total carbon number of 4–24; R is a hydrocarbon moiety of 1–24 carbon atoms; and $1\leqq L\leqq 4$.

5,387,568

PREPARATION OF METALLOCENE CATALYSTS FOR POLYMERIZATION OF OLEFINS

John A. Ewen, Houston, Tex., and Michael J. Elder, Raleigh, N.C., assignors to Fina Technology, Inc., Dallas, Tex.

Continuation of Ser. No. 791,803, Nov. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 419,046, Oct. 30, 1989, abandoned. This application Apr. 13, 1992, Ser. No. 867,572
Int. Cl.[6] B01J *31/00*
U.S. Cl. 502—104 18 Claims

1. A process for making a catalyst for polymerization of olefins comprising:

a) mixing an ionizing ionic compound with a neutral metallocene; and

b) allowing contact between the ionizing ionic compound and the neutral metallocene such that the metallocene is ionized by the ionizing ionic compound and an ion pair is formed in which the metallocene cation acts as a catalyst; wherein the neutral metallocene is of the general formula:

$$R''_n(CpR_4)(CpR'_4)MeQ_p$$

wherein (CpR_4) and (CpR'_4) are a cyclopentadienyl or a substituted cyclopentadienyl group, (CpR_4) and (CpR'_4) being the same or different, R and R' is hydrogen or a hydrocarbyl radical from 1–20 carbon atoms, R being the same or different, R' being the same or different, R'' is a structural bridge between (CpR_4) and (CpR'_4) imparting stereorigidity to the metallocene, n being 0 or 1, Me is a Group IIIB, IVB, VB or VIB metal, Q is a hydride, a halogen, an amide or a hydrocarbyl radical, each Q being the same or different, except only one Q can be hydride and p is the valence of Me minus 2;

wherein the ionizing ionic compound does not contain an active proton and contains a carbonium, oxonium or sulfonium cation; and

wherein the anion of the ionizing ionic compound is not coordinated or is only loosely coordinated to the metallocene cation and is chemically unreactive with the metallocene cation.

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CATALYTIC SOLUTION SUITABLE FOR CONVERTING COMBUSTION EMISSIONS

Eugene Shustorovich, Pittsford, N.Y.; Richard Montano, Vienna, Va.; Aleksandr Bragin, Moscow; Veniamin Kalner, Moscow, U.S.S.R.; Konstantin Solntsev, Moscow, U.S.S.R.; Nikolai Moiseev, Moscow, U.S.S.R., and Yuri Buslaev, Moscow, U.S.S.R., assignors to Blue Planet Technologies Co., L.P., New York, N.Y.

Filed Feb. 25, 1992, Ser. No. 841,356
Int. Cl.[6] B01J *31/28*
U.S. Cl. 502—162 15 Claims

1. A catalyst solution for converting combustion emissions comprising a compound of platinum, a compound of rhenium, a compound of rhodium, and a solvent selected from the group consisting of diglyme, triglyme, tetraglyme, an alkyl pyrrolidone, and an alkoxy ethyl ether, wherein no additional chloride-containing compounds are added to the solution.

5,387,570

CATALYSTS FOR ISO-ALCOHOL SYNTHESIS FROM CO + H_2

Carlos R. Apesteguia, Santa Fe, Argentina; Stuart L. Soled, and Sabato Miseo, both of Pittstown, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 7, 1993, Ser. No. 60,172
Int. Cl.[6] B01J *21/10, 23/02, 23/10, 23/72*
U.S. Cl. 502—304 10 Claims

1. A catalyst composition consisting essentially of a solid solution or a coprecipitated mixture of a first oxide and a second oxide, wherein said first oxide is selected from the group consisting of yttria, rare earth oxides and mixtures thereof, and wherein said second oxide is a Group IIA oxide and a Group IB metal.

5,387,571

THERMAL DYE TRANSFER RECEIVING ELEMENT WITH POLYESTER DYE IRMAGE-RECEIVING LAYER

Robert C. Daly, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 3, 1991, Ser. No. 801,223
Int. Cl.[6] B41M *5/035, 5/38*
U.S. Cl. 503—227 21 Claims

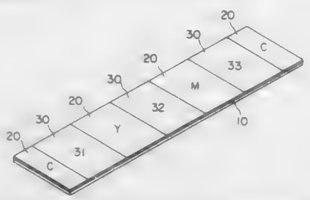
12. In a process of forming a dye transfer image comprising imagewise-heating a dye-donor element comprising a support having thereon a dye layer and transferring a dye image to a dye-receiving element to form said dye transfer image, said dye-receiving element comprising a support having thereon a dye image-receiving layer, the improvement wherein the dye image-receiving layer or an overcoat layer provided thereon comprises a polyester comprising recurring dibasic acid derived units and diol derived units, at least 50 mole % of the dibasic acid derived units comprising dicarboxylic acid derived units containing an alicyclic ring within two carbon atoms of each carboxyl group of the corresponding dicarboxylic acid, and at least 30 mole % of the diol derived units containing an aromatic ring not immediately adjacent to each hydroxyl group of the corresponding diol or an alicyclic ring.

5,387,572

HEAT TRANSFER RECORDING MEDIUM AND HEAT TRANSFER RECORDING METHOD

Hideo Fujimura, and Masanori Torii, both of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

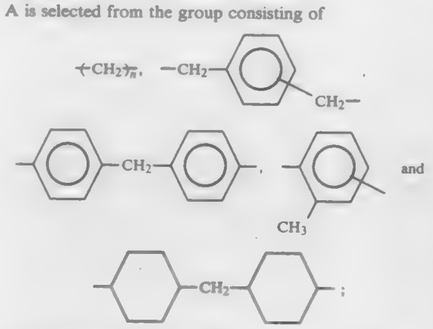
Division of Ser. No. 715,091, Jun. 10, 1991, Pat. No. 5,258,352.
This application Jul. 29, 1993, Ser. No. 98,713
Claims priority, application Japan, Jun. 9, 1990, 2-150574; Aug. 24, 1990, 2-221181; Aug. 24, 1990, 2-221182; Aug. 24, 1990, 2-221183; Aug. 24, 1990, 2-221184; Aug. 24, 1990, 2-221185; Mar. 26, 1991, 3-84426; Mar. 26, 1991, 3-84427; Mar. 26, 1991, 3-84428; Mar. 26, 1991, 3-84429; Mar. 26, 1991, 3-84430
Int. Cl.[6] B41M *5/035, 5/38*
U.S. Cl. 503—227 7 Claims



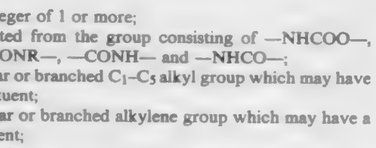
4. A heat transfer recording method comprising the steps of:
superposing a heat transfer sheet which comprises a substrate film and a dye layer formed thereon comprising a dye and a binder on a heat transfer image-receiving sheet which comprises a substrate film and dye-receiving layer formed thereon; and
applying thermal energy imagewise from the back surface of heat transfer recording sheet to form an image on the dye-receiving layer, before the formation of the image, a dye-transfer promoting agent comprising a bis compound having the following formula (I):

$$A\text{-}[B\text{-}X\text{-}Y\text{-}Z]_2 \qquad (I)$$

wherein
A is selected from the group consisting of



and



n is an integer of 1 or more;
B is selected from the group consisting of —NHCOO—, —NHCONR—, —CONH— and —NHCO—;
R is a linear or branched C_1–C_5 alkyl group which may have a substituent;
X is a linear or branched alkylene group which may have a substituent;
Y is a single bond, or a bonding group selected from the group consisting of —O—, —S—, —COO—, —OOC—, —NHCOO—, —OOCHN—, —CONH—, —NHCO—, —SO_2NH—, —NHSO_2—, —SO_2— and —O_2S—; and
Z is a hydrogen atom, a linear or branched alkyl group which may have a substituent or a phenyl group, applied to the dye layer and/or the dye-receiving layer, the dye-transfer promoting agent being in a crystalline state at room temperature and fused by thermal energy which is applied when heat transfer recording is conducted.

5,387,573

THERMAL DYE TRANSFER DYE-DONOR ELEMENT WITH TRANSFERABLE PROTECTION OVERCOAT CONTAINING PARTICLES

Mary Catherine S. Oldfield, Rochester, and Kin K. Lum, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 7, 1993, Ser. No. 163,105
Int. Cl.[6] B41M *5/035, 5/38*
U.S. Cl. 503—227 20 Claims

8. A process of forming a protection layer on top of a thermal dye transfer image comprising:
(a) imagewise-heating a dye-donor element comprising a support having thereon at least one dye layer area comprising an image dye in a binder, said dye-donor being in contact with a dye-receiving element, thereby transferring a dye image to said dye-receiving element to form said dye transfer image; and
(b) thermally transferring a protection layer less than about 1 μm thick on top of said transferred dye image, said protection layer being applied from another area of said dye-donor element, said transferable protection layer area being approximately equal in size to said dye layer area, said transferable protection layer containing particles in an amount of up to about 75% of the amount of said transferable protection layer in order to reduce iridescence of the protection layer located over the transferred image.

5,387,574

RECEIVING ELEMENT FOR THERMAL DYE TRANSFER

Bruce C. Campbell, and William A. Mruk, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 10, 1994, Ser. No. 241,313
Int. Cl.[6] B41M *5/035, 5/38*
U.S. Cl. 503—227 20 Claims

16. A process of forming a dye transfer image comprising:
a) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a binder, and
b) transferring a dye image to a dye-receiving element comprising a base having thereon a dye image-receiving layer to form said dye transfer image,
wherein the dye-receiving element base comprises a composite film laminated to a support, the dye image-receiving layer being on the composite film side of the base, the composite film comprising a microvoided thermoplastic core layer and at least one substantially void-free thermoplastic surface layer, the thermoplastic surface layer being adjacent to the dye image-receiving layer, and wherein the thermoplastic surface layer contains titanium dioxide in its anatase form and an optical brightener.

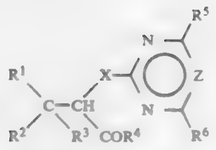
5,387,575

PYRIMIDINE DERIVATIVES, PROCESS FOR PREPARING THE SAME AND HERBICIDE USING THE SAME

Katsumasa Harada; Takaaki Abe; Yuji Akiyoshi; Akio Matsushita; Mikio Kojima; Ikuo Shiraishi; Kaoru Yamamoto; Takashi Hayama, and Shohei Fukuda, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Jun. 5, 1992, Ser. No. 894,557
Claims priority, application Japan, Jun. 7, 1991, 3-232594; Jun. 7, 1991, 3-232595; Jun. 7, 1991, 3-232596; Jun. 25, 1991, 3-248533
Int. Cl.[6] C07D *239/52;* A01N *73/54*
U.S. Cl. 504—243 10 Claims

1. A pyrimidine compound represented by the following formula (I):



(I)

wherein R^1 represents cyano group, a halogen atom, hydroxy group or —O—R^7 where R^7 represents a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a halo-lower alkyl group or a cyano-lower alkyl group; R^2 represents hydrogen atom or a lower alkyl group; R^3 represents a lower alkyl group; R^4 represents a 1-imidazolyl group or —NHSO_2—R^8 where R^8 represents a lower alkyl group, a phenyl group, or a phenyl group substituted with a substituent selected from the group consisting of a straight or branched alkyl group having 1 to 6 carbon atoms and a halogen atom; R^5 represents a lower alkoxy group; R^6 represents a lower alkoxy group or a lower alkyl group; X represents a sulfur atom; and Z represents —CH═ group.

5,387,576

TREATMENT OF HYPERPROLIFERATIVE EPIDERMAL CONDITIONS WITH ACTIVIN A

Eduardo Mitrani, Jerusalem, Israel, assignor to Yissum Research Development Co., Jerusalem, Israel

Filed Oct. 27, 1992, Ser. No. 967,262
Claims priority, application Israel, Oct. 27, 1991, 99867
Int. Cl.[6] C07K *15/00;* A01N *37/00*
U.S. Cl. 514—2 6 Claims

1. A method of treating a hyperproliferative epidermal condition comprising applying to the affected skin area a pharmaceutical composition comprising as active ingredient a biologically effective amount of activin A in a pharmaceutically acceptable carrier.

5,387,577

Patent Not Issued For This Number

5,387,578

NEW LINKER FOR BIOACTIVE AGENTS

Francesco Angelucci, Milan; Laura Bersani, Basiglio; Michele Caruso, Milan; Marina Ripamonti, Milan; Daniela Ruggieri, Milan, and Antonino Suarato, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

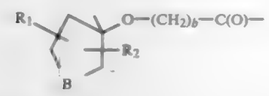
PCT No. PCT/EP91/01449, § 371 Date Apr. 3, 1992, § 102(e) Date Apr. 3, 1992, PCT Pub. No. WO92/02255, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 1, 1991, Ser. No. 842,171
Claims priority, application United Kingdom, Aug. 3, 1990, 9017024
Int. Cl.[6] A61K *37/00;* C07K *17/06;* C07H *15/252, 19/06*
U.S. Cl. 514—21 29 Claims

1. A conjugate of general formula 1:

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$$(A—O—W\text{-}Z)_a—T \qquad 1$$

wherein the moiety A—O— is the residue of drug of formula A—O—H in which —O—H is a primary or secondary hydroxyl group; a is an integer of from 1 to 5; W is a group of general formula 2:



2

wherein

b is an integer of from 1 to 4, Bis—$(CH_2)_2$— and R_1 and R_2 are each independently selected from the group consisting of hydrogen, a halogen selected from the group consisting of chlorine, bromine and iodine, a C_1–C_4 alkyl group, phenyl or phenyl substituted by a halogen selected from the group consisting of chlorine, bromine and iodine, or by a C_1–C_4 alkyl group;

Z is a spacer group selected from the group consisting of:

(i) —NH—;

(ii) —NH—$(CH_2)_c$—S—S— wherein c is an integer of from 1 to 4;

(iii) —NH—$(C)_d$—N=CH— wherein:

(a) d is 0

(b) d is 1 and (C) represents —NH—CO—$(CH_2)_e$—CO—NH— in which e is an integer of from 2 to 4;

(c) d is an integer of from 1 to 4 and (C) represents $(CH_2)_f$—O—$(CH_2)_f$— in which f is 1 or 2, or

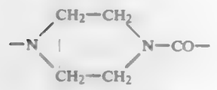
(d) d is an integer of from 2 to 6 and (C) is CH_2;

(iv) —NH—$(C)_d$—NH—CO— wherein (C) and d are as defined above;

(v) —(D)—NH— wherein (D) represents —NH—$(CH_2)_g$—CO— in which g is an integer of from 2 to 6;

(vi) —(E)—CO— wherein (E) represents —NH—$(CH_2)_g$—NH— in which g is an integer of from 2 to 6 and

(vii) the piperazinylcarbonyl moiety of the formula



and T is a carrier moiety.

5,387,579

USE OF α-TOCOPHEROL PHOSPHATE OR A DERIVATIVE THEREOF FOR PREPARING COSMETIC, DERMATOLOGICAL OR PHARMACEUTICAL COMPOSITIONS, AND COMPOSITIONS THEREBY OBTAINED

Alain Meybeck; Frederic Bonte, both of Courbevoie, and Christian Marechal, Paris, all of France, assignors to Lvmh Recherche, Colombos Cedex, France

PCT No. PCT/FR91/00055, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO91/11189, PCT Pub. Date Aug. 8, 1989

PCT Filed Jan. 30, 1991, Ser. No. 917,142

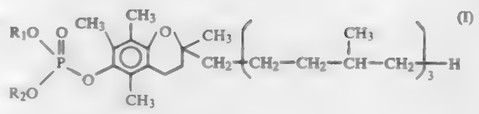
Claims priority, application France, Jan. 31, 1990, 90 01143

Int. Cl.[6] A61K *31/665, 31/355, 37/22, 35/78*

U.S. Cl. 514—100 41 Claims

1. A cosmetic or pharmaceutical composition, comprising as active ingredient an efficient amount of a tocopherol compound selected from the group consisting of:

a) a alpha-tocopherol compound of the following general formula (I)

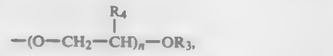


(I)

wherein:

R1 represents an alkyl radical having from 1 to 4 carbon atoms, or a alpha-tocopheryl radical,

R2 represents a hydrogen atom, an alkyl radical having from 1 to 4 carbon atoms, or R2O represents an oxyethylenated chain, of formula



wherein R3 and R4 represents independently a hydrogen atom or a methyl radical, and n represents an integer number higher or equal to 1,

b) a DL form of said tocopherol compound of formula (I),

c) a D form of said tocopherol compound of formula (I),

d) a cosmetically or pharmaceutically acceptable ester of said tocopherol compound of formula (I)

e) a cosmetically or pharmaceutically acceptable salt of said tocopherol compound of formula (I), said tocopherol compound being optionally incorporated in a cosmetically or pharmaceutically acceptable excipient.

5,387,580

BIOCIDAL AZOPHENYL COMPOSITIONS

William W. Wood; Thomas W. Naisby, both of Sittingbourne, and Andrew C. G. Gray, London, all of England, assignors to Shell Research Limited, United Kingdom

Continuation of Ser. No. 561,128, Aug. 1, 1990, abandoned. This application Sep. 2, 1993, Ser. No. 115,326

Claims priority, application United Kingdom, Aug. 4, 1989, 8917852

Int. Cl.[6] A01N *33/26*

U.S. Cl. 514—150 6 Claims

1. A composition for combating phytopathogenic fungi which comprises a carrier and, as active ingredient, a compound of the formula

$$R—N=NX \qquad (I)$$

or an N-oxide thereof, wherein R represents a substituted phenyl group, at least one substituent thereof being a group of formula —NR^1COR^2 where R^1 represents a hydrogen atom or an alkyl group, and R^2 represents a hydrogen atom or an optionally substituted alkyl, alkoxy, alkenyl, alkenyloxy, phenyl or phenoxy group; and X represents a cyano group, a group —COOH or a salt, ester or amido derivative thereof.

5,387,581

PHARMACEUTICAL COMPOSITION OF ASPIRIN AND A BENZOTHIAZEPINE FOR INHIBITING PLATELET AGGREGATION

Akio Odawara, Tokyo; Yasuhiko Sasaki, Urawa; Sakae Murata, Kawagoe, and Hiroshi Narita, Urawa, all of Japan, assignors to Tanabe Seiyaku Co. Ltd., Osaka, Japan

Continuation of Ser. No. 748,965, Aug. 23, 1991, abandoned. This application Mar. 23, 1993, Ser. No. 35,895

Claims priority, application Japan, Sep. 17, 1990, 2-243728; Sep. 17, 1990, 2-243729

Int. Cl.[6] A61K *31/60, 31/55, 31/52*

U.S. Cl. 514—165 6 Claims

1. A pharmaceutical composition for inhibiting platelet aggregation, which comprises acetylsalicylic acid and (−)-cis-2-(4-methylphenyl)-3-acetoxy-5-[2-(dimethylamino)ethyl]-8-methyl-2,3-dihydro-1,5-benzothiazepin-4(5H)-one maleate, wherein the weight ratio of acetylsalicylic acid to (−)-cis-2-(4-methylphenyl)-3-acetoxy- 5-[2-(dimethylamino)ethyl]-8-methyl-2,3-dihydro-1,5-benzothiazepin-4(5H)-one maleate is 0.3–40:1.

5,387,582

VITAMIN D ANALOGUES

Kai Hansen, Herlev, Denmark, assignor to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktiesel SKAB), Ballerup, Denmark

PCT No. PCT/DK90/00323, § 371 Date Mar. 17, 1992, § 102(e) Date Mar. 17, 1992, PCT Pub. No. WO91/09841, PCT Pub. Date Jul. 11, 1991

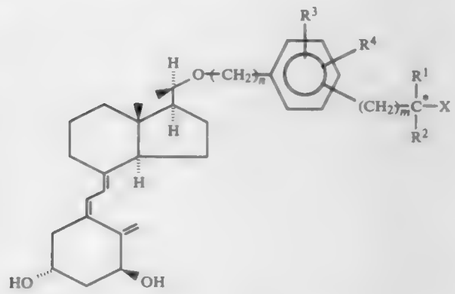
PCT Filed Dec. 10, 1990, Ser. No. 838,795

Claims priority, application United Kingdom, Dec. 22, 1989, 8929059

Int. Cl.[6] C07C *401/00*

U.S. Cl. 514—167 7 Claims

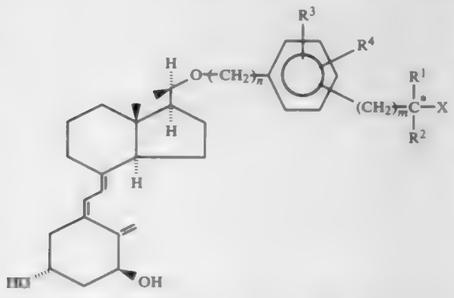
1. A compound of the formula I



I

in which R^1 and R^2 may be the same or different and stand for hydrogen, C_1–C_5-alkyl, C_3–C_7-cycloalkyl, or taken together form a C_3–C_8 carbocyclic ring; X stands for hydrogen or hydroxy, R^3 and R^4, which may be the same or different stand for hydrogen, C_1–C_5-alkyl or halogen, n is 0, 1 or 2 and m is 0, 1 or 2; and derivatives of the compounds of formula I in which one or more hydroxy groups have been transformed into —O—acyl or —O—glycosyl or phosphate ester groups, such ester groups being hydrolyzable in vivo.

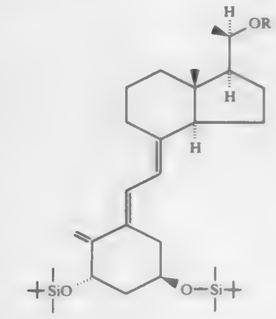
7. A method for producing a compound having formula I



I

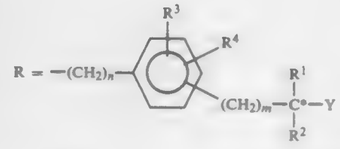
in which R^1 and R^2 may be the same or different and stand for hydrogen, C_1–C_5-alkyl, C_3–C_7-cycloalkyl, or taken together form a C_3–C_8 carbocyclic ring; X stands for hydrogen or hydroxy, R^3 and R^4, which may be the same or different stand for hydrogen, C_1–C_5-alkyl or halogen, n is 0, 1 or 2 and m is 0, 1 or 2; and derivatives of the compounds of formula I in which one or more hydroxy groups have been transformed into —O—acyl or —O—glycosyl or phosphate ester groups, such ester groups being hydrolyzable in vivo comprising,

a) alkylating 1(S),3(R)-bis-(tert-butyldimethylsilyloxy)-9,10-seco-pregna-5(E),7(E),10(19)-triene-20(R)-ol under basic conditions with a side chain building block of formula Z-R, in which Z is a leaving group to form a compound of formula III



III

in which



where Y is hydrogen or hydroxyl in which the hydroxyl group may optionally be protected by a protective group and n, m, R^1, R^2, R^3, and R^4 are as defined above,

b) photoisomerizing under triplet-sensitized conditions a compound of the above formula III and removing protecting groups, if present, to form the desired compound of formula I.

5,387,583

COMPOSITIONS CONTAINING CORTICOSTEROIDS OR ANALOGUES THEREOF AND CORTICOSTEROID BUFFERING EFFECTIVE AMOUNTS OF 5-ANDROSTENE 3B, 17B OR 5-ANDROSTENE 3B, 7B, 17B TRIOL OR ANALOGUES THEREOF

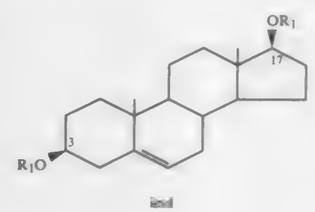
Roger M. Loria, 3819 Brook Rd., Richmond, Va. 23227

Filed Apr. 20, 1993, Ser. No. 50,579

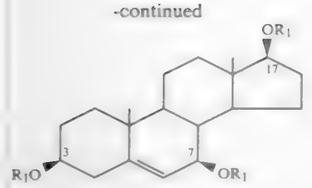
Int. Cl.[6] A61K *31/565*

U.S. Cl. 514—171 7 Claims

1. A pharmaceutical composition comprising an antiinflammatory effective amount of at least one corticosteroid or analogue thereof and a corticosteroid buffering effective amount of at least one immuno regulating compound selected from compounds of the formula:



-continued



wherein each R_1 individually may be H, alkenyl of 2–8 carbons, alkyl of 1–8-carbons, phenylalkyl of 1–4 carbons, phenyl, or COR_2 [(acyl)], wherein R_2 is H, alkyl of 1–8 carbons, alkenyl of 2–8 carbons, phenylalkyl wherein the alkyl has 1–4 carbons —, — or phenyl — wherein each — phenyl moiety may have up to three substituents chosen from among hydroxy, carboxy of 1–4 carbons, halo, alkoxy of 1–4 carbons, alkyl of 1–4 carbons, or alkenyl of 2–4 carbons and wherein any alkyl may be a straight chain, branched chain, or the alkyl may be wholly or partially cyclized.

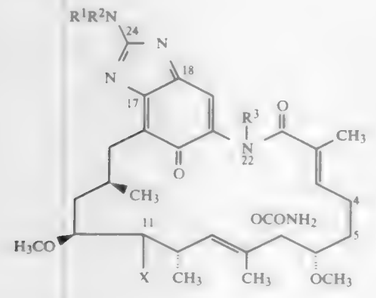
5,387,584

BICYCLIC ANSAMYCINS

Rodney C. Schnur, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 7, 1993, Ser. No. 44,521
Int. Cl.[6] A61K *31/415;* C07D *487/06*
U.S. Cl. 514—183 **9 Claims**

1. A compound of the formula



(I)

wherein the dotted lines between the carbon atoms at positions "4" and "5" and between X and the carbon at position "11" represent optional double bonds;

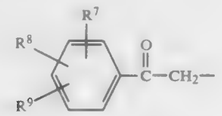
and wherein R^1 and R^2 are independently selected from hydrogen, $(C_1–C_3)$alkyl, $(C_1–C_8)$alkenyl, $(C_1–C_8)$alkynyl, $(C_3–C_7)$cycloalkyl, and phenyl-$(C_1–C_3)$alkyl, wherein the phenyl moiety of said phenyl-$(C_1–C_3)$alkyl may optionally be substituted with from one to three substituents independently selected from halo, azido, nitro, $(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy, aryl, cyano and $NR^4R^5R^6$, wherein R^4, R^5 and R^6 are independently selected from hydrogen and $(C_1–C_6)$alkyl;

or R^1 and R^2 can form, together with the nitrogen to which they are attached, a heterocyclic ring selected from aziridine, azetidine, pyrrolidine, thiazolidine, oxazolidine, piperidine, morpholine, piperazine, 4-$(C_1–C_4)$alkylpiperidine, N-$(C_1–C_1–C_6)$alkylpiperazine and N-benzylpiperazine;

R^3 is hydrogen or a group of the formula

wherein R^7, R^8 and R^9 are independently selected from hydrogen, halo, azido, nitro, $(C_1–C_8)$alkyl, $(C_1–C_8)$alkoxy, aryl, cyano and $NR^{10}R^{11}R^{12}$ wherein R^{10}, R^{11} and R^{12} are independently selected from hydrogen and $(C_1–C_3)$alkyl;

X is halo or OR^{13} when there is a single bond between X and the carbon at position "11", and X is oxo (=O) or oximino (=NOH) when there is a double bond between X and the carbon at position "11";



R^{13} is selected from the group consisting of hydrogen, $R^{14}C(=O)$, $R^{14}SO_2$ and $R^{15}R^{16}NSO_2NHC(=O)$;

R^{14} is selected from the group consisting of hydrogen, $(C_1–C_8)$alkyl, amino$(C_1–C_8)$alkyl, hydroxy$(C_1–C_8)$alkyl and aryl, wherein said aryl is selected from phenyl and naphthyl, and wherein said aryl, $(C_1–C_8)$alkyl and the alkyl moleties of said amino$(C_1–C_8)$alkyl and hydroxy$(C_1–C_8)$alkyl may be substituted with one or more substituents, preferably with from zero to three substituents, independently selected from $(C_1–C_8)$alkyl, halo, amino, nitro, azido, hydroxy and $(C_1–C_8)$alkoxy; and

R^{15} and R^{16} are independently selected from hydrogen, $(C_1–C_8)$alkyl, $(C_1–C_8)$alkenyl, $(C_3–C_7)$cycloalkyl, amino-$(C_1–C_8)$alkyl,hydroxy-$(C_1–C_8)$alkyl and methoxy-$(C_1–C_8)$alkyl;

or R^{15} and R^{16} form, together with the nitrogen to which they are attached, a heterocyclic ring selected from aziridine, azetidine, pyrrolidine, thiazolidine, oxazolidine, piperidine, morpholine, piperazine, 4-$(C_1–C_4)$alkylpiperidine, N-$(C_1–C_6)$alkylpiperazine and N-benzylpiperazine;

or a pharmaceutically acceptable salt thereof.

5. A method of inhibiting an oncogene product in a mammal comprising administering to said mammal an oncogene inhibiting effective amount of a compound according to claim **1**.

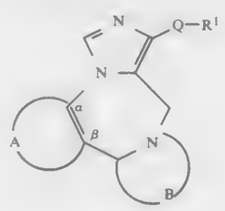
5,387,585

IMIDAZODIAZEPINE DERIVATIVES

René Borer, Reinach; Walter Gassner, Bottmingen; Max Gerecke, and Emilio Kyburz, both of Reinach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

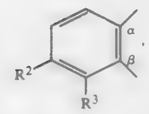
Continuation of Ser. No. 894,692, Jun. 5, 1992, abandoned. This application Nov. 15, 1993, Ser. No. 153,234
Claims priority, application Switzerland, Jun. 17, 1991, 1791/91; Apr. 8, 1992, 1140/92
Int. Cl.[6] A61K *31/55;* C07D *487/14, 495/22*
U.S. Cl. 514—219 **39 Claims**

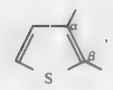
1. A compound of the formula

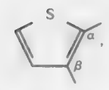


I

wherein A and the two carbon atoms denoted by α and β together are one of the groups







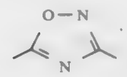
B is one of the residues



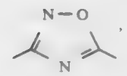




Q is one of the groups



(g)



(h)

R^1 is unsubstituted lower alkyl or lower alkyl substituted by C_{3-6}-cycloalkyl, hydroxy, lower alkoxy, aryl, aroyl, aryloxy, heteroaroyloxy, acyloxy, aryl-(lower)-alkoxy, halogen, the group $—NR^4R^5$ or a five-membered heterocycle bonded via a carbon atom or a nitrogen atom, a lower alkenyl or alkynyl group, an aroyl group, a five-membered heterocycle bonded via a carbon atom or C_{3-6}-cycloalkyl optionally substituted by acyl or lower alkyl,

R^2 and R^3 each are hydrogen, halogen or lower alkyl,

R^4 is hydrogen or lower alkyl,

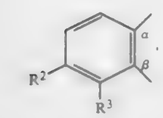
R^5 is hydrogen, aryl, acyl, C_{3-6}-cycloalkyl, aralkoxy-carbonyl or unsubstituted lower alkyl or lower alkyl substituted by aryl, morpholino, lower alkoxy, hydroxy, 2,2-dimethyl-1,3-dioxolan-4-yl, alkoxycarbonyl, carbamoyl, alkoxycarbonylamino, aralkoxycarbonyl or amino or R^4 and R^5 together with the nitrogen atom are either phthalimino or a six-membered saturated heterocycle,

and pharmaceutically acceptable acid addition salts of basic compounds of formula I.

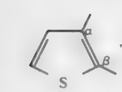
28. A method for the control of epileptic seizures, anxiety, tension and excitation states, sleep disorders and schizophrenic symptoms comprising administering to a host in need of such treatment an effective amount of a compound of the formula t,**1280**

wherein A and the two carbon atoms denoted by α and β together are one of the groups

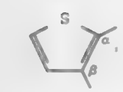
(a)



(b)

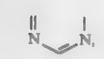


(c)



(d) B is one of the residues

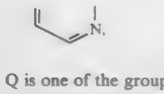
(e)



(f)



Q is one of the groups



(g)

(h)

R^1 is unsubstituted lower alkyl or lower alkyl substituted by C_{3-6}-cycloalkyl, hydroxy, lower alkoxy, aryl, aroyl, aryloxy, heteroaroyloxy, acyloxy, aryl-(lower)-alkoxy, halogen, the group $—NR^4R^5$ or a five-membered heterocycle bonded via a carbon atom or a nitrogen atom, a lower alkenyl or alkynyl group, an aroyl group, a five-membered heterocycle bonded via a carbon atom or C_{3-6}-cycloalkyl optionally substituted by acyl or lower alkyl,

R^2 and R^3 each are hydrogen, halogen or lower alkyl,

R^4 is hydrogen or lower alkyl,

R^5 is hydrogen, aryl, acyl, C_{3-6}-cycloalkyl, aralkoxy-carbonyl or unsubstituted lower alkyl or lower alkyl substituted by aryl, morpholino, lower alkoxy, hydroxy, 2,2-dimethyl-1,3-dioxolan-4-yl, alkoxycarbonyl, carbamoyl, alkoxycarbonylamino, aralkoxycarbonyl or amino or R^4 and R^5 together with the nitrogen atom are either phthalimino or a six-membered saturated heterocycle,

and pharmaceutically acceptable acid addition salts of basic compounds of formula I.

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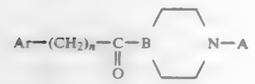
5,387,586

(ARYL(ALKYL)CARBONYL)-HETEROCYCLIC COMPOUNDS, COMPOSITIONS AND USE

Ousmane Diouf, Villeneuve d'Ascq; Daniel Lesieur, Gondecourt; Patrick Depreux, Armentieres; Béatrice Guardiola-Lemaitre, Saint-Cloud; Daniel-Henri Caignard, Paris; Pierre Renard, Versailles, and Gérard Adam, Le Mesnil le Roi, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Mar. 4, 1994, Ser. No. 206,451
Claims priority, application France, Mar. 5, 1993, 93 02528
Int. Cl.[6] A61K *31/445, 31/535;* C07D *417/06, 417/14*
U.S. Cl. 514—233.8 9 Claims

1. A compound which is selected from those of formula (I):



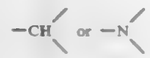
(I)

wherein:

Ar represents phenyl or naphthyl, Ar being unsubstituted or substituted by one or more radicals selected from halogen, lower alkyl, lower alkoxy, and trifluoromethyl,

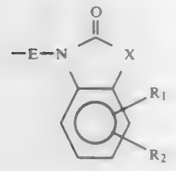
n represents 0 or 1 to 4, inclusive

B represents

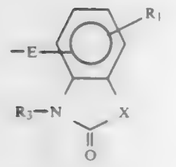


and

A represents a group of formula (A1) or (A2):



(A1)



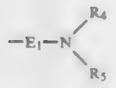
(A2)

wherein:

E represents a linear or branched alkylene chain having 1 to 6 carbon atoms, inclusive,

R_1 represents a radical selected from hydrogen, hydroxyl, lower alkyl, and lower alkoxy,

R_2 represents



where E_1 has the same definition as E as described above and where R_4 and R_5 are selected, independently from one another, from hydrogen and lower alkyl, or form, together with the nitrogen to which attached, a heterocycle selected from pyrrolidine, piperidine, substituted piperidine, morpholine, piperazine, and substituted piperazine,

R_3 represents a radical selected from hydrogen and lower alkyl, and

X represents sulfur or oxygen, its optical isomers, in pure form or in the form of a mixture, and addition salts thereof with a pharmaceutically-acceptable base or acid,

it being understood that, except when otherwise specified, the terms "lower alkyl" and "lower alkoxy" denote linear or branched groups having 1 to 6 carbon atoms inclusive, and the term "substituted" assumed by the "piperidine" and "piperazine" heterocycles means that these heterocycles can be substituted in the 4-position by a radical selected from lower alkyl, aryl, and lower arylalkyl, the term "aryl" denoting phenyl, naphthyl, or pyridyl, which aryl can itself be unsubstituted or substituted by one or more radicals selected from halogen, lower alkyl, hydroxyl, lower alkoxy, and trifluoromethyl.

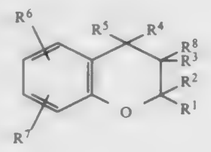
5,387,587

CHROMAN DERIVATIVES

Günther Häusler; Rolf Gericke, both of Seeheim; Hanns Wurziger, Darmstadt; Manfred Baumgarth, Darmstadt; Inge Lues, Darmstadt; Jacques De Peyer, Seeheim, and Rolf Bergmann, Reichelsheim, all of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

Continuation-in-part of Ser. No. 766,362, Sep. 26, 1991, abandoned, and Ser. No. 655,190, Feb. 13, 1991, abandoned, which is a continuation of Ser. No. 137,201, Dec. 23, 1987, abandoned, and a continuation-in-part of Ser. No. 660,080, Feb. 25, 1991, abandoned, which is a division of Ser. No. 347,710, May 5, 1989, Pat. No. 5,013,853, and a continuation-in-part of Ser. No. 657,941, Feb. 21, 1991, abandoned, which is a continuation of Ser. No. 367,281, Jun. 15, 1989, abandoned, and a continuation-in-part of Ser. No. 420,978, Oct. 13, 1989, abandoned. This application Sep. 27, 1991, Ser. No. 766,725
Claims priority, application Germany, Dec. 23, 1986, 3644094; Aug. 7, 1987, 3726261; May 6, 1988, 3815504; Jun. 16, 1988, 3820506; Oct. 14, 1988, 3835011
Int. Cl.[6] C07D *405/12*
U.S. Cl. 514—254 18 Claims

1. A chroman of the formula



wherein

R^1 is A,

R^2 is H or A,

R^1 and R^2 together are also alkylene having 3–6 C atoms,

R^3 is OH or OAc,

R^4 is H, or

R^3 and R^4 together are a bond,

R^5 is pyrazinon-1-yl which is unsubstituted or monosubstituted or disubstituted by A, F;

R^6 and R^7 are each H, A, HO, AO, CHO, ACO, ACS, HOOC, AOOC, AO-CS, ACOO, A-CS-O, hydroxyalkyl having 1–6 C atoms, mercaptoalkyl having 1 –6 C atoms, NO_2, NH_2, HA, NA_2, CN, F, Cl, Br, I, CF_3, ASO, ASO_2, AO-SO, AO-SO_2, AcNH, AO-CO-NH, H_2NSO, HANSO, ANSO, H_2NSO_2, $HANSO_2$, A_2NSO, H_2NCO, HANCO, A_2NCO, H_2NCS, HANCS, A_2NCS, ASONH, ASO_2NH, AOSONH, $AOSO_2NH$, ACO-alkyl, nitroalkyl, cyanoalkyl, A-C(=NOH) or A-C(=NNH_2),

R^8 is H

A is alkyl having 1–6 C atoms;

alkyl is of 1–6 C atoms; and

Ac is alkanoyl having 1–8 C atoms or aroyl having 7–11 C atoms, or a physiologically acceptable salt thereof.

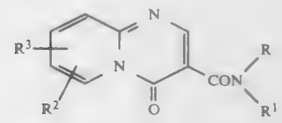
5,387,588

PYRIDOPYRIMIDINE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS FOR PREPARING SAME

István Hermecz; József Knoll; Lelle Vasvári née Debreczy; Klára Gyires; Judit Sipos; Agnes Horvath; László Tardos, all of Budapest, and Mária Blaogh, Dunakeszi, all of Hungary, assignors to Chinoin Gyogyszer- es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Continuation of Ser. No. 903,246, Jun. 23, 1992, Pat. No. 5,252,572, which is a continuation of Ser. No. 307,665, Feb. 6, 1989, Pat. No. 5,158,951. This application Jun. 21, 1993, Ser. No. 80,402
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[6] A61K *31/505;* C07D *471/04*
U.S. Cl. 514—258 6 Claims

1. A compound of the Formula (I)



(I)

wherein

R is a C_1 to C_{12} alkyl group;

R^1 is hydrogen or a C_1 to C_4 alkyl group;

R^2 is hydrogen, a C_1 to C_4 alkyl group or halogen; and

R^3 is hydrogen or a C_1 to C_4 alkyl group; or a pharmaceutically acceptable acid addition salt thereof.

5,387,589

METHOD OF TREATING OCULAR INFLAMMATION

Prasad S. Kulkarni, Anchorage, Ky., assignor to University of Louisville Research Foundation, Inc., Louisville, Ky.

Continuation of Ser. No. 735,604, Jul. 25, 1991, abandoned. This application Nov. 17, 1992, Ser. No. 978,188
Int. Cl.[6] A61K *31/44*
U.S. Cl. 514—291 7 Claims

1. A method for treating ocular inflammation in a mammal in need of said treatment, comprising administering to said mammal an effective anti-inflammatory amount of rapamycin.

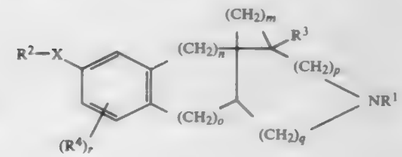
5,387,590

BENZAZABICYCLIC CARBAMATES AS NOVEL CHOLINESTERASE INHIBITORS

Yuhpyng L. Chen, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 28, 1992, Ser. No. 835,904
Int. Cl.[6] C07D *221/22;* A61K *31/445*
U.S. Cl. 514—292 1 Claim

1. A method for inhibiting cholinesterase in a mammal, comprising administering to a mammal a cholinesterase inhibiting amount of a compound of the formula



1

wherein each of m, n, o, q, p and r is an integer from 0 to 3;

X is oxygen or sulfur;

R^1 is hydrogen; (C_1–C_4) alkyl; (C_3–C_8) cycloalkyl; (C_3–C_8) cycloalkyl-(C_1–C_4) alkyl;,(C_1–C_4) alkenyl-(C_1–C_4) alkyl; aryl-(C_1–C_4) alkyl wherein the aryl moiety is selected from the group consisting of phenyl and naphthyl, and wherein said aryl moiety may be optionally substituted with one or more substituents selected from the group consisting of (C_1–C_4) alkyl, (C_1–C_4) alkoxy, halogen, amino, and trifluoromethyl; or heteroaryl-(C_1–C_4) alkyl wherein said heteroaryl moiety is selected from the group consisting of pyridyl, thienyl, furanyl, pyrazinyl, pyrrolyl, indolyl, pyrimidyl, and wherein said heteroaryl moiety may be optionally substituted with one or more substituents selected from the group consisting of (C_1–C_4) alkyl, (C_1–C_4) alkoxy, halogen, amino, and trifluoromethyl;

R^2 is —CYNR^5R^6;

Y is oxygen or sulfur;

R^5 is (C_1–C_{12}) alkyl; (C_3–C_8) cycloalkyl; (C_4–C_{12}) bicycloalkyl; (C_3–C_8) cycloalkenyl; aryl; (C_1–C_4) alkyl wherein said aryl moiety is selected from the group consisting of phenyl and naphthyl, and wherein said aryl moiety may be optionally substituted with one or more substituents independently selected from the group consisting of (C_1–C_4) alkyl, (C_1–C_4) alkoxy, amino, halogen and trifluoromethyl; heteroalkyl wherein the hetero atom is selected from the group consisting of nitrogen, oxygen and sulfur; aryl selected from the group consisting of phenyl and naphthyl; heteroaryl selected from the group consisting of pyridyl, thienyl, furanyl, pyrazinyl, pyrrolyl, indolyl and pyrimidyl; and wherein said aryl and heteroaryl groups may be optionally substituted with one or more substituents independently selected from the group consisting of (C_1–C_4) alkyl, selected from the group consisting of (C_1–C_4) alkyl, (C_1–C_4) alkoxy, halogen, amino, and trifluoromethyl;

R^6 is hydrogen or (C_1–C_{12}) alkyl;

or R^5 and R^6, together with the nitrogen to which they are attached, form a heterocyclic containing group wherein the heterocyclic moiety is selected from the group consisting of 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 4-thiomorpholinyl, 1-piperazinyl, and all other 3 to 12 membered azacyclic and azabicyclic moieties, and wherein said heterocyclic, azacyclic and azabicyclic moieties may be optionally substituted with one or more substituents from the group consisting of (C_1–C_4) alkyl, (C_1–C_4) alkoxy, halogen, trifluoromethyl, hydroxy, amino, phenyl and benzyl; aryl selected from the group consisting of phenyl and naphthyl; aryl (C_1–C_4) alkyl wherein said aryl moiety is selected from phenyl and naphthyl, or heteroaryl selected from the group consisting of pyridyl, thienyl, furanyl and indolyl; and wherein said aryl moiety and aryl and heteroaryl groups may be optionally substituted with one or more substituents independently selected from the group consisting of (C_1–C_6) alkyl, (C_1–C_4) alkoxy, halogen, amino and trifluoromethyl;

R^3 is hydrogen; (C_1–C_4) alkyl; (C_1–C_4) alkoxy; amino; (C_1–C_4 alkylamino; or (C_1–C_4) dialkylamino;

and each R^4 is independently selected from the group consisting of hydrogen; nitrile; (C_1–C_4) alkyl; phenyl; halogen; nitro; trifluoromethyl; (C_1–C_4) alkoxy; carboxylate; hydroxy; amino; (C_1–C_4) alkylcarbonyl; phenylcarbonyl; (C_1–C_4) alkoxycarbonyl; aminocarbonyl; (C_1–C_4) alkylaminocarbonyl; (C_1–C_4) dialkylaminocarbonyl; (C_1–C_4) alkylamino; (C_1–C_4) dialkylamino; benzylamino; (C_1–C_4) alkylbenzylamino; (C_1–C_4) alkylcarbonylamino; and phenylcarbonylamino, or a pharmaceutically salt thereof.

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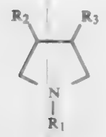
5,387,591

PYRROLIDINE COMPOUNDS

Gilbert Lavielle, La Celle Saint Cloud; Thierry Dubuffet, L'Hay les Roses; Olivier Muller, Emmery; Michel Laubie, Vaucresson, and Tony Verbeuren, Vernouillet, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Feb. 11, 1993, Ser. No. 16,501
Claims priority, application France, Feb. 12, 1992, 92 01523
Int. Cl.[6] A61K *31/47*
U.S. Cl. 514—307 8 Claims

1. A compound selected from those of formula (I):



(I)

in which:

R_1 represents:

phenylsulfonyl (which is unsubstituted or substituted on the phenyl ring by one or more halogen or linear or branched (C_1-C_6)alkyl, linear or branched (C_1-C_6)alkoxy or trihalomethyl), naphthylsulfonyl, quinolylsulfonyl, or isoquinolylsulfonyl,

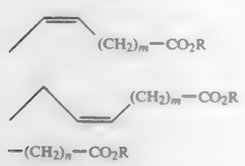
R_2 represents:

hydrogen,

phenyl which is unsubstituted or substituted by one or more halogen or linear or branched (C_1-C_6)alkyl, linear or branched (C_1-C_6)alkoxy, hydroxyl, or trihalomethyl,

3-pyridyl or 2-pyridyl which is unsubstituted or substituted on the pyridine ring by one or more halogen or linear or branched (C_1-C_6)alkyl, linear or branched (C_1-C_6)alkoxy, or trihalomethyl,

R_3 represents one of the following groups:



in which

m is equal to 2, 3 or 4,

n is equal to 4, 5, 6 or 7,

and R represents hydrogen or a linear or branched (C_1-C_6) alkyl,

its enantiomers, diastereoisomers and epimers, as well as its addition salts with a pharmaceutically acceptable acid or base.

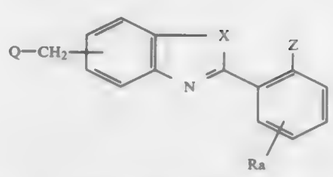
5,387,592

SUBSTITUTED BENZOXAZOLE, BENZTHIAZOLE, AND BENZIMIDAZOLE DERIVATIVES AS ANGIOTENSIN II ANTAGONISTS

Robert H. Bradbury, Wilmslow, and Andrew P. Thomas, Congleton, both of England, assignors to Imperial Chemical Industries PLC, London, England

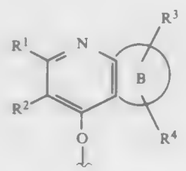
Filed Jun. 25, 1992, Ser. No. 904,227
Claims priority, application United Kingdom, Jun. 25, 1991, 9113628
Int. Cl.[6] A61K *31/475;* C07D *215/42, 215/233*
U.S. Cl. 514—312 10 Claims

1. A heterocyclic derivative of the formula I

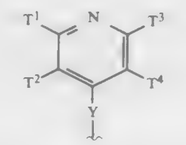


I

wherein Q is selected from a group of the partial structural formula IIa or IIb



IIa



IIb

in which ring B of formula IIa completes a benzene ring;

R^1 and T^1 are independently selected from 1–8C)alkyl, (3–8C)cycloalkyl, (3–8C)cycloalkyl-(1–4C)alkyl, phenyl, phenyl (1–4C)alkyl or substituted (1–4C)alkyl, the latter containing one or more fluoro substituents or bearing an (1–cC)alkoxy substituent;

R^2 and T^2 are independently selected from hydrogen, (1–8-C)alkyl, (3–8C)cycloalkyl, (3–8C)cycloalkyl-(1–4C)alkyl, carboxy, (1–4C)alkoxycarbonyl, (3–6C)alkenyloxycarbonyl, cyano and nitro with R^2 further selected from phenyl or phenyl (1–4C)alkyl;

R^3 and R^4 are optional substituents on ring B independently selected from (1–4C)alkyl, (1–4C)alkoxy, halogeno, trifluoromethyl, cyano, nitro, fluoro(1–4C)alkoxy, hydroxy or hydroxy(1–4C)alkyl;

T^2 is further selected from (1–4C)alkoxy, (1–4C)alkyl containing one or more fluoro substituents, halogeno, carbamoyl, (1–4C)alkanoyl, N-alkylcarbamoyl and di-(N-alkyl)-carbamoyl of up to 7 carbon atoms, amino, and alkylamino and dialkylamino of up to 6 carbon atoms;

T^3 and T^4 together form an (3–6C)alkenylene group, an (3–6C)alkylene group or an (3–6C)alkylene group in which a methylene is replaced by carbonyl;

Y is oxygen or a group of the formula —NRb— wherein Rb is hydrogen, (1–4C) alkyl, (1–4C) alkanoyl or benzoyl;

X is oxygen, sulphur or a group of the formula —NRc wherein Rc is hydrogen or (1–4C)alkyl;

Ra is selected from hydrogen, (1–4C) alkyl, (1–4C) alkoxy, halogeno, trifluoromethyl, cyano and nitro;

Z is 1H-tetrazol-5-yl, carboxy or a group of the formula CF_3SO_2NH—;

wherein any of said phenyl moieties of R^1, R^2, T^1 or T^2 may be unsubstituted or bear one or two substituents independently selected from (1–4C)alkyl, (1–4C)alkoxy, halogeno, cyano and trifluoromethyl;

or a non-toxic salt thereof.

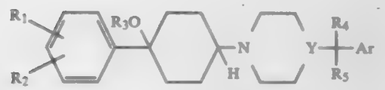
5,387,593

PIPERAZINYL-AND PIPERIDINYL-CYCLOHEXANOLS

Ronald J. Mattson, Meriden, and John D. Catt, Southington, both of Conn., assignors to Briston-Myers Squibb, New York, N.Y.

Continuation-in-part of Ser. No. 952,229, Sep. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 806,989, Dec. 13, 1991, abandoned. This application Feb. 17, 1994, Ser. No. 198,165
Int. Cl.[6] H61K *31/445;* C07D *401/10, 403/10, 211/14*
U.S. Cl. 514—326 24 Claims

1. A compound of Formula I or a pharmaceutically acceptable salt thereof, with Formula I being:



(I)

wherein R_1 and R_2 are independently selected from H, halogen, CF_3, or C_{1-4} alkoxy groups except that R_1 and R_2 cannot both be H simultaneously, or R_1 and R_2, when on adjacent carbon atoms, can be taken together to form a



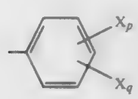
bridge with n being an integer from 1 to 3;

R_3 is H or C_{1-4} alkyl;

R_4 and R_5 are each independently selected from H, C_{1-4} alkyl or phenyl;

Y is CH; and

Ar is an unsubstituted phenyl ring; a substituted phenyl ring of structure II:



(II)

wherein Xp and Xq may be halogen, nitro, amino, carboxamido, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} alkylthio or Xp and Xq can be taken together to form a



(n=1-3); or a heteroaryl group selected from 3-pyridinyl, 4-pyridinyl, 2-thienyl, 2-furanyl, and 1-methyl-2-pyrrolyl moieties.

15. A method of treating anxiety comprising administering to a patient in need therof an effective amount of a compound of claim 1.

22. A method for the prophylactic treatment of migraines comprising administering to a patient in need thereof an effective amount of a compound of claim 1.

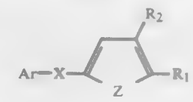
5,387,594

DI(AROMATIC) COMPOUNDS AND THEIR USE IN HUMAN AND VETERINARY MEDICINE AND IN COSMETICS

Jean-Michel Bernardon, Nice, and William R. Pilgrim, Valbonne, both of France, assignors to Centre International de Recherches Dermatologiques Galderma (Cird Galderma), Valbonne, France

PCT No. PCT/FR91/00793, § 371 Date Aug. 4, 1992, § 102(e) Date Aug. 4, 1992, PCT Pub. No. WO92/06948, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 11, 1991, Ser. No. 859,522
Claims priority, application Luxembourg, Oct. 12, 1990, 87821
Int. Cl.[6] A61K *31/235, 31/34, 31/38;* C07D *333/66*
U.S. Cl. 514—346 19 Claims

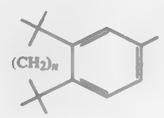
1. A di(aromatic) compound having the formula



(I)

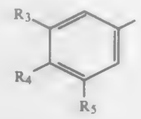
wherein

Ar represents (i)



(II)

wherein n=1 or 2 or (ii)



(III)

wherein

R_3 and R_5 represent hydrogen, OH, alkoxy having 1–6 carbon atoms, α-substituted alkyl having from 3–12 carbon atoms, α,α-disubstituted alkyl having from 4–12 carbon atoms, cycloalkyl having from 3–12 carbon atoms or mono- or polycyclic cycloalkyl having from 5–12 carbon atoms in which the carbon having the free valence is trisubstituted,

R_4 represents hydrogen, OH, alkoxy having 1–6 carbon atoms, α-substituted alkyl having 3–12 carbon atoms, α,α-disubstituted alkyl having 4–12 carbon atoms, cycloalkyl having 3–12 carbon atoms, mono-or polycyclic cycloalkyl having 5–12 carbon atoms in which the carbon having the free valence is trisubstituted, monohydroxyalkyl, polyhydroxyalkyl, fluorine, chlorine, SH, SR_6, SOR_6, SO_2R_6, alkenyl having 2–6 carbon atoms or alkenyloxy having 2 to 6 carbon atoms,

R_6 represents lower alkyl,

R_1 represents hydrogen, OH, —CH_3, —CH_2OH, —COR_7, —$CH(OH)CH_3$, —CH_2OCOR_8, —SO_2R_9, —SOR_9 or —SR_9,

R_7 represents hydrogen, OH, —OR_{10}, —N(r'r''), lower alkyl, monohydroxyalkyl, polyhydroxyalkyl or a sugar residue,

R_{10} represents alkyl having 1–12 carbon atoms or alkenyl having 2–10 carbon atoms,

r' and r'', each independently, represent hydrogen, lower alkyl, aryl, aralkyl, an amino acid residue, a sugar residue,

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an amino sugar residue or a heterocycle, or r' and r'' taken together form a heterocycle,
R_8 represents a saturated or unsaturated, linear or branched alkyl having 1–20 carbon atoms or a sugar residue,
R_9 represents OH, lower alkyl or —N(r'r'') wherein r' and r'' have the meanings given above,
R_2 represents hydrogen, OH, lower alkyl, alkoxy having 1–6 carbon atoms, fluorine, chlorine, CF_3, COR_7 wherein R_7 has the meaning given above, CH_2OH or CH_2OR_6 wherein R_6 has the meaning given above,
Z represents an oxygen atom, a sulphur atom, —CH=CR$_{11}$—, —N=CH— or —N=CR$_6$— wherein R_6 has the meaning given above,
R_{11} represents hydrogen, OH, lower alkyl, alkoxy having 1–6 carbon atoms, fluorine, chlorine or CF_3,
X is a divalent radical which can be read from left to right or vice versa and has the formula

$$—Q—\underset{\underset{Y}{\|}}{C}—CR'R''—,$$

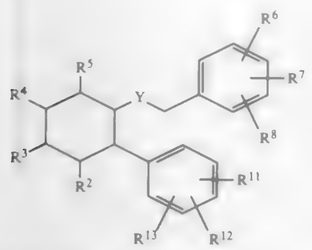
wherein
R' represents hydrogen or —CH_3,
R'' represents hydrogen, —CH_3, OH, fluorine or chlorine, or
R' and R'' taken together form a methano (=CH_2) or oxo (=O) radical,
Q represents an oxygen atom or —NR' wherein R' has the meaning given above,
Y represents an oxygen atom or a sulphur atom, and
with the proviso that when Ar represents a radical of formula (III) and Z represents —CH=CR$_{11}$— wherein R_{11} is hydrogen and R_1 is hydrogen or —COR_7 wherein R_7 is OH or —OR_{10} wherein R_{10} is alkyl having 1–12 carbon atoms, then either R_2 is other than hydrogen or lower alkyl or at least one of R_3 to R_5 is other than hydrogen, and
the salts of said compound of formula (I) when R_1 represents a carboxylic acid function, and
the optical isomers of said compound of formula (I).

5,387,595
ALICYCLIC COMPOUNDS AS TACHYKININ RECEPTOR ANTAGONISTS

Sander G. Mills, Woodbridge; Paul E. Finke, Milltown; Malcolm MacCoss, Freehold; Daniel J. Miller, Edison, and Dennis J. Underwood, Roselle, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 26, 1992, Ser. No. 935,754
Int. Cl.[6] **C07D** *213/40;* **C07C** *235/26, 275/24, 57/46*
U.S. Cl. 514—357 **8 Claims**

1. A compound of structural formula:



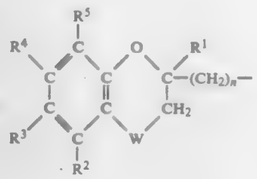
or a pharmaceutically acceptable salt thereof, wherein:
R^2 is selected from the group consisting of:
(1) C_{1-6} alkyl, unsubstituted or substituted with one or more of the substituents selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6} alkoxy,
(d) phenyl-C_{1-3} alkoxy,
(e) phenyl,
(f) —CN,
(g) halo,
(h) —NR^9R^{10}, wherein R^9 and R^{10} are independently selected from:
(i) hydrogen,
(ii) phenyl,
(iii) C 1-6 alkyl, unsubstituted or substituted with one or more of the substituents selected from:
(A) hydroxy,
(B) oxo,
(C) C_{1-6} alkoxy,
(D) phenyl-C_{1-3} alkoxy,
(E) phenyl,
(F) —CN,
(G) halo,
(H) —$NR^{14}R^{15}$, wherein R^{14} and R^{15} are independently selected from hydrogen, C_{1-6} alkyl, and phenyl,
(I) -heteroaryl, wherein heteroaryl is selected from the group consisting of:
(a) furanyl,
(b) pyrrolyl,
(c) pyridyl,
(d) imidazolyl,
(e) oxadiazolyl,
(f) pyrazolyl,
(g) triazolo,
(h) tetrazolo,
(i) pyrimidyl,
(j) oxazolo,
(k) isooxazolo,
(l) thiazolo, and
(m) thiadiazolo, and wherein the heteroaryl is unsubstituted or substituted with one or more substituent(s) selected from:
(I) C_{1-6} alkyl,
(II) C_{1-6} alkoxy,
(III) —$NR^{14}R^{15}$, wherein R^{14} and R^{15} are as defined above,
(IV) halo, and
(V) trifluoromethyl;
(i) —NR^9COR_{10}, wherein R^9 and R^{10} are as defined above,
(j) —$NR^9CO_2R^{10}$, wherein R^9 and R^{10} are as defined above,
(k) —$NR^{14}CONR^9R^{10}$, wherein R^9, R^{10} and R^{14} are as defined above,
(l) —$CONR^9R^{10}$, wherein R^9 and R^{10} are as defined above,
(m) —COR^9, wherein R^9 is as defined above,
(n) —CO_2R^9, wherein R^9 is as defined above,
(o) —$S(O)_n$-R^9, wherein n is 0, 1 or 2 and R^9 is as defined above; and
(2) —R^9, wherein R^9 is as defined above, with the proviso that R^9 is other than hydrogen or phenyl;
R^3 and R^4 are independently selected from the group consisting of:
(1) hydrogen;
(2) C_{1-6} alkyl, unsubstituted or substituted with one or more of the substituents selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6} alkoxy,
(d) phenyl-C_{1-3} alkoxy,
(e) phenyl,
(f) —CN,
(g) halo,
(h) —NR^9R^{10}, wherein R^9 and R^{10} are as defined above,
(i) —NR^9COR^{10}, wherein R^9 and R^{10} are as defined above,
(j) —$NR^9CO_2R^{10}$, wherein R^9 and R^{10} are as defined above,
(k) —$NR^{14}CONR^9R^{10}$, wherein R^9, R^{10} and R^{14} are as defined above,
(l) —$CONR^9R^{10}$, wherein R^9 and R^{10} are as defined above,
(m) —COR^9, wherein R^9 is as defined above,
(n) —CO_2R^9, wherein R^9 is as defined above;
(o) —$S(O)_n$-R^9, wherein n is 0, 1 or 2 and R^9 is as defined above,
(3) phenyl, unsubstituted or substituted with one or more of R^6, R^7 and R^8, wherein R^6, R^7 and R^8 are as defined below;
and the groups R^3 and R^4 may be joined together by a C_{3-4}alkyl or a C_{3-4}alkenyl to form a carbocyclic ring selected from the group consisting of:
(a) cyclopentyl,
(b) cyclohexyl,
(c) phenyl, and wherein the carbocyclic ring is unsubstituted or substituted with one or more substituents selected from:
(i) C_{1-6}alkyl,
(ii) C_{1-6}alkoxy,
(iii) —NR^9R^{10}, wherein R^9 and R^{10} are as defined above,
(iv) halo, and
(v) trifluoromethyl;
R^5 is independently selected from the definitions of R^9 and R^{10}, wherein R^9 and R^{10} are as defined above,
R^6, R^7 and R^8 are independently selected from the group consisting of:
(1) hydrogen;
(2) C_{1-6} alkyl, unsubstituted or substituted with one or more of the substituents selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6} alkoxy,
(d) phenyl-C_{1-3} alkoxy,
(e) phenyl,
(f) —CN,
(g) halo,
(h) —NR^9R^{10}, wherein R^9 and R^{10} are as defined above,
(i) —NR^9COR^{10}, wherein R^9 and R^{10} are as defined above,
(j) —$NR^9CO_2R^{10}$, wherein R^9 and R^{10} are as defined above,
(k) —$NR^{14}CONR^9R^{10}$, wherein R^9, R^{10} and R^{14} are as defined above,
(l) —$CONR^9R^{10}$, wherein R^9 and R^{10} are as defined above,
(m) —COR^9, wherein R^9 is as defined above,
(n) —CO_2R^9, wherein R^9 is as defined above;
(o) —$S(O)_n$-R^9, wherein n is 0, 1 or 2 and R^9 is as defined above;
(3) C_{2-6} alkenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6} alkoxy,
(d) phenyl-C_{1-3} alkoxy,
(e) phenyl,
(f) —CN,
(g) halo,
(h) —$CONR^9R^{10}$ wherein R^9 and R^{10} are as defined above,
(i) —COR^9 wherein R^9 is as defined above,
(j) —CO_2R^9, wherein R^9 is as defined above;
(4) C_{2-6} alkynyl;
(5) phenyl, unsubstituted or substituted with one or more of the substituent(s) selected from:
(a) hydroxy,
(b) C_{1-6} alkoxy,
(c) C_{1-6} alkyl,
(d) C_{2-5} alkenyl,
(e) halo,
(f) —CN,
(g) —NO_2,
(h) —CF_3,
(i) —$(CH_2)_m$-NR^9R^{10}, wherein n, R^9 and R^{10} are as defined above,
(j) —NR^9COR^{10}, wherein R^9 and R^{10} are as defined above,
(k) —$NR^9CO_2R^{10}$, wherein R^9 and R^{10} are as defined above,
(l) —$NR^{14}CONR^9R^{10}$, wherein R^9, R^{10} and R^{14} are as defined above,
(m) —$CONR^9R^{10}$, wherein R^9 and R^{10} are as defined above,
(n) —COR^9, wherein R^9 is as defined above,
(o) —CO_2R^9, wherein R^9 is as defined above,
(p) —$S(O)_n$-R^9, wherein n is 0, 1 or 2 and R^9 is as defined above;
(6) halo,
(7) —CN,
(8) —CF_3,
(9) —OCF_3,
(10) —NO2,
(11) hydroxy,
(12) C_{1-6}alkoxy,
(13) —COR^9, wherein R^9 is as defined above,
(14) —CO_2R^9, wherein R^9 is as defined above;
(15) —$CONR^9COR^{10}$, wherein R^9 and R^{10} are as defined above,
(16) —SR^{14}, wherein R^{14} is as defined above,
(17) —SOR^{14}, wherein R^{14} is as defined above,
(18) —SO_2R^{14}, wherein R^{14} is as defined above,
(19) —NR^9R^{10}, wherein R^9 and R^{10} are as defined above,
(20) —NR^9COR^{10}, wherein R^9 and R^{10} are as defined above,
(21) —NR^9CO_2R 10, wherein R^9 and R^{10} are as defined above, and
(22) —$NR^{14}CONR^9$, R^{10}, wherein R^9, R^{10} and R^{14} are as defined above;
R^{11}, R^{12} and R^{13} are independently selected from the definitions of R^6, R^7 and R^8;
Y is selected from the group consisting of:
(1) —O—,
(2) —S—,
(3) —$N(R^9)$—, wherein R^9 is as defined above,
(4) —$N(COR^9)$—, wherein R^9 is as defined above,
(5) —$N(CO_2R^9)$—, wherein R^9 is as defined above, and
(6) —$N(CONR^9R^{10})$—, wherein R^9 and R^{10} are as defined above.

5,387,596
BENZYLIDENETHIAZOLIDINE DERIVATIVES AND THEIR USE FOR THE INHIBITION LIPID PEROXIDES

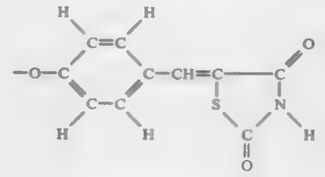
Toyonori Takebayashi; Takayuki Onodera; Kazuo Hasegawa; Takashi Fujita, and Takao Yoshioka, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 687,431, Apr. 18, 1991, abandoned. This application Jul. 21, 1993, Ser. No. 95,311
Claims priority, application Japan, Apr. 27, 1990, 2-113566
Int. Cl.[6] **A61K** *31/425;* **C07D** *417/12*
U.S. Cl. 514—369 **5 Claims**

1. A compound of formula (I) :



(I)



wherein R^1, R2, R^4 and R^5 are each methyl;
R^3 is hydroxy or acetoxy;
W is methylene; and
n is 1.

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HEMIPHOSPHATE HEMIHYDRATE OF 2-(1-PENTYL-3-GUANIDINO)-4-(2-METHYL-4-IMIDAZOLYL)THIAZOLE

Troy A. Appleton, and Ward M. Smith, both of Mystic, Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 656,162, Feb. 25, 1991, abandoned. This application Jun. 18, 1992, Ser. No. 900,973
Int. Cl.[6] C07D *417/04;* A61K *31/425*
U.S. Cl. 514—370 2 Claims

1. 2-(1-pentyl-3-guanidino)-4-(2-methyl-4-imidazolyl)-thiazolehemiphosphate hemihydrate.

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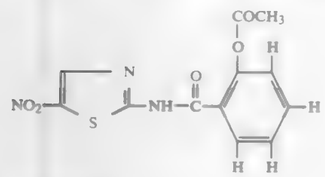
COMPOSITION AND GALENIC FORMULATION SUITABLE FOR COMBATTING AFFECTIONS OF THE LOWER ABDOMEN

Jean-François Rossignol, 2650 Heron La. S., Clearwater, Fla. 34622

Filed Apr. 13, 1994, Ser. No. 227,033
Int. Cl.[6] A61K *31/425;* C07D *277/44*
U.S. Cl. 514—371 18 Claims

1. Composition for oral administration for combatting affections of the lower abdomen, said composition containing:

an effective amount of an active agent of formula I



(I)

and a wetting agent.

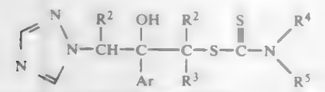
5,387,599

TRIAZOLES, THEIR PRODUCTION AND USE

Katsumi Itoh, and Kenji Okonogi, both of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 13, 1991, Ser. No. 669,000
Claims priority, application Japan, Mar. 15, 1990, 2-65888
Int. Cl.[6] A61K *31/41;* C07D *413/12, 403/12, 401/12*
U.S. Cl. 514—383 21 Claims

1. A triazole compound of the formula (I):



(I)

wherein Ar is a phenyl group having 1 to 3 substituents selected from the group consisting of a halogen atom and a trifluoromethyl group R^1, R^2 and R^3 each represents, the same or different, a hydrogen atom or a lower alkyl, R^4 and R^5 each represents, the same or different, a hydrogen atom, a straight or branched chain alkyl group having 1 to 12 carbon atoms, phenyl-C_{1-4}-alkyl, napthyl-C_{1-4}-alkyl, phenyl, napthyl, biphenyl, anthryl, or indenyl, or its salt.

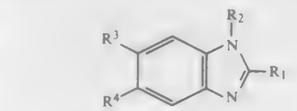
5,387,600

TREATING ARTERIOSCLEROSIS USING BENZIMIDAZOLE COMPOSITIONS

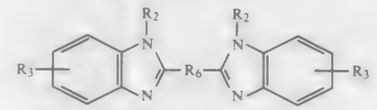
Kazuhiro Aikawa, and Kozo Aoki, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 21, 1993, Ser. No. 94,321
Claims priority, application Japan, Jul. 30, 1992, 4-204122; Sep. 2, 1992, 4-234767
Int. Cl.[6] A61K *31/415, 31/535*
U.S. Cl. 514—395 6 Claims

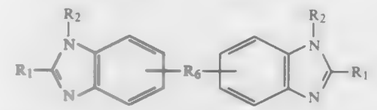
1. A method for treating arteriosclerosis which comprises administering an effective amount of the pharmaceutical composition to a mammal suffering from arteriosclerosis, wherein the pharmaceutical composition comprises a compound of the following formula (I), (II) or (III), or a pharmaceutically-acceptable salt thereof, as an active ingredient together with a pharmaceutically-acceptable carrier or diluent:



(I)



(III)



(III)

wherein

R_1 represents a hydrogen atom, an alkyl, an aryl, a mercapto, an alkylthio, an alkenylthio, an arylthio or a heterocyclo group;

R_2 represents a hydrogen atom or an alkyl group, provided that the alkyl group is not substituted by a hydroxyl group;

R_3 and R_4 each independently represents a hydrogen atom, a halogen atom, a nitro group, R_5O—, R_5CONH—, R_5NHCO—, $(R_5)_2NCO$—, R_5SO_2NH—, R_5NHSO_2—, R_5OCO—, R_5COO— or $R_5NHCONH$— where R_5 represents an alkyl or an aryl group; and

R_6 represents a divalent group.

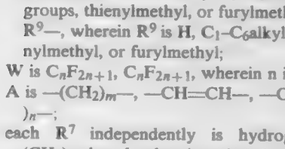
5,387,601

MEDICAMENT

James Hill, Brentford, England, assignor to SmithKline Beecham p.l.c., England

PCT No. PCT/GB91/02223, § 371 Date Jun. 10, 1993, § 102(e) Date Jun. 10, 1993, PCT Pub. No. WO92/10185, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 12, 1991, Ser. No. 74,810
Claims priority, application United Kingdom, Dec. 14, 1990, 9027200
Int. Cl.[6] A61K *31/38*
U.S. Cl. 514—397 5 Claims

1. The method of the prevention of restinosis after angioplasty of bypass surgery in a mammal which comprises administering to a subject in need thereof an effective amount of an angiotensin II receptor antagonist of the formula:



in which:

R^1 is adamantyl, phenyl,, biphenyl, or naphthyl, with each aryl group being unsubstituted or substituted by one to three substituents selected from Cl, Br, F, I, C_1–C_6alkyl, nitro, A—CO_2R^7, C_1–C_6alkoxy, hydroxy, SC_1–C_6alkyl, SO_2NHR^7, $NHSO_2R^7$, SO_3H, $CONR^7R^7$, CN, SO_2C_1–C_6alkyl, $NHSO_2R^7$, $PO(OR^7)_2$, NR^7R^7, NR^7COH, NR^7COC_1–C_6alkyl, $NR^7CON(R^7)_2$, NR^7COW,, W, SO_2W;

m is 0–4;

R^2 is C_2–C_{10}alkyl, C_3–C_{10}alkenyl, C_3–C_{10}alkynyl, C_3–C_6cycloalkyl, or $(CH_2)_{0-8}$phenyl unsubstituted or substituted by one to three substituents selected from C_1–C_6alkyl, nitro, Cl, Br, F, I, hydroxy, C_1–C_6alkoxy, NR^7R^7, CO_2R^7, CN, $CONR^7R^7$, W, NR^7COC_1–C_6alkyl, NR^7COW, SC_1–C_6alkyl, SO_2W, or SO_2C_1–C_6alkyl;

X_3 is a single bond, S, NR^7, or O;

R^3 is hydrogen, Cl, Br, F, I, CHO, hydroxymethyl, $COOR^7$, $CONR^7R^7$, NO_2, W, CN, NR^7R^7, or phenyl;

R^4 and R^5 are independently hydrogen, C_1–C_6alkyl, thienyl-Y-, furyl-Y-, pyrazolyl-Y-, imidazolyl-Y-, pyrrolyl-Y-, except that R^4 and R^5 are not both selected from hydrogen and C_1–C_6alkyl and each heterocyclic ring is unsubstituted or substituted by C_1–C_6alkyl, C_1–C_6alkoxy, Cl, Br, F, I, NR^7R^7, CO_2R^7, SO_2NHR^7, SO_3H, or $CONR^7R^7$, OH, NO_2, W, SO_2W, SC_1–C_6alkyl, SO_2C_1–C_6alkyl, NR^7COH, NR^7COW, or NR^7COC_1–C_6alkyl;

Y is a single bond O, S, or C_1–C_6alkyl which is straight or branched or optionally substituted by phenyl or benzyl, wherein each of the aryl groups is unsubstituted or substituted by halo, NO_2, CF_3, C_1–C_6alkyl, C_1–C_6alkoxy, CN, or CO_2R^7;

R^6 is —Z—$COOR^8$ or —Z—$CONR^7R^7$;

Z is a single bond, vinyl, —CH_2—O—CH_2—, methylene optionally substituted by C_1–C_6alkyl, one or two benzyl groups, thienylmethyl, or furylmethyl, or —C(O)NHCH-R^9—, wherein R^9 is H, C_1–C_6alkyl, phenyl,, benzyl, thienylmethyl, or furylmethyl;

W is C_nF_{2n+1}, C_nF_{2n+1}, wherein n is 1–3;

A is —$(CH_2)_m$—, —CH=CH—, —$O(CH_2)_n$—, or —$S(CH_2)_n$—;

each R^7 independently is hydrogen, C_1–C_6alkyl, or $(CH_2)_m$phenyl, wherein m is 0–0; and

R^8 is hydrogen, C_1–C_6alkyl, or 2-di(C_1–C_6alkyl)-amino-2-oxoethyl; or a pharmaceutically acceptable salt thereof.

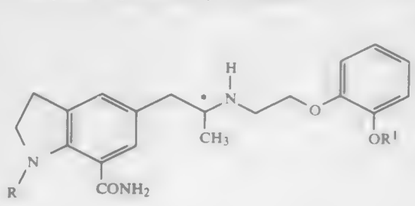
5,387,602

1.5-DIPHENYL-3-(N-HYDROXYCARBAMOYLOXYALKYL)PYRAZOLES

Michael Ferro, Bridgewater, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Aug. 30, 1993, Ser. No. 114,123
Int. Cl.[6] A61K *31/415;* C07D *231/12, 231/16*
U.S. Cl. 514—406 13 Claims

1. An anti-inflammatory compound of the general formula:



wherein,

R^1 and R^2 are independently selected from the group consisting of hydrogen, C_{1-6} alkyl, C_{1-6} perfluoroalkyl, halogen, C_{1-6} alkoxy, C_{1-6} alkylsulfinyl, C_{1-6} alkylsulfonyl and C_{1-6} alkylmercapto;

R^3 and R^4 are independently selected from the group consisting of hydrogen, C_{1-6} alkyl, halogen, C_{1-6} alkoxy, C_{1-6} perfluoroalkoxy, C_{1-6} alkylsulfinyl, C_{1-6} alkylsulfonyl and C_{1-6} alkylmercapto;

R^5 is selected from the group consisting of H, C_{1-6} alkyl, C_{3-6} cycloalkyl and phenyl;

n is 0, 1 or 2; and

X is selected from the group consisting of H, Cl, I and Br.

5,387,603

1,5,7-TRISUBSTITUTED INDOLINE COMPOUNDS AND SALTS THEREOF

Makio Kitazawa; Masaaki Ban; Kosuke Okazaki; Motoyasu Ozawa; Toshikazu Yazaki, and Ryoichi Yamagishi, all of Nagano, Japan, assignors to Kissei Pharmaceutical Co., Ltd., Nagano, Japan

Filed Dec. 1, 1993, Ser. No. 159,624
Claims priority, application Japan, Dec. 2, 1992, 4-356197
Int. Cl.[6] A61K *31/40;* C07D *209/14*
U.S. Cl. 514—415 15 Claims

1. A compound represented by the formula:

wherein R represents a saturated or unsaturated aliphatic acyl group which may be optionally substituted by a halogen atom, a hydroxy group, a lower alkoxy group, a carboxy group, a lower alkoxycarbonyl group, a cycloalkyl group or an aryl group; a hydroxyalkyl group; an aliphatic acyloxyalkyl group; a lower alkyl group which may be optionally substituted by a lower alkoxy group, a carboxy group, a lower alkoxycarbonyl group, an aryl substituted lower alkoxycarbonyl group, a carbamoyl group, a mono- or dialkyl substituted carbamoyl group or a cyano group; an aromatic acyl group which may be optionally substituted by a halogen atom; a furoyl group or a pyridylcarbonyl group; R^1 represents a lower alkyl group which may be optionally substituted by a halogen atom or an aryl group; the carbon atom marked with * represents a carbon atom in (R) configuration, (S) configuration or a mixture thereof; or a salt thereof.

VOL 1171 ISS 1 FE 7 1995 UMI

5,387,604

1,4 BENZODIOXIN DERIVATIVES AND THEIR USE AS SEROTONIN $5HT_{1A}$ AGONISTS

Ian A. McDonald, Loveland; Ronald C. Bernotas, Cincinnati; Mark W. Dudley, Somerville, and Jeffrey S. Sprouse, Cincinnati, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 735,700, Jul. 30, 1991, Pat. No. 5,189,179, which is a continuation-in-part of Ser. No. 574,710, Aug. 29, 1990, abandoned. This application Oct. 16, 1992, Ser. No. 967,434

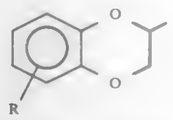
Int. Cl.[6] C07D *319/20;* A61K *31/335*

U.S. Cl. 514—456 39 Claims

1. A compound of the formula:



in which B is represented a C_{1-4} alkylene bridging group; Alk is represented by a linear alkylene bridging group containing from 2–8 carbon atoms which may optionally be monosubstituted at any one carbon atom with a C_{1-4} alkyl, phenyl, substituted phenyl in which said phenyl ring is substituted with up to 3 substituents in which each substituent is independently selected from the group consisting of halogens C_{1-4} alkyl, C_{1-4} alkoxy, CF_3, OCF_3, OH, CN and NO_2, or alkylphenyl substituent in which the phenyl ring may be optionally substituted as above; D is represented by a bond or an ethenylene bridging group; X, Y, and Z are each independently represented by hydrogen, C_{1-4} alkyl, phenyl, optionally substituted as above, or alkylphenyl in which the phenyl ring may be optionally substituted as described above; R_1 is represented by a substituent selected from the group consisting of hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, CF_3, OCF_3, OH, NO_2, CN, $—CONR_2R_3$, $—COOR_4$, $—CH_2SO_2NR_2R_3$, $—SO_2NR_2R_3$, and $—OCH_2COOR_4$; R_2 and R_3 are each independently represented by H or a C_{1-4} alkyl; R_4 is represented by H, C_{1-4} alkyl, phenyl, optionally substituted as above or an alkylphenyl substituent in which the phenyl ring may be optionally substituted as described above; Het is represented by:



in which R is represented by a substituent selected from the group consisting of hydrogen, halogen, C_{1-4} alkyl, C_{1-5} alkoxy, CF_3, OCF_3, OH, NO_2, CN, $—CH_2SO_2NR_5R_6$, $—SO_2NR_5R_6$, $OCH_2C_6H_5$, $—CONR_5R_6$, $—COOR_7$ and $—OCH_2COOR_7$; R_5 and R_6 are each independently represented by H or C_{1-4} alkyl; R_7 is represented by H, C_{1-4} alkyl, phenyl, optionally substituted as above, or an alkylphenyl substituent in which the phenyl ring may be optionally substituted as described above; or a pharmaceutically acceptable salt thereof.

5,387,605

CARBOXYLIC ACIDS THAT ARE EFFECTIVE AGAINST TB

Wolfgang Beilfuss, Hamburg; Karl-Heinz Diehl, Norderstedt; Heinz Eggensperger, Hamburg, and Michael Mohr, Kaltenkirchen, all of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 28, 1993, Ser. No. 69,249

Claims priority, application Germany, Jul. 31, 1992, 4225794

Int. Cl.[6] A01N *43/08, 37/10*

U.S. Cl. 514—461 10 Claims

1. A method of combating mycobacteria comprising the step of treating the mycobacteria with an effective amount of a of furan-2-carboxylic acid, provided that no alkyl sulphonates or alkyl sulphates are present.

5,387,606

PHARMACEUTICAL COMPOSITIONS AND METHOD FOR ADMINISTERING 3 AND 4-SUBSTITUTED 2(5H)-FURANONES TO A MAMMAL FOR INHIBITING BONE LOSS

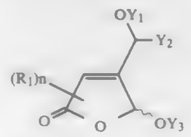
Michael E. Garst, Newport Beach, Calif., assignor to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 872,308, Apr. 24, 1992, Pat. No. 5,268,387. This application Sep. 24, 1993, Ser. No. 126,934

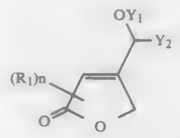
Int. Cl.[6] A61K *31/34, 31/66*

U.S. Cl. 514—461 2 Claims

1. A method for treating an imbalance between bone production and resorption in a host mammal, including a human, the method comprising the step of administering to the mammal an effective dose of a compound, or a pharmaceutically acceptable salt thereof, of the formula



or a compound, or a pharmaceutically acceptable salt thereof, of



where R_1 independently is H, phenyl, C_1-C_6 alkyl substituted phenyl, halogen substituted phenyl, or alkyl of 1 to 6 carbons and n is an integer having the values of 1 or 2, and where when n is 1 the R_1 group is attached to one of the 3 and the 5 positions of the 2-furanone, when n is 2 then the R_1 groups are attached to both the 3 and 5 positions with the proviso that when n is 1 then R_1 is not H;

Y_1 is H, alkyl of 1 to 20 carbons, phenyl C_1-C_{20} alkyl, C_1-C_{20} alkenyl containing one or more olephinic bonds, $PO(OH)_2$, $PO(OH)OR_2$, $PO(OH)R_2$, $PO(OR_2)_2$, where R_2 is independently alkyl of 1 to 20 carbons, phenyl, or halogen substituted phenyl, or C_1-C_6 alkyl substituted phenyl, further Y_1 is $CO—R_3$, $CO—OR_3$, $CONHR_3$, SO_2R_3, SO_2NHR_3, $(CH_2)_p—O—R_3$, or $(CH_2)_p—O—(CH_2)_m—O—R_3$, where p, and m, are integers and are independently 1 to 20 and R_3 is H, C_1-C_{20} alkyl, C_1-C_{20} alkenyl containing one or more olephinic bonds, phenyl, halogen substituted phenyl, or C_1-C_6 alkyl substituted phenyl, with the proviso that when Y_1 is $CO—R_3$, $CO—OR_3$, and $CONHR_3$ then R_3 is not hydrogen;

Y_2 is an alkyl group of 6 to 25 carbons, phenyl, naphthyl, phenyl $(C_1$-$C_{20})$alkyl-, naphthyl $(C_1$-$C_{20})$alkyl—, C_1-C_6 alkyl substituted phenyl, halogen substituted naphthyl, C_1-C_6 substituted naphthyl, and

Y_3 is H, alkyl of 1 to 20 carbons, $CO—R_4$, $CO—O—R_4$, $CO—NH—R_4$, $PO(OR_4)_2$ or $PO(OR_4)R_4$, where R_4 independently is H, alkyl of 1 to 20 carbons, phenyl, or halogen substituted phenyl, or C_1-C_6 alkyl substituted phenyl, with the proviso that when Y_3 is $COOR_4$ then R_4 is not H.

5,387,607

O-BENZYLOXIME ETHERS AND CROP PROTECTION AGENTS CONTAINING THESE COMPOUNDS

Siegbert Brand, Birkenheide; Uwe Kardorff, Mannheim; Reinhard Kirstgen, Neustadt; Bernd Mueller, Frankenthal; Klaus Oberdorf, Eppelheim; Hubert Sauter, Mannheim; Gisela Lorenz, Neustadt; Eberhard Ammermann, Ludwigshafen; Christoph Kuenast, Otterstadt, and Albrecht Harreus, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

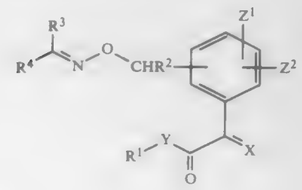
Division of Ser. No. 962,340, Oct. 15, 1992, Pat. No. 5,292,759, which is a division of Ser. No. 722,209, Jun. 27, 1991, Pat. No. 5,194,662. This application Dec. 13, 1993, Ser. No. 165,413

Claims priority, application Germany, Jun. 27, 1990, 4020384; Jun. 27, 1990, 4020388

Int. Cl.[6] A01N *47/40;* C07C *251/58, 251/60*

U.S. Cl. 514—513 6 Claims

1. A compound of the formula I



(I)

where

X is

$CH—C_1$–C_4-alkyl,

Y is

O, S or NR^5,

R^1, R^2 and R^5 are

H or C_1–C_4-alkyl,

Z^1 and Z^2 are identical or different and each is H, halogen, methyl, methoxy or cyano,

R^3 and R^4 are identical or different and each is hydrogen, Cyano, straight-chain or branched C_1–C_{10}-alkyl, C_1–C_4-haloalkyl,

C_3–C_6-cycloalkyl, C_3–C_6-halocycloalkyl,

C_3–C_6-cycloalkyl-C_1–C_4-alkyl,

C_1–C_4-alkoxy-C_1–C_4-alkyl,

C_1–C_4-alkylthio-C_1–C_4-alkyl, arylthio-C_1–C_4-alkyl,

C_2–C_6-alkenyl, C_2–C_5-haloalkenyl,

C_3–C_6-cycloalkenyl, C_3–C_6-halocycloalkenyl,

C_2–C_6-alkynyl, C_1–C_6-alkoxy, C_1–C_6-haloalkoxy,

C_1–C_4-alkylthio, benzylthio,

C_1–C_4-alkylcarbonyl, substituted or unsubstituted phenylcarbonyl, substituted or unsubstituted benzylcarbonyl,

C_1–C_4-alkoxylcarbonyl, substituted or unsubstituted phenoxycarbonyl, substituted or unsubstituted benzyloxycarbonyl, substituted or unsubstituted aryl, substituted or unsubstituted aryloxy, substituted or unsubstituted arylthio, substituted or unsubstituted aryl-C_1–C_4-alkyl, substituted or unsubstituted aryl-C_2–C_4-alkenyl, substituted or unsubstituted aryloxy-C_1–C_4-alkyl, substituted or unsubstituted arylthio-C_1–C_4-alkyl $N(R^6)$ where the radicals R^6 are identical or different and each is H, C_1–C_6-alkyl or substituted or unsubstituted phenyl, $—CO—N(R^7)_2$, where the radicals R^7 are identical or different and each is H or C_1–C_4-alkyl, substituted or unsubstituted meaning, in addition to hydrogen, the radicals halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_1–C_{10}-alkoximino-C_1–C_2-alkyl, aryl, aryloxy, benzyloxy, or C_3–C_6-cycloalkyl, or

R^3 and R^4 together with the carbon atom to which they are attached form cyclopentyl, cyclohexyl, cycloheptyl, adamantyl, camphenyl, tetralyl, indanyl or fluorenyl, each of which may be substituted by the radicals stated above under substituted or unsubstituted, or R^3 and R^4 may be halogen, and "aryl" alone or as part of another radical, is phenyl, naphthyl or anthryl.

5,387,608

CYCLOPENTANE(ENE) HEPTANOIC OR CYCLOPENTANE(ENE) HEPTENOIC ACID, 2-HYDROCARBYL SULFONAMIDOMETHYL AND DERIVATIVES THEREOF AS THERAPEUTIC AGENTS

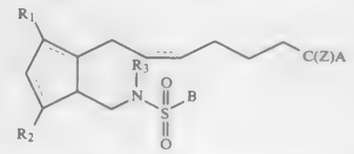
Steven W. Andrews, Irvine, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Aug. 17, 1993, Ser. No. 108,209

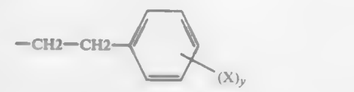
Int. Cl.[6] A61K *31/215, 31/195;* C07C *69/74, 405/00*

U.S. Cl. 514—530 18 Claims

1. A method of treating ocular hypertension which comprises administering an effective amount of a cyclopentane-(ene) heptanoic or cyclopentane(ene) heptenoic acid, 2-hydrocarbylsulfonamidomethyl compound or derivative thereof represented by the formula I



wherein the dashed bonds represent a single bond or a double bond which can be in the cis or trans configuration; A is a radical selected from the group consisting of hydroxyl, and alkoxy radicals; Z is oxo; B is represented by a radical having the general formula



wherein X is a radical selected from the group consisting of halo, nitro, amino, thiol, hydroxy, alkyloxy and alkylcarboxy radicals and y is 0, or an integer of from 1 to 4; R_3 is hydrogen or a lower alkyl radical having from 1 to 3 carbon atoms; and one of R_1 and R_2 is =O, —OH or a $—O(CO)R_6$ group, and the other one is —OH or $—O(CO)R_6$, or R_1 is = and R_2 is H, wherein R_6 is a saturated or unsaturated acyclic hydrocarbon group having from 1 to about 20 carbon atoms, or $—(CH_2)_mR_7$ wherein m is 0–10, and R_7 is an aliphatic ring from about 3 to about 7 carbon atoms, or an aryl ring, and pharmaceutically-acceptable salts thereof.

5,387,609

ANTI-SOLID TUMOR AGENTS

Yoshiharu Morita, Yokohama, and Koichiro Hirayama, Sagamihara, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 669,954, Mar. 15, 1991, abandoned, which is a continuation of Ser. No. 461,671, Jan. 8, 1990, which is a division of Ser. No. 72,141, Jul. 10, 1987, Pat. No. 4,916,160. This application Mar. 9, 1992, Ser. No. 845,817

Claims priority, application Japan, Jul. 10, 1986, 61-162783

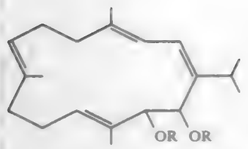
Int. Cl.[6] A61K *31/225, 31/045*

U.S. Cl. 514—548 8 Claims

1. A method of treating solid tumors in a mammal, which comprises administering to said mammal an effective amount of a pharmaceutical composition, which comprises:

a) an effective amount for treating solid tumors of a compound of the formula:

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wherein R is selected from the group consisting of hydrogen and acetyl; and

b) a pharmaceutically acceptable carrier; and wherein said solid tumors treated are sensitive to treatment with said composition containing said compound.

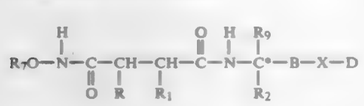
5,387,610

PEPTIDE DERIVATIVES OF COLLAGENASE INHIBITOR

Robert D. Gray; Arno F. Spatola, and Krzysztof Darlak, all of Louisville, Ky., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation of Ser. No. 715,948, Jun. 14, 1991, abandoned. This application Nov. 24, 1992, Ser. No. 981,149
Int. Cl.[6] A61K *37/02, 31/195;* C07C *259/10*
U.S. Cl. 514—575 112 Claims

1. A compound of the formula:

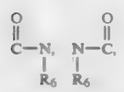


or pharmaceutically acceptable salts thereof

wherein R and R_1 are independently hydrogen, lower alkyl, aryl or aryl lower alkyl,

R_2 is aryl lower alkyl, said R_2 being unsubstituted or mono- or di-substituted with halo, nitro, carboxy, lower carbalkoxy, cyano, lower alkanoyl, trifluoromethyl, lower alkyl, hydroxy, lower alkoxy, formyl, amino, lower alkyl amino, di-lower alkyl amino, mercapto, lower alkylthio or mercapto lower alkyl,

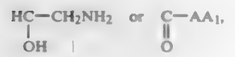
B is



CH_2SO, CH_2SO_2,

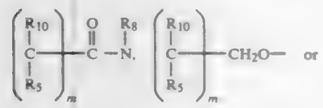


CH_2S, $COCH_2$, $CH{=}CH$,

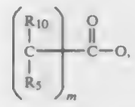


AA_1 is an amino acid residue,

X is a chemical bond, lower alkylene,



-continued



R_9 and R_{10} are independently hydrogen, methyl or ethyl,

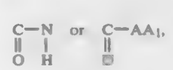
R_5, R_6, R_7 and R_8 are independently hydrogen or lower alkyl,

D is hydrogen or lower alkyl which is unsubstituted or substituted with halo, nitro, carboxy, lower carbalkoxy, cyano, lower alkanoyl, trifluoromethyl, lower alkyl, hydroxy, lower alkoxy, formyl, amino, lower alkyl amino, diloweralkylamino, mercapto, lower alkyl thio, mercapto lower alkyl or aryl,

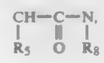
m is 1, 2 or 3 with the proviso that when B is



and X is a chemical bond or lower alkylene, then R_2 is not unsubstituted benzyl or benzyl monosubstituted with hydroxy or lower alkoxy and with the further proviso that when B is



and X is



then R_2 is not unsubstituted benzyl or benzyl substituted with hydroxy or lower alkoxy.

5,387,611

USE OF BUTYLUREA, NONOXYNOL-9 AND BENZALKONIUM CHLORIDE AS ANTI-BACTERIAL, ANTI-VIRAL CONTRACEPTIVE AGENTS

Arye Rubinstein, Monsey, N.Y., assignor to Albert Einstein College of Medicine of Yeshiva University, a Division of Yeshiva University, Bronx, N.Y.

Continuation-in-part of Ser. No. 847,193, Mar. 6, 1992, Pat. No. 5,229,423. This application Jun. 3, 1993, Ser. No. 71,723
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[6] A61K *31/17, 31/14, 31/075*
U.S. Cl. 514—588 20 Claims

1. A method of abrogating sperm motility comprising putting sperm into contact with 0.2–0.6M butylurea in combination with 0.3–0.6% Nonoxynol-9 and/or benzalkonium chloride.

5,387,612

USE OF THE R-ENANTIOMERS OF N-PROPARGYL-1-AMINOINDAN COMPOUNDS FOR TREATING PARKINSON'S DISEASE

Mussa B. H. Youdim, Haifa; John P. M. Finberg, Tivon; Ruth Levy, Tel-Aviv; Jeffrey Sterling; David Lerner, both of Jerusalem; Tirtsah Berger-Paskin, Raanana, and Haim Yellin, Ramat-Gan, all of Israel, assignors to Teva Pharmaceutical Industries Ltd., Jerusalem and Technion Research and Development Foundation Ltd., Haifa, both of Israel

Continuation of Ser. No. 632,184, Dec. 21, 1990, abandoned. This application May 18, 1993, Ser. No. 63,455
Claims priority, application Israel, Jan. 3, 1990, 92952
Int. Cl.[6] A61K *31/135*
U.S. Cl. 514—647 9 Claims

1. A method of treating as subject for Parkinson's disease which consists essentially of administering to the subject an amount of R(+)-N-propargyl-1-aminoindan or a pharmaceutically acceptable salt thereof effective to treat the subject.

5,387,613

TREATMENT OF TACHYARRHYTHMIAS OF SUPRAVENTRICULAR ORIGIN

Arthur H. Goldberg, Montclair, and Leonard Lachman, Fort Salonga, both of N.Y., assignors to RiboGene, Inc., Hayward, Calif.

Filed Jul. 23, 1993, Ser. No. 95,349
Int. Cl.[6] A61K *31/135*
U.S. Cl. 514—652 14 Claims

1. A method for the acute treatment of tachyarrhythmia of supraventricular origin comprising nasally administering a composition comprising propranolol dissolved in a pharmaceutically acceptable aqueous-based carrier to a patient experiencing a tachyarrhythmia of supraventricular origin which causes the heart to beat at a heart rate of above about 100 beats per minute, said composition administered immediately at a total dose of up to 20 mg. of propranolol to significantly reduce the heart rate.

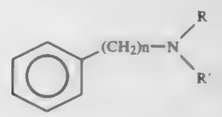
5,387,614

USE OF SIGMA RECEPTOR LIGANDS AS SALIVARY GLAND STIMULANTS

Ronald D. Schoenwald, and Charles F. Barfknecht, both of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Oakdale, Iowa

Filed Jul. 27, 1993, Ser. No. 97,534
Int. Cl.[6] A61K *31/135, 31/13*
U.S. Cl. 514—654 4 Claims

1. A method of stimulating salivary secretion, comprising; orally administering a small but saliva stimulating effective amount of a compound of the formula:



wherein n is from 1 to 8 and R and R′ may be the same of different and are selected from the group consisting of C_1 to C_8 alkyl, C_3 to C_7cycloalkyl.

5,387,615

L-DEPRENYL FOR TREATING IMMUNE SYSTEM DYSFUNCTION AND COMPOSITIONS FOR SAME

Norton W. Milgram, Scarborough, Canada; David R. Stevens, Leawood, Kans., and Gwendolyn O. Ivy, Scarborough, Canada, assignors to Deprenyl Animal Health, Inc., Overland Park, Kans.

Continuation of Ser. No. 975,284, Nov. 12, 1992, Pat. No. 5,276,057, which is a continuation-in-part of Ser. No. 643,452, Jan. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 576,011, Aug. 31, 1990, Pat. No. 5,151,449. This application Aug. 27, 1993, Ser. No. 113,608
Int. Cl.[6] A61K *31/135*
U.S. Cl. 514—654 5 Claims

1. A method of treating immune system dysfunction of humans by stimulating a secretion selected from the group consisting of Tumor Necrosis Factor alpha, Interleukin-6 and Granulocyte-Macrophage Colony Stimulating Factor, said method comprising:

administering to the human a dose level greater than level used to treat Parkinson's disease and an immune response dysfunction treating effective amount of the compound L-deprenyl, or a pharmaceutically acceptable form thereof, at a frequency level of from about one to about seven times weekly until a desired effect upon deterioration of immune system response function is achieved.

5,387,616

Patent Not Issued For This Number

5,387,617

SMALL CELL FOAMS AND BLENDS AND A PROCESS FOR THEIR PREPARATION

David M. Hedstrand, and Donald A. Tomalia, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 8,276, Jan. 22, 1993, abandoned. This application Nov. 8, 1993, Ser. No. 148,440
Int. Cl.[6] C08J *9/00;* C08G *6/00*
U.S. Cl. 521—79 16 Claims

1. A process for the preparation of small cell foams which comprises using as nucleating agents modified dense star polymers, which have a highly branched interior of one monomeric composition and an exterior structure of a different monomeric composition capable of providing a hydrophobic outer shell and which have a particle diameter of from about 5 to about 1,000 nanometers (Dm), in combination with a matrix polymer, and a physical blowing agent an extruding the aforesaid composition under heat and pressure to foam the resultant extruded composition.

5,387,618

PROCESS FOR PREPARING A POLYURETHANE FOAM IN THE PRESENCE OF A HYDROCARBON BLOWING AGENT

Guido F. Smits, Wijnegem, Belgium, assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 27, 1993, Ser. No. 174,555
Int. Cl.[6] C08J *9/14*
U.S. Cl. 521—131 17 Claims

1. A process for preparing a polyurethane or polyisocyanurate foam by reacting an organic polyisocyanate with a polyahl in the presence of a physical blowing agent characterized in that the physical blowing agent, based on total amounts of a) and b), consists of:

a) from about 5 to about 80 mole percent of a C_{5-6} alicyclic alkane or mixtures of such; and

b) from about 95 to about 20 mole percent of a mixture of isopentane and n-pentane present in a mole ratio of from about 80:20 to about 20:80.

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5,387,619

CHEMICAL REACTION SUPPRESSION SYSTEM

Chinsoo Lee, Charleston, and Kenneth L. Hoy, St. Albans, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 676,074, Mar. 27, 1991. This application Jul. 16, 1993, Ser. No. 93,308

Int. Cl.[6] C08G *18/08*

U.S. Cl. 521—133 13 Claims

1. A process for inhibiting chemical reaction of a fluid functionally reactive organic material selected from a group consisting of:

a) one or more monomers;

b) one or more monomers and one or more oligomers or polymers; and

c) one or more oligomers and one or more polymers said process comprising:

i) supplying said functionally reactive organic material;

ii) supplying a supercritical or near supercritical fluid;

iii) mixing the fluid functionally reactive organic material and the supercritical or near supercritical fluid;

iv) inhibiting the reaction of the functionally reactive organic material for as long as the mixture of the functionally reactive organic mixture and the supercritical or near supercritical fluid are maintained under supercritical or near supercritical conditions;

v) removing the supercritical or near supercritical fluid conditions thereby allowing the functionally fluid organic material to react.

5,387,620

CROSS-LINKED ETHYLENIC POLYMER FOAM STRUCTURES AND PROCESS FOR MAKING

Chung P. Park, Pickerington, Ohio; Pak-Wing S. Chum, and George W. Knight, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 148,711, Nov. 8, 1993, abandoned, which is a continuation of Ser. No. 54,329, Apr. 28, 1993, Pat. No. 5,288,762. This application Jun. 1, 1994, Ser. No. 252,151

Int. Cl.[6] C08J *9/00*

U.S. Cl. 521—143 19 Claims

1. A cross-linked ethylene polymer foam structure made according to a process, comprising:

a) forming a foamable melt polymer material by blending and heating a decomposable chemical blowing agent and an ethylene polymer material comprising a substantially linear ethylene polymer having:

i) a melt flow ratio, I_{10}/I_2, $\geqq 5.63$;

ii) a molecular weight distribution, M_w/M_n, defined by the equation: $M_w/M_n \geqq (I_{10}/I_2) - 4.63$; and

iii) a critical shear rate at onset of surface melt fracture of at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a linear ethylene polymer having about the same I_2 and M_w/M_n;

b) inducing cross-linking in the foamable melt polymer material; and

c) expanding the foamable melt polymer material by exposing it to an elevated temperature to form the foam structure.

5,387,621

POROUS MEMBRANES BASED ON UNSTABLE POLYMER SOLUTIONS

Giorgio Soldani, Pisa, Italy, assignor to Kontron Instruments, Inc., Everett, Mass.

Division of Ser. No. 761,508, Sep. 18, 1991, Pat. No. 5,229,045. This application Feb. 11, 1993, Ser. No. 16,516

Int. Cl.[6] C08J *9/28*

U.S. Cl. 521—155 15 Claims

1. A porous polymeric membrane wherein said membrane is elasotomeric, biocompatible and blood compatible and which has a spongy porous cell wall structure with a filamentous outer surface with interfiber spacing ranging from about 30 to 150 microns and a filamentous inner surface with an interfiber spacing ranging from about 30 to about 150 microns said membrane being prepared by a process comprising the steps of,

a) forming a solution of a polymer in a solvent for the polymer;

b) adding a nonsolvent to the polymer solution until a thermodynamically unstable polymer solution is obtained;

c) separately spraying the unstable polymer solution and nonsolvent from separate spray means onto a sliding and rotating mandrel means to form a precipitated material; and

d) placing the precipitated material into a bath of nonsolvent to cure the precipitated material.

5,387,622

PERFUME COMPOSITIONS PRODUCED BY SOL-GEL METHODS

Tohru Yamamoto, c/o Nakato Laboratory, Inc. 6, Ohshinohara, Yasu-cho, Yasu-Gun, Japan

Continuation of Ser. No. 617,960, Nov. 26, 1990, abandoned, which is a continuation of Ser. No. 397,514, Aug. 23, 1989, abandoned, which is a division of Ser. No. 160,802, Feb. 26, 1988, Pat. No. 4,880,851. This application Jun. 28, 1991, Ser. No. 725,884

Claims priority, application Japan, Feb. 26, 1987, 62-043718; Feb. 27, 1987, 62-045462; Apr. 2, 1987, 62-082279

The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.

Int. Cl.[6] A61K *7/46, 9/10, 9/14;* A01N *25/26*

U.S. Cl. 523—102 5 Claims

1. A perfume composition comprising a perfume substance encapsulated or clathrated in a matrix of conjugated polymer produced from an alkoxide and a silane coupling agent, which is obtained from a method comprising the steps of:

adding an acid catalyst for sol-gel methods to a reaction mixture comprising water,

an alkoxide selected from the group consisting of metal alkoxides, phosphorus alkoxides, and silicon alkoxides,

a silane coupling agent selected from the group consisting of (γ-glycidoxypropyl)trimethoxysilane, (γ-glycidoxypropyl)methyldiethoxysilane, β-(3,4-epoxycyclohexyl)ethyltrimethoxysilane, vinyltrimethoxysilane, vinyltrichlorosilane, vinyltris(β-methoxyethoxy)silane, vinyltriacetoxysilane (γ-methacryloxypropyl)trimethoxysilane, N-β-(N-vinylbenzylaminoethyl,-γ-aminopropyltrimethoxysilane•hydrochloride, γ-aminopropyltriethoxysilane, N-phenyl-γ-aminopropyltrimethoxysilane, γ-(2-aminoethyl)aminopropyltrimethoxysilane, γ-(2-aminoethyl-)aminopropylmethyldimethoxysilane, γ-mercaptopropyltrimethoxysilane, mercaptopropylmethyldimethoxysilane, methyltrimethoxysilane, methyltriethoxysilane, hexamethyldisilazane, γ-anilinopropyltrimethoxysilane, γ-chloropropyltrimethoxysilane, γ-chloropropylmethyldimethoxysilane, methyltrichloromethylsilane, dimethyldichlorosilane, trimethylchlorosilane, and octadecyldimethyl-(3-(trimethoxysilyl)propyl)ammonium chloride and

a perfume substance,

so as to cause the hydrolysis of said alkoxide and said silane coupling agent, forming a hydrolysate;

adding a base catalyst for sol-gel methods to the reaction mixture so as to cause the polycondensation of the hydrolysate to form a conjugated polymer, thereby encapsulating or clathrating said perfume substance in the matrix of said conjugated polymer,

wherein said base catalyst is selected from the group consisting of N,N-dimethylbenzylamine, tributylamine, tri-n-propylamine, tripentylamine, tripropargylamine, N,N,N-trimethylethylenediamine, and tri-n-hexylamine,

wherein the acid catalyst is added in an amount of at least 0.1 mole per mole of the alkoxide,

wherein the perfume substance is contained in an amount in the range of 1 to 300 parts by weight per 100 parts by weight of the alkoxide, and

wherein the base catalyst is added in an amount in the range of 0.01 to 0.06 mole per mole of the alkoxide.

5,387,623

BIODEGRADABLE ADHESIVE PACKAGING

Lisa L. Ryan, Dayton, Minn.; Alain Rouyer, Boos; Emmanuelle Pariente, Rouen, both of France, and Peter Yeboa-Kodie, Luneburg, Germany, assignors to H. B. Fuller Company, Vadnais Heights, Minn.

Continuation-in-part of Ser. No. 738,176, Jul. 30, 1991, abandoned. This application Jun. 6, 1992, Ser. No. 909,566

Int. Cl.[6] C08K *5/10*

U.S. Cl. 523—124 18 Claims

1. A method of packaging and applying an adhesive composition in a biodegradable package, said method comprising the steps of:

(a) providing one substantially uniform separate portion of the adhesive composition;

(b) sufficiently solidifying said portion for packaging;

(c) selecting a biodegradable packaging material having physical characteristics which are compatible with and do not substantially adversely affect the adhesive characteristics of a molten mixture of said adhesive composition,

(d) substantially completely surrounding said sufficiently solidified portion with a biodegradable packaging material into a packaged adhesive; and

(e) heating said packaged adhesive to form a substantially homogeneous mixture and applying said homogeneous mixture to a substrate, said packaging material having properties such that no degrading of the packaging material occurs upon application.

5,387,624

METHOD FOR THE PREPARATION OF A POWDER MIXTURE COMPOSED OF CURED SILICONE MICROPARTICLES AND INORGANIC MICROPARTICLES

Yoshitsugu Morita, Chiba, and Noriyasu Yokoyama, Tokyo, both of Japan, assignors to Dow Corning Toray Silicon Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 995,630

Claims priority, application Japan, Dec. 26, 1991, 3-358609

Int. Cl.[6] C08K *7/00*

U.S. Cl. 523—220 18 Claims

1. A method for the preparation of a powder mixture of cured silicone microparticles and inorganic microparticles comprising

(I) forming a water-based suspension of

(A) a plurality of cured silicone microparticles having an average diameter of 0.1 to 200 micrometers, and

(B) a plurality of inorganic microparticles having an average particle diameter of 0.1 to 200 micrometers; and

(II) removing the water from said water-based suspension.

5,387,625

WATERBORNE COATING COMPOSITION FOR METAL CONTAINERS

Girish G. Parekh, Libertyville; Perumal T. Pillai, Lindenhurst, and Devasia J. Ponmankal, Chicago, all of Ill., assignors to The Dexter Corporation, Windsor Locks, Conn.

Filed May 18, 1993, Ser. No. 63,091

Int. Cl.[6] C08K *3/20;* C08L *63/02*

U.S. Cl. 523—404 31 Claims

1. A waterborne coating composition for application to a metal substrate comprising:

(a) about 25% to about 90%, by weight of nonvolatile material, of a flexible high molecular weight epoxy resin having an epoxy equivalent weight of about 7,000 to about 20,000, said flexible high molecular weight epoxy resin comprising:

(i) a liquid epoxy resin having an epoxy equivalent weight of about 150 to about 300,

(ii) a carboxylic acid-terminated linear polymer, and

(iii) a dihydric phenol,

wherein the carboxylic acid-terminated linear polymer is present in a sufficient amount to provide a flexible high molecular weight epoxy resin having a Tg of about 30° C. to about 100° C.;

(b) about 5% to about 70%, by weight of nonvolatile material, of a medium molecular weight epoxy resin having an epoxy equivalent weight of about 1,500 to about 5,000;

(c) about 5% to about 70%, by weight of nonvolatile material, of a resin having pendant carboxylic acid groups, wherein the carboxylic acid groups are present in an amount of about 0.7 to about 5.5 meq/gm of the resin;

(d) a fugitive base in an amount sufficient to neutralize about 20% to about 100% of the stoichiometric amount of the pendant carboxylic acid groups; and

(e) a sufficient amount of a carrier comprising water and volatile organic compounds, such that the waterborne coating composition includes about 10% to about 40%, by weight of the composition, of the total weight of (a), (b), (c) and (d), and such that the composition includes about 0.5 to about 2.5 pounds VOC per gallon of the composition minus water, and wherein the composition is essentially free of a phenol-formaldehyde resin, an aminoplast, a carbodiimide compound and mixtures thereof.

5,387,626

ADDITIVE COMBINATION FOR IMPROVING THE PROCESSING PROPERTIES OF WATER-CONTAINING MIXTURES OF BUILDING MATERIALS

Jozef Böhme-Kovac, Dexheim; Friedrich Girg, Idstein/Taunus, and Heinz-Josef Mann, Saulheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 939,009, Sep. 2, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,730

Claims priority, application Germany, Sep. 3, 1991, 4129169

Int. Cl.[6] C08L *1/28, 3/16*

U.S. Cl. 524—35 11 Claims

1. An additive composition suitable for addition to water-containing building materials, comprising:

a) at least 65% by weight of a water-soluble cellulose ether or a derivative thereof,

b) from 1 to 15% by weight of polyacrylamide,

c) from 1 to 20% by weight of an alkali metal salt or ammonium salt of a crosslinked, ungrafted or starch-grafted polyacrylate having a lattice structure capable of absorbing about 400 to 1000 times its inherent weight of an aqueous liquid having a pH in the range of from 4 to 10, thereby forming a stable gel structure,

d) from 0 to 20% by weight of a starch ether and

e) from 0 to 15% by weight of a water-soluble alkali metal salt, alkaline earth metal salt or ammonium salt of an arylsulfonic acid-formaldehyde condensation product or of a sulfonic acid-modified product of the polycondensation of melamine and formaldehyde.

5,387,627

RADICAL CATION SLATS OF TETRATHIOTETRACENE AND COPPER CHLORIDE, THEIR PREPARATION AND THE USE THEREOF

Bruno Hilti, Basel; Ernst Minder, Sissach; Carl W. Mayer, Riehen, all of Switzerland, and Bernd Klingert, Inzlingen, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 906,074, Jun. 29, 1992, Pat. No. 5,284,600. This application Nov. 16, 1993, Ser. No. 153,247

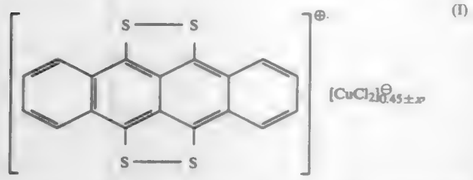
Claims priority, application Switzerland, Jul. 2, 1991, 1952/91-8

Int. Cl.[6] C08K *5/45*

U.S. Cl. 524—84 11 Claims

1. A composition comprising (a) a thermosetting, thermo-

plastic or structurally crosslinked polymer, and (b) a radical cation salt of formula I



(I)

wherein x has a value of from −0.1 to +0.2; and wherein the radical cation salt is in the form of a network of needle crystals in the polymer.

5,387,628

PROCESS FOR PRODUCING (CO)POLYCARBONATE AND (CO)POLYCARBONATE COMPOSITION

Tatsuya Kanno; Tsutomu Yamato; Yasuhiro Oshino; Yutaka Fukuda; Yoshihiro Iguchi; Takaaki Kuwana, and Toshihiro Matsumoto, all of Hyogo, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

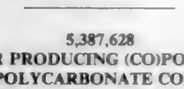
Division of Ser. No. 70,733, Jun. 2, 1993, which is a division of Ser. No. 940,310, Aug. 31, 1992, Pat. No. 5,278,279. This application Sep. 9, 1993, Ser. No. 119,368

Claims priority, application Japan, Mar. 11, 1992, 4-52421

Int. Cl.[6] C08K *5/15*

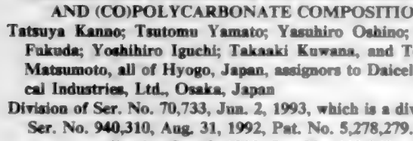
U.S. Cl. 524—117 **39 Claims**

1. A melt polycondensation process for producing a (co)polycarbonate composition or a (co)polyestercarbonate composition comprising adding an organic phosphorus compound selected from the group consisting of compounds represented by the following general formulas (1) to (6), or, an organic phosphorus compound selected from the group consisting of compounds represented by the following general formulas (1) to (6) and a hindered phenol compound to a (co)polycarbonate or a (co)polyestercarbonate, said (co)polycarbonate and said (co)polyestercarbonate being obtained by reacting an aromatic dihydroxy compound with one or more members selected from the group consisting of a diester of carbonic acid and a diester of dicarboxylic acid:

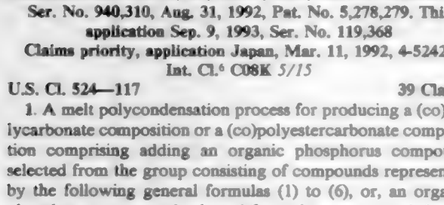


(1)

wherein R^a, R^b and R^c each represents a straight-chain or branched alkyl group having 1 to 12 carbon atoms, or a phenyl group which is unsubstituted or substituted;

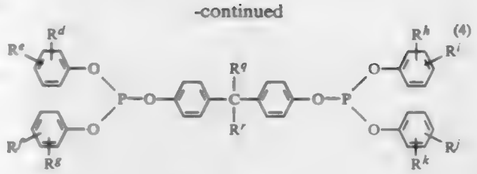


(2)

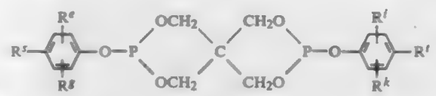


(3)

-continued

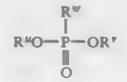


(4)



(5)

wherein R^d, R^e, R^f, R^g, R^h, R^i, R^j and R^k each represents a hydrogen atom or a straight-chain or branched alkyl group having 1 to 12 carbon atoms, R^q and R^r each represents a straight-chain or branched alkyl group having 1 to 12 carbon atoms and R^s and R^t each represents a straight-chain or branched alkyl group having 1 to 12 carbon atoms;



(6)

wherein R^u and R^v each represents a straight-chain or branched alkyl group having 1 to 20 carbon atoms and R^w represents a phenyl or aralkyl group which is unsubstituted or substituted.

5,387,629

PHOSPHORUS CONTAINING POLY(ARYLENE ETHER)S USEFUL AS OXYGEN PLASMA RESISTANT FILMS AND IN NONLINEAR OPTICAL APPLICATIONS

James E. McGrath, Blacksburg, Va.; Carrington D. Smith, Milford Square, Pa.; Duane B. Priddy, Jr., Midland, Mich., and Timothy Pickering, Radford, Va., assignors to The Center for Innovative Technology, Herndon; Virginia Polytechnic Institute & State University and Virginia Tech Intellectual Properties, Inc., both of Blacksburg, all of Va.

Continuation-in-part of Ser. No. 920,989, Jul. 28, 1992. This application Jul. 30, 1993, Ser. No. 99,993

Int. Cl.[6] C08K *5/23*

U.S. Cl. 524—190 **5 Claims**

1. A composition useful in applications where nonlinear optical effects are utilized, comprising:

a polymer matrix including a polymer compound that has a plurality of sub-units with the chemical formula:



where R′ and R″ are substituted or unsubstituted aryl or heterocyclic aryl groups and may be the same or different and where R‴ is a substituted or unsubstituted ary, heterocyclic aryl, alkyl, or heterocyclic alkyl group; and

a chromophore distributed within said polymer matrix and distributed noncentrosymmetrically with respect to individual polymer chains of said polymer compound within said polymer matrix.

5,387,630

POLYOLEFIN-EXTRUSION COATING COMPOSITIONS HAVING GOOD COATABILITY, GOOD ADHESION TO THE SUBSTRATE, AND GOOD CHILL ROLL RELEASE

Ray Edwards, Henderson, and Bruce W. Foster, Longview, both of Tex., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Aug. 31, 1993, Ser. No. 115,271

Int. Cl.[6] C08K *5/20*

U.S. Cl. 524—210 **7 Claims**

1. An extrusion coating composition comprising:

(a) about 79.93 to 97.97 weight percent, based on the weight of the total composition, a polyethylene component having a melt index in the range of about 2 up to 100 dg per minute at 190° C. and having a sufficiently broad molecular weight distribution so that the resulting composition is capable of being extrusion coated at a temperature in the range of 175° up to 290° C.,

(b) about 2 to 20 weight percent, based on the weight of the total composition, of a tackifying resin having a RBSP in the range of about 100° up to 140° C., and

(c) about 0.03 to 0.07 weight percent, based on the weight of the total composition of the fatty acid amide, erucamide.

5,387,631

TREAD RUBBER COMPOSITIONS AND METHOD OF MAKING SAME

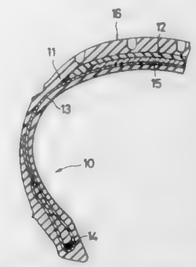
Kinya Kawakami, Kanagawa, and Atsushi Kanazawa, Yokohama, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 892,497, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 770,150, Oct. 3, 1991, abandoned, which is a continuation of Ser. No. 604,987, Oct. 29, 1990, abandoned, which is a continuation of Ser. No. 470,418, Jan. 29, 1990, abandoned, which is a continuation of Ser. No. 282,864, Dec. 9, 1988, abandoned, which is a continuation of Ser. No. 130,512, Dec. 9, 1987, abandoned. This application May 19, 1993, Ser. No. 63,053

Claims priority, application Japan, Dec. 12, 1986, 61-295007

Int. Cl.[6] C08K *5/32*

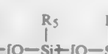
U.S. Cl. 524—260 **7 Claims**



1. A rubber composition for tire treads which comprises:

(a) from 20 to 80 parts by weight of a rubber selected from the group consisting of natural rubber, polyisoprene rubber and mixtures thereof;

(b) from 80 to 20 parts by weight of a styrene/butadiene copolymer rubber having a styrene content of 10 to 30 percent by weight and a 1,2-vinyl bond content of 30 to 80 percent by weight, said styrene/butadiene copolymer rubber being a rubber resulting from the reaction of an unmodified styrene/butadiene copolymer rubber with a compound selected from the group consisting of N,N-dimethylformaldehyde, N,N-diethylformaldehyde, N-diethylacetamide, aminoacetamide, N,N-dimethyl-N′,N′-dimethylaminoacetamide, N-phenyldiacetamide, N,N-dimethyl-acrylamide, N,N-dimethylmethacrylamide, propionamide, N,N-dimethylpropionamide, 4-pyridylamide, N,N-dimethyl-4-pyridylamide, N,N-dimethylbenzamide, p-aminobenzamide, N′,N′-(p-dimethylamino)benzamide, N,N-dimethyl-N′-(p-ethylamino)benzamide, N-acetyl-N-2-naphthylbenzamide, nicotinamide, N,N-diethylnicotinamide, amide succinate, amide maleate, N,N,N′,N′-tetramethylamide maleate, imide succinate, maleimide, N-methylmaleimide, N-methylphthalimide, 1,2-cyclohexanecarboxylimide, N-methyl-1, 2-cyclohexane-dicarboxylimide, oxamide, 2-furlamide, N,N,N′,N′-tetramethyloxamide, N,N-dimethyl-2-furlamide, N,N-dimethyl-8-quinolinecarboxylamide, N,N-dimethyl-p-amino-benzylacetamide, N,N-dimethyl -N′,N′-(p′-dimethylamino)-cinnamylideneacetamide, N,N-dimethyl-N′,N′-(2-dimethylamino)-vinylamide, N′-(2-methylamino)-vinylamide, urea, N,N′-dimethylurea, N,N,N′,N′-tetramethylurea, methyl carbamade, N,N-diethylmethyl carbamate, ϵ-caprolactum, N-methyl-ϵ-caprolactum, 2-pyrrolidoae, N-methyl-2-pyrrolidone, N-acetyl-2-pyrrolidone, 2-piperidone, N-methyl-2-piperidone, 2-quinoline, n-methyl-2-quinoline, 2-indolinone, N-methyl-2-indolinone, isocyanuric acid and N,N′,N″-trimethylisocyanurate and having at the terminal end of the polymer chain an atomic group of the formula



the total amount of said rubbers (a) and (b) in the composition being 100 parts by weight, and

(c) an effective amount of a rubber component of the formula



where n is an integer of 3–10.

5,387,632

SURFACE WETTABLE SILICONE HYDROGELS

Yu-Chin Lai, Pittsford; Dominic V. Ruscio, Webster, and Paul L. Valint, Jr., Pittsford, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

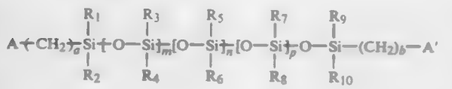
Division of Ser. No. 883,449, May 15, 1992, Pat. No. 5,358,995. This application Aug. 3, 1994, Ser. No. 285,473

Int. Cl.[6] C08F *130/08*

U.S. Cl. 526—279 **28 Claims**

1. A contact lens made from a silicone-containing, hydrogel material formed from the polymerization product of a monomer mix comprising:

a) an acrylic-capped polysiloxane prepolymer represented by the formula:



wherein:

A and A′ are independently an ester or amide of an acrylic or a methacrylic acid;

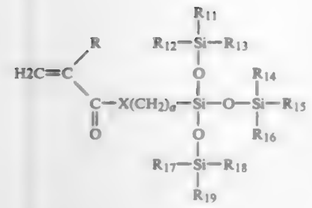
R_1–R_{10} are independently an alkyl, fluoroalkyl, alcohol, ether or fluoroether group having 1–10 carbons, or an aromatic group having 6–18 carbons;

m,n, and p are independently 0 to 200 with m+n+p being from 23 to 200; and

a and b are independently 1 to 10;

b) a bulky polysiloxanylalkyl (meth)acrylate monomer represented by the formula:

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wherein:

X is O or N-R;

R is H or CH_3;

R_{11}–R_{19} are independently an alkyl, fluoroalkyl, alcohol, ether or fluoroether group having 1–10 carbons, or an aromatic group having 6–18 carbons; and

a is 1, or 3 to 10; and

c) at least one hydrophilic monomer.

5,387,633

STYRENE SODIUM STYRENE SULFONATE COPOLYMER FOR PLASTISOL SEALANT

Richard W. Bush, Columbia; Eugene E. Carney, Sykesville; Shao-Hai Wu, Ellicott City, all of Md.; Felek Jachimowicz, Brookline, Mass.; Timothy G. Grasel, Moorpark, Calif., and Tsutomu Takeuchi, Kanagawa, Japan, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Mar. 8, 1994, Ser. No. 208,764

Int. Cl.[6] C08K *5/12, 5/11, 5/523*

U.S. Cl. 524—296 **12 Claims**

1. A plastisol for a container sealant made of about 25–85 weight percent of a plasticizer and a copolymer of styrene with a metal salt of styrene sulfonic acid, wherein the copolymer contains about 2–8 weight percent of the salt.

5,387,634

TINTED PLEXIGLASS WITH ORGANIC PIGMENTS

Hans Lichtenstein, Babenhausen; Silvia Ebert, and Manfred Krieg, both of Darmstadt, all of Germany, assignors to Roehm GmbH Chemische Fabrik, Darmstadt, Germany

Continuation of Ser. No. 680,930, Apr. 5, 1991, abandoned. This application Jan. 15, 1993, Ser. No. 5,164

Claims priority, application Germany, Apr. 5, 1990, 4010987

Int. Cl.[6] C08K *5/09;* **C08F** *2/44, 220/10*

U.S. Cl. 524—321 **16 Claims**

1. An opaque tinted acrylic glass containing an organic pigment or an organic dye, comprising:

A) a polymer matrix comprising 70 to 100% by weight of methyl methacrylate monomer units;

B) 0.01 to 5% by weight of an organic pigment or a colorant containing an organic dye;

C) 0.01 to 3% by weight of an acid having a molecular weight of 30 to 1,000 Daltons present in the polymer matrix; and

D) 0 to 3% by weight of additional additives, prepared by forming, by polymerization, a polymer matrix which comprises 70 to 100% by weight of methyl methacrylate monomer units, in the presence of 0.01 to 5% by weight of an organic pigment or an organic dye, based on the weight of the acrylic glass, and in the presence of 0.01 to 3% by weight of said acid, based on the weight of the acrylic glass, as well as in the presence of 0 to 3% by weight of additional additives.

5,387,635

AQUEOUS DISPERSIONS OF ETHYLENE/α,β-UNSATURATED CARBOXYLIC ACID INTERPOLYMERS

Michael E. Rowland, Lorke Jackson, and Kenneth E. Springs, Clute, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US92/00622, § 371 Date Aug. 27, 1992, § 102(e) Date Aug. 27, 1992, PCT Pub. No. WO92/13012, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 24, 1992, Ser. No. 924,032

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[6] C08K *5/00*

U.S. Cl. 524—379 **11 Claims**

1. An aqueous dispersion of at least one ethylene/α,β-unsaturated carboxylic acid interpolymer produced by a process comprising contacting the interpolymer(s) in a stirred aqueous medium with a mixture of bases having at least 0.2 equivalents of base per mole of α,β-unsaturated carboxylic acid, said base being a mixture of monoethanolamine, diethanolamine, or ammonium hydroxide and at least one alkali metal hydroxide in a total ratio of from about 1.5 to about 3 moles of monoethanolamine, diethanolamine, or ammonium hydroxide per 1 mole of alkali metal hydroxide, thereby forming a dispersion having at least 10 weight percent of dispersed solids, total weight basis, and not more than 1 weight percent of non-dispersibles, based on the weight of the interpolymer, the improvement characterized by the dispersion having a mean volume diameter particle size within the range of 100–10,000 Angstroms.

5,387,636

FLAME-RETARDED HIPS FORMULATIONS WITH ENHANCED IMPACT STRENGTH

Susan D. Landry, and F. Alexander Pettigrew, both of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Continuation of Ser. No. 923,604, Aug. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 745,003, Aug. 14, 1991, abandoned. This application Nov. 4, 1993, Ser. No. 147,901

Int. Cl.[6] C08K *3/38, 3/16;* **C08L** *53/00*

U.S. Cl. 524—404 **22 Claims**

1. A flame-retarded HIPS resin formulation which provides improved impact resistance to test bars made from such HIPS resin formulation comprising

a) a concentrate containing a blend of (i) about 5–25 wt. % of one or more halogenated organic flame retardants, (ii) about 1–12 wt. % of one or more polymeric impact modifiers, and (iii) a synergistically effective amount of one or more flame retardant synergist; and

b) at least about 50 wt. % HIPS resin; whereby test bars made from the HIPS resin formulation have an enhanced IZOD impact strength as determined by ASTM-D 256-88 which is greater than the IZOD impact strength of test bars made from a HIPS resin formulation containing (a) (i), (a) (ii), (a) (iii), and (b) without initially forming the concentrate of (a) (i), (a) (ii), and (a) (iii), the weight percent of each constituent being based upon the total weight of the blended combination of (a) and (b) and the one or more polymeric impact modifiers being selected from the group consisting of styrene/butadiene/styrene triblock copolymers, styrene/isoprene/styrene triblock copolymers, styrene/butadiene diblock copolymers, polycaprolactone, and functionalized ethylene/propylene copolymers.

5,387,637

GOLF BALL CORE COMPOSITIONS

Michael J. Sullivan, Chicopee, Mass., assignor to Lisco, Inc., Tampa, Fla.

Filed Aug. 20, 1992, Ser. No. 932,654

Int. Cl.[6] C08K *3/36*

U.S. Cl. 524—493 **27 Claims**

1. An improved core composition for a golf ball exhibiting a high coefficient of restitution, said composition comprising a base elastomer selected from polybutadiene and mixtures of polybutadiene with other elastomers, said polybutadiene having a molecular weight of from about 50,000 to about 500,000, at least one metallic salt of an α, β-ethylenically unsaturated monocarboxylic acid, a free radical initiator, and a crystalline silica.

5,387,638

EMULSION COMPOSITION

Masato Nakamae, Kurashiki; Ken Yuki, Osaka; Hirotoshi Miyazaki, Kurashiki, and Hitoshi Maruyama, Osaka, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Aug. 25, 1993, Ser. No. 111,536

Claims priority, application Japan, Sep. 7, 1992, 4-237853

Int. Cl.[6] C08L *29/00*

U.S. Cl. 524—503 **5 Claims**

1. An emulsion composition which comprises an aqueous emulsion (A) obtained by emulsion polymerization of 100 parts by weight of an ethylenically unsaturated monomer in the presence of 1 to 15 parts by weight of a carboxyl group-modified polyvinyl alcohol per 100 parts by weight of monomer as the dispersant, and (B) a polyamide resin.

5,387,639

DUCTILE BLENDS OF POLYESTER-CARBONATE OR POLYARYLATES AND POLYETHERIMIDE RESINS

Paul D. Sybert, Evansville, and Raymond H. Glaser, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Oct. 23, 1992, Ser. No. 965,646

Int. Cl.[6] C08L *69/00, 71/10, 67/03*

U.S. Cl. 524—537 **8 Claims**

1. A thermoplastic molding composition for molding ductile articles, consisting essentially of a ductile blend of

(a) from about 75 to 95 parts by weight of a polyester-carbonate resin containing recurring polycarbonate chain units of the formula:

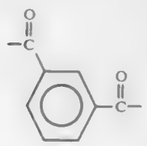


(I)

wherein D is a divalent aromatic radical of the dihydric phenol employed in the resin preparation; and repeating or recurring carboxylic chain units of the formula:

(II)

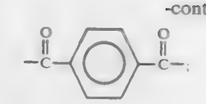
wherein D has the meaning previously ascribed to it and R is a divalent moiety selected from those of the formulae:



(III)

or

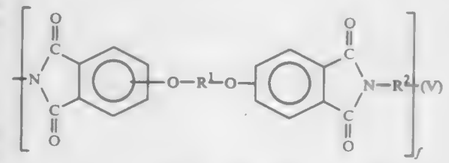
-continued



(IV)

and

(b) from about 5 to 25 parts by weight of a polyetherimide resin having repeating chain units of the formula:



(V)

wherein f is an integer of from about 10 to about 500; R^2 represents a divalent aliphatic hydrocarbon radical containing from 2 to about 12 carbon atoms, a divalent aromatic hydrocarbon of 6 to 20 carbon atoms, a halogenated hydrocarbon radical containing from 6 to 18 carbon atoms, or a divalent cycloaliphatic hydrocarbon radical containing from 3 to about 10 carbon atoms; and R^1 is a divalent aromatic organic radical having from 6 to 30 carbon atoms, inclusive, wherein the amounts of (A) and (B) are based on the combined weight of (A)+(B) and, optionally (C) less than 50% by weight of an aromatic polycarbonate homopolymer wherein the amount of (C) is based on the combined weight of (A)+(B)+(C) and/or (D) an effective amount for fire retardation of a fire retardant; and wherein the blend of (A)+(B) has an average of about 20 to 80 weight percent of ester units of the formulae (III) and (IV) together; and

said moieties (III) and (IV) in the blend being in a weight ratio of from about 50:50 to 0:100, and wherein the ductility of said blend is sufficient to exhibit a notched izod impact strength of at least about 363 J/M at 125 mil thickness.

5,387,640

FLUORINE-CONTAINING COPOLYMERS AND AQUEOUS DISPERSIONS PREPARED THEREFROM

Gisbert Michels, Cologne, and Hans-Albert Ehlert, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 4,347, Jan. 14, 1993, abandoned. This application Mar. 2, 1994, Ser. No. 204,842

Claims priority, application Germany, Jan. 22, 1992, 4201603

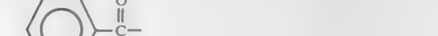
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.

Int. Cl.[6] C08L *27/12;* **C08F** *18/20*

U.S. Cl. 524—544 **17 Claims**

1. Fluorine-containing copolymers and aqueous dispersions prepared therefrom containing 5 to 50% by weight, relative to the total weight of the dispersions, of ingredients other than water (solids content), it being possible for the mixture to contain additionally extenders known per se for texthe auxiliaries, wherein the copolymers contain copolymerized comonomers incorporated by polymerisation in the following percentages by weight, relative to the total weight of the copolymers:

a) 60–90% by weight of perfluoroalkyl-containing (meth)acrylates of the formula

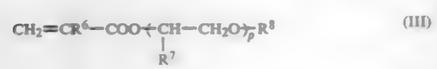


(I),

b) 1 to 35 of monomers of the formula

(II)

and/or styrene, acrylonitrile, vinyl acetate or vinyl propionate,
c) 4 to 25% of monomers of the formula



(III)

whereby b) and c) together constitute at least 6% by weight,
d) 1 to 15% of monomers of the formula



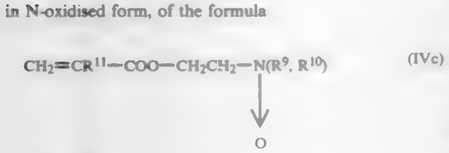
(IVa)

or, in quaternised form, of the formula



(IVb)

or, in N-oxidised form, of the formula



(IVc)

in which formulae
n represents a number from 4 to 16,
X represents —(—CH_2—)$_m$—, —SO_2—NR^2—CH_2—CHR^3— or —O—(—CH_2—)$_m$—, m denoting a number from 1 to 4,
R^1, R^3, R^4, R^6, R^7 and R^{11} represent, independently of one another, hydrogen or methyl,
R^2, R^9, R^{10} and R^{12} denote, independently of one another, C_1–C_4-alkyl,
R^5 represents a C_1–C_{22}-alkyl,
R^8 denotes hydrogen or C_1–C_8-alkyl,
p represents a number from 1 to 50, and
Y represents an equivalent of a mono- to trivalent anion.

5,387,641

AQUEOUS POLYMER EMULSIONS USEFUL AS WALLCOVERING PREPASTE ADHESIVES

Dominic W. K. Yeung, 3661 Golden Orchard Drive, Mississauga, Ontario, Canada L4Y 3J2 ; Richard E. Rice, 1333 Bloor Street E., Apt. 1108, Mississauga, Ontario, Canada L4Y 3T6 , and Dipak Lad, 64 Metcalk Drive, Brampton, Ontario, Canada L6C 4N4

Filed May 25, 1993, Ser. No. 66,792
Int. Cl.[6] C08F *2/22;* C08L *29/04*
U.S. Cl. 524—557 20 Claims

1. A stable aqueous emulsion comprising:
(1) between about 20 and about 50 weight percent synthetic polymer solids, said solids comprising a copolymer or a terpolymer derived from:
(a) between about 60 and about 90 mole percent of a vinyl alcohol derived from a vinyl ester which has been partially or fully hydrolyzed and, optionally, said vinyl ester;
(b) between about 10 and about 40 mole percent of one or more water soluble monomers; and
(c) between about 0 and about 10 mole percent of any alkyl acrylate or alkyl methacrylate wherein alkyl represents an alkyl group containing between 1 and 20 carbon atoms;
(2) between about 0.5 and about 5.0 weight percent of one or more surfactants or protective colloids; and
(3) the balance water;
wherein said aqueous emulsion has a viscosity of less than 1000 cps at 25° C. and wherein said emulsion has adhesive properties.

5,387,642

AQUEOUS BINDER COMPOSITION AND A PROCESS FOR ITS PREPARATION

Harald Blum, Wachtendonk; Werner Kubitza, Leverkusen, and Peter Höhlein, Kempen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 820,172, Jan. 13, 1992, abandoned. This application Jan. 22, 1993, Ser. No. 7,219
Claims priority, application Germany, Jan. 19, 1991, 4101527; Apr. 9, 1991, 4111392
Int. Cl.[6] C08J *3/20;* C08K *3/20;* C08L *51/00, 67/00*
U.S. Cl. 524—591 22 Claims

1. An aqueous binder composition for the manufacture of an aqueous coating composition which may be cured by an isocyanate addition on a coated substrate comprising
A) an aqueous solution or dispersion of an organic polyol component which can be diluted with water and comprises at least one polyester resin containing urethane, carboxylate and hydroxyl groups and
B) a hydrophobic polyisocyanate component which has a viscosity of 50 to 10.000 mPa.s at 23° C. and contains at least one organic polyisocyanate which is present as an emulsion in component A),
wherein the NCO/OH equivalent ratio, based on the isocyanate groups of component B) and the hydroxyl groups of the polyol component present in A), is 0.5:1 to 5:1.

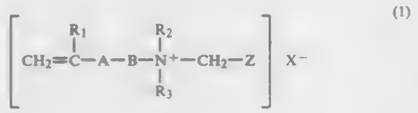
5,387,643

COMPOSITION OF A CATIONIC MICRO-EMULSION AND ITS PREPARATION METHOD

Masao Maegawa, Kashiba, Japan, assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

PCT No. PCT/US93/05841, § 371 Date Feb. 17, 1994, § 102(e) Date Feb. 17, 1994, PCT Pub. No. WO93/25625, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 17, 1993, Ser. No. 107,793
Claims priority, application Japan, Jun. 18, 1992, 4-159375
Int. Cl.[6] C08L *37/00, 51/06, 83/00*
U.S. Cl. 524—804 8 Claims

1. An aqueous, cationic micro-emulsion comprising cationic particles having a two-layer structure, said structure consisting of 100 parts of an inner component (B) protected with an outer film of 10 to 100 parts of component (A), wherein component
(A) is a water soluble resin comprising a copolymer of
(a) a structural unit comprising a cationic alkali-crosslinkable monomer represented by the following formula:



(1)

where
R_1: —H or —CH_3;
R_2, R_3: —CH_3 or —C_2H_5, and R_2 and R_3 may be the same or different;
A: —COO or —CONH;
B: (—CH_2—)$_n$, n=1 to 3;
Z:



X, Y: A halogen atom of F, Cl, or Br;
(b) a structural unit comprising an alkoxysilane monomer containing at least one reactive group selected from the group consisting of a vinyl group, an acyl group, and a methacryl; group and
(c) a structural unit comprising an olefinic unsaturated monomer other than that described by (a) and (b), provided that (a) occupies not less than 5% by weight relative to the total quantity of component (A), (b) occupies not less than 0,5% by weight relative to the total quantity of component (A), and (c) occupies not more than 94.5% by weight relative to the total quantity of component (A); and wherein (B) is a polymerized resin derived from:
(d) a structural unit comprising an alkoxysilane monomer containing at least one reactive group selected from the group consisting of a vinyl group, an acryl group, and a methacryl group; and
(e) a structural unit comprising an olefinic unsaturated monomer other than that described by (d) provided that (d) occupies not less than 0.5% by weight relative to the total quantity of component (B), and (e) occupies not more than 99.5% by weight relative to the total quantity of component (B).

5,387,644

MONOMER PREPARATIONS FOR THE CONSTRUCTION INDUSTRY

Karoly Dischö, Effretikon, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Dec. 14, 1993, Ser. No. 167,256
Claims priority, application Germany, Dec. 15, 1992, 4242356
Int. Cl.[6] C08K *3/04, 5/01;* C08L *75/06, 75/08*
U.S. Cl. 524—847 10 Claims

1. A hardenable monomer composition, comprising
(a) at least one cross-linkable acrylic monomer with a flash point above 50° C.;
(b) at least one material selected from the group consisting of (i) 0.01 to 7% by weight of carbon black, said weight based on the weight of the monomer, and (ii) at least one polyfunctional polyester- or polyether-urethane/acrylate oligomer; and
(c) from 0.01–1% by weight, based on the weight of the total composition, of at least one paraffin oil, said paraffin oil having a density which is lower than the density of the remainder of the composition.

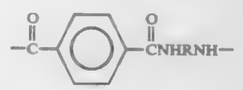
5,387,645

POLYPHTHALAMIDE COMPOSITION

Ruth A. Montag, and George A. Corbin, both of Naperville, Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 21,303, Feb. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 585,879, Sep. 20, 1990, abandoned. This application Dec. 16, 1993, Ser. No. 168,873
Int. Cl.[6] C08L *77/10*
U.S. Cl. 525—66 13 Claims

1. A blend comprising a polyphthalamide having at least about 50 mole percent recurring units represented by the formula:



wherein R comprises at least one divalent aliphatic radical having from 4 to 14 carbon atoms, a functionalized polyolefin having as reactive functionality grafted or copolymerized carboxylic acid or derivative thereof and a pendant succinic anhydride-functionalized block copolymer said block copolymer comprising polymerized styrene blocks add rubber blocks comprising ethylene/propylene, ethylenic/butylene or ethylene/pentylene polymer blocks or a combination thereof.

5,387,646

FLUORINE-TYPE RESIN COMPOSITION, CURABLE COMPOSITION AND COATING COMPOSITION

Akimasa Nakahata, Hiratsuka; Nobushige Numa; Masahiro Yamane, both of Ebina; Osamu Isozaki, Yokohama, and Noboru Nakai, Hiratsuka, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Continuation of Ser. No. 486,667, Mar. 1, 1990, abandoned. This application Apr. 7, 1993, Ser. No. 43,984
Claims priority, application Japan, Mar. 2, 1989, 1-50587
Int. Cl.[6] C08L *27/14, 83/00*
U.S. Cl. 525—103 7 Claims

1. A fluorine-containing resin composition comprising:
(a) a fluorine-containing resin having (i) a hydrolyzable group attached directly to a silicon atom and/or a silanol group and (ii) an epoxy group in the molecule, or
(b) a mixture of a component (I) having a hydrolyzable group attached directly to a silicon atom and/or a silanol group and a component (II) having an epoxy group, wherein at least one of the components (I) and (II) are a fluorine-containing resin, and
(c) at least one metal chelate compound selected from the group consisting of aluminum chelate compounds which contain as a ligand a compound capable of forming a keto-enol tautomer.

5,387,647

THERMOPLASTIC MOLDING COMPOUNDS OF POLYAMIDE AND HYDROGENATED NITRILE RUBBER

Herbert Eichenauer; Hartmuth Buding, both of Dormagen; Josef Merten, Korschenbroich, and Karl-Heinz Ott, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 656,114, Feb. 14, 1991, abandoned, which is a continuation of Ser. No. 386,620, Jul. 31, 1989, abandoned. This application May 19, 1994, Ser. No. 246,555
Claims priority, application Germany, Aug. 13, 1988, 3827529
Int. Cl.[6] C08L *77/00*
U.S. Cl. 525—179 9 Claims

1. Thermoplastic molding compounds prepared by melt mixing:
A) at least 70% by weight of a partially crystalline thermoplastic polyamide or mixture of partially crystalline thermoplastic polyamides,
B) 30 to 0.5% by weight of a hydrogenated statistical nitrile rubber with a hydrogenation of at least 80%,
C) 0 to 29.5% by weight of non-polyamide thermoplastic resin components and, optionally
D) standard additives in usual quantities the melt mixing temperature being between 10° C. and 80° C. above the melting point of the polyamides.

5,387,648

THERMOPLASTIC ELASTOMERS BASED UPON CHLOROSULFONATED POLYETHYLENE AND A CRYSTALLINE OLEFIN POLYMER

Oliver C. Ainsworth, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 45,282, Apr. 8, 1993, Pat. No. 5,286,795, which is a continuation of Ser. No. 629,501, Dec. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 462,666, Jan. 4, 1990, Pat. No. 4,978,703. This application Dec. 27, 1993, Ser. No. 172,972
Int. Cl.[6] C08L *23/28, 23/34, 23/26*
U.S. Cl. 525—192 5 Claims

1. A thermoplastic elastomer blend, having a tension set value at 100% elongating of less than 50%, comprising from about 35 to about 50 parts of a vulcanized chlorined polyethylene, from about 15 to about 30 parts of a crystalline thermoplastic polyolefin polymer, and from about 15 to about 60 parts

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of a thermoplastic non-crosslinked amorphous or semicrystalline chlorosulfonated polyethylene.

5,387,649

POLYMER PRODUCTION

Eric J. M. DeBoer; Fred F. Hage; Adriaan A. Van Der Huizen, all of Amsterdam, Netherlands, and Carl L. Willis, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 991,934, Dec. 17, 1992, Pat. No. 5,364,911. This application Jun. 13, 1994, Ser. No. 258,807

Claims priority, application European Pat. Off., Dec. 20, 1991, 91203390

Int. Cl.[6] C08F *8/42*

U.S. Cl. 525—271 9 Claims

1. A process for the production of a metallated derivative of a polyolefin comprising the steps of polymerizing an α-olefin having a vinylidene group in the terminal portion thereof, and contacting the base polyolefin with an alkyl alkali metal compound in the presence of inert hydrocarbon solvent, and an alkali metal t-alkoxide or a tertiary amine.

5,387,650

PREPARATION OF ABS MOLDING MATERIALS

Ehrenfried Baumgartner, Roedersheim-Gronau; Juergen Hofmann, Ludwigshafen; Rudolf H. Jung, Worms; Rainer Moors, Limburgerhof, and Hansjoerg Schaech, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 764,859, Sep. 24, 1991, abandoned. This application Jan. 11, 1994, Ser. No. 179,822

Claims priority, application Germany, Sep. 27, 1990, 4030512

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.[6] C08F *279/04, 2/38*

U.S. Cl. 525—316 2 Claims

1. A process for the continuous preparation of high-impact polystyrene-acrylonitrile by free radical-initiated polymerization of a mixture of from 60 to 90% by weight of styrene and from 10 to 40% by weight of acrylonitrile, in the presence of from 5 to 30% by weight, based on the sum of monomers, of polybutadiene having a solution viscosity measured as a 5% strength by weight in styrene at 25° C. of from 25 to 95 mPa.s, of from 0.01 to 0.3% by weight, based on the monomers, of a chain transfer agent selected from the group consisting of mercaptans having from 4 to 18 carbon atoms and in the presence of ethylbenzene as solvent, in at least four consecutive reactors operating essentially without back-mixing, at from 50° to 170° C., phase inversion taking place in the second reactor, which comprises carrying out the polymerization as far as phase inversion at 90° C. or below and initiating the polymerization by free radicals from the decomposition of tert-butyl peresters whose half life period at 90° C. is not more than 20 minutes, the polybutadiene content, based on the total reaction mixture, being at least 10% by weight and at most 25% of the total amount of chain-transfer agent being added to the time of phase inversion and the remainder being added thereafter.

5,387,651

BLOCK COPOLYETHERAMIDE SUITABLE FOR INJECTION MOLDING AND PROCESS FOR PREPARING IT

Aldemaro Ciaperoni, Milan, Italy, assignor to Enichem S.P.A., Milan, Italy

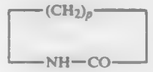
Continuation of Ser. No. 725,444, Jul. 3, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 91,748

Claims priority, application Italy, Jul. 5, 1990, 20873 A/90

Int. Cl.[6] C08L *77/12*

U.S. Cl. 525—408 5 Claims

1. Block copolyetheramide suitable for injection molding, having a melting point ranging from 215° C. to 223° C. an apparent viscosity, at 230° C., ranging from 50 to 150 Pa.sec., a number average molecular weight ranging from 4,300 to 50,000 and a yellow degree lower than or equal to 20 measured by means of an Elrepho apparatus, said copolyetheramide comprising two types of blocks or segments, one of which being polyamide and the other polyalkylene ether, chemically bound to each other, the polyamide block being produced in the presence of catalytic amounts of hypophosphorous acid or metahypophosphorous acid and in the absence of a polyalkylene ether, and the polycondensation between the polyamide blocks and the polyalkylene ether blocks being carried out, in the absence of a polycondensation catalyst and under vacuum lower than 100 mm Hg at temperatures higher than the polyamide block melting temperature, wherein the polyamidic blocks are produced by polymerization of lactams having the formula:



(I)

wherein p is an integer ranging from 2 to 11, wherein the polyalkylene ether is of poly(ethylene oxide)glycol and its amount ranges from 1 to 15% by weight.

5,387,652

RESIN COMPOSITION OF POLYAMIDEIMIDE AND POLYPHENYLENE SULFIDE

Takao Kawaki; Akikazu Amagai, both of Tokyo; Toshiaki Yamada, Tsukuba; Hidefumi Harada, Tsukuba, and Hajime Ban, Tsukuba, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sep. 22, 1993, Ser. No. 124,642

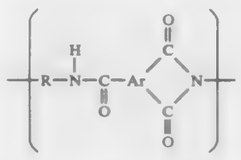
Claims priority, application Japan, Sep. 22, 1992, 4-252848

Int. Cl.[6] C08L *81/04, 79/08*

U.S. Cl. 525—419 8 Claims

1. A resin composition comprising a melt-kneaded product of:

(A) an aromatic polyamideimide resin (Component A) which is obtained by polymerizing an aromatic tricarboxylic acid anhydride and a diisocyanate in a solvent under conditions where an amide group is substantially formed first and then an imide group is formed, and which has at least one recurring unit of the formula (1),



(1)

wherein Ar is a trivalent aromatic hydrocarbon group having at least one 6-membered carbon ring, and R is a divalent aromatic hydrocarbon group or an aliphatic hydrocarbon group, and

(B) a polyphenylene sulfide resin (Component B).

5,387,653

THERMOPLASTIC POLYAMIDE/POLYETHERESTERAMIDE POWDERS FOR THE DIRECT COATING OF METAL SUBSTRATES

Jean-Paul Merval, Brionne; Jean-Yves Peschard, Serquigny, both of France, and Stephen Rennie, London, England, assignors to Atochem, Puteaux, France

Continuation of Ser. No. 815,847, Dec. 3, 1991, abandoned, which is a continuation of Ser. No. 191,871, May 9, 1988, abandoned. This application Aug. 2, 1993, Ser. No. 100,192

Claims priority, application United Kingdom, May 7, 1987, 8710748

Int. Cl.[6] C08L *77/00*

U.S. Cl. 525—420 10 Claims

1. A thermoplastic powder composition of matter comprising particulates of at least one polyamide, polyetheresteramide, or mixture thereof, and an adhesion promoting amount of the polycondensate of an aromatic sulfonamide with an aldehyde or dicarboxylic acid, said composition being well adapted for the direct adherent coating of metallic substrates wherein said adhesion promoting amount is from 0.5% to 20% by weight of said thermoplastic powder.

5,387,654

HYDROXY-PEROXIDES AND THEIR USES

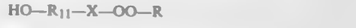
Jose Sanchez, Grand Island, and Arthur L. Baron, Getzville, both of N.Y., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Division of Ser. No. 1,921, Jan. 8, 1993, Pat. No. 5,304,649. This application Mar. 2, 1994, Ser. No. 205,273

Int. Cl.[6] C08F *8/46*

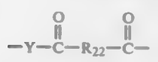
U.S. Cl. 525—451 2 Claims

1. In a process for curing an unsaturated polyester resin composition comprising heating such resins at appropriate temperatures in the presence of initiating amounts of peroxides, the improvement comprising the use in such process of hydroxy peroxides having the structure A:



(A)

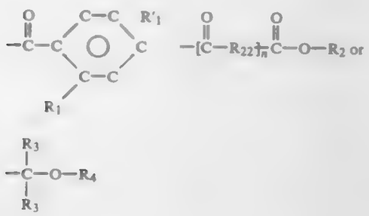
wherein X is a direct bond or the diradical:



and wherein:

When X is a direct bond:

R is selected from the structures:

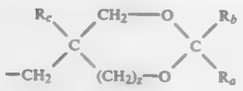


wherein:

R_1 is a lower alkyl radical of 1 to 4 carbons, an alkoxy radical of 1 to 4 carbons, a phenyl radical, an acyloxy radical of 2 to 8 carbons, a t-alkylperoxycarbonyl radical of 5 to 9 carbons, hydroxy, fluoro, chloro or bromo, R'_1 is H or is selected from the same radicals as R_1, and may be the same as or different than R_1;

n is 0 or 1;

R_2 is a substituted or unsubstituted alkyl radical of 1 to 18 carbons, substituents being one or more alkyl radicals of 1 to 6 carbons, t-alkylperoxy radicals of 4 to 8 carbons, alkoxy radicals of 1 to 6 carbons, aryloxy radicals of 6–10 carbons, hydroxy, chloro, bromo or cyano; R_2 is a substituted or unsubstituted cycloalkyl radical of 5 to 12 carbons, a substituted or unsubstituted 4-piperidinyl radical, or a substituted or unsubstituted 1,3-dioxan-5-yl radical with substituents for the cycloalkyl, piperidinyl or dioxanyl radicals being one or more lower alkyl radicals of 1 to 4 carbons; or R_2 is the radical:

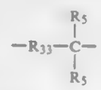


wherein z is 0 or 1, R_a, R_b and R_c are the same or different and are H— or alkyl radicals of 1 to 8 carbons, or R_a and R_b can be connected forming together with the carbon atoms to which they are attached a substituted or unsubstituted ring containing 5–12 carbons, substituents being one or more alkyl radicals of 1 to 5 carbons or phenyl radicals;

R_{22} is a substituted or unsubstituted alkylene diradical of 2 to 3 carbons, substituents being one or more lower alkyl radicals of 1 to 4 carbons, or a substituted or unsubstituted 1,2-phenylene diradical, substituents being one or more lower alkyl radicals of 1 to 4 carbons, chloro, bromo, nitro or carboxy;

R_3 is a lower alkyl radical of 1 to 4 carbons, or the two R_3 radicals can be connected together forming together with the carbon atom to which they are attached a ring containing 5 to 6 carbons;

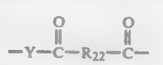
R_4 is a lower alkyl radical of 1 to 4 carbons; the R_{11} diradical is the structure,



wherein R_5 is a lower alkyl radical of 1 to 4 carbons; and

R_{33} is a substituted or unsubstituted alkylene diradical of 2 to 4 carbons, substituents being one or more lower alkyl radicals of 1 to 4 carbons, with the proviso that when n is 0 and R_{33} is an alkylene diradical of 2 carbon atoms substituted with methyl on the C atom alpha to the hydroxy group, R_2 is not a unsubstituted alkyl radical of 1 to 9 carbon atoms or an alkyl radical of 1 to 9 carbon atoms substituted with one or more lower alkyl radicals of 1 to 6 carbon atoms; and

II. when X is the diradical:



Y is oxy or —NR_6—, wherein R_6 is H or a substituted or unsubstituted alkyl radical of 1 to 8 carbons, substituents being one or more lower alkyl radicals of 1 to 4 carbons or hydroxy, and R_{22} is as defined above;

R is a substituted or unsubstituted t-alkyl radical of 4 to 12 carbons, a cumyl radical or a cumyl radical substituted with lower alkyl radicals said lower alkyl radicals totaling 1 to 4 carbon atoms, substituents for the t-alkyl radical being lower alkyl radicals of 1 to 4 carbons or a t-alkylperoxy radical of 4 to 8 carbons; and R_{11} is a substituted or unsubstituted alkylene diradical of 2 to 8 carbons, substituents being one or more lower alkyl radicals of 1 to 4 carbons lower hydroxyalkyl radicals of 1 to 4 carbons or hydroxy.

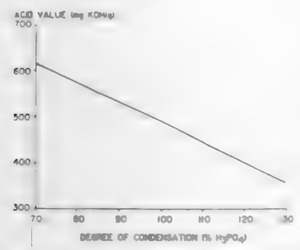
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5,387,655

COMPOSITION WITH INTEGRAL INTUMESCENCE PROPERTIES

Charles D. Aslin, Belper, Great Britain, assignor to Chemische Fabrik Budenheim and Rudolf A. Oetker, Budenheim, Germany

PCT No. PCT/EP92/01186, § 371 Date Jul. 28, 1993, § 102(e) Date Jul. 28, 1993, PCT Pub. No. WO93/05118, PCT Pub. Date Mar. 18, 1993
PCT Filed May 26, 1992, Ser. No. 39,358
Claims priority, application Austria, Sep. 9, 1991, 1790/91
Int. Cl.[6] C08L *61/34*
U.S. Cl. 525—511 41 Claims



1. Composition having integrated intumescent properties, obtained by combining

(a) one or more amino-formaldehyde resins and

(b) a mixture of optionally carboxylic acid anhydride-modified mono- and diesters of orthophosphoric acid with one or more polyols, the average hydroxyl group content of said polyols being at least 40% by weight, the molar ratio monoester/diester not exceeding 12:1 and the phosphorus content of said mixture being equal to at least 10% by weight.

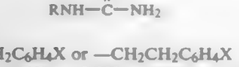
5,387,656

SUBSTITUTED CYANOGUANIDINES AS CURING AGENTS FOR EPOXY RESINS

Joseph J. Zupancic, Bensenville, and Jeffrey P. Conrad, Chicago, both of Ill., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 912,045, Jul. 19, 1992, abandoned, which is a continuation of Ser. No. 557,445, Jul. 23, 1990, abandoned. This application Nov. 16, 1993, Ser. No. 153,401
Int. Cl.[6] C08L *63/02*
U.S. Cl. 525—523 11 Claims

1. A one-part epoxy resin composition curing at temperatures above ambient consisting essentially of an epoxy resin and a substituted cyanoguanidine latent curing agent for said epoxy resin and soluble therein and having improved solubility for organic solvents relative to cyanoguanidine and having the formula



where R is $-CH_2C_6H_4X$ or $-CH_2CH_2C_6H_4X$ and X is —H, $-CH_3$, $-OCH_3$, —OH, or $-NY_2$ and Y is —H, or $-CH_3$ and optionally a catalyst.

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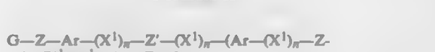
EPOXY RESINS CONTAINING THIADIAZOLE AND/OR OXADIAZOLE MOIETIES

Robert E. Hefner, Jr., Lake Jackson, Tex.; Joseph A. Schomaker, Midland, Mich., and Jimmy D. Earls, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

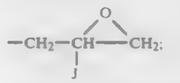
Continuation of Ser. No. 119,781, Sep. 10, 1993, abandoned. This application Apr. 28, 1994, Ser. No. 236,592
Int. Cl.[6] C08G *59/26;* C07D *413/14*
U.S. Cl. 525—523 4 Claims

1. An epoxy resin containing an average of more than one vicinal epoxide group per molecule and at least one thiadiazole or oxadiazole or both at least one thiadiazole and at least one oxadiazole group per molecule, said epoxy resin being represented by the following Formula II:

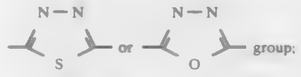
Formula II



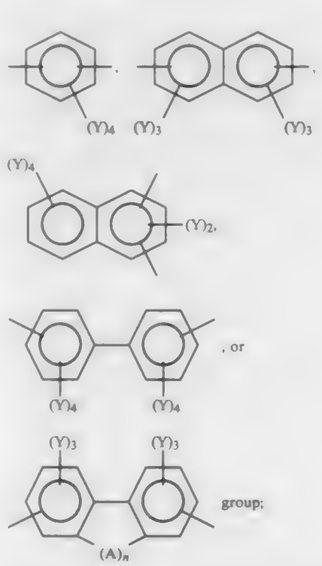
wherein each Z is independently a —O—, —S—, —NR—, —N< or —COO— group; G is



J is hydrogen or a hydrocarbyl group having from one to about 4, carbon atom(s); each Z'— is independently a



each Ar is independently a



each X^1 is independently a —O—, —S—, —SO—, $-SO_2-$, —CO—, —O—CO—, —CO—O—, —S—CO—, —CO—S—, —NR—CO—, —CO—NR—, —NR—CO—NH—, —N-H—CO—NR—, —NH—CO—O— or —O—CO—NH— group; each R is independently hydrogen or a hydrocarbyl group having from one to about 10, carbon atoms; each Y is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from one to about 10, carbon atoms, a halogen atom, a nitro group, a nitrile group, a —CO—R group or a —CO—OR group; A is a divalent hydrocarbyl group having from one to about 10, carbon atoms and can optionally contain one or more heteroatoms selected from N, O, or S; each n independently has a value of zero or one and n^1 has a value of zero to about 10.

5,387,658

CROSSLINKED CASTOR OIL DERIVATIVES

Wolfgang Schröder, Dorsten, and Klaus Jenni, Witten, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Sep. 3, 1993, Ser. No. 115,640
Claims priority, application Germany, Oct. 31, 1992, 4236912
Int. Cl.[6] C08G *59/62;* C08L *63/00, 91/00*
U.S. Cl. 525—530 3 Claims

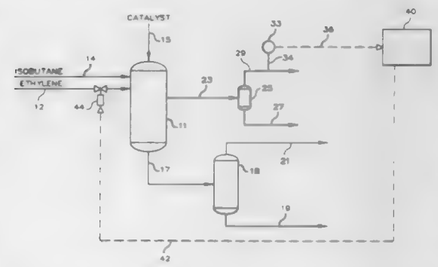
1. A composition suitable for thickening or gelling an oleaginous substance prepared by reacting a mixture comprising: (A) a linking agent containing at least two epoxide groups; (B) a member of the group consisting of castor oil, esters of ricinoleic acid or 12-hydroxystearic acid with a di- or polyol, and hydrogenated derivatives thereof; wherein the molar ratio of (A) to (B) is 0.1:1 to 1.2:1; and isolating a reaction product of (A) and (B) that is substantially free of epoxide groups.

5,387,659

FLASH GAS SAMPLING FOR POLYMERIZATION REACTIONS

John D. Hottovy, Houston; Frederick C. Lawrence, League City, and Nelson T. Black, Pasadena, all of Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 8, 1993, Ser. No. 14,934
Int. Cl.[6] C08F *2/14*
U.S. Cl. 526—59 8 Claims



1. In a polymerization process wherein monomer and catalyst are provided to a polymerization reactor and wherein a polymerization effluent, containing polymer and unreacted monomer, is withdrawn from said polymerization reactor and flash separated at a pressure above about 100 psig to separate said polymer from said monomer to produce a polymer portion and a monomer portion the improvement comprises:

a) withdrawing an effective analyzing amount of said polymerization effluent before said flash separation of said polymerization effluent;

b) flash separating said effective analyzing amount of said polymerization effluent at a pressure below about 75 psig to produce a polymer sample and a monomer sample;

c) analyzing said monomer sample to produce a signal representative of at least one condition in the polymerization reactor; and

d) manipulating at least one condition in the polymerization reactor in response to said signal.

5,387,660

POLYMERIZATION PROCESS

Michael J. Doyle, and Willem Terlouw, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 1, 1993, Ser. No. 24,600
Claims priority, application European Pat. Off., Mar. 2, 1992, 92200605
Int. Cl.[6] C08F *4/76*
U.S. Cl. 526—69 13 Claims

1. A process for the polymerization of ethylene and/or one or more alpha-olefins comprising contacting and reacting in a reactor the olefin(s) with a catalyst comprising a first component having a formula $(Cp)_2MR_1R_2$ wherein Cp represents a cyclopentadienyl group, M represents a Group IVA metal atom, and R_1 and R_2 each represent hydrogen Or a hydrocarbyl group, and a second component which is a compound having a bulky anion containing one or more boron atoms and which is substantially non-coordinating under the reaction conditions, and a cation, to produce a product stream, wherein during said process additional first component is added, and wherein said process is a continuous-mode process in which said catalyst present in the product stream leaving the reactor is deactivated prior to work-up of the product, and solid residue present following work-up of the product is recirculated to said reactor.

5,387,661

POLYMERIZABLE COMPOSITIONS

George W. Frost, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 13, 1994, Ser. No. 242,373
Int. Cl.[6] C08F *4/26, 4/12, 224/00, 220/10; 216/12*
U.S. Cl. 526—90 9 Claims

1. A composition comprising:

(a) a major amount of hydroxypropyl methacrylate;

(b) a major amount of C_8 to C_{10} alkyl ester of acrylic acid or methacrylic acid;

(c) a crosslinking agent selected from the group consisting of a polyallyl glycidyl ether resin and dicyclopentyl ethoxy methacrylate;

(d) a promoter comprising cobalt metal ion; and

(e) a free-radical initiator for polymerizing components (a), (b) and (c).

5,387,662

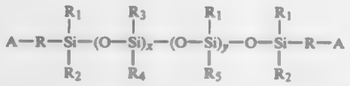
FLUOROSILICONE HYDROGELS

Jay Kunzler, Canandaigua, and Richard Ozark, Solvay, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 17,056, Feb. 12, 1993, Pat. No. 5,321,108. This application Jan. 18, 1994, Ser. No. 183,220
Int. Cl.[6] C08F *230/08, 214/18, 220/56, 226/10*
U.S. Cl. 526—245 22 Claims

1. In a method of making a fluorinated siloxane-containing polymer by preparing a monomer mix comprising a fluorinated siloxane-containing monomer, at least one vinyl- or acryl-containing hydrophilic monomer, and at least one initiator and curing the monomer mix, the improvement which comprises selecting the fluorinated siloxane-containing monomer from the group consisting of

(a) a monomer having the general schematic representation:



wherein:

R is an alkyl or alkylene group having 1 to 10 carbon atoms and which may have ether linkages between carbon atoms;

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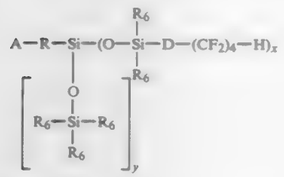
R_1–R_4 may independently be a monovalent hydrocarbon radical or a halogen substituted monovalent hydrocarbon radical having 1 to 18 carbon atoms which may have ether linkages between carbon atoms;
x is≧0;
y is≧z1;
x+y=2 to 1000;
R_5 is a fluorinated side group having the general schematic representation:

$$-D-(CF_2)_z-H$$

wherein
z is 1 to 20;
D is an alkyl or alkylene group having 1 to 10 carbon atoms and which may have ether linkages between carbon atoms; and
A is an activated unsaturated group, such as an ester or amide of an acrylic or a methacrylic acid or is a group represented by the general formula:

$$CH_2=CHOCY-$$

wherein
Y is —O—, —S— or —NH—; and
(b) a monomer having the general schematic representation:



wherein
A is an activated unsaturated group, such as an ester or amide of an acrylic or a methacrylic acid;
R_6 is CH_3 or H;
R is an alkyl or alkylene group having 1 to 10 carbon atoms and which may have ether linkages between carbon atoms;
D is an alkyl or alkylene group having 1 to 10 carbon atoms and which may have ether linkages between carbon atoms;
x is 1, 2 or 3;
y is 0, 1 or 2; and
x+y=3.

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MACROMONOMERS

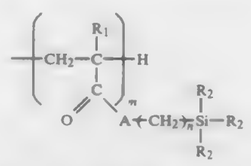
Joseph A. McGee, DeWitt, and Paul L. Valint, Jr., Pittsford, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 998,346, Dec. 30, 1992, Pat. No. 5,336,797. This application Jan. 25, 1994, Ser. No. 186,204
Int. Cl.[6] C08F *230/08, 228/02*
U.S. Cl. 526—279 13 Claims

1. A copolymeric material comprising the reaction product of the polymerization of a hydrophilic monomer, and an oil soluble, non-surface active siloxane macromonomer of the following structural formula:

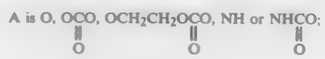
$$B-E-(T)_m$$

wherein B is a polymerizable end group containing at least one ethylenelically unsaturated group and a functional group which reacts to form an ester, amide, urea, urethane, carbonate or epoxy linkage with the rest of the macromonomer; E is a functionalized chain transfer agent;
T has the following structural formula:

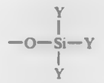


wherein n is an integer from 1 to 6,

A is O, OCO, OCH_2CH_2OCO, NH or NHCO;



R^1 is H or CH_3; and each R^2 is independently selected from a C_1–C_8 alkyl group, a phenyl group and a group of the following structural formula:



wherein each Y is independently selected from a C_1–C_8 alkyl group, a phenyl group and a $(R)_3OSi-$ group wherein each R is independently a lower alkyl group; and
m is an integer from 1 to 120.

5,387,664

HIGHER α-OLEFIN COPOLYMER, VIBRATION-INSULATING RUBBER MOLDED PRODUCT, AND PROCESS FOR THE PREPARATON OF THE RUBBER MOLDED PRODUCT

Masaaki Kawasaki; Toshimasa Takata, both of Waki; Keiji Okada; Kazuhiko Murata, both of Ichihara; Mitsuhiko Onda, Kuga, and Tetsuo Tojo, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,984
Claims priority, application Japan, Jan. 24, 1992, 4-011042; Mar. 6, 1992, 4-050010
Int. Cl.[6] C08F *236/20*
U.S. Cl. 526—336 34 Claims

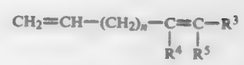
1. A higher α-olefin copolymer of higher α-olefin having 6 to 20 carbon atoms, α,ω-diene represented by the following formula (I) and non-conjugated diene represented by the following formula (II), said copolymer having:
(A) a molar ratio of the higher α-olefin to the α,ω-diene of 90/10 to 50/50,
(B) a content of the non-conjugated diene of 0.01 to 30% by mol, and
(C) an intrinsic viscosity (η), as measured in decahydronaphthalene at 135° C., of 1.0 to 10.0 dl/g;

(I)



wherein n is an integer of 1 to 3, R^1 and R^2 are each independently a hydrogen atom or an alkyl group having 1 to 8 carbon atoms;

(II)



wherein n is an integer of 1 to 5, R^3 is an alkyl group having 1 to 4 carbon atoms, and R^4 and R^5 are each independently a hydrogen atom or an alkyl group having 1 to 8 carbon atoms, provided that both of R^4 and R^5 are not hydrogen atoms.

5,387,665

RESINS FOR ELECTROHOTOGRAPHIC TONERS

Akira Misawa, and Masanobu Ajioka, both of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Feb. 25, 1994, Ser. No. 202,099
Claims priority, application Japan, Feb. 26, 1993, 5-038056; Feb. 26, 1993, 5-038057; Feb. 26, 1993, 5-038058; Feb. 26, 1993, 5-038059; Feb. 26, 1993, 5-038060; Feb. 26, 1993, 5-038061; Feb. 26, 1993, 5-038062; Feb. 26, 1993, 5-038063
Int. Cl.[6] C08G *18/42*
U.S. Cl. 528—81 8 Claims

1. A resin for electrophotographic toner comprising a degradable polyester resin which is an amorphous or semicrystalline poly(α-hydroxycarboxylic acid) prepared by direct dehydration-polycondensation of an α-hydroxycarboxylic acid.

5,387,666

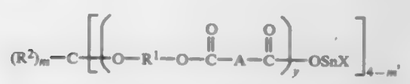
BRANCHED POLYESTERS PREPARED FROM MACROCYCLIC POLY(ALKYLENE DICARBOXYLATE) OLIGOMERS

Tohru Takekoshi, Scotia, and Eric J. Pearce, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 20, 1994, Ser. No. 262,799
Int. Cl.[6] C08G *63/85*
U.S. Cl. 528—283 6 Claims

1. A branched poly(alkylene dicarboxylate) having the formula

(I)



wherein R^1 is an alkylene or mono-or polyoxyalkylene radical containing a straight chain of about 2–8 carbon atoms, R^2 is a C_{1-4} primary alkyl radical, A is a m- or p-linked monocyclic aromatic or alicyclic radical, X is a linear or branched organic end group, y has an average value of at least about 10 and m is 0 or 1.

5,387,667

THERMALLY-REVERSIBLE ISOCYANATE-BASED POLYMERS

Richard A. Markle, Columbus; Joel D. Elhard, Hilliard; Donald M. Bigg, Columbus; Sylvester Sowell, Columbus; Phyllis L. Brusky, Columbus, and George E. Cremeans, Groveport, all of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Division of Ser. No. 740,335, Aug. 5, 1991, Pat. No. 5,239,039, which is a continuation-in-part of Ser. No. 651,020, Feb. 4, 1991, Pat. No. 5,097,010, which is a continuation-in-part of Ser. No. 475,112, Feb. 5, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 103,098
Int. Cl.[6] C08G *75/04*
U.S. Cl. 528—374 4 Claims



1. A polyarylsulfide oligomer comprising a biphenylsulfide repeating unit.

5,387,668

PROCESS FOR PREPARING POLYKETONES

John H. Brophy, Camberley; Neil A. Cooley, Teddington, and Michael J. Green, Yateley, all of England, assignors to BP Chemicals Limited, London, England

Filed Sep. 28, 1993, Ser. No. 127,590
Claims priority, application United Kingdom, Sep. 29, 1992, 9220502; Oct. 22, 1992, 9222160; Mar. 19, 1993, 9305702
Int. Cl.[6] C08G *67/02*
U.S. Cl. 528—392 16 Claims

1. A process for preparing polyketones by polymerising a mixture of carbon monoxide and one or more olefins in the presence of a group VIII metal catalyst which is prepared by reacting together:
(a) a source of a group VIII metal, and
(b) an amine, phosphine, arsine or stibine, characterised in that the polymerisation is carried out in the presence of a hydrocarbyl aluminoxane.

5,387,669

PROCESS FOR PREPARING ROSIN ESTER AND COLORLESS ROSIN

Masso Maeda; Yukiharu Yamada, and Yutaka Kobe, all of Osaka, Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP92/01653, § 371 Date Aug. 17, 1993, § 102(e) Date Aug. 17, 1993, PCT Pub. No. WO93/13180, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 17, 1992, Ser. No. 107,685
Claims priority, application Japan, Dec. 21, 1991, 3-356000; Mar. 26, 1992, 4-101795; Mar. 26, 1992, 4-101799; Mar. 30, 1992, 4-192644
Int. Cl.[6] C09F *1/04*
U.S. Cl. 530—216 8 Claims

1. A process for preparing a rosin ester, which comprises esterifying a purified product of a disproportionated rosin with an alcohol, and then subjecting the esterified rosin to dehydrogenation in the presence of a dehydrogenating catalyst under a reaction pressure of less than 10 Kg/cm^2.

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ANTIBIOTIC, DEOXYMULUNDOCANDIN, A PROCESS FOR ITS PRODUCTION AND ITS USE AS MEDICAMENT

Kirity Roy; Triptikumar Mukhopadhyay, both of Bombay, India; Hans-Wolfram Fehlhaber, Idstein; Herbert Kogler, Kelkheim, both of Germany, and Bimal N. Ganguli, Bombay, India, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

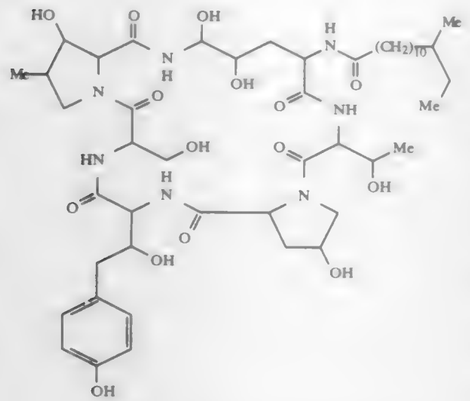
Filed Jan. 24, 1991, Ser. No. 645,410

Claims priority, application European Pat. Off., Jan. 26, 1990, 90101538

Int. Cl.[6] A61K *37/02;* C07K *5/12, 7/06*

U.S. Cl. 530—317 3 Claims

1. Deoxymulundocandin, a compound of the formula (SEQ. ID NO: 1)



as well as physiologically acceptable derivatives thereof.

5,387,671

HEXA- AND HEPTAPEPTIDE ANAPHYLATOXIN-RECEPTOR LIGANDS

Megumi Kawai; Paul Wiedeman; Jay R. Luly, and Yat S. Or, all of Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 27, 1990, Ser. No. 634,634

The portion of the term of this patent subsequent to Jan. 31, 2012, has been disclaimed.

Int. Cl.[6] A61K *37/00, 37/02;* C07K *5/00, 7/00*

U.S. Cl. 530—329 14 Claims

1. An anaphylotoxin activity modulating compound of the formula:

A-B-D-E-G-J-L-M-Q

or a pharmaceutically acceptable salt thereof wherein the groups A through Q have the values:

A is R_1-R_2-R_3;

B is selected from the group consisting of R_4-R_5-R_6, R_{31}, R_{32}, R_{35} and R_{37};

D is selected from the group consisting of R_7-R_8-R_9, R_{31}, R_{32}, R_{35} and R_{37};

E is selected from the group consisting of R_{10}-R_{11}-R_{12}, R_{31}, R_{32}, R_{35} and R_{37};

G is selected from the group consisting of R_{13}-R_{14}-R_{15}, R_{31}, R_{32}, R_{35} and R_{37};

J is selected from the group consisting of R_{16}-R_{17}-R_{18}, R_{31}, R_{32}, R_{35} and R_{37};

L is selected from the group consisting of R_{19}-R_{20}-R_{21}, R_{31}, R_{32}, R_{35} and R_{37};

M is a valence bond, or is selected from the group consisting of R_{22}-R_{23}-R_{24}, R_{31}, R_{32}, R_{35}, and R_{37};

Q is R_{25}-R_{26}-R_{27}; or

B and D, taken together, optionally represent a group selected from the group consisting of R_{33}, R_{34}, R_{38}, R_{39}, R_{40}, R_{41}, R_{42}, R_{43}, and R_{44};

D and E, taken together, optionally represent a group selected from the group consisting of R_{33}, R_{34}, R_{38}, R_{39}, R_{40}, R_{41}, R_{42}, R_{43}, and R_{44};

E and G, taken together, optionally represent a group selected from the group consisting of R_{33}, R_{34}, R_{38}, R_{39}, R_{40}, R_{41}, R_{42}, R_{43}, and R_{44};

G and J, taken together, optionally represent a group selected from the group consisting of R_{33}, R_{34}, R_{38}, R_{39}, R_{40}, R_{41}, R_{42}, R_{43}, and R_{44};

J and L, taken together, optionally represent a group selected from the group consisting of R_{33}, R_{34}, R_{38}, R_{39}, R_{40}, R_{41}, R_{42}, R_{43}, and R_{44};

L and M, taken together, optionally represent a group selected from the group consisting of R_{33}, R_{34}, R_{38}, R_{39}, R_{40}, R_{41}, R_{42}, R_{43}, and R_{44}; and one or more of the groups R_5-R_6-R_7, R_8-R_9-R_{10}, R_{11}-R_{12}-R_{13}, R_{14}-R_{15}-R_{16}, R_{17}-R_{18}-R_{19}, R_{20}-R_{21}-R_{22}, and R_{23}-R_{24}-R_{25}, independently may optionally represent R_{36};

wherein

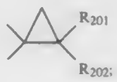
(a) R_1 is selected from the group consisting of lower alkyl, aryl, arylalkyl, and hydrogen;

(b) R_2 is selected from the group consisting of $>CR_{99}R_{100}$ and oxygen, with the proviso that when R_2 is oxygen, R_1 is aryl, lower alkyl, or arylalkyl;

(c) R_3 is selected from the group consisting of $>C=O$ and $>CH_2$, with the proviso that when R_3 is $>CH_2$ then R_2 cannot be oxygen;

(d) R_4 is $>NR_{101}$ where R_{101} is selected from the group consisting of hydrogen, lower alkyl, arylalkyl, and alkenyl;

(e) R_5 is selected from the group consisting of $>CR_{201}R_{202}$, $>NR_{203}$, $>C=CR_{205}R_{206}$, existing in either the Z- or E-configuration, and substituted cyclopropyl of the formula



(f) R_6, R_9, R_{12}, R_{15}, and R_{18} are independently selected from the group consisting of $>C=O$, $>CH_2$, $—CH_2C(O)—$, $—NHC(O)—$, $>C=S$, $>SO_2$, and $>P(O)X$ where X is selected from hydroxy, alkoxy, amino, alkylamino and dialkylamino;

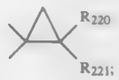
(g) R_7, R_{10}, R_{13}, R_{16}, R_{19}, and R_{22}, are independently selected from the group consisting of $>CH_2$ and $>NR_{50}$ where R_{50} is selected from the group consisting of hydrogen, lower alkyl, arylalkyl, aryl, hydroxy and alkoxy;

(h) R_{21}, and R_{24} are independently selected from the group consisting of $>C=O$, $—CH_2C(O)—$,$—NHC(O)—$, $>C=S$, $>SO_2$, and $>P(O)X$ where X is selected from the group consisting of hydroxy, alkoxy, amino, alkylamino and dialkylamino, with the proviso that when R_{22}-R_{23}-R_{24} is present, R_{21} is $>CH_2$

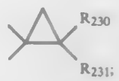
(i) R_8 is selected from the group consisting of $>CR_{210}R_{211}$, $>NR_{213}$, $>C=CR_{215}R_{216}$, existing in either the Z- or E-configuration, and substituted cyclopropyl of the formula



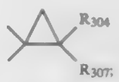
(j) R_{11} is selected from the group consisting of $>CR_{220}R_{221}$, $>NR_{223}$, $>C=CR_{225}R_{226}$, existing in either the Z- or E-configuration, and substituted cyclopropyl of the formula



(k) R_{14} is selected from the group consisting of $>CR_{230}R_{231}$, $>NR_{233}$, $>C=CR_{235}R_{236}$, existing in either the Z- or E-configuration, and substituted cyclopropyl of the formula



(l) R_{17} is selected from the group consisting of $>CR_{301}R_{302}$, $>NR_{303}$, $>C=CR_{305}R_{306}$, existing in either the Z- or E-configuration, and substituted cyclopropyl of the formula



(m) R_{20} is selected from the group consisting of $>CR_{310}R_{311}$, $>C=CR_{315}R_{316}$, existing in either the Z- or E-configuration, and substituted cyclopropyl of the formula



(n) R_{23} is selected from the group consisting of $>CR_{320}R_{321}$, $>C=CR_{325}R_{326}$, existing in either the Z- or E-configuration, and substituted cyclopropyl of the formula



(o) R_{25} is selected from the group consisting of $>O$, and $>NR_{109}$ where R_{109} is selected from the group consisting of hydrogen, lower alkyl, and arylalkyl;

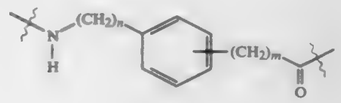
(p) R_{26} is selected from the group consisting of hydrogen, lower alkyl, arylalkyl and $>NR_{110}$ where R_{110} is selected from the group consisting of hydrogen, lower alkyl, or arylalkyl with the provisos that

(i) when R_{25} is $>O$ then R_{26} is lower alkyl, and

(ii) when R_{26} is hydrogen, lower alkyl, or arylalkyl, then R_{27} is absent;

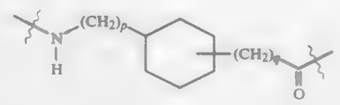
(q) R_{27} is selected from the group consisting of hydrogen, and aryl;

(r) R_{31} is



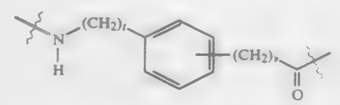
where m and n are integers independently selected from 0, 1 and 2;

(s) R_{32} is



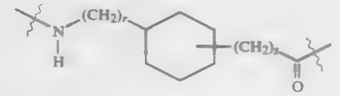
where p and q are integers independently selected from 0, 1 and 2;

(t) R_{33} is



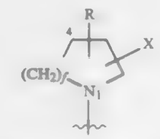
where t and v are integers independently selected from 0, 1, 2 and 3;

(u) R_{34} is



where r and s are integers independently selected from 0, 1, 2 and 3;

(v) R_{35} is



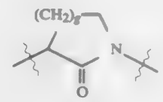
where f is an integer of 0 to 2, X is selected from the group consisting of $>C=O$ and $—CH_2—$ and R is selected from the group consisting of hydrogen and lower alkyl, with the provisos that

(i) when f is 0, X is at C-2 and R is at C-3 or C-4;

(ii) when f is 1, X is at C-2 and R is at C-3, C-4 or C-5 and C-3,4 are saturated or unsaturated;

(iii) when f is 2, X is at C-2, C-3 or C-4 and R is at C-2, C-3, C-4, C-5 or C-6 when the position is unoccupied by X and C-3,4 or C-4,5 are saturated or unsaturated; and

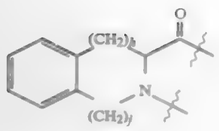
(w) R_{36} is



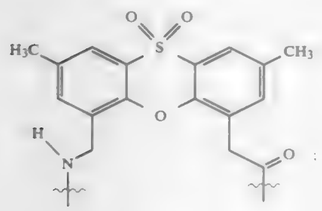
where g is an integer of from 0 to 3;

(x) R_{37} is

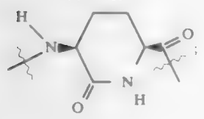
VOL 1171 ISS 1 FE 7 1995 UMI



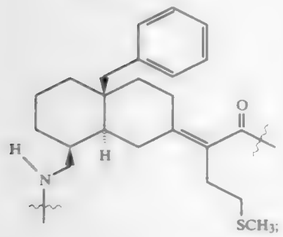
wherein h is 1 and j is 0 or 1;
(y) R_{38} is



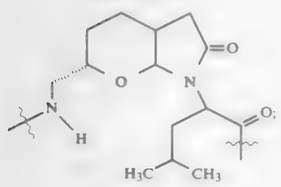
(z) R_{39} is



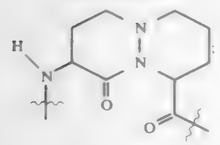
(aa) R_{40} is



(ab) R_{41} is

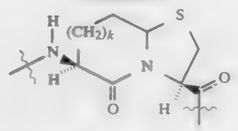


(ac) R_{42} is

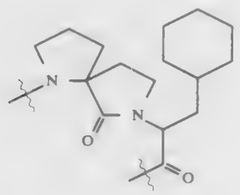


(ad) R_{43} is

-continued



where k is an integer of from zero to two;
(ae) R_{44} is



(af) R_1 and R_2, taken together, optionally represent a group selected from the group consisting of aryl, and hydrogen;
(ag) R_1, R_2 and R_3, taken together, optionally represent a group selected from the group consisting of lower alkyl, arylalkyl, alkenyl, hydrogen, and an N-terminal protecting group;
(ah) R_6 and R_7; R_9 and R_{10}; R_{12} and R_{13}; R_{15} and R_{16}; R_{18} and R_{19}; R_{21} and R_{22}; each pair taken together, optionally and independently represent a group selected from the group consisting of —C(O)NH—, >CH_2, —$(CH_2)_3$—, —CH=CH—, —CH(OH)—, —C≡C—,—C(=CH_2)C-H_2—, —CH(OH)CH_2—, —C(O)O—, —C(O)S—, —CH_2-C(O)O—, —CH_2C(O)S—, —CH2O—, CH_2S—, and —NHC(O)—, with the provisos that
(i) at least one of said pair, taken together, must be other than —C(O)NH—; and
(ii) when R_5 is >NR_{203} or >C=$CR_{205}R_{206}$, R_6 and R_7, taken together, represent —C(O)NH— or —C-(O)NCH_3;
(iii) when R_8 is >NR_{213} or >C=$CR_{215}R_{216}$, R_9 and R_{10}, taken together, represent —C(O)NH— or —C(O)NC-H_3—;
(iv) when R_{11} is >NR_{223} or >C=$CR_{225}R_{226}$, R_{12} and R_{13}, taken together represent —C(O)NH— or —C-(O)NCH_3—;
(v) when R_{14} is >NR_{233} or >C=$CR_{235}R_{236}$, R_{15} and R_{16}, taken together, represent —C(O)NH— or —C-(O)NCH_3—;
(vi) when R_{17} is >NR_{303} or >C=$CR_{305}R_{306}$, R_{18} and R_{19}, taken together, represent —C(O)NH— or —C-(O)NCH_3—;
(vii) when R_{20} is >C=$CR_{315}R_{316}$, R_{21} and R_{22}, taken together, represent —C(O)NH— or —C(O)NCH_3—;
(ai) R_{26} and R_{27}, taken together, optionally represent hydrogen, with the proviso that when R_{25} is >O then R_{26} and R_{27}, taken together, represent hydrogen, lower alkyl, or arylalkyl;
(aj) R_{99}, R_{202}, R_{211}, R_{221}, R_{231}, R_{302}, R_{311}, and R_{321} are independently selected from the group consisting of hydrogen, arylalkyl with the proviso that for R_{302} and R_{311}, arylalkyl is limited to benzyl when R_{19}-R_{20}-R_{21} or R_{22}-R_{23}-R_{24} respectively represent an L-arginyl residue, and lower alkyl;
(ak) R_{100} is selected from the group consisting of hydrogen, and lower alkyl;
(al) R_{201} is selected from the group consisting of hydrogen, lower alkyl, alkenyl, aryl, arylalkyl, (cycloalkyl)alkyl, aminoalkyl, amidoalkyl, hydroxyalkyl, guanidinoalkyl, carboxyalkyl, (carboxyamido)alkyl, (carboxyhydrazino)alkyl, ureidoalkyl, (heterocyclic)alkyl, (thioalkoxy)alkyl, and sulfhydrylalkyl;
(am) R_{201} and R_{202}, R_{210} and R_{211}, R_{220} and R_{221}, R_{230} and R_{231}, R_{301} and R_{302}, R_{310} and R_{311}, R_{320} and R_{321}, each pair taken together, independently may optionally represent —$(CH_2)_z$— where z is an integer of from 2 to 6;
(an) R_{203} is selected from the group consisting of hydrogen, lower alkyl, alkenyl, arylalkyl, (cycloalkyl)alkyl, aminoalkyl, amidoalkyl, hydroxyalkyl, guanidinoalkyl, carboxyalkyl, (carboxyamido)alkyl, (carboxyhydrazino)alkyl, ureidoalkyl, (heterocyclic)alkyl, (thioalkoxy)alkyl, and sulfhydrylalkyl with the proviso that R_{203} may not be a vinyl group nor have a heteroatom directly attached to the nitrogen or separated from it by one methylene unit;
(ao) R_{205}, R_{206}, R_{215}, R_{216}, R_{225}, R_{226}, R_{235}, R_{236}, R_{305}, and R_{306} are independently selected from the group consisting of hydrogen, lower alkyl, aryl, arylalkyl, wherein arylalkyl is excluded from R_{305} and R_{306} when R_{19}-R_{20}-R_{21} represents an L-arginyl residue, (cycloalkyl)alkyl, amidoalkyl, wherein benzoyl amides and their heterocyclic variants are excluded from R_{305} and R_{306} when R_{19}-R_{20}-R_{21} represents an L-arginyl residue (carboxyamido)alkyl, wherein aniline amides and their heterocyclic variants are excluded from R_{305} and R_{306} when R_{19}-R_{20}-R_{21} represents an L-arginyl residue; ureidoalkyl, and (heterocyclic)alkyl, wherein when R_{19}-R_{20}-R_{21} represents an L-arginyl residue, then the heterocycle at from R_{305} and R_{306} can only be separated by one methylene unit from the alpha-carbon;
(ap) R_{210} selected from the group consisting of lower alkyl, arylalkyl, aminoalkyl,and guanidinoalkyl;
(aq) R_{213} is selected from the group consisting of lower alkyl, arylalkyl, aminoalkyl, and guanidinoalkyl with the proviso that R_{213} may not be a vinyl group nor have a heteroatom directly attached to the nitrogen or separated from it by one methylene unit;
(ar) R_{220} is selected from the group consisting of hydrogen, lower alkyl, arylalkyl, (cycloalkyl)alkyl, and guanidinoalkyl;
(as) R_{223} is selected from the group consisting of hydrogen, lower alkyl, arylalkyl, (cycloalkyl)alkyl,and guanidinoalkyl, with the proviso that R_{223} may not be a vinyl group nor have a heteroatom directly attached to the nitrogen or separated from it by one methylene unit;
(at) R_{230} is selected from the group consisting of hydrogen, lower alkyl, arylalkyl, and (cycloalkyl)alkyl;
(au) R_{233} is selected from the group consisting of hydrogen, lower alkyl, arylalkyl, and (cycloalkyl)alkyl with the proviso that R_{233} may not be a vinyl group nor have a heteroatom directly attached to the nitrogen or separated from it by one methylene unit;
(av) R_{301} is independently selected from the group consisting of hydrogen; lower alkyl; alkenyl; aryl; arylalkyl, wherein arylalkyl is limited to benzyl, when R_{19}-R_{20}-R_{21} represents an L-arginyl residue; (cycloalkyl)alkyl; aminoalkyl, wherein aryl and arylalkyl amines are excluded when R_{19}-R_{20}-R_{21} represents an L-arginyl residue; amidoalkyl, wherein benzoyl amides and their heterocyclic variants are excluded when R_{19}-R_{20}-R_{21} represents an L-arginyl residue; hydroxyalkyl; guanidinoalkyl; carboxyalkyl; (carboxyamido)alkyl, wherein aniline amides of aspartyl residues and heterocyclic variants are excluded when R_{19}-R_{20}-R_{21} represents an L-arginyl residue; carboxyhydrazino)alkyl; ureidoalkyl; (heterocyclic)alkyl, wherein when R_{19}-R_{20}-R_{21} represents an L-arginyl residue, then the heterocycle can only be separated by one methylene unit from the alpha-carbon; (thioalkoxy)alkyl, and sulfhydrylalkyl;
(aw) R_{303} is independently selected from the group consisting of lower alkyl, arylalkyl, wherein arylalkyl is limited to benzyl when R_{19}-R_{20}-R_{21} represents an L-arginyl residue, and (cycloalkyl)alkyl, with the proviso that R_{303} may not be a vinyl group or have a heteroatom directly attached to the nitrogen or separated from it by one methylene unit;
(ax) R_{304} is independently selected from the group consisting of hydrogen; lower alkyl; alkenyl; aryl, arylalkyl, wherein arylalkyl is excluded when R_{19}-R_{20}-R_{21} represents an L-arginyl residue; (cycloalkyl)alkyl; aminoalkyl, wherein aryl and arylalkyl amines are excluded when R_{19}-R_{20}-R_{21} represents an L-arginyl residue; amidoalkyl, wherein benzoyl amides and their heterocyclic variants are excluded when R_{19}-R_{20}-R_{21} represents an L-arginyl residue; hydroxyalkyl; guanidinoalkyl; carboxyalkyl; (carboxyamido)alkyl, wherein aniline amides and heterocyclic variants are excluded when R_{19}-R_{20}-R_{21} represents an L-arginyl residue; (carboxyhydrazino)alkyl; ureidoalkyl; (heterocyclic)alkyl, wherein (heterocyclic)alkyl is excluded when R 19-R_{20}-R_{21} represents an L-arginyl residue; (thioalkoxy)alkyl; and sulfhydrylalkyl;
(ay) R_{307} and R_{317} are independently selected from hydrogen; lower alkyl; aryl and arylalkyl, wherein arylalkyl is excluded for R_{307} and R_{317} when R_{19}-R_{20}-R_{21} and R_{22}-R_{23}-R_{24} respectively represent an L-arginyl residue;
(az) R_{310} is independently selected from the group consisting of hydrogen; lower alkyl; alkenyl; aryl; arylalkyl, wherein arylalkyl is limited to benzyl when R_{22}-R_{23}-R_{24} represents an L-arginyl residue; (cycloalkyl)alkyl; aminoalkyl, aryl and arylalkyl amines are excluded when R_{22}-R_{23}-R_{24} represents an L-arginyl residue; amidoalkyl, wherein benzoyl amides and their heterocyclic variants are excluded, when R_{22}-R_{23}-R_{24} represents an L-arginyl residue; hydroxyalkyl; guanidinoalkyl; (carboxyamido)alkyl, wherein aniline amides of aspartyl residues and heterocyclic variants are excluded when R_{22}-R_{23}-R_{24} represents an L-arginyl residue; (carboxyhydrazino)alkyl; ureidoalkyl; (heterocyclic)alkyl, wherein when R_{22}-R_{23}-R_{24} represents an L-arginyl residue, then the heterocycle can only be separated by one methylene unit from the alpha-carbon; and sulfhydrylalkyl;
(ba) R_{312} is independently selected from the group consisting of hydrogen; lower alkyl; alkenyl; aryl; arylalkyl, wherein arylalkyl is excluded when R_{22}-R_{23}-R_{24} represents an L-arginyl residue; (cycloalkyl)alkyl; aminoalkyl, wherein aryl and arylalkyl amines are excluded when R_{22}-R_{23}-R_{24} represents an L-arginyl residue; amidoalkyl, wherein benzoyl amides and their heterocyclic variants are excluded when R_{22}-R_{23}-R_{24} represents an L-arginyl residue; hydroxyalkyl; guanidinoalkyl; carboxyalkyl; (carboxyamido)alkyl, wherein aniline amides and heterocyclic variants are excluded when R_{22}-R_{23}-R_{24} represents an L-arginyl residue; (carboxyhydrazino)alkyl; ureidoalkyl; (heterocyclic)alkyl, wherein (heterocyclic)alkyl is excluded when R_{22}-R_{23}-R_{24} represents an L-arginyl residue; (thioalkoxy)alkyl; and sulfhydrylalkyl;
(bb) R_{315} and R_{316} are independently selected from the group consisting of hydrogen, lower alkyl, arylalkyl, wherein arylalkyl is excluded when R_{22}-R_{23}-R_{24} represents an L-arginyl residue, and (cycloalkyl)alkyl;
(bc) R_{310} is is selected from the group consisting of hydrogen, lower alkyl, arylalkyl, alkenyl, (cycloalkyl)alkyl, aminoalkyl, and guanidinoalkyl;
(bd) R_{325} and R_{326} are independently selected from the group consisting of hydrogen, lower alkyl, aryl, arylalkyl, and (cycloalkyl)alkyl;

all of the foregoing with the provisos that
(i) when more than one sulfhydrylalkyl is present in the compound, the compound exists in the oxidized disulfide form producing a cyclic molecule, or the two sulfhydryl moieties are connected by a C_2 to C_8 alkylene chain and
(ii) when the compound contains a free amino group and carboxyl group, they can be cyclized to give the corresponding lactam.

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5,387,672

HEMOGLOBIN INTRAMOLECULARLY CROSS-LINKED WITHLONG CHAIN DIVALENT REAGENTS

Enrico Bucci, and Clara Fronticelli, both of Baltimore, Md., assignors to The University of Maryland at Baltimore, Baltimore, Md.

Filed Mar. 2, 1993, Ser. No. 24,952

Int. Cl.[6] A61K *37/00, 37/07;* **C07G** *7/00;* **C07K** *13/00*

U.S. Cl. 530—385 **38 Claims**

1. Stroma-free hemoglobin intramolecularly cross-linked with a compound of the following general formula (I)

ROOC X COOR (I)

wherein R is a leaving atom or group capable of activating the carboxyl moiety to which it is attached and X is a divalent hydrocarbon of a length such that the distance between the two active carboxyl groups is at least 13 Å.

5,387,673

ACTIVE FRAGMENTS OF FIBROBLAST GROWTH FACTOR

Andrew P. Seddon, Monroe, and Peter Bohlen, Peekskill, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 615,207, Nov. 23, 1990, Pat. No. 5,206,354. This application Apr. 26, 1993, Ser. No. 54,650

Int. Cl.[6] C12N *15/00;* **C07H** *13/00, 7/00*

U.S. Cl. 530—399 **6 Claims**

1. A fragment of basic fibroblast growth factor which binds to heparin or heparin sepharose, wherein said fragment consists of amino acids 70 to 155 of basic fibroblast growth factor.

5,387,674

REACTIVE FORMAZAN DYES AND HYDRAZONES

Claus Marschner, Speyer, and Manfred Patsch, Wachenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

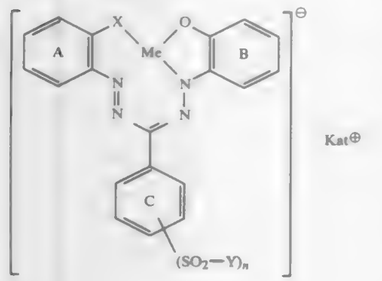
Filed Sep. 8, 1993, Ser. No. 117,686

Claims priority, application Germany, Sep. 9, 1992, 4230095

Int. Cl.[6] C09B *62/503;* **D06P** *1/384*

U.S. Cl. 534—618 **6 Claims**

1. A formazan dye of the formula I



(I)

where

n is 1 or 2,

Kat⊕ is the equivalent of a cation,

Me is copper or nickel,

X is a radical of the formula CO—O or SO_2—O,

Y is vinyl or a radical of the formula C_2H_4—Q, where Q is a group which is detachable under alkaline reaction conditions,

the ring A may be substituted with hydroxysulfonyl, C_1–C_4-alkanoylamino, halogen or nitro, and may be benzofused, the ring B is substituted with hydroxysulfonyl, halogen, nitro, carboxyl, ureido, substituted or unsubstituted mono- or di(C_1–C_4-alkyl)ureido, substituted or unsubstituted phenylureido, substituted or unsubstituted phenyl, substituted or unsubstituted C_1–C_4-alkanoylamino, substituted or unsubstituted benzoylamino, C_1–C_4-alkoxycarbonylamino, substituted or unsubstituted mono- or di-alkylcarbamoyl, substituted or unsubstituted mono- or dialkylsulfamoyl, or a radical of the formula SO_2—Y, and may be benzofused, and the ring C may be substituted with halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylsulfonyl, nitro or hydroxysulfonyl.

5,387,675

MODIFIED HYDROPHOBIC CATIONIC THICKENING COMPOSITIONS

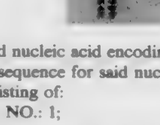
Michael H. Yeh, Hamilton, N.J., assignor to Rhone-Poulenc Specialty Chemicals Co., Cranbury, N.J.

Filed Mar. 10, 1993, Ser. No. 29,208

Int. Cl.[6] C07H *5/04, 5/06;* **C08B** *37/00*

U.S. Cl. 536—18.7 **12 Claims**

1. Water soluble quaternary ammonium ethers of polysaccharides or polyols wherein the quaternary ammonium ether substituents correspond to the formula



(I)

wherein R_1 is a monohydroxylated or polyhydroxylated alkyl group containing between one and about six carbon atoms; R_2 and R_3 are independently, alkyl groups containing between one and about six carbon atoms; R_4 is an alkyl group containing between about six and about 24 carbon atoms; and X is a halide, wherein the degree of substitution of said ethers ranges from about 0.001 to about 0.5.

5,387,676

MN GENE AND PROTEIN

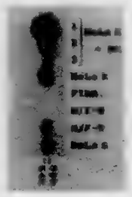
Jan Zavada; Silvia Pastorekova, and Jaromir Pastorek, all of Bratislava, Czechoslovakia, assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Oct. 21, 1992, Ser. No. 964,589

Claims priority, application Czechoslovakia, Mar. 11, 1992, 709-92

Int. Cl.[6] C12N *15/12, 15/03, 15/04, 15/06*

U.S. Cl. 536—23.5 **20 Claims**



1. An isolated nucleic acid encoding a MN protein wherein the nucleotide sequence for said nucleic acid is selected from the group consisting of:

(a) SEQ. ID. NO.: 1;

(b) nucleotide sequences that hybridize under stringent conditions to SEQ. ID. No.: 1 or to its complementary strand; and

(c) nucleotide sequences that differ from SEQ. ID. NO.: 1 and from the nucleotide sequences of (b) in codon sequence due to the degeneracy of the genetic code.

5,387,677

RECOVERY OF AZT BY GUANIDINE PRECIPITATION

Bruno K. Radatus, and Khashayar Karimian, both of Brantford, Canada, assignors to ACIC (Canada) Inc., Ontario, Canada

Continuation-in-part of Ser. No. 717,831, Jun. 21, 1991. This application Jul. 16, 1992, Ser. No. 914,104

Int. Cl.[6] C07H *19/073;* **A61K** *31/70*

U.S. Cl. 536—28.54 **27 Claims**

1. A process for recovering 3'-azido-3'-deoxythymidine (AZT) or a salt thereof from a mixture comprising the steps of:

(i) reacting AZT or a salt thereof in said mixture with a reagent selected from the group consisting of:

(a) guanidine,

(b) a guanidine salt in combination with at least about a 1.0 molar equivalent of a base selected from the group consisting of an alkali metal hydroxide; an alkaline earth metal oxide; an alkaline earth metal hydroxide; ammonium hydroxide; and an organic amine having the formula $R^1R^2R^3N$ wherein R^1, R^2 and R^3 are the same or different and are selected from the group consisting of $C_{1\text{-}10}$ alkyl groups and hydrogen, and

(c) a combination of (a) and (b), to form a precipitated salt;

(ii) acidifying said precipitated salt in a solvent to a pH of less than about 9 to yield free AZT; and

(iii) recovering the AZT or salt thereof.

5,387,678

HALOGENATION PROCESS OF PHTHALOCYANINE AND HALOGENATED ALKOXYPHTHALOCYANINE

Hisato Itoh; Takahisa Oguchi, and Shin Aihara, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo and Yamamoto Chemicals, Incorporated, Yao, both of Japan

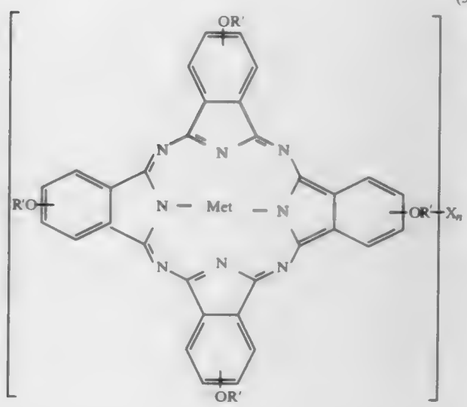
Division of Ser. No. 729,338, Jul. 12, 1991, Pat. No. 5,280,114, which is a continuation-in-part of Ser. No. 680,921, Apr. 5, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 70,810

Claims priority, application Japan, Apr. 7, 1990, 2-91361

Int. Cl.[6] C09B *47/04*

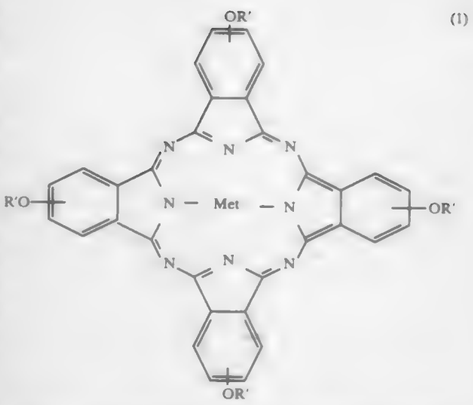
U.S. Cl. 540—138 **15 Claims**

1. A halogentated alkoxyphthalocyanine represented by the formula (3)



(3)

wherein R^1 is a substituted or unsubstituted alkyl group and may be the same or different, Met is two hydrogen atoms, a divalent metal atom, or a trivalent or tetravalent metal derivative, X is a halogen atom, and n is the number of substitution of X and is an integer of from 1 to 4, obtained by reacting an alkoxyphthalocyanine represented by the formula



(1)

wherein R^1 and Met are the same as above, with a halogenating agent represented by the formula (2):

X—Y (2)

wherein X is the same as above and Y is a residue of the halogenating agent selected from the group consisting of a halogen atom, SO_2Cl, SOCl, $FeCl_2$, PCl_4, $POCl_2$, CuBr and quaternary ammonium, said X's being attached to benzene rings attached to the phthalocyanine nucleus.

5,387,679

PROCESS FOR THE PREPARATION OF CEPHALOSPORINS INTERMEDIATES

Loris Sogli, Novara; Daniele Terrassan, Concorezzo, and Giuseppe Ribaldone, Gallarate, all of, assignors to Antibioticos S.p.A., Milan, Italy

PCT No. PCT/EP92/01595, § 371 Date Mar. 15, 1993, § 102(e) Date Mar. 15, 1993, PCT Pub. No. WO93/02085, PCT Pub. Date Feb. 4, 1993

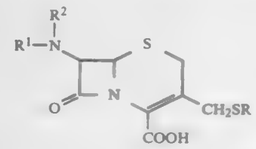
PCT Filed Jul. 14, 1992, Ser. No. 988,961

Claims priority, application United Kingdom, Jul. 15, 1991, 9115287

Int. Cl.[6] C07D *501/04;* **A61K** *31/545*

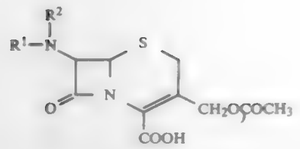
U.S. Cl. 540—226 **13 Claims**

1. A process for preparing a compound of formula (I)



(I)

wherein R is an heterocyclic group which contains at least one nitrogen atom with or without oxygen or sulphur and R^1 and R^2 are both hydrogen atoms or one of them is an hydrogen atom and the other is an acyl group; the process comprising reacting a compound of formula (II)

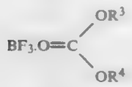


(II)

wherein R^1 and R^2 are each as defined above, and wherein, if necessary, any reactive group is protected by a suitable protective group, or a salt thereof, with a compound of formula (III)

(III)

wherein R is as defined above, or a salt thereof, in the presence of an acid and of a compound of formula (IV)



(IV)

wherein each of R^3 and R^4 is a C_1–C_4 alkyl group or R^3 and R^4 taken together are a C_2 or C_3 alkylene chain and, if necessary, removing the protective groups possibly present.

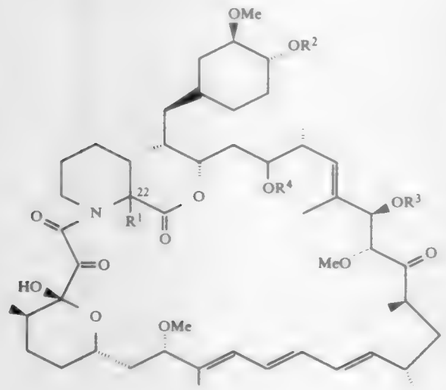
5,387,680

C-22 RING STABILIZED RAPAMYCIN DERIVATIVES

Frances C. Nelson, Yardley, Pa., assignor to American Home Products Corporation, Madison, N.J.

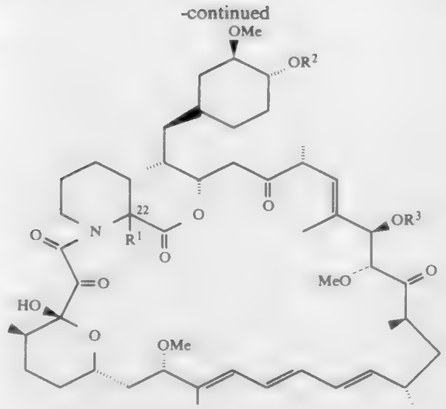
Filed Aug. 10, 1993, Ser. No. 105,090
Int. Cl.[6] C07D *491/06;* A61K *31/395*
U.S. Cl. 540—456 7 Claims

1. A compound of the formula:



or

-continued



wherein

R^1 is C_1–C_6 lower alkyl, C_1–C_6 lower acyl, C_1–C_6 alkylthio, C_6–C_{10} aryl, C_7–C_{16} arylalkyl, C_6–C_{10} arylthio, C_7–C_{16} arylalkylthio, cyano, C_1–C_6 perfluorinated lower alkyl, or



wherein R is a chain of 1–5 carbon atoms; and

R^2, R^3 and R^4 are each independently hydrogen or $SiEt_3$; or a pharmaceutically acceptable salt thereof.

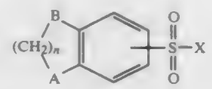
5,387,681

SYNTHESIS OF BICYCLIC AROMATIC SULFONIC ACIDS SULFONYL CHLORIDES AND SULFONAMIDES

William D. Miller, Indianapolis, and Eddie V. P. Tao, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 19, 1992, Ser. No. 932,404
Int. Cl.[6] C07D *233/04*
U.S. Cl. 544—106 16 Claims

1. A process for preparing a bicyclic aromatic sulfonyl halide of the formula



wherein:

X is halo;

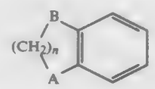
B is —O— or —CH_2—;

A is —O—, —CH_2—, or —$N(CH_3)$—; and

n is 1 or 2;

provided at least one of A or B is —O—,

which comprises reacting a compound of the formula



with sulfur trioxide-N,N-dimethylformamide complex in the presence of a water miscible, non-reactive solvent at a temperature of from about 30° C. to about 120° C., followed by the addition of a thionyl halide at a temperature of from about 30° C. to about 120° C.

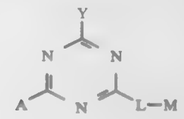
5,387,682

HALOMETHYL-1,3,5-TRIAZINES CONTAINING A MONOMERIC MOIETY

James A. Bonham; Mithcell A. Rossman, and Richard J. Grant, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 555,301, Jul. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 241,691, Sep. 7, 1988, abandoned. This application Apr. 19, 1993, Ser. No. 49,555
Int. Cl.[6] G03F *7/029;* G03C *1/70;* C07D *251/00*
U.S. Cl. 544—194 12 Claims

1. A compound having the formula:



wherein

A represents a member selected from the group consisting of mono-, di-, and trihalomethyl groups,

Y represents a member selected from the group consisting of A, L—M, NH_2, NHR, NR_2, OR, and R′, where R independently represents a member selected from the group consisting of substituted and unsubstituted alkyl groups having 1 to 12 carbon atoms, and substituted and unsubstituted aryl groups having no more than 5 fused rings, and R′ represents a member selected from the group consisting of substituted and unsubstituted alkyl groups having 1 to 12 carbon atoms, substituted and unsubstituted aryl groups having no more than 5 fused rings, substituted and unsubstituted alkenyl groups having 1 conjugated carbon-to-carbon double bond, substituted and unsubstituted polyalkenyl having 2 to 6 conjugated carbon-to-carbon double bonds, substituted and unsubstituted alkynyl groups having 1 conjugated carbon-to-carbon triple bonds, substituted and unsubstituted polyalkynyl groups having 2 to 3 conjugated carbon-to-carbon triple bonds, and substituted and unsubstituted heteroaromatic groups having no more than 3 fused rings wherein the heteroatoms are selected from the group consisting of nitrogen, sulfur, and oxygen, and combinations thereof, provided that said substituents for R and R′, if any, not adversely affect the polymerizability or the photoinitiation capability of said compound,

M represents at least one monomeric moiety capable of undergoing free radical or ionic chain polymerization, and

L represents a group linking the monomeric moiety to the triazine nucleus, the portion of L directly attached to the triazine nucleus being selected from the group consisting of (a) carbon atom, (b) amino group selected from the group consisting of (1). aminoaryl groups wherein the nitrogen atom of the amino group is attached to the triazine nucleus, and (2) amino groups wherein the nitrogen atom of the amino group is attached to both the triazine nucleus and the carbon atom of at least one —CH_2CH_2— group, and (c) oxygen atom.

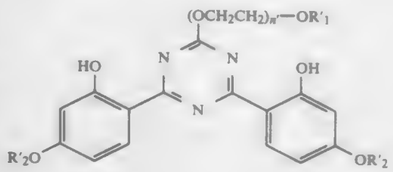
5,387,683

HYDROXYPHENYL-1,3,5-TRIAZINES

Kurt Burdeska, Basle; Gerhard Reinert, Allschwil, both of Switzerland, and Dieter Reinehr, Kandern, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 15,948, Feb. 10, 1993, Pat. No. 5,298,030. This application Dec. 30, 1993, Ser. No. 175,801
Claims priority, application Switzerland, Feb. 21, 1992, 541/92
Int. Cl.[6] C07D *251/22*
U.S. Cl. 544—219 4 Claims

1. A hydroxyphenyl-1,3,5-triazine of formula



(I′)

wherein

R'_1 is hydrogen or C_1-C_5alkyl,

R'_2 is C_1-C_{12}alkyl, and

n′ is 1 to 5.

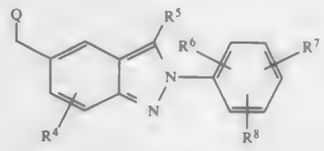
5,387,684

ISOINDAZOLE COMPOUND

Yoshihisa Inoue; Hajime Ebisu; Norifumi Nakamura, all of Hirakata; Yoshitomi Morizawa, Yokohama; Takashi Okazoe, Yokohama, and Arata Yasuda, Yokohama, all of Japan, assignors to The Green Cross Corporation, Osaka and Asahi Glass Co., Ltd., Tokyo, both of Japan

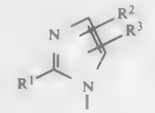
Filed Jan. 24, 1994, Ser. No. 142,447
Claims priority, application Japan, Mar. 25, 1992, 4-98913; Jun. 10, 1992, 4-176189; WIPO, Mar. 25, 1993, PCT/JP93/00354
Int. Cl.[6] C07D *473/40, 471/02, 403/06*
U.S. Cl. 544—264 17 Claims

1. An isoindazole compound of the formula (1)

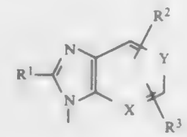


(1)

where Q is a heterocyclic derivative of the formula (2) or (3)



(2)



(3)

wherein in the formulas (1), (2), and (3), R–R^8, X, and Y stand for the following:

VOL 1171 ISS 1 FE 7 1995 UMI

R^1 is lower alkyl, halo-lower alkyl, cyclo-lower alkyl, alkenyl, alkoxyl, alkoxy-lower alkyl, or alkylthio;
R^2 and R^3 may be the same or different, and each is independently hydrogen atom, halogen atom, lower alkyl, halo-lower alkyl, cyclo-lower alkyl, alkenyl, alkoxyl, $-C_mF_{2m+1}$, $-(CH_2)_nR^9$, or $-(CH_2)_pCOR^{10}$;
R^4 and R^5 may be the same or different, and each is independently hydrogen atom, halogen atom, lower alkyl, alkoxyl, or $-C_mF_{2m+1}$;
R^6 is carboxyl, $-COOR^{11}$, $-CONH_2$, cyano, $-SO_3H$, $-SO_2NH_2$, $-NHSO_2CF_3$, or C-bonded tetrazolyl;
R^7 and R^8 may be the same or different, and each is independently hydrogen atom, halogen atom, lower alkyl, alkoxyl, or $-C_mF_{2m+1}$; and
X and Y may be the same or different, and each is independently CH or nitrogen atom; in which
the aforementioned R^9–R^{11}, m, n, and p designate the following:
R^9 is hydroxyl or alkoxyl;
R^{10} is hydrogen atom, hydroxyl, lower alkyl, or alkoxyl;
R^{11} is lower alkyl, alkenyl, cyclo-lower alkyl, aryl, or aralkyl;
m is an integer of 1–6;
n is an integer of 1–4;
p is an integer of 0–4; or a salt thereof.

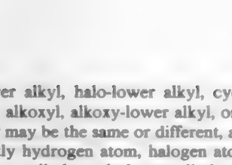
5,387,685

MDR REVERSAL AGENTS

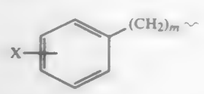
Dennis Powell, 50 Maple Moor La., Peekskill, N.Y. 10566; Rolf Paul, 687 Montgomery La., River Vale, N.J. 07675; William A. Hallett, 346 S. Mountain Rd., New City, N.Y. 10956; Dan M. Berger, 13B Bluehill Commons, Orangeburg, N.Y. 10962, and Minu D. Dutia, 5 Amethyst Ct., West Nyack, N.Y. 10944

Filed Jul. 16, 1993, Ser. No. 92,653
Int. Cl.[6] C07D *217/04, 217/20, 217/12*
U.S. Cl. 546—143 52 Claims

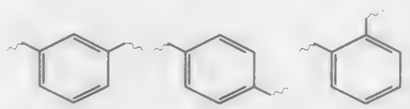
1. A compound of the formula:



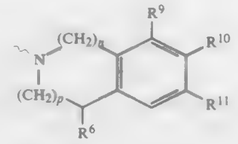
wherein
R^2 is H, OH, O-alkyl(C_1–C_4), F, Br, Cl, I, NO_2, OCF_3, alkyl(C_1–C_6), or $N(R^{12})_2$;
R^3 is H, OH, O-alkyl(C_1–C_3), straight or branched OSi-(C_1–C_4)alkyl, F, Br, Cl, I, NO_2, alkyl(C_1–C_6), OCH_2CH_2Cl, O-alkyl(C_2–C_5)-imidazole, O-alkyl(C_2–C_5)$N(R^{12})_2$, OSO_2CF_3, OCF_3, or $N(R^{12})_2$; or R^2 and R^3 taken together are methylenedioxy or ethylenedioxy;
R^4 is H, OH, O-alkyl(C_1–C_4), F, Br, Cl, I, or alkyl (C_1–C_3);
R^5 is H, CN, CH_2OH, C_2(C_1–C_3)alkyl, CH_2NH_2, $CH_2N(R^{12})_2$ or alkyl (C_1–C_3);
R^1 is straight or branched (C_1–C_{12})alkyl, cycloalkyl(C_3–C_7), bicycloalkyl(C_6–C_{10}), tricycloalkyl(C_6–C_{10}), imidazole or a moiety of the formula:



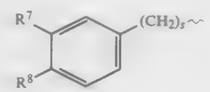
wherein m is an integer 0–3,
X is H, straight or branched (C_1–C_4)alkyl, I, Cl, Br, F, NO_2, or $N(R^{12})_2$;
A is straight or branched (C_2–C_{12})alkyl, or a moiety selected from these of the formulae:



B is a moiety of the formula:



n and P are integers with n=1, p=1;
R^6 is H, alkyl(C_1–C_4), or a moiety of the formula:



s is an integer with s=1–3,
R^7 and R^8 are independently
H, alkyl (C_1–C_4), or O-alkyl (C_1–C_4);
R^9 is H, O-alkyl(C_1–C_4), F, Br, Cl, I, or alkyl(C_1–C_3);
R^{10} is H, O-alkyl(C_1–C_3), OH, F, Br, Cl, I, alkyl(C_1–C_3), OCH_2CH_2Cl, S-alkyl(C_1–C_4), OSO_2CF_3, OCF_3, OCH_2-phenyl , NO_2 or N (R^{12})$_2$;
R^{11} is H, O-alkyl(C_1–C_4), S-alkyl(C_1–C_4), OH, F, Br, Cl, I, OCF_3, OCH_2-phenyl, or alkyl (C_1–C_3)
R^{12} is alkyl(C_1–C_4);
or a pharmaceutically acceptable salt thereof.

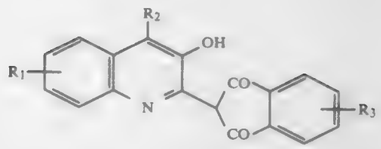
5,387,686

DYE FOR HEAT-SENSITIVE TRANSFER RECORD AND INK COMPOSITION FOR HEAT-SENSITIVE TRANSFER RECORD

Tsukasa Ohyama; Yasushi Shimokawa; Yoriaki Matsuzaki; Keisuke Takuma, all of Fukuoka; Isamu Ghoda; Hitoshi Koshida, both of Hyogo; Ryohei Takiguchi, Chiba; Hiroshi Eguchi; Komei Kafuku, both of Saitama, and Masayuki Nakamura, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated and Dai Nippon Printing Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 924,874, Aug. 5, 1992, Pat. No. 5,296,445. This application Dec. 14, 1993, Ser. No. 166,061
Claims priority, application Japan, Aug. 6, 1991, 3-196631; Dec. 27, 1991, 3-345869; Dec. 27, 1991, 3-345870
Int. Cl.[6] C07D *215/227*
U.S. Cl. 546—154 9 Claims

1. A dyestuff for heat-sensitive transfer record represented by the formula (1)



(I)

where R_1 is an alkyl group having 1 to 8 carbon atoms or cycloalkyl group; R_2 is a hydrogen atom, halogen atom, alkoxy group which may be substituted, alkylthio group which may be substituted or arylthio group which may be substituted; and R_3 is a dialkylaminocarbonyl group.

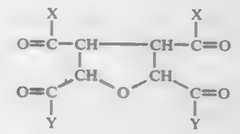
5,387,687

NOVEL PIPERIDINE COMPOUNDS A TETRAHYDROFURAN RING FOR USE AS STABILISERS FOR ORGANIC MATERIAL

Roberto Scrima, Bologna, and Graziano Zagnoni, Vergato-Bologna, both of Italy, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

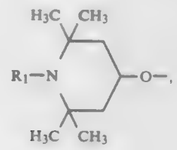
Continuation of Ser. No. 8,058, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 891,531, Jun. 1, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 115,731
Claims priority, application Italy, Jun. 4, 1991, MI91A001524
Int. Cl.[6] C02D *211/32*
U.S. Cl. 546—187 7 Claims

1. A compound of formula (I)

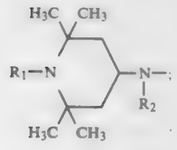


(I)

in which X and Y which can be identical or different are a group of the formula (IIa) or (IIb)

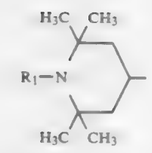


(IIa)



(IIb)

in which R_1 is hydrogen, C_1–C_8alkyl, O, OH, NO, CH_2CN, C_1–C_{18}alkoxy, C_5–C_{12}cycloalkoxy, C_3–C_6alkenyl, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; or C_1–C_8acyl;
R_2 is hydrogen, C_1–C_{18}alkyl, C_3–C_6alkenyl, C_2–C_4alkyl substituted in the 2-, 3- or 4-position by C_1–C_8alkoxy, by di(C_1–C_4alkyl)amino or by a 5- to 7-membered nitrogen-containing heterocyclic group with the free valency on the nitrogen atom; C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1C_4alkyl; C_7–C_9 phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; tetrahydrofurfuryl or a group of the formula (III)



(III)

with R_1 being as defined above; or the two radicals X, the two radicals Y or the radicals X and Y, each, form together a group



with R being a group of the formula (III).

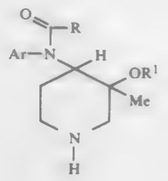
5,387,688

INTERMEDIATES FOR MAKING ANALGESIC N-PHENYL-N-(3-OR[1]-3-ME-4-PIPERIDINYL)AMIDES

Paul L. Feldman, and Marcus F. Brackeen, both of Durham, N.C., assignors to Glaxo Inc., Research Triangle Park, N.C.

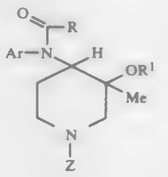
Division of Ser. No. 908,685, Jul. 2, 1992, Pat. No. 5,214,148, which is a division of Ser. No. 629,543, Dec. 18, 1990, Pat. No. 5,130,321. This application Dec. 11, 1992, Ser. No. 73,061
Int. Cl.[6] C07D *211/40*
U.S. Cl. 546—223 6 Claims

1. A compound having the formula (II):



(II)

wherein:
Ar is aryl;
R is a member selected from the group consisting of lower alkyl, preferably ethyl, and lower alkoxy-lower alkyl, preferably methoxymethyl; and
R^1 is a member selected from the group consisting of hydrogen and straight chained lower alkyl.
and the optically active and cis-trans isomers thereof.
5. A compound having the formula (A):



(A)

wherein:
Z is benzyloxycarbonyl;
Ar is aryl;
R is a member selected from the group consisting of lower alkyl and lower alkoxy-lower alkyl; and
R^1 is a member selected from the group consisting of hydrogen and straight chained lower alkyl.

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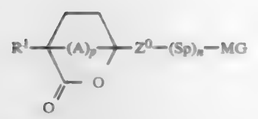
5,387,689

CHIRAL VALEROLACTONE DERIVATIVES

Volker Reiffenrath, Rossdorf, and Ulrich Finkenzeller, Plankstadt, both of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed Sep. 10, 1993, Ser. No. 118,652
Claims priority, application Germany, Sep. 10, 1992, 4230288
Int. Cl.[6] C07D *309/02*
U.S. Cl. 546—268 9 Claims

1. A chiral valerolactone derivative of formula I



I

wherein

R^1 is C_{1-18}-alkyl in which one or two non-adjacent $—CH_2$ groups are optionally replaced by —O—, —CO—O—, —O—CO— or —S—,

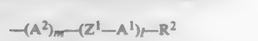
A is $—CH_2—$, $—C—(CH_3)_2—$ or $—CH_2CH_2—$,

Sp is a spacer, which optionally contains a chiral carbon atom,

Z^0 is —COO—, $—CH_2O—$, $—CH_2CH_2—$, —C≡C— or —CH=CH—,

n and p are each 0 or 1, and

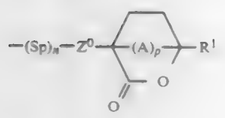
MG is a radical of the formula II



II

wherein

R^2 is C_{1-18}-alkyl or C_{2-18}-alkenyl optionally substituted by halogen or monosubstituted by cyano and in which one or two non-adjacent $—CH_2—$, groups are optionally replaced by —O—, —CO—O—, —O—CO— or —S—, or R^2 is a radical of the formula



in which

A^1 and A^2 are each, independently of one another, 1,4-phenylene which is optionally substituted by one or two fluorine atoms and in which one or two CH groups are optionally replaced by N; 1,4-cyclohexylene which is optionally substituted by a cyano group and in which is optionally substituted by a cyano group and in which one or two CH_2 groups are optionally replaced by O or S; thiadiazole-2,5-diyl or 1,4-bicyclo[2,2,2]octylene;

Z^1 is —CO—O, —O—CO—, $—CH_2O—$, $—OCH_2—$, $—CH_2CH_2—$, —C≡C— or a single bond,

l is 0, 1 or 2,

m is 1 or 2, and

(l+m) is 1, 2 or 3.

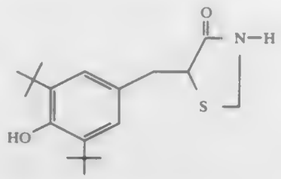
5,387,690

METHOD OF TREATING INFLAMMATORY BOWEL DISEASE

Jaswant S. Gidda, Carmel; Jill A. Panetta, Zionsville, and Michael L. Phillips, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 624,814, Dec. 7, 1990, Pat. No. 5,216,002, which is a continuation-in-part of Ser. No. 454,203, Dec. 21, 1989, abandoned. This application May 28, 1993, Ser. No. 69,970
Int. Cl.[6] C07D *277/14*
U.S. Cl. 548—186 3 Claims

1. A stereoisomer of a compound of the formula



a pharmaceutically acceptable salt thereof.

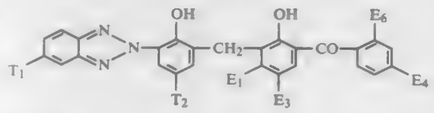
5,387,691

2-(BENZOTRIAZOL-2-YL)-4-ALKYL-6-(2-HYDROXY-3-BENZOYL-6-ALKOXYBENZYL)PHENOLS AND STABILIZED COMPOSITIONS

Robert A. Falk, New City; John J. Luzzi, Carmel, and Gregory R. Coughlin, Poughkeepsie, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 5, 1993, Ser. No. 26,961
Int. Cl.[6] C07D *249/20*
U.S. Cl. 548—257 14 Claims

1. A compound of formula I



(I)

wherein

T_1 is hydrogen, chloro, alkyl of 1 to 4 carbon atoms or $—SO_3H$,

T_2 is alkyl of 1 to 12 carbon atoms,

E_1 is hydrogen, chloro or $—OE_2$,

E_2 is hydrogen or alkyl of 1 to 18 carbon atoms,

E_3 is hydrogen, alkyl of 1 to 4 carbon atoms, chloro or $—SO_3H$,

E_4 is hydrogen, chloro or $—OE_5$,

E_5 is hydrogen or alkyl of 1 to 18 carbon atoms, and

E_6 is hydrogen, hydroxyl or carboxy.

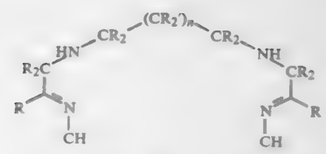
5,387,692

METAL CHELATING LIGANDS FOR HYPOXIC CELLS

Anthony L. Riley, Amersham, and James D. Kelly, Marlow, both of United Kingdom, assignors to Amersham International plc, United Kingdom

Filed Jun. 16, 1992, Ser. No. 899,312
Claims priority, application United Kingdom, Jun. 21, 1991, 9113487
Int. Cl.[6] C07D *233/91*; A61K *31/415*
U.S. Cl. 548—313.7 6 Claims

1. A ligand consisting of at least one quinone, triazole or aromatic nitro compound bonded to a metal chelating moiety which is a bis-amine oxime of the formula



where n=0–3, through at least one R and wherein

R and R′ are the same or different and each is H; hydrocarbyl; amino; amido; hydroxy; alkoxy; alkoxyalkyl; or carboxylic acid; and which are unsubstituted or substituted with a hydrophilic group selected from the group consisting of amino, amido or hydroxy.

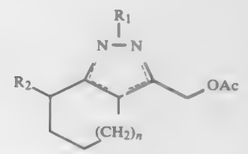
5,387,693

TETRAHYDROINDAZOLE, TETRAHYDROCYCLOPENTAPYRAZOLE, AND HEXAHYDROCYCLOHEPTAPYRAZOLE INTERMEDIATE COMPOUNDS

Peter J. Connolly, New Providence, and Michael P. Wachter, Bloomsbury, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation-in-part of Ser. No. 98,536, Sep. 9, 1993, Pat. No. 5,315,012, Division of Ser. No. 886,569, May 20, 1992, Pat. No. 5,250,561, which is a division of Ser. No. 742,788, Aug. 8, 1991, Pat. No. 5,134,155. This application Dec. 30, 1993, Ser. No. 176,391
Int. Cl.[6] C07D *231/54, 231/56*
U.S. Cl. 548—360.1 1 Claim

1. A compound of the formula XI:



wherein n is 0 or 1;

wherein R_1 is selected from any one of C_2–C_8 alkyl, or substituted aryl;

R_2 is selected from any one of H, C_1–C_8 alkyl, aryl, substituted aryl, aralkyl wherein the alkyl portion is C_1–C_4 or substituted aralkyl wherein the alkyl portion is C_1–C_4; or the pharmaceutically acceptable acid salt thereof.

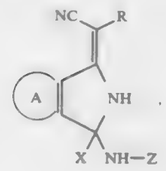
5,387,694

CHROMOGENIC METHYLENEPYRROLINES

Davor Bedekovic, Biel-Benken, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 23, 1993, Ser. No. 52,301
Claims priority, application Switzerland, Apr. 30, 1992, 1388/92
Int. Cl.[6] C07D *209/44*
U.S. Cl. 548—458 16 Claims

1. A methylenepyrroline of the formula

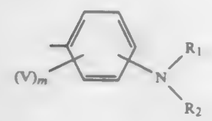


(I)

in which

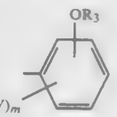
X is pyrrolyl, thienyl, indolyl, carbazolyl, acridinyl, pyrazolonyl, benzofuranyl, benzothienyl, naphthothienyl, phenothiazinyl, indolinyl, julolidinyl, kairolinyl, dihydroquinolinyl, tetrahydroquinolinyl, or naphthyl radical which is unsubstituted or substituted by up to three identical or different substituents from the group consisting of halogen, cyano, lower alkyl, C_5–C_6cycloalkyl, C_1–C-sacyl,—NR_1R_2, —OR_3 or—SR_3, or

X is an unsubstituted phenyl or a phenyl radical of the formula



(1a)

or



(1b)

in which

R_1, R_2 and R_3, independently of one another, are hydrogen, unsubstituted or halogen-, hydroxyl-, cyano- or (lower alkoxy)-substituted alkyl having at most 12 carbon atoms, acyl having 1 to 8 carbon atoms, cycloalkyl having 5 to 10 carbon atoms or unsubstituted or halogen-, trifluoromethyl-, cyano-, (lower alkyl)-, (lower alkoxy)-, (lower alkoxycarbonyl)-, —NX′X″— or 4-NX′X″-phenylamino-ring-substituted phenylalkyl or phenyl, X′ and X″, independently of one another, are hydrogen, lower alkyl, cyclohexyl, benzyl or phenyl or R_1 and R_2 together with the nitrogen atom linking them are a five- or six-membered heterocyclic radical,

V is hydroxyl, halogen, lower alkyl, C_1–C_{12}alkoxy, C_5–C_7-cycloalkoxy, C_1–C_{12}acyloxy, benzyl, phenyl, benzyloxy or phenoxy each of which is unsubstituted or substituted in the phenyl radical by halogen, cyano, lower alkyl or lower alkoxy, or, in the case of the phenyl radical of formula (1*a*), also the group $—NT_1T_2$,

T_1 and T_2, independently of one another, are hydrogen, lower alkyl, C_5–C_{10}cycloalkyl, unsubstituted or halogen-, cyano-, (lower alkyl)- or (lower alkoxy)-substituted benzyl, or acyl having 1 to 8 carbon atoms and

T_1 is also unsubstituted or halogen-, cyano-, (lower alkyl)- or (lower alkoxy)-substituted phenyl, and m is 0, 1 or 2;

R is CN or substituted or unsubstituted phenylcarbamoyl,

Z is an acyl radical, and

A is a radical for forming an aromatic or heterocyclic ring having 6 ring atoms, it being possible not only for ring A but also for the fused-on ring to be substituted.

5,387,695

PROCESS FOR THE CHEMICAL RESOLUTION OF 5-ALKOXY-SUBSTITUTED (+)-1,3-DIMETHYLOXINDOLYLETHYLAMINES

Thomas B. K. Lee, Whitehouse Station, and George S. K. Wong, Fort Lee, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

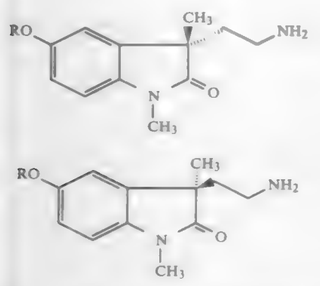
Continuation of Ser. No. 831,750, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 640,505, Jan. 3, 1991, abandoned, which is a continuation of Ser. No. 409,213, Sep. 19, 1989, abandoned. This application Feb. 17, 1993, Ser. No. 22,605
Int. Cl.[6] C07D *209/34*
U.S. Cl. 548—486 25 Claims

1. A process for treating a mixture of enantiomers to precipi-

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tate one of the enantiomers from the mixture, wherein the process comprises:

(A) providing a solution consisting essentially of a mixture of enantiomers of the following formulas:



where R is a straight chain or branched alkyl group having 1–3 carbon atoms or benzyl;

(B) contacting the mixture with a chiral acid in an amount sufficient to preferentially precipitate a salt of the chiral acid and one of the enantiomers; and

(C) recovering the resulting precipitate;

wherein the chiral acid is selected from the group consisting of dibenzoyl-D-tartaric acid, dibenzoyl-L-tartaric acid, ditoluoyl-D-tartaric acid, and ditoluoyl-L-tartaric acid.

5,387,696

REDUCTIVE AMINATION OF AN AMINO ACID OR OF AN AMINO ACID DERIVATIVE WITH AN α-KETO ACID OR AN α-KETO ACID DERIVATIVE

Matthias Kottenhahn, Hanau; Karlheinz Drauz, Freigericht, and Horst Harr, Rodenbach, all of Germany, assignors to DeGussa Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jul. 13, 1992, Ser. No. 912,684

Claims priority, application Germany, Jul. 13, 1991, 4123248

Int. Cl.[6] C07D *207/16*

U.S. Cl. 548—533 **9 Claims**

1. In a reductive amination of an α-keto-compound selected from the group consisting of α-keto acids and α-keto acid derivatives of the Formula (V)

$$R^2-(CH_2)_n-CO-COOR^1 \quad (V)$$

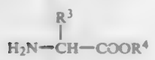
in which

R^1 signifies hydrogen, methyl, ethyl or benzyl,

R^2 signifies hydrogen, C_1-C_4-alkyl, phenyl or phenyl-(C_1-C_4-alkyl), and

n signifies 0, 1 or 2,

with an amino-compound of the Formula (III)

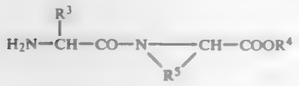


(III)

in which

R_3 signifies hydrogen, heteroalkyl-, or C_1-C_4 alkyl, benzyl-, 4'-hydroxybenzyl, acrylamino-(C_1-C_5)-alkyl, tert-.butyloxycarbonylamino-(C_1-C_5)-alkyl, benzyloxycarbonylamino-(C_1-C_5)-alkyl-, and

R^4 signifies H or an ester protective group, or Formula (IV)



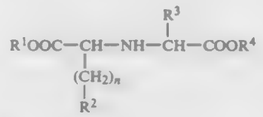
(IV)

in which

R^3 and R^4 have one of the meanings already indicated and

R^5 together with the atoms carrying it signifies a heterocyclic mono- or bicyclic ring system with 5 to 10 members

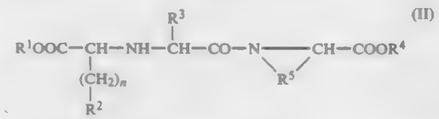
in an inert solvent, and in the presence of a hydrogenation catalyst and a hydrogenation agent, both acting together to reduce a double bond in an intermediate formed by condensation of said keto-compound with said amino-compound to a single bond by incorporating hydrogen, so as to form a C-N bond between the C-atom of the keto-group of said keto-compound and the N-atom of the amino group of said amino-compound yielding a compound for Formula (I):



(I)

in which

R^1 to R^4 and n have one of the meanings already indicated in the case that the compound of Formula (V) is reacted by means of hydrogenolytic conversion with a compound of Formula (III), or a compound of Formula (II):



(II)

in which R^1 to R^5 and n have one of the meanings already indicated in the case that the compound of Formula (V) is reacted by means of hydrogenolytic conversion with a compound of Formula (IV), as well as optionally removing water;

the improvement in which the reductive amination is carried out in the presence of an excess of base, an excess of base being provided if the adducts used have been adjusted to their isoelectric point and then at least one compound is still present in the system which decreases, in water, the hydrogen ion concentration of the water and/or which takes up protons from water molecules, or, if the pK value of the adducts used is below pH 7, which raises the pH of the water above the pK value of the adducts.

5,387,697

PROCESS FOR THE PREPARATION OF 1-[3-ACETYLTHIO-2(S)-METHYLPROPANOYL]-L-PROLINE

Azucena C. Hen, Skillman, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 13, 1994, Ser. No. 260,271

Int. Cl.[6] C07D *207/16*

U.S. Cl. 548—533 **3 Claims**

1. The process for the preparation of 1-[3-acetylthio-2(S)-methylpropanoyl-L-proline which comprises reacting

L-proline

with approximately an equimolar amount of (R)-3-acetylthio-2-methyl propanoyl chloride at 0°–5° C., in the presence of 0.25M potassium phosphate buffer and enough 2.5M potassium hydroxide to keep the pH between 7.5–8.5; and then warming the reaction mixture to ambient temperature while adding conc. HCl to pH 1.5, and recovering the product thereby produced.

5,387,698

RHODIUM CONTAINING SELECTIVE CATALYSTS FOR THE SYNTHESIS OF EPOXYSILOXANE/EPOXYSILICONE MONOMERS AND POLYMERS

James V. Crivello, Clifton Park, and Mingxin Fan, Troy, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jun. 11, 1992, Ser. No. 896,950

The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.

Int. Cl.[6] C07F *7/02, 7/08*

U.S. Cl. 549—215 **9 Claims**

1. A method for making an epoxy-containing organosilicone compound, comprising the steps of:

(i) preparing the mixture comprising:

(A) from about 1 to about 10 parts by weight of the composition of an ethylenically unsaturated epoxide;

(B) from about 0.5 to about 400 parts by weight of the composition of an organohydrogensiloxane or an organohydrogensilane; based on A and

(C) from about 1 to about 5000 parts per million by weight as compared to the weight of the composition of a hydrosilation catalyst of the formula

$$[R_4M]^+[RhCl_3Br]^-$$

wherein M is phosphorous or nitrogen and R is an organic radical comprising C_{1-18}, substituted or unsubstituted, linear alkyl radical, or an aryl, alkaryl or aralkyl radical; and

(ii) reacting the mixture of said step (i), at a temperature of from about 0° to about 200° which promote a hydrosilation addition reaction between (A) and (B) to produce an epoxysilicone product, and which do not promote an epoxide ring-opening reaction in either (A) or in said epoxysilicone product.

5,387,699

PROCESS FOR PREPARING PYROMELLITIC DIANHYDRIDE

Werner Wagner, Munich; Frank Müller, Inning-Bachern; Hans-Jürgen Eberle, Munich, and Franz Grundei, Ebersberg, all of Germany, assignors to Industrie GmbH, Munich, Germany

Filed Dec. 22, 1993, Ser. No. 171,813

Claims priority, application Germany, Feb. 25, 1993, 4305817

Int. Cl.[6] C07D *493/00;* **C07C** *51/16*

U.S. Cl. 549—239 **13 Claims**

1. A process for preparing pyromellitic dianhydride (PMDA) by heterogeneously catalyzed oxidation in the gas phase, comprising:

contacting a reaction gas containing molecular oxygen and an aromatic reactant selected from the group consisting of benzaldehydes which are 2,4,5-trialkylated by alkyl groups having from 1 to 3 carbon atoms, and mixtures of benzaldehydes which are 2,4,5-trialkylated by alkyl groups having from 1 to 3 carbon atoms and benzenes which are 1,2,4,5-tetraalkylated by alkyl groups having from 1 to 3 carbon atoms;

with an oxidation catalyst which contains as active catalyst components

(a) from 5% to 95% by weight of one or more transition-metal oxides of sub-group IV of the Periodic Table of the Elements; and

(b) from 1% to 50% by weight of one or more transition-metal oxides of sub-group V of the Periodic Table of the Elements; and

(c) from 0% to 10% by weight of one or more oxides of elements of main group I of the Periodic Table of the Elements; and

(d) from 0% to 50% by weight of one or more oxides of elements of main groups III, IV and V of the Periodic Table of the Elements and of elements of sub-groups VI and VII of the Periodic Table of the Elements;

where the indicated percentages by weight are based in each case on the total weight of the active components and add up to 100% by weight.

5,387,700

PROCESS FOR THE PREPARATION OF CHLOROSULFATE AND SULFAMATE DERIVATIVES OF 2,3:4,5-BIS-O-(1-METHYLETHYLIDENE)-β-D-FRUCTOPYRANOSE AND (1-METHYLCYCLOHEXYL)METHANOL

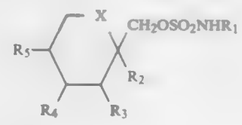
Cynthia A. Maryanoff, New Hope; Lorraine Scott, North Wales, and Kirk L. Sorgi, Blue Bell, all of Pa., assignors to McNeilab, Inc., Spring House, Pa.

Continuation-in-part of Ser. No. 926,269, Aug. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 762,720, Sep. 19, 1991, abandoned. This application Aug. 12, 1993, Ser. No. 106,470

Int. Cl.[6] C07D *311/78, 311/94, 309/06;* **C07C** *309/02*

U.S. Cl. 549—387 **28 Claims**

1. A two step process for synthesizing sulfamates of the formula I:

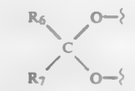


I

wherein X is CH_2 or oxygen;

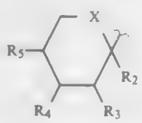
R_1 is hydrogen or C_1-C_4 alkyl; and

R_2, R_3, R_4 and R_5 are independently hydrogen or alkyl, and, when X is oxygen, any of R_2 and R_3, or R_4 and R_5, together, may be a methylenedioxy group of the formula (IV):



IV

wherein R_6 and R_7 are the same or different and are hydrogen, alkyl or are alkyl joined together to form a cyclopentyl or cyclohexyl ring, with the proviso that R_6 and R_7 may not both be H at the same time; the process comprising in a first step, reacting an alcohol of the formula RCH_2OH, wherein R is a moiety of the formula II:



II

with sulfuryl chloride in the presence of a base selected from the consisting of pyridine, pyridine derivatives and triethylamine in a solvent of toluene to form a chlorosulfate compound of the formula III: RCH_2OSO_2Cl; and in a second step reacting the chlorosulfate compound of formula III with an amine of the formula R_1NH_2 in a solvent of tetrahydrofuran to produce the sulfamate of formula I.

VOL 1171 ISS 1 FE 7 1995 UMI

5,387,701

PREPARATION OF 4-HYDROXYMETHYLTETRAHYDROPYRAN

Hans-Juergen Weyer, Mannheim; Rolf Fischer, Heidelberg; Werner Schnurr, Herxheim; Norbert Goetz, Worms, and Thomas Kuekenhoehner, Boehl-Iggelheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 30, 1993, Ser. No. 130,010
Claims priority, application Germany, Oct. 5, 1992, 4233430
Int. Cl.[6] C07D *309/06*
U.S. Cl. 549—423 5 Claims

1. A process for the preparing 4-hydroxymethyltetrahydropyran which comprises:

reacting 3-(2-hydroxyethyl)tetrahydrofuran at a temperature of from 0° to 400° C. and a pressure of from 0.001 to 400 bar in the presence of an acidic catalyst.

5,387,702

PROCESS FOR THE PREPARATION OF CABOFURAN

Gopinathan Changaramponnath; Gopinathan Sarada; Mitra R. Baran, and Ratnasamy Paul, all of Pune, India, assignors to Council of Scientific And Industrial Research, New Delhi, India

Filed Sep. 29, 1993, Ser. No. 128,152
Int. Cl.[6] C07D *307/86*
U.S. Cl. 549—470 12 Claims

1. An improved process for the preparation of carbofuran which comprises reacting catechol with beta methallyl halide or beta methallyl alcohol in the presence of a catalyst composite containing a heteropoly acid to obtain 7-hydroxy 2,3, dihydro 2,2, dimethyl benzofuran and reacting the 7-hydroxy 2,3, dihydro 2,2, dimethyl benzofuran with methyl isocyanate or with phosgene and methyl amine to obtain the carbofuran.

5,387,703

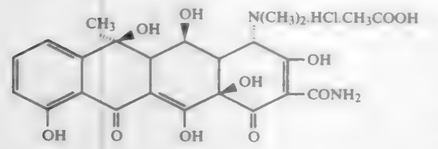
PROCESS AND INTERMEDIATE FOR THE PURIFICATION OF OXYTETRACYCLINE

Marija Cakara, Marulicev trg, and Bozidar Suskovic, Tuskanec, both of , assignors to Pliva, Zagreb,

Filed Oct. 20, 1993, Ser. No. 138,221
Int. Cl.[6] C07C *233/88, 235/42*
U.S. Cl. 552—203 2 Claims

1. A process for the preparation of pure oxytetracycline, characterized in that oxytetracycline hydrochloride or alternatively, oxytetracycline dihydrate and an equimolar quantity of hydrogen chloride in the form of concentrated hydrochloric acid is suspended in glacial acetic acid under stirring, the stirring is continued for 5 hours, the formed oxytetracycline hydrochloride acetate precipitate is filtered, washed with glacial acetic acid and acetone, and dried under reduced pressure at a temperature up to 40° C. till constant weight.

2. Oxytetracycline hydrochloride acetate of the formula



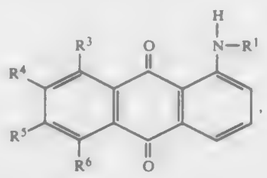
5,387,704

PREPARATION OF ANTHRAQUINONES

Klaus Ebel, Ludwigshafen, and Juergen Schroeder, Viernheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 9, 1993, Ser. No. 150,363
Claims priority, application Germany, Nov. 11, 1992, 4238045
Int. Cl.[6] C07C *221/00*
U.S. Cl. 552—238 20 Claims

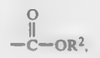
1. A process for preparing an anthraquinone of the formula



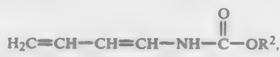
I

wherein

R^1 is hydrogen or

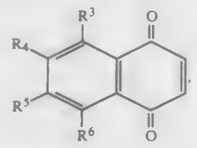


R^2 is C_1- to C_8-alkyl or C_7- to C_{20}-phenylalkyl, and R^3, R^4, R^5 and R^6, independently of one another, are hydrogen, C_1- to C_8-alkyl, C_7- to C_{20}-phenylalkyl, C_1-to C_8-alkoxy, C_1- to C_8-haloalkyl, nitro, cyano, halogen, amino, C_1- to C_8-alkylcarbonyl, benzoyl, N-C_1- to C_8-alkylphenylamino, C_1- to C_8-alkylsulfonyl, phenylsulfonyl, aminocarbonyl or nitrobenzyl, which process comprises: reacting an N-butadienylcarbamic acid ester of the formula



II

where R_2 has the abovementioned meanings, with a 1,4-naphthoquinone of the formula



III

where the substituents R^3 to R^6 have the abovementioned meanings, at from 0° to 150° and in a molar ratio of the ester II to the 1,4-naphthoquinone III of 0.5:1 to 2.5:1, and

reacting the resulting carbamoyltetrahydroanthraquinone with an oxygen-containing gas in a tertiary amine and in the presence of a copper salt.

5,387,705

FATTY ACID ANHYDRIDE PROCESS

Gordon K. Stipp, Cincinnati, and Bernard W. Kluesener, Harrison, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 13, 1993, Ser. No. 106,474
Int. Cl.[6] C11C *3/08*
U.S. Cl. 554—164 20 Claims

1. A process for preparing food grade fatty acid anhydrides from fatty acids, said fatty acid anhydrides having a purity of at least about 95%, a level of di-fatty ketones less than about 300 ppm and a level of mixed anhydrides less than about 0.5%, said process comprising the steps of:

A. reacting in a liquid phase a higher fatty acid with a dehydration agent for from about 5 to about 30 minutes at a temperature of from about 25° to about 150° C. to yield an equilibrium mixture, wherein the dehydration agent is selected from the group consisting of acetic anhydride and propionic anhydride,

B. further converting the fatty acids and mixed anhydrides to symmetrical anhydrides over a time period ranging from about 0.1 to about 60 minutes by continuous removal of the dehydrating agent via high vacuum and low temperature flash evaporation, distillation or thin film evaporation, while maintaining the reaction vessel at a vacuum of from about 500 to about 1 mm Hg and a temperature ranging from about 100° to about 160° C., and

C. purifying the symmetrical anhydrides via wiped film evaporation, centrifugal molecular still or thin-film short path evaporation under a vacuum of from abut 1 to about 0.001 mm Hg at a temperature ranging from about 100° to about 220° C. and maintaining the reaction mixture under these conditions for a time period ranging from 0.0 to 1 minute.

5,387,706

PROCESS FOR PREPARING ACYLOXYSILANES

Edward T. Rasmussen; Barbara A. Schroeder, both of Midland, Mich., and Monica A. Walker, Mill Valley, Calif., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 27, 1994, Ser. No. 265,903
Int. Cl.[6] C07F *7/08, 7/09*
U.S. Cl. 556—442 13 Claims

1. A process for preparation of acyloxysilanes, the process comprising:

(A) contacting a chlorosilane described by formula

$$R^1_aSiCl_{4-a}$$

with a carboxylic acid described by formula

$$R^2COOH$$

in a film thereby forming an acyloxysilane and hydrogen chloride,

(B) vaporizing the hydrogen chloride from the film to facilitate formation of the acyloxysilane, and

(C) recovering the acyloxysilane; where each R^1 is independently selected from a group consisting of hydrogen and monovalent hydrocarbon radicals comprising one to about eight carbon atoms, R^2 is selected from a group consisting of hydrogen and alkyl radicals comprising one to about eight carbon atoms, and a=0, 1, 2, or 3.

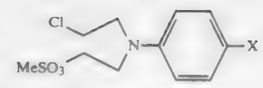
5,387,707

NEW ROUTE OF SYNTHESIS FOR TERTIARY ALKYL ESTERS

John Mann, University of Reading, Department of Chemistry The University, Whiteknights, Reading RG6 2AD, and Caroline J. Springer, Cancer Research Campaign Laboratories, Dept., of: Medical Oncology, Charing Cross Hospital, Fulham Palace Road, London W6 8RF, both of United Kingdom

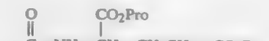
PCT No. PCT/GB90/01371, § 371 Date Apr. 10, 1992, § 102(e) Date Apr. 10, 1992, PCT Pub. No. WO91/03460, PCT Pub. Date Mar. 21, 1991
PCT Filed Sep. 5, 1990, Ser. No. 838,281
Claims priority, application United Kingdom, Sep. 5, 1989, 8920011
Int. Cl.[6] C07C *303/00, 309/15*
U.S. Cl. 558—48 4 Claims

1. A process for the preparation of a compound of the formula (I)

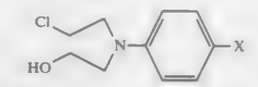


(I)

or a salt thereof wherein X represents a group



where Pro represent hydrogen or a straight or branched Chain C_{1-6} alkyl group, which comprises reacting a compound of formula (IV)



IV

or a salt thereof, where X is as defined above, with methane sulfonyl chloride in an organic solvent.

5,387,708

PRODUCTION OF DIALKYL CARBONATES USING COPPER CATALYSTS

David C. Molzahn; Mark E. Jones; George E. Hartwell, and Jose Puga, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 10, 1993, Ser. No. 165,060
Int. Cl.[6] C07C *69/96;* B01J *31/18*
U.S. Cl. 558—277 30 Claims

1. A process of preparing dialkyl carbonates comprising contacting an alkanol, carbon monoxide, and oxygen in the vapor phase and in the presence of a catalytic amount of a catalyst, the contacting being conducted under reaction conditions such that a dialkyl carbonate is formed in an average productivity greater than about 50 g/L-hr, the catalyst comprising: (1) a copper halide, a copper oxyhalide, or a copper carboxylate halide, (2) a quaternary ammonium salt, and (3) a support component, wherein the atomic ratio of total halide to copper (X^-/Cu) in the catalyst ranges from about 1.0 to about 3.0 and the atomic ratio of nitrogen to copper (N/Cu) is greater than 0.0 but less than 2.0, and further wherein the catalyst is essentially free of the platinum group metals.

30. A catalyst composition comprising a copper compound selected from copper halides, copper oxyhalides, and copper carboxylate halides, (b) a quaternary ammonium salt, and (c) a non-carbon support, wherein the atomic ratio of total halide to copper ranges from about 1.0 to about 3.0 and wherein the atomic ratio of nitrogen to copper is greater than 0.0 but less than 2.0, the catalyst being essentially free of the platinum group metals.

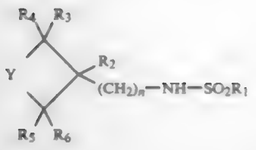
5,387,709

SUBSTITUTED SULFONAMIDES, PROCESS OF PREPARATION AND MEDICINES CONTAINING SAME

Claude Lardy, Lyons; Daniel Guerrier, Saint Genis Laval; Gilles Chavernac, La Mulatiere, and François Collonges, Beynost Miribel, all of France, assignors to Lipha Lyonnaise Industrielle Pharmaceutique, Lyon Cedex, France

Continuation of Ser. No. 736,240, Jul. 26, 1991, abandoned. This application Oct. 12, 1993, Ser. No. 134,731
Claims priority, application France, Jul. 31, 1990, 9009737
Int. Cl.[6] C07C *255/00;* C07D *233/54*
U.S. Cl. 558—388 12 Claims

1. A compound of formula (1):



wherein

R_1 is selected from (i) phenyl, (ii) phenyl substituted by one or more radical (s) selected from the group consisting of halogen, branched or linear (C_1–C_7) alkyl, (C_1–C_7)acyl, trifluoromethyl, (C_1–C_7)-alkoxy, (C_1–C_7)alkylsulfonyl, trifluoromethoxy, nitro, cyano, (C_1–C_7)cycloalkyl, phenyl, (C_1–C_7)alkylthio, amino, (C_3–C_{12})alkylsulfinyl, hydroxy and acetamido, (iii) naphtyl, (iv) dimethylaminonaphtyl, (v) thienyl, (vi) chlorothienyl, (vii) furyl, (viii) imidazolyl, (ix) quinolyl and (x) methylquinolyl;

R_2 and R_3 are different; one of the two represents W, the other is selected from the group consisting of hydrogen, halogen, trifluoromethyl, (C_1–C_7)alkyl, (C_3–C_{12})cycloalkyl, (C_1–C_7)alkoxy, (C_1–C_7)alkylthio, (C_1–C_7)alkylsulfinyl, (C_1–C_7)alkylsulfonyl, (C_1–C_7)acyl, (C_1–C_7)thioacyl, hydroxy, amino (C_1–C_7)alkyl substituted amino, di-(C_1–C_7)alkyl substituted amino, nitro, nitrile, and azide;

W is a group —Z—Ar—$(CH_2)_q$—A in which A is selected from —CO_2H, —SO_3H, —PO_3H, —CO_2Et, —CO_3Me, hydroxyl, carboxyethylaminocarbonyl, carboxyethylcarbonyl, —$CONH_2$, diethylaminoethylcarbonyl, carboxyethylcarbonyl, morpholinocarbonyl, tetrazolyl, 4,5-dihydro-3-oxo[2H]pyridazinyl and $COCH_3$;

q is selected from 0, 1, 2, 3 and 4; Ar represents phenyl; Z is selected from oxygen, methylene and a bond;

R_4, R_5 and R_6 independently have the meaning of R_2 or R_3, except W;

Y is a group —$(CH_2)_s$—B—$(CH_2)_t$— s and t are each independently selected from 0, 1 and 2; B is selected from oxygen, carbonyl, —$C(Me)_2$ and a bond; n is selected from 0 and 1;

a physiologically acceptable salt thereof, a physiologically acceptable salt in the form of a complex thereof, a physiologically acceptable complex thereof, a physiologically acceptable ester thereof or a physiologically acceptable amide thereof.

5,387,710

ETHANOLAMINE DERIVATIVES HAVING SYMPATHOMIMETIC AND ANTI-POLLAKIURIA ACTIVITIES

Youichi Shiokawa, Tsukuba; Masanobu Nagano, Kawanishi; Kiyoshi Taniguchi, Kobe; Kazuhiko Take, Tondabayashi; Takeshi Kato, Nishinomiya, and Kazunori Tsubaki, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP93/00113, §371 Date Sep. 17, 1993, §102(e) Date Sep. 17, 1993, PCT Pub. No. WO93/15041, PCT Pub. Date Aug. 5, 1993

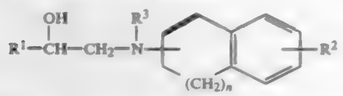
PCT Filed Feb. 1, 1993, Ser. No. 117,163

Claims priority, application United Kingdom, Feb. 3, 1992, 9202236; Aug. 24, 1992, 9217991

Int. Cl.[6] C07C *229/40*; A01N *33/02*

U.S. Cl. 560—43 7 Claims

1. A compound of the formula:



[I]

wherein

R^1 is aryl or a heterocyclic group, each of which may be substituted with halogen, hydroxy, protected hydroxy, aryloxy, lower alkoxy, halo(lowr)alkoxy, nitro, cyano, amino or acylamino,

R^2 is hydrogen, halogen, nitro, hydroxy, lower alkyl optionally substituted with acyl, lower alkenyl optionally substituted with acyl, lower alkoxy optionally substituted with acyl, or amino optionally substituted with acyl(lower)alkyl,

R^3 is hydrogen, an N-protective group, or lower alkyl optionally substituted with lower alkylthio,

n is an integer of 0 to 3, and

a heavy solid line means a single bond or a double bond,

provided that when n is 1, then

1) R^1 is a condensed aromatic hydrocarbon group or a heterocyclic group, each of which may be substituted with halogen, hydroxy, protected hydroxy, aryloxy, lower alkoxy, halo(lowr)alkoxy, nitro, cyano, amino or acylamino, or

2) R^2 is halogen, nitro, lower alkyl optionally substituted with acyl, lower alkenyl optionally substituted with acyl, or amino optionally substituted with acyl(lower)alkyl, or

3) R^3 is an N-protective group or lower alkyl optionally substituted with lower alkylthio, or

4) a heavy solid line means a double bond, and pharmaceutically acceptable salts thereof.

5,387,711

PROCESS FOR PREPARING 3-SULFOBENZOIC ACID AND ALKALI METAL SALTS THEREOF

Michael Meier, Frankfurt am Main, Germany, assignor to Hoechst AG, Frankfurt, Germany

Filed Aug. 6, 1993, Ser. No. 103,186

Claims priority, application Germany, Aug. 7, 1992, 4226131

Int. Cl.[6] C07C *303/22*

U.S. Cl. 562—56 19 Claims

1. A process for preparing 3-sulfobenzoic acid or alkali metal salts or mixtures thereof, which comprises mixing 3-(chlorosulfonyl)benzoic acid with water and a water-immiscible solvent in which 3-sulfobenzoic acid is insoluble or only sparingly soluble, removing water from the mixture by azeotropic distillation, cooling and optionally admixing the 3-sulfobenzoic acid formed with alkali metal hydroxide or a substance forming alkali metal hydroxide and again removing water by azeotropic distillation.

5,387,712

PREPARATION OF AROMATIC ALKOXYALKANOIC ACIDS

Herbert E. Fried, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

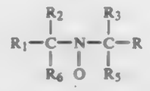
Continuation of Ser. No. 981,039, Nov. 24, 1992, abandoned. This application Jan. 26, 1994, Ser. No. 187,360

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[6] C07C *51/16*

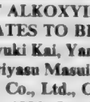
U.S. Cl. 562—420 20 Claims

1. A process for the preparation of an aromatic alkoxyalkanoic acid which comprises reacting the corresponding alkoxylated aromatic alcohol which has a carbon number in the range of from about 14 to about 20 and from about 1 mole to about 9 moles of alkylene oxide per mole of alkoxylated aromatic alkanol with a stable free radical nitroxide having the formula:

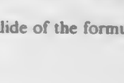


wherein (1) (a) each of R_1, R_2, R_3 and R_4 is an alkyl, aryl or heteroatom substituted alkyl group having 1 to about 15 carbon atoms, and (b) R_5 and R_6 (i) each is an alkyl group having 1 to about 15 carbon atoms provided that R_1–R_6 are not all alkyl groups, or a substituted alkyl group having 1 to about 15 carbon atoms wherein the substituent is hydrogen, cyano, —$CONH_2$, —OCOCH, $OCOC_2H_5$, carbonyl, alkenyl wherein the double bond is not conjugated with the nitroxide moiety, or —COOR wherein R of the —COOR group is alkyl or aryl, or (ii) together form part of a ring that contains 5 carbon atoms and up to two heteroatoms of 0 or N,

or (2) the



moiety and the



moiety individually are aryl, in the presence of a NO_x-generating compound selected from the group consisting of an alkali metal nitrosodisulfonate, nitric acid and mixtures thereof, and an oxidant comprising an oxygen-containing gas at a temperature in the range of from about 0° C. to about 100° C. and thereafter separating out the aromatic alkoxyalkanoic acid.

5,387,713

PROCESS FOR PURIFICATION OF CARBOXYLIC ACIDS

John Cook, Hull; Ruth A. Hazel, and Peter J. Wilson, both of North Humbershire, England, assignors to BP Chemicals Limited, London, England

Filed Dec. 11, 1991, Ser. No. 805,373

Claims priority, application United Kingdom, Jan. 5, 1991, 9100216

Int. Cl.[6] C07C *51/42*

U.S. Cl. 562—608 15 Claims

1. In a carbonylation process wherein a suitable reactant is carbonylated in the presence of a carbonylation catalyst and an iodide promoter to produce carboxylic acid, a method for purifying impure carboxylic acid containing iodide and oxidisable impurities, wherein said method comprises the steps of: (a) contacting said impure carboxylic acid with hydrogen peroxide, and (b) recovering by distillation or evaporation from the product of step (a) purified carboxylic acid having a reduced content of iodide and oxidisable impurities.

5,387,714

PROCESS OF PRODUCING INTERMEDIATES FOR USE IN PRODUCTION OF ALKOXYIMINOACETAMIDES AND INTERMEDIATES TO BE USED THEREIN

Akira Takase, Otsu; Hiroyuki Kai, Yamatokoriyama; Kuniyoshi Nishida, Koka, and Moriyasu Masui, Yokkaichi, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

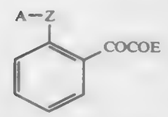
Filed Sep. 30, 1992, Ser. No. 953,884

Claims priority, application Japan, Oct. 4, 1991, 3-257513

Int. Cl.[6] C07C *55/38, 59/21*

U.S. Cl. 562—843 4 Claims

1. An α-keto acid halide of the formula:



(III)

wherein A is unsubstituted phenyl or phenyl substituted by at least one substituent selected from the group consisting of C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_1–C_6alkoxy, halogenated C_1–C_6 alkyl, halogenated C_2–C_6 alkenyl, halogenated C_2–C_6 alkynyl, C_3–C_6 cycloalkyl, C_5–C_6 cycloalkenyl and unsubstituted phenyl groups; Z is —O— or —OCH_2—; and E is halogen.

5,387,715

PROCESS FOR PRODUCING α-HYDROXY-ISOBUTYRAMIDE

Minato Karasawa; Masamitsu Inomata; Hiroharu Kageyama, and Kanemitsu Miyama, all of Chiba, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Feb. 1, 1992, Ser. No. 983,700

Claims priority, application Japan, Dec. 3, 1991, 3-319126; Dec. 3, 1991, 3-319127; Dec. 3, 1991, 3-319128

Int. Cl.[6] C07C *231/06*

U.S. Cl. 564—126 23 Claims

1. A process for producing α-hydroxy-isobutyramide which comprises continuously hydrating acetone cyanohydrin in a liquid phase at a temperature ranging from 20° to 100° C. in the presence of a catalyst consisting essentially of manganese dioxide and in the presence of at least one member which is separate from the catalyst and which is selected from the group consisting of

(i) an oxide dissolved in water which is a hydrate of an oxide of a member selected from the group consisting of aluminum, silicon, germanium, antimony, vanadium, and niobium,

(ii) an oxoacid of a member selected from the group consisting of boron, aluminum, silicon, germanium, tin, arsenic, antimony, vanadium, niobium molybdenum and tungsten,

(iii) an alkali metal salt of the oxoacid,

(iv) an alkaline earth metal salt of the oxoacid,

(v) a heteropolyacid of a member selected from the group consisting of silicon, phosphorous, germanium, arsenic, molybdenum, tungsten and vanadium,

(vi) an alkali metal salt of the heteropolyacid, and

(vii) an alkaline earth metal salt of the heteropolyacid.

5,387,716

N4-SUBSTITUTED 1-ALKOXY-2-ACYLAMINO-4-AMINOBENZENES, PROCESS FOR THEIR PREPARATION AND THEIR USE

Willi Steckelberg, Hofheim/Ts., and Peter Koch, Obertshausen, both of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Germany

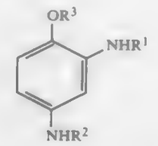
Continuation of Ser. No. 987,682, Dec. 9, 1992, abandoned. This application May 3, 1994, Ser. No. 237,311

Claims priority, application Germany, Dec. 20, 1991, 4142132

Int. Cl.[6] C07C *235/02*

U.S. Cl. 564—223 5 Claims

1. A compound of the general formula I



(I)

wherein

R^1 denotes formyl or (C_1–C_3)-alkylcarbonyl,

R^2 denotes hydroxyethyl, and

R^3 denotes (C_1–C_4)-alkyl.

5,387,717

METHOD FOR THE DETOXIFICATION OF MUSTARD GAS, SULFUR-CONTAINING QUATERNARY AMMONIUM IONENE POLYMERS AND THEIR USE AS MICROBICIDES

Wallace E. Puckett; Mark L. Zollinger, and Fernando D. Corral, all of Memphis, Tenn., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 928,356, Aug. 12, 1992. This application Dec. 18, 1992, Ser. No. 993,079

Int. Cl.[6] C07C *209/12;* A01N *33/12*

U.S. Cl. 564—295 12 Claims

1. An environmentally-safe method for the detoxification of a mustard gas comprising the step of reacting a mustard gas with a bis-tertiary diamine to detoxify said mustard gas and form a quaternary ammonium ionene polymer.

5,387,718

METHOD OF MANUFACTURING ALKYLPHENYL ALKYL ETHERS OR ALKYLPHENYL ALKYL THIOETHERS

Günther Köhler, Marl, and Peter Bickert, Münster, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

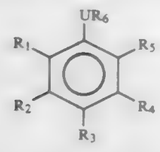
Filed Jul. 14, 1992, Ser. No. 913,192

Claims priority, application Germany, Aug. 13, 1991, 4126671

Int. Cl.[6] C07C *319/14, 41/01, 41/16*

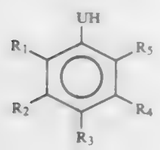
U.S. Cl. 568—38 3 Claims

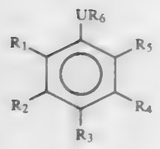
1. A method of preparing an alkylphenyl alkyl ether or an alkylphenyl alkyl thioether, of the formula



where U represents O or S; and

R_6 is a C_{1-6} alkyl group or an aryl group with 6–12 C atoms; R_1–R_5 are independently a C_{1-6} alkyl group, an aryl group with 6–12 C atoms, H, —COOR where R is a C_{1-4} alkyl, —NO_2, —NH_2, —O—CH_2—CH_2—OH, —OH, —CHO, or halogen; any two of R_1–R_5 can be bridged by a bifunctional substituent of the formula —$(CH_2)_x$— or —$(CH_2)_x$—Z—$(CH_2)_y$, where Z represents a hetero atom; x is an integer of from 0 to 7 and y is an integer from 0 to 7, by an unsaturated substituent selected from the group consisting of a straight-chain C_{2-6} alkenyl group, a branched C_{2-6} alkenyl group, a straight-chain C_{2-6} alkynyl group and a branched C_{2-6} alkynyl group, or by an anellated ring system; comprising contacting a phenol or thiophenol having the formula

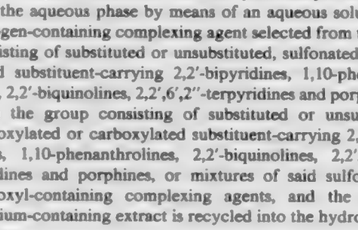




in which R_1–R_5 are as defined above, with a dialkyl carbonate or arylalkyl carbonate having the formula

$(R_6O)_2C{=}O$

wherein R_6 is as defined above; wherein said phenol or thiophenol is capable of reacting with said dialkyl carbonate or arylalkyl carbonate, said contacting is carried out at a temperature of 70°–300° C. under elevated or normal pressure, in the presence of 0.1–10 wt. %, based on the weight of phenol or thiophenol used, of an amidine catalyst, wherein said amidine catalyst is a cyclic amidine of the formula



wherein n is an integer from 1 to 6, m is an integer from 1 to 6, R_{10} is H, C_1–C_6 alkyl, C_{6-12} aryl or C_{3-6} cycloalkyl, R_{11} is C_{6-12} aryl or C_{3-6} cycloalkyl, R_{12} and R_{13} are each, independently, C_1–C_6 alkyl, C_{6-12} aryl or C_{3-6} cycloalkyl, and X is N, or S.

5,387,719

PREPARATION OF ALDEHYDES

Heinz-Josef Kneuper, Mannheim; Michael Roeper, Wachenheim, and Rocco Paciello, Bad Duerkheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 14, 1993, Ser. No. 120,427

Claims priority, application Germany, Sep. 16, 1992, 4230871; May 14, 1993, 4316180

Int. Cl.[6] C07C *45/00, 45/50, 45/78*

U.S. Cl. 568—455 5 Claims

1. A process for the preparation of aldehydes by hydroformylation of olefins having more than 7 carbon atoms, comprising hydroformylation in the presence of synthesis gas by means of a naked rhodium catalyst dissolved homogeneously in the reaction medium, removal of said naked rhodium catalyst from the hydroformylation reaction product, and recycling of said naked rhodium separated off from the hydroformylation product into the hydroformylation step, wherein said naked rhodium catalyst is extracted from the hydroformylation product into the aqueous phase by means of an aqueous solution of a nitrogen-containing complexing agent selected from the group consisting of substituted or unsubstituted, sulfonated or sulfonated substituent-carrying 2,2'-bipyridines, 1,10-phenanthrolines, 2,2'-biquinolines, 2,2',6',2''-terpyridines and porphines, or from the group consisting of substituted or unsubstituted, carboxylated or carboxylated substituent-carrying 2,2'-bipyridines, 1,10-phenanthrolines, 2,2'-biquinolines, 2,2',6',2''-terpyridines and porphines, or mixtures of said sulfonated or carboxyl-containing complexing agents, and the aqueous, rhodium-containing extract is recycled into the hydroformylation step.

5,387,720

PROCESS FOR THE PRODUCTION OF ACROLEIN

Armin Neher, Brachttal; Thomas Haas, Frankfurt; Dietrich Arntz, Oberursel; Herbert Klenk, and Walter Girke, both of Hanau, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Nov. 12, 1993, Ser. No. 151,390

Claims priority, application Germany, Nov. 14, 1992, 4238493

Int. Cl.[6] C07C *45/52*

U.S. Cl. 568—486 20 Claims

1. A process for the production of acrolein or aqueous acrolein solution by dehydration of glycerol, said process comprising reacting a glycerol-water mixture with a glycerol content of 10 to 40 wt. % in either liquid phase at 180° to 340° C. or gaseous phase at 250° to 340° C. on an acidic solid catalyst and optionally separating acrolein or aqueous acrolein solution, wherein the H_o value (Hammett acidity function) of said catalyst is less than +2.

5,387,721

METHYL TERTIARY BUTYL ETHER PROCESS

Charles J. Kruse, Cypress; Kyle L. Preston, Port Arthur, and Brian L. Benac, San Marcos, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 21, 1993, Ser. No. 170,849

Int. Cl.[6] C07C *41/09;* C07L *41/06*

U.S. Cl. 568—697 4 Claims

1. A continuous process for reacting tertiary butyl alcohol with methanol to produce methyl tertiary butyl ether comprising the steps of:

a) passing a feed mixture comprising methanol and tertiary butyl alcohol in a molar ratio of 2 to 3 moles of methanol per mole of tertiary butyl alcohol through a first etherification reaction zone containing etherification catalyst under etherification conditions at a liquid hourly space velocity of 1 to 10 volumes feed mixture per catalyst volume per hour to form a first reaction product mixture comprising unreacted methanol, unreacted tertiary butyl alcohol, water, isobutylene and methyl tertiary butyl ether;

b) passing the first reaction product mixture to a first distillation zone and separating into a first lighter distillate fraction comprising isobutylene, methanol and methyl tertiary butyl ether and a second heavier distillate fraction comprising methanol, tertiary butyl alcohol and water,

c) passing the first lighter distillate fraction to a second etherification reaction zone containing etherification catalyst under etherification conditions at a liquid hourly space velocity of about 1 to 10 volumes feed mixture per catalyst volume per hour to form a second reaction product mixture comprising unreacted methanol, unreacted isobutylene and methyl tertiary butyl ether,

d) separating the second reaction product mixture in a solvent extraction zone to produce a raffinate comprising isobutylene and methyl tertiary butyl ether and an extract comprising unreacted methanol, tertiary butyl alcohol and water.

5,387,722

ONE-STEP SYNTHESIS OF METHYL T-BUTYL ETHER FROM T-BUTANOL USING PENTASIL ZEOLITE CATALYSTS

John F. Knifton, Austin, and Pei-Shing E. Dai, Port Arthur, both of Tex., assignors to Texaco Chemical Inc., White Plains, N.Y.

Filed Sep. 23, 1993, Ser. No. 125,271

Int. Cl.[6] C07C *41/09*

U.S. Cl. 568—698 8 Claims

1. A method for synthesizing alkyl tertiary-butyl ethers which comprises reacting a C_4–C_{10} tertiary alcohol with a C_1–C_6 primary alcohol in the presence of a catalyst comprising a pentasil zeolite having a silica/alumina ratio of 50:1 to 150:1 optionally in the presence of a binder consisting essentially of an oxide of an element selected from Group III or IV of the Periodic Table and continuously contacting said primary alcohol and tertiary alcohol in a molar amount of from about 10:1 to 1:10 over said pentasil zeolite catalyst at a temperature of about 80° C. to about 200° C. and a pressure of about atmospheric to about 1000 psig to obtain alkyl tert-alkyl ether product.

5,387,723

ONE-STEP SYNTHESIS OF METHYL T-BUTYL ETHER FROM T-BUTANOL USING β-ZEOLITE CATALYSTS MODIFIED WITH LITHIUM PLUS RARE EARTHS

John F. Knifton, Austin, and Pei-Shing E. Dai, Port Arthur, both of Tex., assignors to Texaco Chemical Inc., White Plains, N.Y.

Filed Jan. 12, 1994, Ser. No. 181,143

Int. Cl.[6] C07C *41/09*

U.S. Cl. 568—698 17 Claims

1. A method for synthesizing alkyl tertiary alkyl ethers which comprises reacting t-butanol with an alkanol in the presence of a catalyst comprising β-zeolite modified with one or more metals from both Group IA and Group IIIB of the Periodic Table and continuously contacting said alkanol and t-butanol in a molar amount from about 10:1 to 1:10 over said zeolite catalyst at a temperature of about 20° C. to about 250° C. and a pressure of about atmospheric to about 1000 psig.

16. A method for synthesizing alkyl tertiary alkyl ethers which comprises reacting t-butanol with an alkanol in the presence of a catalyst comprising β-zeolite modified with a compound selected from the group consisting of hexamethyldisiloxane, triethylsilyl chloride and phosphorous pentoxide and continuously contacting said alkanol and t-butanol in a molar amount from about 10:1 to 1:10 over said zeolite catalyst at a temperature of about 80° C. to about 200° C. and a pressure of 50 psig to about 500 psig.

5,387,724

SELECTIVE HYDROXYLATION OF PHENOL OR PHENOLIC ETHERS

Alexander Johnstone, Little Neston; William R. Sanderson, and Robert C. Wasson, both of Penketh, all of United Kingdom, assignors to Solvay Interox Limited, England

PCT No. PCT/GB92/00639, § 371 Date Oct. 12, 1993, § 102(e) Date Oct. 12, 1993, PCT Pub. No. WO92/18449, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 9, 1992, Ser. No. 133,110

Claims priority, application United Kingdom, Apr. 11, 1991, 9107655

Int. Cl.[6] C07C *37/60;* B01J *31/00*

U.S. Cl. 568—771 23 Claims

1. In a process for the hydroxylation of a phenol or phenolic ether wherein a phenol or phenolic ether substrate is reacted with hydrogen peroxide in a solvent in the presence of a catalyst to produce a monohydroxylated phenol or phenolic ether, the improvement wherein the solvent comprises an aliphatic carboxylic acid and wherein the catalyst comprises amorphous or microcrystalline zirconium phosphate.

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5,387,725

CHLORINATION PROCESS, ALKYLATION OF PRODUCTS OF SAID PROCESS AND SOME PRODUCTS THEREOF

Marlin E. Walters, West Columbia; W. Frank Richey, Lake Jackson; Katherine S. Clement, Lake Jackson; Steven L. Brewster, Lake Jackson; Emmett L. Tasset, Lake Jackson; Paul M. Puckett, Lake Jackson; V. Rao Durvasula, Lake Jackson, and Hong A. Nguyen, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 789,232, Nov. 7, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 90,597

Int. Cl.[6] C07C *39/24, 63/00;* C07B *57/00*

U.S. Cl. 568—779 **77 Claims**

1. A process for chlorinating at least one compound having acidic protons and a molecular structure which can delocalize the electron density of the conjugate base, said compound hereinafter referred to as a target compound, comprising contacting said target compound with at least one perchloroalkane and aqueous solution of base sufficiently strong to form the conjugate base of the target compound in the presence of an effective amount a phase transfer catalyst which is an tetraalkylonium hydroxide to prepare a chlorinated product wherein at least one of the acidic protons of the target compound is replaced by a chlorine.

5,387,726

SELECTIVE CATALYTIC HYDROGENATION OF AROMATIC ALDEHYDES

Martin Bankmann, Gelnhausen; Reinhold Brand, Hanau; Andreas Freund, Moemrbris, and Thomas Tacke, Freigericht, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

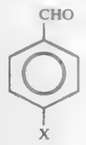
Filed Jan. 7, 1994, Ser. No. 179,621

Claims priority, application Germany, Jan. 8, 1993, 4300297

Int. Cl.[6] C07C *29/141, 27/04*

U.S. Cl. 568—814 **12 Claims**

1. A process for the selective catalytic hydrogenation of carbonyl groups in an aromatic aldehyde of the formula:



in which X is carboxyl, methyl or halogen, to yield the corresponding alcohol or methyl compound, comprising reacting said aromatic aldehyde with hydrogen at hydrogen partial pressures of 5 to 50 bar and temperatures of 100° to 300° C. to hydrogenate said aromatic aldehyde in the presence of a solvent, optionally in the presence of an organic acid, on a shaped support catalyst containing a platinum group metal on a support made from titanium oxide.

5,387,727

METHOD OF PRODUCING PENTAFLUOROPHENYL ALKALI METAL SALT USING PENTAFLUOROBENZENE IN A CHAIN ETHER TYPE SOLVENT

Yoshihiko Ikeda, Shinnanyo; Takeo Yamane, Yamaguchi; Eiichi Kaji, Shinnanyo, and Kenji Ishimaru, Shinnanyo, all of Japan, assignors to Tosoh Akzo Corporation, Tokyo, Japan

Filed Dec. 17, 1993, Ser. No. 168,210

Claims priority, application Japan, Dec. 28, 1992, 4-361481

Int. Cl.[6] C07C *25/13*

U.S. Cl. 570—143 **2 Claims**

1. A method for producing a pentafluorophenyl alkali metal salt of formula (III):

$$C_6F_5M \quad \text{(III)}$$

wherein M denotes an alkali metal ion, comprising:

reacting from 0.5 to 1.5 equivalents of an organometallic compound of formula (II):

$$RM \quad \text{(II)}$$

wherein M denotes an alkali metal ion and R denotes a hydrocarbon group having 1 to 10 carbon atoms which may contain a functional group having no influence on the reaction, with one equivalent of pentafluorobenzene represented by formula (I):

$$C_6HF_5$$

in a solvent selected from the group consisting of an ether solvent, a hydrocarbon solvent and a mixture of an ether solvent and a hydrocarbon solvent at,a temperature of −120° C. to 80° C.

5,387,728

PROCESS FOR THE PREPARATION OF HEXAFLUOROPROPENE DIMERS HAVING A HIGH PROPORTION OF PERFLUORO-(4-METHYL-2-PENTENE)

Alfons Gisser, Burgkirchen, and Konrad von Werner, Garching, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Aug. 25, 1993, Ser. No. 111,643

Claims priority, application Germany, Aug. 27, 1992, 4228592

Int. Cl.[6] C07C *17/02*

U.S. Cl. 570—153 **11 Claims**

1. A process for the preparation of dimers of hexafluoropropene having a high proportion of perfluoro-4-methyl-2-pentene) and a low content of perfluoro-(2-methyl-2-pentene), which comprises: dimerizing hexafluoropropene in acetonitrile, benzonitrile, or proprionitrile, in the presence of catalytic amounts of an adduct of a metal fluoride and an amine which does not contain NH groups and wherein each nitrogen of said amine is bound to three substituents, which substituents are each selected from the group consisting of alkyl, alkylene, alkyl containing ether oxygen, and alkylene containing ether oxygen.

5,387,729

CATALYTIC COMPOSITIONS, PROCESS FOR OBTAINING THEM AND PROCESS FOR HYDROGENATION OF 1,1,2-TRICHLORO-1,2,2,-TRIFLUOROETHANE BY MEANS OF THESE COMPOSITIONS

Luc Lerot, Brussels; Vincent Wilmet, Bierges, and Joseph Pirotton, Brussels, all of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Continuation of Ser. No. 996,855, Dec. 21, 1992, abandoned, which is a continuation of Ser. No. 733,602, Jul. 22, 1991, abandoned, which is a division of Ser. No. 396,899, Aug. 22, 1989, Pat. No. 5,053,377. This application Jan. 13, 1994, Ser. No. 181,169

Claims priority, application France, Aug. 22, 1988, 88 11152

Int. Cl.[6] C07C *17/34*

U.S. Cl. 570—157 **12 Claims**

1. A process for hydrogenation of 1,1,2-trichloro-1,2,2-trifluoroethane to chlorotrifluoroethylene and trifluoroethylene in the presence of molecular hydrogen in which the hydrogenation reaction is catalysed by a catalytic composition consisting essentially of a porous oxygenated or carbon-based support, on which is deposited palladium, and at least one compound chosen from the salts of an alkali or alkaline-earth metal.

5,387,730

VULCANIZABLE LIQUID COMPOSITIONS

Thomas S. Coolbaugh, Morrisville; Frederick C. Loveless, Yardley, both of Pa.; Demetreos N. Matthews, Ewing, and Leslie R. Rudnick, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

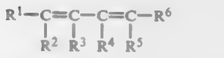
Division of Ser. No. 992,341, Dec. 17, 1992, Pat. No. 5,288,937, which is a continuation of Ser. No. 907,959, Aug. 6, 1992, Pat. No. 5,210,359, which is a division of Ser. No. 466,135, Jan. 16, 1990, Pat. No. 5,149,895. This application Jan. 7, 1994, Ser. No. 179,051

Int. Cl.[6] C07C *2/40;* C08F *297/04*

U.S. Cl. 585—010 **15 Claims**

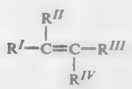
1. A liquid star-branched random copolymer each branch comprising at least one polymerized conjugated diene of formula (1) and at least one polymerized conjugated diene of formula (3), wherein:

the diene of formula (1) has at least five (5) carbon atoms and the following formula



(1)

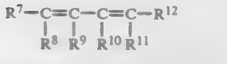
where R^1–R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1–R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized diene of formula (1) has the following formula



(2)

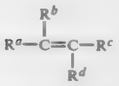
wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

the diene of formula (3) is different from the diene of formula (1), it has at least four (4) carbon atoms and the following formula



(3)

wherein R^7–R^{12} are each hydrogen or a hydrocarbyl group, provided that the structure of the residual double bond in the polymerized diene of formula (3) has the following formula



(4)

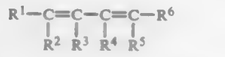
wherein R^a, R^b, R^c and R^d are each hydrogen (H) or a hydrocarbyl group, provided that one of R^a or R^b is hydrogen, one of R^c or R^d is hydrogen and at least one of R^a, R^b, R^c or R^d is a hydrocarbyl group; and

wherein the conjugated diene of formula (1) is present in the copolymer in the amount of about 1.0 to about 25% by mole, and the conjugated diene of formula (3) is present in the copolymer in the amount of about 75 about 99% by mole, said copolymer being selectively hydrogenated, so that the polymerized conjugated diene of formula (3) is substantially completely hydrogenated and thereby contains substantially none of the original unsaturation and the polymerized conjugated diene of formula (1) retains a sufficient amount of its original unsaturation to vulcanize said copolymer.

4. A liquid, star-branched random copolymer each branch comprising:

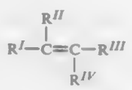
about 0.3 to about 15% by mole of at least one polymerized aryl-substituted olefin;

about 1.0 to about 25% by mole of at least one polymerized conjugated diene having at least five (5) carbon atoms and the following formula



(1)

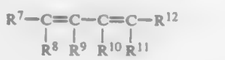
wherein R^1–R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1–R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized block I has the following formula



(2)

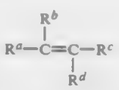
wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

and the remainder of at least one polymerized conjugated diene, different from the diene of formula (1), having at least four (4) carbon atoms and the following formula



(3)

wherein R^7–R^{12} are each hydrogen or a hydrocarbyl group, provided that the structure of the residual double bond in the polymerized diene of formula (3) has the following formula



(4)

wherein R^a, R^b, R^c and R^d are each hydrogen (H) or a hydrocarbyl group, provided that one of R^a R^b is hydrogen, one of R^c or R^d is hydrogen and at least one of R^a, R^b, R^c or R^d is a hydrocarbyl group.

5,387,731

PROCESS FOR THE REMOVAL OF GREEN OIL FROM A HYDROCARBON STREAM

Christopher D. W. Jenkins, Elwood, Australia; Michel H. Masson, Lillebonne, France, and Richard A. Reitz, Houston, Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 49,242, Apr. 19, 1993, Pat. No. 5,304,699, which is a continuation of Ser. No. 812,507, Dec. 20, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 92,501

Int. Cl.[6] C07C *5/08*

U.S. Cl. 585—259 **7 Claims**

1. A process for removing acetylenic contaminants from a hydrocarbon mixture containing hydrocarbons of volatility less than that of butadiene, butadiene, hydrocarbons of volatility greater than butadiene and acetylenic contaminants, comprising the steps of:

(a) selectively hydrogenating the hydrocarbon mixture containing hydrocarbons, butadiene and acetylenic contaminants into a hydrogenated mixture containing butadiene, hydrocarbons and hydrogenation by-products:

(b) contacting the hydrogenated mixture with a water soluble polar solvent to form a polar solvent phase comprising hydrocarbons of volatility greater than that of butadiene, butadiene and hydrogenation by-products and a light

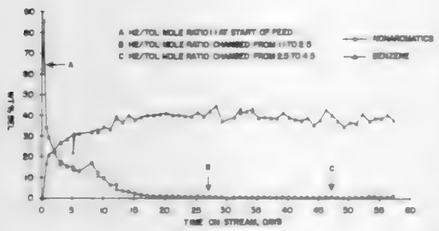
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phase comprising hydrocarbons of volatility less than that of butadiene;
(c) separating the polar solvent phase from the light phase;
(d) stripping butadiene from the separated polar solvent phase of step (c) to form a stripped polar solvent comprising polar solvent and hydrogenation by-products;
(e) contacting the stripped polar solvent of step (d) with a liquid aqueous phase and a liquid organic phase to extract at least a portion of the hydrogenation by-products from the polar solvent.

5,387,732
START-UP PROCESS FOR IMPROVED SELECTIVITY IN TOLUENE DISPROPORTIONATION

Edwar S. Shamshoum; Ashim K. Ghosh, both of Houston, and Thomas R. Schuler, Galena Park, all of Tex., assignors to Fina Technology, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 776,937, Oct. 15, 1991, abandoned. This application Mar. 31, 1993, Ser. No. 40,764
Int. Cl.[6] C07C *3/62*
U.S. Cl. 585—475 **12 Claims**



1. A process for disproportionating a toluene-containing feed stock to produce a disproportionation product containing benzene and xylene which comprises:
(a) initiating a start-up procedure comprising:
(1) establishing a reaction zone by loading into said reaction zone a nickel-modified mordenite catalyst, said reaction zone being maintained under disproportionation conditions, including a temperature within the range of 250° C. to 450° C. and a pressure of at least 550 psig;
(2) passing said toluene feed stock into said reaction zone and into contact with said catalyst;
(3) supplying hydrogen gas into said reaction zone at a rate to provide a hydrogen to toluene mole ratio of between 0.5 and 1.5;
(4) continuously withdrawing said disproportionation product containing benzene and xylene and measuring non-aromatic levels in said product;
(5) further continuing to pass said toluene feed stock and hydrogen into said reaction zone until said disproportionation product contains levels of nonaromatics not greater than about 1.0 to 1.3 weight percent;
(b) thereafter continuing to pass said toluene feed stock and hydrogen into said reaction zone, incrementally increasing amount of said hydrogen to provide a hydrogen to toluene mole ratio of between 3 and 5; and
(c) withdrawing said disproportionation product from said reaction zone.

5,387,733
METHOD FOR THE INHIBITION AND REMOVAL OF AMMONIUM CHLORIDE DEPOSITION IN HYDROCARBON PROCESSING UNITS

Carl E. Weaver, Conroe, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Jun. 9, 1993, Ser. No. 74,239
Int. Cl.[6] C07C *7/20*; C09K *3/00*
U.S. Cl. 585—899 **12 Claims**

1. A method for inhibiting the deposition of ammonium chloride on the internal surfaces of refinery equipment which processes liquid hydrocarbon at elevated temperatures comprising adding to the liquid hydrocarbon an effective deposition inhibiting amount of a non-filming polyamine having the structure:

$R_2N—[(CHR')_xNH]_y—H$

where

R=H or C_1-C_6 alkyl or $—[(CHR')_xNH]_y—H$
R'=H or C_1-C_6 alkyl or $—[(CHR')_xNH]_y—H$
x=2, 3
y=1-6.

5,387,734
PROCESS FOR DECOMPOSING POLYHALOGENATED COMPOUNDS

Hanspaul Hagenmaier, Leignitzer Str. 8, D-7400 Tübingen; Karl-Heinz Tichaczek, Heidenstr. 21, D-7300 Esslingen; Michael Kraft, Eichenwiesen 6, D-7460 Balingen; Roland Haag, Gustav-Werner-Str. 61, D-7415 Wannweil, and Hermann Brunner, Bachgasse 15, D-7400 Tübingen, all of Germany

Continuation of Ser. No. 3,953, Jan. 19, 1993, Pat. No. 5,276,250, which is a continuation of Ser. No. 697,735, May 3, 1991, abandoned, which is a continuation of Ser. No. 288,239, Dec. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 171,429, Feb. 29, 1988, abandoned. This application Oct. 18, 1993, Ser. No. 137,264
Claims priority, application Germany, Jul. 11, 1986, 3623492
Int. Cl.[6] A63D *3/00*
U.S. Cl. 588—207 **7 Claims**

1. The process for the decomposition of polyhalogenated compounds selected from the group consisting of polychlorinated and polybrominated dibenzodioxins, polychlorinated dibenzofurans, chlorobenzenes, polychlorinated biphenyl, chlorophenol and hexachlorocyclohexanes or mixtures thereof which comprises forming a gas containing said polyhalogenated compound as a gaseous component thereof, heating said gas and contacting said heated gas with at least one component which is titanium metal, vanadium metal, tungsten metal or molybdenum metal, or an oxide, silicate or aluminate thereof, at a temperature in the range of about 200 ® to about 550° C. in the presence of at least stoichiometric amounts of water, relative to the amount of halogen and of at least stoichiometric amounts of oxygen, relative to the amount of carbon to produce CO_2.

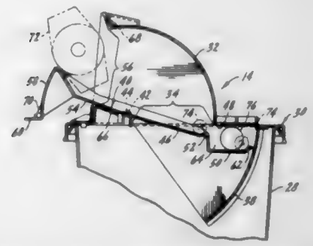
5,387,735
SHARPS DISPOSAL CONTAINER AND SYSTEM

Lawrence G. Ponsi, Wheeling; Barbara T. Skiba, Chicago, and David McDonough, Crystal Lake, all of Ill., assignors to Sage Products, Inc., Crystal Lake, Ill.

Filed Apr. 8, 1993, Ser. No. 44,590
Int. Cl.[6] A62D *3/00*; B65D *83/10*
U.S. Cl. 588—249 **19 Claims**

1. A disposal container comprising
a. a hollow, upstanding container body,
b. an opening at the top of the container body for permitting access to the interior of the container body,
c. barrier means disposed proximate said opening for restricting access to the interior of said container body, at least a portion of said barrier means comprising
i. a first constriction extending over said opening, and
ii. a second constriction extending beneath said opening,

said second constriction being offset from said first constriction forming an obstruction in the top of said container body, and

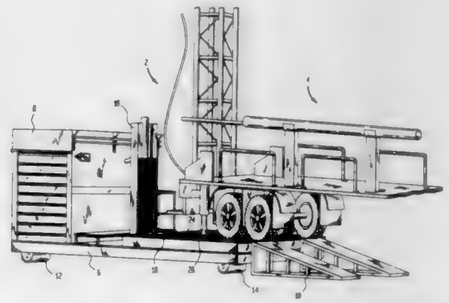


d. retention means for preventing items from being dispensed through said opening from the interior of the container body when said container body is upright, at least a portion of said retention means comprising said obstruction.

5,387,736
PORTABLE DECONTAMINATION SYSTEM AND METHOD FOR ENVIRONMENTAL WELL DRILLING RIGS

Joseph Salomone, Vernon, and Paul Salomone, Jr., West Paterson, both of N.J., assignors to Salomone Bros., Inc., Wayne, N.J.

Filed Aug. 30, 1993, Ser. No. 112,952
Int. Cl.[6] A62D *3/00*
U.S. Cl. 588—249 **8 Claims**

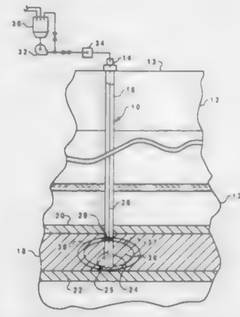


1. A portable decontamination system for environmental well drilling rigs of the type which are truck mounted and extend substantially upright from the rear of the truck, comprising:
a portable platform;
a self-contained decontamination unit supported on the platform at one end thereof;
a ramp adjacent the end of the platform opposite the one end;
a lift supported on the platform between the decontamination unit and a drilling rig;
a carriage for supporting an operator, and carried by the lift so as to be displaceable along the length of the substantially upright drilling rig;
a pan supported on the platform between the lift and the ramp;
a grill covering the pan;
the truck being disposed so that the rear thereof is backed via the ramp over the grill;
means for supporting the rear of the truck on the grill;
the lift being remotely operated by the operator supported in the carriage so as to be displaced with the carriage along the length of the rig;
the self-contained decontamination unit being remotely operated by the operator for washing the rig with water contained in said decontamination unit as the carriage is displaced along the length of the rig; and
contaminated wash water resulting from washing the rig spilling through the grill into the pan.

5,387,737
SLURRY INJECTION INTO DISAGGREGATED EARTH FORMATIONS

Joseph H. Schmidt; Michael L. Bill, both of Anchorage, Ak., and Ahmed S. Abou-Sayed, Sugarland, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 6, 1993, Ser. No. 43,323
Int. Cl.[6] A62D *3/00*; B09B *3/00*
U.S. Cl. 588—250 **11 Claims**



1. A method of disposing of particulate solids in a subterranean formation comprising the steps of:
injecting a quantity of substantially solids-free liquid into a predetermined disposal zone in said formation through an injection well penetrating said disposal, zone, said disposal zone having a predetermined porosity of at least about twenty percent (20%) and wherein the injection of solids-free liquid disaggregates at least a part of said disposal zone; and
injecting a slurry of particulate solids into said disaggregated part of said disposal zone to place said particulate solids in the pore spaces of said disaggregated part of said disposal zone.

5,387,738
REAGENT FOR TREATING A CONTAMINATED WASTE MATERIAL AND METHOD FOR SAME

Doyle H. Beckham, 2326 N. Aspen, Pampa, Tex. 79065, and Harry E. Robson, 3131 Congress Blvd., Baton Rouge, La. 70808

Filed Nov. 3, 1992, Ser. No. 970,630
Int. Cl.[6] B09B *1/00, 3/00*
U.S. Cl. 588—256 **26 Claims**

1. A reagent material for treating contaminated waste materials, which reagent material is comprised of:
(i) 1 part alumina; (ii) 1 to 3 parts of a silica having a surface area of at least about 10 m^2/g; (iii) 0.5 to 3 parts of a component selected from hydroxide, and hydroxide precursors, of an alkali metal; (iv) 2 to 5 parts of CaO; (v) 2 to 5 parts of a zeolitic material having an average pore diameter equal to or greater than 4 Å, and an SiO_2 to Al_2O_3 ratio greater than or equal to 2.5.

10. An innocuous waste mixture which may be safely disposed of in a landfill comprising:
(a) a reagent material comprised of: (i) 1 part alumina; (ii) 1 to 3 parts of a silica having a surface area of at least about

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50 m^2/g; (iii) 0.5 to 3 parts of a component selected from hydroxides and hydroxide precursors of an alkali metal; (iv) 2 to 5 parts of CaO; (v) and 2 to 5 parts of a zeolitic material having an average pore diameter of at least about 4 Å, and an SiO_2 to Al_2O_3 ratio greater than or equal to 2.5; and

(b) a waste material, which prior to a reaction with said reagent material, contains unacceptable levels of one or more contaminants selected from the group consisting of heavy metals and organic components.

18. A method for treating an environmentally unacceptable contaminated waste material to convert it to an environmentally acceptable material, which method comprises mixing said contaminated waste material with an effective amount of a reagent material comprised of: (i) 1 part alumina; (ii) 1 to 3 parts of a silica having a surface area of at least about 50 m^2/g; (iii) 0.5 to 3 parts of a component selected from the hydroxides, and hydroxide precursors, of an alkali metal; (iv) 2 to 5 parts of CaO; and (v) 2 to 5 parts of a zeolitic material having an average pore diameter equal to or greater than 4 Å, and an SiO_2 to Al_2O_3 ratio greater than or equal to 2.5.

5,387,739

TREATMENT OF MUNICIPAL WASTE ASH

Philippe Pichat, 18, rue des Tournelles, 75004 Paris, France

Continuation-in-part of Ser. No. 853,178, Mar. 17, 1992, abandoned, Continuation-in-part of Ser. No. 498,081, Mar. 20, 1990, abandoned. This application Apr. 28, 1992, Ser. No. 876,018

Claims priority, application France, Mar. 20, 1989, 89 03586

Int. Cl.[6] **B09B** *3/00*

U.S. Cl. 588—257 **8 Claims**

1. A process for treating ash from incineration of municipal waste to produce products which are virtually insoluble in water and which are non-pollutants consisting essentially of adding to the ash from 10–35% by weight of the ash of water and adding lime in an amount of from about 0.005 to about 2 parts per 100 parts by weight of the ash, and compacting the product obtained.

5,387,740

IMMOBILIZATION AGENT FOR INDUSTRIAL WASTE

Taiichiro Sasae, and Tomio Nishida, both of Nagaokakyo, Japan, assignors to En-Tech Research Institute Inc., Kyoto, Japan

Continuation of Ser. No. 929,794, Aug. 13, 1992, abandoned. This application Mar. 30, 1994, Ser. No. 220,393

Claims priority, application Japan, Oct. 23, 1991, 3-305303

Int. Cl.[6] **B09B** *3/00*

U.S. Cl. 588—257 **7 Claims**

1. An immobilization agent for toxic heavy metals wherein said immobilization agent is mixed in sufficient amounts with said heavy metals to solidify said mixture, said immobilization agent comprising 100 parts by weight of cement and 40 to 140 parts by weight of the mixture of ferrous chloride, iron oxalate and amorphous aluminum silicate and in which the ratio of ferrous chloride: iron oxalate: amorphous aluminum silicate is 5 to 30% by weight: 5 to 50% by weight: 20 to 90% by weight.

5,387,741

METHOD AND APPARATUS FOR SUBTERRANEAN CONTAINMENT OF HAZARDOUS WASTE MATERIAL

Anthony J. Shuttle, 524 S. Rosina Ave. #9, Somerset, Pa. 15501

Filed Jul. 30, 1993, Ser. No. 99,914

Int. Cl.[6] **B09B** *1/00;* **G21F** *9/12*

U.S. Cl. 588—259 **20 Claims**

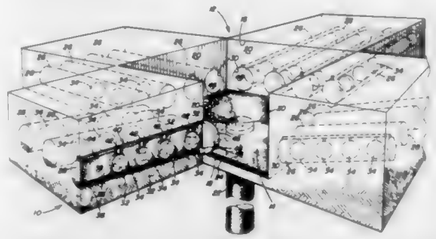
1. A repository for hazardous waste containment comprising,

a subterranean excavated site including a central chamber surrounded by an earthen formation,

said central chamber formed by an earthen overhead layer, a floor, and a plurality of walls extending between said overhead layer and said floor,

a plurality of boreholes extending through each wall into the surrounding formation, said boreholes being positioned in spaced parallel relation along the length of said wall and extending from an open end portion in said chamber to a closed end portion a preselected depth into the surrounding formation,

a layer of water permeable material lining the bottom of said borehole for drainage of water out of said borehole into said chamber,



a plurality of cement modules positioned in spaced relation in said borehole between said open end portion and said closed end portion,

said cement modules each encapsulating a container holding hazardous waste material,

reinforcing means surrounding said cement modules in said borehole for absorbing seismic shock to stabilize said cement modules in said borehole, and

means for closing said borehole open end portion and permitting drainage of water out of said borehole into said central chamber.

5,387,742

TRANSGENIC MICE DISPLAYING THE AMYLOID-FORMING PATHOLOGY OF ALZHEIMER'S DISEASE

Barbara Cordell, Palo Alto, Calif., assignor to Scios Nova Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 538,857, Jun. 15, 1990, abandoned. This application Jun. 17, 1991, Ser. No. 716,725

Int. Cl.[6] **A61K** *49/00;* **C12N** *15/00;* **C07H** *15/12*

U.S. Cl. 800—2 **4 Claims**

1. A transgenic mouse whose cells contain a DNA sequence, comprising:

nerve tissue specific promoter; and

a DNA sequence which encodes a β-amyloid precursor protein selected from the group consisting of A751 and A770,

wherein the promoter and DNA sequence which encodes the precursor protein are operatively linked to each other and integrated in the genome of the mouse and expressed to form β-amyloid protein deposits in the brain of the mouse.

5,387,743

INBRED CORN LINE LH211

Gary D. Arthur, Greenwood, Ind., assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Continuation of Ser. No. 444,880, Dec. 4, 1989, abandoned. This application Oct. 25, 1991, Ser. No. 781,649

Int. Cl.[6] **A01H** *5/00, 4/00, 1/00;* **C12N** *5/04*

U.S. Cl. 800—200 **10 Claims**

1. Inbred corn seed designated LH211 having ATCC accession No. 40725.

5,387,744

AVIRULENT MICROBES AND USES THEREFOR: *SALMONELLA TYPHI*

Roy Curtiss, III, and Sandra M. Kelly, both of St. Louis, Mo., assignors to Washington University, St. Louis, Mo.

Continuation of Ser. No. 975,892, Nov. 13, 1992, abandoned, which is a continuation of Ser. No. 612,001, Nov. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 200,934, Jun. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 58,360, Jun. 4, 1987, abandoned, said Ser. No. 612,001, is a continuation-in-part of Ser. No. 251,304, Oct. 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 106,072, Oct. 7, 1987, abandoned. This application Jul. 7, 1993, Ser. No. 88,394

The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.

Int. Cl.[6] **A61K** *39/112;* **C12N** *1/21*

U.S. Cl. 424—235.1 **11 Claims**

1. An immunogenic composition for the immunization of an individual comprising a live avirulent Salmonella having a mutation in a cdt gene said live avirulent Salmonella having the phenotype of failure to colonize deep tissue of Salmonella deposit strain ATCC no. 55113.

5,387,745

PROCESS FOR IDENTIFYING A LOCATION TO WHICH AN AGROCHEMICAL HAS BEEN APPLIED

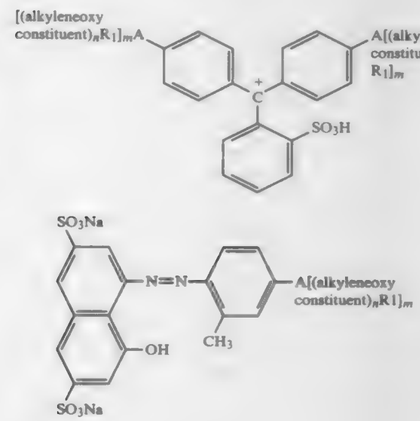
Ralph N. Brendle, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 70,333, Jul. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 902,138, Sep. 3, 1986, abandoned, which is a continuation of Ser. No. 778,153, Sep. 16, 1985, abandoned, which is a continuation of Ser. No. 464,664, Feb. 7, 1983, abandoned. This application Mar. 22, 1991, Ser. No. 674,434

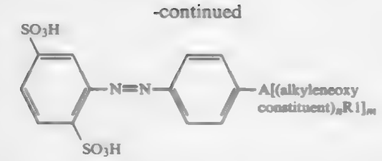
Int. Cl.[6] **A01N** *25/00;* **C05G** *3/00*

U.S. Cl. 504—116 **18 Claims**

1. A process for identifying a discharge of an agricultural chemical composition to a location within the watershed of a body of water having aquatic life, which comprises incorporating into said agricultural chemical composition a colorant in an amount sufficient to visually identify the location to which said agricultural chemical has been applied, said colorant is selected from compounds of the formula:



-continued

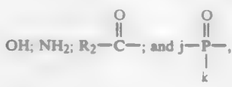


A is a linking moiety in said organic dyestuff molecule selected from the group consisting of N, O, S and CO_2;

the alkyleneoxy constituent comprises an alkylene moiety containing from 2 to about 4 carbon atoms;

n is an integer of from 2 to about 300; m is 1 when A is O, S, CO_2 and 2 when A is N; and the product of n times m (n×m) is from 2 to about 300;

and R_1 is a member of the group consisting of



and sulfonates and sulfates of each of the members of said group, wherein R_2 is H, OH, an alkyl radical containing up to about 20 carbon atoms or alkyl substituted carbonyl radical containing up to about 20 carbon atoms, j and k are OH, OM or OR_3, wherein M is a cation moiety of an alkali metal, an alkaline earth metal or ammonium, and R_3 is an alkyl radical containing up to about 20 carbon atoms; and

thereafter applying said agricultural chemical composition to said location.

5,387,746

PULMONARY HYDROPHOBIC SURFACTANT-ASSOCIATED PROTEIN OF 6,000 DALTONS MOLECULAR WEIGHT AND MULTIMERS THEREOF

Jeffrey A. Whitsett, Cincinnati, Ohio, assignor to Scios Nova Inc., Mountain View, Calif.

Continuation of Ser. No. 857,685, Mar. 25, 1992, abandoned, which is a continuation of Ser. No. 695,961, Jun. 6, 1991, abandoned, which is a continuation of Ser. No. 504,691, Apr. 4, 1990, Pat. No. 5,013,720, which is a continuation of Ser. No. 860,239, May 6, 1986, abandoned. This application Nov. 12, 1992, Ser. No. 975,202

The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.

Int. Cl.[6] **A61K** *37/02;* **C07K** *7/10*

U.S. Cl. 514—12 **46 Claims**

1. A lung specific hydrophobic SAP-6-Val recombinant protein, said recombinant protein comprises a plurality of valine amino acid residues having a first stretch of about six adjacent valine amino acid residues and a second stretch of about three adjacent valine amino acid residues separated from the first stretch of about three adjacent valine amino acid residues separated from the first stretch by about two hydrophobic amino acid residues, said recombinant protein enhances surfactant-like activity of phospholipids in lungs of an animal, and is substantially resistant to protease, endoglycosidase F and collagenase enzymes.

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5,387,747

TRIAZOLOPYRIMIDINE DERIVATIVES WHICH ARE ANGIOTENSIN II RECEPTOR ANTAGONISTS, THEIR METHODS OF PREPARATION AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Nicole Bru-Magniez, Paris; Timur Güngor, Rueil Malmaison, and Jean-Marie Teulon, La Celle Saint Cloud, all of France, assignors to Laboratoires Upsa, Agen, France

PCT No. PCT/FR93/00161, § 371 Date Apr. 16, 1993, § 102(e) Date Apr. 16, 1993, PCT Pub. No. WO93/17024, PCT Pub. Date Sep. 2, 1993

Continuation-in-part of Ser. No. 863,955, Apr. 6, 1992, Pat. No. 5,231,094. This PCT application Feb. 18, 1993, Ser. No. 39,382

Claims priority, application France, Feb. 24, 1992, 92 02109; Apr. 30, 1992, 92 05417

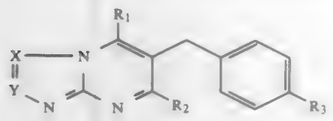
The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.

Int. Cl.[6] C07D *487/04*

U.S. Cl. 514—233.2 **11 Claims**

1. A triazolopyrimidine compound of formula (I):

Formula (I)



in which:

one of the radicals R_1 and R_2 is

a lower alkyl radical having 1 to 6 carbon atoms;

an ether radical of the formula $—(CH_2)_pOR$, in which p is an integer from 1 to 6 and R is a lower alkyl radical having 1 to 6 carbon atoms or a benzyl radical; or

an alcohol radical of the formula $—(CH_2)_pOH$, in which p is as defined above; and

the other radical R_1 or R_2 is

the hydrogen atom;

a halogen atom;

a lower alkyl radical having 1 to 6 carbon atoms; or

a radical selected from the group comprising the radicals N_3, OR_4, SR_4, NR_5R_6 and $NH(CH_2)_n—NR_5R_6$, in which:

R_4 is

the hydrogen atom;

a lower alkyl radical having 1 to 6 carbon atoms or a C_3–C_7-cycloalkyl radical;

a radical $(CH_2)_m—COOR'$, m being an integer from 1 to 4 and R' being the hydrogen atom or a lower alkyl radical having 1 to 6 carbon atoms; or

a radical $(CH_2)_m$-O-R', m and R' being as defined above;

R_5 and R_6, which are identical or different, are

the hydrogen atom; or

a lower alkyl radical having 1 to 6 carbon atoms or a C_3–C_7-cycloalkyl radical; or

R_5 and R_6, taken together with the nitrogen atom to which they are attached, form a heterocycle selected from morpholine, pyrrolidine or piperidine; and

n is an integer from 1 to 4;

X and Y, which are different, are

in one case the nitrogen atom; and

in the other case a group C-R_7, in which R_7 is

the hydrogen atom;

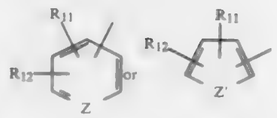
a lower alkyl radical having 1 to 6 carbon atoms or a C_3–C_7-cycloalkyl radical;

a radical $(CH_2)_{n'}OH$, in which n' is an integer from 0 to 4;

a radical SR', R' being as defined above; or

a radical NR_5R_6, in which R_5 and R_6, which are identical or different, are the hydrogen atom, a lower alkyl radical having 1 to 6 carbon atoms or a C_3–C_7-cycloalkyl radical; and

R_3 is a radical of the formula



in which:

Z is CH or N or Z' is S or O;

R_{11} is the hydrogen atom or a halogen atom; and

R_{12} is a tetrazole radical, CN, COOH or $CONH_2$;

and its tautomeric forms and its pharmaceutically acceptable addition salts.

5,387,748

ANTIMICROBIAL DITHIOCARBAMOYL QUINOLONES

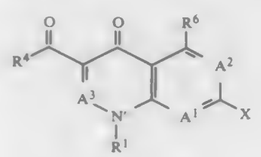
Thomas P. Demuth, Jr., Norwich, and Ronald E. White, South Plymouth, both of N.Y., assignors to Procter & Gamble Pharmaceuticals, Inc., Norwich, N.Y.

Continuation of Ser. No. 418,029, Oct. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 261,948, Oct. 24, 1988, abandoned. This application May 2, 1991, Ser. No. 696,985

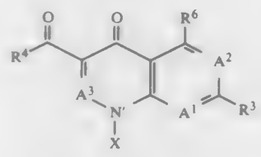
Int. Cl.[6] C07D *501/20;* **A61K** *31/495*

U.S. Cl. 514—254 **35 Claims**

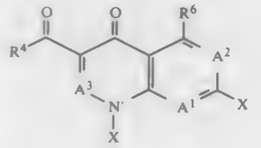
1. A dithiocarbamate-containing compound having one of the following structures:



(I)



(II)



(III)

wherein

(A)

(1) X is the dithiocarbamate-containing moiety $—R^{15}—N(R^{16})(R^{17})$ or $—R^{15}—R^{18}—N(R^{19})(R^{17})$, where

(a)

(1) R^{15} is nil; C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and

(2) R^{16} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; or

(3) when X is $R^{15}—N(R^{16})(R^{17})$, R^{16} and R^{15} may together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the nitrogen atom to which R^{15} and R^{16} are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(b) R^{17} is —C(=S)—S—M, where M is a pharmaceutically-acceptable salt or biohydrolyzable ester; and

(c) (1) R^{18} is C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and

(2) R^{19} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; or

(3) R^{18} and R^{19} may together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the nitrogen atom to which R^{18} and R^{19} are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(2) A^1 is $C(R^7)$; where

(i) R^7 is hydrogen, hydroxy, alkoxy, nitro, cyano, halogen, C_1–C_8 alkyl, or $N(R^8)(R^9)$, and

(ii) R^8 and R^9 are, independently, R^{8a}; where R^{8a} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; or R^8 and R^9 together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle that includes the nitrogen atom to which they are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(3) A^2 is $C(R^2)$; where R^2 is hydrogen or halogen;

(4) A^3 is $C(R^5)$; where R^5 is hydrogen;

(5) R^1 is hydrogen; C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; alkoxy; hydroxy; C_2–C_8 alkenyl; arylalkyl; or $N(R^8)(R^9)$; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(6) R^3 is hydrogen; halogen; C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(7) R^4 is hydroxy; and

(8) R^6 is hydrogen, halogen, nitro or $N(R^8)(R^9)$;

(B) and where

(1) R^1 and R^7 may together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle including N' and A^1; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(2) R^2 and R^3 may together comprise $—O—(CH_2)_n—O—$, where n is from 1 to 4;

(3) R^4 and R^5 may together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the carbon atoms to which R^4 and R^5 are bonded and the carbon atom to which said carbon atoms are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and

(4) R^1 and R^5 may together comprise a 4–9 atom monocyclic or 7–17 atom polycyclic heterocycle including N' and the adjacent carbon to which R^5 is bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

and pharmaceutically-acceptable salts and biohydrolyzable esters thereof, and hydrates thereof.

5,387,749

PROCESS FOR THE PREPARATION OF LINEAR LOW DENSITY POLYETHYLENE

Gabriele Govoni, Renazzo Ferrara, and Massimo Covezzi, Ferrara, both of Italy, assignors to Himont Incorporated, Wilmington, Del.

PCT No. PCT/EP92/01731, § 371 Date Mar. 5, 1993, § 102(e) Date Mar. 5, 1993, PCT Pub. No. WO93/03078, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 30, 1992, Ser. No. 30,053

Claims priority, application Italy, Jul. 31, 1991, M191A 022142

Int. Cl.[6] C08L *23/16*

U.S. Cl. 525—53 **14 Claims**

1. Process for the preparation of ethylene polymers endowed with improved processability by polymerization of ethylene with olefins CH_2=CHR, where R is an alkyl having 1–10 carbon atoms, by means of catalysts comprising the product obtained by reacting an alkyl aluminum compound with a solid component comprising a titanium halide or haloalcoholate and optionally an electron-donor compound supported on a magnesium halide in active form, which process comprises the following steps:

a) pre-contact of the catalyst-forming components in the substantial absence of polymerizable olefins to form a stereospecific catalyst capable of yielding during the polymerization of the mixture of propylene and alpha olefins in step c2) a copolymer having an insolubility in xylene at 25° C. of at least 80%;

b) pre-polymerization, using the catalyst obtained in step a), of propylene or mixtures thereof with ethylene and/or alpha-olefins CH_2=CHR, where R is an alkyl having from 1 to 10 carbon atoms, in such conditions as to obtain a polymer having an insolubility in xylene at 25° C. higher than 60%, in an amount of from about 1 to about 1000 g per g of solid catalyst component;

c) polymerization of the monomers in the gas phase, operating in two or more fluidized bed or mechanically stirred bed reactors in series, wherein, whatever the order:

c1) in one reactor a mixture of ethylene and an alpha-olefin CH_2=CHR, where R is an alkyl radical having from 1 to 10 carbon atoms, is polymerized to obtain a copolymer of ethylene with said alpha olefin copolymer containing up to about 20% by moles of the alphaolefin; and, after removing the unreacted monomers coming from the first reactor,

c2) in another reactor, a mixture of propylene and an alpha-olefin CH_2=CHR', where R' is an alkyl radical having from 2 to 10 carbon atoms, is polymerized to yield a copolymer containing from 5 to 40% by weight of the alpha olefin, in an amount of 5–30% by weight with respect to the total weight of the polymer obtained in c1) and c2);

and wherein the prepolymer-catalyst system obtained in b) is fed into the first reactor and the polymer-catalyst system obtained in the first reactor is fed into the other reactors.

5,387,750

TWO-COMPONENT URETHANE IN-MOLD COATING COMPOSITION

Nien-chu Chiang, Homewood, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Aug. 27, 1993, Ser. No. 113,443

Int. Cl.[6] C08G *18/10*

U.S. Cl. 528—52 **10 Claims**

1. A coating composition for use as an in-mold coating composition comprising:

(a) a first component comprising at least one polyol having at least 4 hydroxyl groups and a viscosity of 6000 cps or less at room temperature; and

(b) a second component comprising a solvent-free isocyanate prepolymer;

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wherein the viscosity of the coating composition is 15000 cps or less at room temperature.

5,387,751

PRODUCTION OF OLEFINE OXIDES

Percy Hayden; Richard W. Clayton; John R. Ramforth, all of Middlesbrough, England, and Alan F. G. Cope, Cheltenham, Australia, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 915,872, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 733,968, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 555,827, Jul. 23, 1990, abandoned, which is a continuation of Ser. No. 205,500, Jun. 10, 1988, abandoned, which is a continuation of Ser. No. 591,183, Mar. 19, 1984, abandoned, which is a continuation of Ser. No. 429,424, Sep. 30, 1982, abandoned. This application Aug. 2, 1993, Ser. No. 100,338

Claims priority, application United Kingdom, Feb. 10, 1978, 5439; Mar. 20, 1978, 10940

Int. Cl.[6] **C07D** *301/10*

U.S. Cl. 549—534 **5 Claims**

1. In a continuous process for the production of ethylene oxide which comprises contacting ethylene with oxygen in the presence of a silver-containing catalyst and from 1 to 50 parts per million by weight of vinyl chloride reaction modifier, the improvement which comprises continuously contacting the catalyst simultaneously with ethylene, oxygen and vinyl chloride modifier with a nitrogen oxide which is in the gas phase and which is in a concentration of 0.5 to 50 parts per million of NO_2 equivalent of the process gas by volume, said nitrogen oxide forming nitrate and or nitrite ions in the catalyst under process conditions, whereby the selectivity of the catalyst is maintained or increased or the rate of loss of selectivity is reduced.

5,387,752

PROCESS FOR THE PRODUCTION OF CYCLOHEXANEDIMETHANOL

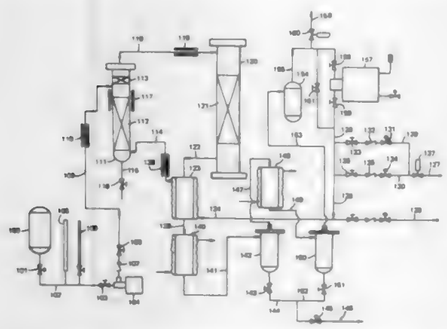
John Scarlett, Spennymoor; Michael A. Wood, Middlesbrough, and Colin Rathmell, Yarm, all of England, assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Dec. 30, 1993, Ser. No. 174,321

Claims priority, application United Kingdom, Dec. 2, 1993, 9324783

Int. Cl.[6] **C07C** *31/27*

U.S. Cl. 568—831 **18 Claims**



1. A process for the production of cyclohexanedimethanol by hydrogenation of dialkyl cyclohexanedicarboxylate which comprises:

(a) providing a hydrogenation zone containing a charge of a granular heterogeneous ester hydrogenation catalyst selected from copper-containing catalysts and Group VIII metal-containing catalysts;

(b) forming a vaporous feed stream of a hydrogen-containing gas and a hydrogenatable material comprising dialkyl cyclohexanedicarboxylate at a feed temperature which is in the range of from about 150° C. to about 350° C. and which is above the dew point of the feed stream and at a feed pressure in the range of from about 150 psia (about 10.34 bar) to about 2000 psia (about 137.90 bar), said vaporous feed stream having a known hydrogen-containing gas:dialkyl cyclohexanedicarboxylate ratio;

(c) supplying the vaporous feed stream to the hydrogenation zone;

(d) maintaining hydrogenation conditions in the hydrogenation zone which are effective to maintain the reaction mixture in contact with the hydrogenation catalyst above its dew point, said hydrogenation conditions comprising a temperature which is in the range of from about 150° C. to about 350° C. and a pressure in the range of from about 150 psia (about 10.34 bar) up about 2000 psia (about 137.90 bar);

(e) passing the vaporous feed stream through the hydrogenation zone: and

(f) recovering from the hydrogenation zone a product stream comprising cyclohexanedimethanol; wherein the dialkyl cyclohexanedicarboxylate is selected from di-(C_1 to C_4 alkyl) cyclohexanedicarboxylates.

5,387,753

PROCESS FOR THE PREPARATION OF ALCOHOLS AND DIOLS

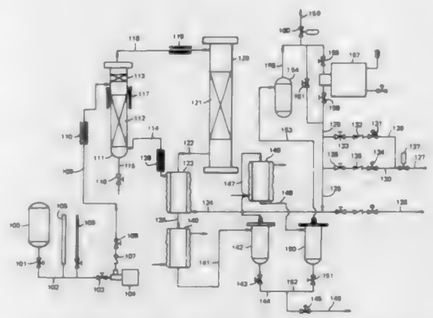
John Scarlett, Spennymoor; Michael W. M. Tuck, London, and Michael A. Wood, Middlesbrough, all of England, assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Dec. 30, 1993, Ser. No. 174,319

Claims priority, application United Kingdom, Dec. 2, 1993, 9324823

Int. Cl.[6] **C07C** *27/04, 31/135, 31/18, 33/14*

U.S. Cl. 568—864 **16 Claims**



1. A process for the production of alcohols and diols by hydrogenation of a corresponding unsaturated organic compound selected from esters, diesters and lactones which comprises:

(a) providing a hydrogenation zone containing a charge of a granular copper-containing ester hydrogenation catalyst;

(b) supplying to the hydrogenation zone, in a first phase of operation, a vaporous feed stream comprising a hydrogen-containing gas and an unsaturated organic compound selected from C_1 to C_4 alkyl esters of C_8 to C_{22} alkylcarboxylic acids, di-(C_1 to C_4) diesters of C_4 to C_{16} dicarboxylic acids, gamma-butyrolactone and epsilon-caprolactone;

(c) maintaining the hydrogenation zone, in the first phase of operation, at a temperature in the range of from about 150° C. to about 350° C. and a pressure in the range of from about 150 psia up to about 2000 psia;

(d) recovering from the hydrogenation zone, in the first phase of operation, a reaction product stream comprising the alcohol or diol;

(e) supplying to the hydrogenation zone, in a second phase of operation, a stream of hydrogen-containing gas which is substantially free from the unsaturated organic compound at an effective reactivation temperature and for an effective period of time thereby to reactivate the charge of copper-containing ester hydrogenation catalyst therein.

5,387,754

INBRED CORN LINE PHGW7

Gerhard P. Weber, Moorhead, Minn., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 3, 1992, Ser. No. 831,236

Int. Cl.[6] **A01H** *5/00, 4/00;* **C12N** *5/04*

U.S. Cl. 800—200 **7 Claims**

1. Inbred corn seed designated PHGW7, and having ATCC Accession No. 75769.

5,387,755

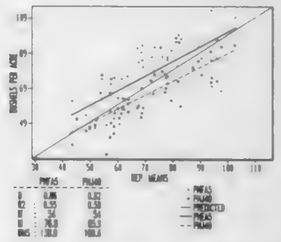
INBRED CORN LINE PHFA5

Roy Luedtke, Jr., Grand Forks County, N. Dak., and Gerhard P. Weber, Clay County, Minn., assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 3, 1993, Ser. No. 12,678

Int. Cl.[6] **A01H** *5/00, 4/00;* **C12N** *5/04*

U.S. Cl. 800—200 **10 Claims**



1. Inbred corn seed designated PHFA5 and having ATCC Accession No. 75692.

5,387,756

MODIFICATION OF PLANT METABOLISM

Michael M. Burrell, and Keith S. Blundy, both c/o Advanced Technologies (Cambridge) Limited, Cambridge Science Park, Cambridge, England

Continuation of Ser. No. 628,216, Dec. 17, 1990, abandoned. This application Dec. 16, 1992, Ser. No. 991,451

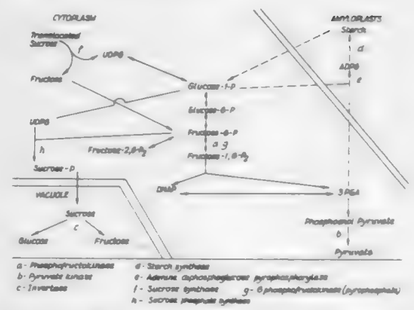
Claims priority, application United Kingdom, Dec. 21, 1989, 8928937; Jul. 6, 1990, 9014988

Int. Cl.[6] **A01H** *1/04;* **C12N** *9/12, 15/00*

U.S. Cl. 800—205 **1 Claim**

1. A transgenic potato plant which harbors in its cells a chimaeric gene, which comprises;

(a) a promoter operably linked to



(b) a deoxgrihonucleic acid coding sequence which encodes phosphofructokinase, said gene being capable of expression in the cells of the transgenic potato plant.

5,387,757

TOMATOES WITH REDUCED EXPRESSION OF POLYGALACTURONASE

Ian G. Bridges, Slater, Iowa; Wolfgang W. Schuch, Crowthorne, and Donald Grierson, Shepshed, both of England, assignors to Zeneca Limited, London, England

Continuation of Ser. No. 577,049, Sep. 4, 1990, abandoned, which is a continuation of Ser. No. 350,362, May 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 119,614, Nov. 12, 1987. This application Apr. 1, 1993, Ser. No. 41,337

Claims priority, application United Kingdom, May 11, 1989, 8811115

Int. Cl.[6] **A01H** *5/08, 5/10*

U.S. Cl. 800—205 **4 Claims**

1. A tomato fruit having a reduced level of expression of polygalacturonase, resulting from the presence in the plant genome of DNA capable of generating antisense RNA complementary to polygalacturonase mRNA, where the reduced level of expression of polygalacturonase is less than 1% of that of similar unmodified tomatoes at a corresponding development stage.

5,387,758

PRODUCTION OF IMPROVED RAPESEED EXHIBITING A REDUCED SATURATED FATTY ACID CONTENT

Raymond S. C. Wong, Kowloon, Hong Kong; Ian Grant, Ontairo, Canada; Jayantilal D. Patel, Ontario, Canada; Jeff P. K. Parker, Ontario, Canada, and Eric B. Swanson, Ontario, Canada, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Continuation of Ser. No. 672,135, Mar. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 504,302, Apr. 4, 1990, abandoned. This application Jan. 29, 1993, Ser. No. 13,184

Int. Cl.[6] **A01H** *1/06, 5/10, 1/00;* **C12N** *15/00*

U.S. Cl. 800—230 **44 Claims**

18. A *Brassica napus* rape plant which upon self-pollination is capable of forming rapeseeds which yield an improved edible endogenous vegetable oil, said rapeseeds having an oil which exhibits following crushing and extraction of said rapeseeds (1) an unusually low palmitic and stearic saturated fatty acid content of 2 to 4 percent by weight based on the sum of stearic and palmitic acids in relation to the total fatty acid content wherein said saturated fatty acid content is controlled by genetic means for the expression of such trait that is present in F-32-38-172-X or D-98-49-176, and (2) an erucic acid content of no more than 2 percent by weight based on the total fatty acid content.

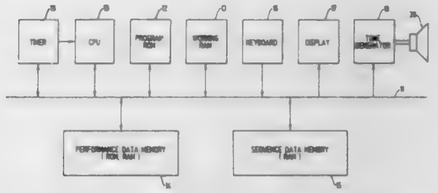
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5,387,759

AUTOMATIC PERFORMANCE APPARATUS USING SEPARATELY STORED NOTE AND TECHNIQUE DATA FOR REDUCING PERFORMANCE DATA STORAGE REQUIREMENTS

Satoshi Usa, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Mar. 24, 1992, Ser. No. 856,474
Claims priority, application Japan, Mar. 29, 1991, 3-067252
Int. Cl.[6] G10H *7/00*; G04B *13/00*; A63H *5/00*
U.S. Cl. 84—609 7 Claims



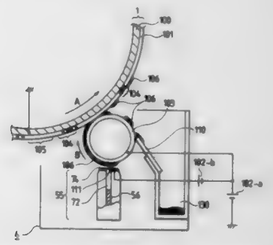
1. An automatic performance apparatus comprising:
technique data memory means for storing technique data which represent performance techniques
performance data memory means for storing a sequence of automatic performance data, said automatic performance data including note performance data which identifies a musical tone to be produced and technique designating data which designates a portion of said technique data;
first reading means for reading out the automatic performance data from the performance data memory means;
second reading means for reading out said technique data designated by said technique designating data sequentially with the reading out of the automatic performance data by the first ring means and wherein the performance techniques are stored in the technique data memory in a time-independent manner; and
musical performing means for performing a musical tone according to the note performance data using at least one performance technique determined by said read out technique data.

5,387,760

WET RECORDING APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Yoshinori Miyazawa; Hideo Yamazaki, and Makoto Fujino, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 775,130
Claims priority, application Japan, Oct. 19, 1990, 2-281549; Oct. 19, 1990, 2-281550; Oct. 19, 1990, 2-281551; Oct. 25, 1990, 2-288011
Int. Cl.[6] G03G *15/10*
U.S. Cl. 118—661 8 Claims



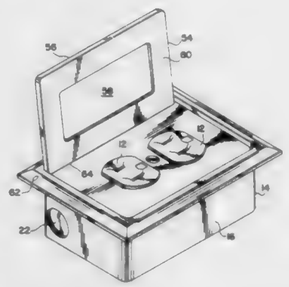
1. A wet development apparatus for developing an electrostatic latent image on an electrostatic latent image carrier using a wet developer, comprising:
a development roller for carrying said wet developer to a contact position between said roller and said carrier; and
developer application means for uniformly applying said developer to said roller, wherein said developer application means comprises an application head comprising: a thin piezoelectric sheet; an opposite plate facing said sheet with a small gap therebetween; a bottom plate sealed on one end of said sheet and said opposite plate; and electrodes disposed on each end of said sheet; wherein by applying a voltage to said electrodes causes said sheet to vibrate and discharge said wet developer to said development roller.

5,387,761

SAFETY ELECTRICAL RECEPTACLE ASSEMBLY

Andrew Simonis, 27 Old Middleville Rd., Newton, N.J. 07860

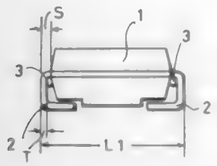
Filed May 6, 1993, Ser. No. 57,283
Int. Cl.[6] H01R *13/447*
U.S. Cl. 174—67 5 Claims



1. A safety electrical receptacle assembly comprising:
an electrical box having an open front, four closed sides, and a closed back, an access aperture in one of said closed sides for receiving an electrical cable, and a continuous marginal flange extending perpendicularly outwardly from said sides;
an electrical outlet housed in said electrical box, said outlet having at least one receptacle extending out of said open front of said electrical box;
a face plate covering said open front of said electrical box and overlapping said flange, said face plate having a main body, at least one cut-out in said main body for receiving at least one receptacle, and a rim projecting upwardly and outwardly from said main body to define a recessed area;
a cover plate dimensioned to fit tightly within said recessed area and hingedly connected to said rim for pivotable movement between a closed position in which said cover plate covers said receptacles and an open position in which said receptacles are exposed;
a supporting surface having a generally rectangular aperture for tightly receiving said electrical box;
said supporting surface further comprising an inwardly facing surface and an outwardly facing surface, said outwardly facing surface having a recess for recess for registration with said flange; and
said inwardly facing surface having a notch aligned with said access aperture.

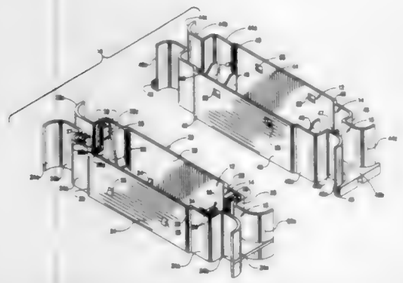
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5,387,762
RESIN-PACKAGED ELECTRONIC COMPONENT HAVING BENT LEAD TERMINALS
Miki Hasegawa, and Yasuo Kanetake, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Dec. 21, 1993, Ser. No. 170,785
Claims priority, application Japan, Dec. 28, 1992, 4-349205
Int. Cl.[6] H01L *23/02*
U.S. Cl. 174—52.4 6 Claims



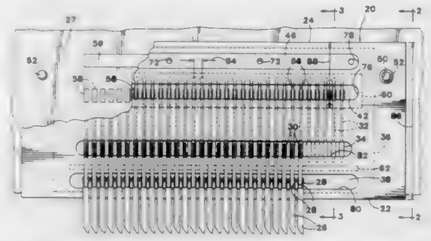
1. In an electronic component which comprises a resin package for enclosing inside parts, and at least one lead terminal projecting out from the resin package; a method of bending the lead terminal comprising the steps of:
arranging a solder wire at an armpit-like portion between the lead terminal and the resin package; and
bending the lead terminal about the solder wire to sandwich the solder wire between the lead terminal and the resin package at the armpit-like portion.

5,387,763
ENCLOSURE FOR STRAIGHT CABLE SPLICE
Selim Messelhi, Etobicoke, Canada, assignor to Communications Technology Corporation, Dallas, Tex.
Filed May 13, 1993, Ser. No. 61,927
Int. Cl.[6] H02G *15/113*
U.S. Cl. 174—92 13 Claims



1. An enclosure for a splice between first and second cables having a layer of insulation including a housing formed of first and second housing segments having an entrance; sealant in said housing segments; and cable gripping apparatus in said housing, said gripping apparatus comprising: strain relief means in said first housing segment; and spaced projections in said second housing segment for urging a cable into engagement with said strain relief means to score and grip the layer of insulation for limiting movement of the cable relative to the housing to prevent separation of said sealant from a cable when a cable is positioned to extend through said entrance into said housing.

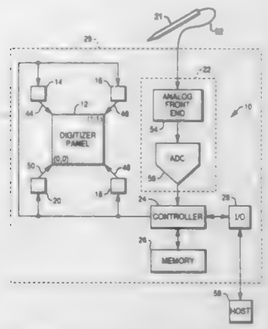
5,387,764
ELECTRICAL CONNECTOR FOR INTERCONNECTING COAXIAL CONDUCTOR PAIRS WITH AN ARRAY OF TERMINALS
Hans A. Blom, Portland; Laurence A. Daane, Sherwood; Paul C. Sprunger, Dundee, and Paul A. Wheatcraft, Tualatin, all of Oreg., assignors to The Whitaker Corporation, Wilmington, Del.
Filed May 4, 1993, Ser. No. 57,269
Int. Cl.[6] H05K *1/02*
U.S. Cl. 174—261 41 Claims



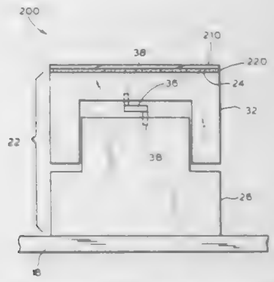
1. A connector for electrically connecting a plurality of electrical conductors to a plurality of electrical terminals located close to one another in an array, comprising:
(a) a central layer of a dielectric material;
(b) a plurality of signal conductors disposed on a first side of said central layer, each said signal conductor having a cable conductor end and a terminal connection end, and said signal conductors having terminal portions, adjacent said terminal connection end, extending generally parallel with each other at a predetermined spacing on said central layer of dielectric material;
(c) a shield bus layer of electrically conductive material disposed on a second side of said central layer;
(d) said central layer of dielectric material defining a signal conductor termination window opening therethrough, and a part of said terminal portion of each of said plurality of signal conductors extending across said signal conductor termination window; and
(e) said central layer of dielectric material defining a shield conductor connection window opening located proximate said cable conductor end of said connector.

5,387,765
DATA SECURE DIGITIZER CONTROL CIRCUIT AND METHOD
John F. Crooks, Duluth, Ga., assignor to NCR Corporation, Dayton, Ohio
Filed Sep. 2, 1992, Ser. No. 939,218
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—18 9 Claims

1. A digitizer panel control circuit comprising:
a digitizer panel;
a plurality of driver means for driving the digitizer panel with a randomly determined sequence of a plurality of different patterns of excitation signals, wherein each pattern defines a plurality of simultaneous states of the drivers, wherein the states include a high state and a grounded state, and wherein at least one of the patterns includes both of the states; and
controller means for controlling the driver means, for choosing the randomly determined sequence of patterns, for choosing a plurality of additional randomly determined sequences of patterns, and for applying the one sequence and the additional sequences until the controller senses liftoff of the sensing means from the digitizer panel.



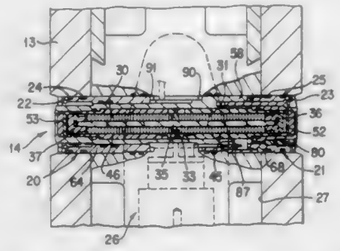
5,387,766
SCALE WITH ABUSE DETECTION AND RECORDAL SYSTEM
David M. Teller, and Lance Ong, both of New York, N.Y., assignors to Jopo, Inc., New York, N.Y.
Filed Jun. 24, 1993, Ser. No. 82,027
Int. Cl.[6] G01G *21/22*
U.S. Cl. 177—262 9 Claims



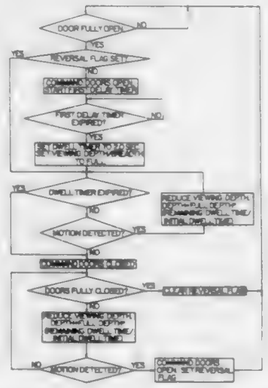
1. A scale incorporating an abuse detection and recordal system, said scale comprising:
(A) means for weighing an article placed thereon, said weighing means defining a surface adapted to support the article thereon and a component damageable by an excessive force downwardly directed on said support surface; and
(B) frangible means disposed on said support surface and frangible by a downwardly directed force less than the excessive force required to damage said component;
whereby said frangible means acts as an abuse detection and recordal system to detect and record the use of such force.

5,387,767
TRANSMITTER FOR SONIC LOGGING-WHILE-DRILLING
Jeffery B. Aron, Houston, Tex., and Peter J. Airey, St. Germain Laval, France, assignors to Schlumberger Technology Corporation, Houston, Tex.
Filed Dec. 23, 1993, Ser. No. 173,323
Int. Cl.[6] G01V *1/40*
U.S. Cl. 367—25 20 Claims

8. Acoustic transmitter means adapted to be mounted on a pipe member in a borehole, comprising: oppositely arranged stacks of piezoelectric crystal washers having a nodal plate therebetween, inner sleeve means including a first sleeve member surrounding one of said stacks and a second sleeve member surrounding the other of said stacks, said nodal plate having an outward directed flange located between the inner ends of said sleeve members and spaced therefrom; first resilient means arranged between each of said inner ends and said flange; outer sleeve means including a tubular member having a seat at one end, said tubular member having a first shoulder; a first head fitted in said seat and secured to said tubular member; a second head releasably attached to said tubular member and having a second shoulder spaced from said first shoulder, said shoulders being adapted to be engaged by second resilient means by which said transmitter means is mounted on the pipe member.



5,387,768
ELEVATOR PASSENGER DETECTOR AND DOOR CONTROL SYSTEM WHICH MASKS PORTIONS OF A HALL IMAGE TO DETERMINE MOTION AND COURT PASSENGERS
Jeff Izard, Bolton, and Francois M. Mottier, West Hartford, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.
Filed Sep. 27, 1993, Ser. No. 127,563
Int. Cl.[6] B66B *3/04*; H04N *7/18*
U.S. Cl. 187—392 13 Claims



10. An apparatus for elevator door control, comprising:
a camera for providing an image of an elevator door sill and a hall in front of an elevator;
an image buffer for storing an old image;
a summer for adding said old image and a new image and providing a difference image including a plurality of pixels of variable brightness and providing said motion detected signal in response to said difference image;

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a mask generator for masking out, increasingly with time, measured from the most recent of motion being detected or the door opening, greater portions of said difference image so long as said motion detected signal is provided;

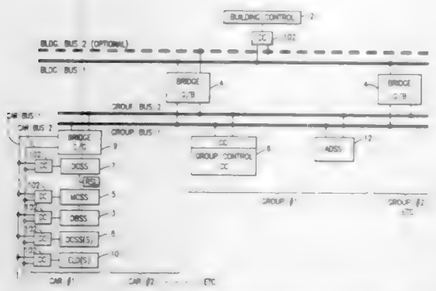
means for commanding said door to close when said motion detected signal is no longer provided.

5,387,769

LOCAL AREA NETWORK BETWEEN AN ELEVATOR SYSTEM BUILDING CONTROLLER, GROUP CONTROLLER AND CAR CONTROLLER, USING REDUNDANT COMMUNICATION LINKS

Bertram F. Kupersmith, Avon, Conn.; Venkataramana S. Pulleia, Singapore, Singapore, and Christopher P. Screven, Torrington, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Jun. 1, 1993, Ser. No. 70,122
Int. Cl.[6] G09F *27/03*; G06F *11/16*
U.S. Cl. 187—248 4 Claims



2. In a local area network elevator communications system, comprising

a building controller, said building controller having a microprocessor for executing building control functions and separate communications coprocessor for executing communications functions;

a group controller for controlling the functions of a group of elevators, said group controller having a microprocessor for executing group functions and a separate communications coprocessor for executing communications functions;

for each elevator of the group, a plurality of car control systems including a motion control system, a drive and brake system, a door control system, and an operational control system, each one of said car control systems having a microprocessor for executing car functions and a separate communications coprocessor which executes communications functions for communicating with a communications coprocessor of another of said car control systems of the same elevator, said group controller or said building controller;

for each elevator of the group, a car bus for exchanging, with said car control systems, signals which control operation of a car and a redundant car bus for exchanging the same signals as said car bus with said car control systems, communications between said car bus, redundant car bus, and each of said car control systems being executed by the corresponding one of said car control system communications coprocessors;

a group bus for exchanging signals with said group controller for controlling said group of elevator cars, and for exchanging signals with a plurality of said car buses by means of a plurality of group-car bridges, and a redundant group bus for exchanging the same signals as said group bus with said car buses, communications between said group controller and said group bus being executed by said group controller communications coprocessor; and

a building bus for exchanging signals with said group bus by means of a building-group bridge and for exchanging signals with said building controller, communications between said building controller and building bus being executed using said building controller communications coprocessor, a method for providing a protocol for the exchange of signals between any of said communication coprocessors and another of said communication coprocessors, comprising:

providing a control byte signal for indicating to a receiver the presence of a bus address signal or a local address signal and whether the receiver is to copy a message from one bus to another bus;

providing a message identifier signal for indicating a message type;

providing a data signal;

providing a frame gap time during which the bus is idle to allow the bus to electrically settle;

providing a programmable number of fixed length time slots associated with a corresponding number of priority messages for providing access by priority messages; and

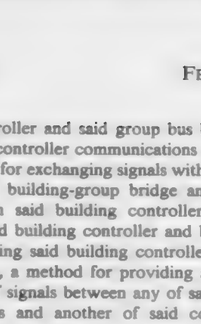
providing a programmable number of fixed length time slots for rotating, in round-robin fashion, bus access by nonpriority messages.

5,387,770

ELECTRIC OPERATING DEVICE FOR CIRCUIT BREAKER

Youji Ikehata, and Shinji Yokota, both of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,192
Claims priority, application Japan, Jun. 2, 1992, 4-141250; Jun. 2, 1992, 4-141251; May 6, 1993, 5-105524
Int. Cl.[6] H01H *3/00*
U.S. Cl. 200—17 R 6 Claims



1. An electric operating device for a circuit breaker, comprising:

a cam which is turned in a predetermined direction by an electric motor which is driven by an operating signal;

a slider having cam engaging portions which make engagement and disengagement with a cam roller of said cam every half revolution of said cam, and an opening into which a handle of said circuit breaker is inserted, said slider being provided to be slidable in directions of the "on" and "off" operations of said handle,

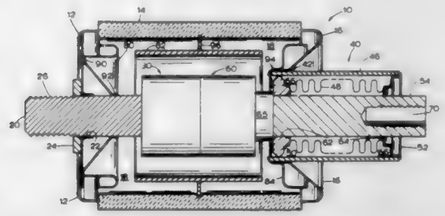
after the "on" and "off" operations of said handle, said cam engaging portions of said slider being disengaged from said cam roller, respectively.

5,387,771

AXIAL MAGNETIC FIELD HIGH VOLTAGE VACUUM INTERRUPTER

Elmer L. Luehring, Cleveland Heights, Ohio, assignor to Joslyn Hi-Voltage Corporation, Cleveland, Ohio

Filed Apr. 8, 1993, Ser. No. 44,416
Int. Cl.[6] H01H *33/66*
U.S. Cl. 200—144 B 47 Claims



1. An axial magnetic field high voltage vacuum interrupter for interrupting the flow of electrical current in high voltage electrical circuits comprising:

a housing having a substantial vacuum therein; and

first and second switch contacts disposed within said housing and movable with respect to each other between a first position in which said first and second switch contacts are in contact with each other and a second position in which said first and second switch contacts are separated from each other by a distance sufficient to allow a voltage to exist without electrical breakdown following interruption, at least one of said first and second switch contacts comprising:

an electrically conductive stem portion;

a plurality of electrically conductive current-carrying bars each having a first end and a second end, said first ends of said bars being conductively coupled to said electrically conductive stem portion, each of said bars having a first portion which extends radially outward from said stem portion and a second portion which is helically coiled about an axis substantially parallel with said stem portion; and

an electrically conductive contact member conductively coupled to said second ends of said electrically conductive bars.

5,387,772

VACUUM SWITCH

Ernest F. Bestel, West Allis, Wis., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Nov. 1, 1993, Ser. No. 146,526
Int. Cl.[6] H01H *33/66*
U.S. Cl. 200—144 B 12 Claims

1. A vacuum switch for opening and closing a circuit between first and second electrical power lines, comprising:

a housing having an evacuated chamber;

a first electrical terminal extending into said chamber of said housing and adapted to be connected to the first electrical power line;

a second electrical terminal extending into said chamber of said housing and adapted to be connected to the second electrical power line, said second terminal extending transversely of said first terminal;

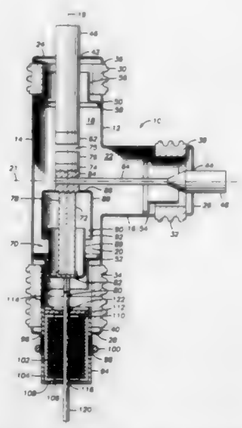
said first and second terminals being fixed to said housing and maintained in a stationary position;

a stationary switch contact disposed on said first terminal within said chamber;

a movable switch contact disposed within said chamber on an actuator member providing line to ground insulation reciprocably mounted in said housing;

said second terminal including a flexible conductive member housed within said chamber and electrically connecting said movable switch contact and said second terminal;

said flexible conductive member flexing between a closed circuit position with said movable switch contact engaging said stationary switch contact and an open circuit position with said movable switch contact out of engagement with said stationary switch contact.

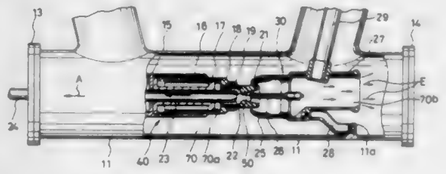


5,387,773

GAS CIRCUIT BREAKER

Nobuya Nakajima; Toshiaki Yoshizumi, and Mikio Hidaka, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1993, Ser. No. 100,302
Claims priority, application Japan, Sep. 16, 1992, 4-246314
Int. Cl.[6] H01H *33/82*
U.S. Cl. 200—148 A 7 Claims



1. A gas circuit breaker comprising:

a grounded tank which is filled with insulation gas;

a stationary contact disposed in said grounded tank for contacting and departing from a movable contact;

an arc-quenching cylinder which is connected to said stationary contact to pass said insulation gas which is blown to an arc generated between said stationary contact and said movable contact; and

an insulation frame which is arranged beneath said arc-quenching cylinder and fixed to an inner wall of said grounded tank in a manner to support said arc-quenching cylinder;

wherein:

said arc-quenching cylinder has a substantially semicircular section portion wherein a flat wall part forming a dent part thereunder is arranged at a bottom of said arc-quenching cylinder;

said insulation frame is disposed beneath said dent part of said substantially semicircular section portion;

said arc-quenching cylinder has a cylinder portion for

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connecting to said stationary contact, and a mounting portion for connecting to said insulation frame; and

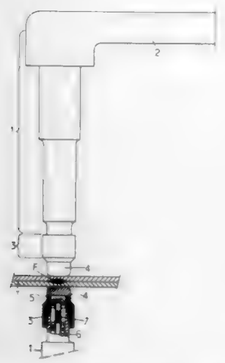
said mounting portion is provided between said dent part and said cylinder portion.

5,387,774

SPOT RESISTANCE-WELDING ELECTRODE; CONTACT TIP FOR SUCH AN ELECTRODE; MACHINE FOR EXCHANGING THESE TIPS

Jean-Noël Boyer, Mettray, and Patrick Le Gall, Fondettes, both of France, assignors to A R O, Chateau Du Loir, France

Filed Dec. 21, 1992, Ser. No. 994,584
Claims priority, application France, Dec. 20, 1991, 91 15893
Int. Cl.[6] B23K *11/10*
U.S. Cl. 219—86.33 **18 Claims**



1. A spot resistance-welding electrode comprising:

an electrode body mounted on a support arm and connected to a high intensity welding current source as well as to a cooling water supply circuit,

a welding cap securely fastened to an end of said body, said cap having

a consumable contact tip which ensures contact with metal sheets to be welded and which transmits to the sheets a welding current pressure and welding current intensity, wherein said contact tip of the welding cap is a distinct component of the cap which is replaceable after said contact tip is consumed, said contact tip including a helical deflecting peg which is centrally and internally located therein,

a brazing which connects said cap to said tip, said brazing having been produced, and later during replacement of the contact tip capable of being destroyed, by passing a current necessary for melting a brazing material located between said contact tip and a remainder of said welding cap from the welding current source.

5,387,775

APPARATUS FOR THE PLASMA DESTRUCTION OF HAZARDOUS GASES

Michael Kang, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 31, 1993, Ser. No. 41,019
Int. Cl.[6] B23K *9/00;* **F23G** *7/04*
U.S. Cl. 219—121.52 **6 Claims**

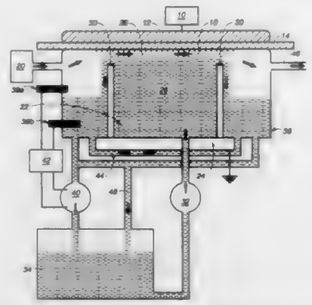
1. An electric-discharge plasma cell for decomposing gases, which comprises in combination:

a. an elongated, substantially planar, high-voltage electrode;

b. voltage generation means for providing an alternating high-voltage waveform to said high-voltage electrode;

c. a horizontally disposed, electrically conducting liquid located substantially parallel to and spaced-apart from said high-voltage electrode, said liquid being electrically grounded, forming thereby a grounded electrode;

d. an elongated, substantially planar dielectric barrier disposed adjacent to said high-voltage electrode and having dimensions such that surface arcing between said high-voltage electrode and said grounded electrode cannot



occur, and such that a volume is formed between said dielectric barrier and the grounded electrode through which the gases to be decomposed are flowed and within which multiple, self-terminating discharges occur throughout; and

e. means for flowing the gases to be decomposed through the volume.

5,387,776

METHOD OF SEPARATION OF PIECES FROM SUPER HARD MATERIAL BY PARTIAL LASER CUT AND PRESSURE CLEAVAGE

Tatyana L. Preiser, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio

Filed May 11, 1993, Ser. No. 60,459
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.72 **10 Claims**



1. A method of separating at least one piece from a super hard material plate having top and bottom surfaces, comprising:

providing a laser capable of cutting said super hard material plate; making a cut with said laser through the top surface of said plate, said cut defining the shape of the piece to be separated and being to a depth which is less than the overall thickness of said plate; and

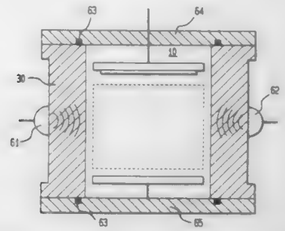
separating said piece from said plate by applying an effective amount of pressure to the bottom side of said plate along the line of said cut to separate the uncut portion of said plate adjacent said cut.

5,387,777

METHODS AND APPARATUS FOR CONTAMINATION CONTROL IN PLASMA PROCESSING

Reid S. Bennett, Wappingers Falls, N.Y.; Albert R. Ellingboe, Palo Alto, Calif.; George G. Gifford, Croton-on-Hudson; Kurt L. Haller, Peekskill, both of N.Y.; John S. McKillop, Satellite Beach, Fla.; Gary S. Selwyn, and Jyothi Singh, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 425,659, Oct. 23, 1989, abandoned.
This application Jun. 24, 1992, Ser. No. 903,644
Int. Cl.[6] B23K *10/00;* **B44C** *1/22;* **B05D** *3/06*
U.S. Cl. 219—121.43 **26 Claims**



2. A method of prevention of plasma contamination in a plasma reactor system comprising:

applying energizing means selected from electrostatics electromagnetic, mechanical, thermal, pressure, hygroscopic, and chemical means to eliminate particle contamination in situ in said plasma reactor system, said forces being applied within said reactor for moving particles potentially leading to contamination across said plasma reactor to a space separate from the active region of said reactor to reduce contamination within said active region of said reactor; and

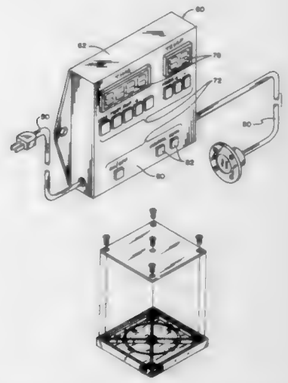
moving particle contamination across a plasma reactor to reduce contamination by the use of a magnetic field selected from pulsed, continuous and ramped magnetic fields.

5,387,778

SNOW AND ICE REMOVAL APPARATUS

Tim P. Stanger, 2867 360th St. Suite 25, Booneville, Iowa 50038

Filed Dec. 10, 1993, Ser. No. 164,754
Int. Cl.[6] H05B *3/32*
U.S. Cl. 219—213 **1 Claim**



1. A snow and ice removal apparatus comprising:

a plurality of rigid filament containers, each filament container including a metal housing having dimensions such that it can be carried and positioned by a user, a hollow interior, an elongated opening disposed therethrough to access the interior, a male electrical connector coupled thereto, a female electrical connector coupled thereto, a metal heating element disposed within the interior and coupled to the male and female electrical connectors, the heating element radiating heat when energy is applied through the electrical connectors, and a metal lid coupled to the opening to seal the heating element therein, thereby protecting the heating element from being crushed and corroded, each container and lid radiating heat when the heating element is energized;

a plurality of power cords, each cord having a first end and a second end, the first end having a male electrical plug coupled thereto and the second end having a female electrical plug coupled thereto, each cord coupled between two filament containers with the male electrical plug of the cord coupled to the female electrical connector of one filament container and the female electrical plug of the cord coupled to the male electrical plug of the other filament container to define a heat generation pathway, the pathway adapted to be placed on a surface to melt snow or ice when energized;

a power cable for transmitting energy to the heat generation pathway, the power cable having a first end and a second end, the first end coupled to the heat generation pathway, the second end adapted to be coupled to an external power source; and

a controller coupled to the power cable for manually and automatically adjusting the application of energy to the heat generation pathway, the controller including a hollow container, an electrical module, and a face plate, the electrical module disposed within the container, the electrical module having input circuitry, processor circuitry, memory circuitry, output circuitry, and bus circuitry, the bus circuitry adapted to carry information between the input circuitry, processor circuitry, memory circuitry, and output circuitry, the input circuitry adapted to receive information from a user and the environment and accept energy from an external power source for driving the electrical module, the memory circuitry adapted to store information from the input circuitry, processor circuitry, and output circuitry, the processor circuitry adapted to manipulate information from the input circuitry and memory circuitry, and the output circuitry adapted to send information to a user and regulate the application of power to the heat generation pathway, and the face plate coupled to the container to seal the electrical module therein, the face plate having a plurality of holes disposed thereon, the holes having dimensions adapted to allow the user to view and manipulate the input and output circuitry.

5,387,779

RICE OVEN WITH FORCED RESIDUAL HEAT EXHAUST

Kisaku Suzuki, 19-8, Toshida, 1-chome, Nerima-ku, Tokyo, Japan

Filed Nov. 8, 1993, Ser. No. 148,625
Int. Cl.[6] A21B *1/00, 1/22*
U.S. Cl. 219—400 **1 Claim**

1. An oven for cooking rice comprising in combination

(A) a cooking chamber defined by a top wall (**1***b*), a bottom wall (**1***a*), side walls (**1***c*) and a rear wall (**1***d*),

(B) electrical heating means (**9**) mounted in the lower portion of said cooking chamber,

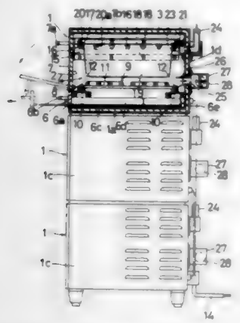
(C) guide rails (**15**) mounted on the opposed side walls (**1***c*) above said electrical heating means (**9**), said guide rails (**15**) being adapted to support a cooking pot (**19**) that contains rice and water,

(D) exhaust outlets (**21**) extending through said rear wall (**1***d*) in an upper portion thereof adjacent the level of said

guide rails (15), said outlets are adapted to remove steam from cooking rice, and

(E) fan means for creating airflow within the cooking chamber,

(F) an opening (25) in said rear wall (1*d*) at a location which



is below said exhaust outlets (21) and adjacent to said electrical heating means (9) for rapidly decreasing the temperature in that area at the conclusion of a cooking cycle by

(a) withdrawing heating gases; and

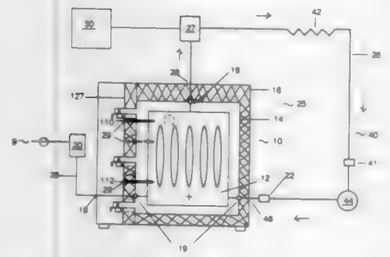
(b) blowing in cooler ambient air.

5,387,780

MICROWAVE HOT WATER HEATING SYSTEM

William P. Riley, 115 Moore St., East Boston, Mass. 02128, assignor to Edwin J. Riley, Milton and William P. Riley, East Boston, both of Mass.

Filed Sep. 23, 1993, Ser. No. 125,515
Int. Cl.[6] H05B *6/80*
U.S. Cl. 219—688 14 Claims



1. A boiler comprising:

(a) a first cabinet enclosing a fluid, said first cabinet having a microwave permeable seamless peripheral wall;

(b) a second cabinet enclosing the first cabinet, said second having a microwave impermeable peripheral wall having an interior surface facing said first cabinet, thereby forming a thermal conducting space between the first and second cabinets;

(c) a third cabinet enclosing the second cabinet;

(d) a wave guide carried on the interior surface of the microwave impermeable peripheral wall of the second cabinet; wherein the wave guide is not in contact with the fluid chamber;

(e) a microwave power source operatively connected to the wave guide carried on the interior surface of the second cabinet;

wherein said second cabinet is in continuity with the microwave power source such that the second cabinet is an extension of the wave guide both electrically and mechanically; and

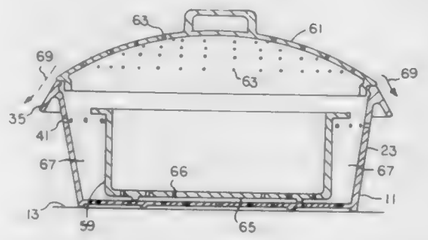
(f) heat transport means positioned between the first and third cabinets for transport of a thermal by-product of the microwave power source.

5,387,781

VENTED FOOD COOKING SYSTEM FOR MICROWAVE OVENS

William Berkoff, 6143 W. Olympic Blvd., Los Angeles, Calif. 90043

Continuation-in-part of Ser. No. 973,186, Nov. 9, 1992. This application Nov. 2, 1993, Ser. No. 146,784
Int. Cl.[6] H05B *6/80*
U.S. Cl. 219—735 4 Claims



1. A food cooking system comprising an enclosure having an annular upstanding side wall positionable in a microwave oven, said side wall having an upper annular edge; an open-topped food-containment pan smaller than said enclosure, whereby said pan is positionable within the enclosure in a microwave opening; a rigid cover mounted on the upper edge of the enclosure side wall to form a central confined space above the pan; said pan having a bottom wall and a side wall, said pan side wall having an upper annular edge spaced below the plane of the enclosure side wall upper edge; a number of circumferentially spaced air holes in the enclosure side wall for supplying air to said heatable air chamber, said air holes being located a slight distance below the upper edge of the pan side wall; said cover having a multiplicity of vent openings therein for venting steam from the food being cooked in the pan; said pan side wall being spaced from the enclosure side wall to form an annular heatable air chamber between the enclosure side wall and the pan side wall, said air holes being in direct communication with said annular heatable chamber; said air holes being effective to replenish air in in the annular heatable chamber, whereby a continual updraft of heated air is maintained from the annular chamber into the central space above the pan, so that the updrafted air promotes outflow of steam through the vent openings in said cover; said enclosure, cover and food-containment pan being formed of a material transparent to microwaves.

5,387,782

APPARATUS FOR SMOOTHING PAPER WEBS

Herbert Holik, Ravensburg, Germany, assignor to Sulzer-Escher Wyss GmbH, Ravensburg, Germany

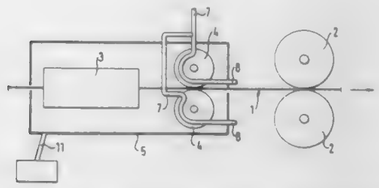
Filed Apr. 14, 1992, Ser. No. 868,612
Claims priority, application Germany, Apr. 17, 1991, 4112537
Int. Cl.[6] H05B *6/62*
U.S. Cl. 219—773 7 Claims

1. An apparatus for smoothing a paper web having inner layer and two outer surface layers, each layer with moisture content, comprising:

a smoothing mechanism in the form of at least one pair of smoothing rolls, said rolls defining a nip there between for the passage of said paper web through said nip in a direction from a supply side to a discharge side;

said rolls having means for applying pressure to said paper web on passage of said paper web through said nip;

a dielectric paper web heating device acting across said inner and outer layers of said paper web positioned upstream of and in front of said rolls of said smoothing mechanism relative to said direction of web movement in order to generate in said paper web having said inner and outer layers a simultaneous heating of both said inner and outer layers with a degree of heating of said layers de-



pending upon the moisture content of said inner and outer layers;

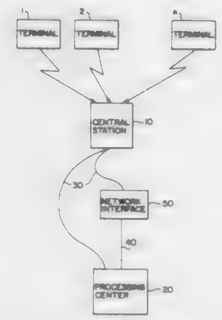
whereby said dielectric paper web heating device causes a moisture distribution across the inner and outer layers with the moisture content of the inner layer is at least substantially less than or at equal to the moisture content in the outer layers.

5,387,784

PORTABLE PAYMENT TERMINALS AND NETWORK FOR SUCH TERMINALS

Jean-Louis Sarradin, Fontenay en Parisis, France, assignor to Societe d'Applications Generales d'Electricite et de Mecanique Sagem, France

Continuation of Ser. No. 786,639, Oct. 25, 1991, abandoned. This application Dec. 7, 1993, Ser. No. 163,587
Claims priority, application France, Oct. 30, 1990, 90 13449
Int. Cl.[6] G06K *5/00*
U.S. Cl. 235—380 9 Claims



1. A point-of-transaction system for processing electronic payment of a transaction, comprising:

(a) a plurality of electronic payment media, each unique to an individual customer;

(b) at least one portable payment terminal, each including

means for identifying a payment medium presented by a customer to a respective terminal,

means for manually entering data relating to the transaction, and

means for generating and for broadcasting by wireless communication a payment authorization request signal during the transaction;

(c) a central station remote from, and in wireless communication with, each terminal; and

(d) a processing center remote from, and in communication with, the central station, said center including

means for validating during the transaction the authorization request signal transmitted by the respective terminal via the central station to the center, and

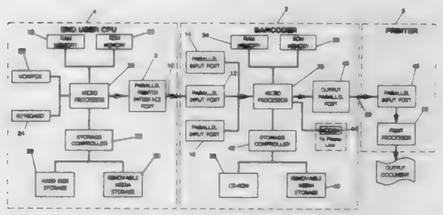
means for communicating during the transaction the validated request signal via the central station to the respective terminal to complete the transaction.

5,387,783

METHOD AND APPARATUS FOR INSERTING AND PRINTING BARCODED ZIP CODES

Terrance S. Mihm, and Douglas Schmidt, both of La Crosse, Wis., assignors to PostalSoft, Inc., LaCrosse, Wis.

Continuation-in-part of Ser. No. 876,627, Apr. 30, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 56,525
Int. Cl.[6] G06F *15/20*
U.S. Cl. 235—375 20 Claims



1. A system for intercepting an electronically encoded print-ready document, said electronically encoded print-ready document including mailing address information, and appending a complete barcoded ZIP CODE to the electronically encoded print-ready document in accordance with the mailing address information, said system comprising:

an input port coupled to a word processing system for receiving said electronically encoded print-ready document from the word processing system;

means for identifying said mailing address information within said electronically encoded print-ready document;

means for retrieving a complete ZIP CODE in accordance with said mailing address information;

means for inserting barcode graphics data into said electronically encoded print-ready document, said barcode graphics corresponding to said complete ZIP CODE, in order to create an electronically encoded modified print-ready document; and

an output port for transmitting said electronically encoded modified print-ready document to a printer.

5,387,785

DEVICE FOR ANALYZING INFORMATION CARRIERS, ESPECALLY GAMING COUPONS BY SUPERIMPOSING BLIND COLOR INFORMATION

Jean-Marie Gatto, and Dominique Bertrand, both of Paris, France, assignors to International des Jeux, Boulogne, France

Filed Sep. 7, 1993, Ser. No. 117,975
Claims priority, application France, Sep. 7, 1992, 92 10642
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—454 10 Claims

1. A device for analyzing information carriers, especially gaming coupons or receipts, comprising:

means for inserting the carrier;

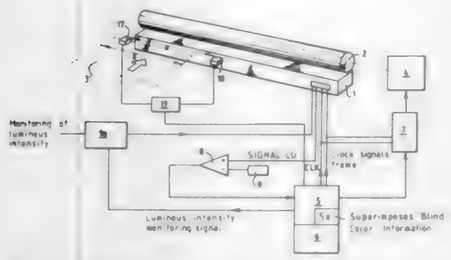
means for reading the information on the carrier; and

means for processing the information read from the carrier with a view to its conversion into digital data and its transmission to a central gaming management unit,

wherein the means for reading the information on the carrier comprise an optical reader which is blind to a single color for the whole of the analysis and in which color fixed

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information is printed on the coupon and which the reader is sensitive to other colors, so as to take into account only the variable gaming information and the fixed information for aligning the coupon and for designating the type of game to which it belongs, which information is printed in these other colors and in that,



the processing means comprise, for analyzing gaming coupons, means of generating marking patterns corresponding to the type of game to which the coupon belongs with a view to the reconstructing of the coupon's regions to be analyzed by superimposing on the variable data and on the fixed alignment and game type data, fixed marking patterns data to which the image reader has been rendered blind.

5,387,786

FOCUSSING DEVICE FOR A BAR CODE READER

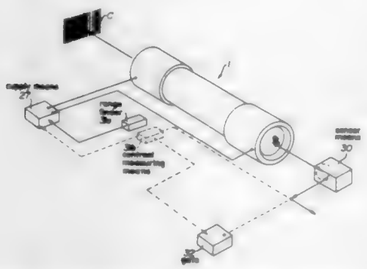
Ke-Ou Peng, KV Delft, Netherlands, assignor to Opticon Sensors Europe B.V., Netherlands

Filed May 12, 1992, Ser. No. 882,442

Claims priority, application European Pat. Off., May 13, 1991, 912011153

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 5 Claims



1. Focussing means for a bar code reader, comprising a lens system and drive means, said lens system comprising at least one lens or set of lenses moveable in the direction of its optical axis, said drive means comprising at least one coil and a magnetic element, wherein said magnetic element comprises a magnetic ring slideably fitting in a holding element characterized in that said at least one moveable lens or set of lenses is fixed to said magnetic element, said magnetic element being slideably arranged in said holding element, wherein said holding element is substantially tubular and in that said at least one coil is fixed relative to said holding element.

5,387,787

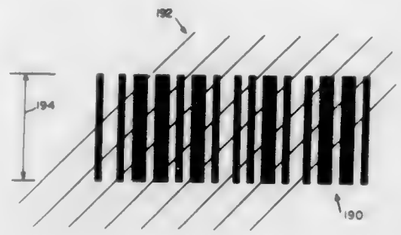
SCANNING DEVICE FOR RECONSTRUCTING A COMPLETE CODE FROM SCANNED SEGMENTS

James R. Waldron, Oviedo, and Daniel A. Kenney, Daytona Beach, both of Fla., assignors to LazerData Corporation, Sanford, Fla.

Continuation-in-part of Ser. No. 944,506, Sep. 14, 1992, Pat. No. 5,296,691. This application Dec. 9, 1993, Ser. No. 165,027

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 47 Claims



1. A device for reading machine readable code, comprising:
(a) scanning means for successively scanning the code and for outputting a signal representative of at least a portion of the code, for each successive scan of the code;
(b) signal processing means for processing each of said signals outputted by said scanning means, said signal processing means further providing signal identification data, including a width and position associated with each of said signals, for each successive scan of the code; and
(c) data processing means for reconstructing the code from said signal identification data for each successive scan of the code provided by said signal processing means, said data processing means also comprising, (i) position aligning means for positionally aligning succeeding scans, wherein said position aligning means comprising,
means for selecting an element in a previous scan,
means for calculating the position of that element in a successive scan based upon a calculated offset, said calculated offset determined by an offset calculating means which calculates the difference in position of features in previous scans, and
means for aligning said successive scan with said previous scan by means of said calculated offset by placing said selected element in said successive scan in alignment with said selected element in said previous scan, and
(ii) alignment verification means for verifying the alignment between said previous scan and said successive scan performed as a result of said means for aligning, wherein said alignment verification means further comprises means for attempting a predetermined number of additional alignments between said previous scan and said successive scan when said previous scan and said successive scan are not aligned by said alignment verification means.

5,387,788

METHOD AND APPARATUS FOR POSITIONING AND BIASING AN ELECTRO-OPTIC MODULATOR OF AN ELECTRO-OPTIC IMAGING SYSTEM

Michael J. Miller, Sunnyvale; Ginetto Addiego, Berkeley, and Francois J. Henley, Los Gatos, all of Calif., assignors to Photon Dynamics, Inc., San Jose, Calif.

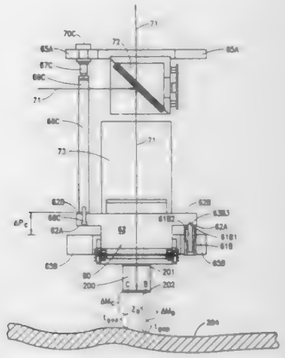
Continuation-in-part of Ser. No. 804,257, Dec. 4, 1991, Pat. No. 5,212,374. This application Mar. 5, 1993, Ser. No. 27,210

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[6] G01J *1/20*

U.S. Cl. 250—201.1 10 Claims

1. A method of positioning an electro-optic material in relation to a surface of a substrate using optical energy emerging from a surface of said electro-optic material, the method comprising the steps of:
choosing a gap distance;
detecting optical energy which emerges from a plurality of regions of said surface of said eletro-optic material; and



positioning said electro-optic material in relation to said surface of said substrate so that every region in said plurality is approximately said gap distance away from said surface of said substrate, wherein changes in position of said electro-optical material necessary to accomplish said positioning are determined using said detected optical energy.

5,387,789

CONVERGING LIGHT BEAM FOCUS DETECTOR USING TWO EQUALLY AND OPPOSITELY OFFSET LIGHT BEAM SPOT SIZE DETECTORS

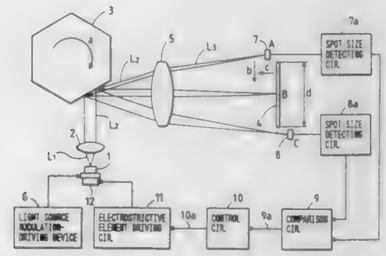
Akira Ota, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1994, Ser. No. 214,189

Claims priority, application Japan, Mar. 19, 1993, 5-083918

Int. Cl.[6] G01J *1/20*

U.S. Cl. 250—201.7 4 Claims



1. A converging position detecting apparatus in a scanning optical apparatus which scans a scanning surface by a light beam emitted from a light source and converged onto the scanning surface in a regular state, comprising:
two spot size detecting means disposed on both sides of an effective scanning area of the scanning surface and spaced from the scanning surface perpendicularly in opposite directions by substantially the same distance, for detecting beam diameters of the light beam; and
means for correcting a converging position of the light beam based on the detected beam diameters so that the converging position is located on or close to the scanning surface.

5,387,790

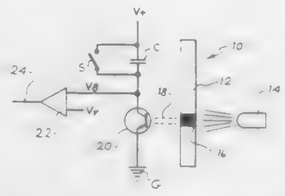
LIGHT INTENSITY DETECTION AND MEASUREMENT CIRCUIT FOR MEASURING THE DURATION OF THE DISCHARGE CYCLE OF A CAPACITOR NETWORK

Donald I. Stimpson, Gurnee, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 27, 1993, Ser. No. 127,470

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—214 RC 18 Claims



1. A light intensity detection circuit for determining the intensity of a light source, comprising:
a. a photosensitive element positioned to receive the light emitted from the light source, said photosensitive element developing a variable resistance level in direct correspondence to the intensity of the light;
b. a capacitor network in series with the photosensitive element;
c. a power source coupled to the capacitor network and the photosensitive element and adapted for charging the capacitor network; and
d. means for measuring the duration of the discharge cycle of the capacitor network through the resistance developed by the photosensitive element in response to the intensity of the light emitted by the light source, wherein the light intensity is related to the duration of the discharge cycle.

5,387,791

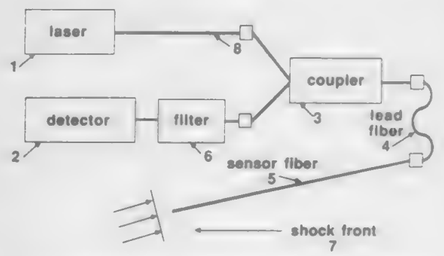
IMPURITY-DOPED OPTICAL SHOCK, DETONATION AND DAMAGE LOCATION SENSOR

Jonathan D. Weiss, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 29, 1993, Ser. No. 83,223

Int. Cl.[6] G01L *23/08;* G01T *1/115*

U.S. Cl. 250—227.14 17 Claims



1. An impurity-doped optical shock, detonation and damage location sensing apparatus, comprising:
a) at least one impurity-doped optical waveguide transmitting and receiving means coupled to an illumination means, said at least one waveguide doped with impurities that will shift the wavelength with respect to that of the illumination means of light fluorescing in response to the light from the illumination means within said at least one waveguide; and

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b) a detector means coupled to said at least one waveguide means, said detector further comprising a filtering means for filtering out backscattered light that is not shifted in wavelength;

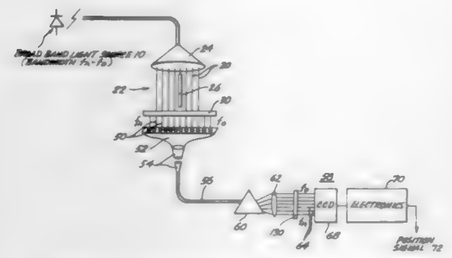
wherein shock or detonation caused along said waveguide means causes said waveguide means to shorten in response to said shock or detonation while said fluorescing light shifted in wavelength within said waveguide means is detected by said detector means which senses variations in light intensity within said waveguide means, said variations being indicative of the shock location along said waveguide means.

5,387,792

OPTICAL FREQUENCY ENCODING FOR NORMAL SHOCK AND POSITION SENSING

Christopher M. Carlin, and Israel Frisch, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 992,286, Dec. 16, 1992, Pat. No. 5,283,430.
This application Feb. 3, 1994, Ser. No. 191,245
Int. Cl.[6] H01J *5/16*
U.S. Cl. 250—227.23 2 Claims



1. A method for measuring the position of a shadow producing object comprising:

developing an intensity pattern on a color gradient filter in response to the object, thereby developing a wavelength intensity modulated signal; then

coupling said wavelength intensity modulated signal to a single optical fiber for providing object position information.

5,387,793

SCANNING ELECTRON MICROSCOPE

Mitsugu Sato, Katsuta; Hideo Todokoro, Tokyo, and Tadashi Otaka, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 133,860
Claims priority, application Japan, Oct. 15, 1992, 4-301541
Int. Cl.[6] H01J *37/244*
U.S. Cl. 250—310 9 Claims

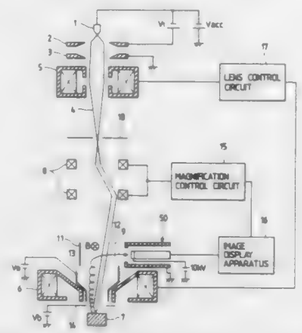
1. A scanning electron microscope that scans a primary electron beam emitted from an electron source on a specimen and detects secondary electrons emitted from the specimen on an electron source side of an objective lens, comprising:

secondary electron detecting means for detecting the secondary electrons, including means for producing an attracting electric field to capture the secondary electrons;

a shielding electrode provided between an optical path of the primary electron beam and the secondary electron detecting means, said shielding electrode being transparent to the secondary electrons and having a shielding effect for said attracting electric field;

an opposed electrode provided at a position facing the shielding electrode with the primary electron beam path being disposed therebetween and having a voltage applied between itself and the shielding electrode to produce a deflecting electric field in a spatial area along portion of the electron beam path for directing the secondary electrons toward said secondary electron detecting means; and

coil means for producing a magnetic field in a direction orthogonal to both the deflecting electric field and the



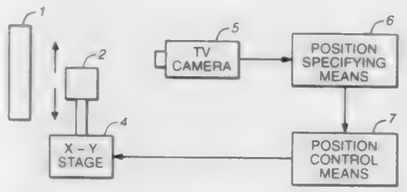
primary electron beam in said spatial area along said portion of the electron beam path so as to also direct the secondary electrons toward said secondary electron detecting means.

5,387,794

DETECTOR FOR DIFFRACTED ELECTRONS

Takao Marui, Kanagawa, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Jan. 10, 1994, Ser. No. 178,693
Claims priority, application Japan, Jan. 18, 1993, 5-005543
Int. Cl.[6] H01J *37/28*
U.S. Cl. 250—310 20 Claims



1. A detector for detecting electrons diffracted by a sample irradiated with an electron beam, said detector comprising:

a fluorescent screen for converting a diffracted electron beam into optical signals;

camera means for receiving optical signals from said fluorescent screen and thereby outputting image signals indicative of a diffraction pattern formed on said fluorescent screen;

detecting means for receiving optical signals from a specified position on said fluorescent screen and thereby detecting brightness of said specified position;

moving means for moving said detecting means relative to said fluorescent screen;

position specifying means for outputting position data indicative of a position on said fluorescent screen; and

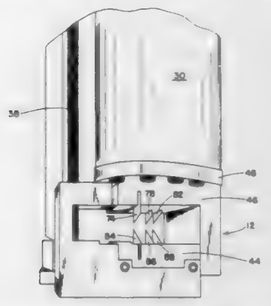
control means for controlling said moving means according to position data outputted from said position specifying means.

5,387,795

PHOTON BEAM POSITION MONITOR

Tuncer M. Kuzay, Naperville, and Deming Shu, Darien, both of Ill., assignors to The University of Chicago, Chicago, Ill.

Filed Jul. 26, 1993, Ser. No. 97,276
Int. Cl.[6] G01T *1/29*
U.S. Cl. 250—336.1 19 Claims



1. Apparatus for monitoring the position of a high heat flux and high energy photon beam comprising:

a first plurality of detectors disposed about and responsive to the photon beam, wherein each of said detectors provides a respective output signal when the photon beam is incident upon said each of said detectors and wherein each of said detectors is comprised of an inner diamond core and an outer photon sensitive metal layer disposed over said inner diamond core; and

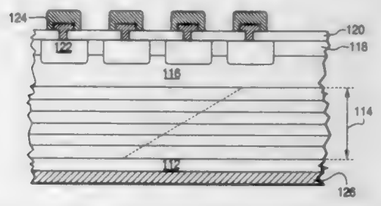
signal processing means coupled to said detectors and responsive to an output signal from each of said detectors for providing an indication of the position of the beam.

5,387,796

LOW LEAKAGE CURRENT PHOTODETECTOR ARRAYS

Abhay M. Joshi, Plainsboro, and Krishna R. Linga, Harrison, both of N.J., assignors to Epitaxx, Inc., West Trenton, N.J.

Filed May 26, 1993, Ser. No. 68,446
Int. Cl.[6] H01L *21/365, 21/477*
U.S. Cl. 250—370.12 15 Claims



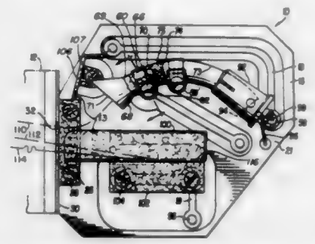
10. A low leakage current $In_xGa_{1-x}As/InAs_yP_{1-y}/InP$ photodetector comprising compositionally graded layers of $InAs_yP_{1-y}$ wherein adjoining layers have abrupt interfaces and have a lattice mismatch of 0.13% or less; the $In_xGa_{1-x}As$ layer has a composition wherein x is from about 0.53–0.82 and an n-type sulfur dopant concentration of up to about $1–5\times10^{17}$ cm^{-3}.

5,387,797

DETECTOR HAVING SELECTIVE PHOTON AND NEUTRAL PARTICLE ABSORBENT COATING

Anthony S. Bauco, Vernon, Conn., and John W. Gray, Ware, Mass., assignors to Galileo Electro-Optics Corporation, Sturbridge, Mass.

Filed Dec. 27, 1993, Ser. No. 172,710
Int. Cl.[6] H01J *39/44*
U.S. Cl. 250—397 11 Claims



1. An ion detector for reducing input noise sources caused by stray photons and neutral particles comprising:

an electron multiplier having an input end;

electrode means for directing ions into the electron multiplier; and

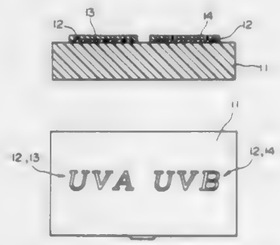
a selective coating on portions of the electrode means for absorbing the photons and neutral particles impinging thereon.

5,387,798

UV-A, UV-B DISCRIMINATION SENSOR

Nobuhiro Funakoshi; Fumihiro Ebisawa, both of Naka; Mitsutoshi Hoshino, Mito; Takashi Yoshida, Iruma; Ken Sukegawa; Akira Morinaka, both of Mito; Norio Sashida, Fujisawa; Shigeko Toeda, Chiba, and Miwa Urabe, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 972,546, Nov. 6, 1992, abandoned. This application Feb. 9, 1994, Ser. No. 194,627
Claims priority, application Japan, Mar. 23, 1992, 4-094974; Jun. 22, 1992, 4-185668
Int. Cl.[6] G01J *5/48*
U.S. Cl. 250—474.1 3 Claims



1. A UV-A, UV-B discriminating sensor comprising:

a first sensor formed on a substrate material for detecting UV-A radiation having a wavelength not less than 320 nm and not more than 400 nm, and

a second sensor formed on said substrate material in parallel for detecting UV-B radiation having a wavelength not less than 280 nm and not more than 320 nm,

wherein said first sensor comprises a photochromic layer formed on the substrate material, wherein said photochromic layer comprises a photochromic composition responsive to ultraviolet radiation having a wavelength not less than 280 nm and not more than 400 nm, and a first pigment

layer formed on the photochromic layer, wherein said first pigment layer comprises a UV radiation absorbing pigment which absorbs ultraviolet radiation having a wavelength not more than 320 nm, and wherein UV-A and visible radiation pass through said first pigment layer; and

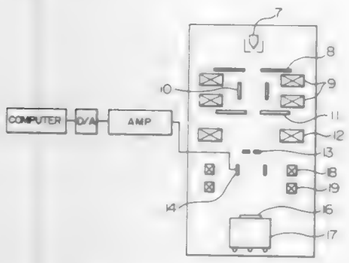
said second UV sensor comprising a photochromic layer formed on the substrate material, wherein said photochromic layer comprises a photochromic composition responsive to ultraviolet radiation having a wavelength not less than 280 nm and not more than 400 nm, and a second pigment layer formed on the photochromic layer, wherein said second pigment layer comprises a UV radiation absorbing pigment which absorbs ultraviolet radiation having a wavelength not less than 320 nm and not more than 400 nm, and wherein UV-B and visible radiation pass through said second pigment layer.

5,387,799

ELECTRON BEAM WRITING SYSTEM

Yasunari Sohda, Hachioji; Hideo Todokoro, Tokyo; Hiroyuki Itoh, Katsuta, and Shinichi Kato, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,608
Claims priority, application Japan, May 20, 1991, 3-114468
Int. Cl.[6] G21K *1/093*
U.S. Cl. 250—492.2 7 Claims



1. An electron beam writing system comprising:

means for emitting electrons;

an optical system for causing an electron beam to be emitted from said emitted electrons, and for projecting said electron beam on a writing object, wherein said optical system has a plurality of lenses including an objective lens for focusing said electron beam on said object wherein said objective lens has two lenses; and

an electrostatic focus corrector for correcting the focus of said electron beam, wherein said focus corrector is arranged at a position in said two-lens objective lens that is closer to an object plane of the optical system than to an image plane of the optical system with respect to the objective lens.

5,387,800

PREFOCUSED LAMP AND REFLECTOR ASSEMBLY

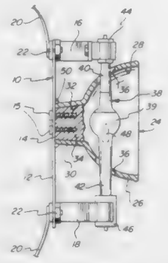
Kevin M. Kurtich, Harwinton, and Herman R. Riess, Torrington, both of Conn., assignors to Dymax Corporation, Torrington, Conn.

Filed Aug. 19, 1992, Ser. No. 933,357
Int. Cl.[6] F41J *9/13*
U.S. Cl. 250—504 R 15 Claims

1. A prefocused lamp assembly, comprising:

a bracket, including a reflector-supporting portion and lamp-mounting means, said lamp-mounting means having a pair of arm members spaced to opposite sides of said reflector-supporting portion and extending forwardly therefrom, said arm members having receptacle portions thereon in general alignment with one another on a rectilinear axis;

a reflector rigidly affixed to said reflector-supporting portion of said bracket and comprising forward wall structure defining a forwardly directed reflective cavity with a central axis that substantially intersects said rectilinear axis, said forward wall structure having opposing portions with holes therethrough aligned substantially on said rectilinear axis; and



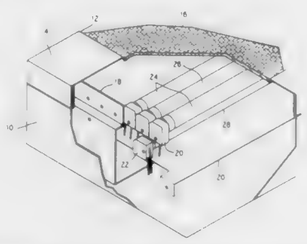
an elongate lamp having opposite end portions with electrical contacts thereon, and an element therebetween for emitting radiation, said end portions of said lamp extending through said holes of said opposing portions of said forward wall structure and being engaged in said receptacle portions of said lamp-mounting means, said lamp being so positioned with respect to said reflective cavity as to optimally focus the radiation emitted thereby.

5,387,801

MULTIPLE WAVELENGTH LIGHT SOURCE

Ramon R. Gonzalez, Los Angeles, and Alexander Waluszko, Pasadena, both of Calif., assignors to UVP, Inc., San Gabriel, Calif.

Filed Jun. 10, 1993, Ser. No. 74,885
Int. Cl.[6] H05B *35/00*
U.S. Cl. 250—504 R 16 Claims



1. A multiple wavelength light source comprising

a housing having a window;

first tubes fixed in said housing in a first plane across said window;

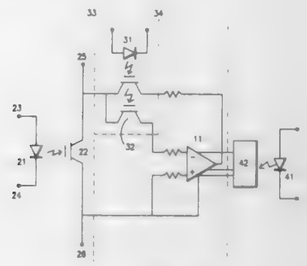
second tubes fixed in said housing in a second plane parallel to said first plane with said first plane between said second plane and said window, said second tubes having a different selected wavelength than each said first tubes, said selected wavelength of said second tubes being 365 nm.

5,387,802

HIGH-SPEED ELECTRONIC SWITCH HAVING LOW EFFECTIVE SERIES RESISTANCE

Chun-Chun Chen, Taipei, Taiwan, Prov. of China, and S. Hoi Tsao, Ottawa, Canada, assignors to Industrial Technology Research Institute, Taiwan, Prov. of China

Filed May 5, 1993, Ser. No. 56,533
Int. Cl.[6] H03F *17/00*
U.S. Cl. 250—551 8 Claims



1. An electronic switch comprising:

a switching device having an input and an output; and

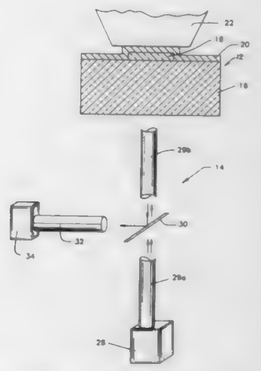
an R_{ON} compensation feed-back control device which includes means for lowering an effective on resistance R_{ON} of the switching device by detecting an amount of current lost due to R_{ON} and adding the lost current to the current flow through said switching device while said switching device is on, said control device including a current source connected between the input and output of the switching device, the current source supplying current to said output based on a difference in current between said input and output.

5,387,803

PIEZO-OPTICAL PRESSURE SENSITIVE SWITCH WITH POROUS MATERIAL

Anthony D. Kurtz, Teaneck, N.J.; Joseph S. Shor, Flushing, N.Y., and Alexander A. Ned, Bloomingdale, N.J., assignors to Kulite Semiconductor Products, Inc., Leonia, N.J.

Filed Jun. 16, 1993, Ser. No. 78,392
Int. Cl.[6] H01L *29/84*
U.S. Cl. 257—3 17 Claims



1. A stress sensitive semiconductor device comprising:

a body of substantially transparent material;

a porous region of a semiconductive material disposed on said body, said porous region having a given conductivity and being adapted to undergo a change in light absorption proportional to a stress applied thereto; and

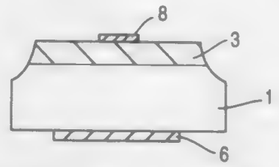
reflective means for reflecting light transmitted through said body and said porous region.

5,387,804

LIGHT EMITTING DIODE

Akira Suzuki, Nara; Katsuki Furukawa, Sakai; Mitsuhiro Shigeta, Joyo, and Yoshihisa Fujii, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 648,234, Jan. 30, 1991, abandoned, which is a continuation of Ser. No. 455,565, Dec. 22, 1989, abandoned. This application Sep. 14, 1992, Ser. No. 944,794
Claims priority, application Japan, Dec. 28, 1988, 63-333698
Int. Cl.[6] H01L *33/00, 29/161, 29/20, 29/22*
U.S. Cl. 257—77 3 Claims



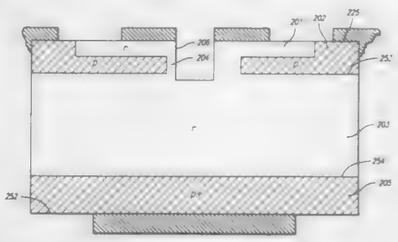
1. A light emitting diode comprising at least one heterojunction including a p-type silicon carbide (SIC) and an n-type semiconductor material selected from the group consisting of gallium nitride (GAN), aluminum nitride (AlN), and aluminum gallium nitride ($Ga_xAl_{1-x}N$, $0<x<1$), a density of positive holes in said p-type silicon carbide being in the order of 10^{18} to 10^{19} cm^{-3}; and a density of electrons in said n-type semiconductor material being in the order of 10^{16} to 10^{17} cm^{-3}.

5,387,805

FIELD CONTROLLED THYRISTOR

Richard A. Metzler, 28232 Driza, Mission Viejo, Calif. 92692, and Vladimir Rodov, 818 S. Juanita Ave., Redondo Beach, Calif. 90277

Filed Jan. 5, 1994, Ser. No. 177,686
Int. Cl.[6] H01L *29/74, 29/747*
U.S. Cl. 257—147 17 Claims



1. A field controlled thyristor comprising:

a first semiconductor region of a first conductivity type in ohmic contact with external contact means;

a gate comprising a second semiconductor region of a second conductivity type, said gate in ohmic contact with said first semiconductor region and external contact means;

a third semiconductor region, of said first conductivity type, in ohmic contact with said second semiconductor region;

a fourth semiconductor region, of said first conductivity type, connecting said first semiconductor region and said third semiconductor region;

a fifth semiconductor region, of said second conductivity

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type, in ohmic contact with said third semiconductor region and external contact means; and

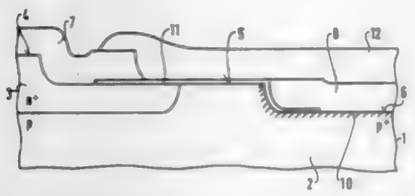
said first semiconductor region having a void therein extending through said first semiconductor region, said second semiconductor region and said fourth semiconductor region, said fourth semiconductor region forming a channel between said void and said second semiconductor region.

5,387,806

GTO-THYRISTOR

Guenther Franz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 11, 1994, Ser. No. 208,814
Claims priority, application Germany, Mar. 25, 1993, 4309763
Int. Cl.[6] H01L *29/74, 29/747, 29/743*
U.S. Cl. 257—147 **11 Claims**



1. A GTO-Thyristor having a semiconductor substrate whose cathode-side surface has three levels lying at different heights, comprising:

a cathode zone which surfaces in a first uppermost level and in a second level lying below the first uppermost level, the cathode zone having a pn-junction which surfaces in the second level;

at least one cathode electrode, which contacts the cathode zone on the first uppermost level and on the second level;

at least one gate electrode arranged on a third lowest level, the third lowest level lying below the second level;

a first insulating layer covering the pn-junction and a second insulating layer covering at least a part of the first insulating layer and at least a part of the gate electrode;

the first insulating layer being exclusively in the second level and in the third lowest level;

the at least one cathode electrode also contacting an emitter zone in the second level and overlapping the first insulating layer;

the gate electrode overlapping a part of the first insulating layer lying in the third lowest level; and

the second insulating layer overlapping the cathode electrode in the second level.

5,387,807

P-N JUNCTION DIFFUSION BARRIER EMPLOYING MIXED DOPANTS

Burhan Bayraktaroglu, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

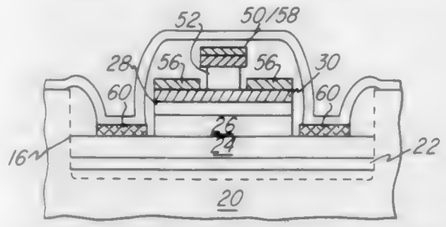
Division of Ser. No. 693,490, Apr. 30, 1991, Pat. No. 5,208,184.
This application Oct. 30, 1992, Ser. No. 969,666
Int. Cl.[6] H01L *29/227, 29/73, 29/90*
U.S. Cl. 257—197 **23 Claims**

1. A p-n junction diffusion barrier, comprising:

a first semiconductor layer of p-type conductivity doped with a first dopant;

a second semiconductor layer of n-type conductivity; and

a third semiconductor layer of p-type conductivity disposed between said first and said second semiconductor layers, said third semiconductor layer doped with a second dopant having a lower diffusivity than said first dopant in order to form a dopant diffusion barrier between said first and said second semiconductor layers.

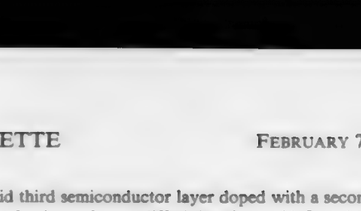


5,387,808

HETEROJUNCTION BIPOLAR TRANSISTORS WITH SLOPED REGIONS

Tetsuro Nozu, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 21, 1993, Ser. No. 6,758
Claims priority, application Japan, Jan. 22, 1992, 4-009183
Int. Cl.[6] H01L *29/73, 27/102*
U.S. Cl. 257—197 **7 Claims**



1. A semiconductor device comprising:

a substrate having a primary surface;

a first heterojunction bipolar transistor formed on the primary surface of said substrate including:

a first layer having a first conductivity type, said first layer having a surface sloped relative to the primary surface of said substrate; and

a second layer having a second conductivity type being formed on the sloped surface of said first layer;

a second heterojunction bipolar transistor formed on the primary surface of said substrate including:

a first layer having a first conductivity type, said first layer having a surface sloped relative to the primary surface of said substrate; and

a second layer having a second conductivity type being formed on the sloped surface of said first layer; and

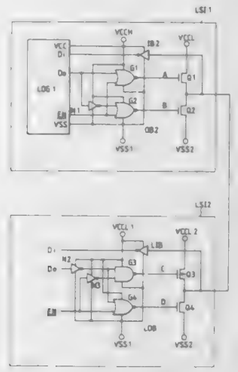
a semiconductor region being formed on the primary surface of said substrate, said semiconductor region having a first portion in contact with said second layer of said first heterojunction bipolar transistor and a second portion in contact with said second layer of said second heterojunction bipolar transistor.

5,387,809

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE CAPABLE OF OUTPUTTING A PLURALITY OF INTERFACE LEVELS

Mikio Yamagishi, Ohme; Kazuo Koide, Iruma, and Tetsuo Nakano, Hamura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 13, 1992, Ser. No. 820,005
Claims priority, application Japan, Feb. 25, 1991, 3-053345
Int. Cl.[6] H01L *27/02*
U.S. Cl. 257—203 **10 Claims**



1. A semiconductor integrated circuit device, comprising:

an internal logic circuit coupled to receive a first power supply voltage and which outputs a first output signal, one potential level of the first output signal representing said first power supply voltage; and

an output circuit including a drive control circuit which is coupled to said internal logic circuit and to receive said first power supply voltage, and an output element which is coupled to said drive control circuit and to receive a second power supply voltage that is smaller than said first power supply voltage and which includes a push-pull type amplifier circuit comprising series-connected N-channel type MOSFETs, a second output signal being delivered from a common connected point of the series-connected N-channel type MOSFETs, one potential level of the second output signal representing said second power supply voltage, responsive to said first output signal.

5,387,810

CELL LIBRARY FOR SEMICONDUCTOR INTEGRATED CIRCUIT DESIGN

Katsuhiro Seta, Tokyo, and Hiroyuki Hara, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 15, 1991, Ser. No. 699,628
Claims priority, application Japan, May 24, 1990, 2-132497
Int. Cl.[6] H01L *29/78, 29/73*
U.S. Cl. 257—370 **9 Claims**

1. A semiconductor integrated circuit, comprising:

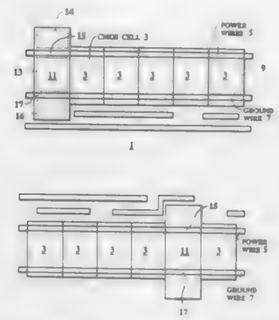
(a) a CMOS cell which includes

(1) a pair of CMOS power source wires at a predetermined distance apart from each other, and

(2) a CMOS circuit located between the pair of CMOS power source wires; and

(b) a BiCMOS cell which includes

a pair of BiCMOS power source wires at a predetermined distance apart from each other, the distance between the pair of BiCMOS power source wires being equal to the distance between the pair of CMOS power source wires, and wherein a CMOS portion is located between the pair of BiCMOS power source wires, and a bipolar transistor



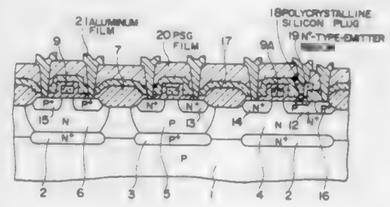
portion is located at an external side of the pair of BiCMOS power source wires.

5,387,811

COMPOSITE SEMICONDUCTOR DEVICE WITH A PARTICULAR BIPOLAR STRUCTURE

Satoshi Saigoh, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 823,686, Jan. 22, 1992, abandoned. This application Aug. 3, 1993, Ser. No. 103,323
Claims priority, application Japan, Jan. 25, 1991, 3-023883
Int. Cl.[6] H01L *29/73, 29/804, 29/40*
U.S. Cl. 257—378 **2 Claims**



1. A composite semiconductor device comprising a semiconductor substrate having first and second portions provided apart from each other; a bipolar transistor formed on said first portion of said semiconductor substrate; and an insulated gate field effect transistor formed on said second portion of said semiconductor substrate; said bipolar transistor including a collector region, an insulating film covering said collector region, a polycrystalline silicon film selectively formed on said insulating film and having first and second side edges to define a width of said polycrystalline silicon film, a base region selectively formed in said collector region and having a side periphery which is substantially aligned with said first side edge of said polycrystalline silicon film, and a collector contact region formed in said collector region and having a side periphery which is substantially aligned with said second side edge of said polycrystalline silicon film, a distance between said side periphery of said base region and said side periphery of said collector contact region being substantially equal to said width of said polycrystalline silicon film; and said insulated gate field effect transistor including a well region, source and drain regions selectively formed in said well region to define a channel region, a gate insulating film covering said channel region, and a gate electrode formed on said gate insulating film.

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5,387,812

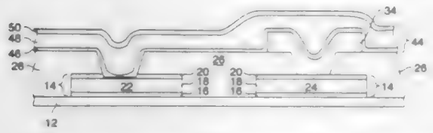
ELECTRICALLY PROGRAMMABLE ANTIFUSE HAVING A METAL TO METAL STRUCTURE

Abdul R. Forouhi, San Jose; Esmat Z. Hamdy, Fremont; Chenming Hu, Alamo, and John L. McCollum, Saratoga, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Division of Ser. No. 743,261, Aug. 9, 1991, Pat. No. 5,272,101, which is a continuation-in-part of Ser. No. 604,779, Oct. 26, 1990, Pat. No. 5,181,096, which is a continuation-in-part of Ser. No. 508,306, Apr. 12, 1990, Pat. No. 5,070,384. This application Sep. 18, 1992, Ser. No. 947,275

Int. Cl.[6] H01L *23/48, 29/46, 29/54;* H03K *19/177*

U.S. Cl. 257—530 2 Claims



1. An antifuse structure in an integrated circuit comprising:
a substrate having an insulating layer disposed on an upper surface thereof:
a lower electrode comprising a first multilayer metal interconnect layer in said integrated circuit, said first multilayer metal interconnect layer disposed on said insulating layer;
an inter-metal dielectric layer disposed on said lower electrode, said inter-metal dielectric layer including an antifuse via formed therethrough communicating with said first multilayer metal interconnect layer;
an antifuse material layer disposed in said antifuse via, said antifuse material layer comprising a layer of silicon nitride; and
an upper antifuse electrode disposed on said antifuse material layer, said upper antifuse electrode comprising a second multilayer metal interconnect layer in said integrated circuit.

5,387,813

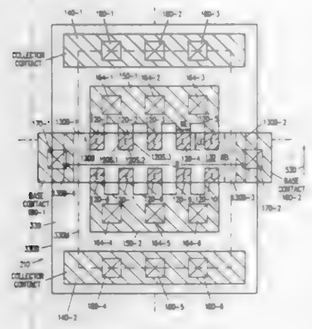
TRANSISTORS WITH EMITTERS HAVING AT LEAST THREE SIDES

Ali A. Iranmanesh; David E. Bien, both of Sunnyvale, and Michael J. Grubisich, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 951,524, Sep. 25, 1992. This application Dec. 14, 1992, Ser. No. 991,075

Int. Cl.[6] H01L *29/72, 27/12*

U.S. Cl. 257—563 22 Claims



1. A transistor comprising:
a collector;
a base overlying and contacting said collector, said base having a top surface, said top surface having a boundary, said base comprising: (1) a semiconductor region, and (2) a conductive metal-containing region overlying and contacting said semiconductor region;
a first emitter overlying said top surface of said base, said first emitter comprising semiconductor material which extends up higher than said base, said first emitter and said base forming a first contiguous base-emitter junction which junction extends from said boundary of said top surface inside said top surface and terminates inside said rod surface, said junction having in plan view at least three sides extending inside said top surface; and
a second emitter spaced from said first emitter, said second emitter overlying said top surface of said base, said second emitter comprising semiconductor material which extends up higher than said base, said second emitter and said base forming a second contiguous base-emitter junction which junction extends from said boundary of said top surface inside said top surface and terminates inside said top surface, said second junction having in plan view at least three sides extending inside said top surface,
wherein said conductive metal-containing region is spaced from said first and second emitters, and said conductive metal-containing region extends along at least three sides of each of said first and second base-emitter junctions.

5,387,814

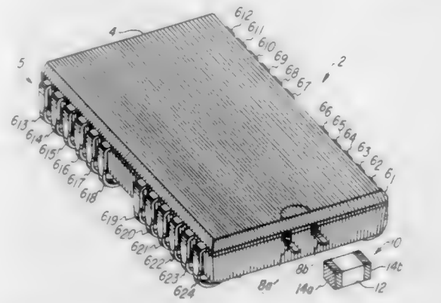
INTEGRATED CIRCUIT WITH SUPPORTS FOR MOUNTING AN ELECTRICAL COMPONENT

Daniel Baudouin, Missouri City; James Wallace, Sugarland, and Ernie Russell, Richmond, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 827,786, Jan. 29, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 86,280

Int. Cl.[6] H01L *23/16, 23/48*

U.S. Cl. 257—690 7 Claims



1. An integrated circuit device, comprising:
a semiconductor die;
first and second contacts electrically connected to said semiconductor die;
packaging material encapsulating said die, said packaging material having an outer periphery, said first and second contacts extending from said packaging material beyond said outer periphery for supporting an electrical component externally from the outer periphery of said packaging material, at least one of said first and second contacts arranged so as to contact one of first and second spaced apart terminals of said electrical component on a plurality of sides of said electrical component.

5,387,815

SEMICONDUCTOR CHIP MODULE

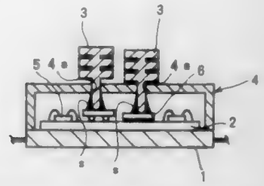
Masanori Nishiguchi, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 6, 1992, Ser. No. 909,206

Claims priority, application Japan, Jul. 12, 1991, 3-172730; Jul. 12, 1991, 3-172735; Jul. 12, 1991, 3-172738

Int. Cl.[6] H01L *23/02*

U.S. Cl. 257—704 16 Claims



1. A semiconductor chip module comprising:
a first substrate having a wiring portion formed thereon;
a semiconductor chip having a circuit side and an opposite side, said chip being mounted so that said circuit side faces said wiring portion;
a heat sink with one end in direct contact with said opposite side of said semiconductor chip;
a cap enclosing said semiconductor chip and having an opening for exposing externally another end of said heat sink; and
an adhesive material embedded in a gap between an inner wall of the opening of said cap and said heat sink as well as upon said semiconductor chip around said one end of said heat sink in contact with said semiconductor chip, said adhesive material maintaining said contact between said heat sink and said semiconductor chip.

5,387,816

HYBRID INTEGRATED CIRCUIT DEVICE

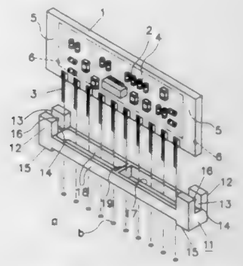
Mitsuo Takahashi; Toshiaki Yagura, both of Aichi, and Kyozo Yamada, Tokyo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Taiyo Yuden Co., Ltd., Tokyo, both of Japan

Filed Apr. 12, 1993, Ser. No. 46,100

Claims priority, application Japan, Apr. 11, 1992, 4-030848

Int. Cl.[6] H01L *23/16*

U.S. Cl. 257—723 16 Claims



1. A hybrid integrated circuit device comprising a circuit substrate on which a wiring pattern is formed, circuit components which are placed on a component area of the circuit substrate and lead terminals which protrude from one side of the circuit substrate, said hybrid integrated circuit device further comprising;
a pedestal which is provided at the side where the lead terminals protrude from the circuit substrate, said pedestal comprising a pair of thick clamping portions for clamping both end portions of said substrate outside the component placement area of said circuit substrate, a pair of connecting portions for connecting the clamping portions and having through holes which are defined between the clamping portions and the connecting portions for inserting the lead terminals wherein the bottom surfaces of the clamping portions are fiat.

5,387,817

DIELECTRIC ISOLATION SUBSTRATE HAVING SINGLE-CRYSTAL SILICON ISLANDS SURROUNDED BY GROOVE AND LOWER CONDUCTIVE LAYER FILLING THE GROOVE THEREWITH

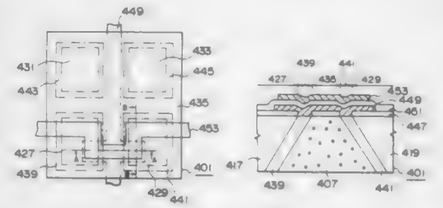
Mamoru Ishikiriyama, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1992, Ser. No. 982,552

Claims priority, application Japan, Dec. 2, 1991, 3-318132

Int. Cl.[6] H01L *29/04, 29/06*

U.S. Cl. 257—758 3 Claims



1. A semiconductor device comprising:
a dielectric isolation substrate including:
a polysilicon supporter layer having first and second cavities formed therein and a flat surface thereof,
first and second isolation films formed on the polysilicon supporter layer in the first and second cavities respectively, and
first and second single-crystal silicon islands formed on said first and second isolation films respectively so that said first and second single-crystal silicon islands are electrically isolated from said polysilicon supporter layer by said first and second isolation films, and edge surfaces of said first and second isolation films surround said first and second single-crystal silicon islands;
first and second insulating films formed on said first and second single-crystal silicon islands respectively, said first and second insulating films having surfaces being higher than the edge surfaces of said first and second isolation films;
a third insulating film formed on the flat surface of said polysilicon supporter layer, said third insulating film having a surface being higher than the edge surfaces of said first and second isolation films so that first and second grooves are respectively formed over the edge surfaces of said first and second isolation films;
a lower conductive layer formed on the third insulating film and having a portion which extends from said third insulating film to said first and second insulating film through said first and second grooves so that said first and second grooves are filled by said lower conductive layer;
a fourth insulating film formed on said lower conductive layer; and
an upper conductive layer formed on said first, second and fourth insulating layers, said upper conductive layer extending from said first insulating film to said second insulating film through said fourth insulating layer laid on the portion of said lower conductive layer.

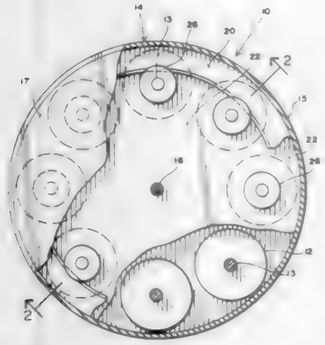
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5,387,818

DOWNHILL EFFECT ROTATIONAL APPARATUS AND METHODS

Martin N. Leibowitz, 1155 Hillsboro Mile, Suite 602, Hillsboro Beach, Fla. 33062

Filed Nov. 5, 1993, Ser. No. 147,845
Int. Cl.[6] H02K *23/60*
U.S. Cl. 290—1 R 15 Claims



1. Electrical energy generating apparatus for creating a downhill effect means of the center of mass of a rotating member about a longitudinal axis comprising:

nonbindingly translating means for translating said longitudinal axis of said rotating member in a direction in advance of the rotational motion thereof;

one or more electrical motors arranged in an orbital array around a common circle and connected to a common power take off shaft;

means for directing motion of said one or more electrical motors in an orbital direction around said common circle; and

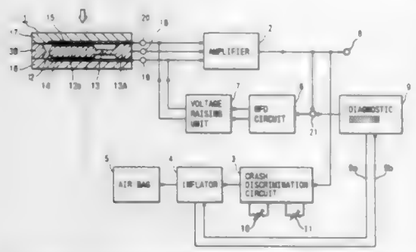
said downhill effect means being operatively connected between each of said one or more electrical motors and said means for directing motion whereby orbital motion occurs.

5,387,819

CRASH DETECTION APPARATUS OF AIR BAG SYSTEM

Sadayasu Ueno, Katsuta; Seikou Suzuki, Hitachioota; Hirokazu Fujita, Katsuta, and Kazuo Sato, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,662
Claims priority, application Japan, Mar. 20, 1991, 3-055375
Int. Cl.[6] B60R *21/08*
U.S. Cl. 307—10.1 16 Claims



1. A crash detection apparatus of an air bag system comprising:

a detection means for detecting acceleration caused therein by an automobile and outputting electric signals corresponding to the acceleration;

a discrimination means for discriminating, from the signals from said detection means, a crash signal which is outputting on the basis of the acceleration caused by crash of the automobile, said crash signal being inputted into an inflator to inflate an air bag;

wherein said detection means is a capacitance type semiconductor detector comprising a fixed electrode and a movable electrode disposed to oppose said fixed electrode, and a servo control means is electrically connected to said detection means to form a feedback loop for detection of acceleration and to apply electric energy to said detection means so that electrostatic force is applied between said fixed electrode and said movable electrode to maintain an initial position of said movable electrode; and

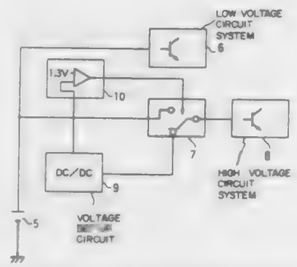
wherein a diagnostic means is provided for diagnosing said crash detection apparatus on whether or not said crash detection apparatus functions correctly by applying an electric signal for diagnosis to said feedback loop of said servo control means so as to apply electrostatic force between said fixed electrode and said movable electrode for diagnosis.

5,387,820

POWER SUPPLY CIRCUIT

Yasumi Imagawa, Kanazawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 17, 1992, Ser. No. 914,519
Claims priority, application Japan, Aug. 8, 1991, 3-199125
Int. Cl.[6] H02M *3/00*
U.S. Cl. 307—31 8 Claims



1. A power supply circuit for supplying electric power from a power source of a battery to at least first and second loads, wherein said first load is operative when supplied with a voltage within a predetermined first voltage range not less than a predetermined first voltage level and said second load is operative when supplied with a voltage within a predetermined second voltage range not less than a predetermined second voltage level higher than said first voltage level, comprising:

means for supplying electric power directly from said power source to said first load;

a voltage detecting circuit for generating an output signal when a voltage of said power source becomes lower than a reference voltage predetermined based on said second voltage level;

a voltage step up circuit for stepping up the voltage of said power source and outputting the stepped up voltage; and

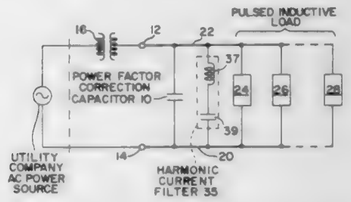
means for supplying electric power from said power source to said second load and including a switching circuit for connecting said power source directly to said second load in an absence of the output signal of said voltage detecting circuit and connecting said stepped up voltage to said second load in the presence of the output signal of said voltage detecting circuit.

5,387,821

POWER DISTRIBUTION CIRCUIT WITH POWER FACTOR CORRECTION AND INDEPENDENT HARMONIC CURRENT FILTER

Paul B. Steciuk, Troy, N.Y.; Frank W. Smith, Williamstown, and Carol A. Lupo, Adams, both of Mass., assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed Nov. 12, 1992, Ser. No. 974,965
Int. Cl.[6] H02J *3/00*
U.S. Cl. 307—105 10 Claims



1. An electrical power distribution circuit of an industrial plant or a commercial building, for connecting pulsed inductive loads to an AC source of electrical energy, comprising:

a) a source of AC electrical energy having a line frequency less than 62 Hz, and providing an essentially sinusoidal voltage;

b) a voltage step-down transformer rated for a load greater than 500 KVA connected to said AC energy source and having two power output terminals;

c) at least two power conductors connected to said two output terminals of said step-down transformer;

d) one pulsed inductive load connected between said two power conductors;

e) a group of at least one power-factor-correction capacitors each connected directly across said two power conductors; and

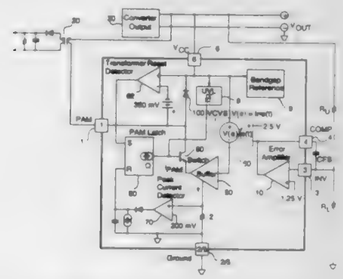
f) a first filter comprised of one filter inductor and one filter capacitor connected in series and forming a resonant series circuit connected directly across said two power conductors, the resonant frequency of said first filter being about exactly that of one harmonic of the frequency of said AC source, the impedance of said first filter being essentially zero at the one harmonic frequency so that essentially all of the harmonic current at the one harmonic frequency is shunted through said first filter.

5,387,822

ERROR SIGNAL ISOLATOR CIRCUIT

Fernando R. Martin-Lopez, Colorado Springs, Colo., and Richard Redl, Onnens, Switzerland, assignors to Toko America, Inc., Mount Prospect, Ill.

Filed Nov. 30, 1992, Ser. No. 983,797
Int. Cl.[6] H03K *7/08*
U.S. Cl. 307—125 3 Claims



1. An error signal isolator circuit for conveying an error signal across an electrical isolation boundary such as an external pulse transformer, the error signal isolator circuit comprising:

error amplifier means for measuring a controllable external supply voltage with respect to a reference voltage and for providing an error voltage signal;

level shifting means coupled to the error amplifier means for receiving the error voltage signal and for altering said error voltage signal to provide a shifted error voltage signal, the magnitude of which is negatively proportional to said error voltage signal and which is referenced to the external supply voltage of said error signal isolator circuit; and

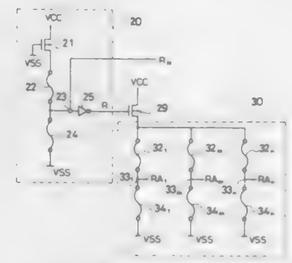
pulse amplitude modulation means for receiving said shifted error voltage signal and for selectively switching said shifted error voltage signal across a winding of said external pulse transformer, said winding being connected to said external supply voltage.

5,387,823

FUSE-PROGRAMMABLE REDUNDANCY CONTROL CIRCUIT

Yuichi Ashizawa, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1993, Ser. No. 132,111
Claims priority, application Japan, Oct. 8, 1992, 4-270047
Int. Cl.[6] H03K *19/003*
U.S. Cl. 326—13 20 Claims



1. A fuse-programmable control circuit for generating fuse-programmable signals in an integrated circuit, comprising:

a master control circuit having two fusible links coupled in series between a first potential and a second potential, for generating a control signal from a point between said two fusible links, one of said two fusible links being cut to activate said control signal if said fuse-programmable signals are required, and another of said two fusible links being cut to deactivate said control signal if said fuse-programmable signals are not required;

a switching element controlled by said control signal, coupled to supply said first potential when switched on by said control signal; and

a fuse-programmable memory having a plurality of pairs of fusible links, each pair coupled in series between said switching element and said second potential, and a like plurality of output terminals, each output terminal disposed between the fusible links in a corresponding pair, for generating said fuse-programmable signals from said output terminals by cutting of one or another of the fusible links in respective pairs of fusible links.

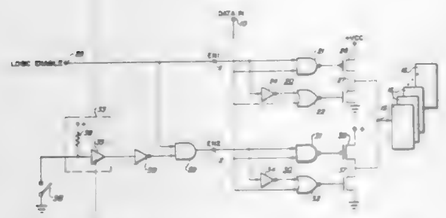
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5,387,824

VARIABLE DRIVE OUTPUT BUFFER CIRCUIT

Jeffery M. Michelsen, Mesa, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 444,478, Dec. 1, 1989. This application Jun. 21, 1991, Ser. No. 718,735
Int. Cl.[6] H03K *17/16*
U.S. Cl. 326—83 8 Claims



1. An output buffer circuit for matching the drive signal on an output terminal to the different impedance requirements of different loads externally connected to such terminal, said circuit including in combination:
a binary signal input terminal;
an output terminal;
a plurality of CMOS buffer circuit means, each having first and second complementary inputs and each having an output, with the outputs of said plurality of CMOS buffer circuit means connected in common with said output terminal;
coupling means for connecting said signal input terminal in common with the first and second inputs of each of said plurality of said CMOS buffer circuit means;
a plurality of independent enable circuit means each connected to a different respective one of said plurality of CMOS buffer circuit means for selectively and independently enabling and disabling said CMOS buffer circuit means for responding to signals on said signal input terminal, each of said enable circuit means including first and second complementary logic coincidence gate means coupled, respectively, between the first and second inputs of each of said plurality of CMOS buffer circuit means and said signal input terminal;
inverter circuit means;
a separate enable signal input terminal for each of said enable circuit means connected directly to a first input of said first coincidence gate means and connected through said inverter circuit means to the first input of said second coincidence gate means, with said input signals being applied in common to all of said coincidence gate means in each of said enable circuit means; and
means for selectively supplying separate predetermined independent enable signals to each of said separate enable input terminals according to predetermined different impedance requirements of different loads externally connected to said output terminal to cause different numbers of said CMOS buffer circuit means to be enabled for operation in parallel to respond to signals on said binary signal input terminal.

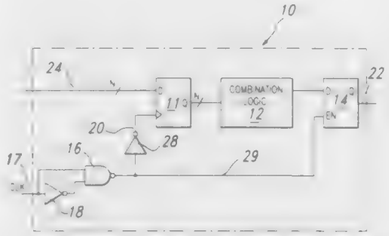
5,387,825

GLITCH-ELIMINATOR CIRCUIT

Jay T. Cantrell, Dallas, and Edward R. Schurig, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 20, 1992, Ser. No. 932,476
Int. Cl.[6] H03K *17/16*
U.S. Cl. 326—26 10 Claims

1. A digital circuit for providing a glitch-free output in an asynchronous environment, said circuit comprising:
pulse forming circuitry for creating an asynchronous pulse, said asynchronous pulse having a first edge, a second edge, and a finite duration between said first and said second edges;
an input circuit for accepting input data based on the receipt of the first edge of the asynchronous pulse;
combinational logic circuitry for accepting data from said input circuit and manipulating said data from said input circuit to provide output data, wherein the outputting of



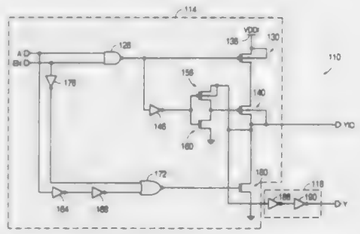
data is delayed while said combinational logic circuitry manipulates said data from said input circuit; and
an output circuit for blocking said data output by said combinational logic circuitry during said finite duration of said asynchronous pulse;
wherein said finite duration of said asynchronous pulse is at least as long as said delay of outputting said data by said combinational logic circuitry and said input data is not directly received by said combinational logic circuitry.

5,387,826

OVERVOLTAGE PROTECTION AGAINST CHARGE LEAKAGE IN AN OUTPUT DRIVER

Michael J. Shay, Arlington, and Richard L. Duncan, Bedford, both of Tex., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 15,726, Feb. 10, 1993. This application Jun. 7, 1993, Ser. No. 72,899
Int. Cl.[6] H03K *17/10*
U.S. Cl. 326—21 6 Claims



1. An output driver comprising:
a power terminal;
a circuit C1 having terminals T11 and T12 and having a control terminal CT1 for controlling a conductive path between said terminals T11 and T12, said terminal T11 being connected to said power terminal;
a circuit C2 having terminals T21 and T22 and having a control terminal CT2 for controlling a conductive path between said terminals T21 and T22, said terminal T21 being connected to said terminal T12;
an output terminal connected to said terminal T22;
a circuit C3 having a terminal T31 connected to said output terminal and a terminal T32 connected to said control terminal CT2, said circuit C3 having a control terminal

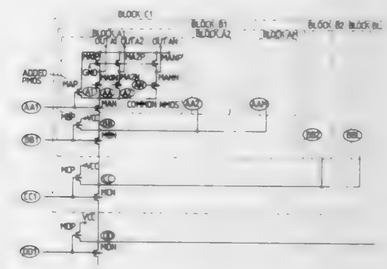
CT3 for controlling a conductive path between said terminals T31 and T32;
a circuit C4 having a terminal T41 connected to said terminal CT2 and having a terminal T42, said circuit C4 having a control terminal CT4 for controlling a conductive path between said terminals T41 and T42;
a reference voltage terminal connected to said terminal T42;
an enable terminal;
a data input terminal; and
a circuit C5 for controlling said control terminals CT1, CT3 and CT4 in response to signals on said enable terminal and said data input terminal so that:
when said driver is enabled by a signal on said enable terminal and said circuit C5 causes said circuit Cl to provide a conductive path between said terminals T11 and T12, said circuit C5 also causes said circuit C3 not to provide the conductive path between said terminals T31 and T32 and said circuit C5 causes said circuit C4 to provide a conductive path between said terminals T41 and T42 so that said terminal CT2 becomes connected to said reference voltage terminal and causes said circuit C2 to provide the conductive path between said terminals T21 and T22; and
when said driver is disabled by a signal on said enable terminal or when said driver is powered down, if a voltage on said output terminal exceeds in magnitude a voltage on said power terminal by at least a predetermined value, said circuit C5 causes said circuit C3 to provide a conductive path between said terminals T31 and T32 and said circuit C5 causes said circuit C4 not to provide the conductive path between said terminals T41 and T42 so that said circuit C2 does not provide the conductive path between said terminals T21 and T22.

5,387,827

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING LOGIC GATES

Yuji Yokoyama; Takashi Akioka; Masahiro Iwamura, all of Hitachi; Atsushi Hiraishi, Oume; Yutaka Kobayashi, Katsuta; Tatsumi Yamauchi, Hitachi; Shigeru Takahashi, Hitachiohta; Nobuyuki Gotou, and Akira Ide, both of Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 22, 1991, Ser. No. 643,372
Claims priority, application Japan, Jan. 20, 1990, 2-10946; Feb. 27, 1990, 2-46717
Int. Cl.[6] H03K *19/23*
U.S. Cl. 326—106 43 Claims



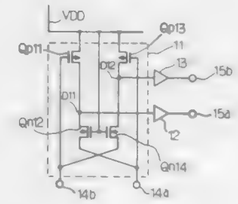
1. A semiconductor integrated logic circuit comprising:
a plurality of logic gates each including a first input terminal for receiving one of first input signals, an output terminal and a common connection terminal;
a first switching element which comprises a transistor having a control electrode and first and second electrodes;
a second switching element which comprises another transistor having a control electrode and first and second electrodes;
a second input terminal, for receiving a second input signal, commonly connected to the control electrodes of the transistors of said first and second switching elements; and
a second output terminal provided at a common connection of the second electrodes of the transistors of said first and second switching elements,
wherein said second output terminal is coupled to said common connection terminal of all of said plurality of logic gates, to thereby form a common node, and
wherein said first and second switching elements operate complementary to one another in response to said second input signal.

5,387,828

HIGH-SPEED LEVEL SHIFTER WITH SIMPLE CIRCUIT ARRANGEMENT

Fumio Nakano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 3, 1993, Ser. No. 161,753
Claims priority, application Japan, Dec. 4, 1992, 4-325117
Int. Cl.[6] H03K *19/0175*
U.S. Cl. 326—68 5 Claims



1. A level shifter for producing complementary output signals from complementary input signals different in voltage range from said complementary output signals comprising;
input nodes paired with each other and applied with said complementary input signals;
output nodes paired with each other for producing said complementary output signals;
a preliminary voltage shifting circuit including
a series combination of a first transistor of a first channel conductivity type, a first common node and a second transistor of a second channel conductivity type having a current path between a constant voltage source and one of said input nodes, said first channel conductivity type being opposite to said second channel conductivity type, said first transistor having a gate node connected with the other of said input nodes, said second transistor having a gate node connected with said constant voltage source, and
a series combination of a third transistor of said first channel conductivity type, a second common node and a fourth transistor of said second channel conductivity type having a current path between said constant voltage source and said other of said input nodes, said third transistor having a gate node connected with said one of said input nodes, said fourth transistor having a gate node connected with said constant voltage source; and
a final voltage shifting circuit connected at input nodes thereof with said first and second common nodes and at output nodes thereof with said pair of output nodes.

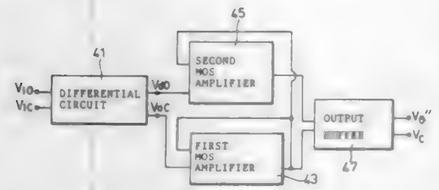
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5,387,829

OUTPUT SIGNAL PROCESSING CIRCUIT FOR A CHARGE-COUPLED DEVICE

Liang-Chung Wu, and Chern-Chian Cheng, both of Hsin-Chu, Taiwan, Prov. of China, assignors to Hualon Microelectronics Corporation, Hsin-Chu, Taiwan, Prov. of China

Filed Dec. 21, 1993, Ser. No. 171,276
Int. Cl.[6] H03K *5/22*; H03F *3/45*
U.S. Cl. 327—65 3 Claims



1. A signal processing circuit for an output stage of a charge-coupled device, said output stage of said charge-coupled device including a reference signal circuit and a CCD signal circuit which generate first and second output signals respectively, said signal processing circuit comprising:

a differential circuit means receiving said first and second output signals from said output stage of said charge-coupled device, said differential circuit means generating a first signal corresponding to said first output signal and a second signal corresponding to said second output signal;

a first amplifier having an output, a first input which receives said first signal from said differential circuit means, and a second input which is connected to said output to serve as a negative feedback input to said first amplifier; and

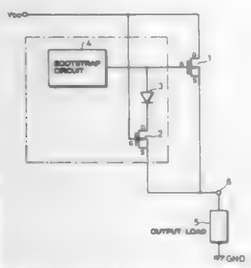
a second amplifier having an output, a first input which receives said second signal from said differential circuit means, and a second input which is connected to said output of said first amplifier to serve as a negative feedback input to said second amplifier, said second amplifier amplifying portions of said second signal which differ from said first signal.

5,387,830

SEMICONDUCTOR DEVICE WITH EXCESS CURRENT PREVENTION CIRCUIT

Yoshihiro Kukimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 957,797
Claims priority, application Japan, Oct. 8, 1991, 3-259969
Int. Cl.[6] H03K *17/04*, *17/687*
U.S. Cl. 327—322 3 Claims



1. A semiconductor circuit device with an excess current prevention circuit comprising:

a bootstrap circuit;

a first NMOS transistor having a drain electrode connected to a power supply terminal, a gate electrode connected to an output of said bootstrap circuit, and a source electrode connected to an output terminal;

a second NMOS transistor having a drain electrode, a gate electrode connected to said power supply terminal and a source electrode connected to said output terminal; and

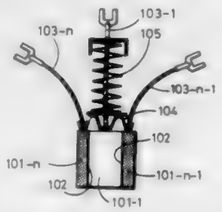
a constant-voltage element connected between the gate electrode of said first NMOS transistor and the drain electrode of said second NMOS transistor.

5,387,831

LOW CIRCULATION LOSS COMPOUND BRUSH

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan, Prov. of China

Filed May 27, 1993, Ser. No. 67,962
Int. Cl.[6] H02K *13/00*
U.S. Cl. 310—242 6 Claims



1. A low circulation loss compound brush structure, comprising:

a first piece of brush material having a first resistance, a first wear-resistant insulator layer which abuts the first piece of material, a second piece of brush material which abuts the first wear-resistant insulator layer and has a second resistance, a second insulator layer which abuts the second piece of brush material, and a third piece of brush material which abuts the second insulator layer and has said first resistance, the first resistance being higher than the second resistance;

a compression spring for applying spring pressure to said pieces of brush material;

an equalizing reed for bearing the spring pressure and distributing the pressure between the first, second and third pieces of brush material; and

separate lead wires for each said piece of brush material.

5,387,832

BRUSH AND COMMUTATOR MOTOR HAVING BRUSH DEVICE USING THE SAME

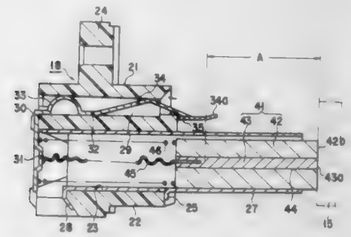
Motoyuki Tanaka, Tokyo; Yasunori Hatano, Hiratsuka; Tadashi Ozawa, Hadano; Tatsuya Ikegami, Machida, and Hiroyuki Yoshizawa, Ebina, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 872,790
Claims priority, application Japan, Apr. 25, 1991, 3-095563; Jul. 29, 1991, 3-188940; Jul. 29, 1991, 3-188941; Aug. 28, 1991, 3-215723; Sep. 30, 1991, 3-251014; Oct. 3, 1991, 3-281857; Dec. 24, 1991, 3-340534; Jan. 30, 1992, 3-015045; Jan. 31, 1992, 4-015739
Int. Cl.[6] H02K *13/00*
U.S. Cl. 310—249 25 Claims

1. A brush having a portion which wears upon making contact with a commutator, almost all of the portion comprising at least two types of materials having different electric resistivities, and extending along a main current direction, comprising:

a good conductive portion includes an electric conductive powder made of a first one of said materials having a lowest electric resistivity, and extending along the main current direction of said brush; and

a brush main portion made of a second one of said materials having a resistivity higher than that of said good conductive portion, and extending along the main current direction of said brush, said brush main portion having a widthwise dimension larger than a respective widthwise dimension of said good conductive portion, as measured in a cross section of said brush perpendicular to said main current direction, said brush main portion having a hole extending along the main current direction, and said good



conductive portion made of said electric conductive powder being embedded in the hole, and said brush main portion having a commutator-side end surface, and

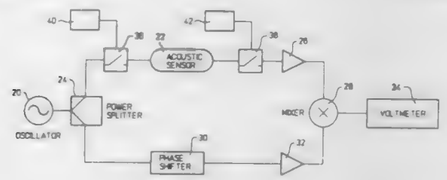
a lead line made of a material having an electric resistivity lower than that of said second one of said materials for said brush main portion, and inserted into and embedded in a proximal end portion of said good conductive portion opposite to the commutator-side end surface thereof.

5,387,833

METHOD AND DEVICE FOR SEPARATING ACOUSTIC WAVE-GENERATED ENERGY FROM DIRECTLY COUPLED ELECTROMAGNETIC INTERFERENCE

Richard L. Baer, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 41,256, Apr. 1, 1993, abandoned. This application Jun. 14, 1994, Ser. No. 259,377
Int. Cl.[6] H03H *9/145*
U.S. Cl. 310—313 R 19 Claims



1. A method of operating an acoustic wave device comprising,

providing a substrate for the propagation of acoustic waves from an input region to an output region,

applying excitation energy singly to the input region such that acoustic conversion of the excitation energy launches acoustic wave energy from the input region,

forming an electrical signal in response to energy detected at the output region, and

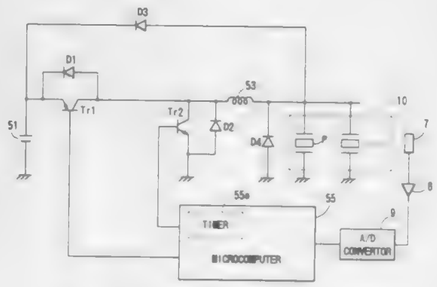
maintaining a separation of each period of arrival of acoustic wave energy at the output region from each period of arrival of undesired non-acoustic wave energy that is coupled from the input region to the output region without undergoing acoustic conversion, including selectively interrupting the application of the excitation energy to the substrate based upon the time required for acoustic wave energy to travel from the input region to the output region and further based upon continuously averting simultaneous arrival of the acoustic wave energy and the non-acoustic wave energy at the output region.

5,387,834

PIEZOELECTRIC ELEMENT DRIVING CIRCUIT

Masashi Suzuki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 959,441, Oct. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 728,592, Jul. 11, 1991, abandoned. This application Jan. 28, 1994, Ser. No. 194,870
Claims priority, application Japan, Jul. 11, 1990, 2-186260; Oct. 11, 1991, 3-292397
Int. Cl.[6] H01L *41/09*
U.S. Cl. 310—317 20 Claims



1. A driving circuit for driving a piezoelectric element having a first terminal and a second terminal, comprising:

power supplying means for supplying a constant level D.C. voltage to said piezoelectric element;

a coil having a first terminal connected to the first terminal of said piezoelectric element;

first switching means connected between said power supplying means and a second terminal of said coil, said first switching means being selectively rendered ON and OFF once during a single printing operation of the piezoelectric element;

second switching means connected between the second terminal of said coil and the second terminal of said piezoelectric element, said second switching means being selectively rendered ON and OFF once during the single printing operation, said coil and said piezoelectric element forming a resonance circuit when said second switching means is rendered ON, said resonance circuit having a resonance frequency based on an inductance of said coil and an electrostatic capacitance of said piezoelectric element;

temperature sensing means for sensing a temperature of said piezoelectric element and for generating a temperature signal indicative of the sensed temperature; and

control means for switching each of the first and second switching means ON and OFF at most once during the single printing operation of the piezoelectric element and for determining, in response to the temperature of the piezoelectric element, a time period for compensating for the temperature-dependent change in the electrostatic capacitance of the piezoelectric element, the control means controlling the driving circuit during the single printing operation by switching said first switching means ON for the time period to charge said piezoelectric element, switching said first switching means off for a predetermined time period, thereafter switching said second switching means ON for the time period to discharge, said piezoelectric element and switching second switching means off.

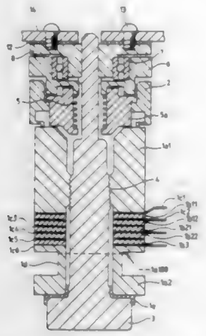
VOL 1171 ISS 1 FEB 7 1995 UMI

5,387,835

VIBRATION DRIVEN MOTOR

Takayuki Tsukimoto, Fujisawa, and Shinichi Koreeda, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 6,781, Jan. 21, 1993, abandoned. This application Jun. 13, 1994, Ser. No. 259,159
Claims priority, application Japan, Jan. 23, 1992, 4-010114
Int. Cl.[6] H01L *41/09*
U.S. Cl. 310—323 16 Claims



1. A vibration driven motor or actuator comprising:
a first vibration member having a driving surface for relatively moving a contact member, and an amplitude increasing portion for increasing a vibration amplitude on said driving surface;
a second vibration member;
an electro-mechanical energy conversion element, clamped between said first and second vibration members, for generating a first bending vibration in a first direction and a second bending vibration in a second direction different from the first direction in at least said first vibration member; and
a coupling member for integrally coupling said first and second vibration members and said electro-mechanical energy conversion element, the coupling member having a coupling portion coupled to at least one of said first and second vibration members at a position axially separated from said amplitude increasing portion, wherein the amplitude increasing portion and the coupling portion are arranged so as not to overlap in an axial direction of the vibration member.

5,387,836

RARE EARTH OXYSULFIDE PHOSPHOR AND HIGH RESOLUTION CATHODE RAY TUBE EMPLOYING IT

Ryuji Adachi, and Hideo Tono, both of Odawara, Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,726
Claims priority, application Japan, Sep. 3, 1991, 3-222998
Int. Cl.[6] H01J *29/20*
U.S. Cl. 313—468 11 Claims

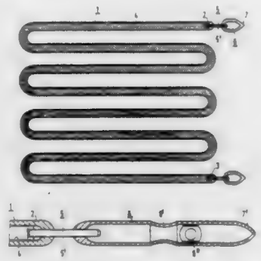
1. A rare earth oxysulfide phosphor of the formula $(Ln_{1-x-y}La_xLn'_y)_2O_2S$ wherein Ln is at least one element selected from the group consisting of Y, Gd, Sc and Lu, Ln' is at least one element selected from the group consisting of Eu, Tb, Sm, Er, Tm, Dy, Ho, Nd and Pr, and x and y are numbers within ranges of $0.005 < x \leqq 0.07$ and $0.0001 \leqq y \leqq 0.2$, respectively wherein said rare earth oxysulfide phosphor has an average particle size of at most 3 μm.

5,387,837

LOW-PRESSURE DISCHARGE LAMP AND LUMINAIRE PROVIDED WITH SUCH A LAMP

Bauke J. Roelevink, Roosendaal; Paulus Q. J. Nederpel, Eindhoven, and Franciscus A. S. Ligthart, Roosendaal, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 2, 1993, Ser. No. 25,300
Claims priority, application European Pat. Off., Mar. 27, 1992, 92200875; Sep. 2, 1992, 92202656
Int. Cl.[6] H01J *19/72, 61/24, 61/30*
U.S. Cl. 343—484 19 Claims



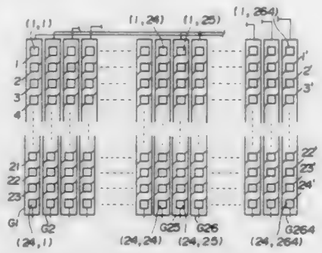
1. A low-pressure discharge lamp comprising:
a tubular glass lamp vessel which is closed in a vacuumtight manner and has end portions;
a cylindrical metal tube to which an end portion of the lamp vessel is fused and which has an exposed outer surface and an end outside the lamp vessel;
an ionizable filling comprising rare gas in the lamp vessel, a glass tube fused proximate to the end of the metal tube and the glass tube having a seal.

5,387,838

FLUORESCENT DISPLAY DEVICE WITH HIGH DUTY RATIO

Haruhisa Hirakawa; Yoshihisa Tsuruoka, and Eiji Sato, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed May 19, 1992, Ser. No. 885,452
Claims priority, application Japan, May 20, 1991, 3-044790[U]
Int. Cl.[6] H01J *63/02*
U.S. Cl. 313—496 19 Claims



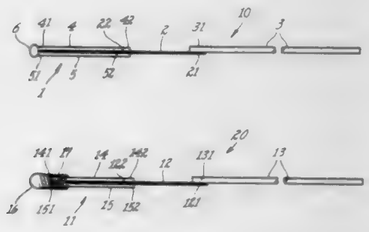
1. A fluorescent display device comprising:
a display section including a plurality of picture cells arranged in a rectangular manner in two directions perpendicular to each other so that the number of picture cells arranged in a long side direction of said display section is larger than that of picture cells arranged in a short side direction thereof;
a plurality of control electrodes arranged in juxtaposition to each other above said display section in the long side direction of said display device while a longitudinal direction thereof is defined in the short side direction of said display section; and
filamentary cathodes arranged in parallel to said longitudinal direction above said control electrodes;
said picture cells being connected together in an oblique direction across said two directions;
said control electrodes being connected together at a predetermined interval;
said control electrodes being scanned and said picture cells being fed with a display signal.

5,387,839

ELECTRODE-INLEAD ASSEMBLY FOR ELECTRICAL LAMPS

Rocco T. Giordano, Garfield Heights; Jeffrey D. Johnson, Mentor; Paul G. Mathews; Gary R. Allen, both of Chesterland, and Timothy P. Dever, Fairview Park, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 11, 1992, Ser. No. 989,301
Int. Cl.[6] H01J *61/04*
U.S. Cl. 313—623 6 Claims



1. An electrode-inlead assembly for an electrical lamp comprising a lead-in-wire, a foil made of refractory metal and an electrode with a shank made of refractory metal, one end portion of said lead-in-wire being welded to one end portion of said foil, one end portion of said shank supporting said electrode while an opposite end portion of said shank being welded to an opposite end portion of said foil,
said shank comprising two parallel rods each having respective one end portions which are joined and wherein said opposite end portion of said foil is welded between respective opposite end portions of said two parallel rods such that a width centerline of said foil is generally at a centerline of said electrode.

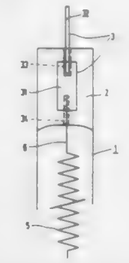
5,387,840

ELECTRIC LAMP HAVING CURRENT CONDUCTORS WITH A METAL PHOSPHIDE COATING ONLY ON EXPOSED PORTIONS THEREOF

Victor R. Noteleteirs, and Leo F. M. Ooms, Turnhout, both of Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1993, Ser. No. 1,983
Claims priority, application European Pat. Off., Jan. 17, 1992, 92200126
Int. Cl.[6] H01J *5/46*
U.S. Cl. 313—623 9 Claims

1. An electric lamp, comprising:
a glass lamp vessel energizeable for emitting light, a gas filling and an electric element within said lamp vessel, said lamp vessel having a wall and a metal current conductor extending in contact with said wall from the electric element through the wall of the lamp vessel to the exterior, the metal current conductor having a layer of substantially the phosphide of its respective metal, the layer being



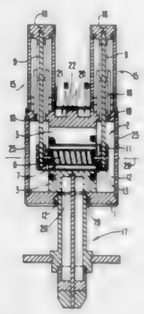
exclusively in those location where the current conductor ids not in contact with the wall of the lamp vessel.

5,387,841

MAGNETRON HAVING AN ANODE WITH COOLING CHANNELS

Peter F. Lewis, Chelmsford, United Kingdom, assignor to EEV Limited, Essex, United Kingdom

Filed Aug. 27, 1992, Ser. No. 935,108
Claims priority, application United Kingdom, Aug. 30, 1991, 9118651; Nov. 11, 1991, 9123906
Int. Cl.[6] H01J *25/50*
U.S. Cl. 315—39.75 16 Claims



1. A magnetron comprising an anode, the anode comprising:
a substantially cylindrical anode block having a major axis, a plurality of resonant cavities and a cathode spaced from and surrounded by the anode block, a pair of ring shaped channels together with a ring shaped separating wall integral with and arranged in side-by-side relation coaxially with the major axis of the anode block, a sleeve surrounding the anode block to enclose the channels and which, together with the separating wall, provides at least one connecting passageway which connects the channels, a coolant inlet pipe passing through the sleeve and into one of the channels, and a coolant outlet pipe passing through the sleeve into the other of the channels, the connecting passageway providing a restriction to enhance, in use, a velocity of coolant flowing between the inlet and outlet pipes through the connecting passageway.

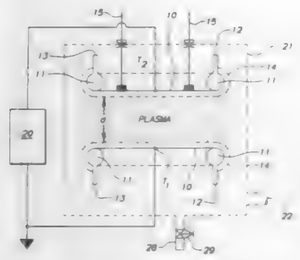
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5,387,842

STEADY-STATE, GLOW DISCHARGE PLASMA

John R. Roth; Peter P. Tsai, and Chaoyu Liu, all of Knoxville, Tenn., assignors to The University of Tennessee Research Corp., Knoxville, Tenn.

Filed May 28, 1993, Ser. No. 68,508
Int. Cl.[6] H01J *7/24*; H05B *31/26*
U.S. Cl. 315—111.21 22 Claims



1. Apparatus to generate and maintain a glow discharge plasma at a pressure of about 1 atmosphere, the apparatus comprising

a pair of electrically insulated plate electrodes aligned and secured in parallel facing position,

means for supplying and maintaining a noble gas at a pressure of about one atmosphere in the volumetric space between said plate electrodes, and

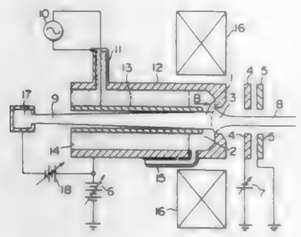
radio frequency amplifier means for generating and maintaining a glow discharge plasma by energizing said electrodes with a potential of 1 to at least 5 KV rms at 1 to 100 KHz.

5,387,843

ION SOURCE HAVING PLASMA CHAMBER, AN ELECTRON SOURCE, AND A PLASMA POWER SUPPLY

Takahisa Nagayama; Naomitsu Fujishita; Kazuhiko Noguchi, and Hidenobu Murakami, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,372
Claims priority, application Japan, Nov. 20, 1991, 3-304992
Int. Cl.[6] H01J *7/24*
U.S. Cl. 315—111.81 7 Claims



1. An ion source, comprising:

a plasma chamber in which plasma is generated and an ion extraction port is formed to extract an ion beam from the plasma;

an electron source for radiating an electron beam toward the ion extraction port through the plasma chamber; and

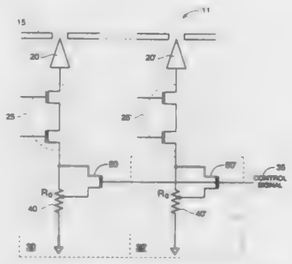
an electron extraction power supply connected between said plasma chamber and said electron source to induce a potential difference therebetween, wherein the electrical potential induced by the electron extraction power supply has a magnitude intensity which causes an energy level of the electron beam to moderate space charges around the ion extraction port.

5,387,844

FLAT PANEL DISPLAY DRIVE CIRCUIT WITH SWITCHED DRIVE CURRENT

Jim J. Browning, Boise, Id., assignor to Micron Display Technology, Inc., Boise, Id.

Filed Jun. 15, 1993, Ser. No. 77,791
Int. Cl.[6] G09G *3/10*
U.S. Cl. 315—169.3 22 Claims



1. A field emission display having a level of brightness, the display comprising:

a. a pixelator for field emission, the pixelator conducting a drive current, the drive current corresponding to the level of brightness;

b. a resistor for providing a resistance between the pixelator and a node and for establishing the drive current, the resistor having a first value; and

c. varying means for varying the resistance from the first value, the varying means enabled by a control signal, thereby varying the brightness in response to the control signal, wherein the varying means comprises:

(1) a second resistor having a second value; and

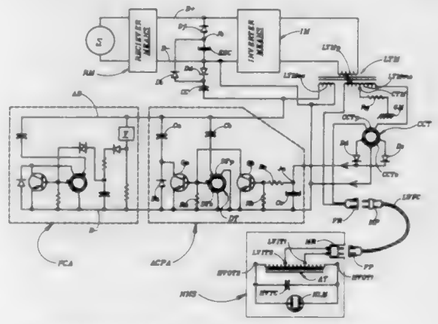
(2) a switch for connecting the resistor in parallel with the second resistor, the switch being enabled by the control signal.

5,387,845

NEON LAMP POWER SUPPLY

Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010

Continuation of Ser. No. 177,473, Apr. 1, 1988, abandoned. This application May 26, 1992, Ser. No. 890,312
Int. Cl.[6] H05B *37/02*, *39/04*, *41/36*
U.S. Cl. 315—209 R 22 Claims



1. A power supply for a neon lamp, comprising:

a source of input AC voltage;

leakage transformer means having: i) an input winding connected with the input AC voltage; and ii) an output winding having a pair of output terminals; the output winding being relatively loosely coupled with the input winding, thereby manifestly exhibiting an output inductance; the output terminals, when unloaded, providing an open circuit output AC voltage;

a tank capacitor effectively connected across the output terminals; the tank capacitor being in resonance with the output inductance at the fundamental frequency of the input AC voltage, thereby causing a Q-multiplied output AC voltage to develop across the output terminals; the magnitude of the Q-multiplied output AC voltage being substantially larger than that of the open circuit output AC voltage; and

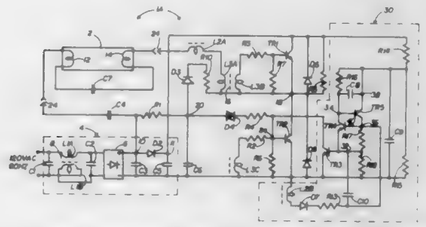
neon lamp means effectively connected across the output terminals, the magnitude of the Q-multiplied output AC voltage being sufficient to cause the neon lamp means to ignite.

5,387,846

COMBINATION BALLAST FOR DRIVING A FLUORESCENT LAMP OR TUBE AND BALLAST PROTECTION CIRCUIT

Gin P. So, Hong Kong, Hong Kong, assignor to Selwyn Yuen, Ontario, Canada, a part interest

Continuation-in-part of Ser. No. 799,209, Nov. 27, 1991, abandoned. This application Aug. 18, 1992, Ser. No. 931,595
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—209 R 20 Claims



1. An electronic ballast having an output terminal at which to provide output power for driving a fluorescent lamp or tube, said ballast comprising:

power supply means;

oscillator means connected between said power supply means and the lamp or tube to provide a high frequency output signal to said lamp or tube; and

a protection circuit including a protection switch connected to said oscillator means to control the operation thereof and a flip-flop connected to said protection switch and responsive to the output power of said ballast, said flip-flop being triggered to operate said protection switch for terminating the operation of said oscillator means and disabling said ballast when the lamp or tube is defective or disconnected from said ballast and the output power of said ballast undergoes a corresponding change.

5,387,847

PASSIVE POWER FACTOR BALLAST CIRCUIT FOR THE GAS DISCHARGE LAMPS

Peter N. Wood, Rolling Hills Est., Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Mar. 4, 1994, Ser. No. 206,512
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—209 R 24 Claims

1. A high power factor power supply for a lamp ballast circuit; said power supply comprising, in combination:

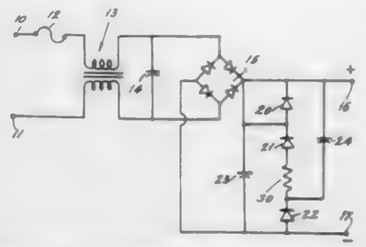
a pair of input a-c terminals;

rectifier means having a-c and d-c terminals; said pair of input a-c terminals connected to said a-c terminals of said rectifier means; said pair of d-c terminals being connectable to a lamp ballast circuit;

a first, second and third diode connected in series with one another and being connected between said pair of d-c terminals;

a first and a second capacitor; said first capacitor being connected between one of said d-c terminals and the node between said first and second diodes; said second capacitor being connected between the other of said terminals and between said second and third diodes;

and a resistor connected between said second and third diodes; said second capacitor connected to the node between said resistor and said third diode.

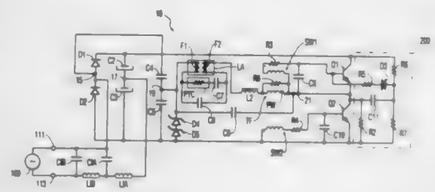


5,387,848

FLUORESCENT LAMP BALLAST WITH REGULATED FEEDBACK SIGNAL FOR IMPROVED POWER FACTOR

John M. Wong, Buffalo Grove, Ill., assignor to Philips Electronics North America Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 1,940, Jan. 8, 1993, Pat. No. 5,313,142, which is a continuation of Ser. No. 846,370, Mar. 5, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 76,566
Int. Cl.[6] H05B *41/29*, *41/36*
U.S. Cl. 315—224 20 Claims



1. A ballast comprising:

rectifying means for receiving and rectifying a first signal and a regulated feedback signal;

inverter means for producing an output signal; and

feedback means for receiving an unregulated feedback signal and for producing said regulated feedback signal, said unregulated feedback signal indicative of said output signal.

5,387,849

LAMP BALLAST SYSTEM CHARACTERIZED BY A POWER FACTOR CORRECTION OF GREATER THAN OR EQUAL TO 90%

Sri Sridharan, Hickory Hills, Ill., assignor to Radionic Technology Incorporated, Chicago, Ill.

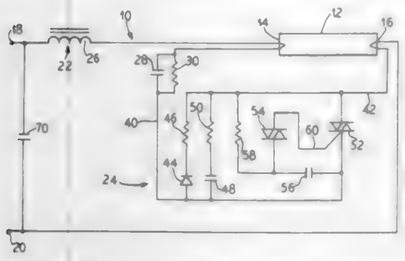
Filed Dec. 14, 1992, Ser. No. 990,283
Int. Cl.[6] H05B *41/04*, *41/18*
U.S. Cl. 315—247 27 Claims

1. A ballast circuit for electrically coupling a fluorescent lamp with electrodes to a power supply, comprising:

a choke electrically connected between the power supply and the lamp;

an electronic starter circuit electrically connected across the lamp;

a ballasting circuit coupled in series between the lamp and the electronic starter circuit, the ballasting circuit comprising a ballasting capacitor and bleeder element coupled in parallel; and



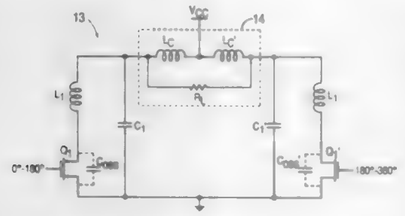
means for providing a high power factor electrically connected across the power supply to provide a power factor correction so that in operation, the ballast circuit is characterized by a power factor of at least 90%.

5,387,850

ELECTRODELESS DISCHARGE LAMP CONTAINING PUSH-PULL CLASS E AMPLIFIER

Derek Bray, Los Altos, and Timothy P. Murphy, Mountain View, both of Calif., assignors to Diablo Research Corporation, Sunnyvale, Calif.

Filed Jun. 5, 1992, Ser. No. 894,020
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—248 **9 Claims**



1. An electrodeless discharge lamp comprising:

a sealed vessel containing a gaseous mixture;

an induction coil positioned adjacent said sealed vessel, said induction coil having a center terminal and first and second end terminals, said center terminal being connected to a source of constant voltage;

means for generating an oscillating electrical signal at a predetermined frequency; and

means for amplifying said oscillating signal, said means for amplifying comprising:

a first switching means and a second switching means, said first and second switching means being turned on out of phase with each other such that one of said first and second switching means is in an off condition when the other of said switching means is in an on condition;

a first inductor and a first capacitor, said first inductor and said first capacitor being connected to said first end terminal of said induction coil; and

a second inductor and a second capacitor, said second inductor and said second capacitor being connected to said second end terminal of said induction coil;

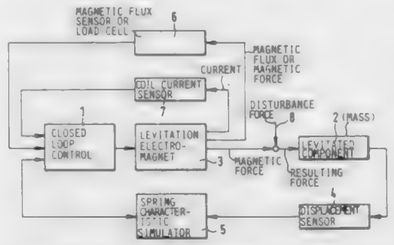
the values of said first and second inductors and the values of said first and second capacitors being selected such that said first and second inductors, said first and second capacitors and said induction coil together form at least a portion of a damped resonant circuit, said damped resonant circuit resonating in such a way that (i) the voltage across said first switching means is substantially zero when said first switching means turns off and the voltage across and current through said first switching means are substantially zero when said first switching means turns on, and (ii) the voltage across said second switching means is substantially zero when said second switching means turns off and the voltage across and current through said second switching means are substantially zero when said second switching means turns on.

5,387,851

CLOSED LOOP CONTROL APPARATUS WITH FREQUENCY FILTERS FOR CONTROLLING AN AIR GAP WIDTH IN ELECTROMAGNETIC LEVITATION SYSTEMS

Reinhard Nuscheler, Schwifting, and Hans Wessner, Markt Indersdorf, both of Germany, assignors to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Germany

Filed Aug. 19, 1992, Ser. No. 932,292
Claims priority, application Germany, Aug. 22, 1991, 4127879
Int. Cl.[6] H02K *29/00*
U.S. Cl. 318—135 **12 Claims**



1. A closed loop control apparatus for controlling an air gap width in an electromagnetic levitation system for levitating a mass above a machine bed, comprising magnetic means (3) including an energizing coil arranged for levitating said mass, closed loop control circuit means for energizing said energizing coil of said magnet means, said closed loop control circuit means comprising simulator means (1,5) for providing a feed back control signal to said energizing coil to simulate electromagnetically a mechanical spring characteristic, sensor means (4,6,7) arranged for sensing at least two control values as a force representing control value, said closed loop control circuit means feeding back said control values to said simulator means (1,5), said simulator means comprising a current controller and frequency filter means responsive to said force representing control value for providing an energizing current to said magnet energizing coil in such a way that an active control of an energizing current supplied to said energizing coil, is provided in response to low and intermediate noise frequencies up to about 1000 cps and so that said active control of said energizing current is blocked in response to noise frequencies above about 1000 cps.

5,387,852

METHOD OF DETERMINING TOOL RUNNING PATH IN N/C SYSTEM

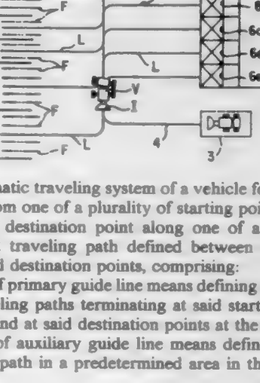
Kazuhiro Maida; Shinji Tachikake; Satoru Yahagi, and Atsushi Ohta, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 14, 1993, Ser. No. 91,045
Claims priority, application Japan, Jul. 14, 1992, 4-186627
Int. Cl.[6] G05B *19/10*
U.S. Cl. 318—567 **3 Claims**

1. A method of determining a tool running path in a numerical control machining system when cutting a plurality of separate parts of a work into predetermined shapes with one cutting tool from one part to another from a first part, the method comprising the steps of

obtaining a cutting trajectory of the cutting tool for each of the parts,

storing all end points of the cutting trajectory which can be one of a tool inlet end and a tool outlet for each of the parts,



determining a part among said plurality of separate pans having a cutting trajectory which has an end point that is nearest to the tool outlet end of the cutting trajectory for said first part as the part to be cut next, and determining said nearest end point to be the tool inlet end of the cutting trajectory for the part to be cut next, and

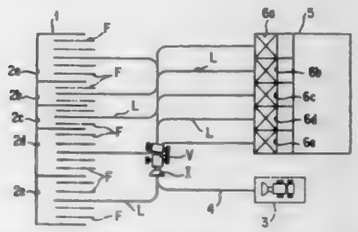
repeating said determining step until the tool running path reaches the part to be cut last.

5,387,853

AUTOMATIC TRAVELLING SYSTEM OF CONSTRUCTION VEHICLE

Toyoichi Ono, 688-5, Tokunobu, Hiratsuka-shi, Kanagawa-ken, Japan

Continuation of Ser. No. 474,785, May 29, 1990, Pat. No. 5,239,249. This application Apr. 28, 1993, Ser. No. 53,400
Claims priority, application Japan, Sep. 30, 1987, 62-244387
Int. Cl.[6] G05D *1/12*
U.S. Cl. 318—587 **17 Claims**



1. An automatic traveling system of a vehicle for navigating the vehicle from one of a plurality of starting points to one of a plurality of destination point along one of a plurality of predetermined traveling path defined between said starting points and said destination points, comprising:

a plurality of primary guide line means defining respective of said traveling paths terminating at said starting points at one end and at said destination points at the other ends;

a plurality of auxiliary guide line means defining auxiliary traveling path in a predetermined area in the vicinity of said destination points, said auxiliary guide line means defining approach paths for navigating said vehicle to an exact position to reach in said destination point;

a first pair of detecting means arranged in alignment in a direction perpendicular to the traveling direction of said vehicle, said first pair of detecting means detecting said primary guide line for navigating the vehicular travel from selected one of said starting points to selected one of said destination points; and

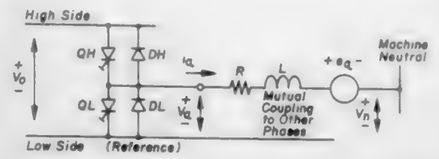
at least one second pair of detecting means arranged in alignment with the row of said first pair of detecting means, said second pair of detecting means detecting one of said auxiliary guide lines for selecting the approach path.

5,387,854

METHOD OF TORQUE NOTCH MINIMIZATION FOR QUASI SQUARE WAVE BACK EMF PERMANENT MAGNET SYNCHRONOUS MACHINES WITH VOLTAGE SOURCE DRIVE

Patrick J. McCleer, Jackson, Mich.; Jack S. Lawler, Knoxville, Tenn., and Natarajan Narasimhamurthi, Ann Arbor, Mich., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 939,123, Sep. 2, 1992. This application May 28, 1993, Ser. No. 69,015
Int. Cl.[6] H02P *7/42*
U.S. Cl. 318—719 **12 Claims**



1. A method for powering a quasi square wave back EMF permanent magnet synchronous machine with a voltage source drive in order to minimize torque notch, the quasi square wave back EMF permanent magnet synchronous machine having a rotor with a plurality of permanent magnets spaced at equal angular intervals, and a stator having a plurality of stator windings forming an odd number N stator phases where $N \geqq 3$, and the voltage source drive having 2N switch devices arranged in N parallely-connected switch legs for connection to an input voltage source, each switch leg having a high side switch device coupled to one of said motor phase windings for driving said phase winding by a drive voltage respective to said phase winding according to a first polarity, and a low side switch device coupled to the one motor phase winding for driving said phase winding by a drive voltage respective to said phase winding according to a second polarity, the powering method comprising the steps of:

gating the switch devices of said voltage source drive according to a predetermined sequence of successive switch periods, each switch period including a commutation period comprising applying an excitation voltage to an incoming phase winding of said stator, said excitation voltage being above the drive voltage respective to said incoming phase winding, while reducing an excitation voltage to an outgoing phase winding of said stator, said excitation voltage being below the drive voltage respective to said outgoing phase winding, thereby

maintaining the sum of the excitation voltages applied to the incoming phase winding and outgoing phase winding constant at a predetermined value for the duration of each commutation period.

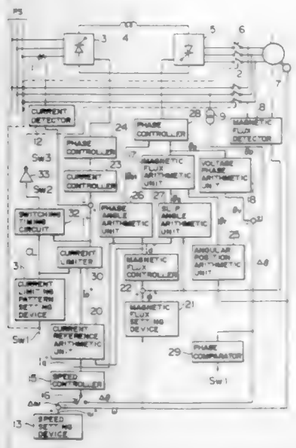
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5,387,855

INDUCTION MOTOR CONTROL SYSTEM

Masanori Miyazaki, Tokorozawa; Yasuhiro Suzuki, Kunitachi, and Tadashi Saito, Fuchu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 873,711, Apr. 22, 1992, Pat. No. 5,212,438, which is a continuation of Ser. No. 248,384, Sep. 23, 1988, abandoned. This application Apr. 2, 1993, Ser. No. 42,405
Claims priority, application Japan, Sep. 24, 1987, 62-237302; Jan. 4, 1988, 63-209
Int. Cl.[6] H02P 5/40
U.S. Cl. 318—805 7 Claims



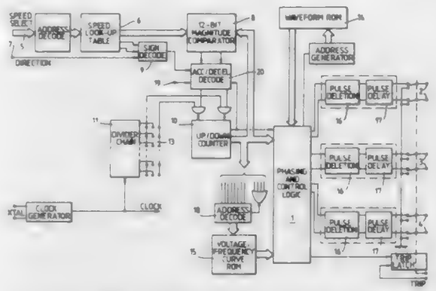
1. An induction motor control system comprising:
a variable-frequency power supply for supplying an output voltage at a given phase for driving an induction motor, the motor having a rotational speed, a magnetic flux phase and a predetermined voltage, at various speeds;
first switching means connected to said induction motor, said variable-frequency power supply and a commercial power supply for supplying a voltage at a given phase, for selectively connecting said induction motor to said commercial power supply or said variable-frequency power supply;
means for calculating a speed difference between a speed reference and said rotational speed of said induction motor;
means for calculating a phase difference between said phase of said output voltage of said variable-frequency power supply or a magnetic flux reference, having a given phase, for said induction motor, and said phase of said voltage of said commercial power supply;
second switching means for selectively outputting said speed difference or said phase difference, prior to the switching of said first switching means;
means for calculating a torque current reference in response to an output of said second switching means;
means for calculating an excitation current reference from a magnetic flux reference; and
vector control means for performing vector control of said variable-frequency power supply in response to said torque current reference and said excitation current reference so that said rotational speed and said voltage of said induction motor are maintained at predetermined values, respectively;
whereby said torque current reference controls a slip frequency of said induction motor through said vector control means.

5,387,856

SPEED CONTROL ARRANGEMENTS FOR ELECTRIC MOTORS

David P. Gilbert, Lincoln, England, assignor to Plessey Semi-Conductors Limited, United Kingdom

Filed Oct. 20, 1993, Ser. No. 139,439
Claims priority, application United Kingdom, Oct. 26, 1992, 9222450
Int. Cl.[6] H02P 5/28
U.S. Cl. 318—807 3 Claims



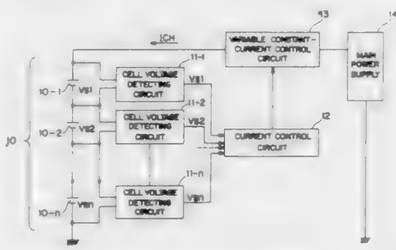
1. A speed control arrangement for an electric motor, comprising: logic circuit means for generating an energizing signal waveform for said motor of a frequency determined by a control signal applied to said logic circuit means; storage means for storing a plurality of first digitally encoded values each for determining a respective predetermined speed of rotation of said motor; means for selecting a first digitally encoded value from said plurality of first digitally encoded values stored in said storage means; counter means for holding a second digitally encoded value; means for applying a signal derived from said second digitally encoded value to said logic circuit means as said control signal; means responsive to a difference between said selected first digitally encoded value and said second digitally encoded value for changing said second digitally encoded value towards said selected first digitally encoded value at a predetermined rate; and means for selecting said predetermined rate at which said second digitally encoded value is changed.

5,387,857

BATTERY CHARGING APPARAUTS

Satoshi Honda; Masayuki Toriyama; Hiroyuki Suzuki, and Yoshihiro Nakazawa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1992, Ser. No. 832,352
Claims priority, application Japan, Feb. 8, 1991, 3-037681; Apr. 9, 1991, 3-103325
Int. Cl.[6] H02J 7/00
U.S. Cl. 320—18 20 Claims



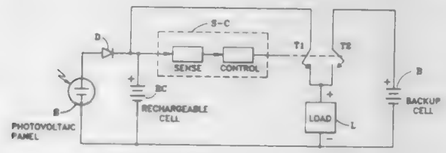
1. A battery charging apparatus comprising:
a plurality of battery cell groups connected to each other in series, each battery cell group including at least one battery cell;
control means for controlling an electric charge supplied to said plurality of battery cell groups;
monitor means for detecting the respective terminal voltages of each of said plurality of battery cell groups; and
detecting means for detecting the respective temperatures of each of said plurality of battery cell groups,
said control means terminating the electric charge supplied to said plurality of battery cell groups as a function of a predetermined terminal voltage and temperature of said plurality of battery cell groups wherein an upper limit of a predetermined temperature of said battery cell groups is utilized in advance for determining a start time of current charging as a function of time lapse from initial actuation of the battery charging apparatus, electric charging commencing once the detected respective temperatures of said plurality of battery cell groups are below the upper limit.

5,387,858

ENERGY-CONSERVING MULTIPLE POWER SOURCE AND METHOD FOR BATTERY-OPERATED PRODUCTS

Edward D. Bender, Warner, and W. David Stratton, Canaan, both of N.H., assignors to Academy of Applied Science, Concord, N.H., a part interest

Continuation of Ser. No. 842,457, Feb. 27, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 89,627
Int. Cl.[6] H02J 7/00
U.S. Cl. 320—61 15 Claims



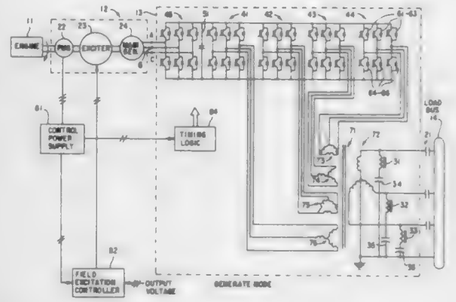
1. A multiple D.C. power source for electrical and electronic products having, in combination, a rechargeable primary D.C. voltage source having chargeable means and comprising photovoltaic cell means and in which the voltage value thereof is controlled in response to charging induced by light received by the photovoltaic cell means; a backup D.C. voltage source; oppositely alternately operative switching means for connecting the primary D.C. voltage source to the product while disconnecting the backup D.C. voltage source from the product; and sense and control means connected to monitor the state of the said voltage value of the primary D.C. voltage source and for establishing predetermined upper and lower threshold voltages therefor, and for controlling the switching means in response to the monitoring, automatically and instantaneously to connect the backup D.C. voltage source to the product while disconnecting the primary D.C. voltage source therefrom when said voltage value thereof drops to said lower threshold voltage; and means for automatically and instantaneously reconnecting the primary D.C. voltage source to the product while disconnecting the backup D.C. voltage source from the product when the voltage value of the primary D.C. voltage source has recharged sufficiently to reach said upper threshold value, whereby in the absence of the backup D.C. voltage source the switching means is powered from the primary D.C. voltage source.

5,387,859

STEPPED WAVEFORM VSCF SYSTEM WITH ENGINE START CAPABILITY

Muthu K. Murugan, Howell; Robert C. Eckenfelder, Point Pleasant, and James Widdis, Oceanport, all of N.J., assignors to AlliedSignal Inc., Morristownship, Morris County, N.J.

Filed Mar. 25, 1993, Ser. No. 36,793
Int. Cl.[6] H02P 9/04; H02M 5/458
U.S. Cl. 322—10 11 Claims



1. A stepped waveform VSCF system with engine start capability comprising:
starter/generator means mounted to an engine;
converter means connected to said starter/generator means and including a plurality of DC/AC inverters connected to said starter/generator means, a plurality of high frequency trap-tuned filters connected to contactor means, three phase transformer means connected between said plurality of high frequency trap-tuned filters and said plurality of DC/AC inverters for providing isolation, and filter capacitor means connected across said plurality of DC/AC inverters;
field excitation controller means connected to said starter/-generator means;
control power supply means connected to said field excitation controller means;
said contactor means connected to said converter means;
load bus means connected to said contactor means;
said three phase transformer means including secondary winding means connected to said plurality of high frequency trap-tuned filters and primary winding means connected to said plurality of DC/AC inverters;
said converter means including timing logic means for switching on and off at a desired frequency, each of a plurality of semiconductor switches to produce a multiple step three-phase output voltage at said secondary winding means of said three phase transformer means;
said converter means further including PWM controller means connected to said control power supply means;
resolver means connected between said starter/generator means and said PWM controller means; and
back EMF sensor circuit means connected to said PWM controller means.

5,387,860

DETACHABLE COILS AIR CORE MOVEMENT HOLDER

Yen-Shu Tsai, 2F, No. 2-3, Alley 14, Lane 44, Hoshin Rd., and Min-Huang Chuang, 2F-2, No. 185, Taoshiang Road, both of Taipei, Taiwan, Prov. of China

Filed Feb. 9, 1993, Ser. No. 15,369
Int. Cl.[6] G01R 5/16, 1/20; H01F 27/28
U.S. Cl. 324—146 1 Claim

1. A detachable coils air core movement holder, comprising:
an upper holder, said upper holder comprising a plurality of vertical bolt housings equiangularly spaced around the

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border of a flat base plate thereof, and an upright hollow post upstanding from the flat base plate at the center;

a bottom holder fitted over said upper holder at the bottom, said bottom holder comprising a plurality of vertical bolt housings around the border of a flat base plate thereof respectively connected to the vertical bolt housings of said upper holder by conductive bolts, and a recessed chamber with a center blind hole at the top of the flat base plate at the center;

a center shaft connected to a magnet in said recessed chamber on said bottom holder and extended out of said hollow post and coupled to a pointer;

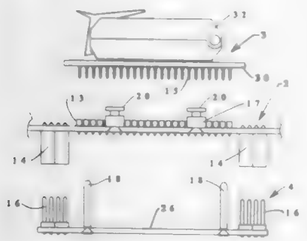
magnetic field generating means fastened to said upper and



bottom holders and controlled to generate a magnetic field in turning said center shaft of said magnet;

wherein said upper and bottom holders have each a plurality of horizontal projections spaced around the respective border between either two contiguous bolt housings; said magnetic field generating means comprises a plurality of bobbins respectively mounted on the horizontal projections of said upper and bottom holders between, each bobbin comprising a frame body with two outward flanges on two opposite ends thereof for winding a coil, said frame body having a center through hole, which receives either horizontal projection of said upper holder and the corresponding horizontal projection of said bottom holder for positioning.

5,387,861
PROGRAMMABLE LOW PROFILE UNIVERSALLY SELECTABLE BURN-IN BOARD ASSEMBLY
Michael Neiderhofer, Milpitas, Calif., assignor to Incal Technology, Inc., Milpitas, Calif.
Filed Jun. 16, 1993, Ser. No. 78,428
Int. Cl.[6] G01R *1/04*
U.S. Cl. 324—158.1 **9 Claims**



1. A programmable low profile burn-in board assembly comprising:

a mother board having a top surface and a bottom surface;

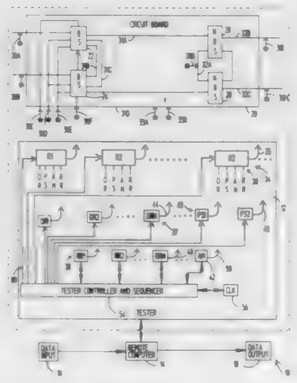
a plurality of test socket means for a plurality of devices under test (DUT);

a program card means for routing signals to each of said test socket means;

means for mounting said plurality of test socket means in a corresponding number of positions on the top surface of said mother board; and

means for mounting said program card means to the bottom surface of said mother board.

5,387,862
POWERED TESTING OF MIXED CONVENTIONAL/BOUNDARY-SCAN LOGIC
Kenneth P. Parker, and Kenneth E. Posse, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 817,014, Jan. 3, 1992, Pat. No. 5,260,649. This application Jul. 6, 1993, Ser. No. 88,279
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—158.1 **8 Claims**



1. A method of testing a circuit board using a data processor providing reduced processing time for the data processor, the circuit board having:

(i) a plurality of non-boundary scan (NBS) devices, each of the NBS devices having a number of NBS pins for electrically coupling to the circuit board;

(ii) a plurality of boundary-scan (BS) devices, each BS device having a number of BS pins for electrically coupling to the circuit board, the number of BS pins serially coupled together to form a boundary scan path, wherein the boundary scan path provides a serial data stream representing a logic state on each of the number of BS pins to the data processor for analysis;

(iii) a number of BS nodes wherein each BS node is coupled to at least one BS pin of the boundary-scan path so as to accept an applied voltage from the boundary scan path and to provide a resultant logic state on the at least one BS pin to the boundary scan path, and

(iv) a number of NBS nodes, each of the NBS nodes coupled to at least one NBS pin, the method comprising the steps of:

selecting one of the number of BS nodes;

determining a first set of pins comprising all BS and NBS pins that are coupled to the selected BS node;

determining a second set of pins comprising all BS and NBS pins coupled to one of the number of NBS nodes and that are within a predetermined distance on the circuit board of any of the first set of pins;

applying a voltage corresponding to a first logic state

from the boundary scan path to all BS nodes in the first set of pins;

applying a voltage corresponding to a second logic state to at least one of the second set of pins;

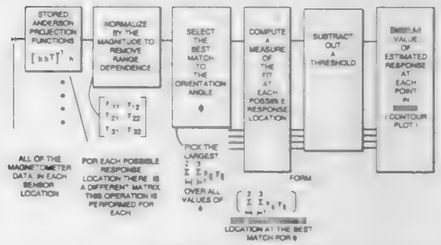
causing the boundary scan path to capture the resultant logic states provided by each BS pin of each of the number of BS nodes coupled to the boundary scan path;

causing the boundary scan path to provide a first serial data stream to the data processor;

determining a subset of the first set of pins, the subset comprising all of the first set of pins that are within the predetermined distance of any one of the second set of pins; and

analyzing only a first portion of the first data stream using the data processor, the first portion of the first data stream including logic states provided to the boundary scan path by the subset of the first set of pins so as to reduce the time required for the data processor to analyze the first data stream.

5,387,863
SYNTHETIC APERTURE ARRAY DIPOLE MOMENT DETECTOR AND LOCALIZER
Allen K. Lo, Diamond Bar; Wilbur W. Eaton, Jr., Placentia, both of Calif., and Ben R. Breed, Austin, Tex., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Apr. 14, 1992, Ser. No. 872,764
Int. Cl.[6] G01B *7/00;* **G01C** *21/00*
U.S. Cl. 324—207.13 **5 Claims**



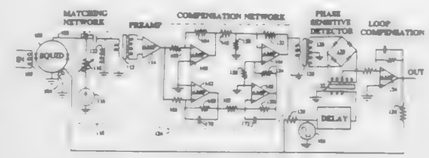
1. A method of detecting and locating a magnetic dipole comprising the steps of:

sensing the magnetic field produced by the dipole using a moving magnetic sensor that is moved relative to the location of a magnetic dipole to synthesize a plurality of output signals that are representative of a plurality of spatially distributed magnetic sensors and that are indicative of the magnetic field sensed by the moving magnetic sensor;

generating a magnetic signature produced by the magnetic field and the dipole which represents a magnetic response function of the dipole by processing the output signals from the moving magnetic sensor to decompose the magnetic field into its magnetic field components; and

processing the magnetic response function to produce magnetic signature features therefrom that are indicative of the location and relative orientation of the magnetic dipole and means for displaying the location of the dipole.

5,387,864
CHANNEL EQUALIZED DC SQUID FLUX-LOCKED LOOP
Meir Gershenson, Panama City, and Robert J. McDonald, Panama City Beach, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 26, 1993, Ser. No. 95,557
Int. Cl.[6] G01R *33/035;* **H01L** *39/24*
U.S. Cl. 324—248 **2 Claims**



1. In a direct current superconducting quantum interference device (DC SQUID) flux-locked loop system comprising

A. said DC SQUID operated in a cold region and subjected to some flux which is to be measured and to a modulating flux,

B. an amplifier operated in a warm region,

C. impedance matching circuitry arranged to connect an electrical output from the DC SQUID to an electrical input of the amplifier,

D. a phase-sensitive detector responsive to an electrical output from the amplifier, and

E. loop-compensation circuitry for providing an output signal indicative of the flux which is to be measured and for providing feedback to maintain the system in a flux-locked loop,

the improvement comprising a compensation network having a frequency transfer function which is the inverse of the frequency transfer function of the impedance matching circuitry, said compensation network being situated in the system between the output of the amplifier and the phase-sensitive detector, whereby both the frequency-domain response and the time-domain response of the system are made more nearly linear.

5,387,865
PERMEABILITY DETERMINATION FROM NMR RELAXATION MEASUREMENTS FOR FLUIDS IN POROUS MEDIA
Michael Jerosch-Herold, High Bridge, and Hans Thomann, Bedminster, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.
Continuation-in-part of Ser. No. 763,026, Sep. 20, 1991, Pat. No. 5,289,124. This application Mar. 11, 1993, Ser. No. 29,755
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[6] G01R *33/20*
U.S. Cl. 324—303 **21 Claims**

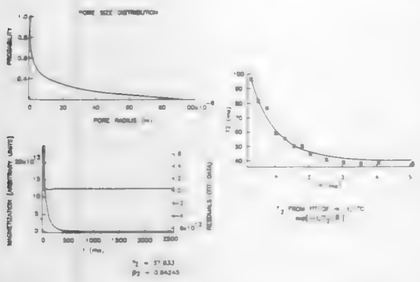
1. A method for determining the permeability of porous media saturated with a liquid using nuclear magnetic resonance (NMR) and comprising:

(a) applying a radiofrequency pulse sequence which after an initial pulse generates successive spin echoes with a train of radio frequency pulses spaced apart by a time interval of length τ wherein all pulses have a carrier frequency corresponding to the Larmor frequency of the fluid spins filling the pore space of the medium for which the fluid flow permeability is to be determined;

(b) measuring the decay of the transverse magnetization at each of the successive regularly spaced midpoints between the 180 degree pulses where the midpoints coincide with the peak of the spin echoes;

(c) repeating steps a and b at least one more time wherein each repeat of step (a) uses said radio frequency pulse train with a different value of the pulse spacing τ;

(d) determining the transverse relaxation time $T_2(\tau)$, from the transverse magnetization decay for each value of τ, and determining one of a prefactor Δ and a restricted diffusion length, l_{nmr}, from said $T_2(\tau)$:



(e) measuring the porosity of said porous media;

(f) determining the permeability of said media from the porosity and one of the prefactor Δ and a restricted diffusion length, l_{nmr}, from said $T_2(\tau)$:.

5,387,866

METHODS FOR HIGH-SPEED MEASUREMENT OF SPIN-LATTICE RELAXATION TIMES

Charles L. Dumoulin, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 12, 1993, Ser. No. 105,249
Int. Cl.[6] G01R *33/20*
U.S. Cl. 324—309 3 Claims

1. A method of measuring spin lattice relaxation time, T_1, within a subject comprising the steps of:

a) placing said subject in a magnetic field to generator longitudinal spin magnetization of nuclear spins within the subject;

b) applying a spatially non-selective radio frequency (RF) pulse to invert the longitudinal magnetization of the nuclear spins;

c) applying a spatially selective RF pulse having a predetermined frequency range to convert longitudinal magnetization into transverse spin magnetization of a selected ensemble of nuclear spins of a spatial region defined by the frequency range;

d) detecting at a time n, magnetic resonance signals generated by the transverse spin magnetization of the selected ensemble of nuclear spins;

e) repeating steps 'c' through 'd' for a plurality of 'N' repetitions each having a different frequency range for the spatially selective RF pulse, to detect 'N' MR response signals from different spatial regions each detected at a different time 'n' after application of the spatially non-selective RF pulse to encode in a time dimension;

f) selecting a subset of the ensemble of nuclear spins; and

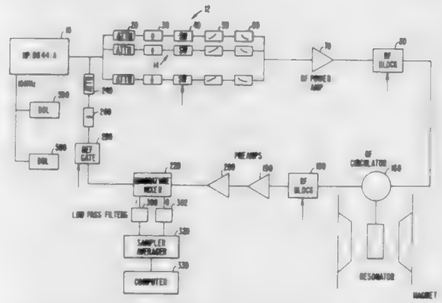
g) determining the spin lattice relaxation time, T_1, for the selected subset of the ensemble of nuclear spins, the spin relaxation time being an exponential recovery rate of the MR response signal of the selected subset as a function of time.

5,387,867

PULSED LOW FREQUENCY EPR SPECTROMETER AND IMAGER

John Bourg, Bethesda; James Mitchell, Damascus; Mark Mirotznik, Silver Spring; Bradley Roth, Kensington, all of Md.; Sankaran Subramanian, Madras; Murali Cherukuri, Rockville, Md., and Paul G. Zablocky, Alexandria, Va., assignors to The United States of America as represented by the Dept. of Health and Human Services, Washington, D.C.

Filed Jul. 26, 1993, Ser. No. 97,811
Int. Cl.[6] G01R *33/20*
U.S. Cl. 324—316 10 Claims



1. An improved excitation system for an electron paramagnetic resonance system having a resonator for receiving excitation signals and containing an aqueous sample that includes electrons which resonate at a selected RF resonant frequency that is not highly absorbed by the aqueous sample, said system including:

means for supplying a radio frequency (RF) carrier signal having a frequency about equal to said selected RF resonant frequency;

pulse forming means, having an input coupled to receive said RF carrier signal, for forming an RF carrier signal pulse;

frequency modulating means, coupled to receive said RF carrier signal pulse, for frequency modulating said RF carrier frequency pulse to form a broadband pulse having a predetermined bandwidth;

pulse compression means, coupled to receive said broadband pulse, for compressing said broadband pulse to form a compressed broadband pulse having a shorter time duration and substantially the same bandwidth as said broadband pulse; and

means for coupling said compressed pulse to said resonator so that said aqueous sample is excited by said compressed pulse.

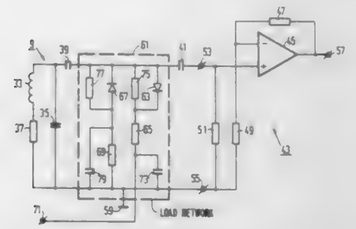
5,387,868

MAGNETIC RESONANCE APPARATUS

Johan W. Rust, and Teunis R. Van Heelsbergen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1993, Ser. No. 116,387
Claims priority, application European Pat. Off., Sep. 29, 1992, 92202975
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—318 14 Claims

1. A magnetic resonance apparatus, comprising a magnet system for generating a steady magnetic field, a coil system for generating gradient fields, and at least one RF coil which comprises a circuit with at least a self-inductance and a tuning capacitor, which circuit is tuned to a predetermined frequency and connected to first and second input terminals of an input amplifier circuit of a receiving device for RF signals, the circuit formed by the RF coil and the input amplifier circuit including means for selectively simulating loading of said RF coil due to an object under examination, said simulating means comprising a load network which comprises at least a switch



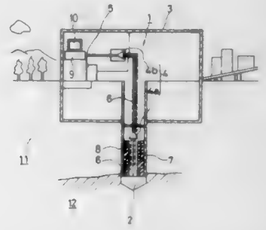
and a resistor which can coupled to the RF coil by means of said switch.

5,387,869

APPARATUS FOR MEASURING TRANSIENT ELECTRIC EARTH CURRENT TO PREDICT THE OCCURRENCE OF AN EARTHQUAKE

Yuji Enomoto, Tsukuba, Japan, assignor to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,104
Claims priority, application Japan, Dec. 26, 1991, 3-359647
Int. Cl.[6] G01V *3/00, 3/08*
U.S. Cl. 324—348 6 Claims



1. An apparatus for measuring transient earth current to predict the occurrence of an earthquake, comprising:

a detection electrode disposed beneath an earth surface at a depth greater than that to which electromagnetic waves generated above said earth surface having commercial power line frequencies penetrate;

a second electrode disposed beneath said earth surface such that an electrical resistance formed between said detection electrode and said second electrode is on the order of several tens of thousands of ohms, said second electrode providing a reference potential; and

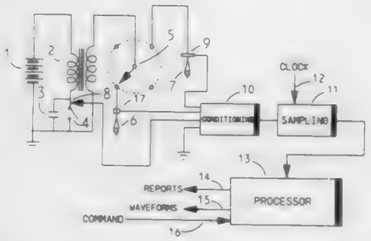
a charge detector coupled to said detection electrode and to said second electrode, said charge detector including a preamplifier and a main amplifier, said preamplifier detecting components having frequencies of at least 100 kHz of a current flowing between said detection electrode and said second electrode, converting said components into a voltage signal, amplifying said voltage signal to produce an amplified signal, and supplying said amplified signal to said main amplifier, said main amplifier sampling said amplified signal at prescribed time intervals to produce a sampled signal and amplifying said sampled signal.

5,387,870

METHOD AND APPARATUS FOR FEATURE EXTRACTION FROM INTERNAL COMBUSTION ENGINE IGNITION WAVEFORMS

Benjamin P. Knapp, Byron Center; Robert Trenary, Mendon; James T. Walters, Kalamazoo; Clarence B. Allgor, Paw Paw, and David T. Bach, Kalamazoo, all of Mich., assignors to SPX Corp., Muskegon, Mich.

Filed Jan. 8, 1993, Ser. No. 2,165
Int. Cl.[6] G01M *15/00;* F02P *17/00*
U.S. Cl. 324—379 16 Claims



1. A method of extracting features from an engine ignition waveform for diagnosis in real time comprising the steps of:

sampling the waveform at a first sampling rate to produce a first sequence of sample values;

choosing one sample value out of every N sample values from said first sequence, where N is an integer, to produce an input sequence of sampled data values, each sampled data value having a magnitude and a time of occurrence;

searching said input sequence for a firing peak with height to indicate a spark plug firing event by finding a plurality of adjacent sample values with magnitudes at least twice the magnitude of other sample values;

determining an actual firing peak height as the greatest magnitude of said adjacent sample values;

comparing the actual firing peak height to a predetermined minimum height threshold value and reporting an anomalous firing event when said actual firing peak height is less than the minimum height threshold value;

comparing the actual firing peak height to a predetermined maximum height threshold value and reporting an anomalous firing event when said actual firing peak height is greater than the maximum height threshold value; comparing the actual firing peak height against a cylinder's running average firing peak height and reporting an anomalous firing event when the actual firing peak height differs from said running average firing peak height by more than a predetermined amount; said running average firing peak height formed by adding a cylinder's current firing peak height to the sum of its previous firing peak height, said sum divided by predetermined number.

5,387,871

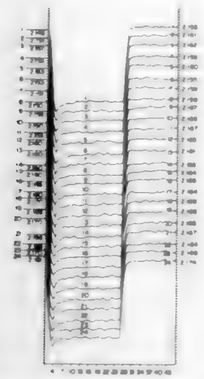
METHOD OF TESTING CHARACTERISTICS OF BATTERY SET

Wei-Jen Tsai, No. 26, Ming-Der Lane, Ming-Der Street, Ta-Li Hsiang, Taichung Hsien, Taiwan, Prov. of China

Filed Nov. 25, 1992, Ser. No. 981,496
Int. Cl.[6] G01N *27/416*
U.S. Cl. 324—429 5 Claims

1. A method of testing characteristics of battery set making use of a multicircuit voltage tester having a plurality of voltage testing line sets connected respectively with a positive terminal and a negative terminal of a battery unit of said battery set, which is subsequently permitted to discharge to a load for a period of time upon an interruption of an input power source and which is subsequently recharged by a resumption of said input power source; wherein said multicircuit voltage tester scanns, reads and writes repeatedly data of voltage of said

battery unit of said battery set at a time when said battery set discharges and is recharged, with said data stored in a memory of said multicircuit voltage tester and plotted as characteristic curves in relation to time such that said characteristic curves



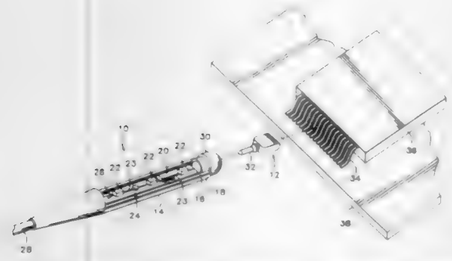
are spaced in coordinate equidistantly to form a chart, comparing said characteristic curves and determining a characteristic of said battery unit of said battery set by observing a change in space between said characteristic curves.

5,387,872

POSITIONING AID FOR A HAND-HELD ELECTRICAL TEST PROBE

Mark W. Nightingale, Washougal, Wash., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Jul. 2, 1993, Ser. No. 86,698
Int. Cl.[6] G01R *1/04*
U.S. Cl. 324—538 **4 Claims**



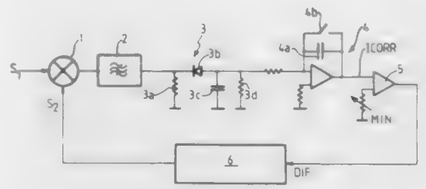
1. An apparatus for directly positioning a hand-held electrical test probe on individual leads of an integrated circuit device mounted on a substrate with the probe having electrical circuitry disposed within a probing head that is coupled to a measurement test instrument for receiving electrical signals on the integrated circuit device leads comprising a housing having a central bore for receiving an electrical conductive element coupled to the electrical circuitry of the probe with one end of the housing being normal to the central bore and having at least four teeth extending therefrom defining interposing slots for engaging the leads of the integrated circuit device with the central bore being exposed within one of the slots for exposing the electrically conductive element therein for providing an electrical connection between one of the leads and the electrical circuitry of the probe head.

5,387,873

METHOD OF SYNCHRONIZING TWO SIGNALS

Marc Muller, Clamart, and Philippe Sarquiz, Paris, both of France, assignors to Schlumberger Industries, Montrouge, France

Filed Oct. 7, 1992, Ser. No. 957,134
Claims priority, application France, Oct. 22, 1991, 91 13002
Int. Cl.[6] H03K *5/26*
U.S. Cl. 327—155 **3 Claims**



1. A method enabling two periodic signals having the same waveform and the same theoretical period to be synchronized, in which the first signal is produced iteratively, in which the second signal is synthesized iteratively with adjustable phase, and in which said phase is adjusted until synchronization is obtained as a function of a measure of the correlation between the first and second signals, wherein the method comprises the following operations:

for each period of the second signal, producing a measure of the correlation between the first and second signals, and comparing said measure with a predetermined minimum value;

for each new period of the second signal, adopting a state of a first type or of a second type depending on whether or not the minimum value exceeds the measure obtained for correlation over the previously elapsed period, either type of state having a polarity that is either positive or negative, and each newly-adopted state having the same polarity as the preceding state if it was of the first type and of opposite polarity, otherwise; and

to the beginning of each new period of the second signal, applying a phase skip through an angle of substantially less than 360° C. and of the same polarity as the polarity of the newly-adopted state.

5,387,874

METHOD AND CIRCUIT FOR DYNAMIC VOLTAGE INTERGRATION

Juha Rapeli, Oulu, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Continuation of Ser. No. 752,864, Aug. 30, 1991, abandoned. This application Apr. 2, 1993, Ser. No. 41,913
Claims priority, application Finland, Aug. 30, 1990, 904281
Int. Cl.[6] H03K *5/00*
U.S. Cl. 327—337 **7 Claims**

1. A method for producing either one of an inverted and a direct time integral of a signal voltage, comprising the steps of:

a. selectively connecting a sampling capacitance to the signal voltage;

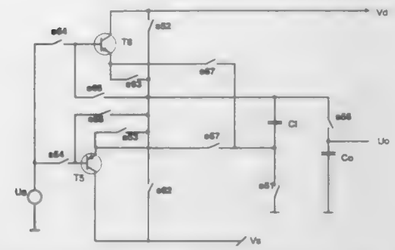
b. precharging the sampling capacitance by selectively connecting the sampling capacitance to one of a positive and a negative supply voltage;

c. storing charge samples representing the signal voltage in the precharged sampling capacitance while connected;

d. switching switch elements at predetermined intervals to selectively connect the sampling capacitance to an integrating capacitance;

e. discharging the charge samples from the sampling capacitance to the connected integrating capacitance while connected;

f. isolating the integrating capacitance after the sample charge has been fully discharged; and



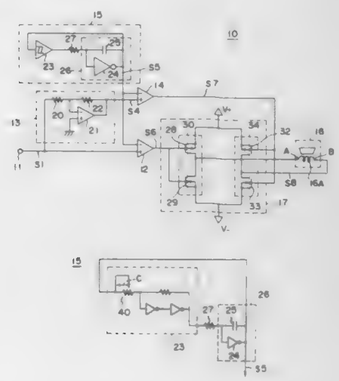
g. selecting timing of the switching elements so that current flows in the circuit only when one of the steps of storing and discharging is being performed.

5,387,875

OUTPUT CIRCUIT CAPABLE OF DRIVING A VIBRATION DEVICE

Makoto Tateno, Tokyo, Japan, assignor to Rion Kabushiki Kaisha, Kokubunji, Japan

Filed Jan. 21, 1994, Ser. No. 183,975
Claims priority, application Japan, Jan. 29, 1993, 5-034324
Int. Cl.[6] H03F *3/38*
U.S. Cl. 330—10 **7 Claims**



1. An output circuit for generating a pulse form drive signal in accordance with an input signal having an input frequency band and a changing voltage level, said drive signal being capable of driving a predetermined vibration means, said output circuit comprising:

oscillation means for producing an output oscillation signal having a voltage level of triangular waveform and having a frequency higher than said input frequency band, said oscillation means being an amplitude adjustable type for varying the amplitude of the output oscillation signal and thereby varying the amplitude at which said vibration means is driven;

polarity inversion means for inverting the polarity of said input signal and producing a corresponding inverted input signal;

first comparison means for comparing the voltage level of said input signal with the voltage level of said output oscillation signal and producing a first comparison signal;

second comparison means for comparing the voltage level of said inverted input signal with the voltage level of said output oscillation signal and producing a second comparison signal; and

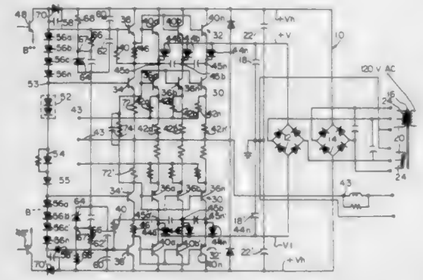
pulse application means for selectively supplying to said vibration means a pulse signal having a positive voltage for a period of time in which the voltage level of said input signal is higher than the voltage level of said output oscillation signal and for a period of time in which the voltage level of said inverted input signal is lower than the voltage level of said output oscillation signal, and for selectively supplying to said vibration means a pulse signal having a negative voltage for a period of time in which the voltage level of said input signal is lower than the voltage level of said output oscillation signal and for a period of time in which the voltage level of said inverted input signal is higher than the voltage level of said output oscillation signal.

5,387,876

HIGH EFFICIENCY AMPLIFIER WITH REDUCED SWITCHING DISTORTION

Jack C. Sondermeyer, Meridian, Miss., assignor to Peavey Electronics Corporation, Meridian, Miss.

Filed Dec. 20, 1993, Ser. No. 169,353
Int. Cl.[6] H03F *3/38, 3/26*
U.S. Cl. 330—251 **18 Claims**



1. An amplifier switchably operative in a plurality of voltage modes depending on the level of the input signal comprising:

circuit means for each voltage mode including a common driver for each level, and a plurality of output devices arranged in parallel, each operative at a selected voltage level and being coupled to the common driver for the corresponding voltage mode, one output device of each level being coupled in series to an output device of the next lower level; and

switching diode means being coupled between series connected outputs of each output device.

5,387,877

VOLTAGE CONTROLLED ATTENUATOR FOR SPEAKERPHONES

Neil Robinson, Sunnyvale, Calif., assignor to Exar Corporation, San Jose, Calif.

Division of Ser. No. 78,716, Jun. 17, 1993, Pat. No. 5,319,704. This application Oct. 14, 1993, Ser. No. 137,237
Int. Cl.[6] H03G *3/30*
U.S. Cl. 330—254 **8 Claims**

1. A voltage controlled attenuator for a speakerphone, comprising:

first and second NPN transistors having emitters coupled together;

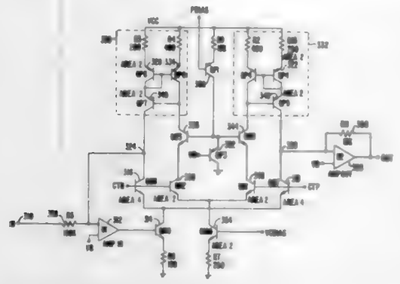
a first current source coupled to said emitters of said first and second NPN transistors;

a first PNP transistor having a collector coupled to a collector of said first NPN transistor;

a second PNP transistor having a collector and base coupled

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to an emitter of said first PNP transistor, and an emitter coupled to a first voltage source;
a third PNP transistor having a collector coupled to a collector of said second NPN transistor;
a fourth PNP transistor having a collector and base coupled to an emitter of said third PNP transistor, and an emitter coupled to said first voltage source;
an input to said attenuator coupled to said collector of said first NPN transistor for providing an analog representation of a voice signal to said first NPN transistor;
an output to said attenuator coupled to said collector of said second NPN transistor;
a first current mirror having a first leg coupled to a base of said first PNP transistor, said first and second PNP transistors being a second leg of said first current mirror;
a second current mirror having a first leg coupled to a base of said third PNP transistor, said third and fourth PNP



transistors being a second leg of said second current mirror;
first and second control inputs coupled to said first legs of said first and second current mirrors, respectively;
wherein said first and second control inputs are coupled to the bases of third and fourth NPN transistors coupled to said first legs of said current mirrors;
an input amplifier having an input coupled to said input of said attenuator and an output coupled to the base of a fifth NPN transistor in said first current source, said input amplifier providing a feedback connection between said collector of said first NPN transistor and said first current source; and
a second current source having a sixth NPN transistor with a base coupled to a fixed bias voltage and a collector coupled to the emitters of said third and fourth NPN transistors.

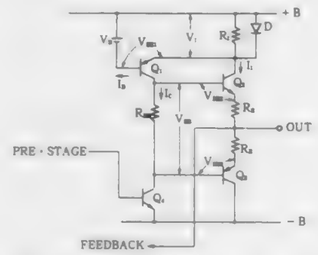
5,387,878

AMPLIFICATION CIRCUIT

Shinichi Fujita, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed May 27, 1993, Ser. No. 67,845
Claims priority, application Japan, May 29, 1992, 4-163732; May 6, 1993, 5-127746
Int. Cl.[6] H03F *3/26*
U.S. Cl. 330—265 **4 Claims**

1. An amplification circuit comprising:
a push-pull type output circuit including first and second output transistors operating complimentarily connected in series between dc current source terminals, each of said first and second transistors includes a base and the bases of each of said first and second transistors are driven by a pre-stage output signal;
a current detecting resistance inserted between either one of said first and second transistors and one of said dc current source terminals for detecting a bias current of said output circuit;
error amplification means for amplifying difference between voltage across said current detecting resistance and reference voltage for negative-feedback controlling the bias current of said output circuit independent of said pre-stage output signal; and



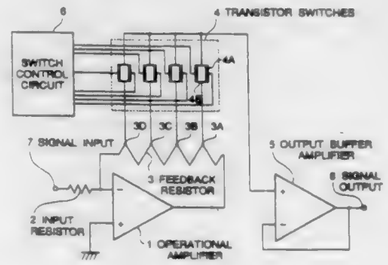
a diode connected in parallel to said current detecting resistance for bypassing a current flowing during outputting of a signal.

5,387,879

GAIN CONTROLLABLE OUTPUT BUFFER AMPLIFIER CIRCUIT HAVING A REDUCED CIRCUIT AREA

Noritoshi Satoh, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 4, 1993, Ser. No. 102,159
Claims priority, application Japan, Aug. 4, 1992, 4-207682
Int. Cl.[6] H03G *3/12*
U.S. Cl. 330—282 **6 Claims**



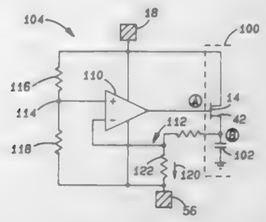
1. An output buffer amplifier circuit comprising:
an operational amplifier having an inverting input and a non-inverting input, one of which is connected to a signal input node, said inverting input of said operational amplifier being connected through an input resistor to said signal input node, said non-inverting input of said operational amplifier being connected directly to the ground;
a feedback resistor having its one end connected to an output of said operational amplifier and its other end connected to said inverting input of said operational amplifier, said feedback resistor having a plurality of intermediate taps;
a corresponding number of transistor switches each of which has its one end connected to a corresponding one of said plurality of intermediate taps of said feedback resistor, each of said transistor switches being formed of a CMOS transfer gate composed of a P-channel MOS transistor and an N-channel MOS transistor connected in parallel to each other,
an output buffer amplifier having its input connected in common to the other end of each of said transistor switches, an output of said output buffer amplifier being connected to an output node; and
a switch control circuit connected to a control input of said transistor switches so as to turn on only a selected one of said transistor switches, gates of said P-channel MOS transistor and said N-channel MOS transistor being connected to receive a pair of complementary control signals from said switch control circuit.

5,387,880

COMPACT MONOLITHIC WIDE BAND HEMT LOW NOISE AMPLIFIERS WITH REGULATED SELF-BIAS

Kevin W. Kobayashi, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 20, 1993, Ser. No. 105,521
Int. Cl.[6] H03F *3/16*
U.S. Cl. 330—296 **33 Claims**



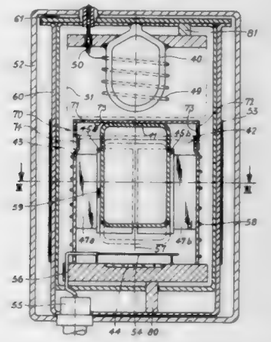
1. A bias regulating circuit for generating a negative current at a source of a first HEMT, comprising:
second and third HEMTs monolithically integrated with said first HEMT and each including a gate, a source, and a drain, wherein said source of said third HEMT is connected to the source of said second HEMT;
a gate resistor having one end connected to the gate of the third HEMT;
a first resistor having one end connected to the drain of the third HEMT and an opposite end connected to a gate of the first HEMT; and
a second resistor having one end connected to an opposite end of the gate resistor, and an opposite end connected to the source of the first HEMT.

5,387,881

ATOMIC FREQUENCY STANDARD

Hartmut S. Schweda, Le Landeron; Giovanni Busca, Neuchâtel, and Pascal Rochat, Marin, all of Switzerland, assignors to Observatoire Cantonal de Neuchatel, Neuchatel, Switzerland

Filed Mar. 9, 1993, Ser. No. 28,140
Claims priority, application France, Mar. 16, 1992, 92 03210
Int. Cl.[6] H01S *1/06;* **H03B** *17/00;* **H03L** *7/26*
U.S. Cl. 331—94.1 **20 Claims**



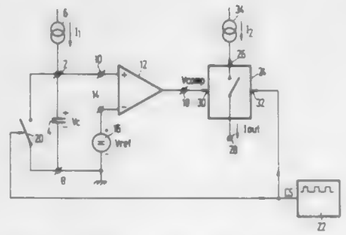
1. An atomic frequency standard comprising:
a resonance cavity within an enclosure;
storage means in said resonance cavity for the storage of atomic or molecular elements;
field generation means for subjecting said storage means to a uniform oscillating magnetic field;
state selection means for placing said elements in a preselected energy state;
means for stimulating transitions from said preselected energy state to another preselected energy state at a predetermined frequency;
heating means for supplying heat to said enclosure; and,
at least one electrode disposed-about said storage means so as to thereby enhance said oscillating magnetic field in the region of said storage means, said at least one electrode being connected to said enclosure by at least one thermally conductive member so as to thereby supply said heat to said storage means.

5,387,882

SWITCHED CAPACITOR CHARGE PUMP AND SAWTOOTH OSCILLATOR USING SAME

Franciscus A. C. M. Schoofs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 56,502, May 3, 1993, abandoned. This application Mar. 22, 1994, Ser. No. 216,122
Claims priority, application Netherlands, Jun. 15, 1992, 9201053
Int. Cl.[6] H03K *3/023, 3/354*
U.S. Cl. 331—111 **11 Claims**



8. A switched capacitor charge pump, comprising:
capacitive means, for storing a charge;
charge means for charging said capacitive means with a first current, said capacitive means exhibiting a first voltage thereacross when being charged by said first current;
clock means for providing a clock signal having a period,
discharge switching means coupled to the capacitive means for recurrently discharging said capacitive means in response to the clock signal;
comparison means having a first input coupled to said capacitive means for receiving the first voltage across said capacitive means, a second input for receiving a reference voltage, and an output for supplying a comparison signal having a first value for denoting that the first voltage is smaller than the reference voltage, and a second value for denoting that the first voltage is larger than the reference voltage;
a second current source for supplying a second current;
an output terminal; and
switching means coupled to the comparison means for controlling the flow of the second current to the output terminal in response to the .clock signal and the comparison signal, such that the second current flows to the output terminal cyclicly with a period corresponding to the period of the clock signal and a pulse width dependent upon the charging time for charging the capacitive means to the reference voltage.

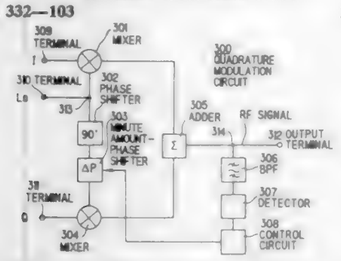
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5,387,883

QUADRATURE MODULATOR HAVING CONTROLLED PHASE SHIFTER

Hideki Ueda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 20, 1993, Ser. No. 63,693
Claims priority, application Japan, May 20, 1992, 4-152932
Int. Cl.[6] H03C *1/52;* H04L *27/36*
U.S. Cl. 332—103 2 Claims



1. A quadrature modulation circuit, comprising:

means for supplying a local signal and two baseband signals;

means for dividing said local signal into two local signals;

means for shifting a phase of at least one of said two local signals to provide a relative phase difference of 90 degrees therebetween;

a first mixer for combining said first baseband signal with a first one of said two local signals, whereby a first combined signal is obtained;

a second mixer for combining said second baseband signal with a second one of said two local signals, whereby a second combined signal is obtained;

means for adding said first and second combined signals; and

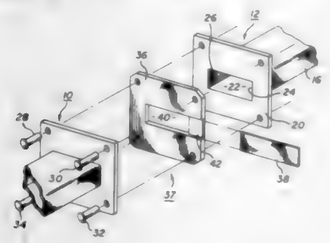
controlling means for controlling said shifting means in accordance with an output signal of said adding means, whereby said two local signals are adjusted to have a relative phase difference of 90 degrees, said controlling means comprises a band-pass filter for limiting a band of said output signal of said adding means, a detector for detecting a signal passing through said band-pass filter by a direct voltage signal, and a control circuit for controlling a shifting amount of said shifting means in accordance with said direct voltage signal from said detector.

5,387,884

IMPEDANCE MATCHING FLANGE FOR A RECTANGULAR WAVEGUIDE

John C. Porcello, Williamsport, Pa., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jul. 13, 1993, Ser. No. 91,178
Int. Cl.[6] H01P *5/04*
U.S. Cl. 333—33 7 Claims



1. Apparatus for adjusting the impedance of a first device of the type that includes a first port comprising rectangular waveguide and terminating in a planar mounting surface for interfacing a planar mounting surface of a second port of a second device, said apparatus comprising, in combination:

a) a substantially-planar metallic member having an internal aperture;

b) means for affixing said member to said first port;

c) a generally-rectangular, planar metallic stub;

d) said metallic member including a groove that extends from an edge of said member to said aperture for accommodating said stub in slidable relationship therewith; and

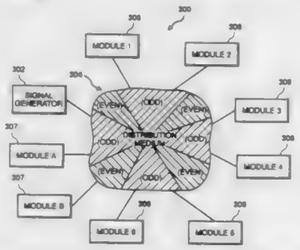
e) the depth of said groove being substantially equal to the thickness of said stub.

5,387,885

SALPHASIC DISTRIBUTION OF TIMING SIGNALS FOR THE SYNCHRONIZATION OF PHYSICALLY SEPARATED ENTITIES

Vernon L. Chi, Chapel Hill, N.C., assignor to University of North Carolina, Chapel Hill, N.C.

Continuation of Ser. No. 518,463, May 3, 1990, abandoned. This application May 25, 1993, Ser. No. 66,374
Int. Cl.[6] H01P *1/213;* H03H *7/48*
U.S. Cl. 333—100 56 Claims



1. An apparatus for distributing a sinusoidal signal comprising:

means for generating said sinusoidal signal with a first temporal phase ϕ_g;

means for receiving the signal with a specific second temporal phase ϕ_i, said receiving means being substantially energy lossless; and

means for propagating the signal, said propagating means being substantially energy lossless, having a substantially energy lossless finite boundary, having a geometry independent of a wavelength of said sinusoidal signal, and coupled to said generating and receiving means to cause said sinusoidal signal to propagate through said propagating means to form a standing wave so that said specific second temporal phase $\phi_i=\phi_g+\delta_i-n_i\times 180°$ at said receiving means, where δ_i is a small, location-dependent phase offset, and n, is a location-dependent non-negative integer.

5,387,886

DUPLEX FILTER OPERATING AS A CHANGE-OVER SWITCH

Tapio Takalo; Aimo Turunen, and Pauli Nappa, all of Oulu, Finland, assignors to LK-Products OY, Kempele, Finland

Filed May 7, 1993, Ser. No. 58,772
Claims priority, application Finland, May 14, 1992, 922210
Int. Cl.[6] H01P *5/12*
U.S. Cl. 333—101 11 Claims

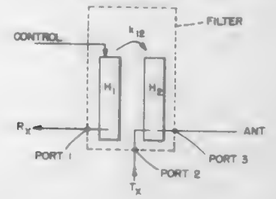
1. A filter comprising resonators, in which a first signal can pass in a first time slot between a first port and a third port and a second signal can pass in a second time slot between a second port and the third port, characterized in that

the first signal path between the first and the third ports comprises a plurality of resonators,

the second port is connected to one of said plurality of resonators in the first signal path, whereby a first subset of resonators lies between the first and the second ports, and a second subset of resonators lies between the second and the third ports forming the signal path between the second and the third ports,

the resonators of one subset are switchable resonators, whose resonance frequencies can be shifted between two

frequencies, the resonators of said one subset being connected to an external control means, such that on receipt of a first control signal from the control means the resona-



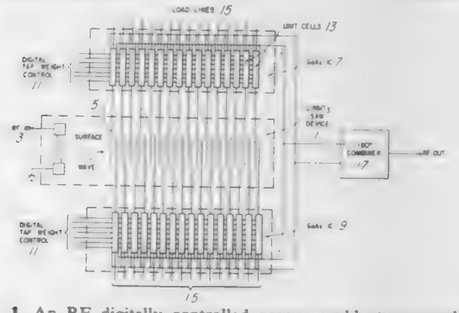
tors of said one subset allow the signal to pass through substantially without attenuation, and on receipt of a second control signal from the control means the resonators of said one subset attenuate said signal.

5,387,887

MINIATURE DIGITALLY CONTROLLED PROGRAMMABLE TRANSVERSAL FILTER USING LSI GAAS INTEGRATED CIRCUITS

Dale E. Zimmerman, Dallas; James W. Culver, Richardson, and Carl M. Panasik, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 196,930, May 20, 1988, abandoned. This application Mar. 4, 1994, Ser. No. 205,751
Int. Cl.[6] H03H *7/38, 9/00, 9/205*
U.S. Cl. 333—166 18 Claims



1. An RF digitally controlled programmable transversal filter, comprising:

(a) an acoustic delay line having a direction of wave propagation and a plurality of taps spaced therealong in said direction of wave propagation;

(b) means for launching a surface acoustic wave along said acoustic delay line in response to an RF input signal;

(c) a plurality of digitally controlled cells, each said cell having unique externally programmable digital means establishing the gain thereof, each said tap controlling an associated cell responsive to receipt of said surface acoustic wave at said tap, each said cell having an output; and

(d) means for combining the outputs of said cells.

5,387,888

HIGH FREQUENCY CERAMIC MULTI-LAYER SUBSTRATE

Kazuo Eda, Nara; Yutaka Taguchi, Settsu, and Katsuyuki Miyauchi, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 1, 1993, Ser. No. 41,183
Claims priority, application Japan, Apr. 3, 1992, 4-081815; Apr. 21, 1992, 4-101177
Int. Cl.[6] H01P *1/15*
U.S. Cl. 333—247 18 Claims

1. A high frequency ceramic multi-layer substrate comprising:

a first dielectric layer made of a first dielectric material;

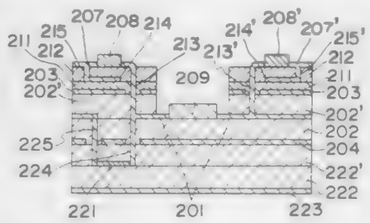
a first ground electrode being formed on a surface of the first dielectric layer;

a stripline formed on a surface of the first dielectric layer different from the other surface in contact with the first ground electrode;

a second dielectric layer made of the first dielectric material, which second dielectric layer being layered on the first dielectric layer interposing said stripline between them;

a second ground electrode being formed on a surface of the second dielectric layer different from the other surface in contact with the second dielectric layer;

a third dielectric layer made of a second dielectric material, which third dielectric layer being applied to the second ground electrode;



an electric circuit provided on the third dielectric layer; and

an electrically conductive line extending through the second and third dielectric layers from a connection point with the stripline to a connection point with the electric circuit without electrical contact with the second ground electrode, the equivalent length of the electrically conductive line from the connection point with the stripline to the electric circuit being a fourth of the wavelength of a signal to be input through the stripline, whereby the length of the electrically conductive line results in high frequency attenuation characteristics;

wherein said electric circuit is made from discrete electronics components; and

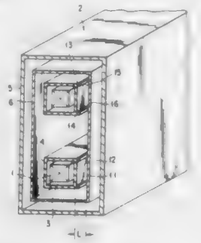
wherein said electric circuit is a direct current bias circuit and one of said discrete electronics components being connected to said electrically conductive line is a capacitor.

5,387,889

SUPERCONDUCTING MAGNET APPARATUS

Hideaki Maeda; Takashi Yazawa, and Ikuo Tashiro, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 27, 1992, Ser. No. 858,876
Claims priority, application Japan, Mar. 29, 1991, 3-091701
Int. Cl.[6] H01F *1/00;* B60L *13/02;* F25B *19/00*
U.S. Cl. 335—216 11 Claims



1. A superconducting magnet apparatus adapted to be used in a magnetically levitating train system having a ground coil, comprising:

a superconducting coil having a racetrack shape;

a coil container, having a racetrack shape that is similar to the superconducting coil, for containing the superconducting coil;

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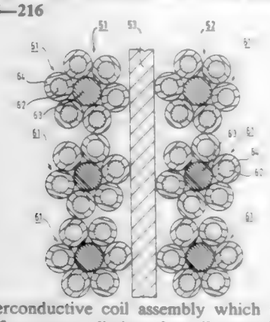
a metallic heat shield that is situated outside the coil container for shielding the coil container from heat;
a coolant contained in the coil container, for maintaining the superconducting state of the superconducting coil; and
a superconducting wire, situated on at least one of two walls of the coil container which are opposed to the ground coil, for suppressing heat which is generated in the coil container and resulting in eddy current occurring outside the coil container generating less heat.

5,387,890

SUPERCONDUCTIVE COIL ASSEMBLY PARTICULARLY FOR A CURRENT LIMITER, AND A CURRENT LIMITER INCLUDING SUCH A COIL ASSEMBLY

Pascal Estop, Vitry-sur-Seine; Thierry Verhaege, Saulx les Chartreux; Van Doan Pham, Meyzieu; Alain Lacaze, Essert, and Christian Cottevieille, Montreuil, all of France, assignors to GEC Alsthom T & D SA and GEC Alsthom Electromecanique SA, both of Paris, France

Filed Nov. 4, 1993, Ser. No. 145,634
Claims priority, application France, Nov. 5, 1992, 92 13317; Aug. 27, 1993, 93 10300
Int. Cl.[6] H01F *1/00, 36/00;* **H02H** *7/00;* **H01H** *47/00*
U.S. Cl. 335—216 **3 Claims**



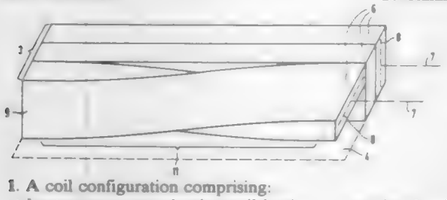
1. A superconductive coil assembly which may be used particularly for a current limiter, the coil assembly comprising at least one coil comprising two sets of superconductive wires wound as touching turns and in opposite directions, each of said superconductive wires comprising a plurality of strands, wherein each strand is covered with a layer of material which has a resistivity in the radial direction lying in the range 0.1 Ω.m to 10 Ω.m.

5,387,891

COIL CONFIGURATION HAVING TWISTED ENDS AND BEING MADE OF A CONDUCTOR WITH SUPERCONDUCTING FILAMENTS

Wolfgang Nick, Köln, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 24, 1994, Ser. No. 217,597
Claims priority, application European Pat. Off., Sep. 25, 1991, 91116350
Int. Cl.[6] H01F *7/22, 5/08*
U.S. Cl. 335—216 **20 Claims**



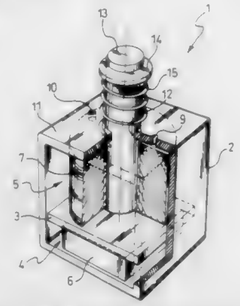
1. A coil configuration comprising:
at least one superconducting coil having an associated coil surface; and
a conductor containing superconducting filaments and being wound substantially on said coil surface, said conductor having a longitudinal axis and having a respective transversal axis oriented approximately perpendicular to said coil surface at each point along said longitudinal axis, said conductor having a cross section being extended along said transversal axis at each of said points along said longitudinal axis, said conductor having two ends protruding from said at least one coil, at least one of said ends having a twist in the vicinity of said at least one coil, and said transversal axis being approximately parallel to said coil surface downstream of said twist.

5,387,892

PERMANENT MAGNET RELEASE SOLENOID FOR AUTOMATIC CIRCUIT BREAKERS AND METHOD OF MAKING

Gian P. Rossetti, Cremona, and Augusto Contardi, Varese, both of Italy, assignors to Bticino S.P.A., Milan, Italy

PCT No. PCT/EP91/01424, § 371 Date Mar. 30, 1993, § 102(e) Date Mar. 30, 1993, PCT Pub. No. WO92/02944, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 29, 1991, Ser. No. 983,576
Claims priority, application Italy, Jul. 30, 1990, 21117-A/90
Int. Cl.[6] H01F *7/00, 7/06*
U.S. Cl. 335—254 **1 Claim**



1. A method of making a permanent magnetic release solenoid for automatic circuit breakers, comprising:
cutting off a tube length from a square cross-section stock of a ferromagnetic material, whereby said tube length comprises a single piece of ferromagnetic material;
making an opening through said tube length;
inserting, laterally into said tube length, an electric winding to a position to said opening;
inserting laterally into said tube length a flat plate of a ferromagnetic material to contact said winding;
inserting laterally into said tube length a permanent magnet to contact the opposite side of said plate from said winding; and
inserting a plunger of a ferromagnetic material through said opening and inside said winding.

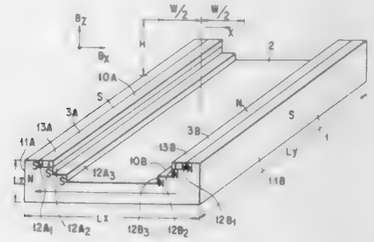
5,387,893

PERMANENT MAGNET MAGNETIC CIRCUIT AND MAGNETRON PLASMA PROCESSING APPARATUS

Masami Oguriyama, Ichikawa; Haruo Okano, Tokyo; Isahiro Hasegawa, Zusi; Junichi Arami, Tokyo, and Hiromi Harada, Hiratsuka, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,230
Claims priority, application Japan, Mar. 9, 1992, 4-085095
Int. Cl.[6] H01F *7/02;* **C23C** *14/00*
U.S. Cl. 335—302 **7 Claims**

1. A permanent magnet magnetic circuit comprising:
a main magnet block having a pair of opposite outer surfaces;
a pair of main magnetic poles of opposite polarities formed on the respective outer surfaces of the main magnet block;
compensating magnetic pole means for controlling the direction of the magnetic field directed from one of said main magnetic poles to the other magnetic pole; and
adjusting magnetic field generating means provided between said pair of opposite outer surfaces of said main magnet block for producing a magnetic field directed to a direction other than the direction of magnetization of said main magnet block to control the magnetic field directed from one of said main magnetic poles to the other main magnetic pole;



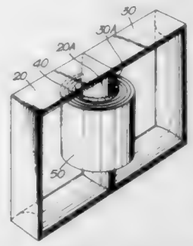
wherein said adjusting magnetic field generating means comprises a pair of adjusting magnetic blocks, said adjusting magnetic blocks being disposed at respective positions corresponding to said respective main magnetic poles and being magnetized in a direction perpendicular to or substantially perpendicular to the direction of magnetization of the maid magnet block.

5,387,894

DISTRIBUTION TRANSFORMERS

Dennis J. Allan, and John V. Grant, both of Stafford, England, assignors to GEC Alsthom Limited, England

Filed Jun. 10, 1992, Ser. No. 896,198
Claims priority, application United Kingdom, Jun. 10, 1991, 9112435
Int. Cl.[6] H01F *27/25*
U.S. Cl. 336—213 **10 Claims**



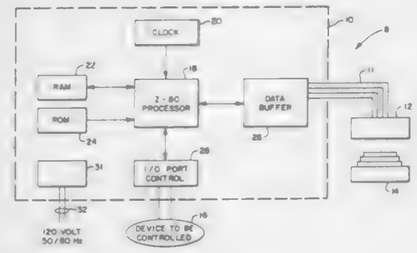
1. An electrical power distribution transformer, comprising:
a core and coil assembly having a wound magnetic core with a central window and electric coils which extend through said core window, said core being unannealed, uncut and of overall circular shape and rectangular cross-section, said core constituting a single roll wound of continuous non-amorphous steel strip, said strip constituting at least a single thickness of steel and having a single width in a range from 250 mm to 1 m, and wherein there are a number of said electric coils in a range between two and four, each said coil being of overall rectangular shape, and each said coil having a cross-section which is a sector of a circle at least where said coils pass through the core window with the sector cross-sections together substantially filling the core window.

5,387,895

CONTROL APPARATUS PARTICULARLY ADAPTED FOR HANDICAPPED PERSONS

Louis A. Keppner, Vernon, and Ramon L. Lecours, Manchester, both of Conn., assignors to MagiCorp Inc., Vernon, Conn.

Continuation of Ser. No. 839,177, Feb. 21, 1992, Pat. No. 5,281,945. This application Oct. 21, 1993, Ser. No. 139,990
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.[6] G05B *1/00;* **G06F** *7/02*
U.S. Cl. 340—146.2 **18 Claims**



1. A control apparatus which comprises:
first and second dish shaped members;
means for storing a first digital code, said means for storing a first digital code being disposed in said first dish shaped member;
means for storing a second digital code, said means for storing a second digital code being disposed in said second dish shaped member;
means for comparing said first and second digital codes, said first and second generally dish shaped members being dimensioned and configured for mutually nesting relationship, said means for comparing being operative when said first and second members are disposed in nesting relationship.

5,387,896

RASTERSCAN DISPLAY WITH ADAPTIVE DECAY

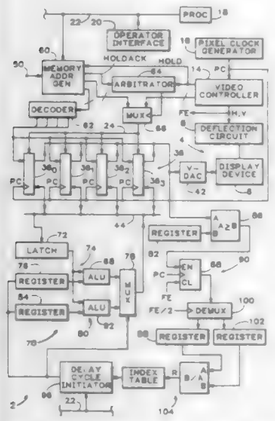
Kuriappan P. Alappat, and Edward E. Averill, both of Beaverton, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Aug. 6, 1990, Ser. No. 563,656
Int. Cl.[6] G09G *1/16;* **H04N** *5/66*
U.S. Cl. 345—147 **3 Claims**

1. Apparatus for manipulating numerical values stored in a memory, said apparatus comprising:
modify means for receiving numerical values from the memory and returning numerical values to the memory, said modify means having at least a first state in which the numerical value received from the memory is modified in a predetermined fashion before returning the numerical value to the memory and a second state in which the numerical value received from the memory is not modified in said predetermined fashion before returning the numerical value to the memory, and
characterizing means for examining at least some of the numerical values and calculating at least one number that defines a property of the examined numerical values, said characterizing means being connected to the modify means for placing the modify means in the first state or the second state depending on the value of said number, the characterizing means comprising:
means for counting the number of numerical values that bear a predetermined relationship to a first value and for counting the number of numerical values that bear a predetermined relationship to a second value, and

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means for comparing the number of numerical values that bear said predetermined relationship to said first value



with the number of numerical values that bear said predetermined relationship to said second value.

5,387,897

MOTOR VEHICLE WITH A CENTRAL LOCKING SYSTEM AND AN ANTI-THEFT ALARM SYSTEM

Rolf Bechtle, Bietigheim Bissingen, and Walter Häcker, Tamm, both of Germany, assignors to Porsche AG, Weissach, Germany

PCT No. PCT/EP91/01264, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993, PCT Pub. No. WO92/02390, PCT Pub. Date Feb. 20, 1992

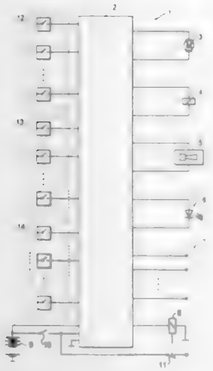
PCT Filed Jul. 6, 1991, Ser. No. 966,193

Claims priority, application Germany, Jul. 31, 1990, 4024300

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[6] B60R *25/10*

U.S. Cl. 340—426 **11 Claims**



1. An arrangement for controlling a central locking system and an alarm system for a motor vehicle with at least two doors having locks and locking buttons, comprising:

a central locking system for automatically locking and unlocking the doors via a lock activation by means of the lock in at least one of the doors;

a first group of switching contacts on the locks of the doors and coupled to the central locking system, the central locking system being controlled in response to signals from the first group of switching contacts;

an anti-theft alarm system that monitors accessing of an interior of the motor vehicle, an alarm readiness of the anti-theft alarm system being capable of being activated by the switching contacts of the first group of switching contacts during locking of the doors, the alarm readiness being capable of being deactivated during unlocking of the doors;

a second group of switching contacts, coupled to the anti-theft alarm system, which records accessing and unauthorized use of the vehicle, with a triggering of an alarm by the alarm-ready anti-theft alarm system taking place by a change from an inactive condition to an active condition of at least one switching contact of the second group of switching contacts; an electro-optical indicating element in at least one of the locking buttons which indicates alarm readiness of the anti-theft alarm system by flashing;

a third group of switching contacts which monitors a locking condition of the locks of the vehicle; and

a control device, coupled to the first, second and third groups of switching contacts, which determines an operating condition of the central locking system and of the anti-theft alarm system, the control device controlling both the central locking system and the anti-theft alarm system, said control device receiving inputs from the first, second and third switching groups of contacts and differentiating between at least the operating conditions:

anti-theft alarm system deactivated or defective (first operating condition),

anti-theft alarm system activated and locks of the vehicle properly locked (second operating condition), and

anti-theft alarm system activated and locks of the vehicle not properly locked (third operating condition),

wherein the control device causes the electro-optical indicating element to indicate one of the operating conditions by visually distinguishable flashing pulses.

5,387,898

BRAKE LIGHTS ACTIVATION SYSTEM AND INERTIAL SIGNAL-GENERATING DEVICE THEREFOR

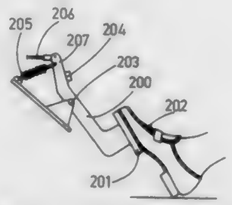
Menashe Yeheskel, Yavne, and Armand Rosenberg, Rehovot, both of Israel, assignors to Baran Advanced Technologies (86) Ltd, Beer-Sheva, Israel

Filed Feb. 18, 1992, Ser. No. 837,330

Claims priority, application Israel, Mar. 1, 1991, 97397; Oct. 23, 1991, 99836; Nov. 29, 1991, 100197

Int. Cl.[6] B60Q *1/44*

U.S. Cl. 340—479 **17 Claims**



1. An acceleration vector activated system to be used in vehicles in association with brake lights and an acceleration pedal, said acceleration pedal producing acceleration vectors in response to pedal movements, comprising:

(a) acceleration vector sensing means connected to the acceleration pedal, to generate a signal having an amplitude proportional to an acceleration vector of the accelerator pedal;

(b) circuit means, connected to the acceleration vector sensing means and to the vehicle brake lights through a vehicle brake light switch, for analyzing a level of the signal generated by the acceleration vector sensing means and to activate the brake lights when the signal is above a predetermined amplitude.

5,387,899

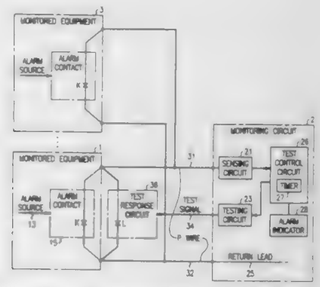
ALARM SYSTEM WITH MONITORING CIRCUIT FOR DETECTING A CUT OR SHORT IN A PAIR OF WIRES

Amato A. DiLauro, Astoria, N.Y.; Richard J. Kriete, Hazlet, N.J.; George S. Micallef, Maplewood, N.J., and Vladimir Zaltsman, Bloomfield, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jul. 29, 1993, Ser. No. 99,116

Int. Cl.[6] G08B *29/00*; G01R *31/02*

U.S. Cl. 340—514 **14 Claims**



1. An alarm system comprising:

means for responding (**15**) to an alarm indication (**13**) through the closure (alarm contact K) of an electrical circuit;

means (**21**) for detecting said closure;

test means (**36**) for closing said electrical circuit in response to a test signal; and

means for generating (**26,23**) and transmitting (**34**) said test signal to said test means;

means (**26,28**) for indicating an alarm in response to said means for detecting said closure when said test means is not closing said electrical circuit;

whereby said test signal and test means are used to test whether said means for detecting is connected to said means for responding.

5,387,900

EAS SYSTEM WITH IMPROVED PROCESSING OF ANTENNA SIGNALS

Christopher B. Plonsky, Boca Raton; Jack H. Schneider, Coral Springs, and Stanley A. Strzelec, Boca Raton, all of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Nov. 19, 1992, Ser. No. 979,612

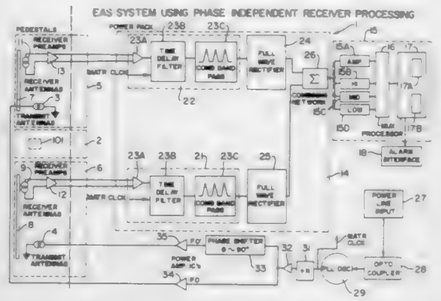
Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—572 **35 Claims**

1. An EAS system for sensing tags in an interrogation zone, said EAS system comprising:

means for transmitting transmitter signals said interrogation zone;

front-end receiving and processing means including first and second receiving antennas for independently receiving from said interrogation zone first and second signals, respectively, said front-end receiving and processing means independently processing said first and second independently received signals, to produce third and fourth processed signals indicative of the absolute values of the independently processed first and second signals; and means for combining said third and fourth signals to produce a combined signal;



and tag evaluation processing means for further processing said combined signal for use in evaluating whether a tag is present in said interrogation zone.

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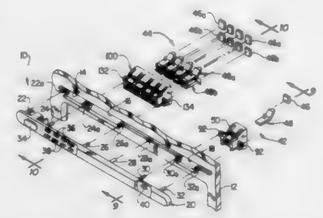
LED INDICATING LIGHT ASSEMBLY FOR A COMPUTER HOUSING

Thomas T. Hardt, Missouri City, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Dec. 10, 1992, Ser. No. 988,723

Int. Cl.[6] G09G *3/14*

U.S. Cl. 340—815.42 **10 Claims**



1. An LED indicating light lens comprising:

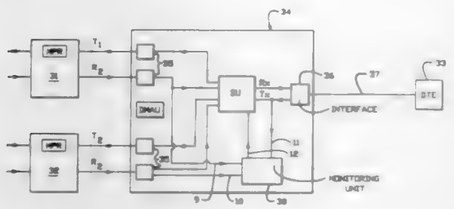
an elongated body having an inlet end face for receiving light from an LED device positioned adjacent thereto, an outlet end face spaced apart from said inlet end face, an outer peripheral side surface extending between said inlet and outlet end faces, said elongated body being adapted to transmit received LED device light from said inlet end face to said outlet end face through an internal light transmission path externally bounded by said outer peripheral side surface,

said elongated body having, along its length, a generally doglegged configuration defined by a front end portion centered about a first axis passing through said outlet end face, a rear end portion laterally offset from and generally parallel to said front end portion and centered about a second axis extending through said inlet end face and laterally offset from and generally parallel to said first axis, and a bent longitudinally intermediate portion joining said front and rear end portions and being centered about a third axis that is angled relative to said first and second axes; and

a mounting pin portion positioned on said front end portion of said elongated body and projecting transversely outwardly from said peripheral side surface.

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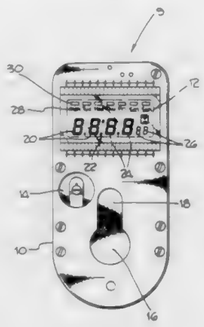
5,387,902
DATA NETWORKS
Terence D. Lockyer, Luton, and Martin C. Adams, Much Hadham, both of England, assignors to 3Com Ireland, Dublin, Ireland
Continuation of Ser. No. 836,748, Feb. 19, 1992, abandoned, which is a continuation of Ser. No. 525,721, May 21, 1990, Pat. No. 5,115,449. This application Sep. 23, 1993, Ser. No. 126,116
Claims priority, application United Kingdom, May 25, 1989, 8912090
The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.03 10 Claims



1. A transceiver for coupling a terminal to a local area network across first and second data links, comprising:
a first pod for connection to the first data link and a second port for connection to the second data link to couple both the first and second ports to the local area network;
a switch unit, having a first state providing for communication between the terminal and the first port for receiving and transmitting data signals on the local area network, and a second state providing for communication between the terminal and the second port for receiving and transmitting data signals on the local area network; and
a monitoring circuit, coupled to the switch unit and the first and second ports which detects a current state of the switch unit, and conditions of the transceiver, including transmission of data signals through the transceiver, and the presence or not of data signals from the network on the first and second ports, and controls the switch unit in response to the current state of the switch unit and the detected conditions of the transceiver.

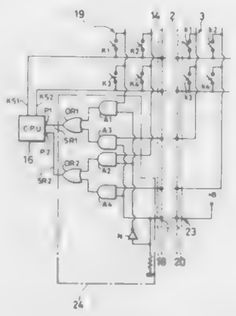
5,387,903
PROGRAMMABLE ELECTRONIC TIME LOCK
Larry Cutter, San Pedro; Klaus W. Gartner, Palos Verdes Estates, both of Calif.; Dieter Butterweck, Dortmund, Germany; P. Vuilleumier, Gletterens, Switzerland; Jean-Luc Monnier, La Chaux-de-Fonds, Switzerland, and P.-A. Sermet, Marin, Switzerland, assignors to Ciposa Microtechniques SA, Switzerland
Filed Apr. 24, 1992, Ser. No. 874,191
Int. Cl.[6] E05B *43/00, 49/00*
U.S. Cl. 340—825.31 4 Claims

1. A method for setting and adjusting a programmable time lock solely by a rotatable key, comprising the steps of:
A) arming the lock by turning a key connected to a key position sensor/encoder;
B) setting a displayed system time by turning the key, which is rotatable in a first and second direction;
C) entering the system time by leaving the key stationary for a predetermined acceptance period;
D) sequentially activating on a display day indicator segments corresponding to the seven days of the week;
E) for each displayed day of the week for which the key is kept stationary for the acceptance period, activating the day indicator corresponding to the next day of the week in sequence; and
F) for each displayed day of the week for which the key is moved during display of the corresponding day indicator segment, entering into a memory primary opening time signals corresponding to a displayed hour and minute selected by a sequence of key turns;
G) after entry of the opening time signals into the memory, upon subsequent arming of the lock, displaying the next entered primary opening time;
H) upon sensing motion of the key alternately in the first and second directions during a predetermined Intermediate Opening Mode selection period, displaying an Intermediate Opening Mode-indicating display for a display period,



and, if the key is stationary during the display period, executing the following steps:
i) entering an intermediate opening time for the current day of the week;
ii) holding the key stationary for the confirmation period;
iii) if the intermediate opening time is later than the system time for the current day, entering into the memory an intermediate opening time signal corresponding to the intermediate opening time; and
iv) disarming the lock at the intermediate opening time.

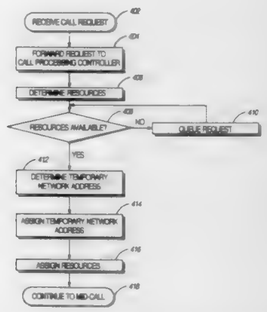
5,387,904
PAGER TERMINAL DEVICE CONNECTABLE TO A HOST APPARATUS
Yuji Takada, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 25, 1993, Ser. No. 22,122
Claims priority, application Japan, Feb. 27, 1992, 4-040915
Int. Cl.[6] G08B *5/22*
U.S. Cl. 340—825.44 12 Claims



1. A pager terminal device, which is connectable to a portable electronic host apparatus having a host central processing unit, a storage device for storing a system controlling program and an operator console, said terminal device comprising:

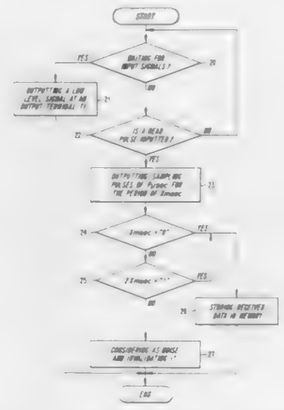
a receiver circuit for receiving and processing a radio signal that is released from a pager relay base;
a key section through which instructions are entered to the pager terminal device;
a pager-use central processing unit for controlling the entire pager terminal device in accordance with a built-in controlling program that is provided therein;
a connector for connecting the receiver circuit to the host apparatus mechanically as well as electrically;
connection-discriminating means for discriminating whether the connector is connected to or disconnected from the host apparatus; and
input switching means for switching input channels in such a manner that an input signal entered through the key section is supplied to the pager-use central processing unit when the discrimination result of the connection-discriminating means shows "disconnection" and that an input signal entered through the operator console is supplied to the pager-use central processing unit when the discrimination result of the connection-discriminating means shows "connection".

5,387,905
MUTLI-SITE GROUP DISPATCH CALL METHOD
Gary Grube, Palatine; Richard Comroe, Dundee; Robert Furtaw, Lake Zurich, and Mark Shaughnessy, Algonquin, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 5, 1992, Ser. No. 956,237
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.52 8 Claims



1. In a communication system network having at least one controller, and a plurality of controlled devices for selectively linking communication sources with communication destinations, wherein each of the plurality of controlled devices has a unique permanent network address, and an assignable temporary second network address, a method of supporting a communication from at least a first communication source to at least a first communication destination, the method comprising the steps of:
A) selecting a set of the plurality of controlled devices to support the communication;
B) communicating information to the set of the plurality of controlled devices using the unique permanent network addresses, which information includes selection information and an assignment of the assignable temporary second network address, which temporary second network address is different from any of the unique permanent network addresses, and which temporary second network address is utilized by each of the set of the plurality of controlled devices while supporting the communication.

5,387,906
SIGNAL RECEIVING CONTROL SYSTEM OF A REMOTE CONTROL DEVICE
Gyung M. Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jan. 11, 1993, Ser. No. 2,583
Claims priority, application Rep. of Korea, Jan. 11, 1992, 92 ZM6
Int. Cl.[6] G08C *19/16*
U.S. Cl. 340—825.64 9 Claims



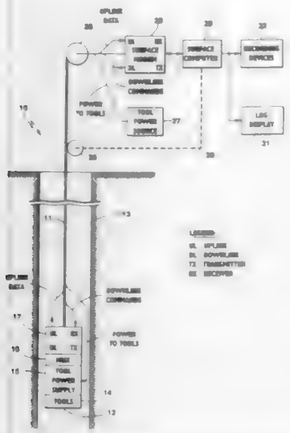
1. A signal receiving control device of a remote control device comprising:
a receiving module for receiving a signal from a transmitting unit;
a microprocessor including an input port for inputting said signal from said receiving module to decode said signal and to control each load of an appliance, and an output port for outputting an input control signal having a first level state and a second level state; and,
a signal input control section connected between said input and output ports for inputting said input control signal from said microprocessor, and applying said signal from said receiving module to said input port of said microprocessor when said input control signal is in said first level state.

5,387,907
HIGH DATA RATE WIRELINE TELEMETRY SYSTEM
Wallace R. Gardner, Houston; Kenneth R. Goodman, and Robert D. Puckett, both of LaPorte, all of Tex., assignors to Halliburton Logging Services, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 976,848, Nov. 16, 1992, abandoned. This application Jun. 25, 1993, Ser. No. 81,710
Int. Cl.[6] G01V *1/00*
U.S. Cl. 340—854.9 9 Claims

1. An uplink receiver for a wireline logging telemetry system, comprising:
a) a phase splitter to receive an analog signal corresponding to an uplink quadrature signal transmitted by a downhole sonde and to separate the received analog signal into first and second components, said first and second components being modulated with a carrier signal;
b) a demodulator to provide in-phase and out-of-phase com-

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ponents by removing the carrier signal from the first and second components; and



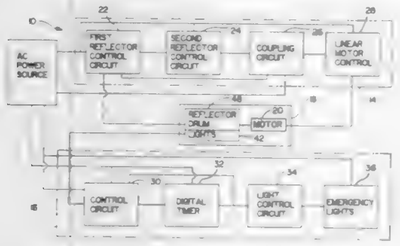
c) a transversal filter equalizer to provide a pair of interleaved multi-level signals corresponding to the in-phase and out-of-phase components.

5,387,908

TRAFFIC CONTROL SYSTEM

Edgeton Henry, 16535 Monte Carlo La., Houston, Tex. 77026, and Fitz Jackson, 11430 Bissonnet St., Houston, Tex. 77099

Filed May 6, 1992, Ser. No. 879,848
Int. Cl.[6] G08G *1/07*
U.S. Cl. 340—916 10 Claims



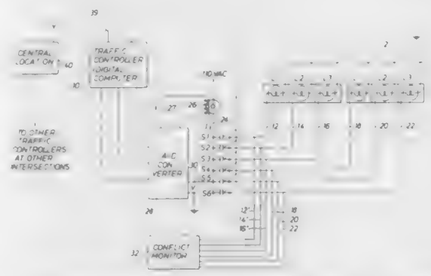
1. A traffic control device including:
a housing having an opening formed therein;
a first power source;
an illuminating means coupled to the first power source and coupled in the housing in alignment with the opening formed therein;
reflector means rotably coupled in the housing having first, second and third reflecting members;
means for rotating the reflector means;
means for activating the rotating means so that each one of the reflecting members of the reflecting means can be selectively rotated into direct alignment with the opening in the housing and the illuminating means to selectively illuminate each one of the reflecting members, the means for activating the rotating means including a second power source;
a first means coupled to the second power source for generating a first and a second signal of predetermined durations during different predetermined time intervals;
a second means coupled to the second power source for generating a third signal of a predetermined duration during a still different predetermined time interval;
a third power source;
a third means coupled to the second and third power source and responsive to the first signal for sending signals to the rotating means to rotate the rotating means to a first, a second and a third position during selected ones of the different time intervals, and responsive to the second signal for sending signals to the rotating means to maintain the rotating means in the first and second positions during other ones of the different time intervals for a predetermined time and responsive to the third signal for sending a signal to the rotating means to maintain the rotating means in the third position during a still different time interval for a predetermined time; and
means for monitoring the activating means to provide an indication when the activating means is inoperative, the monitoring means including, means coupled to the first power source for indicating when the second power source is below a predetermined level;
a first means responsive to the second power source for generating a first signal when the second power source is at a predetermined level and for generating a second signal when the second power source is below the predetermined level;
a fourth power source of the same voltage level as the second power source; and
a second means coupled to the fourth power source and responsive to the first means for activating the indicating means when the second signal is generated by the first means and for deactivating the indicating means when the first signal is generated by the first means.

5,387,909

LAMP SENSING SYSTEM FOR TRAFFIC LIGHTS

Clyde J. Neel, and Henry T. Beyer, both of Sugar Land, Tex., assignors to Naztec, Inc., Sugar Land, Tex.

Filed Mar. 25, 1993, Ser. No. 36,718
Int. Cl.[6] G08G *1/097*
U.S. Cl. 340—931 10 Claims



1. In combination with a traffic control system for a traffic intersection having a traffic controller for cyclically producing a plurality of patterns of command signals, a plurality of switches responsive to the command signals, and a plurality of traffic signal lamps each coupled to a lead from an a.c. voltage source via one of the switches for an on/off condition, apparatus for determining that one or more of the lamps have burned out comprising:
voltage measuring means connected to said a.c. voltage source for measuring the voltage across said signal lamps for each pattern of command signals applied to said switches;
current measuring means coupled to said a.c. voltage source for measuring total a.c. current applied to all of such signal lamps for each pattern of command signals applied to said switches simultaneously with the measurement of said voltage across said signal lamps;

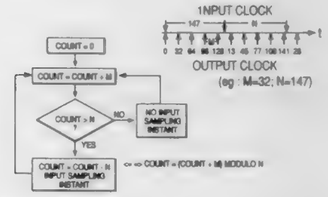
computer means responsive to said current measuring means and to said voltage measuring means for determining a baseline electrical characteristic of said lamps for each pattern of command signals; and
means responsive to said current measuring means and to said voltage measuring means for determining a present electrical characteristic of said lamps for each pattern of command signals and for comparing said present electrical characteristic for a pattern against said baseline characteristic of said pattern to determine if a difference exists between said present electrical characteristic and said baseline electrical characteristic of said pattern thereby to detect a burned out lamp.

5,387,910

SIGNAL PROCESSOR

Yoav Medan, Haifa, and Uzi Shvadron, Mitzpe Aviv, both of Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 7, 1993, Ser. No. 1,481
Claims priority, application United Kingdom, Jan. 8, 1992, 92300146
Int. Cl.[6] H03M *1/66*
U.S. Cl. 341—61 20 Claims



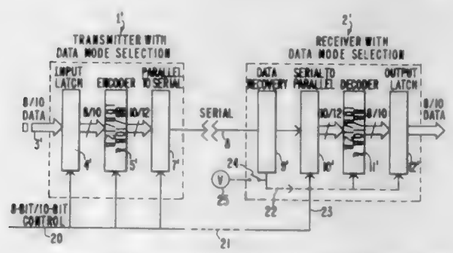
1. A signal processor comprising:
means for receiving a first digital signal and producing an analog signal therefrom;
means for generating digital sample values from the analog signal wherein selected sample digital values are interpolated with other digital sample values generated from the analog signal; and
means for filtering, subsequent to said means for generating, said interpolated selected sample digital values.

5,387,911

METHOD AND APPARATUS FOR TRANSMITTING AND RECEIVING BOTH 8B/10B CODE AND 10B/12B CODE IN A SWITCHABLE 8B/10B TRANSMITTER AND RECEIVER

Marc C. Gleichert, 1191 Bretmoor Way, San Jose, Calif. 95129; Arthur Hsu, 763 Almondwood Way, San Jose, Calif. 95120, and Yun-Che Wang, 278 Sylvin Dr., Los Altos, Calif. 94022

Filed Feb. 21, 1992, Ser. No. 839,864
Int. Cl.[6] H03M *7/00*
U.S. Cl. 341—95 12 Claims



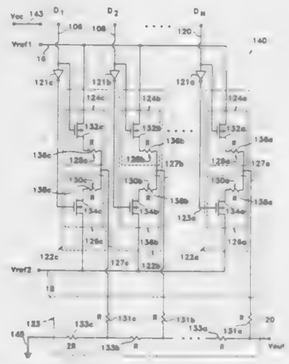
1. A method of coding and transmitting 10 bit data bytes using modified 8B/10B transmission code and a modified 8 bit wide architecture 8B/10B transmitter including:
providing unique 10B/12B codes and incorporating said unique 10B/12B codes in said 8B/10B transmitter;
modifying the architecture of said 8B/10B transmitter to permit selective widening of said 8 bit wide architecture in said 8B/10B transmitter to 10 bit wide architecture as an alternative; and
providing a command control signal to said 8B/10B transmitter to select said 10 bit wide architecture alternative and to select 10B/12B encoding by said 8B/10B transmitter.

5,387,912

DIGITAL-TO-ANALOG CONVERTER WITH REFERENCE GLITCH REDUCTION

Derek F. Bowers, Sunnyvale, Calif., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Dec. 2, 1993, Ser. No. 162,577
Int. Cl.[6] H03M *1/06*
U.S. Cl. 341—118 24 Claims



1. A digital-to-analog converter for converting digital signals to stepped-analog signals, comprising:
first and second reference voltage supply conductors;
a switching circuit output node;
a resistor network electrically connected to said switching circuit output node, said resistor network generally proportionally dividing the voltage between the first and second reference voltage supply conductors; and
a switching circuit that is activated in response to the digital signals, said switching circuit including as assertive circuit portion having a first dissipative circuit electrically connected thereto, and a complementary circuit portion having a second dissipative circuit electrically connected thereto, said assertive and complementary circuit portions being electrically connected to said switching circuit output node such that, when either one of said circuit portions is active and the other circuit portion is inactive, the dissipative circuit in the active circuit portion operates as a part of said resistor network for the proportional dividing of voltage between the first and second reference voltage supply conductors, thereby providing the divided voltage as part of the stepped analog signals, and such that when both circuit portions are active, both dissipative circuits operatively function together for the limiting of current between said first and second reference voltage supply conductors, thereby preventing current surges between the reference voltage supply conductors.

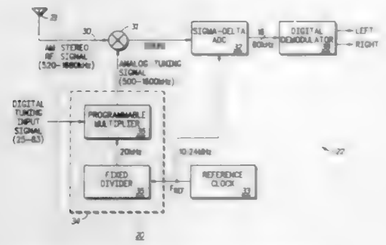
VOL 1171 ISS 1 FE 7 1995 UMI

5,387,913

RECEIVER WITH DIGITAL TUNING AND METHOD THEREFOR

Sangil Park, and Dion D. Messer, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 9, 1993, Ser. No. 149,392
Int. Cl.[6] H03M *1/12*
U.S. Cl. 341—155 19 Claims



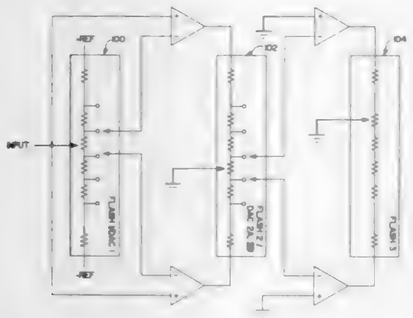
1. A receiver with digital tuning, comprising:
an input terminal for receiving a modulated signal;
an analog multiplier having a first input coupled to said input terminal, a second input for receiving an analog tuning signal, and an output for providing a tuned analog signal;
an analog-to-digital converter (ADC) having an input for receiving said tuned analog signal, and an output for providing a tuned digital signal;
divider means for receiving a reference clock signal, and for providing a first divided signal at a predetermined frequency in response thereto; and
multiplier means coupled to said divider means, for receiving a digital tuning input signal and said first divided signal, and for providing said analog tuning signal at a frequency equal to a multiple of said predetermined frequency as determined by said digital tuning input signal.

5,387,914

CORRECTION RANGE TECHNIQUE FOR MULTI-RANGE A/D CONVERTER

Christopher W. Mangelsdorf, Reading, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Feb. 22, 1993, Ser. No. 20,556
Int. Cl.[6] H03M *1/36*
U.S. Cl. 341—156 14 Claims



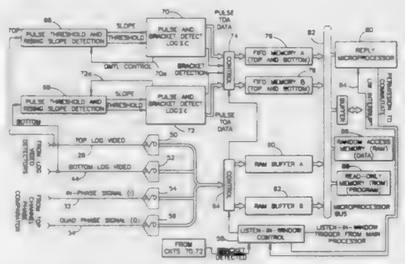
1. In a multi-stage A/D converter of the type where at least one stage comprises a flash converter producing two residue signals for the following stage; that improvement for providing error correction capability by expanding the operating range of said following stage, comprising:
a first flash stage having output means to produce said two residue signals which together represent a least significant bit (LSB) of said first flash stage;
a second flash stage having an input receiving said residue signals;
said second flash stage having a nominal operating range for processing normal error-free input signals;
said second stage comprising a network responsive to said two residue signals and operable to produce corresponding threshold signals for a set of comparators to produce logic signals representing digitally the magnitude of the input signal defined by said two residue signals;
said network comprising means to produce threshold signals outside of said nominal range of said second stage.

5,387,915

METHOD AND APPARATUS FOR DETECTING AND DECODING TRANSPONDER REPLY SIGNALS

Joseph Moussa, Hilliard; William E. Schleder, Dublin, and Richard Thwaits, Columbus, all of Ohio, assignors to B. F. Goodrich FlightSystems, Inc., Columbus, Ohio

Filed Nov. 16, 1993, Ser. No. 153,723
Int. Cl.[6] G01S *13/80*
U.S. Cl. 342—40 52 Claims



1. A method for detecting and identifying a transponder reply signal of the type having a plurality of associated time discrete pulses including two bracket pulses and a number of related data pulses that may have been transmitted at discrete data time intervals between the bracket pulses such that the signal content detected during the data time intervals corresponds to the reply signal data code, comprising the steps of:
a. producing a video signal for each received pulse;
b. detecting potential bracket and data pulses based on said video signals;
c. pairing bracket pulses that mark the beginning and end of a reply signal code based on time of arrival (TOA) of said detected pulses;
d. identifying a reference pulse from said bracket pulses based on relative amplitude of said bracket pulses; and
e. identifying data pulses, associated with said reply signal and detected between occurrence of said bracket pulses, based on said reference pulse to provide the reply code.

5,387,916

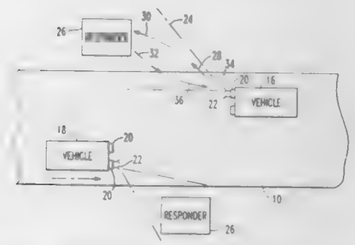
AUTOMOTIVE NAVIGATION SYSTEM AND METHOD

Marvin Cohn, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 923,288, Jul. 31, 1992, Pat. No. 5,254,997. This application Oct. 8, 1993, Ser. No. 133,499
Int. Cl.[6] G01S *13/80*
U.S. Cl. 342—44 36 Claims

1. A navigation system for a vehicle travelling along a highway, comprising:
an interrogator mounted on the vehicle, the interrogator including an antenna means for transmitting an interrogation signal at a predetermined angle relative to the highway;
a responder positioned to receive the interrogation signal,

the responder including a receiving antenna means for collecting the interrogation signal from the vehicle mounted interrogator at times when the vehicle is travelling along a highway within a prescribed range of distance from the transponder, the responder including encoding means coupled to the receiving antenna means for imposing automotive navigation information on the collected interrogation signal, the responder including retrodirective means connected to the encoding means for retransmitting the encoding collected interrogation signal, the



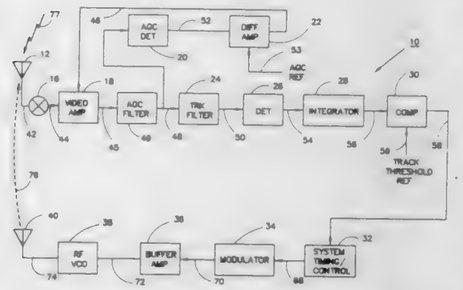
responder including means for retransmitting the encoded collected interrogation signal in the direction of the vehicle mounted interrogator as a responder signal;
an interrogator receiving antenna on the vehicle for collecting the responder signal;
means for decoding the encoded information to provide automotive navigation information; and
indication means mounted to the vehicle for imparting the automotive navigation information to the vehicle operator.

5,387,917

RADAR FUZE

James R. Hager, Golden Valley, and Gregory J. Haubrich, Champlin, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 11, 1992, Ser. No. 989,443
Int. Cl.[6] G01S *13/34*; F42C *13/04*
U.S. Cl. 342—68 15 Claims



1. A radar altimeter fuze apparatus comprising:
a. a receiving antenna means for receiving a return signal;
b. a transmitting antenna for transmitting a transmitted signal which is coupled to the receiving antenna means;
c. a mixer means for mixing at least two signals, the mixer means connected to the receiving antenna means to receive the return signal and a transmitted signal and responsively generate a mixed signal representing an altitude at a mixed signal output;
d. a video amplifier means for amplifying the mixed signal, the video amplifier being connected to the mixed signal output so as to generate an amplified signal representative of the mixed signal at a video amplifier output;
e. a tracking filter means for filtering the amplified signal, the tracking filter means is connected to the video amplifier output to receive the amplified signal and generate a filtered signal at a filter output which is filtered through a track gate within the tracking filter means;
f. a detector means for envelope detecting the filtered signal, the detector means is connected to the filter output to receive the filtered signal and provide a detected signal responsive to the filtered signal at a detector output;
g. an integrator means, connected to the detector output to receive the detected signal, for integrating the detected signal and providing an integrated signal level responsive to the detected signal at an integrator output;
h. a comparator means for comparing the integrated signal level against a track threshold reference signal, the comparator means being connected at a first input to the integrator output to receive the integrated signal level, and at a second input to receive the track threshold reference signal and to output a track/no-track comparator signal at a comparator output, the track/no-track comparator signal is responsive to the integrated signal level and the track threshold reference signal;
i. a system timing control circuit means for controlling system timing, the system timing control circuit means connected to the comparator output to receive the track/no-track comparator signal and to generate a plurality of control signals on a plurality of control lines responsive to the track/no-track comparator signal and proportional to an altitude;
j. a means for modulating connected to the plurality of control lines to receive the plurality of control signals and to provide a modulation signal at a modulator output, the modulation signal being responsive to the plurality of control signals wherein the modulation signal is representative of an altimeter range as determined by the plurality of control signals; and
k. means for voltage control oscillation connected to the modulator output to receive the modulation signal and to generate the transmitted signal.

5,387,918

METHOD AND AN ARRANGEMENT FOR MEASURING DISTANCES USING THE REFLECTED BEAM PRINCIPLE

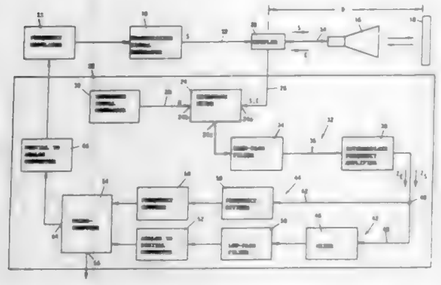
Werner Wiesbeck, Ellmendingen; Jürgen Kehrbeck, Ettlingen, and Eberhardt Heidrich, Karlsruhe, all of Germany, assignors to Endress & Hauser GmbH & Co., Germany

PCT No. PCT/EP92/00848, § 371 Date Dec. 11, 1992, § 102(e) Date Dec. 11, 1992, PCT Pub. No. WO92/18876, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 15, 1992, Ser. No. 956,882
Claims priority, application Germany, Apr. 18, 1991, 4112710
Int. Cl.[6] G01S *13/32*
U.S. Cl. 342—128 12 Claims

1. A method for measuring distances using the reflected beam principle comprising the steps of transmitting at a target a frequency modulated transmission signal having a transmission frequency, receiving from the target a reception signal having a reception frequency, converting the transmission frequency to a transmission intermediate frequency using a constant reference frequency, using the transmission intermediate frequency to correct the frequency modulation of the transmission frequency, converting the reception frequency to a reception intermediate frequency using the constant reference frequency, determining the frequency difference between the transmission intermediate frequency and the reception intermediate frequency, determining the frequency difference

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between the transmission and reception frequencies from the frequency difference between the transmission intermediate



frequency and the reception intermediate frequency as a measure of distance.

5,387,919

DIPOLE ANTENNA HAVING CO-AXIAL RADIATORS AND FEED

Tommy H. Lam, Endicott; Matthew J. Milicic, Jr., Newark Valley, and Don M. Pritchett, Apalachin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1993, Ser. No. 68,728
Int. Cl.[6] H01Q *9/16*
U.S. Cl. 343—821 29 Claims



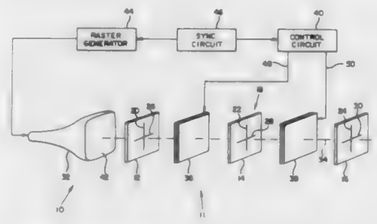
1. A dipole antenna comprising:
a dielectric sheet;
first and second antenna radiators mounted to said sheet about a common axis without substantial longitudinal overlap;
a substantially balanced transmission line comprising first and second substantially balanced conductors printed on said sheet substantially along said axis, electrically connected to said first and second antenna radiators, respectively at facing ends of said antenna radiators and extending at least to an opposite end of one of said antenna radiators to receive an excitation signal for said antenna radiators; and
a balun printed on said sheet and electrically connected to said transmission line approximately where said excitation signal is received.

5,387,920

SWITCHABLE COLOR FILTER AND FIELD SEQUENTIAL FULL COLOR DISPLAY SYSTEM INCORPORATING SAME

Philip J. Bos, Portland, and Philip A. Johnson, Jr., Beaverton, both of Oreg., assignors to Tektronix Inc., Wilsonville, Oreg.

Continuation of Ser. No. 535,523, Sep. 26, 1983, abandoned. This application Aug. 18, 1989, Ser. No. 412,021
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—88 28 Claims



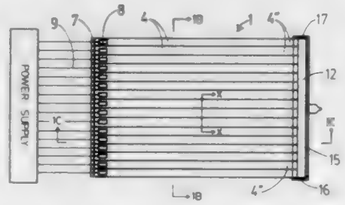
1. A switchable color filter which receives light from a light source, comprising:
three polarizing means in optical communication with the light source, at least two of the three polarizing means including color selective polarizing filters;
a pair of liquid crystal variable optical retarding means positioned so that each one of the pair of liquid crystal variable optical retarding means is disposed between a different pair of the three polarizing means, each one of the variable optical retarding means including liquid crystal material which has directors and is contained between a pair of generally parallel electrode structures, each electrode structure including a director alignment layer which has been conditioned so that the directors of the liquid crystal material in contact therewith become substantially uniformly aligned to form tilt bias angles with the conditioned surfaces, the tilt bias angles of the directors in contact with one conditioned surface being defined in a rotational sense opposite to that of the tilt bias angles of the directors in contact with the other conditioned surface; and
control means in communication with the pair of liquid crystal variable optical retarding means to selectively pass a light output of one of at least three colors.

5,387,921

SCANNING BACK ILLUMINATING LIGHT SOURCE FOR LIQUID CRYSTAL AND OTHER DISPLAYS

Chao Zhang; Yu Feng; Shichao Ge, all of Santa Clara; Jemm Y. Liang, San Jose, and Hsi-Shang Chen, Milpitas, all of Calif., assignors to Panocorp Display Systems, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 993,385, Dec. 18, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 52,772
Claims priority, application China, Oct. 8, 1992, 9/2111255.4
Int. Cl.[6] G09G *3/36, 3/28, 3/00*
U.S. Cl. 345—102 37 Claims



1. A backlight source for use with a light valve display, comprising:

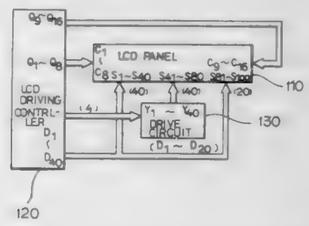
a plate defining therein an array of substantially parallel elongated gas-discharge chambers each having an end, and defining therein a transverse chamber, wherein the end of each chamber is connected to the ends of the other chambers through the transverse chamber;
a gas in the chambers;
an electrode in each chamber spaced apart from the end of such chamber; and
a power supply applying electrical potentials to the electrodes in sets of chambers during a plurality of consecutive time intervals in a sequential scanning operation, wherein the application of potentials to a set of chambers by said power supply defines scanning of the chambers in such set, each set of chambers including at least two chambers, said potentials being applied to electrodes in a set of a plurality of chambers during each time interval, each potential applied across the electrodes in two chambers in a set to cause gas discharge in the two chambers and in a portion of the transverse chamber connecting the two chambers so as to cause light emission from the two chambers, said power supply means being such that during at least two consecutive time intervals, the two sets of chambers to which electrical potentials are applied overlap by at least one chamber, so that ionized particles generated during the earlier of the two consecutive intervals in the at least one overlapping chamber accelerates gas discharge during the later of the two consecutive time intervals.

5,387,922

APPARATUS FOR DRIVING AN LCD MODULE WITH ONE DRIVING CIRCUIT

Sai C. Yun, Kyungsangbook-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 813,964, Dec. 24, 1991, abandoned. This application Oct. 8, 1993, Ser. No. 133,737
Claims priority, application Rep. of Korea, Dec. 28, 1990, 22168/1990
Int. Cl.[6] G09G *3/20*
U.S. Cl. 345—103 2 Claims



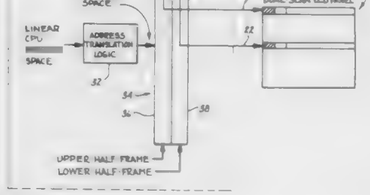
1. Apparatus for driving a liquid crystal display module comprising:
control means for outputting display data synchronously with scanning signals which are outputted therefrom at timings associated with said scanning signals, said timings being different from each other, said display data being outputted upon being received by said control means and upon receipt of a control signal by said control means;
driving means for outputting overflowed display data from Said control means which has overflowed a data capacity of said control means; and
display means for displaying data thereon, upon receiving scanning signals outputted from the control means in accordance with said timings of the scanning signals, said display means receiving said display data outputted from said control means, and said overflowed display data from said driving means;
said control means including two groups of scanning signal output ports at which said scanning signals are outputted at each different timing, and also including a plurality of display data output ports for outputting said display data such that the display data are outputted at said display data output ports at one timing of said scanning signals and also once more outputted at a part of said display data output ports at another timing of said scanning signals;
said driving means including a single driving circuit for receiving said overflowed display data and being effective for outputting the overflowed display data to said display means;
said display means including a liquid crystal display panel having two groups of scanning electrodes corresponding to said two groups of scanning signal output ports of the control means,
said one group of scanning electrodes receiving scanning signals from said one group of scanning signal output ports of the control means and covering a first plurality of dots, said another group of scanning electrodes receiving scanning signals from said another group of scanning signal output ports of the control means and covering a second plurality of dots, and also having signal electrodes divided into two groups corresponding to said display data output ports of the control means, each of said signal electrodes receiving display data from said display data output ports.

5,387,923

VGA CONTROLLER USING ADDRESS TRANSLATION TO DRIVE A DUAL SCAN LCD PANEL AND METHOD THEREFOR

Phillip E. Mattison, Gilbert, and Kenneth P. Caviasca, Phoenix, both of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 855,983, Mar. 20, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 147,092
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—103 3 Claims



1. A VGA controller device for driving a dual scan LCD panel comprising, in combination:
Central Processing Unit (CPU) interface means having a linear address space for storing display data in said controller device;
a display buffer wherein said display data is stored within said controller device, said display buffer comprising, in combination:
separate upper half-frame buffer means for the exclusive storing of the display data for the first half of said LCD panel;
separate lower half-frame buffer means for the exclusive storing of the display data for the second half of said LCD panel; and
said separate upper half-frame buffer means and said separate lower half-frame buffer means having an interleaved one-to-one configuration such that every other address of said display buffer comprises said separate upper half-frame buffer means while said remaining addresses comprises said separate lower half-frame buffer means;
address translation logic means for translating said linear address space of said CPU interface means such that said

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display data written through said CPU interface means in two contiguous blocks of addresses is stored in said separate upper half-frame buffer means and in said separate lower half-frame buffer means of said display buffer in said interleaved one-to-one configuration;

first and second output means for providing a first direct connection between said upper half-frame buffer means and said LCD panel and a second direct connection between said lower half-frame buffer means and said LCD panel and for driving said LCD panel; and

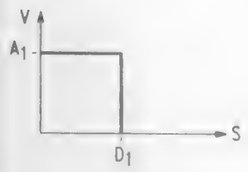
output control means for accessing said display data stored in said display buffer such that said display data in said separate upper half-frame buffer means and said display data in said separate lower half-frame buffer means are simultaneously outputed to said first and second output means for simultaneously and directly driving said first half and said second half of said LCD panel.

5,387,924

METHOD OF MITIGATING THE EFFECTS OF A DEFECTIVE ELECTROMECHANICAL PIXEL

Richard O. Gale, Jr., Richardson, and Brian C. McCormack, Denton, both of Tex., assignors to Texas Instruments Incorporated

Continuation of Ser. No. 965,835, Oct. 23, 1992, Pat. No. 5,289,172. This application Nov. 5, 1993, Ser. No. 148,753
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[6] G09G *3/34*
U.S. Cl. 345—108 **15 Claims**



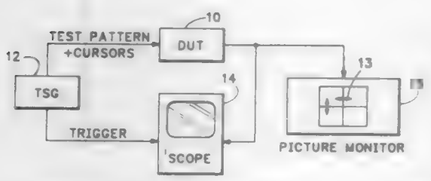
1. A method of mitigating the effects of a defective pixel having electrodes, the method comprising the step of applying a voltage across said electrodes sufficient to permanently change electromechanical characteristics of said pixel.

5,387,925

TEST SIGNAL GENERATOR POSITION CURSORS

Laurent A. Melling, Jr., Scappoose; Edward D. Wardzala; Douglas C. Stevens, both of Portland, and John C. Reynolds, Aloha, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 340,997, Apr. 20, 1989, abandoned.
This application Mar. 18, 1991, Ser. No. 673,167
Int. Cl.[6] G09G *1/14*
U.S. Cl. 345—134 **5 Claims**



1. An apparatus of the type that generates a selected video test pattern comprising:

means for counting a clock signal to generate a cursor count;

means for comparing the cursor count with variable start and end counts to generate a cursor select signal;

means for switching between the selected video test pattern and a desired color value in response to the cursor select signal to insert a cursor having the desired color value into the selected video test pattern for display with the selected video test pattern on a video monitor; and

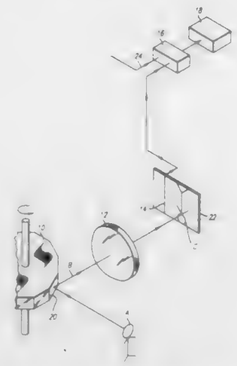
means for generating a trigger signal corresponding to the location of the cursor within the selected video test pattern for input to an analog waveform display device for displaying as an analog waveform a portion of the selected video test pattern determined by the position of the cursor.

5,387,926

HIGH SPEED DIGITAL FRAMING CAMERA

Paul M. Bellan, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Jun. 30, 1992, Ser. No. 906,898
Int. Cl.[6] H04N *5/225*
U.S. Cl. 348—61 **20 Claims**



1. A digital framing camera comprising:

means for scanning an image in a horizontal direction;

a single linear array of photodetectors for receiving said image by receiving a series or vertical segments of said image in sequence, each of said vertical segments being a different portion of the image scanned by the scanning means;

storage means having a fixed capacity for temporarily storing a first quantity of the vertical segments;

first means responsive to a trigger signal for temporarily storing a predetermined further second quantity of the vertical segments into the storage means; and

second means responsive to the trigger signal for permanently storing the first and second quantities of vertical segments stored in the storage means.

5,387,927

METHOD AND APPARATUS FOR BROADBAND TRANSMISSION FROM A CENTRAL OFFICE TO A NUMBER OF SUBSCRIBERS

Christopher M. Look, Coquitlam; Joe Geofroy, and Piyush B. Kothary, both of Burnaby, all of Canada, assignors to MPR Teltech Ltd., Burnaby, Canada

Filed Sep. 17, 1993, Ser. No. 122,298
Int. Cl.[6] H04M *11/00*
U.S. Cl. 348—6 **18 Claims**

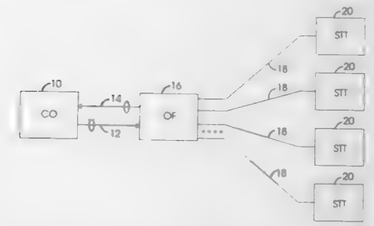
13. A method of transmitting broadband video services from a broadband digital signal source, comprising:

(a) forming the digital signal from said source into a plurality of channels of digital signals including control bits and payload bits, wherein the control bits identify to each set top terminal the portion of the payload bits destined for that set top terminal;

(b) modulating a plurality of carrier signals with said respective channels of digital signals;

(c) multiplexing the modulated signals to form a combined signal;

(d) transmitting the combined signal to a local distribution box;



(e) broadcasting the electrical signal to a number of set top terminals wherein each set top terminal detects a corresponding channel; and

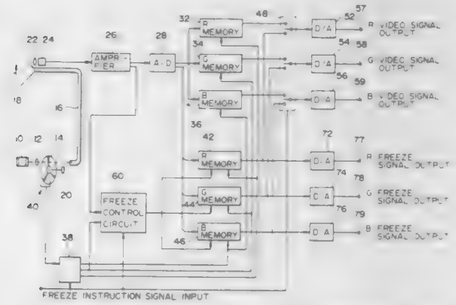
(f) generating in the set top terminal control signals in response to user input and transmitting the control signals to the central office.

5,387,928

ELECTRONIC ENDOSCOPE SYSTEM HAVING BOTH STILL AND MOVING IMAGES

Shigeru Nishimura, Saitama, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Continuation of Ser. No. 706,156, May 28, 1991, abandoned.
This application Dec. 14, 1993, Ser. No. 166,376
Claims priority, application Japan, May 29, 1990, 2-139044; May 29, 1990, 2-139045; Aug. 16, 1990, 2-216203
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—70 **9 Claims**



1. An electronic endoscope system for sequentially picking up images by colors in a field sequential method, simultaneously converting field sequential image signals obtained by such image picking-up, and reproducing the converted images as color picture images, said electronic endoscope system comprising:

memory means for storing field sequential image signals each of a field or a frame by colors, and outputting said image signals simultaneously;

decision means for inputting therein field sequential image signals each of a field or a frame at a given cycle, and, in accordance with the two succeeding field sequential image signals each of a field or a frame input therein, deciding whether the image is a still picture image or a moving picture image; and,

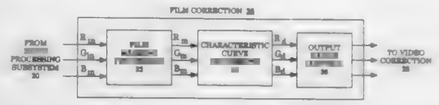
control means for updating the storage contents of said memory means with the latest field sequential image signals of a still picture image each time said decision means decides that the image is a still picture image so as to store the most recent still picture image, and, if a freeze instruction is thereafter input, prohibiting the updating of the storage contents of said memory means whereby a still picture image free of color discrepancies is already present and available for utilization when the freeze instruction is input.

5,387,929

METHOD AND APPARATUS FOR SUBJECT IMAGE TRACKING IN HIGH DEFINITION FILM-TO-VIDEO COLOR CORRECTION

David C. Collier, Gilroy, Calif., assignor to Sony Electronics, Park Ridge, N.J.

Filed Nov. 20, 1992, Ser. No. 979,170
Int. Cl.[6] H04N *9/11*
U.S. Cl. 348—97 **39 Claims**



1. A method for tracking a subject image recorded on a first medium and being electronically transferred to a second medium, said method comprising the steps of:

generating a plurality of monochromatic channels from said subject image recorded on said first medium wherein each of said monochromatic channels represents a complementary color such that said plurality of monochromatic channels comprise a polychromatic image of said subject image;

selecting a white level for said second medium by specifying a first input amplitude for each monochromatic channel such that said first input amplitude corresponds to a first tone on said second medium;

selecting a black level for said second medium by specifying a second input amplitude for each monochromatic channel such that said second input amplitude corresponds to a second tone on said second medium;

converting said subject image for each monochromatic channel into a logarithmic domain;

providing a Hurter-Driffield (HD) characteristic curve for each logarithmic converted monochromatic channel, said HD characteristic curve depicting density of said subject image on said first medium on a vertical axis and relative logarithmic exposure of said subject image recorded on said first medium on a horizontal axis;

specifying a dynamic range for said subject image for each monochromatic channel on said relative logarithmic exposure axis;

mapping said white and black levels onto said dynamic range specified on said relative logarithmic exposure axis;

correcting said subject image in each monochromatic channel in accordance with said HD characteristic curves based on said dynamic range specified, said white and black levels being tracked through correction with said HD characteristic curve;

exponentiating said subject image for each corrected monochromatic channel out of said logarithmic domain while tracking said white and black levels; and

placing said subject image for each monochromatic channel into an output range compatible with said second medium in accordance with said white and black levels.

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5,387,930

ELECTRONIC IMAGE ACQUISTION SYSTEM WITH IMAGE OPTIMIZATION BY INTENSITY ENTROPY ANALYSIS AND FEEDBACK CONTROL

Peng S. Toh, Maidstone, Great Britain, assignor to European Visions Systems Centre Limited, London, England

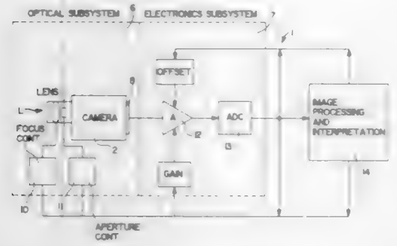
PCT No. PCT/GB91/00846, § 371 Date Jan. 25, 1993, § 102(e) Date Jan. 25, 1993, PCT Pub. No. WO91/19262, PCT Pub. Date Dec. 12, 1991

PCT Filed May 28, 1991, Ser. No. 934,668

Claims priority, application United Kingdom, May 25, 1990, 9011842; Dec. 20, 1990, 9027599

Int. Cl.[6] H04N *5/235*

U.S. Cl. 348—207 **23 Claims**



1. An image acquisition system comprising:

(a) an electronic camera having a lens with a selectively adjustable aperture control:

(b) an amplifier coupled to said camera to receive image data therefrom, said amplifier having selectively adjustable gain and offset controls;

(c) a digitizer coupled to said amplifier to receive amplified image data therefrom; and

(d) a processor coupled to said digitizer to receive digitized image data therefrom, said processor having outputs coupled to said amplifier gain and offset controls for selectively adjusting the same, and an output connected to said lens aperture control for selectively adjusting the same;

(e) said processor being adapted to process said digitized image data received from said digitizer to calculate therefrom an intensity entropy of an image and, in response thereto, to provide outputs selectively to said amplifier gain and offset controls and said lens aperture control for selectively adjusting the same to optimize the acquired image information, said intensity entropy of said image being defined as H_n, where:

$$H_n = -\sum_{i=0}^{n-1} p_i \log_2(p_i)$$

and

n=the number of quantized intensity levels of the digitizer, and

P_i=the probability of the ith intensity level occurring in the image and is defined by $p_i=f_i/N$ where f is the frequency of occurrence of the ith intensity level in the digitized image data and N is the total number of pixels in the digitized image data.

5,387,931

CARRIER LEVEL BALANCING CIRCUIT FOR COLOR CAMERA

Osamu Yagi, and Toru Wakagi, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 50,652

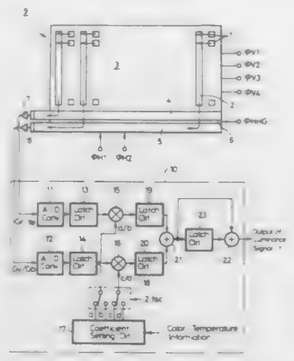
Claims priority, application Japan, Apr. 27, 1992, 4-136058

Int. Cl.[6] H04N *9/64, 9/07*

U.S. Cl. 348—223 **6 Claims**

1. A carrier level balancing circuit for a color camera formed of a solid state image pickup device in which signal charges of all pixels are separately read out at every two lines during one field period and dot-sequential two-channel color signals are output in a basic unit of pixel, comprising:

a first multiplier for alternately multiplying one of said two-channel color signals with first and second coefficients set in association with respective color signals in response to a color temperature information at the unit of pixel;



a second multiplier for alternately multiplying the respective other of said two-channel color signals with third and fourth coefficients set in association with respective color signals in response to a color temperature information at the unit of pixel; and

an adding circuit for adding said two-channel color signals from said first and second multipliers by two pixels each.

5,387,932

VIDEO CAMERA CAPABLE OF ADDING, TRANSMITTING, AND EXTRACTING A REFERENCE SIGNAL INDICATIVE OF THE POSITION OF A REFERENCE PIXEL

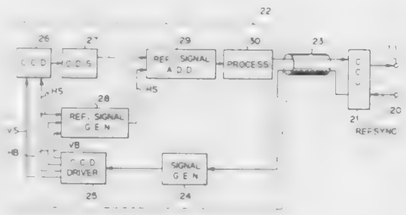
Yoshihiro Morioka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 907,142

Claims priority, application Japan, Jul. 6, 1991, 3-192643

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—246 **1 Claim**



1. A video camera having an image pick-up section and a signal processing section to which an output signal from said image pick-up section is supplied through a transmission cable, comprising:

a CCD image pick-up device, located in said image pick-up section, for producing a video signal;

reference signal generating means, located in said image pick-up section, for generating a reference signal including a vertical blanking interval and a horizontal transfer clock signal within said vertical blanking interval;

reference signal adding means, located in said image pick-up section, for adding to said video signal said reference signal thereby producing said output signal;

extracting means, located in said signal processing section, for extracting from said output signal the horizontal transfer clock signal included in said reference signal; and

defect correcting means, located in said signal processing section, for defect correcting said video signal based on said extracted horizontal transfer clock signal.

5,387,933

DETECTOR-FITTED CAMERA PROVIDED WITH ELECTRONIC PROTECTION

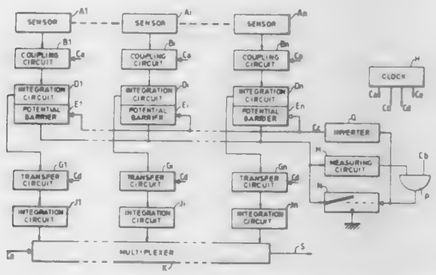
Jean-Pierre Fouilloy, Velizy, and Francois-Xavier Doittau, Behoust/Orgerus, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Dec. 23, 1992, Ser. No. 995,693

Claims priority, application France, Dec. 31, 1991, 91 16380

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—294 **4 Claims**



1. A detection system having electronic protection against countermeasures, comprising:

n sensors, n being a positive integer, for producing charges depending on an amount of energy imparted on the sensors;

n first integration circuits, respectively connected to the sensors, for accumulating the charges produced by the respective sensors;

n second integration circuits, selectively connected to the n first integration circuits;

measuring means, connected to the first integration circuits, for measuring the accumulated charges within the first integration circuits;

comparing means, connected to the measuring means, for comparing the measured accumulated charges with a predetermined charge quantity and outputting a signal when the measured accumulated charges are greater than a predetermined charge quantity; and

protection means, connected to the comparing means and the n first integration circuits, for protecting the n second integration circuits by reducing the accumulated charges of at least one of the n first integration circuits and preventing all of the accumulated charges from said at least one of the n first integration circuits from reaching and damaging at least one of said n second integration circuits when said comparing means outputs said signal.

5,387,934

IMAGE PICKUP APPARATUS

Satoshi Nakamura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,878

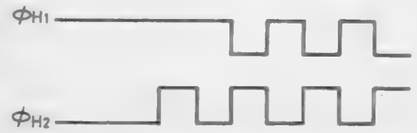
Claims priority, application Japan, Oct. 23, 1991, 3-275723

Int. Cl.[6] H04N *3/14*

U.S. Cl. 348—312 **3 Claims**

1. An image pickup apparatus comprising:

a) a solid-state imager having a plurality of photoelectric converter elements operative to accumulate therein an electric charge corresponding to an amount of an incident light, horizontal and vertical register means adjacent to said photoelectric converter elements operative to transfer an electric charge inputted from said photoelectric converter elements, means for transferring the charge from said vertical register sections to said horizontal register sections in synchronization with first and second clock signals, the electric charge in said horizontal register sections being transferred only when both said first and



second clock signals are activated by changing between high and low levels, and the electric charge in said horizontal register sections being transferred only when the phases of said first and second clock signals are in opposite phase; and

b) means for controlling said first and second clock signals for activating only one of said first and second clock signals for N cycles (N is an integer) just before the transfer of the electric charge in said horizontal register sections is started.

5,387,935

SOLID STATE IMAGING DEVICE HAVING DUAL H-CCD WITH A COMPOUND CHANNEL

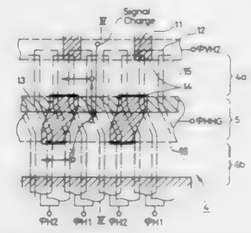
Atsushi Kobayashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 21, 1993, Ser. No. 124,211

Claims priority, application Japan, Sep. 22, 1992, 4-277867

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—323 **5 Claims**



1. A solid state imaging device provided on a semiconductor body comprising:

a plurality of photo sensing elements arranged in a matrix configuration for receiving a light therein and producing a signal charge corresponding to the amount of the received light;

a plurality of vertical charge transferring means, each vertical charge transferring means arranged at one side of a vertical line of said photo sensing elements, for receiving said signal charge from said photo sensing elements and transferring said signal charge in the vertical direction;

a first horizontal charge transferring means connected to said vertical charge transferring means for receiving said signal charge transferred from a first group of alternate vertical charge transferring means and transferring said signal charge in the horizontal direction to a charge detection section;

a second horizontal charge transferring means connected to said vertical charge transferring means for receiving said signal charge transferred from a second group of alternate

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vertical charge transferring means which are not selected as said first group of said alternate vertical charge transferring means and transferring said signal charge in the horizontal direction to said charge detecting section,

said first horizontal charge transferring means comprising:

first and second horizontal shift registers, each said first and second horizontal shift registers extending in the horizontal direction;

a control gate electrode disposed between said first and second horizontal shift registers and having a plurality of gate portions, each gate portion corresponding to said first group of alternate vertical charge transferring means; and

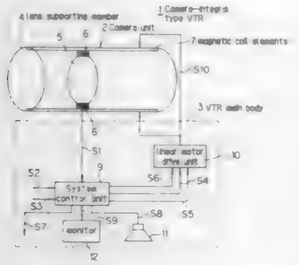
a potential barrier under said control gate electrode, said potential barrier imparting a tiered transfer channel potential profile under said gate electrode with said potential barrier having a shallow potential relative to that of a remainder of said transfer channel under said gate electrode, said potential barrier being located closer to said first horizontal shift registers than said remainder of said transfer channel under said gate electrode, said profile being configured such that application of a signal to said gate electrode simultaneously affects all portions of said profile thereunder thereby maintaining said profile, said potential barrier employable to distribute into said first and second horizontal shift registers signal charge received from said first group of alternate vertical charge transferring means by allowing said signal charge to pass through said transfer channel under said gate electrode while said gate electrode is in a first state, and by pinching off passage of said signal charge through said transfer channel while said gate electrode is in a second state.

5,387,936

IMAGING APPARATUS

Toru Katsumoto, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Dec. 11, 1992, Ser. No. 989,382
Claims priority, application Japan, Dec. 28, 1991, 3-360447
Int. Cl.[6] H04N *5/225, 5/228*
U.S. Cl. 348—335 9 Claims



1. An imaging apparatus wherein a lens system mounted within a housing is driven by a linear motor, comprising:

position detecting means for detecting a position of said lens system;

lens driving means for driving said lens system to a predetermined position, said lens system having an optical axis extending in a first direction;

controlling means for outputting a control signal to said lens driving means based upon position detecting information derived from said position detecting means to control positioning of said lens system; and

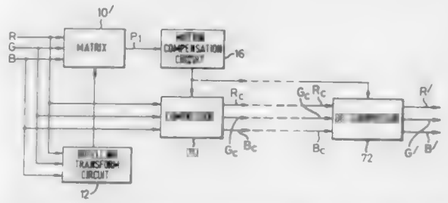
component force detecting means for detecting a component of force applied to said lens system and extending in said first direction when said imaging apparatus is in a stationary servo mode, and for providing a component force signal indicative of the magnitude of said component of force, said component of force being determined from said position detecting information and said control signal.

5,387,937

MOTION COMPENSATION FOR COLOR VIDEO SIGNALS

Martin R. Dorricott, Basingstoke, and Morgan W. A. David, Farnham, both of England, assignors to Sony United Kingdom Limited, Staines

Filed Jan. 4, 1993, Ser. No. 451
Claims priority, application United Kingdom, Feb. 13, 1992, 9203003
Int. Cl.[6] H04N *7/133, 11/04, 11/20*
U.S. Cl. 348—395 39 Claims



1. A method of motion compensating color video signals represented by a first set of signal components comprising the steps of:

generating weighting coefficients as a function of the distribution of color information of a picture by performing a Hotelling transform on the first set of signal components;

deriving at least a first principal component of a second set of signal components from said first set of signal components as a function of said weighting coefficients, said first principal component representing a direction having maximum average color information content of the picture;

calculating motion vectors of the picture from said first principal component; and

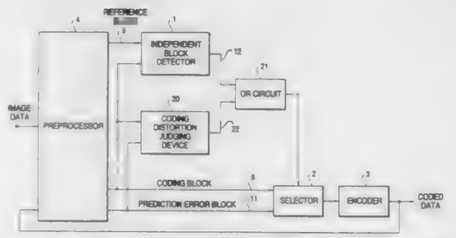
generating first motion compensated signal components as a function of said motion vectors.

5,387,938

ADAPTIVE INTERFRAME/INTRAFRAME BLOCK CODING METHOD AND APPARATUS

Hideki Fukuda, Kadoma; Masahiro Honjo, Sakai, and Ren Egawa, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 957,788, Oct. 8, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 160,368
Int. Cl.[6] H04N *7/13*
U.S. Cl. 348—420 10 Claims



1. An image coding method for dividing a picture to be coded into blocks each composed of adjacent plural pixels, predicting a block to be coded by using a reference picture, and coding each block, comprising the steps of:

detecting a block included in an image region not existing in the reference picture and newly appearing in the picture to be coded as an independent block from an activity of a block in the picture to be coded and an activity of a corresponding reference block at the same position as said block in the picture to be coded in the reference picture;

detecting, among blocks other than the independent block in the picture to be coded, a block which is smaller in coding distortion at a specified code quantity than a corresponding prediction error block predicted from a prediction signal obtained by using the reference picture; and

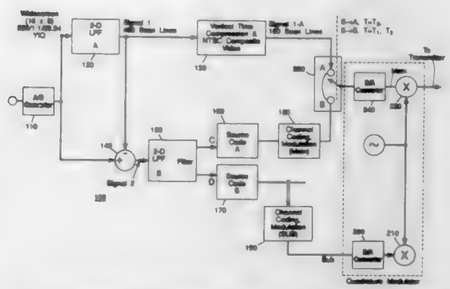
coding each of the independent block and the block which is smaller in the coding distortion than the corresponding prediction error block independently without depending on the reference picture.

5,387,939

ENHANCED RESOLUTION EXTENDED DEFINITION TELEVISION SYSTEM

Saiprasad V. Naimpally, Langhorne, Pa., assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 643,756, Jan. 22, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 87,964
Int. Cl.[6] H04N *7/00*
U.S. Cl. 348—433 9 Claims



1. In a television transmitter where an HDTV video field having 525 lines having low frequency components and high frequency components is transmitted representative of an image having a 9 by 16 aspect ratio, said HDTV video field being converted to allow compatibility with NTSC receivers so that said low frequency components of said 9 by 16 aspect ratio image are displayed in their entirety by said NTSC receiver, a video image encoding apparatus for encoding an enhanced video image comprising:

means for providing a first output signal representative of a number of scan lines of information having a known relation to the number of active scan lines of video information in the HDTV field;

means responsive to said first output signal for selecting and bandlimiting a predetermined number of scan lines to produce an NTSC compatible output signal;

means for subtracting said first output signal from said HDTV signal to produce a third output signal;

means responsive to said third output signal for producing at least a fourth output signal containing bit rate reduced video information in digital format for producing an enhanced video image;

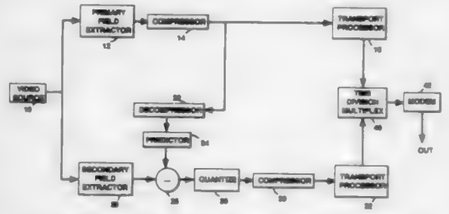
switching means receiving said NTSC compatible output signal and said fourth output signal for producing a fifth output signal coupled to a television transmitter containing said NTSC compatible signal during a first selected time period and said fourth output signal during a second select time period.

5,387,940

METHOD AND APPARATUS FOR PROVIDING SCALEABLE COMPRESSED VIDEO SIGNAL

Wilson Kwok, Plainsboro, N.J.; Billy W. Beyers, Jr., Greenfield, Ind.; Babak Ayazifar, Plainsboro, and Joel W. Zdepski, Belle Mead, both of N.J., assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Jul. 7, 1993, Ser. No. 88,474
Int. Cl.[6] H04N *7/01, 7/00, 11/00*
U.S. Cl. 348—446 8 Claims



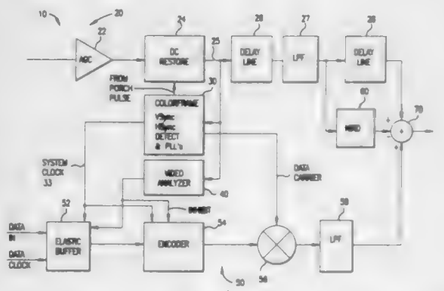
1. A method for compressing video signal comprising; providing frames of a non-interlaced scanned video signal and generating from alternate lines of successive frames of the non-interlaced scanned video signal an interlaced scanned video signal designated primary video signal; compressing the primary video signal to provide compressed primary video signal and decompressing the compressed primary video signal; predicting from the decompressed primary video signal, a secondary video signal corresponding to intervening lines of said non-interlaced scanned video signal which were not utilized in generating said primary video signal; generating differences between corresponding pixels of said secondary video signal and video signal corresponding to said intervening lines of said non-interlaced scanned video signal, and compressing said differences; and conditioning said compressed primary video signal and compressed differences for transmission.

5,387,941

DATA WITH VIDEO TRANSMITTER

Gerald D. Montgomery, and Jay B. Norrish, both of Mesa, Ariz., assignors to WavePhore, Inc., Tempe, Ariz.

Continuation-in-part of Ser. No. 715,920, Jun. 14, 1991. This application Sep. 18, 1992, Ser. No. 947,134
Int. Cl.[6] H04N *7/08, 11/00*
U.S. Cl. 348—473 37 Claims



1. A processor for adding a data signal to a rasterized video signal having both chrominance and luminance portions and active and blanking video intervals, the processor comprising:

a signal generator generating a data carrier;

a modulator responsive to the data carrier providing a modulated data carrier;

a combiner to combine the modulated data signal with the

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video signal during part of the active video intervals to provide a combined signal; and

a controller to control the modulator such that the modulator provides an unmodulated data carrier burst at the start of at least some of the active video intervals.

5,387,942

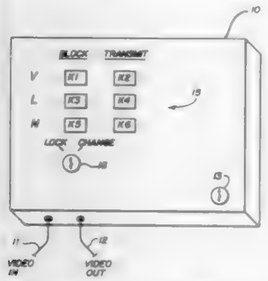
SYSTEM FOR CONTROLLING RECEPTION OF VIDEO SIGNALS

Jerome H. Lemelson, Suite 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

Filed Nov. 24, 1993, Ser. No. 157,887

Int. Cl.[6] H04N *5/44, 7/093*

U.S. Cl. 348—474 **16 Claims**



1. A method for controlling the reception and use of video signals by a television receiver, comprising the steps of:

(a) storing a reception code indicative of a program content which it is desired to prevent from displaying by a television receiver;

(b) receiving a video signal;

(c) extracting a program code from a select portion of the received video signal, wherein such program code is indicative of the video signal's program content by detecting a select sync pulse in the received video signal, measuring elapsed time from the occurrence of the detected sync pulse, wherein the program code of the video signal occurs in a fixed time relation to the sync pulse, and clocking a digital signal corresponding to the program code into a memory; and,

(d) comparing the extracted program code with the stored reception code to ascertain whether the video signal's program content matches the program content indicated by the reception code and, if so, blocking further receipt of such video signals by the display of the television receiver.

5,387,943

SEMIAUTOMATIC LIP SYNC RECOVERY SYSTEM

David S. Silver, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Dec. 21, 1992, Ser. No. 993,566

Int. Cl.[6] H04N *9/475*

U.S. Cl. 348—512 **2 Claims**

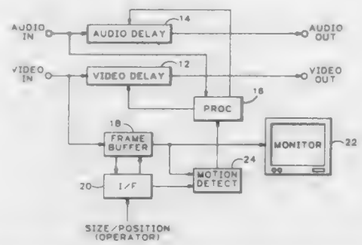
1. An apparatus for synchronizing a video channel and an audio channel of a television signal comprising:

programmable means for selectively delaying the video and audio channels:

means for defining an area within the image represented by the video channel that has motion corresponding to sound in the audio channel;

means for generating motion vectors for the defined area; and

means for producing from the motion vectors and the audio channel delay signals for the programmable delaying means so that the outputs from the programmable delaying means for the respective video and audio channels are in time synchronization.



5,387,944

VIDEO SIGNAL PROCESSING APPARATUS HAVING DIGITAL MULTIVALUE SYNCHRONIZING SIGNAL GENERATING CIRCUIT

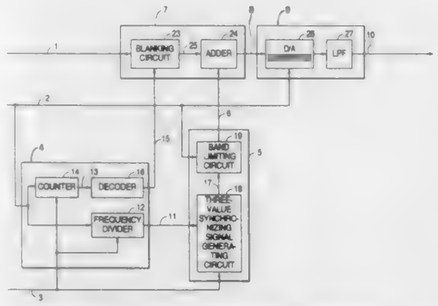
Shigeru Furumiya, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 3, 1993, Ser. No. 70,792

Claims priority, application Japan, Jun. 3, 1992, 4-142477

Int. Cl.[6] H04N *5/06*

U.S. Cl. 348—521 **11 Claims**



1. A video signal processing apparatus comprising:

digital multivalue synchronizing signal generating means for generating a digital multivalue synchronizing signal having an equivalent frequency band to a digital video signal;

synchronizing means for combining the digital video signal and the digital multivalue synchronizing signal to obtain a first video signal having a digital synchronizing signal;

digital/analog converting means for converting the first video signal having the digital synchronizing signal into a second video signal having an analog synchronizing signal; and

clock generating means for generating an operation clock and a control signal for the digital multivalue synchronizing signal generating means and the synchronizing means.

5,387,945

VIDEO MULTIPLEXING SYSTEM FOR SUPERIMPOSITION OF SCALABLE VIDEO STREAMS UPON A BACKGROUND VIDEO DATA STREAM

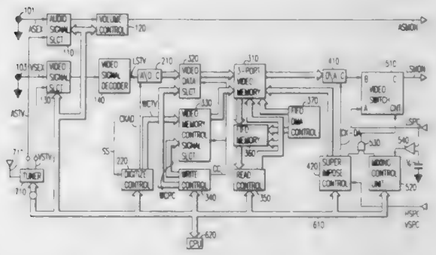
Kesatoshi Takeuchi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 39,708, Mar. 31, 1993, which is a continuation of Ser. No. 873,322, Apr. 14, 1992, which is a continuation of Ser. No. 474,768, May 14, 1990, abandoned. This application Jan. 24, 1994, Ser. No. 185,155

Claims priority, application Japan, Jul. 13, 1988, 63-175948; Dec. 28, 1988, 63-331874; Dec. 28, 1988, 63-331875; Dec. 28, 1988, 63-331876; Dec. 28, 1988, 63-331878; Feb. 7, 1989, 1-28430

Int. Cl.[6] H04N *5/262*

U.S. Cl. 348—564 **16 Claims**



1. An apparatus for processing image signal, for use in a computer system having a CPU, a CPU bus connected to said CPU, a display controller, and a display device, comprising:

a video memory for memorizing a given digital image signal;

first write control means connected to said CPU bus, for controlling the writing of said given digital image signal in said video memory by supplying a first write address to said video memory, a range of said first write address being specified with a plurality of write address parameters set by said CPU;

a video switch for receiving a plurality of image signals including a first image signal read out of said video memory, and selecting one of said plurality of image signals;

first read control means, connected to said CPU bus, for supplying said video switch with a first selection signal indicating to select one of said plurality of image signals, and controlling the reading of said first image signal out of said video memory by supplying a first read address to said video memory in synchronism with a first horizontal synchronizing signal and a first vertical synchronizing signal which are supplied from said display controller, a range of said first read address being specified with a plurality of read address parameters set by said CPU;

an analog-to-digital converter for converting a given analog image signal into said given digital image signal to supply said given image signal to said video memory; and wherein

said first write control means includes:

means for generating a first clock signal on the basis of said plurality of write address parameters and a second horizontal synchronizing signal, and supplying said first clock signal to said analog-to-digital converter, said first clock signal having a first frequency which has a value of a frequency of said second horizontal synchronizing signal multiplied by a first integer included in said plurality of write address parameters, said first clock signal regulating the timing of said converting in said analog-to-digital converter, whereby a horizontal size of a first image represented by the image signal memorized in said video memory is changeable by changing said first integer.

5,387,946

METHOD AND APPARATUS FOR MEASURING NOISE IN VIDEO SIGNALS

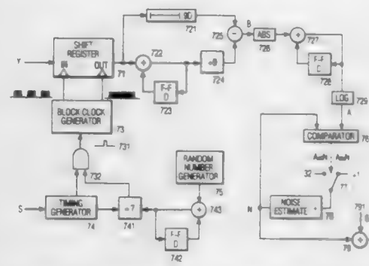
Michael Knee, Strasbourg, France, assignor to Thomson Consumer Electronics S.A., Courbevoie, France

Filed Mar. 22, 1993, Ser. No. 35,024

Claims priority, application European Pat. Off., Mar. 23, 1992, 92400785

Int. Cl.[6] H04N *5/213*

U.S. Cl. 348—622 **7 Claims**



1. A method of applying a low noise signal to a television display by measuring noise in a television signal comprising the steps of:

storing an estimated noise value N;

measuring the activity values A of blocks of pixels;

periodically comparing said activity value A with said estimated noise value N;

adding a first correction value C_{v1} to said estimated value when $A > N$ and subtracting a second correction value C_{v2} when $A \leqq N$, said second correction value C_{v2} being in the order of 10 to 100 times greater than said first correction value C_{v1}; and

determining said activity values A by subtracting the value of each pixel from the mean value of all pixels within the block.

5,387,947

MOTION VECTOR DETECTING METHOD OF A VIDEO SIGNAL

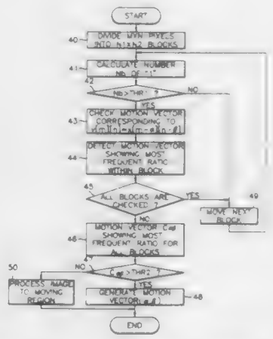
Hyun-Soo Shin, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jul. 6, 1993, Ser. No. 85,796

Claims priority, application Rep. of Korea, Jul. 3, 1992, 1992-11839

Int. Cl.[6] H04N *7/130*

U.S. Cl. 348—699 **6 Claims**



1. A method of detecting motion direction and motion

amount of a digital video signal in order to process a pseudo-moving image, comprising the steps of:

detecting an edge of said pseudo-moving image within a current frame and a previous frame and outputting an edge detected image, said detecting step including the steps of: calculating a gradient between adjacent pixels for each direction by a pixel unit of said video signal, and comparing a maximum gradient value with a given threshold value;

converting the edge detected image into a binary-coded image;

detecting an interframe motion vector with respect to only an edge part of the binary-coded image; and

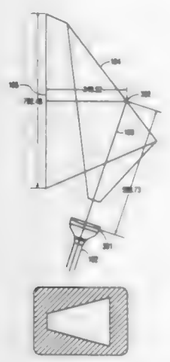
processing said pseudo-moving image as interframe motion or to a moving region based on said interframe motion vector.

5,387,948

METHOD AND APPARATUS FOR REDUCING SCATTERED LIGHT IN PROJECTION TELEVISION TUBES

Stephen Magocs, Knoxville, Tenn., assignor to North American Philips Corporation, New York, N.Y.

Filed May 3, 1993, Ser. No. 56,645
Int. Cl.[6] H04N *9/31, 5/74*
U.S. Cl. 348—779 **13 Claims**



1. In a projection television system comprising first, second and third CRTs for projecting, into coincidence, different-colored images to form a composite color image in space and having a projection screen spaced from said CRTs for receiving and displaying the composite color image, said first CRT having its projection axis located with respect to the axis of said projection screen so as to project a substantially rectilinear image, said second and third CRTs having respective projection axes skewed with respect to the projection screen and providing non-rectilinear distorted images so as to compensate for their skewed position such that their projected images on the projection screen will be rectilinear and coincident with the rectilinear image projected by the first CRT, each of the CRTs having a bounded front surface on which their respective image is formed and each of the CRTs forming an actual image on its respective front surface that is smaller than and lies within the respective boundary of the respective front surface, and each CRT having a respective desired image shape, the improvement comprising:

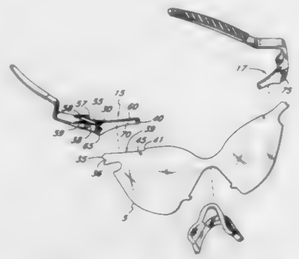
means for preventing light generated by the formed actual images from being scattered from the front surface edges between respective boundaries of the respective desired image shapes and the respective boundaries of the respective front surfaces and causing unwanted glare, said means for preventing covering said front surface edges for blocking the scattered light from reaching the projection screen, said means for preventing on the first CRT being generally rectilinear to match the generally rectilinear image formed on the front surface of the first CRT, said means for preventing on the second and third CRTs being generally non-rectilinear to match the generally non-rectilinear images formed on the respective front surfaces of the second and third CRTs.

5,387,949

EYEGLASS CONNECTION DEVICE

George Tackles, Lake Elsinore, Calif., assignor to Oakley, Inc., Irvine, Calif.

Filed Jan. 29, 1992, Ser. No. 825,476
Int. Cl.[6] G02C *5/14*
U.S. Cl. 351—121 **18 Claims**



1. A connector for eyeglasses, for connecting one or more earstems to a lens, said connector comprising:

a main body with a lateral end and a medial end;

a lens receiving channel extending from the medial end in the direction of the lateral end;

a first interlock structure in the lateral end of the channel, said first interlock structure comprising a locking surface for engaging a corresponding locking surface on the lens for resisting vertical upward motion of the lateral end of the connector with respect to the lens, said locking surface on the first interlock structure comprising a ramped edge of a projection on the connector; and

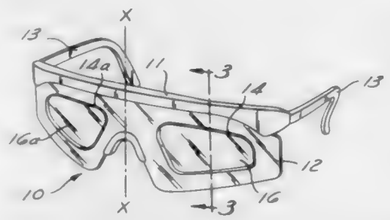
a second interlock structure spaced apart from the lateral end of the channel.

5,387,950

PRESCRIPTION EYEWEAR MADE FROM NON-PRESCRIPTION LENS SHIELD MATERIAL

Alfred Weltmann, 9052 A Niles Central Rd., Skokie, Ill. 60076

Continuation of Ser. No. 565,226, Aug. 9, 1990, abandoned. This application Aug. 21, 1992, Ser. No. 934,119
Int. Cl.[6] G02C *13/00*
U.S. Cl. 351—178 **9 Claims**



1. A process for forming prescription eyewear from a unitary non-prescription generally planar lens shield which is optically defective, comprising the steps of:

(a) providing a unitary non-prescription generally planar lens shield having a pair of apertures formed therein which lie in front of the eyes of the wearer, each aperture

having a first peripheral ridge formed along its peripheral edges;

(b) fabricating a pair of prescription lens sized to fit in said pair of apertures, each having a second peripheral groove designed to interfit with said first peripheral surface; and

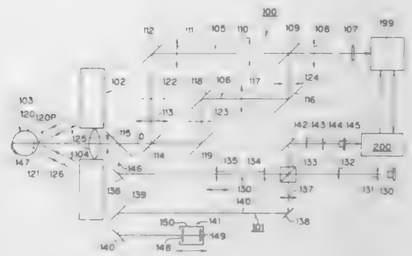
(c) permanently affixing said pair of prescription lenses in said pair of apertures in said lenses shield by heating said lens shield and the apertures therein, installing said prescription lenses in said heated apertures, and cooling said lens shield to thereby permanently affix said prescription lenses in said lens shield.

5,387,951

INTRAOCULAR LENGTH MEASURING INSTRUMENT CAPABLE OF AVOIDING ERRORS IN MEASUREMENT CAUSED BY THE MOVEMENT OF A SUBJECT'S EYE

Hideki Hatanaka, Tokyo, Japan, assignor to Kabushiki Kaisha Topcon, Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,767
Claims priority, application Japan, May 19, 1992, 4-125241
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—205 **4 Claims**



1. An intraocular length measuring instrument comprising:

a pattern image projecting and receiving optical system for projecting a pattern image onto a cornea of a subject's eye and receiving said pattern image into a two-dimensional image sensor;

an interferometric system for producing interference light in a way that measuring light is projected onto a surface of an intraocular object to be measured while reference light is projected onto a reference surface corresponding to said object surface and interference is caused between light reflected by said object surface and light reflected by said reference surface and causing a photosensor to receive said interference light and output an interference signal;

means for determining a position of said object surface by sampling said interference signal;

means for reading data concerning said pattern image received by said two-dimensional image sensor at any point of time of the duration of said sampling in order to memorize said pattern image data in a memory medium; and

means for determining a position of a corneal vertex from said pattern image data memorized in said memory medium.

5,387,952

FEEDBACK APPARATUS FOR SENSING HEAD POSITION

Harold Byer, 2901 Honey Run Rd., Ambler, Pa. 19002

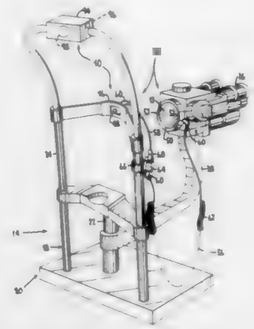
Filed Jan. 31, 1994, Ser. No. 189,358
Int. Cl.[6] A61B *3/14*
U.S. Cl. 351—208 **18 Claims**

1. An apparatus for physical examination of an examinee, the apparatus comprising:

a support;

a stop surface positioned to abut a portion of the examinee when the examinee is in a nominal examination position for the physical examination;

a sensor associated with the stop surface, having means responsive to the examinee when in the examination position, the sensor detecting when the examinee is in and out of the examination position;



switching means responsive to the sensor;

a source of electrical power and an annunciator device, coupled in a circuit to be enabled and disabled by operation of the switching means, whereby operation of the annunciator device warns the examinee when the examinee is displaced from the examination position.

5,387,953

POLARIZATION ILLUMINATION DEVICE AND PROJECTOR HAVING THE SAME

Nobuo Minoura, Yokohama, and Kazumi Kimura, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Dec. 23, 1991, Ser. No. 812,758
Claims priority, application Japan, Dec. 27, 1990, 2-414988; Mar. 20, 1991, 3-080467; Dec. 20, 1991, 3-338580; Dec. 20, 1991, 3-338581
Int. Cl.[6] G03B *21/28*
U.S. Cl. 353—20 **16 Claims**



11. A polarization illumination device comprising:

illuminating means including a light source and a reflecting mirror located behind said light source; and

polarizing means illuminated with light from said illuminating means and including a polarization splitting surface and a reflecting surface respectively inclined with respect to an optical path of the light from said illuminating means, said reflecting surface having one end in contact with one end of said polarization splitting surface so that said polarization splitting surface and said reflecting surface form an inverted V shape, said polarization splitting surface splitting part of the light from said illuminating means into a transmitted light component and a reflected light component and directing the transmitted light component in a first direction and the reflected light component toward said reflecting surface, said reflecting surface reflecting a remaining part of the light from said illuminat-

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ing means and directing the reflected remaining part toward said polarization splitting surface, said reflecting surface returning the reflected light component toward said illuminating means, said polarization splitting surface splitting said remaining part of the light emitted from said illuminating means and reflected by said reflecting means into a transmitted light component of said remaining part and a reflected light component of said remaining part, said transmitted light component of said remaining part being directed toward a second direction different from the first direction, and the reflected light component of said remaining part being returned to said illuminating means,

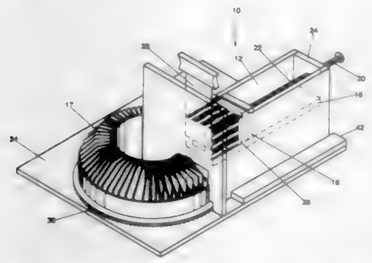
wherein said illuminating means modulates a plane of each returned reflected light component and causes each returned reflected light component to be incident on said polarizing means again.

5,387,954

TRANSPARENCY MAGAZINE LOADING DEVICE

Stanley Bizon, Speers Point, Australia, assignor to Stan Bizon & Associates Pty Limited, Hamilton, Australia

Filed Aug. 14, 1992, Ser. No. 930,763
Claims priority, application Australia, Aug. 16, 1991, PK7795
Int. Cl.[6] G03B *23/02*
U.S. Cl. 353—103 17 Claims



1. A device for manually loading photographic transparencies into a magazine having transparency slots, the device having:

a transparency chamber adapted to contain at least some of the transparencies and including a floor upon which the transparencies rest;

support means for supporting the transparency chamber above the magazine in use;

feeder means for transferring one of the transparencies from the transparency chamber to one of the slots in the magazine via a feeder gap in the floor, the feeder means comprising a feeder tongue adapted to directly engage and to force a transparency in the transparency chamber downwards through the feeder gap; and

slot positioning means for positioning the slot in alignment with the feeder gap, the slot positioning means comprising a spacer means fixed relative to the transparency chamber adapted to engage teeth on a bottom of the magazine which, in engagement with the teeth on the magazine, restricts manual advancement of the magazine to predetermined intervals.

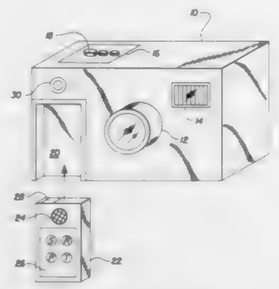
5,387,955

STILL CAMERA WITH REMOTE AUDIO RECORDING UNIT

J. David Cocca, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1993, Ser. No. 110,659
Int. Cl.[6] G03B *29/00, 15/03, 17/24*
U.S. Cl. 354—76 9 Claims

7. A photographic camera system comprising: a remote control unit and a main camera body; wherein said remote control unit includes means for recording at least one audio segment, and means for transmitting sound identification data corresponding to the audio segment to the main camera body; wherein said main camera body includes means for receiving



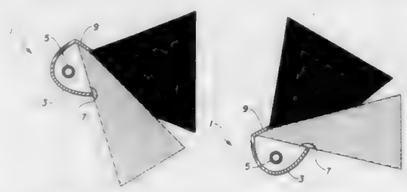
the sound identification data, and means for recording the sound identification data on a recording strip located on a photographic film; and wherein the sound identification data indexes the recorded audio segment to a corresponding exposed image frame on the photographic film.

5,387,956

ALTERNATIVE DIRECT AND COMBINED DIRECT-INDIRECT LIGHT REFLECTING DEVICE

Stanley W. Stephenson, III, Spencerport, and Tom M. Seamans, Corfu, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1994, Ser. No. 198,023
Int. Cl.[6] G03B *15/03*
U.S. Cl. 354—149.1 2 Claims



1. A reflector supported for movement between a direct flash position for reflecting light output from a source of flash illumination directly towards a subject to be photographed and an indirect flash position for reflecting light output from a source of flash illumination onto a nearby surface and thence directly towards a subject to be photographed, is characterized in that:

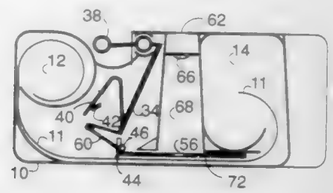
said reflector has integral reflective means that is substantially smaller than, and fixedly angled with respect to, the remainder of the reflector for reflecting a substantially minor percentage of light output from a source of illumination in a different direction than said remainder of the reflector reflects a major percentage of light output from the source of flash illumination regardless of whether the reflector is in its direct or indirect flash position, whereby combined direct and indirect illumination of a subject to be photographed can be achieved.

5,387,957

SIMPLIFIED TRIGGER, SHUTTER AND FILM ADVANCE SYSTEM SUCH AS FOR USE IN A CAMERA

Michael S. Demaree, P.O. Box 262, Porterville, Calif. 93258, and John E. Demaree, 1178 Hayes St., Irvine, Calif. 92770

Filed Jun. 16, 1993, Ser. No. 78,737
Int. Cl.[6] G03B *17/42*
U.S. Cl. 354—204 12 Claims



1. A camera using film, comprising

a housing defining a track for receiving the film having consecutive first, second and third positions;

a shutter slidable in said housing adjacent said track and having a push plate;

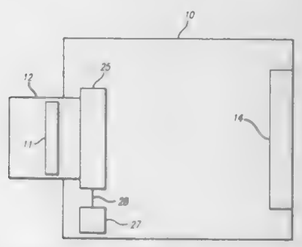
a trigger movably mounted in said housing including an arm constructed and arranged with said housing to advance from said first position, through said second position, to said third position, said arm extending to engage the push plate and a sprocket hole in the film at said first position, releasing the sprocket hole at said second position, and disengaging the push plate at said third position.

5,387,958

ELECTRO-OPTICAL CONTROL OF LIGHT ATTENUATION IN THE OPTICAL PATH OF A CAMERA

Raymond F. Pashley, Chino Hills, Calif., assignor to Sony Electronics, Inc., Park Ridge, N.J.

Filed Jun. 30, 1992, Ser. No. 906,687
Int. Cl.[6] G02F *1/00*
U.S. Cl. 354—227.1 65 Claims



1. In a camera comprising a taking lens for focusing light entering said camera, an optical sensor for receiving said light entering said camera, an iris, located between said taking lens and said optical sensor, said iris having an adjustable diameter aperture for restricting the amount of said light entering said camera and controlling depth of field, an apparatus for compensating for an increase or decrease in the amount of light entering said camera when said aperture diameter of said iris is changed to adjust said depth of field, said apparatus comprising:

an electrochromic neutral density (ND) filter, located between said iris and said taking lens; and

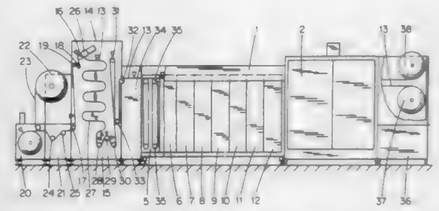
ND control means coupled to said ND filter for applying a ND control current to said ND filter, said ND filter having a light transmission characteristic that is varied by applying said ND control current to said ND filter, such that the amount of light reaching said optical sensor may be maintained constant by darkening or lightening said ND filter.

5,387,959

UNIT FOR DEVELOPING PHOTOGRAPHIC PAPER

Joachim Simon, Erkrath, Germany, assignor to Hostert GmbH, Germany

Filed Sep. 14, 1992, Ser. No. 944,692
Claims priority, application Germany, Sep. 24, 1991, 9111897
Int. Cl.[6] G03D *3/08*
U.S. Cl. 354—319 6 Claims



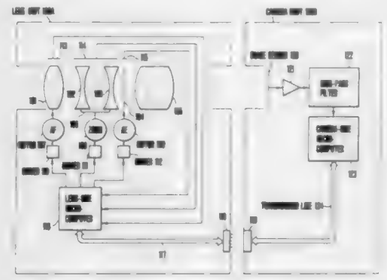
1. A unit for developing exposed photographic paper, said unit having a plurality of baths arranged one after the other and a drying chamber, said photographic paper running as a continuous sheet from a feed end of said unit through said baths for developing, through said drying chamber for drying, and to an exit end of said unit, said photographic paper being passed through each said bath and said drying chamber in a spiral form having several coils, and a storage unit being provided for said continuous sheet of said photographic paper at least at said feed end of said unit, wherein said storage unit has a closed housing, means defining a feed end and an exit end of said storage unit in said housing, a first drive motor arranged at said storage unit feed end, and a second drive motor arranged at said storage unit exit end, said first and second drive motors being individually controllable.

5,387,960

CAMERA APPARATUS

Masahide Hirasawa; Masamichi Toyama, and Ryunosuke Iijima, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 29,924, Mar. 11, 1993, abandoned, which is a continuation of Ser. No. 475,750, Feb. 6, 1990, abandoned. This application Nov. 9, 1993, Ser. No. 150,533
Claims priority, application Japan, Feb. 9, 1989, 1-30588; Feb. 9, 1989, 1-32390
Int. Cl.[6] G03B *13/00*
U.S. Cl. 354—402 42 Claims



1. A lens unit for use with a camera which provides a driving

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control signal having a predetermined periodicity, said lens unit comprising:

a) a driving part which varies a condition of an optical system of said lens unit;

b) an actuator for driving said driving part; and

c) driving control means for driving said actuator on the basis of receiving said driving control signal, said driving control means supplying a driving signal to said actuator in a periodicity different from said predetermined periodicity, the driving control signal coming from said camera side being asynchronous with said driving signal.

5,387,961

ILLUMINATION SYSTEM FOR PROJECTION EXPOSING APPARATUS

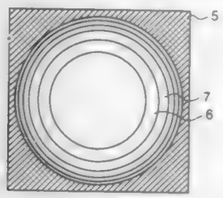
Ho-young Kang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 22, 1993, Ser. No. 155,002

Claims priority, application Rep. of Korea, Nov. 20, 1992, 92-22906

Int. Cl.[6] G03B *27/72, 27/54*

U.S. Cl. 355—71 **3 Claims**



1. An illumination system for a projection exposing apparatus comprising:

a light source; and

a fly's eyes lens including a plurality of adjacently disposed individual lenses, each said individual lenses having alternatively disposed pattern portions and etch portions concentric with a center of said individual lens, said pattern portions and said etch portions capable of transmitting incident light therethrough.

5,387,962

SELF-ALIGNING ROLL FOR BELT LOOP MODULES

Vittorio Castelli, Yorktown Heights; Harold Brown, New City, both of N.Y., and Stephen T. Chai, Rancho Palos Verde, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 13, 1993, Ser. No. 165,622

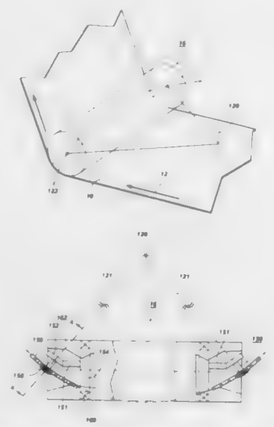
Int. Cl.[6] G03G *5/00*

U.S. Cl. 355—212 **18 Claims**

1. An apparatus for supporting a web moving along a predetermined path, including:

a frame; and

a member mounted movably in said frame in frictional contact with the web to provide support therefor, said member having an axis substantially normal to the predetermined path, said member being frictionally moved by the web, in response to the web having a direction of travel deviating from the predetermined path, in a direction substantially perpendicular to the path to substantially align the axis perpendicular to the direction of travel of the web so as to minimize lateral stress on the web.



5,387,963

ONE-COMPONENT DEVELOPING DEVICE

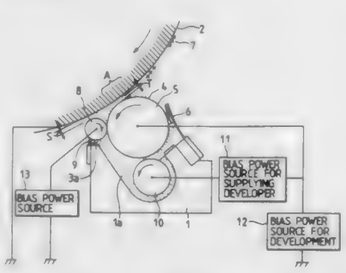
Masashi Kajimoto; Yutaka Toyoda; Hidekiyo Tachibana, and Mikio Yamamoto, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 171,604

Claims priority, application Japan, Dec. 28, 1992, 4-358681

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—215 **5 Claims**



1. A one-component developing device comprising:

a developer carrier, which is rotatably disposed in an opening formed in a device housing and at a position opposing an electrostatic latent image holder, for transporting one-component developer to a development area in which said developer carrier faces said electrostatic latent image holder with a first clearance;

a layer forming member, which is disposed to contact with said developer carrier, for forming a thin layer of the developer on said developer carrier, a predetermined charge being supplied to the thin layer, and the developer of the thin layer flying through said first clearance onto the electrostatic latent image holder at the development area based on an electrostatic latent image on said electrostatic latent image holder, thereby developing said electrostatic latent image;

an elastic rotation body which is in contact with said developer carrier and rotates in such a direction that contact surfaces of said elastic rotation body and said developer carrier move in the same direction, which faces said electrostatic latent image holder with a second clearance, and to which a bias voltage for forming an electric field for attracting the developer on said developer carrier is applied, whereby an air flow and electric attraction force caused by said elastic rotation body transfer the developer scattering from said development area into said device housing, said elastic rotation body being disposed at an edge portion of the opening of the device housing in the downstream of the development area in such a manner that a surface of said elastic rotation body is partially exposed to the outside of the device housing, and that said second clearance is greater than said first clearance; and

developer removing means for removing the developer on said elastic rotation body inside of the device housing to prevent the developer from scattering outside of the device housing.

5,387,964

DEVELOPING APPARATUS INCLUDING A PARTITION BETWEEN A DEVELOPING ROLL AND A STIRRING MEMBER

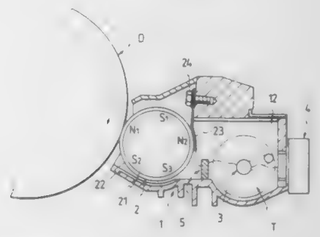
Makoto Kanno; Yoshio Shiina; Akihiko Kato, and Toru Isosu, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1991, Ser. No. 670,194

Claims priority, application Japan, Mar. 19, 1990, 2-69243

Int. Cl.[6] G03G *15/09*

U.S. Cl. 355—251 **6 Claims**



1. A developing apparatus comprising:

a developing agent carrying body for delivering a developing agent to a developing region confronting a latent electrostatic image carrying body by attracting said developing agent by a magnetic force, said developing agent carrying body having a predetermined length;

developing agent delivering/feeding means for feeding said developing agent to said developing agent carrying body while delivering said developing agent along the length of said developing agent carrying body; and

a partition board arranged upright along the length of said developing agent carrying body between said developing agent carrying body and said developing agent delivering/feeding means, said partition board being positioned such that said magnetic force is strong enough to attract said developing agent over an apex of said partition board.

5,387,965

TONER CONCENTRATION CONTROL METHOD

Shin Hasegawa, Kawasaki; Yasushi Koichi, Yamato, and Shinji Kato, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 987,816

Claims priority, application Japan, Dec. 9, 1991, 3-350007

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—246 **16 Claims**

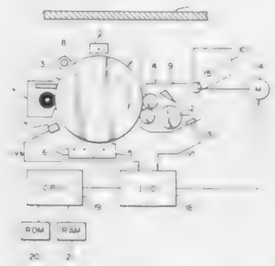
1. A toner concentration control method comprising the steps of:

sensing a density of a toner image for control formed on an image carrier by an optical sensor;

sensing a toner concentration of a developer stored in a developing device by a toner concentration sensor mounted on said developing device;

correcting a target toner concentration for toner supplement control on the basis of an output of said toner concentration sensor and an output of said optical sensor;

wherein the step of correcting the target toner concentration



further includes determining a correction value based on said output of said optical sensor and a reference density value; and

wherein the step of correcting the target toner concentration further includes determining a corrected target toner concentration by one of: (a) adding said correction value to a sensed toner concentration value sensed by said toner concentration sensor; and (b) subtracting said correction value from a sensed toner concentration value sensed by said toner concentration sensor.

5,387,966

DEVELOPING APPARATUS AND METHOD INCLUDING GROOVED DEVELOPER CARRYING ROLLER

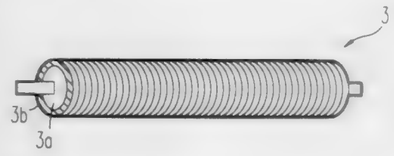
Kenji Karashima, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 24, 1993, Ser. No. 65,758

Claims priority, application Japan, May 22, 1992, 4-156026

Int. Cl.[6] G03G *15/08, 15/09*

U.S. Cl. 355—259 **20 Claims**



1. A developing apparatus for developing a latent image formed on a latent image carrier, the developing apparatus comprising:

a developer carrying roller having a grooved surface thereon such that said grooved surface has a surface roughness of 5 μm–30 μm in an axial direction of said roller, wherein said grooved surface includes a plurality of grooved portions, and wherein flat portions are interposed between neighboring grooved portions in the axial direction of said developer carrying roller, and wherein a width of said flat portions in the axial direction of said developer carrying roller is not greater than 150 μm.

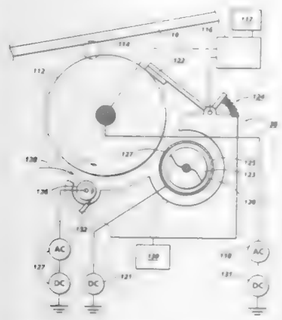
VOL 1171 ISS 1 FE 7 1995 UMI

5,387,967

SINGLE-COMPONENT ELECTROPHOTOGRAPHIC DEVELOPMENT SYSTEM

Grace T. Brewington, Fairport; Paul C. Julien, Webster; John F. Knapp, Fairport, all of N.Y.; Masashi Kajimoto, Atugi, Japan; Hidekiyo Tachibana, Ebina, Japan; Kazuo Terao, Ayase, Japan; Yutaka Toyoda, Sagamihara, Japan, and Mikio Yamamoto, Chicago, Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 23, 1993, Ser. No. 125,883
Int. Cl.[6] G03G *15/06*
U.S. Cl. 355—259 4 Claims



1. An apparatus for developing a latent image, comprising:
a donor roll;
means for selectably rotating the donor roll in a process direction and in a reverse direction relative to the process direction;
a toner mover spaced from the donor roll, for loading toner particles onto a portion of the donor roll;
a metering blade disposed downstream of the toner mover in the process direction, adapted to regulate a quantity of toner on the donor roll;
a pressure sensor associated with the metering blade, adapted to detect the presence of a predetermined amount of toner between the metering blade and the donor roll; and
a seal, spaced from the donor roll and disposed upstream of the toner mover in the process direction, adapted to remove at least approximately one half of the toner on the donor roll.

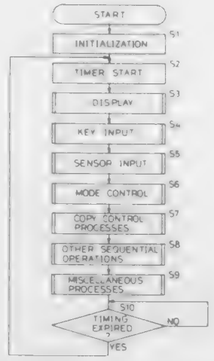
5,387,968

SHEET-SIZE DETERMINING APPARATUS WITH SELECTION INDUCING MEANS

Takahiro Wakikaido, Yao, and Kazuya Akura, Sakai, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 25, 1992, Ser. No. 950,667
Claims priority, application Japan, Oct. 11, 1991, 3-263621
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—311 33 Claims

1. A sheet size determining apparatus for use in an image forming apparatus which has a sheet container capable of accommodating sheets of different sizes, and which is operable in a conjunctive mode selected from either a mixed sheet-size operating mode or a single sheet-size operating mode, and from either an automatic sheet-size selection mode or an automatic image-scaling mode, said sheet size determining apparatus comprising:
means for detecting a dimension of sheets contained in said container, in a corresponding direction;
means for inducing an operator to select that size of sheet actually contained in said sheet container from possible sizes determined in accordance with a sheet dimension detected by said detecting means;
a first mode-selection key for selecting one from said mixed sheet-size and single sheet-size operating modes; and



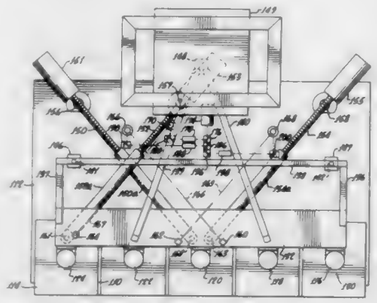
a second mode-selection key for selecting one from said automatic sheet-size selection and said automatic image-scaling modes.

5,387,969

MACHINE TOOL POSITION MEASUREMENT EMPLOYING MULTIPLE LASER DISTANCE MEASUREMENTS

William F. Marantette, Torrance, Calif., assignor to Optima Industries, Inc., Torrance, Calif.

Filed Jun. 22, 1993, Ser. No. 80,912
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—4.5 37 Claims



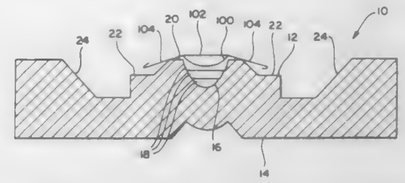
1. Apparatus for measuring position of a tool comprising:
a fixed support,
a tool support member movably mounted on said support,
means for driving the tool support member relative to the support to a plurality of positions within a predetermined work area,
a plurality of mutually spaced retro-reflectors mounted on said tool support member,
a plurality of energy beam scanning devices mounted on said fixed support, each said scanning device including means for projecting an energy beam from a fixed reference position on said fixed support in a scanning sweep through a target area that includes positions of one of said retro-reflectors as said tool support member is driven within said work area, and
means including said scanning devices for measuring the distance from each said scanning device to one of said retro-reflectors.

5,387,970

NULLIFYING LENS AND TEST METHOD FOR QUALITY CONTROL OF INTRAOCULAR LENSES

William J. Neubert, Ballwin, Mo., and David L. Mustain, Largo, Fla., assignors to American Cyanamid Co., Wayne, N.J.

Filed Dec. 7, 1993, Ser. No. 163,972
Int. Cl.[6] G01B *9/00*
U.S. Cl. 356—124 12 Claims



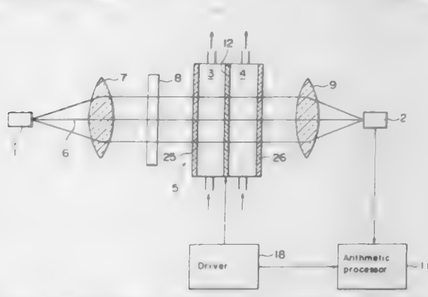
1. A method for analyzing an intraocular lens having a plurality of optical zones, said method comprising the steps of:
providing a nullifying lens, said nullifying lens having a plurality of nullifying optical zones, said plurality of nullifying optical zones being arranged on said nullifying lens and constructed whereby light passing through one or more of said plurality of optical zones of said intraocular lens and through said nullifying lens is focused at a single plane when said intraocular lens does not contain a fabrication flaw;
placing said intraocular lens and said nullifying lens in a light path;
passing light through said intraocular lens and through said nullifying lens along said light path; and
observing whether light passing through said intraocular lens and through said nullifying lens is focused at a single plane, whereby fabrication flaws in said intraocular lens are identified if light passing through said intraocular lens and through said nullifying lens is not focused at a single plane.

5,387,971

METHOD AND APPARATUS FOR MEASURING CONCENTRATION OF A SOLUTION USING PATHLENGTH COMPLEMENTALLY MODULATED CELLS

Katsue Koashi, Toyonaka, and Atsuki Wada, Shiga, both of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Kurashiki, Japan

Filed Sep. 7, 1993, Ser. No. 117,327
Claims priority, application Japan, Sep. 7, 1992, 4-238123
Int. Cl.[6] G01N *1/10;* G01J *1/00*
U.S. Cl. 356—246 13 Claims



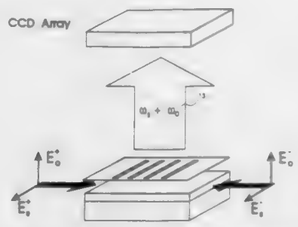
13. A path length complimentarily-modulated cell assembly comprising a sample cell and a reference cell arranged in series and separated by a displacable separator window, said displacable separator window being displacable in a direction such that respective path lengths of the sample cell and the reference cell are varied complementarily when the separator window is displaced, while the total path length of the sample cell and reference cell remains constant.

5,387,972

COHERENT PHASE AND FREQUENCY DETECTION USING SUM-FREQUENCY MIXING IN NON-LINEAR WAVEGUIDES

Siegfried Janz; Edward Frlan, both of Ottawa; Hongxing Dai, Gloucester; Francoise Chatenoud, and Richard Normandin, both of Ottawa, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Mar. 15, 1993, Ser. No. 31,496
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—345 14 Claims



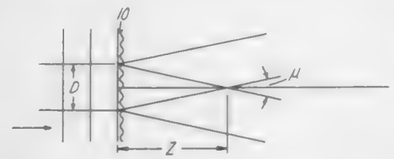
1. A method of detecting a change in the phase relationship between a plurality of signals comprising the steps of:
mixing the plurality signals in a nonlinear waveguide to produce a near field output pattern at the surface of the waveguide which corresponds to a phase relationship between the plurality of signals; and,
monitoring at least one location along the surface of the waveguide of at least part of the near field output pattern for changes in the intensity at the at least one location, wherein a change in the intensity of the pattern at the at least one location corresponds to a change in the phase relationship between the plurality of signals.

5,387,973

DETECTOR APPARATUS FOR DETECTING COHERENT POINT-SOURCE RADIATION

Hillary G. Sillitto, Edinburgh, United Kingdom, assignor to Ferranti plc, Cheshire, England

Filed Dec. 18, 1984, Ser. No. 699,135
Claims priority, application United Kingdom, Dec. 23, 1983, 8334459
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—347 5 Claims



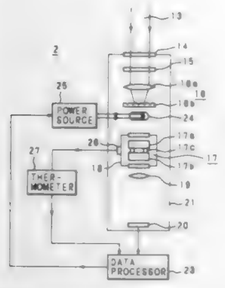
1. Detector apparatus for detecting coherent point-source radiation, which includes a diffraction grating which produces a number of self-images of the grating spaced apart from one another behind the grating, and detector means located behind the diffraction grating to coincide with one of said self-images at a distance which defines the required maximum size of radiation source which may be detected, and in which the detector means includes a Moiré grating of the same period as the diffraction grating and an array of radiation detectors located behind the Moiré grating and operable to detect Moiré fringes produced by the interaction of the Moiré grating with a self-image of the diffraction grating.

5,387,974

LASER APPARATUS INCLUDING FABRY-PEROT WAVELENGTH DETECTOR WITH TEMPERATURE AND WAVELENGTH COMPENSATION

Hajime Nakatani, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1993, Ser. No. 57,831
Claims priority, application Japan, May 15, 1992, 4-123435
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—352 **6 Claims**



1. A laser device comprising:
means for emitting a to-be-measured light;
a standard light source for emitting a light of a predetermined wavelength;
a Fabry-Perot etalon through which the to-be-measured light and standard light pass;
a photosensor for detecting light passing through the Fabry-Perot etalon;
first means for correcting an error in the measured wavelength of the to-be-measured light on the basis of a deviation of a fringe formed by a light of the standard light source on the photosensor via the Fabry-Perot etalon from a fringe which should be formed by the light of the standard light source;
means for detecting a temperature of the Fabry-Perot etalon; and
second means for correcting an error in the measured wavelength caused by thermal expansion of the Fabry-Perot etalon on the basis of a difference between the detected temperature and a stored reference temperature without thermal expansion of the Fabry-Perot etalon.

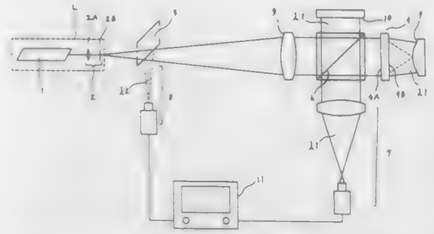
5,387,975

INTERFEROMETER FOR MEASURING A SURFACE CONFIGURATION OF A TEST OBJECT BY AN INTERFERENCE PATTERN USING GRATINGS TO GENERATE WAVE FRONTS

Futoshi Ishida, Sakai; Kiyofumi Hashimoto, Suita; Toshihide Dohi, Minoo; Takao Kobayashi, Takatsuki, and Yutaka Tokuyama, Osaka, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jun. 18, 1993, Ser. No. 79,639
Claims priority, application Japan, Jun. 26, 1992, 4-168825
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—359 **6 Claims**

1. An interferometer for measuring a surface configuration of a test object by an interference pattern, comprising:
a light source;
means for dividing a beam from the light source into two beams, and for guiding one beam to a reference surface as a reference beam and the other beam to a test surface of a test object as a measuring beam;
a single optical element with two grating patterns, said single optical element generating a first wave front as a test beam corresponding to design configuration of the test surface by passing the measuring beam through one of the grating patterns and generating a second wave front which converges on a predetermined measuring position for the test surface by passing the measuring, beam through the other grating pattern;
means for detecting a difference between the predetermined measuring position and the test surface on the basis of the second wave front reflected by the test surface; and



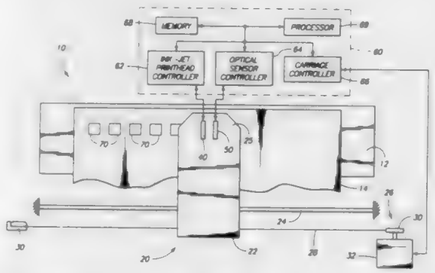
means for measuring the test surface configuration by an interference pattern with the reference beam reflected by the reference surface and the test beam reflected by the test surface, after positioning the test surface to the predetermined measuring position on the basis of the detected difference.

5,387,976

METHOD AND SYSTEM FOR MEASURING DROP-VOLUME IN INK-JET PRINTERS

Christopher M. Lesniak, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 29, 1993, Ser. No. 144,988
Int. Cl.[6] G01B *11/28*
U.S. Cl. 356—379 **13 Claims**



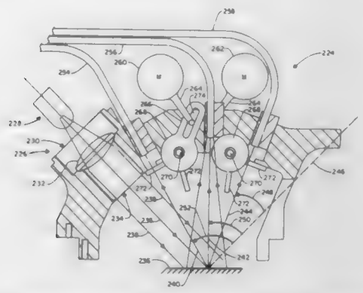
1. A method for measuring drop-volume in an ink-jet printhead, the printhead depositing multiple drops of ink to form printed images, the method comprising the following steps:
printing a series of print samples on a recording media, individual print samples being formed by depositing individual drops of ink;
the printing step including a step of changing a number of ink drops deposited in the individual print samples within the series to produce individual print samples with varying amounts of ink content;
analyzing the series of print samples to detect changes in ink content among the print samples; and
determining drop-volume for the ink-jet printhead based upon the detected changes in ink content among the print samples within the series.

5,387,977

MULTIANGULAR COLOR MEASURING APPARATUS

Bernard J. Berg, Kentwood; Thomas J. Boes, Grandville, and Mark A. Cargill, Belding, all of Mich., assignors to X-Rite, Incorporated, Grandville, Mich.

Filed Sep. 4, 1991, Ser. No. 754,905
Int. Cl.[6] G01N *21/25*
U.S. Cl. 356—407 **19 Claims**



1. An apparatus adapted for measuring color characteristics of a colored surface, said apparatus comprising:
a light source for projecting light toward said colored surface at at least one angle of illumination relative to said surface;
light receivers for receiving light rays reflected from said colored surface at a plurality of reflection angles relative to said surface;
a detector connected to said light receivers for detecting said light rays reflected from said colored surface and for generating electrical signals representative of spectral characteristics of said surface, for each of a series of spectral segments across the visible light spectrum;
a processor connected to said detector and responsive to said electrical signals for generating data representative of said spectral characteristics; and
said apparatus further comprises switching means positioned adjacent said light receivers for periodically inhibiting said light rays reflected from said colored surface from being received by all but one of said light receivers.

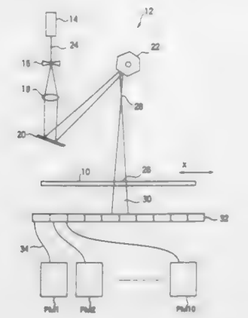
5,387,978

FLAW DETECTION SYSTEM FOR LIGHT-TRANSMITTING PLATE MATERIAL

Masaharu Okafuji; Nagayoshi Ichise, both of Osaka; Mitsuo Odawara, and Junichi Abe, both of Kitakyushu, all of Japan, assignors to Nippon Sheet Glass Co, Ltd., Osaka, Japan

Filed Mar. 5, 1993, Ser. No. 26,606
Claims priority, application Japan, Mar. 6, 1992, 4-049448
Int. Cl.[6] G01N *21/01*
U.S. Cl. 356—431 **7 Claims**

1. A flaw detection system for detecting flaws in a light-transmitting plate material which has first and second planar faces and which is moving through the system in a travelling direction, the system comprising:
a scanner for scanning the first planar face of the light-transmitting plate material with a beam spot in a direction orthogonal to the travelling direction of said light-transmitting plate material,
a light receptor for receiving light of the beam spot transmitted through said light-transmitting plate material from the first planar face to the second planar face, the light receptor comprising an optical-fiber array in which multiple optical fibers are arranged linearly in the direction orthogonal to said travelling direction, and
n photoelectric converters, ordinally numbered first through nth, n being an integer greater than two,
wherein the optical-fiber array includes a plurality of contiguous divisions each of said divisions having n successive ones of the multiple optical fibers which n successive fibers are ordinally numbered first through nth, the n



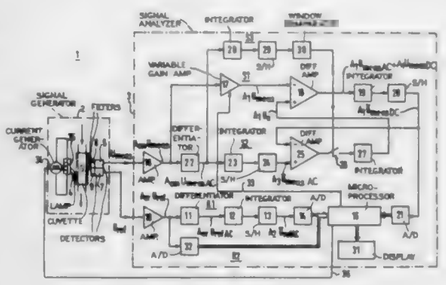
optical fibers in each of said divisions being coupled to respective ones of said n photoelectric converters.

5,387,979

SPECTROPHOTOMETRIC METHOD AND SPECTROPHOTOMETER FOR PERFORMING THE METHOD

Stefan Brauer, Södra Sandby; Rolf Castor, Hägersten; Anders Linge, Kävlinge, and Sven-Gunnar Olson, Arlöv, all of Sweden, assignors to Siemens-Elema AB, Solna, Sweden

Filed Aug. 19, 1993, Ser. No. 108,799
Claims priority, application Sweden, Aug. 21, 1992, 9202402
Int. Cl.[6] G01N *21/31, 21/35;* **G01J** *3/427*
U.S. Cl. 356—435 **16 Claims**



1. A spectrophotometric method for determining the concentration of a substance, comprising the steps of:
directing radiation having a selected degree of intensity modulation through a substance whose concentration is to be determined, said radiation including radiation at a wavelength absorbed by said substance and other radiation;
detecting said radiation, after passing through said substance, at said wavelength absorbed by said substance with a first detector and generating a measurement signal corresponding thereto;
detecting said other radiation after passing through said substance with a second detector and generating a reference signal corresponding thereto, each of said measurement signal and said reference signal consisting of a dark signal component corresponding to respective signals generated by said detectors with no radiation incident thereon, a direct current component and an alternating current component corresponding to respective signals generated by said detectors when said modulated radiation is incident thereon, said alternating current component and said direct current component having a ratio

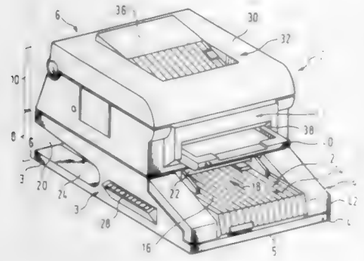
which is independent of the concentration of said substance and which is known from said degree of intensity modulation;
filtering out said alternating current component from said measurement signal;
determining said direct current component of said measurement signal from the filtered-out alternating current component and said known ratio;
normalizing said direct current component of said measurement signal with said reference signal; and
determining the concentration of said substance from the normalized direct current component.

5,387,980

DEVICE FOR SENDING AND RECEIVING GRAPHICAL DOCUMENTS VIA TELETETRANSMISSION LINES

Guenter Baitz, Berlin; Joachim Burchart, Schlangen, and Wolfgang Malke, Berlin, all of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Paderborn, Germany

Filed Sep. 3, 1991, Ser. No. 720,784
Claims priority, application Germany, Nov. 3, 1989, 3936684
Int. Cl.[6] H04N *1/00, 1/04*
U.S. Cl. 358—400 10 Claims



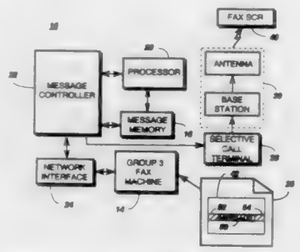
1. Apparatus for sending and receiving graphic images via transmission lines, having opposing sides, a base region and a head region the apparatus comprising:
a reading device;
an input station and a withdrawal station for a single-sheet image original;
a first transportation system for transporting a single-sheet image original from the input station to the withdrawal station along the reading device;
a material supply station for storing printed carrier material;
a printer;
an output station for a printed print carrier; and
a second transport system for transporting print carrier material from the supply station to the output station along the printer;
the input station and withdrawal station being disposed in the base region and on opposing sides of the apparatus and the output station being disposed in the head region of the apparatus;
the apparatus having a substantially rectangular ground plan and the head region receding in a steplike fashion in relation to the base region to expose a part of the base region having an upper side forming a depositing surface of the input station for depositing image originals;
the input station constructed at least in part as a module movably arranged to occupy a first operating position substantially within the ground plan and a second operating position extending beyond the ground plan in at least one direction, the depositing surface comprising a transparent material, and wherein the reading device is movably disposed underneath the depositing surface.

5,387,981

FACSIMILE COMMUNICATION WITH SELECTIVE CALL RECEIVERS

Noah Orlen, Boca Raton, and Zaffer Merchant, Lantana, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 5, 1993, Ser. No. 102,186
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—400 37 Claims



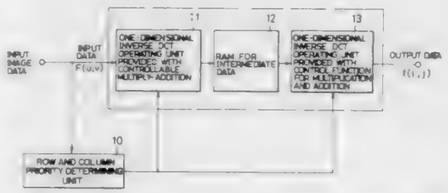
1. In a selective call communication system, a method of facsimile communication, comprising the steps of:
(a) encoding and compressing data to form compressed data;
(b) transferring the compressed data to a selective call terminal;
(c) receiving the compressed data at the selective call terminal;
(d) recovering compressed data within a predefined information region;
(e) processing the recovered compressed data, the step of processing in the selective call terminal further comprises the steps of:
(f) identifying white spaces in the recovered compressed data; and
(g) eliminating the white spaces being identified; and
(h) transmitting the recovered compressed data being processed to at least one selective call receiver.

5,387,982

APPARATUS FOR PERFORMING INVERSE DISCRETE COSINE TRANSFORM

Aoi Kitaura, Tenri, and Kenji Kawahara, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 12, 1993, Ser. No. 30,553
Claims priority, application Japan, Aug. 4, 1992, 4-207898
Int. Cl.[6] H04N *1/415*
U.S. Cl. 358—433 4 Claims



1. An apparatus for performing an inverse discrete cosine transform, which replaces a two-dimensional inverse discrete cosine transform with at least two one-dimensional inverse discrete cosine transforms, said apparatus comprising:
first operating means for receiving two-dimensional data and for performing a first of said at least two one-dimensional inverse discrete cosine transforms with respect to a row direction or a column direction;
storing means, connected to said first operating means, for storing a result of said first of said at least two one-dimensional inverse discrete transforms performed by said first operating means;

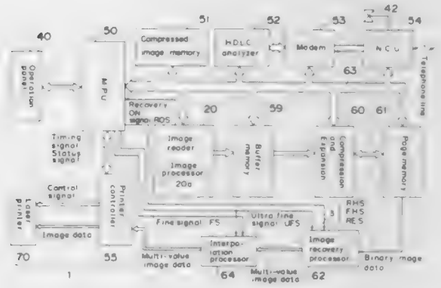
second operating means connected to said storing means, for performing a second of said at least two one-dimensional inverse discrete cosine transforms with respect to said row direction or said column direction using said stored result, and for outputting a result of said second of said at least two one-dimensional inverse discrete transforms by said second operating means; and
determining means for receiving said two-dimensional data and connected to said first operating means and said second operating means for counting both of a first number of said two-dimensional data with respect to said row direction and a second number of said two-dimensional data with respect to said column direction in order to output to said first operating means, a first control signal for performing said first of said at least two one-dimensional inverse discrete cosine transforms with respect to said column direction, and to output to said second operating means, a second control signal for performing said second of said at least two one-dimensional inverse discrete cosine transforms with respect to said row direction, when said first number is greater than said second number,
and to output to said first operating means said second control signal and to output to said second operating means said first control signal, when said first number is not greater than said second number,
each of said first number and said second number not including zero data.

5,387,983

FACSIMILE APPARATUS COMPRISING CONVERTING MEANS FOR CONVERTING BINARY IMAGE DATA INTO MULTI-VALUE IMAGE DATA AND IMAGE PROCESSING APPARATUS JUDGING PSEUDO HALF-TONE IMAGE

Masamichi Sugiura, Toyokawa, and Shigenobu Fukushima, Yokohama, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1992, Ser. No. 951,723
Claims priority, application Japan, Sep. 27, 1991, 3-249029; Sep. 27, 1991, 3-249042
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—434 16 Claims



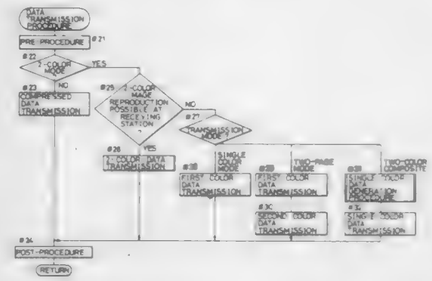
1. A facsimile apparatus comprising:
image data receiving means for receiving image data transmitted from a transmission apparatus apart from said facsimile apparatus;
converting means for converting binary image data representing an image density of each pixel in binary representation of black pixel or white pixel, into multi-value image data representing an image density of each pixel in multi-gradation stages representation including half-tone density;
printing means for printing an image corresponding to image data on a paper;
discrimination signal receiving means for receiving a discrimination signal transmitted from said transmission apparatus;
judging means for judging whether said image data received by said image data receiving means are either simple binary image data binarized using one threshold value or pseudo half-tone image data including half-tone information binarized using a plurality of threshold values, based on said discrimination signal received by said discrimination signal receiving means; and
controlling means for controlling said converting means and said printing means to convert image data judged as said pseudo half-tone image data by said judging means into multi-value image data, and print an image corresponding to said converted multi-value image data, and for controlling said printing means to print an image corresponding to image data judged as said simple binary image data by said judging means without converting said simple image data into multi-value image data.

5,387,984

FACSIMILE TRANSMISSION METHOD OF TRANSFERRING A MULTI-COLOR ORIGINAL IMAGE AND APPARATUS THEREOF

Munehiro Nakatani, Toyohashi; Masamichi Sugiura; Akio Nakajima, both of Toyokawa, and Hideo Muramatsu, Shinshiro, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 26, 1992, Ser. No. 904,592
Claims priority, application Japan, Jul. 16, 1991, 3-202497
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—439 27 Claims



1. A facsimile transmission method of transferring image data from a sending station to a receiving station through a communication line, the method comprising the steps of:
reading an image of an original which contains a first color portion and a second color portion, generating a first image data corresponding to the first color portion of the original and a second image data corresponding to a second color portion of the original, and storing the first image data and the second image data in a memory at the sending station;
calling up the receiving station and making determination whether the receiving station has a two-color image forming function or not;
if the receiving station has the two-color image forming function, sending the first image data and the second image data from the sending station to the receiving station so as to form a two-color copy of the original at the receiving station; and
if the receiving station does not have the two-color image forming function, sending the first image data from the sending station to the receiving station without sending the second image data, so as to form a single-color copy corresponding to the first color portion of the original at the receiving station.

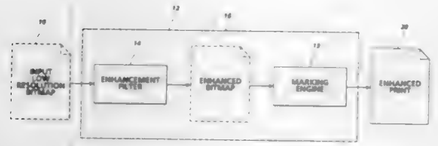
VOL 1171 ISS 1 FE 7 1995 UMI

5,387,985

NON-INTEGER IMAGE RESOLUTION CONVERSION USING STATISTICALLY GENERATED LOOK-UP TABLES

Robert P. Loce; Michael S. Cianciosi, both of Rochester, and R. Victor Klassen, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1993, Ser. No. 170,082
Int. Cl.[6] G03F *3/08*
U.S. Cl. 358—447 27 Claims



1. In a system suitable for depicting a bitmap image as a plurality of pixels, a method for converting an input bitmap having a first resolution into an output bitmap image having a second, reproducible resolution, wherein the second resolution is a non-integer multiple of the first resolution, said method comprising the steps of:

(a) creating a plurality of look-up tables, wherein each look-up table represents a unique phase relationship between the first and second resolution bitmaps and where each look-up table entry represents the resulting output to be generated by the look-up table in response to a specific pattern of input pixels within a pixel observation window;

(b) determining, as a function of the position of the pixel observation window, the phase relationship for an output pixel in the output bitmap; and

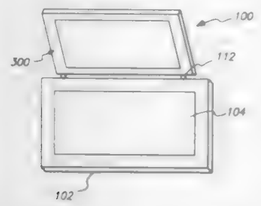
(c) generating, in response to the phase relationship and the pattern of input pixels within the pixel observation window, a video signal for the output pixel, said output pixel being produced at the second, reproducible resolution of the system.

5,387,986

INTEGRATED EDIT BOARD AND DOCUMENT SCANNER

Rodney E. Gerhart, Sunol, Calif., assignor to Ricoh Company Ltd., Tokyo, Japan and Rocoh Corporation, San Jose, Calif.

Filed Sep. 24, 1993, Ser. No. 126,975
Int. Cl.[6] H04N *1/10, 1/387*
U.S. Cl. 358—452 6 Claims



1. A system for editing, reading, and quantizing images on an imaged side of a document without repositioning the document, comprising:

A. an edit unit, including a sensory responsive region disposed to receive the document in selected orientation thereon and an edit reference coordinate, for producing an edit set of coordinate signals representative of the coordinates of sensory inputs applied thereto;

B. a scanner device, including a scanner reference coordinate in alignment with the edit reference coordinate, for optically scanning the imaged side of the document and for generating image data and a scanner set of coordinate signals corresponding to the position of the images on the document disposed on the sensory responsive region;

C. correlation means coupled to receive the edit set of coordinate signals and the scanner set of coordinate signals for selectively altering a portion of the image data associated with the correlated edit set and scanner set of coordinate signals and for generating altered image data; and

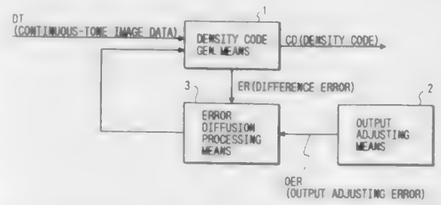
D. output means coupled to receive the altered image data for generating a representation of the images on the imaged side of the document, including the altered portion of the images associated with the edit set of coordinate signals.

5,387,987

METHOD AND APPARATUS FOR REPRODUCING HALF-TONE IMAGES

Naosuke Ino, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 950,692
Claims priority, application Japan, Sep. 26, 1991, 3-273497
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—456 10 Claims



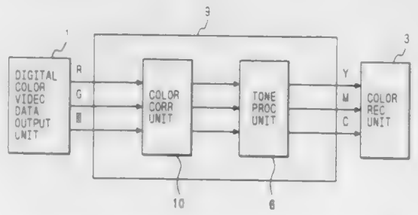
1. A method of reproducing half-tone images comprising the steps of: adding an output adjusting error to a difference error between image data of a target pixel and a threshold level; and diffusing said difference error to which said output adjusting error has been added into pixels surrounding said target pixel when continuous-tone image data of each of said pixels is converted into one of multi-valued density codes, said density codes corresponding to classes defined by at least one predetermined threshold level.

5,387,988

IMAGE SIGNAL PROCESSING APPARATUS AND IMAGE FORMATION APPARATUS INCLUDING THE SAME

Seiichiro Hiratsuka, Kitakyushu; Yoshitsugu Hayashi, and Hiroshi Yamaguchi, both of Fukuoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed May 3, 1993, Ser. No. 55,552
Claims priority, application Japan, May 8, 1992, 4-115708
Int. Cl.[6] H04N *1/46*
U.S. Cl. 358—515 10 Claims



1. An image processing apparatus for converting red, green, and blue luminance signals into cyan, magenta, and yellow density signals, said image processing apparatus comprising:

(a) first signal processing means for producing said cyan density signal from only said red luminance signal;

(b) second signal processing means for producing said magenta density signal from only said red and green luminance signals; and

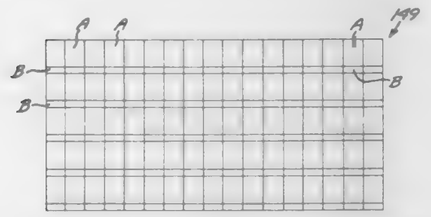
(c) third signal processing means for producing said yellow density signal from said red, green, and blue luminance signals.

5,387,989

MODIFIED TECHNIQUE FOR FABRICATING LOW NOISE FLOODLIT CHMSL HOLOGRAMS

Ronald T. Smith, Torrance; John E. Wreede, Azusa; Mike Virgadamo, Pasadena, and Richard Upper, Studio City, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 995,117
Int. Cl.[6] G02B *5/32;* G03H *1/30*
U.S. Cl. 359—13 2 Claims



1. A holographic center high mounted stoplight system for a vehicle, comprising:

a light source for providing a reconstruction beam;

a hologram layer;

a first array of non-overlapping holographic lenses formed in said hologram layer, each holographic lens of said first array being responsive to said reconstruction beam for diffracting light into a first predetermined diverging solid angular region to produce an image of a masked point source, wherein said first predetermined diverging angular region is identical for all lenses of said first array and is defined by the dimensions of each cell and the location of the point source image produced thereby; and

a second array of non-overlapping holographic lenses formed in said hologram layer and non-overlapping with respect to said holographic lenses of said first array, each holographic lens of said second array being responsive to said reconstruction beam for diffracting light into a second predetermined diverging solid angular region to produce an image of a masked point source, wherein said second predetermined diverging angular region is identical for all lenses of said second array and is defined by the dimensions of each cell and the location of the point source image produced thereby.

5,387,990

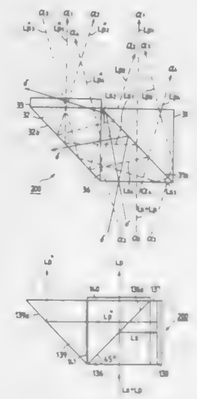
Patent Not Issued For This Number

5,387,991

POLARIZATION CONVERTING DEVICE AND POLARIZED-LIGHT ILLUMINATING SYSTEM USING THE DEVICE AND IMAGE DISPLAY UNIT USING THE DEVICE

Hideaki Mitsutake, Tokyo, and Shigeru Kawasaki, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 702,589, May 17, 1991, abandoned.
This application Dec. 9, 1992, Ser. No. 988,018
Claims priority, application Japan, May 18, 1990, 2-126752; Oct. 5, 1990, 2-266346; May 14, 1991, 3-136945
Int. Cl.[6] G02F *1/137, 1/1335*
U.S. Cl. 359—93 56 Claims



1. A device for converting a light from a light source into a polarized light, comprising:

a first prism having a first slant plane for receiving the light from said light source and dividing it into first and second lights with their polarized planes orthogonal, a first emergent surface from which said first light exits, and a second emergent surface from which said second light exits;

a second prism having an incident surface opposed to said second emergent surface of said first prism, a second slant plane for reflecting said second light from said incident surface so as to direct it to an optical path almost parallel to that of said first light, and a third emergent surface from which said second light reflected from said second slant plane exits; and

a transparent layer provided between said second emergent surface of said first prism and said incident surface of said second prism, said transparent layer having a smaller refractive index than said first prism.

5,387,992

OPTICAL FREQUENCY MULTIPLEX CARRIER CONTROL SYSTEM

Tetsuya Miyazaki, Nara, and Shiro Ryu, Tokyo, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1993, Ser. No. 136,389
Claims priority, application Japan, Oct. 15, 1992, 4-301620
Int. Cl.[6] H04J *14/02*
U.S. Cl. 359—124 1 Claim

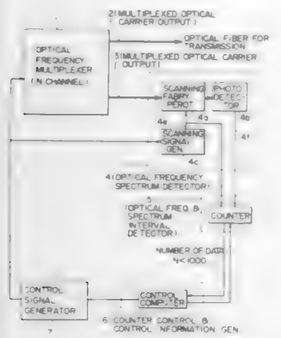
1. An optical frequency multiplex carrier control system comprising:

multiplexing means for multiplexing optical carriers together with an optical frequency standard pulse and outputting a multiplexed optical carrier signal;

scanning type Fabry-Pérot means for analyzing the spectrum of the carrier of the optical carrier signal received from said multiplexing means;

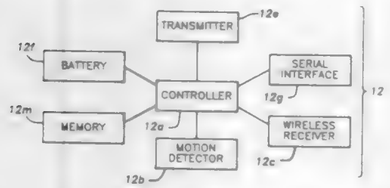
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a signal generator for generating a scanning electrical signal for driving said scanning type Fabry-Férot means;
a photodetector for performing photoelectric conversion of a lightwave transmitted through said scanning type Fabry-Pérot means;
a counter for measuring, in sychronization with said scanning electric signal, the time interval between a pulse corresponding to said optical frequency standard and said scanning electric signal in said converted electric signal and the time interval between a pulse corresponding to the spectrum of said optical frequency standard and a pulse corresponding to the spectrum of each carrier in said converted electric signal;



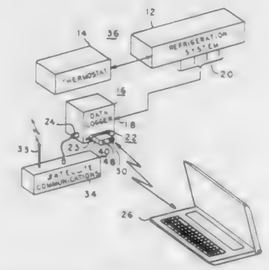
a control computer for transmitting control information obtained by computing, from measured results by said counter, variations in optical frequency scanning range of said scanning type Fabry-Pérot means and in each carrier frequency with respect to said optical frequency standard; and
control signal generating means responsive to said control information from said control computer for generating and sending a control signal to said multipexing means to effect stabilization control of the frequency of said optical carrier signal.

5,387,993
METHOD FOR RECEIVING AND TRANSMITTING OPTICAL DATA AND CONTROL INFORMATION TO AND FROM REMOTELY LOCATED RECEIVERS AND TRANSMITTERS IN AN OPTICAL LOCATOR SYSTEM
Alan C. Heller, and Christopher W. Fox, both of San Antonio, Tex., assignors to Precision Tracking FM, Inc., San Antonio, Tex.
Filed Jun. 25, 1993, Ser. No. 83,725
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—155 14 Claims



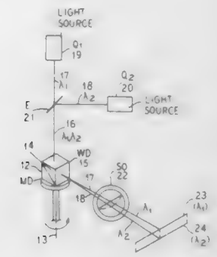
11. A method of transmitting data and control information contained in a plurality of information packages to an optical receiver in an optical locator system, comprising the following steps:
providing a TAG having a serial data interface for receiving data and identifying information;
forming at least one information packet from said data, said information packet containing selected identifying information for the optical locating system;
selecting a maximum number of transmissions from said TAG to the optical locator system;
selecting a time delay that restricts transmission from said TAG to said selected maximum;
activating a sleep mode of said TAG, thereby reducing the normal electrical power consumption by said TAG;
selecting a terminal time interval for said sleep mode;
reactivating said sleep mode when said selected time delay added to said sleep mode time is greater than said terminal time interval, thereby returning the power level of said TAG to normal;
forming an uplink information package containing said information packets; and
transmitting said information package to the optical locating system.

5,387,994
COMMUNICATIONS ADAPTER FOR CONVERTING WIRE-BASED COMMUNICATION TO WIRELESS COMMUNICATION
Michael D. McCormack, Robbinsdale, and Kent C. Woodgate, Bloomington, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.
Filed Feb. 14, 1994, Ser. No. 195,496
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—159 14 Claims



1. A communications adapter for converting a socket connector of communications apparatus from wire-based communication to wireless communication, with the socket connector having transmit and receive contacts, and a control contact which enables the socket connector only when a first predetermined logic level is applied thereto, comprising:
a plug connector, light emitting diode means, timer means, and photo detector means,
said plug connector having transmit, receive and control pins arranged to respectively engage the transmit, receive and control contacts of the socket connector,
said light emitting diode means being connected to the transmit pin of said plug connector,
said timer means having a trigger input and an output, with said timer output being connected to the control pin of said plug connector,
said timer means providing a timed output signal at the timer output having said first predetermined logic level in response to a signal applied to the trigger input, and otherwise providing a signal having a second logic level,
said photo detector means having an output connected to the trigger input of said timer means and also to the receive pin of said plug connector,
wherein an input signal applied to said photo detector means triggers the timer means, enabling communications via the socket connector for the duration of the timed output signal.

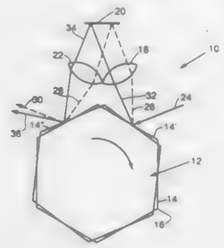
5,387,995
OPTICAL POSITIONING SYSTEM FOR AT LEAST ONE PICTURE ELEMENT
Thomas Härig, Eppstein, Germany, assignor to Linotype-Hell AG Corporation, Kiel, Germany
PCT No. PCT/EP90/02064, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO91/08504, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 30, 1990, Ser. No. 859,364
Claims priority, application Germany, Nov. 30, 1989, 3939551
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—204 4 Claims



1. An optical positioning system, comprising:
at least two narrow band light source means for emitting light beams for generating at least two picture elements in an image plane;
a rotatable wavelength-dispersive light-deflecting means arranged in a beam path between the two light source means and an image plane such that the wavelength-dispersive light-deflecting means is impinged upon in common by the light beams of the two light source means for deflecting the light beams in a deflection direction within a deflection range in said image plane according to their respective wavelengths so that positions of the individual picture elements within the deflection range about basic respective positions are settable by setting said respective wavelengths;
said wavelength-dispersive light-deflecting means by rotation thereof setting said basic respective positions of the picture elements in said image plane; and
said wavelength-dispersive light-deflecting means comprising an optical mechanical light deflector having a wavelength-dispersive element integrated therein comprising a mirroring deflector rotating around a rotational axis and which is positioned such that it is impinged upon by said light beams substantially along said rotational axis.

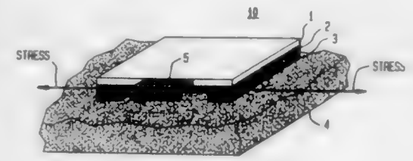
5,387,996
METHOD OF OBTAINING A NARROW FIELD OF VIEW SCAN
Mario P. Palombo, Manhattan Beach, and David Fink, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jul. 20, 1992, Ser. No. 915,226
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—218 16 Claims

1. A method of obtaining a narrow field of view scan comprising the steps of:
impinging a beam of light onto a first facet of a multi-faceted polygon scanning wheel;
rotating the scanning wheel in a scanning sequence;
magnifying the beam of light reflected from said first facet, said step of magnifying including directing the beam of light through an astronomical-type telescope:
directing the reflected beam of light from the first facet and onto a second facet of said polygon scanning wheel; and



causing the reflection off of the second facet to scan in substantially the opposite direction to the reflection off of the first facet.

5,387,997
OPTICAL MODULATOR BASED ON PIEZOELECTRICALLY DRIVEN ANISOTROPIC OPTICAL ABSORPTION
Gerald J. Iafrate, Raleigh, N.C.; Mitra Dutta, Matawan; Hongen Shen, Howell, both of N.J.; Michael A. Stroscio, Durham, N.C., and Arthur Ballato, Oceanport, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 29, 1993, Ser. No. 159,902
Int. Cl.[6] G02F *1/015*
U.S. Cl. 359—248 6 Claims



1. An optic modulator comprising:
a piezoelectric substrate having a thermal expansion coefficient and a piezoelectrically-active direction;
bottom contact means bonded to the piezoelectric substrate, said bottom contact means having a lengthwise axis;
a multiple quantum well heterostructure displaced on the bottom contact means, said multiple quantum well heterostructure having a thermal expansion coefficient; and
means to electrically bias the piezoelectric substrate;
wherein the piezoelectric substrate is formed such that its thermal expansion coefficient is matched to that of the MQW epilayer in the direction parallel to the lengthwise axis of the bottom contact means and so that the piezoelectrically-active direction of the substrate is normal to the lengthwise axis of the bottom contact means, and wherein when the piezoelectric substrate is biased, an anisotropic strain is displaced along said multiple quantum well heterostructure whereby an anisotropic absorption of light is induced in said multiple quantum well heterostructure.

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5,387,998

SHORTER WAVELENGTH LIGHT GENERATING APPARATUS IN WHICH COHERENT LIGHT IS CONVERTED INTO SHORTER WAVELENGTH LIGHT

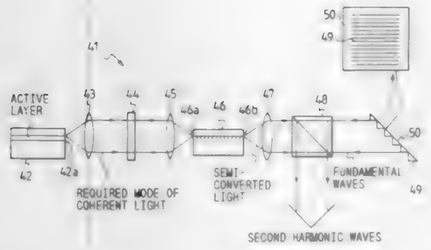
Yasuo Kitaoka; Kazuhisa Yamamoto; Kiminori Mizuuchi, all of Osaka, and Makoto Kato, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 15, 1993, Ser. No. 76,666

Claims priority, application Japan, Jun. 17, 1992, 4-157686; Mar. 24, 1993, 5-064926

Int. Cl.[6] G02F *1/37*; H01S *3/109*

U.S. Cl. 359—328 33 Claims



1. A shorter wavelength light generating apparatus, comprising:

coherent light radiating means for initially radiating a required mode of coherent light and other various modes of coherent light, a wavelength of the required mode of coherent light differing from those of the other various modes of coherent light;

light diffracting means for diffracting the required mode of coherent light radiated from the coherent light radiating means at a feedback angle of diffraction to feed back the required mode of coherent light diffracted to the coherent light radiating means and diffracting the other various modes of coherent light radiated from the coherent light radiating means at an abandoned angle of diffraction to abandon the other various modes of coherent light diffracted, the required mode of coherent light fed back to the coherent light radiating means inducing the coherent light radiating means to dominantly radiate the required mode of coherent light;

wavelength converting means for converting a part of the required mode of coherent light dominantly radiated from the coherent light radiating means in cooperation with the light diffracting means into shorter wavelength light of which a wavelength is shorter than that of the required mode of coherent light, the wavelength converting means being composed of an optical waveguide type of wavelength converting device with an optical waveguide, alternate rows of reverse and non-reverse polarization layers being arranged at regular intervals in the optical waveguide of the optical waveguide type of wavelength converting device, the part of the required mode of coherent light being converted into the shorter wavelength light in the alternate rows of the optical waveguide, and the shorter wavelength light being output; and

focusing means for focusing the required mode of coherent light dominantly radiated from the coherent light radiating means on the optical waveguide of the wavelength converting means to pass the required mode of coherent light through the alternate rows.

5,387,999

CAMERA SHAKE COMPENSATING OPTICAL SYSTEM

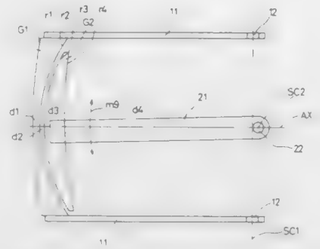
Kohtaro Hayashi, Suita, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Jun. 18, 1993, Ser. No. 80,056

Claims priority, application Japan, Jun. 26, 1992, 4-168691; Mar. 31, 1993, 5-073378

Int. Cl.[6] G02B *15/14, 27/64*

U.S. Cl. 359—557 7 Claims



1. A camera shake compensating optical system for use in a zoom lens system where any blurring of an image to be recorded when the zoom lens system is moved relative to an aligned object on an optical axis of the zoom lens system having an aperture stop is compensated comprising:

a compensating lens movably positioned, on an object side of the aperture stop, so that it is decentered relative to the optical axis in order to compensate for any blurring;

wherein as a focal length of said zoom lens system shifts from a shorter focal length condition to a longer focal length condition, the position of said compensating lens at least does not shift relative to said aperture stop or shifts toward the object side so as to be further away from the aperture stop; and

wherein the following condition is fulfilled:

$$0.22 \leqq FLw \times \Sigma(\Phi i \times \Theta i)$$

where

FLw represents a shortest focal length of an entire system including the camera shake compensating optical system and the zoom lens system;

Φi represents a power of a refractive surface to be displaced due to the decentering of the compensating lens;

Θi represents an angle of optical inclination of the surface to be displaced with respect to said optical axis of said zoom lens system when the compensating lens is decentered so that a principal light beam from an object is bent by one degree in a counterclockwise direction by the camera shake compensating optical system; and

Σ represents a total sum of the product of Φi and Θi with respect to all of the optical surfaces to be displaced by the decentering of the compensating lens.

5,388,000

ANTI-GLARE FITMENT

Christian Bartenbach, Rinner Strasse 39, A-6071 Aldrans, Austria

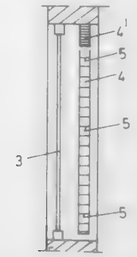
Filed Dec. 14, 1993, Ser. No. 166,702

Claims priority, application Austria, Jan. 15, 1993, A53/93

Int. Cl.[6] G02B *27/00*

U.S. Cl. 359—596 18 Claims

1. Anti-glare fitment with a plurality of elongate light-deflecting slats which are arranged one above another, at a distance from each other, and which are reflective on their upper surface and preferably have a cross section which is



upwardly curved in a concave manner, whereby the light-deflecting slats are, at least within an area, perforated.

5,388,001

POLARIZATION-INDEPENDENT OPTICAL WAVELENGTH FILTER WITH SIMPLIFIED STRUCTURE

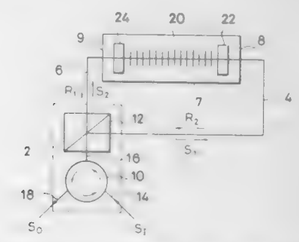
Hideaki Okayama; Issei Asabayashi, and Masao Kobayashi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1993, Ser. No. 128,036

Claims priority, application Japan, Oct. 7, 1992, 4-268264; Sep. 17, 1993, 5-231541

Int. Cl.[6] G02B *27/14, 6/00, 6/10*; H01S *3/30*

U.S. Cl. 359—629 34 Claims



1. A method of filtering an optical input signal (S_I) to extract a particular wavelength, comprising the steps of:

using a polarization splitter (**12**) to divide said optical input signal into a first signal (S_1) and a second signal (S_2) which are linearly polarized with mutually perpendicular planes of polarization;

leading said first signal via a first optical path (**4**) to a first end (**8**) of an optical device (**7**, **35**, or **44**,) that acts selectively on said wavelength;

leading said second signal via a second optical path (**6**) to a second end (**9**) of said optical device;

transmitting said first signal from said first end (**8**) to said second end (**9**) in said optical device, thus obtaining a first returning signal (R_1);

transmitting said second signal from said second end (**9**) to said first end (**8**) in said optical device, thus obtaining a second returning signal (R_2);

leading said first returning signal from said second end (**9**) to said polarization splitter (**12**) via said second optical path (**6**);

leading said second returning signal from said first end (**8**) to said polarization splitter (**12**) via said first optical path (**4**); and

recombining said first returning signal and said second returning signal in said polarization splitter (**12**), thereby generating an optical output signal (S_0).

5,388,002

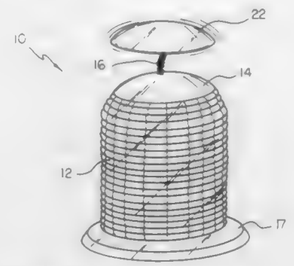
BIRD RESISTANT LENS

Thomas V. Smith, 350 Jadito Trail, and Daniel L. Hogg, 285 E. Kiowa, both of Flagstaff, Ariz. 86001

Filed Jun. 1, 1993, Ser. No. 69,777

Int. Cl.[6] G02B *3/00*

U.S. Cl. 359—642 5 Claims



1. A bird resistant lens comprising:

a lamp housing for receiving and at least partially enclosing a lamp, said lamp housing being substantially translucent so as to allow light radiated from said lamp to pass therethrough, said lamp housing having a top member integrally formed therewith;

a coil spring having first and second ends;

mounting means for mounting said first end of said spring to said top member of said lamp housing such that said spring projects upwardly from said lamp housing; and,

a wobble member mounted to said second end of said coil spring such that said wobble member will move and tilt relative to said lamp housing upon a perching of a bird upon the wobble member, thereby precluding said bird from remaining on said wobble member.

5,388,003

PROJECTION LENS SYSTEM

Kazuhiro Naganuma, Tokyo, and Yasunori Arai, Saitama, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

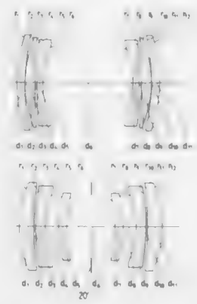
Continuation of Ser. No. 968,483, Oct. 29, 1992, abandoned.

This application May 13, 1994, Ser. No. 242,063

Claims priority, application Japan, Oct. 29, 1991, 3-347594; Oct. 29, 1991, 3-347595

Int. Cl.[6] G02B *9/62*

U.S. Cl. 359—649 6 Claims



1. A projection lens system comprising a front group and a rear group, said front group comprising, in order from an object side, a positive first lens element, a positive second lens element and a negative third lens element, said rear group comprising a negative fourth lens element, a positive fifth lens

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element and a positive sixth lens element, said lens system satisfying the following conditions:

$$-0.0015<(\theta 2-\theta 3)/(\nu 2-\nu 3)<0$$

$$-0.0015<(\theta 5-\theta 4)/(\nu 5-\nu 4)<0$$

where $\theta 2$ and $\nu 2$ denote the dispersion index of the second lens element, $\theta 3$ and $\nu 3$ denote the dispersion index of the third lens element, $\theta 4$ and $\nu 4$ denote the dispersion index of the fourth lens element and $\theta 5$ and $\nu 5$ denote the dispersion index of the fifth lens element and, with θ and ν being defined by:

$$\theta=(ng-nF)/(nF-nC)$$

$$\nu=(nd-1)/(nF-nC)$$

where ng, nF, nC and nd denote the refractive indices of a lens element at the g, F, C and d lines, respectively.

4. A projection lens system comprising a front group and a rear group, said front group comprising, in order from the object side, a positive first lens element, a negative second lens element and a positive third lens element, said rear group comprising a positive fourth lens element, a negative lens element and a positive sixth lens element, said lens system satisfying the following conditions:

$$-0.0012<(\theta 1-\theta 2)/\nu 1-2\nu 2)<0$$

$$-0.0012<(\theta 6-\theta 5)/\nu 6-\nu 5)<0$$

where $\theta 1$ and $\nu 1$ denote the dispersion index of the first lens element, $\theta 2$ and $\nu 2$ denote the dispersion index of the second lens element, $\theta 5$ and $\nu 5$ denote the dispersion index of the fifth lens element and $\theta 6$ and $\nu 6$ denote the dispersion index of the sixth lens element and, with θ and ν being defined by:

$$\theta=(ng-nF)/(nF-nC)$$

$$\nu=(nd-1)/(nF-nC)$$

where ng, nF, nC and nd denote the refractive indices of a lens element at the g, F, C and d lines respectively.

5,388,004

WIDE ANGLE HIGH MAGNIFICATION ZOOM LENS HAVING FIXED GROUP WITH POSITIVE REFRACTIVE POWER

Nobuyuki Adachi, Tokyo, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,324
Claims priority, application Japan, Feb. 4, 1992, 4-047603
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—683 **9 Claims**



1. A zoom lens comprising:
(a) a first lens group having a positive refractive power and provided nearest to an object to be photographed, said first lens group being disposed at a fixed position;
(b) a second lens group having a negative refractive power and provided next to said first lens group, said second lens group movable along the optical axis of said zoom lens during a change of magnification;
(c) a third lens group having a positive refractive power and provided next to said second lens group, said third lens group movable along the optical axis of said zoom lens during a change of magnification;
(d) a fourth lens group having a negative refractive power and provided next to said third lens group, said fourth lens group movable along the optical axis of said zoom lens during a change of magnification; and
(e) a fifth lens group provided next to said fourth lens group, said fifth lens group movable along the optical axis of said zoom lens during a change of magnification to compensate for a discrepancy of an image focal point caused by a change in magnification,
wherein the following inequalities are satisfied:

$$|F_w/F_{1.4}|<0.10$$

$$1.10<|F_2/F_w|<1.50$$

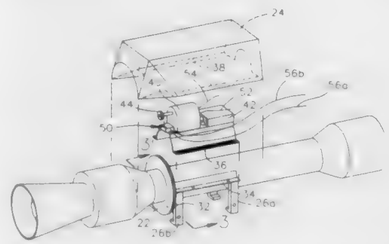
where a focal length of the zoom lens is F_w at a wide angle end, a focal length of said first to said fourth lens group is $F_{w1.4}$ at the wide angle end, and a focal length of said second lens group is F_2.

5,388,005

ELECTRICALLY-ADJUSTABLE VARIABLE POWER RIFLE TELESCOPE

Steven W. Wilson, 4767 Lakeside Blvd., Hale, Mich. 48739

Filed Nov. 24, 1992, Ser. No. 980,990
Int. Cl.[6] G02B *15/14, 23/00;* **F41G** *1/38*
U.S. Cl. 359—694 **13 Claims**



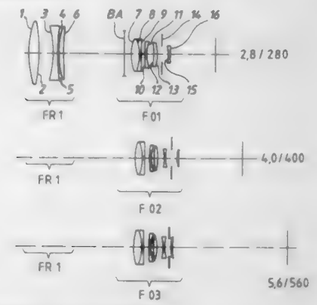
1. An adjustment device for a telescope mounted on a firearm, said adjustment device comprising:
a mounting rail attached to an upper surface of said firearm;
a pair of mounting clamps having one end mounted to said mounting rail and an opposite end extending in a direction away from said firearm;
a variable power telescope having a pair of flanges attached thereto and laterally projecting therefrom, said pair of flanges being removably attached to said pair of mounting clamps, said variable power telescope further comprising:
an adjustment ring externally mounted thereto adjacent one end of said pair of flanges; and
magnifying means mounted to said variable power telescope for providing a magnified image of a target to a user of said firearm;
a platform support member having a pair of flanges thereon, each one of said pair of flanges being mounted to a respective one of said pair of mounting clamps;
drive means juxtaposed said adjustment ring, said drive means further being mounted to said platform support member and complementary with said adjustment ring for altering the magnification produced by said magnifying means; and
selective control means mounted to said firearm and connected to said drive means for selectively controlling the magnification produced by said magnifying means;
whereby while the user holds said firearm with both arms and sights a target through said magnifying means said user adjusts said magnifying means with said selective control means to vary the magnification of said target as seen by said user when sighting through said telescope.

5,388,006

TELEPHOTO CAMERA LENS

Lothar Koelsch, Wilnsdorf, Germany, assignor to Leica Camera GmbH, Wetzlar, Germany

Continuation of Ser. No. 843,364, Feb. 28, 1992, abandoned.
This application Feb. 22, 1994, Ser. No. 199,969
Claims priority, application Germany, Mar. 1, 1991, 4106534
Int. Cl.[6] G02B *13/02*
U.S. Cl. 359—748 **8 Claims**



2. A telephoto lens comprising:
an object-side front group module detachably coupled to an image-side focusing group module;
said object-side front group module being selected from a first group of one or more front group modules, each of said front group modules having fixedly arranged lens elements; and
said image-side focusing group module being selected from a second group of two or more focusing group modules, each of said focusing group modules having mutually displaceable lens elements, each of said focusing group modules having imaging parameters such that when coupled to any one of said front group modules an acceptable imaging performance is maintained;
wherein a focal length of said telephoto lens is determined by a particular selection of said object-side front group module and said image-side focusing group module.

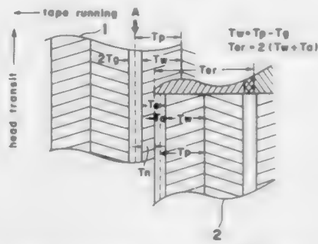
5,388,007

APPARATUS FOR RECORDING AND REPRODUCING SIGNALS WHICH PROVIDES GUARD BANDS BETWEEN SETS OF RECORDING TRACKS TO IMPROVE EDITING

Kunio Sekimoto, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 817,979, Jan. 8, 1992, abandoned, which is a continuation of Ser. No. 477,766, Feb. 9, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 110,678
Claims priority, application Japan, Feb. 14, 1989, 1-33989
Int. Cl.[6] G11B *27/02, 15/14, 5/03*
U.S. Cl. 360—13 **12 Claims**

1. An apparatus for recording signals through forming oblique tracks on a recording medium with at least one rotating set of a plurality of simultaneously scanning recording heads which each are adapted to have different azimuth angles among the adjacent tracks formed by each of the heads of said set, the heads of the set being arranged such that guard bands are not formed among the respective tracks formed by a pair of the recording heads of said set,
characterized in that guard bands are provided between the tracks formed by the different pairs of the recording heads of said set, and
characterized in that at least one rotating erase head rotating simultaneously with the set of recording heads is provided, the erase head being arranged with respect to said set of recording heads, such that portions of the already recorded tracks larger in width than the set tracks to be formed by the set of recording heads become erased and



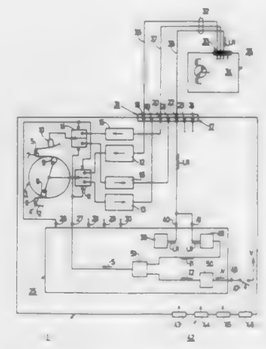
guard bands are provided in the editing points between a set of tracks to be recorded newly by the set of recording heads and an already recorded set of tracks left unerased by said erase head.

5,388,008

DEVICE FOR RECORDING AND PLAYING BACK INFORMATION SIGNALS

Pawel Leahem, Biedermannsdorf, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 4, 1992, Ser. No. 925,354
Claims priority, application Austria, Aug. 7, 1991, 1566/91
Int. Cl.[6] G11B *5/86, 27/02;* **H04N** *5/76*
U.S. Cl. 360—15 **7 Claims**



1. A device for recording information signals on a record carrier, the device comprising:
connection means for connecting a second device capable of supplying the information signals while in a playback mode of operation to the device, said connection means having connection contacts, some of the contacts being provided for receiving the information signals played back by the second device and at least one other of the contacts being provided for receiving a control voltage generated and emitted by the second device, which control voltage is at a first level when the second device is not in its playback mode of operation and at a second level when the second device is in its playback mode of operation;
first detector means for detecting which level the control voltage is at, and generating a first item of control information when the control voltage is at the second level;
second detector means for detecting whether a copy instruction, indicating that the information signals played back by the second device are to be recorded, is given to the

first device, and generating a second item of control information when the copy instruction is given; and

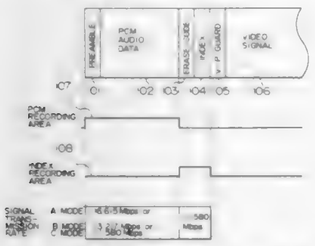
control means for controlling modes of operation of the first device, such modes including at least a record mode of operation, and processing the first and second items of control information and switching on the record mode of operation when the first and second items of control information are simultaneously being generated.

5,388,009

PCM SIGNAL RECORDING METHOD AND APPARATUS CAPABLE OF ADDING INDEX CODE TO PCM SIGNAL RECORDED AT DIFFERENT TRANSMISSION RATES

Yutaka Nagai; Toshifumi Takeuchi; Takao Arai; Hiroo Okamoto; Takaharu Noguchi, all of Yokohama, and Shigeyuki Itoh, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,547
Claims priority, application Japan, Feb. 27, 1991, 3-032612
Int. Cl.[6] G11B *5/02*
U.S. Cl. 360—19.1 **10 Claims**



3. An apparatus for recording a video signal, index codes representing video subcodes and a PCM audio signal in a single continuous scanning on a recording medium, comprising:

means for recording said PCM audio signal in a predetermined first region and said video signal in a second region behind said first region on the recording medium at a first transmission rate which is selected from plural transmission rates; and

means for recording index codes representing video subcodes in a third region between said first and second regions at a constant second transmission rate without regard to said first transmission rate.

5,388,010

PEAK DETECTOR FOR DETECTING ACCURATE PULSE PEAKS PRODUCED BY A MAGNETIC HEAD EXHIBITING RESIDUAL MAGNETISM

David E. Norton, Jr., Boulder, Colo., assignor to Fujitsu Limited, Kawasaki, Japan

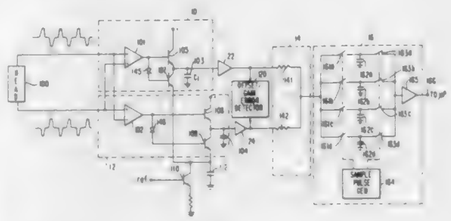
Continuation of Ser. No. 769,405, Oct. 1, 1991, abandoned. This application Dec. 13, 1993, Ser. No. 166,596
Int. Cl.[6] G11B *5/09, 5/596*
U.S. Cl. 360—46 **19 Claims**

1. Apparatus for peak detecting pulses recovered from a magnetic disk by a magnetic head, said apparatus comprising:

input means for concurrently supplying non-full-wave rectified first and second trains of differential pulses recovered from the same track by said magnetic head, said first non-full-wave rectified train of differential pulses exhibiting a baseline shift relative to said second non-full-wave rectified train of differential pulses as a result of asymmetric residual magnetism of said magnetic head;

first and second peak detecting means connected to said input means for detecting peaks of said first and second non-full-wave rectified trains of baseline-shifted differential pulses, respectively;

adding means for adding the peaks detected in said first non-full-wave rectified train of differential pulses with the peaks detected in said second non-full-wave rectified train of differential pulses; and



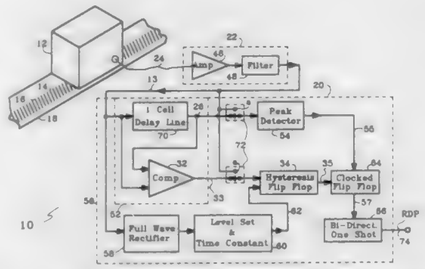
output means for providing an output signal indicative of pulse peaks as a function of the added peaks.

5,388,011

PEAK DETECTOR WITH LOOK AHEAD

Ronald E. Tollum, Simi Valley, Calif., assignor to Wangtek, Inc., Simi Valley, Calif.

Continuation of Ser. No. 886,540, May 20, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,507
Int. Cl.[6] G11B *5/09, 5/02*
U.S. Cl. 360—46 **17 Claims**



1. A system for recovering magnetically recorded digital information, comprising:

read head means for generating analog signals in response to flux transitions on magnetic media, said flux transitions separated by a time period at least equal to a time period of one data cell;

delay line means for providing a replica of said analog signals delayed in time by a fixed time period equal to at least the time period of one data cell;

peak detector means for generating peak detection signals in response to signal characteristics in said time delayed replica indicative of flux transitions in said magnetic media;

comparator means for providing differences in peak-to-peak amplitudes between said analog signals and said time delayed replica;

hysteresis circuit means responsive to said differences for generating a qualifying signal transition whenever said differences exceed a predetermined level; and

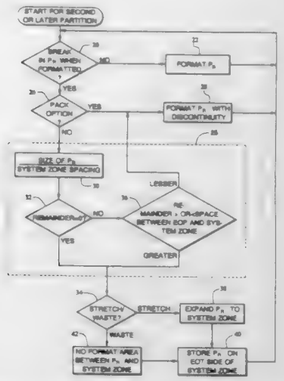
gating means for rejecting peak detection signals which do not occur after a qualifying signal transition.

5,388,012

PARTITIONING OF MAGNETIC TAPE INTO SEQUENTIALLY OCCURRING PARTITIONS BETWEEN AND AROUND REGULARLY OCCURRING SYSTEM ZONES

Stephen M. Adams, Sachse, Tex., and Lionel C. Shih, San Jose, Calif., assignors to E-Systems, Inc., Dallas, Tex. and Ampex Corporation, Redwood City, Calif.

Filed Feb. 28, 1992, Ser. No. 843,390
Int. Cl.[6] G11B *20/12, 5/008*
U.S. Cl. 360—48 **5 Claims**



1. A method for formatting a length of recording media with a plurality of partitions, comprising the steps of:

formatting a plurality of system zones along the length of the recording media, the system zones spaced apart by one or more of the partitions;

selecting a length for each partition; and

formatting one or more partitions along the length of recording media between each of the spaced apart system zones, including the steps of:

determining when a to be formatted partition overlaps a system zone;

dividing the partition into first and second segments when a to be formatted partition overlaps a system zone; and

formatting the first segment before the zone and formatting the second segment after the system zone.

5,388,013

DATA STORAGE FORMAT CONVERSION METHOD AND SYSTEM, DATA ACCESS METHOD AND ACCESS CONTROL APPARATUS

Yoichi Nakamura, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,724
Claims priority, application Japan, Mar. 6, 1992, 4-049833; Jan. 22, 1993, 5-009002
Int. Cl.[6] G11B *5/09, 15/18, 17/00, 19/02*
U.S. Cl. 360—48 **13 Claims**

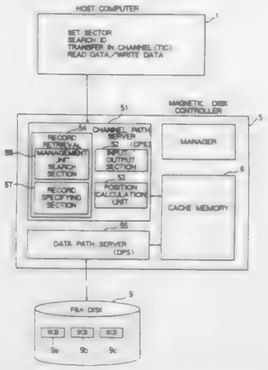
6. An apparatus for controlling access to a storage according to an access instruction corresponding to a variable length format, wherein said storage operates according to a fixed length format with fixed length record blocks, wherein variable length records that have gaps deleted therefrom are arrayed as a management unit which is stored on said storage as a plurality of fixed length record blocks, wherein said management unit includes address information indicating the positions of the variable length records included in said management unit and wherein the management unit also includes relative position information indicating relative positions of the variable length records included in said management unit, the relative position being relative from the start of a corresponding track of said variable length records, said apparatus comprising:

read/write means for reading data from and/or writing into said storage on a management-unit basis;

a memory for storing the data read from and/or written by said read/write means;

input means for receiving said access instruction;

position calculating means for estimating a position of said storage which is substantially likely to hold the fixed length record blocks having the management unit having the variable length record corresponding to said access instruction; and



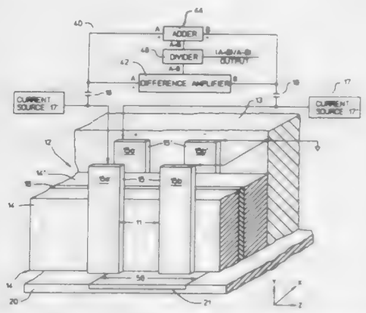
record searching means for reading from said storage the management unit located at the position estimated by said position calculating means, said management unit being read into said memory through said read/write means, wherein said record searching means includes means for detecting in said memory the variable length record of the access instruction.

5,388,014

APPARATUS AND METHOD OF SENSING THE POSITION OF A MAGNETIC HEAD

James A. Brug, Menlo Park; Richard H. Henze, San Carlos, and Steven L. Naberhuis, Fremont, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 10, 1993, Ser. No. 119,468
Int. Cl.[6] G11B *5/03, 5/516, 5/127;* **G11R** *5/33*
U.S. Cl. 360—66 **15 Claims**



1. An apparatus for providing a position signal that indicates the cross-track position of a magnetic head relative to a selected magnetic track, the apparatus comprising:

a first magneto-resistive (MR) element in the magnetic head to sense a portion of the recorded information in the

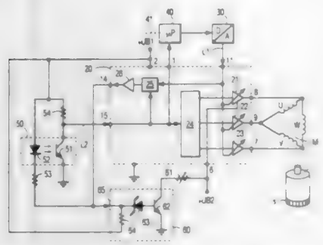
magnetic track, the element having a longitudinal direction;
a second MR element in the magnetic head, insulated from the first MR element, to sense substantially the same cross-track portion of the magnetic track, the second element having a longitudinal direction;
current means for applying a biasing current for and producing an output signal from each MR element, the two biasing currents rotating the magnetization of the MR elements in opposing directions that are transverse from the respective longitudinal directions of the MR elements; and
position decoding means manipulating the output signals to establish the position signal.

5,388,015

MAGNETIC TAPE DEVICE WITH A HEAD CYLINDER

Hartmut Schandl, Vienna, Austria, and Günter Gleim, Villingen-Schwennigen, Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Continuation of Ser. No. 750,052, Aug. 27, 1991, abandoned.
This application Dec. 3, 1993, Ser. No. 161,073
Claims priority, application Germany, Aug. 30, 1990, 4027416; Aug. 30, 1990, 4027417
Int. Cl.[6] G11B *15/18, 5/027, 5/10*
U.S. Cl. 360—69 **9 Claims**



1. A system for heating and controlling a tape drive device having a rotatable head cylinder driven by a controllable motor, said system comprising:
a motor control circuit for generating a motor control signal that is coupled to said motor to control said motor such that said control signal selectively causes said motor to stop and to run;
a heating element for heating said drive device; and
switch means responsive to said motor control signal for turning said heating element on when said motor is stopped and off when said motor is running in accordance with said motor control signal.

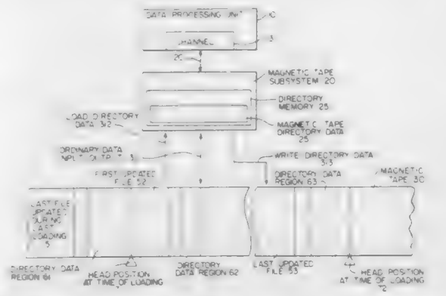
5,388,016

MAGNETIC TAPE DATA MANAGEMENT METHOD AND APPARATUS

Sadasaburoh Kanai; Hiroyuki Kitajima, both of Yokohama; Toshifumi Nishimura, Minamiashigara; Katsuharu Kakuse, Hadamo, and Minoru Kosuge, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,213
Claims priority, application Japan, Mar. 8, 1991, 3-069197
Int. Cl.[6] G11B *15/18*
U.S. Cl. 360—72.1 **51 Claims**

2. A magnetic tape data management method for use in a magnetic tape data storage system where the magnetic tape has plural data regions and plural directory data regions, and, further including a magnetic tape subsystem capable of reading from and writing to said magnetic tape through a tape head, the magnetic tape subsystem further including a directory data memory, the method comprising the steps of;
recording mode data in said directory on said magnetic tape indicating whether or not directory data is to be recorded in the directory data region on the magnetic tape each time the directory data is updated, in order to initialize said magnetic tape prior to its use as a storage medium;
loading said magnetic tape in said magnetic tape subsystem;
reading the latest directory data from the region where it is stored on said magnetic tape;
writing the latest directory data from said magnetic tape to said directory data memory in the magnetic tape subsystem;
accessing data in at least one of said data regions on said magnetic tape loaded in said magnetic tape subsystem;
processing said accessed data;
recording directory data in both the directory data memory of the magnetic tape subsystem and in the directory data region closest to the place at which said magnetic tape head is positioned with respect to the tape at the time of completion of the processing of said date if said mode data



indicates that directory data is to be recorded directory data region on the magnetic tape each time the directory data is updated, otherwise, recording directory data in directory memory of the magnetic tape subsystem without recording in the directory data region of the magnetic tape;
reading the directory data from said directory data memory just before unloading said magnetic tape from said magnetic tape subsystem and recording said directory data in the directory data region closest to the place which said magnetic tape head is positioned with respect to the tape at the time of completion of said processing of said data set, if said mode data does not indicate that directory data is to be recorded in the directory data region on the magnetic tape each time the directory data is updated; and
unloading said magnetic tape from said magnetic tape subsystem.

5,388,017

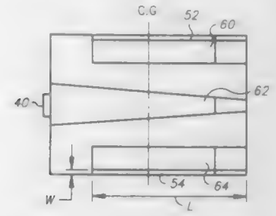
DISK FILE WITH AIR-BEARING SLIDER HAVING SKIDS

Luis P. Franco, Gilroy; Andrew M. Homola, Morgan Hill, and Leela Viswanathan, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 11,049, Jan. 29, 1993, abandoned. This application Aug. 3, 1994, Ser. No. 285,608
Int. Cl.[6] G11B *21/21, 17/32*
U.S. Cl. 360—103 **8 Claims**

1. A transducer assembly for use in a contact start/stop data recording disk file having a rotatable disk for the storage of data, the assembly comprising:
an air-beating slider having a front end and a rear end and comprising a pair of spaced-apart rails, each of the rails having an air-bearing surface and extending from the front end of the slider to a point between the rear end of the slider and the midpoint of the slider, and a rectangularly-shaped skid formed as a carbon overcoat strip projecting from the air-bearing surface of each of the rails, each skid

having its length oriented generally parallel to its rail and extending generally the length of its rail; and



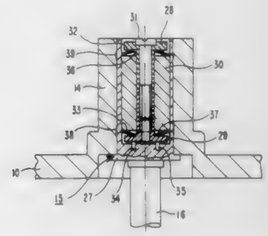
a transducer formed on the rear end of the slider for writing data to or reading data from the disk.

5,388,018

SCANNING DEVICE FOR A MAGNETIC-TAPE APPARATUS HAVING A RADIALLY EXPANDABLE CLAMPING HUB

Gerhard Falk, Rossdorf, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1992, Ser. No. 861,753
Claims priority, application Germany, Apr. 2, 1991, 4110590
Int. Cl.[6] G11B *5/52, 21/04*
U.S. Cl. 360—107 **14 Claims**



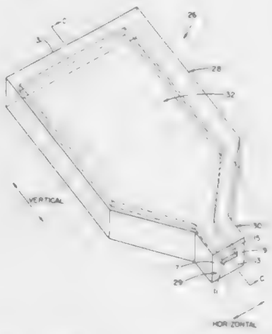
11. A scanning device for a magnetic tape apparatus, said device comprising:
a stationary drum section,
a rotary member rotatable with respect to said drum section about an axis of rotation and including a cylindrical internal wall defining a bore through said rotary member and concentric with the axis of rotation;
a rotatable shaft aligned with the axis of rotation of the rotary member and including an end portion;
a cylindrical sleeve having an end wall fixed to said shaft end portion, said sleeve concentrically extending within said bore in said rotary member and including an internal sleeve surface and an outer sleeve surface which extends with clearance fit with said internal wall of said rotary member;
a pair of radially expandable conical clamping rings within said sleeve;
spacing means between said clamping rings for axially spacing said clamping rings within said sleeve;
first and second clamping elements disposed within said sleeve, each having a cylindrical flange extending through a respective clamping ring for centrically retaining said clamping ring within said sleeve, said second clamping element being disposed closer to said end wall of said sleeve than said second clamping element, said second clamping element having an internal screwthread centered relative to the axis of rotation and said first clamping element having an internal bore aligned therewith; and
a screw extending axially within said sleeve through said internal bore of said first clamping element and threadably engaging said screwthread of said second clamping element, rotation of said screw in one direction of rotation squeezing said clamping rings between said clamping elements and said spacing means, said squeezing causing said clamping rings to radially expand against said inner sleeve surface, expanding said sleeve to clamp said outer sleeve surface against said bore of said rotary member without causing axial movement of said sleeve with respect to said rotary member.

5,388,019

MAGNETIC THIN FILM STRUCTURES FABRICATED WITH EDGE CLOSURE LAYERS

Bernell E. Argyle, Putnam Valley, N.Y.; Thomas C. Arnoldussen, Los Altos; Thomas J. Beaulieu, Hollister, both of Calif.; Dean A. Herman, Jr., Garrison; Sol Krongelb, Katonah, both of N.Y.; Hin P. E. Lee, San Jose; Daniel A. Nepela, Saratoga, both of Calif.; Bojan Petek, Croton-on-Hudson, N.Y.; Lubomyr T. Romankiw, Briarcliff Manor, N.Y., and John C. Slonczewski, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 686,782, May 13, 1991, Pat. No. 5,331,728, which is a division of Ser. No. 432,649, Nov. 7, 1989, Pat. No. 5,032,945. This application Dec. 7, 1993, Ser. No. 163,670
The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.
Int. Cl.[6] G11B *5/147*
U.S. Cl. 360—126 **6 Claims**



1. A magnetic thin film structure comprising:
a laminate of alternate layers of magnetic material and non-magnetic material on a substrate, said laminate including at least one layer of nonmagnetic material and at least two layers of magnetic material, one layer of said at least two layers of magnetic material being a top layer of said laminate;
first and second edge closure layers of magnetic material on first and second side edges of said laminate, said first and second edge closure layers being in magnetic contact with each of said at least two layers of magnetic material; and
the magnetic properties and dimensions of said edge closure layers and laminate layers being such that the initial permeability, μ, is greater than 1, where:

$$\mu = 1 + \frac{2\pi(S_F + S_C)M_S^2}{S_F K_F + S_C K_C - 2\pi A \ln(R_2/R_1)}$$

where, μ=initial permeability,
S_F=cross-sectional area of the laminate,
S_c=cross-sectional area of said first and second edge closure layers,
M_s=spontaneous magnetization,
K_F=anisotropy constant for the magnetic material in said laminate,

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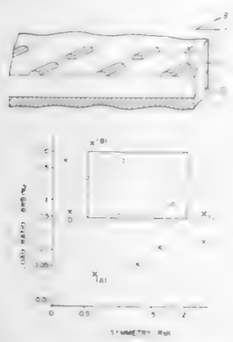
K_c=anisotropy constant for the magnetic material in said first and second edge closure layers,
A =exchange stiffness parameter,
R_2=outer radius of said first and second edge closure layers,
R_1=inner radius of said first and second edge closure layers wherein said edge closure layers are approximated to be semicircular such and that R_2-R_1=the thickness of the magnetic layers of said laminate.

5,388,020

MAGNETIC DISK HAVING IMPROVED SURFACE CONFIGURATION AND MAGNETIC DISK UNIT INCLUDING SAME

Takao Nakamura; Nobuya Sekiyama, both of Yokohama; Hiroshi Tani, Atsugi, and Yoshiki Kato, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 964,897
Claims priority, application Japan, Oct. 23, 1991, 3-275193
Int. Cl.[6] G11B *5/82, 5/66;* **B05D** *5/12*
U.S. Cl. 360—135 **7 Claims**



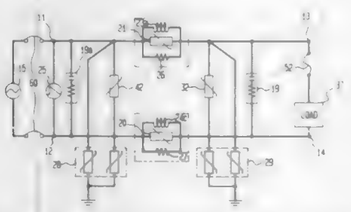
2. A magnetic disk comprising a non-magnetic substrate, and a thin film formed on a surface of said substrate, said film including a magnetic film and a protective film; wherein at least one of said substrate and said thin film is provided with a surface shape in which projections constitute a main component of the surface shape, wherein when the surface shape is evaluated and represented in terms of a load ratio BR5 of a three-dimensional load curve and a symmetric property Rsk of a cross-sectional shape, said load ratio of said surface shape is 0.5% to 10%, and said symmetric property Rsk of said surface shape is 0.5 to 2.0.

5,388,021

VOLTAGE SURGE SUPPRESSION POWER CIRCUITS

George J. Stahl, Severna Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 18, 1992, Ser. No. 946,716
Int. Cl.[6] H02H *9/06*
U.S. Cl. 361—56 **5 Claims**



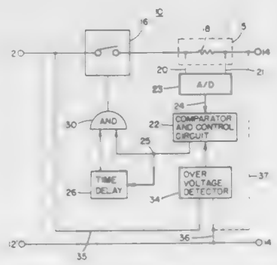
5. A voltage surge and transient suppressor comprising:
first and second input nodes;
a first metal oxide varistor cluster electrically connected between said first and second input nodes;
a second and a third metal oxide varistor cluster electrically connected respectively from said first and said second input nodes to a ground node;
a parallel combination of a first resistor, a first inductor, and a first metal oxide varistor electrically connected between said first input node and a first output node;
a parallel combination of a second resistor, a second inductor, and a second metal oxide varistor electrically connected between said second input node and a second output node;
a fourth metal oxide varistor cluster electrically connected between said first and second output nodes;
a fifth and a sixth metal oxide varistor cluster electrically connected respectively from said first and said second output nodes to a ground node;
a series combination of a third resistor and a first capacitor electrically connected between said first and second input nodes; and
a series combination of a fourth resistor and a second capacitor electrically connected between said first and second output nodes.

5,388,022

AUTO RESET CIRCUIT BREAKER

Om Ahuja, 9005 Longpoint, Apt. 11, Houston, Tex. 77055

Continuation-in-part of Ser. No. 664,472, Oct. 24, 1984, abandoned. This application Feb. 25, 1986, Ser. No. 833,360
The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.
Int. Cl.[6] H02H *3/08*
U.S. Cl. 361—94 **15 Claims**



1. A pyramid protector providing line to line and line to ground over-voltage and over-current protection for each line to be protected, said protector comprising:
(a) at least two conductors to be protected, and a ground conductor for dissipating over-voltage transients,
(b) a multi-element primary protector having a discharge plate for each conductor and at least one ground plate for receiving over-voltage transients,
(c) a current detector circuit, said circuit measuring a variable voltage drop across at least one element series mounted in said line to be protected, said current detector circuit generating a trip signal when said electrical current exceeds a predetermined level,
(d) at least one normally open solid state silicon switch series mounted in each conductor following said primary conductor, said switches being responsive to a first control signal to close said switches for conduction therethrough,
(e) control means for generating a first control signal in response for a voltage across the conductors to thereby close said switches to enable conduction therethrough, said control means responsive to said trip signal to shunt said first control signal to open said switch and interrupt conduction therethrough, said control means again generating said first control signal following a predetermined time interval,

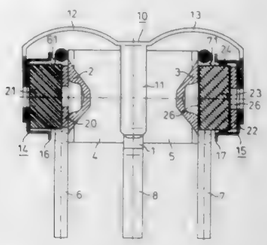
(f) a secondary transient protector means for conducting high voltage transient to ground, said secondary transient protector means mounted between each of said conductors and ground following said solid state silicon switches.

5,388,023

GAS-DISCCHARGE OVERVOLTAGE ARRESTER

Jürgen Boy, and Axel Hahndorff, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 28, 1993, Ser. No. 128,422
Claims priority, application Germany, Apr. 21, 1993, 4313651; May 28, 1993, 4318366
Int. Cl.[6] H02H *1/04*
U.S. Cl. 361—129 **6 Claims**



1. A gas discharge overvoltage arrester comprising:
two hollow-cylindrical insulating members;
a ring-shaped center electrode arranged between said two hollow-cylindrical insulating members;
two end electrodes respectively arranged at ends of the two hollow-cylindrical insulating members;
a two-arm spring clip fastened on the center electrode in connection with which the ends of the arms rest against the ends of the end electrodes with the interposition of a spacer;
wherein the center electrode and the end electrodes are provided with radially extended connections, the connection of each end electrode at the arrester end has a shape of a ring which is fastened at the end to the end electrode, the end of each arm of the spring clip bearing a cap, the cap being provided with a flange-like edge the diameter of which corresponds to the diameter of the ring-shaped connection; and
wherein the spacer between each end electrode and the cap comprises a disk-shaped fusible pellet and a cylindrical part having insulating properties, an outside diameter of the fusible pellet and an outside diameter of the cylindrical part being smaller than an inside diameter of the cap.

5,388,024

TRAPEZOID CHIP CAPACITOR

John Galvagni, Surfside Beach, S.C., assignor to AVX Corporation, Del.

Filed Aug. 2, 1993, Ser. No. 100,375
Int. Cl.[6] H01G *1/14*
U.S. Cl. 361—309 **5 Claims**



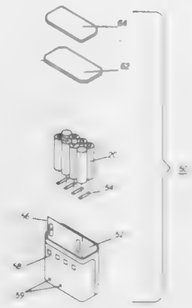
1. A surface mountable multilayer ceramic capacitor assembly comprising a plurality of discrete readily separably interconnected ceramic capacitors arranged in a stack, said capacitors each having mutually spaced first and second terminations of opposite polarity, said first and second terminations of said capacitors in said stack being disposed in abutting relation to the respective first and second terminations of adjacent said capacitors in said stack, and continuous first and second conductive readily fractured termination films mechanically and electrically linking the respective first and second terminations of said capacitors in said stack, whereby individual capacitors or groups of mechanically and electrically connected capacitors as a sub-unit may be separated from said stack.

5,388,025

RECHARGEABLE ELECTRICAL ENERGY STORAGE DEVICE HAVING ORGANOMETALLIC ELECTRODES

James L. Davis, Coral Springs; John K. Arledge, Lauderhill; Thomas J. Swirbel, Davie, and Melanie Williams, Ft. Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 1, 1992, Ser. No. 937,776
Int. Cl.[6] H01G *9/00*
U.S. Cl. 361—502 **17 Claims**



17. A rechargeable battery for a portable radio, comprising:
a housing having electrical contacts for charging and discharging;
one or more electrochemical cells contained within the housing, each cell having two electrodes constructed of a similar organometallic compound, the electrodes being electrically connected by an ion carrying electrolyte and physically separated by a barrier that will pass ions but not electrons; and
each electrochemical cell electrically connected to the other cells and to the electrical contacts.

5,388,026

ELECTROLYTIC CAPACITOR AND METHOD FOR PRODUCING THE SAME

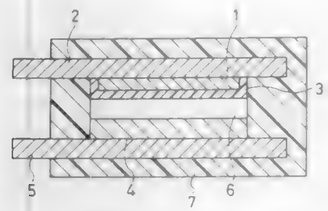
Teruhisa Kanbara, Ikeda; Yuichiro Tsubaki, Kyoto; Tadashi Sotomura, Kashiwara, and Kenichi Takeyama, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kodama, Japan

Continuation of Ser. No. 936,387, Aug. 28, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 171,766
Claims priority, application Japan, Oct. 21, 1991, 3-272294; Apr. 6, 1992, 4-083545
Int. Cl.[6] H01G *9/02*
U.S. Cl. 361—525 **15 Claims**

1. An electrolytic capacitor comprising at least a housing with an insulator lid or a protective coating layer, which encloses the following components,
a pair of electrodes, i.e., an anode with a dielectric substance layer of a metal oxide formed thereon and an electrically conducting cathode,
a pair of lead conductors each of which is connected to said anode or cathode, and
an electrolyte layer which is disposed between said dielec-

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tric substance layer formed on said anode and said cathode, and comprises:
at least one ammonium salt, and



at least one polyether polyol having a skeletal structure represented by the formula:

$$\begin{array}{l} CH_2-O-[(C_2H_4O)-(C_3H_6O)_{m1}]_{n1}-R \\ | \\ CH-O-[(C_2H_4O)-(C_3H_6O)_{m2}]_{n2}-R \\ | \\ CH_2-O-[(C_2H_4O)-(C_3H_6O)_{m3}]_{n3}-R \end{array}$$

where, each of Rs' independently represents a hydrogen atom, an optionally substituted isocyanate residue or acrylic residue which may be the same as or different from one another; m_1, m_2, m_3, n_1, n_2 and n_3, each represents a positive integer, and the ends of the isocyanate residues or acrylic residues are 3-dimensionally linked.

5,388,027

ELECTRONIC CIRCUIT ASSEMBLY WITH IMPROVED HEATSINKING

Randy L. Pollock, Austin, Tex., and George F. Anderson, Jr., Cave Creek, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1993, Ser. No. 99,670
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—705 **13 Claims**



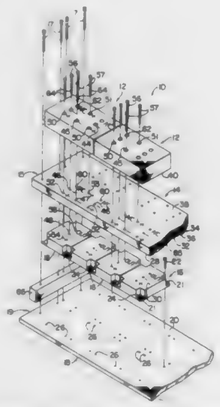
1. An electronic circuit assembly with improved heatsinking, comprising:
a component carrying board comprising a first surface, a second surface and at least one opening extending from the first surface to the second surface, the opening receiving an electronic component;
a first diamond layer disposed adjacent the first surface of the component carrying board, the electronic component attached to the diamond layer through the opening;
a second diamond layer conformal coat covering the second surface of the component carrying board and a top surface of the electronic component; and
wherein heat is dissipated from the electronic component to the first diamond layer and the second diamond layer, and distributed through the first diamond layer and the second diamond layer.

5,388,028

LOW IMPEDANCE INTERCONNECTION ASSEMBLY FOR HIGH FREQUENCY SWITCHING POWER SEMICONDUCTOR DEVICES AND LOW INDUCTANCE MODULAR CAPACITOR

Zeljko Arbanas, Marlboro, Mass., assignor to Kaman Electromagnetics Corporation, Hudson, Mass.

Continuation-in-part of Ser. No. 98,739, Jul. 28, 1993, Pat. No. 5,313,363. This application Feb. 22, 1994, Ser. No. 200,288
Int. Cl.[6] H05H *7/20*
U.S. Cl. 361—710 **11 Claims**



1. A low impedance interconnection assembly for use with high frequency switching power semiconductor devices, said assembly comprising:
a heat sink mounting plate having an outwardly facing substantially flat surface;
a plurality of semiconductor switching devices each of said devices having:
means forming a positive polarity DC voltage input connection;
means forming a negative polarity DC voltage input connection;
means forming an AC voltage output connection, and
means for attachment to said heat sink mounting plate;
means defining a low inductance multi-layer planar bus structure having an outwardly facing lower surface to provide a contact surface for each of said semiconductor switching devices, an outwardly facing upper surface, a first layer carrying a positive DC voltage potential, a second layer carrying a negative DC voltage potential and a dielectric layer separating said first and second layers;
means defining a modular capacitor having at least one positive polarity electrode connection means and at least one negative polarity electrode connection means, said modular capacitor having a first outwardly facing surface for contact with said outwardly facing upper surface of said multi-layer bus structure;
first means for electrically coupling said modular capacitor positive polarity electrode connection means to said first layer of said multi-layer bus structure and said semiconductor positive polarity DC voltage input means;
second means for electrically coupling said modular capacitor negative polarity electrode connection means to said second layer of said multi-layer bus structure and said semiconductor negative polarity DC voltage input means;
third means for electrically coupling said semiconductor switching device AC voltage output to an AC output connection means;

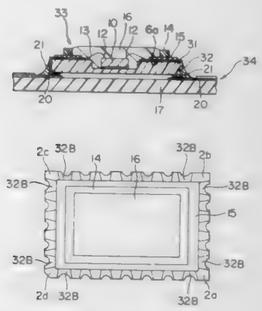
said first and second electrically coupling means further defining attachment means for holding said modular capacitor, multi-layer bus structure and said semiconductor switching devices in a first laminated unitary structure.

5,388,029

SEMICONDUCTOR CHIP CARRIER CAPABLE OF STABLY MOUNTING A SEMICONDUCTOR CHIP

Yoshifumi Moriyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,402
Claims priority, application Japan, Nov. 12, 1991, 3-295376
Int. Cl.[6] H05K *7/02;* **H01R** *9/00;* **H01L** *23/02*
U.S. Cl. 361—760 **13 Claims**



1. A chip carrier for use in supporting a semiconductor chip and comprising:
a leadless carrier portion formed of an insulating substrate which has a rectangular shape having four corners and which has a central portion having a primary surface and a rectangular peripheral portion having a secondary surface surrounding said primary surface; and
a plurality of electrode leads deposited on each side of said rectangular peripheral portion and including:
first electrode leads coated on said secondary surface at positions remote from said four corners and each of which has a first predetermined width, and
second electrode leads each of which is coated outside of but adjacent to each of said corners and each of which has a second width wider than said first predetermined width to enhance strength of solder connections between said second electrode leads and electrodes of a chip, wherein said second width is approximately 0.6 mm, while said first width is approximately 0.3 mm.

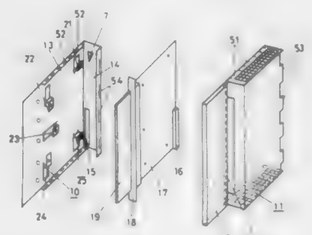
5,388,030

METAL MODULE HOUSING HAVING A PLURALITY OF LUGS FORMED THEREIN FOR SUPPORTING AND GROUNDING A PRINTED CIRCUIT BOARD

Markus Gasser, Unterehrendingen; Markus Hänsli, Däniken; Robert Schilling, Niederrohrdorf, and Stefan Schneeberger, Steffisburg, all of Switzerland, assignors to Asea Brown Boveri, Ltd., Baden, Switzerland

Filed Oct. 13, 1992, Ser. No. 959,982
Claims priority, application Switzerland, Oct. 11, 1991, 2998/91
Int. Cl.[6] H05K *9/00, 7/14;* **H01R** *23/68*
U.S. Cl. 361—818 **10 Claims**

1. An input and/or output device for process data comprising:
a) a mounting rack having a grounded portion;
b) a bus holder located on said mounting rack;
c) a plurality of substantially box-shaped modules positioned next to one another on said mounting rack so that a rear side of each of the modules contacts the mounting rack, each of said plurality of modules including:
1) a process connector inserted in a front side of the module and having a plurality of contacts;
2) a terminal strip having a plurality of contact pins which interact with the plurality of contacts of the process connector;
3) a circuit board having circuits electroconductively connected to the contact pins and to a bus connector;
4) a module housing formed predominately from a metal plate and supporting the circuit board, the terminal strip and the bus connector, the module housing being in electrical contact with the grounded portion of the mounting rack;
5) a first opening which is arranged on a front side of the module housing and which serves as a passage for the terminal strip;



6) a second opening which is arranged on a rear side of the module housing and which serves as a passage for the bus connector;
7) a fastening element which detachably fastens the module housing to the grounded part of the mounting rack;
8) a plurality of lugs formed out of the metal plate of the module housing and supporting the circuit board;
9) a conductor track arranged on the circuit board parallel to the terminal strip and located between the terminal strip and the circuits, the conductor being connected electroconductively to at least one of the plurality of lugs; and
10) at least one protective element provided on the circuit board and electroconductively connected to the conductor track by a first current terminal and to one of the contact pins by a second current terminal.

5,388,031

THREE-PHASE TO SINGLE-PHASE POWER SUPPLY CONVERTER FOR WELDING EQUIPMENT

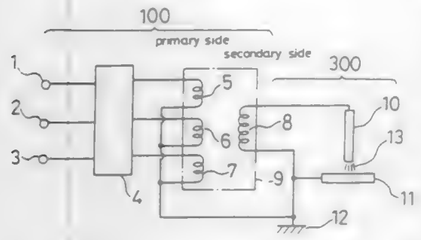
Ryoda Satoh, 8-25, Ohamacho 1-chome, Amagasaki-shi, Hyogo-ken, Japan

Filed Jun. 6, 1991, Ser. No. 710,985
Claims priority, application Japan, Jun. 8, 1990, 2-150585; Jun. 8, 1990, 2-150586; Jun. 8, 1990, 2-150587; Jun. 8, 1990, 2-150589; Sep. 19, 1990, 2-253179; Sep. 19, 1990, 2-253180
Int. Cl.[6] B23K *9/10*
U.S. Cl. 363—149 **1 Claim**

1. A power supply unit comprising:
three input terminals connected to a three-phase A.C. power supply;
a phase control circuit controlling the supply of the three-phase A.C. for each phase;
a transformer comprising a single-phase iron core which is wound by first, second and third phase primary coils at a primary side and by a single-phase secondary coil at a secondary side and in which said first, second and third phase primary coils are connected to said three-phase A.C. power supply via said phase control circuit; and

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an output terminal outputting a single-phase A.C., wherein said phase control circuit controls the supply of the three-



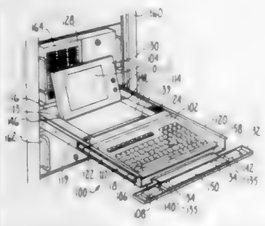
phase A.C. only in an angular range from approximately 120° to 180° for each phase.

5,388,032

COMPUTER EQUIPMENT MONITOR AND DISCRIMINATOR

Daniel A. Gill, Ramona, and Karl Brown, San Diego, both of Calif., assignors to IBUS Technologies, Inc., San Diego, Calif.

Filed May 4, 1993, Ser. No. 57,532
Int. Cl.[6] H05K 7/16
U.S. Cl. 364—146 33 Claims



1. A computer monitoring device for selectively monitoring a plurality of computers mounted within a computer equipment rack, comprising:

a base housing having a front partition and a rear partition, wherein the base housing is slidably mounted within an opening in the equipment rack so that the base housing can be substantially recessed in the opening;

a keyboard located in the front partition of the base housing, wherein the vertical height of the keyboard allows the base housing to be recessed into the opening in the equipment rack;

a display housing pivotably connected to the base housing in a configuration such that the display housing is rotatably moveable from a collapsed position to an erected position;

a flat panel display positioned in the display housing so as to be viewed by a viewer when the housing is in the erected position and, when the housing is in the collapsed position, the vertical height of the display and the display housing allows the base housing to be recessed into the opening in the equipment rack; and

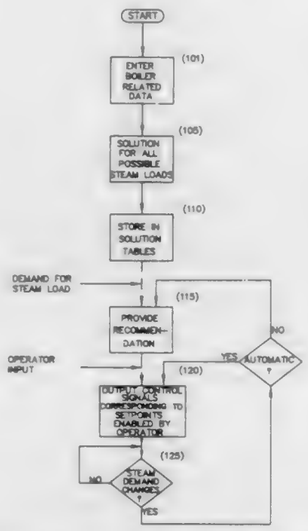
a discriminator, responsive to a selector input device, for selecting one of the plurality of computers for monitoring, wherein the discriminator operatively connects the keyboard and the display to a computer selected by the selector input device.

5,388,033

REAL TIME LOAD ALLOCATION WITH ADDITIONAL CONSTRAINTS

Stephen L. Knupp, Wilmington, Del., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 22, 1993, Ser. No. 125,625
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[6] G05B 13/02; H02J 11/00
U.S. Cl. 364—156 9 Claims



1. A method for allocating a demanded amount of power to a plurality of power output apparatus, each power output apparatus having characteristic curves associated therewith, such that each of the power output apparatus supplies a portion of the demanded power wherein a total of the power outputted from the plurality of power output apparatus equals the amount of the demanded power, and such that the total power outputted from the plurality of power output apparatus results in a minimum cost for generating the power as a function of a plurality of constraints, the method comprising the steps of:

a) entering data for each of the power output apparatus into a controller, the data including cost, and emissions output as a function of power output about each of the power output apparatus;

b) generating optimum solutions by parts for all possible valid output power demands, within output power bounds of each of the power output apparatus, the solutions indicating the portion of power each power output apparatus is to supply to provide the total power demanded at minimal cost and emissions output at or less than predetermined levels;

c) storing the solutions in tables within a storage unit of the controller;

d) upon receipt of a demand for power, performing a search of the solution tables to obtain the amount of power each power output apparatus is to supply, the total of the amounts of power from each power output apparatus being equal to the amount of power demanded at minimal cost and emissions output; and

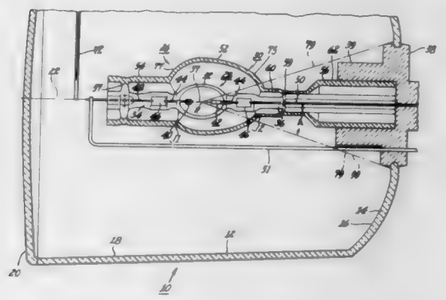
e) outputting control signals to each of the power output apparatus, the control signals being indicative of the amount of power to be supplied.

5,388,034

VEHICLE HEADLAMP COMPRISING A DISCHARGE LAMP INCLUDING AN INNER ENVELOPE AND A SURROUNDING SHROUD

Gary R. Allen, Chesterland; L. Abigail Ainsworth, Cleveland Heights; John M. Davenport, Lyndhurst; Richard L. Hansler, Pepper Pike, and Walter J. Kosmatka, Highland Heights, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 16, 1992, Ser. No. 945,768
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[6] B60Q 1/04
U.S. Cl. 362—61 6 Claims



1. In a vehicle headlamp comprising a reflector having an optical axis along which light is reflected from the reflector forwardly thereof, a lens at a front end of the reflector for receiving and transmitting said reflected light, and a discharge lamp having an optical axis disposed substantially parallel to the optical axis of the reflector and mounted in a position between said reflector and said lens for generating said light, said discharge lamp comprising:

(a) an inner envelope comprising:

(a1) a hollow bulbous portion of vitreous light-transmitting material containing a fill,

(a2) two tubular portions of vitreous material joined to and extending in opposite directions from said bulbous portion, a front one of said tubular portions extending along the lamp optical axis from said bulbous portion toward said lens and a back one of said tubular portions extending along the lamp optical axis from said bulbous portion toward said reflector,

(b) a pair of spaced-apart electrodes within said bulbous portion of the inner envelope between which an electric discharge is developed substantially on the lamp optical axis when the lamp is operated,

(c) means for supporting said electrodes on said tubular portions,

(d) a tubular shroud of vitreous material surrounding said inner envelope and comprising first and second hollow portions at opposite ends of the shroud and a light-transmitting enlarged bulbous portion located between said hollow portions, the first of said hollow shroud portions surrounding said front tubular portion of the inner envelope, the second of said hollow shroud portions surrounding said back tubular portion of the inner envelope, and the bulbous portion of the shroud surrounding the bulbous portion of the inner envelope, and in which:

(e) said bulbous portion of the shroud has a central longitudinal axis that is parallel to and offset by a small distance vertically upward from said optical axis of the discharge lamp sufficient to substantially increase a first seeing-to-glare ratio of the headlamp as compared to a second seeing-to-glare ratio present in an otherwise identical headlamp having no offset between said central longitudinal axis of said bulbous portion and said optical axis of the discharge lamp, and

(f) said enlarged bulbous portion of the shroud has a front zone surrounding said lamp optical axis and located adjacent said first hollow shroud portion and a back zone surrounding said lamp optical axis and located adjacent said second hollow shroud portion,

(g) said front zone is joined to said first hollow portion through a first junction and said back zone is joined to said second hollow portion through a second junction, and

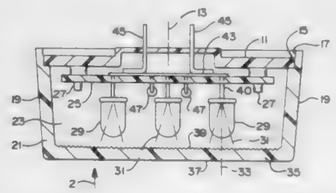
(h) said second junction is located substantially closer to the lamp optical axis than said first junction.

5,388,035

AUTOMOTIVE MARKER LAMP

Jack D. Bodem, Jr., Kokomo, Ind., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Jul. 23, 1993, Ser. No. 96,342
Int. Cl.[6] B60Q 1/26
U.S. Cl. 362—61 9 Claims



1. An automotive vehicle marker lamp, comprising:

a circular base mountable to a vehicle and having a central axis and a peripheral edge;

a hollow circular cup-shaped lens having an annular circular side wall joined to the peripheral edge of said base and a circular front wall spaced forwardly from said base and having a flat front surface and a rear surface;

three light-emitting diodes supported by said base equidistant from said central axis, each light-emitting diode having a conical output beam centered on an axis that is normal to the plane of the lens front wall; and

three sets of light-spreading prism ribs on the rear surface of said lens front wall in respective optical alignment with each light-emitting diode, each set of prism ribs comprising a set of vertically-extending parallel V-shaped ribs formed in the rear surface of the lens front wall, all of said ribs being parallel so that each set of prism ribs spreads the incident light beam in a horizontal plane transverse to the vertically-extending parallel ribs, each light beam being essentially unaffected by said ribs in a vertical plane parallel to the ribs, and the ribs in the different sets of V-shaped ribs having different included angles so that each set of ribs produces a different angular spreading of the incident light beam.

5,388,036

ADJUSTMENT SYSTEM FOR A MOTOR VEHICLE HEADLIGHT REFLECTOR

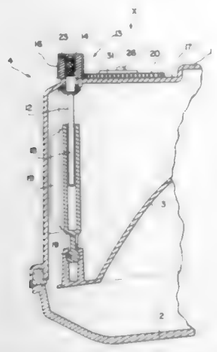
Rolf Stöppelkamp, Lippstadt, Germany, assignor to Hella KG Hueck & Co., Lippstadt, Germany

Filed Mar. 17, 1994, Ser. No. 214,107
Claims priority, application Germany, Mar. 27, 1993, 4310069
Int. Cl.[6] B60Q 1/06
U.S. Cl. 362—66 20 Claims

1. An adjustment system for a reflector of a motor vehicle headlight having an adjusting pin which is rotatably mounted in an opening of a fixed housing which contains the reflector and having a hand knob for rotating it at one end portion thereof and being coupled to the reflector at the other end portion thereof, said reflector being pivotable about an axis in

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response to the shaft being rotated and said adjustment system having an indicating device for indicating a position of the reflector, said indicating device substantially comprising a toothed gear with a scale-like indicator thereon and a pinion gear mounted on the adjusting pin for interengaging with the toothed gear, said toothed gear being freely mounted for rotation on an axle extending outwardly from the housing, said axle extending through a central opening of the toothed gear and having a radial lug at its free end for engaging an outwardly-facing side of the toothed gear, said toothed gear being movable from a position in which it does not engage the pinion to a position in which it does engage the pinion, said toothed gear including locking means for securing it against said movement; wherein



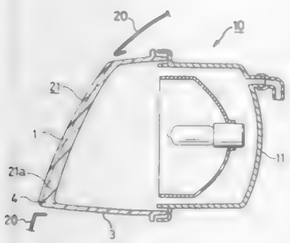
the toothed gear having the scale-like indicator has a facing side which lies flat on an outer surface of the housing;
the toothed gear has an off-center hole therethrough spaced laterally from the central hole which is so large that the axle with its radial lug can pass therethrough;
both openings of the toothed gear are in communication with one another through a stricture which is narrower than a cross section of the axle and at least on one side thereof an edge defining said stricture is radially flexible because of an adjacent cavity in the toothed gear; and
in both positions of the toothed gear the off-center hole of the toothed gear is normally arranged approximately between the central opening and the pinion.

5,388,037

LENS FOR A LIGHTING DEVICE MOUNTED ON VEHICLE

Toru Umeda, Funabashi; Takeshi Ishikawa, Setagaya, and Yoshiharu Urakami, Kawasaki, all of Japan, assignors to Stanley Electric Co., Ltd., Meguro, Japan

Filed Jul. 27, 1993, Ser. No. 97,667
Claims priority, application Japan, Jul. 29, 1992, 4-058417[U]
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—80 **4 Claims**



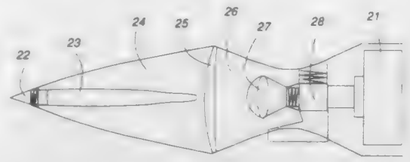
1. In a lens for a lighting device mounted on a vehicle wherein said lens is composed of an aesthetic design surface portion visually recognizable from the outside, a foot fitting portion arranged around the periphery of said aesthetic design surface portion and covered with a vehicle body in such a manner as to allow said foot fitting portion to be visually unrecognizable from the outside, and a corner portion along which said aesthetic design surface portion and said foot fitting portion are jointed to each other, the improvement wherein said aesthetic design surface portion is dimensioned to have a thickness larger than that of said foot fitting portion, and said corner portion is dimensioned to have a thickness larger than that of said aesthetic design surface portion.

5,388,038

LIGHTING PEN

Shyue-Jong A. Yang, 19847 E. Country Hollow Dr., Walnut, Calif. 91789

Filed Feb. 18, 1994, Ser. No. 198,861
Int. Cl.[6] B43K *29/10*
U.S. Cl. 362—118 **1 Claim**



1. A self-illuminable writing instrument comprising:
a first missile shape part comprising a first compartment as a head compartment;
a second enlarged hollow portion comprising a second compartment as a battery compartment;
a pen point which integrates with an ink cartridge positioned in said head compartment;
a transparent plastic shell that covers the cartridge; a light bulb located behind said pen point and said ink cartridge in said head compartment and connected to an on/off switch in said head compartment;
a convex lens inserted between the bulb and ink cartridge in said head compartment;
said on/off switch positioned in said head compartment between the bulb and battery compartment;
two batteries stored in said battery compartment and being electrically connected to said bulb and said switch.

5,388,039

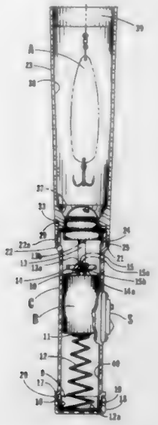
METHOD OF AND APPARATUS FOR ACTIVATING FISH ATTRACTORS HAVING A LUMINESCENT SURFACE WHICH IS LIGHT ACTIVATABLE

James L. Dolph, Port Hope, Mich., assignor to GloTube, Inc., Port Hope, Mich.

Filed Nov. 24, 1993, Ser. No. 157,966
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—154 **20 Claims**

1. A method of activating luminescent fishing line attached lures and other fish attractors which are light activatable with a flash element connected with a battery housed in a battery casing via a voltage building circuit to provide highly intensive light flashes, the casing having an attractor enclosing member with a first open end adjacent said flash element to receive the light from said flash element therein, and further having a remote open end, and the enclosing member having an interiorly facing substantially opaque, light reflective surface for concentrating light rays emitted from said flash element, comprising the steps of:
(a) placing the lure or attractor in the enclosing member by inserting it through the remote open end;
(b) repetitively powering said flash element and directing the light rays emitted successively into said enclosing member through said first open end;

(c) repetitively bouncing the light rays from one reflective surface portion to another along said light reflective surface to impinge upon all luminescent surfaces of said lure or attractor to thereby cause them to store electromagnetic energy and emit light under low light conditions for a protracted period of time; and
(d) removing the lure or attractor from the remote open end of said enclosing member.

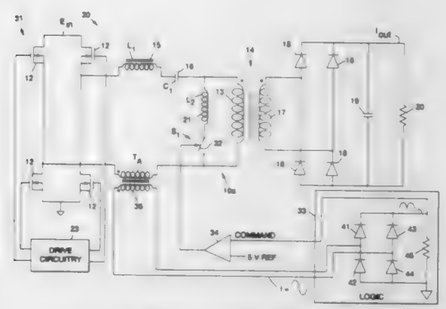


5,388,040

SERIES RESONANT CONVERTER HAVING AN ACTIVELY CONTROLLED THIRD ELEMENT

John T. Hall, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 30, 1993, Ser. No. 130,063
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—16 **7 Claims**



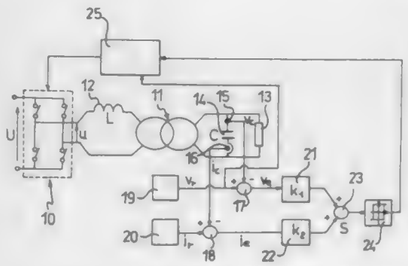
1. In a series resonant converter comprising a switching element, a main transformer having a primary and secondary winding, first and second reactive elements coupled in series with the primary winding of the main transformer, a load coupled across a secondary winding of the main transformer, a third reactive element coupled across the primary winding of the main transformer, and drive circuitry coupled to the switching element, wherein the improvement comprises:
a current sensing transformer coupled in series with the primary winding of the main transformer;
an AC switch coupled in series with the third reactive element; and
logic means coupled between the current sensing transformer and the AC switch for determining a low load condition and for turning on the AC switch in response thereto, wherein the logic means comprises:
(i) a plurality of pairs of series coupled diodes and a resistor coupled in parallel with the plurality of pairs of diodes that are adapted to rectify the current sensed by the current sensing transformer and convert this current to a DC voltage, and
(ii) a comparator coupled to receive the DC voltage and a reference voltage that is adapted to compare these two voltages and provide an output signal that controls the switching of the AC switch in the event of a low load condition.

5,388,041

METHOD AND A CIRCUIT FOR CONTROLLING AN INVERTER TO SWITCH IN THE SLIDING MODE AND BY PWM WITH A THREE-LEVEL OUTPUT VOLTAGE

Mauro Carpita, Genoa, Italy, assignor to Ansaldo-Un'Azienda Finmeccanica S.p.A., Rome, Italy

Filed May 26, 1993, Ser. No. 67,663
Claims priority, application Italy, May 26, 1992, MI92A001290
Int. Cl.[6] H02M *3/24*
U.S. Cl. 363—98 **9 Claims**



1. A method of converting a DC voltage to a sinusoidal AC voltage using a circuit which comprises a single-phase inverter in a bridge configuration, comprising the steps of:
controlling the inverter to switch in accordance with a sliding mode technique;
controlling the inverter by pulse width modulation; and
providing a three-level output voltage based on said steps of controlling;
wherein the sliding mode technique comprises a closed-loop inverter control process involving a comparison of an inverter output circuit quantity to a reference signal, and a resulting error signal being used to control switching of inverter switches;
wherein the three-level output voltage is an output voltage from the inverter which outputs voltages respectively equal to the DC input voltage, the negative of the DC input voltage, and a null voltage under certain conditions.

5,388,042

METHOD FOR MOVING, WITH AT LEAST THREE DEGREES OF FREEDOM, PARTICULARLY IN THEATRE AREA ON OR BELOW A STAGE, A COMPLEX THREE-DIMENSIONAL STRUCTURE

Jean-Marie Schiltz, 37, Rue Marie-Adelaïde, L-4837 Rodange, Luxembourg

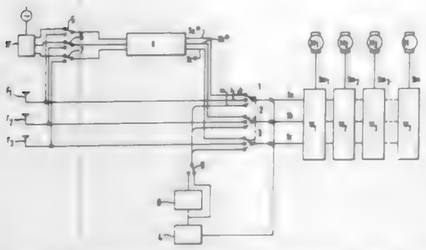
Filed Sep. 21, 1992, Ser. No. 948,125
Claims priority, application Luxembourg, Sep. 27, 1991, 88009
Int. Cl.[6] G06F *15/46*
U.S. Cl. 364—167.01 **6 Claims**

1. Method for moving, with at least three degrees of freedom, particularly in theatre area on or below a stage, a complex three-dimensional structure, which is borne by several lifting machines to be driven independently, means being pro-

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vided for connecting each lifting machine to a respective point of application on the structure, method comprising:

three virtual parallel reference axes are installed in the space on each of which, as a function of a respective one positioning signal a respective point of application is moved up or down, a virtual surface is drawn by these points of application, several independent lifting machines are installed above or below and across this surface, a weighting is determined for each of said lifting machines as a function of its position compared to each reference axis, which weighting is a measure of the amount by which the running of the relevant machine is influenced by the movement of the points of application on the reference axes, in



that the movement and speed of movement of each point of application on its associated reference axis is predefined as a positioning signal, partial control signals are created for each machine according to the proportions of the influence on it by the movement of the points of application via the weighting for the respective machine, the partial control signals for each machine are summated and fed to the individual associated machines as an overall control signal, a control lever which can execute at least three different, independent movements in space, such as rotation about the x-axis, rotation about the y-axis and translation along the z-axis, is used to predefine the positioning signals of the direction and speed of movement of the points of application on the reference axes.

5,388,043

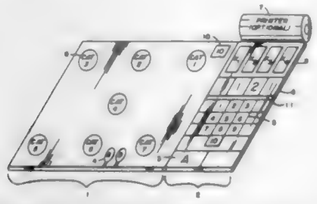
DIET AND BEHAVIORAL CONTROL DEVICE

Catherine A. Hettinger, P.O. Box 536564, Orlando, Fla. 32853

Continuation-in-part of Ser. No. 400,435, Aug. 30, 1989, Pat. No. 5,033,561. This application Apr. 18, 1991, Ser. No. 687,465

Int. Cl.[6] G01G *19/40*; G06F *15/00*

U.S. Cl. 364—413.29 **8 Claims**



1. An electronic diet and behavioral recording device comprising:

a mat on which ingestible substances are placed in preparation for eating by a user;

weighing means, attached to said mat, for weighing ingestible substances placed on said mat, said weighing means includes means for recording the weight of different categories of ingestible substances placed at respective different locations on the surface of said mat;

input means, attached to said mat, for entering data representing associated factors, said associated factors describing one or more environmental conditions under which ingestible substances placed on the weighing means were consumed;

memory means for storing the category of ingestible substance consumed, the weight of the ingestible substances consumed and associated factors input by said input means;

output means, attached to said memory means, for outputting said stored data,

wherein the data output by said output means identifies the environmental conditions associated with the consumption of ingestible substances, said output data serving as an aid in behavioral modification.

5,388,044

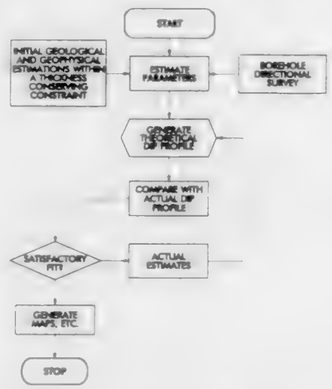
DIPMETER PROCESSING TECHNIQUE

Vincent R. Hepp, Mas Philadelphe, Qt. St-Gabriel, Acton, Mass. 01720

Filed Feb. 3, 1994, Ser. No. 191,127

Int. Cl.[6] G01V *1/00*; G06F *15/58*

U.S. Cl. 364—421 **12 Claims**



1. A method of assisting in the precise geometric description of a folded subsurface geological structure utilizing a computer and continuous dip sequence data from a dipmeter survey obtained through a wellbore penetrating the geological structure, comprising the steps of:

obtaining estimates of geometric parameters from the dipmeter survey describing the geological structure as a stack of surfaces represented in a three dimensional reference by a parametric function together with a continuous description of the borehole course within the three dimensional reference;

generating theoretical dip profiles using the estimates along a given borehole course within a plurality of possible mathematical solutions fitting the geological structure;

generating critical numbers to allow the selection of a solution model within the plurality of possible solutions; and

adjusting the value of the estimates iteratively to generate and display a final dip profile having the highest correlation to the continuous dip sequence from the dipmeter survey.

5,388,045

SELF-DIAGNOSTIC APPARATUS OF VEHICLES

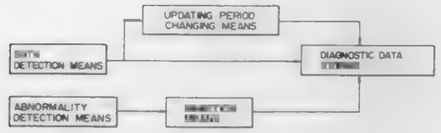
Kenji Kamiya, Anjo, and Katsumi Takaba, Obu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 26, 1993, Ser. No. 111,918

Claims priority, application Japan, Aug. 27, 1992, 4-252259

Int. Cl.[6] G06F *15/74*

U.S. Cl. 364—424.04 **8 Claims**



1. A self-diagnostic apparatus for a vehicle comprising:

data detection means for detecting diagnostic data concerning an operation parameter of at least one device in said vehicle;

diagnostic data storage means for updating and storing said diagnostic data and for maintaining said stored diagnostic data even when an ignition switch of said vehicle is turned off;

updating period changing means for changing a time period of updating by said diagnostic data storage means, and for detecting a rate of change of said diagnostic data, said time period being changed to update data stored in said diagnostic data storage means at an updating time period which decreases as said detected rate of change increases;

abnormality detection means for detecting an abnormal operating state in accordance with said diagnostic data of said device; and

inhibition means for inhibiting said diagnostic data from being updated after said abnormal operating state is detected.

5,388,046

TRACTION CONTROLLER FOR A VEHICLE

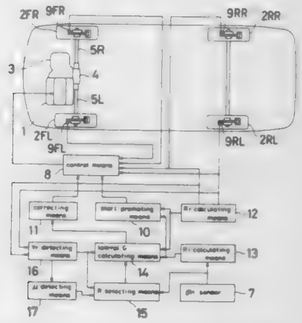
Yoshiaki Anan, and Tetsuhiro Yamashita, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 18, 1991, Ser. No. 793,538

Claims priority, application Japan, Nov. 22, 1990, 2-318831; Nov. 30, 1990, 2-340063

Int. Cl.[6] B62D *5/04*

U.S. Cl. 364—424.05 **25 Claims**



1. A traction controller for a vehicle comprising:

control means for controlling a drive of driving wheels such that spin quantities of the driving wheels from a road surface become target spin quantities when said spin quantities exceed predetermined thresholds;

vehicle speed detecting means for detecting a vehicle speed;

driven wheel speed detecting means for detecting right and left driven wheel speeds;

steering angle detecting means for detecting a steering angle;

actual turning radius calculating means for calculating the actual turning radius Rr of the vehicle based on the difference between said right and left driven wheel speeds detected by said driven wheel speed detecting means;

ideal turning radius calculating means for calculating the ideal turning radius Ri of the vehicle based on the steering angle detected by said steering angle detecting means;

lateral acceleration calculating means for calculating the lateral acceleration of the vehicle based on the vehicle speed detected by said vehicle speed detecting means and one of the actual turning radius Rr calculated by said actual turning radius calculating means and the ideal turning radius Ri calculated by said ideal turning radius calculating means;

correcting means for correcting the control condition of said control means based on the lateral acceleration calculated by said lateral acceleration calculating means such that a quantity of controlling said control means for suppressing a spin of the driving wheels is increased as said lateral acceleration increases;

deviation tendency judging means for judging a tendency for the vehicle to deviate from a running line having the ideal turning radius Ri at the time of turning based on at least one of the road surface condition and the driving conditions of the vehicle; and

turning radius selecting means for selecting as a turning radius for lateral acceleration calculation by said lateral acceleration calculating means the ideal turning radius Ri calculated by said ideal turning radius calculating means when said tendency judged by said deviation judging means exceeds a predetermined threshold and the actual turning radius Rr calculated by said actual turning radius calculating means when said tendency judged by said deviation tendency judging means does not exceed said predetermined threshold.

5,388,047

AIRCRAFT TRAFFIC ALERT AND COLLISION AVOIDANCE DEVICE

Dean E. Ryan, Columbus; Paul A. Ryan, Dublin, and William C. Brodegard, Columbus, all of Ohio, assignors to Ryan International Corp., Columbus, Ohio

Continuation-in-part of Ser. No. 815,489, Dec. 31, 1991, Pat. No. 5,157,615, which is a continuation of Ser. No. 462,387, Jan. 9, 1990, Pat. No. 5,077,673. This application Mar. 18, 1992, Ser. No. 853,147

Int. Cl.[6] G06F *15/50*

U.S. Cl. 364—461 **40 Claims**

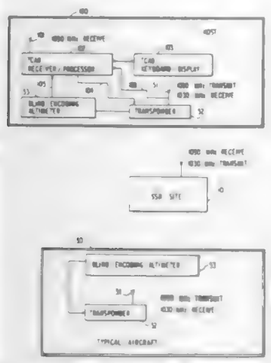
1. Apparatus for proximity alerting an operator of a transponder equipped host aircraft to the presence of other aircraft based on receipt of replies of aircraft carried transponders to interrogation by an SSR comprising:

a) a receiver tuned to receive transponder replies;

b) a processor coupled to said receiver for decoding received replies and processing information extracted therefrom for operator alerting;

c) means coupling a signal from said host transponder to said

processor to indicate transmission of a reply by said host transponder; and



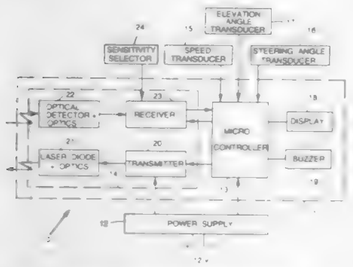
d) means in said processor responsive to said signal for initiating generation of a suppression signal pulse train.

5,388,048

VEHICLE ANTI-COLLISON DEVICE

Amotz Yavnayi, Kiryat Motzkin; Moshe Gavish; Pinchas Schechner, both of Kiryat Bialik, and Israel Kantor, Haifa, all of Israel, assignors to Silicon Heights Limited, Israel

Filed Feb. 16, 1993, Ser. No. 17,742
Int. Cl.[6] G06F *15/50*
U.S. Cl. 364—461 **13 Claims**



1. A vehicle anti-collision device comprising:

a rangefinder for mounting inside a following vehicle near to a windshield thereof for measuring a distance of said vehicle from a leading vehicle,

distance sampling means coupled to the rangefinder for sampling measured distances at predetermined time intervals,

self-speed determination means for measuring a self-speed of the following vehicle,

safety time determination means coupled to the distance sampling means and to the self-speed determination means and responsive to the measured self-speed of the following vehicle for determining a safety time between the following and leading vehicles;

comparing means coupled to the safety time determination means for comparing said safety time with a predetermined threshold, and

alarm means coupled to the comparing means for generating an alarm if the safety time is less than said predetermined threshold,

wherein the rangefinder is coupled to a steering mechanism of the following vehicle and includes:

a laser light source for emitting a beam of laser light, a first component of which is reflected by the windshield, a second component of which passes through the windshield of the following vehicle so as to be reflected by the leading vehicle,

detector means for receiving said first and second components and generating respective first and second detector signals,

timing means coupled to the detector means and responsive to the first and second detector signals for measuring an elapsed time between the detection of the first and second components,

distance determination means coupled to the timing means and responsive to said measured elapsed time for determining the distance between the following and leading vehicles,

turning angle determination means coupled to the steering mechanism for determining a turning radius thereof,

lane differentiation means coupled to the turning angle determination means and responsive to said turning radius, to a known dispersion of said laser beam, to a known lane width and to a known vehicle width for determining a maximum distance between the following vehicle and the leading vehicle for which the two vehicles are in identical lanes, and

switching means coupled to the lane differentiation means, to the turning angle determination means and to the detector means for intercepting the reflected first component of the laser beam and directing it to the detector means only if the two vehicles are in identical lanes.

5,388,049

VALUE MAIL MONITORING SYSTEM AND METHOD

Ronald P. Sansone, Weston; Je H. Oh, Fairfield, and William M. Hunt, Shelton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 11, 1993, Ser. No. 104,686
Int. Cl.[6] G07B *17/00*
U.S. Cl. 364—464.02 **15 Claims**

1. A system for processing value mail, comprising:

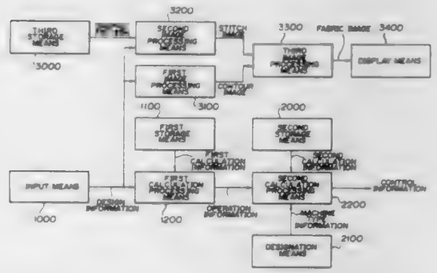
computer means, means for identifying value mail, means in communication with said computer means for sorting value mail in accordance with its destination, means for traying the value mail sorted by said sorting means in accordance with its destination, means for weighing value mail trayed by said traying means, means for delivering mail trays weighed by said weighing means to a common carrier, said computer means having mail lists and time of departure and arrival data for a transportation system, and printer means in connection with said computer means for printing a dispatch and routing tag including routing, distribution, weight and time information thereon relative to departure and expected time of arrival of said value mail.

5,388,050

KNIT DESIGN SYSTEM AND METHOD OF MAKING KNITTING DATA THEREFOR

Hitoshi Inoue; Shigeru Takasao, both of Fuji; Makoto Ikeda, Matsudo; Takashi Matsuda, and Michiyuki Kitamoto, both of Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP92/01182, § 371 Date May 14, 1993, § 102(e) Date May 14, 1993, PCT Pub. No. WO93/06285, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 16, 1992, Ser. No. 50,300
Claims priority, application Japan, Sep. 17, 1991, 3-236469
Int. Cl.[6] G06F *15/46;* **D04B** *7/00*
U.S. Cl. 364—470 **9 Claims**



1. A knit design system, comprising:

input means for inputting design information that indicates a shape of a fabric to be knitted and a stitch structure, said stitch structure including head information, restriction information, twist information, stitch length information, yarn number and link information;

storage means for storing first calculation information indicating correspondence between said design information and operation information, said operation information including sequence data including knitting operation information, racking information, stitch transferring operation information, dropping action information, encounter setting operation information and pull-down tension setting operation that show a common knitting procedure for knitting machines; and

calculation processing means for converting said design information inputted from said input means to said operation information on the basis of said first calculation information in said storage means.

5,388,051

DIRECT NUMERICAL CONTROL (DNC) SYSTEM INCLUDING ONE HIGH-SPEED DATA PROCESSING UNIT FOR EACH NC MACHINE TOOL

Masaki Seki, Tokyo; Takashi Takegahara, Hachioji, and Akira Kajitani, Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

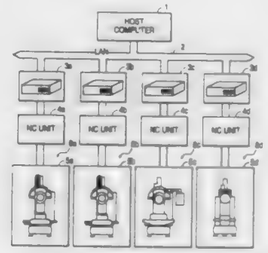
PCT No. PCT/JP92/01451, § 371 Date Jul. 22, 1992, § 102(e) Date Jul. 22, 1993, PCT Pub. No. WO93/10944, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 9, 1992, Ser. No. 90,171
Claims priority, application Japan, Nov. 25, 1991, 3-335734
Int. Cl.[6] G05F *15/46;* **G05B** *19/417*
U.S. Cl. 364—474.11 **7 Claims**

1. A DNC system for controlling a plurality of NC machine tools connected to one host computer, comprising:

a plurality of high-speed data processing units provided for each of said plurality of NC machine tools, respectively, each to distribute command information transmitted from said one host computer to each of said respective NC machine tools; and

data input means, connected to said host computer, for inputting a specified one of said plurality of NC machine tools and for inputting set-up data for said specified NC machine tool, said host computer then transmitting said set-up data, indicating a change of set-up for machining, to one of the high-speed data processing units corresponding to the specified NC machine tool and transmitting NC machining data, corresponding to said specified NC machine tool and read from a memory of said host computer, to said corresponding high-speed data processing unit,

said corresponding high-speed data processing unit further determining said transmitted data to be said set-up data and said NC machining data, respectively, converting said determined set-up data into NC set-up data for numerical control and transmitting said converted NC set-up data to an NC unit for the specified NC machine tool, and transmitting said determined NC machining data to the NC unit for the specified NC machine tool as is.

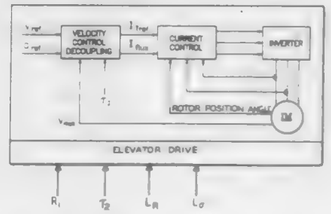


5,388,052

METHOD OF OPERATING AN INDUCTION MOTOR

Michael Mann, Berlin, Germany, assignor to Otis Elevator Company, Farmington, Conn.

Filed Mar. 31, 1993, Ser. No. 41,017
Int. Cl.[6] G01R *19/22;* **H02P** *5/40;* **H02M** *7/217*
U.S. Cl. 364—483 **5 Claims**



1. A method of operating a three phase induction motor which is driven by an inverter, said inverter operating in response to a controller as a function of the total leakage inductance of the motor, the stator resistance of the motor, the main inductance of the motor and the time constant of the rotor of the motor, comprising:

(a) providing pulses of alternating polarity, voltage, each pulse having a duration which is less than said time constant, to one phase of the stator of the motor and measuring the resulting rate of change of stator current with respect to time at a point in time when the stator current crosses zero;

(b) providing, in response to the magnitude of said pulses of voltage and said rate of change of stator current, a leakage

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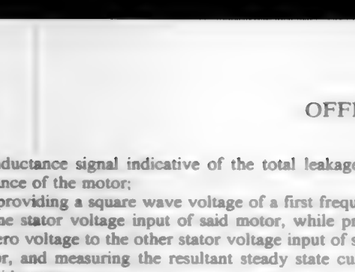
inductance signal indicative of the total leakage inductance of the motor;
(c) providing a square wave voltage of a first frequency to one stator voltage input of said motor, while providing zero voltage to the other stator voltage input of said motor, and measuring the resultant steady state current to said stator;
(d) providing, in response to said square wave voltage and said steady state current in said stator, a tangent signal indicative of the tangent of the phase angle between said steady state current and said square wave voltage;
(e) repeating steps (c) and (d) at least twice at additional frequencies different from each other and different from said first frequency, to provide corresponding tangent signals indicative of the tangent of the phase angle between the related current and voltage;
(f) in response to said leakage inductance signal, signals indicative of said first frequency and said additional frequencies, and said tangent signals, providing a resistance signal indicative of an approximation of the resistance of the stator of said motor, a total inductance signal indicative of an approximate relationship between the main inductance of the rotor and the resistance of the rotor of the motor, and a time constant signal indicative of an approximation of the time constant of said rotor;
(g) establishing motor control parameters in said controller in response to said leakage inductance signal, said resistance signal, said total inductance signal, and said time constant signal; and
(h) causing said controller to operate said inverter to drive said motor.

5,388,053

DATA PROCESSING METHOD FOR OBTAINING DATA INDICATING PULSE PERIOD

Kazumasa Kurihara, and Tsutomu Takahashi, both of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Continuation of Ser. No. 888,640, May 27, 1992, abandoned. This application Jun. 22, 1994, Ser. No. 264,248
Claims priority, application Japan, May 28, 1991, 3-150933
Int. Cl.[6] G01R *29/02*
U.S. Cl. 364—486 **10 Claims**



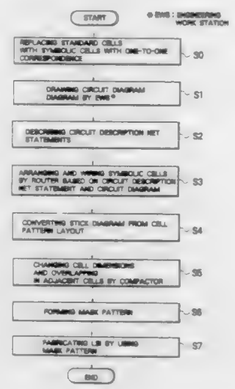
1. A data processing method for obtaining data indicating periods between measured pulses occurring at intervals which discriminates against noise pulses comprising:
a first measurement step for obtaining measured period data by measuring time intervals between occurrences of the measured pulses,
a step for outputting individual time pulses of a prescribed fixed period,
a second measurement step responsive to the individual time pulses for obtaining lapsed time data indicating a time lapse between the occurrence of the most recent measured pulse and the occurrence of the most recent time pulse, and
a processing step for discriminating against noise pulses included in said measured pulses, responsive to the most recent lapsed time data and the most recent measured period data for outputting the most recent measured period data as the pulse period data at that time if the time period indicated by the most recent lapsed time data is shorter than the time period indicated by the most recent measured period data wherein no noise pulses are determined to be in said measured pulse period, and, up to the occurrence of the next measured pulse, outputting the most recent lapsed time data instead of the most recent measured period data as the pulse period data at that time if the time period indicated by the most recent lapsed time data is longer than the time period indicated by the most recent measured period data, which indicates that said measured pulse period includes a noise pulse.

5,388,054

SEMICONDUCTOR INTEGRATED CIRCUIT FABRICATION METHOD

Takeji Tokumaru, Kitagami, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 15, 1991, Ser. No. 793,106
Claims priority, application Japan, Nov. 21, 1990, 2-314118
Int. Cl.[6] G06F *15/60*
U.S. Cl. 364—490 **7 Claims**



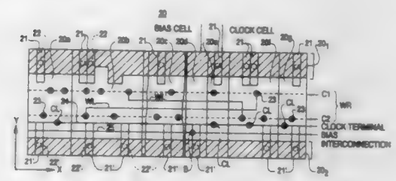
1. A semiconductor integrated circuit fabrication method for designing and fabricating semiconductor circuit elements on a semiconductor substrate for an LSI circuit, comprising the steps of:
replacing standard cells with symbolic cells with one-to-one correspondence;
registering the symbolic cells into a library;
drawing a circuit diagram for a semiconductor integrated circuit;
describing circuit description net statements for the semiconductor integrated circuit based on the circuit diagram;
arranging symbolic cells and wiring among the symbolic cells to obtain a symbolic layout based on the circuit diagram and the circuit description net statements;
describing a stick diagram by using the symbolic layout;
forming a mask pattern by using the stick diagram; and
forming the semiconductor circuit elements and wiring among the semiconductor circuit elements on the semiconductor substrate by using the mask pattern.

5,388,055

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING POLYCELL STRUCTURE AND METHOD OF DESIGNING THE SAME

Tetsu Tanizawa; Hideo Tokuda; Shigenori Ichinose; Katuzi Hirochi, all of Kawasaki, and Takehito Doi, Kasugai, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 6, 1991, Ser. No. 756,017
Claims priority, application Japan, Sep. 7, 1990, 2-237721
Int. Cl.[6] H01L *23/48*
U.S. Cl. 364—491 **17 Claims**



1. A semiconductor integrated circuit comprising:
a substrate having a predetermined width in a first direction and a predetermined length in a second direction which is approximately perpendicular to the first direction; and
a plurality of cells provided on said substrate, said plurality of cells being grouped as groups of cells into respective generally rectangular unit blocks, cells of each unit block being arranged adjacent to each other in the first direction and having mutually different widths in the first direction from other cells in the same unit block but a common length in the second direction, wherein each unit block comprises:
first interconnections for supplying a power source voltage in common to each of the cells within said each unit block;
a row of first input/output terminals of the cells within said each unit block, linearly arranged in the first direction;
a row of second input/output terminals of the cells within said each unit block, linearly arranged in the first direction;
an interconnection region at least including a region which is defined by the rows of the first and second terminals; and
second interconnections located within said interconnection region connecting various ones of the first and second input/output terminals of the cells within said each unit block.

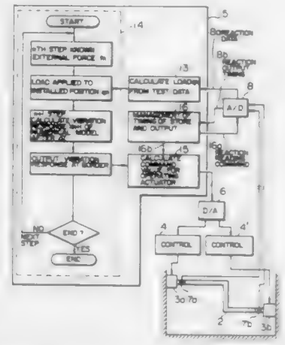
5,388,056

METHOD AND SYSTEM FOR VIBRATION TEST

Toshihiko Horiuchi, Ushiku; Masaki Nakagawa, Ibaraki, and Masatsugu Kametani, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 908,167
Claims priority, application Japan, Jul. 2, 1991, 3-161379
Int. Cl.[6] G01H *1/04*
U.S. Cl. 364—508 **28 Claims**

1. A vibration testing system for testing a structure divided into a plurality of members, comprising:
at least one actuator connected to at least one of the members of the structure;
a controller for controlling said actuator;
load cell means, mounted to said at least one member at a position in the vicinity of the connecting portion of said actuator, for measuring reaction applied to said actuator;
arithmetic means, connected to said load cell means, for storing a numerical model of other of said members, and for calculating a vibration response of the numerical model connected to said member using the reaction measured in said load cell means;
exciting means for providing an excitation signal for said controller based on a result of calculation for the vibration response of said numerical model by said arithmetic means;
time management means for providing said load cell means with a timing signal with a given interval for measurement of the reaction by said load cell means;
said time management means providing another timing signal to said excitation means with another given interval which is equal to or shorter than said given interval;



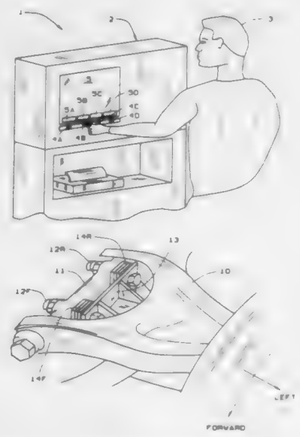
said arithmetic means calculating the vibration response after said time interval from a timing of measurement of said reaction based on the reaction signal and the results of calculation of the vibration response of the prior timing;
said controller controlling said actuator so the vibration response of said actuator after said predetermined period coincides with the result of calculation by said arithmetic means.

5,388,057

APPARATUS AND METHOD FOR DETERMINING SHIM CHANGES TO ADJUST CAMBER AND CASTER OF VEHICLE WHEEL

Daniel B. January, St. Peters, Mo., assignor to Hunter Engineering Company, Bridgeton, Mo.

Filed Jun. 8, 1993, Ser. No. 73,762
Int. Cl.[6] G01B *11/275, 5/24*
U.S. Cl. 364—551.01 **31 Claims**



1. Apparatus for determining shim changes to adjust the

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camber and caster of a vehicle wheel, the apparatus comprising:

(a) a memory for storing preselected information relating to dimensions of a vehicle wheel control arm for at least two different vehicles, the information being different for said two vehicles, and for storing vehicle wheel alignment specifications for said vehicles;

(b) vehicle wheel alignment instruments for measuring the camber and caster of vehicle wheels;

(c) a computer operatively connected to the memory and responsive to the measurements from the vehicle wheel alignment instruments for comparing the measured camber and caster to corresponding caster and camber specifications for said vehicle wheel to determine required changes in camber and caster, and for using said required changes and compensation factors derived from selected actual control arm dimensions to determine the changes required in shims to adjust the measured camber and caster to the specifications; and

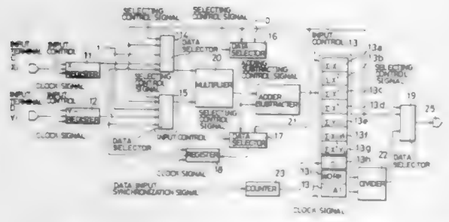
(d) an output device to inform a user of the shim changes required to adjust the measured camber and caster to the specifications.

5,388,058

STATISTICAL PROCESSOR

Takamitsu Yamada, Toyonaka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 650,951, Feb. 5, 1991, Pat. No. 5,282,150. This application Aug. 25, 1993, Ser. No. 111,846
Claims priority, application Japan, Mar. 12, 1990, 2-60580
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.[6] G06F *15/36*
U.S. Cl. 364—554 **4 Claims**



1. A statistical processor for statistically processing at least two variable data sets each including a plurality of variable data values, said variable data values being applied sequentially to said processor during one or more predetermined periods, said processor comprising:

an arithmetic circuit for performing predetermined arithmetic operations on input data values applied thereto during one predetermined period and for obtaining operating result data;

a plurality of registers for storing said operating result data obtained by said arithmetic circuit, each of said plurality of registers storing respective operating result data obtained by said arithmetic circuit and being accessed when said respective operating result data is written thereto or read therefrom;

at least one data selector for selecting said input data values from at least two variable data values applied during one or more predetermined periods and said operating result data in said plurality of registers to supply said selected input data values to said arithmetic circuit; and

a controller for directly controlling a pipeline processing of said at least one data selector, said arithmetic circuit, and said plurality of registers.

5,388,059

COMPUTER VISION SYSTEM FOR ACCURATE MONITORING OF OBJECT POSE

Daniel F. DeMenthon, Columbia, Md., assignor to University of Maryland, College Park, Md.

Filed Dec. 30, 1992, Ser. No. 998,470
Int. Cl.[6] G06F *15/62*
U.S. Cl. 364—559 **9 Claims**



1. A sensing system for producing at successive time instants digital signals expressing positions and orientations of a three dimensional (3-D) object defined by a translation vector and a rotation matrix grouped into a pose matrix that in turn effects changes in a peripheral device comprising:

a single electronic camera having an image plane, an optical axis, a center of projection, a focal length, and a camera reference coordinate frame being centered at the center of projection with x and y axes parallel to the image plane, and a z-axis parallel to the optical axis, the single electronic camera producing an analog video signal;

at least four noncoplanar light sources rigidly attached to the 3-D object, the light sources having light source coordinates in an object reference coordinate frame of the 3-D object, the light sources projecting bright spots onto the image plane of the camera;

means for processing the analog video signal and determining a list of bright spot locations in the camera reference coordinate frame;

a computing means that includes memory means, processing means and output means;

the memory means storing a pseudo-inverse matrix B of a matrix A, wherein each row of the matrix A consists of four homogeneous coordinates of each of the light sources in a coordinate frame of reference of the object;

the memory means also storing a list of x-coordinates and a list of y-coordinates of the bright spots in the image plane of the camera;

the memory means also storing a list of correction factors to be applied to the list of x-coordinates and the list of y-coordinates, the list of correction factors depending on the position and orientation of the object, each element of the list of correction factors being initially set to zero if no knowledge about the position and orientation of the object is available, and being initially estimated otherwise;

the memory means also containing an iterative pose computing task for accurately computing the position and orientation of the object in the reference coordinate frame of the camera;

the iterative pose computing task comprising subtasks of:

(a) applying the correction factors to the list of x-coordinates to obtain a corrected list of x-coordinates and to the list of y coordinates to obtain a corrected list of y-coordinates,

(b) multiplying the matrix B by the corrected list of x-coordinates and by the corrected list of y-coordinates to obtain a vector Q_1 and a vector Q_2,

(c) finding a norm N_1 of a vector R_1 whose three coordinates are first three coordinates of vector Q_1, and a norm N_2 of a vector R_2 whose three coordinates are first three coordinates of vector Q_2,

(d) dividing vector Q_1 by N_1 to obtain a first row of the pose matrix of the object and vector Q_2 by N_2 to obtain a second row of the pose matrix of the object,

(e) computing a vector k as a cross-product of two vectors respectively defined by first three elements of the first row of the pose matrix and by first three elements of the second row of the pose matrix,

(f) dividing the norm N_1 by the focal length of the camera to obtain an inverse of a coordinate T_z of the translation vector of the object along the optical axis of the camera,

(g) complementing the vector k with a fourth coordinate equal to the coordinate T_z of the translation vector to obtain a third row of the pose matrix of the object,

(h) completing the pose matrix with a fourth row containing elements 0, 0, 0, and 1, and

(i) computing a new list of correction factors as a vector obtained by multiplying the matrix A by the third row of the pose matrix, dividing each coordinate by T_z, and subtracting 1 from each coordinate;

and repeatedly using the iterative pose computing task by repeating the steps (a)–(i) until the new list of correction factors is equal to a previous list of the correction factors whereby for each new image of the camera, the iterative pose computing task produces a pose matrix of the object after a few iterations of the pose computing task; and

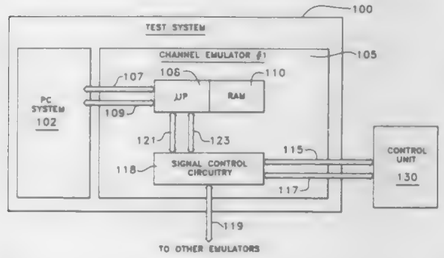
providing to the output means for each frame of the video signal three coordinates of the translation vector of the 3D object and nine elements of the rotation matrix of the 3-D object in digital form which is the computed pose matrix to effect changes in the peripheral device.

5,388,060

SIMULATED HOST COMPUTER/CHANNEL INTERFACE SYSTEM

James R. Adams, Jr., Westminster, and Kenneth L. Howell, Broomfield, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Dec. 15, 1992, Ser. No. 991,358
Int. Cl.[6] G06F *15/60*
U.S. Cl. 364—579 **23 Claims**



1. A test system for testing a data storage device control unit wherein said test system and said control unit transmit control signals and data therebetween, said test system comprising:

a first emulator including:

(a) a microprocessor;

(b) RAM memory connected to said microprocessor;

(c) signal control means operatively connected with said microprocessor for controlling the timing of said control signals and said data transmitted between said first emulator and said control unit; and

(d) programmable timing means operatively connected with said signal control means for varying said timing between the receiving of said control signals transmitted from said control unit and the transmitting of said control signals from said first emulator to said control unit;

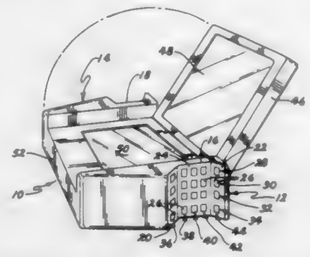
wherein said first emulator performs said testing of said data storage device control unit.

5,388,061

PORTABLE COMPUTER FOR ONE-HANDED OPERATION

Elmer J. Hankes, 1768 Colfax Ave. South, Minneapolis, Minn. 55403

Filed Sep. 8, 1993, Ser. No. 117,995
Int. Cl.[6] G06F *1/00*
U.S. Cl. 364—708.1 **13 Claims**



1. A portable computer having a data processor, comprising:

at least one keypad having a multiplicity of manually actuable keys, said keypad including a generally flat intermediate segment having a lower edge and an upper edge, a first angled segment projecting generally upwardly from said upper edge of said intermediate segment and forming a first obtuse angle with said intermediate segment, and a second angled segment projecting generally upwardly from said lower edge of said intermediate segment, said second angled segment forming a second obtuse angle with said intermediate segment and positioned generally opposably to said first angled segment; and

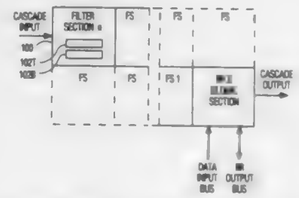
at least one data display screen for viewing data resulting from the keypad and computing operations of the portable computer.

5,388,062

RECONFIGURABLE PROGRAMMABLE DIGITAL FILTER ARCHITECTURE USEFUL IN COMMUNICATION RECEIVER

Paul G. Knutson, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed May 6, 1993, Ser. No. 58,903
Int. Cl.[6] G06F *15/31*
U.S. Cl. 364—724.2 **17 Claims**



1. In a reconfigurable programmable digital filter structure suitable for use as a deghosting filter; wherein said structure includes first and second input-weighted digital filter means each of which has a given number of multiplier-coefficient taps; a combination comprising:

input means for providing input signals to said digital filter means;

filter-reconfiguration means including multiplexer means coupled to said digital filter means (1) for configuring said

first and second digital filter means for operation as a single complex digital filter means with said given number of complex multiplier coefficients for a complex sampled input signal provided thereto by said input means, or (2) for configuring at least one of said first and second digital filter units for operation as a separate real digital filter means with twice said given number of real multiplier coefficients for a real sampled input signal provided thereto by said input means; and

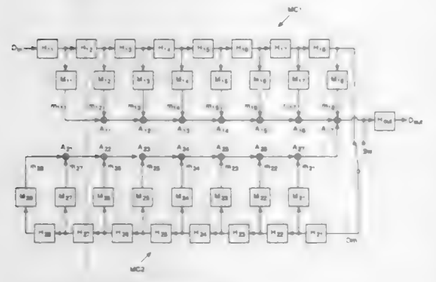
output means for receiving output signals from said digital filter means.

5,388,063

FILTER CIRCUIT WITH SWITCHABLE FINITE IMPULSE RESPONSE AND INFINITE IMPULSE RESPONSE FILTER CHARACTERISTICS

Sunao Takatori, and Makoto Yamamoto, both of Tokyo, Japan, assignors to Yozan Inc., Tokyo, Japan

Filed Nov. 18, 1993, Ser. No. 154,036
Claims priority, application Japan, Nov. 18, 1992, 4-333646
Int. Cl.[6] G06F *15/31*; G06G *7/02*
U.S. Cl. 364—724.17 16 Claims



1. A filter circuit comprising:

i) first circuit means having a plurality of first holding circuits and a plurality of first multiplication circuits, said first holding circuits for holding first input data in time series and each of said first multiplication circuits for multiplying an output of one of said first holding circuits by a first mutiplier;

ii) second circuit means having a plurality of second holding circuits and a plurality of second multiplication circuits, said second holding circuits for holding second input data and each of said second multiplication circuits for multiplying an output of one of said second holding circuits by a second multiplier;

iii) addition means for calculating a total summation of multiplication results of said first and second circuit means; and

iv) a switching circuit for inputting either an output of said addition circuit or delayed first input data as the second input data to said second circuit means.

5,388,064

PROGRAMMABLE NON-VOLATILE ANALOG VOLTAGE SOURCE DEVICES AND METHODS

Sakhawat Khan, Santa Clara, Calif., assignor to Information Storage Devices, Inc., San Jose, Calif.

Filed Nov. 26, 1991, Ser. No. 798,557
Int. Cl.[6] G11C *27/00*, *27/02*
U.S. Cl. 365—45 38 Claims

18. A programmable non-volatile analog voltage source comprising, in a single integrated circuit:

a nonvolatile analog sample storage array for storing a plurality of analog voltages in an equal plurality of analog voltage storage locations and for providing as an output a plurality of parallel analog voltage outputs in response thereto;

addressing means for directing an analog voltage input signal to a selected one of said plurality of analog voltage storage locations of said nonvolatile analog sample storage array with said selected location being identified by an input to the addressing means;

write means responsive to a write signal to cause an analog voltage input to be stored in said selected analog voltage storage location of said nonvolatile analog sample storage array; and

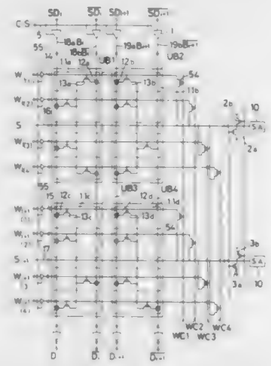
digital to analog convertor means for receiving a multi-bit parallel digital signal and converting said multi-bit parallel digital signal to an analog signal as said analog input signal to said write means.

5,388,065

SEMICONDUCTOR INTEGRATED CIRCUIT

Masato Yoneda, Tokyo, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed May 14, 1992, Ser. No. 883,595
Claims priority, application Japan, May 16, 1991, 3-111771; May 21, 1991, 3-116163; Aug. 30, 1991, 3-219687; Sep. 11, 1991, 3-232073; Sep. 19, 1991, 3-239890
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—49 77 Claims



1. A semiconductor integrated circuit comprising:

a first data line;

a second data line;

a match line;

a control word line;

first connection means for controllably electrically connecting the control word line to the match line;

potential float means for controllably allowing a potential of the control word line to float; and

a memory cell, comprising:

second connection means for providing a circuit path between the match line and one of the first data line and the second data line, and

enable means for selectively enabling the circuit path;

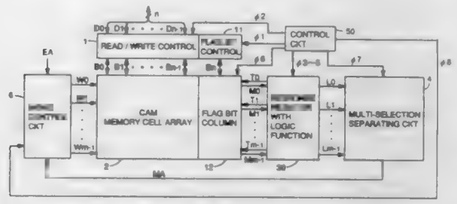
wherein the potential float means and the first connection means are enabled during a data retrieval operation to allow the potential of the control word line to positively correlate to an electric potential of the match line.

5,388,066

CONTENT ADDRESSABLE MEMORY DEVICE AND A METHOD OF DISABLING A COINCIDENCE WORD THEREOF

Takeshi Hamamoto; Tadato Yamagata, and Masaaki Mihara, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 84,098
Claims priority, application Japan, Jul. 6, 1992, 4-178398; May 20, 1993, 5-118209
Int. Cl.[6] G11C *15/00*
U.S. Cl. 365—49 13 Claims



1. A content addressable memory device carrying out retrieval operation based on an applied retrieval data for designating a specific word, comprising:

data storing means including memory cells of a plurality of rows and a plurality of columns;

comparing means for comparing data stored in each memory cell of said data storing means and said retrieval data to detect a coincidence; and

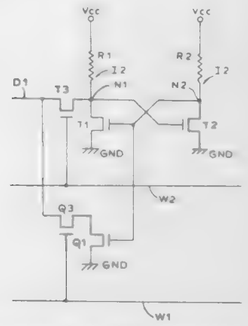
re-writing means responsive to a comparison output from said comparing means for re-writing in parallel content of a specific memory cell of respective row of said data storing means.

5,388,067

SEMICONDUCTOR MEMORY CELL

Nolifumi Sato, and Manabu Ando, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 1, 1994, Ser. No. 221,698
Claims priority, application Japan, Apr. 1, 1993, 5-075978
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—154 12 Claims



1. A semiconductor memory cell comprising:

a flip-flop having a first inverter composed of a first MISFET and a first load element and a second inverter composed of a second MISFET and a second load element, said first and second inverters having respective input terminals connected to the respective output terminals of the second and first inverters;

a third MISFET having a source and a drain, one of which is connected to the output terminal of said first or second inverter;

a fourth MISFET having a gate connected to the output terminal of said second or first inverter;

a fifth MISFET having a drain and a source connected to the other of the source and drain of said third MISFET and the drain of said fourth MISFET, respectively;

fixed potential supply means for supplying a fixed potential to the source of said fourth MISFET;

a read selecting signal line connected to the gate of said fifth MISFET;

a write selecting signal line connected to the gate of said third MISFET; and

a first write/read signal line connected to the other of the source and drain of said third MISFET;

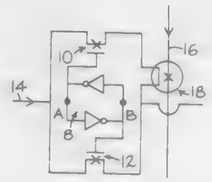
each of said first MISFET, said second MISFET, and said third MISFET being a TFT or an SOI transistor.

5,388,068

SUPERCONDUCTOR-SEMICONDUCTOR HYBRID MEMORY CIRCUITS WITH SUPERCONDUCTING THREE-TERMINAL SWITCHING DEVICES

Uttam S. Ghoshal, and Harry Kroger, both of Austin, Tex., assignors to Microelectronics & Computer Technology Corp., Austin, Tex.

Continuation of Ser. No. 717,305, Jun. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 518,004, May 2, 1990, Pat. No. 5,024,993. This application Oct. 14, 1993, Ser. No. 136,728
Int. Cl.[6] G11C *11/44*, *11/34*, *11/00*, *19/08*
U.S. Cl. 365—162 32 Claims



1. A memory cell for storing and accessing information in binary form of the type useful in computer or logic circuits applications wherein a matrix comprised of a plurality of memory cells of common design is formed in row and column format, with rows being addressed via word-lines and columns being addressed via bit-lines, said cell comprising:

(a) a word-line input terminal;

(b) a bit-line input terminal;

(c) a first superconducting voltage controlled, three-terminal switching device, and a second superconducting voltage controlled, three-terminal switching device, each of said switching devices having a gate voltage terminal and first and second pass terminals, wherein the current flowing through each switching device via said pass terminals is controlled by the voltage applied to said gate terminal;

(d) a semiconductor charge storing circuit for storing charge representing information in binary form, said semiconductor charge storing circuit having at least a first and a second output terminal; and

(e) a superconducting current sensing means, said current sensing means having a biased current circuit with a bias input and a bias output, and a sensed current circuit with a sensed current input and a sensed current output;

wherein said first pass terminal of said first switching device is connected to said word-line terminal;

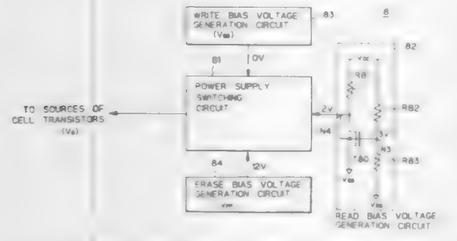
said gate terminal of said first switching device is connected to said first output terminal of said semiconductor charge storing circuit;
said second pass terminal of said first switching device is connected to said sensed current input;
said first pass terminal of said second switching device is connected to said word-line terminal;
said gate terminal of said second switching device is connected to said second output terminal of said semiconductor charge storing circuit;
said second pass terminal of said second switching device is connected to said sensed current output; and
said bias input is connected to said bit-line input terminal.

5,388,069

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE FOR PREVENTING ERRONEOUS OPERATION CAUSED BY OVER-ERASE PHENOMENON

Masaya Kokubo, Kasugai, Japan, assignor to Fujitsu Limited, Kawaski and Fujitsu VLSI Limited, Kasugai, both of Japan

Filed Mar. 18, 1993, Ser. No. 34,130
Claims priority, application Japan, Mar. 19, 1992, 4-064162
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—185 3 Claims



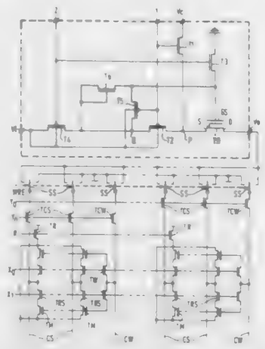
1. A nonvolatile semiconductor memory device comprising:
a plurality of word lines;
a plurality of bit lines;
a plurality of nonvolatile memory cells each formed of a MIS transistor disposed at each intersection of said word lines and said bit lines, and a threshold voltage of said MIS transistor being externally electrically controllable; and
a source power supply circuit, connected to sources of said nonvolatile memory cells, for applying one of a first voltage, a second voltage, and a third voltage to said sources of said nonvolatile memory cells, said first voltage being applied to negate an influence caused by an over-erase phenomenon at the time of a reading operation, said second voltage being used to write data to said memory cells, and said third voltage being used to erase data of said memory cells, said source power supply circuit comprising:
a read bias voltage generation circuit for generating said first voltage;
a write bias voltage generation circuit for generating said second voltage;
an erase bias voltage generation circuit for generating said third voltage; and
a power source switching circuit, said power source switching circuit being connected to said read bias voltage generation circuit, said write bias voltage generation circuit, and said erase bias voltage generation circuit for selecting said first voltage when reading data from said memory cells, said second voltage when writing data to said memory cells, and said third voltage when erasing data of said memory cells.

5,388,070

STORAGE ARRANGEMENT AND METHOD FOR OPERATING THE ARRANGEMENT

Heinz-Peter Frerichs, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 75,708, Jun. 11, 1993. This application Apr. 11, 1994, Ser. No. 226,227
Claims priority, application Germany, Jun. 13, 1992, 4219464
Int. Cl.[6] G11C *11/34, 7/00*
U.S. Cl. 365—185 4 Claims



1. An integrated storage arrangement, comprising a matrix of addressable, electrically programmable storage cells, each of which comprises a MOS transistor with a floating gate whose charge can be controlled by means of a programming voltage and each of which also comprises a control gate, the arrangement also comprising a control circuit which comprises a voltage input for receiving a high voltage which is higher than the desired programming voltage, a voltage output for supplying the programming voltage, and an additional transistor whose construction is the same as that of the transistors of the storage cells and which serves to derive from the high voltage a programming voltage of substantially optimum value with a view to manufacturing tolerances,
characterized in that the drain (D) of the additional transistor (T0) is coupled to the voltage output (Vo), that the source (S) of the additional transistor (T0) can be coupled, via a first switch (T1), to a control voltage input (Vc) and, via a second switch (T2), to the voltage input (Vi), and that the control gate (GS) of the additional transistor (T0) can be coupled, via a third switch (T3), to the reference voltage (0V) and, at least via a fourth switch (T4), to the voltage input (Vi).

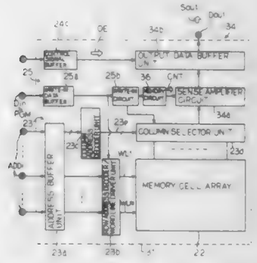
5,388,071

SEMICONDUCTOR MEMORY DEVICE REGULABLE IN ACCESS TIME AFTER FABRICATION THEREOF

Takaki Kohno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 52,664, Apr. 27, 1993, Pat. No. 5,303,188. This application Jan. 11, 1994, Ser. No. 179,717
Claims priority, application Japan, Apr. 28, 1992, 4-136231
Int. Cl.[6] G11C *7/00, 11/40*
U.S. Cl. 365—189.01 3 Claims

1. A semiconductor memory device comprising:
a) a memory cell array having a plurality of non-volatile memory cells each addressable with an address signal;
b) an addressing means associated with said memory cell array for allowing an external device to selectively access data information stored in said non-volatile memory cells indicated by said address signal;
c) a data transferring means coupled between an output data port and said memory cell array, and having
c-1) a sense amplifier circuit supplying current to said memory cell array for quickly producing a voltage signal indicative of said accessed data information, and responsive to an internal control signal for changing a voltage amplification factor thereof, and
c-2) an output data buffer circuit responsive to said voltage signal for driving an external load coupled with said output data port for supplying the accessed data information to an external device; and
d) a non-volatile memory means for storing a control data signal supplied from the outside of said semiconductor memory device, and operative to produce said internal control signal while storing said control data signal.

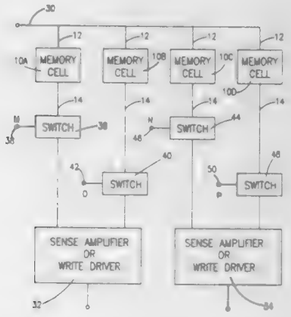


5,388,072

BIT LINE SWITCH ARRAY FOR ELECTRONIC COMPUTER MEMORY

Richard E. Matick, Cortland, and Stanley E. Schuster, Granite Springs, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1992, Ser. No. 866,934
Int. Cl.[6] G11C *8/00, 7/00*
U.S. Cl. 365—230.03 7 Claims



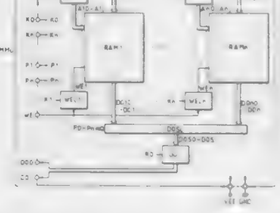
5. An electronic computer memory comprising:
a cache memory comprising a plurality of rows of memory cells, each row of memory cells comprising at least first and second blocks of memory cells, each memory cell storing a data signal, each memory cell having at least one word line input and at least one bit line output;
a word line connected to the word line inputs of at least first, second, third, and fourth memory cells in a row of the cache memory, the first and third memory cells being contained in the first block, the second and fourth memory cells being contained in the second block;
a first sense amplifier for reading data from memory calls;
a second sense amplifier for reading data from memory calls;
a first switch for switchably connecting the bit line output of the first memory cell to the first sense amplifier, said first switch having a control input;
a second switch for switchably connecting the bit line output of the second memory cell to the first sense amplifier, said second switch having a control input;
a third switch for switchably connecting the bit line output of the third memory cell to the second sense amplifier, said third switch having a control input; and
a fourth switch for switchably connecting the bit line output of the fourth memory cell to the second sense amplifier, said fourth switch having a control input;
selection means for independently actuating either the first and third switches to connect memory cells only in the first block to the sense amplifiers, or the first and fourth switches to connect memory cells in both the first and second blocks to the sense amplifiers;
characterized in that the control inputs of each of the first, second, third and fourth switches are capable of being actuated independently of all of other switches connecting memory cell bit line outputs to the first and second sense amplifiers.

5,388,073

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND DIGITAL PROCESSOR EMPLOYING THE SAME

Masami Usami, Nishitama; Akihisa Uchida, Higashiyamato; Yoshino Sakai, Sakaemachi, and Masato Iwabuchi, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 15, 1991, Ser. No. 685,196
Claims priority, application Japan, Apr. 16, 1990, 2-99996
Int. Cl.[6] G11C *8/00, 7/00*
U.S. Cl. 365—230.03 19 Claims



1. A semiconductor integrated circuit device comprising:
a plurality of memory blocks each including:
a plurality of memory cells,
a plurality of word lines and a plurality of data lines which are coupled to said memory cells in such a manner that one memory cell is coupled to one word line and one data line, and
decoder means coupled to said plurality of word lines and said plurality of data lines for bringing one of said plurality of word lines and at least one of said plurality of data lines into selected states on the basis of address signals;
wherein the number of said plurality of memory blocks is n, and a cycle time t_c required for one of a read operation and a write operation of said each of said memory blocks is set at:

$$t_c \geqq n \times t_{mc}$$

where t_{mc} denotes a machine cycle of a digital processor, and
wherein said plurality of memory blocks are started sequentially every machine cycle of said digital processor.

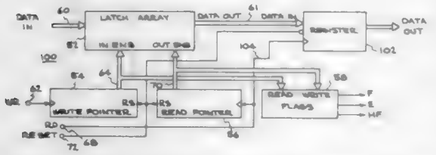
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5,388,074

FIFO MEMORY USING SINGLE OUTPUT REGISTER

Karl C. Buckenmaier, Somerville, Mass., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 17, 1992, Ser. No. 992,337
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.05 6 Claims



1. An improved first-in/first-out (FIFO) memory circuit, comprising:

FIFO data-storage means for storing data information in a group of memory locations, said data-storage means having a first data-input terminal and a data output terminal wherein the FIFO data-storage means includes a series of latches, each latch having a second data-input terminal connected in parallel to said second data input terminals of the other latches, each of said latches having a tri-state data-output terminal connected to said data output terminal of the data-storage means, each of said latches having an input enable terminal for transferring input data from said second data input terminal to said tri-state data output terminal;

write-pointer logic means coupled to said data storage means for selecting the next-available one of said memory locations into which the next available data is to be written;

read-pointer logic means coupled to said data storage means for providing an address signal to a predetermined first-in memory location of the data-storage means to thereby provide the first-in data of the predetermined memory location at the data output terminal of the data-storage means;

output storage means having a single input terminal connected to the output terminal of said data-storage means, said output storage means having an output terminal, said output storage means having a clock terminal for receiving a read clock signal for transferring the data state of the data location containing the first-in data provided from the data-storage means selected by the read-pointer logic means to the output terminal of said output storage means, wherein said output storage means includes a single register having an input terminal connected to the output terminal of said data-storage means.

5,388,075

READ AND WRITE TIMING SYSTEM FOR RANDOM ACCESS MEMORY

Albert W. Vinal, Cary, N.C., assignor to Thunderbird Technologies, Inc., Research Triangle Park, N.C.

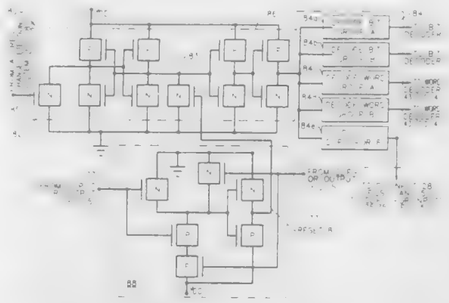
Division of Ser. No. 708,459, May 31, 1991, Pat. No. 5,304,874. This application Feb. 25, 1994, Ser. No. 201,640
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.05 20 Claims

1. A system for timing a read operation in a memory comprising:

means for initiating a read operation;

means for controlling a read operation in said memory in response to a plurality of control signals at a plurality of control inputs thereof;

a plurality of Delay Ring Segment Buffers (D-RSB), each of which includes an input and an output, said output replicating said input after a predetermined delay, each of said inputs of said D-RSBs being responsive to said initiating means, a respective one of said outputs being connected to a respective one of the control inputs of said controlling means, to thereby produce said plurality of control signals in a predetermined timing relationship for controlling the read operation; and



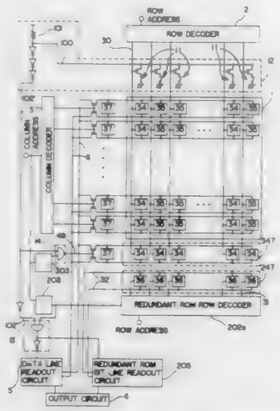
means for indicating that a read operation has successfully occurred, said plurality of D-RSBs being responsive to said indicating means, to deactivate said controlling means after a read operation has successfully occurred.

5,388,076

SEMICONDUCTOR MEMORY DEVICE

Makoto Ihara, Sakurai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 2, 1993, Ser. No. 87,157
Claims priority, application Japan, Jul. 3, 1992, 4-177247
Int. Cl.[6] G11C *7/00, 29/00*
U.S. Cl. 365—200 23 Claims



1. A semiconductor memory device comprising:

a memory cell array in which memory cells are arranged on a plurality of row lines and column lines, wherein an address on the memory cell array is selected by a first address signal for designating one line among the plurality of lines and a second address signal for designating one address on the line designated by the first address signal, and at least one line of the plurality of lines having both ROM cells and RAM cells mixed;

a redundant ROM line as a redundant line for replacing a defective line among the plurality of lines; and

an address selecting means,

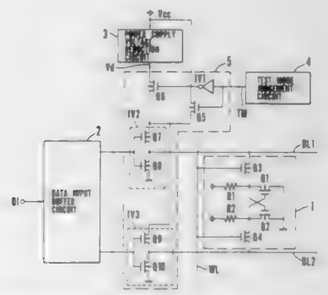
wherein the address selecting means selects an address on the redundant ROM line corresponding to the second address signal when an address of a ROM cell on the defective line is designated by the first and the second address signals, and does not select an address on the redundant ROM line corresponding to the second address signal when an address of a RAM cell on the defective line is designated by the first and the second address signals.

5,388,077

TEST DEVICE FOR SEMICONDUCTOR MEMORY DEVICE

Kohji Sanada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,762
Claims priority, application Japan, Mar. 9, 1992, 4-050216
Int. Cl.[6] G11C *29/00*
U.S. Cl. 365—201 6 Claims



1. A semiconductor memory comprising:

data input buffer means for inputting write information;

power supply voltage reduction means for reducing power supply voltage supplied to a power source supply terminal to a predetermined voltage level;

test mode judgement means for issuing an active level test mode signal upon a data holding power supply voltage test mode;

memory cell means for storing therein the write information; and

switching means operable with an output from said power supply voltage reduction means as power supply voltage when said test mode signal is of an active level to restrict an output level of said data input buffer means to said predetermined voltage level and supply an output signal from said data input buffer means to said memory cell while being operable with said power supply voltage at said power source supply terminal intactly as the power supply voltage when said test mode signal is of an inactive level to supply output write information from said data input buffer means to said memory cell means.

5,388,078

SEMICONDUCTOR MEMORY DEVICE HAVING CURRENT TO VOLTAGE CONVERSION TYPE AMPLIFIER

Hideki Arakawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 12, 1991, Ser. No. 729,442
Claims priority, application Japan, Jul. 13, 1990, 2-184039
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—203 11 Claims

1. A semiconductor memory device formed on a semiconductor substrate and enabling at least data stored in a memory cell to be read out, comprising

a plurality of selectively accessible memory cells,

a bit line connected to said memory cells,

a sense node through which an electric current flows by means of a load,

voltage limiting means connected between said sense node and said bit line, and

a sense amplifier comprising multi-stage amplifier means connected to said sense node for converting the current flowing through said sense node into an electrical voltage and outputting said electrical voltage, each amplifier of said multi-stage amplifier means having switching means connected across input and output terminals thereof,



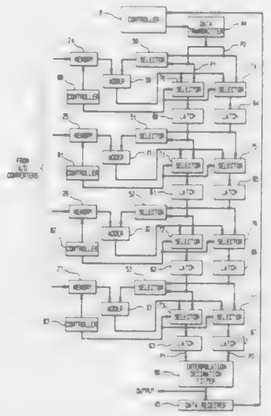
said switching means being actuated during reading of said data from said memory cell for setting said amplifier means to amplifying states on the stage-by-stage basis from the amplifier closest to said sense node.

5,388,079

PARTIAL BEAMFORMING

Jin Kim, Issaquah; Lin X. Yao, Bellevue; Zoran Banjanin, Renton, all of Wash.; Hiroshi Fukukita, Tokyo, Japan; Hisashi Hagiwara, Japan, and Masami Kawabuchi, both of Yokohama, Japan, assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Mar. 26, 1993, Ser. No. 38,572
Int. Cl.[6] G01S *15/00*; A61B *8/00*
U.S. Cl. 367—103 16 Claims



1. A beamformer, comprising:

a plurality of parallel receiving channels for detecting waves and, in response thereto, producing a respective plurality of digital sample signals comprising digital samples, and having a given sample rate (f_0), said plurality of receiving channels being comprised of a plurality of channel groups, each channel group being comprised of parallel receiving channels;

a plurality of partial beamforming means, each one of said plurality of partial beamforming means receiving the digital sample signals of one channel group of said plural-

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ity of parallel receiving channels, and processing said digital sample signals at a rate which is effectively a multiple (N) of said given rate (f_0) to develop an output of partial beamformer sample signals;

a plurality of filter means, each one of said filter means filtering the partial beamforming sample signals of a respective one of said partial beamforming means for developing a partial beamformer signal at said given rate (f_0); and

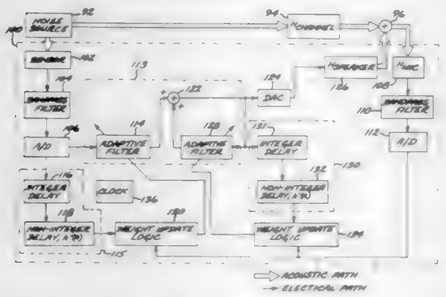
a serial data adding path for adding together the partial beamformer signals of said given rate developed by each of said filter means, for forming a beamformer signal.

5,388,080

NON-INTEGER SAMPLE DELAY ACTIVE NOISE CANCELLER

Paul L. Feintuch, Covina, and Allen K. Lo, Diamond Bar, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 27, 1993, Ser. No. 53,738
Int. Cl.[6] H04B *15/00*
U.S. Cl. 367—135 **18 Claims**



1. An active adaptive noise canceller for suppressing noise signals derived from a noise source, said canceller comprising:

a noise sensor for generating a noise sensor signal indicative of said noise to be suppressed;

first digitizing means for digitizing said noise sensor signal at a given sample rate;

an acoustic sensor for generating an error signal indicative of the residual noise;

second digitizing means for digitizing said error signal at said sample rate;

an acoustic output device for generating a noise cancelling acoustic signal;

delay means for delaying said digitized noise sensor signal by a preselected time delay, said time delay selected to be a non-integer multiple of a sample period determined by said sample rate;

adaptive filter means having a plurality of inputs responsive to said digitized noise sensor signal, said delayed digitized noise sensor signal and said digitized error signal, and an output signal coupled to said acoustic output device; and

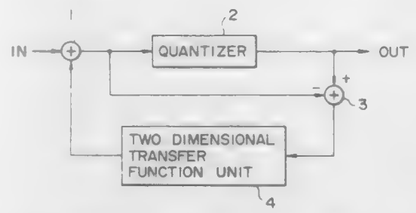
wherein said delay means causes said adaptive filter to be stable over one or more frequency stability regions and to not require a training mode, and said selected non-integer multiple of said sample period permits a reduction in the required sample rate to achieve stable operation in a selected frequency stability region.

5,388,081

TWO-DIMENSIONAL NOISE SHAPING FILTER CIRCUIT

Yoshitaka Hashimoto, Tokyo, and Atsushi Kikuchi, Kanagawa, both of Japan, assignors to Sony Corporation, Japan

Filed Dec. 7, 1992, Ser. No. 986,258
Claims priority, application Japan, Dec. 17, 1991, 3-352872
Int. Cl.[6] H04N *5/21*
U.S. Cl. 348—606 **6 Claims**



1. A two-dimensional noise shaping filter circuit for two-dimensional noise shaping of an input video signal having a vertical component and a horizontal component to be processed comprising:

a first adder for adding a feedback signal to said input video signal;

a quantizer for quantizing an output from said first adder;

a second adder for adding an output from said quantizer to the output from first adder;

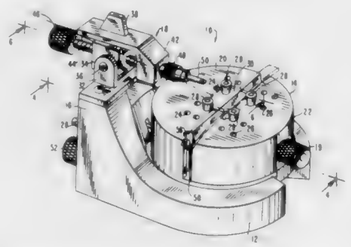
a transfer function unit having a two-dimensional transfer function for generating said feedback signal from the output of said second adder; said transfer function unit including a vertical delay circuit and a horizontal delay circuit connected to form a feedback loop between said second adder and said first adder, said vertical delay circuit being operable to process the vertical component of said video signal and the horizontal delay circuit being operable to process the horizontal component of said video signal.

5,388,082

WATCH CASE BACK OPENER

Scott M. S. Chou, Paramus, N.J., assignor to Kabushiki Kaisha Hattori Seiko, Tokyo, Japan

Filed Mar. 31, 1994, Ser. No. 221,294
Int. Cl.[6] G04B *47/00*; **G04D** *3/00, 1/10*
U.S. Cl. 368—327 **20 Claims**



1. A watch case back opener comprising:

a base;

vise means mounted on said base for releasably securing a watch case to said base, said vise means including a first jaw and a second comparison jaw, the second jaw being movable between a closed position with said first jaw and an open position away from said first jaw;

adjustable securing means mounted on said first and second jaws adapted to secure a plurality of different sized and shaped watch cases to said vise means; and

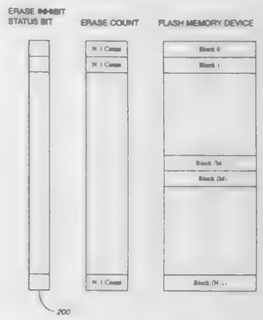
opener unit means mounted on said base for separating a watch case back from said watch case when said watch case is secured to said vise means.

5,388,083

FLASH MEMORY MASS STORAGE ARCHITECTURE

Mahmud Assar, Morgan Hill; Siamack Nemazie, San Jose, and Petro Estakhri, Pleasonton, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Mar. 26, 1993, Ser. No. 38,668
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—218 **24 Claims**



1. A non-volatile semiconductor mass storage device comprising:

a. a plurality of non-volatile storage blocks, wherein each block is selectively programmable to store data and is selectively erasable and further wherein each block has a finite number of erase cycle lifetimes; and

b. means for ensuring no block is subjected to more than a predetermined larger number of erase cycles than any other block.

5,388,084

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE WITH HIGH VOLTAGE GENERATOR

Yasuo Itoh, Kawasaki; Sumio Tanaka, Tokyo; Junichi Miyamoto, Yokohama; Hiroshi Nakamura, Kawasaki; Yoshihisa Iwata, Yokohama; Kenichi Imamiya, Kawasaki, and Yoshihisa Sugiura, Sagamihara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

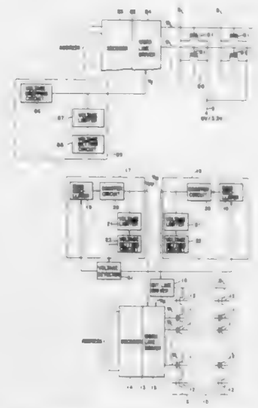
Filed Sep. 29, 1993, Ser. No. 128,087
Claims priority, application Japan, Sep. 30, 1992, 4-261863; Jun. 30, 1993, 5-188859
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—226 **17 Claims**

14. A semiconductor integrated circuit device comprising:

booster means for boosting a power source voltage;

voltage limiting means for limiting an output voltage of said booster means to a given value; and

voltage detecting means for detecting said output voltage of said booster means, whereby a function of said booster means is controlled in accordance with an output of said voltage detecting means, wherein said booster means includes an oscillation circuit, controlled in accordance with a detection result of said voltage detecting means, whereby an oscillation period of said oscillation circuit



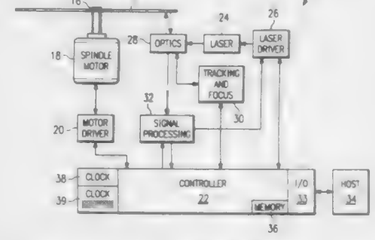
changes in accordance with said detection result of said voltage detecting means.

5,388,085

APPARATUS AND METHOD FOR ACCESSING SECTORS OF A ROTATING DISK

Glen A. Jaquette, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1993, Ser. No. 25,465
The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—32 **25 Claims**



13. An optical disk drive, comprising:

means for rotating an optical disk having a plurality of sectors grouped into a plurality of bands, each band identified by a number;

an optical head for reading information from the disk;

means for positioning said optical head opposite a target sector to be accessed on the disk;

a controller for receiving signals from said optical head;

a clock for generating a series of cycles of a first clock signal having a selected frequency f_N, being a function of a band N in which the target sector is located;

slipping means, interconnected with said controller and said clock, for selectively suppressing one cycle of each N cycles of the first clock signal and generating a series of cycles of a second clock signal having an average frequency f_{N-1}, being a function of a band N-1 immediately preceding band N; and

means for enabling said slipping means when said optical head is positioned opposite an identified sector in band

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N-1 whereby said controller operates at the average frequency f_{N-1} to receive the signals from said optical head to permit said optical head to read data from sectors in band N-1, and for disabling said slipping means prior to said optical head being positioned opposite a boundary between bands N-1 and N to permit said optical head to read data from sectors in band N at frequency f_N.

5,388,086

ELECTRO-MAGNETIC ACTUATOR FOR DRIVING AN OBJECTIVE LENS

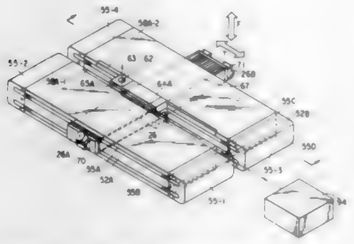
Hideo Yamasaki, and Makoto Nagasato, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 858,625, Mar. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 538,098, Jun. 13, 1990, Pat. No. 5,317,552. This application Jun. 30, 1993, Ser. No. 93,972

Claims priority, application Japan, Jun. 13, 1989, 1-148451; Dec. 27, 1989, 1-336660; Feb. 27, 1990, 2-044403; Mar. 29, 1991, 3-067050; Sep. 30, 1991, 3-250622; Jan. 30, 1992, 4-014415

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.14 **15 Claims**



4. An optical head device, comprising:

a light source;

lens means for converging a light beam derived from the light source onto an optical recording medium;

holding means for holding the lens means such that the lens means is movable in a direction that is perpendicular to a recording surface of the recording medium;

reflecting means for reflecting the light beam;

guiding means for guiding the light beam toward the reflecting means, and for holding the reflecting means such that the reflecting means reflects the light beam toward the lens means, said guiding means being hollow and having a light-input end and a light-output end, said light-output end of the guiding means being at least partially inserted into an internal region of the holding means, said reflecting means being held by the light-output end of the guiding means;

suspending means, secured to the light-input end of the guiding means and to the holding means, for suspending the holding means;

moving means, which is surrounded by the suspending means and which is integrally formed with the guiding means, for moving the guiding means in a direction parallel to the recording surface of the recording medium and perpendicular to tracks formed on the recording surface, said moving means including a pair of moving elements which extend from respective side walls of the guiding means in a direction that is substantially parallel to the recording surface, said moving elements being symmetric with each other relative to the hollow section of the guiding means and being separated from each other by a predetermined space, said moving elements comprising portions of a tracking coil which are spaced from one another to form a tracking coil gap;

generating means for generating a magnetic force used for biasing the moving means, said generating means including a pair of magnet elements which do not contact the moving means, each of the magnet elements including three magnets which are spaced from each other by a predetermined distance and arranged such that any opposing sections of separate ones of the three magnets have opposing polarity; and

connecting means for magnetically connecting the magnetic flux of the magnets, said connecting means being arranged in the tracking coil gap of the moving means and extending in a direction which is substantially parallel to both an extending direction of the guiding means and a moving direction of the moving means, said connecting means permitting circulation of the magnetic flux generated by the magnetic elements.

5,388,087

RECORDING AND REPRODUCING APPARATUS INCLUDING CHANGING A REPRODUCTION CHARACTERISTIC WHEN AN ERROR HAS OCCURRED IN REPRODUCED DATA

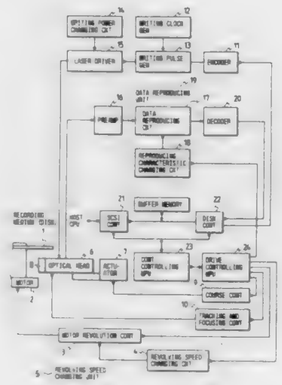
Eisaku Saiki, Yokohama; Takuya Mizokami, Odawara, and Naoto Matsunami, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,504

Claims priority, application Japan, Jul. 11, 1991, 3-196084

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—48 **11 Claims**



1. A recording and reproducing apparatus comprising:

driving means for rotating a recording medium;

recording means for recording information on the recording medium rotated;

reproducing means for reproducing the information from the recording medium rotated, said reproducing means retrying reproduction of information from an area in the recording medium where an error has occurred to the data reproduced, in cases where the error has occurred to the data reproduced in the reproduction of information from the recording medium and said reproducing means is provided with a waveform shaping circuit and a phase-synchronizing circuit; and

characteristic changing means for changing a characteristic of said reproducing means, said characteristic changing means changing at least one of an equalizer characteristic, a filter characteristic, a differentiator characteristic and a slice level, in said waveform shaping circuit;

wherein, if an error has occurred to the reproduced data in the reproduction of information from the recording medium, the reproducing characteristic of said reproducing means is changed by said characteristic changing means so that said reproducing means retries the reproduction of information from the area in the recording medium where the error has occurred to the reproduced data, under the changed reproducing characteristic.

5,388,088

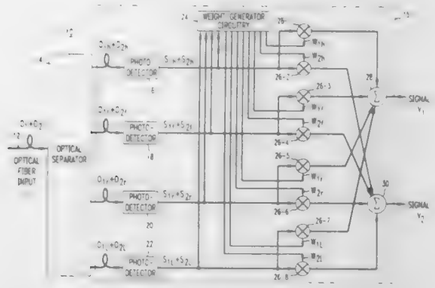
MULTIPLE POLARIZATION SENSITIVE DETECTION ARRANGEMENT FOR FIBER OPTIC COMMUNICATIONS

Michael J. Gans, Monmouth Beach; Sanjay Kasturia, and Jack H. Winters, both of Middletown, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Apr. 2, 1992, Ser. No. 862,398

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—122 **22 Claims**



1. An apparatus for receiving from a single optical fiber first and second optical signals having different polarizations comprising:

means for separating signals output from the optical fiber into a plurality of different optical polarization components, each of the first and second optical signals comprising at least two different optical polarization components;

means for processing the plurality of optical polarization components to generate first and second output signals in such a way as to recover first and second data signals from the first and second optical signals, respectively, the means for processing comprising:

a plurality of photodetectors, coupled to the separating means, each photodetector converting a different one of the plurality of optical polarization components into a respective one of a plurality of electrical signals; and

means for processing the plurality of electrical signals to generate the first and second output signals.

5,388,089

APPARATUS FOR CONNECTING MULTIPLEX TRANSMISSION SYSTEMS

Kunio Odaka, and Kyosuke Hashimoto, both of Hiratsuka, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01163, § 371 Date Apr. 26, 1993, § 102(e) Date Apr. 26, 1993, PCT Pub. No. WO93/05602, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 30, 1991, Ser. No. 50,153

Int. Cl.[6] H04L *12/46*

U.S. Cl. 370—67 **2 Claims**

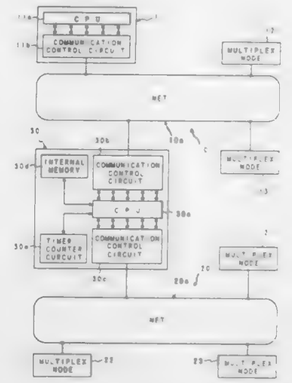
1. An apparatus for connecting at least two multiplex transmission systems, each multiplex transmission system including at least two multiplex nodes and a signal transmission line interconnecting the multiplex nodes, the apparatus comprising:

transmission control means including a storage section for storing data supplied through each of the signal transmission lines, and means for transmitting the stored data for data transmission among the multiplex transmission systems,

wherein said transmission control means further includes:

means for determining whether transmission of transmit data supplied from one of said at least two multiplex transmission systems to another of said at least two multiplex transmission systems is possible, in accordance with a state of use of the signal transmission line of said another multiplex transmission system, and for determining whether storage of the transmit data in the storage section is possible;

means for storing the transmit data in the storage section when transmission of the transmit data is impossible and



at the same time storage of the transmit data is possible, and means for transmitting the stored transmit data to the signal transmission line of said another of the multiplex transmission systems when transmission of the transmit data becomes possible; and

means for informing said one of the multiplex transmission systems of a transmission/storage inability state when neither transmission nor storage of the transmit data is possible.

5,388,090

METHOD, APPARATUS, AND MEDIUM FOR RECORDING INFORMATION IN DATA SECTIONS HAVING NUMBER OF BYTES WHICH INCREASES WITH INCREASE IN CIRCUMFERENCE OF TRACKS ON MEDIUM

Takashi Hoshino, Yokohama; Tetsuya Ikeda, Chigasaki, and Junichi Ishii, Narashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 911,677

Claims priority, application Japan, Jul. 9, 1991, 3-168025; Mar. 12, 1992, 4-053282

Int. Cl.[6] G11B *3/70*

U.S. Cl. 369—275.3 **21 Claims**

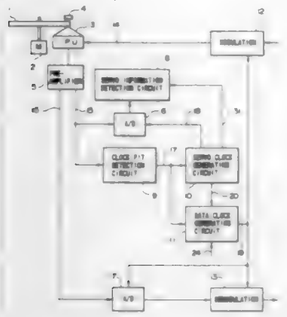
1. A disk-shaped information recording medium for a sample servo method, comprising:

a recording and reproducing area including helically or concentrically disposed tracks grouped into a plurality of bands disposed in a radial direction of the disk; and

segments each including a servo section and a data section disposed on the tracks such that servo sections and data sections are alternately disposed on each of the tracks, the segments on each of the tracks being grouped into a plurality of sectors each including a plurality of the segments;

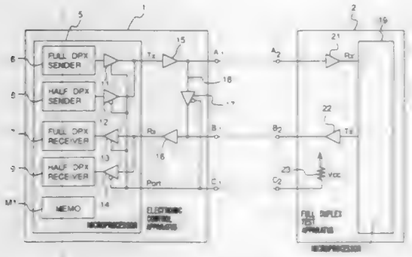
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wherein the servo section comprises at least wobble pits and a clock pit for tracking, and a storage capacity of the data



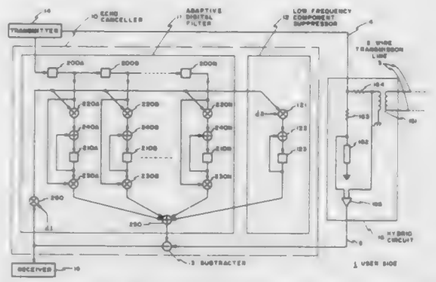
section is increased by one byte at each transition from one band to an outer adjacent band.

5,388,091
COMMUNICATIONS SYSTEM FOR COMMUNICATIONS BETWEEN AN ELECTRONIC CONTROL APPARATUS AND A TEST APPARATUS
Kenichi Kagawa, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Apr. 13, 1993, Ser. No. 45,222
Claims priority, application Japan, Apr. 17, 1992, 4-097692
Int. Cl.[6] H04L *5/14;* **H04J** *3/14*
U.S. Cl. 370—13 **18 Claims**



1. A communication system, comprising:
a test apparatus having a fixed communication mode for sending and receiving data, said test apparatus comprising identification terminal means for outputting an identification signal indicating the fixed communication mode of said test apparatus as either one of a full duplex communication mode and a half duplex communication mode; and
an electronic control apparatus comprising detection terminal means for receiving said identification signal from said test apparatus, communication circuit means for selectively sending and receiving data, including troubleshooting data indicating an operational status of said electronic control apparatus, in either said full duplex communication mode or said half duplex communication mode, and enabling means responsive to said identification signal for enabling said communication circuit means to send data to and receive data from said test apparatus in accordance with the fixed communication mode of said test apparatus;
said test apparatus further comprising microprocessor means for evaluating the operational status of said electronic control apparatus based on the troubleshooting data from said electronic control apparatus.

5,388,092
ECHO CANCELLER FOR TWO-WIRE FULL DUPLEX DIGITAL DATA TRANSMISSION
Tetsu Koyama, Tokyo, and Kazuhiko Aizawn, Miyagi, both of Japan, assignors to NEC Corporation, Japan
Continuation of Ser. No. 543,979, Jun. 26, 1990, abandoned.
This application Nov. 9, 1993, Ser. No. 149,705
Claims priority, application Japan, Jun. 27, 1989, 1-166081
Int. Cl.[6] H04B *3/23*
U.S. Cl. 370—32.1 **3 Claims**

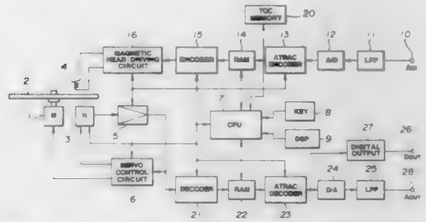


1. An echo canceller for a two-wire full duplex digital data transmission system comprising:
an adaptive digital filter containing a transversal filter with a plurality of taps for generating an echo replica signal by estimating adaptively time-varying transfer characteristics of an echo path in order to suppress an echo signal from said echo path;
means for producing a residual echo signal by obtaining the difference between said echo signal and said echo replica signal at a tail portion of an impulse response of said adaptive digital filter;
low frequency component supressor means for suppressing low frequency components contained in said residual echo signal, said suppressor means being installed in parallel with the final stage of said adaptive digital filter to effectively increase the number of taps of said transversal filter, said suppressor means including:
first order recursive filter means responsive to said residual echo signal and an output from said final stage of said adaptive digital filter for producing a waveform of said low frequency components, tap coefficient updating means responsive to said waveform of said low frequency components and said residual echo signal for updating a tap coefficient to produce an updated tap coefficient, and
first multiplier means for multiplying said waveform of said low frequency components by said updated tap coefficient to produce a low frequency component replica which is used to cancel said low frequency components.

5,388,093
DISC RECORDING AND/OR REPRODUCING APPARATUS FOR RECORDING CONTINUOUS COMPRESSED DATA IN PLURAL DATA REGIONS AND DISC THEREFOR
Tadao Yoshida, Kanagawa, and Takashi Ohmori, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 16, 1992, Ser. No. 945,488
Claims priority, application Japan, Sep. 27, 1991, 3-275067
Int. Cl.[6] G11B *7/007, 7/013*
U.S. Cl. 369—124 **8 Claims**

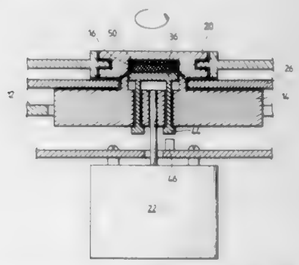
1. A disc recording apparatus in which compressed input data are stored in a memory and read out therefrom in a burst manner for being recorded in a data region of a disc, and in which data indicating the recording contents of a recording region are recorded in a lead-in region of said disc, comprising:
data recording means for subdividing continuous compressed input data and for recording the subdivided continuous compressed input data in plural non-continuous data zones on said disc; and
lead-in data recording means for recording in said lead-in region track number data associated with the continuous compressed input data, address data indicating the positions of said data zones associated with said track number data and address data indicating a linking destination of said subdivided continuous compressed input data recorded in a given data region.

8. A disc-shaped recording region comprising:



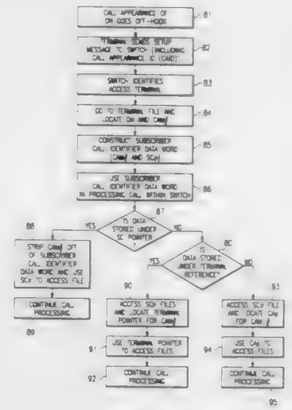
plural data zones in which continuous digital data are recorded after compression followed by subdivision, and
a lead-in region in which track address data associated with said subdivided compressed continuous digital data, address data indicating the position of each data zone associated with track number data, and linking address data indicating the linking destination of the compressed data recorded in one of a plurality of recording zones, are recorded.

5,388,094
TURNTABLE BRAKE FOR A DISC PLAYER
Joong-Je Park, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Sep. 9, 1993, Ser. No. 119,337
Claims priority, application Rep. of Korea, Sep. 9, 1992, 92-17238
Int. Cl.[6] G11B *17/028*
U.S. Cl. 369—270 **4 Claims**



1. A disc player incorporating therein a disc loading device which includes a disc presser having a rotatable clamp plate, the disc presser being movably attached to a main body for movement between a loading position and a clamping position, a spindle motor fixed to a panel on the main body and having a shaft, a turntable fixed to the shaft of the spindle motor to be rotated therewith, and a tray for receiving a disc and seating the disc onto the turntable, said tray being movably mounted on the main body for movement between a loading position and a clamping position, characterized by a turntable brake comprising:
a first magnet vertically movable along a groove formed in an annular protrusion of the turntable;
a second magnet fixed to a groove formed in the rotatable clamp plate;
a brake member fixed to the first magnet and having a pair of legs, each leg having a stopper, said legs being vertically movable through a pair of holes provided in the turntable, said brake member, legs, and stoppers being vertically movable between a loading position and a clamping position responsive to the first magnet being moved towards the second magnet when the disc presser is moved to its clamping position; and
at least one lug upwardly protruding from the panel and having a height higher than the elevational position of said stoppers in their loading position so that the turntable cannot rotate.

5,388,095
REPRESENTING SUBSCRIBERS IN A MULTIPLE INTERFACE ENVIRONMENT SWITCHING SYSTEM
Jila Seraj, Plano, Tex., assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Aug. 6, 1993, Ser. No. 103,889
Int. Cl.[6] H04J *3/12*
U.S. Cl. 370—58.1 **28 Claims**



1. A method of identifying individual subscriber appearances having a common directory number within the software modules of a telecommunication switching system, comprising:
implementing subscriber pointer data within the software modules utilizing a plurality of bit positions;
defining a subscriber call identifier data word to include a first data field comprising a subscriber pointer corresponding to the directory number with which the subscriber is associated and a second data field comprising a call appearance member number corresponding to the individual subscriber appearance with which the call is associated;
passing the subscriber call identifier data word through the software modules of the switching system; and
recognizing the call appearance member number data field of said subscriber call identifier data word only within software modules which implement functionality associated with an individual subscriber appearance.

5,388,096
DISTRIBUTED CIRCUIT SWITCH HAVING SWITCH MEMORY AND CONTROL MEMORY
Lars Westberg, Enkoping, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Jun. 23, 1993, Ser. No. 79,864
Claims priority, application Sweden, Jun. 24, 1992, 9201945
Int. Cl.[6] H04L *12/52*
U.S. Cl. 370—58.1 **7 Claims**

1. A digital switch intended for use in a node in a circuit

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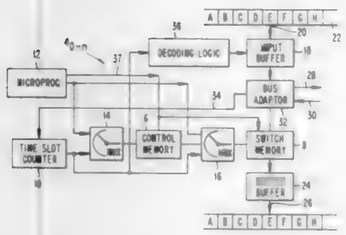
switched telecommunication network with a distributed switching function, the switch comprising:

a switch memory,

a time slot counter, which is connected to the switch memory and arranged to point out an address therein for cyclical writing in the switch memory of data arriving into the switch,

a control memory for controlling an order of data read out from the switch memory, and

an adapting device,



wherein the switch memory is connected via the adapting device to a transmission medium, which is common to a number of nodes in the network, the time slot counter is connected via the adapting device for receiving frame synchronization from the common transmission medium, the control memory is arranged for selecting time slots from the common transmission medium and for generating a read address to the switch memory, and each of the control memory and the switch memory includes a number of memory cells and an address space that defines a number of addressable cells, the number of the memory cells being less than the number of addressable cells.

5,388,097

SYSTEM AND METHOD FOR BANDWIDTH RESERVATION FOR MULTIMEDIA TRAFFIC IN COMMUNICATION NETWORKS

Mark J. Baugher; Daniel D. Heimsoth, and Isabel B. Van Horn, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1993, Ser. No. 85,274

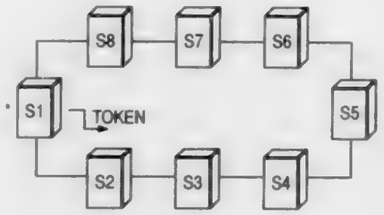
Int. Cl.[6] H04L *12/42*

U.S. Cl. 370—85.5 **20 Claims**

11. Apparatus for use in a digital communications multi-station ring network employing at least one ring token and having at least one server transmitting server frames at a predetermined priority and a plurality of client stations, comprising

means for generating unrequested bandwidth reservation acknowledgement frames by one of said client stations; and

means for transmitting, by said one of said client stations, said acknowledgement frames onto said ring at a non-zero priority less than said predetermined priority, said acknowledgement frames being addressed to no said client stations on said ring; and



means for inhibiting said server from transmitting a request for or confirmation of said acknowledgement frames.

5,388,098

Patent Not Issued For This Number

5,388,099

BACKPLANE WIRING FOR HUB IN PACKET DATA COMMUNICATIONS SYSTEM

Nigel T. Poole, Natick, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 22, 1992, Ser. No. 964,791

Int. Cl.[6] H04B *3/02;* **H04L** *5/20*

U.S. Cl. 370—85.12 **13 Claims**

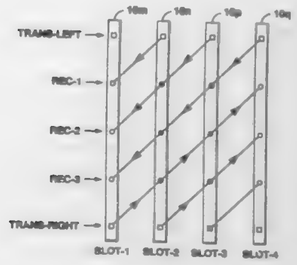
1. A hub for use in a data communications system, comprising

N line cards, where N is an integer, each line card having N−1 receiving ports and having two transmitting ports, the transmitting ports including a transmit-left port and a transmit-right port;

N backplane slots, each slot adapted to receive one of said line cards;

a plurality of backplane wiring paths between the connectors of said slots to connect said transmit-left ports of said line cards to receiving ports of line cards to the left and to connect said transmit-right ports of said line cards to receiving ports of line cards to the right;

means for configuring the line cards into selectively one of a bus configuration OR a ring configuration; and



wherein said receiving ports and said transmitting ports are arranged in a regular linear pattern on an edge of each of said line cards, and connectors in said slots for said transmitting and receiving ports of said line cards are physically arranged in a regular matrix pattern, and said backplane wiring paths are configured diagonally, and said transmit-left ports are all at one end of said linear pattern and said transmit-right ports are all at the other end of said linear pattern.

5,388,100

RECEIVING CIRCUIT FOR DIGITAL DATA TRANSMITTED BY WIRELESS COMMUNICATION

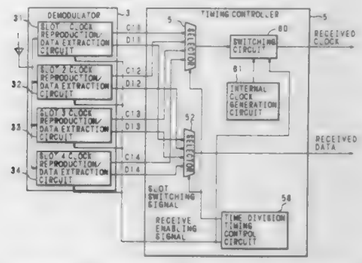
Jun Ohtsuka, Fukuoka, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 24, 1993, Ser. No. 126,381

Claims priority, application Japan, Feb. 26, 1993, 5-039015

Int. Cl.[6] H04B *7/08*

U.S. Cl. 370—95.1 **3 Claims**



1. A receiving circuit which outputs plural time slots of time division multiplexed data transmitted by wireless communication and clock signals reproduced from the data while relating the data and the clock signals, the circuit comprising:

a selector which receives reproduced clock signals of the respective time slots and selects one of said received clock signals reproduced from the data of the respective time slots and outputs said one selected reproduced clock signal;

a time division timing control circuit, coupled to said selector, for separating the received data every time slot and switching an output of said selector in synchronism with the separation;

an internal clock generation circuit for generating an internal clock signal; and

a switching circuit which is supplied with the internal clock signal generated by said internal clock generation circuit and the reproduced clock signal selected by and outputted by said selector, and selects and outputs either the selected reproduced clock signal or the internal clock signal,

said switching circuit including a circuit which selects and outputs the internal clock signal while said time division timing control circuit is switching the output of said selector.

5,388,101

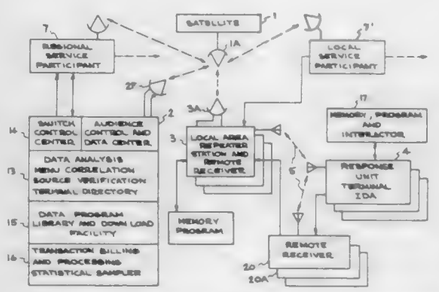
INTERACTIVE NATIONWIDE DATA SERVICE COMMUNICATION SYSTEM FOR STATIONARY AND MOBILE BATTERY OPERATED SUBSCRIBER UNITS

Gilbert M. Dinkins, Herdon, Va., assignor to Eon Corporation, Reston, Va.

Filed Oct. 26, 1992, Ser. No. 966,414

Int. Cl.[6] H04B *7/185;* **H04N** *7/14*

U.S. Cl. 370—95.1 **20 Claims**



1. A base station configuration in a two-way communication interactive video network having a network hub switching center for routing communications from and to a plurality of subscriber units at various geographic locations served by a base station that processes digital data modulated on an r-f carrier and transmitted from a plurality of subscriber units dispersed over a predetermined base station geographic area by presenting multiplexed digital data synchronously related to the base station broadcast signal for communication from identified individual subscriber units within designated geographic service areas, comprising in combination,

base station data processing and transmission facilities for transmitting to a set of local subscriber units and receiving from a subset of those local subscriber units multiplexed synchronously related digital data messages of variable lengths for point-to-point communication between individual subscribers with remotely located reception stations,

base station reception means for receiving and processing data messages from the set of local subscriber units at that base station comprising a set of cell subdivision sites partitioned from said base station geographic area and dispersed over the base station geographic area, each cell subdivision site being adapted for receiving-only low power digital messages transmitted from local subscriber units within range of the partitioned cell site areas, and

a set of local subscriber transceiver units including low power mobile units located within the base station geographic area each adapted to communicate with said base station by way of digital data signals of variable lengths synchronously related to said base station broadcast signal and timed for said multiplexed message transmission.

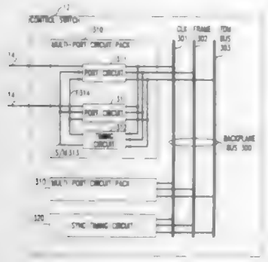
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5,388,102

ARRANGEMENT FOR SYNCHRONIZING A PLURALITY OF BASE STATIONS

Gary L. Griffith, Arvada; Michael L. Nienaber, Thornton, and Norman W. Petty, Boulder, all of Colo., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jul. 1, 1993, Ser. No. 86,678
Int. Cl.[6] H04L *7/08*
U.S. Cl. 370—105.1 23 Claims



18. A method of transporting a synchronization signal to a plurality of communications base stations each having operations synchronized to said synchronization signal received from a controller connected to the base stations by a plurality of links, comprising the steps of:

sending communications traffic from the controller to the base stations via the links, by using an ISDN protocol to transport the traffic on the links; and

sending the synchronization signal from the controller simultaneously to all of the base stations via the links to synchronize the operations of the base stations, by embedding the synchronization signal in the ISDN protocol on the links including

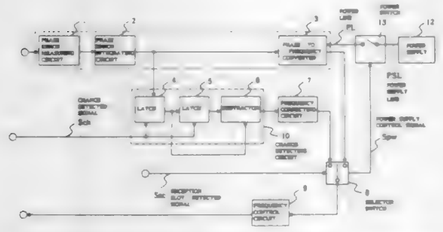
causing otherwise-unused bits of the ISDN protocol to transport the synchronization signal on the links.

5,388,103

FREQUENCY STABILIZER FOR USE IN PHASE-SHIFT KEYING RADIO COMMUNICATIONS SYSTEM

Junichi Ishii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 13, 1993, Ser. No. 135,408
Claims priority, application Japan, Oct. 13, 1992, 4-273953
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—100.1 8 Claims



1. A frequency stabilizer for use in a radio communications system for transmitting a signal modulated by phase-shift keying in a time-division multiplex process, comprising:

a phase error measuring circuit for measuring a phase error between a symbol point and a signal received by a receiver during a period of each of a plurality of reception time slots;

a phase error integrating circuit for integrating an output signal from said phase error measuring circuit;

a phase-to-frequency converter for converting an output signal from said phase error integrating circuit to a frequency error;

a power supply circuit for supplying electrical energy to said phase error measuring circuit, said phase error integrating circuit, and said phase-to-frequency converter;

a change detecting circuit for detecting an amount of change in integrated phase error which is output from said phase error integrating circuit during a fixed period of time;

a frequency correcting circuit for predicting a frequency correcting quantity between periods of successive ones of said reception time slots with an output signal from said change detecting circuit;

a selector switch for receiving the output signals from said phase-to-frequency converter and said frequency correcting circuit, and for selecting the output signal from said phase-to-frequency converter and outputting the selected output signal to an output terminal thereof during periods of the reception time slots, selecting the output signal from said frequency correcting circuit and outputting the selected output signal to the output terminal between said periods of successive ones of said reception time slots, and outputting a power supply control signal indicative of the presently selected output signal to said power supply circuit; and

a frequency controller for controlling the frequency of the receiver depending on an output signal from said selector switch;

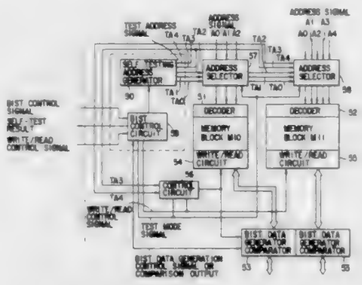
said power supply circuit comprising means for preventing electrical energy from being supplied to said phase error measuring circuit, said phase error integrating circuit, and said phase-to-frequency converter when the power supply circuit is supplied with said power supply control signal from said selector switch indicating that the selector switch is selecting the output signal from said frequency correcting circuit.

5,388,104

SEMICONDUCTOR INTEGRATED CIRCUIT CAPABLE OF TESTING MEMORY BLOCKS

Tsukasa Shirotori, Yokohama, and Kazutaka Nogami, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1991, Ser. No. 813,444
Claims priority, application Japan, Dec. 27, 1990, 2-418754
Int. Cl.[6] G11C *29/00*
U.S. Cl. 371—21.1 10 Claims



1. A semiconductor integrated circuit comprising:

a plurality of writable/readable memory blocks having different address spaces mounted on a same chip;

means for performing address scanning on said writable/-readable memory blocks simultaneously in a test mode based on at least one of the memory blocks having the largest address space from said memory blocks; and

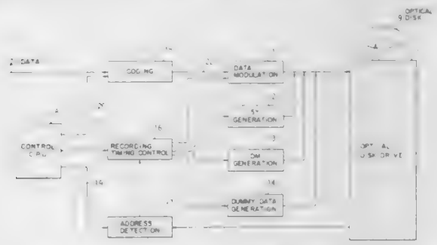
control means, coupled to the writable/readable the memory blocks, for disabling write operations in other memory blocks having a smaller address space than said at least one memory block having the largest address space during a period of the address scanning that exceeds address widths of said other memory blocks.

5,388,105

METHOD OF RECORDING/REPRODUCING OPTICAL DISK DATA

Yuji Takagi, Kadoma; Isao Satoh, Neyagawa, and Yuzuru Kuroki, Sapporo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 518,497, May 3, 1990, abandoned. This application Nov. 23, 1992, Ser. No. 980,438
Claims priority, application Japan, May 11, 1989, 1-118002
Int. Cl.[6] G06F *11/10;* H03M *13/00*
U.S. Cl. 371—37.7 6 Claims



1. A method of recording data on each sector of a rewritable phase change optical disk having a plurality of sectors by a semiconductor laser having optical power in at least three variable modes including a recording mode, an erasing mode and a reproducing mode, said method comprising:

(a) coding data to be recorded in accordance with an error detection and correction code to provide an error detection and correction coded data block;

(b) providing a dummy data block having a predetermined signal with a predetermined signal length and appending said dummy data block to a rear end of said data block; and

(c) recording said data block and said dummy data block on an individual sector of said plurality of sectors so that a location where a level of said optical power changes from said recording or erasing mode to said reproducing mode at a rear end of said individual sector is separated from said data block by a distance corresponding to said predetermined signal length of said dummy block, thereby preventing a defect generated at said location from affecting said data block.

5,388,106

TUNABLE OPTICAL SOURCE FOR PRODUCING A COHERENT OPTICAL BEAM WITH A WIDE RANGE OF WAVELENGTH TUNING

Haruhiko Tabuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

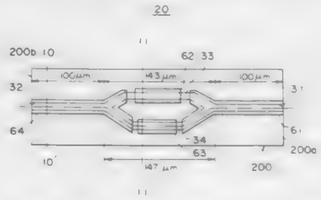
Continuation of Ser. No. 93,898, Jul. 20, 1993, abandoned, which is a continuation of Ser. No. 888,761, May 27, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 232,398
Claims priority, application Japan, May 27, 1991, 3-121306
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—20 28 Claims

1. A tunable laser diode, comprising:

first reflection means for reflecting an optical beam;

second reflection means for reflecting an optical beam;

optical cavity means, extending between said first reflection means and said second reflection means, for establishing an optical resonance by transmitting an optical beam therethrough, said optical cavity means comprising a first waveguide part having a first end connected to said first reflection means and a second, opposite end and exchanging an optical beam with said first reflection means, a second waveguide part having a first end connected to said second reflection means and a second, opposite end and exchanging an optical beam with said second reflection means, a third waveguide part connecting said second end of said first waveguide part and said second end of said second waveguide part with each other for passing a first optical beam between said first and second reflection means, and a fourth waveguide part connecting said first end of said first waveguide part and said second end of said second waveguide part separately from said third waveguide part for passing a second optical beam between said first and second reflection means, said third and fourth waveguide parts merging with each other at said second end of said first waveguide part, said third and fourth waveguide parts merging with each other at said second end of said second waveguide part, said first waveguide part, said second waveguide part and said third waveguide part forming a first optical path having a first optical path length between said first and second reflection means, said first waveguide part, said second waveguide part and said fourth waveguide part forming a second optical path having a second optical path length between said first and second reflection means, the second optical path length being different from the first optical path length;



optical amplification means, provided at least on one of said first and second waveguide parts of said optical cavity means, for amplifying an optical beam that passes therethrough;

refractive index modulation means, provided on said third and fourth waveguide parts of said optical cavity means, for changing a refractive index of said third waveguide part and a refractive index of said fourth waveguide part, relatively to each other; and

said third and fourth waveguide parts having respective, mutually different cross sectional structures supporting respective, and different, third and fourth numbers of optical waves therein.

5,388,107

Patent Not Issued For This Number

5,388,108

DELAYED INITIATION OF READ-MODIFY-WRITE PARITY OPERATIONS IN A RAID LEVEL 5 DISK ARRAY

Robert A. DeMoss, Wichita, and Keith B. DuLac, Derby, both of Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 23, 1992, Ser. No. 966,106
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—51.1 7 Claims

1. A method for updating data and associated parity information stored upon first and second disk drives, respectively, within a disk array upon the receipt of new data from a host system, said method comprising the steps of:

(A) reading old data from said first drive and saving said old data to a first storage buffer;

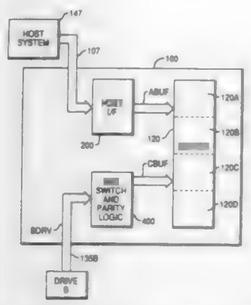
(B) writing said new data to a second storage buffer;

(C) replacing said old data residing on said first drive with said new data;

(D) issuing a write complete status signal indicating completion of said host write operation to said host system;

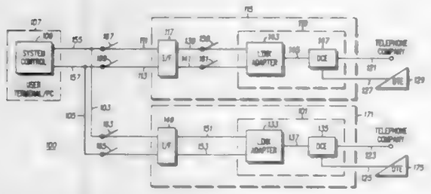
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(E) generating new parity information after the conclusion of step B;



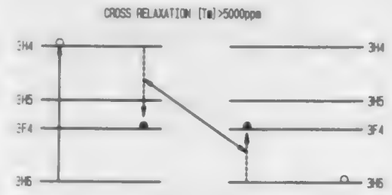
(F) replacing said old parity information residing on said second drive with said new parity information.

5,388,109
DATA COMMUNICATIONS DEVICE WITH RESIDENT LINK ADAPTER
Dean Y. Hodge; Terry Herbster; Robert E. Ray, Jr., all of Madison, and Fred C. Killmeyer, Huntsville, all of Ala., assignors to Universal Data Systems, Inc., Huntsville, Ala.
Continuation-in-part of Ser. No. 514,815, Apr. 26, 1990, abandoned. This application Jul. 17, 1992, Ser. No. 916,320
Int. Cl.[6] G06F *11/10*; H03M *13/00*
U.S. Cl. 371—53 **14 Claims**



11. A data communications device having an address and capable of communicating with a network management system controller, the data communications device comprising:
data communication means for communicating with at least one remote data communications device via a telephone line, and
means for interfacing with at least one data terminal equipment;
means for coupling to a local channel;
means for receiving messages from a network management system controller according to a predetermined receive method via the local channel;
means for sending messages to the network management system controller according to a predetermined transmit method via the local channel,
the receiving means and the sending means capable of communicating directly with the system controller; wherein the receiving means comprises:
means for receiving a first word;
means for determining whether the first word contains a predetermined value;
means for receiving a second, third, fourth, fifth, and sixth words if the first word contains the predetermined value;
means for determining whether the second, third, fourth and fifth words contain an error based on the value of the sixth word and a predetermined algorithm;
means for determining whether the value of the second word is >0;
means for receiving a predetermined number of subsequent words based on the value of the second word if the value of the second word is >0;
means for determining whether the subsequent words contain an error based on the value of the last subsequent word received and the predetermined algorithm;
means for determining whether the value of the third and fourth words contain the address;
means for processing at least one received word if the value of the third and fourth words contain the address.

5,388,110
SUPERLUMINESCENT LIGHT SOURCE FOR AN INTERFEROMETRIC FIBER OPTIC GYROSCOPE
Elias Snitzer, 8 Smoke Tree Close, Piscataway, N.J. 08854
Filed Apr. 30, 1993, Ser. No. 56,025
Int. Cl.[6] H01S *3/30*
U.S. Cl. 72—6 **28 Claims**

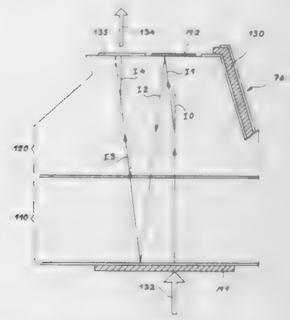


1. A superluminescent source of radiation in a wavelength region substantially centered at about 1.8 microns which comprises:
an optical fiber having a glass core which is doped with thulium ions; and
means for generating pump radiation and for coupling the pump radiation into the doped core, the doping of the thulium ions being sufficient so that the pump radiation excites the thulium ions to a 3F4 state to produce an optical gain 3F4–3H6 transition; wherein the optical fiber is configured so that superluminescent radiation is output from the optical fiber, whereby superluminescent radiation is output from the optical fiber in the wavelength region substantially centered at about 1.8 microns.

5,388,111
PROCESS FOR THE PRODUCTION OF AN ACOUSTOOPTICAL CELL FOR A SWITCHED LASER, THE CELL OBTAINED, PROCESS FOR THE COLLECTIVE PRODUCTION OF SWITCHED MICROCHIP LASERS AND MICROCHIP LASERS OBTAINED
Serge Valette, Grenoble, France, assignor to Commissariat A l'Energie Atomique, Paris, France
Filed Apr. 13, 1994, Ser. No. 227,283
Claims priority, application France, Apr. 14, 1993, 93 04375
Int. Cl.[6] H01S *3/11*
U.S. Cl. 372—13 **20 Claims**

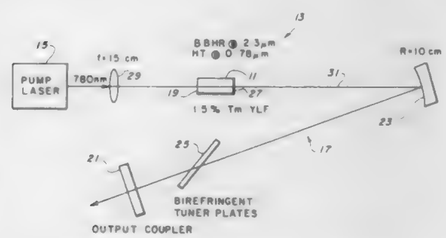
1. A process for the production of an acoustooptical cell for a switched laser, characterized in that it comprises performing the following operations:
a) starting with an acoustooptical material part (**20**) transparent to the amplification wavelength of the laser and able to propagate acoustic waves, said material being crystalline and having crystallographic planes, said part having a front face (**21**) oriented with respect to a selected crystallographic plane,
b) depositing on the front face (**21**) of said part a mask (**22**) having an edge (**24**) parallel to the path of the selected crystallographic plane on the front face (**21**),

c) carrying out anisotropic etching of the part through the mask (**22**), said etching giving rise to the appearance, along the edge of the mask, of an etched plane (**24, 30, 42**) corresponding to the selected crystallographic plane,



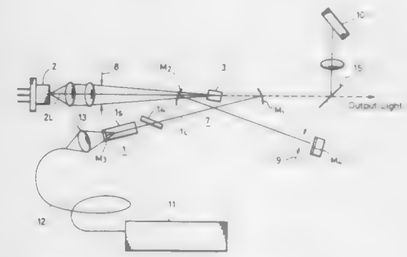
d) depositing on said etched plane (**24, 30, 42**) means able to produce an acoustic wave (**88**) in the material,
e) removing the mask.

5,388,112
DIODE-PUMPED, CONTINUOUSLY TUNABLE, 2.3 MICRON CW LASER
Leon Esterowitz, Springfield; Robert C. Stoneman, Alexandria, both of Va., and Joseph F. Pinto, Laurel, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 29, 1994, Ser. No. 235,844
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—20 **20 Claims**



1. A room-temperature solid state laser comprising:
means for emitting a CW pump beam at a preselected wavelength;
a laser cavity defined by a first reflective element, an output coupler reflective element and a folded mirror disposed between said first reflective element and said output coupler reflective element to form a reflective path therebetween in said laser cavity;
a laser crystal disposed in said laser cavity, said laser crystal having a host material doped with a concentration of Tm^{3+} activator ions sufficient to produce a laser emission on the $^3H_4$ to $^3H_5$ transition of the Tm^{3+} activator ions when the laser crystal is pumped by the CW pump beam at the preselected wavelength, said laser crystal being responsive to the CW pump beam at the preselected wavelength for producing a CW laser emission within a preselected range of wavelengths between about 2.20 microns and about 2.46 microns when said laser crystal is pumped by the CW pump beam at the preselected wavelength, said laser crystal having a first end face coated to be transmissive to the preselected wavelength of the CW pump beam and highly reflective at the wavelength of the CW laser emission produced by said laser crystal, and a second end face anti-reflection coated at the wavelength of the cW laser emission produced by said laser crystal, said folded mirror collimating the CW laser emission in the optical path between said folded mirror and said output coupler reflective element; and
means disposed in said laser cavity between said folded mirror reflective element and said output coupler reflective element for tuning the collimated Cw laser emission to any wavelength within the preselected range of wavelength between about 2.20 microns and about 2.46 microns.

5,388,113
LASER GENERATING APPARATUS
Michio Oka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 26, 1994, Ser. No. 186,753
Claims priority, application Japan, Jan. 27, 1993, 5-011292
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—21 **18 Claims**



1. A laser generating apparatus comprising.
a first fundamental wave light source for generating a first fundamental wave laser light having a first wavelength;
a second fundamental wave light source for generating a second fundamental wave laser light different from said first wavelength;
a nonlinear optical element for generating a sum frequency light having a wavelength of sums of wavelengths of said first and second fundamental wave laser lights; and
a resonator having a laser medium of said first fundamental wave light source and said nonlinear optical element disposed therein;
said resonator having first and second reflection mirrors which are disposed in an opposing relation to each other on at least opposing entrance and exit end faces of said nonlinear optical element;
said first and second reflection mirrors having transmissivities as high as possible relative to said second fundamental wave laser light and said sum frequency light and having a reflectivity as high as possible relative to said first fundamental wave laser light, wherein incident optical axes of said first and second fundamental wave laser lights relative to mirror surfaces of said first and second reflection mirrors are selected to be held in the oblique directions having predetermined angles that are not coincident with perpendicular lines of said mirror surfaces.

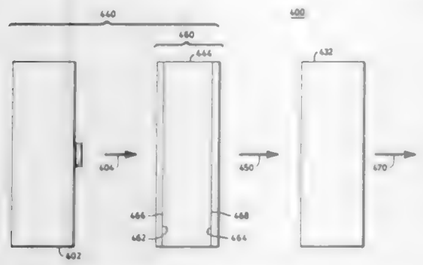
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5,388,114

MINIATURIZED SELF-Q-SWITCHED FREQUENCY-DOUBLED LASER

Joseph H. Zarrabi, Malden; Shobha Singh, Weston, and Pavle Gavrilovic, Brockton, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 17, 1994, Ser. No. 210,037
Int. Cl.[6] H01S *3/16, 3/11;* G02F *1/37*
U.S. Cl. 372—22 26 Claims



1. A laser, comprising:

a laser cavity comprising a self-frequency-doubling host material doped with at least two ionic species, where one of said ionic species absorbs energy at one wavelength λ_1, and emits it at another wavelength λ_2, larger than λ_1, said other ionic species having the property that it is a saturable absorber with respect to said first ionic species so that said other ionic species absorbs energy emitted from said first ionic species at wavelength λ_2 and emits energy within said cavity in the form of a series of high-intensity radiation pulses at wavelength λ_2;

a radiation source optically coupled with said laser cavity to pump said first ionic species so that it emits radiation at wavelength λ_2, which is then converted to said high-intensity radiation pulses at wavelength λ_2 via said other ionic species; and

means for providing feedback to said laser cavity so that it operates as a resonator at wavelength λ_2 to propagate said high-intensity pulses at wavelength λ_2 along its length so that said self-frequency-doubling host material operates to convert said high-intensity pulses at λ_2 into a series of high-intensity pulses at λ_3, and for transmitting said series of high-intensity pulses at wavelength λ_3, that is half the wavelength of λ_2, from said laser cavity so that they are available for use outside of said laser.

5,388,115

ABSOLUTE MEASURING APPARATUS USING LASER AND SCANNING MIRRORS

Hiroyuki Kawashima; Fumio Ohtomo; Susumu Saito, and Isao Minegishi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Japan

Filed May 17, 1993, Ser. No. 61,555
Claims priority, application Japan, May 20, 1992, 4-151136
Int. Cl.[6] H01S *3/10;* G01C *3/00*
U.S. Cl. 372—24 4 Claims

1. An absolute length measuring apparatus comprising:

light sources for emitting alternately a plurality of coherent light beams having different wavelengths;

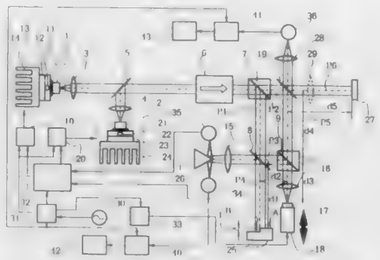
a beam splitter for splitting the coherent light beam from said light sources into two optical paths;

an object of measurement located on one of the two optical paths stemming from said beam splitter;

a scanning mirror located on the other optical path stemming from said beam splitter and made movable in the direction of optical axis;

a light receiver for receiving both the reflected light beam from said object of measurement and the reflected light beam from said scanning mirror through said beam splitter;

sampling parts for generating sampling signals of various wavelengths by sampling the output of said light receiver every time said light sources emit a coherent light beam while scanned by said scanning mirror; and



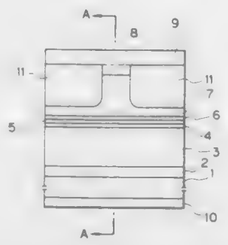
a distance measuring part for assuming a synthetic wavelength signal having a wavelength sufficiently greater than any individually generated wavelength based on the phase relations of said sampling signals, and for measuring the distance to said object of measurement in accordance with said synthetic wavelength signal.

5,388,116

SEMICONDUCTOR LASER DEVICE

Michio Ohkubo, and Toshio Kikuta, both of Kanagawa, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1993, Ser. No. 125,848
Claims priority, application Japan, Sep. 25, 1992, 4-280640; Nov. 11, 1992, 4-327474
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 14 Claims



1. A semiconductor laser device comprising a plurality of layers including an active layer and an electrode layer arranged on a semiconductor substrate to form a double heterostructure and having a current injection region extending through electrode layer and the active layer, a structural scheme being provided in a region located above the active layer in order to reduce the injection current level of the device.

5,388,117

POLARIZATION INSENSITIVE SEMICONDUCTOR OPTICAL AMPLIFIER AND AN OPTICAL COMMUNICATION SYSTEM USING THE SAME

Michiyo Nishimura, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

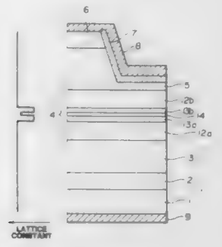
Filed Feb. 10, 1994, Ser. No. 194,273
Claims priority, application Japan, Feb. 19, 1993, 5-054983
Int. Cl.[6] H01S *3/19;* H04B *10/12;* G02B *6/12*
U.S. Cl. 372—45 14 Claims

1. A polarization insensitive optical amplifying apparatus for

imparting a gain to a light signal input thereto, said apparatus comprising:

a first semiconductor layer having a first lattice constant;

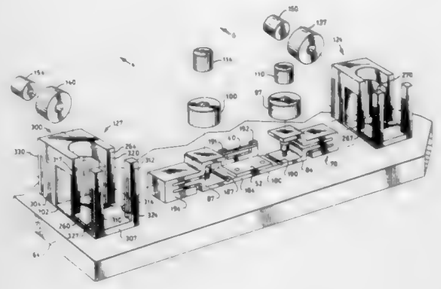
a second semiconductor layer, having a second lattice constant, and formed on at least said first semiconductor layer, the second lattice constant of said second semiconductor layer being less than the first lattice constant of said first semiconductor layer, and said second semiconductor layer undergoing a biaxial tensile stress because of a lattice mismatch between said first semiconductor layer and said



second semiconductor layer, and serving as a well layer for an active layer having a quantum well structure; and

a third semiconductor layer, having a third lattice constant, and formed on at least said first semiconductor layer, the third lattice constant of said third semiconductor layer being less than the first lattice constant of said first semiconductor layer, and said third semiconductor layer undergoing a biaxial tensile stress because of a lattice mismatch between said first semiconductor layer and said third semiconductor layer, and serving as a barrier layer of the active layer having the quantum well structure.

at least one laser diode array having aligned light emitting facets and fixedly mounted to said structural framework along one end thereof so that said emitting facets can emit radiation toward the opposite end thereof;



an elongated cylindrical microlens for receiving radiation from said laser diode array and directing it along a predetermined path of travel;

a first position control mechanism for aligning said elongated cylindrical microlens with said laser diode array to optimize the throughput of radiation therethrough, said position control mechanism comprising:

a pair of independently adjustable mechanical structures spaced apart from one another on said structural framework and adapted to support said elongated cylindrical microlens, each of said pair of independently adjustable mechanical structures having portions movable relative to said structural framework so that, in combination, they may be used for controlling both the linear position and angular relationship of said microlens in a first plane parallel to that of said structural framework, each of said independently adjustable mechanical structures comprising:

(A) at least two members of different stiffness including said movable portions and connected so that said movable portions of said members can be moved in a first direction with respect to one another while other portions cannot, said other unmovable portions of said members being fixedly mounted to said structural framework such that said movable portions of said members can be independently positioned relative thereto; and

(B) means for adjusting the spacing between said movable porticons of said members to provide for their controlled movement with respect to said structural framework, said movable portions of said members moving in said one direction at different rates with respect to said structural framework in accordance with their stiffnesses and the spacing imposed between them with the stiffer of said two members moving the least for a given spacing, said adjusting means including a coarse adjustment and a fine adjustment to provide for vernier positioning of said movable portions of said members with respect to said structural framework with the finest position control being of the movable portion of the stiffer of said members.

5,388,118

Patent Not Issued For This Number

5,388,119

MICROBENCH

David V. Cronin, Peabody, and Louis J. Brozyna, Somerville, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

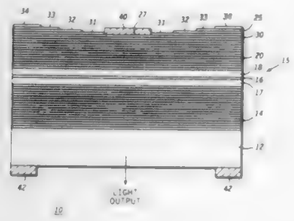
Division of Ser. No. 37,273, Mar. 26, 1993, Pat. No. 5,343,546.
This application May 17, 1994, Ser. No. 245,022
Int. Cl.[6] H01S *3/09*
U.S. Cl. 372—69 4 Claims

1. A pump source for optically pumping an optical fiber laser, said pump source comprising:

a generally planar structural framework;

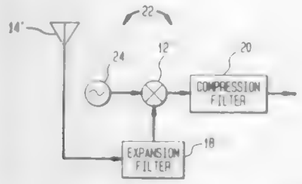
VOL 1171 ISS 1 FEB 7 1995 UMI

5,388,120
VCSEL WITH UNSTABLE RESONATOR
Donald E. Ackley, Lambertville, N.J.; Chan-Long Shieh, Paradise Valley, and Michael S. Lebby, Apache Junction, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 21, 1993, Ser. No. 124,065
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—99 12 Claims



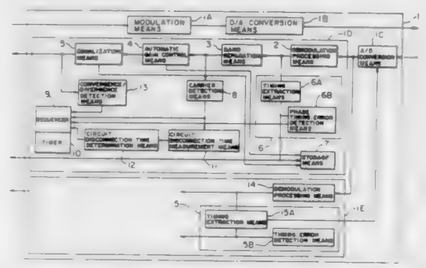
1. An unstable resonator for a vertical cavity laser including a first semiconductor mirror stack, a plurality of semiconductor layers forming an active region positioned on the first semiconductor mirror stack, a second semiconductor mirror stack positioned on the active region so as to sandwich the active region between the first and second semiconductor mirror stacks, and the second semiconductor mirror stack being formed with more semiconductor layers adjacent an edge of the second semiconductor stack than in a central portion thereof so as to spatially modulate the reflectivity of the second semiconductor mirror stack such that reflectivity is reduced in the central portion of the second semiconductor mirror stack and increases toward the edge.

5,388,121
MODIFIED CHIRP-Z PULSE DETECTOR
William J. Skudera, Jr., Oceanport, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 25, 1994, Ser. No. 233,561
Int. Cl.[6] H04L *27/30*
U.S. Cl. 375—1 7 Claims



1. A static Chirp-Z transform circuit for detecting an RF pulse in signals applied thereto, at a gain substantially equal to that realized with dynamic Chirp-Z transform circuits, comprising:
a mixer having two inputs and one output;
an oscillator having a fixed output frequency which is applied to one input of the mixer;
an expansion filter having an input and an output with the latter being connected to the other input of the mixer; and
a compression filter having an input and an output with the former being connected to the output of the mixer and the static transform being presented at the latter when the signals are applied to the input of the expansion filter.

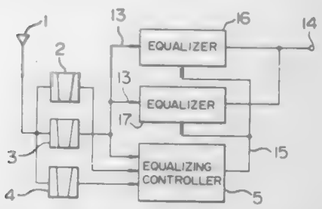
5,388,122
MODULATION AND DEMODULATION SYSTEM
Noboru Kawada, and Yuri Niguki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Aug. 19, 1993, Ser. No. 109,043
Claims priority, application Japan, Feb. 18, 1993, 5-029368
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—8 23 Claims



9. A modulation and demodulation system wherein a signal is communicated in a main channel for main data and a secondary channel for secondary data obtained by frequency division, comprising:
modulation means for modulating and transmitting main data and secondary data;
demodulation means for receiving and demodulating a receive signal to reproduce main data and secondary data; and
analog to digital conversion means for converting the receive signal from an analog signal into a digital signal and for sampling the main data of the main channel and the secondary data of the secondary channel outputted to said demodulation means using a frequency timing extracted from the secondary channel as a sampling timing for said sampling when said demodulation means reproduces said main data and said secondary data;
said demodulation means further including phase timing error detection means for detecting an error of phase timing information extracted from the main channel;
said demodulation means performing re-leading-in processing of timing information when said phase timing error detection means detects the error of the phase timing information.

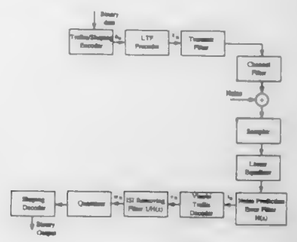
5,388,123
DATA RECEIVING SYSTEM
Mitsuru Uesugi; Kazuhisa Tsubaki, and Kouichi Honma, all of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 21, 1992, Ser. No. 871,810
Claims priority, application Japan, May 10, 1991, 3-105992
Int. Cl.[6] H03K *5/159*
U.S. Cl. 375—14 13 Claims

1. A data receiving system, comprising:
a receiving filter for taking out from a received signal an output comprising a signal of a principal wave and signals of channels adjacent to said principal wave
an equalizer for removing a distortion in a transmission path from at least a portion of said output by selectively performing one of fractional interval equalization and linear decision feedback equalization; and



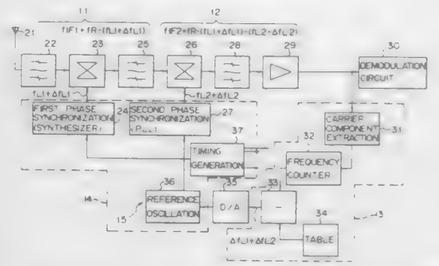
an equalizing controller for deciding, in accordance with said output, which one of said fractional interval equalization and said linear decision feedback equalization is to be performed by said equalizer.

5,388,124
PRECODING SCHEME FOR TRANSMITTING DATA USING OPTIMALLY-SHAPED CONSTELLATIONS OVER INTERSYMBOL-INTERFERENCE CHANNELS
Rajiv Laroia, Silver Spring; Nariman Farvardin, Rockville, and Steven A. Tretter, Silver Spring, all of Md., assignors to University of Maryland, College Park, Md.
Filed Jun. 12, 1992, Ser. No. 897,477
Int. Cl.[6] H04L *25/34, 5/12*
U.S. Cl. 375—17 15 Claims



11. A digital communication apparatus that transmits binary data from a transmitter to a receiver over intersymbol interference channels with data processing components which are serially connected in the following order comprising:
a) a means for entering input binary data to the apparatus,
b) a data shaping encoder means for generating multidimensional signal constellation points,
c) a trellis encoder means,
d) a Laroia-Tretter-Farvardin (LTF) precoder means for shaping and modifying trellis encoded multidimensional signal constellation points before transmission,
e) a transmit filter means,
f) a channel filter means,
g) a linear equalizer-sampler means,
h) a noise prediction-error filter means H(z) for i) whitening noise introduced into the channel, ii) reducing the variance of the noise in the channel and iii) in combination with the LTF precoder, generating output binary data that is always a sequence consistent with the trellis encoder means,
i) a Viterbi trellis decoder means for decoding the noise plus trellis sequence into a noiseless trellis sequence,
j) an intersymbol interference removing filter 1/H (z) and a quantizer encoder means for performing the inverse operation of that performed by the LTF precoder means, and
k) a shaping decoder means for outputting the binary data.

5,388,125
FREQUENCY CONVERTER CIRCUIT WITH IMPROVED INTERMEDIATE FREQUENCY STABILITY
Yoshifumi Toda, and Masahiro Onoda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Aug. 12, 1992, Ser. No. 928,420
Claims priority, application Japan, Aug. 12, 1991, 3-201990
Int. Cl.[6] H03D *3/22;* H04B *1/26*
U.S. Cl. 375—86 18 Claims



1. A frequency converter apparatus which receives a PSK modulated signal, the apparatus comprising:
a first frequency conversion device which receives the PSK modulated signal and a first local oscillation signal and mixes the received PSK modulated signal and the first local oscillation signal to thereby produce a first intermediate frequency signal having a respective frequency approximately equal to the difference between the respective frequencies of the received PSK modulated signal and the first local oscillation signal;
a second frequency conversion device which receives the first intermediate frequency signal and a second local oscillation signal and mixes the first intermediate frequency signal and the second local oscillation signal to thereby produce a second intermediate frequency signal having a respective frequency approximately equal to the difference between the respective frequencies of the first intermediate frequency and the second local oscillation signal; and
a frequency feedback loop comprising:
a frequency difference detection means for detecting the frequency difference between the actual frequency of the second intermediate frequency signal and the true value at which the frequency of the second intermediate frequency signal should be, and producing a corresponding detection output, the frequency difference detection means comprising a carrier component extraction unit which extracts the carrier component from the second intermediate frequency signal for use in determining the frequency difference, the carrier component being extracted by multiplying the second intermediate frequency signal by N, where N is an integer greater than or equal to two and N is determined by the number of shifts and the number of phases for defining the PSK modulation, and
a frequency control means, responsive to the detection output of the frequency difference detection means, for controlling in common the respective frequencies of the first intermediate frequency signal and the second intermediate frequency signal, the frequency control means comprising:
a reference oscillation unit which receives the detection output of the frequency difference detection means and produces an oscillation output having an oscillation frequency controlled in accordance with the received detection output,
a first phase synchronization unit which receives the oscillation output of the reference oscillation unit and synchronizes the phase of the first local oscillation

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signal with respect to the phase of the oscillation output, the first phase synchronization unit being a synthesizer circuit, and

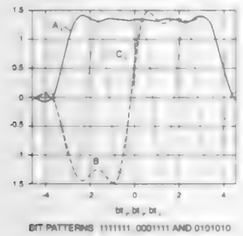
a second phase synchronization unit which receives the oscillation output of the reference oscillation unit and synchronizes the phase of the second local oscillation signal with respect to the phase of the oscillation output, the second phase synchronization unit being a phase-locked loop circuit.

5,388,126

BASEBAND SIGNAL PROCESSOR FOR A MICROWAVE RADIO RECEIVER

Chandos A. Rypinski, 655 Redwood Hwy. #340, Mill Valley, Calif. 94941, and Gerald L. Somer, 921 Transport Way., Petaluma, Calif. 94954

Filed Dec. 21, 1992, Ser. No. 994,538
Int. Cl.[6] H04L *7/06*
U.S. Cl. 375—113 13 Claims



1. In a digital radio transmission system having a source of binary digital information for transport in bursts from origin to destination, a signal source using that information to generate a bandwidth limited baseband binary waveform, a first transmitting transducer to linearly modulate that information bearing waveform upon a radio frequency carrier which is then amplified and applied to a first radio antenna which radiates the radio frequency energy containing carrier and information, a fading and time dispersive medium over which that radiated radio frequency carrier energy is transferred between source and destination, a second antenna capturing a fraction of that radiated energy, a second receiving transducer connected to said second antenna which demodulates the captured radiated energy and recovers the baseband waveform modulated at the transmitter except as modified by distortion in the transmission medium, and a signal processor to recover the original binary information from said recovered baseband waveform, said signal processor including means for block coding the transmitted digital stream into symbols of 7, 11 or 13 sub-bits, recognition means for detecting particular significant patterns of sub-bits within said symbols, said recognition means including an analog delay line tapped at regular intervals corresponding to the time duration of one sub-bit of said symbols, means for algebraically and linearly summing the signal levels at a number of consecutive taps to detect correlation between received and expected sub-bit patterns, and means for the selection of one or the other of opposed polarities at each tap which represents the expected polarity of the corresponding sub-bit at the collection points of a voltage or current summing network, the improvement comprising:

means for the use of only the Barker pattern for the synchronization of sub-bit and symbol clocks at the beginning of each burst;

means for the transfer of further data by use of one-of-four patterns to carry two-bits of data information per symbol, or one-of-N patterns where N equals the decimal representation of the number of bits per symbol when three or more bits per symbol are coded; and

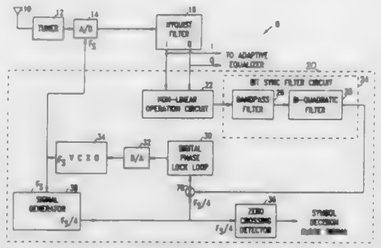
means for limiting sub-bit patterns within said symbols to those where there is a three sub-bit window in which there is no cross-correlation between allowed and possible patterns.

5,388,127

DIGITAL TIMING RECOVERY CIRCUIT

Carl G. Scarpa, Edison, N.J., assignor to Hitachi America, Ltd., Tarrytown, N.Y.

Filed Feb. 9, 1993, Ser. No. 15,490
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—120 15 Claims



1. A symbol timing recovery circuit, comprising:

an oscillator for generating a sampling frequency control signal, having a frequency of Fs, as a function of an average frequency error signal,

the oscillator having an average frequency error signal input for receiving the average frequency error signal and an output for outputting the sampling frequency control signal;

an analog to digital converter for generating a digital signal from an analog signal,

the analog to digital converter having an output for outputting the digital signal generated by the analog to digital converter, an analog signal input adapted for coupling to a tuner for receiving the analog signal from the tuner, and a sampling frequency control signal input coupled to the output of the oscillator for receiving the sampling frequency control signal and for controlling the rate at which the analog to digital converter samples the analog signal;

a Nyquist filter for filtering the digital signal to generate an in-phase signal,

the Nyquist filter having an input coupled to the digital signal output of the analog to digital converter for receiving the digital signal, and a first output for outputting the in-phase signal;

a non-linear operation circuit for performing a non-linear operation on the in-phase signal to generate a timing signal,

the non-linear operation circuit having a first input coupled to the first output of the Nyquist filter for receiving the in-phase signal, and an output for outputting the timing signal;

a digital bi-quadratic filter for filtering the timing signal to generate a quadrature-phase reference signal,

the hi-quadratic filter having a passband centered at a frequency of Fs/4, wherein Fs/4 is a fraction of the frequency Fs, an input coupled to the output of the non-linear operation circuit for receiving the timing signal and an output for outputting the quadrature-phase reference signal;

a signal generator for generating, as a function of the sampling frequency control signal, an internal clock signal having the frequency of Fs/4,

the signal generator having an input coupled to the output of the oscillator for receiving the sampling frequency control signal and an output for outputting the internal clock signal;

a cross-correlator for cross-correlating the internal clock signal and the quadrature-phase reference signal to generate a frequency error signal,

the cross-correlator having a first input coupled to the output of the signal generator for receiving the internal clock signal and a second input coupled to the output of the bi-quadratic filter for receiving the quadrature-phase reference signal, and an output for outputting the frequency error signal; and

a digital phase lock loop circuit for generating an average frequency error signal for adjusting the frequency of the sampling control signal generated by the oscillator,

the digital phase lock loop circuit having an input coupled to the output of the cross-correlator and an output coupled to the input of the oscillator; and

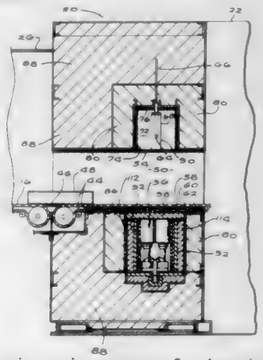
a means for generating a symbol decision clock signal from the internal clock signal coupled to the signal generator.

5,388,128

COMPOSITE CAVITY STRUCTURE FOR AN EXPLOSIVE DETECTION SYSTEM

Tsahi Gozani, Palo Alto, Calif., assignor to Science Applications International Corporation, San Diego, Calif.

Division of Ser. No. 508,235, Apr. 11, 1990, Pat. No. 5,162,096, which is a continuation of Ser. No. 54,329, May 26, 1987, abandoned. This application Aug. 18, 1992, Ser. No. 931,835
Int. Cl.[6] G21C *1/06*
U.S. Cl. 376—159 32 Claims



1. A composite cavity structure for detecting nitrogen in objects within a passageway in the cavity structure, including

a source of high energy neutrons, the source being disposed adjacent the passageway to direct neutrons into the passageway,

a plurality of nonchlorinated hydrogenous wall members disposed relative to one another to reduce the energy in at least a portion of the high energy neutrons passing into the passageway,

premoderator means formed for nonchlorinated hydrogenous material, the premoderator means being disposed adjacent the passageway and at least partially enveloping the source of high energy neutrons to reduce the energy in at least a portion of the neutrons,

first moderator means formed by heavy water, the first moderator means being disposed adjacent the passageway and being disposed relative to the source of neutrons and the premoderator means to reduce the energy in at least a further portion of the neutrons,

second moderator means formed by carbonaceous material, the second moderator means being disposed adjacent the passageway and being disposed relative to the first moderator means to reduce the energy in at least an additional portion of the neutrons and to provide for the movement of the additional portion of neutrons into the passageway, and

the combination of the premoderator means and the first and second moderator means and the nonchlorinated hydrogenous wall members moderating the neutrons produced by the neutron source to obtain the production of neutrons of reduced energy and to provide for an interreaction of the neutrons of the reduced energy with the nitrogen in the objects to produce gamma rays, and

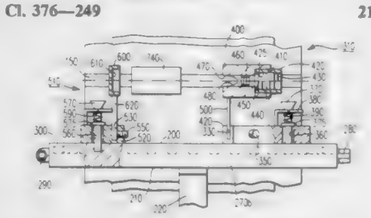
detector means disposed adjacent the passageway for detecting the gamma rays produced by the interreaction of the neutrons of the reduced energy with the nitrogen in the object.

5,388,129

APPARATUS AND METHOD FOR RADIOGRAPHIC INSPECTION OF WELDS

James L. Hartley, deceased,, late of Glenshaw, Pa. by Margaret C. Hartley, Executrix , assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sep. 1, 1993, Ser. No. 114,406
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—249 21 Claims



1. An apparatus for radiographic inspection of a weld circumscribing opposing ends of a generally tubular first member and a generally tubular second member, comprising:

(a) a track surrounding one of the members;

(b) radiation source means mounted on said track for passing a beam of radiation tangentially through the weld, said radiation source means including a collimator for collimating the radiation, so that the radiation passes tangentially through the weld;

(c) radiation shielding means mounted on said track for providing a shield against the beam of radiation; and

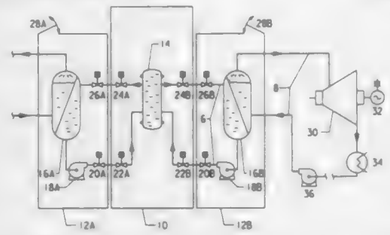
(d) radiation sensitive image recording means interposed between said radiation source means and said radiation shielding means and disposed adjacent the weld for capturing an image of the weld on said image recording means.

5,388,130

STEAM GENERATOR LOCATED OUTSIDE NUCLEAR POWER PLANT PRIMARY CONTAINMENT

Bekeny Posta, 3 Jasmine La., San Rafael, Calif. 94903

Filed Dec. 21, 1993, Ser. No. 171,322
Int. Cl.[6] G21C *13/00*
U.S. Cl. 376—293 12 Claims



1. A PWR nuclear power plant arrangement comprising:

a reactor located within a primary containment;

at least a first steam generator connected to said reactor, said first generator located outside said primary containment in a structure, said reactor located outside said structure; and

a non-radioactive steam user connected to said first steam generator, whereby said generator may be disconnected

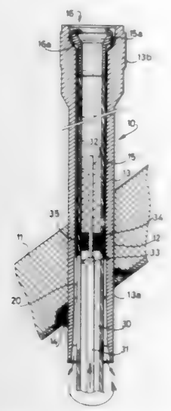
from said reactor without interrupting the operation of said reactor.

5,388,131

METHOD AND DEVICE FOR MACHINING THE INTERNAL SURFACE OF A TUBULAR COMPONENT AND IN PARTICULAR AN ADAPTOR FIXED TO THE VESSEL HEAD OF A PRESSURIZED WATER NUCLEAR REACTOR

Michel Batistoni, Le Bourg, and Pierre Pontvianne, Bethune, both of France, assignors to Framatome, Courbevoie, France

Filed Aug. 6, 1993, Ser. No. 102,785
Claims priority, application France, Aug. 6, 1992, 92 09789
Int. Cl.[6] G21C *21/00*; B24C *3/00*
U.S. Cl. 376—316 14 Claims



1. Method for machining the cylindrical internal surface of a tubular component such as an adaptor fixed to the vessel head of a pressurized water nuclear reactor, with removal of material to a monitored depth, in order to generate a new surface having defined geometrical and physical characteristics, by erosion under the effect of a high-speed liquid jet containing a pulverulent abrasive material, said method comprising the steps of directing said liquid jet at the surface of said component with an angle of incidence with a surface of said component between 30° and 90°, moving said jet so as to sweep over said internal surface of said tubular component, and carrying out at least two successive machining passes, the speed of sweeping over said surface of said component increasing from one pass to the next.

5,388,132

NUCLEAR FUEL ASSEMBLY AND CORE

Motoo Aoyama; Yasunori Bessho, both of Mito; Junichi Yamashita, Hitachi; Katsumasa Haikawa, Ibaraki; Hajime Umehara, Katsuta; Osamu Yokomizo, Ibaraki; Hideo Soneda, and Mitsunari Nakamura, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

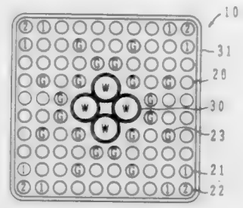
Filed Sep. 16, 1993, Ser. No. 121,898
Claims priority, application Japan, Sep. 18, 1992, 4-249454
Int. Cl.[6] G21C *3/328*
U.S. Cl. 376—435 21 Claims

15. A fuel assembly comprising a multiplicity of fuel rods filled with fuel pellets and arranged into a square lattice array, and at least one neutron moderator rod, the fuel pellets filled in said multiplicity of fuel rods having a maximum uranium enrichment not larger than 5 wt%, said multiplicity of fuel rods including a plurality of first fuel rods including no burnable absorbers and a plurality of second fuel rods including burnable absorbers, wherein:

(a) said multiplicity of fuel rods each have regions of upper and lower end portions thereof in which a mean uranium enrichment in one cross-section of said fuel assembly is lower than other region thereof;

(b) a ratio of the maximum uranium enrichment of said fuel pellets to the mean uranium enrichment in one cross-section of said fuel assembly in said other region is not larger than 1.16;

a percentage in number of said second fuel rods to said multiplicity of fuel rods is in the range of 20% to 30%, the uranium enrichment of the fuel pellets filled in said other region of each said second fuel rod being between the



maximum uranium enrichment of the fuel pellets filled in said multiplicity of fuel rods and a minimum uranium enrichment of the fuel pellets filled in said multiplicity of fuel rods; and

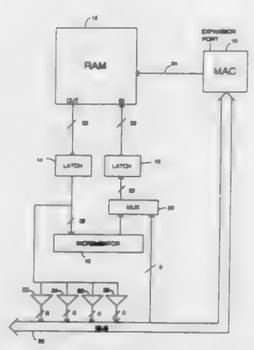
(d) said first fuel rods include a plurality of third fuel rods in which fuel pellets filled in said other region of each of said third fuel rod have a uranium enrichment higher than the mean uranium enrichment in one cross-section of said fuel assembly in said other region, a percentage in number of said third fuel rods to said first fuel rods being not less than 75%.

5,388,133

COUNTER FOR ATTRIBUTE STORAGE FOR USE IN A REPEATER

Nader Vijeh, Sunnyvale, and William Lo, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 22, 1993, Ser. No. 20,490
Int. Cl.[6] G06M *3/06*
U.S. Cl. 377—13 12 Claims



1. A counter for attribute storage in a repeater based system, the repeater based system including an internal bus, the counter comprising:

random access memory (RAM) means for storing attribute information;

means coupled to the RAM means for reading the attribute information responsive to control signals from the repeater based system;

first latching means for receiving attribute information read from the RAM means;

means coupled to the first latching means for incrementing the attribute information;

multiplexer means coupled to the internal bus and the incrementing means for receiving a source address, for receiving the incremented attribute information and for sending the source address at a predetermined bit rate;

second latching means coupled to the multiplexer means and the RAM means for receiving the incremented attribute information and the source address at the predetermined bit rate to allow for access to the RAM means at the predetermined bit rate; and

means coupled to the second latching means for writing the incremented attribute information into the RAM means responsive to the control signals wherein the reading means and the writing means comprises a media access controller (MAC).

5,388,135

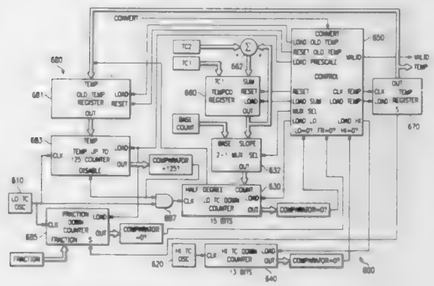
Patent Not Issued For This Number

5,388,134

INTEGRATED CIRCUIT THERMOMETER

James M. Douglass, Farmers Branch; Gary V. Zanders, Dallas, and Robert D. Lee, Denton, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Filed Feb. 5, 1993, Ser. No. 13,883
Int. Cl.[6] G01K *7/32*
U.S. Cl. 377—25 73 Claims



1. A temperature detector, comprising:

(a) a temperature-to-time first converter, said temperature-to-time first converter outputting a time interval with a length depending upon an input temperature; and

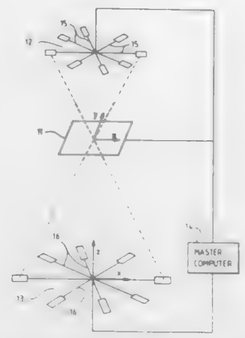
(b) a time-to-number second converter, said time-to-number second converter with input coupled to receive said time interval outputted by said temperature-to-time first converter, said time-to-number second converter approximates said number version of said input temperature by fitting at least a second-order mathematical model to said time interval and outputs a number version of said input temperature.

5,388,136

X-RAY INSPECTION APPARATUS FOR ELECTRONIC CIRCUITS

David K. Halliday, Greenock; Colin D. McCall; Alexander S. McKinnon, both of Gourock, and Christopher D. Smith, Glasgow, all of Scotland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 24, 1993, Ser. No. 65,010
Claims priority, application United Kingdom, Jul. 3, 1992, 9214114
Int. Cl.[6] G01N *23/04*
U.S. Cl. 378—58 7 Claims



1. An X-ray inspection apparatus for electronic circuits comprising:

means for directing X-rays to produce X-ray images representing illuminations of circuit elements from different angles; and

detecting means for detecting said images;

said inspection being characterized in that said detecting means comprises a plurality of detectors, each of said detectors positioned to intercept X-rays after passing through a circuit element from a particular associated angle of illumination, and

said detectors being:

disposed symmetrically about an axis orthogonal to the plane in which the illuminated circuit element lies,

radially movable with respect to said axis, and

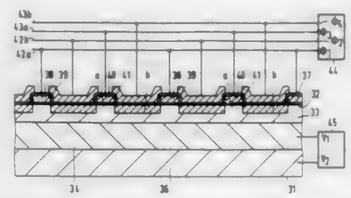
laterally movable along said axis.

5,388,137

BURIED CHANNEL CHARGE COUPLED DEVICE

Jan T. J. Bosiers, and Agnes C. M. Kleimann, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 2, 1994, Ser. No. 204,720
Claims priority, application European Pat. Off., Mar. 3, 1993, 93200598
Int. Cl.[6] G11C *19/28*; H01L *29/796*
U.S. Cl. 377—58 6 Claims



1. A charge coupled device of the buried channel type with a semiconductor body comprising a first layer of a first con-

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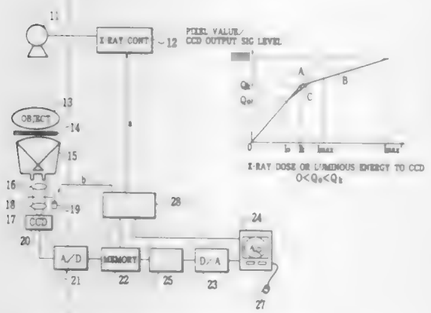
ductivity type which adjoins a surface of the body and which forms a buried channel for storage and transport of electric charge, a second layer of the second conductivity type opposite to the first which lies below and adjoins the first layer and forms a barrier layer, and a third layer of the first conductivity type which lies below and adjoins the second layer and through which excess charge can be drained from the first layer, the surface being provided with a system of electrodes with a series of gates which are situated above the buried channel and which are connected to a voltage source for the at least temporary application of such a voltage to the gates that an inversion layer of the second conductivity type adjoining the surface is formed below the gates, and means being provided for obtaining a built-in potential difference in the channel whereby potential wells in which charge can be stored alternating with potential barriers are formed in the channel upon the application of equal voltages to the gates, characterized in that said means are so situated in relation to the gates that, at said equal voltages at the gates, potential wells are formed below gates of a first group and potential barriers are formed below gates of a second group electrically insulated from the gates of the first group, and in that clock voltages are applied to the gates for the transport of charge packages with a first level at which a potential well is formed in the channel and with a second level at which a potential barrier is formed in the channel, at least one of the first and the second levels of the clock voltages having such a d.c. difference that the built-in potential difference is at least partly compensated.

5,388,138

X-RAY DIAGNOSTIC APPARATUS

Shigemi Fujiwara, Tochigiken, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Nov. 26, 1993, Ser. No. 157,278
Claims priority, application Japan, Nov. 27, 1992, 4-317586
Int. Cl.[6] H05G *1/42*
U.S. Cl. 378—108 **12 Claims**



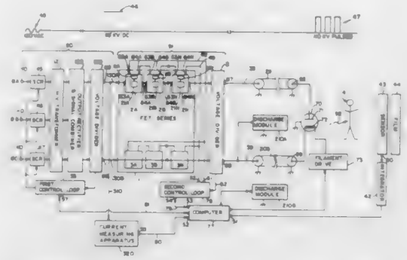
1. An X-ray diagnostic apparatus comprising:
an X-ray tube;
an X-ray controller for controlling a dose of X-rays generated by said X-ray tube;
an image intensifier for converting X-rays radiated by said X-ray tube and passed through an object to be diagnosed, into an optical image;
an optical system through which the optical image is passed;
an image forming device for transducing the optical image obtained through said optical system into electric signals, said image forming device being provided with Knee characteristics such that photoelectric transduction characteristics into the electric signals has a point of inflection beyond which gradient thereof is reduced;
a memory device for storing the electric signals outputted by said image forming device;
an image displaying unit for processing the electric signals of said memory device for display of diagnosis information of the object to be diagnosed;
interest region determining means for determining a region of interest with respect to the diagnosis information displayed on said image display unit; and
luminous energy control means for controlling the dose of the X-rays through said X-ray controller on the basis of pixel values of said image forming device obtained in the determined region of interest, in such a way that values on the photoelectric transduction characteristics are always kept lower than a value at the point of inflection.

5,388,139

HIGH-VOLTAGE POWER SUPPLY AND REGULATOR CIRCUIT FOR AN X-RAY TUBE WITH CLOSED-LOOP FEEDBACK FOR CONTROLLING X-RAY EXPOSURE

Robert Beland, Bellefeuille, Canada, assignor to Electromed International, Quebec, Canada

Division of Ser. No. 931,899, Aug. 18, 1992, Pat. No. 5,241,260, which is a continuation of Ser. No. 467,658, Jan. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 447,559, Dec. 7, 1989, Pat. No. 5,023,769, and a continuation-in-part of Ser. No. 447,338, Dec. 7, 1989, Pat. No. 5,056,125, and a continuation-in-part of Ser. No. 447,389, Dec. 7, 1989, abandoned. This application Jun. 4, 1993, Ser. No. 72,483
Int. Cl.[6] H05G *1/20*
U.S. Cl. 378—112 **18 Claims**



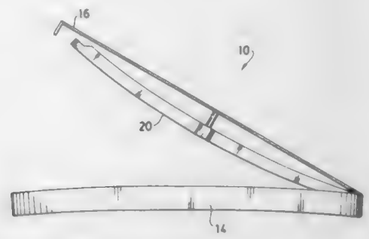
1. Apparatus for supplying operating power to an X-ray generating source, wherein the source projects X-ray radiation toward a patient, a portion of the radiation passing through the patient and being utilized to produce an image of the patient, the apparatus comprising:
a power supply means for receiving a low-voltage input signal and producing a high-voltage output signal, said power supply means comprising:
first control means for receiving the low-voltage input signal of one or more phases, the first control means separately controlling the one or more phases of the input signal to produce one or more single-phase input signals;
voltage transforming and combining means for receiving selective portions of the single-phase input signals from the first control means and producing a high-voltage supply signal; and
means for monitoring the high-voltage supply signal and generating a first control signal which is sent to the first control means for controlling which selective portions of each of the single-phase input signals that are applied to the transforming means to cause the high-voltage supply signal to approach a predetermined magnitude, the first control means including solid-state switching devices which are selectively activated by the first control signal;
second control means for receiving the high-voltage supply signal and regulating at least one of the duration and amplitude of the high-voltage supply signal to produce a high-voltage output signal for operating the X-ray generating source, said second control means including a plurality of solid-state switching means arranged in series, and feedback control means for controlling each of the switching means to produce the high-voltage output signal;
means for receiving X-ray radiation which has passed through a patient and generating a feedback signal representative thereof, wherein the feedback control means is responsive to the feedback signal for controlling at least one of the magnitude and duration of the output signal and thus controlling the amount of X-ray radiation received by the patient.

5,388,140

FILM CASSETTE

Jeffrey C. Robertson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1993, Ser. No. 85,536
Int. Cl.[6] G03B *41/16*
U.S. Cl. 378—187 **26 Claims**



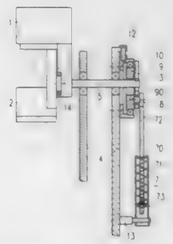
17. An x-ray film cassette comprising:
a base which is substantially convex in both the length and width directions;
a cover adapted to close upon and cooperate with said base;
a pressure plate which is substantially convex in the length and width directions disposed between said cover and said base, said cover, base and pressure plate forming a light-tight space for receiving a sheet of film;
an intensifying screen secured directly to said pressure plate; and
at least one biasing member for biasing said pressure plate against said base when said cover is closed on said base, said pressure plate and said base each having a configuration such that when said cassette is closed, a predetermined pressure distribution is applied to a sheet of film placed in the cassette.

5,388,141

X-RAY APPARATUS COMPRISING AN APPARATUS SECTION WHICH IS PIVOTABLE ABOUT A HORIZONTAL PIVOTAL AXIS

Ulrich Hove, Norderstedt, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 14, 1994, Ser. No. 182,257
Claims priority, application Germany, Jan. 14, 1993, 4300796
Int. Cl.[6] A61B *6/04*
U.S. Cl. 378—197 **8 Claims**



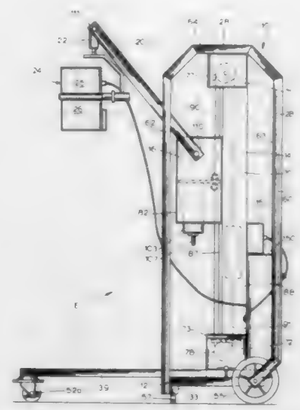
1. An X-ray apparatus, comprising an apparatus section (1, 2) which is pivotable about a horizontal pivotal axis (3) that does not extend through the centre of gravity of said apparatus section, and also comprising a spring assembly (7) for compensation of the torque which is exerted by the weight of the apparatus section on a coupling member (8) which moves in an orbit (100) about the pivotal axis (3) during pivoting of the apparatus section, characterized in that the centre (11) of the orbit (100) is situated outside the pivotal axis (3) in a vertical plane containing the pivotal axis (3), the coupling member (8) being guided in a guide device (9, 90) which is connected to the apparatus section and which extends towards the pivotal axis.

5,388,142

PORTABLE RADIOGRAPHIC DEVICE

William W. Morris, Woodstock, Ill., assignor to X-Cel X-Ray Corporation, Crystal Lake, Ill.

Continuation-in-part of Ser. No. 944,496, Sep. 14, 1992, Pat. No. 5,283,823, which is a continuation-in-part of Ser. No. 800,154, Nov. 27, 1991, abandoned. This application Nov. 16, 1993, Ser. No. 153,212
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[6] A16B *6/10*
U.S. Cl. 378—198 **6 Claims**



1. A portable radiographic unit adapted to be placed in an open or collapsed position, said unit comprising:
a base assembly;
a first movable means connected to the base assembly for permitting said base assembly to be moved from one position to another;
at least one leg extension member;
said leg extension member having a first end pivotally connected to said base assembly and a second outboard end positioned away from said base assembly when said unit is in an open position;
movable means connected to said leg extension member for assisting in permitting said unit to be moved from one position to another;
means connected to said assembly for permitting the manual movement of said unit from one position to another;
a column assembly including a column extending upward from said base assembly;
a carriage assembly connected to said column assembly, said carriage assembly including means for permitting said carriage assembly to travel along at least a portion of the length of said column;
at least one arm extension member, said member having first and second ends;

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said first end of said first arm extension member being pivotally connected to and extending outward from said carriage assembly;

a first means for maintaining said carriage assembly in a selected position along the length of said column;

a second means for maintaining said arm extension member in a selected position relative to said carriage assembly;

a radiographic head; and

means for releasably connecting said radiographic head to said second arm extension member end.

5,388,143

ALIGNMENT METHOD FOR RADIOGRAPHY AND RADIOGRAPHY APPARATUS INCORPORATING SAME

Heber MacMahon, Chicago, Ill., assignor to Arch Development Corporation, Chicago, Ill.

Filed Nov. 26, 1993, Ser. No. 158,599
Int. Cl.[6] A61B *6/08*
U.S. Cl. 378—206 **18 Claims**



8. A method of aligning an x-ray source and an anti-scatter grid in a radiography apparatus, comprising:

projecting light from a first position substantially fixed relative to said grid;

forming an image of said light projected from said first position at a second position substantially fixed to said x-ray source;

projecting light from a third position substantially fixed relative to said x-ray source; and

forming an image of said light projected from said third position at a fourth position substantially fixed relative to said grid.

5,388,144

AUTOMATIC EMERGENCY DIALER

John D. Nichols, 1716 21st St., Anson, Tex. 79501

Filed Sep. 13, 1993, Ser. No. 119,538
Int. Cl.[6] H04M *11/00, 11/04*
U.S. Cl. 379—40 **4 Claims**

1. A fail-safe system for automatically dialing an emergency telephone number in response to a danger signal, and for using a return telephone call to activate an alarm, comprising:

a cam-like member having a series of irregularities in its perimeter;

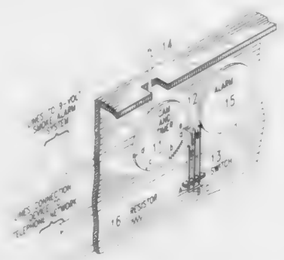
a cam follower engaging said perimeter;

electrical contacts controlled by the motion of said follower;

means connecting said contacts to a telephone line, including resistance means for simulating a telephone circuit;

means for actuating said cam-like member responsive to a danger signal, thereby causing the number of an emergency station to be dialed; and

an alarm in combination with means for connecting said phone line to said alarm, subsequent to said dialing function, so that an incoming return call from the emergency station will energize said alarm.

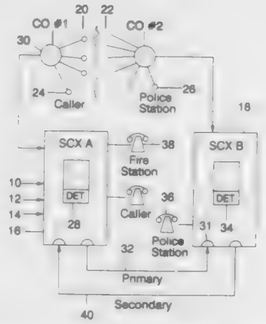


5,388,145

INTERNODE ROUTING FOR A TELEPHONE SYSTEM

Robert J. Mulrow, Wheaton, and Donald J. Jester, Lisle, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 12, 1992, Ser. No. 975,241
Int. Cl.[6] H04M *7/00, 11/00*
U.S. Cl. 379—45 **12 Claims**



1. An internode routing for an emergency telephone system, comprising:

first switch means for routing emergency telephone calls;

second switch means for routing emergency telephone calls;

means for defining emergency service zones for each of the first and second switch means; and

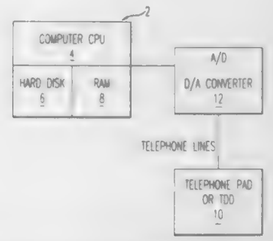
means in the first and second switch means for transferring a telephone call placed to the first switch means to the second switch means for completion to a public safety answering point responsive to a condition of the public safety answering point being located in the emergency service zone associated with the second switch means, wherein the second switch means includes means for determining whether the first or second switch means should service the emergency service zone associated with a telephone number of a calling party.

5,388,146

AUTOMATED TELEPHONE SYSTEM USING MULTIPLE LANGUAGES

Georg E. Morduch, Alexandria, Va., and Joe J. Lynn, Gaithersburg, Md., assignors to Microlog Corporation, Germantown, Md.

Filed Nov. 12, 1991, Ser. No. 790,257
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—52 **20 Claims**



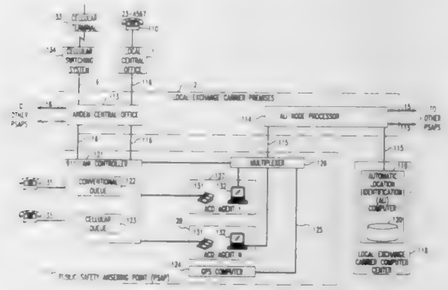
3. An automated answering system comprising a computer memory for storing messages and means for recalling messages from said computer memory by respective names, said messages including a first message in a first format and a second message in a second format, the informational content of said first and second messages being substantially identical, each of said respective names having a first part which is unique and a second part which is common to said first and second messages, said first part representing a unique directory in said memory and said second part representing a location in a directory.

5,388,147

CELLULAR TELECOMMUNICATION SWITCHING SYSTEM FOR PROVIDING PUBLIC EMERGENCY CALL LOCATION INFORMATION

Gary J. Grimes, Thornton, Colo., assignor to AT&T Corp., Murray Hill, N.J.

Filed Aug. 30, 1993, Ser. No. 113,948
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—59 **16 Claims**



1. A cellular switching system for providing public emergency call service to a cellular telephone set, comprising:

means for detecting a public emergency call from a cellular telephone set;

means for requesting the transmission of geo-coordinates from the cellular telephone set;

means for converting the geo-coordinates received as digital information from the cellular telephone set to location information;

means for establishing a digital link to the public safety answering point system;

means for transmitting the location information to a public safety answering point system and for establishing a voice communication path between the cellular telephone set and the public safety answering point system;

the convening means further adapted for translating the location information into audio information upon the means for establishing the digital link being unable to establish a digital link to the public safety answering point system; and

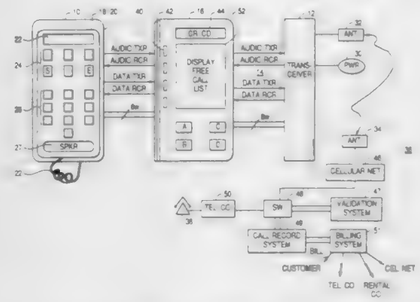
the transmitting means further adapted for communicating the audio information to the public safety answering point system.

5,388,148

CELLULAR TELEPHONE CALLING SYSTEM USING CREDIT CARD VALIDATION

Abe Seiderman, 165 Solano Prado, Coral Gables, Fla. 33156

Continuation-in-part of Ser. No. 743,972, Aug. 12, 1991. This application Mar. 11, 1993, Ser. No. 30,675
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—59 **22 Claims**



1. A credit card cellular telephone calling system for a cellular telephone having access to a cellular telephone system, telecommunications network and a remote supplemental telephonic device coupled thereto, said calling system comprising:

a cellular telephone having a handset and a transceiver unit coupled together via a power and communications bus;

a credit card interface unit coupled to said bus, said interface unit having means for reading and initially validating a credit card;

means for establishing a first telephonic communications link with said telecommunications network and for transmitting to said network credit card data, cellular telephone id data and input telephone number data respectively corresponding to said credit card, to said cellular telephone and to a telephone number input by a user into said handset;

user selectable interface means for displaying a plurality of free call destinations and for permitting selection of one of said plurality of free call destinations, each said free call destination having corresponding free call telephone number data associated therewith, said interface having means for substituting the free call number data for the input telephone number data upon selection by said user;

said network having:

a network transceiver, receiving said credit card data, cellular telephone id data and input telephone number data, and having:

means for ascertaining and recording the validity of said credit card data and said credit card data during said first telephonic communications link and before completion of a further telephonic communications link between said cellular telephone and a telephonic device corresponding to said input telephone number; and,

means for routing a call directed to said cellular telephone from said supplemental telephonic device after recording the validity of said credit card data and for recording a

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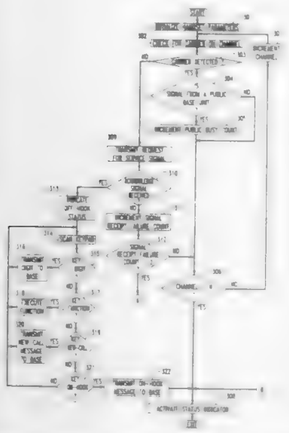
length of said call directed to said cellular telephone and billing said credit card for the same.

5,388,149

METHOD AND APPARATUS FOR DETERMINING AVAILABILITY OF A PUBLIC BASE UNIT FOR COMMUNICATING WITH A CORDLESS TELEPHONE IN A PUBLIC CORDLESS TELEPHONE SYSTEM

Dale E. Lynn, Freehold, and Edwin A. Muth, Matawan, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jun. 3, 1991, Ser. No. 712,177
Int. Cl.[6] H04N *11/00*
U.S. Cl. 379—61 **42 Claims**



1. A cordless telephone public base unit for operation in a public cordless telephone system, the public base unit being connectable to a telephone line for communicating with a central office and the telephone system including a plurality of cordless handset units for establishing communications with the public base unit over a plurality of communication channels occupyable by both the public base unit and a non-public base unit, the public base unit comprising:

means for communicating with a first one of the plurality of cordless handset units over one of the plurality of communication channels; and

means for inserting a signal in said one of the communication channels while communicating with said first one of the plurality of cordless handset units for providing to other of the plurality of cordless handset units identifying information for detection by said other of the plurality of cordless handset units while searching for an available communication channel, said identifying information being indicative of a public base unit communicating over said one of the communication channels.

5,388,150

AUTOMATIC INCOMING TELEPHONE CALL IDENTIFICATION AND DISPOSITION SYSTEM

Robin Schneyer, 3470 Brookdale Dr., Santa Clara, Calif. 95051, and Jing L. Gu, 1806 Yosemite Dr., Milpitas, Calif. 95035

Filed Jul. 28, 1992, Ser. No. 920,887
Int. Cl.[6] H04M *1/57, 3/02;* **H04J** *3/12*
U.S. Cl. 379—67 **19 Claims**

1. In combination with an analog non ISDN telephone line having a first, on-hook state and a second, off-hook state, and wherein voice transmission occurs only while in the off-hook state, an automatic incoming telephone call identification and disposition system comprising in operative combination:

a) a database containing a directory of telephone numbers and telephone number disposition calendars wherein:

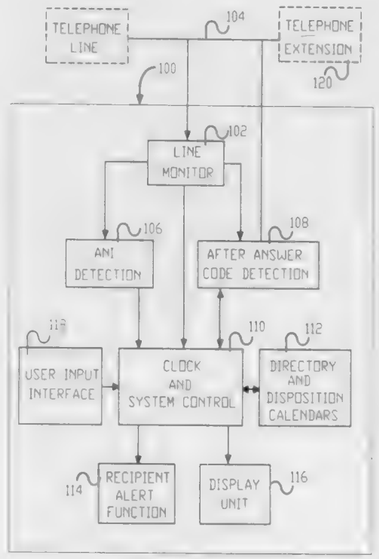
i) each telephone number entered in said database has an identifying code and a name associated therewith:

i) said telephone number disposition calendars contain information relating to one or more of a plurality of caller response options, each of which is individually selectable according to respective preselected access times and dates assigned to each of said telephone numbers;

b) line voltage monitoring means for monitoring line voltage on an analog telephone line connected to said system, said voltage monitoring means including:

i) means for detecting when a threshold line voltage is exceeded in order to determine whether said analog telephone line is in an on-hook state or an off-hook state;

ii) means for detecting a particular voltage fluctuation when said analog telephone line is in said on-hook state, said particular voltage fluctuation corresponding to a ring signal associated with an incoming telephone call



c) means for identifying the telephone number of said incoming call during said on-hook state of said analog telephone line;

d) means for requesting and detecting a code associated with said incoming call during an off-hook state of said analog telephone line:

e) system control means including a clock operative to assign a time and date stamp for each incoming call, compare at least one of the number and code of detected incoming calls to the telephone numbers and to disposition calendar information stored in said database, and execute an appropriate caller response option according to preselected disposition calendar information assigned to each telephone number;

f) means for displaying the entries of said directory;

g) user interface means operative to permit the addition, deletion or modification of telephone number and disposition calendar information contained in said database; and

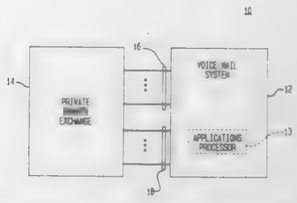
h) means for audibly alerting call recipients of an incoming call.

5,388,151

TECHNIQUE FOR REDUCING MESSAGE NOTIFICATION BLOCKAGE IN VOICE MAIL SYSTEMS

Zafar M. Khalid; Rachel Ramsay, and Brian Tennant, all of San Jose, Calif., assignors to Rolm Systems, Santa Clara, Calif.

Continuation of Ser. No. 955,530, Oct. 1, 1992, abandoned. This application May 20, 1994, Ser. No. 246,915
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—67 **9 Claims**



1. A method of reducing message notification blockage in a Voice Mail System which is connected by a switching system to a message recipient's extension on that switching system comprising the steps of:

(a) identifying a line connecting the Voice Mail System with the switching system;

(b) dedicating the line identified in step (a) for use in only providing message notification to recipients of a voicemail message received at the Voice Mail System by performing the substeps of:

(b1) accessing the switching system with the line identified in step (a); and

(b2) dialing a feature code used by the switching system for preventing incoming calls to the Voice Mail System from being sent over the line identified in step (a); and

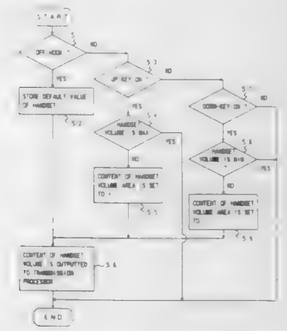
(c) repeating steps (a) and (b) for any other line connecting the Voice Mail System with the switching system to be dedicated for use in only providing message notification to recipients of voicemail messages.

5,388,152

KEY TELEPHONE SYSTEM CAPABLE OF REGULATING VOLUME OF HANDSET

Yoshihiro Kawauchi, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 7, 1993, Ser. No. 43,875
Claims priority, application Japan, Apr. 7, 1992, 4-085561
Int. Cl.[6] H04M *1/00, 9/00*
U.S. Cl. 379—157 **14 Claims**



1. A key telephone system including a main service unit having a main controller, a terminal interface and an office line interface, and a plurality of telephone terminals each connected to said terminal interface and each having conversion means and a handset for transmitting voice of a user as a speech signal to another user and converting a speech signal from the other user into voice, comprising:

default value storage means provided in said main service unit for storing a default value which is a control value for setting a volume of each said handset to a desired amount;

change input means provided in each of said telephone terminals for inputting a new default value in order to change said default value in each said handset;

default value renewal means provided in said main service unit for rewriting said default value as said new default value by selecting an input default value from said default value storage means when said default value of each said handset is changed and input through said change input means; and

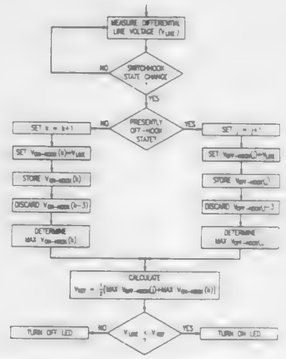
renewal default value setting means provided in said main service unit for fixing said new default value as a reference value of said handset at completion of a telephone call when said default value is changed to said new default value in each said handset, and enabling the telephone call to a desired volume by using said new default value in a next chance of the telephone call.

5,388,153

APPARATUS AND METHOD FOR DETECTING TELEPHONE LINE STATUS

Theodore O. Burger, Fairland; John A. Karpicke, Indianapolis; Donald M. Keen, Indianapolis; Donald R. Means, Indianapolis; Thomas A. Stahl, Indianapolis, and Brian A. Wittman, Indianapolis, all of Ind., assignors to AT&T Corp., Murray Hill, N.J.

Filed Mar. 26, 1993, Ser. No. 38,752
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—164 **17 Claims**



1. A telephone station including a switch for connecting said telephone station to a wire-pair used for communication, the switch functioning to cause the wire-pair to be in a first state when the switch is closed and in a second state when the switch is open, the telephone station further including apparatus for detecting the state of a wire-pair, said apparatus comprising:

means for measuring differential voltage magnitude, V_{LINE}, across the wire-pair;

means for storing a first magnitude of V_{LINE}, when the switch changes from being open to being closed;

means for measuring differential voltage magnitude, V_{LINE}, across the wire-pair; open to being closed;

means for storing a second magnitude of V_{LINE} when the switch changes from being closed to being open;

means for averaging the first and second stored magnitudes to form a reference voltage V_{REF}, said reference voltage being exclusively based on measurements of the first and second differential voltage magnitudes across the wire

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pair, but not upon any other stored parameter that relates to the impedance condition of the wire pair;

means for comparing the magnitudes of V_{REF} and V_{LINE} to determine which one is larger; and

means for indicating the results of said comparison.

5,388,154

ALPHABETIC TELEPHONE DIALER APPARATUS AND METHOD

William Solomon, 4818 W. Roscoe St., 2nd Flr., Chicago, Ill. 60641

Filed Dec. 23, 1993, Ser. No. 173,349
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—368 **15 Claims**



1. A telephone dialing apparatus for sending dialing signals over a communication path connecting a telephone to a switching office, the apparatus comprising:

a telephone dialing circuit having plural first inputs, plural second inputs and an output, connections between one of said first inputs and one of said second inputs generating a telephone dialing signal at the output in accordance with a predetermined telephone dialing plan;

an alphabetic keyboard device having a plurality of switch contacts each corresponding to a single letter of the alphabet assigned to an alphabetic key, which switch contacts connect one of said first inputs and one of said second inputs together at said telephone dialing circuit to generate the dialing signal at the output of said dialing circuit, said alphabetic keyboard device being connected to said first and second inputs in accordance with predetermined mapping of alphabetic representations to numeric keys provided on a standard 12-key telephone keypad by assigning a single letter to each of said alphabetic keys for generating the dialing signal at the output of said dialing circuit; and

means for coupling the telephone dialing signal from the output of said telephone dialing circuit to the communication path.

5,388,155

CORDLESS PHONE HOLDER ENABLING HANDS FREE USE

William G. Smith, 387 Waccamaw Shores Rd., Lake Waccamaw, N.C. 28450

Filed Aug. 7, 1992, Ser. No. 927,074
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—446 **16 Claims**

1. An apparatus to permit hands free operation of a cordless phone, comprising:

a portable housing open on one side and of generally oblong shape and sized larger than a standard cordless phone handset;

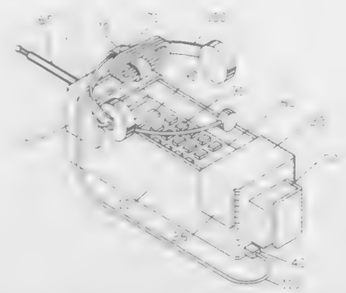
a first flap attached at a first end of said portable housing and situated so as to be foldable to enclose a portion of said first end of the open side of said portable housing;

a receiver means contained within said first flap;

a second flap attached at a second end of said portable housing and situated so as to be foldable to enclose a portion of said second end of the open side of said portable housing;

a speaker means contained within said second flap;

a battery for providing electrical power for said receiver means and said speaker means;



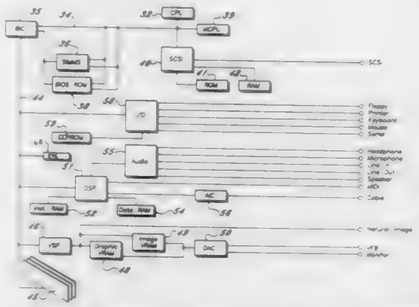
means for wiring said receiver means, said speaker means and said battery whereby said receiver means, said speaker means and said power battery are detachably electrically connected to a telephone headset.

5,388,156

PERSONAL COMPUTER SYSTEM WITH SECURITY FEATURES AND METHOD

John W. Blackledge, Jr.; Grant L. Clarke, Jr.; Richard A. Dayan, all of Boca Raton; Kimthanh D. Le, Boynton Beach; Patrick E. McCourt; Matthew T. Mittelstedt, both of Delray Beach; Dennis L. Moeller; Palmer E. Newman, both of Boca Raton; David L. Randall, Pompano Beach, and JoAnna B. Yoder, Delray Beach, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 26, 1992, Ser. No. 840,965
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—4 **19 Claims**



1. A personal computer system for receiving and retaining data and capable of securing data retained within the system against unauthorized access, the system comprising:

a normally closed enclosure,

an erasable memory element mounted within said enclosure for selective activation to active and inactive states and for receiving and storing a security password when in the active state,

a manually operable option switch mounted within said enclosure, said option switch being operatively connected with said erasable memory element and manually settable by a user of the personal computer system for setting said erasable memory element to the active and inactive states,

a tamper detection switch mounted within said enclosure and operatively connected with said erasable memory element for detecting opening of said enclosure and for clearing any stored security password from said erasable memory element in response to any switching of said tamper switch, and

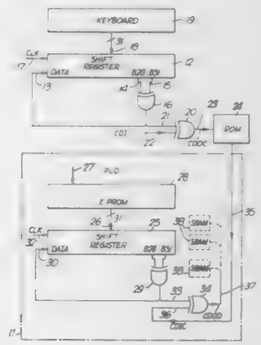
a system processor mounted within said enclosure and operatively connected with said erasable memory element for controlling access to at least certain levels of data stored within the system by distinguishing between the active and inactive states of said memory element and between entry and non-entry of any stored security password.

5,388,157

DATA SECURITY ARRANGEMENTS FOR SEMICONDUCTOR PROGRAMMABLE DEVICES

Kenneth Austin, Northwich, United Kingdom, assignor to Pilkington Micro-Electronics Limited, United Kingdom

Filed Oct. 6, 1992, Ser. No. 957,023
Claims priority, application United Kingdom, Oct. 11, 1991, 9121591
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—4 **14 Claims**



2. Circuit configuration apparatus comprising a programmable logic device and encrypting circuitry for providing encrypted circuit configuration data,

said programmable logic device comprising a semiconductor device having configurable circuitry that configures itself in accordance with data, an input circuit for receiving encrypted data, said encrypted data being used to determine the configuration of said configurable circuitry, decrypting circuitry connected to said input circuit to decrypt said encrypted data, a non-volatile data storage device connected to said decrypting circuitry and holding a key value for use in decrypting said encrypted data, and volatile storage circuitry connected both to said decrypting circuitry for receiving decrypted data from the decrypting circuitry and to said configurable circuitry whereby the configurable circuitry is configured in accordance with said decrypted data, and

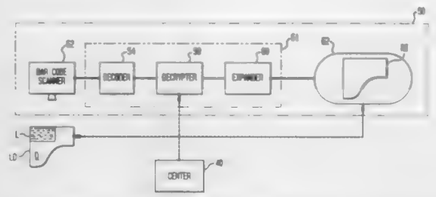
said encrypting circuitry having a first input circuit for receiving a key value which is the same as said key value for the programmable logic device, a second input circuit for receiving data defining circuit configuration of the programmable logic device, an output circuit for outputting said data in encrypted form, and a storage device for storing said data in encrypted form, said storage device having output circuitry for connection to said input circuit of said programmable logic device.

5,388,158

SECURE DOCUMENT AND METHOD AND APPARATUS FOR PRODUCING AND AUTHENTICATING SAME

William Berson, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 20, 1992, Ser. No. 979,116
Int. Cl.[6] H04L *9/32, 9/30, 9/08*
U.S. Cl. 380—23 **11 Claims**



1. A method of producing and authenticating a secure document comprising the steps of:

a) scanning said document to produce a first signal representative of an image of said at least a portion of said document;

b) encrypting a second signal, comprising a representation of said image, said second signal being derived at least in part from said first signal;

c) incorporating a coded representation of said encrypted second signal with said document;

d) reading said coded representation of said second signal from said document;

e) decoding said second signal;

f) decrypting said decoded second signal;

g) inputting said decrypted second signal to a display to display said representation of said image;

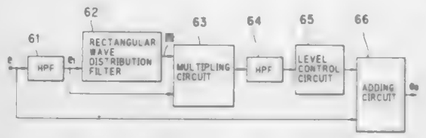
h) comparing said document to said displayed image to authenticate said document.

5,388,159

EQUALIZING CIRCUIT FOR REPRODUCED SIGNALS

Haruo Sakata, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 993,389
Claims priority, application Japan, Dec. 20, 1991, 3-355210; Jan. 10, 1992, 4-022026; Feb. 24, 1992, 4-072781; Mar. 13, 1992, 4-089895; Oct. 21, 1992, 4-308297
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—61 **7 Claims**



1. An audio signal equalizing circuit comprising:

filter means for separating, from an audio component signal, a first harmonic wave component signal which includes a sum component of an odd numbered harmonic wave component signal synthesized from a plurality of odd numbered harmonic wave components and an even numbered harmonic wave component signal synthesized from a plurality of even numbered harmonic wave components and a second harmonic wave component signal which includes a difference component between said odd numbered harmonic wave component signal and said even numbered harmonic wave component signal;

multiplying means for multiplying said first harmonic wave component signal by said second harmonic wave component signal to output a multiplication signal; and

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signal synthesizing means for combining said multiplication signal and said audio component signal to obtain a synthesized signal.

5,388,160

NOISE SUPPRESSOR

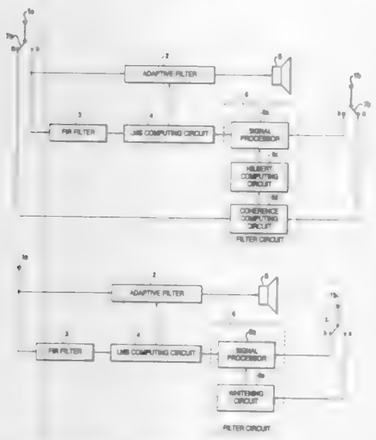
Hiroyuki Hashimoto; Kenichi Terai, both of Osaka; Yasutoshi Nakama; Hironari Ogata, both of Nara, and Chie Yano, Gifu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 8, 1992, Ser. No. 896,043

Claims priority, application Japan, Jun. 6, 1991, 3-134828; Jun. 27, 1991, 3-156572; Feb. 6, 1992, 4-020951

Int. Cl.[6] H03B *29/00*

U.S. Cl. 381—71 12 Claims



1. A noise suppressor comprising:

a first detector for detecting a noise signal from a noise source;

an adaptive filter for processing the noise signal detected by said first detector;

a speaker responsive to an output signal of said adaptive filter for reproducing a sound;

a second detector for detecting a noise signal at a predetermined evaluating point;

a filter circuit for processing the noise signal detected by said second detector;

a digital filter for processing the noise signal from said first detector by using a coefficient substantially equivalent to a transfer function from said speaker to said filter circuit including said second detector; and

a coefficient updating circuit for controlling a coefficient of said adaptive filter according to an output signal of said filter circuit and an output signal of said digital filter,

wherein said filter circuit has such a characteristic that passes only a frequency band in which there is a strong correlation between the noise signal detected by said first detector and the noise signal detected by said second detector, and comprises: a coherence computing circuit for computing a coherence of the noise signal detected by said first detector and the noise signal detected by said second detector before a noise control is activated; a Hilbert computing circuit for performing a Hilbert operation by an output signal from said coherence computing circuit; and a signal processor for processing the noise signal inputted thereto by a coefficient set by an output signal of said Hilbert computing circuit when the noise control is activated.

5,388,161

TONE ADJUSTING APPARATUS FOR AUDIO SIGNALS

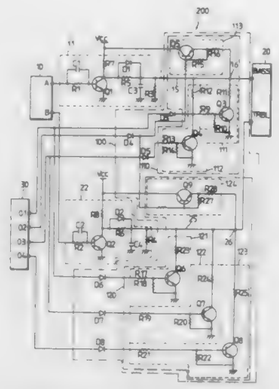
Keun Park, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 26, 1993, Ser. No. 112,764

Claims priority, application Rep. of Korea, Aug. 28, 1992, 92-15578

Int. Cl.[6] H03G *5/00*

U.S. Cl. 381—98 3 Claims



1. A tone adjusting apparatus for different types of audio signals for use with an audio signal processing system including a voltage converter for generating a bass and a treble control voltages necessary to control the bass and the treble bands of a given type of audio signal and a tone controller wherein the bass and the treble bands of the given type of audio signal are adjusted in proportion to the bass and the treble control voltages applied thereto, the apparatus comprising:

means for compensating the bass and the treble control voltages before the bass and the treble control voltages are applied to the tone controller, wherein the compensating means includes:

means for lowering the bass control voltage;

means for increasing the bass control voltage;

means for lowering the treble control voltage; and

means for increasing the treble control voltage, wherein each of the bass and the treble control voltage lowering means has a switching transistor whose base is adapted to receive the activating control signal, whose emitter is connected to ground and whose collector is connected to a path passing the respective bass and the treble control voltages to the tone controller, and a voltage dividing resistor connected between the path and the collector; and

means for detecting the characteristics of the given type of audio signal and for selectively producing an activating control signal to activate said compensating means in relation to the detected characteristics.

5,388,162

SOUND INNOVATION SPEAKER SYSTEM

Tong-Hoon Sohn, #A-1011, Gongzak Apt., Yoido, Seoul 150-010, Rep. of Korea

Filed Jul. 8, 1992, Ser. No. 910,735

Claims priority, application Rep. of Korea, Jul. 9, 1991, 10-445[U]; Oct. 7, 1991, 16-445[U]; Oct. 7, 1991, 16-446[U]

Int. Cl.[6] H04R *25/00;* H05K *5/00*

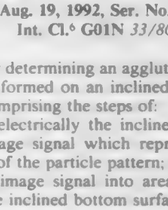
U.S. Cl. 381—160 26 Claims

1. A speaker system, comprising:

a first pair of speaker cases;

a first pair of speaker units each having a conic vibrator exhibiting a central axis and an aperture, each of said first pair of speaker units being positioned within an interior of a corresponding different one of said first pair of speaker cases;

sound wave absorbing material perforated with cone-shaped holes extending radially outwardly from corresponding ones of said first pair of speaker units; and



means for connecting said speaker cases together with said first pair of speaker units being coaxially and symmetrically coupled in spaced-apart, facing opposition with each central axis being coaxially aligned.

5,388,163

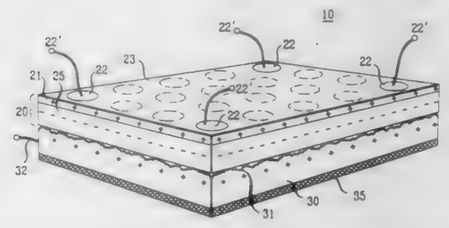
ELECTRET TRANSDUCER ARRAY AND FABRICATION TECHNIQUE

Gary W. Elko, Summit, N.J.; Michael M. Goodwin, Titusville, Fla.; Robert A. Kubli, Milford, and James E. West, Plainfield, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 23, 1991, Ser. No. 812,774

Int. Cl.[6] A04R *25/00*

U.S. Cl. 381—191 35 Claims



1. A foil for use in a transducer array comprising one or more transducers, the foil comprising:

a layer of insulating material; and

a layer of metal in contact with the layer of insulating material, wherein the layer of metal comprises a plurality of physically discrete areas of metal, one or more of the discrete areas defining areas which convert between acoustic and electric energy by variation of capacitance of one or more transducers of the array when the foil is used in said transducer array.

5,388,164

METHOD FOR JUDGING PARTICLE AGGLUTINATION PATTERNS USING NEURAL NETWORKS

Hiroyuki Yonekawa, St. James, and Christopher M. Skoldberg, Hauppage, both of N.Y., assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1992, Ser. No. 932,414

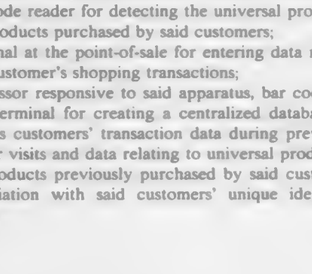
Int. Cl.[6] G01N *33/80*

U.S. Cl. 382—6 4 Claims

1. A method for determining an agglutination reaction from a particle pattern formed on an inclined bottom surface of a reaction vessel comprising the steps of:

scanning photoelectrically the inclined bottom surface to derive an image signal which represents a two-dimensional image of the particle pattern;

processing the image signal into area light intensities by separating the inclined bottom surface into a plurality of areas due to different contours of the inclined bottom surface including decomposing the image signal into a series of concentric rings, each ring representing a different contour area of the image and integrating light intensities in each area to derive the area light intensities;



determining an average intensity of each ring;

inputting the area light intensities into a neural network to produce output signals; and

determining an agglutination reaction based on the output signals.

5,388,165

METHOD AND SYSTEM FOR BUILDING A DATABASE AND PERFORMING MARKETING BASED UPON PRIOR SHOPPING HISTORY

David W. Deaton, and Rodney G. Gabriel, both of Abilene, Tex., assignors to Credit Verification Corporation, Abilene, Tex.

Continuation of Ser. No. 16,991, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 886,385, May 19, 1992, Pat. No. 5,201,010, which is a continuation-in-part of Ser. No. 826,255, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 345,475, May 1, 1989, abandoned. This application Jan. 4, 1994, Ser. No. 177,690

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—7 16 Claims

1. A system for performing targeted marketing on customers in a retail establishment comprising:

apparatus for entering selected indicia from instruments presented by customers at a point-of-sale, in order to generate a unique identification code for each customer;

a bar code reader for detecting the universal product code on products purchased by said customers;

a terminal at the point-of-sale for entering data relating to the customer's shopping transactions;

a processor responsive to said apparatus, bar code reader, and terminal for creating a centralized database of the store's customers' transaction data during previous customer visits and data relating to universal product codes of products previously purchased by said customers, in association with said customers' unique identification code;

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said processor generating a signal upon entry of unique identification codes of customers whose transactions prior to the current shopping visit at the store meet one of a plurality of predetermined purchasing history criteria; and

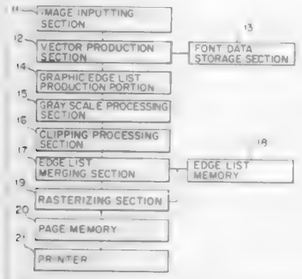
circuitry responsive to said processor and said database for dispensing a sales promotion at the point-of-sale to said customers whose prior transactions meet one of said predetermined purchasing history criteria, wherein said sales promotion provides different incentives to customers having different prior purchasing histories, such that said customers are incented to return to the retail establishment to purchase products in a future transaction.

5,388,166

IMAGE DRAWING APPARATUS

Yuji Onozawa, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 137,799
Claims priority, application Japan, Nov. 30, 1992, 4-343496
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—22 6 Claims



1. An image drawing apparatus for converting input data into raster information and drawing an image in accordance with the raster information, comprising:

edge list production means for producing a first edge list from the input data, the first edge list having one or more first edge list entries each indicative of line segments defined by crossing points between scanning lines and drawing lines and color density information of respective line segments;

conversion means for converting the first edge list into a second edge list the second edge list containing one or more new entries each indicative of one or more edge portions of the line segments and color density information for each of the edge portions being adjusted for gradation based on first edge list entries for a predetermined number of successive line segments including a line segment having said edge portion(s); and

outputting processing means for performing outputting processing in accordance with the second edge list.

5,388,167

DOCUMENT IMAGE PROCESSING SYSTEM AND DOCUMENT IMAGE PROCESSING METHOD

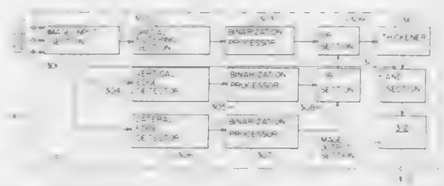
Masashi Koga, Kokubunji; Hiroshi Sakou, Shiki; Masaaki Fujinawa, Odawara; Hiromichi Fujisawa, Tokorozawa; Tatsuya Murakami, Tachikawa; Yoshihiro Shima, Tokorozawa; Tsugio Takahashi, Hadano; Kazunori Kinoshita, Odawara; Kiyomichi Kurino, Ashigarashimo, and Hidefumi Masuzaki, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 12, 1992, Ser. No. 850,303
Claims priority, application Japan, Mar. 12, 1991, 3-046409
Int. Cl.[6] G06K *9/38*
U.S. Cl. 382—50 4 Claims

1. A document image processing system, comprising:

means for photoelectrically dither processing, by binarizing error diffusion, a multivalue document image having a shading background to obtain a binary dither processed image in which image density is expressed in terms of horizontal line width and density;

means for reconstructing multivalue image data from the binary dither processed image to obtain reconstructed multivalue image data;



means for removing a shading background from the reconstructed multivalue image data to produce deshaded reconstructed binary image data; and

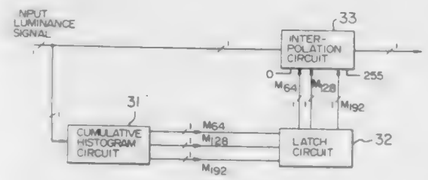
means for compression encoding the deshaded reconstructed binary image data.

5,388,168

PICTURE QUALITY IMPROVING CIRCUIT USING A CUMULATIVE HISTOGRAM

Hirohiko Sakashita, Nara, and Naoji Okumura, Ninoo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 786,822, Nov. 1, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 84,064
Claims priority, application Japan, Nov. 19, 1990, 2-313542
Int. Cl.[6] H04N *5/20*
U.S. Cl. 382—54 8 Claims



1. A picture quality improving circuit, comprising:

means for receiving an input signal having a level variable within a predetermined range;

means for obtaining a cumulative histogram of said input signal for a predetermined time period, said cumulative histogram representing relationships between a plurality of selected levels of said input signal and corresponding histogram values which represent a number of samples of said input signal having levels less than a corresponding one of said selected levels;

a first selector for receiving said input signal and determining a first one of said selected levels which is closest to and greater than a level of the input signal and outputting a first one of said histogram values corresponding to the level of said first one of said selected levels;

a second selector for receiving said input signal and determining a second one of said selected levels which is closest to and less than or equal to the level of the input signal and outputting a second one of said histogram values corresponding to the level of said second one of said selected levels; and

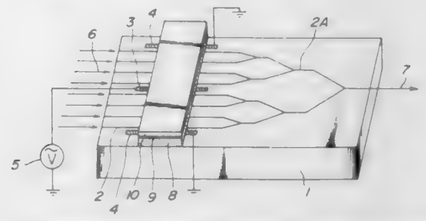
calculation means for calculating a level of a corrected signal corresponding to said input signal by interpolating the level of said input signal between said first one and said second one of said histogram values.

5,388,169

OPTICAL WAVEGUIDE TYPE SYNAPTIC WEIGHT MODULATOR WITH NEMATIC LIQUID CRYSTAL CLADDING

Shunsuke Kobayashi, Tokyo; Yasufumi Iimura, Asaka, and Chen B. Xue, Tanashi, all of Japan, assignors to Tokyo University of Agriculture and Technology, Fuchu, Japan

Filed Dec. 14, 1993, Ser. No. 165,894
Claims priority, application Japan, Apr. 26, 1993, 5-099514
Int. Cl.[6] G02B *6/20*; G02F *1/13*
U.S. Cl. 385—2 4 Claims



1. An optical waveguide type synaptic weight modulator for use with a control power supply, comprising:

a glass substrate;

a multichannel waveguide provided on the glass substrate, the waveguide having an input portion with a plurality of channel waveguides, an output portion, and a branching portion which connects the input and output portions; and

weighting means for weighting input signals which have different waveguide modes and which are introduced into the input portion of the waveguide so as to generate a weighted output signal at the output portion of the waveguide, the weighting means including

electrodes provided on the glass substrate, the channel waveguides passing between the electrodes, the electrodes being connected to the control power supply,

a nematic liquid crystal cladding layer provided over the channel waveguides and the electrodes, and

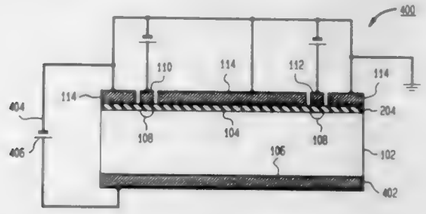
an orientation film contacting the nematic liquid crystal cladding layer.

5,388,170

ELECTROOPTIC DEVICE STRUCTURE AND METHOD FOR REDUCING THERMAL EFFECTS IN OPTICAL WAVEGUIDE MODULATORS

Fred L. Heismann, Freehold; Steven K. Korotky, Toms River, and John J. Veselka, Freehold, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Nov. 22, 1993, Ser. No. 156,118
Int. Cl.[6] G02B *6/34*
U.S. Cl. 385—4 15 Claims



1. An optical device comprising:

a substrate having top and bottom surfaces;

a conductive layer formed on said top surface;

a waveguide formed in said top surface;

a plurality of modulator electrodes formed over at least a portion of said waveguide on said top surface; and

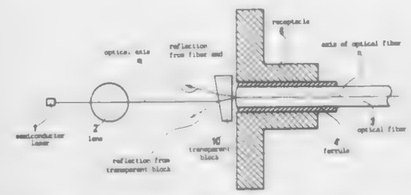
a conductive layer means formed on said bottom surface of said substrate for stabilizing operation of said optical device due to temperature changes.

5,388,171

SEMICONDUCTOR LASER MODULE

Hisato Michikoshi, and Hiromi Nakanishi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 9, 1993, Ser. No. 44,664
Claims priority, application Japan, Oct. 30, 1992, 4-316251
Int. Cl.[6] G02B *6/32*
U.S. Cl. 385—36 22 Claims



22. A semiconductor laser module comprising:

a semiconductor laser for emitting light beams;

a lens for converging the light beams;

a lens holder having an axial bore for keeping the lens in the axial bore and the semiconductor laser at an end of the axial bore;

a ferrule holding an end of an optical fiber, the end of the fiber being substantially perpendicular to an optical axis of the fiber;

a receptacle having an axial hole for supporting the ferrule, the receptacle being connected to the lens holder; and

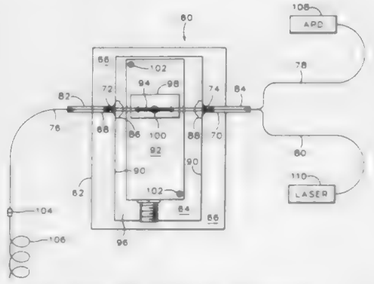
a transparent block with imparallel front and rear surfaces fixed in the axial hole of the receptacle, the transparent block being separated from the end of the fiber.

5,388,172

OPTICAL SWITCHING APPARATUS FOR OPTICAL TIME DOMAIN REFLECTOMETERS

Duwayne R. Anderson, Wilsonville, Oreg., assignor to Tektroniz, Inc., Wilsonville, Oreg.

Filed May 20, 1993, Ser. No. 64,242
Int. Cl.[6] G02B *6/24*
U.S. Cl. 385—23 10 Claims



1. An optical switching apparatus comprising:

a housing having a base and opposing sidewalls with the opposing sidewalls having respective first and second aperture formed therein defining first and second optical

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passageways with the first optical passageway having a first optical waveguide secured therein and the second optical passageway having second and third optical waveguides secured therein;

an optical device disposed within the housing between the first and second optical passageways for selectively directing optical energy between the first optical waveguide and the second and third optical waveguides, the optical device having a first optical path coupling the optical energy between the first and second optical waveguides and a second optical path diverging from the first optical path to the third optical waveguide for coupling the optical energy between the first and third optical waveguides;

a first optical focusing element mounted on one of the opposing sidewalls and disposed across the first optical passageway for focusing the optical energy into the first optical waveguide; and

a second optical focusing element mounted on the other opposing sidewall and disposed across the second passageway for focusing the optical energy into the second and third optical waveguides.

5,388,173

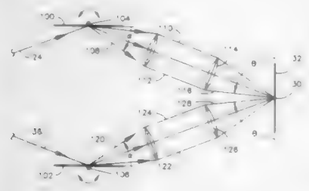
METHOD AND APPARATUS FOR FORMING APERIODIC GRATINGS IN OPTICAL FIBERS

William H. Glenn, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1993, Ser. No. 169,796

Int. Cl.[6] G02B *6/34*

U.S. Cl. 385—37 **21 Claims**



16. An apparatus for impressing an aperiodic grating into a region of an optical waveguide, comprising:

light source means, for providing a source light having a predetermined wavelength;

beamsplitting means for splitting said source light into at least two writing beams;

variable beam directing means for directing said writing beams so as to intersect on a region of the optical waveguide at a predetermined angle of incidence thereon, thereby creating an interference pattern along a longitudinal axis of the waveguide, for a time long enough to form a permanent refractive index variation in the waveguide; and

signal processing means for providing a wavelength control signal to said variable beam directing means, for setting different successive angles of incidence, each angle causing a different refractive index variation to form, so as to create a total refractive index variation which is an aperiodic variation.

5,388,174

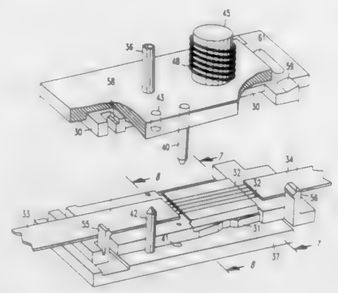
OPTICAL FIBER CONNECTOR TECHNIQUES

Richard A. Roll, West Trenton; Muhammed A. Shahid, Ewing Township, Mercer County, and George J. Shevchuk, Old Bridge, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation-in-part of Ser. No. 20,931, Feb. 22, 1993, Pat. No. 5,287,426. This application Jan. 27, 1994, Ser. No. 186,935

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—80 **34 Claims**



27. A connector for supporting therebetween an array of optical fibers, comprising:

first and second support members each having on a first surface thereof a parallel array of grooves;

the grooves of the first and second support members adapted to contain therebetween an array of optical fibers;

the first surface of the first support member having an alignment projection adapted to engage an alignment aperture in the first surface of the second member to align together the first and second support members;

the first and second support members being substantially entirely of plastic and being made by plastic injection molding.

5,388,175

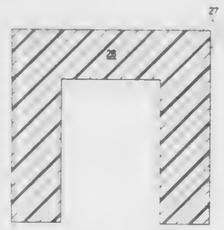
OPTICAL CABLE HAVING POWDER EMBEDDED IN PLASTIC SURFACES

Mary A. Clarke, Granite Falls, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Jan. 25, 1994, Ser. No. 186,082

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—100 **12 Claims**



1. A light waveguide cable, comprising:

a central member having a powder embedded only in the outer surface thereof in the absence of an adhesive on such surface;

an outer sheath; and,

at least one light waveguide between the outer sheath and the central member.

5,388,176

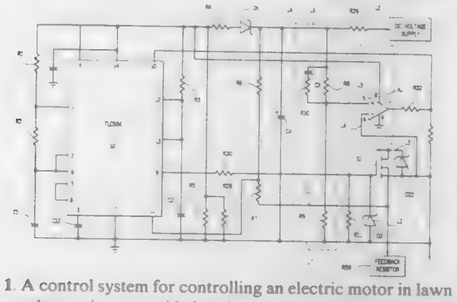
DC MOTOR SPEED CONTROL SYSTEM

Richard A. Dykstra, Cedar Grove, and Robert K. Mitchell, Brookfield, both of Wis., assignors to Briggs & Stratton Corp., Wauwatosa, Wis.

Filed Apr. 6, 1992, Ser. No. 864,404

Int. Cl.[6] H02P *5/17*

U.S. Cl. 388—811 **50 Claims**



1. A control system for controlling an electric motor in lawn or garden equipment, said electric motor being interconnected with a load, said motor drawing current from and being powered by a battery that outputs a supply signal, said supply signal continuously decreasing as said battery discharges, comprising:

means for generating a frequency signal at a predetermined frequency;

means for generating a supply feedback signal functionally related to said supply signal;

means for sensing the current being drawn by said motor;

means for generating a load feedback signal functionally related to the magnitude of said sensed motor current;

pulse width modulation means for receiving said frequency signal, said supply feedback signal, and said load feedback signal, and for outputting a switch control signal at said predetermined frequency whose pulse width is both inversely proportional to said supply signal and directly proportional to the magnitude of said sensed motor current;

switch means for switching current to said motor in response to said switch control signal; and

means for increasing the power to said motor when the sensed motor current is greater than a predetermined level.

5,388,177

HEATING ELEMENT FOR DEODORIZATION

Yukiyoshi Ono, Hirakata; Kunio Kimura, Tsuzuki; Hidenobu Wakita, Yawata, and Yasue Yamade, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

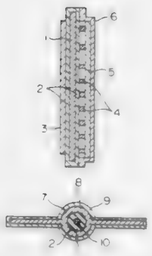
Continuation of Ser. No. 910,895, Jul. 10, 1992, abandoned. This application Apr. 29, 1994, Ser. No. 235,213

Claims priority, application Japan, Jul. 16, 1991, 3-175092; Jul. 16, 1991, 3-175093

Int. Cl.[6] H05B *3/20*

U.S. Cl. 392—386 **24 Claims**

1. A heating element for deodorization comprising: a metallic substrate; an enamel layer formed on a surface of the metallic substrate; a catalyst layer formed on the enamel layer and comprising at least an active alumina, a platinum group metal and a zeolite having only one exchanged ion, said one exchanged ion being selected from the group consisting of Cu and Mg; and an electric resistor which is insulated from an environment surrounding the heating element; and the metallic substrate, the enamel layer, the catalyst layer and the electric resistor being disposed relative to one another so that heat



generated when electric power is applied to the electric resistor is conducted to the catalyst layer through the enamel layer.

5,388,178

SAFETY CONTROL SYSTEM OF A BOILING CLOTHES WASHING MACHINE

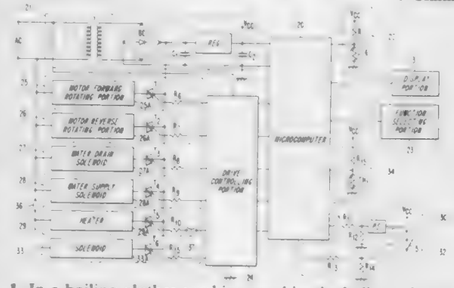
Kyung H. Moon, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 19, 1992, Ser. No. 963,392

Claims priority, application Rep. of Korea, Oct. 19, 1991, 91 18473

Int. Cl.[6] H05B *1/02*; **D06F** *33/02*

U.S. Cl. 392—444 **9 Claims**



1. In a boiling clothes washing machine including a heater mounted in a tub so that the heater heats wash water to process clothing with hot water, the improvement comprising a safety control system including:

first wash water temperature detecting means mounted at a location of the inner bottom of the tub for detecting the temperature of wash water by means of direct contact with the wash water;

second wash water temperature detecting means mounted at a location of the inner bottom of the tub for detecting the temperature of wash water by means of direct contact with the wash water;

means responsive to said second wash water temperature detecting means for controlling the operation of said heater during an abnormal operation of said first wash water temperature detecting means;

first heater temperature detecting means, mounted in a thermally conductive relationship with said heater, for detecting the temperature of said heater;

second heater temperature detecting means, mounted in a thermally conductive relationship with said heater, for detecting the temperature of said heater;

means responsive to said second heater temperature detecting means for controlling the operation of said heater during an abnormal operation of said first heater temperature detecting means; and

means responsive to said *first wash water temperature detecting means for cutting off a power source to said heater in response to a detected wash water temperature being greater than a reference water temperature, for determining a temperature gradient from measurements received from said* first heater temperature detecting means, *for comparing said temperature gradient to a reference temperature gradient value, and* for cutting off [a] *said* power source to said heater in

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response to [a] *said* temperature gradient being greater than [a] *said* reference temperature gradient value, said temperature gradient being defined as a rate of temperature change, and determined from measurements of said detected heater temperature taken during a predetermined time interval.

5,388,179

FLOAT SWITCH FOR PREVENTING DAMAGE TO THE ELECTRIC WATER HEATER ELEMENT

Richard Boyd, Jr., 160 Wood Cir., New Bern, N.C. 28562, and George Spector, 233 Broadway Rm. 3815, New York, N.Y. 10007

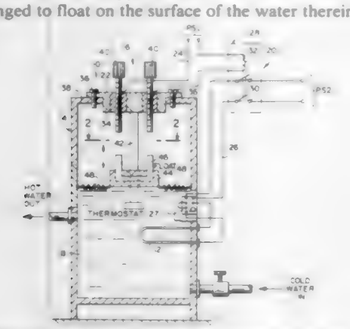
Filed Oct. 3, 1991, Ser. No. 770,367
Int. Cl.[6] H05B *1/02*; F24H *1/20*
U.S. Cl. 392—451 **3 Claims**

1. In an electric water heater having a water holding tank, having top, bottom and side walls, a water inlet for supplying cold water to the tank, an outlet for the flow of heated water from the tank, the inlet and outlet being located in the lower portion of the tank, an electric immersion water heating element located in the lower portion of the tank for heating the water therein and a water level responsive control means connected in circuit with the heating element for protecting the heating element, should the water level in the tank fall during use below a level in which the heating element is immersed, the improvement wherein said water level responsive control means comprises:

a) means in said tank for sensing that a predetermined level of water has entered the electric tank to a depth sufficient to cover the immersion heater;

b) means controlled by said sensing means for energizing the heating element only upon sensing by said sensing means of a predetermined level of water in said tank is sufficient to immerse said heating element thereby preventing the burn out of the heating element; wherein said sensing means includes:

c) a float switch in said tank above the heating element; said float switch comprising a lower set of electrical contacts mounted on the upper surface of a float in said tank arranged to float on the surface of the water therein and an



upper set of electrical contacts mounted on the tank above said float and aligned for electrical engagement with said lower set of contacts when water in said tank is at said predetermined level; and

d) a first electrical circuit connecting said float switch to an energizing means, so that said first electrical circuit activates said energizing means upon engagement of said upper and lower sets of contacts at the predetermined level of water to connect said heating element to a source of power; in further combination with means associated with said float and walls of said tank for preventing access of water above said float; while allowing the float to freely rise and fall with changes in water level in the tank, said upper and lower sets of contacts being located within said tank in water free space above the float.

5,388,180

ELECTRICAL STEAM GENERATOR WITH MULTIPLE PASSAGES OF UNEQUAL CROSS-SECTION

Peter W. Bayles, Durham, England, assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 9, 1992, Ser. No. 942,670
Claims priority, application United Kingdom, Sep. 14, 1991, 9199693
Int. Cl.[6] B44C *7/02*; D06B *19/00*; D06F *75/18*; F22B *1/28*
U.S. Cl. 392—484 **11 Claims**

1. A steam generator, comprising: a body of heat conductive material having a top side and an underside;

an electric heating element located in said body;

said body containing a first chamber and a second chamber with said heating element disposed between said chambers;

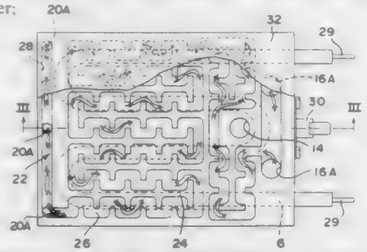
said first and second chambers each having at least one convoluted passageway therethrough with the first chamber passageway being wider than said second chamber passageway;

a water inlet in said body and communicating with said first chamber passageway;

a steam outlet from said body and communicating with said second chamber passageway;

at least one passage connecting said first chamber passageway to said second chamber passageway;

said first chamber being disposed below said second chamber;



said water inlet passing downwards through said second chamber past said heating element into said first chamber; and

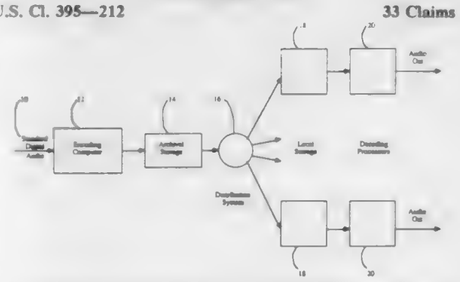
said steam outlet commencing in said second chamber, passing downwards past said first chamber, and communicating with said underside of said body.

5,388,181

DIGITAL AUDIO COMPRESSION SYSTEM

David J. Anderson, 2955 Lakehurst; Donghoon Lee, 2442 Stone Dr., both of, Ann Arbor, Mich. 48105; David L. Neuhoff, 2675 Newport Rd., Ann Arbor, Mich. 48103, and Omar A. Nemri, 1324 McIntyre, Ann Arbor, Mich. 48105

Continuation of Ser. No. 582,715, Sep. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 530,547, May 29, 1990, abandoned. This application Sep. 29, 1993, Ser. No. 128,322
Int. Cl.[6] G10L *9/00*
U.S. Cl. 395—212 **33 Claims**



1. A method of processing a wideband digital audio signal

and for storing the processed signal on a data storage medium comprising:

dividing said wideband digital audio signal into signal blocks each block having a maximum signal value;

scaling each signal block by a constant value selected such that the maximum absolute signal value in each block equals a predetermined value within a preset range and setting a scale factor equal to said constant value for each signal block;

transforming each said signal block into transform blocks comprising a plurality of transform values representative of the audio signal in its associated signal block;

quantizing said transform blocks; and

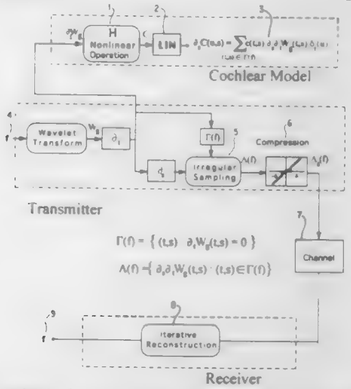
recording said quantized transform blocks and said scale factors as digital data on the data storage medium.

5,388,182

NONLINEAR METHOD AND APPARATUS FOR CODING AND DECODING ACOUSTIC SIGNALS WITH DATA COMPRESSION AND NOISE SUPPRESSION USING COCHLEAR FILTERS, WAVELET ANALYSIS, AND IRREGULAR SAMPLING RECONSTRUCTION

John J. Benedetto, Hyattsville, and Anthony Teolis, Upper Marlboro, both of Md., assignors to Prometheus, Inc., Sharon, Mass.

Filed Feb. 16, 1993, Ser. No. 17,192
Int. Cl.[6] G10L *7/02*
U.S. Cl. 395—2.14 **8 Claims**



1. A method of encoding acoustic signals for data compression and noise suppression comprising the steps of:

(1) utilizing a bank of acoustic filters modeled on the mechanical characteristics of the mammalian cochlea such that the amplitude of the frequency response of the filter in the frequency domain is a smoothed ramp function, also generically referred to as a "shark fin" shape, with tails that guarantee that the acoustic filter is causal because the filter transform function satisfies the Hilbert transform relationships, said filters being established by the substeps comprising:

(a) establishing the basic filter function by taking the convolution of a linear ramp filter transfer function frequency response amplitude in the frequency domain with a second function, said ramp function comprising a straight line sloping from zero amplitude at a lower cutoff frequency upward to an upper amplitude at a higher cutoff frequency and having a zero amplitude outside the frequency range from the lower cutoff frequency to the higher cutoff frequency, said second function being a very narrow symmetric single peak distribution so as to produce a ramp function frequency response amplitude with smooth corners such that the response amplitude varies smoothly throughout its frequency range;

(b) piecing smooth small amplitude frequency response tails to the said convolution below a second lower cutoff frequency and above a second higher cutoff frequency in such a manner that the frequency response amplitude is continuous and has a defined logarithm for all frequencies and satisfies the Paley-Wiener logarithmic integral condition so that a frequency response phase angle can be ascertained for all frequencies using the Hilbert transform relations, whereby it is assured that the filter is causal; and

(c) using the fundamental wavelet relationship to construct a filter bank comprising a plurality of filter impulse responses for a plurality of scales from said basic filter function by scaling said basic filter function according to the wavelet transform relationship, each scale corresponding to a fundamental frequency of a scaled filter, and the entire plurality of scaled filters comprising the filter bank;

(2) transforming a finite duration electric signal representing an acoustic signal into a wavelet representation in time and scale of said electric signal by processing the electric signal through the scaled filters in the filter bank; and

(3) obtaining the wavelet coefficients

$$\Lambda_W(f) = \left\{ \frac{W_{\partial g} f(t_m, s_{m-1})}{\sqrt{1 - a_0}} \right\}$$

at the zero crossings of the time derivative of the wavelet transform; and

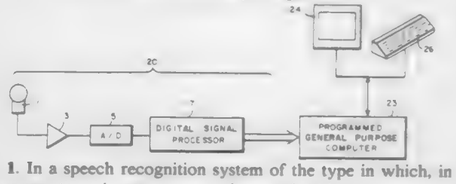
(4) truncating the set of wavelet coefficients according to the data capacity and rate of the system to which the coefficients are sent.

5,388,183

SPEECH RECOGNITION PROVIDING MULTIPLE OUTPUTS

Thomas E. Lynch, Brighton, Mass., assignor to Kurzweil Applied Intelligence, Inc., Waltham, Mass.

Filed Sep. 30, 1991, Ser. No. 767,437
Int. Cl.[6] G10C *7/08*; G10L *7/08*
U.S. Cl. 395—2.51 **5 Claims**
MICROFICHE APPENDIX INCLUDED
(39 Microfiche, 1 Pages)



1. In a speech recognition system of the type in which, in response to an input utterance characterized by a sequence of input acoustic segments, a path is dynamically decoded through a recognition network of sound characterizing arcs, predetermined ones of which connect at nodes which define permissible transitions, by matching sequential input acoustic segments to corresponding points along each possible arc and by measuring closeness of match to obtain a cost metric for reaching each node by the best path for each input time;

a computer implemented method of generating an output network structure which is composed of a selection of said arcs explaining segments of the input utterance and interconnections thereof, said method comprising:

for each arc, calculating and storing along with said node cost metrics, an arc score which represents the best path cost of reaching the last point on that arc at the corresponding time;

when the end of the recognition network is reached, initiating a traceback procedure which comprises:

assigning a minimal node out score to the end of the recognition network;

for each successive node in said traceback procedure, selecting all incoming arcs having arc scores which, when combined with the node out score of the respective terminating node, do not exceed the best path score for the end of the recognition network by more than a preselected margin; and

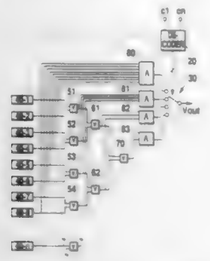
VOL 1171 ISS 1 FEB 7 1995 UMI

calculating, for each node which initiated selected arcs, a node out score which represents the cost of the best path from that node to the end of the recognition network, whereby the successively selected arcs and the joining nodes define the output network structure.

5,388,184
CARDINAL NUMBER EXTENDING CIRCUIT FOR FUZZY NEURON

Kouichi Iwashita, and Masanari Oh, both of Fukuoka, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 21, 1992, Ser. No. 994,325
Claims priority, application Japan, Dec. 28, 1991, 3-359884
Int. Cl.[6] G05B *11/00*
U.S. Cl. 395—3 **5 Claims**

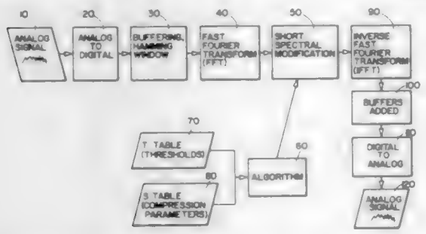


2. A resolution varying circuit for varying a resolution of input signals within a fuzzy neuron, comprising:
integrating means for integrating said input signals with a plurality of integrating levels arranged in a tournament configuration, each of said integrating levels having a different one of a plurality of resolution levels; and
output means for selecting and outputting an output of any one of said integrating levels having a desired one of said resolution levels.

5,388,185
SYSTEM FOR ADAPTIVE PROCESSING OF TELEPHONE VOICE SIGNALS

Alvin M. Terry, Longmont, Colo., and Thomas P. Krauss, Ithaca, N.Y., assignors to U S West Advanced Technologies, Inc., Boulder, Colo.

Filed Sep. 30, 1991, Ser. No. 767,476
Int. Cl.[6] G10L *3/02*
U.S. Cl. 395—2.14 **19 Claims**

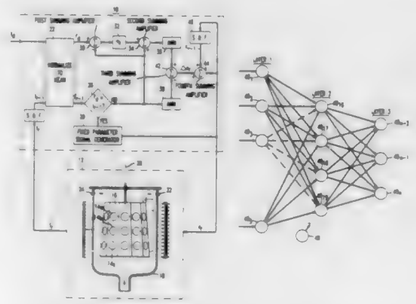


1. For use in an improved telephone network having predetermined hearing impairment profiles and a database for storing customized hearing impairment profiles to compensate a speech signal for a hearing impairment of a telephone user, a method for adaptively processing a speech signal comprising:
a) transforming a digital representation of the speech signal into a spectral domain representation having a plurality of frequency point values;
b) modifying the frequency point values in accordance with the predetermined hearing impairment profile or the customized hearing impairment profile defining a frequency range to be modified corresponding to the hearing impairment of the telephone user,;
c) performing an inverse transformation of the modified frequency point values into an adapted digital signal; and
d) transmitting the adapted signal to the telephone user.

5,388,186
DIFFERENTIAL PROCESS CONTROLLER USING ARTIFICIAL NEURAL NETWORKS

Chinmoy B. Bose, Green Brook, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Feb. 1, 1993, Ser. No. 11,568
Int. Cl.[6] G06F *15/18*; G05B *23/02*
U.S. Cl. 395—11 **8 Claims**

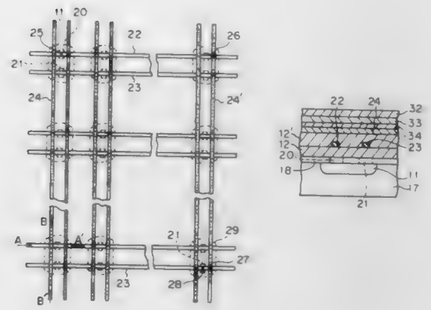


1. A differential process controller for controlling a process at a time r in accordance with both an optimal process output value vector (t_d), whose components represent desired process values, and an actual process value vector (t_{r-1}), whose components represent actual process values measured during an immediately previous interval ($r-1$), comprising:
first processing means supplied with the optimal process output value vector t_d for generating a first vector varying in accordance therewith;
a first artificial neural network for processing the first vector in accordance with past actual process values to yield a first intermediate control vector for controlling the process;
second processing means supplied with the actual process value vector t_{r-1} for generating a second vector varying in accordance therewith;
a second artificial neural network for processing the second vector in accordance with past actual process values to yield a second intermediate control vector for controlling the process;
a first summing amplifier for producing an output vector varying in accordance with the difference between the first and second intermediate control vectors;
a second summing amplifier having a first input supplied with the output vector of the first summing amplifier, and a second input, for generating a control vector for controlling the process in accordance with the sum of the signals at the first and second summing amplifier inputs; and
a store and forward means supplied with the control vector from the second summing amplifier for storing said control vector and thereafter supplying said control vector to said second input of said second summing amplifier after a prescribed interval.

5,388,187
INFORMATION PROCESSING DEVICE CAPABLE OF OPTICALLY WRITING SYNAPSE STRENGTH MATRIX

Satoru Isoda, and Yoshio Hanazato, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1991, Ser. No. 728,165
Claims priority, application Japan, Jul. 10, 1990, 2-184526
Int. Cl.[6] G06G *7/16*; H01L *31/08*
U.S. Cl. 395—25 **11 Claims**

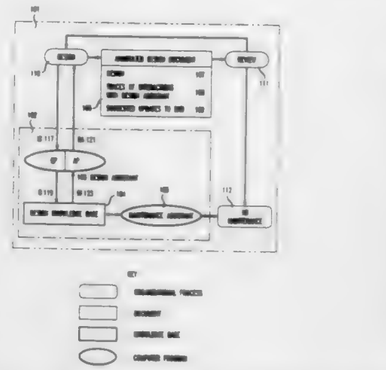


1. An information processing device comprising:
a semiconductor integrated circuit section including N×M neuronic circuit regions arranged in a matrix, said neuronic circuit regions each having an input electrode and an output electrode;
a first heterogeneous molecular film provided on said semiconductor integrated circuit section and having a photoelectric function;
2N first transparent wiring lines arranged to extend in a first direction on said first heterogeneous molecular film such as to extend above the output electrodes and the input electrodes of M neuronic circuit regions;
a second heterogeneous molecular film provided on said first heterogeneous molecular film and having a photoelectric function;
2M second transparent wiring lines arranged to extend in a second direction on said second heterogeneous molecular film such that adjacent two of them extend above N neuronic circuit regions without extending above the output and input electrodes of these neuronic circuit regions;
a transparent insulating layer provided on said second heterogeneous molecular film and said second transparent wiring lines;
a transparent electrode provided on said transparent insulating layer;
a third heterogeneous molecular film provided on said transparent electrode and having a light-emitting function;
6×N×M electrodes provided on said third heterogeneous molecular film and at intersections of the output and input electrodes of said neuronic circuit regions and said first transparent wiring lines and at intersections of said first transparent wiring lines and said second transparent wiring lines; and
lead wires connected to said 6×N×M electrodes;
wherein light from said third heterogeneous molecular film irradiates the intersections of said output or said input electrodes of said neuronic circuit regions and said first transparent wiring lines and the intersections of said first transparent wiring lines and said second transparent wiring lines, whereby a coupling strength between said N×M neuronic circuit regions is controlled.

5,388,188
APPARATUS AND METHODS FOR PROVIDING DESIGN ADVICE

Peter G. Selfridge, Cranford, and Loren G. Terveen, Hampton, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Mar. 17, 1992, Ser. No. 852,596
Int. Cl.[6] G06F *15/40, 15/60*
U.S. Cl. 395—50 **9 Claims**



1. Apparatus for providing advice about a design, the apparatus comprising:
a design document;
a knowledge base from which information about a domain relevant to the design is obtainable in response to a query; and
design assistant means for providing an annotation including the advice for the design document, the design assistant means including
query providing means for producing the query in response to a specification of an advice area received from a user and providing the query to the design assistant means for execution on the knowledge base and
advice providing means responsive to the information produced in response to the execution of the query for employing the information to provide the annotation.

5,388,189
ALARM FILTER IN AN EXPERT SYSTEM FOR COMMUNICATIONS NETWORK

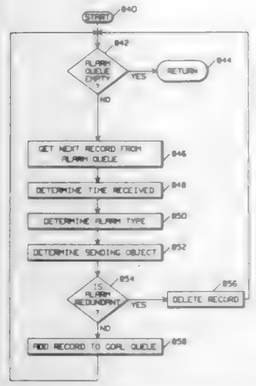
Ching Y. Kung, Fort Lauderdale, Fla., assignor to Racal-Datacom, Inc., Sunrise, Fla.

Division of Ser. No. 802,113, Dec. 4, 1991, Pat. No. 5,295,230, which is a division of Ser. No. 447,485, Dec. 6, 1989, Pat. No. 5,159,685. This application Oct. 28, 1993, Ser. No. 142,565
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—50 **2 Claims**

1. In an expert system for providing diagnostic services for a communication network including a plurality of network devices capable of generating alarms in response to network problems, a method of processing said alarms reported from said network devices, comprising the steps of:
receiving a current said alarm from one of said network devices;
comparing said current alarm with other said alarms previously received from other said network devices to determine whether said current alarm corresponds to one of said previously received alarms in that both said current alarm and said previously received alarms serve to report a common said network problem in said network;
said comparing step further including retrieving information from a database regarding a portion of said network's topology and determining from said portion if any of said network devices providing said previously received

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alarms and said one network device producing said current alarm could produce said previously received alarms and said current alarm, respectively, in response to said common network problem; and



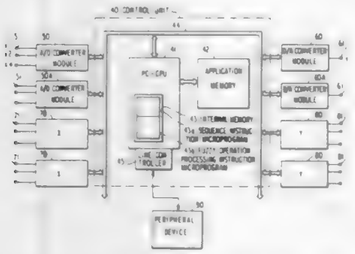
discarding said current alarm if said current alarm and any of said previously received alarms are determined to be in produced by said common common problem.

5,388,190

PROGRAMMABLE CONTROLLER WITH FUZZY CONTROL FUNCTION, FUZZY CONTROL PROCESS AND FUZZY CONTROL MONITORING PROCESS

Nobumasa Nakano, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 982,125, Nov. 25, 1992, Pat. No. 5,261,036, which is a continuation of Ser. No. 602,535, Oct. 24, 1990, abandoned. This application Aug. 2, 1993, Ser. No. 100,366
Claims priority, application Japan, Oct. 24, 1989, 1-276401
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—61 **2 Claims**



1. A fuzzy monitoring process for monitoring fuzzy control information of a programmable controller having a fuzzy control function and at least one of an input converting module and an output converting module, by using a fuzzy control monitoring device, comprising the steps of:

defining at least one of fuzzy membership functions, fuzzy output functions and fuzzy result functions using a definition format comprising a plurality of points and storing data representing said at least one function in at least one of said input converting module and said output converting module;

generating data including at least one of first fuzzy grade numbers, second fuzzy grade numbers and a composite fuzzy set based on said at least one function; and

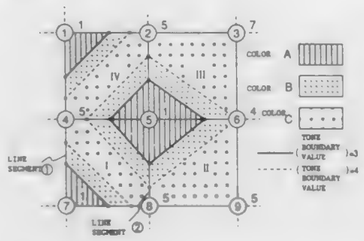
monitoring the production of said generated data using said monitoring device.

5,388,191

METHOD AND APPARATUS FOR DISPLAYING A TWO-DIMENSIONAL TONE PICTURE

Hideki Ikeuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 20, 1992, Ser. No. 886,523
Claims priority, application Japan, May 21, 1991, 3-115161
Int. Cl.[6] G06F *15/20*
U.S. Cl. 395—131 **22 Claims**



1. A method of displaying a two-dimensional tone picture comprising the steps of:

finding points with a value of analysis data equal to a boundary value of a tone on each line segment of an element constructed by nodal points,

comparing a value of each of the nodal points of the element with the tone boundary value of said analysis data,

determining a display region composed of boundary lines constructed by a set of the points found on the line segments and the compared nodal points of the element,

painting the display region with a predetermined color according to the tone boundary value,

repeating in turn said steps of finding, comparing, determining and painting for all of said predetermined tone boundary values so as to complete the display of the two dimensional tone picture of said element, and

repeating in turn the said steps of finding, comparing, determining, painting and repeating, through all of a plurality of finite elements so as to complete the display of the two-dimensional tone picture of all of the plurality of finite elements.

5,388,192

IMAGE LAYOUT PROCESSING METHOD AND APPARATUS

Ikuo Ohsawa; Haruo Nakagawa; Hiroshi Murayama, and Naoki Nabeshima, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jan. 28, 1992, Ser. No. 826,728
Claims priority, application Japan, Jan. 30, 1991, 3-32009
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—135 **10 Claims**

4. An image layout processing apparatus for simulating on a display screen an arrangement of a plurality of binary image objects to be transferred to a prepress layout sheet, said apparatus comprising:

external storage means for storing data of the plurality of binary image objects;

object designating means for separately designating a key object and other desired objects from the binary image objects stored in said external storage means;

object position indicating means for indicating positions of designated objects on the mechanical;

first data conversion means for converting data of the objects designated by said object designating means and read

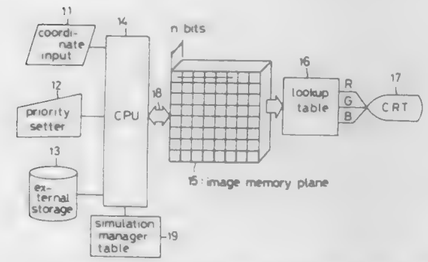
from said external storage means into priority data corresponding to predetermined priorities for superposition;

ground data storage means for storing the priority data (ground data) of the objects other than the key object obtained form said first data conversion means and successively superposed in an order of priority in the positions indicated by said object position indicating means;

key object data storage means for storing the priority data (key object data) of the key object obtained from said first data conversion means;

priority assigning means for assigning a priority to said key object;

display storage means for storing data read from said ground data storage means and said key object data storage means;



write control means for copying the ground data intact (unconditionally) from said ground data storage means to said display storage means, and subsequently copying the key object data from said key object data storage means to said display storage means with a condition that, when a comparison between the priority assigned to said key object and the priority data (ground data) of the objects in said display memory means shows that the priority data of the pixels in said display memory means are substantially lower than the priority assigned to said key object, said key object data in said key object data storage means are copied to positions of the pixels in said display storage means;

second data conversion means for converting pixel data stored in said display storage means into color data; and

display means for displaying the color data obtained from said second data conversion means.

5,388,193

SYMMETRICAL DECODER

Tetsuro Kawata, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 897,743, Jun. 12, 1992, abandoned. This application May 21, 1993, Ser. No. 64,673
Claims priority, application Japan, Jun. 14, 1991, 3-143186
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—143 **4 Claims**

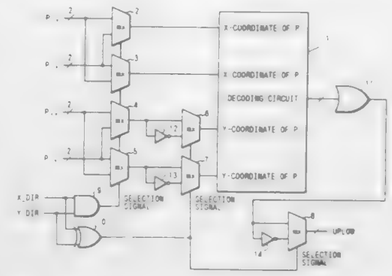
1. A symmetrical decoder for graphic processing, comprising:

first input means for receiving initial coordinate signals representing coordinates of two points in a window, processing said initial coordinate signals, and outputting processed coordinate signals;

second input means for receiving initial direction signals representing a direction between the two points in the window, processing said initial direction signals, and outputting processed direction signals; and

operation means for determining a relationship between the two points utilizing a previously determined array of sets of coordinates and relationships corresponding to each of the sets of coordinates on the basis of the processed coordinate signals and processed direction signals supplied from said first and second input means,

wherein said array is symmetrical around a centerpoint of said window, and wherein said first input means includes a plurality of multiplexers for multiplexing the received



initial coordinate signals to provide processed coordinate signals.

5,388,194

SYSTEM FOR ALTERING ELEMENTS OF A TEXT FILE TO MARK DOCUMENTS

Peter Vogel, 28 Adeline Street, Faulconbridge NSW 2776, Australia

Filed Jul. 24, 1990, Ser. No. 548,904
Claims priority, application Australia, Feb. 11, 1988, PI6705
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—145 **15 Claims**



1. A method for document marking, comprising the steps of:

a. obtaining a first text file representing a document;

b. obtaining a marking code to be applied to said document;

c. identifying each inter-word space in at least a portion of said first text file and changing each said space based on said marking code to generate a signal sequence having changed space lengths including at least first and second space lengths, said space length being a longer space than said second space length, and said second space length being a shorter space than said first space length; and

d. producing a second text file representing a changed version of said document having changed space lengths.

5,388,195

IMAGE PROCESSING SYSTEM WITH EDITING AREA CORRECTING FUNCTION

Teruyuki Aoyama, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,418
Claims priority, application Japan, Mar. 28, 1991, 3-064441
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—146 **15 Claims**

1. An image processing system with editing functions for editing and outputting image information obtained by reading a manuscript, and for performing edit processing on said image

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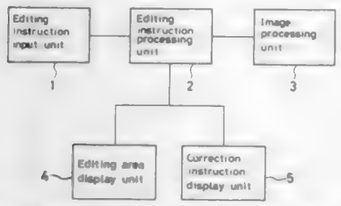
information to give editing content to an editing area of said manuscript, comprising:

image processing means for performing said edit processing based on an edit instruction that relates both to said editing area and said editing content, and for outputting corrected image information;

input means for supplying said edit instruction including said editing area and said editing content and for supplying a correction of said edit instruction;

display means for displaying said editing area of said edit instruction overlapped on said manuscript image information and for displaying said editing content, and information relating to correction when the editing area of the manuscript image information is being corrected; and

edit processing means for receiving said edit instruction



supplied from said input means, for processing an input correction of said edit instruction, for performing display control of said display screen and for supplying said edit instruction with the correction to said image processing means, wherein

said display means displays a corrected editing area overlapped on said image information in a selected condition and displays said corrected editing area in a display mode different from that of the originally displayed said editing area; and

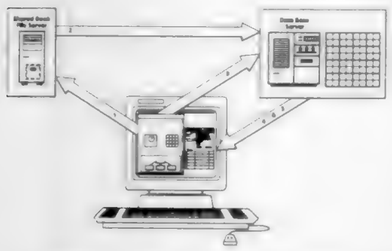
said display means displays editing content of said edit instruction and the correction of the editing content in an area where said corrected editing area is not displayed, and the editing content and the correction of the editing content are displayed only for a given period of time.

5,388,196

HIERARCHICAL SHARED BOOKS WITH DATABASE

Henry G. Pajak, Ontario, and Kenneth C. Byrne, Henrietta, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 7, 1990, Ser. No. 578,384
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—153 **10 Claims**



7. A multi-user collaborative system integrating shared structured data and relational data in a network environment, comprising,

a shared file system for storing structured data,

a relational database for storing relational data, disposed remotely of said shared file system,

a plurality workstations, having remote access to said file system and said relational database, said workstations including means for creating structured data,

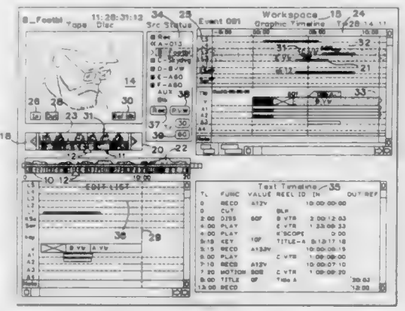
means for automatically translating the created structured data into relational data, the created structured data and the relational data being concurrently stored in the shared file system and the relational database respectively.

5,388,197

VIDEO EDITING SYSTEM OPERATOR INTER-FACE FOR VISUALIZATION AND INTERACTIVE CONTROL OF VIDEO MATERIAL

Bruce L. Rayner, Nevada City, Calif., assignor to The Grass Valley Group, Inc., Nevada City, Calif.

Continuation of Ser. No. 739,357, Aug. 2, 1991, abandoned. This application Mar. 29, 1994, Ser. No. 219,760
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—154 **10 Claims**



1. A method for representing a video sequence, having a plurality of video frames, visually and spatially while minimizing local memory requirements, the method comprising the steps of:

sampling each video frame of the video sequence to produce a frame sample for each video frame;

storing the frame samples for the video frames in a local memory; and

displaying the frame samples as a pictorial timeline representing an edge view of the video sequence.

5,388,198

PROACTIVE PRESENTATION OF AUTOMATING FEATURES TO A COMPUTER USER

Andrew J. Layman, Mill Valley, and David C. Berkovec, Santa Rosa, both of Calif., assignors to Symantec Corporation, Cupertino, Calif.

Filed Apr. 16, 1992, Ser. No. 870,616
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—155 **13 Claims**

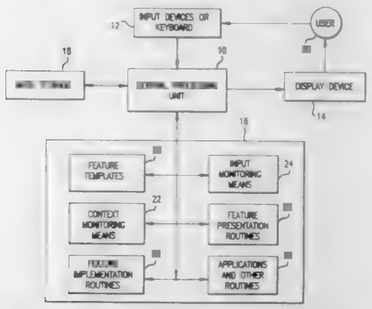
5. A method for proactively automating an operation of an application program on a general purpose computer comprising an input device, a central processing unit, a display device and memory means, said memory means including a plurality of feature templates, feature presentation and implementation routines, by automatically intervening in a user's manipulations of the input device to present automating features, said method comprising the steps of:

continuously monitoring for the user's manipulations of the input device;

continuously monitoring a context of an application program in which the input device is manipulated by the user;

comparing the monitored user's manipulations of the input device and state of the application program to input information in the plurality of feature templates stored in memory and corresponding to existing features provided by the application program, to identify a result desired by the user; and

presenting an automating feature corresponding to a feature template on the display device that achieves a result having greater generality or persistence than the identified desired result if said step of comparing produces a match between the input information of the feature template and the monitored device manipulations and application program state.

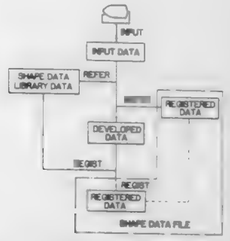


5,388,199

INTERACTIVE GRAPHIC INPUT SYSTEM

Yukinori Kakazu, Ebetsu; Noburo Minami, Numazu; Yasuhiko Tamada, Mishima, and Hiroaki Uno, Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 639,141, Jan. 9, 1991, abandoned, which is a continuation of Ser. No. 498,480, Mar. 23, 1990, abandoned, which is a continuation of Ser. No. 40,599, Apr. 20, 1987, abandoned. This application Feb. 24, 1993, Ser. No. 23,148
Claims priority, application Japan, Apr. 25, 1986, 61-96627; Apr. 25, 1986, 61-96628
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—155 **14 Claims**



1. An interactive graphic input method in a numerical control (NC) programming system which comprises a graphic display unit having means to display plural image frames, a keyboard for inputting alpha-numerals and codes, an input means such as a mouse unit which specifies an arbitrary position on the display screen of said graphic display unit with a cursor, a memory means for storing data, and a control and operation means for controlling and enabling the above respective units, said method comprising the steps of:

preparing a primitive data file in which data of primitives are stored and which is provided in said memory means;

preparing a shape data file in which data of shapes defined in structure are stored and which is provided in said memory means;

decomposing an environmental shape into a hierarchical structure of constructive solid geometry (CSG) and specifying a component element from a bottom level to a top level of said hierarchical structure when said environmental shape which is selected from the group consisting of a workpiece shape, a machine tool shape, a fixture shape, and a tool shape is defined from said keyboard and input means;

selecting one of plural primitives displayed on said graphic display unit by said input means in accordance with the data stored in said primitive data file and inputting dimensions of the selected primitive and an operation mode for setting a relation between the component elements from said keyboard and input means when said data of the primitives are inputted from said keyboard and input means and a name of the component element is inputted from said keyboard and input means;

inputting a name of the component element, a marked name of a referred element and the operation mode from said keyboard and input means when data of a shape derived from a lower level of said hierarchical structure due to an operation, a name of the input component element and the operation mode are inputted from said keyboard and input means, and if a level of said hierarchical structure in the defined shapes stored in said shape data file is available; and

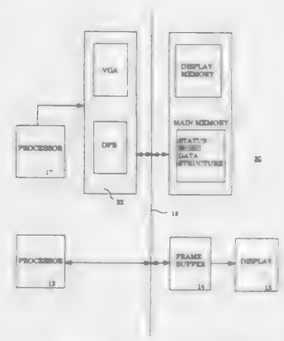
repeating the above operations to a highest level of said hierarchical structure thereby to store the input results in said shape data file.

5,388,200

METHOD AND APPARATUS FOR WRITING DIRECTLY TO A FRAME BUFFER

John F. McDonald, Leominster; Steven E. Golson, Carlisle, both of Mass., and Edward H. Frank, Portola Valley, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 21, 1990, Ser. No. 632,015
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—157 **26 Claims**



7. Apparatus for writing directly to a frame buffer providing signals to an output display in a computer system having a processor running a window management program controlling the furnishing of data to the frame buffer and having a source of graphics data for display on the output display, said apparatus comprising:

means for providing a signal from the processor to the source of graphics data indicating that graphics data from the source is to be displayed;

means for setting up a window for the display of the graphics data from the source under control of the window management program;

means for transmitting a signal from the processor to the source of graphics data indicating that the window exists, said signal providing information regarding position and clipping attributes of the window;

means for setting up a data structure for the window, said data structure including a frame buffer address and clip-

ping data corresponding to each output address of the source of graphics data; and

means for transferring the graphics data from the source to addresses in the frame buffer pointed to by the addresses in the data structure, whereby the window management program is bypassed during the transferring of the graphics data to the frame buffer.

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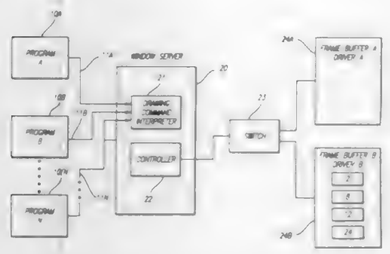
METHOD AND APPARATUS FOR PROVIDING MULTIPLE BIT DEPTH WINDOWS

Leonard Hourvitz, 21155 Skyline Blvd., La Honda, Calif. 94020; Peter Graffagnino, 1948 B Washington St., San Francisco, Calif. 94109, and Harold Cohn, 777 W. Middlefield Rd. #62, Mountain View, Calif. 94043

Continuation of Ser. No. 589,440, Sep. 14, 1990, abandoned. This application Aug. 11, 1993, Ser. No. 106,150

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—157 **16 Claims**



1. A method for dynamically determining in a computer a depth of a display window when interpreting drawing commands to said display window received from a plurality of application programs, said method comprising the steps of:

identifying a current depth of said window, where said current depth is a current bit per pixel depth;

identifying in said computer a current desired bit per pixel depth of said window based on information contained in said drawing commands provided by an application program;

identifying in said computer a maximum desired depth of said window where said maximum desired depth is the maximum desired bit per pixel depth;

comparing in said computer said current depth with said current desired depth and with said maximum desired depth;

setting said current depth of said window equal to said current desired depth when said current desired depth is less than or equal to said maximum desired depth: and

setting said current depth equal to said maximum desired step when said current desired depth is greater than said maximum desired depth.

5,388,202

METHOD AND APPARATUS FOR GENERATING WINDOW BORDERS HAVING PICTORIAL FRAME ELEMENTS

Todd M. Squires, Wheeling; Michael J. Manning, Des Plaines, and David S. Feldman, Buffalo Grove, all of Ill., assignors to Viacom International Inc., New York, N.Y.

Continuation of Ser. No. 474,357, Feb. 2, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 103,834

Int. Cl.[6] G06F *15/62*

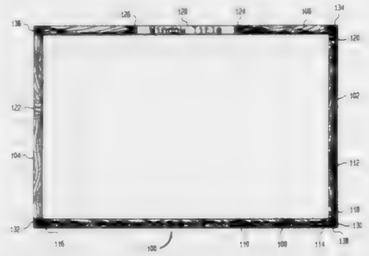
U.S. Cl. 395—157 **13 Claims**

1. A method for displaying a window border frame, comprising custom designed pictorial frame elements, for a window on a display screen in a windowing environment, comprising the steps of:

creating, using a computer program for developing customized drawings under a control of a user, the pictorial frame elements having an arbitrary pictorial design;

storing the pictorial frame elements in computer memory;

determining a size and location of a window border frame of an existing window in the windowing environment,



retrieving the stored pictorial frame elements from the computer memory,

modifying the pictorial frame elements such that the elements are sized to fit within the window border frame, and

displaying the window with the pictorial frame elements assembled in the window border frame.

5,388,203

FUNCTION EXTRACTION METHOD AND APPARATUS

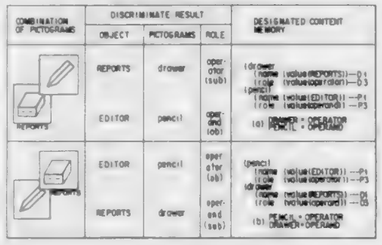
Satomi Kaneko, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 27, 1992, Ser. No. 858,878

Claims priority, application Japan, Mar. 29, 1991, 3-065159

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—159 **15 Claims**



1. A function extraction apparatus comprising:

output process means for displaying a plurality of icons having respective pictograms;

input means for selectively designating at least two of the plurality of icons displayed by the output process means, and generating input information corresponding to the designated icons;

designated content-discriminating means for discriminating objects, their pictograms and roles corresponding to the at least two designated icons based on the input information supplied from the input means, wherein said designated content-discriminating means discriminates the roles of the objects corresponding to the at least two designated icons from a plurality of potential roles to which each object may correspond;

transforming means for transforming the discriminated objects, their pictograms and roles into predetermined information, and outputting the predetermined information as designated-content information;

designated-content memory means for storing the designated-content information;

knowledge base means including pictogram knowledge attribute means for storing, as attribute knowledge, a functional role of each reference pictogram, and functional rule knowledge means for storing a plurality of functional rules each defining a function to be executed, on the basis of the reference pictograms and attribute knowledge; and

function designating means for designating a function to be executed, on the basis of the relationship between the roles of the two objects corresponding to the at least two designated icons by using the designated-content memory means and knowledge base means.

5,388,204

METHOD OF AND APPARATUS FOR COMBINING LINEWORK DATA

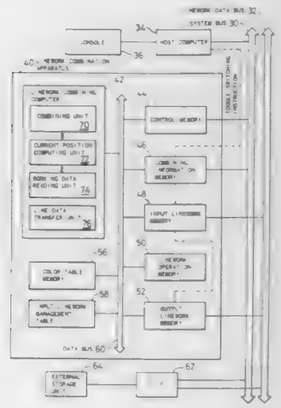
Iwata Ikeda, and Ikuo Ohsawa, both of Kyoto, Japan, assignors to Dianippon Screen Mfg. Co. Ltd., Kyoto, Japan

Filed Feb. 18, 1993, Ser. No. 19,376

Claims priority, application Japan, Feb. 26, 1992, 4-075160

Int. Cl.[6] G06F *15/20*

U.S. Cl. 395—162 **14 Claims**



1. An apparatus for combining a plurality of linework data including run-length data representing a plurality of linework images to produce combined linework data representing a combined linework image which is obtained by combining said plurality of linework images, respectively, comprising:

a first processor;

a first bus connected to said first processor;

an auxiliary memory, connected to said first bus, for memorizing said plurality of linework data;

a second processor;

a second bus connected to said second processor; and

first, second, and third main memories of said second processor for memorizing linework data, said first and third main memories being connected to both of said first and second buses, said second main memory being connected to said second bus;

wherein said first processor includes:

first data-transfer means for transferring at least a part of each of said plurality of linework data from said auxiliary memory to said first main memory through said first bus; and said second processor includes:

second data-transfer means for detecting a necessity of data supplementing to said second main memory, and supplementing at least a part of said plurality of linework data from first main memory to said second main memory through said second bus; and

combining means for combining respective parts of said plurality of linework data stored in said second main memory to produce said combined linework data, and storing said combined linework data in said third main memory.

5,388,205

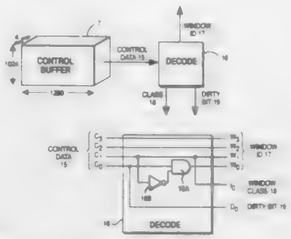
APPARATUS AND METHOD OF ENCODING CONTROL DATA IN A COMPUTER GRAPHICS SYSTEM

Murray R. Cantor, and John A. Cook, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 870,171, Apr. 16, 1992, abandoned, which is a continuation of Ser. No. 475,462, Feb. 5, 1990, abandoned. This application Apr. 4, 1994, Ser. No. 223,367

Int. Cl.[6] G06F *9/22*

U.S. Cl. 395—162 **20 Claims**



1. A method of displaying images on a computer graphics system by encoding and decoding plural bit control data input to a decode logic circuit included therein, comprising the steps of:

converting, by said decode logic circuit, a first bit from the plural bit control data into a class bit for defining plural subsets of said plural bit control data;

designating a second bit of said plural bit control data as a control bit field to control a reset operation, the validity of said control bit field being dependent upon said class bit;

controlling a window identification operation by outputting a first class of values, corresponding to one of the plural subsets, wherein said class bit indicates that said second bit is valid and a reset operation may be implemented; and

controlling said window identification operation by outputting a second class of values, corresponding to another one of the plural subsets, wherein said class bit indicates that said second bit is invalid and a reset operation may not be implemented.

5,388,206

ARCHITECTURE AND APPARATUS FOR IMAGE GENERATION

John W. Poulton; Steven E. Molnar, and John G. Eyles, all of Chapel Hill, N.C., assignors to The University of North Carolina, Chapel Hill, N.C.

Filed Nov. 13, 1992, Ser. No. 975,821

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—163 **42 Claims**

1. An image generation system, comprising:

(a) a plurality of geometry processors for receiving primitives and translating said primitives to screen coordinates to provide primitive screen data; and,

(b) a rasterizer associated with each of said geometry processors for computing pixel values from said primitive screen data, said rasterizer comprising an enhanced memory device, said enhanced memory device corresponding to a selected set of screen coordinates,

(i) said enhanced memory device having for each of said selected screen coordinates,

processing means for computing pixel values to provide a computed pixel value,

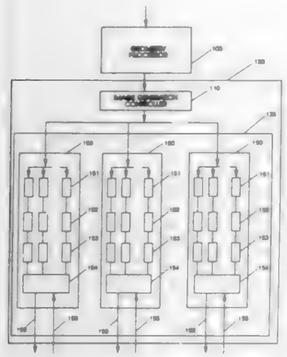
storage means associated with each of said processing means for storing data, and,

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a compositor buffer associated with each of said processing means for storing said computed pixel value, and

(ii) said enhanced memory device further having,

input means for receiving pixel values from a corresponding enhanced memory device associated with a different one of said plurality of geometry processors,



compositor means for compositing said stored computed pixel value and the pixel value received by said input means to determine a composited pixel value; and

output means operably associated with said compositor means for outputting said composited pixel value.

5,388,207

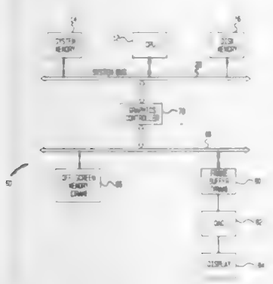
ARCHITECUTRE FOR A WINDOW-BASED GRAPHICS SYSTEM

Wei K. Chia; Bor C. Kuo, both of Hsinchu; Jiunn M. Ju, Tainan County, and Gen H. Chen, Hsinchu, all of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Nov. 25, 1991, Ser. No. 796,720

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—164 **12 Claims**



1. A computer graphics system comprising

a main CPU, a main system memory, a graphics subsystem for displaying graphical images on a display terminal, and a system bus for enabling said main CPU, said system memory and said graphics subsystem to transmit data among one another,

said graphics subsystem comprising:

a graphics controller in communication with said system bus,

a frame buffer for storing pixels displayed on said display terminal,

a separate off-screen memory unit located within said graphics subsystem for storing off-screen pixels in a linear format, and

a local bus for transmitting data within said graphics subsystem among said frame buffer, said off-screen memory unit, and said graphics controller,

said graphics controller including means for converting between two dimensional addresses and linear format addresses utilized by said off-screen memory unit, for converting between logical two dimensional addresses and physical two dimensional addresses and for converting between logical linear addresses and physical linear addresses.

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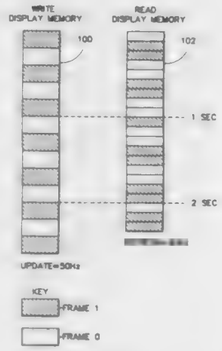
GERBIL WHEEL MEMORY

Thomas A. Weingartner; Paul J. Short, both of Albuquerque, N. Mex.; Paul E. Knight, Streamwood, Ill., and Jennifer A. Graves, Mesa, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 4, 1992, Ser. No. 985,975

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—165 **27 Claims**



10. A display memory apparatus for use with a graphic display system, which avoids the simultaneous reading from and writing to a single memory location,

a memory means for storing data having a first addressing port, a second addressing port, a first data port, and a second data port, wherein the memory means is partitioned into a plurality of frames of memory and each frame is partitioned into a plurality of subframes;

a memory controller means having a write addressing port for receiving addressing signals from the graphic display system, a write data port for receiving data from the graphic display system, a read addressing port for receiving read addressing signals from the graphic display system, a read data port for transmitting data to the graphic display system, an input address port connected to the first addressing port for transmitting address signals to the memory means, an input data port connected to the first data port for transmitting data to the memory means, an output address port connected to the second addressing port for transmitting address signals to the memory means, and an output data port connected to the second data port for receiving data from the memory means, the memory controller means for receiving write address signals on the write address port and producing an input address signal on the input address port which identifies a specific frame and a specific subframe within the memory means to which the write data signal is to be stored, the memory controller means also for receiving read address signals on the read address port and producing an output address signal on the output address port which identifies a specific frame and a specific subframe within the memory means from which data is to be retrieved, wherein the memory controller means will control the output address signals so as to assure that the input data will be written to and the output data will be read from different subframes.

5,388,209

APPARATUS FOR HIGH-SPEED RECORDING COMPRESSED DIGITAL DATA WITH INCREASED COMPRESSION

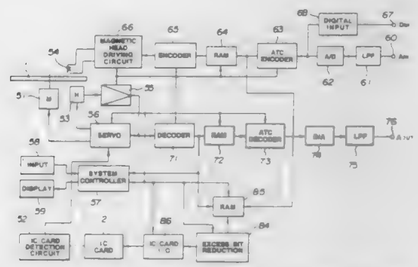
Kenzo Akagiri, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Jul. 31, 1992, Ser. No. 924,550

Claims priority, application Japan, Aug. 2, 1991, 3-216483; Aug. 2, 1991, 3-216484

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.38 **42 Claims**



1. An apparatus for recording, on a recording medium, a recording signal derived from compressed digital data representing an audio information signal, the recording signal, upon reproduction from the recording medium, conversion to an analog signal, and reproduction of the analog signal, being for perception by the human ear, the analog signal including quantization noise, the compressed digital data including plural bits having a bit rate, the bit rate of the bits of the compressed digital data being constant with time, the apparatus comprising:

receiving means for receiving the compressed digital data;

bit removing means for selectively removing redundant bits from portions of the compressed digital data received from the receiving means to provide the recording signal including plural bits having a bit rate, the bit rate of the bits of the recording signal being variable with time, redundant bits being bits selective removal whereof from the compressed digital data leaves unchanged the quantization noise perceived by the human ear in the reproduced analog signal derived from the recording signal by reproduction from the recording medium and conversion; and

a recorder for the recording medium, the recorder receiving the recording signal at a variable bit rate from the bit removing means.

5,388,210

PROGRAMMABLE MODULAR NETWORK INTERFACE FOR COUPLING A COMPUTER AND A PLURALITY OF WORKSTATION CONSOLES

Terry R. Clayton, and Andrew W. Lepp, both of Fredericksburg, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 17, 1993, Ser. No. 63,227

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200 **3 Claims**

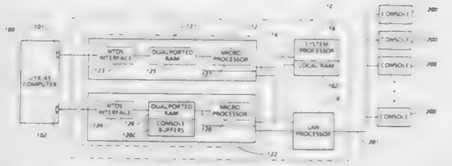
1. A modular system for interfacing between a computer and a plurality of workstation consoles connected to a control data bus, said computer having serial input and output ports that receive and send, respectively, data in accordance with a predetermined format, said consoles having input and output ports that receive and send, respectively, data in a format other than said predetermined format, said system comprising:

a backplane for passing transistor-transistor-logic (TTL) format data;

first conversion processor means connected to said output port of said computer and to said backplane for classifying said predetermined format data received from said computer as an interrogation message or a console designated message which includes a corresponding console destination address indicative of one of said plurality of consoles, said first conversion processor means further converting said console designated message or said interrogation message into the TTL format data passed by said backplane;

second conversion processor means connected to said input port of the computer and to said backplane for retrieving said interrogation message from said backplane and accessing information associated with each of the consoles to output a response to the interrogation message to said computer in accordance with said predetermined format;

a system processor connected to said backplane, including buffer memory means for providing indexed buffering of said console designated message based on said corresponding console designated address and passing said console designated message onto said backplane in accordance with programmable timing;



local area network (LAN) processor means connected to said backplane and connected to said consoles via said control data bus for converting said console designated message from said buffer memory means into said format other than said predetermined format and distribution thereof on said control data bus to a designated one of said plurality of consoles based upon said corresponding console destination address;

said LAN processor means further converting said data sent from said plurality of consoles to said TTL format, said data sent from said plurality of consoles including a corresponding console origination address identifying a particular one of said plurality of consoles as a source of said data sent from said plurality of consoles;

said system processor further having means for providing indexed buffering of said data sent from said plurality of consoles in said TTL format based on said corresponding console origination address and passing said data sent from said plurality of consoles in said TTL format from said buffer memory means onto said backplane in accordance with programmable timing; and

said second conversion processor means including memory means for storing said information associated with each of the consoles being accessed and updating said stored information using said data sent from said plurality of consoles from said buffer memory means.

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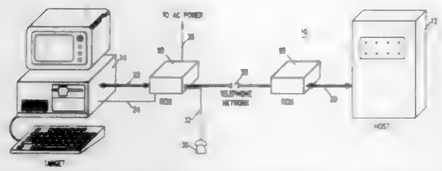
METHOD AND APPARATUS FOR REMOTELY CONTROLLING AND MONITORING THE USE OF COMPUTER SOFTWARE

Gary D. Hornbuckle, Pebble Beach, Calif., assignor to SofTel, Inc., San Francisco, Calif.

Continuation of Ser. No. 883,818, May 14, 1992, abandoned, which is a continuation of Ser. No. 345,083, Apr. 18, 1989, abandoned. This application Apr. 20, 1993, Ser. No. 50,749

Int. Cl.[6] G06F *11/30, 15/40, 13/12*

U.S. Cl. 395—200 **32 Claims**



1. A method of protecting the security of a computer program comprising the steps of:

selecting at least one portion of said computer program essential to the correct operation of the computer program, said computer program not operable without said portion;

encrypting said portion with a first encryption key utilized by an encryption means;

adding a decryption program to the operating system of a computer in which said computer program is to be run, said decryption program including a procedure for initiating the decryption of said portion of said computer program;

fetching the encrypted version of said portion of said computer program;

sending the encrypted version of said portion of said computer program to a decryption means associated with said computer in which said computer program is to be run;

decrypting said encrypted portion under the control of said decryption program to form a decrypted module, utilizing said first encryption key in said decryption means of said computer on which said computer program is to be run;

transferring said decrypted module from said decryption means to said computer for execution along with said computer program; and

deleting said decrypted module from said computer when execution of said computer program is complete, said decryption program initiating said deletion of said decrypted module.

5,388,212

DETECTING UNAUTHORIZED MODIFICATION OF COMMUNICATION UNIT BASED ON COMPARISON BETWEEN STORED HARDWARE IDENTIFICATION CODE AND HARDWARE IDENTIFICATION CODE GENERATED FROM OPERATIONAL PLATFORM IDENTIFICATION CODE

Gary W. Grube, Palatine, and Timothy W. Markison, Hoffman Estates,, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 23,298, Feb. 26, 1993. This application Aug. 13, 1993, Ser. No. 106,018

Int. Cl.[6] G06F *11/08*

U.S. Cl. 395—200 **12 Claims**

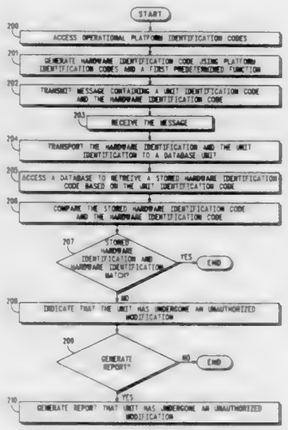
1. In a communication system that includes a plurality of communication units and at least one radio frequency communication resource, wherein each communication unit of the plurality of communication units includes at least one operational platform, a method for identifying unauthorized modification to a communication unit of the plurality of communication units, the method comprises the steps of:

a) transmitting, by the communication unit via the at least one radio frequency communication resource, a message, wherein the message contains a hardware identification code and a communication unit identification code;

b) receiving, by a receiver via the at least one radio frequency communication resource, the message;

c) transporting, by the receiver, the hardware identification code and the communication unit identification code to a database unit;

d) accessing, by the database unit, a database to retrieve a stored hardware identification code based on the communication unit identification code;



e) comparing, by the database unit, the stored hardware identification code with the hardware identification code; and

f) when the stored hardware identification code and the hardware identification code do not substantially match, indicating, by the database unit, that the communication unit has undergone the unauthorized modification; wherein the transmitting of the message step (a) further comprises the steps of:

(1) accessing, by the communication unit, an operational platform identification code for the at least one operational platform; and

(2) generating, by the communication unit, the hardware identification code based on the operational platform identification code a first predetermined function.

5,388,213

METHOD AND APPARATUS FOR DETERMINING WHETHER AN ALIAS IS AVAILABLE TO UNIQUELY IDENTIFY AN ENTITY IN A COMMUNICATIONS SYSTEM

Alan B. Oppenheimer, Cupertino; Sean J. Findley, Gilroy, and Gursharan S. Sidhu, Menlo Park, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 534,154, Jun. 6, 1990, Pat. No. 5,282,270. This application Oct. 29, 1993, Ser. No. 146,448

The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.

Int. Cl.[6] H04L *12/46*

U.S. Cl. 395—200 **31 Claims**

1. In a communication system for transferring data between a plurality of devices, a method used by a first entity for determining whether an alias is available to uniquely identify said first entity, said first entity being a networkable computer resource, the method comprising the steps of:

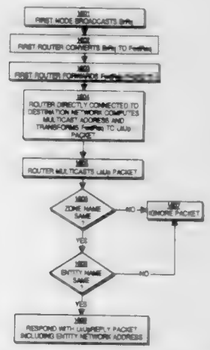
A) said first entity broadcasting a first signal to a first local area network, wherein said first entity is directly coupled to said first local network, wherein said first signal includes said alias, said alias including a zone name,

B) a first routing means of said first local area network translating said first signal into a second signal which includes said alias, said first routing means being coupled to at least one second routing means which is directly coupled to at least one second local area network of said communication system,

C) said first routing means forwarding said second signal to said at least one second routing means,

D) said at least one second routing means computing a zone multicast address from said zone name,

E) said at least one second routing means translating said second signal into a third signal which includes said alias and said zone multicast address,



F) if said at least one second local area network includes a first set of nodes having said zone multicast address, then

F1) said at least one second routing means multicasting said third signal over said second network,

F2) if a second entity of said first set of nodes has said alias, then said second entity transmitting a fourth signal to said first entity, said fourth signal including it network address of said second entity,

G) if said first entity receives said fourth signal, then

G1) said first entity entering said network address into a names table in said first entity, said names table associating said network address with said alias, and

G2) said first entity determining that said alias is not available to uniquely identify said first entity; and

H) if said first entity does not receive said fourth signal, said first entity determining that said alias is available to uniquely identify said first entity.

5,388,214

PARALLEL COMPUTER SYSTEM INCLUDING REQUEST DISTRIBUTION NETWORK FOR DISTRIBUTING PROCESSING REQUESTS TO SELECTED SETS OF PROCESSORS IN PARALLEL

Charles E. Leiserson, Winchester; Robert C. Zak, Jr., Lexington; W. Daniel Hillis, Cambridge; Bradley C. Kuszmaul, Waltham, all of Mass., and Jeffrey V. Hill, Santa Clara, Calif., assignors to Thinking Machines Corporation, Cambridge, Mass.

Division of Ser. No. 946,242, Sep. 16, 1992, Pat. No. 5,333,268, which is a continuation of Ser. No. 592,029, Oct. 3, 1990, abandoned. This application Jan. 14, 1994, Ser. No. 183,219

Int. Cl.[6] G06F *13/00*

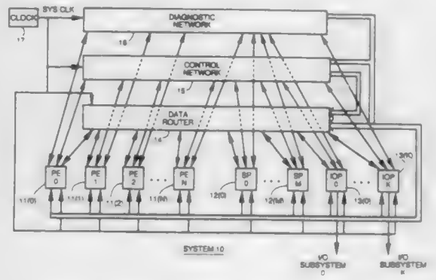
U.S. Cl. 395—200 **31 Claims**

1. A computer comprising:

A. a plurality of processing nodes each for receiving processing requests and generating in response processed data;

B. a control node for generating processing requests for transfer to selected ones of said processing nodes as identified by associated request address information, and for receiving processed data in response, the request address information identifying selected ones of said processing nodes to receive a processing request in parallel; and

C. a request distribution network including a plurality of request distribution nodes connected in a plurality of levels to form a tree-structure, including an upper root level and a lower leaf level, each request distribution node being connected to receive processing requests from, and



to couple processed data to, a parent, the parent of the request distribution node of the root level comprising the control node, and each request distribution node being further connected to couple processing requests to and receive processed data from, selected children, the children of the request distribution nodes of the leaf level comprising the processing nodes, each request distribution node, in response to request address information received from its parent, identifying selected ones of its children and thereafter coupling further request address information which it receives and processing requests in parallel to its children, and coupling processed data which it receives from its children to its parent.

5,388,215

UNCOUPLING A CENTRAL PROCESSING UNIT FROM ITS ASSOCIATED HARDWARE FOR INTERACTION WITH DATA HANDLING APPARATUS ALIEN TO THE OPERATING SYSTEM CONTROLLING SAID UNIT AND HARDWARE

Ernest D. Baker, Boca Raton; John M. Dinwiddie, Jr., West Palm Beach; Lonnie E. Grice; James M. Joyce, both of Boca Raton; John M. Loffredo, Deerfield Beach, and Kenneth R. Sanderson, West Palm Beach, all of Fla., assignors to IBM Corporation, Boca Raton, Fla.

Continuation of Ser. No. 885,718, May 11, 1992, abandoned, which is a continuation of Ser. No. 353,114, May 17, 1989, Pat. No. 5,155,809. This application Apr. 28, 1994, Ser. No. 234,706

Int. Cl.[6] G06F *15/20*

U.S. Cl. 395—200 **16 Claims**

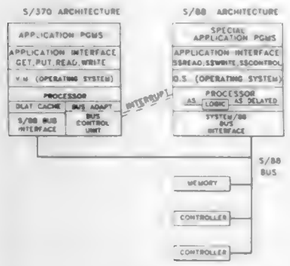
4. In a data processing apparatus,

discrete first and second data processing systems having respective first and second different architectures and first and second different software operating systems, said first processing system including a first processing unit, a main store and a plurality of input/output devices operating in conformance with said first architecture, and said second processing system including a second processing unit operating in conformance with said second architecture,

means directly connecting said first and second processing systems to each other for transferring information between said processing systems,

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means in said first processing system, including an application program dependent on said first operating system, for selectively operating said first processing unit in isolation from said first operating system while receiving information from said second processing system via said connecting means, said information including input/output commands and data originated by said second processing system in conformance with said second architecture,



means in said first processing system, including said application program, for converting said input/output commands and data originated by said second processing system into modified input/output commands and first data formats conforming to said first architecture, and

means for executing modified commands in said first processing system to cause the transfer of data between said first processing unit and said input/output devices of said first subsystem in said first format.

5,388,216

CIRCUIT FOR CONTROLLING GENERATION OF AN ACKNOWLEDGE SIGNAL AND A BUSY SIGNAL IN A CENTRONICS COMPATIBLE PARALLEL INTERFACE

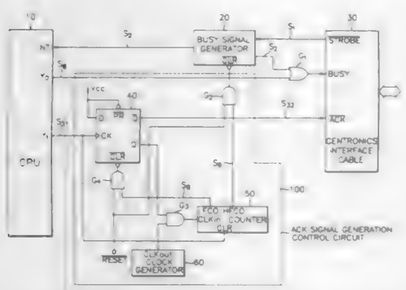
Su-Whan Oh, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 10, 1990, Ser. No. 565,477

Claims priority, application Rep. of Korea, Aug. 17, 1989, 11724/1989

Int. Cl.[6] G06F *3/12*

U.S. Cl. 395—275 **24 Claims**



1. A circuit for controlling generation of an acknowledge signal and a busy signal in a Centronics compatible parallel interface after transmission of a block of data, said circuit comprising:

a Centronics interface port coupled for receiving a strobe signal from a Centronics interface;

busy signal generating means coupled electrically to the Centronics interface port, for generating a busy signal in response to said strobe signal and disabling the generation of said busy signal in response to a busy signal generation control signal;

acknowledge signal generating means coupled to said Centronics interface port, for generating an acknowledge signal in response to a state of a received data processing completion signal to be generated by a central processing unit, and for disabling the generation of said acknowledge signal in response to an acknowledge signal generation control signal, said acknowledge signal generating means comprising:

means for generating clock pulses;

completion signal receiving means for initiating generation of said acknowledge signal in response to said received data processing completion signal, and for terminating the generation of said acknowledge signal in response to said acknowledge signal generation control signal; and

gating means responsive to said completion signal receiving means, for gating said clock pulses; and

counting means for counting said clock pulses gated by said gating means in response to the state of said received data processing completion signal to provide said acknowledge signal generating means with said acknowledge signal generation control signal after providing said busy signal generating means with said busy signal generation control signal.

5,388,217

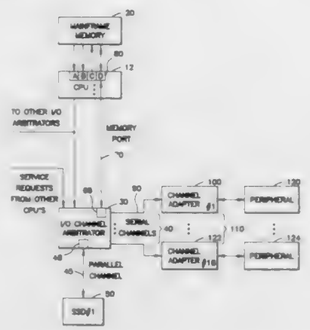
DISTRIBUTING SYSTEM FOR MULTI-PROCESSOR INPUT AND OUTPUT USING CHANNEL ADAPTERS

Gary E. Benzschawel; Lonnie R. Heidtke; Steven S. Chen, all of Chippewa Falls; Fredrich J. Simmons, and George A. Spix, both of Eau Claire, all of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Filed Dec. 13, 1991, Ser. No. 807,082

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—275 **16 Claims**



1. An input/output system for a supercomputer, comprising:

(a) a CPU;

(b) a main memory having a plurality of directly addressable memory locations connected to said CPU;

(c) a solid state memory;

(d) a plurality of channel adapter means for interfacing between a standard input/output protocol and a non-standard input/output protocol of a particular peripheral device; and

(e) an input/output channel arbitrator connected to said CPU, said main memory, said solid state memory and said plurality of channel adapter means, such that said input-/output channel arbitrator facilitates input/output data transfers between said peripherals, said main memory, said CPU and said solid state memories in response to requests received from said CPU.

5,388,218

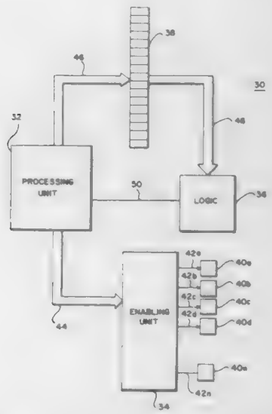
APPARATUS AND METHOD FOR SUPPORTING A TRANSFER TRAPPING DISCIPLINE FOR A NON-ENABLED PERIPHERAL UNIT WITHIN A COMPUTING SYSTEM

Douglas D. Gephardt, and Andrew McBride, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 14, 1992, Ser. No. 836,647

Int. Cl.[6] G06F *15/02*

U.S. Cl. 395—275 **13 Claims**



1. An apparatus for managing employment of a transfer trapping discipline in a computing system; said computing system including a processing unit, an enabling unit, and a plurality of peripheral units; said processing unit receiving information from a plurality of loci within said computing system and determining an enablement profile in response to said information according to predetermined criteria; said enabling unit being coupled with said processing unit and with said plurality of peripheral units and responding to said enablement profile to selectively enable specified peripheral units of said plurality of peripheral units; the apparatus comprising:

at least one storage means coupled with said processing unit for storing information, said information including said enablement profile;

a logic means coupled with said at least one storage means for logically treating said enablement profile according to a predetermined algorithm, said logic means generating a feedback signal representative of said enablement profile; and

a transmission means for communicating said feedback signal from said logic means to said processing unit;

said processing unit responding to said feedback signal to determine whether to employ a transfer trapping discipline whereby transfers destined for a non-enabled peripheral unit are stored in said at least one storage means until said non-enabled unit is enabled.

5,388,219

EFFICIENT CHANNEL AND CONTROL UNIT FOR HOST COMPUTER

Shek-Wayne Chan, Fishkill; David L. Dosch, Apalachin, both of N.Y.; Karlheinz Dutke, Deckenpfronn, Germany, and Wayne R. Longcore, Mason, Mich., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 2, 1992, Ser. No. 844,358

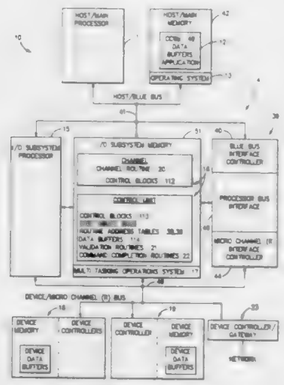
Int. Cl.[6] G06F *13/10*

U.S. Cl. 395—275 **23 Claims**

1. An I/O system for controlling transfer of data between a memory of a host processor and a plurality of different types of device controllers, said I/O system comprising:

a plurality of first programmed means, within an other processor, for determining if a plurality of respective device controller types support specific I/O commands;

second programmed means, within said other processor and responsive to an I/O command to perform an I/O operation on a specific device controller, for identifying and invoking execution of a program within the corresponding first programmed means associated with a type of said specific device controller and, if said specific device controller supports the command, invoking execution of a program within said specific device controller;



third programmed means, within said other processor, for receiving I/O operation state information from said specific device controller and signalling the state information to said second programmed means; and

multitasking operating system means for controlling execution of the program within said corresponding first programmed means and a program within said second programmed means on said other processor in a common task, and a program within said third programmed means on said other processor in a different task.

5,388,220

PARALLEL PROCESSING SYSTEM AND DATA TRANSFER METHOD WHICH REDUCES BUS CONTENTION BY USE OF DATA RELAYS HAVING PLURALITY OF BUFFERS

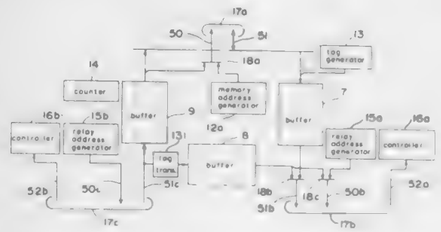
Ichiro Okabayashi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 18, 1992, Ser. No. 853,249

Claims priority, application Japan, Mar. 19, 1991, 3-054529

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—275 **8 Claims**



1. A data transfer apparatus for transmitting data between a

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memory means and a network comprising at least one data relay, said data transfer apparatus comprising:

a first input/output port for transmitting and receiving data from the memory means,

a second input/output port for transmitting and receiving data from the network,

a third input/output port for transmitting and receiving data from the network,

a first buffer connected between the first and second input-/output ports for storing data to be transmitted from the memory means to the network,

a second buffer connected between the first and third input-/output ports for storing data to be transmitted from the network to the memory means,

a third buffer connected between the second and third input-/output ports for passing data between the second and third input/out ports without accessing the memory means;

a tag generator for adding a tag to data received from the memory means;

a tag transformer coupled between the third input/output port and the third buffer, for transforming the tag of data transmitted between the third input/output port and the third buffer;

a memory address generator for generating an address when data is received from the network by the first input/output port and for counting the number of times data is sent from the memory means to the first input/output port;

a counter for counting the number of times data is sent from the first input/output port to the memory means;

a first selector for extracting a part of data sent from the second buffer as an address and for selecting the address with an address generated by the address generator, said selected address being sent to the external means when data is received by the first input/output port from the external means;

a first relay address generator for generating an address when data is sent from the second input/output port to the network;

a second relay address generator for generating an address when data is sent from the network by the third input/output port;

a second selector for selecting between the output of the first buffer and a part of the output of the third buffer when data is sent from the second input/output port to the network; and

a third selector for selecting the output of the first relay address generator when data is sent from the first buffer and for selecting an address portion of the data stored in the third buffer when data is sent from the third buffer.

5,388,221

ADAPTIVE DIGITAL AUDIO INTERPOLATION SYSTEM

Edmund Meitner, 4687 Mao Leod Tr. S.W., Calgary/Alberta, Canada, and Robert P. Gendron, 64 Millpond Rd., N. Andover, Mass. 01845

Filed May 5, 1992, Ser. No. 879,976
Int. Cl.[6] G10L *9/00*
U.S. Cl. 395—2.77 **5 Claims**

1. Method for reducing signal distortion in the neighborhood of transitions in a digital audio system having a digital input signal including successive digital data values comprising the steps of

entering said digital data values;

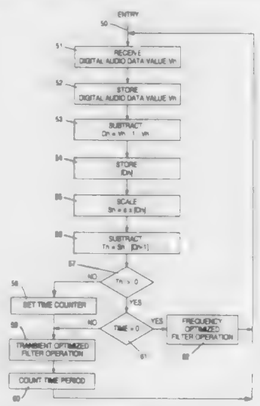
storing said digital data values in a first storage for providing a of said successive digital data values, and in a second storage for providing a delayed digital data value for each said digital data value;

subtracting each of said digital data values from the associated next one of said successive digital data values, thereby generating successive absolute difference values;

storing said absolute difference values in a third storage and providing a previous absolute difference value;

subtracting the stored previously generated one of said absolute difference values from the present one of said absolute difference values and generating a relative difference value;

determining the sign of said relative difference value as indicator for the occurrence of one of said transitions, setting a timing counter to a predetermined value, and starting said timing counter if said sign is positive;



processing said delayed digital input data values stored in said second storage in a frequency optimized filter for providing a first processed data value, and in a transient optimized filter for providing a second processed data value;

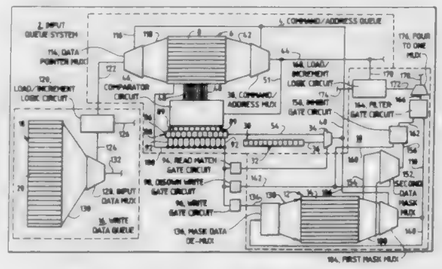
generating a digital audio output signal by selecting said first processed data value while said counter is not counting, and selecting said second processed data value while said counter is counting.

5,388,222

MEMORY SUBSYSTEM COMMAND INPUT QUEUE HAVING STATUS LOCATIONS FOR RESOLVING CONFLICTS

Lawrence A. P. Chisvin, Sudbury; John K. Grooms, Webster; Joseph F. Rantala, Worcester, and David W. Hartwell, Boxboro, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 765,417, Sep. 25, 1991, abandoned, which is a continuation of Ser. No. 376,300, Jul. 6, 1989, abandoned. This application Mar. 28, 1994, Ser. No. 219,807
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—275 **2 Claims**



1. A method of resolving conflicts between execution of commands from a plurality of nodes to a shared memory resource by use of a memory input queue, said commands each being directed to a specific address in said shared memory resource, said memory input queue having a plurality of storage locations that are available for storage of said commands, each of said plurality of storage locations having a "free" state, a "new" state, a "wait" state and a "match" state, at least one of said plurality of nodes having a write-back cache and at least one of said plurality of nodes not having a write-back cache, said commands comprising "ownership read" type and "disown write" type commands from said at least one of said plurality of nodes with a write-back cache, and "read" type and "write" type commands from said at least one of said plurality of nodes without a write-back cache, said memory input queue being connected between said plurality of nodes to receive said commands therefrom and said shared memory resource to access said shared memory resource, said method comprising the steps of:

receiving any of said commands in said memory input queue as received commands;

setting each of said plurality of storage locations in said memory input queue that is available for storage of said commands into said "free" state;

storing each of said received commands in one of said storage locations as stored commands in said memory input queue and changing the state of said one of said storage locations from said "free" state to said "new" state to indicate that said stored commands are to be processed;

creating mask data corresponding to each of said stored commands of said "disown write" type and said "write" type;

selecting each of said stored commands from said storage locations in said memory input queue;

changing, from said "new" state to said "wait" state, the state of each of said storage location that stores one of said stored commands if said one of said stored commands is directed to the same specific address in said shared memory resource as another one of said stored commands of the "ownership read" type or "disown write" type;

deferring the execution of each of said stored commands of the "read" type in said "wait" state until at least one of said stored commands of the "ownership read" type or "disown write" type is executed;

merging and storing said mask data that corresponds to each of said stored commands of the "write" type to create merged mask data;

for each of said stored commands of the "disown write" type changing, from said "wait" state to said "match" state, the state of each of said storage locations in said memory input queue that stores one of said stored commands that is directed to the same address in said shared memory resource as any of said stored commands of the "disown write" type and using said mask data of said stored commands of the "write" type from said storage locations in said "match" state to inhibit said mask data of each of said stored commands of the "disown write" type during execution and executing each of said stored commands of the "read" type from said storage locations in said "match" state after execution of said stored commands of the "disown write" type;

after execution of any of said stored commands that are not directed to the same address in said shared memory resource as any other of said stored commands of the "ownership read" or "disown write" type, changing the storage location that stores said any one of said stored commands from said "new" state to said "free" state to indicate that said storage location that stores said any one of said stored commands is available to receive a new one of said commands; and

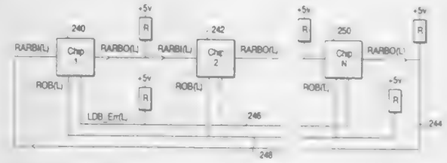
after execution of one of said stored commands from one of said storage locations in said "match" state, changing said one of said storage locations in said "match" state from said "match" state to said "free" state to indicate that said storage location that was changed from said "new" state to said "free" sate is available to store a new one of said commands.

5,388,223

1-BIT TOKEN RING ARBITRATION ARCHITECTURE

Guy Guthrie, Manassas, and Jeffery L. Swarts, Falls Church, both of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 5, 1991, Ser. No. 755,474
Int. Cl.[6] G06F *13/36*
U.S. Cl. 395—325 **20 Claims**



11. The ring arbitration method of claim **10**, which further comprises the steps of:

storing in the first node, a maximum duration value representing a maximum duration between a first instant when the request signal has been received on the third line and a second instant when the token signal is transmitted on the second line; and,

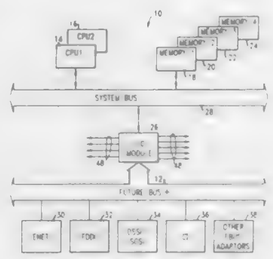
timing the maximum duration at the first node, starting at the first instant and initiating at the second instant the transmission of the token on the second control line.

5,388,224

PROCESSOR IDENTIFICATION MECHANISM FOR A MULTIPROCESSOR SYSTEM

Barry A. Maskas, Sterling, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 24, 1992, Ser. No. 873,924
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—325 **4 Claims**



1. A method for a processor to identify a corresponding slot in a multiprocessor system, the multiprocessor system including a bus having a plurality of slots to couple modules to the bus, preselected ones of the slots each being used to couple processor modules to the bus, each processor module including a processor coupled to an interface, the interface being coupled to the bus, the method comprising the steps of:

for each of the preselected ones of the slots, providing an ID register for storing identification information unique to the corresponding slot;

coupling each ID register to the interface of the corresponding processor module;

performing a command address cycle on the bus, the command address cycle requiring an interface to place the identification information from the corresponding ID register on the bus during a READ bus transaction initi-

ated by the interface and directed to another module coupled to the bus;

causing an interface coupled to a processor requiring identification of the slot by which it is coupled to the bus to initiate a READ bus transaction directed to another module coupled to the bus;

latching, at the module to which the READ transaction is directed, the identification information placed on the bus by the initiator interface during the command address cycle and returning the identification information to the initiator interface, over the bus as a data item; and

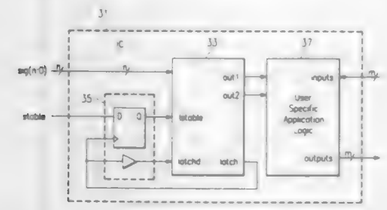
operating the interface to pass the identification information as a data item to the corresponding processor to identify the corresponding slot.

5,388,225

TIME-DOMAIN BOUNDARY BRIDGE METHOD AND APPARATUS FOR ASYNCHRONOUS SEQUENTIAL MACHINES

Jay T. Cantrell, Dallas, and Edward R. Schurig, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 16, 1992, Ser. No. 945,548
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—325 **29 Claims**



1. Circuitry for coupling sequential logic circuitry to an asynchronous input signal, said circuitry for coupling comprising:

a first memory coupled to an input terminal, said first memory having a control signal and capturing data present at said input terminal responsive to a transition of the control signal, said first memory having an output for transmitting the captured data, said first memory having a metastibility delay from a transition at the input to a valid output;

said sequential logic circuitry coupled to said output of said first memory, and having said control signal as one of its outputs;

delay circuitry coupled to said control signal and outputting a delayed control signal;

wherein said sequential logic circuitry produces a pulse on said control signal in response to certain sequences within said sequential logic circuitry, said memory capturing said asynchronous input signal in response to said pulse on said control signal, said delay circuitry being coupled so that said delayed control signal determines when the output of said first memory may be safely input to said sequential logic circuitry.

5,388,226

METHOD AND APPARATUS FOR ACCESSING A REGISTER IN A DATA PROCESSING SYSTEM

Joseph A. Gutierrez, Austin; William C. Moyer, Dripping Springs; Yui K. Ho, and Pee-Keong Or, both of Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

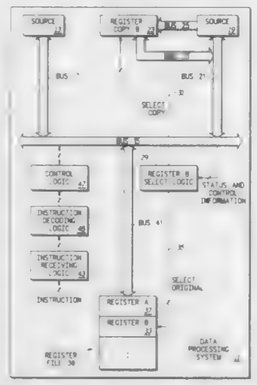
Filed Oct. 5, 1992, Ser. No. 956,194
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—325 **20 Claims**

1. A data processing system comprising:

a register;

a storage circuit;

select logic for generating a first select signal and a second select signal, said select logic providing the first select signal to said register and providing the second select signal to said storage circuit, said select logic selectively asserting the first select signal, said select logic selectively asserting the second select signal, said select logic being coupled to said register and to said storage circuit; and



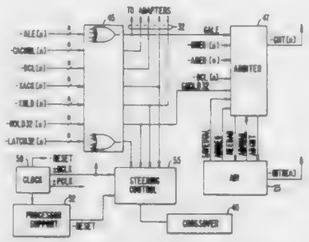
a source circuit, coupled to said register and to said storage circuit, so that when a write access is made to said register, if the first select signal is asserted said source circuit transfers a value into said register, if the second select signal is asserted said source circuit transfers the value into said storage circuit, and if both the first and second select signals are asserted said source circuit transfers the value into both said storage circuit and said register.

5,388,227

TRANSPARENT DATA BUS SIZING

Harold L. McFarland, San Jose, Calif., assignor to Nexgen Microsystems, San Jose, Calif.

Continuation of Ser. No. 567,405, Aug. 14, 1990, abandoned. This application Oct. 7, 1992, Ser. No. 958,438
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—325 **28 Claims**



1. A data communication system **2** comprising:

a bus including a 2N-bit wide data bus having an N-bit lower half and an N-bit upper half;

a bus clock having a frequency that defines a repetitive series of time intervals, referred to as bus cycles;

a source unit having means, coupled to both halves of said bus, for providing 2N bits of data on said upper and lower halves in a single bus cycle;

a sink unit having means, coupled to said lower half, for receiving N bits of data from said lower half in a single bus cycle;

means for initiating a communication between said source and sink units;

means for causing said source unit to provide N bits of data on said upper half and N bits of data on said lower half during a first given bus cycle;

means, associated with said sink unit and separate from said source unit, for asserting a particular type of signal, referred to as HOLDN signal, as part of said communication;

steering control means, responsive to said HOLDN signal and separate from said source and sink units, for generating first and second swap-down control signals;

an N-bit swap-down register, coupled to said upper half and responsive to said first swap-down control signal, for storing said N bits of data provided by said source unit on said upper half during said first given bus cycle;

an N-bit swap-down driver, coupled between said swap-down register and said lower half and responsive to said second swap-down control signal, for driving said N bits of data stored in said swap-down register onto said lower half during a second given bus cycle later than said first given bus cycle; and

means for causing said sink unit to read said N bits of data provided by said source unit on said lower half during said first given bus cycle and to read said N bits of data driven onto said lower half by said swap-down driver during said second given bus cycle;

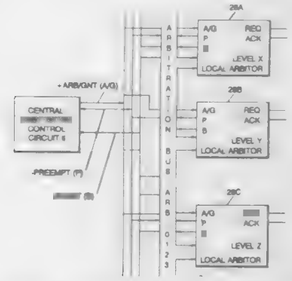
whereby said sink unit identifies itself to said steering control means as a device capable of receiving N bits of data in a single bus cycle by asserting said HOLDN signal.

5,388,228

COMPUTER SYSTEM HAVING DYNAMICALLY PROGRAMMABLE LINEAR/FAIRNESS PRIORITY ARBITRATION SCHEME

Chester A. Heath, Boca Raton, Fla.; James O. Nicholson, Austin, Tex.; James D. Reid, Boynton Beach, Fla., and Frederick E. Strietelmeier, Austin, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 725,223, Jun. 26, 1991, abandoned, which is a continuation of Ser. No. 102,690, Sep. 30, 1987, abandoned. This application May 20, 1993, Ser. No. 65,057
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—325 **2 Claims**



1. An arbitration subsystem for a computer system in which plural devices, having predetermined priorities for access to a channel and requiring access thereto, arbitrate concurrently, upon receipt of a GRANT signal presented concurrently to all said devices, with the arbitrating device having highest priority assuming control of said channel to transmit or receive information; said subsystem comprising:

means in at least one said device for setting programmably the respective device to operate relative to other said devices in either a fair arbitration mode or a linear arbitration mode;

condition indicating means in each said device for indicating a preempt condition to other said devices when the respective device requires access to said channel;

monitoring means in each said device for monitoring preempt conditions indicated by other said devices; and

arbitration logic in each said at least one device for conditionally arbitrating for access to said channel, relative to other said devices requiring access to said channel, when the respective device requires access to said channel and said GRANT signal is received; wherein, the arbitration logic in each said at least one device programmably settable to said fair arbitration mode is required to meet the following additional condition before arbitrating for control of said channel when the respective device is set to said fair arbitration mode:

said preempt condition monitored by said monitoring means in the respective device must be in a predetermined state; and

wherein each said at least one device settable to said fair arbitration mode is operable to transfer information relative to said channel in single (fixed length) transfer and burst (variable length) transfer modes, and additional condition which must be met before the respective device's arbitration logic can arbitrate while the device is in said fair mode is:

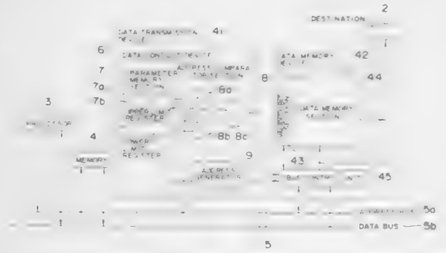
the respective device is operating in said burst mode, and said monitored preempt condition was either inactive when the respective device last accessed said channel or has become inactive since said last access.

5,388,229

DATA TRANSMISSION SYSTEM WHICH PREFETCHES DATA TO BE TRANSFERRED

Yukio Hyouga, Neyagawa, and Katsuyuki Kaneko, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 690,254, Apr. 23, 1991, abandoned. This application Oct. 14, 1993, Ser. No. 136,095
Claims priority, application Japan, Apr. 23, 1990, 2-107234
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—325 **6 Claims**



3. A data transmission system connected to a common bus for connecting in common a memory for storing data and a processor for processing the data stored in the memory, and for transmitting data, produced by the processor, through a data input/output port to an external destination, said data transmission system comprising:

a data conduct device which includes: a parameter memory section for storing parameters which represent a range of data to be transmitted; an address comparator section, connected to said common bus, for monitoring said common bus and for comparing an address said common bus with said range of data to be transmitted to determine whether an access on said common bus is within said range and for generating a data fetch signal; and an address generator for producing an address of data to be transmitted to said external destination from the data stored in said parameter memory section and for generating a data request signal;

a data memory device which includes: a data memory section for storing the data to be transmitted to said external

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destination and a validity bit memory section for storing validity bits related to the data;

a bus control means connected to said common bus and said data memory device, for reading data to be transmitted from said common bus in response to said data fetch signal and said data request signal from said data conduct device and for writing the data into said data memory device;

wherein the parameter for the data transmission is set prior to the production of the transmission data by said processor, and in the period when said processor is producing the transmission data, said data conduct device monitors the address on said common bus, wherein the address on said common bus is compared with the parameter stored in the parameter memory section by said address comparator section, and when the data on said common bus is in the range of data transmission, said address comparator section transmits a signal to said bus control means so that said bus control means receives the signal from said data conduct device and causes the data on said common bus together with the validity bit to be written into said data memory device;

and wherein when carrying out the data transmission, said address generator sequentially generates the address of the transmission data and said data memory device detects the validity bit corresponding to the address to thereby determine the validity of the data, and when the data stored in said data memory section is determined to be valid, then the data stores in said data memory section is transmitted to said external destination, and when the data in said data memory section is determined to be invalid, then said bus control means access said memory at an address generated by said address generator, whereby data stored in said memory is transmitted to said external destination.

5,388,230

PARALLEL PROCESSOR HAVING MULTI-PROCESSING UNITS EITHER CONNECTED OR BYPASSED IN EITHER SERIES OR PARALLEL BY THE USE OF BUS SWITCHING

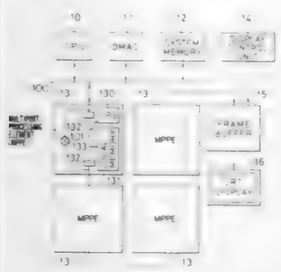
Hiromichi Yamada, Hitachi, and Koyo Katsura, Hitachiohta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 369,252, Jun. 20, 1989, abandoned. This application Aug. 12, 1993, Ser. No. 104,945

Claims priority, application Japan, Jun. 23, 1988, 63-155200

Int. Cl.[6] G06F *13/40, 13/00*

U.S. Cl. 395—325 **5 Claims**



1. A parallel processor comprising a plurality of processing units connected to each other via input/output ports and a main CPU connected to at least one of said processing units to control said processing units,

wherein each processing unit comprises:

a CPU,

a memory for storing data and programs to be executed by said CPU,

a local bus connected to said CPU and said memory,

a plurality of input/output ports, having a corresponding number of outside terminals, connected to said local bus within each of said processing units, said outside terminals being connected to outside buses external of each of said processing units, and

a bus switch for mutually connecting a pair of said outside terminals connected to a pair of said input/output ports, said pair of said input/output ports being a selected two of said plurality of input/output ports;

wherein at least one of said processing units having one of said outside terminals connected to one of the input/output ports has said at least one of said outside terminals connected via an outside bus to an input/output port of said main CPU, and the rest of said outside terminals of said at least one of said processing units are connected via outside buses to a corresponding number of said processing units such that there is at least a pair of said processing units connected in series;

wherein a selected pair of said outside terminals of said each of said processing units is connected to each other via said bus switch for bypassing said each of said processing units;

wherein said main CPU, having a function to modify an inter-relationship of connections between said plurality of processing units, controls said bus switch of any one of said processing units by opening and closing said bus switch to disconnect and connect, respectively, said outside buses of both sides of said bus switch via said bus switch, whereby any one of said processing units can be bypassed; and

wherein said CPU of said each of said processing units reads said programs from said memory and processes according to a demand of said programs to access data of said memory and data of said memory within another processing unit connected in series or parallel with said each of said processing units.

5,388,231

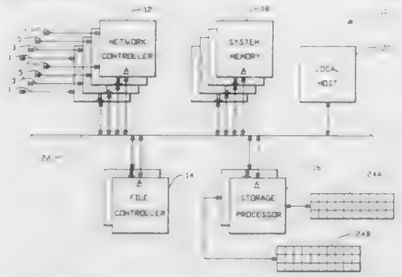
ENHANCED VMEBUS PROTOCOL UTILIZING PSEUDOSYNCHRONOUS HANDSHAKING AND BLOCK MODE DATA TRANSFER

Daryl D. Starr, Milpitas, Calif., assignor to Auspex Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 54,352, Apr. 28, 1993, abandoned, which is a continuation of Ser. No. 863,153, Apr. 2, 1992, abandoned, which is a continuation of Ser. No. 405,636, Sep. 8, 1989, abandoned. This application Apr. 12, 1994, Ser. No. 226,398

Int. Cl.[6] G06F *13/42*

U.S. Cl. 395—325 **3 Claims**



1. A method for implementing a pseudo-synchronous fast transfer VME backplane bus handshake protocol during a data transfer operation in a computer system, said computer system having a master functional unit and a slave functional unit logically interconnected by a VME backplane bus, said VME backplane bus including data lines for transferring data between said master functional unit and said slave functional unit, a data strobe line for communicating a data strobe signal between said master functional unit and said slave functional unit, said data strobe signal having a first state and a second state and a data transfer acknowledge line for communicating a data transfer acknowledge signal between said master functional unit and said slave functional unit, said data transfer acknowledge signal having a first state and a second state, the method for the transfer of data comprising the steps of:

driving said data strobe signal from said first state to said second state on said data strobe line by the master functional unit—sensing and then driving said data strobe signal from said second state to said first state on said data strobe line by the master functional unit a specified period of time after the transition of said data strobe signal from said first state to said second state where the driving of said data strobe signal from said second state to said first state does not require a prior change in state of said data transfer acknowledge signal on said data transfer acknowledge line;

transfer acknowledge signal between said master functional unit and said slave functional unit, said data transfer acknowledge signal having a first state and a second state, the method for the transfer of data comprising the steps of:

driving said data strobe signal from said first state to said second state on said data strobe line by the master functional unit—sensing then driving said data strobe signal from said second state to said first state on said data strobe line by the master functional unit a specified period of time after the transition of said data strobe signal from said first state to said second state where the driving of said data strobe signal from said second state to said first state does not require a prior change in state of said data transfer acknowledge signal on said data transfer acknowledge line;

driving said data transfer acknowledge signal from said first state to said second state on data transfer acknowledge line by said slave module and then driving said data transfer acknowledge signal from said second state to said first state on said data transfer acknowledge line by the slave functional unit a specified period of time after the transition of said data transfer acknowledge signal from said first state to said second state where said driving of said data transfer acknowledge signal from said second state to said first state does not require a prior change in state of said data strobe signal on said data strobe line;

whereby said fast transfer mode handshake protocol for each transfer data cycle between the master functional unit and the slave functional unit is controlled only by the driving of said data strobe signal from a first state to a second state on the data strobe line and the driving of said data transfer acknowledge signal from said first state to said second state on said data transfer acknowledge line.

5,388,232

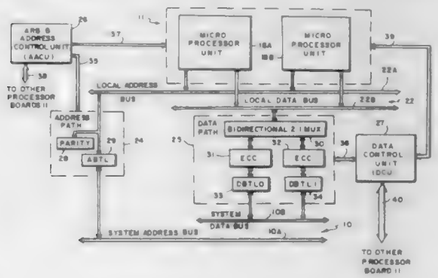
METHOD AND SYSTEM FOR PROVIDING SUCCESSIVE DATA TRANSFERS AMONG DATA PROCESSING UNITS IN A NON-MULTIPLEXED ASYNCHRONOUS MANNER USING UNIQUE PIPELINED ARBITRATION, ADDRESS, AND DATA PHASE OPERATIONS

Timothy J. Sullivan, Clinton; Ralph C. Frangioso, Jr., Franklin; Mark A. DesMarais, Northboro, and Lawrence L. Krantz, Marlborough, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 29,884, Mar. 11, 1993, abandoned. This application Aug. 17, 1994, Ser. No. 291,836

Int. Cl.[6] G06F *13/14, 13/36, 9/46*

U.S. Cl. 395—325 **14 Claims**



1. A method for performing asynchronous address and data transfers among a plurality of different operating units of a data processing system having a system bus which includes an address bus for transferring addresses and a data bus for transferring data between data source units and data destination units of said operating units in communication with said system bus, said method comprising:

selecting, under control of arbitration circuitry, during a first arbitration phase operation, a first one of a plurality of operating units which may be simultaneously requesting access to said system bus as a first master unit;

supplying a first arbitration handshake signal granting access to the address bus to said first master unit and indicating the end of said first arbitration phase operation and the beginning of a first address phase operation for said system bus;

supplying from said first master unit a first address handshake signal during said first address phase operation and supplying an address to said address bus;

supplying first address return handshake signals from each of said other units which operate as slave units acknowledging the supplying of said address and indicating the end of said first address phase operation and the beginning of a first data phase operation for said system bus;

supplying from said first master unit a first data handshake signal to permit a data source to supply data to said data bus;

supplying from said data source a first data source handshake signal and supplying data to said data bus; and

supplying first data return handshake signals from one or more data destination units acknowledging the receipt of data and indicating the end of said first data phase operation for said system bus.

5,388,233

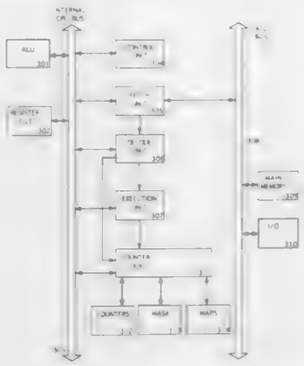
METHOD AND APPARATUS FOR COUNTING INSTRUCTION TYPES USING BIT MASKS AND A PROGRAMMABLE BIT MAP

Kirk I. Hays, Hillsboro, and Wayne D. Smith, Portland, both of Oreg., assignors to Intel Corporation, Santal Clara, Calif.

Filed Apr. 30, 1993, Ser. No. 56,075

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—375 **35 Claims**



1. In a computer system having a processor in which instructions are fetched for potential execution, a counter for counting instructions in which each instruction is characterized by at least one instruction attribute of a plurality of instruction attributes, said counter comprising:

at least one bit map storage means for storing a bit map comprising at least one map bit position, each map bit position representing an instruction attribute;

setting means for setting at least one map bit at at least one predetermined map bit position before instruction decoding;

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bit mask storage means for storing a bit mask corresponding to one of said fetched instructions, said bit mask comprising at least one mask bit position, each mask bit position representing an instruction attribute, a mask bit at a corresponding mask bit position being set if said mask bit position represents an instruction attribute of said fetched instruction; and

incrementing means for incrementing a count value associated with said at least one bit map based upon a comparison of said at least one bit map with said bit mask.

5,388,234

FINITE STATE AUTOMATION TEXT SEARCH APPARATUS HAVING TWO-LEVEL MEMORY STRUCTURE

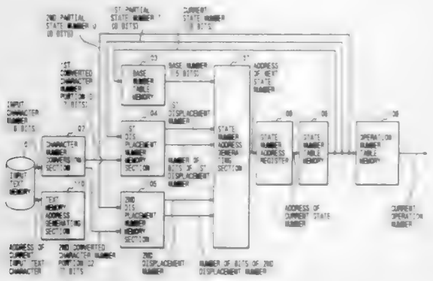
Yuji Kanno, Kawasaki; Masao Ito, Tokyo; Ken Tsurubayashi, Tokyo; Kazuaki Kurachi, Tokyo, and Atsushi Ando, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 17, 1993, Ser. No. 77,585

Claims priority, application Japan, Jun. 19, 1992, 4-161520

Int. Cl.[6] G06F *11/30*

U.S. Cl. 395—375 **11 Claims**



1. A finite state automaton text search apparatus, responsive to sequentially supplied input character numbers expressing successive characters of a text for executing a search of said text in accordance with predetermined search conditions, each of said input character numbers being a binary number comprising a fixed number of bits, said search apparatus comprising:

state number table memory means (**106**) having stored therein a plurality of state numbers, at locations having respective addresses predetermined in accordance with said search conditions, and for selectively outputting one of said state numbers as a current state number in response to a current address value supplied thereto;

character number conversion means (**102**) for converting a currently supplied one of said input character numbers into first and second character number portions (C1, C2);

state number address derivation means (**103**, **104**, **105**, **107**) including means for storing a predetermined set of 1st displacement numbers, a predetermined set of 2nd displacement numbers and a predetermined set of base numbers, and means for

deriving a combination of said first input character number portion (C1) with a first portion (T) of said current state number, and selecting one of said set of 1st displacement numbers, in accordance with said combination,

deriving a combination of said second character number portion (C2) and a second portion (U) of said current state number, and selecting one of said predetermined set of 2nd displacement numbers, in accordance with said combination,

selecting one of said predetermined set of base numbers in accordance with said current state number,

combining said selected 1st and 2nd displacement numbers to form a combined displacement number, and

adding said combined displacement number to said selected base number to obtain an address in said state number table memory means of a next state number; and

address register means (**109**) for supplying said current address to said state number table memory means, coupled to receive said address of the next state number, and for supplying said address of the next state number as said current address to said state number table memory means when a next one of said input character numbers is received by said search apparatus.

5,388,235

ARITHMETIC AND LOGIC PROCESSOR AND OPERATING METHOD THEREFOR

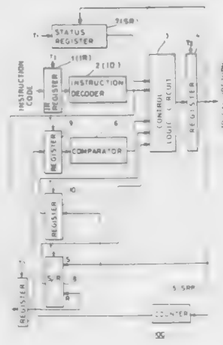
Chikako Ikenaga, and Hideki Ando, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 530,700, May 30, 1990, Pat. No. 5,276,820. This application Aug. 16, 1993, Ser. No. 83,759

Claims priority, application Japan, Jul. 5, 1989, 1-174875

Int. Cl.[6] G06F *13/00, 9/00*

U.S. Cl. 395—375 **15 Claims**



1. An arithmetic and logic processor having a register file and a first memory, wherein said register file includes a plurality of register windows one assigned to each procedure, and each of the plurality of register windows includes a plurality of registers, said processor comprising:

decoding means for decoding a supplied instruction to determine whether the supplied instruction is an instruction requiring a procedure different from a current procedure under execution;

first comparing means for comparing difference between a start address of a register window used by a procedure under execution and a starting address of said register file with a predetermined constant, when said decoding means indicates that the supplied instruction is an instruction other than the instruction requiring a procedure different from the current procedure under execution;

deciding means responsive to an output of said first comparing means for deciding whether or not a data transfer should be performed for a register window between the register file and the first memory; and

first transfer means responsive to a decision of said deciding means for performing the data transfer for all registers in said register window between said register file and said first memory.

5,388,236

DIGITAL SIGNAL PROCESSOR WITH MULTIWAY BRANCHING BASED ON PARALLEL EVALUATION OF N THRESHOLD VALUES FOLLOWED BY SEQUENTIAL EVALUATION OF M

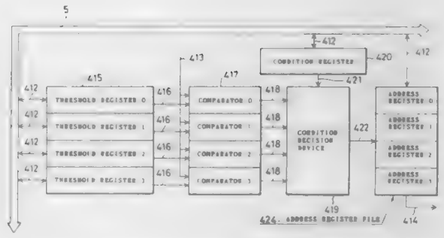
Tokumichi Murakami, and Naoto Kinjo, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 907,118, Jul. 1, 1992, abandoned, which is a division of Ser. No. 379,274, Jul. 13, 1989, Pat. No. 5,161,247. This application Oct. 25, 1993, Ser. No. 140,989

Claims priority, application Japan, Dec. 16, 1988, 63-318941; Dec. 16, 1988, 63-318942; Jan. 9, 1989, 1-1258; Jan. 13, 1989, 1-6805; Jan. 13, 1989, 1-6806; Jan. 18, 1989, 1-9003

Int. Cl.[6] G06F *15/66*

U.S. Cl. 395—375 **3 Claims**



1. A digital signal processor in which a built-in microprogram is fetched and decoded, data is read and calculated in accordance with a content of the microprogram, and calculation result data is written as a basic operation, comprising:

a control circuit including a program counter for an address control of a fetched instruction;

a data memory for inputting/outputting data; and

a data decision device for selecting one of an output from an arithmetic calculator within a calculating unit, an output from a logical shifter, and an output from a multiplier in parallel with an operation of the calculating unit; for simultaneously comparing in parallel the selected output data with n-threshold values (n being a positive integer) defining (n+1) data regions; for determining, based upon n-comparison results of said output data with said n-threshold values, in which region said output data exists among said (n+1) regions; and for sequentially comparing this resultant region in which said output data is determined to exist with m-region limiting conditions (m being a positive integer) which are set previously to designate a present data region; so as to output, when one of said conditions is coincident, branch address information corresponding to said coincident region limiting condition among m-branch addresses which are set previously corresponding to said m-region limiting conditions, or so as to output a signal representative of incoincidence of all the conditions when all of the m conditions are incoincident, and further characterized in that said control circuit updates said program counter based upon said branch address information output from said data decision device so as to generate an instruction address of a destination branch when one of said conditions is coincident, or adds "1" to said program counter based upon said incoincident signal output from said data decision device so as to generate a subsequent instruction address.

5,388,237

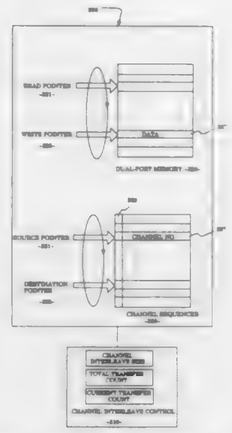
METHOD OF AND APPARATUS FOR INTERLEAVING MULTIPLE-CHANNEL DMA OPERATIONS

Martin Sodos, San Jose, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 30, 1991, Ser. No. 814,766

Int. Cl.[6] G06F *13/18*

U.S. Cl. 395—425 **16 Claims**



1. In a computer system having a transfer resource, a method of transferring data in a first direct memory access (DMA) channel having a first channel interleave size and a second DMA channel having a second channel interleave size using the transfer resource, the first channel interleave size specifying a maximum amount of data that must be transferred in the first DMA channel before the first DMA channel relinquishes control of the transfer resource, the method comprising the steps of:

receiving a request from the first DMA channel to transfer data, the request specifying a first total transfer count indicating a first amount of data of the first DMA channel to be transferred;

comparing the first total transfer count to the first channel interleave size;

transferring a first slice of the first amount of data of the first DMA channel over the transfer resource to a memory if the first total transfer count is greater than the first channel interleave size, the first slice of the first amount of data of the first DMA channel having a slice amount of data equal to the first channel interleave size;

granting control of the transfer resource to the second DMA channel if the second DMA channel has a second priority that is higher than a first priority of the first DMA channel such that a first amount of data of the second DMA channel can be transferred, the first amount of data of the second DMA channel having a second total transfer count;

deferring transfer of a second slice of the first amount of data of the first DMA channel;

comparing the second total transfer count to the second channel interleave size; and

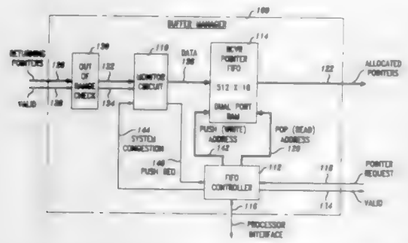
transferring a first slice of the first amount of data of the second DMA channel over the transfer resource to the memory if the second total transfer count is greater than the second channel interleave size, the first slice of the first amount of data of the second DMA channel having a second slice amount of data equal to the second channel interleave size.

5,388,238

SYSTEM AND METHOD FOR MONITORING THE VALIDITY OF CIRCULATING POINTERS IN A FIFO MEMORY

Christopher G. McHarg, Winfield, and Kenneth N. Schaff, Warrenville, both of Ill., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jul. 24, 1992, Ser. No. 919,462
Int. Cl.[6] G06F *12/00*; H04Q *11/04*; G11C *19/00, 21/00*
U.S. Cl. 395—425 15 Claims



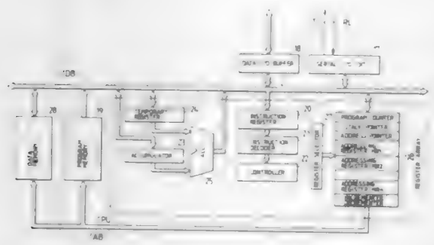
1. A method for enforcing the validity of circulating pointers in a system having an addressable memory and a set of circulating pointers corresponding to addresses of said addressable memory, said method comprising the steps of:
establishing a target pointer as a sole pointer to a selected location in said addressable memory; and
removing all pointers from the set of circulating pointers that point to said selected location in said addressable memory during a predetermined period of time.

5,388,239

OPERAND ADDRESS MODIFICATION SYSTEM

Kenji Iimura, Hitachi; Sakae Miki, Komae; Shunji Shimada, Koganei; Michio Hara; Kenjirou Yasunari, both of Kodaira; Hiroshi Takahashi, Hitachi; Kenichi Kimura, Ohnojou; Akira Ikuta, and Kenji Kawakita, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 277,263, Nov. 29, 1988, abandoned.
This application Mar. 12, 1991, Ser. No. 668,717
Claims priority, application Japan, Dec. 1, 1987, 62-303958; Dec. 21, 1987, 62-321203
Int. Cl.[6] G06F *12/12*
U.S. Cl. 395—400 5 Claims



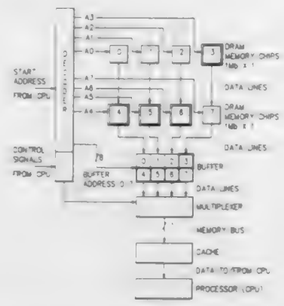
1. A method of obtaining an effective address for accessing a plurality of data tables by a microprocessor, the data tables including protocol data operands, wherein each data table is associated with a corresponding terminal equipment and defines a protocol for communicating with the corresponding terminal equipment, and wherein communication with the terminal equipment is effected by the microprocessor with access to the effective address of a required protocol data operand within one of the data tables for said protocol for communicating, the method comprising the steps of:
storing an n bits operand address in an instruction in an n bit first storage device, the n bits operand address comprising a relative protocol data operand address within each of the data tables, the relative address in each of the data tables having a same kind of data for effecting a same kind of data processing operation;
storing at least one m bits address modifier in an m bit modification register in a microprocessor where m is an integer less than n, the m bits address modifier comprising an identifier of a one of the plurality of data tables and being made the object of operation in an arithmetic logic unit included in the microprocessor;
transferring one m bit address modifier to a second storage device;
adding with the arithmetic logic unit, the n bit protocol data operand address from the first storage device to the m bit address modifier of the second storage device to produce an n bit effective address comprising a physical address of the required protocol data operand for the one data table; and,
communicating by the microprocessor with the corresponding terminal equipment by accessing the effective address of the required protocol data operand within the one of the data tables.

5,388,240

DRAM CHIP AND DECODING ARRANGEMENT AND METHOD FOR CACHE FILLS

Ulrich Olderdissen, Herrenberg, and Manfred Walz, Boblingen, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 29, 1991, Ser. No. 751,495
Claims priority, application European Pat. Off., Sep. 3, 1990, 90116850
Int. Cl.[6] G06F *12/00, 12/06, 13/00, 13/23*
U.S. Cl. 395—400 3 Claims



1. A data mechanism comprising:
a random access memory having a plurality of groups of memory chips, each group being divisible into two equally sized chip sets, each group being addressed by a first address and each individual memory chip being addressed by a second address, said random access memory having data stored therein;
a cache connected to said random access memory and having stored therein a portion of data stored in said random access memory and accessed by a cache address for separately reading requested data therefrom, said cache further providing a cache miss signal when the requested data is not stored in said cache;
CPU means connected to said cache and said random access memory for receiving said cache miss signal and providing responsive thereto, a starting address to said random access memory for starting a block transfer from said random access memory to said cache in two shots, said starting address comprising said first address and said second address, said starting address identifying the group

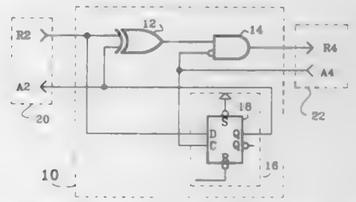
and individual chip within said group which contains the first bit which, when attempted to be read from said cache, caused said cache miss signal;
decoder means connected to said CPU means and said random access memory for receiving said starting address from said CPU means and enabling a first block data transfer from a first chip set in a first of said two shots starting from said first bit which caused the cache miss signal, and enabling a second block data transfer from a second chip set in a second of said shots, said second chip set including the memory chips remaining in the memory group addressed by said first address whose data was not transferred in said first shot;
a data buffer connected to said random access memory and said decoder for storing the data transferred from said group of memory chips in said two shots; and
a multiplexer connected to said buffer and said cache, said multiplexer for serially transferring data from said data buffer to said cache, said multiplexer starting the serial transfer of data from the start of the data transferred from said first set of chips at the beginning of said second shot.

5,388,241

ASYNCHRONOUS CIRCUIT FOR 2-CYCLE TO 4-CYCLE HANDSHAKE CONVERSION

William C. Athas, Redondo Beach, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Mar. 10, 1992, Ser. No. 850,322
Int. Cl.[6] G06F *13/42*
U.S. Cl. 395—500 10 Claims



1. A handshake protocol conversion circuit for performing conversion between two-cycle handshake request and acknowledge signals R2 and A2, respectively, and four-cycle handshake request and acknowledge signals R4 and A4, respectively, comprising:
means for storing a binary value of R2;
means for controlling a binary value of R4 to be
a first binary value when the binary value of R2 and a binary value of A2 are the same binary value,
the first binary value when a binary value of A4 is a second binary value different from the first binary value, and
the second binary value when the binary values of R2 and A2 are different binary values and the binary value of A4 is the first binary value; and
means for setting the binary value of A2 equal to the stored binary value of R2 in response to an assertion of A4.

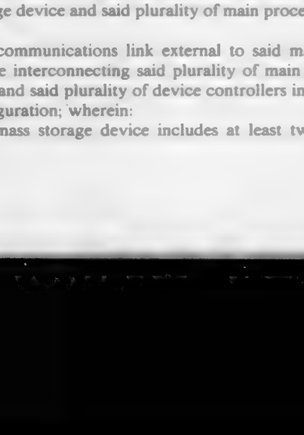
5,388,242

MULTIPROCESSOR SYSTEM WITH EACH PROCESSOR EXECUTING THE SAME INSTRUCTION SEQUENCE AND HIERARCHICAL MEMORY PROVIDING ON DEMAND PAGE SWAPPING

Douglas E. Jewett, Austin, Tex., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 282,469, Dec. 9, 1988, abandoned. This application Nov. 24, 1992, Ser. No. 982,074
Int. Cl.[6] G06F *12/02, 15/76*
U.S. Cl. 395—425 10 Claims

1. A fault tolerant computer system comprising:
a) multiple CPUs each having an independent clock and executing the same instruction stream in accordance with said independent clock, each CPU employing virtual memory addressing with paging;
b) each CPU having a separate local memory, each said local memory being accessed only by one said CPU and not by other of said multiple CPUs, said access occurring without said CPU being subjected to access time overhead due to said CPU being voted and synchronized, each one of said local memories containing a first set of selected pages;
c) a global memory accessed by all of said CPUs, said local memory for each CPU having faster access time than the global memory, the global memory containing a second set of selected pages different from said first set, and said



second set being page-swapped with said first set in each said local memory upon demand so as to maintain identical most-used pages in each said local memory of each CPU, said demand being initiated by an aging routine to mark candidate pages that are not recently used in said local memory; and
d) a disk memory accessed as an I/O device by said multiple CPUs and having an access time slower than said global memory, the disk memory containing pages in an address space of said virtual memory addressing of said multiple CPUs, and said pages contained in said disk memory being page-swapped with said global memory and local memory upon demand by said multiple CPUs.

5,388,243

MULTI-SORT MASS STORAGE DEVICE ANNOUNCING ITS ACTIVE PATHS WITHOUT DEACTIVATING ITS PORTS IN A NETWORK ARCHITECTURE

Joseph S. Glider, Mountain View, and Thomas E. Idleman, Santa Clara, both of Calif., assignors to MTI Technology Corporation, Anaheim, Calif.

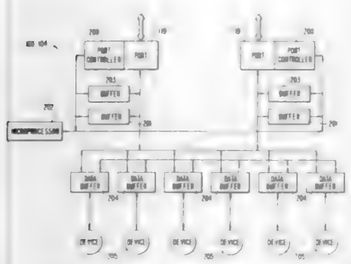
Filed Mar. 9, 1990, Ser. No. 491,434
Int. Cl.[6] G06F *12/00, 13/00*
U.S. Cl. 395—425 16 Claims

1. A data processing system comprising:
a plurality of main processing units;
a mass storage device;
a plurality of device controllers connected to said mass storage device to provide interfaces between said mass storage device and said plurality of main processing units; and
a data communications link external to said mass storage device interconnecting said plurality of main processing units and said plurality of device controllers in a network configuration; wherein:
said mass storage device includes at least two simulta-

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neously operable means for communicating with said controllers, a first one of said at least two simultaneously operable means connecting said mass storage device to a first one of said plurality of controllers, and a second one of said at least two simultaneously operable means connecting said mass storage device to a second one of said plurality of controllers, said at least two simultaneously operable means and said network in combination providing a plurality of paths which support simultaneous communications between said mass storage device and said plurality of main processing units on different ones of said paths, and at least two paths which support communication between said mass storage device and a particular main processing unit, said data processing system further comprising:

means for allowing said mass storage device to announce to a main processing unit to which it has at least two paths, the availability of said at least two paths, without disabling any of said at least two paths.

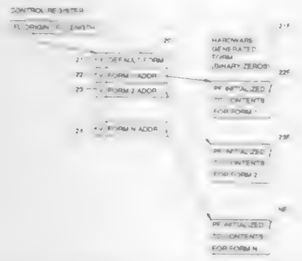


5,388,244

CONTROLS FOR INITIAL DIVERSION OF PAGE-FRAME LOGICAL CONTENT AS PART OF DYNAMIC VIRTUAL-TO-REAL TRANSLATION OF A VIRTUAL PAGE ADDRESS

Glen A. Brent, Red Hook, and Casper A. Scalzi, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 17, 1992, Ser. No. 946,504
Int. Cl.[6] G06F *12/08, 12/14*
U.S. Cl. 395—400 **18 Claims**



1. A method of obtaining security of data contents of page frames in a storage of a computer system, comprising the steps of:

generating page tables having page table entries (PTEs) for defining virtual pages in a virtual storage for use by one or more programs, each PTE containing a prior-data security field (F) initially set to a prior-data state for preventing access to prior data which may be contained in a backing page frame in real storage after assignment of the backing page frame to a PTE, each PTE also containing one or more backing page frame indicator field(s) initially set to indicate no backing page frame is assigned to a virtual page represented by the PTE;

processing fetch operands and store operands in whatever order issued by a program being executed in the computer system, a fetch operand or a store operand containing a virtual address requiring address translation, and address translating the virtual address by accessing a PTE for a virtual page containing a location of data to be obtained for a fetch operand or a location for storing data for a store operand;

testing the security field (F) in the PTE to determine if a prior-data state exists for a virtual page being accessed by a fetch operand or a partial-page-store operand; and

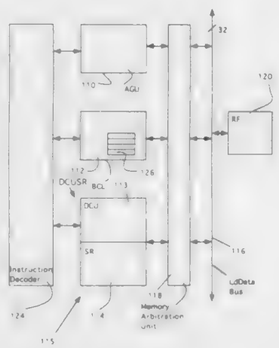
accessing predetermined form data for the fetch operand if the security field (F) indicates a prior-data state exists for the virtual page without providing any page fault signal, regardless of the setting of any backing page frame indicator in the PTE.

5,388,245

MEMORY ARBITRATION METHOD AND APPARATUS FOR MULTIPLE-CYCLE MEMORY COPROCESSORS EMPLOYING A DATA CACHE UNIT AND STACK RAM

Jimmy Wong, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 1, 1993, Ser. No. 69,917
Int. Cl.[6] G06F *13/18*
U.S. Cl. 395—425 **4 Claims**



1. A memory access device within a microprocessor, said memory access device comprising:

a set of memory coprocessors, each connected to a memory bus, including an address generation unit, a bus controller unit, and a combined data cache unit and stack RAM unit, said data cache unit and stack RAM unit sharing common decoders, sense amps, and data paths, wherein said address generation unit and said combined data cache unit and stack RAM unit are single-cycle memory coprocessors and said bus controller unit is a multiple-cycle memory coprocessor with said bus controller unit including a multiple entry queue; and

a memory arbitration unit connected to said memory bus and to each of said memory coprocessors, said memory arbitration unit receiving bus access requests from one or more of said memory coprocessors and granting access to said bus to one of said coprocessors at a time, said memory arbitration unit determining which of said memory coprocessors asserts data onto said bus if more than one of said memory coprocessors requests bus access at substantially the same time, said memory arbitration unit recognizing said combined data cache unit and stack RAM unit as a single entity for arbitration purposes; wherein

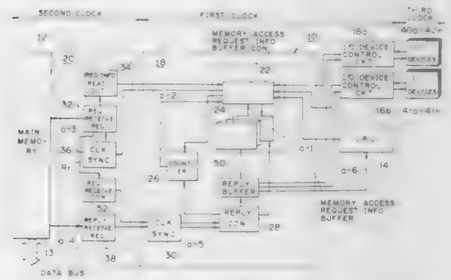
said memory arbitration unit grants bus access to one of said single cycle memory coprocessor units if said queue of said bus controller unit is not full and grants access to said memory bus to said bus controller unit if said queue of said multiple-cycle bus controller unit is full.

5,388,246

ARRANGEMENT AND METHOD OF CONTROLLING MEMORY ACCESS REQUESTS IN DIGITAL DATA PROCESSING SYSTEM

Hiroyuki Kasai, Yamanashi, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 589,650, Sep. 28, 1990, abandoned. This application Oct. 18, 1993, Ser. No. 136,999
Claims priority, application Japan, Sep. 28, 1989, 1-253384
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—425 **3 Claims**



1. A memory access request controller which is provided between a plurality of I/O device controllers and a main memory, said plurality of I/0 device controllers operating under first clocks while said main memory operating under second clocks, said memory access request controller including a buffer which stores memory access request information which includes memory access data and request issued I/O device controller information and request ordered I/O device information, said memory access request information being applied from at least one of said I/0 device controllers, said memory access request controller further comprising:

first means, operating under said first clocks, for controlling read/write operations of said buffer;

second means, operating under said second clocks and coupled to said first means and said main memory, for receiving said memory access data and said request issued I/O device controller information from said buffer and for generating access request receive information including said request issued I/O device controller information; and

third means, coupled to said buffer and said first means and said second means and operating under said first clocks for inducing said first means to transfer said request ordered I/O device information stored in said buffer into said third means in response to said access request receive information received from said second means.

5,388,247

HISTORY BUFFER CONTROL TO REDUCE UNNECESSARY ALLOCATIONS IN A MEMORY STREAM BUFFER

Paul M. Goodwin, Littleton; Kurt M. Thaller, Acton, and Barry A. Maskas, Sterling, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 37,247, May 14, 1993, abandoned. This application Feb. 16, 1994, Ser. No. 197,376
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—425 **3 Claims**

1. A method, comprising the steps of:

receiving from a processor a read command and an address together specifying a memory location to be read;

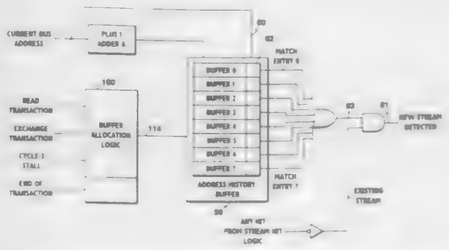
testing whether said read command is accompanied by an additional indication that said processor will be unable to accept data from said memory location for at least a predetermined time after the issuance of said read command by said processor;

storing an address value corresponding to said memory location into a history buffer and marking the stored value as a valid history buffer entry if said read command is not accompanied by said additional indication, and otherwise refraining from said storing and marking;

repeating the foregoing steps until there is at least one address value stored in said history buffer;

receiving another read command and an address together from said processor specifying another memory location to be read;

testing whether the address of said other memory location has a predetermined relationship with any one of the address values stored in valid entries in said history buffer,



the existence of said predetermined relationship indicating that said other memory location sequentially follows the memory location corresponding to the stored address value for which said predetermined relationship exists;

if the address of said other memory location has said predetermined relationship with any of the address values stored in valid entries in said history buffer, asserting a stream detect signal, and otherwise refraining from asserting said stream detect signal;

upon the assertion of said stream detect signal, fetching from a memory the data stored at the memory location sequentially following said other memory location and storing the fetched data in a stream buffer; and

fetching the data stored in said stream buffer and returning it to said processor upon the receipt of a subsequent processor read command specifying said sequentially following memory location.

5,388,248

FLASH MEMORY CARD INCLUDING PLURAL FLASH MEMORIES AND CIRCUITRY FOR SELECTIVELY OUTPUTTING READY/BUSY SIGNALS IN DIFFERENT OPERATING MODES

Kurt B. Robinson, Newcastle; Russell D. Eslick, Placerville; Markus A. Levy, Citrus Heights; David M. Brown, Fair Oaks; Lily C. Pao, Orangevale, and Brian L. Dipert, Sacramento, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 861,013, Mar. 31, 1992. This application Feb. 16, 1994, Ser. No. 198,789
Int. Cl.[6] G06F *13/00;* **G11C** *16/06;* **G06K** *19/067*
U.S. Cl. 395—425 **2 Claims**

1. A flash memory card, comprising:

(A) a plurality of flash memories with a respective plurality of first ready/busy outputs, wherein each ready/busy output of the plurality of ready/busy outputs indicates whether a respective flash memory of the plurality of flash memories is ready or busy;

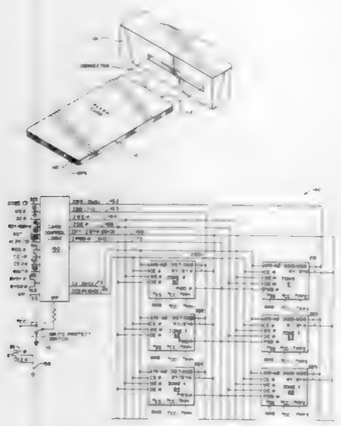
(B) register circuitry for storing mask data;

(C) mode circuitry for choosing one of a first mode and a second mode, wherein a first mode signal is produced if the first mode is chosen, and wherein a second mode signal is produced if the second mode is chosen;

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(D) logic circuitry for performing logical operations with respect to the plurality of ready/busy outputs and the mask data in accordance with which one of the first mode signal and the second mode signal is produced

(1) to produce a ready signal output for the flash memory



card only if all the plurality of flash memories are ready if the first mode is chosen;

(2) to produce a ready signal output for the flash memory card each time any flash memory of the plurality of flash memories goes from being busy to being ready if the second mode is chosen.

5,388,249

DATA PROCESSING SYSTEM GENERATING CLOCK SIGNAL FROM AN INPUT CLOCK, PHASE LOCKED TO THE INPUT CLOCK AND USED FOR CLOCKING LOGIC DEVICES

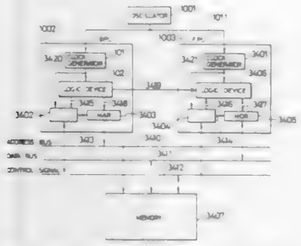
Takashi Hotta; Kozaburo Kurita; Masahiro Iwamura; Hideo Maejima; Shigeya Tanaka, all of Hitachi; Tadaaki Bandoh, Tohkai; Yasuhiro Nakatsuka, Hitachi; Kazuo Kato, Tohkai, and Sin-ichi Sinoda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 184,782, Apr. 22, 1988, Pat. No. 5,133,064. This application Apr. 22, 1992, Ser. No. 872,174

Claims priority, application Japan, Apr. 27, 1987, 62-101930; Jul. 22, 1987, 62-181060

Int. Cl.[6] G06F *1/12*

U.S. Cl. 395—550 43 Claims



1. An information processing system comprising:

clock oscillating means for generating a first clock signal which has a first potential level and a second potential level different from said first potential level, said first and second potential levels being repeated substantially with a first duty cycle and at a first frequency; and

a plurality of information processing units, each connected to receive said first clock signal, for processing information synchronously with each other, each information processing unit including:

(i) clock generating means, connected to receive said first clock signal, for generating at least a second clock signal which is substantially in phase with said first clock signal and which has a third potential level and a fourth potential level different from said third potential level, said third and fourth potential levels being repeated substantially with a second duty cycle and at a second frequency;

(ii) arithmetic means, connected to receive said second clock signal, for subjecting input data to a desired logical operation and for delivering an output signal representing a result of said logical operation in synchronism with said second clock signal; and

(iii) interface means, connected to receive said second clock signal, for controlling synchronous transfer of output data from said arithmetic means to an arithmetic means of another information processing unit using said second clock signal and for receiving by synchronous transfer data corresponding to output data from an arithmetic means of another information processing unit;

said clock generating means in each information processing unit, including:

(a) oscillating means, having a first input to which said first clock signal is supplied, a second input and an output from which there is provided a further clock signal having a frequency, for comparing the respective phases of signals supplied to said first and second inputs and for controlling the frequency of said further clock signal in accordance with difference in said respective phases;

(b) a frequency divider for dividing the frequency of said further clock signal by a predetermined integer to produce at an output said second clock signal; and

(c) a feedback path connecting the output of said frequency divider to said second input of said oscillating means to supply a signal thereto.

5,388,250

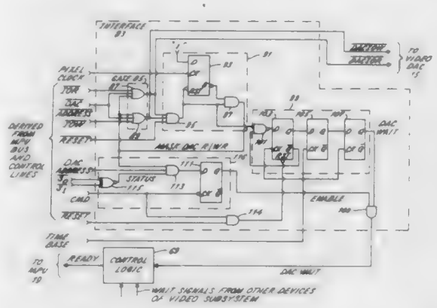
APPARATUS AND METHOD FOR GUARANTEEING STROBE SEPARATION TIMING

Thomas F. Lewis, Fort Lauderdale, and Stephen P. Thompson, Delray Beach, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 437,059, Nov. 13, 1989, abandoned. This application Aug. 24, 1993, Ser. No. 111,034

Int. Cl.[6] G06F *13/10, 13/42*

U.S. Cl. 395—550 24 Claims



1. A computer system which optimizes processing and input-/output throughput while at the same time ensuring reliable transfer of data between a processing unit and associated peripheral devices, said computer system comprising:

a microprocessor unit (MPU) having a clock cycle, the MPU being coupled to a system bus whose bandwidth provides for high-speed nominal transfer cycles;

a peripheral device responsive to read or write signals from the MPU and having a timing parameter requiring a minimum time period to separate presentation to an input to the peripheral device of a second read or write signal following a first read or write signal in consecutive data transfers executed by the MPU and the peripheral device;

a peripheral interface interposed between the MPU and the peripheral device for ensuring the timing parameter of the peripheral device is not violated and delaying an MPU transfer cycle when necessary, said peripheral interface including:

a timing circuit for measuring a time period after the peripheral device receives the first read or write signal, the time period being at least as great as the timing parameter and established by a clock signal having a period established independently with respect to the clock cycle for the MPU; and

a synchronization circuit, which is responsive to the timing circuit, for sensing the transmission by the MPU the second read or write signal before the time period associated with the first read or write signal has elapsed and in response, transmitting a signal to the MPU for extending a second transfer cycle associated with the second read or write signal from the MPU; and

a bus interface coupling the system bus to the peripheral interface.

5,388,251

HELP DISPLAY SYSTEM FOR A COMPUTER

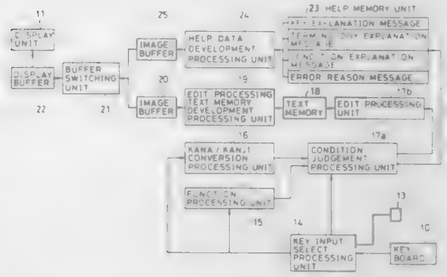
Fusao Makino, Kyoto; Matsutaka Ito, Yamatokoriyama; Hiroyuki Nagasawa, and Katsunori Takeda, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 8, 1988, Ser. No. 268,501

Claims priority, application Japan, Nov. 9, 1987, 62-282725; Nov. 9, 1987, 62-282726; Nov. 9, 1987, 62-282727; Nov. 9, 1987, 62-282728; Dec. 3, 1987, 62-306183

Int. Cl.[6] G06F *11/30, 15/40*

U.S. Cl. 395—575 11 Claims



1. An interactive help display apparatus with a plurality of memories and controls for displaying different modes comprising:

key input means, including at least one help key operatively associated with display means for displaying data,

error detecting means for detecting operational errors of this input means,

first memory means for storing explanations of operating methods actuated by the key input means,

second memory means for storing a terminology index consisting of capital letters of terminologies,

third memory means for storing a plurality of terminologies corresponding to the capital letters,

fourth memory means for storing explanations of functions of the terminologies and operating methods for executing the functions,

cursor means for indicating desired locations of data displayed on the display means of the capital letters from the second memory means,

each of said memory means and said cursor means operatively associated with said display means,

control means for controlling the display means, for displaying on the display means a plurality of displays, each display related to a different mode of operation;

a first display being explanations of operating methods for correcting an error, from the first memory means when the error detecting means detects an error and one help key is operated once,

a second display being the terminology index consisting of capital letters of terminologies stored in the second memory means when the one help key or a second help key is successively operated twice,

a third display being terminologies stored in the third memory means corresponding to capital letters, the capital letters identified by cursor means; and

a fourth display being the stored content of the fourth memory means, which stores the explanation of functions of the terminologies and operating methods associated with the plurality of terminologies stored in the third memory means, so that a user upon actuation of the control means can display said plurality of displays by accessing said memories to identify unknown points of the system to correct errors.

5,388,252

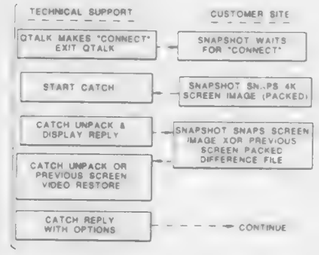
SYSTEM FOR TRANSPARENT MONITORING OF PROCESSORS IN A NETWORK WITH DISPLAY OF SCREEN IMAGES AT A REMOTE STATION FOR DIAGNOSIS BY TECHNICAL SUPPORT PERSONNEL

Robert A. Dreste, Webster; Mark R. Scheda, Brockport, and Howard C. Bozenhard, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 7, 1990, Ser. No. 578,941

Int. Cl.[6] G06F *11/00, 13/00*

U.S. Cl. 395—575 38 Claims



23. A method for monitoring and diagnosis of a system having a multitasking interface to real time control in said system comprising the steps of:

a) providing images on the screen of an interface computer operatively connected to the real time control of said system, said images containing information about the operation of said system;

b) determining whether transmission of the entire screen image is required utilizing predetermined criteria;

c) storing the current image in the memory of said computer;

d) condensing the entire screen image using a packing algorithm; and

e) transmitting the condensed screen image to a service computer at a location remote from said system;

f) so that expert personnel at said remote location can provide via said service computer ongoing technical support for personnel at said system including remote monitoring of said system and remote diagnosis of problems occurring in said system.

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5,388,253

PROCESSING SYSTEM HAVING DEVICE FOR TESTING THE CORRECT EXECUTION OF INSTRUCTIONS

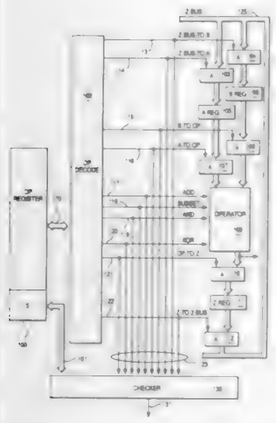
Michel Geneste, Marseille; Francois Jacob, Vence, and Clement Poiraud, Cagnes Sur Mer, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1991, Ser. No. 749,848

Claims priority, application European Pat. Off., Oct. 31, 1990, 90480173

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—575 **11 Claims**



1. Processing system for interpreting and carrying out a set of logically related instructions stored into a software program, an execution of a given instruction by said processing system involving the decoding and the execution of a corresponding set of microcommands, characterized in that it includes:

means for storing a signature portion corresponding to a macrocommand portion of a given instruction which is to be interpreted and executed;

means for computing a signature data functionally related to a combination of decoded and executed microcommands involved in the execution of said given instruction; and

means for comparing said computed signature data with said signature portion in order to detect the occurrence of an error in the execution of said given instruction.

5,388,254

METHOD AND MEANS FOR LIMITING DURATION OF INPUT/OUTPUT (I/O) REQUESTS

John F. Betz, Hyde Park; Allan S. Meritt, Poughkeepsie, both of N.Y.; Larry R. Perry, Gilroy, Calif.; William C. Shepard, Hyde Park, and Harry M. Yudenfriend, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1992, Ser. No. 858,905

Int. Cl.[6] G06F *11/00, 11/30, 11/34*

U.S. Cl. 395—575 **9 Claims**

1. An apparatus for limiting duration of an I/O (input/output) request performed by an I/O supervisor to a data set resident in an I/O device in a data processing system comprising a main processor having a processor clock and said I/O device attached to said main processor, said apparatus comprising:

a) request-based interval establishment means for setting an I/O request time limit in a request time limit field located in said data processing system, and turning ON a request limit indicator in a request limit indicator field located in said data processing system, for said I/O request;

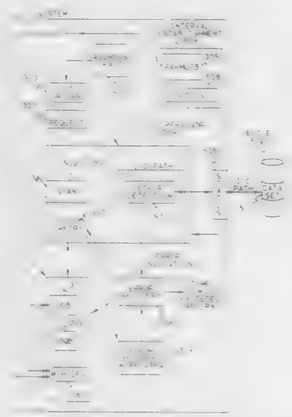
b) data-set-based interval establishment means for setting a maximum data-set duration for said I/O request to said data-set in a data-set-based time limit field located in said data processing system, and turning ON a data-set limit indicator in a data-set indicator field located in said data processing system, for said I/O request;

c) workload-based interval establishment means for setting a maximum workload duration for said I/O request originating in an indicated address space in a workload-based time limit field located in said data processing system, and turning ON a workload limit indicator in a workload indicator field located in said data processing system, for said I/O request;

d) device-based interval establishment means for setting a maximum I/O duration for said I/O request to said I/O device in a device-based time limit field located in said data processing system, and turning ON a device limit indicator in a device indicator field located in said data processing system, for said I/O request;

e) error detection means for detecting an I/O error for said I/O device and generating an error indication;

f) error recovery means, responsive to said error indication for calculating said total I/O request time value for said I/O request, for comparing said total I/O request time value, calculated by said error recovery means, to a minimum of said I/O request time limit, said maximum data-set



duration, said maximum workload duration, and said maximum device duration, and for restarting said I/O request only if said total I/O request time value for said I/O request is less than a minimum of said I/O request time limit, said maximum data-set duration, said maximum workload duration, and said maximum device duration, said time limit and durations being considered in deriving said minimum only if said request, data-set, workload, and device indicators are ON, respectively, said total I/O request time value being calculated by said error recovery means with respect to an initial start time for said I/O request;

g) scan means for calculating said total I/O request time value, for comparing said total I/O request time value, calculated by said scan means, to a minimum of said I/O request time limit and said maximum data-set duration, and for terminating said I/O request, if said total I/O request time value, calculated by said scan means, is greater than a minimum of said I/O request time limit and said maximum data-set duration, said maximum workload duration, and said maximum device duration time limit and durations being considered in deriving said minimum only if said request, data-set, workload, and device indicators are ON, respectively.

2. An apparatus for limiting duration of an I/O (input/output) request performed by an I/O supervisor to a data set resident in an I/O device in a data processing system comprising a main processor having a processor clock and said I/O device attached to said main processor, said apparatus comprising:

a) interval establishment means for setting a time limit in a time limit field located in said data processing system for said I/O request;

b) error detection means for detecting an I/O error for said I/O device and generating an error indication;

c) error recovery means, responsive to said error indication, for restarting said I/O request only if a total I/O request time value for said I/O request is less than said time limit, said error recovery means comprising first I/O request time approximation means for estimating said total I/O request time value including error recovery time and comparing said estimated I/O request time value to said time limit;

d) scan means for terminating said I/O request, if said total I/O request time value is greater than said time limit, said scan means comprising second I/O request time approximation means for estimating said total I/O request time value including error recovery time and comparing said estimated I/O request time value to said time limit.

5,388,255

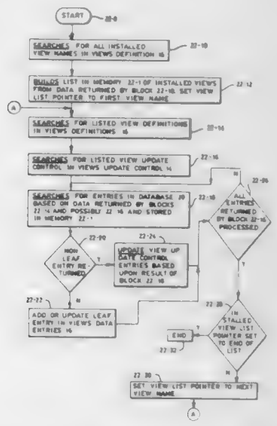
SYSTEM FOR UPDATING LOCAL VIEWS FROM A GLOBAL DATABASE USING TIME STAMPS TO DETERMINE WHEN A CHANGE HAS OCCURRED

Bogdan Pytlik, Lowell; Abigail L. O'Hara, Andover, and Arthur R. LaValle, Chelmsford, all of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Dec. 19, 1991, Ser. No. 810,245

Int. Cl.[6] G06F *15/40, 15/419*

U.S. Cl. 395—600 **2 Claims**



1. A method of formulating a search for changed entries in a global database and updating local views including the steps of at selected time frame intervals,

A. building a list of all installed local view names;

B. developing a list of desired attributes for display in each local view identified in the list of installed local view names, the attributes for each local view including a latest time stamp value for the local view wherein each latest time stamp value indicates the time of a last change to the local view and definitions of the local view;

C. selecting a local view name from the list of installed local view names;

D. reading from the attribute list for the selected local view name the view definitions and the latest time stamp value for the selected local view name;

E. searching the global database using said view definitions to locate an entry corresponding to the selected local view name;

F. when the entry corresponding to the selected local view name is a non-leaf entry, selecting a next entry;

G. when the entry corresponding to the selected local view name is a leaf entry, comparing the time stamp value of the entry with the latest time stamp value for the selected view name from the list of attributes corresponding to the selected local view name;

H. updating the local view corresponding to the selected local view name when the time stamp value of the entry is different from the latest time stamp value for the selected view name;

I. determining when all entries corresponding to the selected local view name are processed;

J. selecting a next entry corresponding to the selected local view name when all entries corresponding to the selected local view name are not processed;

K. selecting a next local view name when all entries corresponding to the selected local view name are processed; and

L. repeating steps C through K until all local view names in the list of all installed local view names are processed.

5,388,256

TRANSACTION PROCESSING DATABASE SYSTEM WITH SHARED WORK-IN-PROGRESS STORE FOR LOGGING DATABASE CHANGES

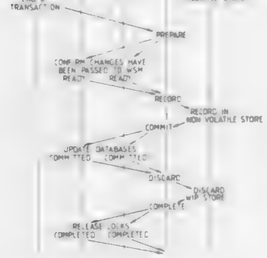
Richard Herbert, Stoke-On-Trent, Great Britain, assignor to International Computers Limited, London, England

Filed May 29, 1992, Ser. No. 890,932

Claims priority, application United Kingdom, Jul. 27, 1991, 9116268

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—600 **2 Claims**



1. A data processing system comprising:

(a) at leas one transaction processing application;

(b) a plurality of data managers, accessible by the transaction processing application, said data managers being responsible for managing respective databases;

(c) a work-in-progress store, common to and shared between all said data managers, said work-in-progress store comprising a volatile portion and a non-volatile portion;

(d) a work-in-progress store manager, coupled to the data managers and to said work-in-progress store, the work-in-progress store manager comprising means for receiving update information relating to a transaction from said data managers and for recording said update information in said volatile portion of said work-in-progress store; and

(e) a commitment co-ordinator, coupled to said transaction

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processing application, to said data managers and to said work-in-progress store manager;

(f) said commitment co-ordinator comprising means for receiving messages from all of said data managers, confirming that all update information relating to said transaction has been recorded in said work-in-progress store, for instructing the work-in-progress store manager to record said update information relating to said transaction in said non-volatile portion of said work-in-progress store, and for then sending messages to all said data managers, instructing the data managers to update their respective databases; and

(g) said commitment co-ordinator also comprising means for receiving messages from all of said data managers, confirming that said data managers have all updated their respective databases, and for then instructing said work-in-progress store manager to discard said update information relating to said transaction from said work-in-progress store.

5,388,257

METHOD AND APPARATUS FOR OPERATING A COMPUTER BASED FILE SYSTEM

Eric J. Bauer, Tinton Falls, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 74,690, Jun. 10, 1993, abandoned, which is a continuation of Ser. No. 735,393, Jul. 24, 1991, abandoned. This application May 23, 1994, Ser. No. 247,619

Int. Cl.[6] G06F *15/40*

U.S. Cl. 395—600 **33 Claims**



1. A computer-based file apparatus for accessing any of a plurality of previously-stored data files, each of said data files identified by a filename, the apparatus comprising

means for receiving a file identifier comprised of a string of characters as part of a standard operating system call, said file identifier being different from the standard operating system hierarchical pathname for said desired data file, said file identifier containing one or more search criterion type/value pairs, wherein each search type/value pair includes a search criterion type and a search criterion value, and

means for locating one or more desired data files by matching at least one of said search criterion type/value pairs directly against a characteristic of said data files, the locating of the desired data files being performed in the absence of requiring a presorting of said data files.

5,388,258

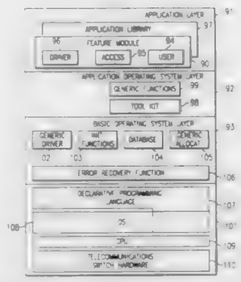
SOFTWARE STRUCTURE FOR TELECOMMUNICATION SWITCHING SYSTEMS

G. Hakan Larsson; Kerstin M. Odling; K. Ake Rosberg, all of Tyreso, and J. Hakan Karlsson, Stockholm, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 800,537, Nov. 27, 1991, abandoned. This application Aug. 12, 1994, Ser. No. 289,997

Int. Cl.[6] G06F *15/40;* **H04J** *3/02*

U.S. Cl. 395—600 **11 Claims**



1. A system for managing data within the architecture of a telecommunications switching system which includes a feature module and a management module within an application layer and a data base within a basic operation system layer, comprising:

means for creating feature unique data fields within said data base and assigning formats, limits and default values to said fields by means of an initiation part of said feature module;

means for creating in an initiation part of said management module commands and parameters referring to said data fields within said data base and storing said commands and parameters in said data base;

means for analyzing each command in response to reception thereof and for checking authority of said command use and whether said parameters thereof are within preselected value limits; and

means for accessing an appropriate individual feature module by a management feature in response to acceptance of said command and operating upon said appropriate feature unique data field to modify said field in response to said command.

5,388,259

SYSTEM FOR ACCESSING A DATABASE WITH AN ITERATED FUZZY QUERY NOTIFIED BY RETRIEVAL RESPONSE

Robert M. Fleischman, Brookline, Mass., and William H. Mansfield, Pittstown, N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed May 15, 1992, Ser. No. 883,098

Int. Cl.[6] G06F *15/40*

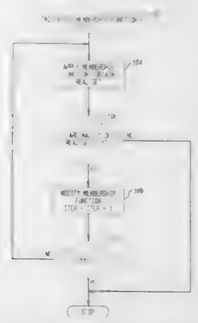
U.S. Cl. 395—600 **2 Claims**

1. In an electronic data processing system comprising a data processor and a memory, a method for executing an imprecise query to identify particular records from a database stored in memory comprising the steps of

using said processor, electronically retrieving at least some of the records of said database from said memory,

using said processor, electronically determining for each record retrieved from said memory a possibility value in the range between zero and one representing the possibility of the record being in the answer set of the imprecise query by evaluating a statistical membership function to values of at least one particular attribute of each record retrieved from said memory,

using said processor, electronically identifying selected ones of said records retrieved from said database which have non-zero possibility values and satisfy said imprecise query,



modifying said membership function in response to the execution of said query, and

re-executing said query in said electronic data processing system by applying said modified membership function to at least some of the records of said database.

5,388,260

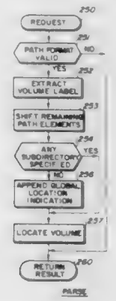
TRANSPARENT LIBRARY MANAGEMENT

Christopher J. Monahan; Mary L. Monahan; Dennis L. Willson, and Lee D. Willson, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 526,257, May 21, 1990, abandoned. This application Mar. 5, 1993, Ser. No. 27,605

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—600 **4 Claims**



1. A method for accessing data in a file stored on at least one of a plurality of removable data storage media in an automated storage library such that peripheral storage drives in the library are transparent to a host processor, the data storage media storing a plurality of volumes, one of the volumes including the file to be accessed, the automated storage library including a plurality of internal peripheral storage drives, a plurality of data storage media storage cells, automated means for transferring a data storage medium between the plurality of internal peripheral storage drives and the plurality of storage cells, and a controller coupled to each of the plurality of internal peripheral storage drives, the automated means, and the host processor, the controller storing the location within the library of each of the plurality of volumes, the method comprising the machine executed steps of:

the controller receiving a request from a host processor to access a file on a volume in the library, the request specifying the file, the volume, and the library;

the controller determining the location within the library of the volume specified in the request;

the controller allocating at least one of the internal peripheral storage drives;

the automated means transferring the volume specified in the request to said at least one of the internal peripheral storage drives which has been allocated and mounting said volume therein; and

the host processor, unaware in which of the internal peripheral storage drives that the volume specified in the request has been mounted read/write accessing data in the file specified in the request via communications routed to said at least one of the internal peripheral storage drives by the controller.

5,388,261

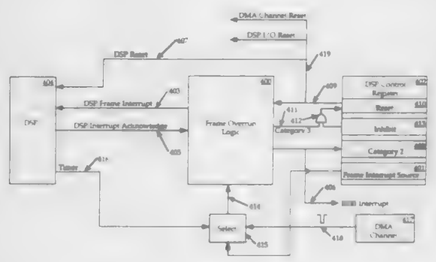
APPARATUS AND METHOD FOR HANDLING FRAME OVERRUNS IN A DIGITAL SIGNAL PROCESSING SYSTEM

Eric C. Anderson, San Jose, Calif., and Hugh B. Svendsen, Atlanta, Ga., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 30, 1992, Ser. No. 954,758

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—650 **19 Claims**



1. In a computer system having a digital signal processor for processing a plurality of tasks within a frame, a method for handling a frame overrun occurring when said plurality of tasks cannot be processed within said frame, comprising the steps of:

detecting said frame overrun, wherein when said frame overrun is detected:

A) comparing an actual processing time of each of said plurality of tasks with an allocated processing time corresponding to each of said plurality of tasks;

B) determining which task of said plurality of tasks most exceeds its allocated processing time;

C) setting said task having said actual processing time which most exceeds its allocated processing time inactive;

D) processing said plurality of tasks except for any inactive task.

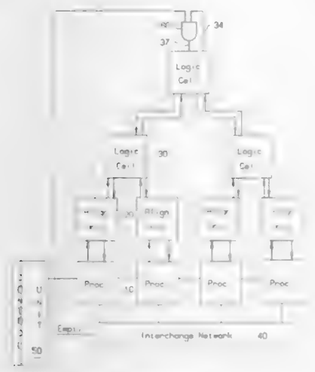
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5,388,262

METHOD AND APPARATUS FOR ALIGNING THE OPERATION OF A PLURALITY OF PROCESSORS

W. Daniel Hillis, Brookline, Mass., assignor to Thinking Machines Corporation, Cambridge, Mass.

Division of Ser. No. 530,484, May 29, 1990, Pat. No. 5,222,237, which is a continuation of Ser. No. 151,386, Feb. 2, 1988, abandoned. This application Apr. 26, 1993, Ser. No. 53,979
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—650 15 Claims



1. A computer system comprising:

A. a plurality of processors each for processing a separate instruction stream,

(i) each instruction stream comprising a sequence of instructions of a plurality of diverse instruction types including an alignment request type,

(ii) at least one instruction stream further including, situated in the instruction stream to be executed at a later point in time than the instruction of the alignment request type, at least one instruction of another type followed by an instruction of an alignment test type,

each processor while processing an instruction of said alignment request type generating an alignment request indication, each processor while processing an instruction of said alignment test type generating an alignment test indication, each processor being inhibited from processing instructions after said instruction of the alignment test type until after it receives an alignment indication; and

B. an alignment network for generating an alignment indication for each said processor in response to receipt therefrom of an alignment test indication following generation of alignment request indications by all of said processors.

5,388,263

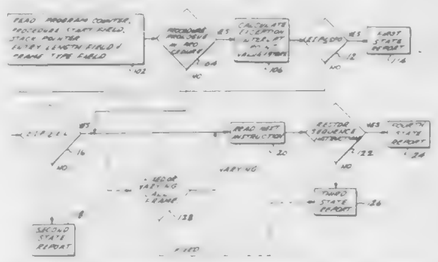
PROCEDURE STATE DESCRIPTOR SYSTEM FOR DIGITAL DATA PROCESSORS

John R. Ellis, Woodside, Calif.; Charles G. Nylander, Nashua, N.H., and R. Kim Peterson, Seattle, Wash., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 406,452, Sep. 13, 1989, abandoned. This application Jul. 30, 1992, Ser. No. 923,022
Int. Cl.[6] G06F *3/00, 9/22*
U.S. Cl. 395—650 20 Claims

1. A method of procedure state reporting for use in a digital data processing system of the type including an input-output unit for entry of data and program instructions, an addressable memory for storage of data and program instructions, and a central processing unit for accessing program instructions and data from the addressable memory and for execution of program instructions, said digital data processing system being programmable for executing a set of program instructions that consists of procedures, each procedure being invoked by the central processing unit in response to one or more of the program instructions, each procedure having at least two potential invocation states and including a set of program instructions, said at least two invocation states being separately present after invocation of a procedure is initiated by the central processing unit with an invoked procedure being in a particular one of said at least two invocation states when a selected set of instructions is executed by the system, said method reporting the invocation state of a procedure invoked for execution by the digital data processing system, said method comprising

(a) a procedure descriptor generator process for controlling the digital data processing system, said procedure descriptor generator process for generating a procedure descriptor for each procedure that is to be invoked for execution by the digital data processing system, said procedure descriptor including at least one procedure descriptor offset value representative of a point of execution of the procedure, each said point of execution representing a



boundary between two invocation states of the procedure; and

(b) a procedure state analyzation process implementable by the digital data processing system, said procedure state analyzation process including the steps of determining the portion of the invoked procedure that has been executed by the digital data processing system, comparing the portion of the invoked procedure that has been executed by the digital data processing system to one of said procedure descriptor offset values, accessing the next program instruction to be executed in said invoked procedure, reviewing said next program instruction to determine if said next program instructions is from said selected set of instructions, reporting the invocation state of the invoked procedure as a first one of said at least two invocation states if said next program instruction is not from said selected set of instructions, and reporting the invocation state of the invoked procedure as a second one of said at least two invocation states if said next program instruction is from said selected set of instructions.

5,388,264

OBJECT ORIENTED FRAMEWORK SYSTEM FOR ROUTING, EDITING, AND SYNCHRONIZING MIDI MULTIMEDIA INFORMATION USING GRAPHICALLY REPRESENTED CONNECTION OBJECT

John C. Tobias, II, Sunnyvale, and Steven H. Milne, Palo Alto, both of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Sep. 13, 1993, Ser. No. 114,640
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—650 20 Claims

1. An object-oriented operating system for enabling multimedia presentations, comprising:

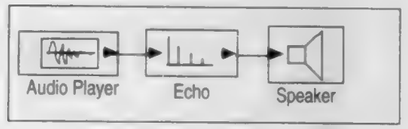
(a) a processor;

(b) a storage under the control of and attached to said processor;

(c) a display under the control of and attached to said processor;

(d) a plurality of multimedia objects in said storage and displayable on said display, each of said plurality of multimedia objects including: a displayable icon representing said each multimedia object, subroutines for processing multimedia information, a port location through which said multimedia information can be transmitted, said port location being connectable to another port location in at least one other of said plurality of multimedia objects, and a list of selected ones of said plurality of multimedia object to which said port location is connected;

(e) a MIDI object for processing MIDI information including key up, key down, program change, control and continuous commands, said MIDI object including a MIDI icon displayable on said display;



(f) a connecting object represented by a geometric indicia presented on said display and stored in said storage for use in connecting a first one of said plurality of multimedia objects to said MIDI object, said connecting object having an input port location for receiving MIDI information, an output port location for transmitting received MIDI information, an internal buffer, means for connecting said input port location to said internal buffer and means for connecting said internal buffer to said output port location in order to temporarily store said received MIDI information during transmission from said in input port location to said output port location; and

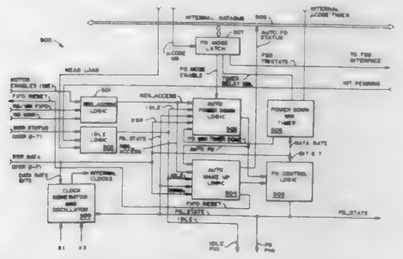
(g) means under the control of the processor for routing said MIDI information between the first one multimedia object and said MIDI object via said connecting object.

5,388,265

METHOD AND APPARATUS FOR PLACING AN INTEGRATED CIRCUIT CHIP IN A REDUCED POWER CONSUMPTION STATE

Andrew M. Volk, Loomis, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 848,416, Mar. 6, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 53,296
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—750 17 Claims



9. An integrated circuit chip for use in a computer system comprising:

core logic to perform a specific function:

non-core logic coupled to the core logic, wherein the non-core logic comprises a first logic circuit to store status of the integrated circuit:

a second logic circuit coupled to the core logic to internally monitoring said core logic;

a third logic circuit coupled to the second logic circuit to determine when the core logic of said chip is in an inactive state; and

a fourth logic circuit coupled to the third logic circuit to place the said chip in a reduced power consumption state in response to said means for determining indicating that said chip is in said inactive state, wherein said fourth logic circuit comprises a clock disabling mechanism to disable the clock input to the core logic of said chip, and

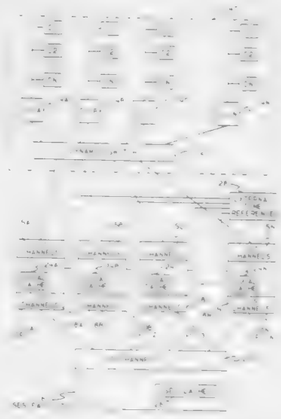
wherein said non-core logic is accessed by said computer system without bringing said core logic out of said reduced power consumption state and wherein said non-core logic stores an externally accessible indication when said chip is in the reduced power consumption state that indicates said chip is ready to receive inputs.

5,388,266

MANAGEMENT OF DATA OBJECTS USED INTAIN STATE INFORMATION FOR SHARED DATA AT A LOCAL COMPLEX

Jeffrey A. Frey, Fishkill; Ronald F. Hill, Wappingers Falls; Jeffrey M. Nick, Fishkill; Michael D. Swanson, Poughkeepsie, and Ambrose A. Verdibello, Jr., Millbrook, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,797
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—700 31 Claims



1. A data processing system for the management of data objects used to maintain state information for shared data, said data processing system comprising:

a central processor for executing instructions arranged in programs for processing data;

a main storage connected to said central processor, said main storage for storing data and said program, said main storage further being divided into a program accessible portion and a program inaccessible portion;

a vector means in the program inaccessible portion of said main storage for containing one or more vectors, each vector having a vector control object and one or more entries, each entry having states the meaning of which are program defined; and

program means having instructions executable by said central processor, said program means including data area defining means for defining a data area in said program

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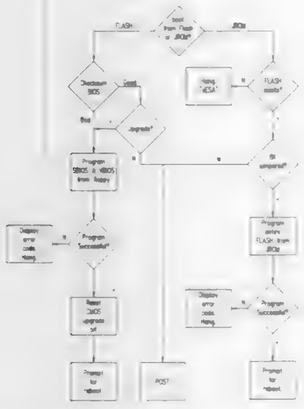
inaccessible portion of said main storage for storing a vector in said vector means thereby providing protected access to said vector through said program means by programs stored in said main storage.

5,388,267

METHOD AND APPARATUS FOR UPDATING AND RESTORING SYSTEM BIOS FUNCTIONS WHILE MAINTAINING BIOS INTEGRITY

Wai-Ming R. Chan; Eric W. Schieve; Charles P. Zeller, and Gary W. Abbott, all of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed May 29, 1991, Ser. No. 707,121
Int. Cl.[6] G06F *9/06, 9/24*
U.S. Cl. 395—700 22 Claims



1. A method booting of a computer system including a CPU, a first rewritable nonvolatile boot memory storing basic system software, a second nonvolatile boot memory, and a third memory, having a predetermined data location storing a value which indicates whether a user has requested an upgrade of said basic system software, the method comprising the computer implemented steps of:

the CPU performing a hard reset;

the CPU executing software from one of either the first rewritable nonvolatile boot memory or the second nonvolatile boot memory, depending on a predetermined indicator, wherein

(1.A) If said CPU is executing software from the first rewritable nonvolatile boot memory, then:

(1.A.i) performing a checksum operation on the basic system software in said first rewritable nonvolatile boot memory, and, if a checksum error is found, then:

(1.A.i.a) prompting the user to provide a data source for the basic system software, and thereafter

(1.A.i.b) reprogramming said first rewritable nonvolatile boot memory from the data source provided by the user;

(1.A.ii) Reading said value from said predetermined data location in said third memory to determine if a user has requested an upgrade of said basic system software, and, if said value indicates that the user has requested an upgrade of said basic system software, then:

(1.A.ii.a) prompting the user to provide a data source for the basic system software, and thereafter

(1.A.ii.b) reprogramming said first rewritable nonvolatile boot memory from the data source provided by We user;

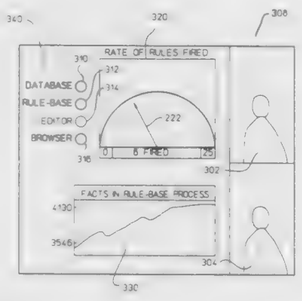
(1.B) If said CPU is executing software from the second nonvolatile boot memory which is not the same as said first rewritable nonvolatile boot memory and if said first rewritable nonvolatile memory is not currently write-protected, then writing the contents of said second nonvolatile boot memory into said first rewritable nonvolatile memory.

5,388,268

METHODS OF INDICATING STATES OF SOFTWARE PROCESSES COOPERATING ON A SINGLE TASK

Brian W. Beach, Santa Cruz, Calif.; Anand Deshpande, Pune, India; Wendy L. Fong; Pankaj K. Garg, both of Sunnyvale, Calif.; Audrey K. Ishizaki, Los Altos, Calif., and Thuan Q. Pham, San Jose, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 947,233, Sep. 18, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,496
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—700 9 Claims



1. In a distributed computer system comprising a plurality of instruments, at least one monitor, and executing a server process, a method of indicating the states of a plurality of software sub-processes that are working together on a task selected by an operator, the sub-processes being coupled to said server process, each sub-process performing at least a part of the task, each sub-process having been programmed to generate signals indicating its state, the states of a sub-process comprising executing, ready, waiting, and stopped, and each sub-process residing in one of said plurality of instruments in said distributed computer system before the operator starts the method, the method comprising the steps of:

generating by each sub-process a signal indicative of the state of that sub-process, said signal being generated in response to a change in state of said sub-process, said signal being unsolicited by the server process, said signal being expressed in a language convenient for said sub-process, said language not required to be the same language for each sub-process;

communicating by each sub-process the generated signals from the sub-processes to the server process;

determining by the server process the states of the sub-process, said determining comprising interpreting the signals received from the sub-processes;

displaying by the server process, via a screen manipulation program, a visual indication of the states of the sub-processes on a monitor; and

repeating from the step of generating until the method is stopped;

such that the operator is provided with a visual indication of the states of the sub-processes working on the task.

DESIGN PATENTS

GRANTED FEB. 7, 1995

ERRATA

For CLASS	See PATENT NO.
D19–027	D 355,214
D21–025	D 355,221

DESIGNS

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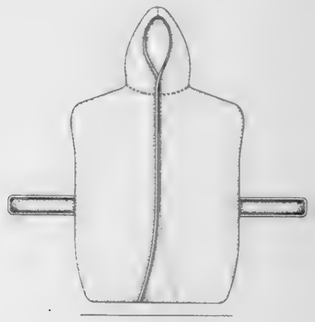
DESIGNS

FEBRUARY 7, 1995

355,067
KNEE PAD STRAP
Walter W. Pytlewski, E. 5255 Seltice Way, Post Falls, Id. 83854
Filed Sep. 7, 1993, Ser. No. 12,692
Term of patent 14 years
U.S. Cl. D2—640



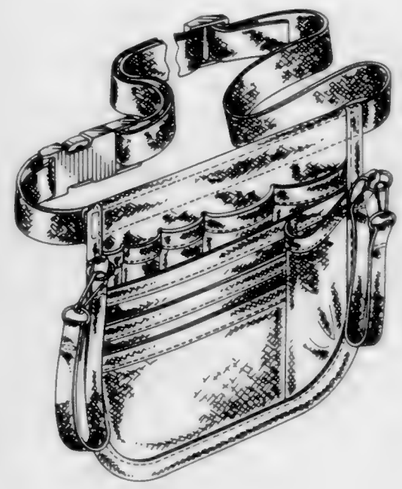
355,068
INFANT'S ROBE
Diane F. Prendergast, Cumberland, R.I., assignor to Playskool Baby, Inc., Pawtucket, R.I.
Filed Jul. 8, 1993, Ser. No. 10,398
Term of patent 14 years
U.S. Cl. D2—719



355,069
SHOE UPPER
Michael A. Aveni, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 15, 1994, Ser. No. 24,545
Term of patent 14 years
U.S. Cl. D2—970



355,070
FANNY PACK
Linda N. Thiessen, 30 E. Brown Dr., No. 1076, Mesa, Ariz. 85201
Filed Sep. 9, 1993, Ser. No. 12,726
Term of patent 14 years
U.S. Cl. D3—226



355,071
COMPARTMENTALIZED FISHING POLE AND ACCESSORY CARRIER
Ronald B. Stull, P.O. Box 134, Maidsville, W. Va. 26541
Filed Jul. 6, 1993, Ser. No. 10,274
Term of patent 14 years
U.S. Cl. D3—260

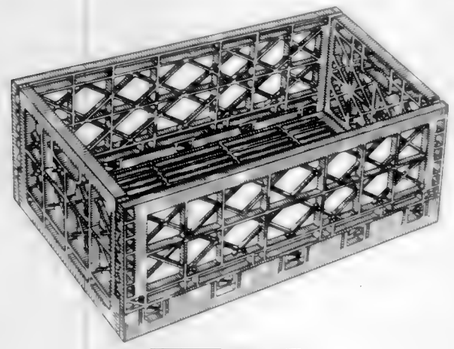


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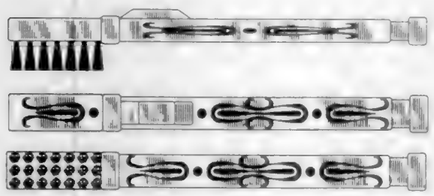
355,072
COSMETIC ORGANIZER
Paolo Tiramani, Greenwich, Conn., assignor to 500 Group Incorporated, Greenwich, Conn.
Filed Jun. 25, 1993, Ser. No. 6,785
Term of patent 14 years
U.S. Cl. D3—293



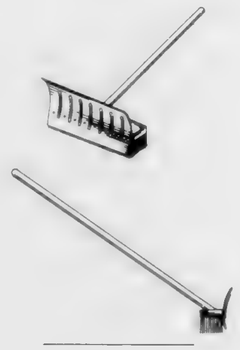
355,073
COLLAPSIBLE STORAGE BIN
Satria Junaedi, 9841 Howland Dr., Temple City, Calif. 91780
Filed Apr. 16, 1993, Ser. No. 9,994
Term of patent 14 years
U.S. Cl. D3—305



355,074
TOOTHPASTE DISPENSING TOOTHBRUSH
Larry J. Devecchio, and Lana J. Livingston, both of 2611 Florida Ave., Stockton, Calif. 95205
Filed Mar. 5, 1993, Ser. No. 5,567
Term of patent 14 years
U.S. Cl. D4—108



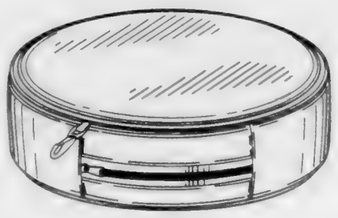
355,075
COMBINED BROOM AND SCRAPER
Robert E. Stone, 127 Haverhill Rd., Salem, N.H. 03079
Filed May 8, 1992, Ser. No. 880,546
Term of patent 14 years
U.S. Cl. D4—118



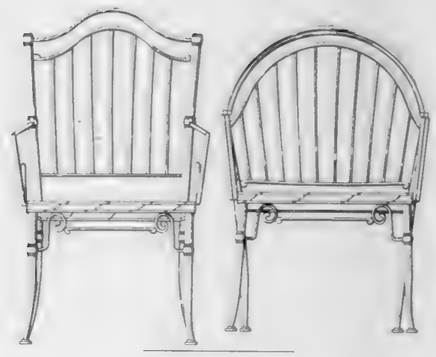
355,076
DISPLAY BOARD FOR SEQUENTIALLY ARRANGED PICTURES
Eric Soderling, 355 Topeka, Irvine, Calif. 92714
Filed Aug. 30, 1993, Ser. No. 12,289
Term of patent 14 years
U.S. Cl. D6—301



355,077
PORTABLE CHAIR
Kathryn L. Tegner, 221 Waverly Dr. SE, Albany, Oreg. 97321
Filed Jan. 26, 1994, Ser. No. 16,336
Term of patent 14 years
U.S. Cl. D6—334



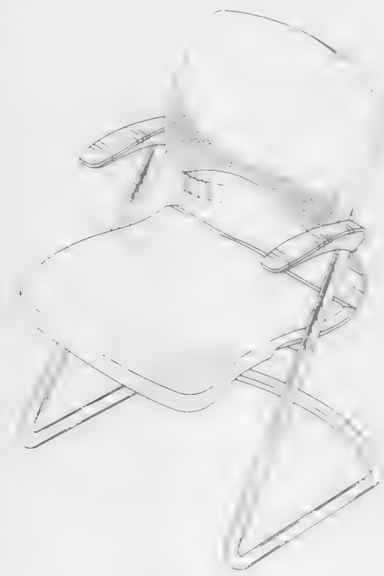
355,078
CHAIR FRAME
Herbert C. Saiger, Troy, Ohio, assignor to Crown Leisure Products, Inc., Owosso, Mich.
Filed Jan. 24, 1992, Ser. No. 825,172
Term of patent 14 years
U.S. Cl. D6—370



355,079
ARMCHAIR
F. Leduc, Stendhale, France, assignor to Allibert, Neuilly sur Seine, France
Filed Jun. 3, 1993, Ser. No. 9,022
Claims priority, application WIPO, Dec. 9, 1992, DM/024625
Term of patent 14 years
U.S. Cl. D6—370



355,080
CHAIR
Roberto Lucci, and Paolo Orlandini, both of Milan, Italy, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jun. 29, 1993, Ser. No. 10,193
The portion of the term of this patent subsequent to Oct. 18, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—372

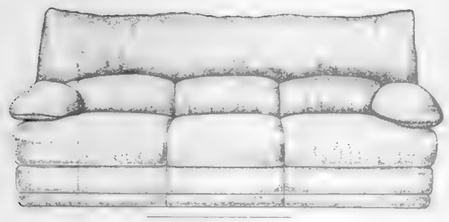


355,081
CHAIR
Robert M. Scheper, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Nov. 9, 1992, Ser. No. 1,304
Term of patent 14 years
U.S. Cl. D6—380

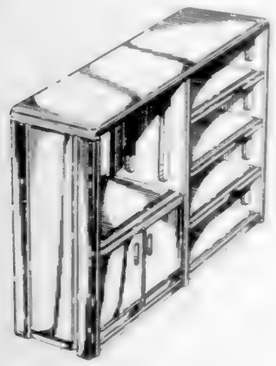


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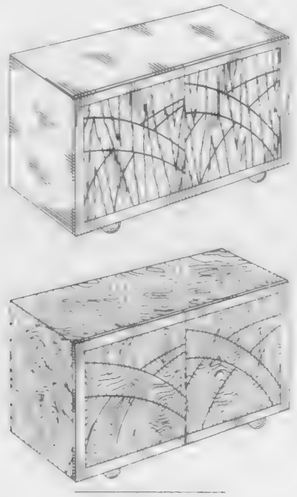
355,082
SOFA
Pasquale Natuzzi, Santeramo In Colle, and Arcangelo Scarati, Talsano, both of Italy, assignors to Industrie Natuzzi, SpA, Bari, Italy
Filed Sep. 10, 1993, Ser. No. 12,812
Term of patent 14 years
U.S. Cl. D6—381



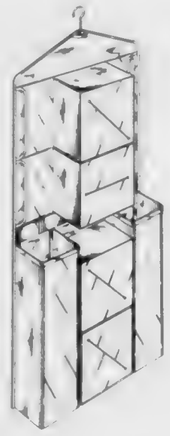
355,083
STORAGE CABINET
Stacy L. Wolff, Akron, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 5, 1993, Ser. No. 3,198
Term of patent 14 years
U.S. Cl. D6—437



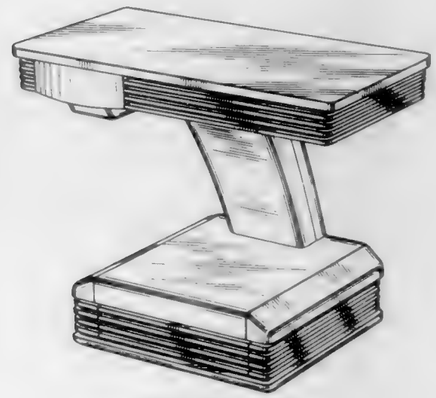
355,084
CABINET
Leon Rosen, Scarsdale, N.Y., assignor to The Pace Collection, Inc., Long Island City, N.Y.
Filed Nov. 3, 1992, Ser. No. 1,103
Term of patent 14 years
U.S. Cl. D6—446



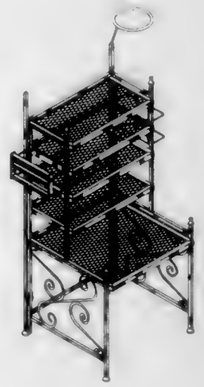
355,085
GIFT WRAP ORGANIZER
Gerald D. Wilhite, Duncanville, and Donald H. Saller, Plano, both of Tex., assignors to Jokari/US, Inc., Carrollton, Tex.
Filed Aug. 14, 1992, Ser. No. 930,213
Term of patent 14 years
U.S. Cl. D6—514



355,086
MONITOR TELEVISION SET STAND FOR TELEVISION CONFERENCE
Kazuaki Sakuta, Komae, and Yasushi Shiotani, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 2, 1992, Ser. No. 2,070
Term of patent 14 years
U.S. Cl. D6—449



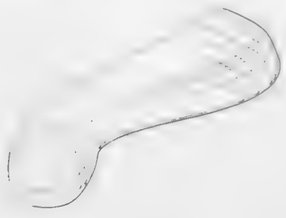
355,087
DISPLAY RACK
J. David Billingsley, Dallas, Tex., assignor to The Vineyard, Inc., Dallas, Tex.
Filed Nov. 30, 1992, Ser. No. 2,132
Term of patent 14 years
U.S. Cl. D6—464



355,088
TABLE
T. Vincent Dobbs, 140 Barksdale Dr., Atlanta, Ga. 30309
Filed Jul. 19, 1993, Ser. No. 10,792
Term of patent 14 years
U.S. Cl. D6—480



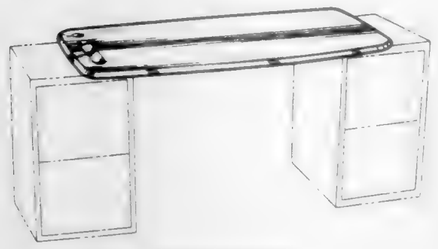
355,089
PAD FOR A CHAIR ARMREST
Dragomir N. Ivicevic, New York, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jun. 1, 1993, Ser. No. 9,008
Term of patent 14 years
U.S. Cl. D6—501



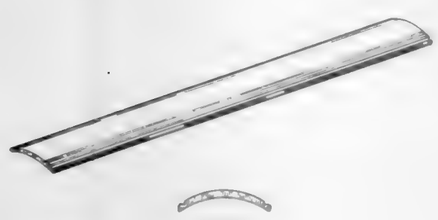
355,090
SEAT
Dragomir N. Ivicevic, New York, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jun. 1, 1993, Ser. No. 9,009
Term of patent 14 years
U.S. Cl. D6—502

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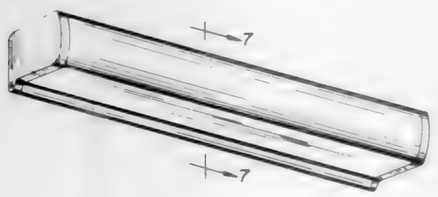
355,091
DESK TOP
Patrick M. Green, Maryville, and Robert R. Huerto, Farragut, both of Tenn., assignors to Rubbermaid Office Products Inc., Wooster, Ohio
Filed Dec. 29, 1993, Ser. No. 16,925
Term of patent 14 years
U.S. Cl. D6—511



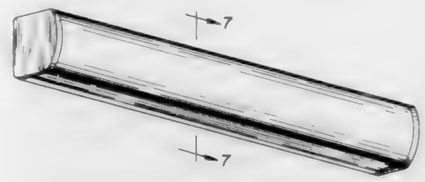
355,092
VENETIAN BLIND SLAT
Cletis F. Swopes, Madison, Wis., assignor to Springs Window Fashions Division, Inc., Middleton, Wis.
Filed May 10, 1994, Ser. No. 22,659
Term of patent 14 years
U.S. Cl. D6—580



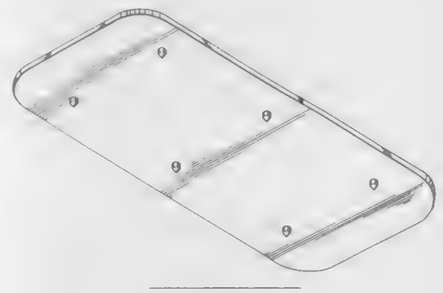
355,093
WINDOW BLIND HEADRAIL
John E. Morris, Lake Mills, Wis., assignor to Springs Window Fashions Division, Inc., Middleton, Wis.
Filed Mar. 31, 1994, Ser. No. 20,647
Term of patent 14 years
U.S. Cl. D6—580



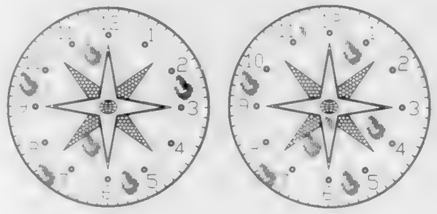
355,094
WINDOW BLIND HEADRAIL
Paul F. Josephson, Madison, Wis., assignor to Springs Window Fashions Division, Inc., Middleton, Wis.
Filed Mar. 31, 1994, Ser. No. 20,694
Term of patent 14 years
U.S. Cl. D6—580



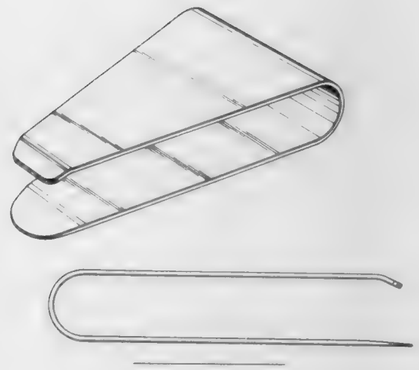
355,095
CARPET COVERING CHAIR MAT
David B. Clever, 19692 Greenleaf Plz., Yorba Linda, Calif. 92686
Filed Nov. 22, 1993, Ser. No. 15,539
Term of patent 14 years
U.S. Cl. D6—582



355,096
ROUND BEACH TOWEL
Kurt Lang, 206 Princeton Rd., Parlin, N.J. 08859
Filed Jan. 30, 1991, Ser. No. 648,419
Term of patent 14 years
U.S. Cl. D6—608



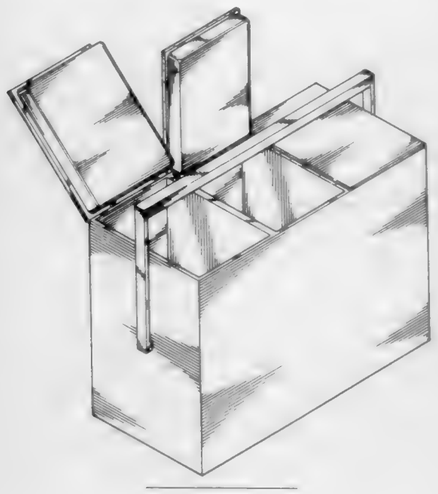
355,097
PIZZA GRIPPING UTENSIL
Inge Ostensen, Fyrveien 32, 1633 Gl.Fredrikstad, Norway
Filed Apr. 1, 1993, Ser. No. 6,846
Claims priority, application Norway, Oct. 2, 1992, D920799
Term of patent 14 years
U.S. Cl. D7—601



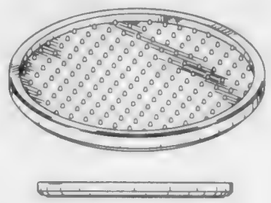
355,098
BOTTLE COOLER
Gary Lin, 8F-2, No. 164, Nanking E. Rd., Sec. 4, Taipei, Taiwan, Prov. of China
Filed Oct. 25, 1993, Ser. No. 14,483
Term of patent 14 years
U.S. Cl. D7—605



355,099
MULTI-COMPARTMENTED COOLING SYSTEM
Joseph M. Dell, 89 Pleasant St., Peru, N.Y. 12972
Filed Dec. 23, 1993, Ser. No. 16,755
Term of patent 14 years
U.S. Cl. D7—605

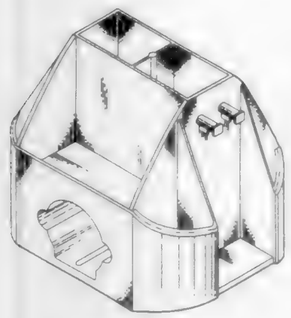


355,100
COASTER
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139, and Steven E. Greenhut, 6368 NW. 23rd Way, Boca Raton, Fla. 33496
Filed Aug. 18, 1993, Ser. No. 11,967
Term of patent 14 years
U.S. Cl. D7—624



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355,101
KITCHEN GADGET ORGANIZER
Bruce Ancona, and Jane Ancona, both of 21 E. 22nd St. Apartment 6K, New York, N.Y. 10010
Continuation of Ser. No. 931,146, Aug. 25, 1992, abandoned.
This application Jun. 13, 1994, Ser. No. 24,342
Term of patent 14 years
U.S. Cl. D7—641



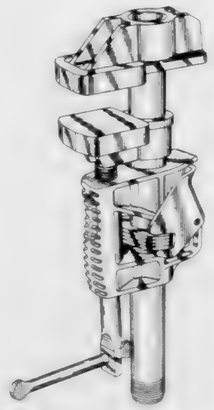
355,102
RAKE
Ronald E. Fridlind, 3429 E. Glenn, Tucson, Ariz. 85716
Filed Mar. 30, 1994, Ser. No. 20,667
Term of patent 14 years
U.S. Cl. D8—13



355,103
RUSHING TOOL
Elizabeth L. Bartlett, 64 Melrose Pl., Montclair, N.J. 07042
Filed Jun. 24, 1992, Ser. No. 903,656
Term of patent 14 years
U.S. Cl. D8—14



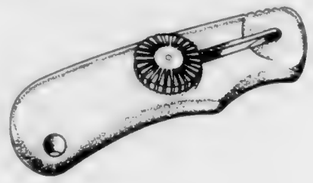
355,104
PIPE CLAMP
Joseph A. Sorensen, Lincoln, and Anthony B. Fuller, DeWitt, both of Nebr., assignors to Petersen Manufacturing Co., Inc., DeWitt, Nebr.
Filed Jan. 6, 1994, Ser. No. 17,194
Term of patent 14 years
U.S. Cl. D8—72



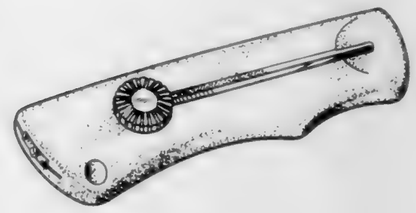
355,105
ABRASIVE PAD
John E. Nemazi, Bloomfield Hills, Mich., assignor to Ryobi Motor Products Corp., Easley, S.C.
Filed Apr. 20, 1993, Ser. No. 7,338
Term of patent 14 years
U.S. Cl. D8—90



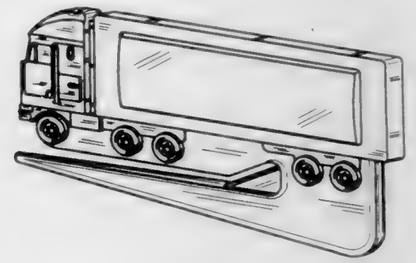
355,106
RETRACTABLE BLADE KNIFE
Yoshihiko Yoshimoto, Osaka, Japan, assignor to NT Incorporated, Osaka, Japan
Filed Jul. 15, 1993, Ser. No. 10,668
Term of patent 14 years
U.S. Cl. D8—99



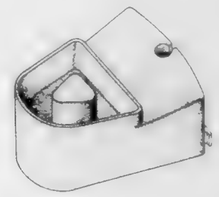
355,107
RETRACTABLE BLADE KNIFE
Yoshihiko Yoshimoto, Osaka, Japan, assignor to NT Incorporated, Osaka, Japan
Filed Jul. 15, 1993, Ser. No. 10,669
Term of patent 14 years
U.S. Cl. D8—99



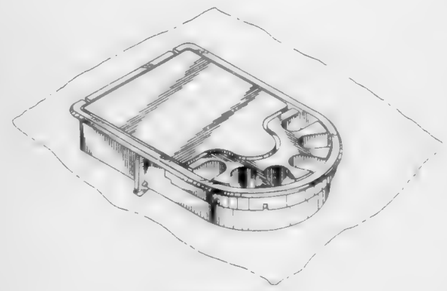
355,108
ENVELOPE OPENER
David P. Lage, Manchester, and Albert P. Carney, Ellisville, both of Mo., assignors to Quick Point, Inc., Fenton, Mo.
Filed Oct. 1, 1993, Ser. No. 13,751
Term of patent 14 years
U.S. Cl. D8—103



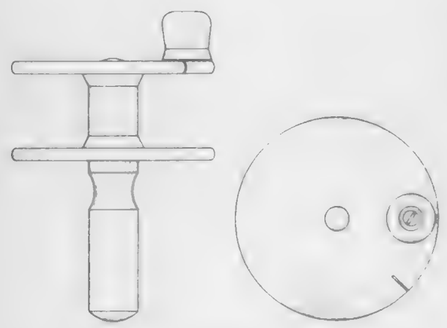
355,109
OUTRIGGER CASTER SUPPORT
David W. Moine, North Canton, and Ronald J. Stephens, Rittman, both of Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Nov. 22, 1993, Ser. No. 15,608
Term of patent 14 years
U.S. Cl. D8—375



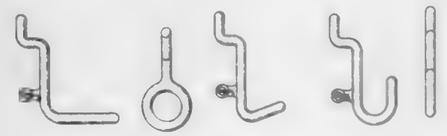
355,110
WIRE MANAGEMENT GROMMET
Ogden R. Olson, Muscatine, and Clayton C. Schmidt, Wilton, both of Iowa, assignors to Hon Industries Inc., Muscatine, Iowa
Filed Aug. 10, 1992, Ser. No. 927,943
Term of patent 14 years
U.S. Cl. D8—356



355,111
FILAMENT WINDING REEL
Keith D. Janssen, 9906 Elliott Rd., Snohomish, Wash. 98290
Filed Nov. 8, 1993, Ser. No. 14,998
Term of patent 14 years
U.S. Cl. D8—359

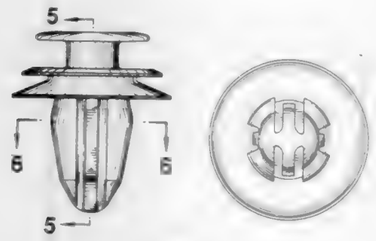


355,112
PEGBOARD HOOK
James R. Richeson, 23504 29th Ave. West, Brier, Wash. 98036
Filed Aug. 28, 1989, Ser. No. 399,609
Term of patent 14 years
U.S. Cl. D8—367

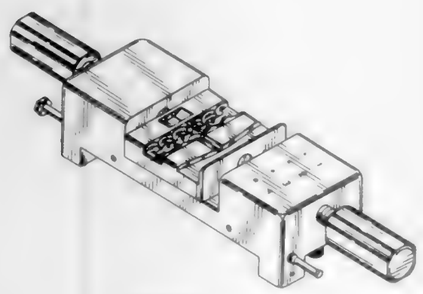


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355,113
BOARD CLAMP
Naohiro Shimajiri, Toyota, Japan, assignor to Nifco Inc., Kanagawa, Japan
Filed Dec. 15, 1992, Ser. No. 2,554
Term of patent 14 years
U.S. Cl. D8—382



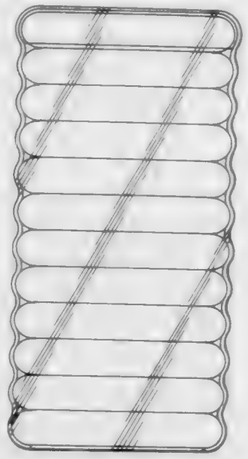
355,114
WATCH SIZING PLATFORM
Jacob Wizman, Los Angeles, Calif., assignor to Severin Montres, Irvine, Calif.
Filed Jan. 24, 1994, Ser. No. 17,859
Term of patent 14 years
U.S. Cl. D8—71



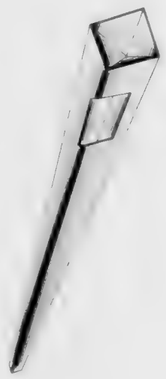
355,115
COMBINATION FUEL CONTAINER AND TOOL TRAY
Larry L. Chrisco, Fairland, Okla., assignor to Blitz U.S.A., Inc., Miami, Okla.
Filed Feb. 16, 1993, Ser. No. 4,920
Term of patent 14 years
U.S. Cl. D9—337



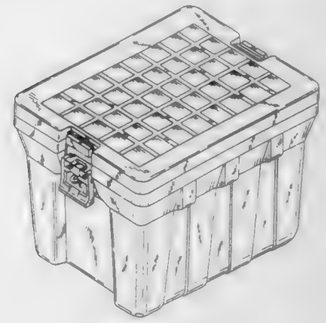
355,116
SHOWER CURTAIN RING PACKAGE
Stanley Bindman, Roslyn Heights, N.Y., assignor to Creative Bath Products, Inc., Central Islip, N.Y.
Filed Jun. 29, 1993, Ser. No. 10,203
Term of patent 14 years
U.S. Cl. D9—345



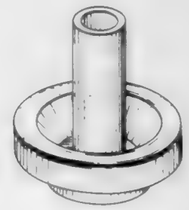
355,117
CONTAINER
Dick P. van der Zwaard, Aalsmeer, Netherlands, assignor to Zwapak B.V., Aalsmeer, Netherlands
Filed Oct. 1, 1993, Ser. No. 13,786
Claims priority, application Hague Agreement, Aug. 9, 1993, DM/026962; United Kingdom, Aug. 10, 1993, 2033034
Term of patent 14 years
U.S. Cl. D9—418



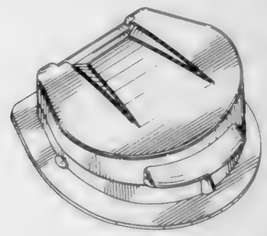
355,118
PACKING CONTAINER
Thomas Dickinson, and Bradley D. Gale, both of St. Louis, Mo., assignors to Contico International Inc., St. Louis, Mo.
Filed Dec. 17, 1993, Ser. No. 16,535
Term of patent 14 years
U.S. Cl. D9—425



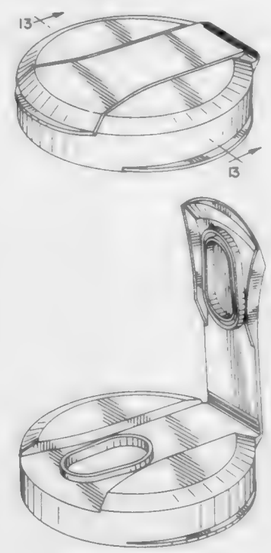
355,119
CAP FOR CONTAINER
Jeffery A. Zimmermann, Somers, N.Y., and James M. Beck, Carol Stream, Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Dec. 17, 1992, Ser. No. 2,724
Term of patent 14 years
U.S. Cl. D9—440



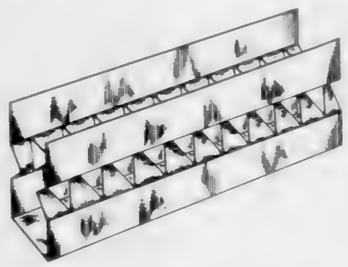
355,120
CONTAINER SPOUT
Jean-Marie Hotz, Préles, Switzerland, assignor to Tetra Laval Holdings & Finance, S.A., Pully, Switzerland
Filed Jul. 24, 1992, Ser. No. 918,380
Claims priority, application Switzerland, Jan. 24, 1992, 119 525
Term of patent 14 years
U.S. Cl. D9—447



355,121
CRUET CAP
Garrett W. Kohl, Cold Springs, N.Y., assignor to Kraft General Foods, Inc., Northfield, Ill.
Filed Sep. 4, 1992, Ser. No. 940,702
Term of patent 14 years
U.S. Cl. D9—447



355,122
PACKING FOR LAMP
Wilhelmus J. J. Van Hest, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 13, 1992, Ser. No. 405
Claims priority, application WIPO, May 5, 1992, 022.797
Term of patent 14 years
U.S. Cl. D9—456



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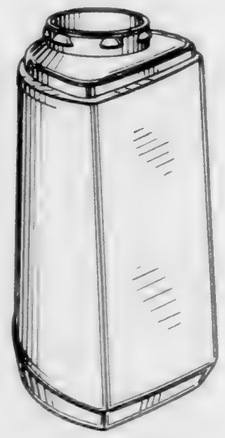
355,123
BOTTLE SEPARATING AND CASHIONING DEVICE WITH REMOVABLE COASTERS
Robert Romano, 142 E. 71st St., New York, N.Y. 10021
Filed Dec. 8, 1992, Ser. No. 2,306
Term of patent 14 years
U.S. Cl. D9—456



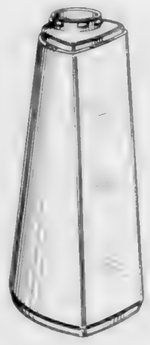
355,124
PERFUME BOTTLE
Arturo Ricci, Milan, Italy, assignor to Proteo S.p.A., Milan, Italy
Filed Nov. 23, 1992, Ser. No. 1,766
Claims priority, application Italy, Jun. 9, 1992, M920000373
Term of patent 14 years
U.S. Cl. D9—503



355,125
BOTTLE
Manharbhai K. Patel, Saddle Brook, N.J., and John Lister, Wilton, Conn., assignors to Reckitt & Colman Inc., Wayne, N.J.
Filed Aug. 5, 1991, Ser. No. 740,488
The portion of the term of this patent subsequent to Mar. 2, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—522



355,126
BOTTLE
John M. Paulovich, Hewitt, and Patricia R. Abel, Clifton, both of N.J., assignors to Reckitt & Colman Inc., Wayne, N.J.
Filed Aug. 5, 1991, Ser. No. 740,640
The portion of the term of this patent subsequent to Mar. 2, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—522



355,127
BOTTLE
Robert E. Litak, Cedarburg, Wis., assignor to Meteor Marketing Management, Inc., Milwaukee, Wis.
Filed Jun. 16, 1993, Ser. No. 9,571
Term of patent 14 years
U.S. Cl. D9—527



355,128
BOTTLE
Barbara M. Samimi, Forest Hills; Kenneth H. Nilssen, Huntington, and John C. Crawford, Lake Mahopac, all of N.Y., assignors to Colgate-Palmolive Co., New York, N.Y.
Continuation-in-part of Ser. No. 4,085, Jan. 27, 1993. This application Jun. 24, 1993, Ser. No. 9,935
The portion of the term of this patent subsequent to Nov. 8, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—542



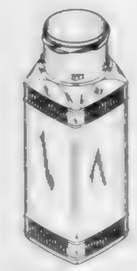
355,129
FLUTED CONTAINER WALL
Robert J. Gruodis, Palos Heights, Ill., assignor to Crown Cork & Seal Company, Oak Brook, Ill.
Filed Sep. 18, 1992, Ser. No. 948,912
Term of patent 14 years
U.S. Cl. D9—552



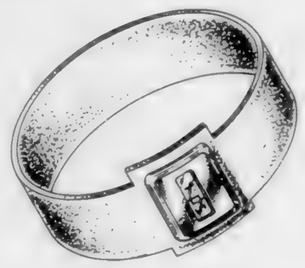
355,130
CONTAINER
Francois Bompard, Issy Les Moulineaux, France, assignor to Laboratories De Biologie Vegetale Yves Rocher, Paris, France
Filed Aug. 12, 1993, Ser. No. 12,608
Claims priority, application France, Feb. 12, 1993, 93 0794
Term of patent 14 years
U.S. Cl. D9—552



355,131
ANALGESIC CONTAINER
Maximillian Kusz, Waterville; Donald P. Deubel, Toledo; Timothy J. Fuchs, Perrysburg; William H. Connery, III, Perrysburg, all of Ohio; Kenneth E. Fuller, Ambler; Kenneth T. Yearwood, Phoenixville, both of Pa., and Donald H. Stuhldreier, Perrysburg, Ohio, assignors to McNeil-PPC, Inc., Milltown, N.J.
Filed Mar. 19, 1993, Ser. No. 5,956
Term of patent 14 years
U.S. Cl. D9—560

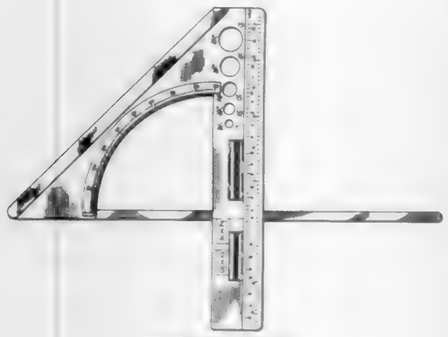


355,132
COMBINED SWEATBAND AND WATCH
Kenneth Williams, P.O. Box 70 Main St., Niverville, N.Y. 12130
Filed Feb. 28, 1992, Ser. No. 844,383
Term of patent 14 years
U.S. Cl. D10—32

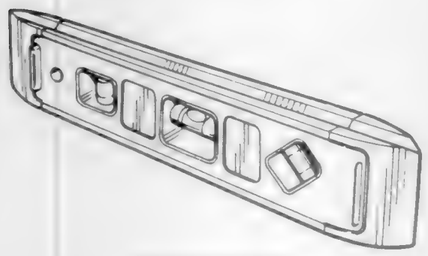


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355,133
CUTTING TEMPLATE
Léandre Vachon, Thetford Mines, Canada, assignor to Plastiques D.S.D. Inc., Québec, Canada
Filed Dec. 27, 1993, Ser. No. 16,832
Term of patent 14 years
U.S. Cl. D10—62



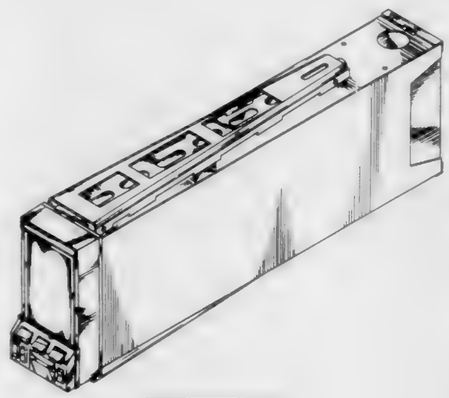
355,134
SPIRIT LEVEL
Donald F. Kennedy, 562 Rimini Rd., Del Mar, Calif. 92014
Filed Feb. 4, 1994, Ser. No. 18,345
Term of patent 14 years
U.S. Cl. D10—69



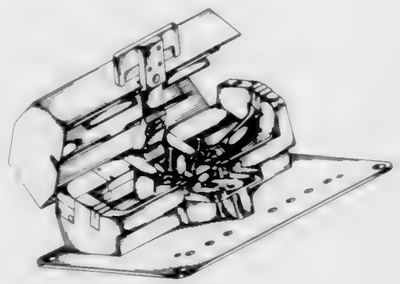
355,135
CLOCK
Ho S. Dun, Hong Kong, Hong Kong, assignor to King's Manufacturing Co. Ltd., Hong Kong
Filed Jun. 30, 1992, Ser. No. 905,651
Claims priority, application United Kingdom, Dec. 30, 1991, 2019885
Term of patent 14 years
U.S. Cl. D10—24



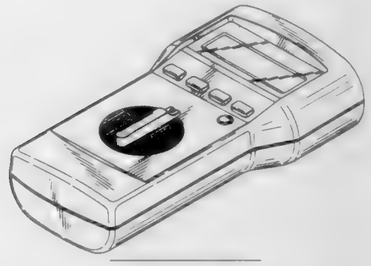
355,136
PROCESS CONTROLLER FOR INDUSTRIAL APPLICATIONS
Eric Highman, Parma, and Lonnie J. Richman, Painesville, both of Ohio, assignors to Elsag International N.V., Amsterdam Zuidoost, Netherlands
Filed Jan. 6, 1994, Ser. No. 17,223
Term of patent 14 years
U.S. Cl. D10—51



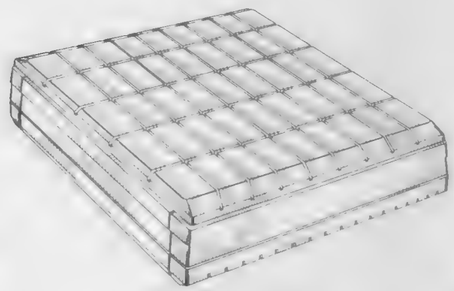
355,137
OPTICAL SPLICE VERIFICATION UNIT
George F. DeVeau, Jr., Stone Mountain; Walter S. Konik, Lilburn, and Joel L. Mock, Norcross, all of Ga., assignors to AT&T Corp., Murray Hill, N.J.
Filed Sep. 30, 1992, Ser. No. 954,851
Term of patent 14 years
U.S. Cl. D10—75



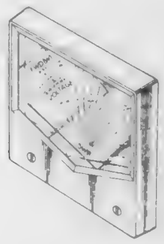
355,138
LOCAL AREA NETWORK CABLE TESTER
Wayne S. Hoofnagle, Bellevue; Roger L. Howell, Seattle, and C. Mark Nerby, Bothell, all of Wash., assignors to Fluke Corporation, Everett, Wash.
Filed Feb. 8, 1994, Ser. No. 18,511
Term of patent 14 years
U.S. Cl. D10—78



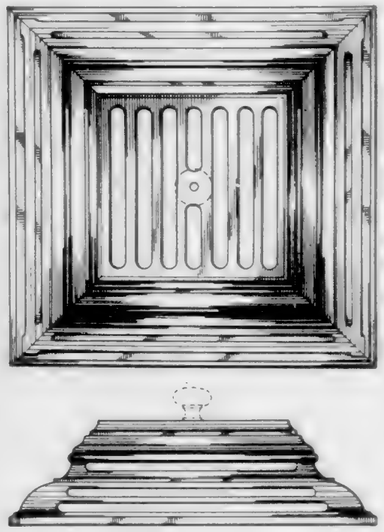
355,139
REMOTE WEIGHING PLATFORM FOR A POSTAL SCALE
William A. Weirsman, Orange, Conn., assignor to Ascom Hasler Mailing Systems, Inc., Orange, Conn.
Filed Sep. 30, 1993, Ser. No. 13,721
Term of patent 14 years
U.S. Cl. D10—91



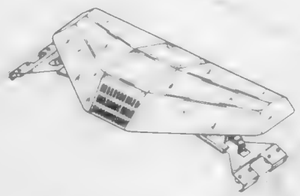
355,140
ELECTRICAL MEASUREMENT METER
Kunio Yamamura, 12-20, Magamoto 2-Chome, Urawa-shi, Saitama-ken, Japan
Filed Oct. 19, 1993, Ser. No. 14,347
Term of patent 14 years
U.S. Cl. D10—100



355,141
DECORATIVE SMOKE DETECTOR COVER
Robert A. Hipchen, 1232 Lovely La., Paradise, Calif. 95969
Filed May 3, 1994, Ser. No. 22,347
Term of patent 14 years
U.S. Cl. D10—104

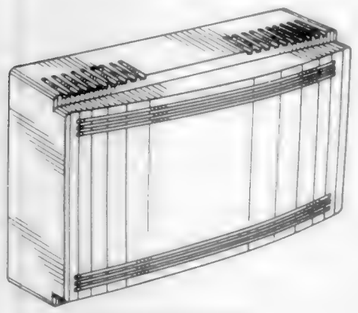


355,142
COMBINED WARNING LIGHT AND SIREN HOUSING FOR AN EMERGENCY VEHICLE
Thomas E. Wagner, Kirkwood, Mo., assignor to Wagner Products Co., Kirkwood, Mo.
Filed Feb. 7, 1994, Ser. No. 18,444
Term of patent 14 years
U.S. Cl. D10—114

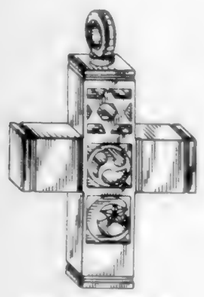


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355,143
CHIME COVER
William A. Lee, Wheaton, and Gary F. Prokop, Berwyn, both of Ill., assignors to Seatt Corporation, Downers Grove, Ill.
Filed Apr. 29, 1994, Ser. No. 22,082
Term of patent 14 years
U.S. Cl. D10—118



355,144
PENDANT
Barry S. Cord, 67 Park Ave., New York, N.Y. 10016
Filed Sep. 20, 1993, Ser. No. 13,181
Term of patent 14 years
U.S. Cl. D11—81



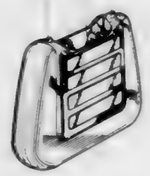
355,145
PLANTER
Daryl L. Peterson, M.P. 36.38L S.R. 14, Stevenson, Wash. 98648
Filed Feb. 12, 1993, Ser. No. 4,757
Term of patent 14 years
U.S. Cl. D11—152



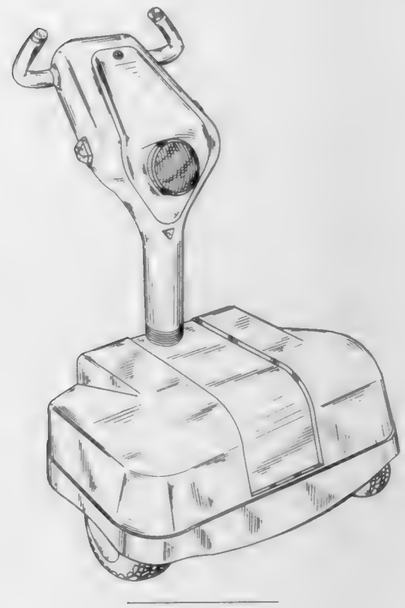
355,146
FINGER RING
Thalia Comuntzis, 11509 Patriot La., Potomac, Md. 20854
Filed Aug. 30, 1991, Ser. No. 752,331
Term of patent 14 years
U.S. Cl. D11—32



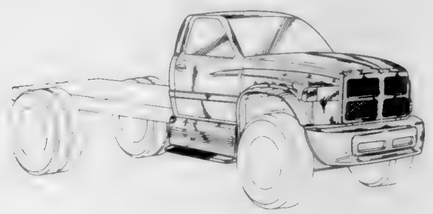
355,147
ZIPPER PULL
Francis G. Frano, Hoffman Estates, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Dec. 27, 1993, Ser. No. 16,824
Term of patent 14 years
U.S. Cl. D11—221



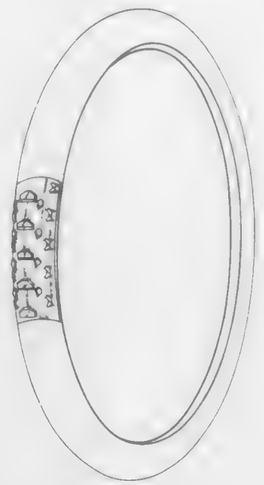
355,148
ELECTRIC TRACTOR VEHICLE
Marius Orsolini, Les Cyclamens 84, bld. Henri Sappia, 06100 Nice, France
Filed Nov. 29, 1993, Ser. No. 15,802
Claims priority, application France, May 28, 1993, 93 2885
Term of patent 14 years
U.S. Cl. D12—85



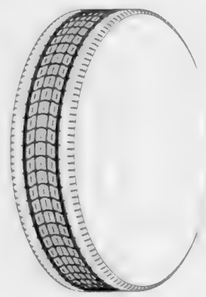
355,149
COMBINED TRUCK CAB BODY EXTERIOR AND FRONT BUMPER
Phillip E. Payne, Northville; Robert J. Janosko, Bloomfield Hills, and K. Neil Walling, Leonard, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Nov. 19, 1993, Ser. No. 15,524
Term of patent 14 years
U.S. Cl. D12—96



355,150
BICYCLE TIRE
Gert Detzner; Rolf Mahling, both of Korbach, and Rüdiger Schulte, Winterberg, all of Germany, assignors to Continental Aktiengesellschaft, Hannover, Germany
Filed Nov. 16, 1992, Ser. No. 1,522
Claims priority, application Germany, May 14, 1992, 9203576
Term of patent 14 years
U.S. Cl. D12—136



355,151
TIRE TREAD
Rodger A. Hagmaier, Hudson, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 26, 1993, Ser. No. 11,086
Term of patent 14 years
U.S. Cl. D12—146



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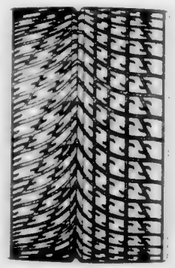
355,152
TIRE TREAD AND BUTTRESS
Robert A. Brightwell, Uniontown; Richard L. Galante, Akron; Kevin C. Legge, Uniontown, and Terry J. Waibel, Wadsworth, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 16, 1993, Ser. No. 15,871
Term of patent 14 years
U.S. Cl. D12—146



355,153
TIRE TREAD
Rudy E. Consolacion, Copley, and Warren L. Croyle, Wadsworth, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 30, 1993, Ser. No. 12,323
Term of patent 14 years
U.S. Cl. D12—147



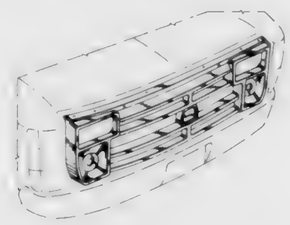
355,154
TIRE TREAD
Warren L. Croyle, Wadsworth; Douglas A. Swift, Hudson, and John J. Taube, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 11, 1993, Ser. No. 5,768
Term of patent 14 years
U.S. Cl. D12—147



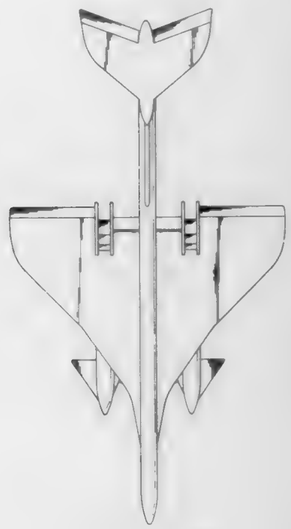
355,155
TIRE TREAD
Michel Breny, Holzthum, and Roland A. Terver, Ettelbruck, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 20, 1993, Ser. No. 16,530
Term of patent 14 years
U.S. Cl. D12—147



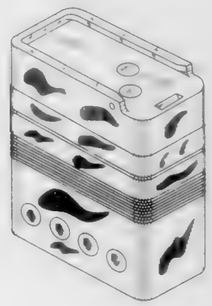
355,156
MOTOR VEHICLE GRILLE
Herschel W. Davis, Altamonte Springs, Fla., assignor to Wheeled Coach Industries, Inc., Winter Park, Fla.
Filed May 14, 1993, Ser. No. 8,408
Term of patent 14 years
U.S. Cl. D12—163



355,157
AIRCRAFT
John M. L. Reeves, Warminster, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 21, 1993, Ser. No. 10,986
Term of patent 14 years
U.S. Cl. D12—341



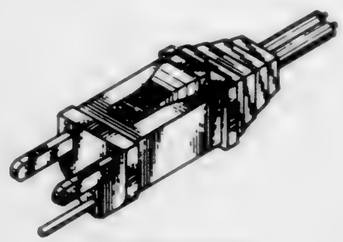
355,158
BATTERY HOUSING FOR A COMMUNICATIONS TRANSCEIVER
Jon K. Alexandres; Gary J. Downs, and William R. Peterson, all of Mason City, Iowa, assignors to Alexander Manufacturing Company, Mason City, Iowa
Filed Jun. 9, 1992, Ser. No. 896,568
The portion of the term of this patent subsequent to Jul. 26, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—103



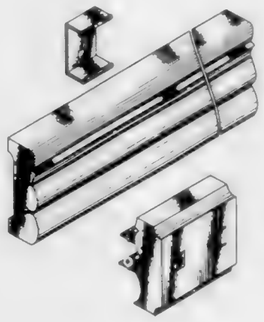
355,159
CABLE CONNECTOR
Yu-Feng Cheng, No. 7, Fu Hsing St., Tu Cheng Hsiang, Taipei Hsien, Taiwan, Prov. of China
Filed Oct. 1, 1993, Ser. No. 13,774
Term of patent 14 years
U.S. Cl. D13—133



355,160
ANTI-SHOCK ELECTRIC PLUG
Faustin C. Velasco, 30-96 43 St. 1st Floor, Astoria, N.Y. 11103
Filed Oct. 4, 1993, Ser. No. 13,822
Term of patent 14 years
U.S. Cl. D13—141

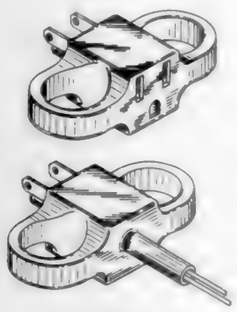


355,161
COMBINED ELECTRICAL OUTLET AND OUTLET HOLDER
Larry H. Bodnar, 8423 Benjamin Dr., Huntington Beach, Calif. 92647
Filed Jul. 9, 1993, Ser. No. 10,487
Term of patent 14 years
U.S. Cl. D13—146

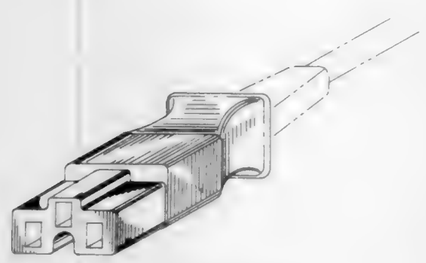


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355,162
ELECTRIC PLUG
M. Gregg Karman, La Quinta, Calif., assignor to Environmental Associates, Inc., Palm Desert, Calif.
Filed Nov. 15, 1993, Ser. No. 15,352
Term of patent 14 years
U.S. Cl. D13—139



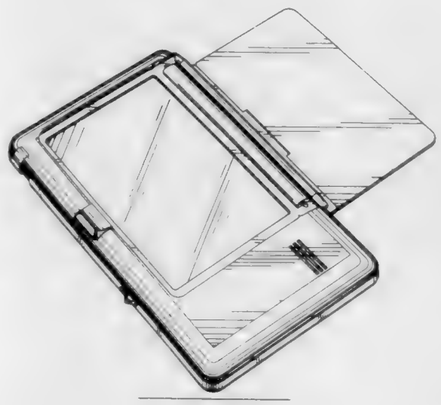
355,163
FEMALE PLUG FOR AN ELECTRICAL CORD
Micheal D. Dolson, Brockville, and Tibor Maknyik, Richmond Hill, both of Canada, assignors to Black & Decker Inc., Newark, Del.
Filed Aug. 26, 1993, Ser. No. 12,189
Term of patent 14 years
U.S. Cl. D13—146



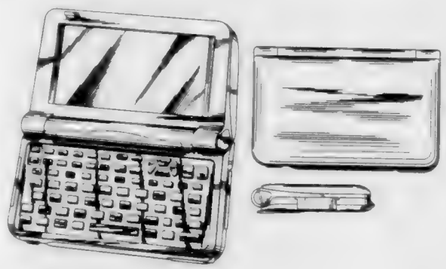
355,164
FLEXIBLE LIGHTING FIXTURE MOUNTING TRACK
Wei H. Shen, 6F, No. 412, Sec. 4, Jen Ai Rd., Taipei,
Filed May 19, 1993, Ser. No. 8,529
Term of patent 14 years
U.S. Cl. D13—155



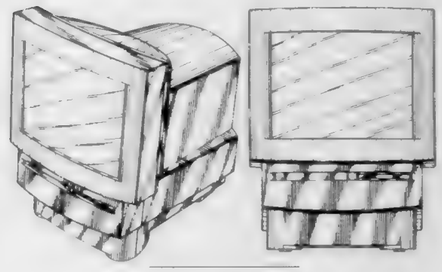
355,165
PORTABLE COMPUTER WITH OPERATION PEN
Hiroshi Sakaguchi, Kyoto, and Hidetoshi Tamaki, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 20, 1992, Ser. No. 2,315
Claims priority, application Japan, May 27, 1992, 4-15583
Term of patent 14 years
U.S. Cl. D14—100



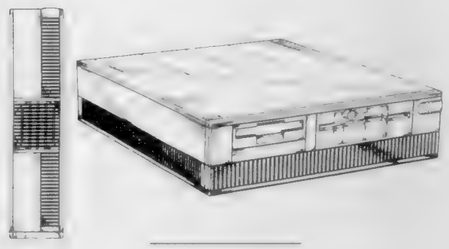
355,166
ELECTRONIC ORGANIZER
Hiroshi Sakaguchi, Kyoto; Shinsaku Hino, and Koji Nishida, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 20, 1993, Ser. No. 16,517
Claims priority, application Japan, Jun. 30, 1993, 5-20363
Term of patent 14 years
U.S. Cl. D14—100



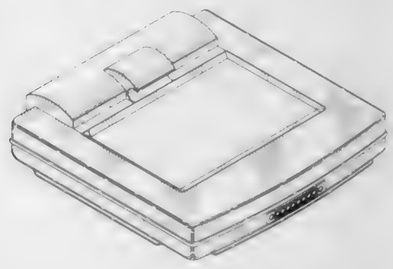
355,167
ENCLOSURE FOR COMPUTER
Lawrence E. Barbera, San Mateo, and Kenneth D. Wood, Woodside, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jun. 17, 1993, Ser. No. 9,666
Term of patent 14 years
U.S. Cl. D14—100



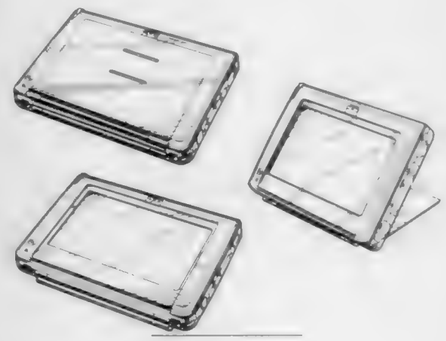
355,168
COMPUTER
Dallas R. Grove, Mountain View, Calif., assignor to Palo Alto Design Group, Inc., Palo Alto, Calif.
Filed Sep. 25, 1992, Ser. No. 951,703
Term of patent 14 years
U.S. Cl. D14—100



355,169
PORTABLE COMPUTER
Donald W. Carr, Birmingham, Mich.; Scott M. Belliveau, Springboro, Ohio, and Robert W. Paterson, Liberty, S.C., assignors to NCR Corporation, Dayton, Ohio
Filed Sep. 1, 1993, Ser. No. 12,456
Term of patent 14 years
U.S. Cl. D14—100



355,170
COMPUTER
Kanji Mizusugi, Mie; Kensho Tsuji, Nara; Hidetoshi Tamaki, Nara, and Mitsuo Kawa, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 2, 1993, Ser. No. 14,780
Claims priority, application Japan, Jun. 24, 1993, 5-19414
Term of patent 14 years
U.S. Cl. D14—100

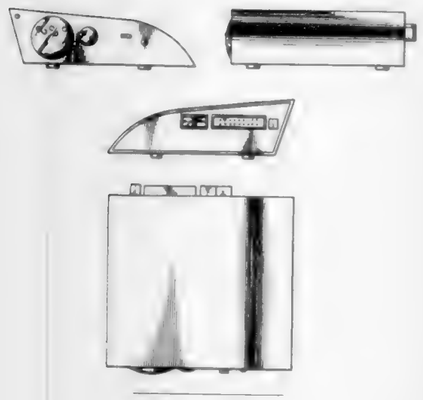


355,171
PORTABLE COMPUTER
Michael D. Derocher, Corvallis, Oreg., assignor to Hewlett-Packard Corporation, Palo Alto, Calif.
Filed Jun. 4, 1993, Ser. No. 9,069
Term of patent 14 years
U.S. Cl. D14—106

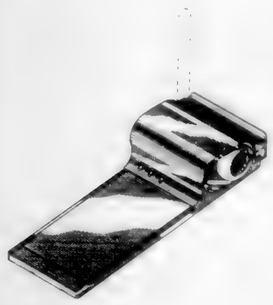


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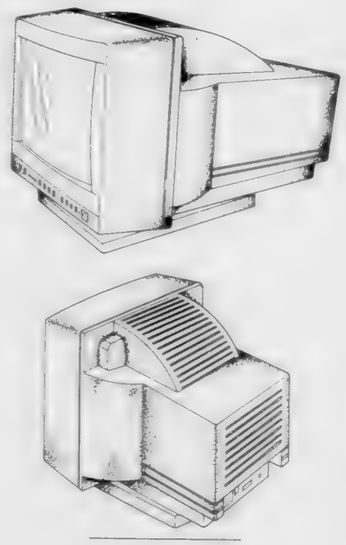
355,172
MODEM
Reza A. Hadaegh, Santa Monica, Calif., assignor to Logicode Technology, Inc., Camarillo, Calif.
Filed Jan. 14, 1992, Ser. No. 820,395
Term of patent 14 years
U.S. Cl. D14—242



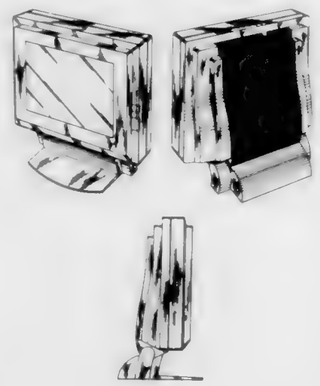
355,173
RADIO PACKET MODEM WITH AN INTEGRATED BATTERY HOUSING
William E. Fenton, Surrey; Roman P. Rak, Delta, and Brian Redman, Richmond, all of Canada, assignors to Motorola, Schaumburg, Ill.
Filed Feb. 7, 1994, Ser. No. 18,475
Term of patent 14 years
U.S. Cl. D14—107



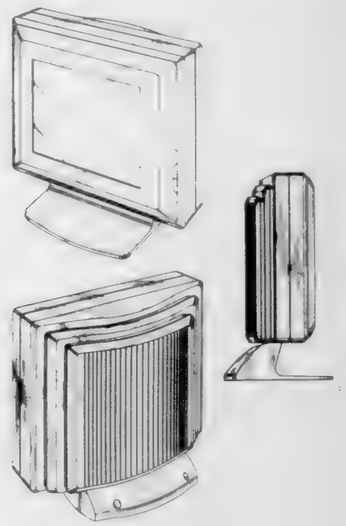
355,174
MONITOR
Steve Liao, Tao-Yuan Shien, Taiwan, Prov. of China, assignor to EFA Corporation, Tao-Yuan Shien, Taiwan, Prov. of China
Filed Jul. 29, 1993, Ser. No. 11,196
Term of patent 14 years
U.S. Cl. D14—113



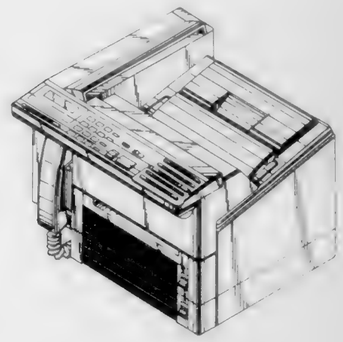
355,175
COMPUTER MONITOR
Kazutoshi Masunari; Hiroshi Yasuno, and Hiroyuki Maeno, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 22, 1993, Ser. No. 10,889
Claims priority, application Japan, Jan. 22, 1993, 5-1474
Term of patent 14 years
U.S. Cl. D14—113



355,176
MONITOR FOR COMPUTER
Hiroyuki Maeno, Osaka; Kazutoshi Masunari, Kanagawa, and Hiroshi Yasuno, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 10, 1993, Ser. No. 12,905
Claims priority, application Japan, Feb. 10, 1993, 5-3582
Term of patent 14 years
U.S. Cl. D14—113



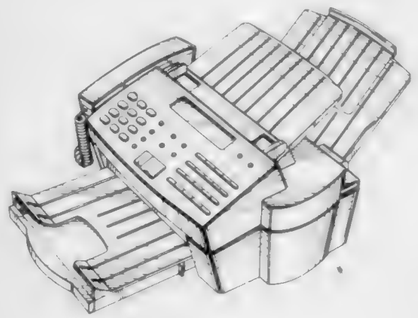
355,177
FACSIMILE MACHINE
Masaji Sawada, Kyoto; Kenzo Yoshida, Nara; Maki Tomoike, Nara, and Yukio Kanaoka, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 19, 1993, Ser. No. 6,225
Claims priority, application Japan, Sep. 24, 1992, 4-28019
Term of patent 14 years
U.S. Cl. D14—118



355,178
FACSIMILE MACHINE
Masaji Sawada, Kyoto, and Shin Takahashi, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 22, 1993, Ser. No. 9,744
Claims priority, application Japan, Dec. 29, 1992, 4-39013
Term of patent 14 years
U.S. Cl. D14—118

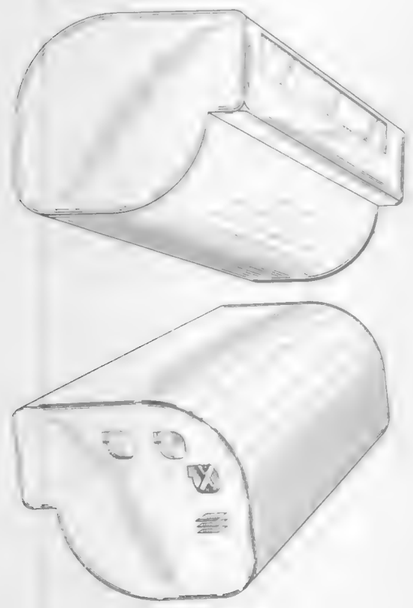


355,179
FACSIMILE MACHINE
Masaji Sawada, Kyoto; Yukio Kanaoka, and Yoichi Tanimura, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 27, 1993, Ser. No. 14,596
Claims priority, application Japan, Apr. 30, 1993, 5-12953
Term of patent 14 years
U.S. Cl. D14—118

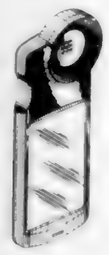


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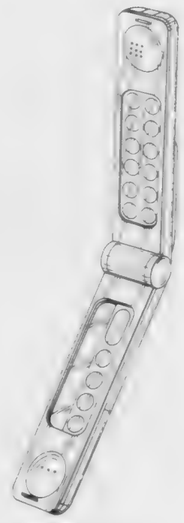
355,180
FILM CASSETTE WITH EXPOSURE STATUS INDICATORS
Dennis R. Zander, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 20, 1993, Ser. No. 8,735
Term of patent 14 years
U.S. Cl. D14—121



355,181
HOUSING FOR A PERSONAL CORDLESS TELEPHONE
Craig F. Siddoway, Davie, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed May 4, 1993, Ser. No. 7,915
Term of patent 14 years
U.S. Cl. D14—138



355,182
PORTABLE RADIO TELEPHONE
Seiji Namba, Kobayashi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 15, 1992, Ser. No. 948,858
Term of patent 14 years
U.S. Cl. D14—138



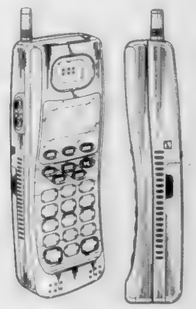
355,183
PORTABLE RADIO TELEPHONE
Eriko Ino, and Katsuhito Watanabe, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Japan
Filed Jan. 15, 1993, Ser. No. 3,532
Claims priority, application Japan, Jul. 31, 1992, 4-22768
Term of patent 14 years
U.S. Cl. D14—138



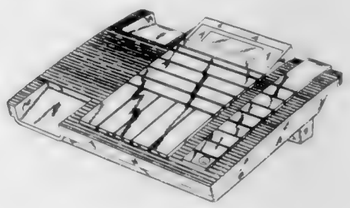
355,184
PORTABLE RADIO TELEPHONE
Takato Yokouchi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 21, 1993, Ser. No. 16,690
Claims priority, application Japan, Jun. 25, 1993, 5-19263
Term of patent 14 years
U.S. Cl. D14—138



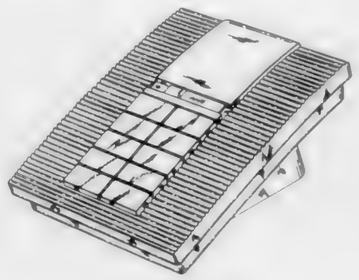
355,185
PORTABLE RADIO TELEPHONE
Katsuhito Watanabe, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Feb. 15, 1994, Ser. No. 18,755
Claims priority, application Japan, Nov. 8, 1993, 5-33544
Term of patent 14 years
U.S. Cl. D14—138



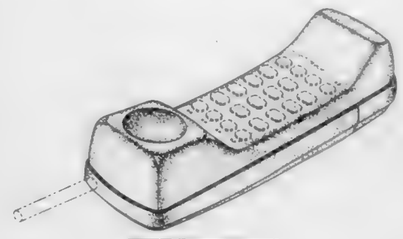
355,186
TELEPHONE ANSWERING MACHINE
David C. Danielson, New Canaan, Conn., and Anthony D. Franks, New York, N.Y., assignors to AT&T Corp., Murray Hill, N.J.
Filed Mar. 4, 1993, Ser. No. 6,427
Term of patent 14 years
U.S. Cl. D14—141



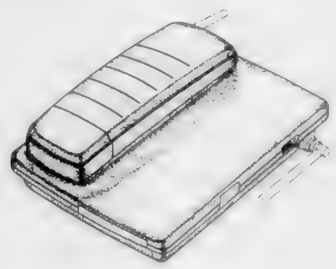
355,187
TELEPHONE ANSWERING MACHINE
David C. Danielson, New Canaan, Conn., and Anthony D. Franks, New York, N.Y., assignors to AT&T Corp., Murray Hill, N.J.
Filed Mar. 4, 1993, Ser. No. 6,428
Term of patent 14 years
U.S. Cl. D14—141



355,188
TELEPHONE HANDSET
Donovan M. Folkes, Somerset, N.J.; Paul A. Scheib, New York, N.Y., and Michael P. Zambelli, Livingston, N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Jan. 26, 1994, Ser. No. 17,931
Term of patent 14 years
U.S. Cl. D14—148

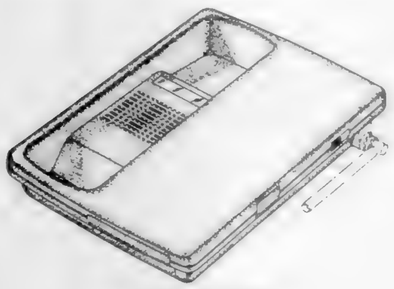


355,189
TELEPHONE SET
Donovan M. Folkes, Somerset, N.J.; Paul A. Scheib, New York, N.Y., and Michael P. Zambelli, Livingston, N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Jan. 26, 1994, Ser. No. 17,934
Term of patent 14 years
U.S. Cl. D14—149

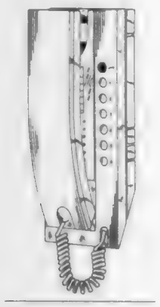


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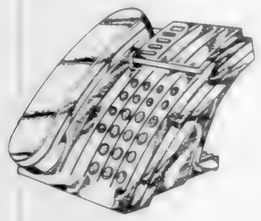
355,190
CORDLESS TELEPHONE BASE
Donovan M. Folkes, Somerset, N.J.; Paul A. Scheib, New York, N.Y., and Michael P. Zambelli, Livingston, N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Jan. 26, 1994, Ser. No. 17,932
Term of patent 14 years
U.S. Cl. D14—149



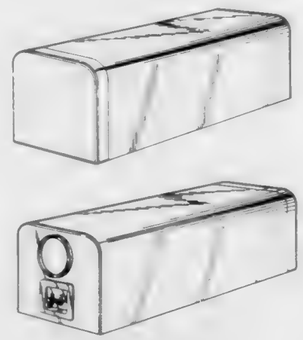
355,191
TELEPHONE
Eberhard Meurer, Furtwangen, Germany, assignor to S. Siedle & Sohne, Germany
Filed Jan. 9, 1992, Ser. No. 820,949
Term of patent 14 years
U.S. Cl. D14—149



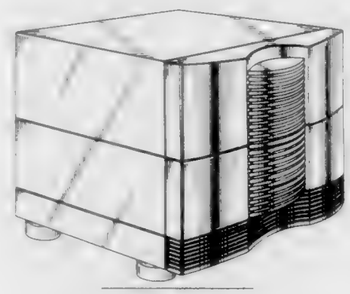
355,192
DESK PHONE
Shih-Chuan Chang, Unit 11 (Rm. 605), 6/F, 3 Wuu-Chyuan-1 Rd., Shin Juang, Taipei, Taiwan, Prov. of China
Filed Dec. 15, 1993, Ser. No. 16,365
Term of patent 14 years
U.S. Cl. D14—151



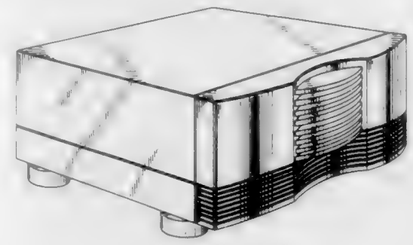
355,193
SUB-WOOFER ENCLOSURE
Steven M. Irby, Stillwater, Okla., assignor to Stillwater Designs & Audio, Inc., Stillwater, Okla.
Filed Jan. 22, 1993, Ser. No. 4,003
Term of patent 14 years
U.S. Cl. D14—210



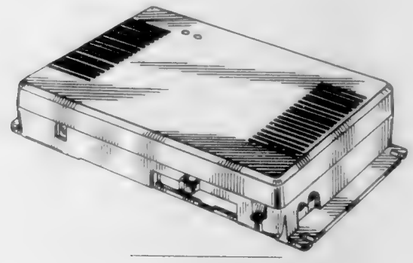
355,194
PROCESSOR FOR A VIDEO EDITING SYSTEM
Jonathan Burke, Corte Madera, Calif., assignor to ImMIX, a div. of Carlton Int'l. Corp., Grass Valley, Calif.
Filed Jan. 27, 1993, Ser. No. 4,121
Term of patent 14 years
U.S. Cl. D14—217



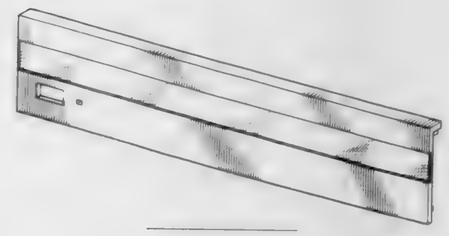
355,195
STORAGE MODULE FOR A VIDEO EDITING SYSTEM
Jonathan Burke, Corte Madera, Calif., assignor to ImMIX, a division of Carlton Int'l. Corp, Grass Valley, Calif.
Filed Jan. 27, 1993, Ser. No. 4,123
Term of patent 14 years
U.S. Cl. D14—217



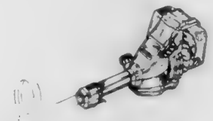
355,196
REPEATER FOR A TELEPHONE
Tadao Nakamura, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 28, 1993, Ser. No. 16,798
Term of patent 14 years
U.S. Cl. D14—240



355,197
FACE PLATE FOR ELECTRONIC HOUSING UNITS
Robert P. Farinelli, Lexington, and Dean A. Hatton, Winchester, both of Ky., assignors to Square D Company, Palatine, Ill.
Filed Jan. 8, 1992, Ser. No. 818,232
Term of patent 14 years
U.S. Cl. D14—257

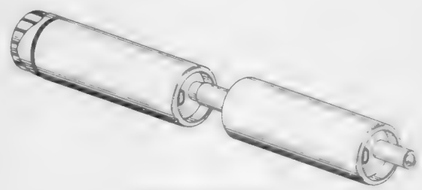


355,198
SMALL ENGINE FOR A PORTABLE POWER TOOL
Naoki Kikuchi, Chandler, Ariz., assignor to Ryobi Outdoor Products, Easley, S.C.
Filed Jul. 23, 1993, Ser. No. 11,028
Term of patent 14 years
U.S. Cl. D15—1

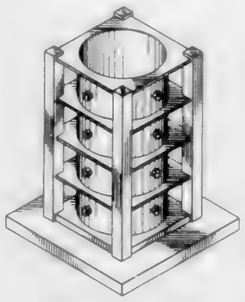




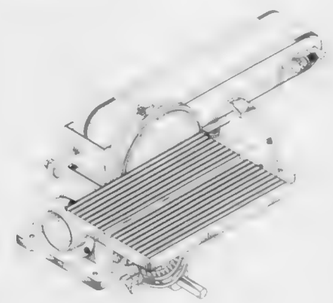
355,199
SUBMERSIBLE PUMP
James I. M. Ousey, P.O. Box 9021, Pittsburg, Calif. 94565
Filed Oct. 22, 1993, Ser. No. 14,801
Term of patent 14 years
U.S. Cl. D15—7



355,200
TOOLING SUPPORT PEDESTAL
Daniel A. Lippman, Phoenix, Ariz., assignor to Stevens Engineering, Inc., Phoenix, Ariz.
Filed Feb. 6, 1992, Ser. No. 831,386
Term of patent 14 years
U.S. Cl. D15—140

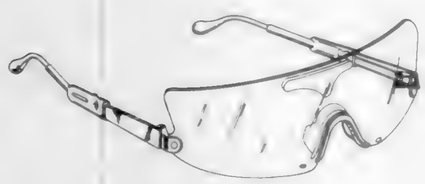


355,201
BELT/DISK SANDING MACHINE
Louis C. Brickner, Jr., Pittsburgh, Pa., assignor to Delta International Machinery Corp., Pittsburgh, Pa.
Filed Nov. 5, 1993, Ser. No. 14,641
Term of patent 14 years
U.S. Cl. D15—125



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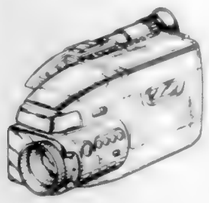
355,202
EYEGLASSES
Marc Mugnier, La Trinite, France, assignor to Mugnier Design, Wayne, N.J.
Continuation-in-part of Ser. No. 12,291, Feb. 1, 1993. This application Jul. 26, 1993, Ser. No. 11,062
Term of patent 14 years
U.S. Cl. D16—314



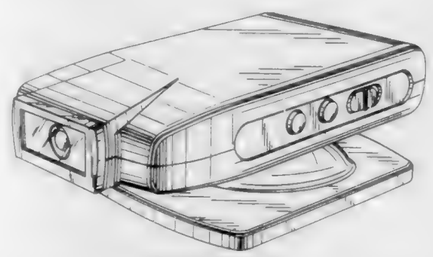
355,203
EYEGLASSES
Marc Mugnier, La Trinite, France, assignor to Mugnier Design, Wayne, N.J.
Continuation-in-part of Ser. No. 12,291, Feb. 1, 1993. This application Jul. 26, 1993, Ser. No. 11,063
Term of patent 14 years
U.S. Cl. D16—314



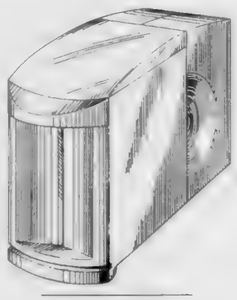
355,204
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Kazuhiko Miyahara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 3, 1993, Ser. No. 12,479
Claims priority, application Japan, Mar. 8, 1993, 5-6604
The portion of the term of this patent subsequent to Aug. 23, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D16—202



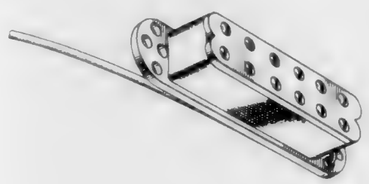
355,205
VIDEO CAMERA
Mitsuo Yokoi, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 1, 1994, Ser. No. 19,411
Claims priority, application Japan, Sep. 30, 1993, 5-29902
Term of patent 14 years
U.S. Cl. D16—202



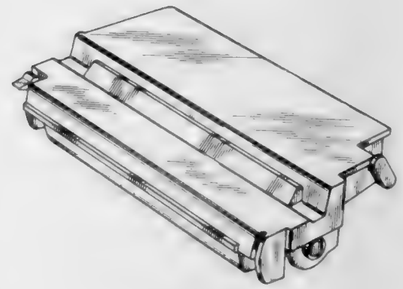
355,206
LIQUID CRYSTAL DISPLAY HOUSING UNIT ADAPTED FOR USE WITH A SLIDE PROJECTOR
Matthew Zavracky, Attleboro; Stephen Offsey, Brookline; David Chastain, Acton; Michel Arney, Needham; Benjamin Beck, Boston, and Gregory Hunter, Westwood, all of Mass., assignors to Kopin Corporation, Taunton, Mass.
Filed Feb. 10, 1993, Ser. No. 4,637
Term of patent 14 years
U.S. Cl. D16—235



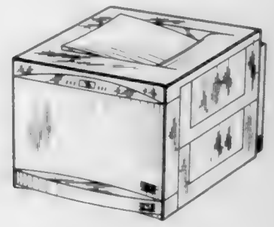
355,207
ELECTROMAGNETIC PICKUP FOR STRINGED INSTRUMENT
Kevin J. Beller, Santa Barbara, Calif., assignor to Carter Duncan Corp., Santa Barbara, Calif.
Filed Jun. 24, 1993, Ser. No. 10,000
Term of patent 14 years
U.S. Cl. D17—20



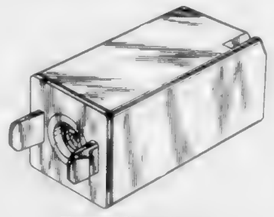
355,208
DEVELOPING DEVICE FOR COPYING MACHINE
Masaaki Ishibashi, Kunitachi; Hiroyuki Shirai, Tokyo, and Tadayuki Tsuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 6, 1992, Ser. No. 128
Claims priority, application Japan, Apr. 17, 1992, 4-11547
The portion of the term of this patent subsequent to Dec. 20, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—43



355,209
LASER BEAM PRINTER
Hideki Ito, Kawagoe, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 23, 1993, Ser. No. 10,943
Claims priority, application Japan, Jan. 27, 1993, 5-1911
Term of patent 14 years
U.S. Cl. D18—55

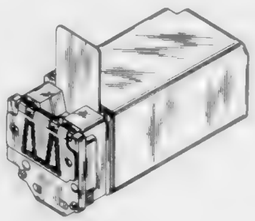


355,210
INK CARTRIDGE FOR PRINTER
Hidemi Kubota, Komae; Toshihiko Ujita, Yamato; Kenjiro Watanabe, Tokyo; Torachika Osada, Yokohama, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1993, Ser. No. 10,004
Claims priority, application Japan, Dec. 29, 1992, 4-38984
The portion of the term of this patent subsequent to Jul. 5, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



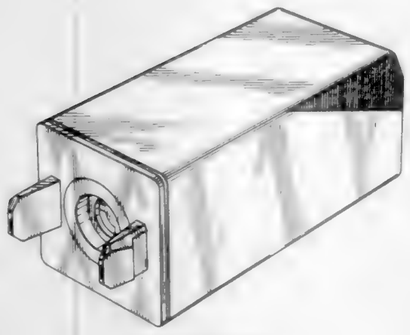
355,211
PRINTING HEAD FOR PRINTER
Hidemi Kubota, Komae; Toshihiko Ujita, Yamato; Kenjiro Watanabe, Tokyo; Torachika Osada, Yokohama, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1993, Ser. No. 10,005
Claims priority, application Japan, Dec. 29, 1992, 4-38907
Term of patent 14 years
U.S. Cl. D18—56

355,212
PRINTING HEAD FOR PRINTER
Hidemi Kubota, Komae; Toshihiko Ujita, Yamato; Torachika Osada, Yokohama; Kenjiro Watanabe, Tokyo, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1993, Ser. No. 10,088
Claims priority, application Japan, Dec. 29, 1992, 4-38906
Term of patent 14 years
U.S. Cl. D18—56

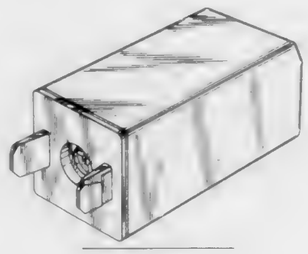


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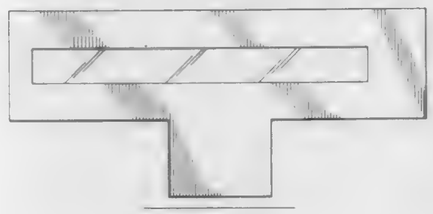
355,213
INK CARTRIDGE FOR PRINTER
Hidemi Kubota, Komae; Toshihiko Ujita, Yamato; Kenjiro Watanabe, Tokyo; Torachika Osada, Yokohama, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1993, Ser. No. 10,099
Claims priority, application Japan, Dec. 29, 1992, 4-38986
The portion of the term of this patent subsequent to Apr. 5, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



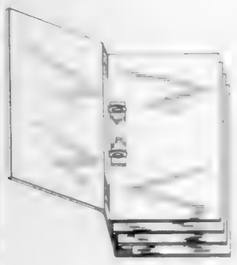
355,215
INK CARTRIDGE FOR PRINTER
Hidemi Kubota, Komae; Toshihiko Ujita, Yamato; Kenjiro Watanabe, Tokyo; Torachika Osada, Yokohama, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1993, Ser. No. 10,097
Claims priority, application Japan, Dec. 29, 1992, 4-38912
The portion of the term of this patent subsequent to Jul. 5, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



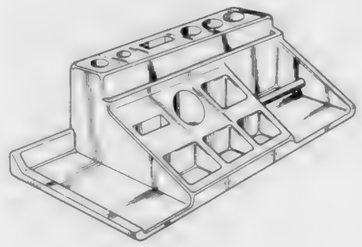
355,216
READING TEMPLATE GUIDE
Rosanne B. Grant, 2145 Ft. Donelson Ct., Dumfries, Va. 22026
Filed Feb. 21, 1992, Ser. No. 837,433
Term of patent 14 years
U.S. Cl. D19—59



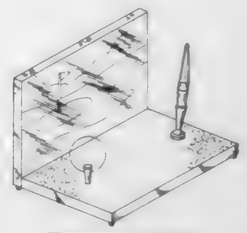
355,214
MULTIPLE RING BINDER
Salomon Menahem, Hadera, Israel, assignor to Superfile Ltd., Hadera-Karkur, Israel
Filed Apr. 16, 1992, Ser. No. 869,635
Term of patent 14 years
U.S. Cl. D19—27



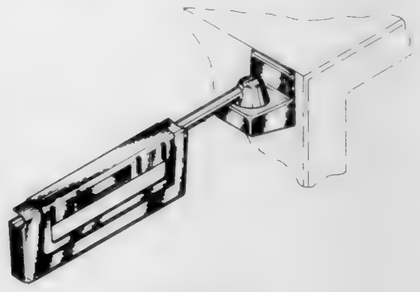
355,217
ORGANIZER FOR ASSORTED OFFICE ARTICLES
Patricia G. Luna, 30305B W. Thirteen Mile, Farmington Hills, Mich. 48334
Filed Jun. 2, 1993, Ser. No. 9,015
Term of patent 14 years
U.S. Cl. D19—78



355,218
COMBINED DESK SET AND PICTURE FRAME
Edward S. Peterka, 1117 Windcrest Acres, Galesburg, Ill. 61401
Filed Jun. 21, 1993, Ser. No. 9,738
Term of patent 14 years
U.S. Cl. D19—82



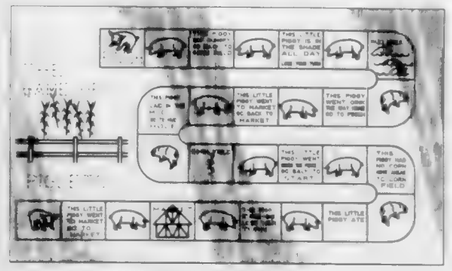
355,219
COPYHOLDER
Bruce S. Jones; William A. Putman, both of Franklin, Tenn., and Thomas J. Bush, Canton Center, Conn., assignors to Pelikan, Inc., Franklin, Tenn.
Filed Nov. 9, 1993, Ser. No. 15,161
Term of patent 14 years
U.S. Cl. D19—88



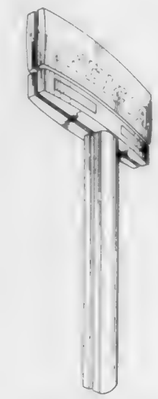
355,220
ILLUMINABLE HOUSE NUMBER SIGN
Donald N. Russo, 3 E. Leasure Ave., New Castle, Pa. 16105, and John Cimperman, P.O. Box 7833, New Castle, Pa. 16107
Filed Nov. 4, 1993, Ser. No. 14,899
Term of patent 14 years
U.S. Cl. D20—17



355,221
PIGLET GAME BOARD
Patricia A. Durlin, R.R. 1 Box 43-A, New Salem, Ill. 62357
Filed Mar. 1, 1993, Ser. No. 5,275
Term of patent 14 years
U.S. Cl. D21—25



355,222
SIGN
John L. Marshall, Knoxville, and J. Michael Milner, Powell, both of Tenn., assignors to Plasti-Line, Inc., Powell, Tenn.
Filed Mar. 18, 1994, Ser. No. 20,118
Term of patent 14 years
U.S. Cl. D20—41

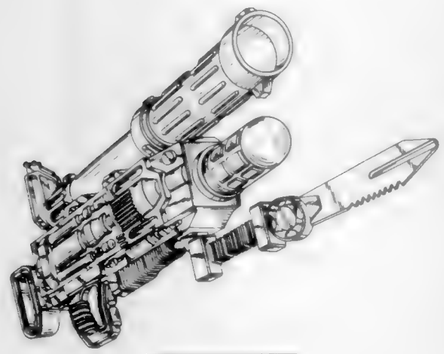


355,223
GIRDER BEAM TOY COMPONENT
Kenneth P. Glynn, Raritan Township, Hunterdon County, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.
Filed Mar. 28, 1994, Ser. No. 20,525
Term of patent 14 years
U.S. Cl. D21—108

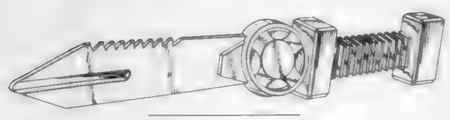


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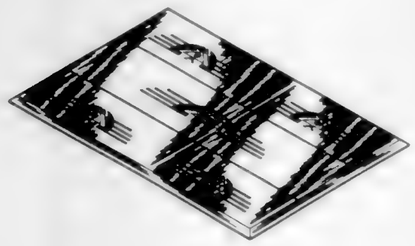
355,224
MULTI-COMPONENT PROJECTILE-PROPELLING TOY WEAPON
Avi Arad, Westport, Conn., and Finn Tornquist, Warren, N.J., assignors to Toy Biz, Inc., New York, N.Y.
Filed Dec. 31, 1992, Ser. No. 3,230
Term of patent 14 years
U.S. Cl. D21—145



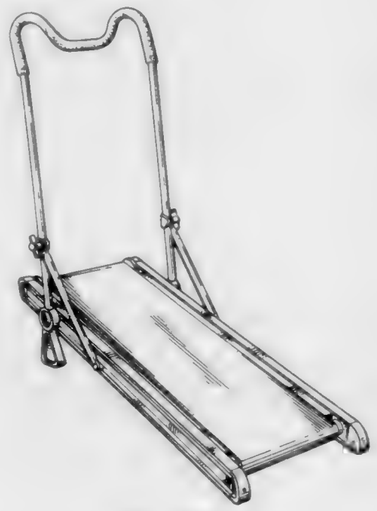
355,225
TOY WEAPON BAYONET
Avi Arad, Westport, Conn., and Finn Turnquist, Warren, N.J., assignors to Toy Biz, Inc., New York, N.Y.
Filed Dec. 31, 1992, Ser. No. 3,226
Term of patent 14 years
U.S. Cl. D21—145



355,226
EXERCISE MAT
Cathy C. Wadley, 2581 Clear Marsh Rd., Johns Island, S.C. 29455
Filed Mar. 5, 1993, Ser. No. 5,566
Term of patent 14 years
U.S. Cl. D21—191



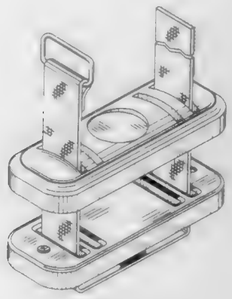
355,227
TREADMILL
Jeffery S. Summers, Santa Monica, Calif.; Anton Kimbill, Portland, Oreg., and Alex E. Kunzler, Bellevue, Wash., assignors to Evergreen Ventures, Inc., Santa Monica, Calif.
Filed Sep. 28, 1993, Ser. No. 13,620
Term of patent 14 years
U.S. Cl. D21—192



355,228
CLIMBER EXERCISER
Michael Hung, 9-16, Nan Kan Hsia, Nan Kan, Lu Chu Hsiang, Tao Yuan County, Taiwan, Prov. of China
Filed Nov. 30, 1993, Ser. No. 15,824
Term of patent 14 years
U.S. Cl. D21—195



355,229
HAND WEIGHT FOR RUNNERS AND JOGGERS
Anthony F. Mugnolo, P.O. Box 20646, Rochester, N.Y. 14602
Filed Dec. 6, 1993, Ser. No. 16,042
Term of patent 14 years
U.S. Cl. D21—196



355,230
FOOTBALL
Robert L. Brown, Cincinnati, Ohio, assignor to Tonka Corporation, Pawtucket, R.I.
Filed Nov. 3, 1993, Ser. No. 14,783
Term of patent 14 years
U.S. Cl. D21—204



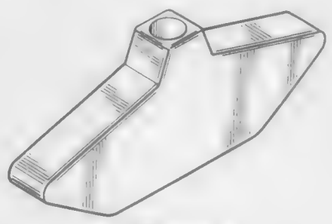
355,231
SHUTTLECOCK
Tony Chien, No. 24, Lane 46, Sec. 1, Chung Hsing Rd., U-Ku Hsiang, Taipei Hsien, Taiwan, Prov. of China
Filed Apr. 29, 1993, Ser. No. 7,663
Term of patent 14 years
U.S. Cl. D21—207



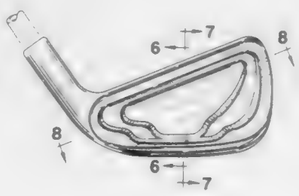
355,232
COMBINED TENNIS RACKET AND BALL RETRIEVER
Joseph J. Hodges, 2 Hull St., Oceanside, N.Y. 11572
Filed Jun. 7, 1993, Ser. No. 9,159
Term of patent 14 years
U.S. Cl. D21—212



355,233
GOLF PUTTER HEAD
Don E. Burdick, 400 Woodland Park, San Leandro, Calif. 94577
Filed Jun. 15, 1993, Ser. No. 9,513
Term of patent 14 years
U.S. Cl. D21—218

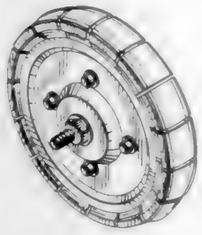


355,234
GOLF CLUB HEAD
Robert F. MacNally, Hinsdale, and Timothy R. Reed, Buffalo Grove, both of Ill., assignors to Tommy Armour Golf Company, Morton Grove, Ill.
Filed Jun. 10, 1993, Ser. No. 9,181
Term of patent 14 years
U.S. Cl. D21—220



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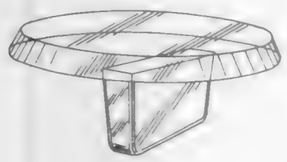
355,235
ROLLER FOR A GRASS SKI
Akira Homma, Tokamachi, Japan, assignor to Homma Kagaku Kabushiki Kaisha, Tokamachi, Japan
Filed Apr. 30, 1993, Ser. No. 7,704
Claims priority, application Japan, Feb. 24, 1993, 5-005153
Term of patent 14 years
U.S. Cl. D21—226



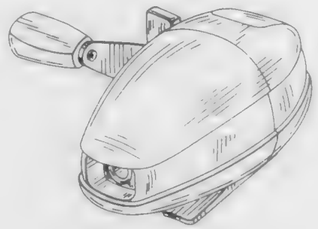
355,236
COMBINED GOLF TARGET AND PRACTICE TEE
Thaddeus Szychowski, 180 Laurel Glen Rd., Soquel, Calif. 95073
Filed Feb. 18, 1992, Ser. No. 836,927
Term of patent 14 years
U.S. Cl. D21—234



355,237
BASKETBALL SPINNER
William F. Linton, 825 E. Emory, Kankakee, Ill. 60901
Filed Jul. 6, 1993, Ser. No. 10,386
Term of patent 14 years
U.S. Cl. D21—240



355,238
REEL FOR FISHING
Shin-ichi Asano, Musashino, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Feb. 24, 1992, Ser. No. 839,440
Claims priority, application Japan, Aug. 27, 1991, 3-25629; Aug. 27, 1991, 3-25630; Sep. 24, 1991, 3-28665
Term of patent 14 years
U.S. Cl. D22—140



355,239
FISHING LURE
Gary A. Pawlak, 4 Villa Verde #106, Buffalo Grove, Ill. 60089, and Michael J. Brackus, 462 E. Dundee, Palatine, Ill. 60067
Filed Feb. 8, 1993, Ser. No. 4,556
Term of patent 14 years
U.S. Cl. D22—128



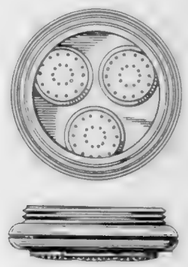
355,240
CHEMICAL DETERGENT BLOCK
Elizabeth J. Gladfelter, Falcon Heights; Tina O. Outlaw, Inver Grove Heights, and Daniel K. Boche, Eagan, all of Minn., assignors to Ecolab, St. Paul, Minn.
Filed Mar. 10, 1993, Ser. No. 5,747
Term of patent 14 years
U.S. Cl. D23—207



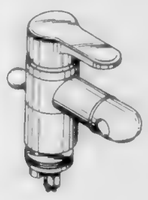
355,241
WATER FILTER
Russell Zylstra, Bellevue; John T. Dailey, Kirkland, both of Wash.; Peter Chermak, Sun Prairie, Wis.; Robert Clack, Sun Prairie, Wis.; Dan Klein, Middleton; Melvin Hemp, Lodi, Wis.; George Ricci, Monterey Park, Calif., and John P. Green, Chandler, Ariz., assignors to Rena-Ware Distributors, Inc., Redmond, Wash.
Filed Oct. 6, 1993, Ser. No. 13,923
Term of patent 14 years
U.S. Cl. D23—209



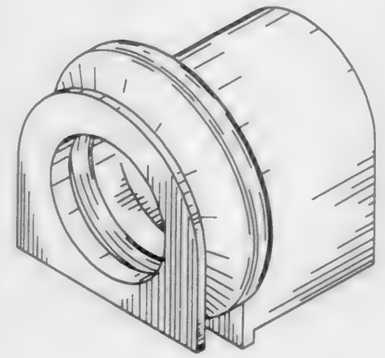
355,242
SHOWER HEAD FACE
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Melville, N.Y.
Filed Nov. 27, 1992, Ser. No. 1,985
Term of patent 14 years
U.S. Cl. D23—213



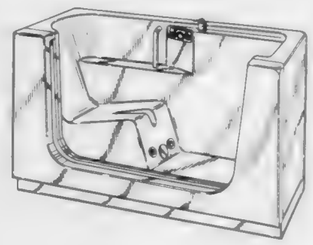
355,243
FAUCET
Sam Chen, Taipei, , assignor to HCG-Moen Corp., Taipei,
Filed May 13, 1993, Ser. No. 8,305
Term of patent 14 years
U.S. Cl. D23—238



355,244
AIR INLET TUBE
Gustaf F. A. Döragrip, Tenhult, and Göte K. D. Karlsson, Huskvarna, both of Sweden, assignors to Aktiebolaget Electrolux, Sweden
Filed Apr. 9, 1992, Ser. No. 866,534
Claims priority, application Sweden, Oct. 14, 1991, 912046
Term of patent 14 years
U.S. Cl. D23—262

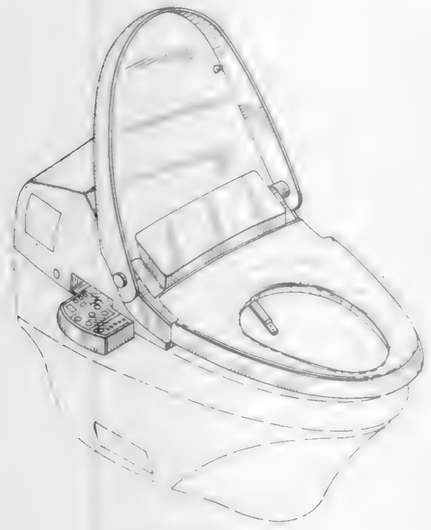


355,245
BATHTUB
Arthur A. Sills, Traverse City; Frederick A. Kilbourn; Brian K. Nelson, both of Suttons Bay, and Donald J. Henderson, Traverse City, all of Mich., assignors to Siltech Products Incorporated, Traverse City, Mich.
Filed Jul. 27, 1993, Ser. No. 11,117
Term of patent 14 years
U.S. Cl. D23—279

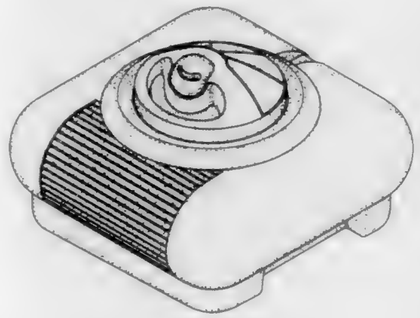


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355,246
COMBINED BIDET, BIDET CONTROL, TOILET SEAT AND COVER
Seijiro Kawamura, and Noriko Yoshii, both of Kitakyushu, Japan, assignors to Toto Ltd., Fukuoka, Japan
Filed Oct. 30, 1992, Ser. No. 989
Claims priority, application Japan, May 1, 1992, 4-13061
Term of patent 14 years
U.S. Cl. D23—295

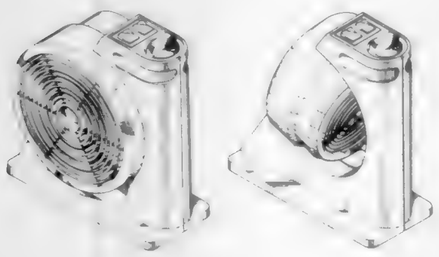


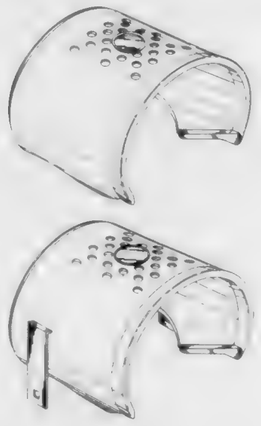
355,248
PORTABLE VAPORIZER
Jui-Shang Wang, Taipei, Taiwan, Prov. of China, and Richard M. O'Grady, Southington, Conn., assignors to Duracraft Corporation, Whitinsville, Mass.
Filed Jun. 11, 1993, Ser. No. 9,352
Term of patent 14 years
U.S. Cl. D23—360



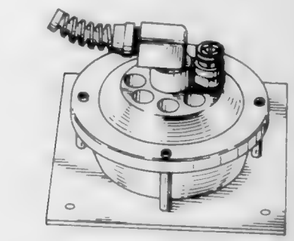
355,249
STEAMER FACIAL AND HAND STEAMING CONDUIT
Richard Caruso, 619 Croyden Rd., Cheltenham, Pa. 19102
Continuation-in-part of Ser. No. 863,449, Apr. 3, 1992, Pat. No. 5,228,213. This application Jan. 29, 1993, Ser. No. 4,242
Term of patent 14 years
U.S. Cl. D23—363

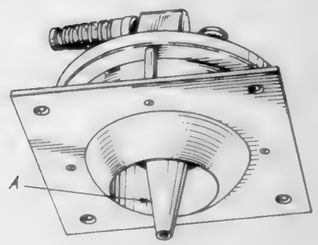
355,247
COMBINED COOLING AND HEATING FAN
Steve Shao, Taisan Taipei, Taiwan, Prov. of China, assignor to Accutek Products Corporation, Taipei, Taiwan, Prov. of China
Filed Oct. 22, 1993, Ser. No. 14,469
Term of patent 14 years
U.S. Cl. D23—328



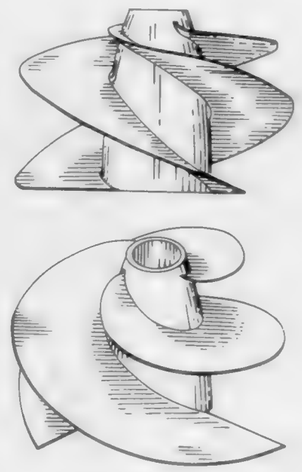


355,250
COMBINED SPHERICAL VENTURI BLOWER HEAD AND IONIZER FOR USE IN DISCHARGING STATIC ELECTRICITY
Walter Spengler, 23 Strehlgasse, Biel Benken, Switzerland CH-4105
Filed May 20, 1993, Ser. No. 8,623
Term of patent 14 years
U.S. Cl. D23—364

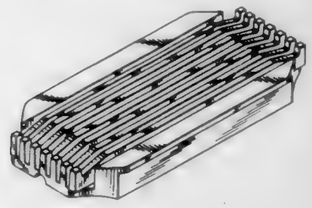




355,252
HELICOIDAL IMPELLER FOR USE IN JET PROPELLED WATERCRAFT
Paul H. Andersen, Pakowhai Road, Napier, New Zealand
Filed Sep. 8, 1992, Ser. No. 940,795
Term of patent 14 years
U.S. Cl. D23—411



355,251
FRAGRANCE DIFFUSER CARTRIDGE FOR AN ELECTRIC AIR FRESHENER
John M. Paulovich, Hewitt, and Manhar K. Patel, Saddle Brook, both of N.J., assignors to Reckitt & Colman Inc., Wayne, N.J.
Filed Jan. 31, 1994, Ser. No. 18,133
Term of patent 14 years
U.S. Cl. D23—366

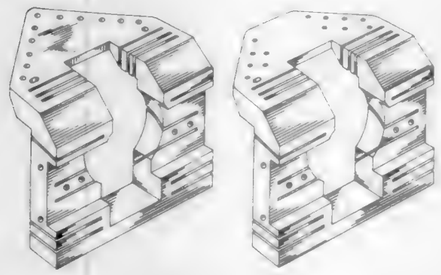


355,253
IMPELLER FOR REFRIGERANT COMPRESSORS
Willem Jansen, Weston; Steve H. Pancygrau, Malden, both of Mass.; Bradford R. Myrick, Contoocook, N.H., and John M. Griffith, Lexington, Mass., assignors to Northern Research & Engineering Corporation, Mass.
Filed Feb. 25, 1993, Ser. No. 5,166
Term of patent 14 years
U.S. Cl. D23—411



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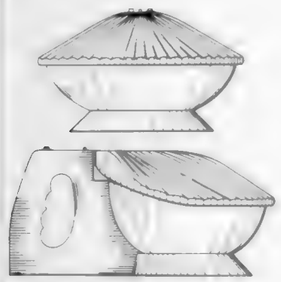
355,254
BONE CUTTING GUIDE
Petrus Krafft, Warsaw, and Verlon C. Caldwell, Jr., Peru, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Oct. 29, 1993, Ser. No. 14,729
Term of patent 14 years
U.S. Cl. D24—140



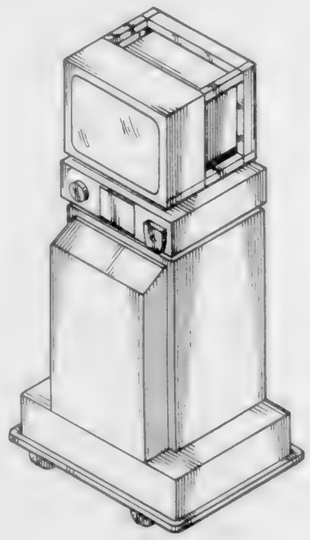
355,255
PERMANENT MAKE-UP PIGMENT APPLICATOR PEN
Kuei C. Chou, 1555-B McGaw Ave., Irvine, Calif. 92714
Filed Jul. 24, 1992, Ser. No. 920,148
Term of patent 14 years
U.S. Cl. D24—144



355,256
PORTABLE ORAL HYGIENE BOWL FOR PROVIDING RINSE WATER
Roy A. Weir, 230 Woolner Avenue, Unit 607, Toronto, Ontario, M6N 1Y7, Canada
Filed Jan. 21, 1992, Ser. No. 824,482
Term of patent 14 years
U.S. Cl. D24—177

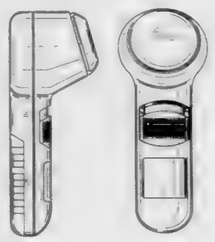


355,257
VISUALIZATION SURGICAL CART
Anthony A. Nobles, Fountain Valley, Calif., assignor to Visioneering, Inc., Fountain Valley, Calif.
Filed May 26, 1993, Ser. No. 8,852
Term of patent 14 years
U.S. Cl. D24—185

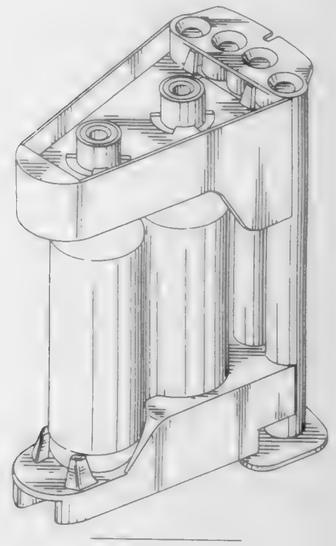


D 355,258
Patent Not Issued For This Number

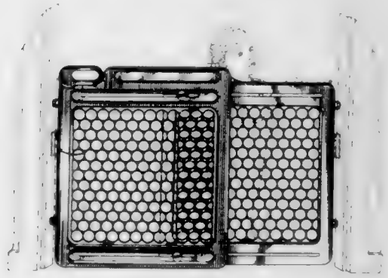
355,259
INFRARED MASSAGER
Sen-Nen Lie, Kowloon, Hong Kong, assignor to Kolvin Industries Limited, Kowloon, Hong Kong
Filed Nov. 3, 1993, Ser. No. 14,925
Claims priority, application United Kingdom, May 5, 1993, 2030862
Term of patent 14 years
U.S. Cl. D24—215



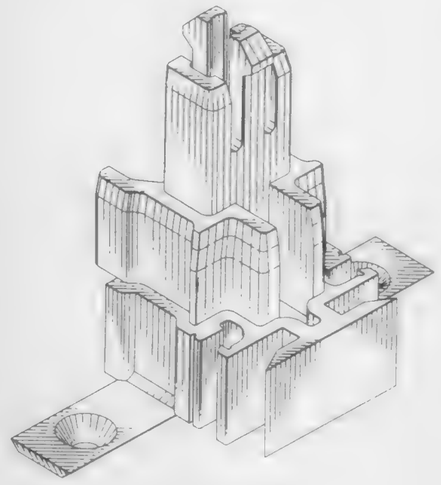
355,260
INTEGRATED HOLDER OF REAGENT BOTTLES
David A. Tomasso, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 1, 1993, Ser. No. 10,295
Term of patent 14 years
U.S. Cl. D24—224



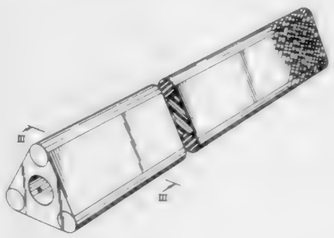
355,261
CHILD SECURITY GATE
Randy L. Abrams, Leominster, Mass., and David W. Crossley, Woonsocket, R.I., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Apr. 8, 1993, Ser. No. 6,869
Term of patent 14 years
U.S. Cl. D25—38



355,262
WINDOW RAIL CLIP
Michael T. Chaney, Middletown, and Philip G. Morton, Germantown, both of Ohio, assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Dec. 16, 1993, Ser. No. 16,487
Term of patent 14 years
U.S. Cl. D25—52



355,263
PERFORATED HOSE FOR INJECTION FILLING OF SEALING MATERIAL IN CASTING JOINTS
Torbjørn Dalegården, Kjellstadvn. 16, N-3400 Lier, Norway
Filed Dec. 16, 1991, Ser. No. 808,008
Claims priority, application Norway, Jul. 1, 1991, 910499
Term of patent 14 years
U.S. Cl. D25—122

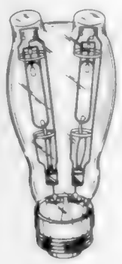


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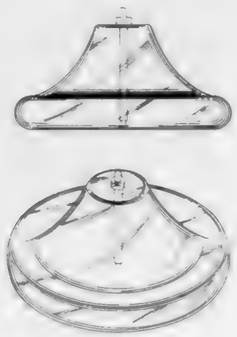
355,264
COVE BASE
Franklin Stoler, 2220 S. Hamilton Ext., Dalton, Ga. 30720
Filed Sep. 29, 1993, Ser. No. 13,656
Term of patent 14 years
U.S. Cl. D25—125



355,265
ELECTRIC LAMP
Kenneth Creightney, 81 Columbia St. #D, New York, N.Y. 10002
Filed Mar. 3, 1994, Ser. No. 19,477
Term of patent 14 years
U.S. Cl. D26—2

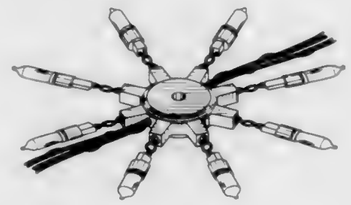


355,266
GLASS OIL LAMP
Geoffrey K. Caplette, and Patricia A. Sprouse, both of Altadena, Calif., assignors to Aurora Art, Inc., Altadena, Calif.
Filed Jan. 21, 1994, Ser. No. 17,827
Term of patent 14 years
U.S. Cl. D26—11

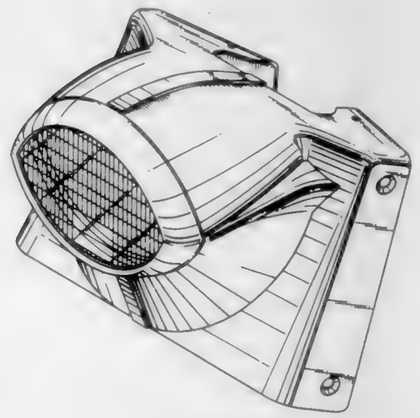


355,267
SPOTLIGHT
Warren K. Parker, Hollywood, Calif., assignor to Mole-Richardson Co., Hollywood, Calif.
Filed Apr. 13, 1993, Ser. No. 6,992
Term of patent 14 years
U.S. Cl. D26—24

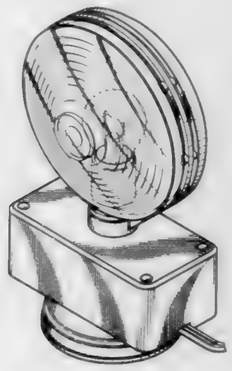
355,268
MULTI-BRANCHED CHRISTMAS LIGHT CLUSTER
Renato M. Openiano, 934 Fuchsia La., San Diego, Calif. 92154
Continuation-in-part of Ser. No. 837,854, Feb. 18, 1992, Pat. No. 5,245,519. This application Mar. 5, 1993, Ser. No. 5,553
Term of patent 14 years
U.S. Cl. D26—25



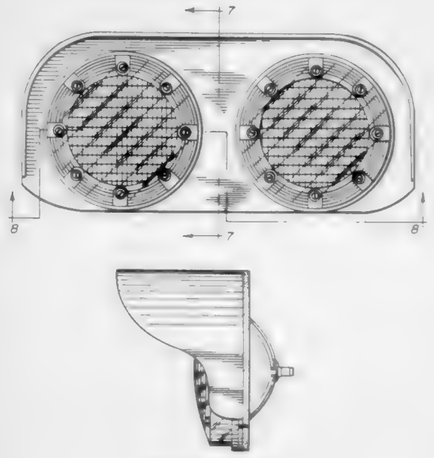
355,269
HOUSING FOR A MOTORCYCLE HEADLIGHT
Lawayne L. Matthies, 809 Manor St., Grand Prairie, Tex. 75050
Filed Feb. 9, 1994, Ser. No. 18,582
Term of patent 14 years
U.S. Cl. D26—28



355,270
MAGNETIC TOW LIGHT
Richard A. Spencer, North Canton, Ohio, assignor to Titan-S-Mfg., Inc., North Canton, Ohio
Filed Feb. 18, 1994, Ser. No. 18,927
Term of patent 14 years
U.S. Cl. D26—28



355,271
AUXILIARY VEHICLE DUAL WARNING LAMP
Joseph E. Baader, 333 Holiday Dr., Springfield, Ohio 45505
Filed Oct. 1, 1992, Ser. No. 954,077
The portion of the term of this patent subsequent to Sep. 4, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—35

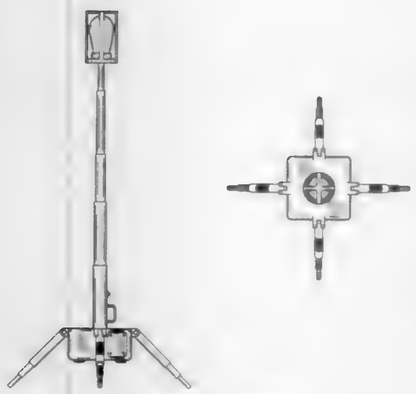


355,272
FLAT FLASHLIGHT
Meena G. Chabria, West Chicago, Ill., assignor to Press-A-Lite Corporation, West Chicago, Ill.
Filed May 17, 1993, Ser. No. 8,439
Term of patent 14 years
U.S. Cl. D26—46



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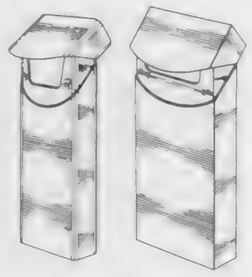
355,273
PORTABLE STROBE LIGHT
Carolyn Steddom, P.O. Box 1277, Starke, Fla. 32091-1277
Filed Dec. 13, 1993, Ser. No. 16,307
Term of patent 14 years
U.S. Cl. D26—66



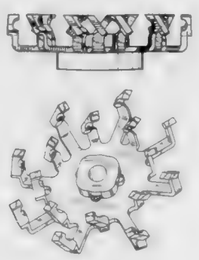
355,274
WATER PIPE
Mark R. Newman, P.O. Box 17009, Tucson, Ariz. 85731
Filed Sep. 27, 1993, Ser. No. 13,496
Term of patent 14 years
U.S. Cl. D27—162



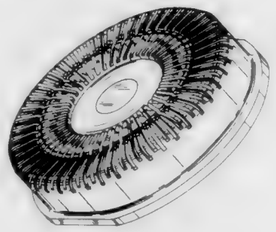
355,275
HINGE-LID CIGARETTE PACK
Heinz Focke, Verden, Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Germany
Filed Feb. 11, 1993, Ser. No. 4,713
Claims priority, application Germany, Aug. 12, 1992, 9205729
Term of patent 14 years
U.S. Cl. D27—189



355,276
CUTTER FOR ELECTRIC SHAVER
Hiromi Uchiyama, and Masaki Okabe, both of Nagano, Japan, assignors to Izumi Products Company, Nagano, Japan
Filed Jun. 26, 1992, Ser. No. 905,636
Claims priority, application Japan, Dec. 28, 1991, 3-39726
Term of patent 14 years
U.S. Cl. D28—50



355,277
CUTTER FOR ELECTRIC SHAVER
Hiromi Uchiyama, and Masaki Okabe, both of Nagano, Japan, assignors to Izumi Products Company, Nagano, Japan
Filed Jun. 26, 1992, Ser. No. 905,634
Claims priority, application Japan, Dec. 28, 1991, 3-39727
Term of patent 14 years
U.S. Cl. D28—50



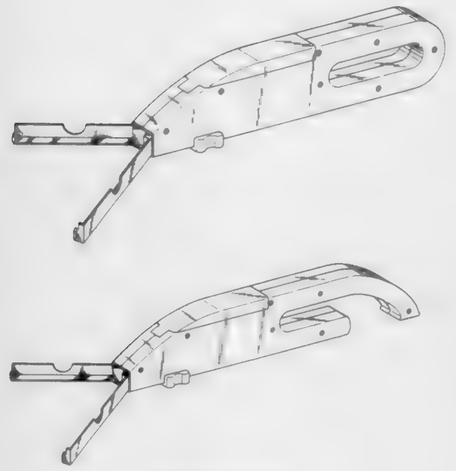
355,278
DENTAL TOOTH PICK
Elisabeth W. Dumont, 2233 Date Palm Rd., Boca Raton, Fla. 33432
Filed Dec. 1, 1993, Ser. No. 15,882
Term of patent 14 years
U.S. Cl. D28—64



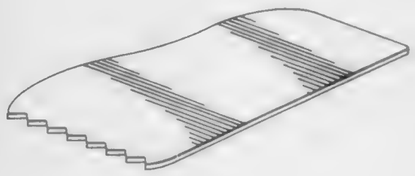
355,279
CHEW TOY FOR DOGS
Anthony O'Rourke, Malibu, and M. William Perel, Beverly Hills, both of Calif., assignors to Booda Products, Inc., Gardena, Calif.
Filed Aug. 20, 1993, Ser. No. 12,015
Term of patent 14 years
U.S. Cl. D30—160



355,280
ANIMAL FECES RETRIEVER
Mashayuki Yoshioka, Kanagawa, Japan, assignor to Olive Corporation, Tokyo, Japan
Filed Feb. 1, 1993, Ser. No. 4,313
Claims priority, application Japan, Aug. 10, 1992, 4-23975
Term of patent 14 years
U.S. Cl. D30—162

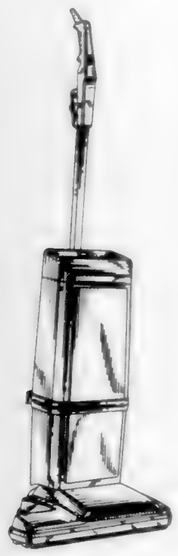


355,281
ICE SCRAPING CARD
Alan M. Hansen, 18304 S.W. Westview Dr., and Lance M. Lechner, 1953 Indian Trail, both of Lake Oswego, Oreg. 97034
Filed Jun. 4, 1993, Ser. No. 9,086
Term of patent 14 years
U.S. Cl. D32—46

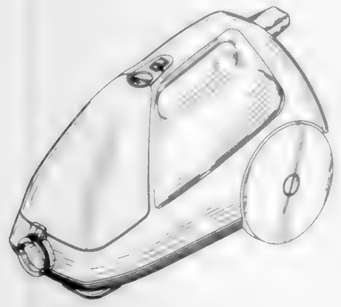


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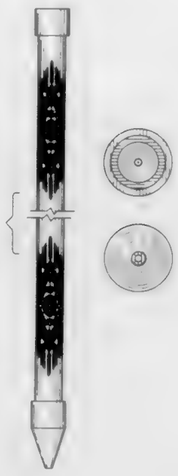
355,282
VACUUM CLEANER WITH HEADLIGHT
Randall K. Lawrence, Westchester, Ohio, and Joel S. Bennett, Greensboro, N.C., assignors to Electrolux Corporation, Atlanta, Ga.
Continuation-in-part of Ser. No. 750,548, Aug. 27, 1991, Pat. No. Des. 334,257. This application Aug. 20, 1992, Ser. No. 932,975
Term of patent 14 years
U.S. Cl. D32—22



355,283
CANISTER-TYPE VACUUM CLEANER
Joyce K. Thomas, and Samuel E. Hohulin, both of Lexington, Ill., assignors to White Consolidated Industries, Inc., Cleveland, Ohio
Filed May 4, 1993, Ser. No. 8,011
Term of patent 14 years
U.S. Cl. D32—24



355,284
HOSE NOZZLE FOR CLEANING SWIMMING POOL WALL & STEPS
Frank A. Stump, 10890 SW. 125 St., Kendall, Fla. 33176
Filed Mar. 5, 1993, Ser. No. 5,565
Term of patent 14 years
U.S. Cl. D32—25



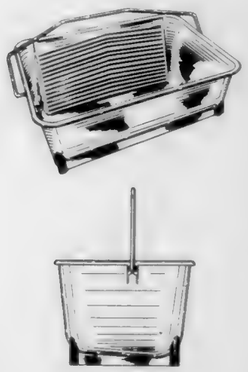
355,285
VACUUM CLEANER NOZZLE WITH HEADLIGHT
Randall K. Lawrence, Westchester, Ohio, and Joel S. Bennett, Greensboro, N.C., assignors to Electrolux Corporation, Atlanta, Ga.
Continuation-in-part of Ser. No. 750,547, Aug. 27, 1991, Pat. No. Des. 334,262. This application Aug. 20, 1992, Ser. No. 933,037
Term of patent 14 years
U.S. Cl. D32—32



355,286
SNOW SCRAPER
Clarence Wallace; Maribeth Wallace, and Shawn Wallace, all of 6136 Shalimar Pl., Florissant, Mo. 63033
Filed Jan. 21, 1993, Ser. No. 3,914
Term of patent 14 years
U.S. Cl. D32—49



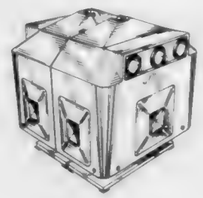
355,287
BUCKET
William P. Camp, Jr., Wooster, Ohio, assignor to The Wooster Brush Company, Wooster, Ohio
Filed Jan. 18, 1994, Ser. No. 17,568
Term of patent 14 years
U.S. Cl. D32—53.1



355,288
RACK FOR HANGING/DRYING SPORTS EQUIPMENT
Frank Mallen, Dollard Des Ormeaux, Canada, assignor to Malenger Inc., Dollard-des-Ormeaux, Canada
Filed Jan. 21, 1994, Ser. No. 17,688
Claims priority, application Canada, Jul. 23, 1993, 23-07-93-2
Term of patent 14 years
U.S. Cl. D32—58



355,289
WASTE GLASS CONTAINER
Gerhard Schäfer, Neunkirchen-Salchendorf, Germany, assignor to Fritz Schafer Gesellschaft mit beschrankter Haftung, Neunkirchen, Germany
Filed Oct. 12, 1993, Ser. No. 14,095
Claims priority, application Germany, Apr. 21, 1993, DM/025 889
Term of patent 14 years
U.S. Cl. D34—1



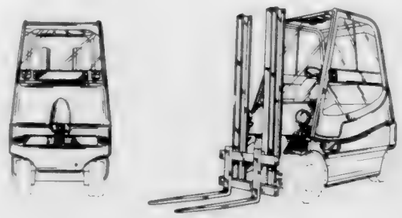
355,290
INVALID SLING
Roy Parker, Slades Cottage, Adams Lane, Sway, Hampshire S041 6EG, England
Filed Oct. 8, 1993, Ser. No. 13,999
Claims priority, application United Kingdom, May 20, 1993, 2031205
Term of patent 14 years
U.S. Cl. D34—28



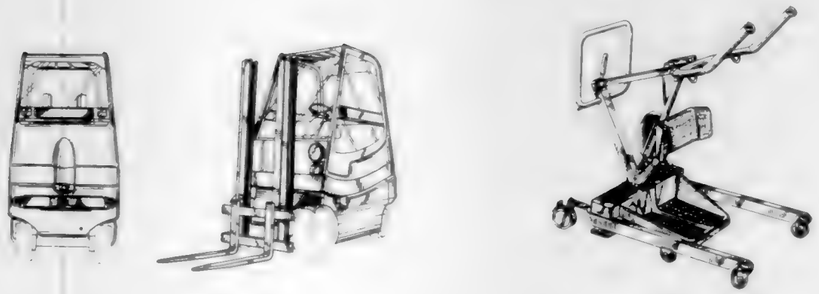
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355,291
FORKLIFT
Richard Soederberg, Mühlacker, Germany, assignor to Dr. Ing h.c.f. Porsche AG, Weissach, Germany
Filed Aug. 26, 1993, Ser. No. 12,205
Claims priority, application Germany, Feb. 26, 1993, M9301573.9
Term of patent 14 years
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355,292
FORKLIFT
Richard Soederberg, Mühlacker, Germany, assignor to Dr. Ing h.c.f. Porsche AG, Weissach, Germany
Filed Aug. 26, 1993, Ser. No. 12,188
Claims priority, application Germany, Feb. 26, 1993, M9301571.2
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355,293
INVALID HOIST
Roy Parker, Slades Cottage, Adams Lane, Sway, Hampshire S041 6EG, England
Filed Oct. 8, 1993, Ser. No. 13,993
Claims priority, application United Kingdom, May 12, 1993, 2031013
Term of patent 14 years
U.S. Cl. D34—28



LIST OF PATENTEES

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PATENTS WERE ISSUED ON THE 7TH DAY OF FEBRUARY, 1995

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Franco, Luis P.; Homola, Andrew M.; and Viswanathan, Leela, 5,388,017, Cl. 360-103.000.
Frey, Jeffrey A.; Hill, Ronald F.; Nick, Jeffrey M.; Swanson, Michael D.; and Verdibello, Ambrose A., Jr., 5,388,266, Cl. 395-700.000.
Geneste, Michel; Jacob, Francois; and Poiraud, Clement, 5,388,253, Cl. 395-575.000
Guthrie, Guy; and Swarts, Jeffery L., 5,388,223, Cl. 395-325.000.
Halliday, David K.; McCall, Colin D.; McKinnon, Alexander S.; and Smith, Christopher D., 5,388,136, Cl. 378-58.000.
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Jaquette, Glen A., 5,388,085, Cl. 369-32.000.
Kantner, Edward A.; and Schultz, Kenneth D., 5,387,110, Cl. 439-59.000.
Lam, Tommy H.; Milicic, Matthew J., Jr.; and Pritchett, Don M., 5,387,919, Cl. 343-821.000.
Lewis, Thomas F.; and Thompson, Stephen P., 5,388,250, Cl. 395-550.000.
Matick, Richard E.; and Schuster, Stanley E., 5,388,072, Cl. 365-230.030.
Medan, Yoav; and Shvadron, Uzi, 5,387,910, Cl. 341-61.000.
Moksvold, Tor W.; Altieri, John; Tarn, Ching-Tzuen; and Snavely, Colleen M., 5,387,553, Cl. 437-32.000.
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Olderdissen, Ulrich; and Walz, Manfred, 5,388,240, Cl. 395-400.000.
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Herbert, Richard, 5,388,256, Cl. 395-600.000.
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Gatto, Jean-Marie; and Bertrand, Dominique, 5,387,785, Cl. 235-454.000.
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Marin, Anna B.; Warren, Craig B.; and Butler, Jerry F., 5,387,418, Cl. 424-409.000.
International Marketing, Inc.: *See—*
Fogal, Robert D., Sr.; and Beatty, Lester A., 5,386,857, Cl. 141-5.000.
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Hagen, Daniel J.; Olsen, Charles; Blais, Norman J.; and Nelson, Clifford E., 5,387,036, Cl. 366-346.000.
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Wood, Peter N., 5,387,847, Cl. 315-209.00R.
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Irving, Leslie F. Method of and apparatus for making customized insoles for footwear. 5,387,384, Cl. 264-138.000.
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Kitoh, Masahiro; Otsuka, Nobuyuki; Ishino, Masato; and Matsui, Yasushi, 5,388,118, Cl. 372-45.000.
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Ishiwari, Kenji: *See—*
Nakashima, Hitoshi; Fujino, Seiichi; and Ishiwari, Kenji, 5,386,923, Cl. 220-86.200.
Ishizaki, Audrey K.: *See—*
Beach, Brian W.; Deshpande, Anand; Fong, Wendy L.; Garg, Pankaj K.; Ishizaki, Audrey K.; and Pham, Thuan Q., 5,388,268, Cl. 395-700.000
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Yamauchi, Mineo; and Iwata, Tamami, 5,387,013, Cl. 283-86.000.
Iwata, Yoichi; Sato, Toshihiko; Seki, Yasunari; Takizawa, Tsuyoshi; and Nakayama, Takayoshi, to Honda Giken Kogyo Kabushiki Kaisha. Air-fuel ratio control system for internal combustion engines, having catalytic converter deterioration-detecting function. 5,386,695, Cl. 60-276.000.
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J. Muller International: *See—*
Dinis, Antonio; and Sauvageot, Gerard, 5,386,782, Cl. 104-124.000.
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Bush, Richard W.; Carney, Eugene E.; Wu, Shao-Hai; Jachimowicz, Felek; Grasel, Timothy G.; and Takeuchi, Tsutomu, 5,387,633, Cl. 524-296.000.
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Jacob, Francois: *See—*
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Jacobs, Pamela K.: *See—*
Smith, Richard S.; Houser, Kevin L.; Hansford, Charles A.; Jacobs, Pamela K.; and Schwemberger, Richard F., 5,387,197, Cl 604-164.000.
Jacobsen, Kenneth H.; and Cole, Louis F. Material dispensing tool for tubular cartridges. 5,386,931, Cl. 222-327.000.
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James, Alexander; and James, Daniel C., to Alex James & Associates, Inc. Method and apparatus for dry spinning spandex. 5,387,387, Cl. 264-205.000
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Moody, John R., 5,387,284, Cl. 118-220.000.
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Kobuki, Manabu; Miyamoto, Teruaki; and Watari, Kenshi, 5,386,677, Cl. 53-251.000.
Jaquette, Glen A., to International Business Machines Corporation Apparatus and method for accessing sectors of a rotating disk 5,388,085, Cl. 369-32.000
Jaramillo, Giovanni: *See—*
DeSantis, John A.; Jaramillo, Giovanni; and Everest, David C., III, 5,387,111, Cl. 439-65.000.

Jarvis, Lawrence A.; and Jarvis, Lawrence A., II, 5,387,911, Cl. 342-22.000.
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Kato, Makoto: *See*—
Kitaoka, Yasuo; Yamamoto, Kazuhisa; Mizuuchi, Kiminori; and Kato, Makoto, 5,387,998, Cl. 359-328.000.

Kato, Shinichi: *See*—
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Hasegawa, Shin; Koichi, Yasushi; and Kato, Shinji, 5,387,965, Cl. 355-246.000.

Kato, Takeshi: *See*—
Shiokawa, Youichi; Nagano, Masanobu; Taniguchi, Kiyoshi; Take, Kazuhiko; Kato, Takeshi; and Tsubaki, Kazunori, 5,387,710, Cl. 560-43.000.

Kato, Yoshiki: *See*—
Nakamura, Takao; Sekiyama, Nobuya; Tani, Hiroshi; and Kato, Yoshiki, 5,388,020, Cl. 360-135.000.

Katoh, Kenichi: *See*—
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Katsumoto, Toru, to Sony Corporation. Imaging apparatus. 5,387,936, Cl. 348-335.000.

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Yamada, Hiromichi; and Katsura, Koyo, 5,388,230, Cl. 395-325.000.

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Kaufmann, Kenneth J.: *See*—
Chance, Britton; and Kaufmann, Kenneth J., 5,386,827, Cl. 128-633.000.

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Kim, Jin; Yao, Lin X.; Banjanin, Zoran; Fukukita, Hiroshi; Hagiwara, Hisashi; and Kawabuchi, Masami, 5,388,079, Cl. 367-103.000.

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Kawaguchi, Masahiro; Sonobe, masanori; Kanzaki, Shigeki; Yokono, Tomohiko; and Takenaka, Kenji, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Variable capacity type swash plate compressor. 5,387,091, Cl. 417-222.200.

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Kitaura, Aoi; and Kawahara, Kenji, 5,387,982, Cl. 358-433.000.

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Kawano, Hiroshi, to Ricoh Company, Ltd. Paper feeding apparatus. 5,386,982, Cl. 271-10.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Ohuchi, Eiichi, 5,386,895, Cl. 191-60.500.

Kawasaki, Masaaki; Takata, Toshimasa; Okada, Keiji; Murata, Kazuhiko; Onda, Mitsuhiko; and Tojo, Tetsuo, to Mitsui Petrochemical Industries, Ltd. Higher α-olefin copolymer, vibration-insulating rubber molded product, and process for the preparaton of the rubber molded product. 5,387,664, Cl. 526-336.000.

Kawasaki, Shigeru: *See*—
Mitsutake, Hideaki; and Kawasaki, Shigeru, 5,387,991, Cl. 359-93.000.

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Yoneda, Masato, 5,388,065, Cl. 365-49.000.

Kawashima, Hiroyuki; Ohtomo, Fumio; Saito, Susumu; and Minegishi, Isao, to Kabushiki Kaisha Topcon. Absolute measuring apparatus using laser and scanning mirrors. 5,388,115, Cl. 372-24.000.

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Kawata, Tetsuro, to Fuji Xerox Co., Ltd. Symmetrical decoder. 5,388,193, Cl. 395-143.000.

Kawauchi, Masato: *See*—
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Kawauchi, Yoshihiro, to Kabushiki Kaisha Toshiba. Key telephone system capable of regulating volume of handset. 5,388,152, Cl. 379-157.000.

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Kawazu, Hideo: *See*—
Hagiwara, Masahiro; Kawazu, Hideo; and Izumi, Takeshi, 5,387,348, Cl. 210-662.000.

Keen, Donald M.: *See*—
Burger, Theodore O.; Karpicke, John A.; Keen, Donald M.; Means, Donald R.; Stahl, Thomas A.; and Wittman, Brian A., 5,388,153, Cl. 379-164.000.

Keen, John M.: *See*—
Hodge, Alison M.; and Keen, John M., 5,387,541, Cl. 437-71.000.

Kefauver, Philip J.: *See*—
Tollens, Fernando R.; Kefauver, Philip J.; and Syfert, Scott W., 5,387,362, Cl. 252-108.000.

Kehrbeck, Jurgen: *See*—
Wiesbeck, Werner; Kehrbeck, Jurgen; and Heidrich, Eberhardt, 5,387,918, Cl. 342-128.000.

Keiser, Thomas E.: *See*—
Baur, Kenneth C.; and Keiser, Thomas E., 5,386,675, Cl. 52-250.000.

Keith, Peter T.: *See*—
Euteneuer, Charles L.; and Keith, Peter T., 5,387,225, Cl. 606-194.000.

Keller, David J.; and Gould, Debra K., to Micron Semiconductor, Inc. High selective nitride etch. 5,387,312, Cl. 156-662.000.

Kelly, James D.: *See*—
Riley, Anthony L.; and Kelly, James D., 5,387,692, Cl. 548-313.700.

Kelly, Sandra M.: *See*—
Curtiss, Roy, III; and Kelly, Sandra M., 5,387,744, Cl. 424-235.100.

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Kennerknecht, Steven, to Pechiney Recherche. Ceramic core for investment casting and method for preparation of the same. 5,387,280, Cl. 106-38.300.

Kenney, Daniel A.: *See*—
Waldron, James R.; and Kenney, Daniel A., 5,387,787, Cl. 235-462.000.

Keppner, Louis A.; and Lecours, Ramon L., to MagiCorp Inc. Control apparatus particularly adapted for handicapped persons. 5,387,895, Cl. 340-146.200.

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Erilli, Rita; Gomes, Gilbert S.; Kern, Ronald; and Repinec, Stephen, 5,387,375, Cl. 252-546.000.

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Khan, Sakhawat, to Information Storage Devices, Inc. Programmable non-volatile analog voltage source devices and methods. 5,388,064, Cl. 365-45.000.

Khan, Shahed U. M., to Duquesne University of the Holy Ghost. Implantable non-enzymatic electrochemical glucose sensor. 5,387,327, Cl. 204-403.000.

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Cima, Michael; Sachs, Emanuel; Fan, Tailin; Bredt, James F.; Michaels, Steven P.; Khanuja, Satbir; Lauder, Alan; Lee, Sang-Joon J.; Brancazio, David; Curodeau, Alain; and Tuerck, Harald, 5,387,380, Cl. 264-69.000.

Kicker, Dan: *See*—
Stogner, John; Westmoreland, Steve; and Kicker, Dan, 5,387,089, Cl. 417-54.000.

Kidaloski, Raymond G.; Detzel, Roger A.; and Warrick, R. Jeffrey, to Babcock & Wilcox Company, The. Adjustable packed panel joint end cover. 5,386,676, Cl. 52-582.100.

Kielmeyer, Ronald F., Jr.: *See*—
Dougherty, Richard M.; Kielmeyer, Ronald F., Jr.; Dydyk, Michael; and Fajen, Lyle A., 5,387,547, Cl. 437-182.000.

Kihara, Shuta: *See*—
Nishimura, Toshiaki; Tanaka, Kazumi; Harada, Masahiro; Seki, Kiichiro; and Kihara, Shuta, 5,387,368, Cl. 252-188.280.

Kikuchi, Atsushi: *See*—
Hashimoto, Yoshitaka; and Kikuchi, Atsushi, 5,388,081, Cl. 348-606.000.

Kikuchi, Hiroshi: *See*—
Imabayashi, Shinichiro; Oka, Hitoshi; Tanaka, Isamu; Kikuchi, Hiroshi; and Watanabe, Makio, 5,387,493, Cl. 430-280.000.

Kikuta, Toshio: *See*—
Ohkubo, Michio; and Kikuta, Toshio, 5,388,116, Cl. 372-45.000.

Kilgore, Gary H. Oil filter cup. 5,386,748, Cl. 81-180.100.

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Hodge, Dean Y.; Herbster, Terry; Ray, Robert E., Jr.; and Killmeyer, Fred C., 5,388,109, Cl. 371-53.000.

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Rha, Sa K.; and Kim, Dong W., 5,387,531, Cl. 437-52.000.

Kim, Ho C. Paint roller. 5,386,611, Cl. 15-230.110.

Kim, Hong S. Method of making dynamic random access memory. 5,387,533, Cl. 437-52.000.

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Kim, Kwang-Moo. Socket for wrench. 5,386,749, Cl. 81-185.000.

Kim, Weon G.: *See*—
Park, Dae I.; Kim, Weon G.; Park, Sang H.; and Son, Hee C., 5,386,645, Cl. 34-317.000.

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Kuen, David A.; and Schleinz, Alan F., 5,386,595, Cl. 2-400.000.

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Qunicy, Roger B., III; and Cartwright, William F., 5,386,838, Cl. 131-365.000.

Kimbro, Charles D.: *See*—
Adriance, Kyle; Kimbro, Charles D.; and Webb, Douglas A., 5,386,962, Cl. 248-624.000.

Kimura, Kazumi: *See*—
Minoura, Nobuo; and Kimura, Kazumi, 5,387,953, Cl. 353-20.000.

Kimura, Kenichi: *See*—
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Agee, John M.; and King, Francis, 5,387,223, Cl. 606-186.000.

King, Francis G.: *See*—
Fluegge, Jerry H.; King, Francis G.; Schank, William H., Jr.; and Olson, Laura P., 5,386,621, Cl. 29-705.000.

King, Ricky L.; and Robinson, Robert F. Hand held device for code cutting key blanks. 5,387,062, Cl. 409-277.000.

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Murakami, Tokumichi; and Kinjo, Naoto, 5,388,236, Cl. 395-375.000.

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Kirjavainen, Kari. Extrusion method and apparatus. 5,387,386, Cl. 264-173.000.

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Kirkpatrick, William D.; and Kirkpatrick, Carole W., 5,387,283, Cl. 106-709.000.

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Kirstgen, Reinhard: *See*—
Brand, Siegbert; Kardorff, Uwe; Kirstgen, Reinhard; Mueller, Bernd; Oberdorf, Klaus; Sauter, Hubert; Lorenz, Gisela; Ammermann, Eberhard; Kuenast, Christoph; and Harreus, Albrecht, 5,387,607, Cl. 514-513.000.

Kishi, Nobuaki; Hoshi, Makoto; Osawa, Tetsuya; and Matsuo, Ichiro, to Chichibu Fuji Co., Ltd. Socket for IC package. 5,387,118, Cl. 439-266.000.

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Kishorenath, Huruli D.; de Rijke, Johan E.; and Foreman, Mark O., to Ebara Technologies Incorporated. Cryogenic vacuum pump with expander speed control. 5,386,708, Cl. 62-55.500.

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Mizui, Kinya; Kiso, Yoshihisa; Hayashi, Tetsuo; and Tanaka, Masahide, 5,387,354, Cl. 252-52.00A.

Kissei Pharmaceutical Co., Ltd.: *See*—
Kitazawa, Makio; Ban, Masaaki; Okazaki, Kosuke; Ozawa, Motoyasu; Yazaki, Toshikazu; and Yamagishi, Ryoichi, 5,387,603, Cl. 514-415.000.

Kitajima, Hiroyuki: *See*—
Kanai, Sadasaburoh; Kitajima, Hiroyuki; Nishimura, Toshifumi; Kakuse, Katsuharu; and Kosuge, Minoru, 5,388,016, Cl. 360-72.100.

Kitamoto, Michiyuki: *See*—
Inoue, Hitoshi; Takasao, Shigeru; Ikeda, Makoto; Matsuda, Takashi; and Kitamoto, Michiyuki, 5,388,050, Cl. 364-470.000.

Kitamura, Atsushi. Method of manufacturing a seamless tubular woven article including polytetrafluoroethylene yarn. 5,387,300, Cl. 156-148.000.

Kitaoka, Yasuo; Yamamoto, Kazuhisa; Mizuuchi, Kiminori; and Kato, Makoto, to Matsushita Electric Industrial Co., Ltd. Shorter wavelength light generating apparatus in which coherent light is converted into shorter wavelength light. 5,387,998, Cl. 359-328.000.

Kitaura, Aoi; and Kawahara, Kenji, to Sharp Kabushiki Kaisha. Apparatus for performing inverse discrete cosine transform. 5,387,982, Cl. 358-433.000.

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Kitazawa, Yasuho: *See*—
Yamamoto, Toshimasa; Nishide, Seiji; Kitazawa, Yasuho; Katoh, Keiichi; and Matsui, Kenji, 5,386,774, Cl. 102-274.000.

Kitoh, Masahiro; Otsuka, Nobuyuki; Ishino, Masato; and Matsui, Yasushi, to Matsushita Electric Industrial Co., Ltd. Multi quantum well semiconductor laser and optical communication system using the same. 5,388,118, Cl. 372-45.000.

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Barkman, William E.; Babelay, Edwin F.; DeMint, Paul D.; Hebble, Thomas L.; Igou, Richard E.; Williams, Richard R.; Klages, Edward J.; and Rasnick, William H., 5,387,061, Cl. 409-80.000.

Klassen, R. Victor: *See*—
Loce, Robert P.; Cianciosi, Michael S.; and Klassen, R. Victor, 5,387,985, Cl. 358-447.000.

Klebusch, William C.: *See*—
Gilchrist, Jon P.; and Klebusch, William C., 5,386,849, Cl. 137-605.000.

Kleimann, Agnes C. M.: *See*—
Bosiers, Jan T. J.; and Kleimann, Agnes C. M., 5,388,137, Cl. 377-58.000.

Klein, Dieter N., to Halliburton Company. Method and apparatus for extended time delay of the detonation of a downhole explosive assembly. 5,386,780, Cl. 102-313.000.

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Austin, Michael M.; Fischl, Steven R.; Bresin, Mark S.; Mehta, Alay; Kleinert, Raymond J., III; and Amero, Willard F., Jr., 5,387,126, Cl. 439-516.000.

Kleinman, H. Leonard, to Ramwear, Inc. Fireman's belt with padding and fire-resistant construction. 5,386,593, Cl. 2-322.000.

Klenk, Herbert: *See*—
Neher, Armin; Haas, Thomas; Arntz, Dietrich; Klenk, Herbert; and Girke, Walter, 5,387,720, Cl. 568-486.000.

Klingert, Bernd: *See*—
Hilti, Bruno; Minder, Ernst; Mayer, Carl W.; and Klingert, Bernd, 5,387,627, Cl. 524-84.000.

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Stipp, Gordon K.; and Kluesener, Bernard W., 5,387,705, Cl. 554-164.000.

Knapp, Benjamin P.; Trenary, Robert; Walters, James T.; Allgor, Clarence B.; and Bach, David T., to SPX Corp. Method and apparatus for feature extraction from internal combustion engine ignition waveforms. 5,387,870, Cl. 324-379.000.

Knapp, John F.: *See*—
Brewington, Grace T.; Julien, Paul C.; Knapp, John F.; Kajimoto, Masashi; Tachibana, Hidekiyo; Terao, Kazuo; Toyoda, Yutaka; and Yamamoto, Mikio, 5,387,967, Cl. 355-259.000.

Knapp, Tracey E.; Loible, James R.; Lanciano, Andrew P.; Sacco, Victor, Jr.; and Baruch, Nicholas D., to Haemonetics Corporation. Peristaltic pump tube loading assembly. 5,387,088, Cl. 417-53.000.

Knaub, Ronald G.: *See*—
Horth, Roland D.; and Knaub, Ronald G., 5,386,900, Cl. 193-2.00R.

Knee, Michael, to Thomson Consumer Electronics S.A. Method and apparatus for measuring noise in video signals. 5,387,946, Cl. 348-622.000.

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Storz, Achim, 5,386,650, Cl. 36-118.000.

Knemeyer, Friedel S.: *See*—
Slutz, David E.; and Knemeyer, Friedel S., 5,387,447, Cl. 428-34.100.

Knepler, John T.; Midden, William E.; and Ford, David F., to Bunn-O-Matic Corporation. Weight controlled grinder and method of grinding coffee beans. 5,386,944, Cl. 241-6.000.

Kneuper, Heinz-Josef; Roeper, Michael; and Paciello, Rocco, to BASF Aktiengesellschaft. Preparation of aldehydes. 5,387,719, Cl. 568-455.000.

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Becker, Erich, 5,387,090, Cl. 417-203.000.

Knifton, John F.; and Dai, Pei-Shing E., to Texaco Chemical Inc. One-step synthesis of methyl t-butyl ether from t-butanol using pentasil zeolite catalysts. 5,387,722, Cl. 568-698.000.

Knifton, John F.; and Dai, Pei-Shing E., to Texaco Chemical Inc. One-step synthesis of methyl t-butyl ether from t-butanol using β-zeolite catalysts modified with lithium plus rare earths. 5,387,723, Cl 568-698.000.

Knight, George W.: *See*—
Park, Chung P.; Chum, Pak-Wing S.; and Knight, George W., 5,387,620, Cl. 521-143.000.

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TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF FEBRUARY, 1995

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Manning, Ronald F.; and Kahn, Maria S., to Hoffmann-La Roche Inc. Biosynthesis of 2 keto-L-gulonic acid. Re. 34,851, Cl. 435-252.320.

McGuire, Keith D., to Batesville Casket Company. Liquid retaining tray for casket. Re. 34,846, Cl. 27-19.000.

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Murakami, Tokumichi; Kamizawa, Koh; and Kameyama, Masatoshi, to Mitsubishi Denki Kabushiki Kaisha. Digital signal processor Re. 34,850, Cl. 395-800.000.

Sanders, Stephen. Leaf bagging equipment. Re. 34,849, Cl. 383-4.000.

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Hwo, Charles C.: *See—*
Wilpers, Dale J.; Hwo, Charles C.; Lee, Robert W.; Korcz, William H.; and Mostert, Simon, H1419, Cl. 525-240.000.
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Wilpers, Dale J.; Hwo, Charles C.; Lee, Robert W.; Korcz, William H.; and Mostert, Simon, H1419, Cl. 525-240.000.
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United States of America
Air Force: *See—*
Merryman, Ronald F. K., H1415, Cl. 395-22.000.
Army: *See—*
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CLASS 2
160 5,386,591
209.13 5,386,592
322 5,386,593
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328 5,386,596
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541.4 5,386,598
547 5,386,599
677 5,386,600

CLASS 5
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413 5,386,602
417 5,386,603
625 5,386,604

CLASS 7
138 5,386,605

CLASS 8
149 5,386,606
442 5,387,262
494 5,387,263
648 5,387,264

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CLASS 16
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CLASS 24
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68 SK 5,386,617
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444 5,386,640
645 5,386,641
708 5,386,642
762 5,386,643

CLASS 34
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317 5,386,645
582 5,386,646
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CLASS 36
117 5,386,649
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134 5,386,651

CLASS 37
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CLASS 38
141 5,386,654

CLASS 40
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CLASS 42
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404 5,386,664

CLASS 51
309 5,387,268

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CLASS 56
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CLASS 57
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603 5,386,698

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CLASS 66
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CLASS 68
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CLASS 70
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813 L 5,386,743

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743 5,387,276

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185 5,386,749

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762 5,386,755
830 5,386,756

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CLASS 86
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CLASS 89
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CLASS 91
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174 5,387,278

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486 5,386,765
495 5,386,766

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630 5,387,311
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CLASS 162
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146 5,387,319
301 5,387,320

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CLASS 171
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262 5,387,766

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379 5,386,894

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67 R 5,386,898
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148 A 5,387,773

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5,387,328
415 5,387,329
421 5,387,330

CLASS 205

125 5,387,332

CLASS 206

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315.11 5,386,907
315.9 5,386,906
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554 5,386,910
583 5,386,911

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673 5,386,914

CLASS 210

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158 5,387,336
159 5,387,337
198.2 5,387,338
326 5,387,339
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617 5,387,344
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659 5,387,347
662 5,387,348
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CLASS 217

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CLASS 228

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CLASS 235

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CLASS 239

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CLASS 241

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CLASS 242

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624 5,386,962

CLASS 249

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CLASS 250

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201 7 5,387,789
214 RC 5,387,790
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336.1 5,387,795
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474.1 5,387,798
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315.04 5,386,967

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163 5,387,363
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CLASS 254

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CLASS 257

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CLASS 264

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160 5,387,385
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280 5,387,388
318 5,387,389
572 5,387,391

CLASS 266

157 5,386,974

CLASS 267

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140 5,386,972
140.12 5,386,976
140.13 5,386,973
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CLASS 269

289 R 5,386,978

CLASS 270

42 5,386,979

CLASS 271

3 5,386,980
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118 5,386,983
122 5,386,984

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CLASS 296

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109 5,387,031

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CLASS 310

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567 5,387,852
587 5,387,853
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807 5,387,856

CLASS 320

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CLASS 322

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CLASS 324

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CLASS 326

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CLASS 327

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CLASS 330

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CLASS 331

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CLASS 332

103 5,387,883

CLASS 333

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CLASS 335

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121 5,387,949
178 5,387,950
205 5,387,951
208 5,387,952

CLASS 353

20 5,387,953
103 5,387,954

CLASS 354

76 5,387,955
149.1 5,387,956
204 5,387,957
227.1 5,387,958
319 5,387,959
402 5,387,960

CLASS 355

71 5,387,961
212 5,387,962
215 5,387,963
246 5,387,965
251 5,387,964
259 5,387,966
5,387,967
311 5,387,968

CLASS 356

4.5 5,387,969
124 5,387,970
246 5,387,971
345 5,387,972
347 5,387,973
352 5,387,974
359 5,387,975
379 5,387,976
407 5,387,977
431 5,387,978
435 5,387,979

CLASS 358

298 B1 5,170,257
400 5,387,980
5,387,981
433 5,387,982
434 5,387,983
439 5,387,984
447 5,387,985
452 5,387,986
456 5,387,987
515 5,387,988

CLASS 359

13 5,387,989
93 5,387,991
122 5,388,088
124 5,387,992
155 5,387,993
159 5,387,994
204 5,387,995
218 5,387,996
248 5,387,997
328 5,387,998
557 5,387,999
596 5,388,000
629 5,388,001
642 5,388,002
649 5,388,003
683 5,388,004
694 5,388,005
748 5,388,006

CLASS 360

13 5,388,007
15 5,388,008
19.1 5,388,009
46 5,388,010
5,388,011
48 5,388,012
5,388,013
66 5,388,014
69 5,388,015
72.1 5,388,016
103 5,388,017
107 5,388,018
126 5,388,019
135 5,388,020

CLASS 361

56 5,388,021
94 5,388,022
129 5,388,023
309 5,388,024
502 5,388,025
525 5,388,026
705 5,388,027
710 5,388,028
760 5,388,029

818 5,388,030

CLASS 362

61 5,388,034
5,388,035
66 5,388,036
[redacted] 5,388,037
118 5,388,038
154 5,388,039

CLASS 363

16 5,388,040
98 5,388,041
149 5,388,031

CLASS 364

146 5,388,032
156 5,388,033
167.01 5,388,042
413.29 5,388,043
421 5,388,044
424.04 5,388,045
424.05 5,388,046
461 5,388,047
5,388,048
464.02 5,388,049
470 5,388,050
474.11 5,388,051
483 5,388,052
486 5,388,053
490 5,388,054
491 5,388,055
[redacted] 5,388,056
551.01 5,388,057
554 5,388,058
559 5,388,059
579 5,388,060
708.1 5,388,061
724.17 5,388,063
724.2 5,388,062

CLASS 365

45 5,388,064
49 5,388,065
5,388,066
154 5,388,067
162 5,388,068
185 5,388,069
5,388,070
189.01 5,388,071
189.05 5,388,074
5,388,075
200 5,388,076
201 5,388,077
203 5,388,078
218 5,388,083
226 5,388,084
230.03 5,388,072
5,388,073

CLASS 366

130 5,387,034
346 5,387,036

CLASS 367

25 5,387,767
103 5,388,079
135 5,388,080

CLASS 368

327 5,388,082

CLASS 369

32 5,388,085
44.14 5,388,086
48 5,388,087
124 5,388,093
270 5,388,094
275.3 5,388,090

CLASS 370

13 5,388,091
32.1 5,388,092
58.1 5,388,095
5,388,096
67 5,388,089
85.12 5,388,099
85.5 5,388,097
95.1 5,388,100
5,388,101
100.1 5,388,103
105.1 5,388,102
112 5,388,098

CLASS 371

21.1 5,388,104
37.7 5,388,105
51.1 5,388,108
53 5,388,109

CLASS 372

13 5,388,111
20 5,388,106
5,388,112
21 5,388,113
22 5,388,114
24 5,388,115
45 5,388,116
5,388,117
5,388,118
69 5,388,119
99 5,388,120

CLASS 375

1 5,388,121
8 5,388,122
14 5,388,123
17 5,388,124
86 5,388,125
113 5,388,126
120 5,388,127

CLASS 376

159 5,388,128
249 5,388,129
293 5,388,130
316 5,388,131
435 5,388,132

CLASS 377

13 5,388,133
25 5,388,134
58 5,388,137

CLASS 378

5,388,136
108 5,388,138
112 5,388,139
187 5,388,140
197 5,388,141
198 5,388,142
206 5,388,143

CLASS 379

40 5,388,144
45 5,388,145
52 5,388,146
59 5,388,147
5,388,148
61 5,388,149
67 5,388,150
5,388,151
88 B1 4,908,850
157 5,388,152
164 5,388,153
368 5,388,154
446 5,388,155

CLASS 380

4 5,388,156
5,388,157
23 5,388,158

CLASS 381

61 5,388,159
71 5,388,160
98 5,388,161
160 5,388,162
191 5,388,163

CLASS 382

6 5,388,164
7 5,388,165
22 5,388,166
50 5,388,167
54 5,388,168

CLASS 383

4 Re.34,849
7 5,387,037

CLASS 384

15 5,387,038
477 5,387,039
5,387,040
531 5,387,041

CLASS 385

2 5,388,169
4 5,388,170
23 5,388,172
36 5,388,171
37 5,388,173
80 5,388,174
100 5,388,175

CLASS 388

811 5,388,176

CLASS 392

386 5,388,177
444 5,388,178
451 5,388,179
484 5,388,180

CLASS 395

2.14 5,388,182
5,388,185
2.38 5,388,209
2.51 5,388,183
2.77 5,388,221
3 5,388,184
11 5,388,186
25 5,388,187
50 5,388,188
5,388,189
61 5,388,190
131 5,388,191
135 5,388,192
143 5,388,193
145 5,388,194
146 5,388,195
153 5,388,196
154 5,388,197
155 5,388,198
5,388,199
157 5,388,200
5,388,201
5,388,202
159 5,388,203
162 5,388,204
5,388,205
163 5,388,206
164 5,388,207
165 5,388,208
200 5,388,210
5,388,211
5,388,212
5,388,213
5,388,214
5,388,215
212 5,388,181
275 5,388,216
5,388,217
5,388,218
5,388,219
5,388,220
5,388,222
325 5,388,223
5,388,224
5,388,225
5,388,226
5,388,227
5,388,228
5,388,229
5,388,230
5,388,231
5,388,232
375 5,388,233
5,388,234
5,388,235
5,388,236
400 5,388,239
5,388,240
5,388,244
425 5,388,237
5,388,238
5,388,242
5,388,243
5,388,245
5,388,246
5,388,247
500 5,388,241
550 5,388,249
5,388,250
575 5,388,251
5,388,252
5,388,253
5,388,254
600 5,388,255
5,388,256
5,388,257
5,388,258
5,388,259
650 5,388,260
5,388,261
5,388,262
5,388,263
5,388,264
700 5,388,266
5,388,267
5,388,268
750 5,388,265
800 Re.34,850

CLASS 400

477 5,387,042
490 5,387,261
691 5,387,043

CLASS 401

5 5,387,044
205 5,387,045
260 5,387,046

CLASS 403

4 5,387,047
109 5,387,048

CLASS 404

6 5,387,049
74 5,387,050
84.05 5,387,051
133.1 5,387,052

CLASS 405

52 5,387,053
53 5,387,054
63 5,387,055
128 5,387,056
5,387,057
259.6 5,387,060

CLASS 406

145 5,387,058

CLASS 408

226 5,387,059

CLASS 409

80 5,387,061
277 5,387,062

CLASS 410

67 5,387,063
89 5,387,064

CLASS 411

48 5,387,065
390 5,387,066

CLASS 414

217 5,387,067
353 5,387,073
404 5,387,068
427 5,387,069
483 5,387,070
563 5,387,071
589 5,387,074
686 5,387,075
5,387,076
791 5,387,077
794.3 5,387,072
798.9 5,387,078

CLASS 415

90 5,387,079
150 5,387,080
208.1 5,387,081
209.2 5,387,082

CLASS 416

23 5,387,083
70 A 5,387,084
97 R 5,387,085
5,387,086
188 5,387,087

CLASS 417

53 5,387,088
54 5,387,089
203 5,387,090
222.2 5,387,091
269 5,387,092

CLASS 420

105 5,387,392

CLASS 422

12 5,387,393
28 5,387,394
81 5,387,395
106 5,387,396
129 5,387,397
168 5,387,398
171 5,387,399
186.03 5,387,400
187 5,387,401
201 5,387,402
292 5,387,403
299 5,387,404

CLASS 423

122 5,387,405
210 5,387,406
352 5,387,407
656 5,387,408

CLASS 424

1.45 5,387,409
9 5,387,410
47 5,387,411
73 5,387,412
191.1 5,387,414
195.1 5,387,415
197.1 5,387,416
235.1 5,387,744
401 5,387,417
409 5,387,418
422 5,387,419
466 5,387,420
472 5,387,421
858 5,387,413

CLASS 425

5 5,387,093
34.1 5,387,094
145 5,387,095
190 5,387,096
382.2 5,387,097
393 5,387,098
564 5,387,099

CLASS 426

2 5,387,422
104 5,387,423
272 5,387,424
329 5,387,425
573 5,387,426
5,387,427
5,387,428
611 5,387,429
627 5,387,430
658 5,387,431

CLASS 427

101 5,387,432
126.3 5,387,433
5,387,481
154 5,387,434
215 5,387,435
5,387,436
245 5,387,437
253 5,387,438
376.2 5,387,439
443.1 5,387,440
443.2 5,387,441
521 5,387,442
586 5,387,443
600 5,387,444

CLASS 428

1 5,387,445
[redacted] 5,387,446
34.1 5,387,447
34.7 5,387,448
35.4 5,387,449
40 5,387,450
65 5,387,451
71 5,387,452
77 5,387,453
85 5,387,454
116 5,387,455
119 5,387,456
141 5,387,457
5,387,458
209 5,387,459
212 5,387,460
215 5,387,470
216 5,387,461
245 5,387,462
327 5,387,463
328 5,387,464
352 5,387,465
355 5,387,466
391 5,387,467
392 5,387,468
397 5,387,469
553 5,387,471
571 5,387,472
623 5,387,473
688 5,387,474
689 5,387,475
698 5,387,480

CLASS 429

12 5,387,476
26 5,387,477
59 5,387,478
126 5,387,479
191 5,387,482

CLASS 430

5 5,387,484
5,387,485
18 5,387,486
58 5,387,487
106 5,387,488
115 5,387,489
204 5,387,483
253 5,387,490
259 5,387,491
270 5,387,492
280 5,387,493
281 5,387,494
315 5,387,495
322 5,387,496
325 5,387,497
353 5,387,498
399 5,387,499
506 5,387,500
533 5,387,501
584 5,387,502

CLASS 431

10 5,387,100
153 5,387,101

CLASS 433

89 5,387,103
173 5,387,102
214 5,387,105

CLASS 434

156 5,387,104
238 5,387,107
271 5,387,106
319 5,387,108

CLASS 435

5 5,387,503
6 5,387,505
5,387,506
7.1 5,387,504
7.21 5,387,507
32 5,387,508
76 5,387,509
91.2 5,387,510
101 5,387,511
118 5,387,512
135 5,387,513
5,387,514
148 5,387,515
191 5,387,109
210 5,387,516
212 5,387,517
221 5,387,518
235.1 5,387,519
240.2 5,387,520
252.31 5,387,521
252.32 Re.34,851
282 5,387,523
287 5,387,522

CLASS 436

74 5,387,524
111 5,387,525
169 5,387,526
518 5,387,527

CLASS 437

3 5,387,536
31 5,387,552
32 5,387,553
40 5,387,528
5,387,529
45 5,387,530
52 5,387,531
5,387,532
5,387,533
5,387,534
57 5,387,535
62 5,387,537
67 5,387,538
5,387,539
5,387,540
71 5,387,541
101 5,387,542
129 5,387,543
151 5,387,544
165 5,387,545
174 5,387,546
182 5,387,547
184 5,387,548
5,387,549
189 5,387,550
209 5,387,551
5,387,554
225 5,387,555
228 5,387,556
247 5,387,557

CLASS 439

59 5,387,110
65 5,387,111
67 5,387,112
98 5,387,113
108 5,387,114
157 5,387,115
188 5,387,116
191 5,387,117
266 5,387,118
281 5,387,119
331 5,387,120
342 5,387,121
353 5,387,122
460 5,387,123
497 5,387,124
5,387,125
516 5,387,126
582 5,387,127
585 5,387,128
587 5,387,129
610 5,387,130
620 5,387,131
633 5,387,132
637 5,387,133
660 5,387,134
668 5,387,136
676 5,387,135
736 5,387,137
751 5,387,138
876 5,387,139

CLASS 440

12 5,387,140
41 5,387,141
61 5,387,142
63 Re.34,852
101 5,387,143

CLASS 441

22 5,387,144
64 5,387,145

CLASS 446

175 5,387,146
224 5,387,147
424 5,387,148
479 5,387,149

CLASS 450

41 5,387,150

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CLASS 451

5 5,386,665
5,386,666
91 5,386,668
344 5,386,667
513 5,387,251

CLASS 453

52 5,387,152

CLASS 454

4 5,387,151

CLASS 460

68 5,387,153
99 5,387,154
132 5,387,155

CLASS 464

93 5,387,156
98 5,387,157

CLASS 472

117 5,387,158
128 5,387,159

CLASS 474

205 5,387,160

CLASS 475

5 5,387,161
333 5,387,162

CLASS 477

100 5,387,163

CLASS 482

9 5,387,164
35 5,387,165
52 5,387,166
57 5,387,167
70 5,387,168
73 5,387,169
97 5,387,170
130 5,387,171

CLASS 492

50 5,387,172

CLASS 493

407 5,387,173

CLASS 494

10 5,387,174
53 5,387,175

CLASS 501

3 5,387,558
20 5,387,559
66 5,387,560
87 5,387,561
97 5,387,562

CLASS 502

62 5,387,564
63 5,387,565
64 5,387,566
103 5,387,567
104 5,387,568
162 5,387,569
304 5,387,570
439 Re.34,853

CLASS 503

227 5,387,571
5,387,572
5,387,573
5,387,574

CLASS 504

116 5,387,745
243 5,387,575

CLASS 514

2 5,387,576
12 5,387,746
21 5,387,578
100 5,387,579
150 5,387,580
165 5,387,581
167 5,387,582
171 5,387,583
183 5,387,584
219 5,387,585
233.2 5,387,747
233.8 5,387,586
254 5,387,587
5,387,748
258 5,387,588
291 5,387,589
292 5,387,590
307 5,387,591
312 5,387,592
326 5,387,593
346 5,387,594
357 5,387,595
369 5,387,596
370 5,387,597
371 5,387,598
383 5,387,599
395 5,387,600
397 5,387,601
406 5,387,602
415 5,387,603
456 5,387,604
461 5,387,605
5,387,606
513 5,387,607
530 5,387,608
548 5,387,609
575 5,387,610
588 5,387,611
647 5,387,612
652 5,387,613
654 5,387,614
5,387,615

CLASS 521

79 5,387,617
131 5,387,618
133 5,387,619
143 5,387,620
155 5,387,621

CLASS 523

102 5,387,622
124 5,387,623
220 5,387,624
404 5,387,625

CLASS 524

35 5,387,626
84 5,387,627
117 5,387,628
190 5,387,629
210 5,387,630
260 5,387,631
296 5,387,633
321 5,387,634
379 5,387,635
404 5,387,636
493 5,387,637
503 5,387,638
537 5,387,639
544 5,387,640
557 5,387,641
591 5,387,642
[redacted] 5,387,643
847 5,387,644

CLASS 525

53 5,387,749
66 5,387,645
103 5,387,646
179 5,387,647
192 5,387,648
271 5,387,649
316 5,387,650
408 5,387,651
419 5,387,652
420 5,387,653
451 5,387,654
511 5,387,655
523 5,387,656
5,387,657
530 5,387,658

CLASS 526

59 5,387,659
69 5,387,660
90 5,387,661
245 5,387,662
279 5,387,632
5,387,663
336 5,387,664

CLASS 528

52 5,387,750
81 5,387,665
283 5,387,666
374 5,387,667
392 5,387,668

CLASS 530

216 5,387,669
317 5,387,670
329 5,387,671
385 5,387,672
399 5,387,673

CLASS 534

618 5,387,674

CLASS 536

18.7 5,387,675
23.5 5,387,676
28.54 5,387,677

CLASS 540

138 5,387,678
226 5,387,679
456 5,387,680

CLASS 544

106 5,387,681
194 5,387,682
219 5,387,683
264 5,387,684

CLASS 546

143 5,387,685
154 5,387,686
187 5,387,687
223 5,387,688
268 5,387,689

CLASS 548

186 5,387,690
257 5,387,691
313.7 5,387,692
360.1 5,387,693
458 5,387,694
486 5,387,695
533 5,387,696
5,387,697

CLASS 549

215 5,387,698
239 5,387,699
387 5,387,700
423 5,387,701
470 5,387,702
534 5,387,751

CLASS 552

203 5,387,703
238 5,387,704

CLASS 554

164 5,387,705

CLASS 556

442 5,387,706

CLASS 558

48 5,387,707
277 5,387,708
388 5,387,709

CLASS 560

43 5,387,710

CLASS 562

56 5,387,711
420 5,387,712
608 5,387,713
843 5,387,714

CLASS 564

126 5,387,715
223 5,387,716
295 5,387,717

CLASS 568

38 5,387,718
455 5,387,719
486 5,387,720
697 5,387,721
698 5,387,722
5,387,723
771 5,387,724
779 5,387,725
814 5,387,726
831 5,387,752
864 5,387,753

CLASS 570

143 5,387,727
153 5,387,728
157 5,387,729

CLASS 585

010 5,387,730
259 5,387,731
475 5,387,732
899 5,387,733

CLASS 588

207 5,387,734
249 5,387,735
5,387,736
5,387,737
256 5,387,738
257 5,387,739
5,387,740
259 5,387,741

CLASS 600

14 5,387,176
22 5,387,177
27 5,387,178
38 5,387,179

CLASS 601

2 5,387,180
155 5,387,181
165 5,387,182

CLASS 602

19 5,387,183
23 5,387,184
26 5,387,185
36 5,387,186

CLASS 604

6 5,387,187
8 5,387,188
20 5,387,189
22 5,387,190
93 5,387,191
5,387,192
96 5,387,193
97 5,387,194
110 5,387,195
158 5,387,196
164 5,387,197
282 5,387,199
290 5,387,200
5,387,201
300 5,387,202
313 5,387,203
317 5,387,204
329 5,387,205
358 5,387,206
369 5,387,207
378 5,387,208
384 5,387,209
396 5,387,210

CLASS 606

10 5,387,211
61 5,387,212
5,387,213
64 5,387,214
79 5,387,215
80 5,387,218
88 5,387,216
103 5,387,217
108 5,387,219
130 5,387,220
148 5,387,221
167 5,387,222
186 5,387,223
191 5,387,224
194 5,387,225
5,387,226
222 5,387,227

CLASS 607

11 5,387,228
18 5,387,229
48 5,387,231
95 5,387,230
124 5,387,232
126 5,387,233
129 5,387,234

CLASS 623

1 5,387,235
5,387,236
11 5,387,237
18 5,387,239
20 5,387,240
5,387,241
22 5,387,242
23 5,387,243
5,387,244
37 5,387,245
56 5,387,246
66 5,387,247

CLASS 800

2 5,387,742
200 5,387,743
5,387,754
5,387,755
205 5,387,756
5,387,757
230 5,387,758

D2—	640	355,067		72	355,104		118	355,143			355,182		88	355,219		177	355,256
	719	355,068		90	355,105	D11—	32	355,146			355,183	D20—	17	355,220		185	355,257
	970	355,069		99	355,106		81	355,144			355,184		41	355,222		215	355,259
D3—	226	355,070			355,107		152	355,145			355,185	D21—	25	355,221		224	355,260
	260	355,071		103	355,108		221	355,147		141	355,186		[redacted]	355,223	D25—	38	355,261
	293	355,072		356	355,110	D12—	85	355,148			355,187		145	355,224		52	355,262
	305	355,073		359	355,111		96	355,149		[redacted]	355,188			355,225		122	355,263
D4—	108	355,074		367	355,112		136	355,150		149	355,189		191	355,226		125	355,264
	118	355,075		375	355,109		146	355,151			355,190		192	355,227	D26—	2	355,265
D6—	301	355,076		382	355,113			355,152			355,191		195	355,228		11	355,266
	334	355,077	D9—	337	355,115		147	355,153		151	355,192		196	355,229		24	355,267
	370	355,078		345	355,116			355,154		210	355,193		204	355,230		25	355,268
		355,079		418	355,117			355,155		217	355,194		207	355,231		[redacted]	355,269
	372	355,080		425	355,118		163	355,156			355,195		212	355,232			355,270
	380	355,081		440	355,119		341	355,157		240	355,196		218	355,233		35	355,271
	381	355,082		447	355,120	D13—	103	355,158		242	355,172		220	355,234		46	355,272
	437	355,083			355,121		133	355,159		257	355,197		226	355,235		66	355,273
	446	355,084		456	355,122		139	355,162	D15—	1	355,198		234	355,236	D27—	162	355,274
	449	355,086			355,123		141	355,160		7	355,199		240	355,237		189	355,275
	464	355,087		503	355,124		146	355,161		125	355,201		242	355,238	D28—	50	355,276
	[redacted]	355,088		522	355,125			355,163		140	355,200	D22—	128	355,239		[redacted]	355,277
	501	355,089			355,126		155	355,164	D16—	202	355,204		140	355,238		[redacted]	355,278
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	514	355,085		552	355,129			355,167		314	355,202		213	355,242	D32—	22	355,282
	580	355,092			355,130			355,168			355,203		238	355,243		24	355,283
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	582	355,095	D10—	24	355,135			355,170	D18—	43	355,208		279	355,245		32	355,285
	[redacted]	355,096		51	355,136		106	355,171		55	355,209		295	355,246		46	355,281
D7—	601	355,097		62	355,133		107	355,173		56	355,210		328	355,247		49	355,286
	605	355,098		69	355,134		113	355,174			355,211		360	355,248		53.1	355,287
		355,099		75	355,137			355,175			355,212		363	355,249		58	355,288
	624	355,100		78	355,138		118	355,176			355,213		364	355,250	D34—	1	355,289
	641	355,101		91	355,139			355,177			355,215		366	355,251		28	355,290
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	5,388,232		5,386,871		5,387,569		5,386,878		5,387,242		5,386,762
	5,388,247		5,386,909		5,387,571		5,386,941		5,387,278		5,386,764
	5,388,255		5,386,918		5,387,573		5,387,191		5,387,311		5,386,833
	5,388,259		5,386,992		5,387,574		5,387,566		5,387,322		5,386,943
	5,388,262		5,387,025		5,387,611	41	5,386,605		5,387,393		5,387,002
26	5,386,592		5,387,059		5,387,613		5,386,658		5,387,412		5,387,052
	5,386,610		5,387,121		5,387,632		5,386,700		5,387,497		5,387,070
	5,386,621		5,387,185		5,387,654		5,386,813		5,387,523		5,387,219
	5,386,643		5,387,201		5,387,662		5,387,125		5,387,538		5,387,453
	5,386,693		5,387,257		5,387,663		5,387,164		5,387,540		5,387,772
	5,386,722		5,387,269		5,387,666		5,387,273		5,387,568		5,387,783
	5,386,728		5,387,297		5,387,673		5,387,314		5,387,630		5,388,176
	5,386,795		5,387,347		5,387,685		5,387,764		5,387,635		5,388,217
	5,386,812		5,387,372		5,387,691		5,387,896		5,387,657		4,399,407
	5,386,942		5,387,381		5,387,698		5,387,920		5,387,659	56	5,386,647
	5,386,975		5,387,409		5,387,748		5,387,925		5,387,712		5,386,718
	5,387,016		5,387,418		5,387,766		5,387,943				

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04 :	355,070		355,266		355,237	33 :	355,075		355,232		355,171
	355,102		355,267		355,239	34 :	355,096		355,242		355,281
	355,198		355,268		355,272		355,103		355,260	42 :	355,157
	355,200		355,279		355,283		355,125		355,265		355,201
06 :	355,274	09 :	355,072	18 :	355,254		355,126	39 :	355,078		355,220
	355,073		355,139	19 :	355,110		355,188		355,083		355,249
	355,074		355,186		355,158		355,189		355,100	44	355,068
	355,076		355,187	21 :	355,197		355,190		355,109	45	355,226
	355,095		355,224	24 :	355,146		355,223		355,131	47 :	355,091
	355,114		355,225		355,216		355,251		355,136		355,219
	355,134	12 :	355,156	25 :	355,206	36 :	355,084		355,151		355,222
	355,141		355,181		355,253		355,089		355,152	48 :	355,085
	355,161		355,273		355,261		355,090		355,153		355,087
	355,162		355,278	26 :	355,081		355,099		355,154		355,269
	355,167		355,284		355,105		355,101		355,230	53 :	355,111
	355,168	13 :	355,088		355,149		355,116		355,262		355,112
	355,172		355,137		355,169		355,119		355,270		355,138
	355,194		355,264		355,217		355,121		355,271		355,145
	355,195	16 :	355,067		355,245		355,123		355,282		355,241
	355,199	17 :	355,129	27 :	355,240		355,128		355,285	54 :	355,071
	355,207		355,143	29 :	355,108		355,132		355,287	55 :	355,092
	355,227		355,147		355,118		355,144	40 :	355,115		355,093
	355,233		355,218		355,142		355,160		355,193		355,094
	355,236		355,221		355,286		355,180	41 :	355,069		355,127
	355,257		355,234	31 :	355,104		355,229		355,077		

PLANT PATENTS

06 :	9,053	9,054	9,055			

STATUTORY INVENTION REGISTRATIONS

06 :	H1411		H1416	27 :	H1413						
	H1414	26 :	H1417	34 :	H1412	39 :	H1415		H1420	48 :	H1419

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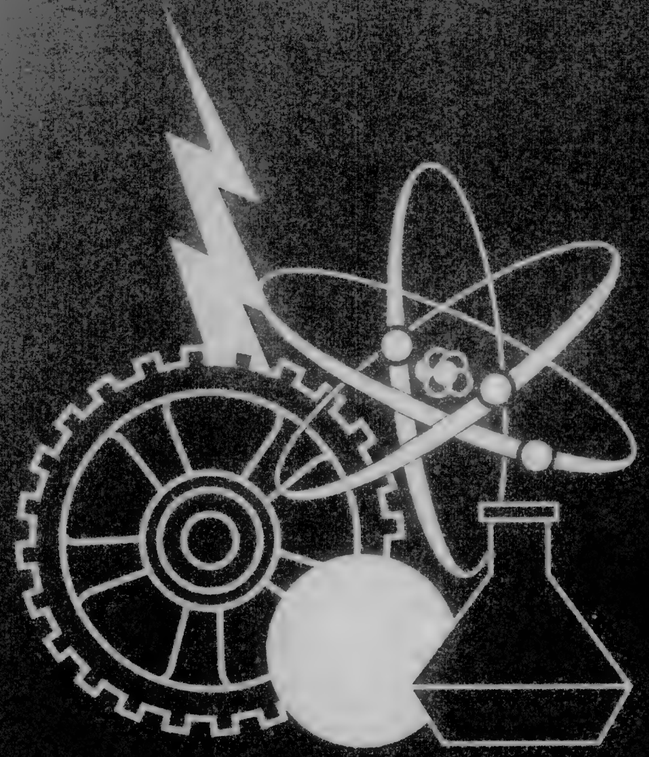
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OFFICIAL GAZETTE

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PATENTS
February 14, 1995



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February 14, 1995 Volume 1171 Number 2

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1168 O.G. 100, on Nov. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Jan. 1, 1995, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation)	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	604.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	147.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	147.00
—Confirmation fee	73.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	185.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Dec. 12, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel for a Decision Without a Hearing as of December 31, 1994.

Chemical Discipline -	October 13, 1992
Mechanical Discipline -	July 1, 1994
Electrical Discipline -	November 4, 1993

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of December 31, 1994.

Chemical Discipline -	March 1, 1993
Mechanical Discipline -	December 1, 1993

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Electrical Discipline - October 4, 1993

Board of Patent Appeals and Interferences
Decisions Rendered in Ex Parte Appeals
During the Month of December, 1994

Affirmed	96
Affirmed-in-Part	15
Reversed	59
Total Decided	170

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 11, 1992 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,086,514 through 5,088,113
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 9, 1988 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,723,322 through 4,724,545
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 7, 1984 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,429,419 through 4,430,758
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED December 7, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,075	07/277,278	10/03/89
(4,625,545)	(06/720,037)	(12/02/86)
Re. 33,303	07/099,165	08/21/90
(4,625,947)	(06/627,029)	(12/02/86)
Re. 34,141	07/739,332	12/08/92
(4,975,478)	(07/388,799)	(12/04/90)
Re. 34,194	07/710,466	03/16/93
(4,974,286)	(07/498,729)	(12/04/90)
4,361,924	06/276,952	12/07/82
4,361,933	06/262,628	12/07/82
4,361,940	06/289,945	12/07/82
4,361,944	06/270,384	12/07/82
4,361,950	06/242,284	12/07/82
4,361,951	06/256,412	12/07/82
4,361,978	06/215,820	12/07/82
4,361,981	06/268,777	12/07/82
4,362,008	06/218,313	12/07/82
4,362,024	06/227,190	12/07/82
4,362,025	06/238,595	12/07/82
4,362,048	06/217,927	12/07/82
4,362,078	06/222,232	12/07/82
4,362,087	06/247,887	12/07/82
4,362,124	06/261,930	12/07/82

Patent Number	Serial Number	Issue Date
4,362,128	06/277,896	12/07/82
4,362,132	06/224,256	12/07/82
4,362,133	06/261,804	12/07/82
4,362,138	06/252,224	12/07/82
4,362,141	06/228,785	12/07/82
4,362,143	06/257,344	12/07/82
4,362,155	06/247,205	12/07/82
4,362,159	06/309,542	12/07/82
4,362,173	06/247,561	12/07/82
4,362,178	06/245,060	12/07/82
4,362,189	06/223,203	12/07/82
4,362,192	06/240,964	12/07/82
4,362,201	06/243,712	12/07/82
4,362,203	06/248,536	12/07/82
4,362,214	06/226,295	12/07/82
4,362,250	06/247,660	12/07/82
4,362,252	06/354,141	12/07/82
4,362,279	06/230,949	12/07/82
4,362,293	06/235,393	12/07/82
4,362,297	06/269,774	12/07/82
4,362,315	06/229,020	12/07/82
4,362,317	06/216,078	12/07/82
4,362,323	06/237,722	12/07/82
4,362,339	06/227,895	12/07/82
4,362,344	06/289,491	12/07/82
4,362,351	06/232,089	12/07/82
4,362,374	06/305,770	12/07/82
4,362,376	06/262,398	12/07/82
4,362,380	06/269,168	12/07/82
4,362,403	06/289,793	12/07/82
4,362,416	06/226,738	12/07/82
4,362,426	06/261,212	12/07/82
4,362,431	06/263,640	12/07/82
4,362,475	06/243,828	12/07/82
4,362,485	06/264,099	12/07/82
4,362,487	06/292,529	12/07/82
4,362,490	06/282,169	12/07/82
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4,362,507	06/255,270	12/07/82
4,362,530	06/245,290	12/07/82
4,362,531	06/254,037	12/07/82
4,362,535	06/269,013	12/07/82
4,362,537	06/238,843	12/07/82
4,362,541	06/258,205	12/07/82
4,362,543	06/245,831	12/07/82
4,362,554	06/241,396	12/07/82
4,362,555	06/241,397	12/07/82
4,362,562	06/236,087	12/07/82
4,362,580	06/251,535	12/07/82
4,362,581	06/229,990	12/07/82
4,362,589	06/325,132	12/07/82
4,362,594	06/245,452	12/07/82
4,362,600	06/293,212	12/07/82
4,362,602	06/283,188	12/07/82
4,362,607	06/284,580	12/07/82
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4,362,614	06/259,296	12/07/82
4,362,616	06/248,045	12/07/82
4,362,623	06/314,217	12/07/82
4,362,630	06/224,597	12/07/82
4,362,639	06/297,892	12/07/82
4,362,640	06/302,528	12/07/82
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4,362,642	06/280,973	12/07/82
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4,362,654	06/263,642	12/07/82
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4,362,667	06/226,868	12/07/82
4,362,672	06/286,974	12/07/82
4,362,675	06/228,409	12/07/82
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4,362,684	06/248,543	12/07/82
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4,362,718	06/245,651	12/07/82
4,362,727	06/306,940	12/07/82
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4,975,970	07/336,605	12/04/90
4,975,979	07/390,942	12/04/90

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,670,191, Re. S.N. 08/356,056, Dec. 14, 1994, Cl. 562/17, PROCESS FOR THE PREPARATION OF N-PHOSPHONOMETHYLGLYCINE, Hans-Jerg Kleiner, Owner of Record: *Hoechst Aktiengesellschaft, Frankfurt Am Main, Germany,* Attorney or Agent: Thomas J. Kowalski, Ex. Gp.: 1204

4,968,686, Re. S.N. 08/287,290, Aug. 5, 1994, Cl. 514/258, ACYCLIC PYRROLO [2,3-D] PYRIMIDINE ANALOGS AS ANTIVIRAL AGENTS, Leroy B. Townsend, et. al., Owner of Record: *The Regents of the University of Michigan, Ann Arbor, Mich.,* Attorney or Agent: DeAnn F. Smith, Ex. Gp.: 1205

5,047,028, Re. S.N. 08/120,212, Sept. 10, 1993, Cl. 606/49, METHOD FOR INDUCING THROMBOSIS IN BLOOD VESSELS, Quinghua Qian, Owner of Record: *Inventor,* Attorney or Agent: Gustavo Siller, Jr., Ex. Gp.: 3309

5,104,332, Re. S.N. 08/350,954, Dec. 7, 1994, Cl. 428/222, SELF-ADHERENT FORM WRAPPING MATERIAL, Janene Youngs McVicker, Owner of Record: *Inventor,* Attorney or Agent: Mark D. Janis, Ex. Gp.: 1504

5,135,296, Re. S.N. 08/286,442, Aug. 4, 1994, Cl. 351/106, EYEGLASSES HAVING SINGLE WIRE FRAMES, Poul J. Lindberg, et. al., Owner of Record: *Inventor,* Attorney or Agent: Stanley A. Wal, Ex. Gp.: 2515

5,157,291, Re. S.N. 08/325,815, Oct. 19, 1994, Cl. 307/573, SWITCHING CIRCUIT FOR SELECTING AN OUTPUT SIGNAL FROM PLURAL INPUT SIGNALS, Sadashi Shimoda, Owner of Record: *Seiko Instruments, Inc., Tokyo, Japan,* Attorney or Agent: Bruce L. Adams, Ex. Gp.: 2502

5,160,290, Re. S.N. 08/332,945, Nov. 1, 1994, Cl. 452/135, MEAT DEBONING APPARATUS AND METHOD, James B. Richburg, Owner of Record: *Inventor,* Attorney or Agent: Cort Flint, Ex. Gp.: 3203

5,161,803, Re. S.N. 08/336,829, Nov. 9, 1994, Cl. 273/435, TELEVISION GAME APPARATUS, Makoto Ohara, Owner of Record: *Sega Enterprise Ltd., Tokyo, Japan,* Attorney or Agent: Joseph W. Price, Ex. Gp.: 3304

5,166,974, Re. S.N. 08/344,752, Nov. 23, 1994, Cl. 379/67, INTERACTIVE CALL PROCESSOR TO FACILITATE COMPLETION OF QUEVED CALLS, Sanford J. Morganstein, et. al., Owner of Record: *Phoenix Maricopa Co., Phoenix, Ariz.,* Attorney or Agent: Donald J. Lenkszus, Ex. Gp.: 2601

5,167,274, Re. S.N. 08/345,231, Nov. 25, 1994, Cl. 165/001, METHOD AND APPARATUS FOR COOLING PARTICULATE SOLIDS, Markus M. Mueller, Owner of Record: *Cominco Ltd., Vancouver, Canada,* Attorney or Agent: Elbie R. de Kock, Ex. Gp.: 3407

5,169,114, Re. S.N. 08/350,942, Dec. 7, 1994, Cl. 248/551, ADJUSTABLE MOUNTING AND SECURITY DEVICE FOR APPLIANCES, Edward O'Neill, Owner of Record: *Lucasey Manufacturing Co., Oakland, Calif.,* Attorney or Agent: Keith A. Vogt, Ex. Gp.: 3505

5,169,324, Re. S.N. 08/352,380, Dec. 9, 1994, Cl. 439/101, PLUG TERMINATOR HAVING A GROUNDING MEMBER, Timothy A. Lemke, Owner of Record: *Chemical Bank, New York, N.Y.,* Attorney or Agent: Michele K. Herman, Ex. Gp.: 3202

5,170,011, Re. S.N. 08/351,721, Dec. 8, 1994, Cl. 174/47, HOSE ASSEMBLY, Norman S. Martucci, Owner of Record: *Teleflex Incorporated, Limerick, Pa.,* Attorney or Agent: Kenneth I. Kohn, Ex. Gp.: 2103

5,170,303, Re. S.N. 08/351,780, Dec. 8, 1994, Cl. 360/126, INDUCTIVE THIN FILM HEAD HAVING IMPROVED READBACK CHARACTERISTICS, Gregory S. Mowry, et. al., Owner of Record: *Seagate Technology, Inc., Scotts Valley, Calif.,* Attorney or Agent: Joseph R. Kelly, Ex. Gp.: 2512

5,171,056, Re. S.N. 08/357,641, Dec. 15, 1994, Cl. 296/163, RETRACTABLE AWNING FOR SLIDE-OUT UNIT ON MOBILE HOME, RECREATIONAL VEHICLE OR THE LIKE, Thomas G. Faludy, et. al., Owner of Record: *Carefree/Scott Fetzer Co., Broomfield, Colo.,* Attorney or Agent: Gary M. Polumbus, Ex. Gp.: 3102

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5,171,196, Re. S.N. 08/352,541, Dec. 9, 1994, Cl. 482/7, TREADMILL WITH VARIABLE UPPER BODY RESISTANCE LOADING, Robert P. Lynch, Owner of Record: *Nordictrack, Inc., Chaska, Minn.,* Attorney or Agent: Mark A. Krull, Ex. Gp.: 3302

5,171,487, Re. S.N. 08/356,154, Dec. 15, 1994, Cl. 261/142, THERMO-MAGNETIC VAPORIZER CARBURETOR, Paul H. Hudz, Owner of Record: *Southpac Trust International Inc., Rarotonga, Cook Islands,* Attorney or Agent: Jordan M. Meschkow, Ex. Gp.: 1305

5,182,526, Re. S.N. 08/355,080, Dec. 12, 1994, Cl. 330/257, DIFFERENTAL INPUT AMPLIFIER STAGE WITH FREQUENCY COMPENSATION, Carl T. Nelson, Owner of Record: *Linear Technology Corp., Milpitas, Calif.,* Attorney or Agent: Robert W. Morris, Ex. Gp.: 2515

5,223,150, Re. S.N. 08/346,402, Nov. 29, 1994, Cl. 210/765, WATER RECLAMATION SYSTEM AND METHOD, Dennis Bundy, et. al., Owner of Record: *Americleer Corp., Ocala, Fla.,* Attorney or Agent: Gerald H. Glanzman, Ex. Gp.: 1306

5,305,000, Re. S.N. 08/358,259, Dec. 19, 1994, Cl. 343/786, LOW LOSS ELECTROMAGNETIC ENERGY PROBE, James M. Harris, Owner of Record: *Gardiner Communications Corp., Garland, Tex.,* Attorney or Agent: Roy W. Hardin, Ex. Gp.: 2514

5,306,060, Re. S.N. 08/356,862, Dec. 15, 1994, Cl. 294/87.2, CARRIER STRAP FOR BOTTLES OR JUGS, James C. Borg, Owner of Record: *Oregon Precision Industries, Inc., Eugene, Oreg.,* Attorney or Agent: Douglas B. Ferguson, Ex. Gp.: 3102

5,306,832, Re. S.N. 08/341,232, Nov. 17, 1994, Cl. 365/230.2, HETEROCYCLIC BIS(4-HYDROXYPHENYL) CYCLOALKANES AND POLYCARBONATES PREPARED THEREFROM, John C. Schmidhauser, Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: William H. Pittman, Ex. Gp.: 2511

5,343,883,Re. S.N. 08/356,710, Dec. 15, 1994, Cl. 132/322, SONIC DENTAL DEVICE AND METHOD, Ronald K. Murayama, Owner of Record: *Inventor,* Attorney or Agent: Samuel B. Stone, Ex. Gp.: 3303

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,540,292, Reexam. No. 90/003,669, Dec. 23, 1994, Cl. 368/029, ELECTRONIC CALENDAR DISPLAY, Charles P. Rubenstein, et. al., Owner of Record: *Psytronics Associates, Princeton, NJ.,* Attorney or Agent: Ostrolenk, Faber, Gerb & Soffen, New York, N.Y., Ex. Gp.: 2107, Requester: Owner

4,647,488, Reexam. No. 90/003,668, Dec. 22, 1994, Cl. 428/116, METHOD AND APPARATUS FOR MOUNTING AND SEALING HONEYCOMB INSULATION MATERIAL, John T. Schnebly, et al., Owner of Record: *Hunter Douglas, Inc., Maywood, N.J.,* Attorney or Agent: Pennie & Edmonds, New York, N.Y., Ex. Gp.: 1508, Requester: Wallenstein, Wagner & Hattis, Chicago, Ill.

4,824,789, Reexam. No. 90/003,660, Dec. 13, 1994, Cl. 436/068, GAS SENSOR, Masao Yafuso, et. al., Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: John T. Wiedemann, Calfee, Halter & Griswold, Cleveland, Ohio, Ex. Gp.: 1809, Requester: Owner

5,195,132, Reexam. No. 90/003,674, Dec. 29, 1994, Cl. 370/410, TELEPHONE NETWORK SPEECH SIGNAL ENHANCEMENT, Duane O. Bowker, et. al., Owner of Record: *AT&T/Bell, New York, N.Y.,* Attorney or Agent: P. V. D. Wilde, AT&T Bell Labs., Murray Hill, N.J., Ex. Gp.: 2601, Requester: Roger W. Herrell & John B. Berryhill, Dann, Dorfman, Herrell & Skillman, Philadelphia, Pa.

5,237,497, Reexam. No. 90/003,673, Dec. 28, 1994, Cl. 364/402, METHOD AND SYSTEM FOR PLANNING AND DYNAMICALLY MANAGING FLOW PROCESSES, Edward M. Sitarski, Owner of Record: *Numetrix Laboratories Limited, Toronto, Canada,* Attorney or Agent: Kramer, Brufsky & Cifelli, Southport, Conn., Ex. Gp.: 2311, Requester: Owner

5,263,967, Reexam. No. 90/003,670, Dec. 23, 1994, Cl. 606/205, MEDICAL INSTRUMENT WITH DUAL ACTION DRIVE, William G. Lyons, III, et. al., Owner of Record: *Brimfield Precision Incorporated, Brimfield, Mass.,* Attorney or Agent: Weingarten, Schurgin, Gagnebin & Hayes, Boston, Mass., Ex. Gp.: 3309, Requester: Owner

5,272,396, Reexam. No. 90/003,671, Dec. 23, 1994, Cl. 326/021, CONTROLLABLE BUS TERMINATOR WITH VOLTAGE REGULATION, Robert A. Mammano, et. al., Owner of Record: *Unitrode Corp., Billerica, Mass.,* Attorney or Agent: Weingarten, Schurgin, Gagnerin & Hayes, Boston, Mass., Ex. Gp.: 2509, Requester: Burr-Brown Corp., Tuscon, Ariz.

5,292,365, Reexam. No. 90/003,675, Dec. 29, 1994, Cl. 106/464, MINERAL FILLERS AND PIGMENTS CONTAINING CARBONATE, Pierre Delfosse, Owner of Record: *Pluess-Staufer, Oftrigen, Switzerland,* Attorney or Agent: Amster Rothstein & Eberstein, New York, N.Y., Ex. Gp.: 1108, Requester: Owner

5,338,979, Reexam. No. 90/003,672, Dec. 23, 1994, Cl. 326/021, CONTROLLABLE BUS TERMINATOR WITH VOLTAGE REGULATION, Robert A. Mammano, et. al., Owner of Record: *Unitrode Corp., Billerica, Mass.,* Attorney or Agent: Weingarten, Schurgin, Gagnerin & Hayes, Boston, Mass., Ex. Gp.: 2509, Requester: Burr-Brown Corp., Tuscon, Ariz.

Department of Commerce
Patent and Trademark Office

Grant of Certificate of Interim Extension of the term of U.S. Patent No. Re. 34,617 of U.S. Patent No. 4,005,196; Olestra

Agency: Patent and Trademark Office, Commerce

Action: Notice of Interim Patent Term Extension

Summary: The Patent and Trademark Office has issued a certificate under 35 U.S.C.. § 156(d)(5) for a second one-year interim extension of the term of U.S. Patent No. Re. 34,617 of U.S. Patent No. 4,005,196 that claims the food additive known as olestra.

For Further Information Contact: Gerald A. Dost by telephone at (703) 305-9285; or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 marked to the attention of Gerald A. Dost, Special Program Examiner, Office of the Deputy Assistant Commissioner for Patent Policy and Projects.

Supplementary Information: Section 156 of Title 35, United States Code, generally provides that the term of a patent may be extended for a period of up to 5 years if the patent claims a product, or a method of making or using a product, that has been subject to certain defined regulatory review. Under section 156, a patent is eligible for term extension only if regulatory review of the claimed product was completed before the original patent term expired.

On December 3, 1993, section 156 was amended by Pub. L. No. 103-179 to provide that if the owner of record of the patent or its agent reasonably expects the applicable regulatory review period to extend beyond the expiration of the patent, the owner or its agent may submit an application to the Commissioner of Patents and Trademarks for an interim extension of the patent term. If the Commissioner determines that, except for permission to market or use the product commercially, the patent would be eligible for a statutory extension of the patent term, the Commissioner shall issue to the applicant a certificate of interim extension for a period of not more than one year. The owner of record of the patent or its agent may apply for a subsequent one-year interim extension.

On January 7, 1994, The Procter & Gamble Company, owner of record in the Patent and Trademark Office of U.S. Patent No. Re. 34,617 of U.S. Patent No. 4,005,196, filed an application for interim extension of the term of the patent under 35 U.S.C. § 156(d)(5). The application states that the patent claims a composition of matter comprising the food additive product olestra. The application indicates that the product is currently undergoing a regulatory review before the Food and Drug Administration for permission to market or use the product commercially. The original term of the patent expired on January 25, 1994. On January 14, 1994, a first one-year interim extension was granted under 35 U.S.C. § 156(d)(5). The extended term of the patent expires on January 25, 1995. On December 1, 1994, applicant requested a second one-year interim extension of the term of the patent.

Review of the application indicates that, except for permission to market or use the product commercially, the subject patent would be eligible for an extension of the patent term under 35 U.S.C. § 156. Since it is apparent that the regulatory review period may extend beyond the expiration of the first one-year interim extension of the original patent term, a second one-year interim extension of the patent term under 35 U.S.C. § 156(d)(5) is appropriate. Accordingly, a second one-year interim extension under 35 U.S.C. § 156(d)(5) of the term of U.S. Patent No. Re. 34,617 of U.S. Patent No. 4,005,196 has been granted from the expiration of the first one-year interim extension of the original expiration date of the patent.

January 17, 1995 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Department of Commerce
Patent and Trademark Office

37 CFR Part 10
[Docket No. 930366-4319]
RIN 0651-AA65

Cross-Appeals in Patent and Trademark Office Disciplinary Proceedings

Agency: Patent and Trademark Office, Commerce.

Action: Proposed Rulemaking.

Summary: On July 21, 1993, the Patent and Trademark Office (PTO) proposed amending a rule of practice in practitioner disciplinary proceedings. 58 FR 38994. The proposed rule change provides for a time period for a party to a disciplinary proceeding to file a cross-appeal, after the other party (the respondent or the Director of the Office of Enrollment and Discipline) to the proceeding has appealed from the initial decision of the administrative law judge (ALJ) to the Commissioner. Currently, PTO rules do not provide for such a time period. A party in a disciplinary proceeding may be interested in appealing only if the other party has appealed. Allowing a time period for filing a cross-appeal will give parties to disciplinary cases more flexibility after an initial decision by the administrative law judge and will avoid the necessity of filing a contingent appeal simply to preserve rights in the event the other party files an appeal.

One comment to the rule change proposed on July 21, 1993, was received suggesting substantive changes. This second notice adopts that suggested change.

Dates: Written comments must be received on or before [March 16, 1995] to ensure consideration. An oral hearing will not be conducted.

Addresses: Address written comments to Commissioner of Patents and Trademarks, Box OED, Washington, D.C. 20231, marked to the attention of Harry I. Moatz. Written comments will be available for public inspection in Suite 518, on the 5th floor of Crystal Park I, located at 2011 Crystal Drive, Arlington, Virginia.

For Further Information Contact: Harry I. Moatz by telephone at (703) 308-5273 or by mail marked to his attention and addressed to Commissioner of Patents and Trademarks, Box OED, Washington, D.C. 20231.

Supplementary Information: A Notice of Proposed Rulemaking was published in the Federal Register (58 FR 38994) on July 21, 1993, and in the *Official Gazette* of the PTO (1153 Off. Gaz. 32) on August 10, 1993. Comments were due August 20, 1993. One comment was received. The comment suggested a substantive change to the original proposed rulemaking. The PTO has adopted the change and is now publishing a second notice requesting comments on the amended notice.

Pursuant to 37 CFR § 10.132 *et seq.*, the Director of the Office of Enrollment and Discipline within the PTO may initiate a disciplinary proceeding against a practitioner. If the proceeding is contested by the practitioner and the Director continues to prosecute, an ALJ for the Department of Commerce enters an initial decision which includes findings of fact, conclusions of law and an order. 37 CFR § 10.154.

Either party to the proceeding may appeal from the initial decision of the ALJ to the Commissioner within thirty (30) days of the date of the decision. 37 CFR § 10.155(a). However, prior to this proposed rule change, § 10.155(a) did not provide for the filing of a cross-appeal.

With regard to interference proceedings, 37 CFR § 1.304(a) addresses the filing of cross-appeals by stating in pertinent part that:

> the time for filing a cross-appeal [to the Court of Appeals for the Federal Circuit] or cross-action [in a district court] expires (1) 14 days after service of the notice of appeal or the summons and complaint or (2) two months after the date of decision of the Board of Patent Appeals and Interferences, whichever is later.

The proposed rule change is similar to the cross-appeal authorized in interference proceedings.

Response to and Analysis of Comment: The single comment suggested that the second sentence of the proposed § 10.155(a) be modified by adding "pursuant to § 10.142" after "(1) 14 days after service of the appeal" to make clear that the period for filing a cross-appeal or reply brief runs from service pursuant to § 10.142. The suggestion is being adopted. The comment further suggested that the fifth sentence in the rule proposed on July 21, 1993, be separated into three new sentences. The first and second new sentences make clear that "the other party to an appeal or cross-appeal may file a reply brief," and that a "reply brief by the respondent" is to be "served in duplicate with the Director." The third new sentence provides a date certain for filing any reply brief by avoiding uncertainty as to when "receipt" of an appeal, cross-appeal or copy thereof occurs, and by relying on the date of "service pursuant to § 10.142" of an appeal, cross-appeal, or a copy thereof. The suggestions have been adopted in the proposed rules.

Other Considerations: This rule change conforms with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Orders 12612 and 12866, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

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The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the rule change will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of the rule change is to provide a time period to file a cross-appeal in a PTO disciplinary proceeding. See the original notice of proposed rulemaking published in the *Federal Register*, 58 FR at 38996.

The PTO has determined that the rule change has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612. The Office of Management and Budget has determined that the rule change is not significant for the purposes of Executive Order 12866.

The rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 10

Administrative practice and procedure, Inventions and patents, Lawyers, Reporting and recordkeeping requirements.

For the reasons set out in the preamble, and pursuant to the authority contained in 35 U.S.C. 6, the PTO proposes to amend 37 CFR part 10 as follows, wherein deletions are indicated by brackets ([]) and additions by arrows (cb):

Part 10-Representation of Others Before The Patent and Trademark Office

1. The authority citation for 37 CFR part 10 would continue to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

2. Section 10.155 is amended by revising paragraph (a) to read as follows:

§ 10.155 Appeal to the Commissioner.

(a) Within thirty (30) days from the date of the initial decision of the administrative law judge under § 10.154, either party may appeal to the Commissioner. cIf an appeal is taken, the time for filing a cross-appeal expires (1) 14 days after the date of service of the appeal pursuant to § 10.142 or (2) 30 days after the date of the initial decision of the administrative law judge, whichever is later.b An appeal cor cross appealb by the respondent will be filed and served with the Director in duplicate and will include exceptions to the decisions of the administrative law judge and supporting reasons for those exceptions. If the Director files the appeal cor cross-appealb , the Director shall serve con the other partyb a copy of the appeal cor cross-appealb. cThe other party to an appeal or cross-appeal may file a reply brief. A respondent's reply brief shall be filed and served in duplicate with the Director. The time for filing any reply brief expiresb [Within] thirty (30) days after cthe date ofb [receipt] cservice pursuant to § 10.142b of an appeal c,cross-appealb or copy thereof[, the other party may file a reply brief, in duplicate with the Director]. If the Director files [the] cab reply brief, the Director shall serve con the other partyb a copy of the reply brief. Upon the filing of an appeal c,cross appeal, if any,b and [a] reply briefcsb, if any, the Director shall transmit the entire record to the Commissioner.

January 13, 1995

MICHAEL K. KIRK
Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks

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Errata

"All reference to Patent No. 5,373,056 to Robert R. Gagne, et. al., of California for 'MACROMONOMERS HAVING REACTIVE END GROUPS' appearing in the *Official Gazette* of December 13, 1994 should be deleted since no patent was granted."

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5,371,696 COMPUTATIONAL STRUCTURES FOR FAST FOURIER TRANSFORM ANALYZERS
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Concordia Univ.
1455 De Maisonneuve Blvd. West
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A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

The Berger Company, Fond du Lac, Wisc., Reg. No. 639,399 for the mark RON LEE, Canc. No. 22,507.

Jeff Vance Venture, DBA J.V. Venture Co., Brookings, Oreg., Reg. No. 1,729,649 for the mark VENTURE POWER (STYLIZED), Canc. No. 22,576.

JEAN BROWN
Administrator, Trademark Trial and Appeal Board,
for Robert M. Anderson
Deputy Assistant Commissioner for Trademarks

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5,053,485	5,231,109	5,292,662	5,319,588
5,068,339	5,233,765	5,293,414	5,319,943
5,071,187	5,234,516	5,295,099	5,319,975
5,122,806	5,234,921	5,295,122	5,321,154
5,130,706	5,234,945	5,296,579	5,321,930
5,141,664	5,239,715	5,298,950	5,322,005
5,144,000	5,242,560	5,300,019	5,323,780
5,145,846	5,242,907	5,300,101	5,324,188
5,146,416	5,243,022	5,300,116	5,324,280
5,153,870	5,247,801	5,303,062	5,324,366
5,157,039	5,253,187	5,303,269	5,324,949
5,325,882	5,343,209	5,351,789	5,362,801
5,325,912	5,343,231	5,352,376	5,363,100
5,327,222	5,344,061	5,353,582	5,363,698
5,327,388	5,344,079	5,353,713	5,363,702
5,327,835	5,344,415	5,353,936	5,363,728
5,328,873	5,344,422	5,354,112	5,363,795
5,329,373	5,344,857	5,354,385	5,364,417
5,330,393	5,345,461	5,354,825	5,364,915
5,330,650	5,345,912	5,355,116	5,365,482
5,330,871	5,345,978	5,355,591	5,365,771
5,331,004	5,346,360	5,355,950	5,366,158
5,331,317	5,346,368	5,355,987	5,366,508
5,331,594	5,346,523	5,356,205	5,366,732
5,331,784	5,346,544	5,356,386	5,367,049
5,331,809	5,346,571	5,356,612	5,367,129
5,334,268	5,347,282	5,357,281	5,367,174
5,334,521	5,347,486	5,357,514	5,367,184
5,334,826	5,347,545	5,357,675	5,367,289
5,335,075	5,347,758	5,358,180	5,367,342
5,335,077	5,347,799	5,358,303	5,367,422
5,335,216	5,347,914	5,358,415	5,367,479
5,336,578	5,348,809	5,358,441	5,368,039
5,338,211	5,349,109	5,358,937	5,368,295
5,338,638	5,349,382	5,359,048	5,368,372
5,339,144	5,349,486	5,359,579	5,369,231
5,339,682	5,349,522	5,359,647	5,369,602
5,339,807	5,349,598	5,359,836	5,369,994
5,339,932	5,350,125	5,360,608	5,370,401
5,340,152	5,350,349	5,360,809	5,370,452
5,341,165	5,350,473	5,360,871	5,371,104
5,341,234	5,350,697	5,360,944	5,371,287
5,341,243	5,350,946	5,361,312	5,373,855
5,341,710	5,351,599	5,361,962	5,374,600
5,341,830	5,351,653	5,362,550	5,374,793
5,342,710	5,351,776	5,362,668	5,375,556

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

December 12-16, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication	TTAB Decision
12-12	CANC (R)	20,394	Turner Broadcasting System, Inc v Lamoureaux	Abandonment, whether respondent owner of mark at time it filed its application for registration [latter ground added by amendment on request for reconsideration]		"THE CARTOON CHANNEL" (and design) [cable television broadcasting services featuring the presentation of cartoons]		No	Request for Reconsideration [petition to cancel granted, on ground that respondent was not owner of mark at time of application]
12-14	CANC	20,759	Marketing Productions, Inc v Mars Advertising Co.	2(d)		"SANTA BUCK" [holiday greeting cards, envelopes and a pressure sensitive depiction of a reindeer sold as a unit]		No	Petition to Cancel Granted
12-14	EX	74/337,483	ECOGROUP, Inc	2(d)	"SANTA DOLLARS" [greeting cards and envelopes and pressure sensitive seals, depicting Santa Claus]	"ECOSMART" [analysis of residential construction plans and procedures for energy efficiency and environmental impact and certification when compliant]	"ECOSMART" [educational services, namely, conducting courses and seminars in the field of environmental awareness and distribution of collateral merchandise relating thereto]	No	Refusal Affirmed

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication	TTAB Decision
12-14	EX	74/298,070 74/298,071 74/298,191	Tomorrowland Co Ltd	2(d)		"TOMORROW-LAND" [clothing; jewelry, clocks, etc.; handbags, garment bags, suitcases, etc.]	"TOMORROWLAND" [providing participation type entertainment in amusement and educational park]	No	Refusal Affirmed (in all three cases)
12-14	EX	74/274,667	Ontario Knife Co	2(d)		"ROBESON" [pocket knives]	Mark comprising a background design, the letter "R," the word "QUALITY SINCE 1879," and the word "ROBESON" [electric combination can opener and knife/ scissors sharpener and electric knives for domestic use]	No	Refusal Reversed
12-15	EX	74/262,791	Stroh Brewery Co	Refusal Reversed		"ST. BART'S THE VIRGIN BREW" (and design) [non alcoholic malt beverages]		Yes	Requirement for a disclaimer, under Section 6, of the words "THE VIRGIN BREW"

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

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Washington, D.C. 20231

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Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
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Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOU's), and extension requests.
Box TTAB FEE	Oppositions, Cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions and extension requests.
Box STATUS NO FEE	Written status inquiries.
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Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

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Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
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Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
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	Springfield: Illinois State Library	(217) 782-5659
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Iowa	Des Moines: State Library of Iowa	(515) 281-4118
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
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	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

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	New York Public Library (The Research Libraries)	(212) 930-0917
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

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PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy
J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	01/06/94
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	01/29/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	04/05/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	02/17/94
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMAN, Director	308-0196	08/23/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	01/29/93
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	06/14/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	12/21/93
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—Vacant	308-0771	12/13/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/14/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	06/29/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	03/23/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	12/20/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	11/30/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	01/20/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	11/04/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/21/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during January 1995 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents ..... Numbers 4,065,812 to 4,071,911 inclusive
Plant Patents ..... 4,174 to 4,205

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Jan. 1, 1995

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/26/94	11/14/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/05/94	10/19/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/05/94	09/19/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/01/94	10/12/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/28/94	11/02/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/12/94	09/21/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/19/94	10/18/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/19/94	09/23/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/28/94	08/25/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/21/94	11/17/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/14/94	11/14/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/09/94	11/01/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/15/94	09/06/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	07/14/94	—0—
Renewals (All Classes)	11/17/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

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REEXAMINATIONS

FEBRUARY 14, 1995

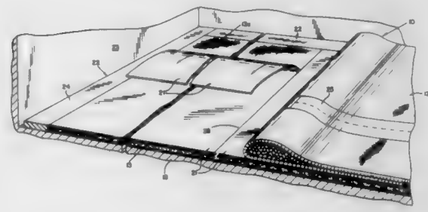
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B2 4,557,774 (2473rd)

SYSTEM FOR HOLDING CARPET IN PLACE WITHOUT STRETCHING

Merle R. Hoopengardner, Lafayette, Calif., assignor to Step Loc Corporation

Reexamination Request No. 90/002,341, May 7, 1991.
Reexamination Certificate for Patent No. 4,557,774, issued Dec. 10, 1985, Ser. No. 647,119, Sep. 4, 1984.
Reexamination Certificate B0 4,557,774, issued Jun. 5, 1990.
Int. Cl.[6] E04B *2/00;* B32B *5/13, 7/12*
U.S. Cl. 156—71



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 7, was previously cancelled.

Claims 12, 16–17, and 22 are cancelled.

Claims 1, 8 and 18 are determined to be patentable as amended.

Claims 2–6, 9–11, 13–15, 19–21 dependent on an amended claim, are determined to be patentable.

New claims 23 and 24 are added and determined to be patentable.

1. A carpet pad *in rolled form* for installation between a floor and a carpet in a wall-to-wall carpet installation, for retaining the wall-to-wall carpet and pad in place by adhesion without need for stretching, *the wall-to-wall carpet being joined together at seams as required to extend from wall to wall,* [comprising] *consisting essentially of*:

a *rolled* pad with upper and lower surfaces and of such thickness, density and compressibility as to enable it to serve as a carpet padding, *the pad having a nominal width and an indeterminate length, and the pad being of sufficeint length and width to allow it use in installation of wall-to-wall carpet, the length being at least sufficient to extend from wall to wall in a room to be carpeted;*

a scrim webbing on at least the lower surface of the pad [for] maintaining dimensional stability of the pad, with means for retaining the scrim webbing to the pad;

a sealant applied to both surfaces of the pad; and

pressure-sesnitive adhesive on both surfaces of the pad [with], *the adhesive having* sufficient tackiness for adhering to a floor and to the underside of a carpet to hold and bond the carpet and pad securely in position while allowing for temporary lifting of the carpet wholly or in localized areas when desired.

B1 4,705,759 (2474th)

HIGH POWER MOSFET WITH LOW ON-RESISTANCE AND HIGH BREAKDOWN VOLTAGE

Alexander Lidow, Manhatta, and Thomas Herman, Redondo, both of Calif., assignors to International Rectifier Corporation, Los Angeles, Calif.

Reexamination Request No. 90/003,141, Jul. 26, 1993.
Reexamination Certificate for Patent No. 4,705,759, issued Nov. 10, 1987, Ser. No. 456,813, Jan. 10, 1983.
Division of Ser. No. 232,713, Feb. 9, 1981, Pat. No. 4,376,286, which is a continuation of Ser. No. 951,310, Oct. 13, 1978, abandoned
Int. Cl.[6] H01L *21/265, 21/31*
U.S. Cl. 437—29



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 4–6 is confirmed.

Claim 1 is determined to be patentable as amended.

Claims 2, 3 and 7, dependent on an amended claim, are determined to be patentable.

1. The method of manufacture of a high power MOSFET device which comprises the steps of:

(a) forming an insulation coating on the upper surface of a flat chip of a monocrystalline semiconductor of one [of the] conductivity [types] *type;*

(b) opening at least first and second spaced windows in said insulation coating which have at least first respective portions thereof which are elongated and parallel to one another;

(c) applying impurity carriers of a conductivity type opposite said one conductivity type to said upper surface which is exposed by said first and second windows and heating said chip to cause said carriers to diffuse into said chip to form first and second respective regions of said opposite conductivity type in said chip which have a first depth *and a relatively large radius of curvature to allow the device to withstand higher reverse voltages;*

(d) opening at least third and fourth spaced windows in any insulation coating on said upper surface which are coextensive with and adjacent to said first and second windows; said third and fourth windows being disposed inwardly of the space between said first and second win-

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dows and being laterally removed from atop said first and second regions respectively;

(e) applying impurity carriers of said opposite conductivity type to said upper surface which is exposed by said third and fourth windows and heating said chip to cause said carriers to diffuse into said chip to form third and fourth respective regions of said opposite conductivity type which are continuous with the adjacent sides of said first and second regions respectively but are shallower *and have a smaller radius of curvature* than said first and second regions; the opposite edges of parallel portions of said third and fourth regions being laterally diffused until they are spaced from one another by a given distance by a common neck region of said one conductivity type of said chip;

(f) applying impurity carriers of said one conductivity type to said upper surface which is exposed by said third and fourth windows and heating said chip to cause said carriers from said one conductivity type to diffuse into said third and fourth regions for only a portion of the depth and width of said third and fourth regions to define first and second source regions; said first and second source regions having facing edges which are spaced from said common neck region,thereby to define first and second channel regions in said third and fourth regions respectively; *and*

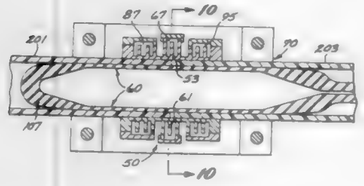
(g) [and] forming an insulated gate means atop said upper surface and over said first and second channel regions, and forming source electrode means on said source regions and drain electrode means on the surface of the chip which is opposite said upper surface.

B1 4,792,374 (2475th)

APPARATUS FOR FUSION JOINING PLASTIC PIPE

Kent A. Rianda, Huntington Beach, Calif., assignor to Georg Fischer AG, Schaffhusen, Switzerland

Reexamination Request No. 90/003,197, Sep. 17, 1993.
Reexamination Certificate for Patent No. 4,792,374, issued Dec. 20, 1988, Ser. No. 34,895, Apr. 3, 1987.
Int. Cl.[6] B29C *65/02*
U.S. Cl. 156—503



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–14** are cancelled.

[1. An apparatus for fusion joining first and second, substantially axially abutted piping system component connection ends, comprising:

support means, internal to the subject first and second piping system ends, for controllably producing an outwardly radial force against the inside surfaces of the subject first and second ends over a region that is longitudinally greater than a melt region which includes the interface and terminal portions of the subject ends; and

heat enabling means (1) for surrounding the subject first and second piping system ends over a thermally controlled region extending longitudinally and bilaterally beyond the melt region which is substantially centrally located therein, and (2) for enabling a longitudinally differentiated thermal driving of the thermally controlled region in which the melt region is heated at least to its material softening point while the bilateral, longitudinally adjacent portions of the thermally controlled region are affirmatively maintained at temperatures lower than the softening point, said heat enablement means cooperating with said internal support means and the unmelted portions of the subject first and second ends to contain the melt region, said heat enabling means comprising:

(a) a longitudinally centrally located annular channel for receiving material softening hot forced fluid and for separating the melt region from the received forced fluid, said centrally located annular channel thermally transferring thermal energy to said melt region; and

(b) thermally conductive fins internal to said centrally located channel.]

B1 4,867,800 (2476th)

CLEANING COMPOSITION OF TERPENE COMPOUND AND DIBASIC ESTER

Kenneth T. Dishart, and Mark C. Wolff, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours & Comp., Wilmington, Del.

Reexamination Request No. 90/003,178, Aug. 30, 1993.
Reexamination Certificate for Patent No. 4,867,800, issued Sep. 19, 1989, Ser. No. 222,496, Jul. 21, 1988.
Int. Cl.[6] B08B *7/00;* **C11D** *7/50*
U.S. Cl. 134—40

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–14** are cancelled.

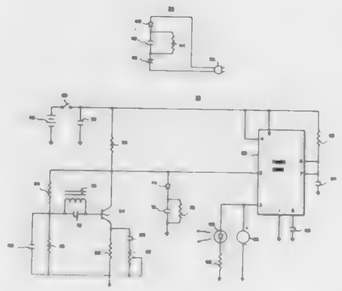
[1. A cleaning composition for removing solder flux residues from the surface of a substrate comprising (a) a terpene compound and (b) a dibasic ester solvent having a flash point at or above 100° F. by Tag close Cup method and at least 2.0 weight percent solubility in water at 25° C.]

B1 4,906,938 (2477th)

POWER CIRCUIT LOCATOR

John G. Konopka, Barrington, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Reexamination Request No. 90/003,332, Feb. 8, 1994.
Reexamination Certificate for Patent No. 4,906,938, issued Mar. 6, 1990, Ser. No. 232,961, Aug. 16, 1988.
Int. Cl.[6] G01R *31/02, 31/08*
U.S. Cl. 324—529



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

1. A power circuit locater for identifying a circuit interrupter for a low frequency AC power line among a plurality of similar circuit interrupters for respective ones of a plurality of adjacent power lines, comprising:

a passive plug in load device including a relaxation oscillator for developing a very low frequency series of very large amplitude, short duration identification pulses in a selected power line circuit to produce a corresponding magnetic field adjacent its corresponding circuit interrupter and magnetic fields of lesser strength in the vicinity of others of said adjacent power lines;

pickup means movable within the vicinity of all of said circuit interrupters for sensing all said magnetic fields;

trigger means including broadly tuned high frequency amplifier means operated in response to said pickup means;

sensitivity means coupled to said trigger means for reducing the sensitivity of said trigger means to all said magnetic fields for responding only to said corresponding magnetic field; and

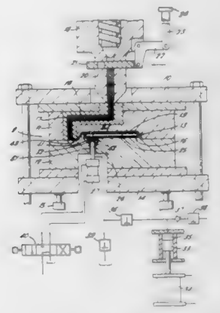
signalling means operated by said trigger means for indicating that said corresponding magnetic field has been sensed.

B1 4,923,666 (2478th)

METHOD OF INJECTION MOULDING

Kunio Yamazaki, Takatsuki, and Tetsuzi Watanabe, Toyonaka, both of Japan, assignors to Cinpres Limited, Staffordshire, England

Reexamination Request No. 90/003,338, Feb. 22, 1994.
Reexamination Certificate for Patent No. 4,923,666, issued May 8, 1990, Ser. No. 187,309, Apr. 28, 1988.
Claims priority, application Japan, Apr. 28, 1987, 62-103227
Int. Cl.[6] B29C *45/34;* **B29D** *22/00*
U.S. Cl. 264—572



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

1. A method of producing a resin molding comprising introducing molten synthetic thermoplastic resin at an elevated temperature in a mold cavity defining the shape of a resultant molding, introducing pressurized gas into the resin, and allowing the resin molding to cool and harden in the mold cavity whilst maintaining the gas under pressure, the mold cavity being designed to manufacture moldings with unevenly distributed thick-walled sections connected to at least one gate for the introduction of the pressurized gas, wherein the process comprises filling the mold cavity to its full capacity with the resin and, subsequent to the filling and whilst the resin of the molding cools from said elevated temperature and tends to shrink within the mold cavity, introducing the pressurized gas into the resin within the mold cavity, the gas flowing only within the resin forming the thick-walled sections and immediately adjacent areas of the molding, the gas entering said thick-walled sections and thereby taking up the shrinkage in the resin and forming gas-filled sections within the resin, and the pressure of the gas within the gas-filled sections being maintained during the cooling stage of the molding cycle until the molding can itself sustain the form dictated by the mold surface.

B1 4,925,705 (2479th)

METHOD OF PRINTING LAYERS HAVING SUBSTANTIALLY EXACT REGISTRATION

George R. Hill, Stockport, England, assignor to Contra Vision Limited, England

Reexamination Request No. 90/003,202, Sep. 21, 1993.
Reexamination Certificate for Patent No. 4,925,705, issued May 15, 1990, Ser. No. 945,849, Dec. 23, 1986.
Claims priority, application United Kingdom, Dec. 24, 1985, 8531804
Int. Cl.[6] B05D *3/10, 3/12, 5/00, 1/32*
U.S. Cl. 427—259

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **13** and **14** is confirmed.

Claims **6** and **7** were previously cancelled.

Claims **1, 5, 9, 12, 15** and **16** are determined to be patentable as amended.

Claims **2–4, 8, 10** and **11**, dependent on an amended claim, are determined to be patentable.

New claims **17** and **18** are added and determined to be patentable.

1. A method of producing superimposed layers with substantially exact registration in one or more areas on a substrate *by removing unwanted parts of the layers*, said method comprising the steps of: placing a mask on the substrate, said mask defining said one or more areas; successively printing one or more of said layers on the substrate to extend beyond the boundaries of said one or more areas defined by the mask, *wherein at least one of said layers covers less than said one or more areas*; leaving the mask in place during the entire time that the layers are applied; and removing the unwanted parts of the layers of printed material outside the boundaries of said one or more areas only after all the layers have been applied.

B1 5,009,662 (2480th)

MEDICAL PRESSURE SENSING AND DISPLAY SYSTEM

William D. Wallace, Salt Lake City; Christopher A. Cutler, Centerville, and Scott D. Gentry, Sandy, all of Utah, assignors to Utah Medical Products, Inc., Midvale, Utah

Reexamination Request No. 90/003,247, Nov. 5, 1993.
Reexamination Certificate for Patent No. 5,009,662, issued Apr. 23, 1991, Ser. No. 328,119, Mar. 23, 1989.
Continuation-in-part of Ser. No. 230,783, Aug. 10, 1988, Pat. No. 5,021,046
Int. Cl.[6] A61M *29/02*
U.S. Cl. 606—192

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **1** is confirmed.

Claim **2** is determined to be patentable as amended.

New claims **3–9** are added and determined to be patentable.

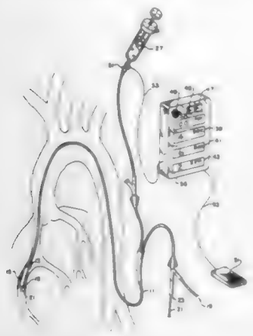
2. A system for measuring fluid pressure in a balloon catheter, said balloon being adapted for inflation inside a human

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body, said catheter having an inflation balloon and an external source of fluid for inflating the balloon, the improvement comprising:

pressure transducer means in fluid communication with the interior of the balloon for providing an electrical signal which is [s] *a* function of the pressure in the interior of the balloon;

electronic means operatively connected to said pressure transducer and responsive to the electrical signal representative of balloon pressure to generate an electronic pressure signal, said electronic means also generating an electronic time duration signal responsive to the start of



pressurization of the balloon [to represent] *such that the electronic time duration signal is initiated at the start of pressurization of the balloon and such that the electronic time duration signal represents* the elapsed time from the start of balloon pressurization; and

display means operatively connected to said electronic means and responsive to said electronic pressure *signal* and *said electronic* time duration [signals] *signal* generated by said electronic means to simultaneously display the balloon pressure measured by the transducer means and the elapsed time of balloon pressurization as two separate display outputs.

B1 5,035,994 (2481st)

HUMAN STEM CELLS AND MONOCLONAL ANTIBODIES

Curt I. Civin, Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Reexamination Request No. 90/003,401, Apr. 15, 1994.
Reexamination Certificate for Patent No. 5,035,994, issued Jul. 30, 1991, Ser. No. 580,337, Sep. 7, 1990.
Division of Ser. No. 55,942, Jun. 1, 1987, Pat. No. 4,965,204.
Int. Cl.[6] A01N *1/02;* **A61M** *37/00;* **C12Q** *1/00;* **G01N** *33/53*
U.S. Cl. 435—2

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

1. A method of isolating a population of human cells containing pluripotent lympho-hematopoletic stem cells comprising:

(a) providing a cell suspension from human tissue, said tissue selected from the group consisting of marrow and blood;

(b) contacting said cell suspension with a monoclonal antibody to immature human marrow cells that is stage-specific and not lineage dependent so that said antibody binds to said stem cells, wherein said antibody specifically binds an antigen on human pluripotent lympho-hematopoletic stem cells said stem cells expressing an antigen that is specifically bound by the monoclonal antibody produced by the hybridomas deposited under ATCC Accession No. HB-8483 and does not specifically bind an antigen on mature, human myeloid and lymphoid cells; and

(c) separating and recovering from said cell suspension the cells bound by said antibody, said bound cells being substantially free of nature lymphoid and myeloid cells.

B1 5,049,402 (2482nd)

PROCESS FOR MINIMIZING BITTERNESS IN CITRUS FRUIT JUICE

Yoji Tamaki, Kagamigahara; Osamu Mutsushika, Kasugai, and Hiroaki Mieda, Nagoya, all of Japan, assignors to Pokka Corporation, Nagoya, Japan

Reexamination Request No. 90/003,176, Aug. 27, 1993.
Reexamination Certificate for Patent No. 5,049,402, issued Sep. 17, 1991, Ser. No. 469,085, Jan. 23, 1990.
Claims priority, application Japan, Aug. 3, 1989, 1-200333; Dec. 5, 1989, 1-314164
Int. Cl.[6] A23L *2/06*
U.S. Cl. 426—599

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–5** are cancelled.

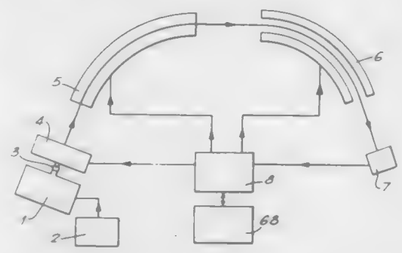
1. A process for producing a citrus fruit juice beverage having a reduced limonin content which comprises subjecting fruit juice obtained by squeezing citrus fruit to a pressure of 1200 to 4000 kg/cm^2 for 1 to 30 minutes under conditions sufficient to reduce limonin content of said juice.

B1 5,068,534 (2483rd)

HIGH RESOLUTION PLASMA MASS SPECTROMETER

Neil Bradshaw, Stockport, and Neil E. Sanderson, Sandiway, both of United Kingdom, assignors to Fisons Plc., Ipswich, England

Reexamination Request No. 90/003,385, Apr. 1, 1994.
Reexamination Certificate for Patent No. 5,068,534, issued Nov. 26, 1991, Ser. No. 623,401, Jun. 5, 1989.
PCT No. PCT/GB89/00622, § 371 Date Dec. 3, 1990, § 102(e) Date Dec. 3, 1990, PCT Pub. No. WO89/12313, PCT Pub. Date Dec. 14, 1989
Claims priority, application United Kingdom, Jun. 3, 1988, 8813149
Int. Cl.[6] B01D *59/44;* **H01J** *49/00*
U.S. Cl. 250—288



AS A RESULT OF REEXAMINATIN, IT HAS BEEN DETERMINED THAT:

Claim **2** is cancelled.

Claim **1** is determined to be patentable as amendeu.

Claims **3–17**, dependent on an amended claim, are determined to be patentable.

1. A mass spectrometer for the analysis of a sample compris-

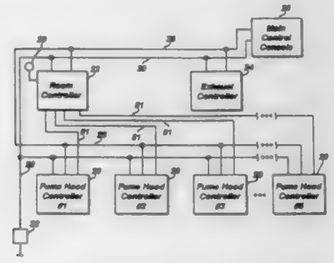
ing means for establishing a plasma [discharge] in an inert gas [by] *substantially at atmospheric pressure, said plasma establishing means comprising* means [of] *for creating* an electrical field energized by a radio-frequency or microwave generator *and a plasma torch for supplying said inert gas into said field*; means for introducing said sample into said plasma [discharge] *to thereby ionize at least a portion of said sample*; a sampling cone disposed adjacent to said plasma and having an aperture in its apex; a mass analyzer disposed to receive a least some of the ions generated in said plasma which pass through said aperture; and means for maintaining the pressure on the side of said sampling cone remote from said plasma substantially below atmospheric pressure, charactrized in that said mass analyzer comprises at least a magnetic sector analyzer having an entrance slit, and including *means for maintaining the potential of said entrance slit substantially at ground potential, and* means for maintaining [a] *the* potential [difference between] *of* said sampling cone [and said entrance slit of] *at a potential with respect to ground potential which is approximately equal to the accelerating potential required by the mass analyzer to thereby raise the potential at which ions are formed in the plasma to* such a magnitude that the energy of the ions after they have passed through said entrance slit permits their mass analysis by said magnetic sector analyzer.

B1 5,092,227 (2484th)

APPARATUS FOR CONTROLLING THE VENTILATION OF LABORATORY FUME HOODS

Osman Ahmed, Madison, Wis.; Steven A. Bradley, Prairie Village, Kans.; Steven L. Fritsche, Mundelein, and Steven D. Jacob, Roselle, both of Ill., assignors to Landis & Gyr Powers, Inc., Buffalo Grove, Ill.

Reexamination Request No. 90/003,447, May 31, 1994.
Reexamination Certificate for Patent No. 5,092,227, issued Mar. 3, 1992, Ser. No. 590,195, Sep. 28, 1990.
Int. Cl.[6] B08B *15/02*
U.S. Cl. 454—61



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **19** and **28** are determined to be patentable as amended.

Claims **2–18**, **20–27** and **29–31**, dependent on an amended claim, are determined to be patentable.

1. Apparatus for controlling the air flow through a fume hood to maintain a predetermined average face velocity through an uncovered portion of an opening of a fume hood of the type which has at least one moveable sash door adapted to cover the opening as the fume hood sash door is moved, the fume hood being in communication with an exhaust duct for expelling air and fumes from the fume hood, said apparatus comprising:

means for detecting the position of each moveable sash door and generating a position signal that is indicative of the sash door position;

means responsive to said position signals for calculating the size of the uncovered portion of the opening;

means for measuring the actual flow of air through the exhaust duct and generating an actual flow signal that is indicative of the actual flow of air through the exhaust duct;

modulating means for varying the flow of air through the exhaust duct responsive to a control signal being received from a controller means;

controller means responsive to said position signals and said actual flow signal for controlling the flow modulating means to generate the greater of a predetermined minimum flow rate signal value or a desired flow rate signal value as a function of the calculated size of the uncovered portion, said desired flow rate signal corresponding to a flow rate that is sufficient to maintain the predetermined average face velocity through the uncovered portion of the opening, said controller means comparing said desired flow rate signal and said actual flow rate signal and generating an error signal indicative of any error that exists by takng a plurality of successive measurement samples of said actual flow rate, determining at least two distinct factors of said error signal from said successive samples and summing the said factors to generate said error signal, said controller means generating and outputting a control signal to said modulating means for selectively reducing said error signal to a predetermined minimum value when said actual flow rate signal exceeds said predetermined minimum flow rate signal value or providing a predetermined minimum flow rate;

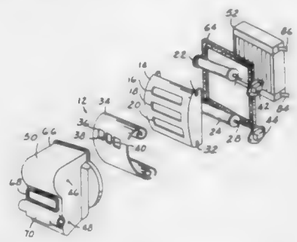
said controller means generating a feed forward control signal for said modulating means in repsonse to a sash door being moved, said feed forward control signal predicting the actual flow rate of air through the exhaust duct as a function of the calculated size of the uncovered portion, said feed forward control signal dominating the output of the controller means between a predetermined inputted minimum delay time and a predetermined inputted maximum delay time when said feed forward control signal is generated.

B1 5,105,730 (2485th)

AIR DISTRIBUTION APPARATUS FOR AN AUTOMOTIVE DEVICE

Calvin G. Smith, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Reexamination Request No. 90/003,174, Aug. 26, 1993.
Reexamination Certificate for Patent No. 5,105,730, issued Apr. 21, 1992, Ser. No. 628,965, Dec. 17, 1990.
Int. Cl.[6] B60H *1/14*
U.S. Cl. 454—161



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–9** are determined to be patentable as amended.

1. [An air distribution apparatus] *A heating and air conditioning module* for an automotive vehicle, comprising:

means, primarily including a heat exchanger, an inner guide

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frame, and a flexible material, defining a chamber for receiving air conditioned by at least one heat exchanger, said chamber incuding an inlet opening and a plurality of discharge openings; [and]

a housing defining an interior volume;

a rotary air blower operative to receive the radially inward flow of air from said inlet opening and discharge the air in a direction coaxial with the axis of rotation of said rotary air blower;

an evaporator disposed substantially across said housing in a direction substantially normal to the direction of air flow from said air blower for receiving the flow of air therethrough, said evaporator being operative to circulate a quantity of refrigerant therethrough for cooling the air blowing therethrough;

said heat exchanger being disposed substantially across said housing in a direction substantially normal to the direction of air flow from said air blower and spaced-apart from the evaporator a predetermined distance for receiving the flow of air therethrough, said heat exchanger being operative to circulate a quantity of refrigerant therethrough for heating the air flowing therethrough;

means, downstream of said inlet opening for selectively [allowing air flow through at least one of said discharge openings, said means for selectively allowing air flow] *distributing the flow of air from the heat exchanger to any one or a combination of discharge openings, said distributing means* comprising:

a pair of *spaced-apart* rollers, each roller being disposed adjacent to one of said discharge openings;

said flexible material disosed along a non-planar path between said rollers and having at least one cutout area; and

means for bidirectional driving of said rollers for positioning said flexible material such that said cutout area is either positioned for allowing air flow through at least one of said discharge openings or for preventing air flow through any of said discharge openings.

B1 5,159,896 (2486th)

POULTRY NEST PAD

Anthony J. Mortillo, Chesterfield; Danny B. Cochran, Ballwin, and Anthony J. Micale, Jr., Chesterfield, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Reexamination Request No. 90/003,357, Mar. 11, 1994.

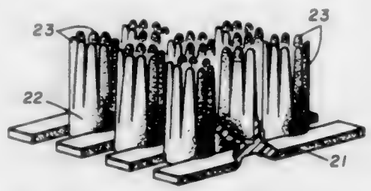
Reexamination Certificate for Patent No. 5,159,896, issued Nov. 3, 1992, Ser. No. 853,285, Mar. 18, 1992.

Int. Cl.[6] A01K *31/14*

U.S. Cl. 119—50.5

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.



1. A gray poultry nest pad wherein said gray is defined as N3 through N9 on the Munsell Neutral Value Scale.

B1 5,199,098 (2487th)

MOISTURE RESISTANT OPTICAL FIBER COATINGS WITH IMPROVED STABILITY

Kelly J. Nolan, Beaver Dams; Emily M. Squires, Painted Post, both of N.Y., and Eric H. Urruti, Wilmington, N.C., assignors to Corning Ware Inc., Corning, N.Y.

Reexamination Request No. 90/003,196, Sep. 16, 1993.

Reexamination Certificate for Patent No. 5,199,098, issued Mar. 30, 1993, Ser. No. 773,525, Oct. 9, 1991.

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—128

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–4** dependent on an amended claim, is determined to be patentable.

1. A coating optical fiber exhibiting improved moisture resistance which includes a glass optical fiber disposed within a cured polymer *primary* coating, characterized in that the cured polymer *primary* coating comprises a phosphite stabilizing agent in combination with a cured polyurethane-acrylate polymer, the urethane groups in the cured polymer being the reaction product of an aliphatic isocyanate and a predominantly saturated, predominantly nonpolar aliphatic diol, *and characterized further in that the cured polymer primary coating is the reaction product of a coating composition which consists essentially of (i) a moisture-resistant oligomer formed from said aliphatic isocyanate and said aliphatic diol, (ii) a predominantly saturated alphatic mono- or di-acrylate monomer, (iii) a photoinitiator, and (iv) a phosphite stabilizing agents.*

REISSUES

FEBRUARY 14, 1995

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,854

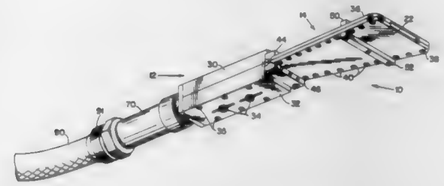
FAN NOZZLE

James D. Shank, Jr., Vestal, N.Y., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Original No. 5,265,383, dated Nov. 30, 1993, Ser. No. 979,300, Nov. 20, 1992. Application for reissue Feb. 24, 1994, Ser. No. 201,886

Int. Cl.[6] B24C *5/04*

U.S. Cl. 451—102 **21 Claims**



1. A blast nozzle for cleaning a surface with a soft and friable abrasive blast media, comprising:

an inlet portion, an orifice and an outlet portion,

said inlet portion containing a circular inlet for receiving a mixture of pressurized air and abrasive blast media and a converging inlet passage communicating with said circular inlet and being formed from at least a first pair of opposing flat *top and bottom* surfaces which converge to said orifice *and a first pair of opposing side surfaces*, said inlet passage converging substantially only by means of said first pair of opposing flat *top and bottom* surfaces to said orifice,

said outlet portion comprising an outlet passage diverging from said orifice to an outlet for directing said blast media to said surface for cleaning, said outlet passage being formed from at least a second pair of opposing *side* surfaces which diverge from said orifice to said outlet *and a second pair of flat top and bottom surfaces*, said outlet passage diverging substantially only by means of said second pair of opposing *side* surfaces, [wherein a plane passing through both of said first pair of opposing flat surfaces is perpendicular to a plane passing through both of said second pair of opposing surfaces,]

said inlet passage having a length from said inlet to said orifice which is at least twice the diameter of said inlet, and

said inlet passage, said orifice and said outlet passage forming a substantially longitudinal passage from said inlet to said outlet.

Re. 34,855

AUTOMATED DEVICE AND METHOD FOR HARVESTING PLANTS AT UNIFORM STEM LENGTHS

Frank D. Garner, Rte. 4, Box 92, Rupert, Id. 83350

Original No. 5,058,369, dated Oct. 22, 1991, Ser. No. 592,361, Oct. 3, 1990. Application for reissue Sep. 1, 1992, Ser. No. 938,601

Int. Cl.[6] A01D *23/04, 34/66, 45/30*

U.S. Cl. 56—13.9 **33 Claims**

1. A method for automated, mechanical harvesting of plants having differing heights and stem lengths, wherein a stem portion of the plant must be severed at a uniform, predetermined length from the top of the plant, said method comprising the steps of:

(1.1) guiding the stems of the plants into a first severing means;

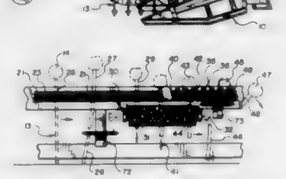
(1.2) severing a lower portion of the stems at an excess length at the first severing means to free the plant from its root yet leave a precut stem length greater than the predetermined length of the harvested plant;

(1.3) guiding the precut stem along a guide track toward a second severing means which is positioned at a separation distance below a top level of the guide track which will cause severance of the stem at the predetermined length of the stem from the top of the plant as the precut stem passes along the guide track;

(1.4) *applying a downward force with respect to the precut stem in addition to gravity to* vertically [positioning] *position* the precut stem within the guide track such that the top of the plant is at a predetermined elevation with respect to the second severing means prior to severance of the stem at the predetermined length; and

(1.5) severing an additional portion of the stem from the plant by advancing the vertically positioned, precut stem to the second severing means to yield a harvested plant having a uniform, predetermined stem length.

11. A device for automated, mechanical harvesting of plants having differing heights and stem lengths, wherein a stem



portion of the plant must be severed at a uniform, predetermined length from the top of the plant, said device comprising:

(11.1) guide means for guiding the stems of the plants into a first severing means;

(11.2) first severing means positioned behind the guide means for severing a lower portion of the stems at an excess length at the first severing means to free the plant from its root yet leave a precut stem length greater than the predetermined length of the harvested plant;

(11.3) a guide track extending from the guide means and operable to guide the stems toward a second severing means which is positioned at a separation distance below the guide track which will cause severance of the stem at the predetermined length of the stem from the top of the plant as the precut stem passes along the guide track;

(11.4) positioning means *operable in addition to gravity and* disposed below the track guide and [being operable] *including means to pull downward on the precut stem* to vertically position the precut stem within the guide track such that the top of the plant is at a predetermined elevation with respect to the second severing means prior to severance of the stem at the predetermined length; and

(11.5) second severing means coupled below the guide tack and being operable to sever an additional portion of the stem from the plant by advancing the vertically posi-

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tioned, precut stem to the second severing means to yield a harvested plant having a uniform, predetermined stem length.

Re. 34,856

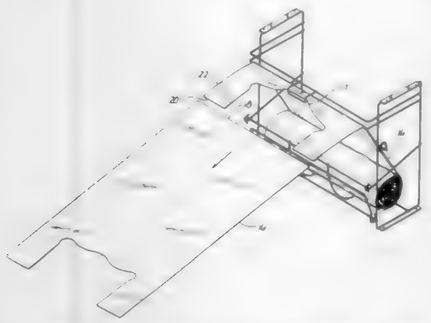
METHOD AND APPARATUS FOR DISPENSING MERCHANDISE BAGS

Mark E. Daniels, Redondo Beach, Calif., assignor to The Avantage Group, Inc., Redondo Beach, Calif.

Original No. 5,209,371, dated May 11, 1993, Ser. No. 884,744, May 15, 1992. Continuation-in-part of Ser. No. 871,857, Apr. 21, 1992, abandoned. Application for reissue Oct. 7, 1993, Ser. No. 133,617

Int. Cl.[6] **B65H** *1/00*

U.S. Cl. 221—63 **12 Claims**



11. A method of dispensing one at a time a plurality of merchandise bags detachably joined together in a series, at a cashier's or other packer's station, each bag being formed of a pair of facing panels, joined at their bottoms and sides and having a top which is open at least for a predetermined extent intermediate its sides, each bag being detachably at least partially joined to two adjacent bags along its top and bottom edges so that at least a portion of the top edge of one bag is attached to the bottom edge of one adjacent bag, and the bottom edge of one said bag is attached at least partially to the top edge of the other adjacent bag, and along each said edge joinder a central section is unattached to leave an opening; said method comprising:

(a) rolling up said series of bags concentrically about a first axis whereby when said bags are unrolled each open space between adjacent bags will appear defined by the trailing transverse edge of the first bag and leading edge of the next ensuing bag;

(b) providing a support for the roll from which support bags may be serially unrolled and detached;

(c) providing a pair of bars spaced slightly apart from each other one bar above the other, said bars being parallel to the roll axis and disposed apart from and in line with the roll to allow a bag to be drawn through the spacing between the bars in a first direction of travel, at least one of said bars being provided with a snagging element directed in a second direction transverse to said first direction of travel, said snagging element, however, permitting passage of the panel portions of each bag past said snagging element in said first direction of travel, but snagging the leading transverse edge partially defining the opening between the bags as the bag including the leading transverse edge partially defining said opening is pulled in the first direction, and releasing the last said bag only when it is drawn between the bars initially in the second direction, and thereafter in the first direction;

(d) grasping the outermost bag of the roll by its leading transverse edge and pulling the last said bag initially in the second direction and then immediately in the first direction through the spacing between the bars and snagging element until the leading edge defining the opening between the bag so pulled and the next ensuing bag reaches the snagging element, whereupon further passage of the said next ensuing bag will be initially restrained by the projection of the snagging element through the opening;

(e) further pulling the bag including the trailing edge defining the last said opening against said restraint to where said bag is detached from the next ensuing bag along the joined edges;

(f) pulling the next ensuing bag first in the second direction past the snagging element and then in the first direction, until the leading edge defining the opening between the last said bag and following bag is snagged by the engaging element, and initially restrained; and

(g) repeating steps (e), and (f) in that order for subsequent bags in the series.

Re. 34,857

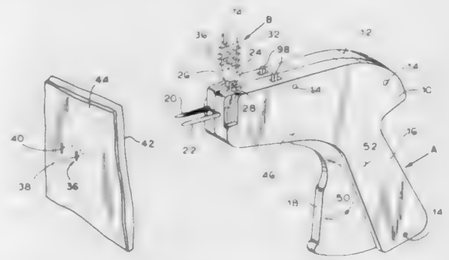
ASSEMBLY OF ATTACHMENTS AND DEVICE FOR ATTACHING SAME

Steven J. Kunreuther, 285 Central Park West, New York, N.Y. 10024

Original No. 5,020,713, dated Jun. 4, 1991, Ser. No. 575,853, Aug. 31, 1990. Continuation-in-part of Ser. No. 347,419, May 4, 1989, abandoned. Application for reissue Mar. 28, 1994, Ser. No. 219,162

Int. Cl.[6] **B65C** *5/06;* **B25C** *1/00*

U.S. Cl. 227—71 **8 Claims**



1. A device for dispensing attachments of the type having first and second T-bar ends with a flexible filament therebetween, the attachments being supplied in an assembly between first and second spaced connecting bars joined to the first and second T-bar ends, respectively, the device comprising a housing, a recess in said housing having first and second spaced sections adapted to receive the first and second connecting bars, respectively, first and second hollow needles extending from said housing, each of said needles comprising a channel through which a different one of the T-bar ends of an attachment is adapted to move, means within said housing for pushing the T-bar ends through said needles to dispense an attachment, means for severing each of the T-bar ends from the connecting bar to which it is joined and means for advancing the assembly through the housing.

Re. 34,858

BUTTON ATTACHER WITH VARIABLE NEEDLE SPACING

Steven J. Kunreuther, 285 Central Park West, New York, N.Y. 10024

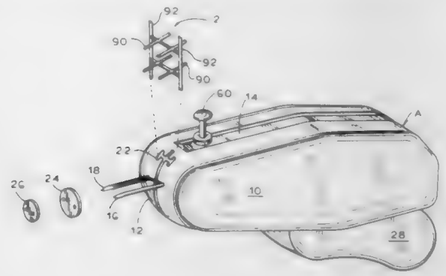
Original No. 5,205,458, dated Apr. 27, 1993, Ser. No. 858,960, Mar. 27, 1992. Application for reissue Mar. 28, 1994, Ser. No. 218,179

Int. Cl.[6] **B65C** *5/06;* **B25C** *1/00*

U.S. Cl. 227—71 **29 Claims**

1. Apparatus for dispensing double "T" bar fasteners through spaced hollow needles, the apparatus comprising a housing from which the needles extend, means in said housing, effective when actuated, to push the "T" bar ends of a fastener through the needles, said housing comprising first and second portions, a different one of the needles extending from each of said housing portions, means for resiliently connecting said

housing portions to permit relative movement of said housing portions from a remote position toward a proximate position to alter the spacing between the needles when external forces are applied to said housing portions and for biasing said housing portions toward said remote position to permit said housing portions to return to said remote position when said external



forces are released, said push means comprising first and second spaced push rods, means for simultaneously moving said rods to push the "T" bar ends through the needles and means for mounting said rods to said moving means to permit the relative position of said rods to change, as said housing portions moe between said remote and proximate positions, so as to accommodate the alterations in needle spacing.

Re. 34,859

THERMALLY OPERATED APPARATUS FOR MAKING A PLATE

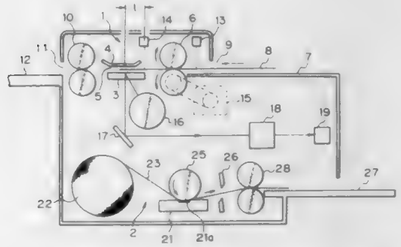
Toshio Endo, Shiroishi, and Mitsuo Sato, Shibata, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Original No. 4,887,168, dated Dec. 12, 1989, Ser. No. 135,081, Dec. 18, 1987. Application for reissue Dec. 12, 1991, Ser. No. 807,044

Claims priority, application Japan, Dec. 20, 1986, 61-304844

Int. Cl.[6] **H04N** *1/032, 1/04, 1/23, 1/40*

U.S. Cl. 358—299 **47 Claims**



13. A thermally operated apparatus for making a plate, comprising:

a start key for starting a plate making operation;

a plural-field continuous key for setting up a plural-field continuous mode;

reading means for reading original documents on a glass platen;

sensing means for sensing each document which is read by said reading means and producing a sense signal;

a thermal head for engraving images of said documents in a roll fed stencil;

a stencil transport roller rotatable for transporting said stencil while urging said stencil against said thermal head;

setting means for setting the number of a plurality of delimited fields which are to be defined in a plate making area of said stencil side by side in an intended direction of stencil transport so as to produce a plate by a continuous operation, and producing a set signal;

cutter means for cutting said transported stencil at a predetermined length in accordance with said number of the plurality of delimited fields when said plate has been completed; and

control means for controlling said stencil transport roller and said reading means in response to said sense signal and said set signal such that said stencil transport roller continues transporting said stencil while all of said documents on said glass platen are continuously read by said reading means.

Re. 34,860

ROADWAY CONDITIONING APPARATUS

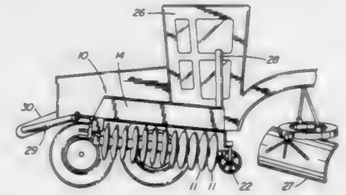
Eric T. Skibsted, P.O. Box 696, Rosebud, Alberta, Canada T0N 2T0

Original No. 5,197,820, dated Mar. 30, 1993, Ser. No. 872,145, Apr. 22, 1992. Continuation of Ser. No. 639,350, Jan. 10, 1991, Pat. No. 5,108,221. Application for reissue Jan. 4, 1994, Ser. No. 177,341

Claims priority, application Canada, Nov. 9, 1990, 2029695

Int. Cl.[6] **E01C** *19/26;* **A01B** *23/06, 5/00*

U.S. Cl. 404—128 **12 Claims**



1. A surface conditioning attachment for use in surface maintenance operations on a gravel roadway, said attachment comprising:

a gang of dished, harrow disks rotatably supported at uniform spacing on a support shaft;

a support structure carrying said support shaft;

means for mounting said support structure generally at the side of an associated carrying vehicle to deploy the shaft generally parallel to the surface to be conditioned, and oblique to the direction of travel of the vehicle so that said shaft diverges from the vehicle in a rearward direction *at an angle between said shaft and the fore-and -aft direction of the vehicle in the range of 15 to 35 degrees;*

brace means extending between the associated vehicle and a portion of said support structure spaced from said vehicle, for thereby maintaining such shaft in said [generally] oblique orientation relative to the direction of travel of the vehicle;

said concave sides of said disks oriented toward the direction of travel of said associated vehicle and said attachment, such that in use the apparatus will engage and condition a swath of roadway to the outboard side of the associated vehicle, with surface material from said swath being conditioned and displaced in the direction of the middle of the roadway.

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Re. 34,861

SUBLIMATION OF SILICON CARBIDE TO PRODUCE LARGE, DEVICE QUALITY SINGLE CRYSTALS OF SILICON CARBIDE

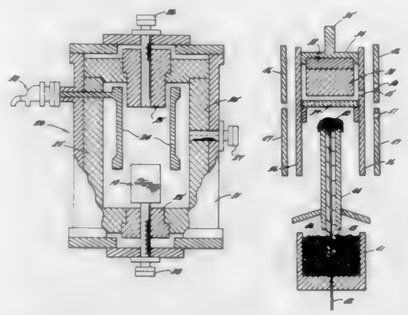
Robert F. Davis; Calvin H. Carter, Jr., both of Raleigh, and Charles E. Hunter, Durham, all of N.C., assignors to North Carolina State University, Raleigh, N.C.

Original No. 4,866,005, dated Sep. 12, 1989, Ser. No. 113,565, Oct. 26, 1987. Application for reissue Oct. 9, 1990, Ser. No. 594,856

Int. Cl.[6] H01L *21/365*

U.S. Cl. 437—100 29 Claims

29. A method according to claim 1 wherein the step of generating and maintaining a substantially constant flow of vaporized Si, Si_2C, and SiC_2 per unit area per unit time from the source powder to the growth surface of the seed crystal further comprises introducing a thermal gradient between the source powder and the seed crystal and then increasing the thermal gradient between the seed crystal and the source powder as the crystal grows and the source powder is used up to thereby maintain an absolute temperature difference between the source powder and seed crystal which continues to be most favorable for crystal growth and to continuously encourage further crystal growth beyond that which would be obtained by maintaining a constant temperature gradient.



PLANT PATENTS

GRANTED FEBRUARY 14, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,056

RAPHIOLEPIS INDICA VARIETY NAMED 'CONDA'

Jerry B. Pittman, Mobile, Ala., assignor to Flowerwood Nursery Inc., Mobile, Ala.

Filed Jul. 5, 1994, Ser. No. 270,779

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—67.5 1 Claim

1. A new and unique variety of *Raphiolepis indica* plant named *Raphiolepis indica* 'Conda' as herein shown and described, is characterized by its large branching structure, rapid growth rate, very large coriaceous leaves, abundance of large clusters of pink flowers, and reddish-purple new-growth; the increased stature and vigor will fill numerous landscape needs for large screens, hedges, specimen plants and unusual foliage coloration and for its tolerance of heat, drought, salt, insects, disease, and soil type.

9,057

POINSETTIA PLANT 'LATE BLOOMING FREEDOM'

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Feb. 7, 1994, Ser. No. 192,440

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—86.4 1 Claim

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its dark red flower bracts, dark green foliage, naturally late flowering and self branching traits.

9,058

POINSETTIA PLANT '664'

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Feb. 7, 1994, Ser. No. 192,442

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—86.4 1 Claim

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its bright red, erect flower bracts, self branching traits and early flowering.

9,059

VERBENA PLANT — 'SUNMAREF TP-W'

Ryuichi Tachibana, Yamato; Yuji Tamura, Kofu, and Ushio Sakazaki, Hikone, all of Japan, assignors to Suntory Limited, Osaka, Japan

Continuation of Ser. No. 100,146, Aug. 2, 1993, abandoned. This application Apr. 8, 1994, Ser. No. 225,080

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87 1 Claim

1. A new distinct variety of verbena plant, substantially as herein illustrated and described, characterized particularly as to novelty by (A) a spreading growth habit with long stems, (B) the formation of abundant branching with each node of said spreading branches that contacts the ground commonly forming deep-spreading roots, (C) the formation of many flowers in ascending spikes with a great profusion of blooms, (D) the formation of flowers that exhibit petals having a very pale purple coloration, and (E) a high resistance to heat, cold, rain, diseases, and pests.

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PATENTS

GRANTED FEB. 14, 1995

ERRATA

For CLASS	See PATENT NO.
451–065	5,388,373
451–245	5,388,374
451–001	5,388,375
074–331	5,388,450
081–057	5,388,478
081–058	5,388,479
601–002	5,388,569
028–214	5,388,805
279–019	5,388,842
451–359	5,389,032
427–304	5,389,229
156–643	5,389,313
436–164	5,389,555
544–277	5,389,637
326–021	5,389,834
326–098	5,389,835
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327–544	5,389,827
327–263	5,389,828
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327–291	5,389,830
327–161	5,389,831
327–223	5,389,832
327–096	5,389,833
326–021	5,389,834
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326–003	5,389,837
326–093	5,389,838
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327–434	5,389,841
327–391	5,389,842
327–276	5,389,843
315–503	5,389,888
381–119	5,390,138
356–426	5,390,151
375–001	5,390,206
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381–024	5,390,246
381–056	5,390,248
379–393	5,390,249
379–410	5,390,250

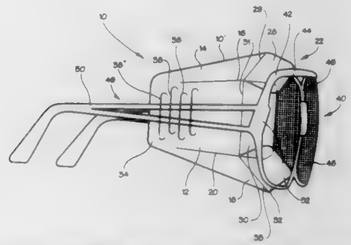
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PATENTS

GRANTED FEBRUARY 14, 1995

GENERAL AND MECHANICAL

5,388,269
EYE SHIELDING APPARATUS AND METHOD
Bradley P. Griffin, Greenville, N.C., assignor to Practicon, Inc., Greenville, N.C.
Filed Sep. 8, 1993, Ser. No. 118,024
Int. Cl.[6] A61F *9/04*
U.S. Cl. 2—13 **12 Claims**



1. An eye shielding apparatus for removable attachment to eyeglasses of the type having a frame with two lens-bearing apertures and two rearwardly extending temples, said shield comprising:

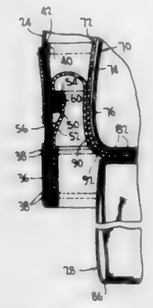
a generally planar panel having a main body portion, a first end portion and at least one side portion extending along the length of said main body portion;

adjusting means for bending said panel into a shielding configuration, including a first scoring line formed between said main body portion and said side portion to permit said side portion to be folded about said first scoring line and away from the plane of said main body portion, scoring line means formed in said first end portion for folding said first end portion away from said plane of said main body portion and two notches formed in said first end portion to form three outwardly projecting segments, said scoring line means including three score lines disposed adjacent said outwardly projecting segments for folding each said segment individually away from the plane of said main body portion to enhance coverage of said shield for a variety of different eyeglass configurations; and

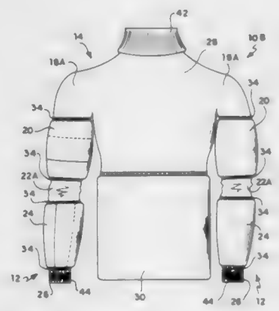
means for mounting said shield on the temple of the eyeglasses, whereby said shield is mounted on the temple for substantially covering a non-planar region adjacent the eyeglass wearer's eyes peripheral to the eyeglass wearer's head and rearwardly of the lens-bearing frame, especially in an industrial environment.

5,388,270
FIREFIGHTER'S COAT INCLUDING DETACHABLE THERMAL WRIST SYSTEM
Joyce A. Hewitt, Alton, N.H., assignor to Globe Manufacturing Company, Pittsfield, N.H.
Filed Mar. 23, 1993, Ser. No. 35,970
Int. Cl.[6] A41D *1/00*
U.S. Cl. 2—93 **10 Claims**

1. A firefighter coat including an outer shell having a pair of shell sleeves each of which has an open lower end, a liner within said outer shell and having a pair of liner sleeves each of which has an open lower end, each of said liner sleeves being disposed within one of said shell sleeves, a pair of wristers, each of said wristers being permanently and inseparably secured by stitching directly to the open lower end of one of said liner sleeves, said stitching extending along the open lower end of the associated liner sleeve to connect said wrister and said liner sleeve circumferentially so that each wrister cannot move away from the associated liner sleeve and there is no possibility of undesired material entering between each wrister and the associated liner sleeve at any time, and means detachably connecting the lower end of each liner sleeve and the interconnected wrister to the lower end of the associated shell sleeve to form a sleeve well at the lower end of each of said shell sleeves.



5,388,271
INSULATED ATHLETIC UNDERGARMENT WITH SEGMENTALLY ARRANGED SUPPLEMENTAL INSULATION FOR COLD WEATHER PROTECTION
Robert W. Sessoms, 107 Tudor Ct., Goodlettsville, Tenn. 37072
Filed Mar. 10, 1993, Ser. No. 29,405
Int. Cl.[6] A41D *13/00, 1/04*
U.S. Cl. 2—115 **19 Claims**



6. An article of insulated apparel to be worn by a user, the user having a plurality of low mobility regions separated by a plurality of articulated joints, said article of insulated apparel comprising:

a body fabricated substantially of an insulated, resilient fabric material;

a plurality of appendages each fabricated substantially of an insulated, resilient fabric material continuous and integral with said body;

a plurality of low mobility areas, each one of said plurality of low mobility areas corresponding to a respective one of the plurality of low mobility regions;

a plurality of high mobility areas, each one of said plurality of high mobility areas corresponding to a respective one of the plurality of articulated joints; and

a segmentally arranged supplemental insulation supported by each one of said plurality of low mobility areas, said segmentally arranged supplemental insulation defining a

VOL 1171 ISS 2 FE 14 1995 UMI

continuous encirclement of said low mobility areas, whereby

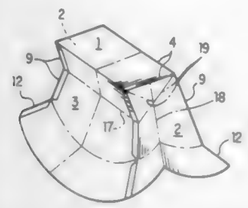
said plurality of low mobility areas provide supplemental insulation to protect the plurality of low mobility regions against a cold ambient environment and enable the plurality of articulated joints to move freely.

5,388,272

METHOD OF MAKING A FOLDING HAT

William R. Epply, 1 Weatherby Rd., Hanover, N.H. 03755

Division of Ser. No. 25,672, Mar. 3, 1993, Pat. No. 5,254,709.
This application Sep. 23, 1993, Ser. No. 126,042
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[6] A42C *1/00*
U.S. Cl. 2—200.3 12 Claims



1. The method of making a folding paper hat comprising:

cutting a blank of stiffly flexible paper-like sheet material having a central rectangular crown with four side panels extending therefrom respectively to four arcuate brim panels;

connecting the side panels to each other along hinge lines extending from the crown to the brim; and

connecting the brim panels to each other along fold lines flaring the brim panels outwardly of the side panels;

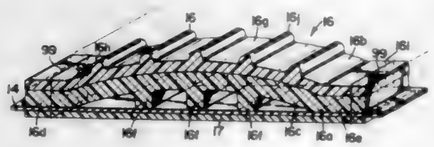
so that opposite side panels and the crown can be folded into flat parallel planes.

5,388,273

SUPPORT STAY

Robin M. Sydor, and Thomas M. Grimm, both of Robbinsdale, Minn., assignors to Ergodyne Corporation, St. Paul, Minn.

Filed Feb. 5, 1993, Ser. No. 14,106
Int. Cl.[6] A41C *1/12;* A41D *27/00;* A61F *5/00*
U.S. Cl. 2—255 21 Claims



1. A support stay for use with an article to be worn by a person, the article having an outer surface and an inner surface, the inner surface proximate the person when worn, the stay comprising:

(a) a base member having a first hardness, said first hardness sufficient to provide a required rigidity for providing support;

(b) a gripping member operatively connected to said base member;

(c) said gripping member having a second hardness which is softer than said first hardness;

(d) said gripping member, when attached to the inner surface of the article, provides a non-slip surface against the person wearing the article to keep the article in position;

(e) said gripping member has a durometer of from 55 to 73, Shore A scale;

(f) wherein said base member has a durometer of from 65 to 85, Shore A scale; and

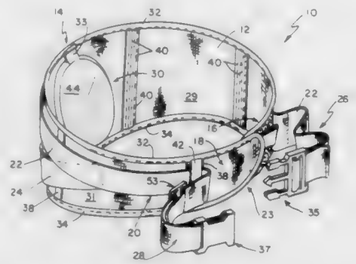
(g) a gripping enhancement means operatively connected to said gripping member.

5,388,274

POWER BELT FOR HEAVY LIFTING

Dennis D. Glover, and Cynthia M. Perez, both of Jackson, Mich., assignors to DePuy Inc., Warsaw, Ind.

Filed Aug. 6, 1993, Ser. No. 103,337
Int. Cl.[6] A41F *3/02*
U.S. Cl. 2—338 25 Claims



1. A belt for supporting the lower back and abdominal regions of a wearer, the belt comprising

means for applying pressure against the lower back region of the wearer,

elastic means coupled to the applying means for holding the applying means in position, the elastic means being stretchably positionable the waist area of the wearer, and

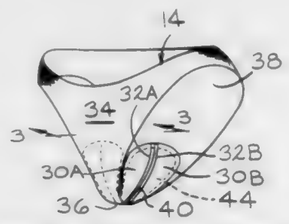
static means for providing support to the pressure applying means, the static means being relatively inelastic and positionable about the waist area of the wearer to enclose the elastic means, the static means being bifurcated along a longitudinal axis of the elastic means to disperse the support to the sacral region of the wearer's spine.

5,388,275

PROTECTIVE WEAR FOR FEMALE WATER SKIERS

Stephen W. Oram, 1544 Brookfield Ct., Adrian, Mich. 49221

Continuation-in-part of Ser. No. 694,399, May 1, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 962,875
Int. Cl.[6] A41B *9/04*
U.S. Cl. 2—406 14 Claims



1. A protective device for female water skiers, windsurfers and the like, comprising, in combination,

a swimsuit trunk portion defining an interior surface and an exterior surface,

a substantially non-absorbent water deflector means in said trunk portion for inhibiting injection of water into the reproductive tract;

said water deflector means is a closed cell foam pad having a thickness of less than about one half inch and having a narrow center region and wider ends, and

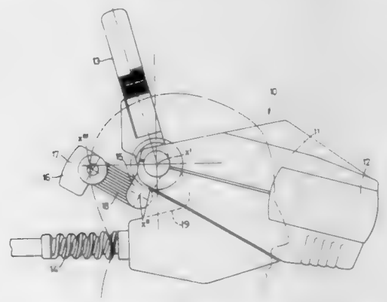
a pair of flaps each including one of a respective pair of adjacent edges, said adjacent edges defining a slit on said interior surface of said trunk portion and pocket means accessible through said slit for retaining said water deflector means in said trunk portion.

5,388,276

HEADWEAR

Richard Holmes, Nuneaton, United Kingdom, assignor to Virtuality Entertainment Limited, Leicester, United Kingdom

PCT No. PCT/GB91/01418, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993, PCT Pub. No. WO92/03756, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 21, 1991, Ser. No. 976,994
Claims priority, application United Kingdom, Aug. 24, 1990, 9018673
Int. Cl.[6] A42B *3/00;* A61F *9/04*
U.S. Cl. 2—421 10 Claims



1. An article of headwear (**10**) adapted to be worn in an orientation such that a frontal region of the article (**10**) is located at the front of the head, the article comprising a generally U-shaped retaining element (**16**) which is pivotable over a rear region of the article (**10**) about a first axis (x') transverse of said rear region of the article between a raised position to facilitate donning and doffing the article (**10**) and a lowered position in which the retaining element (**16**) will engage the back of the wearer's head, wherein distal portions (**18**) of the retaining element (**16**) are pivoted at a second axis (x''), also transverse of said rear region of the article, to respective ends of a pair of links (**15**) the other ends of which are pivoted to said article (**10**) about said first axis (x') whereby the retaining element (**16**) is movable both about said first axis (x') between raised and lowered positions and about said second axis (x'') between positions nearer to and further from the back of the wearer's head.

5,388,277

AIR INTAKE DEVICE IN HELMET

Fujio Taniuchi, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1994, Ser. No. 177,935
Claims priority, application Japan, Aug. 11, 1993, 5-043984[U]
Int. Cl.[6] A42B *1/08*
U.S. Cl. 2—422 1 Claim

1. A helmet having an air intake device, comprising:

a shell of a cap body formed with a recess which is recessed inwardly from a front surface of the shell and is provided at an upper surface of the recess with an opening which is communicated with an interior of the cap body;

a shutter plate which is vertically movable along an inner surface of the shell at a position immediately above the recess for opening and closing the recess;

a guide rod projectingly provided on a back surface of the shutter plate for sliding contact with an innermost wall of the recess; and

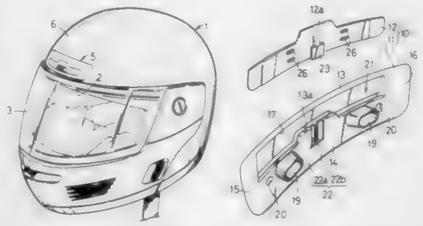
a guide hole perforated in a lower wall of the recess for slidably receiving said guide rod.

5,388,278

AIR INTAKE DEVICE IN HELMET

Fujio Taniuchi, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan

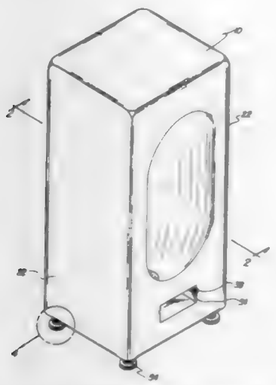
Filed Jan. 6, 1994, Ser. No. 177,955
Claims priority, application Japan, Aug. 3, 1993, 5-042605[U]
Int. Cl.[6] A42B *1/08*
U.S. Cl. 2—422 2 Claims



1. A helmet having a cap body and an air intake device the air intake device comprising a shutter means mounted to a front surface of the cap body, the shutter means including a housing having a wind guide sleeve for permitting an open air to be introduced into an air duct in the cap body, and a shutter plate vertically movably accommodated in the housing for opening and closing the air duct, wherein said housing is molded as one piece from a synthetic resin material and is comprised of an upper wall having a first recess provided in a back surface thereof, a lower wall having, in a front surface thereof, a second recess which defines a shutter chamber for accommodating the shutter plate in cooperation with the first recess, a left end wall connecting left ends of said upper and lower walls to each other, a right end wall connecting right ends of said upper and lower walls to each other, said wind guide sleeve mounted on the lower wall and adapted to be opened and closed by a vertical movement of said shutter plate, a guide groove provided on one of said housing and said shutter plate, and a guide claw provided on the other of the housing and the shutter plate, said guide groove and said guide claw being vertically slidably engaged with each other.

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5,388,279
TODDLER URINAL
Estelle B. Rasmussen, 24 Westview, Hamilton, Ill. 62341
Filed Jun. 13, 1994, Ser. No. 261,175
Int. Cl.[6] A47K *11/12*
U.S. Cl. 4—144.1 1 Claim



1. A toddler urinal for training male toddlers to urinate while standing comprising, in combination:

an essentially box-shaped receptacle having opposed top and bottom surfaces, opposed front and rear walls and opposed side walls extended between the top and bottom surfaces, a generally oblong and open urine deposition cavity formed through the front wall and bounded by a concave backboard adapted for containing urine sprayed therein, a box-shaped urine collection cavity formed through the front wall of the receptacle below the urine deposition cavity and bounded by opposed upper and lower walls, opposed side walls, and a rear wall extended between the upper and lower walls with each side wall having a lateral guiding channel formed thereon, and a drain disposed through the receptacle from the urine deposition cavity to the urine collection cavity;

a perforated drain cover extended across the drain;

a handle formed of a ring with a hand grip peripherally extended therefrom;

a bowl disposed within the ring of the handle to define a pan with the pan adapted to be slidably disposed within the urine collection cavity such that the ring of the handle is mated with the guiding channels and the bowl is positioned upon the lower wall directly under the drain for collecting urine; and

four adjustable legs extended from the bottom surface of the receptacle with the legs adapted to be positioned at a height for allowing a male toddler to Urinate into the urine deposition cavity, each leg having a foot with a top surface and a bottom surface, a cylindrical and threaded portion extended upwards from the top surface of the foot and disposed through the receptacle near a separate corner thereof, and a rubber pad disposed on the bottom surface of the foot to keep the foot from sliding.

5,388,280
VENTILATION TOILET ASSEMBLY FOR USE IN A RECREATION VEHICLE
Jae K. Sim, 5021 Crescent Dr., Anaheim, Calif. 92807
Filed Oct. 13, 1993, Ser. No. 134,883
Int. Cl.[6] E03D *9/05*
U.S. Cl. 4—213 5 Claims

1. A ventilating toilet assembly for use in a recreational vehicle, said toilet assembly comprising:

a toilet bowl, a water flush guiding tunnel communicating with said bowl for allowing flush water to be flushed into the toilet bowl, a toilet seat adapted to be disposed about an upper periphery of said bowl, a toilet seat cover adapted to be disposed on the peripheral top of said toilet seat, an on/off switch disposed on said bowl, an outlet disposed in said bowl for discharging waste products to a discharge line, a water valve disposed in said outlet for controlling the discharge of waste products and water from said bowl, and a passage in said bowl above a normal water level in said bowl for ventilating air within said bowl;

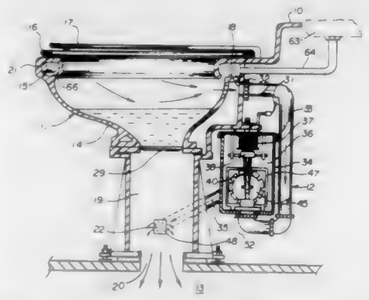
said assembly further comprising an air tube member having first and second ends disposed adjacent said toilet bowl, said first end of said member communicating with said passage in said bowl, said second end of said member communicating with said discharge line, said air tube member including:

a housing;

a downward tube having first and second ends, said first end of said downward tube operatively connected with said housing, said second end of said downward tube adapted to be connected to said discharge line;

a U-shaped main tube having first and second ends, said first end of said U-shaped tube connected to said passage, said second end of said U-shaped tube connected to a bottom aperture disposed on a lower portion of said housing;

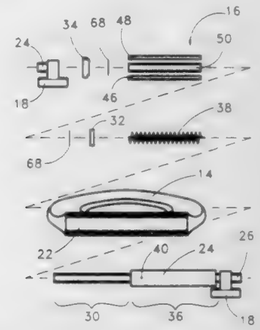
said housing further including an odor air valve member



disposed in said housing, said odor air valve member having an electromagnet connected to a surface within said housing, a contacting plate having means for supporting said contacting plate adjacent said electromagnet, a lever having a first hook-shaped end engageable with said contacting plate and a second hook-shaped end, lever support means for supporting said first end of said lever to said housing, an air valve plate having a lower surface adapted to cover said bottom aperture to provide an air seal between said housing and said second end of said U-shaped tube, a main valve handle connected to a top surface of said air valve plate wherein said second hooked-shaped end is engageable with said main valve handle, and a fan motor with a fan;

said on/off switch operatively connected to said electromagnet and said fan motor and being operative between an on position for ventilating said toilet bowl and allowing said electromagnet and said fan motor to be operated such that said contacting plate moves toward said electromagnet, thereby engaging said first hooked shaped end of said lever which causes said second hooked shaped lever to engage said main valve handle to open said air valve plate for allowing ventilation of the toilet bowl through said passage, through said U-shaped tube and through said downward tube to said discharge line and an off position which disengages the operation of said electromagnet and said fan motor to close said air valve plate.

5,388,281
AUTOMATIC CLOSURE MECHANISM FOR A TOILET SEAT
Ken Wiklund, 29 Ruskin Row, Winnipeg, Manitoba, R3M 2R9, and Tim Seniuk, 5715 Roblin Blvd., Winnipeg, Manitoba, R3G 1M2, both of Canada
Filed Sep. 27, 1993, Ser. No. 127,149
Int. Cl.[6] A47K *13/04*
U.S. Cl. 4—248 16 Claims



1. A dashpot mechanism with damping capability for controlling movement of a pivotable toilet seat assembly to permit the toilet seat assembly to be pivoted to a raised position with little resistance while ensuring that the toilet seat assembly returns to a lowered position by a controlled closing action, unless the controlled closing action is overridden, in which case the toilet seat assembly may be forcibly returned to a closed condition without damaging either of the dashpot and the toilet seat assembly, said dashpot mechanism comprising:

a stator and a cylindrical rotor rotatably received on the stator, the rotor being adapted for connection with the toilet seat assembly and the rotor and the stator defining a fluid tight reservoir containing a damper fluid;

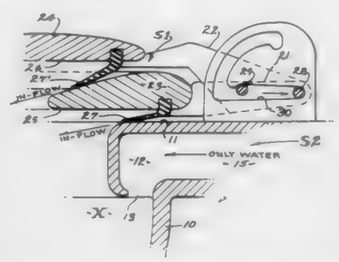
a first flap valve and a second flap valve spaced-apart from each other and positioned in the fluid tight reservoir to define a first fluid chamber and a second fluid chamber;

the first flap valve being hingedly mounted to an inner wall of the rotor, the first flap valve having a free edge and being adapted to rotate between a closed condition, wherein the free edge contacts a wall of the stator, and an open condition, wherein the free edge is spaced from the wall of the stator;

the second flap valve being hingedly mounted to the wall of the stator, the second flap valve having a free edge and being adapted to rotate between a closed condition, wherein the free edge of the second flap valve is adjacent the wall of the rotor, to an open condition, wherein the free edge is spaced from the wall of the rotor; and

means for respectively urging the first flap valve and the second flap valve to their closed conditions, whereby when the toilet seat assembly is pivoted to the raised position, the first flap valve is forced to an open condition by fluid pressure generated by the damper fluid and the toilet seat may be raised with little resistance, and when the pivotable toilet seat assembly is moved toward a lowered position, the first flap valve and the second flap valve resist movement of the damper fluid and closure movement of the toilet seat is resisted so that the toilet seat lowers in a controlled manner, but when the toilet seat is forced to a lowered position by a manual override, the fluid pressure generated in the damper fluid by the manual override forces the second flap valve to the open condition to permit the toilet seat to be lowered with little additional resistance and without damage to any one of the pivotable toilet seat assembly and the dashpot.

5,388,282
HYDRO-PNEUMATIC FLUSH SYSTEM FOR TOILETS
Mark A. Cherry, 965A Jamacha Rd., El Cajon, Calif. 92019
Continuation-in-part of Ser. No. 826,148, Jan. 27, 1992. This application Sep. 27, 1993, Ser. No. 216,601
Int. Cl.[6] E03D *1/00*
U.S. Cl. 4—300 14 Claims



1. A Hydro-pneumatic force flushing system for toilets having a bowl for the reception of rinse and fill water to a water level therein set by a syphon trap and having a raised water storage tank in which there is a riser vent from said bowl and open to atmosphere above a high water level controlled by a means responsive to water level in the tank and having a normally closed flush valve closing a flush passage opening from said tank and into said bowl, the toilet bowl having an upwardly open rim spaced, substantially above the water level in said bowl to form an air chamber upwardly open to atmosphere and for the reception of waste into the water level therein, the flushing system including;

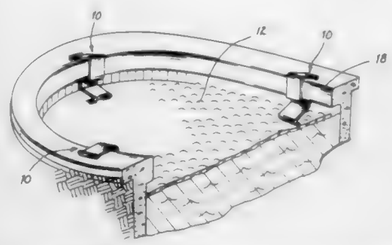
a primary air seal means for engagement with the bowl rim and preventing any out flow of air from the bowl rim to atmosphere,

a secondary air seal means in the flush passage for preventing any out flow of air through the riser vent to atmosphere when flushing,

and a flush control means to open the flush valve for discharge of storage tank water through the flush passage and into the toilet bowl,

whereby entrapped air in said toilet bowl chamber is pressurized and adds to the gravitational effect of the water discharge to force flush water to syphon through the toilet trap.

5,388,283
FLOATING THERMAL POOL COVER RETAINING DEVICE AND METHOD THEREFOR
Terry L. Garnett, 12694 E. Cortez Dr., Scottsdale, Ariz. 85259
Filed Mar. 8, 1993, Ser. No. 28,082
Int. Cl.[6] E04H *4/14*
U.S. Cl. 4—503 18 Claims



1. A combination floating thermal pool cover and thermal pool cover retaining device comprising, in combination:

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a thermal pool cover having a plurality of slits therein for use on a swimming pool;

a thermal pool cover retaining device for said thermal pool cover comprising:

clamping means for removably coupling said retaining device to a substantially flat surface portion of an extending edge of the swimming pool; and

retaining means integrally connected to said clamping means for insertion through one of said plurality of slits in said floating thermal pool cover to hold said thermal pool cover in place and to prevent any portion of said thermal pool cover from lifting;

said clamping means further comprising a first member having a substantially J-shaped bend configuration and having a portion thereof for contact with a substantially flat upper surface of said edge and a second member integrally connected to said first member and having a substantially S-shaped bend configuration and having a portion thereof for contact with a substantially flat bottom surface of said pool edge.

5,388,284

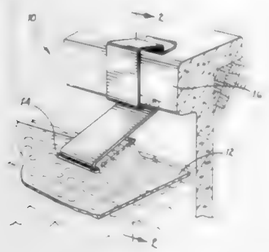
HIGH EFFICIENCY FLOATING THERMAL POOL COVER RETAINING DEVICE AND METHOD THEREFOR

Terry L. Garnett, 12694 E. Cortez Dr., Scottsdale, Ariz. 85259

Continuation-in-part of Ser. No. 28,082, Mar. 8, 1993. This application Jul. 30, 1993, Ser. No. 99,449

Int. Cl.[6] E04H *4/10*

U.S. Cl. 4—503 **18 Claims**



1. A combination floating thermal pool cover and thermal pool cover retaining device comprising, in combination:

a thermal pool cover having a plurality of slits therein for use on a swimming pool;

a thermal pool cover retaining device for said thermal pool cover comprising:

clamping means for removably frictionally coupling said retaining device to a substantially flat opposed surface portions of an extending edge of the swimming pool; and

retaining means integrally connected to said clamping means for insertion through one of said plurality of slits in said floating thermal pool cover to hold said thermal pool cover in place, said retaining means of said thermal pool cover retaining device comprising means for both gripping and lifting including a portion extending downwardly from said clamping means, a connecting portion and a portion sloped upwardly toward said clamping means, said connecting portion connecting said portion extending downwardly to said portion extending upwardly, whereby when said clamping means is attached to the extending edge, and said upwardly extending portion is passed through one of said slits, said upwardly extending portion will retain an edge portion of said pool cover above the level of said connecting portion.

5,388,285

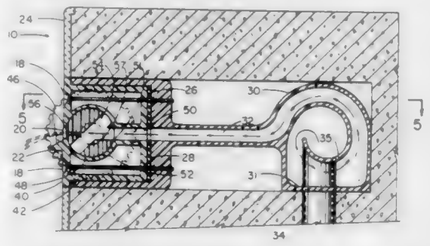
SWIMMING POOL WATERFALL

Alfred J. Belniak, 5000 Cumberland La., Springhill, Fla. 34607

Filed Apr. 18, 1994, Ser. No. 229,189

Int. Cl.[6] E04H *4/00*

U.S. Cl. 4—507 **9 Claims**



1. An apparatus for producing a waterfall in a swimming pool, comprising:

a retaining box having a rear wall and an open front;

an insert positioned within said retaining box;

said insert having a face plate for closing said open front;

an elongate slot formed in said face plate;

an insert plenum formed in said insert in fluid communication with said elongate slot;

an opening formed in said retaining box rear wall, said opening being in fluid communication with said insert plenum;

a spiral passageway having a central core and an outlet;

an interconnecting plenum disposed in fluid communication between said outlet of said spiral passageway and said opening formed in said retaining box rear wall; and

means for introducing water into said central core of said spiral passageway;

whereby water flows from said central core and out said elongate slot formed in said face plate to create a waterfall; and

whereby turbulence in the water flowing through said spiral passageway is reduced by reason of its spiral path of travel.

5,388,286

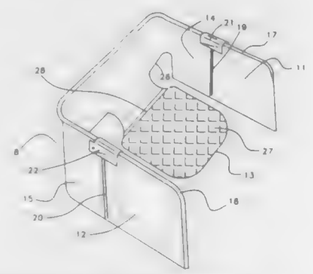
INFANT BATH SEAT DEVICE

Sharon G. Davenport, Rte. 2, Box 2025, Elkhart, Tex. 75839

Filed Dec. 8, 1993, Ser. No. 164,256

Int. Cl.[6] A47K *3/12*

U.S. Cl. 4—572.1 **20 Claims**



1. An infant bath seat device comprising

a generally planar back wall, generally defining a back wall plane, having an upper edge, a lower edge, a first side edge, and a second side edge, said back wall being curved through an angle of about 90 degrees immediately adjacent to each of said first and second side edges such that a narrow strip adjacent to each side edge extends generally perpendicular to said back wall plane and generally parallel to the other said narrow strip;

a first generally planar side wall, generally defining a first side wall plane, having an upper edge, a lower edge, a rear edge, and a front edge, interconnected at its rear edge to said first side edge of said back wall and extending outward from said back wall with said first side wall plane substantially perpendicular to said back wall plane;

a second generally planar side wall, generally defining a second side wall plane, having an upper edge, a lower edge, a rear edge, and a front edge, interconnected at its rear edge to said second side edge of said back wall and extending outward from said back wall with said second side wall plane substantially perpendicular to said back wall plane and with said second side wall plane substantially parallel to said first side wall plane; and

a generally planar seat flap, generally defining a seat flap plane, having a rear edge, a front edge, a first side edge, and a second side edge, interconnected at its rear edge to said lower edge of said back wall intermediate said first and second side edges of said back wall, and extending outwardly from said back wall with said seat flap plane generally perpendicular to said back wall plane and to said first and second side wall planes.

5,388,287

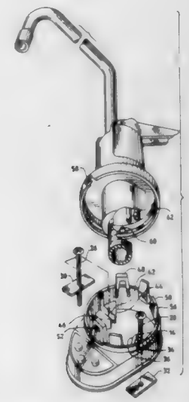
COUNTERTOP FAUCET ASSEMBLY

Edward J. Tischler, St. Paul; Marlin A. Frank, Minneapolis, both of Minn., and Kenneth J. Merchak, Hudson, Wis., assignors to Ecowater Systems, Inc., Woodbury, Minn.

Filed Jul. 12, 1993, Ser. No. 90,430

Int. Cl.[6] E03C *1/02*

U.S. Cl. 4—678 **8 Claims**



1. A countertop faucet assembly adapted to be secured over a hole in a countertop having upper and lower surfaces, with connections to said faucet passing through said hole, said assembly being secured to said countertop without access being required to an area below the countertop, said assembly comprising,

a base subassembly including,

a base member having an aperture formed therein through which the connections to the faucet pass,

said base member provided with a first tab projecting into said aperture, said first tab having a hole therein,

said base member provided with a second tab projecting into said aperture, said second tab having a slot therein, a side of which slot opens into said aperture,

a first tightening means received in said hole in said first tab, said first tightening means having a first clamping means attached thereto, such that when said base member is placed over the hole in the countertop, said first clamping means may be positioned to engage the lower surface of the countertop and said first tightening means actuated to cause said base member and said first clamping means to be drawn together against opposite sides of said countertop to partially secure said base member to the countertop,

a second tightening means received in said slot in said second tab through said side which opens into said aperture, said second tightening means having a second clamping means attached thereto, such that when said base member is partially secured to said countertop, said second tightening means may be positioned in said slot, and said second clamping means positioned to engage the lower surface of said countertop and said second tightening means actuated to cause said base member and said second clamping means to be drawn together against opposite sides of said countertop to secure said base member to said countertop,

a faucet and cap subassembly,

at least one attachment means for attaching said faucet and cap subassembly to said base member, a first portion of said attachment means being provided on said base member and a second portion of said attachment means being provided on said faucet and cap subassembly, said first and second portions of said attachment means engaging each other when said faucet and cap assembly is brought into engagement with said base member, so as to retain and secure said faucet and cap subassembly to said base member, whereby said countertop faucet assembly is secure to said countertop.

5,388,288

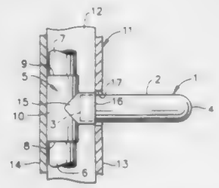
PLUMBING TEST AND TRAP FITTING

Donnie R. Fell, Sr., 3500 Tates Creek Rd., Lexington, Ky. 40517

Filed May 21, 1993, Ser. No. 65,652

Int. Cl.[6] F16L *55/11*

U.S. Cl. 4—679 **17 Claims**



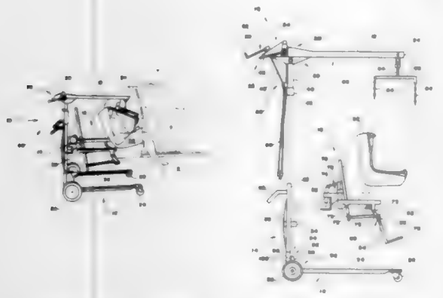
1. A plumbing fitting in combination with a soil pipe and vent pipe assembly, said assembly having an intermediate port, said plumbing fitting comprising a test closure, said test closure being a tubular member of circular cross section terminating in an open end and an opposite integrally closed end, said open end of said fitting being slidably received within said intermediate assembly port with a close tolerance fit, means for sealing said open end of said fitting in said intermediate port in fluid-tight fashion capable of withstanding air and water testing of said assembly, and a trap; whereby,

upon completion of said testing, said fitting is severable via an appropriate cutting means into a first portion, which remains connected to said intermediate port and has a free end extending a desired distance from said intermediate port, and a second portion, said trap being attached to said fee end in a close tolerance fit; wherein,

said second portion, which includes said closed end, is capable of being reused.

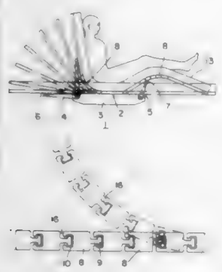
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5,388,289
COMBINATION WHEELCHAIR AND LIFT
Donald L. Casperson, 4243 13.75 Rd., Escanaba, Mich. 49829
Filed Sep. 16, 1993, Ser. No. 121,427
Int. Cl.[6] A61G 7/10
U.S. Cl. 5—861 14 Claims



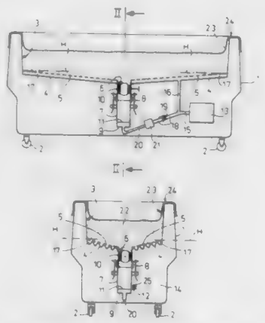
1. A knockdown, portable combination wheelchair and lift, comprising:
a base having
at least one horizontal leg,
a plurality of rolling supports attached to said base, enabling said base to be rolled along a horizontal environmental surface,
a vertically disposed mast secured to said base, said mast having a hinge enabling said mast to be selectively folded down and disposed vertically, said hinge further including means constraining said mast, when disposed vertically, to remain so disposed;
a chair having
a seat,
a seatback having pivot joints pivotally attaching said seatback to said seat,
means removably attaching said chair to said mast; and
a boom having a distal end toward which is attached a sling, and a proximal end toward which is disposed means for readily attaching said boom to and detaching said boom from said mast.

5,388,290
BOTTOM STRUCTURE OF A BED
Kunito Shirai, Togane, Japan, assignor to Paramount Bed Company Limited, Tokyo, Japan
Filed Dec. 21, 1993, Ser. No. 170,714
Claims priority, application Japan, Dec. 25, 1992, 4-89069
Int. Cl.[6] A47C 19/00
U.S. Cl. 5—236.1 5 Claims



1. A bottom structure for a bed with a bottom lifting mechanism comprising plural parallel bottom strips, being sequentially connected to allow bottom bending, and each of the bottom strips, having a tenon formed on one face of each bottom strip in a longitudinal axial direction of the bed, vis-a-vis with the adjacent bottom strips, and having a mortise formed on an opposite face to the face having a tenon, to be loosely engaged with the tenon of the adjacent bottom strip.

5,388,291
FLUIDIZED MEDICAL BED EQUIPPED WITH A DEVICE FOR ELIMINATING ITS SOILED GRANULAR CONSTITUENTS
Georges Roux, Mas de la Sauvagine, 30220 Aigues-Mortes, France
PCT No. PCT/FR92/00953, § 371 Date Jun. 11, 1993, § 102(e) Date Jun. 11, 1993, PCT Pub. No. WO93/06808, PCT Pub. Date Apr. 15, 1993
PCT Filed Oct. 9, 1992, Ser. No. 75,526
Claims priority, application France, Oct. 11, 1991, 91 12851
Int. Cl.[6] A61G 7/00
U.S. Cl. 5—450 4 Claims

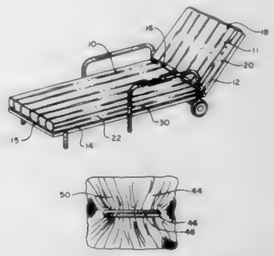


1. Fluidized medical bed having a receptacle defined by:
a lower wall; and
a porous bottom, disposed in the vicinity of, and above, the lower wall, defining between itself and said lower wall an enclosure for admission of pressurized gas, the porous bottom able to be covered with a layer of granular constituents, and the porous bottom defined by several plates having upper faces;
the invention characterized in that the upper faces of said plates of the porous bottom are inclined with respect to the horizontal, each plate having an upper end and a lower end, the lower end terminating at a waste collector, the waste collector comprising a reservoir disposed below the porous bottom, and being connected, at its upper extremity, to the lower end of at least one of said plates defining said porous bottom, said reservoir including two portions, a first portion, secured to the porous bottom and terminating in a shut-off valve provided with a first leakproof coupling, and the second portion capable of being detachably fixed to said leakproof coupling of the first portion.

5,388,292
FLUID FILLED MATTRESS WITH FOAM FILLED CHAMBERS
D. Ray Stinson, 3000 N. Atlantic Ave. #4, Daytona Beach, Fla. 32118, and Peter A. Keay, Ormond Beach, Fla., assignors to D. Ray Stinson and Linda Stinson, Ormond Beach, Fla.
Continuation-in-part of Ser. No. 658,199, Feb. 20, 1991, Pat. No. 5,182,825. This application Feb. 1, 1993, Ser. No. 12,283
Int. Cl.[6] A47C 27/10; A61G 7/057
U.S. Cl. 5—450 19 Claims

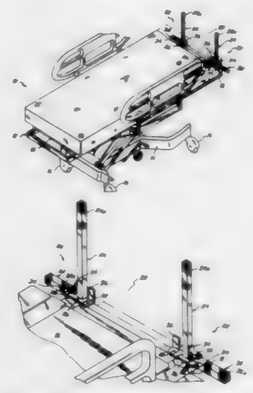
1. A mattress for use in a hospital, nursing home or other healthcare facility to avoid pressure ulcers while providing long-term patient comfort, the mattress comprising:
a resilient support comprising a bottom portion with upwardly extending sides, defining a cavity adapted to accomodate a plurality of bladders;
a plurality of individual bladders positioned adjacent and vertically spaced relative to each other within the cavity of the support, each bladder formed of plural plastic sheets having an edge seam for enclosing the periphery of the bladder and plural, generally parallel seams for forming a plurality of elongated chambers extending in a generally parallel direction across each bladder with the adjacent chambers in fluid communication with each other, the parallel direction of the chambers of one bladder being substantially normal to the parallel direction of the chambers in an adjacent, vertically spaced, bladder;
means for maintaining a fluid pressure within each bladder; and wherein an elongated foam member is disposed in each of the elongated chambers of at least one of the bladders.

5,388,293
COVER FOR CHAISE LOUNGE CUSHION
Janet Z. Kistner, 620 S. Pathfinder Trail, Anaheim, Calif. 92807
Filed Jul. 22, 1993, Ser. No. 94,742
Int. Cl.[6] A47G 9/00
U.S. Cl. 5—470 13 Claims



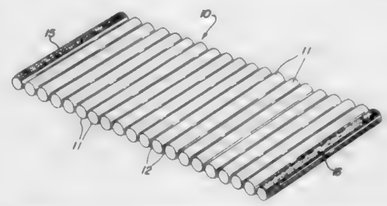
1. A unitary, flexible cover for a chaise longue cushion comprising a pair of opposite elongated panels of generally rectangular shape secured together along the side and bottom portions thereof thereby forming a flat structure and having an open top portion closable by a fastening means, said open top portion being adapted for insertion and removal of said cushion, said cover being expansible such as to form a pair of opposite side walls with said cushion inserted therein, said cover including a pair of short elastic strips affixed transversely opposite each other to an inner surface of said panels at a generally middle portion thereof.

5,388,294
PIVOTING HANDLES FOR HOSPITAL BED
Ryan A. Reeder, Brookville, Ind., assignor to Hill-Rom Company, Inc., Batesville, Ind.
Filed Jun. 11, 1993, Ser. No. 75,992
Int. Cl.[6] A61G 7/08
U.S. Cl. 5—600 10 Claims



1. A hospital bed comprising:
a base;
a bed frame mounted on said base, said frame having a head end spaced from a foot end;
at least one post pivotally mounted on said frame at one of said ends, said post being pivotal between a generally horizontal, stored position and a generally vertical, operable position; and
means for selectively locking said post in the operable position, said locking means comprising a pawl pivotally mounted on said frame and a torsion spring pivotally biasing said pawl in a first direction, said pawl and said torsion spring cooperating to lock said post in the generally vertical operable position, said pawl when pivoted in a second direction freeing said post and allowing said post to be pivoted to the generally horizontal, stored position.

5,388,295
ADJUSTABLE SEAT AND BACK SUPPORT PAD, AND MATTRESS
Jeff Sarkozi, 13722 Belle Rive, Santa Ana, Calif. 92705
Filed Aug. 26, 1993, Ser. No. 111,857
Int. Cl.[6] A47C 20/00
U.S. Cl. 5—630 10 Claims



1. An adjustable support for seats, chairs, mattresses, and the like, comprising:
a.) a base portion providing an array of resilient, longitudinal, parallel support pads, a support pad being constructed of an outer covering material selected from the class consisting of cloth, rubber, leather, plastic, vinyl and elastomer, and wholly or partially filled with a material selected from the class consisting of solid or pelletized

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foam, fiber, cotton, gauze, shredded cloth, air water and a heating gel or a cooling gel, each pad defining a resiliently deformable and flexible support space therebetween, a support pad being sized to produce a non-congruent fit between adjacent pads of a corresponding support space in the absence of added weight or pressure, each support pad comprising a material for imparting resilient deformability thereto, each support space including a flexible hinge region, the base portion and support pads being adapted for use in a single thickness as a support element;

b.) the base portion and array being adapted for non-stabilized folding over at the hinge region into multiple thicknesses, and for stabilization into a unitary support by a resiliently deformable insertion and. subsequent conformation and interlocking of individual support pads into their respective, adjacent support spaces by weight or pressure being applied to the support pads by a user, or by hooks and loops, fasteners, snaps, and the like, thereby compressing a support pad into an adjacent support space to secure the support pads into interlocking contact within the support spaces and preventing shifting of the pad during use; and,

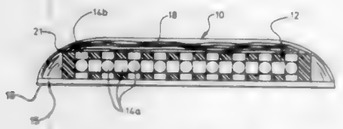
c.) the support pads are resiliently and deformably retractable from their respective adjacent support spaces, to readjust the support to its single thickness.

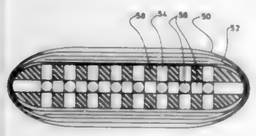
5,388,296

FLUID PERMEABLE BED ACCESSORY

Joseph Mansour, P.O. Box 25033, Columbia, S.C. 29224

Filed Jan. 15, 1993, Ser. No. 5,121
Int. Cl.[6] A47G *9/00*; A47C *27/00, 27/14*
U.S. Cl. 5—636 11 Claims





1. A sanitary bed accessory **10** for use with a supporting mattress comprising at least one outer member **18** and an inner core member **12** made of a cellular material, each member made of a relatively non-absorbent material with the outer member being softer in composition than the inner core member, said inner core member having a plurality of well defined interconnecting passages **14***a* and **14***b* having a sufficient diameter to remain open under the weight of the body of the user, passages in the outer member draining any bodily fluids from the surface of the bed accessory into the passages of the inner core member for storage until cleansed.

5,388,297

CONTAINER OPENING TOOL

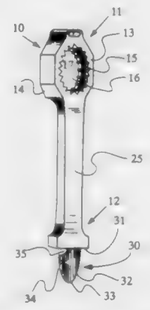
Phillip N. Rosa, 370 W. 5600 South, Washington Terrace, Utah 84405

Filed Nov. 16, 1993, Ser. No. 152,367
Int. Cl.[6] B67B *7/00*
U.S. Cl. 7—156 4 Claims

1. A container opening tool comprising

a wrench end portion having at least one central opening having teeth spaced around the interior of said opening;

a puncture and cut portion including an end sufficiently pointed to puncture a container surface, a curved rim engaging shoulder and a curved blade interconnecting said pointed end and said shoulder; and



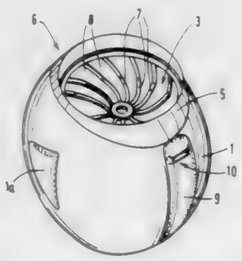
a handle interconnecting said wrench end portion and said puncture and cut portion.

5,388,298

DEVICE FOR THE MACHINE WASHING OF CLOTHES AND THE METHOD OF UTILIZING SAID DEVICE

Philippa J. Rutter, Cardiff, United Kingdom; Henri Cornette, Pointoise, France; John Bailey, Newcastle Upon Tyne, England; Gerard Bocquet, Neuilly Sur Seine, France; Aude G. X. Bournaoui-Karoui, Strombeek-Bever, Belgium; Gilbert Laurenty, Paris, and Jacky P. Duquet, Herbeville, both of France, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US91/08823, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/09736, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 25, 1991, Ser. No. 50,305
Claims priority, application France, Nov. 30, 1990, 90 15065
Int. Cl.[6] D06F *39/02*
U.S. Cl. 8—158 20 Claims



1. A reusable measuring and dispensing device for use in the machine washing of clothes, said device comprising a hollow body closed at one end by a base and adapted to receive a predetermined amount of a product, said hollow body being provided with at least one filling opening and with outlets for distribution of said product, said device being adapted to be placed, together with clothes to be washed, in a drum of a washing machine, wherein said device is progressively emptied of said product during the course of a washing cycle, said device being further provided with means for enabling a user to effect, once said device has been filled, a controlled application of a pretreatment amount of said product to selected areas of said clothes to accomplish a pretreatment of said areas before said washing cycle, said device, containing a residual amount of product remaining after said pretreatment, being introduced into said machine together with said clothes, and in that said pretreatment means forms an integral part of said device.

20. Process for pretreating and washing clothes in a washing machine, comprising the following steps:

(a) a dosage of the total quantity of liquid detergent to be utilized during a washing cycle is introduced into a measuring and dispensing device;

(b) a dosage of a secondary product to be utilized during said washing cycle is introduced into said device;

(c) said clothes are pretreated with a controlled pretreatment quantity of said liquid detergent dosage contained in said device; and

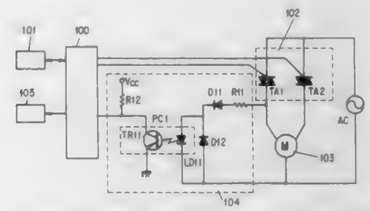
(d) said clothes and said device containing said secondary product and the residual quantity of liquid detergent remaining after said pretreatment quantity is applied to said clothes are placed in a drum of said washing machine, such that said secondary product and said residual quantity of liquid detergent are used for said washing cycle.

5,388,299

WASHING CONTROL SYSTEM OF A WASHING MACHINE

Dong K. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 6, 1994, Ser. No. 223,879
Claims priority, application Rep. of Korea, Apr. 6, 1993, 1993-5700
Int. Cl.[6] D06F *33/02*
U.S. Cl. 8—159 7 Claims



1. A washing control method of a washing machine comprising steps of

reading washing information on information mediums attached on clothes and storing into corresponding memory;

checking possibility of mixed washing with the stored information;

displaying a condition when mixed washing is impossible according to the checking and storing information of total weight of fiber obtained from the stored washing information into a corresponding memory when mixed washing is possible;

searching the corresponding memory for washing information on application of washing start signal; and

carrying out washing after setting up required various washing conditions either according to the total weight of fiber and the property information stored in the washing information on finding stored washing information as the result of the search, or detecting the quantity of laundry on finding no stored washing information.

5,388,300

ADHESIVE TAPE ROLL

Patrick Hickey, Frankfurt, Germany, assignor to GGG Gebrauchs Gerate GmbH, Germany

Filed Oct. 14, 1993, Ser. No. 135,963
Claims priority, application Germany, Oct. 14, 1992, 4234609
Int. Cl.[6] A47L *25/08*; B32B *7/12*
U.S. Cl. 15—104.002 15 Claims

1. An adhesive tape roll suitable for use as a cleaning device, comprising a winding mandrel and a plurality of separate adhesive tapes wound on the winding mandrel; wherein each adhesive tape comprises a strip made of a flexible, nonadhesive material, an adhesive layer being disposed on only one side of the strip and, a layer of nonadhering material being provided on a first end section of an opposite side of the strip, said layer of nonadhering material extending over the entire width of the first end section of the strip; wherein the adhesive tapes are wound one on top of another, alternately in one and then an opposite direction around the winding mandrel; wherein each adhesive tape has a length which is greater than a distance around the winding mandrel, including any adhesive tapes thereunder, in a circumferential direction; and wherein the adhesive-free side of each of at least second and subsequent adhesive tapes wound on the winding mandrel face the winding mandrel and have the layer of nonadhering material on said first end releasably engaging the adhesive layer at an overlapped opposite, second end of the same adhesive tape.

13. A clothes cleaning device having a handle and an adhesive tape roll removably and rotatably mounted on the winding



mandrel; wherein each adhesive tape comprises a strip made of a flexible, nonadhesive material, an adhesive layer being disposed on only one side of the strip and, a layer of nonadhering material being provided on a first end section of an opposite side of the strip, said layer of nonadhering material extending over the entire width of the first end section of the strip; wherein the adhesive tapes are wound one on top of another, alternately in one and then an opposite direction around the winding mandrel; wherein each adhesive tape has a length which is greater than a distance around the winding mandrel, including any adhesive tapes thereunder, in a circumferential direction; and wherein-the adhesive-free side of each of at least second and subsequent adhesive tapes wound on the winding mandrel face the winding mandrel and have the layer of nonadhering material on said first end releasably engaging the adhesive layer at an overlapped opposite, second end of the same adhesive tape.

5,388,301

RIM SEAL FOR VACUUM CLEANER HAVING DUAL STORAGE TANKS

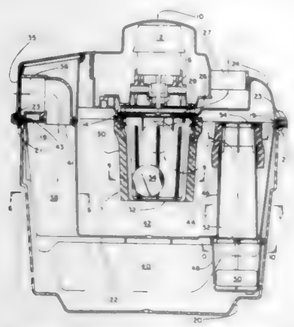
Nick M. Bosyj, North Canton; Donald R. Bowers; Nicholas Koukourakis, both of Akron, and Conway Vincent, North Canton, all of Ohio, assignors to The Hoover Company, North Canton, Ohio

Continuation of Ser. No. 5,024, Jan. 15, 1993, abandoned. This application Sep. 27, 1993, Ser. No. 126,985
Int. Cl.[6] A47L *5/36, 7/00*
U.S. Cl. 15—327.1 14 Claims

1. In a dual tank vacuum cleaner having a first open top concave main body tank, said open top having a circumscribing peripheral rim, and a second inner tank telescopingly received within said main body tank hangingly suspended from the peripheral rim of said main body tank, and a top cover sealingly engaging said tanks, the improvement wherein the peripheral rim of said main body tank comprises a peripheral, upwardly extending inner leg and a radially spaced apart upwardly extending outer leg, said outer leg extending above said inner leg and defining a peripheral groove therebetween, said inner tank having a peripheral rim comprising an outward

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radially extending flange sealingly supported upon the inner leg of said main body tank peripheral rim, said cover having an



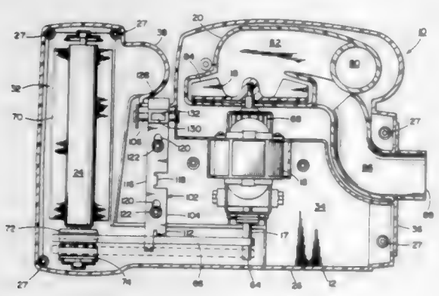
outwardly extending peripheral flange sealingly supported upon the outer leg of said main body tank peripheral rim.

5,388,302

VACUUM CLEANER HOUSING AND AIRFLOW CHAMBER

Kamala J. Sundaram, Milford; Ronald S. Hemmann, Newington, and Paul H. Johnson, Fairfield, all of Conn., assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 8, 1993, Ser. No. 1,827
Int. Cl.[6] A47L 5/24
U.S. Cl. 15—344 15 Claims



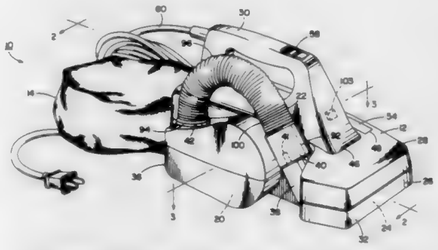
1. A vacuum cleaner comprising:
an outer housing having a dirty air flow opening;
a source of vacuum located in the housing, the source of vacuum including a motor and an impeller; and
a separable air chamber contained within the outer housing and surrounding the impeller, the air chamber being comprised of at least two half sections that form an outlet conduit having an entrance portion including a first section disposed generally perpendicular to and spaced from an entrance of the vacuum impeller and a second section disposed parallel to and adjacent the entrance of the impeller, said first and second sections being joined by a generally curved section, and an exit portion having a flow section disposed generally parallel to the first section of the entrance portion, an impeller chamber disposed downstream of said inlet conduit, the inlet conduit having a substantially constant cross-sectional area along its length, said inlet conduit communicating with said dirty air flow opening of said housing to provide a flow of dirty air into said air chamber.

5,388,303

VACUUM CLEANER WITH EXTENDABLE HOSE AND BRUSH DISENGAGEMENT

Ronald S. Hemmann, Newington; Kamala J. Sundaram, Milford, and Craig A. DuBois, Trumbull, all of Conn., assignors to Black & Decker Inc., Newark, Del.

Division of Ser. No. 2,132, Jan. 8, 1993, Pat. No. 5,331,716. This application Apr. 4, 1994, Ser. No. 222,056
Int. Cl.[6] A47L 5/26
U.S. Cl. 15—334 13 Claims



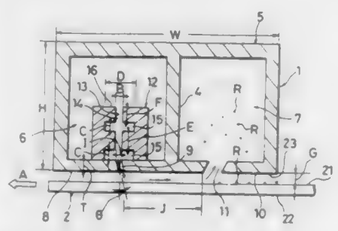
1. A hand-held portable vacuum cleaner having a housing having an upper surface extending in an axial direction substantially parallel to an underlying support surface and a bottom surface for engaging the underlying support surface, and a handle connected to the upper surface, and a source of vacuum, the vacuum cleaner comprising:
a hose located on an exterior of the housing having a first end connected to an intake section of the housing and a second end connected to the source of vacuum, the hose being the only air flow pathway from the intake section to the source of vacuum, the hose being comprised of flexible material and being expendable in length with a relatively compact, free-standing, arch shape when connected between the intake section and the source of vacuum;
means for allowing removal of the first end of the hose from the intake section such that the first end of the hose can be repositioned from the intake section to a desired location by extending and bending the hose; and
the length of the axially extending upper surface of the housing is relatively larger than the distance between the upper and lower housing surfaces.

5,388,304

DUST REMOVING SYSTEM FOR PANELLIKE BODIES

Sanae Takada, Osaka, Japan, assignor to Shinko Co., Ltd., Osaka, Japan

Filed Jan. 5, 1993, Ser. No. 715
Claims priority, application Japan, Apr. 13, 1992, 4-031327[U]
Int. Cl.[6] A47L 5/14
U.S. Cl. 15—345 12 Claims



1. A dust removing system for panellike bodies, comprising:
air blower means;

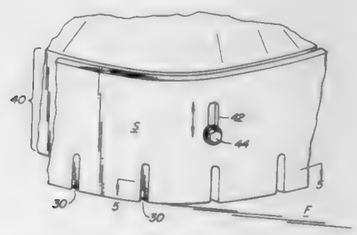
air sucking means;
means for advancing the panellike bodies in an advancing direction;
a cleaner head which includes an air discharging chamber which emits air supplied from the air blower means to a panellike body, an air sucking chamber which removes dust adhering to the panellike body to the air sucking means, a bottom wall of the air discharging chamber being formed with an air jetting slit having an elongated outlet which extends substantially across the width of the panellike body in a substantially perpendicular direction to the advancing direction of the panellike body, said air discharging chamber being provided with a supersonic generator which incorporates ultrasonic waves in an air flow emitted from the air jetting slit of the air discharging chamber, said supersonic generator including a groove which leads to said air jetting slit, through which groove air supplied from said air blower means passes, said groove having a shape which creates ultrasonic waves owing to the air speed at which the air is passed therethrough, and a bottom wall of the air sucking chamber being formed with an air sucking slit having an elongated inlet which extends generally in parallel with the air jetting slit.

5,388,305

VACUUM BUFFER

William A. Fields, Livermore, Calif., assignor to Surtec, Inc., Hayward, Calif.

Filed Sep. 17, 1993, Ser. No. 123,409
Int. Cl.[6] A47L 5/10
U.S. Cl. 15—385 9 Claims



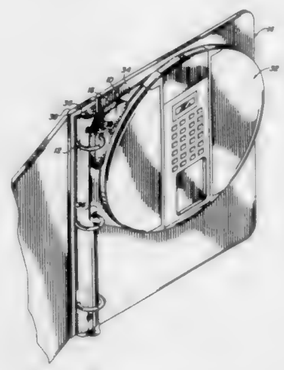
1. A dust evacuation system for a high speed power buffer wherein said buffer includes a chassis mounted for movement along a directed path over a surface to be polished, a motor mounted to said chassis, a high speed polishing buffer depending from said chassis driven by said motor in rotating contact with the floor along a preselected direction of rotation, and a protective hood mounted to said chassis and depending to cover said high speed rotating buffer, the dust evacuation system comprising in combination:
a peripheral skirt depended from said hood immediate the periphery of said buffer;
said skirt, at the extremity adjacent the surface to be polished having grooves, said grooves inclined with respect to the radial direction of rotation of said buffer pad, said grooves inclined to slant from outside of the skirt to the inside of the skirt in the direction of buffer disc rotation at the disc periphery, said grooves as inclined co-acting with said buffer when rotating to entrain air in the direction of buffer disc rotation from the outside of the skirt to the inside of the skirt;
a dust collector aperture adjacent said buffer defined in said hood for the outlet of dust from inside said hood to the exterior of said hood;
a deflector for deflecting air under positive pressure to a dust collector inlet, said deflector protruding into an expanded volume of said protective hood between the bottom of said hood and the top of said rotating disc;
a vacuum pump having an inlet drawing suction on the dust collector inlet deflector and an output for discharging air under positive pressure;
means for collecting said dust communicated to said vacuum pump at said output; and,
said peripheral skirt depended from said hood immediate the periphery of said buffer is telescopically suspended from said hood for towards and away movement with respect to said floor from said protective hood.

5,388,306

ERASER FOR A RING BINDER

Mark A. Bedol, 6980 Fabriano Pl., Rancho Cucamonga, Calif. 91701

Filed Aug. 25, 1993, Ser. No. 111,977
Int. Cl.[6] B43L 19/00
U.S. Cl. 15—424 13 Claims



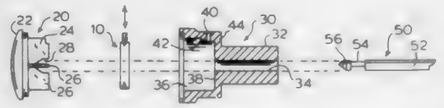
1. An eraser for a ring binder, comprising:
an eraser element having at least one hole extending therethrough, said hole being so sized so as to provide access to a ring of a ring binder, wherein said eraser element comprises two substantially planar surfaces so as to be easily accommodated in said ring binder, each planar surface comprising a base, a first side, and a second side.

5,388,307

SHAFT RETAINING COLLAR

James P. Hyde, Cary, N.C., assignor to Custom Molders, Inc., Durham, N.C.

Filed Mar. 11, 1993, Ser. No. 52,571
Int. Cl.[6] B25G 1/00
U.S. Cl. 16—121 4 Claims



1. A knob adapted to be mounted onto a shaft having an intermediate portion with a reduced cross-section so as to prevent axial and rotational movement relative to said shaft when so mounted, comprising:
(a) a knob body having a shank with an axial aperture formed therethrough and a head having an internal axial cavity of a selected shape surrounded by a wall and with a radially extending hole formed from said cavity outwardly through the wall of said head;
(b) said shank aperture formed of a cross sectional shape adapted to receive said shaft in non-rotatable engagement;

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(c) a knob cap configured to assemble into an open end of said cavity;

(d) a shaft retaining collar configured to nest slidably in said cavity in perpendicular relation to the axial direction of said knob, said collar comprising:

(i) a base portion with two opposed substantially planar faces and having an aperture with a relatively large portion and a relatively small portion extending transversely therethrough in perpendicular relation to said faces;

(ii) button means extending outwardly from said base portion in a direction perpendicular to the axis of said aperture and adapted to slidingly fit into said hole in the wall of said head;

(iii) biasing means integral with and in flexible relation with said base portion and adapted to maintain said small portion of said aperture axially aligned with said reduced cross-section portion of said shaft so as to retain said shaft against relative axial movement and when pressure is applied to said button means moving said collar to a position so that said relatively large portion of said aperture aligns with said shaft to allow said shaft to move axially; and

(iv) said biasing means comprising a pair of resilient spring fingers each connected to said base portion at respective opposed lateral portions thereof and configured with a curvature and length so as to contact an interior surface of said cavity and to move towards one another when said collar is depressed within said cavity to a point that said larger portion of said aperture is axially aligned with said shaft.

5,388,308

VACUUM ARM JOINT ASSEMBLY

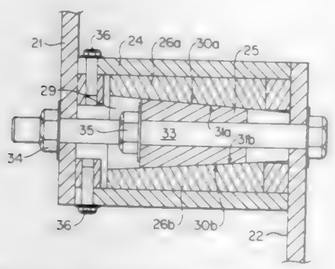
Gerard H. Meeuwissen, 38 Bowman Avenue, Camden N. S. W. 2570, Australia

Filed Jul. 31, 1992, Ser. No. 922,524

Claims priority, application Australia, Aug. 2, 1991, 81541/91

Int. Cl.[6] E05C *17/64*

U.S. Cl. 16—340 **4 Claims**



1. A friction joint assembly comprising

at least a first arm and a second arm pivotally connected to each other by pivot means incorporating mechanical adjustment means, said first arm and said second arm being adapted to be pivotable about said pivot means about a central axis region of said assembly with respect to each other only when urged by a force of at least a predetermined magnitude above a predetermined threshold magnitude, wherein said central axis is a longitudinal axis common to the components comprising said friction joint assembly;

said force being adjustable by said mechanical adjustment means and wherein said mechanical adjustment means comprises an expander and opposed frictional components adapted to be urged by said expander, one against the other, radially from said central axis region about which said opposed frictional components are generally radially disposed;

a bolt passed along said central axis region through all the components of said friction joint assembly and at least a first nut threadably received on an end of said bolt so as to clamp said components together along said central axis, said bolt and said first nut being part of said friction joint assembly region; and

wherein said opposed frictional components comprise a first friction component enclosing a second friction component; said first friction component comprising a tube; said second friction component comprising first and second half components which define an internal volume therebetween when placed in opposed relation to each, other said first friction component connected to said first arm and said second friction component connected to said second arm, said expander comprising a generally wedged shaped expander component which causes said first and second half components to move away from the central axis region, the further said expander is caused to intrude into said volume whereby said force is varied by the degree to which said second component is urged against said first component by the action of said expander receivable within said internal volume.

5,388,309

HINGE WITH ROTARY CUP

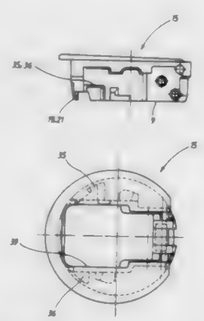
Alfred Grass, Hochst/Vlbg, Austria, assignor to Grass AG, Hochst/Vlbg, Austria

Filed Sep. 1, 1993, Ser. No. 115,873

Claims priority, application Germany, Sep. 21, 1992, 9212627[U]

Int. Cl.[6] E05D *5/00*

U.S. Cl. 16—382 **10 Claims**



1. Hinge comprising:

a press-in cup having a base and a side wall for engagement in a recess in a furniture portion,

a rotary cup having a base and a side wall for engagement with the press-in cup,

primary engagement means for interconnecting the cups upon relative rotation,

secondary engagement means for interconnecting the cups upon relative rotation,

locking means for restraining movement between the cups, wherein the primary engagement means comprises cooperating parts of the base of each cup, the secondary engagement means includes engagement members which project radially inwardly from the side wall of the press-in cup and the locking means comprises a detent projecting from the base of the press-in cup and is engageable with the side wall of the rotary cup.

5,388,310

AUTOLEVELLING METHOD AND APPARATUS

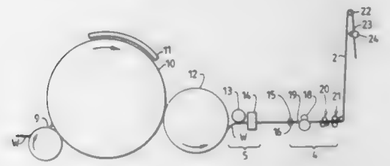
Walter Haworth, Lancashire, United Kingdom, assignor to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Filed Dec. 17, 1993, Ser. No. 169,689

Claims priority, application United Kingdom, Dec. 21, 1992, 9226594

Int. Cl.[6] D01G *15/64;* **D01H** *5/42*

U.S. Cl. 19—65 A **15 Claims**



1. An autoleveller for drafting sliver along a sliver path, comprising:

drafting means for drafting a sliver to be autolevelled;

first sliver thickness measuring means associated with the sliver path for sensing the thickness of sliver in the sliver path and for generating sliver thickness signals responsive thereto;

draft varying means connected to said first sliver thickness measuring means and said drafting means for varying the draft of said drafting means to correct sliver thickness variations sensed by said first sliver thickness measuring means;

control means associated with said draft varying means for controlling said draft varying means in response to the signals from said first sliver thickness measuring means;

second sliver thickness measuring means associated with the sliver path for sensing the thickness of sliver in the sliver path and for generating sliver thickness signals responsive thereto;

averaging means associated with said draft varying means and responsive to said second sliver measuring means for averaging sliver thickness signals over a known length of the sliver path, said averaging means generating averaged thickness values responsive to the averaging of said sliver thickness signals generated by said second sliver measuring means, for detecting a signal drift in the thickness of the drafted sliver; and

said draft varying means being additionally responsive to said averaged thickness values signals from said averaging means for varying said drafting means responsive to said averaged thickness values.

5,388,311

FASTENING AND LOCKING DEVICE FOR TARPAULINS AND SIMILAR COVERING MATERIALS

Peter Sølbeck, Rungsted Kyst, Denmark, assignor to Polysheet A/S, Herlev, Denmark

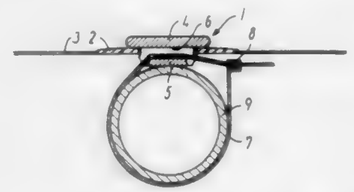
Filed Jul. 9, 1993, Ser. No. 88,537

Claims priority, application Denmark, Jul. 20, 1992, 0933/92

Int. Cl.[6] B65D *63/00;* **F16B** *21/00*

U.S. Cl. 24—16 R **20 Claims**

1. A fastening and locking device for tarpaulins and similar weather protective covering materials of the type which for fastening purposes is provided with inserted eyelets (2), characterized in that it comprises a pluglike member to be mounted in an eyelet (2) with a head (4) in abutment against one side of the tarpaulin (3) and in connection therewith a shank portion (5) projecting through the eyelet opening towards the opposite side of the tarpaulin, the shank portion having a smaller diameter than the head (4), a transverse channel (6) being provided in the shank portion and an anchoring or locking member (7) to be received in said transverse channel, said channel being closed in a direction which is longitudinal of the shank to



prevent the anchoring or locking member from separating from said channel in said longitudinal direction.

5,388,312

SEPARABLE BOTTOM STOP FOR CONCEALED TYPE SLIDE FASTENER

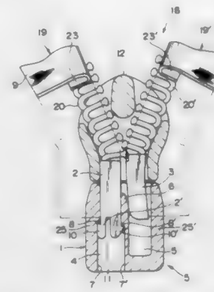
Tsutomu Fudaki, Kurobe, Japan, assignor to Toshida Kogyo K.K., Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 139,816

Claims priority, application Japan, Oct. 29, 1992, 4-075368[U]

Int. Cl.[6] A44B *19/38*

U.S. Cl. 24—388 **4 Claims**



1. In a concealed type slide fastener comprising:

a pair of opposed companion stringers including a pair of stringer tapes having confronting folded edges formed along their respective longitudinal edges and two rows of coupling elements sewn to the respective confronting folded edges and a slider reciprocally mounted on the coupling element rows;

a separable bottom stop comprising a hollow socket box having a partition provided longitudinally therein to thus define in the socket box a pair of first and second holes in side-by-side relation to each other;

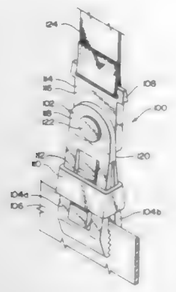
an insert pin mounted on a lower end of one stringer and adapted for coming into and out of fitting engagement with the second hole;

a socket pin mounted on a lower end of the other stringer and reciprocally retained in the first hole; and

means for limiting the reciprocation of the socket pin through the first hole to a predetermined distance wherein the reciprocation-limiting means comprises a pair of confronting locking overhangs formed in opposed inner sides of the first hole substantially halfway of a length thereof and a pair of opposed locking fins provided on opposed sides of a lower end of the socket pin so as to project laterally outwardly therefrom for locking engagement with the locking overhangs.

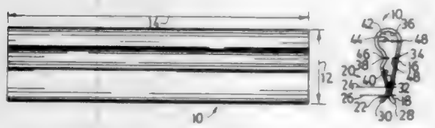
VOL 1171 ISS 2 FE 14 1995 UMI

5,388,313
LOCKING CLIP
Robert W. Cameron, 4972 Northwest Rd., Bellingham, Wash. 98226
Filed Dec. 30, 1993, Ser. No. 175,742
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—537 18 Claims



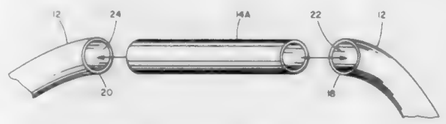
1. A clip assembly for gripping a sheet of material, said clip assembly comprising:
first and second jaw members mounted to a hinge portion in opposition to one another, each said jaw member comprising:
a grip portion for engaging said sheet of material; and
a ramp portion which extends from said hinge portion toward said grip portion;
said ramp portions of said first and second jaw members forming inclined planes which diverge from one another from said hinge portion toward said grip portions;
a collar member surrounding said ramp portions of said first and second jaw members, so that in response to sliding movement of said collar member from said hinge portion toward said grip portions said collar member rides up said divergent inclined planes so as to force said grip portions together against said sheet of material; and
ratchet means for preventing reverse movement of said collar member from said grip portions of said jaw members toward said hinge portion, and for selectively releasing said collar member for said reverse movement so as to permit disengagement of said jaw members from said sheet of material, said ratchet means comprising:
a first set of ratchet teeth formed on said collar member;
a second set of ratchet teeth mounted to at least one said jaw member; and
a ratchet pawl having said second set of ratchet teeth formed thereon, said ratchet pawl being mounted to said at least one jaw member for resilient deflection so as to permit said first set of teeth to ride over said second set of teeth as said collar member is moved toward said grip portions of said jaw members.

5,388,314
POOL COVER FASTENER
Anthony Vella, 34 Olivia Dr., Rochester, N.Y. 14626
Filed Nov. 9, 1992, Ser. No. 973,420
Int. Cl.[6] B42F *1/02*
U.S. Cl. 24—555 9 Claims



1. An integral fastener for securing a pool cover to the top rail of an above-ground pool, wherein said fastener is comprised of a first leg, a second leg, a first downwardly-extending, diverging lip connected to said first leg, and a second downwardly-extending diverging lip connected to said second leg, wherein:
(a) said fastener has a height of from about 1.2 to about 3.0 inches and a length of at least about 1.0 inch;
(b) said first leg and said second leg are partially contiguous with each other and form a closed cavity which is defined by a continuous surface consisting of a first substantially linear wall, a substantially concave inner wall, a substantially convex wall, and a second substantially linear wall, wherein:
1. said closed cavity is comprised of an upper-most concave section with a width of at least about 0.15 inches,
2. said closed cavity is comprised of an intermediate convex section with a minimum width of from about 0.06 to about 0.25 inches,
3. the width of said uppermost concave section exceeds the minimum width of said intermediate convex section by at least about 0.1 inches;
(c) said first substantially linear wall has a length of at least about 0.5 inches;
(d) said first lip is comprised of a first end, said second lip is comprised of a second end, and the distance between said first end and said second end when said first leg and said second leg are partially contiguous with each other is at least about 0.1 inches; and
(e) when said first leg and said second leg are partially contiguous with each other, a force of from about 2 to about 50 pounds is required to separate said first leg and said second leg so that they are at least about 0.25 inches apart.

5,388,315
LACING SYSTEM
Nathan B. Jones, 914 Flat Hill Rd., Lunenberg, Mass. 01462
Filed Apr. 22, 1993, Ser. No. 51,172
Int. Cl.[6] A43B *11/00*; A43C *7/00*
U.S. Cl. 24—712.1 1 Claim

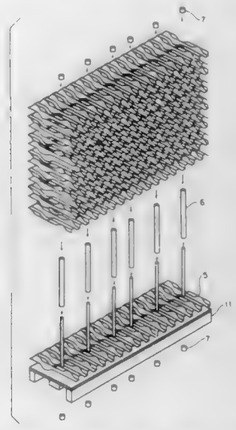


1. A lacing system suitable for lacing a shoe having eyelets, comprising a stretchable lace having first and second ends and being adapted for being laced in the eyelets; said first and second lace ends each having an opening defined therein; and lace locking means comprising an elongated body operable for engaging the opening in each of said first and second lace ends so that said first and second lace ends are substantially collinear with each other and said first and second lace ends are releasably retained in said body through friction with said body when the shoe is engaged with a foot or disengaged from a foot.

5,388,316
BIOFILM SUPPORT MEDIA ASSEMBLY APPARATUS AND METHOD
David S. MacLaren, Gates Mills, Ohio, assignor to Jet, Inc., Cleveland, Ohio
Filed Feb. 16, 1993, Ser. No. 18,438
Int. Cl.[6] B25B *27/14*
U.S. Cl. 29—281.5 17 Claims

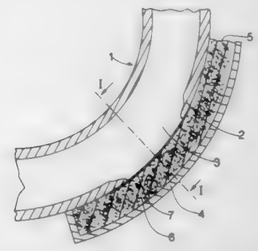
1. An apparatus for the assembly of biofilm support structure modules, comprising:
(a) a plurality of individual biofilm support structure sheets having a plurality of alignment holes, adjacent alignment holes separated by an inter-hole distance;

(b) a base; and
(c) a plurality of aligning means for aligning the biofilm support structure sheets during biofilm support structure module assembly, the aligning means attached to and



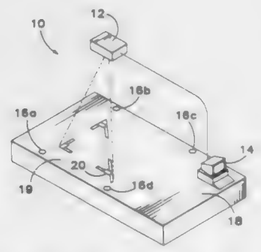
extending from the base, there being a distance between each adjacent aligning means, the distance between each adjacent aligning means corresponding to the inter-hole distance.

5,388,317
METHOD FOR REINFORCING AND REPAIRING EQUIPMENT PARTS AND COMPONENTS SUBJECTED TO HEAVY ABRASIVE WEAR
Knut H. Johansen; Oyvind Larsen, and Hans H. Schelderup, all of Kristiansand, Norway, assignors to Elkem a/s, Norway
Continuation of Ser. No. 772,561, Oct. 7, 1991, abandoned. This application Mar. 18, 1993, Ser. No. 33,424
Claims priority, application Norway, Oct. 8, 1990, 904348
Int. Cl.[6] B23P *6/04*; F16L *55/16*
U.S. Cl. 29—402.18 8 Claims



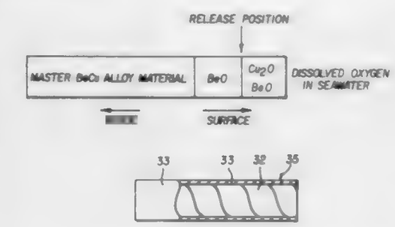
1. A method for repairing a hole in a pipe wherein said hole is at a bend in said pipe, said pipe having a longitudinal axis and being used for transporting particulate material, said method comprising the steps of:
(a) affixing a casing to the exterior of said pipe at said bend in said pipe over an area of said pipe which has said hole, said casing not extending annularly around the circumference of said pipe, the bottom and the sides of said casing being affixed to said pipe such that said casing forms a pocket with said pipe and such that the hole in said pipe is in said pocket, said pocket having an opening which is defined by the top of said casing and the exterior of said pipe, said pocket being oriented such that the sides of said pocket are parallel with the longitudinal axis of said pipe, and the bottom and opening of said pocket exists in planes transverse to the longitudinal axis of said pipe,
(b) pouring into said pocket a fluid wear-resistant concrete mix, thereby filling said pocket to a level such that said hole is covered, and
(c) hardening said concrete in said pocket.

5,388,318
METHOD FOR DEFINING A TEMPLATE FOR ASSEMBLING A STRUCTURE
Gabriel Petta, Woodbridge, Canada, assignor to Laharco, Inc., Portland, Oreg.
Filed Oct. 9, 1992, Ser. No. 959,245
Int. Cl.[6] H05K *13/00*
U.S. Cl. 29—407 7 Claims



1. A method of providing a template for use in assembling a structure from a plurality of work pieces comprising the steps of:
generating data representative of the size, location, and points of attachment of each of the work pieces in an assembled structure;
using the data to generate a control signal;
using the control signal to generate a scanning laser image of the assembled structure;
projecting the scanning laser image onto a working surface;
using the projected image to align the work pieces; and
attaching the work pieces to one another.

5,388,319
METHOD FOR MAKING ORGANISM DEPOSIT-INHIBITING PIPE
Shunji Inoue, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan
Filed Mar. 8, 1993, Ser. No. 27,780
Claims priority, application Japan, Mar. 24, 1992, 4-066269; Apr. 14, 1992, 4-094298
Int. Cl.[6] B21K *29/00*
U.S. Cl. 29—416 11 Claims

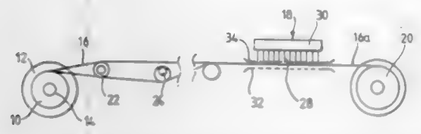


1. A method for making an organism deposit-inhibiting pipe, comprising:
providing a first thin strip comprised of a beryllium-copper

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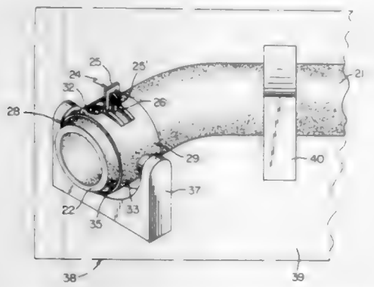
alloy, said first thin strip having opposite first and second edges;
spirally winding said first thin strip to form an inner layer of a pipe structure; and
providing a first resin member to cover an outer surface of said first thin strip after the spiral winding step, thereby to provide an outer layer of said pipe structure.

5,388,320
PRODUCTION OF SHAPED FILAMENTARY STRUCTURES
Norman Smith, Rugby, and Peter G. Lawton, Halifax, both of England, assignors to Aerospace Preforms Limited, West Yorkshire, England
Continuation-in-part of Ser. No. 805,375, Dec. 10, 1991, Pat. No. 5,323,523, which is a continuation of Ser. No. 576,678, Aug. 31, 1990, Pat. No. 5,081,574, which is a continuation-in-part of Ser. No. 6,899, Jan. 27, 1987, Pat. No. 4,955,123. This application Aug. 17, 1993, Ser. No. 88,189
Int. Cl.[6] B23P *17/00*
U.S. Cl. 29—419.1 **20 Claims**



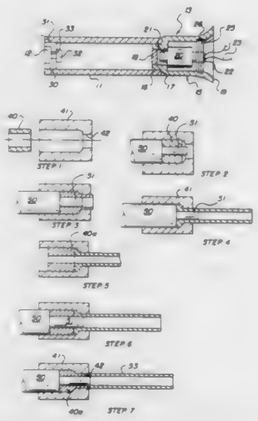
1. A method of manufacturing a shaped fibrous fabric structure from multiple layers of fibrous material comprising building a stack of layers and causing fibres to extend across said layers to interconnect the layers and enriching an outer region of the stack with additional fibres which are caused to extend across a plurality of layers.

5,388,321
METHOD OF MAKING A HOSE CONSTRUCTION USING HEAT SHRINKABLE MATERIAL
James H. Farrell, Rochester Hills, Mich., assignor to Dayco Products, Inc., Dayton, Ohio
Filed May 27, 1993, Ser. No. 68,466
Int. Cl.[6] F16L *33/02*
U.S. Cl. 29—447 **7 Claims**



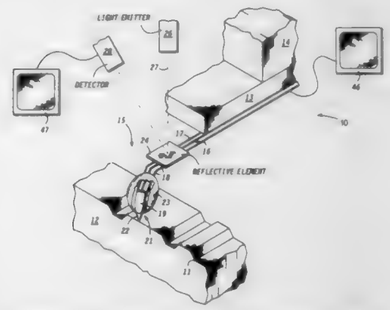
1. In a method of making a hose construction comprising the steps of providing a tubular flexible hose having opposite ends, providing a fastening means, and fastening a clamping means to one of said opposite ends of said hose by said fastening means for substantially circumferentially and radially inwardly clamping said one of said opposite ends of said hose onto a member that has been inserted into said one of said opposite ends of said hose, the improvement comprising the steps of forming said fastening means to comprise a tube of heat shrinkable material, snugly fitting said tube of heat shrinkable material over and against said clamping means to form a self-contained unit therewith, telescoping said unit onto said one of said opposite ends of said hose, and then heat shrinking said tube of heat shrinkable material so that said tube of heat shrinkable material is disposed over and against part of said clamping means and has opposite annular side sections respectively disposed outboard of said clamping means and having been heat shrunk to circumferentially and radially inwardly engage against said one of said opposite ends of said hose to hold said clamping means thereon.

5,388,322
METHOD OF MAKING A SHATTERPROOF AIR BAG INFLATOR PRESSURE VESSEL
Joseph A. Simon, 237 Lothrup, Grosse Point Farms, Mich. [illegible]
Filed May 28, 1993, Ser. No. 68,957
Int. Cl.[6] B23P *19/02;* **B60R** *21/16;* **B21C** *23/08*
U.S. Cl. 29—525 **2 Claims**



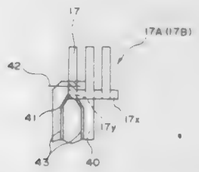
1. A method for forming a shatterproof air bag
providing a steel ring shaped blank, the wall material of said blank having an initial steel grain structure;
forcing the blank, in its axial direction, through a constricted extrusion die orifice by a punch means having forwardly extending central mandrel, thereby forwardly extruding the blank into a substantially uniform hollow cylindrical, elongated tube having a generally uniform wall thickness, and thereby elongating said initial steel grain structure of said wall material of said blank, during the forward extrusion, into a generally elongated, axially oriented, fiber structure;
securing closures on the opposite ends of said elongated tube, thereby forming a sealed vessel for storing a pressurized gas;
and forming said uniform wall thickness of said elongated tube of a strength sufficient to normally contain a predetermined gas pressure, but with the tube wall being splitable in an axial direction of the tube along the elongated axially oriented fiber structure formed in the grain structure of the wall material, to provide an axially elongated opening in the tube wall for release of gas in the event that the gas pressure exceeds said pre-determined pressure, to prevent the tube wall from shattering into fragments.

5,388,323
METHOD OF FORMING A PROBE FOR AN ATOMIC FORCE MICROSCOPE
Theresa J. Hopson, Mesa; Ronald N. Legge, Scottsdale, and Juan P. Carrejo, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 55,887, May 4, 1993, Pat. No. 5,356,218. This application Jun. 21, 1994, Ser. No. 263,117
Int. Cl.[6] G01R *3/00;* **G01K** *1/14*
U.S. Cl. 27—595 **6 Claims**



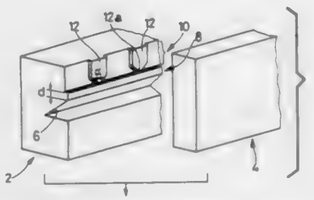
1. A method of forming a probe for an atomic force microscope comprising:
forming a heat sensing assembly having a spring constant of approximately 0.5 to 15 newtons/meter, and including a heat sensing element;
forming an electrically insulating and thermally conducting tip on the heat sensing element; and forming a reflective element on said heat sensing assembly.

5,388,324
PROCESS FOR FABRICATING AN INTEGRAL THIN-FILM MAGNETIC HEAD WITH AN IMPROVED EFFICIENCY
Masahiro Kozaki, Kawasaki, Japan, assignor to Fujitsu Limited, Japan
Filed Jan. 22, 1993, Ser. No. 8,007
Claims priority, application Japan, Jan. 22, 1992, 4-008955
Int. Cl.[6] G11B *5/42*
U.S. Cl. 29—603 **9 Claims**



1. A method for fabricating an elongated integral type magnetic head, comprising the steps of:
providing a separation layer on a surface of a substrate, said separation layer being formed of a material susceptible for a selective removal process;
forming a plurality of elongated integral magnetic head bodies on said separation layer such that each of said magnetic head bodies has an elongated form extending from a first end to a second, opposite end with a length substantially exceeding any of a width and a thickness of said magnetic head body, each of said magnetic head bodies being formed to carry a magnetic head at said first end such that said magnetic head is embedded integrally in said magnetic head body;
said step of forming said plurality of integral magnetic head bodies further including forming said plurality of integral magnetic head bodies as a first block and a second block each having a comb-shape and including a connection part that carries thereon a plurality of said magnetic head bodies at said second end such that said magnetic head bodies extend parallel to each other with a mutual separation, each said mutual separation being set sufficiently large to accommodate a single thin film magnetic head body therein;
forming said comb-shaped first and second blocks such that said first and second blocks are defined laterally by a strip-like boundary region of a material that is susceptible to a selective removal process and said comb-shaped first block and said second block being disposed in a mutually opposing relationship such that said first end of said magnetic head bodies of said first block reaches said connection part of said second block and such that said first end of said magnetic head bodies of said second block reaches said connection part of said first block; and
separating said first block and said second block by applying a selective removal process for removing said strip-like boundary region and said separation layer.

5,388,325
PROCESS FOR FABRICATING A MAGNETIC HEAD CORE SLIDER
Soichiro Matsuzawa, Kuwana, and Nobuhiro Terada, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Japan
Division of Ser. No. 847,683, Mar. 6, 1992, Pat. No. 5,285,342. This application Oct. 27, 1993, Ser. No. 141,649
Claims priority, application Japan, Mar. 28, 1991, 3-91121
Int. Cl.[6] G11B *5/42*
U.S. Cl. 29—603 **6 Claims**

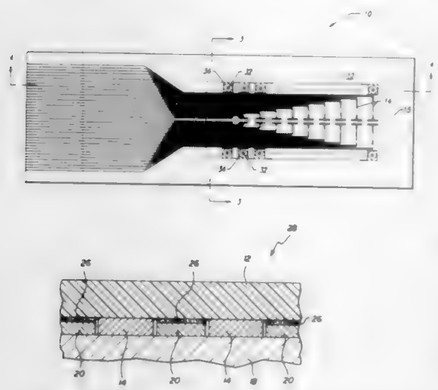


1. A process of fabricating a magnetic head core slider, comprising the steps of:
fixing a core chip in a slider body, said core chip including (i) a first and a second core member which are butted and bonded together so as to define a coil-winding aperture and which cooperate to provide a gap-forming portion on one side of said coil-winding aperture, (ii) a cut-off portion which is provided adjacent to said gap-forming portion and which provides a top surface of the core chip, said gap-forming portion defining a magnetic gap which extends from said aperture, said first and second core members having a pair of width-defining grooves which extend therebetween so as to define a track whose width dimension determines a width dimension of said magnetic gap, and (iii) a distance marker provided in said cut-off portion so as to extend from said top surface to said gap-forming portion, said distance marker having an end portion adjacent to said gap-forming portion, said end portion being shaped so as to indicate a distance between said top surface and said gap-forming portion when said cut-off portion is removed to provide a sliding surface of the core chip in which said magnetic gap is open and which determines said nominal depth dimension of the magnetic gap; and
grinding said top surface of said core chip together with a corresponding surface of said slider body to remove said cut-off portion and said distance marker by an amount corresponding to the distance between said top surface

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and said gap-forming portion, which is indicated by said end portion of said distance marker, so as to establish said nominal depth dimension of said magnetic gap and provide a sliding surface on said slider body.

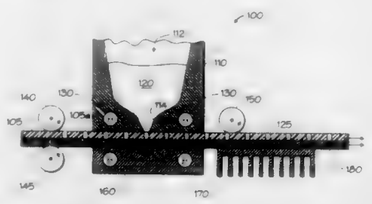
5,388,326
SELF ALIGNING ORIFICE CONSTRUCTION FOR THERMAL INK-JET PRINTHEADS
Robert R. Beeson, Corvallis; Paul H. McClelland, Monmouth, and Donald B. Ouchida, Corvallis, all of Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.
Filed Sep. 7, 1993, Ser. No. 118,277
Int. Cl.[6] H05B *3/00*; G01D *9/00*; B32B *31/00*
U.S. Cl. 29—611 6 Claims



4. A method for assembling thermal ink-jet printheads, comprising:
(a) providing a circuit layout comprising a first substrate, a plurality of conductive traces thereon in a pre-selected pattern, and a plurality of openings through the substrate defining ink-jet nozzles;
(b) providing a die layout comprising (1) a barrier material comprising a photopolymerizable material, (2) a plurality of resistors, each resistor formed on a second substrate and matched to one of the openings, and (3) a plurality of channels formed in the barrier material and matched to a portion of the plurality of conductive traces;
(c) interlocking the plurality of conductive traces with the plurality of channels to align each resistor of the plurality of resistors with respective one of the openings; and
(d) laminating those portions of the first substrate that contact the barrier material to the barrier material so as to bond the two layouts together.

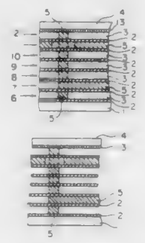
5,388,327
FABRICATION OF A DISSOLVABLE FILM CARRIER CONTAINING CONDUCTIVE BUMP CONTACTS FOR PLACEMENT ON A SEMICONDUCTOR DEVICE PACKAGE
Robert T. Trabucco, Los Altos, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.
Filed Sep. 15, 1993, Ser. No. 122,027
Int. Cl.[6] H05K *3/34*
U.S. Cl. 29—830 12 Claims

1. A method of fabricating a film carrier containing conductive bump contacts for placement on a semiconductor device package, comprising the steps of:
forming a non-conductive film of a desired thickness;
curing the non-conductive film;
forming holes in the non-conductive film of a desired pattern and size;
forming conductive contacts in the holes of the non-conductive film comprising the steps of,
casting a molten metal into the holes of the non-conductive film,



solidifying the molten metal to form conductive contacts; and
cutting the non-conductive film containing the conductive contacts into desired shapes.

5,388,328
PROCESS FOR FABRICATING AN INTERCONNECTED MULTILAYER BOARD
Hitoshi Yokono, Toride; Hideo Arima, Yokohama; Takashi Inoue, Yokohama; Naoya Kitamura, Yokohama; Haruhiko Matsuyama, Hiratsuka; Hitoshi Oka, Yokohama; Fumio Kataoka, Yokohama; Fusaji Shoji, Yokohama; Hideyasu Murooka, Yokohama, and Masayuki Kyooi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Division of Ser. No. 37,543, Mar. 22, 1993, Pat. No. 5,300,735, which is a continuation of Ser. No. 672,117, Mar. 19, 1991, abandoned. This application Jan. 28, 1994, Ser. No. 187,546
Claims priority, application Japan, Mar. 19, 1990, 2-69259; Nov. 30, 1990, 2-330515
Int. Cl.[6] H05K *3/10*
U.S. Cl. 29—852 64 Claims



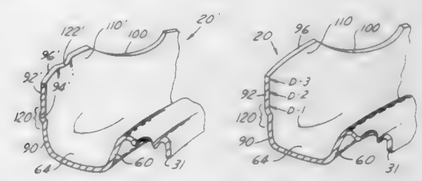
1. A process for the fabrication of an interconnected multilayer board, which comprises forming a metallic under-conductive layer on a base substrate; forming a windowed resist layer on said metallic under-conductive layer; filling windows of the resist layer with a conductor by plating while using said metallic under-conductive layer as a base, thereby forming a conductor layer; forming another windowed resist layer on said conductor layer; filling windows of said resist layer on said conductor layer with a conductor by plating while using said conductor layer as a base, thereby forming a via-hole layer, to form a two-level structure of the conductor layer and the via-hole layer; dissolving the resist layers and portions of the metallic under-conductive layer, other than those in contact with lower face of the conductor constituting the conductor layer, thereby forming a two-level skeleton structure of conductor lines; filling spaces within said skeleton structure with a varnish in a solventless form and then curing the varnish.

5,388,329
METHOD OF MANUFACTURING A HEATING EXCHANGE TUBE
Myron R. Randlett, Cuba; Daniel J. Angeli, St. Louis, both of Mo., and Ralph L. Webb, State College, Pa., assignors to Olin Corporation, Cuba, Mo.
Filed Jul. 16, 1993, Ser. No. 93,544
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.049 9 Claims



1. A method for the manufacture of a heat exchange tube, comprising the steps of:
(a) annealing a metallic strip while inhibiting recrystallization grain growth;
(b) impressing a desired texture on at least one side of said metallic strip, said texture including a plurality of fins separated by grooves;
(c) deforming said metallic strip into a generally circular configuration with said textured side forming the inner bore;
(d) bringing opposite edges of said metallic strip in close proximity; and
(e) bonding said opposing edges together to form a length of internally enhanced tubing.

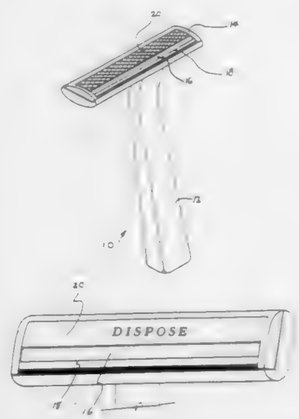
5,388,330
METHOD FOR MAKING DISC WHEELS
Anwar R. Daudi, East Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.
Filed Oct. 12, 1993, Ser. No. 133,888
Int. Cl.[6] B60B *1/06*; B21H *1/02*
U.S. Cl. 29—894.323 10 Claims



1. A method of forming a one-piece sheet metal wheel disc of the type having a central bolt-circle mounting portion for fastening onto a wheel mounting part of a vehicle, a peripheral outer annular flange portion extending generally axially of said wheel disc to an inboard free edge of said disc and adapted for telescopic mounting into a mating wheel rim, and an intermediate annular window vent and hat portion integrally joining said central and flange portions, said method comprising the steps of:
(a) providing a flat sheet metal blank having a predetermined outside dimension and configuration adapted for progressive die cold forming into a preform of said wheel disc having an unfinished outer peripheral annular preform flange portion corresponding in shape generally to but slightly diametrically smaller than said disc flange portion,
(b) subjecting said blank to a progressive cold working multiple stage die forming operation to produce said disc preform having the disc central portion in finished form with a circle of wheel mounting bolt holes, a center wheel mounting pilot opening and wheel mounting pads defining a mounting plane of said disc, having the disc window vent opening and hat section portion in finished form containing window vent openings, and having said unfinished outer peripheral annular preform flange portion in said diametrically undersize unfinished corresponding shape, and
(c) subjecting said disc preform to a final cold working sizing operation wherein said preform flange is radially expanded to circumferentially stretch said preform flange beyond the yield point of the blank metal sufficiently to cause said preform flange to take a permanent set into a final predetermined expanded and finished shape adapted for precision telescopic mounting into the mating wheel rim.

9. A method of manufacturing a wheel disc adapted for telescopic press fit mounting into a mating wheel rim to form a wheel assembly, said method comprising the steps of:
(a) progressively die forming from a metal strip a disc preform having a cross-sectional contour proximating that of the finished disc; and
(b) uniformly radially expanding a peripheral flange portion of said disc preform by application of radial expansion pressure to substantially the entire inner circumference of said peripheral flange portion of said disc preform to permanently deform the same into a finished flange portion on said disc having precision finished predetermined dimensions adapted for the telescopic press-fit mounting into the mating wheel rim.

5,388,331
WEAR INDICATOR FOR A DISPOSABLE RAZOR
Doroodian-Shoja Siamak, 360 R. Hunnewell St., Needham, Mass. 02194
Filed Jan. 28, 1994, Ser. No. 188,244
Int. Cl.[6] B26B *21/40*
U.S. Cl. 30—41.7 6 Claims



1. In a disposable razor or razor cartridge comprising at least one blade mounted in a head or frame, said blade having a shaving edge, the improvement comprising wear indicating

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means for indicating the amount of wear on the shaving edge, said wear indicating means being located on the head or frame in close proximity to the shaving edge of said blade, and said wear indicating means comprising a strip of material extending generally parallel to the shaving edge, said strip of material gradually wearing away as the disposable razor or razor cartridge is used in shaving, the amount of material wearing away being correlated with the amount of wear on the shaving edge to provide a visual indication of the relative wear on the blade.

5,388,332

RAZOR BLADE UNITS AND BLADE SPACERS THEREFOR

Brian Oldroyd, Reading, United Kingdom, assignor to The Gillette Company, Boston, Mass.

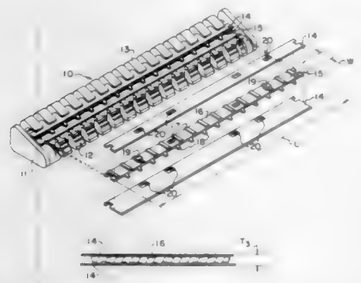
PCT No. PCT/US91/07598, § 371 Date May 27, 1993, § 102(e) Date May 27, 1993, PCT Pub. No. WO92/06828, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 11, 1991, Ser. No. 30,080

Claims priority, application United Kingdom, Oct. 22, 1990, 9022936

Int. Cl.[6] B26B *21/40*

U.S. Cl. 30—50 **6 Claims**



1. In a razor blade unit including:

a first flexible blade with an edge and having a length and a width and a bottom surface;

a second flexible blade with an edge and having a length substantially equal to the length of said first blade and having a width and a top surface;

said first blade bottom surface and said second blade top surface disposed in facing relationship and said edges of said blades facing in the same direction and aligned generally parallel to one another; and

a spacer disposed between said blades and having a generally rectangular cross-section with a top, bottom, front, and back surface, said top surface facing said first blade bottom surface, with said bottom spacer surface facing said second blade top surface, with said front spacer surface facing in the same direction as said edges;

said spacer having a length about equal to the length of said blades and having a width;

THE IMPROVEMENT COMPRISING:

said spacer being flexible about an axis generally parallel to the longer dimension of the rectangular cross-section of said spacer;

a plurality of ribs integral with said spacer and spaced along the top thereof, each rib having the same height;

a second plurality of ribs spaced along the bottom of said spacer each having the same height and offset between said top ribs;

said blades, when assembled into the blade unit, having a desired separation between said facing blade surfaces less than the thickness of said spacer plus the thickness of the top rib and the thickness of the bottom rib;

when said spacer and two blades are spaced the desired distance apart in close contacting relationship, said spacer deforms along its length to form a serpentine shape with said top and bottom ribs touching the respectively opposed bottom surface of said top blade and top surface of said second blade.

5,388,333

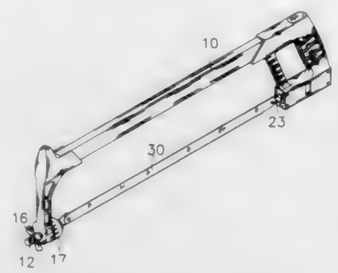
SAW BLADE ADJUSTING MECHANISM

Chun-Chiung Chen, No. 11-5, Kuo-Chung Rd., Ta-Li City, Taichung Hsien, Taiwan, Prov. of China

Filed Apr. 28, 1994, Ser. No. 234,107

Int. Cl.[6] B27B *21/02*

U.S. Cl. 30—508 **1 Claim**



1. A hack saw comprising:

a saw blade including a first end and a second end,

a frame assembly including a first end having a first toothed through hole formed therein and including a second end,

a locating block fastened to said second end of said frame assembly and including a second toothed through hole formed therein,

a first tightening up rod including a threaded front end inserted through said first toothed through hole and threaded with a first nut and including a flanged rear end connected to said first end of said saw blade,

a second tightening up rod including a front end connected to said second end of said saw blade and including a threaded rear end inserted through said second toothed through hole and threaded with a second nut,

a rotary adjusting knob mounted around said first tightening up rod and rotated to turn said first tightening up rod for changing angular position of said saw blade, said rotary adjusting knob including a front end terminating in a ratchet wheel for meshing with said first toothed through hole,

a first spring means engaged around said first tightening up rod and engaged between said rotary adjusting knob and said flanged rear end of said first tightening up rod for biasing said rotary adjusting knob toward said first end of said frame assembly and for biasing said ratchet wheel to mesh with said first toothed through hole,

a gear mounted around said second tightening up rod and meshed with said second toothed through hole,

a second spring means engaged around said second tightening up rod and engaged between said gear and said locating block,

said first and second tightening up rods being synchronously turned by said rotary adjusting knob in order to change angular position of said saw blade when said rotary adjusting knob is moved backwards to release said ratchet wheel from said first toothed through hole after said first nut is loosened.

5,388,334

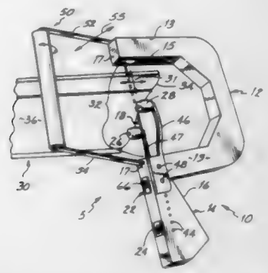
MECHANIZED COPING SAW

Thomas J. Halsey, 3493 Lewis Rd., Amelia, Ohio 45102

Filed Jan. 25, 1994, Ser. No. 186,655

Int. Cl.[6] B23D *53/08*

U.S. Cl. 30—509 **26 Claims**



1. A mechanized coping saw for coping a profiled edge of a piece of molding comprising:

a frame including a handle and a generally U-shaped portion joined to the handle, the U-shaped portion including a cavity formed within the U-shaped portion along its length and having opposite leg sections with outward ends, each leg section having an aperture proximate its outward end which opens into the cavity;

rotating elements located within the cavity;

an endless blade configured to travel within the cavity of the U-shaped portion around the rotating elements, the blade having an exposed cutting section which extends out of the U-shaped portion through the apertures and generally straight between the outward ends of the leg sections, said blade having a cutting edge on at least one side edge thereof;

a power drive system coupled to at least one of the rotating elements to drive the blade through the cavity so that the cutting section is operable to cut the piece of molding;

a first roller mounted to the frame to one side of the exposed blade cutting section, said roller being spaced from and facing to said cutting edge, the roller being rollable along the profiled edge of the molding at a position located generally one of forward and rearward of the cutting edge whereby by applying pressure to the roller against the profiled edge and gripping the handle firmly while pivoting the blade cutting section downwardly, a saw operator is able to begin a cut at precisely a desired point and to maintain a desired precise cutting pattern to support and steadily guide the blade cutting section along the profiled edge as the blade precisely cuts and copes the molding.

5,388,335

DEVICE FOR ADJUSTING A SIGHT

Theo Jung, am Alten Garten 7, 5204 Lohmar 1, Germany

Filed Apr. 8, 1993, Ser. No. 44,973

Claims priority, application Germany, Apr. 9, 1992, 9204927[U]

Int. Cl.[6] F41G *1/32*

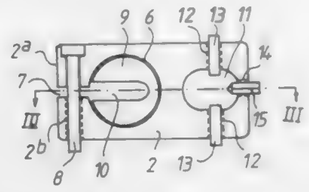
U.S. Cl. 33—260 **11 Claims**

1. A device for adjusting an optical sight on a small arm or a hand firearm, comprising:

an adjusting plate operatively arranged to be mounted on the arm and having a circular socket;

a rotary disk rotatably received in the circular socket and having a first slot extending from its edge;

a sight holder having a bottom plate containing a first plug on its bottom operatively arranged to engage said first slot, wherein said sight holder is arranged to rotate in a horizontal plane, relative to the adjusting plate, about a pivot point defined by the axis of rotation of said rotary disk within said circular socket, and is also arranged to tilt in a vertical plane relative to the adjusting plate; and,



means for fixing the sight holder in a stable position by blocking rotary movement of the rotary disk in the circular socket and by clamping the first plug in the first slot, causing said first slot to narrow.

5,388,336

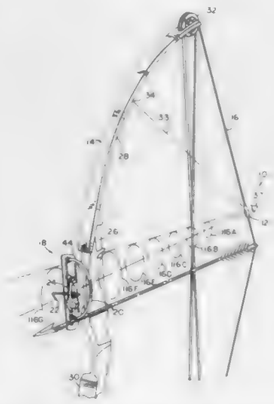
BOW SIGHT

Louis F. Pomaville, 4030 Chilton St., Muskegon, Mich. 49441

Filed Jun. 2, 1993, Ser. No. 71,393

Int. Cl.[6] F41G *1/467*

U.S. Cl. 33—265 **31 Claims**



1. A sight system for a bow having a bow string, comprising:

a peep adapted to be attached to the bow string, said peep including an orifice through which a target can be viewed, said orifice defining a view having an arcuately shaped marginal edge when sighted therethrough; and

a pendulum sight adapted to be attached to the bow, said pendulum sight including sighting means for accurately sighting on a target viewed through said orifice by centering said sighting means in said view, and further including a guard forming a partial ring around said sighting means for protecting said sighting means, said guard having a predetermined size defining an arcuately shaped outer perimeter alignable with the arcuately shaped marginal edge of said view for coarse sighting, whereby the bow can be quickly and accurately aimed by initially sighting on a target with the outer perimeter of the guard aligned with the marginal edge of said view, and then can be more accurately aimed by centering the sighting means and the guard on the target.

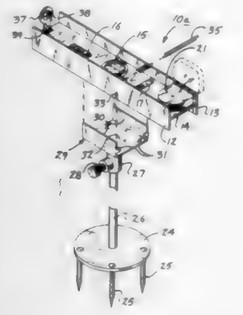
VOL 1171 ISS 2 FEB 14 1995 UMI

5,388,337

ANGLE ORIENTING LEVEL APPARATUS

William J. Powers, II, 10320 Escondido Cyn Rd., Agua Dulce, Calif. 91350

Filed Jun. 7, 1993, Ser. No. 72,120
Int. Cl.[6] **G01C** *9/28, 17/02*
U.S. Cl. 33—273 **4 Claims**



1. A level apparatus, comprising,

a central web, having a web planar top wall, with a first wall flange mounted fixedly and orthogonally to a first side of the central web, and a second wall flange fixedly and orthogonally mounted to a second side of the central web, wherein the first wall flange and the second wall flange are arranged in a parallel coextensive relationship relative to one another, with a first spirit level oriented parallel and medially of the first wall flange and the second wall flange secured within the central web, with a second spirit level orthogonally oriented relative to the first spirit level mounted within the central web,

and

a compass member mounted within the central web adjacent the first spirit level and the second spirit level, the compass member including a central compass housing, with the central compass housing including an outer housing ring rotatably mounted relative to the central compass housing, with the outer housing ring including a ring indicia radially directed of the central compass housing, the compass housing having a compass housing lens, the compass housing lens including a lens indicia member oriented parallel and between the first wall flange and the second wall flange,

the housing ring includes an annular continuous array of ring teeth in a facing relationship relative to the central web top wall, and the central web top wall having a spring plate fixedly mounted to the web top wall extending in contiguous communication between a plurality of said teeth to secure the ring in a predetermined rotative orientation relative to the compass housing.

5,388,338

INTERLOCKING SCREED LEVEL

Kevin R. Majors, 205 S. Story St., Boone, Iowa 50036

Filed Oct. 18, 1993, Ser. No. 136,915
Int. Cl.[6] **G01C** *9/24;* **B65D** *85/00*
U.S. Cl. 33—376 **2 Claims**

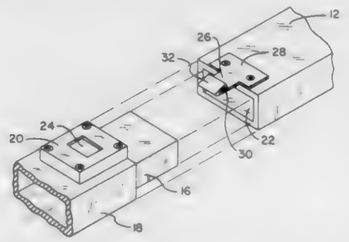
1. An interlocking screed level comprising:

a plurality of rectangularly-shaped screed sections, each having a top surface, a bottom surface parallel with the top surface, a front surface, a back surface parallel with the front surface, and a first end and a second end;

a joint member integral with the first end, the joint member of the first end comprising a rectangular preform extension member of a lesser boundary dimension than the outside boundary of the screed section extending axially from the first end of the screed section;

a joint recess integral with the second end, the joint recess of the second end comprising a rectangular entrance extending axially and inwardly from the exterior of the second end of the screed section to a depth commensurate with the length of the extension member and having an interior boundary dimension minimally greater than the exterior boundary dimension of the extension member for receiving extension members of adjoining screed sections;

a first lock means for interlocking screed sections at the first end of each screed section, the first lock means comprising a clip housing positioned medially at the first end and on the front surface of each screed section, the first lock means comprising a clip housing with an aperture passing from the exterior of a top surface of the clip housing to the exterior of a bottom surface of the clip housing and therethrough and an opening at one side of the clip housing;



a second lock means for interlocking screed sections at the second end of each screed section, the second lock means comprising a flanged clip latch positioned medially at the second end and on the front surface of each screed section for insertion in the clip housing opening of adjoining screed sections and thus securing the screed sections;

the bottom surface of the screed sections when secured together being planar for planing concrete surfaces;

a level means in the top surface for ensuring levelness of the concrete surface, the level means comprising a leveling bubble assembly having a glass tube partially filled with viscous fluid and located medially in a recess entering from the top surface of each screed section and

at least one end cap for encapsulating at least one exposed end of at least one of said screed sections for the purpose of protecting said at least one exposed screed section end from damage.

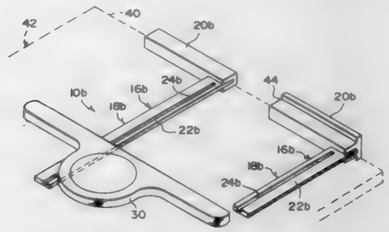
5,388,339

TRI-SQUARE PROTRACTOR

Daniel F. Roach, 1230 St. Lawrence Ave., Bronx, N.Y. 10472, and George Spector, 233 Broadway Rm. 3815, New York, N.Y. 10007

Filed Sep. 16, 1991, Ser. No. 760,686
Int. Cl.[6] **B43L** *7/12*
U.S. Cl. 33—419 **1 Claim**

1. An improved combination square set of the type having a protractor head and blade, wherein the improvement comprises the blade being a tri-square with a short arm with a guide surface normal to a long arm having a longitudinal groove thereon, so that when the protractor head is adjustably attached within said groove on said long arm of said tri-square the short arm can slide along an edge of a flat board, to allow the protractor head to measure a desired line of an angle on the flat board; wherein said short arm of said tri-square further



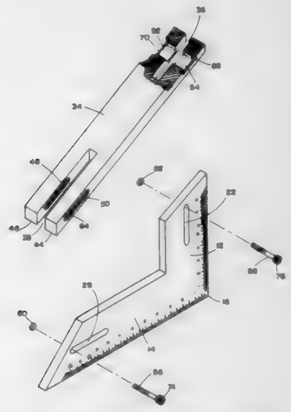
having a stepped edge parallel to said guide surface to be used as an additional border guide along the edge of the flat board.

5,388,340

STAIR LAYOUT SQUARE WITH ADJUSTABLE RAKE BAR

Alva R. Marty, 120 County Rd. 1168, Cullman, Ala. 35055

Filed Mar. 11, 1993, Ser. No. 29,528
Int. Cl.[6] **B43L** *7/10, 7/14*
U.S. Cl. 33—421 **1 Claim**



1. A layout square for determining the location of horizontal run and vertical rise lines on a stair stringer and marking such locations comprising:

an L-shaped square having integral, co-planar blades comprising a long blade having run distances marked on an outer edge thereof and a short blade having rise distances marked on an outer edge thereof;

each of said blades having an elongated slot parallel to a said outer edge, said slots extending along predetermined ranges of run and rise values and ends of said shots defining said ranges;

a rake bar having an elongated contact surface perpendicular to the plane of said blades and engageable with an edge surface of a said stringer, each end of said rake bar being movably connected to a said blade end through a said slot whereby said contacting surface may be aligned with a predetermined run marking and a predetermined rise marking;

markings on said blades showing said rise and run distances and extending diagonally with respect to said outer edges, said markings being disposed generally parallel to said rake bar contact surface;

said run markings being provided at increments within a range of 10 to 12 inches, inclusive, and said rise markings being within a range of 6 to 8 inches, inclusive; and

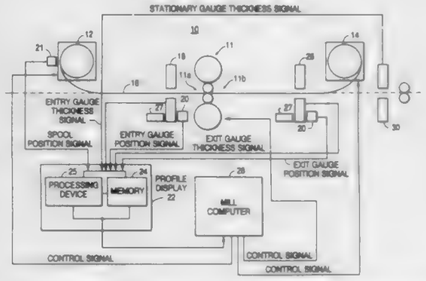
means for securing said rake bar in fixed relation to a said blade upon alignment thereof.

5,388,341

VIRTUAL TWO GAUGE PROFILE SYSTEM

Bipin Patel, Gaithersburg, Md., assignor to Data Measurement Corporation, Gaithersburg, Md.

Filed Aug. 4, 1993, Ser. No. 102,055
Int. Cl.[6] **G01B** *5/06, 7/06*
U.S. Cl. 33—501.03 **22 Claims**



1. A profile system for measuring a profile of a strip material produced in a reversing mill in which a direction of travel of the strip is reversible, the system comprising:

a single thickness gauge that measures thickness of the strip and generates thickness signals;

a moving device coupled to the gauge for controllably moving the gauge transversely to the strip such that the gauge measures the thickness of the strip at different points across a width of the strip along a length of the strip in one pass of the strip through the gauge, and maintaining the gauge in a stationary position in another pass of the strip through the gauge such that the gauge measures the thickness of the strip at different points along a longitudinal line of the strip along said length; and

means for interpreting measurements of the thickness of the strip at the different points into profile data the means for interpreting being connected to the gauge to receive the thickness signals.

5,388,342

ASSEMBLY FOR SUPPORTING AND GUIDING A MOVABLE MEMBER OF A MACHINE, PARTICULARLY A MEASURING MACHINE

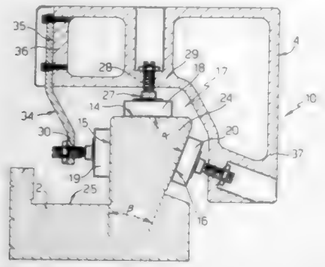
Enrico Garau, Turin, and Pasqualino Poggi, Moncalieri, both of Italy, assignors to DEA SpA, Turin, Italy

Filed Jul. 27, 1993, Ser. No. 98,457
Claims priority, application Italy, Jul. 31, 1992, TO92 A 000660
Int. Cl.[6] **G01B** *5/03, 7/03*
U.S. Cl. 33—503 **14 Claims**

1. An assembly (**10**) for supporting and guiding a movable member (**3**) of a machine (**1**) for movement along an axis (X) relative to a support member of the machine (**1**) itself, of the type comprising a first slide surface (**14**) formed on the support member (**2**) and extending parallel to the said axis X, at least a first bearing pad fixed to the movable member (**3**) and slidable on the first surface (**14**), a second slide surface (**15**) formed on the support member (**2**) and extending parallel to the said axis (X), at least one second bearing pad (**19**) fixed to the movable member (**3**) and slidable on the second surface (**15**), the first and second surfaces (**14**, **15**) extending in respective planes which intersect each other, characterized in that it includes a third slide surface (**16**) formed on the support member and extending in a direction parallel to the said axis (X) and in a

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plane inclined to the said planes in which the first and second slide surfaces (**14**, **15**) lie, and at least one third bearing pad (**20**) fixed to the movable member (**3**), slidable on the third surface (**16**) and arranged to balance the loads exerted by the first and



second bearing pads (**18**, **19**) on the first and second slide surfaces (**14**, **15**) and further characterized in that the third bearing pad is magnetic, the third surface lying in a plane forming respective obtuse internal dihedral angles with the planes in which the first and second surfaces lie.

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MEASURING MACHINE

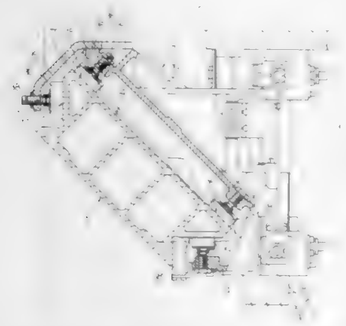
Enrico Garau, Turin; Pasqualino Poggi, Moncalieri, and Domenico Sola, Rivalta, all of Italy, assignors to DEA spa, Turin, Italy

Filed Jul. 27, 1993, Ser. No. 98,458

Claims priority, application Italy, Jul. 31, 1992, T092 A 000661

Int. Cl.[6] G01B *5/03, 7/03*

U.S. Cl. 33—503 **10 Claims**



1. A measuring machine (**1**) of the type comprising:

a base (**2**) having an upper, horizontal reference plane (2') parallel to first and second axes (X, Y) of a set of three cartesian axes (X, Y, Z);

a portal (**3**) movable on the base (**2**) along the first axis (X) and having a cross-member (**6**) extending along the second axis (Y);

a carriage (**7**) carried by the cross-member (**6**) and movable thereon along the second axis (Y);

a measuring head (**8**) carried by the carriage (**7**) and movable relative thereto along a third axis (Z) of the set of three axes;

the cross-member (**6**) including a guide (**14**) for the carriage (**7**), the carriage (**7**) having a plurality of bearing pads (**25**, **28**, **29**, **30**) which cooperate with respective slide surfaces (**15**, **16**, **18**, **17**) of the guide (**14**),

characterized in that the guide (**14**) defines a main slide plane (π) for the carriage (**7**) which forms an acute dihedral angle (α) with the reference plane (2'), the guide (**14**) and the carriage (**7**) having cross-sections which are elongate in directions parallel to the main slide plane (π) and further characterised in that the guide (**14**) is dovetail shaped and has a section in the form of an isosceles trapezium with the longer base disposed in the main slide plane, the first and second slide surfaces (**15**, **16**) being formed on a face of the guide (**14**) defining the longer base in section.

5,388,344

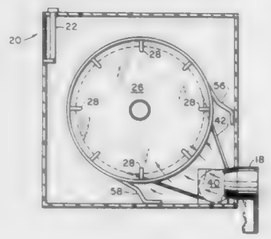
MINIATURE CLOTHES DRYER

Beth K. Wallach, 31 Park Cir., White Plains, N.Y. 10603

Filed Mar. 1, 1994, Ser. No. 204,115

Int. Cl.[6] F26B *19/00*

U.S. Cl. 34—91 **5 Claims**



1. A miniature clothes dryer adapted to operate in combination with a hair dryer that includes a heating element, an air blower for passing air across said heating element and a hot air outlet nozzle, said clothes dryer comprising, in combination:

(a) a dryer housing having an inlet opening to receive and retain the outlet nozzle of a hair dryer, an outlet opening for discharging air passed through the dryer housing and a door for insertion and removal of clothes;

(b) a clothes drying drum, mounted for rotation within said housing and having walls for supporting and tumbling clothes inside thereof which are inserted through said housing door; and

(c) drive means including an electric motor for positively rotating said drum;

wherein said drum walls have a plurality of openings for the passage of air into and out of said drum, and wherein said housing has a plurality of baffles for directing all of the hot air from said inlet opening through said openings to the inside of said drum and from the inside of said drum through said openings to said outlet opening.

5,388,345

DIELECTRIC DRYING OF METAL STRUCTURES

Kevin R. Brundage, Corning; Tudor C. Gheorghiu, Painted Post, both of N.Y.; Victor F. Janas, Robbinsville, N.J.; Vincent Kwapong, Corning, and Christopher J. Malarkey, Painted Post, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Nov. 4, 1993, Ser. No. 147,755

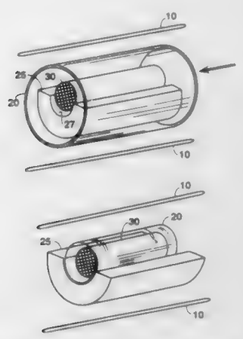
Int. Cl.[6] F26B *3/34*

U.S. Cl. 34—256 **29 Claims**

1. A method of drying electrically conductive structure by:

placing a wet electrically conductive structure in a shield having dielectric constant higher than the dielectric constant of air; and

placing the shield and structure in an electromagnetic energy field in the frequency range of between about 10 MHz and 3.0 GHz to dry the structure, the electromagnetic energy field being generated by electrodes positioned on the outside of the shield away from the structure.



5,388,346

METHOD AND APPARATUS FOR DRYING CERAMIC WARE BY USE OF AIR JETS

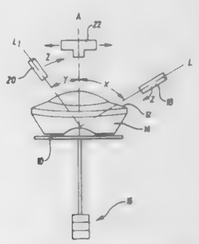
David C. Liversidge, Blythe Bridge, United Kingdom, assignor to Rotajet Limited, Stroke-on-Trent, United Kingdom

Filed Sep. 14, 1992, Ser. No. 944,885

Claims priority, application United Kingdom, Sep. 18, 1991, 9119898

Int. Cl.[6] F26B *7/00*

U.S. Cl. 34—438 **17 Claims**



13. A method of drying an article of ceramic ware comprising directing at least one jet of air onto the article at a predetermined temperature and pressure, and establishing relative rotation between the article and the jet at speeds of between 2 and 16 revolutions per minute, about an axis passing substantially through the center of the article, whereby the jet of air is directed onto the article at or near the periphery thereof in the direction of said axis.

5,388,347

DRYER SECTION IN A PAPER MACHINE

Reima Kerttula, and Jouko Yli-Kauppila, both of Muurame, Finland, assignors to Valmet Paper Machinery, Inc., Helsinki, Finland

Filed Dec. 29, 1993, Ser. No. 174,710

Claims priority, application Finland, Dec. 30, 1992, 925941

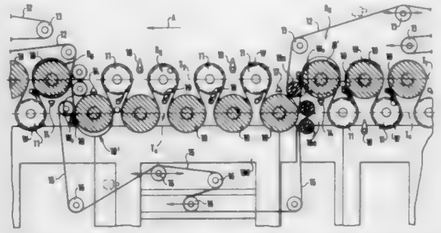
Int. Cl.[6] F26B *3/00*

U.S. Cl. 34—457 **29 Claims**

25. A method for intensifying evaporation of water from a web, reducing transverse shrinkage of the web and improving runnability of the web in a dryer section of a paper machine, comprising the steps of:

providing a normal dryer group having a single-wire draw, drying cylinders in an upper row at a first height level and reversing cylinders in a lower row,

providing an inverted dryer group having drying cylinders in a lower row at a second height level and reversing cylinders in an upper row,



transferring the web over a gap between said normal dryer group and said inverted group, and

arranging at least one of said drying cylinders in connection with the transfer of the web over said gap in a displaced position from said first height level or said second height level.

5,388,348

DRYING MACHINE AND METHOD WITH A PREDRYING OBJECT-SEPARATING FUNCTION

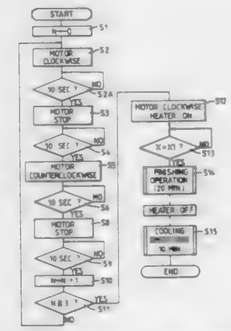
Miho Tanaka, Aichi, and Kinya Hayashi, Gifu, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 9, 1993, Ser. No. 28,183

Claims priority, application Japan, Mar. 31, 1992, 4-077438

Int. Cl.[6] F26B *3/00, 21/06*

U.S. Cl. 34—499 **14 Claims**



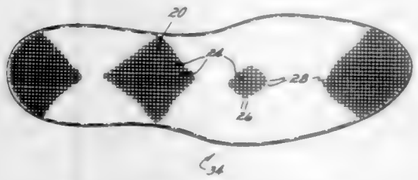
12. A method of operating a drying machine for drying clothes, the drying machine of the type including a rotatable drum having a drying chamber therein, heating means for heating air to the drying chamber, drive means for rotating the rotating drum, and control means for controlling the heating means and drive means, comprising the steps of:

turning off the heating means during a pre-drying operation which occurs before a drying operation and blowing unheated air into the drying chamber; and

actuating the drive means during the pre-drying operation to alternately rotate the drum clockwise and counterclockwise.

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5,388,349
FOOTWEAR INSOLE
John M. Ogden, Cincinnati, Ohio, assignor to Ogden, Inc., Cincinnati, Ohio
Filed Jan. 31, 1992, Ser. No. 828,426
Int. Cl.[6] A43B *13/38;* **B32B** *3/10*
U.S. Cl. 36—43 **18 Claims**



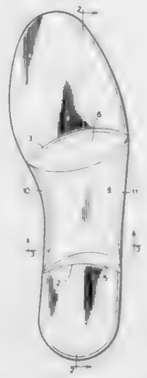
1. An insole for an article of footwear, comprising:
a slip-resistant, non-absorbent and thermally non-conductive first layer formed with a plurality of apertures, said apertures forming wall sections in said first layer therebetween;
a stabilizing layer formed of non-woven fibrous material having a first surface affixed to said first layer and a second surface, said stabilizing layer being effective to substantially reduce movement of said wall sections of said first layer relative to one another in response to the application of a shear force to said first layer;
a barrier layer affixed to said second surface of said stabilizing layer, said barrier layer being formed of a substantially liquid impervious material selected from the group consisting of acrylic latex, polyethylene, vinyl and an ethylene-vinyl acetate copolymer, said barrier layer being adapted to overlie the sole of an article of footwear.

5,388,350
ROLLER SHOE CONSTRUCTION
Bill H. Parker, Jr., 2171 Peachtree Cir., Pittsburg, Calif. 94565
Filed Dec. 31, 1992, Ser. No. 999,272
Int. Cl.[6] A43B *5/00, 5/04;* **A63C** *17/00, 17/14*
U.S. Cl. 36—115 **2 Claims**



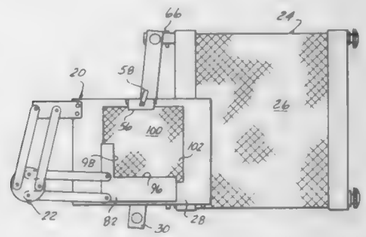
1. A roller shoe construction, comprising,
a shoe upper, the shoe upper having a shoe sole mounted to the shoe upper, with the shoe sole having a first durameter of hardness, and a flexible shoe plate mounted coextensively to the shoe sole, wherein the shoe plate is formed of a second durameter hardness greater than the first durameter of hardness, and the shoe plate includes a forward end spaced from a rearward end, and spaced sides, and a row of spaced parallel semi-cylindrical cavities are directed into the shoe plate at spaced intervals coextensive with the shoe plate from the forward end to the rearward end, and each of the semi-cylindrical cavities includes a roller member rotatably mounted within each of the semi-cylindrical cavities,
a resilient first boss lug mounted to the forward end extending forwardly of the shoe plate, and a resilient second boss lug mounted to the rearward end extending rearwardly of the shoe plate, wherein the first boss lug and the second boss lug are spaced above a shoe plate bottom surface, wherein pivoting of the shoe plate permits selective contact of the first boss lug and the second boss lug for braking,
each of the semi-cylindrical cavities includes a semi-cylindrical support housing contained coextensively therewithin, each support housing defines an arc greater than one hundred eighty degrees and each semi-cylindrical support housing receives one of said rollers therewithin,
and
a roller bearing cage mounted coextensively between each support housing and each roller.

5,388,351
CUBOID-NAVICULA NAVICULAR SUPPORT
Jane Mitchell, and Thomas Pekar, both of 51 Mountain Street, St. Catharines, Ontario, L2T 2S6, Canada
Filed Mar. 4, 1993, Ser. No. 26,069
Int. Cl.[6] A43B *7/22*
U.S. Cl. 36—145 **15 Claims**



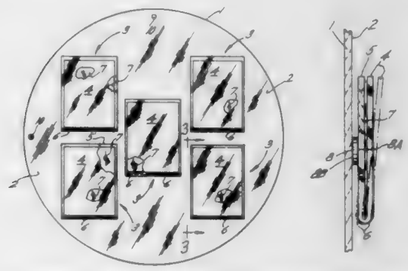
1. An arch support for treatment of problems arising from displacement of the cuboid-navicular arch formed by the cuboid bone and the navicular bone of a user's foot, comprising:
a base surface having a predetermined length extending between a rear edge and a front edge;
a top surface raised above the base surface and having a predetermined length and a region of maximum height relative to the base surface;
a rear surface sloping upwardly and forwardly from the rear edge of the base surface to the top surface; and
a front surface sloping downwardly and forwardly from the top surface to the front edge of the base surface,
wherein the region of maximum height of the top surface relative to the base surface is located adjacent to the rear surface and is fit so that the maximum height is located during use just forwardly of the calcaneus and underneath the cuboid-navicular arch of the foot for engaging the cuboid-navicular arch in supporting the foot, whereby a medial edge of the cuboid bone is lifted and a medial edge of the navicular bone is allowed to rotate downwardly.

5,388,352
NEEDLEWORK PATTERN DISPLAY AND VISUAL GUIDING DEVICE
Lilias Ralph, 6917 Black Pine NE., Albuquerque, N. Mex. 87109
Filed Sep. 2, 1993, Ser. No. 115,235
Int. Cl.[6] D06C *3/08*
U.S. Cl. 38—102.1 **8 Claims**



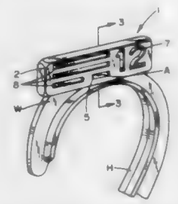
1. A needlework pattern display and visual guiding device, comprising:
means for displaying a needlework pattern, wherein the pattern display means comprises:
a panel having a generally flat configuration and sized to display a desired portion of the pattern; and
means, attached to the panel for retaining the pattern on the panel;
means for releasably attaching the pattern display means to a needlework stretching apparatus;
pointing means for guiding a user's eyes to a desired position on the pattern, wherein the guiding means comprises:
a horizontal cursor bar; and
a vertical cursor bar;
wherein the cursor bars are slidably attached to, and flush against the panel and wherein the cursor bars can selectively be placed at any desired location on the pattern; and
means for attaching the guiding means to the pattern display means.

5,388,353
CARD DISPLAY DEVICE
Virginia L. Givnan, 8175 SW Ernst Rd., Portland, Oreg. 97225
Filed Aug. 16, 1993, Ser. No. 106,443
Int. Cl.[6] G09F *1/10*
U.S. Cl. 40—159 **5 Claims**



1. A display device for a card or a photograph comprising,
a base of transparent material,
a transparent card holder,
attachment means attaching said holder to said base,
said card holder including a transparent back and face member, means biasing the face member toward said back for engagement with a card in the holder to hold same in place, and
said transparent base and said card holder permitting viewing of the front and rear sides of a card without removing same from the display device.

5,388,354
INDICATORS FOR GARMENT HANGERS
David J. Marshall, East Doncaster, and Joseph C. Hollis, East Bentleigh, both of Australia, assignors to Spotless Plastics Pty. Ltd., Moorabbin, Australia
Continuation of Ser. No. 985,342, Nov. 30, 1992, abandoned, which is a continuation of Ser. No. 741,462, Sep. 17, 1991, abandoned. This application Dec. 30, 1993, Ser. No. 176,087
Claims priority, application Australia, Feb. 8, 1989, PJ2623
Int. Cl.[6] G09F *3/00*
U.S. Cl. 40—322 **22 Claims**



1. A plastic indicator suitable for attachment to a hook of a molded plastic garment hanger wherein the hook has an upwardly projecting web, said indicator comprising:
a body adapted to display indicia,
said body comprising side walls, end walls and a top wall, dimensioned to form said body defining a downwardly opening cavity, said downwardly opening cavity shaped and dimensioned to receive said upwardly projecting web formed on the hook of said molded plastic garment hanger, said cavity of said body being located between at least said side walls and said top wall, said side walls extending from a smoothly rounded portion of said top wall and ending with a relatively sharp edge as defined by a substantially non-rounded lower most edge of at least each said side wall,
said end walls being spaced to engage in use spaced points on said web such that said indicator is in use stably supported on said web,
at least one of said side walls defining at least one aperture which extends completely through said side wall, said side wall completely surrounding said aperture, said aperture being adapted to interlock with corresponding means on the upwardly projecting web of the hook,
said smoothly rounded portion and said sharp edges facilitating sorting of said indicators into a preferred orientation.

5,388,355

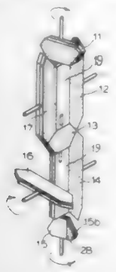
Patent Not Issued For This Number

5,388,356
CHANGEABLE NUMERICAL CHARACTERS FOR A DISPLAY SIGN
Timothy Kalivas, 138 Pine Neck Ave., Patchogue, N.Y. 11772
Filed Aug. 30, 1991, Ser. No. 752,832
Int. Cl.[6] G09F *11/00*
U.S. Cl. 40—450 **8 Claims**

2. A price display for selectively displaying at least one selected number, a background structure comprising a background surface plane, a plurality of flat panels, each of said panels having faces, each panel pivotally secured in said structure and positionable with a displayed one of its faces substantially coplanar to the background surface plane when the displayed face is in a display position, said plurality of flat panels including at least one group of said flat panels consisting of seven of said plurality of panels pivotally mounted to pivot

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through the background surface plane and arranged to form a digital-type FIG. 8, each of said panels of said group having one of its faces contrasting optically with said background structure and another of its faces non-contrasting optically with said structure, three of said panels of said group being disposed substantially horizontally, two of the four remaining panels of said group being disposed in vertical side by side and spaced relation forming the upper sides of the figure eight, thee other two of said four panels being disposed in vertical side by side and spaced relation forming the lower sides of the FIG. 8; means for mounting said four remaining panels of said group for rotation about substantially horizontal axes passing near the geometric centers of said panels of said group, each of three



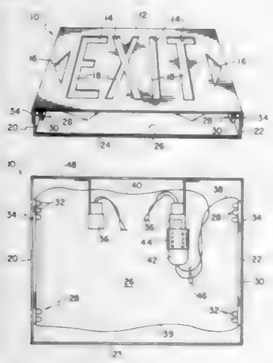
horizontal panels being disposed between the ends of said side by side panels, means mounting said three of said panels of said group for rotation about substantially vertical axes passing near the geometric center of said three of said panels of said group whereby said panels may be selectably rotated through the background surface plane from a non-contrasting orientation with said background structure to a position wherein said panels contrast with said structure to form a series of symbols including the numbers 0 thorough 9.

5,388,357

KIT USING LED UNITS FOR RETROFITTING ILLUMINATED SIGNS

Mark Malita, Annandale, N.J., assignor to Computer Power Inc., High Bridge, N.J.

Filed Apr. 8, 1993, Ser. No. 45,483
Int. Cl.[6] G09F *13/04*
U.S. Cl. 40—570 **24 Claims**



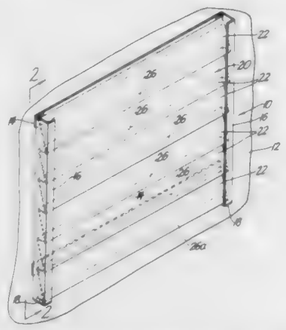
1. An illuminated sign, comprising:
a housing with a display panel at the front, said display panel having a translucent portion defining at least one indicia, said indicia being visible outside said at least when said sign is illuminated;
at least one LBD light source in said housing, said at least one light source including a plurality of light emitting diodes that generate light when supplied with electrical energy, said at least one light source including a base having a first face with said plurality of light emitting diodes mounted on said first face;
fastening means, said at least one light source being positioned in said housing by said fastening means;
reflector means within said housing for receiving light from said at least one light source and reflecting at least a portion of said received light onto said display panel, whereby said indicia are illuminated and visible externally of said housing; and
electrical connection means for connecting said at least one light source to an electrical power supply so as to selectively supply electrical energy to said at least light source, said electrical connection means including a socket within said housing for one of an incandescent lamp and a fluorescent lamp, and said electrical connection means further including electrical adaptor means positioned between said socket and said light source for electrically and mechanically engaging both said socket and also said at least one light source to bring electrical power to said at least one light source when power is made available at said socket, said electrical adaptor means including means for engaging said socket and a female receptacle, said electrical connection means further including a plug connected electrically to said at least one light source, said plug having contacts for engagement in said female receptacle.

5,388,358

IDENTIFICATION BOARD

Mohammad S. Mazhar, Sterling Heights, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 19, 1994, Ser. No. 245,793
Int. Cl.[6] G09F *13/16, 7/08*
U.S. Cl. 40—582 **10 Claims**



1. An identification board mountable on a panel, comprising:
a generally planar space envelope at the panel, the identification board located in the envelope;
a pair of upright brackets on the panel;
channels defined at least in part by the brackets, the channels having an open upper end and a closed lower end;
faciae oriented at an oblique angle to a horizontal reference plane;
first faces of the faciae;
second, oppositely oriented faces of the faciae;
a layer on the first face reflective of at least one selected frequency of light;
means on the second face to render the second face less reflective of the one selected frequency than the layer;
gradins oblique to the faciae and alternated with the faciae;
edge zones of at least some of the the faciae and gradins closely fit with the channels.

5,388,359

DISPLAY APPARATUS

Dale DeWitt, Ladysmith, Wis., assignor to Acrylic Design & Fabricators Inc., Ladysmith, Wis.

Filed Dec. 15, 1993, Ser. No. 166,852
Int. Cl.[6] G09F *15/00*
U.S. Cl. 40—606 **7 Claims**



1. A display apparatus adapted to be mounted on a support means, said display apparatus comprising:
a U-shaped member having a bight portion of a preselected thickness and a pair of side portions extending parallel to one another from opposite ends of said bight portion;
a bore extending through said bight portion from a top side to a bottom side along an axis perpendicular to said bight portion, said bore being characterized by (i) having a polysided cross section, and (ii) having tapered sides so that said bore has a width at said top side larger than a width of said bore at said bottom side;
a threaded aperture in one of said side portions extending there through along an axis generally perpendicular to said one of said side portions;
screw means adjustably positioned in said threaded aperture; and
a display element comprising in part a polysided plug having a polysided cross section and having preselected dimensions so that said plug may fit within said bore,
whereby said U-shaped member may be mounted on top of said support means and secured thereto by said screw means, and
whereby said display element may be positioned in a plurality of preselected angular positions about said bore axis said plug within said bore.

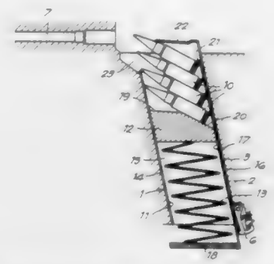
5,388,360

LOADER WITH TILTING CARTRIDGES FOR PISTOL OR MACHINE PISTOL

Canio Fortunato, Cheratte, Belgium, assignor to Fabrique Nationale Nouvelle Herstal, en abrege FNNH, societe anonyme, Herstal, Belgium

PCT No. PCT/BE92/00026, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993
PCT Filed Jun. 19, 1992, Ser. No. 974,586
Claims priority, application Belgium, Jun. 20, 1991, 09100595
Int. Cl.[6] F41A *9/69*
U.S. Cl. 42—50 **10 Claims**

1. A cartridge loader for pistols or machine pistols having a grip provided with a housing for the loader, comprising:
(A) a casing extending in a longitudinal direction having:
(1) a plurality of longitudinal walls, including a front wall, a back wall substantially parallel to the front wall and two side walls between the front and back walls;
(2) at least one lip attached on one end of the casing to one of the side walls, for retaining cartridges inside the casing, the lip forming an upper end of the casing and extending in a transversal direction in which cartridges may be discharged from the casing by a recoil slide in the pistol or machine pistol;
(3) a bottom portion;
(B) a mobile feeder mounted inside the casing, having a top side including a front portion and a back portion, the back portion being inclined with respect to the transversal direction downwardly away from the front portion; and
(C) a spring mounted in the casing between the feeder and the bottom portion;
(D) wherein the front wall and the lip define an opening for discharging cartridges;



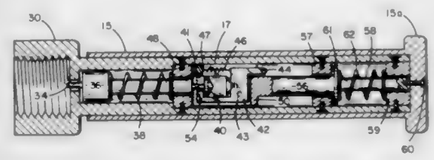
(E) the back wall of the casing including an exterior portion fixed to the side walls and an interior portion shiftable in the longitudinal direction along the exterior portion, the bottom portion of the casing being fixed to one end of the interior portion; and
(F) the interior portion having an upper end provided with at least one protrusion directed to the inside of the casing, for retaining cartridges, and being shiftable between an inserted position wherein the protrusion is situated at the upper end of the casing and a second position wherein the protrusion is situated below the upper end of the casing and wherein one end of the interior portion whereon the bottom portion of the casing is fixed projects outside the exterior portion.

5,388,361

NIGHTSTICK WITH SHELL-FIRING MECHANISM

Thomas L. Farr, Burnsville, Minn., assignor to James E. Alexander; Richard B. Alexander, both of New Brighton and Robert W. Alexander, Mahtomedi, all of Minn.

Filed Mar. 22, 1994, Ser. No. 215,630
Int. Cl.[6] F41H *9/10*
U.S. Cl. 42—1.16 **18 Claims**



1. A nightstick and shell-firing apparatus comprising:
(a) a nightstick having a club portion and a handle portion, the handle portion being threadably attached to the club portion at one end thereof;
(b) a hollow barrel affixed inside said club portion, said barrel having a shell-receiving chamber proximate the end of said club portion which is threadably attached to said handle portion;
(c) a movable sleeve surrounding said handle portion, said

sleeve being rearwardly slidable relative to said handle and club portions;

(d) a firing mechanism inside said handle portion, said firing mechanism linked to said movable sleeve, and comprising a firing pin movably positionable into said shell-receiving chamber, a pivotable trigger connected to said movable sleeve, said trigger having a sear for latching against said firing pin for rearward movement and a contact surface for pivotally releasing said sear; a first fixed stop in said handle portion engageable by said contact surface after predetermined rearward movement of said trigger; and a compression firing spring engageable between said firing pin and a second fixed stop in said handle portion;

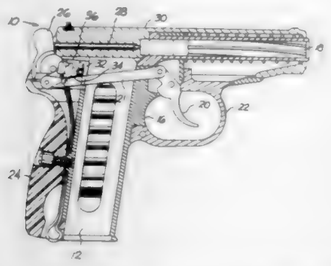
whereby said sleeve may be moved rearwardly to cause compression of said firing spring, and at a predetermined rearward position said trigger pivotally releases said sear to permit said firing spring to force said firing pin into said shell chamber.

5,388,362

MAGAZINE SAFETY FOR A MAKAROV PISTOL

Roy L. Melcher, Alexandria, Va., assignor to International Armament Corporation, Alexandria, Va.

Filed Nov. 12, 1993, Ser. No. 151,285
Int. Cl.[6] F41A *17/36*
U.S. Cl. 42—70.02 **17 Claims**



13. The method of providing an auxiliary safety device for a semi-automatic pistol of the Makarov design, said pistol constituting a blowback-operated, magazine-fed pistol that is operable in a double-action or a single-action mode, said pistol having factory-original parts that include a frame, a slide, a magazine, a well in said frame for receiving the magazine, a trigger, a trigger bar, a hammer, a manual safety, a sear for acting on the hammer, a sear cam for acting on the sear and the hammer, and a post about which the sear pivots during normal operation of the pistol, the auxiliary safety device serving to preclude firing of the pistol when the magazine has been removed from the pistol's well, comprising the steps of:

a. providing a structural plate that has a relatively large and generally central aperture that is sized to slip over and rotate with respect to the post about which the sear pivots, and the generally central aperture essentially dividing the plate into front and rear portions, and the plate also having a second and relatively small aperture that is located in the front portion, said second aperture being sized to permit engagement with one end of a torsion spring, and said plate having first and second normal positions, the first position being one in which a portion of the plate extends into the magazine's well for a distance that is sufficient to encroach into the space that is normally occupied by an installed magazine, and the presence of a magazine in the pistol's well causing the plate to be pivoted backward about its central aperture to its second position in spite of the urging of a torsion spring that biases the plate toward its first position, and the rear portion of the plate interfering with normal operation of the sear cam when the plate is in its first position by preventing the sear cam from moving far enough to allow the hammer to be released when the pistol's trigger is pulled; and

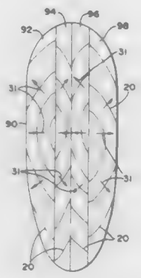
b. providing a torsion spring formed from wire and having first and second ends, and the torsion spring having a generally circular wire coil located between the first and second ends, and the spring's first end having a hook that engages the second aperture in the plate, and the spring having a length so that its second end will rest on a rearward portion of the pistol's trigger bar, and the generally circular wire coil having a diameter that is larger than that of the post about which the sear pivots, such that the torsion spring may be mounted on the post about which the sear pivots, and the spring being so shaped that when it is installed it continuously biases the structural plate to its first position, whereby the pistol cannot be fired in either its single-action or its double-action mode when the magazine has been removed and the structural plate has been biased to a position in which it protrudes into the magazine well.

5,388,363

LAMINATED GUN STOCK

Merlin L. Smart, 134 Zimmerman Rd., Kalispell, Mont. 59901

Continuation of Ser. No. 959,434, Oct. 13, 1992, abandoned. This application Apr. 4, 1994, Ser. No. 222,163
Int. Cl.[6] F41C *23/14*
U.S. Cl. 42—71.01 **13 Claims**



1. A method of making a laminated rifle stock comprising the steps of:

providing an elongate wood blank with lateral growth rings, the blank having a length and spaced ends;

cutting first and second layers from the blank each layer extending the length of the blank;

rotating the first layer about its longitudinal axis with respect to the second layer; and

bonding the rotated first layer to the second layer such that the first and second layers have substantially the same end-to-end alignment as the first and second layers had as part of the wood blank from which the first and second layers were cut and growth tings on the first layer substantially mirror growth rings on the second layer.

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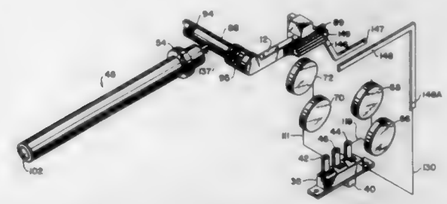
INTERNALLY MOUNTED LASER GUNSIGHT

Arthur Paldino, 470 Halstead Ave., Harrison, N.Y. 10528

Filed Jun. 14, 1993, Ser. No. 76,419
Int. Cl.[6] F41G *1/34*
U.S. Cl. 42—103 **3 Claims**

1. A semiautomatic gun having a gun frame, a barrel, a handle having a base, a removable metallic magazine in said handle, a slide stop and an internally mounted laser sight system, wherein a circuit board, diode and collimating lens for said laser sight are all contained within a cylindrical shaft, said shaft having a forward end and a rearward end portion, and a longitudinal axis, which said shaft also serves as the recoil spring guide for said gun, said diode and said collimating lens

being located at said forward end of said shaft, and said lens collimating a beam of light from said diode along said longitudinal axis of said cylindrical shaft and parallel to the barrel of said gun, electrical power for said circuit board being supplied through a conductive rod running along said longitudinal axis of said rearward end portion of said shaft and through said gun slide stop which is conductively isolated from said gun frame, and conductive strips mounted on a non-conductive plastic



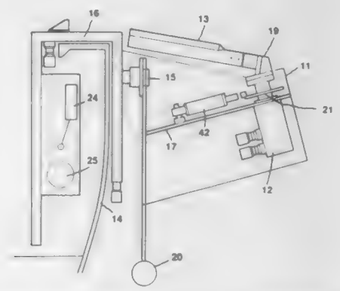
panel in a first side of said gun handle, said strips in conductive communication with first switch means in said base of said gun handle, said first switch means controlling current from one of at least two sets of batteries mounted in opposed sides of said handler conductive means between said sets of batteries and said metallic magazine carried in said handle of said gun to complete an electrical circuit when said magazine is in said handle and interrupt said circuit when said magazine is removed from said handle.

5,388,365

BRANCH LINE DEPLOYMENT MECHANISM

Rodger A. Beaton, Umina, Australia, assignor to Webmac Nominees Pty Limited, North Ballarat, Australia

PCT No. PCT/AU92/00176, § 371 Date Oct. 19, 1993, § 102(e) Date Oct. 19, 1993, PCT Pub. No. WO92/18000, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 16, 1992, Ser. No. 137,160
Claims priority, application Australia, Apr. 19, 1991, PK5729
Int. Cl.[6] A01K *81/04*
U.S. Cl. 43—6.5 **12 Claims**



1. A deployment mechanism for use in deploying a branch line in long line fishing, said deployment mechanism including:

a drive motor having a drive shaft;

an elongate deployment arm having a free end, and an opposite end connected to said drive shaft of said motor, for rotational movement of said free end of said deployment arm about a longitudinal axis of said drive shaft;

an axially extending channel being provided at the free end of said deployment arm for holding a baited line; and

drive means for imparting an intermittent rotational moment to said deployment arm;

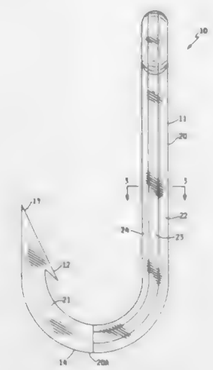
whereby in a first mode said deployment arm is held to allow for the loading of a baited line into said channel and in a second mode said drive means imparts a rotational moment to said deployment arm, so as to cast said baited line out of said channel and away from said deployment arm.

5,388,366

FISH HOOK LURE AND METHOD OF MAKING SAME

Gary L. Kretschmer, Rte. 2 Box 299AA, Fall Creek, Wis. 54742

Continuation of Ser. No. 40,843, Mar. 31, 1993, abandoned. This application Jan. 27, 1994, Ser. No. 187,379
Int. Cl.[6] A01K *83/00*
U.S. Cl. 43—43.16 **15 Claims**



1. A painted fish-hook lure ready to use without adding bulky materials to the fish hook lure comprising a hook having a shape provided with a shank carrying an eye for attaching a line thereto and further carrying a bend with a pointed end for hooking a fish with the fish hook having an outer surface for reflecting light of a first wavelength with the improvement comprising:

an outer thin coating of a single decorative paint material secured on a first surface region of the fish hook, said outer thin coating of decorative paint material conforming to and covering the first surface region of the fish hook from the eye of the hook to the bend of the hook without adding bulk to the hook, said outer coating of decorative paint material having an outer surface substantially uniformly spaced from the outer surface of the hook, said outer thin coating of decorative paint material sufficiently thin to maintain the shape of the fish hook and prevent visual obscuring the shape of the fish hook, said outer thin coating of decorative paint material reflecting light of a wavelength different from the reflected light of the outer surface of the pointed end of the fish hook to provide the shank of the hook with greater visual attractiveness than the point of the hook.

5,388,367

SHEATH-GUARD

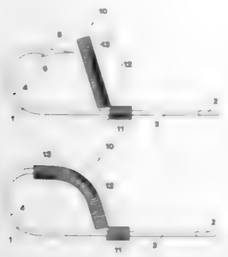
Theodore B. Rydell, Rte. 2, Box 192B1, Shawano, Wis. 54166, assignor to Theodore B. Rydell, Shawano, Wis.

Continuation-in-part of Ser. No. 922,498, Jul. 31, 1992, abandoned. This application May 17, 1993, Ser. No. 61,452
Int. Cl.[6] A01K *91/00*
U.S. Cl. 43—43.2 **18 Claims**

1. A fishing lure, comprising; in combination, at least one hook; said hook having a shank, a bend, a point, and a barb, and having a sheath-guard in the form of a coil spring, said coil spring having one end fixed to the lure at a point of attachment at a location that is in the direction in which the point is directed; and the coil spring has a length greater than the distance between the point of attachment and the point of the hook; whereby said coil spring acts as a flexible, deflective guard when positioned in front of the hook during fishing and;

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the spring is positionable by manually flexing the other end of the coiled spring toward the point of the hook so that the point of the hook is insertable into the coil spring, thereby establishing a latching engagement of the coiled spring with the hook to



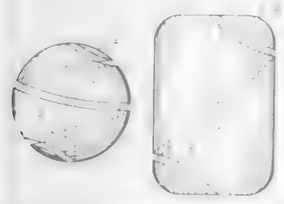
provide a protective safety sheath such that the coil spring is in a latching engagement with the barb between two adjacent spring coils thereby acting as a latching protective safety sheath when not in use for fishing.

5,388,368

MEANS FOR EASY ATTACHMENT OF FISHING LURE, FLOAT, OR SINKER TO A FISH LINE

James L. Lawrence, P.O. Box 7176, East Wenatchee, Wash. 98802

Filed Feb. 8, 1993, Ser. No. 14,709
Int. Cl.[6] A01K *91/00, 93/00*
U.S. Cl. 43—44.9 **19 Claims**



1. A lure device for attachment to a fishing line to attract fish, said device adapted to be placed into a receiving water having fish therein, said device comprising:

a body having a preselected specific gravity, and wherein said preselected specific gravity provides (i) positive, or (ii) negative, or (iii) non-negative buoyancy with respect to said receiving water;

said body having an exterior surface,

said device further comprising:

an approximately axial passage through said body, said passage adapted for the passage of a fishing line therethrough, and

a slit, said slit extending from the surface of the said body to and intersecting with said axial passage throughout the length of said passage; and

wherein said slit defines two or more fingers, said fingers co-operating interdigitally, said slit extending from said surface of said body to said axial passage as defined by said fingers.

5,388,369

DEVICES AND METHODS FOR SELECTIVE APPLICATION OF HERBICIDE

James E. Moore, 555 Riviera Dr., Naples, Fla. 33940

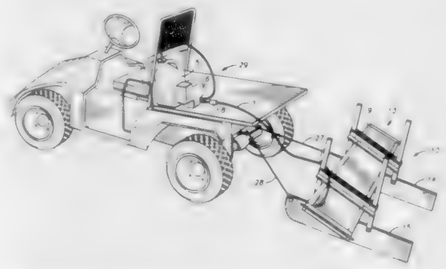
Filed May 26, 1992, Ser. No. 889,104
Int. Cl.[6] A01C *15/00*
U.S. Cl. 47—1.5 **57 Claims**

1. A herbicide applicator assembly having an inclined underside liquid-application surface fed with liquid herbicide in such a manner that said liquid-application surface can wipe sufficient herbicide onto tall plants to kill them, while wiping only enough herbicide onto lower-growing plants to retard their growth, and while avoiding contact of said liquid-application surface with the ground, said herbicide applicator assembly comprising, in combination:

a rigid applicator panel providing said inclined underside liquid-application surface of non-absorbent,

a source of said liquid herbicide for supplying said liquid herbicide to said inclined underside liquid-application surface at a sufficient flow rate for intended treatment and a sufficient pressure for proper distribution;

a distributor connected to said source of liquid herbicide for discharging said liquid herbicide uniformly along an upper edge portion of said inclined underside liquid-application surface; and



means for supporting said rigid applicator panel with sufficient rigidity to keep said inclined underside liquid-application surface at a selected elevation above the ground and at a predetermined slope, with said slope and elevation being maintained accurately while said rigid applicator panel is moved along a swath of vegetation, said inclined underside liquid-application surface being inclined at a sufficient angle so that said liquid herbicide will flow from said upper edge portion of said inclined underside liquid-application surface slowly down said inclined underside liquid-application surface while clinging to said inclined underside liquid-application surface until said liquid herbicide is wiped from an upper portion of said inclined underside liquid-application surface by tall plants or from a lower portion of said inclined underside liquid-application surface by both tall and short plants, or until said liquid herbicide reaches a lower edge portion of said inclined underside liquid-application surface.

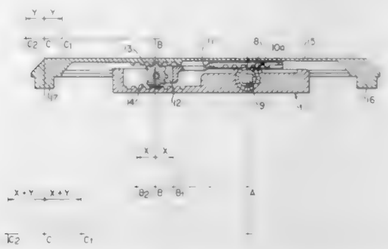
5,388,370

TRANSMISSION FOR ADJUSTABLE SASHES IN DOOR-OR WINDOW FRAMES

Armin Tönsmann, Bielefeld, Germany, assignor to Schüco International KG, Bielefeld, Germany

Filed Apr. 2, 1993, Ser. No. 42,248
Claims priority, application Germany, Apr. 6, 1992, 4211464
Int. Cl.[6] E05F *17/00*
U.S. Cl. 49—100 **16 Claims**

1. A transmission, particularly for moving a sash relative to a frame, comprising a support receivable in a sash; an elongated carrier movably connected to said support; means for moving said carrier longitudinally relative to said support; a gear rotatably mounted on said carrier and mating with a first toothed rack provided on said support; and a second toothed rack, mating with said gear, being movably connected to said support and being movable in response to rotation of said gear as a result of longitudinal movement of said carrier; and wherein said carrier includes a third toothed rack and said



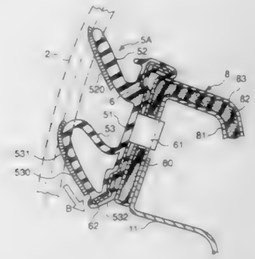
moving means comprises a second gear rotatably journalled in said support and mating with said third rack.

5,388,371

DOOR GLASS WEATHERSTRIP FOR AN AUTOMOBILE

Masahioro Nozaki, Nakashima, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jul. 14, 1993, Ser. No. 91,067
Claims priority, application Japan, Jul. 16, 1992, 4-055849[U]
Int. Cl.[6] E05F *11/38;* **E06B** *7/16*
U.S. Cl. 49—377 **3 Claims**



1. A door glass weatherstrip adapted to be mounted on an automobile door along a belt line thereof, the weatherstrip comprising:

a mounting base;

an insert embedded in the mounting base; and

a seal lip adapted to be in pressure contact with a door glass at a distal end portion thereof, the seal lip including a root portion disposed at a lower end of the mounting base,

said insert including an extension at a lower end portion thereof which extends to the root portion for receiving a biasing force of the door glass exerted on the seal lip, wherein said extension extends from the lower end of the insert in an oblique and downward direction towards the door glass so that it is substantially normal to the seal lip.

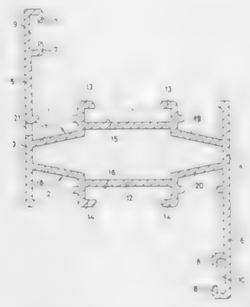
5,388,372

METAL SECTION WITH AN OCTAGONAL CROSS-SECTION FOR WINDOW OR DOOR FRAMES

Edoardo Zanoni, Milan, Italy, assignor to Hydro Alluminio Ornago S.p.A., Italy

PCT No. PCT/EP91/01375, § 371 Date Mar. 31, 1993, § 102(e) Date Mar. 31, 1993, PCT Pub. No. WO92/02706, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 20, 1991, Ser. No. 30,310
Claims priority, application Italy, Jul. 31, 1990, 21586/90[U]
Int. Cl.[6] E06B *7/14*
U.S. Cl. 49—408 **5 Claims**

1. A metal section for window or door frames, having a tubular shape with a substantially polygonal cross-section defined by two peripheral larger faces opposite to one another and two peripheral smaller faces opposite to one another, which two smaller faces connect said larger faces and extend to form respective abutment elements suitable for defining inner and outer fronts, respectively, of the window or door frame, said larger faces comprising respective central portions parallel to one another and provided with flaps defining substantially C-shaped cavities for housing and connecting various members of the window or door frame, said larger faces also



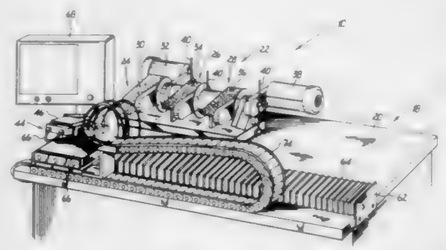
each comprising two end portions connected respectively with said smaller faces, wherein said end portions of each larger face are obliquely converging towards the corresponding end portions of the other larger face for collecting any infiltrated water, and wherein at least one hole is provided in the abutment element defining the outer front of the window or door frame near its intersection with the closest larger face for allowing the collected water to flow away.

5,388,373

APPARATUS FOR APPLYING A CUTTING EDGE TO A NEEDLE

Richard Abbate, Wallingford, and Stephen T. Cassidy, West Haven, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,326
Int. Cl.[6] B24B *19/16*
U.S. Cl. 451—65 **32 Claims**



1. Apparatus for applying a cutting edge to a needle blank comprising:

means for abrading at least one needle;

clamp means for holding said needle in contact with said abrading means, said clamp means comprising a first jaw member and a second jaw member, said first jaw member being movable relative to said second jaw member to rotate the needle held by said clamp means; and

means for moving said clamp means in a direction generally parallel to the axis of elongation of the needle to selectively engage and disengage said needle with said abrading means, said moving means including a controller for automating movement of said clamp means.

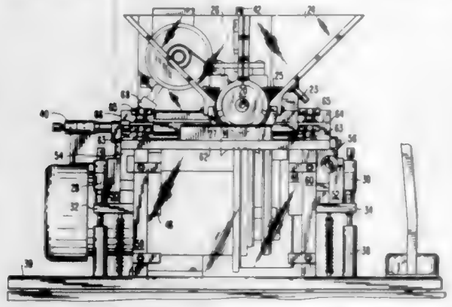
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5,388,374

APPARATUS AND METHOD FOR GRINDING POINTS

W. Scott Samsel, Bristol, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,054
Int. Cl.[6] B24B *5/00*
U.S. Cl. 451—245 14 Claims



1. Apparatus for forming points on surgical grade needles comprising:

(a) a frame;

(b) a transport wheel operably mounted on the frame, the transport wheel configured and dimensioned to transport a plurality of elongated surgical grade needle workpieces therealong;

(c) a support saddle having first and second ends, the support saddle being transport wheel such that a surface of the support saddle is in substantial concentric relation to the transport wheel, wherein the elongated surgical grade needle workpieces are held in contact with the transport wheel when positioned between the transport wheel and the support saddle;

(d) a feed hopper cartridge having an inlet for receiving the elongated surgical grade needle workpieces, a plurality of walls defining an enclosure to store the elongated workpieces and an outlet configured and dimensioned to discharge one elongated workpiece at a time directly to a feed point disposed between the outer surface of the transport wheel and the first end of the support saddle such that the elongated workpieces are positionable between the transport wheel and support saddle; and

(e) a grinding wheel including an asymmetrical concave grinding surface coated with an abrasive material, the asymmetrical concave grinding surface configured and dimensioned such that a surface area of each elongated workpiece which contacts the grinding surface varies relative to the position of the workpiece with respect to the grinding surface, the grinding wheel being disposed adjacent the transport wheel to engage an end of the workpieces supported by the workpiece support saddle.

5,388,375

Patent Not Issued For This Number

5,388,376

PORTABLE ROOF AND TOWER SYSTEM AND METHOD FOR CONSTRUCTION

Franciscus Henri, Werchter, Belgium, assignor to Stageco, N.V., Werchter, Belgium

Filed Feb. 22, 1993, Ser. No. 20,681
Int. Cl.[6] E04H *3/10*
U.S. Cl. 52—6 11 Claims

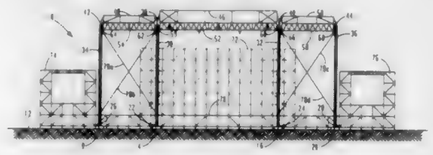
1. A portable roof construction system of the type for building, disassembling, moving and reassembling at an intended site from component pieces, comprising:

(a) a plurality of movable pairs of base blocks positionable at predetermined regular spaced apart locations at the intended site;

(b) a plurality of base pedestal pairs removably fastenable to each of said base block pairs at close tolerance adjustable spaced apart locations;

(c) a plurality of tower pairs removably fastenable to, and having tops vertically extending upwardly from, said plurality of base pedestal pairs;

(d) a plurality of pairs of triangular head block sections removably fastenable at said tops of said plurality of tower pairs; and



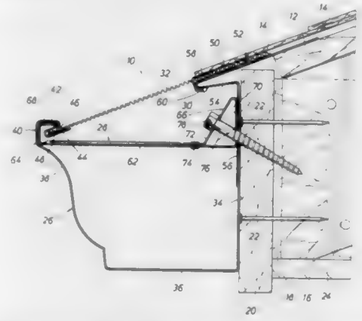
(e) a roof assembly comprising a plurality of triangular roof trusses constructable on-site at platform level between a plurality of opposed pairs of said plurality of base blocks, base pedestals, with each of said plurality of roof trusses aligned between opposed pairs of said towers and liftable upwardly via a plurality of cable winches and which triangular truss sections are removably fastenable to said triangular head blocks with pinned male and female devices.

5,388,377

GUTTER ASSEMBLY FOR ROOFS

Charles L. Faulkner, 15819 Fox Springs Dr., Houston, Tex. 77084

Filed Oct. 18, 1993, Ser. No. 137,726
Int. Cl.[6] E04D *13/00*
U.S. Cl. 52—11 8 Claims



1. In combination with a roof having an outer roofing material overhanging a fascia board; a gutter assembly mounted on said fascia board comprising:

a plurality of horizontally spaced elongate gutter hangers mounted on said fascia board and extending outwardly therefrom, each hanger having a base with upwardly extending rear and front edge portions, said upwardly extending rear edge portion of said hanger including a vertical rear side extending upwardly from said base and an integral downturned mounting flange extending downwardly from said vertical rear side in an inclined spaced relation thereto;

a gutter extending in a generally horizontal direction along said fascia board and having a rear portion thereof between said hangers and said fascia board; said gutter having a front side and an upper edge portion extending along said front side, said upper edge portion defining an inner support member facing toward said roofing material; and

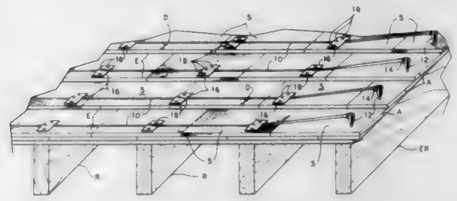
a fastener for each of said hangers extending through said vertical rear side and said downturned mounting flange into said fascia board for securing an associated hanger to said fascia board.

5,388,378

ANCHOR SYSTEM FOR COMPLETED STRUCTURES

Filmore O. Frye, 42 W. Blaine St., McAdoo, Pa. 18237

Division of Ser. No. 64,437, May 21, 1993, Pat. No. 5,311,708.
This application Jan. 4, 1994, Ser. No. 177,122
Int. Cl.[6] E04D *13/00*
U.S. Cl. 52—23 9 Claims



1. In an existing completed permanent frame structure having a sloped roof supported by a plurality of rafters and covered by a plurality of rows of shingles, each of the shingles having an upper portion secured by an overlying shingle and a lower portion resting atop an underlying shingle, an external anchoring system comprising:

a plurality of attachment means, said attachment means externally mounted to the rafters of the structure;

a plurality of shingle securing lines, each of said shingle securing lines having a first end and a second end, said first end attached to one of said plurality of attachment means, and said second end attached to another of said attachment means such that each of said securing lines extends tautly from one of said attachment means to the other of said attachment means in a longitudinal and horizontal direction across the roof, parallel and in contact with the plurality of rows of shingles;

a plurality of line straps, said line straps securing and overlying said shingle securing lines at points between said attachment means where said shingle securing lines cross over the rafters of the structure; and

a plurality of securing means, each of said securing means passing through one of said line straps, through one of said shingle securing lines, through the shingles, and fixedly secured to a rafter of the frame structure, whereby said securing means providing additional security to prevent the broken of said single securing lines.

5,388,379

ROOF EDGE COVERING

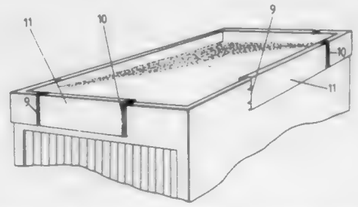
Erhard Lamberti, Redtenbacherstrasse 11, D-6900 Heidelberg, Germany

PCT No. PCT/DE90/00958, § 371 Date Aug. 27, 1992, § 102(e) Date Aug. 27, 1992, PCT Pub. No. WO91/10025, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 12, 1990, Ser. No. 923,791
Claims priority, application Germany, Dec. 27, 1989, 3943087
Int. Cl.[6] E04F *19/02*
U.S. Cl. 52—300 4 Claims

1. In combination, a flat roof having a raised surrounding edge which includes an outer side and a top, and a covering attached to the raised surrounding edge so as to cover said outer side and said top of said raised surrounding edge, said covering comprising

a plurality of elongate covering profiles, each of said covering profiles comprising a first panel having an inside surface, a second panel extending from the inside surface of said first panel when viewed in cross section, and at least one spacer profile fixed to the inside surface of said first panel, said covering profiles positioned in end to end relation along the raised surrounding edge with said first panel of each covering profile overlying the outer side of the surrounding edge and being held spaced therefrom by said one spacer profile, and with said second panel of each covering profile overlying the top of the surrounding edge, and

a plurality of holders disposed respectively between adjacent ends of the adjacent cover profiles, each of said holders having a generally L-shaped configuration so as to



define a first leg in the direction of said first panel and a second leg in the direction of said second panel, each of said holders further having a generally hat-shaped cross section defining a U-shaped recess and a pair of oppositely directed flanges such that the flanges overlap the ends of said first panels and the ends of said second panels of the adjacent covering profiles, and

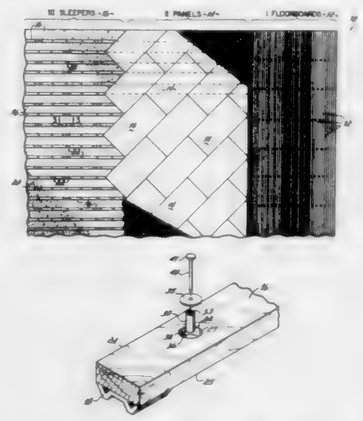
means securing each of said holders to the raised surrounding edge to thereby retain the covering profiles against the surrounding edge.

5,388,380

ANCHORED/RESILIENT SLEEPER FOR HARDWOOD FLOOR SYSTEM

Michael W. Niese, Cincinnati, Ohio, assignor to Robbins, Inc., Cincinnati, Ohio

Filed Jul. 13, 1992, Ser. No. 912,310
Int. Cl.[6] E04B *5/52*
U.S. Cl. 52—480 23 Claims



1. A floor system covering a base comprising:

an elongated attachment strip with upper and lower surfaces;

at least two compressible pads, the pads having top and bottom surfaces residing in direct contact with the lower surface and the base, respectively, to support the attachment strip in spaced relation above the base; and

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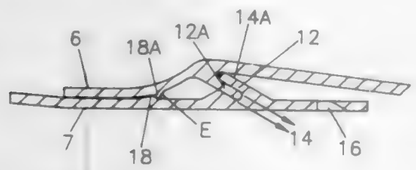
means for anchoring the attachment strip to the base in a manner which does not hold the pads in a precompressed state when the floor system is unloaded, said anchoring means being located at spaced, discontinuous positions along the attachment strip and enabling said strip to be downwardly deflectable but not upwardly raisable beyond a static position.

5,388,381

INTERLOCKING BUILDING PANEL

Walter J. Bilinski, Alpharetta, Ga.; John M. Getz, San Francisco, Calif.; James R. Kline, Petoskey, Mich., and Douglas F. Hudson, Jr., Miami, Fla., assignors to General Electric Company, Pittsfield, Mass.

Filed Jan. 21, 1993, Ser. No. 6,877
Int. Cl.[6] E04D *1/34*
U.S. Cl. 52—519 3 Claims



1. A decorative building panel comprising;
(a) at least one course comprised of a plurality of decorative building elements;
(b) a continuous interlock assembly element disposed along one edge of said course;
(c) at least one non-continuous interlock assembly element disposed along an opposite edge of said course; and
(d) a support rib disposed within each decorative building element, wherein said continuous interlock assembly element comprises
(i) a first interlock assembly element having a first groove, a first lip and a first protrusion, and said first groove having an apex, and
(ii) a second interlock assembly element having a second groove., a second lip and a second protrusion, said first lip being received in said second groove, said second lip being received in said first groove, said first protrusion being forcibly engaged and snapped into place with said second protrusion, said interlock assembly forcing said second lip in the direction of the apex of said first groove for engagement with said apex.

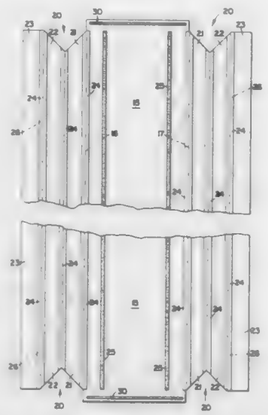
5,388,382

DISPLAY APPARATUS USING COLLAPSIBLE REINFORCEMENT BEAM

Harry M. Brooks, Upper Marlboro, Md., assignor to Nomadic Structures, Inc., Springfield, Va.

Filed May 8, 1990, Ser. No. 520,548
Int. Cl.[6] E04C *2/30*
U.S. Cl. 52—732.1 18 Claims

1. A panel apparatus, comprising:
a) a panel of flexible material, said panel being movable between a first, rolled configuration and a second, flat configuration; and
b) rigidifying means of flexible material and attached to said panel, said rigidifying means being movable between a first, flat configuration and a second, polygonal configuration, said rigidifying means being parallel to a longitudinal dimension of said panel, wherein said rigidifying means comprises a plurality of strips which are hingedly inter-



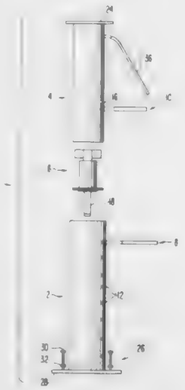
connected to each other, said rigidifying means being hingedly attached to said panel.

5,388,383

STRUCTURAL MEMBER JACKING DEVICE

Guy P. Covington, 768 Old Herald Harbor Rd., Crownsville, Md. 21032

Filed Jun. 29, 1993, Ser. No. 83,307
Int. Cl.[6] E04B *1/00*
U.S. Cl. 52—741.1 12 Claims



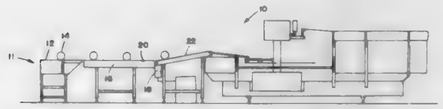
1. A method of raising or lowering a structural member, comprising the steps of:
(a) inserting a plurality of extensible-retractable columns between a floor and a ceiling;
(b) simultaneously actuating at least some of the extensible-retractable columns in a same direction to manipulate the ceiling; and
(c) wherein the extensible-retractable column includes a first vertical support column movable relative to a second Vertical support column with an extender therebetween, and the actuating step includes moving the columns relative to each other by extending the extender.

5,388,384

AUTOMATIC CODE DATE APPLICATION DEVICE

Todd M. Purkey, 943 Reynard SE., Grand Rapids, Mich. 49507, and Hulette K. Ash, 4284-5 Turtle Bend, SW., Grandville, Mich. 49418

Filed Nov. 2, 1993, Ser. No. 146,993
Int. Cl.[6] B65B *57/02*
U.S. Cl. 53—64 9 Claims



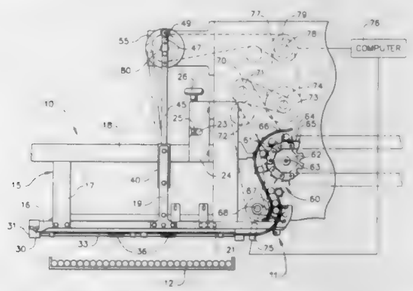
1. An automatic code date application device comprising: package staging means; split conveyor means including two conveyor sections separated by an opening for moving the staged packages sequentially along a pre-determined path of travel; code date application means positioned between the two conveyor sections and within the opening automatically applying the code date to the sequentially moving packages; and packaging finishing means positioned to receive and complete the moving packages bearing applied code dates wherein the package staging means includes bag loader means communicating with the conveyor means having means for opening a package bag and positioning a product to be packaged therein.

5,388,385

FOOD ARTICLE FILLING HEAD

James M. Phelps, Goshen, and Joseph F. Posge, Cincinnati, both of Ohio, assignors to Planet Products Corporation, Cincinnati, Ohio

Filed Apr. 8, 1993, Ser. No. 45,035
Int. Cl.[6] B65B *5/00, 1/00, 39/02*
U.S. Cl. 53—247 16 Claims



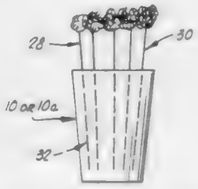
1. A food article filling head for connection to a loader parent machine to intermittently receive a preset number of food articles and discharge said food articles into individual packaging trays, said filling head comprising:
(a) an open frame having quick connect means for ready attachment to the loader parent machine to receive food articles moving in alignment along an input conveyor of the parent machine;
(b) at least two flapper doors hingeably attached to the open frame in a side by side arrangement to collectively form a substantially flat receiving surface to hold the food articles as they are loaded into the filling head from the input conveyor; and
(c) a pusher bar unloading system capable of being operably connected to a power system of the loader parent machine to intermittently discharge the food articles in the filling head to the individual packaging trays positioned below the flapper doors, said unloading system having (i) a set of vertical slide blocks slideably mounted on rails of the open frame, (ii) a horizontal shaft rigidly attached at each of its ends to the slide blocks, (iii) a drive rod pivotally attached at one end to the horizontal shaft for rotatably attaching to a flywheel of the power system to run in a smooth continuous fashion to deliver a generally up and down motion to the horizontal shaft, (iv) a set of vertical pusher bars rigidly attached to the horizontal shaft, and (v) a horizontal elongated pusher member rigidly attached to each of the pusher bars, each said pusher member extending substantially the length of the flapper doors so as to be in an engaging position with the food articles when said drive rod is in a lowermost position to force the food articles downwardly with sufficient force to substantially fully extend the flapper doors to an open position to cause said food articles to drop into the packaging trays and to move to a disengaging position when said drive rod is in an uppermost position.

5,388,386

METHOD FOR WRAPPING AN OBJECT WITH AN EMBOSSED MATERIAL HAVING AN ADHESIVE THEREON

Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.

Continuation of Ser. No. 968,798, Oct. 30, 1992, which is a continuation of Ser. No. 865,563, May 21, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Jan. 28, 1994, Ser. No. 188,183
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[6] B65B *25/02, 11/02, 11/04*
U.S. Cl. 53—397 34 Claims



1. A method for packaging an item, comprising the steps of:
providing a sheet of material having a first side and a second side, a first end and a second end, an upper surface and a lower surface, the sheet of material having a pressure sensitive adhesive only on the upper surface of the sheet of material and the sheet of material being constructed of paper and having an embossed pattern therein;
providing a floral grouping having an upper end consisting of a flower end and a lower end consisting of a stem portion having a stem end, the floral grouping comprising the item;
placing the floral grouping on the sheet of material;
wrapping the sheet of material about the floral grouping with the first side of the sheet of material overlapping portions of the sheet of material and bonding the overlapping portions of the sheet of material by contacting the pressure sensitive adhesive on the upper surface with adjacent overlapping portions of the sheet of material whereby the first side of the sheet of material is bonded to overlapping portions of the sheet of material generally between the first and second ends of the sheet of material and with the sheet of material substantially encompassing and surrounding a substantial portion of the stem portion

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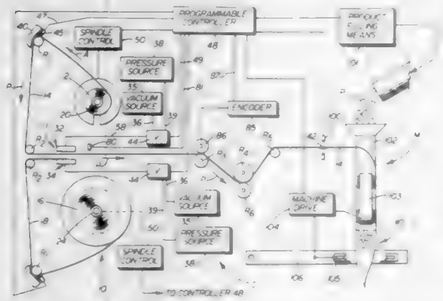
of the floral grouping and being held about the floral grouping by the bonding of the overlapping portions of the sheet of material, the sheet of material wrapped about the floral grouping forming a conically shaped wrapping having an opening extending through a lower end thereof and an opening extending through the upper end thereof with the stem end of the stem portion of the floral grouping extending through the opening in the lower end of the wrapping and the flower end of the floral grouping being exposed near the opening in the upper end thereof.

5,388,387

PACKAGING FILM FEEDING AND SPLICING APPARATUS AND METHOD

Howell T. McElvy, Decatur, Ga., assignor to Kliklok Corporation, Decatur, Ga.

Filed Mar. 12, 1993, Ser. No. 30,985
Int. Cl.[6] B65B *41/14, 41/18, 9/20*
U.S. Cl. 53—451 **18 Claims**



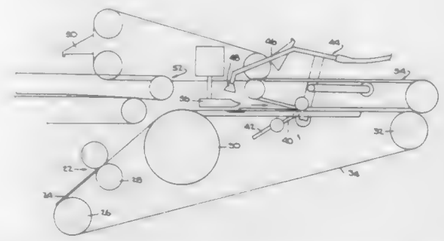
1. An assembly for substantially continuously feeding packaging film into a form, fill, and seal packaging machine comprising:
- means for supporting and unwinding an active and a standby roll of film;
- each roll having a tail-end and a head-end of its film;
- each roll further having adhesive means on the head-end of the film of the standby roll;
- means for continuously feeding the film of the active roll along a feed path into the machine;
- first pneumatic means for tensioning the film of said active roll at least adjacent said tail-end;
- second pneumatic means opposed to said first pneumatic means for holding said head-end and said adhesive means at a splicing station adjacent said feed path;
- at least one of said first and second pneumatic means including a vacuum source to provide suction for the tensioning and holding functions and a pressure source to generate an air blast to blow at least one of the said tail-end and said head-end of the films toward each other;
- control means for rapidly switching at least said first pneumatic means between said vacuum source and said pressure source;
- said pressure source providing sufficient air flow to cause said tail-end to stick to said adhesive means;
- whereby the film of said standby roll is securely spliced to the film of said active roll to provide film feeding to said machine substantially without interruption and without slow-down.

5,388,388

METHOD AND APPARATUS FOR DIVERTING AN ENVELOPE IN AN INSERTER

Eric A. Belec, Southbury, and William J. Wright, Killingworth, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 11, 1993, Ser. No. 74,528
Int. Cl.[6] B65B *5/06, 57/04*
U.S. Cl. 53—460 **6 Claims**



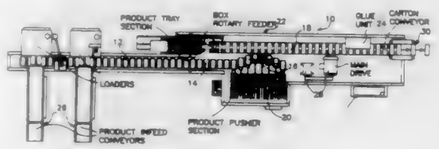
5. A method of inserting documents into an envelope, comprising:
- feeding envelopes seriatim toward an inserting station;
- sensing whether or not said envelopes are properly aligned without skew at said inserting station to receive said documents;
- stopping the properly aligned envelopes at said insertion station and not stopping an envelope not properly aligned without skew at said inserting station;,
- feeding documents toward an envelope properly aligned without skew waiting at said inserting station; and
- inserting said documents into said waiting envelope.

5,388,389

AUTOMATIC PACKAGING EQUIPMENT

Stevan Tisma, c/o 4640 N. Elston, Chicago, Ill. 60630

Division of Ser. No. 984,087, Dec. 1, 1992, abandoned, which is a continuation of Ser. No. 858,888, Mar. 27, 1992, Pat. No. 5,185,984, which is a continuation-in-part of Ser. No. 762,497, Sep. 19, 1991, Pat. No. 5,170,610, which is a continuation-in-part of Ser. No. 508,269, Apr. 11, 1990, Pat. No. 5,072,573, which is a continuation-in-part of Ser. No. 464,162, Jan. 12, 1990, abandoned. This application Jan. 12, 1994, Ser. No. 180,110
Int. Cl.[6] B65B *39/02, /39/14*
U.S. Cl. 53—473 **8 Claims**



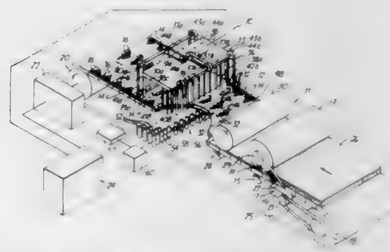
1. A method of conditioning a fragile product which is packaged in an automatic packaging machine having at least two conveyors, one of said conveyors transporting product and the other of said conveyors transporting containers over at least part of an established path through said packaging machine, said established path including at least a product pickup work station and a package loading work station; said method comprising the steps of:
- transporting containers via said one of said conveyors and over said part of said path and past at least said package loading work station;
- providing a modular variable width product reception means, said modular means being easily removable and replaceable without requiring a substantial amount of disassembly of said automatic packaging machine, per se;
- transporting said modular variable width product reception means via said other of said conveyors, and over said part of said path past both of said work stations;
- providing at least one cam track along at least part of said path for controlling said transporting of said modular variable width product reception means, said cam track having contours which provide a desired width behavior for said variable width product reception means;
- opening said modular variable width product reception means at least once responsive to said cam track contour deviating at least once in one direction relative to said other of said conveyors in order to provide a relatively wide stance at least while passing said product pickup work station, said fragile product being received into said wide container without requiring a precise positioning and without damage to said fragile product;
- closing said variable width product reception means at least once responsive to said cam track contour deviating at least once in an opposite direction relative to said other of said conveyors in order to fit said fragile product into container, said closing occurring after said modular variable width product reception means receives said product at said pickup work station and before said received product is discharged at said loading work station; and
- discharging said fragile product from said modular variable width product reception means into said container while in said loading work station.

5,388,390

DOUGH CUTTING AND PACKING APPARATUS

James W. Finkowski, Andover; William L. Murphy, Maple Grove, and Steven K. Hanson, Shoreview, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Oct. 15, 1993, Ser. No. 138,369
Int. Cl.[6] B65B *63/00*
U.S. Cl. 53—516 **14 Claims**



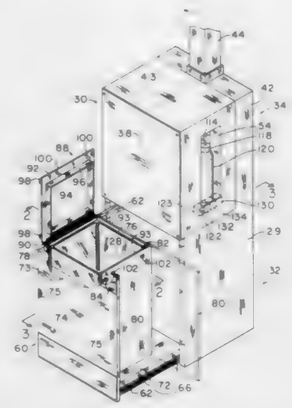
1. In a dough cutting and packing apparatus of the type including a movable, endless cutting unit having a plurality of openings for retaining dough pieces, and a packing mechanism positioned above the endless cutting unit and configured to reciprocate through the openings in the cutting unit for removing the dough pieces from the openings, and further including a container positioning mechanism for moving a plurality of containers relative to the packing mechanism such that the containers are advanced from a position aligned with a first set of openings to successive positions aligned with successive sets of openings to allow the packing mechanism to transfer dough pieces from the cutting unit to the containers until the containers are filled, the improvement which comprises:
- a dough sheeting and cutting mechanism including:
  - first means positioned adjacent a first end of the cutting unit for partially sheeting dough of a dough strip into the plurality of openings in the cutting unit; and
  - second means positioned subsequent to the first means and spaced from the first end of the cutting unit for sheeting a remaining portion of dough of the dough strip into the cutting unit to divide the dough strip into the plurality of dough pieces that are retained within the plurality of openings in the cutting unit.

5,388,391

APPARATUS AND PROCESS FOR PACKAGING BIOHAZARDOUS WASTES

Richard D. Parker, Rt. 1, Box 58A, Rose Bud, Mo. 63091

Filed Dec. 19, 1988, Ser. No. 286,050
Int. Cl.[6] B65B *1/24, 25/00, 61/20*
U.S. Cl. 53—527 **6 Claims**



1. Apparatus for safe temporary storage and packaging of biohazardous wastes in a disposable rectangular waste container, comprising
- an upper portion including downward-extending means terminating in a horizontal rectangular pressure plate, and having, beneath said upper portion,
- a slide-out compartment having four vertical sides, further having compartment floor means to support an open-top disposable rectangular container of such cross-section as to receive said pressure plate; one of which sides is an openable door extending to said floor means,
- said slide-out compartment further having, at such height above its said floor means as to fit onto the open top of such container, a rigid rectangular open frame having an inner edge extending downward, whereby to fit within the top opening of such waste container and accommodate passage therethrough of said pressure plate, said frame further having
- outer edge means to support said frame, relative to said slide-out compartment, with the frame inner edge raised above the top opening of such waste container,
- whereby, when the frame is so supported with its inner edge so raised, such waste container may be readily moved along said compartment floor means for removal and replacement.

5,388,392

APPARATUS FOR POWDER FILLING ANTIBODY TESTING DEVICES

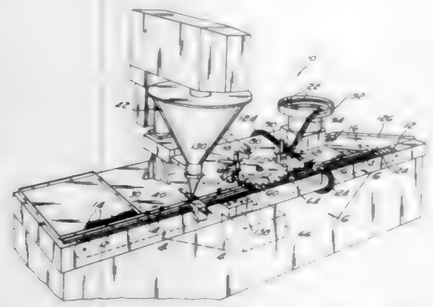
Carl Linnecke, Arcadia, Calif., assignor to V-Tech, Inc., Pomona, Calif.

Filed Oct. 5, 1992, Ser. No. 956,308
Int. Cl.[6] B65B *1/24, 29/10;* **B30B** *11/00*
U.S. Cl. 53—527 **16 Claims**

1. An apparatus for assembling the compounds of an antibody testing device, utilizing powder as a fluid absorbing means, into a completed antibody testing device, comprising a station at which a lower housing portion is filled with a fluid

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absorbing powder, a station at which a disk of filter membrane is placed on top of said liquid absorbing powder in said lower housing portion, and a station at which a membrane carrying



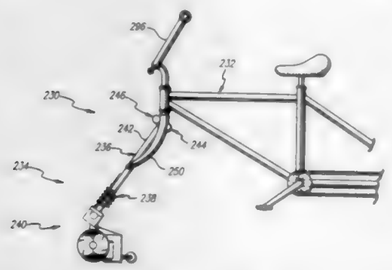
cap portion of the antibody testing device is engaged with said lower housing portion to complete the assembling of the antibody testing device.

5,388,393

BICYCLE POWERED MOWER

David R. Woodling, P.O. Box 871, Cedar Crest, N. Mex. 87008-0871

Continuation-in-part of Ser. No. 771,338, Oct. 4, 1991, Pat. No. 5,222,348. This application Jun. 14, 1993, Ser. No. 77,246
Int. Cl.[6] B62K *13/00*; A01D *34/56*
U.S. Cl. 56—2 11 Claims



1. A bicycle powered mower comprising:
a securing portion for connection to a front fork of a bicycle, the securing portion comprising a pair of securing bars, and a fork clamp on each securing bar for connection to the fork of the bicycle;
a joint portion attached to the securing portion; and
a mower portion connected to the joint portion, whereby conventional propulsion of the bicycle moves the mower portion over an area to be mowed.

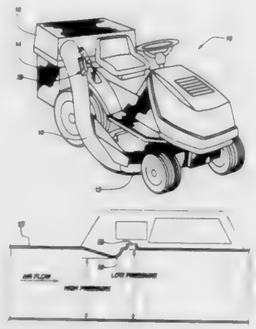
5,388,394

LAWN MOWER GRASS COLLECTION INDICATOR

Richard A. Heismann, Jackson, Tenn., assignor to Murray Outdoor Products, Inc., Jackson, Tenn.

Filed May 25, 1993, Ser. No. 67,533
Int. Cl.[6] A01D *34/12*
U.S. Cl. 56—194 12 Claims

1. Indicator apparatus for use on a riding lawn mower having a grass collection bag communicating with the cutting deck through a discharge duct, said indicator being disposed on said duct and being operative to signal the driver of the mower when said bag becomes substantially full of grass clippings, said apparatus comprising:
a housing secured to said duct in an area visible to the driver of said mower during normal cutting operation thereof, said housing having an interior compartment
an opening formed in a portion of duct covered by said housing, said opening allowing communication between said interior compartment and said duct;
venturi means within said duct immediately adjacent said opening for creating a pressure differential at said opening in response to air flow through said duct, wherein relatively low pressure is developed when said air flow is high, corresponding to said bag being not full, and relatively high pressure is developed when said air flow is reduced, corresponding to said bag being substantially full;
a window formed in said housing in a side portion of said interior compartment;



a vent formed in said housing providing communication between said interior compartment and the atmosphere; and
an indicating member disposed within said interior compartment, moveable between first and second positions in response to the pressure within said duct, in said first position said indicating member being retained against said opening by said relatively low pressure in said duct, and in said second position said indicating member being retained against said window by said relatively high pressure in said duct, wherein
said indicating member is visible through said window to the driver of said mower when said indicating member is in said second position, thereby alerting the driver to the substantially full condition of said bag.

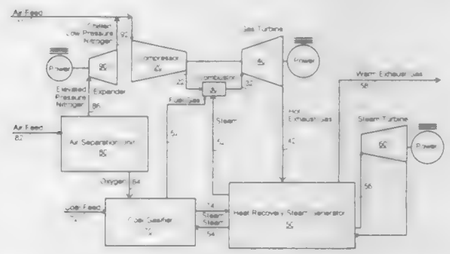
5,388,395

USE OF NITROGEN FROM AN AIR SEPARATION UNIT AS GAS TURBINE AIR COMPRESSOR FEED REFRIGERANT TO IMPROVE POWER OUTPUT

Eric W. Scharpf, Emmaus, and Frederick C. Flemming, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 27, 1993, Ser. No. 54,775
Int. Cl.[6] F02C *3/28*, *7/14*
U.S. Cl. 60—39.02 13 Claims

1. A process for the production of work to generate electricity or to drive a mechanical device using a gas turbine, wherein a feed air stream is compressed and combusted with a fuel gas to produce a combustion product, wherein the combustion product is expanded in a gas turbine expander, thereby producing a hot exhaust gas and producing work and wherein the produced work is used to generate electricity or to drive a mechanical device, characterized by cooling nitrogen product produced by a cryogenic air separation unit to a subambient temperature, and combining the subambient cooled, nitrogen



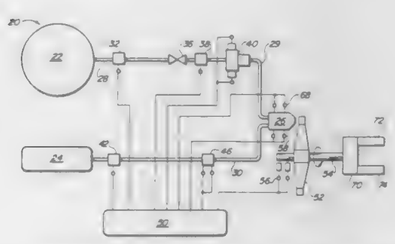
product with the feed air stream prior to compression thereby increasing the work produced in the gas turbine expander.

5,388,396

LOW CARBON PARTICLE PRODUCING GAS TURBINE COMBUSTOR

Michael Koerner, Harbor City; Scott Goldberg, Westminster, both of Calif., and Naaman Midyette, Ft. Lewis, Wash., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 876,343, Apr. 30, 1992, Pat. No. 5,307,633. This application Jan. 6, 1994, Ser. No. 179,650
Int. Cl.[6] F02C *9/16*
U.S. Cl. 60—39.02 3 Claims



1. A combustion system for a gas turbine having turbine nozzle inlets comprising:
a combustor for burning fuel with an oxidizer,
a fuel valve effective for turning on and shutting off fuel to said combustor,
an oxidizer valve effective for turning on and shutting off oxidizer to said combustor,
a combustor controller effective for controlling flow of fuel and oxidizer to said combustor and programmed to shut-off the fuel flow to said combustor upon combustor system shutdown while oxidizer is allowed to continue to flow for a sufficient enough time to allow carbon deposits in a turbine inlet of the gas turbine to be oxidized.

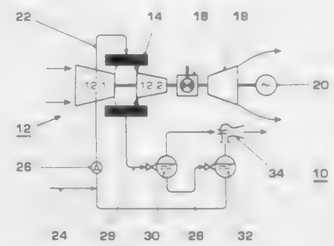
5,388,397

METHOD FOR OPERATING A TURBOCOMPRESSOR

Hans U. Frutschi, Riniken, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Nov. 5, 1993, Ser. No. 147,589
Claims priority, application Germany, Nov. 7, 1992, 4237664
Int. Cl.[6] F02C *7/143*
U.S. Cl. 60—39.05 9 Claims

1. A method for operating a turbocompressor in a gas turbine group, the turbocompressor having at least two compressor stages and a cooler operating between compressor stages which has water applied to it as coolant, comprising the steps of:
directing cooling water to the cooler under pressure, wherein cooling water is heated to a temperature higher than 100° C. at a pressure above its saturation pressure:
directing the heated cooling water to a first vessel, the first vessel being at a pressure less than the pressure of the heated cooling water, the heated cooling water therein being depressurized to ambient pressure, and a portion of the heated cooling water thereby evaporated:



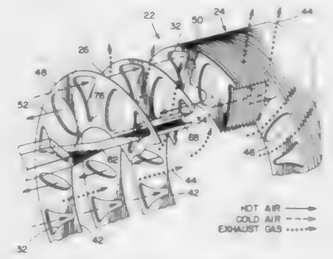
directing unevaporated residual cooling water from the first vessel to a second vessel at a pressure less than the pressure of the first vessel, the residual cooling water being depressurized to the pressure of the second vessel and a portion of the residual cooling water being therein evaporated; and
adding make-up water to the residual cooling water from the second vessel before returning the cooling water to the cooler.

5,388,398

RECUPERATOR FOR GAS TURBINE ENGINE

Vedanth Kadambi, Monroe, Conn., and Constantin Sobaru, Allentown, Pa., assignors to Avco Corporation, Providence, R.I.

Filed Jun. 7, 1993, Ser. No. 72,818
Int. Cl.[6] F02C *7/10*
U.S. Cl. 60—39.511 6 Claims



1. A recuperator system for preheating air before it enters the combustion chamber of a gas turbine engine comprising:
a manifold assembly adjacent the power turbine extending between a forward end and a rear end and having a central passage extending between said forward end and said rear end and a plurality of cross passages communicating with said central passage for containing and guiding flow of exhaust gases from the engine through said assembly, then exhausting it from said assembly;
said manifold assembly including:
a plurality of annular disks in side-by-side relationship, each of said disks having a plurality of first openings at successively spaced circumferential locations, each of said disks having a plurality of second openings at successively spaced circumferential locations respectively intermediate the first openings;
the first openings of said plurality of disks at each circumferential location being aligned along the length of said

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recuperator to define at least a first conduit extending along the length of said assembly for receiving and guiding the flow of cold air to be heated;

the second openings of said plurality of disks at each circumferential location being aligned along the length of said recuperator to define at least a second conduit extending along the length of said assembly for receiving and guiding the flow of pre-heated air toward the combustion chamber of the engine;

said first and second conduits being substantially parallel;

a forward header for supporting said manifold assembly at said forward end; and

a rear header for supporting said manifold assembly at said rear end;

said forward header having an entry passage for receiving ambient air and delivering it to said first conduit;

a plurality of cross conduits for connecting said first and second conduits at a plurality of locations along the length of said assembly, said cross conduits being proximate to the cross passages whereby, by means of convection, the cold air from said first conduit becomes pre-heated by the exhaust gases as it flows toward said second conduit;

said annular disks being formed such that, when contiguously positioned, each adjacent pair of said disks defines therebetween the plurality of said cross conduits and the plurality of said cross passages; and

compensating means for maintaining substantially constant the pressure differential between said first and second conduits at all locations along the length of said assembly, said compensating means including:

first insert means for placement in said first conduit; and

second insert means for placement in said entry passage of said forward header;

whereby the ratio of the cross sectional areas of said first and second conduits conforms to the following relationship:

$$A_i/A_e=[\rho_e/(2\rho_i)]^{\frac{1}{4}}$$

where:

A_i=cross sectional area of the first conduit;

A_e=cross sectional area of the second conduit;

ρ_i=air density in the first conduit; and

ρ_e=air density in the second conduit;

to thereby maintain substantially constant the pressure differential between said first and second conduits along the length of said recuperator.

5,388,399

ROCKET MOTOR HAVING UNITARY CASE, INSULATION AND PROPELLANT

Irving E. Figge, and James D. Martin, both of Manassas, Va., assignors to Atlantic Research Corporation, Vienna, Va.

Filed Mar. 11, 1992, Ser. No. 850,975

Int. Cl.[6] F02K *9/00, 9/08, 9/70, 9/72*

U.S. Cl. 60—253 **9 Claims**

1. A rocket motor, including

(a) an outer hollow casing containing a thermoplastic elastomer binder;

(b) an insulation layer arranged adjacent an inner surface of said casing, said insulation layer containing a thermoplastic elastomer binder; and

(c) a propellant containing a thermoplastic elastomer binder arranged within said insulation layer, whereby when the motor is heated to the melting temperature of said binders, fused bond interfaces between said propellant, insulation, and casing are simultaneously developed.

5,388,400

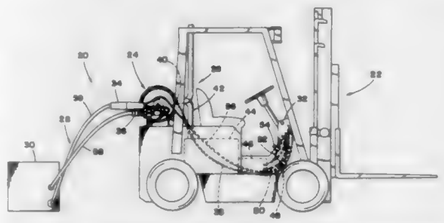
DIESEL ENGINE EXHAUST REGENERABLE FILTER SYSTEM

Bruce B. Hoppenstedt, Bloomington; Wayne M. Wagner, Apple Valley; Ervin P. Fuchs, Farmington, and Edward A. Steinbrueck, Eden Prairie, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Dec. 30, 1992, Ser. No. 998,839

Int. Cl.[6] F01N *3/02*

U.S. Cl. 60—274 **10 Claims**



1. An exhaust filter system for a vehicle with a diesel engine, comprising:

a trap device including a filter installed in a housing, said trap device being mounted on said vehicle, said trap device for removing particulates from exhaust gases of said engine;

a regeneration arrangement for said trap device, said regeneration arrangement including a heater in close proximity to said filter in said housing, said arrangement further including means separate from said vehicle for providing electrical power to said heater for regeneration of said filter and means separate from said vehicle for providing combustion air for regeneration; and

means mounted on said vehicle for controlling said regeneration arrangement, said electrical power providing means including power source means and first means for connecting to one another said controlling means and said heater to said power source means, said power source means including transformer means for powering said heater and switching means for controlling said transformer means, said first connecting means including first and second mating members, said first member having a pair of first sockets in electrical continuity with said transformer means and a first plug in electrical continuity with said switching means, said second member having a pair of second plugs in electrical continuity with said heater and a second socket in electrical continuity with said controlling means.

5,388,401

SYSTEM AND METHOD FOR CONTROLLING AIR/FUEL MIXTURE RATIO FOR INTERNAL COMBUSTION ENGINE WITH EXHAUST SECONDARY AIR SUPPLY APPARATUS

Kimiyoshi Nishizawa, Yokohama, and Toru Kamibeppu, Kagoshima, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 4, 1993, Ser. No. 101,706

Claims priority, application Japan, Sep. 10, 1992, 4-242297

Int. Cl.[6] F01N *3/22*

U.S. Cl. 60—274 **11 Claims**

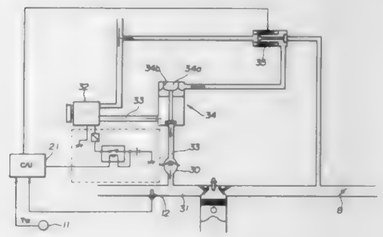
1. An apparatus for an internal combustion engine, comprising:

a) an oxygen concentration sensor disposed in an exhaust gas passage of the engine upstream of a catalytic converter for detecting and outputting a signal indicative of an air/fuel mixture ratio of the engine;

b) a secondary air supply apparatus disposed in the engine and which is constructed so as to supply a secondary air to the exhaust gas passage upstream of said oxygen concentration sensor;

c) first means for determining whether said secondary air supply apparatus is operated to supply the secondary air to the exhaust gas passage;

d) second means for controlling out an air/fuel mixture ratio of the engine in a feedback control mode on the basis of the signal derived from said oxygen concentration sensor during the supply of the secondary air determined as the result of determination by said first means, deriving a feedback correction coefficient of the air/fuel mixture ratio as the result of the feedback control thereby and updating an air/fuel mixture ratio learning value stored in a first memory on the basis of the -feedback correction coefficient derived thereby;



e) third means for controlling the air/fuel mixture ratio of the engine in the feedback control mode on the basis of the signal derived from said oxygen concentration sensor during no supply of the secondary air determined as the result of determination by said first means, deriving the feedback correction coefficient of the air/fuel mixture ratio as the result of the feedback control thereby and updating the air/fuel mixture ratio learning value stored in a second memory on the basis of the feedback correction coefficient derived thereby; and

f) fourth means for comparing both updated values in said first and second memories to carry out a diagnostic for the secondary air supply apparatus.

5,388,402

SECONDARY AIR SUPPLY CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

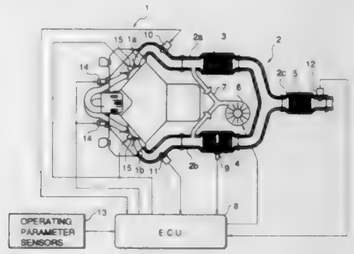
Takuya Aoki, and Tetsu Teshirogi, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1993, Ser. No. 178,378

Claims priority, application Japan, Dec. 24, 1992, 4-359279

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—276 **10 Claims**



1. A secondary air supply control system for an internal combustion engine having an exhaust system, at least one catalyst arranged in said exhaust system for purifying exhaust gas components from said engine, and secondary air supply means for supplying secondary air into said exhaust system at a location upstream of said catalyst, comprising:

catalyst temperature-detecting means for detecting a temperature of said catalyst;

catalyst temperature variation rate-calculating means for calculating a rate of variation in the temperature of said catalyst detected by said catalyst temperature-detecting means per a predetermined time interval; and

secondary air amount control means for controlling an amount of secondary air to be supplied by means of said secondary air supply means, in response to a change in the rate of variation in the temperature of said catalyst calculated by said catalyst temperature variation rate-calculating means, wherein said amount of secondary air is varied with a change in the rate of variation in the temperature of the catalyst.

5,388,403

EXHAUST GAS PURIFICATION DEVICE FOR AN ENGINE

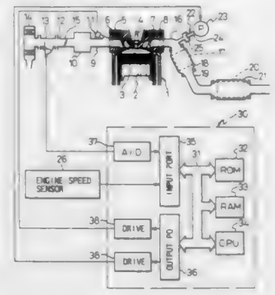
Tetsuo Nagami, Nagoya, and Hiroshi Hirayama, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 28, 1994, Ser. No. 203,206

Claims priority, application Japan, Mar. 12, 1993, 5-052426

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—276 **10 Claims**



1. An exhaust gas purification device of an engine having a combustion chamber and an exhaust passage, said device comprising:

a NO_x absorbent arranged in the exhaust passage and absorbing NO_x when an air-fuel ratio of exhaust gas flowing into said NO_x absorbent is lean, said NO_x absorbent releasing absorbed NO_x when a concentration of oxygen in the exhaust gas flowing into said NO_x absorbent is lowered;

air-fuel ratio control means for controlling an air-fuel ratio of an air-fuel mixture formed in the combustion chamber; and

secondary air supply means for feeding secondary air into the exhaust passage upstream of said NO_x absorbent to make said air-fuel ratio of exhaust gas lean when said air-fuel ratio of said air-fuel mixture is made rich by said air-fuel ratio control means.

5,388,404

CONTROLLER DEVICE FOR ELECTRICALLY HEATED CATALYST OF AUTOMOTIVE ENGINE

Tatsuya Tsumura, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1993, Ser. No. 70,794

Claims priority, application Japan, Jun. 9, 1992, 4-149416; Jul. 13, 1992, 4-185345

Int. Cl.[6] F01N *3/28*

U.S. Cl. 60—284 **6 Claims**

1. A control device for controlling a current supply from a

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battery to an electrical heater for pre-heating a catalyst device for an automotive engine cranked by an electrical starter, said control device comprising:

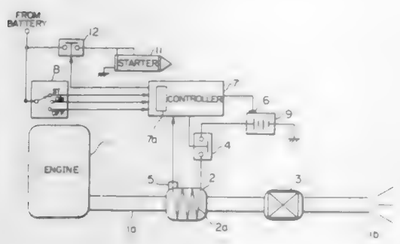
heater current control switch means for turning on and off a current supply from said battery to said electrical heater;

catalyst temperature detector means for detecting a temperature of said catalyst device and generating an output signal indicating a detected temperature;

battery voltage detector means for detecting a voltage of said battery and generating an output signal indicating a detected voltage;

an ignition switch including at least an OFF contact, an ON contact, a START contact, and a HEAT contact, to any one of which a driver of an automobile may selectively turn a key switch, said ignition switch generating an output signal indicating a position of said key switch; and

controller means coupled to said catalyst temperature detector means, said battery voltage detector means and said ignition switch, said controller means controlling said



heater current control switch means in response to said output signals from said catalyst temperature detector means, said battery voltage detector means, and said ignition switch, wherein: (a) in response to said output signal from said ignition switch indicating that said key switch is turned to said HEAT contact, said controller means determines said battery voltage on the basis of said output of said battery voltage detector means and turns on said heater current control switch means to supply current from said battery to said electrical heater to commence a pre-heating of said catalyst device when said battery voltage exceeds a predetermined level; and (b) said controller means determines said catalyst temperature on the basis of said output of said catalyst temperature detector means, and returns said key switch to said START contact to supply current from said battery to said electrical starter and thereby to commence automatically a cranking of said automotive engine when said catalyst temperature exceeds a predetermined level.

5,388,405

SYSTEM FOR PURIFYING EXHAUST GAS FOR USE IN AN AUTOMOBILE

Masakatsu Fujishita, Mito; Takeshi Atago, Katsuta; Akio Honji; Osamu Kuroda, both of Hitachi; Toshio Ogawa, Takahagi; Noriko Watanabe, Mito, and Minoru Osuga, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 30, 1992, Ser. No. 953,218

Claims priority, application Japan, Sep. 30, 1991, 3-251233; Oct. 4, 1991, 3-258178

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—297 **2 Claims**

1. A system for purifying an exhaust gas for use in an automobile, comprising:

an exhaust gas main passage for discharging the exhaust gas from an engine;

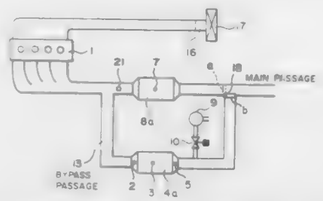
a bypass passage for connecting an upstream portion of said exhaust gas main passage with a downstream portion of the exhaust gas main passage;

adsorbent disposed in said bypass passage having a temperature range at which said adsorbent adsorbs unburnt hydrocarbons, (the adsorption zone), a temperature range above the adsorption zone, at which said adsorbent desorbs the adsorbed unburnt hydrocarbons are desorbed therefrom, (the desorption zone), and a further higher temperature range at which the adsorbed material which can not be completely desorbed in said desorption zone can be eliminated from said adsorbent, (the regeneration zone);

exhaust gas treating catalyst provided in said exhaust gas main passage in parallel with said bypass passage;

means for detecting the temperature of at least one of said adsorbent and said catalyst;

air supplying means disposed in said bypass passage downstream of said adsorbent;



passage changing means provided at the exit of said bypass passage for adjusting the ratio of the flow rate of the exhaust gas through said exhaust gas main passage to that through said bypass passage; and

means for controlling said passage changing means in such a manner that the exhaust gas is caused to flow through said bypass passage when the temperature of said adsorbent falls into the adsorption zone and said bypass passage is closed to cause the exhaust gas to flow through the main passage and air is supplied to said bypass passage by said air supply means when the temperature of the adsorbent falls into the desorption zone.

5,388,406

NOX DECREASING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Shinichi Takeshima, Susono; Satomi Seto, Gotenba, and Shinya Hirota, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

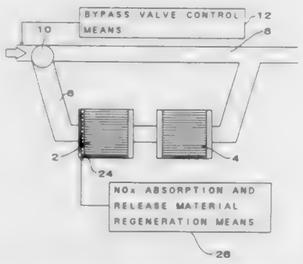
Continuation of Ser. No. 967,599, Oct. 28, 1993, abandoned.

This application Sep. 10, 1993, Ser. No. 118,700

Claims priority, application Japan, Oct. 29, 1991, 3-308245; Aug. 18, 1992, 4-219145

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—297 **27 Claims**



1. An NOx decreasing apparatus for an internal combustion engine comprising:

an internal combustion engine capable of fuel combustion at lean air-fuel ratios;

an exhaust conduit connected to the internal combustion engine;

an NOx absorption and release material, installed in a first portion of the exhaust conduit, for absorbing NOx included in exhaust gas from the engine under oxidizing gas conditions at temperatures below a predetermined temperature and for releasing absorbed NOx at temperatures above the predetermined temperature; and

a first heater installed in the first portion of the exhaust conduit and operable to heat the NOx absorption and release material to a temperature above the predetermined temperature.

5,388,407

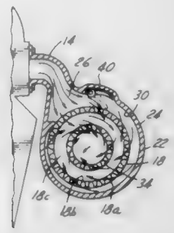
EXHAUST MANIFOLD CATALYST AND MUFFLER FOR AUTOMOTIVE ENGINE

Walter E. Capers, Orchard Lake Village, and Christopher J. Morris, Ypsilanti, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1994, Ser. No. 270,872

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—302 **15 Claims**



1. An exhaust manifold catalytic reactor and muffler for an automotive internal combustion engine, comprising:

at least one exhaust branch for conducting exhaust gases from a cylinder head exhaust port of an engine;

a hollow, generally cylindrical primary catalyst substrate for treating the exhaust gases flowing from the engine with said substrate having inner and outer surfaces which are generally cylindrical and an inner cavity, and:

a housing, connected to said exhaust branch, for placing said exhaust gases in contact with said substrate, with said housing comprising a generally cylindrical container having an outer wall and a transition section for conducting exhaust gas from said exhaust branch to the outer surface of the substrate such that the initial flow of the gases over the substrate is generally tangential, with said outer wall having an inside surface which, together with the outer surface of the substrate, defines an annular gas flow passage circumscribing the outer surface of the substrate, with the area of the gas flow passage gradually decreasing as the circumferential distance from the transition increases such that the exhaust gas moves radially inwardly through the substrate with approximately an even flow distribution.

5,388,408

EXHAUST SYSTEM FOR INTERNAL COMBUSTION ENGINES

Phillip G. Lawrence, Spring Lake, Mich., assignor to Lawrence-Keech Inc., Grand Haven, Mich.

Filed Oct. 1, 1993, Ser. No. 131,525

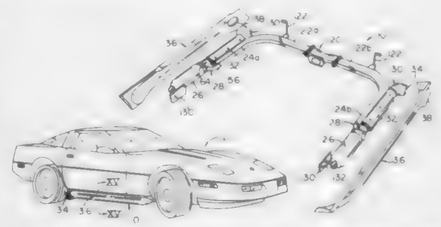
Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—324 **23 Claims**

1. In a land vehicle having an internal combustion engine, a front, a rear and opposing sides, front and rear wheels spaced along each side and an exhaust conduit leading from said engine and including a catalytic converter, an improved exhaust system comprising:

an exhaust pipe connected to said exhaust conduit downstream of said catalytic converter, said pipe receiving cleansed exhaust gases after passage through said catalytic converter;

a sound attenuating chamber connected to said exhaust pipe for receiving the cleansed exhaust gases and attenuating the sound thereof; and



an exhaust outlet connected to and downstream of said chamber for releasing the sound attenuated, cleansed gases to the atmosphere, said exhaust outlet being positioned adjacent one side of said vehicle between said front and rear wheels on said one vehicle side whereby the cleansed, sound attenuated exhaust gases are released along said one vehicle side.

5,388,409

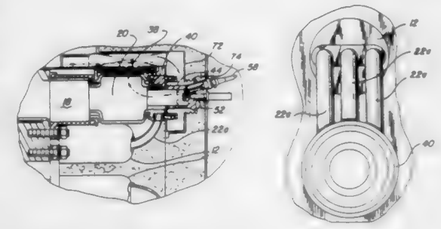
STIRLING ENGINE WITH INTEGRATED GAS COMBUSTOR

Roelf J. Meijer, Ann Arbor, Mich., assignor to Stirling Thermal Motors, Inc., Ann Arbor, Mich.

Filed May 14, 1993, Ser. No. 61,902

Int. Cl.[6] F02G *1/04*

U.S. Cl. 60—525 **19 Claims**



1. A Stirling engine comprising:

a plurality of heat transfer stacks having a cooler, regenerator and heat exchanger stacked end-to-end along an axis;

a plurality of working cylinders with one cylinder positioned adjacent each of said heat transfer stacks, each cylinder being generally parallel to and spaced from said adjacent stack;

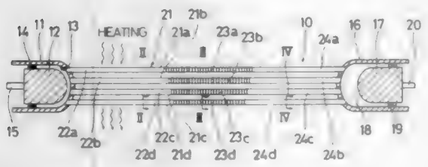
said heat exchangers each including a plurality of tubes for conducting a working cycle fluid of said Stirling engine, said tubes extending axially from said regenerator and terminating in a manifold axially spaced from said regenerator;

at least one combustion chamber having a gas flow outlet communicating with said heat exchangers;

each stack being connected to said adjacent working cylinder by a plurality of connecting ducts for conducting said working cycle fluid between said heat exchanger and said working cylinder whereby bending deflection of said ducts permits movement of each stack relative to the adjacent cylinder as said stacks and cylinders are exposed to thermal gradients and expansion.

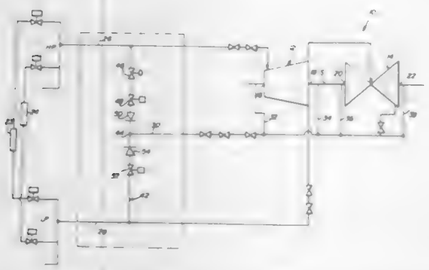
VOL 1171 ISS 2 FE 14 1995 UMI

5,388,410
STIRLING ENGINE
Yutaka Momose, Anjo; Tetsumi Watanabe, Okazaki, and Hiroyuki Ohuchi, Toyoake, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Mar. 25, 1994, Ser. No. 217,547
Claims priority, application Japan, Mar. 29, 1993, 5-070208
Int. Cl.[6] F01B *29/10*
U.S. Cl. 60—526 12 Claims



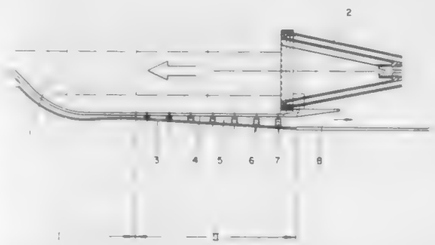
6. A Stirling engine comprising:
an expansion cylinder having a piston disposed therein for defining an expansion chamber;
a compression chamber having a piston disposed therein for defining a compression chamber;
a plurality of hollow conduits for receiving a working fluid, said conduits extending between and connecting the expansion chamber to the compression chamber, each conduit including a heating portion connected to the expansion chamber, a cooling portion connected to the compression chamber and a regenerative portion disposed between the heating portion and the cooling portion, the regenerative portion of at least one of the conduits having a dimension that is less than a corresponding dimension of the regenerative portions of the other conduits.

5,388,411
METHOD OF CONTROLLING SEAL STEAM SOURCE IN A COMBINED STEAM AND GAS TURBINE SYSTEM
Craig W. McKeever, Schenectady, and Daniel T. Lee, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Sep. 11, 1992, Ser. No. 943,233
Int. Cl.[6] F01K *13/02*
U.S. Cl. 60—646 19 Claims



1. A method of operating a steam turbine at a load below a self-sealing load such that make-up steam must be supplied to a plurality of high and low pressure seals of the steam turbine, wherein the steam turbine includes a metal inlet, and wherein steam for the steam turbine is supplied from a heat recovery steam generator having high and low pressure sections via high and low pressure headers, respectively, the method comprising the steps of:
a) supplying steam from the high or low pressure sections of the heat recovery steam generator to said plurality of high and low pressure seals of the steam turbine via a seal steam header; and
b) controlling which of the high and low pressure sections of the heat recovery steam generator supplies said steam to said plurality of high and low pressure seals as a function of pressure in said low pressure header which is connected to the low pressure section of the heat recovery steam generator, percent turbine load, and temperature of said metal inlet of said turbine.

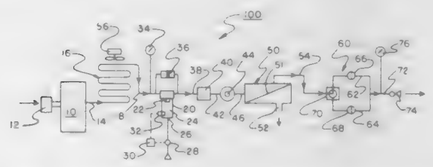
5,388,412
GAS TURBINE COMBUSTION CHAMBER WITH IMPINGEMENT COOLING TUBES
Burkhard Schulte-Werning, Basel, and Roger Suter, Zürich, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland
Filed Nov. 15, 1993, Ser. No. 151,797
Claims priority, application Germany, Nov. 27, 1992, 4239856
Int. Cl.[6] F02C *7/18*; F23R *3/02*
U.S. Cl. 60—760 4 Claims



1. A gas turbine combustion chamber in which a combustion chamber wall is cooled by impingement cooling, comprising:
a plate, perforated with a plurality of holes, mounted spaced apart from an outer surface of the combustion chamber to form a cooling gas duct along the outer surface of the combustion chamber to conduct a cooling gas flow along the outer surface, the holes guiding additional cooling gas into the cooling duct as jets impinging through the perforated plate on the outer surface of the combustion chamber;
a plurality of tubes arranged in the cooling duct on the holes of the perforated plate to direct the cooling gas jets onto the outer surface;
wherein a height of the cooling duct increases continuously in a transverse combustion chamber flow direction to correspond with an increasing mass of cooling gas in the cooling duct to maintain a constant gas speed, and wherein the tubes are positioned to direct the impingement gas on the impingement surface at right angles, a height of the tubes increasing in the transverse flow direction so that a distance between the tubes and the impingement surface is constant over the complete length of the cooling duct.

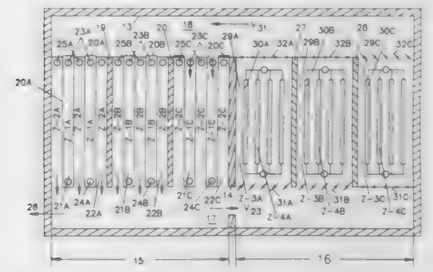
5,388,413
PORTABLE NITROGEN SOURCE
Thomas O. Major, 4105 Gray, Denver, Colo. 80212, and Jack E. Major, Jr., 1590 Harlan, Lakewood, Colo. 80214
Filed Jan. 22, 1993, Ser. No. 7,205
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—11 4 Claims

1. An apparatus for providing nitrogen gas at sequential work sites comprising:
a channel with constraining walls for containing flowing nitrogen gas at a pressure greater than ambient atmospheric pressure, said channel having an upstream end and a down stream end;
a compressor for providing compressed air at a pressure greater than atmospheric pressure to said up-stream end of said channel;
a membrane wall portion of said channel between said up-stream end and said downstream end, said constraining wall of said membrane wall portion comprising a membrane for selectively constraining nitrogen within said channel while allowing another gas to pass through said membrane and without said channel;
a cabinet for containing said compressor and said channel in fixed, relative, functional relation;



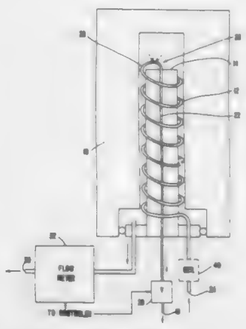
transport facilitation means for facilitating transport of said cabinet from a first of the work sites to a second of the work sites;
a bifurcated channel section with a first and second bifurcated section passage;
a first flow restrictor located within said first bifurcated section passage;
a second flow restrictor located within said second bifurcated section passage; and,
valve means for selectively directing a flow of gas through said first or said second passage.

5,388,414
HIGH PERFORMANCE IN-SITU FREEZING-MELTING PROCESS
Chen-Yen Cheng, 9605 La Playa NE., Albuquerque, N. Mex. 87111
Continuation-in-part of Ser. No. 516,460, Apr. 30, 1990, Pat. No. 5,059,228. This application May 31, 1991, Ser. No. 708,507
Int. Cl.[6] F25J *5/00*
U.S. Cl. 62—12 58 Claims



1. A process of separating a mixture containing a crystallizable solvent, denoted as A-component, and one or more non-solvent components, dissolved and/or suspended, individually denoted as serious B_1, B_2, —, and B_N and collectively denoted as B-components, into a first product that is purified solvent and a second product enriched with the non-solvent components by subjecting a mass of the feed mixture to a cyclic operation and each cycle comprises:
(1) A first primary step of applying a mass of liquid derived from the feed on a set of solid surfaces, referred to as solidification surfaces, in a primary processing zone and removing heat from the primary processing zone to thereby form a layer of solvent solid from the liquid on each of the set of the solidification surfaces, thereby forming a solid-liquid interface, while agitating the liquid near the solid-liquid interface, and discharging a mass of liquid from the primary zone as the second product;
(2) A second primary step of separating the liquid from the layer of the solvent solid on each of the solidification surfaces; and
(3) A third primary step of bringing a stream of super-triple point solvent vapor whose pressure is somewhat higher than the triple point pressure of the solvent in contact with the solvent solid to thereby simultaneously melt the solvent solid and condense the super-triple point solvent vapor and thereby produce a mass of purified solvent liquid, a major fraction of the purified solvent liquid constituting the first product;
(4) A first auxiliary step of subjecting an auxiliary heat auxiliary processing zone and establishing a heat interaction between the primary processing zone interaction medium to an endothermic transformation in an and the auxiliary processing zone to thereby transfer the heat released in the first primary step to supply the heat used in the first auxiliary step.

5,388,415
SYSTEM FOR A COOLER AND GAS PURITY TESTER
Ofer Glinka, Kiryat-Motzkin; Shmuel Segev, Haifa, and Ariel Trau, Naharya, all of Israel, assignors to State of Israel - Ministry of Defence Armament Development Authority, Rafael, Haifa, Israel
Filed Jan. 5, 1994, Ser. No. 177,726
Claims priority, application Israel, Jan. 24, 1993, 104,496
Int. Cl.[6] F25B *47/00, 19/00*
U.S. Cl. 62—51.2 10 Claims



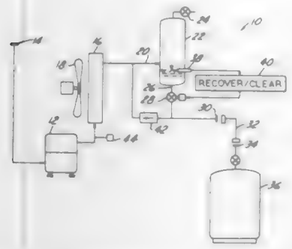
1. A system for a cooler comprising:
a heat exchange tube receiving a supply of pressurized gas;
a gas escape aperture communicating with the interior of the heat exchange tube for permitting escape of the pressurized gas and expansion thereof during a cooling mode; and
a bypass assembly, associated with said heat exchange tube and located after said gas escape aperture, which during a cleaning mode, enables most of the pressurized gas to exit the heat exchange tube without flowing through said gas escape aperture.

5,388,416
REFRIGERANT HANDLING METHOD WITH AIR PURGE AND SYSTEM CLEARING CAPABILITIES
Kenneth W. Manz, Paulding, and Christopher M. Powers, Bryan, both of Ohio, assignors to SPX Corporation, Muskegon, Mich.
Division of Ser. No. 100,424, Aug. 2, 1993. This application Jul. 25, 1994, Ser. No. 279,347
Int. Cl.[6] F25B *47/00*
U.S. Cl. 62—85 7 Claims

1. A method of purging non-condensibles from refrigerant comprising the steps of:

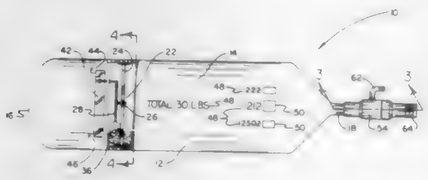
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(a) directing the refrigerant into a chamber such that the refrigerant collects in liquid phase at a lower portion of the chamber and non-condensibles are trapped in the upper portion of the chamber over the liquid refrigerant,
(b) purging the non-condensibles trapped in the upper portion of the chamber,



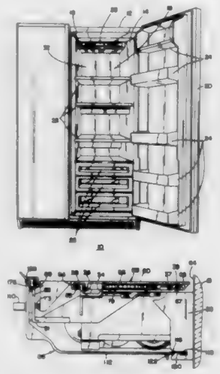
(c) withdrawing refrigerant from an outlet at the lower portion of the chamber in a first mode of operation while maintaining a minimum level of refrigerant within the chamber forming a liquid seal at the outlet to isolate the outlet from the upper portion of the chamber, and
(d) withdrawing all refrigerant from the chamber in a second mode of operation independent of liquid refrigerant level.

5,388,417
BAG FOR THE RECOVERY OF USED FREON FROM AN OPERATIONAL SYSTEM
Andrew J. Hughes, Jr., and Michele D. Hughes, both of 4218 E. Joppa Rd., Baltimore, Md. 21236
Filed Jun. 9, 1994, Ser. No. 257,176
Int. Cl.[6] F25B *49/00*
U.S. Cl. 62—125 **4 Claims**



2. A bag for the recovery of used freon from an operational system comprising:
a bag formed of a strong lightweight flexible material having side walls which are cylindrical when expanded and having a closed outboard end and an open inboard end;
sensor means within the container to indicate the percent of fullness of used freon within the container, the sensor means including a vertically extending support post coupled to the interior surface of the side walls and with an aperture extending centrally through said post, the axis of the aperture being coextensive with the axis of the bag when expanded, a rotatable shaft secured through the aperture and a rod coupled to the shaft for rotation with regard to the post, the rod being of a length less than the post, the rod having a float ball at one end and an indicator arrow at the other end, and a threaded connector removably coupling the rod to the support bar for removal thereof; and
a window formed in the side wall adjacent the pointer adapted to indicate the position of the pointer.

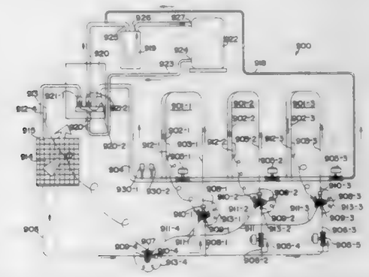
5,388,418
REFRIGERATOR WITH IMPROVED CONTROL MECHANISM
Jerry C. Martin, Corydon, Ind., and Martin M. Zentner, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Mar. 4, 1994, Ser. No. 207,373
Int. Cl.[6] F25B *49/00*
U.S. Cl. 62—131 **11 Claims**



1. A refrigerator with a liner defining a food storage compartment, and a refrigerator control assembly including:
a base mounted within said compartment, said base including an elongated support plate extending generally horizontally from side-to-side within said compartment;
at least one thermostat mechanism mounted under and toward one end of said plate, said at least one thermostat mechanism having at least one operating handle projecting forward of said plate;
a lamp for lighting said compartment mounted under said plate to the side of said at least one thermostat mechanism;
a cover, said cover and said base including cooperating means for removably mounting said cover to said base;
said cover including a vertically disposed bezel extending along the front of said plate in line with said at least one thermostat mechanism and said lamp, said bezel including at least one elongated slot fitting around said at least one operating handle to permit side-to-side movement of said at least one handle for adjusting said at least one thermostat mechanism and permitting said bezel to be removed from said base without removing said at least one handle;
said cover also including a bottom wall extending along said plate below said at least one thermostat mechanism and said lamp and including a light permeable area aligned with said lamp.

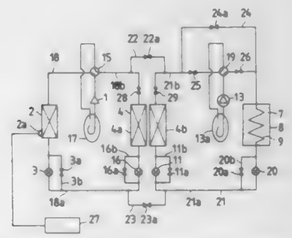
5,388,419
STAGED COOLING DIRECT EXPANSION GEOTHERMAL HEAT PUMP
Glen A. Kaye, Petitcodiac, Canada, assignor to Maritime Geothermal Ltd., New Brunswick, Canada
Continuation-in-part of Ser. No. 53,050, Apr. 23, 1993, Pat. No. 5,313,804. This application Oct. 20, 1993, Ser. No. 139,200
Int. Cl.[6] F25B *13/00*
U.S. Cl. 62—160 **8 Claims**

1. A loop system for use in combination with a "DX" heat pump system comprising:
a) three loops, each of said first loop, said second loop and said third loop including a suction/hot gas line and a liquid line, each said loop being adapted to be buried underground in heat exchange relationship with earth;
b) a refrigerant vapor header connected to each of said suction/hot gas lines, and said refrigerant vapor header being provided with first, second and third solenoid valves, each said valve being downstream of the connection of the respective suction/hot gas line to said refrigerant vapor header;
c) a liquid line header provided with a cooling thermostatic expansion valve;
d) first, second and third connecting line means connecting said liquid line header to an associated one of said liquid



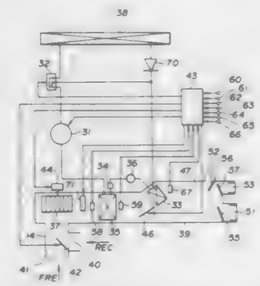
lines of said three loops upstream of said cooling thermostatic expansion valve;
e) first, second and third heating direct expansion valves in an associated one of said first, second and third line means (d); and
f) a solenoid valve in each of said second and third connecting line means, each said solenoid valve being interposed between an associated second and third connection line means between an associated second and third heating thermostatic expansion valve an said liquid line header.

5,388,420
HEAT STORAGE TYPE AIR CONDITIONER, AND DEFROSTING METHOD
Takeshi Yoshida; Yasufumi Hatamura; Hideaki Tagashira; Masami Imanishi, and Keiji Nonami, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 22, 1994, Ser. No. 199,839
Claims priority, application Japan, Feb. 22, 1993, 5-032039; Dec. 7, 1993, 5-306679
Int. Cl.[6] F25B *7/00*
U.S. Cl. 62—160 **22 Claims**



1. A heat storage type air conditioner comprising:
a general cooling and heating circuit including a compressor, a first switching device, a non-use side heat exchanger, first pressure reducing means, and a first use-side heat exchanger generally arranged in this order, wherein said first switching device is operated to change a flow path of refrigerant so that said general cooling and heating circuit selectively performs one of a cooling operation and a heating operation with the aid of said first use-side heat exchanger;
a cold radiating and heat radiating circuit including a refrigerant pump, a second switching device, a cold storing and heat storing heat exchanger, second pressure reducing means, and a second use-side heat exchanger generally arranged in this order, wherein said second switching device is operated to change a flow path of refrigerant so that said cold radiating and heat radiating circuit selectively performs one of a cooling operation and a heating operation with the aid of said second use-side heat exchanger;
a heat storage tank containing a heat storing medium adapted to selectively store therein and radiate therefrom thermal energy, and capable of performing heat-exchange with said cold storing and heat storing heat exchanger when said cold radiating and heat radiating circuit performs one of the cooling operation and the heating operation;
first means for permitting said general cooling and heating circuit and said cold radiating and heat radiating circuit to be operated independently of each other when at least one of said cold radiating and heat radiating circuit and general cooling and heating circuit is driven to perform one of the cooling operation and the heating operation; and
second means for setting a thermal energy storing operation so that said heat storage tank stores thermal energy therein.

5,388,421
HEAT PUMP TYPE AIR CONDITIONER FOR AUTOMOTIVE VEHICLE
Takayoshi Matsuoka, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed May 25, 1993, Ser. No. 66,266
Claims priority, application Japan, May 25, 1992, 4-132372
Int. Cl.[6] F25B *41/00*
U.S. Cl. 62—209 **11 Claims**



1. A heat pump type air conditioner for an automotive vehicle, comprising:
refrigerant;
a compressor applying workload to said refrigerant, said compressor varying its workload according to a physical amount;
an outer heat exchanger connected to a refrigerant discharge side of said compressor and radiating heat of said refrigerant into ambient air;
a blower leading air for air-conditioning a passenger compartment of the automotive vehicle;
a heat-radiating inner heat exchanger connected to the refrigerant discharge side of said compressor and transmitting the heat of said refrigerant to the air led by said blower;
an expansion valve connected to a refrigerant outlet side of said heat radiating inner heat exchanger;
a heat-absorbing inner heat exchanger connected to said expansion valve, said heat-absorbing inner heat exchanger cooling the air led by said blower by transmitting the heat of the air to said refrigerant which is supplied through said

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expansion valve from at least one of said outer heat exchanger and said heat-radiating inner heat exchanger;
a switching device disposed among the refrigerant discharge side of said compressor, a refrigerant inlet side of said outer heat exchanger, and a refrigerant inlet side of said heat-radiating inner heat exchanger, said switching valve leading the refrigerant from said compressor to at least the outer heat exchanger during cooling operation and leading the refrigerant from said compressor to said heat-radiating inner heat exchanger while bypassing said outer heat exchanger during heating operation;
means defining a heating property from relationship with the physical amount and thermal operating condition of at least one of said heat-radiating inner heat exchanger and said heat-absorbing inner heat exchanger;
means for detecting the thermal operating condition; and
means for determining the physical amount at a value from the relationship with said defined heating property and said detected thermal operating condition, and controlling said compressor according to said determined physical amount value.

5,388,422
AIR-CONDITIONING SYSTEM

Noriaki Hayashida; Takashi Nakamura; Hidekazu Tani; Tomohiko Kasai; Junichi Kameyama, and Shigeo Takata, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 814,558, Dec. 30, 1991, Pat. No. 5,237,833. This application Mar. 24, 1993, Ser. No. 36,256
Claims priority, application Japan, Jan. 10, 1991, 3-001616; Jan. 21, 1991, 3-004841; Jan. 28, 1991, 3-008360; Jan. 31, 1991, 3-010415; Jan. 31, 1991, 3-010710; Jan. 31, 1991, 3-010711; Feb. 5, 1991, 3-014031; Feb. 5, 1991, 3-014162; Feb. 5, 1991, 3-014200; Feb. 20, 1991, 3-026000; Feb. 20, 1991, 3-026001; Mar. 28, 1991, 3-064631; Nov. 15, 1991, 3-300615
Int. Cl.[6] F25B *41/00*
U.S. Cl. 62—211 2 Claims

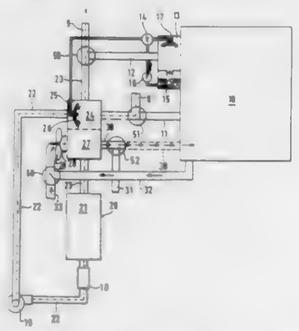


1. An air-conditioning system wherein a single heat source unit having a compressor, a four-way valve, a heat source unit side heat exchanger and an accumulator is connected to a plurality of indoor units having an indoor side heat exchanger and a first flow rate controller through first and second connection pipes;
a first branch joint including a valve device for selectively connecting one of said plurality of indoor units to said first connection pipe or said second connection pipe and a second branch joint connected to another of said indoor side heat exchangers of said plurality of indoor units through said first flow rate controller and connected to said second connection pipe through said second flow rate controller are connected to each other through a second flow rate controller and a gas-liquid separating unit;
said second branch joint and said first connection pipe are connected through a fourth flow rate controller;
said second branch joint and said first connection pipe are connected through a bypass pipe having a third flow rate controller therein; and
said air conditioning system comprises;
a first heat exchanger portion for carrying out a heat-exchange between said bypass pipe between said third flow rate controller and said first connection pipe and pipings connecting said second connection pipe and said second flow rate controller;
a flow path change over unit for allowing, when said heat source unit side heat exchanger is operated as a condenser, a flow of a refrigerant from a refrigerant outlet side of said condenser only to said second connection pipe and a flow of the refrigerant from said first connection pipe only to said four-way valve side, and allowing, when said heat source unit side heat exchanger is operated as an evaporator, a flow of the refrigerant from said first connection pipe only to a refrigerant inlet side of said evaporator and a flow of the refrigerant from said four-way valve only to said second connection pipe; and
a junction unit disposed between said plurality of heat source units, said junction unit comprising said first branch joint, said second branch joint, a gas-liquid separator, said second flow rate controller, said third flow rate controller, said fourth flow rate controller, said first heat exchanger portion and said bypass pipes;
characterized by the provision of:
suction air temperature detecting means for detecting a suction air temperature of said plurality of indoor units;
opening degree setting means for setting a minimum valve opening degree of said first flow rate controller in response to a difference between a detected temperature of said suction air temperature detection means and a predetermined target temperature; and
first valve opening degree controlling means for controlling the valve opening degree of said first flow rate controller at a predetermined rate determined by said first valve opening degree controlling means such that said first flow rate controller is moved to said minimum valve opening degree set by said opening degree setting means at said predetermined rate.

5,388,423
APPARATUS FOR AND METHOD OF COOLING AND/OR HEATING A COMPARTMENT

Noureddine Khelifa, Munich, Germany, assignor to Behr GmbH & Co., Stuttgart, Germany

Filed Mar. 16, 1992, Ser. No. 851,655
Claims priority, application Germany, Mar. 19, 1991, 9112332[U]; Aug. 6, 1991, 4125993
Int. Cl.[6] F25B *27/00*; G05D *23/00*; B60H *1/02*
U.S. Cl. 62—238.3 17 Claims



1. Apparatus for heating or cooling a motor vehicle passenger compartment communicating with a supply air duct for supplying a stream of air to the compartment and a used air duct for exhausting air from the compartment, comprising:
a heat source for transferring heat energy to the air stream, said heat source comprising a sorption reactor provided with a sorbent, said reactor having a reaction chamber through which the air stream passes for extracting moisture from the air stream and adding adsorption heat to the air stream,
an inflow duct upstream of said sorption reactor through which the air stream passes to said reactor,
an outflow duct at the outlet end of said reactor for conveying the treated air stream away from the reactor,
a fresh air duct for feeding fresh air into said inflow duct, and an air stream control element for selectively communicating said fresh air duct with said inflow duct, and
an exhaust air duct opening into the atmosphere, and a further air stream control element for selectively communicating the outflow duct with said exhaust air duct,
wherein at least one heat exchanger is provided which is disposed in at least one of the inflow duct and the outflow duct, and wherein energy of the air stream in one of the inflow and outflow ducts is yielded in this heat exchanger to the air stream in the other of the inflow and outflow ducts.

5,388,424
COMPOSITE COVER FOR TRANSPORT REFRIGERATION UNIT

Robert A. Chopko, Baldwinsville, and Robert S. Simeone, Bridgeport, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 27, 1993, Ser. No. 98,495
Int. Cl.[6] B60H *1/32*
U.S. Cl. 62—239 5 Claims



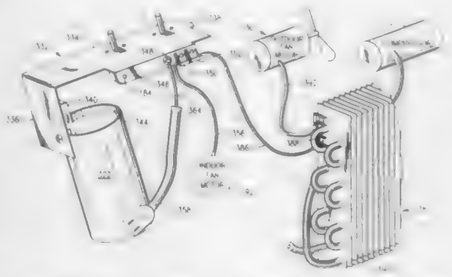
1. A transport refrigeration unit of the type adapted to be mounted on the front wall of a trailer for conditioning the interior of the trailer, the unit having a structural frame which includes a section to be attached to the trailer, and vertically extending members spaced from the front of the trailer for supporting a front cover for enclosing the refrigeration unit, wherein the front cover comprises:
a plurality of sections formed from a composite structure which comprises a twin sheet structure filled with foam;
at least one of said sections formed from a composite structure comprising an openable door;
said door having a hinge means attached thereto on one edge thereof, for mounting said door for opening and closing thereof;
said hinge means comprising: a first support plate positioned within said composite structure adjacent an inside wall of one of said twin sheets; and an outer hinge support plate positioned on the outside wall of said same sheet structure; and, interconnecting means attaching said first support place and said outer hinge support plate structurally together to thereby sandwich said twin sheet section therebetween, and means attached to said outer hinge support plate carrying a hinging structure.

5,388,425
GROUNDING FOR A ROOM AIR CONDITIONER

Theodore S. Bolton, Liverpool, and Stephen Stopyra, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 9, 1994, Ser. No. 208,393
Int. Cl.[6] F25D *23/12*
U.S. Cl. 62—262 3 Claims

1. In an air conditioner having substantially all components thereof, except electrical and refrigeration circuit components, made from an electrically insulating material, said air conditioner having a power service cord and, an electrical grounding system comprising:
an indoor section in communication with the space to be conditioned, including a metal indoor heat exchanger, and means for circulating air to be conditioned in heat exchange relation with the indoor heat exchanger, said circulating means including an electric motor;
an outdoor section in communication with ambient air and including a metal outdoor heat exchanger, an outdoor fan, and a compressor, said indoor heat exchanger, said outdoor exchanger and said compressor being interconnected by electrically conductive refrigerant tubing;
a plastic basepan having a partition integrally formed therewith for dividing the air conditioning unit to separate said indoor section from said outdoor section;



a plastic electrical control box mounted within said indoor section, said electrical control box having an electrically conductive grounding plate mounted in the interior thereof;
means for interconnecting a ground lead of said air conditioning units power service cord to said grounding plate;
means for electrically connecting all electrical controls and other components in the indoor section which must be grounded to said grounding plate;
an outdoor section grounding lead electrically interconnecting said grounding plate with said outdoor heat exchanger thereby grounding the entire refrigeration circuit; and
means for electrically grounding said outdoor fan motor to said outdoor heat exchanger.

5,388,426
AIR CONDITIONER

Kouji Wada; Takashi Sato, and Masayoshi Shimura, all of Fuji, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 13, 1993, Ser. No. 90,399
Claims priority, application Japan, Aug. 26, 1992, 4-227191; Aug. 28, 1992, 4-230264
Int. Cl.[6] F25D *23/12*
U.S. Cl. 62—263 12 Claims

1. An air conditioner comprising:
a case assembly having a front portion, a rear portion, and a top portion in which a suction aperture is formed;
a heat exchanger, located in the case assembly, for exchanging heat with indoor air introduced through the suction aperture;
a blower, located in the case assembly, for supplying the indoor air introduced through the suction aperture into the heat exchanger and for expelling the indoor air from the case assembly after the heat exchange by the heat exchanger; and
open-close means, provided in the top portion of the case assembly, for selectively opening or closing the suction aperture, said open-close means including:
an open-close plate for selectively opening or closing the suction aperture, said open-close plate having a first end

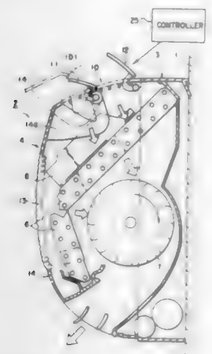
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pivotally mounted on the case assembly, and a second end;

a drive mechanism, provided for the case assembly, for pivoting the open-close plate;

connecting means, located between the open-close plate and the drive mechanism, for elastically connecting the open-close plate to the drive mechanism; and

control means for controlling the drive mechanism,



said control means pivoting the open-close plate outwardly in an opening direction to open the suction aperture when the air conditioner starts operating, and pivoting the open-close plate in an closing direction opposite said opening direction to close the suction aperture when the air conditioner stops operating so that dust will not enter the suction aperture and collect on the heat exchanger.

5,388,427

REFRIGERATOR WITH KIMCHI COMPARTMENT

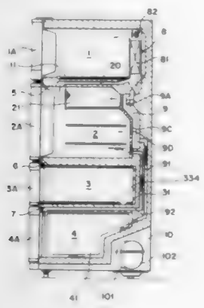
Sun G. Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 1, 1993, Ser. No. 115,046

Claims priority, application Rep. of Korea, Sep. 23, 1992, 92-18147[U]; Sep. 23, 1992, 92-18148[U]

Int. Cl.[6] F25B *29/00*

U.S. Cl. 62—331 **15 Claims**



1. A refrigerator comprising:

a refrigerating compartment;

a freezing compartment located above said refrigerating compartment;

a main cooling apparatus including an evaporator for producing cold air, said evaporator disposed at an elevation higher than a lowermost portion of said refrigerating compartment;

an air flow passage system communicating said evaporator with said refrigerating and freezing compartments for providing cold air to said freezing compartment and said refrigerating compartment; and

a heating/cooling compartment disposed beneath said refrigerating compartment and including its own heating and cooling mechanisms which are selectively actuable for heating and cooling said heating/cooling compartment independently of operation of said main cooling apparatus;

said air flow passage system being isolated from said heating-/cooling compartment so that odors in said heating/cooling compartment are not circulated to said refrigerating and freezing compartments through said air flow passage system.

5,388,428

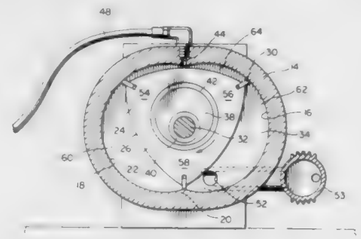
GAS EXPANSION REFRIGERATION SYSTEM

Murry D. Harper, 218 22nd St., Dunbar, W. Va. 25064

Filed Jun. 23, 1993, Ser. No. 79,928

Int. Cl.[6] F25D *9/00*

U.S. Cl. 62—402 **3 Claims**



1. A refrigeration system comprising a source of compressed air, said compressed air being at ambient temperature and compressed to approximately 100 psi., an expansion motor having an inlet communicated with the source of compressed air and an outlet communicated with the expansion motor for discharging expanded air at a temperature substantially below the ambient temperature of the compressed air for cooling ambient air, surfaces, articles, products and the like, said expansion motor comprising a stationary casing with a hollow interior, a rotor journaled in said casing, a main shaft supporting said rotor in the casing and extending outwardly of the casing, a propeller on said main shaft outwardly of the casing, said casing including said inlet and said outlet, said rotor including sealing ribs engaged with the casing to provide intake, expansion and discharge cycles as the compressed air is expanded and discharged at a lower temperature for cooling purposes, said propeller being positioned externally of the casing in ambient air and utilizing energy when rotated thereby controlling rotational speed of the rotor thereby controlling the rate of increase in volume, reduction in pressure to approximately atmospheric pressure and reduction in temperature to substantially below ambient temperature.

5,388,429

COOLING EQUIPMENT

Howell B. Shackelford, Griffin, and Casey F. Hammonds, Hampton, both of Ga., assignors to Low Temp Industries, Inc., Jonesboro, Ga.

Filed Jun. 9, 1993, Ser. No. 74,138

Int. Cl.[6] F25D *17/02*

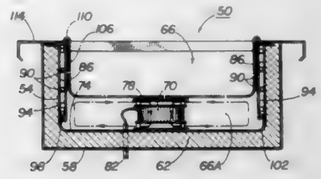
U.S. Cl. 62—446 **8 Claims**

1. Equipment for receiving a product and maintaining the temperature of the product below that of an ambient temperature, comprising:

a. a liner defining a volume adapted to be isolated from the ambient environment when the product is received;

b. means, comprising tubing positioned within the volume and contacting the liner, for enclosing and circulating cooling fluid;

c. means, positioned within the volume, for generating turbulent airflow through at least a portion of the volume; and



d. a non-insulating cover positioned within the volume in contact with the tubing.

5,388,430

METHOD OF PRODUCING A FASHIONED, ONE-PIECE FLAT KNITTED ARTICLE FOR A GARMENT PROVIDED WITH SLEEVES

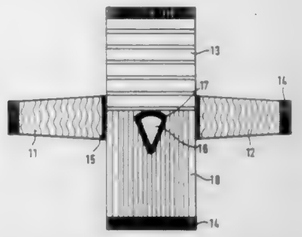
Horst Essig, Hülben, Germany, assignor to H. Stoll GmbH & Co., Reutlingen, Germany

Filed Aug. 6, 1993, Ser. No. 103,437

Claims priority, application Germany, Aug. 26, 1992, 4228408

Int. Cl.[6] D04B *7/30*

U.S. Cl. 66—64 **14 Claims**



1. A method of producing a fashioned, one-piece flat knitted article for a garment provided with sleeves on a two-bad flat knitting machine with at least one carriage, a needle bed displacement device, a loop changing device and a pattern device, wherein individual knitted article parts are to be knitted with separate thread guides, the method comprising the steps of knitting several knitted article parts including a front part, a rear part and two sleeves separately and sequentially so that in each knitted article part always several loop rows are knitted in accordance with a pattern for said each knitted article part before transferring to a next knitted article part; after finishing the sleeves, knitting the front part and a shoulder region of any shape and pattern with the formation of an arbitrarily shaped neck opening between the front part and the rear part; transferring connecting rows of the sleeves in a loop-like manner inwardly in a direction of the shoulder region and the front and rear parts until sleeve connecting edges are completely turned inwardly relative to the front part and rear part; and subsequently finally knitting a last knitted article part in correspondence with a pattern for said last knitted article part.

5,388,431

DUST-REMOVING AND OIL-FEEDING INJECTION NOZZLE APPARATUS IN THE KNITTING UNIT OF A KNITTING MACHINE

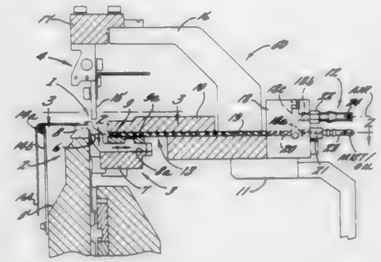
Toshiro Izumi, Hyogo, Japan, assignor to Precision Fukuhara Works, Ltd., Hyogo, Japan

Filed Oct. 12, 1993, Ser. No. 134,338

Claims priority, application Japan, Sep. 5, 1991, 3-254391; Oct. 20, 1992, 4-307774

Int. Cl.[6] D04B *35/32*

U.S. Cl. 66—168 **17 Claims**



1. An apparatus for removing dust, lint and waste fibers from and lubricating a knitting unit located on a rotating cylinder of a circular knitting machine, the knitting unit having knitting needles and sinker cooperating therewith, the sinkers having at least one sinker cam for controlling radial movement of the sinkers within sinker grooves along a predetermined axial path and the sinkers having a sinker cap, said apparatus comprising:

an injection nozzle located between the sinker cap and the at least one sinker cam in general radial alignment with an axis of the knitting unit, said injection nozzle having a tip opening located adjacent the knitting unit and said injection nozzle having a receiving end located opposite said tip opening;

supply means for supplying mist-oil and air to said injection nozzle; said injection nozzle situated with respect to the knitting unit so as to apply the mist-oil and air in a generally horizontal direction toward the sinkers and needles; and

a holder mounted intermediate said supply means and said injection nozzle, enabling mist-oil and air from said supply means to move through said receiving end of said injection nozzle to be discharged at said tip opening of said injection nozzle for removing dust, lint and waste fibers from and lubricating the knitting unit, when the knitting unit is located adjacent said injection nozzle by rotation of the rotating cylinder.

5,388,432

COVERING FOR BENDING FORMS AND IMPROVED BENDING METHOD UTILIZING SAME

Jean-Luc Lesage, Compiegne, and Rene Gy, Villemomble, both of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Mar. 2, 1992, Ser. No. 844,436

Claims priority, application France, Mar. 1, 1991, 91 02514

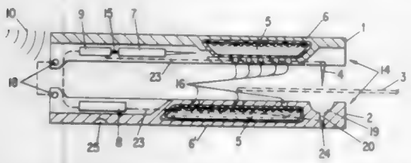
Int. Cl.[6] D04B *7/16*

U.S. Cl. 66—202 **8 Claims**

1. A covering for a bending tool contactable with a glass sheet heated to at least the softening point of the glass, said covering comprising a fabric of metal fibers and ceramic fibers, wherein said fabric is a knitted fabric formed from yarns of metal fiber and yarns of ceramic fiber, the overall mass proportion of metal to ceramic in the fabric is from 10:90 to 90:10 said fibers having a diameter of 7–12 micrometers and said yarns having a Tex number of 20–200.

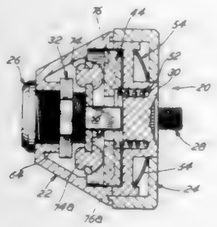
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5,388,433
ANTI-THEFT CLIP WITH BURSTING FLUID
Per-Olof Andersson, Box 211, S-183 23 Täby, and Georg von Rosen, Heimdalsvägen 1, S-184 51 Österskär, both of Sweden
PCT No. PCT/SE90/00833, § 371 Date Jun. 4, 1993, § 102(e) Date Jun. 4, 1993, PCT Pub. No. WO91/09388, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 13, 1990, Ser. No. 862,746
Claims priority, application Sweden, Dec. 14, 1989, 8904246; Mar. 21, 1990, 9001028
Int. Cl.[6] A44B *9/00*
U.S. Cl. 70—57.1 6 Claims



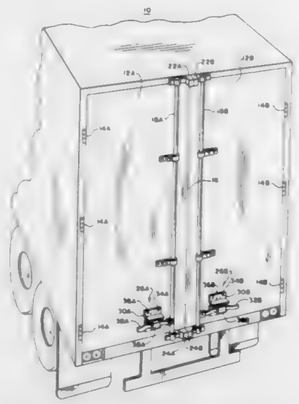
1. A device for preventing theft of displayed goods in shops comprising: a clip consisting of a first and a second arm, each arm having two ends, hinge means joining one set of the ends of each of the two arms, and locking means comprising parts on the other set of ends of each of the two arms, said two arms having an open condition, enabling an item of displayed goods to be protected to be inserted between the other set of ends of the two arms, and a closed condition wherein said locking means engages said item to be protected and locks the other set of ends of the two arms together and to the item to be protected; a rupturable ampule contained in at least said first of said arms; fluid contained in said ampule; said first arm including a release mechanism for detonating and rupturing said ampule in said first arm to make said fluid spill over the item locked between the two arms; said two arms including electrical circuitry means with a circuit, including said release mechanism, closed by said two arms being in said closed and locked condition; and said circuitry means including a receiver with means for activating the release mechanism responsive to receiving an external coded signal and responsive to the closed electrical circuit being improperly broken.

5,388,434
ANTI-THEFT MOUNTING KNOB
Robert M. Kalis, Prairie Village, Kans., assignor to Relm Communications, Inc., Melbourne, Fla.
Filed Jul. 29, 1993, Ser. No. 99,967
Int. Cl.[6] E05B *73/00*; F16B *41/00*
U.S. Cl. 70—58 10 Claims



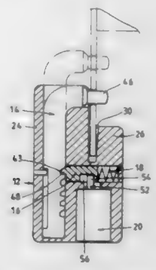
1. A theft prevention device for threadably attaching property to a secure structure comprising:
a. an enclosure having a first open end and a second open end and further defining a cavity;
b. a lock assembly extending into said cavity through said first open end, said lock assembly having a locked position and an unlocked position;
c. fastening means for threadably attaching said device to a threaded counterpart, said fastening means rotatably attachable to said second end;
d. an engaging means having a portion rotatably connected to said lock assembly for transmitting torque applied to said enclosure to said fastening means, said engaging means having a portion being in a slidable, interlocking relationship with said enclosure and an engaging relationship with said fastening means when said lock assembly is in said unlocked position and a disengaged relationship with said fastening means when said lock assembly is in said locked position;
whereby when in said unlocked position, torque applied to said enclosure is transmitted through said engaging means to said fastening means to threadably engage or disengage said threaded counterpart, and when in said locked position, torque applied to said enclosure is not transmitted through said engaging means to said fastening means and said enclosure rotates freely about said fastening means;
wherein said engaging means comprises a cam plate rotatably attached to said lock assembly and comprising one or more cams; and an engaging disc comprising one or more cam slots for engaging said one or more cams.

5,388,435
LOCK
Ronald F. Bailey, Omaha, Nebr., assignor to Verdure Industries, Inc., Omaha, Nebr.
Filed Jan. 4, 1993, Ser. No. 263
Int. Cl.[6] E05B *65/06*
U.S. Cl. 70—101 4 Claims



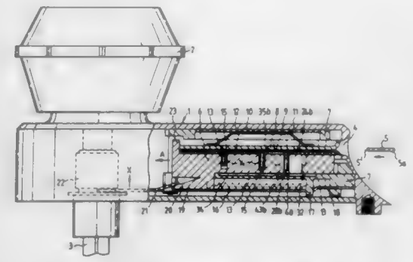
1. A van safety rod lock comprising:
first and second lock bars movably mounted to first and second van doors on a first side of the first and second van doors;
first, second, third and fourth keepers;
the first keeper mounted to the frame of the van above said first door in position to engage a first end of a first rod and the second keeper being mounted to the frame of the van below said first door and adapted to engage a second end of said first rod whereby said first rod extends releasably between said first keeper and second keeper across said door where it may engage said keepers to hold the door in place or be disengaged from said keepers so as to move with said door as it opens;
said third keeper being mounted to the frame of said van above said second door where it may engage a first end of said second bar;
said fourth keeper being mounted to the frame of said van below said second door where it may engage a second end of said second bar, wherein said second bar is movably mounted to said door between said third keeper and fourth keeper to lock said second door closed or move it to an open position with said second door when released from said third and fourth keepers;
a first lever means mounted to said first bar for movement therewith wherein said first lever means when mounted substantially parallel to said first door moves said first bar into engagement with said first and second keepers and when moved to an angular position with respect to said first door disengages said first bar from said first and second keepers;
a second lever means fastened to said second bar for movement therewith, wherein when said second bar is substantially parallel to said second door said second bar has its ends engaged with said third and fourth keepers and when rotated to an angle, with respect to said second door, has said ends of said second bar released from said third and fourth keepers;
retainer means for engaging at least one of said first lever means and second lever means and locking it in a position substantially, parallel to said first door;
said first retainer means including apertured means extending through said first door;
first locking means adapted to be actuated from outside said van adapted to move a dead bolt into an aperture of said apertured means whereby said first retainer means is locked in position from within the van or to move the dead bolt from the aperture;
said first locking means including actuating means by which said first locking means may be actuated from outside said van; and
second locking means adapted to be actuated from outside said van to block said second actuating means from said first locking means whereby said actuating means may be locked in place to prevent movement of said dead bolt.

5,388,436
MOTORCYCLE DISK BRAKE LOCK
Jin-Ren Shieh, No. 178, Shih Chia Rd., Taichung, Taiwan, Prov. of China
Filed Jun. 6, 1994, Ser. No. 254,612
Int. Cl.[6] G62H *5/14*
U.S. Cl. 70—226 6 Claims



1. A motorcycle disk brake lock comprising:
a motorcycle disk brake shoe, a first arm, a second arm, and a lock main body made up of a base portion coupling one end of said first arm and one end of said second arm, said lock main body having a gap located between said first arm and said second arm and dimensioned to receive therein a portion of said motorcycle disk brake shoe;
a lock bolt channel extending to reach said base portion from an open end of said first arm, a lock bolt fastening pin channel extending to reach said base portion from a side of a channel wall of said lock bolt channel, a lock cylinder channel extending inwards from a bottom of said base portion;
a lock bolt having a straight leg portion and a curved portion extending outwards at a predetermined angle from one end of said straight leg portion which is slidably received in said lock bolt channel, said curved portion being capable of causing an open end thereof to move toward said second arm and across said gap to enter one heat-radiating hole of said motorcycle disk brake shoe at the time when said straight leg portion is located at a predetermined position, said straight leg portion having a toothed portion which is provided with a plurality of grooves arranged in a row along the direction of a longitudinal axis of said straight leg portion, said straight leg portion further having along the direction of said longitudinal axis thereof a lock bolt position limiting slot of a predetermined length;
a lock bolt fastening pin disposed in said lock bolt fastening pin channel such that said lock bolt fastening pin can be caused to move between a first position and a second position, and that said lock bolt fastening pin is inserted into one of said grooves of said toothed portion of said lock bolt at the time when said lock bolt fastening pin is located at said first position;
a lock bolt position limiting pin fastened to said first arm such that one end of said lock bolt position limiting pin is received in a lock bolt position limiting slot for limiting said lock bolt to slide within the range of a length of said lock bolt position limiting slot; and
a lock having a lock cylinder and a lock core received in said lock cylinder which is in turn received in a lock cylinder channel such that said lock core is coupled with said lock bolt fastening pin which can be caused to move to said first position from said second position at the time when said lock core is turned by a key to a locking position, said lock bolt fastening pin capable of being caused to move back to said second position from said first position at the time when said lock core is turned by said key to an unlocking position.

5,388,437
MAGNETIC KEY OPERATED LOCK
Bruce S. Sedley, 30 Broadway, 5th Floor, Flat C, Mei Foo Sun Cheun Kowloon, Hong Kong
Continuation of Ser. No. 743,398, Oct. 3, 1991, Pat. No. 5,267,459. This application May 6, 1993, Ser. No. 58,490
Claims priority, application United Kingdom, Feb. 15, 1989, 8903441; Feb. 1, 1990, 9002222
Int. Cl.[6] E05B *47/00*
U.S. Cl. 70—276 11 Claims



1. A magnetic key operated lock comprising a lock plate, a generally planar slide member which is movable relative to the lock plate between a locked position and an unlocking position with a magnetically coded key, and magnet pins carried by the slide member;
the pins being distributed across and slidable transversely to a principal plane defined through the generally planar slide member, the pins being slidable from a first position in which the pins engage the lock plate to lock the slide member in the locked position to a second position in which the pins are disengaged from the lock plate to allow the slide member to be moved to the unlocking position,

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the position and polarity of the pins forming a magnetic code for the lock;

wherein a code changing means is provided for changing the code of the lock from a first predetermined magnetic code to a second predetermined magnetic code by moving at least one magnet pin from a first location to a second location in the principal plane of the slide member;

the code changing means comprising a rotatably mounted carrier in the slide member that rotates about an axis that extends generally transverse to the principal plane and a magnet pin slidable transversely in the carrier, which pin is arranged to engage an abutment formed in the lock plate as the slide member is moved with a code-changing key, thereby causing, while the magnet pin in the carrier is abutted against the abutment, the carrier to rotate during movement of the slide member.

5,388,438

CYLINDER LOCK WITH DETENT DISKS

Hasvikko Paavo, Bulevardi 19 C, SF-00120 Helsinki, Finland

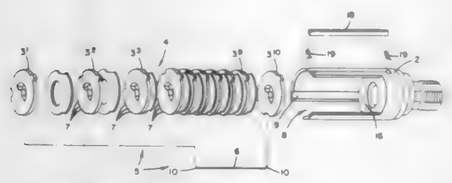
PCT No. PCT/FI90/00272, § 371 Date Apr. 30, 1993, § 102(e) Date Apr. 30, 1993, PCT Pub. No. WO92/08862, PCT Pub. Date May 29, 1992

PCT Filed Nov. 14, 1990, Ser. No. 50,354

Claims priority, application Finland, Jun. 1, 1989, 892658

Int. Cl.[6] E05B *29/08*

U.S. Cl. 70—366 **8 Claims**



1. A disk detent cylinder lock, comprising:

a stationary outer cylinder;

an inner cylinder being disposed within the outer cylinder, the inner cylinder comprising a housing with a turning aperture for determining a turning sector for a plurality of detent disks;

the detent disks being disposed to form a disk stack within the inner cylinder, each of the detent disks having a peripheral notch located on a periphery of said detent disk and at least one of said detent disks being a zero detent disk which turns said detent disk into an opening position through a whole sector defined by the turning aperture of the inner cylinder;

a detent bar interlocking the inner cylinder with the outer cylinder in a locked position of the disk detent cylinder lock, and in the locked position, all peripheral notches of the detent disks being turned to be in register with the detent bar, the detent bar being disposed to set free the inner cylinder to turn in relation to the outer cylinder to open the disk detent cylinder lock so that the detent bar enters a groove which is formed by the peripheral notches;

a plurality of locking members mutually interlocking the detent disks in a situation arising during lock-picking, said locking members comprising a locking bar confronting axially a periphery of the disk stack and a stop member on the detent disk for mutual interlocking of the detent disks in cooperation with the locking bar;

the locking bar being turnably connected to at least one zero detent disk for turning together therewith and the stop member being defined on at least one further detent disk; and

the housing of the inner cylinder comprising a motion space for the locking bar, and a guiding surface located at a side of the motion space at the housing of the inner cylinder for guiding the locking bar into cooperation with the stop member at a stage towards an end of a turning motion, so that when said zero detent disk is turned to an extreme position towards a lock opening direction, the locking bar is by a guidance of the guiding surface in contact with the stop member of said at least one further detent disk thereby locking the zero detent disk together with said at least one further detent disk and with the inner cylinder.

5,388,439

MAGNETIC KEY FOB

Joseph T. Miller, Mehlville, Mo., assignor to Mocap Incorporated, St. Louis, Mo.

Filed Aug. 26, 1992, Ser. No. 935,557

Int. Cl.[6] A44B *15/00*

U.S. Cl. 70—456 R **1 Claim**



1. A magnetic key fob for use for holding a series of keys and with the fob capable of being adhered to a metallic surface, for temporary storage, including a pouch including an enclosure member having a cavity therein, and further having an entrance opening at one end, said enclosure member being closed at all other locations, said enclosure member being formed of a polymer material, a magnetic means located within the enclosure member, means for retaining keys, said means for retaining keys being connected to the entrance of the enclosure member to provide for retention of the magnetic means therein, and to prevent its unauthorized discharge or removal, said means for retaining keys comprising a ring, and a fastening means connecting the key ring to the enclosure member, while securing the entrance opening of the enclosure member into closure for retention of the magnetic means therein, the entrance opening of the enclosure member provided along one edge thereof, and the fastening means for the ring connected approximately at the midpoint of the entrance opening to secure it into closure and retain the magnetic means within the said enclosure member.

5,388,440

METHOD FOR FORMING LARGE 360 DEGREE SHEET METAL SHAPES USING LONGITUDINAL END LOADING

Carroll W. Folmer, 29781 Pebble Beach Dr., Sun City, Calif. 92586

Filed Jul. 21, 1993, Ser. No. 95,686

Int. Cl.[6] B21D *39/08, 26/02*

U.S. Cl. 72—62 **5 Claims**

1. Apparatus for forming large 360 degree sheet metal shapes using longitudinal end loading comprising:

a base having a top surface;

a holder mount ring having a top surface and said holder mount ring is secured to said base;

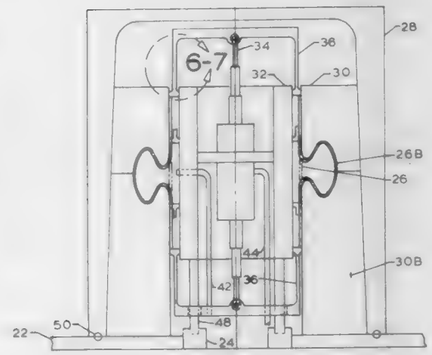
a cylindrical multi-purpose holder having a vertically oriented axis, a top surface, a bottom surface, an outer surface and an inner surface;

means for supporting said multi-purpose holder on said holder mount ring;

a vertically oriented double action actuator mounted inside said cylindrical multi-purpose holder, a delivery tube connected to said double action actuator for delivering hydraulic pressure that will elongate or contract the length of said double action actuator along its vertical axis, said double action actuator having a top end and a bottom end;

a cylindrical lower die having an inner diameter greater than the outside diameter of said multi-purpose holder to provide an annular space there between, said lower die having a bottom surface that rests on said base, said lower die also having an inner surface, an outer surface and a top edge, an annular die cavity is formed in said inner surface adjacent its top edge;

a cylindrical upper die having an inner diameter greater than the outside diameter of said cylindrical multi-purpose holder to provide an annular space therebetween, said upper die having an inner surface, an outer surface and a bottom edge; the bottom edge of said upper die rests on the top edge of said lower die, an annular die cavity is formed in said inner surface adjacent its bottom edge and it mates with the annular die cavity of said lower die;



a cylindrical top plunger having means for securing it to the top end of said double action actuator, said cylindrical top plunger having an inner diameter that is slightly greater than the outer diameter of said cylindrical multi-purpose holder so that it can telescope downwardly over said cylindrical multi-purpose holder, the bottom edge of said cylindrical top plunger telescopes into said annular space between said multi-purpose holder and said cylindrical upper die where it would contact the upper edge of a cylindrical preform to which longitudinal end loading would applied; and

a cylindrical bottom plunger having means for securing it to the bottom end of said double action actuator, said cylindrical bottom plunger having an inner diameter that is slightly greater than the outer diameter of said cylindrical multi-purpose holder so that it can telescope upwardly over said cylindrical multi-purpose holder, the top edge of said cylindrical bottom plunger telescopes into said annular space between multi-purpose holder and said cylindrical lower die where it would contact the lower edge of a cylindrical preform to which longitudinal end loading would be applied.

5,388,441

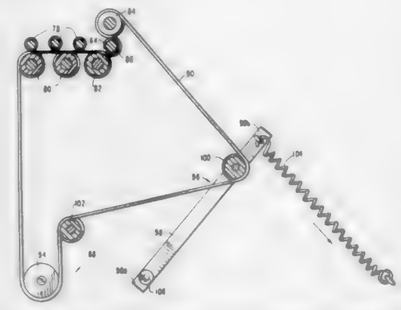
NEEDLE CURVER WITH AUTOMATIC FEED

Michael W. Bogart, Bridgeport, and Richard Parente, Milford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Dec. 29, 1992, Ser. No. 997,855

Int. Cl.[6] B21B *39/02*

U.S. Cl. 72—133 **23 Claims**



1. An apparatus for forming curved surgical needles comprising:

needle advancing means for receiving a needle blank in a needle presenting station and for sequentially advancing the needle blank to a needle curving station;

curving means having a center axis and positioned at said needle curving station for imparting a predetermined arcuate profile to at least a portion of a needle blank; and

means rotatable about said center axis of said curving means for pressing the needle blank about at least a portion of said curving means.

5,388,442

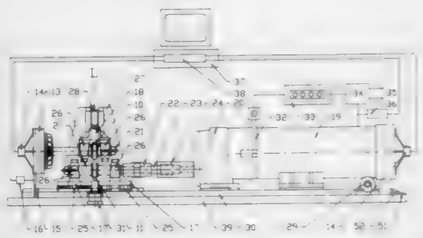
LUBRICATION AND ADHESION TESTING MACHINE

Sudhir Kumar, Westmont, and James G. F. Cheng, Downers Grove, both of Ill., assignors to Tranergy Corporation, Westmont, Ill.

Filed Oct. 13, 1992, Ser. No. 959,789

Int. Cl.[6] G01N *11/14, 19/02*

U.S. Cl. 73—10 **17 Claims**



1. A test stand for lubricant and/or adhesion testing, comprising:

a plate having first and second bearings supporting a first shaft for rotation, the bearings being slidably mounted for axial translation on the plate;

drive means for driving the first shaft;

coupling means for connecting the drive means and first shaft in driving engagement, the coupling means allowing axial adjustment of the relative positions of the first shaft and drive means;

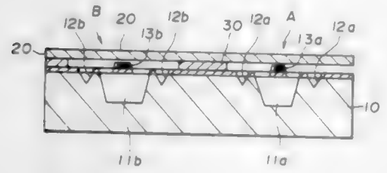
a first wheel mounted on the first shaft for rotation therewith;

support means for a second shaft and wheel rotatable

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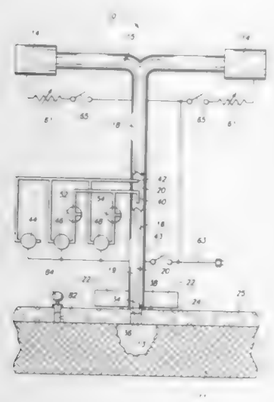
thereon, the second wheel being in contact with the first wheel.

5,388,443
ATMOSPHERE SENSOR AND METHOD FOR MANUFACTURING THE SENSOR
Junji Manaka, c/o Ricoh Seiki Company, Ltd. 1-9-17, Omorinishi Ota-Ku Tokyo 143, Japan
Filed Jun. 24, 1993, Ser. No. 82,352
Int. Cl.[6] G01N *27/12*
U.S. Cl. 73—31.06 **14 Claims**



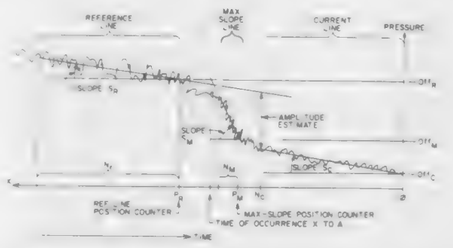
1. A sensor comprising a substrate having at least two cavities formed therein and at least two sensing portions bridged over the respective cavities, said sensing portions comprising a first sensing unit being exposed to ambient atmosphere for sensing the state of the atmosphere and a second sensing unit being air-tightly enclosed by a cover member and usable for temperature compensation, characterized in that the cover member is made of a thin flat plate and is air-tightly joined with the substrate by means of a solid adhesive layer formed around the boundary of the second sensing unit.

5,388,444
APPARATUS AND METHODS FOR DETERMINING REQUIRED VACUUM CHARACTERISTICS OF A RADON EVACUATION SYSTEM
Thomas J. Gerard, N. 1322 Post St., Spokane, Wash. 99201
Filed Oct. 6, 1993, Ser. No. 132,761
Int. Cl.[6] F24F *7/007;* **G01N** *15/08*
U.S. Cl. 73—37 **25 Claims**



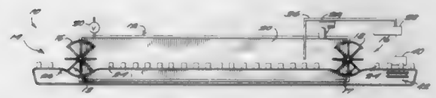
1. A testing apparatus for use with a vacuum test source to determine required vacuum characteristics of a radon evacuation system, the radon evacuation system being of a type which utilizes floor vent holes in a basement floor to evacuate radon from beneath the basement floor, the apparatus comprising:
a vacuum conduit having a base end and a source end for connection between a floor vent hole and said vacuum test source;
measurement means for measuring vacuum produced within the vacuum conduit by said vacuum test source;
a vacuum test source adjustment which is operably connected to regulate the vacuum test source to provide the minimum vacuum required to create a negative pressure in a region under the basement floor, said region extending to points remote from the floor vent hole, the measurement means providing a measurement of said minimum vacuum.

5,388,445
METHOD FOR DETERMINING ARRIVAL AND AMPLITUDE OF A WAVE FRONT AND APPARATUS THEREFOR
Gregg D. Walters, Sunnyvale, and James B. Jerde, Scotts Valley, both of Calif., assignors to NKK Corporation, Tokyo, Japan; Digital Dynamics, Inc., Scotts Valley and H. L. Leggeen Associates, Sun Valley, both of Calif.
Filed Oct. 16, 1992, Ser. No. 962,524
Int. Cl.[6] G01M *3/28*
U.S. Cl. 73—40.5 R **52 Claims**



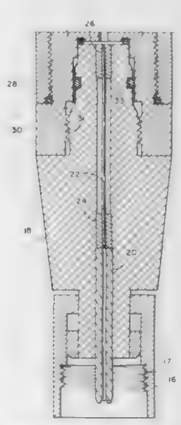
1. A method for determining at a given position on a pipeline a time of arrival of a pressure wave front travelling through fluid in the pipeline due to an event which causes fluctuation of pressure in such fluid, comprising the steps of:
measuring at the given position a characteristic related to the pressure of said fluid, and deriving from said measured characteristic pressure values corresponding to respective discrete times occurring during a first interval of time;
selecting within said first time interval a first duration of a time window encompassing a plurality of said pressure values, and relating the derived pressure values to respective time windows, said first duration being such that a multiplicity of time windows are included within said first time interval;
for said pressure values, upon each being derived as a current value, approximating a rate of change of fluid pressure with time by a slope of a current straight line, said slope being derived from said plurality of pressure values in the time window related to said current value;
converting said measured characteristic to a signal indicative of the time of arrival of said pressure wave front by comparing the slope of the current straight line to a threshold derived from a plurality of slopes obtained for previous time windows within said first time interval, and outputting said signal indicative of the time of arrival of said pressure wave front based upon the slope of a first current straight line exceeding said threshold.

5,388,446
METHOD AND APPARATUS FOR CONTAINER LEAKAGE TESTING
James W. Kronberg, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Oct. 18, 1993, Ser. No. 136,830
Int. Cl.[6] G01M *3/20*
U.S. Cl. 73—40.7 **19 Claims**



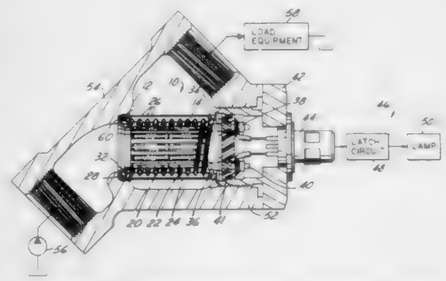
1. An apparatus for testing each container of a series of containers for leaks of a tracer gas from within said containers, said apparatus comprising:
a shell, said shell having an interior, an entrance, an exit opposing said entrance, said exterior having a first atmosphere, said interior having a second atmosphere, said conveying means conveying said series of containers through said shell from said entrance to said exit;
means for conveying said series of containers;
means for taking a sample of said second atmosphere in association with said each container;
means for detecting said tracer gas in said second atmosphere when said tracer gas is leaking from one container of said series of containers, said detecting means issuing a signal when a leak of said tracer gas from said one container is detected;
means for analyzing said sample of said second atmosphere, said sampling means in fluid communication with said taking means to detect said tracer gas in said sample; and
means for removing said one container, said removal means responsive to said detecting means and removing said one container from said series of containers.

5,388,447
VISCOSITY MEASUREMENT APPARATUS
James C. Fitch, Tulsa, and Kym Bergstrom, Broken Arrow, both of Okla., assignors to Diagnetics, Inc., Tulsa, Okla.
Filed Nov. 26, 1993, Ser. No. 157,532
Int. Cl.[6] G01N *11/04*
U.S. Cl. 73—54.14 **19 Claims**



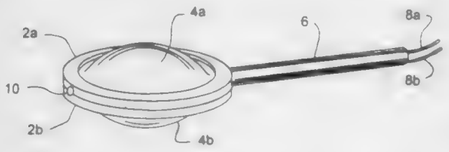
1. A viscosity measurement apparatus for measuring the viscosity of a fluid under known pressure, which apparatus comprises:
a tube of known diameter and length for allowing said fluid to pass therethrough;
a closed chamber in fluid communication with said tube;
means to move a piston sealably engaged with said chamber by force of said fluid passing through said tube;
linear gauge means to measure the time required to move said piston; and
means to calculate viscosity from said known pressure, said known tube diameter and length and from said linear gauge measurement.

5,388,448
CONDUCTIVE PARTICLE DETECTOR
Stephen Showalter, Glenolden, and James L. Horan, Morton, both of Pa., assignors to Vickers, Incorporated, Maumee, Ohio
Filed Aug. 12, 1993, Ser. No. 105,146
Int. Cl.[6] G01R *27/02*
U.S. Cl. 73—61.71 **12 Claims**



1. Apparatus for detecting electrically conductive particles in a fluid stream comprising:
a sleeve of insulating material having an open end, a sidewall and at least one fluid passage through said sidewall,
at least two internested helical conductors mounted on said sleeve sidewall in fixed position with helical reaches of said conductors spaced from each other, and
means for electrical connection to said conductors for detecting a conductive particle bridging reaches of said conductors in fluid that flows through said open end and said at least one passage in said sleeve.

5,388,449
OSMOLARITY SENSOR
Harry H. LeVeen, 321 Confederate Cir.; Eric G. LeVeen, 19 Palmetto Rd., both of Charleston, S.C. 29407, and Robert F. LeVeen, 815 S. 94th St., Omaha, Nebr. 68114
Filed Jul. 6, 1993, Ser. No. 88,228
Int. Cl.[6] G01N *13/04, 7/10*
U.S. Cl. 73—64.47 **26 Claims**



23. An osmolarity sensor, for measuring an osmolarity of a specimen solution, comprising:
means for containing a standard solution;
said means for containing defining a cavity wherein the standard solution is held;

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said means for containing including a semipermeable membrane separating the standard solution from the specimen solution;

said semipermeable membrane permitting passage of a solvent of the specimen solution and the standard solution and blocking passage of solutes of said specimen solution; and

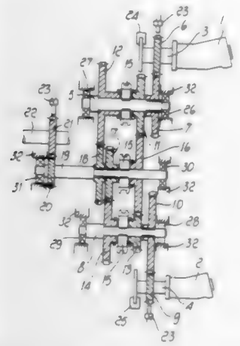
means for sensing one of a conductivity and an absorbance of the standard solution, independent of positioning of said means for containing, and means, responsive to said means for sensing, for determining the osmolarity of the specimen solution when the standard solution has achieved substantial osmotic equilibrium with the specimen solution.

5,388,450

GEARBOX WITH HYDROSTATIC MOTORS PARTICULARLY FOR EARTH-MOVERS

Fritz C. A. Hurth, Montagnola, Switzerland, assignor to Clark-Hurth Components S.p.A., Prov. of Trento, Italy

Continuation of Ser. No. 849,881, Mar. 12, 1992, abandoned.
This application Dec. 6, 1993, Ser. No. 163,578
Claims priority, application Italy, Mar. 15, 1991, MI91 A 000698
Int. Cl.[6] F16H *3/16*
U.S. Cl. 74—331 **11 Claims**



1. A three-shaft gearbox for industrial vehicles comprising:

a first countershaft (**5**);

a second countershaft (**8**);

means (**1, 3, 6, 7; 2, 4, 9, 10**) for driving said first countershaft (**5**) and said second countershaft (7);

a rotatable second countershaft (**8**);

at least one first input gearwheel (**11, 12**) rotatably supported by said first countershaft (**5**);

means (**15**) for rigidly connecting said at least one first input gearwheel (**11, 12**) with said first countershaft (**5**);

at least one second input gearwheel (**13, 14**) rotatably supported by said second countershaft (**8**);

means (**15**) for rigidly connecting said at least one second input gearwheel (**13, 14**) to said second countershaft (**8**);

a secondary shaft (**19**);

at least two secondary gearwheels (**17, 18**) supported by said secondary shaft (**19**); and

means (**15**) for rigidly connecting said secondary gearwheels (**17, 18**) to said secondary shaft (**19**), said at least two secondary gearwheels (**17, 18**) being keyed to said secondary shaft (**19**), one of said output secondary gearwheels (**17**) meshing directly with said at least one first input gear (**14**), and another of said output secondary gearwheels (**18**) meshing directly with said at least one second input gear (**13**), wherein said means (**1, 3, 6, 7; 2, 4, 9, 10**) for driving said first countershaft (**5**) and said second countershaft (7) comprise:

a first hydrostatic motor (**1**);

a first hydrostatic motor output shaft (**3**);

a first output shaft gearwheel (**6**) keyed on said first hydrostatic motor output shaft (**3**);

a first gearwheel (**7**) meshing with said first output shaft gearwheel (**6**) and being keyed to said first countershaft (**5**);

a second hydrostatic motor (**2**);

a second hydrostatic motor output shaft (**4**);

a second output shaft gearwheel (**9**) keyed on said second hydrostatic motor output shaft (**4**); and

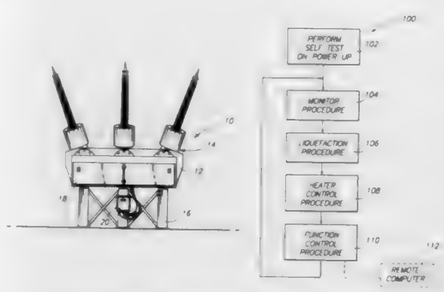
a second gearwheel (**10**) meshing with said second output shaft gearwheel (**9**) and being keyed to said second countershaft (**8**).

5,388,451

HIGH VOLTAGE TRANSMISSION SWITCHING APPARATUS WITH GAS MONITORING DEVICE

Anders M. Stendin, Spokane; William J. Seaton, Greenacres; David A. Gwynne, and Greg A. Lloyd, both of Spokane, all of Wash., assignors to Consolidated Electronics Inc., Spokane, Wash.

Filed Jul. 30, 1993, Ser. No. 100,574
Int. Cl.[6] G01D *21/02*
U.S. Cl. 73—438 **31 Claims**



1. A high voltage transmission switching apparatus, comprising:

a switching apparatus housing having a high voltage element in a gas insulated pressurized vessel, in which the high voltage element generates strong electromagnetic radiation;

an arc-quenching gas containing sulphurhexafluoride contained within the interior of the pressurized vessel to insulate the high voltage element;

a gas density monitoring device operative connected to the pressurized vessel for monitoring the density of the sulphurhexafluoride within the pressurized vessel;

said monitoring device having a pressure transducer for determining the static pressure of the arc-quenching gas within the pressurized vessel and for generating an analog signal representative of the determined static pressure;

said monitoring device having a temperature transducer for determining the approximate temperature of the arc-quenching gas within the pressurized vessel and for generating an analog signal representative of the determined temperature;

said monitoring device having an electronic analog-to-digital converter means responsive to the pressure and temperature analog signals for generating corresponding pressure and temperature digital signals;

said monitoring device having a control means for controlling the monitoring device;

said control means comprising (1) an electronic memory means for storing information concerning a preset reference gas density value, and (2) an electronic processing means responsive to the digital signals and the electronic memory means for generating a present digital density signal representative of a present density value of the arc-quenching gas within the pressurized vessel; and

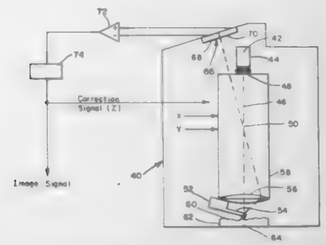
said monitoring device having a digital display responsive to the present digital density signal for visually displaying the present density value.

5,388,452

DETECTION SYSTEM FOR ATOMIC FORCE MICROSCOPES

Robert S. Harp, Westlake Village, and David J. Ray, Agoura Hills, both of Calif., assignors to Quesant Instrument Corporation, Agoura Hills, Calif.

Filed Oct. 15, 1993, Ser. No. 137,625
Int. Cl.[6] G01B *5/28;* **H01J** *37/26*
U.S. Cl. 73—105 **26 Claims**



1. A scanning force microscope device comprising in combination:

a. a sensing probe having a substantially reflective surface on one side and a scanning tip on the opposite side, said tip adapted to be positioned adjacent a surface to be scanned;

b. illuminating means positionally decoupled from said sensing probe and independent of probe motion for generating a radiant energy beam and for applying said beam to said reflective surface;

c. position control means coupled to said sensing probe for moving said scanning tip substantially parallel to a surface to be scanned in a predetermined pattern and for moving said scanning tip orthogonal to the surface to follow the contours of the surface;

d. beam positioning means adapted to receive said radiant energy beam from said illuminating means for directing said radiant energy beam to said reflective surface to follow said sensing probe through lateral motion of said probe; and

e. detector means adapted to receive the energy beam reflected from said reflective surface and operable in response to movement of said reflected energy beam corresponding to position changes of said sensing probe relative to the surface to be scanned to produce a motion representing signal corresponding to tip movement following the contours of the scanned surface,

whereby tip motion in a direction orthogonal to scanning motion results in a series of electrical signals corresponding to and representative of the surface contours of the scanned surface. surface.

5,388,453

METHOD AND APPARATUS FOR MEASURING EVAPORATIVE VEHICLE EMISSIONS

Kenneth Ratton, Farmington Hills, and James Juranitch, Walled Lake, both of Mich., assignors to Power-Tek, Inc., Farmington Hills, Mich.

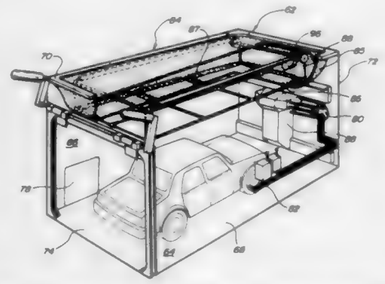
Filed Feb. 26, 1993, Ser. No. 23,322
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.1 **12 Claims**

1. A leak-tolerant apparatus for use in cooperation with an absolute fluid pressure sensor for measuring evaporative emissions from motor vehicles in accordance with prescribed fluid-temperature profiles, comprising:

a housing having an interior portion defining a fluid-fillable test chamber and an exterior portion;

a fluid-temperature sensor in thermal communication with said test chamber fluid;

fluid-conditioning means in fluid communication with said test chamber for controlling the temperature of said fluid disposed in said test chamber;



volume compensation means in fluid communication with said housing exterior portion for compensating for changes in said test chamber fluid volume; and

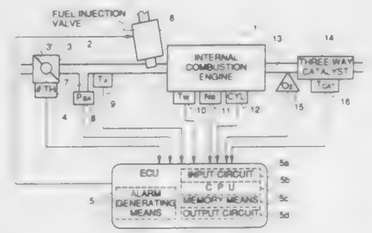
control means in electrical communication with said fluid temperature sensor, said fluid pressure sensor and said volume compensation means for determining the quantity of fluid required to be provided to or evacuated from said volume compensation means in accordance with the Ideal Gas Law (PV=nRT).

5,388,454

DEVICE FOR DETECTING DETERIORATION OF A CATALYST TEMPERATURE SENSOR

Shigetaka Kuroda, and Yoichi Iwata, both of Wako, Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 752,074, Aug. 29, 1991, abandoned.
This application Dec. 8, 1993, Ser. No. 164,685
Claims priority, application Japan, Sep. 5, 1990, 2-236853
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—118.1 **5 Claims**



1. A device for detecting deterioration of a catalyst temperature sensor for detecting a value of the temperature of a catalyst for purifying noxious ingredients of exhaust gases in an internal combustion engine, and providing an electrical signal indicative of the detected value, the device comprising:

a plurality of sensors for providing electrical sensor signals having values indicative of particular operating parameters of said engine;

determining means for processing said electrical sensor signals to determine whether or not (i) a difference between an actual output value from said catalyst temperature sensor and a reference value which should be outputted from said catalyst temperature sensor based upon

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values of said particular operating parameters of said engine indicated by said electrical sensor signals when said engine is in a certain operating condition, determined when a value of at least one of said particular operating parameters is in a predetermined range, exceeds (ii) a predetermined value while said engine is in said certain operating condition;

judging means for providing a warning signal indicating that deterioration of said catalyst temperature sensor has occurred, when said determining means determines that said difference exceeds said predetermined value while said engine is in said certain operating condition; and

alarm generating means responsive to said warning signal for generating an alarm when said judging means has judged that deterioration of said catalyst temperature sensor has occurred.

5,388,455

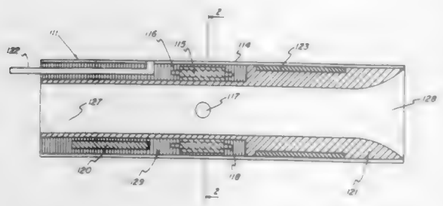
ELECTROMAGNETIC BOREHOLE FLOWMETER SYSTEM

Jimmie W. Hamby; Hubert S. Pearson, both of Knoxville; William R. Waldrop; Donald E. Warren, both of Powell, and Steven C. Young, Oak Ridge, all of Tenn., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Division of Ser. No. 857,555, Mar. 23, 1992, Pat. No. 5,297,425. This application Nov. 15, 1993, Ser. No. 151,671

Int. Cl.[6] G01F *1/00*

U.S. Cl. 73—151 **8 Claims**



1. An improved method for monitoring events occurring at a situs remotely located from an observation situs, wherein juxtaposed such observation situs is signal generating and receiving means for at least both generating an excitation signal and receiving a metering signal, and wherein juxtaposed such remotely located situs is located transducer means for activation by such events, and connector means for effecting communication between such situses, said improved method comprising the steps of:

(a) positioning said transducer means at the event situs and effecting, with said connector means, communication between said transducer means and said signal generating and receiving means;

(b) coupling said signal generating and receiving means to a first power supply means for providing thereto positive and negative voltage amplitudes;

(c) coupling said signal generating and receiving means to a second power supply means for generating an AC square wave excitation signal and transmitting same to said transducer means, said excitation signal synchronized with at least one timing signal provided by said signal generating and receiving means and said first and said second power supply means electrically insulated one from the other;

(d) receiving from said transducer means a metering signal indicative of event occurrences at said remotely located situs;

(e) dividing down output of said signal generating and receiving means to provide timing signals synchronized with said excitation signal and with said metering signal, said signal generating and receiving means having a master clock period of a frequency ranging from 4 to 15 times that of said square wave excitation signal;

(f) selecting, in whole multiples of said master clock period, a sample of said metering signal, said sample selection continuing for at least one such clock period and for less than one-half of the number of such clock periods which comprise the frequency of said excitation signal, and thereafter alternately switching the polarity of said AC square wave excitation signal, whereby transients effected in said metering signal by each such switching are generated after sampling of signal from each positive and each negative amplitude of said metering signal is complete; and

(g) deselecting that portion of the metering signal containing switching transients generated by said AC square wave excitation in step (f) supra, said deselecting initiated at the end of each sampling period and continued for a time sufficient to bridge the transition in polarity change of said AC square wave excitation signal whereby the resulting clamped switching transients are prevented from effecting feedback of noise to said sample of said metering signal.

5,388,456

PROCEDURE IN ORDER TO DETECT THE GAS POTENTIAL IN SEDIMENTARY BASINS AND THE OIL POTENTIAL OBTAINED FROM THIS

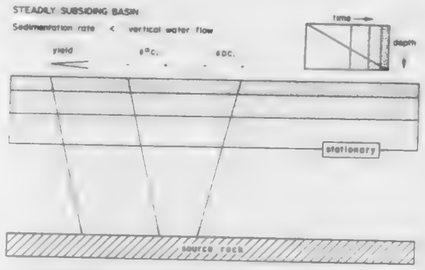
Dirk Kettel, Rambergstrasse 33, D-3000 Hannover 1, Germany

Continuation of Ser. No. 724,163, Jul. 1, 1991, abandoned. This application Oct. 14, 1993, Ser. No. 135,870

Claims priority, application Germany, Jul. 5, 1990, 4021465

Int. Cl.[6] G01V *5/02;* **G01N** *37/00, 33/00, 33/22*

U.S. Cl. 73—152 **4 Claims**



1. A method for determining the potential and character of a hydrocarbon source within the subsurface of a sedimentary basin through analysis of methane gas traces in one of near surface sediments and seabeds comprising the steps of:

a) collecting multiple sediment samples from beneath the zone of near surface oxidation in a region of a selected sedimentary basin;

b) measuring a permeability of each collected sample to verify uniform waterflux (waterflow/time) through the region of the selected basin to be evaluated;

c) analyzing each collected sample to determine the adsorbed methane gas yield x_{sm} for each sample;

d) analyzing the adsorbed methane gas in each collected sample to determine the isotopic ratio of methane containing the C^{13} isotope to methane containing the C^{12} isotope ($\delta^{13}C_1$) or the isotopic ratio of methane containing the D isotope to methane containing the H isotope (δDC_1);

e) correlating from the methane gas yields x_{sm} and the isotopic ratios the degree of isotopic shift F for each of the collected samples;

f) determining the original isotopic ratios at the hydrocarbon source by subtracting the isotopic shift F from the measured isotopic ratios in each of the collected samples;

g) deriving the methane gas potential within the selected region of the basin from the degree of isotopic shift F, waterflux through the sediment over time (age of the sampled sediment), fractionation factors α for $\delta^{13}C_1$ or δDC_1 respectively and the methane yield x_{sm} of each of the samples whereby hydrocarbon anomalies within the selected region of the basin can be identified; and

h) extrapolating from the original isotopic ratios the overall maturity and organic facies of the hydrocarbon source within the subsurface of the selected region of the basin.

5,388,457

THERMAL FLOW SENSOR

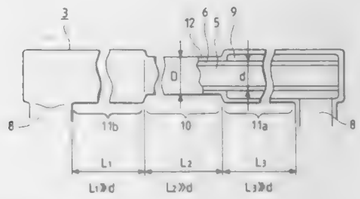
Katsuaki Yasui, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,179

Claims priority, application Japan, Feb. 4, 1992, 4-018738

Int. Cl.[6] G01F *1/68*

U.S. Cl. 73—204.26 **8 Claims**



1. A thermal flow sensor, comprising:

means for detecting a flow and a flow velocity of fluid, said detecting means comprising:

a support member disposed inside a flow passage or a detecting tube, said support member being formed with a wire-shaped electrically-insulating material;

a heat-sensitive resistance member attached on a surface of said support member, wherein said heat-sensitive resistance member is an uncut film made of a material whose resistance varies with temperature; and

conductive film member formed at an end of said detecting means and attached to a surface of said heat-sensitive resistance member, and having a length along said surface more than five times as long as a thickness of said support member.

5,388,458

QUARTZ RESONANT GYROSCOPE OR QUARTZ RESONANT TUNING FORK GYROSCOPE

Marc S. Weinberg, Needham, and Anthony Petrovich, Tewksbury, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Nov. 24, 1992, Ser. No. 981,167

Int. Cl.[6] G01P *9/04*

U.S. Cl. 73—505 **25 Claims**

1. A quartz material tuning fork rate sensor comprising:

at least one elongated quartz member projecting from a body and vibrationally responsive to electrical stimulation;

first and second regions of said member located at different distances from said body;

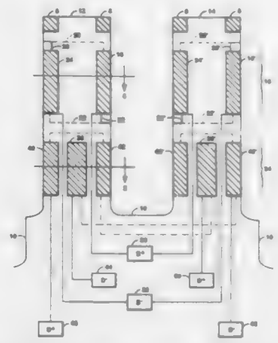
a set of drive electrodes in said first region and having at least one first drive electrode spaced from at least one second drive electrode through said quartz material;

a drive circuit adapted for oscillation at a frequency determined by piezoelectric resonant properties of said first region of said member;

electrical drive leads coupling said at least one first and second drive electrodes to said drive circuit, said at least one first and second drive electrodes exciting vibration of said member in a plane having said member;

a set of sense electrodes in said second region and having at least one first sense electrode spaced apart from at least one second sense electrode on said quartz material, said at least one first and second sense electrodes positioned to receive current piezoelectrically induced therein in response to a rotation rate about said member; and

a sense circuit coupled to said sense electrodes by electrical sense leads for detecting current piezoelectrically induced in said sense electrodes, said sense circuit including a differential input, having respective inputs connected to a first and second pairs of electrodes, balanced with respect to said drive circuit and providing common mode rejection at said sense circuit,



said electrical drive leads disposed, on said member, along lines of minimal field strength in a field piezoelectrically induced from vibration of said member for coupling said drive electrodes to said drive circuit, and

said electrical sense leads disposed, on said member, along lines of minimal field strength in an electric field induced by said drive electrodes for coupling said sense electrodes to said sense circuit.

5,388,459

ACCELERATION SENSOR WITH DIRECT MOUNTING

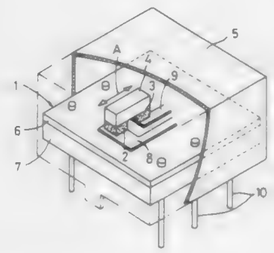
Jiro Inoue; Muneharu Yamashita; Jun Tabota, and Toshihiro Mizuno, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Dec. 28, 1992, Ser. No. 997,675

Claims priority, application Japan, Dec. 27, 1991, 3-346734; Apr. 14, 1992, 4-094220; May 20, 1992, 4-127290

Int. Cl.[6] G01P *15/09*

U.S. Cl. 73—517 AV **17 Claims**



1. An acceleration sensor comprising:

an insulating substrate having a pair of signal deriving electrodes formed directly on an upper surface thereof; and

an acceleration detecting element fixed to and electrically connected to said pair of signal deriving electrodes so as to secure said acceleration detecting element, via said electrodes, to said insulating substrate,

said acceleration detecting element including first and second piezoelectric elements each having a pair of facing end surfaces and being coupled with each other, said first

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and second piezoelectric elements being polarized in reverse directions,

wherein first end surfaces of each of said first and second piezoelectric elements are electrically connected to said pair of signal deriving electrodes respectively, and opposite end surfaces of each of said first and second piezoelectric elements are electrically connected to each other.

5,388,460

CAPACITIVE SENSOR FOR DETECTING A PHYSICAL VALUE SUCH AS ACCELERATION

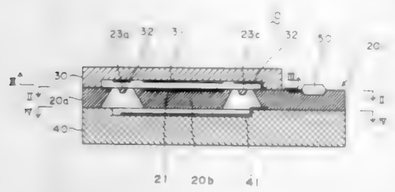
Shizuki Sakurai, Nagoya; Shiro Kuwahara, Anjo; Nakane Kunie, Kariya, and Ryota Takagi, Hamamatsu, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 18, 1992, Ser. No. 853,292

Claims priority, application Japan, Mar. 27, 1991, 3-090037

Int. Cl.[6] G01P *15/11*

U.S. Cl. 73—517 R **6 Claims**



1. A capacitive sensor for detecting a physical value, comprising:

a first plate having a fixed portion and a movable portion supported by said fixed portion through a flexible supporting portion, said movable portion being moved in response to a change in said physical value and having a moving electrode thereon;

a second plate having a fixed electrode thereon and anodically bonded to said first plate, said fixed electrode facing said moving electrode with a predetermined gap; and

a dummy electrode formed on said second plate at a location facing said flexible supporting portion, said dummy electrode being electrically connected to said first late, wherein said physical value is detected as a change in capacitance between the plates.

5,388,461

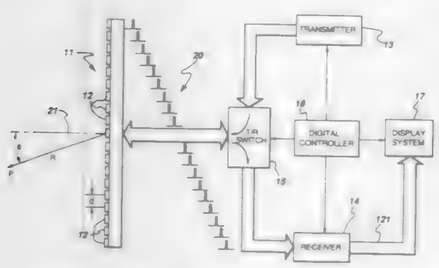
BEAMFORMING TIME DELAY CORRECTION FOR A MULTI-ELEMENT ARRAY ULTRASONIC SCANNER USING BEAMSUM-CHANNEL CORRELATION

Kenneth W. Rigby, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 18, 1994, Ser. No. 182,323

Int. Cl.[6] G01N *29/18*

U.S. Cl. 73—597 **11 Claims**



1. A coherent vibratory energy beam imaging system which corrects for nonuniformities in propagation speed of a transmission medium for said beam, comprising:

a transducer array having a set of array elements disposed in a pattern, each of said elements being separately operable to produce a pulse of vibratory energy during a transmission mode and to produce an echo signal in response to vibratory energy impinging thereon during a receive mode;

a transmitter coupled to said transducer array and being operable during the transmission mode to apply a separate transmit signal pulse with a respective transmitter time delay Tt,k to each of said array elements such that a directed transmit beam is produced;

a receiver coupled to said transducer array and being operable during the receive mode to sample the echo signal produced by each of said array elements as the vibratory energy impinges thereon and to impose a separate respective receiver time delay Tr,k on each said echo signal sample such that a directed receive beam may be produced; and

correction means responsive to said receiver for producing time delay corrections $T_{c,k}$ for application to said transmitter to correct the transmitter time delays $T_{t,k}$ of the transmit signal pulse applied to each array element in the transducer array, and for application to said receiver to correct the receiver time delays $T_{r,k}$ imposed on each said echo signal sample.

5,388,462

CAPACITANCE PRESSURE TRANSDUCER

Leroy C. Delatorre, Sugar Land, Tex., assignor to Panex Corporation, Sugar Land, Tex.

Filed Sep. 24, 1992, Ser. No. 938,201

Int. Cl.[6] G01L *7/06, 9/12*

U.S. Cl. 73—718 **29 Claims**



1. A dual capacitor device for utilizing dependent capacitances for measurement purposes comprising:

a first capacitor base member and a second capacitance base member arranged with parallel capacitor surfaces in parallel planes where facing parallel capacitor surfaces are located on opposite sides relative to a transverse central plane and where said facing capacitance surfaces respectively define first and second capacitors;

said second capacitor base member having a centrally located section connected to an outer section of said second capacitor base member by torsion beam means, said centrally located section being attached to said first capacitor base member by attachment means;

said torsion beam means having a displacement axis parallel to said capacitor surfaces so that angular displacement of said outer section of said second capacitor base member relative to said centrally located section about said displacement axis produces a capacitance change in said first and second capacitors;

force means coupled to said outer section of said second capacitor base member for producing a torsion force on said torsion beam means for developing angular displacement of said outer section and a capacitance change as a function of said torsion force, said force means including a torque member aligned with said displacement axis and having a transverse portion providing a moment arm and including a pressure bellows acting on said moment arm for providing said torsion force.

5,388,463

LOAD INDICATING

Philip M. Scott, Dudley, England, assignor to Rotabolt Limited, United Kingdom

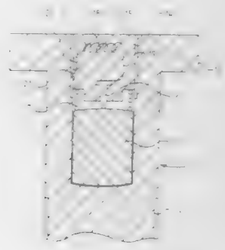
PCT No. PCT/GB92/00072, § 371 Date Jun. 28, 1993, § 102(e) Date Jun. 28, 1993, PCT Pub. No. WO92/13203, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 14, 1992, Ser. No. 78,265

Claims priority, application United Kingdom, Jan. 16, 1991, 9100890

Int. Cl.[6] G01L *1/14;* **F16B** *31/02*

U.S. Cl. 73—761 **4 Claims**



1. A device comprising a hollow member and first and second electrically conductive elements which are anchored to or Fixed with respect to respective portions of the hollow member, which portions undergo relative movement when the hollow member is stressed, wherein, when the hollow member is subjected to a first load, the elements are in mutual electrical contact at a position inside the hollow member and, when the hollow member is subjected to a second load, the elements are out of mutual electrically conductive contact, characterised in that there is provided an inductor connected electrically between said elements so that a closed electrical circuit including the inductor exists when the elements are in mutual contact.

5,388,464

STRESSING DEVICE

Anthony Maddison, Stoke Golding Applied Research Laboratory, Willow Park, Upton Lane, Stoke Golding, Nuneaton, Warks, CV13 6EU, England

PCT No. PCT/GB91/01386, § 371 Date Apr. 5, 1993, § 102(e) Date Apr. 5, 1993, PCT Pub. No. WO92/03716, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 15, 1991, Ser. No. 979,865

Claims priority, application United Kingdom, Aug. 15, 1990, 9017887

Int. Cl.[6] G01N *3/02*

U.S. Cl. 73—856 **7 Claims**

1. A stressing device for applying a stress to a specimen being tested, the device comprising:

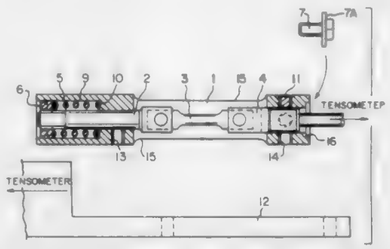
a tubular body portion having a bore passing from one end of the device to the other;

first and second jaws mounted within the tubular body portion and arranged to be secured to opposite ends of a specimen to be tested;

securing means for securing the first jaw to the body portion; and

resilient means housed in a chamber within the bore of the body portion and arranged to apply a load to the second jaw and thus to the specimen being tested,

wherein at least one cut-out is provided in the side of the body portion to provide access to a specimen held between the first and second jaws and to expose the specimen to the surrounding environment, and wherein further the first and second jaws are shaped and are provided with attachments such that, once assembled within the body portion, they are held captive and cannot become separated from the body portion, even when a specimen fails, without removing the said attachments, the device being sufficiently small to enable it to be used in confined spaces so that tests can be carried out in real-life environments.



5,388,465

ELECTROMAGNETIC FLOWMETER

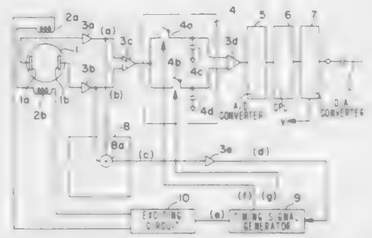
Hiroshi Okaniwa; Ichiro Mitsutake, and Atsushi Koshimizu, all of Tokyo, Japan, assignors to Yamatake-Honeywell Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1992, Ser. No. 978,088

The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.[6] G01F *1/60*

U.S. Cl. 73—861.17 **5 Claims**

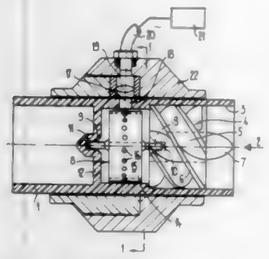


1. An electromagnetic flowmeter for detecting a signal corresponding to flow rate of a conductive fluid in an imposed magnetic field by sampling electrical potential generated at electrodes submerged in said fluid, which comprises:

a noise detection means for detecting noise superimposed on said fluid from said electrodes to produce a noise signal; and

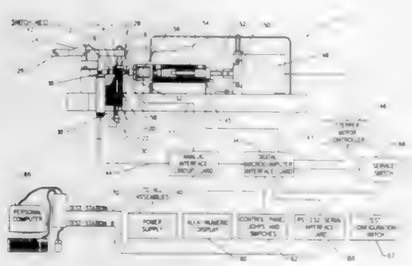
a timing signal generation means for generating timing of an exciting current for generating said magnetic field and timing of said sampling, wherein said timing signal is generated in synchronization with said noise signal and wherein said timing of said sampling is generated at a fixed delay subsequent to a change in polarity of said exciting current.

5,388,466
FLOW METER
Theodora A. Teunissen, Kronenburgersingel 253, 6511 AS Nijmegen, Netherlands
PCT No. PCT/EP92/01037, § 371 Date Jan. 12, 1993, § 102(e) Date Jan. 12, 1993, PCT Pub. No. WO92/21004, PCT Pub. Date Nov. 26, 1992
PCT Filed May 11, 1992, Ser. No. 961,715
Claims priority, application Switzerland, May 14, 1991, 01440/91
Int. Cl.[6] G01F *1/10*
U.S. Cl. 73—861.33 9 Claims



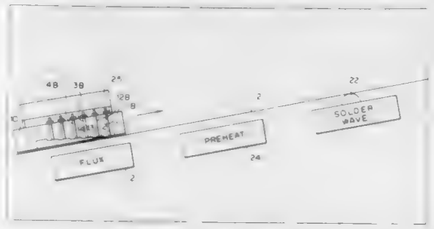
1. A flow meter comprising:
a substantially cylindrical housing;
a rotor coaxially mounted for rotation in said housing, said rotor including curved blades having a full surface area;
a helical diffuser disposed in a passage of the housing coaxially upstream of said rotor for dividing a flow medium flowing through the housing into a plurality of streams and generating a swirl so as to rotate the rotor by impinging the blades;
a ring member disposed coaxially with said rotor and affixed to and surrounding outer ends of said blades so as to be rotated with said blades through successive revolutions; and
means for signal generation which interact with the rotor to determine a flow rate of the medium based upon the revolutions of said ring member.

5,388,467
AUTOMATIC SWITCH TEST STATION
John Jereb, Dundee; John Stark, Bartlett, and Gerald Proszek, Buffalo Grove, all of Ill., assignors to Tricor Systems, Inc., Elgin, Ill.
Filed Sep. 9, 1992, Ser. No. 942,519
Int. Cl.[6] G01L *5/00*
U.S. Cl. 73—862.381 23 Claims



1. An apparatus for testing a switch having an actuating plunger, the switch undergoing a switch event in response to actuation of the actuating plunger, the apparatus comprising:
holding means for holding a switch at a predetermined location;
force applying means for applying a force to an actuating plunger of a switch to actuate the switch;
force sensing means coupled to the force applying means for sensing the force applied to the actuating plunger during actuation of the switch; and
mechanical displacement determining means coupled to the force applying means for determining mechanical displacement of the actuating plunger of the switch at a switch event;
wherein the force applying means has a force versus displacement characteristic, and the mechanical displacement determining means includes correcting means for automatically correcting for displacement errors resulting from the force versus deflection characteristic of the force applying means.

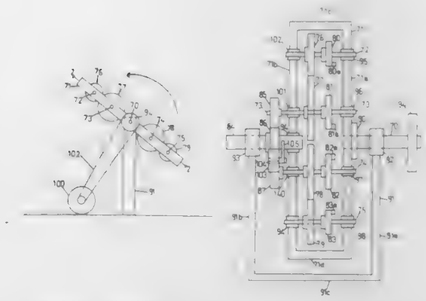
5,388,468
SOLDER WAVE PARAMETERS ANALYZER
Shay Sasson, 14, Volfsson St., Rishon Lezion 75201, Israel
Filed Jan. 29, 1993, Ser. No. 10,834
Claims priority, application Israel, Jan. 31, 1992, 100838
Int. Cl.[6] B23K *1/00, 1/08*
U.S. Cl. 73—865.9 17 Claims



1. An indicator of solder wave soldering parameters, comprising a simulating board of electrically insulating material provided with a plurality of electrical contact elements or groups of elements, said elements or groups of elements being located on a first surface, said board such that, when the board is passed by a soldering machine conveyor over a solder wave with said contact elements facing said wave, at least some of them will be immersed in the solder to different depths therein, so as to form an electric contact between them, each of said electrical contact elements or groups of elements being associated with an electronic measuring circuit, adapted to measure and record the specific depth and duration of the electrical contact between each said contact element (or group of elements), and said solder wave thereby simulating the corresponding dwell time and specific depth of penetration of said solder wave into contact orifices of a real printed circuit plate.

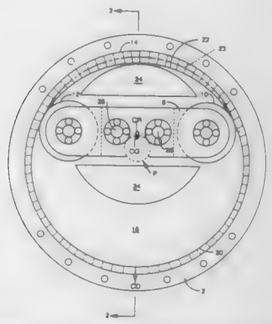
5,388,469
ROTATING ECCENTRIC WEIGHTS VIBRATOR SYSTEM
Howard M. Woltering, Rte. 2, Box 454, Foster, Ky. 41043
Filed Jan. 4, 1994, Ser. No. 177,142
Int. Cl.[6] F16H *33/20*
U.S. Cl. 74—61 10 Claims

1. A vibrator system comprising
a base having two arms,
a vibrator unit rotatively mounted between the two arms of the base,
said vibrator unit comprising
a rectangular frame having two long sides and two short sides, said rectangular frame rotatively mounted between the arms of the base by axles which pierce the long sides at approximately the midpoints of the long sides,
a multiplicity of gear axles rotatively mounted within the rectangular frame, each gear axle extending between the long sides of the rectangular frame,
gears of unequal diameter mounted on the gear axles, one gear mounted on each gear axle within the rectangular frame, each gear meshing with an adjacent gear, causing adjacent gear axles to rotate in opposite directions,



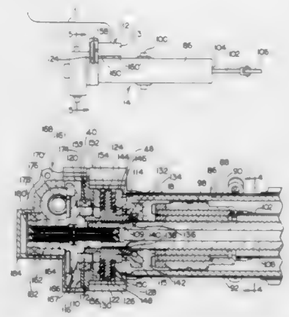
eccentric weights having unequal masses mounted on the gear axles,
one eccentric weight mounted on each gear axle within the rectangular frame, and
means for rotating the gear axles; and
means for rotating the vibrator unit.

5,388,470
CENTRIFUGAL FORCE DRIVE MACHINE
Richard O. Marsh, Jr., 405 Meadow La., Sewickley, Pa. 15143
Filed Jun. 28, 1993, Ser. No. 83,357
Int. Cl.[6] F16H *33/20*
U.S. Cl. 74—84 R 14 Claims



1. A centrifugal force drive machine for generating a force in a controlled direction comprising:
a machine frame;
a shaft mounted to the frame and rotatable about its axis;
power means in driving connection to the shaft and operable to rotate the shaft about its axis;
at least one mass having a constant length mounted on the shaft for rotation with the shaft about a center of rotation, each said mass having a center of gravity which is movable radially with respect to the shaft between a position in which the mass is rotationally balanced about the shaft and a position in which the mass is unbalanced; and
a control member in operative connection between the frame and the mass, the control member constraining the mass to move between a balanced position and an unbalanced position in each one half revolution of the shaft and the mass.

5,388,471
THRUST BEARING FOR AN ACTUATOR DRIVING A SENSOR DEVICE
Hugo N. DeCampos, Granger, and Jason G. Maalouf, South Bend, both of Ind., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Oct. 12, 1993, Ser. No. 134,725
Int. Cl.[6] F16H *25/20*
U.S. Cl. 74—89.15 7 Claims



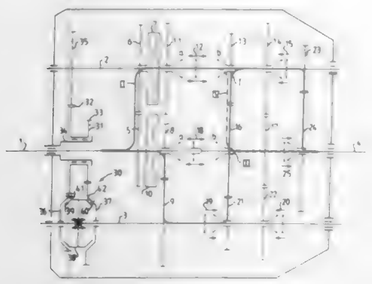
1. In a control system having an actuator with a ball screw supported in a bore of a housing by a thrust bearing assembly, said ball screw translating rotary movement from a drive coupling into linear movement of a ball nut to provide an output member with linear movement, said thrust bearing assembly comprising:
a cylindrical body with an axial bore that extends from a first end and a second end, said cylindrical body having an annular radial projection with gear teeth on a peripheral surface and first and second inner race surfaces thereon adjacent said first and second ends, respectively;
fastener means for connecting said first end of said cylindrical body to said ball screw;
a first roller bearing located on said cylindrical body and positioned to engage said first inner race surface;
a first plate located in said housing and having a first outer race surface thereon;
a second roller bearing located on said cylindrical body and positioned to engage said second inner race surface;
a second plate located in said housing and having a second outer race surface thereon; and
a locating plate attached said housing and engaging said second plate for urging said first and second roller bearings into engagement with said first and second inner and outer race surfaces to fix the axial position of said cylindrical body in said housing, said gear teeth on said peripheral surface of said cylindrical body being rotated with said ball screw to provide a sensor device with a signal corresponding to the location of said output member with respect to said housing.

5,388,472
MOTOR VEHICLE GEARBOX
Sverker Alfredsson, Västra Frölunda, Sweden, assignor to AB Volvo, Goteborg, Sweden
PCT No. PCT/SE91/00740, § 371 Date Jul. 2, 1993, § 102(e) Date Jul. 2, 1993, PCT Pub. No. WO92/08067, PCT Pub. Date May 14, 1992
PCT Filed Nov. 1, 1991, Ser. No. 50,142
Claims priority, application Sweden, Nov. 1, 1990, 9003488-5
Int. Cl.[6] F16H *3/04*
U.S. Cl. 74—331 3 Claims

1. Motor vehicle gearbox comprising: a housing with an input shaft, a first counter-shaft, a second counter-shaft, an output shaft and pairwise cooperating gear wheels on the input

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shaft and said first counter-shaft, and on the output shaft and said second counter-shaft, at least one gear wheel in each pair of cooperating gear wheels being rotatably mounted and lockable on its shaft by clutch means, the clutch means for locking cooperating gear wheels on the input shaft and first counter-shaft being friction clutches, said counter-shafts being coordinated with synchronizing means independent of the clutch



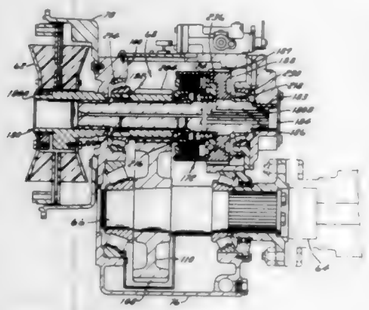
means, said synchronizing means adapted to accelerate a respective counter-shaft up to a certain engine speed determined by a selected gear, said input shaft having a first gear wheel rotatably mounted thereon, which engages a second gear wheel on one of the counter-shafts and is lockable relative to said input shaft by one of said friction clutches, and is lockable relative to the output shaft by an engaging sleeve.

5,388,473

BEARING ARRANGEMENT FOR HEAVY DUTY MARINE TRANSMISSION

James B. Black, Roscoe, Ill., assignor to Twin Disc Incorporated, Racine, Wis.

Filed Oct. 29, 1993, Ser. No. 142,982
Int. Cl.[6] F16H *3/14*
U.S. Cl. 74—361 **29 Claims**



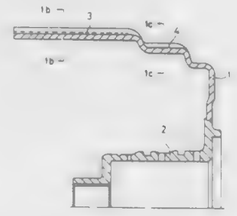
1. A marine gear train comprising:
A. a housing;
B. a rotatable drive shaft at least partially disposed in said housing;
C. a pinion disposed around said drive shaft; and
D. a bearing arrangement via which said pinion is
(1) partially supported on said drive shaft, and
(2) partially supported directly in said housing; said bearing arrangement including
(A) a first taper roller bearing disposed between said pinion and said housing and rotatably supporting said pinion in said housing;
(B) a second taper roller bearing disposed between said pinion and said drive shaft and rotatably supporting said pinion on said drive shaft;
(C) a third bearing disposed between a second end of said drive shaft and said housing and rotatably supporting said drive shaft in said housing; and
(D) a fourth bearing supporting a first end of said drive shaft in said housing.

5,388,474

CLUTCH DRUM AND APPARATUS FOR MANUFACTURING SAME

Haruo Tanaka; Toshiki Takeda, both of Sayama; Yoichi Kojima, Wako; Yoshihiro Kodama, Wako, and Yorinori Kumagai, Wako, all of Japan, assignors to Honda Giken Kogyo Kaisha, Tokyo, Japan

Filed Jun. 8, 1993, Ser. No. 73,309
Claims priority, application Japan, Jun. 30, 1992, 4-173341
Int. Cl.[6] F16D *13/58;* **B21D** *13/00, 51/16*
U.S. Cl. 74—434 **4 Claims**



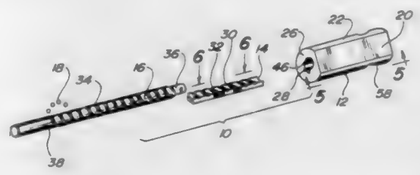
1. A clutch drum comprising:
a drum main body made of a metallic plate having a peripheral wall formed with a cup shape;
spline teeth for engaging with clutch plates, said spline teeth being defined by first corrugations formed in said peripheral wall of said drum main body; and
pulsing teeth for detecting a rotational speed, said pulsing teeth being defined by second corrugations formed in said peripheral wall of said drum main body.

5,388,475

BALL NUT AND METHOD OF MANUFACTURING SAME

Walter J. Shear, III, Waterford, and Theodore R. Schlenker, Troy, both of Mich., assignors to Beaver Precision Products, Troy, Mich.

Filed Sep. 15, 1993, Ser. No. 121,700
Int. Cl.[6] F16H *25/22, 25/24;* **B29D** *1/00*
U.S. Cl. 74—459 **14 Claims**



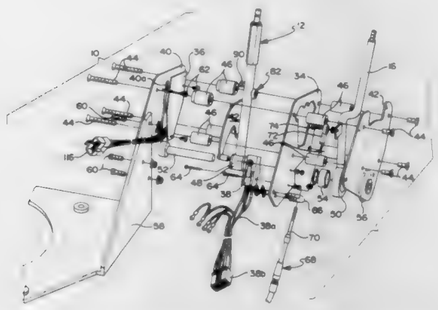
1. A ball nut for use in combination with a ball screw having a helical groove and a plurality of ball bearings comprising:
a partially circumambient sleeve segment having a longitudinal opening along one side thereof and a first surface portion, said first surface portion having a plurality of equidistant arcuate grooves defined thereon;
a partially circumambient deflector segment having a second surface portion cooperable with said first surface portion for completing the circumambience of said sleeve segment, said second surface portion having a plurality of S-shaped return grooves defined thereon spaced apart sufficiently to cooperate with both said plurality of arcuate grooves and said helical groove for completing a plurality of bearing race circuits inside said sleeve segment, whereby said S-shaped return grooves return ball bearings circulating within said bearing race circuits to a preceding segment of an arcuate groove; and
a ball nut body encasing said sleeve segment and including a longitudinal slot for subsequently receiving said deflector segment sufficiently therein to place said plurality of equidistant arcuate grooves into cooperating relationship with said S-shaped return grooves.

5,388,476

GEARSHIFT MECHANISM

James R. Harger, Columbia, and David L. Murray, Lee's Summit, both of Mo., assignors to Agco Corporation, Duluth, Ga.

Filed Jun. 15, 1993, Ser. No. 77,572
Int. Cl.[6] B60K *20/00*
U.S. Cl. 74—473 R **16 Claims**



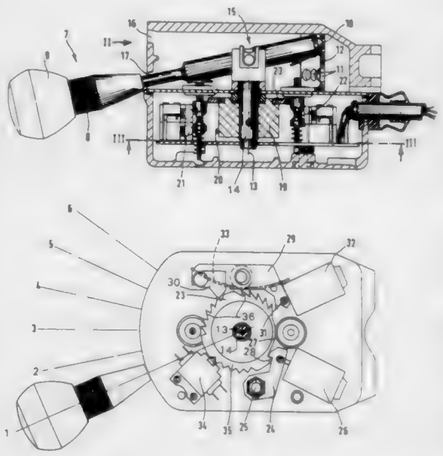
1. An in-line gearshift mechanism for enabling an operator to initiate gear selection for a powershift transmission of an agricultural vehicle, said apparatus comprising:
a shift lever having an operator engageable detent rod movable generally linearly in response to pressure placed thereon by said operator, said shift lever further including a roller coupled to said detent rod and movable linearly with said detent rod, and a gear encoder plate fixedly secured to said shift lever;
said gear encoder plate including a plurality of switch activating elements positioned thereon;
a shifter plate means having an opening formed therein, said opening defining a neutral position, and a forward downshift position, a forward position, a forward upshift position, a reverse downshift position, a reverse position and a reverse upshift position, each of said positions further being formed longitudinally in line with one another and adapted to receive said roller as said gearshift lever is moved linearly by said operator;
a switch plate positioned closely adjacent said gear encoder plate, said switch plate including a plurality of switches thereon responsive to said switch activating elements of said gear encoder plate as said gear encoder plate is moved in response to linear movement of said shift lever, said switches generating control signals indicative of which one of said positions said shift lever is in at a given time to thereby enable said operator to control shifting of said powershift transmission.

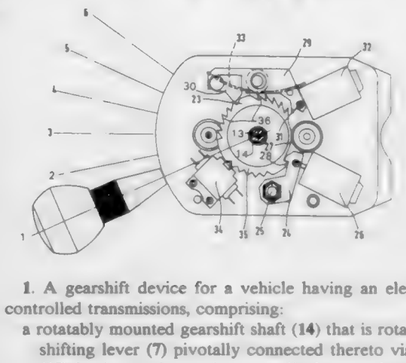
5,388,477

GEARSHIFT DEVICE FOR ELECTRICALLY CONTROLLED GEARBOXES

Walter Frei, Friedrichshafen; Wilhelm Härdtle, Markdorf, and Günter Schwarz, Friedrichshafen, all of Germany, assignors to ZF Friedrichshafen AG, Germany

PCT No. PCT/EP92/01165, § 371 Date Nov. 24, 1993, § 102(e) Date Nov. 24, 1993, PCT Pub. No. WO92/21899, PCT Pub. Date Dec. 10, 1992
PCT Filed May 23, 1992, Ser. No. 150,158
Claims priority, application Germany, May 27, 1991, 4117228
Int. Cl.[6] F16H *59/04, 63/36*
U.S. Cl. 74—476 **2 Claims**





1. A gearshift device for a vehicle having an electrically controlled transmissions, comprising:
a rotatably mounted gearshift shaft (**14**) that is rotated by a shifting lever (**7**) pivotally connected thereto via a joint (**15**) having a pivot axis perpendicular to a longitudinal axis (**13**) of the gearshift shaft (**14**) such that the shifting lever (**7**) extends substantially perpendicular relative to the gearshift shaft (**14**), the shifting lever (**7**) being guided in two parallel slides (**16, 17**) extending transverse to the gearshift shaft (**14**), a first slide (**16**) having a plurality of forward gear positions (**1–6**) and a neutral position (N) spaced thereon and a second slide (**17**) having a plurality of reverse gear positions (**1–3**) and a neutral position (N) spaced thereon, and in a cross slide (**18**) extending perpendicular to the two parallel slides (**16, 17**) connecting them together only in the area of the neutral shifting positions, the shifting lever (**7**) being articulated along said slides into selective engagement with respective shifting positions (**1–6, N**) by a driver; wherein
a locking disc (**23**) is firmly connected to the gearshift shaft (**14**) such that a stop (**28**) that extends from an outer edge of the locking disk (**23**) is in a location corresponding to a first gear position on the two parallel slides, and a detent solenoid (**26**) is located adjacent the locking disc (**23**), the solenoid (**26**) is activated when a speed of the vehicle exceeds a speed for a second gear and upon actuation the detent solenoid (**26**) engages an edge of the locking disc (**23**) and engages the stop (**28**) upon an articulation of the shift lever (**7**) into a first gear position thereby preventing the shift lever from being articulated into the neutral position and preventing a shift from one of reverse to forward and forward to reverse.

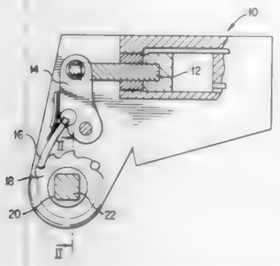
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5,388,478

TORQUE WRENCH HAVING A RAPID TRAVERSE ADAPTER AND A METHOD FOR ITS USE

George L. Castle, Terryville, Conn., assignor to Barnes Group, Inc., Bristol, Conn.

Filed Sep. 4, 1992, Ser. No. 940,552
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—57.39 4 Claims



1. A torquing kit for rapidly applying pretorque with a fluid power driven wrench having a central, torque transmitting ratchet with an internally splined opening extending through the wrench, said kit comprising:

a first adapter member having first and second ends wherein the first end has an externally splined peripheral surface configured to mate with the internally splined ratchet of the wrench and wherein the second end defines a projection for engaging a socket tool;

a second adapter member having first and second ends wherein the first end has an externally splined peripheral surface configured to mate with the internally splined ratchet of the wrench opposite said first adapter member, and wherein the second end defines a recess of non-circular cross section; and

a third adapter member having first and second ends wherein the first end defines a projection with a non-circular cross section configured and dimensioned to be received in the recess of the second adapter member for transmission of torque thereto and wherein the second end defines a recess having a non-circular cross section smaller than the second adapter member recess such that said recesses may be alternately engaged by different sized torquing tools for transferring torque to the first adapter member through said ratchet.

5,388,479

UNIVERSAL RATCHET WRENCH

John Sroka, 5055 Timberedge Rd., Richfield, Ohio 44286

Filed Sep. 7, 1993, Ser. No. 117,540
Int. Cl.[6] B25B *13/00*
U.S. Cl. 81—58.2 14 Claims

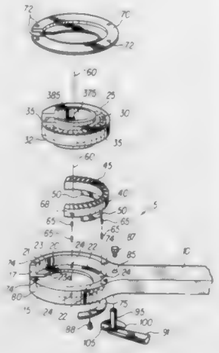
1. An open-ended ratchet wrench comprising:

a wrench handle having a head formed with an open end, the open end defining an axis that extends therethrough, said head having a recess formed on an inner surface thereof;

a ratchet wheel seated in said recess for rotation about said axis, said wheel having a radially extending surface that is generally perpendicular to said axis, said surface being provided with a plurality of ratchet teeth;

a pawl disposed within said recess and restrained against rotation about said axis, said pawl being provided with a plurality of pawl teeth disposed for movement into and out of engagement with said ratchet teeth; and

a release mechanism for selectively moving said pawl in a direction generally parallel to said axis, said mechanism



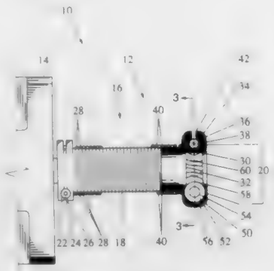
being at least partially disposed within said wrench handle.

5,388,480

PRETENSIONING MECHANISM FOR TENSION ELEMENT DRIVE SYSTEMS

William T. Townsend, Weston, Mass., assignor to Barrett Technology, Inc., Cambridge, Mass.

Filed Aug. 4, 1993, Ser. No. 102,085
Int. Cl.[6] B25B *25/00*; B66F *19/00*
U.S. Cl. 74—501.5 R 1 Claim



1. A tension element pretensioning mechanism a tension element drive, comprising:

a drive pinion including a pinion shaft and a pinion sleeve;

a first tension element end anchor on said pinion shaft for securing one end of a tension element wound around said drive pinion in a first direction and a second tension element end anchor on said pinion sleeve for securing the end of another tension element wound around said drive pinion in a second, opposite direction; and

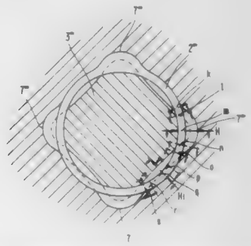
a worm drive including a worm gear on one of said pinion sleeve and pinion shaft and a worm on the other of said pinion sleeve and pinion shaft for relatively counter-rotating said pinion shaft and pinion sleeve for simultaneously in a single action adjusting and fixing the pretension in the tension element.

5,388,481

TORSION VIBRATION DAMPER

Rainer H. Andrä, Limburg, Germany, assignor to Firma Carl Freudenberg, Weinheim, Germany

Continuation of Ser. No. 41,930, Apr. 2, 1993, abandoned, which is a continuation of Ser. No. 935,303, Aug. 26, 1992, abandoned, which is a continuation of Ser. No. 668,488, Mar. 13, 1991, abandoned, which is a continuation of Ser. No. 384,317, Jul. 24, 1989, Pat. No. 5,025,681. This application Nov. 24, 1993, Ser. No. 158,833
Claims priority, application Germany, Jul. 23, 1988, 3825062
The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.
Int. Cl.[6] F16F *15/10*
U.S. Cl. 74—574 10 Claims



1. A torsional vibration damper having a longitudinal axis of rotation comprising:

(a) a central hub having means for connection to a part to be damped;

(b) an inertial damping mass spaced from the central hub to form a longitudinally extending gap surrounding the central hub;

(c) an elastic ring disposed in said gap in adherent contact between the central hub and the inertial damping mass for connecting the central hub to the inertial damping mass, said elastic ring having

(i) successive subsections along the circumferential direction of the elastic ring, with at least one of said subsections uniformly and smoothly merging into adjacent subsections and being spaced at a different distance from the longitudinal axis of rotation than the distance of other subsections from the longitudinal axis, said subsections being of uniform thickness; and

(ii) a longitudinal profile that smoothly varies along the circumferential direction of the ring.

5,388,482

DEPRESSED PARK WINDSHIELD WIPER MECHANISM

Christopher H. Jones, Dayton; Lloyd L. R. Kuck, Beavercreek, both of Ohio, and Frank R. Lombardo, Rochester, N.Y., assignors to ITT Automotive Electrical Systems Inc., Auburn Hills, Mich.

Filed Jul. 7, 1993, Ser. No. 88,465
Int. Cl.[6] B60S *1/24*; F16H *21/20*
U.S. Cl. 74—602 5 Claims

1. In a windshield wiper system on a vehicle body including

a windshield wiper arm pivotable on the vehicle body about a pivot axis,

a lower arm fixed relative to the wiper arm at a first end for pivoting the wiper arm,

a drive link having a first end pivotally connected to a second end of the lower arm, and

an electric motor drive having a drive shaft rotatable about a drive axis in a first direction and an opposite second direction,

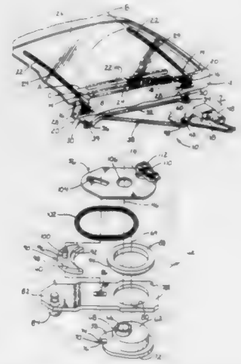
a variable length crank arm comprising:

an output arm having a first end and a second end pivotally connected to a second end of the drive link,

an eccentric driver rigidly attached to the drive shaft for unitary rotation therewith.

means connecting the first end of the output arm to the eccentric driver for rotation relative thereto about an eccentric axis parallel to and offset from the drive axis between a drive position producing a first crank arm length relative to the drive axis and a park position producing a second crank arm length greater than the first crank arm length and corresponding to a parked position of the wiper arm,

coupling means between the eccentric driver and the output arm rotatably fixing the eccentric driver to the output arm



in the drive position thereof and, when the drive shaft rotates in the first direction, sustaining torsional loads against the crank arm in both a first torsional load direction and A second torsional load direction and releasable to permit relative rotation between the eccentric driver and the output arm about the eccentric axis, and

cam means between the coupling means and the vehicle body operating in response to rotation of the drive shaft in the second direction to release the coupling means so that continued drive shaft rotation in the second direction causes the eccentric driver to rotate relative to the output arm from the drive position to the park position.

5,388,483

INTERNALLY MESHING PLANETARY GEAR STRUCTURE AND FLEXIBLE MESHING TYPE GEAR MESHING STRUCTURE

Toshihiro Ishida; Yuzo Ogura, and Akira Hirao, all of Ohbu, Japan, assignors to Sumimoto Heavy Industries, Ltd., Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 71,019
Claims priority, application Japan, Jun. 3, 1992, 4-142515; Jul. 29, 1992, 4-202295
Int. Cl.[6] F16H *33/00*
U.S. Cl. 74—640 2 Claims

1. A flexible meshing type gear meshing structure comprising:

an internal gear having a rigidity;

a flexible external gear internally meshing with the internal gear; and

a wave generator for flexibly deforming the external gear;

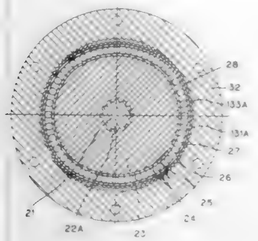
wherein the difference in the teeth number between the external gear and the internal gear is set to be N (N: integer being two or more);

the tooth profile of the external gear is constructed on the basis of the innermost curve of the epitrochoid parallel curves in N pieces which are superposed to be shifted in phase from each other; and

the tooth profile of the internal gear is constructed on the basis of the innermost curve of the trochoid internally

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enveloping curves in N pieces which mesh with the above epitrochoid parallel curves and which are superposed to



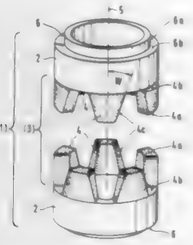
be shifted from each other by the same phase as in the external gear.

5,388,484

METHOD OF MANUFACTURING DIAMOND-IMPREGNATED DRILLING CROWNS

Werner Bogner, Herrsching, Germany, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Oct. 7, 1993, Ser. No. 134,427
Claims priority, application Germany, Oct. 7, 1992, 4233770
Int. Cl.[6] B22F *5/08*; B23P *15/28*
U.S. Cl. 76—108.2 **6 Claims**



1. Method of manufacturing drilling crowns comprising drilling surfaces with impregnated diamond particles for use in cylindrical diamond drilling tool bits, comprising the steps of forming an axially extending hollow cylindrical member with two metal end zones joined together by an intermediate zone containing impregnated diamond particles extending between the end zones and securing the end zones to the intermediate zone in a sintering step, and subdividing the cylindrical member by laser cutting the intermediate zone for forming two mirror image drilling crowns and effecting the cutting step alternately in an approximately axial direction and a direction extending transversely of the axial direction.

5,388,485

OIL FILTER WRENCH

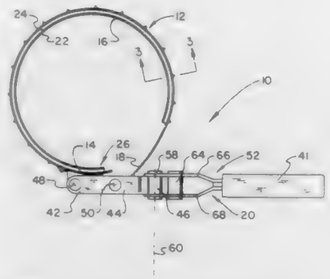
Larry L. Auble, 135 Park Pl., Apt. #5, Wellington, Ohio 44090

Filed Jun. 28, 1993, Ser. No. 82,387
Int. Cl.[6] B25B *13/52*
U.S. Cl. 81—64 **5 Claims**

1. A new and improved oil filter wrench apparatus, comprising:

a band assembly which includes a first band end portion, a band mid-portion, and a second band end portion, said band assembly including an inner band surface and an outer band surface,

an abrasive-surface-containing flexible sheet assembly connected to said band assembly and installed over said inner band surface, wherein said abrasive-surface-containing flexible sheet assembly includes an abrasive-surface-containing flexible sheet and a mounting unit which receives said abrasive-surface-containing flexible sheet and which includes connector means for connecting said abrasive-surface-containing flexible sheet assembly to said band assembly, wherein said band assembly includes a plurality of mounting apertures, and said connector means include



a plurality of mounting projections which project rearward from said mounting unit and engage said mounting apertures, such that said mounting unit, which supports said abrasive-surface-containing flexible sheet, is mounted on said band assembly, and

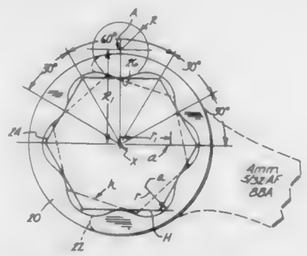
a single handle assembly connected to said first band end portion and said second band end portion.

5,388,486

ROTARY WRENCHING TOOL

Josef Ruzicka, 1705 Summit Ave., St. Paul, Minn. 55105; Petr O. Ruzicka, 117 Parsonage Hill Rd., Short Hills, N.J. 07078, and Milan Ruzicka, 1705 Summit Ave., St. Paul, Minn. 55105

Continuation of Ser. No. 866,259, Apr. 19, 1992, Pat. No. 5,219,392, which is a continuation of Ser. No. 422,076, Apr. 17, 1989, abandoned, which is a continuation of Ser. No. 129,430, Nov. 25, 1987, abandoned, which is a continuation of Ser. No. 810,253, Dec. 18, 1985, abandoned. This application May 12, 1993, Ser. No. 61,634
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[6] B25B *13/06*
U.S. Cl. 81—124.3 **25 Claims**



1. A rotary wrenching tool having an opening for receiving a polygonal head of a threaded member, the opening having an axis of rotation and having an inner surface comprising a series of spaced, arcuate first surfaces concave to the axis of rotation of the opening, each such first surface being defined generally as the locus of points falling a given radial distance "r" from a first axis itself spaced a distance r_1 from, but parallel to, the axis of rotation of the opening, and a series of spaced arcuate second surfaces convex to the axis of rotation of tile opening, each such second surface being defined generally as the locus of paints falling a given radial distance R from a second axis itself spaced a distance R_1 from the axis of rotation, and each of said

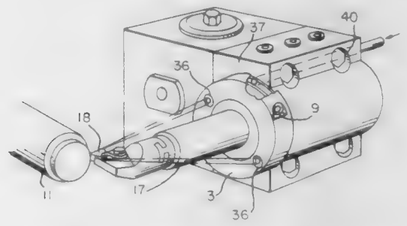
first surfaces tangentially merging into a second surface, wherein the ratio R_1/r_1 exceeds 1.5.

5,388,487

HYDRAULIC TOOL HOLDER WITH COOLANT JETS

Jan Danielsen, Orebro, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Continuation-in-part of Ser. No. 859,521, Jun. 11, 1992, abandoned. This application Jul. 2, 1993, Ser. No. 85,689
Claims priority, application Sweden, Oct. 17, 1990, 9003322
Int. Cl.[6] B23B *27/10, 31/10, 27/08, 31/30*
U.S. Cl. 82—158 **10 Claims**



1. A metal working assembly comprising a tool holder having a smooth circular interior bore of fixed diameter, a lathe shaft having one end portion insertable in said interior bore and an opposite end supporting a metal working tool, hydraulically actuated expansion means acting between said lathe shaft end portion and said interior bore to clamp said lathe shaft to said tool holder, and wherein said hydraulically activated expansion means comprises a flanged bushing insertable into said circular bore of said tool holder, said flanged bushing having a coaxial bore, said lathe shaft insertable into said coaxial bore of said bushing; and an expandable chamber within said bushing acting when pressurized to clamp said bushing to said tool holder circular bore and to said lathe shaft, and further wherein said tool holder has a flat front surface, said flange of said flanged bushing abutting said flat front surface, said flange being in the form of an arcuate segment, said at least one nozzle being located on said flat front face of said tool holder in the area left open by said arcuate flange segment, at least one cooling fluid spray nozzle for spraying cooling fluid on said working tool; and a conduit provided internally of said tool holder forming part of the fluid flow path feeding said at least one nozzle.

5,388,488

MAT CUTTING SYSTEM

Verne Geidl, Troy, Id.; George Delgado, Anchorage, Ak.; David Hudspeth, Anchorage, Ak., and Randall Berry, Anchorage, Ak., assignors to Arago Robotics Incorporated, Anchorage, Ak.

Filed Sep. 14, 1992, Ser. No. 944,452
Int. Cl.[6] B26D *3/00*; B26F *1/38*
U.S. Cl. 83—56 **37 Claims**

33. A method of cutting a precision opening in a mat used in framing artwork, comprising the steps of:

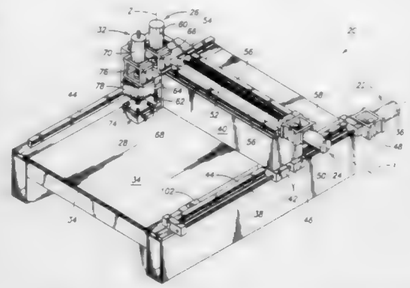
providing a mat for use in connection with framing works of art;

securing the mat to a working surface;

providing a cutting blade oriented at a preselected angle relative to a top surface of the mat for cutting an opening in the mat; simultaneously and controllably moving the cutting blade in a longitudinal Y-axis direction, a transverse X-axis direction, and an orthogonal Z-axis direction to cuttingly insert the cutting blade into the mat to form a precise entrance cut without an overcut;

moving the cutting blade along a path defining the opening; and

simultaneously and controllably moving the blade in the longitudinal Y-axis direction, the transverse X-axis direction, and the orthogonal Z-axis direction to cuttingly remove the cutting blade from the mat at a precise exit cut



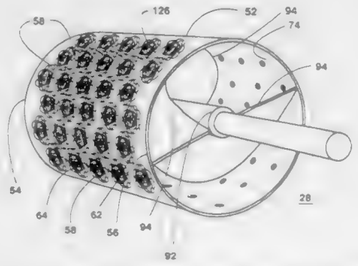
which corresponds to the entrance cut such that no overcutting of the mat occurs.

5,388,489

DOUGH SHEET ROTARY CUTTER

Kyle E. Dayley, Rigby, Id., assignor to Miles J. Willard, Idaho Falls, Id.

Division of Ser. No. 7,322, Jan. 21, 1993, Pat. No. 5,306,133. This application Jan. 18, 1994, Ser. No. 183,166
Int. Cl.[6] A21C *11/14*
U.S. Cl. 83—117 **5 Claims**



1. A rotary cutter for cutting a dough sheet into at least two separate quantities and transporting at least one respective quantity in a predetermined direction, comprising:

a) a cylindrical mandrel;

b) a plurality of cutting dies mounted on the mandrel, each of the cutting dies having a periphery cutting means for producing a shaped dough piece, and an interior hole-cutting means for producing an internal hole punching in the dough piece;

c) a dough piece biasing means disposed within each cutting die between the periphery cutting means and the interior hole-cutting means for ejecting the dough piece; and

d) a removal means and a transport means disposed within the mandrel for removing and transporting the internal hole punching through the mandrel in the predetermined direction to an end of the mandrel.

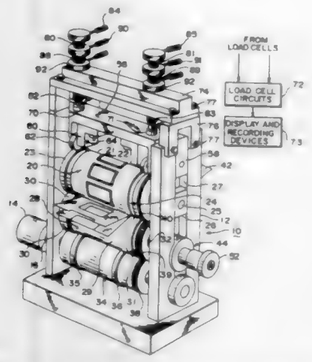
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ROTARY DIE CUTTING SYSTEM AND METHOD FOR SHEET MATERIAL

Byron L. Buck, 7412 Via Lorado, Rancho Palos Verdes, Calif. 90274

Continuation of Ser. No. 522,267, May 10, 1990, abandoned. This application Dec. 30, 1992, Ser. No. 999,565
Int. Cl.[6] B26D *1/56, 3/08*
U.S. Cl. 83—880 1 Claim



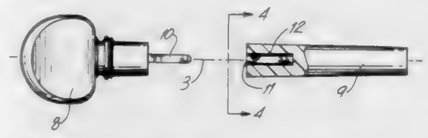
1. A method of cutting sheet material in a rotary die system, said method including the steps of:
providing a roller die having a cutting blade protruding from a surface of said roller die;
locating conical roller die bearer surfaces having first angles of inclination on first and second ends of said roller die;
supporting said roller die for rotation about a roller die axis of rotation;
providing an anvil roller having a cylindrical central surface region;
locating conical anvil roller bearer surfaces having a second angle of inclination equal to said first angle of inclination on first and second ends of said anvil roller;
supporting said anvil roller for rotation about a fixed anvil roller axis-of rotation parallel to said roller die axis of rotation and for lateral shifting along said anvil roller axis of rotation with said roller die bearer surfaces engaging said anvil roller bearer surfaces;
providing an adjustable clearance gap between said cutting blade and said anvil roller central region;
positioning a substantially non-deflecting body generally adjacent said roller die;
applying adjustable external compressive loading forces to said roller die bearer surfaces from said non-deflecting body to adjustably elastically deform said roller die bearer surfaces and said anvil roller bearer surfaces;
setting a predetermined initial clearance gap by laterally shifting said anvil roller with respect to said roller die;
passing a sheet of material to be cut through said initially set clearance gap between said roller die and said anvil roller;
measuring said adjustable external compressive loading forces applied to said roller die bearer surfaces during said cutting of said sheet material;
generating changing reactive forces on said roller die and said anvil roller in response to contacting of said sheet of material by said cutting blade; and
controlling said clearance gap in response to said changing reactive forces exerted on said roller die and said anvil roller by adjusting said lateral position of said anvil roller with respect to said roller die and by cooperatively adjusting said external compressive loading forces exerted on said roller die bearer surfaces from said non-deflecting body to thereby elastically deform said bearer surfaces of said roller die and said anvil roller for maintaining said clearance gap and said compressive loading forces within preselected ranges and thereby holding said reactive forces and said loading forces at any point in said cutting of said sheet material below a predetermined value while maintaining proper cutting of said sheet of material.

5,388,491

CELLO TUNING PEG

Krovoza John, 1780 E. Woodbury Rd., Pasadena, Calif. 91104

Filed Apr. 29, 1993, Ser. No. 55,505
Int. Cl.[6] G10D *3/14*
U.S. Cl. 84—304 10 Claims



1. An improved cello tuning peg of the type having a cylindrical body member with a longitudinal axis for accepting a string and having a handle in fixed rotational relationship relative to said cylindrical body where said longitudinal axis is the axis of rotation of said cylindrical body for turning said cylindrical body to selectively change the tension in said string wherein the improvement comprises, means associated with said handle and said cylindrical body for slideably and detachably telescopically mounting said handle in contemporaneous axial sliding and fixed rotatinal relationship with said cylindrical body where said means is without restriction to free axial removal of said handle from said cylindrical body such that upon axial slideable telescopic engagement of said handle and said cylindrical body said handle and said cylindrical body are connected contemporaneously in fixed rotational and axial slideable relationship with respect to said axis of rotation thereby permitting said handle to be rotated to selectively change the tension in said string and to be freely removeable axially without restriction from said cylindrical body.

5,388,492

"L" GUITAR SUPPORT

Joan E. Olson, 204 Diamond Dr., Walkersville, Md. 21793

Filed Oct. 28, 1993, Ser. No. 142,871
Int. Cl.[6] G10D *3/00*
U.S. Cl. 84—327 1 Claim



1. A guitar support comprising:

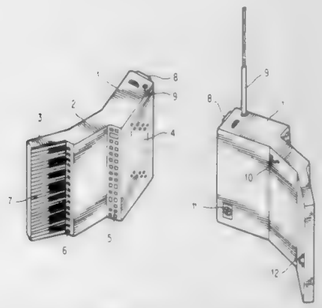
a rod having a first and second end; said rod having a generally rectangular configuration including a first edge and a second edge opposite to said first edge;
Means for fastening said first end to said second end of said rod;
A first suction cup for securement to said guitar having a hub; said first edge of said rod passing through said hub;
A flexible element having a first side and a second side; said second edge of said rod fastened to said first side flexible element;
A second suction cup for securement to said guitar attached to said second side of said flexible element.

5,388,493

EXTRA LOW PROFILE HOUSING FOR VERTICAL DUAL KEYBOARD MIDI WIRELESS CONTROLLER FOR ACCORDIONISTS

Giorgio F. Curletto, 6109 Nevada Ave., NW., Washington, D.C. 20015

Filed Nov. 17, 1993, Ser. No. 153,196
Int. Cl.[6] G10D *11/00*
U.S. Cl. 84—376 A 4 Claims



1. An extra low profile housing for vertical dual keyboard MIDI or Wireless MIDI Controllers for accordionists comprising three vertically oriented rectangular segments; the first one of said three segments being three and one-half to four inches deep comprising a lateral left surface, a back surface, a top and a bottom surface, a front surface incorporating a left-hand bassboard assembly, and containing a primary control panel positioned lengthwise on a lateral right surface; the longitudinally adjacent second rectangular section of said three rectangular segments being not more than two and one-quarter inches deep, having a front and a back surface, a top and a bottom surface, and containing a secondary control panel arranged longitudinally on a lateral right surface; the subsequent adjoining third and last section of said three rectangular segments being one and one-half inches deep, having a top and a bottom surface, a lateral right surface, and having lengthwise a back surface directly opposite a right-hand keyboard representing and constituting the front surface of said third and last section.

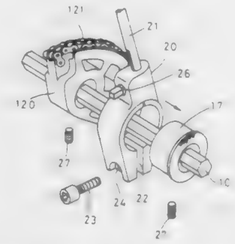
5,388,494

ADJUSTMENT MECHANISM FOR DRUM PEDAL BEATER

Yoshiki Hoshino, Aichi, Japan, assignor to Hoshino Gakki Co., Ltd., Nagoya, Japan

Filed Oct. 15, 1993, Ser. No. 138,131
Claims priority, application Japan, Mar. 19, 1993, 5-018600[U]
Int. Cl.[6] G10D *13/02*
U.S. Cl. 84—422.1 4 Claims

1. An adjustment mechanism for a drum pedal comprising:
a support; a beater rotary shaft supported on the support and rotatable around the axis of the shaft;
a drum beater and a beater member having a generally tubular shape for supporting the drum beater, the beater member being rotatably connected to the shaft, the drum beater including a beater head for being swung toward and away from a drum head as the beater member rotates with the shaft; the beater member selectively enabling free rotation of the beater around the shaft and including means to enable independent adjustment of the beater relative to the rotary shaft to any selected rotative orientation of the beater with respect to the shaft, the means to enable independent adjustment of the beater including a cut groove extending through one side of the beater member such that the beater member is split at the one side, a tightening bolt at the cut groove for selectively loosening and tightening the beater member on the beater rotary shaft to enable independent adjustment of the beater relative to the rotary shaft;
a beater rotary shaft operating member on the beater rotary



shaft, such that rotation of the operating member rotates the shaft for swinging the beater head; a swing pedal on the support to be operated by a performer, connecting means connecting between the pedal and the operating member so said operation of the pedal moves the operating member to rotate the shaft;
a cam supported on the shaft for free rotation with respect to the shaft to different orientations with reference to the shaft; means for fixing the cam at any selected rotative orientation with respect to the beater rotary shaft to enable independent adjustment of the cam relative to the beater rotary shaft; and a spring connected between the cam and the support so that the spring operates the cam to rotate the shaft to a stable position;
whereby the pedal and the beater may be independently set to respective initial positions by the adjustment of the corresponding rotative orientations of the beater and of the cam around the beater rotary shaft.

5,388,495

UPPER CYMBAL FASTENING ASSEMBLY FOR A HI-HAT CYMBAL

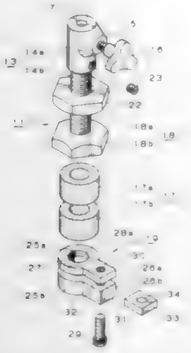
Shizuo Atsumi, Shizuoka, Japan, assignor to Yamaha Corporation, Shizuoka, Japan

Filed May 31, 1994, Ser. No. 251,737
Claims priority, application Japan, Jun. 2, 1993, 5-154616
Int. Cl.[6] G10D *13/02*
U.S. Cl. 84—422.3 4 Claims

1. An upper cymbal fastening assembly for a hi-hat cymbal comprising
an elongated tubular holder inserted over an extension rod and made up of an upper main body and a lower threaded extension,
a felt washer unit inserted over said threaded extension of said tubular holder in order to clamp an upper cymbal,
a lock nut unit screwed over said threaded extension of said tubular holder at a position above said felt washer unit,
a clutch nut unit screwed over said threaded extension of said tubular holder at a position below said felt washer unit in order to clamp said felt washer unit in cooperation with said lock nut unit,

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said clutch nut unit being made up of upper and lower sections coupled to each other via a local joint whilst leaving a horizontal gap, and



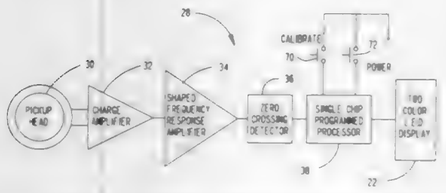
one of said two sections being constructed elastically deformable about said local joint towards the other of said two sections when a vertical force is applied thereto.

5,388,496

ELECTRONIC TUNING DEVICE

Gary Miller; Doran M. Oster, and Charles G. Crampton, all of Gainesville, Fla., assignors to Sabine Musical Manufacturing Company, Inc., Gainesville, Fla.

Filed Sep. 22, 1993, Ser. No. 124,752
Int. Cl.[6] G10G *7/02*
U.S. Cl. 84—454 **12 Claims**



1. An improved electronic tuning device for a musical instrument comprising;

a transducer for converting an acoustic tone played by the musical instrument into electrical signals;

frequency determination means for determining a fundamental frequency of said electrical signals and thus determining a fundamental frequency of said musical tone;

computing means for computing a nearest musical note to said fundamental frequency of said musical tone;

a display including a row of individual light sources corresponding to respective musical notes;

means responsive to the computing means for operating a light source in the row of light sources corresponding to the computed nearest musical note; and

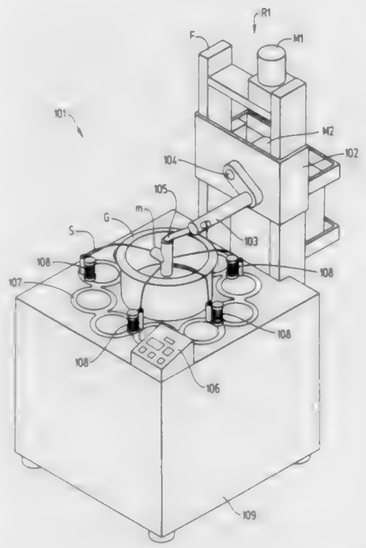
means responsive to a deviation of said fundamental frequency of said musical tone from the computed nearest musical note for controlling the operated light source to indicate the deviation whereby the operated light source indicates both the nearest musical note and the deviation.

5,388,497

BRAIDED STRUCTURE FORMING APPARATUS

Yasuo Akiyama, Kyoto; Zenichiro Maekawa, Amagasaki; Hiroyuki Hamada, Shiga, and Atsushi Yokoyama, Tsu, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation-in-part of Ser. No. 865,938, Apr. 9, 1992, abandoned, which is a division of Ser. No. 742,617, Aug. 8, 1991, abandoned. This application Mar. 10, 1993, Ser. No. 29,248
Claims priority, application Japan, Aug. 25, 1990, 2-223854
Int. Cl.[6] D04C *3/06*
U.S. Cl. 87—34 **12 Claims**



1. A device for forming a structure of braided material, comprising:

a mandrel having an axis and a first, second and third section and defining a mandrel joint,

means for positioning the mandrel so that the mandrel axis is substantially aligned with a first axis,

means for moving the mandrel along the first axis in a first direction at a first speed,

means for braiding at least a portion of the first section of the mandrel at a braiding zone,

means for changing the speed at which the mandrel moves in the first direction to a second speed as the braiding zone approaches the mandrel joint,

means for rotating the mandrel about the mandrel joint until the mandrel axis and the first axis form a first angle,

means for stopping braiding of the first section when the mandrel axis and the first axis form the first angle,

means for rotating the mandrel about the mandrel joint until the mandrel axis and the first axis are substantially perpendicular,

means for stopping movement of the mandrel in the first direction when the mandrel axis and the first axis are substantially perpendicular,

means for braiding at least a portion of the third section of the mandrel,

means for moving the mandrel in the first direction at the second speed, and

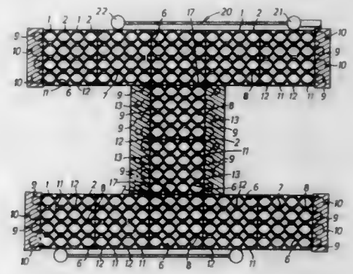
means for changing the speed at which the mandrel moves in the first direction to the first speed.

5,388,498

APPARATUS FOR BRAIDING A THREE-DIMENSIONAL BRAID STRUCTURE

Robin Dent, Foxboro, and Donald J. Rose, Sharon, both of Mass., assignors to Albany International Corp., Albany, N.Y.

PCT No. PCT/GB91/01125, § 371 Date Jan. 6, 1993, § 102(e) Date Jan. 6, 1993, PCT Pub. No. WO92/01103, PCT Pub. Date Jan. 23, 1992
Continuation-in-part of Ser. No. 551,266, Jul. 12, 1990, abandoned. This PCT application Jul. 9, 1991, Ser. No. 961,885
Claims priority, application United Kingdom, Mar. 25, 1991, 9106348
Int. Cl.[6] D04C *3/22*
U.S. Cl. 87—50 **10 Claims**



1. An apparatus for braiding a three-dimensional braid structure, said apparatus comprising:

a braiding station;

a plurality of yarn package carriers for providing yarn to said braiding station;

track means for defining a plurality of serpentine paths of travel for said carriers; and

drive means for effecting movement of said carriers along said paths for interlacing said yarns, said drive means including a plurality of intermeshed braiding horngears arranged in a plurality of rows defined between turnaround devices, each row corresponding to a pair of said paths, said turnaround devices for each said rows including a single first turnaround horngear at one end having a first number of slots, said turnaround devices including at least two second turnaround horngears at the other end of each said row having a different total number of slots than said first turnaround horngear;

wherein said braiding horngears each have n slots, and said turnaround horngears each have less than n slots, said slots being used for moving said carriers;

said track means and drive means cooperating to move said each carrier along a respective row, said carriers being turned around at the end of the rows by said turnaround horngears, with said turnaround horngears receiving one carrier from the respective row and returning said carrier to the same row.

5,388,499

CARTRIDGE FOR EXPLOSIVELY OPERATED INDUSTRIAL TOOLS

Janusz Szyndlar, Unionville, Canada, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 15, 1994, Ser. No. 213,432
Int. Cl.[6] C06D *5/00*
U.S. Cl. 89—1.14 **11 Claims**

1. A cartridge for use in an explosively operated industrial tool having a body with a chamber therein for receiving said cartridge and a breach cap fitted over said body enclosing one end of said chamber, said breach cap having a piercer pin projecting therefrom into said chamber for moving into engagement with and piercing through an end of said cartridge to release gases contained therein, said cartridge comprising:

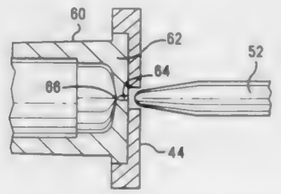
(a) an elongated shell open at one end and having a base at the opposite end;

(b) a gas check positioned in said shell between said open end and said base, said gas check containing a primer;

(c) explosive powder, ignitable by said primer, contained in a powder chamber within said shell between said gas check and said base: and

(d) a depression in a surface of said base of said cartridge forming a relatively thin section therein adjacent to and in alignment with said piercer pin and arranged so that when said piercer pin is moved into said engagement with said base and only when said piercer pin does not pierce completely through said thin section, said thin section will fracture upon ignition of said explosive powder allowing expanding gases to escape through the fracture.

8. The combination of a cartridge containing explosive powder and a primer for ignition thereof and an explosively operated industrial tool having a body with a chamber therein receiving said cartridge and a breach cap fitted over said body enclosing one end of said chamber, an other end of said chamber having a ram, operable upon ignition of said explosive powder to perform a desired work operation, said breach cap having a piercer pin projecting therefrom into said chamber for moving into engagement with and piercing through a surface of said cartridge adjacent said explosive powder to release gases contained therein, said surface of said cartridge having a depression forming a relatively thin section therein adjacent to and in alignment with said piercer pin and arranged so that when said piercer pin is moved into said engagement with said surface and only when said piercer pin does not pierce completely through said thin section, said thin section will fracture upon said ignition of said explosive powder allowing expanding gases to escape through the fracture.

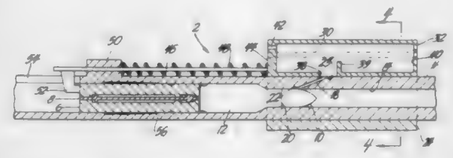


5,388,500

DELAYED BLOW-BACK FOR FIREARMS

Paul A. Petrovich, 11269 Judd Rd., Fowlerville, Mich. 48836

Filed Mar. 7, 1994, Ser. No. 207,465
Int. Cl.[6] F41A *5/26, 3/62*
U.S. Cl. 89—194 **10 Claims**



1. In a rapidly repeating firearm having a barrel and a bolt translatable to a position immediately behind a projectile before firing thereof, a device to delay departure of the bolt from the position after firing the projectile, comprising:

a piston translatable along the barrel, the piston defining a cavity therein and defining an orifice communicated with both the cavity and the barrel;

an internal surface of the piston at the orifice

the barrel defining a duct from an inner barrel diameter to an outer barrel diameter, the duct communicating with the

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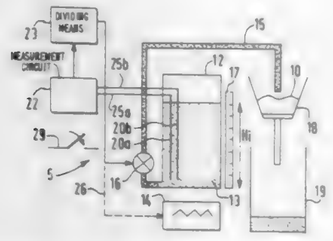
orifice, the duct slanting away from the bolt in a radially outward direction and opening toward the internal surface;
means fixedly mounted to the barrel for holding the piston;
means for solidly connecting the piston to the bolt; and
means for biasing the bolt away from the position immediately behind the projectile.

5,388,501

APPLIANCE FOR INFUSING A SUBSTANCE

Jean-Pierre Hazan, Sucy, and Jean-Louis Nagel, Brevannes, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1993, Ser. No. 170,485
Claims priority, application France, Dec. 22, 1992, 92 15503
Int. Cl.[6] A47J *31/40*
U.S. Cl. 99—285 **10 Claims**



1. An appliance (**5**) for infusing a substance (**10**), which appliance comprises:
a reservoir (**12**) for holding a quantity of a liquid (**13**),
means (**17**) for indicating the quantity of liquid,
means (**14**) for heating the quantity of liquid,
filter means (**18**) for receiving the substance and the quantity of liquid,
means (**23, 16**) for dividing the quantity of liquid into a pre-wetting quantity and at least one additional quantity, which quantities are poured onto the substance in at least two respective steps which are spaced-apart in time, and
means (*20a, 20b,* 22) (27, 28, 32) (28, 33, 34) for continuously measuring quantities of liquid in the reservoir, for defining said prewetting quantity and at least said additional quantity by dividing the liquid in dependence on the quantity of liquid initially present in the reservoir, and for influencing the dividing means in dependence on measured quantities of liquid.

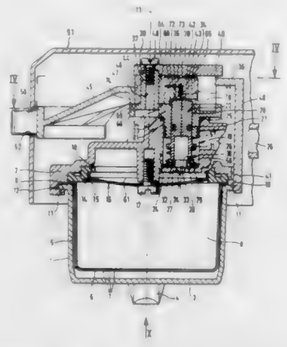
5,388,502

ESPRESSO COFFEE MACHINE

Walter Hufnagl, Sulzbach, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/DE91/00594, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993, PCT Pub. No. WO92/03081, PCT Pub. Date Mar. 5, 1992
PCT Filed Jul. 16, 1991, Ser. No. 977,432
Claims priority, application Germany, Aug. 22, 1990, 4026495
Int. Cl.[6] A47J *31/24*
U.S. Cl. 99—295 **27 Claims**

1. An espresso coffee machine comprising an electrically heatable water heater, a filter basket holder, and a filter basket holding device which can be sealingly closed by introducing therein the filter basket holder, said filter basket holder being subdivided by a filter into a brewing chamber that can be filled with coffee grounds and into a pouring device arranged at its bottom, and wherein said coffee machine further comprises a first duct and a second duct having a steam outlet, said first duct opening into the filter basket holding device so as to connect the brewing chamber to the water heater, wherein said first duct includes a throughflow controlling valve arranged therein and which is always closed when the filter basket holder is not inserted into the filter basket holding device, wherein, after the insertion of the filter basket holder into the filter basket holding device, said filter basket holder causes the valve to move from its closed into an open position, wherein a first actuating member is provided between the filter basket holder and the valve which is actuated by the filter basket holder to control the valve, and wherein steam can be taken



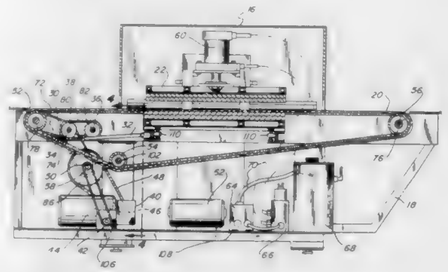
from the espresso coffee machine through said second duct in order to steam and froth beverages, the said steam being produced in the water heater as well, and wherein in addition to the first actuating member, a second actuating member is provided which also serves to control the valve, and wherein said first and second actuating members have open and closed positions and wherein the valve opens only if both the first and the second actuating member have adopted their open position.

5,388,503

HIGH SPEED FOOD PROCESSING DEVICE

Alfred Buerkle, 4380 Brentwood, Wheat Ridge, Colo. 80033

Continuation of Ser. No. 739,813, Aug. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 459,150, Dec. 29, 1989, abandoned. This application Jun. 22, 1992, Ser. No. 900,798
Int. Cl.[6] A47J *37/00*
U.S. Cl. 99—349 **6 Claims**



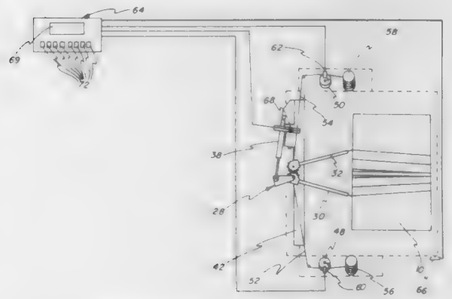
1. A high speed food processing device comprising:
a frame;
said frame having a drive means affixed thereto;
said drive means including a belt drive assembly including a chain and gears for providing continuous forward movement to a continuous belt means; and
a platen drive assembly including a chain and gears for providing cyclic movement to a platen means;
said belt drive assembly is interconnected with said platen drive assembly by a common shaft which is driven by a gear in order to move both drive assemblies continuously at the same rate of travel;
said belt means capable of conveying a food product from a rearward position to a forward position;
said platen means having an upper platen means and a lower platen means capable of communicating with said continuous belt means;
a means affixed to said upper platen means for providing an opening and closing pressure between said upper platen means and said lower platen means; and
an electrical means capable of providing the necessary electrical power to said drive means and to actuate said means for opening and closing said platen means.

5,388,504

TWINE WRAP CONTROL FOR ROUND BALER

Leroy M. Kluver, Celina, Ohio, assignor to AGCO Corporation, Norcross, Ga.

Filed Aug. 23, 1993, Ser. No. 110,004
Int. Cl.[6] B65B *63/04, 57/10*
U.S. Cl. 100—4 **15 Claims**



1. An apparatus for forming and wrapping bales, said apparatus comprising:
a chamber for receiving crop material to form a bale,
wrap guide means for guiding wrap material onto a bale in said chamber,
monitoring means for monitoring the distribution of said wrap material onto said bale,
control means for controlling the position of said wrap guide means in response to the monitored distribution of said wrap material, and
wherein said monitoring means comprises sensing means for measuring the quantity of wrap material as it is dispensed onto said bale.

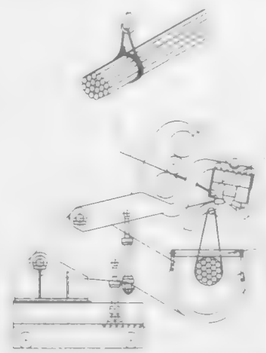
5,388,505

APPARATUS FOR LOOP BINDING AN ARTICLE OR BUNDLE OF ARTICLES WITH AN ARCUATE SECTIONAL ANNULAR GUIDE AND RESTRAINER

Willem J. Verhart, Sijbekarspel, Netherlands, assignor to Hoogovens Groep BV, Ijmuiden, Netherlands

Filed Mar. 16, 1993, Ser. No. 32,006
Claims priority, application Netherlands, Mar. 16, 1992, 9200485
Int. Cl.[6] B65B *27/10, 13/06*
U.S. Cl. 100—26 **5 Claims**

1. An apparatus for binding articles by means of stiff wire, comprising
at least a two turn helical channel annular guide means comprising separable arcuate sections for guiding said wire around at least one article which is to be bound by at least two turns;
pulling means insertable within at least one of said turns for forming at least one lifting loop in the form of a portion of said wire spaced from said at least one article by pulling at least one of said turns away from said at least one article



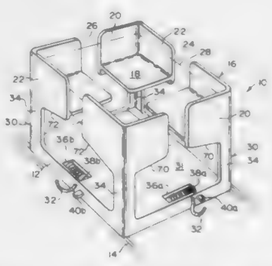
and restraining means for holding back said at least one article when said pulling means acts on said wire.

5,388,506

NEWSPAPER RECYCLING HOLDER

Augustin Vargas, 144 Seaman Ave. #1F, New York, N.Y. 10034, and George Stector, 233 Broadway Rm. 702, New York, N.Y. 10279

Filed May 10, 1994, Ser. No. 240,453
Int. Cl.[6] B65B *13/18*
U.S. Cl. 100—34 **5 Claims**

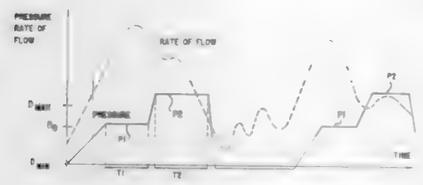


1. A newspaper recycling holder which comprises:
a) a base to sit upon a flat surface;
b) an open top receptacle extending vertically from said base having a bottom platform, a pair of end walls and a pair of side walls to retain a stack of newspapers therein, said receptacle further having a longitudinal central slot extending through said bottom platform and said end walls and an intersecting transverse central slot extending through said bottom platform and said side walls;
c) means mounted on said base for elevating said receptacle above said base, so as to provide a space between said base and said bottom platform for convenient movement of the users hands;
d) a supply of twine mounted on said base to be wound and tied about the stack of newspapers through said slots in said receptacle, so that the bound stack of newspapers can be collected for disposal and recycling; wherein said base has four corners and said elevating means includes four posts, each extending vertically from each said corner; further including:
e) a first twine dispenser having a first spool of twine, wherein said first twine dispenser is recessed into said base directly under one said end wall of said receptacle;

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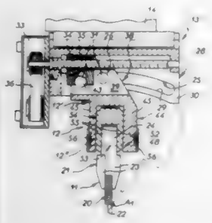
f) a first twine cutter mounted to one end of said base at said first twine dispenser;
g) a second twine dispenser having a second spool of twine, wherein said second twine dispenser is recessed into said base directly under one said side wall of said receptacle; and
h) a second twine cutter mounted to one side of said base at said second twine dispenser.

5,388,507
AUTOMATIC DETERMINATION PROCESS FOR COMMAND AND CONTROL OF A FORCED DRAINING BEFORE PRESSING FOR BATCH PRESSES
Jean Bonnet, Angers, France, assignor to Constructions Meca-Metalliques Chalonnaises SA, Chalonnes sur Loire, France
Filed Feb. 18, 1994, Ser. No. 198,272
Claims priority, application France, Feb. 23, 1993, 93 02201
Int. Cl.[6] B30B *9/22*
U.S. Cl. 100—37 **8 Claims**



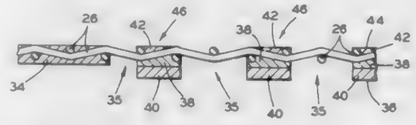
1. A process for automatically determining the command and control of a pressurized draining prior to initiating a pressing cycle in a batch press comprising the steps of after filling a press tank with materials to be pressed and before beginning a pressing cycle measuring continuously the flow rate of liquids from the material to be pressed without applying any pressing pressure, rotating the press tank and ascertaining the minimum and maximum values of the flow rate, comparing the ascertained minimum and maximum flow rate values with respective predetermined values, subjecting the materials to be pressed to a preliminary pressurized draining only when at least one of the minimum and maximum flow rates is greater than a respective predetermined value until both minimum and maximum flow rates are lower than their respective predetermined values and simultaneously checking the orifices for discharging of the liquids for clogging, and beginning the pressing cycle after completion of the preliminary pressurized draining.

5,388,508
SQUEEGEE HEAD, IN PARTICULAR FOR SILKSCREEN PRINTING MACHINES
Jean-Louis Dubuit, Paris, France, assignor to Societe d'Exploitation des Machines Dubuit, Noisy le Grand, France
Filed Dec. 21, 1993, Ser. No. 170,807
Claims priority, application France, Jan. 22, 1993, 93 00633
Int. Cl.[6] B41E *15/46*
U.S. Cl. 101—123 **13 Claims**



1. Squeegee head, in particular for silkscreen printing machines, comprising a squeegee carried by a squeegee-holder, said squeegee-holder carried by a support, means for adjustably mounting said squeegee-holder on said support for rotation about an axis parallel to a lengthwise direction of said squeegee and substantially at an operative free edge of said squeegee, motor means for varying the inclination of said squeegee-holder, said motor means comprising a motor carried by said support, a screw threaded rod perpendicular to said lengthwise direction and driven for rotation by said motor, and a screw threaded nut meshing with said screw threaded rod and held against rotation relative to said support, said screw threaded nut being interengaged by means of at least one recess with at least one drive finger on said squeegee-holder parallel to said lengthwise direction of said squeegee.

5,388,509
METHOD FOR MAKING A PRINTING SCREEN AND PRINTING A VARIBALE THICKNESS PATTERN
Thomas V. Cutcher, 5045 Summerfield Rd., Petersburg, Mich. 49270
Filed May 5, 1993, Ser. No. 57,680
Int. Cl.[6] B41F *15/36*
U.S. Cl. 101—128.21 **12 Claims**

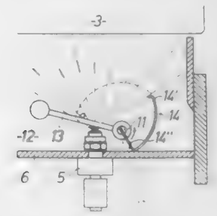


1. An improved method for making a silk screen comprising:
a) applying a first layer of photosensitive emulsion to a screen;
b) securing a first transparency with a film pattern to the screen;
c) exposing the first layer of emulsion on the screen to an ultraviolet light source;
d) removing the first transparency and rinsing the screen to dissolve the unexposed emulsion beneath the pattern, whereby a pattern is defined by a first layer of exposed emulsion and open mesh areas in the screen;
e) applying a second layer of photosensitive emulsion to at least one open mesh area in the pattern such that the second layer of emulsion is thicker than the first layer of emulsion;
f) securing a second transparency with a second film pattern to the areas in which the second layer of emulsion has been applied, the second pattern including a dot arrangement;
g) exposing the second layer of emulsion to an ultraviolet light source; and
h) removing the second transparency and rinsing the screen to dissolve the unexposed emulsion beneath the second pattern to form a second layer of exposed emulsion with emulsion dots, whereby the exposed emulsion dots are thicker than the first layer of exposed emulsion.

5,388,510
SPRAY DAMPENER FOR A PRINTING PRESS
Birger Hansson, Åkarp, Sweden, assignor to Jimek International AB, Malmo, Sweden
Filed Apr. 14, 1994, Ser. No. 227,374
Claims priority, application Sweden, Apr. 23, 1993, 9301361-3
Int. Cl.[6] B41F *7/30*
U.S. Cl. 101—147 **5 Claims**

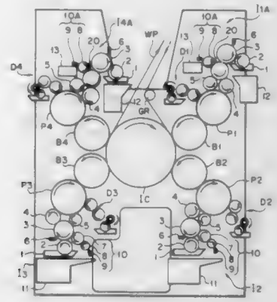
1. In a spray dampener system for a printing press, comprising in a housing (**7**) a row of spray nozzles (**5**) for spraying a liquid on a roller (**3**) in the printing press, the row being substantially parallel with the roller axis, wherein a shutter device (**14**) for mechanically screening off part of or a whole spray

cone is arranged at a nozzle towards the end of the housing, the improvement further comprising: the shutter device is a shield (**14**), an externally rotatable shaft (**11**), and said shield is a substantially partially cylindrical shaped curved self support-



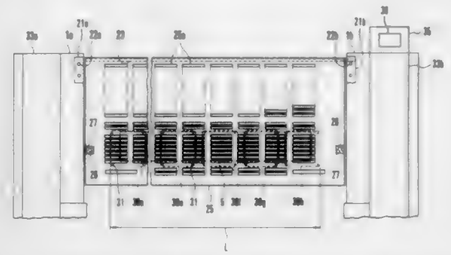
ing member coaxially disposable about the shaft in an arc defined by rotation of the shaft, arranged in the housing (**7**) at the side of the nozzle (**5**) facing the end of the housing to intercept spray about an arc defined by said shield and the rotational position of the shaft.

5,388,511
ROTARY PRESS
Takashi Iijima, Yokosuka, Japan, assignor to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan
Continuation of Ser. No. 658,446, Feb. 21, 1991, abandoned, which is a continuation of Ser. No. 333,240, Apr. 5, 1989, abandoned. This application Sep. 16, 1992, Ser. No. 945,582
Claims priority, application Japan, May 24, 1988, 63-126858
Int. Cl.[6] B41F *31/06*
U.S. Cl. 101—148 **5 Claims**



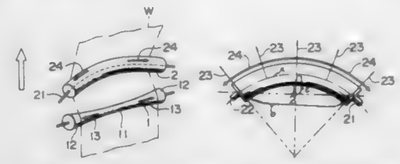
1. A rotary press comprising a plurality of plate cylinders, each of said plate cylinders cooperating with an inking unit adapted to supply ink thereto, each of said inking units comprising
a form roller contacting the respective plate cylinder,
an ink fountain pan located above the respective plate cylinder,
a fountain roller at least partially dipped in said fountain pan,
a mesh roller contacting said fountain roller and adapted to act as an ink metering roller,
a doctor blade contacting a peripheral surface of said mesh roller,
a dampening device contacting said plate cylinder, and
an intermediate roller disposed between said form roller and said mesh roller.

5,388,512
DAMPENING SUPPRESSION APPARATUS FOR PRINTING PRESS
Minoru Tomita, Ibaragi, Japan, assignor to Komori Corporation, Tokyo, Japan
Filed Sep. 29, 1993, Ser. No. 128,894
Claims priority, application Japan, Oct. 9, 1992, 4-076477[U]
Int. Cl.[6] B41F *31/00, 7/24*
U.S. Cl. 101—148 **8 Claims**



1. A damping suppression apparatus for a printing press having an ink roller for supplying an ink, comprising:
a plurality of fans parallely arranged in an axial direction of said ink roller to oppose a circumferential surface thereof, said fans being movable to simultaneously come close to and separate away from the circumferential surface of said ink roller, air volumes of said fans being changeable;
first setting means for respectively setting the air volumes of said fans;
second setting means for setting an air supply range of said fans in the axial direction of said ink roller; and
control means for stopping operation of said fans which fall outside the air supply range set by said second setting means and individually controlling the air volumes of the other of said fans in the air supply range set by said second setting means on the basis of outputs from said first setting means.

5,388,513
OFFSET ROTARY FOR COLOR PRINTING SYSTEM
Hideo Ohta, Tokyo, Japan, assignor to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan
Continuation-in-part of Ser. No. 889,907, May 29, 1992, Pat. No. 5,285,726. This application Nov. 9, 1993, Ser. No. 149,526
Claims priority, application Japan, Nov. 15, 1991, 3-328077
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[6] B41F *13/54*
U.S. Cl. 101—228 **6 Claims**

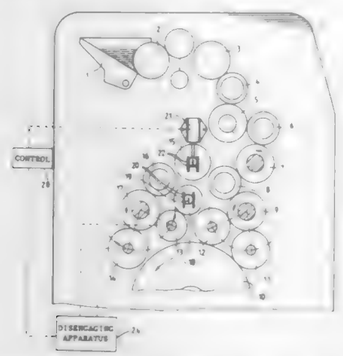


1. An offset type color-printing rotary press for printing an image on a web without shearing, comprising:
(a) a plurality of printing sections including a first printing section;
(b) a concave crown roller having a concave circumferential surface arranged to contact one side of the web travelling through the press; and
(c) an expander roller with a percentage of bow in the range of 0.05 to 0.18 percent, with a curved axis having a convex

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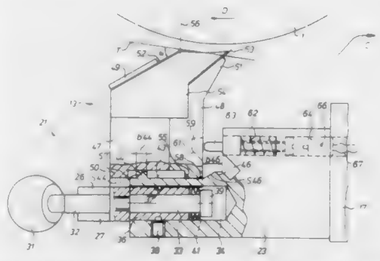
circumferential surface arranged to contact an other side of the web travelling through the press;
wherein the crown roller and expander roller are positioned vertically below the first printing section, and the crown roller is positioned vertically below the expander roller.

5,388,514
INKING UNIT FOR PRINTING MACHINES
Bruno Eltner, Heidelberg, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany
Filed Aug. 16, 1993, Ser. No. 107,250
Claims priority, application Germany, Sep. 9, 1992, 4230090
Int. Cl.[6] B41F *31/06, 31/32*
U.S. Cl. 101—352 16 Claims



1. Method of operating a printing press and printing a printed product, said method comprising the steps of:
providing at least one printing unit;
said step of providing at least one printing unit comprising the steps of:
providing a frame;
providing a plate cylinder and rotatably mounting said plate cylinder on said frame;
providing an ink reservoir for holding a supply of ink;
providing an inking mechanism for transferring the ink between said ink reservoir and said plate cylinder during operation of said printing press;
said step of providing an inking mechanism further comprising the step of providing a plurality of inking rollers, at least one ink fountain roller and at least one transfer roller for transferring ink between said ink fountain roller and at least one of said plurality of inking rollers;
providing a first set of at least one ink applicator roller and a second set of at least one ink applicator roller;
the first set of at least one ink applicator roller and the second set of at least one ink applicator roller constituting the only means in the corresponding printing unit for directly contacting and transferring ink to the plate cylinder;
providing means for engaging the first set of at least one ink applicator roller with the plate cylinder;
providing means for engaging the second set of at least one ink applicator roller with the plate cylinder;
providing means for simultaneously providing a first stream of ink to said first set of at least one ink applicator roller and a second stream of ink to said second set of at least one ink applicator roller; and
providing means for interrupting the second stream of ink to said second set of at least one ink applicator roller, while maintaining flow of the first stream of ink to the first set of at least one ink applicator roller, during a printing operation of said printing press;
said method further comprising the additional steps of: initiating a printing operation of said printing press;
transferring ink between said ink reservoir and said plate cylinder:
said transferring step comprising the step of transferring the ink between said ink fountain roller and at least one of said plurality of inking rollers;
engaging said first set of at least one ink applicator roller with said plate cylinder;
engaging said second set of at least one ink applicator roller with said plate cylinder;
applying ink to said plate cylinder by means of said first set of at least one ink applicator roller and said second set of at least one ink applicator roller;
simultaneously providing a first stream of ink to said first set of at least one ink applicator roller and a second stream of ink to said second set of at least one ink applicator roller; and
interrupting the second stream of ink to said second set of at least one ink applicator roller, while maintaining flow of the first stream of ink to said first set of at least one ink applicator roller, during the printing operation of said printing press;
said method further comprising the additional steps of:
configuring said plate cylinder such that a circumference is defined thereabout and said plate cylinder has a direction of rotation, the circumference of said plate cylinder having a minor portion and a major portion, the minor portion extending about the circumference of said plate cylinder over a first angle, the major portion extending about the circumference of said plate cylinder over a second angle, the second angle being greater than the first angle, the sum of the first angle and the second angle being 360°; and
positioning said first set of at least one ink applicator roller before said second set of at least one ink applicator roller, in the direction of rotation of said plate cylinder, such that, during operation of said printing press, a point on the plate cylinder is displaced:
firstly in time, past said first set of at least one ink applicator roller;
thence, secondly in time, through the minor portion of the circumference of said plate cylinder;
thence, thirdly in time, past said second set of at least one ink applicator roller; and
thence, fourthly in time, through the major portion of the circumference of said plate cylinder.

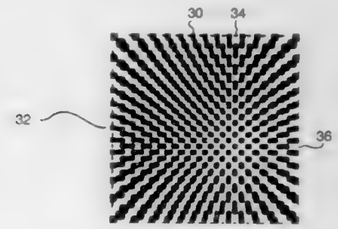
5,388,515
METHOD AND APPARATUS FOR PLACEMENT OF A DOCTOR BLADE AGAINST AN INK-DISPENSING ROLLER
Georg Schneider, Würzburg; Wolfgang O. Reder, Veitshöchheim, and Dieter Reinhart, Hettstadt, all of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany
Filed Apr. 26, 1993, Ser. No. 51,933
Claims priority, application Germany, Apr. 25, 1992, 4213662
Int. Cl.[6] B41F *31/04*
U.S. Cl. 101—363 20 Claims



1. A method for placement of a doctor blade against an ink-dispensing roller in a web-fed rotary press, said method comprising:
providing at least a first doctor blade bar having at least a first doctor blade supporting base body;
resiliently supporting a first doctor blade in said doctor blade supporting base body;
moving said doctor blade along a first curved path of travel corresponding to one arm of a parabola toward an ink dispensing roller;
bringing a working edge of said doctor blade into linear contact against a surface of an ink dispensing roller at a contact point remote from a final working position of said doctor blade, said contact point being at an axis of symmetry of said parabola;
moving said doctor blade along a second path of travel along a jacket surface of an ink dispensing roller into said final working position; and
pushing said doctor blade into said doctor blade supporting base body while moving said doctor blade along said second path of travel along a jacket surface into said doctor blade working position.

5,388,516
Patent Not Issued For This Number

5,388,517
METHOD AND APPARATUS FOR AUTOMATIC ALIGNMENT OF OBJECTS AND REGISTER MARK FOR USE THEREWITH
Raphael L. Levien, P.O. Box 31; Rte. 1, Box 18 (UPS), McDowell, Va. 24458
Continuation of Ser. No. 764,647, Sep. 24, 1991, abandoned. This application Sep. 20, 1993, Ser. No. 123,871
Int. Cl.[6] B41F *13/12*
U.S. Cl. 101—485 48 Claims



OUT OF REGISTER
3 PIXELS RIGHT, 2 PIXELS DOWN

1. A method for aligning first and second objects, wherein said first and second objects are coupled to respective first and second register marks, said first register mark including a first plurality of dots at a first frequency and said second register mark including a second plurality of dots at a second frequency, said method comprising:
providing said first register mark including a first plurality of dots at a first frequency arranged in a two dimensional array wherein the frequency of dots in said first register mark is maximum at the center and decreases with radial distance in substantially all directions from the center of said first register mark; and
providing said second register mark including a second plurality of dots at a second frequency arranged in two dimensional array wherein the frequency of dots in said second register mark is maximum at the center and decreases with radial distance in substantially all directions from the center of said second register mark, said frequency of dots in said second register mark being greater than said frequency of said dots in said first register mark at corresponding points of said first and second register marks respectively;
positioning at least one of said first and second objects so that said second register mark is disposed in overlaid relation to said first register mark, thereby producing a bright spot providing a peak indication having a maximum point substantially common to said first and second overlaid register marks indicative of the registration of said first and second register marks;
detecting the position of said bright spot providing a peak indication as said maximum point derived from a set of data points; and
moving said one of said first and second objects to reposition said bright spot providing a peak indication towards the center of said one of said first and second register marks.

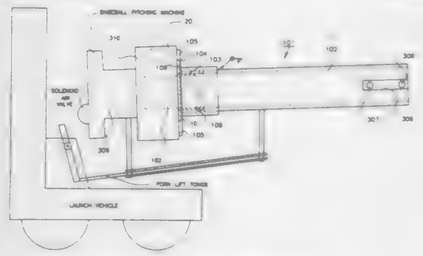
5,388,518
PROPELLANT FORMULATION AND PROCESS
James Wong, Wayland, Mass., assignor to Composite Materials Technology, Inc., Shrewbury, Mass.
Filed Nov. 10, 1988, Ser. No. 269,884
Int. Cl.[6] C06D *5/06;* C06B *33/00*
U.S. Cl. 102—289 10 Claims

1. The process of forming a propellant or other explosive device which comprises adding to the normal organic propellant oxidizer a substantial weight of metal filaments from the group consisting of Aluminum, Zirconium, Titanium, and Niobium and alloys thereof having predetermined substantially uniform surface to volume ratios, the metal filaments having at least one dimension less than 10 microns.

5,388,519
LOW TOXICITY PRIMER COMPOSITION
Louise Guindon, Laval, and Danielle Allard, Ancienne Lorette, both of Canada, assignors to SNC Industrial Technologies Inc., Montreal, Canada
Filed Jul. 26, 1993, Ser. No. 95,522
Int. Cl.[6] C06B *45/00;* D03D *23/00*
U.S. Cl. 102—292 17 Claims

1. A priming composition suitable for small arms primers which comprises:
(a) a percussion-sensitive organic primary explosive;
(b) a sensitizer for mechanically activating said explosive;
(c) a metallic fuel; and
(d) an oxidizer selected from the group consisting of cesium nitrate, sodium oxalate, nitroguanadine, guanadine nitrate, penthrite, zirconium oxide, and mixtures thereof
wherein said composition is otherwise substantially free of heavy metals.

5,388,520
INDIVIDUAL MINE LAUNCHER
Gabe B. Hammond; Richard A. Dunbar; Z. Y. Conner, all of Madison; Steven L. Stoner, and Ronald A. Jasper, both of Hanover, all of Ind., assignors to The United States of America as represented by the Scretary of the Army, Washington, D.C.
Filed Oct. 4, 1993, Ser. No. 130,939
Int. Cl.[6] F42C *17/00;* G01M *19/00*
U.S. Cl. 102—293 15 Claims



1. An individual mine launcher comprising:
a launch tube;

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means including a breech assembly which fits within the launch tube for positioning a mine in the launch tube prior to launching;

means including a pressure chamber and a pneumatic launch activator for launching the mine from the launch tube;

means for monitoring the mine during launch and for monitoring impact of the mine after launch;

wherein the launch tube is mounted on a launcher comprising a launch vehicle separable from the launcher;

means including an arming coil on the launcher for arming the mine and means including a firing coil for causing said pneumatic launch activator to launch a mine from the launch tube

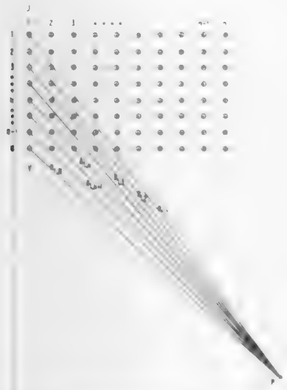
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5,388,521

METHOD OF REDUCING GROUND VIBRATION FROM DELAY BLASTING

David L. Coursen, Espanola, N. Mex., assignor to Coursen Family Trust, Espanola, N. Mex., D. Linn Coursen, trustee

Filed Oct. 18, 1993, Ser. No. 137,562
Int. Cl.[6] F42B *3/00*
U.S. Cl. 102—311 18 Claims



1. A method of blasting a geological formation so as to result in reduced ground vibration at an outlying location, said method comprising the steps of:

a) drilling one or more arrays of boreholes into the formation;

b) emplacing explosives in the boreholes to form one or more arrays of elongated charges and in the process of emplacing the explosive charges also placing a detonator in each charge that is capable of initiating detonation in it, where the detonator is placed close to an end or the midpoint of the charge, and where for each charge the following relationship is satisfied:

$$(C/D)>(R/L)-(Q/L)$$

where D is the detonation velocity of the explosive, C is the velocity of sound in the formation near the charge, L is the length of the charge from the location of the detonator to the end of the charge where detonation ceases, R and Q are, respectively, the shortest distances through the formation to the outlying location from the location of the detonator and from the end of the charge where detonation ceases, and where this relationship is satisfied for both halves of the charge when the detonator is placed close to its midpoint;

c) providing means for setting accurate time intervals between the firings of the detonators;

d) choosing and then setting time intervals for the firings of the detonators such that the detonators in each array are fired in succession from one end of the array to the other, where the time interval T_m, in seconds, between the firing of the detonator in each charge m and the immediately succeeding firing of the detonator in charge (m+1) in the same array satisfies the following relationship:

$$T_m=(L_m/D_m)+(Q_m/C)-(R_{m+1}/C)<0$$

where L_m, D_m, and Q_m are, respectively, the values of L, in meters, D, in meters per second and Q, in meters, for charge m, R_{m+1} is the value of R, in meters, for charge (m+1), and C is in meters pep second; and

e) firing the detonators in each array with time intervals T_m between firings;

f) and when there is more than one array, making them all of essentially the same design, all adjacent to each other and approximately equally spaced apart, all with approximately the same orientations, all with the detonators of the first charge to be detonated in each array lying on or close to the same straight line, with the detonators in each array being fired with time intervals between firings so as to give all of the arrays essentially the same overall duration of detonation from start to finish, where the arrays are initiated in direct or inverse order of the positions of the detonators on said straight line, and where the time intervals T_k between successive initiations of the first charge in each array are all made to be essentially equal to the same positive value, in seconds, of the following expression:

$$T_k=(R_{1,k}/C)\pm[(N^{-1}+j)/f]$$

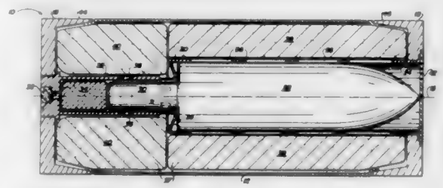
where $R_{1,k}$ and $R_{1,k+1}$ are, respectively, the distances in meters to the outlying location from the location of the first detonator to be fired in one of the arrays and from the first detonator to be fired in the next array to be initiated, N is the number of arrays, j is zero or a positive or negative integer having an absolute value not larger than 4, and f is a frequency, in Herz,at which there is a relatively high peak in the power or amplitude spectrum of the ground vibration that would arrive at the outlying location due to the detonation of one array alone or, alternatively, where f is the instantaneous frequency at the time of occurrence of a relatively high peak in the amplitude of one of the three components of the ground vibration or of their vector sum for the ground vibration that would arrive at the outlying location due to the detonation of one array alone.

5,388,522

CARTRIDGE CASE FOR A CASED TELESCOPED AMMUNITION ROUND

Wilford E. Martwick, Minneapolis, and Brian B. Tasson, Maple Grove, both of Minn., assignors to Alliant Techsystems Inc., Hopkins, Minn.

Continuation-in-part of Ser. No. 154,416, Feb. 10, 1988, Pat. No. 4,907,510. This application Feb. 2, 1990, Ser. No. 474,191
Int. Cl.[6] F42B *5/045*
U.S. Cl. 102—434 15 Claims



1. A cased telescoped ammunition round comprising:

a hollow cylindrical casing having a front edge a rear edge, and an axis of symmetry;

a rear seal within which the rear edge of the casing fits;

a front seal within which the front edge of the casing fits;

a hollow cylindrical control tube including a hollow cylindrical control portion having a front end and a rear end, the rear end of the control portion being secured to the rear seal so that the control portion of the control tube is substantially symmetrical with respect to the axis of symmetry; and a hollow cylindrical sleeve portion having a front end and a rear end, the front end of the sleeve portion being secured to the front seal so that the sleeve portion is substantially symmetrical with respect to the axis of symmetry; and spring means mounted between the front end of the control portion and the rear end of the sleeve portion of the control tube, said spring means being prestressed so that a force is exerted on the front and rear seals, said force acting to move the seals toward one another;

a projectile having a base and a nose;

a booster piston mounted on the base of the projectile, said projectile being positioned in the sleeve portion of the control tube with the booster piston projecting into the control portion of the control tube;

a main propellant charge positioned around the control tube, within the casing and between the front and rear seals;

a booster propellant positioned within the control tube; and

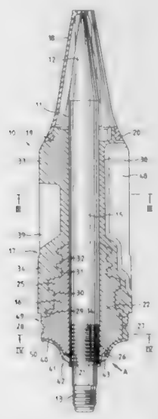
primer means mounted on the control portion of the control tube for igniting the booster propellant charge when initiated.

5,388,523

RELEASABLE SABOT FOR A FIN-STABILIZED SUBCALIBER PROJECTILE

Rudolf Rossmann, Bulach, Switzerland, assignor to Oerlikon-Contraves Pyrotec AG, Zurich, Switzerland

Filed Apr. 15, 1994, Ser. No. 228,385
Claims priority, application Switzerland, May 13, 1993, 01453/93
Int. Cl.[6] F42B *14/06*
U.S. Cl. 102—521 8 Claims



1. A releasable sabot in combination with a fin-stabilized subcaliber projectile that is capable of being fired from a helically grooved weapon barrel, said sabot comprising:

a sabot body, said fin-stabilized subcaliber projectile being anchored in said sabot body, said sabot body being subdivided into segments and including a cartridge shell attachment place and said sabot body having an acceleration portion at a rear face thereof;

a sabot jacket which is divided into segments and at least partially surrounding both a central portion of the fin-stabilized subcaliber projectile in front of the sabot body and the sabot body;

the sabot body, for the purpose of segmentation and gas-tight sealing, further including longitudinal slots and reference fracture locations, wherein the reference fracture locations are arranged in a region of the inner diameter of the sabot body at said acceleration portion of the sabot body, said longitudinal slots including, in the region of the cartridge shell attachment place, a T-shaped cross section with two shoulders as additional sealing areas for the material of the sabot jacket residing in the longitudinal slot, with said-acceleration portion of the sabot body having an outwardly facing forwardly- widening jacket area; and

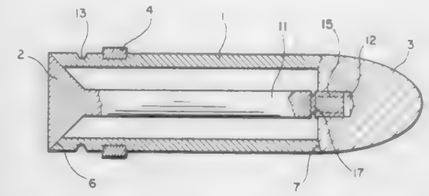
the sabot jacket including a seal bonnet having a ring-shaped closing seal shaped for cooperating with said acceleration portion of the sabot body.

5,388,524

PRACTICE PROJECTILE

Kare R. Strandli, Lyngv. 5, and Inge M. Angard, Froyslandsv. 25, both of 2830 Raufoss, Norway

Filed Nov. 12, 1992, Ser. No. 975,078
Int. Cl.[6] F42B *8/14*
U.S. Cl. 102—529 7 Claims



1. An explosive-free practice projectile adapted to disintegrate only upon impact with a target without the use of any charges comprising:

a hollow shell having first and second axially spaced ends;

a nose portion engaging the first end of said hollow shell along a first circumferential partition, said nose portion including an axially extending, internally threaded bore that opens into said hollow shell; and

a base engaging the second end of said hollow shell along a second circumferential partition, said base including a rod fixedly secured thereto, said rod extending axially, centrally through and being radially spaced from said hollow shell and terminating in an externally threaded end that is formed with a weakened portion, said threaded end being threadably received within the internally threaded bore of said nose portion for securing said hollow shell, said nose portion and said base, which are formed as separate parts, together with said weakened portion being situated adjacent said first circumferential partition.

5,388,525

RAILWAY CAR RETARDER

W. Andrew Bodkin, 144 Walker Rd., Swampscott, Mass. 01907

Filed Aug. 19, 1993, Ser. No. 108,545
Int. Cl.[6] B61K *7/00*
U.S. Cl. 104—26.2 86 Claims

1. An improved car retarder assembly for a railway track with a center line and having ties and a pair of parallel running rails, each rail having a base, an inside edge facing the opposite running rail and an outside edge facing away from the opposite running rail, said retarder comprising:

a metallic gauge plate overlying and permanently affixed to each of the ties, said plate extending under the running rails on both sides of the track;

two riser blocks positioned to bear against the inside edge of the running rail base and fixedly attached to one of said gauge plates, each said riser block having an inward lip;

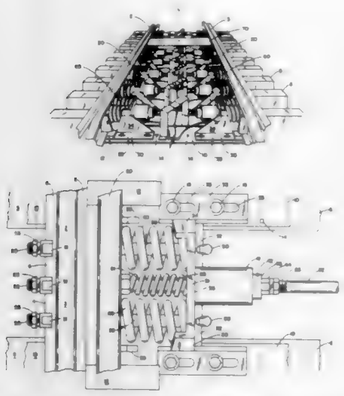
a plurality of brackets arranged in pairs, each pair compris-

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ing two brackets extending between a pair of neighboring ties, at opposite sides of the track center line, each of said brackets having foot plates overlying neighboring gauge plates and each foot plate having holes, each of said brackets having an elongated part with a back facing said track center line, said elongated part extending in secured position parallel to said running rails, said elongated part, having a top and a bottom, extending over a space between two neighboring ties and being recessed at the side opposite to the track center whereby the bracket forms a housing, a ledge extending from the bottom of the elongated part toward the track center line, two vertical sides, and said foot plates extending horizontally to both sides away from said vertical walls, said gauge plates having tapped holes formed therein to accommodate cap screws which pass through the holes of the foot plates and the tapped holes in the gauge plates;

a plurality of cap screws passing through said holes in said foot plates and into tapped holes in said gauge plates to secure said brackets to said gauge plates;

a pair of friction rails each having an outside portion of its foot cut off and each overlying and slidably resting on said riser blocks within the pair of running rails, one rail of the pair of friction rails extending parallel to the elongated part of one bracket of said bracket pair, and between the



one bracket and one of the running rails, and the other rail of the pair of friction rails extending parallel to the elongated part of the other bracket of said bracket pair, and between the other bracket and the other rail of the running rails, said friction rails each further including fittings affixed on two sides of said friction rail by a spring bolt passing through the fittings and friction rail, the spring bolt having a head positioned in a recess of the fitting on one side of the friction rail and being tightened by a nut contacting the fitting on the other side of the friction rail, said bolt extending farther through a nearest one of said brackets;

spring means engaging each friction rail and an adjacent one of said brackets to yieldably urge the friction rail to slide toward an adjacent one of the running rails;

connecting means between each bracket and an adjacent one of the friction rails to limit the movement of the adjacent friction rail toward an adjacent one of the running rails;

a hooked rod member attached by an adjustable nut to the base of one of said running rails, said rod member running underneath the friction rail and the bracket adjacent to said one of said running rails and underneath said one of said running rails and terminating in a hook member to grip an edge of said ledge of the adjacent bracket;

two shoulder blocks fixedly attached at and to the ends of one of said gauge plates and bearing against the outside edges of the running rail bases;

wherein, said friction rails are fitted with stop bolts and web fittings, said stop bolts each having an end in contact with an adjacent one of the running rails, thereby limiting the movement of the friction rail towards the adjacent running rail.

5,388,526

CONVEYER SYSTEM HAVING FLEXIBLE MAGNETIC INNER SLIDER FOR PROPELLING OUTER MEMBER

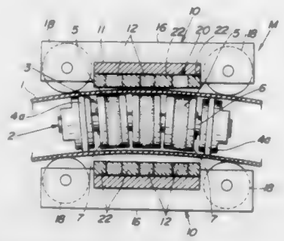
Kazuhisa Imai, Ojima, Japan, assignor to I. Tech Inc., Ohta, Japan

Filed Apr. 13, 1993, Ser. No. 46,652

Claims priority, application Japan, Apr. 15, 1992, 4-140887; Apr. 15, 1992, 4-140888; Apr. 15, 1992, 4-140889

Int. Cl.[6] B61B *13/10*

U.S. Cl. 104—138.1 **30 Claims**



1. A conveyer system comprising:

a tubular guide-way including a curved guide-way section;

a magnet-mounted inner slider slidably disposed in said tubular guide way, said inner slider including means for permitting the entire structure of the inner slider to be flexed along a longitudinal axis thereof when n internal force is applied thereto;

a pressure source connected to said tubular guide-way to feed the interior of said guide-way with a pressurized air thereby to move said inner slider in and along said tubular guide-way;

a magnet-mounted outer slider movably disposed on said tubular guide-way, the magnet of said outer slider establishing a magnetic connection with the magnet of said inner slider so that movement of said inner slider induces movement of said outer slider in the same direction, in which said magnet-mounted inner slider comprises;

a flexible shaft;

two annular head members disposed on opposed ends of said flexible shaft;

an inner magnet unit disposed on said flexible shaft between said annular head members; and

in which said inner magnet unit comprises a plurality of annular magnets which are pivotally disposed on said flexible shaft.

5,388,527

MULTIPLE MAGNET POSITIONING APPARATUS FOR MAGNETIC LEVITATION VEHICLES

Richard D. Thornton, Concord, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 18, 1993, Ser. No. 63,920

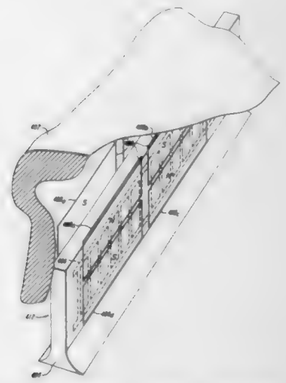
Int. Cl.[6] B60L *13/04*

U.S. Cl. 104—284 **28 Claims**

1. An apparatus for positioning a ground vehicle that travels along a guideway at a preselected position relative to the guideway, orthogonal axes designated "vertical" and "transverse" and a horizontal plane being defined relative to said guideway, said apparatus comprising:

a. carried by said vehicle, a first means for generating a first vehicle magnetic field, having its poles aligned transverse of the guideway;

b. carried by said vehicle, a second means for generating a magnetic field, adjacent to and vertically above said first magnetic field means, having its poles aligned parallel to and opposite to said poles of said first magnetic field means; and



c. fixed to said guideway, passive, electrically conductive means, having a plurality of conductive loops, for Generating a guideway magnetic field to interact with said first and second vehicle magnetic fields to maintain said vehicle at said preselected position;

whereby said first and second vehicle magnetic field means are on opposite sides of a horizontal vehicle plane of symmetry.

5,388,528

VEHICLE FOR USE IN PIPES

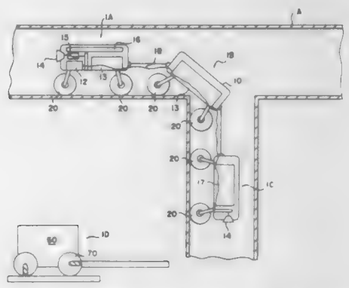
Ronald E. Pelrine; Eric A. Edwards, both of Menlo Park, and Lawrence S. Gullman, La Honda, all of Calif., assignors to Osaka Gas Company, Limited, Japan

Continuation of Ser. No. 64,808, May 21, 1993, abandoned. This application Feb. 24, 1994, Ser. No. 201,088

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[6] B61C *15/04*; **B61B** *13/10*

U.S. Cl. 105—78 **4 Claims**



1. A vehicle for use in pipes comprising a vehicle body, at least one wheel on the vehicle body, and a drive assembly for driving at least one wheel, the wheel comprising an outer wheel member having an annular peripheral wall and having a rigidity capable of bearing the load of the vehicle and magnetic forces applied to the wheel, a rotating shaft mounted on the central portion of the outer wheel member, said rotating shaft having mounted thereon a pair of magnetically permeable members disposed widthwise with respect to the vehicle body, said members radially extending to a position close to the inner peripheral surface of the outer wheel member, a magnet mounted on the rotating shaft with its poles in contact with said pair of magnetically permeable members, said rotation shaft rotating through a desired angle so that when the vehicle travels from a first surface portion to a second surface portion at an angle inclined relative to the first surface portion such that the outer wheel member simultaneously comes into contact with the first surface portion at a first point and with the second surface portion at a second point and initially remains stationary, the rotating shaft rotates within the inner peripheral surface of the outer wheel member from a first position wherein the magnetically permeable members lie adjacent to said first point and the magnetically permeable members are magnetically attracted to the first surface portion to a second position wherein the rotating shaft rotates to said second point and the permeable members are attracted to the second surface portion so as to maintain the outer wheel in contact with said second surface portion so that the vehicle can then travel from said initial stationary position along said second surface portion.

5,388,529

RAIL VEHICLE BODY MADE OF STAINLESS STEEL

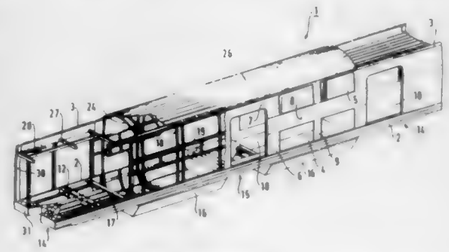
Philippe Tieberghien, Lys Lez Lannoy; Fernand Ramez, Artres; Max Lhommet, Raismes, and Michel Berquet, Marly, all of France, assignors to GEC Alsthom Transport SA, Paris, France

Filed Jun. 2, 1993, Ser. No. 70,679

Claims priority, application France, Jun. 3, 1992, 92 06734

Int. Cl.[6] B61D *17/00*

U.S. Cl. 105—397 **13 Claims**



1. A rail vehicle body comprising:

a chassis having stainless steel length members disposed longitudinally along either edge;

side face frameworks comprising horizontal and vertical section members;

stainless steel roof battens disposed longitudinally along either edge of the top of the body; and

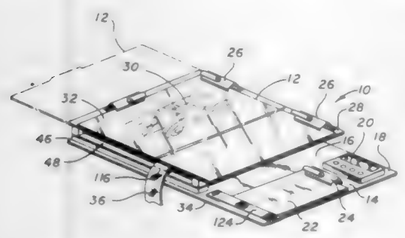
side face covering sheets comprising sheets of stainless steel that are smooth and thin relative to said section members, the sheets being fixed by continuous leak-proof welding to edges of the length members and the roof battens so that the area of said metal sheets is as small as possible;

wherein said length members said roof battens are continuous along the entire length of the body, and constitute part of the visible external surface of the body; and

wherein the side face covering sheets are set back relative to the chassis length members and the roof battens.

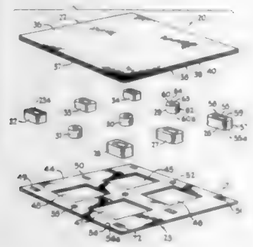
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5,388,530
LAP TOP DESK
Frederick B. Jacobus, 2915 Alta Vista Dr., Newport Beach, Calif. 92660
Filed Mar. 9, 1993, Ser. No. 28,236
Int. Cl.[6] A47B *23/00*
U.S. Cl. 108—43 22 Claims



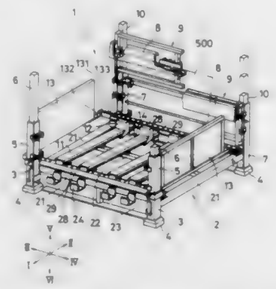
1. A lap top desk comprising:
a plate-like first member;
a plate-like second member, each of said first member and said second member providing a respective working surface;
means for hingeably and slidably supporting said second member in a first position in spaced parallel relation congruently above said first member to conceal a portion of said working surface of said first member with all of said working surface of said second member being available for use, and for permitting said second member to slide laterally in a direction away from an end of said first member to a second position in spaced parallel relation with said first member exposing another portion of said working surface of said first member while all of said working surface of said second member remains available for use, and for allowing said second member to hinge upwardly adjacent to an edge of the first member so that said second member does not conceal said first member and all of said working surface of said first member is available for use.

5,388,531
SHIPPING PLATFORM APPARATUS
Mitchell S. Crews, Geneva; Wayne H. Kuhn, Palos Park, and M. Scott Bryll, Burbank, all of Ill., assignors to Stone Container Corporation, Chicago, Ill.
Continuation of Ser. No. 634,426, Dec. 27, 1990, abandoned. This application Apr. 30, 1992, Ser. No. 876,572
Int. Cl.[6] B65D *19/22*
U.S. Cl. 108—51.3 9 Claims



1. A substantially recyclable shipping platform apparatus for supporting and transporting loads by conventional tined material handling devices, which apparatus is easily disposable and substantially recyclable after use, said shipping platform apparatus comprising:
substantially flat planar load-bearing platform means for supporting said load,
said platform means formed of a substantially paper material and having a top surface and a bottom surface opposite said top surface, wherein said load is capable of resting upon said top surface during the storage and transporting of said load;
substantially flat planar bottom panel means positioned substantially parallel to, and distally spaced below said platform means, for supporting and bearing the weight of both said platform means and said load,
said bottom panel means formed of a substantially paper material and having a top surface and a bottom surface opposite said top surface;
a plurality of substantially elongated pylon means operably positioned between said platform means and said bottom panel means so as to facilitate the insertion, maintenance and removal of the tines of said conventional tined material handling devices therebetween, and to further maximize the supportable strength of said apparatus while providing balance, stability and support to said shipping platform apparatus during use thereof,
each of said pylon means having a top end and a bottom end opposite said top end, an outer surface, and an interior region having an inner surface,
said top end of each of said pylon means being operably secured substantially adjacent to said bottom surface of said platform means, and said bottom end of each of said pylon means being operably secured substantially adjacent to said top surface of said bottom panel means;
pylon attachment means for operably securing said top end of each of said pylon means adjacent to said bottom surface of said platform means and for operably securing said bottom end of each of said pylon means adjacent to said top surface of said bottom panel means; and
frangibility means positioned across at least the substantial length of one of the longitudinal and transverse dimensions of at least one of said platform means and bottom panel means, so as to facilitate reduction in size of the overall shipping platform apparatus after use, to facilitate disposal of the apparatus by way of conventional compactor means.

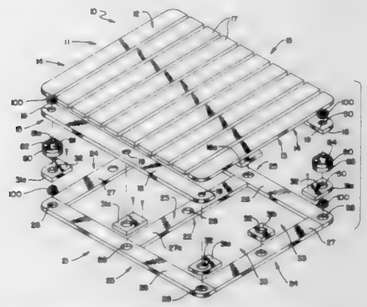
5,388,532
PALLET FOR CONVEYING AND HOLDING GLASS PLATES
Kozo Wakano, Matsusaka, Japan, assignor to Central Glass Co., Ltd., Yamaguchi, Japan
Filed Jun. 29, 1993, Ser. No. 83,276
Claims priority, application Japan, Jun. 29, 1992, 4-045018[U]
Int. Cl.[6] B65D *19/44*
U.S. Cl. 108—55.1 13 Claims



1. A pallet for conveying and holding glass plates of various sizes comprising:
a rectangular floor framework having two front corners and two rear corners;

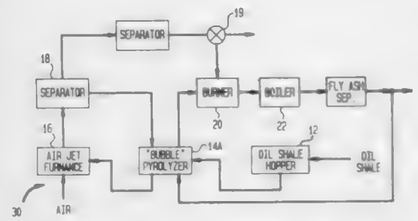
a front stanchion support disposed at each front corner of the floor framework;
a front stanchion inserted into each front stanchion support;
a rear stanchion support disposed at each rear corner of the floor framework;
a rear stanchion inserted into each rear stanchion support;
a rear framework connected to the rear stanchions and movable therewith;
a headrest connected to the rear framework at a particular level relative to the rear framework;
a plurality of longitudinally extending floor beams supported by the floor framework;
means for stepwise adjusting respective levels of the front stanchions;
means for stepwise adjusting respective levels of the rear stanchions and thereby also the level of the rear framework and headrest;
means for stepwise adjusting the level of the headrest relative to the rear framework;
means for stepwise adjusting distances between the floor beams;
means for rotating the front stanchion supports down toward the floor framework; and
means for rotating the rear stanchions down toward the floor framework.

5,388,533
PALLET AND COMPONENTS THEREOF
Brandon L. Pigott, 1017 Elmwood Ave., Wilmette, Ill. 60091; Schuyler F. Pigott, 1122 N. Patton St., Arlington Heights, Ill. 60004; Peter S. Pigott, 803 Elmwood Ave., Wilmette, Ill. 60091, and Maurice J. Pigott, 591 Cherry St., Winnetka, Ill. 60093
Continuation-in-part of Ser. No. 7,372, Apr. 21, 1993, Pat. No. Des. 346,681, which is a continuation-in-part of Ser. No. 961,396, Oct. 15, 1992, Pat. No. 5,343,814, which is a continuation-in-part of Ser. No. 644,928, Jan. 23, 1990, Pat. No. 5,197,395, which is a continuation-in-part of Ser. No. 230,025, Aug. 9, 1988, Pat. No. 4,843,976. This application May 19, 1993, Ser. No. 63,856
Int. Cl.[6] B65D *19/12*
U.S. Cl. 108—56.3 11 Claims



1. A load-bearing pallet comprising:
a generally rectangular base having outer and inner surfaces and a plurality of spaced first channels projecting inwardly from said inner surface with a first diameter at least at the corners thereof;
a generally rectangular deck having outer and inner surfaces and a plurality of spaced second channels projecting inwardly from said inner surface with a second diameter at least at the corners thereof;
a plurality of spacer members with openings having a third diameter therein disposed adjacent said inner surface of said base and adjacent said inner surface of said deck positioned such that said openings are generally vertically aligned with said channels, said openings having a smaller diameter than said first channels and said second channels so as to form a ledge on said spacer member;
a plurality of sleeves having a generally cylindrical sleeve body with an outer lip projecting radially outwardly from an end of said body and at least one tab axially spaced from said lip projecting outwardly from said body,
each said sleeve cooperating with each said opening in said spaced members; and,
a plurality of connectors received in said sleeves cooperating with said sleeves adapted for interconnecting said base and said deck.

5,388,534
METHOD OF AND MEANS FOR PRODUCING COMBUSTIBLE GASES FROM LOW GRADE SOLID FUEL
Benjamin Doron, Jerusalem; Daniel Goldman, Tel Aviv, and Eli Yaffe, Givatayim, all of Israel, assignors to Ormat Inc., Sparks, Nev.
Continuation of Ser. No. 993,445, Dec. 16, 1992, abandoned, which is a continuation of Ser. No. 834,871, Feb. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 827,276, Jan. 29, 1992, abandoned. This application Jun. 28, 1993, Ser. No. 82,818
Int. Cl.[6] F23B *7/00*
U.S. Cl. 110—233 43 Claims



1. A method for producing combustible gases from a solid fuel comprising:
a) pyrolyzing said fuel in a pyrolyzer to produce said combustible gases and carbonaceous material;
b) combusting said carbonaceous material from said pyrolyzer in a furnace to produce combustion products that include hot flue gases and ash particulate;
c) separating said combustion products into a plurality of streams, one of which contains comparatively coarse ash and another stream which contains flue gases and fine ash;
d) directing said comparatively coarse ash into said pyrolyzer; and
e) applying to said pyrolyzer a stream of reaction gases in such a way that said stream of reaction gases bubble through the carbonaceous material in said pyrolyzer without fluidizing such material for activating the void fraction in the pyrolyzer thereby reducing the residence time of material in the pyrolyzer.

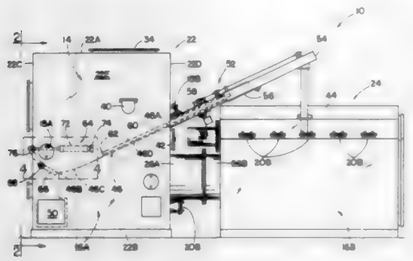
5,388,535
WASTE MATERIAL FLOW CONTROL FEATURES IN A MATERIAL PROCESSING APPARATUS
Roger D. Eshleman, 506 Clayton Ave., Waynesboro, Pa. 17268
Filed Nov. 12, 1993, Ser. No. 151,326
Int. Cl.[6] F23G *5/00*
U.S. Cl. 110—255 21 Claims

1. A material processing apparatus, comprising:
(a) a casing having a top and bottom and a plurality of sides defining a pyrolysis chamber for receiving feed materials therein and pyrolyzing the feed materials into a gaseous material and a solid ash residue;
(b) a mass of refractory material contained in the casing upon the bottom thereof and spaced below the top thereof

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and extending between the sides thereof, the refractory mass including an upper surface defining a bottom of the pyrolysis chamber and having a terminal edge being spaced from a first one of the sides of the casing for defining a solid ash residue collection region therein; and

(c) means disposed in the pyrolysis chamber adjacent to said terminal edge of said upper surface of said refractory mass for controlling the flow of waste material from the terminal edge into the ash residue collection region so as to regulate the residence time of the feed materials in the pyrolysis chamber before reaching the ash residue collection region therein to ensure substantially complete pyrolyzing of the feed materials into gaseous and solid ash residue forms which are substantially sterile, inert and non-hazardous to the environment, said material flow controlling means including a feed material stop and release control mechanism mounted to said casing and extending within said pyrolysis chamber above said solid ash residue collection region therein and being operable to selectively prevent and permit passage of the feed material, after pyrolysis, into said solid ash residue collection region.



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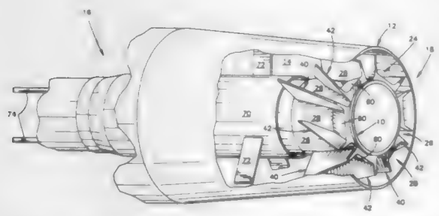
LOW NO_x BURNER

Landy Chung, 5144 Cliff Dr., Ashtabula, Ohio 44004

Continuation of Ser. No. 99,104, Jul. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 995,942, Dec. 21, 1992, Pat. No. 5,249,535, which is a continuation of Ser. No. 856,234, Mar. 25, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 218,465

Int. Cl.[6] F23D *1/02*

U.S. Cl. 110—264 28 Claims



1. A burner nozzle for combusting pulverized coal, comprising:

a) structure defining an annular passage extending from a source of pulverized coal carried by an air stream to an outlet, said outlet communicating with a combustion region for said pulverized coal;

b) said annular passage defined between an inner cylindrical member and an outer housing member, surrounding said inner cylindrical member;

c) a fuel stream dividing unit, near said outlet, for dividing said pulverized coal stream into fuel rich and fuel lean streams, including:

i) a plurality of first blade members, generally radially directed, and circumferentially spaced about a hub-like portion of said unit;

ii) second blade members spaced circumferentially about an inner cylindrical member and in an alternating relationship with said first blade members;

iii) said first blade members defining a first angle with respect to an imaginary plane extending through a center line of said inner cylindrical member;

iv) said second blade members defining a second angle with respect to an imaginary reference plane extending through said centerline that is greater than said first blade angle, such that a channel diverging in cross-section is defined between a first blade member and an adjacent second blade member and a channel converging in cross-section is defined between said second blade member and a next adjacent first blade member;

v) ramp blocks defining ramp-like surfaces, removably mounted at outlet ends of said diverging cross-section channels.

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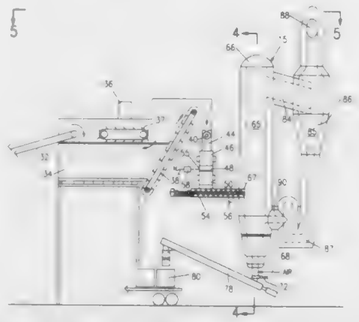
SYSTEM FOR BURNING REFUSE-DERIVED FUEL

Lory E. Larson, Walnut Grove, Calif., and Thomas R. Miles, Portland, Oreg., assignors to Southern California Edison Company, Rosemead, Calif.

Filed Aug. 2, 1994, Ser. No. 285,332

Int. Cl.[6] F23G *5/00*

U.S. Cl. 110—346 24 Claims



1. A system for continuously feeding refuse-derived fuel into a positive pressure combustion chamber, the system comprising:

a) a first, rotary vane air lock;

b) a feed conveyor at substantially atmospheric pressure for transporting refuse-derived fuel having a bulk density of less than 12 pounds per cubic foot from a feed source to the first air lock, the feed conveyor system having a discharge at an elevation above the elevation of the first air lock;

c) a second, rotary vane air lock below the first air lock for receiving the refuse derived fuel from the first air lock;

d) a combustion chamber feeder for feeding the refuse derived fuel from the second air lock into a combustion chamber that is at a positive pressure;

e) a generally vertical, first conduit from the feed conveyor to the first air lock; and

f) a generally vertical, second conduit from the first air lock to the second air lock,

wherein the first air lock is offset from the discharge of the feed conveyor and the second air lock is offset from the first air lock so that the two conduits slope at a sufficient angle from horizontal to avoid bridging of the refuse-derived fuel and to properly feed the vanes of the air locks.

5,388,538

DEVICE FOR CREATING A RAISED MOTIF ON A TUFTED TEXTILE MATERIAL

Marie-Louise Chekroune, 17 rue Beaufils, La Courneuve F-93120, and Suzanne Chekroune, La FaudeS-Fulgent des Ormes, Belleme F-61130, both of France

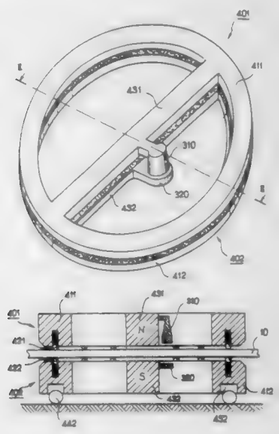
PCT No. PCT/FR92/00295, § 371 Date Jul. 14, 1993, § 102(e) Date Jul. 14, 1993, PCT Pub. No. WO92/20852, PCT Pub. Date Nov. 26, 1992

PCT Filed Apr. 2, 1992, Ser. No. 27,165

Claims priority, application France, May 14, 1991, 91 05787

Int. Cl.[6] D05B *3/00*

U.S. Cl. 112—121.14 2 Claims



1. A device for making a raised motif, according to a given design, on a textile material having a tufted side and second side, by crushing tufts to form the design using a crushing means selected from joined sewn thread and woven braid, the crushing means thus making up at least in part the raised motif, the device comprising:

(a) a first frame including

a first armature having a first means for rolling on the tufted side of the textile material,

a first arm secured to said first armature and carrying a work head carrying at least one needle, and

a first coupling device;

(b) a second frame including

a second armature having a second means for rolling on the second side of the textile material,

a second arm secured to said second armature and carrying a spool, and

a second coupling device, the second coupling device being coupled to the first coupling device, the first coupling device and the second coupling device making the first frame and the second frame jointly mobile;

(d) driving devices for moving the second frame on the textile material; and

(e) remote controls to command at a distance the driving devices so that the work head and spool cooperate to apply the crushing means to the textile material according to the design.

5,388,539

CLAMP DEVICE OR JIG-GUIDE AND DEVICE FOR PRE-POSITIONING AND SHIFTING CLOTH TO BE COUPLED WITH A PROGRAMMABLE SEWING MACHINE.

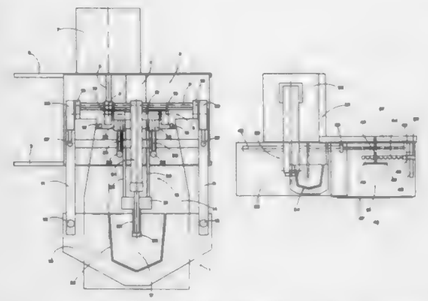
Carlo Guerreschi, Cadidavid, Italy, assignor to VI.BE.-MAC.S.r.l., Verona, Italy

Filed Apr. 16, 1993, Ser. No. 48,752

Claims priority, application Italy, Apr. 28, 1992, VR92A000039; Oct. 29, 1992, VR92U000060

Int. Cl.[6] D05B *21/00*

U.S. Cl. 112—121.12 12 Claims



1. In a programmable sewing machine having a needle for sewing a seam along a programmed pattern lying in a horizontal plane having a transverse direction and a perpendicular longitudinal direction, the improvement comprising:

at least one transverse rail (**2**) extending in the transverse direction;

a sliding support plane (**3**) mounted for movement in the transverse direction and on the transverse rail;

a horizontal socket (**5**) mounted to the sliding support plane (**3**) for movement in the longitudinal direction;

a supporting plate (**14**) detachably fixed to the horizontal socket (**5**) for supporting a base cloth thereon;

a pair of parallel side arms (**11**) pivotally connected to the horizontal socket for pivoting about an axis extending substantially parallel to the transverse direction, for raising and lowering the side arms with respect to the supporting plate;

a clamping Jig (**13**) detachably fixed to the side arms (**11**) and having a recess therein having a shape larger than the programmed pattern and for engaging a periphery of a piece of cloth to be sewn by the programmable sewing machine to the base cloth on the supporting plate;

first drive means (**6, 7**) connected to the horizontal socket for moving the horizontal socket in the longitudinal direction, the first drive means allowing movement of the horizontal socket in the transverse direction on the sliding support plane;

second drive means (**26, 26**) connected between the horizontal socket and the side arms for pivoting the side arms to raise and lower the Jig with respect to the supporting plate;

a pair of brackets (**19, 19**) connected to the horizontal socket;

a form support (**21**) pivotally mounted to the brackets for pivoting about an axis extending substantially parallel to the transverse direction, for raising and lowering the form support with respect to the Jig;

a form (**17**) having a shape corresponding to, and smaller than the shape of the recess in the clamping Jig, the form being mounted for movement in the longitudinal direction to the form support;

third drive means (**28, 28**) connected to the form support for raising and lowering the form support to raise and lower the form, out of and into the recess of the Jig;

fourth drive means (**24**) connected between the horizontal

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socket and the form support for moving the form support in the longitudinal direction;

the shape of the recess in the Jig and the shape of the form being selected so that when the form is in the recess of the jig, a slot (**25**) is formed between the jig and the form, corresponding to the programmed pattern so that a first seam can be made using the sewing machine along the slot, the form being removable from the recess by pivoting the form out of the recess with the third drive means and retracting the form from the recess with the fourth drive means, to expose a piece of cloth on a base cloth between the Jig and the supporting plate, for making a further seam in the piece of cloth; and

loading means connected to the programmable sewing machine for loading a piece of cloth on a base fabric, to be sewn to the base fabric, from a location off-set from the supporting plate (**14**) in the transverse direction, to a location at the supporting plate for engagement by the jig and form.

5,388,540

SAFETY DEVICE FOR SEWING MACHINE

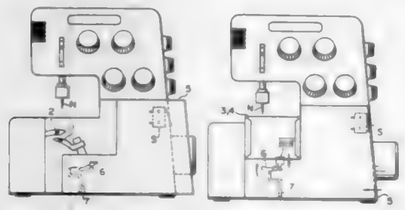
Shiro Satoma, Chofu, Japan, assignor to JUKI Corporation, Chofu, Japan

Filed Mar. 31, 1993, Ser. No. 40,672

Claims priority, application Japan, Mar. 31, 1992, 4-018715[U]

Int. Cl.[6] **D05B** *83/00*

U.S. Cl. 112—277 **9 Claims**



2. In an overlock sewing machine capable of forming overedge stitches, including a looper cover which is adapted to open said sewing machine so as to stretch threads over a looper mechanism and which is so moveable as to close said sewing machine to prevent said looper mechanism from being exposed, and a chip guard cover supported on said looper cover when overedge stitches are formed and removable with respect to said looper cover, a safety device for said sewing machine comprising:

a stopper rigidly mounted on a frame of said sewing machine;

an engageable member provided on said chip guard cover;

means for retaining said looper cover in an open condition, said retaining means abutting said stopper when said chip guard cover is removed from said looper cover, and means for releasing said looper cover from said retaining means, said releasing means being moved by said engageable member to allow said looper cover to be movable to a closed position when said chip guard cover is fitted to said looper cover; and

a switch for generating a signal for starting said sewing machine in a position where said looper cover is closed.

5,388,541

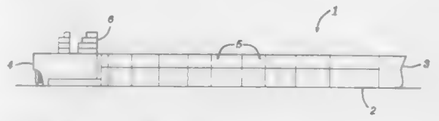
TANKER SHIP DESIGN FOR REDUCING CARGO SPILLAGE

Allen E. Dumas; Mark C. Dumas, and Stephen A. Dumas, all of Oakhill Rd., Keller, Tex. 76248

Filed Sep. 15, 1992, Ser. No. 945,138

Int. Cl.[6] **B63B** *39/00*

U.S. Cl. 114—74 R **14 Claims**



1. A tanker ship comprising:

a) a lower tank, said lower tank being located between a bottom wall and an intermediate wall;

b) an upper tank, said upper tank being located between said intermediate wall and a top wall, said intermediate wall being oil tight so as to separate said lower tank from said upper tank;

c) means for transferring cargo between said upper and lower tanks in response to a pressure differential in said upper and lower tanks, so as to equalize the pressure between said upper tank cargo and said lower tank cargo on said intermediate wall, said meads for transferring cargo being independent of the volume of cargo in said upper tank;

d) said means for transferring cargo comprising a siphon having first and second ends, said first end being located in said upper tank below an ullage space, said second end being located in said lower tank.

5,388,542

WATER-BORNE SHIP AND METHOD OF OPERATION THEREOF

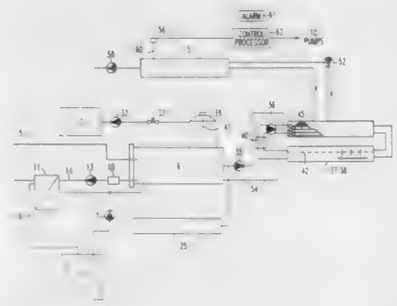
Frank Fischer; Knut Drohula, and Harm Lüneburg, all of Hamburg, Germany, assignors to Blohm + Voss AG, Hamburg, Germany

Filed Sep. 23, 1993, Ser. No. 126,180

Claims priority, application Germany, Sep. 23, 1992, 4231837

Int. Cl.[6] **B63B** *13/00*

U.S. Cl. 114—183 R **9 Claims**



1. A ship comprising:

an outer hull configured for being borne by water;

inner hull means disposed within the outer hull in spaced apart relationship from the outer hull, said inner hull means comprising a plurality of chambers therewithin;

a propeller;.

engine means disposed within one of said chambers of said ship for providing mechanical power to rotate said propeller and move said ship;

a bilge area disposed adjacent a bottom portion of the ship;

the bilge area being disposed adjacent said outer hull and said inner hull means, and said bilge area being configured for accumulating water therein;

pump means for pumping the bilge water out of said bilge area; and

processing means for processing the bilge water to remove contaminants therefrom, said processing means comprising:

first separation means, said first separation means being configured for receiving the bilge water from the pump means, and said first separation means for separating at least a portion of the contaminant from the bilge water to produce at least partially cleaned bilge water;

said first separation means comprises a gravity separation chamber, said gravity separation chamber being configured for allowing at least free contaminant to float on top of the bilge water;

said first separation means comprises means for removing the floating contaminant off of the top of the bilge water;

second separation means for separating at least an additional portion of the contaminant from the at least partially cleaned bilge water to produce a first bilge water fraction and a second bilge water fraction, the first bilge water fraction comprising a substantially clean bilge water fraction, and the second bilge water fraction comprising a bilge water fraction containing the contaminant;

means for transferring the at least partially cleaned bilge water from said first separation means to said second separation means;

means for transporting at least a portion of the second bilge water fraction back to said first separation means for further separation of the contaminant from the second bilge water fraction; and

means for removing the first substantially clean bilge water fraction from said processing means;

said second separation means comprises filter means;

said filter means comprises a first surface for being disposed adjacent the at least partially cleaned bilge water from said first separation means;

said filter means being configured for passage of said first substantially clean bilge water fraction therethrough while inhibiting passage of the contaminants therethrough at at least said first surface of said filter means;

second pump means for flowing the at least partially cleaned bilge water over said first surface of said filter means, said second pump means being configured for flowing the at least partially cleaned bilge water over said first surface at a velocity sufficient to substantially inhibit accumulation of the contaminants on said first surface of said filter means;

said second separation means comprises a flow-through chamber configured for passage of the at least partially cleaned bilge water therethrough in a first flow direction;

said flow-through chamber having a longitudinal dimension, said first flow direction being substantially parallel to said longitudinal dimension of said chamber;

said first surface of said filter means has a longitudinal dimension, said longitudinal dimension of said first surface for being disposed in a direction substantially parallel to said longitudinal dimension of said flow-through chamber, said at least partially cleaned bilge water flowing over said first surface of said filter means in said longitudinal direction of said filter chamber;

said first substantially cleaned bilge water fraction flowing through said filter means in a second flow direction, said second flow direction being substantially perpendicular to said first flow direction;

said processing means further comprises third pump means for continuously circulating the bilge water between said first separation means and said second separation means at a first velocity and a first flow volume, said third pump means comprising a portion of said means for transferring and said means for transporting;

said second pump means is configured for continuously circulating bilge water through at least said second separation means at a second velocity, a second flow volume, and a pressure;

said second velocity is substantially greater than said first velocity and said second pressure is substantially greater than said first pressure; and

said pressure being a pressure sufficient to force said at least partially cleaned bilge water through said filter means to form said first substantially clean bilge water fraction.

5,388,543

PERSONAL WATER SURFACE TOWING DEVICE

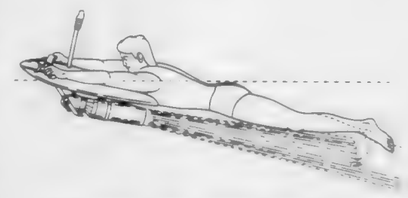
Ronald G. Ditchfield, 2, Fairways, Thornbury Road, Isleworth, Middlesex, TW74NS, England

Filed Aug. 13, 1993, Ser. No. 105,684

Claims priority, application United Kingdom, Sep. 1, 1992, 9309131

Int. Cl.[6] **B63B** *21/56*

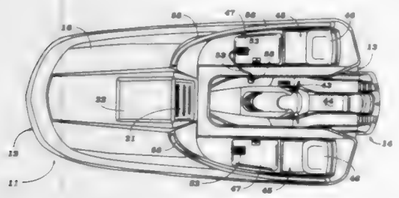
U.S. Cl. 114—242 **13 Claims**



1. A self powered water surface towing device being a means to tow a person by the hands, through and across a water surface, whereby in use when said towing device is released by said person, said towing device and said person will promptly separate, said towing device comprising a buoyant hydrodynamically streamlined body, which when viewed from above is widest at its rear portion and progresses without substantial projections to a narrower front end, with a top surface deck being a means, in use, to support said person's fully extended arms, a means at the rear end of said towing device body to meet up to, locate with and blend and merge hydrodynamically with said persons upper chest area, being an arcuately dished area sloping constantly downwards and rearwards relative to said top surface deck, from the rear end of said top surface deck to the rear end of the underside surface of said towing device body, a means for holding and controlling with the hands said towing device, positioned at the front portion of said towing device body, over its said top surface deck above the surrounding water surface so that said forward position of said means of holding, relative to said towing device body and its said means to locate with said person's upper chest area is a means to determine, in use, that said person's arms are fully extended and supported on top of said top surface deck and also that most of said person's body from their chest down is essentially in said water below its surface, unencumbered by contact with said towing device, a motive power means, a propulsion means fixedly suspended underneath and at least mostly exterior of said towing device body, immersed in the surrounding water, said motive power means driving said propulsion means which expels at least one water jet rearwards underneath said person being towed.

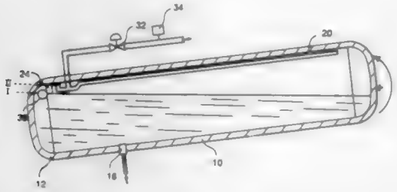
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5,388,544
FUEL SYSTEM FOR DOCKING WATERCRAFT
Noboru Kobayashi, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Nov. 29, 1993, Ser. No. 158,899
Claims priority, application Japan, Nov. 27, 1992, 4-318782
Int. Cl.[6] B63B *21/56*
U.S. Cl. 114—248 11 Claims



1. A watercraft comprised of a main hull defining a passenger's compartment and a berthing area open through said main hull and adapted to receive a smaller watercraft having a propulsion device including an internal combustion engine, said main hull being devoid of any propulsion device, said berthing area being configured so that said propulsion device of said smaller watercraft may be employed to power said main hull through a body of water, a pair of fuel tanks in said main hull disposed on opposite sides of said berthing area, conduit means extending across said main hull at one end of said berthing area for interconnecting said fuel tanks, and means for delivering fuel form said fuel tanks to said smaller watercraft internal combustion engine for its operation.

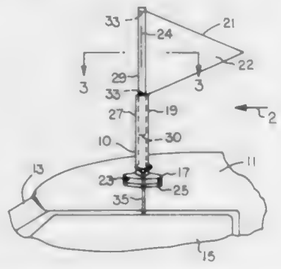
5,388,545
AIR VENTING DEVICE IN A CONTAINER SUBJECTED TO UNCONTROLLED OSCILLATIONS
Pierre Escarrat, Toulon, France, assignor to Etat Francais as represented by the Delegue General pour l'Armement, Paris, France
Filed Dec. 14, 1993, Ser. No. 166,001
Claims priority, application France, Dec. 17, 1992, 92 15266
Int. Cl.[6] B63G *8/32*
U.S. Cl. 114—316 5 Claims



1. Gas venting device in a container with a sealed closure, wherein the container is a torpedo tube of a submarine or a missile launcher of a ship, subjected to uncontrolled oscillations and designed to be filled by a liquid comprising a filling orifice for introducing the liquid to the container, said device consisting of a tube of which one part is inside and one part outside the container and connected to one another, the inside part being normally open to allow the gas pushed back by the liquid filling the container to enter the tube, and the outside part comprising a liquid present indicator to detect the ingress of liquid and thus indicate that the container has been filled by the liquid, and an isolating valve to close off said outside part of the tube in response to the liquid presence indicator;

said device being characterized in that the part of said tube inside the container comprises at least two open ends located at different parts in the container, at least one of the ends being fitted with a closure flap to close off said end once the liquid reaches a predetermined level below the level necessary for it to enter said tube, in such a way that said end allows gas to enter even when the container is subjected to uncontrolled oscillations and so long as the container is not completely filled by the liquid, such that the liquid presence indicator can never detect the presence of liquid until the container is completely filled.

5,388,546
AUTOMOBILE LOCATOR DEVICE
Claude H. Lombard, P.O. Box 561, Lincoln, Me. 04457
Filed Sep. 30, 1993, Ser. No. 129,349
Int. Cl.[6] G09F *17/00, 21/04;* B60Q *7/00*
U.S. Cl. 116—209 1 Claim



1. An automobile locator device adapted for placement on the roof of an automobile comprising:

a mast having a longitudinal axis, an upper end, and a lower end;

a magnetic base rigidly attached to the lower end of said mast;

said base comprising a permanent magnet having a bottom face, and a resilient pad secured to the magnet bottom face, whereby the pad protects an automobile roof surface against damage when the base is positioned thereon;

a pennant extending laterally from said mast a significant distance above the base, whereby the pennant is visible above the roof of an automobile on which the locator device is installed;

said pennant comprising a stiff plastic sheet having one edge thereof attached to said mast so that said one edge extends along the mast, with said plastic sheet extending in a radial plane originating at the mast longitudinal axis;

said resilient pad being matable to an automobile roof surface so that the magnetic base can have various different orientations on the roof surface, for enabling said stiff plastic sheet to face in any compass direction;

a flexible cord having a loop portion loosely encircling said mast, and an enlarged end portion remote from the loop portion; and

said flexible cord being of such a length as to be extendable into the space between an edge of an automobile door and the door jamb area when the door is in its closed position, whereby the locator device is retained against unauthorized removal from the automobile.

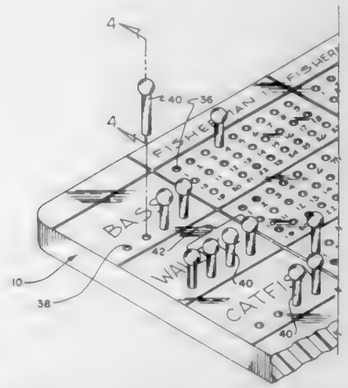
5,388,547
FISH SCORE CARD
Randy L. Lehr, and Jean J. Hulstine, both of 600 E. Willow St., Highspire, Pa. 17034
Filed Feb. 26, 1993, Ser. No. 23,632
Int. Cl.[6] A63F *1/18*
U.S. Cl. 116—222 5 Claims

1. A fish score card comprising:

a substantially flat planar member having first and second opposed side;

said first side of said planar member being divided into a plurality of vertical columns and a plurality of horizontal rows by a first plurality of vertically spaced parallel lines and a second plurality of horizontally spaced parallel lines with said first plurality of lines intersecting said second plurality of lines orthogonally on said first side of said planar member wherein said intersecting lines define said plurality of columns as comprising columns of vertically aligned boxes and wherein said intersecting lines further define said plurality of rows as comprising rows of horizontally aligned boxes on said first side of said planar member;

each box of one of said plurality of columns of vertically aligned boxes having indicia associated therewith representative of a specific type of fish, respectively, and each said box in said one column having a first series of holes each adapted to receive a peg;



wherein said boxes in other of said columns making up said plurality of columns each have therein a second series of holes each of which is adapted to receive a peg, said second series of holes being greater in number than said first series of holes,

wherein said other of said columns making up said plurality of columns has indicia associated therewith to identify a different fisherman respectively; and

a plurality of pegs received in said first series of holes and being adapted for selective removal and insertion in a selected one of said second series of holes to identify the number of a particular type of fish caught by each of said different fisherman, respectively.

5,388,548
METHOD OF FABRICATING OPTOELECTRONIC COMPONENTS
Geert F. M. Coudenys, Kortrijk, and Piet P. A. R. Demeester, Wondelgem, both of Belgium, assignors to Interuniversitair Micro-Elektronica VZW, Leuven, Belgium
PCT No. PCT/BE93/00019, § 371 Date Apr. 11, 1994, § 102(e) Date Apr. 11, 1994, PCT Pub. No. WO93/22793, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 22, 1993, Ser. No. 170,349
Claims priority, application Belgium, Apr. 29, 1992, 09200394
Int. Cl.[6] H01L *21/20*
U.S. Cl. 117—89 6 Claims

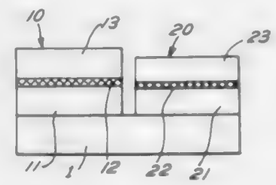
1. A method of fabricating a plurality of optoelectronic devices on a semiconductor substrate using epitaxial growth, comprising the steps of:

covering the semiconductor substrate partially with a mask to form uncovered growing sections and covered sections distributed over the area of the semiconductor substrate,

placing the assembly in a reactor for growing epitaxial layers onto said semiconductor substrate,

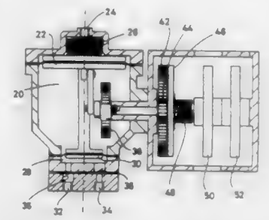
controlling the pressure in the reactor at a first predetermined individual value for growing simultaneously a first layer of all the devices,

during growth, changing the pressure to a predetermined individual value for simultaneously growing a second epitaxial layer of all the devices,



repeatedly changing the pressure to a predetermined individual value for simultaneously growing each further epitaxial layer of all the devices until the structure is complete, so that the active layers of all the components of the structure are lying substantially at the same height over the entire area of the substrate.

5,388,549
MILKING SAMPLING FOR DIAGNOSTIC PURPOSES
Michael Holroyd, Royston, Great Britain, assignor to R J Fullwood & Bland Limited, Shropshire, England
Filed Aug. 10, 1993, Ser. No. 104,789
Int. Cl.[6] A01J *3/00*
U.S. Cl. 119—14.14 10 Claims



1. Apparatus for extracting a sample of milk from a milk line to which a vacuum is connectable, the milk line in use being connected to an animal being milked, comprising a sample extracting means for extracting a flow of milk from the milk line, said means comprising a pump for pressurizing milk, a timer associated with the pump, and a sampling valve for receiving the pressurized milk and for delivering a sample of milk to a diagnostic testing device, said sampling valve being operable under control of the timer.

5,388,550
SANITARY FACILITY FOR ANIMALS
Shannon R. Noble, 513 15th St., NE., Canton, Ohio 44714
Filed Jun. 7, 1993, Ser. No. 71,975
Int. Cl.[6] A01K *1/035*
U.S. Cl. 119—165 12 Claims

8. A sanitary facility apron adapted for use with a covered sanitary facility for animals, for removing debris from an animal's paws, comprising:

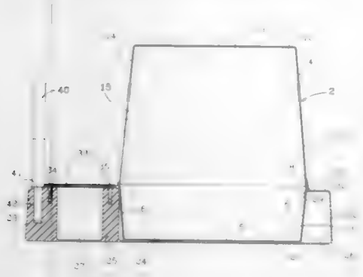
a relatively shallow tray;

a partition positionable outside of said covered sanitary facility dividing said tray into a first compartment adapted for retaining debris removed from an animal's paws, and a second compartment adapted to accept the covered sanitary facility;

debris removing means positionable outside of said covered sanitary facility and extending over said first compartment

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for removing debris from an animal's paws as said animal walks across said debris removing means; and



retaining means for retaining said sanitary facility within the tray; and in which said retaining means are adjustable to accept a variety of sizes of sanitary facilities.

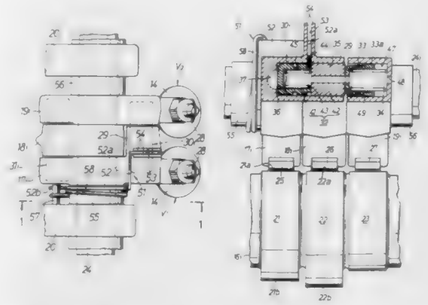
5,388,551
CONVERTIBLE HARNESS SYSTEM
Jack Martusciello, 6540 E. Presidio, Scottsdale, Ariz. 85254
Filed Nov. 8, 1993, Ser. No. 148,959
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—770 **12 Claims**



1. A convertible harness system for use with a child by an attendant comprising:
(a) a harness including:
(i) a body encircling-band having a front and rear;
(ii) a pair of shoulder straps attached to said band and extending from the front to the rear of said band; and
(b) a seat assembly including:
(i) a soft seat pad contoured to fit between the legs of the wearer and support the wearer, said seat pad having a front edge, a rear edge and opposite side edges and extending in the crotch area of the wearer; and
(ii) straps extending from the seat pad and each strap having means for detachably securing said seat pad to said harness whereby said seat pad may be removed from said harness.

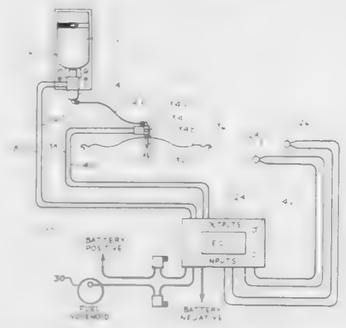
5,388,552
VALVE OPERATING DEVICE FOR AN INTERNAL COMBUSTION ENGINE
Chihaya Sugimoto; Masakazu Kinoshita; Izumi Sugiyama; Hideki Saito; Shigemasa Kajiwara, and Susumu Toki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 15, 1993, Ser. No. 121,992
Claims priority, application Japan, Sep. 16, 1992, 4-246647; Sep. 16, 1992, 4-246648
Int. Cl.[6] F01L *1/34*
U.S. Cl. 123—90.16 **14 Claims**

6. A valve operating device for an internal combustion engine for varying operating characteristics of an engine valve depending on operating conditions of the engine, comprising:
three rocker arms pivotally supported on a rocker shaft in adjacent relationship,
at least one of said rocker arms operatively engaging an engine valve,
at least two of said rocker arms engaging two separate cams having different valve lift cam lobes, and



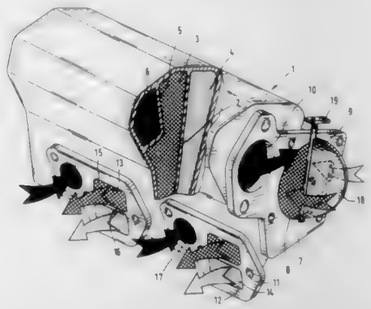
two separate selectively operable coupling means for selectively coupling and uncoupling at least one of said rocker arms operatively engaging an engine valve to at least one of the other two rocker arms
wherein said two separate coupling means are located at substantially the same radial distance from and close to said rocker shaft and wherein said two separate coupling means are circumferentially spaced from each other relative to said rocker shaft for avoiding mutual interference between said two separate coupling means.

5,388,553
STARTING FLUID INJECTION SYSTEM
James O. Burke, Crystal Lake, and Dean R. Solberg, Mundelein, both of Ill., assignors to Kold Ban International, Ltd., Algonquin, Ill.
Filed Dec. 4, 1992, Ser. No. 986,157
Int. Cl.[6] F02N *17/08*
U.S. Cl. 123—179.8 **12 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 34 Pages)



1. A method for injecting starting fluid into an internal combustion engine comprising the following steps:
a) providing a starting fluid injection system on an internal combustion engine, said system comprising a nozzle operative to inject starting fluid into the internal combustion engine, a conduit connected to a source of starting fluid to supply starting fluid to the nozzle for injection, and a remotely actuatable valve positioned closely adjacent to the nozzle to selectively stop the flow of starting fluid to the nozzle, said source of starting fluid comprising a canister and a canister valve;
b) cranking the engine while maintaining the remotely actuatable valve open to inject starting fluid into the engine;
c) monitoring engine speed;
d) closing the remotely actuatable valve promptly to stop starting fluid injection when engine speed satisfies selected criteria indicative of excessively slow engine speed; and
e) closing the canister valve.

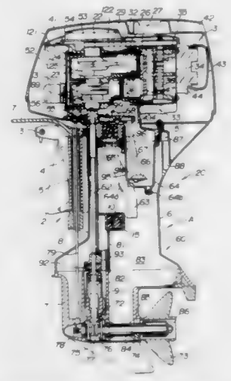
5,388,554
INTAKE MEANS FOR A RECIPROCATING INTERNAL COMBUSTION ENGINE
Thomas Hörner, Mannheim, and Rolf Schmidt, Hemsbach, both of Germany, assignors to Klockner-Humboldt-Deutz AG, Cologne, Germany
Filed Dec. 16, 1993, Ser. No. 167,080
Claims priority, application Germany, Dec. 24, 1992, 4244193
Int. Cl.[6] F02M *35/10*
U.S. Cl. 123—184.43 **5 Claims**



1. An intake means for a reciprocating internal combustion engine having a plurality of cylinders, a cylinder head for each cylinder and a plurality of air intake valves in each cylinder head, said intake means comprising:
an air intake manifold (**1**) having first and second air inlet openings (**8**, **9**)
a pair of air charging ducts (**14**, **15**) in said air intake manifold (**1**) for intake air for each cylinder, of which charging ducts at least one is designed as a swirl duct,
a first intake passage (**3**) connecting said first inlet opening (**8**) to said one charging duct,
a second intake passage (**4**) connecting said second inlet opening (**9**) to the other of said charging ducts (**14**, **15**),
a throttle valve (**18**) positioned at said second inlet opening (**9**) operable to control air flow in said second intake passage (4),
partitions (**2**, **16**) separating said intake passages (**4**, **3**) and said charging ducts (**14**, **15**) cylinder by cylinder,
said intake manifold (**1**) being free of air flow restrictions in said first intake passage (**3**).

5,388,555
OUTBOARD ENGINE ASSEMBLY
Kazuyuki Shiomi; Hideo Shigedomi; Yasushi Fujita; Yoshiyuki Matsuda; Chiharu Soda; Kazuomi Kiku, and Kentaro Furuya, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 5, 1993, Ser. No. 42,552
Claims priority, application Japan, Apr. 3, 1992, 4-110812; Apr. 3, 1992, 4-110814; Apr. 30, 1992, 4-138038; Apr. 30, 1992, 4-138039; May 1, 1992, 4-139725; Jun. 8, 1992, 4-173884
Int. Cl.[6] F02F *7/00*
U.S. Cl. 123—195 P **23 Claims**

1. An outboard engine assembly having forward, rearward, and side portions comprising: an engine; a vertical shaft extending downwardly;
a propeller operatively connected to said vertical shaft;
case means for housing said engine and said vertical shaft therein;
attachment means for supporting said engine and said case means on a boat hull; and
vibroisolating means disposed between said attachment means and said boat hull for isolating vibrations from said engine to the boat hull; wherein said vibroisolating means comprises upper and lower vibroisolating means, said



lower vibroisolating means comprising a laterally extending rigid member, said case means having a first space accommodating said vertical shaft and a second space defined rearwardly of said first space and accommodating said rigid member extending laterally therethrough, and wherein said attachment means comprises upper and lower support members, said rigid member and said lower support member being joined to each other by connecting members, said case means further including third spaces positioned laterally of said first space and accommodating said connecting members, and stiffeners disposed one on each side of said third spaces.

5,388,556
INTERNAL COMBUSTION ENGINE HAVING FLEXIBLE BLOCK AND FLEXIBLE OIL PAN
William G. Angus, Peoria, Ill.; Terry L. Beranek, and Joseph R. Brinker, both of W. Lafayette, Ind., assignors to Caterpillar Inc., Peoria, Ill.
Filed Apr. 8, 1994, Ser. No. 224,847
Int. Cl.[6] F02F *7/00*
U.S. Cl. 123—195 C **8 Claims**



1. In a high horsepower internal combustion engine having an elongated block that is flexible during engine operation and an oil pan having sidewalls and being connectable to the block and flexible therewith, the improvement comprising:
a plurality of baffles each having a body and opposed side portions, each baffle being connected at spaced apart

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locations on said opposed baffle side portions to a respective side of the oil pan, at least one of said side portions of each baffle having a flexible portion of curvilinear cross sectional configuration located between the connecting location of the baffle to the respective oil pan side and the baffle body.

5,388,557

COMBUSTION ENGINE HAVING A SUBSTANTIALLY CONSTANT TEMPERATURE AND PRESSURE

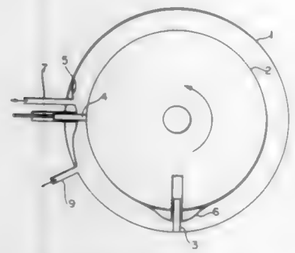
Tore G. O. Berg, Backavägen 18, S-810 40 Hedesunda, Sweden

Continuation-in-part of Ser. No. 12,461, Feb. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 861,438, Apr. 1, 1992, Pat. No. 5,233,966, which is a continuation-in-part of Ser. No. 628,683, Dec. 17, 1990, abandoned. This application Nov. 24, 1993, Ser. No. 156,771

Claims priority, application Sweden, Nov. 12, 1990, 9003593

Int. Cl.[6] F02B *53/06*

U.S. Cl. 123—202 **8 Claims**



1. Combustion engine of high efficiency comprising a stator and a rotor, the stator being shaped as a duct in the form of a closed circle, a moving vane being fastened to the rotor and sliding in the duct and moving in a circular direction, the duct being filled with a gas at a pressure and a temperature greater than those of the ambient air, said gas streaming in the duct in the direction of the moving vane gas behind the moving vane being maintained at a substantially constant temperature by means for injecting a heating gas behind the moving vane, and the gas behind the moving vane being maintained at a substantially constant pressure by means for supplying gas from in front of the moving vane, while an amount of gas equal to the injected amount of heating gas is exhausted from in front of the moving vane an inlet and an outlet being provided for the injection of heating gas and exhaust of gas, respectively.

5,388,558

METHOD AND ARRANGEMENT FOR CHECKING THE OPERABILITY OF A FLUID-FLOW CONDUCTING CONDUIT SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Günther Plapp, Filderstadt; Robert Entenmann, Benningen, and Alfred Kratt, Schwieberdingden, all of Germany, assignors to Robert Bosch GmbH, Stuttgart

Filed Apr. 22, 1993, Ser. No. 52,068

Claims priority, application Germany, Apr. 22, 1992, 4213173

Int. Cl.[6] G01M *15/00;* **F02M** *33/02*

U.S. Cl. 123—520 **12 Claims**

1. A method for checking the operability of a first conduit system of a motor vehicle conducting a first fluid flow at a first temperature, the method comprising the steps of:

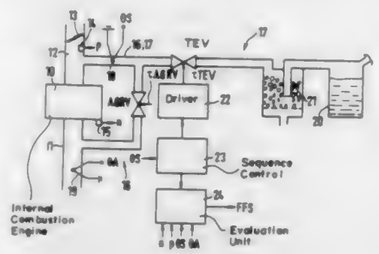
providing a temperature sensor for detecting the temperature of said first fluid flow;

directing a second fluid flow having a second temperature to said temperature sensor with said second temperature being different from said first temperature;

adjusting the operative effect of said second fluid flow on said temperature sensor in such a manner that this operative effect is less than the operative effect of said first fluid flow when said first fluid flow is caused to operate on said temperature sensor;

directing said first fluid flow to said temperature sensor and measuring the temperature at said temperature sensor to obtain a second temperature value;

determining the temperature gradient between said first and second temperature values measured by said temperature sensor;



determining a value of a variable from said temperature gradient with said variable being dependent upon said temperature gradient;

comparing said value of said variable to a pregiven value of said variable; and,

determining said conduit system as being no longer completely operable when said determined value of said variable and said pregiven value satisfy a pregiven condition.

5,388,559

INDUCTION REGULATOR FOR AN INTERNAL COMBUSTION ENGINE

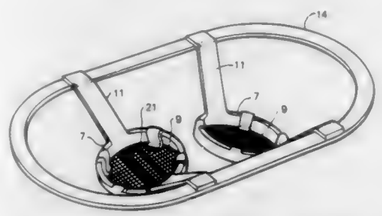
Michael O'Keefe, Liverpool, England, assignor to Phoenix Marketing and Engineering, Ltd., Newport, United Kingdom

Filed Sep. 24, 1993, Ser. No. 126,389

Claims priority, application United Kingdom, Sep. 24, 1992, 9220188

Int. Cl.[6] F02M *29/04*

U.S. Cl. 123—593 **10 Claims**



1. An induction regulator, for an internal combustion engine having a carburetor and a manifold downstream thereof, the regulator comprising: at least one perforated element for allowing passage of fuel and air mixture therethrough; at least one open top reservoir for retaining excess unvaporized fuel; a closed loop supporting strip; and a plurality of strips coupling the perforated element to the closed loop; wherein the closed loop supporting strip is mountable between opposed flanges of the engine manifold.

5,388,560

MISFIRE-DETECTING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Takashi Hisaki; Yuichi Shimasaki; Shigeki Baba; Masaki Kanehiro; Takuji Ishioka; Shigeru Maruyama; Kazuhito Kakimoto; Masataka Chikamatsu; Shukoh Terata, and Kenichi Maeda, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

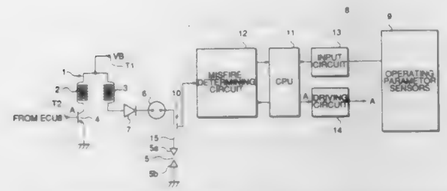
Filed Apr. 26, 1993, Ser. No. 51,705

Claims priority, application Japan, Apr. 28, 1992, 4-136019

The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.

Int. Cl.[6] F02P *11/00*

U.S. Cl. 123—630 **9 Claims**



1. A misfire-detecting system for an internal combustion engine having at least one spark plug, comprising:

engine operating parameter-detecting means for detecting operating parameters of said engine;

ignition command signal-generating means for determining ignition timing based on the detected operating parameters of said engine and for generating an ignition command signal at said ignition timing;

igniting means responsive to said ignition command signal for generating high voltage for causing electric discharge of said at least one spark plug;

sparking voltage-detecting means for detecting sparking voltage when said high voltage is generated by said igniting means;

first comparator means for comparing the detected sparking voltage with a first predetermined comparative level;

second comparator means for comparing the detected sparking voltage with a second predetermined comparative level which is lower than said first predetermined comparative level; and

misfire-determining means for determining whether a misfire has occurred in said engine, based upon a logical relationship between results of said comparisons by said first and second comparator means.

5,388,561

TWO-CYCLE INTERNAL COMBUSTION ENGINE WITH REDUCED UNBURNED HYDROCARBONS IN THE EXHAUST GAS AND ADJUSTABLE SPARK GAP ELECTRODES

Harry Callum, East Hampton, and Jonathan Korn, New York, both of N.Y., assignors to BRQT Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 7,937, Jan. 25, 1993, Pat. No. 5,311,854. This application Mar. 30, 1993, Ser. No. 40,068

Int. Cl.[6] F02B *23/00;* **F02P** *1/00*

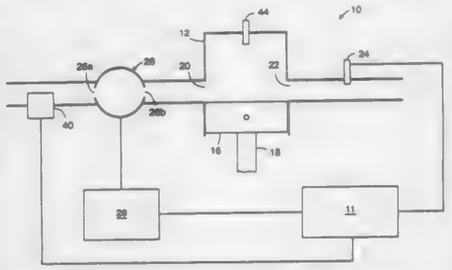
U.S. Cl. 123—672 **24 Claims**

1. In a two-cycle internal combustion engine operable with a source of fuel and a source of air, the engine including a cylinder with inlet and outlet ports, a piston slidable in the cylinder for opening and closing said ports, and fuel injection means, the improvement comprising

a-sensor means for detecting and evaluating unburned hydrocarbons in the exhaust gas and providing signal information,

b-a blower with an outlet for directing an airflow into the cylinder's inlet port, said fuel injection means having an outlet upstream of and directed into said blower,

c-drive means driven by said engine and coupled to said blower for varying the outlet air flow of the blower, and



d-control means for receiving said signal information from said sensor means as to unburned hydrocarbons in the exhaust gas and for controlling the blower airflow into the cylinder to reduce unburned hydrocarbons in the exhaust gas.

5,388,562

FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

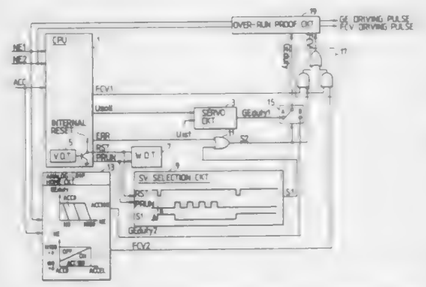
Akira Sekiguchi; Yuichi Kitano; Kazumasa Kurihara, and Masahiko Shinagawa, all of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,139

Claims priority, application Japan, May 8, 1992, 4-143321

Int. Cl.[6] F02D *31/00*

U.S. Cl. 123—690 **5 Claims**



1. A fuel injection control system having a computer implemented feedback control for the fuel injection of an internal combustion engine of a vehicle, comprising:

a) abnormality detection means for detecting an abnormality of the feedback control; and

b) limp home circuit means for conducting an open loop control of the fuel injection of the engine in place of the feedback control when an abnormality of the feedback control is detected by said abnormality detection means to enable a reduced speed operation of the vehicle, said limp home circuit means including fuel cutoff means for interrupting a fuel supply to the internal combustion engine when a rotational speed thereof exceeds a predetermined value which varies as a function of an accelerator pedal depression.

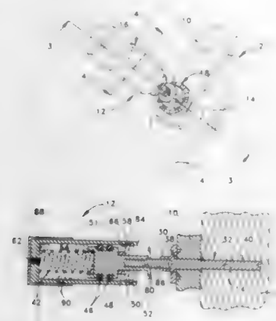
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5,388,563

INDEXED SCALE FASTENER WITH DAMPING MEANS FOR USE IN CONJUNCTION WITH AN ARCHERY BOW

Gary Hsu, Canoga Park, Calif., assignor to Micro Inventions Technology Inc., West Hills, Calif.

Filed Oct. 4, 1993, Ser. No. 131,528
Int. Cl.[6] F41B *5/14, 5/20*
U.S. Cl. 124—23.7 48 Claims



11. An apparatus for an archery bow having a threaded opening, comprising:

a. a washer having a top surface with an indexed scale and a concave cavity;

b. a bolt having a nut portion and a shank portion with screw threads for threadedly engaging into said threaded opening of said archery bow, the nut portion having a top with a threaded aperture and a convex base for mating with said concave cavity of said washer;

c. a damping means having a top, a sidewall and a base with an opening, the top having an exterior surface with a threaded aperture and an interior surface, the sidewall having an interior surface which together with the interior surface of the top defines a hollow chamber, the interior surface of the sidewall having an annular groove;

d. a piston means having an upper portion and a shank portion, the upper portion having a top end and a sidewall;

e. means for connecting said shank portion of said piston means to said bolt;

f. means for engaging between said top of said damping means and said piston means;

g. means for cushioning said piston means;

h. means for securing said piston means within said hollow chamber of said damping means; and

i. means for absorbing the vibrations, shock and noise from said archery bow;

j. whereby when said washer is placed on said archery bow, and said bolt is screwed into said archery bow such that said convex base of said bolt is engaged with said concave cavity of said washer and a poundage of said archery bow can easily be adjusted by reading said indexed scale on said washer, and thereby said damping means absorbs said vibrations and said shock in the longitudinal and lateral directions and damping said noise from said archery bow.

36. A damping means for an archery bow having a threaded opening, comprising:

a. a housing having a top, a sidewall and a base with an opening, the top having an exterior surface with a threaded aperture and an interior surface, the sidewall having an interior surface which together with the interior surface of the top defines a hollow chamber, the interior surface of the sidewall having an annular groove;

b. a piston means having an upper portion and a shank portion, the upper portion having a top end and a sidewall;

c. means for connecting said shank portion of said piston means to said archery bow;

d. means for engaging between said top of said housing and said top end of said piston means;

e. means for cushioning said piston means;

f. means for securing said piston means within said hollow chamber of said housing; and

g. means for absorbing the vibrations, shock and noise from said archery bow;

h. whereby said damping means is screwed into said archery bow, and thereby said damping means absorbs said vibrations and said shock in the longitudinal and lateral directions and damping said noise from said archery bow.

45. An indexed bolt for an archery bow having a threaded opening, comprising:

a. a washer having a top surface with a scale, a rear surface and a concave cavity, the washer having means for keeping it from moving on said archery bow; and

b. a bolt having a nut portion and a shank portion with screw threads for threadedly engaging into said threaded opening of said archery bow, the nut portion having a convex base which mates with said concave cavity of said washer and means for indicating with said scale on said washer;

c. whereby when said washer is placed on said archery bow, and said bolt is screwed into said archery bow such that said convex base of said bolt is engaged with said concave cavity of said washer, the poundage on said archery bow can be adjusted by reading said scale on said washer.

5,388,564

COMPOUND BOW

John J. Islas, 6980 Lincoln Knolls North, Canastota, N.Y. 13032

Filed Jan. 5, 1994, Ser. No. 178,526
Int. Cl.[6] F41B *5/10*
U.S. Cl. 124—25.6 8 Claims



1. An archery bow comprising a riser having an upper end and a lower end, upper and lower limbs each having an inboard end affixed respectively to the upper and lower ends of said riser, a bowstring connecting outboard ends of said upper and lower limbs, and synchronizing means for ensuring equal flexing of said upper and lower limbs upon draw and release of said bowstring; each of said upper and lower limbs including

a spring limb member having an inboard end affixed to the respective end of said riser, and an outboard end;

a cam pulley pivotally mounted on the outboard end of the respective spring limb member;

a rigid limb member having an inboard end fixed to said cam pulley and an outboard end to which said bowstring is attached;

a flexible inextensible cable extending from the respective end of said riser passing over a periphery of said cam pulley with an end thereof attached to said cam pulley; and

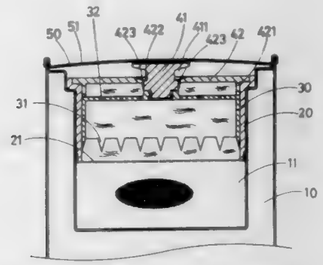
a link member coupled between a point fixed with respect to said cam pulley and said synchronizing means to move said synchronizing means with movement of said cam pulley.

5,388,565

SELF-HEATING CONTAINER SYSTEM

Lih-Horng Ou, 5, Alley 6, Lane 37, Tai Pin West Road, Pin Chang City,

Filed Apr. 1, 1994, Ser. No. 221,509
Int. Cl.[6] F24J *1/00*
U.S. Cl. 126—263 DC 1 Claim



1. A self-heating container system comprising:

(a) a cylindrically contoured can having a cup shaped member formed in a bottom section thereof, said cup shaped member forming a heating chamber containing active lime;

(b) a bottom can cover secured to an end of said bottom section, said bottom can cover having a plurality of openings formed therethrough;

(c) a cylindrical cup having a thin plate member forming a base of said cylindrical cup, said cylindrical cup being securely mounted within said cup shaped member, said cylindrical cup having a predetermined volume of water contained therein;

(d) a cup shaped spiking member having a plurality of holes formed through a base member and a plurality of spike members formed on an end section of a lateral wall of said cup shaped spiking member, said cup shaped spiking member located contiguous to an inner wall surface of said cylindrical cup and being slidably displaceable within said cylindrical cup, said base member having a threaded opening formed therein;

(e) a positioner plate having a lip for securement to an end of said cylindrical cup member and having a centrally located positioner plate opening formed therethrough;

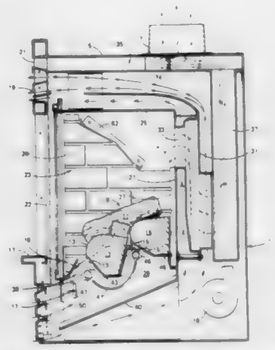
(f) a displaceable positioner plug member having a groove formed within a peripheral wall thereof, said displaceable positioner plug member extending through said centrally located positioner plate opening and threadedly secured within said threaded opening of said base member of said spiking member on a first end thereof, an opposing second end of said displaceable positioner plug member located adjacent said bottom can cover, said positioner plate opening defining a peripheral wall having a plurality of positioner plate tab members extending therefrom for contacting an inner wall of said displaceable plug member defined by said groove and maintaining a contained relation between said positioner plug member and said positioner plate, whereby displacement of said bottom can cover causes contact with said plug member second end and displaces said plug member and said spiking member for penetrating said thin plate member by said spike members thereby opening a plurality of passages for mixing of said active lime and said water to produce heat.

5,388,566

GAS FIRES

Martin L. Smith, Birmingham, and Paul A. Gillam, West Midlands, both of England, assignors to Valor Limited, Birmingham, England

Continuation of Ser. No. 910,887, Jul. 10, 1992, abandoned. This application Mar. 10, 1994, Ser. No. 208,203
Claims priority, application United Kingdom, Jul. 12, 1991, 9115165
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—512 30 Claims



1. A simulated solid fuel effect gas fired heater having a front and a top region across the front, the heater comprising,

a first simulated solid fuel element located within a body of the gas fired heater and having a top, a bottom, a front and a rear, the first simulated solid fuel element having a first partially aerated gas burner arranged in front of and below the first simulated solid fuel element with respect to the front of the heater, so that, in use the flames from the burner engage a lower front portion of the front of the first simulated solid fuel element, the flames then passing around the front of the first simulated solid fuel element,

a port in a wall of the body of the heater for conveying away combustion products from the burner, the port leading to a flue via a down draught diverter located on top of the heater, the down draught diverter comprising a chamber having a front and a rear, the chamber having an elongate slot formed in the top region across the front of the heater,

a vertical passage to the rear of the chamber connecting with said port, and

a U-shaped wall having two horizontally extending arms, being located in the chamber in front of said passage with the flue connecting with the chamber through an upper wall of the chamber between the arms of said U-shaped wall.

5,388,567

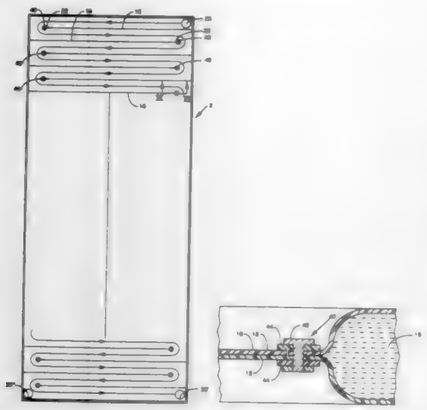
SOLAR HEATING PANEL

Frank J. Hodak, E. Cruikshank Rd., Valencia, Pa. 16059

Continuation-in-part of Ser. No. 970,275, Nov. 2, 1992, abandoned. This application Oct. 1, 1993, Ser. No. 130,658
Int. Cl.[6] F24J *2/36*
U.S. Cl. 126—626 8 Claims

1. A solar heater adapted to heat water for a swimming pool comprising a collector including an upper sheet of unreinforced plastic material and a lower sheet of unreinforced plastic material joined around a peripheral edge thereof, said collector including a plurality of spaced apart heat sealed seams joining said upper and lower sheets having end points alternately spaced from and joined to said sealed peripheral edge to define a plurality of passageways forming a serpentine water pathway through said collector, said collector including a fastener and washer assembly positioned at said end points of

the heat sealed seams, said collector also having an inlet fitting at a first of said passageways and at least one outlet fitting at a last of said passageways, whereby in use water is introduced at



said inlet fitting and heated from thermal energy absorbed by said collector to be withdrawn at the outlet fitting as solarly heated water.

5,388,568

MANIPULATOR ASSEMBLY FOR AN ENDOSCOPE

Hendrik T. van der Heide, Gouda, Netherlands, assignor to B.V. Optische Industrie "De Oude Delft", Delft, Netherlands

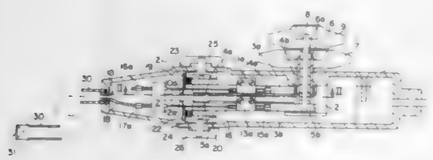
PCT No. PCT/NL91/00121, § 371 Date Mar. 8, 1993, § 102(e) Date Mar. 8, 1993, PCT Pub. No. WO92/00696, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 8, 1991, Ser. No. 961,685

Claims priority, application Netherlands, Jul. 9, 1990, 9001564

Int. Cl.[6] A61B *1/04*

U.S. Cl. 128—4 8 Claims



1. A manipulator assembly for an endoscope, which comprises:

a housing member;

a first pair of control cables for said endoscope extending into said housing member;

first and second gear members positioned for rotation within said housing member;

an endless toothed belt member coursed about said first and second gear members, said control cables being mounted to said toothed belt member;

control means coupled to said first gear member for rotating said first gear member;

stepping means engaging said second gear member for effecting stepwise movement of said endless toothed belt member; and

control element means disposed outside said housing for disengaging said stepping means.

5,388,569

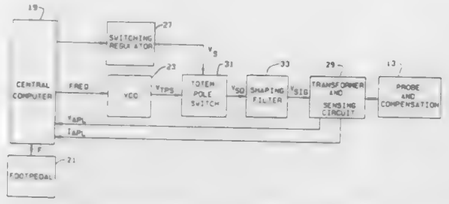
PHACOEMULSIFICATION PROBE CIRCUIT WITH SWITCH DRIVE

Kevin P. Kepley, 1757 Cargill Dr., Dellwood, Mo. 63136

Continuation-in-part of Ser. No. 940,980, Sep. 4, 1992. This application Jan. 5, 1993, Ser. No. 617

Int. Cl.[6] A61B *8/10*

U.S. Cl. 601—2 12 Claims



1. A phacoemulsification probe system comprising:

an ultrasonic handpiece having a distal end of a size suitable for insertion into a patient's eye for emulsifying cataracts, said handpiece including a transducer for converting electrical power to ultrasonic power for application to the patient;

drive circuit means for supplying electrical power to the ultrasonic handpiece transducer;

means for sensing the electrical power supplied by the drive circuit means to the ultrasonic handpiece transducer and for supplying electrical signals indicative of the magnitude of said electrical power supplied by the drive circuit means;

manually operable input means for providing a signal indicative of a transducer power level desired by the user of the phacoemulsification probe system; and

control circuit means responsive to the signal indicative of the desired transducer power level and to the signals indicative of the magnitude of the supplied electrical power for providing control signals to the drive circuit means to control the power applied in an efficient manner;

said drive circuit means including switching means responsive to at least one of the control signals to apply power in a square-wave waveform, and regulator means for supplying a supply voltage to the switching means, said switching means including means responsive to said one of the control signals to initially vary the frequency of the square-wave waveform, said regulator means being responsive to a second control signal from the control circuit means to vary the magnitude of the supply voltage supplied by the regulator means to the switching means to control the amplitude of the square-wave waveform, the frequency of the square-wave waveform being held fixed by the switching means while the magnitude of the supply voltage is varied, thereby controlling the power delivered to the probe.

5,388,570

EMERGENCY CPR MASK STATION

Joseph D. Wassil, 410 S. Bethel St., Baltimore, Md. 21230

Continuation of Ser. No. 878,261, May 4, 1992, abandoned. This application Dec. 3, 1993, Ser. No. 161,173

Int. Cl.[6] A62B *25/00*

U.S. Cl. 128—200.24 12 Claims

1. An emergency cardiopulmonary resuscitation (CPR) station, comprising:

a CPR equipment cabinet including a cabinet top wall, a cabinet bottom wall, a plurality of cabinet side walls, and a cabinet door;

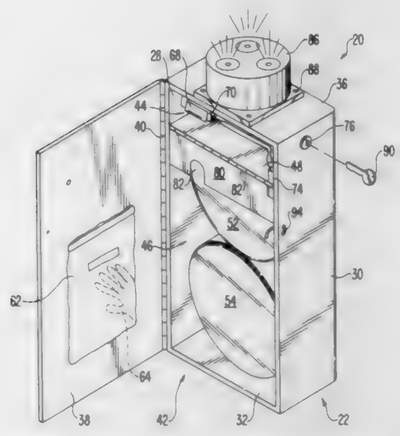
said cabinet top wall, said cabinet bottom wall, said plurality of cabinet side walls, and said cabinet door together defining a cabinet interior, said cabinet door being movable between a closed position wherein access to said cabinet interior is blocked and an open position wherein access to said cabinet interior is provided, said cabinet interior including an upper compartment and a lower compartment disposed therebelow;

at least one CPR mask provided within said cabinet interior, said at least one CPR mask disposed in said lower compartment, mask attachment means affixed to at least one of said plurality of cabinet side walls, said mask attachment means releasably securing said at least one CPR mask to at least one of said plurality of cabinet side walls;

at least one pair of latex gloves provided within said cabinet interior, said latex gloves disposed within a plastic bag, glove attachment means affixed to said cabinet door, said glove attachment means releasably securing said plastic bag to said cabinet door, said plastic bag and said latex gloves thus disposed within said cabinet interior when said cabinet door is in said closed position;

an alarm mounted to and on top of said cabinet top wall, said alarm disposed outside of said cabinet interior;

a switch assembly including a battery disposed in said upper compartment, said switch assembly operatively connected to said alarm, said switch assembly actuating said alarm when said cabinet door is in said open position;



a manually operable switch operatively connected to said switch assembly, said manually operable switch being connected to deactivate said alarm responsive to said cabinet door being in said open position;

at least one aperture in said cabinet door and at least one aperture in one of said plurality of cabinet side walls;

a sealing element, said sealing element received in said at least one aperture in said cabinet door, said sealing element also received in said at least one aperture in one of said plurality of cabinet side walls, said sealing element movable between an unsealed position and a sealed position, said sealing element in said sealed position maintaining said cabinet door in said closed position and said sealing element in said unsealed position allowing said cabinet door to be moved to said open position, said sealing element thereby allowing said switch assembly to automatically actuate said alarm when said cabinet door is moved to said open position;

mounting means for mounting said equipment cabinet to a wall surface such that said equipment cabinet is disposed at a slight angle with respect to said wall surface whereby said cabinet door is biased into said open position when said sealing element is in said unsealed position.

5,388,571

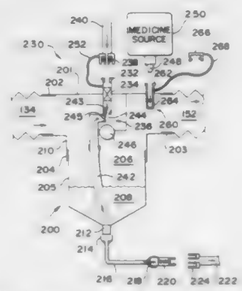
POSITIVE-PRESSURE VENTILATOR SYSTEM WITH CONTROLLED ACCESS FOR NEBULIZER COMPONENT SERVICING

Josephine A. Roberts, 7509 Ben Avon Rd., Bethesda, Md. 20817, and Jephthae W. Burwell, 3119 Adams Mill Rd., NW., Washington, D.C. 20010

Continuation of Ser. No. 653,075, Feb. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 349,216, May 9, 1989, Pat. No. 5,119,807, which is a continuation-in-part of Ser. No. 311,959, Feb. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 74,867, Jul. 17, 1987, Pat. No. 4,805,609. This application Dec. 9, 1992, Ser. No. 988,031

Int. Cl.[6] A61M *15/00, 16/10*

U.S. Cl. 128—203.12 12 Claims



1. A ventilator system of a type that delivers breathable gas to a patient at a selected system pressure and tidal volume comprising;

a patient breathing tube having a first end for reception by the patient and a second end;

a source of breathable gas;

a conduit forming a flow path between said source of breathable gas and said second end;

a source of nebulizing gas;

a nebulizer housing disposed along said conduit having an upper chamber and a lower chamber and said upper chamber in combination with said flow path;

said lower chamber forming a receptacle for medicine to be nebulized;

said housing formed with first and second access openings;

means for delivering medicine through said first access opening; means for delivering nebulizing gas from said source of nebulizing gas to said first access opening; and

means for connecting alternatively, said first or second means to said first access opening.

5,388,572

DRY POWDER MEDICAMENT INHALATOR HAVING AN INHALATION-ACTIVATED PISTON TO AEROSOLIZE DOSE AND DELIVER SAME

Paul Mulhauser, New York; Jeffrey Karg, Waldwick; Thomas Foxen, Brooklyn, and Christopher J. Brooks, Glen Head, all of N.Y., assignors to Tenax Corporation (a Connecticut Corp.), Danbury, Conn.

Filed Oct. 26, 1993, Ser. No. 143,182

Int. Cl.[6] A61M *15/00, 16/00;* B05D *7/14, 83/06*

U.S. Cl. 128—203.15 10 Claims

1. A dry powder breath-activated inhalator apparatus comprising

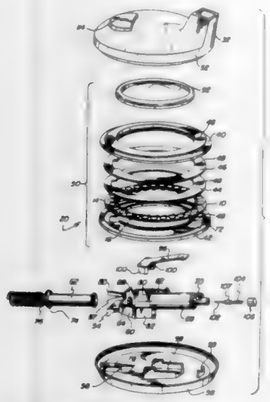
a housing,

a disc having at least one screen mesh portion in said housing, at least one predetermined dose of a powdered medicament embedded in said screen mesh portion of the disc for entrainment with a flow of air introduced through said mesh,

a mouthpiece on said housing in communication with said dose of medicament impregnated in said screen mesh for

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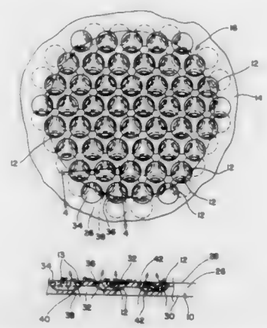
evacuating air from the interior of said housing and providing a means for ingesting said medicament dose,
means in said housing for first compressing air and then dispensing said air in a concentrated burst through said screen mesh and dose in response to evacuation of air from said housing through said mouthpiece,
said compressing and dispensing means including
a cylindrical chamber filled with air,
a piston in said chamber adapted to be reciprocated within said chamber to compress the air in said chamber,
a nozzle on one end of said cylindrical chamber in alignment with said impregnated dose in said screen mesh and mouthpiece,
means in said chamber for establishing communication between said chamber and nozzle only after a predetermined pressure of compressed air has been reached in said chamber,



means in said housing for arming said piston to drive said air from said chamber through said nozzle and dose in said mesh screen to said mouthpiece,
means in said housing for moving said piston from said armed position to a fired position in response to evacuation of air from said housing through said mouthpiece,
said arming means including
a U-shaped linkage having a bight and a pair of pivotably connected legs extending from opposite ends of said bight straddling said piston,
said piston extending through said bight,
spring means between said housing and bight of said linkage for driving said piston forward in said cylindrical chamber, and
a finger pull connected to said bight for compressing said spring means and locking said piston in a retracted position in said cylindrical chamber by maintaining said pivotably connected legs of said linkage in 180° alignment.

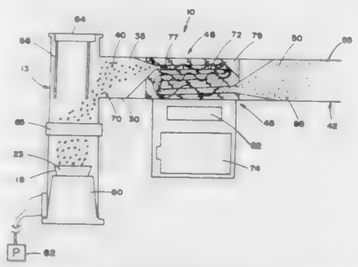
5,388,573
DRY POWDER INHALATOR MEDICAMENT CARRIER
Paul Mulhauser, New York, N.Y., and Jeffrey Karg, Waldwick, N.J., assignors to Tenax Corporation, Danbury, Conn.
Filed Dec. 2, 1993, Ser. No. 161,230
Int. Cl.[6] **A61M** *15/00, 16/00;* **B05D** *7/14;* **B65D** *83/06*
U.S. Cl. 128—203.15 12 Claims

1. A medicament carrier device for use in a dry powder breath-activated inhalator apparatus, comprising
a carrier having opposed surfaces comprising overlapping and intersecting depressions, said interstices formed from and joining portions of said overlapping, intersecting depressions formed in each of said opposed surfaces,
at least one predetermined dose of a powdered medicament impregnated with in said carrier, said powdered medicament dose disposed on at least one portion of said opposed surfaces of said carrier across said portion, said powdered medicament contained within said depressions forming said plurality of interstices and spanning the spaces between said depressions; non-intersecting portions of said



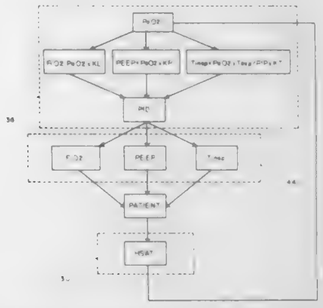
depressions also holding said powdered medicament and providing sharp edges, said sharp edges atomizing said powdered medicament responsive to air flowing through said carrier, depressions, and interstices, and impinging on said sharp edges, said powdered medicament being entrained within this flow of air introduced into said carrier.

5,388,574
AEROSOL DELIVERY ARTICLE
Bradley J. Ingebrethsen, 3522 Kittery Ct., Winston-Salem, N.C. 27104
Filed Jul. 29, 1993, Ser. No. 99,015
Int. Cl.[6] **A61M** *15/00*
U.S. Cl. 125—203.17 13 Claims



2. An aerosol delivery article comprising:
a) an aerosol generating means for producing a first aerosol from a multi-component aerosol forming material, the first aerosol including a first dispersion of particles of the aerosol forming material in a gas phase;
b) means for heating the first aerosol so as to destroy the physical integrity of the particles of the first dispersion so as to provide a second aerosol including a second dispersion of particles having an average size smaller than that of the first dispersion of particles, and said second dispersion of particles of at least one component of the aerosol forming material in a gas phase;
c) means for delivering the second aerosol to a user.

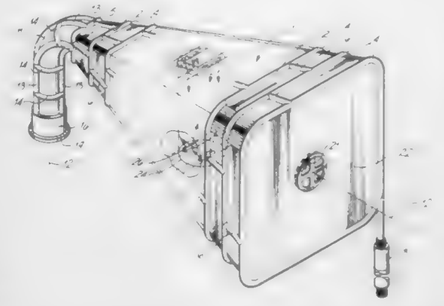
5,388,575
ADAPTIVE CONTROLLER FOR AUTOMATIC VENTILATORS
John C. Taube, 1531 Hanover St., Raleigh, N.C. 27608
Filed Sep. 25, 1992, Ser. No. 950,897
Int. Cl.[6] **A61M** *16/00*
U.S. Cl. 128—204.23 1 Claim



1. A pulsed positive pressure ventilation assist respirator system comprising:
a ventilator means for providing a selected level of positive pressure respirable gas, said ventilator means further having register means for providing a predetermined level of patient parameters to said ventilator, said patient parameters consisting in inspiration time (T_{insp}), positive end expiratory pressure (PEEP) and minimum required fraction inspired oxygen (FiO_2);
pulse oximeter means for optically determining the hemoglobin saturation (HSAT) of the patient's blood;
interpolation means for linearly interpolating the HSAT value provided by said pulse oximeter means for calculating the partial pressure of arterial oxygen (PaO_2) of a patient;
a control mechanism comprising calculation means for deriving a relationship between said patient parameters in said register means and HSAT value provided by said pulse oximeter means; said control mechanism further comprising adaptive means for providing said register means with updated adjusting values for said patient parameters for maintaining a predetermined PaO_2.

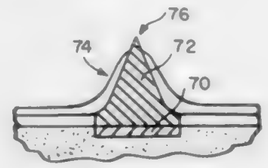
5,388,576
INFLATABLE RESUSCITATION DEVICE
Thomas C. Gray, Clarkston, Wash., assignor to Grayco, Inc., Clarkston, Wash.
Continuation-in-part of Ser. No. 951,984, Sep. 28, 1992, Pat. No. 5,305,739. This application Aug. 13, 1993, Ser. No. 106,286
The portion of the term of this patent subsequent to Apr. 26, 2011, has been disclaimed.
Int. Cl.[6] **A61M** *15/00*
U.S. Cl. 128—205.13 6 Claims

1. A pulmonary resuscitator comprising in combination:
(a) a pump for a fluid media comprising, a compressible bladder having a flexible wall and having a cavity therein enclosed by said flexible wall, inlet check valve means carried by said bladder for unidirectionally. permitting passage of said fluid media into said cavity, a first network means comprising interconnected inflatable fluid channels integrally contained in said flexible wall, said first network means for inflatably erecting said compressible bladder and maintaining said bladder erect and resilient during compression of said bladder, valve means carried by said bladder for charging said first network means with a fluid and sealingly retaining said fluid within said first network during compression of said bladder, and inflatable bias means disposed within said bladder and in exclusive fluid communication with said first network means for biasing said bladder to retain a predetermined bladder shape during compression of said bladder, and
(b) a user device to be fitted over the face of the person to be revived comprising a thin wall body made of a flexible material, a second network of interconnected inflatable fluid channels integrally contained within said thin wall body where said second network of fluid channels when inflated erect said thin wall body into a face mask shape and maintain said thin wall body erect and resilient, a third network of interconnected inflatable fluid channels inte-



grally contained within said thin wall body and integrally connected with the said second network of inflatable fluid channels where said third network inflates upon inflation of said second network and when inflated erects and maintains a receptacle extending from said face mask to permit the passage of air to the users, and means carried by said thin wall body for inflating said second and third networks of inflatable fluid channels with a fluid and sealingly retaining said fluid within said second and third inflatable fluid channels.

5,388,577
ELECTRODE ARRAY MICROCHIP
Allyn E. Hubbard, Milton, Mass., assignor to Boston University, Boston, Mass.
Continuation of Ser. No. 809,089, Dec. 10, 1991, abandoned, which is a division of Ser. No. 535,889, Jun. 8, 1990. This application May 4, 1993, Ser. No. 57,692
Int. Cl.[6] **H01L** *23/48;* **A61B** *5/04*
U.S. Cl. 128—639 12 Claims



1. An electrode army microchip for receiving biological electrical signals comprising:
a plurality of substantially planar metal regions supported on a surface of a substrate, insulating material covering said plurality of metal regions and said surface,
cuts in said insulating material, at least one of said cuts having a width of at least one micron, said cuts arranged to expose portions of said metal regions, whereby each exposed portion forms a substantially planar electrode for engagement with a biological material, and
regions of metal electrically connected to said electrodes to form electrical connections from said electrodes to wire bonding or probe sites on a surface of said microchip or to

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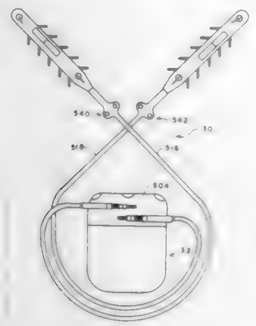
integrated circuitry within said microchip, whereby biological electrical signals from said biological material detectable at said electrodes are transmitted to said wire bonding or probe sites or to said integrated circuitry.

5,388,578

IMPROVED ELECTRODE SYSTEM FOR USE WITH AN IMPLANTABLE CARDIAC PATIENT MONITOR

Barry M. Yomtov, and Paul E. Kreyenhagen, both of Bellevue, Wash., assignors to InControl, Inc., Redmond, Wash.

Division of Ser. No. 820,580, Jan. 14, 1992, Pat. No. 5,313,953.
This application Apr. 6, 1993, Ser. No. 43,269
Int. Cl.[6] A61B *5/042*
U.S. Cl. 128—642 **1 Claim**



1. An electrode system for use with a fully implantable cardiac monitor of the type including electrical circuitry for monitoring the physiology of the human heart and having an enclosure for containing said electrical circuitry, said electrode system comprising:

first and second flexible insulative conduits;

first and second electrode means carried by each of said first and second conduits respectively, said first and second electrode means comprising strip electrode means including an elongated strip of flexible material including a plurality of spaced apart discrete conductive electrodes embedded therein, said electrodes having an exposed major surface, each said elongated strip of flexible material including opposing longitudinal walls and a plurality of spaced apart fixation projections projecting from said longitudinal walls, said fixation projections forming acute angles with said longitudinal walls;

conductor means extending through said first and second conduits and into said header for coupling said electrodes of said first and second electrode means to said electrical circuitry,

said conduits and said electrode means being implantable beneath the skin of a patient to dispose said electrodes in non-touching proximity to the heart for establishing electrical contact between said electrodes and the heart.

5,388,579

FETAL ELECTRODE PRODUCT WITH CHANNELED DRIVE MECHANISM AND IMPROVED TORQUE CHARACTERISTICS

Edward Dowd, Mallorytown; Joseph O'Neill, Gananoque, both of Canada; David M. DiSabito, Clarence, N.Y.; James R. Hubbard, Lumberton, and Cleatis A. Eichelberger, Delran, both of N.J., assignors to Graphic Controls Corporation, Buffalo, N.Y.

Filed Sep. 23, 1993, Ser. No. 126,218
Int. Cl.[6] A61B *5/0448*
U.S. Cl. 128—642 **32 Claims**

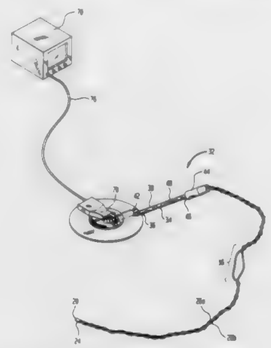
1. A fetal electrode product for transmitting signals indicative of fetal heart rate from a fetus to a monitor, said product comprising:

a fetal spiral electrode, a maternal reference electrode, and a holder made of an insulating material, said electrodes mounted on opposite ends of said holder;

a twisted wire strand including a pair of wires respectively connected to said fetal spiral electrode and said maternal reference electrode and adapted to connect said fetal spiral electrode and said maternal reference electrode to the monitor; and

a drive mechanism connected to said holder when sliding and rotating said holder to secure attachment of said fetal spiral electrode to the fetus, said drive mechanism having:

(a) a solid drive rod with a forward end, a rearward end, a region of smaller diameter having a diameter and a region of larger diameter having a diameter, said regions defining the torque versus angular deflection characteristics of said drive rod,



(b) a handle connected to said rearward end of said drive rod and imparting translation and rotation to said drive rod, and

(c) a clutch connected to said forward end of said drive rod and adapted to impart translation and rotation to said holder,

each of said drive rod, said handle, and said clutch having a channel adapted to transport said twisted wire strand from said electrodes to the monitor and said region of smaller diameter having a plurality of journals spaced along its length, said journals having an outer diameter larger than the diameter of said region of smaller diameter, a notch corresponding to the width of said channel, and a height tangent to said twisted wire strand transported in said channel.

5,388,580

HEAD HOLDER FOR MAGNETIC RESONANCE IMAGING/SPECTROSCOPY SYSTEM

James V. Sullivan, Bowie; Joseph A. Frank, Potomac, and Roland W. Seldon, Rockville, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Aug. 19, 1992, Ser. No. 932,842
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.1 **17 Claims**

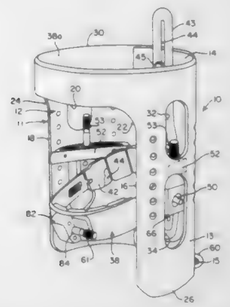
1. A head holder apparatus for a magnetic resonance imaging/spectroscopy unit comprising:

a helmet adapted to be worn on the head of a user, said helmet having a front facial opening, a rear portion and a pair of side portions, the rear portion and side portions being integral with each other;

a flexible head band; first means for shiftably connecting the band to the rear portion of the helmet;

second means for shiftably connecting the head band to the side portions of the helmet;

third means for adjustably mounting the band on the head of the user; and



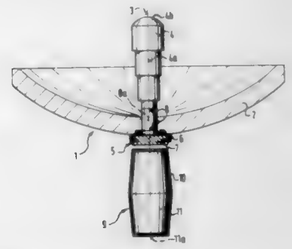
fourth means coupled with the band for adjustably positioning the band in an operative location with reference to the facial opening of the helmet.

5,388,581

EXTRACORPOREAL THERAPY APPARATUS

Edgar Bauer, Kraistal; Werner Krauss, Knittlingen; Michael Meyer, Bruchsal, and Joachim Fladl, Oberderdingen, all of Germany, assignors to Richard Wolf GmbH, Knittlingen, Germany

Continuation of Ser. No. 966,283, Oct. 26, 1992, abandoned.
This application Jun. 8, 1994, Ser. No. 255,578
Claims priority, application Germany, Oct. 25, 1991, 4135328
Int. Cl.[6] A61B *17/22*
U.S. Cl. 128—653.1 **11 Claims**



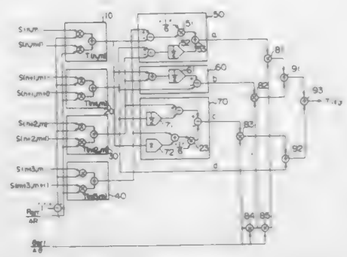
1. Extracorporeal therapy apparatus for treating concretions and tissue by means of sound waves in the body of a patient, comprising generator means for producing sound waves and directing them toward a focus, a spot film device, an X-ray device for locating an object for therapy, an X-ray cone attached to the generator means and bounding a passage having a central longitudinal axis aimed at said focus, means for supporting the spot film device in the passage in alignment with the central longitudinal axis thereof, means for releasably coupling the X-ray device with the generator means in substantial alignment with the central longitudinal axis, and means for mounting the generator means and the X-ray device for joint angular movement about said focus.

5,388,582

DATA INTERPOLATION PROCESSING APPARATUS

Yoshiro Beni; Yoshitaka Abe, and Keiichi Murakami, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 20, 1993, Ser. No. 123,078
Claims priority, application Japan, Oct. 14, 1992, 4-276288
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.07 **9 Claims**



1. A data interpolation processing apparatus for generating indication data for points of interest related to a coordinate system for display and used in an ultrasonic diagnostic system which is to scan an inside of a subject with ultrasonic beams forming a plurality of scanning lines extending in a depth direction and spaced apart in a predetermined scanning direction, the ultrasonic diagnostic system to receive the ultrasonic beams which are reflected by the inside of the subject, said data interpolation processing apparatus comprising:

means for sampling the reflected ultrasonic beams to produce sampled data; and

interpolation arithmetic means for interpolating eight data points of the sampled data to generate the indication data for each point of interest, wherein the eight data points of the sampled data represent pairs of data points located respectively on four scanning lines of said plurality of scanning lines, two of said four scanning lines being placed on each side of said each point of interest in the scanning direction, the data points of each pair of data points being respectively located on each side of said each point of interest in the depth direction.

5,388,583

METHOD AND APPARATUS FOR NON-INVASIVELY DERIVING AND INDICATING OF DYNAMIC CHARACTERISTICS OF THE HUMAN AND ANIMAL INTRACRANIAL MEDIA

Arminas Ragauskas, and Gediminas Daubaris, both of Kaunas, Lithuania, assignors to UAB Vittamed, Kaunas, Lithuania

Filed Sep. 1, 1993, Ser. No. 115,439
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.05 **30 Claims**

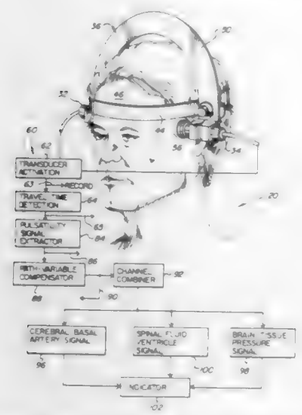
1. A method of deriving an indication of a characteristic of an intracranial medium in a non-invasive manner, comprising the steps of:

deriving repetitive transit time signals representative of the travel times of ultrasonic pulses generated at a first frequency along an acoustic path within the intraeranial medium as well as variations in the travel times attributable to physical changes of a portion of the intracranial medium along the acoustic path;

extracting from said transit time signals at a substantially

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higher frequency spectrum than the first frequency, signal portions representative of said physical changes; and



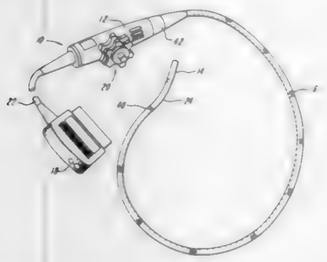
indicating said signal portions as representative of a characteristic of the intracranial medium.

5,388,584

METHOD AND APPARATUS FOR PREVENTION OF FLUID INTRUSION IN A PROBE SHAFT

Robert W. King, Lexington, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 15, 1994, Ser. No. 228,461
Int. Cl.[6] A61B *8/12*
U.S. Cl. 128—662.06 **16 Claims**



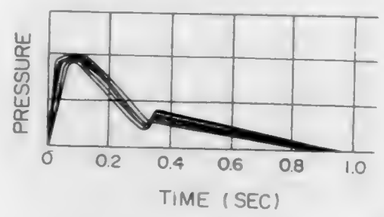
1. A shaft for use with a probe adapted to invade a bodily cavity, said shaft comprising:
an inner, electrically conductive core having a length and defining a channel extending along the length of the shaft;
an outer, electrically insulative coating completely surrounding said shaft; and
a membrane disposed between said core and said outer coating and having a length extending along at least a substantial portion of said length of said core, said membrane comprising a textile layer encapsulated within a flexible film, said coating being directly bonded to said membrane along substantially the entire length of said membrane.

5,388,585

APPARATUS FOR DETECTING AND DISPLAYING BLOOD CIRCULATORY INFORMATION

Mitsuei Tomita, 407 Yamanote Villa Porte, 109 Yamanote-Cho, Naka-Ku, Yokohama 231, Japan

Division of Ser. No. 809,499, Jan. 13, 1992, Pat. No. 5,316,005. This application Jan. 28, 1994, Ser. No. 188,547
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—680 **1 Claim**



1. A pulse wave change detecting apparatus comprising:
a cuff including blood flow shutting bag means for shutting blood flow of an upper arm, and detection bag means for detecting a pulse which has cleared the blood flow shutting bag means;
sound sensor means for detecting a Korotkoff sound generated by putting the cuff around an arm;
pressure sensor means for detecting a pressure change generated in the detection bag means;
pressure control means which functions to gradually decrease a reference internal pressure of the blood flow shutting bag means and of the detection bag means from a high value sufficient for blood flow shutting and, when a sound volume of a Korotkoff sound detected by the sound sensor means reaches a set value, to maintain the reference internal pressure constant;
memory means for storing waveforms of a set number of pressure changes consecutively provided by the pressure sensor means while the reference internal pressure is being maintained constant;
waveform superimposing means for superimposing the waveforms stored in the memory means with positioning rising points of respective waveforms at a same position; and
output means for providing as an output a waveform superimposed by the waveform superimposing means.

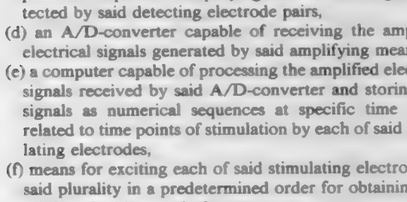
5,388,586

METHODS AND APPARATUS FOR SENSING INTRACARDIAC SIGNALS FOR AN INPLANTABLE CARDIAC PACEMAKER

Chik-Yam Lee, Arcueil; Laurent Claudon, Heillecourt, and Renzo D. Molin, Bagneux, all of France, assignors to ELA Medical, Montrouge, France

Filed Dec. 23, 1993, Ser. No. 172,847
Claims priority, application France, Dec. 23, 1992, 92 15661
Int. Cl.[6] A61B *5/0452*
U.S. Cl. 128—704 **41 Claims**

1. An apparatus for acquiring and detecting intracardial cardiac activity signals comprising:
a passive filter having a passband width of from 0.1 Hz to 80 Hz, an input for receiving cardiac activity signals, and an output for providing filtered signals;
an amplifier integrated circuit including switched capacitors and having an input for receiving the filtered signals, a gain lower than 50, and an output for providing amplified signals in a dynamic range of approximately 0.8V;
an analog-to-digital converter with delta modulation, having a controllable frequency and step for converting an input analog signal to a digital value, an input for receiving the amplified signals, and an output for providing digital values corresponding to the amplified signals;
processor means for processing the digital values; and



means for detecting spontaneous cardiac events based on the processed digital values.

5,388,587

METHOD AND APPARATUS FOR MEASURING THE TRANSPORT TIME OF NERVE SIGNALS EXCITED IN DIFFERENT DERMATOMS OF A PATIENT

Evert Knutsson, and Lennart Gransberg, both of Djursholm, Sweden, assignors to Dorsograf AB, Malmö , Sweden

Continuation-in-part of Ser. No. 915,994, Aug. 4, 1992, Pat. No. 5,313,956. This application Mar. 15, 1994, Ser. No. 213,024
Claims priority, application Sweden, Dec. 4, 1990, 9003853
Int. Cl.[6] A61B *5/05*
U.S. Cl. 128—741 **4 Claims**

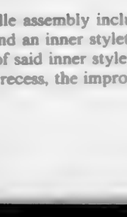
1. An apparatus for measuring the transport time of nerve signals of a patient, said apparatus comprising
(a) a plurality of stimulating electrodes capable of transmitting electrical signals to a plurality of selected skin portions of a patient,
(b) a plurality of detecting electrode pairs adapted for attachment to the patient's head skin,
(c) amplifying means connected to said detecting electrode pairs and capable of amplifying the electrical signals detected by said detecting electrode pairs,
(d) an A/D-converter capable of receiving the amplified electrical signals generated by said amplifying means,
(e) a computer capable of processing the amplified electrical signals received by said A/D-converter and storing said signals as numerical sequences at specific time points related to time points of stimulation by each of said stimulating electrodes,
(f) means for exciting each of said stimulating electrodes of said plurality in a predetermined order for obtaining pluralities of said numerical sequences,
(g) means for excluding select numerical sequences,
(h) means for making sums of numbers in numerical sequences not excluded in step (f) and excited by each of said pairs of exciting electrodes, for obtaining numerical sum sequences which are time related to respective transmitted electrical signals for each of said exciting electrodes, and
(i) means for mutually comparing numerical sum sequences obtained by stimulating different stimulating electrodes for determining differences in transport times for nerve signals excited at different skin locations on the patient.

5,388,588

BIOPSY WOUND CLOSURE DEVICE AND METHOD

Hossein Nabai, 14555 Levan Rd., Ste. 410, Livonia, Mich. 48154, and Homayoon Rahbari, 1314 N. Macomb St., P.O. Box 360, Monroe, Mich. 48161

Filed May 4, 1993, Ser. No. 56,399
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—754 **14 Claims**



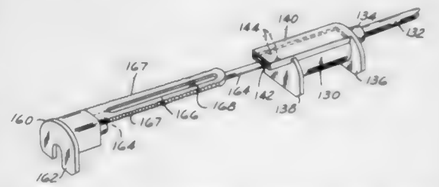
1. A closure device for the repair of skin tissue, controlling bleeding, and reducing the likelihood of inducing excess scar tissue during a routine skin biopsy procedure, comprising: a biopsy punch having a thin sharp circular blade for excising a cylindrical specimen of epidermis and subcutaneous tissue during a routine skin biopsy procedure; a a thin pre-formed cylindrical sponge stored inside of said punch of about the same size and shape as said excised specimen of epidermis and subcutaneous tissue, said sponge made from a foam material which swells and is absorbed in a biopsy site from which said specimen has been excised with little tissue reaction, said sponge being pre-formed to a diameter which is approximately equal to the diameter of said circular blade of said punch used for taking said specimen of skin for a biopsy from said biopsy site; and an applicator for implanting said sterile sponge into said biopsy site after the excising of said specimen by said punch; and a means for applying pressure to said sponge for a short interval of time after said sponge has been implanted into said biopsy site.

5,388,589

CORE BIOPSY NEEDLE WITH SPACER

Richard E. Davis, Grand Rapids, Mich., assignor to DLP, Inc., Grand Rapids, Mich.

Continuation of Ser. No. 767,274, Sep. 27, 1991, abandoned. This application Nov. 22, 1993, Ser. No. 158,040
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—754 **11 Claims**



1. In a biopsy needle assembly including an outer cannula having a main hub, and an inner stylet needle having a stylet hub at one end, one of said inner stylet needle and outer cannula having a biopsy recess, the improvement comprising

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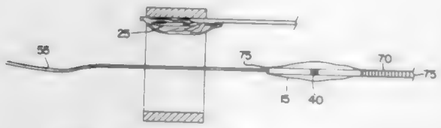
(a) walls surrounding an axial recess in said main hub, said axial recess being acircular in shape having one or more projections extending into the axial recess,
(b) an axial projection element on said stylet hub extending toward said main hub and being slidably received in said axial recess of said main hub, said axial projection element on said stylet hub having serrations that receive said one or more projections in said axial recess to locate said axial projection element axially in said recess, and
(c) said one or more projections in said axial recess and said serrations on said axial projection element being releasably engagable to space said hubs axially in a predetermined position, said serrations on said axial projection element being movable laterally to be released from said one or more projections in said axial recess.

5,388,590

CATHETER EXCHANGE DEVICE

John B. Horrigan, Merrimack; Peter A. Lunn, Beverly, and David S. Brin, West Newbury, all of Mass., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jul. 28, 1993, Ser. No. 98,185
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—772 **21 Claims**



1. A catheter system comprising:
(a) a guidewire;
(b) a catheter having a lumen adapted to slidably receive the guidewire through the lumen; and
(c) a guidewire anchoring means to restrict movement between the guidewire and the anchoring means, the anchoring means comprising:
(i) a balloon;
(ii) a shaft having a distal end and a proximal end;
(iii) a longitudinal lumen throughout the shaft having the lumen being in fluid communication with the balloon, the balloon being disposed on the distal end of the shaft;
(iv) a tubular split housing with a distal end and a proximal end, the housing having an inside diameter, the housing surrounding the distal end of the shaft, the balloon being adhered to the inside diameter of the housing, the balloon being sized to expand to a larger size than the inside diameter of the split housing, the inside diameter of the split housing being sized to slidably receive a catheter.

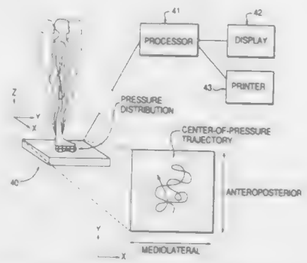
5,388,591

METHOD AND APPARATUS FOR ANALYZING THE HUMAN POSTURAL CONTROL SYSTEM

Carlo J. De Luca, Wellesley Hills, and James J. Collins, Brighton, both of Mass., assignors to Trustees of Boston University, Boston, Mass.

Filed Dec. 9, 1992, Ser. No. 987,715
Int. Cl.[6] A61B *5/103*
U.S. Cl. 128—779 **39 Claims**

1. A method for analyzing the movement of the center of pressure beneath a subject's feet comprising the steps of:
a. providing a force plate having a plurality of pressure sensors;
b. positioning the subject on said force plate;
c. utilizing said pressure sensors to generate signals indicative of the pressure applied by said subject's feet;
d. storing data representing the movement of the center of pressure beneath the subject's feet by using said signals; and



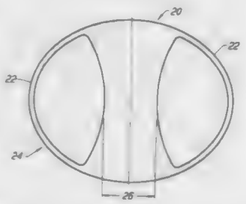
e. generating, by statistical mechanical models, a stabilogram diffusion plot describing the movement of the center of pressure.

5,388,592

PROTECTIVE BARRIER

Tracey Williams, 533 Fourteenth St., San Francisco, Calif. 94103

Filed Jun. 25, 1993, Ser. No. 82,983
Int. Cl.[6] A61F *6/02*
U.S. Cl. 128—842 **3 Claims**



1. A disposable brief for preventing the exchange of body fluids between partners during sexual activity, comprising:
a protective barrier formed of an elongated planar virus impermeable membrane, wherein said membrane is formed of a material chosen from among latex and plastic, said material having a thickness of about 0.00125 to 0.004 inches and a density of less than 25 nm, said protective barrier having a horizontal axis and an outlined configuration symmetrically formed about said axis which defines the shape of said brief, said membrane exhibiting plastic cohesive attraction to a brief wearer's skin to secure the brief in place, and such that said brief is conformable to the contours of the wearer's body; and
at least one set of thigh straps integrated into the brief to secure the brief in place, and to accommodate any of various sized wearers.

5,388,593

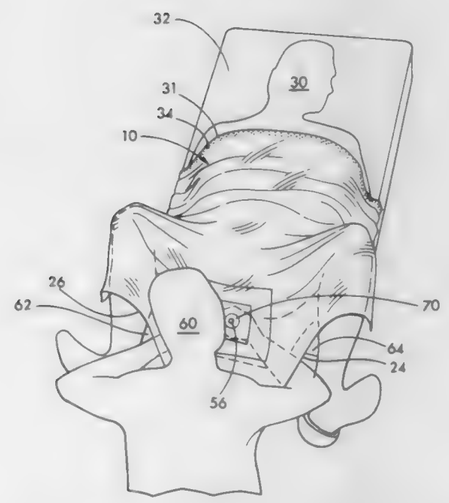
SURGICAL DRAPE FOR ENDOSCOPY

James V. Thomalla, Marshfield, Wis., assignor to Marshfield Medical Research & Education Foundation, Marshfield, Wis.

Continuation of Ser. No. 787,505, Nov. 4, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,576
Int. Cl.[6] A61B *19/08*; **A61F** *5/37*
U.S. Cl. 128—849 **4 Claims**

1. A surgical drape for use in endoscopic procedures, comprising a protective barrier between the surgeon and the patient, the barrier allowing the surgeon to conduct surgical manipulation of an endoscopic instrument on the patient while protecting the surgeon from patient fluid contamination, the barrier comprising a flexible visually transparent substantially liquid impervious sheet having a first end, a second end, and

first and second opposing sides, the sheet consisting essentially of:
a. a first edge at the first end, the first edge being provided with adhesive means along the entire first edge between the first and second opposing sides for releasably sealing the entire first edge to the patient and forming a protective seal between the sheet and the patient at the first edge, the protective seal providing a protective barrier between the patient and the surgeon;
b. an isolation barrier at the second end of the sheet, the second end defining a first, cut-away edge, a second, distal edge and a third, cut-away edge between the opposing first and second sides, wherein the first, cut-away edge extends inwardly at approximately a 45 degree angle from the first side toward the second, distal edge and the third, cut-away edge extends inwardly at approximately a 45 degree angle from the second side toward the second, distal edge, wherein the second, distal edge is located between the first and third, cut-away edges thereby forming a shape substantially equivalent to a bottom half of a hexagon, and wherein the length of each of the first, cut-away, second, distal and third, cut-away edges is shorter in length than the first edge of the first end thereby defining a narrowed portion of the sheet, the narrowed portion being adapted for placement between the patient's legs such that the first and third, cut-away edges of the second end are positioned over the patient's legs and the second, distal edge of the second end is placed between the patient's legs thereby providing an effective isolation barrier between the surgeon and the patient;
c. means for releasably attaching the first and second sides of the sheet to the patient;
d. adhesive means along the second edge of the second end of the sheet; and
e. a friction-fit, self-sealing aperture in the sheet, the aperture being adapted to allow access of a surgical instrument through the sheet and to prevent fluid contamination leakage.

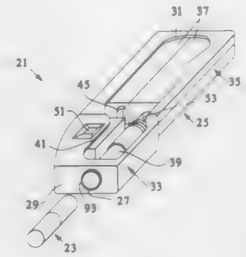


5,388,594

ELECTRICAL SMOKING SYSTEM FOR DELIVERING FLAVORS AND METHOD FOR MAKING SAME

Mary E. Counts, Richmond; Seetharama C. Deevi; Grier S. Fleischhauer, both of Midlothian; Mohammad R. Hajaligol, Richmond; Patrick H. Hayes, Chester; Charles T. Higgins; Willie G. Houck, Jr., both of Richmond; Billy J. Keen, Jr., Chesterfield; Bernard C. Laroy, Richmond; Peter J. Lipowicz; Donald E. Miser, both of Midlothian; Constance H. Nichols, Chesterfield; William H. Stevens; Mantharam Subbiah, both of Midlothian; Michael L. Watkins, Chester, and Susan E. Wrenn, Chesterfield, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 943,504, Sep. 11, 1992, which is a continuation-in-part of Ser. No. 666,926, Mar. 11, 1991, abandoned. This application Sep. 10, 1993, Ser. No. 118,665
Int. Cl.[6] A24F *47/00*
U.S. Cl. 131—329 **27 Claims**



1. A smoking system for delivering a flavored tobacco response to a smoker, the system comprising:
a removable cigarette, the cigarette including
a carrier having first and second ends spaced apart in a longitudinal direction and having first and second surfaces, the first surface defining a cavity between the first and second ends, and
tobacco flavor material for generating a flavored tobacco response in the cavity, the tobacco flavor material being disposed on the first surface of the carrier;
a lighter, the lighter including
a heater fixture for receiving, through a first end, the removable cigarette, and
a plurality of electrical heater elements disposed in the heater fixture, each of the heater elements having a surface for being disposed adjacent the second surface of the cigarette, the heater elements heating the tobacco flavor material to generate a flavored tobacco response in the cavity; and
means for individually activating the plurality of heater elements such that a predetermined quantity of flavored tobacco response is generated in the cavity,
wherein the carrier and the tobacco flavor material allow a transverse flow of air into the cavity.

5,388,595

SECOND-HAND SMOKE FILTERING DEVICE

Gary A. Shafer, 2325 Prince St. #2, Los Angeles, Calif. 90031

Filed Jun. 10, 1994, Ser. No. 258,475
Int. Cl.[6] A24F *13/02*
U.S. Cl. 131—329 **5 Claims**

2. A second-hand smoke filtering device for capturing and filtering smoke from a cigarette comprising:
a hollow body;
a cigarette holder disposed within the body, the cigarette holder further comprising:
a holding chamber adapted for accepting a cigarette therein for smoking;
holding means for holding a cigarette at a fixed position within the holding chamber;

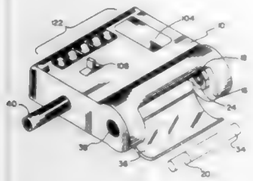
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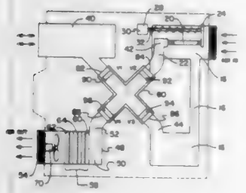
igniter means disposed within the holding chamber for allowing the lighting of a cigarette when activated and preventing the lighting of a cigarette when deactivated; and

drive means coupled to the igniter means for allowing the igniter means to be moved forward in one orientation and backward in another orientation;

a mouthpiece extended from the body, the mouthpiece adapted for receiving smoke from a cigarette in the cigarette holder or second-hand smoke suspeneded within the holding chamber when a user inhales and transmitting second-hand smoke when a user exhales;

a holding chamber disposed within the body for holding second-hand smoke;





a filter compartment disposed within the body for removing second-hand smoke;

valve means disposed between the holding chamber, mouthpiece, cigarette holder, and filter compartment for controlling communication between the holding chamber, mouthpiece, cigarette holder, and filter compartment; and

selection means coupled to the igniter means, drive means, valve means for selectively allowing a user to activate and deactivate the igniter means, move the igniter means forward in one orientation and backward in another orientation, and control communication between the holding chamber, mouthpiece, cigarette holder, and filter compartment.

5,388,596

COAXIAL CIGARETTE

Werner Schneider, Quickborn; Erhard Rittershaus, Hamburg; Erwin Kausch, Jesteburg-Itzenbüttel; Horst Borowski, Hamburg; Bernd-Henrik Müller, Hamburg; Gert Rudolph, Hamburg; Adolf Schlüter, Quickborn; Wolfgang Trinkies, Wedel, and Wolfgang Wiethaup, Hamburg, all of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Hamburg, Germany

Filed Mar. 4, 1992, Ser. No. 845,667

Claims priority, application Germany, Mar. 8, 1991, 4107522

The portion of the term of this patent subsequent to Jan. 10, 2012, has been disclaimed.

Int. Cl.[6] A24D *1/00*

U.S. Cl. 131—360 **8 Claims**

1. A coaxial cigarette comprising:

a) a coaxial rod, a core of the rod and a periphery of the rod each having a different mixture of a material for smouldering substantially without residue,

b) a sheath of the rod core of cigarette paper or tobacco sheet,

c) a sheath of the rod periphery of cigarette paper or tobacco sheet, and

d) a filter mouthpiece,

wherein

e) a ratio of the draw resistance of the core per unit length to the packing density thereof lies in the range of about 0.13 to about 0.27 mm WC cm^2/mg measured with air-impermeable sheath and a flow rate of 17.5 ml/s;

f) a ratio of the draw resistance of the periphery per unit length to the packing density thereof lies in the range of



about 0.07 to about 0.11 mm WC cm^2/mg measured with air-impermeable sheath on the inside and outside, an impermeable core and a flow rate of 17.5 ml/s;

g) the filter mouthpiece is a non-coaxial filter; and

h) a nicotine content of the mixture of the core is greater than 3% by weight and a nicotine content of the mixture of the periphery of the rod is less than 1.1% by weight.

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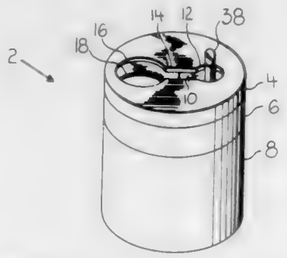
ARTIFICIAL FINGERNAIL REMOVER AND BRUSH CLEANER

Clifford W. Smith, 1410 Enka Way, Orlando, Fla. 32818, and Judy K. Hall, 925 Larson Dr., Altamonte, Fla. 32714

Filed Jun. 7, 1993, Ser. No. 73,357

Int. Cl.[6] A45D *29/18*

U.S. Cl. 132—73.5 **8 Claims**



1. An artificial fingernail remover and brush cleaner comprising:

an upper housing comprising an upper housing large aperture communicating with a door race;

a door comprising a door body, said door body slidably reciprocating within said door race;

a lower housing comprising a lower housing aperture, said lower housing being attached to said upper housing;

a first means to urge said door into a position covering said lower housing aperture;

a container; and

a second means to removably attach said container to said lower housing.

5,388,598

HAIR RESTRAINT

Billy F. Whitten, 3488 Troy Dr., Hollywood, Calif. 90068

Filed Nov. 8, 1993, Ser. No. 149,049

Int. Cl.[6] A45D *8/12*

U.S. Cl. 132—275 **11 Claims**

1. A hair restraint comprising a band having a decorative assembly at an end, the decorative assembly comprising in combination:

a first wire having a first end and a second end;

a decoration including at .least one object with a passage therethrough and strung on said first wire;

a crimp bead on said first wire at each end of said decoration;

with a loop in said first end of said first wire interengaging a loop in the end of said band, with said band loop fixed in place defining a closed loop in said band; and



with said first end of said first wire threaded back into one of said crimp beads and at least some of said decoration; and

a second wire wrapped around said closed loop of said band; with each of said crimp beads squeezed onto said first wire.

5,388,599

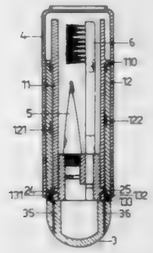
RETRACTABLE TOOTHBRUSH AND TOOTHPASTE HOLDER

Lung W. Yen, 20-1 F, No. 204, 2nd Sec., Po-Ai Erh Rd., Sanmin District, Kaosiung City, Taiwan, Prov. of China

Filed Jan. 13, 1994, Ser. No. 181,217

Int. Cl.[6] A46B *15/00*

U.S. Cl. 132—311 **3 Claims**



1. A retractable toothbrush and toothpaste holder, comprising a cylinder assembly, a lifting member with a toothbrush and toothpaste tube attached thereto, and a rotating seat; said cylinder assembly consisting of a through inner cylinder and a sleeve, said sleeve being shorter than said inner cylinder and covering said inner cylinder; said inner cylinder having a collar near a top end bearing against a top edge of said sleeve, two equi-length elongated guiding grooves oppositely formed on a wall of said inner cylinder, extending from a lower edge of said inner cylinder upward to a point below said collar, and two slots formed near said lower edge of said inner cylinder and each said slot being located between said two guiding grooves; said sleeve having an inner wall on which two spiral grooves are located, each said spiral groove having a starting point at a lower edge of said sleeve corresponding to one of said guiding grooves of said inner cylinder; said spiral grooves each extending upward to said top edge of said sleeve and turning to a horizontally extending mortise, said horizontal mortises each having a retaining boss formed at an entrance to said mortise; said lifting member having a top surface in which a round hole and a retaining recess are formed therein, said round hole receives said toothpaste tube, and said retaining recess receives a rear end of said toothbrush, and two tenons being oppositely provided on a circumferential surface of said lifting member near a lower edge thereof; said lifting member being disposed inside said inner cylinder at a lower portion thereof with said two tenons extending out of said two guiding grooves of said inner cylinder and separately engaging with said starting points of said two spiral grooves; said rotating seat comprising an outer circumferential wall and an inner circular partition wherein an annular recess is formed between said wall and said partition, said annular recess receiving said lower edge of said inner cylinder; said partition comprising two opposite hook members and two opposite locating bars, each said bar being provided at a predetermined position between said two hook members, both of said hook members and locating bars projecting into said annular recess; said lower edge of said inner cylinder engaging with said annular recess of said rotating seat, said two locating bars separately engaging with said two guiding grooves of said inner cylinder, and said two hook members extending into and retained by said two slots at said lower edge of said inner cylinder, such that when said rotating seat is rotated, said inner cylinder will rotate also, said lifting member moves upward along an inclined surface of said spiral grooves until said two tenons of said lifting member enter into said horizontally extended mortises.

5,388,600

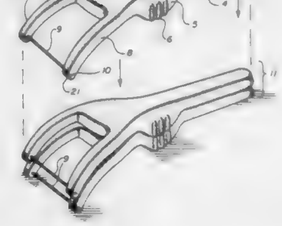
STACKABLE FLOSSER

Adrian Hart, Menlo Park, Calif., assignor to Gillette Canada, Inc., Kirkland, Canada

Filed Sep. 8, 1993, Ser. No. 118,370

Int. Cl.[6] A61C *15/00*

U.S. Cl. 132—323 **17 Claims**



1. A tooth cleaning device comprised of a handle, a holder affixed to an end of the handle comprised of two protruding arm members positioned at least parallel to each other and a strand of dental floss which is drawn between the arms and anchored at the distal end of each arm, wherein several tooth cleaning devices may be stacked one on top of another thereby nesting with each other and wherein the handle is further comprised of an upper surface and two side surfaces and a bottom surface which forms a cavity which is complimentary to the upper surface and at least the upper most portion of said side surfaces of the handle.

5,388,601

SPRAY GUN WASHING APPARATUS

Pierre G. Mansur, 8425 SW. 129 Terrace, Miami, Fla. 33156

Filed Mar. 15, 1994, Ser. No. 212,813

Int. Cl.[6] B08B *3/10*

U.S. Cl. 134—56 R **7 Claims**

1. An apparatus for cleaning spray gun assemblies comprising:

a cabinet including a lower portion having a base, side walls,

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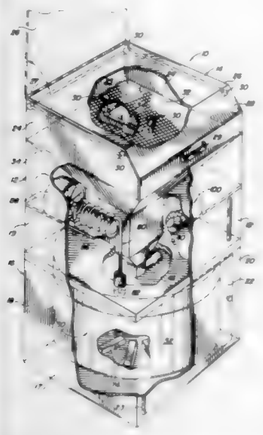
a back wall and a front in surrounding relation to a cabinet interior and an upper portion including a cleaning chamber having side wall portions, a front wall portion, a rear wall portion and a cover hingedly attached to said rear wall portion, said cover being movable between an open position facilitating access to said cleaning chamber and a closed position in covering relation to an interior of said cleaning chamber,

solvent dispersing means including a plurality of spray nozzles positioned and arranged within said cleaning chamber and being structured and disposed for spraying the solvent onto exterior and interior surfaces of the spray gun assemblies placed within said cleaning chamber for cleaning thereof,

a solvent holding chamber disposed in fluid communication with said cleaning chamber and structured and disposed for containing contaminated solvent after use during cleaning in said cleaning chamber,

a distillation chamber disposed in fluid communication with said holding chamber and including an insulated surrounding side wall structure, an insulated base and an open top,

means defining a lid for covering said open top of said distillation chamber in sealed, airtight relation therewith,



valve means between said holding chamber and said distillation chamber and being operable between a closed position to contain the solvent in said holding chamber and an open position to release the solvent into said distillation chamber,

fluid level monitor means for detecting and monitoring a level of the solvent in said holding chamber,

switch means communicating with said fluid level monitor means and structured and disposed for operating said valve means to said open position upon a level of the solvent in the holding chamber reaching a predetermined level as detected by the fluid level monitor means,

a clean solvent tank for containing purified, non-contaminated solvent therein for subsequent circulation to said dispersing means,

a plurality of heating elements disposed in heat transferring relation with said distillation chamber for heating the solvent to a predetermined temperature so as to produce solvent vapors,

a condenser including a condensing tube having a first end connected in fluid communication with said distillation chamber for recovering the solvent vapors, a mid-portion disposed in a cooling zone within said cabinet arid a second opposite end disposed in fluid communication with said clean solvent tank for directing purified, condensed liquid solvent into said clean solvent tank,

a blower disposed within said cooling zone for creating an air current therethrough to cool said mid-portion of said condensing tube, and

a pump for circulating the purified liquid solvent, at a predetermined pressure, from said clean solvent tank to said solvent dispersing means resulting in the solvent being dispersed from said spray nozzles into said cleaning chamber.

5,388,602

DESCALING DEVICE EMPLOYING WATER

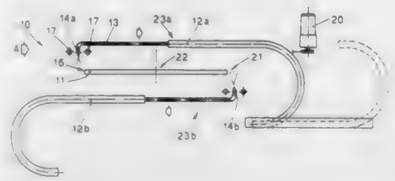
Giovanni Coassin, Pordenone; Franco Driussi, Nogaredo Di Prato-Martignacco; Fausto De Marco, Remanzacco, and Gianni Rattierri, Pradamano, all of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Jul. 19, 1993, Ser. No. 93,000

Claims priority, application Italy, Jul. 31, 1992, UD92A000129; Nov. 23, 1992, UD92A000172

Int. Cl.[6] B08B *3/02*

U.S. Cl. 134—122 R **11 Claims**



1. Descaling device employing water to descale blooms, slabs or billets being fed in cooperation with the descaling device at a speed of feed on the order of 1.5–20 meters per minute, comprising:

at least one movable arm bearing at least one nozzle for delivering descaling water, said at least one movable arm rotating about an axis of rotation in a full circle, wherein a first portion of said full circle corresponds to a working phase during which descaling water is delivered to and acts on a surface of the bloom, slab or billet, and a second portion of said full circle corresponds to a shut-off phase during which descaling water is prevented from acting on a surface of the bloom, slab or billet; and

a plate provided between the bloom, slab or billet and said at least one nozzle when said at least one nozzle is in said second portion of said full circle corresponding to said shut-off phase, said plate protecting the bloom, slab or billet from descaling water from said at least one nozzle during said shut-off phase and containing water on said plate for recovery.

5,388,603

ELECTRONIC STUNNING TRUNCHEON AND UMBRELLA

Paul J. Bauer, and Barbara Bauer, both of 322 Canal Walk #374, Indianapolis, Ind. 46202

Filed Dec. 13, 1993, Ser. No. 165,481

Int. Cl.[6] A45B *03/00*

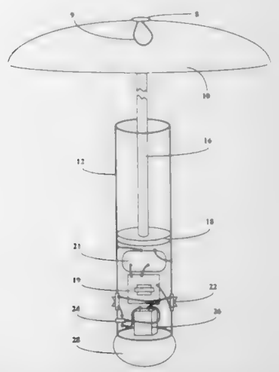
U.S. Cl. 135—16 **7 Claims**

1. A hand-held, personal protective accessory comprising:

a) a compact umbrella including a telescoping shaft having a shaft base at one end and a canopy at an cpposite end, said canopy having an umbrella tip;

b) a truncheon formed of nonconductive, lightweight, rigid, impact-resistant tubing, wherein said umbrella being stored within said tubing, said tubing having a proximal end and a distal end;

c) an electronic stunner including an integrated circuit board, step-up transformer, switches, external positive and negative electrodes, wherein said board is connected to said transformer; said board is further connected to said switches; said transformer being connected to said electrodes; said board and transformer being stored within said tubing; said switches pass through said tubing, and said electrodes are placed sequentially, alternating negative and positive along the axis of the external surface of said tubing with two of said electrodes extending onto said distal end of said tubing;



d) said stunner, truncheon, and umbrella being conjoined so as to create a personal protective accessory;

e) means disguising said personal protective accessory so as to substantially appear to be a compact umbrella by sheathing said personal protective accessory with a fabric cover of approximately the same material and color of said canopy, and said tubing is sealed and finished with a decorative end knob to complete the illusion of a compact umbrella.

5,388,604

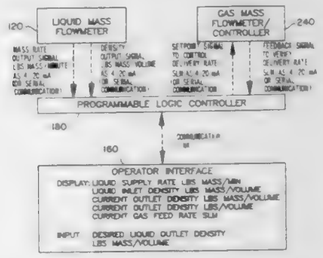
METHOD FOR ADJUSTING THE DENSITY OF A LIQUID

Lyle W. Clem, Algonquin, Ill., assignor to Accurate Metering Systems, Inc., Schaumburg, Ill.

Division of Ser. No. 95,665, Jul. 21, 1993, Pat. No. 5,325,852. This application Mar. 18, 1994, Ser. No. 210,380

Int. Cl.[6] G05D *11/13*

U.S. Cl. 137—4 **5 Claims**



1. A method of producing a combined liquid comestible having a defined density comprising:

a) determining a density of a first liquid;

b) adding a sufficient amount of a fluid to the first liquid to form a combined liquid;

c) determining the density of the combined fluid, the density of the combined fluid being less than the density of the first liquid;

d) comparing the density of the combined fluid to a predetermined density;

e) adjusting the amount of the fluid to have the density of the combined fluid approach the predetermined density;

f) transferring data on the density of the first liquid to a programmable logic controller;

g) passing the density of the first liquid from the programmable logic controller to a first mass flow meter;

h) connecting a fluid supply for the fluid to a fluid mass flow meter;

i) passing the fluid into the first liquid;

j) reading the density of the combined fluid;

k) transmitting the density of the combined fluid to the programmable logic controller;

l) comparing the density of the combined liquid to the predetermined density;

m) adjusting the fluid supply to bring the density of the combined liquid within the predetermined density; and

n) recovering the combined liquid comestible.

5,388,605

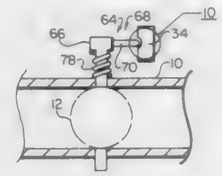
VIBRATION RESPONSIVE GAS SHUT-OFF VALVE ASSEMBLY

James A. Banks, 1827 W. 74th St., Los Angeles, Calif. 90047

Division of Ser. No. 882,444, May 12, 1992, Pat. No. 5,351,706, which is a continuation-in-part of Ser. No. 804,012, Dec. 6, 1991, abandoned. This application Nov. 4, 1993, Ser. No. 145,581

Int. Cl.[6] F16K *17/36*

U.S. Cl. 137—38 **14 Claims**



1. A vibration responsive gas shut-off valve which is operable to shut off gas flow through a gas line in response to a vibration imposed on the line which exceeds a predetermined threshold level, said valve comprising:

a) a somewhat spherical gas flow control element located in a gas conduit and having a diameter approximately equal to the inner diameter of the conduit and forming an upstream side of the conduit on the gas supply side of the element and a downstream side of the conduit on the opposite side of the element;

b) means forming a duct having a first leg and a second leg extending through said element providing gas communication from the upstream side of the element to the downstream side of the element with respect to the conduit, said duct having the first leg of said duct extending from a surface of the flow control element to a point at the approximate center thereof and communicating with said second leg at the approximate center, said second leg being in direct axial alignment with and co-parallel with the first leg and also extending outwardly to the surface of the flow control element, said first and second legs having substantially the same diameter and being so arranged with an orientation and shape such that when the element is in a gas open flow position the gas from the upstream side will flow through the duct from the upstream side to the downstream side and provide a source of gas to a user thereof, said element being rotatable in said conduit to a gas closed flow position where the duct is arranged so there is no gas flow from the upstream side to the downstream side, said duct having a third leg which intersects said first and second legs at approximately the center of the flow control element, said third leg having approximately the same diametral size as each of the first and

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second legs and also extending outwardly to a surface of the flow control element;

c) a pin extending through said flow control element and being journaled in a wall of the conduit to enable rotatable movement of said flow control element;

d) a vent in said conduit located to be in communication with said third leg of said duct for venting the downstream side of the conduit through the duct when the element is in the gas closed flow position; and

e) means responsive to a vibration exceeding a predetermined threshold level to move the element from a gas open flow position to a gas closed flow position.

5,388,606

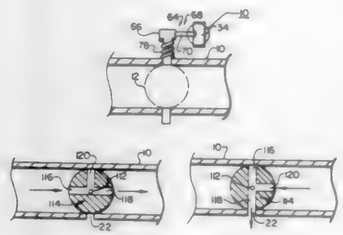
VIBRATION RESPONSIVE GAS SHUT-OFF VALVE ASSEMBLY

James A. Banks, 1827 W. 74th St., Los Angeles, Calif. 90047

Division of Ser. No. 882,444, May 12, 1992, Pat. No. 5,351,706, which is a continuation-in-part of Ser. No. 804,012, Dec. 6, 1991, abandoned. This application Nov. 8, 1993, Ser. No. 148,878

Int. Cl.[6] F16K *17/36*

U.S. Cl. 137—38 14 Claims



1. A vibration responsive gas shut-off valve which is operable to shut off gas flow through a gas line in response to a vibration imposed on the line which exceeds a predetermined threshold level, said valve comprising:

a) a somewhat spherical gas flow control element located in a gas conduit and having a diameter approximately equal to the inner diameter of the conduit and forming an upstream side of the conduit on the gas supply side of the element and a downstream side of the conduit on the opposite side of the element;

b) means forming a duct having a first leg and a second leg extending through said element providing gas communication from the upstream side of the element to the downstream side of the element with respect to the conduit, said duct having the first leg of said duct extending from a surface of the flow control element to a point at the approximate center thereof and communicating with said second leg at the approximate center, said second leg being in direct axial alignment with and co-parallel with the first leg and also extending outwardly to the surface of the flow control element, said first and second legs having substantially the same diameter and being so arranged with an orientation and shape such that when the element is in a gas open flow position the gas from the upstream side will flow through the duct from the upstream side to the downstream side and provide a source of gas to a user thereof, said element being rotatable in said conduit to a gas closed flow position where the duct is arranged so there is no gas flow from the upstream side to the downstream side, said duct having a third leg which intersects said first and second legs at approximately the center of the flow control element, said third leg having approximately the same diametral size as each of the first and second legs and also extending outwardly to a surface of the flow control element;

c) a vent in said conduit located to be in communication with said third leg of said duct and having the same diameter as the first leg or the second leg for venting the downstream side of the conduit through the duct when the element is in the gas closed flow position; and

d) means responsive to a vibration exceeding a predetermined threshold level to move the element from a gas open flow position to a gas closed flow position.

5,388,607

CONTROL SYSTEM FOR SUPPLYING A GAS FLOW TO A GAS CONSUMPTION

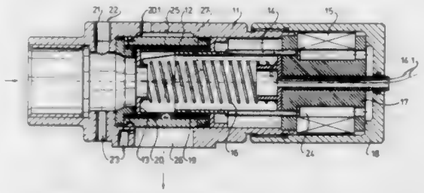
Antonius E. T. J. Ramaker, The Hague, and Leendert Wolters, Rhoon, both of Netherlands, assignors to Deltec Fuel Systems B.V., Rotterdam, Netherlands

Filed Jul. 30, 1993, Ser. No. 100,561

Claims priority, application Netherlands, Jul. 31, 1992, 9201391

Int. Cl.[6] G05D *7/06*

U.S. Cl. 137—88 7 Claims



1. A control system for supplying a gas flow to a gas consumption apparatus, comprising:

a gas supply pipe adapted to be connected to the apparatus having an electrically controlled gas control valve;

the gas control valve comprising in-built valve sensor means for sensing gas variables and valve position, a cylindrical hollow slide valve having a valve slide and including a central gas feed and a lateral gas outlet with an exponential flow profile and an electromagnetic actuator having a wire coil which is wound on the valve slide in a permanent magnetic field; and

an electronic control unit comprising a mathematical module, model-related to the control valve, for adjusting the position of the control valve;

wherein the control system is adapted to adjust the control valve in linear proportion to a desired gas-flow signal to be supplied to the control unit.

5,388,608

SOLENOID VALVES

Masahiko Hara, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Feb. 3, 1994, Ser. No. 191,326

Claims priority, application Japan, Feb. 8, 1993, 5-003301[U]

Int. Cl.[6] F16L *3/00*

U.S. Cl. 137—343 3 Claims

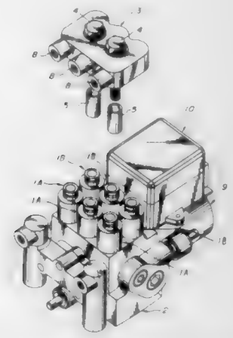
1. In an arrangement:

a housing;

a cover arranged to conceal said housing;

a collar member interposed between said housing and said cover;

at least one bolt arranged through said collar member, said at least one bolt serving to attach said cover to said housing; and



a plurality of solenoid valves disposed between said housing and said cover.

5,388,609

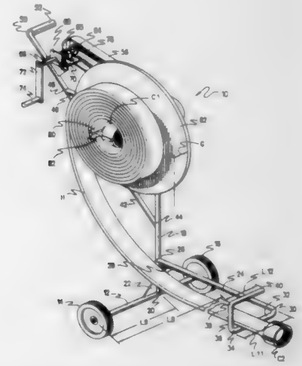
HOSE REEL CART

Gary L. Ghio, 6117 Tremain Dr., Citrus Heights, Calif. 95621, and Leroy F. Meidinger, 7130 Beech Ave., Orangevale, Calif. 95622

Filed Jan. 6, 1994, Ser. No. 178,109

Int. Cl.[6] B65H *75/40*

U.S. Cl. 137—355.27 15 Claims



1. In a device including a reel and means for rotating the reel to coil an elongated flattened flexible member thereon, the improvement comprising:

means for releasably connecting at least a portion of said flexible member to said reel;

means for coiling said flexible member upon itself into a substantially circular roll; and

means for permitting rapid removal of said circular roll from said reel without uncoiling said flexible member.

5,388,610

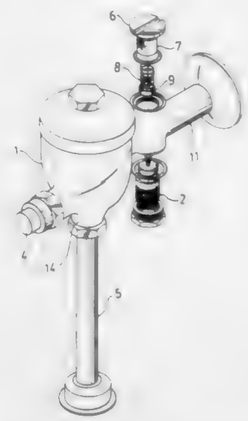
FLUSH VALVE FOR URINALS

Ming-Jung Chuang, No. 57, Sec. 3, Chang-Chin N Road, Taipei, Taiwan, Prov. of China

Filed May 17, 1994, Ser. No. 243,926

Int. Cl.[6] E03B *3/18*

U.S. Cl. 137—549 6 Claims



1. An improved flush valve for urinals comprising a bowl-like main body, a loading valve member within the interial of said main body, a covering lid on the top of said main body to form a back pressure chamber between said loading valve member and said covering lid, a push button provided on one side of said main body for releasing the sealed pressured state formed by said back pressure chamber and said loading valve member, an out let provided on the bottom end of said main body for connecting with a discharging pipe, and an inlet pipe provided on another side of said main body for supplying water, an adjusting knob screwed in said inlet pipe and abutted against the bottom of an adjusting through hole for adjusting volume of water flowing in, said flush valve is characterized in a plurality of elements therein, they are:

a hollow pipe-like filtering net provided on the upper side and surrounding the outer edge of said adjusting through hole and opposite to said water volume adjusting knob;

a turnable knob with its internal side being fixedly connected with one end of said filtering net, and with its outer section being screwed into said inlet pipe;

a pad provided inside said filtering net and above said adjusting through hole, and having enough area for covering said adjusting through hole; and

an elastic element also provided inside said filtering net, and slightly abutting the central base portion of said filtering net where said filtering net and said turnable knob connect with each other and said pad respectively;

when flowing in water source being adjusted in volume with said adjusting knob passing through said adjusting through hole, the water pressure of the flowing in water being able to push said pad upwardly and compress said elastic element, to let water get into the center of said filtering net and flow out toward said main body, and when water flowing to said main body being abruptly stopped to render the pressure therein to be vanished, said pad covering over said adjusting through hole again by the restoring force of said elastic element and back flow of water, said pad thus absorbing the impact produced by hammering function of reversing water due to the abrupt closing of said main body, while said filtering net being capable of filtering out impurity in water.

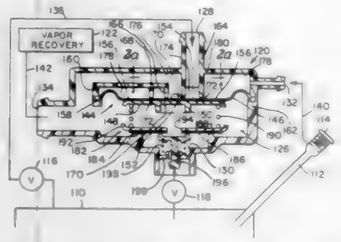
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5,388,611

TANK VENTING AND VAPOR RECOVERY SYSTEM

Robert S. Harris, Connersville, Ind., assignor to Stant Manufacturing Inc., Connersville, Ind.

Division of Ser. No. 822,616, Jan. 17, 1992, Pat. No. 5,318,069.
This application Mar. 14, 1994, Ser. No. 209,717
Int. Cl.[6] F16K *24/00*
U.S. Cl. 137—588 13 Claims



1. An apparatus for controlling discharge of fuel vapors from a vehicle fuel tank having a filler neck, the apparatus comprising

a housing an interior region and being formed to include a first inlet port communicating with the interior region and an outlet part communicating with interior region,

first means for conducting fuel vapor from the fuel tank to the interior region through the first inlet port,

first valve means for selectively blocking flow of fuel vapors from the first conducting means through the interior region, the first valve means being movable in response to fuel vapor pressure received from the first conducting means between a blocking position preventing fuel vapor received from the first conducting means from flowing through the interior region to the outlet port and a venting position allowing fuel vapor received from the first consulting means to flow through the interior region to the outlet port,

second means for conducting fuel vapor from the fuel tank to the interior region,

second valve means for selectively blocking flow of fuel vapors from the second conducting means to the interior region, the second valve means being movable in response to fuel vapor pressure received from the second conducting means between blocking position blocking flow of fuel vapor from the second conducting means through the interior region to the outlet port when the first valve means is positioned in its venting position and a venting position allowing flow of fuel vapor from the second conducting means through the interior region to the outlet port when the first valve means is positioned in its blocking position, and

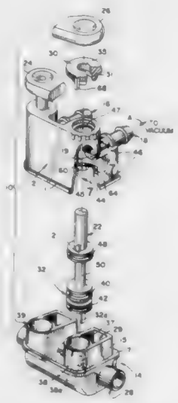
third means for conducting fool vapor from the filler neck to the first valve means to move the first valve means from its blocking position toward its venting position, the first valve means including a central portion, an intermediate portion, concentric with the central portion, and an outer circumferential portion and further comprising an outlet tube extending between the central portion and the outlet port to expose the central portion to atmospheric pressure, and a flow Lube extending between the first inlet port and the intermediate portion to expose the intermediate portion to fuel vapor from the fuel tank, the flow tube extending into the interior region in spaced-apart relationship with the housing to define an outer circumferential chamber therebetween, the outer circumferential chamber being open to the filler neck through the third conducting means to expose the outer circumferential portion to fuel vapor from the filler neck so that the first valve means is moved away from its blocking position toward its venting position allowing flow of fuel vapor from the outer circumferential chamber to the outlet tube during vehicle operation.

5,388,612

VALVE ASSEMBLY

Joseph J. Cerola; Richard M. Davis, and Rowland W. Kanner, all of Guntersville, Ala., assignors to American Hydro-surgical Instruments, Inc., Delray Beach, Fla.

Division of Ser. No. 802,309, Dec. 4, 1991, Pat. No. 5,303,735.
This application Apr. 16, 1993, Ser. No. 48,743
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[6] F16K *11/07*
U.S. Cl. 137—596.2 8 Claims



1. A two-part housing for a dual valve assembly, for particular use as a surgical trumpet valve assembly, comprising:

(a) an upper housing portion integrally including a pair of separate conduits for connection to respective fluid supply lines, each of said conduits having an internal opening into a respective cylindrical bore through which a valve element is reciprocated;

(b) a lower housing portion integrally including a pair of separate cylindrical bores arranged for aligned extension from said respective upper cylinder bores in said upper housing portion, and a common, manifold conduit from which a pair of separate passageways provide flow communication, said upper housing connected to said lower housing;

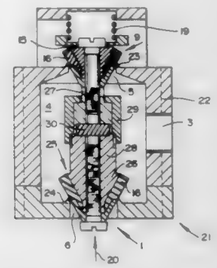
(c) a pair of separate valve orifices internally formed through at least one of said upper and lower housing portions, said valve orifices being arranged to provide respective flow communication between one of said passageways and one of said cylinder bores, thereby enabling each of the valve elements within said respective cylinder bores to control fluid flow through said respective valve orifices for flow to or from said manifold conduit, said valve orifice having a rectangular configuration including three peripheral surfaces formed in one of said housing portions and a fourth peripheral surface formed on the other of said housing portions.

5,388,613

VALVE WITH PRESSURE COMPENSATION

Edmund Krüger, Lübeck, Germany, assignor to Drägerwerk AG, Lübeck, Germany

Filed Dec. 22, 1993, Ser. No. 173,662
Claims priority, application Germany, Jan. 13, 1993, 4300629
Int. Cl.[6] F16K *1/44*
U.S. Cl. 137—625.34 12 Claims



1. A valve with pressure compensation, comprising:

a first valve body;

a second valve body;

a valve housing, said first valve body and said second valve body being arranged in said valve housing acting in a common direction;

outlet openings provided in said valve housing, said outlet openings having flange-like valve seats with said first valve body being seated in a first valve seat and said second valve body being seated in a second valve seat in a closed position, said valve bodies and an inner surface of said valve housing defining a pressure space;

a first deforming zone located at contact points between said first valve body and said first valve seat and a second deforming zone located at contact points between said second valve body and said second valve seat, said deforming zones being formed as pressure pieces with said first deforming zone yielding differently to a closing force than said second deforming zone, said first valve body is formed as an elastomeric cone with a lip acting as a pressure piece, said lip being attached to said elastomeric cone in a manner of a cantilever, said second valve body having an elastomeric coating at said pressure piece, said elastomeric coating being flatly disposed on a support.

5,388,614

ROTARY FLOW CONTROL VALVE

Naoki Hakamada, Okazaki, and Yoriaki Ando, Kariya, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 24, 1993, Ser. No. 125,835
Claims priority, application Japan, Sep. 25, 1992, 4-256931
Int. Cl.[6] F16K *31/04*
U.S. Cl. 137—625.65 8 Claims

1. A rotary flow control valve comprises:

a housing having a cylindrical space and a plurality of communicating channels extending from the side wall of the housing and communicating with the cylindrical space;

a valve located in the cylindrical space and provided with switch channels for selectively canalizing the communicating channels in the housing;

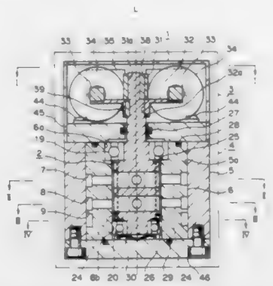
bearings located in the cylindrical space and bearing the valve so that the valve can rotate forward or in reverse with respect to the axial line thereof;

rotary members coupled with the valve and extended in directions perpendicular to the axial line of the valve;

magnets located away from the rotation center on one of the rotary members;

magnetic members opposed to the magnetic poles of the magnets; and

coils that are wound about the magnetic members and change the magnetic poles and forces of the magnetic members according to the orientation and electrical size of



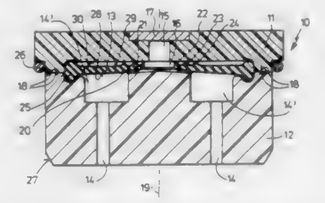
applied current, wherein attraction and repulsion are produced between the magnetic members and magnets in order to rotate the rotary members.

5,388,615

SEALING MEANS AND SEALING VALVE FOR CONTAINER OPENINGS

Roy Edlund, Leinfelden-Echterdingen, and Gerd Schollenberger, Sersheim, both of Germany, assignors to Busak & Luyken GmbH & Co., Stuttgart, Germany

Filed Dec. 7, 1993, Ser. No. 163,835
Claims priority, application Germany, Dec. 11, 1992, 4241943
Int. Cl.[6] F16K *15/14*
U.S. Cl. 137—859 5 Claims



1. Sealing means and sealing valve for a container having an opening, comprising a housing having a gas release connector, a sealing surface, and a seal arranged in the housing, the seal comprising a circumferential sealing bead adapted, in an unpressurized state, to seat on the sealing surface and, in a pressurized state, to be separated from the sealing surface; the seal being made from a rubber-elastic seal material; the sealing bead having, on a first pressurized side of the seal, a sealing edge; the seal having, on a second side, spring means integral with the seal adapted to act on the sealing edge; the spring means having a spring-bead made from the material of the seal, the spring-bead being supported on the wall of the housing opposite to the sealing edge; the seal being configured in the shape of an apertured disk and exhibiting an attachment strip on an outer edge, the attachment strip fixing a position of the seal relative to the housing; the seal being provided with an opening in the vicinity of its middle; the sealing edge bordering on the opening; and further comprising pressure distribution means for distributing a pressure of a fluid located in the container over nearly an entire surface of the seal.

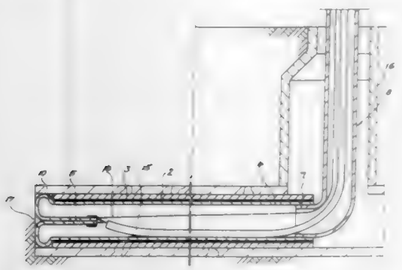
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5,388,616

INVERTIBLE LINER FOR INTERNAL SURFACES OF FLUID CONVEYING PIPES AND THE LIKE

Hans uller, Brauergildestrasse 5, W-4938 Schieder-Schwalenger 2, and Hermann Suerbaum, Lange Ackernstrasse 14, W-4938 Schieder-Schwalenberg, both of Germany

Continuation of Ser. No. 64,711, May 19, 1993, abandoned. This application Jul. 21, 1994, Ser. No. 278,184
Int. Cl.[6] F16L *55/16*
U.S. Cl. 138—98 6 Claims



1. A tubular liner for internal surfaces of fluid-conveying pipes which are accessible from only one axial end, comprising a resin-permeated hardenable tubular substrate which is open at both a proximal end and a distal end, and has an outer impermeable flexible coating layer bonded to said tubular substrate, said impermeable outer coating layer being surrounded by an impermeable flexible sizing tube which is moveable with respect to said impermeable outer coating layer, said sizing tube being spaced from said tubular substrate by said impermeable outer coating layer to prevent said resin from contacting said sizing tube, said sizing tube having a distal end and a proximal end that extends beyond the proximal end of the tubular substrate by a predetermined length where said proximal end of said sizing tube is closed and sealed, said distal end of said tubular substrate being inverted such that said outer coating layer distal end is surrounded by the distal end of the tubular substrate and surrounds the distal end of the sizing tube, a clamping member surrounding the distal end of said tubular substrate, a tubular inverting tool being surrounded by the distal end of the sizing tube such that the distal ends of said tubular substrate, said outer coating layer and said sizing tube are disposed between said clamping member and said tool; means for causing the inversion, by application of fluid pressure, of the tubular substrate until the sizing tube emerges from said proximal end of the tubular substrate causing any further inversion to stop and permitting said resin-permeated tubular substrate to harden.

5,388,617

PIPE REPAIR METHOD USING A SHAPE-MEMORY ALLOY AND PIPE REPAIR MEMBER

Toru Sasaki, and Toru Nagao, both of Utsunomiya, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

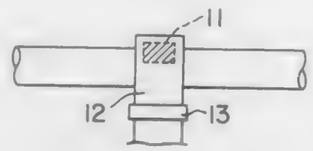
Continuation of Ser. No. 813,641, Dec. 27, 1991, abandoned. This application Nov. 15, 1993, Ser. No. 152,101
Claims priority, application Japan, Mar. 1, 1991, 3-059580
Int. Cl.[6] F16L *55/16*
U.S. Cl. 138—99 27 Claims

16. A pipe repair member for repairing a pipe carrying fluid, comprising:

a seal member for covering a cracked or damaged portion of said pipe;

a band-shaped plate member made from an elongated length of shape-memory alloy and being wound around an outer periphery of said pipe so as to cover said seal member, said band-shaped plate member having a first end and a second end; and

a clamp for clamping both ends of said band-shaped plate member, said clamp including a through-hole formed therein and said clamp being dimensioned and arranged so as to clamp said first end of said band-shaped plate member when the first end of the band-shaped plate member is threaded through said through-hole, and said clamp member and band-shaped plate member being dimensioned and



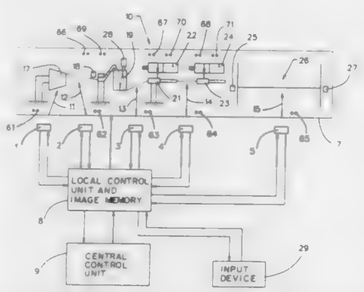
arranged with respect to the pipe and the cracked or damaged portion such that, upon heating said band-shaped plate member to a transformation temperature, said band-shaped plate member returns to a previously memorized state so as to repair said cracked or damaged portion in a fluid tight manner.

5,388,618

WEAVING-MACHINE CONTROL WITH DISPLAY OF THE SITE AND NATURE OF THREAD BREAKS

Bernard Decock, Kortrijk, Belgium, assignor to Picanol N.V., Belgium

Filed Oct. 8, 1993, Ser. No. 133,346
Claims priority, application Belgium, Oct. 14, 1992, 9200891
Int. Cl.[6] D03J *1/00*
U.S. Cl. 139—1 R 9 Claims



1. In a control system for a weaving machine which includes a control unit with a monitor, the improvement wherein the control unit comprises memory means for storing real images or pictures of possible sites, types, or sites and types, of thread breaks, and means for displaying the images on the monitor upon the occurrence of a thread break, the control system further comprising means including a plurality of selection keys for allowing entry into the control unit of data concerning a thread break that has occurred.

5,388,619

CLAMP TIGHTENING DEVICE

Roger Ghawi, 26, av. de Charolles, Paray le Monial 71600, France

Filed Aug. 24, 1993, Ser. No. 112,242
Claims priority, application France, Aug. 27, 1992, 92 10460
Int. Cl.[6] B21P *9/02*
U.S. Cl. 140—123.6 14 Claims

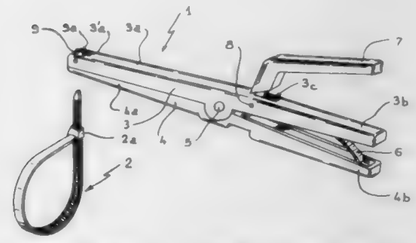
1. A device for tightening a collar around a member which is oriented generally parallel to the device, the collar having an end and a tongue, the device comprising:

a first arm having a first distal portion, a first handle, a first opening in said first distal portion, said first opening being defined by an inner surface;

a second arm having a second distal portion, a second handle and a second opening in said second distal portion being aligned with said first opening such that the collar tongue may extend through both openings simultaneously;

first pivot means for connecting said first and second arms about a first pivot axis, said first and second handles being disposed on opposite sides of said first pivot axis from their respective distal arm portion;

first spring means for biasing said first and second arms so that said first and second distal portions contact in a rest position of the device, said first and second handles being



movable relative to one another about said first pivot axis to separate said first and second distal portions; and

pawl means for gripping and pulling the collar tongue through said second opening, said pawl means including a gripping surface and second pivot means connecting said pawl means to said first distal portion of said first arm, said second pivot means extending substantially perpendicularly to said first pivot axis and defining a second pivot axis, the gripping surface being disposed opposite the inner surface and further from the second arm than the second pivot axis such that a force acting on said gripping surface toward the second arm compresses said inner surface and said gripping surface toward one another to grip the collar tongue.

5,388,620

PACKAGING CONTAINER OF THE AEROSOL TYPE WHICH CAN BE RECHARGED WITH COMPRESSED GAS

Pierre Lasserre, Coubron, and Nicole Konig, Villebon S/Yvette, both of France, assignors to L'Oreal, Paris, France

Filed Sep. 20, 1993, Ser. No. 123,071
Claims priority, application France, Sep. 28, 1992, 92 11535
Int. Cl.[6] B65B *31/00*
U.S. Cl. 141—20 8 Claims

1. A packaging container of aerosol type, which can be recharged with compressed gas, comprising:

an outer casing;

a filling adaptor passing through a wall of the casing in a leaktight manner, the filling adaptor provided at its outer end with means for connection to a compressed gas source;

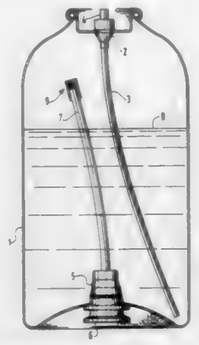
a filling tube connected to an inner end of the filling adaptor, a free end of the filling tube opening within an internal volume of the outer casing of the container above the level of a liquid contained in the container;

a sealing device, mounted at the free end of the filling tube, has the form of a case, the case comprising:

a base wall;

an end wall;

an inner chamber delimited between the base wall and the end wall and having an inner perimeter, the inner chamber communicating with the internal volume of the outer casing through at least one orifice in the end wall and with the filling tube by orifices in the base wall radially outside a central part of the base wall but within the inner perimeter of the inner chamber; and



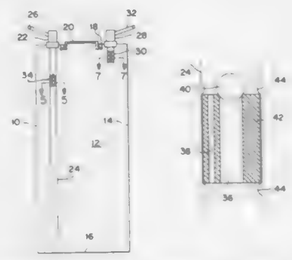
an elastic diaphragm seated in the inner chamber, a central part of the elastic diaphragm immobilized against a central part of the base wall.

5,388,621

PRESSURIZED TRANSFER TANK SECURITY SYSTEM

Jerome Warren, Mandeville, La., and Randall Wilson, Dewey, Okla., assignors to ICEE Ventures, Inc., Metairie, La.

Filed Oct. 5, 1993, Ser. No. 131,589
Int. Cl.[6] B65D *49/00*
U.S. Cl. 141—21 11 Claims



1. A transfer tank security system for use in transferring liquids by gas pressure, comprising:

a transfer tank having a storage area, the transfer tank having first, second and third openings to the interior thereof, the first, second and third openings being the only openings to the interior of the transfer tank;

a pressurized gas inlet connectable to a source of pressurized gas, the pressurized gas inlet being the first opening to the interior of the transfer tank;

a liquid outlet, the liquid outlet being the second opening to the interior of the transfer tank;

an interior tube having an upper end operably connected with said liquid outlet and a lower end located in said storage area of said transfer tank;

a lid provided on the transfer tank, the lid closing the third opening to the interior of the transfer tank, liquids being charged into the interior of the transfer tank through the third opening when the lid is open and the lid sealing the third opening during discharge of liquid from the tank; and

a check valve assembly located in said interior tube, said check valve assembly containing a primary orifice, a secondary orifice which has a cross-sectional area which is at most one-quarter a cross-sectional area of said primary orifice and a sealing member which seals said pri-

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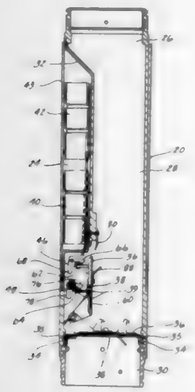
mary orifice when a liquid is forced into the upper end of said interior tube, said secondary orifice being open when the liquid is forced into the upper end of said interior tube and when the primary orifice is sealed by the sealing member.

5,388,622

AUTOMATIC SHUTOFF VALVE

Paul E. Phillips, White Hall, Mich., assignor to EBW, Inc., Muskegon, Mich.

Filed Nov. 3, 1993, Ser. No. 147,068
Int. Cl.[6] F16K *21/00*
U.S. Cl. 141—198 19 Claims



14. A valve assembly for preventing overfilling of a liquid storage tank in series with piping for introducing liquid into the tank, comprising:

an elongated housing defining a liquid flow passageway extending longitudinally thereof, a liquid inlet communicating with said passageway adjacent one end thereof, a single liquid outlet communicating with said passageway adjacent the other end thereof;

float means for moving to predefined positions in response to a liquid level within said tank;

compound valve means having a main valve assembly and a secondary valve assembly, each valve assembly having an open position and a closed position, said main valve assembly significantly reducing flow of liquid from said passageway through said outlet when in said closed position, said secondary valve assembly blocking significant flow of liquid from said passageway through said outlet when in said closed position, wherein said compound valve means further comprises said main valve assembly and said secondary valve assembly having a common horizontal pivot axis; and

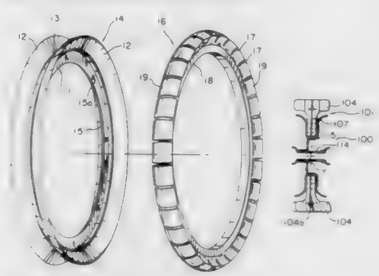
valve control means, connected to said float means, for controlling operation of said compound valve means.

5,388,623

ELASTIC WHEELS AND A PAIR OF SKIS PROVIDED WITH THE ELASTIC WHEELS

Akira Homma; Susumu Homma; Hiroshi Sato, and Hisao Hiroi, all of Tokamachi, Japan, assignors to Homma Science Corporation, Niigata, Japan

PCT No. PCT/JP92/00845, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO93/11836, PCT Pub. Date Jun. 24, 1993
PCT Filed Jul. 3, 1992, Ser. No. 983,574
Claims priority, application Japan, Dec. 17, 1991, 3-333701; Feb. 25, 1992, 4-37901
Int. Cl.[6] B60C *7/10, 7/22*
U.S. Cl. 152—5 20 Claims



1. An elastic wheel, which comprises:

wheel supporting means having a circular rim part formed around an outer periphery thereof; and

a tire part mounted on and around said circular rim part of said wheel supporting means and being elastically deformable in a direction perpendicular to the running direction of the wheel, said tire part including a ring-like elastic member, said tire part having a plurality of transverse radial slits arranged in circumferentially spaced relation around the ring-like elastic member to form a plurality of elastic pieces around the circumference of the tire part, said tire part further including a core disk embedded therein and including a plurality of circumferentially spaced disk pieces arranged radially in said elastic member in correspondence with said elastic pieces so that each disk piece is embedded in a respective elastic piece.

5,388,624

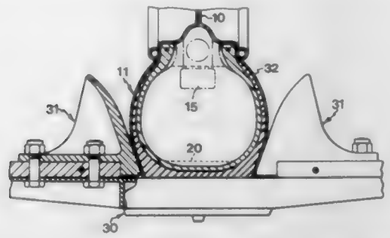
VEHICLE DRIVE WHEEL WITH TIRE AND TRACK DRIVEN THEREBY

Erik G. S. Nordström, Trelleborg, and Carl-Gustav B. C. Victor, Höllviksnäs, both of Sweden, assignors to Trelleborg AB, Trelleborg, Sweden

PCT No. PCT/SE91/00403, § 371 Date Mar. 24, 1992, § 102(e) Date Mar. 24, 1992, PCT Pub. No. WO91/18755, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 5, 1991, Ser. No. 829,033
Claims priority, application Sweden, Jun. 5, 1990, 9002014
Int. Cl.[6] B60C *27/06*
U.S. Cl. 152—185.1 7 Claims

1. A vehicle drive comprising pneumatic tires (11) mounted on rims (10), and a track (30) which cooperates with the tires (11) and is driven thereby and which has tire-supporting elements (31) serving to position the tires (11) in relation to said track (30); said pneumatic tires (11), at least in surface areas

which come into contact with the tire-supporting elements (31), having an outer rubber layer (32) which has a high wear



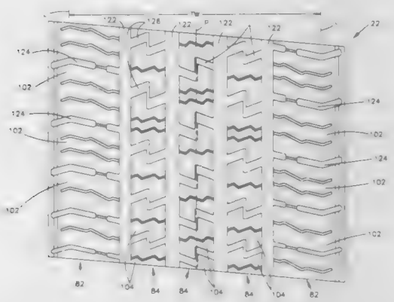
resistance and low-friction properties and in which 50–100% of the rubber material is butadiene rubber.

5,388,625

TIRE HAVING TREAD WITH IMPROVED WEAR RESISTANCE

Timothy A. White, Greer, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Continuation of Ser. No. 762,597, Sep. 19, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 71,869
Int. Cl.[6] B60C *11/12*
U.S. Cl. 152—209 R 12 Claims



1. A tread when in an annular configuration for a tire, having a mid-circumferential plane, said tread comprising:

a plurality of tread elements arranged in a circumferential array about the tire to form a shoulder rib, wherein respective tread elements have a non-zero pitch length variation;

a plurality of transverse extending grooves, each of said grooves separating a pair of circumferentially adjacent tread elements and defining the circumferential pitch length for each of said plurality of tread elements;

a single full depth sipe extending transversely across a tread element when the circumferential pitch length of said tread element is less than a predetermined circumferential pitch length; and

at least a pair of full depth sipes extending transversely across a tread element when the circumferential pitch length of said tread element is greater than the predetermined circumferential pitch length, wherein the tread has both tread elements with the single sipe and tread elements with at least the pair of sipes; and

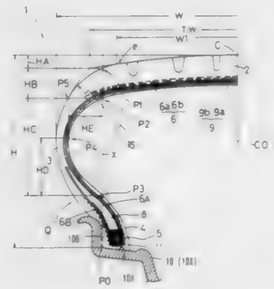
an area moment of inertia associated with the sipe defined tread elements in the shoulder rib when viewed in a direction normal to the tread element, each of said area moments of inertia having orthogonal principle axes of inertia relative to the mid-circumferential plane, the angular orientation between any pair of respective principle axes of inertia of different sipe defined tread elements being within a predetermined angular range of 40 degrees or less and each of said area moments of inertia associated with each one of said principle axes having a magnitude, wherein the magnitude of a smallest moment of inertia is within 40 percent of a largest moment of inertia for the sipe defined tread elements in each shoulder rib circumferential array.

5,388,626

RADIAL TIRE

Kazuo Asano; Mitsushige Idei, both of Kobe, and Tomoko Ookimoto, Itami, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Jun. 15, 1992, Ser. No. 898,540
Claims priority, application Japan, Jun. 17, 1991, 3-173188; Aug. 26, 1991, 3-240396; Dec. 26, 1991, 3-359473
Int. Cl.[6] B60C *3/00*
U.S. Cl. 152—454 3 Claims



1. An assembly of radial tire and a rim, the radial tire comprising a tread portion, a pair of axially spaced bead portions, a pair of sidewall portions extending between the tread edges and the bead portions, a bead core disposed in each of the bead portions, a radial carcass extending between the bead portions and turned up around the bead cores, and a belt disposed radially outside the carcass in tread portion,

said rim comprising a pair of bead seats for the bead portions and a flange extending radially outwardly from the axially outer edge of each said bead seat and comprising a curved upper portion and a flat lower portion,

the sidewall portions under a normally inflated state of the tire are bulged-out so as to satisfy the following conditions:

the total (HA+HC) of a height HA and a height HC is not less than 0.818 times the total (HA+HB+HC) of the height HA, the height HB and the height HC; and

a distance HE is not more than 0.575 times a distance HD, wherein

the height HA is the radial distance between a point C and a point P1,

the height HB is the radial distance between the point P1 and a point P2,

the height HC is the radial distance between the point P2 and a point P3,

the distance HD is the radial distance between the point P3 and a point P4,

the distance HE is the axial distance between the point P3 and the point P4,

the points C and P1 are on the outer surface of the tire tread portion,

the points P2, P3 and P4 are on the inner surface of the tire at the tread portion, the bead portion and the sidewall portion respectively,

the point C is the tire equator CO,

the points P1, P2, P3 are on a plane (X) being parallel with the tire equatorial plane CO and positioned at the bead heel point PO,

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the point P4 is the axially outermost point of the axially inner surface of the sidewall portion,

the bead heel point PO is the intersecting point between the bead base line and the bead side face line,

a bead thickness TB measured normally to the tire inner surface from said point P3 to the tire outer surface is not more than 0.092 times the radial distance (h) between said point C and the radially outer end of the flange, and

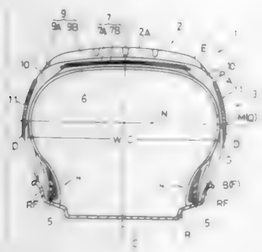
the central point Q1 of the bead thickness TB measured normally to the tire inner surface from said point P3 to the tire outer surface, the central point Q2 of the shoulder thickness TS measured normally to the tire inner surface from said point P2 to the tire outer surface, and the central point Q3 of the sidewall thickness at said point P4 are positioned on a circle (L) of which radius RD is not less than 0.77 times said distance (h).

5,388,627

PNEUMATIC TIRE INCLUDING A PROTECTIVE RUBBER LAYER ON THE OUTER SURFACE OF THE SIDEWALLS

Yoko Nakada, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Dec. 30, 1992, Ser. No. 998,747
Claims priority, application Japan, Jan. 10, 1992, 4-022147
Int. Cl.[6] B06C *13/02, 13/04*
U.S. Cl. 152—454 9 Claims



1. A pneumatic tire comprising:

a tread portion with a pair of edges;

a pair of axially spaced bead portions each with a bead core;

a pair of sidewall portions extending from the edges of the tread portion to the bead portions;

a carcass extending between the bead portions;

said tread portion having a tread rubber layer disposed radially outside the carcass;

each of said sidewall portions including a sidewall rubber layer disposed axially outside the carcass, the sidewall rubber layer being of softer material than the tread rubber layer;

a protective rubber layer disposed on the outer surface of each of the sidewall rubber layers defining a portion of the outer surface of each sidewall portion;

the protective rubber layer having a radial outer edge that ends near the edge of the tread rubber layer and a radial inner edge located radially inward of the maximum carcass width point of the tire and within the sidewall portion;

the protective rubber layer being made of a fiber-reinforced rubber composition containing 10 to 50 parts by weight of short fibrous reinforcements, 20 to 70 parts by weight of carbon black, and 100 parts by weight of rubber base consisting of 20 to 100 parts by weight of natural rubber or isoprene rubber and 80 to 0 parts by weight of butadiene rubber;

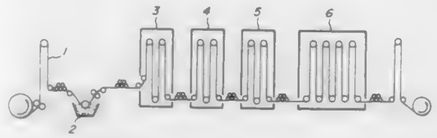
the short fibrous reinforcements oriented at an angle in the range of between 0 to 20 degrees with respect to the tire circumferential direction.

5,388,628

PNEUMATIC RADIAL TIRES INCLUDING POLYESTER CARCASS WITH SPECIFIED ELONGATION AND SHRINKAGE

Yasuyuki Tamura, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 911,071
Claims priority, application Japan, Jul. 9, 1991, 3-193736
Int. Cl.[6] B60C *9/02, 9/04, 9/08*
U.S. Cl. 152—556 2 Claims



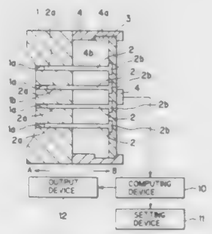
1. A pneumatic radial tire comprising a tread, a belt arranged inside the tread and a radial carcass comprised of at least one carcass ply, said carcass ply including polyester fiber cords each characterized by having an elongation of not less than 1.2% under a load of 0.5 g/d, an elongation of not more than 6.0% under a load of 2.25 g/d and a heat shrinkage of not more than 2.0% under an initial load of 50 g at 177° C. for 30 minutes.

5,388,629

DEVICE AND METHOD FOR DETECTING ABNORMALITY IN DIE CASTING DURING EJECTION THEREOF

Shigetake Kami, Tokyo, Japan, assignor to Ryobi Ltd., Hiroshima, Japan

Filed Dec. 28, 1993, Ser. No. 174,267
Claims priority, application Japan, Dec. 28, 1992, 4-360592
Int. Cl.[6] B22D *29/04, 17/00*
U.S. Cl. 164—4.1 7 Claims



1. A device for detecting an abnormality in ejection of die castings from a die, the die castings being ejected by a movement of an ejector mechanism in a moving direction, the device comprising:

setting means for setting a predetermined set value, the predetermined set value including an upper limit of acceleration of the movable ejector mechanism during the ejection and a predetermined time period during which change in acceleration of the movable ejector mechanism in a die casting machine occurs;

an accelerometer disposed to the movable ejector mechanism for measuring the acceleration thereof during the ejection; and

comparing means for comparing the acceleration measured by said accelerometer and during the predetermined time period with the predetermined set value and for outputting a warning signal when the acceleration measured at the accelerometer exceeds the upper limit.

7. A method for detecting an abnormality in ejection of die castings from a die, the die castings being ejected by a movement of an ejector mechanism in a moving direction, the method comprising the steps of:

provisionally setting a predetermined set value, the predetermined set value including an upper limit of acceleration of the movable ejector mechanism during the ejection and a predetermined time period during which change in acceleration of the movable ejector mechanism occurs;

measuring the acceleration of the ejector mechanism by an accelerometer disposed thereto during the ejection;

comparing the acceleration measured by said accelerometer with the predetermined set value; and

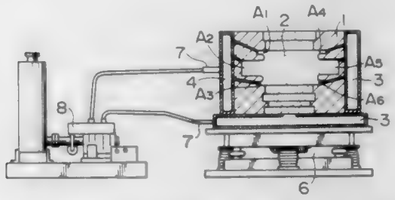
outputting a warning signal when the acceleration measured at the accelerometer exceeds the upper limit during the predetermined time period.

5,388,630

METHOD OF MANUFACTURING CORE AND MOLD

Hiroaki Sano; Takashi Yasukuni; Masaaki Ohata; Kiyotaka Nagai; Hiroshi Matsuura, all of Mihara; Kunio Koshiishi, Tokyo; Yasuyoshi Hirama, Tokyo, and Kyozaburo Ogawa, Tokyo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Kao Quaker Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 132,677, Oct. 6, 1993, abandoned, which is a continuation of Ser. No. 996,362, Dec. 23, 1992, abandoned, which is a continuation of Ser. No. 787,033, Nov. 4, 1991, abandoned. This application Mar. 10, 1994, Ser. No. 209,674
Claims priority, application Japan, Nov. 14, 1990, 2-306168; May 15, 1991, 3-110428; May 30, 1991, 3-127284; Jun. 7, 1991, 3-136397
Int. Cl.[6] B22C *9/10, 15/28*
U.S. Cl. 164—39 7 Claims



1. A method of manufacturing a core, comprising the steps of:

providing a core box;

charging a predetermined amount of a self-hardening sand into the core box, said self-hardening sand containing a binder and water, which predetermined amount is less than a total amount of the self-hardening sand necessary for manufacturing of the core:

simultaneously, applying to the core box a jolt of between more than 2.0 G and less than 5.0 G in three directions by applying at least one of a three-dimensioned jolt and a predetermined combination of two-dimensional and one-dimensional jolts;

thereafter, charging a further amount of the self-hardening sand, which further amount, together with a previously charged amount, should not exceed the total amount of the self-hardening sand necessary for manufacturing of the core;

simultaneously, applying to the charged further amount the jolt of between more than 2.0 G and less than 5.0 G in three directions in accordance with a predetermined scheme; and

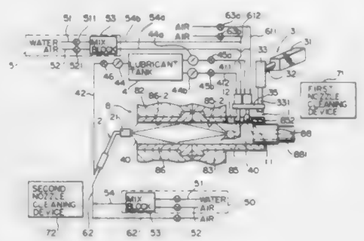
precipitating an air flow in the core box by sucking an inside of the core box upon filling the core box with the self-hardening sand.

5,388,631

DIE-CASTING APPARATUS WITH SPRAYING DEVICE FOR SOLID LUBRICANT AND DEVICE FOR CLEANING NOZZLES

Tetsuro Suganuma, Nagoya; Fumitaka Takehisa, Anjyo; Hiromi Takagi, Nagoya, and Mitsuyoshi Yokoi, Takahama, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 27, 1993, Ser. No. 52,988
Claims priority, application Japan, Apr. 29, 1992, 4-136275
Int. Cl.[6] B22C *3/00*
U.S. Cl. 164—72 13 Claims



1. A die-casting apparatus comprising:

a fixed mold assembly;

a movable mold assembly movable between an opened position spaced from the fixed mold assembly and a closed position where the movable mold contacts with the fixed mold to form a cavity for casting a product;

a spool bushing opened into the cavity for introduction of a molten metal material into the cavity;

an injection sleeve connected to the spool bushing and having an inlet for the introduction of the molten metal material;

a plunger slidably inserted into the injection sleeve for injecting the molten material from the injection sleeve to the cavity via the spool bushing;

first spraying means for spraying lubricant mainly on an inner surface of the injection sleeve;

second spraying means for spraying lubricant mainly on the inner surface of the spool bushing;

means for moving each spraying means between a first position for spraying the lubricant when the mold is opened and a second position for cleaning each spraying means at an outside of the spool bushing and the injection sleeve, respectively; and

means for cleaning the spraying means after the completion of the spraying operation, wherein, during a spraying operation, the first spraying means and the second spraying means are disposed so as to substantially face each other in a spaced relation within the injection sleeve and the spool bushing, respectively.

9. A method for preparing a die-casting apparatus for die-casting operation, said die-casting apparatus comprising a fixed mold and a movable mold which is moved between an opened position where the movable mold is spaced from the fixed mold and a closed position where the movable mold contacts with the fixed mold to form a cavity for die-casting a product, a spool bushing having an outlet for introduction a molten metal material to the cavity, an injection sleeve having an inlet for receiving the molten metal material, and a plunger slidable in the injection sleeve for injecting the molten metal material to the cavity via the spool bushing, the method comprising the steps of:

providing spraying assemblies for generating, respectively, flows of solid lubricant;

providing nozzle cleaning devices for cleaning the spray assemblies, respectively;

moving the movable mold to the opened position after completion of a die-casting operation, while locating the

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spraying nozzles to face the injection sleeve and the spool bushing, respectively so that the spraying nozzle for the injection sleeve and the spraying nozzle for the spool bushing substantially face each other in a spaced relationship within the injection sleeve and the spool bushing;

spraying the lubricant from the spraying assemblies toward the inner spaces of the injection sleeve and the spool bushing, respectively for obtaining heat insulating coatings of lubricant on the inner surfaces of the injection sleeve and spool bushing;

moving the spraying assemblies to cooperate with the respective nozzle cleaning assemblies for cleaning inner and outer sides of the spraying assembly.

5,388,632

METHOD AND APPARATUS FOR CASTING ARTICLES

Colin R. Bayliss, Granger, Ind., assignor to T & N Technology Limited, Warwickshire, England

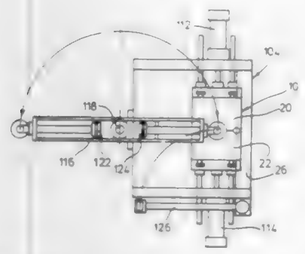
PCT No. PCT/GB91/02229, § 371 Date May 26, 1993, § 102(e) Date May 26, 1993, PCT Pub. No. WO92/11104, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 13, 1991, Ser. No. 70,337

Claims priority, application United Kingdom, Dec. 19, 1990, 9027466

Int. Cl.[6] B22D *15/02, 29/04*

U.S. Cl. 164—131 **4 Claims**



1. A method for the production of a piston by gravity die-casting, the casting including a skirt portion having generally relatively thin metal section thicknesses and a crown portion having generally relatively thicker metal section thicknesses, the method including the steps of:

(a) pouring molten metal into a die, which die has a first crown forming part separable from a skirt forming part; and

(b) allowing the casting to solidify an extent enabling the separation of the skirt forming part of the die therefrom;

(c) separating said die parts while the crown portion of the piston is partially molten so that the casting is retained by the first crown forming part of the die; and

(d) bringing a second crown forming part into mating with said skirt forming part;

(e) removing the solidified piston from the first crown forming part of the die.

5,388,633

METHOD AND APPARATUS FOR CHARGING METAL TO A DIE CAST

William E. Mercer, II, Clute; Carl F. Baker, and Harvey L. King, both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 837,298, Feb. 13, 1992. This application Apr. 15, 1993, Ser. No. 17,099

Int. Cl.[6] B22D *39/02, 17/10, 17/30*

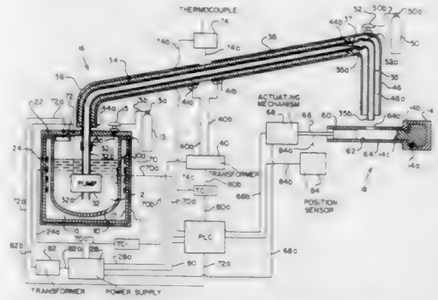
U.S. Cl. 164—457 **29 Claims**

1. A method for delivering molten metal from a source to a mold or die of a molding or casting machine, wherein the source of molten metal is a furnace or holding pot, or a combination thereof, comprising the steps of:

(a) transferring a predetermined volume of the molten metal from said holding pot to a shot delivery apparatus through a transfer means,

(b) allowing the molten metal to cool and solidify in the die following each charge,

(c) determining the volume of solidified metal charged into the die, and



(d) controlling the delivery of a subsequent volume of the molten metal from the holding pot to the shot delivery apparatus, in response to sequential detection of completion of a preceding charge of molten metal to the shot delivery apparatus, removal of a cast part from the die, and closure of the die; and

(e) weighing the casting after removal of the casting from the die, and calculating the volume of the casting based on the density of the metal in the casting.

5,388,634

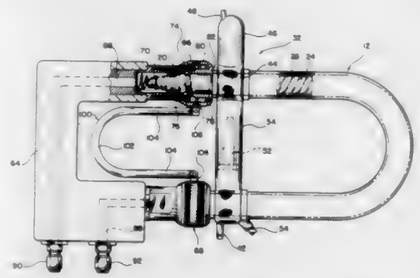
CARDIOPLEGIA DELIVERY SYSTEM

Martin J. Weinstein, Salisbury, and Kenneth E. Buckler, Dracut, both of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed May 10, 1993, Ser. No. 58,245

Int. Cl.[6] F28F *7/00*

U.S. Cl. 165—78 **11 Claims**



1. A holder for releasably mounting a heat exchanger in a cardioplegia delivery system, said heat exchanger defining a flow passage for a heat exchanging fluid and including an inlet fitting and an outlet fitting providing communication with said flow passage; said holder including inlet and outlet couplers positioned to align with and releasably engage with said inlet and outlet fittings respectively, said holder further including means for communicating said inlet and outlet couplers with a source and discharge for heat exchanging fluid, and release means engaged with and extending between said inlet and outlet couplers for manipulating and simultaneous release of said couplers, said couplers being quick disconnect couplers, each with retaining means adapted to engage and retain a fitting, and a movable component movably mounted for selectively releasing said retaining means, said release means being joined to said movable component of each of said couplers, said release means including a manually engageable portion for manipulation thereof and for simultaneous movement of said movable components, said holder including a gripping portion positioned in spaced opposition to said manually engageable portion on said release means and defining a fixed position base toward which said release means is relatively movable for simultaneous movement of said movable components and release of said retaining means of said inlet and outlet couplers.

5,388,635

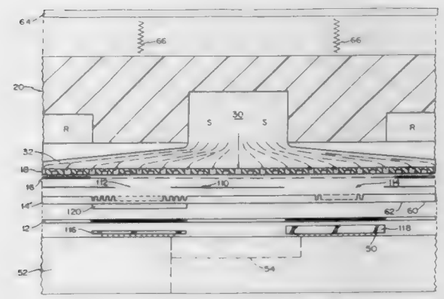
COMPLIANT FLUIDIC COOLANT HAT

Peter A. Gruber, Mohegan Lake, and Arthur R. Zingher, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 515,889, Apr. 27, 1990, abandoned. This application May 8, 1992, Ser. No. 883,051

Int. Cl.[6] F28F *7/00*

U.S. Cl. 165—80.4 **48 Claims**



1. A system for transferring heat from a surface to a flowing fluid comprising:

a non-soft material flexible manifold containing conduit means for guiding the fluid in a topologically parallel branched hierarchy.

5,388,636

SYSTEM FOR CLEANING THE INSIDE OF TUBING

Moshe Peery, Kibbutz Yotvata, Israel, assignor to C.Q.M. Ltd., Rishon le' Zion, Israel

Filed Nov. 18, 1993, Ser. No. 154,062

Int. Cl.[6] F28G *1/12*

U.S. Cl. 165—95 **8 Claims**

1. A system for cleaning the inside of tubing, comprising:

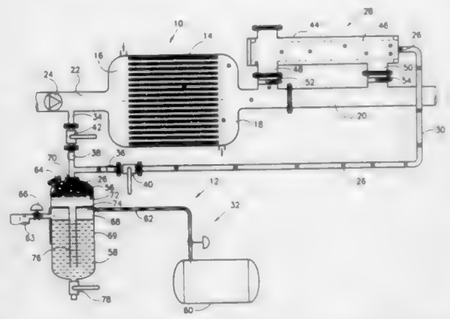
(a) a plurality of balls entrained by a liquid flowing through the system;

(b) separation means for separating said balls from the liquid downstream of the tubing;

(c) accumulator means for accumulating said balls downstream of said separation means;

(d) storage means for storing a volume of injection liquid, said storage means being in communication with said accumulator means, said storage means being in communication with a point upstream of the tubing; and

(e) a compressor for selectively providing a quantity of compressed air into said storage means for injecting at least a portion of said volume of injection liquid from said storage means to said point, said at least a portion of said volume of injection liquid passing through said accumulator means for entraining at least a portion of said balls therewith for injection upstream of the tubing.



5,388,637

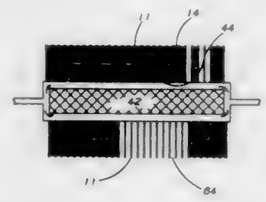
ACTIVATED CARBON ABSORBENT WITH INTEGRAL HEAT TRANSFER DEVICE

Jack A. Jones, Los Angeles, and Andre H. Yavrouian, Glendale, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Oct. 2, 1992, Ser. No. 955,465

Int. Cl.[6] B01J *20/26, 20/32*

U.S. Cl. 165—104.12 **29 Claims**



1. An integral apparatus for the transfer of heat comprising:

a finned tube heat exchanger member having a tube part and a fin part, the fin part being in direct contact with the tube part and outwardly thereof, the fin part forming a plurality of spaced apart fins and spaces along the tube part between the fins; and

a bonded, pyrolyzed activated carbon adsorbent matrix formed from a mixture comprising activated carbon particles and resol binder, the matrix being in the spaces, adjoined to the fins and the tube part to form an integral apparatus capable of withstanding repetitive adsorption and desorption cycles without the matrix becoming unbonded and without the matrix becoming unadjoined from the fins and the tube part.

5,388,638

ROD BAFFLE HEAT EXCHANGER

Cecil C. Gentry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 28, 1993, Ser. No. 174,493

Int. Cl.[6] F28F *9/00*

U.S. Cl. 165—162 **7 Claims**

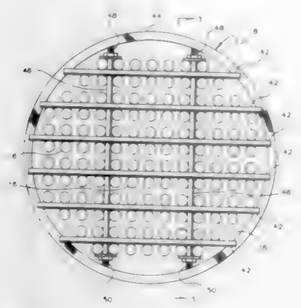
1. A rod baffle comprising:

an outer ring;

a plurality of support rods each having first and second ends wherein each said support rod is fixedly secured at its first and second end to said outer ring so that said outer ring

has a plurality of said support rods secured thereto in parallel equally spaced relation;

at least one cross-support rod having a first end and a second end wherein said cross-support rod is fixedly secured at its first and second end to said outer ring in perpendicular relation to said support rods and wherein a portion of said cross-support rod is provided with a screw thread in close proximity to said first end of said cross-support rod and wherein a portion of said cross-support rod is provided



with a screw thread in close proximity to said second end of said cross-support rod;

a first nut for applying inward pressure wherein said first nut is threaded to said cross-support rod in close proximity to said first end of said cross-support rod and is located within said ring; and

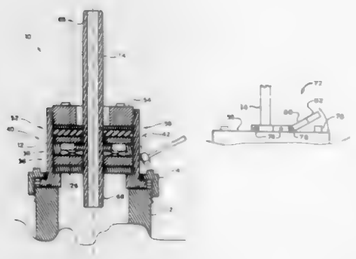
a second nut for applying inward pressure wherein said second nut is threaded to said cross-support rod in close proximity to said second end of said cross-support rod and is located within said ring.

5,388,639

WELLHEAD TUBING ROTATOR

Stanley G. Betchan, 716 Palmer, and Stanley E. Betchan, 1801 Yokley, both of Rockdale, Tex. 76567

Filed Dec. 20, 1993, Ser. No. 169,395
Int. Cl.[6] E21B *19/00, 33/03*
U.S. Cl. 166—78 **16 Claims**



1. A wellhead tubing rotator, comprising:

a generally cylindrical housing having an annular main wall having a first external flange, and defining at one end an interior shoulder, and defining at the other end threads;

a bearing supported within said housing and above said interior shoulder;

a cap having threads cooperating with said housing threads, whereby said cap is installed in said housing by threading thereto;

a central tubing section rotatably supported by said bearing;

a handle attachable to said central tubing section, whereby a person can grasp said handle and rotate said central tubing section; and

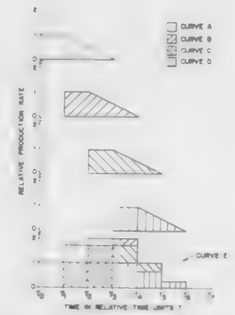
a bottom plate defining a first central opening therein, said bottom plate disposed within said housing and below said bearing, said bottom plate supporting said bearing and partially surrounding said central tubing member.

5,388,640

METHOD FOR PRODUCING METHANE-CONTAINING GASEOUS MIXTURES

Rajen Puri, Aurora, Colo., and Dan Yee, Tulsa, Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 3, 1993, Ser. No. 147,121
Int. Cl.[6] E21B *43/18*
U.S. Cl. 166—263 **40 Claims**



1. A method for increasing the production of methane from a solid carbonaceous subterranean formation having a standard initial production rate of a methane-containing gas of X standard cubic feet per unit time, where X is a positive number, said method comprising the steps of:

injecting an inert methane-desorbing gas into the formation;

recovering greater than X standard cubic feet per unit time of a first methane-containing gas from the formation during the injecting step;

terminating injection of the methane-desorbing gas; and thereafter

recovering greater than X standard cubic feet per unit time of a second methane-containing gas from the formation.

5,388,641

METHOD FOR REDUCING THE INERT GAS FRACTION IN METHANE-CONTAINING GASEOUS MIXTURES OBTAINED FROM UNDERGROUND FORMATIONS

Dan Yee; John P. Seidle, both of Tulsa, Okla., and Rajen Puri, Aurora, Colo., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 3, 1993, Ser. No. 147,122
Int. Cl.[6] E21B *43/18*
U.S. Cl. 166—263 **31 Claims**

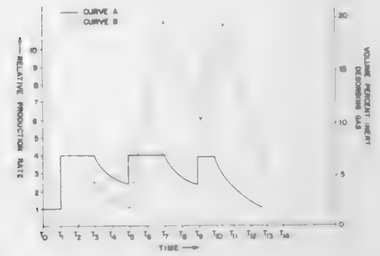
1. A method for reducing the amount of an inert methane-desorbing gas present in a methane-containing gaseous mixture produced from a solid carbonaceous subterranean formation, said method comprising the steps of:

injecting an inert methane-desorbing gas into the formation;

thereafter suspending injection of the methane-desorbing gas;

recovering a first methane-containing gaseous mixture from the formation during at least a portion of the injecting step, said mixture having a first methane-desorbing gas volume percent; and

recovering a second methane-containing gaseous mixture from the formation after performing the suspending step,



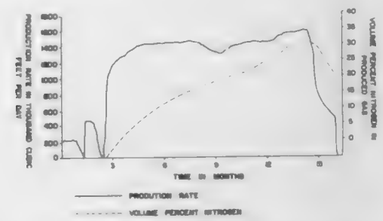
said second gaseous mixture having a second methane-desorbing gas volume percent less than said first methane-desorbing gas volume percent.

5,388,642

COALBED METHANE RECOVERY USING MEMBRANE SEPARATION OF OXYGEN FROM AIR

Rajen Puri, Aurora, Colo., and Dan Yee, Tulsa, Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 3, 1993, Ser. No. 147,111
Int. Cl.[6] E21B *43/18, 43/26, 43/40*
U.S. Cl. 166—266 **25 Claims**



1. A method for recovering methane from a solid carbonaceous subterranean formation having a production well in fluid communication with the formation and an injection well in fluid communication with the formation, the method comprising the steps of:

(a) passing a gaseous fluid containing at least 60 volume percent nitrogen and at least 15 volume percent oxygen through a membrane separator to produce an oxygen-depleted effluent;

(b) injecting the oxygen-depleted effluent into the formation through the injection well;

(c) recovering a fluid comprising methane through the production well; and

(d) operating the production well so that a pressure in the production well at a wellbore location adjacent to the formation is less than an initial reservoir pressure of the formation.

10. A method for recovering methane from a coalbed having a production well in fluid communication with the coalbed and an injection well in fluid communication with the coalbed, comprising the steps of:

(a) passing a gaseous fluid containing at least 60 volume percent nitrogen and at least 15 volume percent oxygen through a membrane separator to produce an oxygen-depleted effluent having less than 95% by volume nitrogen;

(b) injecting the oxygen-depleted effluent into the coalbed through the injection well; and

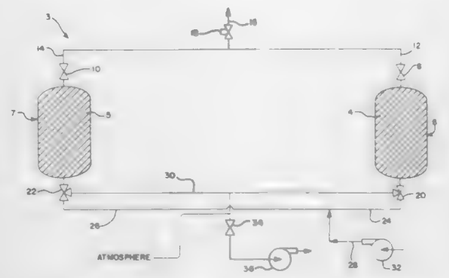
(c) recovering a fluid comprising methane through the production well.

5,388,643

COALBED METHANE RECOVERY USING PRESSURE SWING ADSORPTION SEPARATION

Dan Yee, Tulsa, Okla., and Rajen Puri, Aurora, Colo., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 3, 1993, Ser. No. 147,125
Int. Cl.[6] F21B *43/18, 43/26, 43/40*
U.S. Cl. 166—266 **31 Claims**



14. A method of recovering methane from a coalbed having a production well in fluid communication with the coalbed and an injection well in fluid communication with the coatbed, the method comprising the steps of:

(a) injecting a gaseous fluid containing at least 60 volume percent nitrogen and at least 15 volume percent oxygen into a bed of adsorptive material which preferentially adsorbs oxygen over nitrogen to establish a total pressure on the bed of adsorptive material;

(b) removing a raffinate, comprising an oxygen-depleted effluent containing less than 95% by volume nitrogen, from the bed;

(c) injecting the oxygen-depleted effluent from step b) into the coalbed through the injection well; and

(d) recovering a fluid comprising methane through the production well.

22. A method of increasing the recovery of methane from a coalbed penetrated by an injection well and a production well, which comprises the steps of:

(a) recovering methane from a production well at a pre-injection methane recovery rate;

(b) processing air containing about 15 to 25% by volume oxygen through a pressure swing adsorption separator to produce an oxygen-depleted effluent;

(c) injecting the oxygen-depleted effluent through the injection well at a rate sufficient to increase the recovery of methane from the production well to at least two times the pre-injection methane recovery rate within 90 days of a first injection of oxygen-depleted effluent; and

(d) operating the production well so that a pressure in the production well at a wellbore location adjacent to the coalbed is less than an initial reservoir pressure of the coalbed.

5,388,644

APPLICATION OF N,N-DIALKYLAMIDES TO REDUCE PRECIPITATION OF ASPHALT FROM CRUDE OIL

Julian Romocki, Calgary, Canada, assignor to Buckman Laboratories International, Inc., Memphis, Tenn.

Filed Feb. 8, 1993, Ser. No. 14,724
Int. Cl.[6] E21B *37/06, 43/22*
U.S. Cl. 166—268 **13 Claims**

1. A method of reducing precipitation of asphalt from crude oil subject to such precipitation when subjected to conditions different from the conditions found in its geological reservoir, which method comprises contacting such crude oil with an effective amount of at least one compound of formula I

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wherein R_1 is a substituted or unsubstituted C_1–C_6 alkyl group; R_2 is a substituted or unsubstituted C_1–C_6 alkyl group; and $R_3C(O)$— is a substituted or unsubstituted fatty acid residue of 8 to 22 carbon atoms atoms.

3. An enhanced oil recovery method which comprises:

flooding into an oil-bearing formation through an injection well a miscible flooding solvent selected from liquid natural gas and liquid carbon dioxide, wherein the solvent contains at least one compound of formula I

$$R_3C(O)—N(R_1)(R_2) \quad (I)$$

wherein R_1 is a substituted or unsubstituted C_1–C_6 alkyl group; R_2 is a substituted or unsubstituted C_1–C_6 alkyl group; and $R_3C(O)$— is a substituted or unsubstituted fatty acid residue of 8 to 22 carbon atoms atoms, in an amount effective to increase the pressure at which asphalt from crude oil begins to precipitate in the presence of the flooding solvent to a point greater than the ambient geological pressure in the formation.

5,388,645

METHOD FOR PRODUCING METHANE-CONTAINING GASEOUS MIXTURES

Rajen Puri, Aurora, Colo., and Paul T. Pendergraft, Tulsa, Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 3, 1993, Ser. No. 146,920
Int. Cl.[6] E21B *43/18, 43/26*
U.S. Cl. 166—268 **38 Claims**

1. A process for producing a methane-containing gas and for using a process-derived oxygen-enriched gas stream comprising the steps of:

physically separating a gaseous mixture containing at least about 10 volume percent oxygen into an oxygen-depleted stream and an oxygen-enriched stream;

injecting the oxygen-depleted stream through an injection well in fluid communication with a solid carbonaceous subterranean formation;

recovering a gaseous composition comprising methane from a production well in fluid communication with the solid carbonaceous subterranean formation; and

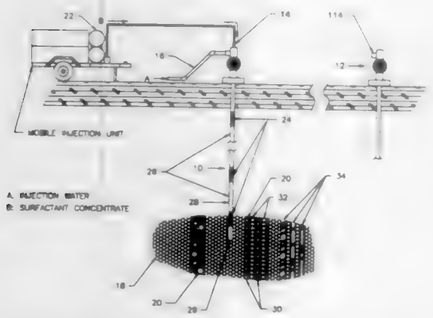
reacting at least a portion of the oxygen-enriched stream with a reactant stream containing at least one oxidizable reactant.

5,388,646

METHOD FOR REJUVENATION OF INJECTION WELLS

Clifford J. Hensley, P.O. Box 3147, Odessa, Tex. 79760

Filed Oct. 1, 1993, Ser. No. 130,400
Int. Cl.[6] E21B *43/22, 43/27*
U.S. Cl. 166—271 **21 Claims**



1. An injection well is spaced from a production well and has a wellhead which receives injection fluid for driving hydrocarbons from a formation towards a production well; the injection well formation has become plugged with contaminants that have accumulated therein over an interval of time, thereby causing the wellhead pressure required to effect a selected minimum flow rate of injection fluid into the formation to increase to a maximum value; the method of treating the formation to remove the accumulated contaminants, comprising the steps of:

treating the well for a day by carrying out a plurality of treatment cycles during the day, each treatment cycle is carried out by flowing injection fluid into the wellhead during a first time interval and injecting treatment chemical into the flowing injection fluid during a second time interval; said first time interval is greater than said second time interval;

flowing the injection fluid into the wellhead at a flow rate that produces a pressure which is less than the fracture pressure of the formation and flowing the treatment chemical into the flowing injection fluid at a rate to intermittently establish a mixture of injection fluid and treatment chemical within the formation; whereby the flowing injection fluid forces the mixture to migrate radially away from the injection well and into the formation and toward the production well;

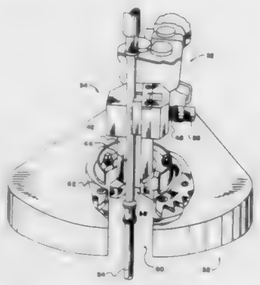
discontinuing the flow of injection fluid and treatment chemical into the injection well and acidizing the injection well to react the contaminants with the acid and thereafter flowing the reaction products away from the injection well by resuming the flow of injection fluid.

5,388,647

SUCKER ROD BACK OFF TOOL

Charles E. McGlothlin, P.O. Box 1583, Hobbs, N. Mex. 88240

Filed Feb. 12, 1993, Ser. No. 17,692
Int. Cl.[6] E21B *31/00;* **B25B** *13/46*
U.S. Cl. 166—301 **7 Claims**



1. A method of removing sucker rods from deep wells, said rods formed by joints in a rod string through tubing in the well and said rod string attached to pump elements far below the surface of the earth, and said pump elements being stuck to a well structure; comprising the steps of:

a) fitting a sucker rod break-out adapter to a mechanically powered tubing tong in the same manner and at the same position as tubing gripping jaws are fitted to said tubing tongs;

b) attaching said adapter having a vise jaw to said sucker rod string, by

c) screwing said vise jaw against the sucker rod, and

d) rotating said adapter by said tong thereby

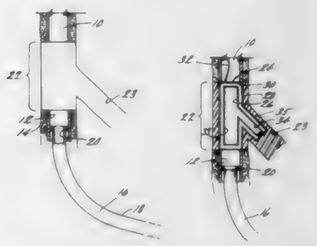
e) breaking a joint in the rod string.

5,388,648

METHOD AND APPARATUS FOR SEALING THE JUNCTURE BETWEEN A VERTICAL WELL AND ONE OR MORE HORIZONTAL WELLS USING DEFORMABLE SEALING MEANS

Henry J. Jordan, Jr., Conroe, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Oct. 8, 1993, Ser. No. 134,088
Int. Cl.[6] E21B *19/16, 33/13*
U.S. Cl. 166—380 **11 Claims**



1. A method for sealing the intersection between a primary borehole and a branch borehole comprising the steps of:

positioning deformable sealing means at an intersection between a primary borehole and branch borehole subsequent to drilling of the branch borehole; and

deforming said sealing means to seal the intersection between said primary borehole and said branch borehole; and wherein

said deformable sealing means comprises collapsible/expandable assembly means having,

a rigid primary element with a window therethrough;

a secondary element attached to said primary element and communicating with said window, said secondary element being adapted to collapse against said primary element and expand angularly from said primary element;

said deforming step further including;

collapsing said secondary element prior to positioning said deformable sealing means at said intersection with said branch borehole;

expanding said secondary element toward said branch borehole;

plugging said end of said secondary element; and

applying pressure to said secondary element through said primary element wherein internal pressure is created in said plugged secondary element to thereby inflate said secondary element.

5,388,649

DRILLING EQUIPMENT AND A METHOD FOR REGULATING ITS PENETRATION

Valto Ilomäki, Loilantie 8, 33470 Ylöjärvi, Finland

PCT No. PCT/FI92/00085, § 371 Date Sep. 24, 1993, § 102(e) Date Sep. 24, 1993, PCT Pub. No. WO92/16718, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 25, 1992, Ser. No. 119,234
Claims priority, application Finland, Mar. 25, 1991, 911415
Int. Cl.[6] E21B *44/00, 10/62*
U.S. Cl. 175—27 **7 Claims**

5. A method for regulating the penetration of a drilling apparatus in rock or soil, said method comprising the steps of:

a) providing an apparatus for drilling rock or soil, said apparatus comprising:

a rotatable tool having a drill head, said rotatable tool being moveable in a direction towards said drill head along its axis of rotation to effect drilling;

a plurality of drill bits mounted on said drill head, each of said drill bits being mounted on a respective member secured to said rotatable tool for movement therewith, each of said members being individually moveable between a forward position towards the forward end of said drill head and a rearward position;

means for maintaining said member in said forward position when, in use, the drill bits are under proper load;

means for permitting any one of said members to move rearwardly to said rearward position when, in use, the respective drill bit is overloaded; and

means for determining that, in use, any one of said members has moved rearwardly away from said forward position as a result of overload to enable a driving force applied to said tool to be restricted;

b) applying a drilling force to said rotatable tool to effect drilling of rock or soil with the drill bit under proper load; and

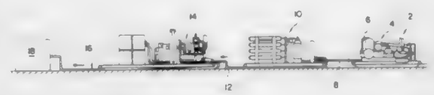
c) upon determining that one or more of said members has moved rearwardly away from said forward position, restricting said drilling force.

5,388,650

NON-CRYOGENIC PRODUCTION OF NITROGEN FOR ON-SITE INJECTION IN DOWNHOLE DRILLING

Keith Michael, Spring, Tex., assignor to Generon Systems, Houston, Tex.

Filed Jun. 14, 1993, Ser. No. 77,014
Int. Cl.[6] E21B *21/00*
U.S. Cl. 175—71 **9 Claims**



1. A method for drilling for oil or gas or a geothermal well in which a compressed inert gas is delivered to a drilling region within a downhole, the improvement comprising:

(a) removing at least a substantial portion of the oxygen contained within a feed stream of air at the site of said drilling to produce an inert rich gas and an oxygen enriched waste gas; and

(b) delivering the inert rich gas to the drilling region within the downhole.

5,388,651

TOP DRIVE UNIT TORQUE BREAK-OUT SYSTEM

Joe R. Berry, The Woodlands, Tex., assignor to Bowen Tools, Inc., Houston, Tex.

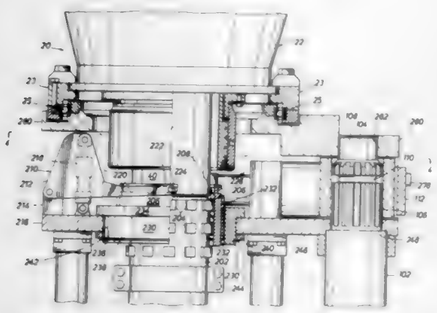
Filed Apr. 20, 1993, Ser. No. 50,537
Int. Cl.[6] E21B *19/00*
U.S. Cl. 175—85 **29 Claims**

1. A torque break-out system for a top drive drilling unit in a drilling rig, the top drive drilling unit having a non-rotating outer housing and adapted to be received at the upper end of a drill string, the top drive drilling unit is moveable upwardly and downwardly with the drill string and includes a tubular stem adapted to be connected to the upper end of the drill

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string for rotation therewith and a motor for power rotating the tubular stem and the connected drill string, the torque break-out system comprising:

an upper housing rotatably connected to the non-rotating outer housing of the top drive drilling unit;



a torquing assembly connected to said upper housing; and

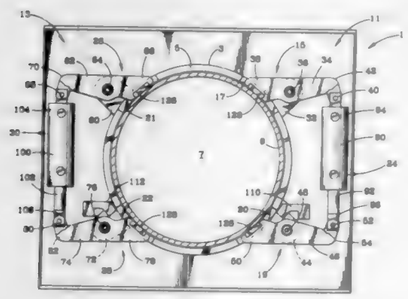
a wrench assembly fixedly connected to said torquing assembly, said wrench assembly vertically fixed relative to the tubular stem.

5,388,652

APPARATUS ON A DRILLING TOWER FOR GRIPPING A DRILL CASING

Donald W. Smith, Garland, Tex., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 2, 1994, Ser. No. 204,578
Int. Cl.[6] E21B *19/14*
U.S. Cl. 175—85 **6 Claims**



1. An apparatus on a drilling tower for gripping a drill casing comprising:

a. hollow, tubular bushing mounted on said tower in a vertically extending position, said bushing having a sidewall forming a passageway for a drill casing to pass vertically therethrough;

b. a pair of casing gripping assemblies mounted on said tower, adjacent an outer surface of said sidewall, said gripping assemblies co-acting in a gripping stroke and in a release stroke;

c. said pair of gripping assemblies spaced from each other adjacent approximately opposite portions of said sidewall;

d. a first gripping assembly of said pair comprising:

i. first gripping jaw means for gripping a casing;

ii. second gripping jaw means for gripping a casing; and

iii. first actuator means for moving said first and second gripping jaw means into and out of contact with a casing;

e. a second gripping assembly of said pair comprising:

i. third gripping jaw means for gripping a casing;

ii. fourth gripping jaw means for gripping a casing; and

iii. second actuator means for moving said third and fourth gripping jaw means into and out of contact with a casing; and

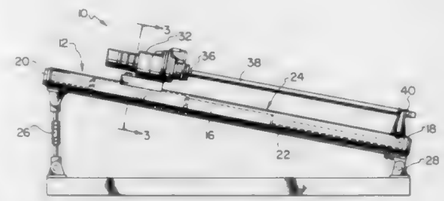
f. said first and second gripping assemblies being positioned around said bushing so that said first and fourth gripping jaw means contact said casing at approximately diametrically opposite locations, and so that said second and third gripping jaw means contact said casing at approximately diametrically opposite locations approximately 90 degrees from said first and fourth gripping jaw means.

5,388,653

DIRECTIONAL DRILLING APPARATUS

J. Richard England, 1021 Dublin Street, Sudbury, Ontario, Canada P3A 1R5

Filed Apr. 13, 1993, Ser. No. 45,183
Claims priority, application Canada, Mar. 11, 1993, 2091529
Int. Cl.[6] E21B *3/02*
U.S. Cl. 175—122 **16 Claims**



1. A directional drilling apparatus, comprising:

a frame;

a drill string motor means having a drill string connected thereto

cylinder means for advancing and retracting said drill string motor means longitudinally along said frame;

a motor mounting means for supporting said drill string motor means movable longitudinally along said frame;

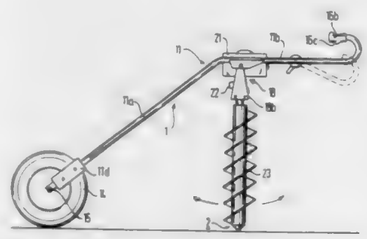
said mounting means including a seat; and a connecting member seated in said seat and freely moveable relative thereto for directly connecting said drill string motor means and said cylinder means and moveable in response to motion transmitted by said drill rod.

5,388,654

GROUND-BORING DEVICE

Josef Heiss, Steinbach 9, D-8172 Lenggries, Germany

Filed Mar. 24, 1993, Ser. No. 39,773
Claims priority, application Germany, Mar. 24, 1992, 9204003[U]
Int. Cl.[6] E04H *17/26;* **E21B** *7/00*
U.S. Cl. 175—170 **11 Claims**



1. A ground-boring device comprising:

a framework including at one end, a wheel for travelling of the framework and at an opposite end, a handgrip arrange-

ment located, during operation of the device, at a gripping level of a service person,

a ground auger mounted by said framework adjacent to said other end of said framework, said ground auger having a boring spindle and an engine-transmission unit for driving said boring spindle, and

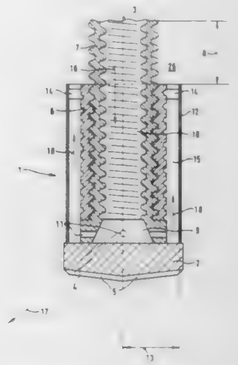
a seating device for mounting of said engine-transmission unit of said ground auger along said framework at a horizontal distance from said wheel and at a height vertically above said wheel, said handgrip arrangement being arranged such that said boring spindle operates substantially vertically by said seating device permitting a swinging of said ground auger in relation to said framework during penetration of said ground auger into the ground.

5,388,655

INJECTION BORING ANCHOR WITH AUGER BLADE

Heinz Gruber, Wilhelm-Busch-Strasse 2, 3370 Seesen/Rhüden, Germany

Filed Oct. 23, 1992, Ser. No. 965,215
Claims priority, application Germany, Nov. 9, 1991, 4136883
Int. Cl.[6] F21B *17/22*
U.S. Cl. 175—323 **14 Claims**



1. A boring tube useable as an injection anchor, comprising at least one tubular base body having a throughgoing longitudinal passage and an outer side; a boring head releasably connected with said base body; an auger blade arranged on said outer side of said base body and uninterruptedly extending over its whole length, said auger blade having a pitch of 1 m–3 m and a radial width which starting from the outer side of said base body is at least 10 mm, said body being provided on said outer side with a radially outwardly profile which is throughgoing along a length of said base body, said boring head having an axially short, plate-shaped boring crown provided with at least one rinsing opening communicating with said longitudinal passage of said base body; a coupling body arranged on said boring crown concentrically relative to a longitudinal axis of said boring crown and having a threaded portion at an end which is opposite to said boring crown for screwing with said base body, said auger blade having an outer diameter which at most is equal to 1.05 times an outer diameter of said boring crown.

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ENDLESS BELT TRACTION DEVICE FOR VEHICLES

Richard Lagasse, P.O. Box 117, Stockholm, Me. 04783

Continuation of Ser. No. 20,341, Feb. 19, 1993, abandoned. This application Mar. 23, 1994, Ser. No. 216,775
Int. Cl.[6] B62D *55/04*
U.S. Cl. 180—9.21 **1 Claim**

1. A traction unit for attachment to a pre-existing road wheel of a vehicle, wherein said road wheel comprises an axle and a pneumatic tire having a tread surface rotatable around an axle defined by said axis;

said traction unit comprising an axle means connected to said vehicle road wheel so that said axle means is aligned with said road wheel axis;

a normally horizontal rigid beam assembly having first and second ends, said rigid beam assembly being located below said axle means so that said beam assembly extends in opposite directions from a vertical plane coincident with the axle means axis;

a first idler wheel rotatably mounted on said first end of said beam assembly;

a second idler wheel rotatably mounted on said second end of said beam assembly;

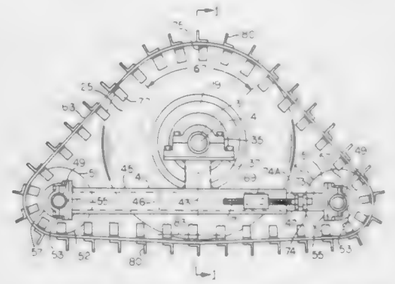
each idler wheel comprising a shaft and a pneumatic tire having a tread surface rotatable around the shaft axis;

said first and second idler wheels being the only idler wheels in the traction unit;

a suspension post extending downwardly and swivably mounted on said axle means for rotatably suspending said beam assembly below said axle means so that said beam assembly and said idler wheels are rockable as a unit around said road wheel rotational axis;

a single endless flexible ground traction belt trained around the tires on said road wheel and said first and second idler wheels;

said beam assembly comprising an elongated tube having a non-circular cross section, and a beam element (47) having



a non-circular cross section slidably telescoped into said elongated tube;

said beam element being slidably adjustable in said elongated tube for controlling slack in said belt;

the diameter of each idler wheel being such that when said traction unit is in an upright condition spaced above a flat horizontal ground surface, the lower surface of the vehicle road wheel is slightly below the lower surfaces of said idler wheels, whereby during service the ground pressure on said belt is distributed to a greater extent on the belt area below the vehicle road wheel axle, and to a lesser extent on the belt areas below the idler wheel shafts;

each idler wheel shaft extending from said beam assembly so that the idler wheel tires and the road wheel tire track in a common plane;

said ground traction belt having side edges spaced equidistant from the common track plane of the pneumatic tires;

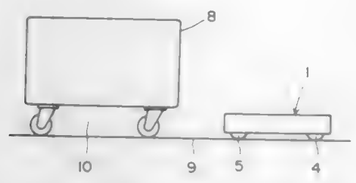
said ground traction belt having an inner surface engaged with the tread surfaces of said pneumatic tires and an outer surface presented to the ground;

two rows of guide shoes extending from the belt inner surface equidistant from the road wheel track plane in close proximity to the road wheel tire to prevent sidewise dislocation of said belt from the vehicle road wheel; and

the tread surface on the road wheel tire being spaced from the tread surface on each idler wheel by a clearance distance that is less than the radius of each idler wheel tire in order to minimize the overall length of the traction unit.

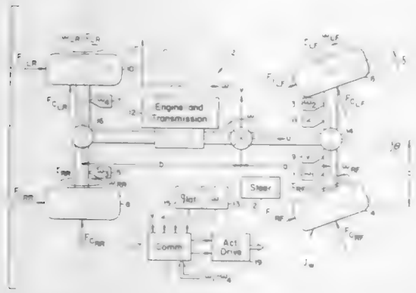
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5,388,657
LIFTING MECHANISM FOR NO-MAN VEHICLE
Itsuo Shiraishi, Ebina, Japan, assignor to Yugen Kaisha Takuma Seiko, Kanagawa, Japan
Filed Mar. 29, 1993, Ser. No. 38,873
Int. Cl.[6] B62D *1/24*
U.S. Cl. 180—168 4 Claims



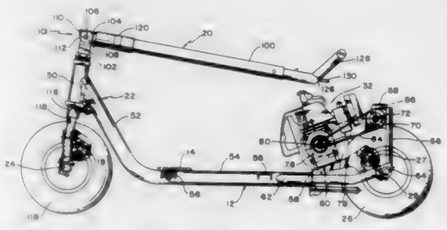
1. A lifting mechanism of a no-man vehicle adapted to run itself along a guide tape installed on a floor, comprising;
a lifting motor secured to a base frame of said no-man vehicle,
a cam disc rotated by said lifting motor,
a lifting member in contact with said cam disc, said lifting member being raised or lowered when the cam disc is rotated by said lifting motor,
wherein a portion of an outer circumference face of said cam disc includes a point closest to an axis of a shaft which rotates the cam disc, and another portion of the outer circumference face of the cam disc opposite to said closest point has a cam face of a predetermined length defining an arc having a constant radius measured from said axis said radius being longer than the distance between said point closest to said axis and said axis.

5,388,658
INTEGRATED TORQUE AND STEERING CONTROL SYSTEM
Masao Ando, Davis, and Donald L. Margolis, El-Macero, both of Calif., assignors to Imra America, Inc., Ann Arbor, Mich.
Filed Dec. 2, 1991, Ser. No. 801,364
Int. Cl.[6] B60K *17/34*
U.S. Cl. 180—197 18 Claims



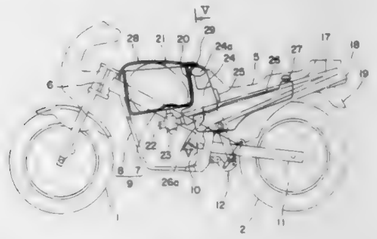
1. Apparatus for controlling wheel torque of a vehicle having at least one wheel and steering angle of the vehicle comprising:
means for sensing desired vehicle speed;
means for sensing a desired steering angle;
means for sensing lateral acceleration of the vehicle;
means for providing a desired angular velocity for said at least one wheel of the vehicle and a desired vehicle angular velocity of the vehicle in response to said desired vehicle speed, said desired steering angle and said lateral acceleration; and
means for controlling the wheel torque and the steering angle of the vehicle in response to said desired angular wheel velocity for said at least one wheel and said desired vehicle angular velocity.

5,388,659
MOTORIZED SCOOTER
Anthony Pepe, 207 E. 85th St., New York, N.Y. 10028
Filed Aug. 19, 1993, Ser. No. 109,362
Int. Cl.[6] B62K *11/06, 11/10, 15/00*; B62M *7/08*
U.S. Cl. 180—219 16 Claims



1. A collapsible, light W...eight and portable motorized vehicle having a free wheeling front wheel and a motor driven rear wheel, comprising: a generally singular tubular frame, for supporting a deck having a generally horizontal portion fixedly secured to at least two deck support plates mounted on said frame for enabling a rider to stand on said deck between the front and rear wheels, said front and rear wheels including mounted tires and disc brakes assemblies, a foldable steering assembly comprising a front fork rotatably supporting said front wheel for rotation about an axis, a fork stem extending upward from said front fork through a head portion of said frame, a steedring member having a stem portion fixed to said fork stem for rotation of said steering member about a first axis when in an operating position, and a shaft portion having one end rotatably attached to said stem portion for about a 90 degree rotation of said shaft portion about a second axis normal to said first axis, said steering member further comprising a. tubular column slidably disposed over said one end of said shaft portion movable between a locked position whereby said column is disposed over said one end locking said shaft portion and said stem portion together to prevent rotation of said shaft portion about said second axis and an Unlocked position, said collar having at least one internal circumferential groove therein and said shaft portion having a spring loaded ball disposed in a blind bore in said shaft portion, and said ball engaging said groove for preventing during use of said vehicle any unintentional movement or undesired release of said collar from said locked position over said one end; and wherein said shaft portion having a retractable locking pin member axially extending from an opposite end of said shaft portion for engaging a mating aperture in said deck when said shaft port,ion is rotated to a folded down storage and transport position and said shaft portion adapted to be latched to said deck to lock said steering member in the storage and transport position; whereby said vehicle can be hand carried and transported by gripping said folded down shaft portion of said steering member.

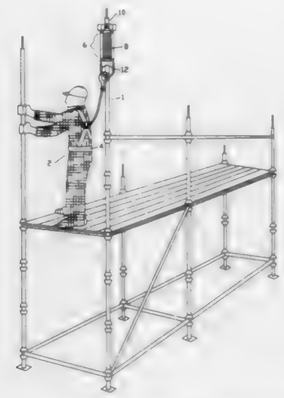
5,388,660
MOTOR BICYCLE
Sadao Shirasagi, and Seishiro Kaneta, both of Hamamatsu, Japan, assignors to Suzuki Kabushiki Kaisha, Japan
Continuation of Ser. No. 724,110, Jul. 1, 1991, abandoned, which is a continuation of Ser. No. 517,426, May 1, 1990, Pat. No. 5,048,634, which is a continuation of Ser. No. 221,928, Jul. 20, 1988, abandoned. This application Sep. 3, 1993, Ser. No. 116,486
Claims priority, application Japan, Jul. 21, 1987, 62-180155
The portion of the term of this patent subsequent to Sep. 17, 2008, has been disclaimed.
Int. Cl.[6] B62J *9/00*
U.S. Cl. 180—219 9 Claims



1. A two-wheeled motorized vehicle comprising:
a main frame having a biforked element comprised of two frame elements extending rearwardly and downwardly along the vehicle;
a steerable front wheel rotatably supported at a front part of the main frame;
a rear wheel rotatably supported at a rear part of the main frame;
an internal combustion engine carried by the main frame and connected to rotationally drive the rear wheel;
a storage compartment disposed above the engine in the space between the two rearwardly and downwardly extending frame elements and having a size and shape sufficient to store therein a helmet for a rider;
a seat carried by the main frame and positioned rearwardly of the storage compartment, the seat having a bottom portion extending obliquely upwardly and rearwardly; and
a fuel tank disposed substantially between the seat and the rear wheel so as to extend obliquely upwardly and rearwardly along the bottom portion of the seat, said fuel tank having a front end portion extending towards a lower side of a rear portion of the storage compartment and having a fuel port opened upwardly at a rear end portion of the fuel tank and at a rearward portion of the seat.

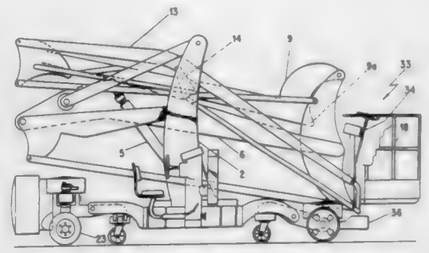
5,388,661
SAFETY STRAP FOR SECURING A BODY HARNESS TO A SCAFFOLDING STRUCTURE
Roy Hood, Jr., Holden, La., assignor to Cherokee Construction Co., Baton Rouge, La.
Filed Nov. 3, 1993, Ser. No. 147,343
Int. Cl.[6] A62B *35/00*
U.S. Cl. 182—3 5 Claims

1. A means for securing a body harness to a scaffolding structure of the type which uses a connector/retention system for detachably securing horizontal members to upright members, wherein the upright members contain retention means at vertically spaced locations for receiving connector means secured to ends of horizontal members and wherein said connector/retention system is selected from the group consisting of the wedge-type, the double-ring type, the peg/socket type, the lever/dish type, and the locking cup type, said means for securing a body harness to said scaffolding being comprised of a strap composed of a main body having a first end and a second end, said first end having secured thereto a mounting ring for securing to a body harness and said second end having a connector means secured thereto which can be detachably connected to said retention means of said upright members, said connector means being of the type selected from the



wedge-type, the double-ring type, the peg/socket type, the lever/dish type, and the locking cup type connector/retention system.

5,388,662
HOIST MACHINE ASSOCIATED TO A SELF-PROPELLED TRUCK
Jacques Tranchero, Via Cerretto, 56, 12024 Costigliole Saluzzo, Cuneo, Italy
Filed Jul. 28, 1993, Ser. No. 97,748
Claims priority, application Italy, Jul. 31, 1992, 92A 000657
Int. Cl.[6] B66F *11/04*
U.S. Cl. 182—63 10 Claims



1. In a hoist machine for an aerial platform, having a base, a plurality of mutually articulated pantographic levers forming a plurality of stages, one of said levers being articulatedly connected to said base, a plurality of jacks connected to selected ones of said levers for extending said stages to raise said aerial platform to a working position and retracting said stages to lower said aerial platform to a rest position, said aerial platform being articulatedly connected to another of said levers, distal from said base when said stages are extended, the improvement wherein
said base comprises truck means for moving said hoist machine along the ground, said truck means having first coupling means, and
said aerial platform comprises driving means for controlling the movement of said truck means, said driving means having second coupling means, said first and second coupling means being releasably engageable for enabling said

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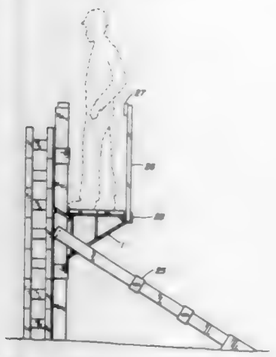
truck means to be controlled by said drive means when said aerial platform is in said rest position.

5,388,663

PORTABLE WALKWAY SYSTEMS

Michel Phillippe, 2840 Bouvier Road, Hammond, Ontario, Canada K0A 2A0; Ernest Phillippe, 2743 Dunning Road, Sarsfield, Ontario, Canada K0A 3E0, and Marc Phillippe, 2214 Russland Road, Vars, Ontario, Canada K0A 3H0

Filed Dec. 8, 1993, Ser. No. 162,932
Int. Cl.[6] E04G *3/08*
U.S. Cl. 182—82 **2 Claims**



1. A walkway assembly in combination with a foam-block wall comprising hollow core foam blocks to be filled with concrete besides which wall said walkway assembly is to be erected, said assembly comprising:

(1) a plurality of vertical support posts standing adjacent to the wall, each of such posts being provided with a channel means in the form of a notch or hole to receive a fastening ring;

(2) a fastening ring installed on each of said posts each such ring being engaged with a respective notch or hole; and

(3) a walkway support bracket mounted on each post, each bracket being engaged with a respective fastening ring, such brackets having:

(i) an engaging leg by which they are engaged with their respective fastening ring;

(ii) a horizontal walkway lumber support bar upon which walkway lumber is placed to span the space between adjacent brackets;

(iii) a downwardly angled brace;

(iv) a thrusting flange located at the lower end of the brace and positioned to bear against said post beneath said fastening ring; and

(4) vertical support means comprising brackets placed around the support posts for a sliding engagement therewith, said brackets being fastened to said wall to provide lateral support to said posts by which they will remain in a vertical orientation while the walkway is in use, while permitting said wall, including said brackets, to subside when said block cores are filled with concrete, without impairing the integrity of the support provided to the walkway.

5,388,664

PORTABLE TREE STAND

Eugene A. Bator, 3887 Jones Rd., Diamond, Ohio 44412

Filed Nov. 23, 1993, Ser. No. 157,387
Int. Cl.[6] E06C *1/00*
U.S. Cl. 182—100 **17 Claims**

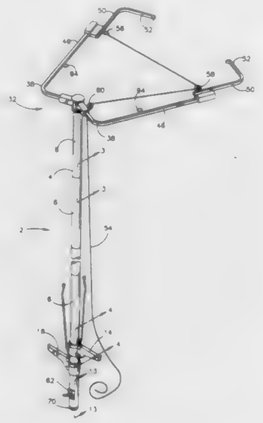
1. Apparatus for use by a person to climb to and descend from an elevated position next to an upright object, comprising:

(a) a tubular metal pole having top and bottom ends;

(b) a clamping assembly attached to the pole near the top end for securing the pole to the upright object;

(c) a device on the bottom end of the pole for anchoring said bottom end to the ground; and

(d) upper and lower foot supports for use by the person to climb and descend the pole, each of the foot supports comprising a sleeve slidably mounted on the pole and a foot platform extending from one side of the sleeve, the



sleeve of the upper foot support being mounted on the pole above the sleeve of the lower foot support, each sleeve having upper and lower friction pads on its interior surface facing said pole, the upper friction pad being located on the side of said sleeve opposite from said foot platform and the lower friction pad being located on the same side of said sleeve as said foot platform, said friction pads having friction surfaces engageable with the outer surface of said pole and holding the foot support in a fixed position on the pole in response to a downwardly applied force on the foot support.

5,388,665

ADJUSTABLE LADDER PLATFORM

Donald W. Newman, 2405 West, 300 North, Bluffton, Ind. 46714

Filed Oct. 12, 1993, Ser. No. 133,887
Int. Cl.[6] E06C *1/12*
U.S. Cl. 182—122 **11 Claims**

1. An adjustable platform for attachment to a ladder, said adjustable platform comprising:

(a) a frame which can be removably attached to the ladder;

(b) a planar platform fixedly mounted on a shaft rotatably disposed in said frame, said planar platform extending substantially outwardly of the ladder; and

(c) a position adjustment means operatively connected to said shaft for selectively locking said planar platform in a desired angular position with respect to the ladder or for permitting said planar platform and said shaft to rotate freely within said frame, said position adjustment means comprising:

a ratchet wheel fixedly disposed on said shaft and at least one ratchet pawl in combination therewith to prevent said planar platform from rotating outwardly when said ratchet wheel and said at least one ratchet pawl are engaged, and to permit said planar platform and shaft to rotate freely when said ratchet wheel is not so engaged;

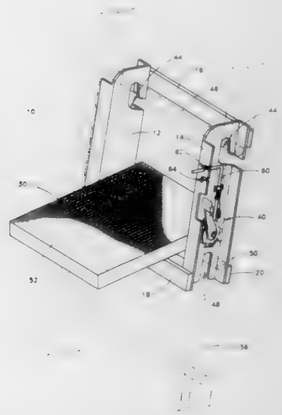
(d) at least one L-shaped first slot defined in an upper rear

portion of said frame so as to engage therein a selected first rung of the ladder;

(e) at least two upwardly extending U-shaped second slots defined in a lower portion of said frame so as to engage therein a second rung of the ladder immediately below said first rung, said second slots have a vertical depth greater than that of said at least one L-shaped first slot; and

(f) means to selectively release said at least one ratchet pawl from said ratchet wheel, wherein said means comprises:

a rotatable ratchet release plate, said rotatable ratchet release plate being rotatably mounted on said shaft; and



at least one boss extending from said ratchet release plate and disposed in proximity to said at least one ratchet pawl such that rotation of said ratchet release plate will cause said at least one boss to bear against said at least one ratchet pawl, thereby causing said at least one ratchet pawl to disengage said ratchet wheel;

wherein said adjustable platform is removably attached to the ladder solely by the releasable engagement of said first rung with said at least one L-shaped first slot and the releasable engagement of said second rung with said second slots.

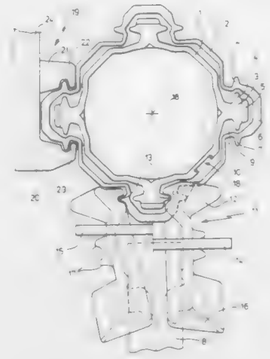
5,388,666

SUPPORT SCAFFOLD

Artur Schwörer, Baden-Württemberg, Germany, assignor to Peri GmbH, Weissenhorn, Germany

Filed Jan. 11, 1993, Ser. No. 2,791
Claims priority, application Germany, Jan. 25, 1992, 4201958
Int. Cl.[6] E04G *1/12*
U.S. Cl. 182—179 **14 Claims**

1. Support scaffold with adjustable-height posts having an outer tube and an inner tube, and with stiffeners arranged between said outer and inner tubes for the attachment between said stiffener and at least one of said inner tube and said outer tube, wherein said stiffener can be fastened both to said outer tube and to said inner tube, said inner tube having a connecting element and said outer tube having a connecting element, and a connecting part of said stiffener is adapted for fastening onto both said inner connecting element and said outer connecting element, wherein the cross-sectional shape of the outer tube approximately corresponds to the cross-sectional shape of the inner tube and said connecting elements provided on the outer tube and inner tube have radially projecting lobes, respectively, for fastening the stiffener, wherein the lobes have a radius and projections, respectively, running perpendicular to said radius and, radially inward from said projections, recesses,



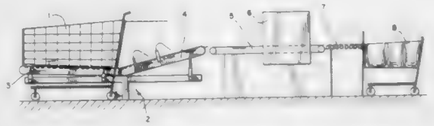
for the entry of fastening means, engaging behind the projections, that are arranged on the stiffeners.

5,388,667

UNLOADING SYSTEM FOR SHOPPING CARTS

Horst Sonnendorfer, and Franz Wieth, both of Eichenau, Germany, assignors to Systec Ausbausysteme GmbH, Eichenau, Germany

Filed Mar. 25, 1993, Ser. No. 36,987
Claims priority, application Germany, Mar. 26, 1992, 4209809
Int. Cl.[6] B65G *67/08*
U.S. Cl. 186—64 **27 Claims**



1. An unloading system in combination with shopping carts which comprise an undercarriage, an upwardly open basket having a generally horizontal product-supporting bottom wall, and a plurality of generally vertical sidewalls extending upwardly from said bottom wall, said basket containing products to be unloaded lying randomly therein on said bottom wall, said system comprising a vibrating conveyor device adapted to be operatively associated with the products to be unloaded to subject the products to a transporting movement in a defined unloading direction, and wherein a side of the basket disposed in the unloading direction relative to the products is adapted to be opened at least in the area adjacent the bottom wall of the basket.

5,388,668

ELEVATOR DISPATCHING WITH MULTIPLE TERM OBJECTIVE FUNCTION AND INSTANTANEOUS ELEVATOR ASSIGNMENT

Bruce A. Powell, Canton, and John N. Williams, Coventry, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Aug. 16, 1993, Ser. No. 59,152
Int. Cl.[6] B66B *1/18*
U.S. Cl. 187—387 **2 Claims**

1. In an elevator system having a plurality of elevator cars, an elevator dispatcher for assigning elevator cars to hall calls,

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and a plurality of hall calls, a method for assigning an elevator car to service a new hall call, the method comprising the steps of:

registering a new hall call;

for each elevator car of the plurality:

estimating a remaining response time value to respond to the new hall call,

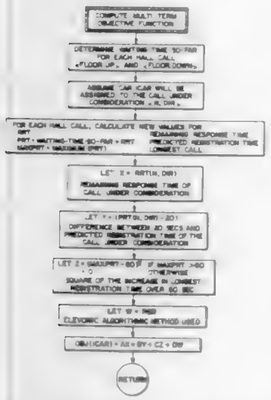
estimating a predicted registration time value to respond to the new hall call,

estimating a maximum predicted registration time value to respond to all previously assigned hall calls;

estimating a relative system response factor value for the elevator system;

estimating an objective factor value according to the relation

$$OBJ=(A\cdot RRT)+(B\cdot|PRT-T_1|)+(\delta\cdot C\cdot^2)+(D\cdot RSR)$$



where OBJ=the objective factor value for an elevator car,

A, B, C and D are coefficients, the value of which may be varied,

RRT=remaining response time value for the car,

PRT=predicted registration time value for the car,

maxPRT=maximum predicted registration time value,

T_1=a first time value threshold,

T_2=a second time value threshold,

RSR=relative system response factor value, and wherein

δ=1 if maxPRT is greater than T_2 and 0 if less than or equal to T_2;

comparing the objective factor value of each of the elevator cars to identify an elevator car having the smallest objective factor value;

assigning the identified elevator car to respond to the new hall call; and

moving the assigned elevator car to the new hall call.

5,388,669

BRAKE ACTUATOR WITH ELECTROMAGNET, CAM, AND HYDRAULIC PISTON COMPONENTS

Eberhard Holl, Schwieberdingen; Frieder Keller, Bretten; Peter Schubert, Stuttgart; Steffen Kaehler, Kornwestheim; Claus Kramer, Besigheim, and Hermann Winner, Karlsruhe, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

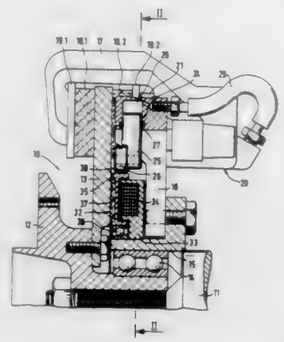
Filed Mar. 10, 1993, Ser. No. 28,874

Claims priority, application Germany, Mar. 11, 1992, 4207641

Int. Cl.[6] B60T *13/74, 1/06*

U.S. Cl. 188—71.2 5 Claims

1. A friction brake for vehicles, comprising a brake disk (13) that is connected coaxially to a vehicle wheel in a manner fixed against relative rotation, at least one friction lining (18.1, 18.2) associated with the brake disk (13); secured relative to said friction lining, a clamping device (20), a first piston (21) for pressing the at least one friction lining (18.1, 18.2) against the brake disk (13); a clutch (32) mechanically connected to the clamping device (20), a drive source for driving said clamping device via said clutch; said clutch is an electromagnetic friction clutch (32) which is disposed coaxially with said brake disk



(13), a first clutch half (33) of said electromagnetic friction clutch is stationary and a second clutch half (35) is rotatably seated independently of the vehicle wheel and is brought into controllable frictional engagement with the brake member (13), said second clutch half (35) of the friction clutch (32) acts on a device (24) for generating hydraulic pressure independently of the direction of rotation of the vehicle wheel, which pressure can act upon the clamping device (20) and said at least one friction lining.

5,388,670

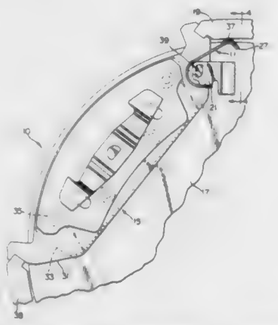
WEAR-LIMIT WARNING ANTI-RATTLE SPRING

Ralph G. Kuskye, Plymouth; Neil J. Clark, Granger, and Steven B. Conger, Plymouth, all of Ind., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Jul. 26, 1993, Ser. No. 97,352

Int. Cl.[6] F16D *65/02*

U.S. Cl. 188—73.38 2 Claims



1. An anti-rattle spring (11) mounted on a backing plate (31) of one a pair of opposed backing plate and friction pad assemblies (15) in a generally planar parallel relationship with a rotor (17) engaging friction surfaces and stationary torque support members (19, 38) of a disc brake assembly (10), said anti-rattle spring (11) comprising: a base portion (21) disposed in a plane generally parallel to the planes of the friction surfaces of said pad assemblies (15), the base portion (21) fastened to one of the pads (15) through an elongated boss (39) in said backing plate (31) and a corresponding elongated hole (43) in the base portion (21) to prevent the anti-rattle spring (11) from rotating on the backing plate (31), said anti-rattle spring (11) having a web portion (23) which extends generally perpendicularly from the base portion (21) and a curved blade (25) which extends from the web portion (23), said curve blade (25) initially extending from the web portion (23) in a direction away from the torque support member (19) and is subsequently curved back toward said torque support member (19) to define a first cantilevered member with a free end (27) that engages said torque support member (19) to provide a resilient biasing between the torque support member (19) and the pad assembly (15), said anti-rattle spring (11) having a relatively flat resilient blade (29) extending generally orthogonally from the base portion (21) in a direction opposite the web portion (23) to define a second cantilevered member which will engage the brake rotor (17) during brake operation only if the thickness of the friction material of the outer brake assembly (15) is less than a predetermined thickness to provide an audible wear-limit warning.

5,388,671

ADJUSTING AND CENTERING MECHANISM ON THE SLIDING ADVANCE LOCK OF A SERVO DRUM BRAKE

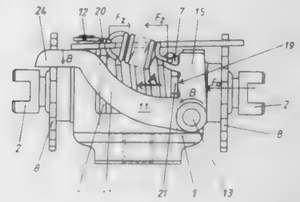
Bernd Rupprecht, Edingen-Neckarhausen, Germany, assignor to Deutsche Perrot-Bremse GmbH, Mannheim, Germany

Filed Aug. 26, 1993, Ser. No. 112,067

Claims priority, application Germany, Aug. 26, 1992, 4228296

Int. Cl.[6] F16D *65/52*

U.S. Cl. 188—79.51 2 Claims



1. An adjusting and centering mechanism for a sliding advance lock of a servo drum brake, the lock being mounted in a guide bracket to be axially slidable against a prestressing force of a centering compression spring, the mechanism comprising:

respective adjusting nuts for each advance direction, into each of which nuts a rotationally rigid threaded bolt is screwed to engage the end of a respective brake shoe, and each of which nuts carries a toothed coaxial adjusting wheel, which wheel has unidirectionally acting ratchet teeth; two two-armed adjusting levers, each swingably mounted on the guide bracket, and being engaged respectively by opposite ends of an adjustment spring, wherein one arm of each adjusting lever has a pawl which engages the ratchet teeth of one of the two adjusting wheels, and the other arm of each adjusting lever has an abutting-region which can abut against a respective axially movable structural element carried by the sliding advance lock; whereby when the sliding advance lock undergoes an axial displacement, one of the two adjusting levers undergoes an angular displacement over its associated toothed adjusting wheel such that the wheel is rotated in the direction to unscrew the associated threaded bolt, wherein the engagement of the pawls and the toothed adjusting wheels is configured such that when a pawl is moved as a consequence of an actuation of the brake the pawl engages a relatively steep side of a tooth of said wheel, and when moved as a consequence of a release of the brake the pawl engages a relatively shallow side of a tooth of said wheel; characterized in that the adjustment spring has a contracting spring force urging the respective other arms of the adjusting levers inwardly towards one another, that the respective structural elements are located between said other arms and are engaged by said other arms resisting said spring force and that axial movement of a respective one of the bolts as a consequence of brake actuation effects axial movement of the respective structural element inwardly away from the respective other arm to provide said angular displacement of the respective adjusting lever by contraction of the adjustment spring.

5,388,672

ANTI-ROLL-BACK DEVICE

Brian Hartley, Manor House, Mansfield Road, Winsick, Chesterfield, Derbyshire, United Kingdom S41 0JG

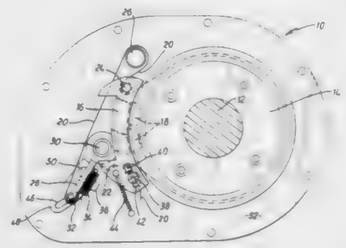
PCT No. PCT/GB91/01723, § 371 Date Apr. 1, 1993, § 102(e) Date Apr. 1, 1993, PCT Pub. No. WO92/05983, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 4, 1991, Ser. No. 39,062

Claims priority, application United Kingdom, Oct. 9, 1990, 9021872; May 25, 1991, 9111378; Sep. 16, 1991, 9119769

Int. Cl.[6] F16D *59/00;* B60T *1/00*

U.S. Cl. 188—82.1 38 Claims



1. An anti-roll-back device for a rotatable member, comprising a second member located adjacent the rotatable member, a loop or noose secured at one end to the second member and extending around the rotatable member to pass around a guide member secured to the second member, the loop or noose then extending to a movable member, the second member being substantially unrestricted in its movements in response to forces applied to it, during use, by said loop or noose, and there being releasable locking means operable to hold the movable member against movement and to release the movable member to move as and when required.

5,388,673

HAND HELD BRAKE FOR USE WITH FOOT-MOUNTED WHEELED VEHICLES

Joseph A. Rohner, III, 3072 Triumph La., Boise, Id. 83705

Filed Jun. 21, 1993, Ser. No. 79,729

Int. Cl.[6] B60T *1/14*

U.S. Cl. 188—84 7 Claims

1. A hand held brake for use with foot-mounted wheeled vehicles comprising:

a tubular body having a top end, a middle section, and a bottom, and said top end having a handle for gripping said top end, said middle section having a tubular hand grip encircling said middle section as a means for gripping said middle section of said tubular body;

a bend in said tubular body approximately 6 to 8 inches above the bottom end of said tubular body, said bend of which is at an angle of 20 degrees,

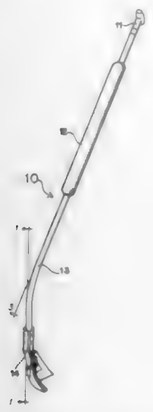
a brake means attached to the bottom end of said tubular body for slowing or stopping the particular wheeled vehicle in use through engaging the ground surface by pressing said brake means at the bottom end of said tubular body downward;

said brake means including one front and one back curved plates with means for attaching said plates to the bottom

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end of said tubular body, said means including sleeves on the upper part of each plate, said sleeves each having two holes aligned with like holes in the bottom end of said tubular body to receive two nuts and bolts with which to secure said plates,

a depending stop member of rubber material fastened between the two plates for engaging the ground surface



when said stop member is pressed downward, where said rubber material is of the proper thickness so that said stop member will roll backward or forward when the ground surface is engaged,

means for securing said stop member between said plates, said securing means being at least two nuts and bolts which are connected through two receiving holes passing through both said plates and said stop member.

5,388,674

DEVICE IN A BRAKE UNIT

Lars Severinsson, Hishult, Sweden, assignor to SAB WABCO Holdings B.V., Heerhugowaard, Netherlands

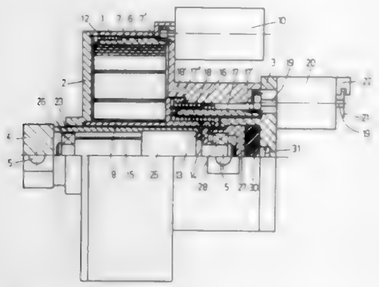
PCT No. PCT/SE92/00201, § 371 Date Sep. 24, 1993, § 102(e) Date Sep. 24, 1993, PCT Pub. No. WO92/17714, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 31, 1992, Ser. No. 119,130

Claims priority, application Sweden, Apr. 8, 1991, 9101024

Int. Cl.[6] B60T *13/04;* **B60L** *7/00*

U.S. Cl. 188—171 **3 Claims**



1. In a brake unit, including a housing (1), a drive sleeve (8) subjected to a torque of a prestressed coil sleeve (6), a locking spring (16) positioned in a bore in housing (1) between the drive sleeve, to which it is attached, and the housing for permitting rotation of the former in a first direction, and a control sleeve (17), which is rotatable by an electric control motor (20) having a current supply thereto in the first direction to open the locking spring, connected to the control sleeve with one end, and allow the drive sleeve concentric therewith to rotate the same angular distance as the control sleeve, the improvement providing for automatic application of the brakes in the event that drive current to the control motor (20) is interrupted, comprising in combination: said locking spring (16) being provided with a slightly smaller external rest diameter than the bore in the housing (1) normally held in engagement with the bore by the torque from the drive sleeve (8), and wherein the control motor (20) is provided with means comprising said locking spring (16) rest diameter to hold the spring (16) locked in engagement with said bore in said normal position, and to return the locking spring (16) to its rest diameter when the central motor current supply is broken whereby the brakes are applied.

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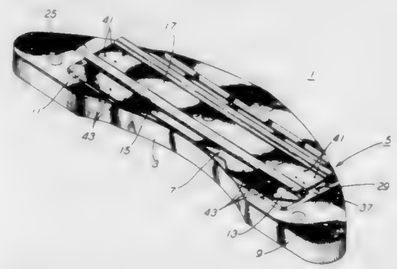
BACKING PLATE FOR DISC BRAKE PAD

Joseph C. Kahr, Southern Pines, and Keith D. Conrad, Aberdeen, both of N.C., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jun. 23, 1994, Ser. No. 263,989

Int. Cl.[6] F16D *65/08*

U.S. Cl. 188—250 B **15 Claims**



1. A disc brake pad including a block of friction brake lining and a backing plate assemblage to which said block of friction brake lining is affixed, said backing plate assemblage having an elongated dovetail-shaped tongue for interconnection with a corresponding dovetail-shaped groove in a brake holder in which said disc brake pad is removably secured, said backing plate assemblage comprising:

a) A primary backing plate including a first elongated base plate on one side of which is formed a longitudinal tongue having a dovetail-shaped cross-section said tongue being formed with a channel that opens into a side of said base plate opposite said one side;

b) a secondary backing plate including a second base plate on one side of which is affixed said block of friction brake lining and on the other side of which is formed at least one tab that is upraised from said second base plate and projects into said channel proximate at least one end of said longitudinal tongue when said opposite side of said primary backing plate is engaged with said one side of said secondary backing plate; and

c) first securing means for interconnecting said tongue to said at least one tab.

5,388,676

HYDRAULIC DASHPOT FOR MOTOR VEHICLES

Herrn T. Sasse, Ennepetal, Germany, assignor to August Bilstein GmbH & Co. KG, Ennepetal, Germany

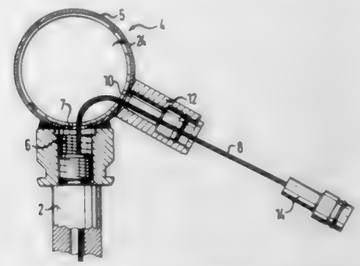
Filed Oct. 6, 1993, Ser. No. 132,636

Claims priority, application Germany, Oct. 7, 1992, 4233650

Int. Cl.[6] F16K *9/46*

U.S. Cl. 188—299 **8 Claims**

1. A hydraulic dashpot for motor vehicles having a vehicle body and a wheel mass, comprising: a shock-absorber cylinder and a shock-absorber piston and piston rod movable within said cylinder; shock absorbing fluid in said cylinder, said piston dividing said cylinder into two displacement compartments; a neck-and-collar pivot connecting said piston to one of said vehicle body and said wheel mass; said neck-and-collar pivot comprising two components, a first one of said components being a collar and a second one of said components being a hollow neck of rubber and metal; electric supply lines to at least one sensor and at least one variable valve extending



outward and being connected to connecting lines of a processing and actuating circuit by a plug-and-socket connection; an outer ring having a first bore corresponding with the inside of said cylinder or with the inside of said piston rod for the electric supply lines to extend therethrough; a groove extending at least partly around an inner surface of said outer ring and receiving said electric supply lines; said outer ring having a second bore through a circumference of said outer ring, said electric supply lines extending through said second bore to said plug-and-socket connection.

5,388,677

UNIT OF A PISTON AND A PISTON ROD

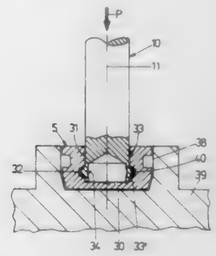
Werner Rösch, Altdorf, Germany, assignor to Suspa Compart AG, Altdorf, Germany

Filed Aug. 6, 1993, Ser. No. 102,796

Claims priority, application Rep. of Korea, Aug. 7, 1992, 4226180

Int. Cl.[6] F16F *9/00*

U.S. Cl. 188—322.22 **5 Claims**



1. A unit of a piston (5) and a piston rod (10) of a longitudinally adjustable gas spring, comprising a gas-proof connection between the piston (5) and the piston rod (10), wherein the piston (5) has a closed bottom (30) and a blind hole (31) open on one side and wherein the piston rod (10) is solid and has at one of its ends a hollow sleeve-shaped section (34) arranged in the blind hole (31) of the piston (5) and, wherein the blind hole (31) is provided with at least one annular groove (32), into which an annular bulged collar (40) of the sleeve-shaped section (34) projects, which annular bulged collar (40) is formed by upsetting the sleeve-shaped section (34), and wherein the length (a) of the sleeve-shaped section (34) is smaller than the depth (b) of the blind hole (31) in the piston (5).

5,388,678

FLUID COUPLING POWER TRANSMISSION WITH LOCKUP CLUTCH

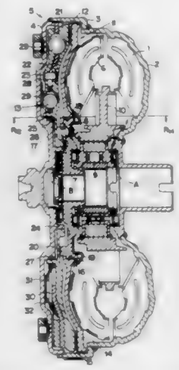
Kiyohito Murata, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 30, 1993, Ser. No. 83,538

Claims priority, application Japan, Jul. 3, 1992, 4-200585; Jul. 3, 1992, 4-200586; Jul. 3, 1992, 4-200587; Jul. 3, 1992, 4-200588; Jul. 10, 1992, 4-207405

Int. Cl.[6] F16H *45/02*

U.S. Cl. 192—3.29 **18 Claims**



1. A fluid coupling power transmission having a lockup clutch, in which a housing is formed by the shell of a pump impeller and a front cover integrally connected to said shell, in which a turbine runner facing said pump impeller is arranged in said housing, and in which said lockup clutch is disposed in said housing for transmitting torque selectively between said housing and an output member integrated with said turbine runner, comprising:

a damper mechanism including a rotational inertial mass being rotatable relative to said housing and selectively engageable with said lockup clutch, and elastic members arranged between said rotational inertial mass and a drive side member being rotatable together with said housing, and compressible by the relative rotation of said rotational inertial mass and said drive side member; and

a friction mechanism which establishes a sliding frictional force for suppressing the rotation of said rotational inertial mass relative to said drive side member when the relative rotation exceeds a predetermined angle.

5,388,679

TORQUE TRANSMISSION DEVICE OF A FOUR-WHEEL DRIVE VEHICLE

Masahiro Inoue, Yamatokohriyama, and Shuzo Hirakushi, Uda, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Division of Ser. No. 858,369, Mar. 24, 1992. This application Apr. 22, 1993, Ser. No. 50,966

Claims priority, application Japan, Mar. 25, 1991, 3-60496

Int. Cl.[6] B60K *17/35;* **F16D** *25/02*

U.S. Cl. 192—35 **5 Claims**

1. A four-wheel drive vehicle comprising a front wheel side drive shaft, a rear wheel side drive shaft, and a torque transmission device interposed between said front and rear wheel drive shafts, said torque transmission device comprising:

a hydraulic pump having a cylindrical casing and a cylindrical rotor, said casing being rotatable interlockingly with one of said drive shafts, said cylindrical rotor being coaxially housed in said cylindrical casing and rotatable interlockingly with the other of said drive shafts, said casing including an end surface and an outer peripheral portion,

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said rotor including an inner peripheral portion, and said hydraulic pump being adapted to transmit torque between said drive shafts through a variable oil pressure generated in said hydraulic pump according to the difference in rotational speed between said drive shafts;

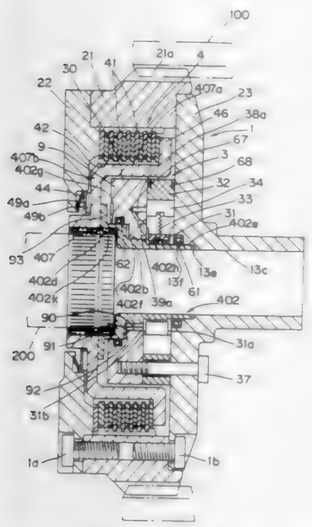
a rotary sleeve coaxially integrally rotatably connected to said inner peripheral portion of said rotor, said rotary sleeve being axially relatively movable with respect to said casing, and said rotary sleeve transmitting torque from said other drive shaft to said rotor;

a multiple disc clutch having a plurality of annular first clutch discs integrally rotatably connected to said casing, and a plurality of annular second clutch discs, said first clutch discs and said second clutch discs being alternately disposed, said multiple disc clutch being adapted to transmit torque between said drive shafts through a frictional coupling power of said first and second discs with said casing and said rotor restrained from being relatively rotated by said frictional coupling power;

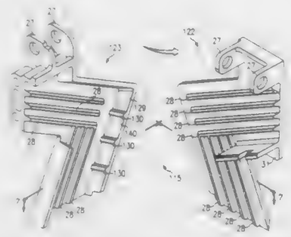
a transmitting member integrally rotatably connected to said other drive shaft and said second clutch discs for transmitting the rotation of said other drive shaft to said second clutch discs, said transmitting member being axially movable with respect to said casing;

a clutch operating portion disposed on said transmitting member for pushing said first and second discs to cause the same to be frictionally coupled to each other; and

a hydraulic piston mechanism disposed between said end surface of said casing and said transmitting member for transmitting force to said transmitting member and said rotary sleeve, said hydraulic piston mechanism comprising: (i) an oil chamber disposed between said casing and said rotary sleeve, (ii) an oil guide hole for guiding the oil pressure of the hydraulic pump to said oil chamber, (iii) a pressure receiving member formed on said rotary sleeve facing said oil chamber for receiving the oil pressure, and (iv) a pushing member formed at said rotary sleeve and adapted to push said transmitting member on which said clutch operating portion is disposed, such that said clutch is engaged when said pressure receiving member receives the oil pressure.



5,388,680
COIN HANDLING SYSTEM WITH AN IMPROVED COIN CHUTE
John A. Hird, Dallas, and Mark E. Kerr, Wylie, both of Tex., assignors to Intellicall, Inc., Carrollton, Tex.
Continuation-in-part of Ser. No. 594,272, Oct. 9, 1990, Pat. No. 5,090,548. This application Feb. 25, 1992, Ser. No. 841,379
Int. Cl.[6] G07F *1/04*
U.S. Cl. 194—345 25 Claims



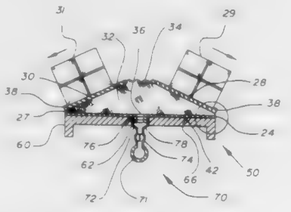
16. A coin chute for a coin handling system comprising:

first and second chute pieces defining an opening for receiving a coin, each of said chute pieces comprising an opposite sidewall of said chute and defining an interior of said chute operable to receive and pass coins therethrough:

first means for separating said chute pieces when said interior of said chute is impacted by a foreign object, thereby forcing said foreign object to exit said coin chute; and

an exterior bevelled surface for separating said chute pieces formed on a surface of said chute, integral with at least one of said chute pieces, positioned opposite said opening and outside said interior of said coin chute, and bevelled toward said interior of said coin chute such that said chute pieces separate when a portion of said chute outside said interior of said chute is impacted by said foreign object, thereby allowing continued movement of said foreign object.

5,388,681
INFLATABLE CONVEYOR BELT
Henri Bonnet, Atlanta, Ga., assignor to United Parcel Service of America, Inc., Atlanta, Ga.
Filed Oct. 19, 1992, Ser. No. 963,588
Int. Cl.[6] B65G *37/00*
U.S. Cl. 198—365 38 Claims

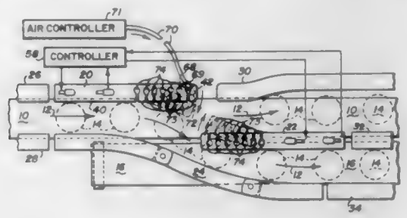


1. A conveyor belt, comprising:

(a) a lower surface; and

(b) a plurality of article supporting surfaces, each of said article supporting surfaces, being tiltably attached to and normally located upward of said lower surface, wherein a plurality of openings are defined in said belt for receiving pressurized gas between said lower surface and said article supporting surfaces, each of said article supporting surfaces being disposed to tilt upon introduction of pressurized gas in a selected one of said openings.

5,388,682
DIVERTER FOR DIVERTING ARTICLES TRANSPORTED ALONG A CONVEYOR BELT
David E. Dudley, San Jose, Calif., assignor to Peco Controls Corporation, Milpitas, Calif.
Filed Feb. 23, 1994, Ser. No. 200,471
Int. Cl.[6] B65G *47/46*
U.S. Cl. 198—367 18 Claims

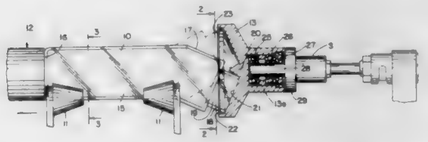


1. A diverter for changing the conveyor path of successive conveyed articles from a single succession of articles to at least two successions of articles, said diverter comprising:

a first actuator positioned adjacent to one conveyor path for a single succession of articles and with means to hold an arm of the actuator in a first position adjacent to said one path and in a second position which intersects with said one path;

the first actuator including a first elongated guide member with a first flexible segment about one terminal end, said first flexible segment being connected to a first piston retractable and extendable responsive to a control signal, said first flexible segment being in a straight line with said first piston extended and forming a first concave arc over said one conveyor path when said first piston is retracted.

5,388,683
DECORATING HOLLOW CONTAINERS
Michael D. Norton, Walbridge, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio
Filed Jul. 16, 1993, Ser. No. 92,347
Int. Cl.[6] B65G *47/24*
U.S. Cl. 198—379 8 Claims



1. For use in an apparatus wherein a container is supported for decorating, wherein the container has a finish with an opening wherein the finish and the opening have the same axis which is at an angle to the axis of the container, said finish having an outer end surrounding said opening,

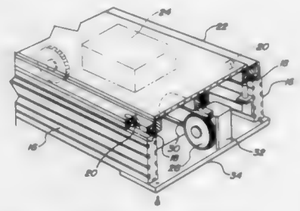
a chuck for engaging the finish,

said chuck having a body having an axis,

said body having an inwardly facing annular frustoconical surface having the same axis as the body of said chuck,

said frustoconical surface being at an angle to the axis of the body of said chuck such that the entire outer end of said finish engages the frustoconical surface for holding the container in position and such that the axis of the frustoconical surface, the axis of the body of the chuck and the axis of the container are aligned and such that the container need not be oriented circumferentially with respect to the frustoconical surface.

5,388,684
PALLET CONVEYOR
Glenn Peck, Grand Blanc, Mich., assignor to Peck Automated Systems, Inc., Grand Blanc, Mich.
Filed Feb. 22, 1994, Ser. No. 199,604
Int. Cl.[6] B65G *25/00*
U.S. Cl. 198—465.1 1 Claim



1. A conveyor comprising, in combination:

a longitudinally extending pallet;

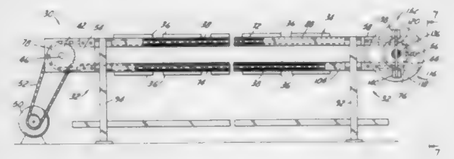
a pair of transversely spaced parallel and longitudinally extending ways for supporting said pallet as it is being conveyed along said ways;

a plurality of rotary drive means longitudinally spaced along said ways for engaging and moving said pallet along said ways, each of said plurality of rotary drive means including a driven pinion which engages a longitudinally extending rack on said pallet;

wherein said drive means are spaced from each other a distance so that a downstream drive means engages said pallet before an upstream drive means disengages said pallet; and

wherein said rack is spring loaded to said pallet so that as the pinion of said downstream rotary drive means engages said rack while said pallet is being moved by said upstream rotary drive means, the rack can be displaced relative to said pallet to accommodate the engagement.

5,388,685
ENDLESS CONVEYOR
Philip S. Szuba, Clinton Township, Macomb County, Mich., assignor to Litton Industrial Automation Systems, Inc., Florence, Ky.
Filed Jan. 6, 1994, Ser. No. 178,031
Int. Cl.[6] B65G *47/84*
U.S. Cl. 198—803.2 42 Claims



1. An endless conveyor comprising: a driven sprocket, an idle sprocket, an endless flexible member received on said driven sprocket and said idle sprocket and having a length of at least eighty feet, at least one pallet operably connected to said endless flexible member for being urged by said endless flexible member, and said endless flexible member and said idle sprocket constructed and arranged to have a mass moment of inertia and a spring rate which provides the conveyor with a natural frequency greater than about twelve hertz for preventing surging vibration from adversely affecting operation of the conveyor.

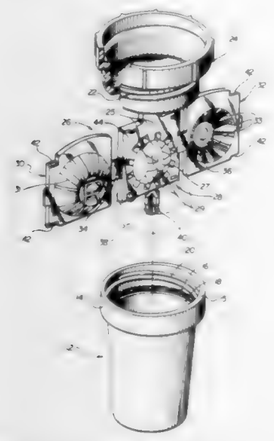
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LENS CASE FOR CONTACT LENS DISINFECTING SYSTEM

Rowland W. Kanner, Guntersville, and Stephen P. Lisak, Arab, both of Ala., assignors to Ryder International Corporation, Arab, Ala.

Continuation-in-part of Ser. No. 13,812, Feb. 2, 1993, abandoned. This application Aug. 12, 1993, Ser. No. 105,749
Int. Cl.[6] B65D *85/38*
U.S. Cl. 206—5.1 **23 Claims**



1. A contact lens case comprising: a cup for receiving a quantity of disinfecting or cleaning solution; a cap removably closing an opening mouth of said cup; and a lens support structure for holding a pair of lenses within said cup, said lens support structure comprising a base plate for supporting one of a pair of lenses on each side thereof, a stem arranged between said cap and said base plate, and basket means pivotally connected to said base plate such that the basket means can overlie said base plate on opposite sides in an overlying position thereof to maintain respective contact lenses between said base plate and said respective basket means; and latch means for releasably maintaining said basket means in said overlying position, said latch means comprising a flexible, integral extension peripherally formed on each basket means and releasably retained in snap-fit against a hook member projecting from a joint formed between said cap and stem portion to maintain the basket means in said overlying position with respect to said base plate.

5,388,687

PACKAGING DEVICES FOR BUNDLING PAPERS TO BE RECYCLED

Podimannil S. Philip, 95-14 127 St., Richmond Hill, N.Y. 11419

Filed May 16, 1994, Ser. No. 243,215
Int. Cl.[6] B65D *71/02;* **B65B** *13/02*
U.S. Cl. 206—83.5 **3 Claims**

1. A new and improved packaging device for bundling papers to be recycled comprising, in combination:

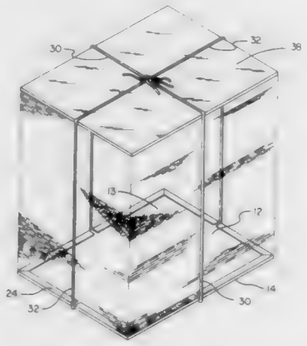
a planar sheet of cardboard with an upper surface and a lower surface and formed of parallel sheets and a corrugated layer intermediate thereof, the cardboard being of a size and shape substantially that of a newspaper when folded;

a paper cover in a rectangular configuration slightly larger than that of the cardboard, the paper cover being adhered over the majority of its central extent to the lower surface of the cardboard and with peripheral edges folded over and adhesively adhered to the upper surface of the cardboard around the periphery thereof, each side edge of the periphery being formed with a centrally located slot for the receipt of a tie string;

a pair of tie strings positionable at right angles to each other and crossing at the center point of the cardboard between the cardboard and the cover, the tie strings, extending beyond the periphery of the cardboard and the cover to constitute tie strings positionable over a quantity of newspapers supported on the upper surface of the cardboard and periphery, the ends of the strings including securement tape; and

a supplemental sheet of cardboard of essentially the same size and shape as that of the sheet of cardboard and positionable over the topmost piece of paper in the stack on the cardboard, the strings being of sufficient length to extend upwardly over the newspaper and supplemental sheet of upper cardboard for tying thereof to create a secure bundle of newspapers for being recycled.

3. A packaging device for bundling papers to be recycled comprising:



a planar sheet of cardboard with an upper surface and a lower surface and formed of parallel sheets and a corrugated layer intermediate thereof, the cardboard being of a size and shape substantially that of a newspaper when folded;

a paper cover in a rectangular configuration slightly larger than that of the cardboard, the paper cover being adhered over the majority of its central extent to the lower surface of the cardboard and with peripheral edges folded over and adhesively adhered to the upper surface of the cardboard around the periphery thereof, each side edge of the periphery being formed with a centrally located slot for the receipt of a tie string; and

a pair of tie strings positionable at right angles to each other and crossing at the center point of the cardboard between the cardboard and the cover, the tie strings extending beyond the periphery of the cardboard and the cover to constitute tie strings positionable over a quantity of newspapers supported on the upper surface of the cardboard and periphery.

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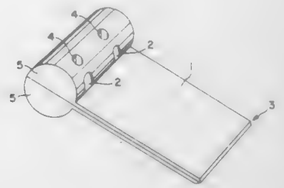
PEN-CASE CONVERTIBLE INTO A PEN-STAND

Heikki Kiiski, Turku, Finland, assignor to Oy Leo Longlife Ltd., Finland

PCT No. PCT/FI91/00398, § 371 Date Jan. 19, 1994, § 102(e) Date Jan. 19, 1994, PCT Pub. No. WO93/02588, PCT Pub. Date Feb. 18, 1993
PCT Filed Dec. 18, 1991, Ser. No. 175,399
Claims priority, application Finland, Jul. 30, 1991, 913289
Int. Cl.[6] A45C *11/34;* **B65D** *85/28*
U.S. Cl. 206—214 **10 Claims**

1. A pen-case comprising a bottom plate having attachments at either end for securing a pen or a pencil thereto in parallel

with said bottom plate, the central region of the bottom plate having a pivot area at which the bottom plate can be folded double and at least one receptacle where the pen or pencil,



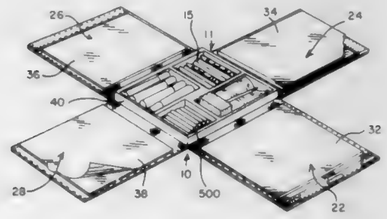
detached from said attachments, can be carried and supported in a substantially vertical position while the folded bottom plate is in a substantially horizontal position.

5,388,689

WRITING SURFACES AND CONTAINER FOR SUPPLIES

Tracy D. Kroop, North Brunswick, N.J.; Nancy A. DeBellis, Bethlehem, Pa.; Charles W. Dietterich, Brodheadsville, Pa., and Robert S. Volk, Easton, Pa., assignors to Binney & Smith Inc., Easton, Pa.

Filed Jan. 25, 1994, Ser. No. 186,758
Int. Cl.[6] A45S *11/34;* **B65D** *85/28*
U.S. Cl. 206—214 **26 Claims**



1. A writing kit comprising:

a base having a plurality of base edges, an interior base surface, and an exterior base surface;

a plurality of wings, each of said wings having an interior wing surface, and an exterior wing surface, each of said wings having a flexible portion, wherein said flexible portion engages a base edge, whereby the wings are hingeably moveable between an open position and a closed position, wherein at least one of said interior wing surfaces includes a writing surface;

an external wall extending in a direction generally perpendicular to the internal base surface, said external wall and said interior base surface defining a compartment;

closing means, whereby the wings are detachably securable in the closed position.

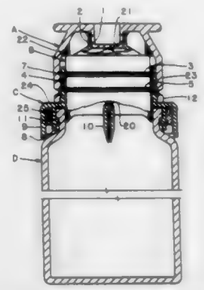
5,388,690

PROPORTIONING DEVICE FOR EXTEMPORANEOUS MULTIDOSE SYRUPS

Antonio Mutterle, Breganzona, Switzerland, and Elisabetta Donati-Pedemonti, Breccia, Italy, assignors to IBSA Institut Biochimique S.A., Lugano, Switzerland

Filed Nov. 15, 1993, Ser. No. 152,727
Claims priority, application Italy, Nov. 27, 1992, MI92 U 001016
Int. Cl.[6] B65D *25/08;* **B67D** *5/00*
U.S. Cl. 206—222 **6 Claims**

1. Proportioning device for extemporaneous multidose syrups for pharmaceutical use, which allows the assembly in one single structure of all of the constituents of a syrup, comprising a container (D) for a fluid, said container having a mouth, and a closing plug containing an active principle in subdivided solid form, characterized in that said closing plug is constituted by a tray (C), a hood (A) and a perforator (B) coaxial and internal to said hood said tray being distinct in two sectors, a lower sector tightly fixed on said mouth of said container and an upper sector in which said hood and said perforator engage telescopically, said closing plug being separated from said



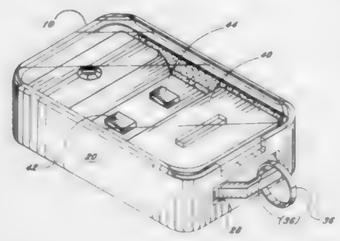
container by means of a diaphragm (10) which is perforated at the moment the active principle is to be added to said fluid said perforator having a dove-tailed cutting edge interrupted by two windows (20) which are diametrically opposite to one another and interrupt said dove-tailed cutting edge and said windows being adapted to engage said diaphragm in a folded condition after said diaphragm is cut and folded by said perforator.

5,388,691

PROTECTIVE CASE FOR REMOTE CONTROL TRANSMITTER

Nona J. White, 1141 NW. 84th Ter., Pembroke Pines, Fla. 33024

Filed Oct. 21, 1993, Ser. No. 139,567
Int. Cl.[6] B65D *85/38;* **A45C** *11/32;* **G08C** *19/00*
U.S. Cl. 206—305 **17 Claims**



1. A case protecting the buttons of and supporting a remote control transmitter, the transmitter including an opening for receiving a key chain ring, the case comprising:

a container with a first opening receiving the transmitter;

a rigid, clear plastic cover-panel that slides through two side grooves of the container and across the first opening of the container;

a second opening along one end side wall of the container which is substantially perpendicular to the first opening; and

the transmitter key chain ring opening is positioned through the second opening and connectable to a key chain ring.

15. A case protecting the buttons of and supporting a remote control transmitter, comprising:

a container with a first opening receiving the transmitter, the container containing two side grooves; and

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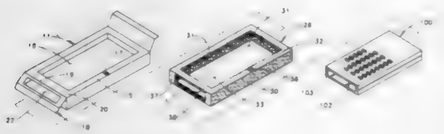
a rigid, clear plastic cover-panel supported within the grooves that slides through the grooves and across the first opening, wherein each groove has a width which tapers starting near a rearward open end of each groove.

5,388,692

LIGHTING COVER FOR A REMOTE CONTROL UNIT

Joseph E. Withrow, 20804 Rolling Meadows Dr., Pflugerville, Tex. 78660; Larry S. Gibbs, 675 Mario, Austin, Tex. 78748, and Reginald Washington, 5316 Downs Dr., Austin, Tex. 78721

Filed Jan. 3, 1994, Ser. No. 177,077
Int. Cl.[6] B65D *85/38, 85/00;* F21V *33/00*
U.S. Cl. 206—320 4 Claims



1. A protective cover for a remote control unit, the remote control unit having pressure responsive buttons thereon and a signal generator on one end, comprising:

(a) A resilient housing comprising:

a housing bottom wall;

two upstanding housing side walls connected to the housing bottom wall;

a housing top wall connected to the housing side walls;

the housing top wall having a first access viewing port therein;

the housing top wall having a switch port therein;

a first closing flap having an integral hinged connection to one end of the housing top wall and selectively forming a first housing end wall;

the first closing flap having a first projection port therein;

the first closing flap releasably attached to the housing bottom wall by a hook and loop fastener;

a second closing flap having an integral hinged connection to another end of the housing top wall and selectively forming a second housing end wall; and

the second closing flap releasably attached to the housing bottom wall by a hook and loop fastener; and

(b) a protective enclosure removably placed within the resilient housing comprising:

an enclosure bottom wall;

two upstanding enclosure side walls connected to the enclosure bottom wall;

an enclosure top wall connected to the enclosure side walls;

the enclosure top wall having a second access viewing port therein;

a first enclosure end wall connected to the enclosure top wall and the enclosure bottom wall;

the first enclosure end wall having a second signal projection port therein;

a second enclosure end wall connected to the enclosure top wall and the enclosure bottom wall;

a light circuit chamber in the second enclosure end wall and extending into one of the enclosure side walls, the light circuit chamber having;

a light circuit disposed within the light circuit chamber, comprising:

a power source in the circuit; a light in the circuit; and a switch in the circuit to selectively provide power to the light.

the enclosure top wall having a switch port therein providing access to the light circuit chamber and allowing the switch to extend from the light circuit chamber, through the enclosure top wall and through the housing switch port in the housing top wall;

a lens port extending from the light circuit chamber through an enclosure side wall and into a remote control unit chamber; and

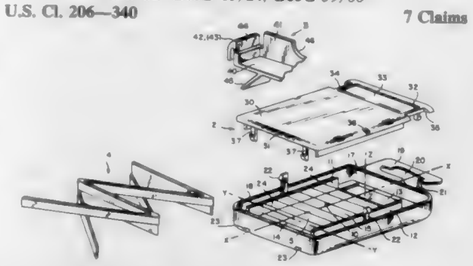
the lens port having a light dispersing lens therein.

5,388,693

BOX FOR STAPLES COMBINED IN STRIPS

Rosario Ceraudo, Recloses, France, assignor to Les Applications Rationnelles S.A., Vernoil, France

Filed Sep. 17, 1993, Ser. No. 122,976
Claims priority, application France, Sep. 18, 1992, 92 11168
Int. Cl.[6] B65D *85/24;* B65G *59/00*
U.S. Cl. 206—340 7 Claims



1. A box for receiving and dispensing staples assembled in strips, the box comprising: a lower portion, said lower portion having a magazine forming a channel for receiving staple strips juxtaposed and parallel to one another in a stack and further positioned transversely to a longitudinal direction of said magazine, said magazine being defined by lateral guides, a base, an ejector device housing at a first end, and a pusher device housing at a second end;

means for advancing progressively a received stack of staple strips towards said ejector device housing as the staple strips are removed;

a cover for covering the lower portion, said cover including a window positioned in alignment with said ejector device housing, said window forming a staple strip ejecting guide means;

a fastening means on the lower portion for fastening the lower portion to said cover;

an ejector device associated with said ejector device housing forming a drawer having a first opening which faces the magazine for receiving a staple strip and a second opening which faces the cover for providing access to a staple strip in the drawer;

said ejector device having staple strip guide means cooperating with said lateral guides and said window, said ejector device being movable between an inserted position and an outlet position, the inserted position enabling a staple strip at the end of a received stack to arrive in the ejector device;

a spring for urging said ejector device from its inserted position to its outlet position; and

wherein said means for advancing progressively is a pusher device associated with said pusher device housing and having a spring which urges a received stack of staple strips in the magazine towards the ejector device.

5,388,694

WRENCH HOLDER/ORGANIZER FOR TOOL BOX

Randall R. Arendt, 62949 New Haven Rd., Ray, Mich. 48096

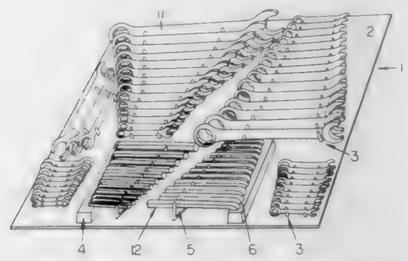
Filed May 17, 1993, Ser. No. 61,808
Int. Cl.[6] B65D *85/20*
U.S. Cl. 206—376 13 Claims

1. A wrench tool organizer and storage device comprising:

a. a single, flat, planar base, said base having an upper face and a lower face;

b. at least one pair of wrench retaining and sorting projection means spacedly attached to the upper face of said planar base so as to accommodate a wide variety of wrench sizes, each wrench retaining and sorting projection means of said at least one pair being positioned relative to the other in a manner which allows at least one wrench to be retained by both means of said pair at the same time;

c. at least one allen wrench head retaining and sorting projection means attached to the upper face of said planar base for holding the head of at least one allen wrench, said allen wrench head retaining and sorting projection means consists of least one block-shaped protrusion having at least one allen wrench head-holding opening extending therethrough, said opening being perpendicular to the plane of said planar base;



d. at least one allen wrench handle retaining and sorting projection means attached to the upper face of said planar base for holding and sorting the drive handle of at least one allen wrench;

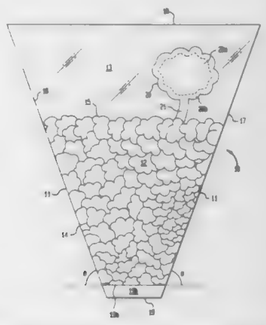
said allen wrench head retaining and sorting projection means and said allen wrench handle retaining and sorting projection means being spacedly attached to said planar base so as to allow at least one allen wrench to engage both said allen wrench head retaining and sorting projection means and said allen wrench handle retaining and sorting projection means at the same time.

5,388,695

FLAT TRAPEZOIDAL CONTAINER OF BRIGHTLY PRINTED THERMALLY SEALABLE FILM

Scott R. Gilbert, Hinckley, Ohio, assignor to Professional Package Company, Strongsville, Ohio

Filed May 23, 1994, Ser. No. 248,391
Int. Cl.[6] B65D *75/12, 65/18, 65/46*
U.S. Cl. 206—423 19 Claims



1. A fastener-free, non-closable container for small goods comprising,

a pair of decorative flexible self-supporting laminar panels having substantially the same size and shape, one congruently disposed relative to the other and joined linearly at their sides and bottom with water-impervious joints, said sides being equally angulated but oppositely directed so as to form a trapezium;

each said panel being a portion of a web of thermally sealable synthetic resinous film divided by a generally lateral line defining therebeneath, a lower printed portion having a brightly colored appearance, and thereabove, an essentially transparent upper portion, said lateral line being located in a region in the range from about one-half to about two-thirds vertically above said bottom;

said container having a single cavity and an exterior surface only the lower portion of which is essentially completely covered with multiple contrasting colors of printing ink;

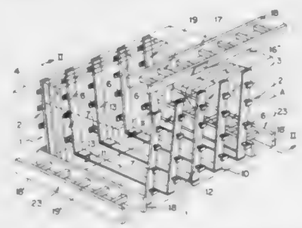
said lower portion having an exterior surface upon which essentially no unprinted portion remains, said lower printed portion comprising regions of contrasting colors, each region having a thickness different from another contiguous region, each region comprising from one to three layers of printing ink superimposed one upon the other, each when dry, having a thickness in the range from 1μ to 10μ, and including sufficient varnish to provide multiple colors of varying intensity providing a gloss index in the range from about 70 to about 98.

5,388,696

DISPOSABLE PACKING FOR FLAT GLASS PLATE STACKS FOR THEIR TRANSPORTATION IN KNOWN STANDARD CONTAINERS

Tomas Rodriguez Egana, Buenos Aires, Argentina, assignor to Vidrieria Argentina Sociedad Anonima, Buenos Aires, Argentina

Filed Aug. 26, 1993, Ser. No. 111,925
Claims priority, application Argentina, Oct. 5, 1992, 323347
Int. Cl.[6] B65D *85/48*
U.S. Cl. 206—454 7 Claims



1. A disposable packing for packages of flat glass sheets for their transportation within standard containers, having internal walls and a floor, the disposable packing comprising lateral wooden upstanding posts resting against the internal walls of a standard container by means of wedges having two opposed flat faces, said upstanding posts being in a position inclined with regard to said walls, said inclination being determined by the inclination of one of the flat faces of said wedges on which said upstanding posts rest, the other, opposed face of said wedge resting on the internal wall of the standard container, the angle of inclination formed by said upstanding post with the floor of the container being obtuse, said upstanding posts having a base and said bases being affixed to one face of supporting boards affixed to the floor of said container, said boards having another face opposed to the one face, the one face of the boards having a flexible cover, the flat glass sheet packages being located adjacent one to the other and applied upon said flexible cover, the glass packages being visible at their periphery and resting laterally on a resting face of said posts, the posts having on their resting faces cushioning strips, a central V-shaped space being formed by said packages resting on said posts, and comprising at least one retaining element placed horizontally between and in contact with the flat glass sheet packages, and at least one stopping element located between and in contact with each end edge of said packages and the container walls for avoiding forward and rearward displacement of the flat glass sheet packages.

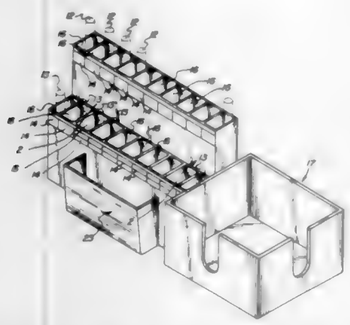
VOL 1171 ISS 2 FE 14 1995 UMI

5,388,697

BEVERAGE IDENTIFICATION SYSTEM

Gregory L. James, 2400 S. Loop West #1413, Houston, Tex. 77054

Filed Jul. 19, 1993, Ser. No. 99,902
Int. Cl.[6] B65D *73/00*
U.S. Cl. 206—459.5 6 Claims



1. A new and improved beverage identification system, comprising:
a plurality of coded classes of drink coding members adapted to be placed within a drink, each coded class of said drink coding members associated with a class code indicia, each class code indicia being in a predetermined one-to-one correspondence with a type of drink, and each drink coding member of each respective coded class carrying the respective class code indicia,
a plurality of coded receiver compartments for receiving said respective coded classes of said drink coding members, each of said coded receiver compartments associated with one of said respective class code indicia, such that a one-to-one correspondence is established between each respective type of drink and each of said respective coded receiver compartments, and
a decoding device which indicates the predetermined one-to-one correspondence between each class code indicia and each type of drink.

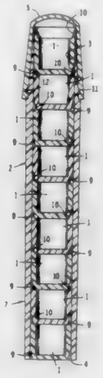
5,388,698

POCKET CARRIER FOR DISPENSING PRODUCTS IN PRECISE QUANTITITES

Hiroshi Wakao, 3-151 Onada Cho, Tajimi-shi, Gifu Ken, Japan 507

Filed Jan. 12, 1993, Ser. No. 3,296
Int. Cl.[6] B65D *83/04;* B65G *59/00*
U.S. Cl. 206—536 8 Claims

5. A dispenser includes an outer container having an elongated shape, said elongated shape having a first end and a second end, an inner wall and a top opening at said first end; inside said container, a plurality of discrete, reusable capsules, each capsule being adapted to fit atop another capsule; at said second end of said container opposite said top opening, a bottom opening having a size and shape suitable for receiving said capsules therethrough, with each of said capsules fitting frictionally against the inner wall of said container with sufficient force to prevent said capsules from falling out of said container, each of said capsules having a size and shape sufficient to receive and hold a discrete, desired quantity of a desired powdered or solid substance each of said capsules being reusable such that each insertion of a refilled or used capsule



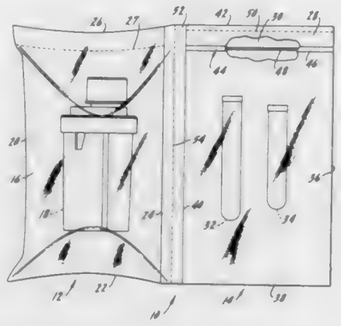
into the bottom opening pushes another of said plurality of capsules into the top opening.

5,388,699

DUAL POCKET SPECIMEN COLLECTION PACKAGE

Janet Ratajczak, McHenry; Donald R. Harreld, Woodstock, and Paul H. Hanifl, Barrington Hills, all of Ill., assignors to Sage Products, Inc., Crystal Lake, Ill.

Filed Jun. 29, 1993, Ser. No. 84,856
Int. Cl.[6] B65D *71/00, 30/22;* A61B *5/00*
U.S. Cl. 206—569 8 Claims



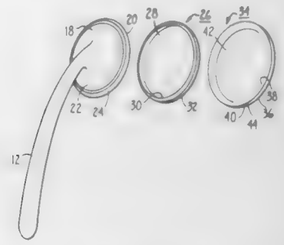
1. A specimen collection kit comprising
a. a first sealed pouch comprising opposite plastic sheets having a peripheral seal,
b. a specimen collection container encapsulated within said first pouch,
c. a second sealed pouch comprising opposite plastic sheets having a peripheral seal,
d. at least one diagnostic vial encapsulated within said second pouch,
e. a resealable seal in said second pouch proximate one edge of said second pouch such that said second pouch is resealable by said resealable seal after opening of the peripheral seal of the second pouch adjacent the peripheral seal, and
f. means severably joining said first and second pouches.

5,388,700

APPLICATOR DEVICE

Myra S. Per-Lee, 12405 Floresta Way, San Diego, Calif. 92128

Filed Aug. 17, 1993, Ser. No. 107,510
Int. Cl.[6] A45D *40/26*
U.S. Cl. 206—581 12 Claims



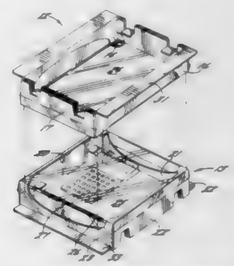
1. An applicator device, comprising:
an elongated shaft having a first end and a second end, the shaft including a manually grippable segment formed adjacent the first end of the shaft;
an applicator head formed on the second end of the shaft, the head having an applicator surface;
a non-porous contact pad removably engaged with the head for covering the applicator surface, wherein the contact pad is formed with an opening and is movable between an enlarged configuration, .wherein the head can be moved through the opening to engage and disengage the contact pad from the head, and a gripping configuration, wherein the head cannot be moved through the opening, to thereby hold the contact pad onto the head; and
a resilient head pad attached to the head for covering the applicator surface of the head, the head pad being formed with a continuous outer surface for abutting the contact pad and substantially preventing relative motion between the contact pad and head pad.

5,388,701

SUSPENSION PACKAGING

Devin C. Ridgeway, Chula Vista, Calif., assignor to Sealed Air Corporaiton, Saddle Brook, N.J.

Filed Nov. 22, 1993, Ser. No. 155,710
Int. Cl.[6] B65D *85/30*
U.S. Cl. 206—583 22 Claims



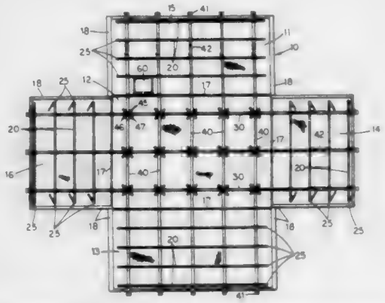
1. A package for fragile articles and comprising:
a container that forms a solid polygon and
two suspension frames in said container, each said frame being formed of a plurality of upright side panels and having at least one dimension that substantially spans and abuts the interior of said container so that each said frame is prevented from moving in said container;
at least one of said frames having two parallel side panels, and each of which defines an arch therein, so that said arched parallel side panels are opposite one another, and
a resilient membrane attached tightly to said side panels of each said frame, and extending from the base of the arch of each said arched side panel across portions of the rise and span of the arch of each of said arched side panels; and
said frames being positioned in said container with said resilient membrane in face to face relationship for holding an object suspended therebetween.

5,388,702

PALLET JACKET

Samuel H. Jones, Spring, Tex., assignor to WorldWide Container Services, Inc., Houston, Tex.

Filed Jul. 19, 1993, Ser. No. 93,393
Int. Cl.[6] B65D *19/00*
U.S. Cl. 206—597 13 Claims



1. Apparatus for securing cargo to a base comprising:
a) a cover having an inside surface and an outside surface, made of substantially weather-resistant material and adapted to cover the cargo on the base of a pallet, said cover including a central portion adapted to overlie the top portions of the cargo, said central portion having a perimeter, and a plurality of side flaps attached to the perimeter of the central portion so as to enclose side portions of the cargo, each of said flaps having edges releasably connectable to edges of adjacent side flaps to form a substantially weatherproof seam;
b) at least one lateral tension strap affixed to a portion of the cover, each said lateral tension strap having two ends, being adjustable in length and adapted to surround a portion of the cargo;
c) one or more strap keepers affixed to the cover and adapted to permit a pair of crossing straps to be held proximate the cover and in sliding relation thereto; and
d) at least one securing strap adapted at each end to be secured to the base, each said securing strap further adapted to be held proximate the cover by at least one said lateral tension strap and at least one said strap keeper in sliding relation to said cover.

5,388,703

SORTING METHOD

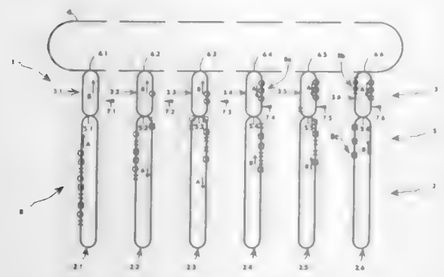
Rolf Schönenberger; Robby Enderlein, both of Landsberg/Lech, and Johann Robu, Olching, all of Germany, assignors to RSL Logistik, Landsberg/Lech, Germany

Filed Aug. 2, 1993, Ser. No. 102,135
Claims priority, application Germany, Aug. 6, 1992, 4226066
Int. Cl.[6] B07C *5/00*
U.S. Cl. 209—44.1 8 Claims

1. A method of sorting a plurality of individually conveyed articles in a suspension-type conveyor means, the articles circulating around a first closed loop reversibly driven conveyor circuit in unsorted fashion and being delivered from there individually and automatically to at least one second conveyor path and arranged in groups, which comprises forming said at least one second conveyor path as at least one second con-

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veyor closed loop reversibly driven circuit around which the articles are circulated until removed therefrom, arranging a first automatically switchable shunt between said first and said at least one second conveyor circuits, actuating the first shunt and thereby moving at least one group of articles of a common selected characteristic from the first conveyor circuit onto the



second conveyor circuit around which they circulate as a group, arranging a second switchable shunt between the second conveyor circuit and a discharge conveyor, and actuating the second shunt and thereby moving a group of articles having the same selected characteristic from said at least one second conveyor circuit to the discharge conveyor.

5,388,704

RELATING TO CONVEYING AND SEPARATION APPARATUS

Christopher P. Morris, 303 Oakdale Road, Carlton, Nottingham. NG4 1DH, United Kingdom

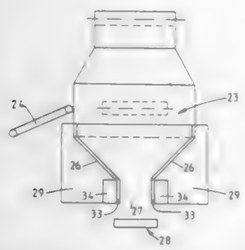
PCT No. PCT/GB91/00069, § 371 Date Aug. 24, 1992, § 102(e) Date Aug. 24, 1992, PCT Pub. No. WO91/10611, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 17, 1991, Ser. No. 910,149

Claims priority, application United Kingdom, Jan. 19, 1990, 9001234

Int. Cl.[6] **B07B** *4/00*; **B65G** *53/16*

U.S. Cl. 209—139.1 **16 Claims**



1. A distribution plate for a separating apparatus of the type in which first and second materials are separated by air stream, wherein the first material has a lower terminal velocity than the air stream and the second material has a higher terminal velocity than the air stream, the distribution plate having a plurality of apertures formed therein for directing fluid flow therethrough in a direction which has a component extending along a surface of the distribution plate and wherein the apertures extend through the distribution plate at an angle in a range of substantially 65° to 85° to the surface of the distribution plate, wherein the apertures are arranged in a first series of zones spaced along the length of the distribution plate, each adjacent pair of zones of the first series being separated by a further zone forming a second series of zones, the apertures in the first and second series of zones being inclined in opposite directions to the surface of the distribution plate and there being a greater number of apertures in the first series of zones than in the second series of zones, such that the fluid flow carries the first material in the direction of the component extending along the surface of the distribution plate to separate the first material from the second material.

5,388,705

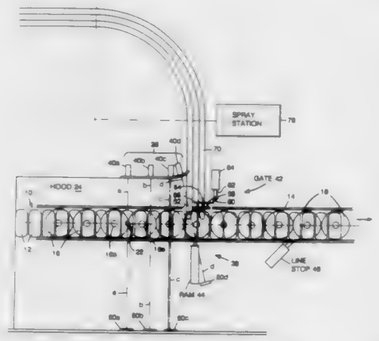
REJECTOR SYSTEM FOR CONVEYOR LINE

David H. Fine, Sudbury, and Freeman W. Fraim, Lexington, both of Mass., assignors to Thermedics Detection Inc., Woburn, Mass.

Filed Feb. 26, 1993, Ser. No. 23,327

Int. Cl.[6] **B07C** *5/00*

U.S. Cl. 209—524 **55 Claims**



1. A method of rejecting individual objects on a continuously moving conveyor having a detection station and a rejection station, comprising:

continuously conveying a series of substantially uniform objects on the conveyor past the detection station;

at the detection station identifying a passing object on the conveyor as having a special property;

continuously conveying the identified object on the conveyor along with the series of objects to the rejection station in the same manner and condition as adjacent objects on the conveyor while positively tracking the identified object between the detection station and the rejection station by optically tracking the identified object from the detection station to the rejection station with a series of light beams arranged along the conveyor between the stations without stopping or forcibly spacing the conveyed objects at any point between the stations; and

at the rejection station selectively ramming the identified object off the conveyor such that adjacent objects are freely conveyed past the rejection station.

5,388,706

APPARATUS FOR IDENTIFYING AND SORTING DIFFERENT TYPES OF A CLASS OF ARTICLES

Roman Baldur, Baie d'Urfe, Canada, assignor to Walsh Automation Inc., Montreal, Canada

Filed Nov. 8, 1993, Ser. No. 148,594

Int. Cl.[6] **B07C** *5/00*

U.S. Cl. 209—587 **7 Claims**

1. Apparatus for identifying and sorting different types of a class of articles, comprising:

an elevated, closed loop, conveyor arrangement defining a closed loop conveyor path;

a plurality of carrier means operatively connected to said conveyor means for movement around said path;

at least one loading station located on said path;

an identification station located on said path after said loading station in the direction of movement of said carrier means;

a plurality of unloading stations located on said path after said identification station in the direction of movement of said carrier means, each unloading station receiving a different type of said class of articles, whereby only one type of said class of articles is unloaded at each unloading station;

wherein, a single article of said class is mounted on each carrier means at said loading station;

the type of each article is identified at said identification station; and

each article is unloaded at said unloading station for receiving the type of article identified at said identification station;

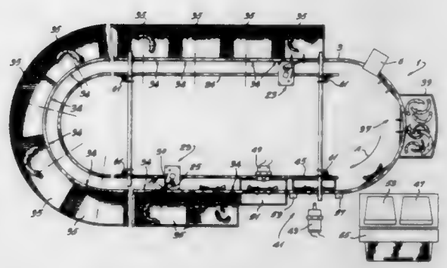
and wherein said identification station comprises a means for making an identification;

and wherein each said unloading station comprises means for unloading;

and further including processor means;

said means for making an identification being connected to said processor means to provide said processor means of identification data;

said processor means analyzing said identification data whereby to determine the type of said article;



said processor means being connected to each said means for unloading to provide a signal for effecting unloading at each said unloading station;

said processor means being programmed to, after identifying the type of an article, determine which unloading station that article should be unloaded at, and when a signal should be sent to that station to unload that article;

said identification means comprising a plurality of video camera means for recording different views of said articles;

said video camera means comprising a side view camera for recording side view characteristics of said articles and a top view camera, for recording top view characteristics of said articles;

said conveyor arrangement comprising a closed loop hollow rail;

a moveable means mounted in said rail for moving through said rail;

means for driving said moveable means around said closed loop;

and wherein each said carrier means comprises two spaced vertical suspension members;

a horizontal member extending between said vertical suspension members adjacent the bottom end thereof.

5,388,707

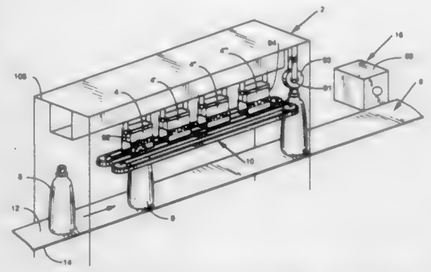
APPARATUS FOR INSPECTING THE EXTERIOR FINISH OF CONTAINERS AND ASSOCIATED METHOD

Lloyd Stivison, West Sunbury, and Henry Dimmick, Sr., Butler, both of Pa., assignors to AGR International, Inc., Butler, Pa.

Filed Jun. 30, 1992, Ser. No. 906,589

Int. Cl.[6] **B07C** *5/07, 5/12*

U.S. Cl. 209—602 **18 Claims**



1. A method of inspecting exterior finish of containers moving sequentially in a predetermined path, comprising the steps of:

providing an apparatus for inspecting exterior finish of containers, said apparatus having at least one inspection gauge having a pair of elongated, opposed gauge plates mounted for pivotal movement relative to one another about first pivot points on upper ends thereof, said gauge plates having gauging means thereon for engaging said container at at least one pair of generally diametrically opposed locations thereon, each said pair of locations being at a level on said container different from other said pairs of locations, sensor means operative responsive to relative pivotal movement of said gauge plates for detecting defective containers, said sensor means detecting defective containers when relative separation distance of said gauge plates where said gauge plates engage said containers caused by said container passing therebetween falls outside of predetermined limits, return spring means for urging said gauge plates in a closed position, and dampening means for reducing rebound movement of said gauge plates upon closure thereof;

moving said containers sequentially and generally continuously through said apparatus;

rotating said container about its vertical axis as it passes through said inspection gauge, whereby said gauge plates contact said container over at least its entire circumference at each said pair of locations engaged by said gauge plates;

pivoting said inspection gauge about at least one second pivot point located at or above said first pivot point to allow non-concentric containers to pass therethrough; and

stopping said rotation of said container after it passes through said gauge plates.

5,388,708

MULTIPLE HYDROCYCLONE ASSEMBLY

Charles W. Bouchillon, Starkville, Miss., and Andrew Franko, Spring Valley, Ohio, assignors to Fluid Quip, Inc., Springfield, Ohio

Filed Oct. 15, 1993, Ser. No. 137,431

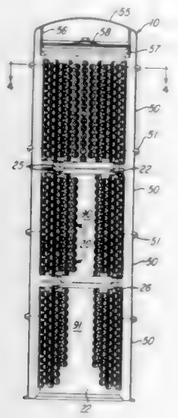
Int. Cl.[6] **B04C** *7/00*

U.S. Cl. 209—728 **14 Claims**

1. A multiple hydrocyclone assembly for cleaning a suspension in a liquid carrier, comprising a closed tubular housing having a generally vertical axis, inner and outer generally concentric cylindrical walls within said housing and cooperating with said housing to define an inner outlet chamber, an annular outer outlet chamber and an annular inlet chamber between said outlet chambers, means at the lower end of said

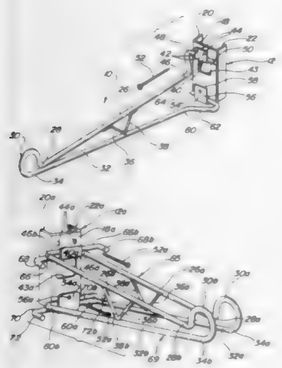
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housing defining an inlet conduit connected to said inlet chamber and outlet conduits connected to said inner and outer outlet chambers, a multiplicity of conical hydrocyclones extending through generally radially aligned corresponding holes within said concentric walls, each of said hydrocyclones having an apex portion with an apex port and a base portion having means defining a tangentially arranged inlet port and a base outlet port, each of said hydrocyclones being positioned to connect said base port to said outer outlet chamber, said inlet



port to said inlet chamber and said apex port to said inner outlet chamber, said holes and said hydrocyclones being arranged in generally vertically extending rows, and said hydrocyclones within at least one of said rows closest to said inlet conduit being omitted and the corresponding said holes being closed to provide a generally vertically extending flow channel in said inlet chamber between adjacent said rows to provide for free flow of said suspension to said hydrocyclones more remote from said inlet conduit and for obtaining a more uniform pressure drop across all of said hydrocyclones.

5,388,709
GARDEN EQUIPMENT SUPPORT RACK
Thomas F. Adams, 3961 E. River Dr., Fort Myers, Fla. 33916
Filed Dec. 30, 1993, Ser. No. 176,095
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—70.6 **9 Claims**



1. A support rack for mounting to an upright post (14) having a front face and two side surfaces, for removably supporting garden equipment, comprising:

(a) at least one elongated hook member (10,65,69) having an inner end (46,60,46*a*,60*a*,46*b*,60*b*) structure and an outer end (28,34,28*a*,34*a*) structure;

(b) mounting structure (12,12*a*) for positioning said at least one elongated hook member on a front face of an upright post;

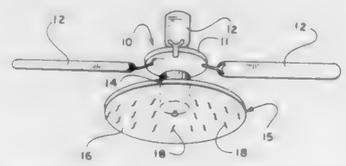
(c) joint means (48,50,62,64,66,66*b*,70,70*b*) for joining said inner end structure of said at least one elongated hook member to said mounting structure;

(d) attachment means (52,52*a*) for fixedly securing said mounting structure to a front face of an upright post;

(e) said mounting structure (12,12*a*) comprises a channel member having a front wall (18,18*a*) for seating on a front face of an upright post, and a pair of laterally spaced apart, integral side flanges (20,22,20*a*,22*a*) for extension through a wall board if an upright post is covered by a wall board, and for seating on the two side surfaces of an upright post to prevent the rack from twisting, relative to the post, which twisting could cause garden equipment supported by the at least one hook member to slip off the hook member; and,

(f) said joint means (48,50,62,64,66,66*b*,70, 70*b*) being carried by said channel member.

5,388,710
DISPLAY DEVICE FOR FAN PULLS
Gerald F. Sawyer, 2862 Tree Top Rd., Dacula, Ga. 30211
Filed Mar. 14, 1994, Ser. No. 209,908
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—113 **5 Claims**



1. A merchandising display device for fan pulls in combination with a fan, said fan including a plurality of blades, and a connector below said blades, said device comprising a base member fixed to said connector, and a plurality of attaching means on said base member, each attaching means of said plurality of attaching means including hook means for receiving a fan pull.

5,388,711
RAIL CAR DOUBLE ACTING PISTON SHOCK ABSORBER
Richard N. Hodges, Arlington, Tex., assignor to F M Industries, Inc., Fort Worth, Tex.
Filed Sep. 10, 1993, Ser. No. 119,964
Int. Cl.[6] B61G *9/16*
U.S. Cl. 213—8 **12 Claims**

1. In a rail car having a frame, a center sill carried by the frame for longitudinal sliding movement relative to the frame and having coupling ends protruding from each end of the frame for connecting to adjacent rail cars, a pair of stationary stops mounted stationarily to the frame and longitudinally spaced apart from each other, an improved shock absorber for absorbing shock as the frame moves relative to the center sill, comprising in combination:

a cylinder mounted stationarily to the center sill, having opposite ends, each end having a bore;

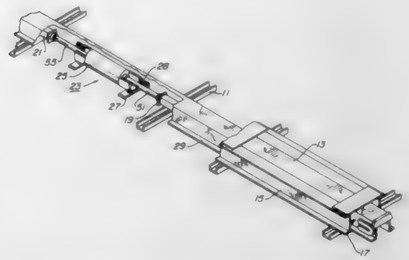
a pair of pistons, slidably carried in the cylinder for independent movement relative to each other;

a pair of shafts, each connected to one of the pistons, the shafts extending slidingly in opposite directions through

the bores provided at the ends of the cylinder between retracted and extended positions, each of the shafts terminating in a stop end for engaging one of the stationary stops;

a fluid of liquid and gas contained in the cylinder for dampening movement of the pistons relative to the cylinder;

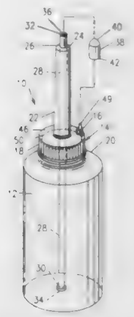
return flow means for allowing fluid that is located between the pistons to return behind each of the pistons as each of



the pistons moves relative to the cylinder when the center sill and the frame move relative to each other; and

the distance from one stop end to the other stop end when both of the shafts are fully extended being no greater than the distance between the stationary stops, so that the shock absorber may be installed between the stationary stops without moving either of the shafts inward from the extended position.

5,388,712
SQUEEZE BOTTLE TOP WITH INTEGRAL CLOSURE HOLDER
Harvey Brody, Costa Mesa, Calif., assignor to Norvey, Inc., Santa Ana, Calif.
Filed Jul. 19, 1993, Ser. No. 93,360
Int. Cl.[6] B65D *37/00, 47/00*
U.S. Cl. 215—229 **24 Claims**

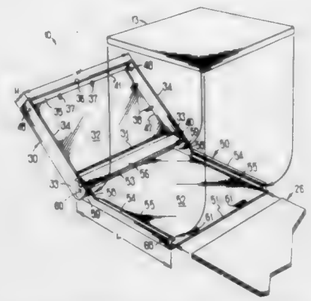


1. An improved container top, of the type having an elongate hollow extension extending upwardly from its upper surface and an extensible dispensing tube slidably disposed in the extension, the tube having an orifice for the dispensing of a liquid from a container to which the top is attached, the top further including a removable closure for the orifice, the closure comprising a substantially cylindrical body with an open end communicating with a hollow interior, wherein the improvement comprises:

closure retention means on the upper surface and dimensioned to be received into the open end and the interior of the closure, so that the closure is retained thereon with a frictional fit; and

orifice stopper means, integral with the closure retention means, for selectively sealing the orifice as an alternative to the closure when the tube is extended to bring the orifice into the proximity of the closure retention means.

5,388,713
STORAGE CONTAINER
Yoshihiko Taniyama, 9380 Old Southwick Pass, Alpharetta, Fulton County, Ga. 30202
Filed Apr. 14, 1993, Ser. No. 48,285
Int. Cl.[6] B65D *85/30*
U.S. Cl. 220—4.22 **31 Claims**



1. For use in an enclosure for a hexahedron shaped object, a base tray for receiving the hexahedron shaped object comprising:

a bottom surface,

a pair of opposed side walls integrally formed with said bottom surface and extending upwardly from said bottom surface,

a rear wall extending upwardly from said bottom surface, and

at least one ledge extending inwardly from at least one of said side walls for securing the hexahedron shaped object and promotional material within said base tray, said at least one ledge including,

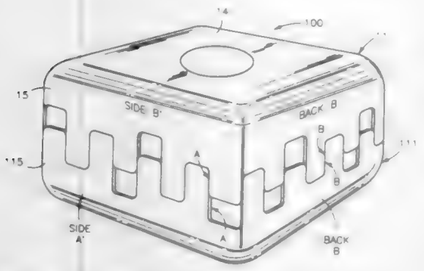
a planar upper ledge surface which extends parallel to said bottom surface, and

a planar lower ledge surface disposed opposite said bottom surface, which extends parallel to said bottom surface, wherein one of said ledge surfaces engages the hexahedron shaped object.

5,388,714
CONTAINER
Michael B. Zutler, Woodbury, N.Y., assignor to Marketing Congress, Inc., Plainview, N.Y.
Continuation-in-part of Ser. No. 41,505, Apr. 1, 1993, Pat. No. 5,265,749. This application Nov. 29, 1993, Ser. No. 158,902
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[6] B65D *83/00*
U.S. Cl. 220—4.24 **9 Claims**

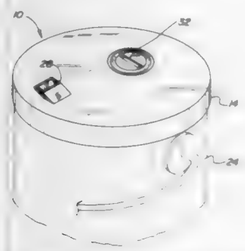
1. A container for an air treatment material, said container having first and second top and bottom housing sections, said housing sections each having an outer peripheral edge that is identical to and interacts with the outer peripheral edge of the other and permits the top to be laid upon the bottom in a nesting, closed configuration with the outer peripheries in engagement along their entire lengths, and the top to be moved to a different position of engagement relative to the bottom to one or more open configurations, said outer peripheries having selected portions of their lengths which are in engagement with each other in said open positions and selected other portions of their lengths which are not in engagement with each other, but rather, spaced apart from each other, in said open positions, said other non-engaging, spaced apart portions of

said outer peripheries defining air passages therebetween, said air passages extending into the interior of said container and said air passages being closed when the container is in the



closed position, said peripheries of said housing sections having any number of regular sections and an even number of paired irregular sections.

5,388,715
SPILL PROOF PAINT LID
Larry Schwindt, 154 Snyder Avenue North, Elmira, Ontario, Canada N3B 2B7
Filed Jan. 31, 1994, Ser. No. 188,690
Int. Cl.[6] B65D *43/20*
U.S. Cl. 220—354 **1 Claim**



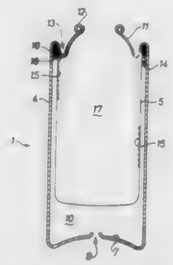
1. A spill proof paint lid with pouring and stirring capabilities comprising, in combination:

a central circular plate with a periphery, the periphery having a downwardly extending extent and a concentric interior ring, the exterior extent being longer than the interior ring, the interior ring is formed as a locking lip positionable in the trough of a paint can, the exterior extent being positionable in contact with the exterior surface of the paint can;

a pouring spout extending upwardly from the circular plate adjacent to the interior ring, the spout having a rectangular cross sectional configuration with its axis extending radially outwardly from the center of the plate at an angle of between about 20 and 40 degrees from the vertical, the circular plate and spout being integrally formed of a flexible high density polyethylene; and

an elongated stirring slot formed in the circular plate essentially equally distant between the center of the plate and the periphery at a location diametrically opposed from the spout.

5,388,716
CONTAINER FOR PRESSURE-TIGHT DISPENSERS AND METHOD FOR MANUFACTURE OF THE SAME
Hans F. Stoffel, Zurich; Oskar Frey, Hinwil, and Gerhard Obrist, Kaiseraugst, all of Switzerland, assignors to Prazisions-Werkzeuge AG, Switzerland
Continuation of Ser. No. 836,972, Feb. 19, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 115,676
Claims priority, application Switzerland, Feb. 19, 1991, 505/91
Int. Cl.[6] B65D *25/16*
U.S. Cl. 220—404 **25 Claims**



1. Double-walled container for a dispenser which is pressure-tight and includes a chamber therein for delivery of flowable products, said container comprising a seamless outside container of one piece construction and a compressible inside container,

said compressible inside container having a top and an opening at said top and being cup-shaped,

said outside container being made of metal and having a wall having outer and inner surfaces, an opening for receiving a valve closure, an inside chamber and an annular inverted zone formed by deformation of said outer and inner surfaces in an upper portion of said wall, displaced from said opening for receiving a valve closure, thereby forming a seamless circumferential groove inside said outside container and a neck portion extending from said seamless circumferential groove to said valve closure receiving opening,

said inside container is fastened along the top thereof in the seamless circumferential groove in the inside chamber of the outside container, independent of said opening for receiving a valve closure, thereby forming an attachment between said inside container and said outside container that is seamless on said outside container outer surface and eliminating leakage directly from said inside container to the outside of said double-walled container.

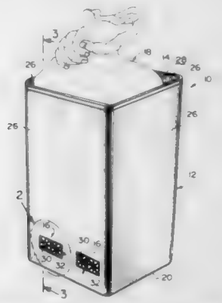
5,388,717
VENTED TRASH CAN
Jon P. LeVasseur, 1997 Esterbrook St., Port St. Lucie, Fla. 34983-469
Filed Dec. 6, 1993, Ser. No. 161,589
Int. Cl.[6] B65D *90/04*
U.S. Cl. 220—404 **1 Claim**

1. A vented trash can which comprises:

a) a container having an open top for the insertion and removal of a plastic trash bag;

b) said container comprising a bottom wall and a plurality of side walls extending upwardly from said bottom wall, to form a compartment within said container for holding the plastic trash bag of trash therein, all of said side walls being angled outwardly from said bottom wall, so that the open top of said container is larger than said bottom wall, to permit the easier insertion of the plastic trash bag into the compartment of said container and the easier removal of the plastic trash bag from the compartment of said container;

c) means for allowing air to enter said container under the plastic trash bag when removing the plastic trash bag when full from said container comprising a generally rectangular port formed within one of said side walls adjacent to said bottom wall of said container, said port being fitted with a rectangular grill having a plurality of horizontal, vertical and diagonal bars all intersecting each other to form a lattice pattern to cover said port to prevent the entrance of rodents and other small animals through said ports and into the plastic trash bag whereas the normal vacuum in said container is now broken and the plastic trash bag can slide out rather than be suctioned against the inside of said container; and



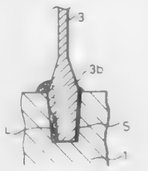
c) said side and bottom walls are integral and fabricated out of a strong durable material and said grill is also fabricated out of a strong durable material.

5,388,718
BEVERAGE CONTAINER WITH PULL RING
Hsin-Hsin Lo, 9, Alley 3, Lane 35, Weitao RD., N. Dis. Taichung, Taiwan, Prov. of China
Filed May 3, 1994, Ser. No. 237,165
Int. Cl.[6] B65D *25/10*
U.S. Cl. 220—522 **1 Claim**



1. A beverage container comprising a body provided with a top end having a pull ring attached to an outer surface thereof and further having a pour opening; wherein said top end has an inner surface under which a gas chamber of a dimension and a shape is disposed, said gas chamber having a top lid riveted at a left end thereof and at a right end thereof to said inner surface of said top end, said gas chamber further having a bottom lid, said gas chamber being sealed off except that said top lid of said gas chamber is provided at a center therof with a whistling hole corresponding in location to said pour opening of said top end, and that said bottom of said gas chamber is provided at a center thereof with a small hole through which a quantity of gas produced by a beverage contained in said body is allowed to enter said gas chamber.

5,388,719
FITTING STRUCTURE OF PARTITION PLATES TO STRUCTURE
Masataka Takasugi, and Ikuo Kataoka, both of Ohtsuki, Japan, assignors to Yamashou Sangyo Kabushiki Kaisha, Yamanashi, Japan
Filed Dec. 22, 1993, Ser. No. 171,675
Claims priority, application Japan, Sep. 29, 1993, 5-268335
Int. Cl.[6] B65D *1/24*
U.S. Cl. 220—553 **2 Claims**



1. A fitting structure of partition plates to a structure in which an end portion of each of said partition plates is fitted into a groove of said structure through a sealing material so as to bond both side surfaces of said end portion of said partition plate to groove walls opposing the side surfaces by said sealing material, characterized in that a thin spacer is interposed between one of the side surfaces of said end portion of said partition plate and one of the side walls of said groove opposing said one side surface and said sealing material is set in a thin film form in a very small space defined between said one side surface of said end portion and said one side wall of said groove on the side of said one side surface, a thick spacer is interposed, on the other hand, between the other side surface of said end portion of said partition plate and the other side wall of said groove opposing said other side surface, and said sealing material is set in a thick form in a sufficiently large space defined between said other side surface of said end portion and said other side wall of said groove on the side of said other side surface.

5,388,720
FLANGED DIFFUSER AND AIR CELL RETAINER FOR PRESSURE VESSEL
James C. Murphy, Chardon, Ohio, assignor to Essef Corporation, Chardon, Ohio
Filed Apr. 15, 1994, Ser. No. 228,192
Int. Cl.[6] F16L *55/00*
U.S. Cl. 220—581 **10 Claims**

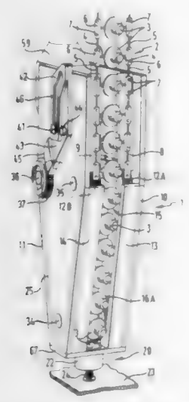


1. A pressure vessel, comprising an outer vessel for containing a first fluid; a flexible inner cell for containing a second fluid and disposed within the outer vessel so as to separate the first fluid from the second; a first port communicating with the inner cell; a second port communicating with the outer vessel;

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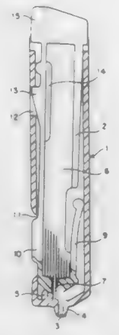
a neck on an end of the vessel surrounding the second port; said neck having an axis and a cylindrical inner surface defining said port; and a diffuser immovably fixed along the neck axis having a deflecting surface for deflecting the first fluid away from the inner cell when the first fluid is flowing through the second port into the outer vessel, said diffuser having a side wall spaced from and facing said cylindrical inner surface of said neck to define an annular passage communicating with said outer vessel, said side wall including at least one passage surrounded by said cylindrical inner surface of said neck for permitting fluid to flow therethrough.

5,388,721
ASSEMBLY TOOL FED WITH COMPONENTS LINED UP ON A BELT
Dieter Mauer, Lollar, Germany, assignor to Emhart Inc., Newark, Del.
Filed Oct. 14, 1992, Ser. No. 960,764
Claims priority, application Germany, Oct. 15, 1991, 4134096
Int. Cl.[6] B65H *5/28*
U.S. Cl. 221—74 23 Claims



1. Assembly tool for detaching and applying components lined up continuously and attached to a tape at an assembly position in which one component after the other is successively separated from the tape and delivered to a workpiece, comprising:
a continuous conveyor belt;
means on the surface of said belt for positively engaging the tape to advance the tape with advancing movement of said conveyor belt;
first guide means forming a driving-in region located prior to the assembly position and second guide means forming a driving-out region located after the assembly position;
a triangular array of rollers including a drive roller supporting said conveyor belt and the tape for sequential passage through said first guide means, said assembly position and said second guide means;
said drive roller being located at the end of said second guide means and positively engaging said belt to draw said belt and said tape through said sequential passage.

5,388,722
STICK-SHAPED OBJECT DISPENSER
Hidehei Kageyama, Kawagoe, Japan, assignor to Kotobuki & Co., Ltd., Kyoto, Japan
Filed Dec. 17, 1993, Ser. No. 168,200
Claims priority, application Japan, Jul. 30, 1993, 5-049697[U]
Int. Cl.[6] B65D *83/00*
U.S. Cl. 221—186 8 Claims

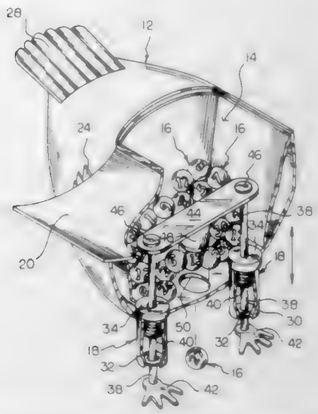


1. A stick-shaped object dispenser for dispensing stick-shaped objects, comprising:
an outer case member having an open rear end, and a front wall provided with a first outlet hole through which the stick-shaped objects are fed out; and
an inner case member removably and slidably inserted in the outer case member through the open rear end of the latter, provided with an elongated cavity for containing the stick-shaped objects formed in a side surface thereof and having a front wall provided with a second outlet hole through which the stick-shaped objects are fed out, said inner case member being removed from said outer case member through said open rear end in order to load a plurality of stick-shaped objects into said cavity;
characterized in that a front portion of a side wall of the cavity of the inner case member contiguous with the front wall thereof is bent obliquely outward to form an elastically flexible tongue which biases the front portion of the inner case member away from a side wall of the outer case member with which the extremity of the elastically flexible tongue is in contact, and the outer case member is provided with a positioning means for positioning the front portion of the inner case member against the resilience of the elastically flexible tongue so that the second outlet hole of the inner case member is set in alignment with the first outlet hole of the outer case member upon application of a predetermined force to said inner case member.

5,388,723
RANDOM MEMBER DISPENSER
John J. Kampmeyer, 2221 Iona Dr., Cocoa, Fla. 32926
Filed Mar. 4, 1994, Ser. No. 205,648
Int. Cl.[6] G07F *11/46*
U.S. Cl. 221—186 5 Claims

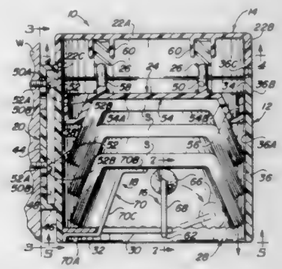
1. A new random member dispenser comprising:
a housing having an internal cavity with a cavity aperture extending from said internal cavity to an exterior of said housing;
at least one supporting actuator means for supporting said housing in an elevated position above a surface, said supporting actuator means further being operable to dispense a random member from said cavity through said cavity

aperture upon an application of a downward force to said housing; said at least one supporting actuator means com-



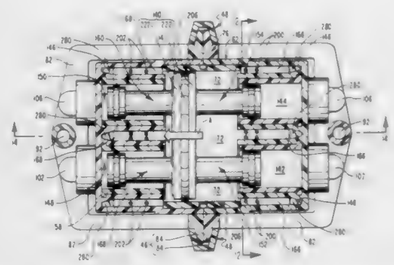
prising a pair of supporting actuators mounted on opposed sides of said cavity aperture.

5,388,724
COFFEE FILTER STORAGE AND DISPENSING CANISTER
Tracy F. Adams, and Pamela S. Adams, both of 1617 N. Ironwood, #2, Apache Junction, Ariz. 85220
Filed Mar. 7, 1994, Ser. No. 207,955
Int. Cl.[6] B65H *3/06*
U.S. Cl. 221—259 19 Claims



1. A coffee filter storage and dispensing canister, comprising:
(a) a container body having an interior compartment for storing an inverted stack of coffee filters therein and one end with a dispensing opening for dispensing coffee filters therefrom;
(b) first means connected to said container body and disposed over the inverted stack of coffee filters in said interior compartment for exerting a hold-down force on the inverted stack of coffee filters toward said one end of said container body having said dispensing opening;
(c) second means disposed adjacent to said one end of said container body and said dispensing opening therein and extending from exteriorly of said container body to within said interior compartment thereof for separating a lowermost one of the coffee filters from the inverted stack thereof and moving the lowermost one filter from said container body through said dispensing opening to dispense the one filter therefrom; and
(d) third means disposed adjacent to said one end of said container body and said dispensing opening therein and extending within said interior compartment thereof for releasably retaining the coffee filters of the inverted stack thereof within said container body so as to permit dispensing of the lowermost one of the coffee filters therefrom;
(e) said first means including a cover removably fitted on an opposite end of said container body, a hold-down member disposed over the inverted stack of coffee filters, and a plurality of biasing elements disposed between said cover and hold-down member causing said hold-down member to exert the hold-down force on the inverted stack of coffee filters and bias the stack toward said dispensing opening of said container body;
(f) said cover of said first means having a flat top portion and an annular side portion attached to a peripheral edge of said flat top portion and extending downwardly therefrom to a lower open end adapting said cover to fit over a top open end of said container body., said flat top portion having a pair of annular seats defined on an interior surface thereof adapted to seat first ends of said biasing elements therein.

5,388,725
FLUID-DRIVEN APPARATUS FOR DISPENSING PLURAL FLUIDS IN A PRECISE PROPORTION
William H. Lichfield, Corinne, Utah, assignor to Fountain Fresh International, Salt Lake City, Utah
Filed Nov. 24, 1993, Ser. No. 158,199
Int. Cl.[6] B67D *5/56*; F04B *11/00*
U.S. Cl. 222—1 135 Claims



124. A method for dispensing in a precise predetermined ratio quantities of a drive fluid and constituent fluid, said method comprising the steps of:
(a) valving a pressurized drive fluid alternately to opposite sides of a drive piston slidably disposed for reciprocating motion in a drive cylinder using valving disposed within said drive cylinder, said drive cylinder being comprised of first and second identical hollow housings, each of said first and second hollow housings having an open end and being mutually matingly engaged at said open ends thereof to form a sealing joint of said drive cylinder and to define said drive cylinder within said matingly engaged first and second hollow housings;
(b) venting the side of said drive piston not provided with the pressurized drive fluid to enable said reciprocating motion of said drive piston and the positive displacement of the drive fluid from said side of said drive piston not provided with the pressurized drive fluid;
(c) securing within said drive cylinder on each side of said drive piston a pair of proportioning pistons extending parallel to the axis of said drive cylinder into individual corresponding proportioning cylinders opening into said drive cylinder facing said drive piston, said proportioning pistons advancing into and receding within said corresponding proportioning cylinders in said reciprocating motion of said drive piston;
(d) supplying the constituent fluid to said proportioning cylinders as said proportioning pistons recede therein; and
(e) venting said proportioning cylinders as said proportion-

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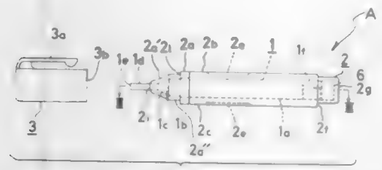
ing piston advances thereinto to enable the positive displacement of the constituent fluid therefrom.

5,388,726

DOUBLE-STRUCTURED PACKAGE OF ONE-SHOT-PUSH SQUEEZE-OUT TYPE FOR ADHESIVE

Masaaki Otake, Ohmiya, Japan, assignor to Sekisui-Iko Company, Limited, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 34,014
Claims priority, application Japan, Apr. 14, 1992, 4-094305
Int. Cl.[6] B67D *5/00*
U.S. Cl. 222—83 10 Claims



10. A double-structured package used for an adhesive comprising:

an elongated plastic container in which said adhesive is stored, said container having a longitudinal axis, said container having one longitudinal end formed with a discharge nozzle;

an elongated casing in which said plastic container is disposed, said casing having a longitudinal axis, said casing having one longitudinal end formed with an opening which is penetrated by said container such that said discharge nozzle of said container extends externally of said casing;

said casing having indentations which are adapted to be pressed by a person's fingers generally perpendicular to the longitudinal axis of the casing to thereby effect squeezing of said container to provide for discharge of adhesive through said discharge nozzle, said casing having a casing wall, said indentations being formed in said casing wall such that the thickness of the casing wall underlying said indentations is less than the thickness of the casing wall juxtaposed to said indentations;

a cap removably fitted on said casing for covering said one longitudinal end of said casing and for covering said discharge nozzle;

said cap having side walls and an end wall, a pin-receiving well disposed within said cap, said pin-receiving well opening up onto said end wall of said cap; and

pin means removably retained in said pin-receiving well such that said pin means is manually removable from said pin-receiving well to effect initial opening of said discharge nozzle of a sealed and fresh container containing adhesive and to effect closure of said discharge nozzle after said initial opening.

5,388,727

TWO COMPARTMENT FLUID DISPENSER WITH PUMP, AND METHOD OF MANUFACTURING SAME

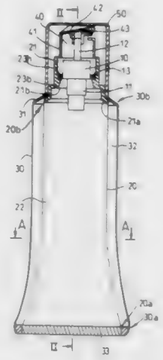
Claude Jouillat, La Marette, France, assignor to Societe Technique de Pulverisation -S.T.E.P.-, Verneuil-sur-Avre, France

Filed Aug. 4, 1993, Ser. No. 101,743
Claims priority, application France, Aug. 6, 1992, 9209759
Int. Cl.[6] B65D *35/22*
U.S. Cl. 222—94 5 Claims

1. A fluid dispenser comprising a pump (10) mounted in a sealed manner on a deformable tank (20), and an outer envelope (30) that surrounds the deformable tank (20) and that retains a shape suitable for being held in the hand throughout the time that the dispenser is in use,

said deformable tank comprising a flexible tube (20) that extends between a first end (20*a*) that is closed by pinching to form a bottom (33, 33*b*) and a second end (20*b*) that is secured to a substantially rigid end piece (21) in which the pump (10) is mounted, said end piece (21) including at least one outside shoulder (21*a*);

said outer envelope comprising a flexible tube extending between a first end (30*a*) close to the bottom (33, 33*b*) of the tank and closed by pinching, and a second end (30*b*)



including a neck (31) that is engaged on said shoulder (21*a*), said second end (30*b*) being in mechanical connection with the second end of the deformable tank (20),

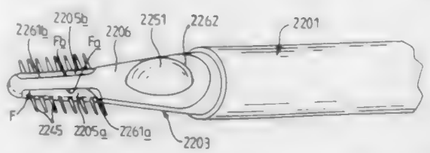
wherein said outer envelope (30) defines an inner volume that communicates with the atmosphere via at least one primary air passage (36) situated between said neck (31) and said shoulder (21*a*) which are in non-sealed contact one against the other.

5,388,728

UNIT FOR DISPENSING AT LEAST ONE FLUID PRODUCT, IN PARTICULAR A COSMETIC OR PHARMACEUTICAL PRODUCT

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Division of Ser. No. 916,256, Jul. 21, 1992, Pat. No. 5,301,850, which is a division of Ser. No. 556,546, Jul. 24, 1990, Pat. No. 5,154,328. This application Dec. 28, 1993, Ser. No. 174,456
Claims priority, application France, Jul. 25, 1989, 89 10000; Feb. 1, 1990, 90 400269
Int. Cl.[6] B65D *35/56*
U.S. Cl. 222—105 14 Claims



1. In a unit for dispensing at least one fluid product, said unit comprising:

(a) a container;

(b) a dispensing head;

(c) said dispensing head including means defining at least one dispensing duct for said at least one fluid product to be dispensed, said dispensing duct having a first and a second end;

(d) closing means situated at said second end of said at least one dispensing duct;

(e) said closing means comprising an obturator which forms part of a first component of said dispensing head and made of an elastically deformable material and at least one seat which forms part of a second component of said dispensing head;

(f) said obturator being adapted to be in contact with said seat when no dispensing is taking place but to move away from said seat by elastic deformation under pressure of the product being dispensed and to reenter into contact with said seat by elasticity when dispensing stops;

the improvement comprising:

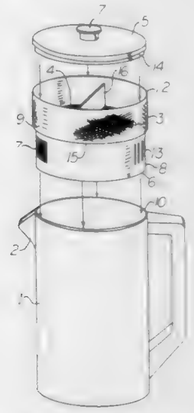
(g) said at least one dispensing duct comprising a duct portion having a section thereof in communication with a flexible enclosure for the product and a second end in communication with a one way valve means; said dispensing head including operating means for opening said one way valve means to cause the product to move through said one way valve means and said flexible enclosure toward said obturator so that subsequent operation of said operating means will cause the product to pass through said obturator to be dispensed, said obturator and said seat extending along a longitudinal axis, said obturator comprising a flexible strip having side edges and opposite faces, said seat being in contact with one of said faces, said unit including a constraining element engaging the other of said faces and having side edges having a width less than the width of said flexible strip, said flexible strip having an end remote from said one way valve, said remote end being closed against said seat so that, upon dispensing the product, the product will be dispensed from between said side edges of said flexible strip and said seat.

5,388,729

PITCHER WITH CADDY ATTACHMENT

Robert M. Gerringer, 1310 Chandler Ct., Acworth, Ga. 30102

Continuation-in-part of Ser. No. 160,488, Dec. 1, 1993, abandoned. This application Jul. 11, 1994, Ser. No. 273,373
Int. Cl.[6] A47G *19/14*; B67D *5/60*
U.S. Cl. 222—130 6 Claims



1. A pitcher with caddy attachment for storing condiments, the device comprising:

(a) a pitcher comprising an upper wall portion and a spout disposed in the upper wall portion;

(b) a recloseable secondary vessel having at least one chamber formed by a secondary wall, a solid bottom, and a recloseable lid;

(c) a skirt, integral with the secondary vessel, extending downward from the secondary vessel and being inside the pitcher wall portion and having at least one opening which can be aligned rotateably with the spout of the pitcher,

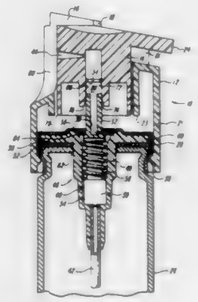
(d) a rotating means comprising the secondary wall for grasping and rotating the secondary vessel, whereby a convenient surface is available to rotateably align the skirt.

5,388,730

LOCKABLE ACTUATOR FOR A DISPENSING CANISTER

Joe L. Abbott, Cumberland, and Michael S. Andrade, Central Falls, both of R.I., assignors to Enviro Pac International L.l.c., Lincoln, R.I.

Filed Nov. 10, 1993, Ser. No. 150,611
Int. Cl.[6] B65D *83/20, 83/22*
U.S. Cl. 222—153 29 Claims



1. A lockable dispenser comprising:

a pressurizable canister having a valve assembly; and

an actuation mechanism attached to said canister, said actuation mechanism comprising a collar and an actuation plunger mounted within said collar in a contacting relation with said valve assembly and rotatable between a first operative position and a second inoperative position, said actuation plunger having an outwardly extending plunger tab thereon and said actuation plunger being slip fitted over a valve stem of said valve assembly in said first operative position and said second inoperative position, said collar further comprising:

a shoulder located beneath said plunger tab to prevent depression of said plunger when said plunger is in the second inoperative position, and

at least one inwardly directed locking tab having a lower surface formed at a height above said shoulder to extend over said actuation plunger to hold said plunger within said collar, said lower surface of said locking tab and said shoulder being cooperatively located to wedge said plunger between said locking tab and said shoulder.

5,388,731

CAP AND DISPENSING FITMENT COMBINATION WHEREIN THE CAP HAS RETAINING MEANS ENGAGING THE FITMENT

Gary L. Mengeu, Wheeling, W. Va.; Merbert V. Dutt, Sarasota, Fla., and Douglas R. Ziegler, Cambridge, Ohio, assignors to Continental Plastics, Inc., Triadelphia, W. Va.

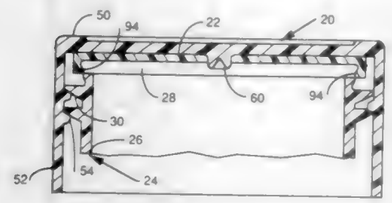
Filed May 4, 1993, Ser. No. 58,351
Int. Cl.[6] B65D *47/00*
U.S. Cl. 222—545 10 Claims

1. A cap and dispensing fitment combination for use on a container having a neck defining a container opening and having cap engagement means and fitment securement means, said combination comprising:

a cap having an end wall and a skirt extending axially from the periphery of said end wall, said cap having means for engaging said cap engagement means and a flange extending axially and radially outwardly from said end wall and terminating in a free end surface which facilitates securement of said dispensing fitment to said cap; and

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a dispensing fitment comprising an end wall having at least one opening therein, said flange engaging into said opening, said dispensing fitment including a sidewall extending axially from the periphery of said end wall and container



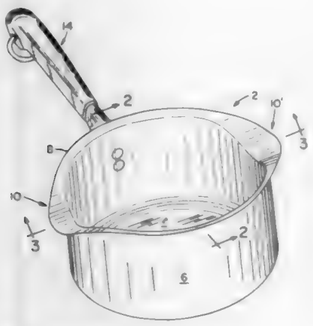
engagement means on said sidewall to secure said dispensing fitment to said fitment securement means of said container when said cap is placed on said container and to retain said dispensing fitment on said container even as said cap is removed from said container.

5,388,732

VESSEL WITH POURING SPOUT INDUCING CONSTANT GEOMETRY, NON-TURBULENT STREAM AND VENTED CLOSURE FOR SAME

Richard W. Greger, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 885,866, May 20, 1992, abandoned. This application Jul. 15, 1992, Ser. No. 913,199
Int. Cl.[6] A47J *27/00*
U.S. Cl. 222—572 5 Claims



1. A vessel comprising:

a) a vessel bottom having a vertical center-line;

b) an annular side wall extending upward from the vessel bottom and terminating into a rim portion and having an inside diameter of at least 4.5 inches;

c) at least one pouring spout formed in the side wall and extending peripherally about the side wall for about a 90° arc with respect to the vertical center-line of the bottom, the at least one spout being peripherally centered about a bisect-line of the arc;

d) the at least one pouring spout being defined by the rim portion making a transition into opposing convex tipper pouring spout surfaces which possess a radius of curvature, indicated as R1, determined by the equation $R1=1.44D-4.96$ and which converge upon and intersect with a concave lower throat surface having a lower most portion and a radius of curvature, indicated as R2, determined by the equation $R2=0.52D-2.11$ the lower most portion of the concave lower throat surface being positioned a predetermined distance below the rim portion of the side wall, the predetermined distance, indicated as H, is determined by the equation $H=0.005D+0.516$ wherein D is the inside diameter of the vessel; and

e) the at least one pouring spout having a lip extending outwardly away from the side wall, the lip having a predetermined curve profile with vertical and horizontal components, the horizontal component of the curve profile of the lip in the vicinity of the bisect-line of the arc occupied by the spout includes a radius of curvature, indicated as R3, determined by the equation $R3=0.5D-1.97$ and a predetermined length that varies as a function of peripheral distance from the bisect-line of the arc occupied by the at least one pouring spout in such manner to provide the lip with a maximum length at the bisect-line of the arc and a minimum length where the concave upper pouring spout surfaces respectively transition into the rim portion.

5,388,733

SLIDE GATE VALVE HAVING REPLACEABLE REFRACTORY VALVE PLATE ASSEMBLY AND METHOD OF REPLACING THE SAME

Francois N. Richard, Nancy, France, assignor to Vesuvius France, Feignies, France

Filed Mar. 17, 1994, Ser. No. 214,287
Claims priority, application European Pat. Off., Apr. 19, 1993, 93401009
Int. Cl.[6] B22D *41/38, 41/22*
U.S. Cl. 222—600 16 Claims



1. A slide gate valve for controlling a flow of molten metal from a metallurgical vessel, comprising

at least one fixed refractory plate having at least one flow opening for conducting a flow of molten metal;

at least one movable refractory plate having at least one flow opening;

a metallic frame mounted on said metallurgical vessel for supporting said fixed and movable refractory plates with respect to said vessel;

at least one pouring nozzle for directing said flow of molten metal from said flow openings;

means for displacing the movable plate with respect to the fixed plate in order to control an overlap between the openings of the fixed and movable plate to regulate said flow of molten metal;

means for compressing the movable plate against the fixed plate to form a seal therebetween, and

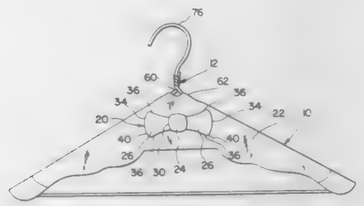
means for interconnecting said fixed and said moveable refractory plates and said pouring nozzle into a valve plate assembly that is installable in and removable from said metallic frame of said slide gate valve in a single operation, wherein said interconnecting means is mechanically independent from said metallic frame.

5,388,734

GARMENT HANGER SHOULDER GUARD WITH SIMULATED BOW-TIE ORNAMENTAL DEVICE

Joel N. Seitz, Parsippany, N.J., assignor to P.D.S. Product Development Corp., South Hackensack, N.J.

Continuation of Ser. No. 155,682, Nov. 22, 1993, abandoned. This application May 23, 1994, Ser. No. 247,529
Int. Cl.[6] A41D *27/22*
U.S. Cl. 223—98 12 Claims



1. In a shoulder guard for a garment hanger, the shoulder guard being of the type erected from an essentially flat sheet of material to include a front panel contoured to complement essentially a garment to be hung on the hanger, the garment having an opening placed at a predetermined location along the front panel when the garment is hung on the hanger and draped over the shoulder guard, an ornamental device in the form of a simulated bow-tie integral with the front panel at the predetermined location, the ornamental device comprising:

a visible representation of a bow-tie knot at the predetermined location along the front panel, the representation of the bow-tie knot including opposite sides;

a visible representation of a bow-tie wing extending from each of the opposite sides of the bow-tie knot representation, each bow-tie wing representation having a wing-like configuration extending from a wing root located at the representation of the bow-tie knot to an opposite wing tip, and a perimetric boundary outlining the configuration of each respective bow-tie wing representation;

a slit in the front panel extending along the perimetric boundary of each wing representation, at least adjacent each wing tip, such that upon erection of the shoulder guard each wing representation is separated from the portion of the front panel along the slit thereby enabling each wing representation to follow a wing contour separate from and standing away from the portion of the front panel along the slit, whereby the ornamental device is viewable in relief against the remainder of the front panel of the shoulder guard, at the predetermined location within the opening of the garment.

5,388,735

DETACHABLE BASKET AND SUPPORT FOR A VELOCIPEDE

Charles R. Mayn, 2701 N. Ocean, #307, Boca Raton, Fla. 33431

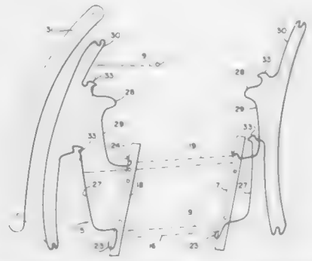
Filed Jul. 2, 1993, Ser. No. 85,105
Int. Cl.[6] B62J *9/00*
U.S. Cl. 224—32 R 9 Claims

1. A basket assembly for velocipedes comprising:

a basket having an open top with an upper rim, a bottom, and fore, aft and left and right walls and a pair of handles pivotally attached to said upper rim, said fore and aft walls each being provided with a pair of spaced-apart apertures at a lower portion thereof;

basket support means including a base portion adapted for fixedly mounting atop a portion of a velocipede frame;

two pairs of hooks affixed to said base portion and extending upward therefrom, a first pair of hooks arranged with each hook having an aperture-engaging portion extending rearward for engaging the apertures in the fore wall of the basket when said bottom rests upon said base portion, and a second, pair of hooks arranged with each hook having an aperture-engaging portion extending forward for engaging the apertures in the aft wall of the basket when said bottom rests upon said base portion, one of said pairs of hooks being fixed for engaging the apertures when said bottom is tilted as well as when said bottom is flat upon said base portion and the other of said pairs of hooks being arranged for engaging the apertures only when the bottom of the basket is flat upon the base portion for securely



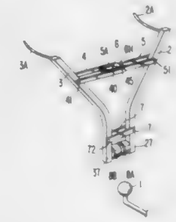
holding the basket and for disengaging the apertures when the basket bottom is tilted up on the corresponding side by a springy latching action, whereby said basket is readily removed from said support means by first tilting up one side of the basket to unlatch said other pair of hooks and then sliding the basket away from said one pair of hooks to completely disengage the basket from the support means.

5,388,736

CYCLE RACK

Erik Schmidt, Gjellerupbakken 20, Gjellerup, DK-7400, Herning, Denmark

Continuation of Ser. No. 743,032, Aug. 9, 1991, abandoned. This application Aug. 10, 1992, Ser. No. 926,642
Claims priority, application Denmark, Apr. 30, 1991, 0792/91
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—42.03 B 9 Claims



1. A cycle rack for carrying a longitudinally extending object, the cycle rack comprising:

a pair of branches connected to each other at an acute angle at a lower portion thereof;

a connecting link located at said lower portion connecting the branches so as to be mutually pivotable;

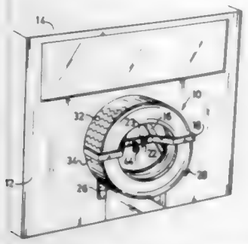
gripping and holding means enabling an adjusting of said connecting link such that said gripping and holding means may be accommodated on different sized towing ball hitches; and

toggle joint means for connecting the pair of branches,

wherein said connecting link includes means for enabling an adjusting of said connecting link so as to accommodate said different sized towing ball hitches.

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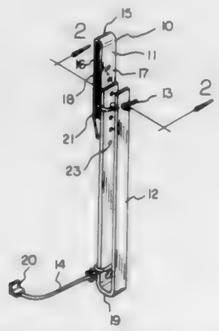
5,388,737
SPARE TIRE CARRIER
Billy R. Myers, and Randall A. Waller, both of Murray, Ky., assignors to Personnel Truck Leasing, Inc., Murray, Ky.
Filed Jul. 16, 1993, Ser. No. 93,057
Int. Cl.[6] B62D *43/00*
U.S. Cl. 224—42.26 **4 Claims**



1. A spare tire carrier comprised of a substantially A-shaped bracket, means for attaching said substantially A-shaped bracket to a motor vehicle, a holding plate removably attached to said substantially A-shaped bracket, means for removably attaching said holding plate to said substantially A-shaped bracket, and lock means for removably securing said holding plate to said substantially A-shaped bracket, wherein:
(a) said substantially A-shaped bracket is comprised of a first leg, a second leg, a first transverse plate for joining said first leg and said second leg, and a second transverse plate for joining said first leg and said second leg, wherein:
1. each of said first leg and said second leg has a proximal end and a distal end,
2. said first plate joins said proximal end of said first leg with said proximal end of said second leg,
3. said second plate joins said first leg with said second leg from a first point intermediate said proximal end and said distal end of said first leg to a second point intermediate said proximal end and said distal end of said second leg,
4. said second plate has a length which is greater than the length of said first plate, and
5. said first plate is attached to a hook adapted to support a tire;
(b) said spare tire carrier is comprised of a first means for supporting said spare tire and a second means for supporting said spare tire, wherein:
1. said first means for supporting said spare tire is attached to said first leg at a point intermediate said proximal end and said distal end of said first leg, and
2. said second means for supporting said spare tire is attached to said second leg at a point intermediate said proximal end and said distal end of said second leg and
(c) said holding plate is comprised of an orifice adapted to receive a bolt and a slot adapted to receive a hasp.

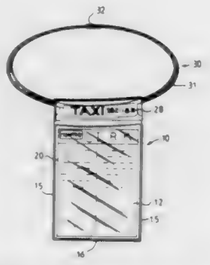
5,388,738
SIDE MOUNT RACK
John Russell, 1707B Hillside Dr. South, North Myrtle Beach, S.C. 29582
Filed Sep. 17, 1993, Ser. No. 121,917
Int. Cl.[6] B60R *9/02*
U.S. Cl. 224—42.45 R **7 Claims**

1. A side mount rack designed to carry long items on a side of a vehicle, said side mount rack comprising:
a first main portion member formed into a U-shape and having one inner end thereof downwardly extending to fit into a space between a vehicle glass window and a door frame in which said vehicle glass window is mounted, with an outer end of said first main portion member downwardly extending into resilient engagement with an exterior panel of said vehicle, said outer end of said first main portion member having a plurality of through-extending first main portion apertures positioned therealong;
a second main portion member having a first end and a second end, said second main portion member having a plurality of first end apertures extending therethrough proximal to said first end thereof and at least one second end aperture extending therethrough and proximal to said second end thereof, said second main portion being substantially U-shaped and having a second tie member aperture extending through a center portion thereof, said second main portion being coextensive such that said first end and said second end of said second main portion are aligned and extend to a single vertical height;



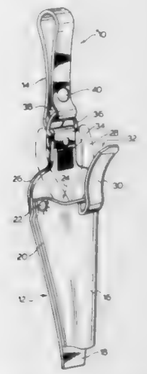
a first flexible tie extending through an individual one of said plurality of through-extending first main portion apertures, an individual one of said plurality of first end apertures, and said at least one second end aperture to removably couple said second main portion member to said first main portion member, and further to removably couple said second end of said second main portion member to said first end thereof to removably capture an object within said second main portion member;
a second flexible tie extending through said second tie member aperture of said center portion of said second main portion member; and,
a hook coupled to a distal end of said second flexible tie member, said hook being operable to engage a portion of said vehicle.

5,388,739
COMMUTER TICKET HOLDER
Virginia Gargan, 12 Alton Ct., North Merrick, N.Y. 11566
Continuation-in-part of Ser. No. 988,866, Dec. 10, 1992, abandoned. This application Jan. 12, 1994, Ser. No. 180,843
Int. Cl.[6] A45C *1/06*
U.S. Cl. 224—202 **5 Claims**



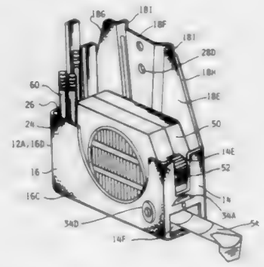
1. A commuter ticket holder suspended from the neck of a user comprising
a generally rectangular, relatively thin, plastic envelope including a commuter ticket front panel defining a transparent window and a commuter ticket back panel, each of the commuter ticket panels having top, bottom and side edges, the bottom and side edges of the commuter ticket front and back panels being sealed together to define a pocket having an open top end in which a commuter ticket may be inserted for display through said transparent window, said envelope also having front and rear neck band panels disposed above and joined to said commuter ticket panels, said neck band front and rear panels having top, bottom and side edges, portions of which are sealed together to define two openings at said side edges thereof and a continuous passageway between said two openings; and
means for suspending said envelope from said neck of said user in a manner to maintain said transparent window facing outwardly at all times comprising
a separate neck band forming a loop adapted to fit around a user's neck received through said passageway and extending through said open ends of said front and rear neck band panels so that said envelope is prevented from turning, and permitting said envelope to be moved along said neck band for positioning on said user.

5,388,740
TOOL HOLDER FOR FISHERMEN AND TRADESMEN
Gordon D. Garland, 283 Arlington Avenue, Toronto, Ontario M6C 2Z8, Canada
Filed Aug. 18, 1992, Ser. No. 931,358
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—253 **9 Claims**



1. A tool holder for use by fishermen, handymen and the like comprising:
a holster portion having a pocket of a size for holding a tool, the pocket being formed from a front and base connected together along the sides thereof and having an open top, the base in at least the area above the pocket being of a stiffness to substantially reduce bending or folding when a tool is removed from the pocket
a belt loop portion for attaching the holder to the belt of a user, the belt loop portion being attached to the holster portion through a movable connection which allows the holster portion movement about two perpendicular axes simultaneously,
a closure tongue being attached to the front near the top opening and having one part of a two part releasable securing means attached thereto, the second part of the two part releasable securing means being attached to the base above the pocket, the two part releasable securing means releasably securing the closure tongue to the base, the closure tongue being movable between an open position falling away from the holster to allow free access to the pocket and a closed position with the tongue being centrally located and protected by the portion of the tool projecting from the pocket.

5,388,741
TAPE-MEASURE USING AND HOLDER ASSEMBLY
George Hillinger, Beverly Hills, Calif., assignor to Huei-Yen Liao, Taipei, Taiwan, Prov. of China
Filed Dec. 27, 1993, Ser. No. 173,888
Int. Cl.[6] B65D *25/10*
U.S. Cl. 224—253 **11 Claims**



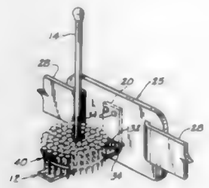
1. An improved tape-measure and implements using and holding assembly comprising:
a) a left section having front, back and bottom edges,
b) a right section having front, back and bottom edges, a tape-release slot and a tape-measure opening,
c) a front section having a top edge, a bottom edge, and left and right edges that are integrally formed with the front edges of said left and right sections,
d) a back section having a bottom edge, and left and right edges that are integrally formed with the back edges of said left and right sections, and having on its back surface a pair of protrusions each having belt slots therethrough,
e) a bottom section having upper and lower surfaces that integrally interfaces with the bottom edges of said left, right, front and back sections, and
f) a partition slat that interfaces with said front and back sections, wherein said assembly is sized to form a tape-measure holding cavity and an adjacent implements holding cavity, wherein a tape measure having an extendable measuring tape and a tape-release slide-lock is insertable into said tape-measure cavity such that the slide-lock projects through the tape-release slot and the extendable measuring tape is extendable and retractable through the tape-measure opening, and pencils, pens and other elongated implements used in the carpentry trade are insertable into said implement cavity.

5,388,742
NAIL COIL RACK
Carol M. Ethridge, and Kenneth L. Ethridge, both of 6324 E. King St., Tulsa, Okla. 74115
Filed Nov. 29, 1993, Ser. No. 158,547
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—255 **1 Claim**

1. A nail coil rack for attachment to a belt worn by a user, comprising:
an inverted T-shaped member having an elongated rod-like stem portion and having an elongated strap-like bar portion, bent at right angle at one end portion in upstanding parallel relation with the stem portion and its remaining portion projecting laterally in opposite directions, from the longitudinal axis of the stem portion, at least equidistant with respect to the length of said bar one end portion;
a belt attachable support member of relatively stiff material tending to remain in a planar configuration having oppos-

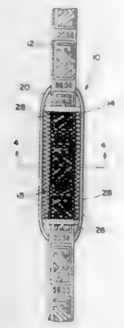
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ing end portions and having transverse belt receiving slots therein and having a longitudinally extending aperture substantially medially the slot spacing for receiving said bar one end portion; and,



fasteners securing said bar one end portion to said support member opposite the stem portion and on opposite sides of the aperture.

5,388,743
SHOULDER PAD FOR DECORATIVE GUITAR STRAP
Howard Silagy, 100A Tec St., Hicksville, N.Y. 11801
Filed Jul. 14, 1994, Ser. No. 274,164
Int. Cl.[6] A41F *15/02;* **A45F** *3/12*
U.S. Cl. 224—264 **2 Claims**



1. A shoulder pad for a guitar strap of web construction material characterized by a decorative pattern displayed therealong, said shoulder pad comprising a rectangular shaped base of neoprene having opposing short and long sides and having in use an interposed position over a user's shoulder and beneath said decorative strap looped over said shoulder, and a cover in the form of a strip of net construction material attached only along opposing edges of said long sides of said base so as to bound between said opposing edges of said long sides an open-ended passageway for tracking movement therethrough of said decorative strap, whereby said decorative strap remains in visible display through said net cover to contribute to an enhanced appearance of said shoulder pad.

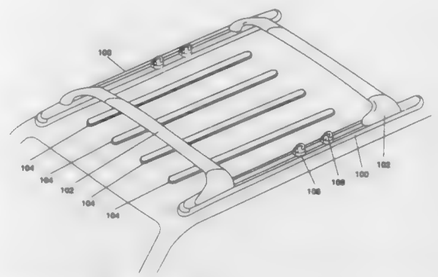
5,388,744
TIE DOWN APPARATUS FOR AN AUTOMOBILE LUGGAGE RACK
David M. Glorio, Okemos, and John S. Cucheran, Lake Orion, both of Mich., assignors to Nissan Research and Development, Inc., Farmington Hills, Mich.
Filed Jul. 22, 1993, Ser. No. 95,318
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—324 **3 Claims**

1. A tie down apparatus for an automobile luggage rack comprising:

an outer rail having an inside channel;

a tie down stud having a knob portion and a shaft portion for assisting in preventing luggage on an automobile roof from falling off; and

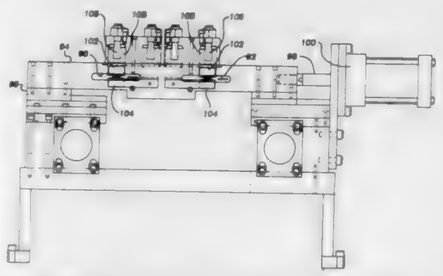
a combination, of a holder and a washer, disposed inside said channel for connection with said tie down stud;



wherein said holder includes an aperture, formed in an upper portion of said holder, which has a smaller diameter than a diameter of the shaft portion of said tie down stud; and

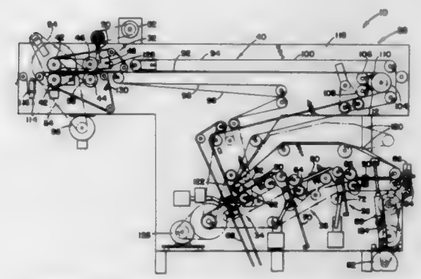
wherein said holder further comprises a resilient retaining rail for lifting the upper portion of said holder to be flush with a top surface of said outer rail.

5,388,745
METHOD AND APPARATUS FOR SEPARATING TUBING
Steven L. Stroup, Sr., 7931 Gathings Dr., Fort Wayne, Ind. 46816
Continuation of Ser. No. 998,421, Dec. 30, 1992, abandoned. This application Jan. 18, 1994, Ser. No. 183,227
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[6] B26F *3/00*
U.S. Cl. 225—2 **16 Claims**



1. A method of separating an intermediate length of hollow, thin-walled flat metal tubing into predetermined lengths having substantially burr-free parted ends comprising the steps of providing a length of hollow flat tubing having flat upper and lower walls joined by end walls, partially severing the tubing by providing relative movement between said tubing and opposed cutting blades having straight cutting edges each defining an acute angle with respect to the upper and lower walls so as to cut progressively inwardly from outer faces of the upper and lower walls, said movement being in a direction generally parallel to the upper and lower walls and transverse to a longitudinal axis of said tubing, and completely severing the tubing by applying an axial force to said tubing sufficient to exceed the ultimate strength of said tubing.

5,388,746
SEPARATOR/FOLDER BAG MACHINE
Peter J. Hatchell, New Franken; Ronald L. Lotto, Bonduel; Ernest H. Teske, and Donald J. Bauknecht, both of Green Bay, all of Wis., assignors to FMC Corporation, Chicago, Ill.
Division of Ser. No. 613,436, Nov. 9, 1990, abandoned. This application Oct. 4, 1991, Ser. No. 770,811
Int. Cl.[6] B65H *35/10*
U.S. Cl. 11.225—100 **2 Claims**



1. A separator for separating individual sheets from a continuous plastic web having transverse perforation formed therein, said perforations formed by means of a perforating knife upstream of said separator, said separator further includes a position indicator coupled to said perforating knife upstream of said separator;

an infeed mechanism for advancing the plastic web at a predetermined speed;

a pair of nip rollers located downstream of said feed mechanism and mounted for reciprocating movement into and out of engagement with each other, said rollers operating when engaged to advance said web at a speed greater than said predetermined speed so as to cause said web to separate along said perforation between said nip rollers and said infeed mechanism;

a linkage including an eccentric coupled to one of said nip rollers for reciprocating said nip roller into engagement with the other nip roller in response to rotation of said eccentric;

a servo motor for rotating said eccentric, said servo motor being means responsive to said position indicator coupled to said perforating knife so that a nip roller is reciprocated into engagement with the other nip roller and thereby cause said web to separate along the perforation between said nip rollers and said infeed mechanism.

5,388,747
POSITIVE YARN FEEDING DEVICE
Jen-Hui Chen, 4FL., No. 27, Lane 160, Hsin Sheng S. Rd., Sec. 1, Taipei, Taiwan, Prov. of China
Filed Jun. 3, 1993, Ser. No. 72,301
Int. Cl.[6] B65H *59/18*
U.S. Cl. 226—174 **6 Claims**

1. A positive yarn feeding device comprising:

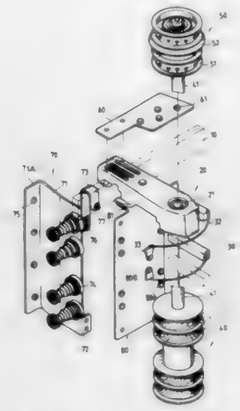
a support body mounted on a beam member,

multiple yarn feeding drum bodies included in a yarn feeding wheel rotatably mounted on said support body, each yarn feeding drum including a frictional contact surface so as to increase friction between the drum body and the yarn,

multiple drive pulleys with a clutch being disposed between each two drive pulleys, the drive pulleys being rotatably mounted on said support body;

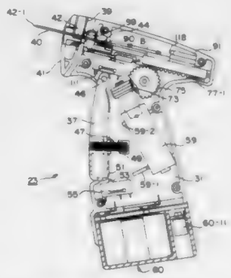
the device being characterized in that each yarn feeding drum body feeds yarn in a yarn path including an incoming yarn guiding eyelet, a tension control means including a movable yarn guiding arm, and an outgoing yarn guiding eyelet, and wherein

a yarn braking assembly is disposed on a side of said yarn feeding wheel corresponding to an outgoing yarn path, the braking assembly including multiple yarn braking means, the number of braking means corresponding to the



number of feeding drum bodies, whereby tension is maintained on the yarn even when no pulling force is applied from a knitting machine.

5,388,748
ELECTRIC POWERED APPARATUS FOR DISPENSING INDIVIDUAL PLASTIC FASTENERS FROM FASTENER STOCK
Paul A. Davignon, Uxbridge, Mass., and Richard M. Bastien, Cumberland, R.I., assignors to Avery Dennison Corp., Pasadena, Calif.
Continuation-in-part of Ser. No. 61,210, May 13, 1993, abandoned. This application Oct. 1, 1993, Ser. No. 130,644
Int. Cl.[6] B65C *7/00*
U.S. Cl. 227—67 **10 Claims**



1. Apparatus for dispensing plastic fasteners from fastener stock, said apparatus comprising:

a casing,

a hollow needle mounted on said casing, said hollow needle having an inlet opening,

a guide groove in said casing for receiving fastener stock, said guide groove being in communication with said inlet opening in said hollow needle,

a feeder element for intermittently advancing fastener stock loaded into said guide groove,

an ejector rod for pushing plastic fasteners from said fastener stock through and out of said hollow needle one at a time, said ejector rod being mounted on said slider,

an electric motor for driving said ejector rod and said feeder element, said electric motor having a drive shaft,

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a converter assembly for converting rotary motion of the drive shaft of said motor into linear motion, said converter including:

a worm mounted on the drive shaft of the electric motor,

a slider,

rack mounted on the slider,

a worm gear in engagement with the worm, and

a spur gear in engagement with the rack and coupled to the worm gear, and

control means for controlling the operation of said electric motor so as to produce intermittent reciprocating linear movement of said ejector rod.

5,388,749

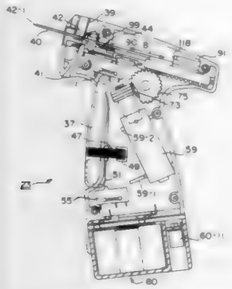
ELECTRIC POWERED APPARATUS FOR DISPENSING INDIVIDUAL PLASTIC FASTENERS FROM FASTENER STOCK

Paul A. Davignon, Uxbridge, Mass., and Richard M. Bastien, Cumberland, R.I., assignors to Avery Dennison Corp., Pasadena, Calif.

Continuation of Ser. No. 61,210, May 13, 1993, abandoned. This application Aug. 12, 1994, Ser. No. 289,498

Int. Cl.[6] B65C *7/00;* **B25C** *1/06*

U.S. Cl. 227—67 **4 Claims**



1. Apparatus for dispensing plastic fasteners from fastener stock, each plastic fastener having a cross bar at the end of a filament, said apparatus comprising:

a casing,

a hollow needle mounted on said casing, said hollow needle having an inlet opening,

a guide groove in said casing for receiving fastener stock, said guide groove being in communication with said inlet opening in said hollow needle,

a feeder element for intermittently advancing said fastener stock loaded into said guide groove so that the cross bar of a fastener to be dispensed is fed into said hollow needle,

an ejector rod for pushing the cross bar of the fastener fed into said hollow needle out through the tip of the needle,

a DC motor for driving said ejector rod and said feeder element, said DC motor having a drive shaft, a positive terminal and a negative terminal,

a converter assembly for converting rotary motion of the drive shaft of said DC motor into linear movement of said ejector rod, and

control means for controlling the operation of said DC motor so as to produce intermittent reciprocating linear movement of said ejector rod, said control means including a trigger switch and a limit switch, said trigger switch and said limit switch each being double through switches, said trigger switch and said limit switch each having a first position and a second position, said trigger switch and said limit switch each begin normally in its first position and being coupled to said DC motor so that when said trigger switch is in its first position and said limit switch is in its first position said DC motor is deenergized, then, when said trigger switch is moved to its second position and said limit switch remains in its first position said DC motor will be energized for movement in a first direction, then, when said limit switch is moved to its second position and said trigger switch remains in its second position said DC motor will be brought to a stop, then, when said trigger switch is moved back to its first position and said limit switch remains in its second position said DC motor will be energized for movement in a first direction and then, when said limit switch is moved back to its first position and said trigger switch remains in its first position said DC motor will be brought to a stop.

5,388,750

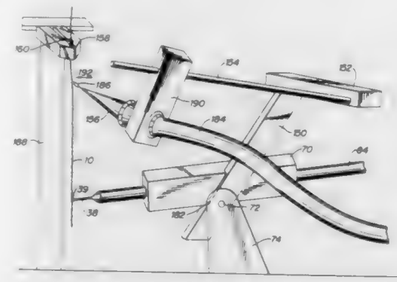
SOLDERING MACHINE FOR ROPE CHAIN

Anthony Paolercio, Pelham Manor, and Bolivar Santacruz, Ozone Park, both of N.Y., assignors to Michael Anthony Jewelers, Inc., Mt. Vernon, N.Y.

Filed Jan. 10, 1994, Ser. No. 179,602

Int. Cl.[6] B23K *31/02, 3/00*

U.S. Cl. 228—4.1 **13 Claims**



1. An improved soldering machine for automatically soldering links of a chain, in which the links are disposed adjacent one another and define link junctions, said machine having means for holding the chain in position for enabling the link junctions to be soldered, soldering means, including solder-applying means for applying solder paste to the chain at said link junctions, said solder-applying means including a hollow needle having a needle tip and means for feeding solder paste through said needle tip, and means for causing the needle tip to traverse a predetermined path with said needle tip contacting said chain over a portion of said predetermined path, the improvement comprising:

heating means for heating solder applied by said soldering means, said heating means coupled to said means for causing the needle tip to traverse a predetermined path to cause the heating means to traverse a cyclical path, said heating means heating said solder applied by said soldering means during a portion of said cyclical path.

5,388,751

WIRE CLAMPER

Kouichi Harada, and Kuniyuki Takahashi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Feb. 2, 1994, Ser. No. 190,308

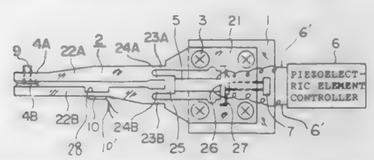
Claims priority, application Japan, Mar. 9, 1993, 5-072855

Int. Cl.[6] H01L *21/60*

U.S. Cl. 228—4.5 **5 Claims**

1. A wire clamper used in a wire bonding apparatus characterized in that said wire clamper comprises: a pair of clamper arms which open and close and a pair of clamping elements that are respectively provided on said clamper arms so as to clamp a bonding wire; wherein at least one of said clamper arms is opened and closed by an electrostrictive strain effect or

magnetstrictive strain effect of a piezoelectric element, and a temperature compensating means is installed which corrects



for fluctuation in a clamping load of said clamper elements that are caused by temperature changes.

5,388,752

METHOD AND APPARATUS FOR SOLDERING A WORKPIECE IN A NON-OXIDIZING GAS ATMOSPHERE

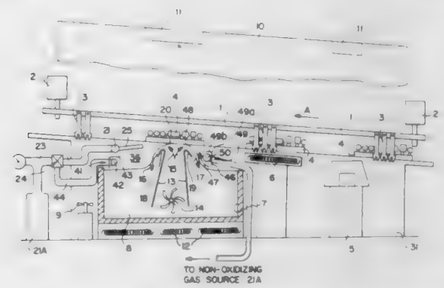
Ichiro Kawakatsu, 30-13, 3-chome Saginomiya, Nakano-ku, Tokyo 165, Japan

Filed Nov. 18, 1993, Ser. No. 153,999

Claims priority, application Japan, Apr. 23, 1993, 5-131492

Int. Cl.[6] H05K *3/34*

U.S. Cl. 228—20.1 **11 Claims**



1. An apparatus for soldering a workpiece in a non-oxidizing atmosphere, comprising:

conveyor means running in a substantially horizontal direction, for holding and moving a workpiece in said horizontal direction;

a flux supplying unit for supplying flux to said workpiece;

a solder bath including molten solder forming an area of upwelling of solder flow and disposed under said conveyor means such that portions of a lower surface of said workpiece successively come into contact with a portion of said upwelling of solder flow and then out of contact with said upwelling of solder flow as the workpiece passes over the solder bath; and

jetting means provided at an exit side of said solder bath with respect to said conveyor means and connected to an non-oxidizing gas source, for jetting non-oxidizing gas from said non-oxidizing gas source into a region defined by the area where the portions of the lower surface of said workpiece come out of contact with said upwelling of solder flow and a vicinity around this area.

5,388,753

INERT GAS WELDING SHIELD FOR THE BACKSIDE OF WELDS

Gerald W. Bjorkman, Jr., Madison, Ala., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Mar. 21, 1994, Ser. No. 215,742

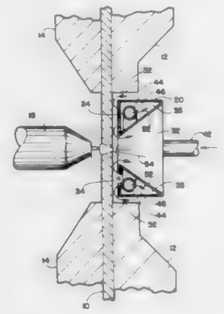
Int. Cl.[6] B23K *9/16*

U.S. Cl. 228—42 **36 Claims**

1. A backside shield for use in welding which comprises:

a continuous enclosure surrounding an open central area wherein said open central area defines a through-opening in said shield;

said enclosure comprising at least one chamber defined by first and second spaced skins and inner and outer walls extending between said skins, said inner wall adjacent to said open central area and said outer wall defining at least a portion of the outer periphery of said enclosure;



means for introducing an inert gas into said chamber including at least one inlet tube;

said second skin being substantially planar and perforated to permit diffuse egress of gas from said chamber;

means for securing said enclosure to a welding device whereby said enclosure may be maintained in alignment with a welding torch with said second skin spaced closely adjacent to the surface of the part to be welded.

5,388,754

METHOD UTILIZING WATER SOLUBLE MASKING FORMULATION FOR PRODUCING AN ARTICLE

Gary V. Grosclaude, Winsted, and Andrew G. Bachmann, Harwinton, both of Conn., assignors to Dymax Corporation, Torrington, Conn.

Division of Ser. No. 762,416, Sep. 19, 1991, Pat. No. 5,225,315. This application Mar. 29, 1993, Ser. No. 38,800

Int. Cl.[6] B05D *1/00;* **B23K** *1/00*

U.S. Cl. 228—118 **9 Claims**

1. A method for producing an article comprised of a solder-bearing substrate having solder on only a portion of its surface, said method comprising the steps:

(a) applying to a first portion of the surface of a substrate, a formulation comprising:

a particulate agent that effervesces upon admixture with water; and a nonaqueous liquid substance that is curable to a solid, adherent, water-soluble matrix for said agent, said agent being dispersed in said substance,

while leaving a second portion of said surface free from said formulation;

(b) effecting curing of said applied formulation, to produce a solid deposit on said surface;

(c) applying molten solder to said surface, and upon said solid deposit, and effecting hardening of said solder; and

(d) washing said surface with water to effect removal of said deposit.

5,388,755

APPARATUS AND METHOD OF BONDING ISOLATION GROOVES OF A RIDGE WAVE-GUIDE LASER DIODE

Kevin A. Baxter, Billerica, Mass., assignor to Polaroid Corp., Cambridge, Mass.

Filed Jan. 28, 1994, Ser. No. 188,567

Int. Cl.[6] B23K *1/008*

U.S. Cl. 228—123.1 **11 Claims**

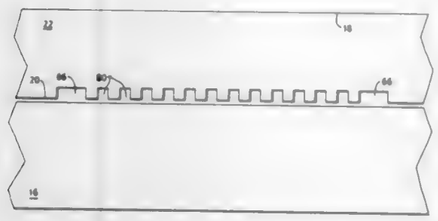
1. A method of bonding a first electronic component to a

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second electronic component, said method comprising the steps of:

placing said first and second electronic components in intimate contact in a sealed chamber;

melting solder between an irregular surface of said first



electronic component and said second electronic component;

fluctuating pressure of gases in said sealed chamber while said solder is melted; and

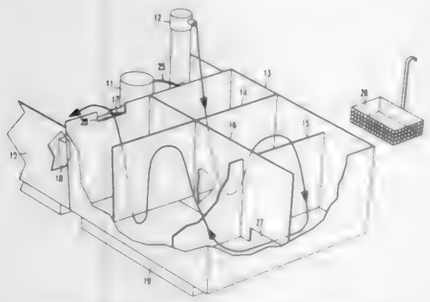
cooling said first and second electronic components so that said melted solder solidifies.

5,388,756

METHOD AND APPARATUS FOR REMOVING CONTAMINANTS FROM SOLDER

Ronald E. Howlett, Richmond, Va., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 27, 1993, Ser. No. 173,012
Int. Cl.[6] C22B 9/02; B23K 3/06
U.S. Cl. 228—214 15 Claims



1. A method for continuous removal of contaminants from molten solder in a main solder pot comprising the steps of:

pumping the solder to a valve assembly which directs the solder into an auxiliary solder pot;

heating the valve assembly to keep the solder in a molten condition;

circulating the solder in the auxiliary pot by a gravity feed while heating the solder in the auxiliary pot to a lesser temperature than solder in the main pot so as to cause at least a portion of the contaminants to precipitate out of the solder while in the auxiliary pot; and

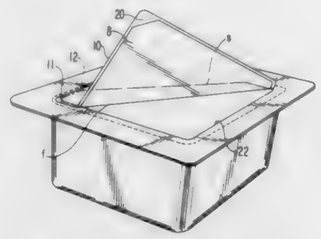
returning the solder to the main pot after said portion of contaminants is removed therefrom.

5,388,757

RECLOSABLE SALES PACKING, E.G. FOR MEAT SLICES

Ove Lorenzen, Hasselager, Denmark, assignor to Schur International A/S, Horsens, Denmark

PCT No. PCT/DK92/00198, § 371 Date Jan. 11, 1994, § 102(e) Date Jan. 11, 1994, PCT Pub. No. WO93/00274, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 25, 1992, Ser. No. 170,239
Claims priority, application Denmark, Jun. 25, 1991, 1235/91
Int. Cl.[6] B65D 1/34
U.S. Cl. 229—123.3 4 Claims



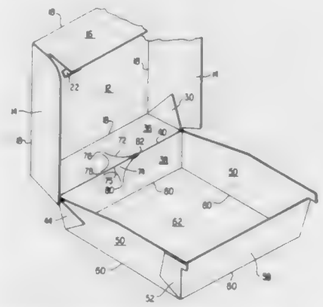
1. A sales packing of the type comprising a more or less cup shaped underpart having an outwardly projecting edge flange, to which there is secured, by welding, a cover sheet belonging to a packing closing system for tight original closing and for reclosing, respectively, characterized in that the reclosing system of the packing is of the type comprising a cover sheet having a self adhesive paper or foil label stretching outwardly somewhat beyond a cutting line, which is provided in the sheet so as to extend along at least a substantial part of the length of the upper mouthing edge of the underpart, the cover sheet outside the cutting line being rigidly welded to the edge flange of the underpart, and the tight original closure of the packing being constituted by a barrier forming uppermost sheet, which, by a peelable welding, is removably secured to to the top side of the edge area of the cover sheet or directly to the said edge flange outside of the edge of the cover sheet.

5,388,758

ANTIBUCKLING CLAMSHELL PACKAGE

Daniel B. Scovell, Budd Lake, N.J., assignor to International Paper Company, Purchase, N.Y.

Filed Dec. 21, 1993, Ser. No. 170,845
Int. Cl.[6] B65D 5/66
U.S. Cl. 229—146 10 Claims



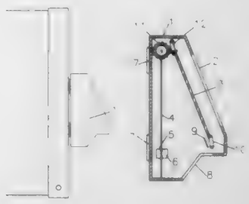
1. A clamshell container formed from a unitary paperboard blank, the container having a cover and a lower tray, said cover and said tray each having a top wall and three or more sidewalls, a first of said sidewalls of said cover and said tray each forming a rear wall, said cover rear wall and said tray rear wall being integral with each other to define a common rear panel and being hingedly connected to each other by a hinge line, said hinge line extending across the container, four arcuate cut lines each extending through said rear panel, said four arcuate cut lines forming a generally star shaped area, each cut line having a terminal at each end of said cut line, the termini of said four cut lines generally defining four corners of an imaginary parallelogram, two opposite of said four corners of said imaginary parallelogram lying on said hinge line and two other opposite of said four corners of said imaginary parallelogram lying, respectively, on opposite sides of said hinge line, respective said termini spaced from each other to thereby form necks at tips of said star shaped area of said common rear panel.

5,388,759

DELIVERY SIGN FOR A RURAL MAILBOX

Gary M. Barnes, Rte. 4 Box 271, Nashville, N.C. 27856

Filed Feb. 2, 1993, Ser. No. 12,448
Int. Cl.[6] B65D 91/00
U.S. Cl. 232—35 5 Claims



1. A signal device for use with a rural mailbox comprising a bottom hinged door, the signal device signaling that the door has been opened, the signal device comprising:

a. a unit housing comprising a transparent window;

b. a means of attaching the unit housing to the door,

c. a back screen inside the unit housing that pivots forward when the door is opened and comprises a message;

d. a shutter assembly inside the unit housing and in front of the back screen that comprises a message when closed and reveals the back screen when opened;

e. a gearing means that operationally connects the back screen and the shutter assembly so that the shutter assembly opens and closes in response to rotations of the back screen;

f. a means of holding the back screen forward after the door is closed;

g. a reset means to release the back screen to pivot backward after a mail recipient picks up incoming mail.

5,388,760

THERMOSTAT BYPASS

Alton R. Ragan, Rte. 1, Box 71, Sparks, Okla. 74869

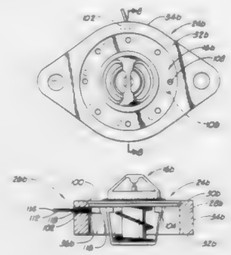
Division of Ser. No. 974,400, Nov. 10, 1992, Pat. No. 5,282,828, which is a division of Ser. No. 709,520, Jun. 3, 1991, Pat. No. 5,163,613. This application Jan. 27, 1994, Ser. No. 187,573
Int. Cl.[6] F01P 7/16
U.S. Cl. 236—345 3 Claims

1. A thermostat bypass assembly for a water cooled engine having a water flow passageway, comprising:

a thermostat insert having an upper end and a lower end and a thermostat opening extending through the thermostat insert intersecting the upper and the lower end thereof;

a thermostat having a thermostat valve which opens and closes to regulate the temperature of water flowing through the water flow passageway, the thermostat having at least one bypass opening formed through a portion thereof and the thermostat disposed in the thermostat opening of the thermostat insert such that the bypass opening of the thermostat is in fluid communication with the thermostat opening; and

a valve member disposed in the thermostat opening of the thermostat insert adjacent to the thermostat, the valve member having at least one bypass opening formed therethrough, the valve member being movable between an operating position wherein the bypass opening of the valve member and the bypass opening of the thermostat are misaligned such that the flow of water through the



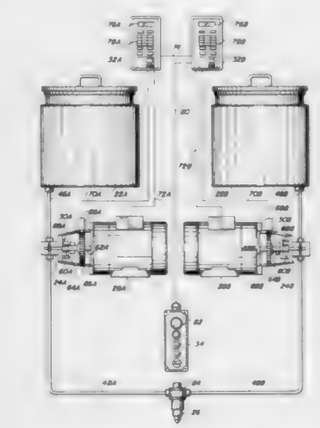
water flow passageway is controlled by the thermostat valve and a bypass position wherein the bypass opening of the valve member and the bypass opening of the thermostat are substantially aligned so as to provide a flow passageway through the thermostat which bypasses the thermostat valve.

5,388,761

PLURAL COMPONENT DELIVERY SYSTEM

Gary D. Langeman, R.R. #2 386, Ruthven, Ontario N0P 2G0, Canada

Filed Oct. 1, 1993, Ser. No. 130,233
Int. Cl.[6] B05B 7/16
U.S. Cl. 239—1 28 Claims



15. A process for mixing and delivering at least two liquid components of a mixture in a selected volume ratio, comprising the steps of,

storing a first component in a first tank;

storing a second component in a second tank;

pumping the first component from the first tank using a first rotary pump;

pumping the second component from the second tank using a second rotary pump;

driving the first and the second pumps with respective first and second motors;

monitoring the respective speeds of the first and the second

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motors with respective first and second speed sensing means;

controlling the speed of the first motor with first control means, the first control means being adapted to receive signals from the first speed sensing means, and being further adapted to send signals to the first motor to control the speed thereof;

controlling the speed of the second motor with second control means, the second control means being adapted to receive signals from the second speed sensing means, and being further adapted to send signals to the second motor to control the speed thereof; and

delivering the mixture of the at least two components from a delivery device that receives the components pumped from the pumps;

wherein the first control means is a master control means, and the second control means is a slave control means, such that the slave control means is further adapted to control the speed of the second motor as a function of the speed of the first motor;

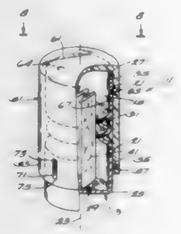
and wherein operating the first and the second motors at the so-controlled speeds permits the first and the second pumps to deliver the first and the second components, respectively, at substantially the pre-selected volume ratio.

5,388,762

DEVICE FOR DISPENSING A VAPORIZABLE MATERIAL

John D. Bryson, Sr., Milwaukee, Wis., assignor to Vaportek, Inc., Sussex, Wis.

Filed Apr. 7, 1993, Ser. No. 44,224
Int. Cl.[6] A61L *9/04*
U.S. Cl. 239—56 17 Claims



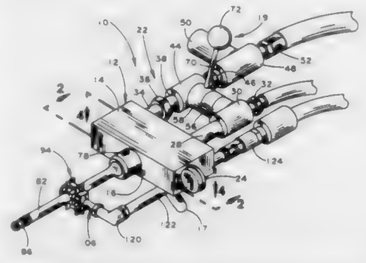
1. A dispenser comprising an inner member which is of one piece constructed, which includes a first end closed by a transverse wall, a cylindrical portion having an axis and an end, and a bellows portion extending axially from said end of said cylindrical portion, which is resiliently displaceable in the direction of said axis between a collapsed condition and a normally extended condition, and which defines an interior cavity adapted to contain a substance in the form of a vapor, an outer member movable relative to said inner member with respect to said axis and including a generally cylindrical portion in closely fitting telescopic relation to said cylindrical portion of said inner member and having a first open end receiving said inner member, and a second end, and a wall closing said second end of said outer member cylindrical portion, and aperture means in at least one of said inner and outer members for affording air flow therethrough relative to said interior cavity in response to displacement of said inner member portion between said collapsed and extended conditions, whereby, the application of force in the direction of said axis causes axial movement of said outer member relative said inner member in the direction affording displacement of said inner member to the collapsed condition with accompanying discharge of air with the substance in vapor form from said interior cavity through said aperture means to the outer atmosphere, thereby dispensing the substance, and whereby release of the application of force causes axial movement of said outer member relative to said inner member in the direction affording re-extension of said inner member to the normally extended condition and inflow of air from the outer atmosphere into said interior cavity.

5,388,763

SPRAY GUN WITH PRESSURE GAUGE

Jeffrey D. Moses, North Liberty, Iowa, assignor to American Matrix Technologies, Inc., Iowa City, Iowa

Filed Sep. 20, 1993, Ser. No. 124,389
Int. Cl.[6] B05B *7/04, 15/00*
U.S. Cl. 239—74 5 Claims



1. A catalyst and resin sprayer capable of providing a resin in confluence with a catalyst whereby the resin and catalyst are mixed and atomized through the addition of pressurized air into the catalyst and resin mixture, the catalyst and resin sprayer further being capable of applying the atomized mixture to a surface to provide a catalyzed resin coating on the surface, said sprayer comprising:

(a) a mixer capable of receiving the resin and the catalyst and mixing the resin and the catalyst into a substantially homogeneous mixture, said mixer further being capable of receiving the pressurized air in confluence with the resin and the catalyst to thereby produce an atomized flow of resin and catalyst;

(b) a manifold operably connected to said mixer for directing the resin and the catalyst to said mixer, said manifold having a catalyst passageway within said manifold which extends from a first side of said manifold to a second side of said manifold, a port provided on said manifold, and a port passageway connecting said port to said catalyst passageway;

(c) means operably connected to said mixer for directing the pressurized air to said mixer so that the pressurized air may be added in confluence with the resin and the catalyst to produce said atomized flow of resin and catalyst;

(d) means for spraying said atomized flow of resin and catalyst onto the surface to provide the catalyzed resin coating on the surface; and

(e) warning means operably connected to said port for monitoring catalyst pressure within said catalyst passageway, for providing indication and diagnostics of a system problem.

5,388,764

SPRAY GUN WITH ORIFICE UNION

Jeffrey D. Moses, North Liberty, Iowa, assignor to American Matrix Technologies, Inc., Iowa City, Iowa

Filed Sep. 20, 1993, Ser. No. 124,402
Int. Cl.[6] B05B *7/04, 15/00*
U.S. Cl. 239—74 4 Claims

1. A catalyst and resin sprayer capable of providing a resin in confluence with a catalyst, whereby the resin and catalyst are mixed and atomized through the addition of pressurized air into the catalyst and resin mixture, the catalyst and resin sprayer further being capable of applying the atomized mixture

to a surface to provide a catalyzed resin coating on the surface, said sprayer comprising:

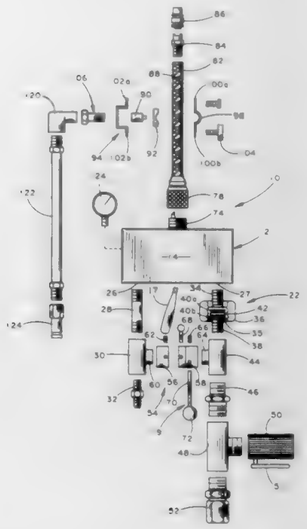
(a) a mixer capable of receiving the resin and the catalyst and of mixing the resin and the catalyst into a substantially homogeneous mixture, said mixer further being capable of receiving the pressurized air in confluence with the resin and the catalyst to thereby produce an atomized flow of resin and catalyst;

(b) means operably connected to said mixer for directing the resin to said mixer;

(c) means operably connected to said mixer for directing the catalyst to said disposable mixer;

(d) means operably connected to said mixer for directing the pressurized air to said mixer in such a manner that the pressurized air may be added in confluence with the resin and the catalyst to produce said atomized flow of resin and catalyst;

(e) means for spraying said atomized flow of resin and catalyst onto the surface to provide the catalyzed resin coating on the surface;



(f) means for supplying resin to said resin directing means, said resin supplying means being provided with an exterior flange and being operably connected to said resin directing means; and

(g) a restricted orifice union comprising:

(i) a nipple having a passageway of a first diameter extending from said resin directing means, said nipple having a threaded exterior;

(ii) an orifice plate provided with a hole of a second diameter, said second diameter being smaller than said first diameter;

(iii) a first resilient sealing member positioned between said nipple and said orifice plate;

(iv) a second resilient sealing member positioned between said resin supplying means and said orifice plate; and

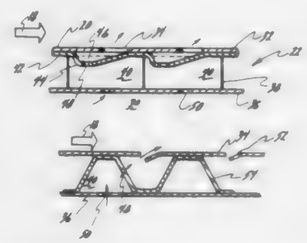
(v) a coupling nut slidably provided on said resin supplying means and retained on said resin supplying means by said exterior flange, wherein said coupling nut is provided with interior threads capable of connecting said resin supplying means to said nipple by mating with said threaded exterior of said nipple.

5,388,765

GAS TURBINE NOZZLE CONSTRUCTION

James D. Hill; Claude R. Stogner, and Anthony M. Zimmerman, all of Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 18, 1990, Ser. No. 510,758
Int. Cl.[6] F02K *1/38*
U.S. Cl. 239—127.3 6 Claims



1. A cooled nozzle wall for a 2D gas type turbine engine discharge nozzle comprising:

a single planar top sheet exposed to the hot gas;

a parallel bottom sheet remote from the hot gas;

a structural frame having a plurality of axially spaced chambers, rigidly and sealingly secured to each of said sheets;

whereby a plurality of discrete plenums is formed;

a plurality of impingement openings through said bottom sheet, one into each of said plenums;

a plurality of secondary cavities arranged with the top sheet forming one wall of said cavity and having a separation wall separating said cavity from said plenum;

a metering opening through each separation wall;

a film slot through said top sheet in fluid communication with each cavity; and

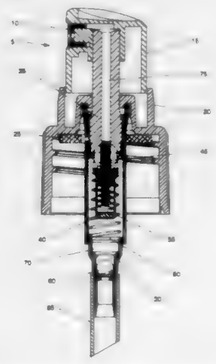
air supply means for supplying cooling air to said impingement opening from a common source.

5,388,766

HIGH PRESSURE ATOMIZATION SYSTEMS FOR HIGH VISCOSITY PRODUCTS

Gerard L. Buisson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 22, 1993, Ser. No. 125,461
Int. Cl.[6] B05B *11/02*
U.S. Cl. 239—333 18 Claims



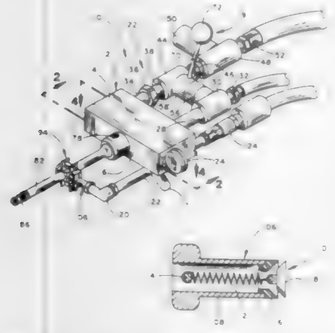
1. A high pressure dispensing and atomization system, said system comprising:

(a) a comparatively high viscosity fluid product;

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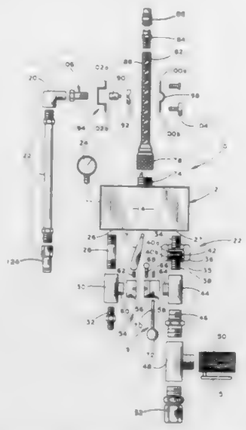
(b) a container for storing said product prior to dispensing and atomizing said product;
(c) a manually operated pump sprayer for dispensing said product from said container, said pump sprayer being associated with an opening in said container so as to permit dispensing of said product from within said container when said pump sprayer is actuated during a dispensing operation, said pump sprayer further including a pre-compression pump mechanism, wherein said product is dispensed only when a pre-determined pressure value is exceeded within said pump sprayer, said pre-determined pressure value comprising a comparatively high threshold pressure defining a lower end of an operating range;
(d) a nozzle assembly associated with said pump sprayer for dispensing and atomizing said product; and
(e) said pump mechanism further including fluid passages sized to eliminate thin-film fluid flow within said pump mechanism during said dispensing operation and provide improved operating efficiency and reduced pressure losses such that when said when said threshold pressure is exceeded said product is discharged from said pump sprayer through said nozzle assembly with sufficient velocity to atomize said product.

5,388,767
SPRAY GUN WITH CHECK VALVE
Jeffrey D. Moses, North Liberty, Iowa, assignor to American Matrix Technologies, Inc., Iowa City, Iowa
Filed Sep. 20, 1993, Ser. No. 124,309
Int. Cl.[6] B05B *7/04, 15/00*
U.S. Cl. 239—411 5 Claims



1. A catalyst and resin sprayer capable of providing a resin in confluence with a catalyst whereby the resin and catalyst are mixed and atomized through the addition of pressurized air into the catalyst and resin mixture, the catalyst and resin sprayer further being capable of applying the atomized mixture to a surface to provide a catalyzed resin coating on the surface, said sprayer comprising:
(a) a mixer capable of receiving the resin and the catalyst and mixing the resin and the catalyst into a substantially homogeneous mixture said mixer being provided with an air inlet hole;
(b) means operably connected to said mixer for directing the resin into said mixer;
(c) means operably connected to said mixer for directing the catalyst to said mixer;
(d) a hand releasable air supply connected to said mixer through said inlet hole, wherein said inlet hole is provided a sufficient distance from said resin directing means and said catalyst directing means to allow the resin and the catalyst to be mixed into a substantially homogeneous state before reaching said air supply, where the resin and the catalyst are atomized, said releasable air supply being provided with a check valve assembly for preventing the mixed resin and catalyst from entering said releasable air supply; and
(e) means for spraying said atomized flow of resin and catalyst onto the surface to provide the catalyzed resin coating on the surface.

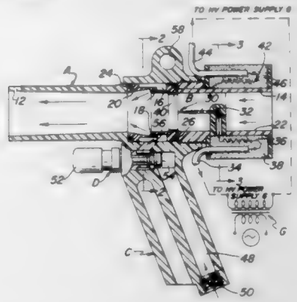
5,388,768
SPRAY GUN WITH A CATALYST INJECTOR AND A MANIFOLD BLOCK
Jeffrey D. Moses, North Liberty, Iowa, assignor to American Matrix Technologies, Inc., Iowa City, Iowa
Filed Sep. 20, 1993, Ser. No. 124,100
Int. Cl.[6] B05B *7/04*
U.S. Cl. 239—417.5 11 Claims



1. A catalyst and resin sprayer capable of providing a resin in confluence with a catalyst whereby the resin and catalyst are mixed and atomized through the addition of pressurized air into the catalyst and resin mixture, the catalyst and resin sprayer further being capable of applying the atomized mixture to a surface to provide a catalyzed resin coating on the surface, said sprayer comprising:
(a) a mixer capable of receiving the resin and the catalyst and mixing the resin and the catalyst into a substantially homogeneous mixture, said mixer further being capable of receiving the pressurized air in confluence with the resin and the catalyst to thereby produce an atomized flow of resin and catalyst;
(b) a manifold operably connected to said mixer comprising:
(i) a block having a first side and a second side;
(ii) at least a pair of passages extending from said first side of said block to said second side of said block; and
(iii) wherein said pair of passages are of a construction which allows resin and catalyst to pass freely from said first side of said block to said second side of said block through said pair of passages and which allows resin and catalyst to pass freely from said second side of said block to said first side of said block through said pair of passages;
(c) an injector operably connected to said manifold, said injector extending outward from said manifold and into said mixer, said injector being of a construction which allows catalyst to pass through said injector from one of said pair of passages and directs the catalyst into a stream of resin exiting said manifold from the other of said pair of passages while preventing catalyst from mixing with resin within the confines of said manifold;
(d) means operably connected to said mixer for directing the pressurized air to said mixer so that the pressurized air

may be added in confluence with the resin and the catalyst to produce said atomized flow of resin and catalyst; and
(e) means for spraying said atomized flow of resin and catalyst onto the surface to provide the catalyzed resin coating on the surface.

5,388,769
SELF-CLEANING IONIZING AIR GUN
Richard D. Rodrigo, Line Lexington, and Timothy A. Good, Royersford, both of Pa., assignors to Illinois Tool Works Inc., Glenview, Ill.
Filed Sep. 20, 1993, Ser. No. 123,927
Int. Cl.[6] H05F *3/00;* H01T *23/00*
U.S. Cl. 239—690 10 Claims



1. A self-cleaning, anti-fouling ionizing air gun for static neutralization, comprising:
a barrel having a rearward end for drawing ambient air from the outside into the barrel and a forward nozzle end for discharging high velocity ionized air toward a target area,
ion emitter electrode means positioned at a medial portion of said barrel, and
means constituting at least one jet of compressed air positioned in front of said electrode means and drawing ambient air from outside the barrel over said electrode means to effect cleansing thereof without causing contaminants in the compressed air to impinge directly upon said ion emitter electrode means.

5,388,770

Patent Not Issued For This Number

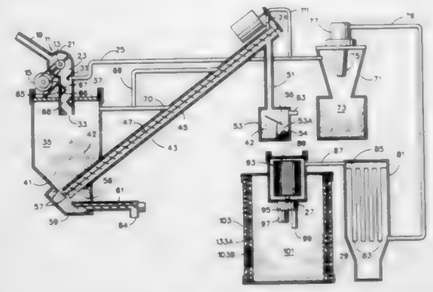
5,388,771
FROZEN LIQUID GRANULATION PROCESS
Josef H. Tsau, 5348 Brummel St., Skokie, Ill. 60077
Filed Aug. 9, 1993, Ser. No. 103,704
Int. Cl.[6] B02C *23/36*
U.S. Cl. 241—17 8 Claims

1. A mechanical granulation method for dry powder materials having improved homogeneity of granulation and reduced processing time including the steps of mixing in a mechanical mixer a dry powder material with ground frozen binder liquid particles to achieve an evenly dispersed mixture, melting said frozen binder liquid particles to obtain a uniformly wetted powder and then mixing said mixture in a granulator to form a granulated mixture.

5,388,772
METHOD TO HOMOGENEOUSLY MIX LIQUIDS WITH POWDERS
Josef H. Tsau, 15358 W. Fair La., Libertyville, Ill. 60048
Continuation-in-part of Ser. No. 103,704, Aug. 9, 1993. This application Nov. 30, 1993, Ser. No. 159,327
Int. Cl.[6] B02C *23/36*
U.S. Cl. 241—17 8 Claims

1. A simplified mechanical mixing method for adding an amount of liquid to a powder selected from the group consisting of polydextrose, maltodextrin, sugar, sugar alcohol, starch and modified starch for improved homogeneity of mixing and reduced processing time comprising the step of mixing frozen particles of said liquid with said powder in a mechanical mixer to melt said frozen particles to form an uniformly wetted powder product.

5,388,773
CRUSHED FLUORESCENT TUBE PARTICULATE SEPARATION AND RECOVERY METHOD AND APPARATUS
Timothy J. Perry, 1875 Piedras Cir., Danville, Calif. 94526
Continuation-in-part of Ser. No. 731,766, Jul. 17, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 33,637
Int. Cl.[6] B02C *19/12*
U.S. Cl. 241—19 28 Claims



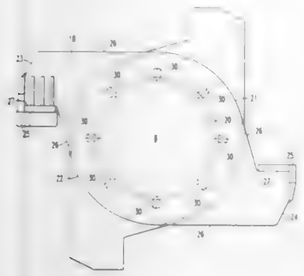
1. A method of separating small, potentially toxic particles from fractured glass particulates derived from crushing of fluorescent light tubes comprising:
(a) passing the fractured glass particulates having phosphor and other particles clinging to their surface into a particulate mixing-type device,
(b) operating such mixing-type device to subject such glass particulates to substantial movement over a given period with respect to each other and in at least partial surface contact with each other to an extent such that a substantial portion of the particles adhering to the surface of the glass particulates are detached from said particulates,
(c) removing the phosphor and other particles from the vicinity of the fractured glass particulates by means of a stream of gas passing through at least a portion of the fractured glass particulates at a given time,
(d) the stream of gas being passed through at least a portion of the fractured glass particulates being applied subsequent to subjection of such particulates to substantial movement with respect to and in contact with each other,
(e) the glass particulates being directed countercurrently with respect to the gas stream to strip the particles from the particulates.

5,388,774
CUTTER MEMBER FOR SCRAP REDUCTION MILL
Daniel M. Zizzo, c/o Michael Zizzo Scrap Steel Company, 6602 22nd Ave., Kenosha, Wis. 53140
Continuation of Ser. No. 942,666, Sep. 9, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,609
Int. Cl.[6] B02C *13/18*
U.S. Cl. 241—152.2 8 Claims

1. In a scrap reduction mill having a rotating vertical shaft supporting hammer assemblies and positioned within a conical shell which tapers inwardly and downwardly, the improvement which comprises a unitary, horizontally planar cutter member positioned above said hammer assemblies and having a central opening into which the vertical shaft extends, the cutter member being of varying radius around the cutter mem-

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ber's circumference, and having at least two portions of the circumference which are of a radius greater than the radii of



adjacent parts of the circumference, the portions of greater radius being evenly, angularly spaced around the circumference

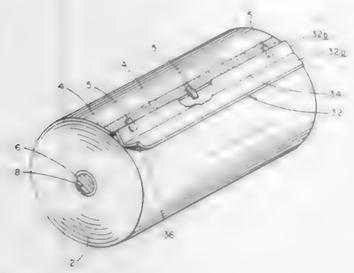
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5,388,775

METHOD AND MEANS FOR PREVENTING THE LIFTING OF THE LEADING EDGE OF A WEB ON A ROTATING WEB ROLL DUE TO WINDAGE

Robert Duguay, Brockton, Mass., assignor to Butler Automatic, Inc., Canton, Mass.

Division of Ser. No. 940,517, Sep. 4, 1992, Pat. No. 5,301,891.
This application Sep. 28, 1993, Ser. No. 127,647
Int. Cl.[6] B65H *19/18, 75/00*
U.S. Cl. 242—160.1 **10 Claims**



1. A device comprising:
a. a web on a roll Of web convolutions in preparation for a splice of said web end to another web, said web having a leading edge; and
b. a spoiler strip having a thin flexible backing strip, means defining a lengthwise boundary line in the backing strip which extends the length of the backing strip, an adhesive coating on a surface portion of the backing strip on one side of said boundary line, the strip surface portion on the opposite side of said boundary line being non-adherent, said adhesive coating affixed to said roll just ahead of said leading edge.

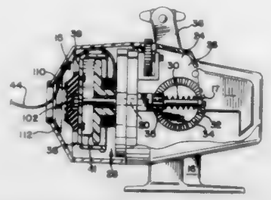
5,388,776

FISHING REEL AND FEATHERING ASSEMBLY THEREFOR

Casey J. Childre, Foley, Ala., assignor to Team Lew's, Inc., Foley, Ala.

Filed Apr. 1, 1993, Ser. No. 41,835
Int. Cl.[6] A01K *89/027*
U.S. Cl. 242—239 **29 Claims**

1. In a fishing reel having a reel body, a reel cover portion, a shaft extending through the reel body, a line spool mounted on the shaft and arranged to hold a predetermined length of fishing line, a rotor mounted on said shaft, the rotor being selectively rotatable and capable of being axially displaced within said reel by exertion of pressure on a button member, the improvement comprising means for selectively feathering the line as it is cast, the feathering means including a plurality



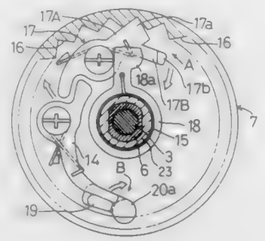
of discrete line engaging means disposed on said rotor, the line engaging means axially extending from said rotor toward a line opening in said reel cover portion, said line engaging means including a plurality of spaced apart bristles.

5,388,777

SPINNING REEL WITH IMPROVED CONTROL STRUCTURE OF STOPPER MECHANISM

Kenichi Sugahara, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jan. 19, 1993, Ser. No. 5,555
Claims priority, application Japan, Jan. 22, 1992, 4-001715[U]
Int. Cl.[6] A01K *89/027*
U.S. Cl. 242—247 **16 Claims**



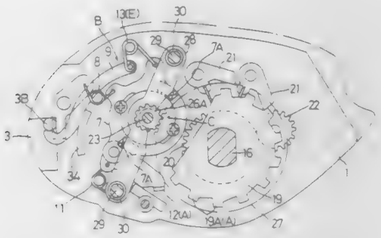
1. A spinning real comprising:
a reel body;
a rotary frame mounted forwardly of said reel body and attached to a sleeve shaft to be rotatable in unison therewith, said rotary frame including a recess having an inner periphery;
a stopper mechanism having engaging teeth and an engaging pawl for preventing said rotary frame from rotating in a fishing line feeding-out direction;
said engaging teeth being defined in said inner periphery,
said engaging pawl being mounted to said reel body on a forward portion thereof, and
a selector mechanism having a selector control element, a selector control shaft, and a link operating member, said selector mechanism being operable to select between:
(a) a rest position wherein the engaging pawl is maintained in a position away from said engaging teeth, and
(b) an operative position wherein the engaging pawl is selectively moved between a position to engage said engaging teeth in response to rotation of said rotary frame in a first direction and a position to disengage from the engaging teeth in response to rotation of said rotary frame in a second direction;
wherein said selector control shaft is interlocked with said selector control element to drive said engaging pawl, and
wherein said link operating member is operable to transmit an operating force of the selector control shaft to said engaging pawl.

5,388,778

CLUTCH CONTROL STRUCTURE FOR A FISHING REEL

Shinichi Morimoto, Nishinomiya, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Oct. 13, 1992, Ser. No. 959,599
Claims priority, application Japan, Oct. 18, 1991, 3-84993[U]
Int. Cl.[6] A01K *89/00*
U.S. Cl. 242—261 **9 Claims**



1. A clutch control structure for a reel comprising:
a clutch mechanism mounted on a rotational drive system for transmitting an operating force of a line winder as a rotating force to a spool;
a clutch controller for engaging and disengaging said clutch mechanism;
a clutch interlock mechanism for operatively interconnecting said clutch controller and said clutch mechanism, said clutch interlock mechanism including an annular cam, said annular cam moving said clutch mechanism between a disengaged state and an engaged state; and
a clutch return mechanism for forcibly returning said clutch mechanism from the disengaged state to the engaged state in response to an operation of said line winder;
wherein said clutch return mechanism includes a rotatable member mounted upstream of said clutch mechanism with respect to a direction of drive transmission through said rotational drive system, and a return member operatively connected to said clutch interlock mechanism to be movable, when said clutch mechanism is disengaged, to an operative position to receive a returning force from said rotatable member, and retractable to an inoperative position under the returning force imparted from said rotatable member in response to a line winding operation of said line winder, to engage said clutch mechanism,
said clutch interlock mechanism including an elastic flexion mechanism provided between said annular cam and said clutch controller for absorbing a portion of the returning force exceeding a clutch-engaging force imparted from said rotatable member,
the entirety of an operating force from said clutch controller being transmitted through said elastic flexion mechanism to said annular cam.

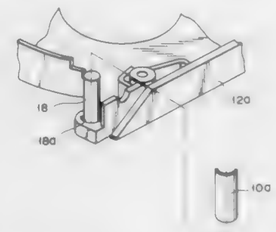
5,388,779

TAPE-GUIDE MADE FROM SYNTHETIC RESIN, METHOD OF MANUFACTURING THE SAME, AND APPARATUS FOR MANUFACTURING THE SAME

Makoto Nishioka, and Tsuneo Ishii, both of Yokohama, Japan, assignors to Sanshin Industry Co., Ltd., Japan

Continuation of Ser. No. 591,734, Oct. 2, 1990, Pat. No. 5,221,061. This application Dec. 23, 1992, Ser. No. 995,794
Claims priority, application Japan, Oct. 5, 1989, 1-260868
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[6] B65H *23/04, 27/00*
U.S. Cl. 242—346 **9 Claims**

1. A tape guide for a magnetic tape, comprising:
a body having a cylindrical outer surface to guide the magnetic tape and an axial end portion, said end portion having at least one recess with a base;
said body being formed from a mixture material injected through a hole into a mold, at a location corresponding to the base of said recess, the base of said recess having a burr formed by the hole through which the material is injected, the burr being located completely within the recess;
said mixture material containing 60 to 89% by weight of an ultra-high-molecular-weight polyolefin base resin having a molecular weight of 800,000, 4 to 25% by weight of an



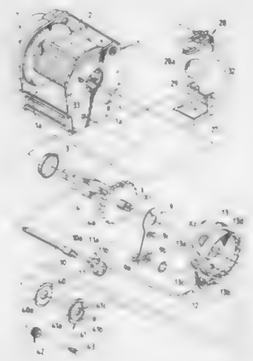
inorganic additive, and 0.17 to 0.31% by weight of a lubricant which is preferably silicone high-polymeric resin;
said ultra-high-molecular-weight polyolefin base resin containing 7 to 13% by weight ultra-high-molecular-weight polyethylene resin having a molecular weight of 150 million to 350 million;
said inorganic additive being one selected from the group consisting of oxides, hydroxides, carbonates, silicates, and carbon-base material.

5,388,780

SEAT BELT RETRACTOR

Masuo Matsuki, Kanagawa, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Aug. 2, 1993, Ser. No. 100,141
Claims priority, application Japan, Aug. 5, 1992, 4-060561[U]
Int. Cl.[6] B65H *75/48*
U.S. Cl. 242—384 **8 Claims**



1. A seat belt retractor provided with an emergency locking mechanism for locking the rotation of a takeup shaft in the direction of drawing-out of a webbing in case of emergency, which comprises:
a base;
a ratchet wheel mounted on said takeup shaft;
an inertial member which rotates following the rotation of said takeup shaft;

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a ratchet member capable of engaging with said ratchet wheel;
a latch member which rotates together with said takeup shaft in the direction of drawing-out of said webbing to thereby make said ratchet member engage with said ratchet wheel to lock the rotation of said takeup shaft in the direction of drawing-out of said webbing;
a locking means for connecting said latch member to said takeup shaft in the case where a rotational lag occurs in said inertial member relative to said takeup shaft, said locking means including a lock member engaging with said latch member, and a flange fixed to said takeup shaft;
a driving side gear fixedly rotating with said takeup shaft along a rotary shaft and being provided with teeth on its outer circumference;
a rotation control disk provided with teeth, which are equal in pitch circle diameter to the teeth of said driving side gear but different in number from the teeth of said driving side gear, said rotation control disk being rotatably supported on the rotary shaft of said driving side gear;
an intermediate gear axially supported so as to engage with the two kinds of teeth of the driving side gear and said rotation control disk simultaneously to thereby rotate said rotation control disk with a phase shift relative to said driving side gear; and
a limiting means for limiting the movement of said lock member in the direction of engagement with said latch member in accordance with an angle of the phase shift of said rotation control disk relative to said takeup shaft.

5,388,781

CABLE PULLING AND REELING APPARATUS HAVING ANTI-SPILL DEVICE AND METHOD

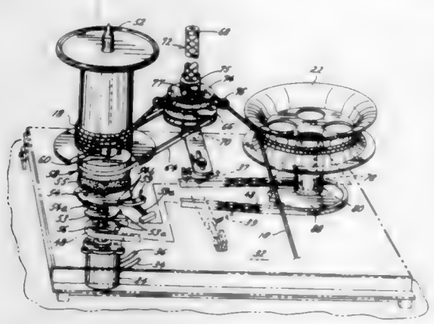
Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182

Continuation-in-part of Ser. No. 809,103, Dec. 11, 1991, Pat. No. 5,215,272, which is a continuation-in-part of Ser. No. 648,041, Jan. 30, 1991, abandoned. This application Mar. 15, 1993, Ser. No. 32,516

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[6] **B65H** *75/34;* **B66D** *1/20, 1/38*

U.S. Cl. 242—388.6 **27 Claims**



1. An apparatus for pulling cables or a pulling line attached to cables such as in stringing high tension electric lines comprising in combination:
a base surface means;
take-up spool driving means carried by said base surface means including motor means coupled to a motor drive shaft, said motor drive shaft being coupled to a first side of a frictional coupling, the second side of the frictional coupling being coupled to a spool receiving means;
said spool receiving means and second side of the frictional coupling being adapted to removably receive a spool;
a level winding means being mounted on a shaft carried by said base surface means, said level winding shaft being rotatably driven by belt and pulley means from the spool receiving means;
said level winding means including a level winding screw means and a level winding pulley reversibly drivable thereon, through which said pulling line is passed to the take-up spool;
a captan means mounted on a drive shaft carried by said base surface means;
said captan drive shaft and said motor drive shaft at the first side of said frictional coupling including respective sprockets and chain means to drive said capstan therefrom so that said pulling line passed to the take-up spool through said level winding means is evenly would on said spool when driven by said motor means.

5,388,782

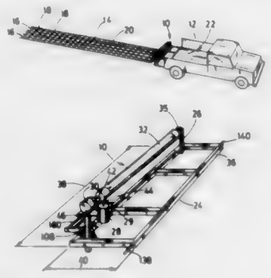
APPARATUS FOR WINDING FENCE MATERIAL

Steven C. King, 216 Phelps Rd., Honeoye Falls, N.Y. 14472

Filed Aug. 31, 1993, Ser. No. 114,650

Int. Cl.[6] **B65H** *75/40*

U.S. Cl. 242—557 **13 Claims**



1. An apparatus for winding fence material comprising a leading edge portion, wherein said apparatus is comprised of a first shaft, a fence supporting member with a substantially curvilinear shape attached to said first shaft, means for rotating said first shaft, means for removably locking said leading edge portion of said fence material within said fence supporting member and for increasing the circumference of said fence supporting member, and means for unlocking said leading edge portion of said fence material within said fence supporting member and for decreasing the circumference of said fence supporting member, wherein:
(a) said apparatus is comprised of a second shaft;
(b) said means for rotating said first shaft is comprised of a motor and a speed reducer connected to said motor;
(c) said apparatus is comprised of a base, means for disposing said first shaft above said base, and means for disposing said second shaft above said base; and
(d) said apparatus is comprised of means for rotating said base.

5,388,783

ECHO EXHANCING DECOY

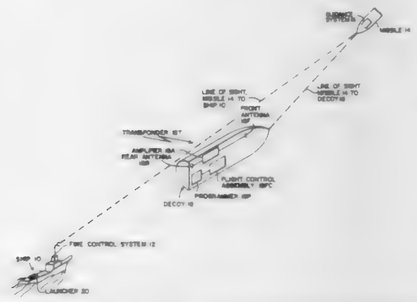
Howard F. Lynn, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 10, 1979, Ser. No. 65,680

Int. Cl.[6] **F41G** *7/00*

U.S. Cl. 244—3.14 **2 Claims**

1. The method of operating a decoy to protect a ship under attack by a guided missile utilizing an active radar to produce echo signals indicative of the position of such ship relative to the guided missile, such echo signals further having unique parameters characterizing the ship, such method comprising the steps of:
(a) firstly, launching and directing the decoy from the ship under attach to a position along or near the line of sight between such ship and the guided missile;
(b) secondly, directing the decoy along a course deviating from the line of sight between such ship and the guided missile;
(c) thirdly, continuously receiving and amplifying the echo signals from such ship to produce decoy signals on the decoy, such decoy signals having substantially the same unique parameters as the echo signals from the ship under attack except having a higher amplitude and an Origin on the line of sight between the decoy and the guided missile; and
(d) fourthly, transmitting the decoy signals to the guided missile, thereby to cause such missile to be guided to the apparent origin of such decoy signals, such apparent origin ultimately differing from the actual position of such ship.



5,388,784

ARMED EXPENDABLE DECOY

Roderic J. Procaccino, Westwood, and Wesley B. Libby, Groton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Aug. 10, 1979, Ser. No. 65,710

Int. Cl.[6] **F41G** *7/00*

U.S. Cl. 244—3.14 **1 Claim**



1. An expendable decoy system for interdicting a guided missile on a flight path determined by a guidance arrangement utilizing an active radar normally operative to illuminate a ship intended to be protected, such decoy system comprising the combination of:
(a) a decoy vehicle, launchable from the ship intended to be protected, flying toward the guided missile when the active radar thereon illuminates such ship to create echo signals;
(b) a transponder on the decoy vehicle, such transponder being responsive to echo signals from the ship, for generating corresponding undelayed decoy signals on which the guided missile homes in preference to the echo signals from the ship, such decoy signals initially being contemporaneously received with the echo signals from the ship and then being angularly separated from such echo signals; and
(c) means, including a proximity fuse and an explosive charge on the decoy vehicle, for interdicting the guided missile when such missile comes within the lethal zone of such charge.

5,388,785

SINGLE-ROTOR HELICOPTER HAVING A COMPOUND ANTI-TORQUE SYSTEM, AND A METHOD OF COUNTERING THE TORQUE INDUCED BY SAID SINGLE ROTOR

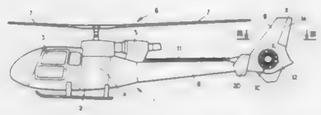
Philippe A. Rollet, Velaux, and Paul G. Eglin, Aix en Provence, both of France, assignors to Societe Anonyme dite: Eurocopter France, Marignane Cedex, France

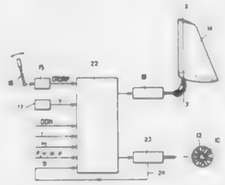
Filed Mar. 19, 1993, Ser. No. 34,503

Claims priority, application France, Apr. 14, 1992, 92 04566

Int. Cl.[6] **B64C** *27/82*

U.S. Cl. 244—17.19 **20 Claims**





1. A helicopter comprising:
a single main rotor for forwards motion and for support; and
an anti-torque system comprising:
an auxiliary, anti-torque rotor rotated from the engine means of said main rotor and exerting controllable anti-torque lateral thrust; and
at least one steering airfoil that is controllable in steering and that generates anti-torque transverse lift;
wherein the helicopter includes automatic swivel control means for automatically controlling the swivel angle of said steering airfoil as a function of the collective pitch angle of said main rotor and of the forward speed of said helicopter.

5,388,786

ESCAPE APPARATUS

Tokuzo Hirose, 13-13, Higashiyama-cho, Ashiya-shi, Hyogo, Japan

Filed Mar. 9, 1994, Ser. No. 208,652

Claims priority, application Japan, Dec. 29, 1993, 5-349656

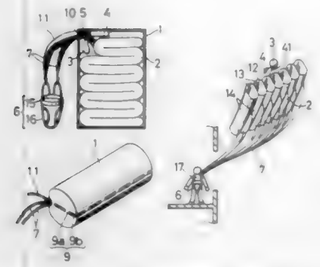
Int. Cl.[6] **B64D** *17/72*

U.S. Cl. 244—138 R **5 Claims**

1. An aerial floating and flying escape apparatus for allowing a person to slowly and safely descend even from a relatively low altitude, comprising:
a case having an exterior surface with a perforated portion formed thereabout;
an aerial floating flyer contained in said case;
a harness to be worn on a human body;
a plurality of cords each having one end connected to said harness and the other end connected to said aerial floating flyer;

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a float bag contained in said case and being interconnected with said aerial floating flyer;
a pressure vessel contained in said case filled with a gas having a specific gravity less than that of air;
valve means interposed between said float bag and said pressure vessel;



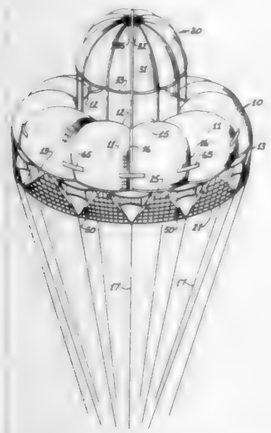
actuator means, operably connected to said valve means, for opening said valve means to enable introduction of said gas into said float bag to expand said case and cause the perforations to break allowing said float bag and said aerial floating flyer to be released from said case and further allowing said float bag to float said aerial floating flyer to insure that it is sufficiently spread in the air.

5,388,787

AIR IMPERMEABLE PARACHUTE CANOPY WITH OPENING ASSIST

David B. Webb, and David A. Wright, both of Fort Erie, Canada, assignors to Irvin Industries Canada Ltd., Fort Erie, Ontario, Canada

Filed Nov. 23, 1993, Ser. No. 155,839
Int. Cl.[6] B64D *17/02, 17/14, 17/18, 17/08*
U.S. Cl. 244—145 29 Claims



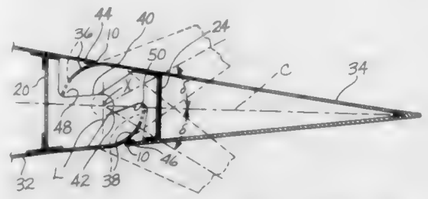
1. A low altitude parachute comprising:
an annular main canopy having a plurality of gores, arranged generally symmetrically about a central axis and joined along adjacent borders to form an annular configuration comprising an interior periphery defining a central main vent, and an exterior periphery generally concentric with said interior periphery;
a cap canopy, arranged adjacent said central main vent of said annular canopy, comprising a plurality of further gores arranged generally symmetrically about said central axis and joined along adjacent borders to define an exterior periphery spaced from said interior periphery of said annular canopy;
a plurality of suspension lines, connecting with said exterior periphery of said annular canopy, in spaced apart relationship, said suspension lines being arranged to support an object along about a vertical axis of said annular canopy when said parachute is inflated;
a plurality of rigging lines, connecting with said interior periphery of said annular canopy, in spaced apart relationship, said rigging lines extending radially outwardly from said interior periphery and connecting with said suspension lines;
a plurality of canopy suspension means, connecting with said exterior periphery of said cap canopy in spaced apart relationship, said means being arranged to connect with said interior periphery of said annular canopy and being sized to maintain said exterior periphery of said cap canopy spaced from about 6 to about 24 inches from said interior periphery of said annular canopy when said parachute is inflated.

5,388,788

HINGE FAIRINGS FOR CONTROL SURFACES

Peter K. C. Rudolph, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 16, 1993, Ser. No. 168,456
Int. Cl.[6] B64C *3/50*
U.S. Cl. 244—215 32 Claims



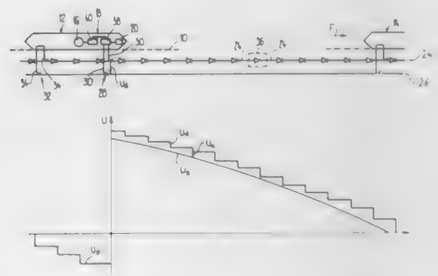
1. A system for providing a smooth transition between a fixed airfoil of an aircraft and a movable control surface mounted on the fixed airfoil, said control surface having a neutral position and being movable in a first direction to a first deployed position and in a second opposite direction to a second deployed position, said system comprising:
first and second fairings carried by the airfoil and the control surface, respectively; and
first and second edge portions carried by, and fixed in position relative to, the airfoil and the control surface, respectively, opposite the fairing carried thereby; said first and second edge portions being positioned adjacent to said second and first fairings, respectively;
said fairings and said edge portions together defining an interface between the airfoil and the control surface; and
at least one of said fairings being curved and overlapping the adjacent edge portion when the control surface is in its neutral position, and having an outer surface that is sealingly engaged by the adjacent edge portion when the control surface is in either of its neutral position and one of said deployed positions, said outer surface being sufficiently close to the adjacent edge portion when the control surface is in the other of said deployed positions to provide a substantially aerodynamically smooth transition between said outer surface and the adjacent edge portion; and the other of said fairings having an outer surface that is sealingly engaged by the adjacent edge portion when the control surface is in its neutral position.

5,388,789

SYSTEM FOR SAFELY AND AUTOMATICALLY CONTROLLING THE DISTANCE BETWEEN VEHICLES

Reinhart Rudershausen, Ammersee, Germany, assignor to AEG Monorail Systems Inc., Wilmington, Del.

Filed Dec. 4, 1992, Ser. No. 985,482
Claims priority, application Switzerland, Dec. 6, 1991, 03597/91
Int. Cl.[6] B61L *3/00*
U.S. Cl. 246—167 D 20 Claims



1. A system for automatically controlling the distance between vehicles following each other on a drive track, the system including a neutral rail and a control rail both paralleling the drive track, each vehicle in the system comprising:
drive means for driving the vehicle at a speed based on a speed control signal;
brake means for emergency braking the vehicle;
distance sensing means for generating a distance signal corresponding to a distance to an immediately preceding vehicle on the drive track;
vehicle speed measuring means for measuring a speed of the vehicle and for generating a plurality of speed signals based thereon;
means for generating a maximum permissible speed signal based on the distance signal; and
control means for generating the speed control signal based on the distance signal, the speed control signal controlling the drive means at a speed which is lower than said maximum permissible speed signal, and the control means for controlling the brake means to emergency brake the vehicle when at least one of the plurality of speed signals are greater than the maximum permissible speed signal.

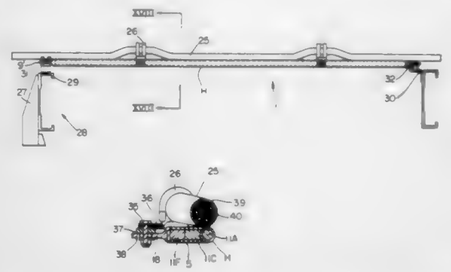
5,388,790

GUIDE AND SUPPORT FRAME FOR ELECTRICAL CONDUCTORS IN AN AIRCRAFT

Hans-Peter Guthke, Steinkirchen, and Werner Piede, Jork, both of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Germany

Continuation-in-part of Ser. No. 830,236, Jan. 31, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 172,082
Claims priority, application Germany, Feb. 2, 1991, 4103237
Int. Cl.[6] E21F *17/02*
U.S. Cl. 248—58 17 Claims

1. An aircraft wiring arrangement for carrying electrical conductors in an aircraft, the arrangement comprising an aircraft structural member, a plurality of tubular frame components made of electrically insulating material and having hollow end portions with an internal cross-sectional configuration, an interlocking element made of electrically insulating material and having a plurality of stubs each having an outer surface with an external cross-sectional configuration corresponding to said internal cross-sectional configuration, a mounting component having a stub with said external cross-sectional configuration and a conductor carrying component having a stub with said external cross-sectional configuration, wherein said interlocking element stubs are inserted in a form-fitting manner into said hollow end portions for joining together said frame components, and wherein said mounting component is attached to said structural member and said mounting component stub is inserted in a form-fitting manner



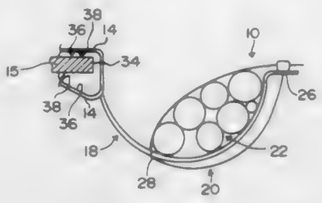
into one of said hollow end portions for mounting said frame components on said structural member, and wherein said conductor carrying component stub is inserted in a form-fitting manner into one of said hollow end portions.

5,388,791

UNIVERSAL CLIPPING RETAINER

Anthony J. McCrory, Mechanicsburg, and Phillip E. Smith, Urbana, both of Ohio, assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Apr. 21, 1993, Ser. No. 50,939
Int. Cl.[6] F16L *3/22*
U.S. Cl. 248—68.1 9 Claims



1. A universal clipping retainer for engaging at least one elongated tubular element to a frame rail flange of a vehicle, the retainer comprising first and second integrally connected sections, said first section comprising structure to which a tubular element is engaged by means of a strap member, the strap member extending through a plurality of openings in the section, extending around the tubular element and engaging to itself, and said second section being a clip comprising a plurality of fingers defining in profile a U-shaped structure, said fingers biased toward each other and toward a centerline of the clip for engaging a wedge-shaped frame rail flange therebetween, each of said fingers having barbs on a flange engaging surface thereof, with the barbs pointing away from free ends of the fingers.

5,388,792

PIVOTABLE COMPUTER TOWER SUPPORT FOOT APPARATUS

Robert J. Hastings, Kingwood, and Paily T. Varghese, Tomball, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 9, 1993, Ser. No. 118,938
Int. Cl.[6] F16M *11/20*
U.S. Cl. 248—188.1 15 Claims

12. A stabilizing foot structure pivotally connectable to a bottom end wall portion of a computer system tower unit, said

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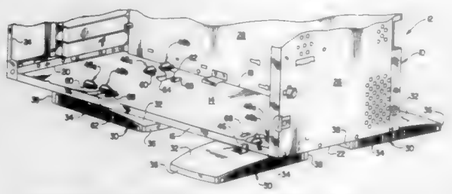
stabilizing foot structure being substantially smaller than said bottom end wall and comprising:

a body portion having a top side wall, an outer end, and an inner end;

a slot formed in a generally central portion of said top side wall and defining on said top side wall a downwardly and resiliently deflectable latch tab;

a latching lug formed on and projecting upwardly from said latch tab;

a first retaining projection formed on and projecting upwardly from said top side wall between said latch tab and said inner end of said body portion, said first retaining projection having a post portion projecting upwardly from said top side wall and horizontally enlarged upper end portion that extends over said top side wall in an



upwardly spaced, generally parallel relationship therewith and

a second retaining projection formed on and projecting upwardly from said top side wall between said first retaining projection and said latch tab, said second retaining projection having a post portion projecting upwardly from said top side wall and horizontally enlarged upper end portion that extends over said top side wall in an upwardly spaced, generally parallel relationship therewith; and

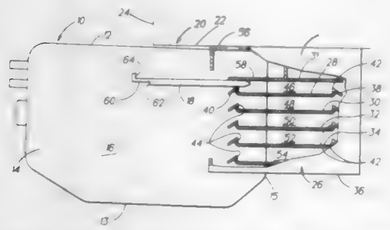
wherein each of said horizontally enlarged upper end portions of said first and second retaining projections includes a retaining flange having a first end portion extending in a first direction through a first length over said top side wall and a second end portion extending in an opposite direction through a second length over said top side wall.

5,388,793

SUPPORT SYSTEM FOR KITCHEN APPLIANCE

Richard B. Kosten, West Haven, and Charles Z. Krasznai, Fairfield, both of Conn., assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 7, 1994, Ser. No. 178,973
Int. Cl.[6] F16M *11/00*
U.S. Cl. 248—201 10 Claims



1. A kitchen appliance having a support system for suspending the kitchen appliance from the bottom surface of a kitchen cabinet comprising:

a pair of horizontally spaced mounting brackets connected to the bottom surface of the kitchen cabinet, each bracket including a plurality of vertically spaced horizontally extending ribs, each of the ribs including a leading edge and a trailing edge, each leading edge including a first vertically extending wall, adjacent pairs of ribs defining therebetween a horizontally extending slot; and

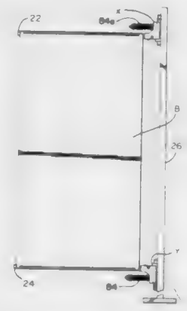
said kitchen appliance including a housing having sidewalls, each sidewall including a handle-like member extending horizontally towards a rear wall of the kitchen appliance, said member including a leading edge and a trailing edge, said trailing edge of said member including a second vertically extending wall, the second vertically extending wall abutting the first vertically extending wall of one of the ribs when the handle-like member is placed in the slot defined between adjacent ribs.

5,388,794

BANNER BRACKET

Leslie C. Wolff, Box 188, Lakeview Dr., Hackensack, Minn. 56452

Filed Jan. 15, 1993, Ser. No. 5,038
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—219.4 9 Claims



1. Apparatus for suspending a flexible banner which has hems on opposite edges and including a pair of rods that extend through the hems of the banner, an upstanding post, a pair of base plates that are fixed in spaced relation on said post, a pair of swing plates positioned respectively on said base plates, each of said base plates having a pair of grooves extending longitudinally of said post adjacent the side edges of the base plate, each of said swing plates having a pair of longitudinally extending lips that rest normally in the pair of said grooves in the base plate that supports the swing plate to allow tilting of the swing plate with respect to the base plate, each of said rods being fixed with respect to one of said swing plates, and a spring that is effectively between each of said swing plates and its respective base plate for yieldably restraining tilting of the swing plate and the said rod that is fixed with respect to the swing plate.

5,388,795

DEPTH ADJUSTABLE BRACKET FOR WALL MOUNT SPEAKERS

Scott Struthers; William J. Kindel, both of San Clemente; Geoffrey L. Spencer, Laguna Niguel; F. Hendrik Huebscher, Mission Viejo, and Ronald Maurer, El Cajon, all of Calif., assignors to Dana Innovations, San Clemente, Calif.

Continuation of Ser. No. 67,343, May 25, 1993, Pat. No. 5,310,149. This application Apr. 7, 1994, Ser. No. 224,287
The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.
Int. Cl.[6] A47F *5/08*
U.S. Cl. 248—231.9 14 Claims

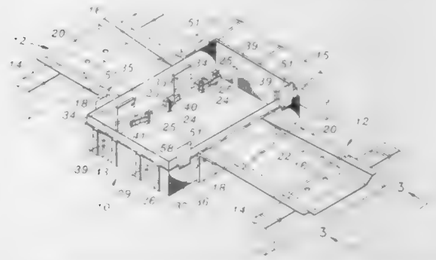
1. A bracket for use in both new construction and retrofit in-wall mounting of speakers, said bracket comprising:

(a) a bracket frame member configured to receive at least one speaker;

(b) a plurality of wing members attached to said bracket frame member, each wing member comprising:

i) a first portion disposed proximate said bracket frame member; and

ii) a second portion extending from said first portion;



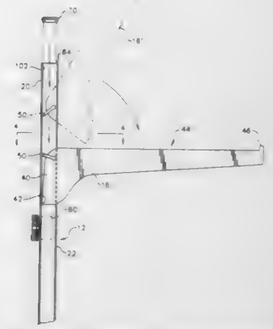
iii) wherein said second portion is capturable intermediate a wall frame member and wall covering in new construction installations and wherein said second portion is severable from said first portion to facilitate use of the bracket in retrofit installations.

5,388,796

STANDARD AND BRACKET SUPPORT SYSTEM

Lloyd Sullivan, Seattle, Wash., assignor to Phoenix Display Corporation, Kent, Wash.

Filed Aug. 12, 1992, Ser. No. 928,957
Int. Cl.[6] A47G *29/02*
U.S. Cl. 248—246 20 Claims



1. Support apparatus usable for supporting shelving, comprising:

an elongated standard with a hollow interior region, said standard having a front wall portion with at least a first slot and a back wall portion, said slot having a longitudinal extent and a width,

a bracket having an arm portion and a heel portion, positionable partially within said standard, with at least a part of said arm portion extending through said slot and outward from said standard, said bracket having a thickness;

a transverse plate coupled to said heel portion of said bracket and positionable within said standard, said plate having a front edge and a rear edge, said rear edge having an effective width;

said bracket being movable from a first angular configuration with respect to said standard, wherein said bracket can slide longitudinally along said slot, to a second configuration wherein said transverse plate is compressed between said front wall portion and said back wall portion, providing resistance to longitudinal sliding along said slot, at least portions of said rear edge of said transverse plate contacting said back wall when said bracket is in said second position, in the absence of substantial plastic deformation of said elongated standard,

said effective width of said rear edge being greater than the thickness of said bracket,

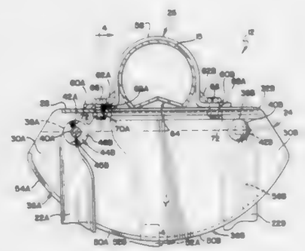
wherein said front edge is at a lower longitudinal position than said rear edge when said bracket is in said second position.

5,388,797

SWING SET HANG TUBE PROTECTIVE MOUNTING BRACKET

Richard Trevino, and Michael Wood, both of Tyler, Tex., assignors to Roadmaster Corporation, Olney, Ill.

Filed Dec. 28, 1992, Ser. No. 996,909
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—370 13 Claims



9. A mounting bracket for pivotally attaching a glide ride to a playground set superstructure, the mounting bracket comprising:

a) a protective member comprising a pair of side portions held in a fixed, spaced-apart distance, the side portions each being of unitary construction and having mountings for pivotally attaching a glide ride between the side portions, the side portions being dimensioned for providing a protective clearance around the pivotal attachment mountings in that the side portions each have a distal edge which is arcuate in shape and said edges have a radius of curvature of greater than about 3 inches, the side portions having a strength sufficient to mount a glide ride to a playground set superstructure.

5,388,798

EASEL FOR DISPLAYING CARDS AND THE LIKE

Isaac N. Glick, 7103-111 Street, Edmonton, Alberta, Canada T6G 1G9

Continuation of Ser. No. 716,504, Jun. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 360,598, Jun. 2, 1989, Pat. No. 5,058,850. This application Jun. 20, 1994, Ser. No. 262,398
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—459 3 Claims

1. An easel for use in supporting a substantially flat display item, such as a photograph or the like, comprising:

a substantially diamond-shaped, flat easel member having opposed pairs of acutely and obliquely angled points and being formed of flexible yet stiff, resilient, non-scratching material, the opposed side edges being substantially parallel, whereby the easel member may be bent along a line between its oblique points to adopt a generally pyramidal configuration wherein the member has, in such pyramidal mode, substantially triangular side walls, load-supporting edges along one open side of the member and bottom

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edges along the other open side of the member, said load-supporting edges being rearwardly inclined, the front and bottom of the pyramidal easel member being open;

each load-supporting edge having a forwardly and upwardly protruding, substantially hook-like member forming an upwardly open slot, said hook-like member being spaced above but close to the adjacent bottom edge of the member, for receiving, suspending and restraining a display item inserted into the slots, said hook-like members and slots being formed to deflect upon insertion of the display item so that the hook members bare against and frictionally engage the display item to positively restrain the display item against the load supporting edges;



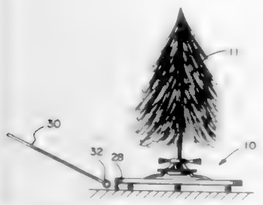
so that, in the loaded mode, the easel member supports the display item in a rearwardly inclined and upstanding position wherein the item extends into the slots and rests against the load-supporting edges, the hook-like members act to restrain the item from slipping downwardly and forwardly and suspend the item above a support surface upon which the easel member stands, the joined side walls and hook-like members form a tensioned load-carrying structure when loaded with the display item and the hook-like members frictionally engage the display item to enable adjustment of the angular position of the display item.

5,388,799

CHRISTMAS TREE STAND

Francis X. Keefe, 802 Connecticut View Dr., Oyster Bay, N.Y. 11771

Filed May 10, 1993, Ser. No. 59,831
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—519 **3 Claims**



1. An apparatus for supporting and transporting a Christmas tree with a Christmas tree stand, comprising:

a circular base having an upper surface with a center point and a lower surface with a circular periphery;

the Christmas tree stand rigidly affixed to said upper surface above the center point for supporting the Christmas tree;

a plurality of wheels rotatably mounted on said lower surface for transporting said base, said plurality of wheels being equally spaced from each other around the circular periphery to provide balanced support for said base; and

attachment means comprising a downwardly extending hook mounted along the circular periphery of said lower surface equidistantly between two adjacent wheels, said attachment means attaching said base to one of:

(i) a stationary structure to prevent unintended transportation of the Christmas tree;

(ii) an extension member for facilitating rolling of the Christmas tree; and

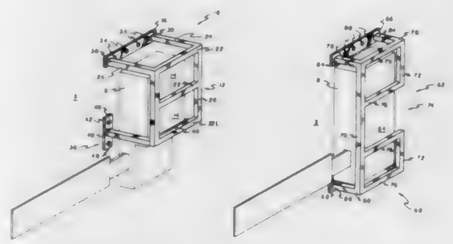
(iii) an extension member for rotating the base about its center point to align each of the wheels to the closest tangent line of the circular periphery, so that each of the wheels faces a different direction to prevent unintended transportation of the Christmas tree.

5,388,800

PROTECTIVE GUARD FOR A SECURITY ALARM DEVICE

Jessie B. Fry, 3522 Littlestone Dr., Arlington, Tex. 76014

Filed Jul. 1, 1993, Ser. No. 84,612
Int. Cl.[6] F16M *13/02*
U.S. Cl. 248—551 **9 Claims**



1. A protective guard for providing access to a security alarm device, said protective guard comprising:

a pair of side members spaced apart in a parallel relationship with one another, said pair of side members has a first end and a second end;

a plurality of cross members connecting said pair of side members to one another, said plurality of cross members includes a first cross member located proximate to said first end, and a second cross member located proximate to said second end;

a plurality of uppermost portions extending from said first cross member;

an upper support mount connected to said plurality of uppermost portions;

an intermediate member;

coupling means for selectively coupling said intermediate member to said second cross member, said coupling means having a first end and a second end, wherein said intermediate member is located on said first end; and

a lower support mount connected to said intermediate member.

5,388,801

VEHICLE SEAT, ESPECIALLY FOR COMMERCIAL VEHICLES

Hans Edrich, Heltersberg; Günter Franzmann, Rockenhausen, and Karl-Peter Armbrust, Ensheim, all of Germany, assignors to Keiper Recaro GmbH & Co., Germany

Filed Sep. 14, 1992, Ser. No. 944,272
Claims priority, application Germany, Sep. 14, 1991, 4130664
Int. Cl.[6] B60N *2/16*
U.S. Cl. 248—564 **10 Claims**

1. A seat for vehicles, especially for commercial vehicles, having seat supporting means and a cushion support, said seat being capable of swinging and comprising:

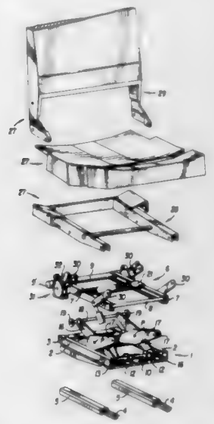
a swinging frame including:

a base part formed as a lower frame and supported by said seat supporting means and having a front and a rear and

including a pair of substantially parallel opposedly mounted lower girders forming lower side girders of the lower frame,

an upper part supporting said cushion support, said upper part formed as an upper frame and having a front and a rear and including a pair of substantially parallel opposedly mounted upper girders forming upper side girders of the upper frame,

two scissor-like crosshead devices, one provided at each respective side of said swinging frame, each having a pivot axis transverse to said upper and lower side girders, said crosshead devices disposed between said lower base part



and said upper part, each of said crosshead devices comprising a higher carrying capacity member formed by a pair of rocking levers, each rocking lever of said pair arranged parallel and adjacent to each other, and a lower carrying capacity member formed by a single rocking lever disposed between and pivotally attached to said pair of rocking levers of said higher carrying capacity member, each of said rocking levers having an upper end and a lower end, said upper ends of all said rocker levers being pivotally connected to said upper girders and said lower ends of all said rocking levers being pivotally connected to said lower girders.

5,388,802

METHOD AND APPARATUS FOR SUSPENDING CHRISTMAS LIGHTS UNDERNEATH EAVES ON A HOUSE

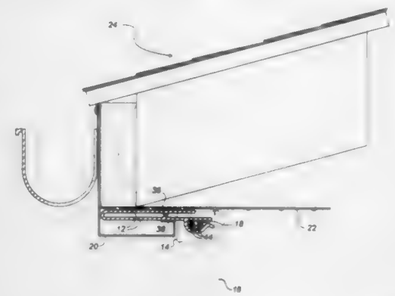
William B. Dougan, and Murray R. Nesbitt, both of Calgary, Canada, assignors to Brimur International Ltd., Calgary, Canada

Filed Jan. 13, 1994, Ser. No. 181,241
Int. Cl.[6] F16L *3/08*
U.S. Cl. 248—74.2 **5 Claims**

1. A method of suspending christmas lights underneath eaves of a house finished with aluminum or vinyl soffit panels and facia, comprising the steps of:

a. firstly, attaching a plurality of V-shaped wedge members to a cord of a string of christmas lights, the V-shaped wedge shaped members each having means in the form of at least one protrusion on at least one of the opposing interior surfaces of the legs of said V-shaped wedge member to limit compression of said V-shaped wedge member; and

b. secondly, wedging the V-shaped wedge members between facia and soffit of a house, such that the christmas lights protrude substantially perpendicularly below the facia and are clearly visible from an adjacent street while



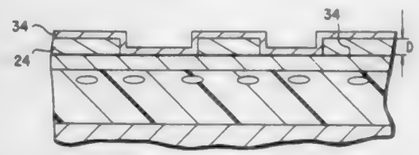
the V-shaped wedge members remain substantially hidden from view by the facia.

5,388,803

APPARATUS FOR PRODUCING TEXTURED ARTICLES

Charles E. Baumgartner, Niskayona, and Katherine D. Hamly, Clifton Park, both of N.Y., assignors to General Electric Company, N.Y.

Filed Aug. 17, 1993, Ser. No. 108,025
Int. Cl.[6] B28B *7/42*
U.S. Cl. 249—111 **10 Claims**



1. A multilayer mold for molding thermoplastic into finished parts with uniform texturing comprising:

a core;

an insulating layer bonded to said core for slowing initial cooling of the thermoplastic during molding; and

a skin layer bonded to the core, said skin layer being formed from a plurality of layers, including a corrosion-resistant layer, which is a phosphorus-rich region, deposited on the core and an etchable non-corrosion resistant layer deposited on the corrosion-resistant layer, said noon-corrosion resistant layer having been selectively etched to a uniform depth for imparting a finished textured surface to the thermoplastic.

5,388,804

ANCHOR BOLT HOLDER-SPACER

Jack H. Cohen, 9995 Dover Cyn. Rd., Templeton, Calif. 93465, and Robert C. Brooks, 3820 N. River Rd., Paso Robles, Calif. 93446

Filed Jul. 19, 1993, Ser. No. 95,390
Int. Cl.[6] E04G *17/00;* **E04B** *1/41*
U.S. Cl. 249—210 **13 Claims**

10. A holder and spacer device for vertically positioning and holding securely a bolt a predetermined distance from a side-abutment perimeter form board, prior to and during placement of a concrete mixture, said concrete mixture to fill an area defined by said form board, to a level of the top edge of said form board, said device comprising:

a form board attachment clip including a form board attachment means, whereby said holder and spacer device is attached to said form board,

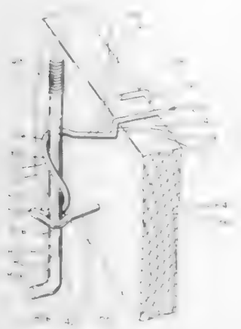
at least one spacer-arm member including spacer means,

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wherein an end of said member is connected to said form board attachment clip, the other end of said spacer-arm member located a predetermined distance away from an inside face of said perimeter form board and connecting to a bolt-holder section, said inside face being the vertical face of said form board which will contact said concrete mixture when it is placed,

a detachment means wherein said form board attachment clip can be separated from said spacer-arm member and the rest of said holder and spacer device, once said device is encased in said concrete mixture which has been placed and has set,

said bolt-holder section including a bolt-holder member attached to said spacer-arm, said bolt-holder member



formed to be substantially proximate to the shaft of said bolt, said bolt-holder section containing holding means to position and securely hold a shaft of said bolt in a vertical position, said holding means to hold said bolt so that a threaded end will protrude sufficiently above the plane of a top edge of said form board, whereby a building frame can be secured to a concrete foundation, and

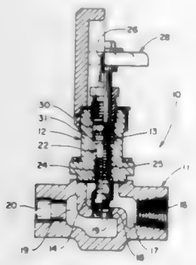
said device formed so that when properly positioned on said perimeter form board, said spacer arm and said bolt-holder member are positioned to be below the level of the generally horizontal plane of the top edge of said perimeter form board, whereby said spacer arm and said bolt-holder member will become encased in said concrete mixture.

5,388,805

DUAL SEAL FOR SHUT-OFF VALVE

Leeland M. Bathrick, Crystal Lake, Ill., and Scott A. McReynolds, Bristol, Wis., assignors to C.E.B. Enterprises, Inc., Mundelein, Ill.

Filed Jan. 3, 1994, Ser. No. 176,900
Int. Cl.[6] F16K *41/04*; **F16J** *15/24*
U.S. Cl. 251—214 **8 Claims**



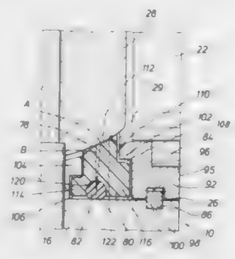
1. A manually operable shut-off valve comprising: a valve body having an inlet and an outlet, a valve member movable in the valve body to control flow between the inlet and the outlet, a bonnet on the valve body having an enlarged counter bore therein, a valve stem for opening the valve member threadedly mounted and extending through the enlarged counter bore in the bonnet, a dual sealing system for the valve stem in the bonnet including a compression activated packing in the counter bore having an inner surface sealing by engaging the valve stem, a packing nut threaded in the counter bore in the bonnet for compressing the packing to increase the radial sealing force of the packing against the valve system, a cartridge seal completely mounted in the bonnet counter bore adjacent and between the packing and the nut having an inner seal sealingly engaging the valve stem and an outer seal sealingly engaging the bonnet counter bore fox blocking fluid flow to the packing nut threads, whereby the cartridge seal reduces the sealing requirement of the packing, said packing nut being separate from and engaging the cartridge seal and axially adjustable in the bonnet to vary the compression of the packing as required to prevent leakage, said packing nut being normally in a partly relieved position to permit easy manual rotation of the valve stem without backing off the packing nut each time, said packing nut being movable against the cartridge seal to an unrelieved position when the cartridge seal becomes at least partly ineffective so the cartridge seal further compresses the packing tighter against the valve stem to assume the primary sealing function of the valve stem.

5,388,806

VALVE ASSEMBLY HAVING IMPROVED VALVE SEAT

Daniel P. Kusmer, Sugarland, and Robert A. Frenzel, Waller, both of Tex., assignors to Keystone International Holdings Corp., Houston, Tex.

Filed Jun. 3, 1994, Ser. No. 253,337
Int. Cl.[6] F16K *1/22*
U.S. Cl. 251—306 **9 Claims**



1. A valve comprising:

a valve body having a first end, a second end, and a through opening forming a fluid flow passage, said valve body including a wall surrounding a portion of said fluid flow passage, said fluid flow passage defining an axis co-axial with said wall;

a valve element rotatably mounted in said valve body, said valve element having an annular, radiused sealing surface and being rotatable around a second axis perpendicular to said first axis;

a valve seat assembly disposed in said valve body for sealing engagement with said sealing surface of said valve element, said valve seat assembly being axially displaced from said second axis toward said first end, said valve seal assembly comprising:

a seal ring formed of a resilient, plastic material and having an annular, radially inwardly facing first surface for sealing engagement with said sealing surface on said valve element and an annular, radially outwardly facing second surface, an annular, radially outwardly facing groove being formed in said second surface,

an elastomeric backing ring disposed in said groove, said backing ring being circular in cross-section, said backing ring having a center-line defined by a first plane passing through the center of said backing ring perpendicular to said first axis, the engagement between said sealing surface on said valve element and said first surface on said seal ring being substantially annular, line contact when said valve element is in the closed position and in the absence of any fluid pressure acting on said valve element, said line contact engagement lying in a second plane axially displaced from said first plane in a direction away from said second axis toward said first end of said valve body; and

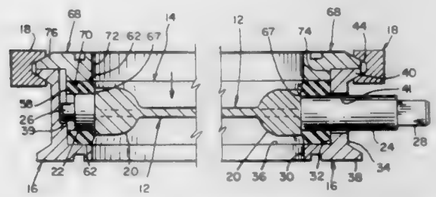
retaining means for retaining said valve seat assembly in said valve body.

5,388,807

MODULAR BUTTERFLY VALVE

Helmut Habicht, 15 Royal Park Ter., Hillsdale, N.J. 07728

Filed Jul. 29, 1994, Ser. No. 282,616
Int. Cl.[6] F16K *1/22*
U.S. Cl. 251—306 **11 Claims**



1. A modular butterfly valve having improved load bearing capability comprising:

a) a disc member adapted to be rotated between an open position and a closed position, said disc member having opposing hubs, each hub having a shaft member extending therefrom, a first of said shaft members having a sufficient length for extending exterior of the said butterfly valve, a second of said shaft members having a reduced diameter portion, said reduced diameter portion having a predetermined length;

b) a housing having a first cylindrical through bore and a counterbore formed concentrically with said first cylindrical through bore, said counterbore having a determined depth for providing a shelf portion, said housing having a first retaining flange and a second retaining flange, said first retaining flange being selectively contoured for engagement by a quick coupling ring, said second retaining flange being selectively contoured for engagement by another of said quick coupling ring, a transverse aperture being adapted for allowing said first of said shaft members to pass therethrough with a predetermined first clearance, a second shelf of a predetermined size and depth, said second shelf being formed in a wall of said housing diametrically opposite said transverse aperture;

c) a resilient valve seat having an outer diameter, a selectively contoured seat portion, and a pair of second transverse apertures, said valve seat having a predetermined length, said outer diameter being sized to closely and removably seat into said counterbore of said housing, each of said second transverse apertures having a predetermined diameter for closely journalling said first and second of said shaft members, said selectively contoured seat portion having a pair of flats formed at opposing points thereon, an axis of said second transverse apertures being selectively positioned at right angles to said flats;

d) a clamping ring having a second through bore, a pilot diameter, and a third retaining flange, said second through bore being substantially equal in diameter to said first through bore, said pilot diameter of said clamping ring being adapted to removably seat in said counterbore while retaining said valve seat in a preferred arrangement between a face of said clamping ring and said shelf portion of said housing, said third retaining flange being sized and contoured for a coupled abutment with said second retaining flange of said housing by said quick coupling ring; and

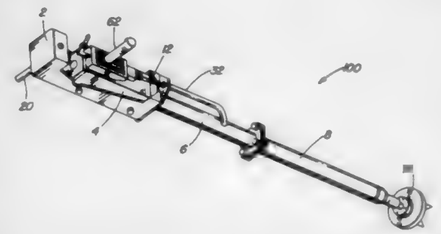
wherein said disc member is resiliently suspended and biased by said resilient valve seat for allowing self centering of said disc member in a direction transverse to a direction of material flow, a second clearance between said reduced diameter portion of said second of said shaft members and said second shelf cooperating with said first clearance for limiting movement of said disc member with respect to said valve seat in a direction parallel to a direction of material flow.

5,388,808

HYDRAULIC JACK SYSTEM

Normand Laitre, 336 rue de L'Anse, Sullivan, Quebec, B. gr. 23, J0Y 2N0, Canada

Filed Aug. 25, 1993, Ser. No. 111,534
Claims priority, application Canada, Aug. 25, 1992, 2076769
Int. Cl.[6] B60S *9/22*
U.S. Cl. 254—35 **14 Claims**



1. A hydraulic jack system for setting derailed rail vehicles back upon their rails by lifting and move one end of said vehicle, comprising:

a housing;

a hollow cylinder;

a piston having an upper and a lower end, said piston being slidable within said hollow cylinder;

a removable extension member rigidly connected between said housing and said cylinder, said cylinder being rigidly connectable to said housing when said extension member is removed:

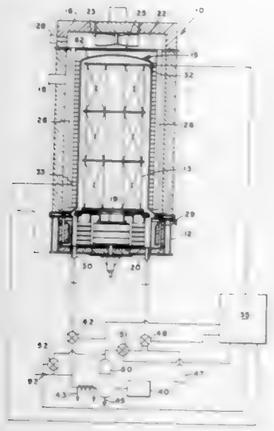
actuation means for communicating a supply of fluid to said hollow cylinder for moving said piston between a retracted position and an extended position, said actuation means being disposed generally within said housing;

a ground-engageable base pivotably mounted on the lower end of said piston for generally universal movement relative thereto when said end of said vehicle is being lifted and moved;

support means associated with said housing, said housing operating in a structural capacity between said support means and said extension member or between said support means and said hollow cylinder when said extension member is removed, said support means being non-rigidly engageable with said end of said vehicle for permitting lateral movement of said end of said vehicle while lifting.

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5,388,809
METHOD AND APPARATUS FOR BATCH COIL ANNEALING METAL STRIP
Klaus H. Hemsath, Toledo, Ohio, assignor to Gas Research Institute, Chicago, Ill.
Division of Ser. No. 51,702, Apr. 23, 1993. This application Jun. 15, 1994, Ser. No. 260,334
Int. Cl.[6] F27D *17/00*
U.S. Cl. 266—80 **13 Claims**

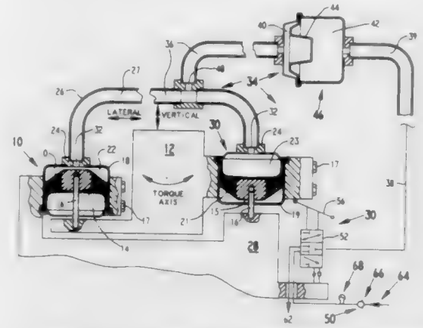


1. Batch coil annealing apparatus comprising:
a stationary base upon which coils of metal strip are stacked, said base having an annular seating surface circumscribing said coils and first and second circumscribing, generally concentric, sealing grooves formed within said seating surface;
a removable, thin-walled, cylindrical, inner cover receiving said coils, said inner cover having a closed axial end, an open axial end and an annular flange extending radially outwardly from said open end, said flange having first and second circumscribing, generally concentric sealing grooves, said first and second flange sealing grooves having the same diameter as said first and second base sealing grooves, respectively;
a removable outer cover surrounding said inner cover, means for removably sealing said outer cover to said base;
first and second elastomer seals, said fire, elastomer seal disposed in said first base groove and said first flange groove, and said second elastomer seal disposed in said second base groove and said second flange groove to define a sealing space therebetween; and
means to draw a sealing vacuum in said annular seal space between said first and second elastomer seals.

5,388,810
CERMET CRUCIBLE FOR METALLURGICAL PROCESSING
Christopher P. Boring, Andersonville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jan. 25, 1994, Ser. No. 186,369
Int. Cl.[6] C21B *3/00*
U.S. Cl. 266—275 **4 Claims**

1. A crucible for use in metallurgically processing metals having high melting points comprising a body consisting essentially of a mixture of calcium oxide and erbium metal.

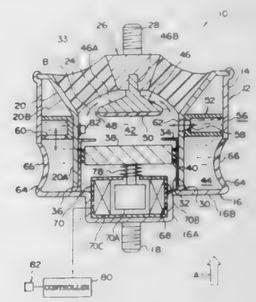
5,388,811
TORQUE-CONTROL SYSTEM FOR VEHICLES CABS AND THE LIKE
Robert H. Marjoram, Erie, Pa., assignor to Lord Corporation, Erie, Pa.
Filed Jul. 9, 1991, Ser. No. 727,177
Int. Cl.[6] F16M *5/00*
U.S. Cl. 267—140.13 **8 Claims**



1. A system for restricting the torque-induced deflection between two bodies, said system comprising:
a) a first hydraulic mounting;
b) a second hydraulic mounting;
c) each said first and second hydraulic mounting having an inner member, a housing, and an elastomeric member in between said inner member and said housing,
a first one of said inner member and said housing of said first hydraulic mounting being attached to said first body and a first one of said inner member and said housing of said second hydraulic mounting attached to said first body,
said other of said inner member and housing of said first hydraulic mounting being attached to said second body and said other of said inner member and said housing of said second hydraulic mounting also attached to said second body;
d) sensor means for detecting a condition resulting from relative torque between said two bodies;
e) a fluid circuit carrying working fluid at a desired operating pressure to said first and second hydraulic mountings, said fluid circuit including
i) a first fluid conduit means carrying said working fluid interconnecting said first hydraulic mounting with said second hydraulic mounting,
ii) a source of auxiliary fluid pressure for varying said desired operating pressure of said working fluid; and
f) means to control the desired operating pressure of said working fluid responsive to said sensor means, said means to control including a valve interconnecting said source of auxiliary fluid pressure with said fluid circuit.

5,388,812
LIQUID-SEALED TYPE VIBRATION ISOLATOR
Hiroshi Kojima, Yokohama, and Kazuya Takano, Kamakura, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Apr. 29, 1993, Ser. No. 53,696
Claims priority, application Japan, May 8, 1992, 4-116377
Int. Cl.[6] F16F *9/10*
U.S. Cl. 267—140.14 **20 Claims**

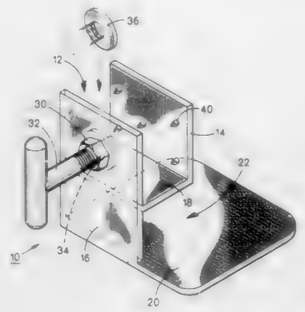
1. A liquid-sealed type vibration isolator comprising:
a first mounting member connected to one of a vibration-generating portion and a vibration-receiving portion;
a second mounting member connected to the other one of said vibration-generating portion and said vibration-receiving portion;
a resilient member disposed between said first mounting member and said second mounting member and adapted to undergo deformation during occurrence of vibrations;
a pressure-receiving liquid chamber disposed in such a manner as to be capable of expanding and contracting by using said resilient member as a portion of a partition wall of said pressure-receiving liquid chamber;
an auxiliary liquid chamber disposed in spaced-apart relation with said pressure-receiving chamber and having at least one diaphragm that is subjected to the hydraulic pressure of said auxiliary liquid chamber;
a limiting passageway allowing said pressure-receiving liquid chamber and said auxiliary liquid chamber to communicate with each other;
a vibrating element supported by one of said first mounting member and said second mounting member via a resilient



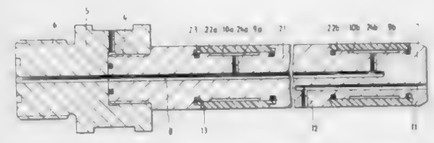
supporting member in such a manner as to be movable along a predetermined axis, said vibrating element constituting a portion of another partition wall of said pressure-receiving liquid chamber so as to be subjected to the hydraulic pressure of said pressure-receiving liquid chamber;
electromagnetic driving means for moving said vibrating element in one of two predetermined directions along said predetermined axis, said electromagnetic driving means having a magnetic-field generating means for generating a magnetic field and a movable member adapted to be moved in one of the two predetermined directions by being subjected to the magnetic field generated by said magnetic-field generating means; and
a spring independent from said vibrating element and pressure within said pressure-receiving liquid chamber for urging said vibrating element in the other one of the two predetermined directions.

5,388,813
CEILING CLAMP
Cyrus L. Arsenault, 90 Jennings Ave., Bridgeport, Conn. 06610
Filed Oct. 25, 1993, Ser. No. 140,442
Int. Cl.[6] B25B *1/02*
U.S. Cl. 269—41 **6 Claims**

1. A ceiling clamp to assist in mounting panels to a ceiling, comprising:
(a) an upwardly open channel defined by a distal vertical wall, an upper portion of a proximal vertical wall parallel to said distal vertical wall, and a horizontal floor joining said distal and proximal walls, said upwardly open channel being dimensioned to accommodate therein a lower portion of a ceiling joist;
(b) clamping means to clamp said lower portion of said ceiling joist in said upwardly open channel;
(c) a horizontal base member comprising a planar plate joined to a lower edge of said proximal wall of said upwardly open channel to provide a surface upon which an end or edge of ceiling panel may be placed when said ceiling clamp is clamped to said ceiling joist, said horizontal base member being parallel to, and spaced apart from, a lower surface of said floor, said base member, said floor, and a lower portion of said proximal wall defining a sidewardly open channel into which an end or edge of said ceiling panel may be inserted; and
(d) said sidewardly open channel being smooth walled and with no additional members protruding into the space defined by contiguous inner surfaces of said base member, said floor, and said lower portion of said proximal wall.



5,388,814
DEVICE FOR HYDRAULIC EXPANSION
Helmut Riemscheid; Herbert Frielingsdorf, both of Lohmar; Heribert Grewe, Overath; Karl Weiss, St. Augustin; Rudolf Schulze, Much; Engelbert Schwarz, Ruppichteroth; Helmut Swars, Bergisch Gladbach, and Arnold Palussek, Engelskirchen, all of Germany, assignors to Emitec Gesellschaft für Emissionstechnologie mbH, Lohmar, Germany
Continuation of Ser. No. 722,084, Jun. 27, 1991, abandoned, which is a division of Ser. No. 639,315, Jan. 8, 1991, Pat. No. 5,054,756, which is a continuation of Ser. No. 305,865, Mar. 17, 1989, abandoned. This application Jun. 22, 1993, Ser. No. 80,998
Claims priority, application Germany, May 21, 1987, 3716986
The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.
Int. Cl.[6] B23B *31/40*
U.S. Cl. 269—48.1 **8 Claims**



1. A device for the simultaneous hydraulic expansion of a plurality of longitudinal expansion areas of a hollow shaft, said hollow shaft having an inner surface for the production of force-looking and/or positive-locking connections between the latter and elements slid thereon, such as cams, toothed wheels or bearing seats, in the form of a pressure medium probe comprising:
at least one longitudinally extending feed channel and radial feed bore holes to every longitudinal expansion area of the hollow shaft to be expanded;
annular grooves arranged in a spaced manner on said probe, said probe comprising a one-piece probe body; and
expansion arrangements received by the grooves wherein said expansion arrangement comprises a one-piece expansion sleeve which covers the expansion area and can be

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acted upon from the inside by pressure medium along substantial portions of its length and is radial expandable, wherein its surface form—lockingly engages the inner surface of the hollow shaft during the hydraulic expansion of the hollow shaft.

5,388,815

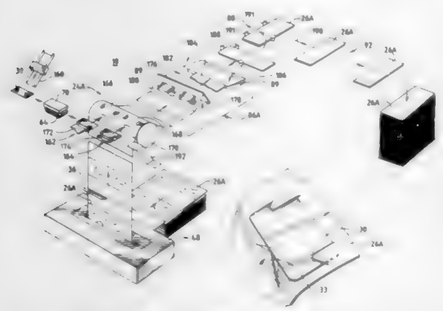
EMBOSSED CARD PACKAGE PRODUCTION SYSTEM WITH MODULAR INSERTERS FOR MULTIPLE FORMS

Jeffery L. Hill, Mundelein; Gregory S. Hill, Lake Zurich, both of Ill.; Robert J. Bretl, Menominee, Mich., and Fred J. Kassabian, Arlington Heights, Ill., assignors to Dynetics Engineering Corporation, Lincolnshire, Ill.

Continuation-in-part of Ser. No. 19,765, Feb. 19, 1993. This application Mar. 24, 1993, Ser. No. 36,664

Int. Cl.[6] B41L *43/14*; **B65H** *39/14*

U.S. Cl. 270—32 **32 Claims**



1. In an card production system having an insertion station, means for delivering cards to the insertion station for insertion into carrier forms delivered to the insertion station and means for delivering the forms in a preselected orientation to a loaded carrier outlet, the improvement being an interchangeable card insertion system, comprising:

a first type of insertion apparatus to insert cards into a first type of carrier form;

means for releasably mounting the first type of insertion apparatus at the insertion station to mount cards to the first type of carrier form;

a second type of insertion apparatus for mounting cards to a second type of carrier form; and

means for releasably inserting the second type of insertion apparatus at the insertion station in lieu of the first type of insertion apparatus for inserting the cards into a second type of carrier form.

8. In an embossed card package production system for mechanically mounting rectangular cards with four edges to carrier forms, the improvement being an inserter for mounting cards to the carrier forms, comprising:

means for opening a pair of corner pockets in the carrier for receipt of a pair of corners of the card at opposite ends of only one of the edges;

means for inserting the pair of corners of the card into the corner pockets; and

means for moving a flap of the carrier over another one of the edges of the card opposite the one edge to releasably hold the pair of corners of the card in the corner pockets of the carrier.

5,388,816

METHOD AND APPARATUS TO OPEN FOLDED SHEETS OR PACKAGES OF SHEETS

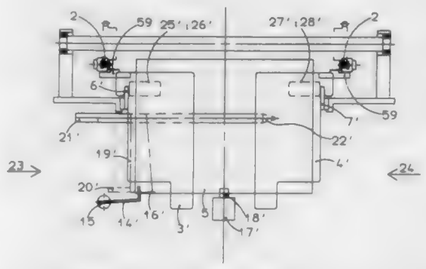
Godber Petersen, Augsburg, Germany, assignor to Man Roland Druckmaschinen AG, Augsburg, Germany

Filed Jul. 13, 1993, Ser. No. 90,742

Claims priority, application Germany, Jul. 16, 1992, 4223404

Int. Cl.[6] B65H *5/30*

U.S. Cl. 270—57 **19 Claims**



1. An apparatus for opening folded sheets (**5**, **30**, **44**), wherein each of the folded sheets has been formed with a partly creased fold leaving an open loop (**9**, **33**) between the sheet halves, comprising

a plurality of engagement means for insertion into the respective open loops of a plurality of the folded sheets; and

control means for the simultaneous, parallel insertion of said engagement means into the open loops (**9**, **33**) during a halt in transport of the folded sheets.

18. A method for opening folded sheets (**5**, **30**, **44**) which have been formed with a partly creased fold leaving an open loop between the sheet halves, comprising the steps of:

transporting the folded sheets;

halting transport of the sheets; and

during such halt in transport of the sheets, inserting a plurality of engagement means in the open loop of a plurality of the folded sheets, respectively, simultaneously and in parallel to open said folded sheets.

5,388,817

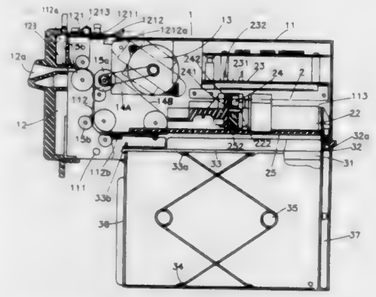
NOTE STACKER MECHANISM

Yuan F. Chang, Taipei, Taiwan, Prov. of China, assignor to Gameax Corporation, Taipei, Taiwan, Prov. of China

Filed Oct. 6, 1993, Ser. No. 132,199

Int. Cl.[6] B65H *29/44*

U.S. Cl. 271—180 **4 Claims**



1. A note stacker mechanism comprising:

a stacker assembly,

a stacking mechanism, and

a note collector,

said stacker assembly comprising;

a rectangular housing,

a note receiving portion having slot means extending from a front surface of said receiving portion to said stacking mechanism for delivery of a note,

note transporting means for gripping the note and transporting the note from the note receiving portion through said slot means to said stacking mechanism,

said note receiving portion being pivoted to said housing around a shaft fixed to said housing by a clip disposed at each end of said shaft, said note receiving portion having a magnetic head therein,

said housing having a clipping opening and a pair of guiding tabs, each of said guiding tabs slidably engaged to a guiding rack on each longitudinal side of said note collector,

fastening means provided at an upper edge of said note receiving portion for engaging said clipping opening,

said fastening means being releasable to permit pivoting of said receiving portion and cleaning of said magnetic head,

said stacking mechanism having a frame fixed at an interior of said housing,

said frame having a space to receive a note from said slot means,

an electric motor fixed on said frame, a printed circuit engaged on said frame actuating said motor when a note passes said magnetic head,

a U-shaped guiding block slideably engaged in a corresponding U-shaped slot on said frame,

said U-shaped guiding block fixed to a pushing plate,

wherein, when said motor is actuated a cam shaft on said motor moves said U-shaped guide block within said corresponding U-shaped slot,

a guide plate being provided at an upper edge of said note collector,

a cutout being provided at an end portion of said guide plate,

spring biased means on said frame releasably engaged in said cutout of said guide plate,

said spring biased means having a clipping tab permitting said spring biased means to be manually disengaged from said cutout and said note collector to be removed from said housing,

a pressing plate having a tab slideably engaged in a slot on said note collector,

said pressing plate being spring biased within said note collector toward said pushing plate,

wherein at selected positions of said U-shaped block in said corresponding slot a sensor on said printed circuit is switched on to move said U-shaped block to permit a note to be received on said pressing plate and into said note collector,

said note collector having a cover plate disposed at one side for removing notes.

5,388,818

NEAR VERTICAL MEDIA RECEIVE MAGAZINE

Christopher J. Anton, Rosemount, and Wayne A. Pickett, Blaine, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1994, Ser. No. 220,886

Int. Cl.[6] B65H *31/00*

U.S. Cl. 271—209 **18 Claims**

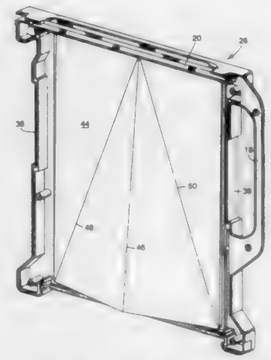
10. A receive magazine configured to be positioned in a generally upright, vertical orientation for passively collecting a plurality of flexible sheets of media, comprising:

an elongated, vertically oriented enclosure having front, back and bottom walls said elongated, vertically oriented enclosure having a top opening through which said sheets of media are passively received within said magazine;

a contoured plate contained within said enclosure, said plate being hinged along a hinge line near said top opening on a non-stacked side of said enclosure, said plate being planar near said hinge line and being non-planar at an end of said plate opposite from said hinge line; and

biasing means positioned near said top opening for resiliently biasing said plurality of flexible sheets of media laterally toward said non-stacking side of said enclosure;

said end of said plate opposite from said hinge line being resiliently biased away from said non-stacking side of said enclosure toward a stacking side of said enclosure;



whereby said plurality of flexible sheets of media being passively received through said top opening contacts said plate and stacks on said stacking side of said enclosure with a stack of said plurality of flexible sheets of media being contoured as determined by said non-planar portion of said contoured plate.

5,388,819

CLAMPING AND TRANSPORTING DEVICE

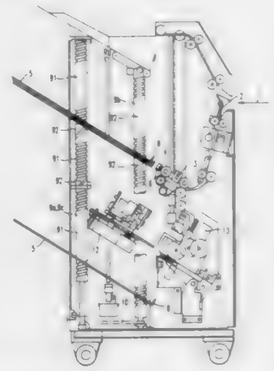
Yoshiaki Ushirogata, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 28, 1993, Ser. No. 53,355

Claims priority, application Japan, Apr. 30, 1992, 4-111646

Int. Cl.[6] B65H *31/26*

U.S. Cl. 271—220 **14 Claims**



12. A clamping device comprising:

a clamp movable between opened and closed conditions;

a motor for operating opening and closing of said clamp;

a linkage assembly connected to said motor and to said clamp to effect opening and closing of said clamp; and

wherein said clamping device is mounted adjacent a bin which receives sheet-like articles, and wherein said sheet-like articles are discharged into said bin in a first direction, said clamping device further including means for transporting said clamp in a transport direction which is parallel to said discharge direction.

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5,388,820

GRIPPER FOR A CONVEYING DEVICE FOR CONVEYING SINGLE-SHEET OR MULTIPLE-SHEET PRINTED PRODUCTS

Jurg Eberle, Hinwil, and Bruno Weber, Berg, both of Switzerland, assignors to Ferag AG, Hinwil, Switzerland

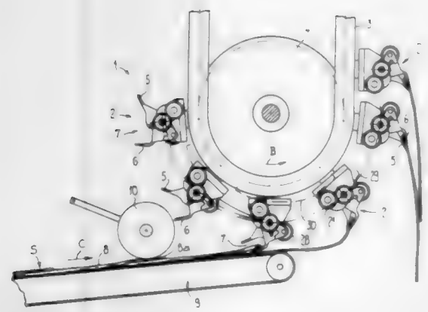
Continuation of Ser. No. 18,749, Feb. 17, 1993, abandoned. This application May 25, 1994, Ser. No. 249,054

Claims priority, application Switzerland, Feb. 19, 1992, 00495/92

Int. Cl.[6] B65H *5/02*

U.S. Cl. 271—277

16 Claims



13. A conveying device for conveying single-sheet or multiple-sheet printed products and having a plurality of grippers guided along a closed circulation path, each of the gripper comprising:

first and second gripper parts mounted for pivotal movement about a common axis, said first gripper part being pivotable between an open position and a clamping position in which it cooperates with said second gripper part for clamping a printed product under spring force;

a closing lever coupled to said first gripper part and including a follower member for coacting with a closing cam for pivoting said first gripper part into the clamping position, said closing lever and said closing lever follower member being configured such that said first gripper part can be moved into said clamping position by the closing cam acting on said follower member in substantially all pivot positions of said first and second gripper parts;

a locking device, said locking device comprising a locking lever for blocking said first gripper in its clamping position, said locking lever being mounted for pivotal movement into a position wherein it is releasable by a stationary opening arrangement disposed along the path of travel of the gripper;

said locking lever having a follower member located on said locking lever, the locking lever follower member having a control surface for engaging the opening arrangement, said control surface being curved about an axis and said control surface axis arranged approximately coaxially with the pivot axis of said two gripper parts in the blocking position of said locking lever; and

a positioning follower member connected to said second gripper part for interacting with fixed positioning cams for holding said second gripper part in a particular pivot position.

5,388,821

FORCE LIMITING ADJUSTABLE BASKETBALL GOAL

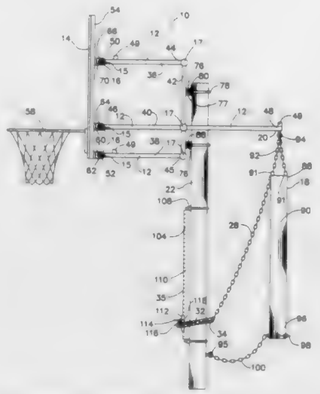
Michael J. Blackburn, 505 E. Washington St., Morris, Ill. 60450

Filed Aug. 10, 1993, Ser. No. 104,008

Int. Cl.[6] A63B *63/08*

U.S. Cl. 273—1.5 R

8 Claims



1. A force limiting adjustable basketball goal comprising:

a backboard having a basketball hoop attached thereto;

a support member having a first end and a second end with said first end pivotally connected to said backboard;

a counter-weight member connected to said second end of said support member;

stanchion means, the support member pivotally connected to said stanchion means a pre-determined distance between said first end and said second end of said support member;

means for positioning the height of said backboard, said counter-weight member and said positioning means allowing rapid height adjustment of said basketball hoop within a pre-determined range; and

means for limiting the maximum allowable force receivable on said basketball hoop, said force limiting means and said counter-weight member restricting the downward acceleration of said backboard should said maximum allowable force be exceeded.

5,388,822

ATTACHMENT FOR A BAT

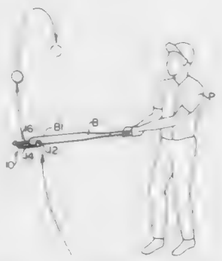
Howard A. Cassady, 539 Severn Ave., Tampa, Fla.

Continuation of Ser. No. 516,686, Jun. 4, 1990, abandoned. This application Jun. 5, 1992, Ser. No. 895,184

Int. Cl.[6] A63B *69/40*

U.S. Cl. 273—26 R

3 Claims



1. An attachment for a baseball or softball bat having a handle end and a ball contact end, the attachment being adapted to receive and release a ball, the attachment comprising:

a strap surrounding at least a portion of the ball contact end of the bat;

means secured to the strap for receiving and releasing a ball, said means comprising a pair of spaced apart, substantially parallel arms having one end thereof secured to and projecting from said strap and projecting from the ball contact end of the bat when the bat is received within the strap, each of said arms extending substantially parallel to the longitudinal axis of the bat and having an off-set lip portion at the end thereof; and

means for securing strap to the bat.

5,388,823

ADJUSTABLE BASEBALL BATTING TEE

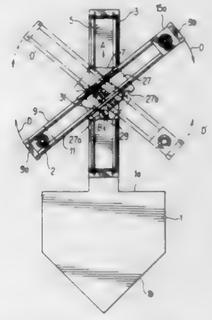
Ronald G. Prieto, Bricktown, N.J., assignor to BASE-ICS Inc., Bricktown, N.J.

Filed Apr. 7, 1994, Ser. No. 224,299

Int. Cl.[6] A63B *69/40*

U.S. Cl. 273—26 R

10 Claims



1. An adjustable batting tee comprising:

a plate member having a front portion and a rear portion;

a first elongated member extending perpendicularly from a center of said front portion of said plate member;

a slidable member positioned on said first elongated member so as to be slidable along a length of said first elongated member;

a second elongated member having first and second oppositely disposed end portions and being rotatably mounted to said slidable member so as to be slidable along said length of said first elongated member and rotatable with respect to said first elongated member, said second elongated member extending cross-wise with respect to said first elongated member and being rotatable with respect to said first elongated member from a first position in which said first end portion of said second elongated member is closer to said front portion of said plate member than said second end portion, to a second position in which said second end portion of the second elongated member is closer to said plate member than said first end portion;

locking means for selectively locking said second elongated member in said first and second positions; and

an upright member for supporting a ball, said upright member being slidably mounted on said second elongated member so as to be slidable along a length of said second elongated member between said first and second end portions of the said elongated member.

5,388,824

POCKET GOLF-AID DEVICE

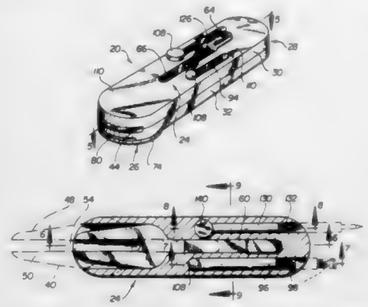
James F. Reimers, 4900 Pear Ridge Dr. #404, Dallas, Tex. 75287-3110

Filed Jan. 10, 1994, Ser. No. 179,320

Int. Cl.[6] A63B *57/00*

U.S. Cl. 273—32 A

5 Claims



1. A manually manipulable device comprising a housing-like body, and a composite assembly of golfing articles, said articles including golfing aids and accessories,

means for securing said articles in said body for retrival and for use, as desired, by a golfer,

said articles being characterized in being readily and easily manipulable and being fabricated of high-strength and of durable and corrosion-resistant compositions,

each of said articles being extendible from said body during specialized employment thereof,

said items including a club-face groove cleaner comprising a hardened steel probe, wire brush means for cleaning ball-impacting faces of clubs, a divot fixer, and a ball marker,

control means, independently operable and conveniently Positioned for accessing each of said articles and for displacing said articles with reference to said body to effect, selectively, an operational mode for each of said articles, and each of said articles including integrally formed means for retracting said articles into said body when not in use,

said housing having top and bottom surfaces including generally planar a real sections for imprinting of selectable visual indicia thereon.

5,388,825

ILLUMINABLE BALL

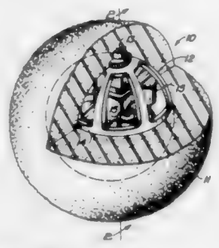
Jeff D. Myers, Paradise Valley, and Roger S. Dollison, Phoenix, both of Ariz., assignors to Myers Innovation Group, Paradise Valley, Ariz.

Filed Jan. 24, 1994, Ser. No. 185,041

Int. Cl.[6] A63B *43/06*

U.S. Cl. 273—58 G

11 Claims



1. An illuminable ball comprising:

a sphere formed of an exterior resilient material overlaying a

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hollow rigid core, the sphere comprising two engageable halves,

means for detachably connecting the halves of said sphere together mounted on said core,

an illuminating means mounted within the hollow core of said sphere,

said illuminating means comprising a D.C. battery, at least one bulb, an on/off switch and a circuit for interconnecting said bulb and said switch with said battery for controlled illumination of said bulb,

said switch being positioned to extend outwardly of the hollow core of said sphere and into said resilient material,

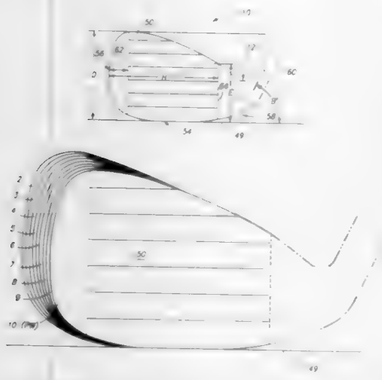
whereby when said resilient material over said switch is compressed by the fingers of a user it may be compressed enough to reach said switch for operation thereof.

5,388,826

CORRELATED SET OF GOLF CLUB IRONS

Brad L. Sherwood, N. 4921 Division, Spokane, Wash. 99207

Filed Feb. 14, 1994, Ser. No. 196,387
Int. Cl.[6] A63B *53/00*
U.S. Cl. 273—77 A 50 Claims



1. A correlated set of individually numbered golf club iron heads progressing from a high numbered head to a low numbered head; individual heads having a front striking face, a rear face, a sole, a toe, a heel and a hosel; the front striking faces of heads within the set individually having a total planar area defining a progressively decreasing loft angle in going from the high numbered head to the low numbered head; for at least two chosen pairs of heads within the set, the striking face total planar area of individual heads within each chosen pair increasing in size in going from the higher numbered head to the lower numbered head in the pair.

5,388,827

GOLF PUTTER

Walker Reynolds, Jr., 14 Rendalia Rd., Anniston, Ala. 36201

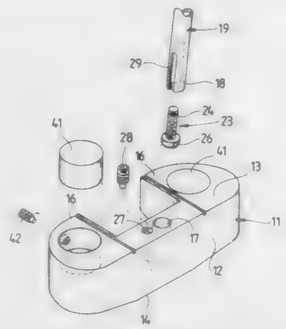
Filed May 11, 1994, Ser. No. 241,278
Int. Cl.[6] A63B *53/02, 53/04*
U.S. Cl. 273—80.1 10 Claims

1. A golf putter comprising in combination:

a) a shaft having a handle and a distal end, said distal end being tubular;

b) a head having a striking face and an upper surface perpendicular to said striking face, said upper surface having a bore formed therein, oblique to the surface thereof and parallel to said striking face, of a dimension adapted to receive said distal end;

c) a threaded member threadably received longitudinally within said distal end and having a terminal portion extending longitudinally beyond said distal end; and



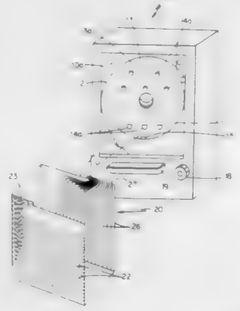
d) means for engaging said distal end and said threaded member within said bore for releasably securing the same to said head.

5,388,828

APPARATUS WITH FUNCTION OF DETECTING POSITION OF EXISTENCE OF METAL BODY

Takatoshi Takemoto; Kazunari Kawashima, both of Tokyo, and Shigeru Handa, Hachioji, all of Japan, assignors to Kabusihik Kaisha Ace Denken, Tokyo, Japan

PCT No. PCT/JP91/01353, § 371 Date Jun. 2, 1992, § 102(e) Date Jun. 2, 1992, PCT Pub. No. WO92/05847, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 4, 1991, Ser. No. 859,467
Claims priority, application Japan, Oct. 4, 1990, 2-167243; Oct. 4, 1990, 2-267240; Oct. 4, 1990, 2-267241; Oct. 4, 1990, 2-267242; Oct. 4, 1990, 2-267244
Int. Cl.[6] A63F *7/02*
U.S. Cl. 273—121 B 15 Claims



1. An apparatus for detecting a moveable metal body in a gaming machine comprising:

a sensor including a folded signal sending line including two lines connected at one end and which serves to carry a current for generating a magnetic field when energized; and a folded signal receiving line including two lines connected at one end which is arranged at a position permitting it to be electromagnetically coupled with said folded signal sending line, and which serves to detect a magnetic flux change caused by the approach of metal,

said folded signal sending line and said folded signal receiving line each being arranged in separate parallel planes and in directions orthogonal to each other;

said sensor being constructed as a sensing matrix in which a plurality of folded signal sending lines are arranged coplanarly and a plurality of folded signal receiving lines are arranged coplanarly;

signal sending means connected to the respective folded signal sending lines, for successively sending signals of predetermined frequency to said respective folded signal sending lines; and,

signal receiving means connected to the respective folded signal receiving lines, for successively receiving the signals from said respective folded signal receiving lines in synchronism with said folded signal sending means wherein

said signal sending means includes sending-signal switching means for successively delivering signals-to-be-sent to said respective folded signal sending lines,

said signal receiving means includes receiving-signal switching means for successively accepting signals-to-be-received from said respective folding signal receiving lines,

said signal receiving means includes decision means for judging whether or not said metal exists, from the signals of said folded signal receiving lines,

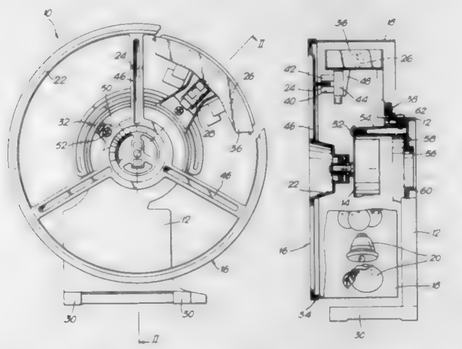
said sensing matrix is arranged in opposition to said panel with a space therebetween at least large enough to pass said metal body, and said signal sending means and said signal receiving means are connected to said sensing matrix, to detect the location of said metal body.

5,388,829

REEL MECHANISMS FOR GAMING MACHINES

Robert A. Holmes, Surrey, England, assignor to Starpoint Electronics Limited, Surrey, England

PCT No. PCT/GB92/01597, § 371 Date Feb. 28, 1994, § 102(e) Date Feb. 28, 1994, PCT Pub. No. WO93/05484, PCT Pub. Date Mar. 18, 1993
PCT Filed Sep. 1, 1992, Ser. No. 204,214
Claims priority, application United Kingdom, Sep. 2, 1991, 9118733; Dec. 4, 1991, 9125844
Int. Cl.[6] G07F *17/34*
U.S. Cl. 273—143 R 10 Claims



1. A reel mechanism (**10**; **10'**) comprising a support (**12**; **12'**) which carries a motor (**14**; **14'**), a reel (**16**; **16'**), a lamp (**26**; **26'**) and an optical device (**28**; **28'**);

the motor carrying the reel, the reel including both a reel strip (**18**; **18'**) provided with symbols (**20**; **20'**) to be illuminated by the lamp as well as a reel support (**22**; **22'**) provided with a tab (**24**; **24'**) to be sensed by the optical device, and the lamp being adjustably movable relatively to the support;

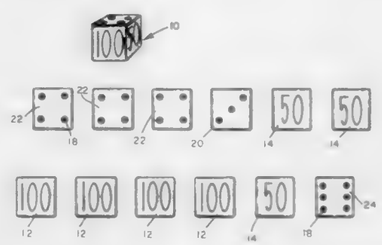
characterised in that the optical device is also adjustably movable relatively to the support.

5,388,830

METHOD FOR PLAYING A DICE GAME

Gary V. Dixson, 3977 Menlo Ave., No. 104, Los Angeles, Calif. 90037

Continuation of Ser. No. 795,523, Nov. 21, 1991, abandoned. This application Feb. 2, 1993, Ser. No. 12,353
Int. Cl.[6] A63F *9/04*
U.S. Cl. 273—146 12 Claims



1. A method of playing a dice game comprising the steps of:

(1) providing a plurality of at least three dice, each die of which comprises a cube having six sides including a first side having thereon the numeral 100, a second side having thereon the numeral 50, a third side having thereon two spots, a fourth side having thereon three spots, a fifth side having thereon four spots, and a sixth side having thereon six spots;

(2) throwing said plurality of dice for displaying a side of each said die; and

(3) calculating a point score including the steps of

(a) multiplying by one hundred the number of displayed spots on one said die for each triplet thereof, if any,

(b) multiplying by ten the display numbers 100 and 50 on one said die for each triplet thereof, if any,

(c) taking the actual value of the displayed numbers 100 and 50 for each single thereof, if any, and

(d) adding the results of steps (a), (b) and (c).

5,388,831

LUMINOUS GOLF PRACTICE DEVICE

Michel Quadri, 9 Ch. Val-de-Travers, 1290 Versoix, and Francois Wahl, Les Pessules 2, 1296 Copper, both of Switzerland

PCT No. PCTCH/93/00021, § 371 Date Sep. 27, 1993, § 102(e) Date Sep. 27, 1993, PCT Pub. No. WO93/14830, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 28, 1994, Ser. No. 122,477
Claims priority, application France, Jan. 28, 1993, 92 01056
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—186.3 10 Claims

1. An auxiliary luminous device, for assisting a user with golfing practice, comprising a light beam transmitter and an optical unit arranged to diffuse a generated light beam in a plane;

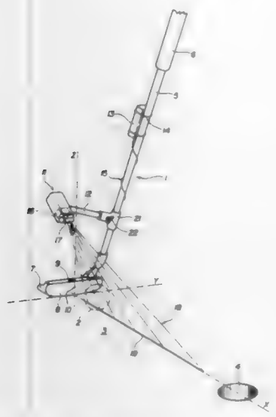
the device being used in combination with a golf club having a striking surface;

the transmitter and the optical unit being attached to the golf club;

the optical unit being aligned relative to the golf club so that the plane in which the light beam is to be diffused extends perpendicular to the striking surface of the golf club and passes through a point of impact between a golf ball, to be struck by the golf club, and the striking surface, and the

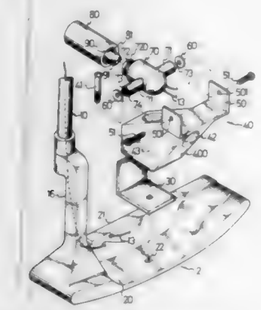
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light beam, when diffused, forms a line of light on the ground during a golfing stroke; and



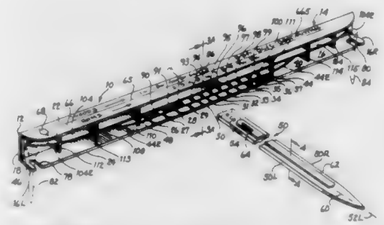
the optical unit being located behind a plane defined by the striking surface.

5,388,832
PRACTICE-TYPE GOLF PUTTER
Kuo H. Hsu, 2Fl., No. 57, Lane 60, Chunghua Rd., Hsintien City, Taipei Hsien, Taiwan, Prov. of China
Filed May 18, 1994, Ser. No. 243,688
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—186.3 4 Claims



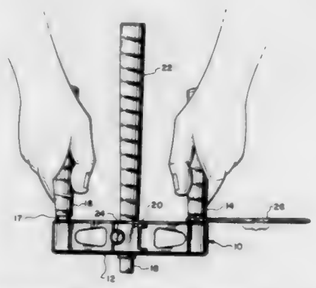
1. A practice-type golf putter comprising
a grip connected to a shaft connected to a neck connected to a head, said grip defining a space therein for receiving batteries, said shaft and said neck being hollow structures for receiving a pair of wires;
a plurality of batteries;
at least one pair of wires;
a switch being bridged between said batteries and said wires and allowed to be operated in an on position to electrically connect said batteries to said wires;
said head comprising a curved plate having a wall extending upwardly from one side thereof for hitting a golf ball, a socket having a body portion and a U-shaped bracket having two upright walls integrally formed at a top of said body portion, said body portion being mounted on said curved plate, a receptacle including two beams extending oppositely and laterally from a periphery thereof for pivotal connection to said two upright walls of said U-shaped bracket, a laser radiator including a first end received in said receptacle and electrically connected to said wires which extend from said neck and a second end protruding beyond said receptacle for emitting laser light when said wires are electrically connected to said batteries, and a sleeve cover having a first end engaged to said receptacle and a second end having a hole allowing laser light from said laser radiator to emit therefrom.

5,388,833
GOLF PRACTICE DEVICE
Hub W. Goyen, Jr., 8864 E. Sunnyside, Scottsdale, Ariz. 85260
Filed Feb. 4, 1994, Ser. No. 191,620
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—187 R 13 Claims



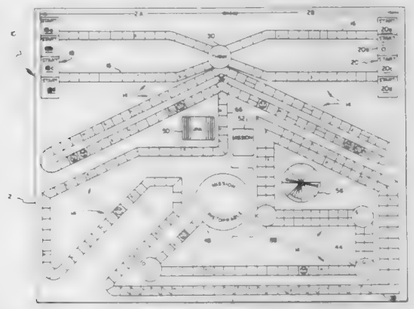
1. A golf teaching tool that indicates placement of a golf ball relative to a golfer, comprising:
a channel having a groove in an inside surface of one side of said channel, an outside surface of the other side of said channel carrying a channel indicium of a golf club type, the length of said channel being at least two feet; and
a directional arm that has a tongue connected thereto at one end, said tongue having a shape substantially complementary to the shape of at least a portion of said groove, one side of said arm carrying a golf ball placement indicium of placement of said ball when said tongue is inserted into said groove.

5,388,834
GOLF SWING TRAINING AID
Dennis Dawson, 4071 Hollow Pl., Moorpark, Calif. 93021
Filed Sep. 15, 1993, Ser. No. 121,935
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—194 R 18 Claims



1. A golf club swing training aid for attachment to a standard golf club comprising;
a crossbar;
a pair of golf grips on opposite outboard ends of said crossbar, said golf grips being shorter than a golf grip of said standard golf club;
clamp means coplanar with said pair of golf grips for removably clamping said crossbar to the shaft of said standard golf club so that said pair of grips are equally spaced and on opposite sides and below the grip on said standard club, and said pair of grips and the grip on said standard club are in substantially the same plane;
whereby said golf swing training aid may be quickly and easily attached and detached from the shaft of any standard golf club for teaching a player a proper swing.

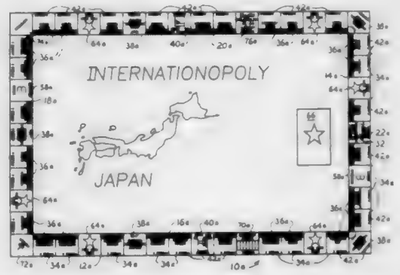
5,388,835
BOARD GAME UTILIZING COMBINATION ROLLS OF THREE DICE
Kevin Albright, 99 Tapscott St., Brooklyn, N.Y. 11212
Filed Aug. 23, 1993, Ser. No. 110,536
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—249 8 Claims



1. A method for playing a board game utilizing combination rolls of three dice for determining primary movement of a playing piece on a game board and ancillary chance means for controlling secondary movement of the playing piece, said method comprising the steps of:
providing a game board having a plurality of travel paths divided into stations including a starting area and a common goal;
selecting one or more identical game pieces for placement in the starting area;
rolling at least three game dice by each of the players;
advancing each player's game piece sequentially in a forward direction a number of stations corresponding to the sum of the numerical count indicated on an upturned face of each of the three game dice;
rolling the three game dice for a second roll upon the occurrence of an identical numerical count on the respective upturned face of each of the three game dice of the first roll and further advancing the game piece a number of stations corresponding to the cumulative numerical count appearing on the respective upturned faces of the three game dice;
rolling two game dice for a third roll and advancing the game piece a number of stations corresponding to the cumulative numerical count appearing on the respective upturned faces of the two game dice; and
rolling one game die for a fourth roll and advancing the game piece a number of stations corresponding to the numerical count appearing on the upturned face of the game die.

5,388,836
BOARD GAME OF INTERNATIONAL FINANCE
Dino A. Foti, 46 Waterloo Ct., Belmont, Calif. 94002
Filed Jun. 30, 1994, Ser. No. 268,492
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—256 8 Claims

1. A board game apparatus of international finance comprising:
at least one game board having a first playing path and an adjacent second playing path, and providing for play over both of said playing paths during the course of play of said game;
said first playing path and said second playing path of said game board each forming a closed loop and each containing an area therein providing for the storage of cards used in the course of play of said game;
said first playing path of said game board comprising a plurality of consecutive playing spaces simulating municipalities, corporations, and other features of a first nation, and said second playing path of said game board comprising a plurality of consecutive playing spaces simulating municipalities, corporations, and other features of a second nation;
a plurality of player position markers each of a different color, and chance means providing for the determination of each move of each of said player position markers during the course of play of said game;
a first plurality of tokens and a second plurality of tokens, said tokens respectively representing standard and maximum taxes applicable to players of said game;



a first currency in different denominations simulating the currency of said first nation, and a second currency in different denominations simulating the currency of said second nation, with said first currency and said second currency having different values from one another;
a plurality of transaction cards corresponding to said playing spaces simulating municipalities, corporations, and other features of said first nation, and said playing spaces simulating municipalities, corporations, and other features of a second nation, and;
a first plurality of cards providing for the random determination of exchange rates between said first currency and said second currency, and a second plurality of cards providing for random financial rewards and penalties for players, whereby;
players proceed in turns about said first playing path and said second playing path by means of said player position markers and perform simulated financial transactions and currency exchanges according to the rules of said game. with the winner of said game being determined by the player accumulating the greatest simulated wealth after a predetermined period of play.

5,388,837
GAME OF MILITARY STRATEGY
Emile Hoffman, 6731 New Hampshire Ave. Apt. #206, Takoma Park, Md. 20912
Filed Jul. 27, 1993, Ser. No. 97,118
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—262 4 Claims

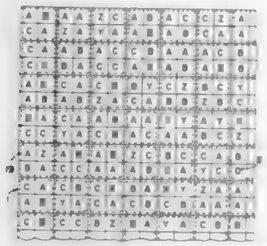
1. A military war game combining elements of skill and chance comprising:
a substantially horizontal playing surface divided into squares each subdivided into four smaller squares, the squares being assigned a color to determine the distance a game piece can move once on that square;
at least two sets of playing pieces, one set for each of said

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players or team of players, said playing pieces comprising armed forces, a moveable weapons system and fixed targets, of which the soldiers and aircraft have attached to them selector dials, each having six sectors which manifest the status power of these said game pieces in accordance with the trump play rule of play;

a die, which determines status power of the selector dial, the number on the die corresponding to the sectors on the selector dial;

a plurality of playing pieces termed figurators representing the moveable playing pieces which are placed on said game board squares at the start of or during the game and which, at the option of the player upon a roll of the die, are replaced by the actual moveable game pieces;



a plurality of playing cards which are distributed between the players at the start of play and which determine the strength of each side's forces;

a plurality of playing pieces termed configurators for targeting opposing forces for destruction;

a plurality of playing pieces termed power cards which are used to determine whether a game piece is killed, captured or wounded, according to the kill, capture or wound theories of play;

a plurality of playing pieces termed decoys to provide and help prevent attacks on troops; and

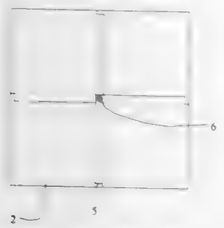
a small object that is placed on soldiers and tanks to show how many turns said soldiers and tanks on maximum or second highest selection value would have to remain on that selector dial.

5,388,838

COLLAPSIBLE STIFF GAME BOARD

John Bohrer, 515 W. Hutchinson Ave., Apt. #6, Pittsburgh, Pa. 15218

Filed May 23, 1994, Ser. No. 247,966
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—285 **1 Claim**



1. A collapsible, stiff game board which comprises:

(a) two or more identically shaped game board segments, each having one or more holes at identical locations, and one or more slits at identical locations at one or more borders of each of said game board segments, said game board segments are stacked on top of one another such that said holes vertically align with one another;

(b) a fastener securing said game board segments at said vertically aligned holes, whereby said game board segments pivot about said fastener along a vertical axis from a collapsed position wherein the borders of said game board segments are lined up such that said game board segments are directly stacked one on top of the other and only the playing surface of the top game board segment is exposed, to an expanded position wherein the playing surfaces of all of said segments are exposed; and

(c) a means to interlock said game board segments at said slits for rigidly locking said game board segments in said expanded position.

5,388,839

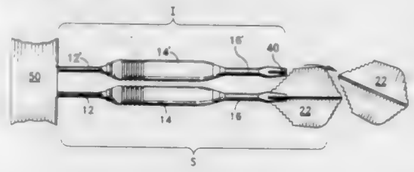
Patent Not Issued For This Number

5,388,840

THROWING DART FLIGHT WITH STEPPED CONFIGURATION

Sean F. Werle, 46 old Depot Rd., Hope Valley, R.I. 02832

Filed Mar. 23, 1994, Ser. No. 216,351
Int. Cl.[6] A63B *65/02*
U.S. Cl. 273—423 **3 Claims**



1. An improved throwing dart flight for connection to a dart body of a throwing dart for throwing at a target, comprising:

a plurality of vane components emanating from a central axis; each of said vane components having a leading edge and an trailing edge relative to the trajectory path of the throwing dart; said dart flight being slidably insertable into said dart body and capable of being retained therein by a friction fit;

each leading edge of said vane components having a plurality of notches therein;

each trailing edge of said vane components having a plurality of notches therein; and

whereby said dart flight is separated from said dart body upon communication of a leading edge of a dart flight of an incoming thrown dart with a trailing edge of a dart flight of a dart present in said target.

5,388,841

EXTERNAL MEMORY SYSTEM HAVING PROGRAMMABLE GRAPHICS PROCESSOR FOR USE IN A VIDEO GAME SYSTEM OR THE LIKE

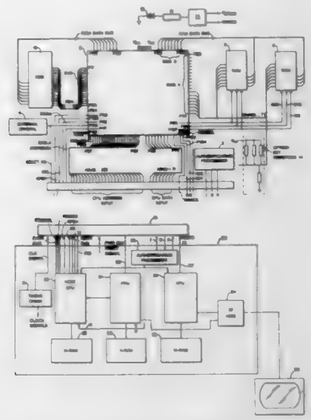
Jeremy E. San, London; Ben Cheese, Melbourn Royston; Carl N. Graham, and Peter R. Warnes, both of London, all of England, assignors to A/N Inc., Redmond, Wash.

Filed Jan. 30, 1992, Ser. No. 827,098
Int. Cl.[6] A63F *9/22*; **G09G** *5/00*
U.S. Cl. 273—435 **57 Claims**

1. For use with a home video game system having a game microprocessor for executing a first portion of a video game program, a game cartridge comprising:

a program memory for storing said first portion of said video game program and a second portion of said video game program, and

a programmable processing unit coupled to said program memory for executing said second portion of said video



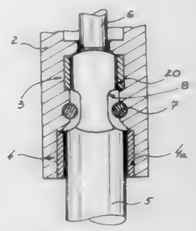
game program in response to signals received from said game microprocessor.

5,388,842

DEVICE FOR HOLDING THE TOOL OF A HYDRAULIC ROCK BREAKER

Bernard Piras, Charly, and Jean S. Comarmond, Vourles, both of France, assignors to Etablissements Montabert, Saint Priest, France

Filed Jun. 15, 1993, Ser. No. 77,883
Claims priority, application France, Jun. 16, 1992, 92 07542
Int. Cl.[6] B25D *17/00*
U.S. Cl. 279—19.5 **8 Claims**



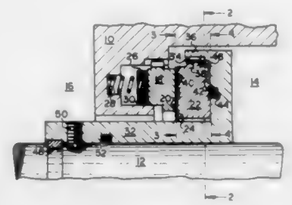
1. A device for holding a tool of a hydraulic rock breaker wherein the tool is arranged coaxially with a percussion piston, said tool being mounted so as to slide, with interposition of upper and lower translational guide means, in a front guide, and being limited in its travel, respectively, upwards, by a limit-stop face of the guide and, downwards, by at least one transverse key arranged between the guide means and also forming a means for axially retaining said tool in the guide, said upper translational guide means delimiting a rotational-locking zone cooperating with a zone of complementary cross-section made, at least locally, on the tool, a directrix of the translational-guide and rotational-locking zone comprising points of inflection forming separation angles between facets, the lower translational guide means including a bush of cylindrical inner cross section surrounding a cylindrical portion of said tool, said key being free from any translational guidance of said tool.

5,388,843

FLUID FILM SEAL

Josef Sedy, Mount Prospect, Ill., assignor to Durametallic Corporation, Kalamazoo, Mich.

Continuation of Ser. No. 18,264, Feb. 16, 1993, abandoned. This application Apr. 8, 1994, Ser. No. 225,349
Int. Cl.[6] F16J *15/16*
U.S. Cl. 277—81 R **8 Claims**



1. Device for sealing a fluid at a space between a housing and a rotatable shaft, comprising:

a first seal ring, mounted on said shaft for rotation therewith and comprising a planar back surface, a planar front sealing surface and a raised portion,

said raised portion being circumferentially oriented and located axially midway across an outer surface of said first seal ring,

a second seal ring, being axially movable and substantially coaxial with said first seal ring,

said second seal ring having a planar sealing surface defining a clearance with said first seal ring planar front sealing surface,

said second seal ring being acted upon by said fluid to close said clearance,

an elastic means, connected between said housing and said second seal ring for biasing said second seal ring towards said first seal ring to close said clearance,

one of said planar sealing surfaces having a plurality of grooves formed therein, said grooves arranged in spaced relation to each other,

a shaft sleeve connected to said shaft and having an inner cylindrical surface adjacent said shaft and an another inner cylindrical surface adjacent said first seal ring,

said another cylindrical surface comprising at least two inwardly extending drive ears,

each said drive ears engaging a drive dent in said raised portion of said first seal ring,

at least two centering strips located radially between said another cylindrical surface of said shaft sleeve and said raised portion of said first seal ring and located circumferentially between each two adjacent said drive ears.

5,388,844

BRAKING DEVICE, PARTICULARLY FOR SKATES

Alfred Pellegrini, Jr., Montebelluna; Andrea Tormena, Crocetta del Montello, and Ernesto Benvenuto, S. Gaetano di Montebelluna, all of Italy, assignors to Nordica S.p.A., Trevignano, Italy

Filed Apr. 23, 1993, Ser. No. 51,421
Claims priority, application Italy, Apr. 29, 1992, TV92 U 000025[U]; Sep. 25, 1992, TV92 U 000046[U]
Int. Cl.[6] A63C *17/14*
U.S. Cl. 280—11.2 **17 Claims**

1. Braking device, particularly for skates comprising an item of footgear having a quarter articulated to a shell which is associated with a supporting frame for a plurality of wheels, the braking device comprising a rod member associated with said quarter and slideable with respect to said shell, said rod member having a braking end adapted to act on at least one of said wheels when said quarter is rotated, said rod member being articulated to a plate having at least one slot for the sliding and pivoting of clamp-like blocking means which inter-

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act with a pair of disks laterally associated with at least one of said wheels, said plate being C-shaped and longitudinal slots being defined at wings thereof, which are arranged parallel to the lateral surface of said shell, and wherein the inner ends of a pair of arms are mutually pivoted, by means of a first pivot which is slideable, within said longitudinal slots, said arms



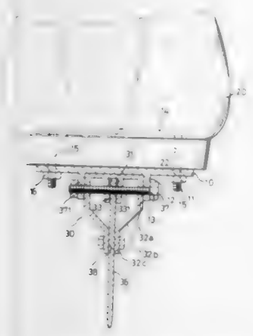
being pivoted at their outer ends to the corresponding ends of a pair of rods which are arranged, when inactive, approximately mutually parallel and in a rearward position, said pair of rods being eccentrically pivoted to said frame by means of second pivots, the ends of said pair of rods which are adjacent to the ground being connected to pads interacting in a clamp-like manner with said pair of disks.

5,388,845

BLADE ASSEMBLY FOR AN ICE SKATE

Mike Soo, No. 403, Chung Shan Rd., Jen Teh Hsiang, Tainan Hsien, Taiwan, Prov. of China

Filed Sep. 8, 1993, Ser. No. 118,031
Int. Cl.[6] A63C *1/38*
U.S. Cl. 280—11.17 4 Claims



1. An ice blade assembly for being attached to a pair of parallel mounting ribs at an underside of a skate, said ice blade assembly comprising:

a hollow base frame including an upper wall with two sides, a side wall extending downward from each said side of said upper wall and along a longitudinal direction of said mounting ribs, and a pair of spaced retaining ribs projecting downwardly from an underside of said upper wall, inwardly spaced from said side walls, and extending toward each other to define a space therebetween, each said side wall including an upper section and a lower section, said upper sections being dimensioned to be securely received between said mounting ribs, said lower sections converging toward each other to define a passage therebetween in alignment with said space defined by said retaining ribs; and

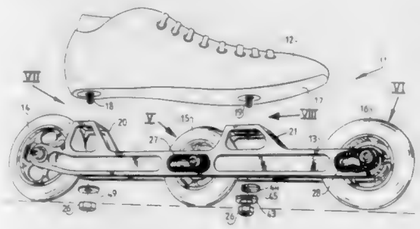
an ice blade passing through said passage, with an upper edge thereof securely mounted between said retaining ribs and with a mediate section thereof retained between said passage.

5,388,846

FRAME FOR A SKATE, METHOD FOR THE MANUFACTURE THEREOF, SKATING SHOE AND SKATE

Johan Gierveld, Wierden, Netherlands, assignor to Gierveld Beheer B.V., Wierden, Netherlands

Filed Jun. 9, 1992, Ser. No. 895,370
Int. Cl.[6] A63C *17/04*
U.S. Cl. 280—11.22 13 Claims



1. A method of manufacturing a one-piece, elongated skate frame skate which includes two fastening brackets spaced apart along a length thereof, said method comprising the steps of:

(a) providing an extrusion device with an injection nozzle having a passage opening which has a form corresponding to an end view of a frame,

(b) manufacturing a profiled bar of an extrudable material using said extrusion device,

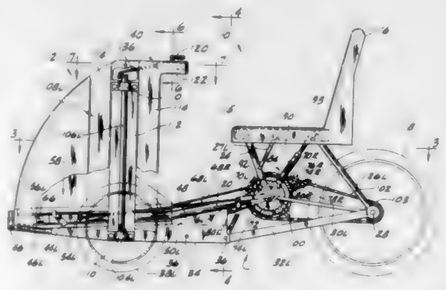
(c) removing portions of said profiled bar by drilling and at least one of milling and grinding to obtain a one-piece, elongated skate frame having two fastening brackets spaced apart along a length thereof.

5,388,847

RIDER PROPELLED VEHICLE AND DRIVE ASSEMBLY THEREFOR

Earl M. Trammell, Jr., Chesterfield, Mo., assignor to Equi-Cycle Corporation, Chesterfield, Mo.

Continuation of Ser. No. 986,091, Dec. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 816,220, Jan. 3, 1992, Pat. No. 5,188,003. This application Jul. 22, 1993, Ser. No. 96,649
Int. Cl.[6] B62M *1/10*
U.S. Cl. 280—215 20 Claims



1. A drive assembly for a rider propelled vehicle comprising:

a shaft mounted on the vehicle for rotation about a drive axis;

a pair of crank arms operatively connected to the shaft for rotating the shaft about the drive axis with the crank arms revolving around the drive axis;

a pair of pedals each capable of being driven by a pumping motion of one of the rider's legs along a repeating path through a first dead center position in which the rider's leg is generally in its most fully flexed position, and a second dead center position in which the rider's leg is generally in its most fully extended position;

means operatively connecting each of the pedals to a respective crank arm, said connecting means being operable to transmit the motion of the pedals to the crank arms and being movable relative to the crank arms so that when the pedals are in their respective first and second dead center positions the force applied by the rider's leg to the pedal in the first dead center position is directed by said connecting means along a line spaced from the axis of rotation of the shaft; and

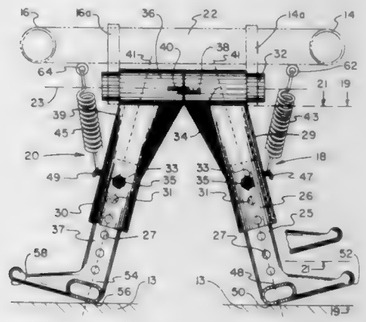
a power assist device operatively connected to the vehicle and the shaft, the power assist device being operable to store energy during a first portion of a revolution of the crank arms, release energy during a second portion of the revolution of the crank arms to assist in driving the rotation of the shaft, store energy during a third portion of the revolution of the crank arms, and release energy during a fourth portion of the revolution of the crank arms to assist in driving the rotation of the shaft.

5,388,848

MOTORCYCLE KICK STAND

Leroy F. Silva, and Darwayne Fisher, both of 1643 E. Alisal St., Salinas, Calif. 93905

Filed Jul. 12, 1993, Ser. No. 89,283
Int. Cl.[6] B62H *1/06*
U.S. Cl. 280—300 8 Claims



1. A kick stand apparatus for a two-wheeled vehicle having a frame and a first side and a second side, wherein the vehicle is used for riding on a ground surface, said apparatus comprising:

independently operable, first leg assembly means, connected to said frame of said two-wheeled vehicle and capable of being placed in a lowered position or in a retracted position by an operator's foot, for preventing the vehicle from falling onto the first side when the vehicle is parked, and

independently operable, second leg assembly means, connected to said frame of said two-wheeled vehicle and capable of being placed in a lowered position or in a retracted position by an operator's foot, for preventing the vehicle from falling onto the second side when the vehicle is parked,

wherein both said first leg assembly means and said second leg assembly means are capable of maintaining a parked vehicle in an upright orientation when both said first leg assembly means and said second leg assembly means are in a lowered position,

wherein said first leg assembly means and said second leg assembly means are supported on a common transverse shaft attached to said frame of said vehicle, said first leg assembly means and said second leg assembly means being in a juxtaposed arrangement on said common transverse shaft with respect to a longitudinal axis of said shaft,

wherein said first leg assembly means includes a first hinge member supported by said shaft,

said second leg assembly means includes a second hinge member supported by said shaft,

said first hinge member includes a first push tab element, a portion of which extends over a portion of said second hinge member, and

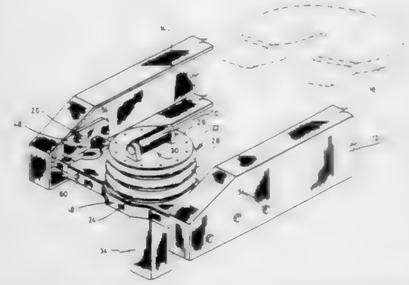
said second hinge member includes a second push tab element such that said second push tab element is adapted to engage said first push tab portion when said first and second leg assembly means are in the retracted position such that said second leg assembly means cannot move from a retracted to a lowered position until said first leg assembly means moves from a retracted to a lowered position.

5,388,849

COMPACT WEIGHT TRANSFER DEVICE FOR TRACTOR TRAILER VEHICLES

Julien Arsenault, St-Simeon, and Sylvio Horth, Paspebiac, both of Canada, assignors to Soudure Caplan, Quebec, Canada

Filed Feb. 2, 1994, Ser. No. 190,283
Claims priority, application Canada, Aug. 20, 1993, 2104491
Int. Cl.[6] B62D *53/08*
U.S. Cl. 280—425.1 10 Claims



1. A weight transfer device for a tractor trailer including a tractor for pulling a trailer, said tractor having a pair of rearward parallel frame side rails and a fifth wheel for attachment with said trailer, said device comprising:

a mount having opposite ends provided with attaching means for attaching transversely said mount between said frame side rails behind said fifth wheel;

a bag unit including a base mounted onto said mount, an upper surface over said base at an adjustable distance therefrom, and an expansible bag between said base and said upper surface for adjusting said distance;

bearing means mounted on top of said upper surface, for upwardly pushing against said trailer without significantly hindering its pivotal movement around said fifth wheel; and

guiding means for vertically guiding said upper surface of the bag unit, said guiding means including:

an elongated member having an end connected to said upper surface and an opposite end projecting downwards therefrom inside said bag; and

an upright sleeve connected to said mount beneath said bag, for slidably receiving said opposite end of the elongated member;

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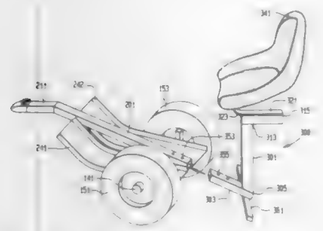
whereby said guiding means prevent said bag from drooping when said bearing means are pushing against said trailer.

5,388,850

CONVERTIBLE SULKY

Nicholas Simone, 2225 Hwy. A1A, Unit 604, Indian Harbour Beach, Fla. 32937

Filed May 24, 1993, Ser. No. 66,782
Int. Cl.[6] B62B *1/06*
U.S. Cl. 280—442 **9 Claims**



1. A convertible sulky to be hitched to a walk-behind lawn mower and being interchangeable between stand-up and sit-down configurations, so that a mower operator is able to operate said walk-behind lawn mower from either a standing or seated position in the sulky behind said walk-behind lawn mower, comprising:

a generally T-shaped support frame that includes a central leg member, a first, upper end of said central leg member having a ball-hitch fixture that is attachable to a ball-hitch element on a rear portion of said walk-behind lawn mower, a second, lower end of said central leg member having a first cross member affixed thereto so as to form, with said central leg member, said generally T-shaped support frame, said lower end of said central leg member having a hollow opening for receiving a seat attachment fixture;

a generally H-shaped support wheelbase frame that includes a second cross member and first and second wheel-mounting leg members affixed to opposite ends of said second cross member, said second cross member being affixed to a location along said central leg member between said first and second ends thereof, and wherein said first wheel-mounting leg member is affixed to a first end of said first cross member of said generally T-shaped support frame, and said second wheel-mounting leg member is affixed to a second end of said first cross member of said generally T-shaped support frame;

a first wheel-mounting element affixed to said first wheel-mounting leg member, said first wheel-mounting element having a first wheel axle attachment location which receives and supports a wheel axle of a first wheel, and a second wheel-mounting element affixed to said second wheel-mounting leg member, said second wheel-mounting element having a second wheel axle attachment location which receives and supports a wheel axle of a second wheel;

a floor member affixed to said generally H-shaped and T-shaped support frames, said floor member comprising first and second generally L-shaped foot plates, upon which an operator may stand or place his feet while seated, each first and second generally L-shaped foot plate having a rearward, foot-receiving plate portion, which is affixed to said first and second cross members, a forward portion which extends upwardly from said rearward, foot-receiving plate portion toward said first, upper end of said central leg member, and side edge portions extending upwardly as side-to-side edge guards for the operator's feet; and

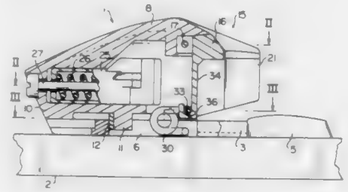
a seat attachment fixture, which is removably insertable into said hollow opening of said lower end of said central leg member, said seat attachment fixture comprising a column member having a first leg portion, which is affixed to a lower end of said column member and is sized for insertion into said hollow opening of said second, lower end of said central leg member, and a cross-piece affixed to the lower end of said column member, so as to be adjacent to said first cross member affixed to said second, lower end of said central leg member of said generally T-shaped support frame, when said first leg portion affixed to said lower end of said column member of said seat attachment fixture is inserted into said hollow opening at said second, lower end of said central leg member of said generally T-shaped support frame, and an operator seat upon which an operator may sit while operating said walk-behind lawn mower, said operator seat being supported by said column member.

5,388,851

ALPINE SKI SAFETY BINDING

Christian Challande, Cruseilles, and Gilles R. Goud, Cran-Gevrier, both of France, assignors to Salomon S.A., Chavanod, France

Filed Nov. 25, 1992, Ser. No. 981,230
Claims priority, application France, Nov. 25, 1991, 91 14756
Int. Cl.[6] A63C *9/085*
U.S. Cl. 280—625 **7 Claims**



1. Front ski binding designed to hold an end of a boot supported on a ski, and to release said end when said end subjects the binding to excessive stress, said front ski binding comprising:

(a) a base (**3**) and means for assembling said base to said ski;

(b) a body continuously connected to said base by an elastically deformable zone (**10**) located in a front portion of said body and of said base (**3**);

(c) a position-retention mechanism (**15**) supported by a front portion of said base and comprising a sole clamp (**16**) attached to said body and retaining said boot against vertical movement and two lateral retaining wings (**20, 21**) which are jointed to said body around substantially vertical axes (**22, 23**) and which are movable in an opening direction in relation to said body;

(d) a return spring (**26**) housed in said body and causing said wings to open in response to lateral stresses generated by said boot on said position-retention mechanism; and

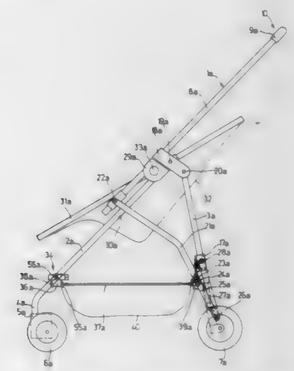
(e) a second spring (**30, 40, 60**) located in a rear portion of said body and being independent of said return spring, said second spring being hooked into both said body and into said base and elastically returning said rear portion of said body toward said base, said body including a means to receive said second spring in a lower portion thereof.

5,388,852

COMPACT FOLDING CHILD'S STROLLER

Jean Bigo, Cholet, and Laurent Ageneau, Mortagne sur Sèvre, both of France, assignors to Ampafrance S.A., Boulogne Billancourt Cedex, France

Filed Jul. 2, 1993, Ser. No. 85,059
Claims priority, application France, Jul. 2, 1992, 92 08177
Int. Cl.[6] B62B *7/06*
U.S. Cl. 280—642 **18 Claims**



1. Folding child's stroller comprising two deformable lateral chassis units each comprising: a front leg and a rear leg each having at least one wheel at its respective lower end; and a push bar having a holding area at its upper end; an articulated X-shape rear chassis joining together the two rear legs of said lateral chassis units; and means for supporting a hammock or a body for receiving the child between said two lateral chassis units when the stroller is deployed, in which stroller each push bar is adapted to slide parallel to the respective front leg between a deployed position in which said push bar is substantially aligned with said front leg and a folded position in which said push bar and the respective front leg are side by side; each rear leg is articulated to the respective front leg in the vicinity of their respective upper ends; a connecting link connects the lower end of each push bar to the respective rear leg; and an operating link is articulated to said connecting link and connected to a sliding piece sliding on each rear leg to which is also articulated an upper end of said X-shape rear chassis so that, when the stroller is folded up, it causes folding of said X-shape chassis and movement towards each other of said two lateral chassis units.

5,388,853

LOCK MECHANISM FOR A COLLAPSIBLE STROLLER

Charles W. Lauro, Southern Pines, N.C., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.

Filed Apr. 6, 1993, Ser. No. 43,223
Int. Cl.[6] B62B *3/02*
U.S. Cl. 280—642 **19 Claims**

1. A collapsible stroller having a tubular construction which supports a seat, a handle bar and a plurality of wheels comprising:

(a) an operative pair of first and second elongated tubes and a cooperative pair of first and second elongated tubes, said cooperative pair is configured to function parallel to and in cooperation with said operative pair;

(b) hinge means which movably couple said first tubes to said second tubes;

(c) a locking member being rotatably and slidably connected to said operative second tube, said locking member rotates to releasably engage said operative first tube to maintain alignment of said first tubes relative to said second tubes; and

(d) a restraining means which releasably restrains rotation of said locking member, thereby requiring a separate disengagement of said locking member from said restraining means and said locking member from said first operative



tube in order to allow said first operative and cooperative tubes to move relative to said second operative and cooperative tubes, respectively, and collapse said stroller.

5,388,854

FOLDABLE SHOPPING CART WITH A PLURALITY OF LOAD SUPPORTS

Nelson Kappaz, Sao Paulo, Brazil, assignor to Kappaz S/A, San Paulo, Brazil

Filed Dec. 21, 1993, Ser. No. 171,095
Int. Cl.[6] B62B *1/12*
U.S. Cl. 280—652 **1 Claim**

1. A foldable shopping cart, comprising:

a pair of parallel downwardly open upright U-shaped frames interconnected by elements pivotally connected to said frames to form a central load-supporting section, one of said frames being located forwardly of the other of said frames;

a U-shaped handle having downwardly extending shanks hingedly connected to said central load-supporting section and extending downwardly and forwardly to form rests for the cart below said central load-supporting section;

wheels rotatable mounted on said central load-supporting section rearwardly of said rests;

a pair of front load-supporting sections disposed one above another and pivotally connected to said one of said frames, each of said front load-supporting sections including a U-shaped frame member forwardly of said one of said frames, a pair of articulated links pivotally connecting said frame member to shanks of said one of said frames, and a plurality of rods pivotally connected to said one of said frames and to said frame member and forming a platform for the respective front load-supporting section in an unfolded position of the cart; and

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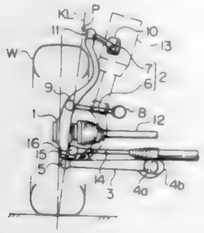
a rear load-supporting section pivotally connected to the other of said frames, said rear load-supporting section including a U-shaped frame member rearwardly of said other of said frames, a pair of articulated links pivotally connecting said frame member of said rear load-supporting section to shanks of said other of said frames, and a plurality of rods pivotally connected to said other of said frames and to said frame member of said rear load-supporting section and forming a platform for the rear load-supporting section in an unfolded position of the cart.

5,388,855

SUSPENSION SYSTEM OF A VEHICLE

Tadanobu Yamamoto, and Hiroyoshi Kumada, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 005,930, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 674,450, Mar. 25, 1991, abandoned. This application May 24, 1994, Ser. No. 248,827
Claims priority, application Japan, Mar. 30, 1990, 2-91390
Int. Cl.[6] B60G *3/20*
U.S. Cl. 280—675 **6 Claims**



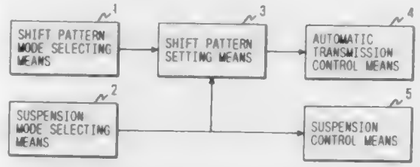
1. A suspension system for a vehicle comprising:
a steering knuckle for supporting a wheel used for steering;
a steering arm connected to the steering knuckle at one end thereof and to a tie rod of a steering device by a joint located rearward of a center of said wheel and at an opposite end thereof;
at least two link members for connecting an upper portion of the steering knuckle to a frame of the vehicle, said link members having longitudinal central axes crossing each other at an axis cross point in a plan view of the suspension system;
a lower arm attached to said steering knuckle at a lower cross point, said lower cross point and said axis cross point defining a kingpin axis extending therethrough, said lower arm connecting a lower portion of the steering knuckle to a frame of the vehicle;
first means, at one end of each of said link members, for pivotally connecting each of said link members to the frame of the vehicle; and
second means, at an opposite end of each of said link members, for pivotally connecting each of said link members to the steering knuckle,
the first means at the one end of one of said link members positioned rearward of the longitudinal central axis of an other of said link members and the second means at the opposite end of the one of said link members positioned forward of the longitudinal central axis of the other of said link members when the wheel is in a neutral position,
each of said link members being disposed so that said link members pivot around said first means and said second means to move the axis cross point along said longitudinal axes to (a) increase a distance between said joint located at the opposite end of the steering arm and said kingpin axis in response to an increase in a turning angle of the wheel toward an outward direction when the wheel is located radially outwardly in relation to a turning circle and (b) reduce said distance in response to an increase in a turning angle of the wheel toward an inward direction when the wheel is located radially inwardly in relation to the turning circle.

5,388,856

AUTOMATIC TRANSMISSION CONTROL DEVICE

Shiro Yonezawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,950
Claims priority, application Japan, Feb. 6, 1992, 4-020912
Int. Cl.[6] B60G *11/26*
U.S. Cl. 280—707 **12 Claims**



1. An automatic transmission control device for controlling a shift operation of a vehicle having a suspension, the device comprising:
shift pattern mode selecting means for selecting a shift pattern mode of said shift operation;
suspension setting means for setting a damping force value of said suspension;
shift pattern setting means for setting an actual shift pattern for said shift operation on the basis of said selected shift pattern mode and said set damping force value; and
transmission control means for controlling said shift operation on the basis of said actual shift pattern which is set by said shift pattern setting means.

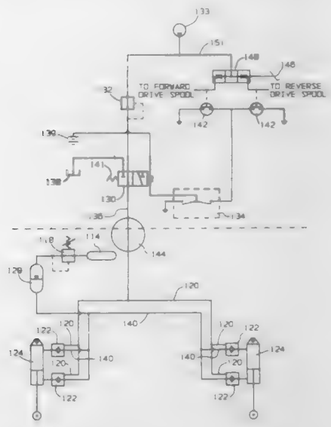
5,388,857

OPERATOR CONTROLLED VEHICLE STABILIZER

Theodore A. Wernimont; Timothy Schroering, and Gerald L. Piper, all of Winona, Minn., assignors to Badger Equipment Company, Winona, Minn.

Continuation-in-part of Ser. No. 936,129, Aug. 27, 1992, abandoned. This application Sep. 21, 1993, Ser. No. 124,940
Int. Cl.[6] B60G *17/005, 25/00*
U.S. Cl. 280—708 **4 Claims**

1. An apparatus for stabilizing a vehicle having a supporting frame and an axle suspended from said frame, comprising:
two hydraulic cylinders positioned on laterally opposite sides of said vehicle for connecting said supporting frame to said axle;
a first hydraulic supply line extending from said cylinders to a first pressurized reservoir of hydraulic fluid;
a pilot-to-close check valve positioned in said supply line to control the flow of hydraulic fluid into and out of said cylinders;
a second hydraulic supply line extending from said pilot-to-close check valve to a hydraulic control pressure source;
a solenoid control valve positioned in said second hydraulic line and being configured to open said pilot-to-close check valve by venting said second hydraulic line to a hydraulic reservoir and to close said pilot-to-close check valve by connecting said second hydraulic line to said hydraulic control pressure source; and
control means for electrically actuating and deactuating said solenoid control valve, said control means being positioned on an ancillary structure that is supported by said supporting frame and is free to rotate with respect to said supporting frame, said control means comprising an electrical circuit connected to said solenoid valve and including a switch for selectively opening and closing said circuit, wherein when said switch is closed, an electrical signal is sent to said solenoid valve to cause said solenoid valve to vent said second hydraulic supply line to said hydraulic reservoir, and wherein when said switch is open, the absence of an electrical signal to said solenoid valve causes said solenoid valve to connect said second hydraulic supply line to said hydraulic control pressure source.

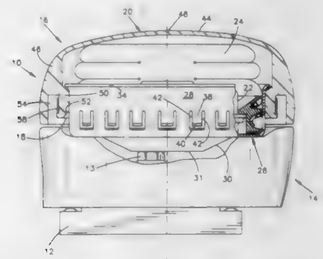


5,388,858

AIR BAG MODULE STRUCTURE AND METHOD OF ASSEMBLY

Jess A. Cuevas, Scottsdale, Ariz., assignor to TRW, Inc., Lyndhurst, Ohio

Filed Feb. 25, 1991, Ser. No. 661,102
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A **22 Claims**



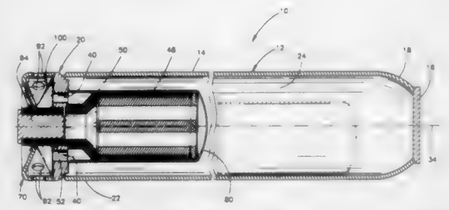
1. A vehicle air bag module structure comprising:
a housing member defining a cavity; and
a retainer member disposed in said cavity,
said housing member including a plurality of separate deformable portions deformed into engagement with a selected portion of said retainer member to couple said retainer member to said housing member,
said retainer member and housing member being adapted to capture and retain selected portions of an air bag and an inflator within said cavity in said housing member.

5,388,859

ISOLATION MEMBER FOR AIR BAG INFLATOR

Craig M. Fischer, and John P. O'Loughlin, both of Mesa, Ariz., assignors to TRW Inc., Lyndhurst, Ohio

Filed Nov. 9, 1993, Ser. No. 150,367
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 **17 Claims**



1. An apparatus for inflating a vehicle occupant restraint, such as an air bag, said apparatus comprising:
a housing having an axis;
inflation fluid supply means in said housing for, when actuated, supplying inflation fluid for inflating the occupant restraint;
an actuator housing located on said axis and having a chamber;
an actuator means in said chamber for actuating said inflation fluid supply means;
at least one discharge opening spaced from said chamber and extending through said housing for enabling inflation fluid to flow into the occupant restraint; and
a ring-shaped isolation member encircling said actuator housing, said isolation member blocking said at least one discharge opening prior to actuation of said inflation fluid supply means;
said isolation member having a first portion secured to said housing and a second portion secured to said actuator housing, said isolation member having a third portion breakable under the pressure of the inflation fluid acting on said third portion, said third portion when broken being movable in response to the pressure of the inflation fluid to a position to enable inflation fluid to flow from said discharge opening past said isolation member and into the occupant restraint.

5,388,860

SAFETY DEVICE FOR PROTECTING THE PASSENGER OF A MOTOR VEHICLE FROM INJURY IN A COLLISION

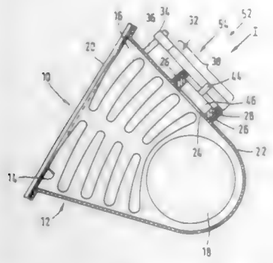
Uwe Brede, Furth, and Josef Kraft, Berg, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Continuation of Ser. No. 957,909, Oct. 8, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,593
Claims priority, application Germany, Oct. 10, 1991, 4133506
Int. Cl.[6] B60R *21/28*
U.S. Cl. 280—739 **4 Claims**

1. A safety device for protecting a passenger of a motor vehicle from injury in a collision, which comprises:
a gas cushion able to be inflated by gas;
a housing connected to the gas cushion and open on one side;
a gas generator arranged in the housing for generating gas under pressure for filling the gas cushion; and
at least one escape opening for allowing the gas under pressure to escape from the housing, when the passenger pitches into the gas cushion, characterized in that the at least one escape opening is provided in a wall of the housing and a controllable escape opening-adjusting device is provided which adjusts the total cross-sectional area of the at least one escape opening such that the size of the total cross-sectional area of the at least one escape opening

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is altered in proportion to the internal pressure in the filled gas cushion and in that the escape opening-adjusting device is controlled depending upon the temperature so that, with a rate of generation of gas under pressure proportional to the temperature, the size of the total cross-section of the at least one escape opening is altered proportionally to the temperature; said escape opening-adjusting device comprising a displaceable control slide valve for opening



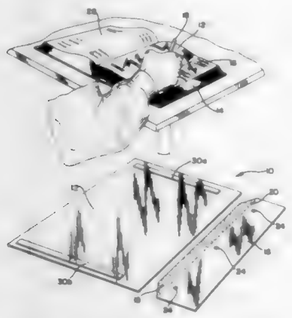
and closing the at least one escape opening and a drive device for the control slide valve which moves the control slide valve for altering the proportion of the total cross-sectional area of the at least one escape opening closed by the control slide valve and the drive device comprising a bimetallic bar which is fastened at one of its ends to the housing and which is coupled to the valve, in one section of a freely displaceable region extending from the other end, in order to displace the control slide valve.

5,388,861

TRANSPARENT OVERLAY DEVICE FOR MAKING NOTES ON PRINTED MATERIAL

Karen Reiter, 20600 NE. 20th Pl., North Miami Beach, Fla. 33179

Filed May 7, 1993, Ser. No. 60,179
Int. Cl.[6] B42D *3/04*; B42F *21/02*
U.S. Cl. 281—4 **15 Claims**



1. A transparent overlay device for placement over a sheet having printed material thereon, wherein notations are made on said transparent overlay device over the printed material sheet without leaving permanent markings on the printed material sheet comprising:

(a) a transparent sheet for substantially covering and protecting the printed material sheet, the transparent sheet having inner and outer vertical edges and being capable of receiving notations thereon;

(b) transparent sheet attachment means for removably attaching the transparent sheet to the printed material sheet without damaging the printed material sheet; and

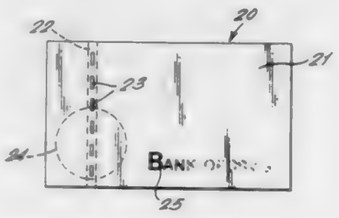
(c) a separate notation border attached to the transparent sheet along substantially the length of the outer vertical edge of the transparent sheet, the notation border being capable of receiving notations thereon without substantially blocking any of the printed material provided on the printed material sheet underlying the transparent sheet.

5,388,862

SECURITY ARTICLES

David Edwards, Basingstoke, United Kingdom, assignor to Portals Limited, Basingstoke, United Kingdom

PCT No. PCT/GB91/02140, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO92/10608, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 3, 1993, Ser. No. 64,045
Claims priority, application United Kingdom, Dec. 4, 1990, 9026379
Int. Cl.[6] D21H *21/42, 21/48*
U.S. Cl. 283—82 **35 Claims**



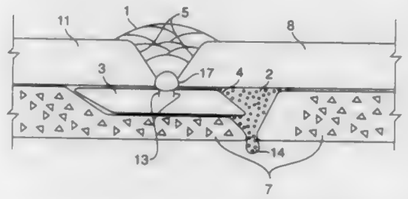
1. A security article which comprises at least one elongate security element, said security element being visually detectable in transmitted light to display portions which transmit light and portions which are opaque, wherein said security element comprises a plurality of layers including a light-transmitting layer and at least two series of opaque regions which are separated by said light-transmitting layer, wherein the opaque regions are arranged such that at certain parts of the security element said regions overlap to prevent light transmission and elsewhere along the length of the security element the opaque regions do not overlap or partially overlap such that light transmission through the security element can occur.

5,388,863

METHOD AND APPARATUS FOR JOINING IN-SITU CEMENT-MORTAR LINED PIPELINES

Ahmed A. Omar, Dhahran, Saudi Arabia, assignor to Saudi Arabian Oil Company, Dhahran, Saudi Arabia

Filed Jul. 20, 1993, Ser. No. 95,098
Int. Cl.[6] F16L *58/06, 13/02*
U.S. Cl. 285—55 **26 Claims**



20. A butt welded groove joint in a metal pipeline, the pipeline having an interior surface lining of cement-mortar, the joint comprising:

a first section and second section of pipe, each having externally beveled ends, the pipe sections being aligned with, and spaced apart from each other to define a first root opening;

a cylindrical backing ring positioned concentrically in the

ends of the first and second sections of pipe and centered below the first root opening, the end of the backing ring in the second pipe being externally beveled;

where the cement-mortar lining of the first section of pipe terminates in an externally beveled end proximate to and below the beveled end of the backing ring; and where the cement-mortar lining of the second section of pipe terminates in an externally beveled end proximate the beveled end of the backing ring and spaced apart from the beveled end of the cement-mortar lining of the first section of pipe to define a second root opening;

a grout joint seal filling the space defined by the beveled ends of the cement-mortar pipe linings, the projecting beveled end of the backing ring, the interior surface of the second section of pipe, and the second root opening; and

an external butt weld joining the beveled ends of the first and second sections of pipe and filling the first root opening.

5,388,864

AIR BRAKE HOSE COUPLING MEMBER

Richard R. Kozinski, 2205 Dunkeith Dr., NW., Canton, Ohio 44708

Filed Feb. 22, 1994, Ser. No. 199,477
Int. Cl.[6] F16L *35/00*; B60D *1/08*
U.S. Cl. 285—78 **11 Claims**



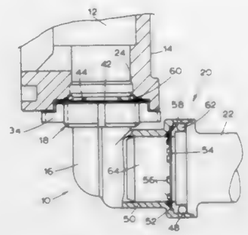
1. An improved air brake hose coupling member having a generally tubular body with a neck at one end adapted to be connected to an air hose, and with arcuate locking lug means projecting outwardly from the other end of the body; the tubular body having an outer curved end portion spaced inwardly of and generally concentrically curved with respect to said arcuate locking lug means, and having L-shaped flange means formed on the body, said locking lug means and L-shaped flange means adapted to engage L-shaped flange means and locking lug means, respectively, of another coupling member similar to said coupling member, to couple said members together when the members are placed in abutting relationship and rotated oppositely with respect to each other; the improvement including a radially extending slot formed in the curved end portion of the tubular body; a rigid finger having an angled end and an opposite pivot end; pin means for pivotally mounting the finger on the body within the slot for movement of the angled end in a generally radial direction with respect to the tubular body between locked and unlocked positions; said angled end being adapted to extend generally along an outer edge of the L-shaped flange means of a coupled coupling member to trap a corner of said L-shaped flange means between said angled end and the curved end portion of the tubular body; and retention means for retaining the finger in the unlocked position.

5,388,865

PRESSURE REGULATOR VENT PIPING COUPLER

James C. Hawkins, Allen, Tex., assignor to Fisher Controls International, Inc., Clayton, Mo.

Filed Dec. 6, 1993, Ser. No. 161,804
Int. Cl.[6] F16L *15/08*
U.S. Cl. 285—89 **8 Claims**



1. A vent piping coupler for coupling vent piping to a threaded vent outlet, said coupler comprising:

a coupler body including a threaded end for threadably engaging said threaded vent outlet and an opposite vent piping end for mounting to said vent piping;

locking ring means for locking said coupler body in position;

said locking ring means including a locking ring mounted on said threaded end including a plurality of upstanding tabs spaced around said locking ring and adapted to securely embed into said threaded vent outlet and a threaded lock nut threadably mounted on said coupler body threaded end to urge said upstanding tabs into secure embedment into said threaded vent outlet; and

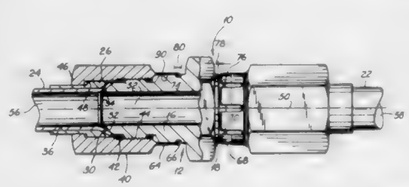
a grip ring mounted within said vent piping end, said grip ring having teeth projecting inwardly from the perimeter of said grip ring and adapted for insertably receiving said vent piping while tending to prevent removal thereof.

5,388,866

HIGH PRESSURE COUPLING WITH PROVISION FOR PREVENTING SEPARATION OF PARTS AND WITH ANTI-GALLING PROVISION

Alvin L. Schlosser, Melville, N.Y., assignor to Lourdes Industries, Hauppauge, N.Y.

Continuation-in-part of Ser. No. 819,479, Jan. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 734,251, Jul. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 491,119, Mar. 9, 1990, Pat. No. 5,058,930. This application Jul. 8, 1993, Ser. No. 88,756
The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.
Int. Cl.[6] F16L *55/00*
U.S. Cl. 285—92 **42 Claims**



1. A fitting comprising first and second members including interengaged first and second threads, said first member including a ramp, said second member including an arrangement adapted by adjustment of the interengaged threads for being brought to bear against said ramp to generate a force to maintain the threads in tightly engaged relationship thereby to avoid play between the threads, said members including generally tubular members having a common axis of symmetry, said

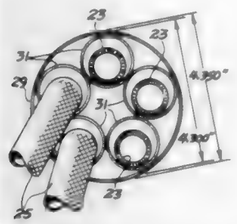
ramp having a surface of generally truncated conical shape and having a base, said first member being provided with a recess adjacent said base; said second member including at least one radially extending part extending at least partly radially relative to said axis to be received in said recess with the tubular member bearing against said ramp.

5,388,867

HOSE

Daniel A. Szekely, 120 Bristol La., Irwin, Pa. 15642

Filed Aug. 23, 1993, Ser. No. 110,805
Int. Cl.[6] B65D *90/00*; F26B *9/06*
U.S. Cl. 285—120 9 Claims



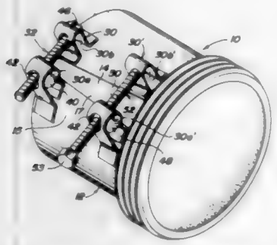
1. A container assembly for storing sections of a garden hose, each section having means at the ends thereof for coupling to contiguous sections to form said garden hose for use; said container comprising a plurality of hose section tubes, each tube dimensioned to contain a said section of said garden hose and means engaging said hose section tubes and securing them together as a rigid unit.

5,388,868

CIRCULAR COUPLING SYSTEM

John W. Burkit, P.O. Box 19, Kempton, Pa. 19529

Filed May 19, 1994, Ser. No. 246,183
Int. Cl.[6] F16L *25/00*
U.S. Cl. 285—177 9 Claims



1. A circular coupling for joining a tubular member to a second member, where a first end of said coupling is adapted to encircle said tubular member and a second end thereof is adapted to be received within a complementary opening in said second member, said coupling comprising

(a) an elongated open ended tubular joint member formed of a relatively rigid sheet-like member, where opposing sheet ends overlap such that the end portions lie contiguous with each other;

(b) a continuous sleeve formed of an elastomeric material contiguous with the inner surface of said tubular joint member extending from said first end toward and wrapped around said second end, where said sleeve near said first end includes at least one continuous upstanding annular rib to be compressed about said tubular member, and said sleeve near said second end includes at least one continuous upstanding external rib to be compressed against the complementary opening of said second member, and

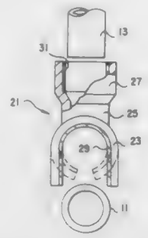
(c) means for changing the diameter of said tubular joint member, said means including a first member for incrementally decreasing the diameter of said first end to compress said coupling about said tubular member, and a second member for incrementally increasing the diameter of said second end to compress said coupling against said complementary opening of said second member.

5,388,869

SADDLE TYPE PLASTIC PIPE JOINT

Shoji Suzuki, Yokohama; Tsuneo Aoi, and Satoshi Okada, both of Hiratsuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1993, Ser. No. 41,593
Int. Cl.[6] F16L *41/08*
U.S. Cl. 285—197 8 Claims



1. A saddle type pipe joint for construction of branching connections to connect a main pipe and a branching pipe, comprising:

a saddle-shaped part composed of a shape-memorized plastic resin having a first memorized shape and a second shape different from said first memorized shape, and which can be fusion-bonded to the main pipe; said saddle-shaped part changing upon heating from said second shape to said first memorized shape; and

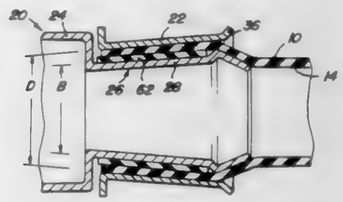
a cylindrical part extending from said saddle-shaped part and having a longitudinal axis extending transversely to said saddle-shaped part, wherein said cylindrical part can be connected to the branching pipe, wherein said saddle-shaped part and said cylindrical branching pipe-connecting part are integrally molded together; in use, said saddle-shaped part fitting over the main pipe and having an interior peripheral length which is greater than a half of an outer peripheral length of the main pipe; said first memorized shape being such that, upon changing from said second shape to said first memorized shape, said saddle-shaped part tightly holds the main pipe by closely contacting more than a half of the outer periphery of the main pipe; said saddle-shaped part having on the inside thereof a fusion-bonding plastic resin layer which will fuse and bond to the main pipe at a temperature at which said saddle-shaped part is restored to said first memorized shape, said fusion-bonding plastic layer comprising a fusible plastic resin layer having incorporated therein an electrically conductive filler.

5,388,870

APPARATUS FOR AND METHOD OF ATTACHING HOSES AND TUBES TO A FITTING

Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Clinton Township, Macomb County, Mich.

Division of Ser. No. 504,543, Apr. 4, 1990, Pat. No. 5,261,706, which is a division of Ser. No. 265,263, Oct. 31, 1988, Pat. No. 4,923,266, which is a continuation-in-part of Ser. No. 189,395, May 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 66,749, Jun. 23, 1987, abandoned. This application Oct. 15, 1991, Ser. No. 776,824
The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.
Int. Cl.[6] F16L *33/22*
U.S. Cl. 285—242 9 Claims



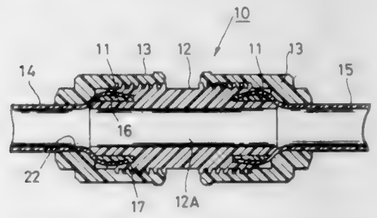
1. A hose coupling for terminating the end of a deformable hose or tubular member, comprising a fitting having an end adapted to be received interiorly of said hose and to expand the interior diameter of said hose when inserted therein, and a locking sleeve locatable over said hose whereby to clampingly secure the hose between the fitting and sleeve, the improvement characterized in that said fitting and sleeve are constructed such that a portion of each is formed with matching frusto-conical surface defined by a double included angle of less than ten but greater than one degree, the conical surfaces increasing in diameter toward the inserting end of said fitting and a seal element is interposed between the hose and the fitting, said seal member being frusto-conical in shape with the cone being defined by a double included angle of less than ten degrees but more than one degree.

5,388,871

FITTINGS WITH BOX NUTS

Masahiro Saitoh, Tokyo, Japan, assignor to Kakizaki Manufacturing Co., Ltd., Tokyo, Japan

Filed May 21, 1993, Ser. No. 65,266
Claims priority, application Japan, May 22, 1992, 4-034172[U]; Jun. 24, 1992, 4-043873[U]
Int. Cl.[6] F16L *19/06*
U.S. Cl. 285—247 29 Claims



1. A resin-made fitting to which at least one hollow tube is connected to form a continuous passage therethrough, the fitting comprising:

a core having an annular cross-section with an inner diameter larger than the inner diameter of the tube, the core being forcibly inserted into an end portion of the tube to expand the end portion;

a fitting body having an inner passage formed along an axial direction of the fitting body for forming a part of the continuous passage, said inner passage having an inner diameter at least as large as the inner diameter of the tube, said fitting body comprising;

a cylindrical socket portion extending axially from the fitting body and having a sealing surface at an axial end which contacts an inner surface of the tube, the socket portion having an outer diameter equal to the inner diameter of the core; and

a cylindrical securing portion extending axially from the fitting body and arranged coaxially around the socket portion to form an annular insertion space between the securing portion and the socket portion to receive the core and the end portion of the tube, the core surrounding the socket portion, and the end portion of the tube located between the core and the securing portion;

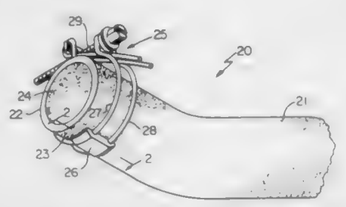
a box nut connecting the end portion of the tube to the fitting body, said box nut being formed to mesh with the fitting body and having a holding surface formed to mate with the sealing surface when the box nut is meshed with the fitting body so that the tube is gripped between the holding and sealing surfaces.

5,388,872

HOSE CONSTRUCTION AND FASTENING MEMBER THEREFOR

Manuel Campo, Fairfax, Va.; Charles S. Pearson, Waynesville, and Jon H. Snyder, Hazelwood, both of N.C., assignors to Dayco Products, Inc., Dayton, Ohio

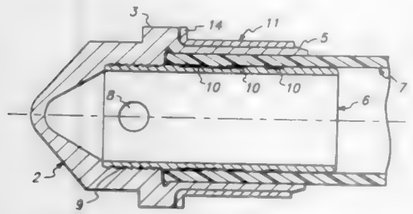
Continuation of Ser. No. 988,982, Dec. 11, 1992, Pat. No. 5,297,821, which is a division of Ser. No. 771,080, Oct. 2, 1991, Pat. No. 5,185,913. This application Nov. 12, 1993, Ser. No. 152,336
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.[6] F16L *33/04*
U.S. Cl. 285—253 16 Claims



1. In a hose construction comprising a tubular flexible hose having opposite ends and an outer peripheral surface means, fastening means, and a clamping means fastened to one of said ends of said hose with said fastening means for substantially circumferentially and radially inwardly clamping said one end onto a member that has been inserted into said one end, said fastening means comprising a fastening member having a part thereof secured to said outer peripheral surface means of said hose and having recess means therein that receives part of said clamping means therein, the improvement wherein said fastening member has means for holding said part of said clamping means in said recess means before said fastening member is secured to said hose, said fastening member having opposed ends, said recess means extending throughout the length of said fastening member and interrupting said opposed ends of said fastening member, said means for holding said part of said clamping means in said recess means comprising projection means of said fastening member that extends over part of said recess means throughout the entire length thereof.

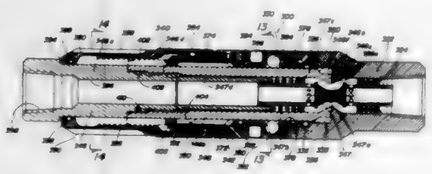
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5,388,873
COUPLING DEVICE USEFUL FOR JOINING OR CAPPING PLASTIC PIPE
Siavoosh K. Enayati, San Mateo, Calif., assignor to Metcal, Inc., Menlo Park, Calif.
Filed Jun. 18, 1993, Ser. No. 77,992
Int. Cl.[6] F16L *33/207*
U.S. Cl. 285—256 26 Claims



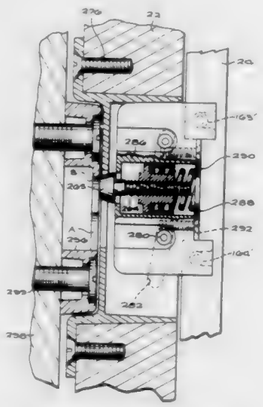
1. A coupling device useful for capping an end of a plastic pipe or joining two or more plastic pipes in fluid communication with each other, comprising:
an insert adapted for insertion into an end of a plastic pipe, the insert including means on an outer surface thereof for mechanically interlocking with an inner surface of the plastic pipe;
coupling means for surrounding the end of the plastic pipe and overlying the insert;
a ring having a smaller inner diameter than the outer diameter of the coupling means, the ring being adapted to fit over the coupling means and press the plastic pipe between the coupling means and the insert; and
spacer means for allowing plastic flow of the end of the plastic pipe when the ring is fitted over the coupling means.

5,388,874
QUICK CONNECT/DISCONNECT LATCH SCREW COUPLING
M. M. Barrier, 15134 Trailside Dr., Houston, Tex. 77095
Filed May 11, 1993, Ser. No. 60,243
Int. Cl.[6] F16L *37/18*
U.S. Cl. 285—315 19 Claims



1. A mechanical coupling comprising:
a first assembly, said first assembly comprising:
first means for latching;
a coupling nut having an interior threaded portion;
an inner body having an exterior threaded portion in constant threaded engagement with said interior threaded portion; and
means for sealing said interengaging threaded portions of said coupling nut and said inner body to form a sealed chamber enclosing said threaded portions; and
a second assembly adapted to engage said first assembly, said second assembly comprising:
second means for latching.

5,388,875
MULTIPOINT DOOR LOCK ASSEMBLY
Paul D. Fleming, Glendale, Calif., assignor to W&F Manufacturing, Inc., Glendale, Calif.
Continuation of Ser. No. 47,920, Apr. 19, 1993, abandoned, which is a division of Ser. No. 822,053, Jan. 14, 1992, Pat. No. 5,290,077. This application Aug. 1, 1994, Ser. No. 283,673
Int. Cl.[6] E05C *1/06*
U.S. Cl. 292—37 10 Claims

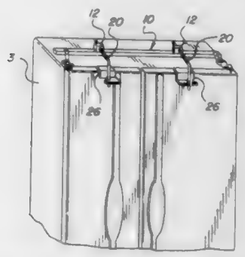


1. A door lock assembly for use in locking a sliding door, said lock assembly comprising:
a main lock cartridge for installation into a side edge of a door, said main lock cartridge including a cartridge housing, an actuator drive bar mounted within said housing for vertical reciprocatory movement, actuator means movably mounted on said housing at a manually accessible position on at least one side of the door, and cam means connected between said actuator means and said drive bar for vertically reciprocating said drive bar in response to manual movement of said actuator means;
at least one secondary lock cartridge for installation into the door side edge at a position remote from said main lock cartridge, said at least one secondary lock cartridge including a headed lock pin adapted to protrude outwardly from the door side edge; and
an extension rod for installation slidably within a channel formed in the door side edge and for connection to said actuator drive bar for vertical reciprocation therewith in response to manual movement of said actuator means, said secondary lock cartridge including cam means connected between said extension rod and said headed lock pin for respectively extending and retracting said headed lock pin relative to the door side edge in response to vertical reciprocation of said extension rod, and in a direction generally perpendicular to the reciprocal displacement of said extension rod.

5,388,876
REFRIGERATOR SAFETY LATCHING DEVICE
Mark Saincome, 123 Pickford, Novi, Mich. 48377
Filed Sep. 16, 1993, Ser. No. 122,775
Int. Cl.[6] E05C *3/04*
U.S. Cl. 292—54 18 Claims

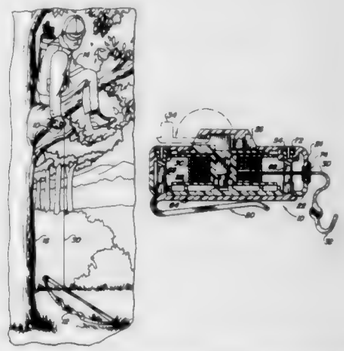
1. A safety latching device for refrigerators of the type having at least one vertically-hinged door extending the entire length of the refrigerator and hingedly-mounted to a refrigerator cabinet, said safety latching device comprising:
an elongated support base having a first end and a second end, said support base secured to a top outer surface of said refrigerator cabinet proximate the refrigerator door,

said support base further including an aperture transversely therethrough;
a latching bar having a first bar portion configured to be snugly and rotatably retained in said aperture through said support base such that said first bar portion is in a plane parallel to the top surface of the refrigerator cabinet, said latching bar further including a second bar portion substantially perpendicular to said first bar portion;
a coupling plate secured to a top edge of the refrigerator door at a location thereon that is in alignment with said aperture in said support base, said coupling plate further including a first plate portion dimensioned to partially cover the top edge of the refrigerator door, a second plate



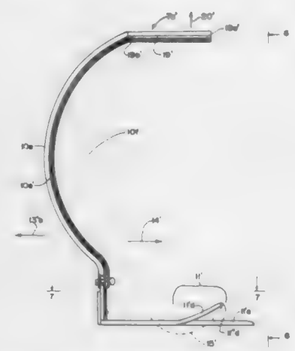
portion substantially perpendicular to said first plate portion, said second plate portion abutting the front of the refrigerator door, said coupling plate further having a latching portion substantially perpendicular to said second plate portion, said latching portion extending outwardly from said refrigerator door and including a slot extending partially therethrough, whereby when said second bar portion of said latching bar is positioned in said slot in a first closed position the refrigerator door is prevented from being opened and when said second bar portion of said latching bar is rotatably moved from said slot to a second open position, the refrigerator door may be opened.

5,388,877
HUNTING BOW RETRIEVER
Carl J. Wenk, Rte. 3, Polk Rd., Hart, Mich. 49420
Filed Sep. 7, 1993, Ser. No. 116,708
Int. Cl.[6] B65H *75/40;* B66C *1/10*
U.S. Cl. 294—1.1 7 Claims



1. A hunting bow retrieval device for releasably engaging a hunting bow comprising:
an elongated tension member so configured and arranged to support the weight of a hunting bow when pulled vertically into a hunting position;
an outer casing configured to be received within the palm of the hand including a pair of side members, said side members being longitudinally engagable along respective borders thereof to form an interior recess, said side members also defining an aperture which constricts passage of said tension member therethrough;
a reel at least partially mountable within the interior recess and confined to rotational movement therein, said reel being mounted between the side members so as to restrict longitudinal or lateral movement with respect thereto, said reel including an exterior circumference, with the tension member being wound about said exterior circumference into a wound position;
a handle assembly passing through at least one of said side members to engage the reel, said handle assembly including a winding means for implementing rotational movement of said reel;
a hunting bow engagement means affixed at an end of the tension member for releasably engaging the hunting bow; said hunting bow engagement means comprising an angular hook of sufficient diameter to prevent penetration into said aperture and which is coated in a noise reducing compound; and
braking means allowing a controlled release of said tension member from the wound position.

5,388,878
PORTABLE MANUAL TOOL FOR HAND LIFTING AND CARRYING BULK
Peter T. Smith, P.O. Box #323, Peapack, N.J. 07977
Filed Feb. 2, 1994, Ser. No. 190,487
Int. Cl.[6] B65G *7/12*
U.S. Cl. 294—15 12 Claims



1. A portable manual bulk lift and carrying handled tool comprising in combination:
a) A portable substantially uprightly extending elongated lever member having opposite upper and lower end portions;
b) a portable lower fork-like member having transversely-extending substantially horizontal tine-support means for supporting tines thereon and the substantially horizontal tine-support means being at least one of mounted and mountable on said lower end portion, the transversely-extending substantially horizontal support means extending substantially horizontally in a sideward direction relative to forward and rearward directions;
c) a plurality of spaced-apart tines having at least one thereof mounted and mountable on said horizontal tine-support means with the tines extending in a first substantially laterally forward direction relative to said portable substantially uprightly extending elongated lever member and relative to said sideward direction, said spaced-apart tines each having tine distal ends;

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d) a hand-gripable substantially elongated handle having a substantially forward end extending in said forward direction and a substantially rearward end extending in said rearward direction, with the substantially rearward end being rigidly attached to said upper end portion and extending substantially horizontally in the first substantially laterally forward direction;

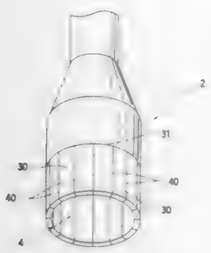
e) a substantially planar member extending substantially uprightly and having a planar surface substantially facing in a second substantially laterally forward direction with the planar member being mounted on said lower end portion such that said planar surface is utilizable as a plate positioned and adapted to be kicked or pushed by which the substantially horizontally extending tines may be urged axially forwardly while a hand grasps and holds said hand-gripable substantially elongated handle, said portable substantially uprightly extending elongated lever member including an intermediate portion extending between said opposite upper and lower end portions, said intermediate portion including a substantially laterally extending arcuate portion forming an arc with a substantially central portion thereof extending in a direction away from and substantially opposite to said first and second substantially laterally forward directions.

5,388,879

SUCTION TYPE ROBOT HAND

Kazuya Sekiguchi, Ikoma; Masao Taguchi, Osaka, and Hitoshi Iwata, Tsuzuki, all of Japan, assignors to House Food Industrial Co., Ltd., Higashi-Osaka, Japan

Continuation of Ser. No. 831,047, Feb. 4, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 128,256
Int. Cl.[6] B66C *1/02*
U.S. Cl. 294—64.1 **15 Claims**



1. A suction-type robot hand comprising:

a hollow suction pad having an opening at one end, and including at said opening plurality of flexible projections, adjacent projections having no clearance between them;

a gas permeable obstacle at said opening of said pad;

a pressure detector in said suction paid for detecting the pressure in said suction pad;

a main body supporting said suction pad and having a vacuum passage formed therein, said vacuum passage communicating with said suction pad;

a vacuum pump communicating with said suction pad through said vacuum passage; and

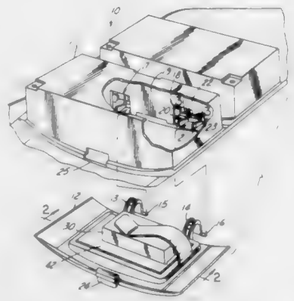
adjustment means for adjusting suction pressure in said suction pad from said vacuum pump, said adjustment means being operatively connected to said pressure detector to adjust the pressure in said suction pad in accordance with the output of said pressure detector.

5,388,880

VEHICULAR COMPARTMENT FOR REMOTE CONTROL TRANSMITTER

Dennis J. Kinane, Commerce, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1994, Ser. No. 179,054
Int. Cl.[6] B60R *7/04*
U.S. Cl. 296—37.7 **4 Claims**



1. A storage and activation system for a remote control transmitter in a motor vehicle, comprising:

a recessed compartment sized to receive said remote control transmitter;

a cover for closing said recessed compartment, said cover being displaceable for introducing said remote control transmitter to said recessed compartment, said cover having an inside face and an outside face;

a movable pushbutton having a button face proximate to said outside face and having a plunger for extending into said recessed compartment in response to a force applied to said button face;

a spring clip affixed to said cover and securing said remote control transmitter against said inside face such that extension of said plunger activates said remote control transmitter; and

a leaf spring connected to said pushbutton for opposing extension of said plunger, said spring clip and said leaf spring being integrally formed.

5,388,881

PORTABLE GOLF CART COVER AND METHOD OF MANUFACTURE THEREFOR

Wayne R. Spencer, Newport News; Bernard C. Smith, and William M. Smith, both of Poquoson, all of Va., assignors to Wayne R. Spencer, Newport News, Va.

Filed Mar. 9, 1993, Ser. No. 28,129
Int. Cl.[6] B60J *9/00*
U.S. Cl. 296—77.1 **31 Claims**

1. A cover for a golf cart of the type having a roof over a cabin section of the cart, wherein the cover rests on the roof, comprising:

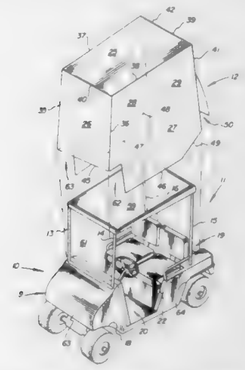
a roof panel,

opposed side panels connected to the roof panel,

a front panel connected to the roof panel, and

a rear panel connected to the roof panel,

the panels, to the extent that they are not formed as one piece with adjacent panels, being connected together by a plasticizer resistant adhesive in the form of a double-sided adhesive tape, such that the entire cover, including the



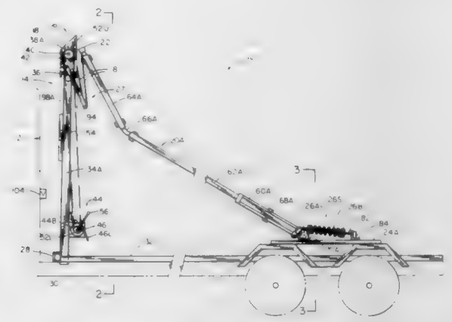
joints, can be readily folded into a compact size and shape for compact storage.

5,388,882

TARP ASSEMBLY FOR CONTAINER TRUCKS

William S. Russell, Lakeland, and Hoyt B. Willaford, Plant City, both of Fla., assignors to HarDee Manufacturing Co., Inc., Plant City, Fla.

Filed Jun. 30, 1993, Ser. No. 85,978
Int. Cl.[6] B60P *7/02*
U.S. Cl. 296—98 **9 Claims**



1. A tarp assembly for covering the opened end of a container on a truck, comprising in combination:

a gantry framework having an upper portion that is higher than the height of the container;

means for fixedly connecting said gantry framework to the truck at a position in front of the container;

a tarp having a size sufficient to cover the opened end of the container;

a roll-up assembly including a shaft on which said tarp is to be roll-up;

means for connecting said roll-up assembly at said upper portion of said gantry framework;

paired side arms including a cross bar between upper ends thereof, an end of said tarp being coupled to said cross bar;

means for pivotably connecting said paired side arms to opposing sides of the truck such that said cross bar extends over the container and draws said tarp over the container when said side arms are pivoted rearwardly;

means for urging said side arms rearwardly;

means for holding said tarp downwardly over the front edge of the container; said means comprising a hold-down assembly pivotably connected to said gantry framework; and

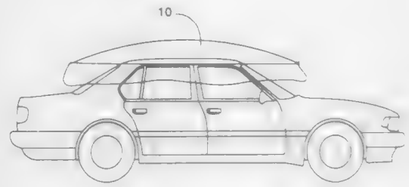
means for cranking said tarp onto said shaft against the force exerted by said urging means.

5,388,883

SUN SHIELD COVER

Shyue-Jong A. Yang, 77 Rainbow Ridge Rd., Pomona, Calif. 91766

Filed Nov. 18, 1993, Ser. No. 154,614
Int. Cl.[6] B60J *11/00*
U.S. Cl. 296—136 **1 Claim**



1. A sun shield cover for use on a vehicle comprising:

a lightweight plastic sheet with an apron disposed therearound, the sheet having two layers, the outer layer being brightly colored and the inner layer being darkly colored;

an elastic wire sewn around the periphery of said sheet to provide support for a generally round shape;

three strips of material each having a plurality of small holes are formed on said sheet for enabling trapped warm air to flow therethrough;

means for biasing said sun shield into a general oval umbrella shape;

two ear-shaped belts disposed along opposing sides of said sheet;

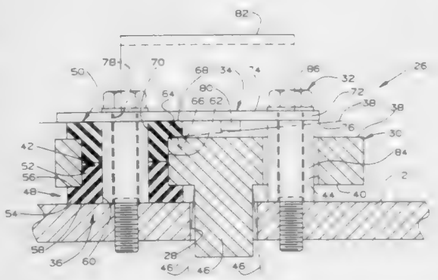
a pair of elastic fixing belts, one attached to each of said ear-shaped belts wherein said fixing belts can be attached to one another inside of said vehicle thereby fixing said sun shield to said vehicle.

5,388,884

ARRANGEMENT FOR MOUNTING A CAB STRUCTURE TO A VEHICLE FRAME

Daniel M. Keehner, and Gail F. Westendorf, both of Decatur, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Apr. 21, 1993, Ser. No. 50,937
Int. Cl.[6] B62D *23/00*
U.S. Cl. 296—190 **8 Claims**



1. A mounting arrangement between a frame having apertures defined therein and a post of a rollover structure, comprising:

a base member attached to the post of the rollover structure

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and having a protrusion formed thereon, the protrusion being positioned within the apertures of the frame;

means for attaching the base member to the frame;

means for distributing loads from the base member into the fastening means, the load distributing means being positioned on the fastening means in normally spaced relationship to the base members; and

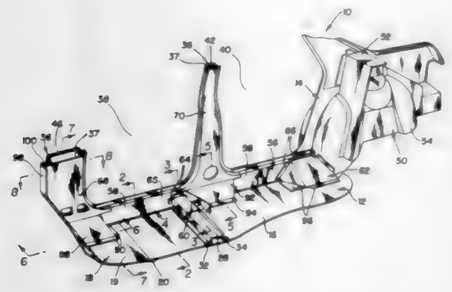
means for isolating the base member from the frame, the isolating means is positioned about the fastening means in interposed relationship to the base member and the frame to isolate the base member from contact with the fastening means in a first condition, and being deformable to a second condition to allow contact between the protrusion and a periphery of the apertures of the frame to transfer loads between the base member and one of the load distributing means and the frame.

5,388,885

BODY STRUCTURE OF A MOTOR VEHICLE

James R. Warren, Lincoln Park, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 1, 1993, Ser. No. 11,558
Int. Cl.[6] B62D *25/20*
U.S. Cl. 296—203 **10 Claims**



1. A vehicle body structure of a vehicle comprising:

a pair of body side frame assemblies extending longitudinally and spaced apart from each other, and each having a longitudinal extending generally planar horizontal surface including an outboard projecting portion;

a generally planar member extending transversely across the vehicle and having outboard longitudinal edge surfaces underlying and engaging the outboard projecting portions of the body side frame assemblies,

and weld means attaching the planar member to the outboard projecting portion so that the planar member retains to the body side frame assemblies at a precise adjusted spaced apart position.

5,388,886

DUAL LEG REST ASSEMBLY

Larry P. LaPointe, Temperance; Jonathan R. Saul, LaSalle, and Karl J. Komorowski, Petersburg, all of Mich., assignors to La-Z-Boy Chair Co.

Filed Aug. 9, 1993, Ser. No. 100,915
Int. Cl.[6] A47C *1/02*
U.S. Cl. 297—75 **8 Claims**

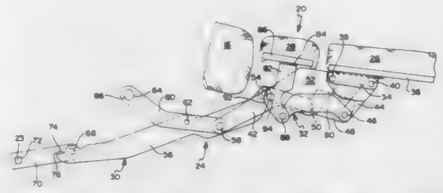
1. In an article of furniture having a seat assembly supported from a chair frame and an actuation means for enabling a leg rest assembly to move between a stowed position and an extended position, said leg rest assembly comprising:

a primary leg rest panel;

a secondary leg rest panel; and

linkage means interconnecting said primary and secondary leg rest panels to said actuation means for coordinated articulated movement such that in said stowed position said secondary leg rest panel is oriented behind and in general parallelism with said primary leg rest panel so as to be concealed thereby, and in said extended position said primary and secondary leg panels lie in substantially the same plane so as to provide a substantial continuous and uninterrupted support surface with said seat assembly, said linkage means including a first linkage for causing articulated movement of said primary leg rest panel and a second linkage for causing articulated movement of said secondary leg rest panel, and wherein said second linkage is supported on said first linkage for movement in response to movement of said first linkage;

said first linkage comprising first and second board links pivotally connected to said primary leg rest panel, a first connector link pivotally interconnecting said first board



link to said chair frame, a second connector link pivotally interconnecting said second board link to one end of a support link, and a drive link interconnecting said actuation means to the opposite end of said support link, said first connector link being pivotably interconnected to an intermediate portion of said support link and said second connector link being pivotally interconnected to an intermediate portion of said first board link; and

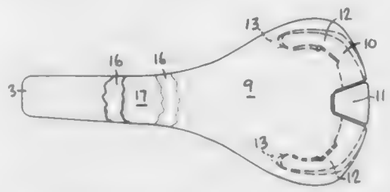
said second link comprising a third board link having a first portion on which said secondary leg rest panel is secured, a second portion pivotally interconnected to said first board link and a third portion pivotably interconnected to said second board link via a third connector link.

5,388,887

BICYCLE SEAT INSERT

Robert Read, Orange, Calif., assignor to Marie-Therese Chiarella, Lugano-Castagnola, Switzerland

Continuation of Ser. No. 967,518, Oct. 28, 1992, abandoned. This application May 26, 1994, Ser. No. 249,698
Int. Cl.[6] B60N *2/38*
U.S. Cl. 297—195.1 **18 Claims**



1. A bicycle type seat comprising:

a shell having an upper surface, a lower surface, a periphery, a wide rear portion with an upper surface, rear edge and side edges, and a relatively narrow nose extending forward of said rear portion in a longitudinal direction,

a cover overlying said shell upper surface and fitting around the shell periphery;

a support comprising a substantially crescent shaped portion and at least one tab, wherein said at least one tab extends upwardly from and between oppositely directed side portions of said substantially crescent shaped portion, said substantially crescent shaped portion lying adjacent said shell lower surface and complementary to at least said shell rear edge, said at least one tab press fit over a portion of said shell wide rear portion upper surface and the cover thereon such that said support exerts a clamping action on a portion of said top cover; and

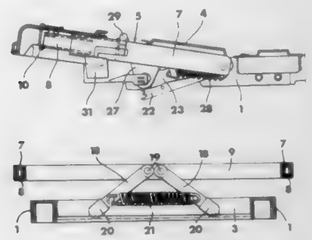
means for attaching said support to said shell.

5,388,888

CUSHION CARRIER FOR CAR SEATS

Gunter Franzmann, Rockenhausen; Heiko Utsch, Hargesheim; Harald Wolsiefer, Krickenbach; Hans Schneider, Rathskirchen, and Karl-Peter Armbrust, Saarbrucken, all of Germany, assignors to Keiper Recaro GmbH & Co., Germany

Filed Feb. 15, 1994, Ser. No. 196,367
Claims priority, application Germany, Feb. 16, 1993, 4304597
Int. Cl.[6] B60N *2/02*
U.S. Cl. 297—284.11 **6 Claims**



1. Carrier for a seat cushion of a vehicle seat, said seat cushion having a front and said vehicle seat having a longitudinal direction and a transverse direction, comprising:

two side members, which extend in the longitudinal direction of said seat and to which are hinged two longitudinal members of a leg support which supports the front portion of the seat cushion so as to pivot around an axis extending in the transverse direction of said seat,

fixing means for fixing said leg support in selectable swivel positions,

a swiveling device operatively connected to the leg support for moving it upwardly and exerting on said leg support a swivel force, said swiveling device including at least one rocking arm having two ends, one end of which is connected pivotably to a cross member of said leg support, which is connected to said longitudinal members, and the other end, which is free, being supported slidably on a track connecting said side members, said swiveling device further including a prestressed spring exerting a rocking force on said at least one rocking arm, the spring tension of said spring being greatest when the rocking arm extends in the direction of said cross member,

whereby the swivel force of said swiveling device is smallest in the lowest swivel position and increases until the highest swivel position has been reached.

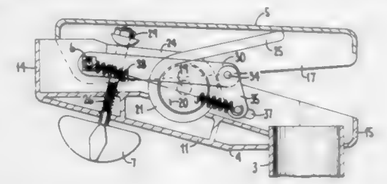
5,388,889

TORQUE CONTROL MECHANISM FOR CHAIRS

Arkady Golynsky, Allentown, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sep. 23, 1993, Ser. No. 125,270
Int. Cl.[6] A47C *3/026*
U.S. Cl. 297—302 **9 Claims**

1. A chair tilt control for a chair comprising a chair control housing mounted on a chair base, a chair seat support member pivotally attached to the forward portion of said chair control housing by pivot means, a main spring member secured to said chair control housing and adapted to resist the pivotal movement of said seat support member, a first lever arm having one end thereof attached to said pivot means and the other end thereof pivotally attached to one end of a first link member, the other end of said link member having a link pin adapted to slide within a link pin retaining groove formed in said chair control



housing, and a first tension spring extending between said pivot means and said link pin.

5,388,890

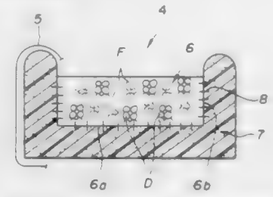
Patent Not Issued For This Number

5,388,891

CUSHION STRUCTURE OF AUTOMOTIVE SEAT

Takashi Oka, Tokyo, and Yoshiharu Ishikawa, Kanagawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Ikeda Bussan Co., Ltd., Kanagawa, both of Japan

Filed Sep. 4, 1992, Ser. No. 941,293
Claims priority, application Japan, Sep. 9, 1991, 3-257078; Sep. 9, 1991, 3-257079
Int. Cl.[6] A47C *15/00*
U.S. Cl. 297—452.48 **13 Claims**



1. An automotive seat including a seat base portion and a seat back portion, said seat base portion having a cushion structure which comprises:

a major holder part constructed of foamed polyurethane, said major holder part having a recess at a center portion thereof;

a center holder part constructed of a wadding which includes down and feathers bound together with a binder of polyurethane elastomer, which is cured after being added to and mixed with the down and feathers, said center holder part being snugly received in said recess of said major holder part, said wadding including approximately 30 to 90 weight percent down and approximately 70 to 10 weight percent feathers; and

a bag-shaped outer skin covering both said major holder part and said center holder part.

5,388,892

MECHANISM FOR THE RELATIVE POSITIONING OF TELESCOPING MEMBERS

Lino E. Tornero, 809 Quailmeadow La., Colfax, N.C. 27235

Filed Apr. 2, 1993, Ser. No. 41,859
Int. Cl.[6] A47C *7/54*
U.S. Cl. 297—411.36 **20 Claims**

5. A positioning mechanism to allow the height of a chair arm to be adjusted comprising: an upright structural member, an armrest shroud, said shroud displaceable along said structural member, a shuttle disposed within said shroud , said shuttle defining a horizontal cavity, a trigger member, said trigger member longitudinally movably contained within said shroud, said trigger member defining a slanted slot, said horizontal cavity partially coincidental with said slanted slot, a

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lock pin, said lock pin positioned in said slanted slot and said horizontal cavity, said structural member defining a plurality of notches, said notches proximate said shuttle for reception of said lock pin, whereby raising said trigger member will cause



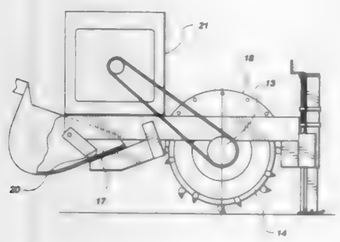
said lock pin to move away from said notches and lowering said trigger member will cause said lock pin to approach said notches for engagement therewith to thereby secure said structural member relative to said shroud.

5,388,893

PAVEMENT GRINDER AND TRENCH OPENING MILL AND METHOD

James F. Maxwell, 722 E. 2730 North, Provo, Utah 84604, and Garlon J. Maxwell, 2260 S. State, Springville, Utah 84663

Filed Jun. 1, 1993, Ser. No. 69,776
Int. Cl.[6] F01C *23/12;* F02F *3/78*
U.S. Cl. 299—39 6 Claims



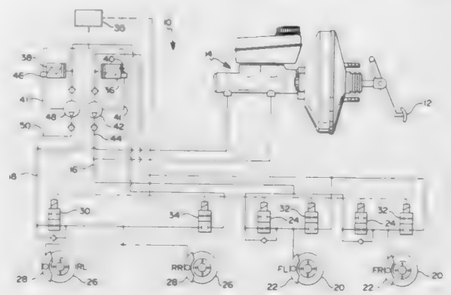
6. A method for pulverizing a trench in asphalt or concrete pavement prior to installation, repair or reinstallation of utility wires or pipes, comprising (1) attaching a pavement trench opening mill to the bucket of backhoe or front loader, said trench opening mill comprising; a frame; attachment means for firmly securing said pavement trench mill to said bucket; a mandrel cutting head having attached thereto cutting teeth desired for pulverizing asphalt and cement pavement as said mandrel rotates; an internal combustion engine power plant; a power transmitting means connecting said internal combustion engine to said mandrel cutting head; a torque amplifying means associated with said mandrel cutting head for amplifying torque and reducing the speed of rotation of said mandrel cutting head; and an adjustable gauge, mounted ahead of said mandrel cutting head, regulating the depth of said cut; (2) using said pavement trench opening mill to pulverize a trench in said asphalt or concrete, (3) detaching said pavement trench opening mill machine from said bucket, and (4) using said front loader or back hoe to remove mill tailings and deepen the trench.

5,388,894

PUMP ON DEMAND

Russ W. Holland, Holly, and Patrick M. Carty, Rochester Hills, both of Mich., assignors to ITT Corporation, New York, N.Y.

Filed Jul. 8, 1993, Ser. No. 89,081
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—10 12 Claims



1. A system for controlling brake fluid pressure within conduits of a vehicle brake network, comprising:

an accumulator coupled to the brake network conduits adapted to receive brake fluid, said accumulator including means for sensing the amount of brake fluid within said accumulator;

a pump hydraulically coupled to said accumulator;

an electronic controller coupled to said pump;

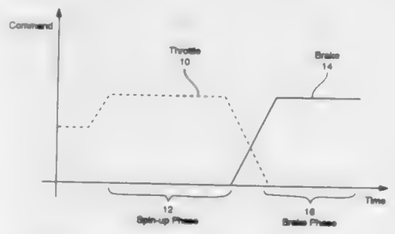
switching means, having a switch housing that is partially received within said accumulator and a switch piston in communication with said sensing means, said switching means further including biasing means for biasing said switch piston toward said sensing means, an electrical contact having a first end disposed within said switch housing adapted to contact a conductive band on said switch piston, and a second end coupled to said electronic controller, such that said electronic controller activates said pump under preselected conditions, whereby said pump removes brake fluid from said accumulator.

5,388,895

METHOD AND SYSTEM FOR DETECTING AND CORRECTING VEHICLE SPEED REFERENCE SIGNALS IN ANTI-LOCK BRAKE SYSTEMS

Dan Negrin, Westmount, Canada, assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Jul. 30, 1993, Ser. No. 100,452
Int. Cl.[6] R60T *8/32*
U.S. Cl. 303—103 25 Claims



1. A method of detecting and correcting an overestimated reference speed for a vehicle having a plurality of wheels and an anti-lock brake system, the vehicle being capable of generating a speed signal based upon the speed of each wheel in a selected subset of the plurality of wheels and capable of calculating at least one reference speed, the method comprising the steps of:

(a) computing test quantities for each corresponding wheel of the selected subset of wheels based on the corresponding speed signal;

(b) determining a consistency of the test quantities with an overestimated reference speed condition by comparing the test quantities with predetermined thresholds;

(c) detecting the overestimated reference speed condition based upon the consistency of the test quantities with the overestimated reference speed condition;

(d) correcting at least one reference speed when the overestimated reference speed condition is detected; and

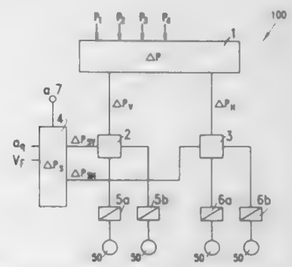
(e) controlling the anti-lock brake system based on the corrected reference speed.

5,388,896

METHOD FOR BRAKING MOTOR VEHICLE WHEELS WHILE REDUCING A YAWING MOMENT OF AN ANTILOCK BRAKING SYSTEM

Uwe Hartmann, Stuttgart; Friedrich Kost, Kornwestheim; Karl-Josef Weiss, Stuttgart, and Wolf-Dieter Ruf, Waldstetten, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jul. 15, 1993, Ser. No. 92,300
Claims priority, application Germany, Aug. 6, 1992, 4225983
Int. Cl.[6] B60T *8/32, 8/24, 8/68*
U.S. Cl. 303—111 10 Claims



1. A method for braking wheels of a vehicle, comprising the steps of:

(a) setting a preselected threshold pressure differential to a beginning value for a start of a braking operation;

(b) monitoring a speed of the vehicle;

(c) monitoring a transversal acceleration of the vehicle;

(d) controlling a build-up of braking pressure on at least one of a first and a second wheels of an axle of the vehicle such that a pressure differential between the braking pressure on the first and second wheels does not exceed the preselected threshold pressure differential, in order to reduce a yawing moment produced by an antilock braking system;

(e) decreasing the preselected threshold pressure differential in response to an increase in the speed; and

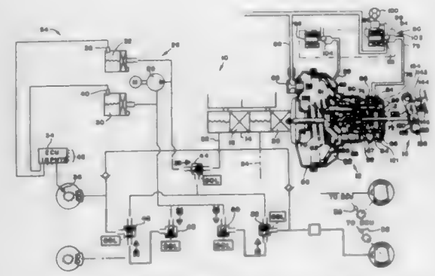
(f) increasing the preselected threshold pressure differential in response to an increase in the transversal acceleration.

5,388,897

VACUUM BRAKE BOOSTER WITH TRACTION CONTROL

Linda S. Yared, and Leo H. McCormick, Jr., both of South Bend, Ind., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 110,452, Aug. 23, 1993, abandoned.
This application Apr. 22, 1994, Ser. No. 231,609
Int. Cl.[6] B60T *8/32, 8/44*
U.S. Cl. 303—113.3 7 Claims



1. A vacuum brake booster for use in a brake system of a vehicle to provide an output force for operating a pressurizing member to develop pressurized fluid to effect a brake application of at least first and second drive wheels of the vehicle, said brake booster having a housing with a movable wall-which separates an interior of the housing into a first chamber and a second chamber, said movable wall having a bore therein with a first passage connected to the first chamber and a second passage connected to the second chamber, said vacuum booster having a first control valve located in said bore, said first control valve selectively controlling communication of a first fluid having a first fluid pressure between said first and second chambers to allow equalization of the first fluid pressure there between and responsive to an operator input for initially interrupting communication of said first fluid through said first passage and later initiating communication of a second fluid having a second fluid pressure through said second passage to said second chamber to create a first pressure differential across the movable wall and develop a first operational output force for operating said pressurizing member to effect a brake application of said drive wheels said brake booster being connected to a second control valve, said second control valve responsive to an operational signal from a control unit generated by a differential in the rotational spin of the first and second drive wheels for independently creating a second pressure differential across said movable wall between said first fluid and said second pressure to develop a second operational force for operating said fluid pressurizing member, said control unit controlling the communication of pressurized fluid derived from said second operational force to selectively effect a brake application of a drive wheel and synchronize the rotational spin thereof with another corresponding drive wheel, the brake booster being characterized by a cylindrical projection that extends from the movable wall through the housing, said cylindrical projection having a third passage therein and balloon means connected to said third passage and responsive to a third fluid having a third fluid pressure communicated to said third passage by said second control valve by expanding to seal said first passage and interrupt communication of said first fluid through said first passage to allow said second control valve to communicate said second fluid to said second chamber to by said second create said second pressure differential.

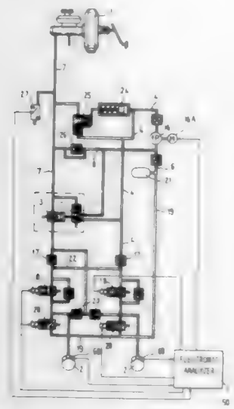
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5,388,898

HYDRAULIC BRAKE SYSTEM INCLUDING AN ANTI-LOCKING CONTROL

Hans-Dieter Reinartz, In der Roemerstadt 169, 6000 Frankfurt-/Main 50, and Helmut Steffes, Am See 22, 6234 Hattersheim 3, both of Germany

PCT No. PCT/EP91/02030, § 371 Date Sep. 30, 1993, § 102(e) Date Sep. 30, 1993
PCT Filed Oct. 26, 1991, Ser. No. 50,458
Claims priority, application Germany, Nov. 22, 1990, 4037168
Int. Cl.[6] B60T *13/14*
U.S. Cl. 303—116.2 **10 Claims**



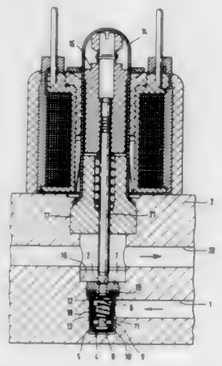
1. A hydraulic wheel brake system having an anti-locking control for braking wheels of an automotive vehicle, comprising a brake pressure generator for generating pressurized hydraulic fluid, a low-pressure accumulator, at least one wheel brake, a main pressure conduit connecting said wheel brake with said brake pressure generator, a return conduit connecting said wheel brake with said low pressure accumulator, an electromagnetically actuated outlet valve closing said return conduit in an inactive condition thereof and opening said return conduit in a switching condition, an electromagnetically controlled inlet valve in said main pressure conduit, a motor driven pump having an inlet, a fluid supply conduit connecting said pump inlet to said pressure generator through said main pressure conduit so as to draw hydraulic fluid from said low pressure accumulator, an auxiliary pressure conduit connected to said at least one wheel brake, said pump having an outlet delivering a flow of pressurized hydraulic fluid to said auxiliary pressure conduit, a sensor for detecting the angular velocity of a wheel to be braked and generating a corresponding signal, an electronic analyzer analyzing said sensor signal and generating switch signals for said pump motor and said inlet and outlet valves, a high pressure accumulator connected to said pump outlet to receive said flow of pressurized hydraulic fluid, a pressure relief valve in communication with said auxiliary pressure conduit and responsive to a defined pressure within said high-pressure accumulator to switch from a blocking condition to an open condition, thereby enabling hydraulic fluid to be conveyed to said brake pressure generator, a multi-way valve having an open initial condition responsive to a pressurized state in said main pressure conduit to establish a pressure fluid connection between said brake pressure generator and said wheel brake coupled thereto, said multi-way valve also having a switched blocking condition, assumed in response to said pump pressure prevailing in said auxiliary pressure conduit, in which blocking condition said pressure fluid connection between said brake pressure generator and said wheel brake coupled thereto is closed, and, a three-way/two-position valve having the pressure of said brake pressure generator applied thereto, said three-way/two-position valve having an initial first condition establishing a hydraulic connection between said multi-way valve and said auxiliary pressure conduit, said three-way/two-position valve having a second switching condition which establishes a hydraulic connection between said multi-way valve and said pressure fluid supply conduit.

5,388,899

SOLENOID VALVE FOR SLIP-CONTROLLED BRAKE SYSTEMS OF AUTOMOTIVE VEHICLES

Peter Volz, Darmstadt, Germany, and Marc Timmermans, Leerbeek, Belgium, assignors to Alfred Teves GmbH, Germany

PCT No. PCT/EP92/00308, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO92/18362, PCT Pub. Date Oct. 29, 1992
PCT Filed Feb. 13, 1992, Ser. No. 971,930
Claims priority, application Germany, Apr. 19, 1991, 4112920
Int. Cl.[6] B60T *8/36*
U.S. Cl. 303—119.2 **6 Claims**



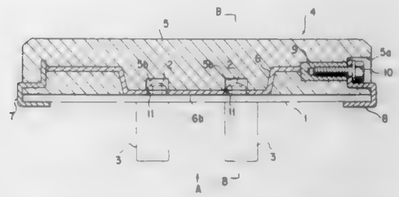
1. A solenoid valve for slip-controlled brake systems of automotive vehicles comprising:
a valve closure member guided in a valve accommodating body and provided with an armature, said valve closure member controlling communication between a first pressure medium connection associated with a pressure medium source and a second pressure medium connection associated with a pressure medium consumer;
a volume flow governor accommodating said valve closure member, said volume flow governor being integrated in the valve accommodating body and connected in series connection between the first pressure medium connection and the valve closure member, to provide a constant volumetric flow of said pressure medium,
wherein said volume flow governor includes a variable restriction orifice,
wherein said orifice is located between said first pressure medium connection and said valve closure member,
wherein said volume flow governor includes a cup-shaped governor housing, the opening of said housing directly facing a valve seat cooperating with said valve closure member,
an essentially sleeve-shaped control piston introduced into said opening so as to be longitudinally movable, with unthrottled flow passage over its entire length,
wherein said control piston and said governor housing have radial pressure medium passages in the end area of their surfaces distal to said valve closure member, said passages provided with control edges cooperating with each other for maintaining a constant volume flow.

5,388,900

CRAWLER PAD

Tatsuo Suzuki, Kanagawa, Japan, assignor to Kabushiki Kaisha Suzuki Shoji, Japan

Filed Jul. 7, 1993, Ser. No. 86,999
Claims priority, application Japan, Jul. 15, 1992, 4-055172[U]; Aug. 12, 1992, 4-061966[U]; Dec. 3, 1992, 4-089603[U]; May 31, 1993, 5-028892[U]; May 31, 1993, 5-028901[U]
Int. Cl.[6] B62D *55/275*
U.S. Cl. 305—54 **53 Claims**



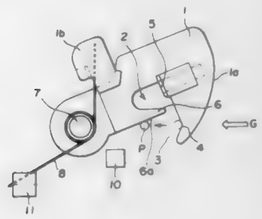
1. A crawler pad to be mounted on a tread surface of a crawler plate forming a crawler for forming an elastic tread for protecting a road surface, comprising:
an elastic member forming the tread of the crawler pad;
a reinforcement supporting said elastic member, said reinforcement having first and second outer ends;
a fixed hook means integrally formed with said reinforcement at said first outer end thereof for engaging with a first edge of said crawler plate;
a detectable hook means detachably secured to said second outer end of said reinforcement for engaging with a second edge of said crawler plate, said detectable hook means having an outermost portion spaced from said second outer end of said reinforcement; and p1 a fastening means for firmly engaging with said reinforcement for firmly securing said detachable hook means to said second outer end of said reinforcement, said fastening means having an inner end portion engaging said second outer end of said reinforcement and an outer end portion disposed between said outermost portion of said detachable hook means and said second outer end of said reinforcement.

5,388,901

STORAGE DEVICE FURNISHED WITH SAFETY FUNCTION

Kazunori Asano, Kamakura, Japan, assignor to Kato Hatsujo Kaisha, Ltd., Yokohama, Japan

Filed Mar. 9, 1993, Ser. No. 28,152
Claims priority, application Japan, Mar. 16, 1992, 4-089294
Int. Cl.[6] E05C *19/02*
U.S. Cl. 312—222 **12 Claims**



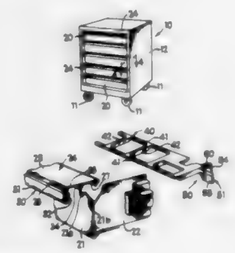
1. A storing device comprising:
a housing having an opening;
a storing box movably mounted in said housing for movement between an open position in which said storing box extends outwardly of said opening, and a closed position in which said storing box is situated substantially within said housing;
a first spring interposed between said storing box and said housing and biasing said, storing box in an opening direction toward said open position;
a cam member pivotably mounted to said housing, a cam groove being formed in said cam member, and a cam surface being formed along an outer surface of said cam member, said cam groove including an inlet mouth, a locking part and an outlet mouth, and being defined between opposing groove sidewalls;
a second spring interposed between said cam member and said housing and biasing said cam member in a first pivotal direction;
a pin member mounted on said storing box so as to travel along a predetermined path when said storing box is moved between its open and closed positions;
wherein said pin member constitutes a means for pivoting said cam member in a second pivot direction against a bias force of said second spring when said storing box is moved from said open position toward said closed position, by engaging and riding along said cam surface of said cam member;
wherein said second spring constitutes a means for pivoting said cam member in said first pivotal direction when said pin member is positioned at said inlet mouth of said cam groove, so as to cause said pin member to enter into said cam groove;
wherein said first and second springs together constitute means for causing said pin member to engage in a predetermined locking position at said locking part of said cam groove and to remain at said locking position absent external forces against said storing box and said housing, and for causing said pin member to disengage from said locking position, ride along said cam groove toward said outlet mouth and exit said cam groove through said outlet mouth when an external force is imposed on said storing box in a closing direction opposite said opening direction and then released;
wherein said locking part of said cam groove forms part of one of said opposing groove sidewalls; and
wherein said cam member further includes a projecting stopper guide having first and second faces which form part of the other of said opposing groove sidewalls, said first face facing said outlet mouth of said cam groove and said second face facing said pin member when said pin member is in said locking position.

5,388,902

SLIDING LATCH MECHANISM FOR A CABINET DRAWER

David A. Huebschen, Kenosha, and Kenneth C. Happ, Burlington, both of Wis., assignors to Snap-on Incorporated, Kenosha, Wis.

Continuation-in-part of Ser. No. 11,985, Feb. 1, 1993. This application Jun. 25, 1993, Ser. No. 82,765
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—332 **11 Claims**



1. A cabinet comprising:

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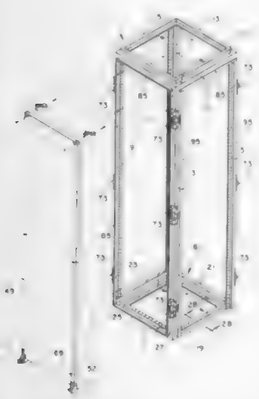
a pair of spaced-apart side walls, a drawer disposed between said side walls, an elongated drawer pull on said drawer, an elongated slide member disposed under said drawer pull and extending longitudinally thereof and supported thereby for sliding movement longitudinally thereof between latching and unlatching positions, a latch hook unitary with said slide member at one end thereof adjacent to one of said side walls, a keeper on said one side wall adjacent to said drawer, and spring means unitary with Said hook and biasing said slide member to its latching position, said hook being engageable with said keeper when said slide member is in its latching position and being disengaged from said keeper when said slide member is in its unlatching position.

5,388,903

MULTIFACETED MODULAR ENCLOSURE FRAME WITH INTEGRAL SUB-PANEL GUIDE SYSTEM

Trent T. Jones, White Bear Lake, and Marc T. Fuller, Minneapolis, both of Minn., assignors to Federal-Hoffman, Inc., St. Paul, Minn.

Continuation of Ser. No. 799,408, Nov. 27, 1991. This application Feb. 25, 1994, Ser. No. 202,202
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—334.29 **12 Claims**



1. A modular enclosure frame for an enclosure assembly which is designed to receive and support sub-panel mounting boards therein and which is enclosed via wall panels mounted to the frame, said frame comprising:

(a) a latticework of upper, lower, and side frame sections being interconnected to form a modular enclosure frame having outer and interior confines, said lower frame sections defining a generally rectangular base frame having adjacent interior corners for such an enclosure assembly; and

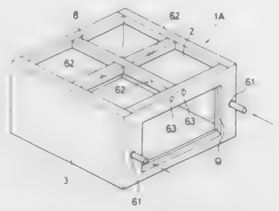
(b) said rectangular base frame including an elongated inherent interior sub-panel guide means integrally formed therewith for properly guiding and positioning such sub-panel mounting boards within such an enclosure assembly, said sub-panel guide means having a planar glide surface extending unobstructedly the entire length between and into said adjacent interior corners.

5,388,904

THERMAL INSULATION BOX

Makoto Kuwahara, Ouizumi; Kakuji Kume, Ashikaga; Eiichi Masuko, Ouizumi; Atsushi Saitou, Ojima; Katsuhiro Fukuda; Takashi Araki, both of Ouizumi, and Yuuji Hosoda, Oura, all of Japan, assignors to Sanyo Electric Co., Ltd, Moriguchi, Japan

Continuation of Ser. No. 956,031, Oct. 2, 1992, abandoned, which is a continuation of Ser. No. 648,456, Jan. 30, 1991, Pat. No. 5,174,640. This application Jan. 24, 1994, Ser. No. 185,173
Claims priority, application Japan, Jan. 31, 1990, 2-22376
Int. Cl.[6] F25D *11/00*
U.S. Cl. 312—406.2 **10 Claims**



1. A thermal insulation box having inner and outer boxes forming a space between said boxes, said inner box defining a thermal insulation compartment with an opening, and a partitioning member provided at said opening of said thermal insulation compartment and partitioning said opening into a plurality of openings wherein:

said partitioning member has an outer shell forming therein a space which communicates with said space between said inner and outer boxes; and wherein

said space between said inner and outer boxes and said space inside said partitioning member are integrally filled with a thermal insulation material;

an outlet formed on the back of the partitioning member is provided for allowing gas liberated from said thermal insulation material when expanding to be exhausted therethrough and for serving as a window for checking the expanding insulation material filling said spaces inside the outer shell; and

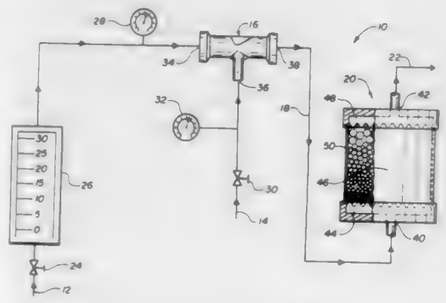
a lid for closing the outlet after completion of the expansion of the insulation material filling said spaces.

5,388,905

POLYMER MIXING/ACTIVATION SYSTEM

Sam E. Ake, Aurora, and Kieran F. O'Melia, Bedford, both of Ohio, assignors to Or-Tec, Inc., Bedford, Ohio

Filed Mar. 30, 1993, Ser. No. 40,372
Int. Cl.[6] B01F *15/02*
U.S. Cl. 366—163 **19 Claims**



1. A polymer mixing/activation system comprising

a mixer-ejector,

a polymer inlet line connected to said mixer-ejector for charging polymer into said mixer-ejector in response to a suction created in said mixer-ejector,

a liquid inlet line connected to said mixer-ejector for charging a pressurized liquid into said mixer-ejector to thereby create a suction in said mixer-ejector, said suction drawing polymer into said mixer-ejector where said polymer and said liquid mix to form a liquid/polymer mixture, and

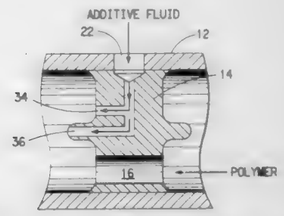
a mixing/retaining chamber in fluid communication with said mixture-ejector for receiving said liquid/polymer mixture, said mixing/retaining chamber including a zone containing a series of substantially sphere-shaped objects which increase in size towards an upstream end of said zone.

5,388,906

STATIC MIXER FOR TWO OR MORE FLUIDS

Sundar M. Rao, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 18, 1991, Ser. No. 809,841
Int. Cl.[6] B01F *5/04, 5/06*
U.S. Cl. 366—173 **2 Claims**



1. In a mixer for one or more additive fluids and a molten polymer that includes an elongated pipe having a longitudinal axis in which said pipe is constricted intermediate opposite ends of the pipe with a flow distributor, said flow distributor having at least two orifices for carrying said polymer moving through said pipe, said orifices having substantially circular cross sections and having longitudinal axes which are substantially parallel to the longitudinal axis of the pipe and a fluid entry port for discharging said additives into said flow distributor, the improvement comprising: an array of passages connected to said fluid entry port, said passages being distributed within said flow distributor, said passages having one end connected to said fluid entry port and their other end directed substantially parallel to the longitudinal axis in a downstream direction of the flow through the pipe, each of said passages having circular cross section with a diameter less than the diameter of any one of said orifices.

5,388,907

MEASURING APPARATUS PROVIDED WITH AN AUTOMATIC FOCUSSING DEVICE

Satoshi Aoyama, Osaka; Masayuki Yamada, Toyonaka; Tatsuaki Kusatsugu, Toyokawa; Seishiro Itoh, Toyokawa, and Hiroji Tsujimura, Sakai, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Oct. 28, 1992, Ser. No. 967,725
Claims priority, application Japan, Oct. 31, 1991, 3-313427; Nov. 1, 1991, 3-287650
Int. Cl.[6] G01J *5/02*
U.S. Cl. 374—130 **30 Claims**

1. A radiation thermometer comprising:

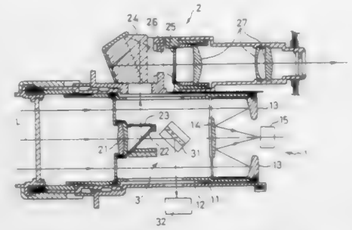
sensor means for detecting an intensity of infrared radiation of light;

a measuring optical system for introducing light from an object to the sensor means;

calculator means for calculating a temperature of the object based on a detected infrared radiation intensity;

a viewfinder optical system, different from the measuring optical system, for introducing light from the object so as to allow the operator to visually recognize the object;

focus detecting means for receiving a part of light divided



from the light in the viewfinder optical system and automatically detecting a focus condition of the viewfinder optical system relative to the object; and

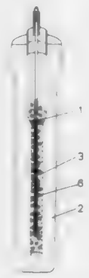
controller means responsive to the focus detection means for automatically controlling both the measuring and viewfinder optical systems so that both the optical systems come into an in-focus condition relative to the object.

5,388,908

APPARATUS FOR MEASURING THE TEMPERATURE OF MOLTEN METALS

Martin Kendall, Sheffield, England, assignor to Heraeus Electro-Nite International N.V., Houthalen, Belgium

Filed Mar. 5, 1993, Ser. No. 26,724
Claims priority, application Germany, Mar. 6, 1992, 4207317
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[6] G01K *1/12, 1/10*
U.S. Cl. 374—140 **13 Claims**



1. Apparatus for measuring temperatures in molten metals with a thermocouple, which is arranged in a closed-end ceramic tube, wherein the junction of the thermocouple is located near the closed end of the tube, and with an outer protective casing which surrounds the closed-end tube while forming an annulus between the closed-end tube and the inner surface of the protective casing, wherein the protective casing comprises substantially refractory metal oxide and graphite, characterized in that the annulus (3) is substantially filled with a metal oxide powder and an oxygen-reducing means, wherein the proportion of the oxygen-reducing means is approximately 5% by volume to approximately 95% by volume.

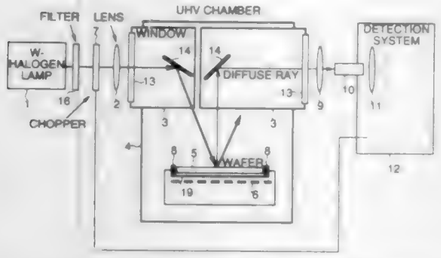
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5,388,909

OPTICAL APPARATUS AND METHOD FOR MEASURING TEMPERATURE OF A SUBSTRATE MATERIAL WITH A TEMPERATURE DEPENDENT BAND GAP

Shane R. Johnson; Christian Lavoie, both of 2626 Tennis Crescent, Vancouver, B. C., Canada V6T 2E1 ; Mark K. Nissen, 215 - 2190 West 7th Avenue, Vancouver, B. C., Canada V6K 4K7 , and J. Thomas Tiedje, 1752 Wesbrook Crescent, Vancouver, B. C., Canada V6T 1W1

Filed Sep. 16, 1993, Ser. No. 121,521
Int. Cl.[6] G01K *11/00;* **G01J** *5/48*
U.S. Cl. 374—161 **17 Claims**



1. An apparatus for measuring the temperature of a substrate material by inference from its band gap measured by diffuse reflectivity comprising:

(a) white light lamp means for emitting broad spectrum white light;

(b) focusing means for focusing the white light emitted from the lamp means upon a front surface of a substrate material which is polished on the front surface and is polished or textured on a back surface, said white light being specularly reflected from the front surface of the substrate material and non-specularly reflected from the back surface of the substrate material;

(c) a diffuser means located adjacent the back surface of the substrate material for non-specularly reflecting the white light emitted from the lamp means;

(d) detector means positioned at a non-specular position on the front side of the substrate material for detecting non-specularly reflected white light from the back surface of the substrate material;

(e) optical fibre bundle means for collecting non-specularly reflected light detected by the detector means; and

(f) computing means for determining a temperature dependent band gap from onset wavelength of non-specular reflection from the back surface of the substrate material transmitted through the optical fibre bundle means.

5,388,910

BAG WITH A FILTERING CHECK VALVE

Yoshihiro Koyanagi, Osaka, Japan, assignor to Kabushikikaisha Kashiwaraseitai, Osaka, Japan

Filed Oct. 27, 1992, Ser. No. 966,886
Claims priority, application Japan, Nov. 1, 1991, 3-98482[U]
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[6] B65D *33/01*
U.S. Cl. 383—100 **3 Claims**

1. A bag comprising a bag body made of a plastic film for containing food therein;

a flat, elongate check valve mounted in a sealed edge portion of said bag body for discharging fluid from said bag body, a first portion of said flat elongate check valve extending into the bag body and a second portion of said flat, elongate check valve extending outside of said bag body, the interior and the exterior of said bag body communicating with each other only through a fluid discharge path of said check valve;

a filtering surface in said first portion of said check valve, said filtering surface being located in said fluid discharge path in said first portion of said check valve;

said check valve comprising:

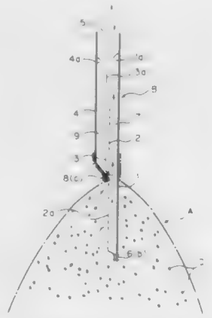
a first plastic film;

a filtering second plastic film having fine holes;

a third plastic film; and

a fourth plastic film, said third and fourth plastic films being shorter than said first plastic film, said second, third and fourth plastic films being superposed in this order on one surface of said first plastic film, each of said first, second, third and fourth plastic films having upper, lower, right side and left side edges;

the lower edges and the right and left side edges of said first and second plastic films and being joined together to define said fluid discharge path therebetween, said first plastic film having a valve seat portion in an upper portion thereof;



the lower edges of said third and fourth plastic films and being joined to said second plastic film between the upper and lower edges of said second plastic film such that a portion of said second plastic film extends below the lower edges of said third and fourth plastic films, and the right and left side edges of said third and fourth plastic films and being joined to the right and left side edges of said second plastic film to define an upper opening between said first and fourth plastic films, to define a checking flap in a portion of said third plastic film which extends upwardly beyond the upper edge of said second plastic film for cooperation with said valve seat portion of said first plastic film, and to define a pocket between said third and fourth plastic films for pressing said checking flap against said valve seat portion, and

said portion of said second plastic film which extends below the lower edges of said third and fourth plastic films being located in said fluid discharge path for functioning as said filtering surface therein.

5,388,911

LINEAR MOTION ROLLING GUIDE UNIT

Norimasa Agari, Seki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 165,834
Claims priority, application Japan, Dec. 17, 1992, 4-91497[U]
Int. Cl.[6] F16C *29/06*
U.S. Cl. 384—15 **6 Claims**

1. A linear motion rolling guide unit comprising:

a track rail having first raceway grooves formed on longitudinally extending side wall surfaces thereof;

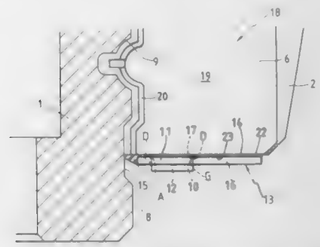
a casing mounted astride on and slidable relative to the track rail and having second raceway grooves formed at positions facing the first raceway grooves;

end caps mounted to the longitudinal ends of the casing;

rolling elements circulating through raceways formed between the first raceway grooves and the second raceway grooves;

end seals attached to the end caps on the side opposite to the casing;

under seals arranged on the undersides of the casing and the end caps, the under seals including seal members for sealing the casing, the end caps and the track rail and core members secured to the seal members;



hook-shaped projections formed at the lower ends of the end seals and extending widthwise, the hook-shaped projections having downwardly projecting portions and bent locking portions, the bent locking portions being formed by bending the free ends of the downwardly projecting portions in a direction away from the end caps; and

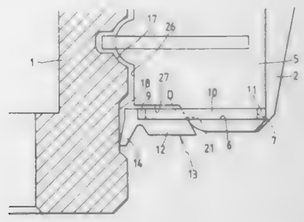
locking holes formed in the longitudinal ends of the core member of each under seal for receiving the hook-shaped projections, the locking holes receiving the downwardly projecting portions of the hook-shaped projections to lock the bent locking portions.

5,388,912

LINEAR MOTION ROLLING GUIDE UNIT

Norimasa Agari, Seki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 165,893
Claims priority, application Japan, Dec. 17, 1992, 4-091496[U]
Int. Cl.[6] F16C *29/06*
U.S. Cl. 384—15 **4 Claims**



1. A linear motion rolling guide unit comprising:

a track rail having first raceway grooves formed on longitudinally extending side wall surfaces thereof;

a casing slidable relative to the track rail and having second raceway grooves formed at positions facing the first raceway grooves;

end caps mounted to the longitudinal ends of the casing;

rolling elements circulating through raceways formed between the first raceway grooves and the second raceway grooves; and,

under seals arranged on the undersides of the casing and the end caps, the under seals including elastic seal members for sealing the casing, the end caps and the track rail and core members secured to the elastic seal members;

wherein the under seals have locking bands extending laterally outwardly from the longitudinal ends of each core member and locking detents formed by bending the free ends of the locking bands toward the end caps; and

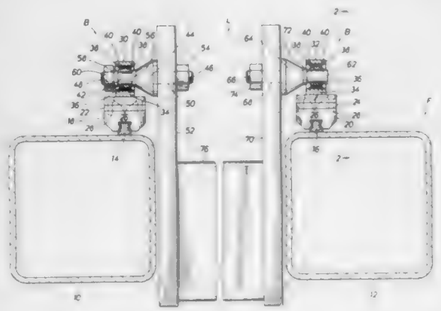
wherein the end caps are formed, at their lower portion on the side opposite the casing, with longitudinally extending engagement grooves and with locking grooves formed at the outer ends of the engagement grooves, and the locking bands and the locking detents of the under seals are fitted into the engagement grooves and the locking grooves, respectively.

5,388,913

LINEAR BEARING COMPENSATION SYSTEM

Clifton M. Cawley, Nederland, and Wesley D. Cawley, Port Neches, both of Tex., assignors to Ohmstede-Cawley, Ltd., Beaumont, Tex.

Filed Apr. 8, 1993, Ser. No. 44,651
Int. Cl.[6] F16C *23/04, 17/00, 19/00*
U.S. Cl. 384—38 **2 Claims**



1. A linear compensation system for use with a parallel track linear motion system, the linear motion system comprised of a first track member having at least one slider member mounted thereon and a parallel second track member having at least one slider member mounted thereon, comprising:

a carriage;

at least one first support for providing angular compensation, said first support mounted and retained on the first track member slider member and having a spherical bearing for angular compensation and a support shaft laterally restrained by said spherical bearing;

at least one second support for providing angular and lateral compensation, said second support mounted and retained on the second track member slider member and having a spherical bearing for angular compensation and a support shaft inserted within said second support spherical bearing and capable of lateral movement within said second support spherical bearing; and

means for connecting said first and second supports to said carriage.

5,388,914

LINEAR MOTION ROLLING GUIDE UNIT

Seiji Takei, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1993, Ser. No. 117,623
Claims priority, application Japan, Sep. 25, 1992, 4-072901[U]
Int. Cl.[6] F16C *29/06*
U.S. Cl. 384—45 **3 Claims**

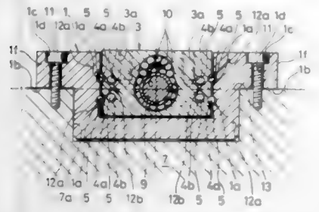
1. A linear motion rolling guide unit, comprising:

a track rail, in which tracks are formed along the lengthwise

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direction on both sides, and having a planar mounting surface for mounting said guide unit on a frame;

a slider, having rolling element circulating paths including load bearing track grooves corresponding to said tracks, that is able to move freely relative to said track rail; and



a plurality of rolling elements, arranged and contained within said rolling element circulating paths, that bear the load while rolling over said tracks,

wherein points of intersection of matching lines of action of the load applied to said rolling elements are positioned on, or in the vicinity of, a plane that contains said planar mounting surface.

5,388,915

BEARING BUSH

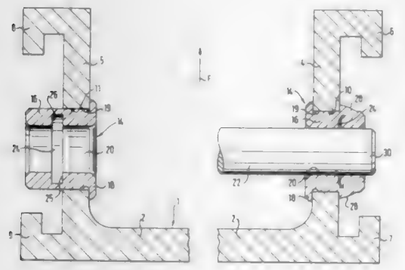
Thomas Huber, Iffeldorf, Germany, assignor to Bavaria Cargo Technologie GmbH, Munich, Germany

Filed May 6, 1993, Ser. No. 57,547

Claims priority, application Germany, May 13, 1992, 4215715

Int. Cl.[6] F16C *35/02, 33/20*

U.S. Cl. 384—439 **8 Claims**



1. A bearing bush for supporting an end of a shaft in a wall, the bearing bush comprising a plastically deformable bush body having first and second ends and a bore therethrough for accommodating the shaft, and a collar which projects radially beyond the bush body at one end thereof and which, in an installed condition in which the bearing bush is fitted with its bush body into a through bore in said wall lies at least substantially flush against a side face of said wall, the bush body having an axial length that is greater than a thickness of the wall for accommodating the bearing bush, and an inside surface of the bore in the bush body having a peripherally extending radial recess which is spaced from said collar by a distance that is at least approximately equal to the thickness of the wall, so that, after the bearing bush has been fitted into the wall, the bush body can be short-term compressed in the axial direction, to produce a permanent plastic deformation, whereby formed on a side of the wall which is in opposite relationship to the collar of the bearing bush is a radially projecting permanent portion which together with the collar positively lockingly mounts the bearing bush to the wall.

5,388,916

DEVICE FOR DETECTING THE SPEED OF ROTATION OF AUTOMOBILE WHEEL

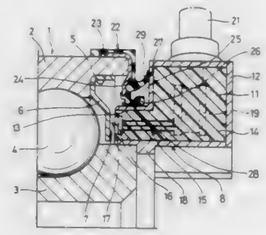
Hisashi Ohtsuki, Shizuoka, and Koji Sahashi, Mie, both of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Dec. 18, 1992, Ser. No. 995,411

Claims priority, application Japan, Dec. 26, 1991, 3-107420[U]

Int. Cl.[6] F16C *33/00, 35/00*

U.S. Cl. 384—448 **4 Claims**



1. A revolving speed detecting device for use with a bearing for a vehicle wheel, said bearing have a rotatable ring and a fixed ring each having a surface opposed to the other, said device comprising a pulser ring mounted on one of said rotatable ring and said fixed ring at one end thereof, a press-fit ring mounted on the other of said two rings at the one end thereof, said pulser ring being located a gap from said press-fit ring, a sensor housing unit integral with said press-fit ring and filled with a resin, a rotation sensor housed in said sensor housing unit and having a sensing unit embedded in said resin in said sensor housing unit, said sensing unit having a sensor element received in a hole formed in said press-fit ring so as to be located opposite to said pulser ring separated by a predetermined gap, and a seal member provided between said press-fit ring and said rotatable ring to seal the space therebetween.

5,388,917

SPINDLE UNIT

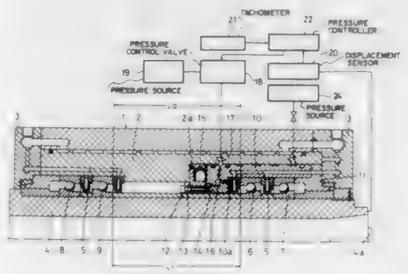
Kenji Hibi, Yoro; Masatsugu Mori, Yokkaichi, and Yoshimi Ohta, Mie, all of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Sep. 28, 1993, Ser. No. 127,608

Claims priority, application Japan, Oct. 14, 1992, 4-71689[U]; Oct. 14, 1992, 4-71718[U]; Oct. 30, 1992, 4-293201

Int. Cl.[6] F16C *35/12, 27/00*

U.S. Cl. 384—517 **5 Claims**



1. A spindle unit comprising an outer casing, a spindle mounted in said outer casing so as to be axially movable within a predetermined range with respect to said outer casing, bearings for supporting said spindle, preload changeover means provided between said outer casing and said spindle for adjusting axial biasing forces applied to said bearings, and control means for adjusting the biasing force applied to said bearings by said preload changeover means according to the axial displacement of said spindle.

5. A spindle unit comprising an outer casing, a spindle mounted to extend through said outer casing, bearings for supporting said spindle, a bearing housing mounted in said outer casing for urging said bearings in an axial direction, an elastic member having a rigidity relatively larger than the axial rigidity of said bearings, a pressure chamber into which is introduced a pressure fluid, said bearing housing being urged in one axial direction by said elastic member and in the other axial direction by the fluid pressure in said pressure chamber, one of said outer casing and said bearing housing being provided at the boundary therebetween with a groove that surrounds said boundary, and means communicating with said groove for supplying a pressure fluid.

5,388,918

SPLIT BEARING CAGES

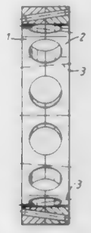
Reginald Williams, Wolverhampton, England, assignor to The Torrington Company, Torrington, Conn.

Filed Nov. 1, 1993, Ser. No. 143,962

Claims priority, application United Kingdom, Aug. 2, 1993, 9316804

Int. Cl.[6] F16C *33/46*

U.S. Cl. 384—530 **11 Claims**



1. A split bearing cage comprising two cage parts assembled and held together such that pockets for receiving rolling elements are formed therebetween, the two cage parts being held together by means of components extending through and located in apertures through both cage parts, said apertures being located between said pockets and aligned at an angle with respect to each other such that, when said components are inserted into said apertures, the relative alignment between at least two of said components is such as to present resistance to the separation of the two cage parts so assembled.

5,388,919

PRINTING DEVICE WITH A TILTABLE PRINTING HEAD

Hiroaki Kimura, Kani; Shigeo Ishikawa, Hazu, and Toshiaki Sugiura, Hekinan, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 8, 1993, Ser. No. 44,170

Claims priority, application Japan, Apr. 10, 1992, 4-118070

Int. Cl.[6] B41J *25/316*

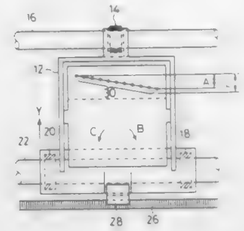
U.S. Cl. 400—55 **18 Claims**

1. A printing device having a platen, comprising:

a guide axle having a center axis;

a carriage with a printing head provided for reciprocal movement along said guide axle;

a first bearing member and a second bearing member for supporting the carriage on said guide axle, said first bearing member having an eccentric center; and



a rotating member for rotating only said first bearing member.

5,388,920

PRINTER WITH COMMAND SYSTEM SELECTION

Kiyotaka Ohara, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 30, 1993, Ser. No. 176,071

Claims priority, application Japan, Feb. 17, 1993, 5-051348

Int. Cl.[6] B41J *5/00*

U.S. Cl. 400—76 **9 Claims**

1. A printer, comprising:

a first memory storing a plurality of print control programs each having a different command system with a corresponding control code;

a second memory storing input print data including a command system;

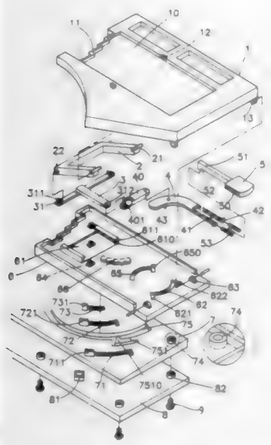
a command system combiner that combines control programs in at least a first combination mode including a group of some of the control programs, a second combination mode including a group of other control programs and a collective mode including a group of all of the control programs;

a determiner that compares the command systems of a group of said control programs from a selected one of the modes to the input command system in the second memory and determines a matching command system; and

a printing mechanism that prints the input print data based on the control program with the matching command system.

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5,388,921
STRUCTURE OF COMPUTER KEYBOARD (I)
Stephen Chung, Taipei Hsien, Taiwan, Prov. of China, assignor to Silitek Corporation, Taipei, Taiwan, Prov. of China
Filed Jan. 24, 1994, Ser. No. 185,148
Int. Cl.[6] **B41J** *5/10*
U.S. Cl. 400—472 **1 Claim**



1. A computer keyboard including two movable symmetrical parts comprising a bottom plate, a base plate affixed to said bottom plate at the top, a bottom shell having mounting lugs, a recessed portion, an inner arched slot and an outer arched slot, said bottom shell supported on said base plate, and a top shell supported on said bottom shell to hold a set of key switches;

a lifting mechanism connected between said top and bottom shells and controlled to turn said top shell on the mounting lugs of said bottom shell in moving said top shell from a horizontal position to a sloping position or from a sloping position to a horizontal position;

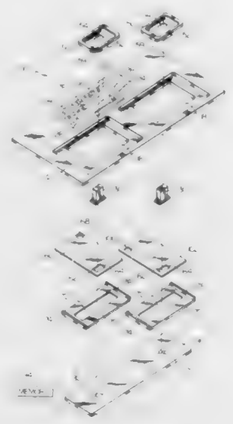
wherein said lifting mechanism comprises two parallel sliding grooves and a T-bar having a transverse section made to slide between said two parallel sliding grooves to said recessed portion on said bottom shell and said T-bar further having a longitudinal section perpendicularly extended from said transverse section;

said lifting mechanism further comprising a substantially U-shaped lifting rod having a straight middle rod section pivoted to the transverse section of said T-bar and said U-shaped lifting rod further having two end rod sections perpendicularly extended from two opposite ends of said straight middle rod section and respectively pivoted to the underside of said top shell, said lifting mechanism having a lever, a link connected between said lever and said T-bar, and push knob connected to said lever;

said lever comprising a rear end connected to one end of said link, a bottom rod near the rear end thereof made to slide in said inner arched slot on said bottom shell, and a forked front end, said forked front end of said lever comprising two opposite hooks spaced by a longitudinal opening thereof, said two opposite hooks being respectively inserted into a hole on said push knob and retained in place by spring elements;

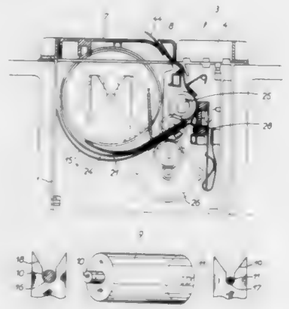
said push knob comprising a push rod disposed in the longitudinal opening on said forked front end of said lever, the push rod of said push knob comprising a bottom rod made to slide in said outer arched slot on said bottom shell.

5,388,922
MINIATURE KEYBOARD
Gregory W. Smiley, Etna, N.Y., assignor to Smith Corona Corporation, Cortland, N.Y.
Filed Jul. 23, 1993, Ser. No. 95,470
Int. Cl.[6] **B41J** *5/08;* **H01H** *5/00*
U.S. Cl. 400—492 **29 Claims**



1. An electronic keyboard assembly for generating character and function codes indicative of the selected characters and functions, said assembly comprising a membrane panel having thereon a code generating means corresponding to characters and functions, at least one depressible keybutton overlaying said membrane panel and supported for movement in both a horizontal and vertical direction, said keybutton including means for activating a selected one of said code generating means upon depression of said keybutton.

5,388,923
ERGONOMIC PRINTER FOR USE IN AIRCRAFT COCKPITS
Marcel Dubois, Le Chesnay, and Jacques Ribeiro, Igny, both of France, assignors to Sextant Avionique, Meudon la Foret, France
Filed Jun. 11, 1992, Ser. No. 897,160
Claims priority, application France, Jun. 11, 1991, 91 07054
Int. Cl.[6] **B41J** *15/04*
U.S. Cl. 400—613.1 **11 Claims**



1. Ergonomic printer suitable for use in the cockpit of an aircraft comprising a print station, a paper feed device, and:

a support structure delimiting a magazine having a bottom and having an upper front wall provided with an opening through which a roll of paper being engaged into said magazine in a loading operation,

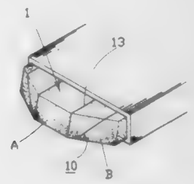
two coaxial support journals provided on said paper roll and having respectively first and second different diameters,

two half-bearings open upwards, coaxial to a rotational axis, and having diameters matching respectively said first and second diameters, said half-bearings being disposed in said magazine to engage said support journals for supporting said paper roll, enabling said paper roll to rotate freely about said rotational axis,

diverging ribs extending upwards from each of said half-bearings for guiding said support journals into the half-bearings during said loading operation while said roll effects a downward translational movement and remains in a position substantially parallel to said rotational axis,

paper extraction means which operate on said paper roll in a region thereof substantially opposite said opening for extracting a paper end from said roll, said paper extraction means delimiting with a face of the magazine opposite to said upper front wall a paper path where the paper is guided successively to said paper feed device for feeding said paper, said print station where said paper is printed, and an outlet slot formed in said upper front wall and through which the paper end exits from said support structure.

5,388,924
DRAWING PEN HAVING MULTIPLE SIDE-MATCHED ABSORPTIVE DRAWING TIPS
Chung L. Chao, No.7–5, Lane 339, Wu Chuan Rd., Taichung, Taiwan, Prov. of China
Filed Feb. 7, 1994, Ser. No. 192,575
Int. Cl.[6] **B43K** *8/02, 27/00*
U.S. Cl. 401—35 **6 Claims**



1. A drawing pen comprising a plurality of ink reservoirs received within a barrel thereof and a plurality of absorptive drawing tips each having a tip end and a top end, said plurality of absorptive drawing tips being connected at said top end to said plurality of ink reservoirs, each said tip end of said plurality of absorptive drawing tips being extended out of said barrel for drawing, said plurality of absorptive drawing tips being complimentarily engaged at said tip end and adhered together with a watertight bonding agent.

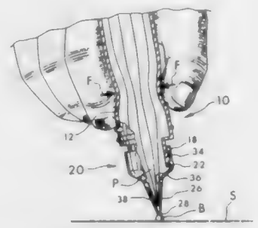
5,388,925
FINE POINT TIP APPLICATOR FOR CRAFT PAINT
Reed N. Wilcox, Littleton; Richard L. George, Englewood, both of Colo., and William H. Lichfield, Corinne, Utah, assignors to The Flagship Group II, Inc., Englewood, Colo.
Filed May 22, 1992, Ser. No. 888,055
Int. Cl.[6] **B43K** *8/14;* **B65D** *47/18*
U.S. Cl. 401—261 **1 Claim**

1. A fine point, easy flow applicator tip for a craft paint applicator, said craft paint applicator containing craft paint, said applicator tip comprising:

means on a first end of said tip for removably affixing said tip on said craft paint applicator;

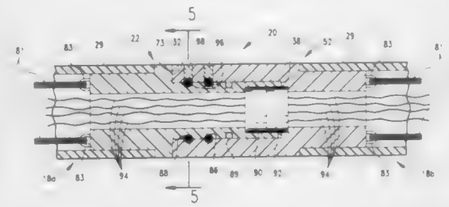
an integral dispensing end formed on the opposing second end of said tip, said dispensing end having an outside diameter in the range of about 0.040 inches to 0.060 inches so as to provide a fine point for dispensing said craft paint;

an integral body between said first and second ends, said body having a first formed large diameter cylindrically-shaped inner hollow portion containing said affixing means, a second formed small diameter cylindrically-shaped inner hollow portion at said dispensing end, and an inner passageway extending from said first inner hollow portion to said second inner hollow portion, said inner passageway having formed substantially parabolic-shaped sidewalls (i) to reduce shear in the flow of said craft paint



through said inner passageway and (ii) to provide substantially laminar flow so as to provide easy flow to said craft paint; said second inner hollow portion having formed sidewalls at said dispensing end with a sidewall thickness in the range of about 0.005 to 0.015 inches, said second formed small diameter cylindrically-shaped inner hollow portion has a predetermined length and wherein the sidewall thickness increases from said dispensing end to about 0.025 inches at said predetermined length so as to provide structural rigidity to said formed sidewalls of said small diameter cylindrically-shaped inner hollow portion.

5,388,926
COMPOSITE COUPLING FOR TOWED ARRAYS
Thomas R. Stottlemyer, Mystic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 22, 1993, Ser. No. 20,932
Int. Cl.[6] **G01Y** *1/00;* **H01R** *13/00*
U.S. Cl. 403—294 **15 Claims**



1. A coupler device for joining a first section of an underwater towed acoustical array terminating in a first connector with a second section of an underwater towed acoustical array terminating in a second connector, comprising:

a male coupler having a male coupler annular end portion for receiving said first towed array section at the end thereof, an annular body integral with and extending coaxially from said male coupler annular end portion and having at least one outer groove disposed around an outer circumference of said annular body, said male coupler having an axial bore therethrough for receiving said first connector disposed on the terminal end of said first towed array section;

a female coupler having a female coupler annular end portion for receiving said second towed array section at the end thereof, a cup-shaped body portion having a cylindri-

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cal wall, an open free end, and a fixed end, said cup-shaped body portion integral with and coaxially extending from said female coupler annular end portion with said open free end oriented away from said female coupler annular end portion and said cylindrical wall having at least one inner groove disposed circumferentially about the inner surface thereof, said at least one inner groove being located to be in registry with said at least one outer groove in said annular body when said annular body is inserted into said cup-shaped body portion, said inner and outer grooves thereby forming a channel between said annular body and said cup-shaped body portion, said cylindrical wall having an aperture defined therethrough for communicating to said channel formed by said inner and outer grooves, and said female coupler having an axial bore extending through said female coupler annular end portion and said fixed end of said cup-shaped body portion for receiving said second connector disposed on the terminal end of said second array section and allowing joining of said first connector with said second connector when said male coupler is inserted in said female coupler;

retaining means insertable into said channel through said aperture for maintaining said annular body in fixed position within said cup-shaped body portion to preserve the connection between said male coupler and female coupler and thereby join said first and second towed array sections;

a first bracket disposed on said male coupler end portion for attachment of strength bearing members extending the length of said first array section; and

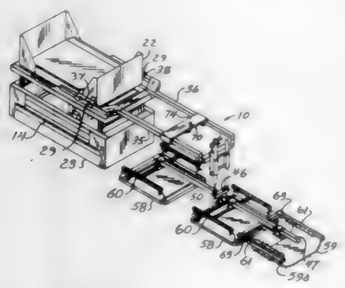
a second bracket disposed on said female coupler end portion for attachment of strength bearing members extending the length of said second array section, said male and female couplers each being fabricated from a non corrosive, low density material to eliminate coupling induced self noise created by fluid flow over said coupler.

5,388,927

RAISEABLE PAN DRAG APPARATUS

Ewald R. Ulmer, and Larry G. Eben, both of Canton, S. Dak., assignors to CMI Corporation, Oklahoma City, Okla.

Filed Mar. 25, 1993, Ser. No. 36,930
Int. Cl.[6] E01C *19/48*
U.S. Cl. 404—84.5 24 Claims



1. A pan drag apparatus for use in conjunction with a concrete finishing machine movable longitudinally along an elongated body of poured concrete and having a finishing unit engageable with the surface of the concrete and movable transversely back and forth across the body of concrete to grade the same, comprising:

supporting means mounted to and extending rearwardly from the finishing unit and moveable transversely back and forth across the body of concrete,

pan drag means mounted to said supporting means extending rearwardly from the finishing unit for engaging the graded concrete surface to finish and seal the same as the finishing unit moves transversely back and forth across the body of concrete,

means for raising and lowering said pan drag means with respect to the concrete surface, and

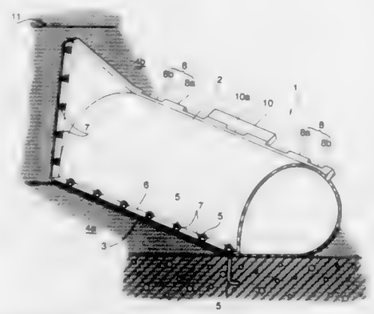
control means for operatively actuating said means for raising and lowering said pan drag means between an upward raised position to a downward engaging position wherein said pan drag means engages the graded concrete surface to seal and finish the same.

5,388,928

FLEXIBLE MEMBRANEOUS WEIR

Yuji Kumagai, Yokohama, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 13, 1993, Ser. No. 90,781
Claims priority, application Japan, Jul. 13, 1992, 4-207044
Int. Cl.[6] E02B *7/20*
U.S. Cl. 405—115 7 Claims



1. A flexible membraneous weir comprising; a bag made of a flexible membrane such as a rubber membrane laid on a river bed across a river and adapted to be erected or collapsed by charging or discharging fluid to or from said bag; a rigid fin projecting from the outer surface of said flexible membrane when said flexible membraneous weir is erected, said rigid fin provided partially at a predetermined location along a river width direction of the outer surface of said flexible membrane; a fin extending continuously along the river width direction is formed on the surface of said bag, and protruded portions and recessed portions are alternately formed along a edge portion of said fin; and wherein said rigid fin is fixedly secured to said continuous fin to straddle across adjacent ones of said protruded portions and to project further than said protruded portions.

5,388,929

METHOD OF RENOVATING AND/OR PROTECTING SEWERS OR PIPES

Sydney Molyneux, Macgregor, Australia, assignor to Danby of North America, Cary, N.C.

Continuation of Ser. No. 660,953, Feb. 26, 1991, Pat. No. 5,145,281. This application Jun. 16, 1992, Ser. No. 899,046
Claims priority, application Australia, Mar. 29, 1990, PJ9374; Jun. 4, 1990, PK0425; European Pat. Off., Jul. 19, 1990, 90307906
The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.
Int. Cl.[6] F16L *1/00*
U.S. Cl. 405—154 2 Claims

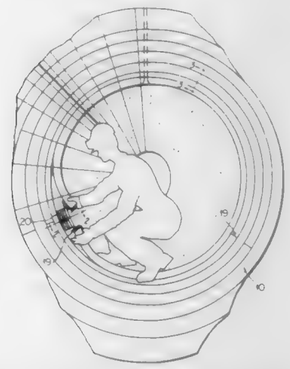
1. A method of lining sewers or pipes having an inside diameter large enough to accommodate a workman inside thereof comprising the steps of:

spirally winding an elongated strip within said sewer or pipe;

said strip having respective joint formations along each side, a smooth inner face, and a plurality of outwardly directed formations;

maintaining the outer diameter of said winding so as to substantially conform to the inner diameter of said sewer or pipe with said outwardly directed formations facing the inner surface of said sewer or pipe;

arranging said respective joint formations such that the joint formation on one side of said strip butts against the joint formation along the other side of an adjacent winding of said strip;



spirally winding an elongated joining strip within said sewer or pipe in a position where said joint formation on one side of said strip butts against said joint formation along said other side of said adjacent winding of said strip; and

forcing said respective adjacent joint formations of said elongated strip and said elongated joining strip into engagement so as to lock said windings of said strip together;

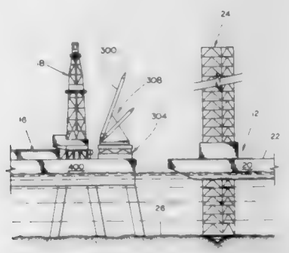
each of said steps being performed by said workman while inside of said sewer or pipe.

5,388,930

METHOD AND APPARATUS FOR TRANSPORTING AND USING A DRILLING APPARATUS OR A CRANE APPARATUS FROM A SINGLE MOVABLE VESSEL

Daniel F. McNease, Tomball, Tex., assignor to Rowan Companies, Inc., Houston, Tex.

Continuation of Ser. No. 863,945, Apr. 6, 1992, abandoned. This application Dec. 30, 1993, Ser. No. 176,282
Int. Cl.[6] E02B *17/00*
U.S. Cl. 405—209 27 Claims



1. A construction crane package suitable for skidding on and off a jack-up rig, the base of the construction crane being wider than a skid fairway defined by the skid rail width on the jack-up rig, the improvement comprising:

a pony comprising a plurality of beams of sufficient length and strength to support the construction crane, said beams being substantially parallel to each other and spaced apart a width that facilitates introducing said pony into the skid fairway on said jack-up rig;

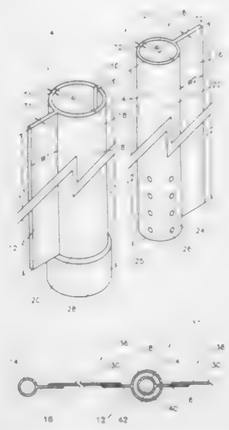
a plurality of support structures within said pony that raise the base of the construction crane to an elevated zone above said skid fairway, the elevated zone having a width at least as great as the width of the base of the construction crane, said elevated zone facilitating skidding said construction crane on and off said jack-up rig and over obstacles outside the skid fairway, said support structures being suitable to support an overhang of the construction crane base caused by the construction crane base being wider than the width of the skid fairway, said support structures having rigidity sufficient to facilitate operation of the construction crane from the elevated zone when the jack-up rig is jacked-up, said plurality of support structures being of sufficient light weight to facilitate movement during the raising and lowering of said jack-up rig.

5,388,931

CUTOFF WALL SYSTEM TO ISOLATE CONTAMINATED SOIL

Robert J. Carlson, 15 Chestnut Hill Ct., The Woodlands, Tex. 77380

Filed Oct. 18, 1993, Ser. No. 137,729
Int. Cl.[6] E02D *5/02, 5/14*
U.S. Cl. 405—274 47 Claims



1. A connector for plastic sheet comprising an outer portion and an inner portion,

the outer portion comprising a first tube having a tube slot lengthwise, the slot having a slot-width, and a first flap disposed in a diametrically opposite position with respect to the tube slot and directed away from the tube slot, the first tube also having a first upper end and a first lower end;

the inner portion comprising a second tube having a second flap, the second flap having a thickness, the second tube adapted to fit within the first tube in a manner that the second flap extends through the tube slot in a direction away from the first flap, the second tube also having a second upper end and a second lower end; and

the slot-width being 10–50% smaller than the thickness of the second flap.

11. A secondary barrier comprising a plurality of interconnected panels, each panel comprising a plastic sheet having a first edge and a second edge, each plastic sheet attached to a successive plastic sheet by means of connectors, each connector comprising an outer portion and an inner portion,

the outer portion comprising a first tube having a tube slot lengthwise, the slot having a slot-width, and a first flap

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disposed in a diametrically opposite position with respect to the tube slot and directed away from the tube slot, the first tube also having a first upper end and a first lower end;

the inner portion comprising a second tube having a second flap, the second flap having a thickness, the second tube adapted to fit within the first tube in a manner that the second flap extends through the tube slot in a direction away from the first flap, the second tube also having a second upper end and a second lower end; and

the slot-width being 10–50% smaller than the thickness of the second flap.

37. A method of forming a cutoff wall comprising the steps of

forming a trench

filling the trench with dense soil to form a primary barrier;

inserting an initial panel within the primary barrier, the panel comprising

a plastic sheet having a first edge and a second edge, and

a connector comprising an outer portion and an inner portion

the outer portion comprising a first tube having a tube slot lengthwise, the slot having a slot-width, and a first flap disposed in a diametrically opposite position with respect to the tube slot and directed away from the tube slot, the first tube also having a first upper end and a first lower end;

the inner portion comprising a second tube having a second flap, the second flap having a thickness, the second tube adapted to fit within the first tube in a manner that the second flap extends through the tube slot in a direction away from the first flap, the second tube also having a second upper end and a second lower end;

the slot-width being 10–50% smaller than the thickness of the second flap, and

the attachment made so that one of the edges of one plastic sheet is connected to one of said flaps of the connector, and one of the edges of the successive sheet is connected to the remaining flap of the same connector;

inserting a successive panel within the primary barrier, the successive panel being substantially identical to the initial panel, in a manner that the second tube of the successive panel is inserted into the first tube of the initial panel; and

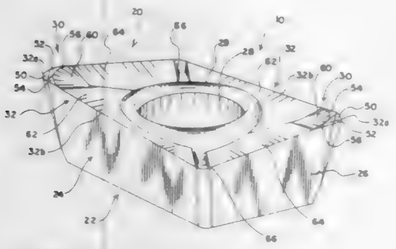
inserting more panels within the primary barrier, each panel being interconnected to a successive one in a similar manner until a desired number of interconnected panels have formed a secondary barrier, thus completing the cutoff wall.

5,388,932

CUTTING INSERT FOR A MILLING CUTTER

Kenneth G. DeRoche, Cary; Howard J. McCreery, Raleigh, both of N.C., and Robert Jauch, Usingen-Wernborn, Germany, assignors to Kennametal Inc., Latrobe, Pa.

Filed Sep. 13, 1993, Ser. No. 120,713
Int. Cl.[6] B23C *5/20, 5/10*
U.S. Cl. 407—113 16 Claims



1. A cutting insert comprising:

a) a main body having a top face, bottom face, and at least a pair of side and end faces therebetween;

b) at least one elevated corner nose formed on the top surface;

c) a cutting edge formed around the elevated corner nose and inclined downwardly therefrom along an adjacent side face of the main body;

d) an angled chamfer formed on the corner nose and extending generally upwardly from the cutting edge;

e) a generally flat surface disposed adjacent to and inwardly of the angle chamfer;

f) a pair of separate tapered lands extending from the flat surface and intersecting with the cutting edge on opposite sides of the angled chamfer; and

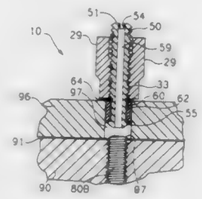
g) wherein the top face includes a central area and an intermediate inclined area that extends between the central area and the cutting edge and the adjacent elevated corner nose area of the top face, and wherein the intermediate area of the top face inclines downwardly from the cutting edge and elevated corner nose to the central area of the top face.

5,388,933

TOOL FOR CENTERING A PUNCH OR DRILL ON A STUD'S BROKEN FACE

David Dunbar, P.O. Box 390380, Anza, Calif. 92539

Filed Mar. 21, 1994, Ser. No. 214,981
Int. Cl.[6] B23B *41/00, 49/00*
U.S. Cl. 408—72 B 10 Claims



1. A tool comprising:

a nut including:

a central bore including:

internal threads; and

a shaft assembly having a first end and a second end; said shaft assembly including:

a cylindrical shaft having a first end defining said shaft assembly first end and a second end; said shaft including:

an axial bore therethrough;

a first portion extending from said shaft first end toward said shaft second end including:

external threads threadably engaged with said internal threads of said nut:

a second portion extending from said shaft second end toward said shaft first end; and

an expandable sleeve attached to said shaft second portion such that threading movement of said nut toward said shaft second end may axially compress said sleeve and such that axial compression of said sleeve expands said sleeve radially outward.

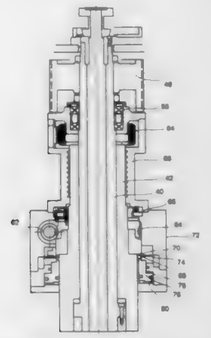
5,388,934

MACHINE TOOLS

Paul T. Harkness, Halifax; Michael J. Haspel, Bingley, and Bernard A. Squires, Huddersfield, all of England, assignors to William Asquith (1981) Limited, Halifax, England

Filed May 10, 1993, Ser. No. 59,909
Int. Cl.[6] B23C *1/06*
U.S. Cl. 409—131 18 Claims

15. A method of operating a machine tool arrangement including a housing (12), a ram (42) and a drive shaft (40) comprising rotating the drive shaft relative to the ram to cause a tool of a tool unit to rotate about the axis of the tool and moving the ram translationally relative to the housing, characterized in that pivotal movement of the ram relative to the



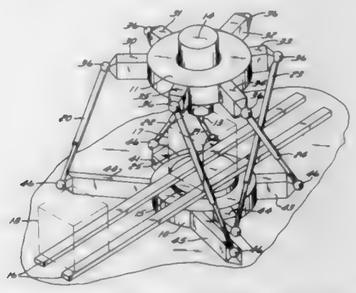
housing causes the orientation of the axis of rotation of the tool to be altered relative to the rotational axis of the drive shaft (40) with the ram and the housing including cooperating portions, said cooperating portions cooperating with each other during both relative translational and relative pivotal movement.

5,388,935

SIX AXIS MACHINE TOOL

Paul C. Sheldon, Mequon, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Aug. 3, 1993, Ser. No. 100,954
Int. Cl.[6] B23C *1/06;* B25J *11/00*
U.S. Cl. 409—201 11 Claims



1. A machine tool for locating a tool relative to a workpiece, comprising the combination of:

a pair of spaced supports, the tool being located with respect to one of the supports and the workpiece being located with respect to the other of the supports;

six leg members with each leg member being joined at a first point to one of the supports and being joined to the other support at a second point that is spaced along the leg member from the first point;

means for individually manipulating at least certain of the leg members to vary the position of the points of such leg members relative to each other;

wherein the junctions of four of the leg members with the supports are located so that the four leg members are arranged into two pairs which are spaced apart to provide between the pairs a portion of a corridor for moving the workpiece into a working position and wherein at least one of the first and second pair of legs is crossed; and

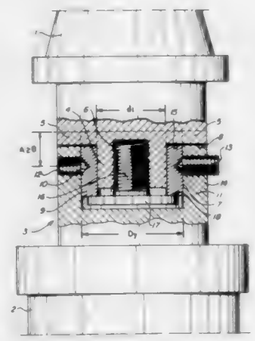
wherein the junctions of the other two leg members with the supports are located so that said other two leg members extend away from each other and provide another portion of the corridor between the inboard points of said other two leg members.

5,388,936

TOOL HOLDER

Wlajko Mihic, Gävle, Sweden, assignor to Mircona AB, Gavle, Sweden

PCT No. PCT/SE92/00332, § 371 Date Nov. 30, 1993, § 102(e) Date Nov. 30, 1993, PCT Pub. No. WO92/21464, PCT Pub. Date Dec. 10, 1992
PCT Filed May 19, 1992, Ser. No. 157,013
Claims priority, application Sweden, Jun. 4, 1991, 9101689
Int. Cl.[6] B23C *9/00;* B23B *31/00*
U.S. Cl. 409—234 1 Claim



1. In a machine tool having rotatable machine part such as a mandrel, the mandrel having a central protruding trunnion extending from an end face thereof and wedge means adjacent a root portion of the central trunnion, the central trunnion having an outer diameter and a threaded central bore, the improvement comprising

(a) a cylindrical sleeve having a length at least equal to that of the central trunnion and including:

(i) an inner diameter corresponding to the outer diameter of the central trunnion for mating reception thereof,

(ii) an outer diameter,

(iii) radial recesses at one end adapted to receive the wedge means of the mandrel,

(iv) a radially circumferential, axially facing abutment surface at another end thereof, and

(v) an externally circumferential essentially V-shaped groove defining a radial plane therethrough at a specified axial distance from the end face of the mandrel;

(b) a screw having a head adapted to engage said axially facing abutment surface of said sleeve and being threadingly insertable into the threaded central bore in the trunnion thereby pressing said sleeve against the end face of the mandrel surrounding the trunnion and establishing a rigid engagement between the mandrel and said sleeve;

(c) a tool holder having:

(i) a hollow portion with a central opening having an inner diameter corresponding to said outer diameter of said sleeve for mating reception thereof,

(ii) an end face defining lateral recesses adapted to cooperate with the wedge means, and

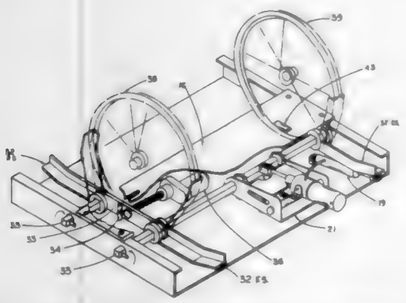
(iii) a plurality of threaded bores extending radially in said hollow portion and communicating with said central opening; and

(d) a set screw arranged in each of said plurality of threaded radial bores of said hollow portion of said tool holder, said set screws have conical inner ends arranged upon tighten-

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ing to engage both sides of said V-shaped groove of said sleeve in order to position said tool holder in both axial directions, said set screws being arranged at an axial distance from said end face of said tool holder closely corresponding to said specified axial distance between said radial plane of said V-shaped groove and the end face of the mandrel.

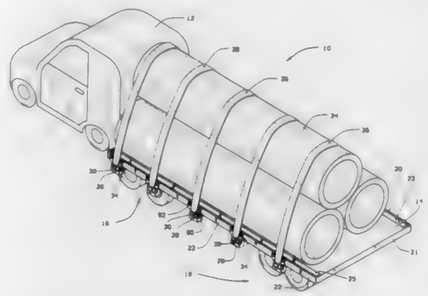
5,388,937
WHEELCHAIR SECUREMENT DEVICE FOR TRANSIT VEHICLES
Ali J. Farsai, 7241 NE. 160th St., Bothell, Wash. 98011
Filed Dec. 23, 1993, Ser. No. 172,433
Int. Cl.[6] B60P *3/06*
U.S. Cl. 410—9 1 Claim



1. A safety device for a moving vehicle for restraining an occupied wheelchair having at least a first and a second wheel, said safety device comprising:
a platform for supporting the wheelchair;
first and second flaps mounted to one side of said platform for pivotally engaging the first wheel of the wheelchair, said first and second flaps being fixed to prevent transverse movement of the flaps;
third and fourth flaps mounted to the other side of said platform for pivotally engaging the second wheel of the wheelchair, said third and fourth flaps being mounted to move transversely with respect to said platform;
a first drive means for pivoting said first and third flaps;
a second drive means for pivoting said second and fourth flaps;
a third drive means for moving said third and fourth flaps transversely;
sensor means mounted on said third and fourth flaps for sensing when the transverse movement of the third and fourth flaps has them in an aligned position under the second wheel of the wheelchair; and
means for stopping the third drive means upon a signal from said sensor means indicating that said third and fourth flaps are in said aligned position.

5,388,938
STRAP HOOK RETAINER
Jesse D. Helton, Box 361, Crocker, Mo. 65452
Filed Mar. 16, 1994, Ser. No. 213,557
Int. Cl.[6] B60P *7/08;* B61D *45/00*
U.S. Cl. 410—101 2 Claims

1. An assembly for releasably retaining a U-shaped strap hook of a tie-down strap utilized to secure cargo onto a platform, the retaining assembly comprising:
a frame adapted to be mounted to the platform;
a plate pivotably disposed within said frame;
a front opening in said frame, said front opening being dimensioned so that said plate will not pivotably extend therethrough;
a rear opening in said frame, said rear opening having a given dimension to allow said plate to pivotably extend therethrough;
said plate being sized to engage the U-shaped portion of the strap hook when the strap hook is passed through said rear opening and said front opening to thus retain the strap hook in engagement with said assembly; and
a pivot lever attached to said plate, said pivot lever permitting manual pivoting of said plate to disengage the strap hook from said assembly;
said frame including; a first side wall; a second side wall; a

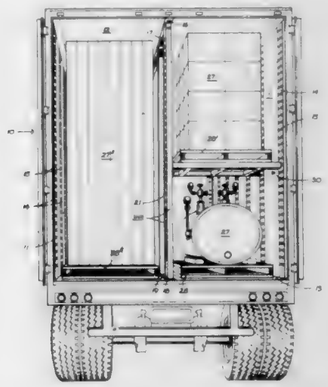


front plate extending between and secured to said first and second side walls, said front opening disposed in said front plate; a rear plate extending between and secured to said first and second side walls and spaced from said front plate, said rear opening disposed in said rear plate; a top plate attached to a top surface of said first and second side walls, said top plate adapted to be attached to the platform; a first bore in said first side wall proximate said top plate; and a second bore in said second side wall proximate said top plate, said pivot lever extending through said first and second bores.

5,388,939
LADING SEPARATING AND BRACING MEANS
Joseph P. Barone, P.O. Box 1462, Blue Bell, Pa. 19422
Continuation-in-part of Ser. No. 96,711, Jul. 23, 1993, Pat. No. 5,314,276, which is a continuation of Ser. No. 610,810, Nov. 8, 1990, abandoned. This application Mar. 24, 1994, Ser. No. 218,129
The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.
Int. Cl.[6] B60P *7/00*
U.S. Cl. 410—139 5 Claims

1. In a freight carrying body having a floor disposed in a horizontal plane, left and right opposing vertical sidewalls, a front wall, a ceiling parallel to the floor, at least three pairs of spaced vertical support members, each one of said pairs being spaced apart from one another and extending substantially between the ceiling and the floor, said vertical support members having attachment means engaged with means on said body mounting said vertical support members thereto, a first and a second pair of said vertical members respectively mounted adjacent to the left and right sidewalls with each pair opposing the other, each vertical member in said first and second pairs having a plurality of spaced apertures along the longitudinal length thereof, said apertures in said vertical members of said first pair being aligned with said apertures in said vertical members of said second pair, a third pair of said vertical members mounted at equal distance from each sidewall between said first and second pairs, each vertical member in said third pair having a plurality of spaced apertures along the longitudinal length thereof oppositely aligned with apertures in vertical members of said first and second pairs;
the improvement comprising a unitary support frame having a pair of substantially parallel spaced elongated members,

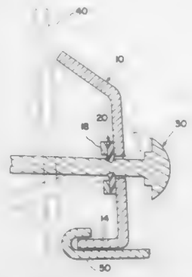
spaced support arms extending between said elongated members and being fixedly connected thereto, a detachable connecting means mounted on each end of the elongated members to secure each end thereof to one of said vertical support members, said unitary support frame in a horizontal orientation having said connecting means on one end of said frame engaged with selected apertures in one of said pairs of vertical members that are adjacent to the sidewalls and having said connecting means on the opposite end of said frame engaged with aligned apertures in said third pair of vertical members to provide an upper decking means to support articles of freight thereupon, or alternatively, said support frame is used in a first vertical orientation as a bracing means to retain articles of freight



against the sidewalls of said body when positioned between said third pair of spaced vertical members and having said connecting means on one end of said frame engaged with selected apertures in one of said vertical members of said third pair and having said connecting means on the opposite end of said frame engaged with aligned apertures in the other one of said vertical members of said third pair, said support frame being used in a second vertical orientation to retain articles of freight against the front wall of said body by having the connecting means on one end of said frame engaged with selected apertures in a selected vertical member adjacent to one of the sidewalls and having the connecting means on the opposite end of said frame engaged with aligned apertures in one of said vertical members of said third pair.

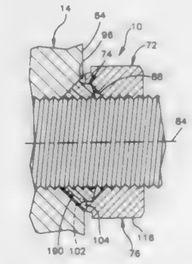
5,388,940
SCREEN RAIL BOLT RETAINER
Harold Herren, 802 Main St., Platteville, Colo. 80651
Filed Nov. 18, 1993, Ser. No. 154,585
Int. Cl.[6] F16B *39/00, 21/18;* B07B *1/46*
U.S. Cl. 411—107 9 Claims

1. An improved screen rail of the type having first and second side surfaces and upper and lower portions, wherein said upper portion is curved in the direction of said first side surface, wherein said lower portion includes a leg projecting in the direction of said first side surface, and at least one opening through said screen rail for receiving a bolt, wherein the screen rail includes a reinforcement member secured to said first side surface adjacent said opening; wherein said reinforcement member includes an opening in registry with said opening in said screen rail; wherein the improvement comprises a resilient rubber side positioned between said screen rail and said reinforcement member; wherein said reinforcement member includes opposite side edges which are secured to said first side surface of said screen rail; and wherein said rubber disk has an aperture therethrough in registry with said openings in said



screen rail and said reinforcement member for engaging said bolt.

5,388,941
SEAL NUT FOR POWER STEERING ASSEMBLY
Bernd F. Wuenscher, Lebanon, Tenn., assignor to TRW Inc., Lyndhurst, Ohio
Filed Feb. 9, 1994, Ser. No. 194,834
Int. Cl.[6] F16B *33/00, 43/02;* F16L *17/00;* B65D *45/00*
U.S. Cl. 411—369 18 Claims



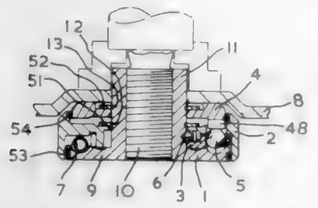
1. A seal nut for providing a seal between a housing having an opening and a threaded member in threaded engagement with the housing, the threaded member having an axis and a first portion received in the opening and a second portion projecting from the housing, said seal nut comprising a nut and a deformable insert movable with said nut;
said nut having a main body portion threaded on the threaded member;
said nut having a plurality of circumferentially spaced tongues projecting axially from said main body portion, said tongues defining between them a plurality of slots, said tongues being deformable radially inward upon engagement with said housing;
said seal nut having a first position on the threaded member in which said nut is spaced apart from said housing and said tongues are disposed in a first radially outward undeformed condition;
said seal nut being movable on the threaded member from the first position to a second position in which said tongues are in engagement with said housing and are disposed in a second condition deformed radially inward from said first condition and in which said deformable insert has a first portion disposed in said slots and a second portion disposed in fluid-tight engagement with said housing.

5,388,942

FLANGE LOCKS

Sergio Bonacina, Galbiate, and Guiseppe L. Cuneo, Calolziocorte, both of Italy, assignors to Black & Decker Inc., Newark, Del.

Filed Feb. 18, 1993, Ser. No. 19,013
Claims priority, application United Kingdom, Feb. 28, 1992, 9204345
Int. Cl.[6] F16B *37/08*
U.S. Cl. 411—432 26 Claims



1. A flange lock for securing a disk on the spindle of a power tool, comprising:

a boss screwable on the spindle;

an outer flange fixed rigid with said boss and an inner flange non-rotatably mounted on the boss but axially movable thereon between an inner limit position in which the flanges are in a first separated condition and a second position in which the flanges are in a second less separated condition;

plurality of rolling members mounted between said flanges and movable between first positions in which the rolling members cooperate with ramps on said flanges to maintain said flanges in said first separated condition and second positions in which the inner flange is able to move towards the outer flange to said second, less separated condition;

means for releasably holding said rolling members in said first positions in such a manner that when the flange lock is screwed on to the power tool spindle to secure the disk thereon by engaging said inner flange against said disk with said flanges maintained in said first separated condition so that said flanges create pressure against said rolling members, release of said holding means resulting in said rolling members being urged by said pressure along said ramps to said second positions whereby pressure between the inner flange and the disk is relieved and unscrewing the flange lock is facilitated;

each flange having a number of said ramps equal to the number of rolling members, the ramps being arranged in facing pairs along which said rolling members are movable;

spring means urging said rolling members into said first positions;

said holding means including a ring member mounted for limited rotation on the boss intermediate said flanges and rotatable in the direction in which the flange lock is screwed on to the spindle to a first limit position in which said rolling members are locked in said first positions thereof adjacent upper ends of the ramps, rotation of the ring member in the opposite direction relative to the boss to a second limit position releasing the rolling members to permit them to run down the ramps;

three said rolling members being equally spaced around the flange lock by a cage member rotatably mounted on the boss intermediate said flanges;

said cage member including an annular wall member circumferentially between an inner face of said ring member and said boss;

said wall member having an opening therethrough in which a locking ball larger than the thickness of the wall is positioned;

said boss including a recess which in said first limit position of said ring member corresponding to the first positions of the rolling members is aligned with said opening and said locking ball is held partly in said opening and partly in said recess by said inner face of the ring member thus locking the cage against rotation relative to the boss; and

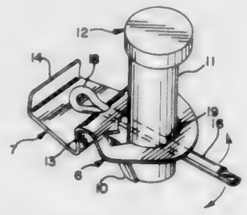
rotation of said ring member to its second limit position aligning a recess in said inner face of said ring member with said opening in said annular wall of said cage member allowing the locking ball to disengage from the recess in the boss and permit the cage member to rotate relative to the boss so that the rolling members can move down said ramps.

5,388,943

COTTER PIN GUARD AND RETAINER

Rudolph E. Nadherny, Naperville, Ill., assignor to Ireco, Inc., Chicago, Ill.

Filed Oct. 5, 1993, Ser. No. 131,650
Int. Cl.[6] F16B *21/14*
U.S. Cl. 411—513 9 Claims



1. A device for guarding and retaining a cotter pin in place after being inserted in a cotter pin receiving aperture extending transversely through a shank of a pin or bolt comprising, an integral piece of springy sheet material having a washer portion and a shelf portion,

said washer portion having a central opening therein for receiving the shank of the pin or bolt and at least one tab extending into frictional retaining engagement with the shank of the pin or bolt extending through said central opening, and

said shelf portion being offset to one side of said washer portion and connected thereto by a step having an opening through which a shank of the cotter pin can be inserted and pass on into said cotter pin receiving aperture, and the edge of said shelf opposite said step having a cotter pin head retaining fence thereon,

said shelf portion flexing at said connection to said washer portion under applied force so as to permit the insertion of the shank of the cotter pin through said opening in said step and said cotter pin receiving aperture and returning to its normal non-flexed condition upon removal of said applied force whereby a head of the inserted cotter pin is trapped between said fence and said step thereby guarding and retaining the inserted cotter pin in place.

5,388,944

VERTICAL HEAT-TREATING APPARATUS AND HEAT-TREATING PROCESS BY USING THE VERTICAL HEAT-TREATING APPARATUS

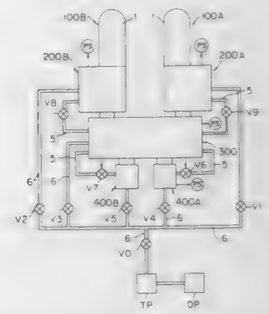
Eiichiro Takanabe, Sagamihara; Takeo Suzuki, Iruma, and Tadataka Noguchi, Kitakyushu, all of Japan, assignors to Tokyo Electron Tohoku Kabushiki Kaisha, Japan

Filed Feb. 4, 1993, Ser. No. 13,366
Claims priority, application Japan, Feb. 7, 1992, 4-057002
Int. Cl.[6] B65G *49/07*
U.S. Cl. 414—217 17 Claims

10. A processing apparatus for heat treating an object comprising:

a first sealable chamber for introducing objects into and removing objects from the apparatus, said first chamber having has induction and has exhausting means;

a second sealable chamber having means for loading objects into a reaction chamber, said second chamber being provided in sealable communication with said first chamber, said second chamber further having gas induction and gas exhausting means;



a pressure balancing gas conduit connected between said first and said second sealable chambers, said conduit including a pressure balancing valve, and

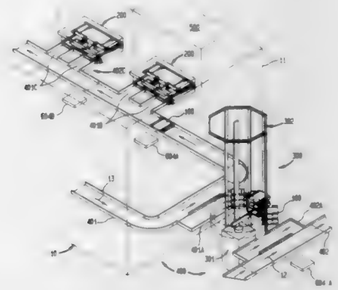
conveying means for transferring objects between said first and said second chamber wherein during operation inert gas is continuously induced into and exhausted from said first and said second gas chambers.

5,388,945

FULLY AUTOMATED AND COMPUTERIZED CONVEYOR BASED MANUFACTURING LINE ARCHITECTURES ADAPTED TO PRESSURIZED SEALABLE TRANSPORTABLE CONTAINERS

George Garric, Perthes, and André Lafond, Nemours, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1993, Ser. No. 101,608
Claims priority, application European Pat. Off., Aug. 4, 1992, 9248011
Int. Cl.[6] B65G *1/133*
U.S. Cl. 414—217 5 Claims



1. Fully automated and computerized conveyor based manufacturing line architecture (**15**) for the storage, handling and transporting of articles for the treatment thereof in a plurality of processors (**500**); said manufacturing line being installed in an average cleanliness ambient including:

a) pressurized sealable transportable containers (**100**) of the type comprising a box-shaped housing (**102**) provided with an access opening (**104**) sealed with releasable door means (**124**) and gas injection valve means (**129**) enclosing a workpiece therein;

b) conveyor transportation means (**401-1**);

c) a gas supply installation means (**700-1**) comprising a compressed ultra pure neutral gas supply source (**701-1**) and a delivery system (**702-1**);

d) dispatching apparatus means with a gas distribution system (**300-1**) comprising:

storage/gas feeding means (**302-1**) for storing the containers said storage/gas feeding means comprising a frame supporting a number of support stations, each support station being provided with gas injector means connected to said gas supply installation means (**700-1**);

handling means (**301-1**) for transferring said containers between said support stations and said conveyor transportation means;

e) pressurized interface apparatus means (**201-1**) adapted to receive said containers and transfer the workpiece enclosed therein to a processing equipment (**500-1**) comprising:

container receiving means for receiving/sending a container from/to said conveyor transportation means;

a pressurized port zone provided with transfer robot means interfacing said container receiving means with said processing equipment;

actuator means for moving said container on said container receiving means; and,

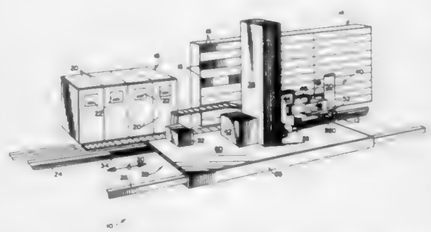
f) computer means (**600**) for overall control of said conveyor transportation means, dispatching apparatus means, gas supply installation means, interface apparatus means and said processing equipments.

5,388,946

SYSTEMS AND METHODS FOR THE AUTOMATED ARCHIVING AND RETRIEVAL OF COMPUTER DATA STORAGE CASSETTES

Rolf Baur, Heubach-Lautern, Germany, assignor to Grau GmbH & Co., Germany

Continuation of Ser. No. 627,023, Dec. 13, 1990, abandoned, which is a division of Ser. No. 391,284, Aug. 9, 1989, Pat. No. 5,015,139, which is a continuation-in-part of Ser. No. 182,593, Apr. 18, 1988, abandoned, and a continuation-in-part of Ser. No. 182,702, Apr. 18, 1988, abandoned. This application Jun. 16, 1994, Ser. No. 261,310
Claims priority, application Germany, Jan. 20, 1988, 3801397
Int. Cl.[6] B65G *1/04*
U.S. Cl. 414—281 56 Claims



1. An automated archiving and retrieval system for computer data storage cassettes comprising:

a cassette library for archiving a number of data storage cassettes during periods of nonuse;

at least one cassette drive unit having a slot sized to accept a data storage cassette therewithin;

a robotic manipulator for (i) gripping and removing a preselected data storage cassette from said cassettte library, (ii) transporting said gripped preselected data storage cassette from said cassette library to said at least one drive unit, (iii) orienting said gripped preselected data storage cassette into alignment with said slot of said at least one drive unit, and (iv) inserting and releasing said preselected data

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storage cassette within said slot of said at least one drive unit, wherein said robotic manipulator includes;

foot structure disposed on a ground surface;

a robot support mounted upon said foot structure for vertical movements relative to said ground surface between raised and lowered positions; and

a robot mounted upon said robot support so as to be carried thereby between said raised and lowered positions thereof, said robot including:

(a) a first drive mounted upon said robot support;

(b) a proximal arm radially extending from said first drive and connected thereto for articulated movements about a first axis;

(c) a distal arm connected to said proximal arm for relative pivotal movements about a second axis;

(d) a support element connected to a terminal end of said distal arm for relative pivotal movements about a third axis;

(e) a manipulator hand connected to said support element, said manipulator hand comprising:

a gripper having a gripped position for gripping a preselected cassette to allow said cassette to be transported between said cassette library and said cassette drive, and a released position for releasing said cassette to allow said cassette to be inserted into said input slot of said cassette drive, wherein

said gripper includes a housing, and a pair of separated finger members establishing a space therebetween mounted to said housing, at least one of said finger members being movable relative to another of said finger members so as to effect said gripped and released positions; and an ejector movable between a retracted position and an extended position for ejecting said cassette into said input slot when said gripper is in said released position, and wherein

said system further comprises;

a positioning control system operatively coupled to said robotic manipulator for effecting movement of said gripper between a first position of said data storage cassette whereby said gripper may be aligned with and adapted to grip said cassette when stored in said cassette library, and a second position of said data storage cassette whereby said cassette may be aligned with said input slot of said cassette drive.

5,388,947

MANUALLY CONTROLLED VEHICLE RESTRAINT APPARATUS WITH A COUNTERBALANCE

John F. Ancel, deceased, late of St. Louis, Mo., and by Colette Ancel, legal representative, 773 Buckley Rd., St. Louis, Mo. 63125

Filed Jul. 6, 1993, Ser. No. 86,305

Int. Cl.[6] B65G *9/00;* **E01D** *1/00;* **B66B** *17/12*

U.S. Cl. 414—401 **12 Claims**

1. An apparatus for restraining a vehicle parked on a surface adjacent to a loading dock with an upper surface, the vehicle having a complementary restraining means attached thereto, said apparatus comprising:

a mounting frame;

vertical guide means fixed to said mounting frame;

vehicle restraining means engageable with said complementary restraining means for holding the vehicle in the parked position;

counterbalance weight means for moving said vehicle restraining means in a vertical direction;

latching means attached to said mounting frame for retaining said counterbalance weight means in a selected position;

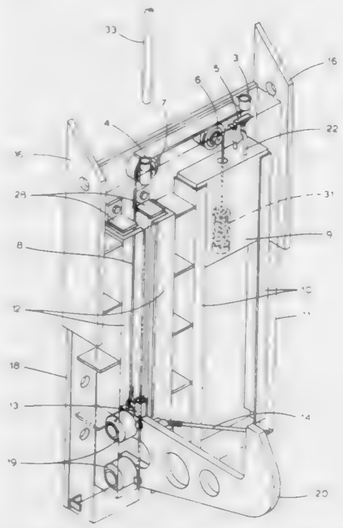
said mounting frame being adapted to be mounted to said loading dock in a vertical position between said upper surface of said dock and said surface upon which the vehicle is parked;

said vertical guide means including a first pair of vertical guide means designed to slidably mate with said vehicle restraining means, and a second pair of vertical guide means designed to slidably mate with said counterbalance weight means;

said vehicle restraining means being adapted to be vertically moveable in said first pair of vertical guide means between a vehicle restraining raised position and a vehicle non-restraining lowered position, said vehicle restraining means including means projecting perpendicularly from said mounting frame and operative to engage said complementary restraining means when said vehicle restraining means is in said raised position;

said counterbalance weight means being adapted to move vertically in said second pair of vertical guide means between a non-latched lowermost position and a latched uppermost position;

a mechanical connection that connects said vehicle restraining means and said counterbalance weight means such that vertical movement of said vehicle restraining means in a first vertical direction will produce a movement of said counterbalance weight means in a second vertical direction opposite to said first vertical direction, whereby when said counterbalance weight means is in its uppermost position said vehicle restraining means will be in its lowered position;



said latching means being operative in response to the movement of said counterbalance weight means to its uppermost position, to engage and retain said counterbalance weight means at said uppermost position; and

manual operated means selectively operable at a first location on said mounting frame to manually move said vehicle restraining means from its raised position to its lowered position which causes said counterbalance weight means to be raised to its uppermost position for engagement with said latching means, said manual operated means being selectively operable at a second location on said mounting frame to engage said latching means to release said counterbalance weight means thereby permitting said counterbalance weight means to move to its lowermost position with the resulting effect that the vehicle restraining means is moved to its raised position thereby engaging said complementary restraining means on the parked vehicle whereby said parked vehicle is restrained from moving from said loading dock.

5,388,948

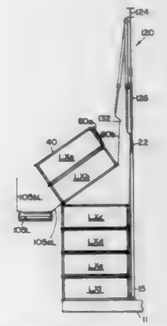
APPARATUS AND METHOD FOR UNLOADING CONTENT OF MULTILAYER CONTAINERS

Wallace H. Jerome, 1480 E. Maple Ave., Barron, Wis. 54812

Filed Mar. 18, 1993, Ser. No. 33,767

Int. Cl.[6] B65G *65/04, 65/34*

U.S. Cl. 414—425 **24 Claims**



1. A multilayer container column comprising:

(a) a plurality of containers of generally the same configuration, each having a top, a bottom and sidewalls extending therebetween for collectively defining an internal cavity for retainably holding a cargo;

(b) gate means in the sidewalls of said containers for enabling access to said internal cavity therethrough;

(c) means for vertically aligning said plurality of containers one upon the other to form a vertical stack in aligned configuration such that said gate means of the containers generally lie in the same plane at a discharge side of the stack of containers; and

(d) hinge means for pivotally interconnecting said aligned containers about their horizontal edges at said discharge side thereof, wherein said containers can be selectively tilted about said hinge means to unload cargo from their internal cavities through said gate means.

5,388,949

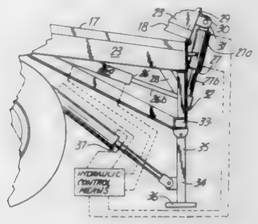
VEHICLE RETRIEVER/TRANSPORTER

Kenneth G. Berg, Box 411, Rte. 2, Mazeppa, Minn. 55956

Filed Jul. 12, 1993, Ser. No. 89,475

Int. Cl.[6] B60P *1/16*

U.S. Cl. 414—480 **4 Claims**



2. A vehicle for retrieving and transporting disabled vehicles, having a frame supported upon a front and rear wheeled axle and a cab enclosing an operator's compartment, comprising:

(a) a fixed bed portion positioned behind said cab, said fixed bed portion being inclined rearwardly and downwardly and terminating at a rear edge;

(b) a foldable bed portion having a front edge hinged to said rear edge of said fixed bed portion and being operable between a folded position wherein said foldable bed portion overlies said fixed bed portion and an unfolded position wherein said foldable bed portion is coplanar with said fixed bed portion; and

(c) a wheeled axle attached to said foldable bed portion, said axle having a wheel at each end, said wheels being in contact with the ground when said foldable bed portion is in said unfolded position.

5,388,950

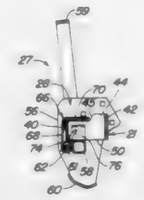
BUMPER QUICK-ATTACH FOR TRACTOR FRONT-END LOADERS

Calvin O. Schmahl, Chilton, Wis., and David L. Apple, Muskegon, Mich., assignors to Deere & Company, Moline and Amerequip Corporation, Chicago, both of Ill.

Filed Aug. 23, 1993, Ser. No. 110,444

Int. Cl.[6] E02F *3/72*

U.S. Cl. 414—686 **13 Claims**



1. In a loader including a pair of transversely spaced upright posts respectively releasably secured to a pair of rear supports carried by and projecting transversely opposite one another from a longitudinally extending tractor frame, a yoke coupled to the upright posts including a pair of legs extending forwardly from the post along opposite sides of the tractor and having forward ends joined together by a bight portion releasably secured to a transverse front end structure fixed to the forward end of the tractor frame, the improvement comprising: said front end structure having forward and top surfaces joined together and defining a desired configuration; said bight portion including opposite side members joined together by a horizontal cross member extending transversely beneath and being in contact with a bottom surface of said front end structure; a latch mechanism including a latch plate shaped complementary to said desired configuration; said latch plate extending between and being pivotally mounted to said side members for rotation about a horizontal axis, located just forwardly of said cross member, between a rearward closed position wherein it is in engagement with said forward and top surfaces and a forward open position wherein it is spaced away from said forward and top surfaces and a control rod connected to said latch plate for remotely moving said latch plate between said open and closed positions.

5,388,951

PIPE LAYING AND HANDLING APPARATUS AND METHOD

Wilber E. Tolliver, Rockford, and Larry R. Magnuson, Muskegon, both of Mich., assignors to Independent Concrete Pipe Corporation, Indianapolis, Ind.

Filed Apr. 21, 1992, Ser. No. 871,484

Int. Cl.[6] B66F *11/00*

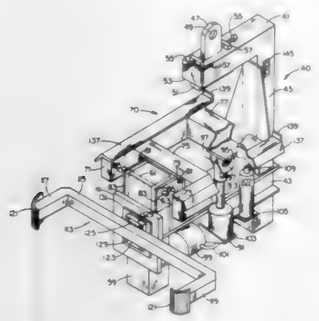
U.S. Cl. 414—746.5 **38 Claims**

1. An apparatus for lifting and aligning a section of precast concrete pipe comprising:

lifting means for lifting a section of precast concrete pipe, said lifting means including a first frame, said first frame being C-shaped and defining a space for receiving a portion of the section of precast concrete pipe; and

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alignment means including a second frame movably connected to said first frame of said lifting means for supporting a section of concrete pipe at an angle relative to said lifting means.

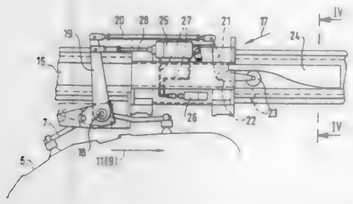


5,388,952

ARRANGEMENT FOR TRANSFERRING SHEET METAL PARTS IN A PRESS INSTALLATION

Hans Hofele, Göppingen, and Karl Thudium, Wäschenbeuren, both of Germany, assignors to L. Schuler GmbH, Germany

Continuation of Ser. No. 834,773, Feb. 13, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 137,881
Claims priority, application Germany, Feb. 16, 1991, 4104810
Int. Cl.[6] B65G *65/02*
U.S. Cl. 414—752 **7 Claims**



1. In an arrangement for the transfer of a sheet metal part within a press installation that has traverses comprising gripper means for holding sheet metal parts, said traverses extending transversely with respect to a transfer movement direction and which can be lifted and lowered and moved in the transfer movement direction and back, carriages movable on moving rails and which are liftable and lowerable with said rails, the improvement comprising:

pivot bearings in which opposite ends of at least one of the traverses are rotatably disposed about an axis of rotation, each of the traverses being disposed between a pair of the moving carriages;

an adjusting device mounted on one of said carriages; and

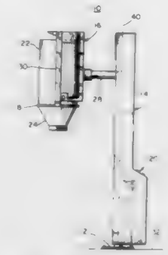
at least one movement transmission device coupled between the adjusting device and one of the ends of said at least one of the traverses, the adjusting device rotatably adjusting the one end of the traverse and thus the gripper means around said axis of rotation to different angular orientations via the movement transmission device.

5,388,953

METHOD FOR THE LIFTING, TURNING, AND TILTING OF CONTAINERS

Helmut Habicht, 15 Royal park Ter., Hillsdale, N.J. 07642

Division of Ser. No. 35,417, Mar. 23, 1993, Pat. No. 5,344,275. This application Jun. 21, 1994, Ser. No. 263,085
Int. Cl.[6] B65G *65/23*
U.S. Cl. 414—786 **11 Claims**



1. A method for lifting, turning and tilting of containers comprising:

(a) providing at least one pedestal assembly having a shaft, said pedestal assembly having an axis of its shaft in a substantially vertical array;

(b) providing a column assembly, said column assembly being elongated and tubular, configuring at least one end of the column assembly for rotatable attachment to said shaft of the pedestal assembly;

(c) providing a container support assembly, said container support assembly including a bottom portion sufficient to receive and support any container placed thereon;

(d) providing a means for retaining the container in a placed condition during lifting, turning, and tilting, said means for retaining the container being adjustably attached to said container support assembly;

(e) providing a moveable carriage assembly interior of said column assembly, said carriage assembly including a plurality of guide rollers rotatably secured thereto, said carriage assembly rotatably supporting said container support assembly exterior of said column assembly by way of an elongated aperture being formed in a wall of the column assembly;

(f) attaching U-shaped channel members to opposing interior walls of the column assembly, so that the guide rollers are guided therein;

(g) mounting a lifting and lowering means interior of said column assembly for a controlled positioning of said carriage assembly with respect to said column assembly;

(h) mounting a powered turning means interior of said column assembly for providing a controlled turning of said column assembly with respect to said pedestal assembly;

(i) mounting a powered tilting means on said carriage assembly, said tilting means being housed interior of said column assembly, said tilting means providing a controlled tilting of said container support assembly;

(j) providing a first controlling means for independently controlling said lifting and lowering means;

(k) providing a second controlling means for independently controlling said turning means;

(l) providing a third controlling means for independently controlling said tilting means;

(m) providing a source of power for said lifting, turning, and tilting;

(n) retaining a container on said container support assembly by engaging said retaining means; and

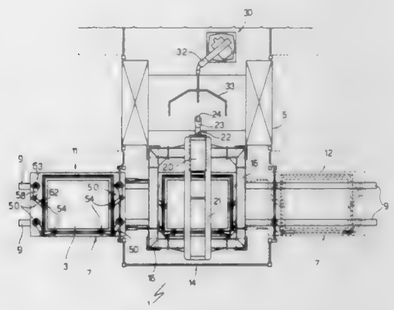
(o) manipulating the container from a first position to at least a subsequent position by independently controlling a flow of power from said power source to said lifting and lowering means, said turning means, and said tilting means.

5,388,954

UNIT FOR FEEDING SEMIFINISHED PARTS TO A FORMING MACHINE, PARTICULARLY A PRESS

Giorgio Marinoni, Turin, and Arturo Baroncelli, Caraglio, both of Italy, assignors to Comau S.p.A., Grugliasco, Italy

Filed May 28, 1993, Ser. No. 69,014
Claims priority, application Italy, May 29, 1992, 92A000464
Int. Cl.[6] B65H *3/00*
U.S. Cl. 414—795.7 **4 Claims**



2. In an apparatus for feeding semifinished parts to a forming machine, the apparatus comprising a table for supporting a stack of the semifinished parts, a carriage movable between a loading station and an unloading station having gripping means for withdrawing one of the semifinished parts from the stack, air cushion supporting means for floating the table in relation to the carriage, and locating means for positioning the table supporting the stack of semi-finished parts relative to the carriage, the improvement comprising:

at least three support members extending from the carriage;

an articulated arm extending from each support member, each articulated arm having a first portion with a first distal end extending from and movable in relation to the support member, a second portion with a second distal end extending from and movable in relation to the first distal end, and an adjustable end portion extending from and movable in relation to the second distal end, the adjustable end portion contactable with sides of the stack; and

means for memorizing the position of the articulated arms in relation to the carriage.

5,388,955

HIGH-SHELF SYSTEM STORE FOR THE STORAGE AND THE REMOVAL FROM THE STORE OF ROLL-SHAPED MATERIAL, MORE PARTICULARLY PAPER ROLLS, HAVING TRACKS ARRANGED IN PAIRS FOR STORING PAPER ROLLS THEREUPON

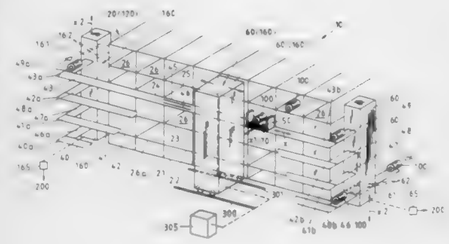
Niels Schröder, Pinneberg, Germany, assignor to Copla Förder- und Lagertechnik Gesellschaft für Anlagenbau mbH, Berlin, Germany

Filed Jun. 12, 1992, Ser. No. 897,687
Claims priority, application Germany, Jun. 12, 1991, 9107229[U]
Int. Cl.[6] B65G *1/06*
U.S. Cl. 414—279 **20 Claims**

1. High-shelf system store for storage and removal from a store of roll-shaped material, more particularly of paper rolls which can be supplied in a lying position from a means for roll seizing via a store with shelf bays constructed in several floors, having tracks that are arranged in pairs for accommodation of paper roll transporting vehicles, in which each track of a pair of tracks attached on crossgirders of the framework structure of the store possesses an approximately U-shaped cross-sectional profile section with a lower chord and an upper chord and with a web interconnecting the lower chord with the upper chord, characterized in that:

a) the high-shelf system store (**10**) comprises one shelf portion (**20**) or two shelf portions while forming a distribution shaft (**30**) in shelf portions (**20**,**120**) disposed at a distance from each other with a plurality of shelf bays (**26**,**126**) disposed in a side-by-side and in a superposed arrangement on floors (**21**,**22**,**23**,**24**,**25**) with front-end openings (**26***a*) or openings located within an area of the distribution shaft (**30**) and having a length corresponding to a length or a multiple of the length of a paper roll (**100**), wherein individual floors (**21** through **25**) of each shelf portion (**20**,**120**) of the two shelf portions (**20**;**120**) disposed on both sides of the distribution shaft (**30**) are located opposite the floors of the in each case other shelf portion;

b) on each floor (**21**;**22**;**23**;**24**;**25**) of each shelf portion (**20**;**120**) within an area of the front-end openings (**26***a*) of each shelf bay (**26**,**126**), a horizontal conveying path (**40**;**41**;**42**;**43**;) proceeding transversely to a longitudinal direction of the shelf is disposed, wherein all conveying paths (**40** through **43**) terminate at one end in one elevator or, at both ends (**40***a*, **41***a*, **43***a*; **40***b*, **41***b*, **42***b*, **43***b*) in one elevator each (**60**,**160**), each elevator comprising an elevator shaft (**60'**,**160'**) of a framework structure with a raisable and lowerable conveying platform (**61**;**161**) for the accommodation of at least one shunting wagon (**50**) with a paper roll transporting car (**70**) disposable thereupon;



c) the conveying paths (**40** through **43**) and the conveying platform (**61**;**161**) of each elevator (**60**;**160**) possess runway tracks (**45**,**46**;**62**,**162**) for the shunting wagons (**50**) of each conveying platform (**61**;**161**) with the runway tracks (**45**,**46**) of each conveying path (**40**;**41**;**42**;**43**) in a respective floor position of the conveying platforms (**61**,**161**) forming a continuous shunting wagon crossing area;

d) each shunting wagon (**50**) is provided with a paper roll transporting car (**70**) proceeding transversely to a forward movement of the shunting wagon which is displaceable on

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runway tracks (52) provided in the shunting wagon (50) and which is provided with a raisable and lowerable paper roll carrying plate (71) having a paper roll supporting area possessing a configuration of a graduated circle (72);

e) each shelf bay (26;126) is provided with a paper roll supporting beam 80 proceeding in a longitudinal direction of the shelf bay and stationarily mounted and fitted with running tracks (82,82') for the paper roll transporting car (70), in which case the paper roll supporting beam (80) comprises two tracks (83,84) disposed at a distance from each other, whose supporting areas (83*a*,84*a*) are constructed inclinedly toward each other in such a way that a storage area corresponding to a partial circumference of a paper roll is formed and whose distance from each other is dimensioned in such a way that the paper roll transporting car (70) is able to travel between the tracks (83,84) with the paper roll carrying plate (71) in the elevated position;

f) a driving means (65,165;55;75) for the displacement of the conveying platform (61,161) of the elevators (60,160), the shunting wagon (50) and the paper roll transporting car (70) are combined into a program control system (200), in which the individual shelf bays (26,126) are also stored;

g) the web (182) of each track (83;84) proceeds free of bends in a linear manner and is, with the aid of screwed, riveted or welded connections (183), connected to a plurality of vertical supporting girders (184) disposed at a distance from each other and connected to the crossgirder (12) of the framework structure (4) of the store;

h) a lower chord (181) is formed by the leg (187) with a horizontally proceeding section (187*a*) forming a support for the paper roll transporting car (70) and by a section (187*b*) adjoining said proceeding section (187*a*), said section (187*b*) proceeding vertically and parallel to the web (182), wherein the horizontal leg section (187*a*) is supported on and the vertical leg section (187*b*) is supported against an angle section (188) connected to the vertical supporting girder (184) and the cross-girder (12), the angle section (188) having a height greater than a length of the vertical leg section (187*b*) of the track (83,84); and

i) an upper chord (180) is formed by a leg (185) which, in the direction of a support (187') of the lower chord (181), proceeds obliquely and which is adjoined by a section (185*a*) proceeding vertically and parallel to the web (182) of the track (83,84), wherein the vertical supporting girder (184) has a length which is shorter than a sum of lengths of the web (182) and of the angle section (188).

5,388,956

FAN ASSEMBLY AND METHOD FOR REDUCING FAN NOISE

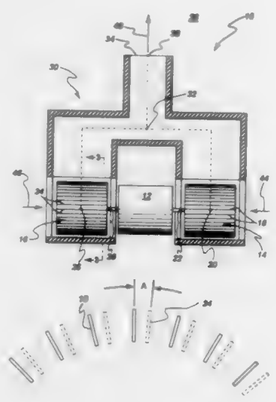
Frederic G. Pla, Schenectady, and Robert A. Hedeen, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 9, 1994, Ser. No. 208,320
Int. Cl.[6] F04D *29/66*
U.S. Cl. 415—1 6 Claims

1. A method for reducing fan noise in a fan assembly having a fan motor and generally identical and spaced-apart first and second fans rotationally attached to said fan motor to turn at the same rate with an equal number of generally identical fan blades, said first and second fans each having an acoustic center, and said method comprising the steps of:

a) rotating said first fan to turn at a rotational speed producing noise including a first tone having a wavelength and having a frequency equal to said rotational speed times said number of fan blades;

b) rotating said second fan to turn at said rotational speed producing noise including a second tone equal generally to said first tone;



c) angularly offsetting said fan blades of said second fan at a relative phase angle with respect to said fan blades of said first fan such that said second tone generally cancels said first tone; and

(d) providing a duct having: a centerline duct path from the acoustic center of said first fan to the acoustic center of the second fan; an opening in fluid communication with ambient air; a first centerline duct route from said opening to the acoustic center of said first fan; and a second centerline duct route from said opening to the acoustic center of said second fan, wherein said first centerline duct route includes a first portion coinciding with a first segment of said centerline duct path and said second centerline duct route includes a second portion coinciding with a second segment of said centerline duct path, and wherein said centerline duct path is equal to the sum of said first segment and said second segment, and wherein said angularly-offsetting step angularly offsets said fan blades of said second fan at said relative phase angle with respect to said fan blades of said first fan such that said relative phase angle satisfies generally an equation:

$$A = pi[(2S/c)(L-2X)-1//B],$$

where A is said relative phase angle expressed in radians, S is said rotational speed expressed in revolutions per second, c is the speed of sound in air within said duct, L is the length of said centerline duct path, X is the length of said first segment of said centerline duct path, and B is said number of fan blades of said first fan.

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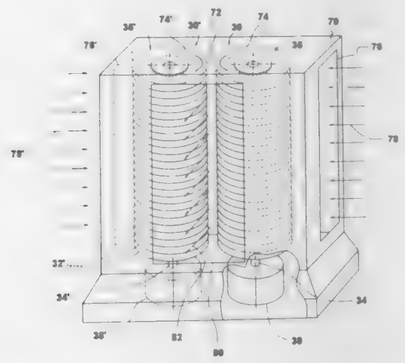
Patent Not Issued For This Number

5,388,958

BLADELESS IMPELLER AND IMPELLER HAVING INTERNAL HEAT TRANSFER MECHANISM

Khanh Dinh, Gainsville, Fla., assignor to Heat Pipe Technology, Inc., Alachua, Fla.

Filed Sep. 7, 1993, Ser. No. 118,103
Int. Cl.[6] F01D *1/36*
U.S. Cl. 415—90 16 Claims



1. An impeller comprising:

(A) a transverse flow rotor which includes

(1) a rotatable shaft, and

(2) a plurality of flat annular disks which are fixedly mounted on said shaft and which entrain fluid by friction upon rotation of said shaft and propel the fluid generally transversely through said rotor; and

(B) a volute which on cases said rotor and which has a radial inlet and a radial outlet, wherein said volute present a gap which is formed adjacent an outer radial surface of said rotor, said gap

(1) extending less than the full circumferential length of said volute,

(2) having a radial distance which is less than the radial distances between the rotor and the remainder of said volute, and

(3) having a minimum width occurring generally along a single axial plane of said volute, and

wherein, when said shaft is rotated fluid flow through said gap forms a sub-ambient pressure zone the reduced fluid pressure of which draws fluid generally towards said gap, thereby enhancing operation of said rotor.

5. A method of displacing a fluid comprising:

propelling said fluid generally transversely without turbulence through a volute of an impeller by rotating a flat disk rotor to draw said fluid into a radial inlet of said impeller, through a gap, and out of a radial outlet of said impeller, said gap

(1) being formed adjacent an outer radial surface of said rotor,

(2) extending lens than the fill circumferential length of said volute,

(3) having a radial distance which is less than the radial distances between the rotor and the remainder of said volute, and

(4) having a minimum width occurring generally along a single axial plane of said volute,

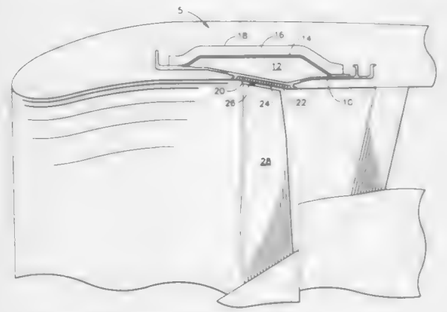
said propelling step using a combination of frictional forces produced by friction between flat disks of said rotor and said fluid, a pressure drop produced by fluid flow through said gap, and centrifugal forces produced by rotation of said disks.

5,388,959

SEAL INCLUDING A NON-METALLIC ABRADABLE MATERIAL

James M. Forrester, Centerville, Ohio; Bradley R. Love, Altharetta, Ga., and Jack W. Baldwin, West Chester, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 23, 1993, Ser. No. 111,253
Int. Cl.[6] F01D *11/08*
U.S. Cl. 415—173.4 4 Claims



1. A sealed fan assembly comprising:

an annular stator casing made of a first material;

a lightweight annular abradable seal structure made of a second material different from said first material, said second material comprising of an epoxy foam containing heat expandable, thermoplastic microballoons filled with a chemical which expand when cured, said seal structure being applied to said stator caseing and cured thereto, whereby:

a. the expanding microballoons cause the second material to fill in gaps and crevices in said first material, resulting in a continuous ring of the second material bonded directly to the first material of the stator casing without need for any additional bonding agents; and whereby:

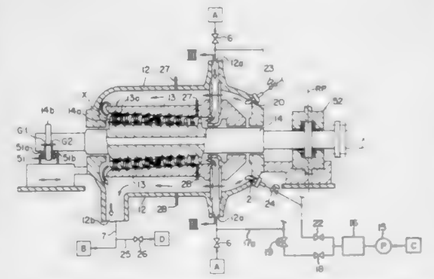
b. the thermoplastic microballoons will produce rounded edges upon wear shear to thereby avoid wear on non-metallic rotor blades.

5,388,960

FORCED-AIR COOLING APPARATUS OF STEAM TURBINE

Atsuhide Suzuki, Yokohama; Shinya Ayano, Fujisawa; Yukio Shinozaki, Kawasaki, and Shigeo Hosoi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 5, 1993, Ser. No. 131,593
Claims priority, application Japan, Oct. 5, 1992, 4-288147
Int. Cl.[6] F01D *21/00, 25/08, 25/26*
U.S. Cl. 415—176 7 Claims



1. A forced-air cooling apparatus of a steam turbine which

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comprises an outer casing composed of upper and lower casing halves, an inner casing composed of upper and lower casing halves and disposed inside the outer casing and a rotor coaxially disposed inside the inner casing for forming a steam flow passage between the inner casing and the rotor and in which steam introduced into the steam flow passage through nozzles provided on the inside of the inner casing from a steam introducing portion is impinged against blades of the rotor to thereby impart a driving force to a movable portion with respect to a stationary portion of a turbine, the steam turbine is cooled during the turning operation period of the steam turbine, and the steam is thereafter exhausted through a steam exhaust portion, the forced-air cooling apparatus comprising:

a cooling passage means including a first cooling air passage formed between the inner casing and the rotor and a second cooling air passage formed between the outer casing and the inner casing;

means for charging external cooling air into the first and second cooling air passages during the turning operation period;

means for externally discharging the cooling air after passing the first and second cooling air passages;

means for detecting a differential expansion in an axial direction between the movable portion and the stationary portion;

means for detecting a temperature difference between the upper and lower casing halves of the outer casing; and

a control means for controlling the flow rate of the cooling air passing the first cooling air passage in response to a signal corresponding to the difference from the differential expansion detection means and controlling the flow rate of the cooling air passing the second cooling air passage in response to a signal corresponding to the difference from the temperature difference detection means.

5,388,961

MECHANICAL ASSEMBLY FOR DETECTING THE PASSING OF A FORCE THRESHOLD IN TRANSLATION

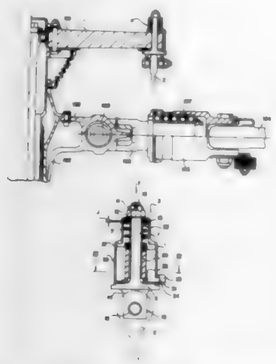
Jean-Luc Leman, Aix-En-Provence; Philippe Legendre, Grans, and Etienne Rampal, Marseille, all of France, assignors to Eurocopter France S.A., Marignane, France

Filed May 5, 1993, Ser. No. 56,545

Claims priority, application France, May 6, 1992, 92 05593

Int. Cl.[6] B64C *27/00*

U.S. Cl. 416—61 **19 Claims**



1. Mechanical assembly for transmitting force along an axis driven by a substantially axial movement of translation under the effect of a thrust load on a rotating body, this mechanical assembly comprising a part which transmits the thrust load input movement, and a part which receives the thrust load output movement, wherein the said mechanical assembly comprises a detector for detecting the passing of a force threshold represented by a predetermined value of the thrust load, which has an elastic element and an indicator part which are arranged such that when the thrust load exceeds the threshold value, the thrust load acts on the elastic element to modify its axial dimension allowing the indicator part to move to a warning position.

5,388,962

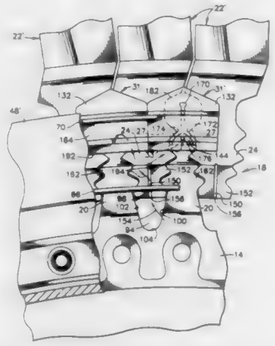
TURBINE ROTOR DISK POST COOLING SYSTEM

Thomas G. Wygle, Loveland; David G. W. Fargher, Fairfield, and Arthur J. Piekarski, Middletown, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 15, 1993, Ser. No. 136,143

Int. Cl.[6] F01D *5/08*

U.S. Cl. 416—95 **10 Claims**



1. In a rotor assembly for a gas turbine engine having a turbine rotor disk and a plurality of radially extending blades mounted on the disk, the disk including a plurality of circumferentially alternating posts and slots disposed about a periphery of the disk, each of the slots receiving a dovetail portion of one of the blades, each blade having a shank portion extending radially outward from the dovetail portion and a platform portion atop the shank portion, a system for cooling each of the disk posts, said system comprising:

a) a plurality of seal bodies, wherein each of said seal bodies includes a thermal isolation chamber positioned over a radially outer surface of one of the disk posts;

b) means for supplying cooling air to a plurality of axially extending blade cooling plenums positioned radially inward of the blades, said plenums extending through the disk;

c) means for diverting cooling air from said axially extending blade cooling plenums to said thermal isolation chambers, wherein said means for diverting comprises a radially extending slot formed in an axially facing surface of each of the blade dovetail portions.

5,388,963

FLANGE FOR HIGH SPEED ROTORS

John H. Dimmick, III, Jupiter, Fla., and Robert A. Ress, Jr., Carmel, Ind., assignors to United Technologies Corporation, Harford, Conn.

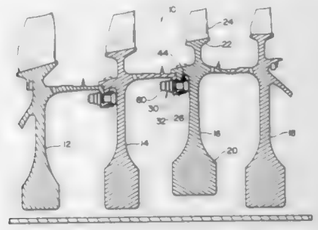
Filed Jul. 2, 1993, Ser. No. 87,542

Int. Cl.[6] F01D *5/06*; **F16B** *43/00*

U.S. Cl. 416—198 A **12 Claims**

1. For a compressor of a gas turbine engine including a plurality of rotors each having a disk, said disk including an offset, at least two adjacent rotors of said plurality of rotors each having mating flanges disposed on said offset of each of said two adjacent rotors adapted to connect said adjacent rotors, one of said mating flanges having a plurality of radial extending circumferentially spaced slots and the other of said mating flanges having a plurality of circumferentially spaced

holes dimensioned to complement said slots, means including a bolt having a head portion for connecting said slots and said holes for attaching adjacent rotors, anti-rotational means formed from a flat sheet metal stock and including a central aperture for receiving said bolt and being captured by the bolt



and the slotted flange, and said offset of said one of said mating flanges being dimensioned to axially extend from said disk substantially the width of said head portion whereby the weight of the disk is minimized and the fatigue life of the rotor is enhanced.

5,388,964

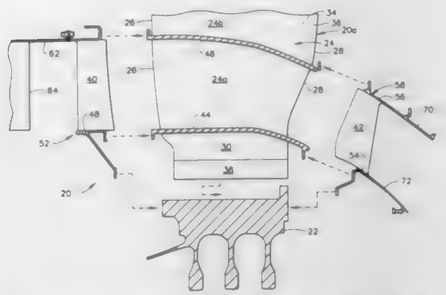
HYBRID ROTOR BLADE

John J. Ciokajlo, Henderson, Nev., and Michael T. O'Brien, Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 14, 1993, Ser. No. 120,897

Int. Cl.[6] F01D *5/30*

U.S. Cl. 416—204 A **9 Claims**



1. A hybrid gas turbine engine rotor blade comprising:

an airfoil having a leading edge and a trailing edge extending from a root to a tip defining therebetween first and second opposite sides;

a dovetail integrally joined to said airfoil root for removably mounting said airfoil to a rotor disk;

said airfoil having an inner portion disposed adjacent to said root, and an outer portion disposed adjacent to said tip, said airfoil outer portion being aerodynamically configured from said leading edge to said trailing edge for effecting a primary pressure rise in airflow channeled thereacross, and said airfoil inner portion being configured from said leading edge to said trailing edge to provide a structural transition from said airfoil outer portion to said dovetail;

a nosepiece disposed adjacent to said leading edge of said airfoil inner portion;

a tailpiece disposed adjacent to said trailing edge of said airfoil inner portion; and

said nosepiece, said tailpiece, and said airfoil inner portion being collectively aerodynamically configured for effecting a secondary pressure rise in airflow channeled thereacross.

5,388,965

SLUDGE PUMP WITH MONITORING SYSTEM

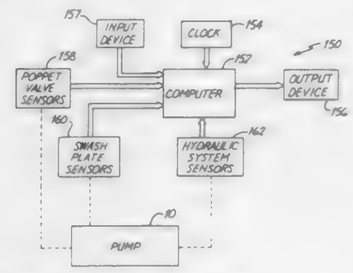
Berthold A. Fehn, Krefeld, Germany, assignor to Friedrich Wilhelm Schwing GmbH, Herne, Germany

Continuation-in-part of Ser. No. 981,982, Nov. 24, 1992, Pat. No. 5,257,912, which is a division of Ser. No. 595,457, Oct. 10, 1990, Pat. No. 5,106,272. This application Mar. 19, 1993, Ser. No. 33,877

Claims priority, application Germany, Mar. 21, 1992, 4209256

Int. Cl.[6] F04B *21/00*

U.S. Cl. 417—63 **5 Claims**



1. A sludge pump system comprising:

a material cylinder;

piston movable in the material cylinder;

a pump drive for driving the piston during working cycles which include a pumping stroke and a filling stroke;

pump valve means for connecting the material cylinder to an outlet during the pumping stroke and for connecting the material cylinder to an inlet during the filling stroke; and

means for monitoring operation of the sludge pump, the means for monitoring comprising:

means for sensing a first parameter related to operation of the pump drive, the first parameter being indicative of adjustment states of a throttle valve of the pump drive;

means for sensing a second parameter indicative of operation of the piston; and

means for determining errors in the operation of the pump based upon the first parameter and the second parameter.

5,388,966

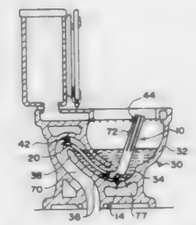
TOILET BOWL DRAINAGE DEVICE

John K. Bley, 185 Sherman, Montgomery, Ill. 60538

Filed Oct. 12, 1993, Ser. No. 133,998

Int. Cl.[6] F04B *17/00*

U.S. Cl. 417—234 **11 Claims**



1. A portable, hand held pump for emptying water from a toilet or urinal bowl, by expelling the water into a drain of the toilet, the pump comprising a housing having curved forward

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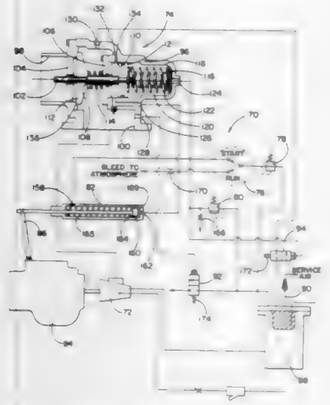
end and linear rear end, the forward end having a nipple extending therefrom to which a predetermined length of tubing is engaged, the housing defining two isolated chambers therein, a first chamber being defined in the rear hand held end of the housing containing a selectively actuatable source of power therein, a second submersible chamber being defined in the forward end and having a motor operated impeller therein, the power source being selectively energizable to operate the motor to which the power source is engaged, the housing including openings therein which lead into the second chamber, the openings lying along a largest in diameter curvature in the curved area of the housing the impeller acting to cause a flow of water into the chamber via the openings and outwardly through the tubing.

5,388,967

COMPRESSOR START CONTROL AND AIR INLET VALVE THEREFOR

Mark A. Firnhaber, LaPorte, and Sylvester Poplawski, Michigan City, both of Ind., assignors to Sullair Corporation, Michigan City, Ind.

Filed Mar. 10, 1993, Ser. No. 29,151
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—295 12 Claims



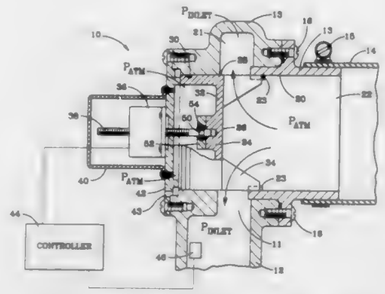
1. A valve for controlling flow to a compressor, comprising:
a housing having an inlet, and an outlet connected to a compressor;
a rod in the housing
a shoulder on the rod;
means for mounting the rod for movement relative to the housing;
a plate movable along the rod;
a first spring between the plate and the housing for biasing the plate toward a closed position in which the housing inlet is at least partially closed;
a piston on the rod, said piston having opposed sides;
a second spring between the piston and the housing for moving the shoulder into engagement with the plate and biasing the plate toward said closed position;
a chamber in the housing on one of said piston sides for receiving air discharged by the compressor, said air having a pressure that acts against the piston and assists the first spring and the second spring move the plate toward the closed position when the compressor is in a start mode of operation; and
a chamber in the housing on the other said piston sides for receiving air discharged by the compressor, said air having a pressure that acts against the piston in opposition to the second spring and reduces bias on the plate whereby the plate is permitted to move away from the closed position when the compressor is in a run mode of operation.

5,388,968

COMPRESSOR INLET VALVE

James A. Wood, and Robert R. Ball, both of Concord, N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation-in-part of Ser. No. 180,928, Jan. 12, 1994, abandoned. This application Jul. 28, 1994, Ser. No. 282,114
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—295 4 Claims



1. In combination with a compressor, an electronically controlled inlet valve comprising:
a housing mounted on the compressor in fluid communication with an inlet of the compressor;
a piston moveable axially within the housing along a path of travel defined by a first maximum position wherein the piston is disposed in substantially non-occluding relation relative to the compressor inlet, and a second maximum position wherein the piston is disposed in substantially occluding relation relative to the compressor inlet, and wherein the piston includes a means for preventing rotation of the piston during its movement linearly along the path of travel;
a stepper motor having a lead screw member which is connected to the piston wherein the lead screw member, by operation of the stepper motor, positions the piston linearly, in a predetermined location, along the path of travel;
atmospheric vent means, formed in the inlet housing, for reducing pressure loads across the substantially cylindrical member, the atmospheric vent means being disposed in direct fluid communication with the cylindrical member;
means for sensing compressor inlet pressure, the sensing means generating a signal in response to a predetermined inlet pressure; and
a microprocessor based electronic controller, operatively connected to the stepper motor and disposed in communication with the sensing means, for controlling actuation of the stepper motor in response to the signal generated by the sensing means.

5,388,969

FLUID COMPRESSOR WITH VERTICAL LONGITUDINAL AXIS

Takayoshi Fujiwara, Tokyo; Masayuki Okuda; Yoshinori Sone, both of Yokohama, and takashi Honjo, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 29, 1993, Ser. No. 175,243
Claims priority, application Japan, Jan. 12, 1993, 5-003314
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—356 5 Claims

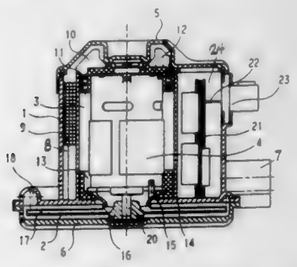
1. A fluid compressor having a vertical longitudinal axis, comprising:
a sealed casing having a suction pipe for introducing a fluid to be compressed, said suction pipe penetrating the sealed casing;
bearings provided at upper and lower parts of the sealed casing;
a guide passage provided in said upper bearing and connected to an opening end of said suction pipe;
a cylinder having upper and lower end opening portions rotatably supported by said upper and lower bearings;
a piston having a vertical longitudinal axis and including an upper shaft portion and a lower shaft portion supported rotatably by the upper and lower bearings, and a piston body situated eccentrically within the piston and formed between the upper shaft portion and the lower shaft portion;
a helical groove provided in the piston body and formed to have a pitch decreasing gradually from the lower side of the piston towards the upper side of the piston;
a blade fitted in the helical groove formed such that the blade projects from and retreats in the groove;
a plurality of working chambers defined between an inner wall of the cylinder and an outer peripheral surface of the piston body and partitioned by the blade so as to have volumes gradually decreasing from the lower side of the piston towards the upper side of the piston;
a suction passage provided in said piston, communicating with said guide passage, and being open to a lowermost one of said working chambers;
an electric motor provided on the sealed casing for rotating the cylinder;
a torque transmission mechanism for transmitting a torque of the cylinder to the piston to rotate the cylinder and the piston synchronously at a relative circumferential speed, and compressing the fluid, which has been sucked in the lowermost one of the working chambers from the suction pipe through the guide passage and the suction passage, while conveying the fluid gradually to an uppermost one of the working chambers,
wherein a diameter ($\Phi D1$) of the lower shaft portion of the piston, a diameter ($\Phi D2$) of the upper shaft portion of the piston, and an inside diameter (ΦDc) of the cylinder have a relationship, $(D1^2+D2^2)>Dc^2$, such that an upward thrust force produced in accordance with the rotation of the piston is substantially equal to or slightly greater than the total weight of rotational parts including the piston and the cylinder.

5,388,970

ELECTRICALLY DRIVEN AIR PUMP

Klaus Muckelmann; Michael Bonse, both of Düsseldorf, and Günter Van De Venne, Mönchengladbach, all of Germany, assignors to Pierburg GmbH, Neuss, Germany

Filed Jan. 24, 1994, Ser. No. 185,713
Claims priority, application Germany, Jan. 22, 1993, 4301666
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—363 8 Claims



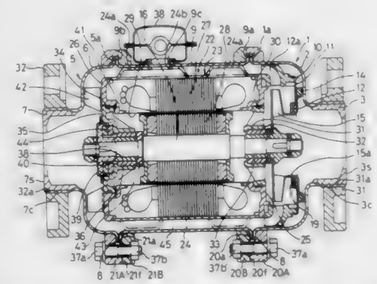
1. An electrically driven air pump comprising a housing, pump means in said housing, an electric motor in said housing connected in driving relation to said pump means, two spaced elastic supports supporting the electric motor from the housing, means in said housing providing an air passage for flow of air past said electric motor and to said pump means, said passage including a suction nozzle supported by one of said elastic supports, said pump means having an inlet collar for entry of air into the pump means, said suction nozzle projecting into said collar for supply of air from the air passage into said pump means, said pump means comprising an impeller provided with said inlet collar, said one of said elastic supports being provided with a plurality of slots through which the air passes to said nozzle.

5,388,971

FULL-CIRCUMFERENTIAL FLOW PUMP

Makoto Kobayashi; Masakazu Yamamoto; Yoshio Miyake; Tsuyoshi Maeda; Hiromi Sakacho, and Koji Isemoto, all of Fujisawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 46,850
Claims priority, application Japan, Apr. 14, 1992, 4-120173; Apr. 14, 1992, 4-120174; Apr. 14, 1992, 4-120176; Apr. 14, 1992, 4-120179; Jun. 1, 1992, 4-165383; Jun. 1, 1992, 4-165384; Jun. 5, 1992, 4-171685
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—423.14 16 Claims



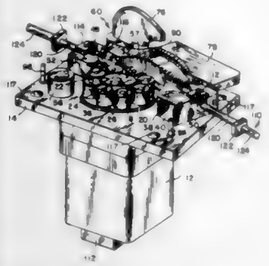
1. A full-circumferential flow pump having a pump casing encasing a motor driving an impeller for pumping a fluid with a circumferential passage separating said pump casing and an outer circumferential surface of said motor, said pump casing comprising:
a suction-side casing made of sheet metal and having a suction nozzle, said suction-side casing having a flange extending radially outwardly from an open end thereof;
an outer cylinder connected to said suction-side casing and accommodating said motor therein, said outer cylinder being made of sheet metal and having a flange extending radially outwardly from an open end thereof;
clamping flanges removably secured together for clamping the adjacent flanges of said suction-side casing and said outer cylinder so that said suction-side casing and said outer cylinder are connected;
a seal member positioned for sealing between said flanges of said suction-side casing and said outer cylinder, wherein said clamping flanges have flange surfaces which contact with each other to define a recess, wherein said flanges of said suction-side casing and said outer cylinder are housed in said recess; and
bolt holes for fastening said clamping flanges, said bolt holes extending to said flange surfaces.

5,388,972

PERISTALTIC PUMP WITH REMOVABLE TUBING OF PRECISE LENGTH

Jeffrey E. Calboun, Pleasantville, and Timothy F. Wickham, Nanuet, both of N.Y., assignors to Medical Laboratory Automation, Inc., Pleasantville, N.Y.

Filed Mar. 9, 1994, Ser. No. 208,638
Int. Cl.[6] F04B *93/08*
U.S. Cl. 417—477.11 16 Claims



1. A precision peristaltic pump comprising:
a plurality of rollers mounted at spaced intervals along the periphery of a circular member;
a motor for rotating said circular member through a precise number of fractional rotations;
a platen having a curved surface facing said rollers and shaped with a curve complementary to that of said member mounted rollers;
means for mounting both said member and said platen such that they are movable relative to each other between an operative position where there is a small precise gap between the platen and a selected number of adjacent rollers and an inoperative position where there is a predetermined larger spacing between the platen and rollers, said gap having an upper and a lower end;
first and second recesses formed on said upper and said lower ends, respectively, of said gap, said recesses being shaped differently from each other so that a complementary fitting which fits at least one of said recesses will not fit in the other;
an element covering each of said recesses when the member and platen are in their operative position, but not covering the recesses when the member and platen are in their inoperative position; and
a precise length of tubing removably mounted between said rollers and said platen so as to be squeezed in said gap by said rollers when said member and platen are in their operative position, said tubing having fittings of different configuration formed at opposite ends of said length, wherein said fittings consist of sections of harder material than the tubing, which fittings each nest in a corresponding one of said recesses only when said tubing is in a single orientation with respect to the member and platen, said fittings coacting with the elements covering the corresponding recess to prevent movement by said means for mounting from said inoperative to said operative positions if the fitting is not fully nested in the recess, whereby said member and platen may be moved to their operative position when said tubing is therebetween only when the tubing is in said single orientation.

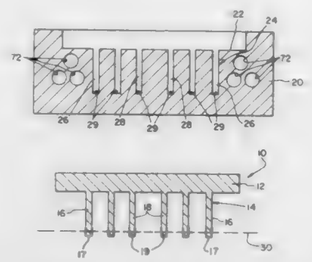
5,388,973

VARIABLE SCROLL TIP HARDNESS

Hubert Richardson, Jr., Brooklyn, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Jun. 6, 1994, Ser. No. 254,184
Int. Cl.[6] F01C *1/04*
U.S. Cl. 418—55.2 9 Claims

1. A process for manufacturing a scroll member with a radially inner wrap portion and a radially outer wrap portion, said process comprising the steps of:
providing a mold to cast the scroll member;
casting the scroll wrap so that said radially inner wrap portion is even in height with said radially outer wrap portion; and



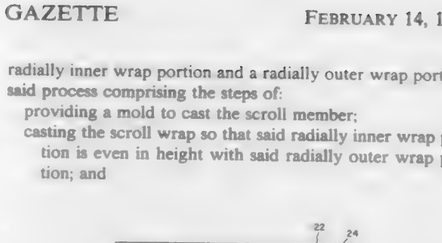
unequally cooling said radially inner wrap portions and said radially outer wrap portions whereby said unequal cooling causes said radially outer wrap portions to become harder than said radially inner wrap portions.

5,388,974

GEAR PUMP

Felix Streiff, Winterthur, Switzerland, assignor to Sulzer Chemtech AG, Winterthur, Switzerland

Filed Oct. 12, 1993, Ser. No. 134,776
Claims priority, application Switzerland, Oct. 29, 1992, 03379/92
Int. Cl.[6] F01C *1/24*
U.S. Cl. 418—206 26 Claims



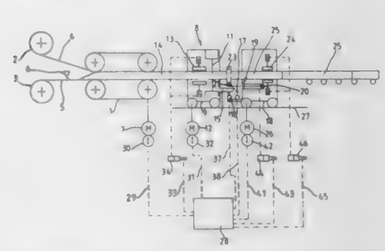
1. A gear pump, comprising:
a pair of gear wheels each having a gear wheel axis, the pair of gear wheels having a length and a tooth width;
a housing having an outlet area; and
an inlet area having an enlargement extending at least to a plane in which both gear wheel axes lie, the enlargement having an enlargement length being parallel to the plane and being at a right angle to the gear wheel axes, the enlargement length being larger than the length of the pair of gear wheels, the enlargement having an inlet width at the gear wheels in a direction of the gear wheel axes, the inlet width being greater than the tooth width, the inlet area also having an inlet depth and an inlet diameter at an entrance, a ratio of the inlet diameter to the inlet depth being at least 2.

5,388,975

APPARATUS FOR CONTINUOUSLY MANUFACTURING SANDWICH ELEMENTS

Ferdinand Proksa, Leverkusen; Hans-Michael Sulzbach, Königswinter; Hans Klonk, Bonn, and Reiner Raffel, Siegburg, all of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Germany

Division of Ser. No. 766,485, Sep. 25, 1991, Pat. No. 5,264,167.
This application Jul. 20, 1993, Ser. No. 95,117
Claims priority, application Germany, Oct. 3, 1990, 4031145
Int. Cl.[6] B29C *67/22;* B26D *7/06*
U.S. Cl. 425—4 C 3 Claims



1. An apparatus for continuously manufacturing sandwich elements having foam cores and top and bottom facings comprising:
i) a double conveyor belt having a feeding means for a top facing, a feeding means for a bottom facing and a feed device for applying a foam-producing reaction mixture onto said bottom facing, said belt conveying said mixture in a first direction and at a first speed,
ii) a first carriage with a cross cutter downstream of said double conveyor belt and movable in said first direction;
iii) a transport carriage with a cleaning device, said transport carriage being movable in said first direction and being located downstream of said first carriage;
iv) a controlling and regulating means connected to the cross cutter, said first carriage, said transport carriage and said cleaning device, for controlling and regulating the movement thereof;
v) a switch rod carried on said first carriage, said switch rod cooperating with two proximity switches, disposed one behind the other on said transport carriage and connected via said control and regulating means to the transport carriage, with the first proximity switch closest to said switch rod being used to brake the transport carriage and the second proximity switch being used 1) to accelerate the transport carriage in said first direction to a speed slightly higher than said first speed so that said transport carriage moves away from said first carriage and 2) to continue to advance the transport carriage at a speed corresponding to said first speed.

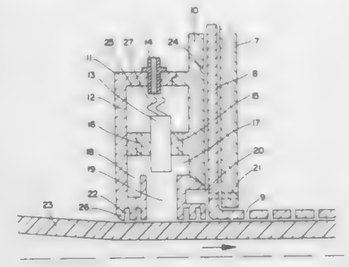
5,388,976

WALL THICKNESS MEASURING DEVICE WITH CALIBRATION DEVICE

Ernst Krüger, Georgsmarienhütte, and Wilhelm Herbach, Bad Oeynhausen, both of Germany, assignors to Friedrich Theyson GmbH, Bad Oeynhausen, Germany

Filed Feb. 25, 1993, Ser. No. 23,803
Claims priority, application Germany, Feb. 27, 1992, 4205955; Jul. 3, 1992, 4221920
Int. Cl.[6] B29C *47/90, 47/92*
U.S. Cl. 425—141 14 Claims

1. An extrusion installation for producing an elongated product, comprising,
an extruder,
a water-cooled calibration sleeve acted upon by negative pressure following said extruder which performs a final calibration of the wall thickness of said elongated product,
a retaining device located between said extruder and said calibration sleeve, said retaining device being attached to said calibration sleeve,
an attachment sleeve which i separate from said calibration sleeve and attached to said retaining device, said attachment sleeve having an inner diameter which is substantially the same as that of said calibration sleeve so as to precalibrate said elongated product emerging from said extruder before it enters said calibration sleeve for final calibration, and



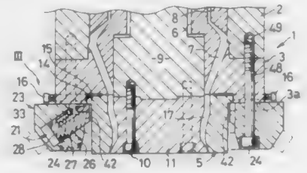
a wall thickness measuring device having at least a single ultrasonic sensor which is located at a predetermined distance defined between its measuring head and the outer surface of said elongated product, said wall thickness measuring device being attached to said retaining device and being located between said attachment sleeve and said calibration sleeve so as to measure the wall thickness of said elongated product between precalibration and final calibration.

5,388,977

CLAMPING DEVICE FOR A BLOW MOULDING MACHINE

Tsutomu Shirakawa, Kobe, Japan, assignor to Kabushiki Kaisha Kosmek, Hyogo, Japan

Filed Sep. 17, 1993, Ser. No. 121,867
Claims priority, application Japan, Sep. 18, 1992, 4-275386
Int. Cl.[6] B29C *45/10*
U.S. Cl. 425—190 5 Claims



1. A clamping device for a blow moulding machine comprising:
an annular mounting block (3) having a lower surface (3*a*) connected to a lower portion of a head unit (1) of the blow moulding machine;
a receiving hole (14) provided in the lower surface (3*a*) of the annular mounting block (3) and adapted to snugly receive a flange (15) provided in an upper portion of a die (5), the flange (15) having a lower surface (15*a*) and an outer peripheral surface;
a plurality of fluid pressure cylinders (21) arranged along the outer periphery of the block (3), each cylinder having a housing (23) fixedly secured to the block (3), and provided with a cyclinder bore (27); and
clamping members (42) connected to the pistons (28) and adapted to be moved by the pistons (28) between a clamping position (X) where said clamping members (42) ad-

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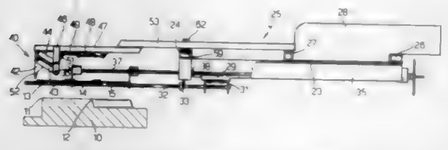
vance radially inwardly beyond the outer peripheral surface of the flange (15) so as to face both the lower surface (3a) of the annular mounting block (3) and the lower surface (15a) of the flange (15) and an unclamping position (Y) where said clamping members (42) retreat radially outwardly beyond the outer peripheral surface of the flange (15).

5,388,978

FIXTURE FOR LOADING PLASTIC SHEET MATERIAL INTO A MOLD

Bruno Bellettato, Cirie' , Italy, assignor to Iveco Fiat S.p.A., Italy

Filed Sep. 17, 1993, Ser. No. 122,333
Claims priority, application Italy, Sep. 18, 1992, T092 A 000776
Int. Cl.[6] B29C *31/08*
U.S. Cl. 425—397 10 Claims



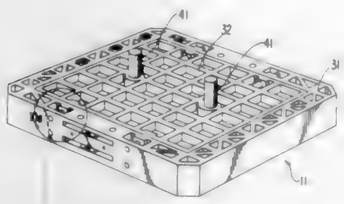
1. A fixture for loading plastic sheet material into a mold, comprising supporting means (23–27, 32) for transferring at least one sheet (13–15) of said material to said mold (10), at least one portion (21, 22) of said sheet (13–14) extending outward of said mold (10), and at least one element (42) activated when transferring said sheet (13–15) to said mold (10), for engaging said portion (21, 22) and folding it about said edge (11, 12), said supporting means (23–27, 32) further comprising a number of parallel bars (32) on which said sheet (13–15) is placed; said bars (32) being retractable in relation to at least one reference member (36, 36') set to the required position of said sheet (13–15) on said mold (10); and said element (42) being moved substantially perpendicular to said bars (32).

5,388,979

MOLD AND PRESS ASSEMBLY FOR PRESS MOLDING ARTICLES

Brian Harmer, Benoni, South Africa, assignor to Agrifibre Developments Limited, Guernsey, Channel Islands

Continuation-in-part of Ser. No. 701,518, May 16, 1991, abandoned, which is a continuation of Ser. No. 578,799, Sep. 7, 1990, abandoned. This application Jan. 21, 1993, Ser. No. 6,949
Claims priority, application South Africa, Sep. 8, 1989, 89/6868
Int. Cl.[6] B29C *33/20*
U.S. Cl. 425—408 9 Claims



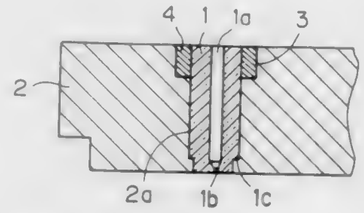
1. A mold assembly comprising a surrounding mold body into which two die halves fit to define a mold cavity between them, and catch assemblies associated with the surrounding mold body and provided between said surrounding mold body and said two die halves when said two die halves are in their cavity defining position for releasably locking each of the two die halves within the surrounding mold body in their cavity defining position relative to the surrounding mold body, wherein the surrounding mold body defines a zone of an inner surface of the periphery of the mold cavity and such surface zone has formations for holding a molded article temporarily captive within the surrounding mold body when the mold is disassembled.

5,388,980

SPINNING NOZZLE TIP STRUCTURE

Kouichi Kijima; Sotomi Ishizaka; Shinobu Uenomachi, all of Sendai, and Michiharu Kodama, Nobeoka, all of Japan, assignors to Kyocera Corporation, Kyoto and Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, both of Japan

Filed Oct. 24, 1991, Ser. No. 781,854
Claims priority, application Japan, Feb. 27, 1991, 3-057835
Int. Cl.[6] B29C *47/12*
U.S. Cl. 425—461 13 Claims



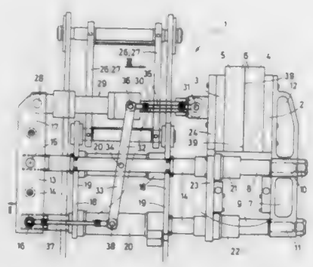
1. A spinning nozzle tip structure arranged such that a spinning nozzle piece made of any one of ceramics, cermets and cemented carbides is fitted into an accommodating hole formed in a nozzle body made of a metal, said nozzle tip structure further comprising a preformed metal ring that is interposed between the spinning nozzle piece and the nozzle body so as to seal the spinning nozzle piece liquid-hermetically.

5,388,981

CLOSURE ARRANGEMENT FOR MOLDS FOR MANUFACTURE OF OBJECTS FROM THERMOPLASTIC PLASTICS MATERIAL

Helmut Scharrenbroich, Neunkirchen-Seelscheid, Germany, assignor to Battenfeld Fischer Blasformtechnik GmbH, Troisdorf/Spich, Germany

Filed Jun. 2, 1993, Ser. No. 70,579
Claims priority, application Germany, Jun. 3, 1992, 4218260
Int. Cl.[6] B29C *49/56*
U.S. Cl. 425—541 3 Claims



1. A closure device for closing a mold tool for manufacturing objects from thermoplastic material, the mold tool having two halves, said closure device comprising:
two mold plates for supporting the two halves of the mold tool, respectively;
a frame for supporting said two mold plates for displacement toward and away from each other, said frame comprising:

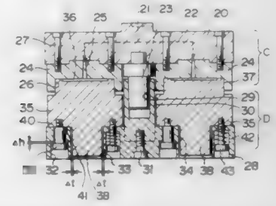
first and second yokes spaced from each other and extending transverse to a displacement direction of said two mold plates, said first yoke directly supporting one of said two mold plates;
tie and pressure rods extending between said first and second yokes parallel to each other, said tie and pressure rods providing for guided displacement of said two mold plates, said tie and pressure rods each having first and second ends;
two rigid joints for rigidly connecting the first ends of said tie and pressure rods to the first yoke;
two articulated joints extending perpendicular to a plane of said frame for hingedly connecting the second ends of said tie and pressure rods to the second yoke;
drive means for displacing said two mold plates, said drive means extending between said second yoke and another of said two mold plates;
articulated means extending perpendicular to the displacement direction for hingedly connecting an end of said drive means, remote from the another of the two mold plates, to said second yoke; and
synchronization means for enabling synchronous displacement of said two mold plates.

5,388,982

INJECTION MOLDING DIE MOUNTED ON AN INJECTION MOLDING MACHINE FOR MOLDING OPTICAL DISC BASE BOARDS

Mitsuo Takahashi, Matsudo; Katsuyuki Yasuda, Funabashi, and Yasuyoshi Sakamoto, Narita, all of Japan, assignors to Seikoh Giken Co., Ltd., Chiba, Japan

Filed Sep. 9, 1993, Ser. No. 118,402
Claims priority, application Japan, Mar. 3, 1993, 5-069300
Int. Cl.[6] B29C *45/64*
U.S. Cl. 425—572 6 Claims



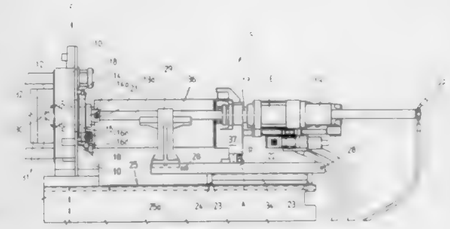
1. An injection molding machine for simultaneously molding a plurality of optical disc base boards, comprising:
a stationary die assembly portion including a first base plate having a first center axis, and a plurality of first cavities each having a respective center axis, said first cavities being arranged in an equally spaced relationship along a circumference of a circle coaxial with the first center axis;
a movable die assembly portion including a second base plate having a second center axis, and a plurality of second cavities each having a respective center axis, each said second cavity positionally corresponding to a respective first cavity;
first aligning means for aligning the first center axis with the second center axis, said first aligning means including a guide rod fixedly secured to said first base plate and extending along the first center axis, and a guide member extending along the second center axis, said guide member being positionally coincident with the first center axis and having a guide hole formed therein for receiving said guide rod; and
second aligning means for aligning each respective first cavity center axis with each corresponding respective second cavity center axis.

5,388,983

INJECTION MOLDING MACHINE FOR PROCESSING SYNTHETIC MATERIALS

Karl Hehl, Arthur-Hehl-Str. 32, D-72290 Lossburg, Germany

Filed Aug. 17, 1993, Ser. No. 107,068
Claims priority, application Germany, Aug. 18, 1992, 4227335
Int. Cl.[6] B29C *45/56*
U.S. Cl. 425—575 11 Claims



1. In an injection molding machine comprising:
an injection molding unit defining a horizontal injection axis and including a plasticizing cylinder centered on and movable along said injection axis; wherein said injection molding unit is mounted and movable in a horizontal shifting direction transversely to said horizontal injection axis to a plurality of injecting positions; and wherein said injection molding unit is adapted in said injecting positions to selectively discharge plastic material out of said plasticizing cylinder along said horizontal injection axis on a plurality of parallel paths, into a central gating of a first injection mold and an off-center gating of a second injection mold;
a stationary mold carrier facing said injection molding unit and being provided with an enlarged opening in said shifting direction for receiving said plasticizing cylinder in each of said injecting positions; wherein said stationary mold carrier is adapted to selectively carry said first and said second injection molds;
at least one drive unit operable to move said plasticizing cylinder along said injection axis into and out of engagement with one of said first and second injection molds when one of said first and second injection molds is mounted on said mold carrier for the injection of said synthetic material into one of said gatings; and
guiding elements for guiding end sections of piston rods of said drive unit; wherein said end sections extend up to said stationary mold carrier and are guided in said shifting direction when displacing said injection molding unit;
the improvement wherein first rods and second rods are provided for said injection molding unit, wherein said first rods extend in said injection direction and are connected to said injection molding unit, wherein said second rods are arranged transversely at right angles to said horizontal injection axis and are disposed on a machine pedestal, and wherein said first rods slide freely on said second rods, whereby said injection molding unit is slidably supported during shifting allowing for a self-adjustment of a nozzle of the injection molding unit.

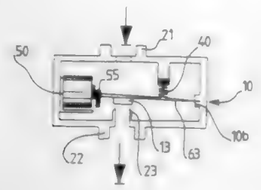
VOL 1171 ISS 2 FE 14 1995 UMI

5,388,984

METHOD OF CONTINUOUS MODULATION OF A FLUID FLOW RATE BY MEANS OF AN ELECTRICALLY CONTROLLED SEQUENTIAL VALVE

Alain Meslif, Saint Martin du Tertre, France, assignor to Gaz de France, Paris, France

Filed Dec. 29, 1992, Ser. No. 998,047
Claims priority, application France, Dec. 31, 1991, 91 16415
Int. Cl.[6] F16K *31/06*; G05B *11/28*
U.S. Cl. 431—12 12 Claims



1. A method for modulating the flow rate of an injector of a fuel gas burner, comprising the steps of:

arranging a fluid-tight casing in a passageway through which fuel gas is conveyed to the fuel gas burner,

providing said fluid-tight casing with inlet and outlet connecting neck fittings for an inlet flow of the fuel gas from said passageway and an outlet flow of the fuel gas to said passageway, respectively,

mounting an electrically controlled valve member in said fluid-tight casing movable between a position opening said passageway and a position closing said passageway,

providing an electromagnet in said fluid-tight casing for moving said valve member in a reciprocating relationship in order to open and close said outlet connecting neck fitting and thus said passageway,

said valve member being mounted in said fluid-tight casing through the agency of a flexible strip constantly biased by a spring towards said closing position of said valve member, said spring having a first end closest to said electromagnet and a second end, opposite to said first end, built into said fluid-tight casing,

maintaining the frequency of the displacements of the valve member toward said opening position constant,

varying the time period in which the valve member is maintained in said closing position in accordance with a desired flow rate of the flue gas, and

selecting the constant frequency of the displacement of the valve member toward said opening position in a range from about 20 Hz to about 30 Hz to prevent the flame of the burner from being extinguished in operation.

5,388,985

BURNER ASSEMBLY WITH FUEL PRE-MIX AND COMBUSTION TEMPERATURE CONTROLS

Joseph E. Musil, Ely, Iowa, and Lawrence G. Clawson, Dover, Mass., assignors to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Dec. 22, 1992, Ser. No. 994,714
Int. Cl.[6] F23L *13/00*
U.S. Cl. 431—116 19 Claims

1. A burner assembly comprising:

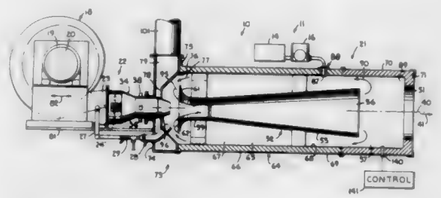
a combustion chamber including an outer housing and an inner, elongate combustion tube disposed spacedly from and centrally within the outer housing, the outer housing forming an annular enclosed space along the length of the combustion tube, the combustion tube having upstream and downstream ends;

a flame region extending from the downstream end of the combustion tube into the outer housing of the combustion chamber;

means for injecting a high velocity stream of combustion air into the upstream end of the combustion tube to flow through the combustion tube in a direction toward the flame region of the combustion chamber;

means for injecting liquid fuel into the combustion chamber to be entrained in and become mixed with the combustion air before the combustion air enters the combustion tube;

an exit opening formed in the outer housing downstream of the downstream end of the combustion tube, the exit opening being bounded peripherally by a pressure increasing ledge for diverting heated combustion gases from the flame region of the combustion chamber to flow counter to the direction of flow in the combustion tube through the annular enclosed space about the combustion tube toward the upstream end of the combustion tube;



flow directing means at the upstream end of the combustion tube and communicating with the annular space about the combustion tube for directing the diverted combustion gases from the annular space to become entrained in and mixed with a stream of combustion air injected into the combustion tube; and

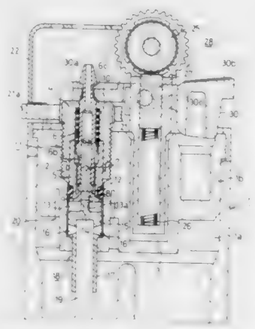
means for combining and mixing a buffer gas with diverted combustion gases to become entrained in and mixed with the stream of combustion air and with combustion fuel, the diverted combustion gases providing energy for vaporizing the combustion fuel prior to burning the mixture of combustion air and fuel in the presence of the mixed buffer gas within the flame region of the combustion chamber.

5,388,986

CIGARETTE GAS LIGHTER

Decha Khemarangsan, Samutsakorn, Thailand, assignor to Thai Merry Co., Ltd., Samutsakorn, Thailand

Filed Mar. 10, 1993, Ser. No. 29,178
Claims priority, application European Pat. Off., Mar. 18, 1992, 92104684
Int. Cl.[6] F23D *14/28*
U.S. Cl. 431—344 5 Claims



1. A gas lighter comprising:

tank means for storing a liquefied gas fuel; burner means for burning the gas fuel stored in the tank means, said burner means including:

wick means for absorbing the liquefied gas fuel from the tank means, the wick means entering into the tank means, and the liquefied gas fuel being vaporized from the wick means to form a gasified fuel;

nozzle means for supplying the gasified fuel from the wick means at an ignition position and for closing the supply of gasified fuel at a closed position, the nozzle means being positioned after the wick means in the direction of flow of the fuel to an exit port, the nozzle means including a lower side portion and a porous member at the lower side portion, the porous member having a through hole therein;

ignition means for igniting the gasified fuel supplied to the exit port in the ignition position by the nozzle means, the ignition means being arranged adjacent the exit port when the nozzle means is in the ignition position;

metal heat collecting means for enhancing vaporization of the liquefied gas fuel from the wick means into the gasified fuel, the metal heat collecting means comprising a first portion extending into the tank means and cooperating with the wick means to form a gasified fuel and a second portion arranged adjacent the nozzle means, having a cylindrical shape and a diameter greater than the diameter of the first portion, a projection integrally formed at the second portion, the projection being inserted through the hole formed in the porous member, radial channels provided in the second portion to provide a flow of gas in a direction different from a direction of flow of the liquid into the first portion, so that the fuel passes from the second portion through a channel between the circumference of the second portion and an inside wall of the nozzle means;

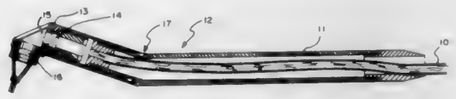
the nozzle means having a valve means which is moved from the closed position to the ignition position by movement along an axis of the nozzle means, the valve means being seated on a valve seat when in the closed position, the valve means having a flow passage, with an actual direction, which passage is blocked at the valve seat, and an entry to the flow passage in a direction which is not parallel to the actual direction of the flow passage, at a position in a side of the valve means, after the blocked portion, in the direction of flow of the gas, the nozzle means having a passage between an outer circumference of the valve means and an inner wall of the nozzle means, whereby the fuel passes from the metal heat collecting means, through the porous member, through the valve means, through the passage between the outer circumference of the valve means and the inner wall of the nozzle means, through the entry to the flow passage and through the flow passage to the exit port in the valve means, when the lighter is in the ignition position.

5,388,987

LASER BEAM DENTAL INSTRUMENT

Jean-Marie Badoz, Pontarlier/Doubs; Herve Picaud, Chatillon Le Duc, and Jacques Manne, Besancon, all of France, assignors to Cheval Freres, SA, Miserey Salines, France

PCT No. PCT/FR91/00317, § 371 Date Dec. 16, 1991, § 102(e) Date Dec. 16, 1991, PCT Pub. No. WO91/16006, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 17, 1991, Ser. No. 776,320
Claims priority, application France, Apr. 17, 1990, 90 05037
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—29 40 Claims



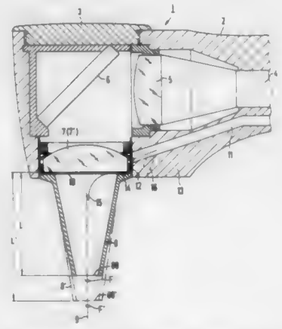
1. A dental instrument for treating caries and for oral surgery, comprising a laser beam emission source having a plurality of adjustable emission parameters including an adjustment for firing a laser beam in a shot or a series of shots, an adjustable energy level for the laser beam, and an adjustable frequency for firing of the laser beam, an optical fiber for conveying the laser beam extending through the dental instrument and to a zone to be treated, and control means responsive to a foot-controlled pedal, for varying each of the emission parameters of the laser beam during operation of the dental instrument.

5,388,988

DENTAL INSTRUMENT FOR TREATING TEETH WITH A LASER BEAM

Siegfried Goisser, Einhausen; Lutz Beerstecher, Bensheim, and Ralf Sutter, Weinheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 2, 1993, Ser. No. 100,134
Claims priority, application Germany, Aug. 10, 1992, 4226461
Int. Cl.[6] A61C *1/00, 3/00*
U.S. Cl. 433—29 12 Claims



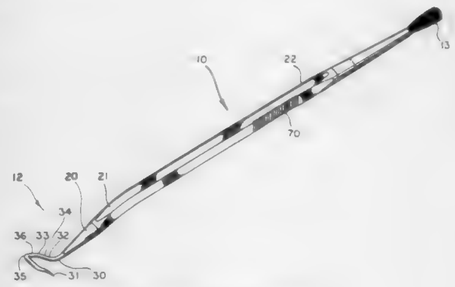
1. A dental instrument for treating teeth with laser beams, said dental instrument comprising a head part; a transmission element having a boundary surface being arranged in the head part for outputting the laser beams in a beam exit direction; and means for conducting a gaseous agent across said boundary surface and from the head part in the beam exit direction, said means directing the gaseous agent from adjacent a side of the boundary surface includes guide and baffle surfaces for directing the agent transversely across the boundary surface and finally into the beam exit direction.

5,388,989

OCCLUSAL SCULPTING TOOL

Demetrios A. Kountis, 595 Invernes Dr., Akron, Ohio 44313

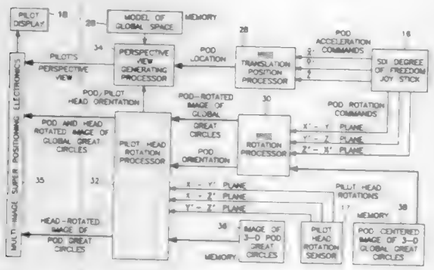
Filed Dec. 9, 1992, Ser. No. 987,633
Int. Cl.[6] A61C *17/00, 3/00*
U.S. Cl. 433—143 14 Claims



1. An occlusal sculpting tool comprising:

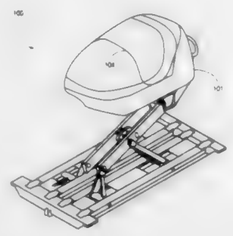
a grip portion having a generally central axis and supporting an occlusal sculpting portion at one end thereof;
said occlusal sculpting portion having an extension bar affixed at one end thereof to said grip portion, and an occlusal tip affixed to the other end of said extension bar;
said extension bar having a plurality of angles therein, such that said occlusal tip is spaced from said grip portion and generally aligned with said generally central axis of said grip portion; wherein said extension bar extends generally radially from said grip portion at a first angle proximate to said grip portion, and has a second angle distal to said grip portion, such that said first and second angles of said extension bar are in different planes; said extension bar also having a first extension section extending between and connecting said first angle and said second angle, a third angle distal to said grip portion, a second extension section extending between and connecting said second angle and said third angle, and a third extension section extending between and connecting said third angle and said occlusal tip.

5,388,990
VIRTUAL REALITY FLIGHT CONTROL DISPLAY WITH SIX-DEGREE-OF-FREEDOM CONTROLLER AND SPHERICAL ORIENTATION OVERLAY
Brian C. Beckman, Renton, Wash., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Apr. 23, 1993, Ser. No. 56,503
Int. Cl.[6] G09B *9/08, 19/16*
U.S. Cl. 434—38 17 Claims



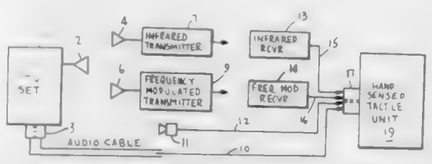
1. An apparatus for displaying to a user the image of a scene surrounding a vehicle traveling in inertial space in response to rotational and translational acceleration commands by the user in six degrees of freedom, the apparatus comprising:
a full-field-of-view display for displaying said image of the scene surrounding the vehicle to the user;
means for producing images on said full-field-of-view display, said images changing to correspond to a new perspective of the user in response to said rotational and translational acceleration commands by the user in six-degrees-of-freedom;
means for the user to impart said rotational and translational acceleration commands to said image producing means; and
means for superimposing on said image a superimposed figure providing the user an instant reference of rotational orientation wherein said image is free of a ground plane, thereby assisting said user preforming the appropriate navigation in the inertial space.

5,388,991
SIMULATION DEVICE AND SYSTEM
Donald L. Morris, San Carlos, Calif., assignor to Magic Edge, Inc., Mountain View, Calif.
Filed Oct. 20, 1992, Ser. No. 964,320
Int. Cl.[6] A63G *31/00*
U.S. Cl. 434—55 22 Claims



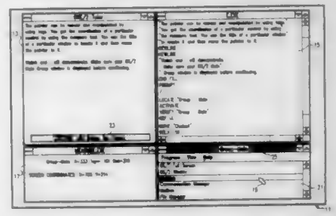
3. A device to provide motion to a capsule comprising:
a platform;
an arm for elevating said capsule above said platform, said capsule being supported on only one end by said arm, wherein said arm includes a first section and a second section, said first section for providing vertical motion to said capsule and said second section for providing pitch to said capsule;
a rotation bearing assembly for rotating said capsule at least 360 degrees on said arm, wherein said rotation bearing assembly includes:
a shaft coupled to said capsule;
a structure for positioning said shaft in operative relation to said arm; and
means for providing slippage between said shaft and said structure;
a beam rotatably coupled to said second section; and
means for providing substantially vertical motion of said capsule by elevating said beam, wherein said means for providing substantially vertical motion provides a predetermined vertical distance to provide the sensation of weightlessness.

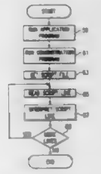
5,388,992
METHOD AND APPARATUS FOR TACTILE TRANSDUCTION OF ACOUSTIC SIGNALS FROM TELEVISION RECEIVERS
David Franklin; Michael Wollowitz, and John Simpson, all of Somerville, Mass., assignors to Audiological Engineering Corporation, Somerville, Mass.
Filed Jun. 19, 1991, Ser. No. 717,665
Int. Cl.[6] H04R *25/00;* G09B *21/00*
U.S. Cl. 434—114 23 Claims



1. Apparatus for providing tactually perceptible vibrations corresponding to sound, said apparatus comprising:
means for providing an electrical audio signal containing a broad band of audio frequency components representing sound events;
signal processing means responsive to said audio signal for passing only low frequency components thereof, said low frequency components including the range of 50 Hz to 800 Hz and excluding at least all frequencies above 2,000 Hz; and
wideband tactile transducer means connected to receive said low frequency components from said signal processing means for providing tactually perceptible vibrations at frequencies equal to the low frequency components passed by said signal processing means;
wherein said tactile transducer means comprises a small d.c. or stepping motor having a rotor arranged for alternating movement in opposite directions in response to said received low frequency components to provide said vibrations.

5,388,993
METHOD OF AND SYSTEM FOR DEMONSTRATING A COMPUTER PROGRAM
Frank A. McKiel; G. Michael Trowbridge, both of Trophy Club; Cathy J. Cavendish, Dallas, and Robert J. Catino, Southlake, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 15, 1992, Ser. No. 914,185
Int. Cl.[6] G09B *19/00*
U.S. Cl. 434—118 15 Claims

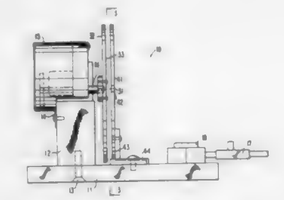


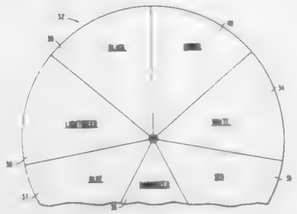


10. A method of demonstrating an application program in a multitasking computer system that includes a computer display screen and a user-input device, which comprises the computer implemented steps of:
running said application program on said computer system;
simultaneously running a demonstration program on said computer system; and,
generating simulated user-input messages to said application program, under control of said demonstration program, thereby to simulate user interaction with said application program.

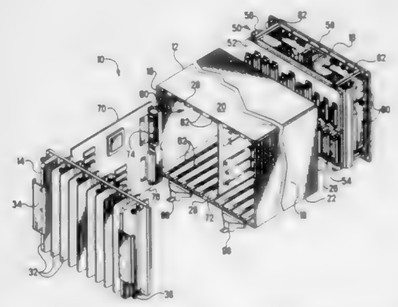
5,388,994
VISUAL STIMULATION DEVICES
David Wexelman, 531/16 Kiryat Kaminetz, Jerusalem, Israel
Filed May 10, 1994, Ser. No. 239,871
Int. Cl.[6] G09B *19/00*
U.S. Cl. 434—236 6 Claims

1. A visual stimulative device comprising: a rotating element having an axis of rotation and having plural planar surfaces thereon, each of said surfaces being in identical fixed relation relative to said axis of rotation, one of said planar surfaces having a reflective mirror, the remainder of said surfaces being of different colors; and means for powering said rotating element at varying angular velocity whereby a viewer is serially exposed to each of said planar surfaces in repetitive cycles.





5,388,995
EMI/RFI PROTECTIVE CABLE INTERFACE FOR HIGH DENSITY JUNCTION BOX
William J. Rudy, Jr., Annville; Howard R. Shaffer, Millersburg, and Daniel E. Stahl, Hummelstown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Jun. 11, 1993, Ser. No. 76,655
Int. Cl.[6] H01R *23/70*
U.S. Cl. 439—61 16 Claims



1. An input/output interface for a junction box receiving a plurality of electrical conductors thereinto for a plurality of electrical interconnections of circuits of circuit cards with the electrical conductors, comprising:
a junction box and a rack assembly defining a box-receiving path into and along which said junction box is slidably received to a mated position guided and generally positioned by vertical walls of said rack assembly, said rack assembly being mountable to a shelf;
said junction box having opposed side walls and opposed top and bottom walls extending from a front face to a rear wall, a front panel member securable to said front face to define a front wall traversing a card-receiving opening, and a backplane assembly proximate said rear wall and positioned rearwardly of a card-receiving region proximate said front panel, all generally defining a card cage, with said side walls and top wall and bottom wall and rear

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wall and front panel member being formed of thermally and electrically conductive material of substantial thickness and being substantially free of openings, said side walls and said top and bottom walls adjoined to edges of adjacent ones thereof and said rear wall being adjoined to rear edges of said opposed side walls and said top and bottom walls in a manner to eliminate any gap thereat through which electromagnetic and radiofrequency energy could otherwise pass;

said backplane assembly defining an array of electrical circuits connecting terminals of card connectors mounted in an array on an interior wall facing said card-receiving region to respective first terminals of an array of first electrical input/output connectors mounted on said rear wall;

said rear wall including said array of first electrical input-/output connectors mounted thereon adapted to be mated with complementary second electrical connectors at an input/output interface, with said first electrical input/output connectors including housed therein a plurality of said first electrical terminals electrically connected to circuits of said backplane assembly, and said rear wall including shield sections surrounding respective said first input/output connectors in a manner eliminating any gap peripherally therearound through which electromagnetic and radiofrequency energy could otherwise pass;

said rack assembly including a panel member traversing a rearward end of said box-receiving path, said panel member being of rugged and durable construction and assuredly affixed to said rack, said panel member having at least one cutout therethrough from a box-proximate forward face to a box-remote cable face and being of selected shape and dimension; and

a corresponding at least one shell member being mounted to said panel member in said cutout and defining at least one cavity in and through which is secured at least one said second input/output connector having a plurality of second electrical terminals housed therein terminating corresponding electrical conductors of an associated cable, each said second input/output connector including thereabout a shield member being complementary with a corresponding one of said shield sections on said rear wall of said junction box to define mated shields upon mating, and a resilient EMI conductive strip surrounding each plug section of one of said shield section and said shield member to groundingly engage with a receptacle section of the other thereof; and

each said at least one shell member having a shape corresponding to said selected shape of said cutout and having a dimension slightly less than said selected dimension thereby being incrementally movable transversely during movement of said junction box against said panel member to align said electrical contacts therein with said electrical contacts of said first input/output connectors,

whereby said junction box adapted to shield said circuit cards and electrical interconnections thereof with said electrical conductors from electromagnetic and radiofrequency interference and to facilitate dissipation of thermal energy therefrom, is slidably receivable into said rack assembly with said first connectors mounted along said back wall becoming assuredly electrically mated to corresponding said second connectors mounted along said panel member upon full sliding of said junction box along said box-receiving path until abutted against said panel member and is easily removable therefrom as a unit unmating the mated connectors.

5,388,996

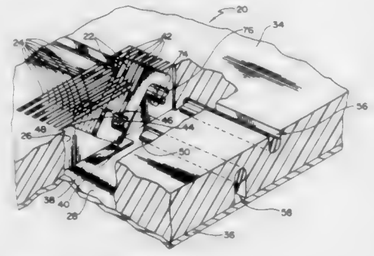
ELECTRICAL INTERCONNECT CONTACT SYSTEM

David A. Johnson, 5600 W. 25½ St., St. Louis Park, Minn. 55416

Continuation-in-part of Ser. No. 801,694, Dec. 2, 1991, Pat. No. 5,207,584, which is a continuation of Ser. No. 639,126, Jan. 9, 1991, Pat. No. 5,069,629. This application May 3, 1993, Ser. No. 56,677

Int. Cl.[6] **H01R** *9/09*

U.S. Cl. 439—65 **9 Claims**



1. Apparatus for electrically interconnecting a lead of a device to a terminal spaced laterally at a distance from the lead, comprising:

(a) a housing, said housing having at least one contact receiving slot formed therein, said slot extending substantially parallel to an axis extending between a corresponding lead and spaced terminal, said housing further having a surface intersected by said slot, said housing having a first trough formed therein proximate the lead and a second trough formed therein proximate the spaced terminal;

(b) a first elastomeric element received in said first trough formed in said housing, said first elastomeric element having a measure of compressibility and tensile extendibility;

(c) a second elastomeric element received in said second trough formed in said housing, said second elastomeric element having a measure of compressibility and tensile extendibility; and

(d) a contact, generally defining a plane, received within said slot, said contact having a protrusion extending outward from said surface for engagement by the lead, a nub extending outward from said surface for engagement of the laterally spaced terminal, a first hook portion, proximate said protrusion, encircling said first elastomeric element to hold said contact to said first elastomeric element, and a second hook portion, proximate said nub, encircling said second elastomeric element to hold said contact to said second elastomeric element;

(e) wherein, as said protrusion is engaged by the lead, said first and second elastomeric elements deform to permit movement of said contact in directions along two mutually-perpendicular axes, wherein wiping action of said protrusion across said lead and said nub across said laterally spaced terminal occurs.

5,388,997

METHOD AND SYSTEM FOR PRODUCING ELECTRICALLY INTERCONNECTED CIRCUITS

Jeffrey J. Grange, Brush Prairie, Wash., and J. P. Harmon, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 33,693, Mar. 16, 1993, abandoned. This application May 17, 1994, Ser. No. 245,513

Int. Cl.[6] **H01R** *9/09, 13/15*

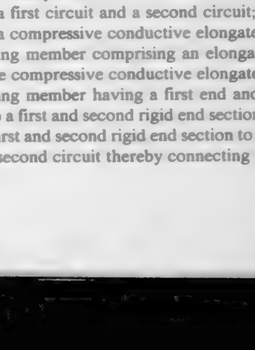
U.S. Cl. 439—66 **24 Claims**

1. A method for interconnecting a first circuit to a second circuit, which comprises

providing a first circuit and a second circuit;

providing a compressive conductive member and a rigid conductive member which acts as a near-linear spring contact structure for said first circuit and second circuit, the compressive conductive member having a first end for interconnecting engagement with the first circuit and a second end for interconnecting engagement with a first end of the rigid conductive member, the rigid conductive member having a first end for interconnecting engagement with the compressive conductive member and a second end for interconnecting engagement with the second circuit;

connecting the second end of the compressive conductive member with the first end of the rigid conductive member; and



connecting the second end of the rigid conductive member with the second circuit and the first end of the compressive conductive member with the first circuit to connect the first circuit to the second circuit to form a completed electrical circuit which, due to the compressive conductive member and the rigid conductive member acting as a near-linear spring contact structure having a significantly lower final load L_1 requirement, the first circuit remains in intimate contact with the second circuit, and the amount of force required to ensure a high level of electrical contact between the first and second circuit is substantially reduced.

5,388,998

METHOD AND SYSTEM FOR PRODUCING ELECTRICALLY INTERCONNECTED CIRCUITS

Jeffrey J. Grange, Brush Prairie, Wash., and J. P. Harmon, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 33,692, Mar. 16, 1993, abandoned. This application May 17, 1994, Ser. No. 245,713

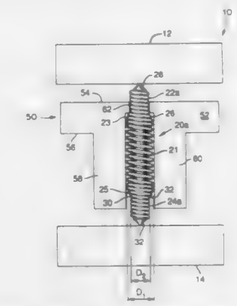
Int. Cl.[6] **H01R** *9/09*

U.S. Cl. 439—66 **14 Claims**

1. A method for interconnecting a first circuit to a second circuit, which comprises

providing a first circuit and a second circuit;

providing a compressive conductive elongate coil interconnect spring member comprising an elongated coil spring body, the compressive conductive elongate coil interconnect spring member having a first end and a second end joined to a first and second rigid end section; and connecting the first and second rigid end section to the first circuit and the second circuit thereby connecting the first circuit to the second circuit to form a completed electrical circuit, at least one of said first and second end sections are



permanently joined to said first circuit or said second circuit by soldering.

5,388,999

CONNECTION SYSTEM USING TERMINAL STRIPS FOR USE IN HIGH BIT RATE COMMUNICATIONS

Jacques Nozick, 28, rue Broca, 75005 Paris, France

Filed Nov. 16, 1993, Ser. No. 152,138

Claims priority, application France, Nov. 20, 1992, 9213937

Int. Cl.[6] **H01R** *9/26, 13/648*

U.S. Cl. 439—94 **15 Claims**

1. A connection system adapted to receive insulated conductors connected to electrical contacts, comprising; a terminal strip of insulating material and a metal rail connected to ground, said terminal strip having two substantially rectangular and generally planar sides extending perpendicularly to a longitudinal direction of the rail, two lateral faces, a front face provided with said electrical contacts, and a back face fixed to the rail, each of the sides having an outside surface, wherein the outside surfaces of said sides of the strip are formed with respective electrically conductive layers in electrical contact with the rail, wherein each of said sides of the strip comprises a flange of insulating material attached to said strip, said flanges being coated with a metal deposit which constitutes said electrically conductive layers, and wherein said flanges include interior channels for receiving said insulated conductors and for guiding them towards said contacts, said interior channels being coated with the metal deposit that is in electrical contact with the rail.

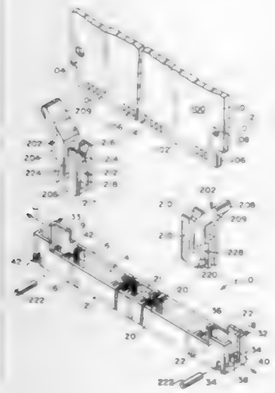
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5,389,000

EDGE CARD CONNECTOR WITH IMPROVED LATCH/EJECT MECHANISM

Anthony M. DiViesti, Arlington Heights, and Kent E. Regnier, Lombard, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Nov. 18, 1993, Ser. No. 154,249
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 23 Claims



1. A push/pull edge card connector for providing an electrical connection between a primary circuit member and a printed circuit card, an edge of said circuit card being insertable into and removable from the connector, said connector comprising:

a connector housing having an elongated card slot disposed therein and extending between two opposing end portions of said connector, the card slot having a predetermined longitudinal axis and being adapted to receive said circuit card edge therein in an electrically operative relationship, the connector housing being defined by a pair of opposing sidewalls extending generally parallel to the axis and an endwall integral with and extending between said sidewalls, said endwall having a slot therein to define a pair of spaced apart, upstanding endwall sections, each said endwall section extending generally perpendicularly from an end portion Of one of said sidewalls to define an L-shaped structure,

a plurality of contact terminals disposed in said housing, each terminal having a portion positioned in said card slot for slidingly engaging said circuit card upon insertion thereof into said card slot,

a latch/eject mechanism positioned on at least one end portion of said connector housing, the latch/eject mechanism including a latch/eject member which is rotatable between a first position at which said circuit card is retained within said card slot and a second position at which at least a portion of said circuit card is ejected from said card slot and at which a portion of said latch/eject member extends through said slot in said endwall,

said latch/eject mechanism including means for limiting the rotation of said latch/eject member during ejection of said circuit card from said card slot, the rotation limiting means including an engagement surface formed on said latch/eject member, the engagement surface being generally vertical and engaging one of said connector housing endwall sections when said latch/eject member is moved to said second position to thereby limit rotation of said latch/eject member, and

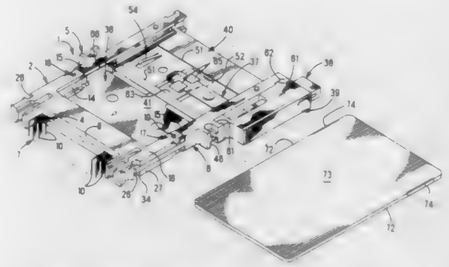
means to rotatably retain said latch/eject member within said housing.

5,389,001

CARD EJECTING MECHANISM

John L. Broschard, III, Harrisburg, and Donald E. Dellinger, Hellam, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 8,939, Jan. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 926,628, Aug. 10, 1992, Pat. No. 5,318,452. This application Feb. 22, 1994, Ser. No. 200,847
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—159 15 Claims



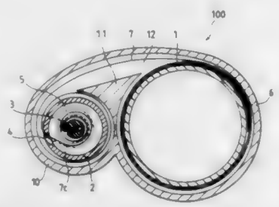
1. A card ejecting mechanism, comprising: a sliding tray between guide arms spaced apart to receive opposite side edges of a card, the guide arms being connected to an electrical connector, a lever arm pivotally attached to a plate extending between the guide arms, a push button slidably engaging the lever arm, a housing mounting the button slidably on one of the guide arms, the tray being engaged and moved by the lever to urge the card outwardly from the guide arms for grasping to remove the card from the guide arms, and a first conductive finger on the plate projecting to contact a card received by the guide arms, both guide arms being formed with interlocking structure for mounting the housing, the housing being mounted by the interlocking structure to one of the guide arms, the plate being formed with a second conductive finger to contact a card received by the guide arms, and one of the fingers nearer to the housing than the other of the fingers being removable to avoid engagement with the lever arm.

5,389,002

CONNECTOR APPARATUS USED FOR A FLEXIBLE CABLE

Kozo Matsuda, Nagoya; Hidenobu Kazita, Okazaki, and Masayasu Teraoka, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 20, 1993, Ser. No. 169,140
Claims priority, application Japan, Dec. 22, 1992, 4-356688; Feb. 17, 1993, 5-027829; Apr. 26, 1993, 5-099505; Jul. 21, 1993, 5-179659; Jul. 21, 1993, 5-180099
Int. Cl.[6] H01R *39/02*
U.S. Cl. 439—164 27 Claims



1. A cable connector apparatus comprising:

a case, defining first and second compartments therein;

a rotary member accommodated in said first compartment;

a stationary member accommodated in said second compartment;

a flexible cable having one end connected to said rotary member and the other end connected to said stationary member, said flexible cable being wound around both said rotary member and stationary member plural times so as to allow said rotary member to turn on its axis several times;

an auxiliary rotary member disposed around and radially spaced from said stationary member, said auxiliary rotary member having an engaging mechanism establishing engagement between said auxiliary rotary member and said flexible cable;

said second compartment being separated into two spaces by said auxiliary rotary member, thereby dividing a flexible cable accommodated in said second compartment into inner and outer portions; and

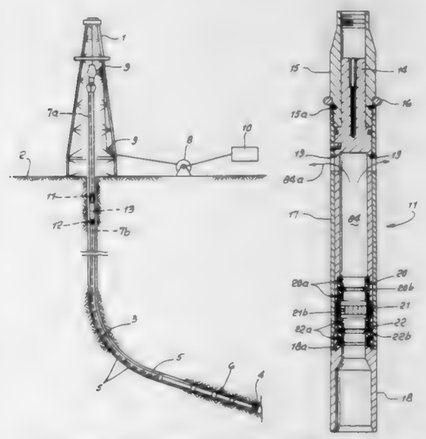
an elastic force assist means associated with said auxiliary rotary member so as to generate elastic force in response to rotation of said auxiliary rotary member.

5,389,003

WIRELINE WET CONNECTION

Donald H. Van Steenwyk, San Marino; Michael S. Orcutt-Clenard, Atascadero, and Raymond W. Teys, Pismo Beach, all of Calif., assignors to Scientific Drilling International, Houston, Tex.

Filed Sep. 13, 1993, Ser. No. 119,565
Int. Cl.[6] H01R *4/60*
U.S. Cl. 439—191 12 Claims



1. A releasable and reseatable electrical connection between female and male disconnectible sections of wireline in a drill string in a borehole, the invention comprising:

a) the male member defining a first axis and having an externally exposed electrical contact ring, extending about said axis,

b) the female member defining a second axis and having a conductive part extending at least part way about said second axis, and a spring element in electrical connection with said part and inwardly exposed for making electrical contact with said contact ring upon telescopic interfitting of the members, said spring element outwardly bowed substantially perpendicular to said drill string to make contact with said part,

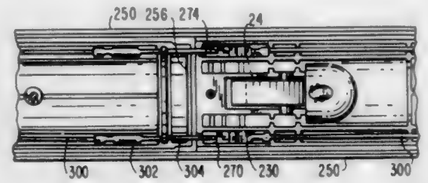
(c) and including seals carried by insulative bushings received by the female member above and below said spring element, to protect said part, said element and said contact ring during inter-fitting of said members, the seals located to wipe against the outer surface of said male member.

5,389,004

HANDLE AND WAND SYSTEM FOR VACUUM CLEANER

Steven L. Gray, Johnson City; Peter Hoekstra; Michael F. Martin, both of Bristol, and George C. Moyher, Jr., Bluff City, all of Tenn., assignors to Electrolux Corporation, Atlanta, Ga.

Filed Apr. 23, 1993, Ser. No. 53,250
Int. Cl.[6] H01R *4/60*
U.S. Cl. 439—192 17 Claims



1. A locking interface for use in a vacuum cleaner system to detachably join a first member of the system to a second member of the system, the locking interface comprising:

a suction conduit wall in the first member surrounding a suction conduit, the suction conduit wall having a slot opening therein near a female end of the first member, the first member also including an end wall at the first end of the first member, the end wall having a plurality of contact access openings therein;

a first plurality of conducting wires running generally parallel to the suction conduit and along the first member, each of the conducting wires terminating at the female end of the first member in an electrical contact, each of the electrical contacts being located adjacent a contact access opening in the end wall;

a latch including a button and a locking arm having a locking tooth, the latch being movably mounted on the first member to permit the locking tooth to move in the slot opening in the suction conduit wall;

a spring for biasing the latch such that the locking tooth of the latch is biased towards the suction conduit;

a cylindrical flange attached to the second member at a male end of the second member, the cylindrical flange fitting into the suction conduit at the female end of the first member;

a locking projection on the cylindrical flange of the second member;

wherein, the second member is detachably joined to the first member with the cylindrical flange of the second member fitting into the suction conduit of the first member such that the locking projection extends into the slot opening in the suction conduit wall with the locking projection engaging the locking tooth to prevent the first member from being separated from the second member until the button is depressed to compress the spring and move the locking tooth away from the locking projection and permit the second member to be removed from the first member.

5,389,005

WATERPROOF ELECTRIC CONNECTOR SEAL MEMBER

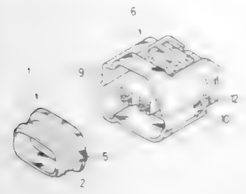
Shinji Kodama, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jun. 14, 1994, Ser. No. 259,507
Claims priority, application Japan, Jun. 22, 1993, 5-150274
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—272 10 Claims

1. A waterproof electric connector seal member for watertightly engaging male and female electric connector housings with each other, said seal member comprising:

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an elastic seal element fit around the outer periphery of a housing portion within a hood of said male electric connector housing, formed of a tubular portion and a flange portion in a tubular section so as to seal the gap between said male electric connector housing and a female electric connector housing which abuts against the outer periphery of said tubular portion so as to be inserted into said hood of said male electric connector housing; and



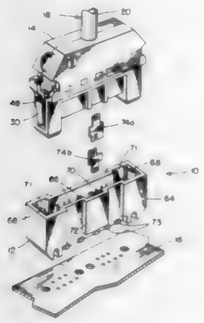
tongues harder than said seal element, fixed to a plurality of portions on the outer periphery of said flange portion of said seal element so as to protrude from the outer periphery of said flange portion, said tongues being retained by means of flexible arms arranged within said hood of said male electric connector housing, placed corresponding to the respective positions of said tongues when said seal element is fully inserted so as to abut against a wall of said male electric connector housing.

5,389,006

LIGHTWEIGHT ENTERTAINMENT CONNECTOR

Rocco J. Noschese, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Aug. 13, 1993, Ser. No. 106,429
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—354 16 Claims



1. An electrical connection system comprising:

a first electrical connector having a first housing, a plurality of first contacts, and latch hooks, the first housing having a receiving area with the latch hooks located inside of the receiving area and facing each other from opposite ends of the receiving area; and

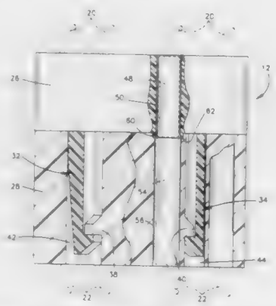
a second electrical connector removably matingly connected to the first electrical connector in the receiving area, the second electrical connector having a second housing, a plurality of second contacts, and deflectable latches at opposite ends of the second housing, the latches each having a section with a hole, the latch hooks being located in respective ones of the holes, wherein the sections of the latches having the holes are inwardly deflectable towards the second housing to remove each of the latches from engagement with its respective latch hook, and wherein the housing has a center section and two enlarged end sections, the end sections extending past a leading face of the center section.

5,389,007

CONNECTOR BLOCK ASSEMBLY

Ernest Reinelt, Laguna Niguel, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 13, 1993, Ser. No. 90,661
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—357 66 Claims



1. A connector block assembly for use in connecting a first plurality of electrical conductors with a second plurality of electrical conductors, said connector block assembly comprising a first connector section which is formed as one piece and receives a first plurality of contacts which are associated with the first plurality of electrical conductors, and a second connector section which is formed as one piece and receives a second plurality of contacts which are associated with the second plurality of electrical conductors, said first connector section of said connector block assembly having first and second end surfaces which are interconnected by side surfaces, surface means for defining a first series of contact cavities which extend between said first and second end surfaces of said first connector section to receive the first plurality of contacts, and a resiliently deflectable retainer finger extending outward from said first end surface of said first connector section and having a longitudinal central axis extending generally parallel to central axes of contact cavities of said first series of contact cavities, said retainer finger having an elongated body section and a head end section, said head end section of said retainer finger having a cam surface which extends transversely to the longitudinal central axis of said retainer finger and a latch surface which extends transversely to said cam surface and to the longitudinal central axis of said latch finger, said body section of said retainer finger having a longitudinally extending central portion and longitudinally extending side portions disposed along opposite sides of said central portion, said longitudinally extending central portion of said retainer finger having a greater thickness as viewed in a plane extending perpendicular to the longitudinal central axis of said retainer finger than said longitudinally extending side portions of said retainer finger, said latch surface on said head end section of said retainer finger projecting outward in a first direction from the longitudinal central axis of said retainer finger, said body section of said retainer finger having a first longitudinally extending side surface which faces in the first direction, said first longitudinally extending side surface of said body section of said retainer finger having a central portion with a continuously curving configuration as viewed in a plane extending perpendicular to the longitudinal central axis of said body section, said second connector section of said connector block assembly having first and second end surfaces which are interconnected by side surfaces, surface means defining a second series of contact cavities which extend between said first and second end surfaces of said second connector section to receive the second plurality of contacts, and surface means for defining a retainer cavity which extends inward from said first end surface of said second connector section of said connector block assembly and has a longitudinal central axis extending generally parallel to central axes of contact cavities of said second series of contact cavities, at least a portion of said retainer cavity having a longitudinally extending central portion and longitudinally extending side portions disposed along opposite sides of said central portion of said retainer cavity, said longitudinally extending central portion of said retainer cavity having a greater thickness as viewed in a plane extending perpendicular to the longitudinal central axis of said retainer cavity than said longitudinally extending side portions of said retainer cavity, said surface means for defining a retainer cavity including means for defining a latch flange which is disposed within said second connector section of said connector block assembly at a location between and spaced from said first and second end surfaces of said second connector section of said connector block assembly, said latch flange having a cam surface which extends transversely to the longitudinal central axis of said retainer cavity and a latch surface which extends transversely to said cam surface and to the longitudinal central axis of said retainer cavity, said cam surface on said head end section of said retainer finger being engageable with said cam surface on said latch flange to resiliently deflect said retainer finger during insertion of said retainer finger into said retainer cavity, said latch surface on said head end section of said retainer finger being disposed in abutting engagement with said latch surface on said latch flange when said retainer finger is inserted into said retainer cavity to block withdrawal of said retainer finger from said retainer cavity, said first series of contact cavities in said first connector section of said connector block assembly being aligned with said second series of contact cavities in said second connector section of said connector block assembly when said retainer finger is inserted in said retainer cavity, said retainer cavity having a side surface which extends parallel to a longitudinal central axis of said retainer cavity and faces toward the longitudinal central axis of said retainer cavity, said side surface of said retainer cavity having a central portion with a continuously curving configuration as viewed in a plane extending perpendicular to the longitudinal central axis of said retainer cavity, the continuously curving configuration of the central portion of said side surface of said retainer cavity corresponds to the continuously curving configuration of said first longitudinally extending side surface of said body section of said retainer finger, said side surface of said retainer cavity having first and second side portions disposed along opposite sides of said central portion of said side surface of said retainer cavity, said first and second side portions having linear configurations as viewed in a plane extending perpendicular to the longitudinal central axis of said retainer cavity, said latch surface on said latch flange extending outward from said central portion and said first and second side portions of said side surface of said retainer cavity toward the longitudinal central axis of said retainer cavity for the same distance throughout the extent of said latch surface on said latch flange.

5,389,008

LAMP SOCKET ASSEMBLY

You-Jen Cheng, and Tzu-Ling Cheng, both of 2nd Fl., 18-9, Tienmu W. Road, Taipei City, Taiwan, Prov. of China

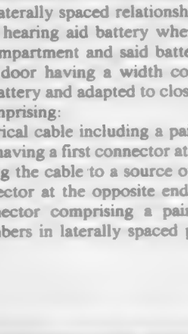
Filed Jan. 3, 1994, Ser. No. 176,465
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—419 6 Claims

1. A lamp socket assembly, comprising:

a socket shell with a bottom end and a top end, the bottom end being open for receiving the base of a lamp bulb, the top end being closed by a top wall with a central opening;

a socket cap for holding down an electrical wire, the socket cap being fastened to the socket shell and covering the top end of the socket shell;

a first metal contact positioned between the socket cap and the top wall of the socket shell, the first metal contact making electrical contact with a conductor of the electrical wire, the first metal contact having an arched portion which protrudes through the central opening of the top wall of the socket shell for making electrical contact with a tip contact of the lamp bulb; and



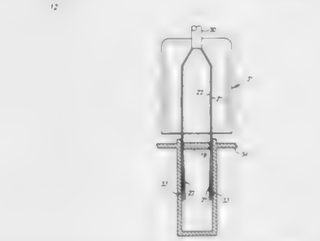
a second metal contact for making electrical contact with another conductor of the electrical wire and with a ring contact of the lamp bulb.

5,389,009

BATTERY SUBSTITUTE DEVICE

George A. Van Schenck, III, 20247 Telegraph Square La., Katy, Tex. 77449

Filed Jul. 27, 1993, Ser. No. 96,969
Int. Cl.[6] H04R *25/02*
U.S. Cl. 439—500 6 Claims



1. In an apparatus for testing a hearing aid instrument where the hearing aid instrument includes a housing having a battery compartment therein with an access opening to said compartment and first and second contact terminals provided in said compartment in laterally spaced relationship for engaging the electrodes of the hearing aid battery when the battery is received in said compartment and said battery compartment is provided with a door having a width corresponding to the thickness of the battery and adapted to close said opening, said improvement comprising:

a flexible electrical cable including a pair of electrical conductors and having a first connector at one end for electrically coupling the cable to a source of d.c. power;

a second connector at the opposite end of said cable, said second connector comprising a pair of resilient plate contact members in laterally spaced parallel array, each

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plate contact member being electrically connected to a different one of the cable conductors with a first end portion of each plate contact member being encapsulated in a rigid molded insulating pod and the spacing between said plate contact members being slightly less than the thickness of the button battery, each of said plate contact members having a second portion which projects from the insulating pod and is of a length which is sufficient to reach one of said compartment contact terminals when said insulating pod engages said door in the door closed condition and the plate contact terminals are in straddle relationship to said door and extend into said compartment whereby when the hearing aid battery is removed from said compartment, the plate contact members of said second cable connector may be placed in straddle relationship to the battery compartment door, flexed towards one another at their distal ends and inserted into the hearing aid battery compartment by closing the battery compartment door and causing their electrical contact with said hearing aid terminals.

5,389,010

CONNECTOR FOR ELECTRICAL COMPONENTS

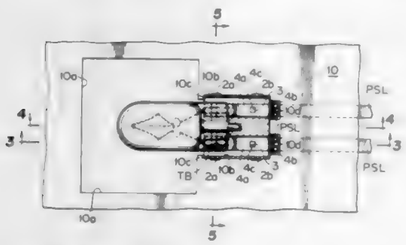
Tsunesuke Takano, and Kouichi Sinzawa, both of Tokyo, Japan, assignors to Daiichi Denso Buhin Co., Ltd., Japan

Filed Sep. 1, 1993, Ser. No. 114,350

Claims priority, application Japan, Sep. 2, 1992, 4-067593[U]; Nov. 16, 1992, 4-084961[U]

Int. Cl.[6] H01R *13/74*

U.S. Cl. 439—565 **16 Claims**



1. A connector for an electrical component comprising:

a support base which includes an edge defining an open space; and

an electrically insulative socket member connected to said support base within said open space for holding and establishing electrical connection with the electrical component; wherein

said socket member includes an opposed pair of side walls, an upper wall and a lower wall which collectively establish an open-ended interior space;

at least one clamp connector disposed in a rearward end of said interior space and coupled to said socket member for receiving a terminal portion of an electrical component inserted into a forward end of said interior space to connect said electrical component electrically to a circuit; and

opposed pairs of separated upper and lower locking tabs formed on one of said side walls of said socket member and said support base, and projecting outwardly therefrom, said upper and lower locking tabs connecting said socket member to said support base and positionally restraining said socket member within said open space, wherein

said edge of said support base defines an enlarged forward space in which said electrical component is disposed, and a rearward space in which said socket member is disposed.

5,389,011

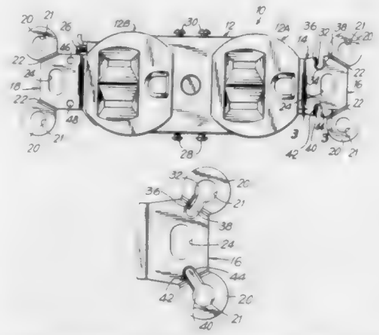
ELECTRICAL RECEPTACLE OR SWITCH WITH BUILT-IN WIRE STRIPPER AND LOOPER

John M. Eder, Floral Park, N.Y., assignor to Eagle Electric Mfg. Co., Inc., New York, N.Y.

Filed Feb. 22, 1993, Ser. No. 20,422

Int. Cl.[6] H01R *33/945*

U.S. Cl. 439—577 **9 Claims**



1. A wire-stripping, box-mounted electrical device, comprising:

(a) an elongated electrically-insulating body having opposite ends;

(b) an elongated metal mounting strap on the body and having opposite strap end regions extending past the opposite ends of the body, each strap end region having means for mounting the device on a junction box;

(c) an electrical termination on the body for connection to an electrical wire and in the box; and

(d) wire stripper means integrally formed with one of the strap end regions, and operative for stripping an electrically-insulating jacket off an electrically-conductive core of the wire prior to connection to the termination.

5,389,012

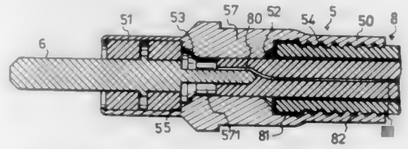
COAXIAL CONDUCTOR AND A COAX CONNECTOR THEREOF

George Y. Huang, 5th Fl., No. 277-1, Sec. 4, Pa-Te Rd., Taipei City,

Filed Mar. 2, 1994, Ser. No. 204,756

Int. Cl.[6] H01R *17/18*

U.S. Cl. 439—583 **6 Claims**



1. A coax connector for a coaxial signal cable, comprising:

a tubular outer conductor having a rear end portion, a front end portion and an intermediate portion which is disposed between said rear and front end portions and which confines a through-hole void that communicates said rear and front end portions, said rear end portion having a teethed inner wall surface, said through-hole void having a diameter smaller than inner diameters of said rear and front end portions, and a first diverging end section adjacent to said rear end portion;

an insulator unit disposed fittingly to substantially span the inner diameter of said front end portion of said tubular outer conductor; and

an elongated inner conductor having a portion that extends through said insulator unit and into the void of said intermediate portion of said tubular outer conductor, said inner conductor being retained in an axial direction of said tubular outer conductor by said insulator unit.

5,389,013

ELECTRICAL TERMINAL WITH MEANS TO AVOID LOCKING LANCE DAMAGE AND ENTANGLEMENT

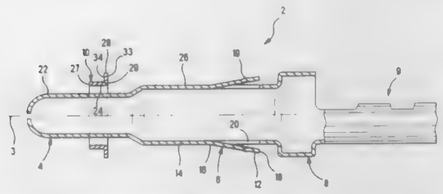
Friedrich J. A. Kourimsky, Bensheim, Germany, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 10, 1994, Ser. No. 179,290

Claims priority, application United Kingdom, Jan. 27, 1993, 9301541

Int. Cl.[6] H01R *13/432*

U.S. Cl. 439—746 **7 Claims**



1. An electrical terminal comprising a locking section, having a base, and at least one resilient locking lance attached to the base, and a forward retaining protrusion, the lance and protrusion serving to retain the electrical terminal against a shoulder within an associated cavity of a housing, the terminal wherein the locking section comprises a sleeve slidable over the locking lance so as to resiliently bias the lance inwardly towards the base, the sleeve being slidable off the locking lance during entry of the terminal into the cavity of the housing so as to allow the locking lance to spring outwardly and lock the terminal in the housing.

5,389,014

ELECTRICAL CONNECTOR HAVING SECONDARY LOCKING MECHANISM

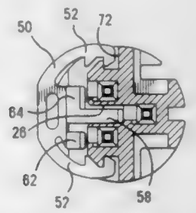
Dietrich W. Kümpel, Rüsselsheim, and Rolf Jetter, Darmstadt, both of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 4, 1993, Ser. No. 102,164

Claims priority, application United Kingdom, Aug. 11, 1992, 9216994

Int. Cl.[6] H01R *13/436*

U.S. Cl. 439—752 **13 Claims**



1. In an electrical connector comprising an insulating housing body and at least one passageway for receiving an electrical terminal, and a locking member for positively retaining said terminal in said one passageway, said housing body having at least one transverse channel in communication with said one passageway where said locking member is moveable transversely of said terminal into said one transverse channel where said locking member can be positioned behind a locking shoulder of said terminal, said connector being characterized in that said locking member is captively supported by said housing body, and said locking member is moveable longitudinally of said housing body from a first position where said terminal can be inserted, to a second position where said locking member is in alignment with said transverse passageway, said locking member being movable transversely into said transverse channel to a locked position to retain said terminal.

5,389,015

CONNECTOR

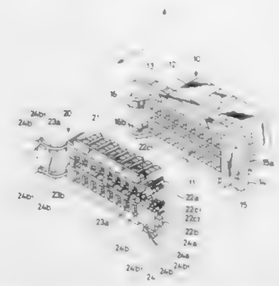
Osamu Sasai, and Masaji Suzuki, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Sep. 16, 1993, Ser. No. 121,418

Claims priority, application Japan, Oct. 8, 1992, 4-076871[U]

Int. Cl.[6] H01R *13/436, 13/627*

U.S. Cl. 439—752 **9 Claims**



1. A connector adapted to be inserted through a mounting hole in a fixed panel member, the connector comprising:

a connector body having a rearwardly extending body projection portion and at least one terminal receiving chamber for receiving a corresponding at least one metal terminal having an electric wire clamped thereto, said connector body further comprising at least one engagement hole having a first projection; and

a retainer having at least one retaining piece and comprising means for engaging said connector body in a provisionally-retained condition before said at least one metal terminal is inserted and a completely-retained condition after said at least one metal terminal is inserted to hold said at least one metal terminal in a double-locked condition, said engaging means comprising a first engagement aperture and a second engagement aperture, wherein said first projection engages said first engagement aperture in said provisionally-retained condition and said first projection engages said second engagement aperture in said completely-retained condition.

5,389,016

STEERING SYSTEM FOR PLANING WATERCRAFTS

Per Nestvall, Göteborg, Sweden, assignor to Volvo Penta AB, Sweden

Filed May 12, 1993, Ser. No. 50,378

Claims priority, application Sweden, Nov. 23, 1990, 9003727

Int. Cl.[6] B63H *5/12*

U.S. Cl. 440—1 **7 Claims**

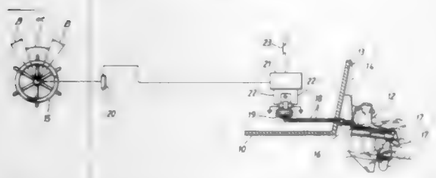
1. An arrangement in a steering and propulsion system for a planing type motorboat having an engine and a trimmable drive, said arrangement comprising:

a) means for adjusting said trimmable drive to various different trim positions;

b) means including a rudder arrangement for effecting steering of the motorboat;

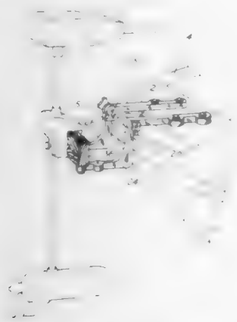
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c) a sensor for detecting displacement of said rudder arrangement, said sensor being connected to said means for adjusting said trimmable drive, and
d) a microprocessor for recording the degree of displacement of said rudder arrangement,



wherein said microprocessor is adapted to control said means for adjusting said trimmable drive whereby said trimmable drive is adjusted so as to trim down the bow of the boat in the water when a certain steering displacement is exceeded.

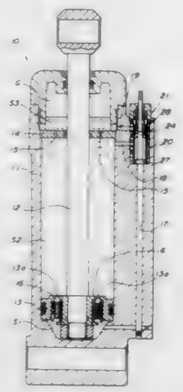
5,389,017
FOLDING BOAT TRANSOM
George P. Huzjak, 1826 S. 71st St., West Allis, Wis. 53214
Filed Jul. 26, 1993, Ser. No. 97,249
Int. Cl.[6] B63H *5/12*
U.S. Cl. 440—53 5 Claims



1. A folding transom having an "engaged position" and a "retracted position" which comprises:
a motor mounting bracket;
a pair of parallel horizontal legs, having first and second ends, each leg being attachable to a boat at the first end;
a pair of "L" shaped members, maintained in parallel relationship, each of which is rotatably attached at one end of the "L" shaped member to the second end of a horizontal leg by a fastener for fastening for locking the "L" shaped member into an engaged position and on the other end of the "L" shaped member to the motor mounting bracket.

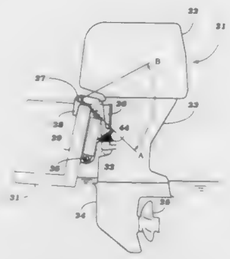
5,389,018
TILT CYLINDER UNIT FOR OUTBOARD ENGINE
Yasuo Funami, Saitama, Japan, assignor to Showa Corporation, Saitama, Japan
Filed Apr. 27, 1993, Ser. No. 52,750
Claims priority, application Japan, Apr. 27, 1992, 4-131325
Int. Cl.[6] B63H *5/12*
U.S. Cl. 440—61 4 Claims

1. A tilt cylinder unit for use with an outboard engine on a boat hull, comprising:
a cylinder;
a piston slidably disposed in said cylinder;
a rod having an end coupled to said piston;
one of said cylinder and said rod being adapted to be coupled to the outboard engine and the other being adapted to be coupled to the boat hull;
said cylinder having a first chamber which is expanded when the tilt cylinder unit is extended and which is compressed when the tilt cylinder unit is contracted, said first and second chambers being defined in said cylinder by said piston;
a third chamber having a portion filled with a gas;
an orifice interconnecting said second and third chamber;
a plurality of communication passages interconnecting said first, second, and third chambers; and



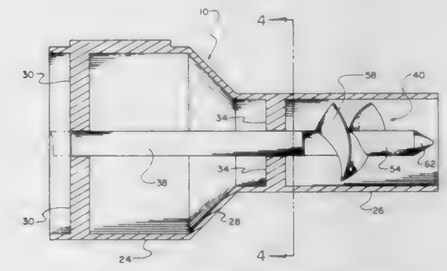
a manually operable valve coupled between said communication passages for selectively opening and closing said communication passages simultaneously;
wherein said communication passages are defined in a wall of said cylinder, said manually operable valve comprising a tubular case fitted in a cavity defined in said wall and having openings communicating with said communication passages, respectively, and a control rod axially movably disposed in said tubular case for selectively bringing said communication passages into and out of communication with each other.

5,389,019
TILT MECHANISM FOR OUTBOARD DRIVE UNIT
Eiichiro Tsujii, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Jul. 13, 1993, Ser. No. 91,607
Claims priority, application Japan, Jul. 16, 1992, 4-212246; Aug. 26, 1992, 4-250824
Int. Cl.[6] B63H *5/12*
U.S. Cl. 440—61 13 Claims



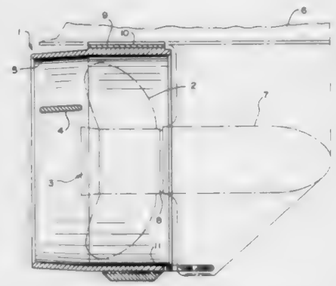
1. A hydraulic assembly for controlling the position of an outboard drive mounted to the transom of a watercraft between a normal drive position and a popped up position when an underwater obstacle is struck and returned to the normal position when the underwater obstacle is cleared, said assembly comprising a cylinder adapted to be connected to one of said outboard drive and said watercraft, a piston having a piston rod connected to the other of said outboard drive and said watercraft, saidpiston being slideably received in said cylinder and dividing said cylinder into two chambers with said piston rod extending through one of said chambers, an accumulator chamber for containing fluid and gas under pressure to accommodate changes in volume caused by the passage of said piston rod through said one chamber upon relative movement between said outboard drive and said watercraft, first conduit means containing first check valve means for permitting flow from said one cylinder chamber to said accumulator chamber only, second conduit means containing second check valve means for permitting flow from the other of said cylinder chambers to said accumulator chamber only, a pressure relief valve for permitting flow from one of said cylinder chambers only to said accumulator chamber when the pressure difference is greater than a predetermined amount, and a third check valve for permitting flow only from said accumulator chamber to the other of said cylinder chambers.

5,389,020
MARINE PROP HOUSING
James D. Clark, 725 Thompson Rd., Algoa, Tex. 77511
Filed Feb. 2, 1993, Ser. No. 12,420
Int. Cl.[6] B63H *1/16*
U.S. Cl. 440—67 3 Claims



1. A marine propeller housing apparatus comprising:
a housing member symmetrically oriented about a longitudinal axis, said housing member including a first cylindrical end section having a first cylindrical end section diameter, an interior surface and first and second ends, an intermediate tapered section having a first end tapering to a second end, said intermediate tapered section first end being coupled to said second end of said first cylindrical end section, and a second cylindrical end section having a second cylindrical end section diameter, an interior surface and first and second ends, said second cylindrical end section first end being coupled to said second end of said intermediate tapered section, said first cylindrical end section diameter being substantially larger than said second cylindrical end section diameter;
mounting bracket means for securing said housing to a marine engine having a splined spindle;
a first series of radial spokes projecting inwardly from said interior surface of said first cylindrical end section proximal to said first cylindrical end section first end;
a second series of radial spokes projecting inwardly from said interior surface of said second cylindrical end section proximal to said second cylindrical end section first end;
a fixed drive tube centrally supported within said housing upon said radial spokes, said drive tube being substantially hollow and having a pair of spaced thrust bearings mounted within said drive tube;
a cylindrical drive shaft extending through said fixed drive tube and rotatably supported upon said bearings, said cylindrical drive shaft having a drive shaft splined receptacle at a first end thereof and a drive shaft splined extension at a second end thereof, wherein said drive shaft splined receptacle is engagable to a splined spindle of a marine engine;
and,
a propeller assembly including a cylindrical jacket having a helical propeller blade secured to and extending around said cylindrical jacket, with a propeller assembly splined receptacle extending into and secured to said cylindrical jacket, said splined extension being received within said propeller assembly splined receptacle for mechanical rotational communication with a splined spindle of a marine engine with said propeller assembly being supported within said second cylindrical end section.

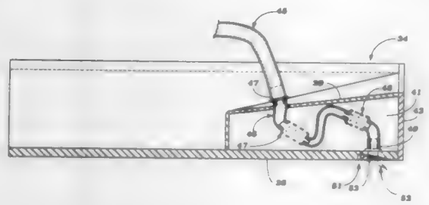
5,389,021
MOTORBOAT PROPELLER SAFETY SHROUD
James A. Padgett, 802 Iowa St., Salem, Va. 24153
Filed Sep. 20, 1993, Ser. No. 123,938
Int. Cl.[6] B63H *11/00*
U.S. Cl. 440—67 6 Claims



1. A protective propeller shroud assembly for a motor driven boat, said protective propeller shroud assembly comprising:
a multibladed marine propeller rotatable about an axis of rotation and having a plurality of radially extending propeller blades, each blade having a leading blade edge, a trailing blade edge and a blade outer tip;
an open ended, generally cylindrical stationary safety shroud positioned about said propeller and having a shroud center line coincident with said propeller axis of rotation, said safety shroud having an inlet located upstream, in a direction of water flow through said propeller and said shroud, of said propeller leading blade edge at a distance of at least 0.50 inch, said safety shroud further having an exit cone having an angle of convergence of between 3.0° and 4.0°, said exit cone having an internal starting point downstream of said blade outer tips, said exit cone terminating in a shroud exit edge; and
a generally horizontal control vane located in said exit cone downstream of said propeller and having an angle of declination the same as said angle of convergence of said exit cone, said control vane being located generally halfway between said safety shroud center line and an upper inner surface of said exit cone portion of said safety shroud.

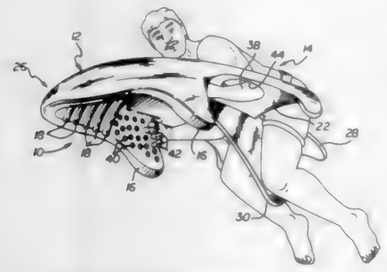
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5,389,022
JET BOAT
Noboru Kobayashi, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Continuation of Ser. No. 798,363, Nov. 21, 1991, abandoned, which is a continuation of Ser. No. 615,980, Nov. 20, 1990, abandoned. This application Nov. 16, 1992, Ser. No. 976,660
Claims priority, application Japan, Nov. 21, 1989, 1-303977
Int. Cl.[6] B63H *21/32, 21/34, 21/38*
U.S. Cl. 440—89 15 Claims



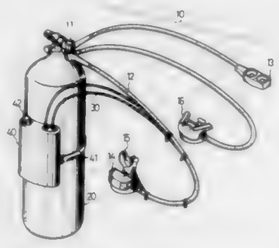
1. In a marine watercraft having a hull powered by an internal combustion engine having an exhaust system, a combined exhaust silencer and exhaust discharge comprising a housing defining an expansion chamber and adapted to be affixed to and forming a portion of said hull in at least a partially submerged position during the operating of said watercraft, and an enclosed tubular exhaust conduit extending uninterruptedly through said housing and surrounded by said expansion chamber from an inlet communicating with said engine exhaust system and an underwater exhaust outlet, said tubular conduit having at least one perforated tubular section communicating the exhaust gases with the interior of said expansion chamber for silencing said exhaust gases from said engine, said expansion chamber forming a complete enclosure around the portion of said exhasut conduit passing therethrough.

5,389,023
BODY SURFING BOARD
Jonothon M. W. McIntyre, 6733 Hinds Ave., North Hollywood, Calif. 91606
Continuation-in-part of Ser. No. 36,112, Mar. 22, 1993, Pat. No. 5,318,467. This application Mar. 14, 1994, Ser. No. 212,363
Int. Cl.[6] B63B *35/79*
U.S. Cl. 441—65 20 Claims



1. A body surfing board, comprising:
a buoyant, resiliently flexible hull including a lower surface that rides on top of water, an upper surface adapted to receive a swimmer in a chest down position with the feet of the swimmer projecting beyond a rear edge of the hull, and a nose section defining a forward end of the hull;
a tail section including a keel extending downwardly from the lower surface of the hull and rearwardly of the rear edge of the hull;
a pair of fins extending downwardly from the hull along opposite lateral edges thereof, the fins each being pivotable along their respective attachments to the hull, inwardly and outwardly with respect to one another; and
propulsion means fixed to the lower surface of the hull, for translating the force of a water wave into forward movement of the body surfing board, the propulsion means including a plurality of slits provided within the nose section and extending between the pair of fins.

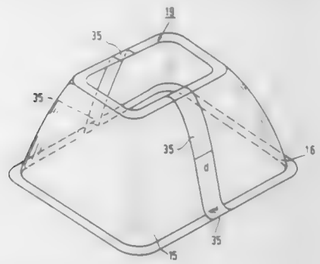
5,389,024
WATER SUPPLY APPARATUS FOR A DIVING SYSTEM
Wen-Shoung Chen, 7th Floor, No. 83, Li Gong Road, Tai Pin Hsiang, Taichung,
Filed Dec. 8, 1993, Ser. No. 162,878
Int. Cl.[6] B63C *11/02*
U.S. Cl. 441—88 2 Claims



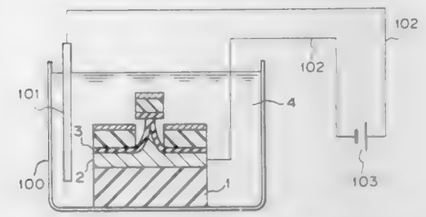
1. A water supply apparatus for a diving system of the type including an air tank for supplying air to a nozzle engageable within the mouth of a diver, which apparatus comprises:
a) a water container for attachment to the air tank and pipe means for supplying water from the container to the nozzle, the pipe means including at least one outlet positioned for supplying water directly to the diver when the nozzle is engaged within the mouth of the diver;
b) the water container including means for pumping water from the container to the nozzle, which pumping means includes an electrically operated pump and a battery power source; and
c) a switch disposed within an interior of the nozzle and in electrical connection with the pump and battery power source for actuation by the teeth of the diver to operate the pump.

5,389,025
METHOD OF MANUFACTURING A MAGNETICALLY SPLIT INTERNAL MAGNETIC SHIELD FOR A DISPLAY TUBE
Richard Vanceulen; Wilhelmus J. Beekmans, and Henricus P. Van Der Vijfeyke, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Division of Ser. No. 898,982, Jun. 15, 1992. This application May 10, 1994, Ser. No. 241,076
Claims priority, application European Pat. Off., Jun. 14, 1991, 91201474
Int. Cl.[6] H01J *9/236*
U.S. Cl. 445—1 1 Claim

1. A method of manufacturing a magnetically split internal magnetic shield for a display tube, comprising arranging two flat plate-shaped parts of a ferromagnetic material next to each other, welding the two flat plated-shaped parts together by means of a strip of a non-magnetic metal, and forming an internal magnetic shield from the two welded flat plate-shaped parts by means of drawing.

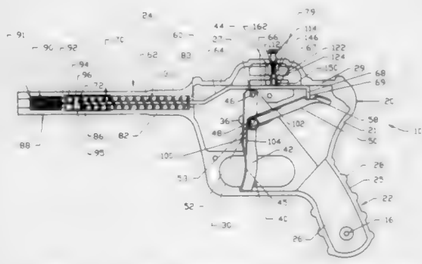


5,389,026
METHOD OF PRODUCING METALLIC MICROSCALE COLD CATHODES
Shinya Fukuta, and Keiichi Betsui, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 867,514, Apr. 13, 1992, abandoned. This application Jun. 28, 1993, Ser. No. 82,170
Claims priority, application Japan, Apr. 12, 1991, 3-079464
Int. Cl.[6] H01J *9/02, 1/30*
U.S. Cl. 445—24 4 Claims



1. A method of producing a metallic microscale cold cathode having a metallic emitter tip formed on a substrate, the emitter tip being located inside an aperture formed in a gate electrode of a metallic film provided on an insulating film surrounding the emitter tip, the method comprising steps of:
(a) forming an insulation film on a metallic material to be formed into an emitter tip;
(b) patterning the insulation film to form a mask of the insulation film;
(c) etching the metallic material using the mask to form a cone of the metal beneath the mask;
(d) oxidizing the surface of the remaining metallic material to form an oxidized metal film, so that an emitter tip of the unoxidized metal material is formed inside the oxidized metal film;
(e) successively forming over the substrate an insulating film and a metallic film to make a gate electrode;
(f) removing the oxidized film under the mask, which has been uncovered by the insulating film and metallic film in said step (e), to thus lift off the mask and expose the emitter tip while forming an aperture separating the emitter tip and the gate electrode and performing an electrically protecting treatment using the unoxidized metal material for the emitter tip as a cathode; and
(g) patterning the metallic film on the insulating film formed in said step (e) to thereby form the gate electrode.

5,389,027
COLLECTOR'S MODEL DISINTEGRATOR PISTOL (CMDP)
Ellis Kantor, Ektek 975 Hornet Dr., Ste. 210, Hazelwood, Mo. 63042, and Daniel H. Heymann, HCO Services, 12921 Nimes Dr., St. Louis, Mo. 63141
Filed Nov. 1, 1993, Ser. No. 144,244
Int. Cl.[6] A63H *17/045, 3/31, 5/04, 33/30*
U.S. Cl. 446—23 19 Claims



1. A Collector's Model Disintegrator pistol comprising:
investment cast left and right pistolhalf sections each half defining a portion of:
a pistol handle portion comprising a downwardly extending, generally cylindrical, hollow portion and a handle external surface;
a pistol body portion having a cast trigger opening and a head portion located at the top of the body portion containing at least one spark observance opening;
a barrel portion having a circular cross section extending outwardly from said body portion housing a cylinder adjacent an abutment and a piston rod having a piston head extending within said cylinder said piston head in facing arrangement with a pop piston, the pop piston in said barrel portion and spring biased into said cylinder while being adapted to exit said cylinder when propelled by air pushed by said piston head;
said piston rod extending within a barrel resilient means located within said barrel; said piston rod having a generally horizontal portion located within said body portion adjacent said head portion; said piston rod having a distal end portion extending into said pistol body portion;
a trigger member mounted within said body portion near said head portion and having a trigger distal end extending downward into the said trigger opening;
a link member within said body portion having a cam slot adjacent its distal end and being pivotally mounted upon a transversely extending pin within said body portion and extending through said trigger;
said pin extending into spaced apart arcuate cast slots located respectively within each of said cast halves;
said piston rod horizontal portion including a roughened surface;
said piston rod distal end portion including a vertical projection extending into said cam slot;
spring means releasably biasing a flint member within said head portion into engagement with said roughened surfaces; whereby when said trigger member is actuated by an operator pulling said trigger rearwardly, said trigger member pivots around its upper end, said link drives said piston rod to move in a rearward direction against the bias of said barrel resilient means, within said body portion and guided solely by said body portion, said flint member and said link member until such time as said piston rod vertical projection is moved out of said cam slot, whereby said piston rod moves rapidly in a forward direction, guided solely by said body portion and said flint member, under the bias of said barrel resilient means, whereby said roughened portion engages said flint member, causing a spark

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visible in said spark opening, and whereby said piston head is moved within said cylinder, forcing air within said cylinder until said piston head pushes air against said pop piston to force said pop piston to exit said cylinder, with an audible pop firing sound and whereby said audible pop firing sound and said spark are both activated by said piston rod.

5,389,028

CHRISTMAS STOCKING, PUPPET AND STORY MEDIA COMBINATION

Catherine Cabrera, 12727 Parkyns St., Los Angeles, Calif. 90049; Pepper de Callier, and Priscilla de Callier, both of 99 Riverside Dr. #13, Burbank, Calif. 91506

Filed Dec. 1, 1992, Ser. No. 983,664
Int. Cl.[6] A63H *3/00, 3/14*
U.S. Cl. 446—73 18 Claims



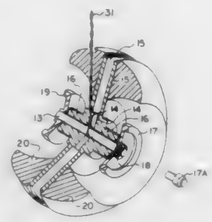
1. A toy comprising in combination:
a Christmas stocking, a puppet and a story media;
said Christmas stocking and said puppet being integrally formed and comprising an enlarged stocking-like article including a sidewall having a first side and a second side, a closed first end and an open second end such that said stocking-like article defines an open-ended cavity sized to receive a human hand therein, said stocking-like article being reversible such that in a first configuration said second side of said sidewall faces the interior of said cavity and in a second configuration said first side of said sidewall faces the interior of said cavity;
said first side of said sidewall including decorative means indicative of the Christmas season, and said second side of said sidewall including decorative means thereon simulating a puppet character; and
said story media comprising an element sized to fit within said open-ended cavity, said story media element being connected to said second side of said sidewall in the vicinity of said closed end such that said story media element can reside within said open-ended cavity when said stocking-like article is in its said first configuration, and such that pulling said story media element through said open second end will cause said stocking-like article to turn substantially inside out and to substantially assume its said second configuration.

5,389,029

ADJUSTABLE PERFORMANCE YO-YO

John J. McAvoy, Jr., 1428 S.W. 137, Seattle, Wash. 98166

Continuation-in-part of Ser. No. 806,480, Dec. 13, 1991, Pat. No. 5,254,027. This application Apr. 27, 1993, Ser. No. 52,717
The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.
Int. Cl.[6] A63H *1/30*
U.S. Cl. 446—250 11 Claims



1. A yo-yo comprising in combination:
a. axle means,
b. string looped about central portion of said axle means defining a twisted spiraled strand means,
c. two inertial disks each rigidly fixed on each end of said axle means and spaced to define a first gap between said two inertial disks,
d. flat smooth annular surface means on facing surfaces of each of said inertial disks whereby skimming contact with said twisted spiraled strand means extending above said axle in said first gap is effected and whereby the said skimming contact length of said twisted spiraled strand means is defined by

$$(\pi/4)(D_0^2 - D_1^2)/d$$

at the completion of slack said twisted spiraled strand means loops wound within the said flat smooth annular surface means, where D_1 and D_0 are the inside and outside diameter of said flat smooth annular surface means and d is the diameter of said twisted spiraled strand means and where looping and overlapping of said twisted spiraled strand means causes said twisted spiraled strands means to oval and intermesh thereby increasing pressure of said skimming contact between said flat smooth annular surface means and said twisted spiraled strand means,
e. second surface means on said inertial disks extending radially beyond said flat smooth annular surface means, whereby said gap between the said two inertial disks at said second surface means forms a second gap which is larger than said first gap to inhibit said further skimming contact with said twisted spiraled strand means and wherein said twisted spiraled strand means may be wound in second gap beyond said flat smooth annular surface means.

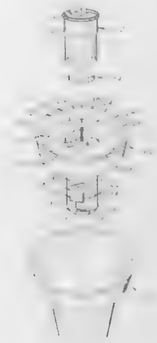
5,389,030

INFLATABLE NOVELTY DEVICE

Stephen Chapkis, 30235 Via Victoria, Rancho Palos Verdes, Calif. 90274

Filed Dec. 29, 1993, Ser. No. 175,287
Int. Cl.[6] A63H *5/00, 3/06;* G09F *19/08, 27/00*
U.S. Cl. 446—397 25 Claims

1. A fluid responsive device for inflating an inflatable element having a mouth through which pressure can be applied to an interior of the element the device comprising,
a chamber for generating a pressure to be applied to a nipple, such nipple being in communication with the chamber,
a passage for receiving a fluid and communicating the fluid to the chamber,
means for receiving a fluid reactive element in the chamber such that on application of a fluid a pressure develops in the chamber, the pressure being releasable through the nipple such that when the mouth of an inflatable element is affixed to the nipple, the inflatable element is extendable under the pressure, and



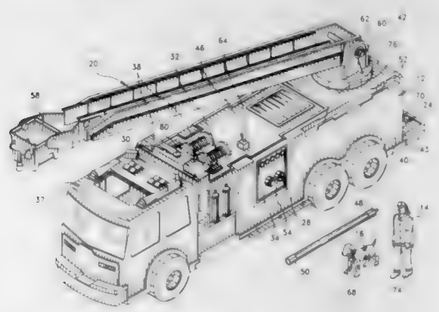
sound reproduction means mounted upon said device with activation means in communication with said chamber being activated by received fluid, said sound reproduction means including a memory means containing a predetermined signal, and a transducer in electronic communication with said memory means for transmitting such predetermined signal.

5,389,031

TOY ASSEMBLY

Henry D. Sharpe, III, Box 202 471 Carpenter La., Saunderstown, R.I. 02874, and Ralph A. Beckman, 257 President Ave., Providence, R.I. 02906

Filed Oct. 5, 1993, Ser. No. 132,911
Int. Cl.[6] A63H *5/00*
U.S. Cl. 446—409 27 Claims



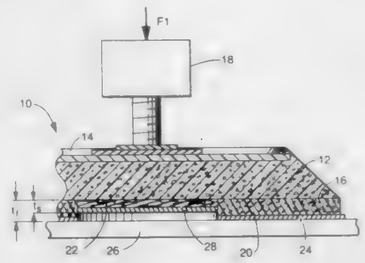
1. A toy assembly comprising:
a base toy unit;
a first accessory removably receivable in a predetermined position on said base toy unit;
detecting means for detecting the absence or presence of said first accessory at the predetermined position thereof on said base my unit; and
sound effect producing means on said base toy unit responsive to said detective means for producing a first prerecorded sound effect when said first accessory is removed from the predetermined position thereof on said base toy unit, said sound effect producing means being manually actuatable for producing a second prerecorded sound effect in the event that said first accessory is absent from the predetermined position thereof at a predetermined time during the operation of said sound effect producing means, said prerecorded sound effects including at least one voice communication.

5,389,032

ABRASIVE ARTICLE

Kris A. Beardsley, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 44,181, Apr. 7, 1993, abandoned. This application Jul. 19, 1994, Ser. No. 277,242
Int. Cl.[6] B24B *23/00;* B24D *13/14, 11/04*
U.S. Cl. 451—359 18 Claims



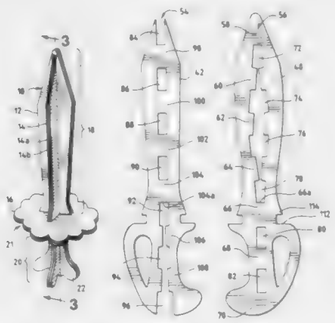
1. An abrasive article for abrading material from a workpiece, comprising a back-up pad having at least one abrading surface comprising means for abrading the workpiece, wherein a first generally planar portion of the at least one abrading surface contacts the workpiece in response to a first force applied to the abrasive article, and first and second generally planar portions of the at least one abrading surface contact the workpiece in response to a second force applied to the abrasive article, wherein the second force is greater than the first force, the abrasive means disposed on the first abrading surface is for polishing the surface of the workpiece, and the abrasive means disposed on the second abrading surface is for buffing the surface workpiece.

5,389,033

TOY SWORD MADE OF FOAM MATERIAL

Blair D. Rauch, 17449 64th Ct., Tinley Park, Ill. 60477

Filed Jul. 23, 1993, Ser. No. 95,407
Int. Cl.[6] A63H *33/00*
U.S. Cl. 446—473 14 Claims

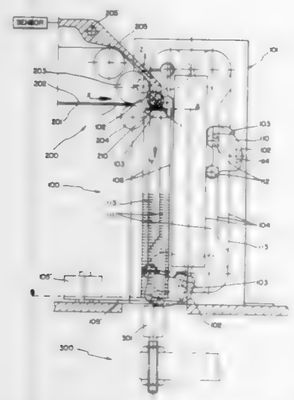


1. A toy sword assembly fabricated of a lightweight, flexible and foam material which includes an elongated blade and handle part and a guard part that fits onto the blade and handle part, wherein:
a. the blade and handle part includes:

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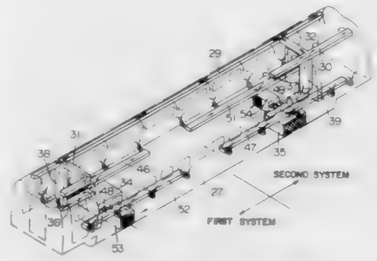
(1) two elongated, interfitting and interlocking subparts which are assembled together and form a cross-shaped cross-sectional body;
(2) a blade portion and a handle portion; and
(3) a guard grasping section positioned between the blade portion and handle portion and having a cross-shaped body portion; and
b. the guard part:
(1) is substantially planar and one piece;
(2) defines an internal aperture with a cross-shape construction to conform with and engage that portion of the cross-shaped body located in the guard grasping section;
(3) is constructed to fit on the grasping section of the blade and handle part and between the blade portion and the handle portion; and
(4) is oriented at substantially right angles to the blade and handle part.

5,389,034
DEVICE FOR STACKING COINS OR SIMILAR DISK-SHAPED OBJECTS
Karl F. Rumbach, Alfter, Germany, assignor to Standardwerk Eugen Reis GmbH, Bruchsal, Germany
Filed Jul. 21, 1993, Ser. No. 95,315
Int. Cl.[6] G07D *9/06*
U.S. Cl. 453—61 20 Claims



1. A device for vertically stacking individually successively fed coins from a conveying system into a coin stack in a stacking space, said device comprising:
at least one coin carrier receiving the coin stack, said coin carrier lowerable within a stacking space and having an axis, said stacking space adaptable to coins of a coin packing machine, in synchronism with the growing stack of coins;
said coin carrier being formed by a U-shaped finger which horizontally protrudes into the stacking space, and being secured to a continuously revolving means of transport having drive gears which move the coin carriers along a specific and substantially rectangular guide track in such a way that the means of transport in stacking the coins are, along with the coin carriers, lowered in positionally stable fashion in the stacking space, the plane of said guide track offset sideways relative to the stacking plane formed by the conveying system and the axis of the stacking space, said coin carrier protruding sideways into the stacking space in such a way that the center of the stacking space is situated on the center line of the successively fed coins and is also the center of said U-shaped finger forming the coin carrier, said coin carrier aligned sideways in the direction of the axes of said drive gears of said transport means to protrude beyond the width of said drive gears;
a support structure supporting said coin carrier and said transport means, said coin carrier, said transport means and said support structure mounted together immovably and independently of the size of the coins to be stacked and having an absence of a mechanical connection with the stacking space; and
said stacking space bounded by up to four movable side parts which are adaptable in shape to the cross section of the coin to be stacked.

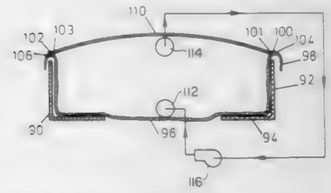
5,389,035
VENTILATING APPARATUS FOR A VEHICLE
Takeshi Ishida, Kobe, and Hiroki Hayashi, Miki, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan
Continuation-in-part of Ser. No. 967,013, Oct. 27, 1992. This application Feb. 17, 1994, Ser. No. 197,553
Int. Cl.[6] B61D *27/00*
U.S. Cl. 454—99 29 Claims



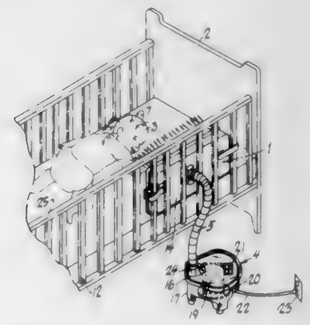
6. A ventilating apparatus for a vehicle having a compartment with a floor comprising:
first and second air conditioners disposed beneath the floor;
a pair of first conduits each extending along an upper portion of the vehicle in a longitudinal direction of the vehicle and each communicating with the compartment and one of the air conditioners for supplying conditioned air to the compartment;
a pair of second conduits for return air extending beneath the floor in the longitudinal direction of the vehicle and each communicating with the compartment and one of the first and second air conditioners;
a pair of third conduits for exhaust air each extending beneath the floor in the longitudinal direction of the vehicle and communicating with the compartment; and
first and second ventilating means for exhausting air from the third conduits to the outside of the vehicle, the first ventilating means being connected to one of the third conduits and the second ventilating means being connected to the other of the third conduits.

5,389,036
STORAGE VESSEL
David Halley, Livingston, Scotland, assignor to W. L. Gore & Associates, Inc., Newark, Del.
Continuation-in-part of Ser. No. 900,039, Jun. 17, 1992, Pat. No. 5,288,266. This application Jan. 26, 1994, Ser. No. 187,049
Claims priority, application United Kingdom, Jun. 18, 1991, 9113087; Aug. 23, 1991, 9118239; Mar. 18, 1992, 9205837
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[6] A01F *25/14, 25/22;* F26B *21/02*
U.S. Cl. 454—182 12 Claims

1. A closed storage vessel for storing moisture-containing product in a controlled environment surrounded by an external atmosphere and for allowing said stored product to become dried by loss of moisture therefrom, which comprises:
an enclosure for storing and drying the product, the enclosure comprising a membrane, said membrane being gas-impermeable so as to resist ingress of oxygen-containing gas from said surrounding external atmosphere, said membrane being water-vapour-permeable to enable passage of water-vapour from said moisture-containing product in the enclosure through said membrane such as to allow moisture to escape from the enclosure and to enable the product to be dried;
means for recirculating gas within the enclosure for assisting drying of the product.

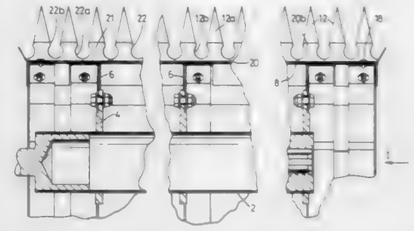


5,389,037
METHOD AND APPARATUS FOR IMPROVING THE RESPIRATORY EFFICIENCY OF AN INFANT
Theodore M. Hale, 39 Celano La., West Islip, N.Y. 11795
Filed Jul. 15, 1993, Ser. No. 92,148
Int. Cl.[6] F24F *7/06*
U.S. Cl. 454—284 14 Claims



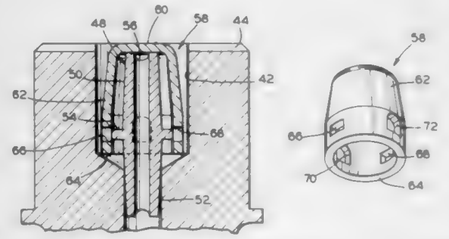
1. Apparatus for providing an even flow of room air across an infant's crib comprising:
an air plenum internally mounted to the crib such that the air plenum is in close proximity to the head of an infant;
an external fan housing assembly capable of generating an even flow of ambient air; and
a hose fluidly connected to the air plenum at one end and to the external fan housing assembly at a second end such that an even flow of ambient air generated by the external fan housing assembly is delivered to the head of the infant through the air plenum.

5,389,038
CROP STRIPPERS
Keith H. Shelbourne, Pakenham, and Paul J. McCredie, Ipswich, both of England, assignors to Shelbourne Reynolds Engineering Ltd., Suffolk, England
PCT No. PCT/GB91/01985, § 371 Date Jun. 10, 1993, § 102(e) Date Jun. 10, 1993, PCT Pub. No. WO92/08339, PCT Pub. Date May 29, 1992
PCT Filed Nov. 12, 1991, Ser. No. 50,435
Claims priority, application United Kingdom, Nov. 12, 1990, 9024565
Int. Cl.[6] A01D *45/00*
U.S. Cl. 460—122 11 Claims



1. A crop stripper having a stripper drum provided with a series of outwardly projecting crop-stripping teeth, said teeth being arranged in a plurality of axially extending rows mounted at spaced intervals about the periphery of the drum, a series of projecting elements of smaller radial extent and leading said teeth arranged in a corresponding plurality of axially extending rows, the teeth of each row of teeth and the elements of each row of projecting elements having corresponding pitches and being in alignment with each other, whereby each crop-stripping tooth has an inner portion behind a said element aligned therewith and an outer portion projecting outwardly of said element, and said elements form openings that align with the gaps between the teeth at their roots.

5,389,039
UNIVERSAL JOINT LUBRICANT RETAINER
Philip J. Mazziotti, Toledo, Ohio, assignor to The Zeller Corporation, Defiance, Ohio
Filed Apr. 14, 1993, Ser. No. 45,702
Int. Cl.[6] F16C *1/24*
U.S. Cl. 464—14 17 Claims



1. A cross for a universal joint comprising a body forming four trunnions extending therefrom along two mutually perpendicular lines, passages in said body extending from a central portion thereof to locations near ends of said trunnions, a cavity in an end of each of said trunnions communicating with one of said passages, means for supplying lubricant to all of said passages and to said cavities, passage extensions communicating with said passages and extending into said cavities, said passage extensions terminating short of the ends of said trunnions, lubricant retainers in said cavities extending over said

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passage extensions each of said lubricant retainers having a top wall and a side wall which are structurally integral, said side wall having at least one opening therethrough near a bottom of the corresponding cavity.

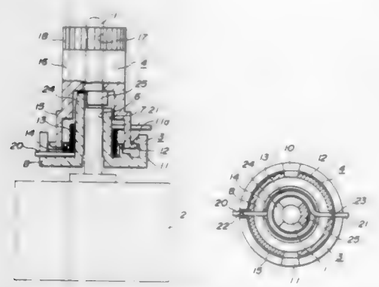
6. A cross for a universal joint comprising a body forming a trunnion extending therefrom, said trunnion having a cavity formed centrally in and end thereof with said cavity opening at an end of said trunnion and having a bottom spaced from the end of said trunnion, said body having a passage communicating with said cavity at the bottom thereof, tubular wall means extending from an end of said passage at an entrance to said cavity through a substantial portion of said cavity, a one-piece lubricant retainer in said cavity extending over said tubular wall means, said lubricant retainer having a side wall with at least one opening therethrough near the bottom of said cavity, and a top wall which is integral with said side wall.

5,389,040

DRIVING POWER TRANSMISSION SYSTEM

Kunio Kakimi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 728,361, Jul. 11, 1991, abandoned. This application Sep. 13, 1993, Ser. No. 120,318
Claims priority, application Japan, Jul. 20, 1990, 2-77276[U]
Int. Cl.[6] F16D *3/52*
U.S. Cl. 464—57 3 Claims



1. A driving power transmission system for transmitting rotational driving power to a tape take-up reel block in a tape recorder, the system comprising:

a drive shaft rotated at either a first rotational velocity in a forward direction or at a second rotational velocity higher than said first rotational velocity in either said forward direction or a reverse direction;

a rotary base supported by said drive shaft for rotation in unison therewith;

a driving power transmitting member supported by said rotary base and having a tubular shape including a driving power transmitting gear at a distal end thereof for engagement with the tape take-up reel block, said driving power transmitting member being supported by said rotary base for rotation independently of said drive shaft;

an elastic connecting member provided on said rotary base, said elastic connecting member comprising a torsion coil spring having two terminal ends extending radially at positions diametrically opposite to each other, wherein a first terminal end engages said rotary base and a second terminal end engages said driving power transmitting member and said elastic connecting member elastically interconnects said rotary base and said driving power transmitting member in either direction of rotation of said drive shaft;

rotational position control means including an abutment member arranged on an upper surface of said rotary base and an abutment member retention lug arranged on an inner surface of said driving power transmitting member for controlling a rotational position of said driving power transmitting member with respect to said rotary base;

a rotational driving power of said drive shaft being transmitted to said driving power transmitting member through said rotary base and said elastic connecting member during rotation at said first rotational velocity; and

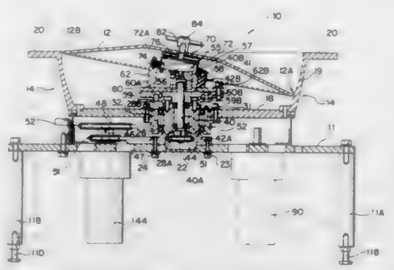
said rotational driving power of said drive shaft being transmitted to said driving power transmitting member by engagement of said abutment member attached to said rotary base with said abutment member retention lug attached to said driving power transmitting member during rotation at said second rotational velocity.

5,389,041

RIGID DISC DRIVE UNIVERSAL LINK

Werner H. Schmitt, Falls Church, Va., assignor to Hoppmann Corporation, Chantilly, Va.

Filed Dec. 31, 1992, Ser. No. 999,361
Int. Cl.[6] F16D *3/16*
U.S. Cl. 464—106 10 Claims



7. A drive connection joint for a centrifugal feeding machine comprising:

a housing;

a drive shaft having a first end and a second end, said drive shaft being operative positioned within said housing for rotation;

a movable link having a first end and a second end, said first end of said movable link being pivotally connected to said drive shaft;

a feeder bowl including a bowl portion, an upwardly projecting sidewall and a rim affixed to said upwardly projecting sidewall, said feeder bowl being rotatably mounted relative to said housing;

a center disc operatively positioned for rotation and being selectively adjustably positioned within said bowl, said center disc including an axis of rotation being positioned at an angle relative to a center line of said drive shaft and being adapted to be mounted at an angle within said bowl for supplying articles disposed within said bowl upwardly to said rim; and

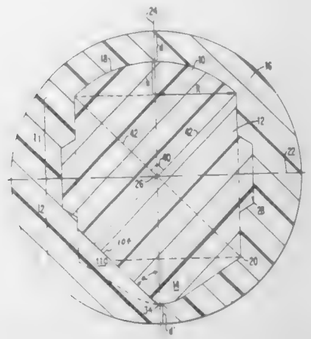
a connector, said connector being affixed to said center disc, a slot formed in said connector, said slot having a predetermined length, width and depth, said second end of said movable link includes a cylindrical rod member affixed thereto for being received within said slot in said connector, said cylindrical rod being axially movable within the depth of the slot and laterally movable along the length of said slot for permitting a three-way connection between said drive shaft and said center disc, namely, pivotable movement, axial movement and lateral movement, said movable link includes a central portion connected between said first end and said cylindrical rod member, said central portion being a wedge shaped member increasing in width from said cylindrical rod member to said first end of said movable link and said connector being selectively adjustably mounted relative to said drive shaft for adjusting the positioning of said center disc affixed thereto relative to said bowl.

5,389,042

BOWLING BALL

Maurice L. Pinel, Jr., Hampton, and Richard W. Sadles, Newport News, both of Va., assignors to Morich Enterprises, Inc., Grafton, Va.

Continuation-in-part of Ser. No. 690,510 Apr. 14, 1991, Pat. No. 5,215,304. This application May 24, 1993, Ser. No. 66,775
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[6] A63B *37/10*
U.S. Cl. 473—126 10 Claims



1. A bowling ball comprising a core of a first density surrounded by a shell of a second density, said core being in the form of a truncated weight block, said weight block having head, body and tip portions, the head portion being in the form of a spherical segment positioned above the horizontal centerline of the ball, the spherical surface of the head being concentric with the shell surface, the body including a generally cylindrical form, and said tip portion of said cylindrical form each having no transverse dimension greater than the transverse dimension of said head portion, said tip portion terminating in a curved surface, and said tip portion and a lower portion of said body portion being located below the horizontal center line of the ball and being further dimensioned such that the total weight of the portion of the weight block below the ball center line is less than the weight of the portion of the weight block above the center line, said core being at least partially non-symmetrical in lateral cross-section, said non-symmetry being defined as the results of a truncation of said weight block by a plane, said plane cutting said weight block at an angle of between zero and less than 90 degrees from the vertical centerline of the weight block, said plane removing no more than half the mass of said weight block.

5,389,043

BICYCLE TOP-PULL FRONT DERAILLEUR

Yi-Hsung Hsu, No. 9, Lane 130, Sec. 1, Kwangfu Road, San Chung City, Taipei Hsien, Taiwan, Prov. of China

Filed May 9, 1994, Ser. No. 239,758
Int. Cl.[6] F16H *9/00*
U.S. Cl. 474—80 5 Claims

1. A bicycle front derailleur comprising:

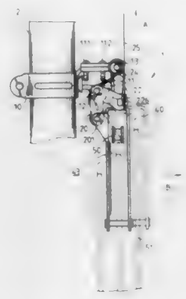
a support ring fixedly secured to a seat tube of the bicycle, the support ring having a side extension formed thereon with two parallel pivots mounted thereto;

a rocking link having a first plate and a second plate spaced from each other and connected together by a connection piece, each of the first and second plate having a pair of holes formed thereon, the holes formed on the first plate being substantially aligned with the holes formed on the second plate, a first one of the holes of the first plate having a first one of the two parallel pivots of the side extension of the support ring to rotatably extend therethrough, the first pivot of the support ring also extending through a first one of the holes of the second plate so as to pivotally secure the rocking link to the side extension of the support ring;

a pivoting link having a first hole formed on a first end thereon to rotatably receive therein a second one of the two parallel pivots of the side extension of the support ring, the pivoting link further having a second hole formed on a second end thereof;

a chain mover member having a first pair of tabs each having a hole formed thereon and aligned with each other and a second pair of tabs each having a hole formed thereon and aligned with each other, a first pivot pin extending through the holes of the first tabs and a second one of the holes of the first and second plates of the rocking link to pivotally secure the chain mover member to the rocking link, a second pivot pin extending through the holes of the second tabs of the chain mover member and the second hole of the pivoting link so as to pivotally secure the chain mover member to the pivoting link;

the side extension of the support ring, the rocking link, the pivoting link and the chain mover member together forming a parallelogram linkage in which the chain mover member is moveable relative to the side extension of the support ring which is fixed on the bicycle;



the chain mover member further comprising a slot through which a drive chain loosely extends to be moved by the movement of the chain mover member relative to the support ring;

biasing means for biasing the chain mover member relative to the side extension to an originally-set position; and

a lever mounted to the second plate of the rocking link in such a way to form a V shape having a vertex with the first hole of the second plate located thereon, the lever having a free end distant from the second plate with cable securing means formed thereon to secure an end of a control cable, the control cable having an opposite end extending upward to connect to a manual shifter located at a position higher than said front derailleur so that by pulling the control cable upward with the manual shifter, the rocking link is rotated about the first pivot by the lever to have the chain mover member moved from the originally-set position by the pivot coupling thereof with the rocking link and thus move the drive chain.

5,389,044

SPLIT SPROCKET AND RETAINER ASSEMBLY

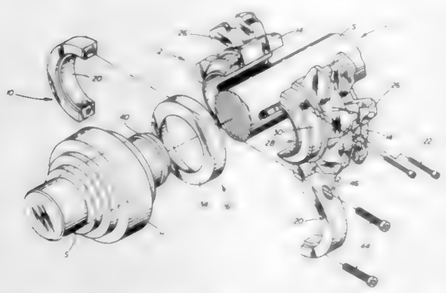
Clarence L. Bandy, Jr., Glade Spring, and Gregory W. Smith, Bristol, both of Va., assignors to American Longwall Face Conveyors, Inc., Abingdon, Va.

Filed Jun. 24, 1993, Ser. No. 82,191
Int. Cl.[6] F16H *55/12*
U.S. Cl. 474—96 16 Claims

1. A split driving member and retainer assembly for mounting on a drive shaft of a rotary drive unit, comprising:

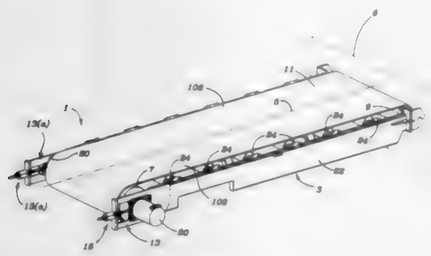
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a driving member including a hub and being split substantially diametrically into two sections;
means for cross-fixing said sections together;
means for connecting said hub of the driving member to said shaft;
a one-piece retaining ring positioned over the end of said hub to join said sections when mounted on said shaft, said one-piece retaining ring absorbing thrust forces tending to radially separate said sections during operation of said drive unit, said one-piece retaining ring being operative to



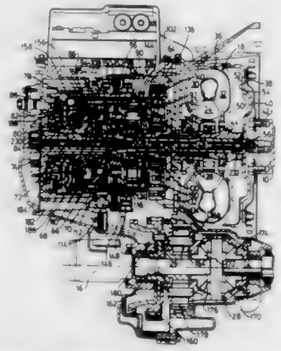
retain said cross-fixing means in a plane substantially transverse to the axis of said drive shaft;
an outer retainer collar mounted on said shaft so as to axially abut said one-piece retaining ring to prevent said ring from shifting axially along said hub and said drive shaft; and
releasable means for connecting said retainer collar to said shaft,
whereby said split driving member is securely retained and connected to said shaft during operation, but easily removable for replacement.

5,389,045
CONVEYOR BELT TENSIONING MECHANISM
Scott F. Lyons, Shippensburg, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Dec. 28, 1993, Ser. No. 174,500
Int. Cl.[6] F16H *7/00*
U.S. Cl. 474—113 7 Claims



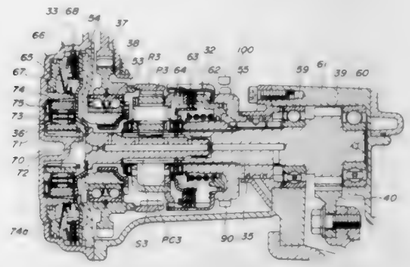
1. In a conveyor belt assembly, a conveyor belt tensioning mechanism comprising:
a. a frame assembly extending longitudinally with respect to a longitudinal axis;
b. a head end pulley at one end of said frame assembly;
c. a tail end pulley at an opposite end of said frame assembly;
d. an endless conveyor belt movable over said end pulleys;
e. mounting means for mounting at least one of said end pulleys on said frame assembly for longitudinal movement therealong;
f. adjustment means on said frame assembly for moving said movable end pulley longitudinally, to apply tension force to said conveyor belt, for tightening said conveyor belt;
g. indicating means on said adjustment means, for indicating when tension force on said conveyor belt is within a preselected tension force range and
h. driving means mounted on said mounting means for driving said end pulley.

5,389,046
AUTOMATIC TRANSMISSION CONTROL SYSTEM
Frank W. Timte, Canton, and Ralph C. Bolz, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed May 25, 1993, Ser. No. 66,826
Int. Cl.[6] F16H *61/08*
U.S. Cl. 475—127 15 Claims



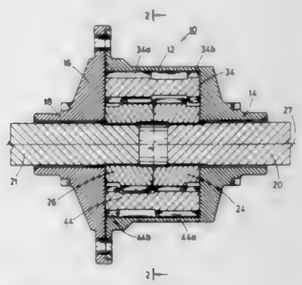
1. An automatic transmission for use in a vehicle driveline comprising multiple ratio gearing, adapted to provide multiple torque flow paths from a driving member to a driven member, a fluid pressure operated brake means for anchoring a reaction member for said gearing;
first clutch means for delivering torque from said driving member to one torque input member of said gearing while said brake means is applied to establish one gear ratio;
second clutch means for delivering torque from said driving member to another torque input member of said gearing while said brake means is applied to establish another gear ratio, said first and second clutch means being applied simultaneously while said brake means is released to establish a gear ratio intermediate said one gear ratio and said other gear ratio; and
a fluid pressure accumulator means for cushioning application of said brake means during establishment of said one gear ratio and said other gear ratio;
said brake means including a double action servo having a piston that partially defines a brake apply pressure chamber and a brake release pressure chamber;
a pressure accumulator in fluid communication with said brake apply pressure chamber during operation of said transmission in said one gear ratio and said other gear ratio; and
control valve means for interrupting communication of said pressure accumulator with said brake apply pressure chamber when said intermediate gear ratio is established and establishing such communication when said one gear ratio and said other gear ratio are established.

5,389,047
AUTOMOTIVE AUTOMATIC TRANSMISSION
Masaya Akiyama, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan
Filed Feb. 18, 1993, Ser. No. 19,273
Claims priority, application Japan, Feb. 24, 1992, 4-072816
Int. Cl.[6] B60K *41/26*; F16H *3/62*
U.S. Cl. 475—200 7 Claims



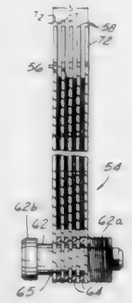
1. An automative automatic transmission comprising:
a transmission mechanism including a casing, an output shaft and a clutch drum, said clutch drum being connected to said output shaft to rotate therewith relative to said casing:
a final drive mechanism to which a torque of said output shaft is transmitted;
a parking gear formed on a cylindrical outer surface of said clutch drum, said parking gear being integral with said clutch drum; and
a parking pawl which is pivotally held by said casing and engageable with said parking gear to lock the same,
wherein the outer diameter of said parking gear is smaller than that of the largest diameter part of said clutch drum.

5,389,048
PARALLEL-AXIS DIFFERENTIAL WITH TRIPLET COMBINATION GEARS
Lennart S. Carlson, Rochester, N.Y., assignor to Zexel-Gleason USA, Inc., Rochester, N.Y.
Filed Mar. 24, 1993, Ser. No. 36,444
Int. Cl.[6] F16H *1/42*
U.S. Cl. 475—252 12 Claims



1. A differential assembly comprising:
a differential housing;
a pair of sun gears positioned in said housing for receiving a pair of respective axle ends for rotation therewith about a common axis;
only two combination gear sets supported in said housing, each set having two outer combination gears separated by a center combination gear, and each respective combination gear in each set being in meshing engagement with both a respective one of said sun gears and with at least one combination gear of its set, the meshing engagement of said sun and combination gears interconnecting said respective axle ends in a mutual driving relationship;
said combination gears of each set being alternately in meshing engagement with opposite ones of said sun gears so that said two outer combination gears of a first one of said sets are in mesh with a first one of said sun gears, while said center combination gear of said first set is in mesh with the second said sun gear and with both said outer combination gears of said first set; and said two outer combination gears of the second of said sets being in mesh with the second of said sun gears, while said center combination gear of said second set is in mesh with said first sun gear and with both said outer combination gears of said second set; and
said sets of combination gears being supported in said housing circumferentially about the common axis of said sun gears and spaced from each other.

5,389,049
PRE-ASSEMBLED DISC STACK HAVING PRESET TOLERANCE FOR USE IN DRIVES, BRAKES AND COMBINATIONS THEREOF
Brian D. Mabee, Sterling Heights, Mich., assignor to Easom Engineering and Manufacturing Corp., Clinton Twp., Macomb County, Mich.
Continuation-in-part of Ser. No. 846,546, Mar. 5, 1992, Pat. No. 5,242,039. This application Dec. 18, 1992, Ser. No. 993,307
The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.
Int. Cl.[6] F16H *37/06*; B60K *1/02*; F16D *67/06*
U.S. Cl. 477—4 25 Claims



1. A pre-assembled disc stack structured for use in a device selected from at least one of a clutch, a brake and a combination thereof, said pre-assembled disc stack having a predetermined cross-section within a first preset tolerance, said pre-assembled disc stack comprising:
a first set of annular discs, each annular disc of said first set of annular discs having at least one first thickness within at least one second preset tolerance;
a second set of annular discs, each annular disc of said second set of annular discs having at least one second thickness within at least one third preset tolerance, said second set of annular discs being interleaved with said first set of annular discs in a prearranged order such that said at least one first thickness of each annular disc of said first set of annular discs and said at least one second thickness of each said annular disc of said second set of annular discs cumulatively equals the predetermined cross-section within the first preset tolerance; and
alignment pin means connected with said second set of annular discs for capturing each annular disc of said second set of annular discs and for capturing each annular disc of said first set of annular discs so as to provide the pre-assembled disc stack having the predetermined cross-section within the first preset tolerance;

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wherein each annular disc of said first set of annular discs has a first inner substantially circular periphery and a first outer substantially circular periphery, wherein further each annular disc of said second set of annular discs has a second inner substantially circular periphery and a second outer substantially circular periphery, said first inner periphery defining a first diameter, said second inner periphery defining a second diameter, said first diameter being less than said second diameter, said first outer periphery defining a third diameter, said second outer periphery defining a fourth diameter, said third diameter being less than said fourth diameter; and wherein said alignment pin means comprises:

a plurality of alignment pins, each alignment pin of said plurality of alignment pins having a first end and an opposite second end; and

abutment means located at said first end and said second end of each said alignment pin for providing an abutment at each of said first and second end thereof;

wherein each annular disc of said second set of annular discs is provided with a plurality of circumferentially disposed alignment holes, an alignment pin of said plurality of alignment pins extending through each alignment hole of said plurality of alignment holes, said first and second sets of annular discs being captured on said plurality of alignment pins by said abutment means; and

wherein said abutment means comprises a head located at said first end of each said alignment pin and a plurality of double threaded nuts a double threaded nut of said plurality of double threaded nuts being threadably engaged with said second end of each said alignment pin; wherein further, said second set of annular discs is connected with respect to the second component of the device by said plurality of double threaded nuts threadably engaging with respect to the second component.

5,389,050

VEHICLE AUTOMATIC TRANSMISSION CONTROL SYSTEM USING FUZZY LOGIC TO DETERMINE SLOPE AND AN INFERRED DRIVER'S INTENTION TO DECELERATE (DEC) TO DETERMINE THE CORRECT GEAR POSITION

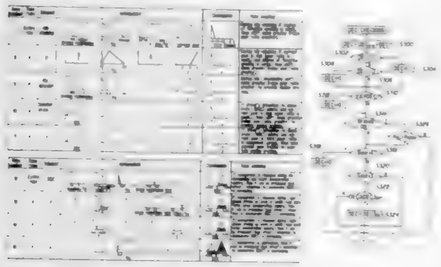
Ichiro Sakai; Yoshihisa Iwaki; Takashi Haga; Shinichi Sakaguchi, and Yukihiko Suzaki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 940,435

Claims priority, application Japan, Sep. 12, 1991, 3-260951; Sep. 12, 1991, 3-260952

Int. Cl.[6] B60K *41/06, 41/04*

U.S. Cl. 477—78 **9 Claims**



1. A system for controlling a multi-step geared automatic transmission of a vehicle, including:

first means for determining parameters at least indicating an engine load, a vehicle speed at braking and a vehicle acceleration;

second means for carrying out a first fuzzy reasoning to infer a value indicative of the driver's intention to decelerate;

third means for carrying out a second fuzzy reasoning using the parameters and the inferred value to determine a gear ratio to be shifted to; and

actuator means for driving a gear ratio shift mechanism in response to the determined gear ratio;

wherein the improvement comprises:

said first means further determines parameters indicating a vehicle speed and indicating if the vehicle is hill climbing or hill descending, said parameter of vehicle hill climbing or hill descending including at least a value of grade resistance obtained by subtracting a value of driving resistance on a level road from a value of current total driving resistance; and

said second means carries out the first fuzzy reasoning at least using one of the parameters determined by said first means based on fuzzy production rules directed toward driving conditions including hill climbing and hill descending.

5,389,051

METHOD OF AND APPARATUS FOR CONTROLLING ENGINE SPEED OF A VEHICLE ENGINE

Hiroshi Hirate; Kohta Ohtoshi, and Tomohiro Iwai, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

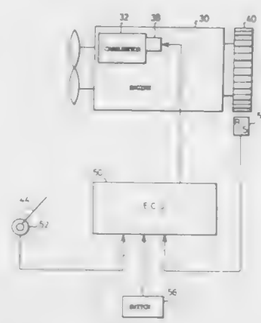
PCT No. PCT/JP92/00664, § 371 Date Jan. 22, 1993, § 102(e) Date Jan. 22, 1993, PCT Pub. No. WO92/20914, PCT Pub. Date Nov. 26, 1992

PCT Filed May 22, 1992, Ser. No. 988,109

Claims priority, application Japan, May 23, 1991, 3-118430; Jul. 19, 1991, 3-179953; Aug. 23, 1991, 3-212259; Aug. 31, 1991, 3-220790; Aug. 31, 1991, 3-220792; Aug. 31, 1991, 3-220800

Int. Cl.[6] B60K *41/00*

U.S. Cl. 177—111 **13 Claims**



1. An apparatus for controlling the speed of an engine for driving a vehicle in which an accelerator pedal mounted on said vehicle is connected to a throttle valve of said engine, said apparatus comprising:

an actuator means for operating said throttle valve of said engine;

an engine speed detecting means for detecting the speed of said engine;

an accelerator pedal detecting means for detecting the displacement of said accelerator pedal of said vehicle;

a desired engine speed setting means for storing a plurality of desired engine speeds therein and selectively determining from said pluralfty the desired engine speed that corresponds to the displacement detected by said accelerator pedal detecting means;

an upper limit engine speed setting means for determining a maximum value of said plurality of desired engine speeds stored in and selectively determined by said desired engine speed setting means as at least one predetermined upper limit engine speed not higher than a no-load maximum engine speed for said engine; and

a control means including an arithmetic calculation means for calculating the differential between the actual engine speed detected by said engine speed detecting means and the desired engine speed corresponding to the detected displacement of said accelerator pedal detected by said accelerator pedal detecting means when the actual engine speed is lower than said predetermined upper limit engine speed determined by said upper limit engine speed setting means, and being operative so as to control said actuator means according to the result of the differential calculated by said arithmetic calculation means so that said actual engine speed coincides with the desired engine speed determined by said desired engine speed setting means.

5,389,052

METHOD OF REGULATING AND CONTROLLING SHIFTING OF GEARS IN AN AUTOMATIC TRANSMISSION TO ENHANCE COMFORT

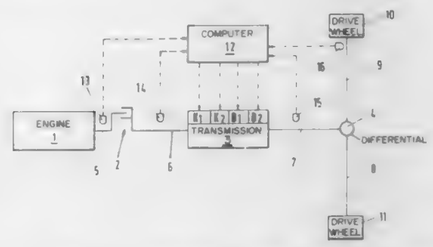
Georg Kruse, Gifhorn, and Norbert Ramm, Braunschweig, both of Germany, assignors to Volkswagen AG, Wolfsburg, Germany

Filed May 21, 1993, Ser. No. 65,566

Claims priority, application Germany, May 22, 1992, 4217004

Int. Cl.[6] F16H *59/00*

U.S. Cl. 477—121 **3 Claims**



1. A method for enhancing shifting comfort in a vehicle having an engine during operation of an automatic transmission having an input shaft and an output shaft and having shift elements for controlling engagement and disengagement of gears in the transmission comprising detecting quantities representative of engine speed, transmission input shaft speed, transmission input shaft torque and transmission output shaft torque or variables which depend on transmission output shaft torque and controlling the shift elements in accordance with at least one of the quantities representative of engine speed, transmission input shaft speed, transmission input shaft torque and transmission output shaft torque or variables of it to provide reduced variations in transmission output shaft torque during shifting operations.

5,389,053

SYSTEM AND METHOD FOR SLIDING CLUTCH ENGAGEMENT UNDER TOOTH BUTT OR TORQUE LOCK CONDITIONS

Jon A. Steeby, Schoolcraft, and Todd W. Fritz, Kalamazoo, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 21, 1993, Ser. No. 95,279

Int. Cl.[6] B60K *20/02*

U.S. Cl. 477—123 **21 Claims**

1. A method for controlling a shift event in a transmission wherein a shift actuator develops a force to effect the engagement of a clutch collar and a gear, the method comprising:

detecting when a non-fully engaged condition of the clutch collar and the gear occurs; and

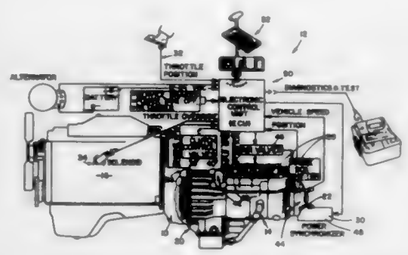
pulsing the shift actuator, when the non-fully engaged condition is detected, between a relatively low force and a relatively high force to disturb the clutch collar and the gear out of the non-fully engaged condition.

18. A transmission comprising:

a shaft having a plurality of gears rotatably supported thereon;

a plurality of clutch collars axially slidable along the shaft for rotatably connecting the gears to the shaft;

a shift actuator for developing a force to effect the engagement of one of the clutch collars and one of the gears;



means for detecting when a non-fully engaged condition of the clutch collar and the gear occurs; and

means for pulsing, when the non-fully engaged condition is detected, the shift actuator between a relatively low force and a relatively high force to disturb the clutch collar and the gear out of the non-fully engaged condition.

5,389,054

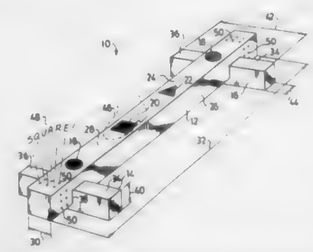
EDUCATIONAL BALANCE BEAM

Mark R. Dorman, P.O. Box 335, Clayton, N.Y. 13624

Filed Oct. 25, 1993, Ser. No. 142,618

Int. Cl.[6] A63B *1/00*

U.S. Cl. 482—34 **11 Claims**



1. An educational talking balance beam comprised of a beam, a first notched support base, and a second notched support base, wherein;

(a) said beam is comprised of a first wall, a second wall, and a third wall, and a hollow interior portion extending through substantially the entire length of said beam, wherein:

1. said first wall has a first exterior surface, said second wall has a second exterior surface, and said third wall has a third exterior surface, and

2. a multiplicity of symbols selected from the group consisting of numbers, letters, shapes, colors, and mixtures thereof appear on said first exterior surface of said first wall, a multiplicity of symbols selected from the group consisting of numbers, letters, shapes, colors, and mixtures thereof appear on said second exterior surface of said second wall, and a multiplicity of symbols selected from the group consisting of numbers, letters, shapes, colors, and mixtures thereof appear on said third exterior surface of said third wall,

(b) each of said first notched support base and said second notched support base is an integral structure comprised of

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a first end, a second end, and a notch disposed between said first end and said second end, and

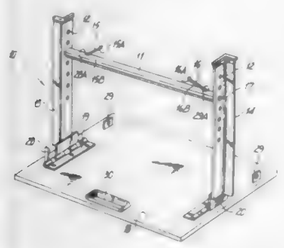
(c) said educational talking balance beam is comprised of a means for announcing the name of a said symbol selected from the group consisting of numbers, letters, shapes, colors, and mixtures thereof, said means for announcing comprising a pressure sensor for sensing a user walking on said indicia, said pressure sensor activating an electronic circuit which sends an output signal, representing said indicia, to a speaker, whenever pressure is applied to at least one of said first exterior surface of said beam, said second exterior surface of said beam, and said third exterior surface of said beam at a point where said symbol appears on said exterior surface of said beam, and wherein said means for announcing the name of said symbol is disposed within said hollow interior of said beam, wherein the beam is rotatable relative to the first and second support base, so indicia from any side can be facing upward, providing another walking surface with said means for announcing the name of said symbols located therein.

5,389,055

PORTABLE EXERCISE BAR DEVICE

Robert B. Gangloff, 54 Dorchester St., Huntington Station, N.Y. 11746

Continuation-in-part of Ser. No. 139,538, Oct. 20, 1993. This application May 2, 1994, Ser. No. 236,349
Int. Cl.[6] A63B *1/00*
U.S. Cl. 482—38 4 Claims



1. A foldable portable apparatus with a chin-up/pull-up bar for use while the user lies supine on his or her back with the heel touching the ground, comprising:

a base having a front edge, a rear edge and a pair of opposite lateral edges, said lateral edges extending between said front edge and said rear edge;

a movable horizontal bar,

a pair of parallel vertical frame bars hingably extendable up vertically from said base;

each of said vertical frame bars having a plurality of apertures at selected predetermined vertical heights above said base,

said apertures corresponding to predetermined desired vertical height locations for said movable horizontal bar above said base;

each of said vertical bars positioned along each of respective opposite lateral edges approximately midway between said front edge and said rear edge;

said horizontal bar having at least one movable extension pin extending from an end of said horizontal bar;

said at least one pin of said horizontal bar being selectively insertable within at least one respective aperture of said pair of parallel vertical frame bars at one of said predetermined vertical height locations above said base;

said horizontal bar containing a means for selectively moving said horizontal bar to said one of said predetermined height locations above said base between said vertical frame bars, while the user is in a supine position, said means comprising:

said vertical bars being extendable above said base within predetermined positions permitting the torso of a user to be positioned therebetween,

said horizontal bar positionable in an uninterrupted recess space above said base permitting the torso of the user to be positioned therebelow in said uninterrupted recess space above said base and below said horizontal bar,

said means for selectively moving said horizontal bar further including:

at least one trigger handle,

said at least one trigger handle being located approximately at one end of said horizontal bar,

said at least one trigger handle extending above said horizontal bar, and,

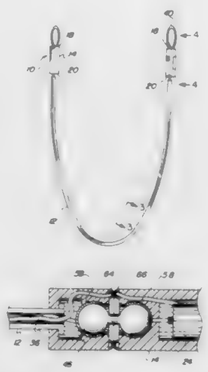
said at least one trigger handle being compressible by the fingers of a hand of the user toward a top portion of said horizontal bar while the user holds said horizontal bar within the palms of the hands of the user.

5,389,056

LIGHTED JUMP ROPE ASSEMBLIES

Edward W. Ricker, 8806 Patricia Ct., College Park, Md. 20740

Filed Nov. 12, 1993, Ser. No. 151,009
Int. Cl.[6] A63B *5/00*
U.S. Cl. 482—82 1 Claim



1. A new and improved jump rope assembly with illuminated components comprising, in combination:

a pair of handles, each handle having an inboard end and an outboard end, one of the handles being hollow and having therein electrical components including a battery, electrical contacts and an on/off switch;

a flexible rope formed in a hollow tubular configuration from a translucent material and having therein a plurality of light bulbs with spherical translucent covers thereover and with electrical wires coupling the light bulbs interiorly along the length of the rope;

a loop handle formed and attached to the outboard end of each handle for the receipt of the user's hand;

a pair of dumb bell shaped rotary connectors mechanically coupling the ends of the rope with the adjacent end of a handle, one of the connectors being electrically conductive with spherical end members and spherically shaped supports for rotatably receiving the end members and coupling the wires in the rope with the battery and the switch for selective illumination of the bulbs when the switch is in the on position;

the electrically conductive connector having associated therewith an electrically conductive first washer with a semicircular cross section secured to the end of the hollow handle facing the rope in contact with a wire of the handle and an electrically conductive second washer with a semicircular cross section secured to the end of the rope in facing contact with the first washer and in contact with a wire in the rope; and

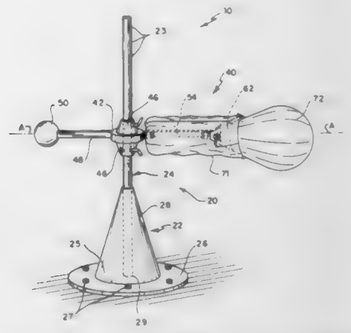
the switch being formed of a slidable member movable between an inoperative orientation wherein the contacts of the electrical components within the handle are out of contact with each other and an operative orientation wherein the electrical contacts within the handle are in electrical contact one with another to effect the flow of current between the battery and the bulbs.

5,389,057

EXERCISE APPARATUS FOR PRACTICING OFFENSIVE AND DEFENSIVE TECHNIQUES

Ronald Zagata, Jr., 1570 King Arthur Way, Streetsboro, Ohio 44241

Filed Dec. 8, 1993, Ser. No. 162,890
Int. Cl.[6] A63B *69/20*
U.S. Cl. 482—83 14 Claims



1. A striking exercise apparatus for use in practicing offensive and defensive techniques, comprising:

a target assembly, said target assembly including a target and means for dampening an impact with said target;

means for supporting said target, said support means defining an axis, said target being movable about said axis;

a counter weight rotatable about said axis, said counter weight being rigidly fixed to and diametrically opposed to said target; and

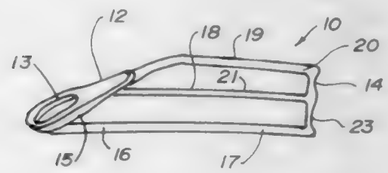
a handle releasably attached to said counter weight for manually manipulating said target.

5,389,058

METHOD AND APPARATUS FOR EXERCISING THE LOWER BACK

Paul D. Tinari, Coquitlam, Canada, assignor to Torrington Capital Limited, Vancouver, Canada

Filed Oct. 18, 1993, Ser. No. 139,275
Int. Cl.[6] A63B *31/08*
U.S. Cl. 482—111 12 Claims



1. A lower back and upper leg exercising device, comprising:

(a) foot mount for attachment of a foot of a user having a toe region for receiving a user's toe and a heel region for receiving a user's heel; and

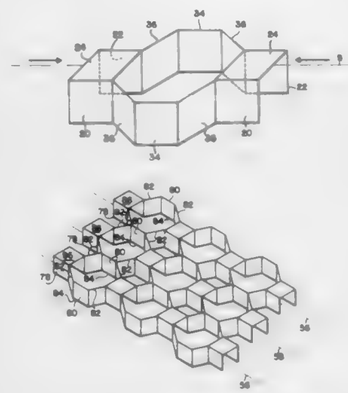
(b) a planar, flexible fin member affixed to said foot mount and extending in a plane perpendicular to a foot mount plane and substantially parallel to a notional line through the center of the foot mount along the length thereof, said foot mount adapted to contain the sole of the foot of the user when his foot is inserted into the foot mount, said fin member having a front edge extending out from said foot mount at a location proximate said toe region and inclined from the foot mount plane forwardly of the toe region and at an acute angle to the foot mount plane thereby allowing the user to maintain the front edge of the fin substantially parallel to the surface of water in a pool when the user is floating in the supine or prone position and user's ankle is in a relaxed, neutral position.

5,389,059

HONEYCOMB STRUCTURAL MATERIAL

Charles H. Corwin, P.O. Box 689, Ketchum, Id. 83340

Filed Jul. 22, 1992, Ser. No. 918,269
Int. Cl.[6] B65H *45/22, 45/28, 45/30*
U.S. Cl. 493—355 5 Claims



1. A method of forming a honeycomb structural material from a single flat sheet of material having a first planar surface, a second planar surface and a longitudinal axis which comprises, in any order:

establishing a pair of fold lines in the second planar surface for forming three panels from the flat sheet of material, a top central surface panel, a first side panel to one side of the central rod surface panel and second side panel to the opposite side of the central top surface panel, each having a longitudinal axis parallel to the longitudinal axis of the sheet of material;

cutting a generally rectangular opening in a portion of the central top surface panel, said generally rectangular opening having a center point and spanning completely from the first side panel to the second side panel and being bounded on two opposing sides by the first and second side panels and on the remaining two opposing sides by remaining portions of the central top surface panel;

establishing, in the second planar surface of the sheet, for the generally rectangular opening in the central top surface panel, at least a pair of fold lines in the first and second side panels adjacent to the opening, said fold lines being perpendicular to the longitudinal axis and in juxtaposed parallel relationship, said fold lines being located equidistant from the center point of the generally rectangular opening;

establishing fold lines in the first and second side panels of

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the sheet at the intersection where the first and second side panels and the ends of the generally rectangular opening bounded by the remaining two opposing sides of the central top surface panel intersect;

folding the sheet of material into a U-shaped channel structure with the first planar surface becoming the outer surface of the channel and the second planar surface becoming the inner surface of said channel, the central top surface panel becoming the base of the U-shaped channel and the first and second side panels becoming the sides of the U-shaped channel; and

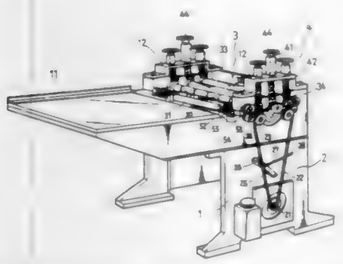
compressing the channel structure along its longitudinal axis to form a polygon concentric about the center point of the opening.

5,389,060

NOTCHING MACHINE FOR CARDBOARDS

Wu Huo-Mu, San Chuong, Taiwan, Prov. of China, assignor to Guan Tai Machinery Co., Ltd., Taipei Hsien, Taiwan, Prov. of China

Filed Dec. 21, 1992, Ser. No. 993,833
Int. Cl.[6] B31B *1/20, 3/25;* **B23C** *3/30*
U.S. Cl. 493—370 **1 Claim**



1. A notching machine for cardboards, comprising a body on which a transmission group, a roller group driven by said transmission group to feed in cardboards, an adjustment group, and a forming group for notching cardboards are mounted, said notching machine being characterized by that:

said roller group is mounted in middle portion of said body and includes a front feeding roller set, an auxiliary roller, and a rear feeding roller set; said front and rear feeding roller sets each consists of an upper and a lower roller being vertically and symmetrically arranged and having a gap therebetween just enough for a predetermined cardboard to pass through; said upper front feeding roller further has dents formed on its sure, ace to secure the positioning of cardboard thereon; two ends of each said rollers of said roller group rest in recesses provided at two sides of said body and are fixed thereto by means of a support and bolts at each end thereof; and said supports are adjustable by means of said adjustment group;

said adjustment group includes a plurality of adjusting rods being separately and properly arranged at two sides of said body with their upper ends extend through and project out of n-shaped frames on top of said body; lower end of said adjusting rods separately connects to said upper roller of said front and said rear feeding roller sets and to said auxiliary roller while a spring is disposed between each of said support and said n-shaped frames; a spring is also disposed between said supports for said upper and said lower rollers of said front and said rear feeding roller sets; each of said adjusting rods has a top adjusting screw for adjusting gaps between said upper and said lower rollers of said front and said rear feeding roller sets; and fixing bolts are used to fix the adjusted adjusting rods; and

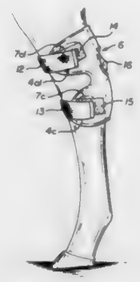
said forming group consists of a forming roller which is driven by a motor provided at one side of said body; said forming roller locates just below said auxiliary roller and has annular cutter holders thereon, allowing a plurality sets of forming cutter to be circumferentially disposed on said cutter holders; and said cutter holders are position-adjustable and fixable by means of bolts.

5,389,061

HOCKWRAP

Fabio Nor, 603 N. Elm Dr., Beverly Hills, Calif. 90210

Filed May 27, 1993, Ser. No. 68,657
Int. Cl.[6] A61N *1/00*
U.S. Cl. 600—15 **10 Claims**



1. An apparatus for aiding in the treatment of subacute and chronic conditions of a hock of a hock of an animal, said apparatus comprising:

a wrap having a substantially hour-glass configuration;

a plurality of magnetic pads attached to the wrap so as to be positioned substantially opposite corresponding accupoints when in a wrapped position;

means for positioning of the apparatus on the hock of the animal, said positioning means including a cut out having a diameter of approximately at least three inches in order to allow a hock joint to be inserted therethrough and to prevent slippage of said wrap after fastening to keep said plurality of magnetic pads in proper alignment with said accupoints; and

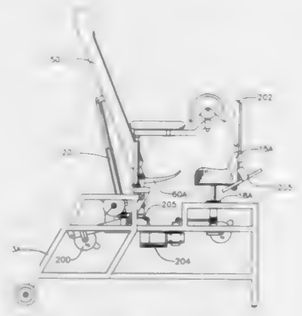
means for fastening the wrap to the hock of the horse.

5,389,062

INTERCOURSE-FACILITATING THERAPEUTIC FURNITURE

John T. Mitchum, Jr., 1705 Birch Trail Cir., Unit S, Chesapeake, Va. 23320

Filed Oct. 5, 1992, Ser. No. 956,365
Int. Cl.[6] A61F *5/00*
U.S. Cl. 600—38 **10 Claims**



1. A furniture apparatus, comprising:

a rigid frame member adapted to stand upright on a floor, said rigid frame member having a first end and a second end and a longitudinal axis therebetween;

means for supporting a woman from said frame member;

said means for supporting said woman from said frame member comprising a first seat member secured to said frame member, said first seat member having a forward end facing toward said second end of said frame member and adapted to accommodate said woman forwardly seated therein;

and means for substantially supporting a man from said frame member;

said means for substantially supporting said man from said frame member comprising a second seat member, said second seat member having a forward end and a rear end and a longitudinal axis therebetween, said forward end of said second seat member facing toward said first end of said frame member, said second seat member being adapted to accommodate said man forwardly seated thereon, said longitudinal axis of said second seat member being substantially parallel to said longitudinal axis of said rigid frame member, and said second seat member being movable parallel to said longitudinal axis of said second seat member between a first position had a second position;

wherein said first seat member is relatively closer to said first end of said frame member than is said second seat member;

and wherein said forward end of said first seat member is in sufficiently close proximity to said forward end of said second seat member that said man and said woman can engage in intercourse with each other when said woman is forwardly seated in said first seat member and in a fixed position relative to said first seat member, and said man is forwardly seated in said second seat member and in a fixed position relative to said second seat member, and said second seat member oscillates from said first position to said second position;

and further comprising means for moving said second seat member parallel to said longitudinal axis of said second seat member between said first position and said second position while said woman is forwardly seated in said first seat, said man is forwardly seated on said second seat, and said man and said woman are engaged in intercourse with each other;

and wherein said means for moving said second seat member between said first position and said second position comprises a first motor and means for oscillating said second seat member between said first position and said second position.

5,389,063

COLORFUL MASSAGING BALL STRUCTURE

Otto Wu, Room 918, 15 Fu Hsing N. Road, Taipei, Taiwan, Prov. of China

Filed Oct. 28, 1993, Ser. No. 142,129
Int. Cl.[6] A61H *15/00, 7/00;* **A63F** *9/06*
U.S. Cl. 601—135 **1 Claim**

1. A ball structure for massaging a user's fingers to provide a therapeutic effect, comprising:

an upper hemispherical member having a first circular plate formed therein, said upper hemispherical member having a first centrally disposed hollow cylindrical body portion extending from said first circular plate along a polar axis of said upper hemispherical member, said first hollow cylindrical body portion having an open proximal end adjacent a bottom surface of said first circular plate and a closed distal end, said open end of said first hollow cylindrical body portion having a sawtooth edge surface formed thereon, said upper hemispherical member further having an outer surface defined by a plurality of first triangularly shaped segment portions disposed in radially spaced relation and a plurality of first slide rail portions disposed between each adjacent pair of said first triangularly shaped segment portions, each of said first triangularly shaped segment portions extending to an apex disposed at a polar portion of said upper hemispherical member to form a first opening thereat having a substantially circular contour;

a lower hemispherical member having a second circular plate formed therein, said lower hemispherical member having a centrally disposed second hollow cylindrical body portion extending from said second circular plate along a polar axis of said lower hemispherical member, said second hollow cylindrical body portion having an open proximal end adjacent a bottom surface of said second circular plate and a closed distal end, said open end of said second hollow cylindrical body portion having a sawtooth edge surface formed thereon for engagement with said sawtooth edge surface of said first hollow cylindrical body portion, said lower hemispherical member further having an outer surface defined by a plurality of second triangularly shaped segment portions disposed in radially spaced relation and a plurality of second slide rail portions disposed between each adjacent pair of said second triangularly shaped segment portions, each of said second slide rail portions being disposed in corresponding alignment with a respective one of said first slide rail portions, each of said second triangularly shaped segment portions extending to an apex disposed at a polar portion of said lower hemispherical member to form a second opening thereat having a substantially circular contour;

means for lockingly engaging said upper hemispherical member with said lower hemispherical member;



a pair of end members, each of said pair of end members being secured within a respective one of said first and second polar openings, each of said pair of end members having an outer surface defined by a plurality of third triangularly shaped segment portions and a plurality of slotted openings formed between adjacent pairs of said plurality of said third triangularly shaped segment portions, each of said plurality of slotted openings being disposed in corresponding alignment with a respective one of said first and second slide rail portions, each of said third triangularly shaped segment portions having an elastic engagement tab portion formed therein adjacent an apex of said third triangularly shaped segment portions;

a plurality of massaging elements, each of said massaging elements having an upper surface and a lower surface, each of said massaging elements having an engagement block portion formed on said lower surface for sliding engagement with a respective first slide rail portion, second slide rail portion and said end member slotted opening, each of said plurality of massaging elements having a plurality of protrusions extending from said upper surface thereof for massaging a user's fingers as said massaging element is slidingly displaced, said third triangularly shaped segment portion elastic engagement tab portions providing biased releasable engagement of a respective one of said massaging elements at an intersection of said end member slotted openings; and,

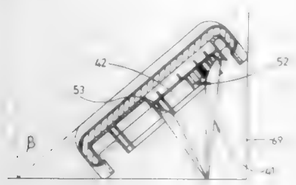
a cylindrically shaped magnet having a first end enclosed within said first hollow cylindrical body portion and a second end enclosed within said second hollow cylindrical body portion for providing an additional therapeutic effect to the user's fingers.

5,389,064

ORTHOPEDIC CUSHION

Gideon Cohen, 20 Eshel Street, Omer 84965, Israel

Continuation-in-part of Ser. No. 731,734, Jul. 16, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 978,486
Claims priority, application Israel, Aug. 1, 1990, 95262
Int. Cl.[6] A47C *20/04*; A61F *5/02*
U.S. Cl. 602—19 7 Claims



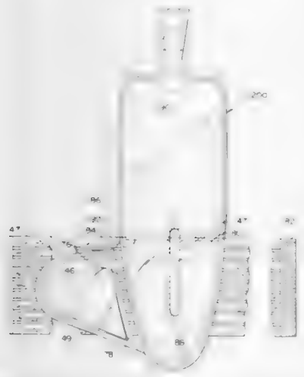
1. An orthopedic portable cushion, comprising:
a cushion assembly and a rear support;
the cushion assembly having a front outer surface adapted to come into contact with a user's back when the cushion is in use, and including an essentially rigid, stiffening backbone having a configuration that is essentially curved in cross-section in a plane perpendicular to said front outer surface of the cushion assembly, the backbone having spaced zones; and
the rear support including an upper portion and a lower portion, foldable about a zone interposed between said two portions, and means being provided for removably connecting said two portions to spaced zones of said backbone.

5,389,065

ANKLE BRACE WITH ATF COMPRESSION

Glen W. Johnson, Jr., Summit, N.J., assignor to Aircast, Inc., Summit, N.J.

Filed Jun. 15, 1993, Ser. No. 77,006
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—27 8 Claims



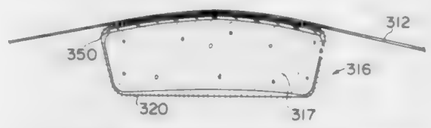
1. An ankle brace having a shell member, said shell member having a lateral elongated support member with a corresponding supporting cushion thereon and an opposed medial support member with a corresponding supporting cushion thereon, each of said supporting members and supporting cushions having a distal end and a proximal end, said support members being attached together at the distal ends thereof by a flexible web and having fastening means adapted to fasten the set of elongated support members about the leg with the supporting cushion placed between the elongated support member and the leg, and with the flexible web passing under the sole of the foot, the ankle brace further including:
a cushioning element carried by one of the supporting cushions and comprising a flap extending outwardly from the distal anterior side of the lateral supporting cushion, said cushioning element having a shape sufficient to cover the area of the anterior talofibular ligaments;
a circumferential elastic strap passing between the lateral supporting cushion and the lateral support member and having sufficient length such that it extends over said cushioning element; and
hook-and-loop fasteners on said circumferential elastic strap such that said strap can attach to itself and provide compression to the flap to cause focal compression over the area of the anterior talofibular ligament and migration of the edemia upwardly from the distal area of the ankle to the proximal area of the ankle.

5,389,066

ATRAUMATIC EYE PATCH

Robert W. Rhame, Jr., P.O. Box 1029, Holly Hill, S.C. 29059

Continuation-in-part of Ser. No. 685,837, Apr. 15, 1991, Pat. No. 5,180,360. This application Oct. 23, 1992, Ser. No. 965,157
Int. Cl.[6] A61F *9/00*
U.S. Cl. 602—74 21 Claims



1. A self-adhering eye patch, said eye patch comprising:
an adhesive backing member for securing the patch to the face of a user; and
inner means for atraumatically maintaining the lid of the eye closed, said inner means including a foam member secured to said backing member and being configured to conform substantially to the shape of an eye socket when inserted therein, a shield member located between said foam member and said backing member wherein said shield member is larger in circumference than a frontal surface of said foam member opposite said shield member said shield member is of a size to engage the bony orbit of the face of a user so that the majority of a force applied to the shield member will be transmitted to the face of the user and not to the eye, and a cover member covering at least the portion of said foam member that contacts skin, said inner means for maintaining the lid of an eye closed being of sufficient thickness to maintain the lid securely closed without damaging the eye.

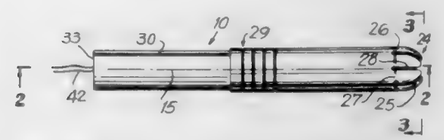
5,389,067

TAMPON APPLICATOR AND METHOD OF MAKING SAME

Jamshid Rejai, Dover, Del., assignor to Playtex Family Products Corporation, Stamford, Conn.

Continuation of Ser. No. 886,114, May 20, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 173,142
Int. Cl.[6] A61F *13/20*
U.S. Cl. 604—14 13 Claims

1. A method of forming a tampon applicator made of paper including cardboard, wherein the tampon applicator includes a cylindrical tube having a longitudinal central axis and a plurality of individual petals separated by a plurality of slits, the plurality of individual petals being concave with respect to the longitudinal central axis and form a forward end for ejecting, with reduced ejection force, a pledget therethrough, comprising the steps of:
a) forming the cylindrical tube made of paper including cardboard, the cylindrical tube having a main cylindrical body, the forward end being located at the terminus of one end of the main cylindrical body;
b) positioning the plurality of individual petals in alignment with the longitudinal central axis of the cylindrical tube so that the forward end of the cylindrical tube is completely open;
c) initially bending each one of the plurality of individual petals at a base region in a first radial direction with respect to the longitudinal central axis;



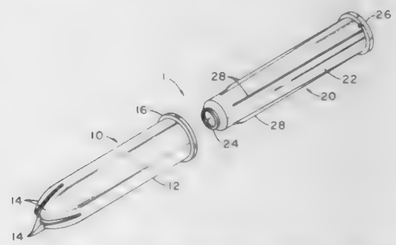
d) thereafter bending each one of the plurality of individual petals at the base region in a second radial direction with respect to the longitudinal central axis, wherein the second radial direction is opposite the first radial direction; and
e) thereafter curving each one of the plurality of individual petals radially inward at the base region to form the concave forward end,
wherein bending each one of the plurality of individual petals in the first and the second radial directions causes at least some of the bonds between fibers of the cardboard to be broken at the base region thereby reducing the ejection force needed to open the curved plurality of individual petals and eject the pledget from the tampon applicator.

5,389,068

TAMPON APPLICATOR

Laura E. Keck, Decatur, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 1, 1992, Ser. No. 938,963
Int. Cl.[6] A61F *13/20*
U.S. Cl. 604—15 18 Claims



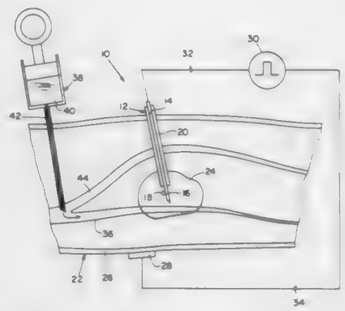
1. A tampon applicator comprising a tubular member composed of a water-dissipatable polymer having a linear molecular structure and having carbonyloxy-linking groups in said linear molecular structure, said polymer comprising a reaction product of at least one difunctional dicarboxylic acid, at least one diol, and at least one difunctional sulfomonomer containing at least one metal sulfonate group attached to an aromatic nucleus having at least one carboxyl functional group; and a second polymer in a blended mixture wherein at least 70 weight percent of said mixture is said water-dissipatable polymer.

5,389,069

METHOD AND APPARATUS FOR IN VIVO ELECTROPORATION OF REMOTE CELLS AND TISSUE

James C. Weaver, Sudbury, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 705,778, May 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 331,263, Mar. 30, 1989, Pat. No. 5,019,034, which is a continuation-in-part of Ser. No. 146,343, Jan. 21, 1988, abandoned. This application Sep. 17, 1993, Ser. No. 122,809
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—21 23 Claims



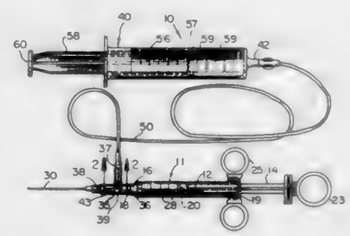
1. A method for treating at least one cell, in vivo, comprising the steps of:
a) directing a penetrator into an organism, said penetrator including a first electrode, and an opening through which a chemical agent can be injected into the organism proximate to the cell to be treated;
b) placing a second electrode where the cell and the opening of the penetrator are between the first and second electrodes;
c) injecting the chemical agent into the organism through the penetrator in an amount sufficient to treat the cell during electroporation of the cell; and
d) applying a voltage between the first and second electrodes in an amount sufficient to cause electroporation of at least a portion of the cell, whereby the chemical agent migrates across the cell membrane, thereby treating the cell.

5,389,070

SYRINGE APPARATUS WITH A FLUID RESEVOIR FOR INJECTION AND ASPIRATION OF FLUIDS

Robert C. Morell, Winston-Salem, N.C., assignor to Wake Forest University, Winston-Salem, N.C.

Filed Mar. 16, 1993, Ser. No. 33,633
Int. Cl.[6] A61M *31/00*, *5/178*
U.S. Cl. 604—51 22 Claims



1. A syringe apparatus for transmitting a fluid comprising:
(a) a first syringe having a generally hollow tube and a plunger for displacement within the hollow tube, the

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hollow tube having a fluid port for transmitting fluid relative to the hollow tube and the plunger having a piston in sealing engagement with the hollow tube and an actuator for effecting longitudinal displacement of the piston within the hollow tube to provide fluid transmission through the fluid port;

(b) a second syringe for containing the fluid;

(c) a flexible connecting tube with a first end and a second end, the first end being connected with the second syringe;

(d) a valve having an outside port for transmitting fluid, a reservoir port connected with the second end of the connecting tube, and a syringe port connected with the fluid port of the hollow tube, the valve providing a first fluid flow path between the reservoir port and the syringe port and a second fluid flow path between the syringe port and the outside port and the valve having a selector for alternatively selecting the first and second fluid flow paths; and

(e) a hypodermic needle connected with the outside port of the valve so that the valve rigidly holds the hypodermic needle in fixed position relative to the first syringe.

5,389,071

INFUSION METHOD HAVING A PLURALITY OF DELIVERY PATTERNS

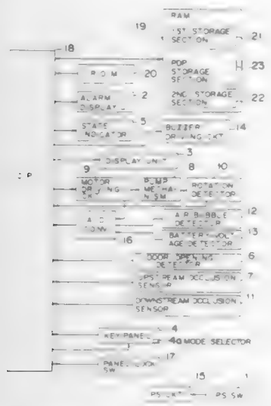
Masafumi Kawahara, Nara, Japan; Donald J. Classey, Waukegan, Ill.; Kenneth M. Lynn, McHenry, Ill.; Michael Gluth, Arlington Heights, Ill.; Grace M. Esche, Algonquin, Ill., and Joseph B. Matthews, Grayslake, Ill., assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 2, 1993, Ser. No. 42,015

Claims priority, application Japan, Apr. 3, 1992, 4-081959

Int. Cl.[6] A61M *31/00, 5/30*

U.S. Cl. 604—51 **4 Claims**



1. A method of delivering an infusion fluid to infuse the infusion fluid into a patient by the use of a peristaltic pump comprising the steps of:

(a) providing a one pattern delivery mode where the infusion fluid is delivered in accordance with a single delivery pattern and a program delivery profile mode where the infusion fluid is delivered in accordance with a plurality of delivery patterns,

(b) selecting said one pattern delivery mode for the infusion of fluid;

(c) inputting only the single delivery pattern;

(d) storing said single delivery pattern inputted in the step (c);

(e) reading out said single delivery pattern stored in the step (d); and

(f) delivering the infusion fluid according to said single delivery pattern read out in the step (e).

5,389,072

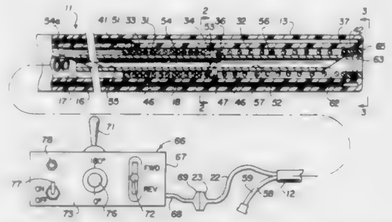
MECHANISM FOR MANIPULATING A TOOL AND FLEXIBLE ELONGATE DEVICE USING THE SAME

Mir A. Imran, Palo Alto, Calif., assignor to MirCor Biomedical, Inc., Sunnyvale, Calif.

Filed Jun. 5, 1992, Ser. No. 893,770

Int. Cl.[6] A61M *37/00;* **F01B** *29/10*

U.S. Cl. 604—95 **21 Claims**



1. A flexible elongate device in the form of a small diameter guide wire or catheter for entering a vessel of a human body comprising a flexible elongate member having proximal and distal extremities, a tool actuator member mounted in the distal extremity of the flexible elongate tubular member, actuator element means having a negative coefficient of expansion disposed within the distal extremity of the flexible elongate member, said actuator element means including first and second opposing heat actuatable actuator elements said actuator element means having a transition temperature which is above the body temperature, electrical control means at the proximal extremity for supplying electrical energy to the actuator element means and means coupling the actuator elements to the tool actuator member for causing movement of the tool actuator member and to cause operation of the operable tool when heat is supplied to the actuator element means.

5,389,073

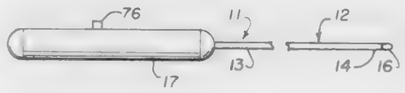
STEERABLE CATHETER WITH ADJUSTABLE BEND LOCATION

Mir A. Imran, Palo Alto, Calif., assignor to Cardiac Pathways Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 983,962, Dec. 1, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 134,487

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—95 **10 Claims**



1. In a steerable catheter having a continuously adjustable bend location along the distal axial length thereof, a flexible elongate tubular member having proximal and distal extremities, a control mechanism secured to the proximal extremity, a plurality of circumferentially spaced-apart flexible elements disposed in the distal extremity for causing bending of the distal extremity of the flexible elongate member and movable means controlled by the control mechanism disposed at the distal extremity of the flexible elongate member for selecting the location in the distal extremity where bending is to occur to thereby adjust the length of the flexible elongate member which extends beyond the bend, said movable means being in the form of a shape-memory element having a memory which makes it assume a straight position upon the application of an electrical current thereto and bypass means adjustable longitudinally of the shape-memory element for causing the current applied to the shape-memory element to bypass a portion of the length of the shape-memory element so that it remains flexible at that portion to provide a hinge point for the bend.

5,389,074

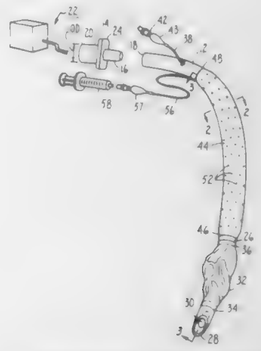
BODY INSERTION TUBE WITH ANESTHETIC JACKET

James N. Parker, and Brian S. Pazevic, both of San Diego, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Oct. 27, 1993, Ser. No. 143,872

Int. Cl.[6] A61M *29/00, 31/00, 16/00*

U.S. Cl. 604—96 **24 Claims**



1. A device engageable with a source of anesthetic fluid, the device being advanceable into a patient for establishing a pathway for fluid communication through the patient's pharynx while reducing patient discomfort, comprising:

a source of pressure;

an elongated flexible tube defining a lumen in fluid communication with the source of pressure, the tube having a distal segment positionable in a body passage of the patient that is distal to the pharynx, the tube being made of plastic such that the tube has sufficient strength to substantially prevent deformation of the tube when the source of pressure is activated; and

a jacket surroundingly engaged with the distal segment of the tube along at least five centimeters (5 cm) of the distal segment, the jacket being formed with a plurality of perforations along its entire length and circumference, wherein anesthetic fluid from the source of anesthetic fluid can be directed out of the perforations of the jacket onto the body passage of the patient to anesthetize a substantial portion of the body passage.

5,389,075

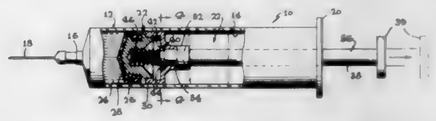
SINGLE-USE HYPODERMIC SYRINGE

Roman Vladimirsky, 2700 N. Cahuenga Blvd., #3109, Los Angeles, Calif. 90068

Filed Jun. 14, 1993, Ser. No. 76,469

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 **11 Claims**



1. A single-use hypodermic syringe comprising:

a barrel, attachment means on said barrel for connecting to said barrel a fluid-handling structure for permitting fluid to be drawn into and discharged from said syringe barrel;

a piston in said syringe barrel to draw fluid into and discharge fluid from said syringe barrel by motion of said piston in said syringe barrel, a piston rod opening in said piston and a recess in said piston adjacent said piston rod opening;

a plunger for controlling said piston in said barrel, said plunger including a piston rod engaged in said piston rod opening in said piston, a groove in said piston rod adjacent said recess; and

a half annular collar engaged in said recess and in said groove, said collar being sized to be retained in said groove when said collar is in said recess and to be free of said groove when said collar is out of said recess so that after one stroke of said piston by said plunger away from said fluid connection means and toward said fluid connection means, said collar comes out of said recess and said groove so that said piston is free of said piston rod to prevent further actuation of said piston by said piston rod.

5,389,076

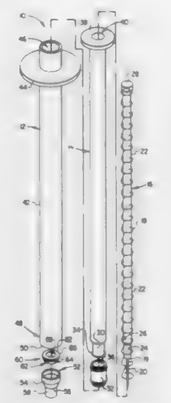
SINGLE USE MEDICAL DEVICE WITH RETRACTION MECHANISM

Thomas J. Shaw, 1510 Hillcrest, Little Elm, Tex. 75068

Filed Apr. 5, 1994, Ser. No. 222,888

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—110 **29 Claims**



1. In a single use medical device having a retraction mechanism with a needle for collecting and injecting fluid, an elongate hollow outer body containing a retraction mechanism and a plunger slidable axially in the outer body, the retraction mechanism including a needle holding member having an unretracted extended position wherein the needle is extended from the body while being biased toward a retracted position entirely within the body, a biasing element for applying retraction force to the needle holding member in a retraction direction and a release element capable of holding the needle holding member against the biasing force provided by the biasing element, the release element being triggered to release the needle holding member for retraction of the needle in response to selective movement of the plunger, the improvement comprising:

the needle holding member comprises an elongated needle rod having a needle extending from a front end thereof, said needle rod having a front portion and a back portion wherein said front portion is a smaller than said back portion;

said release element is a separate release element slidingly

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mounted on the back portion of said needle rod, behind the smaller front portion and held thereon with a friction force that exceeds said retraction force;

said release element cooperates with the outer body to hold the needle rod with the needle extended in the unretracted position while the plunger is movable relative to said outer body to collect or inject fluid;

part of the back portion of said needle rod being positioned within said plunger at all positions of the plunger while moving the plunger during use of the device for collecting and injecting fluid;

retraction is initiated by relative movement of the release element from the back portion to the smaller front portion of the needle rod, caused by force applied by the front of the plunger to the release element at the end of the plunger stroke; and

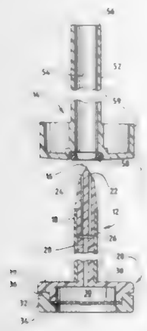
retraction occurs when the release element loses its frictional holding force in excess of said retraction force as a result of the release element being pushed to the smaller front portion of the needle rod whereupon the needle rod is free to retract and moves into said retracted position.

5,389,077

MINIMALLY INVASIVE BODY CAVITY PENETRATING INSTRUMENTS

Lev A. Melinyshyn, Buffalo Grove; Edward M. Goldberg, Glencoe; Alexander Poloyko, Morton Grove, and David E. Schucart, Homewood, all of Ill., assignors to Uresil Corporation, Skokie, Ill.

Filed Mar. 3, 1993, Ser. No. 25,983
Int. Cl.[6] A61M *5/00, 5/178*
U.S. Cl. 604—117 **8 Claims**



1. An instrument for penetrating into body cavities and potential spaces in preparation for the performance of minimally invasive surgical techniques comprising:

an outer cannula which is open at its distal end and adapted to enter a body cavity or potential space;

a central member having a sharp tip at its distal end and being sized to fit within the outer cannula,

the central member including an outer surface and at least one lumen extending from the sharp tip to the proximal end of the member in which the sharp tip includes at least one orifice in communication with the lumen; and

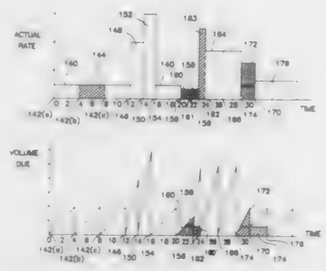
means, disposed in proximity to the proximal end of the instrument and in fluid communication with the lumen, for indicating the pressure in the body cavity or the potential space in response to fluid movement at the distal end of the outer cannula.

5,389,078

PROGRAMMABLE INFUSION PUMP FOR ADMINISTERING MEDICATION TO PATIENTS

Larry R. Zalesky, Blaine, and Linda S. Hansen, Minnetonka, both of Minn., assignors to SIMS Deltec, Inc., St. Paul, Minn.

Filed Oct. 6, 1993, Ser. No. 132,585
Int. Cl.[6] A61M *1/00, 5/00*
U.S. Cl. 604—151 **18 Claims**



1. A programmable infusion pump for administering fluid to a patient at multiple programmable rates and for calculating an effective rate on a real-time basis, the pump having a motor with a stroke volume corresponding to a discrete volume of fluid for each pump activation for delivering a volume of fluid during an infusion cycle, comprising:

input means for receiving, (i) a basal infusion rate corresponding to a time interval between basal pump activations, (ii) an automatic dose having a start time, an automatic dose volume, and a duration, and (iii) a demand dose having a start time, a demand dose volume and a duration;

means for identifying the start time of an automatic dose, including means for calculating a rate for the automatic dose;

means for detecting the start time of a patient activated demand dose, including means for calculating a rate for the demand dose;

means for calculating the effective rate corresponding to a time interval between pump activations, comprising the sum of the basal rate and any automatic and demand dose rates, the means for calculating including means for identifying a start time for the effective rate;

means for determining any undelivered volume of fluid which is scheduled for delivery prior to the start time of the effective rate, including means for delivering the portion of the undelivered volume of fluid corresponding to a whole number of stroke volumes;

means for determining any portion of the undelivered volume of fluid which is a fraction of the stroke volume of the motor;

means for altering at least one of the time intervals subsequent to the new effective rate to include the fractional portion of the undelivered volume; and

pump means for administering the fluid to the patient according to the effective rate.

5,389,079

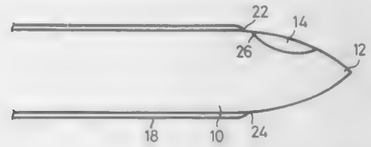
CATHETER UNIT

Wilhelm Waskönig, Calle Sacramento, 15, E-04720 Aguadulce (Almeria), Spain

Filed Aug. 24, 1993, Ser. No. 110,987
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—164 **5 Claims**

1. A catheter unit for non-cutting penetration of tissue and the subsequent introduction of a catheter for continuous spinal anesthesia and the like, said unit comprising inner and outer telescoped tubules, said inner tubule being longitudinally removable from said outer tubule and comprising a small tube with a generally conical end portion continuously tapering along generally elliptical arcs to and terminating in a closed

distal point, a lateral opening defined through said tapered end portion longitudinally inward of said distal point, said opening having a proximal rim portion, said outer tubule having an open forward end defined by a non-cutting rim positioned proximate the proximal rim portion of the opening for non-cutting insertion of said telescoped tubules, said inner tubule being proximally removable from said outer tubule when at the desired positioning in tissue, whereby said outer tubule is adapted to receive a catheter longitudinally therethrough and longitudinally beyond said outer tubule open forward end subsequent to removal of said inner tubule.

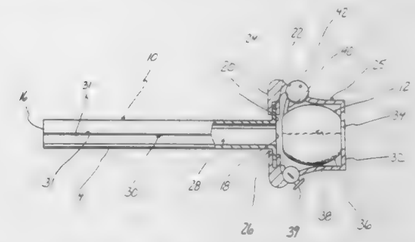


5,389,080

ENDOSCOPIC PORTAL FOR USE IN ENDOSCOPIC PROCEDURES AND METHODS THEREFOR

IuBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 557,869, Jul. 26, 1990. This application Mar. 31, 1993, Ser. No. 40,560
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—167 **30 Claims**



1. An endoscopic portal for establishing communication with an anatomical cavity through a wall of the cavity comprising;

an elongate tubular portal sleeve for insertion through the cavity wall and having an open distal end for positioning within the cavity and an open proximal end for positioning externally of the cavity; and

a valve assembly disposed adjacent said portal sleeve proximal end and including a bladder having a passage therethrough for permitting insertion of instruments of various sizes in said portal sleeve through said passage and means in said bladder for compressing said passage to cause said bladder to sealingly contact instruments inserted through said passage.

5,389,081

STABILIZER FOR A VALVE ASSEMBLY FOR INTRODUCING INSTRUMENTS INTO BODY CAVITIES

Salvatore Castro, Seymour, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed May 18, 1993, Ser. No. 63,255
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—167 **14 Claims**

1. An insufflation trocar cannula comprising in combination:

a body having a cannula extending therefrom;

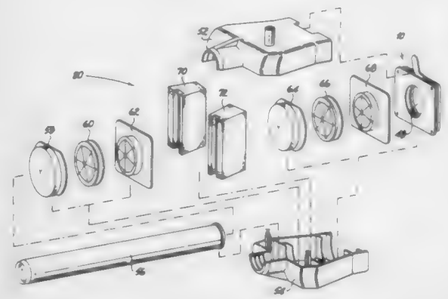
a valve assembly disposed in said housing; and

a stabilizer assembly including:

(a) housing means independent of the valve assembly having an aperture formed therein sufficient to allow passage of surgical instruments therethrough; and

(b) rigid instrument support means operatively mounted within said housing means and defining an orifice, for selectively applying rigid support to a surgical instrument inserted through said aperture wherein said orifice of said rigid instrument support means are infinitely adjustable over a predetermined range of motion to accommodate different surgical instruments each having a different diameter within said predetermined range;

whereby a surgeon can selectively apply said rigid support means to said instrument such that said instrument is substantially stabilized with respect to the valve assembly of said insufflation trocar cannula assembly.

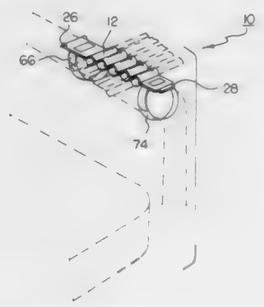


5,389,082

INTRAVENOUS LINE SEPARATOR SYSTEM

Mary C. Baugues, 419 N. Maple St., Covington, Tenn. 38019, and Mary C. Upchurch, 49 Hastings Way, Covington, Tenn. 38015

Filed Mar. 14, 1994, Ser. No. 209,710
Int. Cl.[6] A61M *25/02*
U.S. Cl. 604—174 **2 Claims**



1. A new and improved intravenous line separator system comprising in combination:

a cover plate having an upper surface, a lower surface, a first end, and a second end, a plurality of U-shaped grooves formed within the cover plate, a hinge pin positioned within the first end of the cover plate, a C-shaped locking element integral with the second end of the cover plate, a first set of oblong openings positioned within the first end of the cover plate adjacent to the hinge pin, a second set of oblong openings positioned within the second end of the cover plate adjacent to the C-shaped locking element;

a base plate having an upper surface, a lower surface, a first end, and a second end, a plurality of U-shaped grooves, the U-shaped grooves of the base plate corresponding in

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number and position to the U-shaped grooves of the cover plate, a hinge pin receiving means positioned at the first end of the base plate, the hinge pin of the cover plate adapted to be received within the hinge pin receiving means, the hinge pin and the hinge pin receiving means together serving to pivotally interconnect the base plate and the cover plate, a tongue locking element integral with the second end of the base plate, the C-shaped locking element adapted to receive the tongue locking element and secure the cover plate to the base plate, a first set of oblong openings positioned within the first end of the base plate adjacent to the hinge pin receiving means, a second set of oblong openings positioned within the second end of the base plate adjacent to the tongue locking element, the first and second set of oblong openings of the cover plate adapted to register with the first and second set of oblong openings of the base plate;

a first strap having a first end and a second end, with the ends thereof provided with a pile type fastener, the first strap adapted to be received within the second set of oblong openings of the cover plate and within the second set of oblong openings of the base plate; and

a second strap having a first end and a second end, with the ends thereof provided with a pile type fastener, the second strap adapted to be received within the first set of oblong openings of the cover plate and within the first set of oblong openings of the base plate.

5,389,083

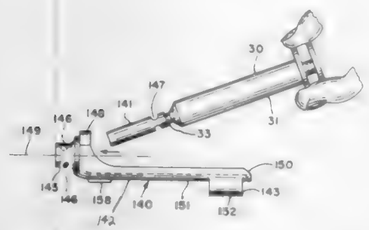
GUARDS FOR HYPODERMIC NEEDLE

John R. McCarthy, South Boston, Mass., assignor to JRM Enterprises, Inc., South Boston, Mass.

Continuation-in-part of Ser. No. 4,105, Jan. 13, 1993, abandoned. This application Sep. 28, 1993, Ser. No. 128,486

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—192 **8 Claims**



1. A guard for use with a syringe that includes an axially extending barrel portion, a hub portion formed at one end of the barrel portion and means for attaching an axially extending needle to the hub portion and with a tubular cover for covering the needle, said guard being formed as an integral unit comprising:

A. an axially extending tongue with a circumferential cross-section that conforms to the syringe barrel and that is adapted for abutting a part of the syringe barrel portion in a substantially coaxial relationship therewith,

B. syringe engagement means located at a first axial end of said tongue for effecting a connection between the syringe and said guard, and

C. gripping means located at the second axial end of said tongue for facilitating the attachment and removal of said guard from said syringe thereby to protect a user from inadvertently contacting the end of the needle.

5,389,084

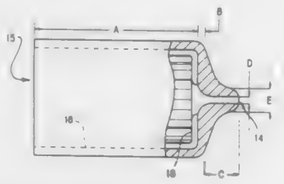
INSTRUMENT TIP PROTECTOR

Robert T. Horan, Northridge, and Rudy Gaba, Simi Valley, both of Calif., assignors to Devon Industries, Inc., Chatsworth, Calif.

Filed Aug. 25, 1993, Ser. No. 112,000

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—192 **14 Claims**



1. A surgical instrument tip protector comprising:

a substantially solid, elastic sheath having an inner surface and an open end adapted to receive an instrument tip; and

a plurality of longitudinal ribs disposed on the inner surface of the sheath and adapted to contact the surface of an instrument tip covered by the sheath to provide spaces about the instrument tip through which fluid or gases may flow.

5,389,085

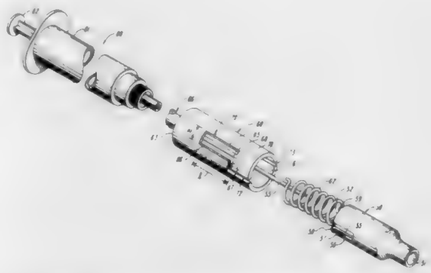
AUTOMATIC NEEDLE PROTECTOR

Larry M. D'Alessio, Manasquan, N.J., and John F. Romano, Washington Crossing, Pa., assignors to International Medical Consultants, Inc., Washington Crossing, Pa.

Continuation-in-part of Ser. No. 16,285, Feb. 11, 1993, Pat. No. 5,292,314. This application Nov. 29, 1993, Ser. No. 159,053

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—198 **28 Claims**



1. A needle protector device comprising:

a needle having a tip;

a hub having an upper end adapted for coupling to a unit operative with said needle and a lower end to which said needle is attached;

a mount having an upper end coupled to said hub, an open lower end, and an aperture disposed in a side thereof, said aperture including an entrance position and an armed position radially spaced from said entrance position by a portion of said mount protruding into said aperture; and

a protective cover having a diameter smaller than the diameter of said mount, said protective cover having an upper end disposed inside of said lower end of said mount and an apertured lower end, wherein said cover is adapted for being in a needle protection position in which said lower end of said cover is disposed over said needle tip or a retracted position in which said needle tip extends through said apertured lower end of said cover, wherein said cover has a lug for engaging said aperture of said mount so that, as said cover is moved between said needle protection position and said retracted position, said lug moves within said aperture, wherein said device is armed by rotating said cover to move said lug from said entrance position over said protruding portion of said mount and to said armed position.

5,389,086

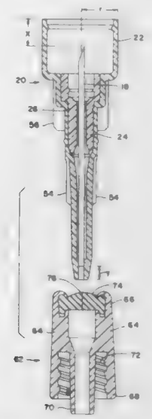
SAFETY CANNULA

Kurt Attermeier, Spring Grove; Thomas E. Dudar, Palatine, both of Ill.; Mark A. Stiehl, Rochester, N.Y., and Joseph M. Tartaglia, Los Altos, Calif., assignors to Sterling Winthrop Inc., Malvern, Pa.

Filed Jul. 6, 1992, Ser. No. 909,546

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—242 **9 Claims**



1. A coupling system-cartridge-syringe holder assembly comprising in combination,

(1) a syringe holder comprising a frame, a clamp and a plunger element containing a piston stem;

(2) a cartridge loaded into the frame of said syringe holder, said cartridge comprising a hollow body filled with a medication, a sealed diaphragm on the distal end thereof and a piston axially and reciprocally slidable through the interior of said body; and

(3) a coupling system for transferring fluids from said cartridge to an injection site, said coupling system comprising:

a fluid flow channel having proximal and distal ends;

a needle cannula defining the proximal end of said fluid flow channel;

a hub attached to the distal end of said cartridge comprising a blunt cannula portion defining the distal end of said fluid flow channel and a sleeve portion which extends beyond the proximal end of said needle cannula;

wherein said cartridge can be advanced distally through said holder by rotating said clamp such that the proximal end of said needle cannula penetrates said diaphragm, and

said piston stem can be connected to said piston and actuated to drive said piston through said cartridge and expulse the fluid contents of said cartridge through said fluid flow channel into an injection site.

5,389,087

FULLY EXCHANGEABLE OVER-THE-WIRE CATHETER WITH RIP SEAM AND GATED SIDE PORT

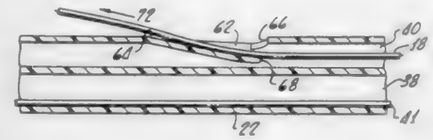
Manouchehr Miraki, Aliso Viejo, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 893,588, Jun. 2, 1992, Pat. No. 5,324,269, which is a continuation of Ser. No. 762,827, Sep. 19, 1991, abandoned. This application Jun. 29, 1992, Ser. No. 907,132

The portion of the term of this patent subsequent to Jun. 28, 2011, has been disclaimed.

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—247 **23 Claims**



1. A fully exchangeable over-the-wire dilatation catheter comprising:

an expandable balloon;

a flexible, elongate tubular shaft having a proximal end, a distal end, and first and second through lumens, each of said lumens in open extension from said proximal end to said distal end, said first lumen terminating in sealed fluid conducting communication with the interior of said expandable balloon at said distal end of said tubular shaft, said second lumen adapted to slidingly receive a guide-wire throughout its longitudinal extent from said proximal end to said distal end and through said interior of said expandable balloon;

a longitudinal rip seam provided in said tubular shaft and extending into said second lumen along at least a portion of the longitudinal extent of said second lumen;

a first gated side access port in communication with said second lumen, disposed near said distal end proximal to said balloon and provided with a partition angularly extending longitudinally into said second lumen; and

a second gated side access port in communication with said second lumen, disposed near said proximal end.

5,389,088

GROMMET

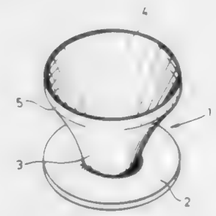
Marinus J. Hageman, Anna van Burenlaan 3, 2012 SL Haarlem, Netherlands

Filed Nov. 13, 1992, Ser. No. 976,101

Claims priority, application Netherlands, Nov. 14, 1991, 9101898

Int. Cl.[6] A61M *27/00*

U.S. Cl. 604—264 **8 Claims**



1. Grommet, comprising a tubular part which at one end is provided with an external flange sized to be hooked behind the internal surface of an eardrum, said tubular part widening out from the flange toward its free end, and said free end defining

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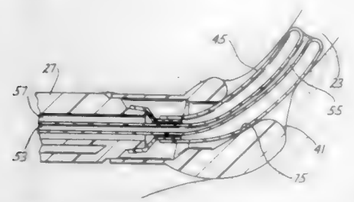
a cone having an apex angle which is larger than the apex angle of a cone which is defined by the end near the flange.

5,389,089

CATHETER WITH ANGLED BALL TIP FOR FALLOPIAN TUBE ACCESS AND METHOD

Otmar Bauer, Kiudenbach, Germany, and Steven R. Bacich, Laguna Niguel, Calif., assignors to Imagyn Medical, Inc., Laguna Niguel, Calif.

Filed Oct. 13, 1992, Ser. No. 960,777
Int. Cl.[6] A61M *5/00, 31/00, 29/00;* **A61B** *17/43*
U.S. Cl. 604—271 **23 Claims**



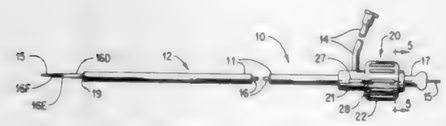
1. A catheter for fallopian tube access comprising:
an elongated catheter body having a proximal region, a distal end and an elongated passage extending from the proximal region to the distal end, said passage terminating in a distal opening at the distal end;
said catheter body having a distal body portion which has a larger radial dimension than a radial dimension of a region of the catheter body which is immediately proximal to said distal body portion, said elongated passage extending through the distal body portion, the distal opening and said distal end being on said distal body portion;
said distal body portion having a deflecting surface in said elongated passage adjacent the distal opening for directing a member or fluid out of the distal opening along a path having a component which extends laterally of the catheter body; and
a support tube movable longitudinally within the elongated passage and a flexible everting element coupled to the catheter body and the support tube, said everting element being deflectable by the deflecting surface toward the distal opening and evertable out of the distal opening.

5,389,090

GUIDING CATHETER WITH STRAIGHTENING DILATOR

Robert E. Fischell, Dayton, Md.; David R. Fischell, Fair Haven, N.J., and Tim A. Fischell, Nashville, Tenn., assignors to Cathco, Inc., Dayton, Md.

Filed Feb. 7, 1994, Ser. No. 192,347
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—280 **20 Claims**



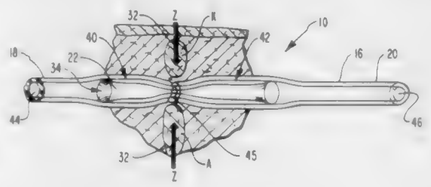
1. A guiding catheter system for the insertion of guide wires and catheters into a vessel of a human body comprising;
an elongated hollow tube having proximal and distal ends and a distal section, the hollow tube's distal end being tapered for easy introduction into a blood vessel and the distal section having a bend adapted to facilitate introduction into and retention into the ostium of an artery;
a dilator having an elongated body and proximal and distal ends and a distal section and having a handle located at the dilator's proximal end, the dilator being tapered at its distal end; and,
a Tuohy-Borst fitting integrally attached as a one-piece construction at the hollow tube's proximal end, the Tuohy-Borst fitting including a threaded base, a threaded nut and an elastomer gland that can be tightened around the dilator by screwing the threaded nut onto the threaded base.

5,389,091

SITE-SELECTIVE DURABILITY-ENHANCED CATHETER AND METHODS OF MANUFACTURING AND USING SAME

H. Robert Moorehead, Salt Lake City, Utah, assignor to C. R. Bard, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 665,787, Mar. 7, 1991, abandoned. This application Jan. 15, 1993, Ser. No. 6,435
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—282 **40 Claims**



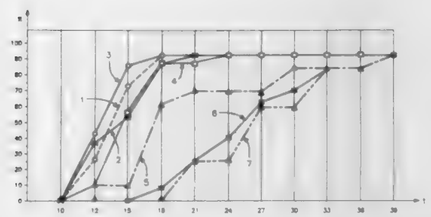
1. A central venous access catheter for long-term indwelling implantation in the body of a patient, the catheter when implanted traversing an anatomical pinch-off region in the body of the patient between the clavicle and the first rib that subjects the portion of the length of the catheter disposed through the anatomical region to intermittent, repeated compressive and abrasive forces, said catheter comprising:
(a) a flexible tube comprised of a compliant medical grade material enclosing a fluid accommodating lumen extending longitudinally through substantially the entire length of said flexible tube, said flexible tube having a distal tip for residence at a preselected location within the cardiovascular system of the body of the patient when said catheter is implanted, and a proximal end through which to afford access to said fluid accommodating lumen when said catheter is implanted, the portion of the length of said flexible tube traversing the anatomical region when said catheter is implanted defining a wear region along the length of said flexible tube, said wear region being distanced from said proximal end and from said dismal tip of said flexible tube; and
(b) safety means positioned within said fluid accommodating lumen of said flexible tube at least at said wear region and terminating proximal of said distal tip of said flexible tube
(i) for permitting fluid flow in said lumen when said wear region is free of the compressive and abrasive forces,
(ii) for yielding with said flexible tube when said wear region is exposed to the compressive or abrasive forces, and
(iii) for maintaining the integrity of said lumen following the fracture or severance of said flexible tube at the wear region due to the compressive or abrasive forces.

5,389,092

NON-ADHESIVE HEALING DRESSING

Alain Guillemet, Fontaine lés Dijon, and Philippe Janod, Dole, both of France, assignors to Laboratoires d'Hygiene et de Dietetique (L.H.D.), Paris, France

Filed Jun. 24, 1992, Ser. No. 903,520
Claims priority, application France, Jul. 3, 1991, 91 08305
Int. Cl.[6] A61F *13/00, 15/00*
U.S. Cl. 604—304 **7 Claims**



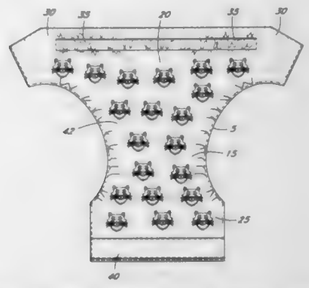
1. A dressing with a matrix containing a block copolymer, said matrix consisting essentially of 10 to 30 parts by weight of a block copolymer with a saturated central sequence, which is a polystyrene/polyethylene-butylene/polystyrene copolymer, and 70 to 90 parts by weight of a plasticizer which is petrolatum.

5,389,093

WETNESS INDICATING DIAPER

Wesley A. Howell, 6926 Doheny, Unit D, Alta Loma, Calif. 91701

Continuation of Ser. No. 861,475, Apr. 1, 1992, Pat. No. 5,197,958. This application Mar. 29, 1993, Ser. No. 39,804
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—361 **9 Claims**



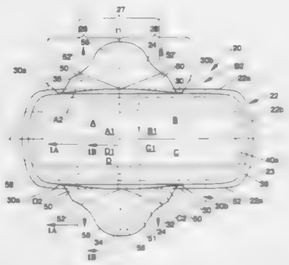
1. A diaper system for indicating wetness, comprising an outer shell having a front portion, a back portion and a connecting portion extending between said front and back portions, said outer shell defining an outer surface; an insulation layer positioned between a wearer and said outer shell which, when dry is insufficiently thermally conductive for a normal body temperature to raise said outer surface above a given threshold, but being sufficiently thermally conductive when wet to raise said outer surface temperature above a given threshold, at least partially thermally insulates said outer surface from said inner surface;
a thermal indicator on said outer surface which provides a visual indication when said outer surface has a temperature above a given threshold; and said threshold being chosen such that said visual indication will generally not be present when said wearer is dry, but will generally be present when said wearer secretes waste material which is absorbed by said insulation layer.

5,389,094

ABSORBENT ARTICLE HAVING FLAPS AND ZONES OF DIFFERENTIAL EXTENSIBILITY

Bruce W. Lavash, West Chester; Thomas Henrich, Cincinnati; Carl L. Bergman, Loveland; Raymond J. Dirk, Cleves; Thomas W. Osborn, III; Jeffrey V. Bamber, both of Cincinnati, all of Ohio, and Kaoru Niihara, Ashiya, Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 769,891, Oct. 1, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 73,256
Int. Cl.[6] A61F *13/15, 13/20*
U.S. Cl. 604—385.2 **24 Claims**



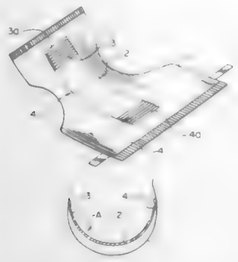
1. An absorbent article for wearing in a wearer's undergarment, said absorbent article having a principal longitudinal centerline that is oriented in a longitudinal direction, and a principal transverse centerline that is oriented in a transverse direction, said absorbent articie comprising:
a main body portion having two spaced apart longitudinal edges, two spaced apart transverse edges, a first end region, a second end region, and a central region disposed between said end regions, said main body portion comprising a liquid pervious topsheet, a liquid impervious backsheet joined to said topsheet, and an absorbent core positioned between said topsheet and said backsheet;
a pair of flaps for folding under the wearer's undergarment, one of each of said flaps being joined to said main body portion at a juncture and extending laterally outward from each said longitudinal edge beyond an outermost peripheral portion of said main body portion, said flaps having a flap transverse centerline that passes through said central region of said main body portion, and having portions of said flaps that are located along said flap transverse centerline, wherein
said portions of said flaps that are located along said flap transverse centerline lie transversely outboard of the longitudinal side edges of said main body portion when said flaps are extended, and
said flap transverse centerline intersecting the principal longitudinal centerline of the absorbent article and dividing the absorbent article into four quarters, each quarter comprising:
a first portion of each quarter adjacent said principal longitudinal centerline and said flap transverse centerline, and
a second portion of each quarter outboard of said first portion of each quarter, said second portion of at least one of said quarters comprising a non-elasticated zone of differential extensibility, said zone of differential extensibility having a greater range of extensibility outward in a generally transverse direction than said first portion of said quarter.

5,389,095

SUSPENDED ABSORBENT DIAPER ARTICLE

Migaku Suzuki, Kanagawa, and Hiroaki Fukui, Saitama, both of Japan, assignors to Paragon Trade Brands, Inc., Federal Way, Wash.

Filed Jul. 28, 1993, Ser. No. 98,701
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.2 15 Claims



1. An absorbent article comprising:
a liquid impermeable outer cover having a front section and a rear section, and a central section between said front section and said rear section;
an elongated absorbent element having a front end, a rear end and opposite side edges and including an absorbent material, said elongated element being supported at said front and rear ends thereof on said outer cover in a suspended manner to extend longitudinally between said front and rear sections of the outer cover for spacing a suspended portion of said elongated absorbent element, including said absorbent material between said front and rear ends thereof, from said central section of said outer cover, said elongated element further including elastic material so that said suspended portion of said elongated absorbent element is elastically stretchable and contractible relative to the outer cover so that said elongated absorbent element is urged toward a crotch area of a wearer of said article.

5,389,096

SYSTEM AND METHOD FOR PERCUTANEOUS MYOCARDIAL REVASCULARIZATION

Michael Aita, Sunnyvale; Gene Samson, Milpitas; Bruce H. Wand, San Jose, and Robert F. Kotmel, Sunnyvale, all of Calif., assignors to Advanced Cardiovascular Systems, Santa Clara, Calif.

Continuation of Ser. No. 630,258, Dec. 18, 1990, abandoned. This application Feb. 25, 1993, Ser. No. 23,161
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—15 11 Claims



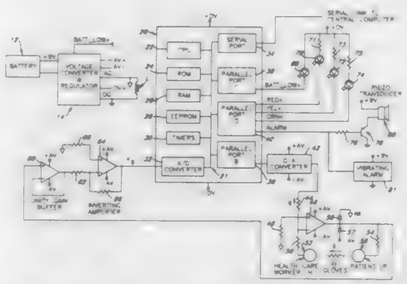
1. A method of percutaneous myocardial revascularization of the myocardium of the heart of a patient, comprising the steps of:
inserting a guidable elongated flexible lasing apparatus into a patient's vasculature;
guiding the distal end of said lasing apparatus to an area within the patient's heart;
directing said distal end of said lasing apparatus to an area within the heart to be revascularized; and
irradiating the inner wall of the heart with laser energy emitted from said distal end of said lasing apparatus with sufficient energy and for a sufficient time to cause a channel to be formed extending from the inner surface of the myocardium.

5,389,097

ENHANCED MONTORING DEVICE FOR SURGICAL GLOVES AND OTHER BARRIERS

John K. Bennett, Houston; Mark Maxham, Richardson; William H. Marshall, and Robert E. Williams, both of Houston, all of Tex., assignors to Novatec Medical Products, Inc., Houston, Tex.

Continuation of Ser. No. 846,539, Mar. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 528,926, May 25, 1990, Pat. No. 5,114,425. This application Jun. 22, 1994, Ser. No. 277,984
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—34 32 Claims



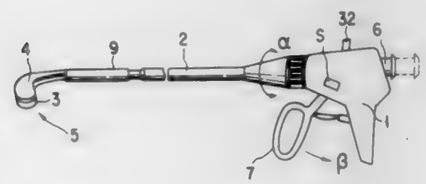
1. Apparatus for detecting adulteration of an article that is used as a barrier to prevent transmission of disease or other dangerous fluid between first and second persons, comprising:
an electronic circuit including a current source, first and second leads coupled to said current source for electrical attachment to the first and second persons, a detection circuit means coupled to said first and second leads, and an alarm coupled to said detection circuit means to alert either the first or second person of a condition of adulteration of the article;
said current source providing a current to said first and second leads such that a series connection is made comprising the first person, the article, and the second person such that said article has an electrical condition;
said detection circuit means monitoring the rate of the rate of change of the electrical condition of the article for detecting adulteration of the article and generating a signal indicative thereof; and
said alarm receiving said adulteration indicating signal for providing an alarm when said detection circuit means detects a condition of adulteration of the article.

5,389,098

SURGICAL DEVICE FOR STAPLING AND/OR FASTENING BODY TISSUES

Minoru Tsuruta; Shiro Bito; Shuichi Kimura; Akito Mukaizawa; Seiji Kuramoto; Tsuyoshi Tsukagoshi; Akio Nakata; Akihiro Taguchi; Kazuhiko Oozeki; Hitoshi Mizno; Shuichi Takayama; Yoshinao Oaki; Keisuke Saito, and Toshihiko Suzuta, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 14, 1993, Ser. No. 62,182
Claims priority, application Japan, May 19, 1992, 4-126246; May 19, 1992, 4-126248; May 20, 1992, 4-127602; Jun. 3, 1992, 4-142930; Jun. 4, 1992, 4-144302; Jun. 4, 1992, 4-144625; Mar. 30, 1993, 5-72553
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—41 16 Claims



1. A surgical device for stapling and fastening body tissues, comprising:
an operation section operated outside a body cavity;
an insertion section extending from said operation section for insertion into a body cavity;
high-frequency applying means provided at a distal end portion of said insertion section, for applying a high-frequency wave to body tissues within a body cavity;
a cartridge provided at the distal end portion of the insertion section, said cartridge containing a plurality of staples, the staples each having at least two legs which are to be inserted into the body tissues;
staple-applying means provided at the distal end portion of the insertion section, and coupled to said cartridge for applying at least one staple from said cartridge to target tissues through said distal end portion of said insertion section;
staple-deforming means provided at the distal end portion of the insertion section for deforming the at least one staple applied to the target tissues by said staple-applying means, thereby stapling the target tissues together; and
current-supplying means, extending through said insertion section from said operation section to said high-frequency applying means, for supplying a high-frequency current to said high-frequency applying means to prevent bleeding of treated target tissues, said high-frequency applying means being electrically connected to the at least one staple applied to the target tissues and applying high-frequency waves to the at least one staple;
said cartridge, said staple-applying means and said staple-deforming means all being operatable by operating said operation section.

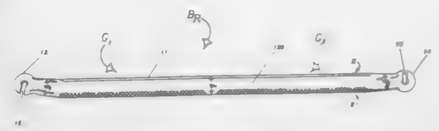
5,389,099

KEYHOLE ROD BENDER

Ruben Hartmeister, 900 Washington Ave., and Walter E. Strippgen, 4960 McIntyre, both of Golden, Colo. 80401

Filed Jul. 28, 1993, Ser. No. 98,804
Int. Cl.[6] B21J *13/08;* B21D *53/00*
U.S. Cl. 606—61 18 Claims

11. A first and second surgical rod bender capable of plastically deforming a surgically implanted rod in situ by movement relative to each other under an influence of force manually applied to end portions of said first and second rod benders, said first and second rod benders each comprising:
a shaft having a central handle portion;
a working end at each end of the shaft;
said working ends each further comprising a rod slot having a bottom, a rod slot central axis, and a diameter; and



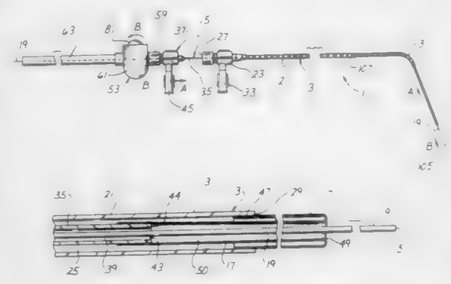
said rod slot further comprising a keyhole hollow at the bottom formed substantially by a pair of bores 2° to 5° offset relative to the rod slot central axis, whereby the rod is held in a substantially static manner by opposing notches in the keyhole hollow.

5,389,100

CONTROLLER FOR MANIPULATION OF INSTRUMENTS WITHIN A CATHETER

Steven R. Bacich, Lagna Niguel; Gary Woker, Escondido; Guy R. Lowery, Mission Viejo, and Fred R. Tietge, San Diego, all of Calif., assignors to Imagyn Medical, Inc., Laguna Niguel, Calif.

Filed Nov. 6, 1991, Ser. No. 788,338
Int. Cl.[6] A61M *37/00*
U.S. Cl. 606—108 24 Claims



24. An everting catheter system comprising:
an elongated outer catheter having an outer catheter lumen and an opening;
an elongated inner catheter movable in the outer catheter lumen and having an inner catheter lumen adapted to receive an elongated instrument, the inner catheter having a proximal end portion;
an everting element coupled to the outer catheter and the inner catheter whereby with movement of the inner catheter in the outer catheter lumen the everting element can be everted through the opening in the outer catheter;
a housing coupled to the proximal end portion of the inner catheter whereby the inner catheter can be moved in the outer catheter lumen by movement of the housing, said housing having a passage communicating with the inner catheter lumen;
a driving device carried by the housing for moving the instrument in the inner catheter lumen relative to the inner catheter; and
the housing having an axis, said housing including a mounting section coupled to the proximal end portion of the inner catheter, a rotatable section and a coupling for coupling the rotatable section to the mounting section so that the rotatable section is rotatable generally about the axis of the passage, said driving device being carried by the rotatable section and being capable of gripping the instru-

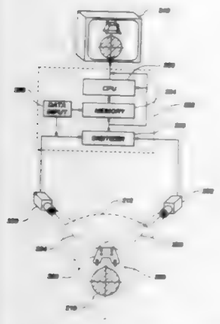
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ment so that rotation of the rotatable section rotates the instrument relative to the inner catheter.

5,389,101
APPARATUS AND METHOD FOR PHOTOGRAMMETRIC SURGICAL LOCALIZATION

Mark P. Heilbrun; Paul McDonald; J. Clayton Wiker; Spencer Koehler, and William Peters, all of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Apr. 21, 1992, Ser. No. 871,382
Int. Cl.[6] A61B *5/055*
U.S. Cl. 606—130 **30 Claims**

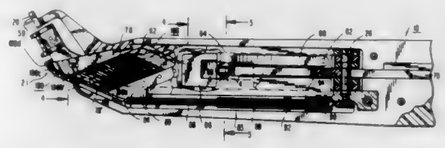


1. Apparatus for defining a location of a medical instrument relative to features of a medical workspace including a patient's body region, comprising:
workspace imaging means positionable for producing a plurality of pairs of images of the medical workspace, each of said image pairs comprising two images made along one of each of a different one of two sightlines, said sightlines intersecting at an angle;
digitizing means operably disposed for digitizing each of said images of said image pairs to produce sets of digital image signals, one said set of digital image signals corresponding to each of said images;
fiducial means removably positionable in said workspace for providing a series of fiducial points held in fixed spatial relation to one another; and
computing means connected to said digitizing means to receive said digital image signals therefrom, said computing means being operable to:
establish a workspace coordinate framework in three dimensions from a first selected one of said pairs of images made when said fiducial means is positioned within said workspace,
determine workspace coordinates in said workspace coordinate framework of any selected point which can be identified from both images of said first selected image pair,
receive a set of scan coordinates for each of three or more selected landmarks present in a scan made in a scan coordinate framework, and correlate said scan coordinates with the workspace coordinates of said landmarks as derived from one of said image pairs, said landmarks being selected from the group of anatomic features, surgical implants, and radiologic implants,
compute conversion functions for converting the scan coordinates of a selected feature in said scan to corresponding workspace coordinates in said workspace framework, and for converting observed workspace coordinates of a selected feature observable in both of said images of a selected one of said image pairs to corresponding scan coordinates in said scan coordinate framework, and
perform said conversion functions for user-selected features found in said scan or in a subsequent selected one of said image pairs.

5,389,102
APPARATUS AND METHOD FOR SUBCUTICULAR STAPLING OF BODY TISSUE

David T. Green, Westport; Henry Bolanos, East Norwalk; Maria Lopez-Isa, Huntington, all of Conn.; Marc J. Theroux, Slatersville, R.I.; John C. Robertson, Bloomfield, Conn.; Joseph M. Paul, Washington Depot, Conn.; Stephen W. Gerry, Bethel, Conn., and Wayne P. Young, Brewster, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 842,448, Feb. 27, 1992, Pat. No. 5,292,326, which is a continuation-in-part of Ser. No. 630,224, Dec. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 581,776, Sep. 13, 1990, abandoned. This application Oct. 9, 1992, Ser. No. 959,242
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—143 **45 Claims**



1. A surgical apparatus for attaching at least two portions of body tissue, which comprises:
a) a pair of support members;
b) a tissue gripping jaw supported at the distal end of each of said support members;
c) body tissue engaging means extending from each jaw and facing said opposed jaw, said body tissue engaging means being structured and adapted to engage respective opposed portions of the body tissue whereby movement of said jaws toward each other causes said opposed portions of body tissue to be displaced toward each other and engage at the interface thereof so as to assume an irregular shape;
d) an elongated fastener member supported proximally of said jaws and positioned to be directed generally medially of the body tissue interface to attach the opposed portions of the body tissue;
e) resilient means positioned between said support members to bias said support members and said jaws in opposed directions; and
f) actuating means adjacent said support members and configured and adapted for advancement in a distal direction to engage said support members in a manner to move said support members toward each other so as to cause said jaws to be moved toward each other.

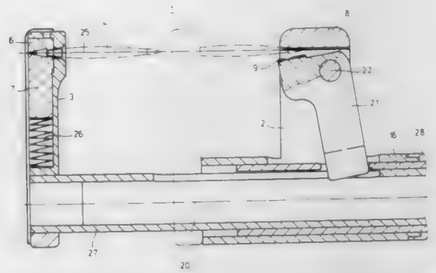
5,389,103
SURGICAL STITCHING APPARATUS

Andreas Melzer, Wiesbaden; Gerhard Buess, Bebenhausen; Rainer Trapp, Graben-Neudorf, and Klaus-Peter Brhel, Philippsburg, all of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Germany

Filed Mar. 16, 1994, Ser. No. 213,732
Claims priority, application Germany, Jul. 23, 1991, 4124381; Jul. 23, 1991, 4124383; Nov. 30, 1991, 4139628
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—144 **12 Claims**

1. A surgical stitching apparatus for endoscopically forming surgical stitches in tissues or vessels by means of a stitching needle, said apparatus comprising a drive mechanism including concentric tubes, a stitching head mounted on a distal end of said concentric tubes, an operating handle structure mounted

on a proximal end of said drive mechanism and having means connected to said concentric tubes for movement thereof for operation of the stitching head at the distal end of said drive mechanism, said stitching head having a stationary and a movable mouthpiece arranged so as to be movable relative to one another along a predetermined path, each having a clamping structure, the clamping structure on the movable mouthpiece including a spring mechanism for biasing the clamping structure thereon into a closed position and the clamping structure on said stationary mouthpiece being operable by said operating handle structure via one of said concentric tubes, said stitching needle having at each end a tip with a bulge and a reduced shank portion and said clamping structures having cavities formed therebetween for receiving the needle tips in a form-

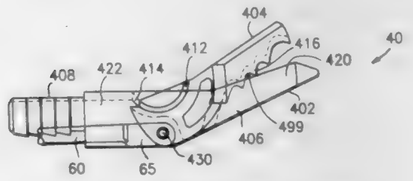


and force-locking manner, said needle being formed such that its longitudinal axis coincides with the path of relative movement of said clamping structures, said movable mouthpiece being operatively connected via another of said concentric tubes to a handle on said operating handle structure for hand control of the relative movement of said mouthpieces, and the clamping structure on said stationary mouthpiece being operable by means of a pedal switch operated drive mechanism disposed on said operating handle structure and connected to said one concentric tube, said drive mechanism comprising a miniature pneumatic cylinder mounted on said operating handle structure and operatively connected to said one concentric tube for operation of the clamping structure on said stationary mouthpiece.

5,389,104
ARTHROSCOPIC SURGICAL INSTRUMENTS

Kevin F. Hahnen, Ft. Lauderdale; Gustavo Aguirre, Miami, and Peter Kratsch, Sunrise, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 978,249, Nov. 18, 1992. This application Aug. 3, 1993, Ser. No. 101,190
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—174 **22 Claims**

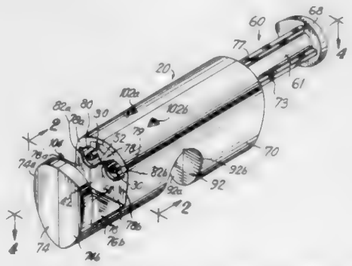


1. An arthroscopic surgical instrument, comprising:
a) a hollow tube having a proximal and a distal end;
b) a stationary jaw coupled to said distal end of said hollow tube;
c) a movable jaw which rotates relative to said stationary jaw;
d) actuating means coupled to said movable jaw for moving said movable jaw, said actuating means coupled to said proximal end of said hollow tube, wherein
said stationary jaw is provided with a pair of spaced apart side walls defining an opening for receiving said movable jaw, each of said side walls having an inner surface and an outer surface which meet at a first sharp edge defined by an acute angle between said inner surface and said outer surface, and
said movable jaw is provided with a pair of spaced apart second sharp edges with a concave inner surface between said second sharp edges, wherein when said movable jaw is rotated relative to said stationary jaw, said first sharp edges and second sharp edges effect a scissor-like cutting action.

5,389,105
EAR PIERCING APARATUS WITH ROTATABLY DISPLACEABLE PUSH ROD

Samuel J. Mann, Englewood, N.J., assignor to Inverness Corporation, Fair Lawn, N.J.

Filed Oct. 26, 1993, Ser. No. 142,998
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.[6] A61B *17/34*
U.S. Cl. 606—188 **16 Claims**

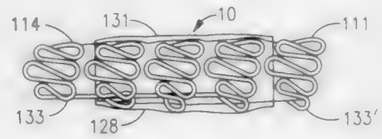


1. An ear piercing assembly comprising housing means, a first and second ear piercing earring releasably supported within said housing means; plunger assembly means disposed within said housing means for selectively ejecting an ear piercing earring from said housing means, said plunger assembly means being movable between a first position for ejecting said first ear piercing earring from said housing means and a second position for ejecting said second ear piercing earring from said housing means.

5,389,106
IMPERMEABLE EXPANDABLE INTRAVASCULAR STENT

Allen J. Tower, North Lawrence, N.Y., assignor to Numed, Inc., Nicholville, N.Y.

Filed Oct. 29, 1993, Ser. No. 145,435
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 **5 Claims**



1. A radially expandable stent for intravascular implantation comprising:
a tubular structure having a longitudinal axis, a radius, a

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central portion, and first and second ends, said tubular structure comprising a distensible frame and an impermeable distensible membrane interconnecting portions of said frame to form an impermeable wall surface disposed between said first and second ends about said axis, said tubular structure being adapted to receive an inflatable catheter for intra vascular placement and radial expansion therewith, wherein said membrane is disposed on said central portion and at least one of said first end and said second end is not in contact with said membrane;

whereby expansion of said catheter and said tubular structure brings said wall surface into supporting contact with an interior surface of a vessel.

5,389,107

SHOCK ABSORBENT PROSTHETIC HIP JOINT

Antoine A. Nassar, 4631 Landings Dr., Fort Meyers, Fla. 33919, and Eugene C. Eckstein, Miami, Fla., assignors to Antoine A. Nassar, Fort Myers, Fla.

Continuation of Ser. No. 881,259, May 11, 1992, abandoned.
This application Apr. 28, 1993, Ser. No. 54,463
Int. Cl.[6] A61F *2/36, 2/32, 2/30*
U.S. Cl. 623—23 **11 Claims**

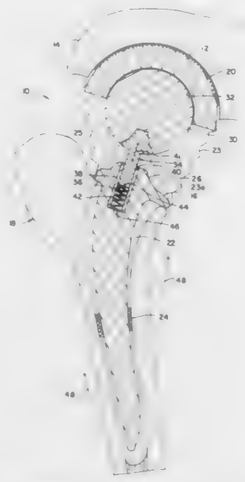
1. A shock absorbent prosthetic hip joint comprising:

a ball section that is pivotably engaged with a socket section connected to a pelvic bone;

a first shock absorber section attached to and extending from said ball section and including a piston that has a substantially solid cross section;

a second shock absorber section attached to an upper part of a femur bone and including an insert configured for insertion into the intramedullary cavity, said insert having an axial chamber formed therein for slidably receiving said piston and permitting said piston to reciprocate in said chamber; and

spring means disposed in said chamber and interengaging a distal end surface of said piston and an inner end of said axial chamber, said distal end surface faces a direction generally opposite to said ball section; said spring means being configured for biasing said first and second shock absorber sections into an expanded condition wherein said ball section is spaced relatively apart from the femur bone



and being responsive to application of a compressive load between the femur and pelvic bones for allowing said first and second shock absorber sections to slide into a compressed condition to cushion said compressive load.

5,389,108

PROCESS FOR FIXING DYES

Katharina Fritzsche, Weil am Rhein, Germany, and Martin Trottmann, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 14, 1992, Ser. No. 914,157
Claims priority, application Switzerland, Jul. 17, 1991, 2120/91
Int. Cl.[6] D06P *1/38;* **D06D** *5/20*
U.S. Cl. 8—444 **23 Claims**

1. A process for dyeing, which comprises applying a dye, which dye contains at least one polymerisable double bond or at least one polymerisable ring system, and a colourless compound or a mixture of colourless compounds, which colourless compound contains at least one polymerisable double bond, to a fiber material, drying the fiber material to a residual moisture content of less than 20% and subjecting the fiber material to ionizing radiation.

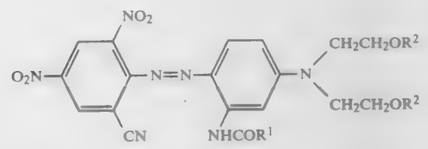
5,389,109

PROCESS FOR THE PREPARATION OF THERMOMIGRATION-RESISTANT DYEINGS

Ulrich Bühler, Alzenau, Germany, assignor to Hoechst Mitsubishi Kasei Co., Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,259
Claims priority, application Germany, Dec. 5, 1991, 4140152
Int. Cl.[6] D06P *5/08, 1/18*
U.S. Cl. 8—495 **19 Claims**

1. Process for the preparation of highly thermomigration-resistant dyeings on fibre materials comprising polyester wherein the fibre materials, after dyeing, are subjected to a heat treatment, characterized in that dyeing is carried out with one or more dyes of the general formula I



(I)

in which

R^1 and R^2, independently of one another, are methyl and ethyl.

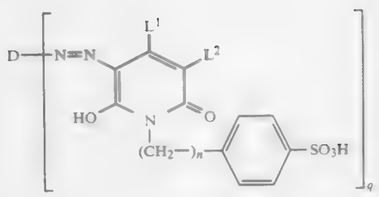
5,389,110

AZO DYES AND PROCESS OF DYEING WITH AZO DYES WHICH CONTAIN AN N-(HYDROXYSULFONYLPHENYLALKYL)PYRIDONE COUPLING COMPONENT

Johannes P. Dix, Weisenheim; Bernd Hupfeld, Speyer; Gunther Lamm, Hassloch, and Helmut Reichelt, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 18, 1993, Ser. No. 107,619
Claims priority, application Germany, Aug. 20, 1992, 4227590
Int. Cl.[6] C09B *29/42*
U.S. Cl. 8—670 **5 Claims**

1. Azo dyes of the formula I



(I)

where

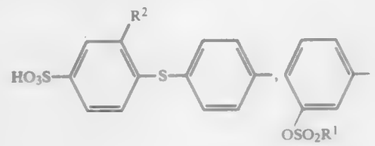
n is from 1 to 4

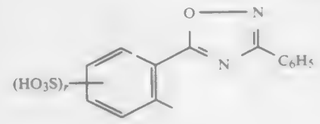
q is 1 or 2,

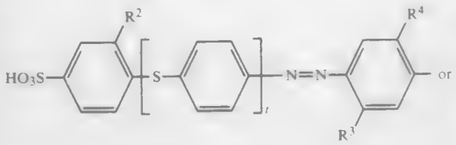
L^1 is hydrogen or C_1–C_3-alkyl,

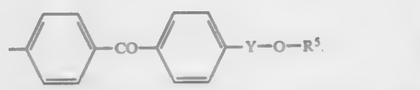
L^2 is acetyl or hydroxysulfonyl, and, when q=1,

D is a radical of the formula

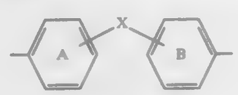




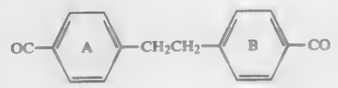




where r is 0 or 1, t is 0 or 1, R^1 is phenyl or C_1–C_4-alkylphenyl, R^2 is hydrogen or nitro, R^3 and R^4 are each independently of the other hydrogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, R^5 is hydrogen or C_1–C_4-alkanoyl, Y is C_1–C_4-alkylene, or, when q=2, is a radical of the formula

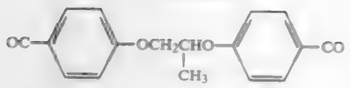


where X is a bridge member and rings A and B may each be substituted independently of one another, wherein the radicals



and

-continued



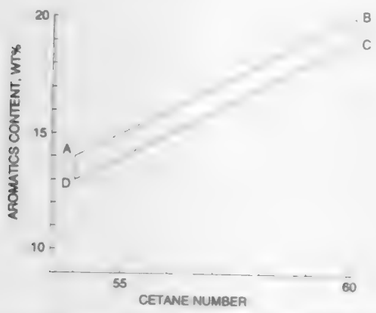
are excluded as bridge members.

5,389,111

LOW EMISSIONS DIESEL FUEL

Manuch Nikanjam, Richmond, and Richard F. Sullivan, San Rafael, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 1, 1993, Ser. No. 69,637
Int. Cl.[6] C10L *1/04, 1/22*
U.S. Cl. 44—300 7 Claims



1. In a Low Emissions Diesel Fuel, the improvement which comprises a Diesel Fuel having an Aromatics Content in the range of from 13 to 20 percent by weight and a Cetane Number in the range of from 54 to 60, said Cetane Number and Aromatics Content being within the tetragonal area defined by Points A, B, C and D shown in FIG. 1, wherein the relationship of Cetane Number and Aromatics Content is expressed according to the equation:

Aromatics Content = Cetane Number − 40 within the limits such that:

Cetane Number − 40 < Aromatics Content ≦ Cetane Number − 40 and wherein 54 ≦ Cetane Number ≦ 60,

whereby statistically determined emissions resulting from combusting said Low Emissions Diesel Fuel in a diesel engine are less than statistically determined emissions resulting from combustion of California Reference diesel fuel in said engine.

5,389,112

LOW EMISSIONS DIESEL FUEL

Manuch Nikanjam, Richmond, and Richard F. Sullivan, San Rafael, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

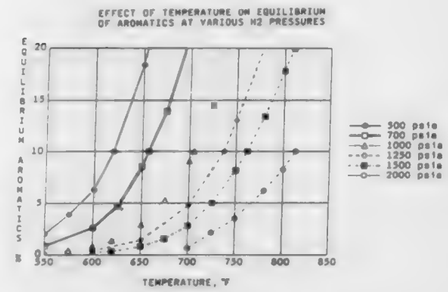
Continuation-in-part of Ser. No. 69,637, Jun. 1, 1993, which is a continuation-in-part of Ser. No. 877,678, May 1, 1992. This application Aug. 13, 1993, Ser. No. 106,176
Int. Cl.[6] C10L *1/04, 1/22*
U.S. Cl. 44—300 8 Claims

1. In a Low Emissions Diesel Fuel, the improvement which comprises a Diesel Fuel having an Aromatics Content in the range of from 14.3 to 19.7 percent by weight and a Cetane Number in the range of from 53.4 to 60.8, said Cetane Number and Aromatics Content being within the tetragonal area defined by Points A, B, C and D shown in FIG. 1, wherein line A-B in FIG. 1 is expressed by the equation:

Aromatics Content = 0.976 (Cetane Number) − 39.6

and line C-D in FIG. 1 is expressed by the equation:

Aromatics Content = 1.03 (Cetane Number) − 40.7



whereby statistically determined emissions resulting from combusting said Low Emissions Diesel Fuel in a diesel engine are less than statistically determined emissions resulting from combustion of California Reference diesel fuel in said engine.

5,389,113

MIXTURES OF FATTY ALKYL LOWER ALKYL ESTERS HAVING IMPROVED LOW-TEMPERATURE STABILITY

Guenther Demmering, Solingen; Karl Schmid, Mettmann; Frank Bongardt, Duesseldorf, and Leonhard Wittich, Langenfeld, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Filed Aug. 17, 1993, Ser. No. 78,197
Claims priority, application Germany, Dec. 17, 1990, 4040317
Int. Cl.[6] C10L *1/02*
U.S. Cl. 44—388 16 Claims

1. A liquid fuel composition consisting essentially of:
(a) from 58 to 95 % by weight of an ester or a mixture of esters selected from the group consisting of esters of fatty acids with from 12 to 22 carbon atoms and aliphatic alcohols with from 1 to 4 carbon atoms, said esters having an iodine value in the range from 50 to 150;
(b) from 4 to 40 % by weight of an ester or a mixture of esters selected from the group consisting of esters of fatty acids containing from 6 to 14 carbon atoms and aliphatic alcohols containing from 1 to 4 carbon atoms; and
(c) from 0.1 to 2 % by weight of an ester or mixture of esters selected from the group consisting of esters of polymers and copolymers of acrylic and methacrylic acids and alcohols containing from 1 to 22 carbon atoms, said liquid fuel composition is sufficiently fluid and pumpable at a temperature of −19° C.

5,389,114

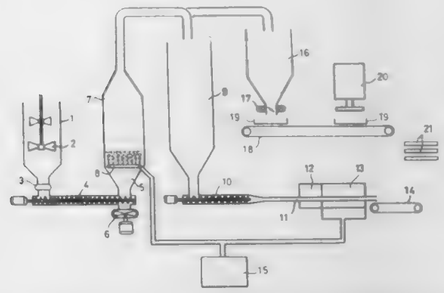
METHOD OF TREATING AND USING WASTE PRODUCTS

David E. Forder, 33 Clifton Road, Regents Park, Southampton SO1 4GY, United Kingdom

Filed Apr. 16, 1993, Ser. No. 39,176
Claims priority, application United Kingdom, Oct. 19, 1990, 9022725
Int. Cl.[6] C10L *5/00*
U.S. Cl. 44—552 9 Claims

1. A method of treating sewage sludge comprising steps of mixing the sludge with a coagulant to bind the sludge then, pressing it to remove moisture,
adding at least one waste product to the sludge then, agitating the mixture,

extruding and shaping the sludge to produce an extruded product, and then



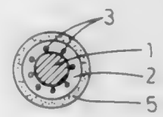
heating and drying the extruded product and irradiating it in a microwave oven.

5,389,115

PILLS OR PELLETS CONTAINING GENETIC MATERIAL AND INERT CARRIER MATERIAL AND METHOD FOR THEIR PREPARATION

Robert J. Legro, Enkhuizen, Netherlands, assignor to Incotec B.V., Enkhuizen, Netherlands

Filed Nov. 17, 1992, Ser. No. 977,775
Claims priority, application Netherlands, Nov. 21, 1991, 9101959
Int. Cl.[6] A01G *1/00;* A01H *9/00, 15/00*
U.S. Cl. 47—57.6 2 Claims



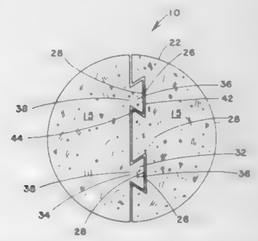
1. A plurality of pills or pellets containing a multitude of spores selected from the group consisting of fern spores and fungi spores, and having a size of approximately 10–100 μm said spores are in or on an adhesive coating surrounding a core. said core being inert with respect to said spores and is of material selected from the group consisting of glass beads, plastic beads, perlite granules, and/or bentonite granules, and having a diameter of between 5 mm and 2 mm.

5,389,116

GROUND COVER AND SOIL SUPPLEMENT

David A. Byrd, 5889 N. 700 W., Craigville, Ind. 46731

Filed Jul. 13, 1992, Ser. No. 912,255
Int. Cl.[6] A01H *1/00;* A01G *7/00*
U.S. Cl. 47—58 32 Claims



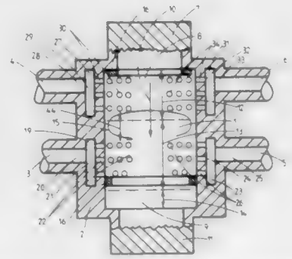
1. A nutrient and moisture retentive ground cover and soil supplement for plants comprising a body composed of mulch and a binder and a base, said mulch being a plurality of small pieces, said binder surrounding portions of said mulch pieces and holding said pieces together and to said base, said mulch and binder and base being gas and water permeable, said base and binder being biodegradable and harmless to soil and plants, said body being self-supporting and opaque and able to retain water, said cover having at least one portion of less thickness than the remainder of said cover which can be broken away to provide an opening in said cover of a shape as desired, said cover being provided in a plurality of separable portions which can be held together, said break away portion providing openings in said cover, said cover pieces being held together with a stem of a plant occupying said openings created by said break away portions.

5,389,117

CROSS FLOW CHAR FUEL GAS PRODUCERS

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115

Continuation-in-part of Ser. No. 774,608, Oct. 10, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 75,286
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[6] C10J *3/20*
U.S. Cl. 48—76 11 Claims



1. A cross flow char fuel gas producer comprising:
a container comprising: a char fuel reaction chamber comprising a refuel end and an ash collection end, a direction of char fuel motion from said refuel end toward said ash collection end, at least two separate inlets into said container, a first separate container inlet and a second separate container inlet, at least two separate outlets from said container, a first separate container outlet and a second separate container outlet;
a source of char fuel particles:
a refuel mechanism means for placing char fuel particles from said source of char fuel particle into said char fuel reaction chamber via the refuel end thereof;
at least one means for removing ashes from said char fuel reaction chamber;
means for preheating said char fuel particles within said char fuel reaction chamber to a rapid reaction temperature at which said char fuel particles react sufficiently rapidly with oxygen in reactant gases, when said char fuel gas producer is being started, that the char fuel temperature does not decrease when said means for preheating is turned off;
at least one source of reactant gas containing appreciable oxygen gas, said appreciable oxygen gas content being that content required to react sufficiently rapidly with said char fuel particles, when said char fuel gas producer is being started, that the char fuel particles temperature does not decrease from the rapid reaction temperature when said means for preheating said char fuel is turned off;
wherein said char fuel reaction chamber further comprises: a volatile matter distillation and char fuel preheat zone positioned toward said refuel end of said chamber, an ash

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collection zone positioned toward said ash collection end of said chamber, a rapid reaction zone positioned between said volatile matter distillation and char fuel preheat zone and said ash collection zone, a peripheral dimension around the outer surface of said char fuel reaction chamber at right angles to said char fuel motion direction;

said peripheral dimension of said char fuel reaction chamber comprising an inlet portion, a separate outlet portion, and separate sealed portions without ports;

a first reactant gas manifold comprising a first reactant gas manifold inlet and a first reactant gas manifold outlet, said first reactant gas manifold outlet connecting to first reactant gas inlet ports into said rapid reaction zone of said char fuel reaction chamber, and said first reactant gas inlet ports being positioned along the length of said char fuel reaction chamber in said direction of char fuel motion which is adjacent to said rapid reaction zone, and said first reactant gas inlet ports also being positioned around only said inlet portion of said peripheral dimension of said char fuel reaction chamber, said first reactant gas manifold inlet connecting to said first separate container inlet;

a producer gas manifold comprising a producer gas manifold inlet and a producer gas manifold outlet, said producer gas manifold inlet connecting to producer gas outlet ports out of said rapid reaction zone of said char fuel reaction chamber, and said producer gas outlet ports being positioned along the length of said char fuel reaction chamber in said direction of char fuel motion which is adjacent to said rapid reaction zone, and said producer gas outlet ports also being positioned around only said outlet portion of said peripheral dimension of said char fuel reaction chamber, said producer gas manifold outlet connecting to said first separate container outlet;

a second reactant gas manifold comprising a second reactant gas manifold inlet and a second reactant gas manifold outlet, said second reactant gas manifold outlet connecting to second reactant gas inlet ports into said volatile matter distillation and char fuel preheat zone of said char fuel reaction chamber, and said second reactant gas inlet ports being positioned along the length of said char fuel reaction chamber in said direction of char fuel motion which is adjacent to said volatile matter distillation and char fuel preheat zone, and said second reactant gas inlet ports also being positioned around only said inlet portion of said peripheral dimension of said char fuel reaction chamber, said second reactant gas manifold inlet connecting to said second separate container inlet;

a volatile matter in reactant gas mixture manifold comprising a volatile matter in reactant gas mixture manifold inlet and a volatile matter in reactant gas mixture manifold outlet, said volatile matter in reactant gas mixture manifold inlet connecting to volatile matter in gas mixture outlet ports out of said volatile matter distillation and char fuel preheat zone of said char fuel reaction chamber, and said volatile matter in gas mixture outlet ports being positioned along the length of said char fuel reaction chamber in said direction of char fuel motion which is adjacent to said volatile matter distillation and char fuel preheat zone, and said volatile matter in gas mixture outlet ports also being positioned around only said outlet portion of said peripheral dimension of said char fuel reaction chamber, said volatile matter in reactant gas mixture manifold outlet connecting to said second separate container outlet;

wherein said reactant gas inlet ports of said first reactant gas manifold are positioned at right angles to said char fuel motion direction and across from said producer gas outlet ports of said producer gas manifold;

wherein said reactant gas inlet ports of said second reactant gas manifold are positioned at right angles to said char fuel motion direction and across from said volatile matter in gas mixture outlet ports of said volatile matter in reactant gas manifold;

a first means for providing a first flow of reactant gas, from said at least one source of reactant gas containing appreciable oxygen gas, into said first reactant gas manifold via said first separate container inlet, and comprising first means for adjusting a flow rate of said first flow of reactant gas:

a second means for providing a second flow of reactant gas from said at least one source of reactant gas containing appreciable oxygen gas, into said second reactant gas manifold via said second separate container inlet and comprising second means for adjusting a flow rate of said second flow of reactant gas;

a producer gas product collector;

a volatile matter in gas mixture product collector;

said first separate container outlet connecting only to said producer gas product collector;

said second separate container outlet connecting only to said volatile matter in gas product collector;

a third means for providing a flow of product producer gas, from said producer gas manifold, into said producer gas product collector via said first separate container outlet, and comprising third means for adjusting a flow rate of said product producer gas;

a fourth means for providing a flow of product volatile matter in gas mixture, from said volatile matter in gas mixture manifold, into said volatile matter in gas mixture product collector via said second separate container outlet, and comprising fourth means for adjusting a flow rate of said volatile matter in gas mixture product.

5,389,118

ABRASIVE TOOL HAVING FILM-COVERED CBN GRITS BONDED BY BRAZING TO A SUBSTRATE

Hans E. Hinterman, Anet, and Ajay K. Chattopadhyay, Hauterive, both of Switzerland, assignors to CSEM Centre Suisse d'Electronique et de Microtechnique S.A. - Recherche et Developpement, Neuchatel, Switzerland

Filed Nov. 17, 1993, Ser. No. 153,626

Claims priority, application United Kingdom, Nov. 20, 1992, 9224320

Int. Cl.[6] B24D *3/00*

U.S. Cl. 51—295 **5 Claims**

1. A CBN abrasive tool comprising a metal, ceramic or cemented carbide substrate and a single layer of CBN grits bonded to said substrate by a brazing ailoy, wherein the surface chemistry of said CBN grits is modified by depositing thereon a film of silicon carbide.

5,389,119

ABRASIVE MEMBER COMPRISING A NONWOVEN FABRIC AND A METHOD FOR MAKING SAME

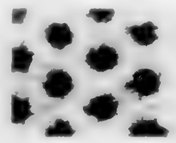
Sandro G. G. Ferronato, Elburg, and Natalino Ferronato, Ennerbaden, both of Netherlands, assignors to KGS Diamind Holding B.V., Elburg, Netherlands

Filed Sep. 15, 1993, Ser. No. 121,198

Claims priority, application Netherlands, Apr. 19, 1993, 9300661

Int. Cl.[6] B24B *1/00*

U.S. Cl. 51—296 **25 Claims**



1. An abrasive member comprising an open, porous layer supporting a metal structure which carries an abrasive material, said porous layer comprising a nonwoven fabric.

5,389,120

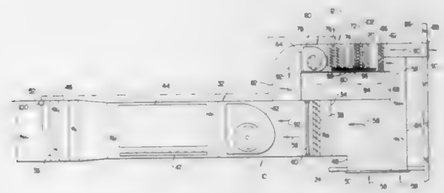
HEATING, VENTILATION AND AIR CONDITIONING UNIT WITH AUTOMATICALLY CONTROLLED WATER SPRAY AIR PURIFICATION SYSTEM

Frederic D. Sewell, 9644 Rocky Branch Dr., Dallas, Tex. 75243, and Barry D. Jones, 14 Flourite Ct., Little Rock, Ak. 77212

Filed Feb. 8, 1994, Ser. No. 192,988

Int. Cl.[6] B01D *47/06*

U.S. Cl. 55—223 **36 Claims**



1. Liquid spray apparatus for purifying air, comprising:

a housing having an open inlet end and an open outlet end and having means for receiving a throughflow of air in a downstream direction from said open inlet end to said open outlet end;

liquid dispersion filter means, positioned in said housing in the path of air flowing therethrough, for removing pollutants from the air using a liquid spray emanating from a source thereof and directed against said liquid dispersion filter means;

liquid spray means, disposed in said housing, for receiving pressurized liquid from a source thereof and spraying the received liquid onto said liquid dispersion filter means;

mist eliminator means, positioned in said housing downstream from said liquid dispersion filter means, for removing liquid entrained in air exiting said liquid dispersion filter means;

sump means for holding a quantity of liquid to be supplied in a recirculated manner to said liquid spray means, and for receiving liquid draining from said liquid dispersion filter means and said mist eliminator means during operation of said apparatus;

fill means for automatically maintaining a predetermined liquid level in said sump means;

a filter structure through which sump liquid may be selectively flowed in a filtering direction or an opposite backwashing direction;

a pump having an inlet communicatable with liquid in said sump means, and an outlet;

conduit means, interconnecting said pump, said filter structure and said liquid spray means, for forming with said filter structure alternatively selectable first and second sump liquid flow paths,

said first sump liquid flow path extending sequentially from said pump outlet through said filter structure in said filtering direction, and from said filter structure to said liquid spray means,

said second sump liquid flow path sequentially extending from said pump outlet to said filter structure, through said filter structure in said backwashing direction, and from said filter structure to a drainage location external to said sump means;

valve means connected in said conduit means, said valve means being normally operative in a first position to cause sump liquid being discharged from said pump outlet to flow through said first sump liquid flow path, but being switchable to a second position to cause sump liquid being discharged from said pump outlet to flow through said second sump liquid flow path; and

first monitoring means for detecting a change in an apparatus operating parameter, indicative of a predetermined lessening in the filtration efficiency of said filter structure, and responsively creating a temporary switching of said valve means from said first position thereof to said second position thereof.

5,389,121

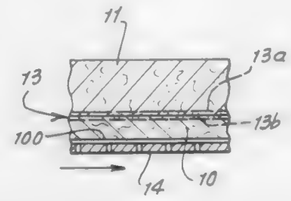
COMPOSITE OF LAYERS OF GLASS FIBERS OF VARIOUS FILAMENT DIAMETERS

Jack R. Pfeffer, 4295 Country Club Dr., Bakersfield, Calif. 93306

Filed Aug. 9, 1993, Ser. No. 103,518

Int. Cl.[6] B01D *39/06*

U.S. Cl. 55—487 **9 Claims**



1. A composite glass fiber structure, comprising

a) first and second layers of glass fibers extending in adjacent parallel relation,

b) synthetic resin coating the fibers of each layer and providing a bond holding the layers together in said parallel relation,

c) the fibers of the first layer having smaller diameters than the fibers of the second layer,

d) the first and second layers being gas compressed to have densities of between 0.25 and 0.45 lbs. per cubic foot,

e) and including a support layer of thin, flexible, porous material extending sidewardly adjacent said first layer whereby the first layer is sardwiched between said support layer and said second layer, said support layer having a thickness between 0.002 and 0.005 inch, and a surface weight between 0.4 and 0.5 oz. per square yard.

5,389,122

PROCESS FOR MAKING FINELY DIVIDED, DENSE PACKING, SPHERICAL SHAPED SILVER PARTICLES

Howard D. Glicksman, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 89,031, Jul. 13, 1993, abandoned. This application Jan. 25, 1994, Ser. No. 186,244

Int. Cl.[6] B22F *9/24*

U.S. Cl. 75—370 **12 Claims**

1. A method for the preparation of finely divided, dense packing, spherical shaped silver particles comprising the steps of:

(1) reacting an aqueous mixture of a silver salt with an alkanolamine to form a homogeneous aqueous solution of a dissolved silver alkanolamine complex;

(2) preparing an aqueous solution of a reducing agent and an alkanolamine; and

(3) mixing together the silver alkanolamine complex solution and the reducing agent alkanolamine solution at a pH buffered to the pH of the alkanolamine and a temperature of 10° C. to 100° C. to form finely divided spherical silver particles.

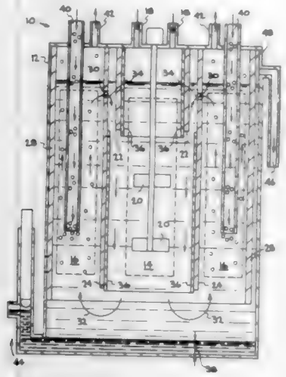
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5,389,123

METHOD FOR CONTINUOUSLY RECOVERING METALS USING A DUAL ZONE CHEMICAL REACTOR

Mark C. Bronson, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 8, 1993, Ser. No. 87,549
Int. Cl.[6] C22B *59/00, 60/00*
U.S. Cl. 75—393 13 Claims



1. A process for continuously recovering a metal product from a metal-containing compound in a single, dual zone chemical reactor, comprising:

(a) providing a reaction vessel comprising at least two reaction zones and containing a liquid carrier,

wherein a first reaction zone is partitioned from, but in fluid communication with, a second reaction zone of the vessel;

(b) introducing a metal-containing compound and a reagent into the liquid carrier in the first reaction zone of the vessel,

wherein the metal-containing compound and the reagent react to produce a metal product and a by-product that is soluble in the liquid carrier;

(c) inducing continuous flow of the liquid carrier with the dissolved by-product into the second reaction zone of the vessel;

(d) introducing a reactive gas into the liquid carrier in the second reaction zone;

wherein the reactive gas and the by-product in the second reaction zone react to produce a waste gas and to generate additional liquid carrier;

(e) removing the metal product and the waste gas from the vessel; and

(f) continuously circulating the liquid carrier from the second reaction zone into the first reaction zone for further use.

5,389,124

METHOD FOR THE RECOVERY OF GOLD VALUE

Yukimichi Nakao, Ibaraki, Japan, assignor to Japan, as represented by Director General of Agency of Industrial Science and Technology, Japan

Filed Mar. 8, 1994, Ser. No. 207,075
Claims priority, application Japan, Jun. 18, 1993, 5-172666
Int. Cl.[6] C22B *3/20*
U.S. Cl. 75—722 9 Claims

1. A method for the recovery of gold value from a material containing gold value which comprises the steps of:

(a) contacting the material containing gold value with a liquid medium which is an organic solvent containing, as dissolved therein, an ionic halogen compound of a first halogen and a second halogen in the elementary form in an amount of at least 50% by moles based on the ionic halogen compound, at least either one of the first and second halogens being iodine, at a first temperature to dissolve the gold value therein to form a gold-containing solution;

(b) decreasing the temperature of the gold-containing solution to a second temperature which is substantially lower than the first temperature to precipitate the gold value in a metallic form; and

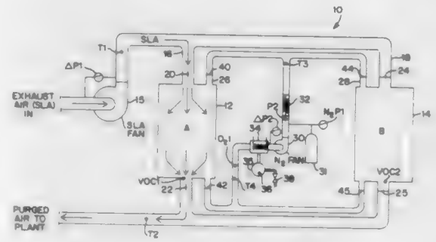
(c) separating the precipitated gold value in the metallic form from the liquid medium.

5,389,125

AUTOMATED SYSTEM FOR RECOVERY OF VOC'S FROM PROCESS AIR

Daniel D. Thayer, 165 W. Shore Rd., Auburn, Me. 04210, and Bruce D. Barney, Freeport, Me., assignors to Daniel D. Thayer, Auburn, Me.

Filed Aug. 20, 1993, Ser. No. 109,628
Int. Cl.[6] B01D *53/04*
U.S. Cl. 95—11 30 Claims



1. A method for removing and recovering volatile organic compounds (VOC's) from a circulating air stream comprising:

passing the circulating air stream through a first adsorption bed for adsorbing VOC's from the circulating air stream;

sensing the VOC concentration in the circulating air stream downstream from the first adsorption bed;

switching the circulating air stream and passing the circulating air stream through a second adsorption bed when the VOC concentration in the circulating air stream through the first adsorption bed exceeds a threshold first VOC concentration level;

desorbing VOC's from the first adsorption bed by first passing an unheated desorption inert gas through the first adsorption bed to drive out O_2;

sensing the O_2 concentration in the unheated desorption inert gas downstream from the first adsorption bed;

heating the desorption inert gas passing through the first adsorption bed after sensing an O_2 concentration below a threshold first O_2 concentration level;

establishing a desorption loop for the heated inert gas including a VOC condenser for recovering VOC's, a circulating inert gas fan, and a heater for heating said desorption inert gas;

sensing VOC concentration in the circulating heated inert gas downstream from the first adsorption bed;

turning off the heater and cooling the first adsorption bed by circulating unheated desorption inert gas in the desorption loop when the sensed VOC concentration falls below a threshold first VOC concentration value;

sensing VOC concentration in the circulating air stream downstream from the'second adsorption bed;

Switching the circulating air stream and passing the circulating airstream through the first adsorption bed when the VOC concentration ,sensed in the circulating air stream downstream from the second adsorption bed exceeds said threshold first VOC concentration value;

sensing temperature of the circulating airstream upstream and downstream of the first and second adsorption beds;

sensing temperature of circulating desorption inert gas upstream and downstream from the first and second adsorption beds;

determining an alarm condition in response to specified system parameters of sensed O_2 concentration, temperature, and VOC concentration reaching or exceeding alarm condition threshold values and providing alarm condition response;

determining an alarm condition and providing said alarm condition response upon sensing O_2 concentration in the circulating desorption inert gas above a programmed alarm threshold second O_2 concentration value greater than the first O_2 concentration level;

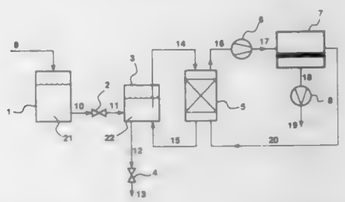
said alarm condition response comprising closing flow control valves and isolating the first adsorption bed, second adsorption bed, and desorption loop from the circulating air stream and desorption inert gas circulating in the desorption loop, and flooding with inert gas through separate flooding lines the first adsorption bed, second adsorption bed and desorption loop, and turning off the heater.

5,389,126

PROCESS FOR REMOVAL OF COMPONENTS FROM LIQUIDS IN BATCH MODE

Richard W. Baker, Palo Alto, and Harmohinder S. Bedi, San Ramon, both of Calif., assignors to Membrane Technology and Research, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 890,931, May 29, 1992, Pat. No. 5,273,572. This application Sep. 21, 1993, Ser. No. 124,935
Int. Cl.[6] B01D *53/22, 19/00*
U.S. Cl. 95—45 48 Claims



1. A process for removing a component from a liquid, comprising the steps of:

(a) providing a gas stripper, adapted to contact gas and liquid, and a tank, said stripper and said tank being connected in a loop;

(b) carrying out a gas-stripping step, comprising circulating a batch of liquid in said loop for a sufficient time to cause a desired degree of stripping of said component from said liquid by said gas, thereby producing a component-depleted liquid stream and a component-laden gas stream;

(b) passing said component-laden gas stream to a membrane separation step, comprising:

(i) providing a membrane having a feed side and a permeate side;

(ii) contacting said feed side with said component-laden gas stream;

(iii) withdrawing from said membrane an enriched gas stream enriched in said component compared with said component-laden gas stream;

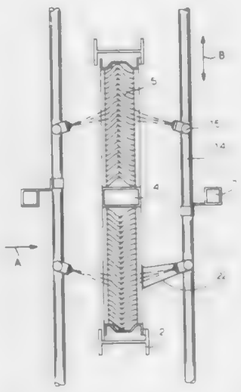
(iv) withdrawing from said membrane a depleted gas stream depleted in said component compared with said component-laden gas stream.

5,389,127

METHOD OF CLEANING A DROP SEPARATOR AND DROP SEPARATOR WITH CLEANING DEVICE

Dieter Wurz, Gartenweg 7, D-7570 Baden-Baden; Stefan Hartig, Oberkirchstrasse 27, D-7590 Achern, and Hubert Wolf, Dompfaffweg 1, D-4005 Meerbusch, all of Germany

PCT No. PCT/EP91/02348, § 371 Date May 3, 1993, § 102(e) Date May 3, 1993, PCT Pub. No. WO92/11075, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 7, 1991, Ser. No. 50,355
Claims priority, application Germany, Dec. 21, 1990, 4041165
Int. Cl.[6] B01D *45/18*
U.S. Cl. 95—281 14 Claims



1. A method for cleaning a drop separator, comprising the steps of:

(a) mounting a plurality of mutually parallel and spaced apart blades curved in a direction of gas flow over a cross section of a gas channel and extending longitudinally and generally perpendicular to the direction of gas flow, thereby forming deposits on the blades;

(b) pulsing cleaning jets of wash water from a plurality of flat jet nozzles across the gas channel over the plurality of blades, thereby spraying the blades with flat cleaning jets removing deposits from the blades; and

(c) simultaneously with step (b) displacing the plurality of flat jet nozzles perpendicular to the direction of the gas flow and perpendicular to the longitudinal extent of said blades.

5,389,128

MILTIPLE, SELF-ADJUSTING DOWNHOLE GAS SEPARATOR

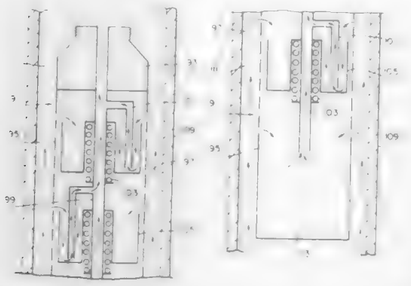
Divonsir Lopes, Tijuca, Brazil, assignor to Petroleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil

Filed Jun. 23, 1993, Ser. No. 80,106
Claims priority, application Brazil, Jun. 24, 1992, PI9202386
Int. Cl.[6] B01D *19/00*
U.S. Cl. 96—207 10 Claims

1. A multiple, self-adjusting downhole gas separator for installation in wellhead production tubing beneath a downhole pump in pumping wells to increase the efficiency of artificial lift, said separator comprising an external decanting pipe having perforations in top and intermediate sections thereof and a concentric inner suction pipe having inverted L-shaped suction pipe by-passes extending outwardly from a peripheral wall thereof, a plurality of respective retention cups disposed adjacent each suction pipe by-pass and positioned between the external decanting pipe and the inner suction pipe in vertical

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succession so that each suction pipe by-pass is centrally positioned with regard to a respective retention cup and elastic



elements on said inner suction pipe supporting said retention cups in position adjacent each suction pipe by-pass.

5,389,129

WAX POLISH COMPOSITION

Martin P. Jordan, Orpington, England, assignor to Berwind Pharmaceutical Services, Inc., West Point, Pa.

Filed May 28, 1992, Ser. No. 889,775

Claims priority, application United Kingdom, May 29, 1991, 9111514

Int. Cl.[6] A61K *9/42*

U.S. Cl. 106—10 **20 Claims**

1. A polish composition for coating pharmaceutical tablets and food/confectionery items to impart a gloss thereto, consisting essentially of 16.5 to 25% by weight beeswax and 16.5 to 25% by weight carnauba wax, 45 to 60% by weight of water, and at least 5% by weight of an emulsifier, the emulsifier having an HLB value of about 16 to about 17.

5,389,130

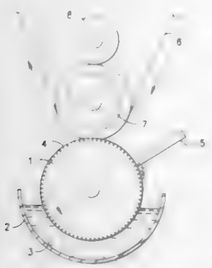
PRINTING INK EMULSION HAVING REDUCED VOC

Rajnish Batlaw, Spartanburg, and Patrick D. Moore, Pacolet, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Jun. 25, 1993, Ser. No. 83,737

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R **32 Claims**



1. In a gravure ink composition comprising a colorant and vehicle, the improvement comprising employing a vehicle comprising a water-in-oil emulsion of a water immiscible organic solvent and water, said organic solvent and water being in a ratio of from 9:1 to 1:3 by weight, respectively.

5,389,131

INK COMPOSITIONS AND PREPARATION PROCESSES THEREOF

Richard L. Colt, Rochester, and Kurt B. Gundlach, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 992,240, Dec. 19, 1992, Pat. No. 5,258,064. This application Oct. 15, 1993, Ser. No. 136,146

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R **56 Claims**

1. A process for preparing an ink composition which comprises (a) forming a mixture by admixing water and a base; (b) adding a colorant to the mixture; and (c) adjusting the pH of the mixture by adding phosphorous acid thereto.

5,389,132

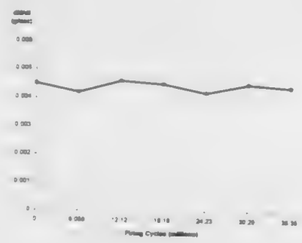
THERMAL INK-JET EXHIBITING REDUCED KOGATION

Akin H. Davulcu; Salman Rashid, and James D. Story, all of Houston, Tex., assignors to JetFill, Inc., Houston, Tex.

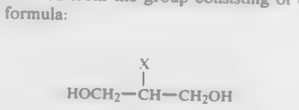
Filed Feb. 2, 1994, Ser. No. 190,316

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R **11 Claims**



1. A thermal ink-jet ink comprising water, a compatible colorant, and from about 2% to about 20% by weight of a humectant selected from the group consisting of compounds having the formula:



wherein X can be an alkyl group having from 1 to 3 carbon atoms, $-NH_2$, $-CH_2NH_2$, and a cyclic ether moiety, and mixtures of such compounds.

5,389,133

INK COMPOSITIONS FOR INK JET PRINTING

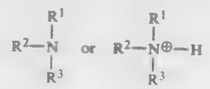
Kurt B. Gundlach, Pittsford; Richard L. Colt, Rochester; Edward J. Radigan, Jr., Hamlin; William M. Schwarz, Webster, and Julia A. Kohlmeier, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 136,146, Oct. 15, 1993, which is a continuation-in-part of Ser. No. 992,240, Dec. 17, 1992, Pat. No. 5,258,064. This application Apr. 14, 1994, Ser. No. 227,828

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 H **20 Claims**

1. An ink composition which comprises (a) water; (b) an anionic dye; (c) N,N'-bis(3-aminopropyl)-1,2-ethylenediamine; (d) a monoamine compound of the formula



wherein R^1, R^2, and R^3 are independently selected from the

group consisting of hydrogen, alkyl, and substituted alkyl; (e) a component selected from the group consisting of phosphorous acid and phosphite salts; and (f) an optional organic component selected from the group consisting of sulfolane, N-methyl pyrrolidone, dimethyl sulfoxide, and mixtures thereof.

5,389,134

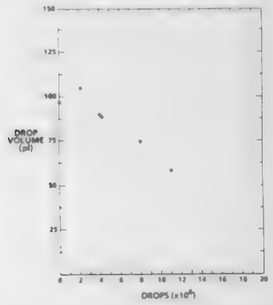
INK COMPOSITIONS FOR INK JET PRINTING

Marcel P. Breton, Mississauga; Bärbel McGibbon, Oakville, and H. Bruce Goodbrand, Hamilton, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

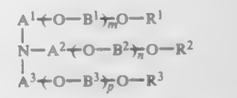
Filed Jul. 18, 1994, Ser. No. 276,592

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 H **17 Claims**



1. An ink composition which comprises water, a colorant, and an additive compound of the formula



wherein A^1, A^2, A^3, B^1, B^2, and B^3 each, independently of each other, are linear alkenyl groups, A^1, A^2, A^3, B^1, B^2, and B^3 each, independently of each other, are either unsubstituted or substituted with alkyl groups, m, n, and p each, independently of each other, are integers of from 0 to about 10, and R^1, R^2, and R^3 each, independently of each other, are hydrogen, alkyl groups, cycloalkyl groups, phenyl groups, or alkylphenyl groups.

5,389,135

CHEMISTRY TO PREVENT THE BUILD UP OF HARD ASH DEPOSITS ON EQUIPMENT

Richard J. Mouche, Batavia, Ill., and Dana Novak, Fairbanks, Ak., assignors to NALCO Chemical Company, Naperville, Ill.

Filed Feb. 16, 1994, Ser. No. 197,522

Int. Cl.[6] C09D *105/14, 7/12*

U.S. Cl. 106—162 **10 Claims**

1. A method of preventing ash deposition on equipment, comprising:

a) adding a hemicellulose extract to phosphonate to form a mixture, having a hemicellulose extract to phosphonate ratio between 75:1 to 100:1; and

b) introducing an effective amount of the mixture to the equipment to prevent ash deposition.

5,389,136

WAX DISPERSIONS, THEIR PRODUCTION AND USE

Bernard Danner, Riedisheim, France, assignor to Sandoz Ltd., Basel, Switzerland

Filed Mar. 2, 1993, Ser. No. 25,206

Claims priority, application Germany, Mar. 4, 1992, 4206714

Int. Cl.[6] C09D *191/06*

U.S. Cl. 106—271 **22 Claims**

1. An aqueous wax dispersion (G) comprising: a wax mixture (A) of;

(A_1) at least one non-oxidized microcrystalline wax [(A_1)] with a needle penetration according to ASTM-D 1321<20 dmm and melting range above 65° C.

and

(A_2) at least one oxidized hydrocarbon wax [(A_2)] with a needle penetration according to ASTM-D 1321<4 dmm and, optionally at least one wax selected from:

(A_3) at least one non-oxidized paraffin wax having needle penetration according to ASTM-D 1321<55 dmm and melting range not exceeding 65° C., and,

(A_1) at least one cationically modified oxidized hydrocarbon wax, and,

(B) a cationic dispersant composition.

5,389,137

PROCESS FOR DYEING ASPHALT

Günter Linde, Krefeld; Manfred Eitel, Kempen; Gerald Büchner, Krefeld-Huels; Peter Kresse, and Günther Teichmann, both of Krefeld, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Apr. 19, 1993, Ser. No. 47,925

Claims priority, application Germany, Apr. 30, 1992, 4214195

Int. Cl.[6] C09D *195/00*

U.S. Cl. 106—281.1 **8 Claims**

1. A process for dyeing at least one of asphalt and bitumen with inorganic granulated pigments, wherein inorganic pigments, to which have been added at least one binding agent in a quantity of 0.1 to 10% by weight, relative to the inorganic pigments, said binding agent being selected from the group consisting of oils, waxes, polyols, polyethers and paraffins, are granulated and mixed with the at least one of asphalt and bitumen, further wherein said oils have a kinematic viscosity at 40° C. of 1.6 to 1,500 mm^2/s and said waxes, polyols, polyethers and paraffins have dropping points of between 50° and 180° C.

5,389,138

OVEN PRETREATMENT AND CLEANING COMPOSITION CONTAINING SILICONE

David R. Harry, Jr., Oak Ridge, N.C., assignor to Kay Chemical Company, Greensboro, N.C.

Filed Mar. 31, 1993, Ser. No. 41,227

Int. Cl.[6] C09K *3/00;* **F24C** *15/20;* **B32B** *19/00*

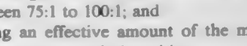
U.S. Cl. 106—287.14 **21 Claims**

1. A food-safe composition for the pretreatment of a surface that is liable to soiling by organic food deposits, said composition consisting essentially of:

a. a food-safe, inorganic thickening agent which is substantially insoluble in an alkaline aqueous composition and which is present in an amount sufficient so that, during application to the surface, the composition is capable of forming a continuous coating adhered to all desired portions of the surface;

b. an alkaline, food-safe, water-soluble inorganic salt in an amount sufficient so that the composition is readily removable with water or an aqueous solution after the composition has been dried and soiled;

c. a food-safe silicone polymer of the formula I



wherein n represents the number of polymer units needed to make the silicone polymer resistant to oxidation, shear,

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or decomposition at elevated temperatures, which silicone polymer is present in an amount sufficient so that the continuous coating is transparent or translucent after the composition has been applied to the surface and dried; and optionally

d. a food-safe mineral oil, wherein, when said food-safe mineral oil is included in said food-safe composition, said mineral oil and said silicone polymer are present in a combined amount sufficient so that the composition is transparent or translucent after the composition has been applied to the surface and dried.

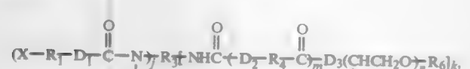
5,389,139

NITRO-SUBSTITUTED POLYMERIC CORROSION INHIBITORS FOR ALUMINUM FLAKE PIGMENT

Clint W. Carpenter, Royal Oak, and Jeanne M. De Haan, Southfield, both of Mich., assignors to BASF Corporation, Southfield, Mich.

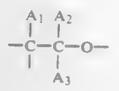
Filed Feb. 14, 1994, Ser. No. 195,961
Int. Cl.[6] C09C *1/62*
U.S. Cl. 106—404 **19 Claims**

1. A composition, comprising a metal surface modified with at least one compound, wherein the compound is of the formula



where X is NO_2 and wherein R_1 is an alkyl, aryl or alkylaryl group;

D_1 is either a divalent radical selected from the group consisting of —O—, —NA_4, and —S—, or a trivalent radical of the formula



wherein A_1, A_2, A_3 and A_4 are each independently hydrogen or alkyl of one to twelve carbon atoms;

R_2 is hydrogen or a covalent bond with D_1, with the proviso that R_2 is only a covalent bond with D_1 when D_1 is a trivalent radical;

R_3 is a polymeric backbone; D_2 and D_3 are divalent radicals, each independently —O— or —NA_5—, where A_5 is hydrogen or alkyl of one to twelve carbon atoms;

R_4 is a divalent radical selected from straight or branched alkylenes of three to thirty carbon atoms;

R_5 is hydrogen or a mixture of hydrogen and alkyl of one to eight carbon atoms;

R_6 is alkyl of one to thirty carbon atoms; m and n are integers, each independently being one to one thousand, and j and k are integers, each independently being one to fifty.

5,389,140

ELECTRODEPOSITION PAINT COMPOSITION

Yoshio Yasuoka, Fujisawa; Masafumi Kume, and Hidehiko Haneishi, both of Hiratsuka, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Oct. 28, 1993, Ser. No. 141,943
Claims priority, application Japan, Oct. 30, 1992, 4-316646
Int. Cl.[6] C09C *1/04*
U.S. Cl. 106—428 **18 Claims**

1. A cationic electrodeposition paint composition which contains a titanium oxide pigment having a coating consisting essentially of a complex of hydrous zinc oxide and hydrous aluminum oxide, wherein the coating amount of the complex based on the titanium oxide is such that the hydrous zinc oxide is 1.3 to 12.5% by weight as ZnO and the hydrous aluminum oxide is 1 to 10% by weight as Al_2O_3.

5,389,141

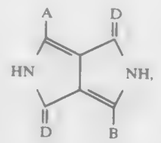
STABILIZATION OF PYRROLOPYRROLE PIGMENTS

Laurent Chassot, Praroman, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 26,964, Mar. 5, 1993, abandoned. This application Dec. 22, 1993, Ser. No. 171,896
Claims priority, application Switzerland, Mar. 5, 1992, 00692/92
Int. Cl.[6] C08K *5/00*
U.S. Cl. 106—498 **14 Claims**

1. A light-stabilised pigment composition comprising

a) at least one pyrrolo[3,4-c]pyrrole pigment of the formula



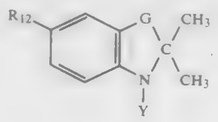
(I)

in which

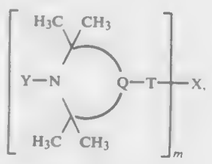
A and B, independently of one another, are isocyclic or heterocyclic aromatic radicals; and

D is an oxygen or sulfur atom; and

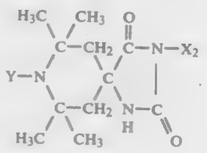
b) from 1 to 100% by weight, based on the pigment, of a nitroxyl compound of the formula



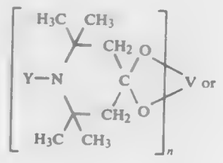
(VI)



(VII)

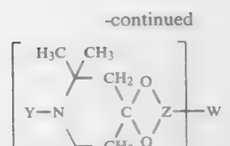


(XII)



(IX)

-continued



(X)

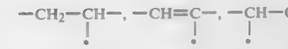
in which

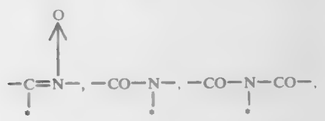
R_{12} is C_1–C_{18}alkyl or C_1–C_{18}alkoxy;

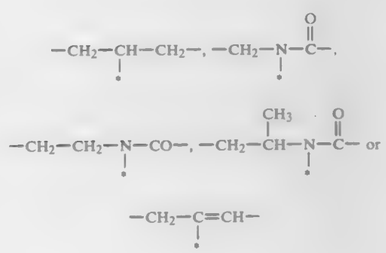
G is a divalent group of the formula —CR_{13}=CH— or —CHR_{13}—CH_2—;

R_{13} is C_1–C_{18}alkyl;

Q is a group of the formula

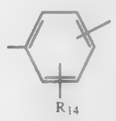






in which the bond denoted by * is the bond leading to T;

T is a direct bond or a group of the formula

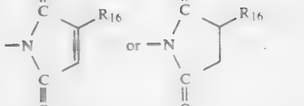


in which

R_{14} is hydrogen, halogen or C_1–C_4alkyl, is —$(CH_2)_r$—, in which r is 1 or 2;

m is the number 1, 2, 3, 4 or 6;

X, if m=1, is hydrogen, C_1–C_{18}alkyl, phenyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, phenyl or halogen, or, under the condition that T, if bonded to a nitrogen atom, is not a direct bond, is a group of the formula —OCO—$NR_{15}R_{16}$, —OSO_2—$NR_{15}R_{16}$, —OCO—R_{16}, —$COOR_{16}$, —$CONR_{15}R_{16}$, —NR_{15}—COR_{16}, —NR_{15}—$CONR_{15}R_{16}$, —OR_{16}, —$NR_{15}R_{16}$,



(X)

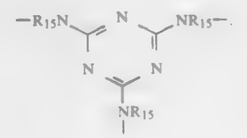
in which R_{15} is hydrogen or C_1–C_{18}alkyl, R_{16} is C_1–C_{18}alkyl, C_2–C_{12}alkenyl, C_5–C_{12}cycloalkyl, phenyl or naphthyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen, phenyl or nitro, or a —$(CH_2)_s$—$CHR_{17}R_{18}$ group where s is zero, 1, 2 or 3, R_{17} is hydrogen, methyl or phenyl, and R_{18} is —OH, halogen, —$COOCH_3$ or —$COOC_2H_5$;

X, if m=2, is a group of the formula —$(CH_2)_p$ or, under the condition that T, if bonded to a nitrogen atom, is not a direct bond, a group of the formula —O—$(CH_2)_p$—O—, —NR_{15}—$(CH_2)_p$—NR_{15}—, —OCO—M—COO—, —NR_{15}—CO—M—CO—NR_{15}—, —OCO—NH—M—NH—COO— or —NR_{15}—CONH—M—NH-CO—NR_{15}—, in which M is —$(CH_2)_p$—,

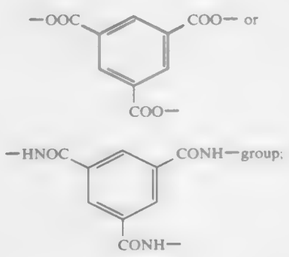


and p is a number between 2 and 10;

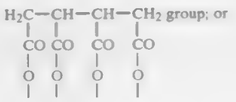
X, if m=3, is a



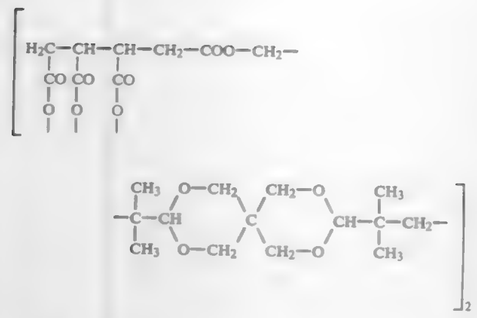
X, if m=4, is a



X, if m=6, is a



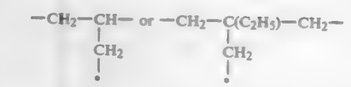
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group;
X_2 is C_8–C_{18}alkyl;
n is the number 1 or 2;
V, if n=1, is C_2–C_8alkylene, hydroxyalkylene or C_4–C_{22}acyloxyalkylene; or
V, if n=2, is the $(—CH_2)_2C(CH_2—)_2$or



group;
Z is a group of the formula



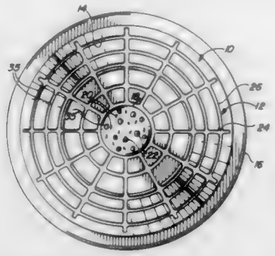
in which the bond denoted by * is the bond leading to W;
W, if n=1, is a —OCOR$_{19}$ group, in which R_{19} is C_1–C_{18}alkyl, or phenyl or naphthyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy or halogen; or
W, if n=2, is a group of the formula —OCO—$(CH_2)_p$—COO— or



and
Y is O•.

5,389,142
METHOD AND COMPOSITION FOR MAKING AN IMPROVED FRANGIBLE BIODEGRADABLE CLAY TARGET
Patrick T. Moore, 24204 Dango Dr., Santa Clara, Calif. 91355
Filed Feb. 4, 1994, Ser. No. 191,477
Int. Cl.[6] C04B *12/04*
U.S. Cl. 106—632 4 Claims

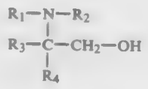
1. An improved composition for making a frangible, biodegradable clay target, said composition comprising a uniform plastic blend of the following ingredients:
a) 1–2 percent, by weight of said composition, of a binder consisting of about 1–2 percent of sodium silicate and 0–1 percent of dextrin, by weight of said composition;



b) up to about 10 percent, by weight of said composition, of water; and,
c) the remainder consisting of clay.

5,389,143
LOW SHRINKAGE CEMENT COMPOSITION
Ismail Abdelrazig, Columbia, Md., and Paul C. Scheiner, Maynard, Mass., assignors to W. R. Grace & Co.-Conn., New York, N.Y.
Filed Jul. 29, 1993, Ser. No. 99,758
Int. Cl.[6] C04B *24/12*
U.S. Cl. 106—696 16 Claims

1. A cement admixture useful in controlling drying shrinkage of a cement composition comprising a mixture of at least one compound of the formula:



wherein R_1 and R_2 are each individually selected from hydrogen atom or a linear or branched alkyl group having 1 to 3 carbon atoms; R_3 and R_4 are each individually selected from hydrogen atom or a linear or branched alkyl group containing 1 to 8 carbon atoms provided that R_3 and R_4 groups together represent at least two (2) carbon atom; and at least one cement water-reducing agent; wherein the weight ratio of compound to agent is 1–10:0.05–5.

5,389,144
ADMIXTURE FOR SPRAY CONCRETE AND MORTAR AND A METHOD FOR THE MANUFACTURE OF SPRAY CONCRETE AND MORTAR USING THIS ADMIXTURE
Theodor A. Burge, Geroldswil; Gustav Bracher, Rifferswil, and Dieter Mai, Bilten, all of Switzerland, assignors to Sika AG vorm. Kaspar Winkler & Co., Zurich, Switzerland
Filed Jun. 19, 1992, Ser. No. 901,117
Claims priority, application Switzerland, Jun. 21, 1991, 1848/91; Jul. 23, 1991, 1848/91
Int. Cl.[6] C04B *22/00*
U.S. Cl. 106—737 21 Claims

1. A method for controlling dust formation and rebound in the processing of spray concrete or spray mortar, comprising the addition of an admixture consisting of an aqueous silicic acid sol or the addition of an admixture comprising an aqueous silicic acid sol to the concrete or mortar, wherein said addition of the admixture is in an amount effective to reduce dust formation and rebound in the processing of spray concrete or spray mortar.

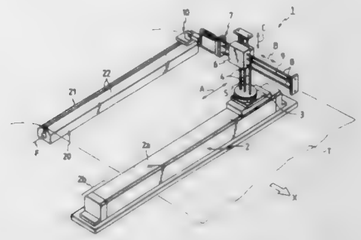
5,389,145
CEMENT MIXING SYSTEM
D. V. Satyanarayana Gupta; Marek K. Pakulski, both of The Woodlands, and William C. Pumphrey, Spring, all of Tex., assignors to The Western Company of North America, Houston, Tex.
Filed Dec. 29, 1993, Ser. No. 174,786
Int. Cl.[6] C04B *24/00*
U.S. Cl. 106—807 10 Claims

1. A method for continuously producing a settable cement-/water/hydrocarbon liquid slurry comprising mixing dry powdered cement with a hydrocarbon liquid to produce a pumpable cement/hydrocarbon liquid slurry, accurately metering said cement/hydrocarbon liquid slurry and water into mixing means, mixing the cement/hydrocarbon liquid slurry with the water to form a settable cement/water/hydrocarbon liquid slurry.

5,389,146
GROUTING COMPOSITION AND METHOD
Andrew W. Lino, Kingwood, Tex., assignor to Baroid Technology, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 46,327, Apr. 12, 1993, abandoned. This application Nov. 22, 1993, Ser. No. 156,097
Int. Cl.[6] C04B *12/00*
U.S. Cl. 106—811 5 Claims

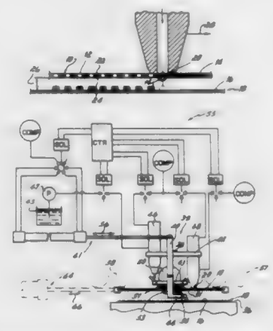
1. A pumpable, reswellable grouting composition mixable with water for sealing an earthen borehole or other subsurface cavity, consisting of 88–90% by weight of granular sodium bentonite, 6–7% by weight of finely ground sepiolite, and 4–5% by weight of granular ammonium sulfate.

5,389,147
CLEANING METHOD AND APPARATUS FOR APPLICATION-EDGE SURFACES
Keiji Shigesada; Akihiro Suzuki, and Norio Shibata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 26, 1992, Ser. No. 935,158
Claims priority, application Japan, Aug. 29, 1991, 3-076239[U]; Jul. 13, 1992, 4-207063
Int. Cl.[6] B05C *11/08*
U.S. Cl. 118—70 9 Claims



1. A cleaning apparatus for removing foreign matter from an elongated application apparatus which applies a dispersion liquid to a flexible carrier, comprising:
an elongated base positioned substantially parallel to a longitudinal axis of said application apparatus;
a cleaning head for removing said foreign matter from said application apparatus;
first moving means for moving said cleaning head in a direction parallel to said base, said first moving means being mounted to said base and supported by said base; and
second moving means for moving said cleaning head in a direction towards and away from said application apparatus so as to move said cleaning head into and out of contact with said application apparatus, said second moving means being mounted on said first moving means, and said cleaning head being mounted on said second moving means;
wherein said cleaning head wipes foreign matter from said application apparatus while said cleaning head is being moved in said direction parallel to said base after said cleaning head has been moved into contact with said application apparatus by said second moving means.

5,389,148
SPRAY APPARATUS UTILIZING POROUS SHEET
Masafumi Matsunaga, Yokohama, Japan, assignor to Nordson Corporation, Ohio
Filed Jan. 28, 1993, Ser. No. 10,430
Int. Cl.[6] B05C *5/00, 11/00;* B05B *3/00*
U.S. Cl. 118—300 4 Claims



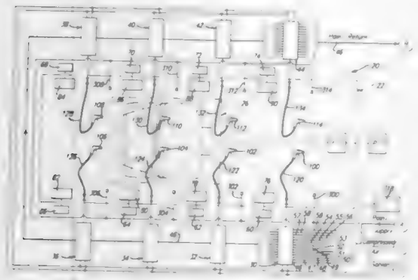
1. A spraying apparatus comprising:
a sheet having first and second sides and a plurality of pores formed therethrough;
means for filling the pores with a liquid;
means for removing excess liquid from the first and second sides of the sheet;
nozzle means directed at the first side of the sheet and adapted to supply pressurized fluid to the sheet to spray the liquid from the pores onto the top surface of a substrate spaced from the second side of the sheet, the sheet not being in contact with the substrate, wherein the filling means, the removing means and the nozzle means are mounted to a frame; and
means for linearly moving, relative to the sheet and the substrate, the frame and the filling means, the removing means and the nozzle means mounted thereto.

5,389,149
PAINT SYSTEM
Richard J. Carey, Milford, and James H. Kelly, Farmington Hills, both of Mich., assignors to Monarch Design Company, Inc., Farmington Hills, Mich.
Filed Dec. 8, 1993, Ser. No. 164,023
Int. Cl.[6] B05B *7/00*
U.S. Cl. 118—302 4 Claims

1. A paint system comprising:
a plurality of paint pots;
a plurality of paint pumps;
a plurality of color changers;
a spray gun; and
a plurality of paint circulating lines extending in series loop relationship between said paint pots, paint pumps, color changers and back to said paint pots, respectively, each of said color changers accepting said spray gun for connection to a discrete paint circulating line, selectively, each of

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said paint pumps being energizable, selectively, to constantly circulate paint through its associated paint circulating line from its associated paint pot to its associated color changer thence back to its associated paint pot.

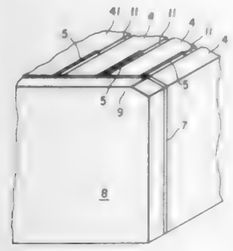


5,389,150

COATING HOPPER INSERTS

William Baum, Rochester, and Douglas R. Korn, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 26, 1993, Ser. No. 37,970
Int. Cl.[6] B05C *11/00*
U.S. Cl. 118—410 12 Claims



1. An apparatus comprising a coating hopper having at least one metering slot bounded by a first wall and second wall, the slot having a first width; and

one or more inserts having a second width less than the first width and a thickness less than or equal to the distance between the first and second wall, the insert insertable and removable from the metering slot without coating hopper disassembly wherein when the insert is inserted in the metering slot the insert is securely held by friction between the insert and the first and second wall bounding the metering slot, so that the metering slot's width is determined by the second width of said one or more inserts and the first width of the metering slot.

5,389,151

INTERCHANGEABLE CONTACT/NON-CONTACT DISPENSING SYSTEM

Wesley Fort, Norcross, Ga., assignor to Nordson Corporation, Westlake, Ohio

Filed Mar. 15, 1993, Ser. No. 31,738
Int. Cl.[6] B05C *1/00, 5/00;* B05B *1/00*
U.S. Cl. 118—411 4 Claims

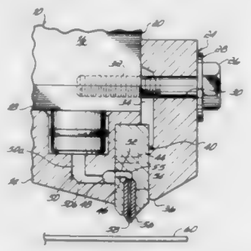
1. An adhesive dispensing system comprising:

a gun body having at least one internal fluid conduit;

an adapter mounted below the body, the adapter including at least one internal fluid passage in fluid communication with the conduit, the at least one passage terminating in a channel;

a clamp removably securable to the gun body and having a clamping portion which resides a pre-determined distance from the adapter when the clamp is secured to the gun body, said pre-determined distance being sufficiently great to accommodate non-contact dispensing means; and

dispensing means having a thickness equal to said pre-determined distance so as to be compressively held in a dispensing position defined by the pre-determined distance between the clamping portion and the adapter when the clamp is secured to the gun body, the dispensing means including a plurality of fluid passageways aligned with the channel when the dispensing means is located in the dispensing position, the dispensing means adapted to receive adhesive from the channel and to convey the adhesive outwardly from the system, via the passageways, and onto a surface, the dispensing means further including a nozzle plate for operation in a non-contact mode of dispensing said adhesive and a spreader assembly for operation in a contact mode of dispensing said adhesive, the nozzle plate and the spreader assembly being interchangeably positionable in the dispensing position by securing and unsecuring, respectively, the clamp to the gun body, the dispensing means thereby adapted to dispense in one of the following modes, contact and non-contact, and to facilitate changeover of the system to dispense in the other of the modes.



5,389,152

APPARATUS FOR DENSIFICATION OF POROUS BILLETS

Garrett S. Thurston, Lowell; Raymond J. Suplinskas, Haverhill, both of Mass.; Thomas J. Carroll, Salem, N.H.; Donald F. Connors, Jr., Tewksburg, Mass.; David T. Scaringella, Franklin, Mass., and Richard C. Krutenat, Belmont, Mass., assignors to Avco Corporation, Providence, R.I.

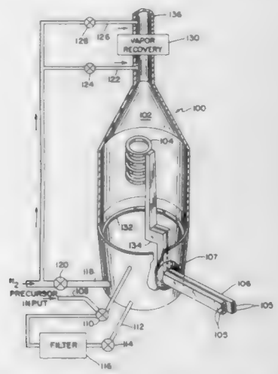
Filed Oct. 9, 1992, Ser. No. 959,299
Int. Cl.[6] B05D *3/14*
U.S. Cl. 118—429 24 Claims

17. A reactor for densifying a porous billet comprising:

a) a reactor for containing a precursor liquid;

b) means, within the reactor, for heating the porous preform to a temperature sufficient to cause the precursor liquid to pyrolize and deposit material within the pores of the porous billet; and

c) wherein said means for heating comprises an induction coil having a plurality of turns of conductive material with the spacing between turns varying along the length of the induction coil.

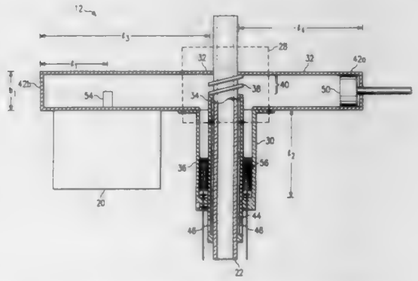


5,389,153

PLASMA PROCESSING SYSTEM USING SURFACE WAVE PLASMA GENERATING APPARATUS AND METHOD

Ajit P. Paranjpe, Plano, and Steve S. Huang, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 19, 1993, Ser. No. 19,941
Int. Cl.[6] C23C *16/50;* H05H *1/46*
U.S. Cl. 118—723 MP 20 Claims



16. A processing system comprising, in combination:

a processing chamber;

a plasma generator comprising:

a section of rectangular waveguide including first and second arms;

a magnetron coupled to one of said arms;

a section of coaxial waveguide coupled through a first wall of said section of rectangular waveguide to define a cavity therebetween, said section of coaxial waveguide comprising:

a first cylinder;

a second cylinder slidably disposed within said first cylinder, a space disposed between portions of said first and second cylinders defining a portion of said cavity, an end of said second cylinder disposed proximate to a second wall of said rectangular waveguide and defining a space therebetween; and

an elongated discharge tube disposed proximate one end thereof within said second cylinder, said discharge tube extending out of said second cylinder, through said second wall and into said processing chamber for providing plasma thereto; and

a coil disposed around said discharge tube in the portion of said discharge tube disposed between said second cylinder and said second wall; and

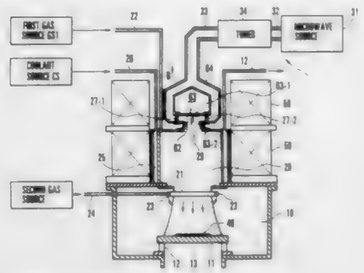
a gas source coupled to the end of said discharge tube proximate said second cylinder.

5,389,154

PLASMA PROCESSING APPARATUS

Nishimura Hiroshi; Ono Toshiro, and Matsuo Seitaro, all of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone, Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 81,934
Claims priority, application Japan, Jun. 23, 1992, 4-187369; Mar. 22, 1993, 5-085183
Int. Cl.[6] C23C *16/50*
U.S. Cl. 118—723 MR 8 Claims



1. A plasma processing apparatus comprising:

a plasma chamber having a microwave introducing hole;

microwave supplying means;

a first microwave waveguide means for guiding microwave energy from said microwave supplying means;

a second microwave waveguide means for guiding microwave energy to said microwave introducing hole upon receiving an output from said first microwave waveguide means; and

external magnetic field supplying means for supplying an external magnetic field to said plasma chamber,

wherein said second microwave waveguide means comprises a vacuum waveguide and a dielectric window mounted within the second microwave waveguide means with an opening of the second microwave waveguide means being formed contiguous to a side of said microwave introducing hole, said vacuum waveguide being arranged at a position where the external magnetic field applied from said external magnetic field supplying means has a field strength greater than the field strength of a magnetic field which satisfies an ECR condition, and causing the microwave guided from said first microwave waveguide means to propagate through said dielectric window in a direction perpendicular to the external magnetic field such that the electric field of the microwave is parallel to the external magnetic field applied to said second microwave waveguide means by said external magnetic field supplying means,

said dielectric window is arranged at a position at which at least a portion of said dielectric window cannot be seen directly from said microwave introducing hole, and

the propagating direction of the microwave is changed at a position immediately above said plasma chamber, at which the external magnetic field strength is higher than the magnetic field strength which satisfies the ECR condition, thereby introducing, through said opening, the microwave to said microwave introducing hole along the external magnetic field,

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whereby converting a raw material in said plasma chamber into plasma by electron cyclotron resonance (ECR).

5,389,155
LIQUID REMOVAL PROCESS IN PIPELINES THROUGH A MOVING PISTON

Paulo César Lima, Rio de Janeiro, Brazil, assignor to Petroleo Brisileiro S.A. - Petrobras, Rio de Janeiro, Brazil

Filed Jul. 30, 1993, Ser. No. 99,517
Claims priority, application Brazil, Jul. 31, 1992, 9202987; Jul. 5, 1993, 9202987
Int. Cl.[6] B08B *9/00, 9/04, 902*
U.S. Cl. 134—8 **5 Claims**

1. A method for removing liquids from the interior surfaces of a gas conducting pipeline comprising: introducing a piston into the pipeline in contact with said interior surfaces; passing said piston through said pipeline by means of a pressure differential on opposite sides of said piston; and pushing the liquids in said gas conducting pipeline through said pipeline by said piston, wherein said piston is formed as a cylindrical body consisting essentially of flexible, uncoated, spongy polymeric material having a density lower than 40 kg per cubic meter and a ratio of 1.5:1 to 2:1 between length and diameter of said piston so as to ensure a minimum liquid removal efficiency of 90% with minimum diameter loss of said piston as a result of passage through said pipeline.

5,389,156
DECONTAMINATION OF HYDROCARBON PROCESS EQUIPMENT

Nishaneth K. Mehta, and Richard W. Krajicek, both of Houston, Tex., assignors to Serv-Tech, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 998,556, Dec. 30, 1992, Pat. No. 5,356,482, which is a continuation-in-part of Ser. No. 805,367, Dec. 30, 1991, abandoned. This application May 13, 1993, Ser. No. 61,187
The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.
Int. Cl.[6] B08B *3/00, 3/08, 9/00*
U.S. Cl. 134—10 **18 Claims**

1. A process for simultaneously decontaminating chemical or refining process equipment in fluid communication to remove deposited contaminants to clean the process flow equipment for use, maintenance or repair comprising the steps of:
draining the flow path to be cleaned of process fluids;
pumping an aqueous solution at elevated temperatures along the process flow path through equipment in fluid communication along such process flow-path, said aqueous solution containing an effective amount of extractant with an affinity for the contaminants and at least one surfactant having emulsification activity between the contaminant and water, to contact the internal surface of the equipment to allow invasion of interstices of deposits by the extractant and surfactant at a temperature and for a time sufficient to entrap contaminants into the solution; and
withdrawing the solution from the process flow-path being cleansed to remove the contaminants from the process equipment with the solution.

5,389,157
VISCOELASTIC CLEANING COMPOSITIONS WITH LONG RELAXATION TIMES

William L. Smith, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 622,213, Nov. 30, 1990, abandoned, which is a continuation of Ser. No. 416,571, Oct. 3, 1989, abandoned, whic! is a division of Ser. No. 196,907, May 20, 1988, Pat. No. 4,900,467. This application Jun. 8, 1993, Ser. No. 74,277
The portion of the term of this patent subsequent to Apr. 30, 2008, has been disclaimed.
Int. Cl.[6] B08B *9/02*
U.S. Cl. 134—22.13 **3 Claims**

1. A method for clearing restrictions caused by organic materials in drain pipes comprising
(a) introducing to a drain pipe having an organic restriction therein an aqueous drain opening composition comprising a cleaning-effective amount of a drain opening active and a viscoelastic thickening system wherein the composition has a relative elasticity between about 10–500 sec/Pa, a relaxation time of at least about 5 seconds, a dilution percentage of less than about 25%, a flow rate Of less than about 100 ml/minute, and a viscosity of at least about 20 cP;
(b) allowing the composition to remain in contact with the organic restriction material to react therewith; and
(c) rinsing the composition and restriction away.

5,389,158
LOW BANDGAP PHOTOVOLTAIC CELL WITH INHERENT BYPASS DIODE

Lewis M. Fraas, Issaquah, and James E. Avery, Fall City, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 840,509, Feb. 24, 1992, Pat. No. 5,248,346, which is a continuation-in-part of Ser. No. 717,635, Jun. 19, 1991, Pat. No. 5,123,968, which is a division of Ser. No. 523,710, May 14, 1990, Pat. No. 5,091,018, which is a continuation-in-part of Ser. No. 339,311, Apr. 17, 1989, abandoned, said Ser. No. 717,635, is a continuation-in-part of Ser. No. 527,061, May 21, 1990, Pat. No. 5,096,505, Ser. No. 527,038, May 21, 1990, Pat. No. 5,118,361, and Ser. No. 755,316, Sep. 5, 1991, Pat. No. 5,217,539. This application Jul. 26, 1993, Ser. No. 97,353
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[6] H01L *31/05*
U.S. Cl. 136—244 **4 Claims**



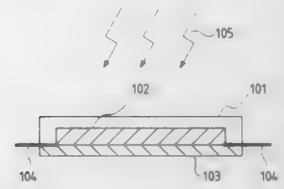
4. A photovoltaic power array comprising a module containing three tandem solar cells, each tandem solar cell including a GaAs primary cell and a GaSb booster cell having a pn-junction and being optically aligned beneath the GaAs cell to receive incident radiation transmitted through the GaAs cell,

wherein in each tandem solar cell the GaAs cell is electrically connected in parallel with the GaSb cell, wherein in the module the respective GaAs cells and GaSb cells of the three tandem solar cells are connected electrically in series, and wherein each GaSb cell is doped with Te to a concentration in the p-region of at least about 6×10^{17} atoms/cm^3 to form an n-region of the pn-junction so that the nondestructive, reverse-breakdown voltage at which the GaSb cell functions as a bypass diode for the module is between about −1.5 and −0.5 volts.

5,389,159
SOLAR CELL MODULE AND METHOD FOR PRODUCING THE SAME

Ichiro Kataoka, Tsuzuki; Soichiro Kawakami, Nara; Masahiro Mori, Tsuzuki, and Shigenori Itoyama, Nara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1993, Ser. No. 112,966
Claims priority, application Japan, Sep. 1, 1992, 4-233775
Int. Cl.[6] H01L *31/048*
U.S. Cl. 136—251 **9 Claims**



1. A solar cell module comprising:
a conductive substrate;
a semiconductor layer having a photoelectric converting function formed on said substrate;
a transparent conductive layer formed on said semiconductor layer; and
an organic resin layer formed by electrostatic powder coating on said transparent conductive layer.

5,389,160
TIN BISMUTH SOLDER PASTE, AND METHOD USING PASTE TO FORM CONNECTION HAVING IMPROVED HIGH TEMPERATURE PROPERTIES

Cynthia M. Melton, Bollingbrook; William Beckenbaugh, and Dennis Miller, both of Barrington, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1993, Ser. No. 69,640
Int. Cl.[6] B23K *35/34*
U.S. Cl. 148—24 **4 Claims**

1. A solder paste comprising a mixture of a first metal powder and a second metal powder dispersed in an expendable vehicle, said first metal powder being formed of a solder alloy composed predominantly of tin and bismuth and having a melting temperature, said second metal powder comprising a metal selected from a group consisting of gold and silver in an amount effective to dissolve in said solder alloy to increase the melting temperature thereof.

5,389,161
PROCESS FOR PHOSPHATING STEEL PARTS TO IMPROVE CORROSION AND WEAR RESISTANCE

Joseph Wawra, Saint-Just/Saint-Rambert, and Jean-Marc Poirson, Saint-Etienne, both of France, assignors to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement, Andrezieux-Boutheon, France

Filed Feb. 8, 1993, Ser. No. 18,853
Claims priority, application France, Mar. 10, 1992, 92 02826
Int. Cl.[6] C23C *22/78, 8/56*
U.S. Cl. 148—242 **17 Claims**

1. Process for phosphating steel parts to improve corrosion and wear resistance, in which the parts undergo a preliminary surface treatment, and thereafter are brought into contact with a solution containing, essentially, protons, phosphate anions and cations selected from the group consisting of Ca^{2+}, Zn^{2+} and Mn^{2+}, wherein the preliminary treatment is carried out in a salt bath in the presence of sulphur-containing species causing the formation of a layer of iron compounds with at least one element selected from the group consisting of carbon and nitrogen, and reciprocal thermal diffusion of the compounds of the layer and of the iron of the part so that the surface of the part comprises, per 1000 atoms, at least 150 atoms of free iron and 5 to 150 atoms of sulphur, and has a porosity defined by an actual surface area to macroscopic surface area ratio of from 20 to 40.

5,389,162
METHOD FOR TREATING A METAL CAN SURFACE

Syunichi Endou; Masahiro Jo, and Satoshi Miyamoto, all of Osaka, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Division of Ser. No. 40,436, Apr. 1, 1993, abandoned. This application Dec. 3, 1993, Ser. No. 161,088
Claims priority, application Japan, Apr. 3, 1992, 4-082508
Int. Cl.[6] C23C *22/82*
U.S. Cl. 148—257 **12 Claims**

1. A method for treating a metal can surface, comprising the steps of forming a phosphate film on the metal can surface and applying to the metal can surface a surface-treating agent comprising an emulsion containing a sorbitan fatty acid ester in a concentration of 100 to 2000 mg/l in a water medium, in order to diminish a friction coefficient of a surface of the metal can body.

5,389,163
METHOD FOR PRODUCING A RUBBER-REINFORCED STEEL WIRE

Shunji Hachisuka, Ibaraki, Japan, assignor to Tokyo Rope Mfg. Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 989,232, Dec. 11, 1992, abandoned. This application May 2, 1994, Ser. No. 236,696
Claims priority, application Japan, Dec. 16, 1991, 3-331920
Int. Cl.[6] C25D *5/50, 7/06*
U.S. Cl. 148—532 **5 Claims**

1. A method for manufacturing a rubber-reinforcing steel wire, comprising the steps of:
providing a steel wire;
forming a brass layer on the steel wire, the brass layer having a Cu content within a range from 63 to 67%;
forming a Ni layer on the brass layer, the Ni layer having a thickness within a range from 0.06 to 0.15 μm; and
drawing the steel wire, having the brass and Ni layers thereon, through a die to form a coating layer made by alloying the Ni layer and the brass layer.

5,389,164

PRODUCTION METHOD OF STRONG AND TOUGH THICK STEEL PLATE

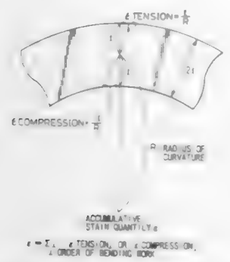
Atsuhiko Yoshie; Takashi Fujita; Masaaki Fujioka, all of Futtsu; Yuji Nomiyama, Oita, and Hiroki Miyawaki, Futtsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 7, 1994, Ser. No. 192,875

Claims priority, application Japan, Feb. 10, 1993, 5-022901; Feb. 16, 1993, 5-026879; Feb. 18, 1993, 5-029143; Sep. 8, 1993, 5-223610

Int. Cl.[6] **C21D** *8/02*

U.S. Cl. 148—547 **15 Claims**



1. A method of producing a strong and tough thick steel plate, comprising:

casting a steel consisting of 0.02 to 0.30 wt % of C, 0.01 to 2.0 wt % of Si, 0.30 to 3.5 wt % of Mn, 0.003 to 0.10 wt % of Al, and the balance of Fe and unavoidable impurities, into an ingot or a slab;

hot rolling said ingot or said slab at a cumulative reduction ratio of at least 20% in a temperature region higher than an Ar_3 transformation point in succession to said casting or after heating, to obtain a hot rolled steel plate having an austenite texture;

applying repeated bending to said hot rolled steel plate in an austenite non-recrystallization temperature region or in a temperature region higher than said Ar_1 transformation point but lower than an Ar_3 transformation point so as to impart a cumulative strain quantity E (%) expressed by the following formula; and

cooling the resulting bent work so as to transform austenite crystal grains in said bent work to fine ferrite crystal grains;

$$-1.14\times10^{-3}T+2.4>E\geq1.71\times10^{-3}T-0.4$$

where

E: sum (%) of the strains which a plate surface receives by repeated bending,

T: temperature (°C.) of the plate surface when said repeated bending is carried out, within the region of Ar_1 to 1,000° C.

5,389,165

LOW DENSITY, HIGH STRENGTH AL-LI ALLOY HAVING HIGH TOUGHNESS AT ELEVATED TEMPERATURES

Alex Cho, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 699,540, May 14, 1991, Pat. No. 5,198,045. This application May 15, 1992, Ser. No. 883,831

Int. Cl.[6] **C22F** *1/04*

U.S. Cl. 148—552 **15 Claims**

1. A method for producing an aluminum alloy product having high fracture toughness and strength at elevated temperatures which comprises the following steps:

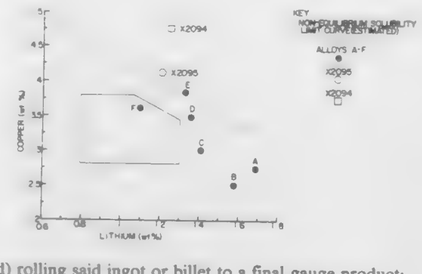
a) casting an alloy of the following composition as an ingot or billet:

$$Cu_aLi_bMg_cAg_dZr_eAl_{bal}$$

wherein a, b, c, d, e and bal indicate the amount of each alloying component in weight percent and wherein $2.8<a<3.8$, $0.80<b<1.30$, $0.20<c<1.00$, $0.20<d<1.00$ and $0.08<e<0.40$, and the alloy has a density ranging from 0.095 to 0.0981 lbs/in^3;

b) relieving stress in said ingot or billet by heating;

c) homogenizing said ingot or billet by heating, soaking at an elevated temperature and cooling;



d) rolling said ingot or billet to a final gauge product;

e) solution heat treating said product by soaking and then quenching;

f) stretching the product to 5 to 11%; and

g) aging said product by heating, said alloy having a Cu:Li ratio falling within an area on a graph having Cu content on one axis and Li content on the other axis, the area being defined by the following corners: (a) 3.8% Cu-0.8% Li; (b) 2.8% Cu-0.8% Li; (c) 2.8% Cu-1.3% Li, (d) 3.45% Cu-1.3% Li and (e) 3.8% Cu-1.07% Li.

5,389,166

WATER BARRIER FORMED FROM A CLAY-FIBER MAT

Alec W. White, Hoffman Estates, Ill., assignor to American Colloid Company, Arlington Heights, Ill.

Continuation-in-part of Ser. No. 677,005, Apr. 2, 1991, Pat. No. 5,237,945, which is a continuation-in-part of Ser. No. 628,497, Dec. 17, 1990, Pat. No. 5,174,231. This application Dec. 16, 1992, Ser. No. 990,989

Int. Cl.[6] **B01D** *39/00;* **B32B** *5/06, 5/16, 5/26, 5/30, 7/08, 31/16;* **C02F** *1/42;* **D04H** *1/46*

U.S. Cl. 156—71 **41 Claims**

1. An article of manufacture comprising a mat of fibers having a powdered or granular material distributed among the fibers throughout at least a portion of a thickness of the article and consolidated sufficiently by sewing or needle punching to prevent substantial loss of the powdered or granular material during handling and installation, said article including an adhesive coating to increase the strength of the product.

40. A method of impeding the flow of Radon gas comprising disposing the article of claim **1** between the Radon gas and an area to be protected from said gas.

5,389,167

METHOD FOR INSULATING A CAVITY

Henry Sperber, 8 Red Fox La., Engelwood, Colo. 80111

Continuation-in-part of Ser. No. 49,569, Apr. 19, 1993, and a continuation-in-part of Ser. No. 875,623, Apr. 28, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 76,258

Int. Cl.[6] **E04B** *2/00*

U.S. Cl. 156—71 **20 Claims**

1. A method for insulating and for simultaneously holding batt insulation in place, comprising:

providing a frame assembly including a cavity back wall and border walls that define at least a first cavity, each of said border walls defining a depth and having an outer face with said depth extending from said cavity back wall to said outer face;

supplying a mixture to said first cavity, said mixture including dissipating foam, adhesive and loose insulation particles, said supplying step including supplying more of said mixture adjacent to said border walls and portions of said cavity back wall adjacent to said border walls than is supplied to a volume of said first cavity disposed inwardly of said border walls and said back wall portions; and



positioning batt insulation in said first cavity with said batt insulation to be held in said first cavity using said adhesive and with at least a majority of said foam subsequently dissipating, said positioning step including spreading said mixture using said batt insulation to cause some of said mixture adjacent to said border walls to spread into said first cavity volume, said adhesive being used to adhere said batt insulation to said border walls along at least portions of said depth thereof.

5,389,168

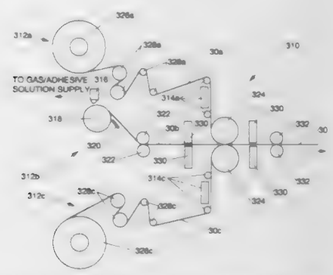
METHOD OF MAKING AN ELASTOMERIC ADHESIVE FOAM AND OF ELASTICIZING GARMENTS

John J. Litchholt, Harrison, and Richard W. Lodge, Cincinnati, both of Ohio, assignors to The Procter & Gambie Company, Cincinnati, Ohio

Filed Jun. 30, 1993, Ser. No. 85,237

Int. Cl.[6] **B32B** *31/04*

U.S. Cl. 156—77 **47 Claims**



1. A method for producing an elastomeric adhesive foam, the method comprising the steps of:

a) providing (i) an elastomeric, hot-melt adhesive material comprising an A-B-A block copolymer, an aromatic modified hydrocarbon resin which associates with both the A blocks and the B block of said copolymer, and optionally a processing oil; and (ii) a gas;

b) melting said adhesive material;

c) forming a solution of said gas in said adhesive material;

d) applying said solution to a substrate;

e) foaming said solution to form an adhesive foam; and

f) stabilizing said adhesive foam.

5,389,169

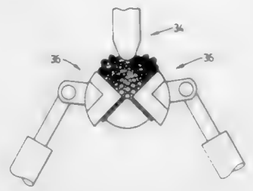
METHOD OF AND APPARATUS FOR REMOVING A SOFTENABLE COVER FROM A GOLF BALL

Corbett McRae, 6462 Finch Ave. West, Unit 155, Rexdale, Ontario, Canada M9V 1T4

Filed Feb. 18, 1994, Ser. No. 198,760

Int. Cl.[6] **B32B** *35/00*

U.S. Cl. 156—98 **15 Claims**



1. A method of removing a softenable cover from a golf ball having a softenable outer cover and an inner core, the method comprising the steps of:

(a) heating the golf ball to a temperature above the softening point of the cover;

(b) cutting a portion of the circumference of the cover through substantially its entire thickness; and,

(c) forcing the core through said cut portion.

5,389,170

METHOD FOR BONDING SUBSTRATES USING MOLTEN MOISTURE REACTIVE ORGANOSILOXANE COMPOSITIONS

William P. Brady, Sanford; Martin E. Cifuentes, Midland; William J. Schoenherr, Midland; David L. Stickles, Midland; Michael R. Strong, Midland; Bernard Vanwert, Midland; Gary A. Vincent, Midland, and Randall G. Schmidt, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 11, 1993, Ser. No. 75,989

Int. Cl.[6] **C03C** *27/00*

U.S. Cl. 156—109 **14 Claims**

1. A method for bonding one substrate to another using a curable organosiloxane composition, the method comprising the sequential steps of

I) causing a curable organosiloxane composition to become flowable by heating the composition above its flow-transition temperature, where the curable composition comprises (a) a resinous organosiloxane copolymer comprising monovalent $R^1{}_3SiO_{\frac{1}{2}}$ units, tetravalent $SiO_{4/2}$ units and up to 6 weight percent, based on the weight of said copolymer, of $XSiO_{3/2}$ units, where X is at least one member selected from the group consisting of hydroxyl groups, hydrolyzable groups and trihydrocarbylsiloxy groups, R^1 is a monovalent hydrocarbon radical, the molar ratio of $R^1{}_3SiO_{\frac{1}{2}}$ to $SiO_{4/2}$ units is from 0.5 to 1.2, and the glass transition temperature of said copolymer is above ambient temperature, and (b) a polyorganosiloxane having a viscosity of from 0.02 to 100 Pa. s at 25° and containing an average of more than two hydrolyzable groups per molecule, at least 80 percent of the repeating units of said polyorganosiloxane are disiloxane units, and where the amount of said resinous organosiloxane copolymer relative to said polyorganosiloxane is sufficient for a vertical layer of said composition to be substantially non-flowable at 25° C. prior to reaction of said hydrolyzable groups and for said composition to have a flow transition temperature within-the range from 40° to 200° C.;

II) applying said composition while in the molten state to at least one surface of a substrate to form a bonding layer;

III) contacting said bonding layer with a second substrate prior to any substantial increase in the flow transition

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temperature of said composition to achieve adhesive bonding of said first and second substrates, and

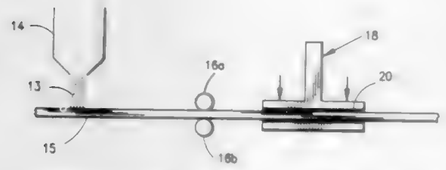
IV) exposing the bonded substrates to moisture for a time sufficient to react said hydrolyzable groups to form a crosslinked structure and increase the flow transition temperature of said composition by at least 10° C.

5,389,171

METHOD OF MAKING A PRINTING BLANKET

Peter Bartholmei, Göttingen, and Jürgen Reissmann, Northeim, both of Germany, assignors to Continental Aktiengesellschaft, Hannover, Germany

Filed Sep. 13, 1993, Ser. No. 119,845
Claims priority, application Germany, Sep. 12, 1992, 4230594
Int. Cl.[6] B32B *31/26*
U.S. Cl. 156—155 **2 Claims**



1. A method of making a multi-layered elastic printing blanket having a reinforcement carrier layer, a cover layer and an elastic intermediate layer, the cover layer being made of rubber or an elastomeric material and having an exposed surface, the layers of the printing blanket defining a composite layer structure, the method comprising the steps of:

providing particles which volatilize to a gas upon the application of heat;

distributing said particles onto-said exposed surface of said cover layer of said printing blanket while said cover layer is unvulcanized;

pressing said particles into said exposed surface;

applying a barrier under pressure to said surface of said unvulcanized cover layer to define a gas tight confined region between said barrier and said surface;

applying heat to said composite layer structure to vulcanize said layers together while at the same time causing said particles to volatilize to a gas under pressure between said barrier and said surface of said cover layer whereby said gas under pressure imparts a predetermined roughness to said surface of said cover layer; and,

removing said barrier from said surface thereby allowing the gas to escape.

5,389,172

METHOD OF CARRYING OUT EXPOSED AGGREGATE TEXTURED CONCRETE FINISHES

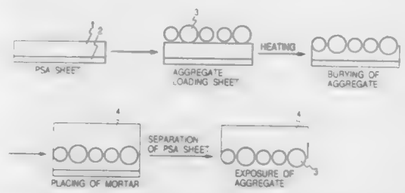
Teruaki Kobayashi; Masahito Oyama; Hiroyuki Enomoto, all of Kawasaki; Hiroyuki Ogawa, Fuchu, and Yutaka Tamura, Fuchi, all of Japan, assignors to Sliontec Corporation, Kanagawa and Seltec Corporation, Tokyo, both of Japan

Filed Sep. 27, 1993, Ser. No. 126,715
Claims priority, application Japan, Oct. 22, 1992, 4-284234
Int. Cl.[6] B28B *1/16, 3/00;* B32B *31/00*
U.S. Cl. 156—155 **4 Claims**

1. A method of making an aggregate exposed finish for concrete using an aggregate loaded adhesive sheet made of a substrate and an adhesive layer coated thereon, and having adhesive properties such that an adhesive strength thereof is sufficient to retain said aggregate before hardening of mortar or concrete, but decreases in contact with hardening mortar or concrete to an extent for facilitating removal of said adhesive sheet from said aggregate, said adhesive layer being of sufficient thickness for burying of said aggregate therein, and comprising the steps of:

loading aggregates on said adhesive sheet;

burying a sufficient part of said aggregates in said sufficiently thick adhesive layer by heating said adhesive layer of said adhesive sheet to thereby fix said aggregates to said adhesive sheet and thus form an aggregate loaded surface on said adhesive sheet;



casting mortar or concrete onto said aggregate loaded surface of said aggregate loaded adhesive sheet;

hardening said mortar or concrete, wherein during said hardening said adhesive strength of said adhesive sheet decreases; and

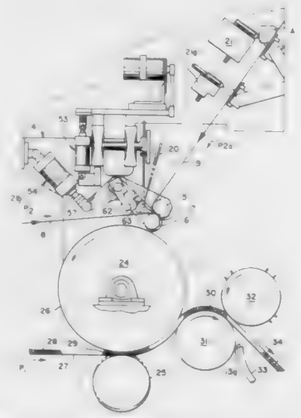
removing said adhesive sheet from said hardened mortar or concrete to expose said aggregate exposed finish for said concrete.

5,389,173

APPARATUS AND PROCESS FOR MAKING DISPOSABLE DIAPER TYPE PRODUCTS

John R. Merkatoris, and Gary E. Johnson, both of Green Bay, Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 984,468, Dec. 2, 1992, abandoned. This application Oct. 4, 1993, Ser. No. 131,285
Int. Cl.[6] A41B *13/00;* A61F *13/15*
U.S. Cl. 156—164 **11 Claims**



1. A method for making disposable diapers having leg opening areas comprising the steps of: advancing a fluff pad-equipped first web along a generally horizontal first path, advancing under tension second and third webs along a second path generally parallel to said first path and into a nip provided by a pair of rolls, applying adhesive to said second web prior to entry thereof into said nip, feeding a plurality of continuous elastic strands into said nip into contact with said adhesive, pressing said strands against aid adhesive equipped web just prior to said second web entering said nip, and shifting said strands laterally about leg opening areas in said second and third webs and partially wrapping said second and third webs about one of said rolls, and uniting thereafter said second and third webs with said first web, said steps including controlling the position of said strands closely adjacent said nip by passing said strands through eyelets of flat, resilient member means.

2. Apparatus for making disposable diaper comprising:

a frame defining a generally horizontal first path,

means on said frame for advancing a fluff pad-equipped first web along said first path,

a pair of rolls providing a nip mounted on said frame aligned with said first path and spaced therefrom,

a drum mounted on said frame in the space between said first path and said pair of rolls, one of said pair of rolls being positioned closely adjacent said drum,

means for advancing under tension along a second path second and third webs into the nip of said rolls, means in said second path for continuously equipping at least one of said webs with adhesive,

means for feeding a continuous elastic strand into said nip between said second and third webs and into contact with said continuous adhesive whereby said second and third webs are united and with said strand being united to said second and third webs,

said strand feeding means including guide means mounted on said frame closely adjacent said nip for shifting said strand laterally, and

roll means on said frame in said first path for cooperating with said drum for uniting said first web with the already united second and third webs,

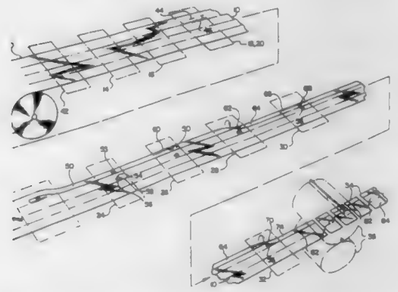
said pair of rolls being positioned relative to said first path so as to have said united second and third webs travel in partial wrapping engagement with said one of said pair of rolls and in partial wrapping engagement with said drum until said first web is united with said already united second and third webs so as to maintain said elastic strand under tension while traveling between said nip and the union of said three webs taking place between said drum and said roll means.

5,389,174

METHOD OF MAKING A CONTROLLABLE FRAGRANCE SAMPLER

Susan Hibsch, Woodridge, and Sharon Rubar, Countryside, both of Ill., assignors to The Lehigh Press, Inc., Cherryhill, N.J.

Division of Ser. No. 766,665, Sep. 25, 1991, Pat. No. 5,242,521.
This application Apr. 27, 1993, Ser. No. 54,785
Int. Cl.[6] B32B *7/00, 31/18;* B42D *15/00*
U.S. Cl. 156—200 **2 Claims**



1. A method of making a plurality of devices having manually-removable elements containing a selectively releasable fragrance, comprising the steps of:

a. providing a moving web of material;

b. longitudinally cutting said moving web of material to form first and second moving webs of material;

c. applying a slurry of adhesive and microcapsules to one of said moving webs of material, said microcapsules containing a fragrance substance;

d. combining said first moving web of material with said second moving web of material so that said slurry is sandwiched between said first and second moving webs;

e. partially die cutting said first and second moving webs of material around said slurry to define a manually-removable element, and;

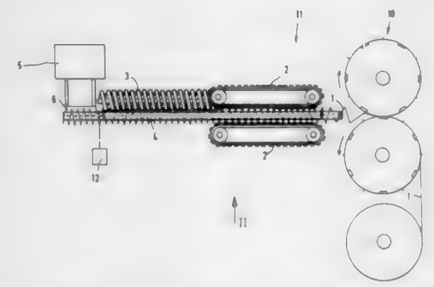
f. transversely cutting said first and second moving webs of material into separate samplers, each including a manually-removable element containing said selectively releasable fragrance which will release a fragrance after removal from the sampler and upon separation of said first and second webs.

5,389,175

METHOD OF MANUFACTURING A PLEATED FILTER MATERIAL

Berthold Wenz, Sachsenheim, Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

Filed Jul. 16, 1993, Ser. No. 92,429
Claims priority, application Germany, Jul. 18, 1992, 4243723
Int. Cl.[6] B31F *1/00*
U.S. Cl. 156—204 **11 Claims**



1. A method for the manufacture of a pleated filter material web from an endless web of filter material, comprising:

scoring the filter material web;

introducing the filter material web between at least two cogbelts spaced apart from one another and disposed above and below the filter material web and running with the filter web, the cogbelts subsequently pleating the filter material web according to the scoring; and

advancing the pleated filter material with a defined distance between pleats by at least one helix adjoining the cogbelts.

5,389,176

RUGGED SHAPED SHEET AND PROCESS FOR MANUFACTURING SAME

Motoyasu Nakanishi, Fuji, and Akira Takayama, Shimizu, both of Japan, assignors to Suzuki Sogyo Co., Ltd., Shizuoka, Japan

Filed Jun. 21, 1993, Ser. No. 79,376
Claims priority, application Japan, Jun. 19, 1992, 4-185923; Oct. 21, 1992, 4-307574; Dec. 9, 1992, 4-351902; Feb. 26, 1993, 5-062843; Jun. 11, 1993, 5-166110
Int. Cl.[6] B29C *41/18*
U.S. Cl. 156—242 **22 Claims**

1. A process for manufacturing a rugged shaped sheet comprising the steps of:

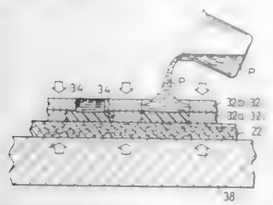
arranging a base sheet member on a base;

arranging, on the base sheet member, perforated plates formed with perforations of a predetermined shape in a pattern-like manner;

pouring an elastomer liquid material into the perforations of each of the perforated plates;

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subjecting the elastomer liquid material to a squeegee treatment; and
curing the elastomer liquid material, wherein
at least two such perforated plates including a base-side perforated plate and a ground-side perforated plate each formed with said perforations are provided;
the base-side perforated plate is first arranged on the base sheet member;
the elastomer liquid is poured in a predetermined amount into the perforations of the base-side perforated plate, subjected to the squeegee treatment and then semicured, resulting in forming a base layer;
the ground-side perforated plate is arranged on the base layer thus formed;



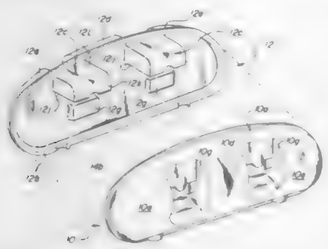
the elastomer liquid material is poured in a predetermined amount into the perforations of the ground-side perforated plate, subjected to the squeegee treatment and cured to a degree sufficient to permit the elastomer liquid material to be removed from the ground-side perforated plate, resulting in forming a ground layer;
the perforated plates are removed from the cured elastomer liquid material in turn subsequent to formation of the ground layer, to thereby obtain a combination of the base sheet member and a rugged pattern of a predetermined configuration adhesively formed on the base sheet member; and
the combination is fully cured to form the rugged shaped sheet.

5,389,177

THERMOFORMING PROCESS FOR MAKING A TWIN SHEET PLASTIC STRUCTURE INCLUDING CAPTURED METALLIC ELEMENT

Lyle H. Shuert, 1034 Stratford Pl., Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 606,173, Oct. 31, 1990, abandoned. This application Sep. 28, 1992, Ser. No. 951,894
Int. Cl.[6] B29C *51/10, 51/12*
U.S. Cl. 156—245 3 Claims



1. A method of forming a metal and plastic composite structure comprising:
providing a metallic element having first and second adjoining portions;
providing a first plastic sheet;
providing a second plastic sheet;
individually heat forming said first plastic sheet to form a first rigid self-supporting preform plastic part;
individually heat forming said second plastic sheet to form a second rigid self-supporting preform plastic part;
following the individual heat forming of the parts, and with the parts in a hot flowable state, assembling said rigid plastic parts and said metallic element to form a composite assembly with portions of said first and second parts fused together to form a rigid self-supporting hollow twin sheet plastic structure defining a void and an opening into said void, further portions of said first and second plastic parts coacting to embrace said first portion of said metallic element at said opening, further portions of said first and second parts coacting to define a passage within the void spaced from the opening, and said second portion of said metallic element positioned within the void such that it passes through the passage and is clamped between the parts at the passage with the parts out of contact with the metallic element between the opening and the passage.

5,389,178

METHOD FOR IMPARTING IMPROVED ADHESION TO POLYOLEFIN SUBSTRATES

Noel G. Harvey, North Wales, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 29, 1993, Ser. No. 128,938
Claims priority, application United Kingdom, Oct. 26, 1992, 9222490
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—249 5 Claims

1. In the process for adhering polyolefin substrates to polar polymer films or laminates, the improvement which comprises:
a) forming a first film or sheet of a multi-stage polymer containing a crosslinked rubbery first-stage formed predominantly from butyl acrylate, and wherein the second-stage is formed predominantly from methyl methacrylate, and wherein the particle size is from about 2 microns to about 15 microns, and wherein the ratio of first-stage to second-stage polymer is at least 3/2;
b) applying the first film or sheet under heat and pressure to a polyolefin sheet or film, wherein the polyolefin is not rubber-modified;
c) separating the two films or sheets mechanically to leave a thin tie-layer of the multi-stage polymer at or near the surface of the polyolefin sheet or film; and
d) laminating to the tie-layer of the so-treated polyolefin sheet or film a polar polymer sheet or film.

5,389,179

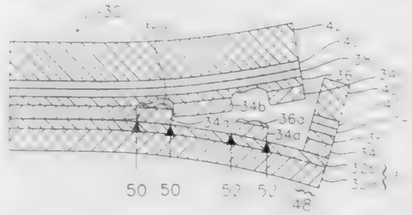
Patent Not Issued For This Number

5,389,180

IMAGING LAMINATE WITH IMPROVED TAB FOR DELAMINATION

George O. MacCollum, Bellingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 799,090, Nov. 27, 1991, Pat. No. 5,279,889. This application Dec. 10, 1993, Ser. No. 164,327
Int. Cl.[6] B32B *31/18*
U.S. Cl. 156—257 13 Claims



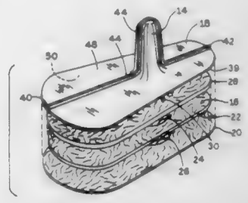
1. A method of preparing a laminar composite structure which comprises the steps of:
providing a composite laminar structure, said composite laminar structure comprising a pair of sheets having therebetween at least a layer of vertically frangible image-forming substance adhered more firmly to one of said pair of sheets than to the other of said pair of sheets, abutting portions of said layer of image-forming substance being attachable more firmly to said other of said pair of sheets than to said one of said pair of sheets as a result of exposure of said portions to intense radiation, for provision of a pair of complementary images upon separation of the sheets after said exposure;
cutting said composite laminar structure into individual laminar units;
defining a marginal portion of said laminar units by cutting a marginal portion of one of said sheets and said frangible layer from the remainder of said one sheet and layer; and
securing said defined marginal portion of said one sheet substantially more strongly to the other of said pair of sheets than said remainder of said one sheet to said other of said sheets.

5,389,181

FEMININE HYGIENE ARTICLE AND METHOD

John P. Vukos, and Billie D. Matelski, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 962,513, Oct. 15, 1992, Pat. No. 5,290,262. This application Oct. 20, 1993, Ser. No. 140,366
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—264 17 Claims



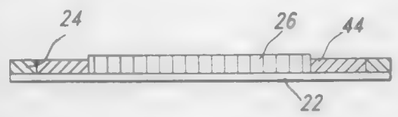
1. A method of fabricating an absorbent feminine hygiene article, said feminine hygiene article comprising an external pad having a length, a width and a predetermined outer perimeter and shape, a soft flexible film baffle, and a soft flexible film sheath adapted to extend vertically from said external pad a distance sufficient to permit insertion of at least a portion of said sheath into a user's vagina when said external pad is placed against the user's labia majora, said method comprising the steps of:
(a) selecting a soft and flexible film material suitable for contact with female genitalia, and impervious to body fluid;
(b) cutting, from said film material, a pair of film blanks, each said blank being shaped such that, when said blanks are joined together, the combination thereof can comprise said predetermined outer perimeter and shape, each said blank comprising (i) a perimeter edge portion extending from a first point to a second point along a first perimeter path describing substantially half of said outer perimeter of said external pad, and (ii) a joinder edge portion adapted to be joined with the other said blank of said pair, said joinder edge portion extending between said first and second points along a second path, different from said first path, said second path, at an intermediate locus, extending away from said perimeter edge portion to thereby describe elements of said sheath;
(c) joining said joinder edge portions of said blanks;
(d) bending said joined blanks to create first and second generally parallel opposed major surfaces thereof, thereby creating a baffle corresponding to said predetermined outer perimeter and shape, said film sheath comprising an extension of said baffle on said second major surface and wherein said first major surface is disposed toward the user; and
(e) joining an absorbent layer to said first major surface of said baffle to form said article.

5,389,182

USE OF A SAW FRAME WITH TAPE AS A SUBSTRATE CARRIER FOR WAFER LEVEL BACKEND PROCESSING

Michael A. Mignardi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 2, 1993, Ser. No. 101,122
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—344 19 Claims



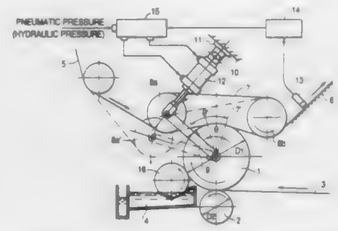
1. A method of fabricating a microelectronic device comprising the steps of:
providing a piece of dicing tape having an adhesive side;
mounting a wafer on the adhesive side of said dicing tape, said wafer containing partially fabricated devices;
subdividing said wafer to separate said partially fabricated devices, said separated devices remaining mounted to said dicing tape;
placing a protective cover over exposed portions of the adhesive side of said dicing tape;
continuing the fabrication of said separated devices while the protective cover remains over the exposed portions of the adhesive side of said dicing tape; and
removing said devices from said dicing tape.

5,389,183

SINGLE-FACER

Yukuharu Seki, and Makoto Ando, both of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1993, Ser. No. 65,389
Claims priority, application Japan, Jun. 5, 1992, 4-169855
Int. Cl.[6] B32B *31/08;* B31F *1/28*
U.S. Cl. 156—359 7 Claims



3. A single-facer comprising: a pair of corrugating rolls for corrugating a core paper web into a wave shape; a paste application member for applying paste to corrugation crest portions of the corrugated core paper web; endless belt means for pressing a liner against the core paper web applied with paste to stick them with each other, the pressing force and wrapping angle of the endless belt means being controllable; a temperature sensor for detecting a surface temperature of a single-faced corrugated cardboard sheet; and regulator means responsive to a signal issued from said temperature sensor for regulating at least either one of a pressing force of said endless belt and a wrapping angle of said endless belt so that said surface temperature may be always held at a predetermined value or higher.

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5,389,184

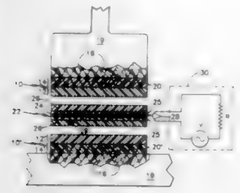
HEATING MEANS FOR THERMOPLASTIC BONDING

Gary J. Jacaruso, Milford; Geoffrey C. Davis, Madison, and Allen J. McIntire, Ansonia, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 860,480, Mar. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 628,245, Dec. 17, 1990. This application Dec. 16, 1993, Ser. No. 168,910

Int. Cl.[6] B32B *31/00*; H05B *3/34*

U.S. Cl. 156—378 11 Claims



1. A heating element structurally configured for interposition and operation between two composite structures to be bonded together for heating a bonding joint therebetween, each composite structure having cured thereto a thermoplastic adhesive strip, each thermoplastic adhesive strip having a thermoplastic layer defining a bonding surface for the respective composite structure, the bonding surfaces defining the bonding joint between the two composite structures to be bonded together, said heating element comprising:

an electrical resistance material;

first and second layers of electrical insulation, said electrical resistance heating material being sandwiched between said first and second layers of electrical insulation;

a pair of electrical leads connected to said electrical resistance heating material; and

a layer of thermoplastic adhesive material encasing said first and second layers of electrical insulation, said thermoplastic adhesive material encasing said first and second layers of electrical insulation being compatible with and structurally configured for contact with the thermoplastic material layers of the thermoplastic adhesive strips that define the bonding surfaces between the two composite structures to be bonded together, said thermoplastic adhesive material being selected from thermoplastic adhesive materials suitable for bonding composite structures together;

said heating element being interposable between the composite structures to be bonded together such that said layer of thermoplastic adhesive material contacts the thermoplastic layers of the composite structures to be bonded together;

said interposable heating element being operable to melt and fuse said layer of thermoplastic adhesive of said interposable heating element to the thermoplastic layers of the composite structures to form the bonding point for the composite structures to be bonded together.

5,389,185

FILM STICKING APPARATUS

Yoji Washizaki, Saitama, Japan, assignor to Somar Corporation, Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 41,329

Claims priority, application Japan, Apr. 3, 1992, 4-110655; Jun. 5, 1992, 4-145742

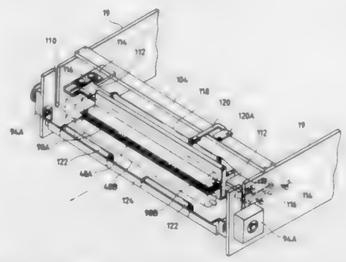
Int. Cl.[6] B05C *1/10, 21/00*

U.S. Cl. 156—390 7 Claims

1. A film sticking apparatus comprising:

a pressure sticking roller for sticking a film onto a surface of a base plate under heat and pressure while conveying said base plate along a base plate conveyance passage;

a wet roller for applying an air bubble generation preventive liquid to said base plate so that said film is stuck to said base plate by said pressure sticking roller as said liquid remains applied to said surface; and



means for preventing said liquid from being applied from said wet roller to said plate, said preventing means comprising a liquid receiver movable along said passage into a space between said base plate and said wet roller.

5,389,186

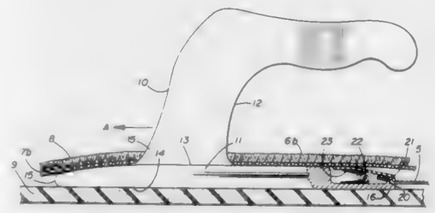
CARPET SEAM TAPE APPARATUS

Wilbert Knockum, 2614 - 99th Ave., Oakland, Calif. 94605

Filed Sep. 9, 1993, Ser. No. 118,955

Int. Cl.[6] B29C *65/00*

U.S. Cl. 156—391 6 Claims



1. A carpet seam tape apparatus for dispensing carpet seam tape, from a stationary axis rotatable roll thereof, below and centered with respect to juxtaposed edges of adjacent carpet sections, comprising

a base having a forward portion and a rearward portion, and further having a top surface and a bottom surface, said base including a handle extending from said top surface said top surface and said bottom surface being substantially smooth to minimize the friction coefficient thereof;

guide means connected to said base adapted for mounting between upturned juxtaposed edges of adjacent carpet sections to be seamed for guiding said base between and substantially parallel to the adjacent carpet sections, said guide means having a configuration to maintain displacement of said juxtaposed edges of adjacent carpet sections when disposed therebetween at substantially less than the width of the carpet seam tape; and

clamping means connected to said base at said rearward portion thereof adapted to engage and align the carpet seam tape substantially centered between the juxtaposed edges of the adjacent carpet sections, said clamping means having a holding force sufficient to result in withdrawal of tape from the roll as said base is moved between said carpet sections.

5,389,187

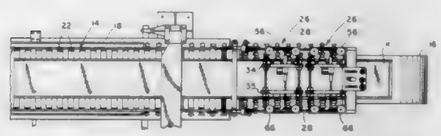
APPARATUS FOR TIRE TREAD APPLICATION

Patrick D. Marks, Cuyahoga Falls, and Michael W. Smith, Mogadore, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 30, 1993, Ser. No. 85,306

Int. Cl.[6] B29D *30/30*

U.S. Cl. 156—405.1 4 Claims



1. Apparatus for tire tread application to a tire carcass said apparatus comprising a conveyor with two guides slidably mounted on a frame over said conveyor and a tire building drum, parallel ways on said frame extending transversely of said conveyor, an adjusting screw mounted on said frame and extending transversely of said conveyor, an adjusting nut threaded on said screw, said guides being slidably mounted on said ways, a pneumatic piston cylinder assembly interposed between said adjusting nut and a first one of said guides for urging said first one of said guides towards a first edge of said tread and a self-centering mechanism connecting said first one of said guides to a second one of said guides for simultaneously urging rollers on said guides toward a second edge of said tread, said piston cylinder assembly including pressure regulating means for regulating an operating pressure of said piston cylinder assembly so that said piston cylinder assembly can apply a continuous constant force at each side of said tire tread while in contact with said tread regardless of variation in a width of said tire tread.

5,389,188

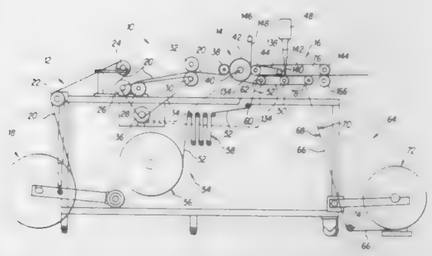
APPARATUS FOR, FORMING PLEATS IN A SHEET MATERIAL

Dennis G. Hicks, Neenah, Wis., assignor to Converting, Inc., Clintonville, Wis.

Filed Dec. 3, 1992, Ser. No. 983,472

Int. Cl.[6] B32B *31/08*

U.S. Cl. 156—473 19 Claims



1. A pleat-forming apparatus for forming pleats in a sheet material, comprising:

a frame;

a pleating drum rotatably supported on said frame, said drum having a plurality of openings and a plurality of radially extendible and retractable teeth positioned within said openings;

a female roller having a plurality of recesses shaped to conform to the shape of said teeth, said female roller being rotatably supported on said frame adjacent to said drum such that said teeth when extended engage said recesses;

a drive source coupled to said drum for rotatably driving said drum;

a mechanism for extending and retracting said teeth during rotation of said drum

a material feed assembly for feeding an unpleated sheet material between said drum and said female roller and at least partially around said drum such that said teeth when extended protrude into the material and into the recesses of said female roller to form pleats in said material; and

a vacuum source coupled to said pleating drum, said pleating drum having at least one conduit connecting said vacuum source to the exterior of said drum such that when a sheet material is fed between said drum and said female roller and at least partially around said drum, the vacuum draws the sheet material against the exterior of said drum.

5,389,189

SPLICING TAPE FEEDING DEVICE FOR USE IN A TAPE SPLICER

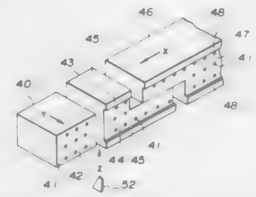
Masayoshi Matsuyama, Machida, and Yoshihiko Miyasaka, Yokohama, both of Japan, assignors to Sony Magnescale Inc., Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 51,867

Claims priority, application Japan, Aug. 26, 1992, 4-227451

Int. Cl.[6] B65H *21/00*

U.S. Cl. 156—506 5 Claims



1. A splicing tape feeding device for supplying a splicing tape to join two separate tapes, said splicing tape having a uniform width in a lateral direction with respect to the feeding direction of the splicing tape, comprising:

a stationary base member having a flat surface;

a movable member displaceable relative to said stationary base member and having a flat surface;

means for defining a tape transport path supporting the splicing tape, on each of the flat surfaces of said stationary base member and said movable member, and for preventing lateral displacement of the splicing tape relative to a feeding direction of the splicing tape, said defining and preventing means being disposed on opposite sides of said tape transport path;

a cutting member movable in a lateral direction of the splicing tape to cut away a leading end of the splicing tape supplied through said tape transport paths;

a movable applying member having a flat surface on which the cut away leading end of the splicing tape is retained, said movable applying member applying the cut away splicing tape onto adjacent ends of the two separate tapes to be spliced;

said stationary member having a distal end portion flat surface which is disposed adjacent said movable applying member and retains the leading end of the splicing tape over the whole width of the splicing tape;

a first mating portion formed on said stationary base member; and

a second mating portion formed on said movable member;

said first and second mating portions being engageable with each other to form a continuous plane of said tape transport paths;

wherein said tape transport paths are kept flush with each other during the movement of said movable member and have a lateral width in a lateral direction with respect to

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the feeding direction of the splicing tape, not less than the width of the splicing tape, and said first and second mating portions cooperate with each other to eliminate a distance in the feeding direction of the splicing tape between adjacent distal ends of said stationary base member and said movable member.

5,389,190

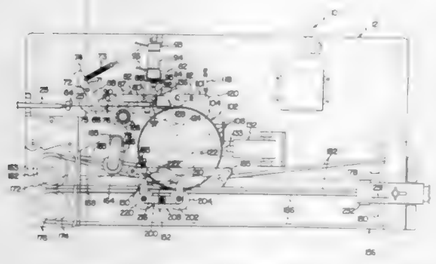
APPARATUS AND METHOD FOR APPLYING A TWIST-TIE TO A PACKAGING CONTAINER

Brian D. Larsen, Worthington; James A. Beckman, Reading; Stan W. Drietz, Worthington; Scott L. Nelson, Worthington; Mike P. Feltman, Worthington, and Gary L. Lowe, Worthington, all of Minn., assignors to Bedford Industries, Inc., Worthington, Minn.

Continuation of Ser. No. 34,350, Mar. 19, 1993, abandoned. This application Jul. 19, 1994, Ser. No. 277,359

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—521 **20 Claims**



1. An apparatus for applying a twist-tie to a surface of a container, comprising:

a frame assembly;

a payout mechanism coupled to the frame assembly, the payout mechanism holding a supply of twist-tie material wherein at least a portion of the twist-tie material is metallic;

means coupled to the frame assembly for extracting a continuous length of twist-tie material from the supply of twist-tie material and for cutting a twist-tie of a desired length from the continuous length of twist-tie material; and

a twist-tie applicator including a rotatable disc having a magnetic mechanism that creates a magnetic force for removing the twist-tie from the extracting and cutting means and for holding the full length of the twist-tie stationary relative to the disc as the disc rotates for application of the twist-tie to the surface of the container.

5,389,191

MOUNTING APPARATUS FOR DEPLOYING AN ELECTRONIC COMPONENT MOUNTS FORMED ON A TAPE CARRIER

Eiji Muramatsu, and Masaru Kamimura, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 818,673, Jan. 9, 1992, abandoned, which is a division of Ser. No. 573,885, Aug. 28, 1990, Pat. No. 5,177,596. This application Oct. 13, 1993, Ser. No. 136,478

Claims priority, application Japan, Aug. 28, 1989, 1-221228

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—510 **6 Claims**

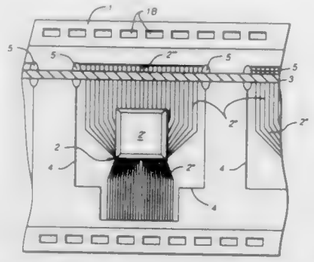
1. A mounting apparatus for deploying a plurality of electronic component mounts spatially formed along a length of a tape carrier for removal therefrom and mounting on an electronic circuit panel apparatus undergoing assembly, comprising

a plurality of cut out boundary, closed loop slits formed through said tape carrier in a series along the length thereof each forming a cutout tape carrier portion on which each an electronic component mount is secured,

a plurality of enlarged opening regions formed along a portion of length of each of said cut out boundary slits, said opening regions having a width greater than a width formed by said cut out boundary closed loop slits,

minimal attachment means extending transversely across said enlarged opening regions for forming a connection between each of said cutout tape carrier portions and a remaining body portion of said tape carrier to minimally hold said each cutout tape carrier portions within the plane of said tape carrier,

each of said mounts having at least one electrical terminal portion formed along a cutout boundary edge for connection to a corresponding electrical terminal portion formed along an edge of said circuit panel apparatus,



conveyor means to transport said tape carrier longitudinally along a first path adjacent to and at a different vertical elevation relative to said circuit panel apparatus,

cutter means positioned over said transported tape carrier in said path ahead of said circuit panel apparatus for consecutively severing said minimal attachment means relative to each of said mounts with severing means extending through the enlarged slit opening regions piercing said minimal attachment means relative to an aligned cutout carrier portion, and

transport means positioned beneath said transported tape carrier for consecutively transporting said severed mounts from said first path for respectively aligning and securing said mount electrical terminal portion with said corresponding circuit panel apparatus electrical terminal portion.

5,389,192

APPARATUS AND METHOD FOR REMOVING A COATING FROM A COATED LINEAR MATERIAL

Hiroaki Takimoto; Hiroshi Suganuma, and Junichi Yoshikawa, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 895,807, Jun. 9, 1992, Pat. No. 5,306,378. This application Jul. 8, 1993, Ser. No. 86,876

Claims priority, application Japan, Nov. 25, 1991, 3-104741

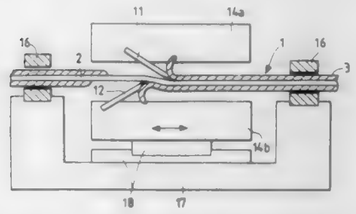
Int. Cl.[6] B32B *35/00*

U.S. Cl. 156—584 **9 Claims**

1. An apparatus for removing a coating from a linear material, the linear material having a predetermined diameter upon which the coating is disposed, the apparatus comprising:

first and second blades each having linear, uninterrupted cutting edges, said blades being disposed at different positions with respect to an axis of the coated linear material, said first and second blades being arranged so that said cutting edges are capable of contacting the coated linear material at sharp angles with respect to said axis, said cutting edges having a width disposed in a direction perpendicular to said axis of the coated linear material, and

means for moving at least one of said blades, permitting said cutting edges of the blades to contact the coated linear material such that said cutting edges are disposed, with respect to said axis, such that the sum of the distances from each of said cutting edges to said axis is less than the



predetermined diameter of the linear material, thereby disposing the coated linear material in a curved state with respect to said cutting edges.

5,389,193

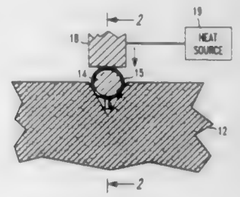
METHODS FOR BONDING ALUMINIZED OPTICAL FIBER

Alexander Coucoulas, Basking Ridge; Ranjan Dutta, Lawrenceville, and Robert Klaiber, Lebanonon, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 14, 1993, Ser. No. 167,255

Int. Cl.[6] H01L *21/306;* **B44C** *1/22*

U.S. Cl. 156—633 **18 Claims**



1. A method for bonding an aluminized optical fiber to a silicon substrate comprising the steps of:

contacting the aluminized optical fiber to a surface of the silicon substrate to define an interface therebetween;

and simultaneously pressing together the aluminized optical fiber and the silicon substrate, and heating the interface of the fiber and the substrate, the heat and pressure being the only energy applied to the interface.

5,389,194

METHODS OF CLEANING SEMICONDUCTOR SUBSTRATES AFTER POLISHING

Michael D. Rostoker, San Jose, and Nicholas F. Pasch, Pacifica, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 14,432, Feb. 5, 1993, abandoned. This application Jun. 15, 1993, Ser. No. 77,809

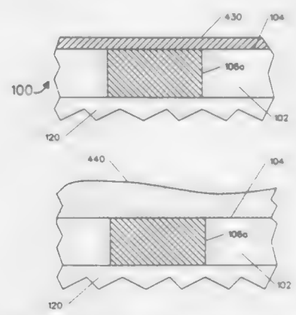
Int. Cl.[6] H01L *21/306*

U.S. Cl. 156—636 **25 Claims**

1. A method of cleaning polishing residue from a semiconductor device, comprising:

providing a semiconductor device;

chemical-mechanically polishing a surface of the semiconductor device with an alumina-containing slurry, thereby leaving a polishing residue over the surface; and



cleaning the surface of the semiconductor device with a cleaning solution consisting essentially of a solution of phosphoric acid and hydrofluoric acid.

5,389,195

SURFACE MODIFICATION BY ACCELERATED PLASMA OR IONS

Andrew J. Ouderkirk, Woodbury; Douglas S. Dunn, Maplewood; Edward C. Yu, St. Paul, and Susan N. Bohlke, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 7, 1991, Ser. No. 665,692

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—643 **38 Claims**

1. A process for modifying a polymeric surface comprising projecting either pulses or a scanned beam of ions or plasma having a molecular weight of at least 1 against a polymeric surface at a fluence of 10^{-3} to 10^{3} J/cm^2 at a pressure less than 0.8 bar with an effective pulse duration of 10 nanoseconds to 1 millisecond, said projecting etching said polymeric surface or adding chemistry to said polymeric surface.

5,389,196

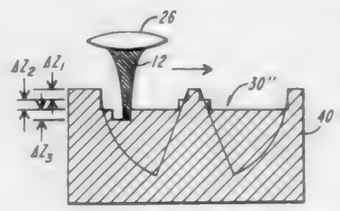
METHODS FOR FABRICATING THREE-DIMENSIONAL MICRO STRUCTURES

Theodore M. Bloomstein, Cambridge; Daniel Ehrlich, Lexington, and Anita M. Flynn, Arlington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 30, 1992, Ser. No. 828,247

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—643 **33 Claims**



1. A method of producing a three-dimensional object, comprising

providing a substrate having an outer surface defining a first interface plane having selected dimensions, the interface plane having a series of address points contained within said selected dimensions,

generating a beam of focused radiant energy that is incident upon at least one selected address point in said plane,

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etching a selected number of the address points to a selected depth by a photochemical reaction induced by the focused radiant energy,

defining at least a second interface plane having selected dimensions disposed below the first interface plane and within the substrate, and

etching a selected number of the address points contained within the second interface plane to a selected depth by the photo-chemical reaction,

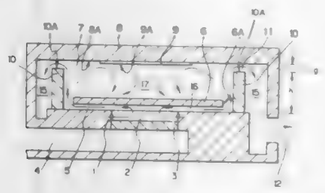
whereby the successive etching of selected address points within the first and second interface planes forms the three-dimensional object in the substrate.

5,389,197

METHOD OF AND APPARATUS FOR PLASMA PROCESSING OF WAFER

Yasushi Ishimaru, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 28, 1993, Ser. No. 10,366
Claims priority, application Japan, Jan. 29, 1992, 4-013674
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—643 **9 Claims**



1. A method of down-flow type plasma processing on a wafer, in which a plasma of a reactant gas is formed by subjecting a reactant gas to a high frequency electromagnetic wave and supplying only the neutral active species, generated by neutralizing the plasma, onto the wafer while the plasma is shielded from the wafer, said method comprising the steps of:

providing a wafer stage having a flat surface;

mounting a wafer on the flat surface of the wafer stage;

providing an exhaust ring having a diameter greater than that of the wafer;

disposing the exhaust ring concentrically around and spaced from the wafer stage thereby defining an exhaust gap between the wafer stage and the exhaust ring; and

exhausting the neutral active species through the entirety of the exhaust gap.

5,389,198

STRUCTURE AND METHOD OF MANUFACTURING THE SAME

Akira Koide, Chofu; Kazuo Sato, Tokyo; Seiko Suzuki, Hitachi-Ota; Norio Ichikawa, Mito; Hidehito Obayashi, Tokyo, and Masahide Hayashi, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Automotive Engineering Co., Ltd., Japan

Filed Sep. 23, 1991, Ser. No. 763,519
Claims priority, application Japan, Sep. 26, 1990, 2-254153; Sep. 26, 1990, 2-254154; Jun. 4, 1991, 3-132690
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—651 **20 Claims**

1. A method of manufacturing a semiconductor accelerometer wherein a wafer is processed in an etching process and a structure having a cantilever beam with one end attached to the inside of a frame and the other end having a seismic mass is produced,

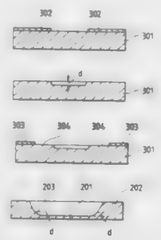
characterized in that the wafer is processed according to a plurality of anisotropic etching steps to produce a curvature on the end of said cantilever beam that is fixed to said frame, and further comprising:

a first photolithography process of forming a first etching mask to a part of the wafer to become a frame on opposite surfaces of said wafer;

a first one of said plurality of anisotropic etching steps of narrowing a thickness of the wafer in accordance with said first etching mask;

a second photolithography process of forming an insulation film at least partially to a part of the wafer to become the seismic mass;

a third photolithography process of forming a second etching mask over the seismic mass and the part of the wafer to become the frame;



a fourth photolithography process of forming a third etching mask overlying said second etching mask, the frame, a part of said wafer to become a prototype of the beam, and a part of said wafer to become a prototype of the curvature on the fixed end of the beam;

a second one of said plurality of anisotropic etching steps of forming a stepped surface having a depth corresponding to at least half of the thickness of the beam, followed by allowing the second etching mask to remain but removing the third etching mask; and

a third one of said plurality of anisotropic etching steps of forming the beam, a penetrating part at its periphery, and the curvature on the fixed end of the beam simultaneously.

5,389,199

AQUEOUS LUBRICANT AND SURFACE CONDITIONER FOR FORMED METAL SURFACES

Sami B. Awad, Drexel Hill, Pa.; Timm L. Kelly, Birmingham, and Gary L. Rochfort, Troy, both of Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Division of Ser. No. 910,483, Jul. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 785,635, Oct. 31, 1991, abandoned, which is a continuation of Ser. No. 521,219, May 8, 1990, Pat. No. 5,080,814, which is a continuation of Ser. No. 395,620, Aug. 18, 1989, Pat. No. 4,944,889, which is a continuation-in-part of Ser. No. 57,129, Jun. 1, 1987, Pat. No. 4,859,351. This application Sep. 23, 1993, Ser. No. 126,143
Int. Cl.[6] C23F *1/00;* **B44C** *1/22*
U.S. Cl. 156—665 **17 Claims**

1. A process comprising the steps of cleaning an aluminum can with an aqueous acidic or alkaline cleaning solution, drying the cleaned can, and subsequently conveying the cleaned and dried can via automatic conveying equipment to a location where it is lacquered or decorated by printing or both, wherein the improvement comprises contacting at least one exterior surface of said aluminum can, prior to the last drying of said exterior surface before automatic conveying, with a reactive lubricant and surface conditioner composition, thereby forming a film on the can surface to provide the surface of the can after drying with a coefficient of static friction that is not more than 1.5 and that is less than would be obtained on a can surface of the same type without such film coating, said reactive lubricant and surface conditioner composition being an aqueous solution comprising water-soluble organic material selected from phosphate esters, alcohols, fatty acids including mono-, di-, tri-, and poly-acids; fatty acid derivates including salts, hydroxy acids, amides, esters, ethers, and derivatives thereof,

and mixtures thereof, and at least one of the elements selected from zirconium, titanium, cerium, aluminum, iron, tin, vanadium, tantalum, niobium, molybdenum, tungsten, and hafnium in metallic or ionic form and the film formed on the can surface contains at least part of said inorganic material in addition to said organic material.

5,389,200

PROCESS FOR REMOVING INORGANIC COMPONENTS THAT FORM ASH ON IGNITION AND OILY WASTE FROM PAPER DURING RECYCLING

Charles A. Cody, Robbinsville, and Edward D. Magauran, Westampton, both of N.J., assignors to Rheox, Inc., Hightstown, N.J.

Filed Apr. 26, 1993, Ser. No. 51,759
The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.
Int. Cl.[6] D21C *5/02*
U.S. Cl. 162—5 **32 Claims**

1. A process for treating wastepaper containing oily waste contaminants to remove oily waste contaminants which comprises:

(a) forming an organoclay in situ in a wastepaper containing oily waste contaminants aqueous system by reacting one or more cation exchangeable clays having a cation exchange capacity of at least 5 milliequivalents per 100 grams of clay with one or more ammonium salts;

b) contacting the wastepaper aqueous system with an amount of the organoclay effective to remove the oily waste contaminants from the wastepaper; and

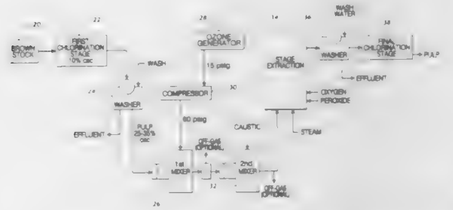
(c) recovering paper pulp from said aqueous system.

5,389,201

BLEACHING OF KRAFT CELLULOSIC PULP EMPLOYING OZONE AND REDUCED CONSUMPTION OF CHLORINE CONTAINING BLEACHING AGENT

Ted Y. Tsai, Harriman, N.Y., assignor to International Paper Company, Purchase, N.Y.

Continuation of Ser. No. 843,843, Feb. 28, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 137,732
Int. Cl.[6] D21C *9/12, 9/147, 9/153*
U.S. Cl. 162—57 **18 Claims**



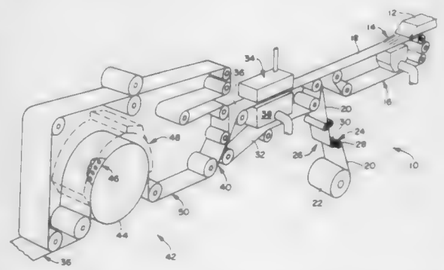
1. A method of bleaching a cellulosic kraft papermaking pulp in a multi-stage bleaching flow stream sequence using chlorine-containing bleaching agents in the first and final stages, said method comprising the steps of adjusting the O.D. weight consistency of an acidic pulp flow stream from said first bleach stage to a range of within about 25% to 35% and adjusting the temperature thereof to a range of about 20° to 60° C., combining said consistency and temperature adjusted pulp flow stream in a first mixer with a gaseous flow mixture of ozone and oxygen pressurized to a range of about 60 psi. to about 100 psi. wherein the ozone volume constituency of said gaseous flow mixture is about 5% to about 10% of the gaseous mixture volume and the ozone weight flow rate is about 0.2% to about 0.5% of the O.D. pulp weight flow rate, said temperature of the pulp in said first mixer being not sufficiently high as to permit the oxygen in the ozone mixture to react with components of the pulp, providing a residence time between said first mixer and a second mixer sufficient to substantially complete a chemically reactive consumption of said ozone by said pulp prior to said second mixer, following completion of said ozone consumption, adjusting the O.D. weight consistency, temperature and pH conditions of said pulp flow stream to initiate an extended reaction of said oxygen with said flow stream pulp, and, following said extended oxygen reaction, combining with said pulp flow stream, a final stage chlorine containing bleaching agent.

5,389,202

PROCESS FOR MAKING A HIGH PULP CONTENT NONWOVEN COMPOSITE FABRIC

Cherie H. Everhart, Alpharetta, Ga.; Daniel O. Fischer, Knoxville, Tenn.; Fred R. Radwanski, Roswell, Ga., and Henry Skoog, Roswell, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 633,594, Dec. 21, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 74,571
Int. Cl.[6] D21H *23/24*
U.S. Cl. 162—103 **23 Claims**



1. A method of making a high pulp content nonwoven composite fabric having from about 10 to about 25 percent, by weight, of a nonwoven continuous filament substrate; and more than about 70 percent, by weight, of a fibrous component consisting of pulp fibers, said method comprising:

superposing a pulp fiber layer over a nonwoven continuous filament substrate having a bond density greater than about 100 pin bonds per square inch and a total bond area less than about 30 percent;

hydraulically entangling said layers to form a composite material; and

drying said composite.

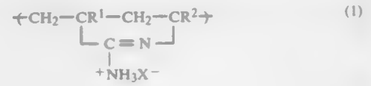
5,389,203

PAPER-MAKING ADDITIVES COMPRISING CATIONIC POLYMERS

Shigeru Sawayama, Yokohama; Kohichi Satoh, Zama; Shin-ichi Sato, and Toshiaki Sakakihara, both of Kitakyushu, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

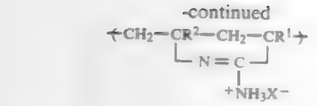
Filed Sep. 1, 1993, Ser. No. 115,917
Claims priority, application Japan, Sep. 3, 1992, 4-235833
Int. Cl.[6] D21H *17/45*
U.S. Cl. 162—135 **43 Claims**

1. A process for making paper, comprising adding, to a pulp slurry, a cationic polymer which contains 20 to 90% by mole of a repeating unit represented by the formula (1) and/or (2):



(1)

-continued



(2)

0 to 2% by mole of a repeating unit represented by the formula (3):



(3)

0 to 70% by mole of a repeating unit represented by the formula (4):



(4)

and 0 to 70% by mole of a repeating unit represented by the formula (5):



(5)

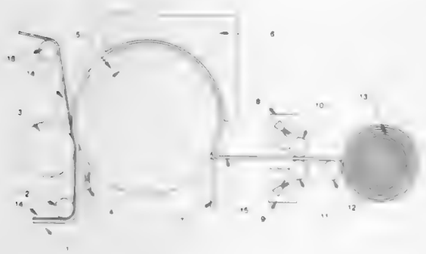
wherein R^1 and R^2 independently denote a hydrogen atom or a methyl group, R^3 denotes an alkyl group having 1 to 4 carbon atoms or a hydrogen atom, and X^- denotes an anion; and which has a reduced viscosity of 0.1 to 10 dl/g as measured in a 1N saline solution of 0.1 g/dl at 25° C.

5,389,204

PROCESS FOR APPLYING A THIN FILM CONTAINING LOW LEVELS OF A FUNCTIONAL-POLYSILOXANE AND A MINERAL OIL TO TISSUE PAPER

Robert S. Ampulski, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 10, 1994, Ser. No. 212,436
Int. Cl.[6] D21H *21/22*
U.S. Cl. 162—135 23 Claims



1. A process for applying low levels of a functional-polysiloxane compound and a mineral oil to a dry tissue paper web, said process comprising the steps of:

a) providing a dry tissue paper web;

b) mixing a functional-polysiloxane compound with a suitable mineral oil to form a functional-polysiloxane containing solution;

c) mixing said functional-polysiloxane containing solution with water and a suitable surfactant emulsifier to form a functional-polysiloxane containing emulsion.

d) applying said functional-polysiloxane containing emulsion to a heated transfer surface;

e) evaporating at least a portion of the water from said heated transfer surface to form a film containing said functional polysiloxane and said mineral oil, and

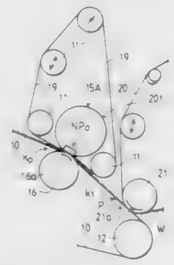
f) transferring said film from said heated transfer surface to at least one outwardly-facing surface of said tissue web by contacting said outwardly-facing web surface with said heated transfer surface, thereby transferring a sufficient amount of said functional polysiloxane compound such that from about 0.004% to about 0.75% of said functional polysiloxane compound, based on the dry fiber weight of said tissue web, is retained by said tissue web, and wherein the weight ratio of the functional-polysiloxane compound to the mineral oil retained by the tissue web ranges from 19:1 to 1:19.

5,389,205

METHOD FOR DEWATERING OF A PAPER WEB BY PRESSING USING AN EXTENDED NIP SHOE PRE-PRESS ZONE ON THE FORMING WIRE

Juhani Pajula; Juha Kivimaa, both of Jyvaskyla; Jorma Lapotti, Palokka; Martti Hirsimaki, Jyska; Pekka Taskinen, Jyvaskyla, and Mikko Karvinen, Vihtavuori, all of Finland, assignors to Valmet Paper Machinery, Inc., Helsinki, Finland

Continuation-in-part of Ser. No. 795,043, Nov. 20, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 26,851
Claims priority, application Finland, Nov. 23, 1990, 905798
Int. Cl.[6] D21F *3/06, 9/02, 3/04*
U.S. Cl. 162—205 20 Claims



1. A method in the manufacture of paper or board for dewatering of a paper web that is being manufactured and that has been drained in a former of a paper machine, wherein the dewatering takes place by passing the paper web on support of fabrics that receive water through a plurality of dewatering nips so that, by the effect of the compression pressure applied in said dewatering nips, water is transferred out of a fiber mesh of the paper web into spaces in the fabric that receive water as well as into spaces in the hollow faces of mobile dewatering members, comprising the steps of:

draining-pressing a web running on a forming wire by carrying the web on a single-wire run of the forming wire into a pre-pressing zone comprising an extended-nip pre-press zone having a length from about 100 to about 600 mm, draining-pressing the web in said pre-pressing zone between the forming wire and a first press fabric by applying a compression pressure from about 0.5 to about 3 MPa in said extended-nip pre-press zone by means of a press shoe situated in a loop of said first press fabric, and carrying the web on the single-wire run of the forming wire after said pre-pressing zone,

transferring the paper web from the forming wire onto a wire in the drying section while constantly supporting the web by a fabric that receives water, a transfer fabric, or a corresponding transfer surface as a closed draw at a speed that is greater than about 25 m/s,

dewatering the paper web in a press section by means of at least two press nips, at least one of said press nips comprising an extended-nip press zone whose length in a machine direction is greater than about 100 mm,

transferring the web after each of said press nips from one of said fabrics onto an opposing one of said fabrics or onto said corresponding transfer surface, the web being transferred after at least one of said press nips such that there is a substantially non-rewetting transfer of the web after said at least one of said press nips,

forming said extended-nip press zone in connection with a mobile flexible press-band loop, and

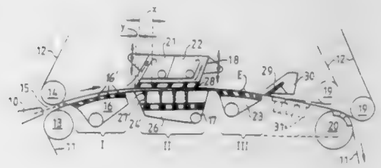
regulating the distribution of the compression pressure employed within said extended-nip press zone both in a transverse direction of the web and in the machine direction so as to control different profiles of properties of the web.

5,389,206

TWIN WIRE FORMER

Rudolf Bück; Dieter Egelhof; Klaus Henseler, all of Heidenheim, Germany; Werner Kade, Neenah, Wis.; Albrecht Meinecke, Heidenheim, Germany; Wilhelm Wanke, Heidenheim, Germany, and Hans-Jürgen Wulz, Heidenheim, Germany, assignors to J. M. Voith GmbH, Germany

Continuation of Ser. No. 773,965, Nov. 12, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 55,918
Claims priority, application Germany, Aug. 22, 1989, 3927597
Int. Cl.[6] D21F *1/00*
U.S. Cl. 162—301 18 Claims



1. A twin-wire former for the production of a paper web from a fiber suspension, the twin wire former comprising:

first and second web forming wire belts, means for directing the wire belts to travel along a path together for forming a twin wire zone of the twin wire former, with the web between the wire belts as the wire belts travel along the path through the twin wire zone, neither wire belt defining a single wire predrainage zone;

each wire belt forming an endless loop;

the twin wire zone having a first section at the start of the path through the twin wire zone, means for supporting the belts for forming a wedge shaped entrance slot into the first section, a fiber suspension supplying headbox having an outlet placed and directed for delivering fiber suspension from the headbox to the wedge shaped entrance slot of the first section of the twin wire zone; a curved drainage element in the first section, the curved drainage element having an open surface to enable drainage of water from the fiber suspension and being curved along the path of the belts through the twin wire zone, the curved drainage element being engaged by one of the wire belts, for curving the path of the belts around the curved drainage element after the entrance of the suspension into the entrance slot;

the twin wire zone having a second section following the first section along the path of the belts through the twin wire zone; in the second section, a plurality of first drainage strips are positioned within the loop of the first wire belt and are for contacting the first wire belt; in the second section, a plurality of second drainage strips are positioned within the loop of the second wire belt and are for contacting the second wire belt; the first strips being shifted in position along the path of the wire belts with respect to the second strips so that the first and second strips are offset and in a non-opposing relationship; first support means for resiliently supporting the first drainage strips against the respective wire belt that strip contacts;

second support means supporting the second drainage strips rigidly against the second wire belt;

the first drainage strips being located within the same wire belt loop as the curved drainage element and the second drainage strips being located within the other wire belt loop; the first one of the second drainage strips being located upstream of the first one of the first drainage strips and the last one of the second drainage strips being located downstream of the last one of the first drainage strips;

means for supplying a vacuum in the area of the second drainage strips;

the twin wire zone having a third section following the second section along the path of the wire belts through the twin wire zone; a stationary drainage element in the third section, for being engaged by one of the wire belts as the wire belts travel over the stationary drainage element, the stationary drainage element having an open surface to enable water to be drained through the wire belt in contact therewith; and

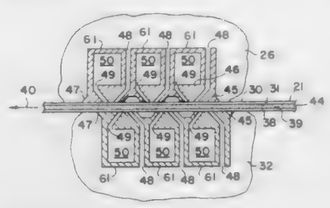
the twin wire zone being free of rolls which deflect the twin wire zone.

5,389,207

APPARATUS FOR CONTROLLING THE DEWATERING OF A WEB IN A FOURDRINIER FABRIC

Peter A. Rodriguez, 1785 Selva Marina Dr., Atlantic Beach, Fla. 32233, and Glauco Corbellini, 33100 Via Carducci 48, Udine, Italy

Continuation of Ser. No. 24,906, Mar. 3, 1993, abandoned, which is a continuation of Ser. No. 845,674, Mar. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 717,880, Jun. 17, 1991, Pat. No. 5,242,547, which is a continuation of Ser. No. 384,744, Jul. 24, 1989, abandoned. This application Apr. 28, 1994, Ser. No. 234,627
Int. Cl.[6] D21F *1/48*
U.S. Cl. 162—363 20 Claims



1. A drainage apparatus in combination with and for controlling the dewatering from a wet web of paper making fibers on a moving main Fourdrinier fabric about spaced breast and couch rolls and having adjacent the couch roll a drier end downstream of a wetter end adjacent the breast roll, said fabric having an outer surface, and an inner surface, said apparatus including a stationary first dewatering means along the wetter end for removing water through said fabric, said apparatus comprising an elongated stationary drainage multicell wire meniscus separator unit along the drier end of said fabric and having a drainage surface in continuous contact with said inner surface of said fabric, a web formed from an aqueous dispersion of paper making fibers supported on said outer surface of said fabric above said drainage separator unit, said drainage separator unit including a plurality of adjacent and spaced cells each from the next and each said cell having an internal space for discharging a volume of water and air, each said cell extending to and in contact with said inner surface of said fabric, each said cell having a first passageway means structured and arranged for conducting atmospheric air to said drainage surface of said separator unit and said inner surface of said fabric without air penetrating said web and between the inner surface of said wet web of paper in contact with said outer surface of said fabric and said inner surface of said fabric, each said cell having a second passageway means communicating from said

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drainage surface of said separator unit and said first passageway means through interstices of said fabric to said internal space of each of said cells, means for applying a small vacuum to said internal space of each of said cells to modify the natural tension of meniscus of water in said fabric so as to induce by capillary forces drainage of water from said web to said fabric and then, together with the atmospheric air introduced through said first passageway means, through said second passageway means into said internal space, said first and second passageways communicating for the passage of air only horizontally through said fabric, and means for discharging the water and air from said internal spaces of said cells.

5,389,208

PROCESS FOR RECLAIMING AND/OR CONCENTRATING WASTE AQUEOUS SOLUTIONS OF GAS TREATING CHEMICALS

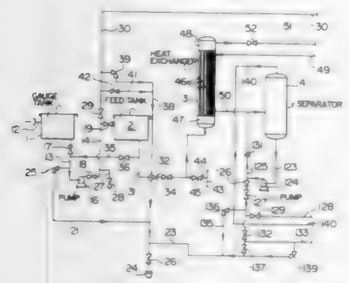
Todd Beasley, Brooks, and Dwight A. Merritt, Calgary, both of Canada, assignors to Canadian Chemical Reclaiming Ltd., Brooks, Canada

Continuation-in-part of Ser. No. 835,076, Feb. 18, 1992, Pat. No. 5,152,887, which is a continuation of Ser. No. 433,159, Sep. 13, 1990, abandoned. This application Aug. 12, 1992, Ser. No. 928,365

The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.

Int. Cl.[6] B01D *3/10*

U.S. Cl. 203—11 21 Claims



1. A continuous process for reclaiming an impurity-containing waste aqueous solution of a gas treating chemical having a decomposition temperature in such a way that the process can be operated in apparatus made of carbon steel without causing substantial corrosion of said apparatus, which process comprises the steps of:

(a) heating a feed of said waste aqueous solution to a temperature below said decomposition temperature and subjecting said heated waste solution to a high vacuum of at least 16 inches of mercury in order to produce a vapor comprising water vapor and vaporized gas treating chemical and a liquid residue containing said impurities;

(b) separating said vapor from said liquid residue;

(c) heating most of said liquid residue separated from said vapor to a temperature below said decomposition temperature while avoiding localized overheating of said liquid residue to a temperature above said decomposition temperature;

(d) thoroughly mixing said heated liquid residue with said waste aqueous feed solution to effect said heating of step (a); and

(e) condensing said vapor to produce a purified solution of said gas treating chemical.

5,389,209

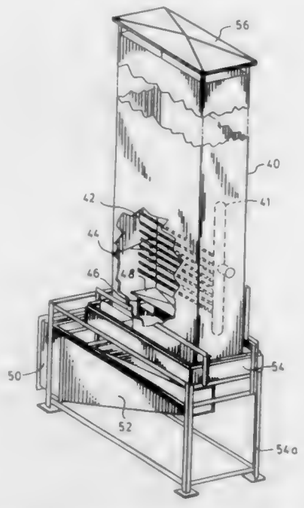
PRODUCTION OF HIGH QUALITY MAPLE SYRUP

Yvon A. Paquette, 43 Reid, Drummondville, Quebec, Canada J2B 7T5

Continuation-in-part of Ser. No. 527,889, May 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 355,490, May 23, 1989, abandoned. This application Jan. 21, 1993, Ser. No. 6,496

Int. Cl.[6] B01D *1/16, 3/00*

U.S. Cl. 203—14 34 Claims



1. A process for making maple syrup from a sap containing water and sugar, said process comprising the following steps carried out in any order:

a) boiling the sap under normal pressure to evaporate one part of the water contained therein in the form of steam, to form said maple syrup sugar and to develop caramelized and sweet characterics while simultaneously giving flavor and color to said maple syrup; and

b) processing the sap as follows:

heating the sap at a temperature lower than 212° F. by means of a heating source;

atomizing the sap that is so heated in an air circulating column through which air is blown, so as to evaporate another part of the water contained in said sap and thus produce humid air that is eliminated, and to concentrate said sap in order to increase its sugar content while avoiding caramelization thereof;

recycling the concentrated sap that is so obtained toward the heating source; and

repeating said heating and atomizing steps to further concentrate said sap until its sugar content corresponds to a predetermined Brix number.

24. A process for making maple syrup from a sap containing water, comprising the following steps:

a) evaporating at least 50% by weight of the water contained in said sap by atomization of said sap at a temperature below 212° F. in an air circulating column through which air is blown at low pressure and humid air is formed and eliminated; and

b) thereafter developing carmelized and sweet characteristics and flavor and a tinted color to the maple syrup by boiling the sap evaporated in step a) under atmospheric pressure.

5,389,210

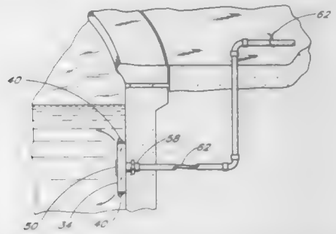
METHOD AND APPARATUS FOR MOUNTING AN ELECTROLYTIC CELL

Michael A. Silveri, 702 Martis Peak, Incline Village, Nev. 89451

Continuation of Ser. No. 105,365, Aug. 11, 1993, abandoned, which is a continuation of Ser. No. 960,265, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 759,692, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 680,591, Mar. 28, 1991, abandoned, which is a continuation of Ser. No. 597,085, Oct. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 424,305, Aug. 18, 1989, Pat. No. 4,992,156. This application May 10, 1994, Ser. No. 240,532

Int. Cl.[6] C25B *9/04, 15/08*

U.S. Cl. 204—1.11 31 Claims



27. A method for counting an electrolytic cell in a swimming pool of the type having a water circulation line, including a pipe in flow communication with the pipe beneath the level of water therein, said method comprising the steps of:

positioning said electrolytic cell beneath the surface of the pool water and in front of an outlet of said pipe;

attaching said electrolytic cell in a position so that water flow from said pipe will flow across said cell;

providing an elongated electrical wire to connect said electrolytic cell to a power source remote from the water within said pool;

connecting one end of said wire to said electrolytic cell;

threading the wire through a portion of said pipe; and

connecting an end of said wire to said power source to thereby supply electrical power to said electrolytic cell.

5,389,211

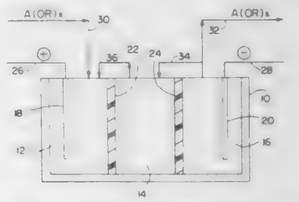
METHOD FOR PRODUCING HIGH PURITY HYDROXIDES AND ALKOXIDES

Hossein Sharifian, Austin, and David G. Diercks, Burleson, both of Tex., assignors to Sachem, Inc., Austin, Tex.

Filed Nov. 8, 1993, Ser. No. 148,925

Int. Cl.[6] C25B *3/00*

U.S. Cl. 204—72 39 Claims



1. A process for improving the purity of an organic or inorganic hydroxide which comprises the steps of

(A) providing an electrolysis cell which comprises an anolyte compartment containing an anode, a catholyte compartment containing a cathode and water, and at least one intermediate compartment containing water, an organic liquid, or a mixture of water and an organic liquid, said at least one intermediate compartment being separated from the anolyte and catholyte compartments by at least two dividers selected from nonionic dividers, cation selective membranes, or combinations thereof;

(B) charging a mixture comprising the organic or inorganic hydroxide and an oxidizable liquid to the anolyte compartment;

(C) passing a current through the electrolysis cell to produce a purified organic or inorganic hydroxide in the catholyte compartment; and

(D) recovering the purified organic or inorganic hydroxide from the catholyte compartment.

5,389,212

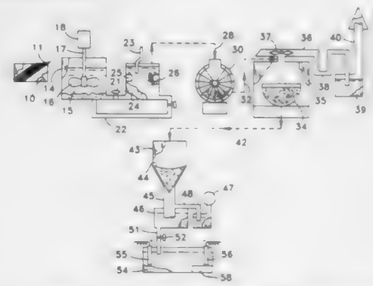
METHOD FOR RECOVERING PHOTOGRAPHIC AND INDUSTRIAL WASTE

Richard H. McLaren, P.O. Box 1460, Anaconda, Mont. 59711

Filed Feb. 14, 1994, Ser. No. 194,876

Int. Cl.[6] C25C *1/00*

U.S. Cl. 204—109 7 Claims



1. A process for recovering from the silver-bearing emulsion of used photographic and X-ray films, metallic silver having a purity on the order of 0.999 fine, comprising

placing in a tank, which contains a mixture of warm water and a silver emulsion leaching agent, a supply of used photographic or X-ray film,

agitating said mixture and the used film in said tank to cause the emulsion to be removed from the plastic substrate of the film, and to form a concentrate in said tank,

cycling said concentrate through a first electrolytic extractor to produce a first batch of silver granules having a purity less than 0.999 fine,

pulverizing said first batch of granules, and transferring the pulverized granules to an acid bath to form a silver salt solution having an approximately neutral pH, and

transferring said salt to a second electrolytic extractor operable to produce a second batch of silver granules having a purity on the order of 0.999 fine.

5,389,213

Patent Not Issued For This Number

5,389,214

FLUID TREATMENT SYSTEM EMPLOYING ELECTRICALLY RECONFIGURABLE ELECTRODE ARRANGEMENT

Robert K. Erickson, Belmont, and Francois X. Prinz, San Jose, both of Calif., assignors to Water Regeneration Systems, Inc., Belmont, Calif.

Filed Jun. 19, 1992, Ser. No. 901,376

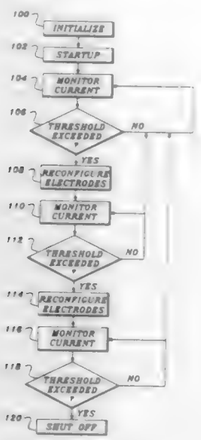
Int. Cl.[6] C02F *1/461*

U.S. Cl. 204—149 23 Claims

1. Electrolytic fluid treatment apparatus for treating a fluid, said apparatus comprising several electrodes exposed to the fluid, support means for physically supporting said electrodes, electrical reconfiguration means for providing electrically reconfigurable interconnections of a plurality of said electrodes with each other, and sensing means for producing an output representative of a characteristic of the fluid, said elec-

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trical reconfiguration means including means responsive to said output for automatically reconfiguring the interconnection of the plurality of electrodes in response to said output during treating of the fluid.

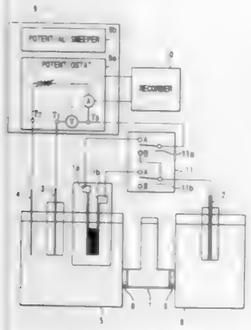


5,389,215

ELECTROCHEMICAL DETECTION METHOD AND APPARATUS THEREFOR

Tsutomu Horiuchi; Osamu Niwa; Hisao Tabei, all of Ibaragi, and Masao Morita, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 53,635
Claims priority, application Japan, Nov. 5, 1992, 4-143752
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—153.1 **13 Claims**



1. An electrochemical detection method using an apparatus including

a first vessel and a second vessel,

a reference electrolytic solution filled in said second vessel,

first and second closely spaced working electrodes immersed in a sample solution for measurement filled in said first vessel,

a stripping electrode immersed in the reference electrolytic solution, and

an ionic conductor, arranged between said first vessel and said second vessel, for electrically connecting the sample solution for measurement and the reference electrolytic solution, wherein

the reference electrolytic solution contains an electrolyte which can be deposited and dissolved by an electrochemical reaction by applying a potential to said stripping electrode,

in a first stage, a pre-electrolysis potential is applied to said first working electrode with said stripping electrode being connected to said second working electrode to deposit the electrolyte in the reference electrolytic solution on said stripping electrode, and

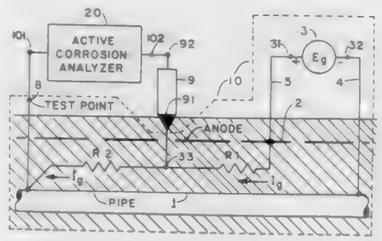
in a second stage, after said second working electrode is disconnected from said stripping electrode, the potential of said stripping electrode is swept to measure a current generated when the electrolyte deposited on said stripping electrode in the first stage is dissolved from said stripping electrode, and the concentration of an analyte in the sample solution for measurement is determined from the measured stripping current.

5,389,216

METHOD FOR ACTIVE CORROSION ANALYSIS

Hayati Balkanli, P.O. Box 35725, Houston, Tex. 77235

Filed Apr. 14, 1993, Ser. No. 46,200
Int. Cl.[6] G01N *17/00*
U.S. Cl. 204—153.11 **16 Claims**



1. A method of measuring the cathodic activity resulting from placing a cathodic protective system on a metal structure subject to corrosion or metal loss from use in a medium having electrolytic activities sufficient to otherwise damage the structure, and the protective system includes as least one current generator connected to the metal structure and to a sacrificial metal anode exposed to the medium, said method comprising the steps of:

(a) initimately contacting the medium with a probe having a ground connection to the metal structure at a ground point, wherein the probe contact is spaced from the ground point to define a medium dependent resistance therebetween, and the resistance of the medium is sufficient so that the current flow from at least one of the current generators flows through the medium and across the resistance thereof to enable the probe to obtain a reference voltage value:

(b) forming a measuring current;

(c) introducing the measuring current so that the measuring current flows through the medium between the ground point and the probe contact and further measuring the voltage induced by the measuring current at the probe;

(d) selecting a polarity for the measuring current so that the measuring current alters the measured voltage at the probe;

(e) changing the measuring current over a period of time, where the time period is dynamically varied, so that the probe measured voltage is altered from a reference voltage to a first voltage; and

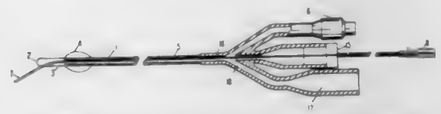
(f) from the first voltage, determining a characteristic of the cathodic protective system.

5,389,217

MEASUREMENT OF BLADDER OXYGEN

Mervyn Singer, London, England, assignor to Biomedical Sensors Ltd., High Wycombe, England

Filed Apr. 28, 1994, Ser. No. 234,083
Int. Cl.[6] G01N *27/26;* **A61B** *5/05;* **A61M** *29/00*
U.S. Cl. 204—153.17 **5 Claims**



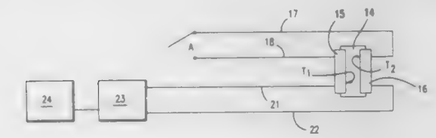
5. A method for the continuous monitoring of bladder epithelial oxygen (pbO_2) which comprises introducing into the bladder of a patient an apparatus comprising, in combination, an introductory catheter and an oxygen sensor, wherein said catheter comprises an elongated hollow tube having channels therein, a proximal end and a distal end, which distal end forms a tip having an open port at or near the distal termination thereof and inflatable placement means located proximal to the open port, each of said channels terminating in a port at the proximal end of the catheter, a first port be connected to means for inflating the placement means, a second port is the terminal proximal end of a second channel terminating in the open port in the tip of the catheter and a third port is the terminal proximal end of a drainage channel, said oxygen sensor comprising an elongated sensor having a distal end and a proximal end, said distal end comprising an oxygen-sensing element enveloped within an oxygen-permeable membrane, the sensor is completely accommodated within the second channel of the catheter, deploying the distal end of the oxygen sensor through the open port in the tip of the catheter so that the sensor extends beyond the tip and rests against the wall of the bladder, inflating the placement means so that the apparatus is held within the bladder, connecting the proximal end of the sensor to a monitor and obtaining desired readings from the monitor.

5,389,218

PROCESS FOR OPERATING A SOLID-STATE OXYGEN MICROSENSOR

Ulrich Bonne, Hopkins; Spencer B. Schuldt; Barrett E. Cole, both of Bloomington, all of Minn., and Edward R. Ule, Mountain View, Calif., assignors to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 301,018, Jan. 24, 1989, abandoned, and Ser. No. 301,017, Jan. 24, 1989, abandoned. This application Apr. 28, 1992, Ser. No. 875,798
Int. Cl.[6] G01N *27/409*
U.S. Cl. 204—153.18 **13 Claims**



1. A process for determining oxygen partial pressure in a single ambient atmosphere with a solid-state oxygen microsensor, the steps comprising:

exposing an oxygen ion conducting solid electrolyte and two co-planar, independent and separated microsensor electrodes each in contact with said solid electrolyte to said single ambient atmosphere;

generating a temperature gradient across said independent microsensor electrodes by energizing a heater film which is in direct contact with at least one of said solid electrolyte and a dielectric layer of said oxygen microsensor to heat each said microsensor electrode to a different absolute operating temperature;

measuring an output voltage across said independent microsensor electrodes;

maintaining said temperature gradient at a constant value across said co-planar, independent microsensor electrodes at least until a corresponding said output voltage is measured; and

calculating the oxygen partial pressure in said single ambient atmosphere as a function of said constant value of said temperature gradient and said corresponding measured output voltage.

5,389,219

PHOTODEGRADATION-RESISTANT ELECTRODEPOSITABLE PRIMER COMPOSITIONS

Robert R. Zwack, and V. Eswarakrishnan, both of Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 745,797, Aug. 16, 1991, Pat. No. 5,260,135, which is a continuation-in-part of Ser. No. 736,199, Jul. 26, 1991, abandoned. This application Jun. 23, 1993, Ser. No. 79,788
The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.
Int. Cl.[6] C25D *13/10*
U.S. Cl. 204—181.1 **8 Claims**

1. A process for coating a substrate comprising:

(a) applying a primer coating to the substrate by the process of electrodeposition of an electrodepositable film-forming composition comprising an aqueous dispersion of an ionic epoxy-based resin, a hindered amine light stabilizer and an antioxidant mixture which comprises a phenolic antioxidant and a sulfur-containing antioxidant; whereby the hindered amine light stabilizer is present in amounts of 0.1 to 3 percent by weight and the antioxidant mixture is present in amounts of 0.1 to 5 percent by weight; the percentages by weight being based on resin solids, and the weight ratio of antioxidant mixture to hindered amine light stabilizer is at least 0.5:1; and

(b) applying a film-forming topcoat composition directly to the primer coating; said film-forming composition being permeable to ultraviolet light which will cause degradation of the primer coating resulting in delamination of the topcoat from the primer coating in the absence of the hindered amine light stabilizer and antioxidant mixture.

5,389,220

APPARATUS FOR A CONTINUOUS SELECTIVE ELECTRODEPOSITION ON A STRIP

Horst Herzog, Pfinztal; Hans J. Neese, Eisingen; Gerd Schaudt, Pforzheim, and Wolfgang Mäder, Freudenstein, all of Germany, assignors to Doduco GmbH & Co. Dr. Eugen Dürrwächter, Pforzheim, Germany

PCT No. PCT/EP91/01124, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO91/19835, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 17, 1991, Ser. No. 949,805
Claims priority, application Germany, Jun. 20, 1990, 4019643
Int. Cl.[6] C25D *17/00*
U.S. Cl. 204—206 **14 Claims**

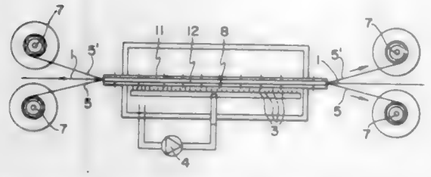
1. An apparatus for a continuous selective electrodeposition on a strip, comprising a carrier, which guides the strip in its longitudinal direction, and electrolyte discharge orifices, which are associated with and face the carrier and through which the electrolyte discharged by a pump is sprayed onto the strip, which is covered by a mask tape, which is provided with at least one row of holes and urges the strip against the carrier,

wherein drive means are provided for moving the strip relative to the mask tape,

characterized in that the carrier is straight, one or more elongate pressure-applying elements, which are parallel to

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the carrier, are associated with the carrier and urge the mask tape against the strip and individually or jointly define openings, which face the electrolyte discharge orifices and overlap the holes in the mask tape, and



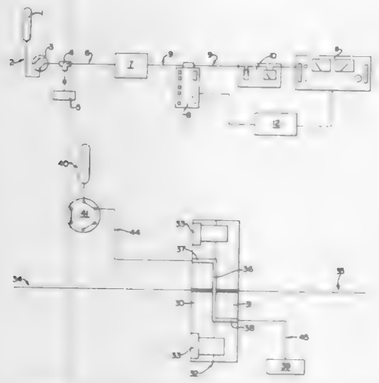
characterized in that the carrier is provided with openings, which face further electrolyte discharge orifices, and that an additional mask tape is provided between the carrier and the strip and has at least one row of holes, which overlap the openings in the carrier, so that the strip to be coated is covered by the two mask tapes on both sides.

5,389,221

TWO DIMENSIONAL SEPARATION SYSTEM

James W. Jorgenson, Chapel Hill, and Anthony V. Lemmo, Durham, both of N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Mar. 9, 1993, Ser. No. 28,678
Int. Cl.[6] G01N *27/26, 27/447*
U.S. Cl. 204—299 R **30 Claims**



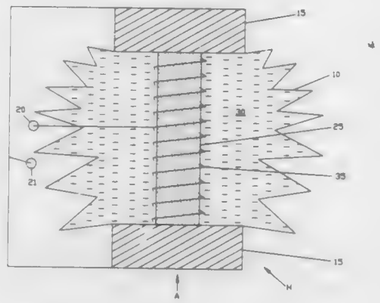
1. A combination liquid chromatography and capillary zone electrophoresis separation system, comprising:
- a flow gating interface having an effluent channel and a gating channel formed therein, with said gating channel transversely intersecting said effluent channel at an intersection portion so that said channels are in fluid communication with one another, with said intersection portion dividing said effluent channel into an upstream portion and a downstream portion, and with said intersection portion dividing said gating channel into an upstream portion and a downstream portion;
- a liquid chromatography column having an outlet end connected to said effluent channel upstream portion;
- an electrophoresis capillary having an inlet end and an outlet end, said inlet end connected to said effluent channel downstream portion; a
- a flush solution inlet line connected to said gating channel upstream portion;
- a flush solution outlet line connected to said gating channel downstream portion;
- valve means for regulating the flow of flush solution from said flush solution inlet line to said gating channel upstream portion; and
- said intersection portion configured so that the rate of flow of effluent from said effluent channel upstream portion to said effluent channel downstream portion decreases as the rate of flow of flush solution in said gating channel increases.

5,389,222

SPRING-LOADED POLYMERIC GEL ACTUATORS

Mohsen Shahinpoor, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 21, 1993, Ser. No. 124,412
Int. Cl.[6] C25B *9/00*
U.S. Cl. 204—299.2 **15 Claims**



1. A polymeric gel actuator comprising:
- a) a polymeric gel element having initial physical dimensions;
- b) means for changing the dimensions of the polymeric gel element;
- c) means for converting said change in the physical dimensions into mechanical movement; and
- d) means for augmenting a portion of said mechanical movement.

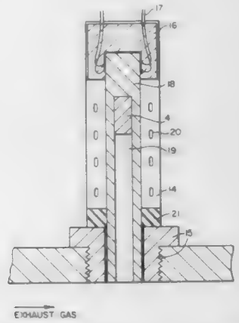
5,389,223

ELECTROCHEMICAL MEASURING SENSOR

Gerhard Hoetzel, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 635,615, Jan. 4, 1991, abandoned. This application May 17, 1993, Ser. No. 62,497
Claims priority, application Germany, Jul. 23, 1988, 3825139
Int. Cl.[6] G01N *27/419*
U.S. Cl. 204—425 **16 Claims**

1. An apparatus comprising
- an electrochemical measuring sensor for determination of the air/fuel ratio in exhaust gas from an internal combustion engine, both in a fuel-lean range and in a fuel-rich range, having
- a sensor element with
- a housing (**14**) having a first end secured by a screw-in connection to a sidewall of an exhaust pipe of said internal combustion engine, and a second end remote from said exhaust pipe, said housing defining a reference gas chamber and a test gas chamber therewithin;
- a seal (**21**), located adjacent said first housing end, separating from each other said reference gas and test gas chambers;
- an electrochemical oxygen concentration cell and
- an oxygen pumping cell, each with a solid electrolyte base, which are situated in said housing (**14**), facing each other, to define a diffusion slit intermediate space which serves as said test gas chamber (**19**), said intermediate space communicating with the exhaust gas in said exhaust pipe, wherein
- each of said cells includes a pair of electrodes; and
- in order to remove said pairs of electrodes from thermal influence by cold exhaust gas,
- the electrodes (**4**, **5**) of the oxygen pumping cell and the electrodes (**6**, **7**) of the electrochemical oxygen concentration cell of the sensor element in the measuring sensor are situated in a portion of the housing (**14**) remote from said screw-in connection and outside the exhaust pipe, a first one (**4**) of the electrodes of the oxygen pumping cell and a first one (**7**) of the electrodes of the electrochemical oxygen concentration cell being directly exposed to the ambient atmosphere via openings (**20**) into said reference gas chamber in the housing (**14**).

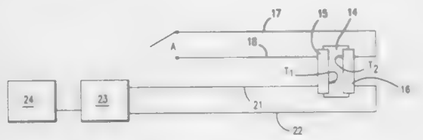


5,389,225

SOLID-STATE OXYGEN MICROSENSOR AND THIN STRUCTURE THEREFOR

Roger L. Aagard, Prior Lake; Ulrich Bonne, Hopkins, and Barrett E. Cole, Bloomington, all of Minn., assignors to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 301,017, Jan. 24, 1989, abandoned. This application Apr. 28, 1992, Ser. No. 875,795
Int. Cl.[6] G01N *27/407*
U.S. Cl. 204—426 **15 Claims**



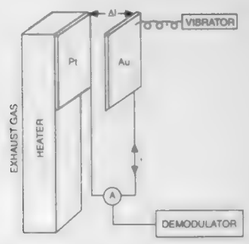
1. A solid-state oxygen microsensor comprising:
- an oxygen ion conducting solid electrolyte;
- a pair of co-planar, independent sensor electrodes exposed to a single ambient atmosphere, said co-planar independent sensor electrodes spaced apart from each other and contacting said solid electrolyte;
- heater means for heating each said sensor electrode to a different absolute operating temperature and thereby generating a temperature gradient across said electrodes, said heater means comprising a heater film which is in direct contact with at least one of said solid electrolyte and a dielectric layer of the oxygen microsensor;
- temperature gradient control means for maintaining said temperature gradient at a constant value;
- temperature measuring means for measuring a temperature gradient across said co-planar, independent sensor electrodes;
- voltage measuring means for measuring an output voltage potential difference across said co-planar, independent sensor electrodes;
- temperature gradient control means for maintaining said temperature gradient at a constant value at least until a corresponding said output voltage potential difference is measured; and
- processor means in communication with said temperature measuring means and said voltage measuring means for determining an oxygen partial pressure of said single ambient atmosphere based upon said temperature gradient and said corresponding output voltage potential difference at said temperature gradient.

5,389,224

CAPACITIVE A/F SENSOR

Robert E. Hetrick, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 1, 1993, Ser. No. 84,498
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—425 **16 Claims**



1. A sensing structure for electrically sensing stoichiometric ratio of an oxidizing and reducing species in an ambient gas phase including:
- a material with an active surface which interacts with the gas phase; and
- a capacitive device having plates which are vibrated relative to each other, said capacitive device providing an electrical signal that is proportional to the change in workfunction thereby sensing the stoichiometric ratio.

5,389,226

ELECTRODEPOSITION OF NICKEL-TUNGSTEN AMORPHOUS AND MICROCRYSTALLINE COATINGS

David M. Scruggs, Oceanside, and Gerald A. Croopnick, Trabuco Canyon, both of Calif., assignors to Amorphous Technologies International, Inc., Laguna Niguel, Calif.

Continuation-in-part of Ser. No. 992,044, Dec. 17, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 85,501
Int. Cl.[6] C25D *3/56, 5/50*
U.S. Cl. 205—50 **22 Claims**

1. An electrodeposition process for depositing a nickel-tungsten coating onto a substrate, comprising the steps of:
- preparing an electrodeposition bath comprising in solution
- from about 0.034X to about 0.047X moles per liter of nickel,
- from about 0.15X to about 0.28X moles per liter of tungsten,
- from about 0.13X to about 0.43X moles per liter of hydroxycarboxylic acid, and
- boron in an amount selected from the group of zero boron and from about 0.077X to about 0.15X moles per liter of boron, where X is a scaling factor of from about 0.67 to

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about 1.7 and the bath has a pH of from about 6 to about 9; and

electrodepositing a coating onto a substrate from the electrodeposition bath.

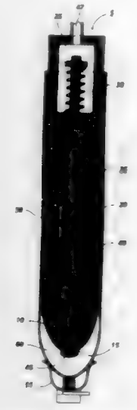
11. A substrate having a coating prepared by the process of claim **1**.

5,389,227

ELECTROFORMING MANDRELS

Ernest F. Matyi, Webster; William G. Herbert, Williamson; Gary J. Maier, and Loren E. Hendrix, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 26, 1993, Ser. No. 157,557
Int. Cl.[6] C25D *1/02*
U.S. Cl. 205—73 **20 Claims**



1. A method for separating a mandrel from an article formed thereon comprising:

(a) providing the mandrel having an opening in a tapered end portion;

(b) plugging a portion of the opening with a member which presents a deposition surface for the formation of the article;

(c) forming the article having a tapered end portion on the mandrel, including on the deposition surface of the member; and

(d) moving the member against the inside surface of the tapered end portion of the article to move the article away from the mandrel, thereby forming a gap between the article and the mandrel.

5,389,228

BRUSH PLATING COMPRESSOR BLADE TIPS

Kenneth C. Long, Stuart; Brian A. Manty, Palm Beach Gardens, and Charles C. McComas, Palm City, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 4, 1993, Ser. No. 13,283
Int. Cl.[6] C25D *5/06*
U.S. Cl. 205—110 **18 Claims**

1. A method for the application of an abrasive tip to a gas turbine blade, said method comprising the steps of:

a) providing a blade body having a tip;

b) cleaning said tip and applying thereto a nickel strike;

c) applying to said tip a loose coating of particulate abrasive;

d) connecting said blade body to a power source;

e) covering said particulate abrasive with a dielectric cloth or fabric, said cloth or fabric being porous to plating solution while not permitting movement of the particulate abrasive;

f) brush electroplating a metal selected from the group consisting of cobalt, platinum, chromium, nickel, nickel-tungsten alloys, and nickel-cobalt alloys onto said blade tip in such a manner as to embed said particulate abrasive in said metal;

g) removing said dielectric cloth; and

h) brush electroplating a surface layer of said metal over the embedded abrasive.

5,389,229

PRESTABILIZATION OF PARTICULATE MATTER PRIOR TO THEIR DISPERSION

Nathan Feldstein, Princeton, N.J., and Philip Dumas, Morrisville, Pa., assignors to Surface Technology, Inc., Trenton, N.J.

Filed Jun. 18, 1993, Ser. No. 77,665
Int. Cl.[6] B32B *9/00*
U.S. Cl. 427—304 **6 Claims**

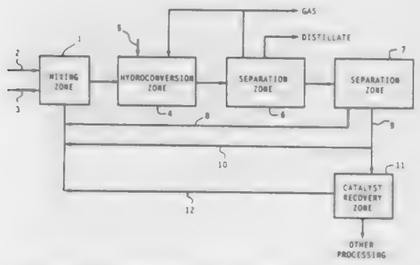
1. A process for the metallization of an object to provide on the surface thereof a metal coating with finely divided particulate matter dispersed therein which process comprises contacting the surface of said object with a plating composition and dispersed insoluble particulate matter, said particulate matter is derived directly or indirectly from a prestabilized composition having a limited fluidity for the particulate matter.

5,389,230

CATALYTIC HYDROCONVERSION PROCESS

Lavanga R. Veluswamy, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 11, 1993, Ser. No. 75,988
Int. Cl.[6] C10G *69/06, 1/06*
U.S. Cl. 208—68 **16 Claims**



1. A process for catalytically converting a heteroatom containing carbonaceous material to a hydroconversion product stream comprising sequentially

forming a mixture of carbonaceous material, hydrogen donor solvent, and a catalyst precursor, wherein the catalyst precursor is an oil soluble or oil dispersible metal compound having a metal content of about 0.01–2 wt. % on the basis of the carbonaceous material and is selected from the group consisting of Groups II, III, IV, V, VIB, VIIB and VIII of the Periodic Table of Elements;

converting the catalyst precursor to an active catalyst within the mixture by heating the mixture in the presence of hydrogen to form an activated catalyst mixture;

reacting the activated catalyst mixture under hydrocarbon conversion conditions to form a hydroconversion product stream;

separating a liquid fraction of the hydroconversion product stream, wherein the liquid fraction has an initial boiling point of about 350° F.; and thereafter

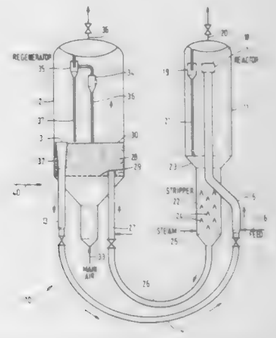
hydrocracking the liquid fraction in the presence of hydrogen and a metal catalyst activated from an oil soluble or oil dispersible metal compound, said activated metal catalyst being essentially the same activated metal catalyst used in the hydroconversion step, under hydrocracking conditions, wherein the metal has a concentration of about 2–20 wt. % on the basis of the liquid fraction being hydrocracked and is selected from the group consisting of Groups II, III, IV, V, VIB, VIIB and VIII of the Periodic Table of Elements, to form a hydrocracked product stream.

5,389,231

CATALYTIC CRACKING PROCESS AND APPARATUS THEREFOR

John F. R. Brander, Baton Rouge, La., and Todd R. Steffens, Randolph, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 664,723, Mar. 5, 1991, abandoned. This application Sep. 14, 1992, Ser. No. 944,598
Int. Cl.[6] C10G *11/00, 35/10*
U.S. Cl. 208—113 **11 Claims**



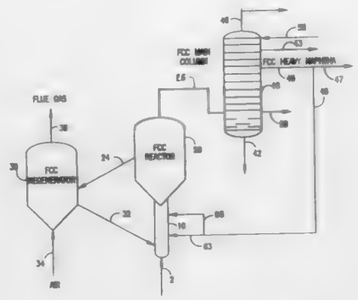
1. In a catalytic cracking process comprising the steps of contacting a hydrocarbon feed with particles of active hydrocarbon cracking catalyst under hydrocarbon-cracking conditions in a reaction zone, separately recovering from the reaction zone (a) vaporous cracked hydrocarbon products and (b) used catalyst particles, contacting the used catalyst particles with a stripping medium in a stripping zone to recover from the used catalyst particles hydrocarbon material associated therewith, passing stripped used catalyst particles from the stripping zone to a regeneration zone wherein the stripped used particles are contacted with an oxygen-containing gas to remove hydrocarbonaceous material associated therewith in a exothermic oxidation reaction which regenerates and heats the catalyst particles, and circulating the heated regenerated catalyst particles to the reaction zone for contact with further amounts of hydrocarbon feed; the improvement wherein (a) the hot regenerated catalyst particles from the dense catalyst phase of the regenerator are divided into a first portion and a remaining portion and the first portion is passed in dense phase flow in indirect heat exchange relationship in a heat exchanger external to the stripping zone with at least some used catalyst particles from the stripping zone before contacting hydrocarbon feed in the reaction zone whereby the temperature of the first portion of the regenerated catalyst particles is reduced and the temperature of the said used catalyst particles is increased and (b) the cooled first portion and the remaining portion of the regenerated catalyst particles are thereafter combined for contact with the feed.

5,389,232

RISER CRACKING FOR MAXIMUM C3 AND C4 OLEFIN YIELDS

Yusuf G. Adewuyi, Chadds Ford, Pa.; Peter M. Adornato, Cherry Hill, N.J.; David L. Johnson, Glenn Mills, Pa., and Gerald L. Teitman, Vienna, Va., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 4, 1992, Ser. No. 877,919
Int. Cl.[6] C10G *13/02*
U.S. Cl. 208—120 **16 Claims**



1. A catalytic cracking process for converting a heavy hydrocarbon feed to lighter products comprising;

a. charging a heavy hydrocarbon feed comprising hydrocarbons boiling above 650° F. to a base section of a riser catalytic cracking reactor having a length, said base section, and an upper outlet section;

b. charging a stream of a fluidized solids mixture of hot, regenerated base FCC cracking catalyst and separate particles of shape selective zeolite cracking catalyst additive in a support from a catalyst regenerator to the base of the riser reactor, said stream containing 5 to 35 wt % additive and 95 to 62.5 wt % base FCC catalyst, and wherein the additive contains a concentration of shape selective zeolite such that the solids mixture contains more than 3.0 wt % shape selective zeolite, on a pure shape selective zeolite basis;

c. catalytically cracking said feed at catalytic cracking conditions including a solids: feed weight ratio of a least 4:1, a solids/feed mixture temperature in the base of the riser of 950° to 1100° F.;

d. quenching the solids/feed mixture in at least one quench zone in said riser reactor downstream of the base thereof and at least 10 percent of the length of the riser upstream of said riser outlet, by injecting a quench fluid in an amount sufficient to quench the temperature in the riser at least 10° F. and produce a quenched mixture of solids and hydrocarbon vapor;

e. catalytically cracking in said riser reactor said quenched mixture for a time equal to at least the vapor residence time of the last 10% of the length of said riser to produce a mixture of catalytically cracked products and solids which are discharged from said outlet of said riser reactor;

f. separating said discharged mixture of catalytically cracked products and solids into a cracked product rich vapor phase, which is withdrawn as a product, and a solids rich phase containing spent cracking catalyst and shape selective additive catalyst;

g. stripping said solids in a stripping means at stripping conditions to produce stripped solids containing coke;

h. decoking said stripped solids in a catalyst regeneration means operating at catalyst regeneration conditions to produce a stream of a fluidized solids mixture of hot, regenerated base FCC cracking catalyst and separate particles of shape selective zeolite cracking catalyst additive, which is recycled to the base of said riser reactor.

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METALS PASSIVATION OF CRACKING CATALYSTS

Dwayne R. Senn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 14, 1993, Ser. No. 137,247
Int. Cl.[6] C10G *11/05*; B01J *29/06*
U.S. Cl. 208—120 26 Claims

20. A process for catalytically cracking a hydrocarbon-containing oil feed in the substantial absence of added hydrogen gas and in the presence of a zeolite-containing catalytic cracking catalyst in a catalytic cracking zone, at a temperature of about 800°–1200° F., wherein lithium sulfate has been added to said oil feed at such conditions as to incorporate at least about 0.01 weight-% lithium into said catalyst and to provide a passivated catalyst in said cracking zone.

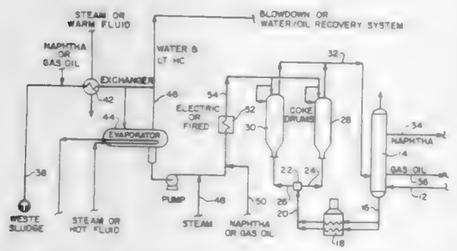
26. A process in accordance with claim 20, wherein said hydrocarbon-containing oil feed has a boiling range, measured at atmospheric pressure conditions, of about 400° F. to about 1200° F. and contains in excess of about 0.01 ppm nickel and in excess of about 0.01 ppm vanadium.

5,389,234

WASTE SLUDGE DISPOSAL PROCESS

Alok K. Bhargava, Whipanny, N.J.; Wai Seung W. Louie, Brooklyn, N.Y., and Arthur N. Stefani, Princeton, N.J., assignors to ABB Lummus Crest Inc., Bloomfield, N.J.

Filed Jul. 14, 1993, Ser. No. 91,875
Int. Cl.[6] C10G *9/14*
U.S. Cl. 208—131 1 Claim



1. A method for disposing of waste refinery sludge in a delayed coking process employing at least one coke drum comprising the steps of:

a. feeding a heated fresh coking feed into a coke drum through the bottom of said drum while maintaining coking conditions in said drum;

b. providing a waste refinery sludge containing water, light hydrocarbons and heavy hydrocarbons;

c. diluting said waste stream with a hydrocarbon selected from the group consisting of naphtha and gas oil to minimize fouling and foaming;

d. heating said stream and evaporating water and light hydrocarbons therefrom;

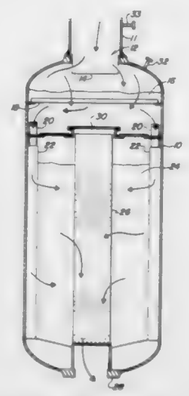
e. further heating said stream to a coking temperature and introducing said stream into said coke drum through the top portion thereof whereby vapor from said sludge is discharged from said coke drum with overhead vapor from said coking feed and unvaporized liquids and solids from said sludge are mixed with the material being coked.

5,389,235

CATALYTIC REACTION ZONE FOR SULFUR CONTAMINANT SENSITIVE CATALYST

Michael B. Russ, Villa Park, and Thomas A. Jasonowicz, Hoffman Estates, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 2, 1992, Ser. No. 984,652
Int. Cl.[6] C10G *35/04*
U.S. Cl. 208—134 7 Claims



1. A process for the catalytic conversion of a hydrocarbon feedstock with an L-zeolite catalyst, said process comprising:

a) passing a hydrocarbon feed to a reactor vessel;

b) retaining a sorbent for the sorption of sulfur compounds in said reactor vessel as a downflow bed and passing said feed through said sorbent material;

c) passing said feed from said downflow bed into contact with an L-zeolite catalyst arranged in said reactor vessel as a radial flow catalyst bed;

d) measuring sulfur that enters said downflow bed;

e) recording a measurement of sulfur loading in said downflow bed; and,

f) comparing said measurement of sulfur loading to the total sulfur sorbent capacity of said downflow bed.

5,389,236

METHOD AND APPARATUS FOR CONTROLLING INTRODUCTION OF CATALYSTS INTO FCC UNITS

David B. Bartholic, 75 Wetumpka La., Watchung, N.J. 07060, and Regis B. Lippert, 210 Baltimore Blvd., Sea Girt, N.J. 08750

Filed Apr. 21, 1993, Ser. No. 50,865
Int. Cl.[6] C10G *13/18*
U.S. Cl. 208—152 24 Claims

1. A method for controlling addition of a catalyst into a fluid catalytic cracking unit (FCC unit) in order to maintain a given concentration of the catalyst in said FCC unit and thereby produce a desired performance from said FCC unit, said method comprising:

obtaining data concerning the fluid catalytic cracking unit in order to establish:

(1) an upper concentration limit for the catalyst which is capable of producing the desired performance from the FCC unit,

(2) a lower concentration limit for the catalyst which is capable of producing the desired performance from the FCC unit,

(3) a rate of consumption of the catalyst by the FCC unit, and

(4) an addition rate at which catalyst is introduced into the FCC unit;

entering the data concerning the FCC unit into a programmed computer in order to determine:

(1) a basic cycle time for introducing an addition amount of the catalyst into the FCC unit,

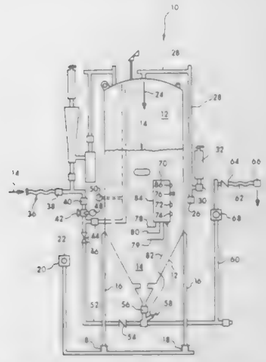
(2) a first period of the basic cycle time wherein the addition amount of the catalyst is introduced into the FCC unit,

(3) a second period of the basic cycle time wherein the catalyst is not introduced into the FCC unit,

(4) an addition amount of the catalyst which is capable of raising the concentration of the catalyst from the lower concentration limit to the upper concentration limit and which also is capable of being introduced into the FCC unit during the first period of the basic cycle time, given the addition rate at which catalyst is introduced into the FCC unit,

placing the FCC unit under control of a computerized control device and thereby:

(1) operating the FCC unit for a given period of time which contains a series of basic cycle times,



(2) introducing a nominal addition amount of the catalyst (having a nominal weight) into the FCC unit during the first period of a given basic cycle time by injecting said catalyst into the FCC unit at an addition rate which is between about three times and about ten times the rate of consumption of the catalyst by said FCC unit,

(3) determining a weight difference between the nominal weight of the nominal addition amount and an actual weight of the catalyst introduced into the FCC unit by weighing a container holding an inventory of the catalyst before and after the nominal addition amount is introduced into the FCC unit,

(4) sending analog information concerning the weight difference between the nominal weight of the nominal addition amount and the actual weight of the catalyst introduced into the FCC unit as determined by weighing the container holding the inventory of the catalyst to the computerized control device in order to take any needed corrective action with respect to subsequent introduction of the catalyst into the FCC unit.

5,389,237

FCC PROCESS WITH LIFT GAS

Mohsen N. Harandi, Langhorne, and Paul H. Schipper, Doylestown, both of Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 8, 1993, Ser. No. 28,018
Int. Cl.[6] C10G *11/18*
U.S. Cl. 208—153 10 Claims

1. A process for the fluidized catalytic cracking of a feed containing sulfur and hydrocarbons boiling above 650 F. to catalytically cracked products comprising:

a) charging to a base portion of a riser reactor a stream of regenerated catalyst and an ethylene containing lift gas recovered from said catalytically cracked products and accelerating said catalyst up said riser reactor;

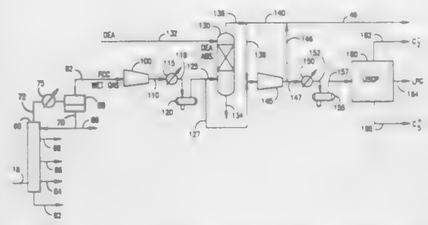
b) contacting said accelerated catalyst with said feed hydrocarbons in a lower portion of said riser reactor to produce a mixture of regenerated catalyst and feed;

c) cracking said mixture in said riser reactor to produce a mixture of cracked products including ethylene and H_2S and spent catalyst which are discharged from a top portion of said riser reactor;

d) separating said mixture to produce a stream of catalytically cracked products which are removed as a product for transmission to an FCC main fractionator and a stream of spent catalyst containing entrained and absorbed catalytically cracked products and coke;

e) stripping said spent catalyst in a stripping means by contact with a stripping gas at stripping conditions to produce stripped catalyst;

f) regenerating said stripped catalyst in a catalyst regeneration means at catalyst regeneration conditions including



contact with an oxygen containing gas to produce regenerated catalyst;

g) recycling said regenerated catalyst to said cracking reactor to contact said feed;

h) fractionating said cracked products in said FCC main fractionator to produce a plurality of liquid product streams and an overhead vapor stream containing ethylene and H_2S;

i) compressing said overhead vapor stream to produce a compressed vapor stream containing ethylene and H_2S;

j) splitting said compressed vapor stream into a lift gas fraction and a product fraction;

k) removing H_2S from said lift gas fraction of said compressed vapor stream in an H_2S removal means to produce a compressed vapor containing ethylene and a reduced H_2S content relative to said product fraction;

l) recycling to said base of said riser reactor said lift gas fraction; and

m) charging to a gas plant said product fraction of said compressed vapor.

5,389,238

EBULLATED BED PROCESS WITH RECYCLE EDUCTOR

Edward K. Liu; John C. Strickland, and Ting Y. Chan, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 17, 1993, Ser. No. 32,086
Int. Cl.[6] C10G *13/02*
U.S. Cl. 208—157 6 Claims

1. An ebullated bed process carried out in a reactor vessel wherein a liquid hydrocarbon feedstock is passed through a feedstock conduit at a feedstock rate to a lower portion of a reactor vessel, and upwardly through an expanded catalyst bed to an upper portion of the reactor vessel from which an effluent is withdrawn, and separating the effluent at a separation pressure into a liquid phase effluent and a vapor phase effluent, wherein the improvement comprises:

providing a head in the feedstock conduit at least 50 psi (4.4 atm) above the separation pressure, and

educting a portion of said liquid phase effluent by means of

the head into the feedstock conduit at a recycle rate to maintain an expanded catalyst bed volume at 110 vol % to 200 vol % of a settled catalyst bed volume.

5,389,239

CONTROL METHOD FOR DIRECT-COUPLED FCC RISER CYCLONE

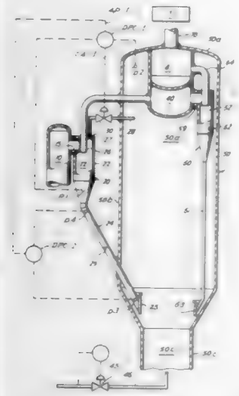
Leonce F. Castagnos, Jr., The Woodlands, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 22, 1993, Ser. No. 155,356

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.[6] C10G *11/18*

U.S. Cl. 208—161 **8 Claims**



1. A control method for fluid catalytic cracking a hydrocarbon feedstock comprising:

contacting the feedstock with fluidized cracking catalyst in a riser reaction zone at catalytic reaction temperature and reaction pressure thereby yielding a reaction mixture;

discharging the reaction mixture into a direct-coupled riser cyclone separation zone, and separating the reaction mixture at a separation pressure to yield a cracked hydrocarbon vapor and a coked cracking catalyst;

withdrawing the cracked hydrocarbon vapor from the separation zone;

measuring the separation pressure to produce a separation pressure measurement;

contacting the coked cracking catalyst with a stripping gas and separating to yield stripped catalyst and spent stripping gas;

measuring a spent stripping gas pressure to produce a spent stripping gas pressure measurement; and

passing the spent stripping gas to the separation zone at a flow rate proportional to a measurement difference between the separation pressure measurement and the spent stripping gas pressure measurement, thereby maintaining a pressure differential between the separation pressure and the spent stripping gas pressure.

5,389,240

NAPHTHENIC ACID REMOVAL AS AN ADJUNCT TO LIQUID HYDROCARBON SWEETENING

Ralph D. Gillespie, Elgin, and Blaise J. Arena, Chicago, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Aug. 2, 1993, Ser. No. 100,848

The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.

Int. Cl.[6] C10G *19/073, 27/00;* **C07C** *7/12*

U.S. Cl. 208—226 **18 Claims**

1. In the method of sweetening a mercaptan-containing hydrocarbon feedstock by the oxidation of mercaptans to disulfides catalyzed by metal chelates in an alkaline environment, where said hydrocarbon feedstock contains naphthenic acids in an amount corresponding to an acid number of greater than 0.003, the improvement comprising flowing the hydrocarbon feedstock prior to sweetening through a bed of a solid solution of at least one divalent metal oxide selected from the group consisting of magnesium, calcium, barium, nickel, cobalt, iron and zinc and aluminum oxide at conditions effective to remove naphthenic acids by said solid solution to afford a hydrocarbon feedstock containing naphthenic acids in an amount corresponding to an acid number less than 0.003.

5,389,241

METHOD FOR SELECTIVE HYDRODENITROGENATION OF RAW OILS

Chakka Sudhakar, Wappingers Falls; Gerald G. Sandford, Glenham, and Frank Dolfinger, Jr., Poughkeepsie, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 810,086, Dec. 19, 1991. This application Oct. 6, 1993, Ser. No. 132,415

Int. Cl.[6] C10G *45/04;* **C07C** *7/00*

U.S. Cl. 208—254 H **7 Claims**

1. A one-step method for selectively removing nitrogen from a raw hydrocarbon oil which comprises reacting said raw hydrocarbon oil with hydrogen over a sulfided carbon supported Fe—Mo catalyst under hydrodenitrogenation conditions, including a temperature of from about 200° C. to about 450° C. and a pressure from about 100 to about 2500 psig, wherein said carbon support has a BET surface area of at least about 650 m^2/g, a pore volume for nitrogen of at least about 0.3 cc/g and an average pore diameter of at least about 0.8 nanometers.

5,389,242

PROCESS FOR THE FRACTIONATION OF OIL AND GAS ON A PETROLEUM DEPOSIT EFFLUENT

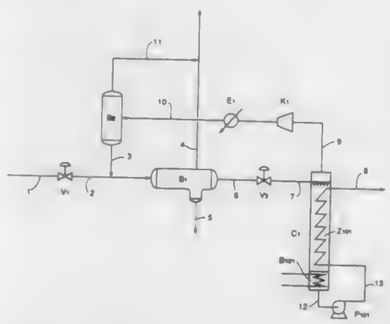
Christophe Lermite, Paris; Joseph Larue, Chambourcy, and Alexandre Rojey, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 7, 1992, Ser. No. 925,698

Claims priority, application France, Aug. 8, 1991, 91 10230

Int. Cl.[6] C10G *7/00, 7/02*

U.S. Cl. 208—347 **20 Claims**



1. A process for the fractionation of oil and gas from a petroleum deposit effluent said process comprising:

in a stage (a), introducing the petroleum deposit effluent containing oil and gas into a separator and separating liquid and gaseous phases at a gas evacuation pressure, P1, producing a gaseous fraction, G1, and producing a liquid fraction, L1, composed at least in part of oil, and sending said liquid fraction, L1, to at least one distillation stage (b) which comprises a distillation zone (C1) having an internal heat exchange zone and a reboiling zone wherein the internal heat exchange zone is formed by vertical tubes and a calandria which surrounds said tubes;

in said at least one distillation stage (b), distilling the liquid fraction, which passes through said internal heat exchange zone as a falling film, at a pressure, P2, which is less than the pressure, P1, in stage (a) and more than atmospheric pressure, in said distillation zone (C1), and recovering a gaseous fraction, G2, and a liquid fraction, L2; reboiling said liquid fraction, L2, and passing the resultant vapor into and through said internal heat exchange zone; and

in at least one recompression stage (c), recompressing at pressure, P1, at least a part of the gaseous fraction, G2, and at least partially mixing the recompressed gaseous fraction, G2, with the gaseous fraction, G1, and recovering the resultant mixture.

5,389,243

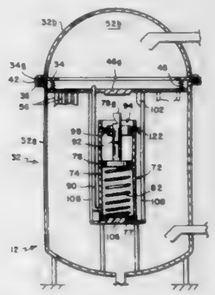
SELF-REGENERATING PRESSURIZED FILTERING SYSTEM FOR LIQUIDS

Neil B. Kaplan, 2239 Quail Ridge So., Palm Beach Gardens, Fla. 33418

Filed Sep. 28, 1992, Ser. No. 951,917

Int. Cl.[6] B01D *29/66, 29/70, 35/143*

U.S. Cl. 210—90 **18 Claims**



6. A filter system comprising

a fluid-tight housing;

one or more filter elements dividing said housing interior into a first chamber and a second chamber;

means for introducing a liquid under pressure into said first chamber so that said liquid flows from said first chamber through each filter element to the second chamber;

means for conducting liquid from the second chamber;

pumping means in said housing for increasing the fluid pressure in said second chamber;

energy storage means in said housing and responsive to a pressure differential between said first and second chambers for storing energy, said energy storage means comprising a resilient variable volume container located in the first chamber collapsible in response to a pressure increase in the first chamber, and

means responsive to a pressure change in one of said chambers for applying the energy stored by said energy storage means to drive said pumping means so as to produce liquid backflow through each filter element.

7. The system defined in claim 6 wherein the energy storage means comprise

a linear actuator including a cylinder and a piston movable in the cylinder between an extended position and a retracted position;

a spring for biasing the piston to said extended position, and

means for releasably retaining the piston in said retracted position.

9. The system defined in claim 7 wherein the retracted position of said piston in said cylinder is directly related to the pressure differential between said first and second chambers caused by back pressure developed at said one or more filter elements.

10. The system defined in claim 9 and further including signaling means, and

means responsive to a selected position of said piston in said cylinder for actuating said signaling means.

5,389,244

PRESSURE AND VACUUM FILTRATION AND WASHING DEVICE

Michael T. Cranston, 161 Oak Ln., Greencastle, Pa. 17225

Filed Jun. 21, 1993, Ser. No. 78,836

Int. Cl.[6] B01D *36/00, 41/04*

U.S. Cl. 210—106 **16 Claims**



1. A pressure and vacuum filtration and washing device adapted for the processing and handling of hazardous materials without releasing hazardous chemical vapors. comprising:

a microporous filter medium adapted to be operated under an inert atmosphere;

a filter vessel containing said filter medium and adapted to contain said inert atmosphere;

means for pumping a solid-liquid stream through said filter vessel wherein said solid-liquid stream is separated by said filter medium into a filter cake and a filtrate stream;

a mixer for washing the cake;

at least one control valve; and

piping means interconnecting said filter vessel, said pumping means, said mixer, and said valve, wherein;

said device is totally enclosed and self contained and wherein said piping means includes a dip tube contained within the filter vessel and connected at one end to the piping interconnecting the mixer and the filter vessel, wherein the other end of said dip tube extends a predetermined distance from a face of said filter medium.

5,389,245

VAPOR SEPARATING UNIT FOR A FUEL SYSTEM

Matthew W. Jaeger, Fond du Lac, Wis.; Brian R. White, Stillwater, Okla.; Steven M. Lippincott, Stillwater, Okla.; Jerry M. Stoll, Jr., Stillwater, Okla.; Yasuaki Ogishi, Greendale, Wis., and Ken-Ichi Nomura, Yokohama, Japan, assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Aug. 10, 1993, Ser. No. 104,772

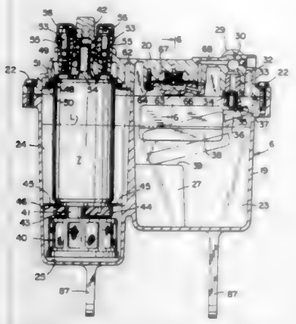
Int. Cl.[6] B01D *35/01*

U.S. Cl. 210—129 **19 Claims**

1. A vapor separating assembly for a marine engine, comprising a tank, fuel inlet means for introducing liquid fuel into the tank, valve means connected to said fuel inlet means for opening and closing said fuel inlet means, liquid level control means responsive to the level of liquid in the tank for moving said valve means between the open and closed position, electric pumping means disposed within the tank and having an inlet located in the tank and an outlet communicating with a

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fuel rail assembly of an engine, said tank including a first section and a second section, said first section comprising a reservoir to contain liquid fuel and said second section comprising a pumping chamber to contain said pumping means, said tank further including an internal wall partially separating said



reservoir and said pumping chamber, said tank having a sloping lower surface interconnecting said reservoir and said pumping chamber, fuel return conduit means connecting the fuel rail assembly with said tank for returning fuel to the tank, and vapor venting means connected to the upper end of the tank for venting vapor from the tank.

5,389,246

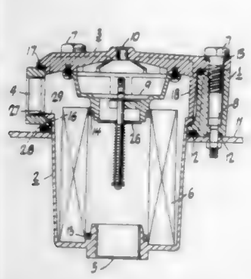
RESERVOIR FILTER

William L. Zinga, Arlington Heights, Ill., assignor to Zinga Industries Inc., Reedsburg, Wis.

Continuation of Ser. No. 6,545, Jan. 21, 1993, abandoned. This application Feb. 3, 1994, Ser. No. 191,135

Int. Cl.[6] B01D *35/02, 35/147*

U.S. Cl. 210—130 **11 Claims**



10. A reservoir filter housing adapted to accommodate a replaceable cylindrical filter element having an inner radial surface and adapted for use in suction and return line applications, the reservoir filter housing comprising:

a) a filter bowl, said filter bowl

i) having a first end, said first end having a base including an opening defining a port, said port including a substantially cylindrical projection which has an outer radial surface sized to form a friction fit with the inner radius of said filter element, and

ii) having a second end, said second end being open and having an annular flange on its radially outer surface, said flange having a first surface facing in a direction towards said first end and a second surface facing in a direction away from said first end;

b) a filter body defining an interior chamber, said filter body

i) having a radial opening defining a second port,

ii) having an open first end,

iii) having an open second end, said second end having an annular radially inward projecting ledge on an inner surface thereof, said annular radially inward projecting ledge having a first surface for holding said filter bowl; and

c) an access cover, said access cover

i) being sized to fit over and seal said open first end of said filter body,

ii) having a first surface facing said interior chamber,

iii) having an axial extension formed on said first surface of said access cover, said axial extension including a section having a substantially cylindrical outer surface with an outer radius sized to form a friction fit with the inner radial surface of said filter element, and

iv) having a plurality of fingers, said fingers

extending axially from said first surface of said access cover, and

contacting said first surface of said flange of said filter bowl such that said second surface of said flange of said filter bowl is held against said first surface of said annular radially inward projecting lip of said filter body.

5,389,247

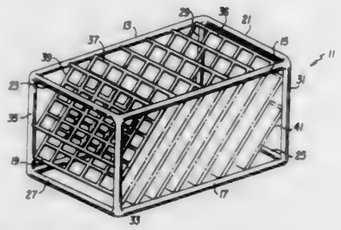
WASTE WATER TREATMENT PROCESS

Arthur G. Woodside, 60 Birdie Dr., Slidell, La. 70460

Filed Jun. 5, 1992, Ser. No. 894,665

Int. Cl.[6] C02F *3/06*

U.S. Cl. 210—151 **9 Claims**



1. Apparatus for treating waste water comprising

a plurality of nets consisting of crossing ribbon-like lines having a multitude of ringlets, said lines being fabricated from a high-tensile strength environment-proof thread;

a frame having substantially horizontal and vertical interconnected rods;

means for mounting each of said plurality of nets in a substantially planar-spaced configuration within said frame, the plane of said nets being at an angle of between 40° and 50° to said horizontal rods; and

a tank for receiving organic waste water, said tank being of a dimension for receiving at least one of said frames.

5,389,248

BIOREACTOR FOR BIOLOGICAL TREATMENT OF CONTAMINATED WATER

François Paré, Montreal, and John Hart, Fredericton, both of Canada, assignors to Bioremetek, Inc., Montreal, Canada

Filed May 21, 1993, Ser. No. 66,308

Int. Cl.[6] C02F *3/10*

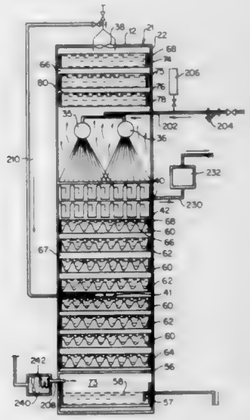
U.S. Cl. 210—151 **16 Claims**

1. A bioreactor unit for the aerobic biological treatment of hydrocarbon contaminated waste water and off-gases, said bioreactor comprising a biotreatment chamber which comprises:

a vertically extending housing unit forming walls, floor and ceiling of said biotreatment chamber, said housing unit comprising a door for accessing said treatment chamber;

waste water inlet means for discharging waste water under pressure from an upper portion of said biotreatment chamber;

a plurality of superimposed water treatment trays disposed substantially horizontally in said housing of said biotreatment chamber and below said waste water inlet means, said water treatment trays being adapted for retrieval from said biotreatment chamber through said door of said housing unit, each of said water treatment trays having at least one bottom porous section containing an organic contact media, said organic contact media comprising naturally occurring organic vegetative matter, said organic contact media acting to retain and favor growth of microorganisms having the ability to degrade hydrocarbons in said waste water, said water treatment trays being



disposed in said biotreatment chamber in a stationary relationship during treatment to permit intimate successive contact of said waste water with said organic contact media on each of said water treatment trays for gradual treatment of said waste water, as said waste water flows downwards in said biotreatment chamber;

water outlet means substantially at a bottom of said biotreatment chamber for discharging treated waste water from said biotreatment chamber;

air flow means for creating an aerobic environment in said biotreatment chamber, said air flow means being adapted to provide air flow through said water treatment trays in said biotreatment chamber; and

air outlet means for removing air introduced in said biotreatment chamber through said air flow means.

5,389,249

CLARIFIER WITH ROTATING SEALED COVER

John Richards, London, England, assignor to Dorr-Oliver Incorporated, Milford, Conn.

Filed Dec. 1, 1993, Ser. No. 159,845

Int. Cl.[6] B01D *21/06*

U.S. Cl. 210—188 **12 Claims**

1. An apparatus for clarifying liquor, comprising:

a tank;

a cover positioned over said tank, said cover being rotatably and sealingly engaged with a marginal wall of said tank so as to prevent foul air within said tank from escaping into the atmosphere;

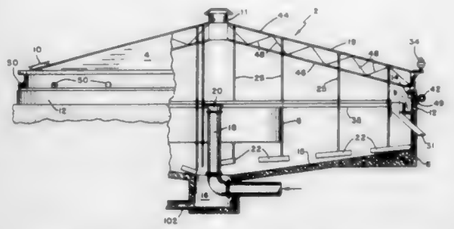
an air inlet means on said cover;

an influent supply means disposed within said tank, said supply means comprising a feed well being rotatable with and supported by said cover;

means, on said tank, for extracting foul air from within the tank;

means, on said tank, for filtering the foul air extracted from said tank and discharging the filtered air into the atmosphere;

means for rotating said cover; and



a plurality of rakes supported by and rotatable with said cover for raking settled solids toward the center of said tank and into a sediment discharge sump of said tank.

5,389,250

SELF DILUTING FEEDWELL FOR THICKENER DILUTION

Leonard J. A. Wood, Wyee; Simon D. Turner, Summerland Point; Timothy J. Laros, Marsfield, all of Australia, and Robert C. Emmett, Jr., Salt Lake City, Utah, assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Sep. 26, 1991, Ser. No. 767,072

Int. Cl.[6] B01D *21/24*

U.S. Cl. 210—194 **29 Claims**

1. An apparatus for diluting an influent feed stream comprising:

a settling tank structured to provide settling of particulate material residing within liquid contained within said tank and configured to facilitate the formation of a clarified liquid phase in an upper region of said tank;

influent feed pipe means positioned relative to said tank to deliver an influent liquid slurry feed stream to said tank from an influent source external to and other than said tank, said influent feed pipe means having nozzle structure forming an outlet;

eductor means having an inlet positioned to receive said liquid slurry feed stream from said nozzle structure of said outlet, and having at least one port positioned proximate to said inlet, said port being positioned proximate to and in fluid communication with said clarified liquid phase in said tank to draw clarified liquid from said tank through said port responsive to momentum transfer between the flow of said influent liquid slurry feed and said clarified liquid; and

receiving chamber structure positioned downstream from said nozzle structure to provide mixing of said influent feed stream and said clarified liquid drawn from said settling tank.

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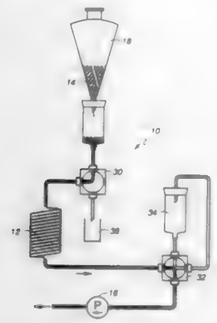
ORGANIC CONTAMINANT SEPARATOR

Peter Del Mar, Los Alamos, N. Mex., assignor to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 912,431, Jul. 13, 1992, Pat. No. 5,273,655, which is a continuation-in-part of Ser. No. 648,774, Jan. 31, 1991, abandoned, which is a division of Ser. No. 418,613, Oct. 10, 1989, Pat. No. 5,037,553. This application Nov. 23, 1993, Ser. No. 157,753

Int. Cl.[6] **B01D** *15/08*

U.S. Cl. 210—198.2 **7 Claims**



1. An extraction apparatus for sample preparation prior to analysis for the concentration of an organic contaminant in an aqueous medium comprising:

a. a composite tube comprised of a blend of a polyolefin and a polyester, the composite tube having an internal diameter of from about 0.1 to about 2.0 millimeters and being of sufficient length to permit an organic contaminant contained within an aqueous medium passed therethrough to adhere to the composite tube; and

b. a means of passing through the composite tube both a first predetermined amount of an aqueous medium containing an organic contaminant at a predetermined rate whereby the organic contaminant adheres to the composite tube and a second predetermined amount of a solvent capable of removing the adhered organic contaminant from said composite tube.

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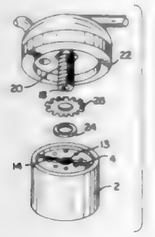
MAGNETIC FILTER AID

Robert A. Morrick, 3209 Pheasant Branch Rd., Middleton, Wis. 53562

Filed Jul. 28, 1993, Ser. No. 98,627

Int. Cl.[6] **B01D** *35/06*

U.S. Cl. 210—223 **3 Claims**



1. In a filter system having a housing, a filtering material within the housing, an inlet coverplate containing the filtering material within the housing and sealed to the housing, said coverplate having oil inlet holes, and a central mounting aperture in the coverplate having a predetermined diameter and for mounting the housing on an engine with an exterior side of the coverplate facing the engine, the improvement comprising a filtering aid comprising;

an annular permanent magnet, and

an annular particle-collecting disk formed of an easily magnetizable material,

said magnet being magnetically secured to said exterior side of said coverplate concentrically with said aperture, and said disk being magnetically secured to said magnet concentrically with said aperture, said magnet and said disk each having a central hole of substantially equal diameter and of a diameter substantially equal to the diameter of said aperture so that said holes and said aperture may be aligned with said plate disposed in the path of oil flow when the housing is mounted on an engine.

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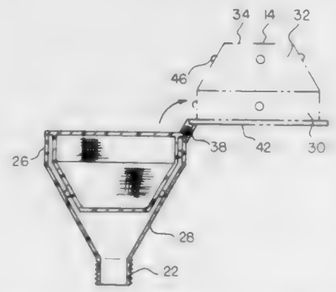
FUNNELS FOR USE WITH LARGE DRUMS

Michael G. Cicconi, 3650 Tuscarawas Rd., Beaver, Pa. 15009

Filed Nov. 9, 1993, Ser. No. 149,515

Int. Cl.[6] **B01D** *29/085;* **B65B** *39/00*

U.S. Cl. 210—248 **2 Claims**



1. A new and improved apparatus for pouring oil and other fluids into a large container comprising, in combination:

a funnel fabricated of a rigid material and having a lower extent of a cylindrical configuration with a small diameter and a limited height with external threads thereon, an upper extent of a cylindrical configuration with a large diameter and a limited height, and an intermediate extent of a frustroconical configuration extending between the upper extent and the lower extent, the upper and intermediate and lower extents having a common axis with the surface of the intermediate extent forming an angle of about 30 degrees with respect to the axis; and

a strainer having a cylindrical upper wall positionable within the upper cylindrical extent of the funnel and equally spaced therefrom and a frustroconical lower wall forming an angle of about 30 degrees with respect to the axis and located within the upper portion of the intermediate frustroconical extent of the funnel and equally spaced therefrom and a circular wall therebeneath and a hinge coupling the upper edge of the strainer to the upper edge of the funnel, the wall being fabricated of a mesh material.

5,389,254

WATER TREATMENT SYSTEM

Lawrence C. Sherman, Clearwater, Fla., assignor to Olin Corporation, St. Petersburg, Fla.

Filed Aug. 13, 1993, Ser. No. 106,253

Int. Cl.[6] **B01D** *63/00*

U.S. Cl. 210—257.2 **8 Claims**

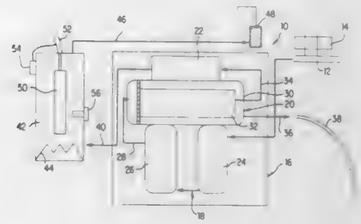
1. A system for treating water comprising:

(a) a pre-filter for filtering influent water,

(b) a reverse osmosis membrane for removing ionic level contaminants from the pre-filtered water,

(c) a holding tank for receiving water from said reverse osmosis membrane,

(d) a source of ultraviolet light within said holding tank for providing sufficient ultraviolet disinfection to eliminate bacterial growth in the water contained therein, wherein



said holding tank maintains the water contained therein under pressure by means of a pressure maintaining diaphragm mounted within said tank, and

(e) an outlet from said holding tank for dispensing potable water.

5,389,255

MODULE FOR PERFORMING PERVAPORATION OF FLUIDS

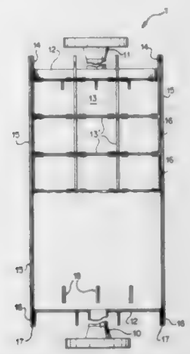
René S. Danziger, Adliswil, Switzerland, and Claus Gerrath, Langnau, Germany, assignors to Krebs & Co. AG, Switzerland

Filed May 19, 1993, Ser. No. 64,512

Claims priority, application Switzerland, May 27, 1992, 01720/92

Int. Cl.[6] **B01D** *63/00*

U.S. Cl. 210—321.75 **13 Claims**



1. In a module for performing pervaporation of fluids, having a feed inlet (**10**) and a retentate outlet (**11**) and at least one plate-shaped pervaporation chamber (**2**) each of which has a flat permeable membrane (**26**) on both sides and at least one permeate outlet, wherein each pervaporation chamber (**2**) is positioned between two adjacent plate-shaped heating chambers (**3**), the improvement comprising: each said pervaporation chamber (**2**) and said heating chambers (**3**) being self-supporting enclosed chambers maintained at a spaced distance with respect to each other in a closed flow-through reservoir (**1**) whereby the fluid to be pervaporated flows in a gap formed between each said pervaporation chamber (**2**) and a correspondingly adjacent said heating chamber (**3**) in a flow direction from said feed inlet (**10**) to said retentate outlet (**11**);

said flow-through reservoir (**1**) shaped as a rectangular box, said feed inlet (**10**) and said retentate outlet (**11**) positioned on two opposite narrow end walls (**12**) of said rectangular box, one longitudinal end wall (**15**) of said rectangular box supporting said heating chambers (**3**) and an opposite longitudinal end wall (**15**) supporting each said pervaporation chamber (**2**), and both said longitudinal end walls (**15**) sealingly mounted within said flow-through reservoir (**1**); and

a plurality of comb-shaped supports (**18**) positioned within said flow-through reservoir (**1**), and said heating chambers (**3**) and each said pervaporation chamber (**2**) supported on said comb-shaped supports (**18**).

5,389,256

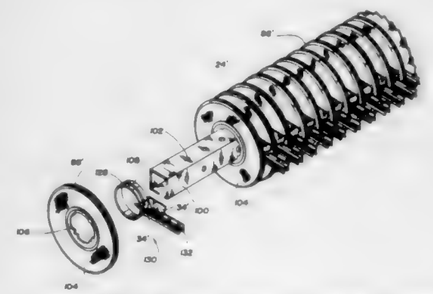
FILTER APPARATUS FOR MACHINE TOOL COOLANT

Stephen N. McEwen, Bowling Green; Jay M. Creps, Rudolph, and Scott M. McEwen, Bowling Green, all of Ohio, assignors to Henry Filters, Inc., Bowling Green, Ohio

Continuation-in-part of Ser. No. 575,338, Aug. 30, 1990, Pat. No. 5,158,691. This application Oct. 27, 1992, Ser. No. 967,196

Int. Cl.[6] **B01D** *33/21, 33/46*

U.S. Cl. 210—346 **5 Claims**



1. An immersible disc filter assembly for filtering particulates from a fluid, the disc filter assembly comprising:

a hollow rotatable mandrel of predetermined cross-sectional shape having perforations through which fluid is movable;

a plurality of hollow disc filter elements having a filter portion for receiving fluid into the hollow of said filter element, each filter element being in driven relationship with the mandrel, said filter elements being spaced along the hollow mandrel and located thereon to place the hollow of each filter element in fluid communication with the hollow of said mandrel through at least one of said perforations;

a plurality of spacer elements relatively rotatably mounted on said mandrel, one of said spacer elements being mounted between each pair of filter elements for spacing said filter elements; and

means for scraping said disc filter elements to remove the particulates therefrom mounted on said spacer elements.

5,389,257

METHOD FOR TREATING WATER

John H. Todd, Falmouth, Mass., and Barry Silverstein, Jay, N.Y., assignors to Ecological Engineering Associates, Marion, Mass.

Division of Ser. No. 266,732, Nov. 3, 1988, Pat. No. 5,087,353. This application Nov. 7, 1991, Ser. No. 789,075

Int. Cl.[6] **C02F** *3/32*

U.S. Cl. 210—602 **17 Claims**

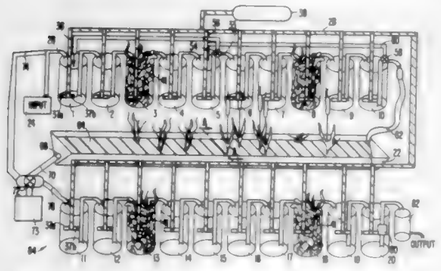
1. A method for treating water comprising:

(a) connecting a plurality of tanks each capable of holding water in series such that water can be transferred along said series of tanks from a first tank to a last tank, wherein each of said tanks comprises a bottom and light-transmitting sides;

(b) stocking said tanks with water and organisms for removing pollutants from the water,

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(c) inputting water containing pollutants to the first tank; and



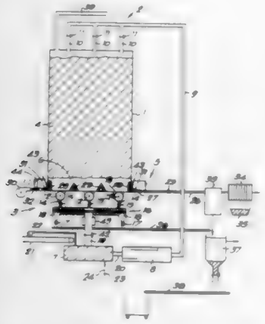
(d) outputting water from which said pollutants have been removed from the last tank.

5,389,258

METHOD FOR THE ANAEROBIC DECOMPOSITION OF ORGANIC WASTE

Jan R. G. Smis, Melsen-Merelbeke, and Luc. A. De Baere, De Pinte, both of Belgium, assignors to Organic Waste Systems, N.V., Belgium

Filed Jun. 29, 1993, Ser. No. 83,258
Claims priority, application Belgium, Jun. 30, 1992, 09200605
Int. Cl.[6] C02F *11/04, 3/28*
U.S. Cl. 210—603 17 Claims



1. A method for the anaerobic decomposition of degradable organic waste and for the extraction of biogas from the latter in a reactor containing an active, anaerobic, methanogene biomass which is exposed to anaerobic fermentation without any mixing in the reactor, comprising

supplying waste in the form of a semi-solid or solid organic substrate at the top of said reactor,

allowing phase separation into a liquid phase and a solid phase in the lower part of said reactor,

secreting a liquid phase at the bottom of said reactor from a top solid phase during a fermentation period without any mixing in said reactor,

removing said secreted liquid phase before fresh waste is supplied to said reactor,

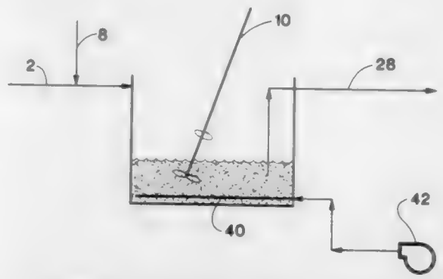
removing at least one third of the entire content of the solid phase from said reactor and thoroughly mixing it with fresh substrate to form said waste which is supplied at the top of said reactor.

5,389,259

PREPARATION TREATMENT OF VOLATILE WASTEWATER COMPONENTS

John K. Berrigan, Jr., Wausau, Wis., assignor to Zimpro Environmental Inc., Rothschild, Wis.

Division of Ser. No. 933,832, Aug. 24, 1992, Pat. No. 5,310,484.
This application Feb. 15, 1994, Ser. No. 196,685
Int. Cl.[6] C02F *3/12*
U.S. Cl. 210—616 7 Claims



1. In a batch flow biophysical treatment process for wastewater containing at least one volatile organic pollutant, said process comprising aerating and mixing said wastewater with biological solids and powdered adsorbent in a treatment zone; ceasing aeration and mixing, then settling a mixture of wastewater, biological solids and powdered adsorbent in said treatment zone to produce a clarified liquid phase which is discharged from said treatment zone and a settled biophysical solids phase retained in said treatment zone, the improvement comprising the steps;

(a) aerating and mixing said settled biophysical solids phase in said treatment zone to establish a significant dissolved oxygen content therein,

(b) ceasing aerating and then adding influent wastewater to contact and mix with aerated biophysical solids in said treatment zone while maintaining in said wastewater a minimum residual dissolved oxygen concentration, whereby a significant portion of said volatile organic pollutant in said influent wastewater is biologically degraded without being stripped from said wastewater; and

(c) commencing aeration and mixing of a mixture of biophysical solids and influent wastewater depleted of volatile organic pollutant in said treatment zone for additional pollutant removal by said biophysical treatment process.

5,389,260

BRINE SEAL FOR TUBULAR FILTER

Melvin R. Hemp, Lodi, and Daniel A. Klein, Middleton, both of Wis., assignors to Clack Corporation, Windsor, Wis.

Filed Apr. 2, 1993, Ser. No. 41,542
Int. Cl.[6] B01D *61/08*
U.S. Cl. 210—652 20 Claims

15. A water filtration system comprising:

A. a manifold having a rinse water discharge port formed therein;

B. an annular boss extending downwardly from said manifold, said boss having outer peripheral threads and an internal passage formed therein through which untreated water flows and which terminates in an untreated water inlet port;

C. an annular filter element having an upper end surrounded by said boss, communicating with said discharge port, and terminating in an upper axial surface;

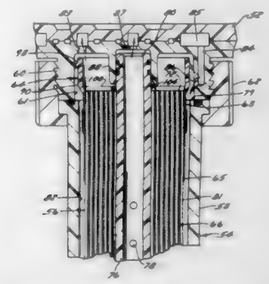
D. an annular fitting extending upwardly from said upper axial surface of said filter element;

E. a filter housing which encases said filter element and which is enclosed except for an open upper axial surface;

F. an internally threaded sump nut which fastens said filter housing to said boss; and

G. a brine seal which isolates said inlet port from said rinse water discharge port, said brine seal including

(1) a annular body having an inner peripheral surface which surrounds said upper axial end of said filter element and which has an outer peripheral surface, said annular body having a lower portion sealingly secured to said filter element and an upper portion extending above said upper axial surface of said filter element,



(2) a ring which engages said annular fitting,

(3) a plurality of ribs which extend radially from said ring to said inner peripheral surface of said annular body proximate a junction between said upper and lower portions thereof, said ribs engaging said upper axial surface of said filter element, and

(4) a skirt which extends outwardly from said outer peripheral surface of said annular body proximate an upper end of said upper portion, which is angled downwardly, and which sealingly engages said boss.

5,389,261

CONDENSATE POLISHER REGENERANT SYSTEM

John Daly, Mississauga, and Ronald Oleka, Oakville, both of Canada, assignors to Grace Dearborn Inc., Canada

Filed Aug. 31, 1993, Ser. No. 114,793
Claims priority, application Canada, Sep. 1, 1992, 2077312
Int. Cl.[6] C02F *1/42*
U.S. Cl. 210—674 14 Claims

8. A method for treating water to remove undesirable cations comprising passing the water through a bed of cation exchange resin wherein the resin was regenerated with an aqueous solution of an organic salt of a low volatility amine wherein the organic anion is represented by the formula:



wherein X is COOH or PO_3H, Y is H, COOH or PO_3H and R is H or C_1 to C_{12} alkyl.

5,389,262

PROCESS FOR REMOVING HEAVY METALS FROM SOLUTIONS WITH FERROUS DITHIONITE AND HYDROXIDE

Robert G. Guess, Beverly, Mass., assignor to Romar Technologies, Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 893,978, Jun. 3, 1992, Pat. No. 5,298,168, which is a continuation-in-part of Ser. No. 682,129, Apr. 8, 1991, Pat. No. 5,122,279. This application Mar. 28, 1994, Ser. No. 218,733
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[6] C02F *1/62*
U.S. Cl. 210—719 21 Claims

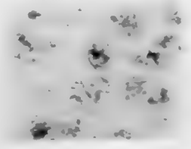
1. The process for removing dissolved heavy metal from an aqueous solution containing said heavy metal which consists essentially of admixing said solution with a source of ferrous and dithionite ion in solution at a pH between about 1 and 7 to effect precipitation of between about 30 and 90 weight percent of said dissolved heavy metal and to form a first solution, admixing said first solution with an alkali metal hydroxide to effect precipitation of a remainder of said heavy metals including ferrous and ferric ions as metal hydroxides and recovering said precipitated heavy metal and metal hydroxides.

5,389,263

GAS ANTI-SOLVENT RECRYSTALLIZATION AND APPLICATION FOR THE SEPARATION AND SUBSEQUENT PROCESSING OF RDX AND HMX

Paula M. Gallagher, Bradford; Val J. Krukonis, Lexington, and Michael P. Coffey, Townsend, all of Mass., assignors to Phasex Corporation, Lawrence, Mass.

Filed May 20, 1992, Ser. No. 886,603
Int. Cl.[6] B01D *21/01*
U.S. Cl. 210—729 36 Claims



1. A process for separating mixtures of crystalline solids using gaseous, near critical, or supercritical fluids as anti-solvents, comprising the steps of

dissolving a solid mixture containing at least two components which are to be separated in a common liquid solvent to form a solution;

adding to the solution a volume a gaseous, near critical, or supercritical anti-solvent to induce precipitation of one component of the components of the solid mixture resulting in a precipitated component, and collecting the precipitated component.

5,389,264

HYDRAULIC ENERGY DISSIPATOR FOR WET OXIDATION PROCESS

Richard W. Lehmann, Rib Mountain, and Mark A. Clark, Schofield, both of Wis., assignors to Zimpro Environmental Inc., Rothschild, Wis.

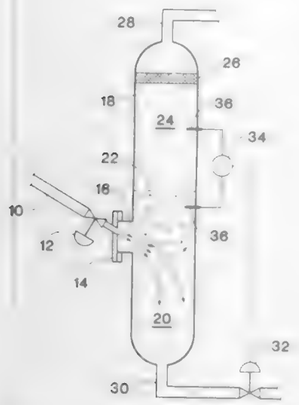
Filed Jul. 12, 1993, Ser. No. 89,463
Int. Cl.[6] B01D *19/00*
U.S. Cl. 210—744 6 Claims

1. In a wet oxidation system where wastewater and oxygen-containing gas are combined to form a wet oxidation mixture which is pressurized and heated within a pressure vessel to effect wet oxidation treatment, said mixture then flowing from said pressure vessel, through cooling means to cool said mix-

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ture, then to a pressure control valve which maintains the system at a selected operating pressure, the improvement comprising;

depressurizing and discharging said cooled oxidation mixture through said pressure control valve into a phase separator vessel of selected length to diameter ratio, said vessel containing a gas phase and a liquid phase, said pressure control valve positioned to discharge said oxidation mixture at a selected orientation below the surface level of said liquid phase within said vessel, thereby dissipating the energy of the oxidation mixture therein and preventing erosion of said phase separator vessel.



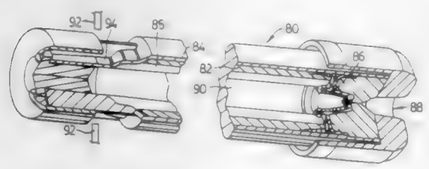
4. A process according to claim 1 further comprising maintaining the surface level of said liquid phase within said phase separator vessel above said pressure control valve inlet by a level control means.

5,389,265

PHASE-SEPARATION TUBE

Robert P. Luoma, II, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 2, 1993, Ser. No. 71,137
Int. Cl.[6] B01D *17/038, 17/12*
U.S. Cl. 210—745 17 Claims



8. A method of partitioning a pre-selected phase of a sample of liquid having a plurality of phases of differing densities and optical characteristics, comprising the steps of:

(a) passing said sample of liquid through a first end of a linear tube and into a first chamber of said tube, said first chamber being located at the first end of said tube and being separated from a second chamber located at a second opposed end of said tube by a separation device, said first end and said second end having sealable openings, said second chamber being free of the liquid, said separation device slidably engaging the interior surface of the tube in an essentially fluid-tight manner and having a flow-restriction orifice therein to permit fluid flow communication between the first and second chambers under the influence of force, said first end of the tube having a section of smaller diameter than the second end, said smaller diameter section extending away from the sealable opening at the first end for a minor fraction of the length of the tube;

(b) ordering the phases of the sample within the tube using axial centrifugation;

(c) while the phases are ordered, reducing the volume of the first chamber by movement of the separation device within the tube, such that one phase of the liquid in the first chamber flows through the flow-restriction orifice as the volume of the first chamber is reduced and into the second chamber, said phase in the second chamber being removable therefrom through the second end of the tube; and

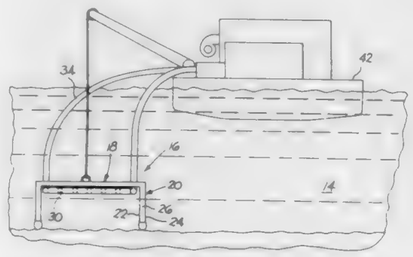
(d) monitoring at least one phase so ordered by optical means fixedly located opposite the section of the tube of smaller diameter and controlling the reduction in volume in accordance with the results of the monitoring of said phase.

5,389,266

METHOD OF REMOVING ZEBRA MUSSELS FROM WATERWAYS AND WETTED SURFACES

David N. Clum, Higdon, Ala.; Frederick Krosner, Signal Mountain, and Jewel R. Leak, Jr., Hixson, both of Tenn., assignors to Dixstar, Inc., Chattanooga, Tenn.

Continuation-in-part of Ser. No. 37,349, Mar. 25, 1993, Pat. No. 5,294,351. This application Jan. 11, 1994, Ser. No. 179,936
Int. Cl.[6] C02F *1/02*
U.S. Cl. 210—747 10 Claims



1. A method of destroying zebra mussels attached to a surface disposed in water, comprising:

(a) isolating said surface and a batch of water in contact with said surface within a chamber separating said batch of water from water outside said chamber;

(b) heating said batch of water to raise the temperature of said batch of water to a temperature lethal to said zebra mussels;

(c) maintaining said batch of water at said lethal temperature for a period of time sufficient to kill said zebra mussels; and

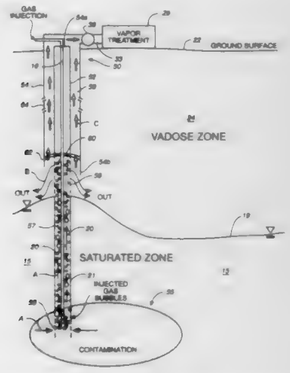
(d) thereafter releasing said batch of water and said surface from said chamber.

5,389,267

IN-SITU VAPOR STRIPPING FOR REMOVING VOLATILE ORGANIC COMPOUNDS FROM GROUNDWATER

Steven M. Gorelick, San Carlos, Calif., and Haim Gvirtzman, Modi'im Mobile Post, Israel, assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation-in-part of Ser. No. 698,409, May 10, 1991, Pat. No. 5,180,503. This application Dec. 18, 1992, Ser. No. 993,722
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.[6] C02F *1/20*
U.S. Cl. 210—758 38 Claims



19. A system for removing volatile organic compounds (VOCs) from groundwater, comprising:

a first well means extending from the ground surface into a saturated zone;

a second well means extending from the ground surface into a vadose zone, said second well means coaxially spaced from said first well means along a length thereof to define an annular space between walls of said first and second wells means;

means for injecting a gas into said first well means to cause groundwater to flow towards and up the first well means but not to the ground surface, and to cause VOCs to be transferred from the groundwater to a vapor within rising gas bubbles in said first well means;

separation means for separating the VOC vapor from the gas bubbles, for allowing the VOC vapor to enter said second well means, and for directing the flow of groundwater from said first well means towards the saturated zone to establish a circulation path extending through the well, the vadose zone and the saturated zone for the removal of VOCs; and

means for collecting the VOC vapor from said second well means.

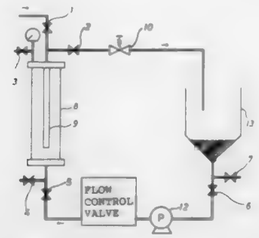
5,389,268

FILTER AID INCLUDING SPECIFIC SILICA GEL

Mutsuhiro Ito; Nobuki Watanabe, both of Hyuga; Sakio Takahashi, Yokohama, and Yuji Takahashi, Narashino, all of Japan, assignors to Fuji Silysia Chemical Ltd. and Kirin Brewery Kabushiki Kaisha, Japan

Filed Oct. 15, 1993, Ser. No. 137,825
Int. Cl.[6] B01D *39/06*
U.S. Cl. 210—777 6 Claims

1. A filter aid, for absorbing protein, comprising silica gel as a primary component thereof, and said silica gel including flake-like silica gel, scale-like silica gel, and rod-like silica gel; wherein said silica gel are classified by shape according to a ratio of a shortest length to a middle length to a longest length, and the ratio of said flake-like silica gel is 1: not less than 3: not less than 5; the ratio of said scale-like silica gel



is 1: not less than 2: not less than 3; and the ratio of said rod-like silica gel is 1: not less than 1: not less than 3.

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BIODEGRADABLE SPIN FINISHES

Rolf Kleber, Neu-Isenburg; Frank Weinelt, Burgkirchen; Lothar Jaeckel, Flörsheim am Main, and Adelgunde Oberhauser, Neuötting, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 959,997, Oct. 13, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 181,359
Claims priority, application Germany, Oct. 15, 1991, 4134113
Int. Cl.[6] D06M *13/137*
U.S. Cl. 252—8.6 4 Claims

1. A method of spin finishing textile fibers, filament, or staple, which comprises, applying as the spin finish, compounds of the formula

$$R_1-CH(OR_2)-OR_2 \quad (I)$$

in which

R_1 is a straight-chain or branched alkyl radical of the empirical formula C_nH_{2n+1} or a straight chain or branched alkenyl radical of the empirical formula C_nH_{2n-1} where n is in each case 1 to 9, and

R_2 is a straight-chain or branched alkyl radical of the empirical formula C_nH_{2n+1} where n is 2 to 9.

5,389,270

COMPOSITION AND PROCESS FOR PREPARING A NON-CONDUCTIVE SUBSTRATE FOR ELECTROPLATING

Charles E. Thorn, Newport, Ky.; Frank Polakovic, Ringwood, N.J., and Charles A. Mosolf, Juno Beach, Fla., assignors to Electrochemicals, Inc., Youngstown, Ohio

Filed May 17, 1993, Ser. No. 62,943
Int. Cl.[6] C10M *125/02*
U.S. Cl. 252—22 8 Claims

1. A composition consisting essentially of:

about 0.1 to about 20% by weight graphite having a mean particle size within the range from about 0.05 to about 50 microns;

about 0.01 to 10% by weight of a water soluble or dispersible binding agent for binding to the graphite particles;

an amount of an anionic dispersing agent for effective for dispersing the bound graphite particles;

a pH within the range of about 9–11, wherein the pH is provided by a carbonate/bicarbonate buffer;

optionally, an amount of a surfactant effective to wet a through hole; and

an aqueous dispersing medium.

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SULFONATED OLEFINIC COPOLYMERS

Robert D. Lundberg, Flemington, and Robert R. Phillips, Spring Lake Heights, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 15, 1993, Ser. No. 77,577
Int. Cl.[6] C10M *151/00*
U.S. Cl. 252—33 11 Claims

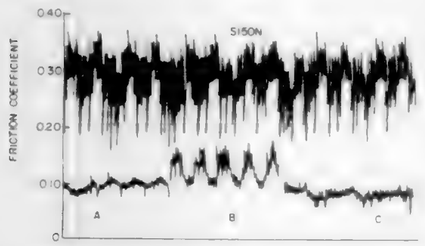
1. A neutralized sulfonated ethylene/alpha olefin copolymer obtained by sulfonating and neutralizing an ethylene/alpha olefin copolymer having terminal unsaturation, at least 30% of which is vinyl idene unsaturation.

5,389,272

LUBRICATING OIL COMPOSITIONS CONTAINING TRITHIOCYANURIC ACID

Morton Beltzer, and Jacob J. Habeeb, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 21,508, Feb. 22, 1993, abandoned. This application Apr. 19, 1994, Ser. No. 229,885
Int. Cl.[6] C10M *133/22*
U.S. Cl. 252—47 6 Claims



1. A method for improving the extreme pressure performance of lubricants used in jet engines which comprises lubricating the jet engine with a lubricating oil composition which comprises:
(a) a major amount of an aviation turbine oil, and
(b) a minor amount of trithiocyanuric acid.

5,389,273

MODIFIED SUCCINIMIDE OR SUCCINAMIDE DISPERSANTS AND THEIR PRODUCTION

Andrew G. Papay, Manchester, Mo., assignor to Ethyl Petroleum Additives, Inc., Richmond, Va.

Division of Ser. No. 766,127, Sep. 27, 1991, Pat. No. 5,256,324, which is a division of Ser. No. 601,240, Oct. 22, 1990, abandoned, and Ser. No. 313,021, Feb. 21, 1989, Pat. No. 5,164,103, which is a continuation-in-part of Ser. No. 167,875, Mar. 14, 1988, Pat. No. 4,855,074. This application Sep. 3, 1993, Ser. No. 117,408
Int. Cl.[6] C10M *137/00*
U.S. Cl. 252—49.9 11 Claims

1. An automatic transmission fluid composition which comprises a major amount of base oil having a viscosity of from about 3.5 to 4.5 cSt at 100° C. and minor amounts of (i) a phosphorus-containing succinimide or succinamide formed by contacting a partially hydrolyzed phosphorus ester with a succinimide or succinamide dispersant, and (ii) viscosity index improver such that said automatic transmission fluid composition has a viscosity in the range of 6.5 to 8.5 cSt at 100° C.

5,389,274

ACTIVATOR-FROTHER COMPOSITION

Hector C. Fernandez, Santiago, Chile, assignor to Hecu S.A., Santiago, Chile

Filed Oct. 21, 1993, Ser. No. 140,578
Claims priority, application Chile, Oct. 23, 1992, 1195-92
Int. Cl.[6] B03D *1/02*
U.S. Cl. 252—61 9 Claims

1. A activator frother composition of good selectivity which can be employed as additional reagent for the flotation of minerals of finely divided sulfide and as sole reagent for the retreatment flotation tailings, comprising:
a) approximately 1% to 10% by weight of said composition being comprised of pine oil;
b) approximately 10% to 30% by weight of said composition being comprised of sodium sulfide (Na_2S) in 10% solution;
c) approximately 15% to 36% by weight of said composition being comprised of hydrogen peroxide (H_2O_2) in 50% solution; and
d) approximately 20% to 40% by weight of said composition being comprised of sodium bicarbonate ($NaHCO_3$) in 20% solution.

5,389,275

COMPOSITIONS FOR STORING COOLNESS CAPACITY

Douglas A. Ames, Manhattan Beach, Calif., assignor to Transphase Systems, Inc., Huntington Beach, Calif.

Division of Ser. No. 338,534, Apr. 11, 1989, Pat. No. 5,037,571, which is a continuation of Ser. No. 126,505, Nov. 30, 1987, abandoned. This application Jun. 28, 1991, Ser. No. 723,427
Int. Cl.[6] C09K *5/00*
U.S. Cl. 252—70 12 Claims

1. A composition of matter suitable for use in storing cooling capacity by its heat of fusion, comprising a major amount of a sodium hydroxide-water solution in which the ratio of sodium hydroxide to water is about 47 to 53, a nucleating agent in an amount sufficient to inhibit supercooling of said solution, and a dispersing agent in a quantity sufficient to maintain said nucleating agent in dispersion throughout said solution, said composition having a freezing-melting point plateau at about 41° F.

5,389,276

AIRCRAFT DEICING FLUID WITH THERMAL AND PH-STABLE WETTING AGENT

David A. Coffey; Edward C. Y. Nieh, and Richard A. Armstrong, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 15, 1993, Ser. No. 151,688
Int. Cl.[6] C09K *3/18*
U.S. Cl. 252—70 13 Claims

1. A deicing/anti-icing composition comprising:
an alkylene glycol component present in an amount between about 80% and 98% by weight of the composition;
a thickener comprising a polyacrylic acid homopolymer or copolymer having a molecular weight between about 600 and 200,000;
a corrosion inhibitor selected from the group consisting of an alkaline metal salt of tolytriazole or benzotriazole;
a buffer selected from the group consisting of phosphates and borates;
a neutralizer selected from the group consisting of alkali metal hydroxides, organic amines bases and mixtures thereof present in an amount sufficient to neutralize between about 20 wt % to 90 wt % of the carboxylic acid groups present in the thickener; and
a surfactant/wetting agent selected from the group consisting of nonylphenol ethoxylates, alkylaryl sulfonates having 7-20 carbon alkyl groups, polyoxyethylene phosphates and tetrafunctional block copolymers of ethylene oxide/propylene oxide (EO/PO) on an ethylene diamine backbone.

5,389,277

SECONDARY ALKYL SULFATE-CONTAINING POWDERED LAUNDRY DETERGENT COMPOSITIONS

Nelson E. Prieto, Richmond, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1993, Ser. No. 129,898
Int. Cl.[6] C11D *7/18, 7/38, 3/395, 1/12*
U.S. Cl. 252—99 17 Claims

1. A powdered detergent composition comprising from about 2 percent by weight to about 30 percent by weight, basis the total weight of the composition, of one or more secondary alkyl sulfate compounds, from about 30 percent by weight to about 85 percent by weight, basis the total weight of the composition, of one or more builders, from about 0.1 percent by weight to about 48 percent by weight, basis the total weight of the composition, of one or more fillers, and from about 0 percent by weight to about 12 percent by weight, basis the total weight of the composition, of one or more bleach compounds.

5,389,278

METHOD FOR REMOVING COFFEE STAINS FROM CARPET

Charles R. Minns, and Thomas L. Varner, Jr., both of Williamsburg, Va., assignors to BASF Corporation, Parsippany, N.J.

Continuation of Ser. No. 650,353, Feb. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 462,919, Jan. 8, 1990, Pat. No. 5,252,243, which is a continuation of Ser. No. 206,531, Jun. 14, 1988, abandoned. This application Jun. 19, 1992, Ser. No. 901,467
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[6] C09K *15/06*
U.S. Cl. 252—102 6 Claims

1. A method of spot removing coffee stains from a synthetic polymer fiber carpet comprising:
contacting said carpet with an amount effective to remove the coffee stains of an aqueous cleaning composition having predominantly throughout said contacting a pH of at least 9 and comprising:
(a) up to about 30 percent by total composition weight of a water-soluble wetting agent selected from the group of aliphatic alcohols; glycols, and mixtures thereof;
(b) between about 3 and about 15 percent by total composition weight of a peroxyhydrate oxidizing agent; and
(c) a pH adjustment substance.

5,389,279

COMPOSITIONS COMPRISING NONIONIC GLYCOLIPID SURFACTANTS

Van Au, Peekskill, N.Y.; George Grudev, Hewitt, N.J.; Bijan Harirchian, South Orange, N.J.; Michael Massaro, Ridgefield Park, N.J., and Abid N. Khan-Lodhi, Hoole Chester, England, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 816,419, Dec. 31, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 981,737
Int. Cl.[6] C11D *9/00, 9/30, 1/18*
U.S. Cl. 252—108 27 Claims

20. A detergent composition comprising an aldobionamide and a surfactant selected from the group consisting of anionic surfactants, nonionic surfactants and mixtures thereof.

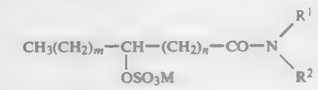
5,389,280

STABLE AND HOMOGENEOUS AQUEOUS FORMULATIONS OF SURFACTANTS

Thomas Martini, Kelkheim; Karl-Heinz Keil, Hanau, and Ignaz Wimmer, Winhöring, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 16, 1992, Ser. No. 821,682
Claims priority, application Germany, Jan. 19, 1991, 4101542
Int. Cl.[6] C09D *9/00;* C11D *7/50, 7/32*
U.S. Cl. 252—170 20 Claims

1. A stable and homogeneous aqueous formulation consisting essentially of at least one surfactant having an "hydrophilic-lipophilic balance" value of less than or equal to 13, and a compound of the formula I



in which R^1 is C_1–C_8-alkyl, C_1–C_8-alkenyl, phenyl, alkyl-phenyl or phenalkyl having in each case 1 to 4 carbon atoms in the alkyl chain or cyclohexyl, R^2 is hydrogen or one of the radicals mentioned for R^1, or R^1 and R^2, together with the nitrogen atom, are a heterocyclic radical, M is an alkali metal or ammonium cation or one equivalent of an alkaline earth metal or aluminum cation and m and n in each case independently of one another are numbers from 6 to 8 , the amount of compound of the formula I being 10 to 300% by weight, based on the amount of water, and the amount of water being 10 to 300% by weight, based on the amount of surfactant.

5,389,281

COMPOSITION FOR PROTECTING VINYL RECORDS

Walter E. Davies, 2811 Castro Valley Blvd., Castro Valley, Calif. 94546, and Marion M. Fulk, 5116 Diane La., Livermore, Calif. 94550

Filed Nov. 1, 1993, Ser. No. 146,715
Int. Cl.[6] C11D *3/20, 1/68, 1/28, 3/44*
U.S. Cl. 252—170 8 Claims

1. A composition for cleaning phonograph records and styli, consisting essentially of:
about 1.5% to about 12.5% by volume lower alcohol;
about 0.10% to about 0.91% by volume 3,5-dimethyl-1-hexyn-3-ol;
about 0.005% to about 0.022% by volume surfactant; and
the balance being deionized water.

5,389,282

MILKY DETERGENT COMPOSITION FOR HARD SURFACES

Hiroyuki Saijo; Haruki Kawano, both of Utsunomiya, and Masaki Tosaka, Oyama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 871,916, Apr. 22, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,478
Claims priority, application Japan, Apr. 24, 1991, 3-094184; Oct. 3, 1991, 3-256699
Int. Cl.[6] C11D *1/66, 1/75*
U.S. Cl. 252—174.17 20 Claims

1. A milky detergent composition for hard surfaces consisting essentially of, based on the total weight of the composition, the following components (a), (b) and (c):
(a) 5–30 wt. % of an alkylglycoside;
(b) 3–15 wt. % of one or more partial esters of aliphatic hydrocarbon polyols selected from the group consisting of glycerol, ethylene glycol, propylene glycol, and dimers and trimers of glycerol, ethylene glycol, and propylene glycol, with fatty acids having at least 16 carbon atoms on the average, said esters having a melting point of 50° C. or higher; and

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(c) 1-10 wt. % of one or more amine oxide surfactants.

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SUBSTANTIALLY PHOSPHATE FREE MILDLY ACIDIC CLEANER FOR PLASTICS

Theodore D. Held, III, Grosse Pointe Farms, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 628,254, Dec. 14, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 974,369

Int. Cl.[6] C11D *1/04, 1/22*

U.S. Cl. 252—174.19 14 Claims

1. An aqueous liquid composition of matter that has a pH in the range from about 4.4 —about 6.1; that has a buffering capacity sufficiently high that at least about 0.06 milliequivalents of a strong base per liter of the composition must be added to raise the pH of the composition by 0.1 pH unit; that contains a total of not more than 0.01 percent by weight of material selected from the group consisting of organic solvents and other organic materials with a boiling point lower than that of water; that has a foam volume of not more than 25 ml from 150 ml of the composition at a temperature of 60° C.; and that consists essentially of water and:

(A) from about 0.4 to about 10 milliequivalents per kilogram of total composition ("mEq/kg") of acids selected from the group consisting of hydroxycarboxylic and dicarboxylic acids;

(B) from about 1.4 to about 20 mEq/kg of salts containing anions of acids selected from the group consisting of hydroxycarboxylic and dicarboxylic acids;

(C) from about 0.21 to about 3.3 grams per kilogram of total composition ("g/kg") of nonionic surfactant; and

(D) an amount of hydrotrope material that is from about 0.25 to about 0.75 times the amount in g/kg of component (C), said hydrotrope material being selected from the group consisting of the ammonium and alkali metal salts of sulfonates of toluene, xylene, and cumene and mixtures thereof; and, optionally,

(E) a sufficient amount of biocidal material to inhibit growth of any bacteria and fungi that may be present in the composition.

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LIQUID CLEANING PRODUCTS HAVING IMPROVED STORAGE CAPACITY WITHOUT SETTLING

Philippus C. van der Hoeven, Prinsenbeek; Arie van der Linden, Maarssen; Pieter Versluis, Vlaardingen, and Terence A. Clarke, Voorschoten, all of Netherlands, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 115,065, Oct. 27, 1987, abandoned. This application Dec. 21, 1990, Ser. No. 631,761

Claims priority, application United Kingdom, Oct. 30, 1986, 8625974

Int. Cl.[6] C11D *1/722, 1/12*

U.S. Cl. 252—174.22 7 Claims

1. A substantially non-aqueous non-setting liquid cleaning product having a viscosity below 10 Pas at a shear rate of 5 s^{-1} or more, when stored at 50° C., for 64 hours immediately after preparation, wherein said liquid cleaning product comprises:

1) from 20% to 70% by weight of a non-aqueous organic solvent comprising polyalkoxylated fatty alcohol nonionic surfactant;

2) from 15% to 70% by weight particles of solid materials dispersed in the solvent; and

3) from 0.01% to 15% by weight of a structurant selected from the group consisting of:

a) deflocculant alkyl, alkenyl, aryl, aralkyl and aralkenyl mono-carboxylic acids, and halogenated derivatives thereof;

b) deflocculant anionic surfactants in the acid form, having a sulphonic acid moiety; and

c) mixtures thereof.

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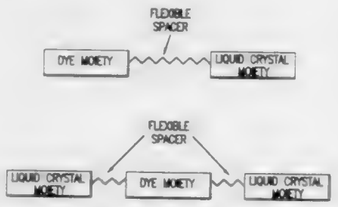
LIQUID CRYSTAL COUPLED DICHROIC DYES

Paul J. Shannon, Exton, Pa., and Brian J. Swetlin, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Dec. 11, 1989, Ser. No. 448,409

Int. Cl.[6] C09K *19/00, 19/52;* G02F *1/13*

U.S. Cl. 252—299.1 19 Claims



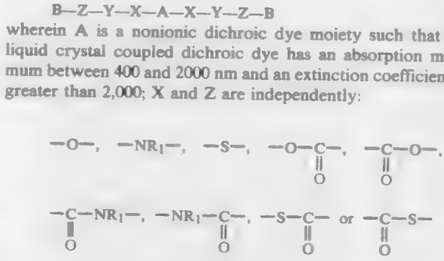
1. A liquid crystal coupled dichroic dye composition comprising a dichroic dye moiety coupled to one or two nematogenic or smectogenic liquid crystal moieties by a flexible spacer group having at least four atoms linked in a linear fashion wherein the liquid crystal coupled dichroic dye composition has the general formulae:

A—X—Y—Z—B (I)

or

B—Z—Y—X—A—X—Y—Z—B (II)

wherein A is a nonionic dichroic dye moiety such that the liquid crystal coupled dichroic dye has an absorption maximum between 400 and 2000 nm and an extinction coefficient of greater than 2,000; X and Z are independently:



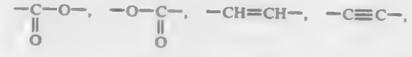
or a covalent bond linkage, wherein R_1 is hydrogen, a methyl group, or an ethyl group; Y is a linear or branched C_2 to C_{12} alkyl group which is uninterrupted or interrupted by one or more of —O—, —S— or —NR_1—; B is a liquid crystal moiety having the general formula:

—D—W—D—R_2, (III)

—D—W—D—D—R_2, or (IV)

—D—D—W—D—R_2 (V)

wherein D is a 1,4-disubstituted benzene ring, a 1,4-disubstituted cyclohexane ring, or a 2,5-disubstituted pyrimidine ring, W is



or a covalent bond linkage, provided that W is not a covalent bond linkage when B comprises three rings, R_2 is a C_1 to C_{12} alkyl group, C_5 to C_7 cycloalkyl group, C_1 to C_{12} alkoxy group, C_1 to C_{12} alkoxycarbonyl group, nitrile group, nitro group or NR_3R_4 wherein R_3 and R_4 are hydrogen or C_1 to C_{12} alkyl groups; and X—Y—Z comprises at least four linearly linked atoms.

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LIQUID CRYSTAL COPOLYMER CONTAINING ALKOXY-SUBSTITUTED PARA-PHENYLENE TEREPHTHALATE GROUPS

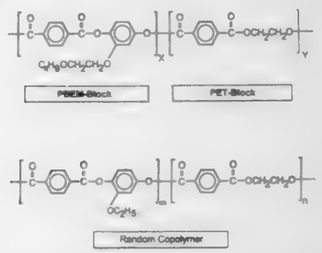
Ashok Tendolkar, New Cidco, India; Sridevi Narayan, Amherst, Mass.; Simon W. Kantor, Agawam, Mass., and Robert W. Lenz, Amherst, Mass., assignors to University of Massachusetts at Amherst, Amherst, Mass.

Filed Oct. 8, 1992, Ser. No. 958,382

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.[6] C09K *19/52;* C08G *63/00*

U.S. Cl. 252—299.01 10 Claims



1. A liquid crystalline copolymer comprising:

(a) alkoxy-substituted para-phenylene terephthalate groups; and

(b) alkylene-terephthalate groups.

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ANTIFERROELECTRIC LIQUID CRYSTAL COMPOSITE MATERIAL, PROCESS FOR PREPARING THE SAME, AND LIQUID CRYSTAL ELEMENT USING THE SAME

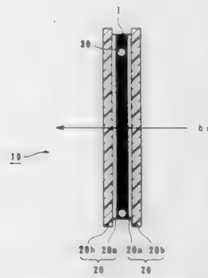
Shinichi Nishiyama; Mitsuko Nagai; Hideo Hama, and Tooru Yamanaka, all of Sodegaura, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jul. 13, 1993, Ser. No. 90,820

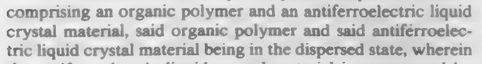
Claims priority, application Japan, Jul. 14, 1992, 4-186690; Apr. 28, 1993, 5-103249

Int. Cl.[6] C09K *19/52, 19/32;* G02F *1/13*

U.S. Cl. 252—299.01 14 Claims



1. An antiferroelectric liquid crystal composite material comprising an organic polymer and an antiferroelectric liquid crystal material, said organic polymer and said antiferroelectric liquid crystal material being in the dispersed state, wherein the antiferroelectric liquid crystal material is represented by the followed formula (I)



(I)

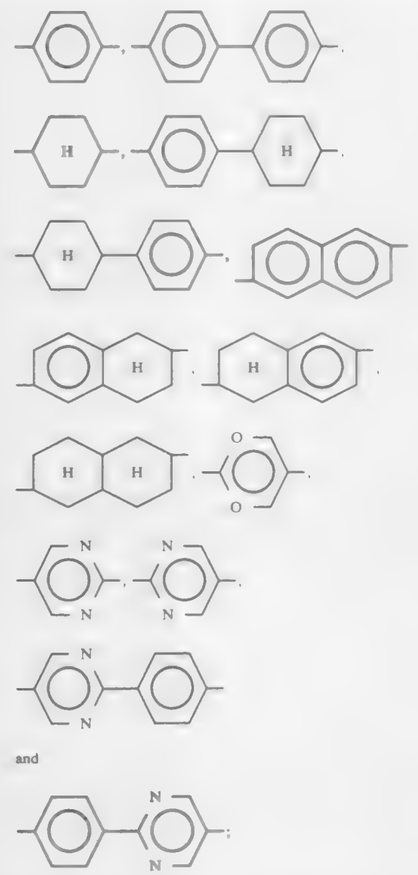
wherein R is an alkyl group of 4 to 20 carbon atoms or a polyfluoroalkyl group of 4 to 20 carbon atoms, a part of —CH_2— group or a —CF_2— group present in said alkyl or polyfluoroalkyl group can be substituted with at least one group selected from —O—, —S—, —CO—, —CHX— (wherein X is a halogen atom), —O—CO—, —O—COO—, —COO— and —CH=CH— so that hetero atoms are not bonded to each other, said alkyl or polyfluoroalkyl group may have optical activity;

X^1 is a group selected form —COO—, —O—CO— and —O—, or a single bond;

X^2 and X^3 are each independently a group selected from —COO—, —O—CO—, —CH_2CH_2—, —CH_2O— and —OCH_2—;

X^4 is a group selected from —COO—, —CO—, —O— and —O—CO—;

A^1, A^2 and A^3 are each independently a group selected from divalent groups represented by the following formulas:



and

;

Q^1 is —$(CH_2)_q$— wherein q is an integer of 0 to 6;

Q^2 and Q^3 are each independently an alkyl group of 1 to 10 carbon atoms or a halogen atom, Q^2 and Q^3 are different from each other, both of Q^2 and Q^3 are not halogen atoms, and a part of —CH_2— group or —CF_2— group present in Q^1, Q^2 and Q^3 may be substituted with at least one group selected from —O—, —S—, —CO—, —CHX— (wherein X is a halogen atom), —CHCN—, —O—CO—, —O—COO—, —COO— and —CH=CH— so that hetero atoms are not bonded to each other;

l, m and n each independently represent 0 or 1; and

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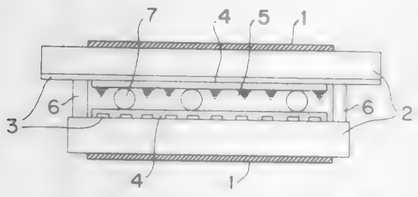
a difference in a refractive index between the organic polymer and the antiferroelectric liquid crystal material is in the range of 0 to ±0.15 in a transparent state of said composite material.

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LIQUID CRYSTAL DISPLAY

Katsuhiko Rindo; Tadashi Nishimori; Kazuo Kubota, and Akira Yoshimatsu, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Aug. 20, 1993, Ser. No. 109,269
Claims priority, application Japan, Aug. 20, 1992, 4-221386; Jul. 6, 1993, 5-166881
Int. Cl.[6] C09K *19/00; G02F 1/1339*
U.S. Cl. 252—299.01 **15 Claims**



1. A liquid crystal display comprising spacer particles each spacer particle having, at least on the surface portion thereof, a nonionic hydrophilic unit represented by the following formula (1):

$$RO-(R_1O)_m \quad (1)$$

wherein R represents a C_1–C_{18} alkyl group, a C_2–C_{18} alkenyl group, a C_6–C_{18} aryl group, a C_7–C_{18} alkylaryl group, a C_1–C_{18} acyl group, a C_2–C_{18} alkylcarbamoyl group, a C_2–C_{18} acylcarbamoyl group or a C_7–C_{18} arylcarbamoyl group; R_1 represents a linear or branched alkylene group having 2 to 4 carbon atoms wherein a hydroxyl group may be substituted for a hydrogen atom on the alkylene group; and m is a positive number of 1 to 100 on the average, with the proviso that the plural R_1's may be the same or different from each other

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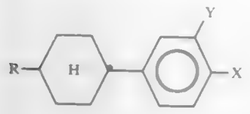
LIQUID-CRYSTALLINE MEDIUM

Bernhard Rieger, Yokohama, Japan; Hans A. Kurmeier, Seeheim-Jugenheim, Germany; Eike Poetsch, Mühltal, Germany; Herbert Plach, Darmstadt, Germany, and Ekkehard Bartmann, Erzhausen, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

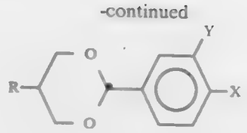
Continuation of Ser. No. 946,689, Sep. 18, 1992, abandoned, which is a continuation of Ser. No. 688,953, May 15, 1991, abandoned. This application Feb. 24, 1994, Ser. No. 201,159
Claims priority, application Germany, Mar. 9, 1990, 4007412
Int. Cl.[6] C09K *19/52, 19/34, 19/30*
U.S. Cl. 252—299.01 **20 Claims**

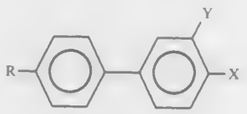
1. A liquid-crystalline medium consisting essentially of:

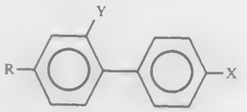
a) 5–65% by weight of a component A, which is two or more compounds selected from group A:



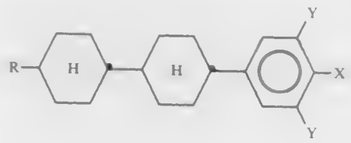
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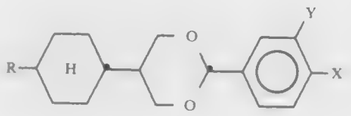


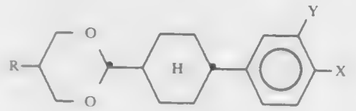


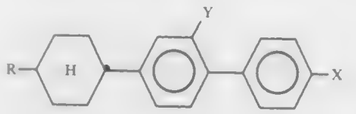


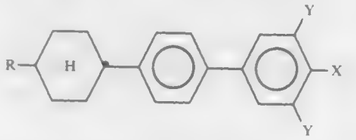
b) 20–95% by weight of a component B which is two or more compounds selected from group B:





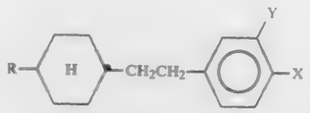




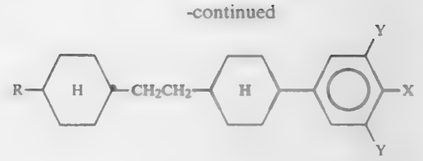


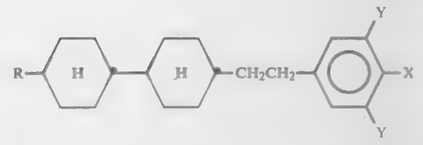
c) 0–40% by weight of a compound C, which is one or more compounds having a clearing point above 170° C., and

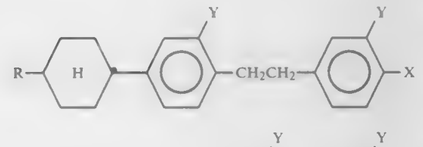
d) 0–35% by weight of a component D, which is one or more compounds selected from group D:

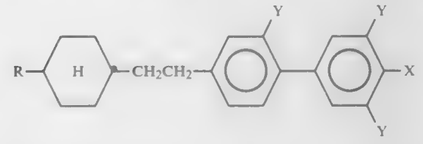


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where R, X and Y each, independently of one another, have the following meanings:

R is in each case alkyl, oxaalkyl, haloalkyl or alkenyl having up to 7 carbon atoms,

X is F, Cl, CHF_2, CF_3, $OCHF_2$, or OCF_3, and

Y is H, F or Cl,

with the provisos that (1) the proportion of compounds of formula B5 is from 15 to 40% by weight in the total mixture; and (2)(a) the medium contains at least one compound of formula A2, B2 or B3, or (b) the medium contains at least one compound of formula A1, A2, A3, A4, B1, B2, B3, B4 or B5 in which R is oxaalkyl or haloalkyl.

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NITROGEN-CONTAINING HETEROCYCLES

Joachim Krause, Dieburg; Rudolf Eidenschink, Münster; Klaus Bofinger, Mühltal; Reinhard Hopf, Berlin; Volker Reiffenrath, Darmstadt; Eike Poetsch, Mühltal, all of Germany; Bernhard Scheuble, Yokohama, Japan, and Thomas Geelhaar, Mainz, Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

Division of Ser. No. 352,308, May 16, 1989, Pat. No. 5,089,168, which is a division of Ser. No. 34,182, Dec. 24, 1986, Pat. No. 4,834,904. This application Dec. 17, 1991, Ser. No. 808,507
Claims priority, application Germany, Apr. 27, 1985, 3515373
The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.
Int. Cl.[6] C09K *19/34, 19/52;* **C07D** *739/02*
U.S. Cl. 252—299.61 **9 Claims**

1. A nitrogen containing heterocycle of the formula I

$$R^1-A^1-A^2-R^2$$

in which one of R^1 and R^2 is an alkyl group of 1–15 carbon atoms or an alkyl group of 1–15 carbon atoms in which one or two nonadjacent CH_2 groups are replaced by at least one of —S—, —O—, —CO—, —O—CO—, —CO—O— or —CH=CH—, and the other radical R^1 or R^2 is an optically active organic radical with an asymmetric carbon atom having the formula

wherein

X is —O—,

Q is $—CH_2CH_2—$,

Y is F,

R is an alkyl group of 1 to 10 carbon atoms

A^1 is —A—, $—A^4—Z^3—A—$ or $—A—Z^3—A^4$,

A is pyrimidine-2,5-diyl,

A^2 and A^4 each independently is 1,4-cyclohexylene or 1,4-phenylene which is unsubstituted or substituted by one or two F atoms, and

Z^3 is —CO—O—, —O—CO—, $—OCH_2—$, $—CH_2O—$, $—CH_2CH_2—$ or a single bond.

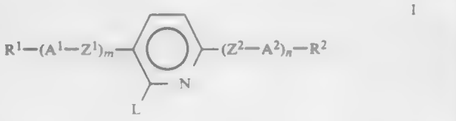
5,389,291

3,6-DISUBSTITUTED 2-HALOPYRIDINES

Volker Reiffenrath, Rossdorf, and Thomas Geelhaar, Mainz, both of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP91/02148, § 371 Date Feb. 11, 1992, § 102(e) Date Feb. 11, 1992, PCT Pub. No. WO92/09576, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 14, 1991, Ser. No. 828,949
Claims priority, application Germany, Nov. 27, 1990, 4037630
Int. Cl.[6] C09K *19/34;* **G02F** *1/13*
U.S. Cl. 252—299.61 **13 Claims**

1. 3,6-Disubstituted 2-halopyridines of the formula I



where

and $R^{1'}$ are each, independently of one another, an alkyl or alkenyl radical having up to 15 carbon atoms which is unsubstituted or monosubstituted by CN, halogen or CF_3, it also being possible for one or more CH_2 groups in these radicals to be replaced, in each case independently of one another, by —S—, —O—, —CO—, —CO—O—, —O—CO— or —O—CO—O— in such a manner that S and/or O atoms are not linked directly to one another, and one of the radicals R^1 and R^2 is alternatively halogen, $—CF_3$, $—OCF_3$ or $OCHF_2$,

A^1 and A^2 are each, independently of one another, a

(a) trans-1,4-cyclohexylene radical in which, in addition, one or more non-adjacent CH_2 groups may be replaced by —O— and/or —S—,

(b) 1,4-phenylene radical in which, in addition, one or two CH groups may be replaced by N,

(c) radical from the group comprising 1,3 -cyclobutylene, 1,3-bicyclo[1.1.1]pentylene, 1,4-cylohexenylene, 1,4-bicyclo[2.2.2]octylene, piperidine-1,4-diyl, naphthalene-2,6 -diyl, decahydronaphthalene-2,6-diyl and 1,2,3,4-tetrahydronaphthalene-2,6-diyl, it being possible for the radicals (a) and (b) to be substituted by CN or halogen,

Z^1 and Z^2 are each, independently of one another, $—CH_2—CH_2—$, —C—C—, $—CH_{20}—$, $—OCH_2—$, —CO—O—, —O—CO—, —CH=N—, $—CH_2S—$, $—SCH_2—$, a single bond or an alkylene group having 3 to 6 carbon atoms in which, in addition, one CH_2 group may be replaced by —O—, —CO—O—, —O—CO—, —CH-halogen- or —CHCN—,

L is F,

m is 0, 1 or 2,

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n is 0, 1 or 2, and
m+n is 1, 2 or 3,
with the proviso that
Z^2 is $-CH_2CH_2-$, $-C\equiv C-$, $-CH_2O-$, $-CO-O-$ or a single bond.

5,389,292

DIFLUOROMETHYL COMPOUNDS

Dieter Dorsch, Darmstadt; Ekkehard Bartmann, Erzhausen; Hans A. Kurmeier, Seeheim-Jugenheim; Ulrich Finkenzeller, Plankstadt; Georg Weber, Erzhausen; Herbert Plach, Darmstadt, and Eike Poetsch, Mühltal, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Continuation of Ser. No. 424,219, Oct. 4, 1989, abandoned. This application Mar. 9, 1992, Ser. No. 845,818
Claims priority, application Germany, Jul. 27, 1988, 3825425; Mar. 24, 1989, 3909802
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[6] C09K *19/34, 19/30, 19/12, 19/20*
U.S. Cl. 252—299.61 16 Claims

1. A liquid-crystalline medium containing at least two liquid-crystalline components, and based on a mixture of polar compounds having positive dielectric anisotropy, wherein at least one compound is of the formula I

$$R-(A^1-Z^1)_m-A^2-Q-CHF_2 \qquad I$$

in which
R is H, halogen, —CN, —NCS, an alkyl or alkenyl radical having 1 to 15 carbon atoms, in which one or more CH_2 groups in these radicals, independently of one another, can each also be replaced by —O—, —S—,



—CO—, —CO—O—, —O—CO— or —O—CO—O— in such a manner that oxygen atoms are not directly linked to one another, or such an alkyl or alkenyl radical substituted by CN, CF_3 or at least one halogen atom.
A^1 and A^2 independently of one another are each a
(a) trans-1,4-cyclohexylene radical in which one or more non-adjacent CH_2 groups can also be replaced by —O— and/or —S—,
(b) 1,4-phenylene radical in which one or two CH groups can also be replaced by N,
(c) radical from the group consisting of 1,4-cyclohexenylene, 1,4-bicyclo[2,2,2]octylene, piperidine-1,4-diyl, naphthalene-2,6-diyl, decahydronaphthalene,2,6-diyl and 1,2,3,4-tetrahydronaphthalene-2,6-diyl,
in which the radicals (a) and (b) can be substituted by CN or fluorine,
Z^1 is —CO—O, —CH_2O—, —CH_2CH_2, —CH=CH—, —C≡C— or a single bond,
m is 1, 2 or 3 and
Q is —O—, —S—, —CH_2, —CO—O—, —O—CO—, or a single bond.

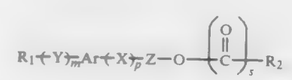
5,389,293

OPTICALLY ACTIVE BENZENE DERIVATIVES, PROCESS FOR PRODUCING THE SAME AND LIQUID-CRYSTALLINE COMPOSITION CONTAINING SAID DERIVATIVES AS LIQUID-CRYSTALLINE COMPOUND AND LIGHT SWITCHING ELEMENTS

Takayuki Higashii, Kishiwada; Isao Kurimoto, Toyonaka; Shoji Toda, Takarazuka; Masayoshi Minai, Moriyama; Takeshi Tani, Tsukuba; Chizu Kawakami, Tsukuba, and Koichi Fujisawa, Tsukuba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

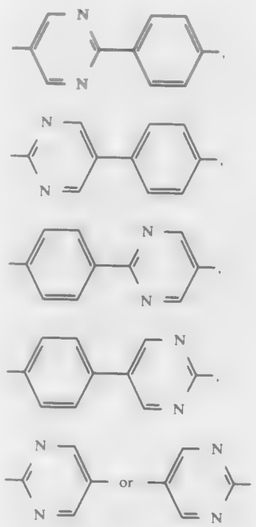
Continuation of Ser. No. 815,914, Jan. 2, 1992, abandoned, which is a continuation of Ser. No. 410,263, Sep. 21, 1989, abandoned. This application Jul. 9, 1992, Ser. No. 912,130
Claims priority, application Japan, Sep. 22, 1988, 63-238091; Sep. 22, 1988, 63-238092; Sep. 22, 1988, 63-238094; Oct. 13, 1988, 63-258938; Oct. 18, 1988, 63-263748; Apr. 25, 1989, 1-106659; May 30, 1989, 1-138333
Int. Cl.[6] C09K *19/34;* C07D *239/02*
U.S. Cl. 252—299.61 16 Claims

8. A liquid crystal composition having at least two components at least one of which is an optically active benzene derivative represented by the formula (I):

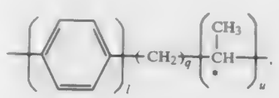


(I)

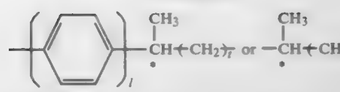
wherein R_1 represents an alkyl group having 3 to 20 carbon atoms; Y represents —O—, —COO— or —OCO—; m, p and s each represents a number of 0 or 1; Ar represents



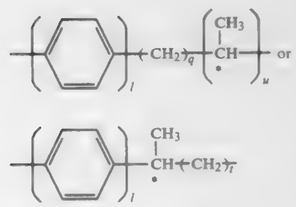
X represents —COO— or —OCO—; Z represents



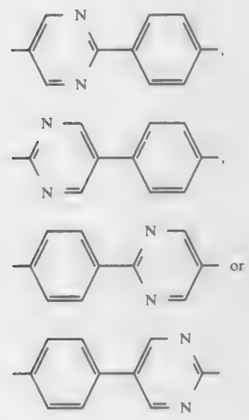
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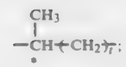
wherein q represents a number of 1 to 5, t represents a number of 0 to 5, l represents a number of 1 or 2, u represents a number of 0 or 1 and * indicates asymmetric carbon atoms; provided that when p is 1, Z represents



when p is 0, Ar represents



Z represents



represents an alkyl or alkoxyalkyl group having 1 to 20 carbon atoms optionally substituted by halogen atoms; provided that when u is 0, R_2 represents an optically active alkyl or alkoxyalkyl group having 1 to 20 carbon atoms optionally substituted by halogen atoms.

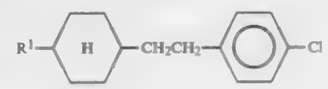
5,389,294

CHLOROBENZENE DERIVATIVES

David Coates, Merley Wimborne, and Simon Greenfield, Creekmoor, both of Great Britain, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP90/00718, § 371 Date Jun. 22, 1990, § 102(e) Date Jun. 22, 1990, PCT Pub. No. WO90/14405, PCT Pub. Date Nov. 29, 1990
PCT Filed May 4, 1990, Ser. No. 477,525
Claims priority, application United Kingdom, May 15, 1989, 8911104
Int. Cl.[6] C09K *19/30;* C07C *26/06;* G02F *1/13*
U.S. Cl. 252—299.63 12 Claims

1. A chlorobenzene compound of formula I



I

wherein
R^1 is an alkyl residue with up to 12 carbon atoms or an alkyl residue with of up to 12 carbon atoms wherein one or two non-adjacent CH_2- groups is replaced by —O—, —O—CO—, —CO—O— and/or —CH=CH—.

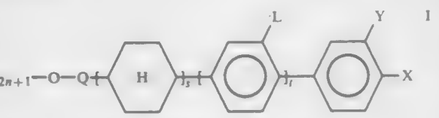
5,389,295

BENZENE DERIVATIVES, AND A LIQUID CRYSTAL MEDIUM

Andreas Wächtler, Griesheim; Reinhard Hittich, Modautal; Eike Poetsch, Mühltal; Herbert Plach, Darmstadt, all of Germany; David Coates, Merley, Great Britain; Ulrich Finkenzeller, Plankstadt, Germany; Thomas Geelhaar, Mainz, Germany; Volker Reiffenrath, Rossdorf, Germany, and Bernhard Rieger, Münster-Altheim, Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

Continuation of Ser. No. 585,142, Oct. 5, 1990, abandoned. This application Oct. 6, 1992, Ser. No. 957,051
Claims priority, application Germany, Aug. 12, 1989, 3926746; Aug. 12, 1989, 3926749; Aug. 31, 1989, 3928818; Jan. 9, 1990, 4000392; Jan. 22, 1990, 4001685; Mar. 13, 1990, 4007864; Mar. 28, 1990, 4009908
Int. Cl.[6] C09K *19/30, 19/12;* C07C *41/00*
U.S. Cl. 252—299.63 11 Claims

1. A liquid-crystalline medium for electro-optical displays , consisting essentially of at least two liquid crystalline components, wherein at least one component is a benzene derivative of Formula I



I

in which n is 1 to 7, Q is $-(CH_2)_r-$, where r is 1 to 5, s is 0, 1 or 2, t is 0 or 1, where s+t≧1, X is F, Cl, —OCF_3 or —$OCHF_2$, and Y and L are each, independently of one another, H or F, and the other components are selected from the Formulae 1b, 2b, 3b, 4b and 5b and optionally 1a, 2a, 3a, 4a, and 5a:

R′—L—E—R″ 1b

R′—L—COO—E—R″ 2b

R′—L—OOC—E—R″ 3b

R′—L—CH_2CH_2—E—R″ 4b

R′—L—C≡C—E—R″ 5b

wherein L and E are each independently a divalent radical selected from the group consisting of —Phe—, —Cyc—, —Phe—Phe, —Phe—Cyc—, —Cyc—Cyc, —Pyr—, —Dio—, —G—Phe—, —G—Cyc— and their mirror images, where Phe is unsubstituted or fluorinesubstituted 1,4-phenylene, Cyc is trans-1,4-cyclohexylene or 1,4-cyclohexenylene, Pyr is pyrimidine-2,5-diyl or pyridine-2,5-diyl, Dio is 1,3-dioxane-2,5-diyl and G is 2-(trans-1,4-cyclohexyl)ethyl, pyrimidine-2,5-diyl, pyridine-2,5-diyl or 1,3-dioxane-2,5-diyl, R′ is alkyl or alkenyl having up to 8 carbon atoms and R″ is selected from the group consisting of —F, —Cl, —CF_3, —$OCHF_2$ and —OCF_3, or

R′—L—E—R″ 1a

R′—L—COO—E—R″ 2a

R′—L—OOC—E—R″ 3a

R′—L —CH_2CH_2—E—R″ 4a

R′—L—C≡C—E—R″ 5a

wherein R′ and R″ are each independently alkyl, alkenyl, alkoxy, alkenyloxy or alkenoyloxy of up to 8 carbon atoms.

5,389,296

LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE CONTAINING SAME

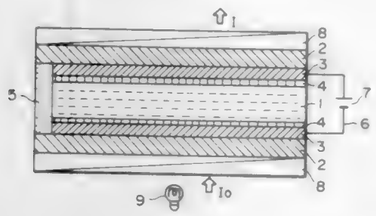
Kenji Shingo; Masshiro Terada; Toshiharu Uchimi, all of Atsugi; Akio Yoshida, Chigasaki; Takeshi Togano; Masanobu Asaoka, both of Yokohama, and Takashi Iwaki, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 201,183, Jun. 2, 1988, abandoned. This application Nov. 23, 1992, Ser. No. 980,116

Claims priority, application Japan, Jun. 4, 1987, 62-140645; Jun. 5, 1987, 62-142023; May 30, 1988, 63-132152

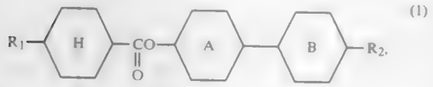
Int. Cl.[6] C09K *19/30, 19/34, 19/12*

U.S. Cl. 252—299.63 **11 Claims**



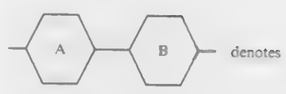
1. A chiral smectic liquid crystal composition, comprising:

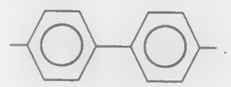
at least one mesomorphic compound represented by the formula (1) below:

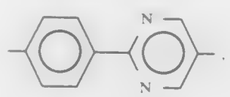


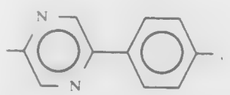
(1)

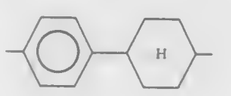
wherein R_1 denotes an alkyl group having 1–16 carbon atoms; R_2 denotes a substituted or unsubstituted alkyl group, alkoxy group, alkoxycarbonyl group, acyloxy group or alkoxycarbonyloxy group each having 1–16 carbon atoms the substituent of the substituted R_2 being alkyl, alkoxy, alkoxycarbonyl, Cl or F; and

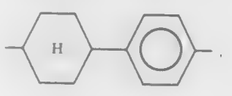


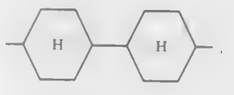


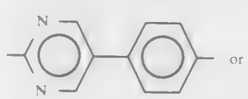




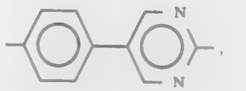








or



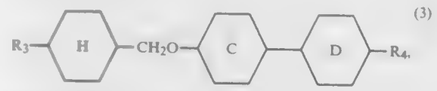
,

in which group



may have a substituent of CN or F; and

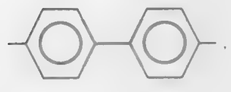
at least one mesomorphic compound represented by the formula (3) below:

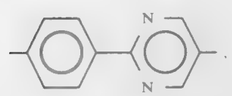


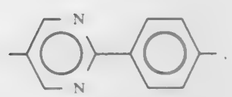
(3)

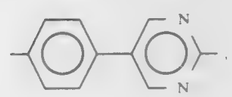
wherein R_3 denotes an alkyl group having 1–16 carbon atoms; R_4 denotes a substituted or unsubstituted alkyl group, alkoxy group, alkoxycarbonyl group, acyloxy group or alkoxycarbonyloxy group each having 1–16 carbon atoms, the substituent of the substituted R_4 being alkyl, alkoxy or Cl; and

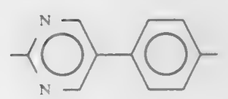












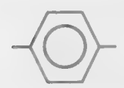


or



,

and wherein group



may have a substituent of CN or F.

5,389,297

INERT MATRIX COMPOSITION MICROEMULSIFIABLE CONCENTRATE AND AQUEOUS MICROEMULSION

Kolazi S. Narayanan, Palisades Park, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed Jun. 9, 1993, Ser. No. 74,076

Int. Cl.[6] A01N *25/08, 25/30;* **B01E** *17/16;* **B01J** *13/00*

U.S. Cl. 252—312 **9 Claims**

1. An inert matrix composition in the form of a free-flowing, high melting solid suitable for making a solid microemulsion concentrate upon admixture with an agriculturally active ingredient which comprises, by weight of the composition, about 10–50% of a C_6–C_{18} alkylpyrrolidone, about 10–50% of an anionic surfactant and about 10–70% of a water-soluble, high melting organic compound containing a dissociable proton which can complex with said pyrrolidone, a melting point of >100° C. a molecular weight of ≦500, and a water solubility of at least 10%, which is selected from the group consisting of hydroxy acids, amino acids, sugars and amides.

8. A solid microemulsifiable concentrate comprising the inert matrix composition of claim **1** and 1–20% by weight of an agriculturally active ingredient.

9. An aqueous microemulsion comprising the solid microemulsifiable concentrate of claim **8** and dilution water in an amount sufficient to reduce the concentration of the agriculturally active ingredient to between a few ppm and 1% by weight.

5,389,298

COLLOIDAL DISPERSIONS OF CERIUM (IV) COMPOUNDS IN AQUEOUS MEDIA

Jean Grosbois, L'Isle Adam, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 892,694, May 27, 1992, abandoned, which is a continuation of Ser. No. 255,501, Oct. 11, 1988, abandoned. This application Mar. 3, 1993, Ser. No. 51,590

Claims priority, application France, Oct. 9, 1987, 87 13953

The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.

Int. Cl.[6] B01J *13/00*

U.S. Cl. 252—313.1 **31 Claims**

1. A weakly acidic colloidal dispersion of a cerium (IV) compound in an aqueous medium, having a pH of at least 3.5 the colloids of which having the following general formula (III):

$$Ce(A)_x(NO_3)_y(OH)_{4-x-y} \quad \text{(III)}$$

in which A is the anion of a water-soluble monovalent carboxylic acid having a pK_a of from 2.5 to 5.0, x is a number greater than or equal to 0.2 and less than or equal to 0.8, and y is a number greater than or equal to 0.01 and less than or equal to 0.1.

5,389,299

HIGH TEMPERATURE HYDROCARBON DEFOAMER COMPOSITION AND METHOD

Paul R. Hart, The Woodlands, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Oct. 6, 1992, Ser. No. 957,325

Int. Cl.[6] B01D *19/02;* **B01B** *1/02*

U.S. Cl. 252—321 **8 Claims**

1. A method for inhibiting foam production in high temperature hydrocarbon fluids during processing comprising adding a foam inhibiting amount of a mammal scent gland oil.

5,389,300

AGENT FOR PROTECTING SAWN TIMBER

Hans-Georg Schmitt, Krefeld; Otto Exner, Ratingen, and Hans-Ulrich Buschhaus, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 19, 1993, Ser. No. 64,538

Claims priority, application Germany, May 27, 1992, 4217523

Int. Cl.[6] A01N *25/02, 37/20*

U.S. Cl. 252—380 **7 Claims**

1. A microbicidal composition consisting of ingredients (a) and (b) and optionally ingredients (c), (d) and/or (e), wherein ingredients (a), (b), (c), (d) and (e) are as follows:

(a) at least one phenol compound selected from the group consisting of tribromophenol, 3-methyl-4-chlorophenol, dichlorophene, o-phenylphenol m-phenylphenol, p-phenylphenol and 2-benzyl-4-chlorophenol, or a Group I A metal salt thereof;

(b) at least one iodopropargyl compound of the formula (I):

IC≡C—CH_2—O—CO—NH—R (I)

in which

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R represents straight-chain or branched alkyl having 1 to 6 carbon atoms, cycloalkyl having 3 to 6 carbon atoms or aryl;
(c) a solvent or a diluent or a mixture thereof;
(d) an emulsifier or emulsifier mixture; and
(e) one or more microbially active compounds selected from the group consisting of dichlorofluanide, tolylfluanide, folpet, fluorofolpet, or carbendazime, benomyl, fuberidazole, thiabendazole or a salt thereof, thiocyanatomethyl benzothiazole, methylene bisthiocyanate, benzyldimethyltetradecylammonium chloride, benzyldimethyldodecylammonium chloride, didecyldimethylammonium chloride, tridemorph, fenpropimorph, falimorph, diiodomethyl p-tolyl sulfone, 3-iodo-2-propinyl alcohol, 4-chlorophenyl-3-iodopropargyl-formyl, 3-bromo-2,3-diiodo-2-propenylethylcarbonate, 2,3,3-triiodoallylalcohol, 3-bromo-2,3-diiodo-2-propenyl alcohol, bronopol, N-methyl isothiazolin-3-one, 5-chloro-N-methyl-isothiazolin-3-one, 4,5-dichloro-N-octyl isothiazolin-3-one, N-octyl-isothiazolin-3-one, benzoisothiazolinones, cydopenteneisothiazolinones, 1-hydroxy-2-pyridinethione or a Na, Fe, Mn or Zn salt thereof, tetrachloro-4-methylsulfonylpyridine, tin octoate, tin 2-ethylhexanoate, tin oleate, tin phosphate, tin benzoate, copper octoate, copper 2-ethylhexanoate, copper oleate, copper phosphate, copper benzoate, zinc octotate, zinc 2-ethylhexanoate, zinc oleate, zinc phosphate, zinc benzoate, tributyltin oxide, Cu_2O, CuO, ZnO, a Na or Zn salt of a dialkyldithiocarbamate, tetramethylthiuram disulfide, 2,4,5,6-tetrachloroisophthalodinitrile, 2-mercaptobenzothiazole, 8-hydroxyquinoline, boric add, a boric add ester, borax, benzyl alcohol mono(poly)-hemiformal a oxazolidine, a hexahydro-S-triazine, N-methylolchloroacetamide, tris-N-(cyclohexyldiazenium dioxy)-aluminum, N-(cyclohexyldiazeniumdioxy)-tributyltin or a K salt thereof, bis-N-(cydohexyldiazeniumdioxy)-copper, or benzoic acid, sorbinic acid or 2-ethyl hexanoic add or an alkali- or earth-alkali-salt thereof, azinophos-ethyl, azinphos-methyl, 1-(4-chlorophenyl)-4-(O-ethyl, S-propyl)-phosphoryloxypyrazole, chloropyroifos, coumaphos, demeton, demeton-S-methyl, diazinone, dichlorvos, dimethoate, ethoprophos, etrimfos, fenitrothion, penthion, heptenophos, parathion, parathion-methyl, phosalone, phoxim, pirimiphos-ethyl, pirimiphos-methyl, profenofos, prothiofos, sulfprofos, triazophos, trichlorophone, aldicarb, bendiocarb, 2-(1-methylpropyl)phenyl methyl carbamate, butocarboxim, butoxycarboxim, carbaryl, carbofuran, carbosulfan, cloethocarb, isoprocarb, methomyl, oxamyl, pirimicarb, promecarb, propoxur, thiodicarb, allethrin, alphamethrin, bioresmethrin, byfenthrin, cydoprothrin, cyfluthrin, decamethrin, cyhalothrin, cypermethrin, deltamethrin, alpha-cyano-3-phenyl-2-methylbenzyl 2,2-dimethyl-3-(2-chloro-2-trifluoro-methylvinyl)cyclopropanecarboxylate, fenpropathrin, fenfluthrin, fenvalerate, flucythrinate, flumethrin, fluvalinate, permethrin, resmethrin, tralomethrin, and 1-[(6-chloro-3-pyridinyl)-methyl]-4,5-dihydro-N-nitro-1H-imidazil-2-amine.

5,389,301

FORMULATION TO PROTECT FROM THE CORROSION METAL-COATING MIRRORS AND SIMILAR AND PROCEDURE FOR THE PRODUCTION THEREOF

Fernando Fenzi, Milan, Italy, assignor to Fenzi S.p.A. Vernici Ed Accessori Vetrari, Tribiano, Italy

Filed Mar. 16, 1993, Ser. No. 33,283
Claims priority, application Italy, Mar. 23, 1992, MI92 A 000664
Int. Cl.[6] C23F *11/14*
U.S. Cl. 252—394 **8 Claims**

1. A lead-free anticorrosive formulation applied in layer form for the protection of metal films applied to transparent supports wherein said formulation contains a binder consisting of a resin selected from the group consisting of isomerized rubber, urethane oil, alkyd and modified alkyd, acrylic, phenol and epoxy resins; at least one melamine resin; a corrosion-inhibiting pigment consisting of cyanoacetylurea; fillers; metal oxides; at least one solvent; and adhesion-promoting additives.

5,389,302

CHEMILUMINESCENT DYE PENETRANT PROCESS AND COMPOSITION

Leslie F. Warren, Jr., Camarillo, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Oct. 4, 1993, Ser. No. 131,183
Int. Cl.[6] C09K *11/07*
U.S. Cl. 252—408.1 **13 Claims**

1. A method for detecting cracks and other defects in the surface of an object which comprises
applying to said surface a liquid dye penetrant comprising a dye carrier in the form of a nonionic surfactant, a fluorescent dye soluble in said carrier in an amount of about 0.1 to about 15 parts of said dye per 100 parts of said surfactant, by weight, and hydrogen peroxide in an amount equivalent to about 0.1 to about 10% by volume of 30% hydrogen peroxide,
removing excess dye penetrant from the surface of said object, while retaining dye penetrant in said cracks and defects,
applying an oxalate selected from the group consisting of an oxalate ester and an oxalate amide to the treated surface, causing said penetrant in said cracks and defects to luminesce, and thereby
producing self illuminated penetrant indications at the location of said cracks and defects.

5,389,303

MIXTURES OF POLYAMINO ACIDS AND CITRATE

Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to SRCHEM Incorporated, Elkridge, Md.

Filed Sep. 10, 1993, Ser. No. 118,588
Int. Cl.[6] C11D *1/10, 3/33, 3/20*
U.S. Cl. 252—544 **10 Claims**

1. A detergent composition comprising citric acid and a polymer, said polymer being selected from the group consisting of polyamino acids and polyamine copolymers of polyamino acids, in a ratio of from 75 to 25 of polymer to citrate to 0.1 to 99.9 of polymer to citrate.

5,389,304

HIGH FOAMING NONIONIC SURFACTANT BASE LIQUID DETERGENT

Stephen T. Repinec, Jr., Flemington; Gilbert S. Gomes, Somerset, both of N.J., and Rita Erilli, Rocourt, Belgium, assignors to Colgate Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 893,138, Jun. 3, 1992, abandoned. This application Jul. 9, 1993, Ser. No. 91,517
The portion of the term of this patent subsequent to Feb. 7, 2012, has been disclaimed.
Int. Cl.[6] C11D *1/831, 1/84*
U.S. Cl. 252—546 **9 Claims**

1. A high foaming, nonionic surfactant-based, light duty, liquid detergent comprising approximately by weight:
(a) 10% to 30% of a water soluble nonionic surfactant selected from the group consisting of primary and secondary C_8–C_{18} alkanol condensates with 5 to 30 moles of ethylene oxide, condensates of C_8–C_{18} alkylphenol with 5 to 30 moles of ethylene oxide, and propylene oxide having a weight ratio of alkylene oxide content of 60% to 85% by weight and condensates of 2 to 30 moles of ethylene oxide with sorbitan mono and tri-C_{10}–C_{20} alkanoic acid esters having an HLB of 8 to 15;
(b) 1% to 10% of at least one water-soluble or water-dispersible anionic surfactant selected from the group consisting of a C_8–C_{18} alkyl sulfates, C_8–C_{18} alkyl benzene sulfonates, C_{10-20} paraffin sulfonates, C_{10}–C_{24} alpha olefin sulfonates and C_8–C_{18} ethoxylated alkyl ether sulfates;
(c) 0.5% to 8% of a water-soluble betaine;
(d) 0.5% to 8% of a dialkyl sulfosuccinate ester; and
(e) balance being water as an aqueous medium in which said nonionic surfactant, said anionic detergent, said dialkyl sulfosuccinate ester and said betaine are solubilized in said water, wherein said composition does not contain any polymeric thickener, clay, silica or alkanol amide, said composition having a Brookfield viscosity at room temperature using a #2 spindle at 30 rpm of about 100 to about 1,000 cps.

5,389,305

HIGH FOAMING NONIONIC SURFACTANT BASE LIQUID DETERGENT

Stephen T. Repinec, Flemington; Gilbert S. Gomes, Somerset, both of N.J.; Rita Erilli, Rocourt, Belgium, and Ronald Kern, Buttzville, N.J., assignors to Colgate Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 893,138, Jun. 3, 1992, abandoned. This application Jul. 9, 1993, Ser. No. 91,518
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[6] C11D *1/831, 1/84*
U.S. Cl. 252—546 **8 Claims**

1. A high foaming light duty, liquid detergent comprising approximately by weight:
(a) 6% to 12% of a water soluble nonionic surfactant selected from the group consisting of primary and secondary C_8–C_{18} alkanol condensates with 5 to 30 moles of ethylene oxide, condensates of C_8–C_{18} alkylphenol with 5 to 30 moles of ethylene oxide, condensates of C_8–C_{20} alkanol with a heteric mixture of ethylene oxide and propylene oxide having a weight ratio of ethylene oxide to propylene oxide from 2.5:1 to 4:1 and a total alkylene oxide content of 60% to 85% by weight and condensates of 2 to 30 moles of ethylene oxide with sorbitan mono and tri-C_{10}–C_{20} alkanoic acid esters having an HLB of 8 to 15;
(b) 4% to 9% of a water-soluble anionic detergent which is selected from the group consisting of a C_8–C_{18} alkyl sulfates, C_8–C_{18} alkyl benzene sulfonate and C_{10-20} paraffin sulfonate;
(c) 1% to 6% of a water-soluble betaine; and
(d) balance being water as an aqueous medium in which said nonionic surfactant, said anionic detergent and said betaine are solubilized in said water, wherein said composition does not contain any polymeric thickener, clay, silica or alkanol amide, said composition having a Brookfield viscosity at room temperature using a #2 spindle at 30 rpm of about 100 to about 1,000 cps.

5,389,306

PROCESS FOR MAKING SOLID FORMULATIONS CONTAINING AMINE OXIDE SURFACTANTS

Thomas J. Wierenga, Cincinnati, and Raymond D. Young, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 22, 1994, Ser. No. 231,415
Int. Cl.[6] C11D *1/75, 3/20;* C07C *59/245, 291/00*
U.S. Cl. 252—547 **9 Claims**

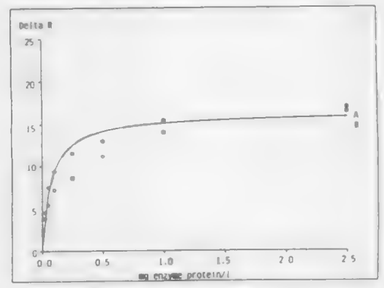
1. A process for preparing solid formulations containing amine oxide surfactants, which process comprises the steps of:
(a) admixing maleic acid and an aqueous liquid amine oxide surfactant formulation, wherein the molar ratio of maleic acid to amine oxide in the admixture is at least about 1:1 and the pH of the admixture is at least about 1 unit less than the pKa of the amine oxide surfactant, to thereby form a visible precipitate therein; and
(b) separating the precipitate from the admixture to form from the separated precipitate a solid formulation containing a maleic acid-amine oxide salt that is soluble in water at 25° C. at a pH above the pKa of the amine oxide surfactant.

5,389,307

DETERGENT COMPOSITION COMPRISING AN ALKYL SULFATE AND A SUBSTILISIN VARIANT

Poul Lindegaard, Copenhagen, and Dorrit A. Aaslyng, Roskilde, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK91/00342, § 371 Date Apr. 6, 1993, § 102(e) Date Apr. 6, 1993, PCT Pub. No. WO92/08778, PCT Pub. Date May 29, 1992
PCT Filed Nov. 14, 1991, Ser. No. 39,042
Claims priority, application Denmark, Nov. 14, 1990, 2714/90
Int. Cl.[6] C11D *1/12, 3/386*
U.S. Cl. 252—549 **14 Claims**



1. A detergent composition comprising an alkyl sulphate, one or more subtilisin variants selected from the group consisting of Subtilisin BPN'/M222A, Subtilisin Carlsberg/M222A, Subtilisin 147/M222A, Subtilisin 309/G195E, Subtilisin 309/M222A, and Subtilisin 309/G195E/M222A, and one or more other enzymes selected from the group consisting of amylases, lipases, cellulases and peroxidases.

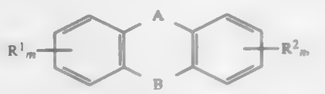
5,389,308

COMPOSITION GENERATING AN IR-OPAQUE SMOKE

Horst Busel, Berchtesgaden, and Joseph Schneider, Bischofswiesen, both of Germany, assignors to Buck Werke GmbH & Co., Bad Uberkingen, Germany

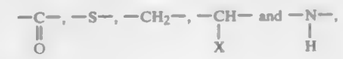
Filed Aug. 20, 1993, Ser. No. 110,555
Int. Cl.[6] F21V *9/04;* C06D *3/00;* C06B *27/00*
U.S. Cl. 252—587 **20 Claims**

1. A composition for generating an IR-opaque smoke in the form of a compact which has a density in the range from 0.9 to 1.5 g/cm^3 and which comprises from 10 to 25 percent by weight of magnesium powder, from 5 to 35 percent by weight of a fluorinated organic polymer, from 5 to 15 percent by weight of chloroparaffin, and from 35 to 65 percent by weight of an aromatic compound selected from the group consisting of
(a) compounds of the formula I



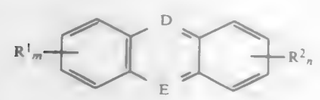
(I)

wherein A and B are independently selected from



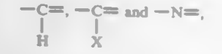
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R^1 and R^2 are independently selected from OH, X or alkyl having one to four carbon atoms,
m and n is an integer from 0 to 2, and
X is halogen,
(b) compounds having formula II



(II)

wherein R^1 and R^2, X, m, and n are defined as above and D and E are independently selected from



(c) compounds from the group of phthalic anhydride, 2-benzoyl pyridine, fluorene, dibenzosuberenone or diphenylenesulphide, and the derivatives thereof which are substituted by R^1_m R^2_m, and combinations thereof.

5,389,309

COMPOSITION AND METHOD FOR MAKING FIRE-RETARDANT MATERIALS

Richard A. Lopez, 21901 Winnebago La., Lake Forest, Calif. 92630

Filed Dec. 21, 1990, Ser. No. 632,011
Int. Cl.[6] C09K *21/00, 21/14*
U.S. Cl. 252—606 34 Claims

1. A fire retardant composition which is noncorrosive to metal, and dries at ambient temperatures, comprising:
dicyandiamide and urea-nitro for releasing nitrogen gas in the presence of flame;
an ammonium phosphate compound;
a urea/formaldehyde resin polymer in water; and
an activator of the resin, said activator comprising melamine and an acid salt catalyst.

5,389,310

METHOD AND APPARATUS FOR DISPERSING GAS INTO LIQUID

Matti O. Leiponen, Espoo, Finland, assignor to Outokumpu Mintec OY, Espoo, Finland

Filed Oct. 15, 1993, Ser. No. 138,400
Claims priority, application Finland, Oct. 16, 1992, 924717
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—87 17 Claims



1. A method for dispersing a gas into a non-gaseous flowable medium employing dispersion apparatus comprising a rotor that is at least partly submerged in the flowable medium and has a central axis and an outer periphery, a gas supply conduit for supplying gas to the rotor, and a means for rotating the rotor about the central axis thereof, said method comprising employing a rotor having at least one blade that is hollow and defines an interior space and has at least one discharge aperture that opens radially of the rotor at the outer periphery thereof and is variable in width, and supplying gas under pressure to the interior space of the rotor blade, whereby the gas is discharged into the flowable medium at the periphery of the rotor by way of the variable width discharge aperture.

5,389,311

ATMOMETER COVERING AND METHOD

Henry T. Hetzel, 1931 S. County Rd. 19, Loveland, Colo. 80537

Filed Nov. 1, 1993, Ser. No. 146,412
Int. Cl.[6] G01N *19/10*
U.S. Cl. 261—104 17 Claims



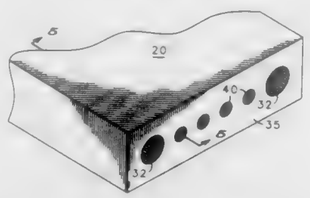
1. Evaporation apparatus comprising:
an evaporating plate susceptible to meterological precipitation having an evaporating surface and a water supply inlet connectable to a water supply; and
a covering disposed against the evaporating surface and including a barrier layer that is permeable to water vapor originating at the evaporating surface and that prevents meterological precipitation from entering the evaporating surface.

5,389,312

METHOD OF FABRICATING MOLDED OPTICAL WAVEGUIDES

Michael S. Lebby, Apache Junction, and Davis H. Hartman, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 26, 1993, Ser. No. 143,276
Int. Cl.[6] B29D *11/00*
U.S. Cl. 264—1.24 15 Claims



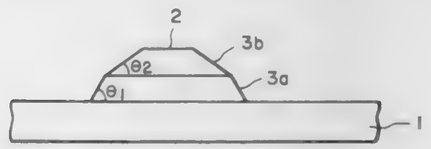
1. A method of manufacturing optical waveguides comprising the steps of:
providing a plurality of longitudinally extending, cylindrical passage-forming members positioned in parallel, spaced apart relationship;
molding a cladding member having opposed surfaces around the plurality of cylindrical passage-forming members so that the cylindrical passage-forming members extend through the cladding member and each of the opposed surfaces;
removing the plurality of cylindrical passage-forming members from the molded cladding member subsequent to the molding step so as to leave a plurality of passages through the cladding member from one opposed surface to the other; and
positioning waveguide core material in the passages to form a plurality of optical waveguides.

5,389,313

METHOD OF PRODUCING A MOLDING DIE FOR AN INFORMATION RECORDING MEDIUM

Hiroyuki Imataki; Tetsuya Satoh; Mizuho Hiraoka, all of Kawasaki, and Tomoyuki Tamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 811,900, Dec. 20, 1991, Pat. No. 5,234,633, which is a continuation of Ser. No. 718,906, Jun. 24, 1991, abandoned, which is a continuation of Ser. No. 657,388, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 290,640, Dec. 27, 1988, abandoned. This application Dec. 21, 1992, Ser. No. 994,358
Claims priority, application Japan, Dec. 28, 1987, 62-329680; Apr. 28, 1988, 63-103797
Int. Cl.[6] B44C *1/22*; B29D *17/00*
U.S. Cl. 156—643 5 Claims



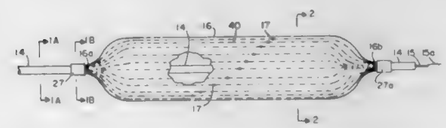
1. A method of producing a molding die for an information recording medium, having a mold surface with a prescribed unevenness pattern comprising a projection; said projection having different etching velocities along its projected thickness; said projection defining a pair of convergent opposite inclining side slopes, each slope of said pair forming an acute inclining angle with respect to an extension of said mold surface; said method comprising the steps of:
forming a pattern-forming layer on a substrate, said pattern-forming layer comprising a common metal element throughout the thickness of the pattern-forming layer and an additional element differing in composition from the common metal element in the thickness direction of the pattern-forming layer, the pattern-forming layer having an etching velocity which is variable in the thickness direction of the pattern-forming layer by varying a proportion of the common metal element with respect to the additional element; and
etching the pattern-forming layer with an etchant having an unchanging composition to remove the pattern-forming layer selectively and to form said projection.

5,389,314

MEDICATION DISPENSING BALLOON CATHETER

James C. Wang, Norton, Mass., assignor to Boston Scientific Corp., Del.

Division of Ser. No. 862,415, Apr. 2, 1992, Pat. No. 5,254,089. This application Jul. 7, 1993, Ser. No. 88,327
Int. Cl.[6] A61M *25/10*
U.S. Cl. 264—25 6 Claims



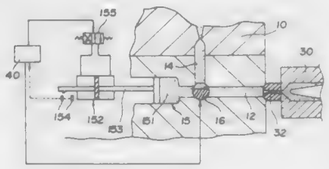
1. A method of making a medication dispensing balloon for a catheter, said method comprising:
co-extruding two dissimilar plastic materials, the first of the extrusions forming a tube having a wall disposed about an axis and the other of said plastics being disposed within the wall of said tube, said other plastic being arranged as a segmented array of circumferentially disposed strands, said array being aligned parallel with said axis, said strands being individually enclosed within said tube;
withdrawing said strands from said tube whereby to form a plurality of conduits within said tube.

5,389,315

METHOD AND DEVICE FOR MOLD PRESS FORMING

Shozo Yabushita, Kanagawa, Japan, assignor to Kasai Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1993, Ser. No. 43,047
Claims priority, application Japan, Nov. 4, 1992, 4-295244
Int. Cl.[6] B29C *45/28, 45/76*
U.S. Cl. 264—40.1 14 Claims



1. A method for mold press forming, comprising the steps of:
supplying molten resin to a hot runner provided in a lower die for mold press forming via a nozzle of an injection molding machine;
distributing said molten resin to prescribed locations of said lower die via a plurality of valve gates branching off from said hot runner; and
engaging an upper die for mold press forming with said lower die to form said molten resin into a desired shape;
said valve gates being sequentially opened and closed according to a command from a control unit based on a signal from a position sensor which detects a fore-and-aft position of an in-line screw of said injection molding machine such that said valve gates are opened one after the other substantially without any overlap between opening periods of said valve gates.

5,389,316

PROCESS FOR PRODUCING AN ENERGY ABSORBING PANEL

Michael L. Kerman, Romeo, Mich., assignor to Woodbridge Foam Corporation, Ontario, Canada

Continuation-in-part of Ser. No. 744,331, Aug. 13, 1991, abandoned. This application Apr. 2, 1992, Ser. No. 862,172
Int. Cl.[6] B29C *65/00*
U.S. Cl. 264—46.5 7 Claims

1. A process for producing a resilient energy absorbing panel having an energy absorbing surface in a mold comprising an upper mold and a lower mold, said upper and lower molds being closeable to define an enclosure corresponding to the shape of the energy absorbing panel, said enclosure having a volume, the process comprising the steps of:
(i) placing a flexible, fibrous reinforcing layer in the upper mold and the lower mold;
(ii) dispensing a liquid foamable polyurethane composition in the lower mold;
(iii) expanding the foamable liquid polyurethane composition to fill about 50 to 90% by volume of said volume of said enclosure; and
(iv) closing the upper mold and the lower mold to define said enclosure to produce a resilient energy absorbing panel having a resilient polyurethane foam core which adheres to and impregnates the reinforcing layer thereby providing an energy absorbing surface on the panel;
wherein the reinforcing layer has a tensile strength greater than the tensile strength of the resilient polyurethane foam core and upon compression of the panel at the energy

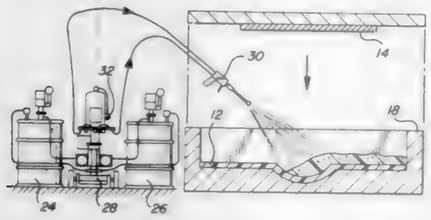
absorbing surface to about 50% by volume of the uncompressed panel in a direction substantially normal to the reinforcing layer, the panel recovers to at least about 90% by volume of the uncompressed panel in less than about 30 minutes.

5,389,317

METHOD FOR MOLDING COMPOSITE ARTICLES INCLUDING A SHAPED FOAM CUSHION BY SPRAYING FOAMABLE COMPONENTS

Robert A. Grimmer, Berwick, Me., assignor to Davidson Textron Inc., Dover, N.H.

Filed Aug. 19, 1993, Ser. No. 108,236
Int. Cl.[6] B29C *67/22*
U.S. Cl. 264—46.5 7 Claims



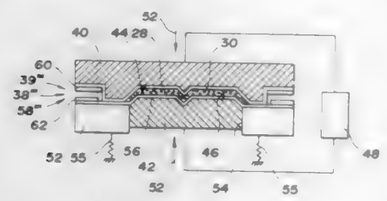
1. A method of constructing a molded composite article having a foam cushion that is attached to a cover comprising the steps of:
providing a closeable mold that has a mold cavity,
providing a removable cover having a face disposed on a surface of the mold cavity and an exposed back surface,
spraying a coating of foam forming materials onto substantially the entire back surface of the cover in a substantially uniform manner while the mold is open, and
closing the mold with a lid so as to hold a substrate in spaced relationship to the cover while the foam forming materials react to fill the space between the cover and the substrate with a foam to provide a foam cushion between the cover and the substrate.

5,389,318

METHOD FOR MAKING A FORMED LAMINATE OF COLLAPSED FOAM

Christian Thary, Farmington Hills, Mich., assignor to Namba Corporation, Walled Lake, Mich.

Division of Ser. No. 890,530, May 28, 1992, Pat. No. 5,296,182. This application Oct. 12, 1993, Ser. No. 134,218
Int. Cl.[6] B29C *67/22*
U.S. Cl. 264—46.5 6 Claims



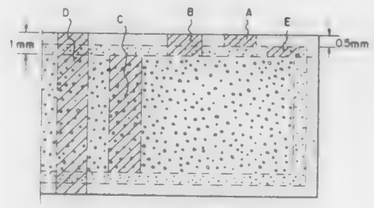
1. A method for making a formed laminate, comprising:
providing a flexible sheet adjacent first and second contoured mold surfaces;
providing a quick reacting foamable liquid mixture for reaction that causes full expansion in less than 25 seconds to provide a foam which subsequently cures in less than 20 minutes at room temperature without any heating but which, after substantial completion of the expansion and before substantial curing has taken place, has a transitory state when the liquid mixture is viscous and defines cells enclosing gas generated during the reaction; and
providing relative movement of the first and second contoured mold surfaces toward each other to compress the foam and the flexible sheet between the contoured mold surfaces during the foam reaction while the foam is in said transitory state to form the flexible sheet and provide a collapsed foam layer that is bonded to the flexible sheet as the formed laminate.

5,389,319

PROCESS FOR PRODUCING THERMOPLASTIC POLYESTER SERIES RESIN FOAMED MATERIAL

Motoshige Hayashi; Norio Amano; Takaaki Hirai; Takeshi Taki, and Masatoshi Ishibashi, all of Nara, Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Division of Ser. No. 633,851, Dec. 26, 1990, Pat. No. 5,134,028. This application Dec. 5, 1991, Ser. No. 802,668
Claims priority, application Japan, Dec. 27, 1989, 1-344249; Dec. 27, 1989, 1-344250; Jul. 9, 1990, 2-182371
Int. Cl.[6] B29C *67/22*
U.S. Cl. 264—48 8 Claims



1. A process of producing a thermoplastic series resin foamed material having a thickness of at least 3 mm and an apparent density of from 0.05 to 0.7 g/cm^3, wherein the crystallinity of the resin in the surface portion within 0.5 mm from the surface of the foamed material is not more than 30% and at least 1% lower than the crystallinity of the resin in the central portion of the foamed material, which comprises extruding a thermoplastic polyester series resin containing a foaming agent, said resin being mixed with pyromellitic dianhydride, benzophenonetetracarboxylic acid dianhydride, cyclopentanetetracarboxylic acid dianhydride, diphenylsulfonetetracarboxylic acid dianhydride or diglycidyl terephthalate prior to extrusion and foaming, from an extruding machine in a molten state at a temperature of at least 200° C. and bringing the surface of the extruded resin into contact with a liquid or a solid having a temperature lower than the glass transition point of the resin while the extruded resin is foamed and has a surface temperature of higher than the crystal melting point to forcibly suddenly cool the surface.

5,389,320

METHOD OF MAKING EXPANDABLE POLYPHENYLENE ETHER AND POLYOLEFIN BLEND

Lynn M. Martynowicz, Virginia Beach, Va., assignor to General Electric Company, New York, N.Y.

Filed Oct. 28, 1991, Ser. No. 783,948
Int. Cl.[6] B29C *67/22*
U.S. Cl. 264—53 14 Claims

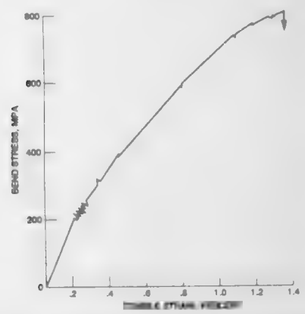
1. A process for producing expandable particles of melt compounded blends of polyphenylene ether resin and polyolefin resin, comprising:
(a) mixing a melt compounded blend of polyphenylene ether resin and polyolefin resin, a blowing agent which is capable of being imbibed by the polyphenylene ether and polyolefin resin blend, and water in a pressure vessel to form a dispersion;
(b) heating the dispersion in the sealed pressure vessel for a sufficient time to impregnate the blowing agent in the melt compounded blend of resin particles while continuously maintaining the dispersion in the sealed pressure vessel;
(c) cooling the dispersion in the sealed pressure vessel; and
(d) removing the cooled blowing agent-impregnated, melt compounded blend of resin particles from the vessel.

5,389,321

METHOD OF PRODUCING A SILICON CARBIDE FIBER REINFORCED STRONTIUM ALUMINOSILICATE GLASS-CERAMIC MATRIX COMPOSITE

Narottam P. Bansal, No. Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 892,054, Jun. 4, 1992, abandoned. This application Sep. 16, 1993, Ser. No. 128,007
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[6] C04B *35/80*
U.S. Cl. 264—60 13 Claims



1. A method of producing a ceramic fiber-reinforced glass-ceramic matrix composite comprising the steps of
preparing an aqueous slurry of SrO–Al_2O_3–2 SiO_2 (SAS) glass powder, an organic binder, a plasticizer, glycerine, and a surfactant,
ball milling said slurry,
casting said slurry into tape thereby forming a glass-matrix tape,
drying said glass matrix tape,
cutting said glass matrix tape to a predetermined size,
winding continuous chemical vapor deposition (CVD) SiC fibers onto a drum,
cutting said fibers on said drum thereby forming a fiber mat,
alternating a plurality of said glass matrix tapes with a plurality of said fiber mats thereby forming a tape-mat stack,
warm pressing said tape-mat stack thereby forming a "green" composite,
wrapping said "green" composite in foil,
heating said wrapped "green" composite whereby organic constituents are burned out thereby forming an interim material, and
hot pressing said interim material to produce a silicon carbide fiber reinforced SAS glass-ceramic matrix composite.

5,389,322

METHOD FOR MANUFACTURE OF BIODEGRADABLE DISPOSABLE CONTAINER

Doo-hyun Kim, 404-908 Jugong Apartment, 751-1, Sang Gaedong, Nowon-ku, Seoul, and Jae-il Kim, 202-206 Jugong Apartment, 208,210,212 Shanbon-dong, Gunpo-shi, Kyongki-do, both of Rep. of Korea

Filed Sep. 20, 1993, Ser. No. 124,305
Claims priority, application Rep. of Korea, Dec. 31, 1992, 1992-27293
Int. Cl.[6] B27N *5/02, 1/02*
U.S. Cl. 264—112 7 Claims

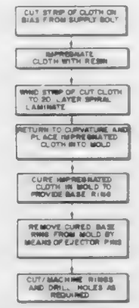
1. A method for manufacture of a biodegradable disposable container comprising the steps of:
(i) mixing 40–46 weight % of fine granular sawdust powder with 29–35 weight % of a liquid protein, and agitating;
(ii) mixing the resultant mixture of step (i) with 17–23% of a starch and 4–6% of sodium metaphosphate and agitating;
(iii) compression-molding the resultant mixture of step (ii) into a container under a pressure of about 3 Kg/cm^2;
(iv) steaming the container of step (iii) in a steaming box for about 30 minutes at a temperature in the range of about 85° C.–95° C., and drying; and
(v) applying a resin coating to inner and outer surfaces of the resultant container of step (iv) and drying.

5,389,323

METHOD OF FABRICATING A QUASI-ISOTROPIC APPARATUS

Richard L. Cook, 444 Lake Mary Rd., Flagstaff, Ariz. 86001

Division of Ser. No. 774,701, Oct. 9, 1991, Pat. No. 5,275,598, and a continuation-in-part of Ser. No. 774,701, Oct. 9, 1991. This application Sep. 7, 1993, Ser. No. 116,964
Int. Cl.[6] B29C *53/56, 67/14*
U.S. Cl. 264—136 10 Claims



1. The method of fabricating an Ilizarov ring, comprising, in combination, the steps of:
providing a length of woven cloth having a warp, a woof, and a bias;
impregnating the length of cloth with a thermosetting resin;
cutting a rectangular strip from the impregnated cloth;
winding the impregnated strip of cloth to provide a multi-layered spiral laminate;
providing a mold having a cavity of a desired configuration;
forming the multi-layered cloth laminate into the configuration of the mold cavity wherein a multilayered spiral box beam is formed;
placing the laminate in the mold cavity;
curing the cloth laminate in the mold cavity;
removing the cured laminate from the mold cavity; and
machining the cured laminate to provide an Ilizarov ring.

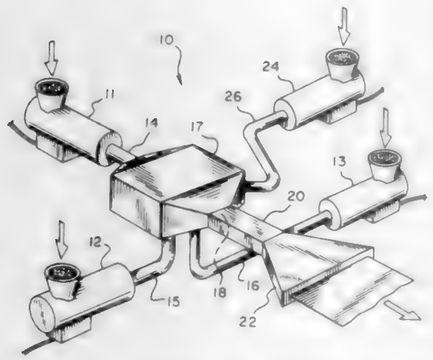
VOL 1171 ISS 2 FE 14 1995 UMI

5,389,324

LAYER THICKNESS GRADIENT CONTROL IN MULTILAYER POLYMERIC BODIES

Ray A. Lewis; David M. Wisniewski; Ravi Ramanathan, and Walter J. Schrenk, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 7, 1993, Ser. No. 72,255
Int. Cl.[6] B29C *47/06, 47/92*
U.S. Cl. 264—171 28 Claims



1. A method for generating a layer thickness gradient within a multilayer polymeric body comprising the steps of:
providing separate streams of at least first and second heat plastified polymeric materials;
dividing each of said streams into a plurality of first substreams and a plurality of second substreams;
controlling the respective flow rates of said polymeric materials in said substreams to provide a differential in the volume of polymeric materials flowing through each of said substreams; and
combining said substreams into a composite stream having said plurality of first and second substreams interdigitated into overlapping generally planar layers with substantially parallel layer interfaces to form said multilayer body, said layers formed from the substream having the greater volumetric flow rate being thicker than said layers formed from the substream having the lesser volumetric flow rate to form a gradient in layer thicknesses.

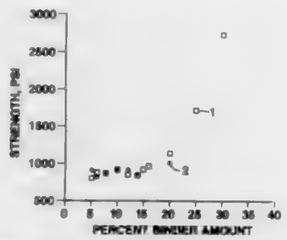
17. An apparatus for generating a layer thickness gradient within a multilayer polymeric body comprising:
means for providing at least first and second streams of heat plastified polymeric materials;
means for dividing said at least first and second streams into a plurality of first substreams and a plurality of second substreams;
means for controlling the respective flow rates of said polymeric materials in said plurality of first and second substreams to provide a differential in the volume of polymeric materials flowing through each of said substreams; and
means for combining said substreams into a composite stream having said plurality of first and second substreams interdigitated into overlapping generally planar layers with substantially parallel layer interfaces to form said multilayer body, said layers formed from the substream having the greater volumetric flow rate being thicker than said layers formed from the substream having the lesser volumetric flow rate to form a gradient in layer thicknesses.

5,389,325

ACTIVATED CARBON BODIES HAVING PHENOLIC RESIN BINDER

Dana C. Bookbinder; Evelyn M. DeLiso, both of Corning, N.Y.; Ronald E. Johnson, Tioga, Pa., and Kevin P. Streicher, Bath, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Sep. 24, 1993, Ser. No. 125,776
Int. Cl.[6] B32B *3/12*
U.S. Cl. 264—177.12 12 Claims



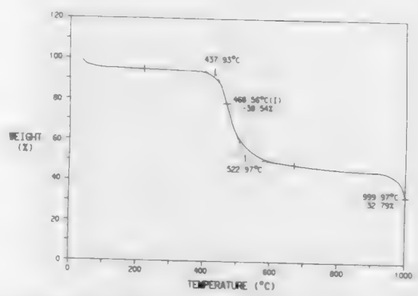
1. A method for making a carbon body having a phenolic resin binder, said method comprising:
a) forming an aqueous mixture comprising in percent based on the total weight of the activated carbon and phenolic resin,
about 5% to about 35% solid phenolic resin,
about 4% to about 10% plasticizing organic binder selected from the group consisting of cellulose ethers, cellulose ether derivatives, and combinations thereof,
and the balance of the mixture being activated carbon particles;
b) forming said mixture into a body; and
c) drying the formed body.

5,389,326

FIBERS AND FILMS OF IMPROVED FLAME RESISTANCE

Robert V. Kasowski, West Chester, Pa., and Kiu-Seung Lee, Richmond, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 974,194, Nov. 10, 1992, Pat. No. 5,319,013.
This application May 23, 1994, Ser. No. 247,366
Int. Cl.[6] D01F *6/00*
U.S. Cl. 264—184 6 Claims



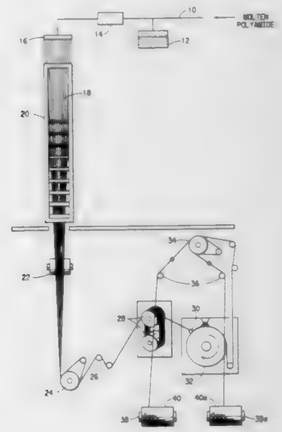
1. A method for preparing a fiber or film of improved thermal stability comprising impregnating the fiber or film with a solution of tungsten hexachloride in an organic solvent in sufficient amount to provide at least 0.1% by weight of tungsten, treating the impregnated fiber with an aqueous solution to extract solvent and to convert the hexachloride into mixed tungsten oxides wherein the polymer forming the fiber or film is selected from the group consisting of an aramid and polybenzimidazole.

5,389,327

POLYAMIDE PIGMENT DISPERSION

Raymond Longhi, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 13, 1993, Ser. No. 45,293
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[6] D01D *5/12*; D01F *1/02*; B29C *41/22*; C08L *51/00*
U.S. Cl. 264—210.8 3 Claims



1. A method for improving spinning performance in a process for preparing drawn pigmented polyamide filaments comprising the steps of:
a) adding to a molten fiber-forming polyamide a liquid pigment concentrate comprising from 1%–60%, based on total weight of concentrate, pigment dispersed in a polymer matrix of from 40%–99%, based on total weight of concentrate, of an N,N'-dialkyl polycarbonamide having a melting point less than about 100° C. and a number average molecular weight between 800–5000;
b) mixing said liquid pigment concentrate with said molten fiber-forming polyamide to produce a uniform blend;
c) spinning said blend into filaments; and
d) drawing said filaments.

5,389,328

PROCESS FOR THE FABRICATION OF ORTHOPAEDIC AIDS BASED ON EPOXY RESINS AND POLYAMINES

Klaus D. Urban, and Hans R. Felzl, both of Vienna, Austria, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 24, 1993, Ser. No. 23,036
Claims priority, application Switzerland, Feb. 28, 1992, 621/92
Int. Cl.[6] B29C *43/00, 51/00*
U.S. Cl. 264—294 8 Claims

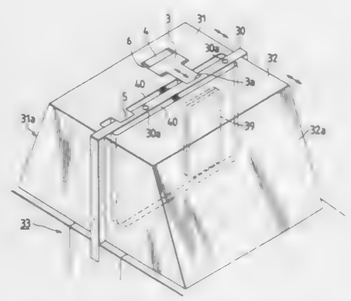
1. A process for the fabrication of orthopaedic aids made from semifinished material that is obtainable from a cured material based on one or more than one epoxy resin and one or more than one polyamine as essential polymer component, which hardened material has a glass transition point, which process comprises: (i) heating said material to above the glass transition point; (ii) shaping the cured material to produce the intended shape of the orthopaedic aid; and (iii) cooling the shaped material to a temperature below the glass transition point.

5,389,329

METHOD AND APPARATUS FOR MOLDING A MAGNETIC DISK CARTRIDGE SHUTTER

Selichi Watanabe, and Tadashi Irie, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 27, 1993, Ser. No. 126,655
Claims priority, application Japan, Sep. 29, 1992, 4-282248
Int. Cl.[6] B29C *45/44*
U.S. Cl. 264—318 29 Claims



1. A method for molding a plastic shutter for a magnetic disk cartridge, comprising the steps of:
(a) providing first and second core members defining therebetween a molding cavity, each of said first and second core members including raised portions for forming a window in said shutter, said raised portions being located opposite one another;
(b) providing a plate member extending into said molding cavity and cooperating with said first and second core members to define an injection space having the shape of said shutter, said plate member having a free end in said molding cavity;
(c) providing at least one thrust member extending into said molding cavity and contacting said free end of said plate member;
(d) adjusting an amount of protrusion of said thrust member into said molding cavity in a direction perpendicular to said plate member within a range of +40 μm to −20 μm relative to a position where a forward end of said thrust member contacts said plate member without exerting a thrust force on said plate member; and
(e) injecting molten resin into said injection space to mold a plastic shutter.

15. A mold for molding a shutter for a magnetic disc cartridge, comprising:
first and second core members defining therebetween a molding cavity, each of said first and second core members including raised portions for forming a window in said shutter, said raised portions being located opposite one another;
a plate member extending into said molding cavity and cooperating with said first and second core members to define an injection space having the shape of said shutter, said plate member having a free end in said molding cavity;
at least one thrust member extending into said molding cavity and contacting said free end of said plate member; and
means for adjusting an amount of protrusion of said thrust member into said molding cavity in a direction perpendicular to said plate member in a range of +40 μm to −20 μm relative to a position where a forward end of said thrust member contacts said plate member without exerting a thrust force on said plate member.

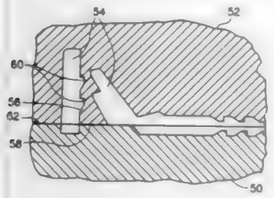
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5,389,330

INJECTION MOLDING OF CABLE TIES

Soren C. Sorensen, 12630 Carmel Country Rd., No. 110, San Diego, Calif. 92130, and Jens O. Sorensen, P.O. Box 2274, Rancho Santa Fe, Calif. 92067

Filed Jan. 28, 1993, Ser. No. 10,538
Int. Cl.[6] B65D *63/00*
U.S. Cl. 264—328.1 2 Claims



1. An injection molded tie that is useful for forming a loop for retaining a bundle of elongated articles, the tie comprising

an elongated tongue with two ends and two broad sides, a locking head at one end of the tongue, a tip at the other end of the tongue, a first set of ratchet teeth extending along one broad side of the tongue and a second set of ratchet teeth extending along the other broad side of the tongue;

wherein the locking head has sides defining an opening for receiving the tip of the tongue to form said loop, including a movable pawl that is hinged at one side of said opening and with an abutment surface on the opposite side of said opening from the pawl;

wherein the pawl has at least one pawl tooth disposed for engaging the first set of ratchet teeth when the tip of the tongue is inserted through said opening with the second set of ratchet teeth facing the abutment surface, wherein the pawl, when the at least one pawl tooth is so engaged, is movable toward the abutment surface in response to pressure applied to the tongue in a direction opposite to the direction of said insertion in order to force the second set of ratchet teeth against the abutment surface; and

at least one stationary tooth disposed on the abutment surface and having an apex for engaging the second set of ratchet teeth when the second set of ratchet teeth is forced against the abutment surface to thereby in combination with the at least one pawl tooth hold the tongue in the locking head when pressure is applied to the tongue in the direction opposite to the direction of said insertion.

wherein the tie is injection molded by a method comprising the steps of

(a) providing a mold by combining mold parts to define a mold cavity for forming the tie;

(b) injecting molding material in the mold cavity to form the tie;

(c) solidifying the injected molding material to solidify the tie;

(d) separating the mold parts to open the mold; and

(e) ejecting the solidified tie from the opened mold;

wherein step (a) comprises providing a first mold part defining a portion of the mold cavity that forms the first set of ratchet teeth on the one broad side of the tongue and a second mold part that defines a portion of the mold cavity that forms the second set of ratchet teeth on the other broad side of the tongue wherein the second mold part includes a core that defines at least a portion of the mold cavity that forms the opening of the locking head, and wherein the first mold part is combined with the core of the second mold part at an interior parting surface that is not adjoining the portion of the mold cavity that forms the apex of the at least one stationary tooth; and

wherein steps (d) and (e) comprise ejecting the solidified tie from the opened mold without separating the mold parts at the portion of the mold cavity that forms the at least one stationary tooth apex; and

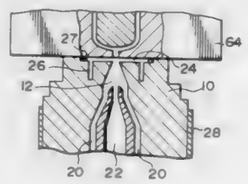
wherein the tie bears a line defined by said interior parting surface and does not bear a line defined by a parting surface of mold parts adjoining the at least one stationary tooth apex.

5,389,331

METHOD OF INJECTION MOLDING MULTI-PLY PRODUCTS USING PLASTIC HEAT-INSULATING BARRIER LAYER

Shinichi Uehara, and Koichi Sato, both of Ueda, Japan, assignors to Nissei ASB Machine Co., Ltd., Nagano, Japan

Continuation of Ser. No. 783,249, Oct. 28, 1991, abandoned. This application Aug. 3, 1993, Ser. No. 101,110
Claims priority, application Japan, Oct. 31, 1990, 2-296338
Int. Cl.[6] B29C *45/16, 45/17*
U.S. Cl. 264—513 11 Claims



1. A method of injection molding a multi-ply product by charging a plurality of molten plastic materials into an injection cavity mold through a hot-runner nozzle operatively connected to the injection cavity mold, said method comprising the steps of:

injection molding a dummy article having a single layer by charging a most thermostable one of said plastic materials into said injection cavity mold, whereby said one plastic material is pre-charged into a recess formed to communicate with an exit port for the hot-runner nozzle, said recess being located at an interface between the hot-runner nozzle and the injection cavity mold;

removing said dummy article from said injection cavity mold leaving a solidified plastic material from the dummy article to form an insulator in the recess; and

maintaining said one plastic material forming said insulator solidified in said recess as an insulating barrier layer between the injection cavity mold and the hot-runner nozzle during successive steps of injection molding multi-ply products from said molten plastic materials.

5,389,332

HEAT RESISTANT CONTAINER MOLDING METHOD

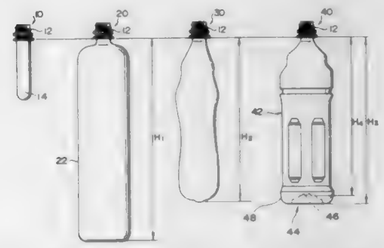
Fumiya Amari, and Tosimichi Takeuchi, both of Komoro, Japan, assignors to Nissei ASB Machine Co., Ltd., Nagano, Japan

Filed Feb. 24, 1993, Ser. No. 21,585
Claims priority, application Japan, Feb. 29, 1992, 4-078820; Jan. 29, 1993, 5-034792
Int. Cl.[6] B29C *49/12, 49/18*
U.S. Cl. 264—530 10 Claims

1. A method of molding a heat resistant container, the heat resistant container including a body part, a bottom part formed at a first axial end of the heat resistant container, and a heel part connecting the bottom part to the body part, the bottom part having a raised part extending inwardly toward a second axial end of the heat resistant container, the raised part having a central part formed in a center of the raised part and an edge part surrounding said central part, the edge part connecting the central part to the heel part, the method comprising the steps of:

(a) primary blow molding an injection molded preform into a primary blow molded article in a primary blow cavity mold, the primary blow molded article being axially longer than the heat resistant container, the primary blow molded article having a less-stretched region;

(b) heat shrinking the primary blow molded article into a heat shrunk primary blow molded article, an axial length of the heat shrunk primary blow molded article being greater than an axial length of the heat resistant container, the axial length of the heat shrunk primary blow molded article being measured from a top of the heat shrunk primary blow molded article to a bottom center of the heat shrunk primary blow molded article, the axial length of the heat resistant container being measured from a top of the heat resistant container to a peak of the raised part of the heat resistant container;



(c) inwardly forming the central part of the raised part in said less-stretched region in a secondary blow cavity mold by moving a bottom mold in a vertical direction, the central part contacting the bottom mold without an area corresponding to the edge part of the raised part contacting the bottom mold when the bottom mold stops moving in the vertical direction; and

(d) after said forming step, secondary blow molding the heat shrunk primary blow molded article into the heat resistant container within the secondary blow cavity mold, wherein said heel part and said edge part each have a desired wall thickness thinner than a wall thickness of the central part of the raised part, and the less-stretched region becomes limited to the central part of the raised part, the less-stretched region having a lower stretch ratio than a stretch ratio of the body part of the heat resistant container.

5,389,334

ABRASION AND CORROSION RESISTANT ALLOYS

John H. Culling, P.O. Box 769, Pevely, Mo. 63070-0769

Filed Apr. 22, 1993, Ser. No. 51,633
Int. Cl.[6] C22C *30/00*
U.S. Cl. 420—582 10 Claims

1. An alloy consisting of:

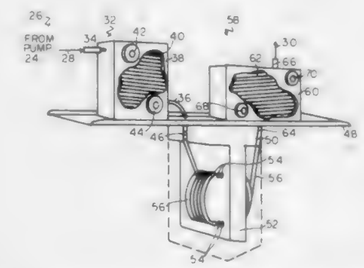
CARBON	0.4 to 1.2% BY WEIGHT
NICKEL	20 TO 35%
CHROMIUM	29 to 35%
MOLYBDENUM	2 TO 6%
COPPER	1 TO 4%
SILICON	UP TO 1.5%
MANGANESE	UP TO 1.5%
IRON	THE BALANCE

5,389,335

HIGH TEMPERATURE, SHORT TIME MICROWAVE HEATING SYSTEM AND METHOD OF HEATING HEAT-SENSITIVE MATERIAL

Stanley E. Charm, Boston; Steven Landau, Brookline; Hossein Zarrineghbal, Winchester, and Robert F. Golden, Acton, all of Mass., assignors to Charm Sciences, Inc., Malden, Mass.

Filed Jun. 18, 1993, Ser. No. 79,680
Int. Cl.[6] M61L *2/00*
U.S. Cl. 422—21 34 Claims



25. In a method for the rapid, high temperature, short time microwave heating of a heat-sensitive fluid having an organism or pathogenic agent which method comprises:

a) heating the fluid within a plastic tubing in a microwave energy field within a housing having an opening to a selected high temperature of greater than 60° C. to reduce or inactivate the organism or pathogenic agent, the heating, without substantial alteration of other desirable properties of the fluid the heating carried out in less than about 1.0 second;

b) holding the heated fluid for a selected time and at a selected temperature;

c) cooling the heated fluid to a temperature of less than about 40° C. in a period of less than about one second; and

d) recovering the heated, cooled fluid, wherein the improvement comprises:

positioning a disposable cartridge means having a plastic, microwave heating coil means containing a plurality of substantially uniform, aligned, spaced apart coils of the plastic tubing within the microwave energy field, the plastic tubing retained in a coiled arrangement by a plastic coil holder which holder is easily inserted in and removed from the microwave heating field.

5,389,333

HYDROGEN STORAGE ALLOYS

Yufeng Li; Deming Xu; Mingming Geng; Jun Li, and Siqing Xu, all of Beijing, China, assignors to Central Iron & Steel Research Institute of Ministry of Metallurgical Industry, Beijing, China

Filed Aug. 31, 1993, Ser. No. 114,876
Int. Cl.[6] H01M *4/00;* C22C *19/00*
U.S. Cl. 420—455 6 Claims

1. A hydrogen storage alloy having a formula of:

$$Mm_{1-g}M_aNi_bMn_cCo_dAl_eX_f$$

wherein,

Mm is a misch metal mainly containing La, Ce, Pr, Nd and the balance amount of unavoidable impurities;

M is titanium, zirconium or a mixture thereof;;

X is nitrogen or a mixture of nitrogen and boron; and

$0.01<a<0.2$;

$3.5<b<4.6$;

$0.2<c<0.6$;

$0.1<d<0.7$;

$0.1<e<0.5$;

$0.005<f<0.2$; and

$4.8<a+b+c+d+e+f<5.4$.

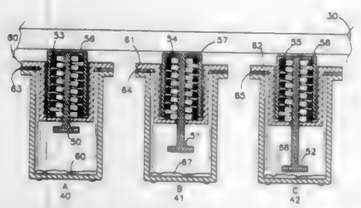
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5,389,336

METHOD OF DECONTAMINATING A CHAMBER THAT HAS MOVABLE SHELVES

Robert W. Childers, Garner, N.C., assignor to American Sterilizer Company, Erie, Pa.

Continuation of Ser. No. 13,429, Feb. 4, 1993, Pat. No. 5,286,448. This application Jan. 13, 1994, Ser. No. 181,640
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[6] A61L *2/00, 9/00*
U.S. Cl. 422—28 **22 Claims**



1. A method for decontaminating a chamber system to a predetermined level, that comprises the steps of:
a) providing a chamber system having at least a lower and an upper shelf, at least one of which is vertically movable while maintaining its horizontal position, a condenser, and piping that are fluidly connected to each other and to a vacuum system;
b) placing at least one container containing a predetermined amount of liquid sterilant into the chamber on at least one shelf;
c) placing a loose fitting cap on said at least one container;
d) moving one of the shelves until the adjacent shelf presses against the at least one container cap thereby sealing the container;
e) evacuating the chamber, condenser and piping to a vacuum of predetermined subatmospheric absolute pressure, wherein the chamber system is isolated from the vacuum system;
f) moving another of said movable shelves until the cap on the at least one container is no longer sealed on the container;
g) vaporizing at least a portion of said liquid sterilant by exposing said liquid sterilant to the evacuated chamber environment; and
h) maintaining the vacuum and exposing the interior of said chamber to sterilant vapor for a predetermined time until a predetermined level of decontamination is achieved.

5,389,337

METHOD FOR PRODUCING A PRESERVATIVE FOR FOOD PRODUCTS

José A. Novejarque Conde, Valencia, Spain, assignor to Novesol, S.L., Valencia, Spain

PCT No. PCT/ES91/00068, § 371 Date Jun. 15, 1993, § 102(e) Date Jun. 15, 1993, PCT Pub. No. WO93/07768, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 18, 1991, Ser. No. 75,565
Int. Cl.[6] A61L *9/00;* **A23L** *3/00*
U.S. Cl. 422—29 **8 Claims**

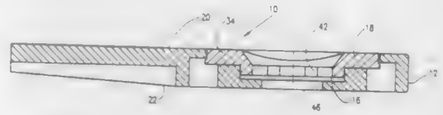
1. A method for producing a stabilizing and preserving solid product for foodstuffs such that the solid product has a percentage of ethanol of at least 75% by weight and can produce evaporation of an alcohol content thereof so as to effectively eliminate the alcohol content, comprising the steps of:
dissolving a salt and a fatty acid, in a hydroalcoholic solution, at temperatures selected according to the melting point of the fatty acid that is used; and
adding quantities between 1% and 15% of fatty alcohols to form a crystalline mesh of said fatty alcohols so as to regulate the speed of evaporation of said alcohol content thereof, in accordance with the nature, weight and volume of the foodstuffs to be preserved.

5,389,338

APPARATUS FOR DRY CHEMICAL ANALYSIS OF FLUIDS

Falk Fish, Tel Aviv, Israel, assignor to Orgenics Ltd., Yavne, Israel

Continuation-in-part of Ser. No. 816,280, Jan. 3, 1992, abandoned. This application Aug. 4, 1993, Ser. No. 101,965
Claims priority, application Israel, Jan. 6, 1991, 96887
Int. Cl.[6] G01N *33/00, 21/00*
U.S. Cl. 422—58 **16 Claims**



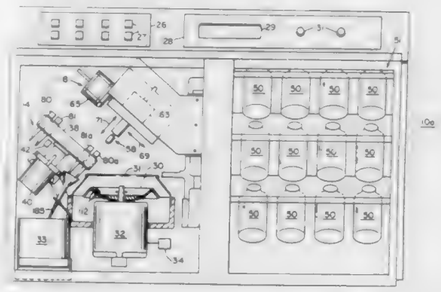
1. Apparatus for dry chemical analysis of fluids containing color particulate suspension such as whole blood, comprising:
a rigid base member defining an aperture and a filter supporting location above said aperture, wherein said filter supporting location includes a depression;
a filter including a reagent capable of colorimetric changes in the presence of an analyte; and
rigid filter retaining means including a rigid mesh, engaging said filter and said base member to retain said filter non-adhesively on said filter supporting location between said rigid mesh and said aperture,
said filter retaining means further including protuberances depending perpendicularly from said mesh, wherein said protuberances abut said filter for retaining said filter within said depression in spaced relationship with respect of said mesh, and for providing even distribution of a sample liquid on a surface of said filter.

5,389,339

INTEGRAL BIOMOLECULE PREPARATION DEVICE

Harry E. Petschek, Lexington, Mass.; Henry Kaufmann, Danville, N.H.; Robert A. Quinlan; David A. DeBonville, both of Beverly, Mass.; Martin J. Sklar, Needham, Mass.; Ronald D. Danehy, Tewksbury, Mass.; Michael Foley, Beverly, Mass.; John McG. Dobbs, and David Banks, both of South Hamilton, Mass., assignors to Enprotech Corporation, New York, N.Y.

Continuation of Ser. No. 517,221, May 1, 1990, abandoned. This application Aug. 19, 1992, Ser. No. 932,285
Int. Cl.[6] G01N *35/00, 35/06*
U.S. Cl. 422—64 **43 Claims**



1. A self-contained biomolecule preparation device for automatically preparing biomolecules such as nucleic acid from samples such as cell samples, comprising:

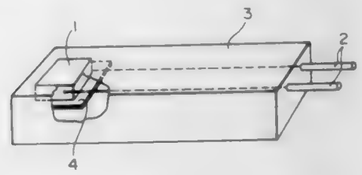
a plurality of samples tubes contained in a rotor for holding chemical compounds in liquid or solid form;
a plurality of pipet tips to withdraw and dispense controlled amounts of fluid contained in said plurality of sample tubes;
a centrifuge, containing the rotor, for spinning said plurality of samples tubes in said rotor at predetermined times;
a pipet tip rack, separate from the centrifuge and the rotor, for holding said plurality of pipet tips, each of said tips associated with and substantially parallel to one of said sample tubes in the rotor of said centrifuge;
means for maintaining a predetermined relationship between the pipet tips in said tip rack and the sample tubes in the rotor;
a pipet arm assembly, proximate said pipet tip rack and the rotor of said centrifuge, including a pipet tip handling mandrel, driven to move in two dimensions by a motorized mechanism, for selectively removing pipet tips from said pipet tip rack, inserting them into the sample tubes in the rotor of said centrifuge, and returning the selected pipet tip back to the tip rack for further use, said arm assembly responsive to said means for maintaining so that the pipet tip selected for removal remains associated with the sample tube in which the pipet tip is to be inserted;
a plurality of reagent reservoirs, proximate said sample tubes, for holding biomolecule preparation reagents;
reagent adding means for selectively adding controlled amounts of the reagents from said reservoirs to said sample tubes at predetermined times;
mixing means for mixing the sample tube contents at predetermined times;
fluid withdrawal means for withdrawing fluid from a sample tube into an inserted pipet tip at predetermined times; and
process control means for controlling the operation, including the integrated sequence of operations, of said centrifuge, said pipet arm, said reagent adding means, said mixing means and said fluid withdrawal means.

5,389,340

MODULE AND DEVICE FOR DETECTING NOX GAS

Kazuko Satake, Yokohama, Japan, assignor to Tokuyama Corporation, Japan

Continuation-in-part of Ser. No. 458,380, Dec. 28, 1989, abandoned. This application Dec. 20, 1991, Ser. No. 811,240
Int. Cl.[6] G01N *27/00*
U.S. Cl. 422—98 **9 Claims**



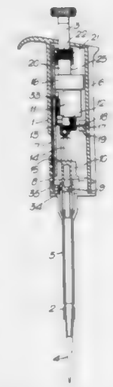
1. A module for detection of NO_x gas in a mixed gas which comprises:
(i) an electric insulating support,
(ii) an element for detection of NO_x gas integrated into the surface of the support, said element for detection of NO_x gas substantially consisting of at least one titanium-containing oxide which is selected from the group consisting of:
(a) titanium oxide,
(b) a solid solution wherein at least one element selected from the group consisting of aluminum (Al), gallium (Ga), indium (In), scandium (Sc), magnesium (Mg), yttrium (Y), neodymium (Nd), tantalum (Ta), antimony (Sb) and arsenic (As) is contained in the solid-solution state in the titanium oxide, and
(c) an oxide which contains titanium and as another element, lead (Pb) or cadmium (Cd), and has a perovskite structure,
and has an oxygen deficiency such that its nonstoichiometric parameter (δ) is in the range of 0.03 to 0.3, and
(iii) a couple of electrodes connected to the element for detection of NO_x gas at intervals of distance.

5,389,341

KNOB PIPETTE

Jukka Tuunanen, Helsinki; Juhaa K. Telimaa, Vantaa; Antti J. Keipi, Vantaa, and Ari K. Kukkonen, Vantaa, all of Finland, assignors to Labsystems Oy, Helsinki, Finland

Filed Jun. 22, 1993, Ser. No. 79,776
Claims priority, application Finland, Jun. 24, 1992, 922939
Int. Cl.[6] B01L *3/02;* **G01N** *1/14*
U.S. Cl. 422—100 **14 Claims**



1. A knob pipette, which has a body and therein a lower end and an upper end, a cylinder open from below at the lower end of the body, and therein a piston movable between the lower and upper position for sucking liquid into the pipette and for removing it therefrom, wherein the improvement comprises
a motor and a transmission mechanism related thereto for moving a piston;
an electronic control system for controlling the movement of the piston;
a stopping system for stopping the piston movement into a desired position;
a knob reciprocatively and slidably movable in the body; and
a knob-displacement measuring system connected to the control system such that the knob displacement produces a signal for the control system which in turn energizes the motor to move the piston, thereby controlling the piston movement by means of the control system.

5,389,342

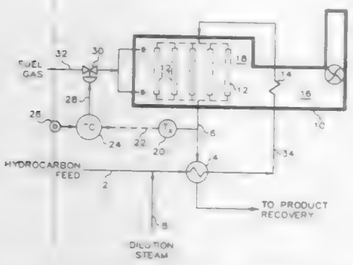
APPARATUS FOR DEHYDROGENATION PROCESS CONTROL

Kelly B. Savage, Coffeyville, Kans.; Francis M. Brinkmeyer, and Steven D. Bridges, both of Bartlesville, Okla., assignors to Pillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 814,544, Dec. 30, 1991, Pat. No. 5,243,122. This application Jun. 3, 1993, Ser. No. 70,811
Int. Cl.[6] B01J *8/06;* **C07C** *5/333;* **G05D** *23/00*
U.S. Cl. 422—109 **5 Claims**

1. Apparatus comprising:
a fired-dehydrogenation reactor having a fixed catalyst bed which comprises a plurality of catalyst filled tubes;
means for forming a feed stream by mixing a hydrocarbon stream containing at least one alkane and a diluent stream;

means for dividing said feed stream for supplying feed to each of said plurality of catalyst filled tubes;
means for supplying combustion fuel to said fired-dehydrogenation reactor through a control valve;
means for withdrawing a reaction product stream from said fired-dehydrogenation reactor;
means for establishing a first signal representative of the actual temperature of said reaction product stream;
means for establishing a second signal representative of the desired temperature of said reaction product stream;



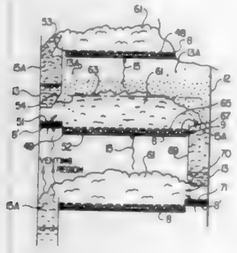
means for establishing a third signal responsive to the difference between said first signal and said second signal, wherein said third signal is scaled so as to be representative of the position of said control valve required to maintain the actual temperature of said reaction product stream represented by said first signal substantially equal to the desired temperature represented by said second signal, while allowing the average temperature of the catalyst filled tubes to rise; and
means for manipulating said control valve in response to said third signal.

5,389,343

CATALYST ASSEMBLY AND METHOD FOR CHEMICAL PROCESS TOWER

Joseph C. Gentry, Dallas, Tex., assignor to Glitsch, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 927,749, Aug. 10, 1992, Pat. No. 5,277,847. This application Oct. 5, 1993, Ser. No. 132,059
Int. Cl.[6] B01J *8/04, 8/06*
U.S. Cl. 422—191 23 Claims



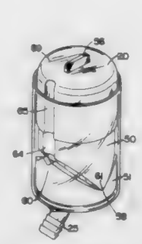
1. An improved tray assembly for a process column of the type utilizing catalyst media therein and wherein liquid flows downwardly through at least a first downcomer onto a first tray and across the active area thereof through which vapor flows upwardly for interaction and mass transfer with the liquid before passing therefrom by at least a second downcomer, wherein the improvement comprises means associated with said tray for the support of catalyst media therebeneath for facilitating the interaction between vapor rising upwardly through said tray and said catalyst media, and wherein said catalyst support means comprises a basket secured to the underside of said tray by attachment members.

5,389,344

VARIABLE CONCENTRATION, SOLID CHEMICAL DISPENSER

James L. Copeland, Burnsville, Minn.; John E. Thomas, River Falls, Wis.; Daniel K. Boche, Eagan, Minn.; James D. Decker, Apple Valley, Minn., and Daniel F. Brady, Eagan, Minn., assignors to Ecolab Inc., St. Paul, Minn.

Filed Oct. 5, 1993, Ser. No. 131,653
Int. Cl.[6] B01D *11/00;* B08B *3/04*
U.S. Cl. 422—264 21 Claims



1. A dispenser for a solid chemical, comprising:
(a) a spray nozzle for directing a solvent upon an eroding surface of a solid chemical, said chemical being located within a housing, wherein the chemical immediately adjacent said spray nozzle is dissolved and passes out of said dispenser in solution form, wherein said solid chemical is supported upon a screen above said spray nozzle;
(b) adjustment means for varying a distance between said spray nozzle and said screen, said distance being variable between a first, high concentration setting and a second, low concentration setting, said spray nozzle having a fixed position and said screen being vertically movable between a first position and a second position, wherein a concentration of the chemical in the solution is adjustable between said high concentration setting and said low concentration setting; and
(c) indication means operatively connected to said adjustment means for displaying the screen positions which correspond to said high concentration setting and said low concentration setting.

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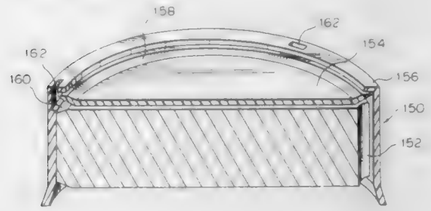
SWIMMING POOL ACCESSORIES

Michael B. Renton, 31 4th Avenue, Parktown, North, Johannesburg 2193, South Africa

Continuation of Ser. No. 820,126, Jan. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 610,920, Nov. 9, 1990, abandoned. This application Oct. 1, 1993, Ser. No. 130,418
Claims priority, application South Africa, Nov. 9, 1989, 89/8550; Dec. 11, 1989, 89/95448; Jun. 1, 1990, 90/4193; Jan. 14, 1991, 91/0218
Int. Cl.[6] C02F *1/00;* E04H *4/16*
U.S. Cl. 422—264 25 Claims

1. A water treatment device comprising:
at least one substantially cylindrical pill made of solid water treatment material having a pair of end surfaces joined by a cylindrical side surface;
a sleeve closely fitting onto the cylindrical side surface to protect substantially all of the cylindrical side surface from contact with the water being treated;
a gas passage in said sleeve adjacent to said cylindrical side surface running from one end surface to the other end surface of the pill at said cylindrical surface, thereby exposing a narrow strip of the cylindrical side surface of the pill to the water being treated;

a closure disc abutting said sleeve to protect one of the end surfaces against water contacting said end surfaces;
an inwardly directed flange at one end of the sleeve, the closure disc being held by said flange against said one end surface; and



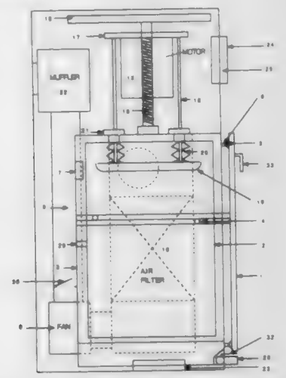
an opening in said flange, said opening being in connection with said gas passage, so that gases can pass along the passage and exit through said opening.

5,389,346

BIO-HAZARDOUS WASTE COMPACTOR

Maxie L. Copeland, Jr., Rte. 3, Box 278, Rayville, La. 71269

Continuation of Ser. No. 853,148, Mar. 18, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 123,706
Int. Cl.[6] B30B *9/00*
U.S. Cl. 422—292 22 Claims



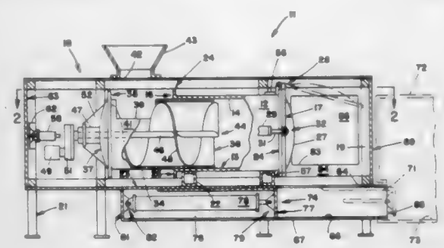
1. A bio-hazardous waste compactor comprising:
a sealable compartment having an opening;
open-ended receptacle means for receiving bio-hazardous waste;
reciprocal support means mounted within said sealable compartment for detachably supporting and reciprocally moving said open-ended receptacle means into and out of said sealable compartment through said opening;
a compaction boot movable into and out of said open-ended receptacle means;
reciprocating means extending into said sealable compartment for reciprocally moving said compaction boot into and out of said open-ended receptacle means;
cover means for covering said opening when said open-ended receptacle means is moved into said sealable compartment;
first sealing means disposed between said sealable compartment and said cover means for providing an airtight seal;
second sealing means provided where said reciprocating means extends into said sealable compartment, said second sealing means further ensuring said airtight seal; and
means in fluid communication with said sealable compartment for creating a condition of negative gauge pressure within said sealable compartment while said cover means and said first and second sealing means prevent replacement of the atmosphere within said sealable compartment.

5,389,347

BIO-HAZARDOUS WASTE STERILIZER AND COMPACTOR

John L. Hall, Tracy, Calif., assignor to Bromac Enterprises, Tracy, Calif.

Filed Oct. 1, 1993, Ser. No. 130,189
Int. Cl.[6] A61L *2/04*
U.S. Cl. 422—307 16 Claims



1. Apparatus for receiving, sterilizing and compacting hazardous waste material which apparatus has a sterilizing chamber for receiving said waste material, means for heating the contents of said chamber to a temperature which destroys hazardous organisms in said waste material and means for compacting waste material which has been processed in said sterilizing chamber, wherein the improvement comprises:
a sterilizer casing forming said sterilizing chamber and having a waste material entry opening at one end of said chamber and a waste discharge opening at the opposite end thereof,
a door at said opposite end of said sterilizer casing, said door being movable between a closed position at which said waste discharge opening is closed and an open position at which waste material may be discharged from said chamber through said discharge opening,
a translatable hollow waste receptacle having a wall with a waste receiving opening therein and having an open end and a closed end, said receptacle being proportioned for entry of said open end thereof into said sterilizing chamber through said waste material entry opening thereof, said receptacle being translatable between a first position at which said waste receiving opening in said receptacle wall is situated outside of said sterilizing chamber to enable deposit of wastes in said receptacle and a second position at which said waste receiving opening is inside said sterilizing chamber and at which said receptacle closes said waste material entry opening of said sterilizer casing, and
motor driven feeding means for urging waste material which is received in said receptacle towards said opposite end of said sterilizer casing.

5,389,348

Patent Not Issued For This Number

5,389,349

RECOVERY OF LITHIUM VALUES FROM BRINES

William C. Bauman, 1015 Balfour St., Midland, Mich. 48640, and John L. Burba, III, 232 Rabbit Trail, Lake Jackson, Tex. 77566

Filed May 24, 1993, Ser. No. 65,586
Int. Cl.[6] C01D *15/00;* B01J *20/00;* C09K *3/00*
U.S. Cl. 423—179.5 18 Claims

1. A composition consisting essentially of pellets, each of said pellets consisting essentially of an integral mass of polycrystalline material of randomly disposed crystals of hydrated alumina intercalated with LiX in an amount to provide a mol fraction of $LiX/Al(OH)_3$ of not less than about 0.02, nor more

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than 0.2, wherein LiX is at least one compound selected from the group consisting of Li halide, Li nitrate, Li sulfate, and Li bicarbonate, said pellets being of a particle size not smaller than about 140 United States Standard Sieve Size.

5,389,350

GAS SEPARATION USING ADSORBENT ACTIVATED CARBONIZED POLYARYLAMIDES

John J. Freeman, Middlesex; Frederick G. R. Gimblett, Reading, both of United Kingdom; Robert A. Hayes, Pooraka, Australia, and Kenneth S. W. Sing, Ilminster, United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, United Kingdom

PCT No. PCT/GB90/02008, § 371 Date Jul. 9, 1992, § 102(e) Date Jul. 9, 1992, PCT Pub. No. WO91/10000, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 21, 1990, Ser. No. 867,686

Claims priority, application United Kingdom, Dec. 28, 1989, 8929259

Int. Cl.[6] **C01B** *31/20, 31/08;* **C01C** *3/04;* **B01D** *53/02*

U.S. Cl. 423—230 **17 Claims**

1. A process for separating carbon dioxide from a gaseous mixture by contacting the mixture with a fibrous adsorbent activated carbon whereby the polar molecules are preferentially adsorbed, wherein the activated carbon is prepared by carbonizing a material comprising polyarylamide fiber which is a condensation product of 1,4-diaminobenzene and terephthalic acid, at a temperature of about 840° C. to about 880° C. and activating the carbonized product in an activating carbon dioxide-containing atmosphere at an elevated temperature of about 840° C. to about 880° C., the overall weight loss of the fiber during the process being 73% to 91% of the starting weight of the fiber.

5,389,351

METHOD FOR DESULFURIZING A GAS

Nobuyasu Hasebe, and Nobukatsu Hasebe, both of 30351 Camino Porvenir, Rancho Palos Verdes, Calif. 90274

Filed Nov. 4, 1992, Ser. No. 970,695

Int. Cl.[6] **C01B** *17/04, 17/16*

U.S. Cl. 423—242.1 **17 Claims**



1. A method for the removal of sulfur compounds from a gas comprising the steps of:

a. forming an absorbent composition comprising solubilized sulfur dioxide in at least the stoichiometric concentration to react with a major portion of hydrogen sulfide present in said gas being treated and a non-aqueous solvent therefor;

b. contacting said gas being treated with said absorbent composition and maintaining said contact for sufficient period to absorb a major portion of hydrogen sulfide in said gas by reaction with said solubilized SO_2 to form water and elemental sulfur as byproducts thereof; and

c. thereafter, contacting said treated gas with a catalyst to convert the hydrogen sulfide in said gas to elemental sulfur.

5,389,352

OXIDE PARTICLES AND METHOD FOR PRODUCING THEM

Jiun-Fang Wang, Piscataway, N.J., assignor to Rodel, Inc., Newark, Del.

Filed Jul. 21, 1993, Ser. No. 95,749

Int. Cl.[6] **C01F** *17/00*

U.S. Cl. 423—263 **8 Claims**

1. A process for preparing chemically active solid CeO_2 particles useful for polishing comprising: (a) forming an aqueous solution comprised of a water soluble trivalent cerium salt and an oxidizing agent and (b) aging said solution as a liquid phase for a time not less than 4 hours at which time said trivalent cerium salt has been oxidized to said chemically active solid CeO_2 particles.

5,389,353

FLUIDIZED BED PROCESS FOR CHLORINATING TITANIUM-CONTAINING MATERIAL AND COKE USEFUL IN SUCH PROCESS

Hans H. Glaeser, Wilmington, Del., and Mark J. Spoon, Ponca City, Okla., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 944,998, Sep. 15, 1992, abandoned, which is a continuation of Ser. No. 739,771, Jul. 26, 1991, abandoned, which is a continuation of Ser. No. 618,520, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 373,604, Jun. 30, 1989, abandoned, which is a continuation of Ser. No. 119,468, Nov. 10, 1987, abandoned. This application Feb. 1, 1994, Ser. No. 189,469

Int. Cl.[6] **C01G** *23/02, 23/047*

U.S. Cl. 423—492 **11 Claims**

1. In a fluidized bed process for chlorinating titanium-containing material, the improvement comprising utilizing in the process calcined petroleum shot coke, calcined petroleum fluid coke or mixtures thereof, said improved process being capable of (a) decreasing the mount of fine particulate coke that is entrained in the hot gases exiting the fluidized bed reactor, and (b) more completely reacting the coke.

5,389,354

PROCESS FOR THE PRODUCTION OF OLEUM AND SULFURIC ACID

Karl Bründle, Bergisch Gladbach; Kurt-Wilhelm Eichenhofer, Leverkusen; Klaus Geisler, Bergisch Gladbach; Günter Pütz, Leverkusen, and Klaus-P. Grabowski, Wermelskirchen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 18, 1991, Ser. No. 643,392

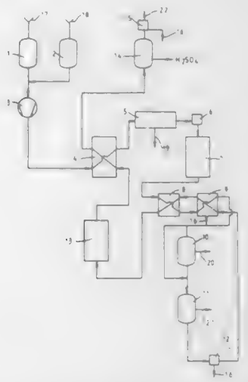
Claims priority, application Germany, Jan. 28, 1990, 4002465

Int. Cl.[6] **C01B** *17/69, 17/79*

U.S. Cl. 423—522 **14 Claims**

1. In the continuous production of oleum having a concentration of 10 to 45% by weight SO_3 or sulfuric acid having a concentration of 94 to 100% by weight H_2SO_4 by burning sulfur with atmospheric oxygen, cooling the resulting SO_2-containing gas to 390°–480° C., catalytically reacting the cooled gas to SO_3-containing gas on a vanadium-containing catalyst, absorbing the SO_3-containing gas after cooling and separating liquid from the gas after absorption, followed by

recovering energy, the improvement which comprises effecting the burning of the sulfur with atmospheric oxygen in the



presence of a dry SO_2-containing gas which contains from about 50 ppm up to about 5,000 ppm $(NO)_x$ expressed as NO.

5,389,355

METHOD OF PREPARING A SYNTHETIC RUTILE FROM A TITANIFEROUS SLAG CONTAINING ALKALINE EARTH METALS

Michel Gueguin, Tracy, Canada, assignor to QIT-Fer et Titane, Inc., Montreal, Canada

Filed Dec. 9, 1987, Ser. No. 130,580

The portion of the term of this patent subsequent to Jun. 12, 2007, has been disclaimed.

Int. Cl.[6] **C01G** *23/00, 23/047, 23/07*

U.S. Cl. 423—610 **13 Claims**

1. A method of preparing synthetic rutile from a titaniferous slag containing FeO, Ti_2O_3 and an oxide of at least one alkaline earth metal and where the molecular ratio of Ti_2O_3 to FeO is at least about 1, the method comprising:

a) contacting the titaniferous slag with chlorine gas at a temperature of at least about 800° C. such that at least some of the alkaline earth metal oxide is converted to an alkaline earth metal titanate; and

b) contacting the chlorine-treated slag of (a) with hydrochloric acid at a temperature of at least about 150° C.

5,389,356

COMPOUNDS AND METHODS FOR GENERATING OXYGEN FREE RADICALS USED IN GENERAL OXIDATION AND REDUCTION REACTIONS

Steven D. Aust; David P. Barr, both of Logan; Thomas A. Grover, Hyde Park; Manish M. Shah, and Namhyun Chung, both of Logan, all of Utah, assignors to Utah State University Foundation, Logan, Utah

Filed Jan. 5, 1993, Ser. No. 1,106

Int. Cl.[6] **C02F** *3/02*

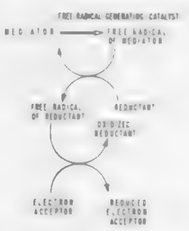
U.S. Cl. 423—659 **14 Claims**

1. A method of selectively oxidizing or reducing a targeted substrate, the method including the steps of

providing a peroxidase to serve as a free radical generating catalyst;

adding a suitable mediator which can be oxidized by said peroxidase to form the free radical of said mediator, whereby said free radical of said mediator is generated by a reaction between said peroxidase and said mediator, said free radical of said mediator being an oxidizing agent;

adding a suitable reductant which can be oxidized by said free radical of said mediator to form the free radical of said reductant, said reductant being and EDTA, whereby said free radical of said reductant is generated by a reaction between said free radical of said mediator and said reductant, said free radical of said reductant being a reducing agent; and



exposing at least one of said free radicals so generated to a targeted substrate, said substrate reacting in a oxidation/reduction reaction with at least one of said free radicals so generated.

5,389,357

MODIFIED CRYSTALLINE ALUMINOSILICATE ZEOLITES AND PROCESS FOR THEIR PREPARATION

Goro Sato; Yusaku Arima, and Takanori Ida, all of Kitakyushu, Japan, assignors to Catalysts & Chemicals Industries Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 965,479, Oct. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 680,465, Apr. 4, 1991, abandoned. This application Jun. 1, 1994, Ser. No. 252,375

Claims priority, application Japan, Apr. 11, 1990, 2-95570

Int. Cl.[6] **C01B** *33/34;* **B01J** *29/08*

U.S. Cl. 423—714 **7 Claims**

1. A process for the manufacture of a modified crystalline aluminosilicate zeolite which comprises the steps of:

(a) contacting a starting faujasite crystalline aluminosilicate zeolite having a crystalline lattice with a silica/alumina mole ratio of not more than 6 and a unit cell size of 24.65 Å or greater in an aqueous phase with a dealuminating agent selected from the group consisting of sulfuric acid, nitric acid and hydrochloric acid at a pH value not exceeding 4 in the presence of a soluble silica in an amount of not less than 500 ppm, said soluble silica being derived from a soluble silica source selected from the group consisting of silicic acid, metasilicate, orthosilicate, disilicate, trisilicate and silica sol; and

(b) recovering a modified faujasite crystalline aluminosilicate zeolite wherein a portion of the aluminum from the zeolite crystal structure has been replaced with silicon, such that the recovered zeolite has a silica/alumina mole ratio of more than 6 and a crystallinity of at least 70% relative to that of said starting zeolite.

5,389,358

ZEOLITE GZS-11 AND ITS DYNAMIC PREPARATION PROCESS

Jianxin Wu, Elkridge; Robert R. Gatte, Columbia, and Terry G. Roberie, Ellicott City, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jul. 16, 1993, Ser. No. 93,249

Int. Cl.[6] **B01J** *29/28*

U.S. Cl. 423—718 **8 Claims**

1. A synthetic zeolite, designated here as zeolite GZS-11, having a molar composition expressed by the formula:

$$[x\ M_{2/n}O+(1.0\pm0.2-x)R_{2/n}O]:Y_2O_3:y\ XO_2:w\ H_2O$$

where M is an inorganic cation of valance n, R is an organic cation of valence n, "x" has a value of less than 1.0, Y is one or more of +3 valence elements, selected from the group consisting of aluminum, boron, gallium, iron, chromium, vanadium,

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molybdenum, and manganese, X is one or more of +4 valence elements, selected from the group consisting of silicon, germanium, and titanium, "y" has a value of less than 10, "w" has a value of up to 4 depending upon the degree of hydration of the zeolite, and having an X-ray diffraction pattern of the as-synthesized zeolite substantially as zeolite beta and when Y is aluminum and X is silicon having an X-ray diffraction pattern of the as-synthesized zeolite substantially as set out in Table 1.

5,389,359

PHARMACEUTICAL PREPARATION CONTAINING L-ASPARTATE OR L-ASPARAGINE FOR PREVENTING ETHANOL TOXICITY, AND PROCESS FOR PREPARATION THEREOF

Sang C. Park, Seoul, Rep. of Korea, assignor to Miwon Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 18, 1994, Ser. No. 182,506
Claims priority, application Rep. of Korea, Jun. 28, 1993, 93-11849; Dec. 3, 1993, 93-26324
Int. Cl.[6] A61K *31/045, 31/195*
U.S. Cl. 424—10 6 Claims

1. A method for reducing blood alcohol concentration in a human subject, who has consumed ethanol in a quantity sufficient to elevate their blood alcohol concentration, which comprises administering a pharmaceutical composition containing at least 30% by weight of L-aspartate or L-asparagine to said human subject in an amount effective to reduce said blood alcohol concentration, the amount of L-aspartate or L-asparagine ranging from 0.001 to 0.4 g/kg/day.

5,389,360

ORAL COMPOSITIONS

Michael J. Mobley, Cincinnati; Michael F. Lukacovic, West Chester; Peter A. Padolik, Mason, and Gregory Berry, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 61,138, May 13, 1993, abandoned. This application Jul. 22, 1993, Ser. No. 96,535
Int. Cl.[6] A61K *7/16, 33/34*
U.S. Cl. 424—49 7 Claims

1. An oral composition effective against diseases of the oral cavity comprising:
(a) a safe and effective amount of copper bis-glycinate; and
(b) a pharmaceutically acceptable carrier.

5,389,361

PRECURSOR PREPARATION FOR THE PRODUCTION OF NEUTRAL METAL OXIDE SOLS

Karl Osterried, Dieburg; Wolfgang Hechler, Lautertal-Reichenbach; Hans-Dieter Brückner, Darmstadt, and Roland Martin, Weinheim, all of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Jun. 15, 1992, Ser. No. 898,586
Claims priority, application Germany, Jun. 14, 1991, 4119719; Nov. 6, 1991, 4136512
Int. Cl.[6] A61K *7/42, 7/44;* B01J *13/00*
U.S. Cl. 424—59 4 Claims

1. A water soluble neutral metal oxide sol comprising 35–75% by weight of at least one metal oxide sol or metal oxide hydrate sol and 15–45% by weight of at least one hydroxycarboxylic acid or water soluble salt or amide thereof, with the proviso that the metal oxide is not an antimony oxide.

2. In a cosmetic preparation or sunscreen comprising a metal oxide sol, the improvement wherein the sol is one of claim 1.

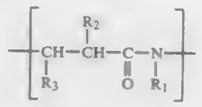
5,389,362

COSMETIC COMPOSITIONS FOR THE TREATMENT OF THE HAIR AND SKIN CONTAIN POLYMER CONSTITUTED ESSENTIALLY BY REPEATING UNITS OF THE β-ALANINE TYPE

Claude Mahieu, Paris, and Christos Papantoniou, Montmorency, both of France, assignors to Societe Anonyme dite: L'OREAL, Paris, France

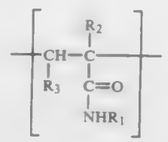
Division of Ser. No. 393,699, Jun. 30, 1982, Pat. No. 5,204,092. This application Nov. 25, 1992, Ser. No. 981,258
Claims priority, application France, Jul. 3, 1981, 81 13131
Int. Cl.[6] A61K *7/13, 47/34, 7/42*
U.S. Cl. 424—59 19 Claims

1. A hair dye composition comprising in an aqueous or hydroalcoholic solution wherein the alcohol is a lower alkanol
(a) at least one polymer having 50 to 100% of repeating units of the β-alanine type having the formula



(I)

and 0 to 50% of repeating units of the acrylamide type having the formula



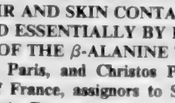
(II)

wherein
R_1 represents hydrogen or a member selected from the group consisting of



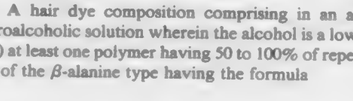
(i)

(ii) $-CH_2OH$,
(iii) $-(CH_2)_n-CH_3$ wherein n is 0 or a whole number ranging from 1 to 11,



(iv)

wherein r′ and r″ each independently, represent hydrogen or alkyl containing 1–3 carbon atoms,
(v) —CHOH—COOH,
(vi) $-CH_2-SO_3Na$,



(vii) and

(viii)

wherein m ranges from 1 to 10, and
R_2 and R_3, each independently, represent hydrogen or

methyl, said polymer being present in an amount sufficient to confer increased body and hold to the hair without causing powdering, stickiness or a harsh appearance to the hair, and
(b) a hair dye present in an amount effective to dye hair.

5,389,363

COSMETIC COMPOSITIONS FOR LENGTHENING, COLORING AND CURLING EYELASHES

Florence Snyder, Sayreville; Gale Reinhart, Belford, and Debbie DiGirolamo, Holmdel, all of N.J., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Filed Apr. 23, 1993, Ser. No. 52,346
Int. Cl.[6] A61K *7/032*
U.S. Cl. 424—70.7 19 Claims

1. A cosmetic composition for lengthening, curling, and coloring human eyelashes comprising, by weight of the total composition:
10–25% of a gel composition comprising a film forming component that contains a water dissipatable polymer which is a polyester or polyamide, and
75–90% of an oil in water emulsion base composition comprised of pigment, wax, and an oil soluble synthetic polymer selected from the group consisting of polyvinylpyrrolidone (PVP), PVP/dimethylaminoethylmethacrylate copolymer, PVP/eicosene copolymer, PVP/ethylmethacrylate/methacrylic acid copolymer, PVP/hexadecene copolymer, PVP/VA copolymer, PVP/1-triacontene, PPG-12 SMDI copolymer and mixtures thereof,
wherein when the gel composition is mixed into the base composition the water dissipatable polymer of the gel composition reacts with the oil soluble synthetic polymer of the base composition to provide a composition with superior lash lengthening properties.

19. A composition for lengthening, curling and coloring human eyelashes comprising:
10–25 parts of a gel composition comprising by weight of the gel composition, 40–60% silicone, 1–15% emollient, 30–40% of a synthetic polymer which is a powder at room temperature, 5–20% of a film forming component comprising, by weight of the film forming component, 1 to 4 parts of a water dissipatable polymer which is a polyester or polyamide, 1 to 4 parts humectant, and 2 to 6 parts water; and
75–90 parts of an oil in water emulsion base composition comprising by weight of the base composition 35–45% water, 0.5–10% gums, 5–20% pigment, 10–25% wax, and 1–10% Tricontanyl PVP,
wherein when the gel composition is mixed into the base composition the water dissipatable polymer of the gel composition reacts with the Tricontanyl PVP and the synthetic powder polymer of the base composition to provide a composition with lash lengthening properties.

5,389,364

CONDITIONING HAIR WITH AMINOSILANE REACTION PRODUCTS WITH LACTONES OR CARBONATES

Martin E. Cifuentes, and Patricia A. Giwa-Agbomeirele, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 6, 1993, Ser. No. 102,927
Int. Cl.[6] A61K *7/06, 7/09*
U.S. Cl. 424—70.122 5 Claims

1. In a method of conditioning hair by applying to the hair an effective amount of a composition which includes a hair conditioning agent, the improvement in hair conditioning comprising applying to the hair a composition having from 0.5 to 5.0 percent by weight of a hair conditioning agent which is a derivatized amine functional organosilicon compound selected from the group consisting of (i) a reaction product of an amine functional polysiloxane and a derivative of carbonic acid; (ii) a reaction product of an amine functional polysiloxane and a lactone; (iii) a reaction product of an amine functional silane and a derivative of carbonic acid; and (iv) a reaction product of an amine functional silane and a lactone; the amine functional polysiloxane having the formula

$$R_{3-z}'Q_zSiO[R_2'SiO]_x[R^aQSiO]_ySiQ_zR_{3-z}'$$

wherein R′ denotes an alkyl group of 1 to 4 carbons of a phenyl group with the proviso that at least 50 percent of the total number of R′ groups are methyl; R^a is R′ or an alkoxy group; Q denotes an amine functional substituent of the formula —R″Z wherein R″ is a divalent alkylene radical of 3 to 6 carbon atoms and Z is a monovalent radical selected from the group consisting of $-NR_2'''$, and $-NR'''(CH_2)_nNR_2'''$; wherein R‴ denotes hydrogen or an alkyl group of 1 to 4 carbons, and n is a positive integer having an value of from 2 to 6; z has a value of 0 or 1; x has an average value of 15 to 3000; y has an average value of 0 to 100 when z is 1, y has an average value of 1 to 100 when z is 0; with the proviso that in all cases y has an average value that is not greater than one tenth the average value of x; the amine functional silane having the formula

$$(RO)_{3-a}R_aSiR'NHR''$$

in which R is an alkyl group having one to four carbon atoms; R′ is an alkylene group having three to eighteen carbon atoms; R″ is selected from the group consisting of a hydrogen atom, hydrocarbon radicals free of aliphatic unsaturation having one to six carbon atoms, and aminoalkyl radicals having two to six carbon atoms; and has a value of zero to one, the derivative of carbonic acid being a compound selected from the group consisting of ethylene carbonate and propylene carbonate; and the lactone being a compound selected from the group consisting of propiolactone, butyrolactone, valerolactone, and caprolactone.

5,389,365

SILICONE TERPOLYMER CONTAINING WATER-IN-OIL EMULSION DERIVED FROM UNSATURATED ETHYLENE OXIDES

Gary E. LeGrow, and David A. Glover, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 7, 1994, Ser. No. 192,537
Int. Cl.[6] A61K *7/48;* C08G *77/38*
U.S. Cl. 424—78.03 6 Claims

1. A method of softening skin comprising applying to the skin a water-in-oil emulsion which includes 5 to 50 percent by weight of an organic oil; 44 to 94.5 percent by weight of water; and 0.5 to 5 percent by weight of a water dispersible silicone wax; the water dispersible silicone being derived from the reaction of (i) an ≡SiH containing siloxane having a formula selected from the group consisting of $Me_3SiO(MeHSiO)_x$-$SiMe_3$ and $Me_3SiO(MeHSiO)_x(Me_2SiO)_ySiMe_3$ in which Me is the methyl radical, and x and y are integers, the value of the integer x being from twenty to one hundred, and the value of the integer y being from one to one hundred, with the proviso that the ratio of x/y is at least two or more; (ii) a linear C30+ organic alpha-olefin; and (iii) an unsaturated ethylene oxide polymer having the formula $H_2C{=}CH{-}CH_2{-}O(CH_2C$-$H_2O)_zH$ in which z has a value of at least sixteen; the emulsion being free of organic emulsifying agents.

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NEOCARZINOSTATIN DERIVATIVE COMPOSITION FOR ORAL ADMINISTRATION

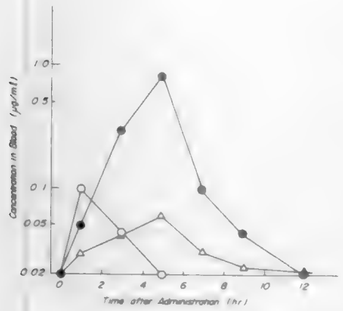
Hiroshi Maeda, 631-3, Aza-Tamukae, Hotakubohon-Machi, Kumamoto City, Kumamoto Pref.; Fujio Suzuki, Kumamoto; Kiichiro Oka, Kumamoto, and Shohei Tanaka, Kumamoto, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo; Hiroshi Maeda, Kumamoto; Kuraray Co., Ltd., Kurashiki and Kayaku Antibiotics Research Co., Ltd., Tokyo, all of Japan

Continuation of Ser. No. 751,175, Aug. 28, 1991, abandoned, which is a continuation of Ser. No. 414,388, Sep. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 78,942, Jul. 29, 1987, abandoned. This application May 17, 1993, Ser. No. 61,338

Claims priority, application Japan, Sep. 19, 1986, 61-221166

Int. Cl.[6] **A61K** *31/74*

U.S. Cl. 424—78.33 **4 Claims**



1. A composition for oral administration, consisting essentially of:

a neocarzinostatin derivative;

from 0.1 to 100 ml per mg of said neocarzinostatin derivative of at least one fatty acid glyceride which has from 6 to 20 carbon atoms and which is non-iodized; and

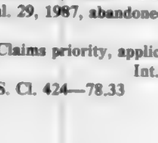
at least one amphiphilic agent present in an amount of from 0.01 to 0.1 ml, if liquid, or from 0.05 to 5 mg, if solid, per mg of said neocarzinostatin derivative,

wherein said neocarzinostatin derivative is represented by the following formula:

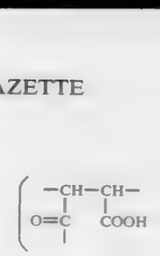
(SMA)—(NCS)—(SMA),

wherein (NCS) is a divalent neocarzinostatin residue in which one hydrogen atom is removed from each primary amino group in an alanine residue at the N-terminal of neocarzinostatin and in a lysine residue at the 20th position from the N-terminal of neocarzinostatin, and (SMA) is a monovalent styrene-maleic acid copolymeric residue at least a portion of which may be half-esterified and which consists of structure units for

1) a styrene residue

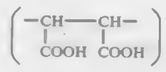


2) a residue having the following formula in which a hydroxy group of a one carboxyl group in a maleic acid residue is removed to leave a carbonyl group and is bonded to the neocarzinostatin residue

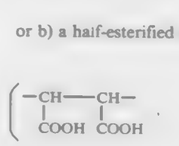


wherein the carbonyl group bonds to the neocarzinostatin residue via its carbon atom); and

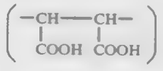
3), a) a maleic acid residue



or b) a half-esterified maleic acid residue



in which R is (i) an alcohol residue in which a hydroxyl group is removed from an alkanol having 1 to 4 carbon atoms, (ii) an ethylene glycol monoalkyl ether in which the alkyl group has 1 to 2 carbon atoms, or (iii) a glycerine dialkyl ether in which the alkyl group has 1 to 2 carbon atoms), and a maleic acid residue



5,389,367

Patent Not Issued For This Number

5,389,368

AVIRULENT MICROBES AND USES THEREFOR

Roy Gurtiss, III, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.

Continuation of Ser. No. 200,934, Jun. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 58,360, Jun. 4, 1987, abandoned. This application Oct. 22, 1992, Ser. No. 965,607

The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.

Int. Cl.[6] **A61K** *39/112, 39/108*

U.S. Cl. 424—93.2 **11 Claims**

1. A vaccine for the immunization of a vertebrate or invertebrate comprising a live avirulent bacterium selected from the group consisting of Salmonella, Escherichia and Salmonella-Escherichia hybrids obtained from a pathogenic strain of said bacterium, said pathogenic strain of said bacterium containing a gene encoding adenylate cyclase and a gene encoding cyclic AMP receptor protein and said strain of said bacterium made avirulent by an inactivating mutation in the gene encoding adenylate cyclase and an inactivating mutation in said gene encoding cyclic AMP receptor protein, and wherein upon administration with a pharmaceutically acceptable carrier to said vertebrate or invertebrate, said live avirulent bacteria is effective in evoking an immune response in said vertebrate or invertebrate to immunize against said pathogenic strain.

5,389,369

HALO PEROXIDASE CONTAINING COMPOSITIONS FOR KILLING YEAST AND SPORULAR MICROORGANISMS

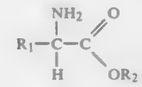
Robert C. Allen, San Antonio, Tex., assignor to ExOxEmis, Inc., Little Rock, Ark.

Continuation-in-part of Ser. No. 660,994, Feb. 21, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 100,780

Int. Cl.[6] **C12N** *9/08, 9/02, 9/04;* **A61K** *37/50, 31/195;* **A61L** *2/00*

U.S. Cl. 424—94.4 **18 Claims**

1. A composition for killing or inhibiting the growth of yeast or sporular microorganisms comprising a haloperoxidase and at least one antimicrobial activity enhancing agent of the formula:



wherein R_1 is hydrogen, an unsubstituted, or hydroxy or amino substituted, straight or branched chain alkyl group having from 1 to 6 carbon atoms, and R_2 is hydrogen or a straight or branched chain alkyl group having from 1 to 6 carbon atoms.

5,389,370

ACTIVE COMPONENT CONCENTRATES AND NEW ACTIVE COMPONENT COMBINATIONS FROM GINKGO BILOBA LEAVES, THEIR METHOD OF PREPARATION AND PHARMACEUTICALS CONTAINING THE ACTIVE COMPONENT CONCENTRATES OR THE ACTIVE COMPONENT COMBINATIONS

Joseph O'Reilly, Glounthaune, Ireland, and Hermann Jaggy, Bad Schönborn, Germany, assignors to Montana Limited, Little Island, Ireland

Continuation of Ser. No. 623,861, Dec. 4, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 909,137

Claims priority, application Germany, Dec. 4, 1989, 3940094

Int. Cl.[6] **A61K** *35/78, 31/70*

U.S. Cl. 424—195.1 **20 Claims**

1. An extract from the leaves of *Ginkgo biloba* comprising 40–60% flavone glycosides, 5.5–8.0% ginkgolides selected from ginkgolides A, B, C and J or mixtures thereof, 0.5–7.0% bilobalide, from about 0% to less than 10% proanthocyanidins and a maximum of approximately 10 ppm alkylphenol compounds.

5,389,371

ARECA FOOD ADDITIVES AND ITS FOODS

Shin Jen Shiao, 1001 Tahsueh Road, Institute of Applied Chemistry, Chiao Tung University, Hsinchu 300, Taiwan, Prov. of China

Filed Jan. 21, 1993, Ser. No. 6,946

Claims priority, application Philippines, Feb. 13, 1992, 43923

Int. Cl.[6] **A61K** *35/78;* **A23L** *1/28;* **A23J** *1/00*

U.S. Cl. 424—195.1 **10 Claims**

1. Areca quid comprising:

one of areca and areca seed;

areca food additive means for reacting with and completely neutralizing polyphenolic compounds included in said areca and areca seed; and

alternatively a component selected from the group consisting of betel leave, betel fruit, Chinese herb, and betel stem.

5,389,372

STABLE FORMULATION OF PLANT EXTRACT

Luigi deMaria; Claudio Lasciarrea; Pietro Micheli, all of Milan, Italy, and Hein-Uwe Schmersahl, Limeshain, Germany, assignors to ASTA Medica Aktiengesellschaft, Dresden, Germany

Filed Nov. 10, 1993, Ser. No. 149,813

Claims priority, application United Kingdom, Nov. 13, 1992, 9223894

Int. Cl.[6] **A61K** *9/16, 35/78*

U.S. Cl. 424—195.1 **5 Claims**

1. A granulate consisting essentially of Senna extract concentrate and, for each part by weight of Senna extract concentrate, 1 to 3 parts of weight of sucrose.

5,389,373

PREPARATION OF OIL-IN-WATER EMULSIONS OF DRUGS

Stanley S. Davis, and Clive Washington, both of Nottingham, United Kingdom, assignors to The University of Nottingham, Nottingham, United Kingdom

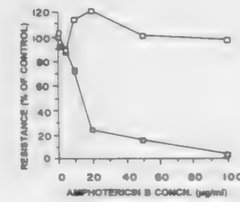
PCT No. PCT/GB90/01309, § 371 Date Feb. 24, 1992, § 102(e) Date Feb. 24, 1992, PCT Pub. No. WO91/02517, PCT Pub. Date Mar. 7, 1991

Continuation of Ser. No. 834,292, Feb. 24, 1992, abandoned. This PCT application Aug. 21, 1990, Ser. No. 130,419

Claims priority, application United Kingdom, Aug. 23, 1989, 8919172

Int. Cl.[6] **A61K** *9/107*

U.S. Cl. 424—400 **17 Claims**



1. A process for preparing an oil-in-water emulsion of a drug which is poorly soluble in water, said process comprising the steps of:

(a) dissolving the drug in a solution of high pH having a pH of at least 9 or low pH having a pH of 5 or less;

(b) adding the resultant solution to a pre-formed emulsion;

(c) adding to the emulsion an amount of an acid, base or buffer appropriate to neutralize at least substantially the product of step (b).

5,389,374

PREVENTION OF TOXIN PRODUCTION USING ABSORBENT PRODUCTS

Susan K. Brown-Skrobot, Hamilton-Square, N.J., assignor to McNeil-PPC, Inc., Milltown, N.J.

Continuation of Ser. No. 936,689, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 695,471, May 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 605,910, Oct. 30, 1990, abandoned. This application Sep. 29, 1993, Ser. No. 128,336

Int. Cl.[6] **A61F** *13/02, 13/15, 13/20;* **A61L** *15/16*

U.S. Cl. 424—431 **9 Claims**

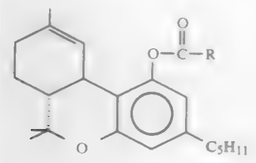
1. A method of inhibiting the production of Enterotoxin A, Enterotoxin B or Enterotoxin C comprising exposing an absorbent product to Enterotoxin A-producing *Staphylococcus aureus* bacteria, Enterotoxin B-producing *Staphylococcus aureus* bacteria, or Enterotoxin C-producing *Staphylococcus aureus* bacteria, wherein said absorbent product comprises an effective Enterotoxin-inhibiting amount of a compound selected from the group consisting of:

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a) monoesters of a polyhydric aliphatic alcohol and a fatty acid containing from eight to eighteen carbon atoms and wherein said monoester has at least one hydroxyl group associated with its aliphatic alcohol residue;
b) diesters of a polyhydric aliphatic alcohol and a fatty acid containing from eight to eighteen carbon atoms and wherein said diester has at least one hydroxyl group associated with its aliphatic alcohol residue; and
c) mixtures of said monoesters and diesters,
and wherein said Enterotoxin A, Enterotoxin B or Enterotoxin C-producing *Staphylococcus aureus* bacteria contacts said compound.

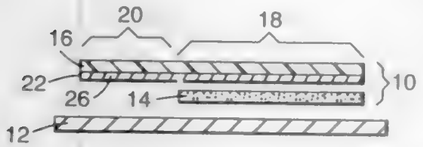
5,389,375
STABLE SUPPOSITORY FORMULATIONS EFFECTING BIOAVILABILITY OF Δ^9-THC
Mahmoud A. ElSohly, Oxford, Miss., assignor to University of Mississippi, University, Miss.
Filed May 21, 1993, Ser. No. 65,117
Int. Cl.[6] A61F *9/02*
U.S. Cl. 424—436 **7 Claims**

1. A long term stable suppository formulation comprising a therapeutically effective amount of at least one Δ^9-THC prodrug ester derivative having the formula:



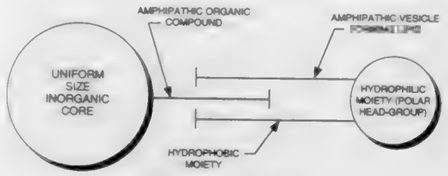
where R is an hemiester of succinic acid in a pharmaceutically acceptable rectal suppository base wherein the suppository base affords long term stability of the Δ^9-THC prodrug ester derivative contained in the suppository formulation such that greater than 90% of the original concentration of the hemisuccinate ester is retained for at least one year.

5,389,376
PRESSURE-SENSITIVE POLY(N-VINYL LACTAM) ADHESIVE COMPOSITION AND SKIN COVERING ARTICLES USING SAME
Daniel C. Duan, St. Paul, Minn.; Robert A. Asmus, Hudson Township, St. Croix County, Wis.; Timothy M. Dietz; Rosa Uy, both of St. Paul, Minn., and Olester Benson, Jr., Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 792,442, Nov. 15, 1991, Pat. No. 5,276,079. This application Oct. 15, 1993, Ser. No. 139,516
Int. Cl.[6] A61F *13/02*
U.S. Cl. 424—448 **28 Claims**



1. A mammalian skin covering comprising: an adhesive layer for contacting mammalian skin and backing layer, the adhesive layer adhered to the backing layer and comprising a hydrophilic, pressure-sensitive adhesive composition of swellable, solid poly(N-vinyl lactam) radiation-crosslinked and an essentially unirradiated plasticizer present in an amount sufficient to form a cohesive, pressure-sensitive adhesive composition.

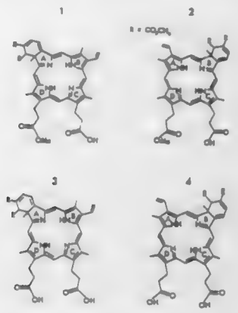
5,389,377
SOLID CARE THERAPEUTIC COMPOSITIONS AND METHODS FOR MAKING SAME
Mark S. Chagnon, Pelham, N.H.; John R. Ferris, Newburyport, Mass.; Tracy J. Hamilton; Edwin A. Rudd, both of Salem, N.H., and Michelle J. Carter, Derry, N.H., assignors to Molecular Bioquest, Inc., Atkinson, N.H.
Continuation-in-part of Ser. No. 894,260, Jun. 8, 1992, which is a continuation-in-part of Ser. No. 566,169, Aug. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 455,071, Dec. 22, 1989, abandoned. This application Oct. 7, 1992, Ser. No. 958,646
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 **10 Claims**



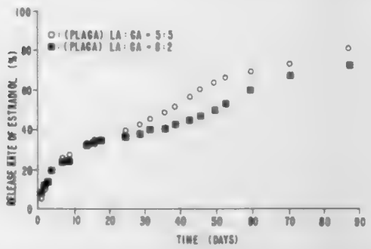
1. A solid core therapeutic composition for in vivo and in vitro applications comprising a substantially uniform size inorganic core selected from the group consisting of metals and metal oxides of Fe, Co, Ni, Zn, Mn, Mg, Ca, Ba, Sr, Cd, Hg, Al, B, Sc, Ga, V, and In, and mixtures thereof, characterized in that said core is capable of adsorbing or coordinating with a hydrophilic moiety, coated with a first amphipathic organic compound, characterized in that said first amphipathic organic compound contains a hydrophilic moiety and a hydrophobic moiety and the hydrophilic moiety is adsorbed or coordinated with the inorganic core and the hydrophobic moiety thereby extends outwardly from the inorganic core, and further coated with a second amphipathic compound wherein said second amphipathic compound contains a hydrophobic and hydrophilic moiety and the hydrophobic moiety associates with the outwardly extending hydrophobic moiety of said first amphipathic compound to form said solid core therapeutic composition.

5,389,378
BENZOPORPHYRIN VESICLES AND THEIR USE IN PHOTODYNAMIC THERAPY
Thomas D. Madden, Vancouver, Canada, assignor to The Liposome Company, Inc., Princeton, N.J.
Continuation of Ser. No. 570,282, Aug. 17, 1990, abandoned. This application Dec. 15, 1992, Ser. No. 990,923
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 **25 Claims**

1. A composition for treating cancerous tissue with photodynamic therapy consisting of a photosensitizing effective mount of a benzoporphyrin, which is not complexed to a metal, in liposomes, and a pharmaceutical carrier, wherein said benzoporphyrin is selected from the group consisting of benzoporphyrin monoacid A, monoacid B, diacid A, diacid B and mixtures thereof, and wherein said composition has a benzoporphyrin to lipid ratio greater than 100 μg benzoporphyrin per mole lipid.

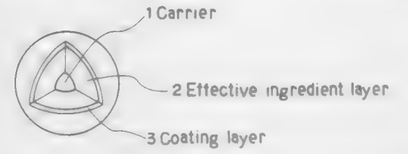


5,389,379
PROCESS FOR THE PREPARATION OF BIOLOGICALLY ACTIVE MATERIAL CONTAINING POLYMERIC MICROCAPSULES
Cardina A. M. C. Dirix; Hendrikus J. M. Kamp, both of Westervoort, and Anthonius P. Sam, Heesch, all of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands
Filed Feb. 16, 1993, Ser. No. 17,925
Claims priority, application European Pat. Off., Feb. 18, 1992, 92200466
Int. Cl.[6] A61K *9/48, 9/14*; B01J *13/04, 13/20*
U.S. Cl. 424—451 **7 Claims**



1. A process for the preparation of polymeric microcapsules comprising a biologically active agent, said process comprising mixing an active agent with a solvent to form a solution or suspension, dissolving a polymer in a solvent, which may be the same solvent used for dissolving or suspending the active agent, atomizing the formed solution or suspension, subsequently collecting the thus formed droplets in a non-solvent, and transferring the coagulated droplets into a second non-solvent.

5,389,380
SUSTAINED RELEASE PHARMACEUTICAL PREPARATION AND PROCESS FOR PREPARING THE SAME
Kazuo Noda, Takarazuka; Masao Kobayashi, Kyoto; Takashi Osawa, and Toru Maejima, both of Toyonaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan
Continuation of Ser. No. 863,170, Apr. 3, 1992, abandoned. This application Aug. 31, 1993, Ser. No. 120,859
Claims priority, application Japan, Apr. 8, 1991, 3-075335
Int. Cl.[6] A61K *9/16*
U.S. Cl. 424—490 **5 Claims**



1. A process for preparing a sustained release pharmaceutical preparation which comprises:
(1) adding a mixture containing a medicinal compound and a heat-meltable material to a particulate carrier while tumbling the carrier at a temperature at which the heat-meltable material can melt, to form an effective ingredient layer containing the medicinal compound and the heat-meltable material as a binder around the carrier, thereby providing a core, and
(2) successively adding a mixture containing a heat-meltable material and a non-heat-meltable dissolution-controlling agent to the core under the same condition as in the step (1) to form a coating layer containing the non-heat-meltable dissolution-controlling agent and the heat-meltable material as a binder around the core;
wherein the heat-meltable material is selected from the group consisting of a saturated or unsaturated fatty acid having 10–32 carbon atoms, an aliphatic monatomic alcohol having 12–30 carbon atoms, an ester of a saturated or unsaturated fatty acid having 14–24 carbon atoms and an aliphatic monaromic alcohol having 12–24 carbon atoms, an ester of a saturated or unsaturated fatty acid having 12–18 carbon atoms and glycerin, an ester of a hydroxyl group-containing fatty acid having 12–22 carbon atoms and an aliphatic monatomic alcohol having 12–22 carbon atoms, an ester of a hydroxy group-containing saturated fatty acid having 12–22 carbon atoms and glycerin, an ester of a hydroxy group-containing unsaturated fatty acid having 12–22 carbon atoms and glycerin, a hydrogenated compound of any of said esters and a polyethyleneglycol;
wherein the non-heat-meltable dissolution-controlling agent is selected from the group consisting of magnesium stearate, calcium stearate, talc, titanium dioxide, colloidal silicon dioxide, magnesium silicate, dried aluminum hydroxide gel, precipitated calcium carbonate and calcium sulfate; and
with the proviso that the effective ingredient layer and the coating layer are formed without using solvents.

5,389,381
LYOPHILIZED POLYETHYLENE OXIDE MODIFIED PROTEIN AND POLYPEPTIDE COMPLEXES WITH CYCLODEXTRIN
Christopher P. Phillips, Brandamore, and Robert A. Snow, West Chester, both of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.
Division of Ser. No. 23,182, Feb. 25, 1993, Pat. No. 5,298,410. This application Jan. 5, 1994, Ser. No. 178,205
Int. Cl.[6] C12N *9/96*; A61K *31/715, 37/26*
U.S. Cl. 424—94.3 **10 Claims**

1. A method of treating a disease condition caused by super-

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oxide anions on tissue in a mammal comprising administering an effective amount of a composition comprising

from about 150 to about 150,000 units/ml of a covalently bound low diol polyethylene oxide superoxide dismutase:

from about 0.1 to about 20% w/v of cyclodextrin: and

from about 0.01 to about 50 nM buffer, said composition having a pH of from about 5.7 to about 6.5.

5,389,382

HYDROSOLS OF PHARMACOLOGICALLY ACTIVE AGENTS AND THEIR PHARMACEUTICAL COMPOSITIONS COMPRISING THEM

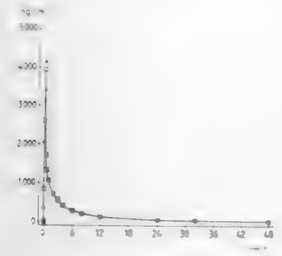
Martin List, and Heinz Sucker, both of Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 436,147, Nov. 13, 1989, abandoned, which is a continuation of Ser. No. 134,337, Dec. 17, 1987, abandoned. This application Jan. 16, 1991, Ser. No. 642,106

Claims priority, application Germany, Dec. 19, 1986, 3643392

Int. Cl.[6] **A61K** *9/14, 9/16, 9/50, 37/02*

U.S. Cl. 424—499 **15 Claims**



1. A hydrosol which comprises solid particles of a cyclosporin and a stabilizer which maintains the size distribution of said particles, wherein said cyclosporin has a water solubility below 0.5 grams per 100 milliliters, and said particles have a weight ratio of cyclosporin to water of about 1:300 to about 1:1500 and a weight ratio of cyclosporin to said stabilizer of about 1:1 to about 1:50.

5,389,383

METHOD FOR TREATING HYPOXIA-ASSOCIATED OCULAR COMPLICATIONS

Stanley W. Huth, Newport Beach, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Jun. 18, 1993, Ser. No. 79,025

Int. Cl.[6] **A61K** *33/24*

U.S. Cl. 424—650 **29 Claims**

1. A method of preventing or treating hypoxia-associated ocular complications in a host in need of such prevention or treatment which comprises administering to the eye of the host a prophylactically or therapeutically effective amount of at least two agents selected from the group consisting of a heme oxygenase inducer, a membrane-permeable anti-acidosis buffer, and an osmoprotectant.

5,389,384

STERILIZING OR DISINFECTING COMPOSITION

Francois Jooste, Beamsville, Canada, assignor to Trans Delta Corporation, Pickering, Canada

Continuation of Ser. No. 302,609, Jan. 27, 1989, abandoned. This application Jul. 2, 1990, Ser. No. 546,809

Int. Cl.[6] **A01N** *59/08, 59/22, 59/02, 59/00*

U.S. Cl. 424—661 **16 Claims**

1. In a solution containing at least 40,000 p.p.m. of a halogen containing compound which is effective as a sterilizing or disinfecting agent said halogen containing compound being selected from the group consisting of chlorine dioxide, bromine oxide, bromine chloride, monochloroamine, bromic acid, iodine monochloride, iodine trichloride and iodine monobromide,

the improvement comprising the addition of about 2 to about 10 percent by weight based upon the total weight of the solution of a stabilizing agent which suppresses the chemical dissociation of the halogen containing compound such that the sterilizing capability of the solution is maintained for extended periods of time relative to the solution without the stabilizing agent, said stabilizing agent being a compound selected from the group consisting of cyclamic acid, dimethyl sulphoxide, glyoxyl sodium bisulphite, potassium sorbate, sodium cyclamate, sodium metabisulphite, sodium oxalate, sodium sulphite, sodium thiosulphate and thioacetamide.

5,389,385

TREATMENT OF IODINE DEFICIENCY DISEASES

William R. Ghent, 10 Montreal Street, Suite 201, Kingston, Ontario, Canada K7L 3G6 , and Bernard A. Eskin, Presidential Commons, Ste. D124, Philadelphia, Pa. 19131

Continuation of Ser. No. 803,550, Dec. 9, 1991, Pat. No. 5,250,304, which is a division of Ser. No. 292,968, Jan. 3, 1989, Pat. No. 5,171,582, which is a continuation-in-part of Ser. No. 889,947, Jul. 28, 1986, Pat. No. 4,816,255, which is a continuation-in-part of Ser. No. 760,950, Jul. 31, 1985, abandoned. This application Oct. 4, 1993, Ser. No. 131,427

Int. Cl.[6] **A01N** *59/22;* **A61K** *33/36*

U.S. Cl. 424—667 **3 Claims**

1. A method for therapeutically treating a patient for an iodine deficiency disease or preventing an iodine deficiency disease wherein said iodine deficiency disease is selected from the group consisting of fibrocystic displasia, breast cancer, endometriosis and premenstrual syndrome comprising:

treating a patient for said iodine deficiency disease or preventing said iodine deficiency disease by administering to a mammal from about 0.07 to about 0.09 milligrams of elemental iodine per kilogram of body weight.

5,389,386

METHOD OF CONTROLLING FUNGAL DISEASE IN CULTIVATED PLANTS

Anthony E. Winston, East Brunswick, and Alfredo Vinci, Dayton, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Jun. 30, 1994, Ser. No. 269,154

Int. Cl.[6] **A01N** *59/00, 31/02, 31/14*

U.S. Cl. 424—717 **13 Claims**

1. A method for controlling fungal disease in cultivated plants which comprises contacting the plant matter with a fungicidally effective amount of an aqueous formulation which has a content comprising (1) about 0.1–3 weight percent of a bicarbonate ingredient selected from the group consisting of alkali metal and ammonium bicarbonates; and (2) about 0.01–0.5 weight percent of a surfactant ingredient selected from the group consisting of nonionic C_{10}–C_{15} alcohols condensed with 8–15 moles of ethylene oxide having an HLB between about 8–15 and nonionic alkoxylated C_6–C_{18} alkylphenols having an HLB between about 8–15; based on the formulation weight.

5,389,387

STORAGE STABLE CALCIUM-SUPPLEMENTED BEVERAGE CONCENTRATES

Maria E. Zuniga; George M. Fieler; William J. Gore, and Alice L. Burkes, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 814,030, Dec. 26, 1991, abandoned. This application Sep. 16, 1993, Ser. No. 122,316

Int. Cl.[6] **A23L** *2/04*

U.S. Cl. 426—74 **10 Claims**

1. A process for preparing a shelf-stable calcium fortified

beverage concentrate, comprising the following steps in the following order:

(1) preparing a mixture of a sugar solution and citric and malic acid in water;

(2) adding to the mixture of (1) a slurry of calcium salts in water, wherein any calcium citrate, calcium malate and inorganic calcium salt is first dissolved in water and then other calcium salts are added to make the slurry, said slurry being added with agitation and wherein the temperature is maintained below 120° F. (49° C.);

(3) adding to the mixture of (2) the flavors dissolved in water, wherein the citric and malic acid present in the flavor is the same ratio as the acids in (1); and

(4) adding to the mixture of (3) any preservatives and additional ingredients in water, wherein said concentrates are stable from calcium precipitation at temperatures of greater than 90° F. (32° C.) for at least about 30 days.

5,389,388

MICROWAVE TREATMENT OF UNCHLORINATED CAKE FLOUR

Todd W. Gusek, Crystal, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Jun. 24, 1992, Ser. No. 903,384

Int. Cl.[6] **A21D** *6/00*

U.S. Cl. 426—242 **20 Claims**

1. A process for preparing an improved flour for use in producing high sugar chemically leavened baked goods of good volume and eating quality, comprising the step of:

A. exposing a raw, non-dehydrated, wheat flour having an initial moisture content of about 8% to 14% by weight, with a sufficient amount of microwave energy to reduce the moisture content to about 1% to 5% by weight to produce a microwave treated flour,

wherein the microwave exposure step heats the flour to a temperature of about 220° to 290° F. (104.4° to 143.3° C.), wherein the microwave exposure step is practiced with a high intensity microwave heating at a microwave field intensity ranging from about 50 to 125 V/cm,

wherein a bed depth of the flour during the microwave exposure step ranges from about 10 to 100 mm, and .

wherein the microwave exposure step is practiced for about 0.5 to four minutes.

5,389,389

COMPOSITIONS AND METHODS FOR INHIBITING BROWNING OF PROCESSED PRODUCE

Roderick G. Beck, King City, Calif., assignor to Basic American Foods, San Francisco, Calif.

Continuation of Ser. No. 193,723, May 13, 1988, abandoned. This application Mar. 14, 1991, Ser. No. 733,951

Int. Cl.[6] **A23B** *7/02*

U.S. Cl. 426—269 **56 Claims**

1. A method for treating produce to minimize browning of said produce, said process comprising:

exposing produce to a discoloration inhibiting agent comprising a mixture of a source of available cysteine and a sulfiting agent in amounts effective to minimize browning of said produce upon subsequent processing, handling and storage, and

subjecting said produce to a procedure selected from the group consisting of processing, handling, and storage.

5,389,390

PROCESS FOR REMOVING BACTERIA FROM POULTRY AND OTHER MEATS

Robert D. Kross, 2506 Florin Ct., Bellmore, N.Y. 11710

Filed Jul. 19, 1993, Ser. No. 93,809

Int. Cl.[6] **A22C** *21/00;* **A23L** *3/358*

U.S. Cl. 426—332 **24 Claims**

1. A method for disinfecting poultry carcasses or poultry carcass pieces comprising:

(1) washing the carcasses or carcass pieces after evisceration;

(2) immersing each poultry carcass or carcass piece sequentially in a chilling tank; and

(3) removing the carcasses or pieces from the chilling tank wherein each poultry carcass or poultry carcass piece is contacted with an aqueous solution containing about 0.001% to about 0.2% by weight of a metal chlorite and sufficient acid to adjust the pH of the solution to about 2.2 to about 4.5, to maintain the chlorite ion concentration in the form of chlorous acid to not more than about 35% by weight of the total amount of chlorite ion concentration in the solution, said acid being selected in an independant test such that, when mixed into a 0.1% by weight aqueous sodium chlorite solution to adjust the pH to about 2.95 and held for 30 minutes at about 25° C., no more than about 2 ppm chlorine dioxide are generated so that, significant discoloration of the poultry is minimized, said contact occurring during processing steps selected from the group consisting of initial washing after evisceration, immersion in the chill tank, and a mixture of these steps.

5,389,391

LOW PH ANTIMICROBIAL FOOD COMPOSITION

Woodrow C. Monte, 6411 S. River Dr., #65, Tempe, Ariz. 85283

Filed May 10, 1993, Ser. No. 58,226

Int. Cl.[6] **A23L** *3/34*

U.S. Cl. 426—335 **6 Claims**

1. A method for preparing a sterile food composition for ingestion along the digestive tract of a patient, said method including the steps of

(a) preparing a powder food composition by blending together

(i) from 6% to 28% by weight of water soluble protein;

(ii) from 4% to 22% by weight of triglycerides of predominantly 6 to 26 carbon atoms in the fatty acid chain;

(iii) from 35% to 78% by weight of carbohydrates selected from the group consisting of corn syrup solids, trisaccharides, tetrasaccharides, pentasaccharides, hexasaccharides, dextrose, fructose, sucrose, maltose, oligosaccharides and high saccharides;

(iv) from 0.1% to 10% by weight of an emulsifier;

(v) from 0.1% to 8% by weight of an edible acid for adjusting the pH of the food composition within the range of 2 to 6;

(vi) from 0.01% to 6% by weight of an antimicrobial agent selected from the group consisting of sorbic acid, benzoic acid, sodium benzoate, potassium sorbate, sodium sorbate, and potassium benzoate; and,

(v) from 1% to 5.0% by weight of a pectic substance;

(b) mixing said powder food composition with water to form an aqueous food solution;

(c) heating said aqueous food solution to a sterilization temperature of at least about two hundred degrees Fahrenheit for a time sufficient to kill all microorganisms in said food solution; and,

(d) cooling said sterilized food solution.

5,389,392

ESTERIFIED POLYETHER FAT MIMETICS CONTAINING RING-OPENED OXOLANE UNITS

Charles F. Cooper, Paoli, Pa., assignor to Arco Chemical Technology, L.P., Del.

Continuation of Ser. No. 886,583, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 633,814, Dec. 27, 1990, abandoned. This application Jan. 11, 1994, Ser. No. 179,847

Int. Cl.[6] **A23L** *1/00*

U.S. Cl. 426—531 **20 Claims**

1. An esterified polyether of the following structural formula, useful as a reduced calorie fat replacement in a food composition:

$$L\text{-}(Ox)_x\text{-}(Ep)_y\text{-}\overset{O}{\overset{\|}{C}}R]_z$$

wherein L is an organic linking moiety, Ox is a ring-opened oxolane unit, Ep is a ring-opened epoxide unit having an ester linkage to

$$-\overset{O}{\overset{\|}{C}}R$$

which provides said esterified polyether with an in vitro lipase hydrolysis rate value using porcine pancreatic lipase which is less than about 30% of the value of an olive oil standard., x is from 3 to 25, y is from 1 to 25, z is at least 2, and R is a C_7–C_{23} hydrocarbon moiety.

5,389,393

QUICK-SETTING DESSERT GEL MIX

Mark V. Hembling, New Fairfield, Conn.; Lawrence T. McCarty, Ossining; Julia A. Stephenson, Cold Spring, both of N.Y.; Eva C. Szewczyk, Jersey City, N.J.; Charles W. Bertalan, New Brunswick, N.J., and Joseph P. DeStephano, Mahwah, N.J., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Apr. 7, 1993, Ser. No. 44,342
Int. Cl.[6] A23L *1/05321*
U.S. Cl. 426—575 26 Claims

1. A dry mix for producing a quick-setting, sugar-sweetened, clear-edible gel having a pH of between 3.5 and 5.5, said mix being fully dispersible in cold tap water with spoon stirring for less than one minute and said mix comprising on a weight basis:
(a) 80 to 95% sugars;
(b) 2 to 5% agglomerated potassium or sodium alginate, said agglomerates being 100% minus 16 U.S. mesh sieve, with no more than 50% passing through a 170 U.S. mesh sieve, said agglomerates being formed from particles of potassium or sodium alginate having a mean particle diameter of 10 to 60 microns and said agglomerate being free of sugars and dextrins;
(c) 1 to 6% food acid;
(d) 1 to 6% buffering agent;
(e) 0.25 to 1.0 of agglomerated slowly soluble calcium salt; and
(f) an anti-oxidant in an amount that will increase the clarity of the gel.

5,389,394

PROCESS FOR PRODUCING COCOA EXTRACT

Bernd Weyersbach, Ganderkesee, and Ortwin Culmsee, Bremen, both of Germany, assignors to Jacobs Suchard AG, Zurich, Switzerland

Filed Apr. 9, 1990, Ser. No. 506,079
Claims priority, application Germany, Apr. 19, 1989, 3912819
Int. Cl.[6] A23L *2/38; A23G 1/00*
U.S. Cl. 426—593 10 Claims

1. A process for producing cocoa extract comprising contacting broken cocoa seeds with water at a temperature in the range of between 40° and 100° C. and atmospheric pressure in a static fixed bed extractor wherein the water flows downward through the fixed bed extractor so as to obtain an aqueous extract containing the water-soluble constituents of the cocoa seeds and the residue of the broken cocoa seeds and recovering the aqueous extract.

5,389,395

NUTRITIONAL BAR FOR A PROTEIN-SPARING DIET OF THE VERY-LOW-CALORIE TYPE

Robert L. Joseph, Columbus; Sherri A. Walker, Alexandria, both of Ohio; Caroline H. Ikeda, Lakewood, Calif.; Lisa D. Craig, and Karen A. Cashmere, both of Columbus, Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 985,392, Dec. 4, 1992, abandoned. This application Dec. 7, 1993, Ser. No. 164,165
Int. Cl.[6] A23L *3/00*
U.S. Cl. 426—72 20 Claims

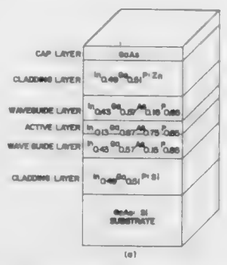
1. A food containing an oil-based flavoring and aspartame having enhanced flavor stability comprising:
(a) proteinaceous material selected from the group consisting of soy protein, caseinates, milk protein, egg albumin and whey protein concentrate;
(b) an oil-based flavoring absorbed onto silica, said flavoring being selected from the group consisting of chocolate and cherry flavor;
(c) aspartame;
(d) citric acid; and
(e) digestible carbohydrate material selected from the group consisting of sorbitol, glycerin, polydextrose, fructose, maltodextrin, pectin and gum arabic, with the concentration of proteinaceous material being greater than the concentration of available carbohydrate material;
said food bar being unbaked and exposed during extrusion to a maximum temperature of about 37° C. and having a uniformly homogenous composition.

5,389,396

INGAASP/GAAS DIODE LASER

Manijeh Razeghi, Evanston, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Aug. 11, 1993, Ser. No. 105,379
The portion of the term of this patent subsequent to Jan. 24, 2012, has been disclaimed.
Int. Cl.[6] C23C *16/00*
U.S. Cl. 427—58 4 Claims



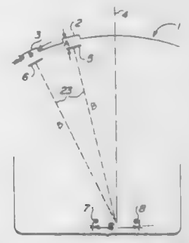
1. A method for controlling the wavelength of light in a diode laser through the preparation of a strained layer heterostructure for a diode laser by LP-MOCVD comprising the steps of:
a) preparing a substrate;
b) growing, in succession, the following layers on said substrate;
1) a first cladding layer;
2) doping said first cladding layer with a dopant consisting of Si;
3) two waveguide layers of $Ga_xIn_{1-x}As_yP_{1-y}$ X=0.5 to 1 Y=0 to 0.92);
4) an undoped active layer of $Ga_xIn_{1-x}As_yP_{1-y}$ between said waveguide layers, where a first ratio of As:P varies and a second ratio of In:Ga varies.
5) a second doped cladding layer, and
c) varying the composition of said active layer by varying said first and second ratios of said active layer so that the wavelength of light emitted by said diode laser is controlled from about 660 nm to about 1100 nm.

5,389,397

METHOD FOR CONTROLLING THE THICKNESS DISTRIBUTION OF A DEPOSITED LAYER

Matthew S. Brennesholtz, Waterloo, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 400,198, Aug. 29, 1989, abandoned. This application Mar. 4, 1992, Ser. No. 846,727
Int. Cl.[6] B05D *5/06*
U.S. Cl. 427—69 3 Claims



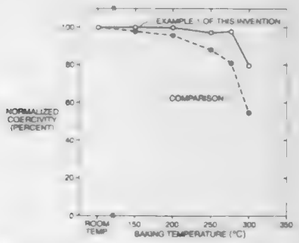
1. A method of forming an interference filter on the inner surface of a glass faceplate for cathode ray tube;
the method comprising depositing a layer of source material on the faceplate;
characterized by providing at least one variable transmission mask between the source material and the faceplate, in a fixed, spaced-apart position relative to the faceplate, and being approximately co-extensive with the faceplate, the variable transmission defined by a plurality of holes varying in one or more of size, shape and spacing and increasing from a minimum at the center of the mask to a maximum within the range of about 70 to 90 percent at the edges of the mask;
so that during deposition the faceplate is partially shielded from and partially exposed to the source material, the extent of exposure increasing with the mask transmission from the center to the edges of the faceplate, whereby the thickness of the filter increases from the center to the edges of the faceplate.

5,389,398

METHOD OF MANUFACTURING MAGNETIC RECORDING MEDIUM FOR CONTACT RECORDING

Hisanori Suzuki, Sunnyvale, and Takeo Matsudaira, Cupertino, both of Calif., assignors to Hoya Corporation, San Jose, Calif.

Division of Ser. No. 766,968, Sep. 26, 1991, Pat. No. 5,316,844, which is a continuation of Ser. No. 509,558, Apr. 16, 1990, abandoned. This application Jan. 14, 1994, Ser. No. 181,926
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—130 16 Claims



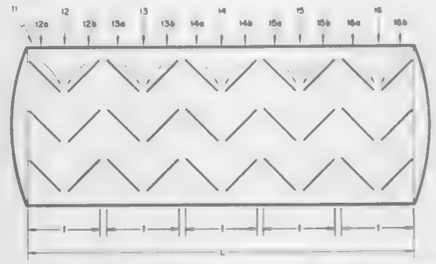
1. A method of manufacturing a magnetic recording medium for contact recording with a magnetic head having flying height of less than 760 Å, said method comprising the steps of:
providing a non-magnetic substrate of an aluminum alloy having a surface finished so as to have maximum surface roughness R_{max} of 100–300 Å and having surface protrusions or unevenness of height less than 760 Å;
forming an underlying layer directly over said substrate and a magnetic layer over said underlying layer by sputtering, said underlying layer comprising a Cr film and one or more non-magnetic layers selected from Ta, Mo, Zn, and alloys consisting of one or more elements selected from the group consisting of Ta, Mo, and Zn, said Cr film being formed between said one or more non-magnetic layers and said magnetic layer;
forming on said magnetic layer a first protective film comprising a non-magnetic film of one or more selected from the group consisting of metals, semiconductors, metallic compounds, and semiconducting compounds;
coating said first protective film with a solution containing particulates and one or more selected from the group consisting of organosilic compounds and organometallic compounds;
heating said coating solution to about 150°–300° C. and thereby forming a second protective film comprising an inorganic oxide film and said particulates dispersed within said inorganic oxide film;
forming a lubricating film on said second protective film; and
burnishing said medium.

5,389,399

APPARATUS FOR THE TREATMENT OF SEED

Michelle Bazin, Outarville, and Michel Taron, Le Raincy, both of France, assignors to Etablissements Ceres S.A., Mereville, France

Continuation of Ser. No. 852,712, Mar. 17, 1992, which is a continuation of Ser. No. 754,236, Aug. 26, 1991, abandoned, which is a continuation of Ser. No. 532,352, Jun. 4, 1990, abandoned, which is a continuation of Ser. No. 409,735, Sep. 20, 1989, abandoned, which is a continuation of Ser. No. 219,262, Jul. 15, 1988, abandoned. This application Aug. 2, 1993, Ser. No. 100,155
Claims priority, application France, Jul. 16, 1987, 87 10336
Int. Cl.[6] B05D *7/00*
U.S. Cl. 427—212 7 Claims



1. A method for the treatment of seed with a treatment agent, comprising the steps of:
A) providing a rotary drum defining a longitudinal axis, two longitudinally spaced end walls interconnected by a generally cylindrical peripheral wall, a bottom portion of said drum forming a seed-carrying space, at least first and second rows of circumferentially spaced stirring plates mounted to an inwardly facing surface of said drum, said first and second rows of plates being longitudinally spaced apart to define a vertical flow passage therebetween, said plates of said first row being angularly offset about said axis relative to said plates of said second row whereby the plates of each row reach their uppermost positions in the

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drum at different times than the plates of the other row, each plate being inclined at an angle of inclination relative to said axis such that when each plate is located at its uppermost position in said drum, a remote edge of said plate located farthest from said vertical flow passage is higher than a proximal edge of said plate located closest to said vertical flow passage;

B) introducing seed into said drum to form a seed bed in said seed-carrying space;

C) repeatedly rotating said drum about a substantially horizontal axis intersecting said two end walls so that stirring plates raise seed from said seed-carrying space, some of the raised seed falling from said remote edges of said stirring plates, and the rest of the raised seed falling from said proximate edges and into said vertical flow passage for downward travel back to said seed-carrying space; and

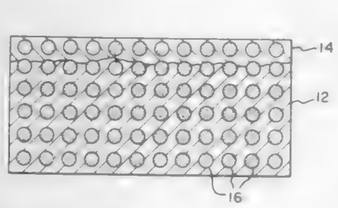
D) introducing seed treatment agent into said drum during step C so that said treatment agent is applied onto seed as the seed travels downwardly along said vertical flow passage.

5,389,400

METHOD FOR MAKING A DIAMOND/CARBON/CARBON COMPOSITE USEFUL AS AN INTEGRAL DIELECTRIC HEAT SINK

Jyh-Ming Ting, Fairborn, and Max L. Lake, Yellow Springs, both of Ohio, assignors to Applied Sciences, Inc., Cedarville, Ohio

Filed Apr. 7, 1993, Ser. No. 44,223
Int. Cl.[6] C23C *16/26, 16/50;* B05D *5/12*
U.S. Cl. 427—249 13 Claims



1. A method of making a diamond/carbon/carbon composite comprising the steps of:

a) providing a preform of interwoven vapor grown carbon fibers having interstices therein;

b) densifying said preform of interwoven vapor grown carbon fibers by depositing pyrolytic carbon into the interstices of said preform to produce a carbon/carbon composite; and

c) depositing a polycrystalline diamond film on said carbon/carbon composite.

5,389,401

CHEMICAL VAPOR DEPOSITION OF METAL OXIDES

Roy G. Gordon, 22 Highland St., Cambridge, Mass. 02138

Filed Feb. 23, 1994, Ser. No. 200,678
Int. Cl.[6] C23C *16/40*
U.S. Cl. 427—255.2 12 Claims

1. A chemical vapor deposition process for forming a metal oxide or mixture of metal oxides by reaction of the vapor of a di-hydrogenated aromatic ketone, or an isomer thereof, with the vapor of one or more metal-containing compounds having ligands exchangeable with phenols.

5,389,402

METHOD OF PRODUCING DECORATIONS WHICH ARE COLOR-STABLE IN A PORCELAIN FIRING AND A PIGMENT COMPOSITION SUITABLE THEREFOR

Dietrich Speer; Akos Kiss; Jenny Horst, all of Hanau; Güenter Halbritter, Rodenbach, and Rita Loew, Rodgau, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed May 12, 1993, Ser. No. 59,582
Claims priority, application Germany, May 15, 1992, 4216175
Int. Cl.[6] B05D *5/00;* C09C *1/04;* C08K *3/00*
U.S. Cl. 427—258 31 Claims

1. A method for the production of a decoration on a porcelain surface which decoration is essentially color-stable in a porcelain firing, said method comprising the steps of (a) applying a decorative layer onto said porcelain surface which is unfired or pre-fired in a biscuit firing and (b) applying a layer of glaze onto said porcelain and (c) firing said porcelain at a temperature in a range of 1300° to 1500° C., wherein said decorative layer contains a pigment composition containing a inclusion pigment selected from the group consisting of crystals of colored heavy-metal sulfides, selenides and sulfoselenides enclosed in a transparent oxidic or silicate casing and at least one color-stabilizing auxiliary agent being present in said decorative layer or present in said layer of glaze or being present in both of said decorative layer and said layer of glaze, wherein said agent is selected from the group consisting of cerium(III) compounds, cerium (IV) compounds, zinc oxide and zinc compounds forming zinc ions during the porcelain firing, and said agent is present in an amount of at least 2% by weight calculated as ZnO or Ce_2O_3 or CeO_2 and relative to the amount of inorganic solids in the decorative layer or layer of glaze.

8. A pigment composition for the production of a decoration which is essentially color-stable in a porcelain firing, comprising an inclusion pigment based on crystals enclosed in a transparent oxidic or silicate casing and containing a colored heavy-metal sulfide, selenide or sulfoselenide or mixture thereof and at least one color-stabilizing auxiliary agent selected from the group consisting of cerium(III) compounds and cerium (IV) compounds, said agent being present in an amount of at least 2% by weight calculated as Ce_2O_3 or CeO_2 and relative to the amount of said inclusion pigments.

5,389,403

WATER-BASED POLYMER THICK FILM CONDUCTIVE INK

Michael S. Buckley, Diamond Bar, and Richard E. Bowns, Hacienda Heights, both of Calif., assignors to Acheson Industries, Inc., Port Huron, Mich.

Division of Ser. No. 997,374, Dec. 28, 1992, Pat. No. 5,286,415.
This application Dec. 3, 1993, Ser. No. 160,767
Int. Cl.[6] B05D *3/02;* H01B *1/00, 1/20, 1/22*
U.S. Cl. 427—372.2 9 Claims

1. A method of curing a polymer thick film onto a substrate comprising the steps of:

(1) providing an aqueous conductive polymer thick film-forming and printable composition comprising:

(a) about 10 to 0.25 to about 20% by weight of water-soluble thermoplastic polymer selected from the group consisting of polyethyloxyazoline, polyvinyl pyrrolidone, polyvinyl alcohol, polyacrylamide, polyglycol, and polyacrylic acid;

(b) about 10 to 70% by weight of a water insoluble polymer dispersion in water, said dispersed polymer selected from the group consisting of polyurethane resin polymer, acrylic resin polymer, polyester resin polymer, and vinyl resin polymer;

(c) about 2% to about 20% by weight of at least one glycol drying-retarder agent;

(d) an effective electrically conducting amount of less than 90% by weight of conductive particles selected from the group consisting of conductive metal particles, carbon black particles, graphite particles, and combinations thereof; with the proviso that the amount of said carbon black particles, graphite particles, or combinations thereof do not exceed 40% by weight; and

(e) an effective solvating amount of water to dissolve water-soluble thermoplastic polymer (a); each of said amounts being based upon the total weight of said composition;

(2) applying said composition to a substrate; and

(3) thermally curing said composition at an elevated temperature onto said substrate.

5,389,404

APPLYING CATALYST AND COATING COMPOSITION CONTAINING SAME TO A SUBSTRATE

Stephen Armstrong, Braine L'Alleud, Belgium, assignor to Dow Corning S.A., Seneffe, Belgium

Division of Ser. No. 863,920, Apr. 6, 1992, Pat. No. 5,273,946.
This application Aug. 19, 1993, Ser. No. 109,019
Claims priority, application United Kingdom, Apr. 20, 1991, 9108510
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[6] B05D *3/02;* B01J *37/04*
U.S. Cl. 427—387 8 Claims

1. A process for treating a substrate which comprises

(I) applying to a substrate a curable composition and,

(II) thereafter curing the applied composition on the substrate, the curable composition comprising:

(X) a compound containing olefinic unsaturation selected from organic and organosilicon compounds;

(Y) an organosilicon compound having at least one silicon-bonded hydrogen atom and,

(Z) a catalyst which is prepared by a process which comprises reacting:

(A) a rhodium complex represented by the general formula $Rh(R_2S)_3X_3$, in which each R represents an alkyl group having not more than 8 carbon atoms, a phenyl group or the R'_3SiQ— group in which Q represents a divalent aliphatic hydrocarbon group having from 1 to 6 carbon atoms and each R′ represents a group selected from alkyl groups having from 1 to 8 carbon atoms, aryl groups having from 6 to 8 carbon atoms and the $(CH_3)_3Si$— group, not more than one R′ being $(CH_3)_3Si$—, and X represents Cl or Br, with

(B) an organohydrogen polysiloxane in which the organic substituents are selected from alkyl groups having from 1 to 8 carbon atoms and phenyl groups, at least 70 percent of the total organic groups being methyl, wherein there is present in the reaction mixture

(C) an organosiloxane having silicon-bonded groups selected from vinyl and allyl groups, the remaining organic substituents being selected from alkyl groups having from 1 to 6 carbon atoms and phenyl groups, at least 50 percent of the total silicon-bonded substituents being methyl, and the ratio of silicon-bonded hydrogen atoms provided by (B) to each Rh atom provided by (A) is in the range of 0.5:1 to 6:1, whereby the substrate is treated.

5,389,405

COMPOSITION AND PROCESS FOR TREATING METAL SURFACES

Deborah L. Purnell; Brenda S. Morris, both of Philadelphia, and David W. Reichgott, Richboro, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Nov. 16, 1993, Ser. No. 152,806
Int. Cl.[6] B05D *7/14;* C08L *83/00;* C09D *5/08*
U.S. Cl. 427—387 20 Claims

6. A method of coating a metal surface comprising contacting the metal surface with an aqueous solution containing from about 0.008% to 0.2% of a cationic polymer having a charge density of from about 1.5 to 12.0 meq/g active polymer and a molecular weight between about 1,000 and 600,000, from about 0.005% to 0.12%, expressed as SiO_2, of an alkaline aqueous silicate and from about 0.01% to 0.25 % of an organofunctional silane.

5,389,406

PROCESS FOR THE PRODUCTION OF MULTILAYER COATINGS

Klaus-Peter Doebler, Radevormwald; Wolfgang Göldner, Heiligenhaus; Matthias Kimpel, Schwelm, and Klausjörg Klein, Wuppertal, all of Germany, assignors to Herberts Gesellschaft mit beschrankter Haftung, Wuppertal, Germany

Filed Oct. 14, 1993, Ser. No. 136,588
Claims priority, application Germany, Oct. 23, 1992, 4235778
Int. Cl.[6] B05D *1/36, 7/00*
U.S. Cl. 427—407.1 15 Claims

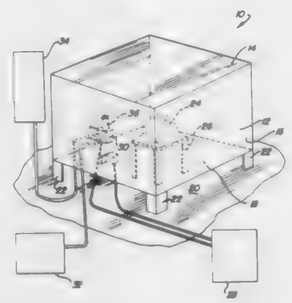
1. A process for producing multilayer coatings by the electrophoretic deposition of a first coating layer of a first aqueous coating medium on an electrically conducting substrate, the application of a second coating layer based on a second aqueous coating medium, and jointly stoving the coating layers thus obtained, characterised in that a coating medium is used for the second coating layer which is based on one or more vehicles stabilised by ionic groups in the aqueous coating medium, which vehicles cross-link during stoving with the formation of urethane groups, wherein the coating medium is selected so that the maximum pigment/vehicle weight ratio of the first coating medium is 1:1, that the ratio of the pigment/vehicle weight ratio of the first coating medium to the pigment/vehicle weight ratio of the second coating medium has a value of up to 1.8, and that the minimum stoving temperature interval for the second coating layer is above that for the first coating layer or overlaps the latter so that the lower limit of the interval for the second coating layer is above the lower limit of the interval for the first coating layer.

5,389,407

THERMAL SPRAYING COATING METHOD

Larry Sokol, Delray Beach, Fla., assignor to Sermatech International, Inc., Limerick, Pa.

Continuation of Ser. No. 806,848, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 617,001, Nov. 21, 1990, abandoned. This application Oct. 30, 1992, Ser. No. 969,528
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—450 9 Claims



1. A method of applying a thermal spray coating, said method including the steps of:

disposing a substrate (**24**) in a chamber (**16**) having an opening that is continuously open to ambient atmosphere about said chamber and said chamber initially containing oxygen, substantially filling the chamber (**16**) with a gas which displaces oxygen from the chamber (**16**) through the opening to ambient, the gas being inert to the substrate (**24**), the chamber (**16**), and thermal spray coating material; thermally spraying thermal spray coating material through the gas and onto the substrate (**24**) to form the

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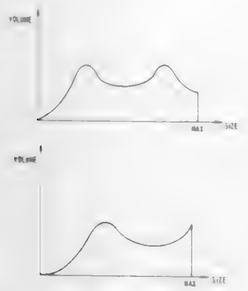
thermal spray coating; the gas preventing oxidation between the substrate (24) and the thermal spray coating, and continuously supplying the chamber with the inert gas simultaneously with the spraying of the thermal spray coating material through the gas and onto the substrate.

5,389,408

METHOD FOR CURING METAL PARTICLES INTO CONTINUOUS CONDUCTORS

Burt DeVolk, Albuquerque, N. Mex., assignor to Printron, Inc., Albuquerque, N. Mex.

Continuation of Ser. No. 853,237, Mar. 18, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 171,986
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—559 **30 Claims**



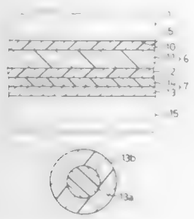
1. A method of curing metal particles deposited in a pattern on a non-metallic substrate into continuous metal conductors arranged in said pattern, comprising applying sufficient electromagnetic energy simultaneously to said particles to melt at least some of said particles, sensing the temperature of said particles when said electromagnetic energy is being applied, and stopping application of said electromagnetic energy when said temperature reaches a specified level.

5,389,409

WEATHERSTRIP

Tadanobu Iwasa; Keiji Akachi; Toshiyuki Tanaka, and Shinichi Yoshioka, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Dec. 7, 1992, Ser. No. 986,537
Claims priority, application Japan, Dec. 5, 1991, 3-322160
Int. Cl.[6] B60R *13/04, 13/06;* **B32B** *7/12*
U.S. Cl. 428—31 **7 Claims**



1. A weatherstrip for use with a vehicle body, comprising:
a strip body having a base and a seal portion formed integrally with said base, said base having a fitting surface for contacting the vehicle body;
an adhesive layer applied on said fitting surface, for bonding said strip body to the vehicle body; and
a release liner for protecting said adhesive layer, said release liner including a synthetic resin non-woven fabric layer comprised of a composite fiber having a polyethylene terephthalate core and a polyethylene sheath and a film layer laminated to said non-woven fabric layer.

5,389,410

THERMOPLASTIC MULTILAYER COMPOSITES OF POLYAMIDE AND LINEAR CRYSTALLINE POLYESTER BLENDS

Joachim Mügge, Haltern; Stefan Röber, and Hans Jadamus, both of Marl, all of Germany, assignors to Huels Aktiengesellschaft - PB 15, Marl, Germany

Filed Nov. 10, 1992, Ser. No. 974,286
Claims priority, application Germany, Nov. 14, 1991, 4137434
Int. Cl.[6] B32B *27/08*
U.S. Cl. 428—34.1 **18 Claims**

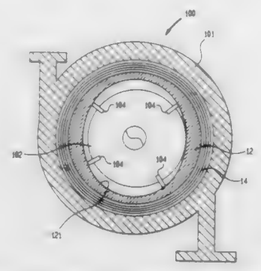
1. A thermoplastic multilayer composite comprising:
at least one layer A of a polyamide-based molding composition wherein at least 50% of all the end groups present in the polyamide are amino end groups and said end groups are present in layer A at a concentration of from 30 to 130 mmol/kg, and
at least one layer B of a molding composition comprising a blend of:
a) 95 to 60% by weight of a linear, crystalline polyester and
b) 5 to 40% by weight of a polymer different than a) containing reactive groups other than epoxide groups reactive with the amino end group of the polyamide of layer A,
wherein said reactive groups are present in a concentration of from 4 to 95 mmol/kg based on the total amount of layer B; and
wherein said layers A and B are intimately and cohesively bonded to one another.

5,389,411

COMPOSITE STRUCTURE FORMING A WEAR SURFACE

Edward I. Cohen, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 24, 1993, Ser. No. 125,715
Int. Cl.[6] F01C *19/04;* **B32B** *17/00;* **A47G** *19/22*
U.S. Cl. 428—34.6 **14 Claims**



1. A composite structure forming a wear surface, comprising:
a hollow ceramic inner core having an inner circumference defining a wear surface; and
a wound outer cladding concentrically surrounding said ceramic inner core, wherein said wound outer cladding is placed in tension around said ceramic inner core to form an interference fit with said ceramic inner core, said wound outer cladding providing a pre-stress to said ceramic inner core.

5,389,412

THERMOPLASTIC POLYIMIDE TUBULAR FILM

Akihiro Tanaka, Kusatsu; Tatsuro Kitaura, Shiga; Junya Kanetake, Moriyama; Tsutomu Yoshida, Kusatsu, and Satoru Wakinaka, Konan, all of Japan, assignors to Gunze Limited, Ayabe, Japan

Continuation of Ser. No. 960,644, Oct. 14, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 232,312
Int. Cl.[6] B29C *47/20, 55/22;* **B32B** *1/08;* **C08J** *5/18*
U.S. Cl. 428—35.5 **4 Claims**

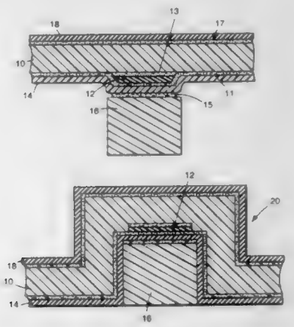
1. A tubular thermoplastic film consisting essentially of polyimide made by extruding a thermoplastic polyimide resin to form a tubular film and drawing the tubular film formed by extrusion at a draw ratio of 1.1/1 to 3/1 in the circumferential and in the longitudinal directions.

5,389,413

THREE DIMENSIONAL SIGNAGE AND A METHOD OF MAKING

Robert R. Condon, St. Paul; Daniel P. Pohl, White Bear Lake, and Frank T. Sher, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 28, 1993, Ser. No. 55,187
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—40 **9 Claims**



1. 3-D sign face construction comprising:
(a) a conformed laminate comprising in sequence:
(1) a sign face layer, wherein the sign face layer is a semi-rigid or rigid conformable thermoplastic sheeting,
(2) a first adhesive layer,
(3) one or more visual characters, wherein the visual characters are cut from a cuttable conformable material having a thickness in the range of 1–5 mils;
(4) a second adhesive layer,
(5) a background color layer, wherein the background color layer is conformable material; and
(6) a third adhesive layer; and
(b) one or more 3-D characters positioned in register with the visual characters, wherein the 3-D characters are cut from a cuttable material having a thickness in the range of 10–50 mils.

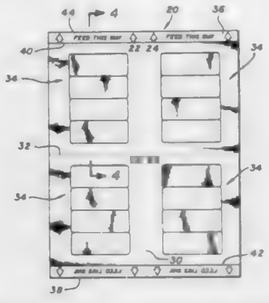
5,389,414

DIVISIBLE LASER LABEL SHEET

Ghanshyam H. Popat, Alta Loma, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Filed May 17, 1993, Ser. No. 63,213
Int. Cl.[6] B32B *31/00*
U.S. Cl. 428—40 **11 Claims**

1. A multiple purpose, double thickness label sheet assembly comprising:
a backing sheet having pre-defined dimensions and an upper surface;
a label sheet having a pressure sensitive adhesive coating thereon mounted on said upper surface of said backing sheet, with the adhesive facing the backing sheet, said label sheet covering substantially all of said upper surface of said backing sheet;
said double thickness label sheet assembly being divided into a plurality of sections by microperforations extending through both said label sheet and said backing sheet;
said label sheet having a flexible top leading edge and a flexible bottom leading edge, said label sheet having a first die-cut flexibility line cut into said label sheet approximately ½ inch from said top leading edge and a second die-cut flexibility line cut into said label sheets approximately ½ inch from said bottom leading edge, said flexibility lines allowing said leading edges to easily bend around



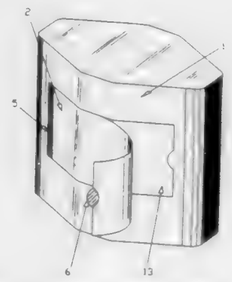
the twists and turns in a conventional laser printer feed path;
each of said sections having a plurality of die cut labels thereon, with the die cuts extending through said label sheet but not through said backing sheet; and
said label sheet being substantially coextensive with said backing sheet;
whereby said double thickness label sheet assembly may be printed in its entirety by a laser printer, or may be divided along said microperforations into sections which each have a flexible leading edge for individual feeding into a laser printer, and said microperforations leave substantially smooth edges when said sections are separated from one another.

5,389,415

PEEL-BACK RE-SEALABLE MULTI-PLY LABEL

Thomas R. Kaufmann, Birchrunville, Pa., assignor to Beckett Corporation, Lionville, Pa.

Continuation of Ser. No. 961,864, Oct. 15, 1992, Pat. No. 5,264,265. This application Nov. 19, 1993, Ser. No. 156,574
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—40 **11 Claims**



1. A peel-back re-sealable multi-ply label, comprising:
(a) a bottom ply having an upper side and an underside; and

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(b) a top ply having a upper side and an underside, the underside of said top ply being bonded to the upper side of said bottom ply with permanent adhesive along a first edge to form a hinge.

5,389,416

Patent Not Issued For This Number

5,389,417

OPTICAL RECORDING MEDIUM

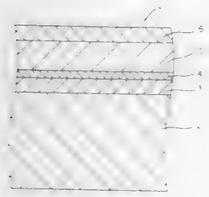
Junji Tominaga; Susumu Haratani; Tokuhiko Handa, and Hiroyuki Arioka, all of Nagano, Japan, assignors to ADK Corporation, Tokyo, Japan

Filed Jul. 15, 1993, Ser. No. 91,435
Claims priority, application Japan, Aug. 28, 1992, 4-253832
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64 **9 Claims**

1. An optical recording medium comprising a recording layer on a surface of a substrate, said recording layer predominantly containing

at least one element (A) selected from the group consisting of Ag, Au, Cu and Pt,

at least one element (B) selected from the group consisting of Ti, Zr, Hf, V, Nb, Ta, Mn, W and Mo, and



at least one element (C) selected from the group consisting of Te, Se and S.

5,389,418

FLEXIBLE MAGNETIC RECORDING DISK AND METHOD FOR PREPARING THE SAME

Masataka Ota; Yasushi Endo; Satoru Hayakawa, and Toshio Kawamata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 19, 1993, Ser. No. 108,455
Claims priority, application Japan, Aug. 21, 1992, 4-244007
Int. Cl.[6] G11B *5/00*
U.S. Cl. 428—64 **11 Claims**

1. A flexible magnetic recording disk comprising a non-magnetic support having thereon (1) a non-magnetic layer comprising a non-magnetic powder and a binder resin, and (2) a magnetic layer comprising a ferromagnetic metal powder and a binder resin, in this order, wherein the magnetic layer has a thickness of 1 μm or less, which is ½ or less of the thickness of the non-magnetic layer; and the magnetic layer further contains abrasive particles having a presence density at the magnetic layer surface of 0.16 to 0.24 particle/μm^2 which comprises (i) first abrasive particles having a Mohs' hardness of 6 or more and an average particle size of 0.8 to 1.4 times as large as the average particle size of said ferromagnetic powder and (ii) second abrasive particles having a Mohs' hardness of 6 or more and an average particle size of 2 to 4 times as large as the average particle size of said ferromagnetic powder.

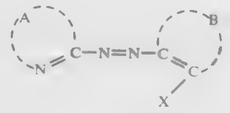
5,389,419

OPTICAL RECORDING MEDIUM COMPRISING A DYE-INCORPORATED COMPOSITION

Shuichi Maeda, Hidaka; Satoru Imamura; Kazuo Mitsuhashi, both of Machida, and Takako Tsukahara, Sagamihara, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Division of Ser. No. 809,513, Jan. 24, 1992, Pat. No. 5,330,542. This application Mar. 22, 1994, Ser. No. 215,609
Claims priority, application Japan, May 25, 1990, 2-136844; Nov. 28, 1990, 2-328423
Int. Cl.[6] B32B *3/02*
U.S. Cl. 428—64 **8 Claims**

1. An optical recording medium comprising a substrate and a recording layer formed thereon for information to be written in and/or to be read out, wherein said recording layer contains a dye-incorporated composition which comprises a mixture of a cyanine dye and an azo metal chelate compound, wherein the azo metal chelate compound is an azo compound of the following formula (I):

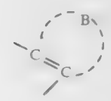


(I)

wherein A is a residue forming a hetero ring together with the carbon atom and the nitrogen atom to which it is bonded, B is a residue forming an aromatic ring or a hetero ring together with the two carbon atoms to which is bonded, and X is a group having an active hydrogen, wherein



is a thiazole ring, a benzothiazole ring, a pyridobenzothiazole ring, a benzopyridothiazole ring, a pyridothiazole ring, a pyridine ring or a quinoline ring; or a thiazole ring, a benzothiazole ring, a pyridobenzothiazole ring, a benzopyridothiazole ring, a pyridothiazole ring, a pyridine ring or a quinoline ring substituted by an alkyl group, an alkoxy group, an aryloxy group, an aralkyl group, an aryl group, a halogen atom, a cyano group, a nitro group, an ester group, a carbamoyl group, an acyl group, an acylamino group, a sulfamoyl group, a sulfonamide group, an amino group, a hydroxyl group, a phenylazo group, a pyridinoazo group or a vinyl group; and



is a benzene ring, a naphthalene ring, a pyridine ring, a pyridone ring, a tetrahydroquinoline ring or a pyrazole ring; or a benzene ring, a naphthalene ring, a pyridine ring, a pyridone ring, a tetrahydroquinoline ring or a pyrazole ring substituted by an alkyl group, an alkoxy group, an aryloxy group, an aralkyl group, an aryl group, a halogen atom, a cyano group, a nitro group, an ester group, a carbamoyl group, an acyl group, an acylamino group, a sulfamoyl group, a sulfonamide group, an amino group, a hydroxyl group, a phenylazo group, a pyridinoazo group or a vinyl group; chelated with a metal.

5,389,420

HEAT INSULATOR AND METHOD OF MAKING IT

Gerhard Sextl, Geiselbach; Roland Reuter, Darmstadt; Hans Strack, Alzenau; Peter Kleinschmit, Hanau, and Rudolf Schwarz, Alzenau-Wasserlos, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 669,738, Mar. 15, 1991, Pat. No. 5,236,758. This application Nov. 30, 1992, Ser. No. 983,216
Claims priority, application Germany, Mar. 16, 1990, 4008480; Sep. 17, 1990, 4029405
Int. Cl.[6] B32B *1/04, 3/02*
U.S. Cl. 428—74 **11 Claims**

1. A heat insulator for use as heat-insulation comprising:

a) a finely distributed, powdery or fibrous substance with a water-adsorption capacity of 4 to 50% by weight with respect to the weight of the powdery or fibrous substance at 23° C. and 85% relative humidity and

b) a continuous metal-free casing which surrounds this finely distributed powdery or fibrous substance and has a water-vapor permeability of 0.02 to 0.1 g/(m^2.d. bar) at 23° C. and 85% relative humidity and,gas permeabilities for N_2, O_2 and CO_2 of in sum 0.05 to 0.5 cm^3/(m^2.d. bar) at 23° C.,

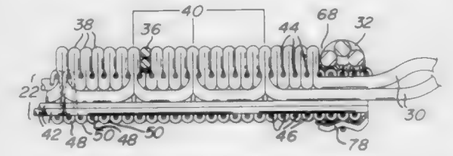
said heat insulator having the property of absorbing water up to an amount of 2 to 15% by weight without its thermal conductivity being impaired by more than 25%.

5,389,421

FRINGED WILTON-TYPE CARPET AND METHOD OF MAKING THE SAME

Philip Pearlman, 207 Richard Dr., Broomall, Pa. 19008

Filed Dec. 23, 1992, Ser. No. 996,337
Int. Cl.[6] B32B *3/02, 3/06*
U.S. Cl. 428—82 **8 Claims**



1. A Wilton carpet having a left side, a right side, and a pair of ends, a longitudinal axis, and a transverse axis, said carpet comprising a backing layer and a face layer, said face layer comprising plural loops of a yarn extending in plural longitudinal lines parallel to said longitudinal axis, and with the yarns forming each of said lines of loops terminating in an unlooped yarn portion forming a loose fringe extending beyond said backing layer at each of said pair of ends, each of said longitudinal lines of loops includes an end loop contiguous with a respective one of said fringes, wherein the end loops of each of said lines of loops on one end of said carpet form a first interface line thereat and the end loops of each of said lines of loops on the other end of said carpet form a second interface line thereat, and respective strips of material are secured to said fringes along said first and second interface lines and wherein, each of said strips is braided.

5,389,422

BIAXIALLY ORIENTED LAMINATED FILM

Iwao Okazaki; Koichi Abe, both of Kyoto, and Shoji Nakajima, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sep. 3, 1992, Ser. No. 940,382
The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.
Int. Cl.[6] D06N *7/04*
U.S. Cl. 428—141 **17 Claims**

1. A biaxially oriented laminated film having protrusions of uniform height comprising:

a film layer B whose major component is a thermoplastic resin B_r;

a film layer A laminated on at least one surface of said film layer B and whose major components are a thermoplastic resin A_r and particles contained therein, the film layer A having a thickness of 0.005–3 μm, the particles contained in the film layer A having a mean diameter of 0.1 to 10 times the thickness of the film layer A, the content of the particles in the film layer A being 0.5–50% by weight; and

a skin layer C which comprises a polymer laminated on at least one surface of said laminated film layer A and film layer B and having a thickness of 1–300 nm.

5,389,423

WINDSHIELD MOLDING FOR VEHICLES

Yukihiko Yada, Nagoya, Japan, assignor to Tokai Kogyo Kabushiki Kaisha, Obbu, Japan

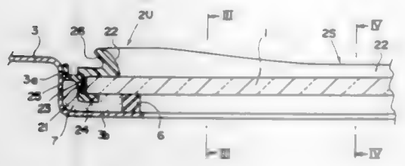
Filed May 29, 1992, Ser. No. 890,158
Claims priority, application Japan, May 31, 1991, 3-157580
Int. Cl.[6] B32B *3/28;* **B60J** *1/02*
U.S. Cl. 428—167 **12 Claims**

1. A windshield molding for vehicles, the windshield molding comprising a first molding section and a second molding section which are continuously and integrally extrusion-

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molded for installation along a periphery of a windshield glass fixed to a window opening in a vehicle body panel; wherein:

said first molding section and said second molding section include a support leg section adapted for insertion into a gap between the periphery of said windshield glass and an inner edge of said window opening, and a decorative section positioned at an external end of said support leg to overlap said periphery of said windshield glass from an outside;



at least one part of said decorative section and said support leg section has a thick body portion which is gradually thickened in a longitudinal direction at least in the first molding section and extends in an external direction from a peripheral edge of a surface of the windshield glass; and

said thick body portion has a rainwater retaining groove formed therein for retaining rainwater.

5,389,424

ANTIABRASION CURVED SHAPE AND PROCESS FOR ITS MANUFACTURE

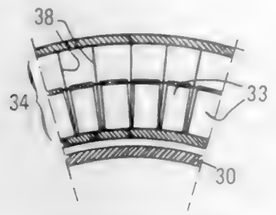
Pierre Groult, deceased, late of Villeconin; Josette Groult, heir; Groult, heir, Therese; Maria S. Groult, heir; Vanina Groult, heir; Henri Groult, heir; Barthelemy Groult, heir, all of Villeconin, and Michel Huvey, heir, Bougival, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 144,915, Mar. 3, 1988, abandoned. This application Oct. 9, 1991, Ser. No. 773,412

Claims priority, application France, Apr. 8, 1986, 05.096/86

Int. Cl.[6] B32B *1/00*; **B29C** *45/00*

U.S. Cl. 428—174 **11 Claims**



1. Process for manufacturing an elongated body of reinforced material, said elongated body being capable of resisting abrasion and comprising a lower surface and an upper surface, said process comprising the steps of:

providing a mold having an elongated groove,

applying a first layer of antiabrasion material on at least one of an internal bottom portion and internal wall portions of said elongated groove,

filling the elongated groove having the antiabrasion material with the reinforced material,

applying a second layer of antiabrasion material as a covering after the step of filling the groove with reinforced material, and

separating the reinforced material from said elongated groove after one of the step of applying of the first layer of antiabrasion material or the step of applying of the second layer of antiabrasion material whereby the elongated body is provided with at least one layer of antiabrasion material when separated from said elongated groove.

11. Curved elongated body comprising an upper surface, a lower surface, and a pair of spaced lateral surfaces disposed between said upper and lower surfaces, means for resisting abrasion provided on at least one of the upper surface and the lower surface, and wherein means for resisting abrasion are provided on only one portion of at least one of the lateral surfaces.

5,389,425

PACKAGING MATERIALS

David N. Platt, Bridgwater, and Andrew Holloway, Witney, both of England, assignors to Courtaulds Packaging Limited, Essex, United Kingdom

PCT No. PCT/GB91/00700, § 371 Date Dec. 3, 1991, § 102(e) Date Dec. 3, 1991, PCT Pub. No. WO91/17202, PCT Pub. Date Nov. 14, 1991

PCT Filed May 1, 1991, Ser. No. 777,317

Claims priority, application United Kingdom, May 1, 1990, 9009783

Int. Cl.[6] B32B *27/14, 27/08*; **C11D** *17/00*

U.S. Cl. 428—195 **7 Claims**

1. A water soluble or water dispersible polymeric film comprising a first discontinuous layer of a polymer resistant to dissolution and/or softening on handling with wet hands and selected from nitrocellulose or polyvinylidene chloride; a second layer made from a heat sealable polymer which is water soluble and resistant to insolubilization in water by perborate ions and selected from a polyvinyl alcohol or an acrylic; and an intermediate layer interposed between said first and second layers, said intermediate layer being a cold water soluble polyvinyl alcohol which is resistant to insolubilization by perborate ions.

5,389,426

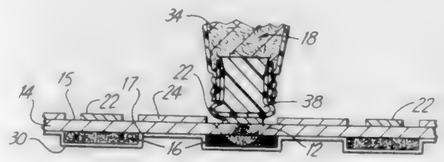
ARTICLE FOR USE IN FORMING A PERMANENT IMAGE USING A TEMPORARY MARKER

Robert P. Arens, St. Paul, and James M. Ripka, Zimmerman, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 25, 1993, Ser. No. 8,194

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 **19 Claims**



1. An article capable of being permanently marked by an imaging liquid, the article comprising:

a porous material having a top surface and a bottom surface; and

a dye applied to the bottom surface of the porous material, the dye being soluble in the imaging liquid such that when the imaging liquid contacts the top surface of the porous material the imaging liquid penetrates the porous material, dissolves at least some of the dye to provide a dye solution with at least some of the dye solution migrating to the top surface such that a mark of dye residue remains permanently visible on the top surface of the porous material.

5,389,427

NON-WETTABLE GLASS SHEET

Jean-Marc Berquier, Deuil-la-Barre, France, assignor to Saint-Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 45,088, Apr. 12, 1993. This application Jan. 24, 1994, Ser. No. 185,406

Claims priority, application France, Apr. 10, 1992, 92 04463

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—210 **23 Claims**

21. A non-wettable glass sheet comprising a base and a hydrophobic, oleophobic mono-layer resistant to ultraviolet radiation and having a thickness of from 10–30 Å, said monolayer consisting essentially of organosilanes selected from the group consisting of tridecafluorotetrahydrooctyltrichlorosilane of the formula $CF_3(CF_2)_5—(CH_2)_2SiCl_3$ and perfluorodecyltrichlorosilane of the formula $CF_3—(CF_2)_7—(CH_2)_2SiCl_3$ regularly grafted into polysiloxane patterns.

5,389,428

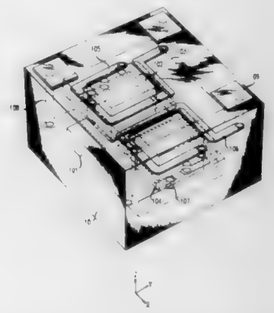
SINTERED CERAMIC COMPONENTS AND METHOD FOR MAKING SAME

Debra A. Fleming, Lake Hiawatha, N.J.; Gideon S. Grader, Haifa, Israel; David W. Johnson, Jr., Bedminster, N.J.; Henry M. O'Bryan, Jr., Plainfield, N.J., and Warren W. Rhodes, Raritan, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 8, 1992, Ser. No. 987,515

Int. Cl.[6] H01F *41/02*

U.S. Cl. 428—209 **4 Claims**



1. In a multilayer magnetic device of the type comprising layers having patterns of metal-containing magnetic material regions and insulating material regions stacked to form a structure comprising a magnetic material core substantially surrounded by an insulating material housing, said metal-containing magnetic material normally subject to metal loss during sintering, the improvement wherein: said insulating material comprises metal of the type included in said magnetic material at a concentration level such that at sintering temperatures there is no net loss or gain of metal from said magnetic material.

5,389,429

THERMAL TRANSFER MATERIAL AND THERMAL TRANSFER RECORDING METHOD

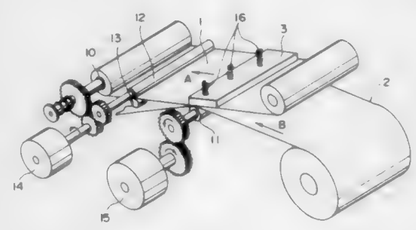
Yoshihisa Takizawa, Kawasaki; Naoki Kushida, Yokohama; Takayuki Suzuki, Saitama, and Tetsuo Hasegawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 513,896, Apr. 24, 1990, Pat. No. 5,268,052. This application Sep. 2, 1993, Ser. No. 115,105

Claims priority, application Japan, Apr. 27, 1989, 1-111020; Jul. 31, 1989, 1-198272; Aug. 1, 1989, 1-201024; Aug. 1, 1989, 1-201025; Aug. 1, 1989, 1-201026; Aug. 1, 1989, 1-201027; Aug. 1, 1989, 1-201028; Aug. 4, 1989, 1-203064

Int. Cl.[6] B41M *5/00*

U.S. Cl. 428—212 **16 Claims**



1. A thermal transfer material comprising a support and a heat-transferable ink layer disposed thereon, wherein the heat-transferable ink layer has a storage elasticity modulus E′ satisfying a relationship of:

$$1\times10^7 \leqq E' \leqq 1\times10^9 N/m^2$$

at 30° C.; and has a temperature providing a thermal differential value of dynamic energy loss angle (tan δ) satisfying a relationship of $d(\tan\delta)/dT = 1\times10^{-2}$ is in the range of 40° to 60° C.

5,389,430

TEXTILES COATED WITH WATERPROOF, MOISTURE VAPOR PERMEABLE POLYMERS

Iskender Yilgör, and Emel Yilgör, both of Midlothian, Va., assignors to Th. Goldschmidt AG, Essen, Germany

Filed Feb. 5, 1993, Ser. No. 14,308

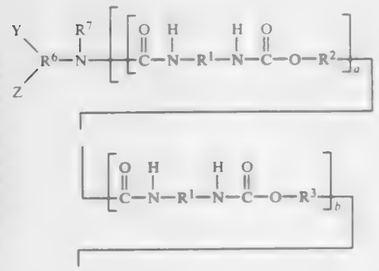
Int. Cl.[6] B32B *7/00*

U.S. Cl. 428—246 **8 Claims**

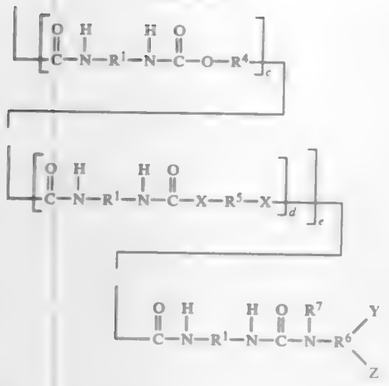
1. A textile structure material comprising:

a first layer of a textile material;

a second layer, adhered to at least one surface of the first layer, comprising an adhesive polymer of the formula



-continued



where

R^1 is a bivalent aliphatic or aromatic hydrocarbon group which optionally may be substituted;

R^2 is a bivalent poly(ethylene oxide) of molecular weight around between 400 to 8000 g/mole;

R^3 is a bivalent poly(tetramethylene oxide), bivalent poly(-propylene oxide), bivalent polybutadiene or bivalent polyisobutylene of molecular weight around between 500 to 3000 g/mole;

R^4 is a bivalent polyester glycol with a molecular weight of around between 500 to 3000 g/mole;

R^5 is a bivalent aliphatic, linear or branched hydrocarbon having 2 to 20 carbon atoms;

R^6 is a bivalent linear or branched hydrocarbon chain having 2 to 20 carbon atoms or an ether having 2 to 20 carbon atoms;

R^7 is a hydrogen or an alkyl having 1 to 4 carbon atoms;

X is an oxygen atom or



group where R is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms;

Y and Z represent a hydrogen atom or a hydroxy group, with the proviso that at least Y or Z is a hydroxy group;

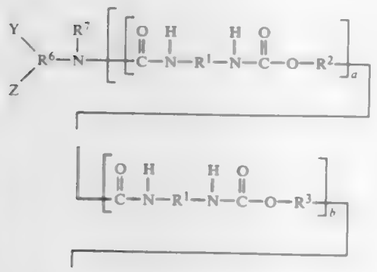
(a), (b), (c), (d) and (e) represent the average repeat units in the polymer backbone;

(a), (b), (c) and (d) are numbers up to 10;

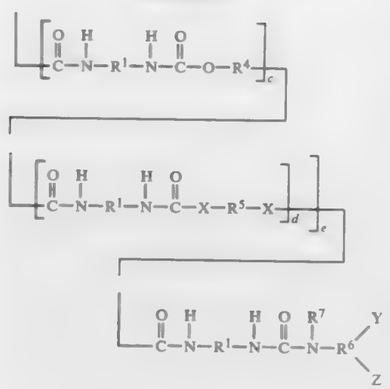
(a), (b) and (c) each must be at least 1; and

(e) is a number up to 50;

a third layer, on top of the second layer, comprising a linear polyurethaneurea segmented block polymer of the formula



-continued



where

R^1, R^2 and R^3 are same as above;

R^8 is a bivalent aliphatic linear or branched hydrocarbon having 2 to 20 carbon atoms;

R^9 is a bivalent aliphatic polycaprolactone of molecular weight around between 500 and 5000 g/mole;

R^{10} is a bivalent alkylenoxy group having 1 to 12 carbon atoms;

R^{11} is a hydrocarbon chain having 1 to 20 carbon atoms;

X is an oxygen atom or



group where R is a hydrogen atom or any alkyl group having 1 to 4 carbon atoms;

(g), (h), (i), (j), (k) and (m) represent the average repeat units in the polymer backbone;

(g), (h), (i) and (j) are numbers up to 10;

(g), (h), (i), (j) and (m) each must be at least 1;

(k) is a number up to 300; and

(m) is a number up to 10.

5,389,431

NONWOVEN FABRIC AND PROCESS FOR PRODUCING SAME

Komei Yamasaki, Sodegaura, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00601, § 371 Date Jan. 7, 1993, § 102(e) Date Jan. 7, 1993, PCT Pub. No. WO92/20850, PCT Pub. Date Nov. 26, 1992

PCT Filed May 12, 1992, Ser. No. 960,352

Claims priority, application Japan, May 14, 1991, 3-107894

Int. Cl.[6] D04H *1/42, 1/72*

U.S. Cl. 428—288 4 Claims

1. A nonwoven fabric which comprises fibrillated three-dimensional network fibers comprising, as a principal component, fibers prepared by flash-spinning a styrenic polymer having a high degree of syndiotactic configuration.

5,389,432

BINDERS BASED ON α-OLEFIN/CARBOXYLIC ACID/POLYAMIDE POLYMERS AND THEIR IONOMERS

Robert M. Blanch, Convent Station, and Gregory Borsinger, Boonton, both of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jan. 19, 1993, Ser. No. 4,879

Int. Cl.[6] B32B *7/14*

U.S. Cl. 428—288 27 Claims

1. A nonwoven fabric comprising:

(a) a web of fibers, said web consisting of overlap regions where said fibers intersect and open regions; and

(b) a binder material in adhesive contact with said fibers and substantially concentrated in overlap regions of said web, said binder comprising a polymeric backbone comprising recurring monomeric units derived from monomers selected from the group consisting of one or more α-olefins and one or more unsaturated carboxylic acids, having grafted thereon by a divalent amide linkage one or more polymeric grafts comprising at least one recurring monomeric unit derived from monomers selected from the group consisting of:

—NHC(O)RC(O)NHR$_1$ and —NH—R—C(O)—

a combination thereof in wherein R is an alkylene group of at least about 2 carbon atoms, and R_1 is R or aryl.

5,389,433

BATTERY SEPARATOR

Victor S. C. Chang, Ellicott City; Richard C. Hartwig, Laurel, both of Md.; James K. Kung, Lexington, Mass.; Joseph T. Lundquist, Gilroy, Calif.; Marc E. Parham, Bedford, Mass.; James A. Artges, Belmont, Mass., and Anthony J. Laccetti, North Andover, Mass., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Apr. 1, 1993, Ser. No. 41,115

Int. Cl.[6] B32B *3/26, 5/18;* B01D *39/14*

U.S. Cl. 428—310.5 15 Claims

1. A battery separator comprising a microporous sheet product having a thickness of less than about 50 mils bound by first and second major surfaces of the sheet product comprising a substantially uniform mixture of from 1:4 to 4:1 wt. ratio of a polyarylether sulfone having a weight average molecular weight of from about 20,000 to about 200,000, and a particulate filler and having a porous sheet substantially embedded between the first and second major surfaces of said sheet product, and having porosity throughout the sheet product's thickness with a pore size distribution such that the pore size of each increment of thickness increases from each major surface towards an interior, central portion of the sheet product's thickness without a major portion of said increase occurring adjacent to each major surface.

5,389,434

ELECTROMAGNETIC RADIATION ABSORBING MATERIAL EMPLOYING DOUBLY LAYERED PARTICLES

Craig S. Chamberlain; Glen Connell, and William C. Tait, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 591,799, Oct. 2, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 941,868

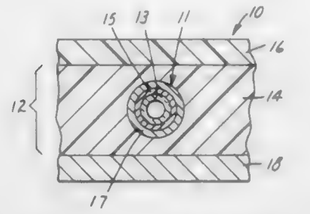
Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—323 29 Claims

1. A non-electrically-conductive electromagnetic radiation absorbing material having a resistivity of greater than 2×10^8 ohm-cm at room temperature, comprising a plurality of electromagnetic radiation dissipative particles and a dielectric binder through which the dissipative particles are dispersed, in which the dissipative particles comprise:

(a) a core particle;

(b) an ultrathin, electromagnetic radiation dissipative layer made of an inorganic material, of thickness within the range of 0.05 to 10 nm, located on the surface of the core particle; and



(c) an ultrathin electrically insulating layer having a thickness of at least 0.5 nm overlaying the dissipative layer.

5,389,435

FLAME RETARDANT EPOXY COMPOSITE

Hugh A. Yap, Marysville, Wash., assignor to ICI Composites Inc., Tempe, Ariz.

Continuation-in-part of Ser. No. 797,527, Nov. 25, 1991, abandoned. This application May 20, 1993, Ser. No. 64,619

Int. Cl.[6] B32B *5/16, 9/00, 27/38*

U.S. Cl. 428—324 7 Claims

1. A laminate comprising

A. a glass scrim coated with a composition comprising an inorganic filler selected from the group consisting of inorganic oxides and salts and a first epoxy resin and

B. a structural composite comprising graphite fibers and a second epoxy resin.

5,389,436

SURFACE-TREATED METAL SHEET WHICH EXCELS IN WORKABILITY, ELECTRICAL CONDUCTIVITY AND CORROSION RESISTANCE, AND METHOD OF PRODUCING THE SAME

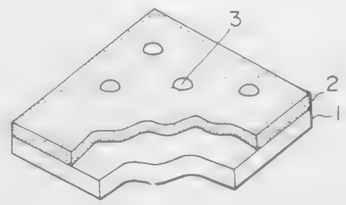
Nobuo Totsuka; Masaki Mabuchi; Katsuhei Kikuchi, and Yoshihiro Naruse, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Nov. 30, 1993, Ser. No. 160,051

Claims priority, application Japan, Nov. 30, 1992, 4-320146

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—327 6 Claims



1. A surface-treated metal sheet which excels in workability, electrical conductivity and corrosion resistance, comprising:

a metal sheet which has been plated;

a chromate layer formed on at least one side of said metal sheet, with a deposition amount of about 5 to 200 mg/m^2 calculated on the basis of Cr;

and a second layer at a thickness of about 0.2 μm and about 10.0 μm, formed on said chromate layer, comprising organic lubricant particles having a deposition amount of from about 5 to 1000 mg/m^2, such that the area coated by said organic lubricant particles to the entire area of the metal sheet surface is below about 50%.

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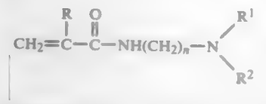
5,389,437

PRESSURE SENSITIVE ADHESIVE SHEET A PRESSURE SENSITIVE LABEL AND A LAMINATE UTILIZING A SPECIFIED PRESSURE SENSITIVE ADHESIVE LAYER

Norihisa Miyajima; Issei Ozaki, and Hajime Fukada, all of Urawa, Japan, assignors to Saiden Chemical Industry Co., Ltd. and Lintec Corporation, both of Tokyo, Japan

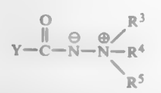
Division of Ser. No. 800,533, Nov. 27, 1991, Pat. No. 5,278,271.
This application Sep. 24, 1993, Ser. No. 126,971
Int. Cl.[6] B32B *7/12, 27/36*
U.S. Cl. 428—354 22 Claims

1. A pressure sensitive adhesive sheet comprising an adhesive coated substrate, said substrate being selected from the group consisting of paper and a synthetic resin film, said adhesive coating comprising a pressure sensitive adhesive composition which comprises an acrylic copolymer prepared by copolymerization of from 0.1 to 20 weight % of a component (A) comprising at least one unsaturated monomer selected from the group consisting of unsaturated monomers having the structure of the formula:



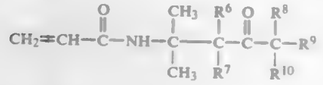
wherein R is a hydrogen atom or methyl group, R^1 and R^2 are a hydrogen atom or an alkyl group of 1 to 4 carbon atoms, respectively, n is an integer from 1 to 4 and R^1 and R^2 are the same or different;

from 0.01 to 10 weight % of a component (B) comprising at least one unsaturated monomer selected from the group consisting of unsaturated monomers having the structure of the formula:



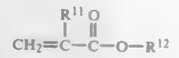
wherein Y is an organic group having a radical polymerizable unsaturated bond and R^3, R^4 and R^5 are an aryl or an unsubstituted or substituted alkyl group, respectively, and are the same or different with each other;

from 0 to 10 weight % of a component (C) comprising at least one unsaturated monomer selected from the group consisting of unsaturated monomers having the structure of the formula:



wherein R^6, R^7, R^8, R^9 and R^{10} are a hydrogen atom or —CH_2OH group, respectively, and are the same or different with each other; and

from 60 to 99.89 weight % of a component (D) comprising at least one unsaturated monomer selected from the group consisting of unsaturated monomers having the structure of the formula:



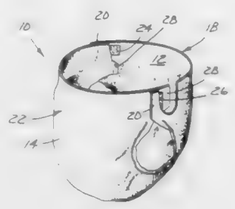
wherein R^{11} is a hydrogen atom or methyl group and R^{12} is an alkyl group of 1 to 14 carbon atoms.

5,389,438

REPOSITIONABLE ADHESIVE TAPE

John A. Miller, and George J. Clements, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 483,130, Feb. 22, 1990, abandoned.
This application Apr. 8, 1991, Ser. No. 681,655
Int. Cl.[6] C09J *7/02*
U.S. Cl. 428—355 8 Claims



1. A low-tack or no-tack adhesive consisting essentially of a composition of by weight:

from 20 to 80 parts of at least one elastomeric block copolymer selected from the group consisting of styrene/butadiene and styrene/isoprene block copolymers, and

correspondingly from 80 to 20 parts of tackifying material selected from the group consisting of tackifier resin and a blend of tackifier resin and liquid plasticizer oil, wherein the tackifier comprises 0 to 35 parts of a solid tackifier resin and from 0 to 80 parts of a liquid tackifying resin or plasticizing oil, and wherein the tackifier resin is selected from the group consisting of aliphatic hydrocarbon resins from the polymerization of unsaturated species with four to six carbon atoms, rosin esters and acids, aliphatic-/aromatic liquid tackifiers, polyterpene tackifiers, hydrogenated tackifying resins, hydrogenated polyterpene resins and hydrogenated aliphatic and aliphatic/aromatic resins, and the liquid plasticizer oils are selected from the group consisting of mineral oil, naphthenic oil, paraffinic oil, and

aromatic oils, and mixtures thereof, which adhesive has a composite midblock glass transition temperature (CMTg) from 225 Kelvin to 240 Kelvin when the adhesive is based on styrene/isoprene block copolymers and a CMTg from 215 Kelvin to 235 Kelvin when the adhesive is based on styrene/butadiene block copolymers to provide an adhesive having no tack or low tack, which adhesive has a 90 degree peel value (as herein defined) of 0.1 to 2.7N/25 mm and a self-adhesion value (as herein defined) of from 0.2 to 3.4N/25 mm.

5,389,439

Patent Not Issued For This Number

5,389,440

FINISH COMPOSITION FOR COATING AND PROTECTING A REINFORCING SUBSTRATE

Michel Arpin; Paul Petit, both of La Motte Servolex, and Andre Vagnon, Chambery, all of France, assignors to Vetrotex Saint-Gobain, France

Continuation of Ser. No. 59,941, May 7, 1993, abandoned, which is a division of Ser. No. 758,442, Sep. 5, 1991, Pat. No. 5,242,969, which is a continuation of Ser. No. 511,478, Apr. 18, 1990, abandoned. This application May 31, 1994, Ser. No. 251,036
Claims priority, application France, Apr. 19, 1989, 89 05187
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—391 16 Claims

1. A finish composition for coating and protecting a surface of a reinforcing substrate, said finish composition comprising from about 2 to about 15% by weight of an aqueous emulsion consisting essentially of:

at least one essentially crystalline polyolefin having a weight average molecular weight greater than 10,000;

from about 10 to 50 parts by weight of an acid material for each 100 parts by weight of said polyolefin, said acid material selected from the group consisting of saturated fatty acids, unsaturated fatty acids and mixtures thereof, wherein said unsaturated fatty acids do not include any hydroxyl groups;

at least one base; and

a sufficient amount of water to form an aqueous phase emulsion comprising from about 1–50% of solid materials.

5,389,441

PHTHALONITRILE PREPOLYMER AS HIGH TEMPERATURE SIZING MATERIAL FOR COMPOSITE FIBERS

Teddy M. Keller, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 28, 1993, Ser. No. 82,645
Int. Cl.[6] B32B *27/34*
U.S. Cl. 428—395 20 Claims

1. A coated fiber comprising a base fiber having a coating of an amorphous, B-stage bisphthalonitrile prepolymer on an outer surface thereof.

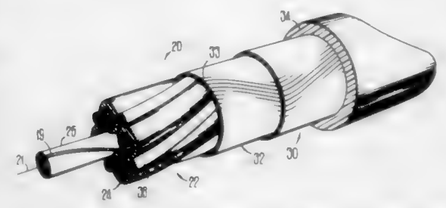
5,389,442

WATER BLOCKING STRENGTH MEMBERS

Candido J. Arroyo, Lithonia; Jill B. Fluevog, Norcross; Krishnaswamy Kathiresan, Marietta, and Parbhubhai D. Patel, Dunwoody, all of Ga., assignors to AT&T Corp., Murray Hill, N.J.

Continuation-in-part of Ser. No. 764,969, Sep. 25, 1991, abandoned, which is a continuation of Ser. No. 463,076, Jan. 10, 1990, abandoned, which is a division of Ser. No. 217,486, Jul. 11, 1988, Pat. No. 4,913,517. This application Nov. 25, 1992, Ser. No. 982,252
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—396 2 Claims

1. A waterblocking strength member for use in an optical fiber communications cable, said waterblocking strength member comprising:



an elongated, supple yarn which is impregnated with a superabsorbent material and which has a breaking strength greater than 400 Newtons.

5,389,443

IN-MOLD COATING WITH IMPROVED TOUGHNESS

Krishna G. Banerjee, Stow; I. Glen Hargis, Tallmadge; Earl G. Melby, Uniontown, and Douglas S. McBain, Norton, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Continuation-in-part of Ser. No. 828,080, Jan. 30, 1992. This application Jan. 7, 1993, Ser. No. 1,488
Int. Cl.[6] B32B *27/06, 27/38*
U.S. Cl. 428—413 15 Claims

1. A method comprising:

in-mold coating a molded fiber reinforced thermoset polyester resin or thermoset vinyl ester resin composition containing from about 10 to about 75 percent by weight fibers with a thermosetting in-mold coating composition and curing said in-mold coating composition to form an adherent thermoset coating on said molded thermoset resin glass fiber composition, said in-mold coating composition comprising;

a) at least one polymerizable vinyl ester resin being the reaction product of a polyepoxide with unsaturated monocarboxylic acids having from 3 to 10 carbon atoms, said vinyl ester resin having a weight average molecular weight of from about 500 to about 1500,

b) from about 80 to 200 parts by weight of at least one copolymerizable ethylenically unsaturated monomer,

c) from about 5 to about 90 parts by weight of a low profile additive,

d) an effective amount of a mold release agent, and

e) from about 1 to about 35 parts by weight of at least one B polymer block, wherein said B polymer block is in the form of one or more of AB, ABA, or $A(BA)_n$ block copolymers where n is from 1 to 5 having one or more A blocks therein, said A blocks being unsaturated polyester condensation products of monomers consisting essentially of,

one or more saturated cyclic ethers and/or glycols of up to 18 carbon atoms,

reacted with one or more unsaturated dicarboxylic acids and/or anhydrides thereof having molecular weights from 98 to 400 and optionally one or more saturated dicarboxylic acids and/or anhydrides thereof of molecular weights from 98 to 400, and

said B blocks being flexible polymers having a Tg of 0° C. or less and wherein said parts by wt. are per 100 parts by wt. of said vinyl ester resin.

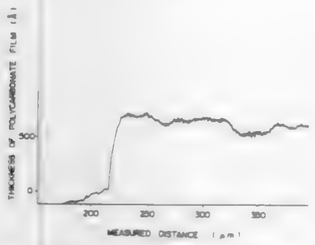
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5,389,444

ORGANIC ELECTROLUMINESCENCE DEVICE

Chishio Hosokawa; Shuji Sakamoto, and Tadashi Kusumoto, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/01180, § 371 Date May 11, 1993, § 102(e) Date May 11, 1993, PCT Pub. No. WO93/06189, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 16, 1992, Ser. No. 50,489
Claims priority, application Japan, Sep. 18, 1991, 3-238111; Mar. 9, 1992, 4-050865; Mar. 10, 1992, 4-051955
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—457 25 Claims



1. An organic electroluminescence device which comprises a polycarbonate containing a repeating unit of a styrylamine skeleton having an electroluminesence function as at least one material selected from the group consisting of an emitting material and a hole injecting material.

5,389,445

MAGNETRON SPUTTERED BORON FILMS AND TI/B MULTILAYER STRUCTURES

Daniel M. Makowiecki, and Alan F. Jankowski, both of Livermore, Calif., assignors to Regents of The University of California, Oakland, Calif.

Division of Ser. No. 666,971, Mar. 11, 1991, Pat. No. 5,203,977. This application Apr. 15, 1993, Ser. No. 48,373
Int. Cl.[6] B32B *15/04*
U.S. Cl. 428—457 13 Claims



1. A low atomic number/high atomic number multilayer structure comprising a thin amorphous boron layer having no morphological growth features as the low atomic layer, and a transition metal layer as the high atomic number layer.

5,389,446

COPPER FOIL FOR PRINTED CIRCUITS

Keisuke Yamanishi, and Kazuhiko Sakaguchi, both of Hitachi, Japan, assignors to Nikko Gould Foil Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 17,587
Claims priority, application Japan, Feb. 19, 1992, 4-069807
Int. Cl.[6] C23C *16/06*
U.S. Cl. 428—472 4 Claims

1. A copper foil for printed circuits having a shiny side with a coating layer thereon, the coating layer comprising chromium oxide and nickel, and either or both of zinc and zinc oxide.

5,389,447

POLYMERS OF 2,2-DISUBSTITUTED-3-HYDROXYPROPIONIC ACID FOR CERAMIC PROCESSING

Roe C. Blume; Lewis E. Manring, and William G. Peet, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 20, 1989, Ser. No. 368,517
Int. Cl.[6] C08G *63/06;* C04B *35/64*
U.S. Cl. 428—480 20 Claims

1. A binder composition consisting essentially of a mixture of at least two polymers of a 3-hydroxypropionic acid disubstituted at the 2-position by alkyl or hydrocarbon aryl or both, said composition having a glass transition temperature in the range of −30° C. to −40° C. being substantially to completely amorphous, displaying no crystalline exotherm in differential scanning calorimetry in a temperature range of −100° C. to +150° C. and volatilizing substantially cleanly at below 400° C. leaving a low carbon residue.

5,389,448

BLENDS OF POLYPROPYLENE AND ETHYLENE COPOLYMER AND FILMS MADE FROM THE BLEND

Henry G. Schirmer; Allen C. Williams, Jr., both of Spartanburg, and Martin Nelson, Greer, all of S.C., assignors to W.R. Grace & Co.-Conn., Duncan, S.C.

Division of Ser. No. 810,003, Dec. 18, 1991, which is a continuation of Ser. No. 659,215, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 566,594, Aug. 13, 1990, abandoned. This application Apr. 2, 1993, Ser. No. 42,429
Int. Cl.[6] B32B *27/28, 27/32*
U.S. Cl. 428—517 16 Claims

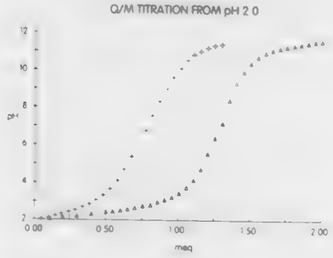
1. A multilayer film comprising the following layers, each of a), b), and c) having a different polymer composition:
a) a core layer comprising propylene polymer or copolymer, and very low density polyethylene;
b) two outer layers each comprising a styrene diene copolymer; and
c) two intermediate layers each bonding the core layer to a respective outer layer, and comprising a polymeric adhesive.

5,389,449

SULFONAMIDE BONDED HYDROPHILIC COATINGS

Noubar B. Afeyan, Brookline; Hossein K. Hodjat, Jamaica Plain, and Laszlo Varady, Malden, all of Mass., assignors to PerSeptive Biosystems, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 637,482, Jan. 4, 1991, abandoned. This application Jan. 5, 1993, Ser. No. 467
Int. Cl.[6] B01D *15/08;* B05D *3/10;* C08F *8/32, 8/38*
U.S. Cl. 428—523 13 Claims



1. A method of preparing a chromatography matrix having an anion exchange layer covalently bonded to a surface of a hydrophobic organic polymer comprising the steps of:
a. reacting said hydrophobic polymer at a temperature above 4° C. with a halosulfonating agent selected from the group consisting of chlorosulfonic acid and fluorosulfonic

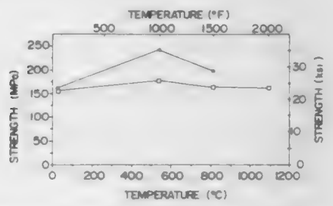
acid in a concentration of at least 10 mmol per gram of said polymer, thereby selectively forming halosulfone groups covalently bonded onto said polymer and minimizing formation of sulfonate groups;
b. washing the halosulfonated polymer formed in step (a) with water or an organic solvent; and
c. reacting said halosulfone groups with a polyaminated polymer having plural amine groups per molecule of said polymer to form sulfonamide bonds between said halosulfonated polymer and said plural amine groups of said polyaminated polymer thereby producing a non-cross-linked polymeric anion exchange layer covalently bonded to said hydrophobic polymer, said layer being stable in the absence of cross-links between the molecules of said polyaminated polymer.

5,389,450

COMPOSITE MATERIALS AND METHODS FOR MAKING THE SAME

Christopher R. Kennedy; Birol Sonuparlak, both of Newark; Ali S. Fareed, Wilmington; John E. Garnier, Newark, and Gerhard H. Schiroky, Hockessin, all of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation-in-part of Ser. No. 862,397, Apr. 2, 1992, which is a continuation-in-part of Ser. No. 61,854, Jun. 12, 1987, Pat. No. 5,202,059. This application Jan. 11, 1993, Ser. No. 3,202
Int. Cl.[6] B22F *5/00;* B05D *5/00*
U.S. Cl. 428—552 22 Claims



1. A permeable mass adapted for use as a reinforcing component in a composite, said composite comprising a ceramic matrix embedding said permeable mass, wherein said permeable mass comprises:
a first ceramic filler material comprising a plurality of layers comprising at least one fiber material; and
a second ceramic filler material comprising at least one ceramic filler material different from said fiber material disposed between at least two of said layers, said different ceramic filler material having a thermal expansion coefficient which is less than the thermal expansion coefficient of said ceramic matrix.

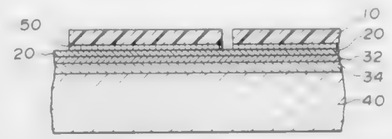
5,389,451

LAMINATED STEEL SHEET FOR WELDED CAN

Naoyuki Ooniwa; Hiroyuki Kato, and Takaaki Kondo, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 34,136
Claims priority, application Japan, Mar. 25, 1992, 4-067498; Mar. 31, 1992, 4-074928
Int. Cl.[6] B32B *15/08*
U.S. Cl. 428—612 20 Claims

1. A laminated steel sheet for a welded can comprising:
a steel sheet;
a plating layer formed on the steel sheet, said plating layer having a top surface with a roughness represented by a PPI of 5 to 150, wherein the PPI is the number of peaks per inch exceeding 0.5 μm appearing in the top surface of said plating layer as seen in a cross-section of the plating layer;
said plating layer having a tinning layer and a chemical treatment layer; said tinning layer being formed on the steel sheet and said chemical treatment layer being formed on the tinning layer;
said tinning layer having a coating weight of 0.9 g/m^2 to 2.8 g/m^2;
said chemical treatment layer containing 5 mg/m^2 to 50 mg/m^2 of metallic chromium and hydrated chromium oxide containing 5 mg/m^2 to 25 mg/m^2 of chromium; and



a resin film bonded by thermo-compression on the plating layer in a band form;
said resin film being a biaxially oriented film of a polyethylene terephthalate copolymer, said polyethylene terephthalate copolymer having an acid component of which 0.5 mol % to 10 mol % is isophthalic acid.

5,389,452

ALUMINUM PLATE EXCELLENT IN FORMABILITY

Hiroki Nakajima; Kimikazu Ikemoto, both of Toyota; Yoshirou Tomioka, Anjo; Yutaka Suzuki, Toyota; Shinichiro Nakamura, Nagoya; Masaru Adachi, Osaka; Yuzo Kawakami, Kainan; Kuniaki Matsui, and Tsuneharu Mori, both of Moka, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Kabushiki Kaisha Kobe Seiko Sho, Kobe, both of Japan

Filed May 6, 1993, Ser. No. 57,472
Claims priority, application Japan, May 8, 1992, 4-115850
Int. Cl.[6] B32B *15/04*
U.S. Cl. 428—624 12 Claims

1. A plated aluminum plate for fabrication comprising a plating layer of another metal on the surface of an aluminum plate and an oily film of a lubricant having a saponification value of 20 to 100 mgKOH/g, said lubricant comprising:
(A) 13–40% by weight of a fatty acid ester of a polyol,
(B) 11–25% by weight of an alkali metal salt of sulfonic acid or an alkaline earth metal salt of sulfonic acid, and
(C) 30–60% by weight of a controlling agent for controlling the viscosity and saponification value of the lubricant.

5,389,453

ALUMINUM ALLOY MATERIAL HAVING A SURFACE OF EXCELLENT ZINC PHOSPHATE PROCESSABILITY

Kikurou Toyose, Mooka; Hideo Fujimoto, Kugetanishi; Akihiro Tsuruno, Mooka; Masao Takemoto, Shimonoseki; Eiki Usui; Masahiro Kawaguchi, both of Mooka; Kouki Ikeda; Jun Hisamoto, both of Kobe, and Nagisa Takee, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 754,953, Sep. 5, 1991, abandoned. This application May 17, 1993, Ser. No. 62,141
Int. Cl.[6] B32B *15/20*
U.S. Cl. 428—639 18 Claims

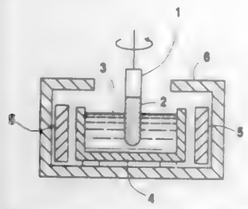
1. An aluminum alloy material having a surface suitable for zinc phosphate processing prepared by a process comprising the steps of 1) cleaning the aluminum alloy surface, and 2) forming a composite film layer comprising Zn metal, 8.3–25% by wt, Ni or 5.8–16.6% by wt, Mn metal, and Si oxide wherein said film is present in an amount greater than 0.2 g/m^2 and less than 2 g/m^2 on the surface of the aluminum alloy.

5,389,454

SILICIDE COATING HAVING GOOD RESISTANCE TO MOLTEN METALS

John C. Wood, and Shoichi Katoh, both of Saitama, Japan, assignors to Praxair S.T. Technology, Inc., Danbury, Conn.

Filed Oct. 28, 1993, Ser. No. 142,018
Claims priority, application Japan, Dec. 21, 1992, 4-356381
Int. Cl.[6] B32B 15/00
U.S. Cl. 428—641 2 Claims



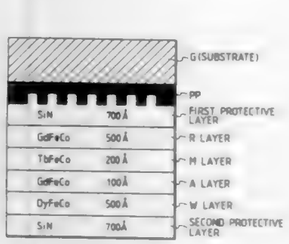
1. An article resistant to attack by molten metal comprising a substrate having a first layer consisting of Mo-B on its surface and a top layer comprising a refractory metal silicide being expressed by the formula: MSi_2, where M is at least one metal element selected from the group consisting of Cr, Mo, Ta, Nb, W, Zr, Ti and V, on the first layer.

5,389,455

OVER-WRITE CAPABLE MAGNETOOPTICAL RECORDING MEDIUM HAVING C/N RATIO EXCEEDING 53 DB

Jun Saito, Tokyo; Tetsuo Hosokawa, Yokohama; Akio Okamuro, Yokohama; Hiroyuki Matsumoto, Tokyo; Haruhisa Iida; Satomi Kokai, both of Yokohama, and Hideki Akasaka, Kamagaya, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 948,166
Claims priority, application Japan, Jan. 7, 1992, 4-000435
Int. Cl.[6] G11B 5/66
U.S. Cl. 428—694 EC 2 Claims



1. An over-write capable magnetooptical recording medium capable of performing an over-write operation by pulse modulating a laser beam between a high intensity level and a low intensity level in accordance with binary coded information to be recorded, comprising:

a substrate;

at least four layers on said substrate including a readout layer, a memory layer, an adjusting layer for an exchange coupling force σ_W, and a writing layer; and

a protective layer provided on the reproduction light incidence side of said at least four layers,

wherein said readout layer essentially consists of GdFeCo, said memory layer essentially consists of TbFeCo, said adjusting layer for the exchange coupling force σ_W essentially consists of GdFeCo, and said writing layer essentially consists of DyFeCo, and said medium exhibits a C/N ratio exceeding 53 dB, the C/N ratio being a value obtained when a plurality of marks having a period of 1.6 μm are written, and are read out so that medium noise is maximized as compared to other noise, said marks being formed by the high intensity level of said laser beam;

wherein said readout layer has a composition of $Gd_a(Fe_{1-b}Co_b)_{1-a}$, said memory layer has a composition of $Tb_c(Fe_{1-d}Co_d)_{1-c}$, said adjusting layer has a composition of $Gd_e(Fe_{1-f}Co_f)_{1-e}$, and said writing layer has a composition of $Dy_g(Fe_{1-h}Co_h)_{1-g}$, for a =10 to 24 atm. %, b=10 to 50 atm. %, c=18 to 25 atm. %, d=more than 0 and not more than 10 atm. %, e=30 to 40 atm. %, f=more than 0 and not more than 50 atm. %, g=25 to 30 atm. %, and h=30 to 50 atm. %; and

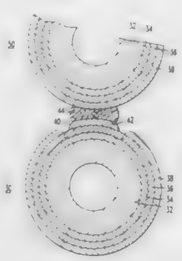
wherein the thickness of the readout layer is within a range between 200 and 600Å, the thickness of the memory layer is within a range between 200 and 600Å, the thickness of the adjusting layer is within a range between 50 and 200Å, and the thickness of the writing layer is within a range between 400 and 1500Å.

5,389,456

METHOD AND CLOSING PORES IN A THERMALLY SPRAYED DOPED LANTHANUM CHROMITE INTERCONNECTION LAYER

Prabhakar Singh, Export, and Roswell J. Ruka, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 14, 1994, Ser. No. 195,935
Int. Cl.[6] H01M 8/10; B05D 5/12
U.S. Cl. 429—27 19 Claims



1. A method of forming a dense, substantially gas-tight, electrically conductive interconnection layer on a porous electrically conductive electrode structure, comprising the steps of:

a. providing an electrode structure;

b. forming by thermal spraying a doped $LaCrO_3$ powder, on a selected portion of the electrode structure, a layer of porous, doped $LaCrO_3$ interconnection material bonded to the electrode surface;

c. depositing on the surface of said porous, doped $LaCrO_3$ layer a mixture comprising CaO and Cr_2O_3 capable of forming, in part, liquid $CaCrO_4$ upon heating; and,

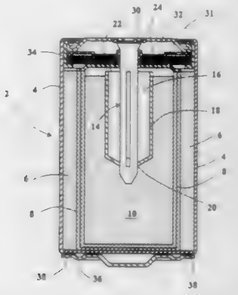
d. heating said porous, doped $LaCrO_3$ layer with the CaO and Cr_2O_3 surface deposit in air at from about 1000° C. to 1200° C. to form, in part, liquid $CaCrO_4$, such that the pores of said porous thermally sprayed porous doped $LaCrO_3$ interconnection layer are substantially closed, at least on the surface, to provide a dense, substantially gas-tight, electrically conductive interconnection material bonded to the electrode surface.

5,389,457

GAS FILLED COLLAPSIBLE MEMBER WITHIN ANODE TO ACCOMMODATE EXPANSION OF ANODE

Lewis F. Urry, Elyria, Ohio, assignor to Eveready Battery Company, Inc., St. Louis, Mo.

Filed Aug. 9, 1993, Ser. No. 103,377
Int. Cl.[6] H01M 2/26
U.S. Cl. 429—66 18 Claims



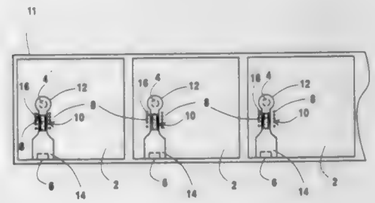
1. A galvanic cell comprising a conductive container; a cathode electrode in electronic contact with the container and said container functioning as the first terminal of the cell; a separator disposed within said cathode electrode to form a cavity within said cathode electrode, said separator permitting ion transport; an anode electrode disposed within said cavity and electronically insulated from the cathode electrode by said separator; an anode current collector in electronic contact with said anode electrode and in electronic contact to an external terminal of the cell in which said external terminal functions as the second terminal of the cell; and said anode current collector comprises a gas filled collapsible member disposed within said anode electrode and having an opening into a confined space in the cell and said gas filled collapsible member adapted to accommodate expansion of the anode electrode.

5,389,458

BATTERY WITH TESTER LABEL AND METHOD FOR PRODUCING IT

Victor H. Weiss, Plantation, Fla., and Jeffrey L. Anderson, Excelsior, Minn., assignors to Eveready Battery Company, Inc., St. Louis, Mo.

Filed May 3, 1993, Ser. No. 56,158
Int. Cl.[6] H01M 2/02
U.S. Cl. 429—90 19 Claims



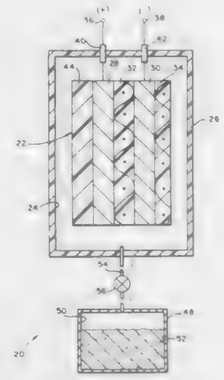
1. A tester label assemble on a battery having a first terminal and a second terminal of opposite polarity; said battery tester label consisting essentially of a nonconductive film at least partially encasing said battery and having a top surface and bottom surface and said film defining a first opening exposing a segment of the first terminal and a spaced apart second opening exposing a segment of the second terminal of the battery; an expanded thermal and electrical insulating material disposed on the top surface of the nonconductive film between said first opening and said second opening, wherein said expanded insulating material is selected from the group consisting of foaming inks, PVC foams, acrylic foams and polyethylene foams and said expanded insulating material has a porosity of at least 10 percent; a conductive circuit layer disposed over the first opening, the second opening, and at least a portion of the expanded insulating material so that a first segment of conductive circuit layer can be deflected through the first opening to contact the first terminal, a second segment of the conductive circuit layer can be deflected through the second opening to contact the second terminal with the remaining segment of the conductive circuit layer being electrically and thermally insulated from the terminals of the battery by the expanded insulating material; a thermally sensitive material disposed in responsive contact with the conductive circuit layer such that when the first segment and second segment of the conductive circuit layer contact the first terminal and second terminal respectively, a current will flow through the conductive layer and heat the thermally sensitive material which will indicate the capacity of the battery.

5,389,459

DISTRIBUTED ENERGY SYSTEM

John C. Hall, 18334 Montpere Way, Saratoga, Calif. 95070

Filed Jan. 14, 1994, Ser. No. 181,846
Int. Cl.[6] H01M 12/08
U.S. Cl. 429—101 5 Claims



1. A metal oxide-hydrogen battery system comprising:

a first vessel having a first enclosed compartment;

battery cell means disposed in said first vessel;

a second vessel remote from said first vessel having a second enclosed compartment containing a solid state metal hydride capable of sublimating hydrogen gas to thereby develop a pressure within said second vessel in the range of approximately 1 to 10 psig;

conduit means providing communication between the first compartment and the second compartment; and

valve means for controlling the flow to said first vessel of hydrogen gas from the second vessel.

5,389,460

VIBRATION-RESISTANT BATTERY HAVING INDIVIDUALLY SUPPORTED STORAGE CELLS

Walter R. Oswald, Huntington Beach; Steven J. Stadnick, Lakewood; Allen R. Powers, Venice, and David W. Wong, Torrance, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 31, 1994, Ser. No. 221,335
Int. Cl.[6] H01M 2/10, 10/34
U.S. Cl. 429—101 19 Claims

1. A battery, comprising:

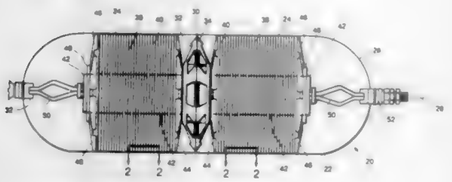
a battery container, comprising:

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a battery wall having oppositely disposed battery ends, and

stack support means for supporting internal structure within the battery wall, the stack support means being supported from the battery wall at a location between the battery ends and including means for vibrationally decoupling loads supported on the stack support means;

a first cell stack supported from a first side of the stack support means and extending in a first direction therefrom; and



a second cell stack supported from a second side of the stack support means and extending in a second direction therefrom, opposite to the first direction, each of the first cell stack and the second cell stack comprising

storage cell means for electrolytically storing energy, at least some portion of the storage cell means extending to the battery wall to form a mechanical contact therewith,

means for supporting the storage cell means from the stack support, and

means for making electrical contact to the storage cell means.

5,389,461

ELECTROCHEMICAL BATTERY WITH MOBILE ELECTRODES

Jacques Rebondy, Quaix en Chartreuse, and Jean-Pierre Galves, Meylan, both of France, assignors to Thomson Tubes Electroniques, Velizy, France

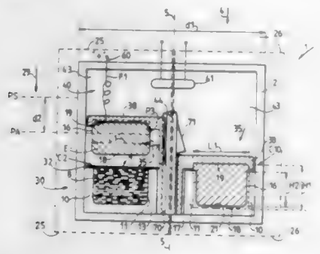
PCT No. PCT/FR92/00826, § 371 Date Apr. 29, 1993, § 102(e) Date Apr. 29, 1993, PCT Pub. No. WO93/05542, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 28, 1992, Ser. No. 39,421

Claims priority, application France, Sep. 3, 1991, 91 10865

Int. Cl.[6] H01M *6/38, 6/14*

U.S. Cl. 429—113 **6 Claims**



1. An electrochemical battery having:

a group of mobile electrode carrying plates, said plates having electrodes affixed thereon; and

a fixed electrolyte container having electrolyte therein, said electrolyte extending throughout said container in an uncompartmented manner when said battery is in a storage state where said electrodes are out of contact with said electrolyte, and said electrolyte being compartmented into several individual portions, the individual portions isolated from each other by said electrode carrying plates when said battery is in an activated state, the electrodes in contact with said electrolyte in the activated state.

5,389,462

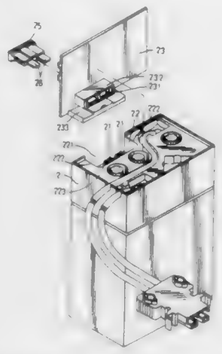
STORAGE BATTERY

Hsien-Chih Lin, Tainan City, Taiwan, Prov. of China, assignor to Ztong Yee Industrial Co., Ltd., Taiwan, Prov. of China

Filed Nov. 17, 1993, Ser. No. 154,876

Int. Cl.[6] H01M *2/02*

U.S. Cl. 429—121 **3 Claims**



1. In a storage battery including a top end which has a depression formed adjacent to a periphery of said top end and a cover lid for covering said top end, said depression having a bottom on which two sockets are mounted, said socket being connected respectively to positive and negative terminal ends of said storage battery, said cover lid having a through-hole to receive a fuse plug therethrough such that two legs of said fuse plug extending slidingly into said sockets;

the improvement comprising: said depression being confined by a surrounding wall which has an opening to permit access into said depression, said cover lid having a shielding plate extending perpendicular from the cover lid to shield said opening.

5,389,463

BATTERY SEPARATOR

Victor S. Chang, Ellicott City; Richard T. Giovannoni, Columbia; Richard C. Hartwig, Laurel, all of Md.; Joseph T. Lundquest, Gilroy, Calif.; Christian B. Lundsager, Ashton, Md.; Marc E. Parham, Bedford, and Anthony J. Laccetti, North Andover, both of Mass., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Apr. 1, 1993, Ser. No. 41,646

The portion of the term of this patent subsequent to Sep. 13, 2011, has been disclaimed.

Int. Cl.[6] H01M *2/16*

U.S. Cl. 429—142 **15 Claims**

1. A battery separator comprising a microporous sheet product having a thickness of less than about 50 mils bound by first and second major surfaces of the sheet product, comprising a substantially uniform mixture of from 1:4 to 4:1 wt. ratio of a halogenated polyolefin polymer and a particulate filler with a porous sheet embedded between the first and second major surfaces of the sheet product, and having porosity throughout the sheet product's thickness with a pore size distribution such that the average pore size increases from each major surface towards an interior, central portion of the sheet product's thickness.

5,389,464

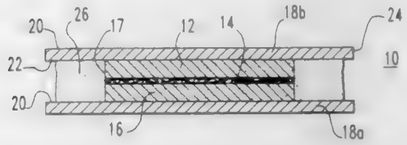
BIPOLAR CELL STACK ELECTROLYTE CONTAINMENT FOR MOLTEN SALT BATTERIES

Steven J. Specht, Concord, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 18, 1993, Ser. No. 137,340

Int. Cl.[6] H01M *2/08, 10/18*

U.S. Cl. 429—152 **18 Claims**



1. Multicell battery formed of cells stacked in series and comprising a peripheral seal each cell having a positive electrode and a negative electrode that contain an electrolyte having a melting point lower than an operating temperature of the battery, each cell further being separated from an adjacent cell by a respective bipolar wall, such that selected cells are bounded by opposed faces of two bipolar walls, the seal comprising:

a higher melting point salt provided peripherally around the electrodes of selected cells on at least one of the cell's opposed bipolar wall faces, the salt having a melting point that is greater than the operating temperature of the battery.

5,389,465

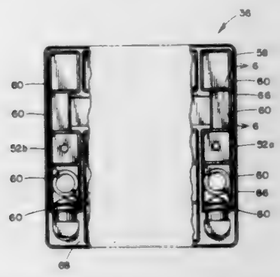
SNAP FIT BATTERY CASE AND METHOD

John Hooke, Warrensburg, Mo., assignor to Hawker Energy Products, Inc., Warrenburg, Mo.

Continuation of Ser. No. 887,436, May 21, 1992, abandoned. This application Jan. 26, 1994, Ser. No. 187,789

Int. Cl.[6] H01M *2/08*

U.S. Cl. 429—172 **6 Claims**



1. In a snap-fit battery case for a lead-acid cell, said case having a jar and a lid, said jar having a perimeter defining an opening, said case housing at least one positive electrode plate, at least one negative electrode plate, a separator interposed between the electrode plates, acid electrolyte absorbed in the electrode plates and separator, and electrical connections each extending from an electrode plate through the case to an output terminal, said lid being sealed to said jar, an improvement comprising:

a peripheral channel in one of said lid and said jar, indentation means in a first wall of said channel and urging projection means in an opposite second wall of said channel, said urging projection means protruding from said second wall into said channel and toward said first wall,

the other of said lid and said jar having a perimeter wall defined by a substantially uninterrupted first surface and an irregularly-shaped second surface, retaining projection means extending from said second surface and configured complementarily to said indentation means, said channel being adapted to slidingly receive said perimeter wall in a direction from an open end of said channel to a closed end of said channel such that said perimeter wall first surface engages said channel urging projection means to bias said perimeter wall towards said channel first wall and said channel indentation means is adapted to receive said perimeter wall projection means in snap-fit fashion so as to retain said lid and said jar in mating relationship.

5,389,466

BATTERY TERMINAL

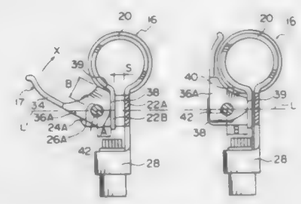
Nori Inoue, and Athushi Sakatani, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jun. 18, 1993, Ser. No. 78,119

Claims priority, application Japan, Jun. 23, 1992, 4-043602[U]

Int. Cl.[6] H01M *2/30*

U.S. Cl. 429—178 **5 Claims**



1. A battery terminal comprising:

a main body comprising:

an annular electrode-engaging portion into which a battery post is inserted, said electrode-engaging portion having an open free end;

first and second tightening plates extending from said open free end of the electrode-engaging portion;

an electric wire-connecting portion extending from one of the first tightening plate, the second tightening plate, and a portion of the annular electrode-engaging portion;

a lever-holding portion being continuous with the first tightening plate and projecting toward the second tightening plate; and

a lever which is pivotal about a pivotal axis and has a cam-shaped bearing portion which is supported on the lever-holding portion;

wherein the bearing portion of the lever has a curved first side and a straight second side, and an intersection between the first side and, the second side, the intersection being located rearwardly of a line to the second side and passing through the pivotal axis of the lever; the distance between the pivotal axis of the lever and the first side is shorter than the distance between the pivotal axis of the lever and the second side; and the straight second side presses the second tightening plate toward the first tightening plate in response to pivotal motion of the lever, thus closing the free end of the electrode-engaging portion and pressing the electrode-engaging portion against the battery post.

5,389,467

RECHARGEABLE GALVANIC LITHIUM CELL

Rudolf Herr, and Hans-Walter Praas, both of Kelkheim, Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Germany

Filed May 11, 1994, Ser. No. 241,016

Claims priority, application Germany, May 21, 1993, 4317032

Int. Cl.[6] H01M *10/40*

U.S. Cl. 429—194 **15 Claims**

1. A rechargeable galvanic lithium cell having a negative

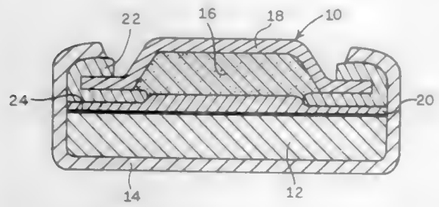
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electrode, a positive electrode and an electrolyte comprised of a mixture of lithium tris(fluorosulphonyl)methanide, $LiC(SO_2F)_3$, dissolved in organic solvents or in organic polymers.

5,389,468
ALKALINE STORAGE BATTERY
Shozo Fujiwara, Neyagawa; Yoichi Izumi, Habikino; Yoshio Moriwaki, Hirakata, and Isao Matsumoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 11, 1993, Ser. No. 29,525
Claims priority, application Japan, Oct. 9, 1992, 4-297667
Int. Cl.[6] H01M *10/26, 4/36*
U.S. Cl. 429—206 42 Claims

1. An alkaline storage battery comprising a positive electrode made primarily of a metal oxide, a negative electrode made primarily of hydrogen storage alloy particles, a separator and an alkaline electrolyte, where said hydrogen storage alloy particles are subjected to a surface treatment where base particles consisting of said hydrogen storage alloy particles and fine particles consisting of at least one of particulate metals or alloys having a smaller size and a higher ductility than those of said base particles are subjected therebetween to a mechanical energy primarily derived from compression and attrition forces of said base particles against each other, simultaneously to emboss the surfaces of individual base particles and to allow said fine particles to be deformed and coated under mechanical pressure onto the surfaces of said base particles.

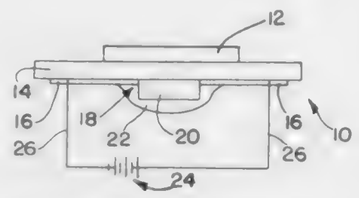
5,389,469
AGO BATTERY, AND MATERIAL
Joseph L. Passaniti, Fitchburg; El-Sayed A. Megahed, Madison, both of Wis., and Nuri A. Zreiba, Tripoli, Libyan Arab Jamahiriya, assignors to Rayovac Corporation, Madison, Wis.
Filed Jun. 14, 1993, Ser. No. 75,889
Int. Cl.[6] H01M *10/26, 4/34*
U.S. Cl. 429—206 29 Claims



1. An electrochemical cell having an anode, an electrolyte, and a cathode body, said cathode body comprising a solid product of a reaction of a first component comprising AgO and a second component comprising bismuth, said reaction taking place under reducing conditions in aqueous alkaline medium at a temperature of at least 40 degrees C.

5,389,470
TEMPERATURE RESPONSIVE BATTERY TESTER
Robert Parker, 212 Wildhorse Dr., Palm Desert, Calif. 92260, and Jack Brass, 96 Hillmount Ave., Toronto, Ontario, Canada M6B 1X6
Filed May 7, 1993, Ser. No. 58,449
Int. Cl.[6] H07M *10/48*
U.S. Cl. 429—90 36 Claims

1. A device for measuring the voltage of a battery, comprising:
a temperature responsive material;
a conductive heating means for heating said temperature responsive material in response to an applied current; and
diode means for applying a current from a battery to said conductive heating means when a battery having a voltage exceeding a threshold conducting voltage of said diode means is electrically connected to said device.



5,389,471
WETTABLE BATTERY SEPARATOR FOR ALKALINE BATTERIES
James K. Kung, Lexington, Mass., assignor to W. R. Grace & Co.-Conn., New York, N.Y.
Continuation-in-part of Ser. No. 48,626, Apr. 16, 1993, Pat. No. 5,298,348. This application Mar. 28, 1994, Ser. No. 218,489
Int. Cl.[6] H01M *2/16*
U.S. Cl. 429—206 16 Claims

1. A separator for an alkaline battery system comprising a porous sheet selected from the group consisting of microporous films, fabrics, and synthetic papers and wherein the sheet is saturated with a resin containing one or more carboxyl groups which have been neutralized with a base so as to form a salt wherein the resin is present in an amount of from about 0.0001 to 3% by weight of the sheet.

5,389,472
PREPARATION OF SILVER VANADIUM OXIDE CATHODES USING AG (O) AND V_2O_5 AS STARTING MATERIALS
Esther S. Takeuchi, Williamsville, and William C. Thiebolt, III, Tonawanda, both of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.
Filed Jun. 3, 1993, Ser. No. 71,518
Int. Cl.[6] H01M *4/04, 4/54*
U.S. Cl. 429—219 20 Claims

1. A method for preparing a cathode of an electrochemical cell, wherein the cathode contains as active material silver vanadium oxide prepared by a chemical addition, or reaction of starting materials, which comprises:
a) combining the starting materials comprising elemental silver with at least one vanadium-containing compound to form an intimate combination of the starting materials comprising an anhydrous mixed metal oxide;
b) thermally treating the anhydrous mixed metal oxide in an inert atmosphere to form an oxygen deficient silver vanadium oxide; and
c) forming a cathode from the oxygen deficient silver vanadium oxide.

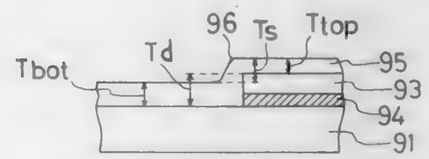
11. A cathode comprising as an active material oxygen deficient silver vanadium oxide prepared by thermally treating an anhydrous mixed metal oxide according to the method of claim 1.

5,389,473
METHOD OF PRODUCING X-RAY GRIDS
Oleg Sokolov, 1-27 Beverbrook Rd., Danbury, Conn. 06810
Filed Nov. 10, 1993, Ser. No. 149,767
Int. Cl.[6] G21K *1/02*
U.S. Cl. 430—4 6 Claims

1. A method of producing an X-ray grid, comprising the steps of

providing a monolithic panel of a photosensitive material;
exposing the panel through a masking device to produce in the panel a hidden image;
developing the hidden image in the panel by a thermal treatment;
etching the photosensitive monolithic panel after said developing so as to form a monolithic grate with a plurality of cells with partitions therebetween; and
covering the partitions with an X-ray absorbing material,
said providing including using as the photosensitive material a photosensitive glass with a differential of solubility not less than 25, and
said exposing including exposing with a radiation having a wavelength which is shorter than a wavelength of an ultraviolet radiation.

5,389,474
MASK FOR PHOTOLITHOGRAPHY
Katsuji Iguchi, Yamatokoriyama; Takashi Fukushima, Shiki, and Hiroki Tabuchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 699,295, Apr. 16, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 47,056
Claims priority, application Japan, Apr. 19, 1990, 2-105832; Jun. 28, 1990, 2-171920
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 11 Claims

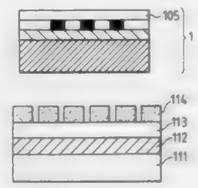


1. A mask for photolithography comprising:
a transparent substrate which allows light having a predetermined wavelength to pass therethrough;
an opaque pattern provided on said substrate for inhibiting the light from passing therethrough;
a stepped portion formed on said substrate which includes at least said opaque pattern; and
a phase shift pattern comprising a transparent film formed over said substrate, said phase shift pattern also covering at least a side of said stepped portion;
the stepped portion having a height substantially equal to $\lambda/\{2(n-1)\}$ where λ represents wavelength of light, and n represents a diffraction rate of the phase shift pattern;
whereby the phase shift pattern at a portion that adjoins the side of the stepped portion has a thickness greater than the thickness of the phase shift pattern on said substrate by $\lambda/\{2(n-1)\}$.

5,389,475
RECORDING MEDIUM AND INFORMATION-ERASING METHOD
Yoshihiro Yanagisawa; Hiroshi Matsuda, both of Isehara; Hisaaki Kawade, Yokohama; Etsuro Kishi, Kawasaki; Haruki Kawada, Yokohama; Hideyuki Kawagishi, Ayase; Kiyoshi Takimoto, Isehara; Yuko Morikawa, Yokohama, and Toshihiko Takeda, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 18, 1992, Ser. No. 900,313
Claims priority, application Japan, Jun. 21, 1991, 3-175856
Int. Cl.[6] G11B *9/00*
U.S. Cl. 430—19 13 Claims

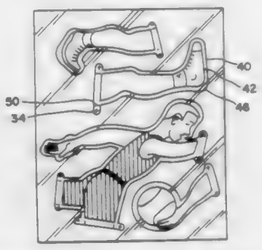
1. A recording medium comprising a substrate electrode, a recording layer having an electric memory effect provided on said electrode and constituted of a monomolecular film of an organic compound or a built-up film thereof, and a photoconductive thin film laminated on said recording layer, said photoconductive thin film being divided into a plurality of isolated sectors.

11. A recording medium comprising a substrate; a substrate



electrode layer; and a recording layer on said substrate electrode layer, said recording layer comprising a first layer and a second layer; said first layer comprising a track region and an adjacent non-track region; and said second layer having a recording region laminated on said first layer.

5,389,476
METHOD FOR PRODUCING LIFE-SIZED DECALS
Steven N. Kruchko, 3839 Central Ave., Western Springs, Ill. 60558
Filed Jun. 8, 1993, Ser. No. 73,772
Int. Cl.[6] B44C *1/16;* G03F *9/00*
U.S. Cl. 430—22 34 Claims



1. A method for making life-sized decals of an original figure on a sheet fed printing press having a maximum sheet size which is smaller than the size of the original figure, comprising the steps of:
creating a photographic image of the original figure;
creating a digitized image which contains the color information and overall shape of the photographic image;
developing the digitized image into plural color separation film negative images which are substantially the same size as the original figure, one film negative for at least each of cyan, magenta, yellow and black;
adding registration marks to the color separation film negative images to form registration lines between proposed image sections;
dividing the color separation film negative images into image sections which are smaller than the maximum sheet size of the printer and which overlap along the registration lines;
transferring the image sections of the color separation film negative images onto printing plates; and
printing the image sections onto sheet material comprising a clear medium removably laminated to a backing sheet, wherein the image sections printed on the clear medium can be removed from the backing sheet and overlapped in registry to reconstruct the original figure in proportions larger than the size of the sheet material.

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PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY AND METHOD FOR MAKING THE PHOTOSENSITIVE MATERIAL

Sohji Tsuchiya, Kanagawa; Atsushi Omote; Hiroki Kusayanagi, both of Kawasaki; Yoshimasa Itoh, Machida, and Takahiro Asano, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

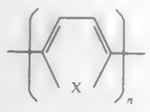
Filed Sep. 10, 1992, Ser. No. 942,888

Claims priority, application Japan, Sep. 13, 1991, 3-234381; Sep. 13, 1991, 3-234382; Oct. 4, 1991, 3-257394; Nov. 5, 1991, 3-288327; Nov. 5, 1991, 3-288328; Dec. 17, 1991, 3-333166; Dec. 17, 1991, 3-333167; Dec. 17, 1991, 3-333168; Dec. 17, 1991, 3-333169; Feb. 21, 1992, 4-034607

Int. Cl.[6] C08G *15/02*

U.S. Cl. 430—57 51 Claims

1. A photosensitive material for electrophotography which comprises a conductive support and a photosensitive layer having a single-layer structure and formed on said conductive support, the photosensitive layer being made of X-type metal-free phthalocyanine, a resin binder, and an electrolytically polymerized product doped with an anion, said product being used in an amount from 1 to 50 wt % based on the phthalocyanine and having recurring units of the following formula



wherein X represents N—H, N-alkyl, S or O and n is an integer of at least 3, the phthalocyanine being dispersed in the resin binder partly in a molecular state and partly in a particulate state.

5,389,478

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, AND ELECTROPHOTOGRAPHIC APPARATUS, DEVICE UNIT, AND FACSIMILE MACHINE EMPLOYING THE SAME

Akira Yoshida, Sagamihara; Koji Goto, and Fumio Sumino, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

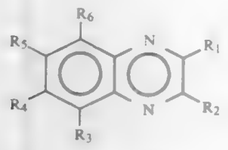
Continuation of Ser. No. 872,143, Apr. 22, 1992, abandoned. This application Aug. 18, 1993, Ser. No. 108,168

Claims priority, application Japan, Apr. 24, 1991, 3-94379

Int. Cl.[6] G03G *5/06*

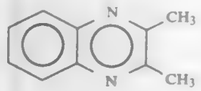
U.S. Cl. 430—59 22 Claims

1. An electrophotographic photosensitive member comprising an electroconductive support, and a photosensitive layer formed thereon, the photosensitive layer containing a compound



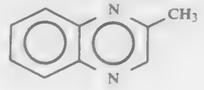
(1)

represented by the formulas (2) and (3) as follows:



(2)

-continued



(3)

5,389,479

ELECTROPHOTOGRAPHIC PHOTOCONDUCTORS CONTAINING A BIS-ENAMINE COMPOUND

Kiyofumi Morimoto, Tenri; Akihiro Kondo, Nara; Satoshi Machino, Joyo; Kazuhiro Emoto, Nagaokakyo, and Akiko Masuda, Gose, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

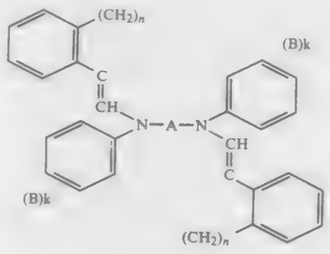
Filed Aug. 24, 1993, Ser. No. 110,929

Claims priority, application Japan, Sep. 28, 1992, 4-258141

Int. Cl.[6] G03G *5/06*

U.S. Cl. 430—59 3 Claims

1. An electrophotographic photoconductor providing a conductive substrate and a photosensitive layer formed thereon, said photosensitive layer comprising a bis-enamine compound of the formula (I):



(I)

wherein A is a C_{6-12} arylene group which may have a substituent, a bivalent heterocyclic residue which may have a substituent, or a C_{2-4} lower alkylene group which may have a substituent; "B" is a lower dialkylamino group, a lower alkoxy group, a lower alkyl group, a hydrogen atom or a halogen atom; and "k" is an integer from 1 to 5 provided that when k is an integer of 2 or more, the Bs, which may be identical or different, may together form a ring; and n is an integer from 2 to 4.

5,389,480

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Hitoshi Ono, Yokohama, and Atsuo Saita, Machida, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

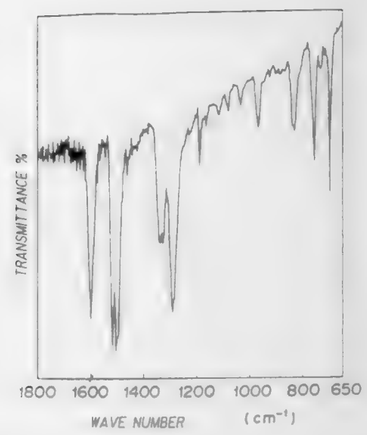
Continuation-in-part of Ser. No. 953,848, Sep. 30, 1992, abandoned. This application Nov. 19, 1993, Ser. No. 154,445

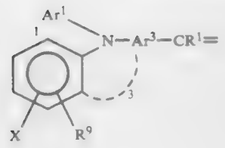
Claims priority, application Japan, Oct. 2, 1991, 3-255341; Oct. 8, 1991, 3-260865; Oct. 22, 1991, 3-274277

Int. Cl.[6] G03G *5/06*

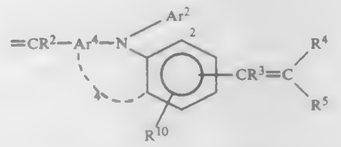
U.S. Cl. 430—59 10 Claims

1. An electrophotographic photoreceptor comprising an electrically conductive substrate and a photosensitive layer formed thereon, wherein said photosensitive layer contains at least one member selected from the group consisting of compounds of the following formulas (I), (II) and (III):



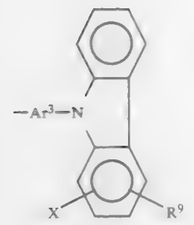


(I)

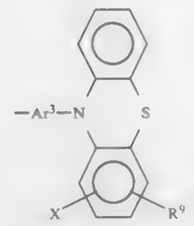


wherein X is a hydrogen atom or a group of $—CR^6═C(R^7)R^8$; each of Ar^1 and Ar^2 which may be the same or different, is an alkyl group which may have substituents, an aryl group which may have substituents, or a heterocyclic group which may have substituents; each of Ar^3 and Ar^4 which may be the same or different, is an arylene group which may have substituents, or a bivalent heterocyclic group which may have substituents; each of R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8 which may be the same or different, is a hydrogen atom, an alkyl group which may have substituents, an aryl group which may have substituents, or a heterocyclic group which may have substituents (provided that when either one of R^4 and R^5 is a hydrogen atom or an alkyl group, the other is an aryl group or a heterocyclic group, and also that when either one of R^7 and R^8 is a hydrogen atom or an alkyl group, the other is an aryl group or a heterocyclic group); each of R^9 and R^{10} which may be the same or different, is a hydrogen atom, a halogen atom, an alkyl group which may have substituents, an alkoxy group which may have substituents, or a substituted amino group; dotted line 1 indicates that Ar^1 may bond as shown by the dotted line to the aromatic group bonded to the nitrogen atom to form a structure of the formula (A-III) or (A-IV), dotted line 2 indicates that Ar^2 may bond as shown by the dotted line to the aromatic group bonded to the nitrogen atom to form a structure of the formula (A-V) or (A-VI), dotted line 3 indicates that Ar^3 may bond as shown by the dotted line to the aromatic group bonded to the nitrogen atom to form a structure of the formula (A-VII) or (A-VIII), and dotted line 4 indicates that Ar^4 may bond as shown by the dotted line to the aromatic group bonded to the nitrogen atom to form a structure of the formula (A-IX) or (A-X):

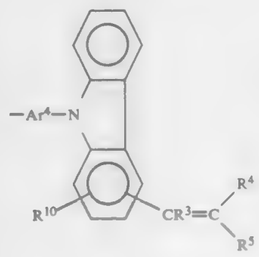
(A-III)



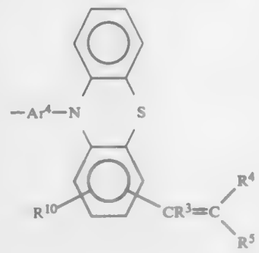
(A-IV)



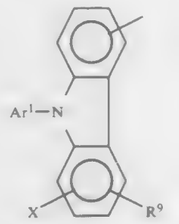
(A-V)



(A-VI)



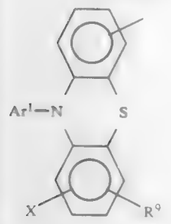
(A-VII)



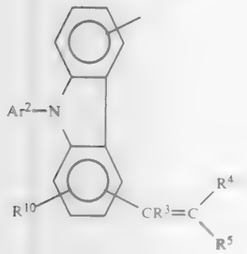
VOL 1171 ISS 2 FE 14 1995 UMI

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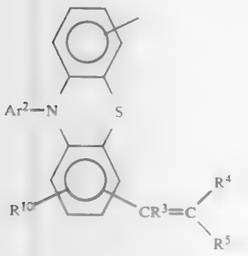
(A-VIII)



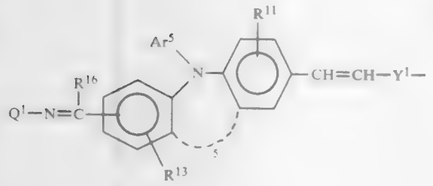
(A-IX)

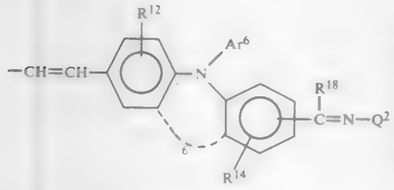


(A-X)



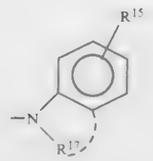
(II)



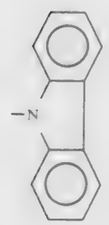


wherein Q^1 is any one of the groups of the following formulas (B-III), (B-VI) and (B-VII); Q^2 is any one of the groups of the following formula (B-VI), (B-VII) and (B-VIII):

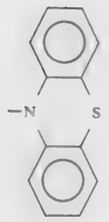
(B-III)



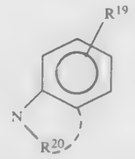
(B-VI)



(B-VII)

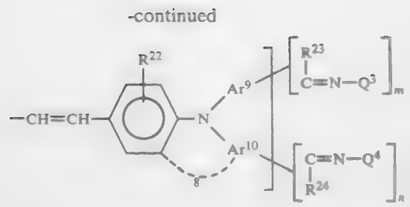


(B-VIII)

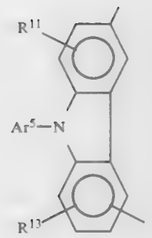


Y^1 is an aliphatic linking group which may have substituents, and the main chain of the linking group may contain an oxygen atom or a carbon-carbon double bond; each of Ar^5 and Ar^6 which may be the same or different, is an alkyl group which may have substituents, an aryl group which may have substituents or a heterocyclic group which may have substituents; each of R^{11}, R^{12}, R^{13}, R^{14}, R^{15} and R^{19} which may be the same or different, is a hydrogen atom, an alkyl group which may have substituents, a halogen atom, an alkoxy group which may have substituents, or a substituted amino group; each of R^{16} and R^{18} which may be the same or different, is a hydrogen atom, an alkyl group which may have substituents, an aryl group which may have substituents, or a heterocyclic group which may have substituents; each of R^{17} and R^{20} which may be the same or different, is an aryl group which may have substituents, a heterocyclic group which may have substituents, or an alkyl group which may have substituents (when R^{17} or R^{20} is an alkyl group, R^{17} or R^{20} may be bonded to a benzene ring as indicated by the dotted line); dotted line 5 indicates that the two phenyl groups bonded to the same nitrogen atom may bond as shown by the dotted line to form a structure of the following formula (B-IX) or (B-XI), and dotted line 6 indicates that the two phenyl groups bonded to the same nitrogen atom may bond as shown by the dotted line to form a structure of the following formula (B-X) or (B-XII):

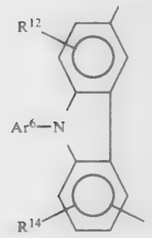
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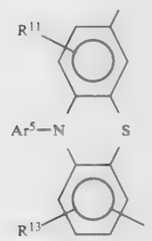
(B-IX)



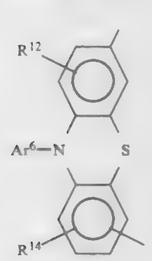
(B-X)

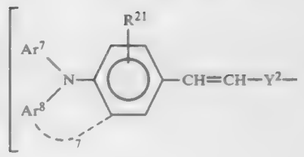


(B-XI)



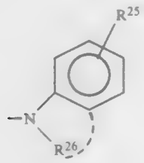
(B-XII)



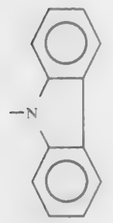


wherein Q^3 is any one of the groups of the following formulas (C-II), (C-V) and (C-VI); Q^4 is any one of the groups of the following formulas (C-V), (C-VI) and (C-VII):

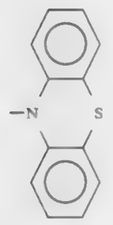
(C-II)



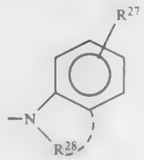
(C-V)



(C-VI)



(C-VII)



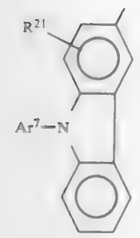
Y^2 is an arylene group which may have substituents, or a bivalent heterocyclic group which may have substituents; each of Ar^7, Ar^9, R^{26} and R^{28} which may be the same or different, is an alkyl group which may have substituents, an aryl group which may have substituents or a heterocyclic group which may have substituents; each of Ar^8 and Ar^{10} which may be the same or different, is an aryl group which may have substituents, or a heterocyclic group which may have substituents; each of R^{21}, R^{22}, R^{25} and R^{27} which may be the same or different, is a hydrogen atom, a halogen atom, an alkyl group which may have substituents, an alkoxy group which may have substituents, or a substituted amino group; each of R^{23} and R^{24} which may be the same or different, is a hydrogen atom, an alkyl group which may have substituents, an aryl group which

(III)

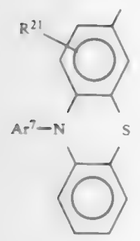
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may have substituents, or a heterocyclic group which may have substituents (when R^{26} or R^{28} is an alkyl group, R^{26} or R^{28} may be bonded to a benzene ring as indicated by the dotted line); dotted line 7 indicates that Ar^8 may bond to the benzene ring to which R^{21} is bonded, as shown by the dotted line to form a structure of the following formula (C-VIII) or (C-IX), and dotted line 8 indicates that Ar^{10} may bond to the benzene ring to which R^{22} is bonded, as shown by the dotted line to form a structure of the following formula (C-X) or (C-XI):

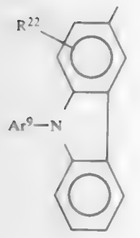
(C-VIII)



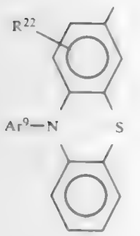
(C-IX)



(C-X)



(C-XI)



and each of m and n is an integer of 0 or 1 and $m+n \geqq 1$.

5,389,481

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Atsuo Saita, Machida; Shuichi Maeda, Hidaka; Kohzo Ishio; Hitoshi Ono, both of Yokohama, and Tetsuo Murayama, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 53,653, Apr. 29, 1993, abandoned. This application Apr. 11, 1994, Ser. No. 225,697

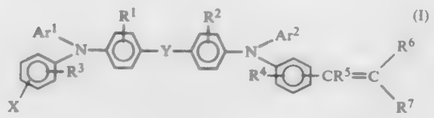
Claims priority, application Japan, Apr. 30, 1992, 4-111828; Sep. 11, 1992, 4-243701; Oct. 19, 1992, 4-280208; Jan. 20, 1993, 5-007832

Int. Cl.[6] **G03G** *5/047, 5/06*

U.S. Cl. 430—59 **16 Claims**

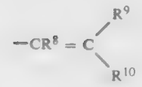
1. An electrophotographic photoreceptor comprising an electrically conductive substrate and a photosensitive layer formed thereon, wherein said photosensitive layer contains an arylamine compound of the following formula (I):

(I)



wherein X is a hydrogen atom or a group of the formula (II):

(II)



Y is a group of the formula (III) or (IV):

$$-O-A^1-O- \quad \text{(III)}$$

$$-A^2-O-A^3- \quad \text{(IV)}$$

wherein A^1 in the formula (III) is a bivalent hydrocarbon residue which may have substituents, and each of A^2 and A^3 in the formula (IV) is an alkylene group which may have substituents, an arylene group which may have substituents, or a group wherein an alkylene group which may have substituents and an arylene group which may have substituents, are bonded, and A^2 and A^3 may be the same or different from each other; each of Ar^1 and Ar^2 which may be the same or different, is an alkyl group which may have substituents, an aryl group which may have substituents, or a heterocyclic group which may have substituents; each of R^1, R^2, R^3 and R^4 which may be the same or different, is a hydrogen atom, a halogen atom, an alkyl group which may have substituents, an alkoxy group which may have substituents, or a substituted amino group; each of R^5, R^6, R^7, R^8, R^9 and R^{10} which may be the same or different, is a hydrogen atom, an alkyl group which may have substituents, an aryl group which may have substituents, or a heterocyclic group which may have substituents, or R^6 and R^7, or R^9 and R^{10} are condensed to form a carbon ring group which may have substituents, or a heterocyclic group which may have substituents, provided that with respect to the pair of R^6 and R^7 and the pair of R^9 and R^{10}, when one of each pair is a hydrogen atom or an alkyl group, the other is an aryl group or a heterocyclic group.

9. The electrophotographic photoreceptor according to claim 1, wherein the photosensitive layer comprises a carrier generation layer and a carrier transport layer, and the carrier transport layer contains the arylamine compound of the formula (I).

5,389,482

MAGNETIC PARTICLE POWDER INCLUDED IN MAGNETIC TONERS FOR MAGNETIC IMAGE CHARACTER RECOGNITION

Yoji Okano; Kazuo Fujioka; Koso Aoki; Hiromitsu Misawa; Eiichi Kurita, all of Hiroshima, and Yasuhiko Fujii, Otake, all of Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Filed Apr. 23, 1992, Ser. No. 872,399

Int. Cl.[6] **G03G** *9/083*

U.S. Cl. 430—106.6 **6 Claims**

1. A magnetic toner used for magnetic image character recognition, said toner containing a magnetic particle powder comprising magnetite particles having a residual magnetization of from 12 to 20 emu/g, containing from 18.5 to 22.5% by weight of Fe^{2+}, coated with silicon oxide, aluminum oxide or a mixture thereof, and having a specific surface area of from 3.5 to 9.5 m^2/g.

5,389,483

ELECTROPHOTOGRAPHIC TONER HAVING TWO ETHYLENE POLYMERS

Shoji Kawasaki, Yokohama; Nobuhiro Hirayama, Hiratsuka; Kenji Uchiyama, Odawara; Hisatomo Sato, Yokohama, and Hiromi Akiyama, Hiratsuka, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 743,371, Aug. 26, 1991, abandoned. This application Jun. 9, 1993, Ser. No. 74,158

Claims priority, application Japan, Dec. 26, 1989, 1-334822

Int. Cl.[6] **G03G** *9/087*

U.S. Cl. 430—109 **12 Claims**

1. An electrophotographic toner composition, comprising, as a principal component, a mixture of (X) 20–80 parts by weight of a first ethylene polymer having a weight-average molecular weight (Mw) of at least 200,000 and (Y) 80–20 parts by weight of a second ethylene polymer having a Z average molecular weight/number-average molecular weight ratio (Mz/Mn) of at least 6 and a Mw of not greater than 50,000, said second ethylene polymer being obtained by subjecting an ethylenically-unsaturated monomer to solution polymerization.

5,389,484

TONER FOR DEVELOPING ELECTROSTATIC IMAGES, IMAGE FORMING APPARATUS, APPARATUS UNIT AND FACSIMILE APPARATUS

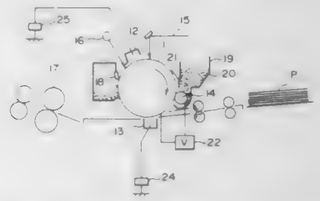
Kazuyoshi Hagiwara, Tokyo, and Hirohide Tanikawa, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 868,966, Apr. 16, 1992, abandoned. This application Feb. 17, 1994, Ser. No. 197,555

Claims priority, application Japan, Apr. 16, 1991, 3-109684; Apr. 26, 1991, 3-097245; Mar. 31, 1992, 4-077447; Apr. 13, 1992, 4-118496

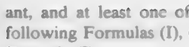
Int. Cl.[6] **G03G** *9/00*

U.S. Cl. 430—109 **40 Claims**



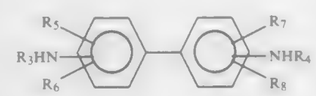
1. A toner for developing electrostatic images comprising: toner particles, wherein each of said toner particles contains a binder resin having as a constituent an acid component with an acid value of from 0.5 mg.KOH/g to 100 mg.KOH/g, a colorant, and at least one of the compounds represented by the following Formulas (I), (II) and (III):

Formula (I)



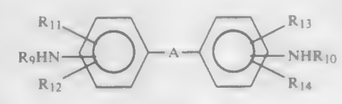
wherein Ar represents a substituted or unsubstituted aryl group; and R_1 and R_2 are the same or different and each represent a hydrogen atom, an alkyl group or a phenyl group which is substituted or unsubstituted, and a nitrogen-containing ring structure formed by combining at least one of them with Ar or a nitrogen-containing ring structure formed by combining both of them with each other; and

Formula (II)



where R_3 and R_4 are the same or different and each represent a hydrogen atom, an alkyl group or a phenyl group which is substituted or unsubstituted; and R_5, R_6, R_7 and R_8 are the same or different and each represent a hydrogen atom, an alkyl group, a hydroxyl group, an alkoxy group, a mercapto group, an alkylthio group, an amino group, an alkylamino group, a dialkylamino group, a halogen atom, a phenyl group which is substituted or unsubstituted, an alkenyl group, a nitrogen-containing ring structure formed by combining R_5 and R_6 with each other and a nitrogen-containing ring structure formed by combining R_7 and R_8 with each other;

Formula (III)



wherein A represents a linking group, R_9 and R_{10} are the same or different and each represent a hydrogen atom, an alkyl group or a phenyl group, which is substituted or unsubstituted; and R_{11}, R_{12}, R_{13} and R_{14} are the same or different and each represent a hydrogen atom, an alkyl group, a hydroxyl group, an alkoxy group, a mercapto group, an alkylthio group, an amino group, an alkyl amino group, a dialkylamino group, a halogen atom, a phenyl group which is substituted or unsubstituted an alkenyl group, a nitrogen-containing ring structure formed by combining R_{11} and R_{12} with each other, and a nitrogen-containing ring structure formed by combining R_{13} and R_{14} with each other.

5,389,485

TONER

Yoshimichi Katagiri, Chigasaki; Yuzo Horikoshi, Isehara, and Norio Sawatari, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 718,897, Jun. 21, 1991, abandoned. This application Nov. 24, 1992, Ser. No. 981,995

Claims priority, application Japan, Jun. 22, 1990, 2-165177; Jun. 22, 1990, 2-165178

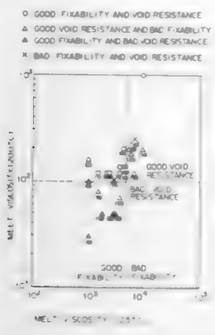
Int. Cl.[6] **G03G** *9/00*

U.S. Cl. 430—110 **3 Claims**

1. A toner for the use in a flush light fixing apparatus which carries out fixing of the toner by means of a flush light, comprising a polymeric surface tension reducing agent and a binder

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resin, characterized in that the melt viscosity of said toner and the surface tension thereof both at a temperature of 200° C. are,



respectively, 30 poises or more and below 15 dyne/cm, said toner being fixed by the flush light fixing apparatus.

5,389,486

ELECTROPHOTOGRAPHIC TONER

Tadayuki Kiyoyanagi, Urawa; Junko Yoshioka, Yono; Shigeo Yamamura, Omiya, and Masaharu Nomura, Hasuda, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

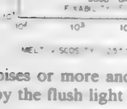
Continuation-in-part of Ser. No. 844,473, Mar. 2, 1992, abandoned. This application Aug. 5, 1993, Ser. No. 102,706

Claims priority, application Japan, Mar. 5, 1991, 3-062499; Jan. 17, 1992, 4-025980

Int. Cl.[6] **G03G** *9/00*

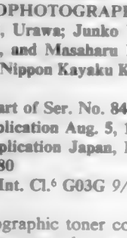
U.S. Cl. 430—110 **11 Claims**

1. An electrophotographic toner containing a binder resin and at least one charge control agent represented by the following formula (1):



(1)

wherein R_1, R_2 and R_3 independently represent an alkyl group having 4 to 8 carbon atoms, a cycloalkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted benzyl group; R_4 represents an alkenyl group, 3-phenyl-2-propenyl group, an alkynyl group, 3-phenyl-2-propynyl group, or a group represented by the formula:



where R_5, R_6, R_7 and R_8 independently represent hydrogen atom, acetyl group, an alkyl group having 1 to 5 carbon atoms, methoxy group, ethoxy group, hydroxyl group, dimethylamino group, diethylamino group, or amino group, and Y represents hydrogen atom, an alkyl group having 1 to 8 carbon atoms, an aryl group having 6 to 8 carbon atoms, at aralkyl group having 7 to 10 carbon atoms, or a group of —CO—O—R_9 or —CO—NH—R_9 where R_9 represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted cycloalkyl group; and X^- represents an anion.

5,389,487

IMAGE FORMING PROCESS, IMAGE-FORMING APPARATUS, APPARATUS UNIT, AND FACSIMILE APPARATUS

Hiroaki Kawakami; Shinji Doi, both of Kawasaki; Keita Nozawa; Masatsugu Fujiwara, both of Yokohama, and Masashi Jimbo, Asaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 120,849, Sep. 15, 1993, abandoned, which is a continuation of Ser. No. 799,328, Nov. 27, 1991, abandoned. This application May 3, 1994, Ser. No. 237,409

Claims priority, application Japan, Nov. 29, 1990, 2-325532; Feb. 8, 1991, 3-017644; Feb. 28, 1991, 3-055568; Mar. 8, 1991, 3-067753; Apr. 5, 1991, 3-099747

Int. Cl.[6] **G03G** *13/08*

U.S. Cl. 430—120 **75 Claims**

1. An image forming process comprising: a step of feeding a developer from a feeding roller onto a developer-carrying member, a step of applying the developer onto the developer-carrying member in a predetermined layer-thickness by pressing the developer against the developer-carrying member with a blade and simultaneously giving an electrostatic charge to the developer by friction, a step of forming a developed image by developing an electrostatic image formed on a latent image holding member with the developer applied on the developer-carrying member, a step of transferring the developed image onto a recording medium, and a step of fixing the transferred developed image on the recording medium by action of heat and pressure:

wherein said developer is a non-magnetic one-component type developer comprising non-magnetic toner, the non-magnetic toner containing at least a binder resin and a releasing agent; the binder resin having a THF-soluble portion and less than 10% by weight of a THF-insoluble portion based on the binder resin, the THF-soluble portion having a molecular weight distribution curve pattern wherein a ratio of weight-average molecular weight/number-average molecular weight (Mw/Mn) is not less than 8, and at least one peak in the range of molecular weight of from 3.0×10^3 to 4.5×10^4(MA), at least one peak in the range of molecular weight of from 3.8×10^5 to 1.0×10^6(MB), and a local minimum point in the range of molecular weight of from 2.0×10^4 to 3.8×10^5(Md) are present, and peak molecular weight ratio MB/MA is from 10 to 150, and the ratio of SA:SB:Sd is 1:(0.2–0.7):(0.2–0.8) where SA is the area under the molecular weight distribution curve at the molecular weight range of 400 to Md, SB is the area under the molecular weight distribution curve at the molecular weight range of Md to 5.0×10^6, and Sd is the area surrounded by the molecular weight distribution curve and the straight line drawn from the peaktop at MA to the peaktop at MB;

the releasing agent having a number-average molecular weight of not higher than 3.0×10^3, a weight average molecular weight of not higher than 1.2×10^4, and a ratio of weight-average molecular weight/number average molecular weight of not more than 4, and a melting point of from 60° to 150° C., and being contained in the non-magnetic toner in an amount of from 0.1 to 20% by weight based on the binder resin.

5,389,488

Patent Not Issued For This Number

5,389,489

IMAGE-FORMING MATERIAL

Naoto Yanagihara; Tosiaki Endo, and Naotaka Wachi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

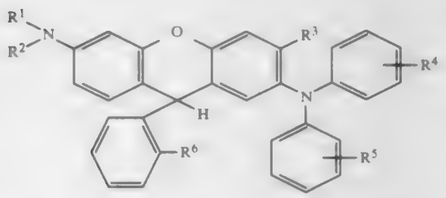
Filed May 19, 1993, Ser. No. 63,467

Claims priority, application Japan, May 26, 1992, 4-133925

Int. Cl.[6] **G03C** *1/73*

U.S. Cl. 430—138 **10 Claims**

1. An image-forming material comprising a support having thereon a coating layer containing (A) at least a microcapsule, wherein the microcapsule encapsulates (1) a leuco dye that forms a black color tone upon oxidative development and (2) a photo-oxidizing agent, and (B) a reducing agent, wherein the leuco dye is a xanthene derivative represented by the following formula (I):



(I)

wherein R^1 and R^2, which are the same or different, each represents a hydrogen atom, an alkyl group, an aralkyl group, or an aryl group; R^3 represents a hydrogen atom, an alkoxy group, an aryloxy group, an alkylthio group, or an arylthio group; one of R^4 and R^5 each represents a hydrogen atom, an alkyl group, or an alkoxy group and the other one of R^4 and R^5 represents a trifluoromethyl group, an arylsulfonyl group, an alkylsulfonyl group or an N-substituted sulfamoyl group where R^3 represents a hydrogen atom, and R^4 and R^5 each represents a hydrogen atom, an alkyl group or an alkoxy group where R^3 is an alkoxy group, an aryloxy group, an alkylthio group or an arylthio group; and R^6 represents a hydrogen atom, an alkyl group, or a substituted carbonyl group; and wherein R^1 and R^2, may be bonded to each other to form a ring which may include an unsaturated bond or a hetero ring.

5,389,490

CAPSULE TONER AND PROCESS FOR PRODUCING THE SAME

Kazufumi Tomita; Izuru Matsui, and Koichi Takashima, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 94,348

Claims priority, application Japan, Jul. 24, 1992, 4-198523

Int. Cl.[6] **G03G** *9/093*

U.S. Cl. 430—138 **20 Claims**

1. A capsule toner comprising a core material containing a fixing component, an outer shell covering said core material, and a chargeable substance adhered on the surface of said outer shell, said outer shell containing a polyurea resin obtained from at least an aliphatic polyisocyanate and an aromatic polyisocyanate and/or a polyurethane resin obtained from at least an aliphatic polyisocyanate and an aromatic polyisocyanate.

5,389,491

NEGATIVE WORKING RESIST COMPOSITION

Yoshiyuki Tani; Masayuki Endo, both of Kadoma; Fumiyoshi Urano, and Takanori Yasuda, both of Kawagoe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma and Wako Pure Chemical Industries, Ltd., Osaka, both of Japan

Filed Jun. 28, 1993, Ser. No. 82,399

Claims priority, application Japan, Jul. 15, 1992, 4-210961

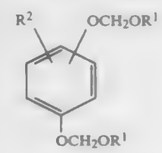
Int. Cl.[6] **G03F** *7/012, 7/021, 7/023*

U.S. Cl. 430—170 **8 Claims**

1. A negative working resist composition comprising an admixture of:

(a) an alkali-soluble resin in a film-forming amount,

(b) a compound of the formula:



[I]

wherein R^1 is an alkyl group having 1 to 10 carbon atoms or an aralkyl group; and R^2 is a hydrogen atom, a hydroxyl group, an alkoxy group having 1 to 5 carbon atoms, an alkyl group having 1 to 10 carbon atoms or a group of the formula: —OCH_2OR^1, in amount sufficient to cross-link with at least a portion of the resin,

(c) a photosensitive compound in an amount sufficient to generate an acid upon exposure to light, and

(d) a solvent in an amount sufficient to dissolve the components (a) to (c).

5,389,492

RESIST COMPOSITION COMPRISING A SILOXANE OR SILSESQUIOXANE POLYMER HAVING SILANOL GROUPS IN A COMPOSITION WITH A NAPHTHOQUINONE COMPOUND

Tadayoshi Kokubo; Atsushi Sakamoto, both of Shizuoka; Akinobu Tanaka, and Hiroshi Ban, both of Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and Nippon Telegraph and Telephone Corporation, Tokyo, both of Japan

Continuation of Ser. No. 708,580, May 31, 1991, abandoned. This application Apr. 8, 1994, Ser. No. 225,088

Claims priority, application Japan, Jun. 1, 1990, 2-141659

Int. Cl.[6] **G03F** *7/023, 7/30*

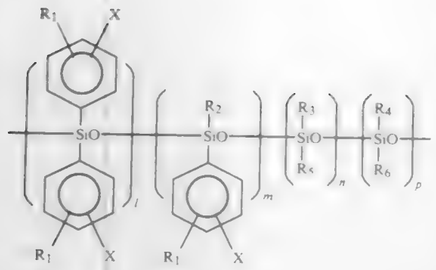
U.S. Cl. 430—191 **2 Claims**

1. A resist composition comprising a mixture of

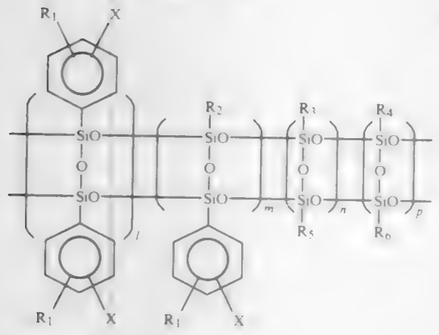
(a) a compound having an active hydrogen and an acid group, said compound being selected from the group consisting of salicylic acid, thiosalicylic acid, p-hydroxybenzoic acid, 3,5-dihydroxybenzoic acid, p-aminobenzoic acid, anthranilic acid, and p-hydroxyphenylacetic acid,

(b) an alkali-soluble siloxane polymer, in a same composition layer, wherein said alkali-soluble siloxane polymer has a molecular weight of 900 or more and contains in molecules thereof at least one unit selected from the group consisting of a unit represented by formula (I) and a unit represented by formula (II):

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(I)



(II)

wherein X's are the same or different and each represents one member selected from the group consisting of hydrogen;



where R represents hydrogen, a hydrocarbon group, or a substituted hydrocarbon group;



where R represents hydrogen, a hydrocarbon group, or a substituted hydrocarbon group; and and a carboxyl group;

R_2, R_3, R_4, R_5, and R_6 are the same or different and each represents one member selected from the group consisting of hydrogen, a hydroxyl group, a substituted or unsubstituted aliphatic hydrocarbon group, and a substituted or unsubstituted aromatic hydrocarbon group, provided that at least one R_2 to R_6 is a hydroxyl group; and wherein R_1 represents one member selected from the group consisting of hydrogen, a substituted or unsubstituted aliphatic hydrocarbon group, and a substituted or unsubstituted aromatic hydrocarbon group,

l, m, n, and p each is 0 or a positive integer, provided that l and m are not 0 at the same time, and m, n, and p are not 0 at the same time, and

(c) an o-naphthoquinone compound.

5,389,493

DYE-RECEIVING RESIN FOR SUBLIMATION TRANSFER IMAGE RECEIVING MATERIAL AND IMAGE RECEIVING MATERIAL COMPRISING SAME

Haruo Asai; Mitsuru Kuwabara; Nobukazu Kotera, and Hiroshi Fujimoto, all of Ohtsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Continuation of Ser. No. 955,864, Dec. 9, 1992, abandoned. This application Feb. 25, 1994, Ser. No. 201,621

Claims priority, application Japan, Feb. 15, 1991, 3-44147; Aug. 30, 1991, 3-246912; Oct. 9, 1991, 3-290537

Int. Cl.[6] G03C *8/00*

U.S. Cl. 430—211 **22 Claims**

1. A sublimination transfer image receiving material comprising a base material and a dye-receiving layer, said dye-receiving layer comprising a lubricant and a polyester resin comprising an aromatic dicarboxylic acid component and a glycol component comprising an alicyclic glycol component.

5,389,494

RADIATION-SENSITIVE MIXTURE AND PRODUCTION OF RELIEF IMAGES

Son N. Kim, Hemsbach, Germany, assignor to Basf Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 3, 1990, Ser. No. 592,297

Claims priority, application Germany, Oct. 25, 1989, 3935451

Int. Cl.[6] G03C *1/492*

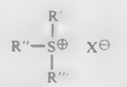
U.S. Cl. 430—270 **8 Claims**

1. A positive-working radiation-sensitive mixture wherein radiated parts become soluble in alkaline developers, consisting essentially of

(a) a binder or binder mixture which is insoluble in water but soluble in aqueous alkaline solutions and

(b) a compound which forms a strong acid on exposure to radiation,

wherein the binder (a) is phenolic resin in which from 5 to 50% of the phenolic hydroxy groups have been replaced by β-halogenated alkyl carbonate groups, and wherein compound (b) is a sulfonium salt of the formula (II)



(II)

where R′, R″ and R‴ are identical or different and are each alkyl of 1 to 3 carbon atoms, phenyl, phenyl substituted by OH or alkyl of 1–3 carbons, or benzyl and $X^{\ominus}$ is $AsF_6^{\ominus}$, $SbF_6^{\ominus}$, $PF_6^{\ominus}$, ClO_4^{θ}, $BF_4^{\ominus}$ and/or $CF_3SO_3^{\ominus}$.

5,389,495

WATERBORNE PHOTORESISTS HAVING NON-IONIC FLUOROCARBON SURFACTANTS

Robert K. Barr, Laguna Niguel, Calif., assignor to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 199,037, Feb. 18, 1994, which is a continuation-in-part of Ser. No. 186,875, Jan. 25, 1994, abandoned. This application Apr. 6, 1994, Ser. No. 223,615

Int. Cl.[6] G03C *1/78*

U.S. Cl. 430—281 **3 Claims**

1. A photoimageable composition that can be borne in water comprising

A) between about 30 and about 80 wt % of a latex binder polymer having carboxylic acid functionality which provides an acid number of between about 50 and about 250;

B) between about 15 and about 50 wt % of a fraction of alpha,beta-ethylenically unsaturated monomers;

C) between about 0.1 and about 25 wt % of a photoinitiator or photoinitiator chemical system which generates free radicals;

D) between about 1 and about 40 wt % of a neutralizing base and/or a polyether polyurethane associate thickener in an amount sufficient to stabilize an emulsion of said latex binder polymer; and,

E) between about 0.5 and about 3.0 wt % of a surfactant which is a fluoroaliphatic oxyethylene adduct having the formula: $CF_3—(CF_2)_n—Y—X_m—Z$; where n=0 to 20, Y=SO_2—N(C_1–C_{10}alkyl), X=$CH_2—CH_2—O$ or $CH(CH_3)—CH_2—O$, m=0 to 20, and Z=$CH_2—CH_2—OH$ or $CH(CH_3)—CH_2OH$, said weight percentages being based on total weight of components A–E.

5,389,496

PROCESSES AND COMPOSITIONS FOR ELECTROLESS METALLIZATION

Jeffrey M. Calvert, Burke, Va.; Walter J. Dressick, Fort Washington, Md.; Gary S. Calabrese, North Andover, and Michael Gulla, Millis, both of Mass., assignors to Rohm and Haas Company, Philadelphia, Pa. and United States of America, Washington, D.C.

Continuation-in-part of Ser. No. 691,565, Apr. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 22,439, Mar. 6, 1987, Pat. No. 5,077,085, which is a continuation-in-part of Ser. No. 182,123, Apr. 14, 1988, Pat. No. 5,079,600. This application May 17, 1993, Ser. No. 62,706

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—315 **35 Claims**

1. A process for forming a patterned electroless metal deposit on a substrate, comprising:

(a) providing a substrate having on at least a portion of its surface one or more multidentate chemical groups capable of ligating to an electroless metallization catalyst;

(b) exposing the substrate to patterned activating radiation to form a pattern of substrate surface areas that are selectively reactive to electroless deposition;

(c) contacting the substrate with an electroless metallization catalyst that is at least substantially tin-free, the electroless metallization catalyst ligating to the multidentate chemical groups on the substrate surface substantially by coordination type binding other than electrostatic interaction; and

(d) contacting the substrate with an electroless metallization solution to form a patterned electroless metal deposit on the substrate surface, said metal deposit corresponding to the pattern of surface areas selectively reactive to electroless deposition formed in said step (b).

5,389,497

METHOD FOR FORMING PATTERNED SOLDER MASK

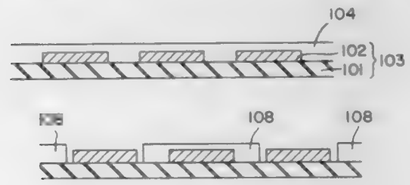
Mitsuo Yoshioka, Hirakata; Yoshikazu Yamagami, Neyagawa; Akio Kashihara, Hirakata, and Kiyomi Sakurai, Yawata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jun. 3, 1993, Ser. No. 70,791

Claims priority, application Japan, Jun. 3, 1992, 4-142549

Int. Cl.[6] G03F *7/16, 7/26*

U.S. Cl. 430—315 **4 Claims**



1. A method for forming a patterned solder mask on a surface of a printed circuit board comprising an insulating substrate and an electroconductive circuit thereon, comprising the following steps:

(1) the step to form on the surface of the printed circuit board a layer of a negative or positive type photosensitive resin composition;

(2) the step to cure the region not forming the solder mask by UV-ray irradiation of thus formed photosensitive resin layer;

(3) the step to remove the uncured region of said photosensitive resin layer;

(4) the step to form a thermosetting resin composition film for solder mask at the region of the surface of the printed circuit board where the uncured photosensitive resin layer has been removed, the thermosetting composition having a difference in surface tension by 5 dyne/cm or more from the cured photosensitive resin composition layer;

(5) the step to cure the thermosetting resin composition by heating; and

(6) the step to remove photosensitive resin layer.

5,389,498

PHOTOCHEMICAL GENERATION OF DYES

Richard J. Ellis, Great Dunmow, Great Britain, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 4, 1993, Ser. No. 147,646

Claims priority, application United Kingdom, Nov. 16, 1992, 9224004

Int. Cl.[6] G03C *1/73*

U.S. Cl. 430—340 **15 Claims**

1. A photosensitive element for the production of near infrared absorbing images having a photosensitive medium comprising a trialkyl orthoester, a photochemical source of a strong acid and a compound of the formula (I):



wherein:

n is 0 or 1,

R^1 and R^2 are independently members selected from the group consisting of hydrogen and alkyl groups of up to 5 carbon atoms and

Ar_1 and Ar_2 are independently members selected from the group consisting of aryl groups bearing an electron-donating substituent in the 4-position.

5,389,499

PHOTOGRAPHIC MATERIAL HAVING FAITHFUL RENDITION OF THE RED COLOR

Jeffrey L. Hall, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 816,011, Dec. 30, 1991, Pat. No. 5,270,152. This application Sep. 8, 1993, Ser. No. 117,787

The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.

Int. Cl.[6] G03C *7/20, 7/18*

U.S. Cl. 430—359 **18 Claims**

1. A color photographic element comprising:

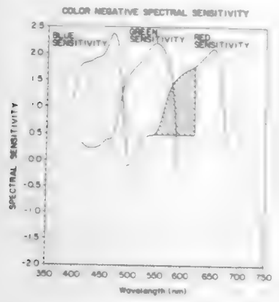
a) a support bearing a fast photographic silver halide cyan image dye-forming layer and a slow photographic silver halide cyan image dye-forming layer, wherein the slow layer is closer to the support than the fast layer, and

b) a color correction layer substantially free of image dye-forming coupler and comprising a spectrally and chemically sensitized photographic silver halide having a maximum absorbance wavelength in the range of about 560 to about 620 nanometers,

wherein said color correction layer is between said fast and slow cyan image dye-forming layers.

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11. A process for developing an image in a photographic element according to claim 1, said process comprising the steps



of imagewise exposing said element to light and developing the exposed element with a silver halide color developing agent.

5,389,500

METHOD FOR FORMING COLOR PHOTOGRAPHIC IMAGES IMPROVED IN COLOR REPRODUCTION

Hiroshi Shimazaki; Kuniaki Uezawa; Satoru Shimba, and Yoshitaka Yamada, all of Hino, Japan, assignors to Konica Corporation, Japan

Continuation of Ser. No. 841,359, Feb. 25, 1992, abandoned. This application Oct. 19, 1993, Ser. No. 139,334
Claims priority, application Japan, Mar. 1, 1991, 3-059542
Int. Cl.[6] G03C *7/46, 1/08, 1/005, 1/494*
U.S. Cl. 430—386 5 Claims

1. A method for forming a color photographic image comprising the steps of:

imagewise exposing a negative photographic light-sensitive material comprising a support having provided thereon a blue-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer, and a red-sensitive silver halide emulsion layer to form an exposed negative material, and developing, bleaching, fixing, washing, and drying said exposed negative material to form a permanent negative material, and

using the permanent negative material to expose a printing silver halide color photographic light-sensitive material comprising a support having provided thereon a yellow color forming layer, a magenta color forming layer, and a cyan color forming layer to form an exposed printing color photographic light-sensitive material, and

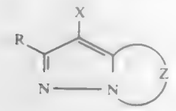
developing said exposed printing color photographic light-sensitive material,

wherein the negative material meets requirement (A), and the print material fulfills requirement (B);

(A) the wavelength λ_B^{max}, a maximum value in the spectral sensitivity distribution of said blue-sensitive silver halide emulsion layer, is from 415 nm to 470 nm, and the sensitivity of said blue-sensitive emulsion layer at 480 nm is not more than 25% of its sensitivity at λ_B^{max},

(B) a magenta color forming layer of the printing color photographic light-sensitive material comprises a magenta coupler represented by Formula 1;

Formula 1



wherein Z represents a group of non-metal atoms necessary to form a nitrogen-containing heterocyclic ring, which may have a substituent, X represents hydrogen or a group capable of being split off by reaction with an oxidation product of a color developing agent, and R represents hydrogen or a substituent.

5,389,501

METHOD OF FIXING A PHOTOGRAPHIC MATERIAL

David N. Rogers, Harrow, and John R. Fyson, Hackney, both of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1993, Ser. No. 83,815
Claims priority, application United Kingdom, Jul. 4, 1992, 9214273
Int. Cl.[6] G03C *5/38*
U.S. Cl. 430—393 13 Claims

1. A method of fixing a photographic element with a fixer solution in which the fixing agent comprises less than 20% ammonium thiosulphate characterised in that the photographic element has incorporated therein a fix accelerator precursor which is a silver salt of an amino thiol having a solubility of less than 1 g/l (as silver ion) when held for 23° C. for 5 minutes in a colour developer solution at pH 10 having a sulphite concentration of 4.25 g/l and a bromide concentration of 1.2 g/l.

5,389,502

HARDENING DEVELOPER FOR SILVER HALIDE PHOTOGRAPHY AND DEVELOPMENT METHOD

Alan S. Fitterman, Rochester, and Jean M. Buongiorne, Brockport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 8, 1994, Ser. No. 193,350
Int. Cl.[6] G03C *5/305*
U.S. Cl. 430—491 20 Claims

1. An alkaline, aqueous black-and-white photographic developer comprising

hydroquinone developing agent,

auxiliary developing agent,

dialdehyde hardener,

organic antifoggant,

sulfite antioxidant,

buffer, and

sequestering agent selected from the group consisting of oligomeric carboxyl substituted hydrocarbons, said hydrocarbons each having at least one subunit having the general structure:



and at least one subunit having the general structure:



wherein said R groups each independently represent an unsubstituted alkyl group having from 2 to 4 carbons.

5,389,503

PHOTOGRAPHIC ELEMENTS FOR PRODUCING BLUE, GREEN, AND RED EXPOSURE RECORDS OF THE SAME HUE

Gareth B. Evans, Potten End; Christopher B. Rider, Mitcham Surrey, and Michael J. Simons, Eastcote, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 93,509, Jul. 16, 1993, Pat. No. 5,350,651.
This application Feb. 22, 1994, Ser. No. 198,415
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—502 6 Claims

1. A photographic element comprised of

a support and, coated on the support,

a sequence of superimposed blue, green and red recording silver halide emulsion layer units that are each chosen to record imagewise exposure in a different one of the blue, green and red portions of the spectrum and each of which produce images of the same hue as the remaining of the silver halide emulsion layer units upon processing, one of the emulsion layer units forming a first emulsion layer unit in the sequence coated nearest the support, another of the emulsion layer units forming a last emulsion layer unit in the sequence coated farthest from the support, and an intermediate emulsion layer unit located between the first and last emulsion layer units, and

a first interlayer coated between the first emulsion layer unit and the intermediate emulsion layer unit capable of transmitting to the first emulsion layer unit electromagnetic radiation the first emulsion layer unit is intended to record and a second interlayer coated between the intermediate emulsion layer unit and the last emulsion layer unit capable of transmitting to the first and intermediate emulsion layer units electromagnetic radiation the first and intermediate emulsion layer units are intended to record,

WHEREIN

the first interlayer contains a dye or a precursor of a dye capable of absorbing after photographic processing scanning radiation within at least a first wavelength region and

the second interlayer contains a dye or a precursor of a dye capable of absorbing after photographic processing scanning radiation within at least the first wavelength region or a second wavelength region.

5,389,504

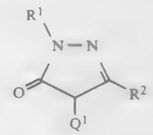
COLOR PHOTOGRAPHIC ELEMENTS CONTAINING A COMBINATION OF PYRAZOLONE AND PYRAZOLOAZOLE COUPLERS

Hans G. Ling, Rochester; Drake M. Michno, Webster, and Stephen Singer, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1993, Ser. No. 82,076
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—506 34 Claims

1. A photographic element comprising a support and first and second green-sensitive silver halide emulsion layers of different sensitivity, wherein said first layer has a higher sensitivity than said second layer and comprises a two-equivalent magenta dye-forming coupler selected from the group consisting of a pyrazolone coupler having a structure according to formula I

(I)



wherein

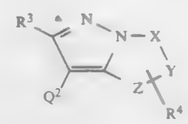
R^1 is an unsubstituted aryl group, or an aryl or pyridyl group substituted with one or more substituents selected from the group consisting of halogen atoms and alkyl, alkoxy, aryloxy, acyloxy, alkoxycarbonyl, aryloxycarbonyl, alkylsulfonyl, arylsulfonyl, sulfamoyl, sulfonamido, carbamoyl, carbonamido, ureido, nitro, cyano and trifluoromethyl;

R^2 is an anilino, acylamino or ureido group which is unsubstituted or substituted with one or more substituents selected from the group consisting of halogen atoms and alkyl, aryl, alkoxy, aryloxy, acyl, acyloxy, alkoxycarbonyl, aryloxycarbonyl, alkylthio, alkylsulfoxyl, arylsulfoxyl, alkylsulfonyl, arylsulfonyl, sulfamoyl, sulfonamido, carbamoyl, carbonamido, carbamate, carboxyl, ureido, nitro, imido, cyano, trifluoromethyl, hydroxyl and heterocyclyl groups and groups which form a link to a polymeric chain, and wherein R^2 contains at least 6 carbon atoms, and

Q^1 is a coupling-off group selected from the group consisting of halogen atoms and alkoxy, aryloxy, alkylthio, arylthio, acyloxy, sulfonamido, sulfonyloxy, carbonamido, arylazo, imido and nitrogen-containing heterocyclic groups,

and a pyrazoloazole coupler having a structure according to formula II

(II)



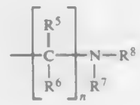
wherein

R^3 is a substituent in the 6-position which does not adversely affect the desired properties of the coupler,

Q^2 is a coupling-off group,

X, Y, Z are individually carbon or nitrogen atoms necessary to complete an azole ring, with unsaturated bonding being present in the ring as needed,

R^4 denotes the group



R^5, R^6 are individually hydrogen or unsubstituted or substituted alkyl or aryl, with the proviso that both are not hydrogen,

n is 1 or 2,

R^7, R^8 are individually hydrogen, unsubstituted or substituted alkyl or aryl, —C(O)—R^9 or —SO_2R^9, at most one of R^7 and R^8 being hydrogen,

R^9 is unsubstituted or substituted alkyl or aryl or —N—H—R^{10}, and

$R^{10}$is unsubstituted or substituted alkyl or aryl,

and wherein said second layer has lower sensitivity than said first layer and comprises a two-equivalent magenta dye-forming coupler selected from the group consisting of couplers defined by formulas I and II,

wherein the activity of said dye-forming coupler present in said second layer of lower sensitivity is less than the activity of said dye-forming coupler present in said first layer of higher sensitivity,

with the proviso that said first layer comprises a coupler of formula I and said second layer comprises a coupler of formula II or said first layer comprises a coupler of formula II and said second layer comprises a coupler of formula I.

5,389,505

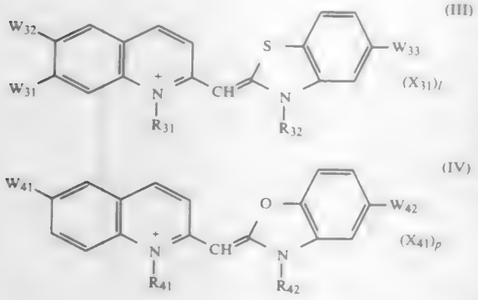
SILVER HALIDE PHOTOGRAPHIC MATERIAL

Junji Nishigaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 31, 1993, Ser. No. 113,766
Claims priority, application Japan, Sep. 18, 1992, 4-249741
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—506 6 Claims

1. A silver halide color photographic material having on a support at least one blue-sensitive silver halide emulsion layer containing at least one yellow-coloring color coupler, at least one green-sensitive silver halide emulsion layer containing at least one magenta-coloring color coupler, and at least one red-sensitive silver halide emulsion layer containing at least one cyan-coloring color coupler, and additionally having on the support at least one silver halide emulsion layer capable of

imparting an interlayer effect to the red-sensitive emulsion layer, in which the layer capable of imparting an interlayer effect has been color-sensitized with at least one sensitizing dye of the general formula (III) and with at least one sensitizing dye of the general formula (IV):



where R_{31}, R_{32}, and R_{41} and R_{42} each represents a sulfoalkyl group or a carboxyalkyl group;

X_{31} and X_{41} each represents a charge-balancing pair ion;

i and p each represents 0 or 1, and where is 1 is 0 the formula (III) compound forms an internal salt, and when p is 0 the formula (IV) compound forms an internal salt,

$W_{31}W_{32}$ and W_{41} each represents an alkyl group having 3 or less carbon atoms, a halogen atom, an aryl group or an aryloxy group; and

W_{33} and W_{42} each represents a halogen atom or an aryl group.

5,389,506

ELEMENTS AND PROCESSES FOR PRODUCING SUPERIOR PHOTOGRAPHIC RECORDS

James E. Sutton, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 905,597, Jul. 26, 1992. This application Aug. 25, 1993, Ser. No. 112,006

Int. Cl.[6] G03C *1/08*

U.S. Cl. 430—509 **30 Claims**

1. A photographic element comprised of a support and at least two silver halide emulsion layers differing in threshold sensitivities for recording exposures within the same region of the spectrum,

wherein

said silver halide emulsion layers differing in threshold sensitivities (1) each record exposures within only one of the blue, green or red regions of the spectrum, (2) are each orthochromatically sensitized to record exposures in the blue and green portions of the spectrum, or (3) are each panchromatically sensitized to record exposures in the blue, green and red portions of the spectrum,

one of said emulsion layers is capable of recording an image that exhibits a higher signal to noise ratio than at least one other of said emulsion layers in at least one exposure range above their threshold sensitivities, and

at least two of the emulsion layers differing in threshold sensitivities each contain a different dye image providing material capable of providing a different image dye after processing, each of said different dye image providing materials being chosen so that when any two of the image dyes produced by said different dye image providing materials are compared, at least 25 percent of the half peak absorption band width of each image dye lies in a spectral region unoccupied by the half peak absorption band width of the compared image dye.

5,389,507

REVERSAL ELEMENTS WITH INTERNAL LATENT IMAGE FORMING CORE-SHELL EMULSIONS

Keath T. Chen, Rochester; Ingo H. Leubner, and Robert A. Arcus, both of Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,450

Int. Cl.[6] G03C *1/035*

U.S. Cl. 430—567 **12 Claims**

1. A reversal photographic element comprising a light sensitive layer containing both surface latent image forming silver halide grains and internal latent image forming silver halide grains and no more than a nominal amount of internally fogged grains, wherein the internal latent image forming grains comprise core-shell grains in which the core has been chemically sensitized, and the surface latent image forming silver halide grains comprise surface chemically sensitized grains.

5,389,508

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shunji Takada; Morio Yagihara; Hisashi Okamura; Hiroshi Kawamoto, and Makoto Kikuchi, all Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 19, 1993, Ser. No. 34,860

Claims priority, application Japan, Mar. 19, 1992, 4-092342

Int. Cl.[6] G03C *1/015, 1/005*

U.S. Cl. 430—367 **8 Claims**

1. A silver halide photographic light-sensitive material comprising at least one light-sensitive silver halide emulsion layer formed on a support, said emulsion layer containing at least one silver halide emulsion which comprises regular crystal grains having a silver halide phase containing silver iodide, said silver halide phase having been formed while iodide ions are rapidly being generated in a reactor vessel, wherein said iodide ions are generated from an iodide ion-releasing agent represented by Formula (I):

R—I Formula (I)

where R represents a monovalent organic residue which releases the iodine atom in the form of ions upon reacting with a base and/or a nucleophilic reagent, which is placed in the reactor vessel, whereby 50% to 100% of said iodide ion-releasing agent completes release of said iodide ions within 180 consecutive seconds in said reactor vessel, and wherein said iodide ions are generated by a reaction of said iodide ion-releasing agent with an iodide ion release-controlling agent.

5,389,509

ULTRATHIN HIGH CHLORIDE TABULAR GRAIN EMULSIONS

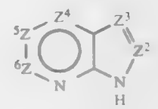
Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1993, Ser. No. 130,978

Int. Cl.[6] G03C *1/015, 1/035, 1/07*

U.S. Cl. 430—567 **13 Claims**

1. A radiation sensitive emulsion containing a silver halide grain population comprised of at least 50 mole percent chloride, based on silver, in which greater than 50 percent of the total grain projected area is accounted for by ultrathin tabular grains having a thickness of less than 360 {111} crystal lattice planes and, adsorbed to the major faces of the ultrathin tabular grains and present in a concentration in excess of that required to provide monomolecular coverage of an area equal to 150 percent of the area of the grain surfaces, a compound of the formula:



where

Z^2 is $—C(R^2)=$ or $—N=$;

Z^3 is $—C(R^3)=$ or $—N=$;

Z^4 is $—C(R^4)=$ or $—N=$;

Z^5 is $—C(R^5)=$ or $—N=$;

Z^6 is $—C(R^6)=$ or $—N=$;

with the proviso that no more than one of Z^4, Z^5 and Z^6 is $—N=$;

R^2 is H, NH_2 or CH_3;

R^3, R^4 and R^5 are independently selected, R^3 and R^5 being hydrogen, hydroxy, halogen, amino or hydrocarbon and R^4 being hydrogen, halogen or hydrocarbon, each hydrocarbon moiety containing from 1 to 7 carbon atoms; and

R^6 is H or NH_2.

5,389,510

PHOTOGRAPHIC ELEMENTS CONTAINING ALKYNYLAMINE DOPANTS

Carl R. Preddy, Rochester; Wai K. Lam, Webster, and Roger Lok, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 16, 1993, Ser. No. 169,832

Int. Cl.[6] G03C *1/10*

U.S. Cl. 430—567 **15 Claims**

1. A photographic element comprising a silver halide emulsion, said emulsion comprising silver halide grains which contain an alkynylamine dopant.

5,389,511

SILVER HALIDE PHOTOGRAPHIC EMULSION AND LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL MAKING USE OF THE SAME

Tomoyuki Nakayama, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 972,420, Nov. 5, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 200,563

Claims priority, application Japan, Nov. 6, 1991, 3-317268

Int. Cl.[6] G03C *1/09*

U.S. Cl. 430—600 **6 Claims**

1. A silver halide photographic emulsion containing silver halide grains having thereon chemically sensitized nuclei, said chemically sensitized nuclei comprising at least two distinctive groups in size distribution, each group contains a chalcogenide, and each group is capable of increasing surface sensitivity of the emulsion.

5,389,512

METHOD FOR DETERMINING THE RELATIVE AMOUNT OF A VIRAL NUCLEIC ACID SEGMENT IN A SAMPLE BY THE POLYMERASE CHAIN REACTION

Shirley Y. Kwok, San Ramon; John J. Sninsky, El Sobrante, both of Calif., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 669,923, Mar. 15, 1991, abandoned, which is a continuation of Ser. No. 254,889, Oct. 7, 1988, abandoned. This application May 20, 1994, Ser. No. 246,395

Int. Cl.[6] C12Q *1/70, 1/68*

U.S. Cl. 435—5 **14 Claims**

1. A method for determining the amount of a viral nucleic acid sequence relative to the amount of a cellular nucleic acid sequence in a sample comprising virally infected host cells, comprising the steps of:

(a) co-amplifying the viral nucleic acid sequence and the cellular nucleic acid sequence in an amplification reaction mixture that comprises a first primer pair for amplifying said viral nucleic acid sequence, a second primer pair for amplifying said cellular nucleic acid sequence and DNA polymerase, wherein the relative concentrations of said first and second primer pairs are adjusted so that the concentration of the primer pair for amplification of the nucleic acid sequence present in the greatest amount is lower than the concentration of the primer pair for amplification of the nucleic acid sequence present in the smallest amount,

(b) measuring the amounts of amplified viral and cellular nucleic acid sequences produced in step (a); and

(c) determining the amount of said viral nucleic acid sequence relative to the amount of said cellular nucleic acid sequence present in said sample prior to the co-amplification in step (a).

5,389,513

METHOD FOR DETECTING *LISTERIA MONOCYTOGENES*

Fernando Baquero, Madrid, Spain, and Pascale Cossart, Paris, France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 227,402, Aug. 2, 1988, abandoned, which is a continuation of Ser. No. 143,490, Jan. 13, 1988, abandoned. This application Apr. 22, 1991, Ser. No. 688,826

Int. Cl.[6] C12Q *1/68;* **C07H** *21/04*

U.S. Cl. 435—6 **12 Claims**

1. A method for the detection of *Listeria monocytogenes* in a sample, wherein said method comprises:

(a) placing the sample in a media capable of supporting growth of bacteria of the genus Listeria;

(b) disrupting any bacterial cells present in the sample to release bacterial DNA;

(c) additionally treating said disrupted sample to denature the bacterial DNA;

(d) contacting said denatured bacterial DNA with an oligonucleotide under hybridization conditions whereby said oligonucleotide can hybridize to denatured *L. monocytogenes* DNA;

(e) detecting any hybridized oligonucleotide; and

(f) correlating presence of hybridized oligonucleotide with the presence of *L. monocytogenes;* and

further wherein said oligonucleotide is one strand of a HindIII restriction fragment of the sequence:

```
5'-AA GCTTATCCAA ATGTAAGTGC
3'-TT CGAATAGGTT TACATTCACG

AAAAATTGAT TATGATGACG AAATGGCTTA
TTTTTAACTA ATACTACTGC TTTACCGAAT

CAGTGAATCA CAATTAATTG CGAAATTTGG
GTCACTTAGT GTTAATTAAC GCTTTAAACC

TACAGCATTT AAAGCTGTAA ATAATAGCTT
ATGTCGTAAA TTTCGACATT TATTATCGAA

GAATGTAAAC TTCGGCGCAA TCAGTGAAGG
CTTACATTTG AAGCCGCGTT AGTCACTTCC

GAAAATGCAA GAAGAAGTCA TTAGTTTTAA
CTTTTACGTT CTTCTTCAGT AATCAAAATT

ACAAATTTAC TATAACGTGA ATGTTAATGA
TGTTTAAATG ATATTGCACT TACAATTACT

ACCTACAAGA CCTTCCAGAT TTTTCGGCAA
TGGATGTTCT GGAAGGTCTA AAAAGCCGTT

AGCTGTTACT AAAGAGCAGT TGCAAGCGCT
TCGACAATGA TTTCTCGTCA ACGTTCGCGA

TGGAGTGAAT GCAGAAAATC CTCCTGCATA
ACCTCACTTA CGTCTTTTAG GAGGACGTAT
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TATCTCAAGT GTGGCGTATG GCCGTCAAGT
ATAGAGTTCA CACCGCATAC CGGCAGTTCA

      TTATTTGAAA TTATCAACTA ATTCCCATAG
      AATAAACTTT AATAGTTGAT TAAGGGTATC

TACTAAAGTA AAAGCTGCTT TTGATGCTGC
ATGATTTCAT TTTCGACGAA AACTACGACG

      CGTAAGCGGA AAATCTGTCT CAGGTGATGT
      GCATTCGCCT TTTAGACAGA GTCCACTACA

AGAACTAACA AATATCATCA AAAATTCTTC
TCTTGATTGT TTATAGTAGT TTTTAAGAAG

      CTTCAAAGCC GTAATTTACG GAGGTTCCGC
      GAAGTTTCGG CATTAAATGC CTCCAAGGCG

AAAAGATGAA GTTCAAATCA TCGACGGCAA
TTTTCTACTT CAAGTTTAGT AGCTGCCGTT

      CCTCGGAGAC TTACGCGATA TTTTGAAAAA
      GGAGCCTCTG AATGCGCTAT AAAACTTTTT

AGGCGCTACT TTTAATCGAG AAACACCAGG
TCCGCGATGA AAATTAGCTC TTTGTGGTCC

      AGTTCCCATT GCTTATACAA CAAACTTCCT
      TCAAGGGTAA CGAATATGTT GTTTGAAGGA

AAAAGACAAT GAATTAGCTG TTATTAAAAA
TTTTCTGTTA CTTAATCGAC AATAATTTTT

      CAACTCAGAA TATATTGAAA CAACTTCAAA
      GTTGAGTCTT ATATAACTTT GTTGAAGTTT

AGCTT-3'
TCGAA-5'.
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5,389,514

METHOD FOR SPECIFICALLY ALTERING THE NUCLEOTIDE SEQUENCE OF RNA

John Taylor, Cheltenham, Pa., assignor to Fox Chase Cancer Center, Philadelphia, Pa.

Filed Aug. 28, 1992, Ser. No. 937,490
Int. Cl.[6] C12Q *1/69, 1/02;* C12P *19/34*
U.S. Cl. 435—6 13 Claims

12. A method for specifically editing an RNA molecule by converting a target uridine disposed within said RNA molecule to cytidine, said method comprising:

a) hybridizing said RNA molecule with a single stranded complementary nucleic acid at least 10 nucleotides in length, having a sequence complementary to a segment of said RNA molecule comprising said target uridine flanked on both sides by at least four nucleotides, thereby forming a hybrid molecule having a double stranded nucleic acid structure of at least ten base pairs, in which said target uridine is disposed at least four nucleotides inward from each terminus of said double stranded structure;

b) providing a nuclear extract having an RNA editing component which converts uridine to cytidine when said uridine is disposed within a double stranded nucleic acid structure of at least ten base pairs, at least four nucleotides inward from each terminus of said double stranded structure;

c) exposing said hybrid molecule to said nuclear extract to promote promoting conversion of said target uridine to cytidine, thereby specifically editing said RNA molecule.

5,389,515

ISOLATED NUCLEOTIDE SEQUENCES FOR IDENTIFYING *NEISSERIA GONORRHOEAE*

Rich Chmelo, and Lisa Foltz, both of Indianapolis, Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Sep. 15, 1992, Ser. No. 945,159
Int. Cl.[6] C12Q *1/68;* C07H *21/04*
U.S. Cl. 435—6 11 Claims

1. Isolated nucleic acid molecule useful in specifically identifying *Neisseria gonorrhoeae* in a sample, said molecule selected from the group consisting of nucleic acid molecules having the nucleotide sequence set forth in: SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, and a complementary to SEQ ID NO: 4, a nucleic acid molecule complementary to SEQ ID NO: 5, and a nucleic acid molecule complementary to SEQ ID NO: 6.

5,389,516

CDNA PROBES AND ANTIBODIES FOR HUMAN METHENYLTETRAHYDROFOLATE SYNTHETASE

Jacques Jolivet, Montréal, Canada; Alain Dayan, Tours, France, and Richard Bertrand, Outremont, Canada, assignors to Universite de Montreal, Montreal, Canada

Filed Mar. 19, 1993, Ser. No. 33,857
Int. Cl.[6] C12N *15/11, 15/12, 15/52;* C12Q *1/68*
U.S. Cl. 435—6 3 Claims



1. A cDNA probe for the detection of the mRNA for human methenyltetrahydrofolate synthetase, which comprises at least one nucleic acid sequence, selected from the group consisting of:

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                                G GCC AAC      —1

ATG GTG AAA CCC CAT CTC TAT CAG
    AAA TAC AAA AGA ATT TCC ATC      45

TTT CTG AGC ATG CAA GAT GAA ATT
    GAG ACA GAA GAG ATC ATC AAG      90

GAC ATT TTC CAA CGA GGC AAA ATC
    TGC TTC ATC CCT CGG TAC CGG     135

TTC CAG AGC AAT CAC ATG GAT ATG
    GTG AGA ATA GAA TCA CCA GAG     180

GAA ATT TCT TTA CTT CCC AAA ACA
    TCC TGG AAT ATC CCT CAG CCT     225

GGT GAG GGT GAT GTT CGG GAG GAG
    GCC TTG TCC ACA GGG GGA CTT     270

GAT CTC ATC TTC ATG CCA GGC CTT
    GGG TTT GAC AAA CAT GGC AAC     315
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CGA CTG GGG AGG GGC AAG GGC TAC
    TAT GAT GCC TAT CTG AAG CGC     360

TGT TTG CAG CAT CAG GAA GTG AAG
    CCC TAC ACC CTG GCG TTG GCT     405

TTC AAA GAA CAG ATT TGC CTC CAG
    GTC CCA GTG AAT GAA AAC GAC     450

ATG AAG GTA GAT GAA GTC CTT T   472
```

Seq. Id. No. 1 and a 238bp SphI/StyI restriction endonuclease fragment thereof.

5,389,517

SPECIFIC ANTIBODIES AGAINST THE DNA-BINDING DOMAIN OF AND IMMUNOASSAYS TO DETERMINE THE PRESENCE AND FUNCTIONAL STATUS OF ESTROGEN RECEPTOR PROTEINS

Herbert H. Wotiz, Milton, and Abdulmaged M. Traish, Belmont, both of Mass., assignors to Trustees of Boston University, Boston, Mass.

Continuation of Ser. No. 784,626, Nov. 11, 1991, Pat. No. 5,312,752, which is a continuation of Ser. No. 388,091, Jul. 31, 1989, abandoned. This application Jun. 18, 1993, Ser. No. 77,880
Int. Cl.[6] G01N *33/53, 33/577*
U.S. Cl. 435—7.1 8 Claims

1. An in-vitro method for ascertaining the functional status of human estrogen receptor protein via the presence of activated but untransformed 4S forms, and activated and transformed 5S forms of human estrogen receptor protein in a cellular sample, said method comprising the steps of:

providing at least one monoclonal antibody specific for an epitope within amino acid residues 247–261 of human estrogen receptor protein, said monoclonal antibody having binding specificity for a single epitope within the DNA-binding domain in the activated but untransformed (4S) forms and in the activated and transformed (5S) forms of human estrogen receptor protein but which does not bind with the native (8S) forms of human estrogen receptor protein;

mixing said monoclonal antibody with a cellular sample whereby said monoclonal antibody binds specifically to the DNA-binding domain of such (4S) and (5S) forms of human estrogen receptor protein as are present in said cellular sample; and

identifying the presence of bound monoclonal antibody within said cellular sample, the presence of said bound monoclonal antibody serving as a measure of the 4S and 5S forms of and ascertaining the functional status of human estrogen receptor protein within the cellular sample.

5,389,518

MONOCLONAL ANTIBODIES DIRECTED AGAINST VITRONECTIN AND FIBRONECTIN, AND USES THEREOF

John G. Steele, North Rocks, and Patricia A. Underwood, Annandale, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Act, Australia

PCT No. PCT/AU90/00039, § 371 Date Aug. 1, 1991, § 102(e) Date Aug. 1, 1991, PCT Pub. No. WO90/08834, PCT Pub. Date Aug. 9, 1990
PCT Filed Feb. 5, 1990, Ser. No. 730,931
Claims priority, application Australia, Feb. 3, 1989, PJ2529
Int. Cl.[6] G01N *33/554*
U.S. Cl. 435—7.21 12 Claims

1. A monoclonal antibody A27 bovine vitronectin such that the bound vitronectin retains its cell binding activity, the monoclonal antibody being produced by hybridoma cell line ECACC 89011102.

5,389,519

METHOD OF SCREENING FOR INFERTILITY

Richard A. Bronson, Huntington, N.Y., assignor to The Research Foundation of the State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 740,042, Aug. 1, 1991, Pat. No. 5,256,539. This application Mar. 25, 1992, Ser. No. 857,165
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[6] E01N *33/567, 33/53*
U.S. Cl. 435—7.21 12 Claims

7. A method for detecting the inability of a sample of mammalian spermatozoa to undergo capacitation comprising:

potentiating a sample of spermatozoa obtained from said subject by subjecting it to conditions suitable for inducing capacitation of said sample; and

contacting said sample to at least one of a polyclonal or a monoclonal antibody which specifically binds a polypeptide comprising an Arginine-Glycine-Aspartate amino acid triplet for a sufficient period of time and under conditions suitable to permit binding of said antibody with said spermatozoa, and determining the extent of antibody binding, wherein a relative increase in antibody binding is indicative of whether the spermatozoa have undergone capacitation and wherein a lack of binding is indicative of the absence of capacitation.

5,389,520

SPECIFIC DETECTION OF CELL SURFACE RECEPTOR LEUKOCYTE ADHESION MOLECULE-1

Thomas F. Tedder, South Natick; Boris Schleiffenbaum, Brookline, both of Mass., and Olivier Spertini, Assens, Switzerland, assignors to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 730,503, Jul. 8, 1991, abandoned, which is a continuation of Ser. No. 313,109, Feb. 21, 1989, abandoned, and a continuation-in-part of Ser. No. 700,773, May 15, 1991, abandoned, and a continuation-in-part of Ser. No. 737,092, Jul. 29, 1991, abandoned, and a continuation-in-part of Ser. No. 770,608, Oct. 3, 1991. This application Apr. 2, 1992, Ser. No. 862,483
Int. Cl.[6] G01N *33/577*
U.S. Cl. 435—7.24 6 Claims

2. A method for identifying cells expressing LAM-1 in a medium suspected of containing shed LAM-1 comprising reacting a monoclonal antibody reactive with LAM-1 and not reactive with shed LAM-1 with a population of cells in a medium suspected of containing shed LAM-1 and visualizing cells to which said antibody binds.

5,389,521

CARBOHYDRATE RECEPTOR FOR BACTERIA AND METHOD FOR USE THEREOF

Howard C. Krivan, Rockville; Ginsburg Victor, Bethesda, and David D. Roberts, Rockville, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 226,445, Aug. 1, 1988, Pat. No. 5,217,715. This application Jan. 13, 1993, Ser. No. 3,915
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[6] G01N *33/569*
U.S. Cl. 435—7.33 3 Claims

2. A method for detecting the presence or absence of bacteria in a culture, the bacteria being selected from the group consisting of Pseudomonas, Haemophilus, Staphylococcus, Klebsiella and *Streptococcus pneumoniae,* the method comprising:

providing a suspension of a purified carbohydrate compound bound to an insoluble carrier, said carbohydrate compound selected from the group consisting of fucosyl-

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asialo GM1, asialo GM1, asialo GM2 and mixtures thereof; and

contacting the suspension of carbohydrate compound bound to insoluble carrier with the bacteria in the culture whereby perceptible agglutination of the insoluble carrier indicates the presence of the bacteria and the lack of perceptible agglutination indicates the absence of the bacteria.

5,389,522

SERUM ANTIOXIDANTS AS PREDICTORS OF THE ADULT RESPIRATORY DISTRESS SYNDROME IN SEPTIC PATIENTS

John E. Repine, 2275 Cherry Hills Farm Dr., Englewood, Colo. 80110, and Jonathan A. Leff, 5905 S. Fairfax Ct., Littleton, Colo. 80121

Filed Mar. 19, 1993, Ser. No. 34,935
Int. Cl.[6] C12Q *1/26, 1/30;* G01N *33/53*
U.S. Cl. 435—7.4 5 Claims

1. A method for predicting the development of adult respiratory distress syndrome in a septic patient comprising the steps of providing serum of said patient, determining said patient's serum level of manganese superoxide dismutase, comparing said patient's serum level of manganese superoxide dismutase to an established baseline serum level of manganese superoxide dismutase, a serum level greater than or equal to said baseline serum level being predictive of the development of ARDS, and diagnosing ARDS development potential if said patient's serum level of manganese superoxide dismutase is greater than or equal to said established baseline serum level of manganese superoxide dismutase.

5,389,523

LIPOSOME IMMUNOANALYSIS BY FLOW INJECTION ASSAY

Anne L. Plant, Arlington, Va.; Laurie Locascio-Brown, Silver Spring, and Richard A. Durst, Clarksburg, all of Md., assignors to The United States of America, as represented by the Secretary of Commerce, Washington, D.C.

Continuation of Ser. No. 473,020, Jan. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 200,210, May 31, 1988, abandoned. This application Jul. 23, 1992, Ser. No. 917,426
Int. Cl.[6] G01N *33/543, 33/544, 33/547, 35/08*
U.S. Cl. 435—7.92 28 Claims

1. A flow injection immunoassay method for detecting or quantifying an analyte in a test sample, said method comprising:

(a) providing a stationary solid phase support having bonded thereto a receptor for competitively binding thereto said analyte and sensitized liposomes;

(b) forming said sensitized liposomes having a surface membrane and an interior aqueous phase, said surface membrane having a binding agent incorporated thereinto that binds to said receptor in competition with said analyte and said liposomes including a marker compound, wherein said sensitized liposomes will not disrupt as a result of any bonding between said binding agent and said receptor;

(c) flowing a sample which may contain said analyte past said solid phase support in a moving, non-segmented carrier stream;

(d) flowing said liposomes past said solid phase support in said stream, whereby flow separates liposomes bound to said solid phase support from liposomes unbound to said solid phase support; and

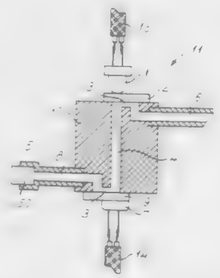
(e) detecting said marker compound or a reaction product of said marker compound of either the bound liposomes or the unbound liposomes to determine the presence or amount of analyte in said test sample.

5,389,524

METHOD AND A SYSTEM FOR QUANTITATIVELY MONITORING A CHEMICAL COMPONENT DISSOLVED IN A LIQUID MEDIUM

Bjorn E. H. Larsen; Arne Vinther, both of Koge; Poul Moller, Solrod; Jorn R. Thorsson, Copenhagen; Henrik Soeberg, Albertslund; Jesper L. Sorensen, Roskilde, and Lykke B. Larsen, Hellerup, all of Denmark, assignors to Kemisk Vaerk Koge A/S, Koge, Denmark

PCT No. PCT/DK90/00196, § 371 Date Mar. 24, 1992, § 102(e) Date Mar. 24, 1992, PCT Pub. No. WO91/02254, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 30, 1990, Ser. No. 842,166
Claims priority, application Denmark, Jul. 28, 1989, 3748/89
Int. Cl.[6] C12Q *1/02;* G01N *31/00, 21/00*
U.S. Cl. 435—29 64 Claims



1. An apparatus for quantitatively monitoring a chemical component dissolved in a liquid medium, comprising:

a measuring cell having a measuring chamber for measuring a measurement parameter, said chamber being configured to form an interface zone between said liquid medium and an analytical reagent or reference solution when said analytical reagent or reference solution and said liquid medium are introduced into said measuring chamber, wherein said interface zone is suitable for measuring a value of said measurement parameter, said value of said parameter being a function of the amount of said chemical component present in said liquid medium;

a reservoir containing said analytical reagent or reference solution;

means for transferring liquid between said chamber and said reservoir, said means comprising a first conduit connecting said reservoir and said measuring chamber; and

means for measuring said measurement parameter.

5,389,525

DNA-MOLECULES CODING FOR FMDH CONTROL REGIONS AND STRUCTURAL GENE FOR A PROTEIN HAVING FMDH-ACTIVITY AND THEIR USE THEREOF

Cornelius P. Hollenberg, Dusseldorf, and Zbigniew Janowicz, Erkrath, both of Germany, assignors to Rhein Biotech, Dusseldorf, Germany

Continuation of Ser. No. 248,519, Sep. 23, 1988, abandoned. This application Mar. 3, 1992, Ser. No. 844,885
Int. Cl.[6] C12P *21/02;* C12N *15/81, 15/52, 1/19*
U.S. Cl. 435—69.1 20 Claims

1. A process for producing a protein or polypeptide, comprising culturing a methylotrophic yeast containing a recombinant vector that contains an isolated DNA molecule comprising a 5' control region obtainable from a gene from a methylotrophic species of the genus Hansenula, said gene coding for a protein having formate dehydrogenase (FMDH) activity, derepressing said 5' control region by growth on glycerol as a carbon source, cultivating the methylotrophic yeast, and recovering the protein or polypeptide.

5,389,526

PLASMID VECTORS FOR CELLULAR SLIME MOULDS OF THE GENUS DICTYOSTELIUM

Martin B. Slade, 40 Conrad Street, East Ryde NSW 2113; Andy C. M. Chang, 7/19 Bowden Street, Harris Park NSW 2150, and Keith L. Williams, 25 Kara Street, Lane Cove NSW 2066, all of Australia

PCT No. PCT/AU90/00530, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO91/06644, PCT Pub. Date May 16, 1991
PCT Filed Nov. 2, 1990, Ser. No. 867,106
Claims priority, application Australia, Nov. 2, 1989, PJ7187
Int. Cl.[6] C12N *1/15, 15/80;* C12P *21/00*
U.S. Cl. 435—69.1 20 Claims

1. A method of producing a desired polypeptide comprising the following steps:

a) preparing a recombinant plasmid vector comprising an origin of replication from plasmid Ddp2 or pDG1 and a DNA sequence encoding the desired polypeptide, wherein plasmid Ddp2 or pDG 1 and a DNA sequence encoding the desired polypeptide, wherein said plasmid vector lacks DNA sequences encoding a Rep protein required for extrachromosomal replication in wild type Dictyostelium;

b) preparing a recombinant strain of Dictyostelium comprising a gene encoding a Rep polypeptide which allows replication of the recombinant plasmid of step (a);

c) transforming the recombinant Dictyostelium of step (b) with the recombinant plasmid vector of step (a);

d) culturing the transformed Dictyostelium of step (c) under conditions which allow expression of the DNA sequence encoding the desired polypeptide; and

e) recovering the desired polypeptide.

5,389,527

DNA ENCODING MAMMALIAN PHOSPHODIESTERASES

Joseph A. Beavo, Seattle; Harry Charbonneau, W. Lafayette, and William K. Sonnenburg, Mountlake Terrace, all of Wash., assignors to The Board of Regents of The University of Washington, Seattle, Wash.

Continuation-in-part of Ser. No. 688,356, Apr. 19, 1991, abandoned. This application Apr. 20, 1992, Ser. No. 872,644
Int. Cl.[6] C12N *9/16, 15/09, 15/55, 15/63*
U.S. Cl. 435—69.1 13 Claims

1. A purified and isolated polynucleotide sequence comprising a polynucleotide sequence encoding a mammalian cyclic GMP stimulated nucleotide phosphodiesterase enzyme having an amino acid sequence selected from the group consisting of: SEQ ID NO: 39 and SEQ ID NO: 45.

5,389,528

HEPATITIS δ DIAGNOSTICS AND VACCINES

Michael Houghton, Danville; Kang-Sheng Wang, Oakland; Qui-Lim Choo, El Cerrito; Amy J. Weiner, Berkeley, and Lacy R. Overby, Alamo, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 932,920, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 765,917, Sep. 25, 1991, abandoned, which is a division of Ser. No. 53,991, May 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 875,337, Jun. 17, 1986, abandoned. This application Jul. 27, 1993, Ser. No. 97,519
Int. Cl.[6] C12N *15/51, 15/62, 15/63, 1/21*
U.S. Cl. 435—69.3 34 Claims

1. An isolated DNA sequence which encodes a polypeptide immunologically identifiable as a component of the δ-antigen, said DNA sequence comprising a sequence of open reading frame (ORF) 5 of the HDV genome or its complement, as depicted in FIG. 3.

5,389,529

MODIFIED LAMβ SIGNAL SEQUENCE AND PROCESSES FOR PRODUCING RECOMBINANT NEUROTROPHINS

Nikos Panayotatos, Orangeburg, and James P. Fandl, La Grangeville, both of N.Y., assignors to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 715,185, Jun. 12, 1991, abandoned. This application Nov. 21, 1991, Ser. No. 796,106
Int. Cl.[6] C12N *15/11*
U.S. Cl. 435—69.8 6 Claims

1. A modified LamB signal sequence gene comprising a DNA molecule (SEQ ID NO: 3) encoding a LamB signal sequence which has been altered to encode fourteen hydrophobic amino acids in the hydrophobic core region.

5,389,530

METHODS FOR THE PRODUCTION OF ANTIBODIES AND INDUCTION OF IMMUNE RESPONSES TO TUMOR-ASSOCIATED GANAGLIOSIDES BY IMMUNIZATION WITH GANGLOISIDE LACTONES

Sen-itiroh Hakomori, Mercr Island, Wash., assignor to The Biomembrane Institute, Seattle, Wash.

Division of Ser. No. 996,509, Dec. 21, 1992, Pat. No. 5,308,614, which is a continuation of Ser. No. 173,962, Mar. 28, 1988, abandoned. This application Jul. 27, 1993, Ser. No. 97,006
Int. Cl.[6] C07K *15/28;* C12P *21/08;* C12N *15/02*
U.S. Cl. 435—70.21 5 Claims

1. A method for the production of antibodies to a tumor-associated ganglioside comprising:

(1) immunizing an animal with an immunogenic amount of a lactone of a tumor-associated ganglioside and a pharmaceutically acceptable carrier;

(2) isolating the immunized cells from said animal;

(3) fusing the isolated immunized cells with myeloma cells; and

(4) screening for hybridomas which produce antibodies having binding specificity to said ganglioside and collecting the antibodies so produced.

5,389,531

METHODS TO REPLICATE DNA IN VITRO USING PRD1-CATALYZED DNA REPLICATION SYSTEMS

Junetsu Ito, Tucson, Ariz., and Seung-Ku Yoo, Providence, R.I., assignors to Arizona Board of Regents, Tucson, Ariz.

Continuation of Ser. No. 869,916, Apr. 14, 1992. This application Mar. 9, 1994, Ser. No. 208,486
Claims priority, application Japan, Aug. 26, 1991, 3-240525
Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *17/00;* C12N *15/00*
U.S. Cl. 435—6 4 Claims

1. A DNA replication sequence adapted to couple to the 3' end of a DNA strand wherein said DNA strand is not natively coupled to the DNA replication sequence the DNA replication sequence having a DNA sequence selected from the group consisting of SEQ ID No. 1, SEQ ID No. 86, SEQ ID No. 87, SEQ ID No. 88, and SEQ ID No. 89.

5,389,532

PROCESS OF PRODUCING A DEHYDRATED POLYSACCHARIDE GEL CONTAINING MICROORGANISMS FOR PREPARING FERMENTED DRINKS

Charles Divies; Pascal Lenzi, both of Dijon; Jacques Beaujeu, Noumea, and Frederic Herault, La Chapelle sur Erdre, all of France, assignors to Champagne Moet & Chandon

Continuation of Ser. No. 635,531, Feb. 25, 1991, abandoned. This application Nov. 22, 1993, Ser. No. 161,681
Claims priority, application France, Jul. 7, 1988, 88 09249
Int. Cl.[6] C12N *11/10, 1/04;* C12C *1/00;* C12G *11/00*
U.S. Cl. 435—178 17 Claims

1. A process for the preparation of microorganisms enclosed

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in at least partially dehydrated gels, said microorganisms exhibiting an improved viability after rehydration, comprising:

a) dispersing the microorganisms in a gelable polysaccharide solution;

b) gelling the polysaccharide solution containing the microorganisms to form a gel enclosing the microorganisms;

c) soaking the gel enclosing the microorganisms in a solution containing at least 500 g/l sucrose for a period of time sufficient to reach equilibrium;

d) separating the equilibrated gel containing the microorganisms from the solution and recovering the gel; and

e) drying the gel to obtain an at least partially dehydrated gel.

5,389,533

IMMOBILIZATION OF BIOCHEMICAL SUBSTANCES ON A CARRIER CONTAINING A LAYER OF AN OLEFINIC - UNSATURATED, EPOXYFUNCTIONAL POLYETHER

Wolfgang von Gentzkow, Kleinsendelbach, and Hans-Dieter Feucht, Renningen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 22, 1993, Ser. No. 34,319

Claims priority, application Germany, Mar. 23, 1992, 4209369

Int. Cl.[6] C12N *11/08, 11/06;* **G01N** *33/545, 33/549*

U.S. Cl. 435—180 **18 Claims**

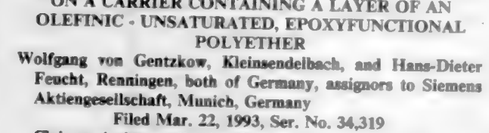
1. A method for immobilization of a biochemical substance comprising the steps of:

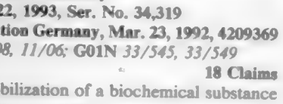
applying an olefinic-unsaturated, epoxyfunctional polyether to a carrier material in the form of a layer,

cross-linking the polyether by means of high-energy radiation or using peroxide, to form an epoxyfunctional polymer matrix,

treating the layer with an aqueous solution of the biochemical substance, whereby the biochemical substance is immobilized in the polymer matrix by reaction with epoxy groups,

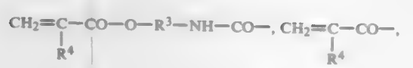
and stabilizing the layer by reaction of non-reacted epoxy groups with a compound containing an amino group, a carboxyl group or an amino group and a carboxyl group, wherein the polyether has the structure

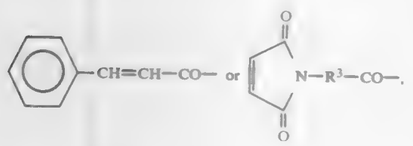




where the following applies:

Z=



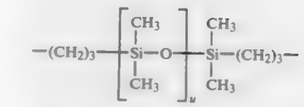


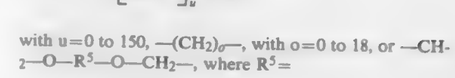
where

R^3=$-(CH_2)_m-$, with m=1 to 10

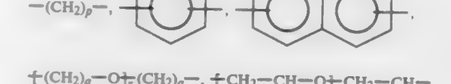
R^4=H or CH_3;

R^1=



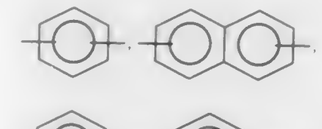


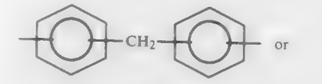


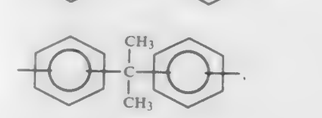


with p=2 to 20, q=2 to 4, r=1 to 50, s=0 to 50, t=0 to 25,

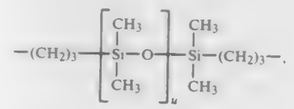
Ar=







R^2=$-(CH_2-CH=CH-CH_2)_n-$, $-R^6-$, $-R^6-O-CO-R^7-CO-O-R^6-$ or



where n=1 to 50, u=0 to 150,

R^6 has the same meaning as R^5, except that



are excluded, and

R^7 has the following meaning:

$-(CH_2)_v-$, $-(CH_2)_{q-1}-O+(CH_2)_q-O\frac{}{s}(CH_2)_{q-1}-$, or

$-(CH_2)_{q-1}+O-(CH_2)_q\frac{}{t}O-Ar-O+(CH_2)_q-O\frac{}{r}(CH_2)_{q-1}-$,

with q=2 to 4, s=0 to 50, t=0 to 25, v=0 to 20, and Ar has the meaning indicated above.

10. A method for immobilization of a biochemical substance comprising the steps of:

applying an olefinic-unsaturated, epoxyfunctional polyether to a carrier material in the form of a layer,

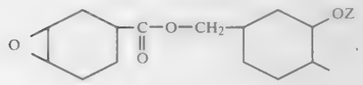
cross-linking the polyether by means of high-energy radiation or using peroxide, to form an epoxyfunctional polymer matrix,

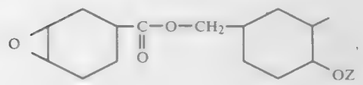
treating the layer with an aqueous solution of the biochemical substance, whereby the biochemical substance is immobilized in the polymer matrix by reaction with epoxy groups.

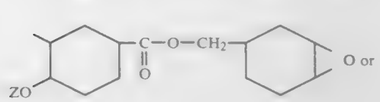
and stabilizing the layer by reaction of non-reacted epoxy groups with a compound containing an amino group, a carboxyl group or an amino group and a carboxyl group, wherein the polyether has the structure

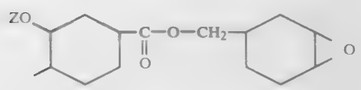
$R^1-O-R^2-O-R^1$

R^1=



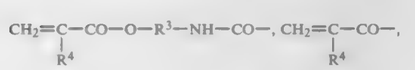


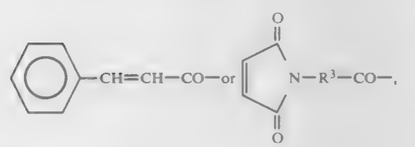




where the following applies:

Z=



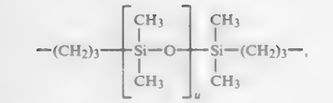


where

R^3=$-(CH_2)_m-$, with m=1 to 10

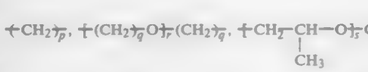
R^4=H or CH_3;

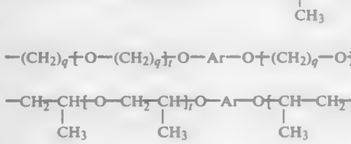
R^2=$-(CH_2-CH=CH-CH_2)_n-$, $-R^5-$, $-R^5-O-CO-R^6-CO-O-R^5-$ or



where n=1 to 50, u=0 to 150,

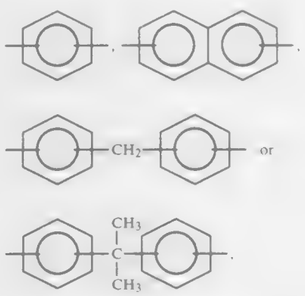
R^6=

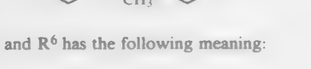


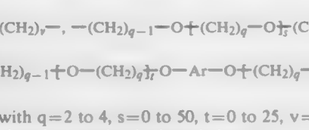


with p=2 to 20, q=2 to 4, r=1 to 50, s=0 to 50, t=0 to 25,

Ar=







and R^6 has the following meaning:

$-(CH_2)_v-$, $-(CH_2)_{q-1}-O+(CH_2)_q-O\frac{}{s}(CH_2)_{q-1}-$, or

$-(CH_2)_{q-1}+O-(CH_2)_q\frac{}{t}O-Ar-O+(CH_2)_q-O\frac{}{r}(CH_2)_{q-1}-$.

with q=2 to 4, s=0 to 50, t=0 to 25, v=0 to 20, and Ar has the meaning indicated above.

5,389,534

BIOSENSOR CONTAINING A BIOCHEMICAL SUBSTANCE IMMOBILIZED ON A LAYER OF AN OLEFINIC-UNSATURATED, EPOXYFUNCTIONAL POLYETHER

Wolfgang von Gentzkow, Kleinsendelbach, and Hans-Dieter Feucht, Renningen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 22, 1993, Ser. No. 35,019

Claims priority, application Germany, Mar. 23, 1992, 4209370

Int. Cl.[6] C12N *11/08, 11/06;* **C12M** *1/40;* **G01N** *33/545*

U.S. Cl. 435—180 **12 Claims**

1. A biosensor with a selective detection system comprising a polymer and a biochemical substance wherein the detection system is produced in the following manner:

applying an olefinic-unsaturated, epoxyfunctional polyether to a carrier material in the form of a layer,

cross-linking the polyether by means of high-energy radiation to form an epoxyfunctional polymer matrix,

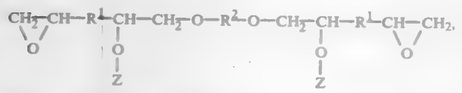
treating the layer with an aqueous solution of the biochemi-

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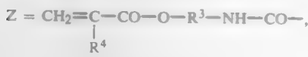
cal substance, whereby the biochemical substance is immobilized in the polymer matrix by reaction with epoxy groups, and

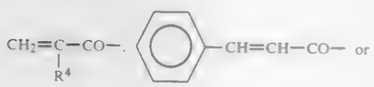
stabilizing the layer by reaction of non-reacted epoxy groups with a compound containing an amino group, a carboxyl group or an amino group and a carboxyl group,

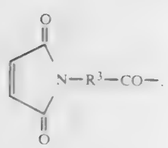
wherein the polyether has the following structure:



where the following applies:





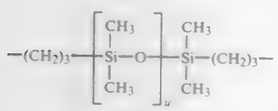


where

R^3=—$(CH_2)_m$—, with m=1 to 10

R^4=H or CH_3;

R^1=



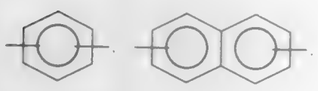
with u=0 to 150,

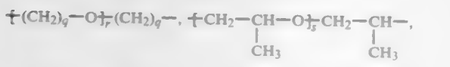
—$(CH_2)_o$—, with o=0 to 18, or

CH_2—O—R^5—O—CH_2—,

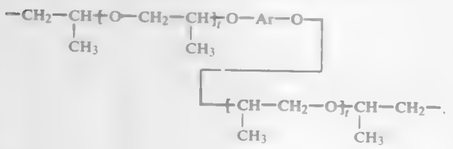
where

R^5=—$(CH_2)_p$—,







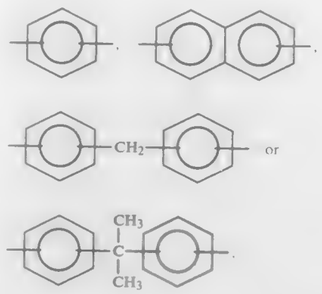


with

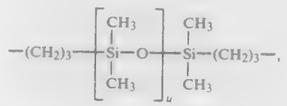
p=2 to 20, q=2 to 4, r=1 to 50,

s=0 to 50, t=0 to 25,

Ar=



R^2=—$(CH_2$—CH=CH—$CH_2)_n$—, —R^6—, —R^6—O—CO—R^7—CO—O—R^6— or



where

n=1 to 50, u=0 to 150,

R^6 has the same meaning as R^5,

except that



are excluded, and

R^7 has the following meaning:



with

q=2 to 4, s=0 to 50, t=0 to 25,

v=0 to 20, and

Ar has the meaning indicated above.

7. A biosensor with a selective detection system comprising a polymer and a biochemical substance wherein the detection system is produced in the following manner:

applying an olefinic-unsaturated, epoxyfunctional polyether to a carrier material in the form of a layer,

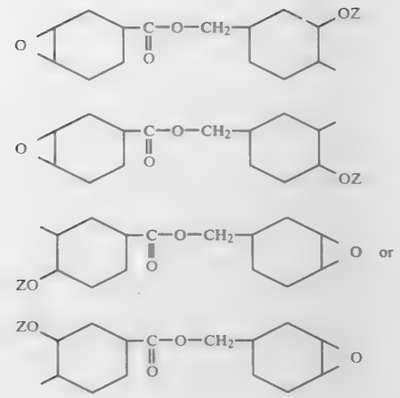
cross-linking the polyether by means of high-energy radiation to form an epoxyfunctional polymer matrix,

treating the layer with an aqueous solution of the biochemical substance, whereby the biochemical substance is immobilized in the polymer matrix by reaction with epoxy groups, and

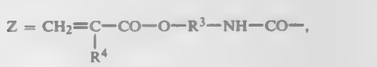
stabilizing the layer by reaction of non-reacted epoxy groups with a compound containing an amino group, a carboxyl group or an amino group and a carboxyl group,

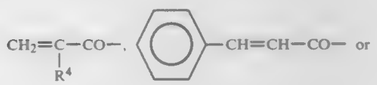
wherein the polyether has the following structure:

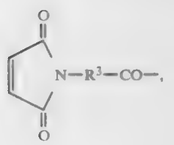
R^1—O—R^2—O—R^1, where R^1=



where the following applies:





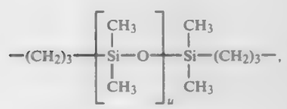


where

R^3=—$(CH_2)_m$—, with m=1 to 10

R^4=H or CH_3;

R^2=—$(CH_2$—CH=CH—$CH_2)_n$—, —R^5—, R^5—O—CO—R^6—CO—O—R^5— or

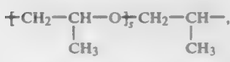


where

n=1 to 50, u=0 to 150,

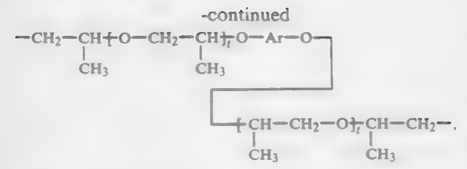
R^5=

—$(CH_2)_p$—,



—$(CH_2)_q$—O—$(CH_2)_q$—O—Ar—O—$(CH_2)_q$—O—$(CH_2)_q$—, or

-continued

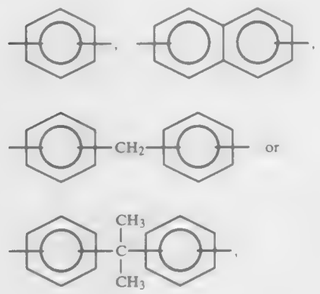


with

p=2 to 20, q=2 to 4, r=1 to 50,

s=0 to 50, t=0 to 25,

Ar=



and R^6 has the following meaning:

with

q=2 to 4, s=0 to 50, t=0 to 25,

v=0 to 20, and

Ar has the meaning indicated above.

5,389,535

METHOD OF ENCAPSULATING CELLS IN A TUBULAR EXTRUDATE

Patrick Aebischer, Barrington, R.I., and Lars Wahlberg, Gävle, Sweden, assignors to Brown University Research Foundation, Providence, R.I.

Continuation of Ser. No. 827,728, Feb. 26, 1992, Pat. No. 5,284,761, which is a continuation of Ser. No. 461,999, Jan. 8, 1990, Pat. No. 5,158,881, which is a continuation-in-part of Ser. No. 121,626, Nov. 17, 1987, Pat. No. 4,892,538. This application Dec. 17, 1993, Ser. No. 169,169

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[6] **C12N** *11/04, 5/00;* **C12M** *1/40;* **B01J** *13/02*

U.S. Cl. 435—182 **20 Claims**

1. A method of encapsulating viable cells comprising co-extruding an aqueous cell suspension and a polymeric solution through a common port having at least two concentric bores to form a tubular extrudate having a polymeric outer coating which encapsulates said cell suspension, wherein said cell suspension is extruded through an inner bore and said polymeric solution is extruded through an outer bore and a pressure differential is maintained between said cell suspension and said polymeric solution during co-extrusion to impede solvent diffusion from said polymeric solution into said cell suspension, and said polymeric solution and said cell suspension are chosen so that coagulation of said polymeric solution occurs as the polymeric solution and cell suspension are extruded through the extrusion port.

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5,389,536

LIPASE FROM *PSEUDOMONAS MENOCINA* HAVING CUTINASE ACTIVITY

Gregory L. Gray, Boise, Id.; Scott D. Power, San Bruno, and Ayrookaran J. Poulose, Belmont, both of Calif., assignors to Genencor, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 629,308, Dec. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 465,532, Jan. 17, 1990, abandoned, which is a continuation of Ser. No. 107,902, Oct. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 932,959, Nov. 19, 1986, abandoned. This application May 23, 1991, Ser. No. 705,052

Int. Cl.[6] C12N *9/20*

U.S. Cl. 435—198 1 Claim

1. A lipase isolated from *Pseudomonas mendocina* having the following characteristics

(a) cutinase activity; and

(b) the amino acid sequence:

```
01        |  10        20
APLPDTPGAPFPAVANFDRSGPYTTSSQ

30        |  41        50
SEGPSCRIYRPRDLGQGGVRHPVILWG

60        |  70        81
NGTGAGPSTYAGLLSHWASHGFVVAAA

      90        100
ETSNAGTGREMLACLDYLVRENDTPYG

110       |  121       130
TYSGKLNTGRVGTSGHSQGGGGSIMAG

140       |  150       161
QDTRVRTTAPIQPYTLGLGHDSASQRRQ

      170       180       190
QGPMFLMSGGGDTIAFPYLNAQPVYRR

      201       210
ANVPVFWGERRYVSHFEPVGSGGAYRG

220       |  230       241
PSTAWFRFQLMDDQDARATFYGAQCSL

250       |  260       270
CTSLLWSVERRGL
```

5,389,537

NUCLEASE HAVING ALTERED SPECIFICITY

Ronald T. Raines, and Stephen B. del Cardayré, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 21, 1994, Ser. No. 184,604

Int. Cl.[6] C12N *9/22*

U.S. Cl. 435—199 5 Claims

1. A mutant pancreatic-type ribonuclease A, the mutant differing from the wild-type ribonuclease A at amino acid position 45 and being able to cleave an RNA molecule after an A ribonucleotide.

5,389,538

MUTANT HUMAN PROUROKINASE

Toshizumi Tanabe; Masanori Morita; Masaaki Hirose, and Yasuo Amatsuji, all of Hirakata, Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Oct. 6, 1992, Ser. No. 957,039

Claims priority, application Japan, Oct. 7, 1991, 3-289257

Int. Cl.[6] A61K *37/547*; C12N *9/72*

U.S. Cl. 435—215 1 Claim

1. An isolated mutant human prourokinase, wherein in the epidermal growth factor region from the Asn (10) to the Thr (49) of the human prourokinase shown in SEQ ID No: 7, at least one of Gly (16) in the amino acid sequence of human prourokinase is substituted with a Lys residue and Gly (38) in the amino acid sequence of human prourokinase is substituted with a Lys residue.

5,389,539

PURIFICATION OF HEPARINASE I, II, AND III FROM *FLAVOBACTERIUM HEPARINUM*

Ramnath Sasisekharan, Arlington, Mass.; Daniel L. Lohse, Bryan, Tex.; Charles L. Cooney, Brookline, Mass.; Robert J. Linhardt, Iowa City, Iowa, and Robert S. Langer, Newton, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass. and University of Iowa Research Foundation, Iowa City, Iowa

Filed Nov. 30, 1992, Ser. No. 983,367

Int. Cl.[6] C12N *9/00, 9/52, 1/20*

U.S. Cl. 435—220 8 Claims

1. An isolated heparinase II from *Flavobacterium heparinum* free of lyase activity other than heparinase II activity, having a molecular weight of 84,100, cleaving heparin and heparan sulfate and having a pH optimum of 8.9–9.1.

5,389,540

EXPRESSION OF TETANUS TOXIN FRAGMENT C IN YEAST

Andrew J. Makoff; Michael A. Romanos; Jeffrey J. Clare, and Neil F. Fairweather, all of Beckenham, England, assignors to Evans Medical Limited, Leatherhead, United Kingdom

Filed Nov. 27, 1990, Ser. No. 618,312

Claims priority, application United Kingdom, Nov. 28, 1989, 8926832; Mar. 17, 1990, 9006097

Int. Cl.[6] A61K *39/08*; C12N *15/31, 15/67*

U.S. Cl. 435—69.3 3 Claims

1. An expression vector which incorporates DNA encoding tetanus toxin fragment C having the amino acid sequence shown in SEO ID NO:2 and having an increased (G+C)-content relative to the wild-type DNA sequence show in SEO ID NO:1 in each of the following regions:

(i) from nucleotide **510** to nucleotide **710**,

(ii) from nucleotide **650** to nucleotide **850**,

(iii) from nuceotide **800** to nucleotide **1100**,

(iv) from nucleotide **900** to nucleotide **1200** and,

(v) from nucleotide **1100** to nucleotide **1356**.

the numbers corresponding to those set forth in the sequence of SEO ID NO:1 so as to allow the production of complete mRNA transcripts in yeast, which vector thereby expresses said fragment C in yeast, wherein the said DNA is as shown in SEQ ID NO:3.

5,389,541

ERYTHROPOIETIN-DEPENDENT ERYTHROBLASTOID MOUSE CELL LINE

Gordon Keller, Denver, Colo.; Harmut Beug, and Erwin Wagner, both of Vienna, Austria, assignors to Boehringer Ingelheim International GmbH, Ingelheim am Rhein, Germany

PCT No. PCT/EP91/00981, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO91/18973, PCT Pub. Date Dec. 12, 1991

PCT Filed May 28, 1991, Ser. No. 952,880

Claims priority, application Germany, Jun. 1, 1990, 4017679

Int. Cl.[6] C12N *5/06, 15/00*

U.S. Cl. 435—240.2 1 Claim

1. The erythroblastoid mouse cell line E 31, deposited as ECACC No. 90032211.

5,389,542

CONTROLLING VITRIFICATION OF PLANTS USING WATER ABSORBENT POLYMER

Whei-Lan Teng, Taipei Hsien; Yann-Jiun Liu, Chiayi Hsien, and Tai-Sen Soong, Taipei, all of Taiwan, Prov. of China, assignors to Development Center for Biotechnology, Taiwan, Prov. of China

Filed Nov. 4, 1992, Ser. No. 970,679

Int. Cl.[6] C12N *5/00, 5/02*

U.S. Cl. 435—240.45 12 Claims

1. A method for reducing vitrification of a plant in a growth medium, which comprises the step of adding a water absorbent acrylamide/acrylate copolymer to the growth medium, said copolymer, which is capable of absorbing water from about 50 to about 800 times its weight, being added in an amount necessary to reduce the vitrification.

5,389,543

CLONED GENES ENCODING THE D_1 DOPAMINE RECEPTOR

James R. Bunzow; Olivier Civelli; David K. Grandy; Qun Y. Zhou, all of Portland, Oreg.; Marc G. Caron, Durham, N.C.; Allen Dearry, Durham, N.C.; Pierre Falardeau, Durham, N.C., and Jay A. Gingrich, Durham, N.C., assignors to Duke University, Durham, N.C. and Oregon Health Sciences University, Oreg.

Continuation of Ser. No. 583,852, Sep. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 523,237, May 14, 1990, abandoned. This application Jul. 2, 1992, Ser. No. 908,654

Int. Cl.[6] C12N *15/12, 15/63*

U.S. Cl. 435—252.3 30 Claims

1. A cloned isolated gene encoding a mammalian D_1-dopamine receptor selected from the group consisting of:

(a) isolated DNA encoding the human D_1-dopamine receptor depicted in FIG. 1B(I) to 1B(III), or an isolated DNA encoding the rat D_1-dopamine receptor depicted in FIG. 3A; and

(b) isolated DNA which hybridizes to isolated DNA of (a) above under conditions defined by a wash stringency of 1×SSC at 55° C. and encodes a D_1-dopamine receptor.

5,389,544

METHOD FOR COUNTING LIVING CELLS OF MICROBES AND APPARATUS THEREFOR

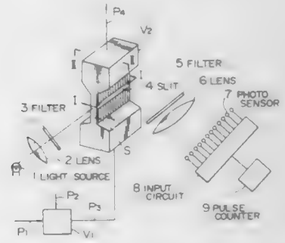
Kiyoshi Sugata; Ryohei Ueda; Takashi Doi; Takashi Onishi, and Kazunori Matsumoto, all of Yokohama, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1991, Ser. No. 658,646

Claims priority, application Japan, Feb. 21, 1990, 2-38372; Nov. 6, 1990, 2-299056

Int. Cl.[6] C12M *1/34, 1/00*; G01N *21/00*

U.S. Cl. 435—291 2 Claims



1. A method of continuously counting only living microbial cells in a fluid sample, comprising the steps of:

a) adding to the sample a reagent capable of reacting with at least one enzyme of the living cells to form an accumulative fluorescent product within the living cells, said reagent being at least one derivative of fluorescein selected from the group consisting of 5-carboxyfluorescein diacetate and 6-carboxyfluorescein diacetate;

b) continuously passing the sample from step (a) through a photometric detection cell while irradiating the sample with a light having a wavelength in a range of 450–490 nm to induce excitation of the fluorescent product accumulated within each of the living cells, thereby causing emission of a corresponding fluorescence from each of the living cells as an individual luminous point; and

c) counting up the individual luminous points appearing within a detection area in a certain time interval with a plurality of photosensors.

5,389,545

REAGENTS, METHODS AND KITS FOR WATER DETERMINATION

Harald Dahms, 472 Madison Ave., Toms River, N.J. 08753

Filed Jul. 26, 1993, Ser. No. 97,110

Int. Cl.[6] G01N *33/18*

U.S. Cl. 436—42 38 Claims

11. A pyridine-free, single-component volumetric reagent for the volumetric analysis of moisture by the Karl Fischer reaction, said reagent containing triiodide ions as an oxidizing agent, iodine in an amount less than 10^{-2} moles per liter, SO_2, an amine and a solvent, the molar amount of SO_2 in said reagent being greater than the molar amount of triiodide ions in said reagent.

5,389,546

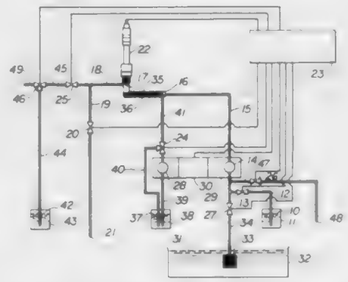
METHOD FOR DETERMINING AND MONITORING CONSTITUENT CONCENTRATION OF AN AQUEOUS METALWORKING FLUID

Giles J. P. Becket, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Continuation of Ser. No. 891,118, Jun. 1, 1992, abandoned. This application Apr. 20, 1994, Ser. No. 230,445

Int. Cl.[6] G01N *31/16*

U.S. Cl. 436—51 11 Claims



1. A method for determining and monitoring constituent concentration of an aqueous based metalworking fluid comprising the steps of

a. supplying metal particle free aqueous based metalworking fluid, at a controllable, measurable flow rate, to a flow through chamber having a static means for mixing,

b. supplying a titrant, reactive with said constituent of the metalworking fluid, to said chamber at a controllable, measurable flow rate and known concentration, simultaneously with and separate from the metalworking fluid,

c. mixing the metalworking fluid and titrant in the chamber,

d. reacting said constituent of the metalworking fluid with the titrant in said chamber to produce a reacted metalworking fluid,

e. flowing the reacted metalworking fluid past a detector to produce an electrical signal whose strength varies in relation to the concentration of the constituent,

f. passing said signal to a measuring means therefor that

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generates an electrical output related to the strength of said signal,

g. directing said output to a means for controlling the flow rate of the titrant in relation to said signal,

h. adjusting the flow rate of the titrant responsive to said signal until said signal reaches a predetermined value,

i. measuring the flow rate of the metalworking fluid,

j. measuring the flow rate of the titrant,

k. calculating the constituent concentration of the metalworking fluid from values of the flow rates of titrant and metalworking fluid measured when the signal reaches the predetermined value.

5,389,547

PRETREATING REAGENT, PRETREATMENT METHOD, ASSAY WITH PRETREATED SAMPLES, ASSAY KIT AND METHOD OF DIAGNOSING INFECTIOUS DISEASES

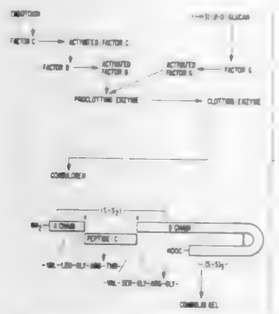
Shigenori Tanaka, and Hiroshi Tamura, both of Tokyo, Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation), Tokyo, Japan

Filed May 10, 1993, Ser. No. 58,306

Claims priority, application Japan, May 8, 1992, 4-142010; Apr. 2, 1993, 5-100426

Int. Cl.[6] G01N *33/00*

U.S. Cl. 436—94 15 Claims



6. A method of diagnosing an infectious disease which comprises assaying for a substance occurring in a biological sample and specifically reacting with a Limulus reagent, said method comprising pretreating the biological sample by the method of claim 1, mixing the thus-pretreated sample with Limulus reagent, allowing a reaction to proceed and determining the amount of said substance relative to a standard.

5,389,548

MONITORING AND IN-SYSTEM CONCENTRATION CONTROL OF POLYELECTROLYTES USING FLUOROCHROMATIC DYES

John E. Hoots, St. Charles; Claudia C. Pierce, Naperville, both of Ill., and Roger W. Kugel, Winona, Minn., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Mar. 29, 1994, Ser. No. 219,126

Int. Cl.[6] G01N *21/64*

U.S. Cl. 436—6 20 Claims

1. A method for monitoring and/or controlling the concentration of a polyelectrolyte in the water of an aqueous system comprising:

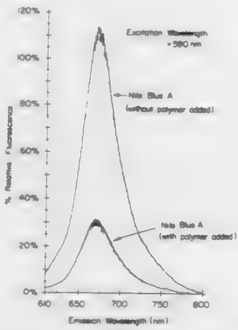
withdrawing a sample of said water;

adding a known or standard amount of a fluorochromatic reagent to said sample;

directing light energy of a selected excitation wavelength for said fluorochromatic reagent into said sample whereby light energy is available for absorption by said fluorochromatic reagent;

measuring the intensity of light emitted about a selected fluorescence emission wavelength for said fluorochromatic reagent;

comparing said intensity of said emitted light to a standard curve, said standard curve comprising a plot of fluores-



cence emission intensity of said fluorochromatic reagent in the presence of a polyelectrolyte versus concentration said polyelectrolyte; and

determining from said comparison the concentration of a polyelectrolyte in said sample of water.

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METHOD FOR CLASSIFYING LEUKOCYTES AND A REAGENT USED THEREFOR

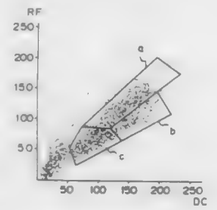
Yukio Hamaguchi, Akashi; Kenji Ito, Kakogawa; Yukio Tsujino, Kobe; Kazuhiro Moriyama, Yokohama; Ikuya Takenaka, Mitaka; Takashi Morikawa, and Hitomi Ohmi, both of Akashi, all of Japan, assignors to Toa Medical Electronics Co., Ltd., Japan

Continuation-in-part of Ser. No. 296,085, Jan. 11, 1989, abandoned, and a continuation-in-part of Ser. No. 596,206, Oct. 10, 1990, abandoned. This application Oct. 21, 1992, Ser. No. 964,347

Claims priority, application Japan, May 29, 1987, 62-134433; Mar. 1, 1990, 2-50814

Int. Cl.[6] G01N *31/00*

U.S. Cl. 436—10 26 Claims



1. A reagent for classifying leukocytes in a blood sample that lyses erythrocytes and which acts on leukocytes to enable the classification and counting of leukocytes, said reagent comprising

(a) a first fluid which is an agent for diluting blood and which contains a hyperosmotic agent to maintain the first fluid at an osmotic pressure of at least 285 mOsm;

(b) a second fluid that contains a surfactant and which is to be added to a sample of blood that has been diluted with the first fluid said surfactant selected from the group consisting of:

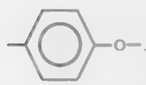
(i) a surfactant of a first group which is a polyoxyethylene-based anionic surfactant represented by the formula:

R_1-R_2-$(CH_2CH_2O)_n$-X

where

R_1 is an alkyl, alkenyl, or alkynyl group having 10–22 carbon atoms;

R_2 is —O—,



or COO;

n is an integer of 8–30

X is —SO_3Na, COONa, OSO_3Na or ONa; and

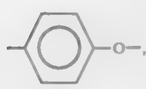
(ii) a surfactant of a second group which is a polyoxyethylene-based nonionic surfactant represented by the formula:

R_1-R_1-$(CH_2CH_2O)_n$-H

where

R_1 is an alkyl, alkenyl, or alkynyl group having 10–22 carbon atoms;

R_2 is —O—,



or COO;

n is an integer of 8–30;

(c) a solubilizing agent that selectively reduces the size of monocytes in leukocytes.

5,389,550

ORGANIC SUBSTANCE ANALYZING METHOD AND APPARATUS USING PORTABLE CONSTRUCTION

Shigeaki Ishida, Kameoka; Hidetoshi Fujimori, Kyoto; Hideki Matsubayashi, and Tsutomu Machihara, both of Funabashi, all of Japan, assignors to Japan National Oil Corporation, Tokyo, Japan

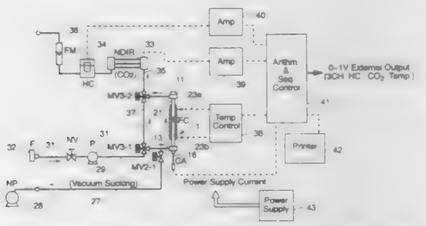
PCT No. PCT/JP92/00305, § 371 Date Nov. 10, 1993, § 102(e) Date Nov. 10, 1993, PCT Pub. No. WO93/18400, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 12, 1993, Ser. No. 146,109

Claims priority, application Japan, Mar. 13, 1992, 4-089778

Int. Cl.[6] G01N *33/24*

U.S. Cl. 436—32 7 Claims



1. An insoluble organic substance analyzing method using a portable construction including a hydrocarbon thermal cracking furnace adapted to be selectively connected to a vacuum sucking line and an air supplying line and also to an exhaust line for exhaust corresponding to air supply, and a hydrocarbon detector and a CO_2 detector which are placed in said exhaust line, said method comprising the steps of

a) placing sample container filled with a granulated rock sample in said thermal cracking furnace maintained at a temperature above room temperature but below 100° C., connecting said thermal cracking furnace to said vacuum sucking line, evacuating the furnace until a substantial vacuum state is established therein, and tightly closing the furnace,

b) quickly heating said closed thermal cracking furnace from said temperature to a first temperature which is effective for evaporation and thermal cracking of some of the organic substances but which is not effective for decomposition of inorganic carbonates, said furnace being maintained at this temperature for a fixed period of time,

c) cooling said thermal cracking furnace to a temperature at which the hydrocarbons in the furnace do not react with air, and connecting it to said air supplying line and said exhaust line to allow the produced gases in the furnace to flow into the hydrocarbon detector and CO_2 detector to compute the HC peak P1 and CO_2 peak P3 from output signals therefrom,

d) connecting said thermal cracking furnace again to the vacuum sucking line, evacuating the furnace, tightly closing the furnace, and rapidly heating the furnace to a second temperature higher than said first temperature to effect substantial thermal cracking of the insoluble organic substances, said furnace being maintained at this temperature for a fixed period of time,

e) cooling said thermal cracking furnace to a temperature at which the hydrocarbons in the furnace do not react with air, and connecting it to said air supplying line and said exhaust line to allow the produced gases in the furnace to flow into the hydrocarbon detector and CO_2 detector to find at least the HC peak P2 from the output signals therefrom and record it, and

f) deciding the types and amounts of organic substances from the sizes of said peaks P1, P2 and P3.

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METHOD OF MANUFACTURING A SEMICONDUCTOR SUBSTRATE

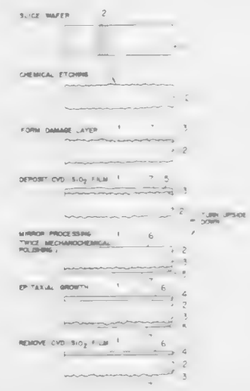
Takanobu Kamakura, Yokosuka, and Youji Yamashita, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 838,691, Feb. 21, 1992, abandoned. This application Mar. 1, 1993, Ser. No. 24,839

Claims priority, application Japan, Feb. 21, 1991, 027551

Int. Cl.[6] H01L *21/306*

U.S. Cl. 437—10 14 Claims



1. A method of manufacturing a semiconductor substrate having first and second principal planes comprising:

a damage layer forming step of forming a damage layer on a second principal plane of a wafer for improving gettering ability;

an etching protection film forming step of forming an etching protection layer on said damage layer for preventing

said damage layer from being etched during an epitaxial process; and

an epitaxial layer growing step of growing an epitaxial layer on a first principal plane of said wafer after forming said etching protection film.

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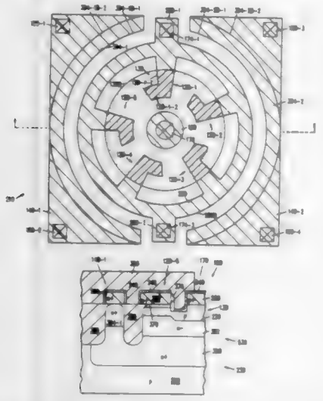
TRANSISTORS HAVING BASES WITH DIFFERENT SHAPE TOP SURFACES

Ali A. Iranmanesh, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 29, 1993, Ser. No. 10,919

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **6 Claims**



1. A method for forming a transistor, said method comprising the steps of:

forming a collector;

forming a base overlying said collector, said base having a top surface; and

forming a first emitter overlying said top surface of said base and comprising:

a first portion which in plan view extends from a boundary of said top surface of said base inside said top surface; and

a second portion which in plan view extends at an angle to said first portion.

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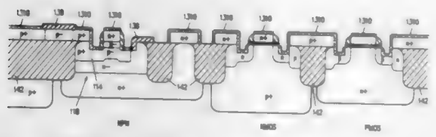
METHODS FOR FABRICATION OF TRANSISTORS

Michael J. Grubisich, San Jose, and Ali A. Iranmanesh, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 30, 1993, Ser. No. 85,436

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **15 Claims**



1. A method for forming a semiconductor structure, said method comprising the steps of:

forming a structure S1 comprising:

a contiguous semiconductor region laterally surrounded by an oxide insulator and comprising:

a collector of a first conductivity type; and

an emitter of the first conductivity type overlying the collector;

a buried layer of said first conductivity type underlying the collector and said insulator; and

a sink region of said first conductivity type contacting the buried layer, the sink region being separated from the collector by a first portion of said insulator;

masking a portion P1 of said contiguous semiconductor region with a dopant mask;

introducing a dopant having a second conductivity type opposite to the first conductivity type into an unmasked portion P2 of said contiguous semiconductor region so that at least a part of the portion P1 would not acquire the second conductivity type, said steps of masking and introducing said dopant being used to form a base of said second conductivity type formed at least partially overlying said collector, said base extending only a partial length of said semiconductor region so as to be separated from said first portion of said insulator;

forming an insulator I1 over and in contact with at least a part of the portion P1; and

forming a conductive material over and in contact with at least a part of said contiguous semiconductor region which part is exposed by the insulator I1, said conductive material having a lower resistivity than the portion P2.

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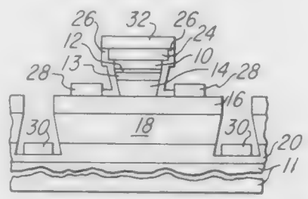
METHOD FOR FABRICATING MICROWAVE HETEROJUNCTION BIPOLAR TRANSISTORS WITH EMITTERS DESIGNED FOR HIGH POWER APPLICATIONS

William U. C. Liu, Dallas, and Darrell G. Hill, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 32,779, Mar. 16, 1993, abandoned, which is a continuation of Ser. No. 856,106, Mar. 23, 1992, abandoned. This application Nov. 30, 1993, Ser. No. 159,758

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **8 Claims**



1. A method for fabrication of heterojunction bipolar transistors having a plurality of emitter fingers, comprising the step of:

epitaxially depositing an emitter layer of $Al_xGa_{1-x}As$, where $x>0.4$, said emitter layer is adjacent a base layer, whereby said emitter layer provides a ballasting resistance to distribute a current approximately evenly through each of said emitter fingers.

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PARTICLE PATTERN JUDGING METHOD

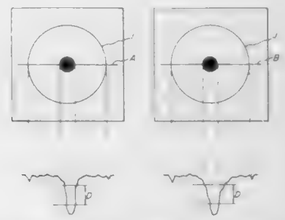
Haruhisa Watanabe, Hachioji; Satoshi Tanaka, Hino; Shinya Matsuyama, Hachioji, and Keita Sembu, Tokorozawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 629,705, Dec. 18, 1990, abandoned. This application Jun. 24, 1993, Ser. No. 80,592

Claims priority, application Japan, Dec. 21, 1989, 1-329662; Jul. 13, 1990, 2-184333

Int. Cl.[6] G01N *21/75, 33/80*

U.S. Cl. 436—164 **6 Claims**



1. Particle pattern judging method comprising the steps of:

picking up a two dimensional image of a particle pattern formed on the bottom surface of a reaction vessel by an immunological agglutinating reaction to obtain an image information of the particle pattern;

differentiating said image information along a diameter passing through a center of the bottom surface of the reaction vessel to obtain differentiated values along said diameter; and

judging whether the particle pattern is agglutinated or not by comparing said differentiated values along the diameter with a standard distribution of differentiated values which is previously obtained by using known agglutinated and non-agglutinated particle patterns;

wherein said differentiating step is conducted by using a first differentiation operator for detecting a variation of light intensity of the particle pattern in a horizontal direction and a second differentiation operator for detecting a variation of light intensity of the particle pattern in a vertical direction, said differentiating step comprising the steps of extracting a number of pixels, consisting of a pixel area from the image information of the particle pattern, and multiplying the light intensity of each pixel consisting of the pixel area by each coefficient of said first and second differentiation operators to obtain Y1 and Y2, Y1 being the value calculated by using the first differentiation operator and Y2 being the value calculated by using the second differentiation operator, obtaining a mean value of Y1 and Y2 by calculating the formula of $Y=(|Y1|+|Y2|)/2$ to get the differentiated value of the pixel area; and extract the pixel areas concerning all over the particle pattern in a successive manner.

5,389,556

INDIVIDUALLY POWERING-UP UNSINGULATED DIES ON A WAFER

Michael D. Rostoker; Carlos Dangelo, and James Koford, all of San Jose, Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 2, 1992, Ser. No. 908,695

Int. Cl.[6] G01R *31/26*

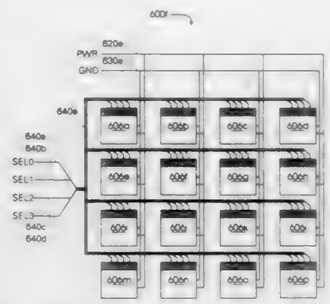
U.S. Cl. 437—8 **7 Claims**

1. A method of individually powering-up unsingulated dies on a semiconductor wafer, comprising:

defining a plurality of individual dies on a semiconductor wafer, each die occupying a distinct area on the wafer, said dies ultimately being processed into integrated circuit devices;

providing on each die, within the area of the die, an address decoding circuit associated with the die, each address decoding circuit being responsive to a unique address at a multi-bit address input of the address decoding circuit to connect power to the die with which it is associated;

providing a multi-bit address signal in common to the multi-bit address input of each of the address decoder circuits; and



selectively addressing and applying power to the individual dies by providing the unique address to which their associated address decoding circuit responds via the multi-bit address signal.

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PROCESS FOR FORMATION OF LDD TRANSISTOR, AND STRUCTURE THEREOF

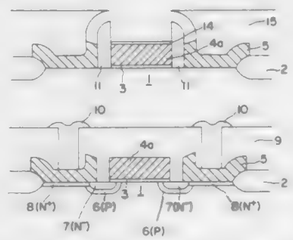
Goo Jung-Suk, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Chung-cheongbuk-Do, Rep. of Korea

Division of Ser. No. 8,096, Jan. 22, 1993, Pat. No. 5,262,664, which is a continuation of Ser. No. 719,837, Jun. 24, 1991, abandoned. This application Jun. 10, 1993, Ser. No. 75,633

Claims priority, application Rep. of Korea, Jun. 30, 1990, 90-9596

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—44 **5 Claims**



1. A process for formation of an LDD transistor, comprising the steps of:

forming a field oxide layer, growing a gate oxide layer, and successively depositing a polycrystalline silicon layer 4*a*, a nitride layer 14 and a polycrystalline silicon layer 4*b* to form a gate; wherein said gate is spaced from said field oxide regions

forming a side wall spacer 11 adjacent to and abutting the gate, depositing an undoped polycrystalline silicon layer 5 over the gate, the field oxide layer, and the space in between the gate and the field oxide layer, and ion-implanting a first impurity in the polycrystalline silicon layer 5;

shearing off said polycrystalline silicon layer 5 using a mask and excluding a part of said polycrystalline silicon layer 5 positioned upon said field oxide layers, spreading a photoresist 15 over said polycrystalline silicon layer 5, carrying out an etch back until said polycrystalline silicon layer 5 is

exposed, and carrying out an etching on said polycrystalline silicon layers **4***b*, **5** until said nitride layer **14** is exposed;

etching off said side wall spacer **11**, removing said photoresist **15**, ion-implanting a second impurity in order to form a p type region **6** only on the portion where said side wall spacer **11** was located and ion-implanting a third impurity in order to form an n-type region **7** within a portion of said p type region **6**;

filling an insulating material over the gate, the field oxide layer, and the space in between the gate and the field oxide layer, after carrying out the above steps, and performing a heat treatment to form a shallow n+ region **8** by the first impurity having diffused from said doped polycrystalline silicon layer **5**; and

etching said insulating material to create contact holes in said insulating material, depositing a metal **10**, and forming electrical interconnections.

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METHOD OF MAKING A SEMICONDUCTOR MEMORY CIRCUIT DEVICE

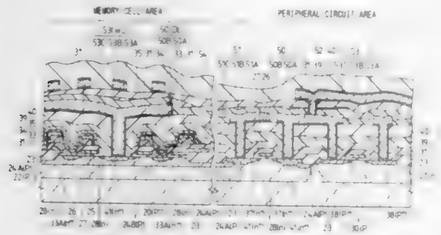
Naokatsu Suwanai, Koganei; Hiroyuki Miyazawa; Atushi Ogishima, both of Kodaira; Masaki Nagao, Koganei; Kyoichiro Asayama, Tachikawa; Hiroyuki Uchiyama, Kodaira; Yoshiyuki Kaneko, Kokubunji, all of Japan; Takashi Yoneoka, Irving, Tex.; Kozo Watanabe, Kodaira, Japan; Kazuya Endo, Kokubunji, Japan, and Hiroki Soeda, Koganei, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 799,541, Nov. 27, 1991, Pat. No. 5,237,187. This application Aug. 10, 1993, Ser. No. 104,014

Claims priority, application Japan, Nov. 30, 1990, 2-329122

Int. Cl.[6] **H01L** *21/70*

U.S. Cl. 437—52 **20 Claims**



1. A method for fabricating a semiconductor memory circuit device having an array of memory cells arranged in a matrix form, each memory cell containing a first MISFET and an information storing capacitor connected in series with each other, and also having peripheral circuitry constituted by a plurality of second MISFETs, said method comprising:

(a) a step of forming a first gate electrode of each first MISFET and a second gate electrode of each second MISFET in first and second regions, respectively, on a semiconductor substrate;

(b) after forming the first and second gate electrode, a step of introducing first impurities of N conductivity type into said semiconductor substrate in self-alignment with respect to said first and second gate electrodes in said first and second regions, so as to form a source region and a drain region for said first and second MISFETs;

(c) after introducing the first impurities of N conductivity type, a step of forming a third insulating film in both said first and second regions on said semiconductor substrate;

(d) a step of removing a portion of the third insulating film so as to expose one of the source and drain regions of said first MISFET;

(e) a step of forming a first electrode of said information storing capacitor so as to be in contact with said one of the source and drain regions of said first MISFET exposed through said third insulating film;

(f) a step of forming in sequence, a dielectric film and a second electrode of said information storing capacitor on said first electrode;

(g) a step of forming a second insulating film on said third insulating film in the first and second regions of said semiconductor substrate, after performing steps (e) and (f); and

(h) a step of forming a wiring layer on said second insulating film in said first and second regions, wherein said first and second electrodes extend on said third insulating film in said first region and the thickness of said third insulating film is larger than a total thickness of said first and second electrodes of said information storing capacitor.

5,389,559

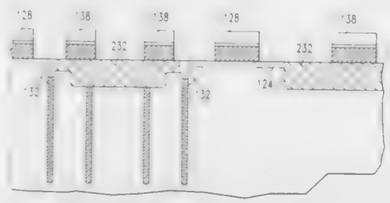
METHOD OF FORMING INTEGRATED INTERCONNECT FOR VERY HIGH DENSITY DRAMS

Chang-Ming Hsieh; Louis L. Hsu; Toshio Mii, all of Fishkill; Seiki Ogura, and Joseph F. Shepard, both of Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1993, Ser. No. 161,763

Int. Cl.[6] **H01L** *21/70, 27/00*

U.S. Cl. 437—52 **28 Claims**



1. A method of forming a DRAM cell, said cell having a pass gate connected between a bit line and a storage capacitor, said storage capacitor being a trench capacitor, said method comprising the steps of:

a) forming a trench capacitor in a first trench in a surface of a semiconductor body;

b) depositing a layer of doped semiconductor material over said trench capacitor and said surface;

c) selectively removing said deposited doped semiconductor material layer from said surface, remaining said doped semiconductor material forming straps between said trench capacitor and said surface; then,

d) etching an isolation trench into said surface, said isolation trench being wider than said first trench, extending horizontally along said first trench and spanning one side of said first trench;

e) filling said isolation trench with oxide; and

f) forming a past gate on said surface adjacent said first trench, one of said straps connecting said pass gate to said capacitor.

5,389,560

PROCESS FOR PRODUCTION OF STACKED CAPACITOR OF SEMICONDUCTOR DEVICE

Cheol S. Park, Bubaleub, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Dec. 23, 1993, Ser. No. 173,345

Claims priority, application Rep. of Korea, Dec. 31, 1992, 1992-27322

Int. Cl.[6] **H01L** *21/70, 27/00*

U.S. Cl. 437—52 **10 Claims**

1. A process for production of a stacked capacitor of a semiconductor device comprising the steps of:

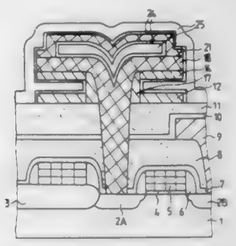
a) forming a first insulating layer and a second insulating layer on a transistor structure one by one, said transistor structure resulting from forming of a device separating oxide layer, a gate oxide layer, a gate electrode, a spacer oxide layer, a source region and a drain region on a semiconductor substrate;

b) forming a bit line, contacting with said drain region, by etching said second insulating layer and said first insulating layer on said drain region after patterning of a bit line contact and, thereafter, forming a third insulating layer and a fourth insulating layer on the result structure one by one;

c) forming a first conductive layer, a first buffer oxide layer, a second conductive layer and a fifth insulating layer on the result structure of the b) step one by one and, thereafter, developing a first photoresist film used as a storage node contact mask;

d) etching said fifth insulating layer, said second conductive layer, said first buffer oxide layer and said first conductive layer one by one and, thereafter, removing said first photoresist film;

e) forming a conductive layer on the result structure of the d) step and, thereafter, etching the result structure entirely for forming a spacer on said structure;



f) etching said fourth insulating layer, said third insulating layer, said second insulating layer and said first insulating layer one by one, thereby forming a contact hole exposing said source region to the outside;

g) forming a third conductive layer and a second buffer oxide layer on the structure resulting from) step f) one by one and, thereafter, etching said structure to form said second buffer oxide layer with a width and length;

h) forming a fourth conductive layer and a sixth insulating layer on the resulting structure of step g) one by one and, thereafter, forming a second photoresist film having a width and length larger than said second buffer oxide layer;

i) etching said sixth insulating layer, said fourth conductive layer, said third conductive layer and said second conductive layer;

j) removing said second photoresist film and removing all of said first and second buffer oxide layers and, thereafter, partially etching said first conductive layer using the remaining sixth insulating layer as an etch barrier; and

k) etching said sixth insulating layer for removing this layer and, thereafter, applying a capacitor dielectric layer and forming a plate electrode.

5,389,561

METHOD FOR MAKING SOI TYPE BIPOLAR TRANSISTOR

Takayuki Gomi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 989,514, Dec. 11, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 161,498

Claims priority, application Japan, Dec. 13, 1991, 3-330561; Dec. 13, 1991, 3-330562

Int. Cl.[6] **H01L** *21/265*

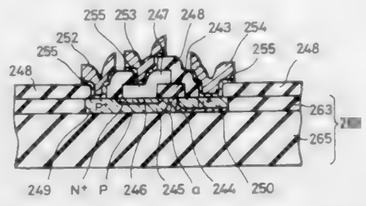
U.S. Cl. 437—31 **9 Claims**

1. A method for manufacturing a semiconductor apparatus which has second conductivity type emitter region and collector region and a first conductivity type base region arranged in a lateral direction within a first conductivity type element forming region which is surrounded from its side portions and its lower portion by an insulating layer, comprising the steps of:

providing the element forming region;

forming an interlayer on said element forming region;

forming an opening portion on said interlayer at a portion corresponding to a portion which will become said emitter region;



selectively forming a semiconductor layer on said opening portion so that a part of said semiconductor layer is overgrown over said interlayer in the lateral direction; and

introducing a second conductivity type impurity into one side of said element forming region and said semiconductor layer while preventing introduction in the other side of said element forming region;

introducing a first conductivity type impurity in said other side of the element forming region; and

heat treating to diffuse the second conductivity type impurities to form the collector and emitter.

5,389,562

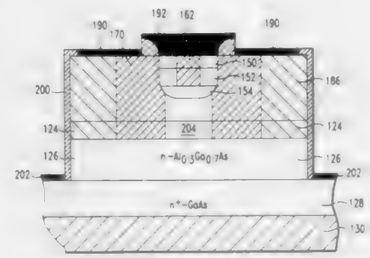
DOUBLE HETEROJUNCTION BIPOLAR TRANSISTOR AND THE METHOD OF MANUFACTURE THEREFOR

S. Noor Mohammad, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 968,913, Dec. 23, 1992, Pat. No. 5,365,089. This application Feb. 8, 1994, Ser. No. 193,685

Int. Cl.[6] **H01L** *21/265*

U.S. Cl. 437—31 **11 Claims**



1. A method of manufacturing a Double Heterojunction Bipolar Transistor (DHBT), said method comprising the steps of:

a) growing a layered wafer comprising the steps of:

i) growing a first layer of a first semiconductor material on a substrate, said first layer being doped with a first donor type dopant,

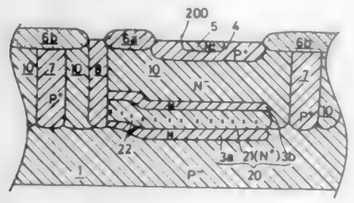
ii) growing a second layer of a second semiconductor material on said first layer, said second layer being doped with said first donor type dopant at a first dopant concentration;

iii) growing a third layer of said second semiconductor material on said second layer, said second layer being doped with said first donor type dopant at a second dopant concentration, and

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iv) growing a fourth layer of said first semiconductor material on said third layer, said fourth layer being doped with a second donor type dopant;
b) etching a trench in said layered wafer;
c) growing a plug in said trench;
d) doping a core region of said plug;
e) doping an extrinsic base region in said layered wafer; and
f) forming a base contact, an emitter contact, and a collector contact.

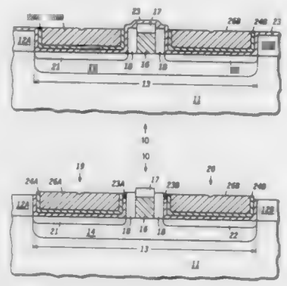
5,389,563
METHOD OF FABRICATING A BIPOLAR TRANSISTOR HAVING A HIGH ION CONCENTRATION BURIED FLOATING COLLECTOR
Takashi Kurol, and Shigeru Kusunoki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 31,988, Mar. 16, 1993, Pat. No. 5,341,022. This application May 13, 1994, Ser. No. 242,604
Claims priority, application Japan, May 15, 1992, 4-123177
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—31 7 Claims



1. A method of fabricating a semiconductor device, comprising the steps of:
(a) selectively forming a plurality of first insulating films on a semiconductor substrate of a first conductivity type;
(b-1) forming a principal buried layer of a second conductivity type having a relatively high concentration of defects formed in said semiconductor substrate;
(b-2) forming secondary buried layers of relatively low concentration on upper and lower surfaces of said principal buried layer; and
(c) forming a bipolar transistor including a first semiconductor layer of said second conductivity type having a relatively low concentration formed on said principal buried layer, a second semiconductor layer of said first conductivity type selectively formed on a surface of said first semiconductor layer, and a third semiconductor layer of said second conductivity type selectively formed on a surface of said second semiconductor layer.

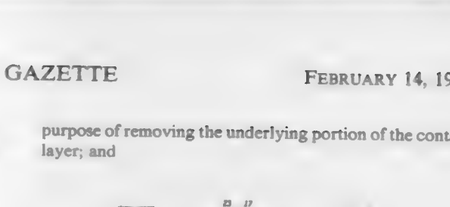
5,389,564
METHOD OF FORMING A GAAS FET HAVING ETCHED OHMIC CONTACTS
Bruce A. Bernhardt, Tempe; Jaeshin Cho, Gilbert, and Gregory L. Hansell, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 22, 1992, Ser. No. 902,245
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—40 13 Claims

8. A method of forming a III-V FET comprising:
providing a III-V semiconductor substrate;
forming a gate in contact with the substrate;
covering a portion of the substrate with a contact layer that is one of nickel and palladium;
covering the contact layer with a refractory metal;
etching a portion of the refractory metal for the purpose of removing the portion of the refractory metal and exposing an underlying portion of the contact layer;
etching the underlying portion of the contact layer for the purpose of removing the underlying portion of the contact layer; and



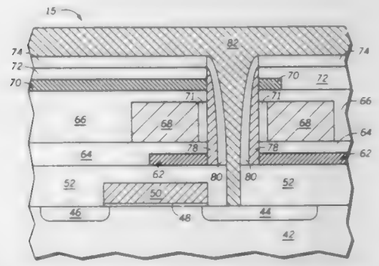
forming an ohmic contact between the contact layer and the substrate by alloying the contact layer with the substrate.

5,389,565
METHOD OF FABRICATING HIGH THRESHOLD METAL OXIDE SILICON READ-ONLY-MEMORY TRANSISTORS
Alex Gyure, Sunnyvale, Calif.; John Berg, Boise, Id.; Damian Carver, Boise, Id., and Pete Manos, Boise, Id., assignors to Zilog, Inc., Campbell, Calif.
Filed Jan. 7, 1994, Ser. No. 179,492
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—52 14 Claims



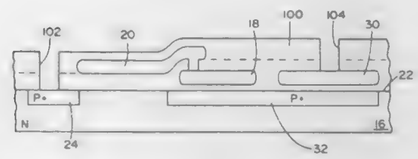
1. A method of forming a read-only-memory circuit including memory locations on a silicon substrate comprising:
forming polysilicon lines at the memory locations;
implanting lightly doped regions in the silicon substrate at some but not all of the memory locations, this lightly doped regions implanting step being self-aligned around the polysilicon lines at the some but not all the memory locations;
forming barrier layers on the polysilicon lines; and
implanting heavily doped regions in the silicon substrate at the memory locations, this heavily doped regions implanting step being self-aligned around the barrier layers on the polysilicon lines;
wherein a memory cell of one type is formed at the some but not all memory locations where the lightly doped regions are formed and a memory cell of another type is formed at other memory locations where lightly doped regions are not formed.

5,389,566
METHOD OF FORMING A FERROMAGNETIC MEMORY DEVICE
Craig S. Lage, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.
Division of Ser. No. 96,204, Jul. 23, 1993, Pat. No. 5,329,486, which is a continuation of Ser. No. 873,139, Apr. 24, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 218,395
Int. Cl.[6] H01L *21/70, 27/00*
U.S. Cl. 437—52 24 Claims



19. A method for forming an integrated circuit memory cell comprising the steps of:
providing a semiconductor substrate;
forming a transistor device within the semiconductor substrate;
forming a dielectric layer overlying the transistor device; and
forming an annular ferromagnetic core overlying the dielectric layer and being coupled to the transistor device.

5,389,567
METHOD OF FORMING A NON-VOLATILE DRAM CELL
Alexandre Acovic, Yorktown Heights, N.Y.; Ching-Hsiang Hsu, Hsin Chu, Taiwan, Prov. of China; Matthew R. Wordeman, Mahopac, and Being S. Wu, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 841,343, Feb. 25, 1992, Pat. No. 5,331,188. This application May 10, 1994, Ser. No. 241,136
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—52 10 Claims



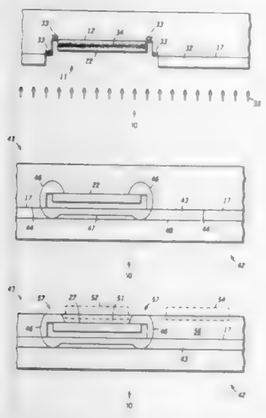
1. A method for forming a non-volatile dynamic random access memory cell comprising the steps of:
(a) providing a substrate of a first conductivity type having first and second spaced diffusion regions;
(b) depositing a tunnel oxide layer on said substrate;
(c) depositing a first layer of undoped polysilicon on said tunnel oxide layer and implanting a dopant of said second conductivity type in said first layer of undoped polysilicon;
(d) selectively removing a portion of said first layer of polysilicon such that the remaining portion forms a first polysilicon region disposed above said first diffusion region, said first polysilicon region forming a first layer of a floating gate;
(e) depositing a first oxide layer on said first polysilicon region and exposed portions of said tunnel oxide layer;
(f) forming a via in said first oxide layer to expose an end of said first polysilicon region;
(g) depositing a second layer of undoped polysilicon on said first oxide layer and said exposed end of said first polysilicon region and implanting a dopant of said second conductivity type in said second layer of undoped polysilicon;
(h) selectively removing a portion of said second polysilicon layer such that the remaining portion contacts said first polysilicon region and is disposed between said first and second spaced diffusion regions, said remaining portion of said second polysilicon layer forming a second layer of said floating gate;
(i) depositing a second oxide layer on said second polysilicon layer and exposed portions of said first oxide layer.

5,389,568
METHOD OF MAKING A DYNAMIC RANDOM ACCESS MEMORY DEVICE
Joo-young Yun, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Oct. 29, 1993, Ser. No. 142,986
Claims priority, application Rep. of Korea, Oct. 29, 1992, 1992 19990
Int. Cl.[6] H01L *21/72*
U.S. Cl. 437—60 7 Claims

1. A method of manufacturing a capacitor electrode in a semiconductor device comprising the steps of:
(a) forming an insulating layer on a semiconductor substrate having at least one transistor with a source region;
(b) forming a first conductive layer on said insulating layer;
(c) forming at least one first material pattern on said first conductive layer corresponding in location to said source region;
(d) etching said at least one first material pattern, said first conductive layer, and said insulating layer to form a first opening which exposes said source region;
(e) forming a second conductive layer over said first conductive layer having said opening formed therethrough, said second conductive layer covering a sidewall of said first opening and said source region to obtain a second opening having a smaller diameter than said first opening;
(f) etching back said second conductive layer to expose said at least one etched first material pattern; and
(g) removing said at least one etched first material pattern to obtain said capacitor electrode.

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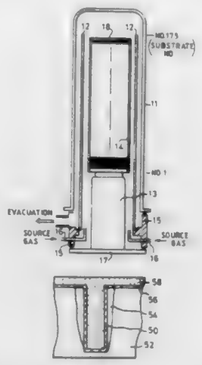
5,389,569
VERTICAL AND LATERAL ISOLATION FOR A SEMICONDUCTOR DEVICE
Bertrand F. Cambou, and Donald L. Hughes, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 3, 1992, Ser. No. 845,409
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—67 **17 Claims**



5. A method for making a buried isolation layer for bonded silicon substrates comprising:
providing a first silicon substrate with a first and a second surface;
patterning the first surface of the first silicon substrate to form a plurality of cavities having a depth;
masking the resulting surface of the first silicon substrate, the masking covering a portion of the first surface and the masking covering a portion of the plurality of cavities, thereby exposing a portion of the first surface of the first silicon substrate and a portion of each cavity;
implanting the first surface of the first silicon substrate with a dopant, wherein the dopant is implanted through the exposed portion of the first surface of the first silicon substrate;
removing the masking;
providing a second silicon substrate with a first and second surface; and
bonding the first surface of the first silicon substrate to the first surface of the second silicon substrate, thereby generating a bonded silicon substrate with the plurality of cavities therebetween.

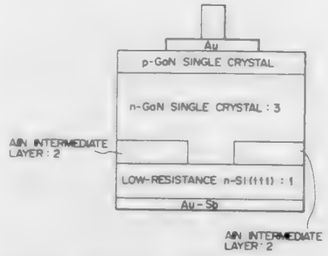
5,389,570
METHOD OF FORMING BORON DOPED SILICON LAYER AND SEMICONDUCTOR
Junichi Shiozawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Aug. 18, 1992, Ser. No. 931,787
Claims priority, application Japan, Aug. 19, 1991, 3-207045; Mar. 26, 1992, 4-068880
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—101 **25 Claims**

1. A method of forming a semiconductor device, said method comprising:
forming a boron doped amorphous silicon layer on a substrate by thermal-decomposition of a higher order silane



gas and diborane gas with gas temperatures in the range of 150° C.–450° C.

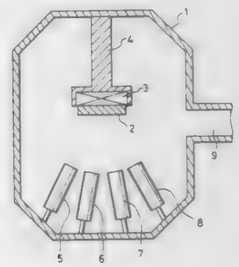
5,389,571
METHOD OF FABRICATING A GALLIUM NITRIDE BASED SEMICONDUCTOR DEVICE WITH AN ALUMINUM AND NITROGEN CONTAINING INTERMEDIATE LAYER
Tetsuya Takeuchi, Nagoya; Hiroshi Amano, Nijigaokahigashidanchi Room No. 19-103, No. 21, Kamioka-cho 2-chome, Meito-ku; Isamu Akasaki, No. 1-38-805, Jyoshin 1-chome, Nishi-ku, both of Nagoya-shi, Aichi-ken; Atsushi Watanabe, Tsurugashima, and Katsuhide Manabe, Inazawa, all of Japan, assignors to Hiroshi Amano; Isamu Akasaki, both of Aichi; Pioneer Electronic Corporation, Tokyo and Toyoda Gosei Co., Ltd., Aichi, all of Japan
Division of Ser. No. 971,208, Nov. 4, 1992, Pat. No. 5,239,188.
This application Apr. 16, 1993, Ser. No. 46,960
Claims priority, application Japan, Dec. 18, 1991, 3-335255
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—133 **2 Claims**



1. A method of fabricating a gallium nitride semiconductor device comprising a silicon (Si) substrate, an intermediate layer consisting of a compound containing at least aluminum and nitrogen and formed on said silicon substrate, and a crystal layer of $(Ga_{1-x}Al_x)_{1-y}In_yN$, wherein $0 \leqq x \leqq 1$ and $0 \leqq y \leqq 1$, excluding a case of $x=1$ when $y=0$, comprising the steps of:
keeping a silicon single crystal substrate at a temperature of 400° to 1300° C.;
holding said single crystal substrate in an atmosphere where a metaloganic compound containing at least aluminum and a nitrogen-containing compound are present to form a thin film intermediate layer containing at least aluminum and nitrogen on a part or entirety of a surface of said single crystal substrate; and

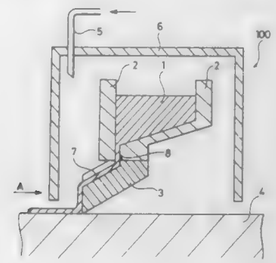
then forming at least one layer or multiple layers of a single crystal of $(Ga_{1-x}Al_x)_{1-y}In_yN$ on said intermediate layer.

5,389,572
PROCESS OF MAKING CHALCOPYRITE STRUCTURE SEMICONDUCTOR FILM
Takayuki Negami, Katano; Mikihiko Nishitani, Nara; Shigemi Kohiki, Osaka, and Takahiro Wada, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 14, 1994, Ser. No. 195,948
Claims priority, application Japan, Feb. 15, 1993, 5-025287
Int. Cl.[6] H01L *21/22*
U.S. Cl. 437—141 **11 Claims**



1. A process of producing a chalcopyrite semiconductor film comprising:
depositing a Group I-III-VI_2 chalcopyrite compound film on a substrate while evaporating onto said substrate a Group VII element to obtain a I-III-VI_2 chalcopyrite compound film containing said Group VII element therein as a dopant.

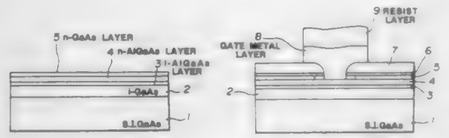
5,389,573
METHOD OF MAKING NARROW METAL ELECTRODE
Takushi Itagaki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 948,441, Sep. 22, 1992, Pat. No. 5,328,520.
This application Mar. 21, 1994, Ser. No. 215,478
Claims priority, application Japan, Feb. 24, 1992, 4-75308
Int. Cl.[6] H01L *31/18*
U.S. Cl. 437—180 **5 Claims**



1. A method for producing an electrically conduction pattern on a substrate, comprising:
maintaining a first low melting point metal in a fused state;
applying, by capillary action, said fused first low melting point metal to a tip of a drawing head disposed close to or in contact with a substrate;
applying said fused first low melting point metal to the substrate in a first linear pattern including lines having a width less than 100 microns while moving the tip of said drawing head relative to the substrate;
cooling and solidifying said first low melting point metal in the first linear pattern on the substrate;
maintaining a second low melting point metal in a fused state, the second low melting point metal having a lower melting point than the first low melting point metal;
applying, by capillary action, said fused second low melting point metal to the tip of the drawing head disposed close to the substrate;
applying said fused second low melting point metal to the substrate in a second linear pattern intersecting the first linear pattern; and
cooling and solidifying said second low melting point metal in the second linear pattern on the substrate.

5. The method of claim **1** wherein said substrate includes one of an active layer of an incident light surface of a solar cell and a transparent electrode disposed on an active layer of a light incident surface of a solar cell and said first and second linear patterns are part of an electrode.

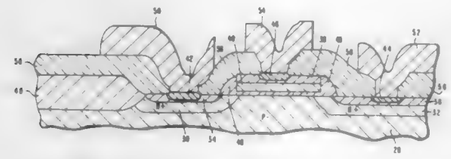
5,389,574
SELECTIVE ETCHING METHOD FOR III-V GROUP SEMICONDUCTOR MATERIAL USING A MIXED ETCHING GAS AND A STOP-ETCHING GAS
Yasuyuki Mizunuma, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 946,607, Sep. 18, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,597
Claims priority, application Japan, Sep. 20, 1991, 3-268536
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—184 **2 Claims**



1. A selective etching method comprising etching a III-V group compound semiconductor free from Al, said III-V group compound semiconductor free from Al being adjacent to a III-V group compound semiconductor containing Al, using a mixed gas containing a fluoride stop-etching gas containing C and F as constituent elements and a chloride etching gas consisting of Si and Cl as constituent elements, wherein the III-V group compound semiconductor containing Al is a compound semiconductor composed at least of Al, Ga and As and wherein said III-V group compound semiconductor which are free from Al are compound semiconductors at least composed of Ga and As and are free from Al, wherein the stop-etching gas consisting of C and F as constituent elements is at least one fluorocarbon based gas selected from the group consisting of CF_4, C_2F_6, C_3F_8, CHF_3, CH_2F_2 and $CBrF_3$ and wherein the etching gas consisting of Si and Cl as constituent gases is at least one silane-based gas selected from the group consisting of $SiCl_4$, SiH_2Cl_2 and $SiHCl_3$, and wherein a rare gas is additionally contained in the mixed gas and is one or more gases selected from the group consisting of He, Ne, Ar, Kr, Xe and Rn.

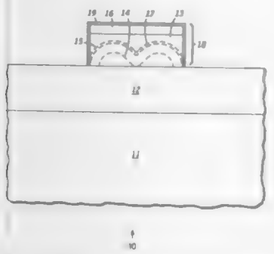
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5,389,575
SELF-ALIGNED CONTACT DIFFUSION BARRIER METHOD
Maw-Rong Chin; Gary Warren, both of Huntington Beach, and Kuan-Yang Liao, Laguna Niguel, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Continuation-in-part of Ser. No. 729,243, Jul. 12, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 39,718
Int. Cl.[6] H01L *21/441*
U.S. Cl. 437—190 **5 Claims**



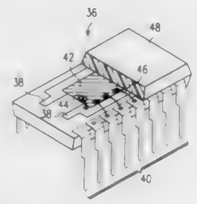
1. A method of preparing a semiconductor with a contact diffusion barrier, comprising:
forming a layer of low resistivity material over the semiconductor,
forming an insulating layer over said low resistivity layer,
forming a contact opening in said insulating layer in a plasma process by unheated plasma etching with a first plasma substance;
changing said plasma substance when the etching of said contact opening has been completed to a second plasma substance that reacts with said low resistivity material to resist diffusion from a overlying metal contact material into said semiconductor;
reacting said second plasma substance with said low resistivity material through said contact opening by a continuation of said unheated plasma process to form a conductive diffusion barrier in said low resistivity layer, said insulating layer acting as an implantation mask during said continued plasma process; and
forming a body of electrical contact material in said opening that contacts said conductive diffusion barrier and is self-aligned with said conductive diffusion barrier and is self-aligned with said conductive diffusion barrier by said contact opening with said conductive diffusion barrier resisting diffusion from said electrical contact material into the semiconductor.

5,389,576
METHOD OF PROCESSING A POLYCIDE STRUCTURE
Israel A. Lesk, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 28, 1992, Ser. No. 997,425
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—200 **8 Claims**



1. A method of processing a polycide structure comprising:
providing a silicon wafer;
forming a layer of silicon dioxide on the silicon wafer;
applying a layer of doped polysilicon on a portion of the silicon dioxide;
forming a layer of tungsten silicide on the doped polysilicon;
covering the tungsten silicide and the doped polysilicon with silicon dioxide; and
heating the silicon dioxide, the doped polysilicon and the tungsten silicide to a temperature greater than approximately 900° C. in an environment consisting substantially of nitrogen and oxygen wherein the oxygen has a concentration between approximately 1×10^1 and 1×10^5 parts per million for the purpose of substantially preventing conversion of silicon in the doped polysilicon layer to silicon monoxide.

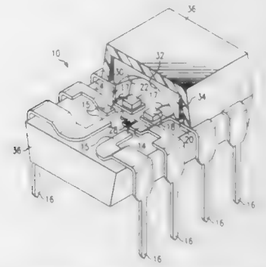
5,389,577
LEADFRAME FOR INTEGRATED CIRCUITS
David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Continuation of Ser. No. 938,396, Aug. 31, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 180,692
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—206 **10 Claims**



1. A method for fabricating a leadframe for an integrated circuit, comprising the steps of:
forming the leadframe having a paddle for attaching a die thereon, and having a plurality of leads extending from the paddle, wherein said paddle comprises at least two substantially rectangular shaped separate segments having a substantially rectangular space separating each segment from the remaining segments;
attaching said die directly to said separate segments of said paddle with an adhesive material;
electrically bonding each separate segment of the paddle to the die, wherein each separate segment can transmit a different electrical signal to or from the die; and
bonding the plurality of leads to the die so that electrical contact can be made between the plurality of leads and the die.

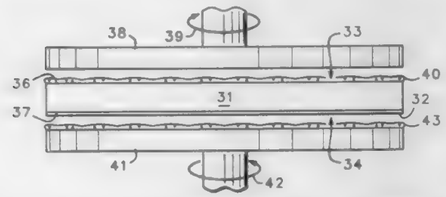
5,389,578
OPTICAL COUPLER
Lester L. Hodson, McKinney, and Kirk S. Laney, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 4, 1994, Ser. No. 178,174
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—209 **18 Claims**

1. A method of manufacturing an optical coupler comprising:
providing a leadframe having at least a first and second mount lead;
coupling a light emitter to the first mount lead;
coupling a light detector to the second mount lead with the light detector electrically isolated from the light emitter;
surrounding and encasing the light emitter and light detector with an inner mold material;
molding the inner mold material in place to form a transparent encapsulation having a molded surface defining a precision reflector over the light emitter and light detector; applying a reflective coating over the precision molded surface; and



encasing the molded inner mold material encapsulation, applied reflective material coating, and a portion of the first and second mount leads with an overmold.

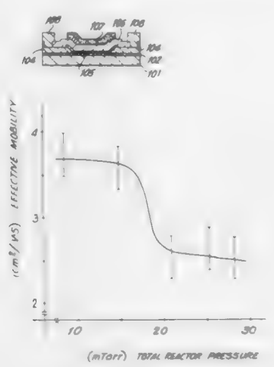
5,389,579
METHOD FOR SINGLE SIDED POLISHING OF A SEMICONDUCTOR WAFER
Raymond C. Wells, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 5, 1993, Ser. No. 43,117
Int. Cl.[6] H01L *21/302, 21/60*
U.S. Cl. 437—225 **12 Claims**



3. A method for single sided polishing of a semiconductor wafer, the semiconductor wafer having a first and a second surface corresponding respectively to a first and a second side, the method comprising:
forming a protective layer on the second surface of the semiconductor wafer; and
polishing the first and second sides of the semiconductor wafer concurrently, the first surface being polished whereas said protective layer prevents the second surface from being polished.

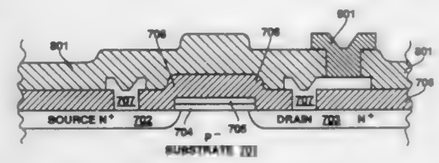
5,389,580
THIN FILM SEMICONDUCTOR DEVICE AND METHOD OF PRODUCTION
Mitsutoshi Miyasaka, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Continuation of Ser. No. 703,112, May 17, 1991, abandoned. This application Dec. 27, 1993, Ser. No. 173,265
Claims priority, application Japan, May 18, 1990, 2-128745; May 18, 1990, 2-128746; Apr. 3, 1991, 3-070879
Int. Cl.[6] H01L *21/469*
U.S. Cl. 437—233 **10 Claims**

1. A method of forming a MOSFET thin film transistor including a thin film layer of silicon to serve as an active layer of a transistor, comprising the steps of:
providing a substrate;
placing the substrate into a reactor;
depositing a thin film silicon layer having a thickness of less than about 1400 Å on the substrate in the reactor by chemical vapor deposition by flowing gas through the reactor at a speed of at least about 1.7 SCCM/mTorr and using monosilane (SiH_4) as a source gas at one of a total reactor



pressure of about 15 mTorr or less and a silane partial pressure of about 10 mTorr or less.

5,389,581
HIGH DENSITY TEOS-BASED FILM FOR INTERMETAL DIELECTRICS
Philip Freiberger, Santa Clara; Ragupathy V. Giridhar, San Jose; Brett Huff, Fremont, and Farhad K. Moghadam, Los Gatos, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Continuation of Ser. No. 712,115, Jun. 7, 1991, abandoned. This application May 25, 1993, Ser. No. 67,335
Int. Cl.[6] H01L *21/90*
U.S. Cl. 437—238 **13 Claims**



1. A method of forming a semiconductor device which comprises the steps of:
(a) providing a substrate with a first interconnection metal layer;
(b) forming a dielectric layer directly on said first interconnection layer, said dielectric layer being formed by a method including using a plasma-enhanced reaction, said reaction being performed at a radio frequency of approximately 13.56 MHz, with a flow rate of an oxygen containing chemical and a flow rate of tetraethyl orthosilicate (TEOS) such that an equivalent atomic flow rate of oxygen in said oxygen containing chemical on a mole basis is between two times said flow rate of TEOS on a mole basis and about six times said flow rate of TEOS on a mole basis; and
(c) forming a second interconnection layer directly on said dielectric layer produced by said method, said dielectric layer produced by said method being the sole dielectric layer separating said second interconnection layer from said first interconnection metal layer.

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5,389,582

CRISTOBALITE REINFORCEMENT OF QUARTZ GLASS

Ted A. Loxley, and John F. Blackmer, both of 3985 Ben Hur Ave., Willoughby, Ohio 44094

Continuation-in-part of Ser. No. 523,982, May 16, 1990, Pat. No. 5,053,359, which is a division of Ser. No. 328,773, Mar. 24, 1989, abandoned, which is a continuation of Ser. No. 225,051, Jul. 27, 1988, abandoned, which is a continuation of Ser. No. 795,645, Nov. 6, 1985, abandoned. This application Sep. 30, 1991, Ser. No. 767,691

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[6] C03C *10/14;* C03B *37/00*

U.S. Cl. 501—4 28 Claims

1. A process for making a quartz glass comprising shaping a quartz refractory composition containing fine vitreous silica particles to form a porous silica body, heating the silica body to a temperature above 1400° C. to sinter and coalesce the silica particles, the silica body being heated in such manner as to limit crystallization and to provide a vitreous glass, and cooling the resulting refractory glass through the crystallographic alpha-beta inversion to a temperature below 100° C., said process being characterized in that said quartz refractory composition is made by mixing fused quartz particles with an average particle size of from one to ten microns with a minute amount of micronized water-insoluble particles of a crystallization aid having metallic ions that promote the growth of cristobalite to provide a homogeneous mixture; in that said metallic ions provide nucleation sites distributed throughout said silica body; and in that the glass is seeded to provide a high concentration of internal cristobalite nuclei at said nucleation sites.

5,389,583

PROCESS FOR THE PREPARATION OF A SILICATE-BOUND MATERIAL

Gisbert Schulze, Lauf, Germany, assignor to Hoechst CeramTec Aktiengesellschaft, Selb, Germany

Continuation of Ser. No. 724,720, Jul. 2, 1991, abandoned. This application Sep. 20, 1993, Ser. No. 130,087

Claims priority, application Germany, Jul. 4, 1990, 4021288

Int. Cl.[6] C03C *8/14*

U.S. Cl. 501—17 19 Claims

1. A process for the preparation of a ceramic molded article comprising the steps of:

a) admixing a silicate or alumina-based ceramic starting material comprising at least one of a clay other than kaolin, kaolin, steatite, and alumina, with a silicate-containing flux which is substantially free of feldspar, wherein the flux comprises nepheline syenite and alkali metal-free glass frit having a beginning softening point of above 850° C., wherein the weight ratio of nepheline syenite to glass frit in the flux is from 0.1 to 0.7:1 so as to form a mixture,

b) shaping the mixture into a green molded article, wherein the green molded article contains 0.2 to 20% by weight of the glass frit and 1.5 to 7% by weight of nepheline syenite and

c) heating and dense-sintering the molded article at a temperature of above 1100° C.

5,389,584

GA- AND/OR IN-CONTAINING ASGE SULFIDE GLASSES

Bruce G. Aitken, and Mark A. Newhouse, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Apr. 11, 1994, Ser. No. 225,766

Int. Cl.[6] C03C *3/32, 4/10*

U.S. Cl. 501—40 3 Claims

1. A transparent glass exhibiting excellent transmission far into the infrared region of the electromagnetic spectrum and wherein the difference between the temperature of the onset of crystallization and the transition temperature is at least about 150° C., said glass consisting essentially, expressed in terms of mole percent on the sulfide basis, of 55–95% GeS_2, 2–40% As_2S_3, 0.01–20% R_2S_3, wherein R is at least one trivalent network forming cation selected from the group consisting of gallium and indium, 0–10% MS_x, wherein M is at least one modifying cation selected from the group consisting of aluminum, antimony, barium, cadmium, calcium, lead, lithium, mercury, potassium, silver, sodium, strontium, thallium, tin, yttrium, and a rare earth metal of the lanthanide series, 0–20% total of at least one halide consisting of chloride and fluoride, 0–5% total selenide, and wherein the sulfur and/or selenium content can vary between 85–125% of the stoichiometric value.

5,389,585

FINE NON-OXIDE CERAMIC POWDERS

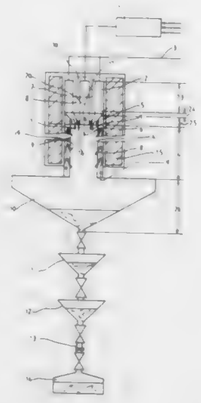
Theo König, Laufenburg-Rotzel, and Dietmar Fister, Murg-Niederhof, both of Germany, assignors to H.C. Starck GmbH and Co., Goslar, Germany

Filed Apr. 26, 1993, Ser. No. 51,519

Claims priority, application Germany, May 4, 1992, 4214725

Int. Cl.[6] C04B *35/52*

U.S. Cl. 501—87 15 Claims



1. Fine non-oxide ceramic powders MeX, wherein

Me=at least one of B, Al, Si, Ti, Zr, Hf, V, Y, Ta, Nb, Mo, W, La, Fe, Co, Ni and Cr and

X=at least one of C, N, B and Si

wherein the powders exhibit a particle size between 1.0 nm and 500 nm, with the proviso that when MeX is Si_3N_4 the particle size is between 1.0 nm and 100 nm and when MeX is AlN the particle size is between 1.0 nm and 200 nm, and further wherein fewer than 1% of the individual particles exhibit a deviation of more than 40% and no individual particles exhibit a deviation of more than 60% from the average particle size of the powders.

5,389,586

PRESSURELESS SINTERING OF WHISKER REINFORCED COMPOSITES

William M. Rogers, Taylors, and James F. Rhodes, Greer, both of S.C., assignors to Advanced Composite Materials Corporation, Greer, S.C.

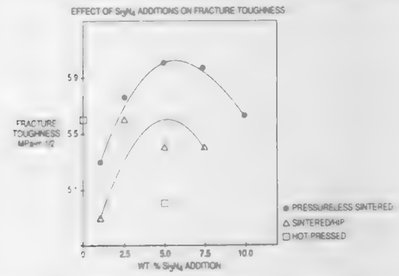
Continuation of Ser. No. 922,763, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 801,854, Dec. 3, 1991, abandoned. This application Apr. 21, 1994, Ser. No. 232,842

Int. Cl.[6] C04B *35/76*

U.S. Cl. 501—87 27 Claims

1. A process for making a sintered composite body comprising:

sintering under pressureless sintering conditions a preform body having a density within the range from about 60% to about 70% of theoretical maximum and made from a mixture comprising: a matrix consisting essentially of alumina and up to about 4 wt. % of sintering aids, about 10 to about 20 wt. % of monocrystalline whiskers, and about 2 to about 7.5 wt.% of nitride modifier consisting essentially of silicon nitride or aluminum nitride or mixtures thereof, to provide a sintered Ceramic composite which exhibits a density of at least about 95% of theoretical and a sufficiently high density and concentration of closed pores to achieve a density of at least about 98% theoretical upon densification by hot isostatic pressing.



5,389,587

BN-GROUP CERAMICS HAVING EXCELLENT RESISTANCE TO LOSS BY DISSOLVING

Masazumi Nakashima, and Sumihiko Kurita, both of Saga, Japan, assignors to Kabushiki Kaisha Kouransha, Saga, Japan

Continuation of Ser. No. 499,419 filed as PCT/JP80/01151, Nov. 10, 1989, published as WO 90/05122, May 17, 1990, abandoned.

This application Jan. 19, 1993, Ser. No. 5,409

Claims priority, application Japan, Nov. 10, 1988, 63-284868

Int. Cl.[6] C04B *35/58*

U.S. Cl. 501—96 15 Claims

1. A sintered body shaped to provide contact of said sintered body with a partly solidified phase of a hot melt, said sintered body comprising 50% by weight or more of h-BN and from 1% to less than 50% by weight of a complex compound selected from the group consisting of $Al_6Si_2O_{13}$, $Si_3Al_3O_3N_5$, Al_3O_3N or $Si_6Al_{10}O_{21}N_4$.

5,389,588

REACTION INJECTION MOLDING OF SILICON NITRIDE CERAMICS HAVING CRYSTALLIZED GRAIN BOUNDARY PHASES

Alexander Lukacs, III, 5 Marklyn Ct. Brandywood, Wilmington, Del. 19810, and Roger L. K. Matsumoto, 2 Ranch Ct. Paper Mill Farms, Newark, Del. 19711

Division of Ser. No. 851,038, Mar. 10, 1992, Pat. No. 5,240,658, which is a continuation-in-part of Ser. No. 675,010, Mar. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 373,305, Jun. 29, 1989, abandoned. This application Aug. 30, 1993, Ser. No. 114,268

Int. Cl.[6] C04B *35/38*

U.S. Cl. 501—97 19 Claims

1. A sintered, glass-free silicon nitride-containing ceramic article prepared by the process comprising:

(1) injecting into a heated mold a fluid, non-dilatant mixture comprising (a) at least about 40 percent by volume of a powder mixture of (i) from about 20 weight percent to about 98 weight percent silicon nitride, (ii) from about 0.5 weight percent to about 20 weight percent of a silicate glass-forming sintering aid, and (iii) from about 0.001 weight percent to about 80 weight percent of at least one material selected from a high metal content transition metal silicide, a transition metal and a metal compound that forms a high metal content silicide with silicon nitride under the conditions defined in steps (2) or (3), and (b) a curable silicon nitride precursor binder that is a liquid below its curing temperature, to cure the binder and produce a hardened molded article,

(2) heating the hardened molded article under a suitable atmosphere to a temperature sufficient to convert the cured binder to a silicon nitride-containing ceramic, and

(3) sintering the article by (i) heating at a temperature of about 1300° C. to about 1800° C. until a silicate glass forms, and (ii) further heating at a temperature of about 1300° C. to about 1800° C. under a vacuum until oxygen is removed from the silicate glass and the glass crystallizes.

5,389,589

BARIUM-CONTAINING ALUMINA

Karl C. C. Kharas, Des Plaines, Ill., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 22, 1992, Ser. No. 994,838

Int. Cl.[6] C04B *35/10*

U.S. Cl. 501—127 15 Claims

1. A barium-containing alumina prepared by the process comprising the steps of:

(a) making three preparations:

(i) an aqueous solution of a water soluble barium carboxylate having a concentration suitable to provide about 2 wt. % to about 18 wt. % Ba in the alumina;

(ii) a polyether or a polyalcohol; and

(iii) an aqueous boehmite sol or suspension having crystallites greater than about 150 Å;

(b) simultaneously adding preparations (a)(i) and (a)(ii) to preparation (a)(iii) with stirring to form a gel, said gel having a polyether or polyalcohol content of about 2 wt. % to about 26 wt. %;

(c) drying the gel and then calcining said dried gel in air at a temperature greater than about 1000° C.; and

(d) optionally further crystallizing the alumina by treating said calcined gel at a temperature in the range of from about 1000° C. to about 1350° C., in an atmosphere containing 3 to about 30% steam.

5,389,590

METHOD OF FABRICATING A SINTERED CERAMIC COMPOSITE

Masahiro Nawa, Katano; Koichi Niihara, 1142, Kori-Godo-chosha, 9-7, Korigaoka, Hirakata-shi, Osaka; Atsushi Nakahira, Suita, and Tohru Sekino, Mino, all of Japan, assignors to Matsushita Electric Works, Ltd. and Koichi Niihara, both of Osaka, Japan

Division of Ser. No. 769,398, Oct. 1, 1991, Pat. No. 5,296,301.

This application Feb. 7, 1994, Ser. No. 192,727

Claims priority, application Japan, Oct. 8, 1990, 02-270916; May 20, 1991, 03-145467; May 21, 1991, 03-116358; May 21, 1991, 03-116359

Int. Cl.[6] C04B *35/65*

U.S. Cl. 501—127 14 Claims

1. A method of fabricating a sintered ceramic-metal composite product comprising:

a ceramic matrix of polycrystalline ceramic; and

a metal phase having a higher melting point than a sintering temperature of said ceramic matrix, said metal phase comprising a number of metal particles dispersed within the grains of the polycrystalline ceramic and having an average particle size of 1 μm or less;

said method comprising the steps of:

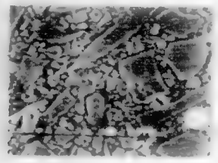
preparing a powder mixture of a ceramic powder having an average particle size of 0.5 μm or less and 0.5 to 50% by volume of at least one metal element selected from groups IVa, Va and VIa of the periodic table, said metal element being in the form of a powder having an average particle size of 1 μm or less; and sintering said powder mixture to obtain said ceramic-metal composite product.

5,389,591

MIXTURE OF GRAINS AND PARTICLES OF VITREOUS SILICA, AND NEW MATERIAL MADE OF SINTERED VITREOUS SILICA

Jacques, M. L. Guigonis, Entraigues sur Sotgues, and Eric T. G. Jorge, Avignon, both of France, assignors to Societe Europeenne des Produits Refractaires, Courbevoie, France

Filed May 20, 1993, Ser. No. 63,689
Claims priority, application France, May 22, 1992, 92 06276
Int. Cl.[6] C04B *35/14*
U.S. Cl. 501—133 **8 Claims**



1. A refractory material consisting essentially of sintered grains of fused vitreous silica and substantially spherical particles of fume silica which are visible in the form of dispersed separate entities in a photomicrograph, said grains of fused vitreous silica containing at least 99% by weight of silica, said refractory material having the following analysis, in % by weight: $Al_2O_3 \leqq 1\%$, $ZrO_2 \leqq 1\%$, $Fe_2O_3 \leqq 0.05\%$, $CaO \leqq 0.05\%$, $Na_2O \leqq 0.05\%$, others: traces, the remainder to 100% being SiO_2, having a content of cristobalite not higher than 2% by weight, and a bubbling index not higher than 3 when tested in contact with borosilicate glasses at 1350° C. for 1 hour.

5,389,592

METHOD OF ENHANCING THE ACTIVITY OF REGENERATED CATALYSTS

Jeffrey G. Weissman, Wappingers Falls; Elaine C. Decanio, Montgomery, and Max R. Cesar, New Burgh, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 15, 1993, Ser. No. 136,145
Int. Cl.[6] B01J *23/94, 23/92, 38/64, 38/66*
U.S. Cl. 502—25 **6 Claims**

1. A method of enhancing the activity of a used silicon containing catalyst for the hydroprocessing of hydrocarbons containing active metals from Groups VIB, VIIB and VIII of the Periodic Table which has been regenerated by an oxidation process, comprising:

(a) applying a modifying amount of a soluble boron containing compound or compounds in a solvent selected from the group consisting of water, hydrogen peroxide solution, acetone and alcohol, onto the surface of a regenerated catalyst;

(b) drying said modified regenerated catalyst to remove all free solvent from said catalyst;

(c) recovering said enhanced regenerated catalyst containing from about 0.01 to about 5.0 wt. % of said boron.

5,389,593

PILLARED CLAY CONTAINING FLUORIDED PILLARS

Jennifer S. Holmgren, Bloomingdale, Ill., assignor to UOP, Des Plaines, Ill.

Filed Oct. 12, 1993, Ser. No. 133,939
Int. Cl.[6] B01J *21/16, 37/00*
U.S. Cl. 502—63 **10 Claims**

8. A process for preparing a pillared clay composition comprising a smectite clay having the empirical formula

$$A^{n}{}_{(x+z/n)}(M_{8-x}M1_x)(M2_{(y-z)}M3_z)O_{20}(OH)_4$$

where A is a counter ion selected from the group consisting of alkali metals, alkaline earth metals, secondary amines, tertiary amines, quaternary ammonium cations and quaternary phosphonium cations, n is the charge on said counter ion, M is silicon or germanium, M1 is a metal having a +3 oxidation state selected from the group consisting of aluminum, gallium, iron and chromium, x ranges from about 0 to about 1.8, M2 is a metal having a +3 or a +2 oxidation state, M3 is a metal having a +2 or a +1 oxidation state, y is 4 when M2 is a +3 metal or 6 when M2 is a +2 metal and z varies from about 0 to about 1.8, the smectite clay having between its layers pillars which are metal fluoro hydroxy polymer cations, the smectite clay having between its layers pillars which are metal fluoro hydroxy polymer cations, the process comprising mixing a clay with a solution containing a pillar or pillar precursor, isolating the pillared clay and calcining the pillared clay at a temperature of about 300° C. to about 800° C. for a time sufficient to fix the pillars, treating the calcined clay with a solution of a fluoride compound for a time sufficient to form a metal fluoro hydroxy cation pillar.

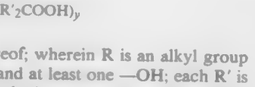
5,389,594

DEGRADABLE CHELANTS HAVING SULFONATE GROUPS, USES AND COMPOSITIONS THEREOF

Druce K. Crump, Lake Jackson, and David A. Wilson, Richwood, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 7,947, Jan. 26, 1993, Pat. No. 5,258,141, which is a division of Ser. No. 708,534, May 31, 1991, Pat. No. 5,208,369. This application Oct. 12, 1993, Ser. No. 134,783
Int. Cl.[6] B01J *31/04*
U.S. Cl. 502—167 **10 Claims**

1. A method of chelating a metal ion comprising contacting the ion with at least one compound of Formula I:



and salts and complexes thereof; wherein R is an alkyl group having at least one —SO_3H and at least one —OH; each R′ is independently selected from hydrogen, an unsubstituted or inertly substituted alkyl group, an alkyl group substituted with a carbonyl group, with a carboxylic acid, salt or complexed carboxyl group, a hydroxyalkyl or an alkoxy group; R″ is a hydroxyalkyl group; and x, y and z are integers, x and y each being at least 1, such that x+y+z=3 to form a chelate between the metal and the compound Of Formula I.

5,389,595

HYDROPROCESSING CATALYST, ITS USE, AND METHOD OF PREPARATION

Howard D. Simpson, Irvine, and Suheil F. Abdo, Placentia, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Sep. 30, 1993, Ser. No. 130,109
Int. Cl.[6] B01J *21/04*
U.S. Cl. 502—315 **61 Claims**

1. A method for preparing a catalyst, said method comprising:

(1) preparing a calcined particulate containing a Group VIII metal component and a porous refractory oxide;

(2) contacting at least one additional catalytic promoter component with said calcined particulate obtained in step (1); and

(3) calcining a composition obtained in step (2) and wherein said catalyst contains above 3 weight percent of said Group VIII metal components, calculated as the monoxide.

41. A hydroprocessing catalyst comprising greater than 4.0 weight percent of nickel components, calculated as NiO, at least about 22 weight percent of molybdenum components, calculated as MoO_3, and at least one phosphorus component on a support comprising at least one Underbedded nickel

component and an amorphous, porous refractory oxide, said catalyst having at least 75 percent of the total pore volume in pores of diameter from about 50 to about 130 angstroms and at least about 60 percent of the total pore volume in pores of diameter less than 110 angstroms.

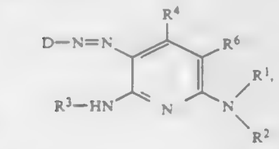
5,389,596

DYE MIXTURES FOR DYE TRANSFER

Karl-Heinz Etzbach, Frankenthal; Gunther Lamm, Hassloch, and Ruediger Sens, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 10, 1993, Ser. No. 59,132
Claims priority, application Germany, May 12, 1992, 4215535
Int. Cl.[6] B41M *5/035, 5/38*
U.S. Cl. 503—227 **6 Claims**

1. Dye mixtures comprising at least one azo dye of the formula I



(I)

where

R^1, R^2 and R^3 are identical or different and each is independently of the others alkyl, alkoxyalkyl, alkanoyloxyalkyl, alkoxycarbonyloxyalkyl or alkoxycarbonylalkyl, each of which may have up to 20 carbon atoms and be phenyl-, C_1–C_4-alkylphenyl-, C_1–C_4alkoxyphenyl-, halophenyl-, benzyloxy-, C_1–C_4-alkylbenzyloxy-, C_1–C_4-alkoxybenzyloxy, halobenzyloxy-, halogen, hydroxylor cyano-substituted, hydrogen, unsubstituted of C_1–C_4-alkyl- or C_1–C_4-alkoxy-, halogen- or benzyloxy-substituted cyclohexyl or a radical of the formula

$$[-E-O]_m-R^5,$$

where

E is C_2–C_6-alkylene,

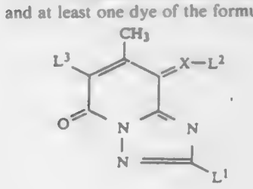
R^5 is C_1–C_4-alkyl or unsubstituted or C_1–C_4-alkyl- or C_1–C_4-alkoxy-substituted phenyl,

R^4 is C_1–C_4-alkyl,

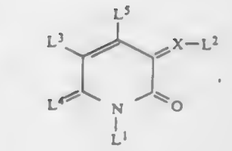
R^6 is cyano or carbamoyl, and

D is the radical of a diazo component,

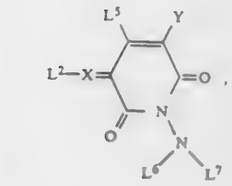
and at least one dye of the formula II, III and/or IV



(II)



(III)



(IV)

where

L^1 is C-C-alkyl, which may be substituted and may be interrupted by from 1 to 4 oxygen atoms in ether function, substituted or unsubstituted phenyl or hydroxyl,

L^2 is a 5- or 5-membered carbocyclic or heterocyclic radical,

L^3 is cyano, carbamoyl, carboxyl or C_1–C_4-alkoxycarbonyl,

L^4 is oxygen or a radical of the formula



where

Q^1 is in ach case C_1–C_6-alkyl, which may be interrupted by 1 or 2 oxygen atoms in ether function,

X is CH or nitrogen,

L^6 and L^7 are identical or different and each is independently of the other hydrogen, substituted or unsubstituted C_1–C_{12}-alkyl, C_5–C_7-cycloalkyl, substituted or unsubstituted phenyl, substituted or unsubstituted pyridyl, substituted or unsubstituted C_1–C_{12}-alkoyl, C_1–C_{12}-alkoxycarbonyl, substituted or unsubstituted C_1–C_{12}-alkylsulfonyl, C_5–C_7-cycloalkylsulfonyl, substituted or unsubstituted phenylsulfonyl, substituted or unsubstituted pyridylsulfonyl, substituted or unsubstituted benzoyl, pyridylcarbonyl or thienylcarbonyl, or together with the nitrogen atom joining them together are unsubstituted or C_1–C_4-alkyl-substituted succinimido, unsubstituted or C_1–C_4-alkyl -substituted phthalimido or a five- or six-member saturated heterocyclic radical, which may contain further hetero atoms,

Y is cyano or a radical of the formula CO—Q^2, CO—Q^2 or CO—NHQ^2, where Q^2 is hydrogen, C_1–C^8-alkyl, which may be substituted and may be interrupted by 1 or 2 oxygen atoms in ether function, C_5–C_7-cycloalkyl, phenyl or tolyl, the dye mixture containing from 10 to 90% by weight of the dye mixture of dyd of formula I and 90 to 10% by weight of the dye mixture of one or dyes of the formulas II, III and/or IV.

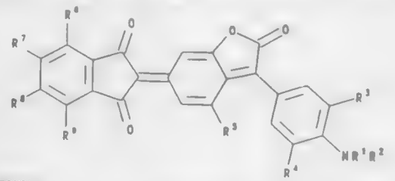
5,389,597

BENZOFURANONES

Richard A. Hann, Ipswich; Nigel Hall, Bury; Gary W. Morrison, London, and Dean Thetford, Manchester, all of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 955,021, Oct. 1, 1992, Pat. No. 5,268,490. This application Sep. 14, 1993, Ser. No. 120,416
Claims priority, application United Kingdom, Oct. 1, 1991, 9120785; Oct. 1, 1991, 9120786
Int. Cl.[6] B41M *5/035, 5/38*
U.S. Cl. 503—227 **3 Claims**

4. A thermal transfer printing sheet comprising a substrate having a coating comprising a benzofuranone of Formula (1):



wherein:

R^1 and R^2 are each independently -H or optionally substituted C_{1-20}-alkyl;

R^3 and R^4 are each independently -H or optionally substituted C_{1-6}-alkyl;

R^5 is selected from -H, -CN, -COOR[10] and -COR[10], in which R^{10} is -H or C_{1-6}-alkyl;

R^6, R^7, R^8 and R^9 are each independently selected from -H, -NR^1R^2, -NO_2, halogen, optionally substituted C_{1-6}-alkyl and optionally substituted C_{1-6}-alkoxy, the optional substi-

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tution for said $C_{1\text{-}20}$-alkyl, $C_{1\text{-}6}$-alkyl and $C_{1\text{-}6}$-alkoxy being selected from the group consisting of $C_{1\text{-}6}$-alkyl, $C_{1\text{-}6}$-alkoxy, nitro, chloro, fluoro, hydroxy, cyano, carboxy, phenyl and cyclohexyl.

5,389,598

AQUEOUS CONCENTRATE FORMULATIONS HAVING REDUCED EYE IRRITANCY

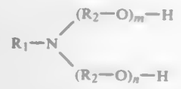
Howard C. Berk, St. Louis County, Mo., and James W. Kassebaum, Indianapolis, Ind., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 17, 1993, Ser. No. 169,693
Int. Cl.[6] A01N *57/04, 28/30, 25/32*
U.S. Cl. 504—206 **20 Claims**

1. A storage-stable aqueous concentrate composition comprising

(a) a water-soluble pesticide or plant growth modifying agent, in an amount sufficient to provide the desired pesticidal or plant growth modifying effect when the composition is diluted by a factor of at least 10 in water and applied to the organism to be killed, controlled or modified;

(b) an alkoxylated alkylamine surfactant represented generically by the structural formula



wherein R_1 is a straight or branched chain alkyl group with an average of about 8 to about 22 carbon atoms, R_2 groups are $C_{2\text{-}4}$ alkylene groups or a mixture of such groups and m and n are numbers such that m+n has an average value in the range from about 2 to about 50, said alkoxylated alkylamine surfactant being present in sufficient amount to provide good efficacy of said pesticide or plant growth modifying agent when the composition is applied in diluted form to the organism to be killed, controlled or modified, and in sufficient amount to impart an undesirable degree of eye irritancy to the composition if component (c) is absent;

(c) a $C_{6\text{-}22}$ saturated or unsaturated alkyl monocarboxylic or dicarboxylic acid or mixture of such acids, in sufficient amount to reduce or eliminate the eye irritancy of the composition imparted by component (b), but in an amount insufficient to cause any herbicidal symptoms in its own right when the composition is applied in diluted form to plant foliage in accordance with the present invention; and

(d) water.

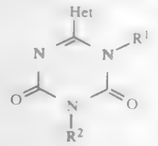
5,389,599

SUBSTITUTED HETEROCYCLYLTRIAZINEDIONES

Otto Schallner, Monheim; Klaus Lürssen; Robert R. Schmidt, both of Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Christoph Erdelen, Leichlingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 8, 1992, Ser. No. 986,639
Claims priority, application Germany, Dec. 18, 1991, 4141721
Int. Cl.[6] C07D *403/04;* **A01N** *43/66*
U.S. Cl. 504—230 **11 Claims**

1. A substituted heterocyclyltriazinedione of the formula



wherein

R^1 represents hydrogen, or represents a straight-chain or branched radical selected from the group consisting of alkyl having 1 to 10 carbon atoms, alkenyl having 2 to 5 carbon atoms, alkinyl having 2 to 5 carbon atoms, alkoxyalkyl or alkylthioalkyl, each of which has 1 to 4 carbon atoms in the individual alkyl moieties, halogenoalkyl having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, halogenoalkenyl having 2 to 5 carbon atoms and 1 to 9 identical or different halogen atoms, halogenoalkinyl having 2 to 5 carbon atoms and 1 to 7 identical or different halogen atoms, or represents cycloalkyl which has 3 to 7 carbon atoms and which is optionally monosubstituted to pentasubstituted by identical or different substituents selected from the group consisting of halogen, straight-chain or branched alkyl having 1 to 3 carbon atoms and straight-chain or branched halogenoalkyl having 1 to 3 carbon atoms and 1 to 7 identical or different halogen atoms, or

R^1 furthermore represents arylalkyl, aryloxyalkyl, arylthioalkyl or heteroarylalkyl, each of which has 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and each of which has 6 or 10 carbon atoms in the aryl moiety, or 2 to 9 carbon and 1 to 3 hetero atoms in the heteroaryl moiety, and each of which is optionally monosubstituted to pentasubstituted in the aryl, or heteroaryl, moiety by identical or different substituents selected from the group consisting of halogen, cyano, nitro, straight-chain or branched alkyl, alkoxy or alkylthio, each of which has 1 to 3 carbon atoms, in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each of which has 1 to 2 carbon atoms and 1 to 5 identical or different halogen atoms, straight-chain or branched alkoxycarbonyl or alkoximinoalkyl, each of which has 1 to 3 carbon atoms in the individual alkyl moieties, and phenyl which is optionally monosubstituted to pentasubstituted by identical or different substituents selected from the group consisting of halogen and straight-chain or branched alkyl having 1 to 3 carbon atoms, and

R^2 represents a straight-chain or branched radical selected from the group consisting of alkyl, alkoxy or alkylthio, each of which has 1 to 6 carbon atoms, alkenyl having 2 to 5 carbon atoms, alkinyl having 2 to 5 carbon atoms, halogenoalkyl having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, halogenoalkenyl having 2 to 5 carbon atoms and 1 to 9 identical or different halogen atoms, halogenoalkinyl having 2 to 5 carbon atoms and 1 to 7 identical or different halogen atoms, or represents cycloalkyl which has 3 to 7 carbon atoms and which is optionally monosubstituted to pentasubstituted by identical or different substituents selected from the group consisting of halogen, straight-chain or branched alkyl having 1 to 3 carbon atoms and straight-chain or branched halogenoalkyl having 1 to 3 carbon atoms and 1 to 7 identical or different halogen atoms, or

R^2 furthermore represents arylalkyl, aryloxyalkyl, arylthioalkyl or heteroarylalkyl, each of which has 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and each of which has 6 to 10 carbon atoms in the aryl moiety, or 2 to 9 carbon atoms and 1 to 3 hereto atoms in the heteroaryl moiety, the aryl moiety being optionally monosubstituted to pentasubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy or alkylthio, each of which has 1 to 3 carbon atoms, straight-chain or branched halogenoalkyl, halogenoalkoxy, halogencalkylthio, each of which has 1 to 2 carbon atoms and 1 to 5 identical or different halogen atoms, straight-chain or branched alkoxycarbonyl or alkoximinoalkyl, each of which has 1 to 3 carbon atoms in the individual alkyl moieties, and phenyl which is optionally monosubstituted to pentasubetituted by identical or different substituents selected from the group consisting of halogen and straight-chain or branched alkyl having 1 to 3 carbon atoms, and

Het and heteroaryl of the heteroarylalkyl radicals represent pyrazolyl, imidazolyl, triazolyl, tetrazolyl, indolyl, indazolyl or benzimidazolyl, each of which is N-linked and each of which is optionally monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of fluorine, chlorine, bromine, cyano, nitro, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, methoxy, ethoxy, n- or i-propoxy, n-, i-, s- or t-butoxy, methylthio, ethylthio, trifluoromethyl, trifluoromethoxy, trifluoro-methylthio, methoxycarbonyl, ethoxycarbonyl, methoximinomethyl, methoximinoethyl, ethoximinomethyl, ethoximinoethyl, and phenyl which is optionally monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of fluorine, chlorine, bromine, methyl and ethyl.

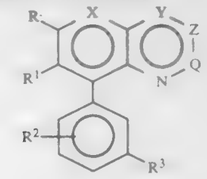
5,389,600

SUBSTITUTED FUSED HETEROCYCLIC HERBICIDES

Thomas P. Selby, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US91/08266, § 371 Date May 21, 1993, § 102(e) Date May 21, 1993, PCT Pub. No. WO92/09578, PCT Pub. Date Nov. 6, 1992
Continuation-in-part of Ser. No. 617,707, Nov. 26, 1990, Pat. No. 5,110,347. This PCT application Nov. 14, 1991, Ser. No. 50,475
Int. Cl.[6] A01N *43/54;* **C07D** *239/72, 239/80, 239/88*
U.S. Cl. 504—240 **12 Claims**

1. A compound of the formula



wherein

X is CH;

Y is CR^8;

Z is N;

Q is N CR^5;

R is C_1–C_4 alkyl, C_2–C_4 alkoxyalkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_3 alkylamino or N(C_1–C_3 alkyl)(C_1–C_3 alkyl);

R^1 is H, F, Cl or CH_3;

R^2 is H, halogen, C_1–C_3 alkyl, C_1–C_3 haloalkyl, C_1–C_3 alkoxy or C_1–C_3 haloalkoxy;

R^3 is H, halogen, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_1–C_4 haloalkyl, C_3–C_4 halocycloalkyl, C_2–C_4 haloalkenyl, C_2–C_4 haloalkynyl, OR^6, $S(O)_nR^7$ or CN;

R^5 is C_1–C_4 haloalkyl, C_3–C_5 halocycloalkyl, C_2–C_4 haloalkenyl, C_2–C_4 haloalkynyl, OR^6, $S(O)_nR^7$ or halogen;

R^6 is C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, C_1–C_4 haloalkyl, C_2–C_4 haloalkenyl or C_2–C_4 haloalkynyl;

R^7 is C_1–C_2 alkyl or C_1–C_2 haloalkyl;

R^8 is H, CN, C_1–C_3 alkyl, C_1–C_3 alkoxy or halogen; and

n is 0, 1 or 2;

or their mono N-oxides or their agriculturally suitable salts.

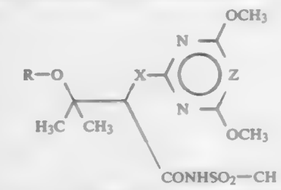
5,389,601

3-ALKOXY-N-CYCLOALKYLSULFONYALKANOIC AMIDE DERIVATIVE AND HERBICIDE USING THE SAME

Takaaki Abe; Yuji Akiyoshi; Hiroshi Shiraishi; Ikuo Shiraishi, and Takashi Hayama, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Jul. 20, 1993, Ser. No. 93,859
Claims priority, application Japan, Jul. 21, 1992, 4-235071
Int. Cl.[6] C07D *239/60;* **A01N** *43/54*
U.S. Cl. 504—243 **8 Claims**

1. A 3-alkoxy-N-cycloalkylsulfonylalkanoic amide compound represented by the formula (I):



(I)

wherein R represents a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a halo-lower alkyl group or a cyano-lower alkyl group; X represents an oxygen atom or a sulfur atom; Z represents a —CH= group; and n represents an integer of 2 to 9.

5,389,602

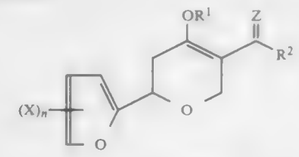
HERBICIDAL TETRAHYDROPYRAN-2,4-DIONES

Juergen Kast, Boehl-Iggelheim; Dieter Kolassa, Ludwigshafen; Norbert Meyer, Ladenburg; Bruno Wuerzer, Otterstadt; Karl-Otto Westphalen, Speyer; Wilhelm Rademacher, and Johann Jung, both of Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

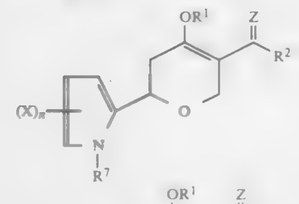
Continuation of Ser. No. 850,208, Mar. 12, 1992, abandoned, which is a continuation of Ser. No. 572,360, Aug. 27, 1990, abandoned, which is a continuation of Ser. No. 362,663, Jun. 7, 1989, abandoned. This application Jun. 15, 1993, Ser. No. 76,687
Claims priority, application Germany, Jun. 7, 1988, 3819347
Int. Cl.[6] C07D *413/04;* **A01N** *43/74*
U.S. Cl. 504—271 **11 Claims**

1. Tetrahydropyran-2,4-diones of the formulae I.1, I.3, I.4 and I.6 to I.39

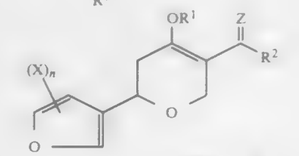
I.1



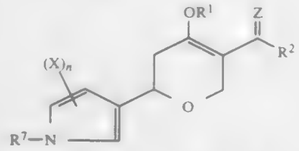
I.3



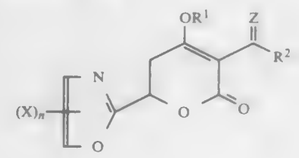
I.4



I.6

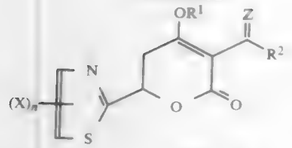


I.7

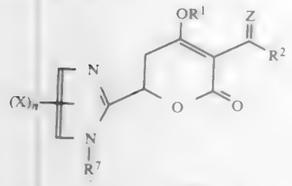


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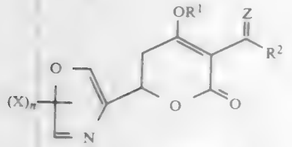
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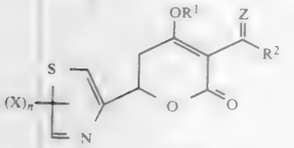
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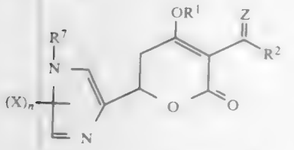
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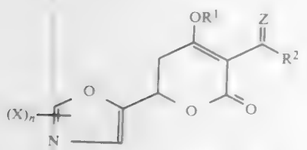
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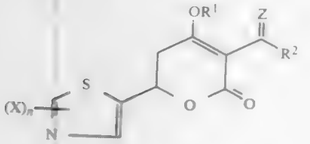
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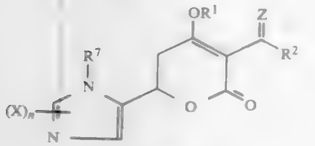
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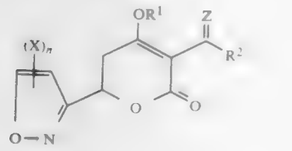
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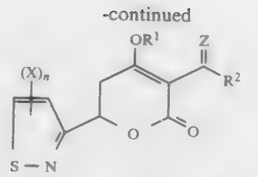


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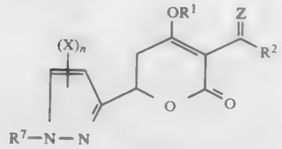


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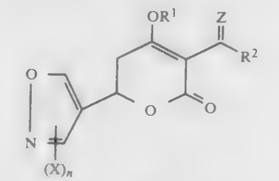
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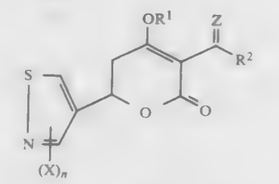
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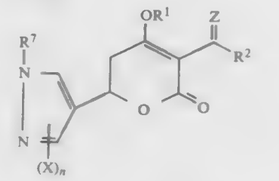
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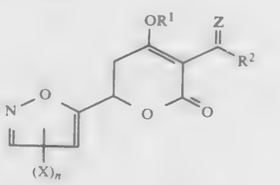
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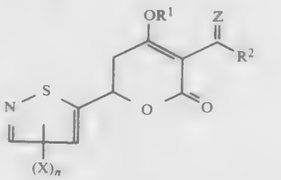
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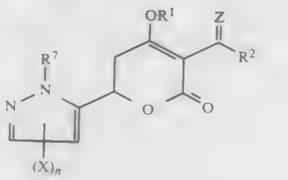
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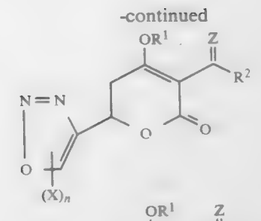


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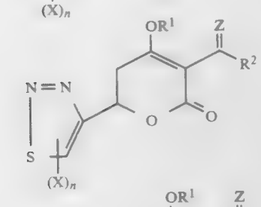


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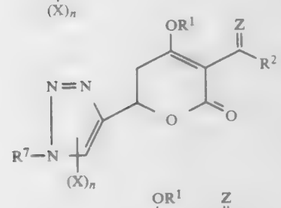
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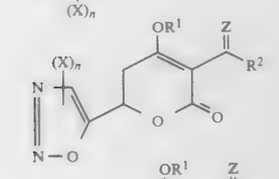
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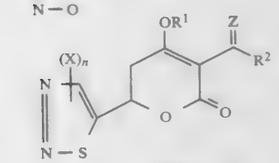
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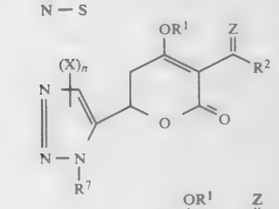
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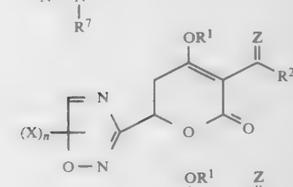
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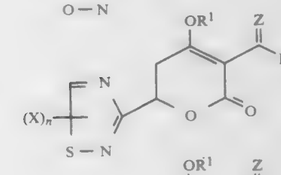
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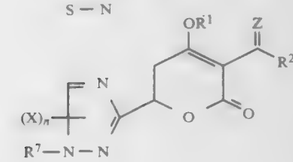
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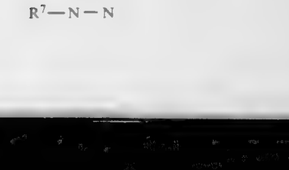
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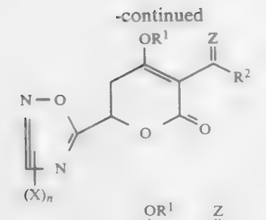
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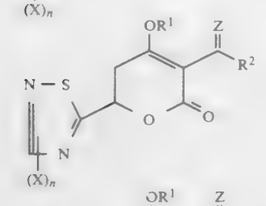
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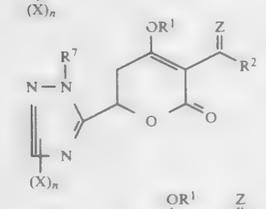
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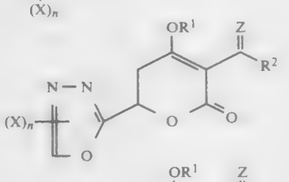
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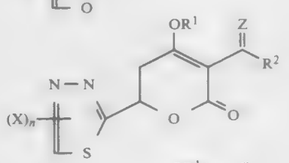
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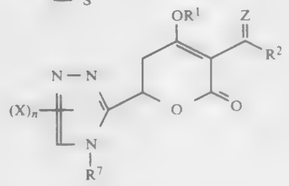
I.36



I.37



I.38



I.39

where

R^1 is hydrogen; C_1-C_8-alkyl which may be substituted by C_1-C_6-alkoxy or C_1-C_6-alkylthio; C_2-C_6-alkenyl; C_2-C_6-alkynyl; phenyl which may be monosubstituted to trisubstituted by halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-haloalkyl; C_1-C_6-alkoxy and/or C_1-C_6-alkylthio; C_1-C_6-alkylsulfonyl; benzenesulfonyl which may be monosubstituted to trisubstituted in the benzene ring by halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkoxy and/or C_1-C_6-alkylthio; C_2-C_6-alkylcarbonyl; C_3-C_6-alkenylcarbonyl; or benzoyl which may be monosubstituted to trisubstituted in the benzene ring by halogen, cyano, nitro, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkoxy or C_1-C_6-alkylthio;

R^2 is C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_1-C_6-haloalkyl or C_3-C_6-cycloalkyl;

R^7 is hydrogen; C_1-C_6-alkyl; C_2-C_6-alkenyl; C_2-C_6-alkanoyl; benzoyl which may be monosubstituted to trisubstituted in the benzene ring by C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-alkylthio, halogen, cyano, nitro and/or C_1-C_6-haloalkyl;

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benzyl; or phenyl which may be monosubstituted to trisubstituted by halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkoxy and/or C_1-C_6-alkylthio; X is halogen; C_1-C_6-alkyl; C_3-C_6-cycloalkyl which may be monosubstituted to trisubstituted by halogen, C_1-C_6-alkoxy and/or C_1-C_6-alkylthio; C_2-C_6-alkenyl; C_2-C_6-alkynyl; C_1-C_6-alkoxy; C_2-C_6-alkenyloxy; C_1-C_6-alkylthio; C_1-C_6-alkoxycarbonyl; C_2-C_6-alkanoyloxy; benzyloxy which may be monosubstituted to trisubstituted in the benzene ring by halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy and/or C_1-C_6-haloalkyl; NR^5R^6; formyl or C_2-C_6-alkanoyl or its imine, oxime or Schiff's base; or phenyl which may be monosubstituted to trisubstituted by halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-haloalkyl and/or NR^3R^4;

n is 0, 1 or 2 and, where n is 2, the radicals X may be different;

R^3, R^4, R^5 and R^6 are each hydrogen, C_1-C_6-alkyl, phenyl, C_2-C_6-alkanoyl, benzoyl and/or benzyl;

Z is oxygen or an oxime ether radical —NOR^8; and

R^8 is C_1-C_6-alkyl or C_2-C_6-alkenyl which may be monosubstituted to trisubstituted by halogen, C_1-C_6-alkoxy and/or C_1-C_6-alkylthio; C_2-C_6-alkynyl; C_2-C_6-haloalkynyl; C_1-C_6-alkyl or C_2-C_6-alkenyl, each of which may be monosubstituted to trisubstituted by phenyl, which may be monosubstituted to trisubstituted by halogen, nitro, cyano, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkoxy and/or C_1-C_6-alkylthio; or thenyl which may be monosubstituted to trisubstituted by halogen,

or their environmentally compatible salts.

5,389,603

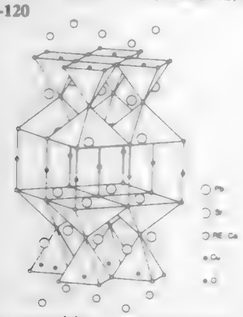
OXIDE SUPERCONDUCTORS, AND DEVICES AND SYSTEMS COMPRISING SUCH A SUPERCONDUCTOR

Bertram J. Batlogg, New Providence, and Robert J. Cava, Bridgewater, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 262,549, Oct. 25, 1988, abandoned. This application Feb. 9, 1990, Ser. No. 484,457

Int. Cl.[6] H01L *39/12;* **H01B** *12/00*

U.S. Cl. 505—120 **8 Claims**



1. An article comprising a superconductive element comprising at least one superconductive material having a perovskite-like crystal structure and nominal formula $(Pb_2A_2\ Cu')$-$BCu_2O_{8+\delta}$ with (A selected from the group consisting of Sr, Ba, Sr and Ba, Sr and Ca, and Sr, Ba and Ca; Cu' is selected from the group consisting of Cu, Ag, and Cu and Ag;) (B is selected from the group consisting of one or more RE and Ca, one or more RE and Sr, and one or more RE and Ca and Sr; where RE is Y and the elements of atomic number 57–71); wherein $0 \leq \delta \leq 1$; wherein divergence of the composition of the superconductive material from the nominal formula amounts of Pb, A, Cu', B, and/or Cu is at most about 10 atomic %; wherein associated with the crystal structure is an ab-plane, the crystal structure comprising a central crystal plane that comprises Cu', and further comprising two Pb- and oxygen-containing crystal planes sandwiching the central plane, with all three said planes being parallel to the ab- plane; and wherein the composition is selected such that the superconductive material has a transition temperature of at least about 30K.

5,389,604

PROCESS OF PRODUCING OXIDE SUPERCONDUCTOR

Masato Murakami; Naomichi Sakai; Hiroshi Takaichi, all of Koto; Akihiro Kondoh, Kobe; Shoichi Kagiya; Naomichi Nakamura, both of Koto; Hiroyuki Fujimoto, Kokubunji; Naoki Koshizuka, and Shoji Tanaka, both of Koto, all of Japan, assignors to Nippon Steel Corporation, Tokyo; Tosoh Corporation, Yamaguchi; Kawasaki Jukogyo Kabusiki Kaisha, Hyogo; Hokuriku Electric Power Company, Toyama; Kawasaki Steel Corporation, Hyogo; Railway Technical Research Institute, Tokyo and International Superconductivity Technology Center, Tokyo, all of Japan

Filed Jun. 17, 1993, Ser. No. 77,378

Claims priority, application Japan, Sep. 14, 1992, 4-245303

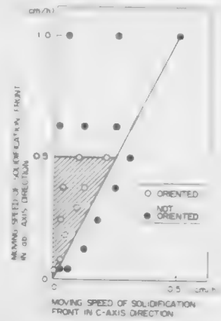
Int. Cl.[6] H01B *1/00;* **H01L** *39/00*

U.S. Cl. 505—450 **4 Claims**

1. A process of producing an oxide superconductor of a Y—Ba—Cu—O system with a composition having an atomic ratio Y:Ba:Cu of 1.0–2.0:2.0–2.5:3.0–3.5, said process comprising the steps of:

preparing a semimelt including solid and liquid phases and consisting of Y, Ba, Cu and O in said atomic ratio; and

solidifying said semimelt to form said oxide superconductor by so controlling a moving speed of a solidification front to have two components of different values in two perpendicularly intersecting directions, wherein the temperature



gradients of the two perpendicularly intersecting directions are at least about 1° C./cm.

5,389,605

PROCESS FOR MOLDING A HIGH-TEMPERATURE SUPERCONDUCTOR

Joachim Bock, and Preisler Eberhard, both of Erftstadt, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 26, 1993, Ser. No. 67,725

Claims priority, application Germany, Jun. 10, 1992, 4218950

Int. Cl.[6] H01L *39/12;* **B28B** *1/02*

U.S. Cl. 505—450 **5 Claims**

1. A process for producing a high-temperature superconductor molding consisting essentially of an oxide comprising bismuth, strontium, calcium, copper and optionally lead as well as sulfates of strontium, barium or mixtures thereof, which comprises:

intimately mixing

(i) oxides of bismuth, strontium, calcium, copper and optionally of lead in a desired molar ratio, and (ii) from 2 to 30% by weight of strontium sulfate and/or from 1 to 20% by weight of barium sulfate, each calculated according to the mixture of the oxides;

melting the mixture in a crucible comprising crucible material of platinum, iridium, rhodium or their alloys with each other or with other noble metals of the 1st or 8th subgroup

of the Periodic Table of the Elements at temperatures from 870° to 1600° C.;

pouring the melt into a permanent mold of desired form and size;

allowing said melt to solidify slowly therein to produce said molding;

freeing the molding from the permanent mold material; and

annealing the molding for from 6 to 200 hours at temperatures from 700° to 900° C. in an oxygen-containing atmosphere to produce said high-temperature superconductor molding.

5,389,606

PROCESS FOR PRODUCING THIN FILMS OF INORGANIC OXIDES OF CONTROLLED STOICHIOMETRY

Dean W. Face, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 984,134, Dec. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 850,621, Mar. 16, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 151,236

Int. Cl.[6] C23C *14/00;* **B05D** *5/12*

U.S. Cl. 505—473 **12 Claims**

1. A vapor deposition method of forming in-situ a crystalline thin film of formula A_yB_z wherein A is a relatively volatile oxide that is susceptible to evaporative loss from said thin film during vapor deposition, B is an involatile oxide, y is the number of moles of relatively volatile A, and z is the number of moles of involatile B, and wherein relatively volatile oxide A and involatile B have deposition rates such that the deposition rate of relatively volatile A is at least 1.1 times the product of the deposition rate of involatile B times the stoichiometric ratio y/z of relatively volatile A to involatile B comprising,

providing a first source of said relatively volatile A,

providing a second source of said involatile B,

depositing said involatile B from said second source onto a substrate while concurrently depositing a sufficient amount of said relatively volatile A from said first source onto said substrate to provide a crystalline thin film of formula A_yB_z.

5,389,607

MICROEMULSION CONTAINING A PERFUMING CONCENTRATE AND CORRESPONDING PRODUCT

Nathalie Dartnell, Paris, and Bernard Breda, Bougival, both of France, assignors to Yves Saint Laurent Parfums, Neuilly Sur Seine, France

Division of Ser. No. 889,277, May 28, 1992, Pat. No. 5,252,555. This application Jul. 21, 1993, Ser. No. 93,948

Claims priority, application France, May 31, 1991, 91 06592

Int. Cl.[6] A61K *7/46*

U.S. Cl. 512—3 **10 Claims**

1. A clear, essentially transparent, non-alcoholic perfuming cosmetic microemulsion containing no saturated hydrocarbon with a number of carbon atoms below 10 or above 20 and bearing a hydroxyl function replacing a hydrogen atom, said microemulsion comprising a mixture of:

a perfume, on a weight basis of about 5% to 50% of the microemulsion;

a polyethylene glycol surfactant on a weight basis of about 10% to 50% of the microemulsion;

a polyglycerol first cosurfactant, on a weight basis of about 1% to 20% of the microemulsion;

an ether phosphate second cosurfactant, on a weight basis of about 0.5% to 15% of the microemulsion; and

at least one aqueous compound or water, qs 100.

5,389,608

1-PHENYL-1-CYANO-C_5-C_7 ALKANES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

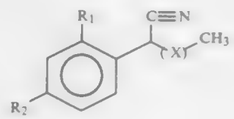
Anthony T. Levorse, South Amboy; Marie R. Hanna, Keyport; Charles E. J. Beck, Summit, and Kathleen E. Boardwick, Keyport, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 12, 1994, Ser. No. 241,725

Int. Cl.[6] A61K *7/46*

U.S. Cl. 512—6 **9 Claims**

1. A process for imparting, augmenting or enhancing an aroma of or to a consumable material selected from the group consisting of perfume compositions, perfumed articles and colognes comprising the step of intimately admixing with a consumable material base an aroma augmenting, enhancing or imparting quantity of at least one 1-phenyl-1-cyano-C_5–C_7 alkane defined according to the structure:



wherein R_1 and R_2 each represents hydrogen or methoxy with the proviso that when R_1 is methoxy, R_2 is hydrogen and when R_2 is methoxy, R_1 is hydrogen; and wherein X represents C_3–C_5 straight chain or branched chain alkylene.

5,389,609

ANTIFUNGAL PREPARATIONS, AND PROCESS FOR MAKING SUCH PREPARATIONS

Charles P. Woloshuk, Raleigh, N.C.; Leo S. Melchers, Ea Leiden, Netherlands; Bernardus J. C. Cornelissen, EB Warmond, Netherlands; Elisabeth J. S. Meulenhoff, AE Amsterdam, Netherlands; Marianne B. Sela-Buurlage, VP Amersfoort, Netherlands, and Petrus J. M. Van Den Elzen, BH Voorhout, Netherlands, assignors to Mogen International N.V., Leiden, Netherlands

PCT No. PCT/NL91/00089, § 371 Date Apr. 6, 1992, § 102(e) Date Apr. 6, 1992, PCT Pub. No. WO91/18984, PCT Pub. Date Dec. 12, 1991

PCT Filed May 31, 1991, Ser. No. 828,798

Claims priority, application Netherlands, Jun. 7, 1990, 9001293

Int. Cl.[6] A61K *35/78*

U.S. Cl. 514—12 **8 Claims**

1. A method for obtaining an antifungal protein with activity against an Oomycete, said method comprising:

preparing an extract from a root or leaf of a plant;

testing the plant extract for the presence of the antifungl protein with an assay which comprises contacting or causing contact between the Oomycete and the plant extract, and assaying for inhibition of germination, growth or both of the Oomycete;

purifying the antifungal protein by fractionating the plant extract into a plurality of extract fractions according to protein content, and using the assay to test the extract fractions for inhibition of germination, growth or both of the Oomycete; and

recovering the antifungal protein from an extract fraction which inhibits germination, growth or both of the Oomycete.

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5,389,610

CARBOXYALKYLCARBONYL AMINOACID ENDOPEPTIDASE INHIBITORS

Bernard R. Neustadt, West Orange; Elizabeth M. Smith, Verona, both of N.J., and Martin F. Haslanger, Carmel, Ind., assignors to Schering Corporation, Kenilworth, N.J.

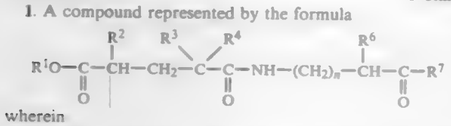
PCT No. PCT/US90/06655, § 371 Date Apr. 21, 1992, § 102(e) Date Apr. 21, 1992, PCT Pub. No. WO91/07386, PCT Pub. Date May 30, 1991

Continuation-in-part of Ser. No. 439,765, Nov. 21, 1989. This PCT application Nov. 20, 1990, Ser. No. 849,036

Int. Cl.[6] C07K *5/08*; A61K *39/02*

U.S. Cl. 514—2 **8 Claims**

1. A compound represented by the formula



wherein

R^1 is H;

R^2 is alkyl substituted with alkoxy, alkoxyalkoxy, or phenyl;

R^3 and R^4 together with the carbon to which they are attached form a 5-, 6- or 7-membered carbocyclic ring;

n is 0, 1, 2 or 3;

R^6 is alkylthioalkyl, and when n is 1,2 or 3, R^6 is also hydroxy or benzyloxy; and

R^7 is hydroxy, alkoxy or phenylalkoxy; or a pharmaceutically acceptable salt thereof.

5,389,611

LACTOFERRIN HYDROLYZATE FOR USE AS AN ANTIBACTERIAL AGENT AND AS A TYROSINASE INHIBITION AGENT

Mamoru Tomita, Yokohama; Kouzou Kawase, Urawa; Yoshitaka Tamura, Yokohama; Mitsunori Takase, Ohmiya; Hiroshi Miyakawa; Koji Yamauchi, both of Kamakura; Hitoshi Saito, Kawasaki; Hiroaki Abe, Yokosuka; Seiichi Shimamura, and Susumu Kobayashi, both of Yokohama, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 634,763, Dec. 27, 1990, Pat. No. 5,214,028. This application Dec. 9, 1991, Ser. No. 803,955

Claims priority, application Japan, Jan. 23, 1990, 2-13315; Jun. 26, 1990, 2-169636

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[6] C07K *3/10, 1/12*

U.S. Cl. 514—6 **11 Claims**

1. Lactoferrin hydrolyzate, obtained by hydrolyzing lactoferrin at a pH of from 1 to 4, such that said lactoferrin hydrolyzate has a decomposition rate of 6–20%.

5,389,612

PHOSPHONIC PEPTIDE INHIBITORS OF BACTERIAL COLLAGENASES

Vincent Dive, Vincennes; Flavio Toma, Clamart, both of France, and Athanasios Yiotakis, Athens, Greece, assignors to Commissariat a l'Energie Atomique, France

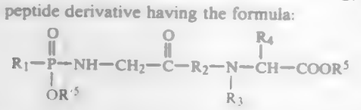
Continuation of Ser. No. 613,123, Nov. 15, 1990, abandoned. This application Sep. 23, 1992, Ser. No. 949,760

Claims priority, application France, Nov. 15, 1989, 89 14978

Int. Cl.[6] A61K *37/64, 37/02*; C07K *5/08, 5/10*

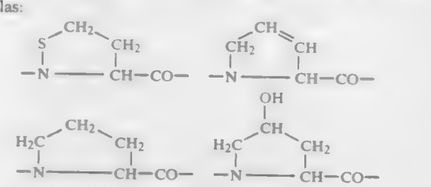
U.S. Cl. 514—7 **17 Claims**

1. A peptide derivative having the formula:



wherein:

—R_1 is selected from the group consisting of a phenylethyl group, a nitrophenylethyl group, a trifluoromethylphenylethyl group, and a group of the formula:



—CH(R^6)-NH-R^7-R^8 in which R^6 is the side chain of ala, leu, or phe, and R^7 is a direct bond, and R^8 is an unsubstituted aralkyl group or a benzyloxycarbonyl group;

—R^2 is a divalent radical chosen from among proline, hydroxyproline, thiazolidine and dehydroproline of formulas:

connected by its N part to CO;

—R^3 is a hydrogen atom or a C_1–C_4 alkyl group;

—R^4 is the side chain of an aminoacid; and

—R^5 and R'^5 are a hydrogen atom or an alkali metal; and pharmaceutically acceptable metal salts thereof.

5,389,613

METHOD OF TREATING PROSTATE ADENOCARCINOMA, PROSTATE BEGNIN HYPERTROPHIA AND ENDOMETRIOSIS

Fernand Labrie, Quebec, Canada, and Jean-Pierre Raynaud, Paris, France, assignors to Roussel Uclaf and Shering Corporation, both of Germany

Division of Ser. No. 875,228, Apr. 28, 1992, abandoned, which is a division of Ser. No. 595,297, Oct. 10, 1990, Pat. No. 5,189,021, which is a division of Ser. No. 334,088, Apr. 5, 1989, Pat. No. 4,981,842, which is a division of Ser. No. 120,408, Nov. 13, 1987, Pat. No. 4,851,386, which is a division of Ser. No. 921,737, Oct. 22, 1986, Pat. No. 4,745,102, which is a division of Ser. No. 895,179, Aug. 11, 1986, Pat. No. 4,728,640, which is a division of Ser. No. 621,421, Jun. 18, 1984, Pat. No. 4,743,589, which is a division of Ser. No. 468,932, Feb. 23, 1983, Pat. No. 4,472,382, which is a division of Ser. No. 189,168, Sep. 22, 1980, abandoned. This application Feb. 18, 1993, Ser. No. 19,232

Claims priority, application France, Sep. 21, 1979, 79 23545

The portion of the term of this patent subsequent to Sep. 18, 2002, has been disclaimed.

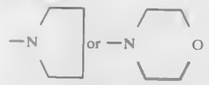
Int. Cl.[6] A61K *37/02, 37/43*

U.S. Cl. 514—15 **6 Claims**

1. A method of treating prostate adenocarcinoma, prostate begnin hypertrophia and endometriosis in warm blooded animals comprising administering to warm-blooded animals an effective amount of at least one peptide of the formula

p Glu-His-Trp-Ser-Tyr-X-Y-Arg-Pro-Z

wherein (a) Z is Gly—NH_2, Y is Leu and X is Gly, (b) Z is Gly—NH_2, Y is Leu, X is DL Leu, DL Val, D Abu (α-aminobutyric acid), D Phe, D Ser, D Thr, D Met, D Pgl, D Lys, Leu, Ile, Nle, Val, Met, Phe, D Leu, D Arg, D Ser (tbu), D Thr (tbu), D Cys (tbu), D Asp (O tbu), D Glu (O tbu), D Orn (boc), D Lys (boc), D Trp, Trp, 2-methyl Ala, D Tyr, lauryl-D Lys, dextran-D Lys, (c) Z is NH-cyclopropyl or NH—Alk- wherein Alk is alkyl of 1 to 3 carbon atoms, Y is Leu and X is D Ser (tbu), D Thr (tbu), D Asp (O tbu), D Glu (Otbu), D ORn (boc), D Lys (boc), (d) Z is —NH—CH_3, —NH—CH_2—CH_3—NH—CH_2—CH_2—CH_3—NH—CH_2—CH_2—OH,



Y is Leu and X is Gly, (e) Z is —NH—CH_2—CH_3, Y is Leu and X is D Trp, D Leu, D Ala, D Ser (tbu), D Tyr, D Lys, Ala (f) Z is Gly—NH_2 or —N—CH_2—CH_3, Y is N Me Leu and X is Gly, (g) Z is —NH-cyclopropyl, Y is Leu and X is D Leu or (h) Z is Gly—NH_2, NH-cyclopropyl or —NHAlk' wherein Alk' is alkyl of 1 to 3 carbon atoms, Y is Ser (but), Cys (but),

Asp (Obut), Glu (Obut), Orn (boc), Lys (boc) and X is Gly sufficient to treat said conditions.

5,389,614

HYDANTOIN DERIVATIVES

Wolfgang König, Hofheim; Gerhard Zoller, Schöneck; Melitta Just, Langen, and Bernd Jablonka, Bad Soden, all of Germany, assignors to Cassella AG, Frankfurt am Main, Germany

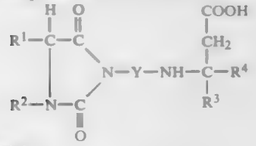
Filed Aug. 4, 1992, Ser. No. 924,745

Claims priority, application Germany, Aug. 8, 1991, 4126277

Int. Cl.[6] C07D *233/76*; C07K *5/02*; A61K *37/02*

U.S. Cl. 514—18 **6 Claims**

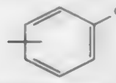
1. Compound of the formula I,



(I)

in which

Y denotes —$(CH_2)_m$—CO— or



and m represents 1–4;

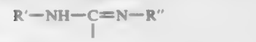
R^1 represents —$(CH_2)_n$—NH—X, —CH_2—C_6H_4—NH—X, —CH_2—C_6H_4—C(=NH)—NH_2, —CH_2—C_6H_4—CH_2—NH—X or —C_6H_4NH—X, or



wherein n represents an integer from 3 to 5,

X^1 represents —CH_2NHX, —NHX or —C(=NH)—NH_2,

X represents hydrogen or C_1–C_6-alkyl, or represents a radical of the formula II,



(II)

wherein

R' and R'' independently of one another denote hydrogen or C_1–C_6-alkyl;

R^2 denotes hydrogen or C_1–C_6-alkyl;

R^3 denotes hydrogen or a phenyl radical;

R^4 denotes hydrogen, $COOR^5$, CO—$N(CH_3)$—R^5 or CO-NH-R^5, wherein

R^5 denotes hydrogen, NHCO—HN_2 or (C_1–C_{18}-)alkyl, which is optionally mono- or polysubstituted by identical or different radicals from the series comprising hydroxyl, carboxyl, carboxamido, amino, mercapto, (C_1–C_{18}-)alkoxy, (C_1–C_{18}-)alkoxycarbonyl, (C_6–C_{14}-)aryl-(C_1–C_3-)alkoxycarbonyl, (C_3–C_8-cycloalkyl, halogen, nitro, trifluoromethyl and a radical R^6, wherein

R^6 represents (C_6–C_{14}-)aryl, (C_6–C_{14}-)aryl-)C_1–C_8-)alkyl, or a mono- or bicyclic 5- to 12-membered heterocyclic ring which can be aromatic, partly hydrogenated or completely hydrogenated and can contain, as a hetero element, one, two or three identical or different nitrogen, oxygen or sulphur atoms, the aryl and, independently of one another, the heterocyclic radical optionally being mono- or polysubstituted by identical or different radicals from the series comprising (C_1–C_{18}-)alkyl, (C_1–C_{18}-)alkoxy, halogen, nitro and trifluoromethyl; or R^6 represents a radical R^7;

R^7 denotes —NR^8R^9, —OR^8, —SR^8 or an amino acid side chain; or a naturally occurring or unnatural amino acid radical, imino acid radical or optionally N(-C_1–C_8-)alkylated or (C_6–C_{14}-)aryl-(C_1–C_8-)alkylated azzaamino acid radical or a dipeptide radical, in which the peptide bond can be reduced to NH—CH_2, and esters and amides thereof, it being possible for free functional groups optionally to be substituted by hydrogen or hydroxy- methyl or protected by protective groups customary in peptide chemistry; or denotes a radical —COR^7, wherein R^7 is defined as R^7;

R^8 denotes hydrogen, optionally amino-substituted(C_1–C_{14}-)aryl(-C_1–C_8-)alkyl, (C_1–C_{18}-)alkylcarbonyl, (C–C-)alkoxycarbonyl, (C_6–C_{14}-)arylcarbonyl, (C_6–C_{12}-)aryl(-C_1–C_8-)alkylcarbonyl, (C_6–C_{18}-)aryl(-C_1–C_{18}-)alkoxycarbonyl, or a naturally occurring or unnatural amino acid radical, imino acid radical or optionally N(-C_1–C_8-alkylated or (C_6–C_{14}-)aryl(-C_1–C_6-)alkylated azaamino acid radical or a dipeptide radical, in which the peptide bond can be reduced to NH–CH_2; and

R_9 denotes hydrogen, (C_1–C_{18}-)alkyl, (C_6–C_{12})aryl or (C_6–C_{12}-)aryl(-C_1–$_8$)alkyl;

and or physiologically tolerated salts thereof, excluding compounds of the formula I wherein, simultaneously,

R^1 denotes —$(CH_2)_n$—NH—X, and

Y denotes —$(CH_2)_m$—CO—.

5,389,615

PEPTIDES AND PHARMACEUTICAL COMPOSITION THEREOF IN THE TREATMENT OF PAIN

Sergio H. Ferreira, Est. Sao Paulo, Brazil; Adrian F. Bristow, Hertfordshire, and Stephen Poole, London, both of England, assignors to British Technology Group Ltd., London, England

PCT No. PCT/GB89/00319, § 371 Date Dec. 20, 1989, § 102(e) Date Dec. 20, 1989, PCT Pub. No. WO89/09226, PCT Pub. Date Oct. 5, 1989

Continuation of Ser. No. 438,404, Dec. 20, 1989, abandoned. This PCT application Mar. 28, 1989, Ser. No. 95,856

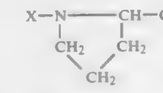
Claims priority, application United Kingdom, Mar. 28, 1988, 8807427; Dec. 9, 1988, 8828833

Int. Cl.[6] A61K *37/02*; C07K *5/08*

U.S. Cl. 514—18 **14 Claims**

1. A method of treating pain, which method comprises administering to a host a pharmaceutically effective amount of a compound selected from the group consisting of:

(a) a peptide of formula (I)



(I)

wherein X is selected from the group consisting of H_2N—$(CH_2)_4$—$CH(NH_2)$—C(C=O)—and H_2N—(C(=NH)—NH—$(CH_2)_3$—$CH(NH_2)$—C(=O) and Y is a naturally occurring amino acid residue,

(b) the C-terminal amide thereof, and

(c) a pharmaceutically acceptable salt of the said peptide or amide;

with the proviso that the proline residue is D-Pro.

5,389,616

AMINO ACID DERIVATIVES

Quirico Branca, Basle, Switzerland; Werner Neidhart, Freiburg im Breisqau, Germany; Jenri Ramuz, Birsfelden; Henri Ramuz, Birsfelden, all Heinz Stadler, Rheinfelden, both of Switzerland, and Wolfgang Wostl, Grenzach-Wyhlen, Germany, assignors to Hoffman-LaRoche Inc., Nutley, N.J.

Division of Ser. No. 872,736, Apr. 22, 1992, Pat. No. 5,256,645, which is a division of Ser. No. 318,576, Mar. 3, 1989, Pat. No. 5,134,123. This application Jul. 29, 1993, Ser. No. 99,028

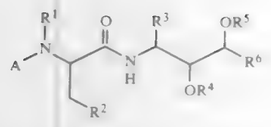
Claims priority, application Switzerland, Mar. 4, 1988, 820; Sep. 16, 1988, 3469; Dec. 28, 1988, 4824

Int. Cl.[6] A61K *37/00*

U.S. Cl. 514—18 **30 Claims**

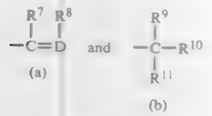
1. A method for treating high blood pressure and cardiac insufficiency which comprises administering an effective amount of a compound of formula:

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wherein R^1 is hydrogen or methyl, R^2 is imidazol-4-yl, R^3 is isobutyl, cyclohexylmethyl or benzyl, R^4 and R^5 each independently are hydrogen, alkanoyl, which is optionally mono- or multiply-substituted by amino, monoalkylamino, dialkylamino, alkanoylamino, alkanoyloxyamino, carboxy, alkoxy or hydroxy, or an O-protecting group or together are a cyclic O-protecting group, R^6 is one of the groups:



(a) and (b)

and A is the group:

—Y—Z

wherein D is a methyne group or a nitrogen atom, R^7 is alkyl, aryl or arylalkyl and R^8 is hydrogen, alkyl, aryl or arylalkyl or R^7 and R^8 together with the two atoms to which they are attached is aryl, heteroaryl, cycloalkenyl or heterocycloalkenyl, R^9 is hydrogen or alkyl and R^{10} and R^{11} taken together with the carbon atom to which they are attached, are cycloalkyl or heterocycloalkyl, Y is the bivalent residue of optionally N- and α-methylated phenylalanine, cyclohexylalanine, tyrosine, O-methyltyrosine, α-napththylalanine or homophenylalanine linked with Z at the N-terminal, Z is acyl, in the form of an optically pure diastereomer, a diastereomeric racemate, or mixtures thereof as well as pharmaceutically usable salts thereof.

5,389,617

METHOD FOR ADMINISTRATION OF AZAURIDINE AND PYRIDOXINE FOR THE TREATMENT OF RHEUMATOID ARTHRITIS

William Drell, San Diego, Calif., assignor to UR Labs, Inc., San Diego, Calif.

Continuation of Ser. No. 822,630, Jan. 17, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 152,255

Int. Cl.[6] A61K *31/70, 31/44*

U.S. Cl. 514—43 **12 Claims**

1. A method for treating rheumatoid arthritis in a patient comprising:

(a) administering to the patient an azauridine compound in an amount of from about 10 to about 50 mg/kg/day, and a pyridoxine compound in an amount of at least 0.0005 mole per mole of azauridine, for an initial period sufficient to reduce the adverse side effects associated with the administration of azauridine compounds at dosage levels of at least 50 mg/kg/day during subsequent administration of an azauridine compound at a higher dosage level of at least 50 mg/kg/day; and then

(b) administering to the patient an azauridine compound at a higher dosage level of at least about 50 mg/kg/day, and a pyridoxine compound in an amount of at least 0.0005 mole per mole of azauridine, for a second period sufficient to show improvement in the rheumatoid arthritis.

5,389,618

MIXTURES OF PARTICULAR LMW HEPARINIC POLYSACCHARIDES FOR THE PROPHYLAXIS/TREATMENT OF ACUTE THROMBOTIC EVENTS

Roger Debrie, Rieux, France, assignor to Rhone-Poulenc Rorer S.A., Antony, France

Continuation of Ser. No. 721,315, Jun. 26, 1991, abandoned. This application Jul. 16, 1993, Ser. No. 92,577

Claims priority, application France, Jun. 26, 1990, 90 08013

Int. Cl.[6] A61K *31/725;* **C08B** *37/10*

U.S. Cl. 514—56 **32 Claims**

1. A heterogeneous intimate admixture of sulfated heparinic polysaccharides, such sulfated polysaccharides having a weight average molecular weight less than that of heparin and said admixture consisting essentially of

from 9% to 20% of polysaccharide chains having a molecular weight less than 2,000 daltons

from 5% to 20% of polysaccharide chains having a molecular weight greater than 8,000 daltons, and

from 60–86% of polysaccharide chains having a molecular weight of between 2,000 and 8,000 daltons,

the ratio between the weight average molecular weight and the number average molecular weight thereof ranging from 1.3 to 1.6

said admixture (i) exhibiting a bioavailability and antithrombotic activity greater than heparin and (ii) having an average molecular weight of between approximately 3,500 and 5,500 daltons.

5,389,619

DERIVATIVES OF PHENYLACETIC ACID, THEIR PREPARATION AND THEIR USE AS PESTICIDES

Reinhard Doetzer, Weinheim; Hubert Sauter; Horst Wingert, both of Mannheim; Reinhard Kirstgen, Neustadt; Albrecht Harreus, Ludwigshafen; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Heppenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

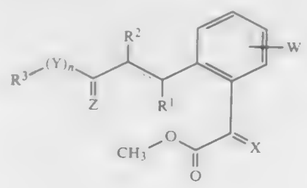
Filed Mar. 29, 1993, Ser. No. 38,862

Claims priority, application Germany, Apr. 4, 1992, 4211384

Int. Cl.[6] A61K *31/21, 31/235, 31/695;* **C07C** *327/10, 229/28, 229/34*

U.S. Cl. 514—63 **26 Claims**

1. A compound of the formula I



I

where

n is 0 or 1,

W is hydrogen, halogen, unsubstituted or substituted C_1–C_4-alkyl or unsubstituted or substituted C_1–C_4-alkoxy,

X is $CHOCH_3$, $NOCH_3$, $CHCH_3$ or CHC_2H_5,

Y is oxygen, sulfur or NR^4, —O—NR^4—, —NR^4—O— or —NR^4—NR^5—,

Z is oxygen, NR^6, NOR^7 or N—NR^8R^9 or, where n=1, sulfur,

R^1 is hydrogen or unsubstituted or substituted C_1–C_4-alkyl,

R^2 is independent of R^1 and is hydrogen unsubstituted or substituted C_1–C_4-alkyl, unsubstituted or substituted C_3–C_6-cycloalkyl, unsubstituted or substituted aryl, C_1–C_4-perfluoroalkyl or CO—V

R^3 is hydrogen, unsubstituted or substituted C_1–C_4-alkyl, unsubstituted or substituted C_2–C_4-alkenyl, unsubstituted or substituted C_3–C_6-cycloalkyl, unsubstituted or substituted or fused aryl, unsubstituted or substituted aryl-C_1–C_4-alkyl, or unsubstituted or substituted aryl-C_2–C_4-alkenyl or, where n=0, cyano, C_1–C_4-perfluoroalkyl or unsubstituted or substituted C_2–C_4-alkynyl or, where n=1, and Y is oxygen, unsubstituted or substituted trialkyisilyl,

R^4 and R^5 are independent of one another and are each hydrogen, unsubstituted or substituted C_1–C_4-alkyl or unsubstituted or substituted C_3–C_6-cycloalkyl,

R^6 is unsubstituted or substituted C_1–C_4-alkyl, or unsubstituted or substituted or fused aryl,

R^7 and R^8 are each hydrogen, unsubstituted or substituted C_1–C_4-alkyl, unsubstituted or substituted C_2–C_4-alkenyl, unsubstituted or substituted C_2–C_4-alkynyl, unsubstituted or substituted C_3–C_6-cycloalkyl, unsubstituted or substituted or fused aryl, unsubstituted or substituted aryl-C_1–C_4-alkyl, or COR^{10},

R^9 has the same meanings as R^4 and is independent of R^8,

R^{10} is unsubstituted or substituted C_1–C_4-alkyl, unsubstituted or substituted C_3–C_6-cycloalkyl, or unsubstituted or substituted aryl,

V is unsubstituted or substituted C_1–C_4-alkyl, unsubstituted or substituted aryl, hydroxyl, unsubstituted or substituted C_1–C_4-alkoxy, unsubstituted or substituted allyloxy, unsubstituted or substituted benzyloxy or unsubstituted or substituted trialkylsilyloxy

and ---- is a single bond or a double bond.

5,389,620

ENDOTHELIN ANTAGONISTIC HETEROAROMATIC RING-FUSED CYCLOPENTENE DERIVATIVES

Kiyofumi Ishikawa; Toshio Nagase; Toshiaki Mase; Takashi Hayama; Masaki Ihara; Masaru Nishikibe, and Mitsuo Yano, all of Tsukuba, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

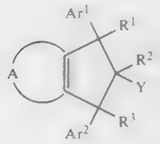
Filed Dec. 14, 1993, Ser. No. 165,880

Claims priority, application Japan, Aug. 18, 1993, 5-225100; Oct. 15, 1993, 5-281613; Oct. 21, 1993, 5-285677

Int. Cl.[6] A61K *31/435;* **C07D** *221/04*

U.S. Cl. 514—80 **5 Claims**

1. A heteroaromatic ring-fused cyclopentene derivative of the formula:



(I)

wherein each of Ar^1 and Ar^2 is independently a phenyl group or a thienyl group wherein an optional hydrogen atom(s) on the aromatic ring may be replaced with 1 to 4 groups selected from the group consisting of a hydroxyl group, a carboxyl group, a C_1–C_6 alkoxy carbonyl group, a mono- or di- C_1–C_6 alkylaminocarbonyl group, a carbamoyl group, a tetrazol-5-yl group a methylenedioxy group, a C_1–C_6 alkoxy group, a C_1–C_6 alkyl group and a C_2–C_6 alkenyl group (provided that the C_1–C_6 alkoxy group, the C_1–C_6 alkyl group and the C_2–C_6 alkenyl group may be substituted by a hydroxyl group, an amino group, a mono- or di- C_1–C_6 alkylamino group, a C_1–C_6 alkoxy carbonyl group, a mono- or di- C_1–C_6 alkylaminocarbonyl group, a carbamoyl group, a carboxyl group, a tetrazol-5-yl group, a 2-oxo-3H-1,2,3,5-oxathiadiazol-4-yl group, a 2,2-dioxo-3H-1,2,3,5-oxathiadiazol-4-yl group, or a 5-oxo-4H-1,2,4-oxadiazol-3-yl group); each of R^1, R^2 and is independently a hydrogen atom, a hydroxyl group or a C_1–C_6 alkyl group, or R^1 and R^2, or and R^2 and R^3 together form a single bond; Y is a group of —CO—R^4 (wherein R^4 is a hydroxyl group, an amino group, a C_1–C_6 alkoxy group, a mono- or di- C_1–C_6 alkylamino group, an arylsulfonylamino group wherein an optional hydrogen atom(s) on the aryl ring may be replaced with a C_1–C_6 alkyl group, or a C_1–C_6 alkylsulfonylamino group which may be substituted by an aryl group on the alkyl moiety), a sulfo group, a phosphono group, a tetrazol-5-yl group a 2-oxo-3H-1,2,3,5-oxathiadiazol-4-yl group, a 2,2-dioxo-3H-1,2,3,5-oxathiadiazol-4-yl group, or a 5-oxo-4H-1,2,4-oxadiazol-3-yl group; and A is a group which forms together with the adjacent carbon-carbon double bond a heteroaromatic ring selected from the group consisting of pyridine, pyrimidine, pyridazine, pyrazine and thiazole (provided that an optional hydrogen atom(s) on the heteroaromatic ring may be replaced with a hydroxyl group, an amino group, a C_1–C_6 alkoxy group, a halogen atom, a cyano group, a nitro group, a mono- or di- C_1–C_6 alkylamino group, a carboxyl group, a C_1–C_6 alkoxycarbonyl group, a C_1–C_6 acyl group, an aroyl group, or a C_1–C_6 alkyl group, C_2–C_6 alkenyl group or C_2–C_6 alkynyl group which may be substituted by a C_1–C_6 alkoxy group or a C_1–C_6 alkylamino group, and a nitrogen atom of said heteroaromatic ring may be oxidized to form an N-oxide group); or a pharmaceutically acceptable salt thereof.

5,389,621

METHOD OF ENHANCING THE ANTICOAGULANT EFFECTS OF ASPIRIN USING SALICYLAMIDE

Mohamed S. Abdel-Rahman, Montville, N.J., and Maged M. Rizk, Croton-On-Hudson, N.Y., assignors to University of Medicine and Dentistry of New Jersey, Newark, N.J.

Continuation of Ser. No. 977,897, Nov. 18, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 199,345

Int. Cl.[6] A61K *31/60, 31/615, 31/16*

U.S. Cl. 514—159 **12 Claims**

1. A method of treating a coagulation disorder in a mammalian patient in need of such treatment, which comprises administering to said patient an anticoagulant-effective amount of a combination of aspirin and salicylamide which comprises a dose of 10–20 mg/kg body weight aspirin and a dose of 3–10 mg/kg body weight salicylamide.

5,389,622

VITAMIN D3 ANALOGUES

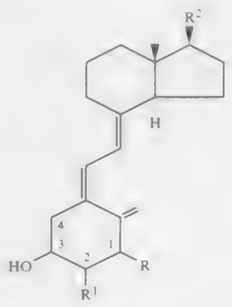
Gary H. Posner, and Todd D. Nelson, both of Baltimore, Md., assignors to The John Hopkins University, Baltimore, Md.

Division of Ser. No. 849,716, Mar. 12, 1992, Pat. No. 5,274,142. This application Jun. 4, 1993, Ser. No. 70,913

Int. Cl.[6] C07C *401/00*

U.S. Cl. 514—167 **2 Claims**

1. In a method of inhibiting cell proliferation by administration of a vitamin D_3 analogue, the modification which comprises administering a vitamin D_3 analogue of the formula:



and stereoisomers thereof, wherein R is $—R^3OH$ where R^3 is one of straight and branched alkyl of 1 to 6 carbons, R^1 is hydrogen, and R^2 represents a substituent completing the D_3 analogue.

5,389,623

REDOX CARRIERS FOR BRAIN-SPECIFIC DRUG DELIVERY

Nicholas S. Bodor, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Division of Ser. No. 295,663, Jan. 11, 1989, Pat. No. 5,087,618, which is a division of Ser. No. 666,210, Oct. 29, 1984, Pat. No. 4,829,070, which is a continuation-in-part of Ser. No. 379,316, May 18, 1982, Pat. No. 4,479,932, and Ser. No. 461,543, Jan. 27, 1983, abandoned, and Ser. No. 475,493, Mar. 15, 1983, Pat. No. 4,622,218, and a continuation-in-part of Ser. No. 516,382, Jul. 22, 1983, Pat. No. 4,540,564. This application Sep. 27, 1991, Ser. No. 766,528

Claims priority, application WIPO, May 12, 1983, PCT/US83/00725; Canada, May 16, 1983, 428192

Int. Cl.[6] A61K *31/56, 31/455*

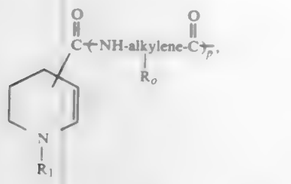
U.S. Cl. 514—169 **28 Claims**

1. A compound of the formula

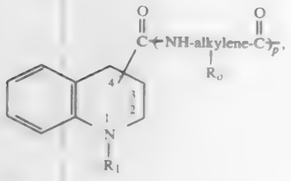


(I)

or a nontoxic pharmaceutically acceptable salt thereof, wherein D is the residue of a centrally acting drug having at least one reactive hydroxyl functional group, said drug being a steroid sex hormone or antiinflammatory steroid, said residue being characterized by the absence of a hydrogen atom from at least one reactive hydroxyl functional group in said drug; n is a positive integer equal to the number of said functional groups from which a hydrogen atom is absent; and (DHC) is a radical of the formula

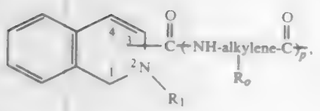


(a')



(d')

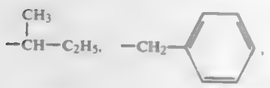
or



(g')

wherein the alkylene group can be straight or branched and can contain 1 to 3 carbon atoms; R_0 is hydrogen, methyl,

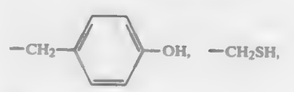
$-CH(CH_3)_2$, $CH_2-CH(CH_3)_2$,



$-CH_2OH$, $-CH(OH)CH_3$, $-(CH_2)_2-SCH_3$,

$-CH_2-CONH_2$, $-CH_2CH_2-CONH_2$,

-continued



$-CH_2COOH$ or $-CH_2CH_2COOH$; p is 1 or 2, provided that, when p is 2, then the alkylene groups can be the same or different and the R_0 radicals can be the same or different; the dotted line in formula (a') indicates the presence of a double bond in either the 4 or 5 position of the dihydropyridine ring; the dotted line in formula (d') indicates the presence of a double bond in either the 2 or 3 position of the dihydroquinoline ring; R_1 is C_1–C_7 alkyl, C_1–C_7 haloalkyl or C_7–C_{10} aralkyl; the carbonyl-containing grouping in formula (a') can be attached at the 2, 3 or 4 position of the dihydropyridine ring; the carbonyl-containing grouping in formula (d') can be attached at the 2, 3 or 4 position of the dihydroquinoline ring; and the carbonyl-containing grouping in formula (g') can be attached at the 1, 3 or 4 position of the dihydroisoquinoline ring.

14. A pharmaceutical composition, in unit dosage form, said composition conıprising:

(i) an amount of a compound as claimed in claim **1**, or a nontoxic pharmaceutically acceptable salt thereof, sufficient to release a pharmacologically effective amount of a steroid sex hormone or antiinflammatory steroid to the brain; and

(ii) a nontoxic pharmaceutically acceptable carrier therefor.

5,389,624

ANTIANDROGENIC [3,2-C]PYRAZOLE AND [3,2-D]TRIAZOLE STEROIDS

Helmut Hofmeister; Dieter Bittler; Horst Michna; Ursula Habenicht; Karl-Heinrich Fritzemeier, and Yukishige Nishino, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

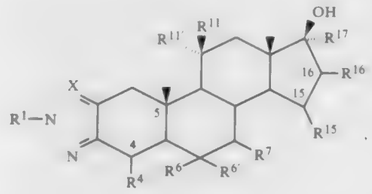
Division of Ser. No. 725,330, Jul. 5, 1991, Pat. No. 5,236,912. This application Apr. 27, 1993, Ser. No. 52,976

Claims priority, application Germany, Jul. 4, 1990, 4021433

Int. Cl.[6] A61K *31/58; C07J 71/00*

U.S. Cl. 514—176 **14 Claims**

1. A triazole steroid of formula I



(I)

wherein

X is a nitrogen atom,

R^1 is an alkylsulfonyl group $R-SO_2-$ wherein R is an alkyl group of 1–3 carbon atoms,



is a C—C single or double bond,

R^4 is a hydrogen atom or a methyl group that is in the α- or β-position in case of a C_4–C_5 single bond,

R^6 and $R^{6'}$ in each case are a hydrogen atom or jointly a 6,6-methylene or ethylene group,

R^7 is a hydrogen atom or, if R^6 and $R^{6'}$ are respectively hydrogen atoms, additionally a saturated or unsaturated α- or β-alkyl group of 1–4 carbon atoms, or

R^6 and R^7 are a 6α,7α- or 6β,7β-methylene group or an additional bond between the number 6 and 7 carbon atoms, and also

$R^{6'}$ is a hydrogen atom,

R^{11} is a hydrogen, fluorine or chlorine atom, and

$R^{11'}$ is a hydrogen atom, or

R^{11} and $R^{11'}$ jointly are a methylene group,

R^{15} and R^{16} each are a hydrogen atom,



is a C—C double bond, a 15α,16α- or a 15β,16β-methylene group, or a C—C single bond, and also

R^{17} is a hydrogen atom, an alkyl group of 1–4 carbon atoms, a vinyl, E- or Z-halovinyl, allyl, ethynyl, bromoethynyl, chloroethynyl, or propynyl group, wherein halo is F, Cl, Br or I.

5,389,625

CEPHALOSPORIN COMPOUNDS

Hiroyuki Muro, Shiga; Masayasu Kasai, Kyoto; Satoru Hatano, Kameoka; Ken-ichi Nishimura; Susumu Nishizawa, both of Kyoto, and Nobuharu Kakeya, Nagaokakyo, all of Japan, assignors to Kyoto Pharmaceutical Industries, Ltd., Kyoto, Japan

PCT No. PCT/JP90/01370, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO91/06549, PCT Pub. Date May 16, 1991

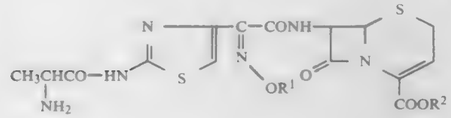
PCT Filed Oct. 24, 1990, Ser. No. 849,019

Claims priority, application Japan, Oct. 28, 1989, 1-280397

Int. Cl.[6] C07D *501/22;* **A61K** *31/545*

U.S. Cl. 514—202 **10 Claims**

1. A cephalosporin compound of the formula (I)



(I)

wherein R^1 is hydrogen atom or lower alkyl, and R^2 is 1-alkanoyloxyalkyl or 1-alkoxycarbonyloxyalkyl except 1-cyclohexyloxycarbonyloxyethyl, or its pharmaceutically acceptable salt.

5,389,626

3-ARYLOXMETHYL-CEPHALOSPORIN DERIVATIVES, AND THEIR MEDICAL USE

Koichi Kojima; Kazuo Koyama; Shigeo Amemiya, and Masayuki Iwata, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

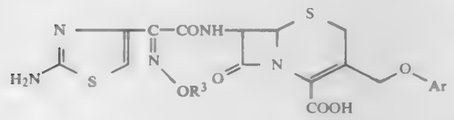
Continuation of Ser. No. 742,091, Aug. 2, 1991, abandoned, which is a continuation of Ser. No. 416,923, Oct. 4, 1989, abandoned. This application May 5, 1992, Ser. No. 880,295

Claims priority, application Japan, Oct. 7, 1988, 63-253253

Int. Cl.[6] C07D *501/26;* **A61K** *31/545*

U.S. Cl. 514—202 **21 Claims**

1. A compound of the formula



wherein

R^3 represents a hydrogen atom or a substituted C_1–C_6 alkyl group having two halogen substituents or one carboxy substituent;

Ar represents a substituted phenyl group having 1 to 3 substituents selected from the group consisting of a substituted C_1–C_6 alkyl group having at least one halogen, hydroxy, or C_2–C_7 alkoxycarbonyl substituent; a C_1–C_6 aliphatic carboxylic acyl group; a C_1–C_6 aliphatic carboxylic acylamino group; a C_2–C_6 alkoxycarbonyl group; a halogen atom; a cyano group; and pharmaceutically acceptable salts and esters thereof.

5,389,627

CEPHEM COMPOUNDS

Choong S. Kim; Yang S. Ahn, both of Seoul; Kang Y. Jung, Kyonggi-do; Nam H. Lee, Seoul; Rok L. Yun, Kyonggi-do; Seong Y. Park; Yeo H. Yoon, both of Seoul; Keon H. Lee, Kyonggi-do; Chun S. Lyu, and Kwang H. Lee, both of Seoul, all of Rep. of Korea, assignors to Cheil Foods & Chemicals, Seoul, Rep. of Korea

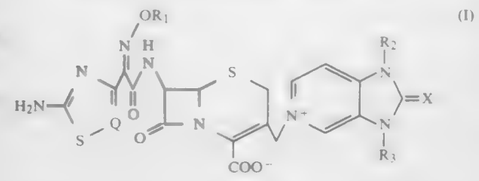
Filed Nov. 3, 1993, Ser. No. 145,228

Claims priority, application Rep. of Korea, Jun. 5, 1993, 1993-10188

Int. Cl.[6] C07D *501/38;* **A61K** *31/545*

U.S. Cl. 514—202 **8 Claims**

1. A cephem compound having the formula:



(I)

wherein, Q is a carbon or nitrogen atom; X is an oxygen atom, or a nitroalkyl or cyanoimine group, with the proviso that X cannot be an oxygen atom when Q is a carbon atom; R_1 is a hydrogen atom, or a lower alkyl group, or a lower alkyl group which may be substituted by fluoro, or by a carboxylic group or an inorganic cation salt thereof; and R_2 and R3 independently are a hydrogen atom or a lower alkyl group; or pharmaceutically acceptable salts thereof.

5,389,628

AMINO AND NITRO CONTAINING TRICYCLIC COMPOUNDS USEFUL AS INHIBITORS OF ACE

Gary A. Flynn, and Douglas W. Beight, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

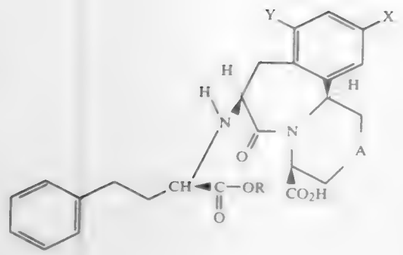
Division of Ser. No. 46,326, Apr. 12, 1993, Pat. No. 5,308,841, which is a division of Ser. No. 979,029, Nov. 20, 1992, abandoned, which is a division of Ser. No. 905,494, Jun. 25, 1992, Pat. No. 5,208,230, which is a continuation of Ser. No. 777,625, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 633,572, Dec. 21, 1990, abandoned. This application Dec. 8, 1993, Ser. No. 164,047

Int. Cl.[6] C07D *498/04, 487/04, 513/04;* **A61K** *31/55*

U.S. Cl. 514—215 **10 Claims**

1. A compound of the formula

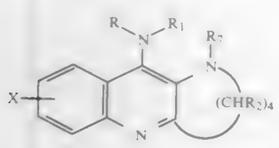
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wherein
A is sulfur;
R is hydrogen or a C_1–C_4 alkyl; and
X and Y are each independently hydrogen, nitro or amino, with the proviso that one of X and Y is hydrogen and one of X and Y is other than hydrogen; and
pharmaceutically acceptable salts thereof.

5,389,629
FUSED HETEROALKYLENE QUINOLINAMINES
Gregory M. Shutske, Somerset, and Richard C. Effland, Bridgewater, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somervilee, N.J.
Division of Ser. No. 337,603, Apr. 13, 1989, Pat. No. 5,002,955, which is a division of Ser. No. 171,103, Apr. 4, 1988, Pat. No. 4,843,079, which is a continuation-in-part of Ser. No. 41,562, Apr. 23, 1987, abandoned. This application Jan. 10, 1991, Ser. No. 639,432
Int. Cl.[6] **C07D** *487/02;* **A61K** *31/55*
U.S. Cl. 514—217 **5 Claims**

1. A compound of the formula

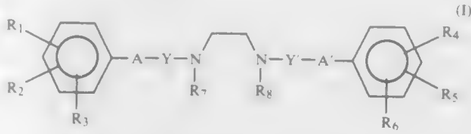


wherein; R is hydrogen, loweralkyl or loweralkylcarbonyl; R_1 is hydrogen, loweralkyl, loweralkylcarbonyl, aryl, diloweralkylaminoloweralkyl, aryloweralkyl, diaryloweralkyl, oxygen-bridged aryloweralkyl, or oxygen-bridged diaryloweralkyl; X is hydrogen, loweralkyl, cycloalkyl, loweralkoxy, halogen, hydroxy, nitro, trifluoromethyl, formyl, loweralkylcarbonyl, arylcarbonyl, —SH, loweralkylthio, —NHCOR$_4$ or —NR$_5$R$_6$, R_4 being hydrogen or loweralkyl, and R_5 and R_6 being independently hydrogen, loweralkyl or cycloalkyl; and each R_2 and R_7 are independently hydrogen or loweralkyl, or taken together form a methylene or ethylene bridge constituting a part of a ring of at least five atoms; the term cycloalkyl in each occurrence signifying a saturated cyclic hydrocarbon radical having 3 to 7 carbon atoms; the term aryl in each occurrence signifying a phenyl group optionally substituted with 1,2 or 3 substituents each of which being independently loweralkyl, loweralkoxy, halogen, hydroxy, trifluoromethyl, phenoxy or benzyloxy; and the term oxygen-bridged in each occurrence signifying that an oxygen atom intervenes between an aryl group and a loweralkyl group or that an oxygen atom intervenes between two adjacent carbon atoms of what was originally a loweralkyl group; a stereo, optical or geometrical isomer thereof, or a pharmaceutically acceptable acid addition salt thereof.

5. A method of increasing the cholinergic function in a mammal which comprises administering to the mammal an effective cholinergic function increasing amount of a compound as defined in claim 1.

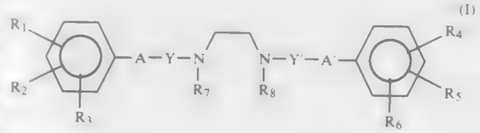
5,389,630
DIAMINE COMPOUND AND BRAIN PROTECTING AGENT CONTAINING THE SAME
Seiichi Sato, Tokyo; Kiyoshi Kawamura, Niiza; Yoshio Takahashi, Iruma; Koichiro Watanabe, Kawajima; Sadahiro Shimizu, and Tomio Ohta, both of Sayama, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan
PCT No. PCT/JP90/00970, § 371 Date Jan. 22, 1993, § 102(e) Date Jan. 22, 1993, PCT Pub. No. WO92/02487, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 30, 1990, Ser. No. 966,142
Int. Cl.[6] **C07D** *243/08;* **A61K** *31/55*
U.S. Cl. 514—218 **7 Claims**

1. A diamine compound of formula (I) or an acid addition salt thereof:



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different from each other and represent individually a hydrogen atom, halogen atom, hydroxyl group, C_{1-6} alkyl group, C_{1-6} alkoxy group, C_{1-6} acyloxy group, C_{1-6} alkoxycarbonyloxy group, C_{1-6} alkylsulfonyloxy group or an amino group, among which the alkyl group and alkoxy group may be substituted by a halogen atom or a phenyl group; R_7 and R_8 are combined to represent a trimethylene; A and A′ are individually a single bond, Y and Y′ are individually a tetramethylene.

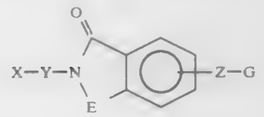
2. A diamine compound of formula (I) or an acid addition salt thereof:



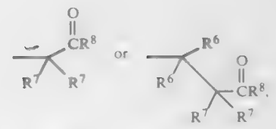
wherein R_1, R_2, R_3, R_4, R_5, and R_6 are the same or different from each other and represent individually a hydrogen atom, halogen atom, hydroxyl group, C_{1-6} alkyl group, C_{1-6} alkoxy group, C_{1-6} acyloxy group, C_{1-6} alkoxycarbonyloxy group, C_{1-6} alkylsulfonyloxy group or an amino group, among which the alkyl group and alkoxy group may be substituted by a halogen atom or a phenyl group; R_7 and R_8 are combined to represent a trimethylene; A and A′ are the same or different from each other and represent individually —O—, —NH—, —CONH→, —NHCOO→ or —SO_2NH→ wherein, the symbol '→' denotes a bond to Y or Y′, Y and Y′ are the same or different from each other and represent a C_{1-8} alkylene group or C_{2-8} alkenylene group.

5,389,631
FIBRINOGEN RECEPTOR ANTAGONISTS
David A. Claremon, Maple Glen, and Nigel Liverton, Harleysville, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Continuation-in-part of Ser. No. 821,116, Jan. 15, 1992, Pat. No. 5,272,158, which is a continuation-in-part of Ser. No. 784,484, Oct. 29, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,042
Int. Cl.[6] **A61K** *31/55, 31/505;* **C07D** *243/14, 239/80*
U.S. Cl. 514—221 **11 Claims**

1. A compound of the following formula:



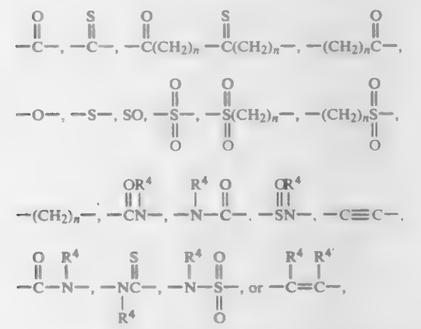
wherein
G is



E is —$(CHR^1)_m$—J—;
m is zero or one;
J is



X is a 6-membered monocyclic nonaromatic ring system containing a nitrogen atom and either unsubstituted or substituted with C_{1-10} alkyl, aryl C_{0-8} alkyl, oxo, thio, amino CO_{0-8} alkyl, C_{1-3} acylamino C_{0-8} alkyl, C_{1-6} alkylamino C_{0-8} alkyl, C_{1-6} dialkylamino C_{0-8} alkyl, C_{1-4} alkoxy C_{0-6} alkyl, carboxy C_{0-6} alkyl, C_{1-3} alkoxycarbonyl C_{0-6} alkyl, carboxy C_{0-6} alkyloxy, hydroxy C_{0-6} alkyl;
Y is C_{0-8} alkyl, C_{0-8} alkyl—NR^3—CO—C_{0-8} alkyl, C_{0-8} alkyl—$CONR^3$—C_{0-8} alkyl, C_{0-8} alkyl—O—C_{0-8} alkyl, C_{0-8} alkyl-$S(O_n)$—C_{0-8} alkyl, or C_{0-8} alkyl—SO_2—NR^3—C_{0-8} alkyl, C_{0-8} alkyl—NR^3—SO_2—C_{0-8} alkyl, or C_{1-8} alkyl—CO—C_{0-8} alkyl;
Z is

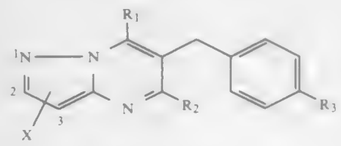


wherein n is 0-6;
R^1, R^2, R^3, R^4, and $R^{4'}$, are independently selected from the group consisting of hydrogen, C_{1-10} alkyl, aryl C_{0-8} alkyl, oxo, thio, amino CO_{0-8} alkyl, C_{1-3} acylamino C_{0-8} alkyl, C_{1-6} alkylamino C_{0-8} alkyl, C_{1-6} dialkylamino C_{0-8} alkyl, C_{1-4} alkoxy C_{0-6} alkyl, carboxy C_{0-6} alkyl, C_{1-3} alkoxycarbonyl C_{0-6} alkyl, carboxy C_{0-6} alkyloxy, hydroxy C_{0-6} alkyl,
R^6 is hydrogen, C_{1-8} alkyl, aryl C_{0-6} alkyl, C_{3-8} cycloalkyl C_{0-6} alkyl, C_{0-6} alkylcarboxy C_{0-6} alkyl, carboxy C_{0-6} alkyl, C_{1-4} alkyloxy C_{0-6} alkyl, hydroxy C_{0-6} alkyl, provided that any of which groups may be substituted or unsubstituted independently with R^1 or R^2, and provided that, when two R^6 groups are attached to the same carbon, they may be the same or different;
R^7 is hydrogen, fluorine C_{1-8} alkyl, C_{3-8} cycloalkyl, aryl C_{0-6} alkyl, C_{0-6} alkylamino C_{0-6} alkyl, C_{0-6} dialkylamino C_{0-6} alkyl, C_{1-8} alkylsulfonylamino C_{0-6} alkyl, aryl C_{0-6} alkylsulfonylamino C_{0-6} alkyl, C_{1-8} alkyloxycarbonylamino C_{0-8}-alkyl, aryl C_{0-8} alkyloxycarbonylamino C_{0-8} alkyl, C_{1-8} alkylcarbonylamino C_{0-6} alkyl, aryl C_{0-6} alkylcarbonylamino C_{0-6} alkyl, C_{0-8} alkylaminocarbonylamino C_{0-6} alkyl, aryl C_{0-8} alkylaminocarbonylamino C_{0-6} alkyl, C_{1-6} alkylsulfonyl C_{0-6} alkyl, aryl C_{0-6} alkylsulfonyl C_{0-6} alkyl, C_{1-6} alkylcarbonyl C_{0-6} alkyl aryl C_{0-6} alkylcarbonyl C_{0-6} alkyl, C_{1-6} alkylthiocarbonylamino C_{0-6} alkyl, or aryl C_{0-6} alkylthiocarbonylamino C_{0-6} alkyl wherein groups may be unsubstituted or substituted with one or more substituents selected from R^1 and R^2, and provided that when two R^7 groups are attached to the same carbon atom, they may be the same or different; and
R^8 is hydroxy, C_{1-8} alkyloxy, aryl C_{0-6} alkyloxy, C_{1-8} alkylcarbonyloxy C_{1-4} alkyloxy, aryl C_{1-8} alkylcarbonyloxy C_{1-4} alkyloxy, or proline joined by an amide linkage and wherein the carboxylic acid moiety of said proline is as the free acid or is esterified by C_{1-6} alkyl.

5,389,632
PYRAZOLOPYRIMIDINE DERIVATIVES WHICH ARE ANGIOTENSIN II RECEPTOR ANTAGONISTS
Nicole Bru-Magniez, Paris; Timur Güngör, Rueil Malmaison, and Jean-Marie Teulon, La Celle Saint Cloud, all of France, assignors to Laboratoires UPSA, Agen, France
Continuation-in-part of Ser. No. 863,955, Apr. 6, 1992, Pat. No. 5,231,094. This application Feb. 24, 1993, Ser. No. 21,897
Claims priority, application France, Feb. 24, 1992, 92 02109; Apr. 30, 1992, 92 05417; WIPO, Feb. 18, 1993, PCT/FR93/00160
Int. Cl.[6] **C07D** *487/04*
U.S. Cl. 514—233.2 **17 Claims**

1. A pyrazolopyrimidine compound of formula (I):

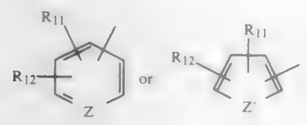
Formula (I)



in which:
one of the radicals R_1 and R_2 is
a lower alkyl radical having 1 to 6 carbon atoms; or
an ether radical of the formula —$(CH_2)_p$OR, in which p is an integer from 1 to 6 and R is a lower alkyl radical having 1 to 6 carbon atoms or a benzyl radical; and
the other radical R_1 or R_2 is
the hydrogen atom;
a halogen atom;
a lower alkyl radical having 1 to 6 carbon atoms; or
a radical selected from the group consisting of the radicals OR_4, SR_4, NR_5R_6 and $NH(CH_2)_n$—NR_5R_6,
in which:
R_4 is

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the hydrogen atom;
a lower alkyl radical having 1 to 6 carbon atoms or a C_3–C_7-cycloalkyl radical;
a radical $(CH_2)_m$—COOR′, m being an integer from 1 to 4 and R′ being the hydrogen atom or a lower alkyl radical having 1 to 6 carbon atoms; or
a radical $(CH_2)_m$—O—R′, m and R′ being as defined above;
R_5 and R_6, which are identical or different, are
the hydrogen atom; or
a lower alkyl radical having 1 to 6 carbon atoms or a C_3–C_7-cycloalkyl radical; or
R_5 and R_6, taken together with the nitrogen atom to which they are attached, form a heterocycle selected from morpholine, pyrrolidine or piperidine; and
n is an integer from 1 to 4;
X, in the 2- or 3-position of the pyrazolo[1,5-a]pyrimidine ring, is
the hydrogen atom;
a lower alkyl radical having 1 to 6 carbon atoms; or
a radical selected from the group consisting of the hydroxyl radical and the radical COOR′, R′ being as defined above; and
R_3 is a radical of the formula



in which:
Z is CH or N; Z′ is S or O;
R_{11} is the hydrogen atom or a halogen atom; and
R_{12} is a tetrazole radical, CN, COOH or $CONH_2$;
as well as its tautomeric forms and its pharmaceutically acceptable addition salts.

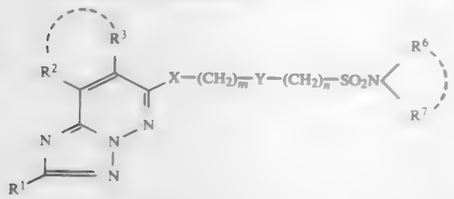
5,389,633

TRIAZOLOPYRIDAZINE COMPOUNDS, THEIR PRODUCTION AND USE

Akio Miyake, Hirakata; Yasuhiko Kawano, Suita, and Yasuko Ashida, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 17, 1993, Ser. No. 32,296
Claims priority, application Japan, Mar. 18, 1992, 4-061780; Aug. 18, 1992, 4-218904; Feb. 1, 1993, 5-014560
Int. Cl.[6] A61K *31/535, 31/50;* **C07D** *487/04, 471/14*
U.S. Cl. 514—233.2 **23 Claims**

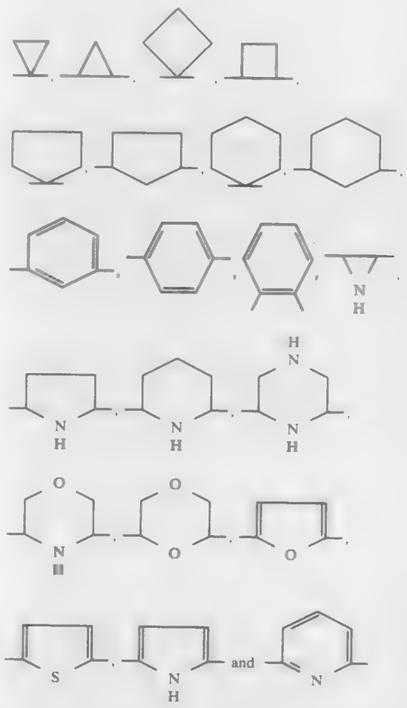
1. A compound of the formula:



wherein R^1 stands for (i) a hydrogen atom, (ii) a C_{1-6} alkyl group which may be substituted with one to four substituents selected from the group consisting of a hydroxy, amino, carboxyl, nitro, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkyl-carbonyloxy and halogen or (iii) a halogen atom;
R^2 and R^3 independently stand for stand for a hydrogen atom or a C_{1-6} alkyl group which may be substituted with one to four substituents selected from the group consisting of a hydroxy, amino, carboxyl, nitro, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkyl-carbonyloxy and halogen;
X stands for an oxygen atom or $S(O)_p$, wherein p is a whole number of from 0 to 2;
Y stands for (i) a group of the formula:

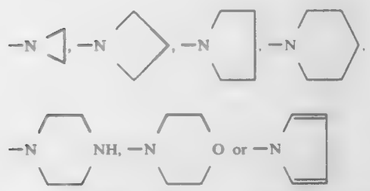


wherein R^4 and R^5 independently stand for a hydrogen atom or a C_{1-6} alkyl group which may be substituted with one to four substituents selected from the group consisting of a hydroxy, amino, carboxyl, nitro, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkyl-carbonyloxy and halogen or (ii) a divalent homocyclic or heterocyclic ring selected from the group consisting of



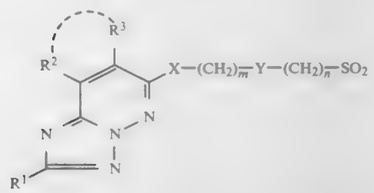
which may be substituted with 1 to 5 substituents selected from the group consisting of a C_{1-6} alkyl group which may be substituted with 1 to 4 substituents selected from the group consisting of hydroxy, amino, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkyl-carbonyloxy and halogen, an amino group which may be substituted with 1 or 2 substituents selected from the group consisting of C_{1-6} alkyl, C_{1-6} acyl, pyrrolidino, morpholino, piperidino and piperazino, a hydroxy, a carboxyl, a nitro, a C_{1-6} alkoxy, and a halogen;
R^6 and R^7 each stands for (i) a hydrogen, (ii) a C_{1-6} alkyl group which may be substituted with one to four substituents selected from the group consisting of a hydroxy, amino, carboxyl, amino, carboxyl, nitro, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkyl-carbonyloxy and halogen, (iii) a C_{3-6} cycloalkyl group which may be substituted with one to four substituents selected from the group

consisting of a hydroxy, amino, carboxyl, nitro, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkyl-carbonyloxy and halogen, (iv) a C_{6-14} aryl group which may be substituted with one to five substituents selected from the group consisting of a C_{1-6} alkyl which may be substituted with one to four substituents selected from the group consisting of hydroxy, amino, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy and halogen, an amino which can be substituted with one or two substituents selected from the group consisting of C_{1-6} alkyl, pyrrolidino, morpholino, piperidino and piperazino, an acetamido, a hydroxy, a carboxyl, a nitro, a C_{1-6} alkoxy, a C_{1-6} alkylcarbonyloxy and a halogen, or (v) R^6 and R^7 taken together with the adjacent nitrogen atom form a nitrogen-containing heterocyclic ring selected from the group consisting of



which may be substituted with 1 to 5 substituents selected from the group consisting of a C_{1-6} alkyl group which may be substituted with 1 to 4 substituents selected from the group consisting of hydroxy, amino, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkylcarbonyloxy, and halogen, an amino group which may be substituted with 1 or 2 substituents selected from the group consisting of C_{1-6} alkyl, C_{1-6} acyl, pyrrolidino, morpholino, piperidino and piperazino, a hydroxy, a carboxyl, a nitro, a C_{1-6} alkoxy and a halogen;
m stands for a whole number of from 0 to 4;
n stands for a whole number of from 0 to 4; or
a pharmaceutically acceptable salt thereof.

20. A compound of the formula:

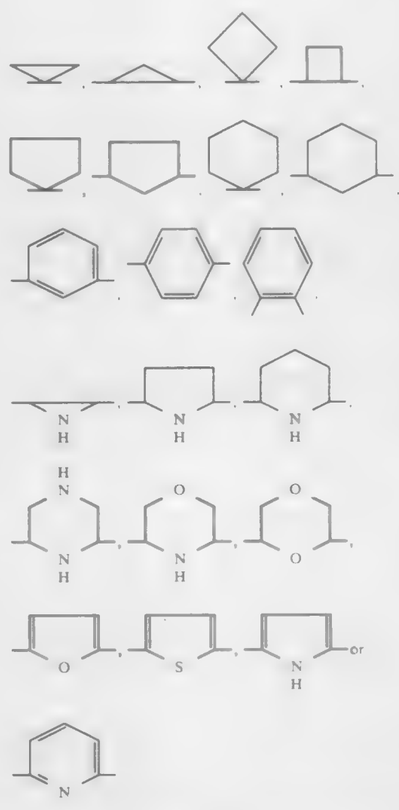


[VI]

wherein W stands for a halogen, C_{6-10} arylsulfonyloxy, or C_{1-4} alkylsulfonyloxy;
R^1 stands for (i) a hydrogen atom, (ii) a C_{1-6} alkyl group which may be substituted with one to four substituents selected from the group consisting of a hydroxy, amino, carboxyl, nitro, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkyl-carbonyloxy and halogen or (iii) a halogen atom;
R^2 and R^3 independently stand for stand for a hydrogen atom or a C_{1-6} alkyl group which may be substituted with one to four substituents selected from the group consisting of a hydroxy, amino, carboxyl, nitro, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkyl-carbonyloxy and halogen;
X stands for an oxygen atom or $S(O)_p$, wherein p is a whole number of from 0 to 2;
Y stands for (i) a group of the formula:



wherein R^4 and R^5 independently stand for a hydrogen atom or a C_{1-6} alkyl group which may be substituted with one to four substituents selected from the group consisting of a hydroxy, amino, carboxyl, nitro, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkyl-carbonyloxy and halogen or (ii) a divalent homocyclic or heterocyclic ring selected from the group consisting of



which may be substituted with 1 to 5 substituents selected from the group consisting of a C_{1-6} alkyl group which may be substituted with 1 to 4 substituents selected from the group consisting of hydroxy, amino, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkyl-carbonyloxy and halogen, an amino group which may be substituted with 1 or 2 substituents selected from the group consisting of C_{1-6} alkyl, C_{1-6} acyl, pyrrolidino, morpholino, piperidino and piperazino, a hydroxy, a carboxyl, a nitro, a C_{1-6} alkoxy, and a halogen;
m is a whole number from 0 to 4 and n is a whole number from 0 to 4, or a pharmaceutically acceptable salt thereof.

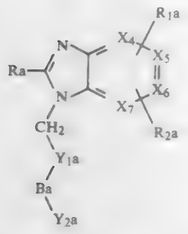
5,389,634

IMIDAZOLE DERIVATIVES HAVING ANGIOTENSIN II RECEPTOR ANTAGONISTIC ACTIVITY

Michel Fortin; Daniel Frechet, both of Paris; Gilles Hamon, Le Raincy; Simone Jouquey, Paris, and Jean-Paul Vevert, Pantin, all of France, assignors to Roussel-Uclaf, France

Division of Ser. No. 712,247, Jun. 7, 1991, Pat. No. 5,338,756.
This application Jun. 9, 1993, Ser. No. 74,106
Claims priority, application France, Jun. 8, 1990, 90 07136; Mar. 13, 1991, 91 03043
Int. Cl.[6] A61K *31/675, 31/50, 31/505;* C07D *487/04, 471/04*
U.S. Cl. 514—248 4 Claims

1. A compound having the formula

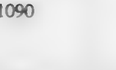


Ia

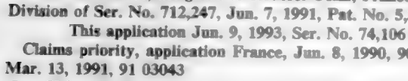
wherein X_4, X_5, X_6 and X_7 are all =CH— or one or two are nitrogen and the others are =CH—, Ra is n-butyl or butenyl, R_{1a} and R_{2a} are individually selected from the group consisting of hydrogen, halogen, —SH, —OH, alkyl, alkylthio and alkoxy of 1 to 6 carbon atoms, alkenyl and alkynyl of 2 to 6 carbon atoms, carbocyclic aryl, carbocyclic aralkyl, and carbocyclic aralkenyl of up to 6 alkyl and alkenyl carbon atoms unsubstituted or substituted with at least one member of the group consisting of halogen, —OH, —SH, alkyl, alkoxy and alkylthio of 1 to 6 carbon atoms, tetrazolyl and acyl of 2 to 6 carbon atoms and acyloxy, of 2 to 6 carbon atoms carboxy and alkoxycarbonyl of 1 to 4 alkyl carbon atoms, Y_{1a} is phenyl, Ba is a single bond or



and when Ba is a single bond or



Y_{2a} is phenyl unsubstituted or substituted with $—(CH_2)_p—SO_2—X_a—R_{14a}$, p is 0 or 1, X_a is selected from the group consisting of a single bond,



R_{14a} is selected from the group consisting of methyl, ethyl, vinyl, allyl, pyridylmethyl, pyridylethyl, pyridyl, phenyl, benzyl, free, esterified or salified carboxy, tetrazolyl, tetrazolylalkyl and tetrazolylcarbamoyl, the tetrazolyl being unsubstituted or substituted with alkyl, alkenyl, alkoxyalkyl or carbocyclic aralkyl and if B_a is a single bond, Y_{2a} is selected from the group consisting of —CN, free carboxy, salified or carboxy esterified with alkyl of 1 to 4 carbon atoms and tetrazolyl with the proviso that when B_a is a single bond, at least one X_4, X_5, X_6 and X_7 is not =CH—.

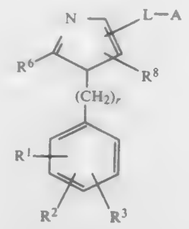
5,389,635

4- OR 5-HETEROCYCLIC SUBSTITUTED IMADAZOLES AS ANGIOTENSIN-II ANTAGONISTS

Richard E. Olson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 863,881, Apr. 6, 1992, Pat. No. 5,219,856.
This application Apr. 12, 1993, Ser. No. 58,962
Int. Cl.[6] A61K *31/495, 31/535;* C07D *401/14, 403/14*
U.S. Cl. 514—255 11 Claims

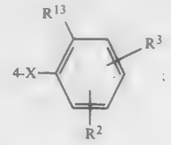
1. A compound of the Formula (I)



(I)

wherein

R^1 is in the meta or para position and is



R^2 i s independently
(a) H,
(b) halo,
(c) C_1–C_4 alkyl,
(d) C_1–C_4 alkoxy,
(e) C_1–C_4 acyloxy,
(f) C_1–C_4 alkylthio,
(g) C_1–C_4 alkylsulfinyl,
(h) C_1–C_4 alkylsulfonyl,
(i) hydroxy (C_1–C_4) alkyl,
(j) aryl (C_1–C_4) alkyl,
(k) $—CO_2H$,
(l) —CN,
(m) tetrazol-5-yl,
(n) $—CONHOR^{12}$,
(o) $—SO_2NHR^9$,
(p) $—NH_2$,
(q) C_1–C_4 alkylamino,
(r) C_1–C_4 dialkylamino,
(s) $—NHSO_2R^{10}$,
(t) $—NO_2$,
(u) furyl,
(v) aryl;

$R^3$is independently
(a) H,
(b) halo,
(c) C_1–C_4 alkyl,
(d) C_1–C_4 alkoxy,
(e) C_1–C_4 alkoxyalkyl;

R^5 is
(a) H,
(b) C_1–C_6 alkyl,
(c) C_3–C_6 cycloalkyl,
(d) C_2–C_4 alkenyl,
(e) C_2–C_4 alkynyl;

R^6 is
(a) C_1–C_{10} alkyl,
(b) C_3–C_{10} alkenyl,

(c) C_3–C_{10} alkynyl,
(d) C_3–C_8cycloalkyl,
(e) C_4–C_8cycloalkenyl,
(f) C_4–C_{10} cycloalkylalkyl,
(g) C_5–C_{10} cycloalkylalkenyl,
(h) C_5–C_{10} cycloalkylalkynyl,
(i) $—(CH_2)_sZ^2(CH_2)_mR^5$,
(j) benzyl, unsubstituted or substituted on the phenyl ring with 1–2 substituents selected from the group consisting of halo, C_1–C_4 alkyl, C_1–C_4 alkoxy or $—NO_2$;

R^8 is
(a) H,
(b) C_1–C_4 alkyl,
(c) $—(CH_2)_nCHR^{34}OR^{29}$,
(d) $—COR^{35}$,
(e) $—(CH_2)_nCHR^{34}COR^{35}$,
(f) $—CR^{36}=CR^{37}COR^{35}$
(g) $—CONHOR^{12}$;

R^9 is
(a) H,
(b) C_1–C_5 alkyl,
(c) aryl,
(d) $—CH_2$-aryl;

R^{10} is
(a) aryl,
(b) C_3–C_7 cycloalkyl,
(c) C_1–C_4 perfluoroalkyl,
(d) C_1–C_4 alkyl unsubstituted or substituted with a substituent selected from the group consisting of aryl, —OH, —SH, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, —CF3, halo, $—NO_2$, $—CO_2H$, $—CO_2CH_3$, $—CO_2$-benzyl, $—NH_2$, C_1–C_4 alkylamino, C_1–C_4 dialkylamino, $—PO_3H_2$;

R^{11} is
(a) H,
(b) C_1–C_6 alkyl,
(c) C_3–C_6 cycloalkyl,
(d) phenyl,
(e) benzyl;

R^{12} is
(a) H,
(b) methyl,
(c) benzyl;

R^{13} is
(a) $—CO_2H$,
(b) $—PO_3H_2$,
(c) $—SO_3H$,
(d) $—SO_2NHR^9$,
(e) $—SO_2NHCOR^{10}$,
(f) $—SO_2NHCONHR^9$;

R^{14} is
(a) H,
(b) C_1–C_6 alkyl,
(c) $CH_2CH=CH_2$
(d) benzyl;

R^{15} is
(a) H,
(b) C_1–C_8alkyl,
(c) C_1–C_8perfluoroalkyl,
(d) C_3–C_6cycloalkyl,
(e) phenyl,
(f) benzyl;

R^{16} is
(a) H,
(b) C_1–C_6 alkyl,
(c) benzyl;

R^{17} is
(a) H,
(b) C_1–C_6 alkyl,
(c) C_3–C_6 cycloalkyl,
(d) phenyl,
(e) benzyl;

R^{18} is
(a) $—NR^{19}R^{20}—$,
(b) $—NHCONH_2$,
(c) $—NHCSNH_2$,
(d) $—NHSO_2—C_6H_5$;

R^{19} and R^{20} are independently
(a) H,
(b) C_1–C_5 alkyl,
(c) phenyl;

R^{21} and R^{22} are independently
(a) C_1–C_4 alkyl or taken together are
(b) $—(CH_2)_q—$;

L is a divalent group which is a
(a) C_1 to C_8 alkylene chain,
(b) C_3 to C_8 alkenylene chain,
(c) C_3 to C_8 alkynylene chain,
(d) C_2 to C_8 alkylene chain containing O,
(e) C_2 to C_8 alkylene chain containing $S(O)_{0-2}$,
(f) C_2 to C_5 alkylene chain containing NR^{23};
wherein the alkylene, alkenylene and alkynylene chains are branched or unbranched, 0 to 1 carbon atoms of L contain a carbonyl group, and both termini of L are carbon atoms;

R^{23} is
(a) H,
(b) C_1–C_6 alkyl,
(c) C_3–C_6 alkenyl,
(d) aryl,
(e) aryl (C_1–C_4) alkyl,
(f) C_2–C_6 alkanoyl,
(g) arylcarbonyl,
(h) aryl (C_1–C_4) alkanoyl,
(i) C_1–C_6 alkoxycarbonyl;

A is a piperazine ring substituted by R^{24} and R^{25} and attached to L through a nitrogen atom and in which 0–2 ring carbons are carbonyl groups and N-4 is substituted by R^{26} or R^{28};

R^{24} is
(a) H,
(b) C_1–C_6 alkyl,
(c) aryl,
(d) aryl (C_1–C_4) alkyl,
(e) diaryl (C_1–C_4) alkyl,
(f) $—OR^{29}$,
(g) $—(CH_2)_rCO_2R^{29}$,
(h) $—(CH_2)_rCH_2OR^{29}$,
(i) $—(CH_2)_rCONR^{31}R^{32}$,
(j) $—(CH_2)_rCH_2NR^{31}R^{32}$,
(k) $—(CH_2)_rCH_2SH$,
(l) $—(CH_2)_rCH_2S(O)_{0-2}R^{30}$,
(m) $—(CH_2)_rCH_2NHC(NH_2)=NH$;

R^{25} is
(a) H,
(b) C_1–C_6 alkyl,
(c) aryl,
(d) aryl (C_1–C_4) alkyl;

R^{26} is
(a) H,
(b) C_3–C_6 cycloalkyl,
(c) C_4–C_8 cycloalkylalkyl,
(d) aryl,
(e) pyridyl,
(f) aryl (C_1–C_4) alkyl,
(g) diaryl (C_1–C_4) alkyl,
(h) (C_3–C_6 cycloalkyl) aryl (C_1–C_4) alkyl,
(i) aryl (C_3–C_6) cycloalkyl,
(i) C_2–C_8 alkoxyalkyl;

R^{28} is
(a) C_1–C_6 alkanoyl,
(b) arylcarbonyl,
(c) aryl (C_1–C_4) alkanoyl,
(d) diaryl (C_1–C_4) alkanoyl,
(e) $—CO_2R^{33}$,
(f) $—CONR^{31}R^{32}$;

R^{29} is
(a) H,

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(b) C_1–C_6 alkyl,
(c) aryl,
(d) aryl (C_1–C_4) alkyl,
(e) diaryl (C_1–C_4) alkyl;
R^{30} is
(a) C_1–C_6 alkyl,
(b) aryl,
(c) aryl (C_1–C_4) alkyl,
(d) diaryl (C_1–C_4) alkyl;
R^{31} and R^{32} are, independently,
(a) H,
(b) C_1–C_6 alkyl,
(c) aryl,
(d) aryl (C_1–C_4) alkyl, or R^{31} and R^{32} when taken together are pyrrolidine, piperidine or morpholine;
R^{33} is
(a) C_1–C_6 alkyl,
(b) aryl,
(c) aryl (C_1–C_4) alkyl,
(d) diaryl (C_1–C_4) alkyl;
R^{34} is
(a) H,
(b) C_1–C_4 alkyl,
(c) C_3–C_6 cycloalkyl,
(d) aryl,
(e) aryl (C_1–C_4) alkyl;
R^{35} is
(a) H,
(b) OR^{29},
(c) $NR^{38}R^{39}$;
R^{36} and R^{37} are independently
(a) H,
(b) C_1–C_4 alkyl,
(c) aryl,
(d) arylmethyl;
R^{38} and R^{39} are independently
(a) H,
(b) C_1–C_4 alkyl,
(c) aryl,
(d) arylmethyl, or taken together are $—(CH_2)_u—$, or morpholine;
X is
(a) a carbon-carbon single bond,
(b) —CO—,
(c) $—C(R^{19})(R^{20})—$,
(d) —O—
(e) —S—,
(f) —SO—,
(g) $—SO_2—$,
(h) $—NR^{14}—$,
(i) $—CONR^{16}$,
(j) $—NR^{16}CO—$,
(k) $—OC(R^{19})(R^{20})—$,
(l) $—C(R^{19})(R^{20})O—$,
(m) $—SC(R^{19})(R^{20})—$,
(n) $—C(R^{19})(R^{20})S—$,
(o) $—NHC(R^{19})(R^{20})—$,
(p) $—C(R^{19})(R^{20})NH—$,
(q) $—NR^{16}SO_2—$,
(r) $—SO_2NR^{16}—$,
(s) —CH=CH—,
(t) —CF=CF—,
(u) —CF=CH—,
(v) —CH=CF—,
(w) $—CF_2CF_2—$,
(x) $—CH(OR^{15})—$,
(y) $—CH(OCOR^{17})—$,
(z) $—C(N=NR^{18})$,
(aa) $—C(OR^{21})(OR^{22})—$,
(bb) 1,2-cyclopropyl,
(cc) 1,1-cyclopropyl;
Z^2 is
(a) —O—
(b) —S—,
(c) $—NR^{11}—$;
m is 1 to 5;
n is 0 to 2;
q is 2 to 3;
r is 0 to 2;
s is 0 to 5;
t is 0 to 3;
u is 2 to 5;
wherein aryl is phenyl unsubstituted or substituted with one or two substituents selected from the group consisting of halo, C_1–C_4 alkyl, C_1–C_4 alkoxy, $—NO_2$, $—CF_3$, C_1–C_4 alkylthio, —OH, $—NH_2$, C_1–C_4 alkylamino, C_1–C_4 dialkylamino, —CN, $—CO_2H$, $—CO_2CH_3$, $—CO_2CH_2CH_3$, $—CO_2—$, benzyl, acetyl, or pharmaceutically acceptable salts of these compounds;
provided that when A is piperazine and R^{24} and R^{25} are both H then R^{26} is not H, phenyl or C_1–C_4 alkoxyphenyl.

5,389,636

METHOD OF COMBATING VENTURIA

Philip E. Russell, Sawston, England, and Heinz H. A. Hagemeister, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 757,967, Sep. 12, 1991, abandoned. This application Apr. 25, 1994, Ser. No. 232,487
Claims priority, application United Kingdom, Sep. 15, 1990, 9020207
Int. Cl.[6] A01N *43/54*
U.S. Cl. 514—275 **2 Claims**

1. A method of combating a *Venturia* spp infestation in apple trees, which comprises applying an anti-*Venturia* effective amount of 2-anilino-4,6-dimethylpyrimidine to the apple trees.

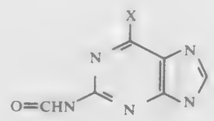
5,389,637

2-FORMYLAMINO-6-HALOGENOPURINE

Masami Igi, Osaka, and Taketo Hayashi, Yao, both of Japan, assignors to Sumika Fine Chemicals Co., Ltd., Osaka, Japan

Division of Ser. No. 937,427, Aug. 31, 1992. This application Sep. 2, 1993, Ser. No. 115,015
Claims priority, application Japan, Nov. 22, 1991, 3-334053
Int. Cl.[6] C07D *473/40*
U.S. Cl. 544—277 **1 Claim**

1. A. 2-formylamino-6-halogenopurine or a salt thereof represented by Formula (2):



(2)

wherein X represents a chlorine atom, a bromine atom, an iodine atom or a fluorine atom.

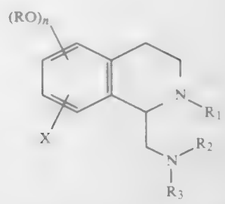
5,389,638

TETRAHYDROISOQUINOLINES AS ALPHA-2 ANTAGONISTS AND BIOGENIC AMINE UPTAKE INHIBITORS

John F. DeBernardis, Lindenhurst; Daniel J. Kerkman, Lake Villa, both of Ill.; Robert E. Zelle, Stow, Mass., and William McClellan, Waukegan, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 10, 1993, Ser. No. 119,789
Int. Cl.[6] N61K *31/47;* **C07D** *217/18, 401/06*
U.S. Cl. 514—29.1 **10 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein
n is an integer selected from the group consisting of 0 and 1,
R is independently selected from the group consisting of methyl and ethyl;
X is selected from the group consisting of hydrogen and fluorine;
R_1 is selected from the group consisting of
alkyl of one to six carbon atoms,
alkanoyl of from two to six carbon atoms,
aminosulfonyl,
alkoxycarbonyl of from two to eight carbon atoms, and
aminocarbonyl;
R_2 is selected from methyl and ethyl; and
R_3 is arylalkyl where the aryl portion is unsubstituted or is substituted by one or more groups selected from the group consisting of
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms,
alkoxy of one to six carbon atoms,
thioalkoxy of one to six carbon atoms,
amino,
alkylamino of one to six carbon atoms,
dialkylamino in which the alkyl groups are independently of one to six carbon atoms;
hydroxy,
halo,
mercapto,
nitro,
carboxldehyde,
carboxy,
carboalkoxy of two to eight carbon atoms, and
carboxamido; or
R_2 and R_3 taken together with the nitrogen atom to which they are attached form a pyrrolidinyl ring substituted by phenyl, which phenyl group is optionally substituted by one or more groups selected from the group consisting of
alkyl of one to six carbon atoms,
halo,
hydroxy,
alkoxy of one to six carbon atoms,
amino, and
thioalkoxy of one to six carbon atoms.

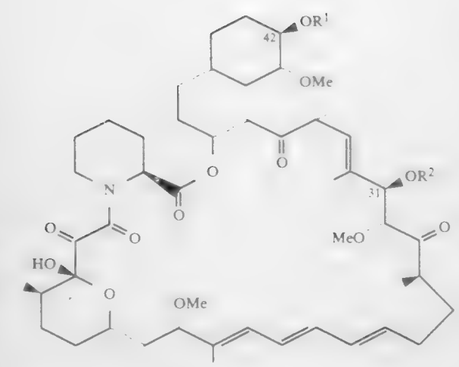
5,389,639

AMINO ALKANOIC ESTERS OF RAPAMYCIN

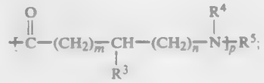
Amedeo A. Failli, Princeton Junction, N.J., and Robert J. Steffan, Langhorne, Pa., assignors to American Home Products Company, Madison, N.J.

Filed Dec. 29, 1993, Ser. No. 174,120
Int. Cl.[6] A61K *31/445;* **C07D** *487/04*
U.S. Cl. 514—291 **14 Claims**

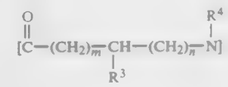
1. A compound of the structure



wherein R^1 and R^2 are each, independently, hydrogen or



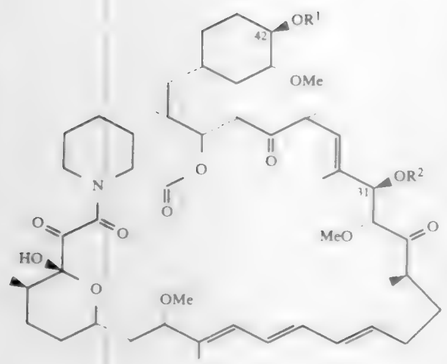
R^3 is $—(CH_2)_qCO_2R^6$;
R^4 is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 7–10 carbon atoms;
R^5 is hydrogen;
R^6 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, arylalkyl of 7–10 carbon atoms, fluorenylmethyl, or phenyl which is optionally mono-, di-, or tri-substituted with a substituent selected from alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, hydroxy, cyano, halo, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, or $—CO_2H$;
R^7 is alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, arylalkyl of 7–10 carbon atoms, fluorenylmethyl, or phenyl which is optionally mono-, di-, or tri-substituted with a substituent selected from alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, hydroxy, cyano, halo, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, or $—CO_2H$;
m is 0–4;
n is 0–4;
p is 1–2;
q is 0–4;
wherein R^3, R^4, m, and n are independent in each of the



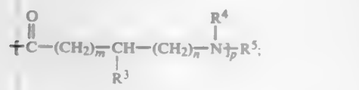
subunits when p=2;
with the proviso that R^1 and R^2 are not both hydrogen; and further provided that if R^5 is CO_2R^7, then R^6 is hydrogen; and still further provided that if R^6 is not hydrogen, then R^5 is hydrogen;
or a pharmaceutically acceptable salt thereof.

12. A method of inducing immunosuppression in a mammal in need thereof which comprises, administering to said mammal an immunosuppressive amount of a compound of the structure

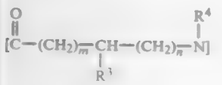
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wherein R^1 and R^2 are each, independently, hydrogen or

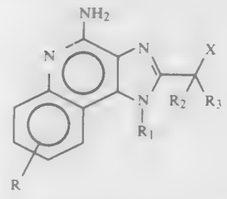


R^3 is $-(CH_2)_qCO_2R_6$;
R^4 is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 7–10 carbon atoms;
R^5 is hydrogen;
R^6 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, arylalkyl of 7–10 carbon atoms, fluorenylmethyl, or phenyl which is optionally mono-, di-, or tri-substituted with a substituent selected from alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, hydroxy, cyano, halo, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, or $-CO_2H$;
R^7 is alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, arylalkyl of 7–10 carbon atoms, fluorenylmethyl, or phenyl which is optionally mono-, di-, or tri-substituted with a substituent selected from alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, hydroxy, cyano, halo, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, or $-CO_2H$;
m is 0–4;
n is 0–4;
p is 1–2;
q is 0–4;
wherein R^3, R^4, m, and n are independent in each of the



subunits when p=2;
with the proviso that R^1 and R^2 are not both hydrogen; and further provided that if R^5 is CO_2R^7, then R^6 is hydrogen; and still further provided that if R^6 is not hydrogen, then R^5 is hydrogen;
or a pharmaceutically acceptable salt thereof.

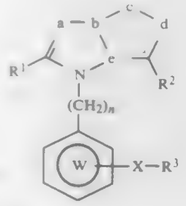
5,389,640
1-SUBSTITUTED, 2-SUBSTITUTED 1H-IMIDAZO[4,5-C]QUINOLIN-4-AMINES
John F. Gerster, Woodbury; Stephen L. Crooks, Mahtomedi, both of Minn., and Kyle J. Lindstrom, Houlton, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 838,475, Feb. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,326, Apr. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 662,926, Mar. 1, 1991, abandoned. This application Aug. 28, 1992, Ser. No. 938,295
Int. Cl.[6] C07D *471/02, 471/04;* A61K *31/44*
U.S. Cl. 514—293 **15 Claims**
1. A compound of the formula:



wherein R_1 is selected from the group consisting of: hydroxyalkyl of one to about six carbon atoms and alkoxyalkyl wherein the alkoxy moiety is of one to about four carbon atoms and the alkyl moiety is of one to about six carbon atoms;
R_2 and R_3 are independently selected from the group consisting of hydrogen and alkyl of one to about four carbon atoms;
X is selected from the group consisting of alkoxy of one to about four carbon atoms, alkoxyalkyl wherein the alkoxy moiety is of one to about four carbon atoms and the alkyl moiety is of one to about four carbon atoms, hydroxyalkyl of one to about four carbon atoms, and hydroxy; and
R is selected from the group consisting of hydrogen, straight chain or branched chain alkoxy of one to about four carbon atoms, halogen, and straight chain or branched chain alkyl of one to about four carbon atoms;
or a pharmaceutically acceptable acid addition salt thereof.

5,389,641
FUSED HETEROCYCLIC COMPOUNDS, HAVING ANGIOTENSIN II ANTAGONISTIC ACTIVITY
Takehiko Naka, and Yoshiyuki Inada, both of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 868,841, Apr. 16, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 127,356
Claims priority, application Japan, Apr. 16, 1991, 3-173473; Jul. 5, 1991, 3-263341; Sep. 25, 1991, 3-315629
Int. Cl.[6] A61K *31/395;* C07D *519/00*
U.S. Cl. 514—303 **14 Claims**
1. A compound of the formula:

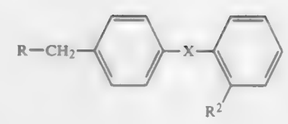
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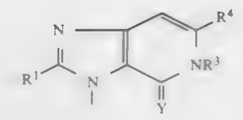
wherein R^1 is lower (C_{1-8}) alkyl, lower (C_{2-8}) alkenyl, lower (C_{2-8}) alkynyl, C_{3-6} cyloalkyl, phenyl-lower (C_{1-4}) alkyl, phenyl or

naphthyl, which may be attached through (a) $-N(R^{10})-$ wherein R^{10} is hydrogen or lower (C_{1-4}) alkyl, (b) oxygen or (c) $S(O)_m$ wherein m is an integer of 0 to 2, each of the lower alkyl, lower alkenyl, lower alkynyl and cycloalkyl being unsubstituted or substituted with hydroxyl, amino, N-lower (C_{1-4}) alkylamino, N,N-di-lower (C_{1-4}) alkylamino, halogen, lower (C_{1-4}) alkoxy or lower (C_{1-4}) alkylthio, and each of the phenyl-lower alkyl, phenyl and naphthyl groups being unsubstituted or substituted with halogen, amino, N-lower (C_{1-4}) alkylamino, N,N-di-lower (C_{1-4}) alkylamino, lower (C_{1-4}) alkoxy, lower (C_{1-4}) alkylthio or lower (C_{1-4}) alkyl on the benzene ring;
R^2 is a group of the formula —CO—D, wherein D is (i) hydroxyl, (ii) lower (C_{1-6}) alkoxy, or (iii) a group of the formula $-OCH(R^4)OCOR^5$, wherein R^4 is hydrogen or lower (C_{1-6}) alkyl and R^5 is lower (C_{1-6}) alkyl, lower (C_{1-6}) alkoxy or C_{3-8} cycloalkyloxy;
R^3 is phenyl which is substituted with R^6 selected from the group consisting of carboxyl, tetrazolyl, trifluoromethanesulfonic amide ($-NHSO_2CF_3$), phosphoric acid, sulfonic acid, cyano, and lower (C_{1-4}) alkoxycarbonyl, each of the groups being unprotected or protected with (i) lower (C_{1-4}) alkyl group, which may be substituted with lower (C_{1-4}) alkoxy or phenyl, (ii) $-OCH(R^{4'})OCOR^{5'}$ wherein $R^{4'}$ is hydrogen, lower (C_{1-6}) alkyl or C_{3-8} cycloalkyl and $R^{5'}$ is (a) lower (c_{1-6}) alkyl, (b) lower (C_{2-8}) alkenyl, (c) C_{3-8} cycloalkyl, (d) lower (C_{1-3}) alkyl which is substituted with phenyl or C_{3-8} cycloalkyl, (e) lower (C_{2-3}) alkenyl which is substituted with phenyl or C_{3-8} cycloalkyl, (f) phenyl, (g) p-tolyl (h) naphthyl, (i) lower (C_{1-6}) alkoxy, (j) lower (C_{2-8}) alkenyloxy, (k) C_{3-8} cycloalkyloxy, (1) lower (C_{1-3}) alkoxy which is substituted with phenyl or C_{3-8} cycloalkyl, (m) lower (C_{2-3}) alkenyloxy which is substituted with phenyl or C_{3-8} cycloalkyl, (n) phenoxy, (o) p-nitrophenoxy or (p) naphthoxy, (iii) lower (C_{2-5}) alkanoyl or (iv) benzoyl, the phenyl R^3 group being optionally further substituted with a substituent selected from halogen, nitro, cyano, lower (C_{1-4}) alkoxy, amino, N-lower (C_{1-4}) alkylamino, N,N-di-lower (C_{1-4}) alkylamino, lower (C_{1-4}) alkylthio and lower (C_{1-4}) alkyl;
X is (i) a chemical bond, (ii) lower (C_{1-4}) alkylene wherein the number of atoms between the W ring and R^3 is 1 or 2, (iii) —CO—, (iv) —O—, (v) —S—, (vi) —NH—, (vii) —CO—NH—, (viii) $-O-CH_2-$, (ix) $-S-CH_2-$, or (x) —CH=CH—;
W is phenyl which may be substituted with halogen, nitro, cyano, lower (C_{1-4}) alkoxy, amino, N-lower (C_{1-4}) alkylamino, N,N-di-lower (C_{1-4}) alkylamino, lower (C_{1-4}) alkylthio, and lower (C_{1-4}) alkyl; a, c and d are independently selected from the group consisting of one or two optionally substituted carbon atoms and one or two optionally substituted hetero atoms; b and e are independently selected from the group consisting of one optionally substituted carbon atom and one optionally substituted nitrogen atom, wherein one of b or e is nitrogen; the dotted line is a bond to form one double bond; n is an integer of 1 or 2; or a pharmaceutically acceptable salt thereof.

5,389,642
IMIDAZOPYRIDINES
Dieter Dorsch, Ober-Ramstadt; Werner Mederski, Erzhausen; Mathias Osswald, Zwingenberg; Pierre Schelling, Mühltal; Norbert Beier, Reinheim; Ingeborg Lues, Darmstadt, and Klaus-Otto Minck, Ober-Ramstadt, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany
Filed Dec. 16, 1993, Ser. No. 167,369
Claims priority, application Germany, Dec. 16, 1992, 4242459
Int. Cl.[6] A61K *31/435;* C07D *471/04*
U.S. Cl. 514—303 **5 Claims**
1. Imidazopyridine derivatives of the formula I:



in which
R is

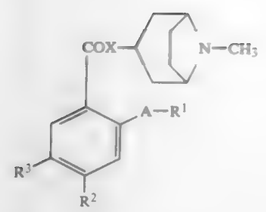


R^1 is C_3–C_7-cycloalkyl-C_nH_{2n}- or C_1–C_6-alkyl, in which a CH_2 group is replaced by O or S,
R^2 is H, $COOR^6$, CN, NO_2, NH_2, $NHCOR^5$, $NHSO_2R^5$ or 1H-5-tetrazolyl,
R^3 is $-C_mH_{2m}$—CN, C_2–C_6-alkynyl, $-C_mH_{2m}$—Ar, $-C_mH_{2m}$—CO-R^5, $-C_mH_{2m}$—CO—Ar, $-C_mH_{2m}$—Het or $-C_mH_{2m}$—CO—Het,
R^4 is H or Hal,
R^5 is C_1–C_6-alkyl, in which one or more H atoms can also be replaced by F,
R^6 is H or A,
X is a single bond or is —NH—CO—, —CO—NH—, —O—CH—(COOH)—, —NH—CH(COOH)—, —NA—CH-(COOH), —CH=C—(COOH), —CH=C(CN) or —CH=C(1H-5-tetrazolyl)-,
Y is O or S,
A is alkyl having 1–6 C atoms,
Ar is an unsubstituted phenyl group or a phenyl group which is monosubstituted or disubstituted by Hal, R^5, OH, OR^5, $COOR^6$, CN, NO_2, NH_2, NHA, $N(A)_2$, $NHCOR^5$, NHCOOA, $NHSO_2R^5$ and/or 1H-5-tetrazolyl,
Het is a five- or six-membered heteroaromatic radical having 1 to 4N, O and/or S atoms, which can also be fused to a benzene or pyridine ring,
Hal is F, Cl, Br or I,
m is 1, 2, 3, 4, 5 or 6, and
n is 0, 1, 2, 3, 4, 5 or 6, and their salts.

5,389,643
AMINOBENZOIC ACID DERIVATIVES USEFUL FOR TREATING GASTRO-INTESTINAL CONDITIONS
Shuhei Miyazawa; Shigeki Hibi; Hiroyuki Yoshimura; Takashi Mori; Yorihisa Hoshino; Mitsuo Nagai; Kouichi Kikuchi; Hisashi Shibata; Kazuo Hirota; Takashi Yamanaka; Isao Yamatsu, and Masanori Mizuno, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan
Filed Feb. 3, 1993, Ser. No. 13,080
Claims priority, application Japan, Feb. 4, 1992, 4-018959; Sep. 3, 1992, 4-235533
Int. Cl.[6] C07D *451/04, 451/06;* A61K *31/46*
U.S. Cl. 514—304 **23 Claims**
1. An aminobenzoic acid derivative represented by the following formulas (I), (I-2) or (I-3), or a pharmacologically acceptable salt thereof:

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(I)



wherein

R^1 represents a straight or branched C_1–C_8 cyanoalkyl, straight or branched C_2–C_8 cyanoalkenyl, substituted C_3–C_8 cycloalkyl, substituted or unsubstituted C_3–C_8 cycloalkylalkyl wherein the alkyl moiety has 1 to 8 carbon atoms, halogen-substituted straight or branched C_1–C_8 lower alkyl, straight or branched C_2–C_8 alkenyl, or straight or branched C_2–C_8 alkynyl group;

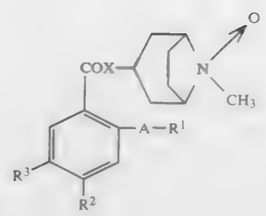
R^2 represents an amino, a mono- or disubstituted acylamino, —NHCOOH, or a mono- or disubstituted alkylamino group;

R^3 represents a halogen atom;

X represents a group represented by the formulas: —O— or —NH—; and

A represents an oxygen or sulfur atom, with the proviso that when A represents an oxygen atom and R^1 represents a halogen-substituted C_1–C_8 lower alkyl group, the group represented by the formula: —A—R^1 is a group exclusive of one represented by the formula: —O—$(CH_2)_r$—CF_3 wherein r is 0 or an integer of 1 to 4; and that when R^1 represents said unsubstituted cycloalkylalkyl group, said unsubstituted cycloalkylalkyl group is not a cycloalkylalkyl group represented by the formula: —$(CH_2)_m$—R wherein R is a cycloalkyl group and m is an integer of 1 to 6;

(I-3)



wherein

R^1 represents a straight or branched C_1–C_8 cyanoalkyl, a straight or branched C_2–C_8 cyanoalkenyl, a substituted C_3–C_8 cycoalkyl, substituted or unsubstituted C_3–C_8 cycloalkylalkyl wherein the alkylmoiety has 1 to 8 carbon atoms, a halogen-substituted straight or branched C_1–C_8 lower alkyl, a straight or branched C_2–C_8 alkenyl, or a straight or branched C_2–C_8 alkynyl group;

R^2 represents an amino, a mono- or disubstituted acylamino, —NHCOOH or a mono- or disubstituted alkylamino group;

R^3 represents a halogen atom;

X represents a group represented by the formulas: —O— or —NH—; and

A represents an oxygen or sulfur atom.

5,389,644

1,4-DIHYDROPYRIDINE COMPOUNDS

Jean-Louis Peglion, le Vesinet; Ghanem Aasssi, Saint Cloud; Alain Pierre, Marly le Roi; Laurence Kraus-Berthier, Colombes; Nicolas Guilbaud, Paris, and Jean-Paul Vilaine, Chatenay Malabry, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Feb. 4, 1993, Ser. No. 13,297

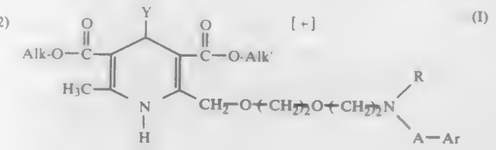
Claims priority, application France, Feb. 5, 1992, 92 01266

Int. Cl.[6] A61K *31/44;* **C07D** *211/90*

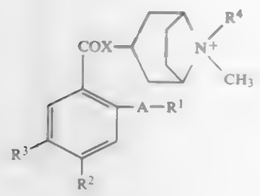
U.S. Cl. 514—307 **13 Claims**

1. A 1,4-dihydropyridine compound selected from those of formula I:

(I)



(I-2)



wherein

R^1 represents a straight or branched C_1–C_8 cyanoalkyl, straight or branched C_2–C_8 cyanoalkenyl, substituted C_3–C_8 cycoalkyl, substituted or unsubstituted C_3–C_8 cycloalkylalkyl wherein the alkyl moiety has 1 to 8 carbon atoms, halogen-substituted straight or branched C_1–C_8 lower alkyl, straight or branched C_2–C_8 alkenyl, or straight or branched C_2–C_8 alkynyl group;

R^2 represents an amino, a mono- or disubstituted acylamino, —NHCOOH or a mono- or disubstituted alkylamino group;

R^3 represents a halogen atom;

X represents a group represented by the formulas: —O— or —NH—;

A represents an oxygen or sulfur atom; and

R^4 represents a C_1–C_8 lower alkyl or aralkyl wherein said alkyl moiety has 1 to 8 carbon atoms group; and

wherein:

Y represents phenyl which is optionally substituted by 1 to 5 identical or different substituents, each being halogen, alkoxy, or alkylthio, each having 1 to 4 carbon atoms inclusive, trihalomethyl, or methylenedioxy;

Alk and Alk', which are the same or different, each represents straight-chain or branched alkyl having 1 to 5 carbon atoms inclusive;

R represents hydrogen, straight-chain or branched alkyl having 1 to 5 carbon atoms inclusive, or straight-chain or branched alkenyl or alkynyl, each having 3 to 5 carbon atoms inclusive;

A represents:

—$(CH_2)_m$— in which m is an integer of 1 to 5 inclusive, optionally substituted by a substituent selected from: straight-chain and branched alkyl having 1 to 5 carbon atoms inclusive, and straight-chain and branched alkenyl and alkynyl each having 2 to 5 carbon atoms inclusive,

and simultaneously

Ar represents:

a) phenyl which is substituted by one or more halogen, trifluoromethyl, nitro, cyano, or alkoxycarbonyl having 2 to 6 carbon atoms inclusive or alkylthio having 1 to 5 carbon atoms, inclusive

b) thienyl, pyridyl, naphthyl, quinolyl, isoquinolyl, indolyl, N-methylindolyl, benzofurazanyl, or benzo-2,1,3-thiadiazolyl, or

the whole of —A—Ar represents dibenzo[a,d]cyclohept-5-yl; in the form of the dextrorotatory isomer, and

its physiologically tolerable addition salts with a pharmaceutically-acceptable acid.

5,389,645

SUBSTITUTED TYROSYL DIAMINE AMIDE COMPOUNDS

Donald W. Hansen, Jr., Skokie; Nizal S. Chandrakumar; Karen B. Peterson, both of Vernon Hills, and Sofya Tsymbalov, Des Plaines, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Aug. 13, 1992, Ser. No. 929,275

Int. Cl.[6] C07D *215/48;* **A61K** *31/47*

U.S. Cl. 514—311 **4 Claims**

1. A method for treating pain in an animal comprising administering to said animal a therapeutically-effective amount of a compound, wherein the compound is:

N-[2-[[2S-amino-3-(4-hydroxy-2,6-dimethylphenyl)-1-oxopropyl]amino]-2-methylpropyl]2-quinolinecarboxamide, hydrochloride; or

N-[2-[[2S-amino-3-(4-hydroxy-2,6-dimethylphenyl)1-oxopropyl]amino]-2-methylpropyl]-3-quinolinecarboxamide, hydrochloride.

5,389,646

METHODS FOR TREATMENT AND PREVENTION OF BONE LOSS USING 2,3-BENZOPYRANS

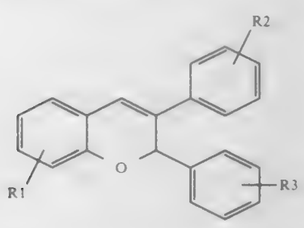
Virender M. Labroo, Mill Creek, Wash., assignor to ZymoGenetics, Inc., Seattle, Wash.

Filed Dec. 30, 1993, Ser. No. 175,899

Int. Cl.[6] A61K *31/445, 31/40, 31/35*

U.S. Cl. 514—320 **21 Claims**

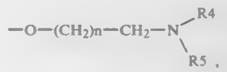
1. A method for reducing bone loss in a patient comprising administering to a patient in need thereof an effective amount of a composition comprising a compound of the formula



or a pharmaceutically acceptable salt thereof, wherein:

each of R1 and R2 is individually H, OH, linear or branched chain C_1–C_{17} alkoxy, linear or branched chain C_2–C_{18} acyloxy, or linear or branched chain C_2–C_{18} alkoxycarbonyl; and

R3 is



wherein each of R4 and R5 is individually a linear or branched chain alkyl radical of from one to 18 carbon atoms, or together with N, R4 and R5 form a three- to 10-membered ring, and n is an integer from 1 to 6,

in combination with a pharmaceutically acceptable carrier.

5,389,647

RENIN INHIBITORS

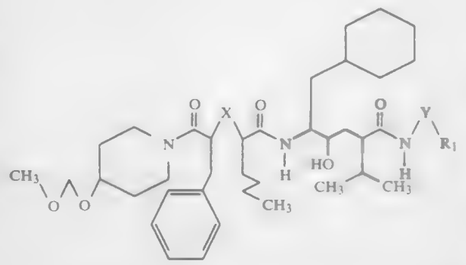
William R. Baker, Libertyville; Steven A. Boyd, Mundelein; Anthony K. L. Fung, Gurnee; Herman H. Stein, Highland Park; Jon F. Denissen, McHenry, and Charles W. Hutchins, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 736,364, Jul. 31, 1994, Pat. No. 5,244,910, and a continuation-in-part of Ser. No. 680,811, Apr. 9, 1991, Pat. No. 5,122,514, said Ser. No. 736,364, is a continuation-in-part of Ser. No. 568,557, Aug. 15, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 71,747

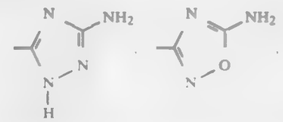
Int. Cl.[6] A61K *31/445;* **C07D** *413/08, 401/08*

U.S. Cl. 514—326 **6 Claims**

1. A compound of the formula:



wherein X is O Y is C_1 to C_6 alkylene which is unsubstituted or substituted with one or two substituents independently selected from C_1 to C_7 loweralkyl, C_1 to C_7 alkoxy and C_1 to C_7 thioalkoxy; and R_1 is —NHR_2 wherein R_2 is hydrogen, C_1 to C_7 alkanoyl, C_1 to C_7 hydroxyalkyl, formyl, C_1 to C_7 alkoxycarbonyl, aroyl wherein aroyl is —$C(O)R_6$ wherein R_6 is phenyl, naphthyl, tetrahydronaphthyl, indanyl or indenyl, —$C(O)NHR_{17}$ wherein R_{17} is hydrogen or C_1 to C_7 loweralkyl, —$C(S)NHR_{18}$ wherein R_{18} is hydrogen or C_1 to C_7 loweralkyl, —C(=N—CN)—NHR_{19} wherein R_{19} is hydrogen or C_1 to C_7 loweralkyl, —C(=N—CN)—SR_{22} wherein R_{22} is C_1 to C_7 loweralkyl,



—C(O)O-benzyl, —$SO_2NR_{26a}R_{26b}$ wherein R_{26a} and R_{26b} are independently selected from C_1 to C_7 loweralkyl or —SO_2R_{27} wherein R_{27} is C_1 to C_7 loweralkyl; or a pharmaceutically acceptable salt or prodrug ester thereof.

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INSECTICIDAL PYRAZOLINES

Shin-ichi Tsuboi; Katsuaki Wada, both of Oyama; Fritz Maurer, Wuppertal; Yumi Hattori, and Shinzaburo Sone, both of Oyama, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

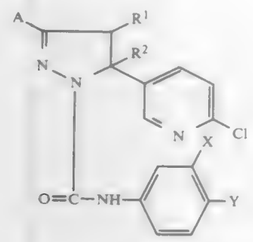
Continuation of Ser. No. 957,324, Oct. 6, 1992, abandoned. This application Apr. 4, 1994, Ser. No. 223,369

Claims priority, application Japan, Oct. 18, 1991, 3-297773

Int. Cl.[6] C07D *401/14, 405/14;* A61K *31/44*

U.S. Cl. 514—333 8 Claims

1. A pyrazoline of the formula



(I)

wherein

R^1 and R^2 represent hydrogen, C_{1-4} alkyl, or unsubstituted or halogen-substituted phenyl,

A represents phenyl which may be substituted by at least one substituent selected from the group consisting of halogen, C_{1-4} alkyl, C_{1-4} alkoxy, halogeno-C_{1-4} alkyl, halogeno-C_{1-4} alkoxy, nitro, haloalkylenedioxy, unsubstituted or halogen-substituted phenyl, and unsubstituted or halogen-substituted phenoxy, or

A represents halogen-substituted 3-pyridyl,

X and Y individually represent hydrogen, halogen, C_{1-4} alkyl, halogeno-C_{1-4} alkyl, halogeno-C_{1-4} alkoxy or halogeno-C_{1-4} alkylthio, or

X and Y together form a haloalkylenedioxy group,

with the proviso (a) that X and Y do not simultaneously represent hydrogen, and with the further proviso (b) that, when R^1 and R^2 simultaneously represent hydrogen, then (i) A represents phenyl substituted by at least one substituent selected from the group consisting of halogeno-C_{1-4} alkoxy, nitro, halomethylenedioxy, unsubstituted or halogen-substituted phenyl and unsubstituted or halogen-substituted phenoxy, or (ii) at least one of X and Y represents halogeno-C_{1-4} alkoxy or halogeno-C_{1-4} alkylthio, or (iii) X and Y together form a haloalkylenedioxy group.

5,389,649

OXATHIANE DERIVATIVES

Iain M. McLay, and Roger J. A. Walsh, both of Dagenham, United Kingdom, assignors to Rhone-Poulenc Rorer Limited, Eastbourne, England

PCT No. PCT/EP91/00075, § 371 Date Jul. 20, 1992, § 102(e) Date Jul. 20, 1992, PCT Pub. No. WO91/10659, PCT Pub. Date Jul. 25, 1991

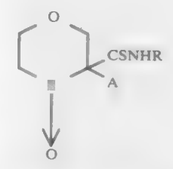
PCT Filed Jan. 17, 1991, Ser. No. 910,297

Claims priority, application United Kingdom, Jan. 19, 1990, 9001327

Int. Cl.[6] C07D *411/04*

U.S. Cl. 514—336 6 Claims

1. A compound of the formula



where R is lower alkyl and A is pyridyl unsubstituted or substituted by lower alkyl, lower alkoxy or halo; or a pharmaceutically acceptable salt thereof.

5,389,650

(AZAARYLMETHOXY)INDOLES AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

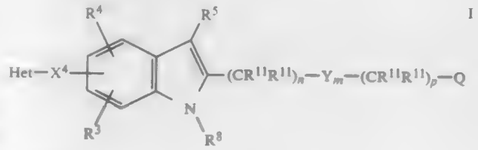
Richard Frenette, Vimont Laval; John W. Gillard, Baie d'Urfe; John H. Hutchinson, Montreal; Petpiboon Prasit, Kirkland, and Michel Therien, Laval, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Continuation-in-part of Ser. No. 768,140, Sep. 30, 1991, abandoned. This application Sep. 25, 1992, Ser. No. 951,635

Int. Cl.[6] C07D *401/12, 403/12;* A61K *31/44*

U.S. Cl. 514—337 8 Claims

1. A compound of the formula I:



I

wherein:

Het is ArR^1R^2;

Ar is 2-, 3- or 4-pyridyl;

R^1, R^2, R^3, and R^4 are each hydrogen;

R^5 is $X^2—R^7$;

R^6 and R^9 are independently alkyl, alkenyl, $—(CH_2)_uPh(R^{10})_2$ or $—(CH_2)_uTh(R^{10})_2$;

R^7 is R^6;

R^8 is R^9;

R^{10} is hydrogen or halogen;

each R^{11} is independently hydrogen or lower alkyl, or two R^{11}'s on same carbon atom are joined to form a cycloalkyl ring of 3 to 6 carbon atoms;

R^{12} is hydrogen, lower alkyl or $—CH_2R^{21}$;

R^{21} is phenyl substituted with 1 or 2 R^{22} groups;

R^{22} is hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl, lower alkylcarbonyl, $—CF_3$, —CN, $—NO_2$ or $—N_3$;

m is 0;

n is 1 to 3;

p is 0 to 3 when m is 0;

u is 0 in R^6 and 1 in R^9;

X^2 is $CR^{11}R^{11}$ or S;

X^4 is $CH_2—Y^1$;

Y^1 is O;

Q is $—CO_2R^{12}$;

or a pharmaceutically acceptable salt thereof.

5,389,651

NITROGEN-CONTAINING HETEROCYCLYL-OXY AND -THIO COMPOUNDS USEFUL AS PESTICIDES

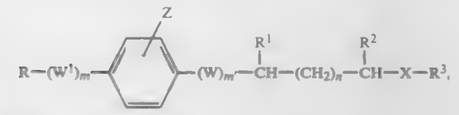
Clive A. Henrick, Palo Alto, Calif., assignor to Sandoz Ltd., Basle, Switzerland

Continuation-in-part of Ser. No. 856,563, Apr. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 756,873, Jul. 18, 1985, abandoned. This application Jul. 27, 1987, Ser. No. 77,835

Int. Cl.[6] C07D *213/643, 213/69;* A01N *43/40*

U.S. Cl. 514—345 26 Claims

1. A compound of the formula



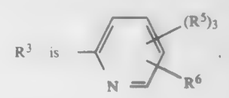
wherein

R is C_{4-8}alkyl, C_{4-8}alkenyl, C_{4-8}alkadienyl, C_{4-8}alkynyl or C_{4-8}alkadiynyl,

R^1 is hydrogen or C_{1-5}alkyl,

R^2 is hydrogen, C_{1-5}alkyl or halo,

with the proviso that at least one of R^1 and R^2 is hydrogen,



wherein

each R^5 and R^6, is independently hydrogen, halo, C_{1-8}alkyl, C_{1-8}alkoxy, C_{1-8}alkylthio, nitro, methyl substituted by 1 to 3 halos, ethyl substituted by 1 to 5 halos or C_{3-8}alkyl substituted by 1 to 6 halos,

W is oxygen or sulfur,

W^1 is oxygen or sulfur,

X is oxygen or sulfur,

Z is hydrogen, C_{1-5}alkyl, halo, methyl substituted by 1 to 3 halos, ethyl substituted by 1 to 5 halos or C_{3-5}alkyl substituted by 1 to 6 halos,

m is 0 or 1,

m' is 0 or 1, and

n is 0.

5,389,652

3-CYCLOALKYL-PROP-2-ENAMIDES

Elizabeth A. Kuo, Swindon Wilts, England, assignor to Roussel-Uclaf, France

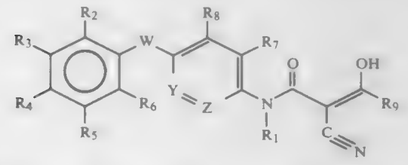
Division of Ser. No. 944,830, Sep. 14, 1992, Pat. No. 5,312,830. This application Jan. 21, 1994, Ser. No. 184,566

Claims priority, application United Kingdom, Sep. 17, 1991, 91-19874; Jul. 1, 1992, 92-13972

Int. Cl.[6] A01N *43/10*

U.S. Cl. 514—349 11 Claims

1. A compound selected from the group consisting of a compound of the formula



I

wherein R_1 is hydrogen or alkyl of 1 to 3 carbon atoms, W is selected from the group consisting of —O—, —S—, —SO— and $—SO_2—$, or one of Z and Y is —CH— and the other is —N—, R_2, R_3, R_4, R_5 and R_6 are individually selected from the group consisting of hydrogen, halogen, methoxy, methylthio, alkyl of 1 to 4 carbon atoms, $—WCF_3$, $—CF_3$, $—NO_2$, —CN, $—W—(CH_2)_n—CF_3$, $—W—(CF_2)_n—CF_3$, $—(CF_2)_n—CF_3$ and $—(CH_2)_n—CX_3$, n is an integer from 1 to 3, X is a halogen or R_3 and R_4 together are $—O—(CH_2)—O—$ and R_2, R_5 and R_6 are as defined above, R_7 and R_8 are individually hydrogen or alkyl of 1 to 6 carbon atoms, R_9 is cycloalkyl of 3 to 6 carbon atoms and their non-toxic, pharmaceutically acceptable salts with bases.

5,389,653

CATECHOL DERIVATIVES

Karl Bernauer, Oberwil; Janos Borgulya, Basel; Hans Bruderer, Biel-Benken; Mosé Da Prada, Riehen, and Gerhard Zürcher, Basel, all of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

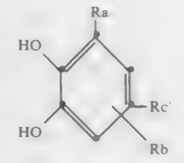
Continuation of Ser. No. 686,210, Apr. 16, 1991, Pat. No. 5,236,952, which is a continuation of Ser. No. 395,110, Aug. 16, 1989, abandoned, which is a continuation of Ser. No. 22,891, Mar. 6, 1987, abandoned. This application Apr. 16, 1993, Ser. No. 48,685

Claims priority, application Switzerland, Mar. 11, 1986, 980/86; Jan. 9, 1987, 62/87

Int. Cl.[6] A61K *31/44;* C07D *213/02*

U.S. Cl. 514—355 24 Claims

1. A compound of the formula:



Ib

wherein Ra is nitro or cyano, Rb is hydrogen or halogen and Rc' is COR^{11} wherein R^{11} is an aromatic or partially unsaturated heterocyclic group attached via a ring carbon atom and having 1–3 nitrogen atoms as hetero ring members,

or an ester or ether derivative thereof which is hydrolyzable under physiological conditions or a pharmaceutically acceptable salt thereof.

5,389,654

3-ETHYL 5-METHYL(+)2-[2-(N-TRITYLAMINO)ETHOXYMETHYL]-4-(2-CHLORO-PHENYL)-1,4-DIHYDRO-6-METHYL-6-METHYL-3,5-PYRIDINEDICARBOXYLATE

Borut Furlan, Ljubljana; Anton Copar, Smartno pri Litiji, and Alenka Jeriha, Ljubljana-Polje, all of Slovenia, assignors to LEK, tovarna, farmacevtskih in Kemicnih . . ., Slovenia, Slovenia

Filed Nov. 10, 1993, Ser. No. 149,735

Claims priority, application Slovenia, Nov. 26, 1992, P-92 00 344

Int. Cl.[6] A61K *31/455;* C07D *211/86*

U.S. Cl. 514—356 1 Claim

1. 3-ethyl 5-methyl (±) 2-[2-(N-tritylamino)-ethoxymethyl]-4-(2-chlorophenyl)-1,4-dihydro-6-methyl-3,5-pyridinedicarboxylate.

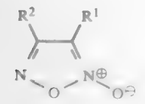
5,389,655

PHENYLFUROXANS

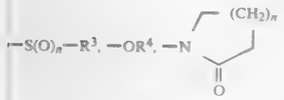
Karl Schönafinger, Alzenau, and Helmut Bohn, Schöneck, both of Germany, assignors to Cassella AG, Frankfurt am Main

Filed May 20, 1993, Ser. No. 65,547
Claims priority, application Germany, May 29, 1992, 4217794
Int. Cl.[6] C07D *413/04;* A61K *31/41*
U.S. Cl. 514—364 9 Claims

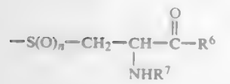
1. Phenylfuroxans of the formula I:



in which one of the radicals R^1 and R^2 represents phenyl and the other represents



or



where

R^3 denotes (C_1–C_6)-alkyl, (C_5–C_7)-cycloalkyl, (C_7–C_{10})-aralkyl, (C_3–C_7)-alkenyl, —$(CH_2)_m R^5$ or —$(CH_2)_n$—CO—R^6;

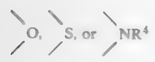
R^4 denotes (C_3–C_6)-alkyl, (C_5–C_7)-cycloalkyl, (C_3–C_7)-alkenyl, —$(CH_2)_n$— Het, —$(CH_2)_m$—R^5 or (C_7–C_{10})-aralkyl;

R^5 denotes hydroxyl, C_1–C_6-alkoxy, (C_1–C_6)-alkylamino, di-(C_1–C_6)-alkylamino or N—(C_1–C_6)-alkyl-N-benzylamino;

R^6 denotes hydroxyl, amino, (C_1–C_6)-alkylamino, di-(C_1–C_6)-alkyl-amino or $OR^{3'}$, where $R^{3'}$, with the exception of —$(CH_2)_n$—CO—R^6, is defined as R^3;

R^7 denotes hydrogen, (C_1–C_6)-alkyl or (C_2–C_7)-alkylcarbonyl;

Het represents a 5- to 7-membered heterocycle containing



as heteromembers; and

n represents 0, 1 or 2 and

m represents 2, 3 or 4,

and their pharmacologically acceptable acid addition compounds.

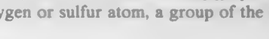
5,389,656

ACETYLENE DERIVATIVES, THEIR PREPARATION AND THEIR USE FOR CONTROLLING INSECTS AND ACARIDAE

Costin Rentzea, Heidelberg; Uwe Kardorff, Mannheim; Christoph Kuenast, Otterstadt; Hans Theobald, Limburgerhof, and Thomas Kuekenhoehner, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 737,866, Jul. 30, 1991, abandoned. This application Jul. 13, 1992, Ser. No. 911,386
Claims priority, application Germany, Jul. 31, 1990, 4024281
Int. Cl.[6] C07D *277/22, 333/08;* A01N *43/78, 43/10*
U.S. Cl. 514—365 2 Claims

1. An acetylene derivative of the formula I



I

where R^1 is 2-thienyl, 3-thienyl or 2-thiazolyl which may carry from one to three of the following radicals: nitro, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, C_1–C_6-alkenyl or C_3–C_8-cycloalkyl, R^2 is a mononuclear to trinuclear aromatic ring system which may carry from one to five halogen atoms or from one to three of the following groups: nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkenyl, phenyl or phenoxy, where the last-mentioned aromatic groups may in turn carry from one to five halogen atoms or from one to three of the following groups: C_1–C_4 alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio, and R^1 is not 2-thienyl when R^2 is phenyl or 4-methylphenyl, R^1 is not 2-thienyl when R^2 is thienyl substituted by C_1–C_4-alkoxy carbonyl, and R^1 is not 2-thiazolyl when R^2 is phenyl.

5,389,657

METHOD FOR TREATING INFERTILITY

David C. Madsen, Libertyville, Ill., assignor to Free Radical Sciences Corporation, Cambridge, Mass.

Filed Feb. 1, 1993, Ser. No. 12,006
Int. Cl.[6] A61K *31/425*
U.S. Cl. 514—369 12 Claims

1. A method for treating infertility comprising the step of administering to a female patient having fertility problems a therapeutically effective amount of an intracellular glutathione stimulator chosen from the group consisting of: L-2-oxothiazolidine-4-carboxylate; and L-2-oxothiazolidine-4-carboxylate esters to provide a defense mechanism against egg-/embryo envelope lipid per oxidation.

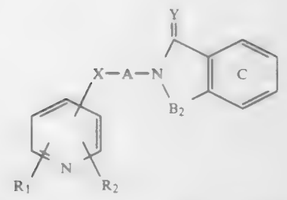
5,389,658

PYRIDINE DERIVATIVES, THEIR PRODUCTION AND USE

Muneo Takatani, Kyoto; Taketoshi Saijo, Ikeda, and Kiminori Tomimatsu, Minoo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 880,641, May 7, 1992, Pat. No. 5,246,948. This application Jun. 24, 1993, Ser. No. 81,181
Claims priority, application Japan, May 10, 1991, 3-105691
Int. Cl.[6] A61K *31/425;* C07D *417/12*
U.S. Cl. 514—373 7 Claims

1. A pyridine derivative of the formula (IV):



(IV)

wherein R_1 and R_2 are the same or different and are a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkenyl group, a lower alkoxy group, hydroxy group, nitro group, cyano group, amino group, carbamoyl group, an acylamino group, a lower alkylamino group, a lower alkenylamino group or an aralkylamino group, X is an oxygen atom or —$S(O)_n$—, wherein n is 0, 1 or 2, A is a bivalent C_{1-15} hydrocarbon residue Y is an oxygen or sulfur atom, a group of the formula:



is an optionally substituted benzene ring, B_2 is SO_2.

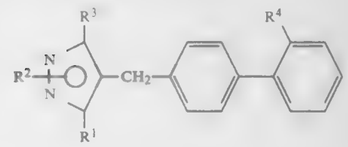
5,389,659

C-LINKED PYRAZOLE DERIVATIVES

Barry C. Ross, Luton; David Middlemiss, Bishops Stortford; Colin D. Eldred, Ware; John G. Montana, Ware, and Pritom Shah, Ware, all of England, assignors to Glaxo Group Limited, London, England

Filed Mar. 8, 1991, Ser. No. 666,746
Claims priority, application United Kingdom, Mar. 9, 1990, 9005354
Int. Cl.[6] A61K *31/41;* C07D *403/10*
U.S. Cl. 514—381 40 Claims

1. A compound of formula (I)



(I)

or a physiologically acceptable salt, solvate or a metabolically labile ester thereof wherein

R^1 represents a hydrogen atom or a group selected from C_{1-6}alkyl or C_{2-6}alkenyl;

R^2 represents a hydrogen atom or a group selected from C_{1-6}alkyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, C_{3-6}alkenyl, fluoroC_{1-6}alkyl, fluoroC_{3-6}alkenyl, phenyl, —$(CH_2)_k$CO R^5 or —$(CH_2)_k SO_2 R^5$;

R^3 represents —$(CH_2)_n COR^7$;

R^4 represents a C-linked tetrazolyl group;

R^5 represents a group selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{1-6}alkoxy or the group —$NR^{10}R^{11}$;

R^7 represents a group selected from hydroxy, C_{1-6}alkoxy or phenoxy;

R^{10} and R^{11} which may be the same or different each independently represent a hydrogen atom or a C_{1-4}alkyl group or —$NR^{10}R^{11}$ forms a saturated heterocyclic ring which has 5 or 6 ring members and may optionally contain in the ring one oxygen atom;

k represents zero or an integer from 1 to 4; and,

n represents zero.

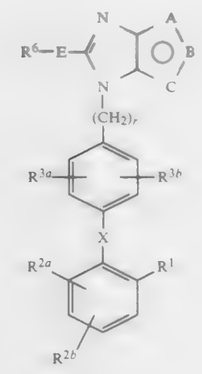
5,389,660

SUBSTITUTED IMIDAZO-FUSED 5-MEMBERED RING HETEROCYCLES AS ANGIOTENSIN II ANTAGONISTS

William J. Greenlee, Teaneck; David B. R. Johnston, Warren; Malcolm MacCoss, Freehold; Nathan B. Mantlo; Arthur A. Patchett, both of Westfield; Prasun K. Chakravarty, Edison, and Thomas F. Walsh, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 516,502, Apr. 25, 1990, Pat. No. 5,164,407, which is a continuation-in-part of Ser. No. 375,655, Jul. 3, 1989, abandoned. This application Oct. 7, 1992, Ser. No. 957,588
Int. Cl.[6] C07D *487/04, 487/02;* A61K *31/41, 31/415*
U.S. Cl. 514—381 8 Claims

1. A compound having the formula:



(I)

wherein:

R^1 is

(a) —CO_2R^4,

(b) —SO_3R^5,

(c) —$NHSO_2CF_3$,

(d) $PO(OR^5)_2$,

(e) —SO_2—NH—R^9,



(f)

(g) —SO_2NH—CO—R^{21},

(h) —CH_2SO_2NH—CO—R^{21},

(i) —CONH—SO_2R^{21},

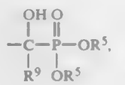
(j) CH_2CONH—SO_2R^{21},

(k) —$NHSO_2$NHCO—R^{21},

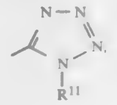
(l) $NHCONHSO_2R^{21}$,

(m) —SO_2NHCONHR^{21},

(n) —CONHOR^5,

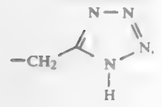


(o)

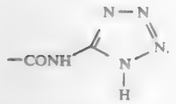


(p)

-continued

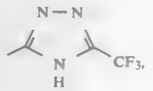


(q)

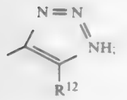


(r)

(s) —CONHNHSO$_2$CF$_3$,
(t) —SO$_2$NHCN,

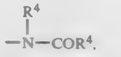


(u)

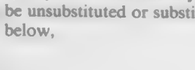


(v)

R^{2a} and R^{2b} are independently H, halo (Cl, Br, I, F), —NO$_2$, —NH$_2$, C$_{1-4}$-alkylamino, di(C$_1$–C$_4$-alkyl)amino, —SO$_2$NHR^9, CF$_3$, C$_1$–C$_4$-alkyl, or C$_1$–C$_4$-alkoxy;
R^{3a} is
(a) H,
(b) halo(Cl, Br, I, F),
(c) C$_1$–C$_6$-alkyl,
(d) C$_1$–C$_6$-alkoxy,
(e) C$_1$–C$_6$-alkoxy-C$_1$–C$_4$-alkyl;
R^{3b} is
(a) H,
(b) halo (Cl, Br, I, F),
(c) NO$_2$,
(d) C1-C6-alkyl,
(e) C$_1$–C$_6$-acyloxy,
(f) C$_3$–C$_7$-cycloalkyl,
(g) C$_1$–C$_6$-alkoxy,
(h) —NHSO$_2$R^4,
(i) hydroxy-C$_1$–C$_4$-alkyl,
(j) aryl-C$_1$–C$_4$-alkyl,
(k) C$_1$–C$_4$-alkylthio,
(l) C$_1$–C$_4$-alkylsulfinyl,
(m) C$_1$–C$_4$-alkylsulfonyl,
(n) NH$_2$,
(o) C$_1$–C$_4$-alkylamino,
(p) di(C$_1$–C$_4$-alkyl)amino,
(q) CF$_3$,
(r) —SO$_2$—NHR^9,
(s) aryl or,
(t) furyl;
wherein aryl is phenyl or naphthyl optionally substituted with one or two substituents selected from V and W as defined below;
R^4 is
H, straight chain or branched C$_1$–C$_6$-alkyl, aryl, or aryl-C$_1$–C$_5$-alkyl wherein the aryl groups are as defined above and where a substituent, can be the same or different;
R^{4a} is C$_1$–C$_6$-alkyl, aryl or aryl-C$_1$–C$_5$-alkyl;
R^5 is H or —CH(R^4)—O—CO—R^{4a};
E is
a single bond, —NR^{13}(CH$_2$)$_s$—, —S(O)$_x$(CH$_2$)$_s$— where x is 0 to 2 and s is 0 to 5, —CH(OH)—, —O—, —CO—;
R^6 is
(a) aryl as defined above;
(b) straight chain or branched C$_1$–C$_6$-alkyl, C$_3$–C$_7$-cycloalkyl, C$_2$–C$_5$-alkenyl or C$_2$–C$_5$-alkenyl each of which can be optionally substituted with a substituent selected from the group consisting of aryl as defined above, C$_3$–C$_7$-cycloalkyl, halo (Cl, Br, I, F) —OH, —NH$_2$, —NH(C$_1$–C$_4$-alkyl), —N(C$_1$–C$_4$-alkyl)$_2$, —NH—SO$_2$R^4, —COOR^4, —SO$_2$NHR^9;
A-B-C together are:
(a) —N(R^8)—C(R^{7a})=N—
(b) —N=C(R^{7a})—N(R^8)—;
R^{7a} and R^{7b} are independently
(a) H,
(b) straight chain or branched C$_1$–C$_6$ alkyl, C$_2$–C$_6$-alkenyl or C$_2$–C$_6$-alkynyl each of which can be optionally substituted with a substituent selected from the group consisting of C$_3$–C$_7$-cycloalkyl, halo (Cl, Br, I, F), —OH, —NH$_2$, —NH(C$_1$–C$_4$-alkyl), —N(C$_1$–C$_4$ alkyl)$_2$, —NHSO$_2$R^4, —COOR^4, C$_1$–C$_4$-alkoxyl, C$_1$–C$_4$-alkylthio, C$_1$–C$_4$-alkylcarbonyl, —CONH$_2$, —OCOR^4, —CON(R^4)$_2$, aryl,

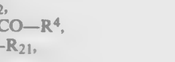


—S(O)$_x$—R^{21}, —CONHSO$_2$R^{21},
(c) aryl as defined above,
(d) substituted aryl in which the substituents are V or W, as defined below,
(e) aryl-C$_1$–C$_4$-alkyl in which the aryl group as defined above can be unsubstituted or substituted with V or W as defined below,
(f) halo,
(g) hydroxy,
(h) —N(R^4)R^{21},
(i) C$_1$–C$_6$-alkoxy,
(j) perfluoro-C$_1$–C$_4$-alkyl,
(k) CO$_2$R^4,
(l) CON(R^4)$_2$,
(m) N(R^4)—CO—R^4,
(n) —S(O)$_x$—R$_{21}$,
(o) —CN,
(p) —CONHSO$_2$R^{21},
(q) —SO$_2$NHCOR^{21},
(r) —NHSO$_2$R^{21},
(s) —NHSO$_2$CF$_3$,



(t)

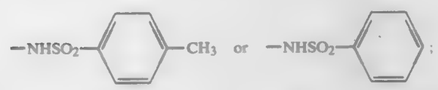
(u) —SO$_2$NH—CN,



(v)

R^{7c} and R^{7d} are independently H, alkyl or substituted alkyl, aryl, substituted aryl or substituted aryl-C$_1$C$_4$-alkyl, wherein substituents can be H, halo, C$_1$–C$_4$-alkyl, hydroxy-C$_1$–C$_4$-alkyl, CO$_2$R^4, or COR^4;
R^8 is:
(a) H;
(b) C$_1$–C$_6$-alkyl optionally substituted with OH, CO$_2$R^4, N(R^4)$_2$, or CON(R^4)$_2$;
(c) aryl or aryl-C$_1$–C$_4$-alkyl wherein the aryl moiety is optionally substituted with H, halo, C$_1$–C$_4$-alkyl, hydroxy-C$_1$–C$_4$-alkyl, CO$_2$R^4; COR^4, or SO$_2$R^4;
V and W are independently:
(a) H,
(b) C$_1$–C$_5$-alkoxy,
(c) C$_1$–C$_5$-alkyl,

(d) hydroxy,
(e) C$_1$–C$_5$-alkyl-S(O)$_x$— where x is as defined above,
(f) CN,
(g) NO$_2$,
(h) NHR^4,
(i) N(R^4)$_2$,
(j) CON(R^4)$_2$,
(k) CO$_2$R^4,
(l) COR^4,
(m) CF$_3$,
(n) halo (Cl, Br, I, F),
(o) hydroxy-C$_1$–C$_5$-alkyl,
(p) C$_1$–C$_5$-alkylthio,
(q) —SO$_2$NR^{9}R^{10},
(r) C$_3$–C$_7$-cycloalkyl,
(s) C$_2$–C$_{10}$-alkenyl,
R^9 is H, C$_1$–C$_5$-alkyl, phenyl or benzyl;
R^{10} is H, C$_1$–C$_4$-alkyl;
R^{11} is H, C$_1$–C$_6$alkyl, C$_2$–C$_4$-alkenyl, C$_1$–C$_4$-alkoxy-C$_1$–C$_4$-alkyl, or —CH$_2$—C$_6$H$_4$R^{20};
R^{12} is —CN, —NO$_2$ or —CO$_2$R^4;
R^{13} is H, C$_1$–C$_4$-acyl, C$_1$–C$_6$-alkyl, allyl, C$_3$–C$_6$-cycloalkyl, phenyl or benzyl;
R^{14} is H, C$_1$–C$_8$-alkyl, C$_1$–C$_8$-perfluoroalkyl; C$_3$–C$_6$-cycloalkyl, phenyl or benzyl;
R^{15} is H, C$_1$–C$_6$-alkyl;
R^{16} is H, C$_1$–C$_6$-alkyl, C$_3$–C$_6$-cycloalkyl, phenyl or benzyl;
R^{17} is —NR^{9}R^{10}, —OR^{10}, —NHCONH$_2$, —NHCSNH$_2$,



R^{18} and R^{19}are independently C$_1$–C$_4$-alkyl or taken together are —(CH$_2$)$_q$— where q is 2 or 3;
R^{20} is H, NO$_2$, —NH$_2$, —OH or —OCH$_3$;
R^{21} is
(a) aryl as defined above,
(b) C$_3$–C$_7$-cycloalkyl,
(c) C$_1$–C$_4$-alkyl optionally substituted with a substituent selected from the group consisting of aryl as defined above, —OH, —SH, C$_1$–C$_4$-alkyl, —O(C$_1$–C$_4$-alkyl), —S(C$_1$–C$_4$-alkyl), —CF$_3$, halo (Cl, Br, F, I), —NO$_2$, —CO$_2$H, CO$_2$-C$_1$–C$_4$-alkyl, —NH$_2$, —NH(C$_1$–C$_4$-alkyl), —N(C$_1$–C$_4$-alkyl)$_2$, —PO$_3$H, —PO(OH) (O-C$_1$–C$_4$-alkyl);
(d) perfluoro-C$_1$–C$_4$-alkyl;
X is a single bond;
r is 1; or,
a pharmaceutically acceptable salt thereof.

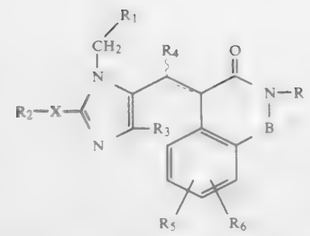
5,389,661

IMIDAZOLE AND 1,2,4-TRIAZOLE DERIVATIVES WITH ANGIOTENSIN II ANTAGONIST PROPERTIES

Ila Sircar, Ann Arbor, Mich., and Jagadish C. Sircar, Clarks Summit, Pa., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 985,395, Dec. 4, 1992, Pat. No. 5,322,950, which is a continuation-in-part of Ser. No. 802,652, Dec. 5, 1991, abandoned. This application Feb. 10, 1994, Ser. No. 194,535
Int. Cl.^{6} **A61K** *31/41, 31/415;* **C07D** *257/04*
U.S. Cl. 514—381 **7 Claims**

1. A compound of formula



I

or a pharmaceutically acceptable salt thereof wherein
R$_1$ is adamantylmethyl,
phenyl,
biphenyl, or
naphthyl, each of which is unsubstituted or substituted by one to three substituents selected from
Cl,
Br,
F,
I,
alkyl of from one to four carbon atoms,
nitro,
tetrazol-5-yl,
alkoxy of from one to four carbon atoms,
hydroxy,
SO$_3$H,
SO$_2$alkyl of from one to four carbon atoms,
CN,
C$_n$F$_{2n+1}$ wherein n is an integer of from 1 to 3,
CO$_2$R$_4$,
SO$_2$NHR$_4$,
NHSO$_2$R$_4$,
NHSO$_2$C$_n$F$_{2n+1}$,
CON(R$_4$)$_2$ wherein R$_4$ is hydrogen or lower alkyl;
X is a single bond, S, or 0;
R$_2$ is alkyl of from two to ten carbon atoms, alkenyl of from two to ten carbon atoms, alkynyl of from three to ten carbon atoms, cycloalkyl of from three to six carbon atoms,
(CH$_2$)$_m$phenyl wherein m is an integer of from zero to eight and phenyl is unsubstituted or substituted by one to three substituents selected from alkyl of from one to four carbon atoms,
nitro,
Cl,
Br,
F,
I,
hydroxy,
alkoxy of from one to four carbon atoms, or NR$_4$R$_4$ wherein R$_4$ is as defined above;
R$_3$ is hydrogen,
Cl,
Br,
F,
I,
CHO,
hydroxymethyl,
alkyl,
aryl,
heteroaryl,
CO$_2$R$_4$,
CONR$_4$R$_4$,
NO$_2$, or
C$_n$F$_{2n+1}$ wherein n is as defined above;
R$_4$ is hydrogen or alkyl of from one to five carbon atoms,
R is hydrogen or alkyl of from one to five carbon atoms which alkyl is unsubstituted or substituted with
CN,
CO$_2$R$_4$,

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tetrazol-5-yl,
$CONHR_4$,
$CONH(CH_2)_nCO_2R_4$,
phenyl unsubstituted or substituted by one to three substituents selected from alkyl of from one to four carbon atoms,
nitro,
Cl,
F,
I,
hydroxy,
alkoxy of from one to four carbon atoms, or
NR_4R_4 wherein R_4 is as defined above; or
R is OR_4, or $O(CH_2)_n CO_2R_4$;
R_5 and R_6 are each independently
hydrogen,
halogen,
alkyl of from one to five carbon atoms,
alkyloxy of from one to five carbon atoms,
NO_2,
$NHCOR_4$,
$NHSO_2R_4$,
$(CH_2)_nCO_2R_4$ wherein n and R_4 are as defined above; and
B is a bond;
the is a double or single bond; and the indicates both E and Z isomer of the compound.

5,389,662

COMBINED COMPOSITIONS

László Pap, Budapest; István Székely, Dunakeszi; Lajos Nagy, Szentendre; András Szegő, Budapest; Andrea Tóth, Solymár; Éva Somfai, Budapest; Csaba Szántay, Budapest; Lajos Novák, Budapest, and László Poppe, Budapest, all of Hungary, assignors to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyar Rt., Budapest, Hungary

PCT No. PCT/HU90/00055, § 371 Date May 31, 1991, § 102(e) Date May 31, 1991, PCT Pub. No. WO91/01640, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 30, 1990, Ser. No. 687,938
Claims priority, application Hungary, Jul. 31, 1989, 3913/89
Int. Cl.[6] A01N *43/28*
U.S. Cl. 514—383 **2 Claims**

1. A synergistic insecticidal composition which consists essentially of a synergistic mixture of:
(a) Chinmix; and
(b) propiconazole, in a synergistic weight ratio of 1:2 to 1:40.

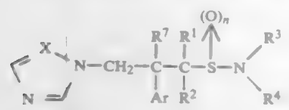
5,389,663

1-(1H-1,2,4-TRIAZOLE-YL)-2-PROPANOL COMPOUNDS

Katsumi Itoh, Toyono; Kenji Okonogi, Mishima, and Akihiro Tasaka, Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 875,257, Apr. 24, 1992, abandoned. This application Nov. 24, 1993, Ser. No. 156,925
Claims priority, application Japan, Apr. 26, 1991, 3-097638; Jul. 29, 1991, 3-188871
Int. Cl.[6] A61K *31/595;* **C07D** *249/08*
U.S. Cl. 514—383 **8 Claims**

1. An azole compound represented by the formula (I):



(I)

wherein X is a nitrogen atom;
Ar is a phenyl group substituted by halogen or a halogenated C_{1-4} alkyl group;
R^1 and R^2 independently are a hydrogen atom or a lower alkyl group, or R^1 and R^2 may combine together to form a lower alkylene group;
R^3 and R^4 independently are
(a) a hydrogen atom,
(b) a C_{1-12} alkyl group which may be substituted by (1) a hydroxyl group, (2) an optionally esterified carboxyl group selected from carboxyl, methoxycarbonyl, ethoxycarbonyl and butoxycarbonyl, (3) a nitro group, (4) an amino group, (5) a C_{1-6} alkanoylamino group, (6) a C_{1-6} alkylamino group, (7) a C_{1-6} alkoxy group, (8) a halogen, (9) a halogenated C_{1-3} alkyl group, (10) an oxo group, (11) a thioxo group, (12) a mercapto group, (13) a C_{1-6} alkylthio group, (14) a C_{1-6} alkylsulfonyl group, (15) a C_{1-6} alkanoyl group, (16) a C_{6-14} aryl group optionally substituted with (A) an optionally halogenated C_{1-3} alkyl group, (B) a halogen, (C) an optionally halogenated C_{1-3} alkoxy group, or (D) a 5- or 6-membered heterocyclic group containing at least one hetero atom selected from nitrogen, sulfur and oxygen, which may optionally be substituted with (i) an optionally halogenated C_{1-6} alkyl group, (ii) a C_6 alkylsulfonyl group or (iii) a C_{1-6} alkylthio group, (17) a benzoyl group optionally substituted by halogen or halogenated C_{1-3} alkyl group, (18) a heterocyclic alkyl group selected from triazolylmethyl, methyltriazolylmethyl, pyridylmethyl, imidazolylmethyl and methylimidazolylmethyl, or (19) a C_{3-6} cycloalkyl-alkyl group selected from cyclopropylmethyl and cyclopentylmethyl;
(c) a C_{3-8} cycloalkyl group which may be substituted by the substituents as defined in (b);
(d) a C_{2-4} alkenyl group which may be substituted by the substituents as defined in (b);
(e) a C_{2-9} alkynyl group which may be substituted by the substituents as defined in (b);
(f) a C_{6-14} aryl group which may be substituted by the substituents as defined in (b);
(g) a 5- or 6-membered heterocyclic group containing one to three hetero atoms selected from nitrogen, sulfur and oxygen, the 5- or 6-membered heterocyclic group being selected from imidazolyl, triazolyl, tetrazolyl, pyrazolyl, pyridyl, thiazolyl, thiadiazolyl, thienyl, furyl, pyrrolyl, pyrazinyl, 4-piperidinyl, 1-piperazinyl, pyrimidinyl, isoxazolyl, oxazolyl, N-methylimidazolyl and N-methyltriazolyl, which may be substituted by the substituents as defined in (b); or
(h) R^3 and R^4 may form a non-aromatic 5- or 6-membered heterocyclic group together with the nitrogen atom to which they are bonded further containing at least one hetero atom selected from nitrogen, sulfur and oxygen, the non-aromatic 5- or 6-membered heterocyclic group being selected from morpholino, piperidino, 1-piperazinyl, 1-pyrrolidinyl, 1,2,3,4-tetrahydropyrazin-1-yl, 1-indolinyl, 2-isoindolinyl, 1,2,3,4-tetrahydroquinolin-1-yl, 1,2,3,4-tetrahydroisoquinolin-2-yl, imidazoly, triazolyl, tetrazolyl, pyrrolyl and pyrazolyl, which may be substituted by the substituents as defined in (b);
n denotes an integer of 0 to 2; and
R^7 is a hydrogen atom, a hydroxyl group which may be optionally acylated by an acyl group selected from acetyl, propionyl, butyryl, isobutyryl, phenylacetyl and benzoyl, or may form a bond together with R^1; or a salt thereof.

5,389,664

ALLEVIATING STOMACH ULCERS IN SWINE

Clifton A. Baile, Chesterfield; Frances C. Buonomo, Glencoe; Carol L. McLaughlin, Chesterfield, and Billy D. Vineyard, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 910,863, Jul. 8, 1992, abandoned. This application Apr. 5, 1994, Ser. No. 223,377
Int. Cl.[6] A61K *31/415, 31/47, 37/00, 31/445*
U.S. Cl. 514—394 **19 Claims**

1. A method for alleviating stomach ulcers in swine which comprises:
administering to swine a compound, effective to alleviate pars esophageal ulcers in swine being administered exogenous porcine somatotropin, in an amount which is effective to alleviate said ulcers, wherein said
compound being a benzimidazole compound effective for inhibiting H+/K+ ATPase activity in parietal cells in swine stomachs which is selected from heterocyclylalkyl(-sulfinyl or thio)benzimidazoles and [benzimidazolyl(sulfinyl or thio) alkyl]anilines.

5,389,665

FUNGICIDAL FORMULATIONS

Malcom A. Faers, Cambridge, England, and Zoltan Damo, Esppstein, Germany, assignors to Schering Agrochemicals Limited, Cambridge, England

PCT No. PCT/GB92/00375, § 371 Date Jan. 24, 1994, § 102(e) Date Jan. 24, 1994, PCT Pub. No. WO92/16105, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 3, 1992, Ser. No. 119,085
Claims priority, application Germany, Mar. 19, 1991, 4108871
Int. Cl.[6] A01N *25/04, 47/38*
U.S. Cl. 514—399 **13 Claims**

1. A liquid formulation, which comprises 0.1 to 75% by weight of prochloraz, at least 3% by weight of a nonionic surfactant or surfactant mixture, at least 8.5% by weight of a phenol derivative to prevent crystallisation of the prochloraz on storage of the emulsion, said phenol being a compound of formula

$R^1—O—X$

in which R^1 is phenyl, substituted by one to three C_1–C_8alkyl, α-methylbenzyl or α-methyl-4-methylbenzyl groups, by 4-hydroxyphenylene in the para-position, a C_6–C_{22}-alkyl group in the para-position or by two C_3–C_{12}-alkyl groups in the ortho and para-positions, and X is hydrogen, an alkali metal, an alkaline earth metal or NR_3 in which each R is the same or different and is hydrogen or C_1–C_8-alkyl, optionally substituted by hydroxy, and at least 1% by weight of an organic solvent which is only slightly soluble in water and which comprises at least one aromatic hydrocarbon.

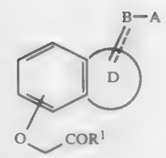
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FUSED BENZENEOXYACETIC ACID DERIVATIVES

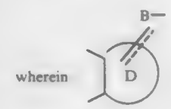
Nobuyuki Hamanaka; Kanji Takahashi, and Hidekado Tokumoto, all of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 28, 1992, Ser. No. 997,492
Claims priority, application Japan, Dec. 27, 1991, 3-360502; Jul. 14, 1992, 4-209587
Int. Cl.[6] A61K *31/415;* **C07D** *233/70, 261/00, 263/00*
U.S. Cl. 514—400 **12 Claims**

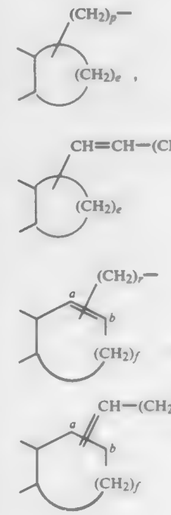
1. A fused benzeneoxyacetic acid derivative of the formula (I):



(I)



wherein



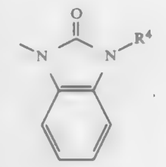
(i)

(ii)

(iii)

or

(iv)



A is
R^1 is
(i) a hydroxy group,
(ii) a C_{1-12} alkoxy group, or
(iii) NR^2R^3;
R^2 and R^3 each, independently, is
(i) a hydrogen atom or
(ii) a C_{1-4} alkyl group, or
R^2 and R^3, taken together with the nitrogen atom bound to R^2 and R^3 are the residue of an amino acid;
R^4 is
(i) a hydrogen atom,
(ii) a C_{1-4} alkyl group,
(iii) a phenyl group, or
(iv) a C_{1-4} alkyl group substituted by 1 or 2 phenyl groups, wherein said phenyl group may be substituted by 1 to 3 of a C_{1-4} alkyl group, a C_{1-4} alkoxy group, a halogen atom, a nitro group or a trihalomethyl group, when R^4 is phenyl or the group containing phenyl;

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e is 3–5;
f is 1–3;
p is 1–4;
q is 0–2;
r is 1–4;
s is 0–3;
with the proviso that
(1) q or s is not 0; and
(2) $-(CH_2)_r$13 or $=CH-(CH_2)_s-$ are bonded to the carbon atom at a position a or b in the ring;
or non-toxic salts thereof or non-toxic acid addition salts thereof.

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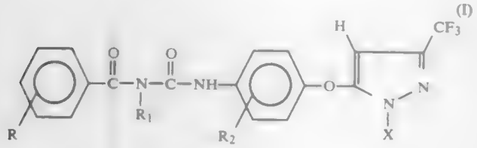
PYRAZOLE CONTAINING BENZOYL UREA DERIVATIVES, AND COMPOSITIONS

Ki J. Hwang, and Kyung H. Park, both of Daejeon, Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejeon, Rep. of Korea

PCT No. PCT/KR92/00039, § 371 Date Jun. 18, 1993, § 102(e) Date Jun. 18, 1993, PCT Pub. No. WO93/04044, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 18, 1992, Ser. No. 39,373
Claims priority, application Rep. of Korea, Aug. 20, 1991, 91-14311
Int. Cl.[6] **A01N** *43/56;* C07D *231/20, 231/22*
U.S. Cl. 514—407 **2 Claims**

1. A compound of benzoyl urea derivatives having pyrazole group which correspond to the following formula(I).

(I)



wherein,
R and R_2, as equivalent or different group respectively, are hydrogen, one or more halogen atoms selected from the group consisting of fluoride, chloride and bromide atom, lower alkoxy or nitro group;
R_1 is hydrogen atom or a lower alkyl group; and
X is a lower alkyl group or phenyl substituent.

5,389,668

THIOCHROMAN COMPOUNDS

Gérald Guillaumet, Orleans; Gérard Coudert, Orleans; Tchao Podona, Orleans la Source; Béatrice Guardiola-Lemaitre, Neuilly sur Seine; Pierre Renard, Versailles; Gérard Adam, Le Mesnil le Roi, and Daniel Henri-Caignard, Paris, all of France, assignors to Adir Et Compagnie, Courbevoie, France

Division of Ser. No. 133,901, Oct. 12, 1993, which is a division of Ser. No. 62,424, May 17, 1993, Pat. No. 5,332,741. This application Jan. 12, 1994, Ser. No. 180,849
Claims priority, application France, May 18, 1992, 92 05960
Int. Cl.[6] **A61K** *31/40, 31/495;* C07D *405/00, 409/00*
U.S. Cl. 514—414 **9 Claims**

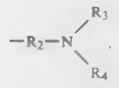
1. A compound selected from those of formula (I):

(I)

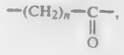


in which:
R_1 represents:
a group of formula (B):

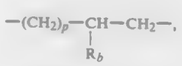
(B)



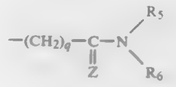
in which
R_2 is a group selected from:
(1)—R'_2—, wherein R'_2 represents a group $-(CH_2)_n-$ or



wherein n is 1 to 6, inclusive, R'_2 being unsubstituted or substituted in the alkylene moiety by lower alkyl, aryl or aryl-lower alkyl,
and (2)



wherein p is 1, 2 or 3 and R_b represents a radical selected from hydroxy, lower alkoxy, lower alkylcarbonyloxy, aryloxy, and aryl-lower alkoxy,
one of R_3 and R_4, which are identical or different, each independently of the other represents a radical selected from:
hydrogen, and
lower alkyl that is unsubstituted or substituted by one or more radicals selected from halogen, hydroxy, and lower alkoxy, the other of R_3 and R_4 being a radical



in which q represents 0 or is 1 to 4 inclusive and Z represents oxygen or two hydrogen atoms, and in which,
or R_3 and R_4, together with the nitrogen atom carrying them, form:
an unsubstituted or substituted
wherein, unless indicated otherwise:
the expression "substituted" associated with the term "" phthalimide indicates that the phthalimide is substituted by one or more radicals selected from:
halogen,
hydroxy,
oxo,
lower alkyl,
lower alkoxy, and
lower alkoxycarbonyl,
the term "aryl" means a phenyl or naphthyl group,
and the terms "lower alkyl" and "lower alkoxy" indicate linear or branched groups containing 1 to 6 carbon atoms inclusive, an optical isomer, in pure form or in the form of a mixture, and an addition salt thereof with a Pharmaceutically-acceptable acid or base.

5,389,669

PYRROLE THIOCARBOXAMIDE INSECTICIDAL AND ACARICIDAL AGENTS

Kevin E. Henegar, Portage, Mich., and Roger W. Addor, Pennington, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 971,025, Nov. 3, 1992, Pat. No. 5,286,742. This application Nov. 10, 1993, Ser. No. 150,626
Int. Cl.[6] **A01N** *43/36, 55/00*
U.S. Cl. 514—423 **10 Claims**

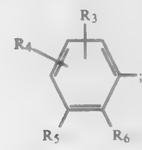
1. A method for controlling insects and acarina which comprises contacting said insects and acarina, their breeding grounds, food supply or habitat with an insecticidally or acaricidally effective amount of a compound having the structural formula



wherein
W is



R_1 and R_2 are each independently hydrogen,
C_1–C_4 alkyl optionally substituted with one or more halogen atoms, or
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
x is Cl, Br, CN, NO_2, Q,
C_1–C_4 alkyl substituted with one or more halogen atoms, or
phenyl optionally substituted with one or more halogens atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
Q is



R_3 and R_4 are each independently hydrogen, halogen, NO_2, CN or C_1–C_4 alkyl optionally substituted with one or more halogen atoms;
R_5 and R_6 are taken together with the atoms to which they are attached to form a 5- or 6-membered heterocyclic ring containing 1 or 2 oxygen atoms and optionally substituted with one or more halogen atoms or C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms;
Y is hydrogen, Cl, Br, CN, NO_2, $S(O)_nT$, Q,
C_1–C_4 alkyl substituted with one or more halogen atoms, or
phenyl optionally substituted with one or more halogen atoms, NO_2 groups, CN groups, C_1–C_4 alkyl groups optionally substituted with one or more halogen atoms, or C_1–C_4 alkoxy groups optionally substituted with one or more halogen atoms;
Z is hydrogen, Cl, Br, $S(O)_nT$ or C_1–C_4 alkyl substituted with one or more halogen atoms;
T is C_1–C_4 alkyl substituted with one or more halogen atoms;
n is an integer of 0, 1 or 2;
R is A, OA or CN;
A is hydrogen,



C_1–C_6 alkyl optionally substituted with one to three halogen atoms, one tri(C_1–C_4 alkyl)silyl, one hydroxy, one cyano, one or two C_1–C_4 alkoxy groups optionally substituted with one to three halogen atoms, one C_1–C_4 alkylthio, one phenyl optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups, one phenoxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups, one benzyloxy group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups, one C_1–C_6 alkylcarbonyloxy group optionally substituted with one to three halogen atoms, one C_2–C_6 alkenylcarbonyloxy group optionally substituted with one to three halogen atoms, one phenylcarbonyloxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups, one C_1–C_6 alkoxycarbonyl group optionally substituted with one to three halogen atoms or one to three C_1–C_4 alkoxy groups, or one benzyloxycarbonyl group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
C_3–C_6 alkenyl optionally substituted with one to three halogen atoms or one phenyl group, or
C_3–C_6 alkynyl optionally substituted with one to three halogen atoms or one phenyl group;
R_7 is C_1–C_6 alkyl or C_3–C_6 cycloalkyl each optionally substituted with one to three halogen atoms, one hydroxy, one cyano, one or two C_1–C_4 alkoxy groups optionally substituted with one to three halogen atoms, one C_1–C_4 alkylthio, one phenyl group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups, one phenoxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups, one benzyloxy group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups, one C_1–C_6 alkylcarbonyloxy group optionally substituted with one to three halogen atoms, one C_2–C_6 alkenylcarbonyloxy group optionally substituted with one to three halogen atoms, one phenylcarbonyloxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups, one C_1–C_6 alkoxycarbonyl group optionally substituted with one to three halogen atoms or one to three C_1–C_4 alkoxy groups, or one benzyloxycarbonyl group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
C_2–C_6 alkenyl optionally substituted with one to three halogen atoms or one phenyl group,
C_3–C_6 alkynyl optionally substituted with one to three halogen atoms or one phenyl group,
phenyl optionally substituted with one or more halogen atoms, C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups, phenoxy groups, C_1–C_4 alkylthio groups, tri(C_1–C_4 alkyl)-silyl groups, C_1–C_4 alkylsulfinyl groups, C_1–C_4 alkyl-

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sulfonyl groups, CN groups, NO_2 groups or CF_3 groups,

phenoxy optionally substituted with one or more halogen atoms, C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups, C_1–C_4 alkylthio groups, tri(C_1–C_4 alkyl)silyl groups, C_1–C_4 alkylsulfinyl groups, C_1–C_4 alkylsulfonyl groups, CN groups, NO_2 groups or CF_3 groups,

1- or 2-naphthyl,

2-, 3-, or 4-pyridyl optionally substituted with one to three halogen atoms,

C_1–C_6 alkoxy optionally substituted with one to three halogen atoms, or

C_2–C_6 alkenyloxy optionally substituted with one to three halogen atoms;

R_8 is hydrogen or C_1–C_4 alkyl;

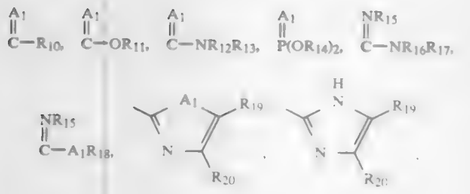
R_9 is C_1–C_6 alkyl optionally substituted with one to three halogen atoms,

phenyl optionally substituted with one to three halogen atoms, CN groups, NO_2 groups, C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups or CF_3 groups,

2- or 3-thienyl, or

2- or 3-furyl;

Q_1 is



CN,

C_1–C_6 alkyl optionally substituted with one or more halogen atoms, CN groups or phenyl groups, or

phenyl optionally substituted with one or more halogen atoms, C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups, CN groups, NO_2 groups, CF_3 groups or $NR_{21}R_{22}$ groups;

A_1 is O or S;

R_{10} is C_1–C_6 alkyl or phenyl;

R_{11} is C_1–C_6 alkyl;

R_{12} and R_{13} are each independently hydrogen, C_1–C_6 alkyl or may be taken together with the atom to which they are attached to form a 5- to 7-membered ring;

R_{14} is C_1–C_4 alkyl;

R_{15} is hydrogen, C_1–C_4 alkyl or may be taken together with either R_{16} or R_{18} and the atoms to which they are attached to form a 5- to 7-membered ring optionally substituted with one or two C_1–C_4 alkyl groups;

R_{16} and R_{17} are each independently hydrogen or C_1–C_4 alkyl;

R_{18} is C_1–C_4 alkyl or when taken together with R_{15} and the atoms to which they are attached may form a 5- to 7-membered ring optionally substituted with one or two C_1–C_4 alkyl groups;

R_{19} and R_{20} are each independently hydrogen or C_1–C_4 alkyl or when taken together may form a ring wherein $R_{19}R_{20}$ is represented by —CH=CH—CH=CH—; and

R_{21} and R_{22} are each independently hydrogen or C_1–C_4 alkyl;

with the proviso that when W is on the 2- or 5-position of the pyrrole ring, then R is other than H.

5,389,670

METHODS OF INHIBITING THE SYMPTOMS OF PREMENSTRUAL SYNDROME/LATE LUTEAL PHASE DYSPHORIC DISORDER

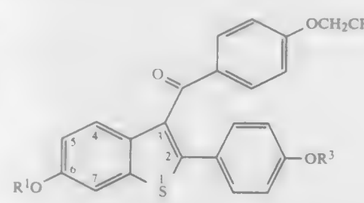
Steven A. Fontana, Martinsville, Ind., assignor to Eli Lilly Company, Indianapolis, Ind.

Filed Dec. 21, 1993, Ser. No. 171,148

Int. Cl.[6] A61K *31/38*

U.S. Cl. 514—443 **3 Claims**

1. A method of inhibiting one or more symptom of premenstrual syndrome/late luteal phase dysphoric disorder comprising administering to a female human in need of treatment an effective amount of a compound having the formula



(I)

wherein

R^1 and R^3 are independently hydrogen, —CH_3, —CO—(C_1–C_6 alkyl), or —CO—Ar, in which Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidine, hexamethyleneimino, and piperidino; or a pharmaceutically acceptable salt or solvate thereof.

5,389,671

4- OR 5-(SUBSTITUTED SULFONYL)METHYL-3(2H)-FURANONES

Steven W. Felman, Langhorne, Pa.; Ivo L. Jirkovsky, Plainsboro, and Kevin A. Memoli, Cranbury, both of N.J., assignors to American Home Products Corporation, Madison, N.J.

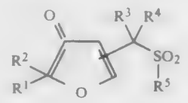
Division of Ser. No. 986,644, Dec. 8, 1992, Pat. No. 5,314,913.

This application Feb. 16, 1994, Ser. No. 197,427

Int. Cl.[6] A61K *31/34*

U.S. Cl. 514—473 **1 Claim**

1. A method for treating ulcers which comprises administering to a patient in need of such treatment, an effective amount of a compound of formula (I)



(I)

wherein R^1 and R^2 are independently alkyl containing 1 to 3 carbon atoms, phenyl or halogen substituted phenyl;

R^3 and R^4 are hydrogen;

R^5 is alkyl containing 1 to 6 branched or straight chain carbon atoms,

substituted phenyl wherein the substituent is selected from the group consisting of alkyl containing 1 to 6 branched or straight chain carbon atoms and halogen.

5,389,672

4- OR 5-(SUBSTITUTED SULFONYL)METHYL-3(2H)-FURANONES

Steven W. Felman, Langhorne, Pa.; Ivo L. Jirkovsky, Plainsboro, and Kevin A. Memoli, Cranbury, both of N.J., assignors to American Home Products Corporation, Madison, N.J.

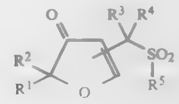
Division of Ser. No. 986,644, Dec. 8, 1992, Pat. No. 5,314,913.

This application Feb. 16, 1994, Ser. No. 197,428

Int. Cl.[6] A61K *31/34*

U.S. Cl. 514—473 **1 Claim**

1. A method for lowering blood cholesterol which comprises administering to a patient in need of lowered cholesterol, an effective amount of a compound of formula (I)



(I)

wherein

R^1 and R^2 are independently alkyl containing 1 to 3 carbon atoms or phenyl;

R^3 and R^4 are independently hydrogen or alkyl containing 1 to 3 carbon atoms;

R^5 is phenyl, naphthyl or substituted phenyl wherein the substituent is selected from the group consisting of methoxy, nitro and acetamide.

5,389,673

4- OR 5-(SUBSTITUTED SULFONYL)METHYL-3(2H)-FURANONES

Steven W. Felman, Langhorne, Pa.; Ivo L. Jirkovsky, Plainsboro, and Kevin A. Memoli, Cranbury, both of N.J., assignors to American Home Products Corporation, Madison, N.J.

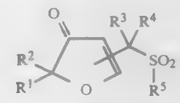
Division of Ser. No. 986,644, Dec. 8, 1992, Pat. No. 5,314,913.

This application Feb. 16, 1994, Ser. No. 197,429

Int. Cl.[6] A61K *31/34*

U.S. Cl. 514—473 **1 Claim**

1. A method for lowering blood glucose which comprises administering to a patient in need of lowered blood glucose, an effective amount of a compound of formula (I)



(I)

wherein R^1 and R^2 are independently alkyl containing 1 to 3 carbon atoms or phenyl;

R^3 and R^4 are independently hydrogen or alkyl containing 1 to 3 carbon atoms;

R^5 is phenyl, naphthyl or substituted phenyl wherein the substituent is selected from the group consisting of methoxy, nitro and acetamide.

5,389,674

FUNGICIDAL COMPOSITIONS AND METHODS FOR PRODUCTION THEREOF

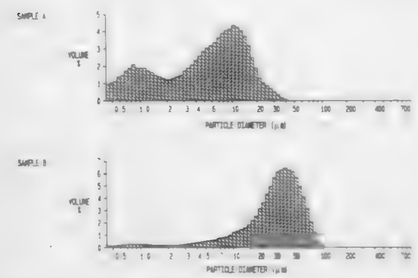
Yili Guo, Maple Glen, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 877,010, May 1, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 90,599

Int. Cl.[6] A01N *47/14, 55/02, 25/12*

U.S. Cl. 514—476 **33 Claims**

1. A particulate composition comprising one or more components selected from dithiocarbamates and bisdithiocarbamoyl disulfides and a moisture content of from about 2.5 to about 20% by weight of the particulate composition such that the



resulting particulate compound has a bulk density of at least about 0.75 grams per cubic centimeter.

5,389,675

MIXED LIGAND METAL COMPLEXES OF NITRIC OXIDE-NUCLEOPHILE ADDUCTS USEFUL AS CARDIOVASCULAR AGENTS

Danae D. Christodoulou, Frederick; David A. Wink, Jr., Hagerstown, and Larry K. Keefer, Bethesda, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 27, 1992, Ser. No. 858,885

Int. Cl.[6] A61K *31/28;* **C07F** *13/00*

U.S. Cl. 514—492 **41 Claims**

1. A compound of the formula:

KA

wherein A is:

$[(M)_x{}^{x'}(L)_y(R^1R^2N\text{-}N_2O_2)_z]$, and

M is a pharmaceutically acceptable metal, or where x is at least two, a mixture of two different pharmaceutically acceptable metals;

L is a ligand bound to at least one metal selected from the group consisting of C_1–C_{20} alkoxy, C_1–C_{20} carboxylate, C_1–C_{20} alcohol, amino, C_1–C_{20} alkyl amine, C_1–C_{20} ether, C_1–C_{20} ester, C_1–C_{20} amide, a sulfur- or phosphorus-containing ligand, a substituted derivative of any of the above, a halide, ammonia, an aquo, a hydroxo and an oxo ligand;

R^1 and R^2 may be the same or different and are selected from the group consisting of loweralkyl, aryl, and arylalkyl;

x is an integer of from 1 to 10, inclusive;

x' is the formal oxidation state of the metal M, and is an integer of from 1 to 6 inclusive;

y is an integer of from 1 to 18, inclusive, and where y is at least 2, the ligands L may be the same or different.

z is an integer of from 1 to 20, inclusive;

with the first proviso that where M is copper, x is one, L is methanol and y is one, that at least one of R^1 or R^2 is not ethyl; and the second proviso that where L is aquo and x is one, that M is not sodium, potassium, calcium or nickel; and K is a pharmaceutically acceptable counterion present in the composition when the overall charge of A is not zero, counterion K being present only in an amount to neutralize A.

7. A method for treating cardiovascular disorders, said method comprising administering to a mammal a therapeutically effective amount of a compound of the formula:

KA,

wherein A is:

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$[(M)_x{}^{x'}(L)_y(R^1R^2N\text{-}N_2O_2)_z]$, and

M is a pharmaceutically acceptable metal, or where x is at least two, a mixture of two different pharmaceutically acceptable metals;

L is a ligand bound to at least one metal selected from the group consisting of C_1–C_{20} alkoxy, C_1–C_{20} carboxylate, C_1–C_{20} alcohol, amine, C_1–C_{20} alkyl amine, C_1–C_{20} ether, C_1–C_{20} ester, C_1–C_{20} amide, a sulfur- or phosphorus-containing ligand, a substituted derivative of any of the above, a halide, ammonia, an aquo, a hydroxo and an oxo ligand;

R^1 and R^2 may be the same or different and are selected from the group consisting of loweralkyl, aryl, and arylalkyl;

x is an integer of from 1 to 10, inclusive;

x' is the formal oxidation state of the metal M, and is an integer of from 1 to 6 inclusive;

y is an integer of from 1 to 18, inclusive, and where y is at least 2, the ligands L may be the same or different;

z is an integer of from 1 to 20, inclusive;

with the first proviso that where M is copper, x is one, L is methanol and y is one, that at least one of R^1 or R^2 is not ethyl; and the second proviso that where L is aquo and x is one, that M is not sodium, potassium, calcium or nickel; and

K is a pharmaceutically acceptable counterion present in the composition when the overall charge of A is not zero, counterion K being present only in an amount to neutralize A.

14. A pharmaceutical composition for treating cardiovascular disorders comprising a therapeutically effective amount of a composition of the formula:

KA,

wherein A is:

$[(M)_x{}^{x'}(L)_6(R^1R^2N\text{-}N_2O_2)_z]$,

M is a pharmaceutically acceptable metal, or where x is at least two, a mixture of two different pharmaceutically acceptable metals;

L is a ligand bound to at least one metal selected from the group consisting of C_1–C_{20} alkoxy, C_1–C_{20} carboxylate, C_1–C_{20} alcohol amine, C_1–C_{20} alkyl amine, C_1–C_{20} ether, C_1–C_{20} ester, C_1–C_{20} amide, a sulfur- or phosphorus-containing ligand, a substituted derivative of the above, a halide, ammonia, an aquo, a hydroxo and an oxo ligand;

R^1 and R^2 may be the same or different and are selected from the group consisting of loweralkyl, aryl, and arylalkyl

x is an integer of from 1 to 10, inclusive;

x' is the formal oxidation state of the metal M, and is an integer of from 1 to 6 inclusive;

y is an integer of from 1 to 18, inclusive, and where y is at least 2, the ligands L may be the same or different;

z is an integer of from 1 to 20, inclusive;

with the first proviso that where M is copper, x is one, L is methanol and y is one, that at least one of R^1 or R^2 is not ethyl; and the second proviso that where L is aquo and x is one, that M is not sodium, potassium, calcium or nickel; and K is a pharmaceutically acceptable counterion present in the composition when the overall charge of A is not zero, counterion K being present only in an amount to neutralize A.

5,389,676

VISCOUS SURFACTANT EMULSION COMPOSITIONS

Edwin B. Michaels, Milford, Conn., assignor to E. B. Michaels Research Associates, Inc., Milford, Conn.

Continuation-in-part of Ser. No. 673,631, Mar. 22, 1991, Pat. No. 5,244,652, and a continuation-in-part of Ser. No. 673,784, Mar. 22, 1991, Pat. No. 5,314,917. This application Sep. 13, 1993, Ser. No. 121,277

Int. Cl.[6] A61K *31/205, 31/13*

U.S. Cl. 514—556 10 Claims

1. A water-in-oil or oil-in-water emulsion comprising an amphoteric surfactant solution comprising

i) a mixture of a betaine selected from the group consisting of alkyl-N-betaines, alkyl amido ethyl betaines, alkyl amido propyl betaines, alkyl sultaines, alkyl amido propyl hydroxy sultaines, alkyl hydroxy propyl sultaines, alkyl-N-sulfobetaines and acyl-N-betaine or mixtures of two or more thereof and an amine oxide selected from the group consisting of alkyl-N,N dimethylamine oxides, alkyl-N,N-dihydroxyethylamine oxides and acylamide t-amine oxides or mixtures of two or more thereof;

ii) a pharmaceutically or dermatologically acceptable substantially nonpolar hydrophobic material having a HLB value of 1 or less and

iii) at least one water soluble, pharmaceutically or dermatologically acceptable nonionic, cationic or amphoteric emulsion aid.

5,389,677

METHOD OF TREATING WRINKLES USING GLYCALIC ACID

Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002, and Eugene J. Van Scott, 3 Hidden La., Abington, Pa. 19001

Division of Ser. No. 8,223, Jan. 22, 1993, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jul. 12, 1993, Ser. No. 89,101

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[6] A61K *7/48, 31/19*

U.S. Cl. 514—557 10 Claims

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising 2-hydroxyethanoic acid (glycolic acid), or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,389,678

SOLUBLE ALUMINUM CARBOXYLATE BATHING PREPARATION

Hidenori Yorozu; Hirotaka Sato, both of Utsunomiya, and Yasuhiro Doi, Ichikaimachi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Division of Ser. No. 895,006, Jun. 8, 1992, Pat. No. 5,310,758. This application Aug. 19, 1993, Ser. No. 108,302

Claims priority, application Japan, Jun. 10, 1991, 3-137829

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—557 3 Claims

1. A method of bathing a human individual to impart a refreshing feeling to the individual, comprising immersing a part of the body of the individual, excluding the head, in a bath comprising soluble aluminum carboxylate and water, wherein said soluble aluminum carboxylate is present in an amount of 6.7×10^{-5} to 1.3×10^{-2} wt. % based on the total weight of said bath and the aluminum salt incorporated into said bath is solely said soluble aluminum carboxylate.

5,389,679

METHOD OF TREATING SMALL MOUTH ULCERS WITH LACTIC ACID

Howard Alliger, 10 Ponderosa Dr., Melville, N.Y. 11747

Continuation of Ser. No. 823,243, Jan. 21, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 110,336

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—557 19 Claims

1. A method for treating aphthous ulcers of the mouth including canker sores, in humans, comprising topically exposing tissue suffering from an outbreak of aphthous ulcers to an effective amount of lactic acid or one of its pharmaceutically acceptable salts at a pH of less than about 6.0.

5,389,680

FLUOROALKENYL COMPOUNDS AND THEIR USE AS PEST REPELLENTS

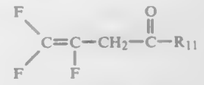
Peter G. Ruminski, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 827,231, Feb. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 663,218, Mar. 1, 1991, abandoned. This application Oct. 18, 1993, Ser. No. 138,937

Int. Cl.[6] A01N *37/06*

U.S. Cl. 514—563 21 Claims

1. A compound having the structure



wherein R_{11} is $-OR_{12}$, SR_{12}, halogen, —NHOH, or $-NR_{12}R_{13}$; each of R_{12} and R_{13} is independently hydrogen; an alphatic or an aromatic group, optionally substituted with at least one group selected from the group consisting of hydroxy, alkoxy, halo, nitro, amino, thiol, alkylthio, carboxyl, alkoxycarbonyl, and phenyl; a C_1–C_{12} aliphatic amine, optionally substituted with at least one group selected from the group consisting of hydroxy, alkoxy, halo, nitro, amino, thiol, alkylthio, carboxyl, alkoxycarbonyl, and phenyl; a C_2–C_{12} aliphatic carboxylic acid, optionally substituted with at least one group selected from the group consisting of hydroxy, alkoxy, halo, nitro, amino, thiol, alkythio, carboxyl, alkoxycarbonyl, and phenyl; or R_{12} and R_{13} taken together with the N or R_{11} are a protein amino acid or a cyclic group selected from the group consisting of morpholine, piperidine, piperazine, or pyrrolidine, optionally substituted with at least one group selected from the group consisting of hydroxy, alkoxy, halo, nitro, amino, thiol, alkylthio, carboxyl, alkoxycarbonyl, and phenyl; or an agronomically acceptable salt thereof.

5,389,681

PARENTERAL SOLUTIONS FOR DICLOFENAC SALTS

Bruno Galli, Seltisberg, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 30, 1993, Ser. No. 129,885

Claims priority, application Switzerland, Oct. 22, 1992, 3275/92

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—567 4 Claims

1. A pharmaceutical composition in the form of a parenterally administrable solution consisting essentially of:

a) a pharmaceutically acceptable salt of diclofenac;

b) 1,2-propylene glycol or polyethylene glycol 300–400;

c) glutathione admixed with C_{2-3}alkanecarboxylic acid C_{2-4}alkyl ester or with hydroxy-C_{2-4}alkanecarboxylic acid C_{2-4}alkyl ester; or N-acetylcysteine admixed with C_{2-3}alkanecarboxylic acid C_{2-4}alkyl ester or with hydroxy-C_{2-4}alkanecarboxylic acid C_{2-4}alkyl ester; and

d) a carrier liquid acceptable for injectable formulations.

5,389,682

AGENTS ACTING AT CHOLECYSTOKININ RECEPTORS

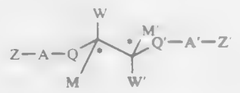
Bradley D. Tait, Canton, and Michael W. Wilson, Ann Arbor, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 947,234, Sep. 18, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 118,374

Int. Cl.[6] C07C *275/34, 275/28;* A61K *31/18, 31/17*

U.S. Cl. 514—592 6 Claims

1. A compound of formula



I

or a pharmaceutically acceptable salt thereof wherein:

Z and Z' are each independently selected from:

alkyl of from 1 to 6 carbon atoms,

branched alkyl of from 3 to 9 carbon atoms,

cycloalkyl or polycycloalkyl of from 5 to 12 carbon atoms unsubstituted, mono- or disubstituted with one or more substituents selected from:

alkyl,

branched alkyl,

CO_2R^1, and

$-OR^3$ wherein R^1 is as defined below, and

R^3 is

hydrogen,

$-CH_3$,

$-CH_2CH_3$, or

$C(O)CH_3$;

Unsubstituted, mono- or polysubstituted phenyl which substituents are selected from:

alkyl of from 1 to 6 carbon atoms,

branched alkyl of from 3 to 9 carbon atoms,

hydrogen,

—CN,

—F,

—Cl,

—Br,

—I,

$-NO_2$,

$-CF_3$,

—SMe,

$-S(O)_2CF_3$,

—S(O)Me,

$-S(O)_2Me$,

$-(CH_2)_mS(O)_2OR^1$,

$-S(O)_2NR^1R^2$,

—CHO,

—C(NOH)H,

$-(CH_2)_mCO_2R^1$,

$-C(O)NR^1R^2$,

$-NR^1R^2$,

$-C(O)CO_2R^1$,

$-C(NOH)CO_2R^1$,

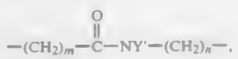
$-OR^1$,

—OAc,



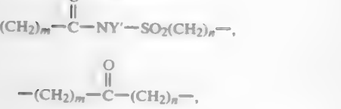
wherein R^1 and R^2 are as defined below;

A' is



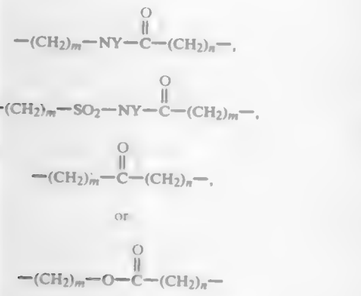
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wherein m and n are each independently an integer of from 0 to 3;

A is a bond,



wherein m and n are as defined above;

Q and Q' are each independently NY or NY' wherein Y and Y' are each independently:

hydrogen,

phenyl,

benzyl,

straight alkyl of from 1 to 4 carbon atoms,

branched alkyl of 3 or 4 carbon atoms,

$-(CH_2)_nCO_2R^1$, or

$-(CH_2)_n-C(O)NR^1R^2$;

W and W' are each independently:

phenyl which is unsunstituted, mono- or polysubstituted by:

hydrogen,

—CN,

—SMe,

$-SO_2CF_3$,

—S(O)Me,

$-S(O)_2Me$,

$-(CH_2)_mS(O)_2OR^1$,

$-S(O)_2NR^1R^2$,

CHO,

—C(NOH)H,

$-(CH_2)_mCO_2R^1$,

$-C(O)NR^1R^2$,

$-NR^1R^2$,

$(CO)CO_2R_1$,

$-C(NOH)CO_2R^1$,

$-OR^1$,

—OAc,

—F,

—Br,

—Cl,

—I,

$-CF_3$,

$-NO_2$,

alkyl of from 1 to 6 carbon atoms,

branched alkyl of from 3 to 9 carbon atoms,



M and M' are each independently hydrogen, methyl, or fluorine;

R^1 and R^2 are each independently hydrogen or lower alkyl;

R^3 is hydrogen, methyl, ethyl, or $C(O)CH_3$;

m and n are each independently an integer of from 0 to 3; with the proviso that at least one urea or sulfonylurea is present in the compound.

5,389,683

NAPHTHYLETHYLUREAS

Daniel Lesieur, Gondecourt; Said Yous, Lille; Patrick Depreux, Armentieres; Gérard Adam, le Mesnil le Roi; Pierre Renard, Versailles; Bruno Pfeiffer, Eaubonne, and Béatrice Guardiola-Lemaitre, Neuilly sur Seine, all of France, assignors to Adir et Compagnie, Courbevoie, France

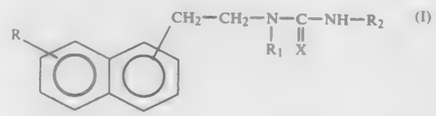
Filed Aug. 14, 1992, Ser. No. 930,285

Claims priority, application France, Aug. 23, 1991, 91 10547

Int. Cl.[6] A61K *31/17;* C07C *275/06*

U.S. Cl. 514—595 17 Claims

1. A compound selected from those of formula I:



(I)

in which:

R represents hydrogen or a group OR_3 wherein R_3 represents straight-chained or branched alkyl having 1 to 6 carbon atom inclusive;

R_1 represents hydrogen or straight-chained or branched alkyl having 1 to 6 carbon atoms inclusive;

X represents oxygen;

R_2 represents linear or branched lower alkyl having 1 to 6 carbon atoms inclusive, unsubstituted or optionally-substituted cycloalkyl having from 3 to 8 carbon atoms inclusive, unsubstituted or optionally-substituted $(C_3–C_8)$-cycloalkyl-$(C_1–C_6)$-alkyl,

addition salts thereof with a pharmaceutically-acceptable base, and

isomers, epimers and diastereoisomers thereof,

wherein:

the term "substituted" associated with the expressions "cycloalkyl" and "cycloalkylalkyl" indicates that the cyclic system may be substituted by one or more groups selected from halogen, linear or branched lower alkyl having 1 to 6 carbon atoms inclusive, and linear or branched lower alkoxy having 1 to 6 carbon atoms inclusive.

5,389,684

NAPHTHALENE CARBOXAMIDES

John Fairhurst, Basingstoke, and David E. Tupper, Reading, both of United Kingdom, assignors to Lilly Industries Limited, Basingstoke, United Kingdom

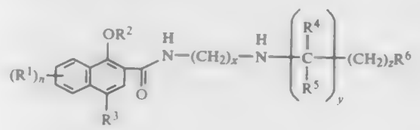
Filed Aug. 17, 1993, Ser. No. 108,038

Claims priority, application United Kingdom, Aug. 26, 1992, 9218113

Int. Cl.[6] A61K *31/165;* C07C *233/22*

U.S. Cl. 514—622 7 Claims

1. A compound of the formula:



in which R^1 is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, halogen or nitro, and n is 0, 1, 2, or 3, R^2 is hydrogen, C_{1-4} alkyl or C_{2-4} alkenyl, R^3 is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, halogen, nitro or —NR'R" where R' and R" are each hydrogen or C_{1-4} alkyl, R^4 and R^5 are each hydrogen, C_{1-4} alkyl, optionally substituted phenyl or C_{6-9} cycloalkyl optionally substituted by 1 to 4 C_{1-4} alkyl groups, R^6 is C_{6-10} cycloalkyl optionally substituted with 1 to 4 C_{1-4} alkyl groups or a phenyl group, or C_{4-9} heterosubstituted cycloalkyl optionally substituted with 1–4 alkyl groups, x is 1, 2 or 3, y is 0 or 1 and z is 0, 1, 2 or 3; or a salt thereof.

5,389,685

STABILIZER DISINFECTANT FORMULATION

Kim Smith, and Fred Boyd, both of Huntington, Ind., assignors to Huntington Laboratories, Inc., Huntington, Ind.

Filed Jun. 10, 1993, Ser. No. 75,136

Int. Cl.[6] A01N *33/12;* C11D *3/48*

U.S. Cl. 514—643 9 Claims

1. A color-stable hard surface disinfectant formulation comprising about 2 to about 30 weight percent of bacteriocidal quaternary amine compounds,

about 1 to about 10 weight percent of a $(C_8–C_{24}$ alkyl) dimethylamine oxide,

water, and

an alkali bicarbonate in an amount effective to retard the discoloration of the disinfectant formulation during storage.

5,389,686

ANALGESIC PROPERTIES OF FEDOTOZINE

Laurent Diop, Saclay; Agnés Grouhel, Meudon; Jean-Louis Junien, Sevres; Annick Langlois, Boulogne, and Xavier Pascaud, Paris, all of France, assignors to Jouveinal SA, Fresnes Cedex, France

Continuation of Ser. No. 37,966, Mar. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 937,127, Aug. 31, 1992, and Ser. No. 931,957, Aug. 19, 1992, Pat. No. 5,245,080, which is a continuation of Ser. No. 367,603, Jun. 19, 1989, abandoned. This application Jul. 13, 1993, Ser. No. 91,691

Claims priority, application France, Feb. 20, 1989, 89 02177

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—651 13 Claims

1. A method for the treatment of hypersensitivity to pain, which comprises administering to a subject in need of such treatment a therapeutically effective amount of the compound fedotozine (−) tartrate.

5,389,687

RING-SUBSTITUTED 2-AMINO-1,2,3,4-TETRA-HYDRONAPHTHALENES

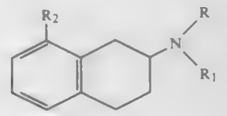
John M. Schaus, and Robert D. Titus, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 315,750, Feb. 27, 1989, abandoned. This application Apr. 11, 1991, Ser. No. 683,637

Int. Cl.[6] A61K *31/135;* C07C *211/38*

U.S. Cl. 514—657 19 Claims

1. A compound of the formula:



in which R is allyl;

R^1 is hydrogen, C_1-C_4 alkyl, or allyl;

R^2 is halo;

and pharmaceutically acceptable acid addition salts thereof.

5,389,688

WATER BASED MICROEMULSION FORMULATIONS

Kolazi S. Narayanan, Palisades Park, N.J., assignor to Isp Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 964,245, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 654,250, Feb. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,014, Jun. 28, 1990, Pat. No. 5,156,666, which is a continuation-in-part of Ser. No. 505,030, Apr. 5, 1990, Pat. No. 5,160,528, which is a continuation-in-part of Ser. No. 448,707, Dec. 11, 1989, Pat. No. 5,071,463. This application Mar. 30, 1993, Ser. No. 40,239

Int. Cl.[6] A01N *25/00*

U.S. Cl. 514—788 11 Claims

1. A clear, efficacious, aqueous microemulsion of an agriculturally active ingredient wherein the dispersed phase consists of small droplets with diameters in the range of about 10 to 100 millimicrons which is stable at or below room temperature for an extended period of time, consisting essentially of:

(a) about 0.005–2% by weight of a water-insoluble agriculturally active ingredient,

(b) about 0.01–15% by weight of a surfactant,

(c) about 0.01–15% by weight of a C_1–C_4 alkyl pyrrolidone, or a C_6–C_{18} alkyl pyrrolidone, or both, and

(d) at least about 80% by weight water wherein the agriculturally active ingredient optionally contains a synergist.

5,389,689

METHOD OF PRODUCING DIMETHYL ETHER

Kaoru Fujimoto; Tsutomu Shikada; Yojiro Yamaoka, and Takashi Sumigama, all of Tokyo, Japan, assignors to Kaoru Fujimoto and NKK Corporation, both of Tokyo, Japan

PCT No. PCT/JP92/01467, § 371 Date Sep. 9, 1993, § 102(e) Date Sep. 9, 1993, PCT Pub. No. WO93/10069, PCT Pub. Date May 27, 1993

PCT Filed Jul. 9, 1993, Ser. No. 87,757

Claims priority, application Japan, Nov. 11, 1991, 3-294630; Nov. 11, 1991, 3-294631

Int. Cl.[6] C07C *41/01*

U.S. Cl. 518—700 5 Claims

1. In a method of producing dimethyl ether from a mixed gas containing carbon monoxide and either or both of hydrogen and water vapor or a mixed gas of them further containing carbon dioxide, the improvement which comprises using a catalyst prepared by pulverizing a mixed catalyst comprising zinc oxide, copper oxide or chromium oxide, and aluminum oxide to a degree of pulverization of about 0.1 to 20 μm in grain size, compressing to bind said oxides, at a pressure of from 100 to 500 kg/cm^3, and then pulverizing again, in a slurry state formed by suspending in a solvent.

5,389,690

ACTIVATION OF HYDROCARBON SYNTHESIS CATALYST

Willard N. Mitchell, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 949,935, Sep. 24, 1992, Pat. No. 5,292,705. This application Dec. 13, 1993, Ser. No. 166,336

Int. Cl.[6] C07C *1/06*

U.S. Cl. 518—700 7 Claims

1. A Fischer-Tropsch process which comprises activating an essentially fresh, reduced cobalt containing Fischer-Tropsch catalyst with hydrogen or a hydrogen containing gas, the catalyst being dispersed in hydrocarbon liquids and subsequently using the catalyst in a Fischer-Tropsch process at Fischer-Tropsch reaction conditions.

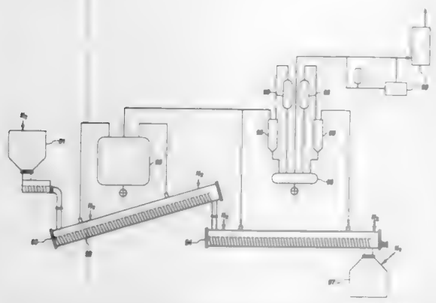
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5,389,691

PROCESS FOR CO-RECYCLING TIRES AND OILS

Chang Y. Cha; Henry Plancher, both of Laramie, Wyo., and Lawrence S. Kraus, Elburn, Ill., assignors to Univ. of Wyoming, Laramie, Wyo. and Amoco Corp., Chicago, Ill.

Filed Sep. 7, 1993, Ser. No. 117,387
Int. Cl.[6] C08J *11/04; C07C 4/08*
U.S. Cl. 521—41 16 Claims



1. A process to co-recycle scrap tires and oil comprising:
digesting at a maximum temperature below about 750° F. said tires using said oil being selected from the group comprising residuum, waste motor oil, new 600 w cylinder oil, trim gas oil, vacuum heavy bottoms, decanted oil, and combinations thereof;
mixing a product-enhancing additive being selected from the group consisting of calcium carbonate, calcium hydroxide, calcium oxide, magnesium carbonate, magnesium oxide, magnesium hydroxide, dolomite, sodium carbonate, sodium hydroxide, potassium carbonate, potassium hydroxide, iron oxide, bauxite, red mud, and combinations thereof;
separating glass and steel fibers from said tires by using a screw reactor housed in a non-spherical chamber;
retorting at a maximum temperature below about 875° F. obtaining product light oil and product gas and solid carbonous residue, wherein said product light oil is not recycled; and
curing said carbonous residue at a maximum temperature below about 900° F.

5,389,692

STRUCTURAL STRENGTH COATING AND MATERIAL

Richard L. Bertram, 8577 Wonderland Ave., Hollywood, Calif. 90046

Continuation-in-part of Ser. No. 966,282, Oct. 26, 1992, Pat. No. 5,268,392. This application Aug. 25, 1993, Ser. No. 112,586
Int. Cl.[6] C08L *75/00*
U.S. Cl. 521—51 25 Claims

1. A co-polymer coating for a porous structural material having a surface and having a plurality of pores at least some of which pores open onto said surface of said porous structural material, comprising a first co-polymer component having a surfactant mixed with said first co-polymer component where the surfactant is sufficient to lower the surface tension of a co-polymer resulting from a mixture of said first co-polymer component with a second co-polymer component before said mixture has cured to form said co-polymer coating so that the co-polymer mixture occupies at least some of said pores opening onto said surface of said porous structural material.

5,389,693

INTEGRAL SKIN POLYURETHANE FOAMS AND PROCESS FOR THE PREPARATION THEREOF

Ricardo DeGenova, and Freddie E. Polk, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 31, 1994, Ser. No. 250,965
Int. Cl.[6] C08J *9/34*
U.S. Cl. 521—51 15 Claims

1. An integral skin polyurethane foam formulation comprising:
(A) an organic isocyanate functional admixture including
(i) a methylene diphenyl diisocyanate soft segment prepolymer,
(ii) methylene diphenyl diisocyanate and
(iii) polymethylene polyphenyl polyisocyanate,
(B) an active hydrogen containing material,
(C) a catalyst and
(D) a blowing agent.

5,389,694

FOAMABLE STYRENIC POLYMER GEL HAVING A CARBON DIOXIDE BLOWING AGENT AND A PROCESS FOR MAKING A FOAM STRUCTURE THEREFROM

Chau V. Vo, Souffelweyersheim, France, and Andrew N. Paquet, Granville, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 4, 1993, Ser. No. 71,839
Int. Cl.[6] C08J *9/08, 9/12*
U.S. Cl. 521—79 19 Claims

1. The process for making a closed-cell styrenic polymer foam structure, comprising:
a) heating a styrenic polymer material comprising greater than 50 percent by weight styrenic monomeric units and about 0.1 to about 40 percent by weight of oxygen-containing monomeric units based upon the total weight of the styrenic polymer material, the oxygen-containing monomeric units being selected from the group consisting of C_{1-8} alkyl ester, C_{1-8} alkyl anhydride, and C_{1-8} aliphatic alcohol monomeric units to form a melt polymer material;
b) incorporating into the melt polymer material at an elevated pressure a blowing agent comprising about 5 weight percent or more of carbon dioxide based upon the total weight of the blowing agent to form a foamable gel;
c) expanding the foamable gel at a reduced pressure to form a foam structure.

5,389,695

INSULATING FOAM OF LOW THERMAL CONDUCTIVITY AND METHOD OF PREPARATION

Heinz Jaster, and William J. Ward, III, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1993, Ser. No. 172,005
Int. Cl.[6] C08J *9/12*
U.S. Cl. 521—97 10 Claims

1. A method for producing an insulating foam which comprises:
blowing a formable resinous foam in an otherwise inert atmosphere with a gaseous mixture comprising carbon dioxide and at least one inert gas having a thermal conductivity up to 10 milliwatts/m-° K.;
sealing said foam along with at least one solid reagent capable of carbon dioxide removal in a gas-impervious enclosure; and
thereby removing the remaining carbon dioxide from said sealed foam and leaving said inert gas,
the proportions of gases employed during foam production being such that the partial pressure of said inert gas in said enclosure is in the range of about 20–200 torr and the total pressure therein is up to 100% of said partial pressure.

5,389,696

PROCESS FOR THE PRODUCTION OF MOLDED PRODUCTS USING INTERNAL MOLD RELEASE AGENTS

Michael P. Dempsey, Aliquippa; Gene Symosko, Oakdale; Merle W. Lesko, McDonald, and Ronald L. Zacour, Washington, all of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 123,491, Sep. 17, 1993, abandoned. This application Jul. 14, 1994, Ser. No. 275,468
Int. Cl.[6] C08G *18/16*
U.S. Cl. 521—128 13 Claims

1. In a process for producing a molded foam part having a density of from 0.25 to 1.25 g/cc, by reacting a reaction mixture comprising an organic polyisocyanate and at least one organic compound containing isocyanate-reactive hydrogens in the presence of a blowing agent, a catalyst, a surfactant, and an internal mold release agent in a closed mold, the improvement wherein said internal mold release agent comprises:
a) from 1 to 10% by weight, based on the weight of said reaction mixture, of mixed esters comprise the reaction product of
i) aliphatic dicarboxylic acids,
ii) aliphatic polyols, and
iii) monocarboxylic acids with 12 to 30 carbon atoms in the molecule,
wherein said reaction product has an acid number of less than 25 and a hydroxyl number of less than 25, with the proviso that said internal mold release agent excludes esters selected from the group consisting of: (1) esters of (i) dicarboxylic acids and (ii) aliphatic monofunctional alcohols of 12 to 30 carbon atoms, (2) esters of (i) aliphatic monofunctional alcohols having 12 to 30 carbon atoms and (ii) aliphatic hydrocarbon monocarboxylic acids with 12 to 30 carbon atoms, and (3) complete esters or partial esters of (i) aliphatic polyols and (ii) aliphatic hydrocarbon monocarboxylic acids having 12 to 30 carbon atoms.

5,389,697

Patent Not Issued For This Number

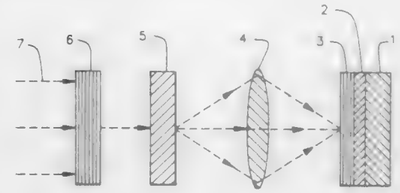
5,389,698

PROCESS FOR MAKING PHOTOPOLYMERS HAVING VARYING MOLECULAR ORIENTATION USING LIGHT TO ORIENT AND POLYMERIZE

Vladimir G. Chigrinov, Moscow; Vladimir M. Kozenkov; Nicolic V. Novoseletsky, both of Dolgoprudniy, all of Russian Federation; Victor Y. Reshetnyak; Yuriy A. Reznikov, both of Kiev, Ukraine; Martin Schadt, Seltisberg, Switzerland, and Klaus Schmitt, Lörrach, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J. and Niopic Moscow Research and Production Association, Moscow, Russian Federation

Continuation of Ser. No. 910,068, Jul. 8, 1992, abandoned. This application Sep. 21, 1993, Ser. No. 125,006
Claims priority, application Switzerland, Jul. 26, 1991, 2244/91
Int. Cl.[6] C08F *2/46;* G03C *1/492*
U.S. Cl. 522—2 3 Claims

1. A process for the manufacture of an oriented photopolymer, which comprises:
a) providing a layer of a photo-polymerizable, optically isotropic polymeric material, and



b) orienting and polymerizing said layer by irradiating it with linearly-polarized light to obtain the oriented photopolymer.

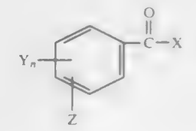
5,389,699

(METH)ACRYLATE COPOLYMER BASED UV-CROSSLINKABLE MATERIALS

Gerd Rehmer, Bobenheim-Roxheim; Andreas Boettcher, Nussloch, and Michael Portugall, Wachenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 742,163, Aug. 1, 1991, Pat. No. 5,264,533, which is a continuation of Ser. No. 654,392, Jan. 30, 1991, abandoned, which is a continuation of Ser. No. 366,164, Jun. 14, 1989, abandoned. This application Jul. 8, 1993, Ser. No. 88,736
Claims priority, application Germany, Jun. 16, 1988, 3820464
Int. Cl.[6] C08F *2/46;* 522 *34, 35, 116, 152;* 526 *301, 302, 304*
U.S. Cl. 522—35 3 Claims

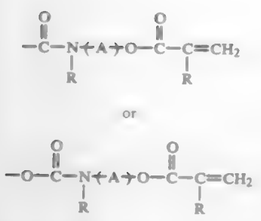
1. A UV-crosslinkable material based on a (meth)acrylate copolymer having a K value of from 15 to 100 and containing from 0.01 to 10% by weight, based on the copolymer, of copolymerized monomers of the formula I



(I)

where X is alkyl of 1 to 3 carbon atoms or is phenyl which is unsubstituted or substituted by n Y groups, Y is —H, —CF_3, —O-alkyl and/or alkyl—COO—, where alkyl in each case is of 1 to 4 carbon atoms, halogen, —CN, —COOH or a non-ortho —OH group, n is from 0 to 4 and Z is a group of the formula

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where R is H or C_1–C_4-alkyl and A is an alkylene, oxaalkylene or polyoxaalkylene radical of 2 to 12 carbon atoms.

5,389,700
INITIATOR FOR PHOTOPOLYMERIZATION
Yusuke Sasaki, Shintone, Japan, assignor to Autex, Inc., Tokyo, Japan
Filed Jul. 23, 1992, Ser. No. 919,016
Claims priority, application Japan, Oct. 30, 1991, 3-310048
Int. Cl.[6] C08F *2/46*
U.S. Cl. 522—47 10 Claims

1. An initiator for photopolymerization of cationically polymerizable material, characterized in that said initiator comprises a composite obtainable from a reaction between:
(a) a charge-transfer complex; and
(b) 0.1–2 equivalents per stoichiometric amount of said charge-transfer complex of at least one salt selected from the group consisting of sodium, potassium and silver salts of tetrafluoroborates, hexafluorophosphonates and hexafluoroantimonates;
wherein said charge transfer complex is obtained by reacting, in the presence of a good affinity solvent;
(i) a biscyclopentadienyl iron compound wherein said biscyclopentadienyl iron compound has a general formula

$(C_5H_nR_{5-n})\ Fe(C_5H_mR'_{5-m})$

wherein R and R′ are straight or branched, saturated or unsaturated alkyl groups, substituted or non-substituted aryl groups, carboxyl groups, nitril groups, or amino groups, n and m are integers ranging from 0 to 5; with
(ii) 0.1–2 equivalents per stoichiometric amount of said biscyclopentadienyl compound of a quinoid.

5,389,701
CROSSLINKED ADHESIVE COMPOSITIONS COMPRISING EPOXY FUNCTIONALIZED POLYDIENE BLOCK POLYMERS AND HYDROGENATED TACKIFYING RESINS
James R. Erickson, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.
Continuation of Ser. No. 772,172, Oct. 7, 1991. This application Jun. 18, 1993, Ser. No. 80,045
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[6] C08J *3/28*
U.S. Cl. 522—158 3 Claims

1. An adhesive composition which has sufficient gel content to provide increased resistance to temperature and/or organic solvents which comprises an epoxidized diolefin block polymer which contains from 0.1 to 5.0 milliequivalents of epoxide per gram of polymer and a tackifying resin, said composition being cured by exposure to radiation such that the block polymer is crosslinked through at least some of the epoxy functionality.

5,389,702
SOIL HARDENING MORTAR AND METHOD FOR MAKING THE SAME
Koo, Chul-Whay, #348-2, Sungbuk-Dong, Sungbuk-Ku, Seoul, Rep. of Korea
Filed Feb. 27, 1992, Ser. No. 102,013
Claims priority, application Rep. of Korea, Mar. 7, 1991, 3681
Int. Cl.[6] C09K *17/00;* C08K *5/09, 3/32, 3/34*
U.S. Cl. 523—132 72 Claims

1. A method of making a soil hardening mortar comprising:
reducing to between 10% and 12% the natural moisture content of the soil,
grinding said soil to within a particle size of 5 to 15 mm,
mixing said soil with a first agent and a second agent applied in a ratio of 1:1 by weight until said agents are uniformly infiltrated in said soil with said soil particles thoroughly infiltrated to have an optimum moisture content of 15% to 18%,
wherein said first agent comprises a polymer or mixture of polymers or copolymers, said polymers or mixture of polymers or copolymers containing polymerized monomer or monomers of acrylic acid and/or vinyl acetate and/or acrylamide, and said second agent comprises of sodium fluosilicate and ferric chloride.

5,389,703
METHOD OF MAKING HYBRID POLYMER OF EPOXY RESIN AND THE RESULTING PRODUCT
Hsueh-Chi Lee, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Oct. 12, 1993, Ser. No. 133,936
Int. Cl.[6] C08K *3/20;* C08L *63/02*
U.S. Cl. 523—406 10 Claims

1. A method of making a hybrid polymer of an epoxy resin and an ethylenically unsaturated monomer system which comprises:
(a) preparing an organic phase containing said epoxy resin, said monomer system and an oil soluble surfactant;
(b) preparing an aqueous phase containing water and a water soluble surfactant;
(c) combining said phases of steps (a) and (b) under polymerization conditions; and
(d) polymerizing monomer in said monomer system to form a water-based emulsion of said hybrid polymer.

5,389,704
EPOXY PHOSPHATE ESTER RESIN, ITS PRODUCTION AND COATING COMPOSITION CONTAINING THE RESIN
Yoshimitsu Yabu, Gotemba, Japan, assignor to The Dow Chemical Company, Midland, Mich.
PCT No. PCT/US92/10197, § 371 Date Jul. 15, 1993, § 102(e) Date Jul. 15, 1993, PCT Pub. No. WO93/12156, PCT Pub. Date Jun. 24, 1993
PCT Filed Nov. 30, 1992, Ser. No. 90,027
Claims priority, application Japan, Dec. 16, 1991, 3-351848
Int. Cl.[6] C08K *3/20;* C08L *63/02*
U.S. Cl. 523—406 9 Claims

1. A process for preparing an epoxy phosphate ester resin, which comprises (1) reacting an epoxy resin having an average of greater than one vicinal epoxy group with a phosphoric acid source material selected from the group consisting of 100 percent phosphoric acid, a semi-hydrate of phosphoric acid, a polymeric phosphoric acid, a partial anhydride of phosphoric acid, pyrophosphoric acid, orthophosphoric acid, triphosphoric acid, superphosphoric acid and a mixture thereof to obtain an epoxy phosphate ester; and (2) then adding additional phosphoric acid source material to the epoxy phosphate ester obtained in step (1); and (3) further reacting the epoxy phosphate ester obtained in step (1) with the additional phosphoric acid source material.

5,389,705
POLYMERS SUITABLE AS BINDERS
Klaus Huemke, Friedelsheim; Helmut Fobbe, Muenster, and Konrad Knoll, Mannheim, all of Germany, assignors to BASF Lacke + Farben Aktiengesellschaft, Muenster, Germany
Filed Aug. 6, 1993, Ser. No. 102,756
Claims priority, application Germany, Aug. 14, 1992, 4227030
Int. Cl.[6] C08J *3/00;* C08K *3/20;* C08L *63/00*
U.S. Cl. 523—417 10 Claims

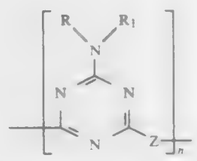
1. A polymer which is suitable as a binder and is obtainable by reacting
(A) a base resin which has an average molecular weight $\overline{M}_w$ of from 200 to 5,000 and contains on average from 1 to 3 epoxy or isocyanato groups as the reactive groups per molecule with
(B) a mixture of
(B1) 5 to 50% by weight of a polyisobutylene terminated by primary amino groups and having an average molecular weight $\overline{M}_w$ of from 500 to 5,000 and
(B2) 5–95% by weight of an amidoamine carrying primary amino groups and obtained by condensation of diprimary diamines of 2 to 20 carbon atoms with aliphatic C_2–C_{44}-dicarboxylic acids,
the amounts being such that from 1 to 5 equivalents of primary amino groups of (B) are present per equivalent of the reactive group of (A).

5,389,706
WELL CEMENT COMPOSITIONS HAVING IMPROVED PROPERTIES AND METHODS
James F. Heathman, Duncan, and Roger S. Cromwell, Walters, both of Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Oct. 9, 1992, Ser. No. 958,985
Int. Cl.[6] C08K *3/30;* C09K *7/02*
U.S. Cl. 524—5 5 Claims

1. A method of cementing a well comprising the steps of:
placing an aqueous cement composition in a zone in said well to be cemented; and
maintaining said cement composition in said zone for a time sufficient for said cement composition to set into a hard impermeable mass therein;
wherein said cement composition is comprised of a particulate Portland cement, sufficient water to form a pumpable slurry and a dispersing and stabilizing additive comprised of an ethoxylated alkali metal salt of an alkyl polyether sulfonate wherein the alkyl substituents contain from about 12 to about 15 carbon atoms and wherein said salt contains an average in the range of about 20 to about 40 moles of ethylene oxide per mole thereof, said ethoxylated alkyl polyether sulfonate being dissolved in an aqueous solvent in an amount in the range of from about 20 parts to about 40 parts per 100 parts by weight of solution.

5,389,707
SALTS OF TRIAZINIC COMPOUNDS WITH PHOSPHORUS OXYACIDS. AND USE OF SAID COMPOUNDS IN SELF-EXTINGUISHING POLYMERIC COMPOSITIONS
Roberto Cipolli, Novara; Enrico Masarati, Castelnuovo Valtidone; Roberto Oriani, Milan; Mario Pirozzi, San Donato Milanese, and Gilberto Nucida, San Giuliano Milanese, all of Italy, assignors to Ministero Dell'Universita' e Della Ricerca Scientifica e Tecnologica, Rome, Italy
Division of Ser. No. 956,994, Oct. 6, 1992, Pat. No. 5,344,931. This application May 6, 1994, Ser. No. 238,871
Claims priority, application Italy, Oct. 11, 1991, MI91A002705
Int. Cl.[6] C08K *5/3492, 5/3435*
U.S. Cl. 524—100 29 Claims

1. Self-extinguishing polymeric compositions comprising:
(a) from 90 to 40 parts by weight of a thermoplastic polymer, or of a polymer with elastomeric properties;
(b) from 7 to 28 parts by weight of one or more ammonium or amine phosphate(s) or phosphonate(s);
(c) from 3 to 32 parts by weight of one or more oligomeric derivative(s) of 2,4,6-triamino-1,3,5-triazine salified with a phosphorus oxyacid, said oligomeric derivatives of 2,4,6-triamino-1,3,5-triazine having the general formula (XIV):

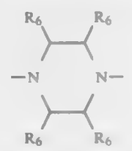


(XIV)

wherein:
R is H or $-[-C_pH_{2p}-]-O-R_4$
in which p is an integer comprised within the range of from 2 to 8, and
R_4 is H, (C_1-C_8)-alkyl, (C_2-C_8)-alkenyl, $-[-C_qH_{2q}-]-O-R_5$,
in which q is an integer comprised within the range of from 1 to 4, and
R_5 is H, (C_1-C_4)-alkyl, (C_6-C_{12})-cycloalkyl or alkylcycloalkyl;
R_1 is (C_1-C_4)-alkyl or R,
or the moiety

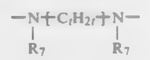


is replaced by a heterocyclic radical bonded to the triazinic ring through the nitrogen atom, wherein said heterocyclic radical is selected from the group consisting of aziridine, pyrrolidine, piperidine, and piperazine radicals;
n is an integer comprised within the range of from 2 to 50;
m is a numeral smaller than, or equal to, n;
z is a divalent or polyvalent radical falling within the scope of one of following formulae



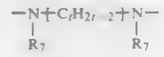
(II)

wherein the $-R_6$ radicals, which may be the same, or different from each other, are hydrogen, (C_1-C_4)-alkyl,



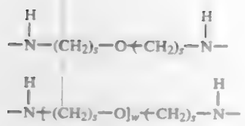
(III)

or



(IV)

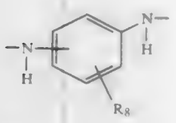
wherein t is an integer comprised within the range of from 2 to 14, R_7 is hydrogen, (C_1-C_4)-alkyl, (C_2-C_6)-alkenyl, (C_1-C_4)-hydroxyalkyl;



(V)

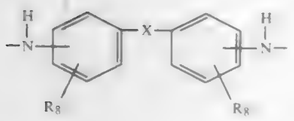
(VI)

wherein s is an integer comprised within the range of from 2 to 5 and w is an integer comprised within the range of from 1 to 3,



(VII)

or

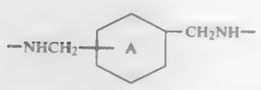


(VIII)

wherein

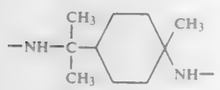
X is a direct —C—C—, O, S, S—S, SO, SO_2, NH, $NHSO_2$, NHCO, N=N, or CH_2 bond,

R_6 is hydrogen, hydroxy, (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy,



(IX)

wherein "A" can be a saturated or unsaturated cycle,



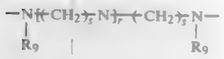
(X)

or



(XI)

wherein s has the above defined meaning,

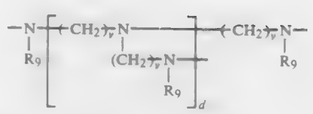


(XII)

wherein

R_9 is hydrogen or (C_1-C_4)-alkyl,

r is an integer comprised within the range of from 1 to 5, the indexes s, which are the same, or may be different from each other, have the above defined meaning,



(XIII)

wherein

R_9 has the above defined meaning,

v is an integer comprised within the range of from 2 to 4, and

d is either 1 or 2.

5,389,708

SULFUR-CONTAINING ACID PHOSPHORIC ESTER INTERNAL RELEASE AGENT

Masahiko Kusumoto; Hiroyuki Yamashita, and Teruyuki Nagata, all of Omuta, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

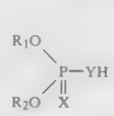
Filed Jan. 27, 1993, Ser. No. 9,761

Claims priority, application Japan, Jan. 31, 1992, 4-015878; Feb. 3, 1992, 4-017497; Feb. 5, 1992, 4-019620; Feb. 13, 1992, 4-026471; Mar. 2, 1992, 4-044532; Mar. 4, 1992, 4-046661; Mar. 5, 1992, 4-048277

Int. Cl.[6] C08K *5/5398;* **G02C** *11/08*

U.S. Cl. 524—137 **4 Claims**

1. A process for preparing a urethane resin which comprises polymerizing at least one iso(thio)cyanate compound selected from the group consisting of polyisocyanate compounds, polyisothiocyanate compounds and isothiocyanate compounds containing a isocyanato group with at least one active hydrogen compound selected from the group consisting of polyol compounds, polythiol compounds and hydroxythiol compounds in the presence of at least one sulfur-containing acid phosphoric ester selected from the group consisting of thiophosphoric acid esters and dithiophosphoric acid esters of the formula,



(1)

where X and Y are independently selected from the group consisting of an oxygen atom and a sulfur atom, at least one of X and Y is a sulfur atom, and R_1 and R_2 are independently alkyl groups.

5,389,709

RESIN COMPOSITION

Sumio Itamura; Tohei Moritani; Toshiaki Sato, and Taichi Negi, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 856,842, Mar. 23, 1992, abandoned, which is a continuation of Ser. No. 527,070, May 22, 1990, abandoned. This application Nov. 6, 1992, Ser. No. 973,214

Claims priority, application Japan, May 30, 1989, 1-137752; May 30, 1989, 1-137753

Int. Cl.[6] C08L *29/04*

U.S. Cl. 524—239 **5 Claims**

1. A resin composition comprising components (A), (B), (C2) and/or (C3), and (D) wherein:

(A) is a polyolefin:

(B) is a saponified product of an ethylene vinyl acetate copolymer having an ethylene content of 20 to 65 mol % and a saponification degree of the vinyl acetate component of at least 96%;

(C2) is at least one compound selected from the group consisting of metal salts of higher fatty acids having from 8 to 22 carbon atoms; metal salts of ethylenediaminetetraacetic acid; and hydrotalcite;

(C3) is a polyolefin modified with unsaturated carboxylic acid or derivative thereof; and

(D) is a saponified product of an ethylene-vinyl acetate copolymer having an ethylene content of 68 to 98 mol % and a saponification degree of the vinyl acetate component of at least 20%;

wherein the blending ratio by weight of polyolefin (A) to component (B) ranges from 60:40 to 99.9:0.1; component (C2) is present in an amount of about 0.0001 to 1 part by weight based upon 100 parts of (A) and (B) in total; component (C3) is present in an amount of about 1 to 50 parts by weight based upon 100 parts by weight of (A) and (B) in total; and component (D) is present in an amount of 0.3 to 30 parts by weight based upon 100 parts of (A) and (B) in total.

5,389,710

CRYSTALLIZATION MODIFIER FOR POLYESTER MOLDING COMPOSITIONS

Gerald J. Dege, 204 Mooney Rd., Flanders, N.J. 07836; Murali K. Akkapeddi, 7 Manor Dr., Morristown, N.J. 07960; Harold W. Tuller, Jones La., Long Valley, N.J. 07853, and Nicholas Vanderkooi, Jr., 8 Van Riper Ave., Pompton Plains, N.J. 07444

Filed Nov. 23, 1992, Ser. No. 979,752

Int. Cl.[6] C08K *5/17*

U.S. Cl. 524—243 **20 Claims**

1. A polyester composition comprising a polyester and a crystallization modifier selected from the compounds having the formula:

$$H_2N—R^1—O—(R^2—O)_x—R^3—NH_2$$

wherein R^1 and R^3 are independently selected from the group consisting of alkylene units having from about 2 to about 6 carbon atoms;

R^2 is a hydrocarbon radical having from about 2 to about 6 carbon atoms; and

x is from about 1 to about 100.

5,389,711

PLASTICISERS FOR SALT FUNCTIONALIZED POLYVINYL AROMATICS

Paul A. Westbrook, Houston, and Leonard E. Gerlowski, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 14, 1990, Ser. No. 479,898

Int. Cl.[6] C08K *5/09*

U.S. Cl. 524—288 **13 Claims**

1. A polymeric composition comprising:

a) a functionalized block copolymer comprising at least two blocks comprising predominantly monovinyl aromatic hydrocarbon units, and at least one hydrogenated block comprising predominantly conjugated diolefin hydrocarbon units, wherein salt functional groups are grafted onto the blocks which comprise predominately monovinyl aromatic hydrocarbon units; and

(b) a plasticizer selected from the group consisting of phthalic acid, napthalic acid, phthalic anhydride, naphthalic anhydride, salts of phthalic acid, salts of naphthalic acid, and mixtures thereof, the plasticizer having a melting temperature above about 100° C.

5,389,712

DIFFICULTLY FLAMMABLE POLYAMIDE MOULDING MATERIALS

Aziz El Sayed, Leverkusen; Edgar Ostlinning, Düsseldorf; Karsten-Josef Idel, Krefeld; Dieter Freitag, Krefeld, and Georg Heger, Krefeld, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Dec. 21, 1993, Ser. No. 171,115

Claims priority, application Germany, Jan. 7, 1993, 4300260

Int. Cl.[6] C08K *3/20, 3/40;* **C08L** *77/00*

U.S. Cl. 524—424 **15 Claims**

1. Difficultly flammable polyamide moulding materials consisting of:

A) from 5 to 50 weight % of a thermoplastic, partially crystalline polyamide selected from the group consisting of PA 6, PA 66, PA 46, PA 610, PA 6/6T, partially crystalline copolyamides formed from these components or admixtures of these substances,

B) from 8 to 25 weight % of a thermoplastic additive consisting of a copolyamide formed from isophthalic acid and/or terephthalic acid and hexamethylenediamine/caprolactam which reduces the processing temperature of the polyamide,

C) from 0 to 35 weight % of reinforcing materials,

D) from 45 to 60 weight % of magnesium calcium carbonate hydrate, and

E) from 0 to 2.0 weight % of additives selected from the group consisting of internal lubricants, stabilizers and nucleating agents.

5,389,713

POLYCARBONATE RESIN COMPOSITIONS

Kenichi Ishiwa, Ishibashi, and Hideyuki Itoi, Utsunomiya, both of Japan, assignors to GE Plastics Japan, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,689

Claims priority, application Japan, Mar. 5, 1992, 4-083076

Int. Cl.[6] C08L *69/00;* **C08K** *5/10;* **C08G** *63/64*

U.S. Cl. 524—480 **15 Claims**

1. A polycarbonate resin composition comprising

(A) 100 parts by weight of a polycarbonate having a viscosity-average molecular weight of about 12,000–18,000

(B) 0.001–5 parts by weight of an α-olefin oligomer and

(C) 0.00001–0.00045 parts by weight of an acidic sulfur-containing compound having a pKa of no more than 3 or a derivative formed from such a compound wherein the polycarbonate is a product of melt polymerization of an aromatic dihydroxy compound and a carbonate diester.

5,389,714

BLENDS OF POLYPHENYLPHENE ETHER, POLYAMIDE, ELASTOMERIC SUBSTANCES AND NEEDLE SHAPED TITANIUM OXIDE TREATED WITH ORGANOPOLYSILOXANES

Takashi Ohtomo, Utsunomiya; Hiromi Ishida, Moka; Hidekazu Kabaya, Moka, and Hiroshi Kubo, Moka, all of Japan, assignors to GE Plastics, Japan, Ltd., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 995,498

Claims priority, application Japan, Dec. 27, 1991, 3-360389

Int. Cl.[6] C08K *3/22;* **C08L** *71/12, 77/06*

U.S. Cl. 524—497 **13 Claims**

1. Resin compositions characterized in that they contain:

(A) 5–80 wt. parts polyphenylene ether resins,

(B) 95–20 wt. parts polyamide resins,

(C) 0–50 wt. parts, per 100 wt. parts (A) and (B), elastomeric substances, and

(D) 1–50 wt. parts, per 100 wt. parts (A) and (B) and (C), organopolysiloxane surface-treated needle-shaped titanium oxide having average particle length not greater than 5 μm, and long axis/short axis aspect ratio not less than 3.

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POLYMER BLENDS FOR ROOFTOP CURABLE HEAT SEAMABLE ROOF SHEETING AND METHOD FOR COVERING ROOFS

James A. Davis, Uniontown, and Joseph K. Valaitis, Brecksville, both of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 918,750, Jul. 27, 1992, abandoned. This application Dec. 8, 1993, Ser. No. 163,410
Int. Cl.[6] C08L 9/00
U.S. Cl. 524—505 16 Claims

1. A self-adhering rooftop curable heat seamable sheet material for roofing prepared from an uncured polymeric composition of matter comprising:

100 parts by weight of a polymer blend consisting essentially of

from at least about 10 to 95 parts by weight of an ethylene-containing polymer selected from the group consisting of polyolefins having up to 2 percent by weight crystallinity, prepared from monomers having at least 2 carbon atoms and mixtures thereof; and

from about 5 to 90 parts by weight of a crystallinity enhancing crystalline polymer selected from the group consisting of polyethylene homopolymers; poly(ethylene-co-propylene) random copolymers and poly(ethylene-b-octene) and poly(ethylene-b-butene) block copolymers;

from about 20 to 300 parts by weight of a filler selected from the group consisting of reinforcing and non-reinforcing fillers and mixtures thereof per 100 parts of said polymer blend;

from about 1,5 to 10 parts by weight of a cure package capable of allowing the composition of matter to cure on a rooftop at temperatures of at least 50° C. per 100 parts of said polymer blend;

from about 20 to 150 parts by weight of a processing material selected from the group consisting of paraffinic oils, naphthenic oils and waxes and mixtures thereof, per 100 parts of said polymer blend, said sheet material exhibiting a peel adhesion value of at least 2 pounds/inch and a shear adhesion value of at least 15 pounds/square inch, so that seaming is achieved in the absence of an adhesive.

5,389,716

FIRE RESISTANT CURED BINDER FOR FIBROUS MATS

Larry R. Graves, Puyallup, Wash., assignor to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Filed Jun. 26, 1992, Ser. No. 904,966
Int. Cl.[6] C08J 5/10; C08K 3/20; C08L 61/04
U.S. Cl. 524—510 26 Claims

1. A binder composition suitable for impregnating and coating fibrous mats and for bonding the fibers thereof when cured, wherein said binder composition is fire resistant when cured, said binder composition comprising:

a stable mixture of

a fire resistant latex,

a thermosetting, aldehyde condensation polymer, and an effective amount of an aqueous silica colloid to enhance the fire retardant properties of the cured binder composition and yet remain compatible with the other components of the binder composition prior to curing,

wherein the weight ratio of said latex to said aldehyde condensation polymer is at least 1:1 on a non-volatile weight basis.

5,389,717

ERASABLE MARKING COMPOSITION

Andree Santini, Easton, and Richard E. Miller, Nazareth, both of Pa., assignors to Binney & Smith Inc., Easton, Pa.

Continuation of Ser. No. 855,255, Mar. 23, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,655
Int. Cl.[6] C09D 11/10, 13/00; C08L 53/02
U.S. Cl. 524—575 23 Claims

1. An erasable marking composition, which comprises:

(a) noncarboxylated styrene-butadiene copolymer resin having a styrene:butadiene ratio of about 29:71,

(b) a colorant, and

(c) a solvent, formulated so as to form an erasable marking composition.

5,389,718

TWO-COMPONENT AQUEOUS POLYURETHANE DISPERSIONS

Terry A. Potter, Beaver; Patricia B. Jacobs, Pittsburgh; Peter H. Markusch, McMurray, all of Pa., and James W. Rosthauser, Glen Dale, W. Va., assignors to Miles Inc., Pittsburgh, Pa.

Continuation of Ser. No. 969,603, Oct. 30, 1992, which is a continuation of Ser. No. 730,754, Jul. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 644,180, Jan. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 559,805, Jul. 30, 1990, abandoned. This application May 26, 1994, Ser. No. 249,486
Int. Cl.[6] C08L 75/04
U.S. Cl. 524—591 18 Claims

1. A two-component, aqueous coating composition which may be cured at ambient temperature to form a polyurethane coating having a surface appearance which is comparable to the surface appearance of a polyurethane coating obtained from a two-component solvent based coating composition and which comprises in unmixed form:

I) a first component based on an aqueously dispersed polyurethane wherein said polyurethane has

a) an average hydroxy functionality of 1.8 to 8,

b) a total content of urethane and urea groups, calculated as —NH—C—O—, of 9 to 20% by weight, based on the weight of said polyurethane,

c) 0 to 200 milliequivalents of chemically incorporated anionic groups per 100 g of polyurethane and

d) 0 to 25% by weight, based on the weight of said polyurethane, of ethylene oxide units incorporated within terminal and/or lateral polyether chains,

wherein components c) and d) are present in an amount which is sufficient to maintain the polyurethane stably dispersed in water, and

II) a second component based on a water dispersible polyisocyanate wherein said polyisocyanate has

a) an isocyanate content of 2 to 30% by weight, based on the weight of the polyisocyanate,

b) an average functionality of 2 to 8,

c) 0 to 200 milliequivalents of chemically incorporated anionic groups per 100 g of polyisocyanate and

d) 0 to 25% by weight, based on the weight of said polyisocyanate, of ethylene oxide units incorporated within terminal and/or lateral polyether chains,

wherein components c) and d) are present in an amount which is sufficient to maintain said polyisocyanate stably dispersed in water, and components I and II are present in an amount sufficient to provide an equivalent ratio of isocyanate groups to hydroxyl groups of 0.8:1 to 6:1.

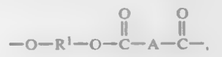
5,389,719

METHOD FOR POLYMERIZING MACROCYCLIC POLY(ALKYLENE DICARBOXYLATE) OLIGOMERS

Tohru Takekoshi, Scotia, and Eric J. Pearce, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 20, 1994, Ser. No. 262,795
Int. Cl.[6] C08G 63/85
U.S. Cl. 524—784 11 Claims

1. A method for preparing a polyester which comprises contacting at least one macrocyclic polyester oligomer comprising structural units of the formula



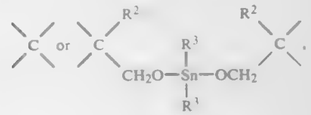
(I)

wherein R^1 is an alkylene or mono- or polyoxyalkylene radical containing a straight chain of about 2–8 carbon atoms and A is a m- or p-linked monocyclic aromatic or alicyclic radical, with at least one macrocyclic polyester oligomer polymerization catalyst having, at least in part, the formula



(II)

wherein R^3 is a C_{1-10} alkyl radical and Z is



(III)

wherein R^2 is a C_{1-4} primary alkyl radical, at a temperature within the range of about 160°–300° C.

5,389,720

AQUEOUS POLYISOCYANATE DISPERSIONS

Peter H. Markusch, McMurray, Pa., and Ashok M. Sarpeshkar, New Martinsville, W. Va., assignors to Miles Inc., Pittsburgh, Pa.

Filed May 25, 1990, Ser. No. 529,056
Int. Cl.[6] C08G 18/08
U.S. Cl. 524—839 4 Claims

1. An aqueous polyisocyanate dispersion which has an isocyanate content of at least 0.5% by weight, based on the weight of the polyisocyanate, and is prepared by a process which comprises

a) dispersing in water a polyisocyanate which has an isocyanate content of at least 12% by weight and is rendered hydrophilic by reaction with a compound containing a lateral or terminal nonionic hydrophilic group and

b) chain extending the dispersed polyisocyanate with a primary or secondary monoamine containing at least one hydroxyl group in an amount sufficient to provide an equivalent ratio of amino groups to isocyanate groups of 0.6:1.0 to 0.95:1.0.

5,389,721

PROCESS FOR PREPARING EXTENDED CHAIN POLYESTERS AND BLOCK OR GRAFT COPOLYESTERS

Shaul M. Aharoni, Morris Plains, N.J., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 899,079, Jun. 15, 1992, abandoned. This application May 27, 1994, Ser. No. 250,313
Int. Cl.[6] C08L 67/00; C08G 3/76
U.S. Cl. 525—50 22 Claims

1. A process for forming extended chain polyesters which comprises

(a) forming an intimate mixture of one or more polyesters, and an effective amount of one or more effective phosphorous (III)-containing chain extension reagent;

(b) heating said mixture for a time and at a temperature sufficient to form said extended chain polyester without discoloration of said extended chain polyester beyond that caused by heating alone; wherein the polyester used in step (a) were prepared with a catalyst or catalyst mixture that does not contain salts or compounds of the elements from groups VA and VIA of the periodic table in elemental form or any other form.

5,389,722

HYDROPHILIC RESIN AND METHOD FOR PRODUCTION THEREOF

Kinya Nagasuna, Himeji, and Kunihiko Ishizaki, Suita, both of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Jun. 3, 1993, Ser. No. 70,765
Claims priority, application Japan, Jun. 5, 1992, 4-145494; Jun. 5, 1992, 4-145495; Feb. 15, 1993, 5-025525
Int. Cl.[6] C08F 8/00
U.S. Cl. 525—55 24 Claims

1. A method for the production of a hydrophilic resin comprising the steps of copolymerizing a hydrophilic unsaturated monomer with 0.001 to 50 mol %, based on the amount of said monomer, of a first cross-linking agent having a structural unit represented by the formula (I):



(I)

wherein n represents an integer of at least 1 and then heat-treating the product of said copolymerization.

5,389,723

TRANSPARENT LIQUID ABSORBENT MATERIALS FOR USE AS INK RECEPTIVE LAYERS

Mohammad Iqbal; Alan G. Miller, both of Austin, Tex., and John J. Stofko, Jr., St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 24, 1990, Ser. No. 602,626
Int. Cl.[6] C08G 63/48
U.S. Cl. 525—57 16 Claims

1. A liquid-absorbent composition comprising a blend of:

(a) at least one polymeric matrix component comprising a crosslinkable polymer derived from α,β-ethylenically unsaturated monomers,

(b) at least one polymeric liquid-absorbent component, and

(c) polyfunctional aziridine as a crosslinking agent, said composition capable of forming semi-interpenetrating networks wherein said at least one polymeric matrix component is crosslinked and said at least one liquid-absorbent component is uncrosslinked, said uncrosslinked liquid-absorbent component being capable of being dissolved in the liquid that it is capable of absorbing.

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5,389,724

POLYMER BLENDS

Edward E. LaFleur, Warminster, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

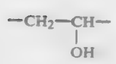
Continuation-in-part of Ser. No. 171,036, Dec. 21, 1993, which is a continuation-in-part of Ser. No. 98,585, Jul. 28, 1993, which is a continuation-in-part of Ser. No. 988,548, Dec. 10, 1992, which is a continuation-in-part of Ser. No. 872,478, Apr. 23, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 261,788

Int. Cl.[6] C08L *29/04*

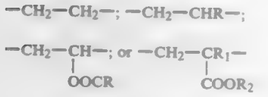
U.S. Cl. 525—57 3 Claims

1. A melt-processed polymeric blend comprising:

a) from about 80 to about 98 parts of a first polymer containing at least about 95 mol % units of the structure



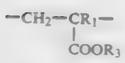
and optionally units selected from one or more of the following structures:



wherein R is alkyl, R_1 is H or CH_3, and R_2 is an alkyleneoxy group; and

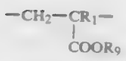
b) from about 2 to about 20 parts of a second polymer containing

(i) from about 70 to about 93 weight percent of one or more units of the structure



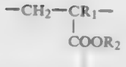
where R_3 is lower alkyl of from 1 to 4 carbon atoms, and

(ii) from about 2 to about 10 weight percent of one or more units derived from an unsaturated copolymerizable carboxylic acid or anhydride, wherein the second polymer contains no units derived from a vinyl amide or vinyl cyclic amide monomer, and wherein the second polymer further contains from 5 to 28 weight percent of units derived from at least one of



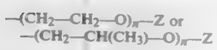
(a)

wherein R_9 is an alkyl group of 5 to 20 carbon atoms,



(b)

wherein R_2 is an alkeneoxy group, i.e., of the structure



where n is from 1 to 30, and Z is H or C_1 to C_8 alkyl,

(c) a vinyl ester, a vinyl aromatic monomer, glycidyl methacrylate, acrylonitrile, or methacrylonitrile.

5,389,725

RESIN COMPOSITION CONTAINING FLUORINE-CONTAINING ELASTOMER

Toru Bando, Sodegaura, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00456, § 371 Date Nov. 8, 1993, § 102(e) Date Nov. 8, 1993, PCT Pub. No. WO93/21272, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 9, 1993, Ser. No. 150,022

Claims priority, application Japan, Apr. 10, 1992, 4-091034

Int. Cl.[6] C08L *27/12, 69/00, 67/03, 81/00*

U.S. Cl. 525—92 19 Claims

1. A thermoplastic resin composition which comprises (a) a base-treated fluorine-containing elastomer obtained by contacting a fluorine-containing elastomer with a basic compound in an inert atmosphere to form a carbon-carbon unsaturated bond in the fluorine-containing elastomer and (b) a thermoplastic resin, the content of the base-treated fluorine-containing elastomer in the composition being 0.1 to 50% by weight.

5,389,726

NAIL LACQUER PRIMARY FILM FORMING RESIN

Milan F. Sojka, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 238,607, May 5, 1994. This application Jul. 5, 1994, Ser. No. 270,289

Int. Cl.[6] C08L *83/00*

U.S. Cl. 525—100 8 Claims

1. A composition comprising a blend of (i) a graft copolymer having a main backbone chain of acrylic ester units and methacrylic ester units, the main backbone chain having grafted thereto pendant trialkoxysilyl groups and pendant ethylene glycol dimethacrylate groups, the trialkoxysilyl grafts being grafted to only acrylic ester units and the ethylene glycol dimethacrylate grafts being grafted to other of the remaining unsubstituted acrylic ester units; and (ii) a silsesquioxane resin containing $RSiO_{3/2}$ units and ≡SiOH units in which R is an alkyl group or an aryl group.

5,389,727

RESIN COMPOSITIONS AND A METHOD OF CURING THE SAME

Noboru Nakai, Hiratsuka; Osamu Isozaki, Yokohama, and Naozumi Iwasawa, Hiratsuka, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Division of Ser. No. 672,792, Mar. 21, 1991, Pat. No. 5,284,919, which is a division of Ser. No. 402,408, Sep. 5, 1989, Pat. No. 5,026,793. This application Aug. 27, 1993, Ser. No. 112,311

Claims priority, application Japan, Sep. 9, 1988, 63-227093

Int. Cl.[6] C08F *8/00*

U.S. Cl. 525—101 3 Claims

1. A resin composition comprising (F) a high molecular weight compound containing an average of 2 or more hydroxyl groups and an average of 1 or more functional groups selected from the class consisting of alkoxysilane, silanol and acyloxysilane groups per molecule and having a number average molecular weight of 3,000 to 200,000, (G) a low molecular weight compound containing an average of 2 or more epoxy groups per molecule and having a number average molecular weight of 240 to 5,000, and (D) at least one metal chelate compound selected from the class consisting of aluminum chelate compounds, titanium chelate compounds and zirconium chelate compounds.

5,389,728

MOISTURE-CURABLE MELT-PROCESSIBLE ETHYLENE GRAFT COPOLYMERS

George W. Prejean, Orange, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 114,041, Aug. 30, 1993. This application Jun. 1, 1994, Ser. No. 252,292

Int. Cl.[6] C08F *8/00*

U.S. Cl. 525—102 6 Claims

1. A melt-processible, moisture-curable graft copolymer composition, comprising the reaction product of

(A) a direct copolymer from monomers comprising:

(i) ethylene;

(ii) 15–40 wt. % based on the direct copolymer, of an alkyl acrylate or methacrylate wherein the alkyl group contains 1–8 carbon atoms; and

(iii) 1–10 wt. % based on the direct copolymer, of a glycidyl containing monomer selected from the group consisting of glycidyl acrylate, glycidyl methacrylate and glycidyl vinyl ether, and

(B) from 15 to 150 percent of the stoichiometric amount with respect to the glycidyl moiety in the direct copolymer, of N-tert-butylaminopropyl trimethoxysilane, based on its amine functionality,

the resulting graft copolymer having a melt index of from 1 to 1500.

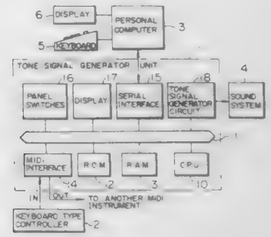
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5,389,729

TONE SIGNAL GENERATOR ADAPTED FOR COUPLING WITH PERSONAL COMPUTER

Mikihiro Hiramatsu, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Jan. 13, 1993, Ser. No. 4,072
Claims priority, application Japan, Jan. 14, 1992, 4-004993
Int. Cl.[6] G10H *1/00*
U.S. Cl. 84—601 7 Claims



1. A tone signal generator unit comprising:

bi-directional serial communication means for transmitting and receiving information including musical performance data to and from a personal computer;

electronic musical instrument serial communication means for communicating with an electronic musical instrument including serial input means for receiving information including musical performance data from an electronic musical instrument and serial output means adapted for transmitting information including musical performance data to another electronic musical instrument;

tone signal generation means for generating tone signals based on musical performance data received by either said bi-directional serial communication means and the musical performance data received by said electronic musical instrument serial communication means;

mode selection means for selecting one of a plurality of communication modes; and

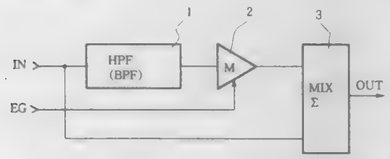
communication control means for controlling communication of information including musical performance data between said bi-directional serial communication means, said electronic musical instrument serial communication means and said tone signal generation means according to the selected communication mode.

5,389,730

EMPHASIZE SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENT

Masatada Wachi, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 20, 1991, Ser. No. 674,558
Claims priority, application Japan, Mar. 20, 1990, 2-70501; Mar. 20, 1990, 2-70502
Int. Cl.[6] G10H *1/02*
U.S. Cl. 84—624 61 Claims



1. An emphasize system for an electronic musical instrument, comprising:

an envelope generator for generating an envelope signal for an input musical tone signal in accordance with the input musical tone signal;

a control signal generator for producing a control signal based upon the envelope signal;

filter means for allowing a predetermined frequency range component of the input musical tone signal to pass therethrough;

multiplier means for multiplying a signal passing through said filter means and the control signal and outputting a product signal; and

mixing means for mixing said product signal and the input musical tone signal, and outputting a mixed signal;

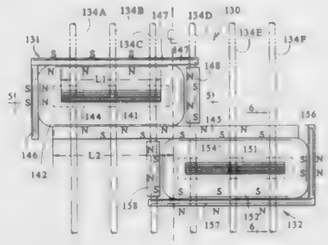
wherein the control signal is obtained by squaring the envelope signal.

5,389,731

ELECTROMAGNETIC MUSICAL PICKUP USING MAIN AND AUXILIARY PERMANENT MAGNETS

Melvin A. Lace, Prospect Heights, Ill., assignor to Thomas E. Dorn, Clarendon Hills, Ill., a part interest

Continuation-in-part of Ser. No. 000,202, Jan. 4, 1993, which is a continuation-in-part of Ser. No. 764,346, Sep. 23, 1991, abandoned, and Ser. No. 900,485, Jun. 18, 1992, Pat. No. 5,221,805, which is a continuation-in-part of Ser. No. 597,899, Oct. 10, 1990, abandoned, said Ser. No. 764,346, is a continuation-in-part of Ser. No. 597,899, Oct. 10, 1990. This application Jul. 13, 1993, Ser. No. 90,318
Int. Cl.[6] G10H *3/18*
U.S. Cl. 84—726 15 Claims



1. An electromagnetic pickup for a musical instrument, such as a guitar, having a given number of ferromagnetic strings, the pickup comprising:

an elongated high permeability ferromagnetic core, having a length L1 sufficient to span a plurality of less than all of the musical instrument strings, a height H1, and a width W1;

an elongated electrically conductive pickup coil disposed in encompassing relation to the ferromagnetic core;

a main permanent magnet, formed of a first permanent magnet material having a first high energy product, disposed in alignment with one elongated edge of the core, the main permanent magnet being magnetized in a direction transverse to the core height to maintain a given constant magnetic polarity in the core;

auxiliary permanent magnet means, comprising at least one elongated auxiliary permanent magnet, formed of a second permanent magnet material having an energy product materially lower than the first energy product, disposed immediately adjacent one side of the pickup coil, the auxiliary permanent magnet having a length L2 greater than L1 and a height H2 at least as large as H1;

and means for mounting the core, the coil, the main permanent magnet, and the auxiliary permanent magnet on the musical instrument with the core and the coil spanning a plurality of less than all of the ferromagnetic strings, in spaced relation thereto, and with that plurality of strings passing through a magnetic field afforded by the main permanent magnet and the core so that movement of any string of the plurality of strings generates an electrical signal in the coil.

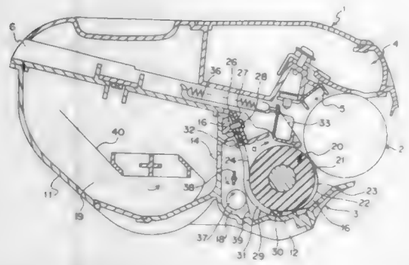
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5,389,732

DEVELOPING DEVICE WITH A SEALING CONSTRUCTION FOR PREVENTING TONER LEAKAGE

Hitoshi Sekino, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 3, 1993, Ser. No. 145,226
Claims priority, application Japan, Nov. 6, 1992, 4-76561; Dec. 28, 1992, 4-89373
Int. Cl.[6] G03G *15/08*
U.S. Cl. 118—653 11 Claims



1. A developing device having a sealing construction for preventing a toner applicaton roller leakage therefrom, said developing device comprising:

accommodating means for accommodating a toner therein;

a rotatable member supported at said accommodating means for holding a toner on a peripheral surface thereof;

regulating means for regulating an amount of the toner supplied to said peripheral surface of said rotatable member, said regulating means including a scraper one end of which is supported at the accommodating means and the other end of which is pressed in contact with the peripheral surface of the rotatable member along an axial direction of the rotatable member; and

a seal member for sealing a space between the accommodating means and the peripheral surface of the rotatable member, said seal member having a top seal portion, a bottom seal portion and a pair of side sealing portions, each of said side seal portions seamlessly integrated with both ends of said top seal portion and said bottom seal portion.

5,389,733

DEVELOPING DEVICE FOR AN IMAGE FORMING APPARATUS

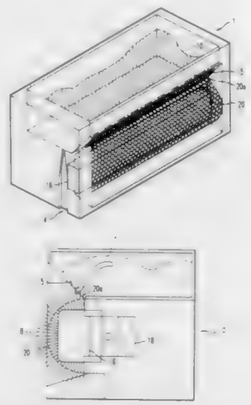
Shigekazu Enoki; Yoshiaki Tanaka, both of Kawasaki; Takeshi Motohashi, Yokohama; Fumihiro Kitahara, Tokyo, and Koyo Hariyama, Minoo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 28, 1994, Ser. No. 202,548
Claims priority, application Japan, Feb. 26, 1993, 5-062805
Int. Cl.[6] G03G *15/09*
U.S. Cl. 118—657 10 Claims

3. A developing device for developing a latent image formed on a photosensitive drum with a magnetic toner brush formed by a magnet bar comprising:

a covering means for covering the magnet bar, which forms the magnet brush therearound, said covering means having holes therein through which the magnetic toner brush is built; and

moving means for relatively moving the magnetic toner brush and the covering means during the developing



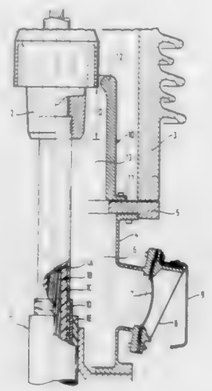
process, whereby, the magnet toner brush is cut off by the covering means.

5,389,734

DEVICE FOR PROTECTING THE END OF AN ELECTRIC CABLE AGAINST THE EFFECTS OF INSULATION BREAKDOWN

André Darcy, Calais; Daniel François, Andres, and François Gahungu, Calais, all of France, assignors to Alcatel N. V., Amsterdam, Netherlands

Filed May 28, 1992, Ser. No. 892,803
Claims priority, application France, May 29, 1991, 91 06455
Int. Cl.[6] H02G *15/22*
U.S. Cl. 174—19 6 Claims



1. A device for protecting the end of a high or very high tension electric cable having synthetic insulation from the effects of insulation breakdown, the device comprising an insulator and a metal enclosure coupled to said insulator and fitted with a rupture disk, said insulator and enclosure being mounted around the end of said cable and defining a gastight chamber around said end, which chamber contains dielectric gas under pressure and is separated from ambient air by said rupture disk;

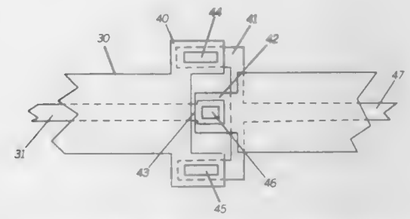
wherein the device further includes, inside said chamber, a circularly symmetrical collar which is made at least in part of metal, said collar protecting said insulator and extending around said cable and being sufficiently close to the cable for the cross-sectional area of said chamber between the collar and the cable to be much less than the cross-sectional area between the cable and the inside surface of the insulator.

5,389,735

VERTICALLY TWISTED-PAIR PLANAR CONDUCTOR LINE STRUCTURE

David E. Bockelman, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1993, Ser. No. 115,368
Int. Cl.[6] H01B *11/02;* H01P *5/00, 3/08*
U.S. Cl. 174—33 5 Claims



1. A stacked twisted-pair differential transmission line structure comprising:

a first bi-planar conductor having straight portions and successive turning portions, the turning portions winding through two planes in a first direction;

a second bi-planar conductor having straight portions and successive turning portions, the turning portions winding in an opposite direction for forming a twisted-pair through the two planes;

said turning portions comprising a first forcated planar conductive member having first forked sides; and

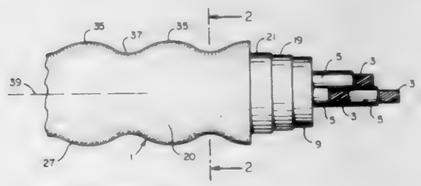
a second forcated planar member located below the first forcated planar conductive member and having second forked sides wherein said second forcated member is narrower in width than said first forcated member.

5,389,736

POWER AND CONTROL CABLE WITH A TWO LAYER METALLIC SHEATH FOR MARINE APPLICATIONS

Gerhard Ziemek, and Helmut Hildebrand, both of Langenhagen, Germany, assignors to Kabelmetal Electro GmbH, Hanover, Germany

Filed Jul. 22, 1993, Ser. No. 94,692
Int. Cl.[6] H01B *7/34*
U.S. Cl. 174—36 17 Claims



1. A cable comprising:

a core having at least one insulated electric conductor;

an inner envelope in the form of at least one copper strip surrounding said core, the inner envelope providing electromagnetic field shielding within an attenuation range of 85 to 115 dB, the amount of attenuation in this range being dependent upon the thickness of the inner envelope and increasing monotonically with increasing thickness;

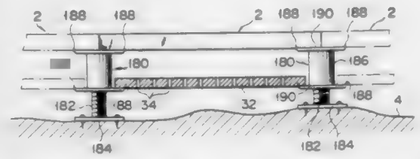
an outer envelope of stainless steel surrounding and enclosing the inner envelope, the steel strip extending in the longitudinal direction of the cable with welded abutting edges extending in the longitudinal direction of the cable, the outer envelope enabling the cable to retain its structural and electrical integrity when subjected to external temperatures which approach the melting point of stainless steel; and an electrically non-conductive layer disposed between the inner and outer envelopes and preventing any metallic contact between the inner and outer envelopes.

5,389,737

PANEL FOR FREE ACCESS TO SIGNAL CABLE AND POWER CABLE

Hiroshi Kobayashi; Tsuguhiro Hirose; Hideaki Haruyama, all of Tokyo; Jiro Kano, Kawasaki; Katsunari Kodachi, Tokyo; Yoshio Kojima, Yokohama; Humio Takeda, Hachioji, and Toshihiko Muro, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 394,161, Aug. 14, 1989, Pat. No. 5,049,700, which is a continuation of Ser. No. 608,120, May 8, 1984. This application Apr. 4, 1991, Ser. No. 680,379
Claims priority, application Japan, May 13, 1983, 58-83619; Aug. 18, 1983, 58-150497
The portion of the term of this patent subsequent to Sep. 17, 2008, has been disclaimed.
Int. Cl.[6] E04B *5/58*
U.S. Cl. 174—48 4 Claims



1. A free access floor panel comprising a plurality of panel plates each having the same shape, forming a space to permit an electrical cable to be arranged between a floor and the panel plates, and being laid on the floor to form a floor surface, the free access floor panel comprising:

each of the plurality of panel plates having a notch portion provided with a projection portion formed in a side portion of the panel plate in order to permit the electrical cable to be led from an arbitrary position of the floor surface;

a blind plate engageable with the notch portion and mountable so as to form a flat surface with the panel plate surface; and

a peelable surface member bonded to the panel plate on which the blind plate is mounted.

5,389,738

TAMPERPROOF ARRANGEMENT FOR AN INTEGRATED CIRCUIT DEVICE

Gerald V. Piosenka, Scottsdale; David M. Harrison, Mesa, and Ronald V. Chandos, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1992, Ser. No. 878,271
Int. Cl.[6] H01L *23/02, 23/28;* G08B *19/00;* H04L *9/00*
U.S. Cl. 174—52.4 16 Claims

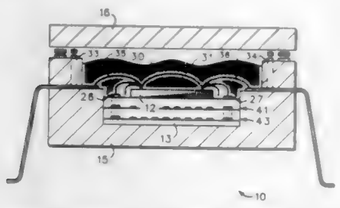
1. A tamperproof arrangement for an integrated circuit device comprising:

an integrated circuit package including a lid for sealing said integrated circuit package;

an integrated circuit die including an integrated circuit for providing electronic circuitry;

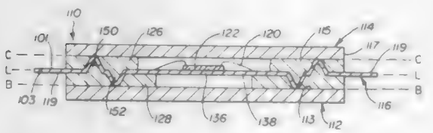
VOL 1171 ISS 2 FE 14 1995 UMI

die attach material for bonding said integrated circuit die to said integrated circuit package;
means for detecting a physical attack of said integrated circuit;
means responsive to said means for detecting for clearing critical information from said integrated circuit;
said means for detecting including:
at least two metal conductor grids located only underneath said integrated circuit, said conductor grids for



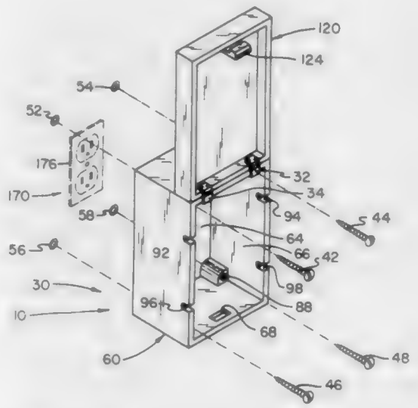
detecting damage to said integrated circuit and providing an indication to said means responsive for clearing said critical information; and
a dielectric layer interposed between electrode fingers of said two metal conductor grids, in response to damage of said dielectric layer, said dielectric layer indicating a change in capacitance, said means responsive operating to clear said critical information in response to said change in capacitance.

5,389,739
ELECTRONIC DEVICE PACKAGING ASSEMBLY
Louis T. Mills, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 15, 1992, Ser. No. 991,057
Int. Cl.[6] H01L *23/02*
U.S. Cl. 174—52.4 **20 Claims**



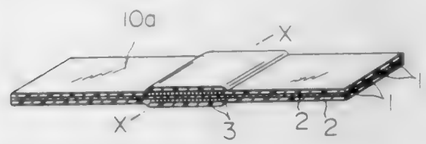
1. An electronic device package assembly comprising:
a base member;
a cover member;
a lead frame having a plurality of leads disposed between said base member and said cover member;
an electronic device disposed between said base member and said cover member and electrically attached to said leads;
bonding means for bonding said base member and said cover member to the lead frame, said bonding means being constructed from material having a liquid state under certain temperature conditions associated with assembly of said electronic device package assembly;
spacer means disposed between said lead frame and said base member and said lead frame and said cover member for maintaining said base member and said cover member at a predetermined spacing from said lead frame, said spacer means being constructed from material having a solid state under all temperature conditions associated with assembly of said electronic device package assembly whereby said spacer means maintains said base member and said cover member at said predetermined spacing from said lead frame during periods when said bonding means is in a liquid state.

5,389,740
SAFETY COVER FOR ELECTRICAL OUTLETS
Kathleen A. Austin, 220 Delaware Ave., Milford, N.J. 08848
Filed Dec. 10, 1993, Ser. No. 164,967
Int. Cl.[6] H02G *3/14*
U.S. Cl. 174—67 **2 Claims**



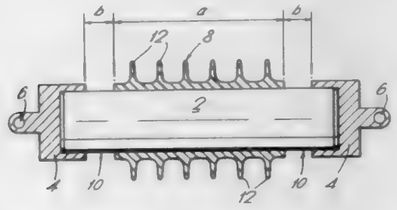
1. A safety cover for electrical outlets for enclosing an electrical wall outlet for minimizing personal injury due to electric shock and alternatively additionally for providing a tamper-proof means to prevent unauthorized connection or interruption of electrical power to an appliance, the safety cover for electrical outlets comprising:
a box made of rigid electrical-nonconducting material and having an integral top, bottom, and sides, the box having an open back and front, the box also having an integral gusseted mounting hole within each rear corner, the box having a height and width greater than the height and width of an electrical wall outlet cover plate, the box having a depth substantially greater than the length of an electrical appliance plug, the box additionally having a plurality of notches on the front edge of each side wherethrough electrical line cords may be passed, the box further having catch means along the front edge of the bottom;
a cover made of the same material as the box, the cover having a height and width essentially the same as the box, the cover having an integral latch element sized and located such as to be cooperative with the catch means of the box;
hinge means whereby the cover is hingedly connected to the box along the top edge of both the box and the cover such that when the cover is pivoted downwardly on the hinge means the cover latch element is snapidly releasedly received by the box catch means whereby retaining the cover in a closed position; and,
a plurality of threaded screws extending through the gusseted holes of the box and threadedly engagable to a plurality of holes within a wall surrounding an electrical outlet to be protected, the holes having a pattern essentially the same as the pattern of the gusseted holes of the box such that the safety cover is fixedly securable to the wall in surrounding relationship to the electrical outlet whereby the electrical outlet is fully enclosable by the covered box, thereby precluding tampering with the electrical outlet or an electrical plug that may be connected thereto.

5,389,741
FLAT CABLE AND CONNECTION DEVICE AND METHOD FOR THE SAME
Seiichi Ueno, Kameyama, Japan, assignor to The Furukawa Electric Company, Ltd., Marunouchi, Japan
Filed May 14, 1993, Ser. No. 61,060
Claims priority, application Japan, May 16, 1992, 4-039461[U]
Int. Cl.[6] H01B *7/08*; H01R *43/00, 9/07*
U.S. Cl. 174—117 F **16 Claims**



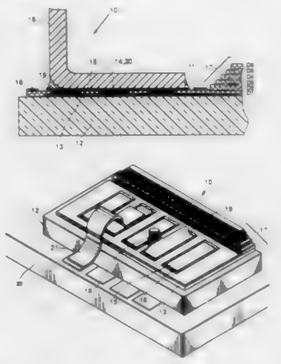
1. A flat cable, comprising:
a plurality of conductors arranged substantially in parallel in an array,
insulating covering layers adhered to two sides of the parallel array of said plurality of conductors, and
interlayer peeling layers interposed between said conductors and said insulating covering layers at predetermined intervals along a longitudinal direction of the cable so as to facilitate the peeling between the conductors and the insulating covering layers.

5,389,742
COMPOSITE ELECTRICAL INSULATOR
Robin J. T. Clabburn, Swindon, and John S. T. Looms, East Molesey, both of Great Britain, assignors to Raychem Limited, Swindon, United Kingdom
Continuation of Ser. No. 602,885, Oct. 24, 1990, abandoned, which is a continuation of Ser. No. 339,759, Apr. 18, 1989, abandoned, which is a continuation of Ser. No. 185,065, Feb. 12, 1988, Pat. No. 4,845,318, which is a continuation of Ser. No. 45,268, Apr. 22, 1987, abandoned, which is a continuation of Ser. No. 609,258, May 11, 1984, abandoned. This application Apr. 1, 1992, Ser. No. 866,071
Claims priority, application United Kingdom, May 11, 1983, 8312892
Int. Cl.[6] H01B *17/32, 17/38, 17/60*
U.S. Cl. 174—209 **14 Claims**



1. An electrical insulator comprising:
a) an elongated generally cylindrical support member formed from electrically insulating and non-tracking refractory material;
b) an electrically conductive component mounted at each end of the support member; and,
c) an electrically insulating and non-tracking polymeric component;
in which said polymeric component has a plurality of annular extensions spaced apart longitudinally on an outer surface thereof, and is mounted on said refractory support member so as (A) to extend longitudinally thereof, (B) to be spaced apart at each end by said refractory support member from respective ones of said conductive components, and (C) to provide the major insulating surface area of the insulator.

5,389,743
RIVET DESIGN FOR ENHANCED COPPER THICK-FILM I/O PAD ADHESION
Charles E. Simila, and Mradul Mehrotra, both of Tucson, Ariz., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Dec. 21, 1992, Ser. No. 993,544
Int. Cl.[6] H05K *1/02*
U.S. Cl. 174—262 **7 Claims**

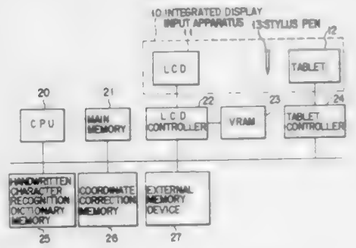


1. A structurally secure input/output (I/O) pad for a circuit card comprising:
an alumina ceramic layer,
a conductor layer printed directly on said alumina ceramic layer,
a dielectric layer having a plurality of vias filled with a conducting material printed on said conductor layer,
at least one input/output pad printed on said dielectric layer and said conducting material, and
a seal glass layer on said dielectric layer around said input-/output pad thereby making the circuit hermetic and impervious to moisture.

5,389,744

Patent Not Issued For This Number

5,389,745
HANDWRITING INPUT APPARATUS FOR INPUTTING HANDWRITTEN DATA FROM UNSPECIFIED DIRECTION
Hiroyuki Sakamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 10, 1992, Ser. No. 942,842
Claims priority, application Japan, Sep. 11, 1991, 3-231241
Int. Cl.[6] G08C *21/00*; G09G *5/38*; G06K *9/00*
U.S. Cl. 178—18 **11 Claims**



1. A handwriting input apparatus comprising:

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an integrated display input device having a display device and a coordinate detection device for detecting coordinate data, said display device and said coordinate detection device being arranged on one another and forming one unit;

region data storing means for storing data concerning a display region and an input region, said display region having a plurality of sections corresponding to items to be input, and said input region defining a function of inputting data to said sections;

region display means for displaying said display region and said input region on said display device in accordance with the data stored in said region data storing means, a display position in which said input region is defined being represented by display position coordinate data;

section selecting means for selecting one of the sections of said display region displayed by said region display means;

rotation angle setting means for setting a rotation angle indicating a display direction in which said input region, corresponding to the section selected by said section selecting means, is displayed by said region display means;

transfer position setting means for setting a transfer position to which said input region, displayed by said region display means and corresponding to the section selected by said section selecting means, is transferred; and

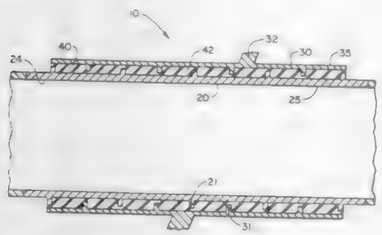
region renewing means for renewing the display position coordinate data representing the display position of said input region corresponding to the section selected by said section selecting means, in accordance with the rotation angle set by said rotation angle setting means and the transfer position set by said transfer position setting means, and for changing the display position and display direction of said input region, with a display state of said display region being maintained.

5,389,746

SUBMARINE HULL STRUCTURES PROVIDING ACOUSTICALLY ISOLATED HULL OPENINGS

Paul E. Moody, Barrington, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1994, Ser. No. 268,598
Int. Cl.[6] G10K *11/00;* **B63H** *1/15;* **B65D** *53/00*
U.S. Cl. 181—0.5 **16 Claims**



1. A structure which provides an acoustically isolated opening, the structure comprising:

an inner, annular structural member having a coaxial opening providing said opening in said structure, said inner, structural member having at least one outer fixed, radially extending structural ring;

an outer, annular structural member surrounding said inner structural member in radially spaced relationship to form an axially extending annular cavity therebetween, said outer structural member having at least one inner fixed, radially extending structural ring, wherein said outer and inner structural rings radially overlap and are axially spaced along the annular cavity to form the said annular cavity with varying radial dimensions therealong; and

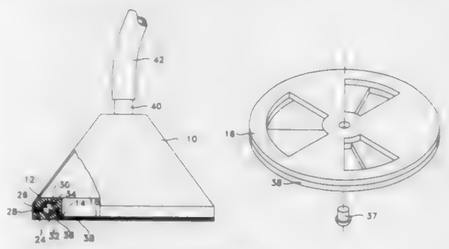
acoustical isolating means disposed within said axially extending annular cavity supporting said inner member within said outer member in generally coaxial relationship with each other and acoustically isolating said outer annular structural member from said inner annular structural member.

5,389,747

STETHOSCOPE

Carl M. Mohrin, 186 Charlestown Rd. R.R. #3, Hampton, N.J. 08827

Filed Aug. 16, 1993, Ser. No. 106,825
Int. Cl.[6] A61B *7/02*
U.S. Cl. 181—131 **22 Claims**



1. A stethoscope head comprising:

a bell housing having a mouth end;

a first diaphragm, having a respective opening therein, and being coupled to said bell housing at said mouth end; and

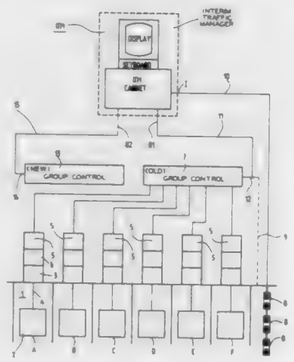
a second diaphragm, having a respective opening therein, and being rotatably coupled to said bell housing in juxtaposition to said first diaphragm, said first and second diaphragms forming a composite diaphragm adapted for placement against a patient's body for auscultation.

5,389,748

METHOD AND APPARATUS FOR MODERNIZING THE CONTROL OF AN ELEVATOR GROUP

Richard J. Burke, Westwood; Robert J. Platt, Randolph, and Kenneth T. May, Little Falls, all of N.J., assignors to Inventio AG, Hergiswil NW, Switzerland

Filed Jun. 9, 1993, Ser. No. 74,213
Int. Cl.[6] B66B *1/14*
U.S. Cl. 187—247 **16 Claims**



1. A method for modernizing a group control for an elevator system having a plurality of elevator cars for serving a plurality of floors in a building, the system including hall call registering devices located at the floors for entering hall calls, a group control connected to the hall call registering devices by a bus line and to controls for the elevator cars by a data bus, the group control being responsive to entered hall calls and to signals indicative of conditions of each of the cars for dispatching the elevator cars to serve the hall calls, the method comprising the steps of:

a) integrating an Interim Traffic Manager system into an elevator system to be modernized by disconnecting an existing bus line from a hall call input of an existing group control, installing a new bus line, connecting the new bus line between a hall call input of the Interim Traffic Manager system and existing hall call registering devices, and connecting a first hall call output of the Interim Traffic Manager system to the hall call input of the old group control;

b) installing a new group control in the elevator system, connecting a hall call input of the new group control to a second hall call output of the Interim Traffic Manager system, and operating all elevator cars in the elevator system under the control of the Interim Traffic Manager system and the old group control according to an old control strategy of the old group control;

c) removing a first elevator car of the elevator system from service and adapting the out of service elevator car to an associated new elevator control while operating all other not yet adapted elevator cars of the elevator system as a first subgroup under the control of the Interim Traffic Manager system and the old group control;

d) subordinating the out of service elevator car to the new group control by connecting the new group control to the associated new elevator control;

e) recommissioning the out of service elevator car under the control of the new group control;

f) removing another elevator car of the elevator system from service and adapting the out of service another elevator car to an associated new elevator control while operating all other not yet adapted elevator cars of the elevator system as the first subgroup under the control of the Interim Traffic Manager system and the old group control and operating all of the already adapted elevator cars of the elevator system as a second subgroup under the control of the Interim Traffic Manager system and the new group control;

g) repeating the steps d) and e);

h) repeating the steps f) and g) until a last, not yet adapted elevator car of the elevator system remains;

i) removing the last elevator car of the elevator system from service and adapting the out of service last elevator car to an associated new elevator control while operating all of the already adapted elevator cars of the elevator system as the second subgroup under the control of the Interim Traffic Manager system and the new group control;

j) repeating the steps d) and e); and

k) disassembling the Interim Traffic Manager system and the old group control from the elevator group and connecting the old bus line with the hall call input of the new group control.

5,389,749

ELEVATOR SYSTEM

Sadao Hokari; Kiyoshi Nakamura; Hiromi Inaba, all of Katsuta; Yoshio Sakai, Ibaraki; Hideaki Takahashi, Katsuta; Seikichi Masuda, Hitachi; Takei Ando, Ibaraki; Toshiaki Kurosawa, Katsuta; Akihiro Nokita, Mito, and Masahiro Konya, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Building Systems Engineering And Service Co., Ltd., both of Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 906,225
Claims priority, application Japan, Jul. 24, 1991, 3-184325
Int. Cl.[6] B66B *1/06, 1/28;* **H02P** *7/42, 7/00*
U.S. Cl. 187—293 **11 Claims**

1. An elevator system comprising:

a first driving system having an electronic frequency converter for outputting variable-voltage/variable-frequency AC power and an induction motor;

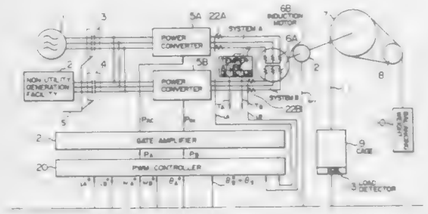
a second driving system having a frequency converter for outputting variable-voltage/variable-frequency AC power and an induction motor;

a common elevator driven by said first and second driving systems;

a velocity command means;

means for detecting the rotation velocity of said motors;

means for controlling one of said first and second driving systems in accordance with a total torque command including a first torque command corresponding to the



deviation between the velocity command and the detected velocity value and a second torque command corresponding to an unbalanced torque peculiar to the elevator operating system when the total torque command is less than a predetermined value; and

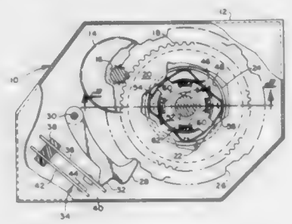
means for keeping the torque command for one of said first and second driving systems constant while controlling the other of said first and second driving systems in accordance with the torque command correspondingly to the difference between the total torque command and the predetermined value when the total torque command is larger than the predetermined value.

5,389,750

TORQUE LIMITING DRIVE AND PROGRAMMER/TIMER EMPLOYING SAME

Robert K. Aigner, Norwood Park, and Joseph J. Mahon, Libertyville, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 13,501, Feb. 4, 1993, abandoned. This application May 16, 1994, Ser. No. 242,996
Int. Cl.[6] H01H *7/08, 43/10*
U.S. Cl. 200—38 R **7 Claims**



1. A torque limiting drive assembly adapted for receiving a shaft comprising:

(a) a rotatable driving clutch member adapted for connection to a rotating source of power having thereon first axially engageable surfaces for rotary driving connection therewith;

(b) a driven clutch member having a first annular friction surface disposed on an inner periphery thereof and a second annular friction surface disposed concentrically

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within spaced radially from and facing said first annular surface;

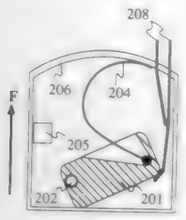
(c) a spring member assembled onto said driven member and having outer portions thereof frictionally engaging said first annular friction surface and inner portions thereof engaging said second annular friction surface, said outer and inner portions disposed in circumferentially spaced alternating arrangement said driving member, said driven member and said spring member forming an assembly adapted for receiving a shaft, whereupon application of torque above a predetermined level to either of said driving or driven member causes rotary movement of said spring member with respect to said first and second friction surfaces.

5,389,751

LONG DWELL CRASH SENSOR

David S. Breed, Boonton, N.J., assignor to Automotive Technologies International, Inc., Denville, N.J.

Continuation-in-part of Ser. No. 686,717, Apr. 17, 1991, abandoned, and Ser. No. 727,757, Jul. 9, 1991, Pat. No. 5,233,141. This application Mar. 1, 1993, Ser. No. 24,218
Int. Cl.[6] H01H *35/14;* **B60R** *21/32*
U.S. Cl. 200—61.45 R **10 Claims**



8. In a vehicle having a deployable airbag, a vehicle crash detecting sensor comprising:

a housing;

switch means within said housing and operatively connected to said airbag;

a pivoted sensing mass within said housing, rotatively responsive to vehicle deceleration, having a first at-rest position where said mass is at rest in the absence of vehicle deceleration, a second position at a first rotation angle from said first at-rest position and where said sensing mass is operatively adjacent said switch means, and a final position at a second rotation angle from said first at-rest position;

a biasing means within said housing exerting a torque on said sensing mass urging said mass toward said first at-rest position, said biasing means exerting a torque on said sensing mass at said final position, said torque having a magnitude less than one-half of the torque exerted by said biasing means on said sensing mass when said mass is at said at-rest position; and wherein

said switch means enabling deployment of said airbag in response to the motion of said sensing mass to said second position; said sensing mass operating said switch means when said mass is at said second position.

5,389,752

SWITCH CONTROL LEVER

Hassan Karbassi, Hartland, Wis., assignor to Hydro Electronic Devices, Inc., Hartford, Wis.

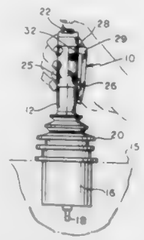
Filed Sep. 18, 1992, Ser. No. 946,591
Int. Cl.[6] H01H *9/06*
U.S. Cl. 200—61.85 **10 Claims**

1. An apparatus comprising:

(A) a support;

(B) a switch which is disposed on said support and which is spring biased into an open position so as to have a spring constant; and

(C) a palm operated hingeless control lever formed from a resilient material, said control lever including a base portion non-pivotally fixed to said support and a hingeless actuator portion which



is connected to said base portion so as to form a hingeless connection between said base portion and said actuator portion,

is sufficiently long to receive the palm of an operator's hand and to extend over said switch,

is deflectable into contact with said switch, and which

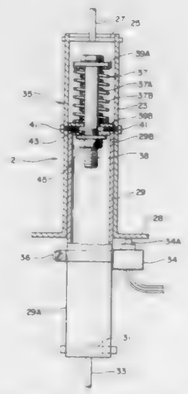
has a spring constant which is lower than that of said switch.

5,389,753

FEED CONTROL SWITCH ASSEMBLY

John L. Harkins, 169 Battle Rd., SW., Calhoun, Ga. 30701

Filed Aug. 3, 1993, Ser. No. 101,418
Int. Cl.[6] H01H *35/00*
U.S. Cl. 200—85 R **15 Claims**



1. A feed control switch assembly for turning on and off the supply of feed to be conveyed to a hopper, the feed control switch assembly comprising:

a first member having:

a) a hanger at a one end thereof from which the feed control switch is suspended, and

b) an open end opposite the one end;

a second member, received by the open end of the first member, the second member being slidably moveable relative to the first member and having a suspender from which a cord is suspended for attachment to the hopper;

a spring biasing means for pulling the first and second members together at a predetermined spring bias strength;

a flange at the open end of the first member, the flange extending outwardly of the first member and forming a stop; and

an electrical switch having a switch button which turns off the electrical switch when the switch button is released to an extended position and turns on the electrical switch when the switch button is at a depressed position, the electrical switch being positioned adjacent to the flange and on the second member;

wherein, when the weight of feed in the hopper exceeds the predetermined spring bias strength, the second member pulls away from the first member causing the electrical switch to move away from and disengage the flange so that the switch button is released to the extended position thereby turning off the electrical switch and the supply of feed to the hopper; and

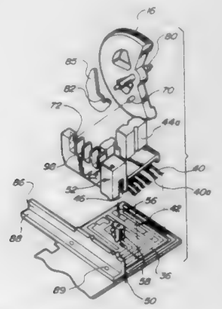
wherein, when the predetermined spring bias strength exceeds the weight of feed in the hopper, the second member is pulled toward the first member causing the electrical switch to contact the flange so that the switch button is compressed to the depressed position thereby turning on the electrical switch and the supply of feed to be conveyed to the hopper.

5,389,754

PRINTED CIRCUIT BOARD MOUNTED GUIDE SYSTEM

Robert D. Muller, Royal Oak, and Robert D. Schmidt, Livonia, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Nov. 8, 1993, Ser. No. 148,934
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—292 **12 Claims**



1. A switch mechanism comprising:

a set of conductive paths formed on a surface of a substrate;

a set of movable conductive contacts adapted to selectively conductively engage said conductive paths to open and close circuit paths created thereby;

a contact carrier for retaining said movable contacts in a predefined spaced relationship;

a guide member adapted to engage said contact carrier and predeterminately guide the movement of said carrier with respect to said substrate, said guide member being fixedly secured to said surface of said substrate;

actuation means for causing movement of said contact carrier along said guide member, said actuation means including a projection for engaging said contact carrier; and

said contact carrier further including an inverted u-shaped slot and said projection including a pin member for engaging said slot.

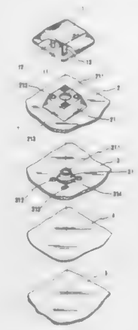
5,389,755

COMPUTER KEY SWITCH DEVICE

Pao-Chin Chen, 4F, No. 292, Sec. 2, Chien Kuo S. Road, Taipei, Taiwan, Prov. of China

Filed Oct. 27, 1993, Ser. No. 144,050
Int. Cl.[6] H01H *3/12*
U.S. Cl. 200—341 **1 Claim**

1. A computer key switch device which comprises a frame (5), a membrane (4) mounted on top of said frame, a rubber base plate (3) integrally molded from rubber and mounted on said membrane, said membrane housing a switch in the interior thereof, said rubber base plate having a conical projection (31) made gradually smaller toward the top, a pair of opposite pin holes (312) and a pair of opposite oblong holes (313) disposed around said conical projection at four corners thereof, said conical projection having a top ring (311), a horn-shaped bottom ring (314), a transverse division wall blocked between said top ring and said horn-shaped bottom ring, and a solid stub rod (315) extended downwards from said transverse division wall at the center thereof; a key body plate (2) integrally molded from plastics and mounted on said rubber base plate (3), said key body plate having a key body portion (21) raised from a top surface of said key body plate, and spaced above said conical projection (31) of said rubber base plate, said key body portion comprising a center through hole (211) through which



said top ring of said conical projection projects, two opposite pin holes (212) aligned with said pair of opposite pin holes (312) on said rubber base plate, and two opposite retaining holes (213) aligned with said pair of opposite oblong holes (312) on said rubber base plate; a key cap (1) mounted on said key body portion (21) of said key body plate, said key cap comprising a bottom plunger (11) stopped against said top ring of said conical projection, two opposite bottom rods (12) inserted into said two opposite pin holes (212) on said key body portion (21), and two opposite bottom hooks (13) hooked in said two retaining holes (213) on said key body portion; wherein when said conical projection of said rubber base plate is squeezed by said bottom plunger of said key cap, the horn-shaped bottom ring of said conical projection is deformed, and the stub rod (315) of said conical projection is moved downwardly to connect with said switch in the interior of said membrane, and a circuit is triggered.

5,389,756

PUSHROD SWITCH, ESPECIALLY A BRAKE LIGHT SWITCH, WITH SLIDING MEMBER AND SWITCH RESETTING MEANS

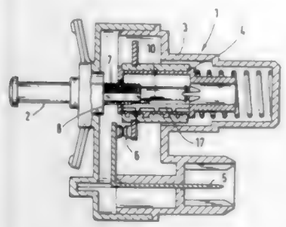
Pierre Micallef, St. Julians, Malta, assignor to Merit-Elektrik GmbH, Gummersbach, Germany

Filed May 5, 1993, Ser. No. 58,498
Claims priority, application Germany, May 12, 1992, 4215515
Int. Cl.[6] H01H *3/12*
U.S. Cl. 200—345 **4 Claims**

1. A pushrod switch comprising a plastic switch housing, a pushrod arranged in the switch housing, a movable element comprising a sliding member engagable with the pushrod and provided with opposing end walls through which the push rod is extendable, an electrical terminal element in the switch housing, contacting elements for making contact between the sliding member and the terminal element and means for switch resetting,

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wherein said means for switch resetting comprises a locking catch device for releasably fixing the pushrod relative to the sliding member, said locking catch device comprising two guide elements located between said opposing end walls in said sliding member, said guide elements are each shaped like a quarter shell and have interior curved surfaces facing each other, said guide elements extend in longitudinal directions parallel to each other, are located on opposite sides of a longitudinal central plane extending vertically through both the sliding member and the push rod, are located on opposite sides of a horizontal transverse central plane passing through the push rod and rotated about 90° from the central longitudinal plane so as



to be diagonally across from each other in the sliding member, and have longitudinal edges parallel to the longitudinal central plane, said longitudinal edges being spaced from each other a predetermined distance in a direction of the longitudinal central plane and from the horizontal transverse central plane; and

wherein said pushrod has a plurality of peripheral teeth on a periphery of the pushrod and the interior curved surfaces of the guide elements are provided with a plurality of opposing teeth, said guide elements and said peripheral teeth and said opposing teeth being structured and positioned so that said peripheral teeth of said pushrod are engagable with said opposing teeth of said guide elements.

5,389,757

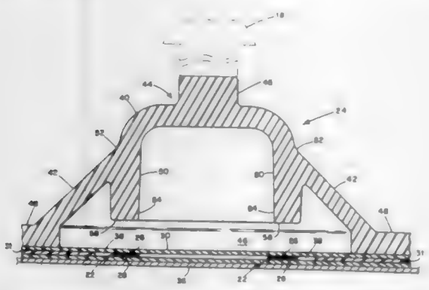
ELASTOMERIC KEY SWITCH ACTUATOR

Ernest G. Souliere, Rochester, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 77,830, Jun. 15, 1993, abandoned. This application Mar. 16, 1994, Ser. No. 210,099

Int. Cl.[6] H01H *3/12*

U.S. Cl. 200—345 **4 Claims**



1. A key switch and actuator assembly comprising:

An electrical switching region; and

A hollow arched actuator made of elastomeric material and having an open end, the actuator overlaying the electrical switching region and having its open end in surrounding relationship therewith, the actuator including a first wall portion shaped to provide substantially linear resistive force during compression displacement of the actuator toward the switching region and to provide substantially linear restoring force during expansion displacement of the actuator away from the switching region, the actuator further including a second wall portion located below the first wall portion shaped to undergo buckling toward the switching region at a predetermined compression displacement and to undergo unbuckling away from the switching region at a predetermined expansion displacement that is smaller in total displacement than the predetermined compression displacement, the actuator also including an interior portion positioned and sized to move into the switching region at the buckling of the second wall portion and to move out of the switching region at the unbuckling of the second wall portion.

5,389,758

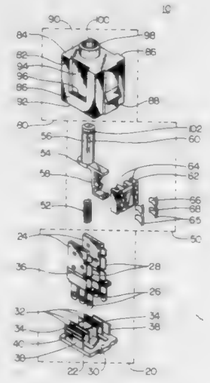
PUSHBUTTON SWITCH

William J. Agnatovech, Franklin, Mass., assignor to Augat Inc., Mansfield, Mass.

Filed Dec. 22, 1993, Ser. No. 171,616

Int. Cl.[6] H01H *13/14*

U.S. Cl. 200—530 **13 Claims**



1. A switch comprising:

a platform assembly, comprising

a base portion having retention elements integral therewith, and

at least one conductor carrier portion having a plurality of electrical conductors which terminate in first and second sets of contacts, and a retention portion,

the retention portion of said carrier portion cooperative with one or more of said retention elements to retain said at least one conductor carrier portion on said base portion;

an encasement assembly, comprising

a housing engagable with one or more of said retention elements to retain said housing on said base portion, said housing having an orifice formed therein and further defining a cavity; and

a pushbutton assembly disposed within said cavity along a vertical axis, comprising

a pushbutton actuator extending through said orifice and aligned with said vertical axis,

a bias element disposed between said pushbutton actuator and said base portion, and

a slider block having at least one electrical shorting element disposed therein and in electrical contact with one set of said contacts, said slider block coupled to said pushbutton actuator for translation coaxial with said vertical axis.

5,389,759

MICROWAVE CONTAINER

Anthony S. Jay, Hillingdon; Elizabeth M. Sands, Hayes; Joy C. Taylor, Woodplumpton, and Alan Norman, Pontnewydd, all of United Kingdom, assignors to A.G. (Patents) Limited, London, United Kingdom

PCT No. PCT/GB90/01338, § 371 Date Apr. 27, 1992, § 102(e) Date Apr. 27, 1992, PCT Pub. No. WO91/03917, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 30, 1990, Ser. No. 836,311

Claims priority, application United Kingdom, Aug. 30, 1989, 8919601

Int. Cl.[6] H05B *6/80*

U.S. Cl. 219—734 **11 Claims**

1. A container for use in a microwave oven, the container having at least one surface arranged to come into immediate contact with a food item therein, the container formed from a microwave transparent material and having coated on at least a part of said surface a browning agent for transfer of a brown coloration to a surface of the food item.

5,389,760

FLASH BUTT WELDING FACILITY

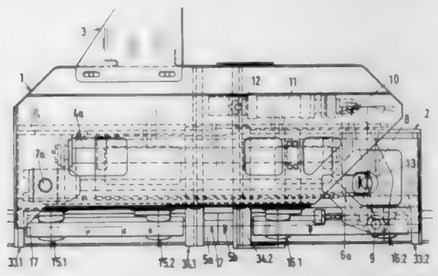
Hansrudolf Zollinger, Geroldswil, Switzerland, assignor to H. A. Schlatter AG., Schlieren, Switzerland

Filed Oct. 1, 1993, Ser. No. 130,548

Claims priority, application Switzerland, Nov. 9, 1992, 3458/92

Int. Cl.[6] B23K *11/04*

U.S. Cl. 219—53 **16 Claims**



3. Flash butt welding facility for welding together a first and a second profiled workpiece, comprising:

a) a first and a second clamping system for retaining and positioning the first and second profiled workpieces aligned on a workpiece clamping axis, wherein the clamping systems are open to a first side perpendicular to the workpiece clamping axis for receiving the first and second workpieces, respectively;

b) first and second support means for supporting said first and second clamping systems, respectively;

c) at least one compressive force generator arranged on a second side of the workpiece clamping axis opposite said first side and in parallel with the workpiece clamping axis for moving the support means relative to each other;

d) a first end of said at least one compressive force generator being pivotally connected to said first support means;

e) at least one lever linking a second end of said at least one compressive force generator with said second support means;

f) the second support means being displaceably supported by guide rod means mounted in the first support means for a strictly linear movement of the second support means with respect to the first support means; and

g) pull rod means pivotally linking said first support means and said lever at a fulcrum.

5,389,761

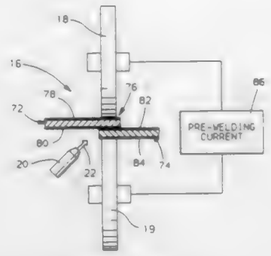
METHOD AND APPARATUS FOR CLEANING METAL PIECES PRIOR TO RESISTIVE SEAM WELDING OR LASER LAP SEAM WELDING

Alfred L. Kresse, Jr., Romeo, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 17, 1993, Ser. No. 122,086

Int. Cl.[6] B23K *11/34, 11/08, 26/00*

U.S. Cl. 219—78.14 **14 Claims**



1. A method comprising the steps of:

placing first and second pieces of metal so that each of the pieces of metal overlaps at least a portion of the other piece of metal and comprises a contacting surface in physical contact with the other piece of metal at the overlapping portion, wherein at least one of the first and second pieces of metal comprises an additional material on the contacting surface;

rolling the overlapping portions of the first and second pieces of metal through a pair of rollers;

providing current through the rollers and the overlapping portions as the overlapping portions are rolled through the pair of rollers, wherein the current heats the metal and additional material and creates a fluid melt zone between the overlapping portions:

flowing a stream of inert gas at said fluid melt zone to remove from between the overlapping portions at least a portion of the fluid melt zone and at least a portion of the additional material as the overlapping portions exit the rollers; and thereafter

moving the overlapping portions to a weld station to seam weld the first and second pieces of metal at said overlapping portions, whereby oxidations and coatings have minimal affect on weld results, wherein a residue of the flowing inert gas bathes an area between the rollers and the weld station to impede oxidation of the overlapping portions from which the fluid melt zone and additional material were removed and wherein continuous cleaning and seam welding of the first and second pieces of metal are accomplished.

5,389,762

STUD-WELDING PROCESS AND A DEVICE FOR CARRYING OUT THE PROCESS

Thomas H. Schneegans, Hauptstrasse 160, D7858 Weil-am-Rhein, Germany

PCT No. PCT/EP91/01950, § 371 Date Apr. 16, 1993, § 102(e) Date Apr. 16, 1993, PCT Pub. No. WO92/06814, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 15, 1991, Ser. No. 39,149

Claims priority, application Switzerland, Oct. 17, 1990, 03 325/90

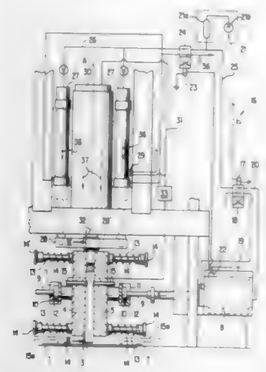
Int. Cl.[6] B23K *9/20*

U.S. Cl. 219—99 **14 Claims**

1. A process for stud-welding a stud to a surface, the process comprising: accelerating the stud toward the surface with an accelerating force acting along a stud axis while igniting an arc, whereupon an end face of the stud is immersed in a melt bath formed by melting of the end face of the stud and the

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surface, and at least prior to accelerating the stud, positioning the stud relative to the surface and pressing the stud against the surface by means of at least two positioning forces, wherein the at least two positioning forces are essentially parallel to the



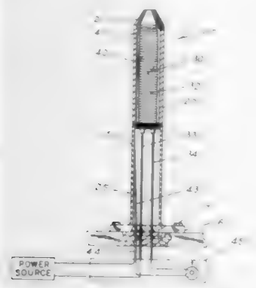
stud axis, and are approximately angularly symmetrical to said stud axis, and the at least two positioning forces act at two or more points outside the stud axis so that the stud does not float away laterally on immersion in the melt bath.

5,389,763

CORE REMOVER

Dennis Nagan, and Kevin Whitney, both of Green Bay, Wis., assignors to Riverdale of Green, Inc., Green Bay, Wis.

Filed Aug. 2, 1993, Ser. No. 101,218
Int. Cl.[6] H05B *3/42*
U.S. Cl. 219—221 **9 Claims**



3. A core remover for removing cores from paper rolls, the core remover comprising:

a tube having a bottom part mounted to a base and a removable top part having a tappered tip;

a cartridge heating element located inside said removable top part of the tube; and

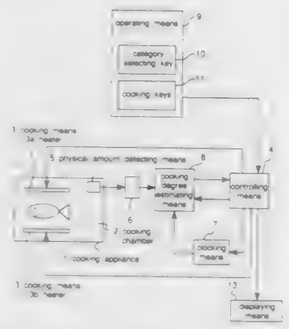
a temperature sensor located inside the tube and connected to the heating element and controlling the temperature of the heating element.

5,389,764

AUTOMATIC COOKING APPLIANCE EMPLOYING A NEURAL NETWORK FOR COOKING CONTROL

Kazunari Nishii, Izumi; Kenji Watanabe, Nara; Shigeki Ueda, Yamatokoriyama, and Motohiko Naka, Kawasaki, all of Japan, assignors to Matsuhista Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 31, 1992, Ser. No. 937,102
Claims priority, application Japan, Aug. 30, 1991, 3-219868; Aug. 30, 1991, 3-219870; Oct. 21, 1991, 3-272268
Int. Cl.[6] B23K *9/00*
U.S. Cl. 219—506 **10 Claims**



1. A cooking appliance, comprising:

a cooking chamber for accommodating an object to be cooked;

a heater for heating the object to be cooked within said cooking chamber;

a physical characteristic detecting means for detecting a change in a physical characteristic in said cooking chamber while the object to be cooked is heated by said heater and providing an output signal representing the detected change in the physical characteristic;

a timer for counting the amount of time that elapses from said heater starting to heat the object to be cooked, said timer providing an output signal representing the amount of time;

a cooking degree estimating means for providing an estimate of the degree to which the object to be cooked has been cooked from said output signals from said physical characteristic detecting means and said timer and from a predetermined relationship between (a) changes in the physical characteristic in said cooking chamber while the object to be cooked is being cooked by said heater, (b) the amount of time that has elapsed from said heater starting to heat the object to be cooked and (c) changes of the temperature of the object to be cooked, and for outputting a signal representing the estimate of the degree to which the object has been cooked; and

a control means for controlling said heater on the basis of said signal outputted from said cooking degree estimating means.

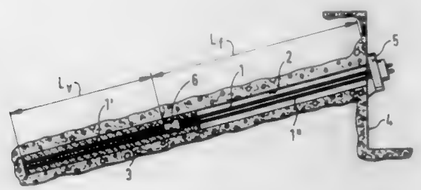
5,389,765

ARRANGEMENT FOR SEVERING THE TENSION MEMBER OF A SOIL ANCHOR AT A PREDETERMINED LOCATION BY INDUCTION HEATING

Toni Baer, Schwanden, Switzerland, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany

Filed Aug. 17, 1993, Ser. No. 108,080
Claims priority, application Switzerland, Aug. 17, 1992, 2555/92
Int. Cl.[6] H05B *6/10*
U.S. Cl. 219—635 **4 Claims**

1. An arrangement for severing a tension member of soil anchor of ferromagnetic material at a predetermined location forming a predetermined breaking point, the apparatus comprising a coil surrounding the tension member in a tubular manner at the predetermined breaking point and being mountable together with the tension member, a high temperature-resistant thermal insulating layer underneath the coil, a tubular core of electrically conducting, heat-resistant and ferromagnetic material, the tubular core being arranged between the



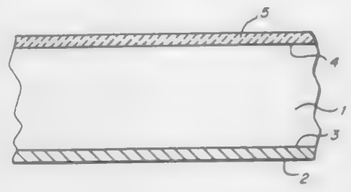
high temperature-resistant layer and the tension member, such that the coil forms a primary winding and the core forms a first secondary winding and the tension member forms a second secondary winding, and means for applying an electric current having a frequency of approximately 5 to 30 kHz and a voltage of approximately 500 to 800 V to the coil for reducing the tensile strength of the tension member at the predetermined breaking point by means of heat produced by induction resulting from the electric current.

5,389,767

MICROWAVE SUSCEPTOR ELEMENTS AND MATERIALS

Reuven Dobry, 87 Rolling Wood Dr., Stamford, Conn. 06905-2331

Filed Jan. 11, 1993, Ser. No. 2,154
Int. Cl.[6] H05B *6/80*
U.S. Cl. 219—730 **17 Claims**



1. Microwave susceptor elements comprising:

(a) a non-metallic, inorganic, ceramic substrate with at least part of its surface porous, roughly textured and liquid absorbent; and

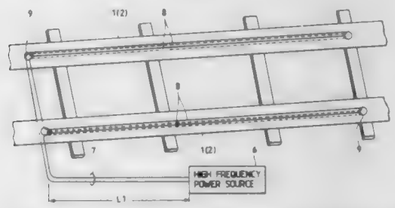
(b) a deposit of finely subdivided microwave responsive substance, laid down from a dispersion of said substance solely in a volatile liquid vehicle, the dried substance being held adherently on said part of the surface of said substrate without the aid of any adhesive, binding or protective agents.

5,389,766

RAIL SNOW-MELTING BY ELECTROMAGNETIC INDUCTION HEATING

Seiichi Takahashi; Ichiro Ideno, both of Tokyo; Kouji Awatani, and Hirotsune Kimura, both of Kawasaki, all of Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Nov. 26, 1993, Ser. No. 157,267
Claims priority, application Japan, Nov. 27, 1992, 4-317657
Int. Cl.[6] H05B *6/10*
U.S. Cl. 219—635 **7 Claims**



1. An apparatus of an electromagnetic induction heating type for melting snow from rails of a railroad track, comprising:

a power source;

an electrically conductive cable wound in at least one turn around a segment of a rail and through spaced through-holes formed in said rail, the segment of said rail being defined between two of said through-holes; and

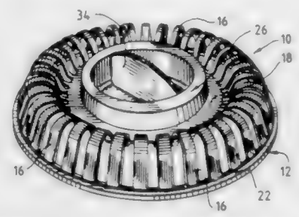
a lead wire interconnecting said power source and said conductive cable for supplying electric current from said power source to said conductive cable to heat the rail segment by electromagnetic induction and melt snow therefrom.

5,389,768

MICROWAVEABLE CHIP MAKER

Norton Sarnoff, Northbrook; Carl R. Fletcher, Kildeer; Laura A. Morris, Oak Park, and John F. Chmela, Mount Prospect, all of Ill., assignors to Ensar Corporation, Wheeling, Ill.

Filed Nov. 3, 1993, Ser. No. 147,116
Int. Cl.[6] H05B *6/80*
U.S. Cl. 219—732 **13 Claims**



1. A microwave oven resistant microwaveable chip maker formed of a plastic material, said chip maker comprising

a support rim for supporting said chip maker on a support surface,

a row of spacers formed with said rim and extending upwardly above said rim, each adjacent pair of said spacers defining a slot between them for receiving and holding a thin food item in a spaced relationship to each next adjacent food item, said slot being open at the top and opening below said rim to permit air flow and circulation therebetween and above and below said spacers,

said spacers merging with said rim so that said rim cooperates with said spacers to support and contain said food items, and

a finger grippable handle for lifting and transporting said chip maker.

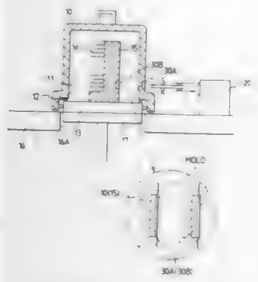
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5,389,769

ID RECOGNIZING SYSTEM IN SEMICONDUCTOR MANUFACTURING SYSTEM

Teppei Yamashita; Masanao Murata; Tsuyoshi Tanaka; Teruya Morita; Hitoshi Kawano; Atsushi Okuno; Masanori Tsuda, and Mitsuhiro Hayashi, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,976
Claims priority, application Japan, Mar. 27, 1992, 4-071378
Int. Cl.[6] G06F *15/46*
U.S. Cl. 235—375 **13 Claims**



1. An ID recognizing system in a semiconductor manufacturing system, comprising:

an IC module for transmitting/receiving a signal, said IC module being buried in a surface of a container and covered with a molded layer, wherein said container accommodates wafers and is conveyed from one device to another in said semiconductor manufacturing system, said IC module having a reloadable memory; and

a fixed station including means for exchanging radio communication packets with said IC module, said fixed station being fixedly set at a predetermined position in each of said devices,

wherein said IC module is powered by radio waves carry said communication packets and which are transmitted from said fixed station, and

wherein said communication packets contain a container ID code and data on one of said wafers, an amount of off-set of said data on said one of said wafers relative to said container ID code indicating a position of the wafer in-the container.

5,389,770

METHOD AND APPARATUS FOR DECODING UNRESOLVED BAR CODE PROFILES

H. Sprague Ackley, Seattle, Wash., assignor to Intermec Corporation, Everett, Wash.

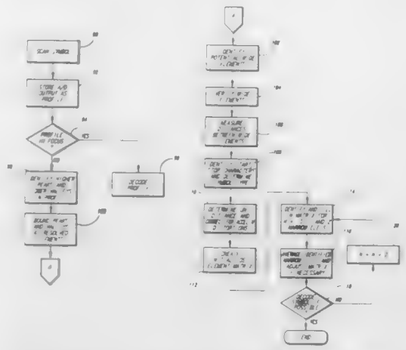
Filed Jan. 22, 1993, Ser. No. 8,769
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—462 **68 Claims**

1. Apparatus for decoding a machine readable symbol representing encoded information, the machine readable symbol including a plurality of relatively spaced two-dimensional geometric shapes, the geometric shapes and spaces therebetween having at least a narrow and a wide width in at least one dimension, comprising:

a sensor that receives light that is reflected from the machine readable symbol and produces an output signal therefrom;

a receiver that receives the output signal and produces a large shape signal indicative of the geometric shapes or spaces therebetween in the machine readable symbol having the wide widths in the one dimension, but failing to produce a signal indicative of other geometric shapes or spaces having the narrow widths; and

means for processing the large shape signal and producing a signal indicative of the information encoded in the machine readable symbol, the means for processing including means for identifying in the large shape signal the geometric shapes or spaces in the machine readable symbol having the wide widths in the one dimension, memos for measuring the distances between the centers of the identified widths or spaces, and memos for determining a number and location of the spaces or widths of the other geometric shades in the machine readable symbol based on the measured distances.

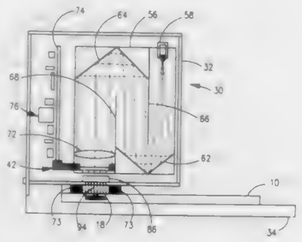


5,389,771

BARCODING

Pasquale J. Amendolia, P.O. Box 475, St. James, N.Y. 11780

Filed Dec. 7, 1993, Ser. No. 162,567
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—454 **11 Claims**



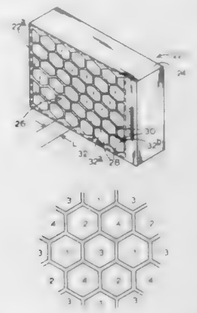
1. A subject identification system comprising cassette means for containing unexposed X-ray film for receiving X-ray irradiation passing through said subject, said cassette means having an open window through which subject identifying information may be transferred to said film, said open window being provided with a slidable door movable between a first position opening said window and a second position closing said window, base means for receiving said cassette means, means mounted on said base means for delivering subject identifying information to said film in said cassette means through said window when said slidable door is in its first position, said mounted means containing a source of light, means for rendering said light almost collimated, LCD means located in the path of said almost collimated light to project an image on said x-ray film, said LCD means upon energization producing subject identifying information in the form of a negative so that when said almost collimated light passes through said LCD means said subject identifying information appears on said film in a readable form after being developed.

5,389,772

TWO-DIMENSIONAL PLURAL CONTACT ARRAY FOR HEADING AN ID UNIT

Clarke W. McAllister, 2150 NW. 25th Pl., Corvallis, Oreg. 97330

Continuation of Ser. No. 700,215, May 13, 1991, Pat. No. 5,266,783. This application Aug. 17, 1993, Ser. No. 108,088
Int. Cl.[6] G06K *7/06*
U.S. Cl. 235—441 **1 Claim**



1. For use with a code-producing unit including dual spaced point contacts and being capable of producing a code in response to an interrogation signal pair impressed on the point contacts, a code reader comprising:

target contact means including spaced plural generally planar contacts regularly arrayed in two dimensions at least one of which is substantially greater than the space between the point contacts of the code-producing circuit, and

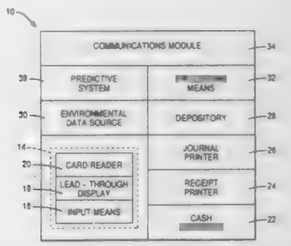
interrogation signal-producing means operative with said target contact means to produce an interrogation signal pair at adjacent ones of said planar contacts.

5,389,773

SELF-SERVICE SYSTEM HAVING TRANSACTION PREDICTIVE CAPABILITY AND METHOD OF USING

Michael G. Coutts; Alan F. Newell, and Ian W. Ricketts, all of Dundee, Scotland, assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 15, 1993, Ser. No. 151,648
Claims priority, application United Kingdom, Sep. 29, 1993, 9320072
Int. Cl.[6] G06F *15/30*
U.S. Cl. 235—379 **25 Claims**



1. A self-service system having the capability of predicting a type of transaction to be initiated by a customer, comprising:

a customer interface unit for initiating a selected type of self-service transaction;

controller means for controlling the operation of said system in response to the type of transaction initiated by said customer;

storage means for storing data relating to previous transactions of the system initiated by various customers;

input means for inputting transaction type data into said storage means;

prediction means coupled to said storage means for predicting the type of transaction to be initiated by a given customer; and

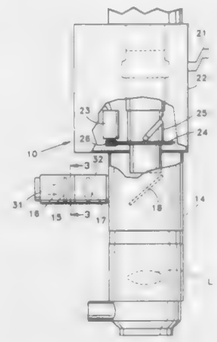
conditioning means controlled by said prediction means for conditioning said controller means to prepare said system for performing a certain type of transaction.

5,389,774

METHOD AND MEANS FOR CALIBRATING THE MAGNIFICATION OF ZOOM OPTICAL SYSTEMS USING RETICLE IMAGES

Boris Gelman, Fairport, and D. Scott Davis, Rochester, both of N.Y., assignors to Optical Gaging Products, Inc., Rochester, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,396
Int. Cl.[6] G01J *1/20*
U.S. Cl. 250—201.1 **13 Claims**



1. In an optical measuring system of the type in which the image of a workpiece which is to be measured is projected by an adjustable zoom lens assembly onto a video camera which via a central processing unit (CPU) is capable of recording and displaying an image of the workpiece on a video screen, the improvement comprising

a reticle mounted adjacent said zoom lens assembly,

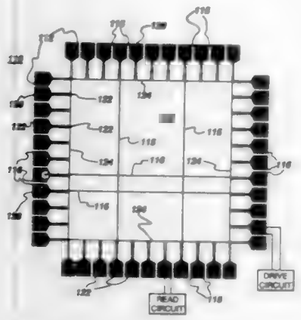
means operable upon adjustment of the zoom lens in said assembly to a given magnification to project an image of said reticle at said magnification, and via said zoom lens and video camera, to said CPU for electronic recording of said reticle image by said CPU.

means operable, when it is desired to reestablish said given magnification, to project a new image of said reticle via said zoom lens and camera to said CPU for comparison on said screen with the previously recorded image of said reticle, and

means operable during the comparison of said new image with said previously recorded image to adjust said zoom lens until said new image corresponds with said recorded image, whereby said given magnification is reestablished.

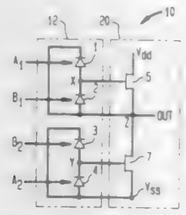
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5,389,775
IMAGER ASSEMBLY WITH MULTIPLE COMMON ELECTRODE CONTACTS
Robert F. Kwasnick, Schenectady, N.Y.; Scott W. Petrick, Pewaukee, and Lawrence R. Skrenes, Hartland, both of Wis., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 3, 1993, Ser. No. 161,030
Int. Cl.[6] H01L *27/14*
U.S. Cl. 250—208.1 **13 Claims**



1. An x-y-addressed solid state radiation imager assembly having at least one photosensor array, each photosensor array comprising:
a plurality of address lines, said plurality of address lines further comprising a plurality of scan lines and a plurality of data lines, said plurality of scan lines each being oriented substantially along a first axis of said imager and said plurality of data lines each being oriented substantially along a second axis of said imager assembly; and
a common electrode disposed over said photosensor array so as to be electrically insulated from said address lines, said common electrode extending substantially over the area of said photosensor array and having at least one edge corresponding to a lateral boundary of said imager assembly;
said at least one edge of said common electrode further comprising more than two electrical contact points disposed at selected intervals along the length of said edge.

5,389,776
FET-BASED OPTICAL RECEIVER
Ted K. Woodward, Lincroft, N.J., assignor to AT&T Corp., Murray Hill, N.J.
Filed Nov. 22, 1993, Ser. No. 156,137
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—214 LS **18 Claims**



1. A photo-receiver apparatus, comprising:
first and second detectors connected in series in a loop having a first node between them;
third and fourth detectors connected in series in a loop having a second node between them;
a first field-effect transistor having a gate input connected to the first node, a drain input connected to a preset drain voltage and a source input connected to a third node; and
a second field effect transistor having a gate input connected to the second node, a drain input connected to the third node and a source input connected to a preset source voltage;
wherein a first input signal beam is simultaneously detected by the first and fourth detectors and a second input signal beam is simultaneously detected by the second and third detectors to produce output signals at the third node.

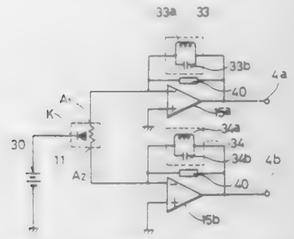
5,389,777
OPTICAL DISPLACEMENT SENSOR UTILIZING OPTICAL DIFFUSION AND REFLECTION
Philip K. Chin, 813 W. William David Pkwy., Metairie, La. 70005
Continuation-in-part of Ser. No. 955,932, Oct. 2, 1992. This application Jul. 30, 1993, Ser. No. 100,488
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—214 PR **51 Claims**



1. An optical displacement transducer, comprising:
a light emitting means for emitting a light flow comprising a light emitting housing having an internal chamber formed therein, a light source positioned inside the chamber, and a translucent face formed in a portion of the light emitting housing for channelling the light flow from the light emitting housing;
a light receiving means for receiving the light flow mounted opposite the light emitting housing, said light receiving means comprising a light receiving body having an internal chamber formed therein for retaining a light sensor, said light receiving body being provided with a translucent face in a portion thereof which is oriented in a substantially parallel relationship to the light emitting housing translucent face; and
a light blocking means for intermittently blocking the light flow between the light source and the light sensor and for varying the amount of light reaching the light sensor, said light blocking means comprising a flexible shadow rod having a first portion which moves between said light emitting housing and said light receiving body, and a second portion which is oriented at an angle to the first portion.

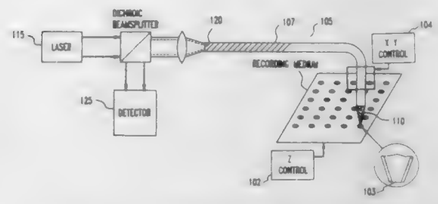
5,389,778
PHOTOELECTRIC CONVERSION CIRCUIT HAVING A TUNING CIRCUIT AND CHANGEOVER SWITCHES
Kohji Shinomiya, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 835,852, Feb. 18, 1992, Pat. No. 5,252,820. This application Jun. 17, 1993, Ser. No. 77,391
Claims priority, application Japan, Mar. 11, 1991, 3-72465; Apr. 26, 1991, 3-96603; Aug. 29, 1991, 3-218507; Oct. 14, 1991, 3-264661
Int. Cl.[6] H01J *40/14*; G01J *1/20*; G03B *3/00*
U.S. Cl. 250—214 R **18 Claims**

1. A photoelectric conversion circuit comprising:
first and second prescribed potentials;
a semiconductor position sensing device comprising first and second electrodes and a third electrode being connected to said first prescribed potential, for receiving incident light including signal light being modulated in intensity at a prescribed frequency, converting said incident light to first current and second current, and detecting position of said incident light by comparing said first current and said second current, wherein said first current flows between said first and third electrodes, and said second current flows between said second and third electrodes;
first and second resonators both electrically resonating with said prescribed frequency;



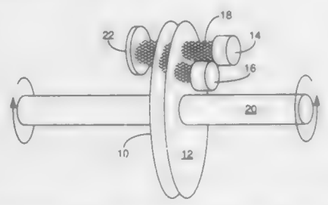
a first differential amplifier having an output end being connected to an end of said first resonator, an inverting input being connected to said first electrode and the other end of said first resonator in common, and a non-inverting input being connected to said second prescribed potential; and
a second differential amplifier having an output end being connected to an end of said second resonator, an inverting input being connected to said second electrode and the other end of said second resonator in common, and a non-inverting input being connected to said second prescribed potential.

5,389,779
METHOD AND APPARATUS FOR NEAR-FIELD, SCANNING, OPTICAL MICROSCOPY BY REFLECTIVE, OPTICAL FEEDBACK
Robert E. Betzig, Chatham; Igal M. Brener, Eatontown; Stephen G. Grubb, Warren, and David A. B. Miller, Fair Haven, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Jul. 29, 1993, Ser. No. 99,681
Int. Cl.[6] H01J *3/14*
U.S. Cl. 250—216 **22 Claims**



1. Apparatus for collecting information from a surface of a sample, comprising:
a) a light source that comprises a first optical cavity, and that further comprises an emissive face portion for emitting therethrough radiation from the first optical cavity;
b) means for situating the emissive face portion near the sample surface such that the optical cavity is reflectively coupled to a spot on the sample surface, relative to at least one wavelength λ of radiation emitted from the optical cavity;
c) means for scanning the spot over a portion of the sample surface; and
d) means for detecting changes in an output characteristic of the light source,
CHARACTERIZED IN THAT:
e) the emissive face portion has a maximum extent L in at least one dimension parallel to the sample surface that is less than λ; and
f) the situating means, in use, to situate the emissive face portion at a distance from the sample surface that is less than or approximately equal to L.

5,389,780
OPTICAL TORQUE SENSOR UTILIZING SINGLE POLARIZING AREA FILTERS AND MECHANICAL AMPLIFIER
Philip M. Anderson, 37 Winding Way, Madison, N.J. 07940
Continuation-in-part of Ser. No. 883,219, May 14, 1992, abandoned. This application Mar. 24, 1993, Ser. No. 36,427
Int. Cl.[6] G02F *1/01*
U.S. Cl. 250—225 **12 Claims**



1. An apparatus for measuring twist in a shaft under torsion, comprising:
(a) a light source for emitting light along a light path;
(b) a light detector for receiving said light;
(c) a first polarizing filter comprising a single polarizing area and having a first axis-of-polarization, attached at a first point along said shaft within said light path and between said light source and said light detector;
(d) a second polarizing filter comprising a single polarizing area and having a second axis-of-polarization, attached at a second point along said shaft within said light path and between said light source and said light detector, whereby said twist produces a change in angle between said first and said second axis-of-polarization, and said change in angle produces a change in intensity of said light received by said light detector: and
(e) a sleeve disposed over a length of said shaft and having a first and second end, said first end of said sleeve being fixed to said first polarizing filter and said second end of said sleeve being fixed to said shaft, so that said angle between said first and said second axis of polarization is equal to angular twist occurring between said second end of said sleeve and said second polarizing filter, said sleeve comprising a cylinder having a collar at each end thereof, and being slit in half for application to said shaft in-situ.

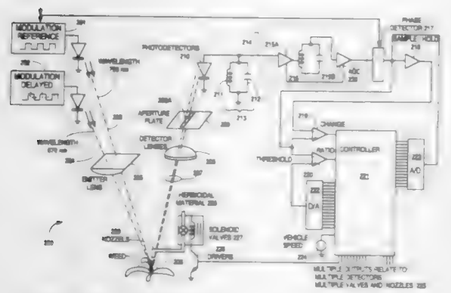
5,389,781
STRUCTURE AND METHOD USABLE FOR DIFFERENTIATING A PLANT FROM SOIL IN A FIELD
Jim Beck, Los Gatos, and Tom Vyse, Santa Clara, both of Calif., assignors to Patchen California, Los Gatos, Calif.
Continuation of Ser. No. 920,942, Jul. 28, 1992, Pat. No. 5,296,702. This application Nov. 10, 1993, Ser. No. 149,867
Int. Cl.[6] G01J *3/50*
U.S. Cl. 250—226 **11 Claims**

1. Structure comprising:
a first light emitting diode providing light of a first wavelength, said light of said first wavelength being modulated with a first modulation signal, said light of said first wavelength being incident on an area of a surface, said surface being substantially stationary;
a second light emitting diode providing light of a second wavelength, said light of said second wavelength being

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modulated with a second modulation signal, said second modulation signal being phase shifted with respect to said first modulation signal, said light of said second wavelength being incident on said area of said substantially stationary surface;

a light detector detecting a portion of said light of said first wavelength and a portion of said light of said second wavelength reflecting from said area of said surface, said light detector having an output lead;



a circuit having an input lead and an output lead, said input lead of said circuit being coupled to said output lead of said light detector;

an electro-mechanical device coupled to said output lead of said circuit and controlled by said circuit; and

means for moving said first light emitting diode, said second light emitting diode, said light detector, said circuit, and said electro-mechanical device over said area of said surface.

5,389,782

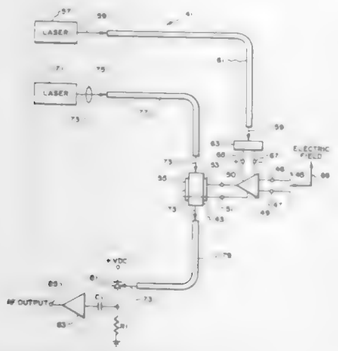
OPTICALLY POWERED AMPLIFIER USED BY AN ELECTROMAGNETIC FIELD SENSOR TO AMPLIFY AN ELECTRICAL SIGNAL FROM AN ANTENNA

Donald P. Hilliard, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1994, Ser. No. 242,488

Int. Cl.[6] H01J *5/16;* **G01R** *31/00;* **H01Q** *15/00*

U.S. Cl. 250—227.17 **9 Claims**



1. An electromagnetic field sensor apparatus for measuring the intensity of planar electromagnetic waves comprising:

an electro-optic modulator having first surface and second surfaces intersecting a first optical path, a third surface having a first electrode attached thereto and a fourth surface having a second electrode attached thereto;

a first light source located along said first optical path for transmitting monochromatic light into said electro-optic modulator through the first surface of said electro-optic modulator;

a polarizer positioned along said first optical path below said first light source for polarizing the monochromatic light transmitted from said first light source into said electro-optic modulator;

a first optical fiber positioned along said first optical path between said polarizer and said electro-optic modulator for maintaining polarization of the monochromatic light transmitted from said first light source into said electro-optic modulator;

an antenna having an output for intercepting said planar electromagnetic waves and converting said planar electromagnetic waves intercepted to a voltage signal to be applied to the output of said antenna;

a microwave amplifier having an input coupled to the output of said antenna for receiving said voltage signal and amplifying said voltage signal by a factor of at least one hundred;

said microwave amplifier having a first output electrode connected to the first electrode of said electro-optic modulator and a second output electrode connected to the second electrode of said electro-optic modulator;

said electro-optic modulator modulating the monochromatic light entering said electro-optic modulator as the monochromatic light traverses said electro-optic modulator with said amplified voltage signal impressed upon said first and second surfaces of said electro-optic modulator;

a detector located along said first optical path downstream from said electro-optic modulator for detecting the modulated monochromatic light along said first optical path as the modulated monochromatic light exist from said electro-optic modulator whereby weak planar electromagnetic fields may be detected in free space with a negligible perturbation;

a second light source located along a second optical path for transmitting monochromatic light along said optical path; and

a photovoltaic cell located along said second optical path, said photovoltaic cell having a positive terminal and a negative terminal;

said microwave amplifier having a positive terminal connected to the positive terminal of said photovoltaic cell and a negative terminal connected to the negative terminal of said photovoltaic cell;

said photovoltaic cell receiving the monochromatic light transmitted along said second optical path, converting it to a DC bias voltage and providing said DC bias voltage to said microwave amplifier via the positive and negative terminals of said microwave amplifier.

5,389,783

CONFOCAL LASER SCANNING MICROSCOPE WITH DUAL MODE WAVEGUIDE

Takashi Shionoya, Tokyo; Jun Iwasaki, and Hiroshi Ohki, both of Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 9, 1993, Ser. No. 73,712

Claims priority, application Japan, Jun. 18, 1992, 4-159722

Int. Cl.[6] H01J *3/14*

U.S. Cl. 250—234 **10 Claims**

1. A confocal laser scanning differential interference microscope comprising:

an illumination optical system for radiating a laser light spot onto an object;

a focusing optical system for focusing light reflected by the object onto a detection surface;

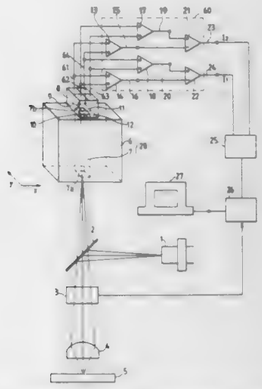
a detection optical system for detecting the reflected light focused on the detection surface;

scanning means for scanning the laser light spot relative to the object; and

an optical element arranged between said focusing optical system and said detection optical system, and having waveguide means for propagating the reflected light focused by said focusing optical system,

wherein said waveguide means has waveguides in at least two directions perpendicular to an optical axis of incident light,

said waveguides constitute a double-mode transmission waveguide, which selects either of a combination of a 0th-order mode and a 1st-order mode and the 0th-order mode alone in each of the two directions of the reflected light from the object according to amplitude distributions



of electric fields in the two directions of the incident light as waveguide modes in the two directions upon propagation of the incident light, and propagates light in the selected modes, and

said detection optical system receives light emerging from said waveguide, and detects whether the waveguide in each of the two directions is the combination of the 0th-order mode and the 1st-order mode, or the 0th-order mode alone, thereby detecting amplitude distributions of the electric fields, in the two directions, of the reflected light from the object.

5,389,784

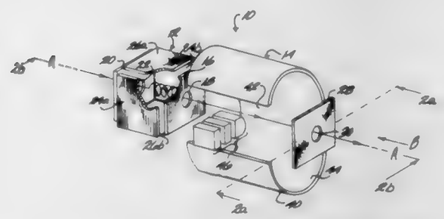
ION CYCLOTRON RESONANCE CELL

Robert R. Weller, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 24, 1993, Ser. No. 64,887

Int. Cl.[6] H01J *49/20*

U.S. Cl. 250—291 **20 Claims**



1. An ion cyclotron resonance cell for analyzing a beam of ions, said cell comprising:

a plurality of electrode plates defining a first volume, said plurality of electrode plates including a pair of opposing trapping plates, said pair of opposing trapping plates each having a hole formed therein through which said beam of ions can move;

an end trapping plate spaced apart from one trapping plate of said pair of trapping plates thereby defining a second volume therebetween and into which said ion beam moves;

means in spaced relation to said second volume for causing said ion beam to fluoresce whereby said ion beam gives off light;

means in spaced relation to said second volume for collecting at least a portion of said light, said collecting means surrounding said second volume; and

means in operating connection with said collecting means for analyzing said at least a portion of said light.

5,389,785

APPARATUS AND METHOD OF PRODUCTION THEREOF

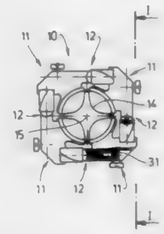
Urs Steiner, Sunnyvale; Nigel P. Gore, San José, both of Calif., and Helmut Rother, Osterholz-Scharmbeck, Germany, assignors to Finnigan Corporation (a Virginia corporation), San Jose, Calif.

Filed Apr. 28, 1993, Ser. No. 54,523

Claims priority, application European Pat. Off., May 26, 1992, 92108815

Int. Cl.[6] B01D *59/44;* **H01J** *49/00*

U.S. Cl. 250—292 **18 Claims**



1. An ion filter for a mass spectrometer or mass analyzer, comprising:

a longitudinally divided assembly having a longitudinal axis along the center of the longitudinally divided assembly including a plurality of elongated rod assemblies; and

each rod assembly including:

a longitudinally elongated and cross-sectionally curved rod surface, the rod surface directed towards the longitudinal axis along an imaginary processing line normal to the apex of the rod surface, and

abutment surfaces configured to be aligned with corresponding abutment surfaces of adjacent rod assemblies, wherein the rod surface and the abutment surfaces of each rod assembly are disposed such that no undercut on any arbitrarily selected region of the rod surface and the abutment surfaces is visible from a direction parallel to the processing line.

5,389,786

METHOD OF QUANTITATIVE DETERMINATION OF DEFECT CONCENTRATION ON SURFACES

Noriaki Itoh, Nagoya; Yasuo Nakai, Kani; Ken Hattori, Tokyo, and Akiko Okano, Toyota, all of Japan, assignors to President of Nagoya University, Nagoya, Japan

Filed Apr. 15, 1993, Ser. No. 46,758

Claims priority, application Japan, Oct. 6, 1992, 4-267469

Int. Cl.[6] G01N *21/00*

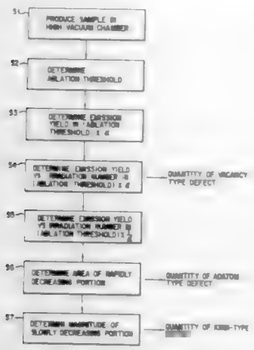
U.S. Cl. 250—307 **3 Claims**

1. A method of quantitative determination of defect concentration on surfaces, comprising the steps of:

determining an ablation threshold of a laser fluence with respect to a surface of a sample, manufactured in a high vacuum chamber; and

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determining a quantity of vacancy-type defects by radiating a laser beam having a fluence slightly higher than the ablation threshold on the surface and measuring a first emission yield Y_1, corresponding to the quantity of vacancy-type defects, and determining respective quantities of adatom-type and kink-type defects by radiating a pulsed laser beam having a fluence slightly lower than the ablation threshold on the surface of the sample repeatedly to obtain a graph plotting the relationship between a second



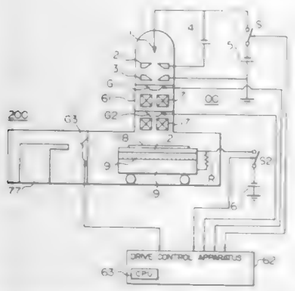
emission yield Y_2, corresponding to the quantities of adatom-type and kink-type defects, and the number of laser pulses, the quantity of the adatom-type defects being obtained by determining an area under a first portion of the graph, and the quantity of kink-type defects being obtained by determining a magnitude of the second emission yield Y_2 of a second portion of the graph, the first portion having a steeper negative slope than the second portion.

5,389,787

SCANNING ELECTRON MICROSCOPE

Hideo Todokoro, Tokyo, and Tadashi Otaka, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 137,976
Claims priority, application Japan, Oct. 20, 1992, 4-306205
Int. Cl.[6] H01J *31/256*
U.S. Cl. 250—310 12 Claims



1. A scanning electron microscope wherein primary electron beams emitted from an electron source are scanned on a sample, and a scanning image is obtained from a detection signal produced by secondary particles generated from the sample, comprising:

secondary particle detecting means for detecting the secondary particles generated from a surface of the sample on the side of the electron source separated from an objective lens;

means for producing a retarding static field with respect to the primary electron beams between the sample and the objective lens by applying a negative voltage to the sample; and

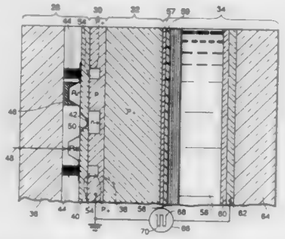
means for controlling an application of the negative voltage to the sample in conjunction with a preparation operation for mounting and replacing the sample.

5,389,788

INFRARED TRANSDUCER AND GOGGLES INCORPORATING THE SAME

Jan Grinberg, Los Angeles, Calif.; Raymond Balcerak, Alexandria, Va.; Chiung-Sheng Wu; Uzi Efron, both of Los Angeles, Calif., and Paul O. Braatz, Calabasas, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif. and United States of America, Washington, D.C.

Filed Dec. 13, 1993, Ser. No. 166,790
Int. Cl.[6] G02F *1/136*
U.S. Cl. 250—331 42 Claims



1. An infrared (IR) radiation transducer, comprising:

an IR detector,

a liquid crystal (LC) readout section, and

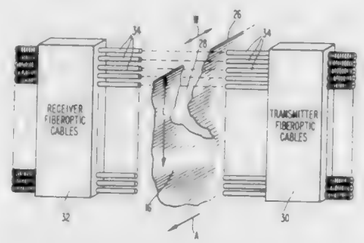
a modulating structure interfacing between said IR detector and said LC readout section to modulate the LC readout in accordance with detected IR.

5,389,789

PORTABLE EDGE CRACK DETECTOR FOR DETECTING SIZE AND SHAPE OF A CRACK AND A PORTABLE EDGE DETECTOR

Donald D. Nguyen, Lawrenceville, N.J., assignor to Union Camp Corporation, Princeton, N.J.

Filed May 20, 1992, Ser. No. 886,053
Int. Cl.[6] G01N *21/89, 21/86*
U.S. Cl. 250—341.1 27 Claims



1. A detector for detecting cracks on an edge of a continuous moving web, each crack having a width in a moving direction of said moving web and a length in a direction crosswise to said moving direction, said detector comprising:

light source means for directing a plurality of beams of light toward said edge;

light sensor means for detecting said plurality of beams of light, said light sensor means generating a plurality of detection signals dependent on respective widths of a crack at respective distances from said edge; and

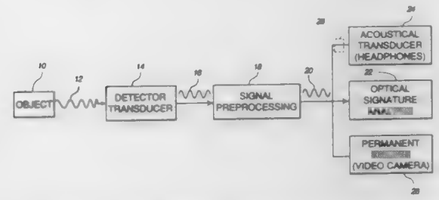
signal processing means responsive to said detection signals for determining the shape and said width and length of said crack.

5,389,790

TECHNIQUE FOR DETECTING AND IDENTIFYING CERTAIN OBJECTS

Richard C. Honey, San Mateo, and Robert A. Brown, Redwood City, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Feb. 15, 1991, Ser. No. 656,766
Int. Cl.[6] G06K *9/46*
U.S. Cl. 250—342 19 Claims



1. A method of identifying a particular object from which electromagnetic radiation is emitted and/or reflected at an intensity that fluctuates in accordance with a frequency pattern unique to that object, said method comprising the steps of:

(a) detecting electromagnetic radiation that is emitted and/or reflected from an object during normal operation and is not provided as a special identification signal transmitted for the purpose of identifying the object;

(b) converting said detected radiation to an electric signal having the same unique frequency pattern as the electromagnetic radiation itself, the frequency pattern of said electrical signal serving as an identifying signature of said object; and

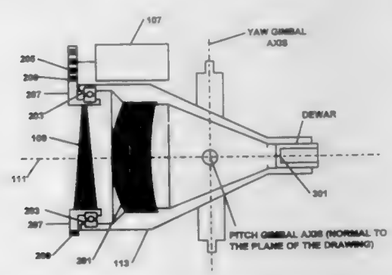
(c) using said electrical signal to identify said object.

5,389,791

DEVICE FOR ENHANCING FIELD OF VIEW AND REDUCING IMAGE SMEAR IN A MISSILE SEEKER

Ronald C. Passmore, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 31, 1994, Ser. No. 189,390
Int. Cl.[6] H04N *3/06*; G01J *5/08*
U.S. Cl. 250—347 4 Claims



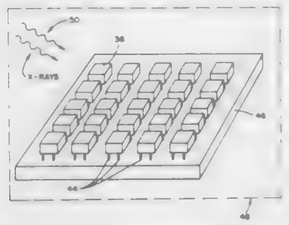
1. In a rate-stabilized infrared seeker having a circulatable sensor for producing a primary scan vector, the sensor also having objective optics and gimbals for circulating the sensor; an improvement for increasing the sensor's field of view and concurrently decreasing the image smear, said improvement comprising: an optical wedge, and a means for rotating said wedge to produce a secondary scan vector, said wedge being juxtaposed to the objective optics such that the line of sight of the sensor passes through the geometrical center of said wedge and said secondary scan vector combines with the primary scan vector to produce a wider scan pattern having at least one point of low scan velocity.

5,389,792

ELECTRON MICROPROBE UTILIZING THERMAL DETECTOR ARRAYS

Don DiMarzio, Northport, and Larry Lesyna, Plainview, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jan. 4, 1993, Ser. No. 126
Int. Cl.[6] G01T *1/36*; H01L *31/115, 31/0296*
U.S. Cl. 250—370.06 2 Claims



1. An energy dispersive X-ray detector positioned in proximity to a material sample subjected to an atomically exciting probe, fluorescent X-rays emitted from the elements in the sample, the detector comprising:

a thin film layer of X-ray absorbent polycrystalline HgTe;

a water of electronic grade silicon to which the X-ray absorbent layer is bonded, an interface of the wafer, bonded to the absorbent material, being free of ion implantation;

an outward layer of the silicon wafer, opposite the interface, having preselected amounts of phosphorous and boron implanted therein thereby serving as a thermistor layer;

bump bond contacts extending from spaced points of the thermistor layer to allow electrical and thermal feedthrough to a connected readout wafer;

a cryogenic system to keep the detector at a temperature below the superconducting transition temperature of indium;

wherein the X-ray absorbent layer converts impinging X-rays to heat which passes through the wafer to the thermistor layer tier the corresponding changes of electrical impedance thereof.

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APPARATUS AND METHODS FOR ION IMPLANTATION

Derek Aitken, Dorking; Frederick J. L. Robinson, Crawley, and Michael T. Wauk, II, Haywards Heath, all of England, assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 60,685, May 12, 1993, abandoned, which is a continuation of Ser. No. 698,371, May 9, 1991, which is a continuation of Ser. No. 504,048, Apr. 3, 1990, abandoned, which is a continuation of Ser. No. 383,289, Jul. 18, 1989, abandoned, which is a continuation of Ser. No. 180,727, Apr. 6, 1988, abandoned, which is a continuation of Ser. No. 85,285, Aug. 12, 1987, abandoned, which is a continuation of Ser. No. 844,002, Mar. 25, 1986, abandoned, which is a continuation-in-part of Ser. No. 641,027, Aug. 15, 1984, Pat. No. 4,578,589, which is a continuation-in-part of Ser. No. 523,463, Aug. 15, 1983, abandoned. This application Apr. 5, 1994, Ser. No. 223,384

The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.

Int. Cl.[6] H01J *37/317*

U.S. Cl. 250—492.21 20 Claims



1. A system for implanting ions of a preselected chemical species into a plurality of semiconductor wafers, comprising:

source means for producing an ion beam, including ions of said preselected chemical species at or above said preselected beam current level;

beam analyzing means for receiving said ion beam and selectively separating various ion species in said beam on the basis of mass to produce an analyzed beam exiting said analyzing means;

beam resolving means disposed in the path of said analyzed beam for permitting ions of said preselected chemical species to pass therethrough;

beam accelerating means for accelerating said ions in said resolved beam in a prearranged direction defining one coordinate axis of a rectangular coordinate system;

wafer scanning means for scanning a plurality of wafers through said accelerated ion beam;

said analyzing means having an ion dispersion plane associated therewith; said source means having an associated ion emitting envelope including an area of substantial extension in a plane parallel to said ion dispersion plane and producing an ion beam characterized by a beam envelope which retains an area of substantial extension in a plane parallel to said ion dispersion plane throughout the region between said source and said analyzing means and by ions entering said analyzing means travelling substantially either toward or from a common apparent line object perpendicular to said ion dispersion plane; and

said wafer scanning means comprising a scan wheel assembly for carrying a plurality of semiconductor wafers and having a central axis; drive means for rotating said scan wheel assembly about said central axis to scan said wafers across said ion beam in one coordinate direction; scan means for producing relative scanning movement between said scan wheel assembly and said ion beam in another coordinate direction; said scan wheel assembly comprising a central hub, a plurality of separate spoke arms mounted to said central hub and extending radially outward therefrom; and a plurality of heat sink elements, each formed on the outer end of one of said spoke arms and including means for mounting a semiconductor wafer thereon, said spoke arms each having a width substantially less than the maximum width of said heat sink elements; said scan means overscanning said heat sink elements in and out of said ion beam so that said ion beam strikes only a portion of said spoke arms in one overscan position thereby reducing the total heat load produced on said scan wheel assembly by said ion beam.

5,389,794

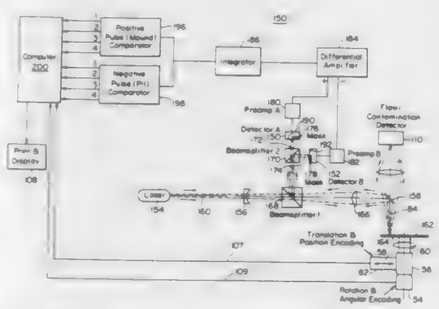
SURFACE PIT AND MOUND DETECTION AND DISCRIMINATION SYSTEM AND METHOD

Nicholas C. Allen, Bedford; Sergey V. Broude, Newton Centre, both of Mass.; Eric T. Chase, Nashua, N.H.; Pascal Miller, North Chelmsford, Mass.; Jay L. Ormsby, Salem, N.H.; Bruno Rostaing, Medford, and Lloyd P. Quackenbos, Newburyport, both of Mass., assignors to QC Optics, Inc., Burlington, Mass.

Filed Nov. 25, 1992, Ser. No. 981,745

Int. Cl.[6] G01N *21/88*

U.S. Cl. 250—572 20 Claims



1. A surface defect pit and mound detection and discrimination system comprising:

means for scanning a beam of radiation over a surface;

means for separately sensing radiation scattered from the surface in the near-specular region and in the far specular region for differentiating between pits and mounds and other types of defects;

means for detecting a local slope on the surface from radiation scattered from the surface in the near-specular region; and

means, responsive to said means for detecting, for differentiating between whether said beam of radiation is scanning a pit or a mound.

5,389,795

METHOD AND APPARATUS FOR DIRECTING AIR AND OPTICAL SIGNALS TO DETECT EDGE CRACKS AND OTHER ABSENCES OF PRODUCT

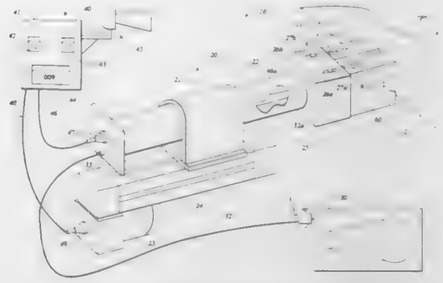
Timothy W. Rye, 1109 Tom La., Marietta, Ga. 30066

Continuation-in-part of Ser. No. 945,279, Sep. 15, 1992, Pat. No. 5,260,583, which is a continuation of Ser. No. 654,204, Feb. 11, 1991, Pat. No. 5,166,536. This application May 24, 1993, Ser. No. 65,950

The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.

Int. Cl.[6] G01N *21/88*

U.S. Cl. 250—572 49 Claims



1. A method of detecting openings in a product, said method comprising the steps of:

directing air onto a product to deflect the product, including the steps of directing a first stream of air in a first direction to contact a first surface of the product, and directing a second stream of air in a second direction to contact a second surface of the product; and

detecting, through an optical device, openings in the product, including openings defined by product deflected by air directed onto the product.

5,389,796

VACUUM TRANSISTOR HAVING AN OPTICAL GATE

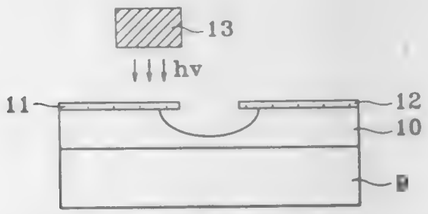
Sung-Weon Kang, and Jin-Yeong Kang, both of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Rep. of Korea

Filed Dec. 22, 1993, Ser. No. 171,408

Claims priority, application Rep. of Korea, Dec. 22, 1992, 92-25030

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—10 3 Claims



1. A vacuum transistor having an optical gate, in which an optical signal is radiated from the optical gate, the transistor comprising

a silicon substrate;

an insulating layer deposited on said silicon substrate, the insulating layer having a recess portion formed by an etching method;

an optical source for radiating the optical signal and serving as said optical gate;

two electrodes formed on said insulating layer and separated from each other under a vacuum or an atmosphere, one of which receives the optical signal and is an electron emitting electrode for emitting electrons, and the other of which is an electron collecting electrode for collecting the electrons emitted from said electron emitting electrode;

said electron emitting electrode formed beneath said optical source under a vacuum or an atmosphere and connected to ground; and

said electron collecting electrode connected to a power source, wherein an amount of current flowing in said electron collecting electrode is adjusted by an intensity of the optical signal from said optical source.

5,389,797

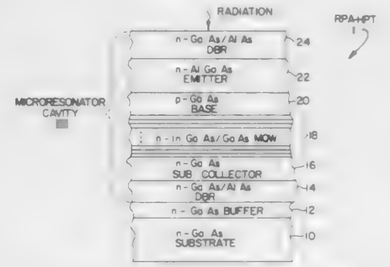
PHOTODETECTOR WITH ABSORBING REGION HAVING RESONANT PERIODIC ABSORPTION BETWEEN REFLECTORS

Robert P. Bryan; Gregory R. Olbright, both of Boulder, Colo.; Thomas M. Brennan, and Jeffrey Y. Tsao, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Department of Energy, Washington, D.C.

Filed Feb. 24, 1993, Ser. No. 943,823

Int. Cl.[6] H01L *31/04, 29/205*

U.S. Cl. 257—21 29 Claims



1. A photodetector responsive to a wavelength or wavelengths of interest, comprising:

(a) a resonant cavity structure, said resonant cavity structure bounded by first and second reflector means, said resonant cavity structure being resonant at the wavelength or wavelengths of interest for containing a plurality of standing waves; and

(b) a photodetector disposed within said resonant cavity structure, said photodetector having a radiation absorbing region comprising a plurality of quantum wells, said quantum wells spaced apart from one another by a distance substantially equal to a distance between antinodes of the standing waves, each of said quantum wells further being spatially positioned at a location of one of the antinodes of one of the standing waves such that radiation absorption is enhanced through resonant periodic absorption.

5,389,798

HIGH-SPEED SEMICONDUCTOR DEVICE WITH GRADED COLLECTOR BARRIER

Seiji Ochi, and Hirotaka Kizuki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,275

Claims priority, application Japan, Oct. 2, 1991, 3-255118; Jul. 21, 1992, 4-217251

Int. Cl.[6] H01L *29/205, 29/72*

U.S. Cl. 257—25 4 Claims

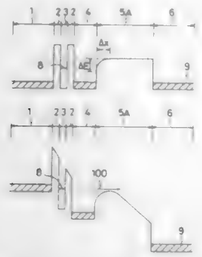
1. A high-speed semiconductor device comprising:

an emitter layer, a base layer, and a collector layer succes-

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sively disposed, said emitter layer serving as an injection source of hot electrons; and

a collector barrier layer disposed between said base layer



and said collector layer, said collector barrier layer having a band gap energy and a graded composition so that the band gap energy gradually decreases adjacent said base layer and adjacent said collector layer.

5,389,799

SEMICONDUCTOR DEVICE

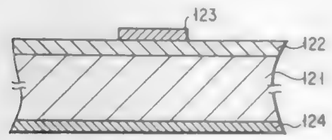
Tsutomu Uemoto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 11, 1993, Ser. No. 74,541

Claims priority, application Japan, Jun. 12, 1992, 4-152577; Aug. 7, 1992, 4-211082; Mar. 15, 1993, 5-53459

Int. Cl.[6] H01L *29/48, 23/48, 29/161, 29/167*

U.S. Cl. 257—77 **15 Claims**



1. A semiconductor device, comprising a first semiconductor layer of a first conductivity type, said first semiconductor layer containing carbon as a constituent element; and a second semiconductor layer of a second conductivity type, said second semiconductor layer being formed on the first semiconductor layer and containing carbon as a constituent element; wherein Cr is doped in at least one of the first and second semiconductor layers.

5,389,800

SEMICONDUCTOR LIGHT-EMITTING DEVICE

Kazuhiko Itaya, Goleta, Calif., and Genichi Hatakoshi, Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 29, 1993, Ser. No. 128,113

Claims priority, application Japan, Sep. 29, 1992, 4-259634

Int. Cl.[6] H01L *29/161, 29/205, 33/00*

U.S. Cl. 257—94 **16 Claims**

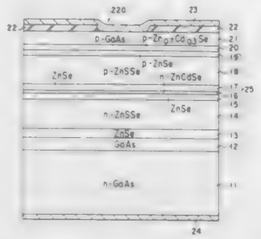
1. A semiconductor light-emitting device comprising:

a light-emitting region having a first semiconductor layer, formed on a main surface of one side of a semiconductor substrate, an upper-most layer of said light-emitting region made of a compound semiconductor containing elements from the group II and group VI of the periodic table;

a second semiconductor layer formed on said light-emitting region, and made of a material having a lattice constant different from that of the material of said semiconductor substrate by at least 2%, said second semiconductor layer having a film thickness not greater than a critical film thickness;

a first electrode formed on a main surface of the other side of said semiconductor substrate; and

a second electrode formed above said second semiconductor layer;



wherein said second semiconductor layer is made of a compound semiconductor containing elements from the group II and group VI of the periodic table, to which a compressive strain is applied.

5,389,801

SEMICONDUCTOR DEVICE HAVING INCREASED CURRENT CAPACITY

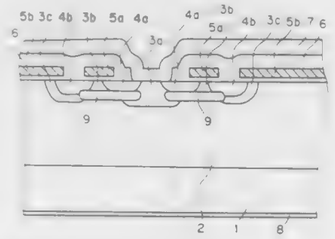
Tomohide Terashima, and Gourab Majumdar, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 972,290

Claims priority, application Japan, Mar. 16, 1992, 4-057850

Int. Cl.[6] H01L *29/74, 31/111, 23/58, 27/01*

U.S. Cl. 257—139 **16 Claims**



1. A semiconductor device comprising:

a first semiconductor layer of a first conductivity type having upper and lower major surfaces;

a second semiconductor layer of a second conductivity type formed on said upper major surface of said first semiconductor layer and having first through fourth regions successively located in a first direction orthogonal to a thicknesswise direction of said first semiconductor layer;

a buried insulating film selectively buried in said second semiconductor layer, extending from at least a first end of said first region to said second region;

a first control electrode selectively formed in said second region above said second semiconductor layer;

a second control electrode selectively formed in said fourth region above said second semiconductor layer;

a third semiconductor layer of the first conductivity type formed in an upper major surface of said second semiconductor layer, located at first, second and third regions and a first end of said fourth region;

a fourth semiconductor layer of the second conductivity type contiguous to said buried insulating film in said third semiconductor layer, extending from a first end of said second region to at least part of said first end of said first region;

a fifth semiconductor layer of the second conductivity type contiguous to said buried insulating film in said third semiconductor layer, extending from a second end of said second region isolated from said first end of said second region through said third region to part of said first end of said fourth region;

a first current electrode insulated from said first control electrode and connected to said third and fourth semiconductor layers in said first region; and

a second current electrode connected to said lower major surface of said first semiconductor layer.

5,389,802

HETEROJUNCTION FIELD EFFECT TRANSISTOR (HJFET) HAVING AN IMPROVED FREQUENCY CHARACTERISTIC

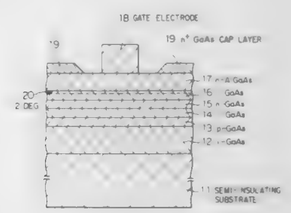
Yasuo Ohno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 170,868

Claims priority, application Japan, Dec. 21, 1992, 4-340062

Int. Cl.[6] H01L *31/072, 31/109, 31/0328*

U.S. Cl. 257—194 **3 Claims**



1. A heterojunction field effect transistor of a first conductive type comprising:

a substrate having a principal surface;

a buffer region deposited on the principal surface of said substrate, said buffer region comprising a first impurity-doped layer of a second conductive type, an undoped layer laid on said first impurity-doped layer, and a second impurity-doped layer of the first conductive type laid on said undoped layer, said first impurity-doped layer of the second conductive type having substantially the same impurity concentration per unit area as said second impurity-doped layer of the first conductive type, carriers of the second conductive type being depleted in the whole of said buffer region at thermal equilibrium;

a channel layer deposited on a top surface of said buffer region; and

a carrier supplying layer deposited on a top surface of said channel layer.

5,389,803

HIGH-GAIN SI/SIGE MIS HETEROJUNCTION BIPOLAR TRANSISTORS

S. Noor Mohammad, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1993, Ser. No. 38,372

Int. Cl.[6] H01L *31/072, 31/109, 27/082, 31/117*

U.S. Cl. 257—197 **9 Claims**

1. A MIS transistor comprising:

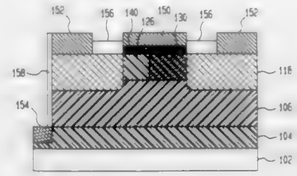
an isolating substrate;

a collector layer of a first conduction type and of a first semiconductor material on said substrate;

a base layer of said first semiconductor material on said collector layer, said base layer of a second conduction type;

a thin oxide layer on said base layer;

a plug of a second semiconductor material forming a discrete area in said base layer,



said plug and a portion of said base layer of said first semiconductor material formed on and extending from said collector layer to said thin oxide layer; and

a low work function metal on said thin oxide layer.

5,389,804

RESONANT-TUNNELING HETEROJUNCTION BIPOLAR TRANSISTOR DEVICE

Naoki Yokoyama, and Kenichi Imamura, both of Atsugi, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

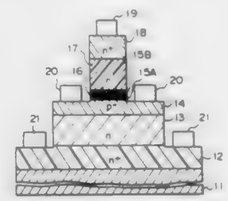
Continuation of Ser. No. 909,664, Jul. 7, 1992, abandoned, which is a division of Ser. No. 659,162, Feb. 22, 1991, Pat. No. 5,151,618, which is a division of Ser. No. 601,011, Oct. 22, 1990, Pat. No. 5,027,179, which is a continuation of Ser. No. 293,568, Jan. 4, 1989, abandoned, which is a continuation of Ser. No. 937,615, Dec. 3, 1986, abandoned. This application Nov. 8, 1993, Ser. No. 148,402

Claims priority, application Japan, Dec. 3, 1985, 60-270803

The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.

Int. Cl.[6] H01L *29/73, 27/082*

U.S. Cl. 257—197 **1 Claim**



1. A resonant-tunneling heterojunction transistor device comprising:

an emitter layer;

a collector layer;

a base layer located between the said emitter and collector layers; and

a superlattice structure located in said emitter layer for providing at least one quantum well in which there is a resonant-state energy level (Ex);

said base layer formed of a semiconductor material having a first conductivity type and said emitter layer formed of a semiconductor material having a second conductivity type opposite said first conductivity type,

the lowest energy level (Ec) of a conduction band of at least one side of said superlattice structure being one of a level higher than, equal to, and lower than said resonant-state energy level (Ex), depending upon a magnitude of a bias voltage applied between said emitter and base layers,

said collector layer formed of semiconductor material of the second conductivity type, and said base layer and said collector layer having a common interface forming a PN junction therebetween.

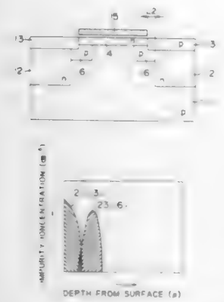
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5,389,805

SOLID-STATE IMAGE SENSING DEVICE

Kenichi Arakawa, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 29, 1994, Ser. No. 219,836
Claims priority, application Japan, Mar. 30, 1993, 5-072270
Int. Cl.[6] H01L *29/796, 27/14, 31/00*
U.S. Cl. 257—222 **6 Claims**



1. A solid-state image sensing device, comprising:
a charge storage layer formed in the vicinity of a surface of a semiconductor substrate, for transferring light allowed to be incident thereupon into an electric signal photoelectrically and further storing the transferred electric signal as a signal charge temporarily;
a transfer channel formed on the surface of the semiconductor substrate, for transferring the signal charge stored in said charge storing layer;
a depletion prevention layer formed on the surface of the semiconductor substrate and on said charge storage layer, for preventing an interface of said charge storage layer from being depleted; and
a barrier layer formed at a position deeper than said transfer channel, for preventing punch through from being generated between said charge storage layer and said transfer channel, said barrier layer being located locally at such a position that a maximum impurity concentration of said barrier layer is located at a position deeper than said depletion prevention layer.

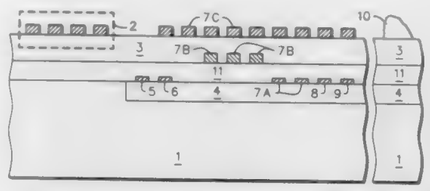
5,389,806

APPARATUS FOR REDUCING HETEROSTRUCTURE ACOUSTIC CHARGE TRANSPORT DEVICE SAW DRIVE POWER REQUIREMENTS

Fred S. Hickernell, Phoenix; Frederick Y.-T. Cho, Scottsdale, and Frederick M. Fliegel, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 836,165, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 577,180, Sep. 4, 1990, abandoned. This application Dec. 2, 1992, Ser. No. 985,059
Int. Cl.[6] H01L *29/796*
U.S. Cl. 257—239 **2 Claims**

1. A heterostructure acoustic charge transport (HACT) device comprising:
a semiconductor substrate including:
a surface;
a source of electric charge;
acoustic wave means coupled to said semiconductor substrate, said acoustic wave means operating in response to an applied voltage source to provide an acoustic wave to transport said electric charge, said acoustic wave means including an interdigital metallic wave transducer disposed along said semiconductor substrate;
a HACT channel disposed along said surface of said semiconductor substrate, said HACT channel including heteroepitaxial semiconductor layers for transporting said electric charge in response to said acoustic wave means in a particular direction; and
piezoelectric means disposed over said HACT channel, said piezoelectric means facilitating transportation of said electric charge in said particular direction of said HACT channel for reducing power consumption by said HACT device, wherein said HACT device further includes:
a first plurality of nondestructive sensing Schottky electrodes having a first element factor, said first plurality



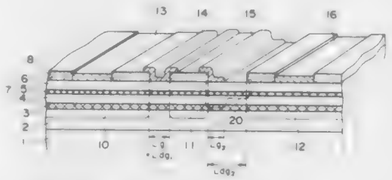
connected to said top layer of said plurality of heteroepitaxial layers, each of said first plurality of electrodes providing a replica of said electric charge from said source; and
a second plurality of sensing electrodes having a second element factor different than said first element factor, said second plurality of sense electrodes coupled to said top layer of said plurality of heteroepitaxial layers, each of said second plurality of electrodes providing a replica of said electric charge from said source.

5,389,807

FIELD EFFECT TRANSISTOR

Nobuo Shiga, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Aug. 24, 1993, Ser. No. 110,937
Claims priority, application Japan, Sep. 3, 1992, 4-235946
Int. Cl.[6] H01L *33/00*
U.S. Cl. 257—280 **13 Claims**



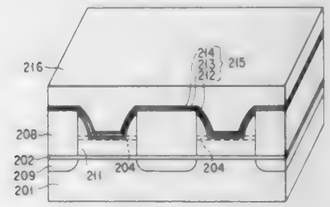
1. A field effect transistor comprising:
a semi-insulating semiconductor substrate,
a non-intentionally doped buffer layer formed on said semi-insulating semiconductor substrate,
a thin first pulse-doped layer having a high impurity concentration and being formed on said buffer layer,
a cap layer structure formed on said thin first pulse-doped layer, said cap layer structure including,
a first non-intentionally doped layer
a thin second pulse-doped layer having a high impurity concentration and formed in direct contact with said first non-intentionally doped layer, and
a second non-intentionally doped layer formed on said thin second pulse-doped layer;
high-impurity-concentration ion implantation regions formed in said second non-intentionally doped layer to define a source electrode formation region and a drain electrode formation region, respectively,
a high-impurity-concentration ion implantation region formed between and isolated from said source and said drain electrode formation regions to define a gate electrode formation region which extends into said buffer layer,
a source electrode formed on said source electrode formation region,
a drain electrode formed on said drain electrode formation region,
first and second gate electrodes formed on said gate electrode formation region, and
an insulating layer covering upper surfaces of said electrode regions that are not covered by said electrodes.

5,389,808

NON-VOLATILE SEMICONDUCTOR MEMORY WITH INCREASED CAPACITANCE BETWEEN FLOATING AND CONTROL GATES

Norihisa Arai, Oomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Feb. 18, 1994, Ser. No. 199,018
Claims priority, application Japan, Feb. 25, 1993, 5-036528
Int. Cl.[6] H01L *29/78*
U.S. Cl. 257—316 **22 Claims**



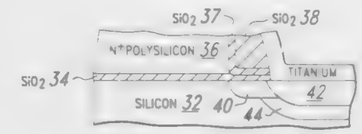
1. A semiconductor device comprising:
a semiconductor substrate;
first and second impurity regions, formed in the semiconductor substrate and extending in a first direction, which serve as bit lines;
a first gate insulation layer formed on a channel region interposed between the first and second impurity regions;
a first gate electrode formed on the first gate insulation layer;
two isolation layers formed on the first and second impurity regions;
a second gate insulation layer formed on the first gate electrode; and
a second gate electrode, formed on the second gate insulation layer and extending in a second direction perpendicular to the first direction, which serves as a word line,
the first gate electrode comprising:
a first conductive layer;
two second conductive layers formed above the first conductive layer; and
a thin film, formed between the first and second conductive layers, serving as a stopper when the second conductive layers are formed by etching,
in which each of the second conductive layers consists of side wall layers formed along opposed sides of adjacent isolation layers.

5,389,809

SILICIDED MOS TRANSISTOR

Roger A. Haken, and Richard A. Chapman, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 651,096, Feb. 4, 1991, abandoned, which is a continuation of Ser. No. 489,843, Mar. 2, 1990, abandoned, which is a continuation of Ser. No. 149,784, Jan. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 718,818, Apr. 1, 1985, abandoned, which is a continuation of Ser. No. 344,589, Feb. 1, 1982, abandoned. This application Feb. 25, 1992, Ser. No. 841,900
The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.
Int. Cl.[6] H01L *29/73, 27/02*
U.S. Cl. 257—344 **21 Claims**



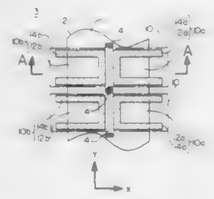
1. A field effect transistor drain structure comprising:
a semiconductor substrate doped a first conductivity type and having a structure formed thereon;
a first region in said substrate heavily doped a second conductivity type with two dopants having different diffusion characteristics, said heavily doped first region including a common area defined by the implantation of said two dopants and an area of simultaneous diffusion of said two dopants extending away from said implantation area and under said structure said diffusion area having a curved shape defined by said simultaneous diffusion;
a second region in said substrate lightly doped as a second conductivity type by the greater diffusion of a single one of said two dopants, said dopant in said second region consisting essentially of said single dopant diffused from said first region during said simultaneous diffusion, said second region defining a peripheral band between said semiconductor substrate and said area of simultaneous diffusion in said first region and having a curved shape defined by said greater diffusion of said only one dopant; and
a third doped region formed in said substrate adjacent said first region and beneath said structure.

5,389,810

SEMICONDUCTOR DEVICE HAVING AT LEAST ONE SYMMETRICAL PAIR OF MOSFETS

Masashi Agata, Osaka; Hiroyuki Yamauchi, Takatsuki, and Toshio Yamada, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 23, 1993, Ser. No. 35,731
Claims priority, application Japan, Mar. 27, 1992, 4-070755
Int. Cl.[6] H01L *29/78*
U.S. Cl. 257—369 **30 Claims**



1. A semiconductor device comprising:
a semiconductor layer having an upper surface;
an active region formed in said upper surface;

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an isolation region formed in said upper surface and enclosing said active region; and

a pair of MOSFETs formed in said active region;

wherein said pair of MOSFETs include a pair of gate electrodes;

each of said pair of electrodes is symmetrical with respect to a first symmetric plane substantially normal to said upper surface, and one of said pair of electrodes is symmetrical with the other of said pair of electrodes with respect to a second symmetric plane normal both to said upper surface and to said first symmetric plane;

each of said pair of electrodes includes a first portion and a second portion each having a length extending in a direction parallel to said first symmetric plane, a third portion electrically connecting respective ends of said first portion and said second portion, and a fourth portion electrically connecting respective other ends of said first portion and said second portion; and

said fourth portion is extended across the boundary of said active region and said isolation region.

5,389,811

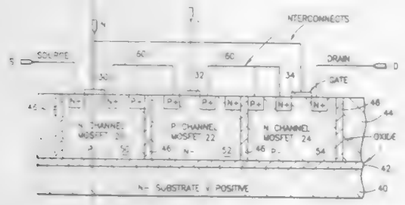
FAULT-PROTECTED OVERVOLTAGE SWITCH EMPLOYING ISOLATED TRANSISTOR TUBS

Frank Poucher, and John Quill, both of Limerick, Ireland, assignors to Analog Devices, Incorporated, Norwood, Mass.

Filed Apr. 14, 1994, Ser. No. 227,727

Int. Cl.[6] H01L *27/02, 29/06, 29/78*

U.S. Cl. 257—360 **11 Claims**



1. An integrated-circuit (IC) chip formed with a switch for use in applications where overvoltage conditions can cause damage to a device to which the switch is connected; said switch having input and output terminals; said IC chip comprising:

semiconductive material formed with a plurality of MOS transistors connected in series between the switch input and output terminals;

said transistors including at least one N-channel transistor and at least one P-channel transistor;

control terminal means;

means responsive to control signals applied to said control terminal means for turning off and on said transistors of said switch to open and close the circuit through such transistors;

means operable, when said switch transistors are in "on" state and an overvoltage is applied to said input terminal, for turning off at least one of said transistors when the applied voltage reaches a predetermined overvoltage level; and

isolation means forming part of said IC chip to establish a plurality of isolation tubs each for at least a corresponding one of said transistors.

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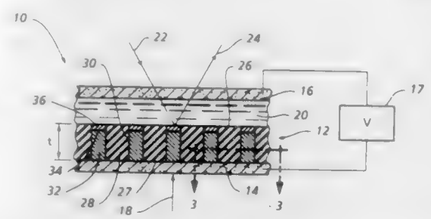
PHOTODETECTOR ARRAY HAVING HIGH PIXEL DENSITY

Carmen I. Huber, Silver Spring, Md.; Tito E. Huber, Brooklyn, N.Y.; Tak-Kin Chu, Bethesda, and Nicholas Caviris, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 77,806, Jun. 18, 1993, Pat. No. 5,328,853. This application Apr. 20, 1994, Ser. No. 230,461

Int. Cl.[6] H01L *27/14, 31/00*

U.S. Cl. 257—443 **5 Claims**



1. In a photodetector device including an electrically insulating matrix and an array of photoconductive pins embedded therein, said pins occupying channels formed in the matrix extending in spaced relation to each other from an interface surface of the matrix to provide a pixel density substantially exceeding 1,000,000 elements per square centimeter, each of said pins having terminal ends within said channels closely spaced from the interface surface, and light reflecting pads occupying the channels between said terminal ends of the pins and the interface surface of the matrix.

5,389,813

POWER SEMICONDUCTOR DEVICE WITH TEMPERATURE SENSOR

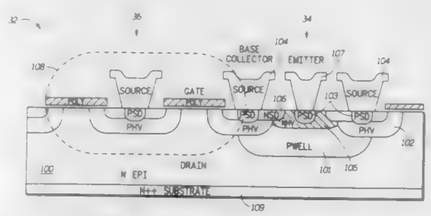
Walter Schwob, Commugny, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1992, Ser. No. 970,743

Claims priority, application United Kingdom, Nov. 6, 1991, 9123558

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—469 **5 Claims**



1. A power FET semiconductor device with a temperature sensor comprising:

a semiconductor substrate of a first conductivity type, a plurality of power device cells formed on the semiconductor substrate coupled to form the power FET semiconductor device, and the temperature sensor comprising a temperature sensing diode formed on the semiconductor substrate, wherein the temperature sensing diode and a power device cell have at least one common diffusion region, whereby the temperature sensor can directly sense temperature of the power device cell, and wherein the temperature sensing diode has a separate terminal, and wherein the temperature sensing diode comprises four regions, wherein

a fourth region of the temperature sensing diode is formed by a first conductivity type epitaxial layer formed on the semiconductor substrate;

a third region of the temperature sensing diode is formed by a second conductivity type first area of low impurity concentration formed in part of the first conductivity type epitaxial layer, wherein the third region and the first conductivity type epitaxial layer form a junction that isolates the temperature sensing diode from the plurality of power device cells;

a second region of the temperature sensing diode is formed by a first conductivity type region of low impurity concentration formed in part of the third region; and

a first region of the temperature sensing diode is formed by a second conductivity type region of high impurity concentration formed in part of the second region, wherein the separate terminal is coupled to the first region, and wherein the power device cell comprises:

a drain region formed by the first conductivity type epitaxial layer;

a gate region formed by a second conductivity type region of low impurity concentration formed in part of the first conductivity type epitaxial layer and the third region;

a source region formed by a first conductivity type region of high impurity concentration formed in part of the gate region and the second region; and

a coupling region formed by a second conductivity type region of high impurity concentration extending through the source region to the gate region,

wherein the coupling region forms the at least one common diffusion region, and wherein a conduction path of the temperature sensing diode comprises the first, second, and third regions of the temperature sensing diode and the gate region and coupling region of the power device cell.

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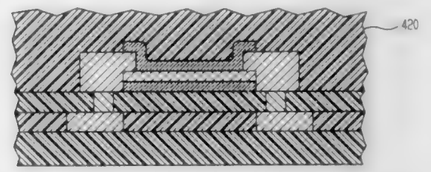
ELECTRICALLY BLOWABLE FUSE STRUCTURE FOR ORGANIC INSULATORS

Kris V. Srikrishnan, Wappingers Falls; James F. White, Newburgh, both of N.Y., and Jer-Ming Yang, Changhua, Taiwan, Prov. of China, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 23,278, Feb. 26, 1993, abandoned. This application Feb. 7, 1994, Ser. No. 192,760

Int. Cl.[6] H01L *27/02, 29/34, 23/48*

U.S. Cl. 257—529 **7 Claims**



1. An electrically blowable fuse structure for a microelectronic circuit, said circuit having a first organic insulator underlying and in contact with said fuse structure and a second organic insulator overlying and in contact with said fuse structure, said circuit further having at least a pair of electrical conductors connected to said fuse structure, wherein said fuse structure is characterized by,

a first heat shield member, a fusing element having a first melting point and having upper and lower surfaces and having first and second ends electrically connected to said pair of electrical conductors, and a second heat shield member,

wherein said first heat shield member is located between and in substantial contact with said fusing element and said first organic insulator,

wherein said second heat shield member is located between and in substantial contact with said fusing element and said second organic insulator,

wherein said first and second heat shield members are electrically insulating and are patterned to clad to said upper and lower surfaces of said fusing element, and

wherein said first and second heat shield members have a second melting point, said second melting point being higher than said first melting point.

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SEMICONDUCTOR DIODE WITH REDUCED RECOVERY CURRENT

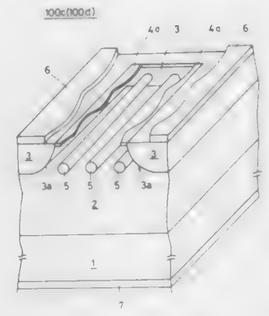
Hideki Takahashi, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 49,411

Claims priority, application Japan, Apr. 28, 1992, 4-110057; Nov. 9, 1992, 4-298644; Mar. 31, 1993, 5-073325

Int. Cl.[6] H01L *29/90*

U.S. Cl. 257—605 **11 Claims**



1. A semiconductor device comprising:

a first conductivity type first semiconductor layer;

second conductivity type second semiconductor layers of a relatively high concentration, said second semiconductor layers being selectively formed in a top major surface of said first semiconductor layer;

at least one third semiconductor layer of said second conductivity type having a relatively high concentration, said third semiconductor layer being selectively formed in said first semiconductor layer at a region between neighboring ones of said second semiconductor layers; and

a second conductivity type fourth semiconductor layer of relatively low concentration, said fourth semiconductor layer being formed in said top major surface of said first semiconductor layer at a region between neighboring ones of said second semiconductor layers.

5,389,816

MULTI-LAYER LEAD FRAME USING A METAL-CORE SUBSTRATE

Mitsuharu Shimizu, and Masato Tanaka, both of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Filed Oct. 22, 1993, Ser. No. 139,737

Claims priority, application Japan, Nov. 19, 1992, 4-333679

Int. Cl.[6] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—666 **13 Claims**

1. A metal-core-type multi-layer lead frame adapted to be used for a semiconductor device comprising:

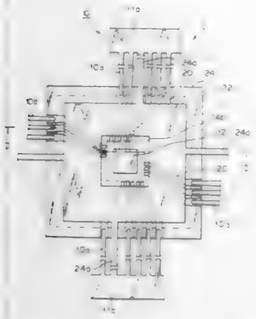
a metal core plate on which a semiconductor chip is to be mounted;

a plurality of signal lines formed on said metal core plate;

a metal plane, such as a power supply plane or a ground plane, being substantially frame shaped and having a cen-

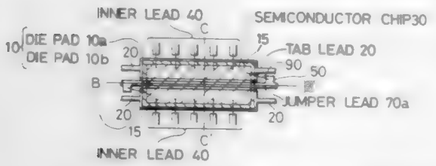
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tral opening and a length and width smaller than that of said metal core plate;
an insulating layer;
said metal plane laminated on said signal lines through said insulating layer, so that at least an outer peripheral edge of said metal core plate is uncovered to expose at least a portion of a respective one of said plurality of signal lines;
a lead frame body;,



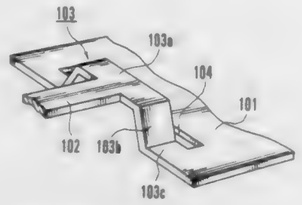
a plurality of leads, on said lead frame body, which are electrically connected to said signal lines at said outer peripheral edge of said metal core plate;
a frame member integrally supporting said plurality of leads of the lead frame body; and
said metal plane being integrally formed with said lead frame body, in such a manner that at least one of said leads integrally extends from said frame member to an outer edge of said metal plane.

5,389,817
SEMICONDUCTOR DEVICE HAVING A FLAT JUMPER LEAD
Tsutomu Imamura, Yokohama, and Isao Baba, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 820,238, Jan. 14, 1992, abandoned. This application Nov. 29, 1993, Ser. No. 158,358
Claims priority, application Japan, Jan. 18, 1991, 3-004632
Int. Cl.[6] H01L *29/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—666 **8 Claims**



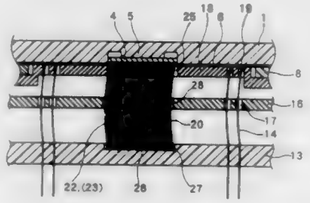
1. A plastic package type semiconductor device comprising:
a die pad having a plurality of parts;
a tab lead having a plurality of parts holding the die pad;
a flat type jumper lead formed between the parts of the die pad;
an electrical insulating film formed on both the die pad and the flat type jumper lead;
a semiconductor chip bonded on the insulating film by an adhesive; and
a plastic mold as a plastic package for molding the die pad, the tab lead, the flat type jumper lead, the insulating film, and the semiconductor chip in the plastic mold,
wherein the flat type jumper lead is electrically insulated from the semiconductor chip by the insulating film, and the thickness of the jumper lead is approximately equal to the thickness of the die pad.

5,389,818
LEAD FRAME
Shuji Inoue, and Yasuhiko Hiraki, both of Ibaragi, Japan, assignors to Intel Corporation, Santa Clara, Calif.
Filed Oct. 27, 1993, Ser. No. 144,208
Claims priority, application Japan, Mar. 17, 1993, 5-081089
Int. Cl.[6] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—676 **7 Claims**



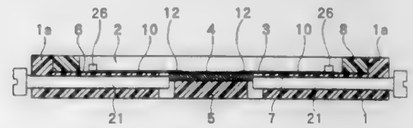
1. A lead frame comprising:
a stage portion on which a semiconductor chip having pads formed on an upper surface of said semiconductor chip is mounted;
at least one bar-like support portion for supporting said stage portion;
a plurality of lead portions arranged to surround said stage portion and connected to said pads of said semiconductor chip mounted on said stage portion, said stage portion being arranged at a level lower than that of an arrangement surface of said lead portions; and
a connection portion formed on one side of said stage portion perpendicular to said bar-like support portion, said connection portion having a central portion which has an upper side portion projecting almost parallelly to a surface of said stage portion at a level higher than that of the surface of said stage portion and is connected to said bar-like support portion on the same plane.

5,389,819
SOCKET FOR AN IC CARRIER HAVING A FLEXIBLE WIRING SHEET SUPERIMPOSED OVER AN IC BODY AND AN ELASTIC BACKUP MEMBER ELASTICALLY PRESSING THE FLEXIBLE WIRING SHEET INTO CONTACT WITH THE IC BODY
Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan
Filed Dec. 9, 1993, Ser. No. 164,454
Claims priority, application Japan, Dec. 10, 1992, 4-353089
Int. Cl.[6] H01L *23/42, 23/44, 23/46*
U.S. Cl. 257—727 **16 Claims**



1. A socket and IC carrier arrangement, comprising:
an IC carrier having an IC body thereon, said IC body having a plurality of contact pieces thereon;
a flexible wiring sheet superimposed on and contacted with said IC body, said flexible wiring sheet having leads thereon each having a first contact pad disposed on a superimposed portion of said flexible wiring sheet and a second contact pad disposed outside of said superimposed portion, and each of said leads contacting corresponding ones of said contact pieces of said IC body with said first contact pads; and
a socket having said IC carrier therein, said socket comprising an elastic backup member for elastically pressing said superimposed portion of said wiring sheet into contact with said IC body in a pressing position and releasing pressure on said superimposed portion in a pressure-release position, an operator for deflecting said elastic backup member between said pressing position and said pressure-release position, and contact members for contacting respective ones of said second contact pads.

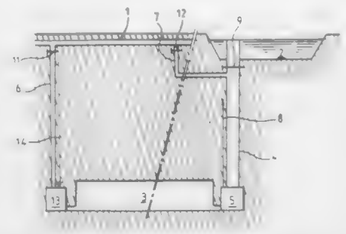
5,389,820
IC CARRIER
Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan
Filed Dec. 21, 1993, Ser. No. 170,904
Claims priority, application Japan, Dec. 22, 1992, 4-356950
Int. Cl.[6] H01L *39/02, 23/48, 29/44, 29/52*
U.S. Cl. 257—727 **5 Claims**



1. An IC carrier comprising a carrier body carrying an IC body, which is either alone or received in a protective case, a wiring sheet with a lead pattern applied onto an upper surface thereof and on which said wiring sheet is superimposed in such a manner as to cover an outer upper surface of said IC body, a plurality of fine adjustment pushers for pressing said IC body or said protective case sidewardly at plurality of points in order to slightly move said IC body or said protective case along an inner upper surface of said wiring sheet to adjust the position of said IC body so as to correctly correspond to said wiring sheet, each of said fine adjustment pushers being formed of male screw pins which are threadedly engaged with said carrier body and reciprocally moved, said IC body or said protective case being pressed sidewardly by end faces of said male screws, respectively.

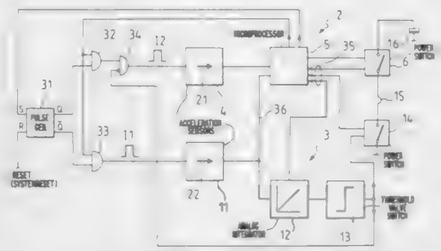
5,389,821
DRAINWATER/SEWAGE TREATMENT INSTALLATION FOR PRODUCING ELECTRICAL POWER AND FOR REGULATING A HYDRAULIC FLOW
Claude Moulliet, Nanterre, France, assignor to GTM Batiment et Travaux Publics, Societe Anonyme, Nanterre, France
Filed Nov. 17, 1993, Ser. No. 153,572
Claims priority, application France, Nov. 20, 1992, 92 13948
Int. Cl.[6] F03B *13/06;* **E03B** *1/00;* **E02B** *9/06;* **E02D** *29/10*
U.S. Cl. 290—1 R **14 Claims**

1. An installation for producing electrical power and for regulating a water flow rate to a sewage treatment plant having a predetermined treatment capacity, comprising at least a first water reservoir situated at a first level, at least a second water reservoir situated at a second level considerably lower than the first level, at least a first conduit interconnecting the two reservoirs and provided with a valve putting the two reservoirs into communication with each other when open, at least one hydroelectric station situated at the second level or at a level close thereto and having at least one reversible pump-turbine set which is hydraulicly connected to said first conduit for supplying electricity to an electricity distribution supply network, wherein in order to enable said water flow rate to be regulated, in particular that of rainwater in a drainage network, the second reservoir is deep underground, and the installation further comprises at least one second conduit provided with a valve and connecting said drainage network to the second



reservoir, said valve of said at least one second conduit being open when said water flow rate in said drainage network exceeds said predetermined treatment capacity.

5,389,822
TRIGGERING CIRCUIT FOR A SAFETY DEVICE IN MOTOR VEHICLES
Peter Hora, and Günther Fendt, both of Schrobenhausen, Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Germany
Filed Apr. 26, 1991, Ser. No. 691,869
Claims priority, application Germany, May 23, 1990, 4016644
Int. Cl.[6] B60R *21/32*
U.S. Cl. 307—10.1 **6 Claims**



4. Apparatus for motor vehicle safety device in the form of restraint systems, comprising:
at least first and second triggering paths which are independent of one another, each having an acceleration sensor and an analysis circuit for producing an output signal when a signal from said acceleration sensor exceeds a predetermined threshold;
at least one of said analysis circuits being a digital circuit comprising a microprocessor, and at least another being an analog circuit;
pulse generator responsive to said microprocessor and coupled to provide test pulses sequentially to the respective triggering paths, which pulses are analyzed separately in the respective triggering paths; and
means for preventing said pulse generator from providing a test pulse to said first triggering path during existence of an output signal from said analysis circuit of said second triggering path.

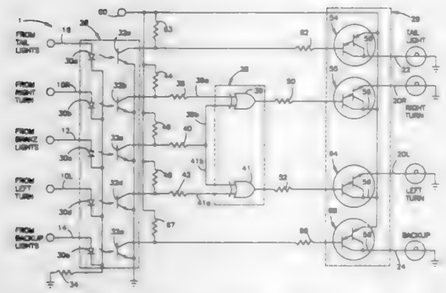
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5,389,823

BRAKE AND TURN SIGNAL ADAPTOR FOR TRAILERS

Evan L. Hopkins, and Gregory A. Yotz, both of Emporia, Kans., assignors to Hopkins Manufacturing Corporation, Emporia, Kans.

Continuation of Ser. No. 579,151, Sep. 6, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 909,127
Int. Cl.[6] B60L *1/00*
U.S. Cl. 307—10.1 33 Claims



1. An electrical circuit for adapting independent brake light and right and left turn signal light connections on a towing vehicle to combined brake light and right and left turn signal light connections on an associated trailer, said circuit comprising:

a first CMOS exclusive OR IC means having means to receive a first input pulse from a right turn signal light connection on said towing vehicle and means to receive a second input pulse from a brake light connection on said towing vehicle, each of said two input pulses to said first CMOS exclusive OR IC means being either high or low,

a second CMOS exclusive OR IC means having means to receive a first input pulse from a left turn signal light connection on the towing vehicle and means to receive a second input pulse from the brake light connection on said towing vehicle, each of said two input pulses to said second CMOS exclusive OR IC means being either high or low;

an isolation means electrically interconnected between the brake light and right and left turn signal light connections on said towing vehicle and said first and second CMOS exclusive OR IC means, said isolation means electrically isolating the right and left turn signal light connections and the brake light connection on said towing vehicle from said first and second CMOS exclusive OR IC means;

resistive means electrically interconnected between said isolation means and said first and second CMOS exclusive OR IC means for providing said CMOS exclusive OR IC means with the appropriate level of voltage;

each of said CMOS exclusive OR IC means having means for providing a high output pulse when one of said two input pulses is low and the other of said two input pulses is high,

each of said CMOS exclusive OR IC means having means for providing a low output pulse when both of said two input pulses are low, or when both of said two input pulses are high, and

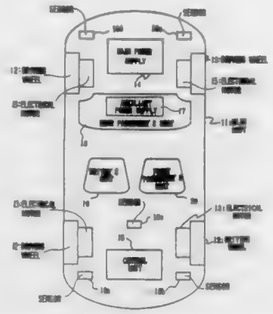
each of said CMOS exclusive OR IC means having means to apply said output pulse to an amplifier means, said amplifier means having means to apply the amplified pulse selectively to said combined right and left brake light and turn signal light connection on said trailer.

5,389,824

POWER SUPPLY CUT OFF APPARATUS

Shuzo Moroto, and Mutumi Kawamoto, both of Tokyo, Japan, assignors to Kabushiki Kaisha Equos Research, Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,246
Claims priority, application Japan, Mar. 17, 1992, 4-092016
Int. Cl.[6] B60R *16/02*
U.S. Cl. 307—10.1 12 Claims



1. A power supply cut off apparatus for an electrical vehicle, comprising:

an electric motor for driving said electrical vehicle;

a first power supply circuit for driving said electric motor;

a state detection sensor for detecting a state of said vehicle;

collision diagnosis means for diagnosing a collision state of said vehicle on the basis of a state detection signal output from said state detection sensor; and

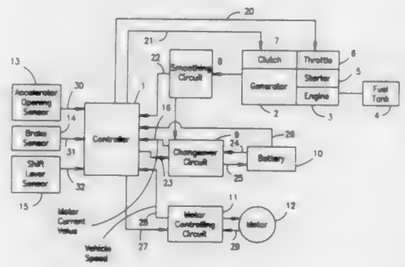
power supply opening means for opening said first power supply circuit according to a diagnosis result from said collision diagnosis means.

5,389,825

SYSTEM OF CONTROLLING CHANGEOVER OF AN ELECTRIC POWER SOURCE FOR AN ELECTRIC MOTOR VEHICLE

Masami Ishikawa, and Yukihiro Minezawa, both of Tokyo, Japan, assignors to Aisin AW Co., Ltd., Japan

Continuation of Ser. No. 693,518, Apr. 24, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,699
Int. Cl.[6] B60L *11/06*
U.S. Cl. 307—10.1 5 Claims



1. A system of changing over an electric power source for an electric motor vehicle including a battery unit and a generator, comprising:

a changeover circuit for changing over a state of connection between said battery unit and said generator including a parallel connection state where said battery unit and said generator are connected in parallel and a series connection state where said battery unit and said generator are connected in series;

means for determining a speed of the vehicle;

means for measuring a current value of an electric motor of said vehicle;

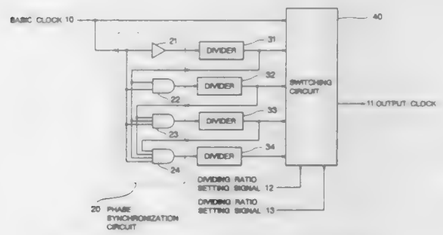
a controller for determining a power supply mode, said controller being adapted to instruct a changeover of the state of connection to said changeover circuit based upon said determined power supply mode, wherein said controller estimates a current value of said electric motor, determines a first proposed power supply mode on the basis of said vehicle speed and said estimated current value and a second proposed power supply mode on the basis of said vehicle speed and said measured current value, compares said estimated current value and said measured current value, and selects the determined power supply mode from said first and second proposed power supply modes in accordance with the comparison, said determining of the first proposed power supply mode including defining the first proposed power supply mode as being the parallel connection state when the estimated current value is larger than a predetermined value and defining the first proposed power supply mode as being the series connection state when the estimated current value is less than the predetermined value, said determining of the second proposed power supply mode including defining the second proposed power supply mode as being the parallel connection state when the measured current value is larger than the predetermined value and defining the second proposed power supply mode as being the series connection state when the measured current value is less than the predetermined value.

5,389,826

VARIABLE CLOCK DIVIDING CIRCUIT

Satoru Sonobe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,753
Claims priority, application Japan, Jul. 11, 1991, 3-170836
Int. Cl.[6] H02B *1/00*
U.S. Cl. 307—125 11 Claims



1. A variable clock dividing circuit comprising:

a plurality of dividing means, coupled in succession, for cooperating to divide an input clock signal by a dividing ratio, said input clock signal being based on a basic clock signal, each of said dividing means outputting an output clock signal based on said input clock signal, clock signals being input to each of said dividing means except a first of said plurality of dividing means being based on said output clock signals of all previous dividing means in said succession;

synchronizing means for synchronizing, based on said basic clock signal, phases of said clock signals being input to said plurality of dividing means except said first of said plurality of dividing means; and

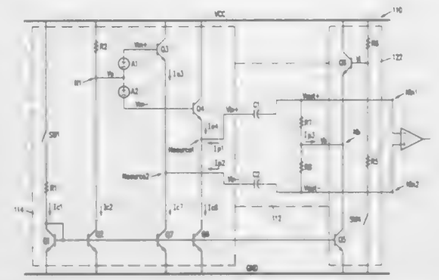
switching means for selectively outputting one of said output clock signals output from said plurality of dividing means.

5,389,827

QUICK RECOVERY AC COUPLING CIRCUIT

Donald T. Wile, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 15, 1993, Ser. No. 47,790
Int. Cl.[6] H03K *17/22*
U.S. Cl. 327—544 8 Claims



1. A quick-recovery AC coupling circuit for maintaining a bias voltage across a coupling capacitor when the circuit is powered off, the circuit comprising:

a coupling capacitor stage that generates an output DC-biased AC signal at an output node by receiving an output DC bias voltage at a bias node and by capacitively coupling an input DC-biased AC signal at an input node to the output node;

a low-output impedance source stage that generates the input DC-biased AC signal at the input node to the coupling capacitor stage in response to an externally-generated AC signal and that prevents a first current from flowing from the coupling capacitor stage into the source stage when the circuit is powered off; and

a biasing stage that generates the output DC-bias voltage at the bias node and that prevents a second current from flowing from the coupling capacitor stage into the biasing stage when the circuit is powered off,

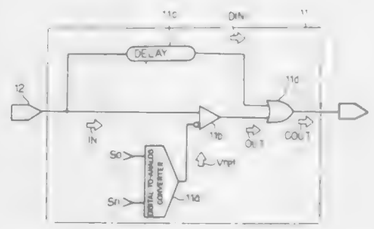
whereby when a high-input impedance device is connected to the output node and when the circuit is powered off, current cannot flow into or out of the coupling capacitor stage, thereby maintaining the bias voltage across the coupling capacitor stage.

5,389,828

PROGRAMMABLE DELAY GENERATOR FOR INDEPENDENTLY CONTROLLING LEADING AND TRAILING EDGES OF DELAYED PULSE

Shusei Tago, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,520
Claims priority, application Japan, Aug. 29, 1991, 3-244406
Int. Cl.[6] H03K *5/12, 5/159*
U.S. Cl. 327—263 13 Claims



1. A programmable delay generator comprising:

a) a reference voltage producing means responsive to a digital control signal, and producing a reference voltage level corresponding to value indicated by said digital control signal;
b) a voltage comparing means coupled with said reference voltage producing means and with an input pulse generator, and operative to compare the voltage level of an input pulse with said reference voltage level for producing a delayed pulse shrunk with respect to said input pulse;
c) a delay means coupled with said input pulse generator, and operative to introduce time delay into said input pulse for producing delayed input pulse, said time delay introduced by said delay means being larger than time delay introduced by said voltage comparing means; and
d) a composer coupled with said delay means and with said voltage comparing means, and operative to produce a composite delayed pulse from said delayed pulse and said delayed input pulse for independently controlling leading and trailing edges of said composite delayed pulse with respect to said input pulse.

5,389,829

OUTPUT LIMITER FOR CLASS-D BICMOS HEARING AID OUTPUT AMPLIFIER

Ciro Milazzo, Santa Cruz, Calif., assignor to Exar Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 765,481, Sep. 27, 1991, Pat. No. 5,247,581. This application Sep. 30, 1992, Ser. No. 953,901
Int. Cl.[6] H03K *9/08*
U.S. Cl. 327—172 **10 Claims**



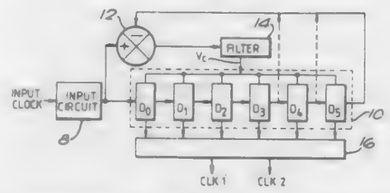
1. An apparatus comprising:
a class-D pulse width modulation amplifier including
a first comparator for producing an input pulse; and
a second comparator for producing a clock period; and
an output limiter including
first means, coupled to said pulse width modulation amplifier, for producing a pulse proportional to said input pulse from said pulse width modulation amplifier,
second means, coupled to said first means, for limiting an output pulse of said first means to a predetermined maximum length, and
control means, coupled to said pulse width modulation amplifier and said first means, for generating a pulse to said first means in the absence of a pulse from said pulse width modulation amplifier during said clock period of said pulse width modulation amplifier.

5,389,830

CLOCK GENERATION

Keith Buckingham, and Robert J. Simpson, both of Bristol, United Kingdom, assignors to Inmos Limited, Bristol, United Kingdom

Division of Ser. No. 542,320, Jun. 22, 1990, Pat. No. 5,243,597. This application Aug. 24, 1992, Ser. No. 933,679
Claims priority, application United Kingdom, Jul. 7, 1989, 8915583
Int. Cl.[6] H03K *5/159*
U.S. Cl. 327—291 **13 Claims**



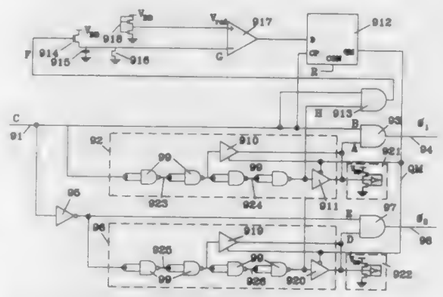
1. Clock generation circuitry for providing from a first clock signal a second clock signal at a different rate, the circuitry comprising:
a plurality of sequentially connected delay devices, a first one of which is coupled to receive the first clock signal, each delay device being operable to cause a trigger signal and an output signal to be produced at a predetermined time interval after receiving a trigger signal from the previously connected delay device;
control circuitry operable to provide a control signal in common to said delay devices for controlling said predetermined time interval; and
output circuitry coupled to receive the output signals of the delay devices to produce therefrom said second clock signal, wherein the output circuitry has a plurality of inputs for receiving respective ones of the output signals of the delay devices and is operable to change the state of its own output signal on receipt of each said output signal of the delay device.

5,389,831

CLOCK GENERATOR FOR PROVIDING A PAIR OF NONOVERLAPPING CLOCK SIGNALS WITH ADJUSTABLE SKEW

Robert E. Eisenstadt, Santa Clara, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 17, 1992, Ser. No. 992,335
Int. Cl.[6] H03K *3/86*
U.S. Cl. 327—161 **9 Claims**



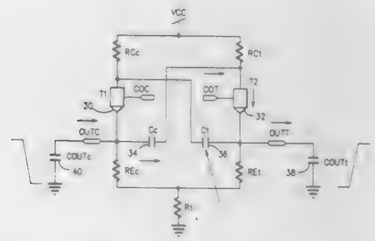
1. A clock generator comprising:
a first AND gate having a first input connected to a clock input port, having a second input, and having an output port at which is produced a first output signal ϕ_1;
a first delay element, for introducing a first delay time (D_3), electrically connected between the clock input port and the second input of the first AND gate;
means coupled to said first delay element and responsive to said clock input, for sensing when s value of first delay time (D_3) is outside of an operating range and for adjusting the value of first delay time (D_3) to remain within this operating range.

5,389,832

CAPACITIVELY CROSS-COUPLED DCS EMITTER-FOLLOWER OUTPUT STAGE

David W. Boerstler, Millbrook; Edward B. Eichelberger, Hyde Park; Gary T. Hendrickson, Kingston, and Charles B. Winn, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 101,679, Aug. 4, 1993, abandoned, which is a continuation of Ser. No. 956,922, Oct. 2, 1992, abandoned. This application Mar. 3, 1994, Ser. No. 217,139
Int. Cl.[6] H03K *3/29*
U.S. Cl. 327—223 **5 Claims**



1. A differential output circuit for connecting a differential current switch circuit to a load, said circuit comprising:
a pair of differential emitter follower circuits said pair having a first and a second transistor each having a base, a collector and an emitter, the collectors of said first and second transistors each connected through a resistor to a positive potential source;
first capacitance means coupled between the collector of said first transistor and the emitter of said second transistor;
second capacitance means coupled between the collector of said second transistor and the emitter of said first transistor; and
input means for receiving a differential input from said differential current switch circuit, said input means connected to the base of said first and second transistors.

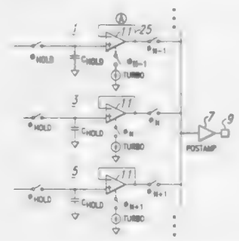
5,389,833

ANALOG MULTIPLEXER

Michael R. Kay, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 27, 1992, Ser. No. 936,169
Int. Cl.[6] H03K *17/16;* **G11C** *27/02*
U.S. Cl. 327—96 **22 Claims**

5. A multiplex circuit comprising:
(a) an amplifier having a first current source continually coupled thereto to provide a continual current thereto; and
(b) a second current source providing substantially higher values of current to said amplifier than said first current source, said second current source selectively coupled to said amplifier.

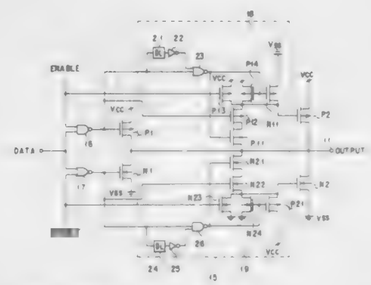


5,389,834

OUTPUT BUFFER CIRCUIT HAVING A DC DRIVER AND AN AC DRIVER

Masanori Kinugasa; Satoshi Nonaka, both of Yokohama, and Hiroshi Shigehara, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 12, 1992, Ser. No. 975,482
Claims priority, application Japan, Nov. 15, 1991, 3-300702
Int. Cl.[6] H03K *19/0948*
U.S. Cl. 326—21 **35 Claims**



1. An output buffer circuit comprising:
an output terminal;
a first output buffer having an output node connected to said output terminal, and an output resistance determined from DC specifications;
a second output buffer having an output node connected to said output terminal, and an output resistance determined from AC specifications when said second output buffer is driven with said first output buffer;
first control means having a first enable input line and a first data input line for controlling an operation of said first output buffer, said first control means driving said first output buffer according to a logic level of said first data input line when said first enable input line has a first logic level, and said first control means setting said first output buffer in a high-impedance state when said first enable input line has a second logic level opposite of said first logic level of said first enable input line; and
second control means having a second enable input line for controlling an operation of a second output buffer, said second control means driving said second output buffer when an output at said output node of said first output buffer changes and when said second enable input line has a first logic level, said second control means maintaining said second output buffer in a high-impedance state when said second enable input line has a second logic level opposite of said first logic level of said second enable input

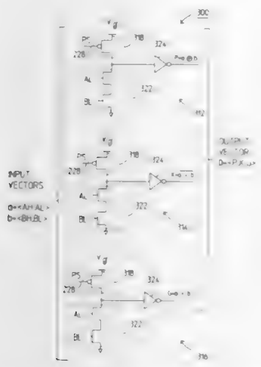
VOL 1171 ISS 2 FE 14 1995 UMI

line, and said second control means connecting said output node of said first output buffer to said second output buffer only through current paths of transistors.

5,389,835
VECTOR LOGIC METHOD AND DYNAMIC MOUSETRAP LOGIC GATE FOR A SELF-TIMED MONOTONIC LOGIC PROGRESSION

Jeffry D. Yetter, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 684,720, Apr. 12, 1991, Pat. No. 5,208,490. This application Feb. 3, 1993, Ser. No. 14,881
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[6] H03K *19/094*
U.S. Cl. 326—98 **68 Claims**



16. A logic gate for a self-timed monotonic logic progression utilizing vector logic variables, each vector logic variable defined by vector components on respective logic paths, each vector logic variable exhibiting either an invalid state or a unique one of a plurality of possible valid states at an instant in time, said invalid state exhibited when all of said logic paths exhibit logic low, each of said valid states exhibited when a subset of said logic paths exhibit logic high, and wherein said subset is nonoverlapping relative to other subsets corresponding with other valid states, the logic gate for deriving an output vector from input vectors, comprising:

logic means comprising a plurality of ladder logics, said logic means for receiving said input vectors, for performing logic functions upon said input vectors, and for providing a ladder logic output at a ladder logic;

buffer means comprising a plurality of inverting buffer mechanisms associated respectively with said ladder logics, said inverting buffer mechanisms configured to output said vector components defining said output vector, said inverting buffer mechanisms configured to maintain said vector components at logic low before receiving said ladder logic output so that said output vector exhibits an invalid state, one of said inverting buffer mechanisms configured to receive said ladder logic output and invert said ladder logic output to thereby derive said output vector in a valid state;

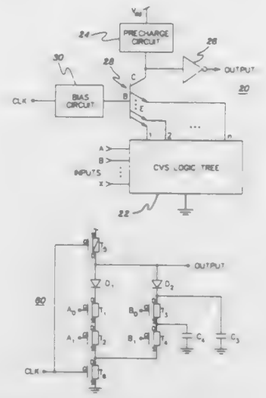
arming means comprising a plurality of arming mechanisms associated respectively with said inverting buffer mechanisms, said arming mechanisms configured to periodically precharge said inverting buffer mechanisms respectively to thereby cause said inverting buffer mechanisms to maintain said vector components at logic low; and

wherein said subset is greater than one.

5,389,836
BRANCH ISOLATION CIRCUIT FOR CASCODE VOLTAGE SWITCH LOGIC

Allan R. Bertolet, Williston; Albert M. Chu, Essex Junction; William R. Griffin, Shelburne; John G. Petrovick, Jr., Colchester, and Larry Wissel, Williston, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1993, Ser. No. 72,276
Int. Cl.[6] H03K *19/096, 19/20, 19/017*
U.S. Cl. 326—110 **16 Claims**



1. A combinatorial logic circuit comprising:

a logic tree having multiple branches each of which changes state between a logic "1" and a logic "0", each state change within a logic branch manifesting itself as a charging or discharging of the logic branch, wherein state changes from a logic "1" to a logic "0" are characterized as a discharging of the logic branch and state changes from a logic "0" to a logic "1" are characterized as a charging of the logic branch, said logic branches being coupled together so as to form a single output;

an isolation circuit electrically coupled to each logic branch of said logic tree for electrically isolating each logic branch from all logic branches of said logic tree; and

a precharge circuit coupled to said logic tree via said isolation circuit for providing charge to said logic tree and to said output of said combinatorial logic circuit prior to operation of said logic tree, whereby the logic branches of said logic tree are charged and discharged substantially independently of one another thereby enhancing switching speed of the combinatorial logic circuit.

5,389,837
SUPERCONDUCTING FLUX FLOW DIGITAL CIRCUITS

Vincent M. Hietala, Placitas, N. Mex.; Jon S. Martens, Sunnyvale, Calif., and Thomas E. Zipperian, Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 21, 1993, Ser. No. 51,103
Int. Cl.[6] H03K *19/195*
U.S. Cl. 326—3 **9 Claims**

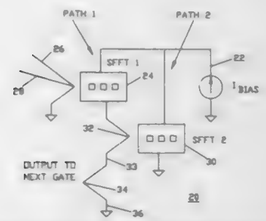
1. A digital logic circuit comprising:

means to provide bias current;

first superconducting flux flow transistor (SFFT) means comprising a main conducting body having a first region, a second region, and an intermediate region comprising at least one weak link of reduced dimensions wherein the first region is connected to the bias current means and wherein an output line is connected to the second region;

a first set of at least one logic input control current lines located proximate to the weak links of the first SFFT;

second SFFT means comprising a first region, a second region, and an intermediate region comprising at least one weak link of reduced dimensions wherein the first region is connected to the bias current means, a section of the output line from the second region of the first SFFT is

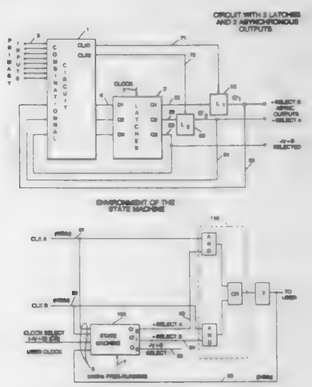


located proximate to the weak links of the second SFFT, and an output line is connected to the second region; and means to utilize the logic output of the circuit, such means receiving the output from the first current output line from the first SFFT.

5,389,838
DEVICE AND METHOD OF MANAGING ASYNCHRONOUS EVENTS IN A FINITE STATE MACHINE

Gerard Orengo, Biot, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1993, Ser. No. 124,739
Claims priority, application European Pat. Off., Oct. 9, 1992, 92480147.5
Int. Cl.[6] H03K *19/00, 19/173*
U.S. Cl. 326—93 **4 Claims**



1. A finite state machine connected to a plurality of units for managing the execution of M asynchronous signals to select, independently from a clock signal (**7**) of the state machine, a signal among a set of primary input signals (**3**) received by the state machine, said state machine including a combinational logic means (**1**) receiving said set of primary input signals (**3**) which contains N asynchronous input signals and outputting state variable output signals (**6**) to a state variable register (**2**), said state variable register being driven by the clock signal (**7**) and providing M state variable register output signals (**51**, **52**), said finite state machine being characterized in that it comprises:

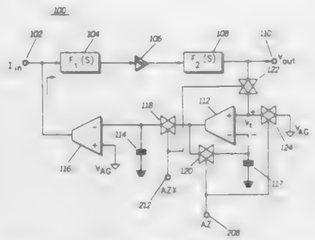
logic means (**1**) for generating M timing pulses (**71**, **72**) according to the N asynchronous input signals (**81**, **82**, **83**, CS) to indicate the moment of the selection, said means being connected to the combinational logic means (**1**), and

storing means (**10**, **20**) for receiving said M state variable register outputs (**51**, **52**) and being driven by said M timing pulses (**71**, **72**) to generate M output signals (**53**, **54**) each one enabling to select one of the input signals of the state machine at that moment, said M output signals loop back to the combinational logic means to indicate the present state of the state machine.

5,389,839
INTEGRATABLE DC BLOCKING CIRCUIT

Joseph P. Heck, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 3, 1993, Ser. No. 25,517
Int. Cl.[6] H03F *1/34;* **H03K** *5/08;* **H04L** *25/06*
U.S. Cl. 327—307 **17 Claims**



1. An electronic circuit having an output, comprising:

a forward transmission path;

feedback means coupled across the forward path;

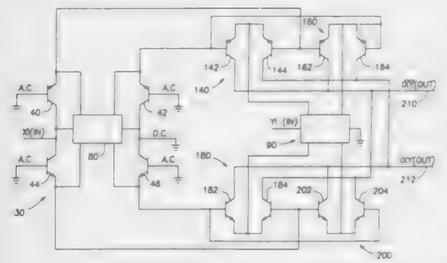
an error amplifier having an offset voltage; and

auto-zero circuit for forcing the output to accurately follow a desired DC voltage independent of the offset voltage.

5,389,840
COMPLEMENTARY ANALOG MULTIPLIER CIRCUITS WITH DIFFERENTIAL GROUND REFERENCED OUTPUTS AND SWITCHING CAPABILITY

Ronald N. Dow, San Jose, Calif., assignor to Elantec, Inc., Milpitas, Calif.

Filed Nov. 10, 1992, Ser. No. 974,129
Int. Cl.[6] H03F *3/45*
U.S. Cl. 327—357 **26 Claims**



1. A complementary multiplier for generating a product signal from two input signals, said multiplier comprising:

a first input amplifier having a pair of inputs and first and second pairs of outputs, for generating first and second pairs of currents at said first and second pairs of outputs from a first input signal applied between said pair of inputs, said first and second pairs of currents having opposite polarities;

a first pair of transistors each having a collector, a base coupled to AC ground, and an emitter coupled to one of said first pair of outputs of said first input amplifier, for generating first and second intermediate signals at the

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emitters of said first pair of transistors from said first pair of currents;

a second pair of transistors complementary to said first pair of transistors, each having a base coupled to AC ground, a collector connected to the collector of one of said first pair of transistors, and an emitter coupled to one of said second pair of outputs of said first input amplifier, for generating third and fourth intermediate signals at the emitters of said second pair of transistors from said second pair of currents;

a second input amplifier having a pair of inputs and first and second pairs of outputs for generating third and fourth pairs of currents at said first and second pairs of outputs, respectively of said second input amplifier from a second input signal applied between said pair of inputs, said third and fourth pairs of currents having opposite polarities;

a first pair of gain core differential amplifiers, each gain core differential amplifier having first and second input terminals for receiving said first and second intermediate signals, respectively, first and second output terminals corresponding to said first and second input terminals, and a third input terminal connected to receive one of said third pairs of currents for controlling the transconductance of said gain core differential amplifier, the first output terminal of each gain core differential amplifier of said first pair of gain core differential amplifiers being cross-connected to the second output terminal of the other gain core differential amplifier of said first pair of gain core differential amplifiers, said cross-connected output terminals forming first and second outputs of said complementary multiplier; and

a second pair of gain core differential amplifiers complementary to said first pair of gain core differential amplifiers, each gain core differential amplifier having first and second input terminals for receiving said third and fourth intermediate signals, respectively, first and second output terminals corresponding to said first and second input terminals, and a third input terminal connected to receive one of said fourth pair of currents for controlling the transconductance of said gain core differential amplifier, the first output terminal of each gain core differential amplifier of said second pair of gain core differential amplifiers being cross-connected to the second output terminal of the other gain core differential amplifier of said second pair of gain core differential amplifiers, and also being connected to said one of said first and second outputs of the complementary multiplier, said first and second pairs of gain core differential amplifiers each having gain characteristics substantially matching the gain characteristics of said first and second pairs of transistors, respectively, for generating first and second output signals at said first and second outputs of the complementary multiplier proportional to the product of said first and second input signals.

5,389,841

DIFFERENTIAL TRANSMISSION CIRCUIT

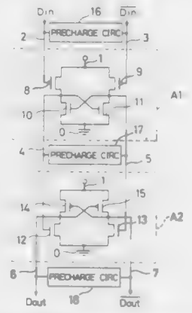
Masashi Agata; Hiroyuki Yamauchi, both of Osaka, and Atsushi Fujiwara, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 1, 1993, Ser. No. 114,142
Int. Cl.[6] H03H *17/00*
U.S. Cl. 327—434 8 Claims

1. A differential transmission circuit comprising:

a first differential amplifying circuit for receiving complementary sets of input data at the gates of first conductive MOS transistors and for transmitting complementary sets of internal data; and

a second differential amplifying circuit for receiving said complementary sets of internal data at the gates of second conductive MOS transistors and for transmitting complementary sets of output data, the conductivity of said second conductive MOS transistors being different from the conductivity of said first conductive MOS transistors.

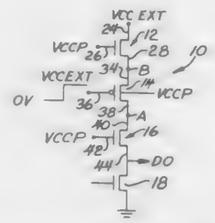


5,389,842

LATCH-UP IMMUNE CMOS OUTPUT DRIVER

Kim C. Hardee, Colorado Springs, Colo., assignor to Nippon Steel Semiconductor Corporation, Toky, Japan and United Memories, Inc., Colorado Springs, Colo.

Filed Aug. 10, 1992, Ser. No. 927,615
Int. Cl.[6] H03K *17/10, 19/0948*
U.S. Cl. 327—391 13 Claims



1. An output driver in an integrated circuit comprising:

an N-channel transistor and a P-channel transistor, each having a respective gate electrode and source-drain path, the source-drain paths of said transistors being coupled in series and having a node (A) therebetween, the source-drain paths being in circuit between an externally generated first supply voltage and the second voltage;

a data output path coupled to said circuit between the first supply voltage and the second voltage;

the gate electrode of the P-channel transistor being coupled to receive a data signal,

the gate electrode of the N-channel transistor being coupled to receive a high voltage, said high voltage being greater than said first supply voltage;

said high voltage being coupled to a region in which said P-channel transistor is constructed; and

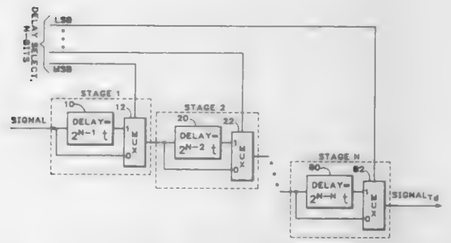
wherein the source-drain path of the N-channel transistor is located between the data output path and the P-channel transistor.

5,389,843

SIMPLIFIED STRUCTURE FOR PROGRAMMABLE DELAYS

David J. McKinney, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Aug. 28, 1992, Ser. No. 936,819
Int. Cl.[6] H03K *5/06, 17/28*
U.S. Cl. 327—276 2 Claims



1. A programmable variable delay circuit comprising a plurality (1—N) of delay stages connected in series, with each delay stage comprising:

a delay element (10,20, . . . ,80) having an input and an output, with the delay element associated with each different delay stage providing a characteristic delay time that is an integral power of a base number Y of a unit characteristic delay time t of a shortest delay element, with each delay stage producing a different delay and the delays associated with the plurality of delay stages including delays corresponding to t times each integral power of Y from 0 to N—1; and

selecting means (12,22, . . . ,82) having two inputs, for selecting as an output of a particular stage either the input or the output of that stage's delay element;

and the programmable variable delay circuit further comprising N-bits of delay selection signals, with the delay selection signals being connected to the selecting means of the plurality of delay stages such that less significant bits are connected to selection means associated with shorter delays and more significant bits are connected to selection means associated with longer delays in a monotonic correspondence, so that digital values applied to the delay selection signals produce proportional cumulative delays from the variable delay circuit.

5,389,844

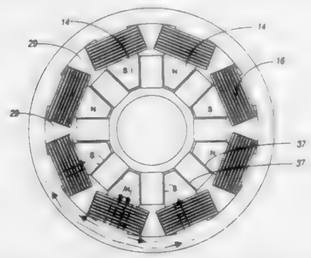
LINEAR ELECTRODYNAMIC MACHINE

George A. Yarr, Ballston Spa, and John A. Corey, Melrose, both of N.Y., assignors to Clever Fellows Innovation Consortium, Inc., Melrose, N.Y.

Continuation-in-part of Ser. No. 610,170, Nov. 6, 1990, Pat. No. 5,146,123, Ser. No. 609,811, Nov. 6, 1990, Pat. No. 5,139,242, and Ser. No. 918,904, Jul. 22, 1992, abandoned, which is a continuation of Ser. No. 749,273, Aug. 26, 1991, abandoned. This application Jul. 31, 1992, Ser. No. 923,055
The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.
Int. Cl.[6] H02K *33/00*
U.S. Cl. 310—15 33 Claims

1. An electrodynamic machine comprising:

a magnetic flux generator reciprocatingly mounted within a magnetically conductive stator ring assembly, the magnetic flux generator comprising a plunger assembly, having a plunger axis, with an even plurality of substantially radially-extending magnets, the magnets being mounted to a central structural core to align interdigitally with an equal plurality of poles on the stator ring assembly, the



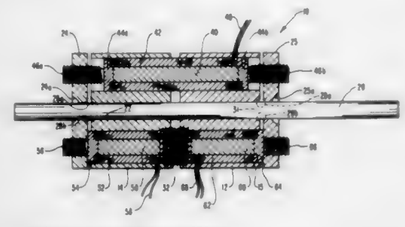
stator ring assembly having a plurality of electrically conductive coils positioned around portions thereof.

5,389,845

LINEAR ACTUATOR APPARATUS AND METHOD

Owen D. Brimhall, South Jordan, Utah, assignor to Technical Research Associates, Inc., Salt Lake City, Utah

Filed Nov. 22, 1993, Ser. No. 156,091
Int. Cl.[6] H01L *41/12*
U.S. Cl. 310—26 19 Claims



1. A linear actuator comprising:

a housing body comprising a first housing and a second housing;

a drive rod longitudinally movable relative to said housing;

a first clamping means operable to clamp the relative position of said first housing to said drive rod;

a second clamping means operable to clamp the relative position of said second housing to said drive rod; and

extension means for moving said first clamping means relative to said second clamping means.

5,389,846

MINIATURE MOTOR

Akira Okazaki; Takanobu Lee; Ikuo Matsushita, and Masao Take, all of Matsudo, Japan, assignors to Mabuchi Motor Co., Ltd., Matsudo, Japan

Filed Apr. 16, 1993, Ser. No. 49,674
Claims priority, application Japan, Apr. 22, 1992, 4-026156[U]
Int. Cl.[6] H02K *11/00*
U.S. Cl. 310—40 MM 3 Claims

1. A miniature motor, comprising:

a rotor having a plurality of magnetic poles extending axially, said poles being disposed on an outer circumferential surface of said rotor;

a housing formed into a bottomed hollow cylindrical shape; and end plate fitted to an open end of said housing;

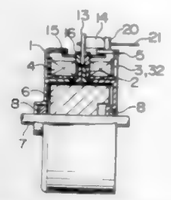
a stator having two coils wound on coil bobbins, said coil bobbins being disposed axially in said housing;

a power feeding connector; and

a printed circuit board having end prongs carrying bonding pieces, said printed circuit board being electrically con-

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nected to said power feeding connector, said printed circuit board being interposed between said coil bobbins,



said coils having coil ends connected directly to said bonding pieces of said printed circuit board.

5,389,847

ROTOR FOR A HIGH SPEED INDUCTION TYPE AC MOTOR HAVING A PRESS FIT STACKED CORE

Kosei Nakamura, Yamanashi; Yoshiyuki Hayashi, Sunto, and Kazuhisa Numai, Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

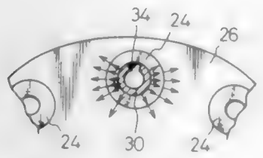
PCT No. PCT/JP92/00814, § 371 Date Feb. 25, 1993, § 102(e) Date Feb. 25, 1993, PCT Pub. No. WO93/00735, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 26, 1992, Ser. No. 974,588

Claims priority, application Japan, Jun. 28, 1991, 3-049968

Int. Cl.[6] H02K *1/00, 17/16*

U.S. Cl. 310—197 **6 Claims**



1. A rotor for a high speed induction type ac motor comprising:

an iron core having a stacked construction and a plurality of axial through-bores piercing therethrough and equiangularly arranged in a circumferential direction thereof;

a plurality of electrically conductive rod-like members inserted in and disposed in the plurality of axial through-bores of said stacked iron core; each of said plurality of electrically conductive rod-like members having both ends projecting outward from both axial end faces of said stacked iron core, respectively;

electrically conductive annular end rings, each having a plurality of axial bores therein, each of said axial bores to be engaged with corresponding ends of each of said plurality of electrically conductive rod-like members and fit in said both axial ends faces of said stacked iron core, and;

elastically expandable and shrinkable connecting members, each being adapted to be fit in a blind bore of said each end of said plurality of electrically conductive rod-like members, thereby rigidly connecting said electrically conductive end ring to each of said end faces of said stacked iron core.

5,389,848

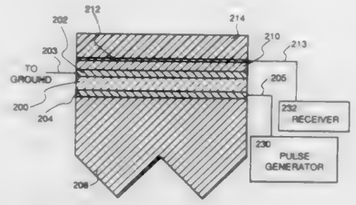
HYBRID ULTRASONIC TRANSDUCER

Casmir R. Trzaskos, Amsterdam, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 15, 1993, Ser. No. 6,274

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—322 **16 Claims**



1. An ultrasonic transducer comprising:

transmitter means for emitting ultrasonic acoustic energy, said transmitter means comprising a first piezoelectric element made of a piezoelectric ceramic material and having opposing upper and lower surfaces;

receiver means for detecting acoustic energy reflected from an object under evaluation, said receiver means comprising a second piezoelectric element made of a piezoelectric polymer material and having upper and lower surfaces;

first and second electrodes, respectively positioned in abutting relationship with said lower surface of said first piezoelectric element, and said upper surface of said second piezoelectric element

means for coupling said first electrode to a signal pulse generator;

means for coupling said second electrode to a signal receiver;

a common electrode positioned in abutting relation with both said upper surface of said first element, and said lower surface of said second element; and

means for establishing a single continuous conductive path between said common electrode and an electrical ground.

5,389,849

TACTILITY PROVIDING APPARATUS AND MANIPULATING DEVICE USING THE SAME

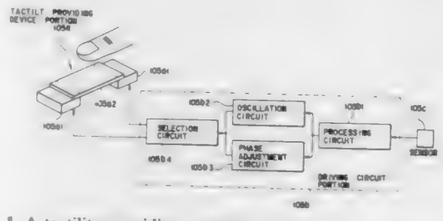
Takeo Asano, Tokyo; Hisashi Nishimura, Hanno; Nobutoshi Sekiguchi, Hidaka, and Hideo Adachi, Iruma, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1994, Ser. No. 179,427

Claims priority, application Japan, Jan. 20, 1993, 5-007196; Mar. 17, 1993, 5-057480

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—323 **20 Claims**



1. A tactility providing apparatus comprising:

detection means for outputting a contact state signal in accordance with a contact state with respect to an object to be manipulated, the contact state signal representing at least one of information of a sense of sliding of said detection means with respect to the object and surface information such as surface roughness of the object;

signal processing means for converting the contact state signal from said detection means into tactility information corresponding to at least one of the information of the sense of sliding and the surface information;

tactility providing means which is excited in accordance with the tactility information from said signal processing means to generate at least one of a traveling wave corresponding to the information of the sense of sliding and a standing wave corresponding to the surface information; and

transmission means for transmitting at least one of the traveling wave and the standing wave generated by said tactility providing means to a finger of an operator,

wherein while the finger of the operator is in a non-contact state with respect to the object, the information of the sense of sliding with respect to the object is provided to the finger, through the traveling wave transmitted from said transmission means, in accordance with the contact state signal from said detection means, and the surface information about the object is also provided to the finger through the standing wave.

5,389,850

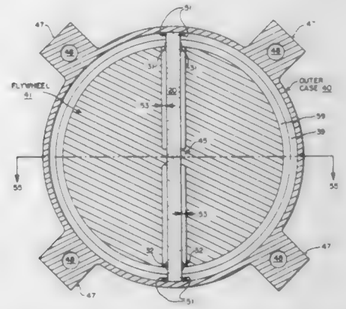
ROTATIONAL SHOCK SENSOR

Richard K. Wilmer, San Jose, Calif., assignor to Maxtor Corporation, San Jose, Calif.

Filed Feb. 4, 1994, Ser. No. 191,988

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—329 **20 Claims**



1. A sensor for sensing rotational displacement of a body comprising:

an elongated beam of a material providing a piezoelectric effect, said beam having a pair of ends and a central portion;

a case attached to said body, said case having an interior surface, said beam being fixedly attached to said interior surface at said ends;

a flywheel attached to said beam, rotational displacement of said body causing said flywheel to stress said crystal so as to generate a voltage across said beam due to said piezoelectric effect.

5,389,851

LAMINATED PIEZOELECTRIC ELEMENT

Daisuke Kimura, Kawasaki, and Yuji Oshime, Fuchu, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 735,038, Jul. 24, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 108,938

Claims priority, application Japan, Jul. 30, 1990, 2-199299

Int. Cl.[6] H01L *41/08*

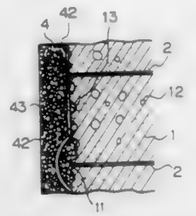
U.S. Cl. 310—340 **12 Claims**

1. A laminated piezoelectric element comprising:

a laminate of piezoelectric ceramic plates and inner electrodes, the piezoelectric ceramic plates being laminated alternately with the inner electrodes, the laminate having a peripheral surface presenting individual peripheral surfaces of the ceramic plates, the piezoelectric ceramic plates having recesses at the peripheral surfaces thereof;

a positive outer electrode connected to a first group of said inner electrodes at the peripheral surface of the laminate;

a negative outer electrode connected to another group of said inner electrodes at the peripheral surface of the laminate; and



a coating of fine ceramic particles, having an average particle size of less than 3 μm in their largest dimension, coated directly on substantially the entire peripheral surfaces of the piezoelectric ceramic plates, the recesses having a size and the fine ceramic particles having an average particle size which is smaller than the size of the recesses, so that the fine ceramic particles fill the recesses on the peripheral surfaces of the piezoelectric ceramic plates to substantially prevent formation of a current between said inner electrodes even when water exists in the recesses.

5,389,852

ULTRASONIC SIGNAL CONVERTER

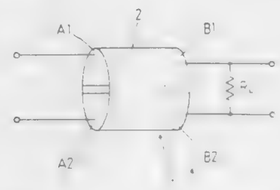
Kohji Toda, 1-49-18 Futaba, Yokosuka 239, Japan

Filed Nov. 12, 1993, Ser. No. 151,138

Claims priority, application Japan, Nov. 20, 1992, 4-335640; Dec. 14, 1992, 4-354316; Dec. 24, 1992, 4-359440

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—366 **19 Claims**



1. An ultrasonic device for transducing an electric signal comprising:

a pillar-like piezoelectric ceramic with a cylindrical shape such that the ratio of lengths between diameter and longitudinal directions is nearly equal to 1, said piezoelectric ceramic having two end surfaces, ZA and ZB, running perpendicular to the polarization axis of said piezoelectric ceramic; and

means for transducing an electric signal consisting of a first transducer element comprising at least two electrodes A1 and A2 forming an input pair, and a second transducer element comprising at least two electrodes B1 and B2 forming an output pair,

said electrodes A1 and A2 being formed on said surface ZA such that said electrodes A1 and A2 are not connected to each other and are separated by a line dividing the area of said surface ZA nearly at the rate of 1 to 1 and corresponding to diameter of said surface ZA,

said electrodes B1 and B2 being formed on said surface ZB such that said electrodes B1 and B2 are not connected to

each other and are separated by a line dividing the area of said surface ZB nearly at the rate of 1 to 1 and corresponding to diameter of said surface ZB,

said piezoelectric ceramic, said electrodes A1, A2, B1 and B2 forming a piezoelectric vibrator,

said first transducer element receiving a high-frequency electric signal S1 with a voltage V1 from the outside, and causing said piezoelectric vibrator to vibrate at a frequency, almost the same as the resonance frequency of said piezoelectric ceramic,

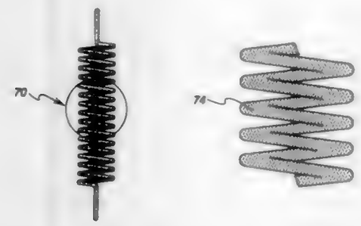
said second transducer element transducing the acoustic vibration of said piezoelectric vibrator to an electric signal S2 with a voltage V2 having almost the same frequency as said resonance frequency, and delivering said electric signal S2 outside.

5,389,853

INCANDESCENT LAMP FILAMENT WITH SURFACE CRYSTALLITES AND METHOD OF FORMATION

Laurence Bigio, Schenectady, N.Y.; Joseph M. Ranish, Cleveland Heights, Ohio; Clyde L. Briant, Charlton; Ronald H. Wilson, Schenectady, both of N.Y., and John F. Ackerman, Cheyenne, Wyo., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 1, 1992, Ser. No. 955,382
Int. Cl.[6] H01J *1/14;* B05D *5/12*
U.S. Cl. 313—341 15 Claims



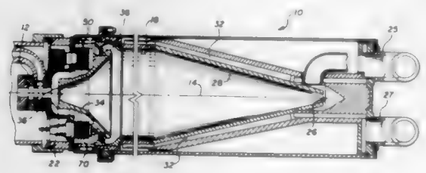
1. A filament having improved emission of visible light comprising, a tungsten filament having an outer surface and a layer of submicron-to-micron crystallites metallically bonded to the outer surface with submicron spacing between crystallites, the crystallites being comprised substantially of tungsten with up to 1 weight percent thorium and up to 10 weight percent of at least one of rhenium, tantalum, and niobium.

5,389,854

COLLECTOR ION EXPELLER

Richard B. True, Sunnyvale, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jul. 21, 1992, Ser. No. 917,815
Int. Cl.[6] H01J *23/027*
U.S. Cl. 315—5.38 20 Claims



6. A charged particle collector for collecting charged particles, comprising:

an enclosed region having an entrance for passing said charged particles;

an electrode suspended within said enclosed region adjacent to said entrance, said electrode being electrically insulated from said entrance; and

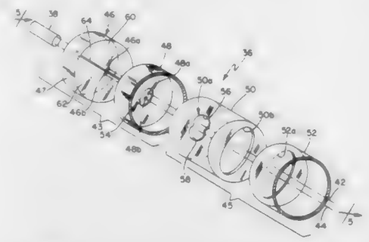
means for applying a potential connected to said electrode, said potential being positive with respect to said entrance, wherein said potential repels ions of said charged particles to produce an ion-free region within said collector adjacent to said entrance.

5,389,855

MULTI-BEAM ELECTRON GUN FOR MONOCHROME CRT

Hsing-Yao Chen, Barrington, Ill., assignor to Chunghwa Picture Tubes, Ltd., Yangmei, Taiwan, Prov. of China

Filed Feb. 10, 1993, Ser. No. 16,590
Int. Cl.[6] H01J *29/46, 29/56*
U.S. Cl. 315—14 36 Claims



1. An electron gun for a monochrome cathode ray tube (CRT) including a display screen whereon a video image is formed by sweeping an incident electron beam generally horizontally over a plurality of successive vertically spaced, horizontal scan lines in a raster-like manner, said electron gun comprising:

cathode means for providing energetic electrons;

a beam forming region (BFR) disposed adjacent to said cathode means and including first and second charged grids respectively having first and second arrays of spaced apertures for forming said energetic electrons into a plurality of beams, wherein each of said first and second arrays of apertures are aligned generally vertically and wherein each aperture of said first array is aligned with a respective aperture in said second array so as to form the energetic electrons into a plurality of spaced, generally vertically aligned electron beams; and

lens means disposed intermediate said BFR and the CRT's display screen for receiving said vertically aligned, spaced electron beams and focusing the electron beams as vertically aligned, spaced spots on the display screen, wherein each electron beam is simultaneously swept over a respective scan line in forming a video image on the. display screen, and wherein said lens means includes third and fourth charged grids respectively including first and second vertically elongated apertures for passing and focusing the electron beams on the display screen.

5,389,856

HIGH-PRESSURE DISCHARGE LAMP WITH AN INTEGRAL FUSE-CAPACITOR COMPONENT

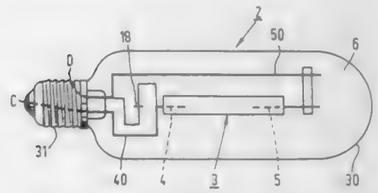
Gerardus M. J. F. Luijks, and Hubertus A. M. Coenen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1993, Ser. No. 2,007
Claims priority, application European Pat. Off., Jan. 17, 1992, 92200125.0
Int. Cl.[6] H01J *7/44*
U.S. Cl. 315—58 21 Claims

1. A high pressure discharge lamp, comprising:

a) an outer envelope;

b) a discharge vessel arranged with said outer envelope and energizeable for emitting light; and



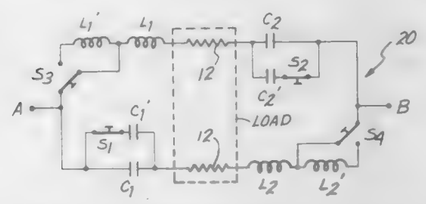
c) an ignitor circuit arranged within said outer envelope for igniting said discharge vessel, said ignitor circuit including an integral component comprising a capacitor and a fuse non-separably and directly joined to each other.

5,389,857

MAGNETIC BALLAST FOR FLUORESCENT LAMPS

Louis E. Abbott, and David S. Greenblat, both of Carson City, Nev., assignors to Bruce Industries, Inc., Dayton, Nev.

Filed May 17, 1993, Ser. No. 65,538
Int. Cl.[6] H05B *39/00*
U.S. Cl. 315—94 23 Claims



1. A ballast for delivering a substantially constant current to a fluorescent tube load variable by a factor of at least 3-to-1 between the lowest and highest wattage rating of said load, said fluorescent tubes having heater filaments at opposite ends of said tubes, comprising:

a bridge circuit having first and second inductors and first and second capacitors, a first said heater filament connected between said first inductor and said first capacitor, a second said heater filament connected between said second inductor and said second capacitor, said first inductor being connected to said second capacitor at a first input node, said second inductor being connected to said first capacitor at a second input node.

5,389,858

VARIABLE AXIS STIGMATOR

Guenther O. Langner, Fultonville, and Paul F. Petric, Brewster, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

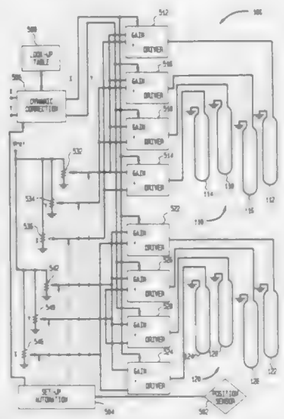
Filed Jul. 16, 1992, Ser. No. 915,798
Int. Cl.[6] G09G *1/04;* G21K *1/08;* H01J *3/14*
U.S. Cl. 315—370 10 Claims

1. An arrangement for shifting the axis of a quadrupole field including

a yoke having at least four coils arranged in pairs in a quadrupole configuration wherein at least the coils of at least one said pair of coils are individually electrically accessible,

means for individually driving said coils of said at least one pair of coils including means for individually deriving current values for each coil of said at least one pair of coils in accordance with a position to which said axis is to be shifted, and

means for controlling said means for individually driving said coils of said at least one pair of coils for differentially altering current in respective ones of said at least one pair of coils by approximately the same amount, wherein said



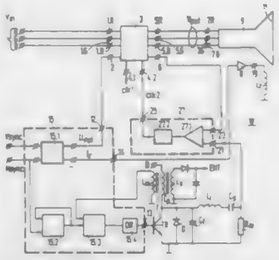
amount is approximately a linear function of one of two orthogonal components of a distance of a magnetic axis of said yoke from a mechanical axis of said yoke.

5,389,859

DISPLAY DEVICE INCLUDING A CORRECTION CIRCUIT FOR CORRECTING A POSITION ERROR, AND CORRECTION CIRCUIT FOR USE IN SUCH A DISPLAY DEVICE

Jeroen H. Stessen, and James J. A. McCormack, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 20, 1993, Ser. No. 124,119
Claims priority, application European Pat. Off., Sep. 22, 1992, 92202900
Int. Cl.[6] G09G *1/04;* H01J *29/74*
U.S. Cl. 315—370 6 Claims



1. A display device comprising a display tube for displaying video information, at least a line deflection coil and at least a field deflection coil, a deflection unit having a first output for applying a line deflection signal to the line deflection coil and a second output for applying a field deflection signal to the field deflection coil, a memory having an input for receiving and storing the video information under the control of a first clock signal and an output for reading the video information to be applied to the display tube under the control of a modulatable second clock signal, and a correction circuit for correcting a position error upon display of the video information on the display tube, with an input for receiving an input signal related to the line deflection current, said correction circuit comprising a modulatable clock generator for generating the second clock signal to be applied to the memory and an output for

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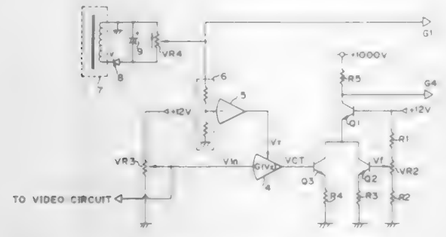
applying said second clock signal to the memory, characterized in that the display device includes a waveform generator for generating a reference signal related to the line deflection signal, and in that the memory has a section for storing the reference signal under the control of the first clock signal and for reading the reference signal modulated with the second clock signal from the memory under the control of the second clock signal, said modulated reference signal being applied as second input signal to the correction circuit.

5,389,860

FOCUS CONTROL CIRCUIT FOR CRT

Masaki Kobayashi, Machida; Rieko Katsuka, Yamato, and Akihiro Funakoshi, Kamakura, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1993, Ser. No. 114,812
Claims priority, application Japan, Aug. 31, 1992, 4-232183
Int. Cl.[6] H01J *29/58*
U.S. Cl. 315—382 6 Claims



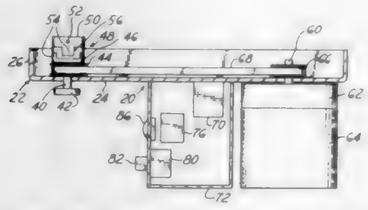
1. A focus control circuit for a CRT, comprising:
focus bias voltage setting means for setting a focus bias voltage;
bias voltage control means for controlling said focus bias voltage and said focus bias voltage setting means in response to control information;
amplifying means for amplifying a luminance setting voltage for said CRT by an amplification factor determined by an amplification factor control voltage and supplying said amplified luminance setting voltage to said bias voltage control means as control information; and
amplification factor control voltage supplying means for supplying a voltage, derived from a control grid voltage which is applied to a control grid of said CRT, to said amplifying means as said amplification factor control voltage.

5,389,861

MACHINE TOOL POWER SPEED CHANGER

Robert L. Warnke, III, 3287 Metamora Rd., Oxford, Mich. 48371

Filed Jul. 26, 1993, Ser. No. 96,278
Int. Cl.[6] H02K *33/16*
U.S. Cl. 318—10 6 Claims



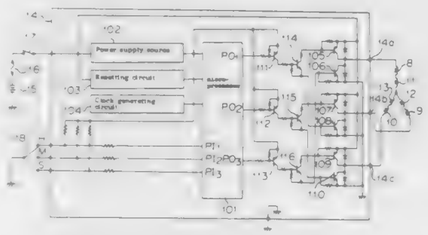
1. A power speed changer for a machine tool wherein the machine tool has a housing and is equipped with a rotatable shaft for setting the machine speed by shaft rotation, the power speed changer comprising:
a coupling for attachment to the rotatable shaft;
a support frame for attachment to the machine tool housing; and
power driving means on the support frame comprising:
a reversible electric motor;
a gear reduction output driven by the motor;
a belt and pulley arrangement connecting the gear reduction output and the coupling for rotating the shaft upon motor operation;
a manually operated switch for energizing the motor for selective rotation in either direction, whereby the shaft is rotated upon switch actuation for increase or decrease of machine speed; and
an overload switch in circuit with the motor for opening the circuit upon excessive torque demands.

5,389,862

ROTATION ANGLE SWITCHING DEVICE

Tsutomu Tominaga, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 942,779
Claims priority, application Japan, Oct. 15, 1991, 3-266125
Int. Cl.[6] H02P *6/02*
U.S. Cl. 318—254 4 Claims



1. A rotation angle switching device comprising:
an output shaft connected to a rotatable permanent magnet, said permanent magnet having a plurality of pole pairs; and
a stator, around which a plurality of coils are wound, said coils being three times as numerous as said pole pairs;
wherein the coils are connected in three pairs star connection; the permanent magnet is provided with a selected rotation angle position by switching a circuit through which current flows by selecting a first two pairs of coils; and, in initializing thereof such as in starting of power supply, after current has flowed for a predetermined period of time to a second two pairs of coils including coils other than a third two pairs of coils for flowing current in correspondence with an original rotation angle position thereof, the circuit is switched to energize the third two pairs of coils in correspondence with the original rotation angle position.

5,389,863

ROTOR MOVEMENT SENSING SYSTEM

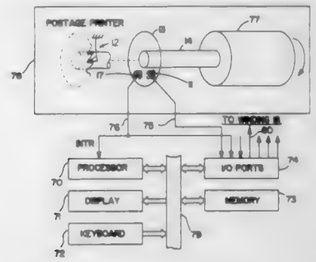
Daniel Flückiger, Walkringen, Switzerland, assignor to Ascom Autelca AG, Berne, Switzerland

Filed Feb. 8, 1993, Ser. No. 14,658
Int. Cl.[6] G06M *3/12*; G07B *17/00*; H03K *21/40*
U.S. Cl. 318—549 32 Claims

1. A rotor movement sensing system for use in a postage meter having a rotor for printing postage by cyclic rotation thereof, and having a register relating to postage printed by the rotor, the rotor position between postage printing cycles defining a home position, the sensing system comprising:

bistable means having an output, a setting input and a resetting input, the setting input operatively coupled to the rotor so as to set the bistable means upon rotation of the rotor by a first predetermined angle past the home position, and
means responsive to the output for changing the register contents and for actuating the resetting input.

23. A method for use with a rotor movement sensing system in a postage meter having a rotor for printing postage by cyclic rotation thereof, and having a register relating to postage



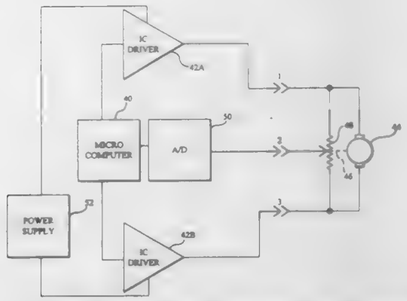
printed by the rotor, the rotor position between postage printing cycles defining a home position, the sensing system comprising bistable means having an output, a setting input and a resetting input, the setting input operatively coupled to the rotor so as to set the bistable means upon rotation of the rotor by a first predetermined angle past the home position, the method comprising the steps, performed in response to the output, of:
changing the register contents, and
actuating the resetting input.

5,389,864

ACTUATOR WITH MOTOR AND FEEDBACK DRIVEN BY A COMMON POWER SUPPLY

Fredrick W. Tryan, Lewiston, and Erik W. Brom, Winona, both of Minn., assignors to Lake Center Industries, Inc., Winona, Minn.

Filed Mar. 29, 1993, Ser. No. 38,858
Int. Cl.[6] G05B *11/16*
U.S. Cl. 318—562 17 Claims



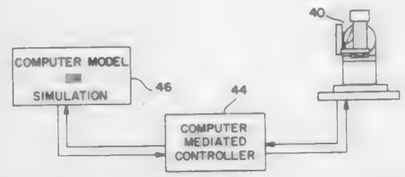
1. In an actuator system of the type having a motor with first and second electrical terminals and an output shaft driven by the motor, a potentiometer actuated by the output shaft and having first and second power terminals and a feedback terminal, a common power supply for the motor and the potentiometer, and control means connected to the power supply and the motor and the potentiometer terminals for controlling the power applied thereto so as to alternately move the output shaft and read a signal on the feedback terminal without moving the output shaft.

5,389,865

METHOD AND SYSTEM FOR PROVIDING A TACTILE VIRTUAL REALITY AND MANIPULATOR DEFINING AN INTERFACE DEVICE THEREFOR

Charles J. Jacobus; Alan J. Riggs, and Mark J. Taylor, all of Ann Arbor, Mich., assignors to Cybernet Systems Corporation, Ann Arbor, Mich.

Filed Dec. 2, 1992, Ser. No. 984,324
Int. Cl.[6] F16D *31/02*; G05G *9/02*
U.S. Cl. 318—568.11 13 Claims



1. A six-axis hand controller capable of assuming an arbitrary orientation and position in three-dimensional space, the hand controller comprising:
a base;
a first member, supported by the base for movement along a first axis;
a second member, support by the first member for movement along a second axis orthogonal to, and forming a plane with, the first axis;
a third member, supported by the second member for movement along a substantially vertical third axis which is orthogonal to the first and second axes;
a first constant-force spring with a first end attached to the base and a second end attached to the third member for urging the third member upwardly against a gravitational force on the third member wherein the third member substantially floats in a quiescent operating state;
a fourth member, supported by the third member for rotation about a fourth axis perpendicular to the plane formed by the first and second axes;
a fifth member, supported by the fourth member for rotation about a fifth axis orthogonal to the fourth axis; and
a sixth member, supported by the fifth member for rotation about a sixth axis orthogonal to the fourth and fifth axes.

5,389,866

CONTROLLER FOR A STEP MOTOR

Katsumi Ishida, Obu; Hiroshi Miyata, and Naoto Kushi, both of Toyota, all of Japan, assignors to Aisan Kogyo Kabushiki Kaisha and Toyoto Jidosha Kabushiki Kaisha, both of Aichi, Japan

Filed Apr. 19, 1993, Ser. No. 47,277
Claims priority, application Japan, Apr. 24, 1992, 4-131502
Int. Cl.[6] G05B *11/06*
U.S. Cl. 318—600 12 Claims

1. A controller for controlling a step motor to conform with a target step number which may be varied with time, the controller comprising:
a timer for measuring time;
timing detecting means utilizing the time measured by the timer for detecting a timing when a finally determined duration of energization has elapsed;
means for permitting a drive circuit of the step motor to start energization for advancing the step motor to a next step number based on the timing detected by the timing detecting means;
means for storing a target step number when the timing detecting means detects the timing;
deriving means for deriving a step deviation between the

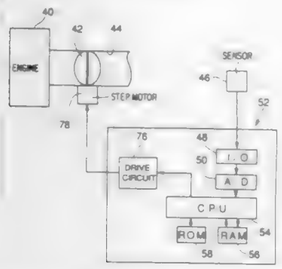
stored target step number and an actual step number of the step motor;

means for deriving a first duration of energization in accordance with the step deviation derived by the deriving means;

means for determining a temporary duration of energization to increase speed in comparison with the first duration of energization derived by the deriving means;

means utilizing the time measured by the timer for detecting a temporary timing when the temporary duration of energization has elapsed;

means for discriminating whether there is a change in the target step number from the stored target step number and a current target step number; and



means for determining a second duration of energization, wherein:

the second duration of energization is the step deviation between the current target step number and the actual step number at an immediately preceding timing detected by the timing detecting means if the discriminating means determines that the target step number has changed, and

the second duration of energization is the first duration of energization derived by the deriving means at an immediately preceding timing detected by the timing detecting means if the discriminating means determines that the target step number has not changed.

5,389,867

CONTROL SYSTEM FOR ACTUATOR APPLICABLE TO SERVO SYSTEM HAVING LOW RESOLUTION SENSOR AND SPEED-REDUCTION GEAR MECHANISM

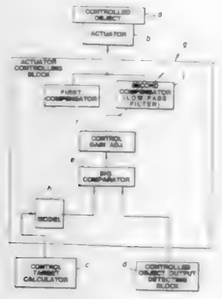
Kazutaka Adachi, and Yoshinori Yamamura, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 30, 1992, Ser. No. 998,916

Claims priority, application Japan, Jan. 9, 1992, 4-002286

Int. Cl.[6] H02K *29/02;* **G05D** *23/275*

U.S. Cl. 318—601 **4 Claims**



1. A control system for an actuator, the actuator being capable of arbitrarily moving a controlled object, the control system comprising:

a) first means for calculating a control target that the control system is desired to reach;

b) second means for detecting an output variable of the controlled object;

c) a signal comparator which compares both output signals related to the control target and related to the output variable of the controlled object;

d) third means for receiving output signals related to the control target calculated by the first means and related to the output variable of the controlled object detected by the second means and for calculating and generating an input signal to be input to the actuator, wherein the third means includes a typical model which represents a motion performance target value desired for the controlled object and the output signals to be compared by the signal comparator are an output signal of the typical model calculated according to the typical model and the output signal of the control target and the output signal related to the output variable of the controlled object, wherein said third means further includes a first compensator which outputs a typical signal therefrom so that the output signal related to the output variable of the controlled object coincides with the output of the typical model and a second compensator which outputs a compensation signal which indicates a difference between a low-pass filtered signal derived using a low-pass filter H from the input signal to the actuator and the output signal related to the output variable of the controlled object which is passed through a second filter which is a product of an inverted transfer function of a previously identified actuator and another low-pass filter having the same transfer characteristics as the low-pass filter, and wherein the third means forms a sum of the typical signal derived from the first compensator and the compensation signal and wherein a control gain to be adjusted is a cut-off frequency of the low-pass filter provided in the second compensator; and

e) fourth means for adjusting the control gain for the actuator according to a result of comparison by the signal comparator

wherein the output signal related to the output variable of the controlled object is a rotation angle of a DC motor expressed as $\Theta(k)$, the input signal to the actuator is expressed as $u(k)$, and the low-pass filter has a transfer function $H(z^{-1})$, and wherein the transfer function of the low-pass filter is expressed as follows:

$$H(z^{-1})=(1-\alpha)z^{-1}/\{1-\alpha z^{-1}\}.$$

wherein $\alpha=\exp(-\tau.\omega_{NF})$, τ is a sampling time, and ω_{NF} is a cut-off frequency of the low,pass filter.

5,389,868

DRIVE CONTROL APPARATUS FOR DRIVEN MACHINE AND PARAMETER DISPLAY METHOD IN DRIVE CONTROL APPARATUS FOR DRIVEN MACHINE

Nobuhiro Mikami; Hisaaki Tsukahara; Hiroshi Yamada, and Satomi Yamauchi, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 16,925

Claims priority, application Japan, Apr. 10, 1992, 4-090939; Sep. 28, 1992, 4-258062

Int. Cl.[6] H02M *5/00;* **H02P** *5/00*

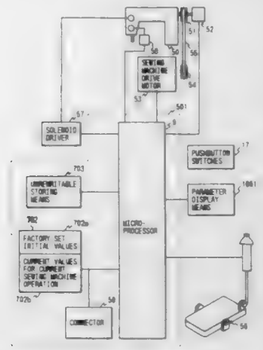
U.S. Cl. 318—632 **4 Claims**

1. A drive control apparatus for a driven sewing machine, comprising:

parameter setting means for setting parameters used to operate the driven sewing machine;

unrewritable storing means for storing a basic set of values of said parameters for standard sewing machine operations;

rewritable storing means having an initial value storage for storing initial values of said parameters, and a current value storage for storing the current values of said parameters for current sewing machine operations; and



wherein said parameter setting means is operative to (1) copy said basic set of values of said unrewritable storing means to said current value storage of said rewritable storing means, and (2) copy said basic set of values to said initial value Storage.

5,389,869

POWER CONTROL SYSTEM FOR AN A.C. INDUCTION MOTOR

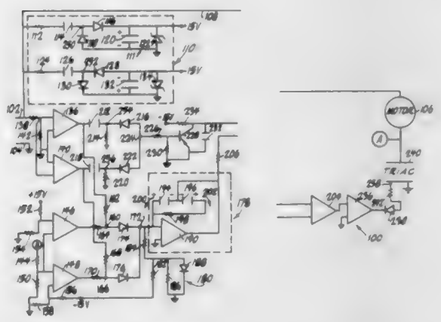
Nicholas Anderson, Bayside, N.Y., assignor to Energy Consortium, Inc.

Division of Ser. No. 990,565, Dec. 14, 1992, Pat. No. 5,304,911.

This application Dec. 8, 1993, Ser. No. 164,268

Int. Cl.[6] G06G *7/186;* **H02P** *7/36*

U.S. Cl. 318—729 **4 Claims**



1. An integrator comprising:

an operational amplifier having at least one input and an output;

a first feedback path having a first polarized capacitor, a negative terminal of the first polarized capacitor being coupled to the output of the operational amplifier, a positive terminal of the first polarized capacitor being coupled to the input of the operational amplifier; and

a second feedback path having a second polarized capacitor and a resistor, a negative terminal of the second polarized capacitor being coupled to the output of the operational amplifier, a positive terminal of the second polarized capacitor being coupled to the input of the operational amplifier, the resistor being coupled between the output and the input of the operational amplifier in the second feedback path.

5,389,870

METHOD AND APPARATUS FOR FILTERING ALTERNATOR RIPPLE USING SYNCHRONOUS SAMPLING

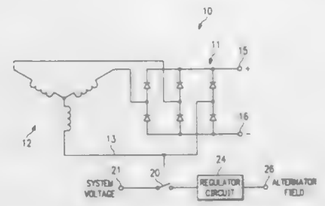
Scott L. Falater, Phoenix, Ariz., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 801,765, Nov. 29, 1991, abandoned.

This application May 6, 1993, Ser. No. 59,008

Int. Cl.[6] H02J *7/14*

U.S. Cl. 322—28 **9 Claims**



1. A circuit in a vehicle system for reducing the ripple in an output of a multi-phase alternator having a plurality of stator windings, said vehicle system having a regulating circuit that regulates the output of the alternator, comprising:

a switch connected in series between a system battery voltage and the regulating circuit;

said switch being connected to receive a signal produced by one of the stator windings to be closed in response to a voltage waveform of said one of the stator windings at a predetermined phase of the voltage of said one of the stator windings at a conduction switchover point among the stator windings.

5,389,871

SELF-OSCILLATION TYPE DC-DC CONVERTER

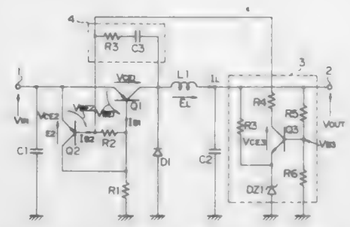
Tetushi Otake, Tsurugashima, Japan, assignor to Toko, Inc., Tokyo, Japan

Filed Mar. 18, 1994, Ser. No. 215,036

Claims priority, application Japan, Mar. 19, 1993, 5-83849

Int. Cl.[6] G05F *1/44*

U.S. Cl. 323—282 **9 Claims**



1. A non-insulated, self-oscillation type DC-DC converter having DC voltage inputted therein, and a first switching element for turning on and off the inputted DC voltage so that stabilized DC output voltage is applied to a load through a smoothing circuit comprising at least one diode, a choke coil, and a smoothing capacitor, said converter comprising:

a second switching element of a same junction type as said first switching element, said first switching element having a current input terminal connected to a current input terminal of said second switching element,

said first switching element having a control terminal that is

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connected to a current output terminal of said second switching element;

a first resistor connected between said control terminal of said first switching element and ground;

a second resistor;

said second switching element having a control terminal that is connected by said second resistor to said control terminal of said first switching element; and

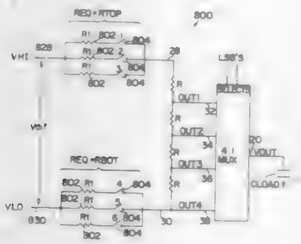
a feedback circuit connected between a current output terminal of said first switching element and said control terminal of said second switching element.

5,389,872

SIGNAL PROCESSING SYSTEM AND METHOD OF REDUCING SWITCH ERROR ATTRIBUTABLE TO SWITCH IMPEDANCES

Richard A. Erhart, Chandler, Minn., and Matthew P. Hanly, Scottsdale, Ariz., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 21, 1993, Ser. No. 51,109
Int. Cl.[6] G05F *3/08*
U.S. Cl. 323—354 **9 Claims**



9. A method of reducing signal processing system output signal offset errors attributable to switch impedances within a signal processing system comprising:

selecting an output port of a resistor divider network having equal valued network resistors;

applying a first excitation signal to a first common input port for a first plurality of switches;

applying a second excitation signal to a second common input port for a second plurality of switches;

outputting a differential excitation signal across a first common output port for said first plurality of switches and a second common output port for said second plurality of switches;

applying said differential excitation signal across a first input port and a second input port of said resistor divider network;

calculating a desired output signal level, said desired output signal level being equal to a product of a constant multiplier and said differential excitation signal;

calculating a second output signal level, said second output signal level being equal to a product of said differential excitation signal and a numerical ratio, said ratio being dependent on said resistor values for said resistor network, a first equivalent resistance for said first plurality of switches and a second equivalent resistance for said second plurality of switches;

equating the desired output signal level to said second output signal level to determine a relationship between said first equivalent resistance and said second equivalent resistance; and

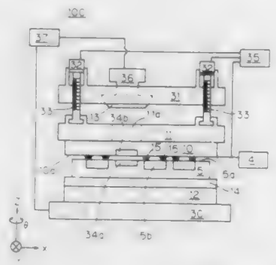
enabling a combination of switch settings for said first plurality of switches and said second plurality of switches to establish said relationship, wherein said combination of switch settings includes open and closed switches.

5,389,873

PRESSURE CONTACT CHIP AND WAFER TESTING DEVICE

Tatsuya Ishii, and Masatoshi Matsumoto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,538
Claims priority, application Japan, Jun. 5, 1992, 4-145459
Int. Cl.[6] G01R *1/04*
U.S. Cl. 324—158.1 **25 Claims**



1. A testing device for a wafer and chips for testing at least one chip being formed on one major surface of a semiconductor wafer, said testing device comprising:

(a) a test plate having a contact electrode being arranged to be in mirror image relation to a prescribed one of bonding pads provided in each said chip, at least a part of said test plate having transparency in the direction of its thickness;

(b) alignment means for recognizing said semiconductor wafer through said test plate and relatively moving said test plate with respect to said semiconductor wafer thereby making alignment;

(c) compression bonding means for bringing said contact electrode into contact with said prescribed bonding pad with a uniform and constant pressure; and

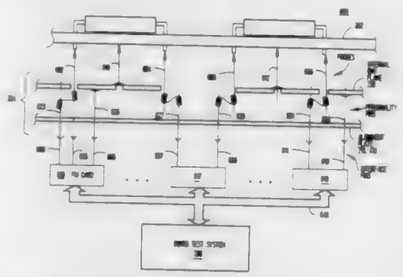
(d) signal application means for applying an electric signal to said chip from said contact electrode.

5,389,874

METHOD FOR CONTROL OF GROUND BOUNCE ABOVE AN INTERNAL GROUND PLANE IN A SHORT-WIRE BOARD TEST FIXTURE

Philip N. King, and Carroll E. Morris, Jr., both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 762,521, Sep. 18, 1991, abandoned. This application Mar. 15, 1993, Ser. No. 31,092
Int. Cl.[6] G01R *1/073*
U.S. Cl. 324—758 **7 Claims**



1. A method for setting up a short-wire board test fixture by positioning a plurality of ground probes relative to a plurality of positioned test signal probes, to reduce ground bounce during a testing of a circuit board, the method comprising the steps of:

1) placing the circuit board to be tested on the short-wire board test fixture;

2) defining a grid of squares on the circuit board to subdivide the test signal probes into groups, such that each group of test signal probes is in only one square;

3determining the number of test signal probes within each of said groups;

4) determining the number of ground probes to be positioned in each square so that no more than five test signal probes exist for each ground probe within each of said groups;

5) selecting a maximum distance to be maintained when positioning ground probes adjacent to test signal probes; and

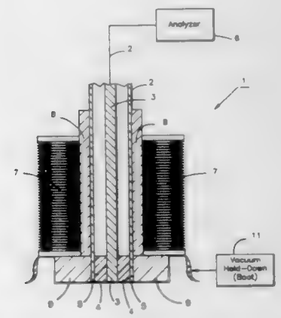
6) positioning said ground probes in the short-wire board test fixture relative to said test signal probes so that each test signal probe is within said maximum distance of at least one of said ground probes to thereby reduce ground bounce during testing of the circuit board.

5,389,875

APPARATUS FOR NON-DESTRUCTIVE TESTING OF DIELECTRIC/MAGNETIC MATERIALS

Mark D. A. Rosen, Woodbridge, Conn., and Mark A. Lizza, Oyster Bay, N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 19, 1993, Ser. No. 34,344
Int. Cl.[6] G01N *27/72;* **G01R** *33/00*
U.S. Cl. 324—228 **9 Claims**



1. A non-destructive test apparatus, comprising:

means for directing an electromagnetic wave at a structure to cause the wave to reflect from the structure and for guiding the reflection of the wave to an analyzer; and

means for selectively applying a magnetic field to the structure simultaneously with the reflection of the electromagnetic wave from the structure in order to analyze intrinsic electromagnetic properties of the structure,

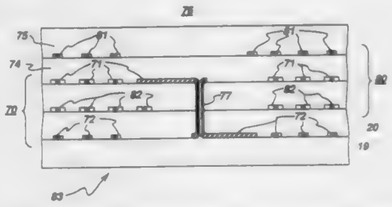
wherein said electromagnetic wave directing means is a coaxial cable, said magnetic field applying means comprises a coil wrapped around an outer conductor of said cable, said magnetic field applying means further comprises means for concentrating magnetic flux on said structure, and wherein said flux concentrating means comprises a soft magnetic sleeve surrounding said outer conductor and in turn surrounded by said coil.

5,389,876

FLEXIBLE EDDY CURRENT SURFACE MEASUREMENT ARRAY FOR DETECTING NEAR SURFACE FLAWS IN A CONDUCTIVE PART

Kristina H. V. Hedengren; Richard O. McCary, both of Schenectady, N.Y.; Robert P. Alley, Myrtle Beach, S.C.; Richard J. Charles, Schenectady, N.Y.; William P. Kornrumpf, Albany, N.Y., and John D. Young, Rexford, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 6, 1991, Ser. No. 696,455
Int. Cl.[6] G01N *27/82;* **G01R** *33/12*
U.S. Cl. 324—242 **29 Claims**



1. A flexible eddy current surface measurement array comprising:

a spatially correlated plurality of electrically interconnected eddy current sensing means wherein said eddy current sensing means comprise drive and sense elements operatively coupled through a conductive surface under inspection such that said drive and sense elements are disposed in at least two layers wherein said elements are electrically interconnected therethrough and within an integral, multi-layer structure such that said multilayer structure is outwardly affixed onto a supporting material having a surface conforming to match the conductive surface under inspection wherein said sense elements are further comprised of a plurality of coil elements such that each of said coil elements are electrically connected to respective output leads; and

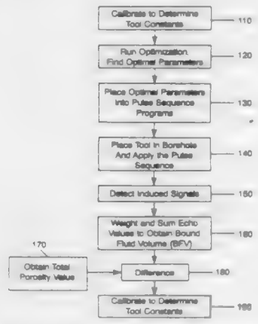
said multi-layer structure is flexible wherein the plurality of said sensing means are disposed.

5,389,877

NUCLEAR MAGNETIC RESONANCE PULSE SEQUENCES FOR DETERMINING BOUND FLUID VOLUME

Abdurrahman Sezginer, Brookfield, and Christian Straley, Ridgefield, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 27, 1991, Ser. No. 800,339
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—303 **18 Claims**



1. A method involving nuclear magnetic resonance (NMR)

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for measuring an indication of an attribute of a volume of earth formation with a borehole tool for placement in a borehole in the earth formation such that the borehole tool is substantially surrounded by the earth formation, wherein the borehole tool produces static magnetic fields in a volume of a formation, produces oscillating magnetic fields in a volume of a formation, and measures an induced magnetic signal, the method comprising:

a) producing a static magnetic field from the borehole tool into the volume of formation substantially surrounding the borehole tool oscillating magnetic fields according to a pulse sequence

b) the borehole tool also producing oscillating magnetic fields according to a selected pulse sequence in order to induce signals in the volume which are measurable by the tool in the borehole;

c) defining an NMR cutoff relaxation time;

d) measuring with the tool the induced signals; and

e) determining from the measured signals occurring substantially before the cutoff relaxation time an indication of bound fluid volume (BFV) of the volume of earth formation.

5,389,878

ELECTRON SPIN RESONANCE DEVICE

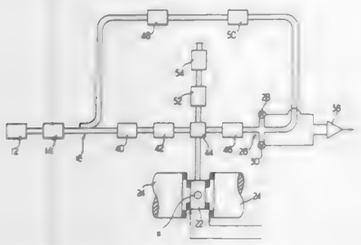
Kazuo Nakagawa; Makoto Tsuneda; Atsushi Nukanobu, all of Tokyo; Akio Nakanishi, and Akira Furuse, both of Osaka, all of Japan, assignors to Nikkiso Co., Ltd., Tokyo and Sumitomo Special Metals Co., Ltd., Osaka, both of Japan

Filed Apr. 22, 1993, Ser. No. 51,363

Claims priority, application Japan, Apr. 23, 1992, 4-104343

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—316 4 Claims



1. An electron spin resonator provided with a cavity resonator applied with a polarized magnetic field in which a measuring sample is placed to extend along a microwave magnetic field vertical to said polarized magnetic field so as to supply a microwave power generated by a microwave oscillator through resistance attenuators to said measuring sample in said cavity resonator for detection of a resonant signal as a reflected power reflected from said measuring sample in said cavity resonator in order to detect an electron spin resonant signal of said measuring sample, characterized in that said microwave power generated by said microwave oscillator is divided by a directional coupler into a plurality of microwave powers so that one of said divided microwave powers is supplied through both a first variable resistance attenuator and a first microwave power amplifier into said cavity resonator as well as a resonant signal reflected from said measuring sample in said cavity resonator is supplied through a second microwave signal amplifier into a magic-T so as to supply an output signal of said microwave signal amplifier into an E-branch of said magic-T in which each of paired balance branches is provided with a crystal detector, while another of said microwave powers divided by said directional coupler is supplied through both a second variable resistance attenuator and a first phase shifter into an H-branch of said magic-T in which said another microwave power is supplied as a reference signal having the same amplitude as and an opposite phase to said output power of said microwave signal amplifier for detection and subsequent output of a resonant signal component only of said measuring sample by said crystal detectors prior to an amplification thereof.

5,389,879

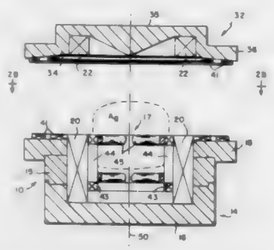
MRI DEVICE HAVING HIGH FIELD STRENGTH CYLINDRICAL MAGNET WITH TWO AXIALLY SPACED ELECTROMAGNETS

Yuly M. Pulyer, 350 Revere Beach Blvd., Revere, Mass. 02151

Filed Dec. 18, 1992, Ser. No. 993,313

Int. Cl.[6] G01R *33/28*

U.S. Cl. 324—318 2 Claims



1. An MRI imaging device comprising:

a cylindrical magnet having a primary electromagnet and a secondary electromagnet, the electromagnets having the same longitudinal axis and spaced apart along such axis, each electromagnet having associated therewith a separate flux guiding member that substantially surrounds that electromagnet with an open end of that electromagnet facing the other electromagnet, the electromagnets providing a static magnetic field in a central air gap extending from within the primary electromagnet axially beyond the primary electromagnet toward the secondary electromagnet;

a gradient coil for providing a gradient magnetic field in the central air gap; and

an Rf coil for providing an Rf field orthogonal to the static field in the central air gap;

wherein the flux guiding members comprise a cylinder closed at one end and having an annular surface at the other end, and wherein the magnet further comprises shimming coils located on said annular surface.

5,389,880

MAGNETIC RESONANCE IMAGING APPARATUS

Issei Mori, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jun. 30, 1993, Ser. No. 85,742

Claims priority, application Japan, Jun. 30, 1992, 4-172539

Int. Cl.[6] G01R *33/20*

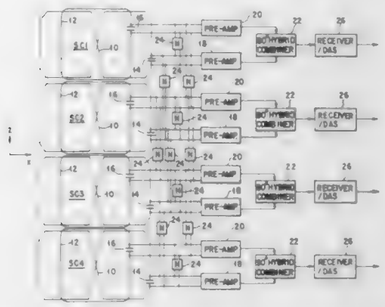
U.S. Cl. 324—318 12 Claims

1. A magnetic resonance imaging apparatus for receiving radio frequency signals generated by an object to be imaged; said apparatus comprising:

a radio-frequency coil array formed of a plurality of radio-frequency coil assemblies arranged in at least one dimension, each radio-frequency coil assembly for receiving radio-frequency signals from two directions perpendicular to each other generated at a predetermined portion of the object and for generating two output signals in response thereto;

each radio-frequency coil assembly having an associated means for shifting a phase of one of the two output signals by about 90° and for synthesizing the two output signals to obtain one synthesized signal;

means for substantially simultaneously operating at least two of said plurality of radio-frequency coil assemblies to generate substantially simultaneously at least two synthesized signals; and



means for reconstructing an image of the object on the basis of said at least two synthesized signals.

5,389,881

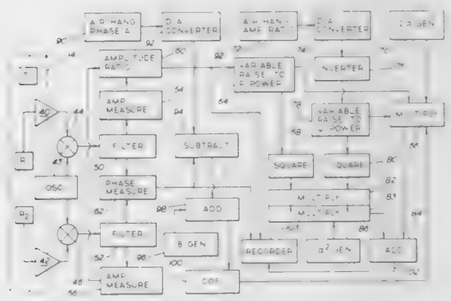
WELL LOGGING METHOD AND APPARATUS INVOLVING ELECTROMAGNETIC WAVE PROPAGATION PROVIDING VARIABLE DEPTH OF INVESTIGATION BY COMBINING PHASE ANGLE AND AMPLITUDE ATTENUATION

Michael S. Bittar, Houston, and Paul F. Rodney, Spring, both of Tex., assignors to Baroid Technology, Inc., Houston, Tex.

Filed Jul. 22, 1992, Ser. No. 918,460

Int. Cl.[6] G01V *3/18, 3/12*

U.S. Cl. 324—338 20 Claims



6. Apparatus for determining the resistivity of earth formations surrounding a borehole, comprising:

means for generating electromagnetic wave energy at a first location in the borehole;

means for receiving electromagnetic wave energy at second and third locations in the borehole, said second and third locations being successively spaced longitudinally in the borehole from said first location;

means for detecting the phase shift between electromagnetic energy received at said second and third locations in the borehole;

means for generating a first signal functionally related to said phase shift;

means for detecting the attenuation between electromagnetic energy received at said second and third locations in the borehole;

means for generating a second signal functionally related to said attenuation;

variable means for combining said first and second signals to generate a plurality of additional signals functionally related, respectively, to the resistivity of the formation at a plurality of depths of investigation, respectively.

5,389,882

LAN MEASUREMENT APPARATUS FOR DETERMINING VOLTAGE BETWEEN PACKETS

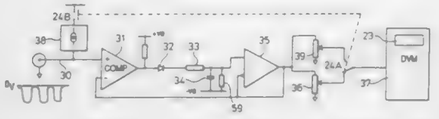
Colin S. I'Anson, and Peter Phaal, both of Bristol, England, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 1, 1993, Ser. No. 66,140

Claims priority, application European Pat. Off., Dec. 7, 1990, 90313319

Int. Cl.[6] G01R *31/08;* H04J *1/16*

U.S. Cl. 324—522 16 Claims



1. An apparatus for measuring at least one physical parameter of a wired, packet-based, baseband LAN, said apparatus comprising:

(a) input means for providing a connection to a transmission medium of the LAN to enable measurements to be made while the LAN is operational, and

(b) voltage measuring means, coupled to the LAN transmission medium via said input means for detecting and providing a measure of an inter-packet gap voltage that is present during intervals between packets on the LAN transmission medium.

5,389,883

MEASUREMENT OF GAS AND WATER CONTENT IN OIL

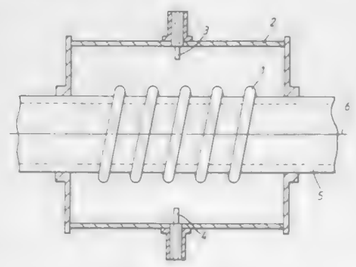
Richard Harper, Essex, United Kingdom, assignor to GEC-Marconi Limited, Stanmore, United Kingdom

Filed Sep. 16, 1993, Ser. No. 121,548

Claims priority, application United Kingdom, Oct. 15, 1992, 9221650

Int. Cl.[6] G01N *22/04*

U.S. Cl. 324—636 11 Claims



1. Apparatus for measuring the relative proportions of dissimilar fluids within a pipe, comprising: a plurality of coil resonators with different resonant frequencies surrounding the pipe with the pipe passing through the coils of the coil resonators, the coil resonators being split into a plurality of groups each comprising a plurality of coil resonators having the same natural resonant frequency, the resonators of the different groups having different natural resonant frequencies; a variable frequency source of electromagnetic radiation for sending electromagnetic radiation at a plurality of different frequencies into the coil resonators; and an electromagnetic radiation sensor for measuring electromagnetic radiation emitted by each of the coil resonators.

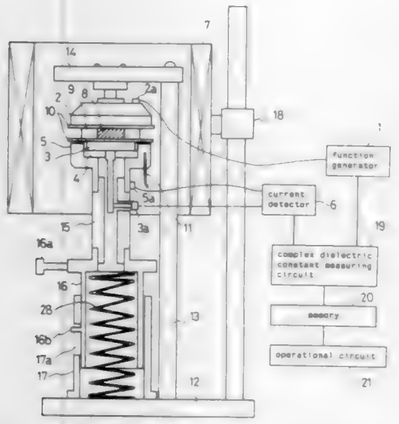
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PARALLEL PLATE DIELECTRIC CONSTANT MEASURING APPARATUS HAVING MEANS FOR PREVENTING SAMPLE DEFORMATION

Nobutaka Nakamura; Masafumi Take, and Nobuo Iizuka, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Filed May 7, 1993, Ser. No. 57,766
Claims priority, application Japan, May 7, 1992, 4-115011
Int. Cl.[6] G01R *27/26*; G01N *27/22*
U.S. Cl. 324—663 5 Claims



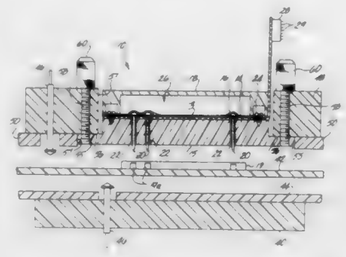
1. A parallel plate measuring apparatus for measuring the dielectric constant of a sample, the sample having a thickness, said apparatus comprising: an exciting electrode having a flat surface portion; a response electrode having a flat surface portion facing, and parallel to, said flat surface portion of said exciting electrode; a sample holding assembly composed of at least one pair of insulating thin film members and an insulating ring member having a thickness equal to the thickness of the sample, said ring member being interposed between said insulating thin film members and being disposed to prevent radial flow of the sample, and said assembly being disposed, when the dielectric constant of the sample is to be measured, between said flat surface portions of said exciting electrode and said response electrode so that a respective insulating thin film member is disposed between the sample and a respective one of said electrodes, and between said insulating ring member and a respective one of said electrodes, for preventing the sample and said insulating ring member from directly contacting each of said electrodes when the sample and said insulating ring member are arranged between said exciting electrode and said response electrode; a heating oven disposed to surround said exciting electrode and said response electrode for varying the temperature of the sample; circuit means connected to said exciting electrode and said response electrode for applying an alternating voltage between said electrodes and for detecting a current flowing between said electrode in response to the voltage when a sample is disposed between said electrodes; and a dielectric constant measuring circuit connected to said circuit means for receiving signals representing the alternating voltage and the current and for calculating the dielectric constant of only the sample independently of the dielectric constants of said insulating thin film members and said insulating ring member inserted between said exciting electrode and said response electrode; whereby fluid flow of the sample during heating of the sample and welding between the sample and said electrodes during cooling of the sample is prevented so that the dielectric constant of the sample is measured accurately.

5,389,885

EXPANDABLE DIAPHRAGM TEST MODULES AND CONNECTORS

Mark A. Swart, Upland, Calif., assignor to Everett Charles Technologies, Inc., Pomona, Calif.

Continuation-in-part of Ser. No. 827,023, Jan. 27, 1992, Pat. No. 5,252,916. This application Jan. 26, 1993, Ser. No. 9,133
Int. Cl.[6] G01R *1/073*
U.S. Cl. 324—761 13 Claims



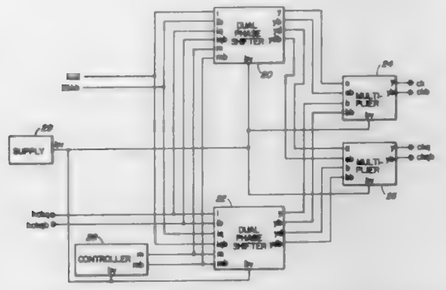
1. A test module for making contact with a fixed pattern of spaced apart leads adjacent an integrated circuit package mounted among other electrical circuit elements on a loaded printed circuit board, to perform circuit verification by an external electronic test analyzer, the test module comprising:
a rigid probe support member having top and bottom sides;
a plurality of elongated and spaced apart test probes extending through a fixed pattern of respective bores in the probe support member to slidably support the probes in a pattern corresponding to the pattern of leads adjacent the integrated circuit package, the test probes comprising solid metal pins projecting from the bottom side of the probe support member on said fixed pattern so that a projecting first end of each supported test probe is aligned for contact with a corresponding lead adjacent the integrated circuit package, an opposite second end of each supported test probe having means for retaining the probe in said probe support member, the second end of each probe facing away from the top side of the probe support member and away from the integrated circuit package;
a flexible elastic diaphragm having a first face and a second face, the diaphragm mounted on the probe support member so the first face of the diaphragm is normally supported by the top side of the probe support member, the diaphragm thereby contacting the second ends of the test probes, and in which the second face of the diaphragm faces toward a void space into which the diaphragm is elastically movable away from the top side of the probe support member in response to axial pressure contact from the second ends of the test probes caused by the test probes sliding within their respective bores when the test module is mounted over the integrated circuit package and the first ends of the test probes are pressed into contact with the leads adjacent the integrated circuit package, thereby freely stretching the flexible diaphragm into the void space away from the probe support member and holding the stretched diaphragm under tension and in spring biased pressure contact with the second ends of the test probes to resiliently force each test probe axially against a respective lead adjacent the integrated circuit package; and
connecting means supported by said probe support member for electrically connecting said test probes to corresponding electrical terminals on the test module so that contact between the individual leads adjacent the integrated circuit package and corresponding test probes on the module is electrically translated via the test probes to the external electronic test analyzer through its contact with the terminals on the test module.

5,389,886

QUADRATURE SIGNALS FREQUENCY DOUBLER

Petre Popescu, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 12, 1993, Ser. No. 150,907
Int. Cl.[6] H03B *19/00*
U.S. Cl. 327—120 15 Claims



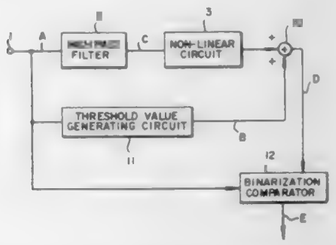
1. A circuit for receiving a pair of quadrature input signals of a first frequency and to generate a pair of quadrature output signals of a second frequency, the second frequency being greater than the first frequency, said circuit comprising;
a pair of dual phase shifters, each having input means to independently receive said pair of input signals of said first frequency and processing means to generate a pair of phase shifted output signals having a phase difference therebetween;
control means connected to each of said pair of dual phase shifters having phase adjusting means to control the phase difference between said pair of phase shifted output signals;
a pair of symmetrical multipliers each receiving said pair of phase shifted output signals from said pair of dual phase shifters and generating said pair of quadrature output signals of said second frequency and;
biasing means connected to each of said pair of dual phase shifters, control means and symmetrical multipliers to provide operating voltage to said circuit.

5,389,887

BINARY CODING CIRCUIT

Seiichi Mizukoshi, Chigasaki, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 19, 1993, Ser. No. 47,890
Claims priority, application Japan, Aug. 18, 1992, 4-219061
Int. Cl.[6] H03K *5/00*
U.S. Cl. 327—72 1 Claim



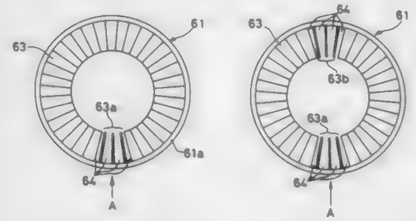
1. A binary coding circuit that eliminates input signal components that have high frequencies and a small amplitude, comprising:
an adaptive threshold value generating circuit for generating optimum threshold values for binarization of background components;
a high-pass filter circuit that outputs high-frequency components of the input signal;
an adder that adds the outputs of the adaptive and high-pass filter circuits; and
binarization means for binarizing the input signal in response to a comparison of the output of the adder and the input signal.

5,389,888

SYNCHROTRON RADIATION BEAM GENERATOR

Chiaki Urano, Narashino, and Hiroyuki Suda, Narashino, both of Japan, assignors to Seiko Seiki Kabushika Kaisha, Japan

Filed Jun. 15, 1992, Ser. No. 898,511
Claims priority, application Japan, Jun. 18, 1991, 3-146083
Int. Cl.[6] H05H *13/04*
U.S. Cl. 315—503 11 Claims



5. Apparatus for extracting a radiation beam from a radiation beam generator, comprising: a beam duct connected in use to a radiation beam generator for extracting a radiation beam from the radiation beam generator and transmitting the radiation beam through the beam duct; and a multistage axial-flow arrangement disposed within the beam duct for controlling transmission of the radiation beam through the beam duct while maintaining the portion of the beam duct upstream of the multistage axial-flow arrangement at a higher vacuum level than the beam duct portion downstream thereof, the multistage axial-flow arrangement comprising a plurality of stators with blades coacting with a plurality of rotors with blades for maintaining the higher vacuum level at the upstream portion of the beam duct, wherein the blades of the stators are disposed at respective tilt angles, and wherein at least one blade of each stator has a variable tilt angle.

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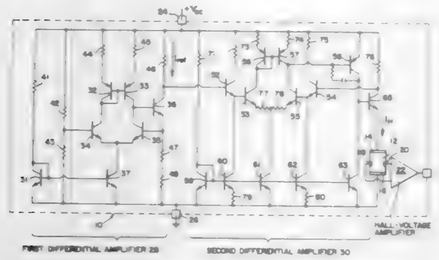
TEMPERATURE-COMPENSATED CURRENT SOURCE FOR USE IN A HALL ANALOG MAGNETIC-FIELD DETECTOR

Jay M. Towne, Henniker; Ravi Vig, Concord, and Paul W. Latham, II, Lee, all of N.H., assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed Sep. 10, 1993, Ser. No. 119,851
Int. Cl.[6] H03F *15/00*
U.S. Cl. 330—6 12 Claims

1. A temperature-compensated current source for use in a Hall magnetic-field detector comprising a pair of DC voltage terminals to which a DC supply voltage may be connected for energizing said current source, a current-source output; a differential amplifier means; a reference resistor connected to one input of said differential amplifier means; a current amplifier having an input connected to the output of said amplifier means, said current amplifier having an output that is adapted to be connected to a Hall element to be energized by said current amplifier; a voltage divider circuit means having an output connected to said reference resistor, said voltage divider means being connected across said pair of DC voltage terminals for producing at said one amplifier-means input a bias

voltage, which is dropped across said reference resistor, that is proportional to the DC supply voltage, said differential amplifier means being for varying the Hall energizing current from said current-amplifier output as a function of the temperature



coefficient of said reference resistor to compensate for and stabilize the Hall sensitivity of the Hall element with respect to changes with temperature, and for changing the level of said Hall energizing current as a direct function of the DC supply voltage that may be applied to said DC voltage terminals.

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COMBINERS FOR R.F. POWER AMPLIFIERS

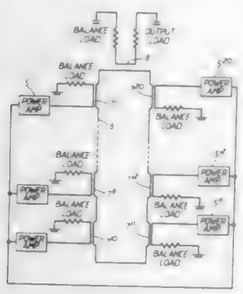
Clement P. Burrage, Essex, United Kingdom, assignor to GEC-Marconi Limited, Middlesex, United Kingdom

Filed Jul. 29, 1993, Ser. No. 97,999

Claims priority, application United Kingdom, Aug. 20, 1992, 9217679

Int. Cl.[6] H03F *3/68, 3/60*

U.S. Cl. 330—124 R **15 Claims**



14. A combiner for two r.f. power amplifiers having different operating frequencies, comprising a directional coupler for coupling the output of a first r.f. power amplifier having one operating frequency on to a transmission line, the transmission line forming a continuous loop the length of which is an integral number of wavelengths of that operating frequency, and a directional coupler for withdrawing the output power of the r.f. amplifier from the continuous loop as well as for coupling the output of a second r.f. power amplifier having a different operating frequency to produce a combined output.

5,389,891

SEMICONDUCTOR DEVICE COMPRISING A TWO-STAGE DIFFERENTIAL AMPLIFIER

Pascal Philippe, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

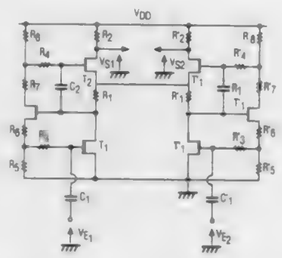
Filed Dec. 21, 1992, Ser. No. 995,452

Claims priority, application France, Dec. 23, 1991, 9116035

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—253 **8 Claims**

1. A two-stage differential amplifier comprising: a first differential transistor pair including first and second transistors having their respective source electrodes coupled together in common, each of the transistors receiving an input signal and forming a respective current branch, means connecting said source electrodes directly to ground, and a second differential transistor pair including third and fourth transistors having their respective source electrodes coupled together in common, each of the third and fourth transistors receiving an output signal from the respective branches of the first differential transistor pair, forming a current branch, and supplying an output, wherein each branch of the second differential transistor pair is connected in series with a respective branch of the first differential transistor pair so as to form two sub-circuits each comprising a transistor of the first differential transistor pair and a load, and a transistor of the second differential transistor pair and a load, in a manner such that the respective transistors of each sub-circuit share a same current.



5,389,892

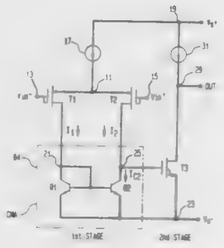
INPUT STAGES FOR HIGH VOLTAGE OPERATIONAL AMPLIFIER

Milton L. Embree, Muhlenberg Township, Berks County, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Nov. 9, 1993, Ser. No. 150,628

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—253 **16 Claims**



1. The combination comprising:

first and second power terminals for the application therebetween of an operating potential;

first and second signal input terminals;

an input stage comprised of insulated-gate field-effect transistors (IGFETs); each IGFEI having source and drain electrodes defining the ends of a main conduction path and a control electrode whose applied potential determines the conductivity of the conduction path; said input stage including first and second IGFETs;

a relatively constant current source;

means connecting said relatively constant current source between said first power terminal and the source electrodes of said first and second IGFETs;

means connecting the control electrode of said first IGFET to said first signal input terminal and the control electrode of said second IGFET to said second signal input terminal;

first and second nodes;

means connecting the drain of said first IGFET to said first node and the drain of said second IGFET to said second node;

a current mirror amplifier (CMA) for use in combination with said input stage comprised of a first main current-carrying path and a second main current-carrying path for conducting a current which mirror the current in the first main current-carrying path, said first and second main current-carrying paths comprised solely of bipolar transistors for producing a signal having low noise and low voltage offset at said second node; said CMA including first and second bipolar transistors, each bipolar transistor having an emitter and a collector defining the ends of a main conduction path and a base;

means connecting the bases of said first and second bipolar transistors and the collector of said first bipolar transistor to the drain of said first IGFET at said first node;

means connecting the collector of said second bipolar transistor to said second node;

means connecting the emitters of said first and second bipolar transistors to said second power terminal;

an output stage including a high voltage field effect transistor (FET) having source, drain and gate electrodes and characterized in having a relatively high threshold voltage; means connecting the source of said high voltage FET to the second power terminal;

means connecting the drain of said high voltage FET to an output load terminal;

means connecting an output load between said output load terminal and a power terminal adapted to receive a relatively high operating voltage; and

means connecting the gate of said high voltage FET to said second node for providing high voltage, high current, amplification with relatively low noise and low offset to the signal at said second node.

5,389,893

CIRCUIT FOR A CONTROLLABLE AMPLIFIER

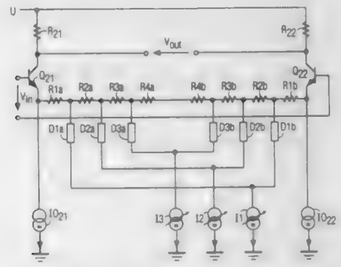
Sossio Itri, Wolfsburg, and Martin Rieger, Rottweil, both of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Filed Oct. 19, 1993, Ser. No. 138,852

Claims priority, application Germany, Apr. 25, 1991, 4113498

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—254 **12 Claims**



1. A circuit for a controllable amplifier, provided with a differential amplifier for an input voltage, said differential amplifier containing a first transistor and a second transistor, the emitters of said transistors being connected by resistors, and wherein:

said emitters of said first and second transistors are connected by a series circuit of at least three resistors;

wherein a respective component whose resistance can be controlled is branched off between said resistors, each of said components being connected to a respective current source;

wherein the current from said current sources can be altered in dependence on the input voltage, and

wherein, in the event that the middle resistor of the resistors in the series circuit is divided into two individual resistors, no component having a controllable resistance is branched off from the junction of these two resistors.

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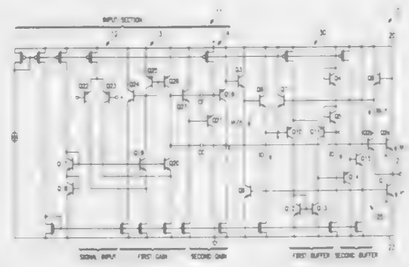
POWER AMPLIFIER HAVING HIGH OUTPUT VOLTAGE SWING AND HIGH OUTPUT DRIVE CURRENT

Marc H. Ryat, Santa Clara, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Sep. 3, 1992, Ser. No. 940,076

Int. Cl.[6] H03F *3/45, 3/30*

U.S. Cl. 330—255 **19 Claims**



7. A power amplifier, comprising:

a signal input amplifier stage to which an input signal is applied to produce an input stage amplified output;

a quasi-push-pull signal output stage having first and second transistors, said first transistor having a current path connected between a supply voltage and an output node, said second transistor having a current path connected between a reference voltage and said output node, said first transistor having a base connected to receive the input stage amplified output; and

a common mode biasing circuit connected to bias said quasi-push-pull signal output stage for class AB operation comprising:

a sense circuit for sensing the current conducted by the first transistor;

a current mirror circuit connected to a base of the second transistor; and

a buffer, coupled to said sense circuit and to said current mirror circuit, and having an output for biasing the second transistor responsive to the current sensed by said sense circuit and to the current mirrored by said current mirror circuit;

wherein the input stage amplified output provides a signal base drive current to said first transistor separate from said common mode biasing circuit.

5,389,895

TRANSCONDUCTANCE AMPLIFIER

Paul A. Moore, Seaford, and Anthony R. Cusdin, Horley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 10, 1993, Ser. No. 165,435

Claims priority, application United Kingdom, Dec. 21, 1992, 9226550

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—257 **15 Claims**

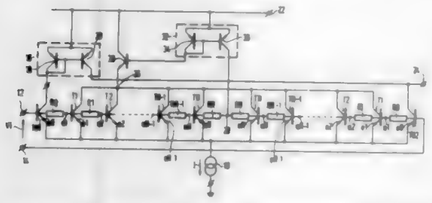
7. A transconductance amplifier comprising:

first and second input terminals for an input signal voltage, a current source,

first and second input transistors each having a control electrode and first and second main electrodes,

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first means coupling the second main electrodes of said first and second input transistors to said current source,
an output terminal coupled to the first main electrodes of the first and second input transistors,
second means coupling said first and second input terminals to respective control electrodes of the first and second input transistors,
a plurality of further transistors each having a control electrode and first and second main electrodes,
a tapped impedance coupled between the control electrodes of the first and second input transistors and with each tap of the tapped impedance coupled to a respective control electrode of a respective further transistor,



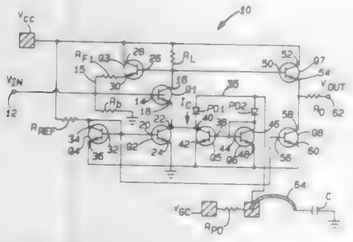
a common circuit node coupled to the first main electrodes of the further transistors,
third means coupling the second main electrodes of the further transistors to said current source,
means coupled to said common circuit node for computing the total control electrode currents of the further transistors from currents flowing in the first main electrodes of the further transistors, and
means for supplying to a center point of the tapped impedance a compensation current corresponding to the total control electrode currents of the further transistors.

5,389,896

HBT MONOLITHIC VARIABLE GAIN AMPLIFIER WITH BIAS COMPENSATION AND BUFFERING

Kevin W. Kobayashi, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 24, 1994, Ser. No. 200,990
Int. Cl.[6] H03G 3/12
U.S. Cl. 330—282 20 Claims



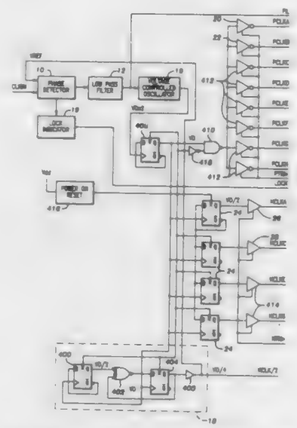
1. A bipolar variable gain amplifier comprising:
an input for receiving an input signal;
an output for providing an amplified output signal as a function of the input signal and a variable gain;
a transistor amplifier including a first bipolar transistor having a base, a collector and an emitter, with the base connected to the input and the collector coupled to the output;
a parallel feedback path connected between the collector and the base of said first transistor;
a series feedback path connected to the emitter of said first transistor and having a variable resistance element;
means for applying a variable control signal to the series feedback path to control the variable gain; and
bias compensation means connected to the variable resistance element for generating a variable current so as to provide current bias to the variable resistance element.

5,389,897

METHOD OF AND APPARATUS FOR LIMITING THE FREE RUNNING FREQUENCY IN MULTIPLYING PHASE-LOCKED LOOP CIRCUITS

Ghassan R. Gebara, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 22, 1993, Ser. No. 34,289
Int. Cl.[6] H03L 7/00
U.S. Cl. 331—1 6 Claims



1. A method of limiting a free running output frequency of a voltage controlled oscillator in a phase-locked loop circuit, said phase-locked loop circuit containing a low pass filter, a voltage controlled oscillator and a phase detector, wherein said free running output frequency of said voltage controlled oscillator is limited to a frequency which does not exceed a maximum input frequency of said phase detector, comprising the steps of:
receiving an output voltage from said low pass filter in said phase-locked loop circuit;
developing a limited voltage signal in response to said output voltage by applying said output voltage across a zener diode connected to ground, said limited voltage signal being less than a maximum input voltage of said voltage controlled oscillator in said phase-locked loop circuit; and
providing said limited voltage signal to an input of said voltage controlled oscillator in said phase-locked loop circuit such that said free running output frequency does not exceed a maximum input frequency of a flip-flop circuit in said phase-locked loop circuit that uses a signal output from said voltage controlled oscillator.

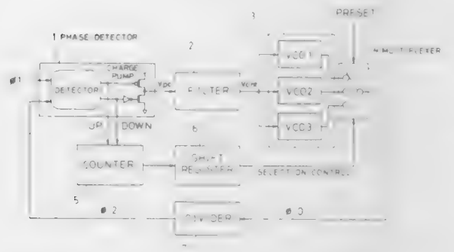
5,389,898

PHASE LOCKED LOOP HAVING PLURAL SELECTABLE VOLTAGE CONTROLLED OSCILLATORS

Osamu Taketoshi; Tsuguyasu Hatsuda, and Seiji Yamaguchi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 22, 1993, Ser. No. 79,530
Claims priority, application Japan, Jun. 22, 1992, 4-162477
Int. Cl.[6] H03L 7/099, 7/18
U.S. Cl. 331—2 11 Claims

1. A phase-locked loop comprising:
a phase detector for comparing the phase of a reference signal with the phase of an internal signal to produce a phase difference signal proportional to the phase difference found between the signals,
a filter for producing a phase control signal with a voltage value proportional to the phase difference signal,
a plurality of voltage-controlled oscillators with different mean frequencies which oscillate at a frequency controlled according to the voltage value of the phase control signal,



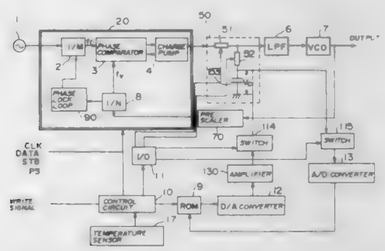
a selector for selecting one of the outputs of said plurality of voltage-controlled oscillators on the basis of the phase difference signal or the phase control signal, and
a frequency divider for dividing the frequency of the selected output to produce said internal signal, wherein, when said phase control signal changes its voltage value, said plurality of voltage-controlled oscillators vary their output frequencies equal amounts.

5,389,899

FREQUENCY SYNTHESIZER HAVING QUICK FREQUENCY PULL IN AND PHASE LOCK-IN

Shinya Yahagi; Noriyoshi Komatsu, both of Sendai; Toshimitsu Kibayashi, and Yoshifumi Toda, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Japan

PCT No. PCT/JP92/01086, § 371 Date Apr. 23, 1993, § 102(e) Date Apr. 23, 1993, PCT Pub. No. WO93/05578, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 27, 1992, Ser. No. 50,151
Claims priority, application Japan, Aug. 30, 1991, 3-220543
Int. Cl.[6] H03L 7/18, 7/10
U.S. Cl. 331—10 9 Claims



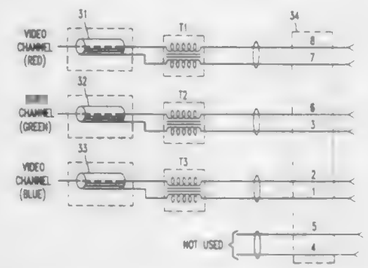
4. A frequency synthesizer including a phase lock loop in which a phase difference signal based on a phase comparison between a compared signal based on an output signal of a voltage-controlled oscillator and a reference signal based on an output signal of a reference oscillator is passed through a loop filter and is then applied, as a control signal, to the voltage controlled oscillator, said frequency synthesizer comprising:
preset circuit means for changing an output frequency of the voltage controlled oscillator; and
modifying means for changing a time constant of said loop filter so that said time constant is reduced when switching the output frequency of the voltage controlled oscillator,
said preset circuit means comprising:
storage means for storing data relating to values of the control signal applied to the voltage controlled oscillator, said values corresponding to output frequencies that can be synthesized by the frequency synthesizer; and
control means for reading data related to one of the output frequencies to be switched from the storage means and controlling said loop filter on the basis of said data read from the storage means.

5,389,900

ADAPTER FOR TRANSMISSION OF COLOR COMPONENTS ON SEPARATE TWISTED WIRE PAIRS

William H. Georger, Dover Township, Ocean County, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Mar. 26, 1993, Ser. No. 37,944
Int. Cl.[6] H03H 5/00
U.S. Cl. 333—25 7 Claims



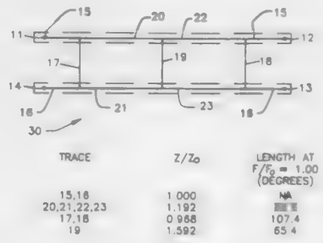
1. A device for applying separate color components of a video baseband signal onto separate twisted pairs of wires comprising:
a plurality of first ports, each adapted for coupling to a separate one of the color components;
a plurality of transformers each electrically coupled to a corresponding port, each transformer having a common mode rejection greater than 40 dB for frequencies up to 50 MHz; and
a second port electrically coupled to each transformer, the said second port including means for electrically connecting each transformer to a separate twisted pair of wires.

5,389,901

MICROWAVE AMPLITUDE EQUALIZER CIRCUIT

William G. Sterns, West Hills, and Ching F. Cho, Tujunga, both of Calif., assignors to ITT Corporation, New York, N.Y.

Filed Mar. 23, 1993, Ser. No. 36,037
Int. Cl.[6] H01P 5/12, 5/18
U.S. Cl. 333—109 17 Claims



TRACE	Z/Zo	LENGTH AT $F/F_0 = 1.00$ (DEGREES)
15,16	1.000	NA
20,21,22,23	1.192	[illegible]
17,18	0.988	107.4
19	1.592	65.4

1. An equalizer circuit for RF frequencies having a minimum return loss, comprising:
a first branch line of a first given impedance having a first RF port and a second RF port, said first RF port being

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adapted for receiving input power to said equalizer circuit;

a second branch line of said first given impedance having a third RF port and a fourth RF port, said third RF port being adapted for providing power from said equalizer circuit;

a first cross arm of a first given electrical length and a second given impedance coupling said first branch line and said second branch line, said first cross arm being transverse to said first and second branch line;

a second cross arm of said first given electrical length and said second given impedance coupling said first and said second branch lines, said second arm being transverse to said first and said second branch lines; and

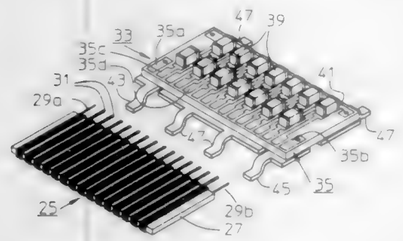
a third cross arm of a second given electrical length and a third given impedance coupling said first and said second branch lines, said third cross arm being transverse to said first and said second branch lines, and being positioned symmetrically between said first and said second cross arms, said second electrical length differing from said first electrical length by substantially more than five degrees at any of said RF frequencies over which said equalizer circuit operates and said first, second, and third given impedance being unequal, thereby minimizing said return loss of said equalizing circuit, while providing a variable insertion loss as a function of said RF frequencies over which said equalizer circuit operates.

5,389,902

ELECTROMAGNETIC DELAY LINE HAVING A PLURALITY OF CHIP CAPACITORS DISPOSED IN MORE THAN ONE ROW

Kazuo Kameya, Tokyo, Japan, assignor to Elmec Corporation, Kanagawa, Japan

Filed Nov. 9, 1993, Ser. No. 149,843
Claims priority, application Japan, Nov. 9, 1992, 4-322251
Int. Cl.[6] H03H *7/32*
U.S. Cl. 333—138 12 Claims



1. An electromagnetic delay line comprising:

a base board carrying a common ground electrode extending in a first direction and a plurality of connecting electrodes arranged along said first direction opposite to said common electrode;

a plurality of chip capacitors arranged on said base board in a staggered relationship in two rows extending in said first direction between said common ground electrode and said connecting electrodes;

means for connecting each of said chip capacitors across said common ground electrode and a corresponding one of said connecting electrodes;

an inductive device having a plurality of taps connected to said connecting electrodes;

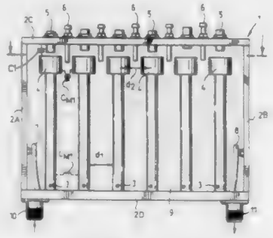
whereby a ladder circuit is formed by said inductive device and said chip capacitors.

5,389,903

COMB-LINE HIGH-FREQUENCY BAND-PASS FILTER HAVING ADJUSTMENT FOR VARYING COUPLING TYPE BETWEEN ADJACENT COAXIAL RESONATORS

Risto Pitrainen, Oulu, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI91/00387, § 371 Date Jun. 16, 1993, § 102(e) Date Jun. 16, 1993, PCT Pub. No. WO92/11664, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 16, 1991, Ser. No. 75,579
Claims priority, application Finland, Dec. 17, 1990, 906215
Int. Cl.[6] H01P *1/205*
U.S. Cl. 333—203 12 Claims



1. A comb-line bandpass filter, comprising:

an outer conductor in form of an elongated housing made of an electrically conductive material,

a plurality of inner conductors in form of respective conductor rods arranged in a line and spaced apart from each other within said housing so that each of said inner conductors provides a coaxial resonator together with said outer conductor, each of said inner conductors comprising:

a cylindrical smaller diameter portion, one end of said smaller diameter portion being connected by a connection to said housing,

a cylindrical larger diameter portion attached to another end of said smaller diameter portion,

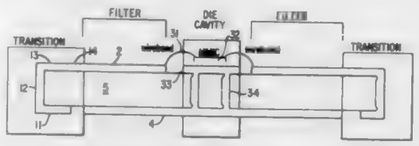
means for adjusting an axial offset between said smaller diameter portion and said larger diameter portion so as to vary a type of a coupling between any two adjacent ones of said coaxial resonators between predominantly capacitive and predominantly inductive couplings by varying the ratio of a distance between the smaller diameter portions of inner conductors of said two adjacent ones of said coaxial resonators to a distance between the larger diameter portions of said inner conductors of said two adjacent ones of said coaxial resonators.

5,389,904

SURFACE-MOUNTABLE, FREQUENCY SELECTIVE MICROWAVE IC PACKAGE

Kuang-Chung Tao, Hsinchu, and Chao-Hui Lin, Taiching, both of , assignors to Industrial Technology Research Institute, Taiwan, R.O.C., Hsinchu,

Filed Sep. 11, 1992, Ser. No. 944,105
Int. Cl.[6] H01P *3/08, 1/00*
U.S. Cl. 333—246 7 Claims



1. A surface-mountable and frequency selective package for a microwave intergrated circuit (IC), comprising:

a dielectric plate, having a front side and a back side,

a grounded terminal at the back side of said plate which is grounded,

a die mount at the front side of said plate, which is mounted with said integrated circuit,

said dielectric plate having holes filled with metal connected between said ground terminal and said die mount for grounding said integrated circuit,

at least one signal transition terminal through which a signal transmits, including a first pad of metal and a suspended transmission line of metal on the front side of said dielectric plate and a surface mounting pad of metal at the back side of said dielectric plate for surface mounting;

a filter section connected between said signal transition terminal and said die mount for filtering said signal;

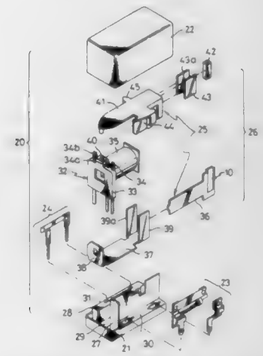
the metal on the front side of said plate being of different material from the metal on the back side of said plate.

5,389,905

DAMPER, ELECTROMAGNET ASSEMBLY EMPLOYING THE DAMPER, AND RELAY EMPLOYING THE ELECTROMAGNET ASSEMBLIES

Kiwamu Shibata; Yoichi Yokoyama; Manabu Yano; Nobuhiro Kitamura; Naoki Kanemoto, and Tetsuyasu Kawamoto, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 15, 1993, Ser. No. 46,984
Int. Cl.[6] H01H *51/22*
U.S. Cl. 335—78 25 Claims



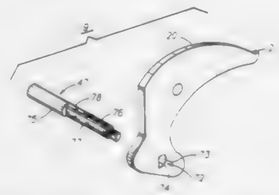
1. Apparatus comprising first and second relatively movable members and a damper disposed between said members, said members being normally separated from one another and movable toward one another, said damper including a container comprised of thin flexible sheet material forming a fluid-containing chamber arrangement which includes a plurality of interconnected compressible chambers, said chamber arrangement being positioned such that a first of said chambers is compressed by a force of compression between said members in response to relative movement of said members toward one another while a second of said chambers is uncompressed by said force of compression, such that fluid compressed in said first chamber is displaced into said second chamber and expands said second chamber while damping the relative movement between said members, said second chamber being arranged for expandable independently of external forces other than a force imposed by the incoming fluid displaced thereto by said force of compression.

5,389,906

COST-EFFICIENT INDUSTRIAL-RATED MOLDED CASE BREAKER

Roger N. Castonguay, Terryville; David Arnold, Chester; Roger J. Morgan, Simsbury; Frederic W. Glabau, Kensington, all of Conn.; Henry J. Tucholski, Fremont Center, N.Y., and Thomas T. B. Reyes, Parque Jardines, Puerto Rico, assignors to General Electric, New York, N.Y.

Division of Ser. No. 109,871, Aug. 20, 1993, Pat. No. 5,337,031. This application May 16, 1994, Ser. No. 243,032
Int. Cl.[6] H01H *9/00*
U.S. Cl. 335—172 1 Claim



1. A movable contact arm carrier for molded case circuit breakers comprising:

a U-shaped support having a pair of downward depending sidearms integrally-formed from a first planar surface, said planar surface including an opening formed therein, said shaped opening defining an aperture having a circular perimeter on one part and a planar perimeter on the remainder thereof;

a cradle support bracket extending from a top of said planar surface and adapted for supporting an operating cradle;

a pair of main movable contact arms arranged between said sidearms and having a main movable contact fastened to one end;

an arcing movable contact arm intermediate main contact arms and having an arcing contact fastened to one end; and

an operating cradle pivotally-arranged on said support bracket, said cradle including a hook at one end and a shaped opening at an opposite end;

a cradle pivot pin attached to said cradle, said cradle pivot pin having a uniform perimeter on one part and a non-uniform perimeter on another part thereof, aid non-uniform perimeter defining a circular perimeter on one part and a planar perimeter on the remainder thereof; and

a plurality of striations on said non-uniform part, said striations fastening said cradle pivot pin to said cradle when said cradle pivot pin is inserted within said shaped opening in press-fit relation.

5,389,907

HIGH TEMPERATURE SUPERCONDUCTOR MULTIPOLE CORRECTORS FOR PARTICLE ACCELERATORS

Husam Gurol, Encinitas, Calif., and Robert W. Baldi, Mandeville, La., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Oct. 7, 1993, Ser. No. 133,687
Int. Cl.[6] H01F *7/22*
U.S. Cl. 335—216 12 Claims

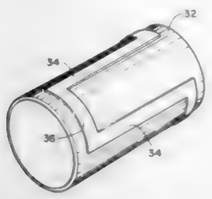
1. A superconductive corrector system for correcting magnetic field variations due to multipole harmonics in superconducting accelerator magnet systems having a beam tube through which particles are accelerated, surrounded by a superconducting magnet coil array and a liquid helium vessel, which comprises:

a corrector tube of non-magnetic material adapted to slide over an end of an accelerator magnet system;

a pattern of superconductive bands formed on the surface of said corrector tube;

said superconductive bands formed from a superconductor having a critical temperature above the boiling temperature of liquid nitrogen;

said superconductive bands including an even-numbered plurality of substantially equally spaced longitudinal bands arranged to lie substantially parallel to each other



and to the axis of the beam tube when said corrector tube is in place on the helium vessel; and

said superconductive bands further including circumferential band segments connecting adjacent ends of said longitudinal bands alternately at opposite ends of the array of parallel longitudinal bands.

5,389,908

COIL OF SUPERCONDUCTING MATERIAL FOR ELECTRIC APPLIANCE AND MOTOR UTILIZING SAID COIL

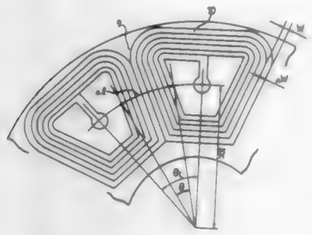
Takeshi Sawada, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 812,403, Dec. 23, 1991, abandoned, which is a division of Ser. No. 220,162, Jul. 18, 1988, Pat. No. 5,099,162. This application Oct. 20, 1993, Ser. No. 138,389

Claims priority, application Japan, Jul. 22, 1987, 62-184399; Apr. 4, 1988, 63-81397

Int. Cl.[6] H01F *7/22*

U.S. Cl. 335—216 **1 Claim**



1. A coil of a superconducting material for use in electrical equipment, which comprises a coil formed in a flat spiral shape on an insulator substrate, wherein the gap between conductors of said coil is greater than a dimension of the conductor measured along the same direction as the gap is measured.

5,389,909

OPEN ARCHITECTURE MAGNETIC RESONANCE IMAGING PASSIVELY SHIMMED SUPERCONDUCTING MAGNET ASSEMBLY

Timothy J. Havens, Florence, S.C., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 8, 1993, Ser. No. 148,250

Int. Cl.[6] H01F *1/00, 3/00;* **G01V** *3/00*

U.S. Cl. 335—216 **11 Claims**

1. An open architecture magnetic resonance imaging magnet utilizing a separated pair of superconducting magnet coil assemblies positioned about the axis thereof and forming an axial bore to receive patients, and providing open radial space between the magnet coil assemblies to minimize confinement to the patient within the axial bore and to maximize access to the patient in the open radial space comprising:

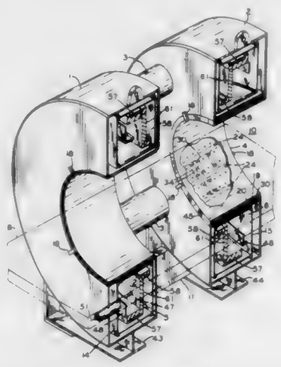
a first annular superconducting magnet assembly positioned about said axis including a first axially extending central opening;

a second annular superconducting magnet assembly positioned about said axis, and spaced from and substantially parallel to said first magnet assembly including a second axially extending central opening;

said bore formed by said central axially extending openings of said first and second magnet assemblies about said axis;

a plurality of spacers extending between said first magnet coil assembly and said second magnet coil assembly;

each of said magnet assemblies including at least one superconducting magnet coil in a housing and means to cool the interior of said housing and said magnet coil to superconducting temperatures to provide a magnetic field within said bore;



said magnet assemblies being configured and positioned to preclude a negative Z2 component of said magnetic field and providing a substantial positive Z2 magnetic field in the central patient imaging region in the axial space of the bore between and outside the bores of the superconducting magnet coil assemblies; and

a passive magnetic shim assembly positioned substantially within and contiguous to at least one of said axially extending central openings of said housing without axially extending through the region between said housings, and including a plurality of magnetic shim members selectively positionable on said passive shim assembly and about said axis to improve the magnetic homogeneity in said central opening of said bore between said magnet coil assemblies;

whereby said patient imaging region between said housings is substantially free of magnetic shim members and whereby said magnetic coil assemblies provide an inhomogeneous magnetic field in said central patient imaging region therebetween which said shim members improve.

5,389,910

SOLENOID ENCASEMENT WITH VARIABLE RELUCTANCE

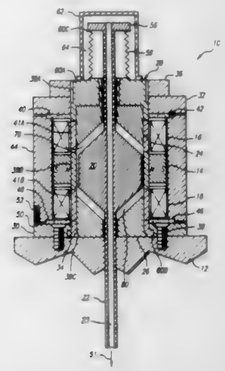
Steve G. Abel, Chandler, Ariz., assignor to Allied Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 8, 1992, Ser. No. 986,960

Int. Cl.[6] H01F *7/00, 7/08*

U.S. Cl. 335—278 **9 Claims**

1. Solenoid apparatus comprising substantially a cylindrical shaped encasement thereof; the encasement having a longitudinal axis, two relatively fixed end portions, and variable reluctance; the reluctance being variable by movement of a movable portion located between the end portions of the encasement wherein the movement is rotational, and wherein each of the end portions forms a first set of circumferentially extending regions which are angularly spaced by a second set of circumferentially extending regions formed by the same end portion, the regions of the first set having relatively high magnetic



reluctance and the regions of the second set having relatively low magnetic reluctance, the regions of the first set are of mutually equiangular range and are equivalent for the two end portions, and the end portions are out of angular phase, as determined by reference to the regions of the first set.

5,389,911

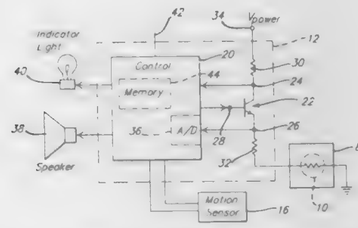
ALARM SYSTEM FOR DETECTING GLASS BREAKAGE

Adrian Madau, Dearborn, Mich., assignor to Ford Motor Company, Del.

Filed Dec. 6, 1993, Ser. No. 161,556

Int. Cl.[6] B60R *25/10*

U.S. Cl. 340—426 **19 Claims**



1. An alarm system for detecting glass breakage having a power source comprising:

switching means having an input terminal, an output terminal, and a control terminal, for switching between a conducting and non-conducting state, said input terminal electrically connected to said power source;

an electrically conductive trace fixed to said glass, said trace electrically connected to said output terminal;

control means electrically connected to said control terminal for controlling said switching means between said conducting and non-conducting states, which comprises means for measuring a reference output terminal voltage of said switching means while said switching means is in a first conducting state as a first initial measurement, for measuring a second output terminal voltage of said switching means while said switching means is in the non-conducting state after the first initial measurement, for measuring a third output terminal voltage of said switching means while said switching means is in a second conducting state after the first initial measurement, for comparing said reference voltage, said second voltage and said third voltage measurements to generate a control signal in response to a comparison of said voltages.

5,389,912

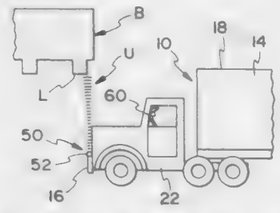
TRUCK CLEARANCE ANTI-COLLISION DEVICE

Parham P. Arvin, 3200 N. Lake Shore Dr., Ste. #2606, Chicago, Ill. 60657

Filed Feb. 10, 1993, Ser. No. 15,977

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—435 **14 Claims**



1. A vehicle clearance anti-collision device, comprising:

a) means provided for generating an ultrasonic wave;

b) means provided for receiving the ultrasonic wave generated by said ultrasonic wave generating means and reflected off an object;

c) means provided for mounting said ultrasonic wave generating means and said ultrasonic wave receiving means on a portion of a vehicle;

d) said mounting means being configured for causing said ultrasonic wave generating means to transmit a vertical ultrasonic wave;

e) means operatively connected to said ultrasonic wave generating means and to said ultrasonic wave receiving means for determining a vertical difference between the object and the height of the vehicle; and

f) means operatively connected to said vertical difference determining means for generating a human-recognizable piece of information corresponding to the vertical difference determined by said vertical difference determining means.

5,389,913

WARNING SYSTEM FOR VEHICLES

Ronald Boser, 1025 Commerce Ave., Vero Beach, Fla. 32960; Vito Farinola; Bert Greenberg, both of 5805-A W. Park Rd., Hollywood, Fla. 33021, and David Schrenk, Vero Beach, Fla., assignors to Ronald Boser, Vero Beach; Vito Farinola and Bert Greenberg, both of Hollywood, all of Fla.

Continuation of Ser. No. 12,502, Feb. 2, 1993, abandoned. This application May 17, 1994, Ser. No. 243,747

Int. Cl.[6] B60Q *1/26*

U.S. Cl. 340—471 **8 Claims**

1. In a motor vehicle having a horn, a horn circuit; back-up lamps and a back-up lamp circuit; high beam head lamps and a high beam head lamp circuit; and park lamps and a park lamp circuit, each of the lamp circuits having a normal off-state and an on-state, a horn warning system comprising:

a first relay having a normal off-state and an on-state, said first relay responsive to actuation of the horn circuit to switch from said normal off-state to said on-state, when the horn is sounded,

a flasher circuit switching on and off in response to the on-state of said first relay,

a second relay,

said flasher circuit, said second relay and the back-up lamps connected in series to said on-state of said first relay,

said second relay when actuated by said on-state of said first

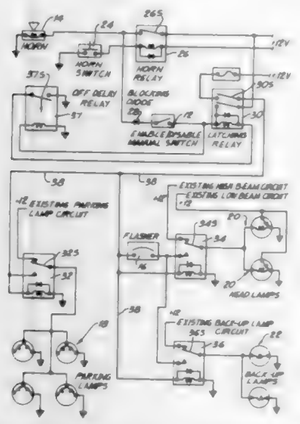
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relay switching said back-up lamps from the back-up lamp circuit to said flasher circuit, actuation of said horn circuit causing said back-up lamps to switch on and off in synchronism with the switching of said flasher circuit,

a third relay,

said flasher circuit, said third relay and the high beams of said head lamps connected in series to said on-state of said first relay,

actuation of said third relay by the on-state of said first relay causing the high beams of said head lamps to be switched



from the high beam circuit to said flasher circuit, actuation of said horn circuit causing said high beam head lamps to switch on and off in synchronism with the switching of said flasher circuit,

said back-up lamps and said high beams of said head lamps being the only lights connected to said flasher circuit,

a fourth relay,

the parking lamps and said fourth relay being connected in series to said on-state of said first relay, actuation of said horn circuit causing the parking lamps, when off, to be turned on.

5,389,914

ANTI-DISASTER MONITORING SYSTEM AND ANTI-DISASTER MONITORING METHOD

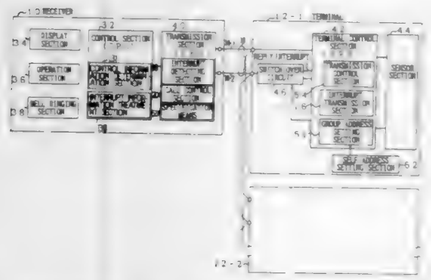
Masamichi Kikuchi, Ayase, Japan, assignor to Hochiki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1991, Ser. No. 755,687

Claims priority, application Japan, Sep. 6, 1990, 2-236070; Sep. 6, 1990, 2-236072

Int. Cl.[6] G08B *26/00;* **G05B** *23/02*

U.S. Cl. 340—518 **8 Claims**



1. An anti-disaster monitoring system comprising a plurality of terminals; a receiver connected to said plurality of terminals through a transmission path, said receiver including means for calling the terminals in sequence by transmitting calling signals each of which designates the address of one of said terminals, said terminals including means for transmitting a terminal response signal when an address designated in the calling signal coincides with a self-address of a terminal, and in which said receiver decodes the received terminal response signal and performs alarming or the like, each of said terminals having a group address setting section for setting a group address of a group consisting of a predetermined number of terminals on the basis of the self-address, and an interrupt transmitting section for transmitting a break signal which invalidates the terminal response signal on a timing when the terminal response signal is transmitted to said receiver from any of said terminals when an abnormality is detected to notify generation of an interrupt, and in that said receiver has an interrupt detection section for detecting an interrupt of the terminal when it receives the break signal on a timing when the terminal response signal is received, a calling control means for performing a sequential group calling by designating the group addresses when an interrupt detection output is obtained from said interrupt detection section, and a specification means for specifying the terminal in the group when a response signal is obtained from the group containing the terminal in which an abnormality is detected in response to the group calling made by said calling control means, said receiver having means for transmitting the calling signal for interrupt confirmation to the terminals when said interrupt detection section determines an interrupt from the received break signal to allow the terminal to transmit an interrupt level signal which indicates the cause of generation of the interrupt, and said interrupt level signal indicating an order of priority of the process for specifying the terminal in which an abnormality is detected on the basis of the abnormality detection data indicating the cause of generation of the interrupt.

5,389,915

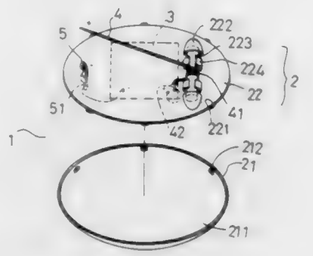
CHILD SEPARATION ALARM WITH SAFETY PIN ACTUATION MEANS

Shih-Yu Chen, Tainan Hsien, , assignor to All Ship Enterprise Co., Ltd., Tainan Hsien, Taiwan, Prov. of China

Filed Jul. 20, 1993, Ser. No. 93,871

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—573 **1 Claim**



1. A child separation alarm, comprising:

a first safety pin actuation means for transmitting a wireless signal; and,

a second safety pin actuation means for receiving said wireless signal, each of said first and second safety pin actuation means including:

a. an ornamental body having a base plate and a cap, said base plate being flat, circular or oval in shape and having several mortises spaced around an outer circumferential edge, said cap being shaped so as to cover said base plate and having a recess for containing an electronic circuit board and several projections spaced around a circumferential edge to engage said mortises of said base plate to assemble said cap to said base plate, said electronic circuit board of said first safety pin actuation means including a transmitter circuit for emitting said wireless signal and being mounted on a surface of said base plate thereof, said electronic circuit board of said second safety pin actuation means including a receiver circuit for inhibiting an output signal to a user responsive to receipt of said wireless signal and being mounted on a surface of said base plate thereof;

b. a shaft comprising a thin metal needle, having an outer end and an inner end formed into a coil with a tip end protruding through a hole in said base plate for connection to an electrically positive wire;

c. a locating rod protruding through said coil portion of said shaft and having a pair of opposing ends held stably by two holders fixed on an inner surface of said base plate, each of said two holders being shaped as half a cap and fixed on the inner surface of said base plate to hold said opposing ends of said locating rod; and,

d. a hook fixed on the inner surface of said base plate for hooking said outer end of said shaft, having a bottom end protruding through said base plate to be connected to a negative wire connected to said electronic circuit board so that said hook and said shaft may form a switch so as to control energization of a respective one of said transmitter and receiver circuits for emission of said wireless signal by said first safety pin actuation means and reception of said wireless signal at a remote location by said second safety pin actuation means, said second safety pin actuation means providing said output signal in the absence of receipt of said wireless signal.

5,389,916

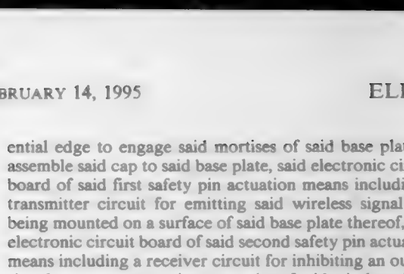
SIMPLIFIED SHORTCIRCUITING AND CIRCUIT-BREAKING ALARM MEANS FOR PLANAR OR LINEAR CONDUCTORS

Sheng-Chuan Chen, and Tieng-Fu Lin, both of C/O Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei, Taiwan, Prov. of China

Filed Jun. 28, 1993, Ser. No. 82,711

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—650 **9 Claims**



1. A shortcircuiting and circuit-breaking alarm means comprising:

a Darlington amplifier comprised of two NPN transistors, a PNP transistor connected to said Darlington amplifier, a first conductor connected between the base of the first NPN transistor of said Darlington amplifier and the positive pole of a power source through a large resistor having a large resistance, a second conductor connected between said Darlington amplifier and said PNP transistor having the base of said PNP transistor connected to a negative pole of said power source through a small resistor having a resistance smaller than that of said large resistor, said first and second conductors being juxtapositionally interposed by an insulator therebetween to serve as a detector body, a silicon controlled rectifier connected to said PNP transistor, and a sounding integrated circuit powered by said power source and electrically connected with a buzzer and connected to said silicon controlled rectifier, whereby upon a breaking of either said conductor or short circuiting of said two conductors, said PNP transistor is conductive to trigger said silicon controlled rectifier to sound the buzzer of said integrated circuit for an alarm warning purpose.

5,389,917

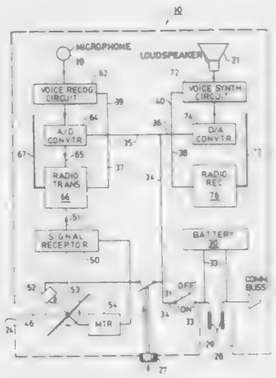
LAPEL DATA ENTRY TERMINAL

Vincent T. LaManna, Webster, and Jay M. Eastman, Pittsford, both of N.Y., assignors to PSC, Inc., Webster, N.Y.

Filed Feb. 17, 1993, Ser. No. 18,591

Int. Cl.[6] G06F *7/06, 3/16, 15/20;* **G06K** *7/10*

U.S. Cl. 340—825.3 **12 Claims**



1. A data entry terminal for bi-directional communication with a remote data center and for entering data into said remote data center, said terminal having sufficiently miniaturized dimensions and sufficiently light weight so as to be comfortably wearable on a lapel of an operator's clothing, comprising:

a) a housing with light- and sound-transmissive openings;

b) means for removably attaching said housing to said operator's clothing;

c) scanner/reader means in said housing for acquiring optical code data signals from a bar coded surface when mechanically actuated by said operator, without physical contact of said terminal with said surface;

d) means for receiving first verbal pronouncement code data signals from said remote data center;

e) speaker means for conveying said first verbal pronouncement code data to said operator;

f) means for acquiring second verbal pronouncement code data signals from said operator; and

g) RF means for transmitting said optical code data signals and said second verbal pronouncement code data signals to said remote data center.

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5,389,918

IMAGE FLUCTUATION DETECTION APPARATUS

Hiroya Kusaka, Kawanishi, and Takashi Sakaguchi, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

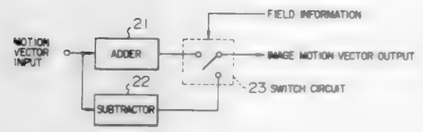
PCT No. PCT/JP91/01446, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992

PCT Filed Oct. 22, 1991, Ser. No. 853,703

Claims priority, application Japan, Oct. 23, 1990, 2-286203; Nov. 28, 1990, 2-331934

Int. Cl.[6] **H04N** *7/137*

U.S. Cl. 348—699 **8 Claims**



1. An image fluctuation detection apparatus comprising:

a representative point memory circuit for (i) receiving and dividing input video signals of an interlace system into a plurality of areas, (ii) storing video signals indicative of representative points of respective areas of a current field of said interlace system as representative point signals and (iii) outputting previous point signals, stored in said representative point memory, indicative of respective representative points of respective areas of a previous field of said interlace system;

a correction calculation circuit for performing correlation calculation processing between said previous representative point signals supplied from said representative point memory circuit and video signals within the respective areas of the current field corresponding to said previous representative point signals and generating a calculation result in response thereto;

a motion vector detection circuit for detecting an inter-field image motion vector, representing movement of an image of said video signals between successive fields of said interlace system, based on said calculation result supplied from said correlation calculation circuit; and

a motion vector correction circuit for performing vector correction on said inter-field motion vector by (i) adding a scanning position discrepancy value in a vertical direction between the current field and the previous field to a vertical-direction component of the detected inter-field image motion vector supplied from said motion vector detection circuit or (ii) subtracting said scanning position discrepancy value from said vertical-direction component of the detected inter-field image vector.

5,389,919

ELECTRONIC INTERLOCK FOR STORAGE ASSEMBLIES WITH COMMUNICATION

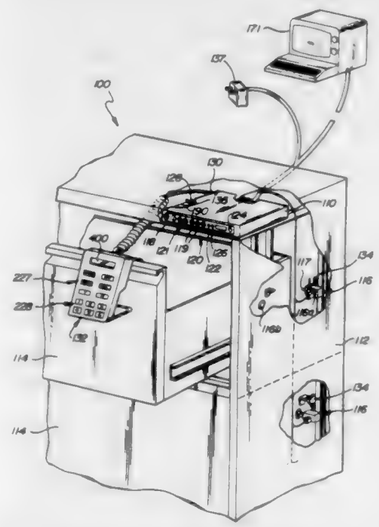
Edward L. Warren, Spring Lake; David E. Miller, West Olive, and James Arter, North Muskegon, all of Mich., assignors to Meridian, Inc., Spring Lake, Mich.

Continuation of Ser. No. 599,676, Oct. 17, 1990, Pat. No. 5,225,825, which is a continuation-in-part of Ser. No. 505,037, Apr. 5, 1990, abandoned. This application Nov. 19, 1992, Ser. No. 979,000

The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.

Int. Cl.[6] **H04Q** *1/00*

U.S. Cl. 340—825.31 **27 Claims**



18. A file cabinet assembly (**100**) comprising:

housing means (**12, 112**) defining an enclosure;

a plurality of storage units (**14, 114**) supported by said housing means (**12, 112**) for moving between a closed position and an open position;

electronically controlled locking means (**16, 116**) for receiving power and operatively associated with each of said storage units (**14, 114**) and having a locked condition for contacting and locking said storage units (**14, 114**) in said closed position in response to a lock signal and having an unlocked condition for unlocking and allowing said storage units (**14, 114**) to move to said open position in response to an unlock signal and for maintaining said storage units (**14, 114**) in said closed position and locked in response to discontinuation of power;

electrical control means (**18, 110**) connected to said locking means (**16, 116**) for locking and unlocking said locking means (**16, 116**);

said control means (**18, 110**) including electronic input means (**20, 120**) for receiving an input code, electronic data memory means separate from said input means (**20, 120**) for storing a plurality of access codes, electronic sensing means operatively connected to said storage units for producing an electrical signal indicative of the respective storage unit being in the closed position or open position, history memory means for storing operational information regarding reception of an input code and use of said access codes and a subsequent opening of a storage unit, processor means operatively connected to said input means (**20, 120**) and said data memory means (**22, 162**) and said history memory means and said locking means for receiving and comparing said input code with said access codes to produce said unlock signal to only one of said locking means when said access code equals said input code and all of said storage units are in said closed position allow opening of one of said storage units when said input code has a predetermined relationship with said access codes and to store the occurrence of the relationship and access code and sensed opening of a storage unit in said history memory means for subsequent electronic recall and for limiting opening to only one of said storage units while the remaining storage units are maintained in said closed position with the associated locking means locked so that all of said storage units must be in the closed position in order to unlock a storage unit.

5,389,920

CONTROL APPARATUS FOR POWERED VEHICLE DOOR SYSTEMS

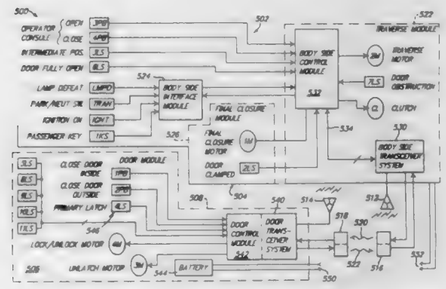
Daniel L. DeLand, Davison; Paul Heimnick, Owosso; Curtis T. Moy, Grand Blanc, all of Mich.; Lawrence H. Zuckerman, Easton, Pa.; David G. Grossman, Green Lane, Pa., and Kurt P. Schuler, Allentown, Pa., assignors to MascoTech, Inc., Taylor, Mich.

Continuation of Ser. No. 497,603, Mar. 22, 1990, Pat. No. 5,140,316. This application May 1, 1992, Ser. No. 863,175

The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.

Int. Cl.[6] **G08C** *19/00*

U.S. Cl. 340—825.69 **7 Claims**



1. A control system for a power-operated movable member, the movable member being slidably mounted to a body portion of a self-propelled motor vehicle, the control system comprising:

first bidirectional wireless communications means, mounted on the body portion of the vehicle, for transmitting and receiving, regardless of relative positioning of the movable member and the body portion, to and from the movable member digitally encoded communications signals containing information related to a plurality of control signals for controlling a plurality of functions associated with the movable member;

second bidirectional wireless communications means, mounted on the movable member, for transmitting and receiving, regardless of relative positioning of the movable member and the body portion, to and from the body portion of the vehicle digitally encoded communications signals containing the information related to the plurality of control signals for controlling the plurality of functions associated with the movable member, the transmitting and receiving defining a wireless communications link;

wherein the digitally encoded communication signals are in the form of at least a first block of information bits pertaining to the plurality of control signals associated with the movable member and at least a second block of information bits; and

means for verifying the accuracy of the wireless communications link between the first and second wireless communications means, said verification means using at least in part the first and second block of information bits.

5,389,921

PARKING LOT APPARATUS AND METHOD

John M. Whitton, 1845 Sashabaw Rd., Ortonville, Mich. 48462, and Robert E. Whitton, 10181 Perry Lake Rd., Clarkston, Mich. 48348

Filed May 17, 1993, Ser. No. 61,547

Int. Cl.[6] **G08G** *1/01*

U.S. Cl. 340—933 **8 Claims**

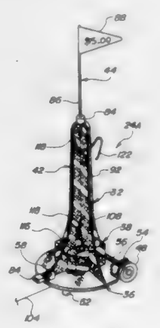
1. A vehicle counting system for a vehicle parking lot having an entrance lane for allowing vehicles entry and entrance fee collection for each of said vehicles by a parking attendant, said system comprising:

a portable traffic pylon at one side of said entrance lane, said pylon including a base member,

a vehicle counter mounted on said base member adapted to sense and count said vehicles passing thereby,

said pylon further including a tower and a counter cover attached to the bottom of the tower pivotally mounted on said base member adapted to be pivoted from a normal upright position where said tower serves to guide vehicle traffic and said counter cover encloses said vehicle counter to a tilted access position where access to said vehicle counter is allowed between said base member and counter cover,

said vehicle counter having a display device for producing a digital display which represents the number of vehicles counted by the vehicle counter, said counter cover having an opening to permit viewing of said digital display from outside the pylon,



a security lock for normally locking said tower and counter cover to said base member in said upright position,

whereby the amount of fee collection to be accounted for by the attendant can be verified at any time by reading of said display and said tower and counter cover are normally locked in said upright position to operate as said traffic pylon while preventing unauthorized access to said vehicle counter,

said base member having at least one leg to aid in supporting said pylon in a stationary position,

an axle mounted on said base member,

a pair of wheels mounted on said axle for use in moving said pylon and for cooperating with said one leg to support said pylon in a stationary position,

and said tower and counter cover pivotally mounted on said base member by said axle.

5,389,922

COMPRESSION USING SMALL DICTIONARIES WITH APPLICATIONS TO NETWORK PACKETS

Gadiel Seroussi, Cupertino, Calif., and Abraham Lempel, Haifa, Israel, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 13, 1993, Ser. No. 46,548

Int. Cl.[6] **H03M** *7/30*

U.S. Cl. 341—51 **23 Claims**

1. A method for encoding input data in a dictionary based compression/decompression system comprising:

storing unique multiple character strings from the input data as dictionary entries in the compression/decompression system;

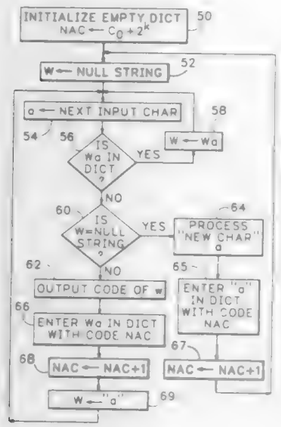
encoding multi-character strings from the input data into codewords according to the address of dictionary entries matching the character strings;

identifying single-character strings from the input data that have not previously been stored in the compression/-decompression dictionary;

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encoding each single-character string into a special code and a partial code, each special and partial code representing a selectable portion of the associated single-character string; and

outputting a compressed data stream from the compression/decompression system having both the codewords



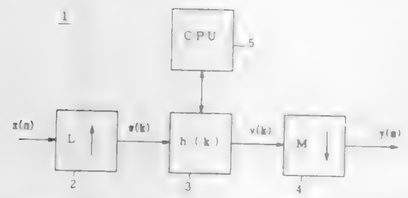
corresponding to the encoded single-character strings and the codewords corresponding to the encoded multiple character strings, each special code and associated partial code uniquely identifying a single-character string and representing a subset of the total number of unique single-character strings that can exist in the input data.

5,389,923

SAMPLING RATE CONVERTER

Eiji Iwata, Tokyo, and Takao Yamazaki, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,228
Claims priority, application Japan, Mar. 31, 1992, 4-105978
Int. Cl.[6] H03M *7/00*
U.S. Cl. 341—61 **6 Claims**



1. Sampling rate converter for converting a sampling frequency L of a digital signal to a sampling frequency M (L:M conversion) or for converting a sampling frequency M of a digital signal to a sampling frequency L (M:L conversion), while utilizing the same filter coefficients and maintaining a constant predetermined DC gain for both conversions, said sampling rate converter comprising:

an over-sampler for multiplying said sampling frequency L or M by M or L, respectively, during said L:M conversion and said M:L conversion, respectively;

a rate converting filter receiving an output of said over-sampler for restricting the frequency band of said output;

a central processing unit (CPU) for supplying filter coefficients to said rate converting filter and having means for quantizing said filter coefficients, means for arranging the quantized filter coefficients into a three-dimensional array including rows and columns, means for determining a ratio between a total sum of values of said rows and columns of the array of quantized filter coefficients, and means for correcting each of said quantized filter coefficients in response to the determined ratio so as to maintain said predetermined DC gain; and

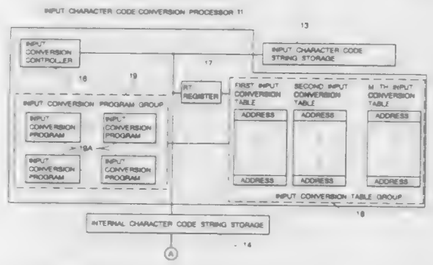
a down-sampler receiving an output of said rate converting filter for multiplying the rate converted frequencies by 1/L or 1/M during said L:M conversion or said M:L conversion, respectively.—

5,389,924

MULTIPLE CHARACTER CODE SET INPUT/OUTPUT CONVERSION SYSTEM

Yuji Ogawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 8, 1993, Ser. No. 14,152
Claims priority, application Japan, Feb. 6, 1992, 4-056240
Int. Cl.[6] H03M *7/00*
U.S. Cl. 341—106 **9 Claims**



1. A multiple character code set input/output conversion system for a computer system provided with a plurality of computers handling different kinds of character code sets comprising:

an input character code conversion means for converting character code strings based on a character code set used in a text file into internal character code strings based on an internal character code set commonly used by said plurality of computers, and

an output character code conversion means for converting said internal character code strings to other character code strings based on a specific character code set.

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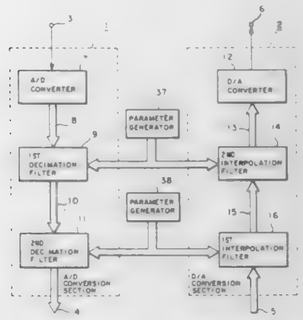
A/D AND D/A CONVERSION DEVICE WITH SHARED PARAMETER GENERATORS

Tetsuaki Ohga; Hiroichi Ishida, and Takeshi Tokuda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1990, Ser. No. 537,954
Claims priority, application Japan, Jul. 7, 1989, 1-176445
Int. Cl.[6] H03M *1/00*
U.S. Cl. 341—108 **4 Claims**

1. An A/D and D/A conversion device having A/D conversion means for converting analog signals to digital signals including an A/D converter which produces a f_s digital signal by sampling an externally supplied analog signal at a predetermined frequency f_s, decimation filters of n stages (n is a positive integer) which produces a f_d digital signal by decimating said f_s signal supplied by the A/D converter at a predetermined frequency f_d that is lower than said frequency f_s, said n stages of decimation filters being arranged sequentially in i stages in the direction of information flow where i increases by whole integers from 1 to n, and

D/A conversion means for converting digital signals to analog signals including interpolation filters of n stages (n is a positive integer) which produces a f_s digital signal by interpolating an externally supplied input digital signal of a sampling frequency f_d at the frequency f_s, said n stages of interpolation filters being arranged sequentially in i stages in the direction of information flow where i increases by whole integers from 1 to n, and a D/A converter which converts said f_s digital signal supplied by said interpolation



filters into an analog signal to output, said A/D and D/A conversion device comprising:

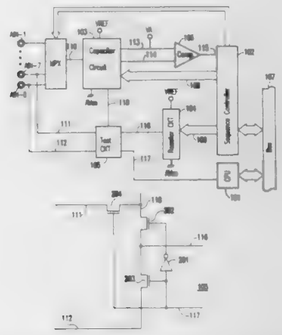
parameter generators of n in number, each connected to be shared by and for supplying the same filter parameters to both the i-th stage (i=1 to n) of said n-stage decimation filters and, at the same time, to the (n−i+1)th stage of said n-stage interpolation filters.

5,389,926

MICROCOMPUTER HAVING TEST CIRCUIT FOR A/D CONVERTER

Kiyoshi Fukushima, Kumamoto, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 15, 1993, Ser. No. 92,360
Claims priority, application Japan, Jul. 17, 1992, 4-190554
Int. Cl.[6] H03M *1/10*
U.S. Cl. 341—120 **8 Claims**



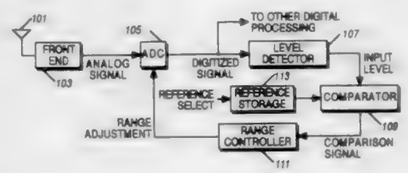
1. A microcomputer comprising a central processing unit, an analog-to-digital converter coupled to said central processing unit via an internal bus and converting an analog input voltage supplied thereto to corresponding digital data, said analog-to-digital converter including a first circuit section which has a function of generating a changeable reference voltage at an output node thereof and a second circuit section which has a function of receiving said changeable reference voltage at an input node thereof and storing an electrical charges relative to said changeable reference voltage, first and second terminal, and a test circuit coupled to said analog-to-digital converter and said first and second terminals and activated in a test mode to connect said output node of said first circuit section to said first terminal and said input node of said second circuit section to said second terminal.

5,389,927

METHOD AND APPARATUS FOR CONTROL OF AN ANALOG TO DIGITAL CONVERTER

William J. Turney, Schaumburg; Paul H. Gailus, Prospect Heights, and Mark A. Gannon, Sleepy Hollow, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 28, 1993, Ser. No. 68,324
Int. Cl.[6] H03M *1/18*
U.S. Cl. 341—139 **25 Claims**



1. A device comprising:

A) an analog to digital converter having an analog signal input, a digitized signal output, and a range adjustment input;

B) a level detector coupled to the digitized signal output and having a level detector output that yields an input level signal;

C) a comparator having at least a first input coupled to the level detector output, a second input coupled to a reference, and a comparison signal output; and

D) a range controller having an input coupled to the comparison signal output and an output coupled to the range adjustment input, such that the range controller adjusts the range of acceptable peak magnitude analog signals over which the analog to digital converter converts analog signals into digital signals.

5,389,928

PROCESS FOR THE D/A CONVERSION OF SIGNED BINARY CODES OF A BI-POLAR, TIME-VARYING SIGNAL AND A DIGITAL-TO-ANALOG CONVERTER EMPLOYING THIS PROCESS

Luciana Coppero, Pavia; Franco Maloberti, Torre d'Isola PV, and Giuseppe Palmisano, Pavia, all of Italy, assignors to Italtel Societa Italiana Communicazioni, S.P.A., Milan, Italy

PCT No. PCT/EP91/01044, § 371 Date Dec. 28, 1992, § 102(e) Date Dec. 28, 1992, PCT Pub. No. WO92/00631, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 4, 1991, Ser. No. 955,758
Claims priority, application Italy, Jun. 28, 1990, 20796 A/90
Int. Cl.[6] H03M *1/76*
U.S. Cl. 341—150 **7 Claims**

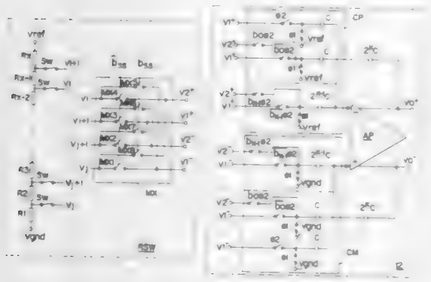
1. A process for the digital-to-analog conversion of signed binary code words representing voltage samples of a bipolar time-varying signal to be reconstructed, wherein the more significant bits of the code word are converted first and the less significant ones thereafter, said process comprising the following steps:

a. constructing two positive voltages (Vo+, Vo−), each being a function of time and ranging between the analog ground level (Vgnd) and the upper full scale level (Vref), the maximum amplitude of each of these voltages being equal to ½ of the maximum peak value (Vpm) of the signal to be reconstructed, the first voltage (Vo+) values being obtained as the sum of said analog ground level (Vgnd) with the analog signal corresponding to the code obtained by disregarding the most significant bit of the code word, and the second voltage (Vo−) values being obtained as

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the difference between said upper full scale level (Vref) and the analog signal corresponding to the code obtained by disregarding the most significant bit of the code word;

b. shifting downward the second one (Vo−) of these voltages, by a quantity equal to its maximum amplitude (¼Vpm), so as to form a voltage SVo− and thus obtain two voltages (Vo+ and SVO−) that are symmetric with respect to said analog ground level (Vgnd);



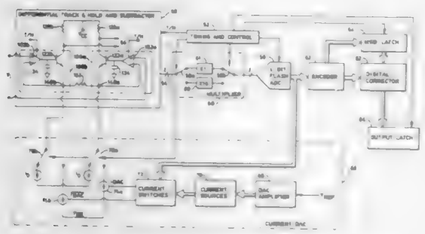
c. forming the algebraic difference between said two voltages that are symmetric with respect to said analog ground level (Vo+, SVo−) with the sign bit of the code word determining which voltage is the minuend versus the subtrahend in order to reconstruct the original bipolar time-varying signal.

5,389,929

TWO-STEP SUBRANGING ANALOG-TO-DIGITAL CONVERTER

Mohammad R. Nayebi, Palo Alto, and Alexandru Hartular, San Jose, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 3, 1994, Ser. No. 191,403
Int. Cl.[6] H03M *1/14*
U.S. Cl. 341—156 12 Claims



1. A subranging analog-to-digital converter comprising:

a flash analog-to-digital converter;

differential track and hold means having first and second like sections each responsive to a respective input of a differential analog input voltage, and each section having an output terminal coupled through like first resistors to a voltage source;

a second resistor connected between respective nodes of said first and second sections;

said differential track and hold means comprising means responsive to control signals for causing a voltage between said nodes to track said differential analog input voltage during a track mode and for causing said voltage between said nodes to be held during a hold mode wherein, in said hold mode, the differential analog input voltage is applied across said second resistor;

current source means for drawing like currents from said nodes of said track and hold means during a first conversion phase to provide said differential analog input voltage held between said nodes across said output terminals;

means for coupling said differential analog input voltage from said output terminals to said flash analog-to-digital converter during said first phase to provide most significant bits of said held differential analog input voltage;

said current source means comprising means for drawing respective currents from said nodes of said track and hold means in accordance with outputs from said flash analog-to-digital converter during a second phase to provide a difference voltage across said output terminals wherein said difference voltage is the difference between said held differential analog input voltage and an analog conversion corresponding to said most significant bits;

means for multiplying said difference voltage and coupling the multiplied difference voltage to said flash analog-to-digital converter to provide least significant bits of said held differential analog input voltage; and

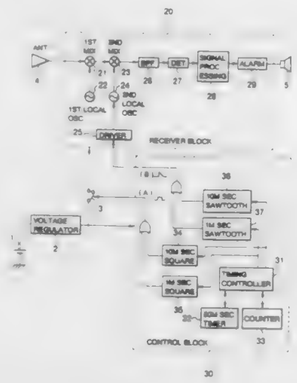
means for combining said most and least significant bits.

5,389,930

POWER SAVING TYPE MULTI-BAND MICROWAVE DETECTOR

Hisao Ono, Okazaki, Japan, assignor to Yupiteru Industries Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1993, Ser. No. 45,103
Claims priority, application Japan, Apr. 14, 1992, 4-094505
Int. Cl.[6] G01S *7/285*
U.S. Cl. 342—20 6 Claims



1. A power-saving type multi-band microwave detector for detecting a microwave, comprising:

a receiver circuit, for detecting said microwave, including a local oscillator for generating an oscillation output and means for sweeping the frequency of said oscillation output over a predetermined reception band;

power supply means for periodically supplying a power for said receiver circuit to maintain said receiver circuit active while the power is supplied thereto; and

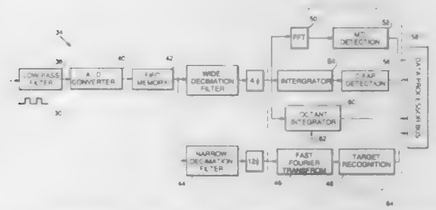
control means for controlling said receiver circuit and said power supply means for an intermittent microwave receiving operation, said control means periodically operating said receiver circuit and said power supply means in a first mode having a higher sensitivity and higher power consumption and a second mode having a lower sensitivity and lower power consumption, wherein an operational period of each periodic first mode is longer than an operational period of each periodic second mode, and wherein said control means periodically performs said second mode a plurality of time for each periodically performed first mode.

5,389,931

RADAR SIGNAL PROCESSING SYSTEM

Eric E. Anderson, Palmdale; Ronald L. Bridegroom, Simi Valley; Pham G. Cuong, Moorpark; Charles M. Feld, Canoga Park; Knut S. Kongelbeck, Chatsworth, and Terrance L. Simonson, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 14, 1994, Ser. No. 209,286
Int. Cl.[6] G01S *13/60*
U.S. Cl. 342—70 3 Claims



1. A conical scan radar signal processing system for handling radar return pulse data and providing target detection, identification and tracking information comprising:

means for converting the return pulses into a pulse train of shaped pulses arranged in the same order as received;

a first finite impulse response filter connected to said means for providing a predetermined sample rate reduction output for use in moving target detection, constant false alarm rate detection and target tracking;

a second finite impulse response filter, interconnected with said means for converting, for providing an output of greater sample rate reduction than that of said first finite impulse response filter; and

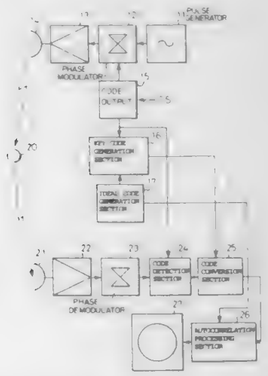
a programmable signal processor connected to receive the outputs of the first and second finite impulse response filters for achieving target detection, identification and tracking.

5,389,932

PULSE COMPRESSION CONTROL SYSTEM

Eikichi Ota, Kawasaki, and Asao Komata, Fuchu, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 10, 1993, Ser. No. 969,150
Claims priority, application Japan, Jun. 10, 1991, 3-137561
Int. Cl.[6] G01S *13/30*
U.S. Cl. 342—189 2 Claims



1. A pulse compression control system comprising:

a first order modulation means for modulating a pulse using a transmission code sequence which has larger self correlation side lobes than those of an ideal code sequence wherein a self correlation function has a sharp peak at one point and has side lobes, and for transmitting a modulated pulse;

a demodulation means for demodulating the modulated pulse to obtain a reception code sequence;

a second order modulation means for modulating the reception code sequence from the demodulation means so as to obtain said ideal code sequence; and

a self correlation processing means for carrying out pulse compression processing of the ideal code sequence outputted from the second order modulation means,

said first order modulation means including a code output section receiving a code selection signal for outputting one of the code sequences having a sharp peak value at one point in said self correlation function thereof and a self correlation side lobe level of no more than level two, in accordance with the code selection signal, and further including a key code generation section connected to said code output section for supplying the code sequence of a difference between said ideal code sequence and the code sequence from said code output section as a key code sequence to said second order modulation means;

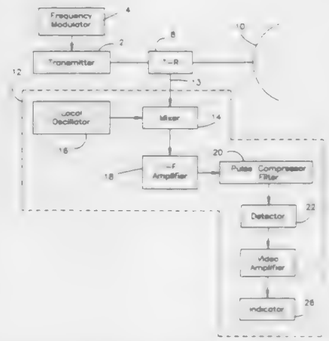
said second order modulation means including a code detection section for adding the reception code sequence from said demodulation means and an output from said code output section, and for outputting a decision result of an added value, further including a code conversion section for receiving an output from said key code .generation section and an output of said code detection section and for converting said output of said code detection section to the ideal code sequence.

5,389,933

LINEAR PULSE COMPRESSION RADAR SYSTEM AND METHOD

Martin Golinsky, Roslyn Heights, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation-in-part of Ser. No. 957,486, Oct. 7, 1992. This application Aug. 10, 1993, Ser. No. 104,013
Int. Cl.[6] G01S *13/28*
U.S. Cl. 342—201 10 Claims



1. A method for improving the target-detection performance of a linear pulse compression radar system by effecting a reduction of the temporal sidelobes of the autocorrelation function output signal, said radar system comprising a transmitter having a frequency modulator for creating a transmitter signal pulse and a receiver comprising a matched filter for compressing a return echo of a transmitter signal pulse, said method comprising the steps of:

generating a transmitter signal pulse using a waveform

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which varies the frequency of a baseband signal between first and second frequencies; and

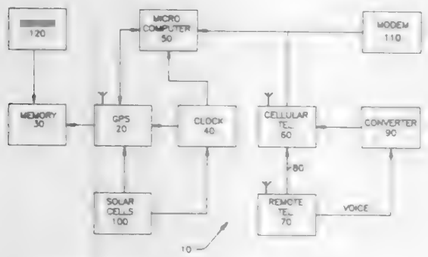
selecting said first and second frequencies so as to optimize the percent cycle-to-cycle frequency variation in the transmitter signal pulse, said variation causing a correlation function between an echo of the transmitter signal pulse and a time-delayed replica of the transmitter signal pulse to reduce the amplitude of the temporal sidelobes of the autocorrelation function output of said matched filter.

5,389,934

PORTABLE LOCATING SYSTEM

Sheldon Kass, North Brunswick, N.J., assignor to The Business Edge Group, Inc., North Brunswick, N.J.

Filed Jun. 21, 1993, Ser. No. 78,637
Int. Cl.[6] H04B *7/185*
U.S. Cl. 342—357 **7 Claims**



1. A portable tracking system, comprising:

a) at least first and second portable tracking units for communicating with each other to monitor and track each other as they each change location, said first and second portable tracking units each including an electronic calculator for converting latitude and longitude information to the distance and direction between said first and second units, and each of said first and second units including a visual display for displaying an arrow pointing in the direction of the other unit, and for displaying the distance between said first and second units;

b) a global positioning system for determining the latitude and longitude of said system as it changes location in response to a telephone call from a remote telephone unit in said second portable tracking unit;

c) a memory unit for storing location information in digital data form supplied by said global positioning system;

d) a clock for supplying time and date information to said system;

e) a micro-computer for controlling the operation of said system;

f) cellular telephone equipment for communicating with said remote telephone unit via a telephone network for transmitting said location information in voice form and for triggering said global positioning system;

g) means for converting digital data from said global positioning system to voice form for responding via said cellular telephone equipment to a telephone call from said remote telephone unit to provide location information, including latitude and longitude, in voice form to the person calling on said remote telephone unit;

h) batteries for supplying power to said system; and

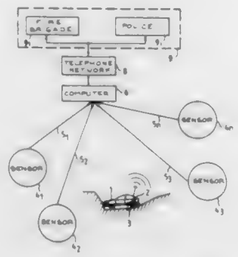
i) said entire system being portable so as to be carried by a person or vehicle to be located.

5,389,935

AUTOMATIC SYSTEM FOR LOCATING AND IDENTIFYING VEHICLES IN DISTRESS

Didier Drousault, Eaubonne, and Jean Potage, Franconville, both of France, assignors to Thomson-CSF, Puteaux, France

Continuation of Ser. No. 828,852, Feb. 6, 1992, abandoned. This application Mar. 23, 1994, Ser. No. 216,367
Claims priority, application France, Jun. 13, 1990, 90 07324
Int. Cl.[6] G01S *3/02*
U.S. Cl. 342—457 **18 Claims**



1. A system for locating vehicles in distress, comprising:

a radio distress beacon having at least one input sensor connected to a vehicle which transmits a distress signal upon a predetermined condition;

a network of direction finders which receive the distress signal, each of the direction finders determining an angle of arrival of the distress signal;

a computer, coupled to each of the direction finders and to a switched telephone network connected to emergency services, for calculating a location of the vehicle using the angle of arrival of the distress signal determined by each of the direction finders;

means for determining from the location calculated by the computer, a telephone number of emergency services which are closest to the location of the vehicle and a geographical area in which the predetermined condition occurred; and

means for automatically calling the closest emergency services and indicating a direction to be followed to reach the location where the predetermined condition occurred.

5,389,936

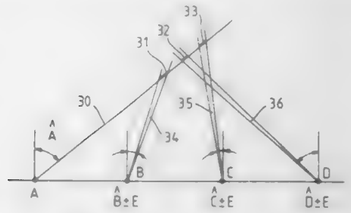
DETERMINING FIX CONFIDENCE SCORES IN DIRECTION FINDING SYSTEMS

Robert N. Alcock, Dorking, Great Britain, assignor to Thorn EMI Electronics Limited, Hayes, England

PCT No. PCT/GB91/00870, § 371 Date Jun. 24, 1993, § 102(e) Date Jun. 24, 1993, PCT Pub. No. WO91/19208, PCT Pub. Date Dec. 12, 1991
PCT Filed May 31, 1991, Ser. No. 952,747
Claims priority, application United Kingdom, Jun. 1, 1990, 9012237
Int. Cl.[6] G01S *3/02*
U.S. Cl. 342—465 **9 Claims**

1. A method of determining a fix confidence score for each source of radiation detected by direction finding stations in known separated locations in a direction finding system, which stations each produce a set of bearings of the sources each detects, each bearing having an error predetermined for the associated station, and a triangulation process being used to fix the position of the sources, characterised in that there are at least three direction finding stations, in that each fix confidence score is formed for a combination of bearings taken one each from the respective stations, in that one bearing of each of the combinations is taken in turn as a spoke directed at a source, in that the triangulation process generates a bar of intersection points along the spoke for each other bearing of the combination, each bar corresponding to the error of each other bearing,

in that the number of overlaps between pairs of bars along the spoke is totalled to give a spoke score, and in that the spoke



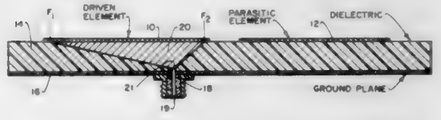
scores for all spokes of the combination are summed to form the fix confidence score for a source which may be associated with the combination.

5,389,937

WEDGE FEED SYSTEM FOR WIDEBAND OPERATION OF MICROSTRIP ANTENNAS

Cyril M. Kaloi, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 1, 1984, Ser. No. 605,737
Int. Cl.[6] H01Q *1/26*
U.S. Cl. 343—700 MS **11 Claims**



1. A wide bandwidth microstrip antenna, comprising:

a. a thin ground plane conductor;

b. a thin radiating element for producing a radiation pattern being spaced parallel to and electrically separated from said ground plane by a dielectric substrate;

c. a wedge shaped feed conductor mounted within said dielectric substrate and connected to said radiating element;

d. said wedge shaped feed comprising an upper edge, and two lower tapered edges which meet at an apical point; the height of said wedge shaped feed being less than the thickness of said dielectric substrate;

e. said wedge shaped feed being connected along its upper edge to said radiating element for feeding the radiating element at an indefinite series of feedpoints along the radiating element length;

f. a single coaxial-to-microstrip adapter mounted on said ground plane for feeding the antenna; the center pin of said adapter extending through the ground plane and connecting to the apical point of said wedge feed;

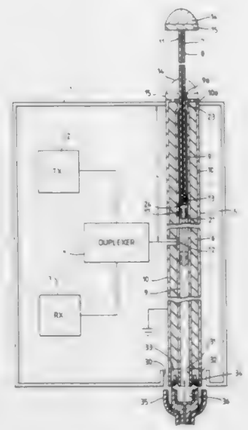
g. the angle of the said lower tapered edges of said wedge feed with respect to said radiating element and the distance of said apical point from the ground plane operating to provide impedance and phase matching for broad bandwidth antenna operation.

5,389,938

RETRACTABLE ANTENNA ASSEMBLY WITH RETRACTION SHORT CIRCUITING

Peter Harrison, Ascot, England, assignor to Nokia Mobile Phones (U.K.) Limited, Surrey, United Kingdom

Continuation of Ser. No. 912,543, Jul. 13, 1992, abandoned. This application Jun. 21, 1993, Ser. No. 80,389
Claims priority, application United Kingdom, Jul. 13, 1991, 9115136
Int. Cl.[6] H01Q *1/24*
U.S. Cl. 343—702 **17 Claims**



1. An antenna assembly comprising a radiating element movable between a retracted position and an extended position, a pair of substantially concentric conductors providing coaxial feed means to said radiating element when the radiating element is in the extended position, contact means for electrically connecting an inner conductor of the pair of conductors to an outer conductor of the pair of conductors when the radiating element is in its retracted position, the radiating element, in the retracted position, and the coaxial feed means forming a short-circuited transmission line with the length of the inner conductor from a feed point on the inner conductor through the contact means and through the outer conductor having an effective electrical length of a quarter wavelength, wherein the pair of concentric conductors are connected to an external antenna connection, the pair of concentric conductors are singular members that provide the coaxial feed means both to said radiating element and to said external antenna connection and, the radiating element is slidably mounted within the inner conductor of the pair of conductors.

5,389,939

ULTRA WIDEBAND PHASED ARRAY ANTENNA

Raymond Tang, Fullerton, and Kuan M. Lee, Brea, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

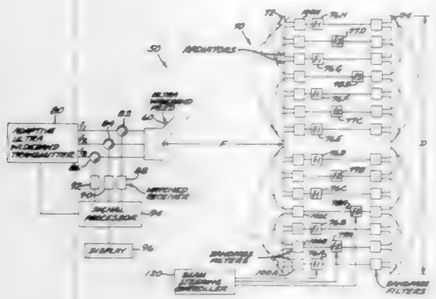
Filed Mar. 31, 1993, Ser. No. 40,788
Int. Cl.[6] H01Q *19/06*
U.S. Cl. 343—754 **24 Claims**

1. A phased array antenna system for illuminating a given radar surveillance volume, said system covering a plurality of separate frequency bands, comprising:

a space-fed frequency multiplexing lens comprising first and second radiating apertures, said first aperture facing a space feed means, said second aperture for illuminating said volume, each aperture comprising a plurality of radiating elements each in turn coupled to a corresponding radiating element of the other radiating aperture through a phase shifter device, each said aperture comprising

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means for multiplexing an incoming wideband signal into separate frequency band signals, said multiplexing means comprising a first plurality of arrays of radiating elements comprising said plurality of radiating elements of said first radiating aperture, each array operating at a particular one of said separate frequency bands, and a corresponding second plurality of arrays of radiating elements comprising said plurality of radiating elements of said second radiating aperture, and wherein the radiating elements of said first plurality of arrays share a common physical first aperture, and the radiating elements of said second plural-



ity of arrays share a common physical second aperture, and wherein said phase shifter devices are each associated with signals of one of said frequency bands and are only required to perform a phase shifting function over the particular frequency band with which said phase shifter is associated; and

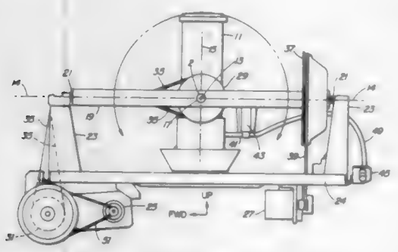
said space feed means for illuminating said first aperture with signals covering said plurality of separate frequency bands, said feed means comprising a plurality of radiators each for radiating signals of a particular one of said separate frequency bands, and wherein said radiators share a common phase center.

5,389,940

ANTENNA POINTING MECHANISM

Colin A. Sutherland, Nepean, Canada, assignor to CAL Corporation, Ottawa, Canada

Filed Sep. 14, 1992, Ser. No. 944,278
Int. Cl.[6] H01Q *3/00*
U.S. Cl. 343—765 20 Claims



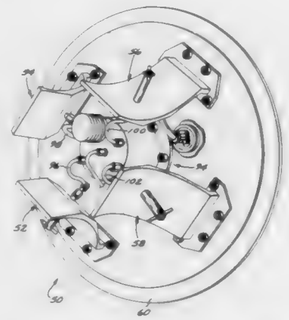
1. An antenna pointing mechanism comprising:
(a) a directional antenna having a central axis,
(b) first means for supporting the antenna about a pitch axis which is orthogonal to the central axis and which passes through about the center of mass of the antenna,
(c) an electromagnetically transparent yoke surrounding the antenna for supporting the first means,
(d) means for rotatably retaining the yoke at opposite ends thereof at positions along a roll axis,
(e) first independent substantially electromagnetically transparent driving means for driving the antenna to rotate about the pitch axis, and
(f) second independent substantially electromagnetically transparent driving means for driving the antenna to rotate about the roll axis.

5,389,941

DATA LINK ANTENNA SYSTEM

I-Ping Yu, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 28, 1992, Ser. No. 843,134
Int. Cl.[6] H01Q *21/26*
U.S. Cl. 343—797 21 Claims



1. An antenna system having omni-directional radiation coverage, comprising:
a plurality of antennas, each disposed to illuminate only a respective sector relative to a desired omnidirectional radiation coverage;
means for selectively coupling an RF drive signal to only a selected one of said antennas to radiate said signal only to the sector illuminated by said selected antenna; and
wherein each of said antennas comprises:
a parabolic cylindrical reflector surface characterized by a focus disposed above said surface;
a dipole structure arranged such that the back radiation of said dipole illuminates said reflector surface, the forward radiation of said dipole being free to radiate away from said surface without being redirected to said surface; and
means for supporting said dipole structure above said surface for feeding said drive signal to said dipole structure, said supporting and feeding means comprising an electrically conductive hollow support mast extending from said surface and to which said dipole structure is attached, and a center conductor element which extends through said hollow support mast to define a coaxial transmission line.

5,389,942

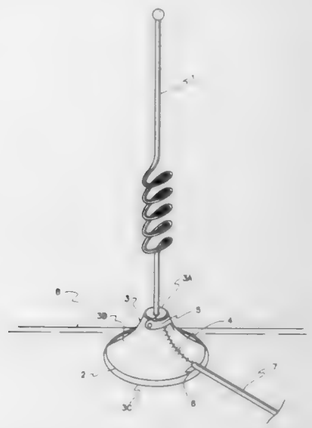
ANTENNA MOUNT COVER

Charles E. Oglesby, Jr., 602 E. Tantallon Dr., Fort Washington, Md. 20744

Filed Oct. 12, 1993, Ser. No. 133,840
Int. Cl.[6] H01Q *1/42*
U.S. Cl. 343—872 9 Claims

1. A base cover for a magnetically adhered vehicle antenna having a radiator rod, a magnetic base and a coaxial cable connector fastened thereto, said base cover comprising:
a flexible bag structure made from water repellent material, said flexible bag structure enclosing the magnetic base and having
a top end,
a side wall joined to said top end,

a bottom wall peripherally connected to said side wall;
means defining a first opening in said side wall adjacent said bottom wall, thereby enabling access of a coaxial cable connector to the magnetic base of the antenna;
means defining a second opening in said top end, thereby



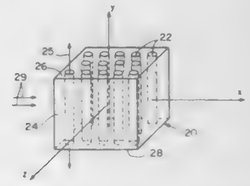
enabling said radiator rod to extend from space enclosed within said base cover to space exterior thereof; and
releasable closure means disposed on said side wall of said flexible bag structure adjacent said top end for releaseably sealing said second opening of said base cover against said radiator rod.

5,389,943

FILTER UTILIZING A FREQUENCY SELECTIVE NON-CONDUCTIVE DIELECTRIC STRUCTURE

Karl Brommer, Hampton Falls; Henry Mullaney, Amherst, both of N.H.; Robert Meade, Somerville, Mass.; Andrew Rappe, Emeryville, Calif., and John Joannopoulos, Belmont, Mass., assignors to Lockheed Sanders, Inc., Nashua, N.H. and Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 656,812, Feb. 15, 1991, Pat. No. 5,187,461. This application Jul. 27, 1992, Ser. No. 920,001
Int. Cl.[6] H01Q *15/00*; H01P *1/201*
U.S. Cl. 343—909 39 Claims



37. An electromagnetic energy filter comprising:
A body of non-conductive dielectric material; and
a spatially periodic dielectric lattice structure in said body and comprised of a plurality of elongated non-conductive dielectric elements disposed with respect to a plane orthogonal to a longitudinal axis of the elongated elements in a two-dimensional periodic lattice arrangement within the body and extending in parallel with one another through the body, the lattice structure having dimensions which are proportioned such that the lattice structure defines a band gap at a range of electromagnetic energy frequencies such that electromagnetic energy at such frequencies having a polarization parallel to the longitudinal axis of the elongated elements and electromagnetic energy at such frequencies having a polarization perpendicular to the longitudinal axis of the elongated elements which is incident on the body of non-conductive dielectric material is substantially prevented from propagating within the body of non-conductive dielectric material.

5,389,944

PHASE CORRECTING REFLECTION ZONE PLATE FOR FOCUSING MICROWAVE

Gary Collinge, Suffolk, and Thomas M. B. Wright, Herts, both of United Kingdom, assignors to Mawzones Developments Limited, United Kingdom

PCT No. PCT/GB91/01136, § 371 Date Aug. 9, 1993, § 102(e) Date Aug. 9, 1993, PCT Pub. No. WO92/01319, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 10, 1991, Ser. No. 969,283
Claims priority, application United Kingdom, Jul. 10, 1990, 9015159
Int. Cl.[6] H01Q *15/02*
U.S. Cl. 343—910 18 Claims



1. A reflection zone plate for focusing microwave energy comprises a plurality of reflective portions, each reflective portion corresponding to a zone of said zone plate; said reflective portions being positioned in P parallel planes, so that each said reflective portion reflects energy λ/P out of phase with respect to adjacent reflective portions, where λ is the wavelength of the energy and P is an integer of 4 or more, such that energy reflected from said reflective portions constructively interferes at a focus of said zone plate; wherein the reflective portions in each said plane are formed on a surface of a planar substrate formed of a material of low dielectric loss.

5,389,945

WRITING SYSTEM INCLUDING PAPER-LIKE DIGITALLY ADDRESSED MEDIA AND ADDRESSING DEVICE THEREFOR

Nicholas K. Sheridon, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

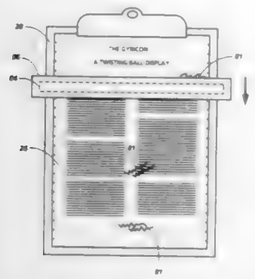
Continuation of Ser. No. 864,383, Apr. 6, 1992, abandoned, which is a continuation of Ser. No. 433,311, Nov. 8, 1989, abandoned. This application Nov. 19, 1993, Ser. No. 156,527
Int. Cl.[6] G09F *9/32*
U.S. Cl. 345—85 11 Claims

1. A writing system including a reusable planar writing sheet for use with an addressing device which is capable of imposing human perceivable information on said writing sheet, said writing sheet and said addressing device being normally independent and remote from one another when said writing sheet is not being addressed, and wherein said writing sheet and said addressing device are brought into proximity with and are

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moved relative to one another for imposing information on said writing sheet,

said writing sheet has a surface upon which information can be written and erased, exhibits ambient light valve behavior, has the ability to retain imposed information in the absence of an external retaining ibrce, and has the capability of being rolled into tubular form about any axis lying in the plane of said sheet, said writing sheet further comprises a light transparent host layer, a plurality of reorientable substantially spherical balls having at least two dissimilar surface portions of contrasting colors and different



surface charges, each of said balls being contained, and free to rotate, within a cavity in said host layer, said reorientable balls being movable from a fixed and stable first orientation, in which they will present a first visual appearance, to a fixed and stable second orientation, in which they will present a second visual appearance,

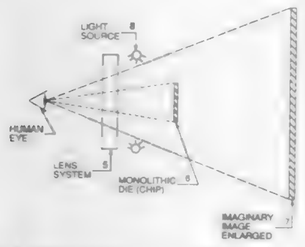
said addressing device includes an array of electrically chargeable electrodes for dislodging said balls from one fixed and stable orientation and initiating rotation thereof, and a holding electrode for completing rotation of said balls to the other fixed and stable orientation.

5,389,946

APPARATUS AND METHOD FOR PRODUCING A VIEWSCREEN FROM A MINIATURE HIGH RESOLUTION CHIP

Raja S. Tuli, 55 City Centre Dr., Ste. 500, Mississauga, Ontario, Canada L5B 1M3

Filed Dec. 28, 1992, Ser. No. 997,166
Int. Cl.[6] G09G *3/34*
U.S. Cl. 345—106 **1 Claim**



1. A visual display device, comprising:

a monolithic, high density, high resolution visual display chip, integrated with an optical lens means to create an enlarged imaginary image,

a layer of thermally sensitive material on said display chip which changes color due to a change in temperature,

said thermally sensitive material comprising a thermochromic liquid crystal material which changes colors with a change in temperature,

wherein a first color changes to a second color when said material is heated from a lower temperature to a higher temperature, the second color is maintained as long as said higher temperature is applied, said second color changes to said first color when said material is cooled from a higher temperature to a lower temperature,

an array of heating elements positioned underneath said thermally sensitive layer forms a matrix array of pixels, individual heating elements being located at pixel location at the intersection of a plurality of row lines and column lines,

said heating elements having a specific thermal mass which allows the elements to maintain said higher temperature for one frame period of the image, wherein the thermal mass acts like a memory for the frame period and maintaining said second color,

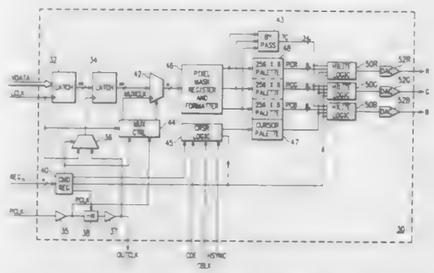
means for establishing a current in selected ones of said thermal heating elements for raising the temperature level and altering the light reflecting properties of those portions of thermally sensitive materials which are in close proximity to said heating elements.

5,389,947

CIRCUITRY AND METHOD FOR HIGH VISIBILITY CURSOR GENERATION IN A GRAPHICS DISPLAY

Paul B. Wood, Spring; Thomas M. Albers, Houston, and Stephen B. Preston, Spring, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 696,355, May 6, 1991, abandoned. This application Mar. 2, 1993, Ser. No. 26,207
Int. Cl.[6] G09G *1/28*
U.S. Cl. 345—145 **15 Claims**



1. A video display driver circuit, comprising:

a color palette memory for storing intensity data corresponding to the intensity of display components, said color palette memory having an input for receiving an address value, and having an output at which it presents pixel data in a digital form including a value having a magnitude corresponding to the intensity of at least one color component to be displayed, responsive to the address value received at its input;

inverting circuitry, having a data input coupled to the output of said color palette memory, and having a control input and an output, said inverting circuitry for inverting the output of said color palette memory responsive to a control signal received at its control input;

a cursor enable circuit coupled to the control input of said inverting circuitry, for generating said control signal responsive to a display location being at a selected cursor location in a displayed image; and

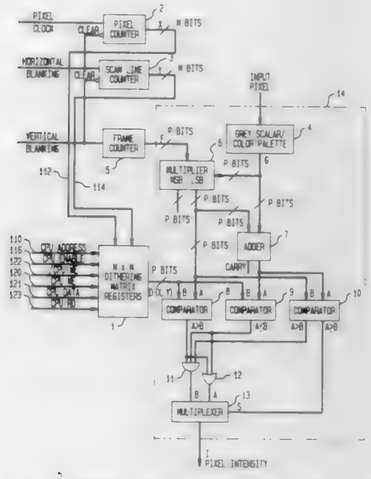
output circuitry, having an input coupled to the output of said inverting circuitry, for presenting, to a display device, an output signal corresponding to the inverted output of the color palette memory.

5,389,948

DITHERING CIRCUIT AND METHOD

Chih-Yuan Liu, Hsinchu, Taiwan, Prov. of China, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Feb. 14, 1992, Ser. No. 837,636
Int. Cl.[6] G09G *3/00*
U.S. Cl. 345—147 **11 Claims**



10. A binary display device capable of displaying a multiple intensity scale image comprising

a circuit which represents an input pixel having a specific multiple intensity scale value by illuminating a corresponding pixel on said binary display for a specific number of frames in a display period, the specific number of illuminated frames being proportionate to the specific multiple intensity scale value, said number of illuminated frames being spread evenly over said display period,

wherein said multiple intensity scale value G(X,Y) is a grey scale value, and

said circuit comprises:

means for generating the coordinates X,Y of a pixel,

means for storing a dither matrix and outputting a specific dither matrix element D(X,Y) in response to the coordinates X,Y of a pixel,

means for maintaining a frame count number F in said display period,

means for multiplying said multiple intensity scale value G(X,Y) with said frame count number F,

means responsive to the dither matrix element D(X,Y), said frame count F, said specific grey scale value G(X,Y) and a product (F * G(X,Y)) of the means for multiplying for the pixel with coordinates X,Y for determining whether said corresponding pixel with coordinates X,Y on said binary display should be illuminated in each frame of said display period,

means for adding said product (F * G(X,Y)) and said input intensity value G(X,Y),

first means for comparing said product (F * G(X,Y)) with said dither matrix element D(X,Y),

second means for comparing said dither element D(X,Y) with said addition ((F * G(X,Y))+G(X,Y)),

a third means for comparing said product (F * G(X,Y)) with said addition ((F * G(X,Y))+G(X,Y)), and

said circuit generating an output pixel intensity in response to results from said three means for comparing.

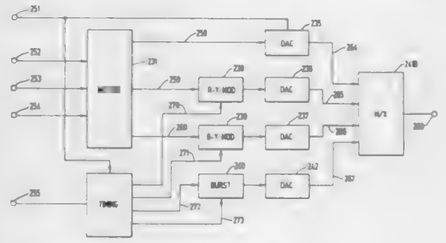
5,389,949

VIDEO SIGNAL PROCESSOR

Akira Nakada; Toshio Orii; Shigeo Tsuruoka; Jun Nakamura, all of Nagano, and Kimio Yamamura, Tokyo, all of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 990,003, Dec. 14, 1992, abandoned, which is a continuation of Ser. No. 746,152, Aug. 14, 1991, abandoned, which is a continuation of Ser. No. 238,206, Aug. 30, 1988, abandoned. This application Feb. 16, 1994, Ser. No. 197,458

Claims priority, application Japan, Aug. 31, 1987, 65-217559; Sep. 2, 1987, 62-219992; Sep. 14, 1987, 62-230202; Sep. 14, 1987, 62-230205; Sep. 14, 1987, 62-230207; Sep. 14, 1987, 62-230209; Sep. 14, 1987, 62-280208; Jul. 11, 1988, 63-173563
Int. Cl.[6] G09G *1/28*
U.S. Cl. 345—154 **17 Claims**



1. A video signal generator comprising:

conversion means for converting digital RGB color data into a luminance signal and two color-difference signals represented by analog values, wherein said conversion means comprise: digital conversion means for converting digital RGB color data into a luminance signal and two color-difference signals represented by digital values; and modulator and digital-analog converter means connected to said digital conversion means for modulating said two color-difference signals represented by digital values with two respective subcarriers represented by digital values and for converting the two modulated color-difference signals represented by digital values into two color-difference signals represented by analog values varying within an analog value range, and wherein said modulator and converter means are operative for giving each color-difference signal represented by analog values a signal value at the midpoint of the analog value range when the associated subcarrier experiences a change in level.

5,389,950

VIDEO GAME/FLIGHT SIMULATOR CONTROLLER WITH SINGLE ANALOG INPUT TO MULTIPLE DISCRETE INPUTS

Frank M. Bouton, Beaverton, Oreg., assignor to Thurstmaster, Inc., Tigard, Oreg.

Continuation of Ser. No. 140,329, Oct. 20, 1993, abandoned, which is a continuation of Ser. No. 911,765, Jul. 9, 1992, abandoned. This application Mar. 2, 1994, Ser. No. 206,204
Int. Cl.[6] G09G *3/02*
U.S. Cl. 345—156 **18 Claims**

1. A video game/simulation system for simulating operation of a complex system having a plurality of user-controlled functions, the system comprising:

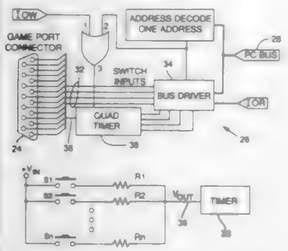
a personal computer having a digital microprocessor operable under control of a video game/simulation program, a display for displaying images produced by the program, and an input/output bus for connecting peripheral input and output devices to the digital microprocessor;

a game board coupled to the input/output bus having a finite number of inputs for receiving and inputting to the microprocessor a first limited number of analog input signals and a second limited number of discrete input signals;

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a video game/simulator controller having a number of analog output signal lines not exceeding said first number and a number of discrete output signal lines not exceeding said second number, the signal lines coupled to the game board inputs;

a plurality of switches all coupled to one of the analog output signal lines through a different impedance so as to



produce a different discrete level of signal on said one analog output signal line uniquely corresponding to each of the switches; and

means in the personal computer for interpreting each different discrete level of signal as a separate discrete command and inputting said command to the video game/simulation program to effect a corresponding change in the displayed images produced by the program.

5,389,951

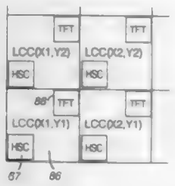
LIQUID CRYSTAL DISPLAY INTEGRATED WITH HALL EFFECT POINTING DEVICE

Robert G. Baker, Delray Beach, Fla., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 21, 1993, Ser. No. 95,626

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—174 **13 Claims**



13. Liquid crystal display apparatus comprising:

a liquid crystal display (LCD) comprising a layer of liquid crystal cells (LCCs) each containing liquid crystal material, said LCCs being arranged in a rectangular array;

a magnetic actuator that is selectively movable adjacent to said LCD and said LCCs for selectively actuating said LCCs;

a substrate positioned adjacent said layer, said substrate having a plurality of cell circuits, each cell circuit being positioned adjacent a different LCC and comprising

a thin film transistor (TFT) for actuating liquid crystal material adjacent thereto in response to a control signal applied to such TFT,

a first Hall sensor cell (HSC) comprising a first Hall effect element (HEE) actuated by a magnetic field having a first polarity for generating a Hall effect voltage, a first differential amplifier coupled to said HEE for receiving said Hall effect voltage therefrom, said first differential amplifier producing an output signal proportional to said Hall effect voltage produced by said first HEE connected thereto, and a first trigger connected to said differential amplifier for producing a digital output signal indicating when said voltage from said first differential amplifier is above a predetermined magnitude and thereby generating a first control signal in response to actuation of said first HEE by said actuator,

a second Hall sensor cell (HSC) comprising a second Hall effect element (HEE) actuated by a magnetic field having a polarity opposite said first polarity for generating a Hall effect voltage, a second differential amplifier coupled to said HEE for receiving said Hall effect voltage therefrom, said second differential amplifier producing an output signal proportional to said Hall effect voltage produced by said second HEE connected thereto, and a second trigger connected to said differential amplifier for producing a digital output signal indicating when said voltage from said second differential amplifier is above a predetermined magnitude and thereby generating a second control signal in response to actuation of said HEE by said actuator,

a switch having a first control signal input coupled to said first and second triggers for receiving said first and second control signals therefrom, said switch further having an output coupled to said TFT for transmitting a control signal thereto, said switch having a plurality of modes of operation including a first mode in which control signals generated by said triggers are propagated through said switch and applied to said TFT to thereby activate said liquid crystal material when a first polarity of magnetic field is adjacent said HEE and deactivate said liquid crystal material when a second polarity of magnetic field is adjacent said HEE;

said LCCs and said cell circuits being arranged in columns and rows;

mode control means for generating mode control signals for controlling operation of said switches comprised in said cell circuits;

video processing means coupled to said cell circuits for generating and transmitting third control signals;

a computer coupled to said video processing means;

said switch in each cell circuit having a control signal input for receiving third control signals from said video processing means and mode input means for receiving said mode control signals for selectively setting said switch to operate in accordance with said mode control signals, said switch having (a) a second mode of operation in which said third control signals from said video processing means are applied to said TFT for actuating liquid crystal material adjacent to said TFT and (b) a third mode of operation in which said first and second control signals from said HSC is inputted into said computer;

I/O line means connected to said video processing means for selectively transmitting said third control signals to said TFTs when said switches are set to operate in said second mode and transmitting said first and second control signals to said computer when said switches are set to operate in said third mode, said I/O line means comprising a plurality of sense lines each connected to a plurality of switches in a different column; and

cell selection means comprising a plurality of row lines, each row line being connected to a plurality of switches in a row, and each column line being connected to a plurality of switches in a column, whereby a given switch is enabled by coincident active signals on said row line and said column line connected thereto for selectively enabling said switches one-at-a-time to input said first and second control signals into said computer when said switches are set to said third mode and to selectively actuate said LCCs one-at-a-time when said switches are set to said second mode.

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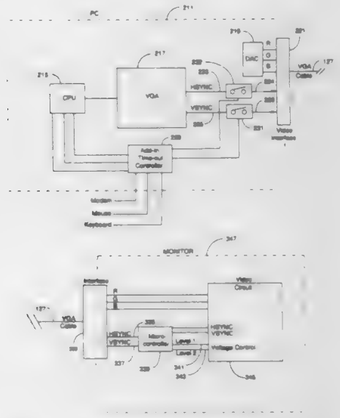
LOW-POWER-CONSUMPTION MONITOR STANDBY SYSTEM

Dan Kikinis, Sunnyvale, Calif., assignor to Cordata Inc., Tortola, Virgin Islands (British)

Continuation of Ser. No. 984,370, Dec. 2, 1992, abandoned. This application Oct. 22, 1993, Ser. No. 141,413

Int. Cl.[6] G09G *5/00, 5/12;* **H04N** *5/63*

U.S. Cl. 345—212 **27 Claims**



1. In a general-purpose computer having a CPU, a memory, input apparatus, a monitor, and a video adapter including circuitry having an HSYNC generator and a VSYNC generator for providing HSYNC and VSYNC signals to the monitor, a system for signalling the monitor to assume alternative power-using states comprising:

timing means for detecting periods of inactivity of said input apparatus, said timing means being provided by said CPU following an instruction routine stored in said memory;

SYNC disabling means for interrupting one of the HSYNC and VSYNC signals to the monitor in response to detection of a period of inactivity by said timing means, said SYNC disabling means including a register associated with said circuitry wherein one bit is a vertical retrace polarity bit and another bit is a horizontal retrace polarity bit, SYNC signals being disabled by said CPU writing to said register; and

power management means associated with said monitor for reducing power to power-using circuits in said monitor in response to the absence of one of said HSYNC and VSYNC signals.

5,389,953

NON-IMPACT PRINTER MODULE WITH IMPROVED BURN-IN TESTING CAPABILITY AND METHOD USING SAME

Keith W. Agar, Henrietta, and Jeffrey G. La Pointe, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1991, Ser. No. 636,841

Int. Cl.[6] B41J *2/435*

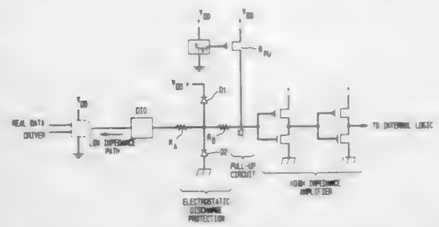
U.S. Cl. 347—5 **18 Claims**

16. A method for burning-in a recording element having integrated circuit driver that is electrically coupled to said recording element, said method comprising the steps of:

applying an electrical power signal to said driver from a source external to said driver;

in response to said electrical power signal generating internally in said driver a pseudo image data signal to a data register forming a part of said driver; and

applying a control signal to said driver to initiate an energization of said recording element by the driver that is responsive to said pseudo image data signal without providing, from a source external of said driver, a real image data signal to said driver.



5,389,954

LASER PROCESS APPARATUS FOR FORMING HOLES IN A WORKPIECE

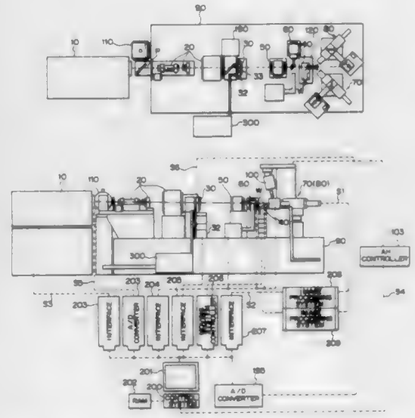
Masaki Inaba, Kawasaki; Hiroshi Kohno, Yokohama; Fumio Ichikawa, Kamakura; Kazuaki Masuda, Kawasaki; Takashi Watanabe, Yokohama; Tsuyoshi Orikasa, Kasukabe; Masayuki Nishiwaki, Kawasaki; Toshio Tsuda, and Akira Goto, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1991, Ser. No. 794,862

Claims priority, application Japan, Nov. 21, 1990, 2-314135; Nov. 21, 1990, 2-314136; Nov. 22, 1990, 2-315925; Nov. 30, 1990, 2-329524; May 13, 1991, 3-135324

Int. Cl.[6] B41J *2/435*

U.S. Cl. 347—258 **32 Claims**



1. A laser process apparatus for making holes in a workpiece, comprising:

a laser light source emitting a laser light;

optical converting means for converting the laser light from said laser light source to laser beams suitable to make holes in the workpiece;

workpiece holding means for holding the workpiece at a processing position where the holes are made in the workpiece, said workpiece holding means having an adjusting mechanism for adjusting the processing position;

a mask for processing the laser light into laser beams, shapes of which correspond to shapes of the holes; and

mask adjusting means for adjusting the position of said mask.

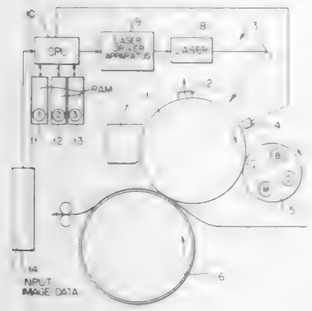
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5,389,955

IMAGE FORMING APPARATUS DIRECTLY CORRECTING AN IMAGE DATA IN RESPONSE TO CHANGES IN IMAGE POTENTIAL DATA

Nobuo Suzuki, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 137,923
Claims priority, application Japan, Feb. 24, 1993, 5-035206
Int. Cl.[6] B41J *2/435*
U.S. Cl. 347—112 **6 Claims**



1. An image forming apparatus wherein an electrostatic latent image is formed on a photosensitive member and developed into a visible image, comprising:

image data conversion means for converting input image data in accordance with image data conversion information;

storage means for storing electrostatic latent image potential data for at least one input coverage value in a predetermined condition;

optical means for exposing a reference pattern of one or more input coverage values on said photosensitive member to light to form an electrostatic latent image;

potential detection means for detecting a potential of the electrostatic latent image of the reference pattern formed by said optical means; and

means for comparing potential data detected by said potential detection means and the potential data stored in said storage means with each other and modifying, when a difference between the potential data thus compared is greater than a predetermined value, the image data conversion information for said image data conversion means so that the electrostatic latent image potential at a same input image data value may be substantially equal to the electrostatic latent image potential in the predetermined condition.

5,389,956

TECHNIQUES FOR IMPROVING DROPLET UNIFORMITY IN ACOUSTIC INK PRINTING

Babur B. Hadimioglu, Mountain View; Butrus T. Khuri-Yakub, Palo Alto; Richard L. Weisfield, Menlo Park, and Eric G. Rawson, Saratoga, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 18, 1992, Ser. No. 931,804
Int. Cl.[6] B41J *2/04*
U.S. Cl. 347—12 **10 Claims**

1. A method for improving the uniformity of droplets ejected from an array of droplet ejectors defining a first row and a second row of droplet ejectors which eject droplets in response to electrical inputs, the method comprising the steps of:

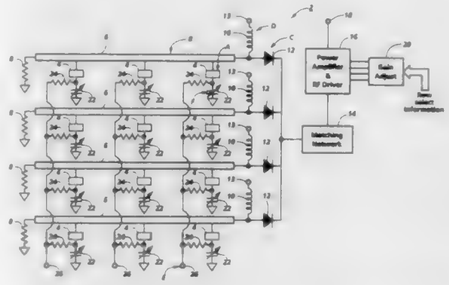
(a) determining for said first row of droplet ejectors a relationship between the electrical inputs to the droplet ejectors of said first row of droplet ejectors and an average characteristic of droplets ejected from said first row of droplet ejectors;

(b) determining for said second row of droplet ejectors a relationship between the electrical inputs to the droplet ejectors of said second row of droplet ejectors and an average characteristic of droplets ejected from said second row of droplet ejectors;

(c) specifying for said first row of droplet ejectors an average characteristic of droplets that are to be ejected by the droplet ejectors in said first row of droplet ejectors;

(d) specifying for said second row of droplet ejectors an average characteristic of droplets that are to be ejected by the droplet ejectors in said second row of droplet ejectors;

(e) determining for said first row of droplet ejectors, using steps (a) and (c), an amplitude of the electrical inputs to



said first row of droplet ejectors that achieves the specified average characteristic for the droplets to be ejected from said first row of droplet ejectors;

(f) determining for said second row of droplet ejectors, using steps (b) and (d), an amplitude of the electrical input to said second row of droplet ejectors that achieves the specified average characteristic for the droplets to be ejected from said second row of droplet ejectors;

(g) applying to said first row of droplet ejectors the electrical inputs determined in step (e) when a droplet is to be ejected from said first row of droplet ejectors; and

(h) applying to said second row of droplet ejectors the electrical inputs determined in step (f) when a droplet is to be ejected from said second row of droplet ejectors wherein droplet uniformity is improved.

5,389,957

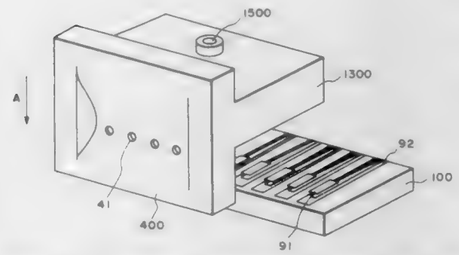
INK JET HEAD WITH CONTOURED OUTLET SURFACE

Makiko Kimura, Sagamihara; Toshio Kashino, Chigasaki; Teruo Arashima, Yokohama; Hiroshi Sugitani, Machida; Yoshifumi Hattori, Yamato; Masami Ikeda, Tokyo; Asao Saito, Yokohama; Kazuaki Masuda, Sagamihara; Akio Saito, Hadano; Tsuyoshi Orikasa, Kasukabe; Takashi Ohba, Zama; Kunihiko Maeoka, Kawasaki; Jun Kawai, Yokohama; Tsutomu Abe, Isehara, and Hiroshi Nakagomi, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 583,336, Sep. 17, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 940,735
Claims priority, application Japan, Sep. 18, 1989, 1-241025; Sep. 18, 1989, 1-241054; Sep. 18, 1989, 1-241055; Sep. 18, 1989, 1-241057
Int. Cl.[6] B41J *2/135*
U.S. Cl. 347—20 **5 Claims**

1. An ink jet head comprising a base member, a first member attached to said base member and having recesses forming ink passages, and a second member integral with said first member and extending at an angle from an end of said first member, said second member having ink ejection outlets communicating with said ink passages and being located at a nonplanar ejection side surface, wherein said ejection side surface has first and second surface portions with a connecting surface portion therebetween having said ejection outlets therein, said surfaces satisfying the following relations:

$0.02\ \text{mm} < a \leqq 0.05\ \text{mm}$
$0.05\ \text{mm} \leqq b \leqq 0.8\ \text{mm}$
$0.15\ \text{mm} \leqq c$
$1.5\ \text{mm} \leqq d \leqq 25\ \text{mm}$
$0.12\ \text{mm} \leqq e \leqq 0.5\ \text{mm}$
$5\ \text{degrees} \leqq \theta 1 \leqq 15\ \text{degrees}$
$0\ \text{degrees} \leqq \theta 2 \leqq 6\ \text{degrees}$



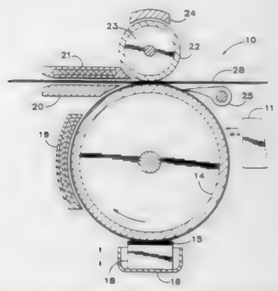
wherein a is a thickness of said second member where said ejection outlets are formed, b is a distance from a junction between said first and second members to said second surface portion, c is a thickness from a junction surface between said second member and said base member, d is a distance from said second surface portion to an end of said second member, e is a distance from said junction to said first surface portion, $\theta 1$ is an angle of inclination of said connecting surface portion from vertical, and $\theta 2$ is an angle of inclination of said first surface portion from vertical.

5,389,958

IMAGING PROCESS

Loc V. Bui, Portland; Donald R. Titterington, Tualatin; James D. Rise, Lake Oswego; C. Wayne Jaeger, Beaverton; Jon C. Mutton, Portland, and Hue P. Le, Beaverton, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Nov. 25, 1992, Ser. No. 981,646
Int. Cl.[6] B41J *2/05*
U.S. Cl. 347—103 **31 Claims**



1. A method of imaging in printer using phase change ink comprising the steps of

(a) applying a liquid to a first supporting surface to form a liquid layer, the liquid layer serving as an intermediate transfer surface and having an exposed surface not in contact with the supporting surface and an opposing second surface in contact with the supporting surface,

(b) imaging the exposed surface of the liquid layer by applying a phase change ink to form an image thereon by changing the ink from a solid state to a molten state and applying it at a temperature of about 85° C. to about 150° C. in the molten state to the liquid layer where the ink solidifies into a malleable state having a temperature of between about 30° C. and about 80° C.; and

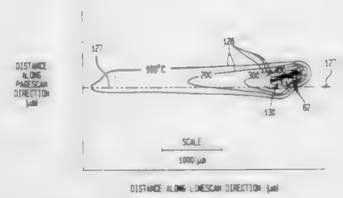
(c) transferring the image of malleable ink to a receiving medium where the ink further solidifies to a ductile state so that it will yield without fracturing and is flexible between about −10° C. and about 80° C.

5,389,959

THERMAL PRINTING SYSTEM

Daniel D. Haas, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 865,508, Apr. 9, 1992, abandoned. This application May 20, 1994, Ser. No. 246,384
Int. Cl.[6] B41J *2/475;* **G01D** *15/14*
U.S. Cl. 347—187 **25 Claims**



1. A thermal printer system comprising:

a multiple channel print head applying an array of writing laser spots of heat energy to a dye donor element to print individual pixels onto a receiver element in accordance with electronic signals encoding an image being printed;

means for moving the dye donor element relatively past the print head at a controlled velocity, the dye donor element having a dye vaporization temperature substantially above ambient; and

thermal energy means for preheating a zone on the dye donor element encompassing the array of writing laser spots which substantially uniformly elevates a temperature throughout the zone to just below the dye vaporization temperature such that thermal interactions between the array of writing laser spots of heat energy are reduced, linearity and range of exposure of said image being printed are improved and artifacts are reduced in the printed image.

5,389,960

DYE RECORDING METHOD AND DYE RECORDING APPARATUS THEREFOR DYE RECORDING APPARATUS THEREFOR, THERMAL HEAD THEREFOR AND RECORDING INK FOR DYE RECORDING

Hiroshi Onishi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 7, 1991, Ser. No. 772,531
Claims priority, application Japan, Oct. 9, 1990, 2-271118; Jan. 28, 1991, 3-008325; Mar. 8, 1991, 3-043363; Apr. 26, 1991, 3-097512
Int. Cl.[6] B41J *2/32*
U.S. Cl. 346—224 **48 Claims**

19. A dye recording apparatus, comprising:

a printing medium having a dyed layer suitable for receiving a dye;

a fluid ink including said dye;

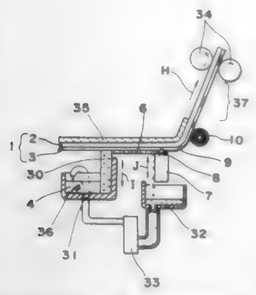
an ink supplier for supplying said fluid ink on a surface of said dyed layer of said printing medium;

a heater for heating said fluid ink selectively; and

a removing device for removing said fluid ink from said surface of said printing medium;

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whereby said fluid ink supplied by said ink supplier is heated with said heater and said fluid ink is removed after heating



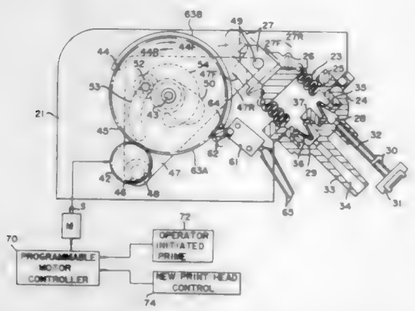
from said dyed layer with said removing device to obtain a dye printing image on said printing medium.

5,389,961

INK JET PRINTER WITH VARIABLE-FORCE INK DECLOGGING APPARATUS

Seiichi Takagi, Suwa, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 797,005, Nov. 25, 1991, abandoned. This application Jul. 27, 1993, Ser. No. 97,730
Int. Cl.[6] B41J *2/165*
U.S. Cl. 347—29 8 Claims



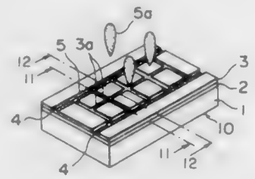
1. An apparatus for inhibiting and removing ink clogs in a printing nozzle of an ink jet printer, said apparatus comprising:
a printing nozzle;
a vacuum source having at least first and second negative pressure levels; and
means for selectively coupling said printing nozzle to said vacuum source to suck ink through said printing nozzle when said printing nozzle is not being used in a printing operation, the absolute value of said first negative pressure being adequate to suck ink through said printing nozzle to inhibit ink clogs from forming therein, the absolute value of said second negative pressure being greater than the absolute value of said first negative pressure and adequate to remove previously formed ink clogs from said printing nozzle.

5,389,962

INK JET RECORDING HEAD ASSEMBLY

Takuro Sekiya; Mitsuru Shingyouchi; Takashi Kimura, all of Yokohama; Takayuki Yamaguchi, Minoo; Yoshio Watanabe, Kawasaki; Shuji Motomura, Yokohama; Eiko Suzuki, Sagamihara, and Masami Kadonaga, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 9, 1991, Ser. No. 803,561
Claims priority, application Japan, Dec. 14, 1990, 2-410976; Apr. 15, 1991, 3-110911; Jul. 5, 1991, 3-192442; Aug. 28, 1991, 3-242726
Int. Cl.[6] B41J *2/05, 2/175*
U.S. Cl. 347—65 19 Claims



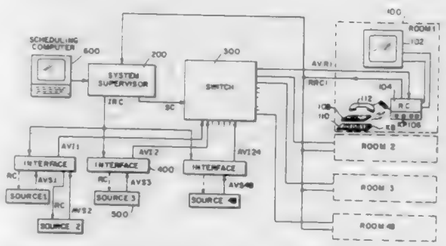
1. An ink jet recording head assembly comprising:
a base member having a plurality of enclosures, a top of each of said enclosures having an Opening;
an ink supply for supplying ink to each of said enclosures via the opening at the top thereof and for maintaining the ink at a predetermined depth; and
an energy operation portion which is provided in each of said enclosures under the ink supplied via the opening, said energy operation portion supplying energy to the ink in each of said enclosures so that a bubble is generated in the ink.
wherein an ink drop is jetted from a surface of the ink due to the bubble generated in the ink, and wherein said ink supply has a plate on which a channel is formed, said plate being stacked on said base member so that ink flows through the channel and is supplied to each of said enclosures via the opening at the top thereof, a top surface of said channel being open.

5,389,963

SYSTEM FOR SELECTIVELY INTERCONNECTING AUDIO-VIDEO SOURCES AND RECEIVERS

John A. Lepley, Lawton, and John A. Lepley, Jr., Paw Paw, both of Mich., assignors to Dynacom, Inc., Mishawaka, Ind.

Filed Feb. 5, 1992, Ser. No. 831,352
Int. Cl.[6] H04N *7/10*
U.S. Cl. 348—7 23 Claims



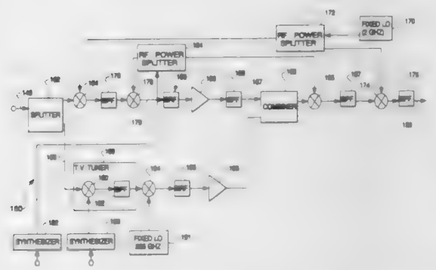
1. A system for interconnecting a plurality of sources of audio and video signals and a plurality of audio and video communication devices comprising:
switch means for selectively connecting said plurality of audio and video signals from said plurality of sources at its inputs to its outputs;
a plurality of first modulating means for receiving and modulating an audio signal from a respective source and providing said modulated audio signal as said audio signal input to said switch means;
a plurality of transmitter means, connected to a respective output of said switch means and including second modulating means for modulating received video signals, for transmitting said modulated video signals and received modulated audio signals simultaneously at an output; and
a plurality of receiver means connected to said output of a respective transmitter means for receiving, separating and demodulating said transmitted video and audio signals and providing said demodulated video and audio signals at an output for a respective communication device.

5,389,964

BROADCAST CHANNEL SUBSTITUTION METHOD AND APPARATUS

Frank X. Oberle, Buffalo Grove; Jody L. Holzman, Highland Park, and Terry Renfro, Chicago, all of Ill., assignors to Information Resources, Inc., Chicago, Ill.

Filed Dec. 30, 1992, Ser. No. 998,494
Int. Cl.[6] H04N *7/16*
U.S. Cl. 348—9 24 Claims



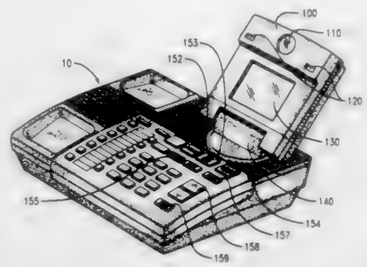
1. A signal substitution system at a viewer premises for substituting television signals in a channel on a distribution means with substitute television signals, said apparatus comprising at said viewer premises:
means for receiving a plurality of television signals and for distributing said received plurality of television signals in a plurality of RF frequency separated channels on said distribution means;
means for receiving control signals directing the substitution of a specified first of said received television signals for the signals in a specified one of said plurality of frequency separated channels on said distribution means;
RF channel deletion apparatus responsive to said received control signals for deleting said specified frequency separated channel from said distribution means;
means for frequency converting said specified first received television signals to the frequency of said specified frequency separated channel; and
means for combining said frequency converted first television signals with the signals in the plurality of frequency separated channels on said distribution means.

5,389,965

VIDEO TELEPHONE STATION HAVING VARIABLE IMAGE CLARITY

Andrew J. Kuzma, Carmel, Ind., assignor to AT&T Corp., Murray Hill, N.J.

Filed Apr. 1, 1993, Ser. No. 41,110
Int. Cl.[6] H04N *7/14*
U.S. Cl. 348—14 17 Claims



1. Video telephone apparatus for transmitting digitized video frames over a limited bandwidth medium, said apparatus including:
a source of original video frames, each frame comprising an array of picture elements;
coding means for generating compressed video frames by eliminating certain details from the original video frames, said compressed video frames being generated at a rate that is proportional to the amount of detail removed from the original video frames;
means for receiving a user-selected control signal from the limited bandwidth medium;
means responsive to the user-selected control signal for controllably increasing the rate at which compressed video frames are generated by increasing the amount of detail removed from the original video frame; and
means for transmitting the compressed video frames at a constant data rate over the limited bandwidth medium.

5,389,966

FILM IMAGE INPUT SYSTEM FOR REPRODUCING A FILM IMAGE ON A T.V. SCREEN

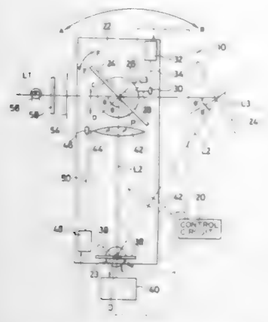
Kazuo Ikari, and Ryo Imai, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 5, 1991, Ser. No. 755,472
Claims priority, application Japan, Sep. 14, 1990, 2-245113; Jan. 18, 1991, 3-004638; Jan. 18, 1991, 3-004639; Mar. 8, 1991, 3-043780; Mar. 11, 1991, 3-044918; Mar. 11, 1991, 3-044919; Mar. 11, 1991, 3-044920; Aug. 22, 1991, 3-211171
Int. Cl.[6] H04N *5/253*
U.S. Cl. 348—98 1 Claim

1. A film image input system which forms an image of a developed still photo film on a light receiving surface of an image pickup element through a mirror and a single focus lens and outputs to a monitor TV an image signal photo-electrically converted by the image pickup element to thereby reproduce the film image on the screen of the monitor TV, said film image input system comprising:
a rotary mechanism including said mirror, single focus lens and image pickup element and capable of varying the length of an optical path extending from said photo film to said image pickup element by means of rotation of said rotary mechanism;
mirror drive means for rotating said mirror on said rotary mechanism and for moving said mirror along an optical axis of said single focus lens;
lens drive means for moving said single focus lens along the optical axis thereof on said rotary mechanism;
detect means for detecting an angle of rotation of said rotary mechanism and for outputting an output signal; and

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control means, in accordance with said output signal of said detect means, for controlling said mirror drive means so that the image light of said photo film can enter said image pickup element at a right angle and for controlling said



lens drive means so that said single focus lens can be moved to a focusing position thereof at which said image is focused on said light receiving surface,

wherein zooming of said film image can be achieved by means of rotation of at least said rotary mechanism.

5,389,967

OBJECT TRACKING APPARATUS AND METHOD OF CAMCORDER

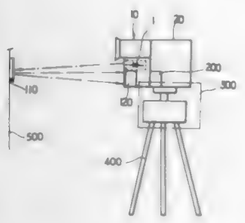
Ki-Yong Kim, Kyonggi-do, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 9, 1992, Ser. No. 942,402

Claims priority, application Rep. of Korea, Sep. 13, 1991, 91-15969

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—169 19 Claims



1. An object tracking apparatus of a camcorder having a lens capable of focusing on an object positioned at various distances from said lens, comprising:

light emitting means for generating light of a first frequency, attachable to said object;

focus purpose light emitting means for generating light of a second frequency, said light of a second frequency capable of reflection off said object;

photoelectric conversion means for converting to electrical signals said light of a second frequency reflected off said object and the light of a first frequency incident and generated from said light emitting means;

travelling object detection means for discriminating the moving status of the object by utilizing the signals photoelectrically converted from said photoelectric conversion means; and

direction switching means for changing the shooting direction of the camcorder in accordance with said moving status of the object detected from said travelling object detection means.

5,389,968

CCD TELEVISION CAMERA WITH SEPARATED CAMERA HEAD

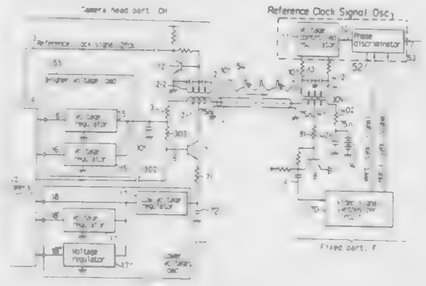
Yukio Koyanagi, Tokyo, and Yuji Suwa, Yokohama, both of Japan, assignors to Yugengaisha Wai-Kei Kikaku, Tokyo and Komatsu Denshi Kabushiki Kaisha, Komatsu, both of Japan

Filed Apr. 3, 1992, Ser. No. 862,881

Claims priority, application Japan, Apr. 11, 1991, 3-166527

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—222 8 Claims



1. A CCD TV camera with a separate camera head, comprising:

a camera head part including a clock generator means for issuing control signals based on a reference clock signal, a CCD camera circuit with a CCD imaging device driven by a control signal of said clock generator means, signal processing circuits for processing an output signal of said CCD imaging device to form a composite video signal, and a first coupling circuit having a first hybrid coil, whose secondary coil is connected to said clock generator means to provide the reference clock signal thereto,

a further part physically separable from said camera head part and including a DC power source, a video signal synthesizer circuit, reference clock signal oscillation means for producing the reference clock signal and a second coupling circuit having a second hybrid coil, and

a single coaxial cable electrically connecting said camera head part and said further part via said first coupling circuit and said second coupling circuit, respectively, one end of a center conductor of said coaxial cable being connected to a primary coil of said first hybrid coil of the camera head part and the other end of said center conductor being connected to a primary coil of said second hybrid coil of said further part, said DC power source and said video signal synthesizer circuit being connected to the primary coil of said second hybrid coil so as to supply power to said camera head part and to receive the composite video signal from said camera head part, a secondary coil of said second hybrid coil being connected to said reference clock signal oscillation means so as to provide said reference clock signal to said clock generator means of said camera head part.

5,389,969

APPARATUS USING BRIGHTNESS INFORMATION FROM A PHOTOMETERING CIRCUIT AND A BRIGHTNESS-CONVERTED GREEN COMPONENT FROM A COLOR METERING CIRCUIT TO ULTIMATELY ADJUST WHITE BALANCE

Masahiro Suzuki, Kawasaki, and Masahiro Juen, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

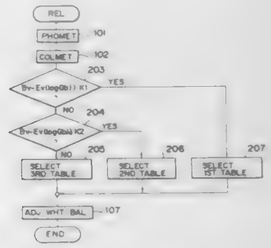
Continuation of Ser. No. 974,496, Nov. 12, 1992, Pat. No. 5,289,268. This application Dec. 21, 1993, Ser. No. 170,744

Claims priority, application Japan, Nov. 21, 1991, 3-331569

The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.

Int. Cl.[6] H04N *9/73, 9/04*

U.S. Cl. 348—223 4 Claims



1. A method of adjusting a white balance in a camera, wherein a brightness of an object is metered on the basis of light, the light being directed to an image pickup device of the camera to produce object brightness information, and a color temperature of light at a periphery of the camera is metered to produce brightness converted information which is a green component of light, and a white balance is controlled so as to adjust a color balance of an output signal from said image pickup device on the basis of the object brightness information and the brightness converted information.

5,389,970

METHOD AND CIRCUIT FOR CONTROLLING WHITE BALANCE IN A VIDEO SIGNAL

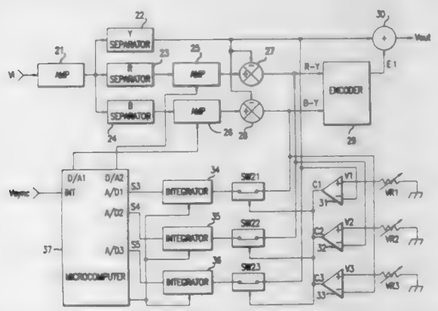
Seung E. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Jun. 25, 1993, Ser. No. 81,882

Claims priority, application Rep. of Korea, Jun. 26, 1992, 11226

Int. Cl.[6] H04N *9/73*

U.S. Cl. 348—228 9 Claims



1. A circuit for controlling white balance in a video signal having a predetermined white area, comprising:

means for separating a luminance signal, a red signal and a blue signal from the video signal;

gain control amplifier means for amplifying the separated red signal and the separated blue signal received from said means for separating and outputting amplified red and blue signals;

making means for making a red minus luminance signal and a blue minus luminance signal from the luminance signal received from said means for separating, and the amplified red signal and the amplified blue signal received from said gain control amplifier means;

integrating means for integrating the luminance signal, the red minus luminance signal and the blue minus luminance signal;

means, coupled between said making means and said integrating means, for controlling said making means to supply the luminance signal, the red minus luminance signal and the blue minus luminance signal having levels under first, second and third predetermined signal levels respectively, to said integrating means; and

a microcomputer connected to said integrating means and determining whether the integrated luminance, red minus and blue minus luminance signals received from said integrating means fall within a predetermined white area indicating that the integrated luminance, red minus and blue minus luminance signals are used to control the white balance, and said microcomputer having a memory storing the predetermined white area.

5,389,971

IMAGE SENSOR PROVIDED ON A CHIP AND HAVING AMPLIFYING MEANS

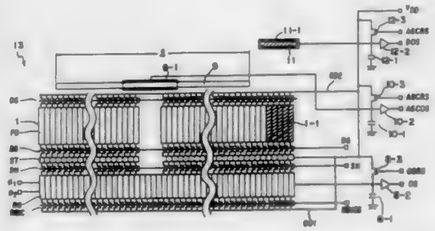
Tokuji Ishida; Toshio Norita, and Jun Hasegawa, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 593,863, Oct. 5, 1990, Pat. No. 5,083,207, which is a division of Ser. No. 298,998, Jan. 19, 1989, Pat. No. 4,985,774. This application Dec. 3, 1991, Ser. No. 801,895

Claims priority, application Japan, Jan. 20, 1988, 63-10245; Feb. 10, 1988, 63-31381; Feb. 10, 1988, 63-31382; Feb. 10, 1988, 63-31383; Feb. 10, 1988, 63-31384; Feb. 10, 1988, 63-31385; Feb. 10, 1988, 63-31386; Feb. 10, 1988, 63-31387; Feb. 10, 1988, 63-31388; Feb. 10, 1988, 63-31389; Feb. 10, 1988, 63-31390; Feb. 10, 1988, 63-31391; Feb. 10, 1988, 63-31392; Feb. 10, 1988, 63-31393

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—294 8 Claims



1. An image sensor provided on a chip, comprising:

first means for receiving an image formed thereon, and for generating an image signal representing said image received;

second means for receiving an image formed thereon, and for generating an image signal representing said image received, said second means being spaced apart from said first means;

a circuit, provide on a predetermined space between said first and second means, for performing a predetermined function;

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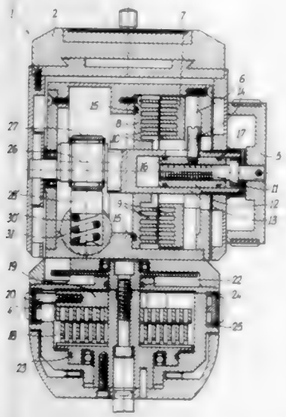
means for outputting said image signal generated by said first and second receiving means and said circuit;
means for amplifying said image signal outputted by said outputting means; and
means for sending said image signal amplified by said amplifying means to the outside of said chip;
wherein said amplifying means includes first amplifying means for amplifying said image signal outputted, and second amplifying means for amplifying said image signal amplified by said first amplifying means.

5,389,972

SUPPORT HEAD FOR TELEVISION OR MOTION-PICTURE CAMERAS FOR HORIZONTAL AND AZIMUTHAL PANNING SHOTS, HAVING A DAMPING MEMBER AND A BALANCING MEMBER OF VARIABLE INTENSITY

Guido Cartoni, Rome, Italy, assignor to Sachtler Aktiengesellschaft-Kommunikationstechnik, Untersch Leissheim, Germany

Filed Feb. 25, 1993, Ser. No. 22,537
Claims priority, application Italy, Feb. 28, 1992, RM.92 A/000130
Int. Cl.[6] H04N *5/225, 5/232*
U.S. Cl. 348—373 6 Claims



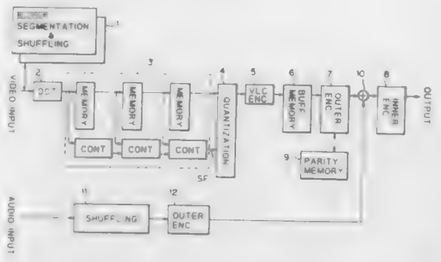
1. A support head for television or motion-picture cameras adapted to perform horizontal and azimuthal panning shots, and comprising a balancing member and devices for controlling and adjusting horizontal and azimuthal movements, respectively, said device for controlling and adjusting azimuthal movement including a first braking element, and a first braked element assembled on a same axis and each comprising a plurality of concentric rings staggered so as to define spaces therebetween, the concentric rings of said first braking element engaging in the spaces defined between adjacent concentric rings of said first braked element;
a high viscosity fluid being provided in said spaces between said concentric rings of said first braking element and said first braked element, said high viscosity fluid being contained in a tight seal space inside said support head;
screw control means for actuating said first braking element arranged outside said support head, and rotating inside a longitudinally slidable hollow shaft element having on its outer surface slots receiving axially slidable first radial pin means, said first pin means engaging with an outer surface of said first braking element and further comprising adjusting means for interengagement of a second braking element and a second braked element for control of horizontal movement, said adjusting means being constituted by second pin means slidable in slots provided on a drive ring nut, wherein said support head comprises a balancing member constituted by bearing means assembled on an eccentric section of a horizontal axis of said support head, elastic means, and hinge contact means between said elastic means and said bearing means, said elastic means being assembled on a longitudinally slidable support element comprising means for causing and controlling displacement of said support element along its own axis.

5,389,973

QUANTIZATION CONTROL CIRCUIT

Takuya Kitamura, and Yoshihiro Murakami, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,806
Claims priority, application Japan, Apr. 3, 1992, 4-110858
Int. Cl.[6] H04N *7/133*
U.S. Cl. 348—405 13 Claims



1. A quantization control circuit for determining an optimum scaling factor for quantizing orthogonal transformation coefficient data corresponding to a predetermined period of time of a digital video signal, comprising:
determining means for determining a first scaling factor from said orthogonal transformation coefficient data as a function of whether a bit rate determined by quantizing said orthogonal transformation coefficient data using an initial scaling factor is no greater than a target bit rate; and
correcting means for determining a corrected scaling factor by calculating a plurality of second scaling factors each derived from said first scaling factor, calculating a plurality of error values each derived from a respective one of said second scaling factors and from said orthogonal transformation coefficient data, and then selecting a respective one of said plurality of second scaling factors corresponding to a respective one of said plurality of error values having a minimum value as said corrected scaling factor.

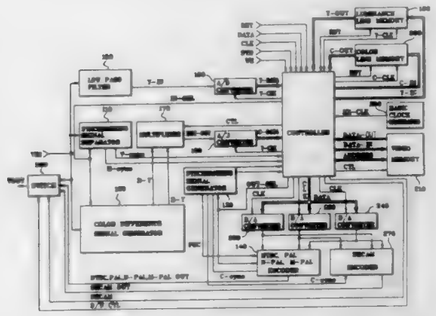
5,389,974

AUTOMATIC CONVERTING DEVICE OF TELEVISION BROADCASTING MODE

Jum H. Bae, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 31, 1992, Ser. No. 999,111
Claims priority, application Rep. of Korea, Dec. 31, 1991, 91-25683
Int. Cl.[6] H04N *5/46*
U.S. Cl. 348—555 8 Claims

1. An automatic converting device of a television broadcasting mode comprising:
a low pass filter for extracting a luminance signal from an input television video signal;
a first analog to digital converter connected to the low pass filter, for converting the luminance signal into digital signals;
a synchronizing signal separator for separating synchronizing signals from the video signal;
a color difference signal generator connected to the synchronizing signal separator, for generating color difference signals from the video signal;
a synchronizing signal generator connected to the synchronizing signal separator, for supplying a 4 fsc generating signal proper to the broadcasting mode and for generating a synchronizing signal;
a multiplexer connected to the color difference signal generator, for mixing the color difference signals to provide a mixed color difference signal;
a second analog to digital converter connected to the multiplexer, for converting the mixed color difference signal into a digital signal to produce color signal data;
a controller for generating various control signals to control a switching device;
a luminance line memory connected to said controller, for delaying the luminance signal by 1 horizontal period;
a color line memory for delaying a color signal provided by said controller by 1 horizontal period;



a basic clock generator connected to said controller, for generating a basic clock signal;
a video memory, connected to the controller for receiving a field signal, and for compatibly converting the received field signal;
a digital to analog converter connected to said controller, for converting image data corresponding to the converted field signal into an analog luminance signal and color difference signals;
a first encoder connected to the digital to analog converter, for encoding one of NTSC, PAL, N-PAL and M-PAL broadcasting signals; and
a second encoder connected to the digital to analog converter, for encoding an SECAM broadcasting signal;
said switching device being connected to said controller and said first and second encoders, for selectively providing an output from one of said first and second encoders in accordance with said controller.

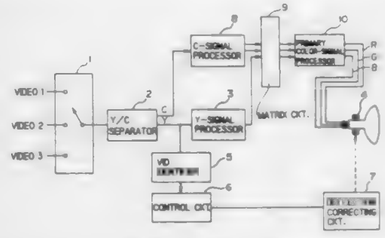
5,389,975

VIDEO ADDITIVE INFORMATION IDENTIFYING DEVICE WITH PLURAL INPUTS

Yasuhito Maeshima, Aichi; Masayuki Suematsu, and Masahiro Nakano, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 48,508
Claims priority, application Japan, May 29, 1992, 4-161864
Int. Cl.[6] H04N *5/46, 5/445, 7/087*
U.S. Cl. 348—556 4 Claims

1. A video mode information identifying device, comprising:
input selection means for selecting one of a plurality of input video signals each including a brightness signal, a chromaticity signal, and video mode information representing a display frame mode inserted in the brightness signal, said video mode information having a fundamental wave spectral component equal to ½ of a frequency of a color subcarrier;
a Y/C separation circuit receiving a selected one of said plurality of input video signals from said input selection



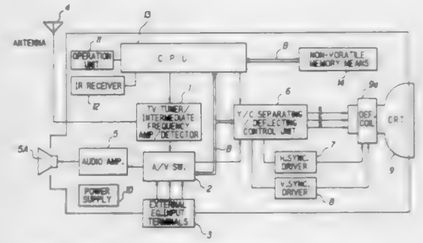
means for separating the brightness signal and the chromaticity signal from the selected video signal; and
an identifying circuit for extracting the video mode information from the separated brightness signal to identify a content thereof.

5,389,976

AUDIO VIDEO EQUIPMENT INCLUDING NON-VOLATILE MEMORY MEANS AND METHODS FOR PRODUCING THE SAME

Hitoshi Miyagawa, Saitama, and Koji Takeda, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 4, 1993, Ser. No. 101,762
Claims priority, application Japan, Aug. 20, 1992, 4-242531
Int. Cl.[6] H04N *5/44, 5/60*
U.S. Cl. 348—571 20 Claims



1. Audio video equipment, comprising:
an audio video signal processing unit for processing one of an audio signal and a video signal;
a control unit for controlling an operation of said audio video signal processing unit; and
a non-volatile memory unit for storing control data to be supplied to said control unit for controlling said audio video signal processing unit, wherein said control data corresponds to a presence or an absence of inherent operational functions of the audio video equipment.

5,389,977

GHOST CANCELER HAVING A FUNCTION OF ADAPTIVELY ADJUSTING A SIGNAL LEVEL

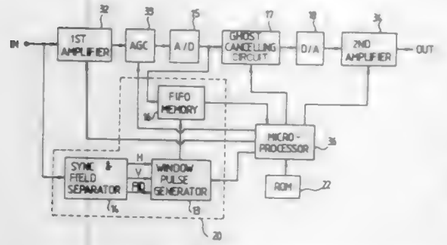
Myeong-hwan Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 29, 1993, Ser. No. 175,232
Claims priority, application Rep. of Korea, Dec. 29, 1992, 1992-25962
Int. Cl.[6] H04N *5/213*
U.S. Cl. 348—614 15 Claims

1. A ghost canceler for cancelling a ghost using a ghost cancellation reference signal, said ghost canceler comprising:

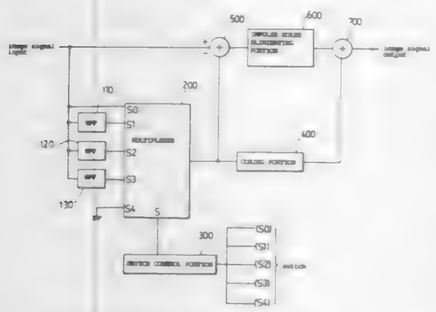
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detection means for detecting the ghost cancellation reference signal from a received video signal;
a first amplifier for amplifying the received video signal according to a predetermined amplification coefficient to produce an amplified video signal;
an analog-to-digital converter for analog-to-digital converting the output signal of said first amplifier;
a ghost canceling circuit for cancelling said ghost from an analog-to-digital converted video signal to thereby generate a de-ghosted video signal;



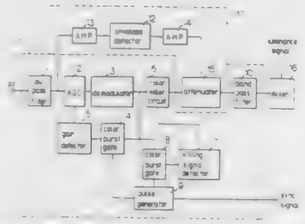
a memory storing preset ghost cancellation signal-related information therein; and
a microprocessor which controls said detection means and said ghost canceling circuit to detect and cancel the ghost, and which compares a ghost cancellation reference signal level output from said detection means with a corresponding ghost cancellation reference signal level stored in said memory to determine said amplification coefficient supplied to said first amplifier.

5,389,978
NOISE ELIMINATIVE CIRCUIT EMPLOYING A CORING CIRCUIT
Kim Jeong-Hun, Yangcheon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyonggi-do, Rep. of Korea
Filed Mar. 1, 1993, Ser. No. 24,308
Claims priority, application Rep. of Korea, Feb. 29, 1992, 92-3401
Int. Cl.[6] H04N *5/213*
U.S. Cl. 348—622 **7 Claims**



1. A noise eliminative circuit comprising:
a plurality of high pass filters having different cut-off frequencies, respectively, for passing high-frequency components of an input image signal;
a multiplexer for selectively outputting one of the input image signal and output signals of the respective high pass filters in accordance with a switch control portion;
a coring circuit for receiving the selected output signal from the multiplexer and eliminating a minute noise level from the high-frequency component thereof;
a first adder for removing the selected output signal from the multiplexer from the input image signal;
an impulse noise eliminating circuit for eliminating an impulse noise from the image signal output from the first adder; and
a second adder for adding the output signal of the impulse noise eliminating circuit and the output of the coring circuit to obtain an image signal in which noise is eliminated.

5,389,979
CHROMINANCE SIGNAL PLAYBACK SYSTEM AND METHOD FOR VIDEO CASSETTE RECORDERS HAVING NOISE SUPPRESSION OF THE CHROMINANCE SIGNAL
Dong K. Jeong, Kyungki-do, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed May 13, 1992, Ser. No. 882,350
Claims priority, application Rep. of Korea, May 13, 1991, 6780/1991
Int. Cl.[6] H04N *9/70, 9/71*
U.S. Cl. 348—644 **20 Claims**



1. A chrominance signal playback system for a video cassette recorder, comprising:
(A) a chrominance processing circuit including:
a color killer circuit, and
(B) a noise removing circuit means for suppressing noise in a chrominance signal processed in the chrominance processing circuit, said noise removing circuit means including:
(i) an envelope detector for detecting an envelope signal from a chrominance signal filtered from a video signal in the chrominance processing circuit, and
(ii) an attenuator for attenuating a signal output from said color killer circuit in accordance with a level of the detected envelope signal so as to suppress noise from the processed chrominance signal.

5,389,980
NOSE PADS FOR SPECTACLES
Nan-Chieh Lin, No. 71, Lane 160, Sec. 4, Chang Ho Street, Tainan, Taiwan, Prov. of China
Filed Jan. 3, 1994, Ser. No. 176,254
Int. Cl.[6] G02C *5/12*
U.S. Cl. 351—139 **1 Claim**

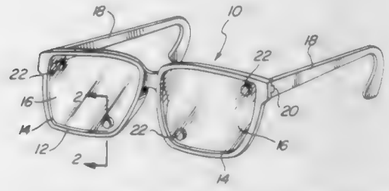
1. A nose pad attachment system for a pair of nose pad bodies pivotally coupled to a lens frame comprising:
(a) a pair of ovally contoured cover members, each of said cover members enclosing a respective one of said nose pad bodies and having an aperture formed through an outer wall of each of said cover members for insert therein of said nose pad body, each of said cover members formed of a flexible plastic composition; and,
(b) an elastic bridge member having opposing ends secured

respectively to an upper section of each of said cover members, said elastic bridge and said cover members in



contiguous interface with the nose of a user to prevent displacement of said lens frame when worn by said user.

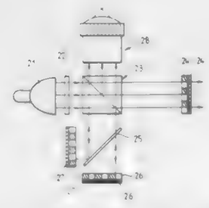
5,389,981
EYEGLASSES HAVING MAGNETS ATTACHED THERTO FOR IMPROVING THE BLOOD CIRCULATION OF THE EYES
George Riach, Jr., 10424 Cary Cir., Cypress, Calif. 92651
Filed Jun. 22, 1993, Ser. No. 79,893
Int. Cl.[6] G02C *1/00*
U.S. Cl. 351—158 **11 Claims**



1. An eyeglass frame structure having magnets selectively positioned thereon to define a non-invasive device so as to project a magnetic field into the surrounding area of one's eye or eyes so as to effectively improve the blood circulation within the eye or eyes subjected to the magnetic field and comprising:
a frame member formed to define a pair of openings to receive lenses therein;
a pair of temple members hingedly mounted to said frame member; and
magnetic means having north and south magnetic poles mounted on said eyeglass frame structure, said magnetic means being arranged to project a north magnetic field in the direction of the eye to impinge on the eye, whereby the surrounding area thereof is stimulated by said north magnetic field; and
means for attaching said magnetic means to said frame structure.

5,389,982
"OPTICAL SYSTEM FOR LIQUID CRYSTAL PROJECTOR"
Seung G. Lee, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Continuation of Ser. No. 812,936, Dec. 24, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 84,448
Claims priority, application Rep. of Korea, Dec. 26, 1990, 20988/1990
Int. Cl.[6] G03B *21/28*
U.S. Cl. 353—37 **5 Claims**

1. An optical system for a liquid crystal projector, comprising:
a light source of high luminance for emitting a light;
a polarized light prism for separating the light into polarized light of visible rays of three components having been emitted from said light source by reflection and transmitting the light in accordance with the polarized light of visible rays of three components, said polarized light prism being disposed at a front of said light source and spaced apart from said light source by a predetermined distance;
first reflecting means for selectively reflecting one component of the polarized light of visible rays of three components from said polarized light prism and allowing the two remaining components to pass therethrough;
second reflecting means for reflecting one of the two remaining components of the polarized light of visible rays of three components from said polarized light prism toward a first liquid crystal display panel by a first reflec-



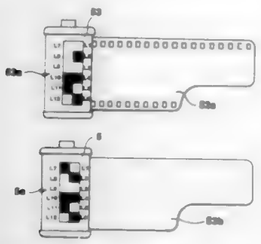
tion mirror and reflecting the other of the two remaining components toward said polarized light prism by a second liquid crystal display panel;
composing means for composing the incident light having been reflected by said first and second reflecting means thereto into a composed color image; and
projecting means for projecting said composed color image on a screen, said projecting means being arranged at a side of said polarized light prism;
said first reflecting means including,
a first liquid crystal display for transmitting a polarized light transmitted from said polarized light prism, and
a reflection mirror for transmitting a component besides a predetermined color component and reflecting a predetermined color component of the polarized light transmitted from said liquid crystal display, said reflection mirror being disposed at a rear surface of said liquid crystal display.

5,389,983
CAMERA
Katsuhiko Tsunefuji, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Aug. 4, 1992, Ser. No. 925,558
Claims priority, application Japan, Aug. 15, 1991, 3-205163; Sep. 17, 1991, 3-236623; Nov. 25, 1991, 3-309335
Int. Cl.[6] G03B *7/00, 17/26, 17/02, 13/10*
U.S. Cl. 354—21 **6 Claims**

1. A camera capable of accommodating a film cartridge having information including a film sensitivity, number of permissible exposures, and latitude of the built-in film displayed as first code data on its outer periphery, wherein:
said film cartridge is provided with second code data on its outer periphery identifying whether the built-in film is perforated or imperforated, and

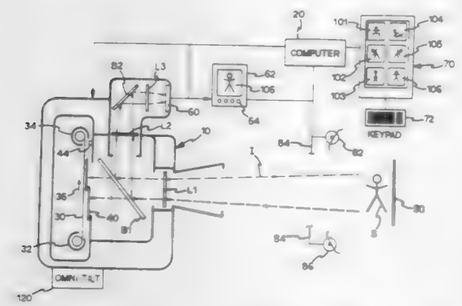
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said camera includes means for reading Said data when the cartridge is placed in said camera and means for changing



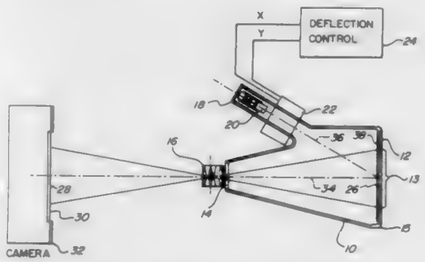
a finder field display responsive to said second code data obtained by said reading means.

5,389,984
SYSTEM FOR RECORDING IDENTICAL ELECTRONIC AND PHOTOGRAPHIC IMAGES
John E. Lovenheim, 190 Council Rock Ave., Rochester, N.Y. 14610
Filed Dec. 1, 1992, Ser. No. 983,955
Int. Cl.[6] G03B *29/00, 17/38, 15/06*
U.S. Cl. 354—76 19 Claims



7. A system for recording an image of an object on an electronic medium and on a photographic medium, comprising:
a) means provided for recording an image of the object on an electronic medium;
b) means provided for capturing an image of the object on a photosensitive medium;
c) means operatively associated with said capturing means for governing the exposure of a photosensitive medium;
d) said governing means having a first state in which a photosensitive medium is prevented from being exposed and a second state in which a photosensitive medium is able to be exposed;
e) means provided for controlling said recording means and said capturing means for causing a substantially identical image of an object to be recorded and captured, said controlling means including:
i) means for sending a take request signal to said recording means and to said governing means when an image of an object is to be recorded and captured;
ii) means for determining a length of governing lag time required for the take request signal sent by said take request signal means to cause said governing means to go from said first state to said second state in which a photosensitive medium is able to be exposed; and
iii) means operatively connected to said take request signal means for causing said take request signal means to send a take request signal to said governing means at a predetermined time prior to sending a take request signal to said recording means, the predetermined time being substantially equal to the length of governing lag time determined by said determining means; and,
f) whereby, said recording means records an image of the object that is identical to the image of the object captured by said capturing means.

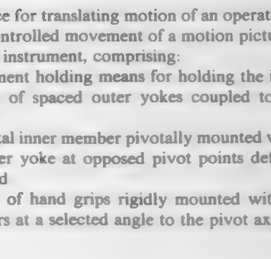
5,389,985
IMAGE RECORDING APPARATUS AND REARVIEW CRT THEREFOR
Thor A. Olson, Minneapolis, and Richard A. Keeney, Eagan, both of Minn., assignors to Management Graphics, Inc., Minneapolis, Minn.
Filed Nov. 15, 1993, Ser. No. 153,230
Int. Cl.[6] G03B *29/00*
U.S. Cl. 354—76 16 Claims



1. Apparatus for recording an image on a substrate such as photographic film, comprising:
a rearview cathode ray vacuum tube having a faceplate;
a layer of phosphor deposited on said faceplate in the interior of said vacuum tube;
an optical viewport in said vacuum tube for viewing an image on an image area of said phosphor inside said vacuum tube, said optical viewport disposed along an optical axis generally perpendicular to said faceplate and generally centered with respect to said image area;
means mounted in said vacuum tube offset from said optical axis, for generating an electron beam at an acute angle with respect to said optical axis to write said image on the image area of said phosphor; and
a camera mounted to view said image through said optical viewport for recordal of the image.

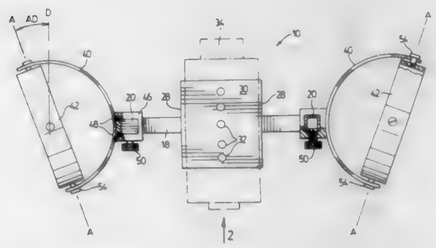
5,389,986
REMOTE CONTROLLED CAMERA SYSTEM
Sadafusa Tsuji, Tondabayashi; Yoshito Tanaka, Sakai; Yoshihiro Tanaka, Osaka, and Hiroyuki Okada, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 855,716, Mar. 20, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 186,499
Claims priority, application Japan, Mar. 26, 1991, 3-087443; Apr. 1, 1991, 3-096374
Int. Cl.[6] G03B *29/00*
U.S. Cl. 354—81 21 Claims

1. A remote controlled camera system including a camera body and a remote control device emitting to said camera body a signal for rotating an optical axis of a taking lens provided at the camera body upward and downward or rightward and leftward, said camera body comprising:
rotation driving means, responsive to the signal from said remote control device, for rotating the optical axis of the taking lens,
means for switching a mode of said camera body between a first mode wherein photographing operation is performed without using said remote control device and a second mode wherein photographing operation is performed in response to the signal from said remote control device, and



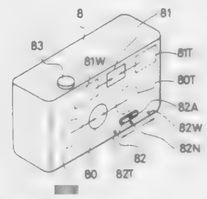
means, responsive to said switching means switching the mode from the second mode to the first mode for controlling said rotation driving means so as to set the optical axis of the taking lens to a predetermined position.

5,389,987
MOTION TRANSLATION DEVICE FOR POSITIONING CAMERAS AND OTHER AIMED INSTRUMENTS
Gilles D. G. Corbeil, 53b Glen Manor Drive, Toronto, Ontario, Canada M4E 2X5 , and Gerd E. Kurz, 1211 Fawndale Road, Pickering, Ontario, Canada L1V 4M4
Filed Jul. 30, 1993, Ser. No. 99,798
Int. Cl.[6] G03B *29/00*
U.S. Cl. 354—82 20 Claims



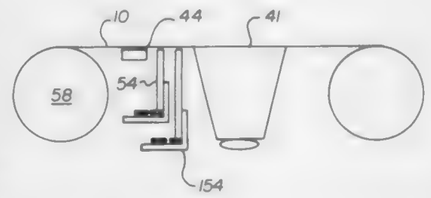
1. A device for translating motion of an operator's wrist and arms into controlled movement of a motion picture camera or other aimed instrument, comprising:
(a) instrument holding means for holding the instrument;
(b) a pair of spaced outer yokes coupled to the holding means;
(c) a pivotal inner member pivotally mounted within each of the outer yoke at opposed pivot points defining a pivot axis; and
(d) a pair of hand grips rigidly mounted within the inner members at a selected angle to the pivot axis.

5,389,988
TRIMMING CAMERA
Koichi Daitoku, Sagamihara, Japan, assignor to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 802,729, Dec. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 525,709, May 21, 1990, abandoned. This application Sep. 23, 1992, Ser. No. 949,351
Claims priority, application Japan, May 22, 1989, 1-128341; Dec. 10, 1990, 2-401094
Int. Cl.[6] G03B *17/24*
U.S. Cl. 354—106 23 Claims



1. Trimming camera comprising:
a photographing lens;
pseudo panorama mode setting means for setting a pseudo panorama mode;
a wide conversion lens which is arranged to be situated selectively, at a position to intersect or a position not to intersect with a light path which passes through said photographing lens, said wide conversion lens taking said intersecting position in response to the setting of the pseudo panorama mode and thereby executing wide angle photography in cooperation with said photographing lens; and
input means for inputting pseudo panorama information into a photo image plane recording means on or after the photographing, in response to the setting of the pseudo panorama mode, said pseudo panorama information indicating that an upper and lower part of the photographed frame are to be eliminated when the frame is printed.

5,389,989
CAMERA FOR RECORDING DIGITAL AND PICTORIAL IMAGES ON PHOTOGRAPHIC FILM
Gilbert A. Hawkins, Mendon, and Jose M. Mir, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 29, 1993, Ser. No. 146,347
Int. Cl.[6] G03B *17/24*
U.S. Cl. 354—106 18 Claims



1. In a photographic camera system for recording images of a subject in a first location on a photographic film, the improvement comprising:
a) means for advancing the film;
b) optical recording means disposed in proximity to the camera exposure gate including a plurality of selectively activated LEDs and waveguide means for conducting light from the emitters to the film as the film is advanced

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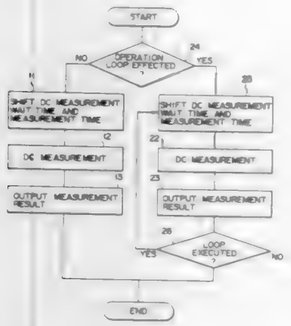
by the film advancing means so that digital information such as digital audio information is recorded in a second location on the film spaced from the first location;
c) means for optically projecting an image of a subject onto the film to record such image in the first location; and
d) means for selectively energizing the LEDs at different light levels to provide multilevel gray scale information recorded on the film.

5,389,990

METHOD FOR MEASURING DC CURRENT/VOLTAGE CHARACTERISTIC OF SEMICONDUCTOR DEVICE

Osamu Nakamura, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 598,889, Oct. 19, 1990, abandoned. This application Oct. 22, 1992, Ser. No. 965,613
Claims priority, application Japan, Oct. 21, 1989, 1-272783
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—158.1 35 Claims



1. A measuring method for a semiconductor device comprising the steps of:
a first step of setting measurement time based on preset measurement time for an initial measurement, and based on the result of a fourth step for a second or succeeding measurement;
a second step of measuring an electrical characteristic of a to-be-tested object;
a third step of comparing the results of the measurements for said to-be-tested object in the preceding and current cycles, and determining that said first and second steps should be repeatedly effected when a difference between the compared measurement results is larger than a preset value, and that the measurement should be terminated when the difference is smaller than said preset value; and
a fourth step of extending the measurement time by a preset period of time to provide a newly set measurement time used in said first step when it is determined in said third step that said first and second steps should be repeatedly effected.

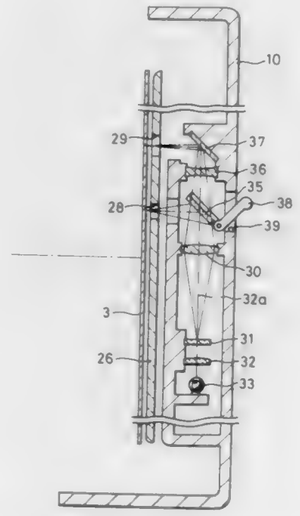
5,389,991

CAMERA HAVING DATA RECORDING DEVICE

Yoji Naka, Tokyo; Kazuhiko Onda, Saitama, and Michihiro Shiina, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 25, 1993, Ser. No. 22,952
Claims priority, application Japan, Feb. 25, 1992, 4-073440; Feb. 25, 1992, 4-073441; Mar. 30, 1992, 4-074479
Int. Cl.[6] G03B *17/02, 37/00*
U.S. Cl. 354—159 9 Claims

1. A camera comprising:
size designating means for designating one of at least first and second picture sizes in order to determine before effecting exposure a picture size to be printed photographically, said second size being smaller than said first size, in which a first area is used for photographic printing in accordance with a picture as formed on photographic film upon designating said first size, and a second area is used for photographic printing at a larger printing magnification in accordance with a picture as formed on said film upon designating said second size;
first data recording means for recording first data within said first area;
second data recording means for recording second data within said second area, said second data being smaller than said first data;
selector means for selecting one of said first and second data recording means in accordance with designation of said sizes by said size designating means;
said first data recording means including a liquid crystal display for displaying information, a first light source for illuminating said liquid crystal display from behind, a first opening formed in said film pressure plate, and a first optical system for recording said information displayed in



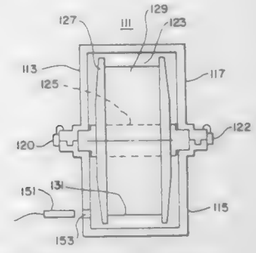
said liquid crystal display, said information being recorded as said first data from behind said film through said first opening;
said second data recording means including a second opening formed in said film pressure plate, and a second optical system for recording said information displayed in said liquid crystal display, said information being recorded as said second data from behind said film through said second opening;
said first optical system including a convex lens on which light that passes through said liquid crystal display impinges, a concave lens on which light that passes through said convex lens impinges, and a first reflecting surface for reflecting light that passes through said concave lens to direct said light to said first opening;
said second optical system including a second reflecting surface for reflecting said light that passes through said convex lens to direct said light to said second opening; and
said selector means inserts said second reflecting surface into an optical axis of said convex lens when said second size is designated.

5,389,992

RELOADABLE CANISTER WITH REPLACEABLE FILM SPOOL

Frank D. Weber, San Diego, Calif., assignor to Anacomp, Inc., Carmel, Ind.

Continuation of Ser. No. 590,470, Sep. 27, 1990, Pat. No. 5,247,323, which is a continuation-in-part of Ser. No. 501,234, Mar. 29, 1990, Pat. No. 5,153,625. This application Jun. 3, 1993, Ser. No. 71,529
Int. Cl.[6] G03B *1/18*
U.S. Cl. 354—173.1 6 Claims



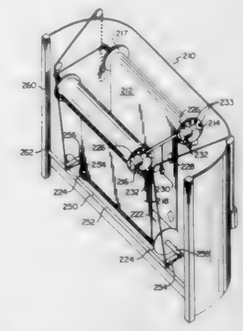
1. A reloadable film canister comprising:
a light-tight housing defining an interior film receiving region wherein said housing is formed with first and second parts which are movable with respect to one another from a closed, light-tight, condition to an open, reloading, condition and then to said closed condition;
a support member carried by said housing;
an encoder disk; and
a film carrying core removably insertable into said housing when said housing is in said open condition, wherein said core is carried on said support member and wherein said core is coupled to said disk within said housing at least when said core is so inserted, with said disk being usable to detect a rotation of said core.

5,389,993

AUTOMATED PHOTOGRAPHIC BACKDROP APPARATUS

John Adolphi, Eden Prairie; Michael Surma, Golden Valley, and Gerald A. Jensen, Plymouth, all of Minn., assignors to Lifetouch Portrait Studios Inc., Minneapolis, Minn.

Filed May 21, 1992, Ser. No. 887,190
Int. Cl.[6] G03B *15/00;* G09F *11/22*
U.S. Cl. 354—291 20 Claims



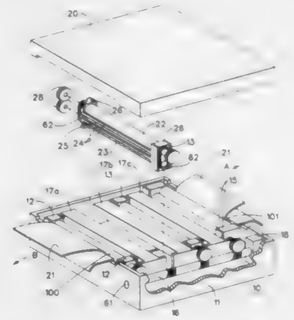
20. A changeable backdrop, comprising:
a scroll having rotatable first and second shafts;
a web attached at opposite ends to the first and second shafts, the web containing a plurality of different backdrop selections and being partially wound upon at least one of the shafts;
a frame for suspending the shafts, the shafts being mounted on the frame closely adjacent to one another so that the unwound portion of the web hangs substantially vertically;
rotating means for rotating the first and second shafts comprising a motor associated with each shaft and means for controlling the motors to selectively rotate the shafts to select a particular portion of the web to hang downwardly;
a roller weight of substantially the same length as the width of the web, the roller weight being disposed on the web intermediate the shafts so that when a portion of the web is unwound from the shafts the roller weight causes such portion to hang generally vertically downwardly, the roller weight including flanges on opposite ends of the roller weight to laterally position the roller weight with respect to the web;
patches printed on the web and an optical sensor mounted adjacent to at least one of the shafts for detecting the patches to determine the relative position of the web with respect to the shafts;
a steering bracket attached to the roller weight for positioning the roller weight in a lowered position in a vertical plane that is parallel to the vertical planes of the scrolls; a track, and a runner carried by the track, the runner being attached to the steering bracket, for allowing the roller weight to be raised and lowered; and
a counterweight attached to the steering bracket by means of a wire and a plurality of pulleys for assisting in support of the bracket.

5,389,994

CLOSED SOLUTION RECIRCULATION/SHUTOFF SYSTEM FOR AN AUTOMATIC TRAY PROCESSOR

John H. Rosenburgh, Hilton; Joseph A. Manico, Rochester; Ralph L. Piccinino, Jr., Rush, and David L. Patton, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 56,457, May 3, 1993. This application Mar. 10, 1994, Ser. No. 209,179
Int. Cl.[6] G03D *03/02*
U.S. Cl. 354—324 18 Claims



1. An apparatus for processing photosensitive materials, said apparatus comprising:
a processing module comprising a container, at least one processing assembly placed in said container and at least one transport assembly disposed adjacent said at least one processing assembly, said at least one processing assembly and said at least one transport assembly forming a substantially continuous channel through which a processing solution flows, said processing channel comprising at least 40% of the total volume of processing solution available

for the processing module and having a thickness equal to or less than about 100 times the thickness of the photosensitive material to be processed in said processing channel, at least one discharge opening is provided in said at least one transport assembly or said at least one processing assembly for introducing processing solution through said channel;

recirculation means for circulating the processing solution from said small volume in said module to said at least one discharge opening;

means for managing processing solution volume in order to reduce the formation of processing solution disturbances; and

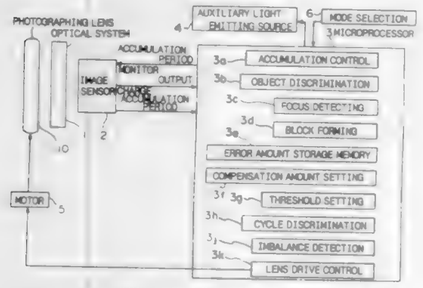
means coupled to said recirculation means for maintaining the processing solution level in a small volume at a predetermined level.

5,389,995

FOCUS CONDITION DETECTING DEVICE

Shigeyuki Uchiyama, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Aug. 30, 1993, Ser. No. 113,328
Claims priority, application Japan, Sep. 2, 1992, 4-233982
Int. Cl.[6] G03B *13/36*
U.S. Cl. 354—402 **7 Claims**



1. A focus condition detecting device, comprising:

an image sensor having a plurality of photoelectric elements and outputting an output data train representing an incoming image of an object;

an optical system which directs the image of the object to said image sensor;

filter means for filtering said output data train by performing differential filtering in which a DC component is removed so as to obtain a filtered data train;

range division means for calculating a difference data train from differences between values of said filtered data train and a predetermined value, and dividing said filtered data train into a plurality of ranges on the basis of said difference data train; and

detecting means for detecting a focus condition of a photographing lens for each of said plurality of ranges on the basis of said filtered data train.

5,389,996

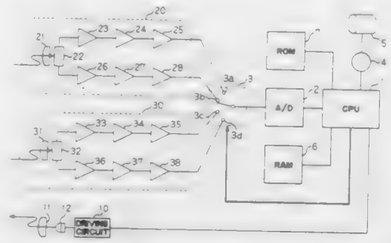
DISTANCE MEASURING DEVICE FOR A CAMERA

Hajime Oda; Hiroyuki Saito, and Michio Kawai, all of Yotsukaido, Japan, assignors to Seikosha Co., Ltd., Japan

Filed Oct. 29, 1993, Ser. No. 144,828
Claims priority, application Japan, Oct. 29, 1992, 4-291343
Int. Cl.[6] G03B *13/36*
U.S. Cl. 354—403 **15 Claims**

1. A distance measuring device for a camera, comprising:

light projecting means for projecting measuring light to an object to be photographed; first light receiving means disposed at a base length from the light projecting means for receiving measuring light reflected by the object and producing an output representative of the received measuring light; second light receiving means disposed in the vicinity of the light projecting means for receiving measuring light reflected by the object and producing an output representative of the received measuring light; computing means for computing the distance to the object from the output of the first light receiving means depending on the base length and for compensating the computed distance according to the output of the second light receiving means; and photographic lens controlling means for controlling the amount of displacement of a photographic lens according to the output of the first light receiving means.

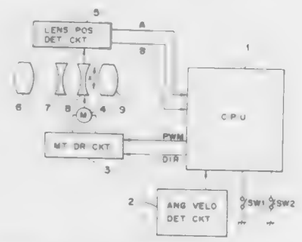


5,389,997

APPARATUS FOR CORRECTING CAMERA SHAKE

Sueyuki Ohishi, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 113,770
Claims priority, application Japan, Sep. 4, 1992, 4-263056
Int. Cl.[6] G03B *29/00, 5/00*
U.S. Cl. 354—430 **20 Claims**



9. An apparatus for correcting shake, comprising:

an angular velocity detector for detecting an angular velocity caused by a shake;

a shake-correction circuit for correcting the shake by driving a DC motor to move a correction lens which is at least a part of a photographing lens system;

a calculation circuit for calculating a target velocity of said correction lens based on an output from said angular velocity detector;

a determination circuit for determining whether the calculated target velocity is less than a predetermined value; and

a lens position detector for detecting a position of said correction lens;

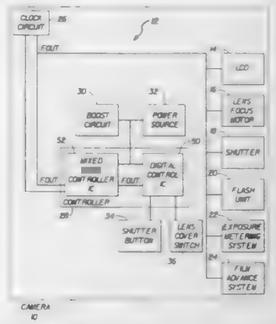
wherein when said determining circuit determines that the calculated target velocity is less than said predetermined value, said shake-correction circuit drives said DC motor with a prescribed input signal and then discontinues said prescribed input signal in response to a change in the output from said lens position detector.

5,389,998

CAMERA POWER SUPPLY SYSTEM

Clay A. Dunsmore, Fairport; John H. Minnick, Rochester, both of N.Y., and Christopher A. Ludden, Austin, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 8, 1993, Ser. No. 46,065
Int. Cl.[6] G03B *7/26*
U.S. Cl. 354—484 **14 Claims**



1. A camera power supply system for use in a photographic camera, comprising:

a clock circuit that produces timing pulses;

a user-operable switch that initiates an exposure taking sequence;

an exposure taking system that operates in accordance with the timing pulses from the system clock circuit to complete the exposure taking sequence;

a power supply system controller; and

a power source that provides electrical power to the controller, said controller including means for selecting between an active camera mode and a reduced voltage camera mode, said selecting means automatically selecting the reduced voltage mode at the completion of an exposure taking sequence and modifying the operation of the clock circuit in the reduced voltage mode to reduce the consumption of electrical power from the power source, the modification to the clock circuit operation in the reduced voltage camera mode including reducing the accuracy of the timing pulses.

5,389,999

PHOTOPRINTER FOR CUTTING & DEVELOPING VARIOUS DIMENSIONED PRINTS FROM CONTINUOUS STRIP LIGHT-SENSITIVE PAPER

Giosué Franci, and Luciano Malisan, both of Pordenone, Italy, assignors to San Marco Imaging S.r.l., Pordenone, Italy

Filed Dec. 14, 1993, Ser. No. 165,903
Claims priority, application Italy, Dec. 15, 1992, 92A 000092
Int. Cl.[6] G03B *29/00*
U.S. Cl. 355—28 **1 Claim**



1. A device for application to photographic printing machines, by which sheets of light-sensitive paper cut in various dimensions from continuous strips of various dimensions are advanced and positioned at a print station and transferred thereafter to a successive developing machine, of the type comprising: a reel (1) wound with a relative strip (1*a* or 1*b*) of unexposed light-sensitive paper exhibiting any convenient width according to the size of the photographic prints to be produced; feed means (2, 3) serving to advance the strip (1*a* or 1*b*); cutting means (4) positioned between and operating in conjunction with the feed means in such a way as to produce sheets of any given suitable length; a printing surface positioned following the cutting means in the feed direction, consisting in a suitable device (5) of vacuum or other conventional type by means of which the sheets of paper are advanced toward and positioned exactly at the print station; also diverting means positioned preceding or preferably following the vacuum device (5) in the feed direction, by which sheets (A1-B1-C1-D1-E1 . . .) of light-sensitive paper of width at least less than half the width of the largest size of print (A, B, C, D . . .) handled by the machine are diverted and distributed in alternation onto parallel conveying lanes, spaced apart one from another at a suitable distance in such a way as to allow their progress along two or more corresponding parallel paths through the successive developing and drying stages of the machine, characterized

in that the vacuum device (5) affording the printing surface is disposed initially in coaxial alignment with the median axis of the advancing strip (1*a* or 1*b*) and concurrently with the longitudinal optical axis (y) of the printing machine, and capable of movement in the transverse direction in such a manner as to allow of being traversed alternately and symmetrically and to an exact selected position on either side of the axis (y), supported slidably on transversely disposed guides and set in motion along the guides by drive means of which the operation is interlocked to sensing means capable of determining the exact selected position; and

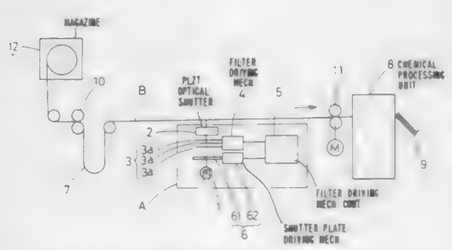
in that the alternating transverse movements of the vacuum device are such that sheets of light-sensitive paper (A1, B1, C1, D1) exhibiting width less than half the working width of the successive developing machine are diverted after printing onto two or more parallel conveying lanes, in alternation and in co-ordinated sequence, thereby obtaining the distribution which in a conventional machine is obtained by the application of a self-contained and separate transfer device, while eliminating the additional dimensions and cost of such a self-contained and separate transfer device.

5,390,000

EXPOSURE APPARATUS INCLUDING PLZT OPTICAL SHUTTER

Tohru Tanibata, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed May 13, 1993, Ser. No. 59,958
Int. Cl.[6] G03B *27/72*
U.S. Cl. 355—71 **2 Claims**

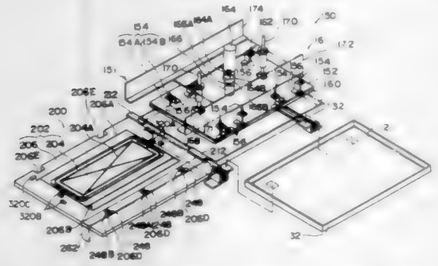


1. An exposure apparatus comprising:

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a light source;
a PLZT optical shutter of linear form extending at a right angle to a pass line of a photosensitive material for exposing the photosensitive material during its running;
a light modulation filter unit having a plurality of optical modulation filters arranged in a row along a light path of the light source;
a light modulation filter driving mechanism for individually actuating the optical modulation filters separately to selectively advance them to and retract them from a light path between the PLZT optical shutter and the light source, said driving mechanism advancing and retracting from one to all of said plurality of optical modulation filters from said light path; and
a filter driving mechanism controller for controlling the movement of the light modulation filter driving mechanism so that a desired tone of light can be obtained at a predetermined timing.

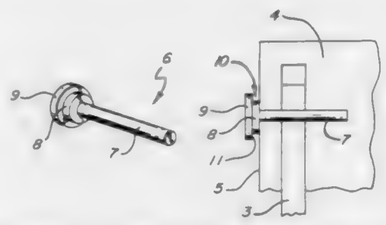
5,390,001
PHOTOSENSITIVE MATERIAL PRINTING APPARATUS
Toshimitsu Ishiwata; Hiroki Sutoh; Shin-ichi Yabe, and Hiroshi Kawaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jul. 16, 1992, Ser. No. 913,813
Claims priority, application Japan, Jul. 16, 1991, 3-175562; Apr. 3, 1992, 4-082304
Int. Cl.[6] G03B *27/04*
U.S. Cl. 355—85 24 Claims



1. A photosensitive material printing apparatus equipped with a printing portion for printing an image of an original film onto a photosensitive material, comprising:
holding means for holding said original film at a predetermined position with respect to said photosensitive material;
moving means for moving said holding means along a photosensitive surface of said photosensitive material;
input means for inputting an amount of movement of said holding means so as to move said original film to said predetermined position; and
control means for controlling said moving means so as to move said holding means based on the amount of movement input by said input means.

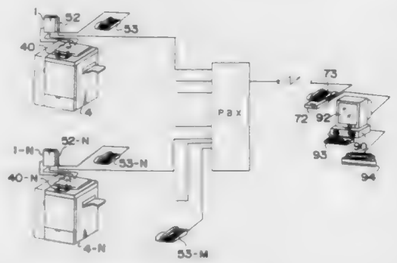
5,390,002
TONER CARTRIDGE HOLDER PIN
Steven B. Michlin, 5310 Bentley Suite 105, West Bloomfield, Mich. 48322
Filed Mar. 2, 1994, Ser. No. 205,062
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—200 9 Claims

1. A holding pin for securing together sections of a toner cartridge assembly for use in imaging machines, said holding pin comprising a shank and a head larger diameter than said shank, said head having two portions, a first portion for abutting against said assembly and a second portion sized to allow



easy gripping of said head for removal of said pin from said toner cartridge assembly.

5,390,003
COPYING SYSTEM FOR PREVENTING COPYING OF COPY-PROHIBITED IMAGES
Ikunori Yamaguchi, Toyokawa; Keiji Nakatani, Aichi, and Miho Ataka, Nara, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Nov. 30, 1993, Ser. No. 159,478
Claims priority, application Japan, Nov. 30, 1992, 4-345359; Oct. 29, 1993, 5-272232
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—201 38 Claims

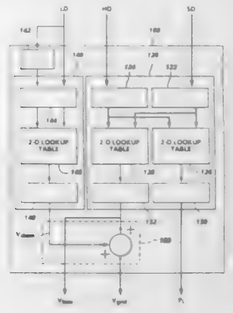


1. A copying apparatus comprising:
reading means for reading an image of an original document and outputting image data corresponding to the image read;
recording means for recording the image corresponding to the image data on paper;
deciding means for deciding whether or not the image read corresponds to an image which is prohibited from being copied;
calling means for calling a predetermined called party via a communication line; and
transmitting means for transmitting a result of the decision made by the deciding means to the called party by actuating the calling means, when it is decided by the deciding means that the image read by the reading means corresponds to the image which is prohibited from being copied.

5,390,004
THREE-INPUT, THREE-OUTPUT FUZZY LOGIC PRINT QUALITY CONTROLLER FOR AN ELECTROPHOTOGRAPHIC PRINTER
Mark A. Hopkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 9, 1994, Ser. No. 239,792
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—208 10 Claims

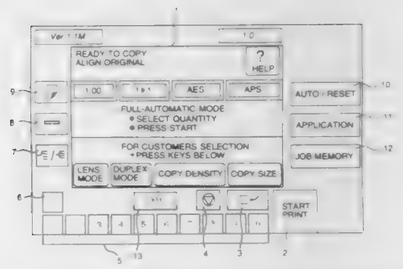
1. A method of controlling an electrophotographic printing

machine having a plurality of processing stations wherein toner is applied to a charge-retentive surface, comprising the steps of
accepting as inputs successive measurements of an optical density of applied toner on the charge-retentive surface in



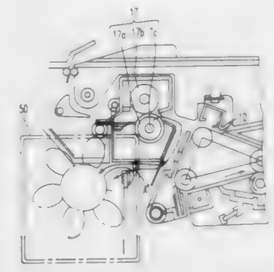
areas thereof intended to have a predetermined toner coverage thereon;
assigning each input to at least one error subset; and
deriving an adjustment parameter relating to at least one processing station, at least in part from an extent of joint membership of a plurality of inputs in an error subset.

5,390,005
OPERATION-PANEL-INDICATING METHOD FOR A COPYING MACHINE
Tetsuo Kimoto; Tetsuo Hirata, and Yoshikazu Maekawa, all of Hachioji, Japan, assignors to Konica Corporation, Japan
Filed Jul. 1, 1993, Ser. No. 86,231
Claims priority, application Japan, Jul. 13, 1992, 4-185490; Jul. 13, 1992, 4-185491; Jul. 13, 1992, 4-185492; Jul. 13, 1992, 4-238681; Jul. 13, 1992, 4-239840
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—209 7 Claims



1. A method of indicating a setting screen of an image forming apparatus comprising a touch panel, wherein copying conditions of said image forming apparatus, including magnification, copy density and paper size, can be selected by touching a button displayed on said setting screen, said method comprising;
displaying an initial screen indicating that a copy operation is ready to start in an automatic-setting mode, and a plurality of manual-setting mode selection buttons, each of which selects one of a plurality of manual-setting screens, wherein under said automatic-setting mode, magnification is set at an initial value, and copy density and paper size are automatically set depending on a document to be copied, and wherein each of said plurality of manual-setting mode selection buttons correlates to copying conditions which can be adjusted by touching one of a plurality of setting buttons displayed in each manual-setting screen, and
changing said initial screen by touching one of said plurality of manual-setting mode selection buttons to indicate one of said plurality of manual-setting screens corresponding to a copying condition, each condition being controlled by one of said manual-setting mode selection buttons, wherein copying conditions selected by said manual-setting mode selection buttons can be manually set by touching one of said plurality of setting buttons on the displayed manual-setting screen,
a plurality of buttons by which one of a plurality of functions of the image forming apparatus is selected, being provided on the displayed manual-setting screen, correlated buttons which cannot be used simultaneously in terms of functions selected thereby being displayed with indication showing such correlation.

5,390,006
IMAGING FORMING APPARATUS WITH IMPROVED EXHAUST FLOW
Tomio Wakabayashi, Hatano; Keiji Okamoto, and Rikio Kasahara, both of Yokohama, all of Japan, assignors to Ricoh Company Ltd., Tokyo, Japan
Filed Nov. 30, 1992, Ser. No. 982,944
Claims priority, application Japan, Nov. 29, 1991, 3-316543
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—215 20 Claims



1. An image forming apparatus having improved exhaust flow comprising:
an image carrier;
fixing means for fixing toner which has been transferred to a sheet of paper;
an exhaust device for exhausting air from an interior portion of said image forming apparatus;
a flow improvement board located between said image carrier and said fixing means, said flow improvement board improving the effectiveness of said exhaust device by improving the exhaust flow of air located between the image carrier and the fixing means;
the apparatus further including conveying means for conveying the sheet of paper to a transfer device at which toner is transferred to said sheet, said means for conveying further conveying said sheet from said transfer device to said fixing means in a direction substantially parallel to a bottom plane of said apparatus, and wherein said transfer device is disposed such that toner adheres to an underside of the paper;
wherein said flow improvement board extends along a width of a housing of said fixing means with said flow improvement board adjacent said housing, and also extends downwardly to a location below a lowermost portion of said housing of the fixing means such that an exhaust passage is defined between said flow improvement board and said image carrier and
the apparatus further including at least one magnet located between said image carrier and said fixing means, and

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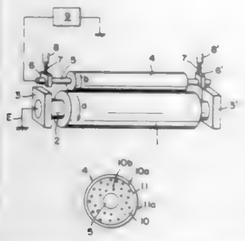
wherein said at least one magnet is mounted upon said flow improvement board.

5,390,007

CHARGING MEMBER, CHARGING DEVICE, PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

Harumi Kugoh, Kawasaki; Junji Araya, and Hideyuki Yano, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 18,284
Claims priority, application Japan, Feb. 13, 1992, 4-059496
Int. Cl.[6] G03G *15/02*
U.S. Cl. 355—219 60 Claims



52. A charging member contactable to a chargeable member to be charged to electrically charge the chargeable member, said charging member, comprising:

a sponge layer; and

a coating layer disposed between said sponge layer and the chargeable member;

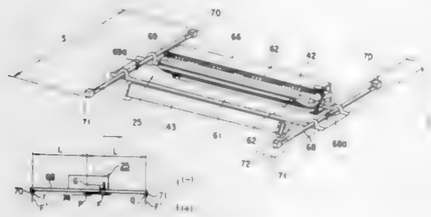
wherein a cell diameter in a surface of said sponge layer coated with said coating layer is not more than 200 microns wherein said sponge layer is electrically conductive, and the coating layer is a resistance layer.

5,390,008

SCANNING APPARATUS

Tesshu Kuwahara, Kawaguchi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 6, 1993, Ser. No. 162,306
Claims priority, application Japan, Jan. 28, 1993, 5-012736
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—235 3 Claims



1. A scanning apparatus comprising:

an original table for supporting an original;

movable means to be moved along the original table in a first direction;

guiding means for slidably guiding the movable means, said guiding means having a flat surface;

supporting means having shafts and support members positioned at both sides of the movable means in a second direction perpendicular to the first direction, elongated in the first direction, and supporting said movable means on said guiding means;

endless belt means connected at a predetermined point to said movable means, for moving said movable means in the first direction; and

driving means for driving said endless belt means at a predetermined acceleration,

wherein a length S (mm) of said supporting means, measured in the first direction, a distance l (mm) between the center of gravity of said movable means and the predetermined point, measured in a direction of gravity, the predetermined acceleration a (mm/sec^2) of said endless belt means, and acceleration of gravity g (mm/sec^2) satisfy the following relationship:

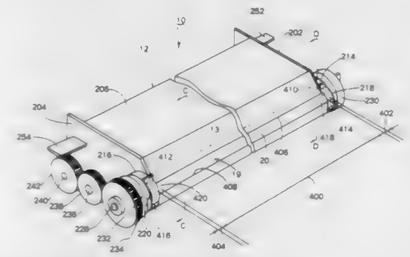
$$S \geqq 4al/g.$$

5,390,009

DEVELOPING DEVICE

Akira Nakakuma, Takaishi, and Yasuyuki Fukunaga, Hirakata, both of Japan, assignors to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 845,319, Mar. 3, 1992, Pat. No. 5,311,260.
This application Feb. 1, 1994, Ser. No. 189,677
Claims priority, application Japan, Mar. 8, 1991, 3-67649; Mar. 8, 1991, 3-67651; Mar. 11, 1991, 3-69407
Int. Cl.[6] G03G *15/06*
U.S. Cl. 355—245 5 Claims



1. A developing mechanism comprising:

a developing housing having an open front surface,

a magnetic brush mechanism disposed within said developing housing, wherein said magnetic brush mechanism includes

a cylindrical sleeve member that extends along said opening of said developing housing, and

a magnet member arranged within said sleeve member,

a portion of a peripheral surface of said sleeve member being exposed through said opening of said developing housing,

said magnet member extending within said sleeve member in an axial direction thereof,

said magnet member having a length in the axial direction which is shorter than a length of said sleeve member in the axial direction,

said sleeve member having a developing operation region in which said magnet member is present, and non-developing operation regions on both end portions of said sleeve where said magnet member is not present, wherein

developing agent, when contained in the developing housing, is moved in a desired direction past said opening, within said developing operation region, said developing agent being held on the peripheral surface of said sleeve member and being magnetically attracted thereto by said magnet member,

said developing mechanism including, at an upstream portion and a downstream portion on both end portions of said opening of said developing housing, an upstream sealing side member and a downstream sealing side member positioned to contact said non-developing operation regions at a peripheral surface of said sleeve member, and side sealing pieces, each of said side sealing pieces extending along the peripheral surface of said sleeve member

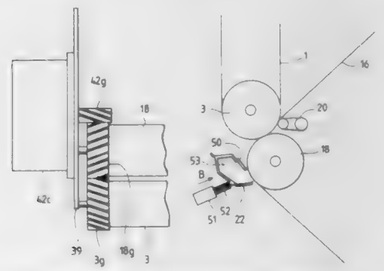
between an associated upstream sealing side member and an associated downstream sealing side member to provide a gap between the peripheral surface of said sleeve member and each of said side sealing pieces, said gap being smaller than the thickness of a layer of developing agent held on the peripheral surface of said sleeve member and exposed through said opening.

5,390,010

DRIVE MECHANISM FOR AN ELECTROPHOTOGRAPHIC APPARATUS FOR ENSURING EQUAL ROTATIONAL SPEEDS OF INTERMEDIATE TRANSFER AND PHOTOSENSITIVE DEVICES

Makoto Yamahata, Chikushino, and Tomonori Takayama, Fukuoka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 30, 1993, Ser. No. 40,087
Claims priority, application Japan, Apr. 10, 1992, 4-090520
Int. Cl.[6] G03G *15/14*
U.S. Cl. 355—271 8 Claims



1. An electrophotographic apparatus comprising:

a rotatable toner attachment device to which a toner is attached in accordance with image information;

a rotatable intermediate transfer device to which the toners attached to said toner attachment device are transferred, the toners being overlapped so as to form a composite toner image on said intermediate transfer device and said composite toner image being transferred to a recording medium;

a cleaning device arranged to be brought into contact with and separated from said intermediate transfer device for removing toner remaining on said intermediate transfer device after said composite toner image has been transferred to said recording medium, said cleaning device applying a load against said intermediate transfer device when said cleaning device is brought into contact with said intermediate transfer device;

a drive source for rotating both said toner attachment device and said intermediate transfer device so as to prevent slippage between said intermediate transfer device and said toner attachment device due to said intermediate transfer device being subjected to said load, a driving force of said drive source being first transmitted to said intermediate transfer device and then transmitted through said intermediate transfer device to said toner attachment device.

5,390,011

COMPACT IMAGING ROLL PRINTER

Sotos M. Theodoulou, Bramalea, Canada, assignor to Delphax Systems, Canton, Mass.

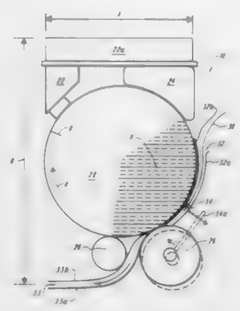
Filed May 27, 1993, Ser. No. 68,237
Int. Cl.[6] G03G *15/14*
U.S. Cl. 355—272 19 Claims

1. An imaging roll for use in a system for producing a print, such imaging roll including

a cylinder forming a rigid core of low thermal conductivity, said core including drive engagement means for controllably driving said core

a plurality of heating elements extending parallel to the axis of said cylinder and distributed over an outer region of said cylinder,

a hardcoated elastomeric layer over said plurality of heating elements, said hardcoated elastomeric layer having a capacitance per unit area effective to hold a developable latent charge image and being non-tacky so as not to accumulate toner particles, said hardcoated elastomeric layer further being non-adherent to melted toner, and said



heating elements being separately actuable by commutation as said core is driven so that by commutating said heating elements ON in a linear region bearing a toned image the toned image is melted and transfers to a recording sheet upon contact;

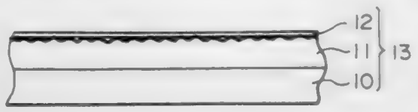
said hardcoated elastomeric layer further having a conductive sublayer forming a backplane to establish a potential for attracting charged particles to form said developable latent charge image so that a latent, toned and melted image may be successively formed on a linear region of said roll and transferred from said roll directly to a recording member as a final image as said roll rotates.

5,390,012

IMAGE FORMING APPARATUS HAVING TRANSFER MATERIAL CARRYING MEMBER

Toshiaki Miyashiro, Ichikawa; Haruo Fujii, Yokohama, and Toshihiko Ochiai, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 992,773
Claims priority, application Japan, Dec. 25, 1991, 3-357054; Oct. 30, 1992, 4-316462
Int. Cl.[6] G03G *15/14*
U.S. Cl. 355—273 56 Claims



1. An image forming apparatus, comprising:

an image bearing member;

image forming means for forming a toner image on said image bearing member;

a transfer material carrying member for electrostatically carrying a transfer material to a transfer position wherein the toner image is electrostatically transferred at the transfer position onto the transfer material carried on said transfer material carrying member, and wherein said transfer material carrying member comprises a dielectric layer for carrying the transfer material and a supporting

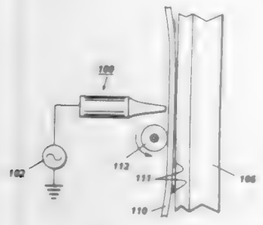
member, bonded thereon over less than its entire area, for carrying the dielectric layer, and there is provided an air gap between the dielectric layer and said supporting member where they are not bonded.

5,390,013

ULTRASONIC FUSING (ULTRA-FUSE) PROCESS

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1993, Ser. No. 157,599
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—285 21 Claims



10. Apparatus for fusing toner images to substrates such as plain paper, said apparatus comprising:

means for heating toner images from a side of a substrate opposite a side thereof having said toner images electrostatically adhered thereto; and

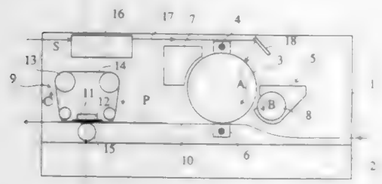
means for simultaneously heating only a portion of a member other than said substrate which portion of a member is heated in a nip between said substrate and said member and as it contacts said toner images for supplying additional heat thereto.

5,390,014

PORTABLE ELECTROPHOTOGRAPHIC IMAGE FORMING APPARATUS

Masumi Asanae, Kumagaya, and Katsutomo Ohmika, Isezaki, both of Japan, assignors to Hitachi Metals, Inc., Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,521
Claims priority, application Japan, Jun. 26, 1992, 4-168124
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—290 6 Claims



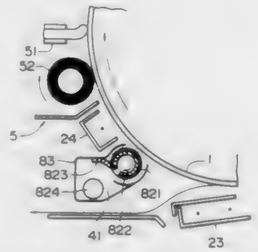
1. A light-weight, portable electrophotographic printer comprising an image-forming unit having a cylindrical, electrostatic latent image-bearing member; an electrostatic latent image-forming means, a developing means equipped with a developing roll for electrostically attracting non-magnetic, one-component developer, a transfer means for transferring the developed image on the surface of said electrostatic latent image-bearing member onto a recording medium, and a cleaning means for cleaning the surface of said electrostatic latent image-bearing member after transferring of said developed image, respectively disposed near said electrostatic image-bearing member; and a fixing means including rollers disposed downstream of said electrostatic latent image-bearing member for heat-fixing said developed image onto said recording medium, wherein the peripheral speed of said electrostatic latent image-bearing member is 60 mm/sec or less, the outer diameter of said electrostatic latent image-bearing member is 40 mm or less, the outer diameter of said developing roll is 30 mm or less, and the diameters of said rollers in said heat fixing device are sufficiently small to provide finger-less release of said recording medium, the height of said image-forming unit being 60 mm or less.

5,390,015

CARRIER REMOVAL IN AN ELECTROPHOTOGRAPHIC IMAGE FORMATION METHOD

Hiroshi Nagame, and Narihito Kojima, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 3, 1993, Ser. No. 101,001
Claims priority, application Japan, Aug. 3, 1992, 4-226440
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—305 8 Claims



1. In an electrophotographic image formation method, comprising the steps of:

uniformly charging a photoconductor to a predetermined polarity, said photoconductor comprising an electroconductive support, an organic photoconductive layer formed on said electroconductive support, and a protective layer comprising carbon formed on said organic photoconductive layer,

applying a digitally-processed light image to said photoconductor, with the potential of an image area of an original image being reversed with respect to the potential of a non-image area of said original image, thereby forming a latent electrostatic image corresponding to said original image on said photoconductor,

performing reverse development of said latent electrostatic image formed on said photoconductor by use of a two-component developer comprising a carrier and a toner to form a visible toner image on said photoconductor,

performing an image transfer of said visible toner image formed on said photoconductor,

attracting said carrier, after performing said image transfer, using at least one carrier removing means for attracting said carrier with a magnetic flux density in the range of from 400 Gauss to 2000 Gauss prior to cleaning said photoconductor, and

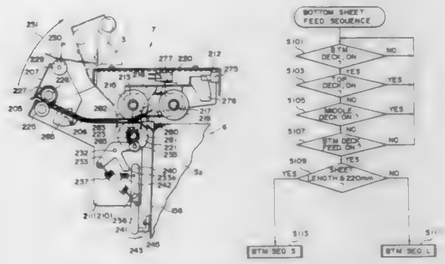
cleaning said photoconductor after said step of attracting said carrier.

5,390,016

IMAGE FORMING APPARATUS AND METHOD FOR PREFEEDING A SHEET TO A CONVEYING PATH FROM A SHEET ACCOMMODATING DEVICE PRIOR TO GENERATION OF A SHEET FEEDING SIGNAL

Akimitsu Hoshi, Kawasaki; Masaaki Sato, Yokohama; Norifumi Miyake, Kawasaki, and Kenji Kobayashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 625,972, Dec. 11, 1990, abandoned.
This application Jun. 21, 1993, Ser. No. 79,216
Claims priority, application Japan, Dec. 11, 1989, 1-321645
Int. Cl.[6] G03G *21/00*; B65H *7/00*
U.S. Cl. 355—308 36 Claims



1. An image forming apparatus, comprising:

sheet accommodating means for accommodating a stack of sheets;

feeding means for feeding one by one the sheets from said sheet accommodating means;

image forming means for forming an image on a sheet fed from said sheet accommodating means by said feeding means;

a sheet conveying path for guiding the sheet from said accommodating means to said image forming means; and

control means for causing the sheet to be pre-fed and retained in said sheet conveying path when the sheet in said sheet accommodating means has a size not larger than a predetermined size, and for not doing so when the sheet in said sheet accommodating means has a size larger than the predetermined size.

5,390,017

OPTICAL NETWORK ANALYZER FOR MEASURING THE AMPLITUDE CHARACTERISTICS AND GROUP DELAY TIME DISPERSION CHARACTERISTICS OF AN OPTICAL CIRCUIT DEVICE

Takeshi Ozeki, Tokyo; Manish Sharma, and Hiroyuki Ibe, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 24, 1993, Ser. No. 111,002
Claims priority, application Japan, Aug. 25, 1992, 4-225817
Int. Cl.[6] G01N *21/84, 21/41*
U.S. Cl. 356—73.1 5 Claims

1. An optical network analyzer, comprising:

a first light source for generating light having an arbitrary frequency;

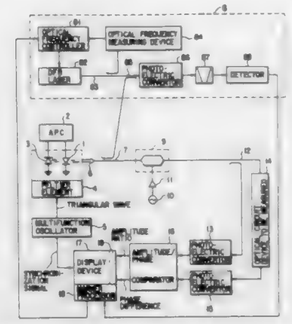
a light modulator for modulating an intensity of the light generated by the first light source by use of a modulation signal having a predetermined frequency and a predetermined amplitude;

a light splitter for splitting the light modulated by the light modulator such that part of the modulated light is used as a reference optical signal;

a connector for permitting the light modulated by the light modulator to pass through an optical circuit device;

a first photoelectric conversion section for performing photoelectric conversion with respect to the reference optical signal and the light which has passed through the optical circuit device;

an amplitude/phase comparator for extracting modulated signal components from two electric signals obtained by the first photoelectric conversion section and for comparing the modulated signal components with each other, thereby obtaining an amplitude ratio and a phase difference;



a light source controller for sweeping an optical frequency of the first light source in a constant cycle; and

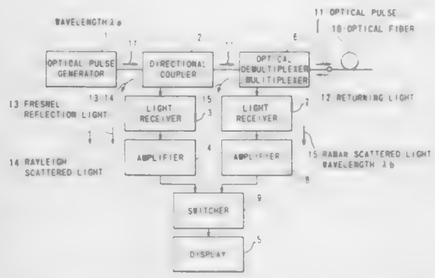
a display device for displaying comparison results of the amplitude/phase comparator in synchronism with the frequency sweeping performed by the light source controller.

5,390,018

OPTICAL PULSE TESTER CAPABLE OF DISPLAYING RAMAN OR RAYLEIGH SCATTERED LIGHT

Tatsuyuki Fujita; Mikio Maeda, both of Tokyo; Toshiya Sato, Katsuta, and Tsuneo Horiguchi, Mito, all of Japan, assignors to Ando Electric Co., Ltd. and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Mar. 16, 1994, Ser. No. 213,578
Claims priority, application Japan, Mar. 17, 1993, 5-057495
Int. Cl.[6] G01N *21/88*
U.S. Cl. 356—73.1 1 Claim



1. An optical pulse tester capable of displaying Raman scattered light comprising:

an optical pulse generator for generating an optical pulse with the specified wavelength;

a directional coupler to which said optical pulse is supplied, for dividing returning light from an optical fiber to be measured into Fresnel reflection light and Rayleigh scattered light with said specified wavelength;

a demultiplexer/multiplexer to which the optical pulse via said directional coupler is supplied, for injecting an output light into said optical fiber and for demultiplexing returning light from said optical fiber into Raman scattered light different from said optical pulse in wavelength;

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a display for displaying a characteristic waveform of said optical fiber; and

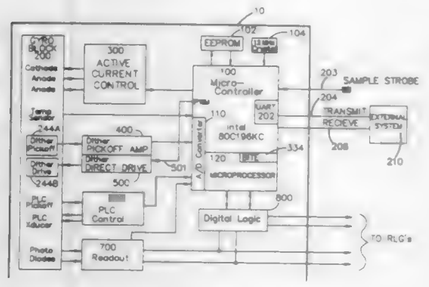
a switcher for supplying said Rayleigh scattered light to said display in the case of long distance measurement or precise loss measurement of said optical fiber, and for supplying said Raman scattered light to said display in the case of the measurement of the near-end part of said optical fiber or the connecting point between optical fibers without a dead area.

5,390,019

LASER GYRO BUILT IN TEST METHOD AND APPARATUS

Keith R. Fritze, Minnetonka; Joseph E. Killpatrick, Minneapolis, and Dale F. Berndt, Plymouth, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 17, 1992, Ser. No. 922,611
Int. Cl.[6] G01B *9/02*; H01S *3/083*
U.S. Cl. 356—350 **6 Claims**



1. A laser gyro self test apparatus comprising:

(a) a laser gyro controller comprising a microprocessor with a high speed universal asynchronous receiver transmitter (UART) and a peripheral transaction system controlling the UART the laser gyro controller for monitoring the laser gyro;

(b) a transmit line connected to the UART;

(c) a receive line connected to the UART;

(d) a microprocessor controller external system;

(e) a serial to parallel converter connected to the transmit line to convert serial data on the transmit line to parallel data having a parallel output;

(f) a first in first out (FIFO) register means connected to the parallel output having an interface output;

(g) an interface logic unit connected to the output of the FIFO register means connected to the external system to receive commands from the external system; and

(h) a parallel to serial converter connected to the interface logic and the receive line to convert parallel data from the interface logic to serial data for communication to the UART.

5,390,020

VIDEO AMPLIFIER STABILIZATION FOR CRT PRINTING

Douglas W. Constable, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 14, 1992, Ser. No. 945,317
Int. Cl.[6] H04N *5/84*
U.S. Cl. 358—350 **12 Claims**

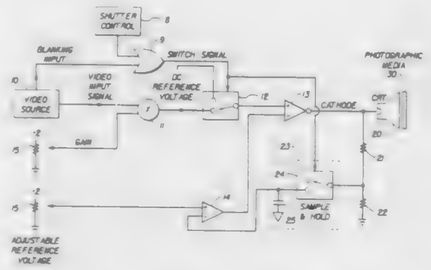
1. A video amplifier stabilization system for controlling the illumination of an image that appears on the screen of a CRT of a CRT printing device and is provided from a video source producing a video input signal representing the image, wherein the video source is DC coupled into the stabilization system and a blanking input is also produced by the video source coincident with horizontal and vertical retrace periods to blank the image during the horizontal and vertical retrace periods, said system characterized by:

first switching means for selecting the video input signal when the video source is in an unblanked mode and capable of selecting a DC reference voltage when the video source is in a blanked mode;

an amplifier whose first input is coupled to said first switching means and the output of said amplifier is connected to the cathode of the CRT to display the image represented by the video input signal;

means for storing a DC voltage;

means coupled to said first switching means and adapted to receive the blanking input for extinguishing the image that appears on the screen of the CRT to act as a shutter; wherein said extinguishing means combines: a shutter control for extinguishing the CRT in-between exposures; and gating means whose first input is coupled to said shutter control, and whose second input is coupled to the



blanking input and whose output is coupled to said first switching means and a second switching means for extinguishing images appearing on the screen of the CRT in-between print exposures and during horizontal and vertical blanking and

said second switching means is coupled to the output of said amplifier, said storing means and said extinguishing means, for closing in response to the presence of the blanking signal to cause said second switching means to close and a voltage to be stored in said storing means and for opening in response to the absence of the blanking signal to permit the voltage stored in said storing means to be transmitted to a second input of said amplifier, for stabilizing or correcting said amplifier for thermal drifts;

whereby, the image appearing on the screen of the CRT will be controlled by said extinguishing means and have the same illumination for the same video input signal enabling prints of uniform density to be produced.

5,390,021

OPTICAL RING RESONATOR GYRO USING COHERENT LIGHT MODULATED BY A RECTANGULAR SIGNAL HAVING ITS PERIOD DIVIDED INTO FOUR INTERVALS

Chihito Nagata, and Kenichi Okada, both of Tokyo, Japan, assignors to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,536
Int. Cl.[6] G01C *19/72*
U.S. Cl. 356—350 **4 Claims**

1. An optical ring resonator gyro comprising:

a light source for supplying coherent light;

optical frequency shift means for shifting the frequency of said coherent light in accordance with an input signal;

rectangular signal generator means for providing a rectangular signal to said optical frequency shift means as an input signal for shifting the frequency of said coherent light;

a ring-shaped optical path surrounding a limited closed area

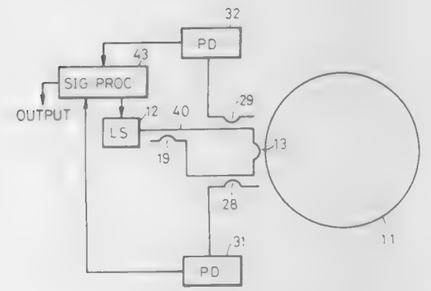
and permitting light to propagate therethrough a plurality of time;

optical coupler means for introducing said coherent light, shifted in frequency by said optical frequency shift means, into said ring-shaped optical path so as to propagate therethrough in opposite directions as a clockwise light beam and a counterclockwise light beam;

first and second photodetectors for detecting the intensities of interference light beams available from said optical coupler means and produced at said optical coupler means by interference of respective portions of said clockwise and counterclockwise light beams which have propagated in opposite directions in said optical path and interfered with each other;

means for dividing each period of said rectangular signal generated by said rectangular signal generator means into four intervals by dividing a high-level duration of each period thereof into first half and latter half intervals and dividing a low-level duration of each period thereof into first half and the latter half intervals, respectively;

first deviation signal detector means responsive to outputs of said first photodetector during said first half intervals of the high-level and the low-level durations of each period of said rectangular signal, respectively, and for detecting



as a first deviation signal the difference between said outputs of said first photodetector during said first half intervals;

second deviation signal detector means responsive to outputs of said second photodetector during said latter half intervals of the high-level and the low-level durations of each period of said rectangular signal, respectively, and for detecting as a second deviation signal the difference between said outputs of said second photodetector during said latter half intervals;

switching means for negatively feeding back said first deviation signal to said optical frequency shift means so as to reduce to zero said difference between the outputs of said first photodetector during said first half intervals of the high-level and the low-level durations of each period of said rectangular signal and for negatively feeding back said second deviation signal to said optical frequency shift means so as to reduce to zero said difference between the outputs of said second photodetector during said latter half intervals of the high-level and the low-level durations of each period of said rectangular signal; and

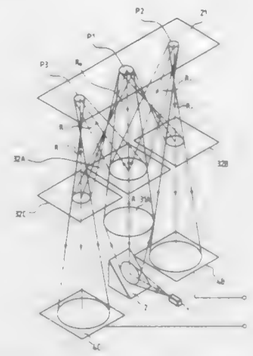
output means for detecting the difference between said first and second deviation signals and for outputting said deviation signal difference as an angular rate input into said ring-shaped optical path.

5,390,022

DISPLACEMENT INFORMATION DETECTION APPARATUS FOR RECEIVING A DIVERGENT LIGHT BEAM

Koh Ishizuka, Ohmiya; Tetsuharu Nishimura, Kawasaki; Hiroshi Kondo, Yokohama, and Yasushi Kaneda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1993, Ser. No. 42,589
Claims priority, application Japan, Apr. 7, 1992, 4-085447; Dec. 17, 1992, 4-337403
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—356 **25 Claims**



1. A displacement information detection apparatus for detecting relative displacement information regarding said apparatus and an object to be detected having a scale grating, said apparatus comprising:

an illumination system for radiating coherent light beams which can interfere with each other;

splitting means for splitting the coherent light beams from said illumination system into first and second light beams, at least one of the first and second light beams being radiated onto the scale grating on the object;

synthesizing means for synthesizing the first and second light beams, at least one of which is diffracted by the scale grating on the object, an interference light beam being generated by the synthesizing operation of said synthesizing means; and

a light-receiving element for detecting the interference light beam, the relative displacement information regarding the object and said apparatus being detected upon reception of the interference light beam by said light-receiving element,

wherein said illumination system is configured to focus the at least one of the first and second light beams that is diffracted by the scale grating at a location between an optical path of said splitting means and an optical path of said synthesizing means, so that the interference light beam incident on said light-receiving element is a divergent light beam.

5,390,023

INTERFEROMETRIC METHOD AND APPARATUS TO MEASURE SURFACE TOPOGRAPHY

James F. Biegen, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Continuation-in-part of Ser. No. 893,324, Jun. 3, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 127,798
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—359 **30 Claims**

1. In a non-contact method of profiling a test surface of unknown topography and composition, a method of determining a composition-dependent phase change on reflection intro-

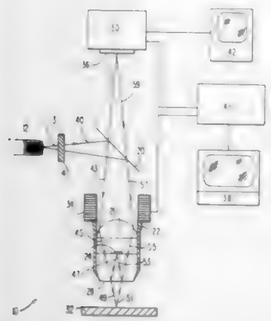
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duced by reflection of an illumination beam from the test surface, comprising the steps of:

(a) producing a first illumination beam and a second illumination beam from an extended, narrow bandwidth source;

(b) establishing on a detector an imaging beam having an intensity which results from the interference between a first wavefront and a second wavefront, the first wavefront being formed by reflection of the first illumination beam from at least one point on a reference surface of known topography and composition and the second wavefront being formed by reflection of the second illumination beam from a corresponding point on a test surface of unknown topography and composition;

(c) moving one of the reference surface and the test surface relative to the other said surface over a predetermined linear range of motion so as to translate one of the first and second wavefronts relative to the other said wavefront and thereby vary the imaging beam intensity and create a time-varying interference intensity pattern on the detector;



(d) calculating the phase of said interference intensity pattern at a point of maximum interference contrast of the interference intensity pattern on the detector to provide a value proportional to the composition-dependent phase change on reflection introduced by said reflection of the second illumination beam from said test surface;

(e) calculating a constant κ by curve-fitting the relationship $(1-\kappa NA^2\rho^2)$, where ρ is a constant that varies from 0 to 1 and NA is an effective numerical aperture of an interferometer objective through which the extended, narrow bandwidth source is passed, to ideal data calculated using an equation defining a function $\Phi(\theta)$ which relates phase change on reflection from a surface to an angle θ of illumination incidence on the surface and which has been normalized to a zero angle of illumination incidence; and

(f) dividing said value by $1-2\kappa$ to provide said phase change on reflection introduced by said reflection of the second illumination beam from said test surface.

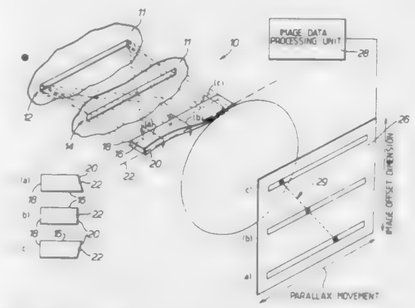
5,390,024

OPTICAL TRANSFORM GENERATING APPARATUS

Steven Wright, c/o Wright Cotttage, Mackerye End, Harpenden, Hertfordshire, Great Britain AL5 5DR

Continuation of Ser. No. 928,423, Aug. 13, 1992, abandoned.
This application Dec. 21, 1993, Ser. No. 170,981
Claims priority, application United Kingdom, Aug. 13, 1991, 9117443
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—376 9 Claims

1. Apparatus for optically generating at an output plane an Epipolar transform of a viewed scene, said apparatus including a line of sight, a parallax axis orthogonal to said line of sight, means for selecting a linear slice of said viewed scene as seen from a plurality of offset viewing points along said parallax axis and elongate deflector means extending generally parallel with said parallax axis for having said selected slice incident thereon, said elongate deflector means forming corresponding respective offset images thereof as seen from said plurality of



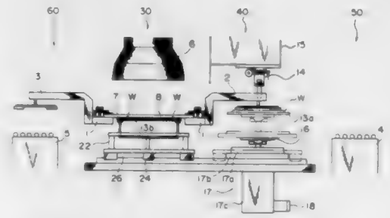
offset viewing points and mapping said images towards or onto a respective portion of an output image plane in accordance with the offset of the associated viewing point.

5,390,025

METHOD OF LOCATING WORK IN AUTOMATIC EXPOSING APPARATUS

Akira Morita; Kozo Tsunoda, and Takehiko Okamura, all of Tokyo, Japan, assignors to ORC Manufacturing Co., Ltd., Tokyo, Japan

Filed May 18, 1992, Ser. No. 884,938
Claims priority, application Japan, May 29, 1991, 3-125991
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—400 5 Claims



1. A method of locating work in an automatic exposing apparatus, said method comprising the steps of:

transferring a work from a feed-in section into a locating section by reciprocal movement of a feeding member along a path between said locating section and an exposing section, said feed-in section prealigning said work, said locating section aligning said work with respect to a printing frame, said printing frame including a plurality of lower printing frames and an upper printing frame fixed to said feeding member, said exposing section irradiating said work in said printing frame, said locating section is separated from said exposing section and aligning as well as irradiating occurring concurrently;

receiving said work on a first one of said plurality of lower printing frames;

transferring said feeding member along said path to position said upper printing frame in said locating section above said first lower printing frame;

aligning said work on said first lower printing frame with respect to said upper printing frame, said securing said first lower printing frame to said upper printing frame and said feeding member;

transferring said work in said printing frame into said exposing section by reciprocal movement of said feeding member along said path, and concurrently transferring a second one of said plurality of lower printing frames from said exposing section to said locating section by a forklifter;

exposing said work in said printing frame in said exposing section, and concurrently returning said forklifter to said exposing section;

separating said upper printing frame from said work on said first lower printing frame, said forklifter receiving said work on said first lower printing frame; and

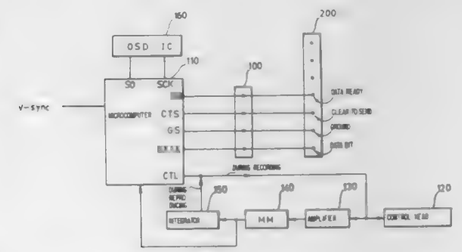
transferring said work out of said exposing section by reciprocal movement of said feeding member along said path.

5,390,026

CHARACTER EDITING CIRCUIT OF CAMCORDER

Han-Jun Lim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 28, 1993, Ser. No. 82,854
Claims priority, application Rep. of Korea, Jun. 26, 1992, 92-11403
Int. Cl.[6] H04N *5/76*
U.S. Cl. 358—335 7 Claims



1. A character editing circuit of a camcorder comprising:

control means for changing control pulses to data indicative of input character information to thereby be output to a control track of a recording medium when the character information is input during a recording process, and for outputting a signal indicative of the character information to an on-screen-display integrated circuit when the data indicative of the character information is input from the control track of the recording medium during a reproducing process;

control head for recording and reproducing the data indicative of the character information output from the control means to the control track; and

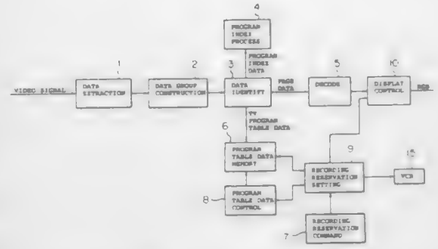
data detecting means for applying to the control means the control pulses in which character information data reproduced from the control track is waveform-shaped and integrated, wherein the control means outputs the character information data and a predetermined control signal data to a control head to thereby be recorded on the control track, and during a reproducing process, outputs character information detected by the data detecting means to an on-screen-display integrated circuit to thereby display the character, represented by the character information on a screen and to thereafter obtain a control signal from the control signal data.

5,390,027

TELEVISION PROGRAM RECORDING AND REPRODUCING SYSTEM USING PROGRAM DATA OF TEXT BROADCAST SIGNAL

Hidemi Henmi, Shiga; Shigeru Takano, Osaka; Hideto Nakahigashi, Osaka, and Ken Sakamoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 799,996, Nov. 24, 1991, Pat. No. 5,260,788, and Ser. No. 748,188, Aug. 20, 1991, abandoned.
This application Jul. 19, 1993, Ser. No. 92,882
Claims priority, application Japan, Aug. 23, 1990, 2-223170; Nov. 29, 1990, 2-333906
Int. Cl.[6] H04 *5/76*
U.S. Cl. 358—335 7 Claims



1. A television program recording and reproducing apparatus for recording a television program on a magnetic tape based on a television program data contained in a received video signal, comprising:

a data extraction means for extracting a data block in an encoded transmission-format test broadcast signal multiplexed with a vertical blanking period of a video signal;

a data group construction means for constructing a data group by assembling a plurality of extracted data blocks;

a data identifying means for identifying said data group and including a gate means for passing said data group when said data group is identified as containing a television program table, said program table including recording information with respect to at least one television program, said recording information including a channel information and a program start time and a program end time for each of said at least one television program;

a memory means for storing said recording information of said television program table contained in said data group passed through said gate means of said data identifying means, said memory means including respective memory areas for storing said channel information and said program start time and said program end time for each said television program of said television program table;

channel specifying means for specifying a channel responsive to an input instruction from a user;

detecting means for detecting whether said memory means includes recording information associated with the channel specified by said channel specifying means;

display means for automatically operating in either one of a first display mode and a second display mode in response to said detecting means, said display means operating in said first display mode when said detecting means detects that said memory means is devoid of recording information associated with the channel specified by said channel specifying means and operating in said second display mode when said detecting means detects that said memory means includes recording information associated with the channel specified by said channel specifying means, said first display mode including a displayed start time and a displayed end time as input by the user of a selected television program, and said second display mode including a display of a television program listing of television pro-

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grams as stored in said memory means associated with the channel specified by said channel specifying means and a display cursor responsive to the user for specifying a selected television program from among the television program listing;

recording program information input means for inputting the recording information associated with the television program selected using said display means;

time detecting means for detecting a time at which recording of the selected television program is to start based on the program start time of said recording information input by said recording program information input means;

recording operation control means for controlling the recording of the selected television program in accordance with said time detecting means and said recording program information input by said recording program information input means;

index detecting means for detecting an index location on the magnetic tape to identify a section on the magnetic tape where the selected television program is recorded by said recording operation control means;

initial position returning means returning the magnetic tape to an initial position from the section on the magnetic tape where the selected television program is recorded by said recording operation control means; and

information writing means for writing the recording information of the selected television program together with the index location at the initial position of the magnetic tape.

5,390,028

APPARATUS FOR CONVERTING INPUT VIDEO SIGNAL TO MOTION PICTURE FILM IMAGE

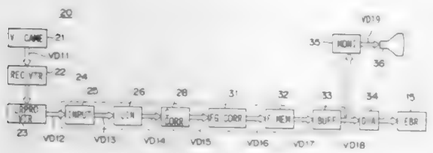
Ikuo Kobayashi, and Fumiaki Henmi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,593

Claims priority, application Japan, Mar. 31, 1991, 3-092910

Int. Cl.[6] H04N *5/87*

U.S. Cl. 358—346 **8 Claims**



1. An apparatus for converting an input video signal having a nominal transmission speed into a motion picture film image, the apparatus comprising:

means for receiving said input video signal at said nominal transmission speed, converting said transmission speed of said video signal to a low speed that is lower than said nominal transmission speed, and transmitting said video signal at said low speed;

color detecting means receiving said video signal transmitted at said low speed for detecting a color characteristic of said transmitted video signal and producing a detection signal on the basis of said detected color characteristic;

color correcting means responsive to said video signal transmitted at said low speed and said detection signal for predioting a gamma correction to be performed, and for performing a color correction on said transmitted video signal in accordance with said detection signal and the predicted gamma correction so as to output a color corrected video signal;

gamma correcting means for performing gamma correction on said color corrected video signal on the basis of a gamma correction curve to form a gamma corrected signal; and

recording means for recording the gamma corrected signal formed by the gamma correcting means on motion picture film.

5,390,029

METHOD FOR CONTROLLING THE PROCESSING OF DIGITAL IMAGE SIGNALS

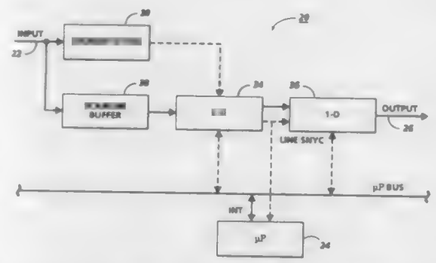
Leon C. Williams, Walworth; Francis K. Tse, Rochester, and Robert F. Buchheit, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 809,807, Dec. 18, 1991, Pat. No. 5,307,180. This application Jan. 24, 1994, Ser. No. 185,075

The portion of the term of this patent subsequent to Apr. 26, 2011, has been disclaimed.

Int. Cl.[6] H04N *1/40, 1/387;* **G06K** *9/36*

U.S. Cl. 358—448 **2 Claims**



1. A method for selectively controlling the application of a plurality of image processing effects to a plurality of digital signals representing an image, comprising the steps of:

(a) partitioning the image into a plurality of overlapping windows, each window having a non-mutually exclusive image processing effect to be applied to the digital signals therein;

(b) characterizing the overlapping windows as a plurality of sequential, non-overlapping tiles;

(c) determining the lengths of all non-overlapping tiles, and storing said lengths in successive locations in a memory;

(d) determining a common height for each set of laterally adjacent tiles, and storing said common heights in successive locations in the memory;

(e) initializing data elements based upon the characteristics stored in steps (c) and (d);

(f) consecutively selecting an unprocessed signal from the plurality of digital image signals;

(g) identifying the non-overlapping tile region within which the selected signal lies;

(h) determining an image processing operation to be applied to the selected signal based upon the identification of the non-overlapping tile region in step (g, wherein the image processing operation is distinguishable from an image processing operation applied in a laterally adjacent tile;

(i) processing the selected signal in accordance with the image processing operation determined in step (h);

(j) updating the data elements; and

(k) checking to determine if the tile characteristics stored in memory have been exhausted; and if so

(l) suspending further processing; otherwise

(m) continuing at step (f).

5,390,030

PEAK HOLDING CIRCUIT AND VIDEO PROCESSING UNIT USING THE SAME

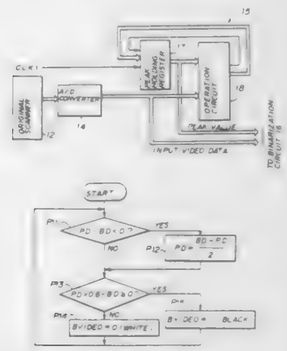
Hiroyuki Kudose, Isehara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 637,637, Jan. 4, 1991, abandoned. This application Jun. 4, 1993, Ser. No. 71,609

Claims priority, application Japan, Jan. 8, 1990, 2-2038

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—461 **8 Claims**



1. A video processing unit, comprising:

scanner means for optically scanning an original and for generating an analog video signal from the original;

converting means for converting said analog video signal into a digital video signal;

a peak holding circuit, comprising peak holding register means for holding a current peak value and operation means for comparing said current peak value with said digital video signal and, when said digital video signal has a value that is greater than said current peak value, for performing a predetermined averaging operation on said current peak value and said digital video signal to produce a new peak value that is between said current peak value and said digital video signal, and for writing said new peak value into said peak holding register means; and

binarization means generating a binarized digital video signal from said new peak value in said peak holding register means.

5,390,031

CONTROL INFORMATION FORMAT CONSTRUCTION USED IN TRANSMITTING IMAGE INFORMATION

Seung I. Kang, Seoul, and Cha S. Dong, Kyeongki, both of Rep. of Korea, assignors to Sindo Ricoh Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 21, 1991, Ser. No. 795,717

Claims priority, application Rep. of Korea, Nov. 28, 1990, 1990-19411

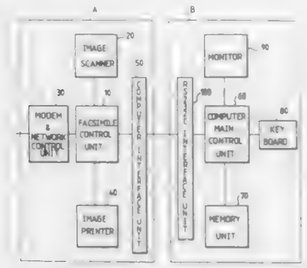
Int. Cl.[6] H04N *1/41*

U.S. Cl. 358—468 **5 Claims**

1. An apparatus for generating a control signal used in image information transmission in a system combining a facsimile device and a computer, comprising:

head code means for producing a head code of one byte, said head code indicating a start of the control information;

control cods means for producing a control code of one byte located Just after the head code, said control code being one of operation mode control information, manuscript mode control information, end control information, and response control information for error, for showing the kind of control; and



control end code means for producing a control end code of two bytes located just after the control code, said control end code indicating an end of the control information.

5,390,032

IMAGE READER HAVING PHOTOELECTRIC CONVERSION LINE SENSORS

Norihiro Yamamoto, and Osamu Takase, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 905,883

Claims priority, application Japan, Jun. 28, 1991, 3-158142; Sep. 30, 1991, 3-251618; Sep. 30, 1991, 3-251620; Oct. 4, 1991, 3-257568

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—474 **19 Claims**

1. An image reader comprising:

a light source for projecting light onto an original;

first and second photoelectric conversion elements arranged so that said first photoelectric conversion element reads a first half of said original in a scanning direction and said second photoelectric conversion element reads a second half thereof, and so that a first read signal of said first half of said original is transferred, starting from a center of said original, from said first photoelectric conversion element and a second read signal of said second half of said original is transferred, starting from said center, from said second photoelectric conversion element;

imaging means for projecting light reflected by said original onto said first and second photoelectric conversion elements;

driving means for driving said first and second photoelectric conversion elements so that said first and second read signals are output from said first and second photoelectric conversion elements, respectively; and

signal processing means, coupled to said driving means, for processing said first and second read signals so that a finalized read signal containing information on pixels arranged in a scanning line is generated each time said original is scanned in said scanning direction.

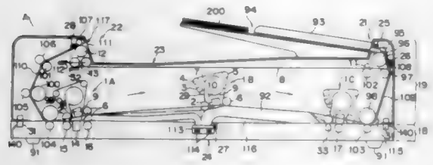
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5,390,033

METHOD AND APPARATUS FOR TURNING OVER PAGES OF BOOK-ORIGINAL

Kazunori Bannai, Tokyo; Kazushige Taguchi, Warabi; Tetsuya Fujioka, Yokohama; Hiroshi Takahashi, Kawasaki, and Fumio Kishi, Yokohama, all of Japan, assignors to Ricoh Company, Inc., Tokyo, Japan

Filed Dec. 6, 1991, Ser. No. 803,058
Claims priority, application Japan, Jul. 19, 1991, 3-179788
Int. Cl.[6] H04N *1/04*
U.S. Cl. 358—498 **20 Claims**



1. An apparatus for turning over a page of a book-type original which is set with spread pages being arranged upward, said apparatus comprising:

a belt arranged for turning over said page;

an electrode held in contact with a surface of said belt for forming an electric charge pattern on the surface of said belt and generating uneven electric fields on the surface of said belt;

a voltage applying means for applying a voltage to said electrode in order to form the electric charge pattern;

a belt deforming means for deforming a part of said belt upward at a portion of said belt; and

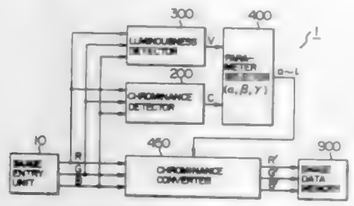
a moving means for moving said belt deforming means continuously along a surface of said page so that an uppermost page of said original contacting with said belt is attracted by the uneven electric fields generated on the surface of said belt and is separated from a next page of said original.

5,390,034

COLOR IMAGE PROCESSING METHOD AND APPARATUS WITH CHROMINANCE EMPHASIZING PROCESS

Tatsuya Murakami, Tachikawa; Eiichi Hadano, Hachioji; Kazuyuki Kodama, Tokyo; Kazunori Kinoshita; Masaaki Fujinawa, both of Odawara, and Hiromichi Fujisawa, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 782,096, Oct. 24, 1991, Pat. No. 5,268,771, which is a continuation-in-part of Ser. No. 761,770, Aug. 15, 1991, Pat. No. 5,231,482, which is a continuation-in-part of Ser. No. 479,615, Feb. 13, 1990, Pat. No. 5,128,748. This application Jan. 21, 1993, Ser. No. 6,771
Claims priority, application Japan, Jan. 23, 1992, 4-010369
Int. Cl.[6] H04N *1/46;* **G03F** *3/08*
U.S. Cl. 358—518 **10 Claims**



6. A color image processing apparatus, comprising:

chrominance detecting means for detecting a chrominance for every pixel of a digital color image;

luminousness detecting means for detecting a luminousness for every pixel of a digital color image;

output means for outputting each pixel of said input digital color image having either of a chrominance C≦a chrominance threshold value β and a luminousness V≦luminousness threshold value γ, based on at least one of said detected chrominance and luminousness; and

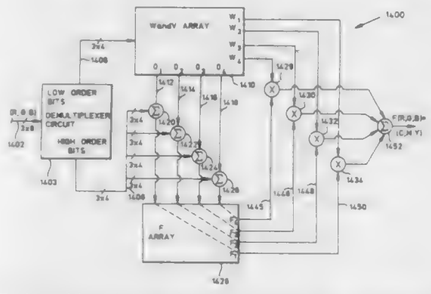
emphasis means for emphasizing the chrominance and outputting each pixel of said input digital color image having said chrominance C>said chrominance threshold value β and said luminousness V>said luminousness threshold value γ, based on at least one of said detected chrominance and luminousness.

5,390,035

METHOD AND MEANS FOR TETRAHEDRON/OCTAHEDRON PACKING AND TETRAHEDRON EXTRACTION FOR FUNCTION APPROXIMATION

James M. Kasson, Menlo Park, and Wilfred E. Plouffe, Jr., San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,805
Int. Cl.[6] H04N *1/46*
U.S. Cl. 358—518 **7 Claims**



7. An arithmetic apparatus for converting an input color signal to an output color signal using a function having an input domain in a first three-dimensional color space and an output range in a second m-dimensional color space, the apparatus comprising:

an input port means for accepting an image pixel including a plurality of input color signal bits representing a set of coordinates x, y, and z, such that x represents a first color component in the first color space, y represents a second color component in the first color space, and z represents a third color component in the first color space, the plurality of bits including a plurality of high order bits and a plurality of low order bits;

demultiplexer means coupled to the input port means for separating the plurality of bits into said plurality of high order bits and said plurality of low order bits, the low order bits being conveyed to a first output terminal of the demultiplexer means and the high order bits being conveyed to a second output terminal of the demultiplexer means;

weights and vertices array means coupled to the first output terminal of the demultiplexer means for producing an output consisting of first, second, third, and fourth additive constants, and first, second, third, and fourth multiplicative constants, in response to the receipt of the low order bits;

first summation means coupled to the weights and vertices array means and to the second output terminal of the demultiplexer means for producing a first index value as the arithmetic sum of the first additive constant and the high order bits, a second index value as the arithmetic sum of the second additive constant and the high order bits, a third index value as the arithmetic sum of the third additive constant and the high order bits, and a fourth index value as the arithmetic sum of the fourth additive constant and the high order bits;

function value array means coupled to the first summer means for producing an output consisting of first, second, third, and fourth function values in response to the receipt of the first, second, third, and fourth index values, respectively;

multiplexer means coupled to the weights and vertices array means and to the function value means for calculating a first product as the mathematical product of the first function value and the first multiplicative constant, a second product as the mathematical product of the second function value and the second multiplicative constant, a third product as the mathematical product of the third function value and the third multiplicative constant, and a fourth product as the mathematical product of the fourth function value and the fourth multiplicative constant;

second summation means coupled to the multiplier means for calculating an output sum as the arithmetic sum of the first product, the second product, the third product, and the fourth product, the output sum representing an approximation for a range output value v of the function in the second m-dimensional color space; and

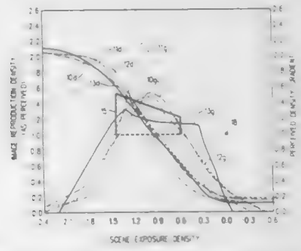
an output device connected to the second summation means to generate an output color in response to the output sum.

5,390,036

COLOR IMAGE REPRODUCTION OF SCENES WITH PREFERENTIAL TONE MAPPING

John D. Buhr, Webster, and Harry D. Franchino, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 950,871, Sep. 24, 1992. This application Oct. 28, 1993, Ser. No. 145,369
Int. Cl.[6] G03F *3/08*
U.S. Cl. 358—519 **6 Claims**



1. A system for presenting a preferential tone mapping in a reproduction of an original scene, the system being of the type having means for capturing original scene parameters onto a medium from which a reproduction of the original scene is to be derived and means for creating a visual reproduction of the scene from the captured scene parameters; said system characterized by:

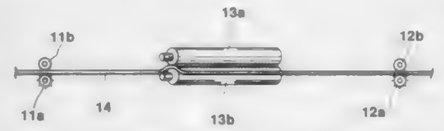
at least one of the capturing and creating means including scene parameter transformation means for imparting to the visual reproduction, when taken in conjunction with untransformed characteristics of the capturing and creating means, a reproduced tone mapping having instantaneous gamma values of viewed reproduction density relative to density of the original scene which are greater than a minimum value of 1.0 and less than a maximum value of 1.0 plus 0.35 times scene exposure density over a scene exposure density range of from 0.60 to 1.45 as measured relative to a zero density, 100% diffuse reflector in the original scene and which further lie substantially within a range of values subtended by an angle of 14° measured from a reference point at 0.0 scene exposure density and 1.0 viewed reproduction density gradient.

5,390,037

LIQUID CRYSTAL MOLECULE ORIENTING METHOD

Yuji Negishi, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1993, Ser. No. 113,838
Claims priority, application Japan, Sep. 25, 1992, 4-279203
Int. Cl.[6] C09K *19/00*
U.S. Cl. 359—76 **9 Claims**



1. In a device which processes an orientation film used in a liquid crystal display panel, the orientation film being formed on one surface of a film substrate, and serving to orientate liquid crystal molecules included in the liquid crystal display panel, the orientation film and the film substrate forming a film lamination, and the device comprising a resilient rubbing roll and a backup roll disposed opposite to the resilient rubbing roll, for holding and feeding the film lamination, a method of processing the orientation film comprising the steps of:

conveying the film lamination between the rubbing and backup rolls such that the orientation film of the film lamination faces the rubbing roll;

bringing the rubbing roll into contact with the orientation film formed on the one surface of the film substrate and

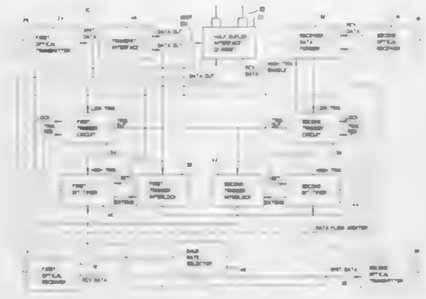
bringing the backup roll into contact with the other surface of the film substrate so that part of the film lamination is displaced from a plane of conveyance of the film lamination and Partially guided along the peripheral surface of the backup roll due to a pressing action by the backup roll to thereby reduce the area of contact between the orientation film of the film lamination and the rubbing roll.

5,390,038

HALF-DUPLEX COMMUNICATIONS INTERFACE

Warren P. Cecchini, 1058 Jefferson Rd., Penn Hills, Pa. 15235

Continuation-in-part of Ser. No. 535,389, Jun. 8, 1990, Pat. No. 5,150,244. This application Jun. 11, 1992, Ser. No. 897,095
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[6] H04B *10/24*
U.S. Cl. 359—113 **18 Claims**



1. An apparatus comprising:

a first optical receiver for receiving optical digital signals from a first optical fiber;

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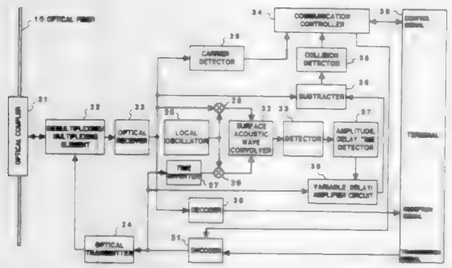
a second optical receiver for receiving optical digital signals from a second optical fiber;
a half-duplex interface which communicates with the first and second optical receivers and to a half-duplex line, for receiving electrical digital signals from the half-duplex line, and sending electrical digital signals thereto corresponding to optical digital signals received from either the first or second optical receivers;
a first optical transmitter means for providing optical digital signals to a third optical fiber corresponding to digital signals received by the first or second optical receivers or the interface;
a second optical transmitter means for providing optical digital signals to a fourth optical fiber corresponding to signals received by the first or second optical receivers or the interface;
a receiver data merger connected to the first and second optical receivers for merging the signals therefrom and producing a corresponding signal;
a first trigger circuit in communication with the interface and the first and second optical transmitters for passing signals from the interface to the transmitters when the first trigger circuit is in a first state;
a second trigger circuit in communication with the receiver data merger and the interface, and the first and second optical transmitters, for passing signals from the receiver data merger to the interface and to the first and second optical transmitters when the second trigger circuit is in a first state; and
means for controlling when the first and second trigger circuits are in the first state, said controlling means connected to the first and second trigger circuit, and preventing the first and second trigger circuit from being in the first state at the same time, and for preventing one of the trigger circuits from being in the first state for at least a predetermined period of time corresponding to a time period greater than zero but less than or equal to one bit after the other trigger circuit is in the second state.

5,390,039

OPTICAL NETWORK FOR DETECTING COLLISIONS BASED ON THE REFLECTION OF A TRANSMITTING SIGNAL

Noboru Yamamoto, Fujisawa, and Kenji Nakamura, Hadano, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 80,585, Jun. 24, 1993, abandoned, which is a continuation of Ser. No. 748,811, Aug. 22, 1991, abandoned. This application May 16, 1994, Ser. No. 243,528
Claims priority, application Japan, Aug. 27, 1990, 2-222515
Int. Cl.[6] H04J *14/02*
U.S. Cl. 359—136 **80 Claims**



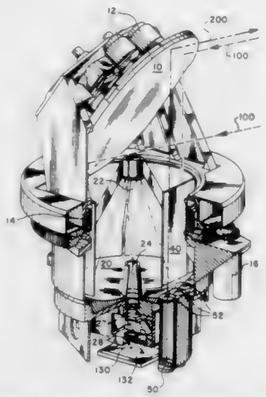
1. An optical communication network having an optical signal collision detection function, comprising:
optical coupler means for transmitting a transmission signal to an optical fiber and receiving a reception signal or a combined signal of the reception signal and a reflected signal from the optical fiber, the reflected signal resulting from the transmission signal being reflected at an intermediate portion of a transmission path including the optical fiber;
detection means, which inputs the transmission signal to be transmitted by said optical coupler means and the combined signal received by said optical coupler means, for detecting a signal collision on the basis of the transmission signal and the combined signal received by said optical coupler means and detecting a correlation between the transmission signal and the combined signal; and
removing means for removing the reflected signal from the combined signal on the basis of the correlation detected by said detection means.

5,390,040

OPTICAL TRANSCEIVER FOR FREE-SPACE COMMUNICATION LINKS

Eric J. Mayeux, Littleton, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Feb. 4, 1994, Ser. No. 191,941
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—152 **23 Claims**



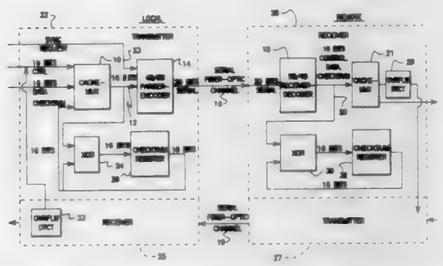
19. An optical transceiver for full-duplex communications comprising:
a gimbaled steering mirror having a flat reflective surface;
positioning means for controlling the azimuth and elevational orientation of said steering mirror relative to a predetermined axis;
a telescope extending along said axis for focusing an incoming beam reflected from within a predetermined field of view on said steering mirror;
a beam splitter for splitting said incoming beam focused by said telescope into a first beam and a second beam;
a data detector for recovering data from said first beam;
a tracking detector for receiving said second beam and generating a tracking signal to control said positioning means; and
at least one transmitting laser for directing an outgoing beam parallel to said axis onto a portion of said steering mirror outside of said field of view of said telescope.

5,390,041

FIBER OPTIC CHANNEL EXTENDER INTERFACE METHOD AND APPARATUS

Kevin M. Knecht, Chippewa Falls, and Eric C. Fromm, Eau Claire, both of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Filed Nov. 6, 1991, Ser. No. 788,496
Int. Cl.[6] H04B *10/12*
U.S. Cl. 359—158 **5 Claims**



1. A digital communication system having a transmitter, receiver, and an optical transmission medium comprising:
(a) caching means of said transmitter for storing binary information in a plurality of packets including control, data and checksum packets;
(b) means coupled to said caching means for calculating error checksum values on said binary information;
(c) means for parsing said control, data and checksum packets into 4-bit groups;
(d) encoding means for encoding each 4-bit group into a 5-bit code;
(e) means coupled to said encoding means for generating 5-bit sync symbols;
(f) means of said transmitter coupled to said optical transmission medium for serially combining and transmitting a serial bit stream including said 5-bit codes, sync symbols and error checksum values;
(g) means of said receiver coupled to said optical transmission medium for receiving said serial bit stream and for reconstituting 5-bit codes from said serial bit stream;
(h) means for decoding said 5-bit codes into 4-bit groups; and
(i) means for calculating error checksum values on said 4-bit groups;
(j) means for linking said 4-bit groups into parallel packet form for data processing use.

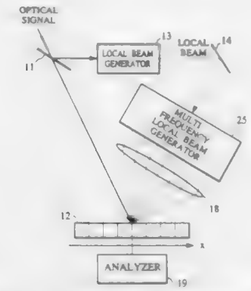
5,390,042

HIGH SENSITIVITY OPTICAL RECEIVER SUITABLE FOR SINGLE OPTICAL SIGNAL WITH HIGH SPEED MODULATION

Fumihiko Ito, and Kenichi Kitayama, both of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corp., Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,897
Claims priority, application Japan, Mar. 8, 1993, 5-046923; Mar. 8, 1993, 5-046923; Mar. 10, 1993, 5-049461
Int. Cl.[6] H04B *10/06;* **G01B** *9/02*
U.S. Cl. 359—189 **16 Claims**

1. An optical receiver for receiving an optical signal carrying data within a finite temporal length T, comprising:
input means for entering the optical signal;
local beam generation means for generating a local beam synchronized with a carrier of the optical signal entered by the input means;
local beam processing means for obtaining multifrequency local beam components from the local beam generated by the local beam generation means and spatially resolving the multi-frequency local beam components to obtain spatially resolved beams with mutually different frequencies;
photo-detector means for receiving the optical signal entered by the input means and the spatially resolved beams



obtained by the local beam processing means simultaneously to obtain an interference fringe pattern; and
analyzer means for reconstructing the optical signal by Fourier analyzing the interference fringe pattern obtained by the photo-detector means.

5,390,043

COMPRESSED CHANNEL SPACING FOR OPTICAL HETERODYNE COMMUNICATION SYSTEMS

Vincent A. O'Byrne, Boston, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 12, 1991, Ser. No. 654,153
Int. Cl.[6] H04B *10/06*
U.S. Cl. 359—191 **32 Claims**

24. In an optical heterodyne system, having a transmitter and a receiver including a local oscillator, a method for transmitting an optical signal including a plurality of optical channels, comprising the steps of:
a) grouping pairs of optical channels together to form blocks, wherein the optical channels are spaced within said blocks such that optical interference does not exceed an predetermined at the receiver after heterodyning the optical signal with a lightwave from the local oscillator, and wherein a spacing between blocks is such that interference from adjacent optical channels with the selected optical channel when heterodyned with the local oscillator lightwave does not exceed a predetermined level;
b) transmitting the optical signal to a receiver;
c) where a lower frequency optical channel in a block is a selected channel to be received by the receiver, negatively displacing the selected channel to a lower frequency relative to the lower frequency channel by the frequency of the local oscilator; and
d) where a higher frequency optical channel in the block is a selected channel to be received by the receiver, posi-

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tively displacing the selected channel to a higher frequency relative to the higher frequency channel by the frequency of the local oscilator.

5,390,044

CIRCULAR ARC ILLUMINATION APPARATUS

Tatsuo Ito, Osaka; Toshiyuki Watanabe, Neyagawa, and Masaki Suzuki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 2, 1993, Ser. No. 70,686
Claims priority, application Japan, Jun. 3, 1992, 4-142322
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—212 **8 Claims**



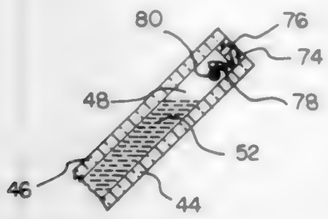
1. A circular arc illumination apparatus comprising:
a light source device;
a condensing optical system for condensing rays emitted by the light source device; and
a scanning optical system for transmitting the rays to an object to be scanned, the scanning optical system including a driving device, a rotating mirror driven by the driving device, an angular velocity detecting device for detecting an angular velocity of the rotating mirror, a controller for controlling the driving device based on an angular velocity of the rotating mirror detected by the angular velocity detecting device so as to vary the angular velocity in one time scanning, and a circular arc-shaped bending mirror for reflecting scanning rays reflected by the rotating mirror to the object, the bending mirror having an axis coincident with a rotary axis of the rotating mirror.

5,390,045

ADJUSTABLE WINDOW TINTING SYSTEM

Leroy A. Bernard, Jr., 4090 W. Lynwood Dr., Beaumont, Tex. 77703

Filed Jul. 9, 1993, Ser. No. 87,577
Int. Cl.[6] B60J *3/04*; G02F *1/15*
U.S. Cl. 359—275 **5 Claims**



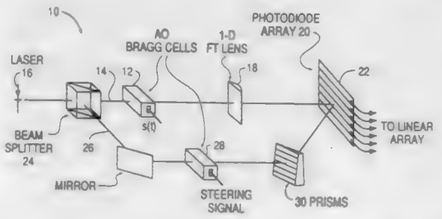
1. An adjustable window tinting system comprising:
a tinted fluid;
a pair of glass panes positioned in a spaced, parallel relationship so as to define a space therebetween;
sealing means coupled to both of said glass panes for permitting said fluid to reside within said space between said glass panes, said sealing means including a vent positioned along an uppermost portion thereof for permitting air to enter and exit said space;
a flexible sealing member mounted to said sealing means proximal to said vent, said flexible sealing member being positionable over said vent to close said vent;
a float member attached to said flexible sealing member, said float being buoyant relative to said fluid so as to position said flexible sealing member over said vent when said space is filled with said fluid;
a container for receiving said fluid, said container being in fluid communication with said space;
and,
a pumping means for selectively transferring said fluid from said container to said space.

5,390,046

TIME DELAY BEAM FORMATION

Leslie H. Gesell, and Terry M. Turpin, both of Columbia, Md., assignors to Essex Corporation, Columbia, Md.

Continuation-in-part of Ser. No. 806,697, Dec. 12, 1991, Pat. No. 5,202,776. This application Apr. 12, 1993, Ser. No. 45,062
Int. Cl.[6] G02F *1/11*
U.S. Cl. 359—287 **48 Claims**



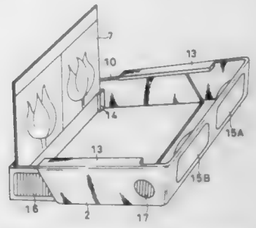
1. A system for generating at least one time delay signal from an input signal, comprising:
a source of coherent light,
beam splitter means for splitting the coherent light into a first leg and a second leg,
first modulation means associated with the first leg for modulating the coherent light with a modulation signal and for generating a modulated output signal, the first modulation means defining an image plane,
second modulation means associated with the second leg for modulating the coherent light with a steering signal,
optical element means associated with the second leg for receiving an input beam from the second modulation means at an incidence angle and for producing a plurality of reference waves having a plurality of orientations that are a function of the incidence angle,
a one-dimensional array of photodiodes arranged substantially in the image plane of the first modulation means,
means for imaging the modulated output signal of the first modulation means onto each of the photodiodes in the array,
means for focusing each of the plurality of reference waves produced by the optical element means to a corresponding plurality of reference spots on the photodiodes in the array, the orientations of the reference plane waves produced by the optical element means determining the locations of the reference spots on the photodiodes,
the array of photodiodes detecting interference between the modulated output signal associated with the first leg and the reference spots associated with the second leg and for producing an output signal corresponding to the detected interference,
whereby each photodiode produces an output signal corresponding to the modulation signal delayed by a time factor that is a function of the location of the reference spot on the photodiode.

5,390,047

STEREOVIEWER AND PACKAGE

Shigeo Mizukawa, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Apr. 16, 1993, Ser. No. 46,806
Claims priority, application Japan, Apr. 21, 1992, 4-033506[U]
Int. Cl.[6] G02B *27/04*
U.S. Cl. 359—466 **4 Claims**



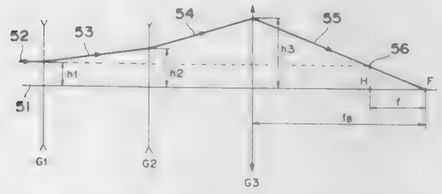
1. A stereoviewer and package, comprising:
a package including a box-shaped main body case having a space for accommodating stereoscopic photographs, and a lid case attached to said main body case in such a manner as to be horizontally slidable so as to open and close said package;
a holder portion attached to the rear surface of either of said main body case and said lid case so as to position and hold said stereoscopic photographs in a standing state;
binocular lenses provided on the front surface of the other case so as to view said stereoscopic photographs therethrough, thereby enabling the distance between said binocular lenses and said stereoscopic photographs to be changed by the sliding operation of both cases when the user views said stereoscopic photographs three-dimensionally; and
wherein said main body case is formed with the top surface open and said lid case with the bottom surface open, so that said lid case is attached upside down to said main body case when the user views said stereoscopic photographs.

5,390,048

PROJECTION LENS ASSEMBLY AND PROJECTION DISPLAY APPARATUS

Yoshito Miyatake; Yuichi Kimura, both of Neyagawa; Sinya Sannohe, Osaka, and Yoshimasa Fushimi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 1, 1992, Ser. No. 984,311
Claims priority, application Japan, Dec. 2, 1991, 3-317692; Dec. 2, 1991, 3-317693
Int. Cl.[6] G02B *9/12, 9/34, 13/22*
U.S. Cl. 359—650 **13 Claims**



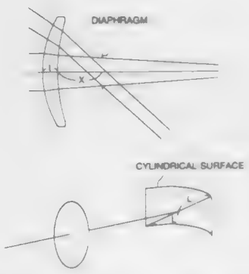
1. An optical system comprising: a screen; and a projection lens assembly which comprises a first lens group having a negative power, a second lens group having a negative power and a third lens group having a positive power, all arranged along the optical axis of the assembly in the foregoing order from one side of said screen, air space being left between the first and second lens groups and an air space being left between the second and third lens groups, each of said air spaces having a length along said optical axis greater than the entire thickness of the second lens group along said optical axis.

5,390,049

PHOTOGRAPHIC LENS

Nobuyoshi Mori, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Jul. 30, 1993, Ser. No. 99,557
Claims priority, application Japan, Aug. 6, 1992, 4-210389
Int. Cl.[6] G02B *9/00*
U.S. Cl. 359—739 **4 Claims**



1. A photographic lens for an image forming apparatus having an image forming surface and a diaphragm disposed between the lens and the image forming surface, the lens comprising:
a positive meniscus lens to form an image of an object on the image forming surface, the lens having a convex surface at its object side and a second surface facing the diaphragm, wherein the lens satisfies the following inequalities:

$$0.04 < t/L < 0.08 \text{ and } 0.1 < x/f < 0.15$$

wherein the length of a diagonal line of an image forming plane on the image forming surface is 2L, the lens thickness on the optical axis is t, the distance between the second surface of the lens and the diaphragm is x and the focal distance of the lens is f.

5,390,050

ECCENTRIC FRESNEL LENS SHEET AND METHOD OF MAKING SAME

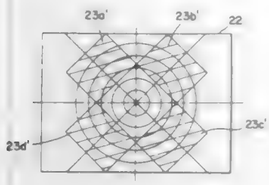
Haruyuki Yanagi; Nobuo Minoura, both of Yokohama; Katsumi Kurematsu, Kawasaki, and Hideaki Mitsutake, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 433,989, Nov. 9, 1989, abandoned. This application Jul. 6, 1993, Ser. No. 86,359
Claims priority, application Japan, Nov. 10, 1988, 63-284582; Oct. 31, 1989, 1-285895
Int. Cl.[6] G02B *3/08*; B29D *11/00*
U.S. Cl. 359—742 **5 Claims**

4. A method of manufacturing an eccentric Fresnel lens sheet, comprising the steps of:
forming a mold for a concentric Fresnel lens having an optical axis;
cutting the mold for the concentric Fresnel lens to produce

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a plurality of molds for eccentric Fresnel lens which is offset from the optical axis; and



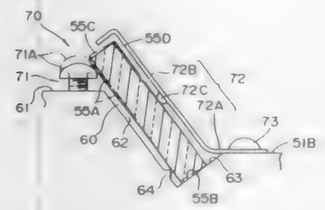
producing an eccentric Fresnel lens sheet by using each of the molds for eccentric Fresnel lens.

5,390,051

MIRROR ANGLE ADJUSTMENT STRUCTURE FOR OPTICAL SYSTEM

Taizo Saito, Okayama; Morio Takizawa, and Hirokazu Yoshino, both of Saitama, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1992, Ser. No. 872,837
Claims priority, application Japan, Apr. 24, 1991, 3-59325[U]
Int. Cl.[6] G02B *7/182*; A47G *1/24*
U.S. Cl. 359—872 **21 Claims**



1. A mirror angle adjustment structure for an optical system for adjusting an angle of a mirror having a reflection surface comprising:

a support projection, abutting against the reflection surface of said mirror, and projected from a mirror support member at a position corresponding to an end along the lengthwise direction of said mirror;

an adjustment screw member, abutting against the reflection surface of said mirror, and disposed at another end of said mirror, said adjustment screw member threadably engaged with said mirror support member and comprising a rounded head portion with a turning operation groove defined at a center thereof, said rounded head portion positioned to engage said mirror, said adjustment screw member being turned when said turning operation groove is engaged and turned by a driver; and

urging means for urging said mirror towards said support projection and said adjustment screw member, wherein an angle of said mirror can be adjusted by turning said adjustment screw member.

5,390,052

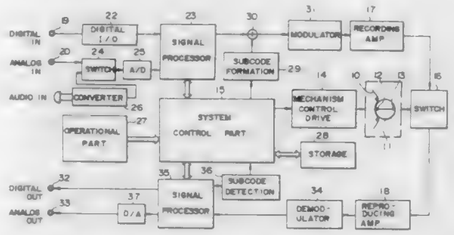
METHOD OF RECORDING/REPRODUCING TABLE OF CONTENTS IN DIGITAL MAGNETIC TAPE RECORDING/REPRODUCING APPARATUS

Hiroaki Kato, and Yanabe Junji, both of Sanda, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,060
Int. Cl.[6] G11B *5/00, 5/09, 5/76*
U.S. Cl. 360—32 **36 Claims**

1. A recording method for recording a table of contents (TOC), in a digital magnetic tape apparatus, in which a head performs a helical scan of a magnetic tape to form tracks and each track includes a pulse code modulation (PCM) area for recording digital data and a subarea for recording a digital subcode signal representing information about the digital data, comprising the steps of:

writing a reproduction skip signal in subarea, in response to activation of a TOC button, to thereby inhibit reproduction of signals recorded in a subsequently consecutive area of the tape during a normal reproduction of the recorded digital data; and



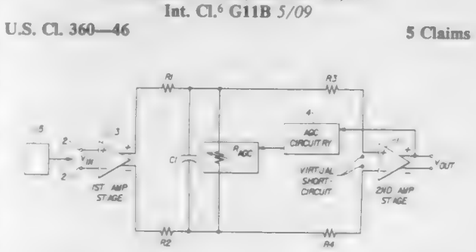
recording a TOC signal in the PCM area, on a consecutive area of the tape subsequent to the written reproduction skip signal, by audio input.

5,390,053

CIRCUIT FOR CONTROLLING THE OVERALL UPPER CUTOFF FREQUENCY OF AN AMPLIFIER STAGE

John S. Averill, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 22, 1993, Ser. No. 95,971
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—46 **5 Claims**



1. A circuit for controlling the overall upper cutoff frequency of an amplifier stage comprising:

input means for receiving an input signal, the amplitude of which is proportional to the frequency of said input signal;

amplifier means for providing an amplified output signal; and

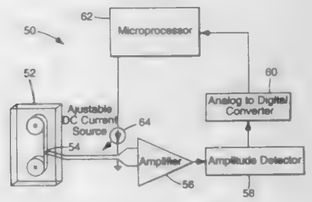
bandwidth tracking means located between said input means and said amplifier means, said bandwidth tracking means comprised of a low-pass filtering stage, a voltage divider network and a capacitance across said voltage divider network, said bandwidth tracking means being controlled by servo means in response to the output of said amplifier means so that the amplitude of said amplified output signal remains substantially constant and so that the voltage divider network and capacitance are operative to vary the upper cutoff frequency of said low-pass filtering stage in a proportionate manner with the frequency of said input signal.

5,390,054

METHOD AND SYSTEM FOR MINIMIZING THE ERROR RATE OF A DIGITAL RECORDING SYSTEM BY PREDICTING THE OPTIMAL BIAS CURRENT

Robert Youngquist, White Bear Lake; Theodore Schwarz, Woodbury; Richard Molstad, St. Paul, and Tim Ngo, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 12, 1993, Ser. No. 30,800
Int. Cl.[6] G11B *5/03*
U.S. Cl. 360—66 **8 Claims**



1. A digital recording system, including:

means for applying a bias current through a magnetoresistive transducer;

means for changing the bias current;

means for measuring the amplitude of art output signal, E_o, produced by the transducer for each of the bias currents as a recorded magnetic media is transported thereby;

calculating means, responsive to the measured amplitudes, for predicting an optimized bias current for which the system error rate is minimized, wherein the calculating means predicts the optimized bias current by taking an average of: (1) the bias current for which the output signal amplitude is maximized, E_{omax}, and (2) the bias current for which the normalized output signal amplitude is maximized, E_{nmax}, wherein the normalized output signal, E_n, is derived by dividing each output signal, E_o, by its bias current; and

means, responsive to the calculating means, for signaling the changing means to adjust the bias current to the optimized bias current.

5,390,055

LOADING SYSTEM FOR TAPE CASSETTE IN RECORDING AND/OR REPRODUCING APPARATUS FOR STORING AND/OR REPRODUCING INFORMATION ON RECORDING MEDIUM TAPE STORED IN CASSETTE HOUSING

Masanori Maehara; Eiji Ohshima; Toshio Mamiya, and Yoshio Kusui, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

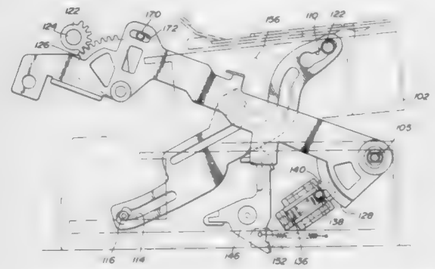
Continuation of Ser. No. 744,838, Aug. 13, 1991, abandoned, which is a continuation of Ser. No. 268,795, Nov. 9, 1988, abandoned. This application Aug. 2, 1993, Ser. No. 100,199
Int. Cl.[6] G11B *5/027*
U.S. Cl. 360—85 **21 Claims**

1. A magnetic tape cassette loading system having a mechanical chassis in which are provided a cassette tape holder capable of movement relative to a base plate of said mechanical chassis and a movable tape guide means for drawing a section of a magnetic tape from a tape cassette received in said tape cassette holder and arranging the magnetic tape in a predetermined tape path defined outside of a casing of said magnetic tape cassette, comprising:

retaining means for movably retaining said holder on said mechanical chassis of said tape cassette loading system to enable said holder to be movable through a predetermined path between a first position in which said tape guide means can draw a section of said magnetic tape from said tape cassette in said tape path, and a second position in which said cassette may be removed or inserted into said holder;

a cam defined on one of said tape cassette holder and said mechanical chassis and a cam follower defined on the other of said holder and mechanical chassis;

elastic pusher means for urging said cassette holder from said first position in the direction of said second position



while maintaining said cassette holder substantially parallel to said base plate; and

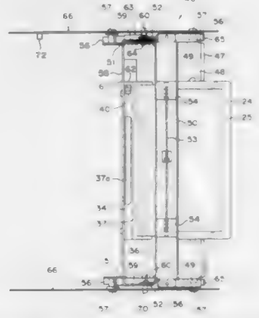
a first step means defined on said cam for elastically arresting movement of said holder caused by said pusher means at a third position of said holder, which third position of said holder is intermediate said first position and said second position.

5,390,056

RECORDING/REPRODUCING APPARATUS CAPABLE OF ACCEPTING TAPE CARTRIDGES OF DIFFERENT SIZES

Hideaki Kawada, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 17, 1993, Ser. No. 61,733
Claims priority, application Japan, May 19, 1992, 4-150162
Int. Cl.[6] G11B *5/008*
U.S. Cl. 360—94 **8 Claims**



1. A recording/reproducing apparatus provided with a tape cartridge holding device comprising:

cartridge holding means for holding a tape cartridge which includes a case provided with a mouth in its front portion, a recording tape medium held within the case with a portion thereof extending across the mouth, and a lid provided with a socket opening forwardly in its front surface, said lid being pivotally supported on the case at the front portion of the case so as to be turnable between a closed position where the lid covers the mouth and an open position where the lid opens the mouth;

a lid opening member including at least a first side portion pivotally supported on the cartridge holding means at a

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respective side of a tape cartridge held in the latter for turning about an axis of turning aligned with the axis of turning of the lid of the tape cartridge held in place on the cartridge holding means, and a laterally directed portion extending from the side portion of the lid opening member in front of said lid of a tape cartridge held in said cartridge holding means and provided with a projection capable of engaging in said socket of the lid from in front when the tape cartridge is held in place on the cartridge holding means; and

lid actuating means for turning the lid opening member about its axis of turning between a first position corresponding to the closed position of the lid and a second position corresponding to the open position of the lid.

5,390,057

CASSETTE LOADING APPARATUS

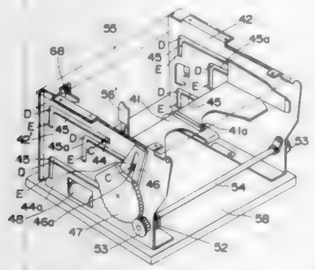
Akihiro Nishimura, Higashiosaka, and Masahiro Yao, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 27, 1990, Ser. No. 634,547

Claims priority, application Japan, Dec. 27, 1989, 1-342047; Jul. 5, 1990, 2-177740; Oct. 5, 1990, 2-269130

Int. Cl.[6] G11B *15/60*

U.S. Cl. 360—96.5 **7 Claims**



6. A cassette loading apparatus and a small tape cassette and a large tape cassette loadable by said cassette loading apparatus into a cassette playing position in a tape player;

said small cassette including a pair of reels spaced at a first distance, a cassette body accommodating the pair of reels and provided with a guiding means at the center between the reels, and front and rear lids connected with each other for covering a tape extending between the pair of reels at the front of the cassette body;

said large tape cassette including a pair of reels spaced at a second distance which is larger than said first distance, a cassette body accommodating the pair of reels and provided with a guiding means at the center between the reels, and front and rear lids connected with each other for covering a tape extending between the pair of reels at the front of the cassette body;

the rear lid of each of the small tape cassette and the large tape cassette having two projections thereon at points spaced along the length thereof, the points and spacing of said projections being the same on each tape cassette;

a cassette holding means in said cassette loading apparatus for holding either the small tape cassette or the large tape cassette and having cassette engaging-complementary guiding means for engaging the guiding means of either of the tape cassettes to guide either of the tape cassettes onto said cassette holding means;

a moving means in said cassette holding apparatus for moving said cassette holding means between a cassette loading position and a cassette playing position;

a lid opening means in said cassette loading apparatus for opening the front and rear lids of either the small tape cassette or the large tape cassette and positioned for engaging at least one of the projections provided on the rear lid of each of the small tape cassette and the large tape cassette when said cassette holding means moves from the cassette loading position to the cassette playing position; and

a further lid opening means in said cassette loading apparatus and positioned for engaging the front lid of only said large tape cassette when said cassette holding means moves from the cassette loading position to the cassette playing position for applying a force for opening the front lid of the large tape cassette simultaneously with a force applied to the front lid of said large cassette by said firstmentioned lid opening means through the rear lid of said large tape cassette connected to the front lid of said large tape cassette.

5,390,058

MAGNETIC HEAD ASSEMBLY WITH SPRING ARMS HELD ON ONE SIDE OF HEAD ARM

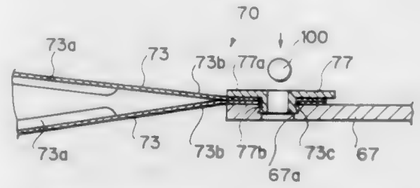
Akihiko Yamaguchi, Higashine, Japan, assignor to Fujitsu Limited, Japan

Filed Feb. 19, 1993, Ser. No. 19,760

Claims priority, application Japan, Feb. 26, 1992, 4-039297

Int. Cl.[6] G11B *5/48, 21/16*

U.S. Cl. 360—104 **8 Claims**



1. A magnetic head assembly in a magnetic disk apparatus comprising a plurality of coaxially arranged magnetic disks, with one of the adjacent magnetic disks having a first surface and the other disk having a second surface facing the first surface; said magnetic head assembly comprising:

first and second magnetic heads:

a first spring arm having first and second opposite flat end portions; the first spring arm carrying, at the first end portion thereof, the first magnetic head for access to the first surface of the magnetic disks;

a second spring arm having first and second opposite flat end portions; the second spring arm carrying, at the first end portion thereof, the second magnetic head for access to the second surface of the other magnetic disk;

a head arm extending from a rotatable support structure into a gap between the adjacent magnetic disks for supporting the first and second spring arms at the second opposite flat end portions for radial movement relative to the magnetic disks; and

a unitary holder having means for holding the second flat end portions of the first and second spring arms together so as to abut between one side of the head arm and the unitary holder; the unitary holder having an engaging portion extending through the first and second flat spring arm end portion and contacting the head arm; the engaging portion being permanently deformed to bite into the head arm and fix the unitary holder and second flat opposite end portions to the head arm, with the second flat opposite end portions fixed between the unitary holder and head arm.

5,390,059

FLYING HEAD SLIDER SUPPORTING MECHANISM HAVING ACTIVE AIR PRESSURE CONTROL

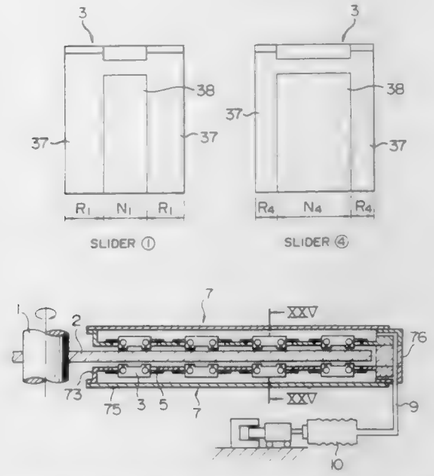
Mikio Tokuyama; Yuzo Yamaguchi; Katsuaki Kikuchi, all of Tsuchiura; Kousaku Wakatasuki, Ibaraki; Shoi Suzuki, Hamamatsu, and Yoshinori Takeuchi, Ishioka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 531,308, May 31, 1990, abandoned. This application Jul. 22, 1993, Ser. No. 95,420

Claims priority, application Japan, Jun. 1, 1989, 1-140006; Jul. 6, 1989, 1-174934

Int. Cl.[6] G11B *21/21*

U.S. Cl. 360—104 **2 Claims**



1. A flying head slider supporting mechanism comprising:

a rigid body spaced from a surface of a magnetic recording medium by a predetermined distance;

an air flow passage extending through said rigid body to a surface of said rigid body opposed to said magnetic recording medium;

means for generating either an air flow passing through said air flow passage toward said surface of said magnetic recording medium or an air flow passing through said air flow passage from said surface;

a read/write head for one of reproducing data recorded on said magnetic recording medium or recording the same on said magnetic recording medium;

a head slider disposed in said air flow and carrying said read/write head;

means for movably supporting said head slider movable relative to said rigid body in a direction perpendicular to said surface of said magnetic recording medium;

means for generating a relative movement between said head slider and said magnetic recording medium;

wherein a plurality of said head sliders are provided and are spaced from each other, said head sliders being respectively disposed in said airflow and respectively supported by said means for supporting, wherein said sliders are radially disposed with respect to each other, and wherein a width of a rail for generating positive pressure of one of said sliders disposed radially outwardly is less than or equal to a width of a negative pressure generating pocket of said one of said sliders and is less than a width of a rail of another one of said sliders disposed radially inwardly from said one of said sliders.

5,390,060

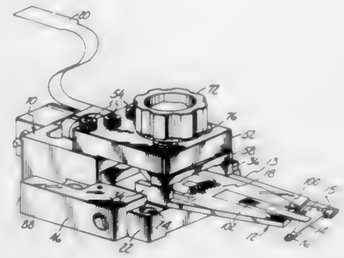
LOCK MECHANISM FOR RESTRAINING A HEAD OF A HEAD/ARM ASSEMBLY

John J. Pecha, Edina, and Mark A. Toffle, St. Louis Park, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Division of Ser. No. 53,953, Apr. 19, 1993, Pat. No. 5,323,284, which is a continuation of Ser. No. 664,202, Mar. 4, 1991, abandoned. This application Mar. 2, 1994, Ser. No. 204,654

Int. Cl.[6] G11B *5/54*

U.S. Cl. 360—105 **3 Claims**



1. A lock mechanism for restraining a head of a head/arm assembly of a disc drive having a planar disc, the head/arm assembly having a rigid arm, flexible support means supporting the head and mounted to the rigid arm, the flexible support means normally biasing the head to an operating position with respect to the disc, the lock mechanism comprising:

a lock arm having a length, the lock arm supported by the rigid arm and arranged to move substantially parallel with the length of the lock arm and the plane of the disc between a first lock arm position wherein a forward edge of the lock arm engages the flexible support means to restrain the flexible support means from biasing the head to its operating position, and a second lock arm position wherein the forward edge of the lock arm is free of the flexible support means; and

actuator means for moving the lock arm substantially parallel with the length of the lock arm and the plane of the disc between the first and second lock arm positions.

5,390,061

MULTILAYER MAGNETORESISTANCE EFFECT-TYPE MAGNETIC HEAD

Ryoichi Nakatani, Akigawa; Masahiro Kitada, Tokyo; Naoki Koyama, Kokubunji; Isamu Yuito, Ome; Hisashi Takano; Eijin Moriwaki, both of Hachioji; Mikio Suzuki, Kokubunji; Masaaki Futamoto, Kanagawa; Fumio Kugiya; Yoshibumi Matsuda, both of Hachioji; Kazuo Shiiki, Kanagawa; Yoshinori Miyamura, Tokyo; Kyo Akagi, Fuchu; Takeshi Nakao, Sagamihara; Hirotsugu Fukuoka, Hitachiota; Takayuki Munemoto, Ibaraki; Tokuho Takagaki, Yokohama; Toshio Kobayashi, Tokyo; Hideo Tanabe, Higashimurayama, and Noboru Shimizu, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 5, 1991, Ser. No. 710,775

Claims priority, application Japan, Jun. 8, 1990, 2-148643; Aug. 22, 1990, 2-218894; Aug. 22, 1990, 2-218904; Sep. 14, 1990, 2-242341

Int. Cl.[6] G11B *5/33*

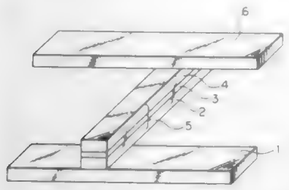
U.S. Cl. 360—113 **27 Claims**

1. A multilayered magnetoresistance effect element, comprising:

first and second magnetic layers;

an intermediate layer, including at least one of a group consisting of an insulating material, a semiconductor and an antiferromagnetic material, between said first and second magnetic layers to form a magnetoresistance effect multilayered structure; and

a first and a second electrode respectively disposed on the first and second magnetic layers of the magnetoresistance effect multilayered structure, for detecting a variation of an external magnetic field by sensing change of a voltage between the first and second electrodes via the magnetoresistance effect multilayered structure to detect an electrical resistance variation in the multilayered structure



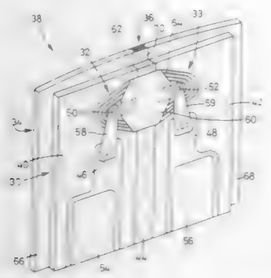
caused by electron spin-dependent scattering at layer-layer interfaces in the multilayered structure due to the external magnetic field variation, the first and second electrodes and the multilayered structure being arranged so that all current flows across the first magnetic layer-intermediate layer and second magnetic layer-intermediate layer interfaces, and in said intermediate layer.

5,390,062

THIN-FILM MAGNETIC CIRCUIT BOARD AND MAGNETIC HEAD USING THE SAME

Soichiro Matsuzawa, Kuwana; Yayo Akai, Nagoya, and Nobuhiro Terada, Kasugai, all of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 884,014, May 18, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 212,398
Claims priority, application Japan, May 21, 1991, 3-146917
Int. Cl.[6] G11B *5/147, 5/127*
U.S. Cl. 360—126 **10 Claims**



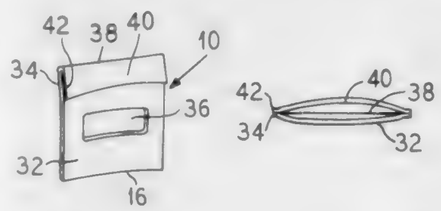
1. A thin-film magnetic circuit board comprising:
first and second planar substrates each comprising a magnetic material;
a non-magnetic layer interposed between the entirety of side surfaces of said first and second planar substrates, for bonding said first and second planar substrates to each other in juxtaposition such that said substrates are arranged in the same plane;
a pair of coils formed on each of said first and second planar substrates, respectively, said coils being formed from an electrically conductive film to provide a circuit pattern on said first and second planar substrates, each coil having a spiral shape and surrounding a predetermined blank portion formed on a surface of each of said first and second planar substrates;
a pair of leads which are electrically connected to opposite ends of said circuit pattern formed by said coils, said pair of leads being formed on said first and second planar substrates, respectively; and
a connector formed of a magnetic film, for magnetically connecting said first and second planar substrates, said connector extending between said first and second planar substrates such that the connector is fixed to said predetermined blank portion of said first and second planar substrates.

5,390,063

VIDEO CASSETTE PRESSURE FLAP

Michael J. Berg, Mount Prospect; Richard J. Ciochon, Chicago, and Jerome T. McGee, Arlington Heights, all of Ill., assignors to Plitek Corporation, Elk Grove Village, Ill.

Filed Mar. 19, 1991, Ser. No. 671,369
Int. Cl.[6] G11B *23/02*
U.S. Cl. 360—132 **14 Claims**



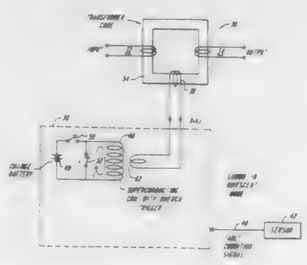
1. A pressure flap for limiting tape slack in a tape cassette holding a tape therein, said pressure flap comprising the following:
a generally planar body portion having a tape contact edge in contact with a flat side of said tape at a first end thereof, and a fold line at a second end thereof, said body portion being bowed in a geometric plane extending generally parallel to said fold line; and
a folded portion extending contiguously from said fold line of said body portion at a predetermined angle, said folded portion being bowed in a geometric plane extending generally parallel to said fold line;
said folded portion adapted to be fixed in position to said tape cassette, and said body portion flexibly cantilevered from said folded portion against said flat side of said tape.

5,390,064

CURRENT LIMITERS IN POWER UTILITY APPLICATIONS

Carl Russo, Loveland, Ohio, assignor to American Superconductor Corp., Westoborough, Mass.

Filed Jul. 7, 1992, Ser. No. 909,949
Int. Cl.[6] H02H *7/04;* **H02J** *3/06*
U.S. Cl. 361—35 **5 Claims**



1. A method of current limiting current transfer in a power utility transformer protected by a circuit breaker comprising the steps of

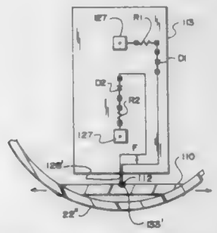
detecting a current fault condition causing dangerously high currents to pass through said transformer; and
applying sufficient current to a transformer core of said power transformer in response to a detected fault condition to bias it into a saturated state for sufficient time necessary to protect the transformer until operation of said circuit breaker.

5,390,065

TVSS METER ADAPTER STATUS INDICATOR

Edward F. Allina, and Stanley F. Allina, Jr., both of 605 Capri Blvd., St. Petersburg, Fla. 33706

Filed Jul. 19, 1991, Ser. No. 732,922
Int. Cl.[6] H02H *9/04*
U.S. Cl. 361—56 **1 Claim**



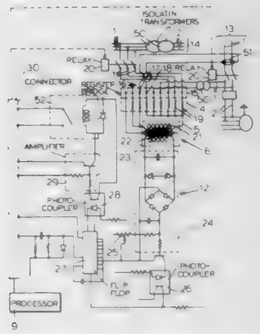
1. TVSS apparatus with a substantially cylindrical housing about on-line status indicator light-transmitting means comprising a translucent rod whose opposite end portions extend from the interior to the exterior through close-fitting bores in the housing.

5,390,066

PROTECTION DEVICE FOR ELECTRICAL APPLIANCES, MACHINES AND INSTALLATIONS

Henri Parrier, and Jean Parrier, both of 41 Rue Marius Poncet, F-69290 St. Genis Les Ollieres, France

PCT No. PCT/FR92/00099, § 371 Date Oct. 8, 1992, § 102(e) Date Oct. 8, 1992, PCT Pub. No. WO92/14291, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 4, 1992, Ser. No. 941,070
Claims priority, application France, Feb. 8, 1991, 91 01634
Int. Cl.[6] H02H *3/20, 3/06*
U.S. Cl. 361—59 **14 Claims**



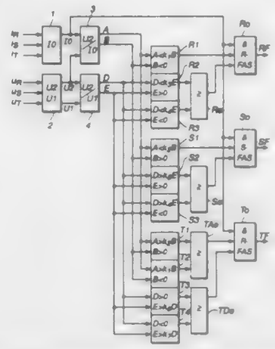
5. A protection device for an electrical machine appliance or installation, comprising:
a connect/disconnect switch connected between a plurality of supply lines and respective user lines to be protected and connectable to a load;
a resistor bridge connected through an isolation transformer to said user lines and having a connection point at a defined potential which is constant during a normal operation of said load;
an isolating amplifying circuit element having an input side connected across said connection point and a neutral point which can be at a ground potential, and an output side electrically isolated from said input side and outputting an amplified signal representing a potential difference between said points;
a threshold circuit connected to said output side of said isolating amplifying circuit element; and
a processor connected to an output of said threshold circuit and connected with said connect/disconnect switch for automatically disconnecting said user lines from said supply lines upon a variation of the potential difference detected by said threshold circuit, and for automatically reconnecting said user lines with said supply lines upon elimination of said variation of the potential difference detected by said threshold circuit.

5,390,067

PHASE SELECTION FOR GROUND FAULT

Leif Eriksson, Sala; Murari M. Saha, and Kjell Svensson, both of Västerås, all of Sweden, assignors to ASEA Brown Boveri AB, Vasteras, Sweden

Filed Feb. 23, 1993, Ser. No. 21,074
Claims priority, application Sweden, Mar. 20, 1992, 9200874
Int. Cl.[6] H02H *3/26, 3/40*
U.S. Cl. 361—79 **5 Claims**



1. A method for phase selection in the single-pole tripping of high-impedance ground faults in direct grounded 3-phase power networks based on the use of filtered and sampled discrete time values i_R, i_S, i_T and u_R, u_S, u_T of respective measured phase currents and phase voltages, comprising the steps of:
continuously obtaining the symmetrical components of zero-sequence current **I0** and positive-sequence and negative-sequence voltages **U1**, **U2**, respectively, which are expressed as complex numbers with one real part and one imaginary part, from said time values, measured phase currents and phase voltages;
forming a first ratio **U2/I0** as a complex quantity in the form of a real part A and an imaginary part B and a second ratio **U2/U1** as a complex quantity in the form of a real part D and an imaginary part E using said symmetrical components, and wherein:
(1) **U2/I0**=A+jB and
(2) **U2/U1**=D+jE and
determining a faulted phase when there is a zero-sequence current according to a first criterion with conditions based on said first complex quantity (1) and a second criterion with conditions based on said second complex quantity (2); and
initiating single-phase tripping when the same phase is indi-

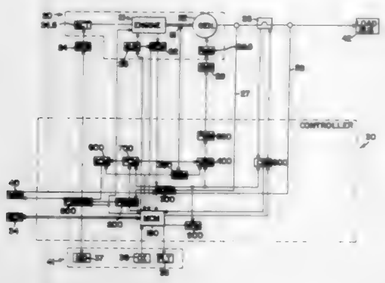
cated as being a faulted phase by both said first and second criterion.

5,390,068

MICROPROCESSOR BASED INTEGRATED GENERATOR SET CONTROLLER APPARATUS AND METHOD

Mark H. Schultz, Shoreview, and David J. Koenig, Wyoming, both of Minn., assignors to Onan Corporation, Minneapolis, Minn.

Division of Ser. No. 639,131, Jan. 9, 1991, Pat. No. 5,168,208, which is a division of Ser. No. 191,560, May 9, 1988, Pat. No. 5,006,781. This application Jul. 27, 1992, Ser. No. 919,899
Int. Cl.[6] H02H *7/06;* H02P *9/00*
U.S. Cl. 361—95 13 Claims



1. A circuit interrupter system for opening a switch in line between an electrical generator and an electrical load bus in accordance with particular interrupt data by monitoring an electrical characteristic of the waveform provided by the generator to the load bus, the system comprising:

(a) interrupt data memory means for storing interrupt data in a predetermined data format, the interrupt data including comparison values associated with the monitored electrical characteristic and values of time corresponding to said comparison values;

(b) data processing means, cooperatively connected to said interrupt data memory means, the generator and the switch, including:

(i) means for monitoring the electrical characteristic of the waveform;

(ii) first comparison means for comparing iteratively said comparison values and the electrical characteristic of the waveform;

(iii) means for selectively incrementing or decrementing a plurality of timer values, each of which is associated with one of said comparison values, based on the result of said first comparison means;

(iv) second comparison means for comparing, for each comparison value, the corresponding timer value and value of time stored in said interrupt data memory means; and

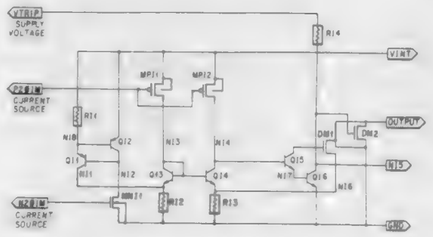
(v) means for opening the in line switch based on the results of said second comparison means, whereby the generator is isolated from the load bus by the in line switch being opened.

5,390,069

SHORT CIRCUIT LIMIT CIRCUIT WITH TEMPERATURE-DEPENDENT CURRENT LIMIT

Andrew Marshall, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 726,473, Jul. 8, 1991, abandoned. This application Sep. 24, 1993, Ser. No. 126,726
Int. Cl.[6] H03K *17/30*
U.S. Cl. 361—103 11 Claims



1. A current limit circuit, comprising:

an output transistor having a current path connected to a first output node;

a sensing circuit connected to said output transistor for producing a current that is proportional to the current in the current path of the output transistor;

a current reference circuit for producing a reference current, said reference current being a function of temperature;

a comparator having a first input for receiving said current produced by said sensing circuit, a second input for receiving said reference current, and a comparator output, said comparator comparing said current produced by said sensing circuit with said reference current to produce a control signal at said comparator output; and

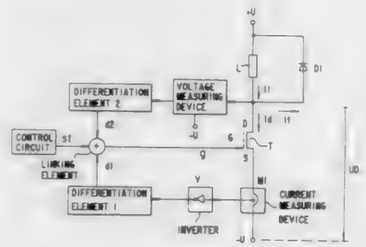
a control circuit connected to a control electrode of said output transistor and responsive to said control signal for controlling a voltage at the control electrode of said output transistor to limit current through said current path of said output transistor.

5,390,070

CLOCKED POWER END STAGE FOR INDUCTIVE LOADS

Ernst Niedermeier, Neutraubling, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 13, 1992, Ser. No. 867,764
Claims priority, application European Pat. Off., Apr. 11, 1991, 91 105787
Int. Cl.[6] H01H *47/32;* G05F *1/575*
U.S. Cl. 361—152 9 Claims



1. A clocked power end stage, comprising:

an inductive load;

a free-wheeling circuit connected to said load;

a switch device having repetitive transitions between ON and OFF states, said switch device being connected to said load at a connection point disposed between said switch device and said load; a voltage source having a first pole connected to said load, and a second pole connected to said switch device, forming a series circuit through said load and said switch device; wherein said connection point has a voltage UD measured to said second pole;

a control circuit for generating a control clock signal for said switch device;

current measuring means connected to said switch device for measuring a load current flowing through said switch device for generating a current output signal proportional with the load current;

a first differentiation device with a predeterminable time constant being connected to said current measuring means for generating an output signal depending on a variation over time of the current output signal of said current measuring means;

voltage measuring means connected between said connecting point and said second pole, said voltage measuring means having an output providing an output voltage signal proportional with the voltage UD;

a second differentiation device with a predeterminable time constant having an input connected to said voltage measuring means for generating an output signal depending on a variation over time of the output signal of said voltage measuring means; and

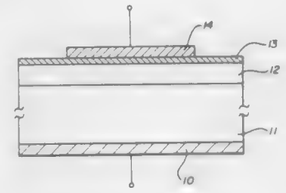
a linking element having respective inputs connected to said first and second differentiation devices, and to said control circuit; and an output connected to said switch device for superimposing the output signals of said differentiation devices on the control clock signal for limiting speeds of variation of the load current and the load voltage.

5,390,072

THIN FILM CAPACITORS

Wayne A. Anderson, Hamburg; Robert S. Hamilton, Youngstown; Quanxi Jia, and Zhiqing Shi, both of Buffalo, all of N.Y., assignors to Research Foundation of State University of New York, Albany, N.Y.

Filed Sep. 17, 1992, Ser. No. 945,891
Int. Cl.[6] H01G *4/10*
U.S. Cl. 361—313 37 Claims



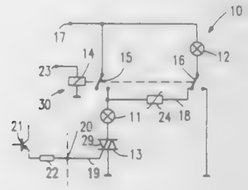
25. A high performance capacitor comprising first and second film layers of a dielectric material arranged in opposing juxtaposition, one said layer comprising said dielectric material in amorphous configuration, the other of said layers comprising said dielectric material in polycrystalline configuration, said opposing layers being arranged between upper and lower electrodes.

5,390,071

LOW INTERFERENCE CONTROLLED SWITCHING CIRCUIT FOR MULTIPLE LOADS

Reinhard Kersten, Aachen, Germany, and Martin Sonnek, St. Veit/GL, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1991, Ser. No. 712,229
Claims priority, application Germany, Jun. 22, 1990, 4019928
Int. Cl.[6] H01H *47/00*
U.S. Cl. 361—160 19 Claims



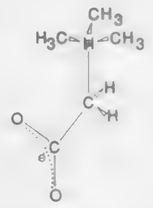
1. A circuit for controlling power to at least two loads from a source of AC supply voltage comprising: a bidirectional power semiconductor unit, switching elements, and a control unit for controlling operation of the power semiconductor unit and the switching elements so as to control the power consumption of the loads, characterized in that the control unit is adapted to control the power semiconductor unit and the switching elements so as to connect one or both loads to the power semiconductor unit via the switching elements in at least two power supply modes of operation.

5,390,073

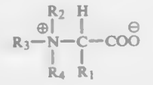
DIELECTRIC MATERIAL CONTAINING DIPOLAR MOLECULES

William G. McMillan, Los Angeles, Calif., assignor to Maxwell Laboratories, Inc., San Diego, Calif.

Filed Jan. 11, 1993, Ser. No. 2,916
Int. Cl.[6] H01G *4/04, 4/08*
U.S. Cl. 361—327 12 Claims



1. A capacitor including at least two electrodes separated by a dielectric material, wherein said dielectric material comprises at least one N-trialkyl substituted α-amino acid of the formula:



wherein R_1 is chosen from the group consisting of hydrogen and a non-polar group; and R_2, R_3, and R_4 are alkyl groups having no more than three carbon atoms.

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5,390,074

CHIP-TYPE SOLID ELECTROLYTIC CAPACITOR AND METHOD OF MANUFACTURING THE SAME

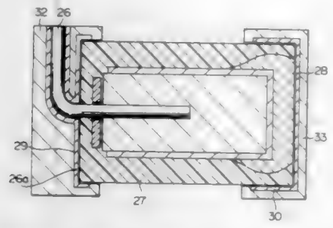
Nobuo Hasegawa; Sumio Nishiyama; Hideto Yamaguchi, all of Uji; Takashi Ida, Kyoto; Junichi Kurita, Yawata; Koji Ueoka, Neyagawa; Yasuhiro Kobashi, Yawata, and Hideo Hashimoto, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 23, 1992, Ser. No. 948,577

Claims priority, application Japan, Sep. 30, 1991, 3-250982; Sep. 30, 1991, 3-251085; Sep. 30, 1991, 3-251088; Sep. 30, 1991, 3-251089; Feb. 14, 1992, 4-027730

Int. Cl.[6] H01G *9/05, 9/24*

U.S. Cl. 361—540 12 Claims



1. A chip-type solid electrolytic capacitor comprising:
a capacitor element having a body, an anode lead wire implanted in the body so that one end of the anode lead wire extends from the body, and a cathode section on the body;
a resin shell which coats a portion of said capacitor element so that said anode lead wire and said cathode section are exposed, the resin shell having a surface roughened by both sandblast and chemical etching; and
an anode metal layer and a cathode metal layer, respectively, formed on said surface roughened by both sandblast and chemical etching to contact said anode lead wire and said cathode section, respectively.

5,390,075

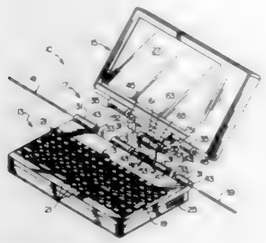
ELECTRONIC APPARATUS WITH FLEXIBLE CABLE INTERCONNECT HAVING INDEPENDENTLY MOVABLE MEMBER SUPPORTED ON TAB PORTIONS

John J. English, Hallstead, Pa.; Robert D. Loy, Whitney Point, N.Y.; Oswaldo A. Mantilla, Endicott, N.Y.; Walter Melnychenko, Johnson City, N.Y., and Roger J. Stockholm, Montrose, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 441, Jan. 4, 1993. This application Aug. 3, 1994, Ser. No. 285,365

Int. Cl.[6] H05K *7/16*; H01R *3/00*; H01B *7/24*; G06F *1/16*

U.S. Cl. 361—683 6 Claims



1. An electronic apparatus comprising:
a first portion including at least one electronic component;
a second portion including at least one electronic component, each of said first and second portions including a protruding tab segment;
hinge means pivotally connecting said first and second portions;
a movable member movably positioned on at least part of each of said first and second portions and including first and second openings therein, said movable member movably positioned on said tab segments of said first and second portions and adapted for independent movement with respect to said first and second portions and said hinge means during pivotal movement of at least one of said portions, said movable member being a separate member from said hinge means; and
a flexible cable for electrically interconnecting said electronic component of said first portion with said electronic component of said second portion, said flexible cable passing through said first and second openings of said movable member and engaging said movable member during said pivotal movement of said at least one of said portions to effect movement of said movable member.

5,390,076

COOLING STRUCTURE FOR INTEGRATED CIRCUITS

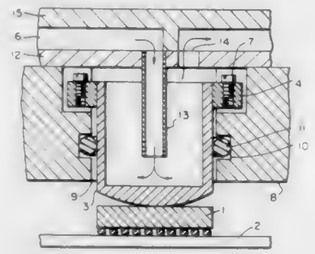
Kazuhiko Umezawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,739

Claims priority, application Japan, Jan. 22, 1992, 4-031634

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—689 6 Claims



1. A cooling structure for an integrated circuit, comprising:
a wiring substrate;
an integrated circuit mounted on said wiring substrate;
a housing having a hole;
a cylindrical piston for absorbing heat from said integrated circuit, said cylindrical piston being received in said hole of said housing, a lower surface of said cylindrical piston being in contact with said integrated circuit, said cylindrical piston having an open upper portion and a cavity for receiving a liquid coolant through said open upper portion;
a fixing means provided on an outer side surface of said cylindrical piston for adjusting a height of said cylindrical piston and for fixing said cylindrical piston to said housing by frictional contact with said housing; and
a nozzle for spraying said liquid coolant on a bottom surface of said cavity of said cylindrical piston.

5,390,077

INTEGRATED CIRCUIT COOLING DEVICE HAVING INTERNAL BAFFLE

Robert W. Paterson, Seneca, S.C., assignor to AT&T Global Information Solutions Company, Dayton, Ohio

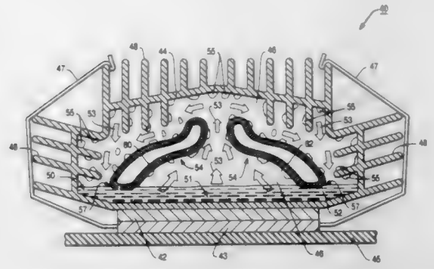
Filed Jul. 14, 1994, Ser. No. 274,937

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—700 11 Claims

1. An apparatus for cooling an integrated circuit device, comprising:

a container defining a chamber that is partially filled with a coolant which forms a coolant pool in the chamber, wherein heat generated by the integrated circuit device causes boiling of the coolant at a heating area of the coolant pool so that vaporized coolant rises upwardly from the coolant pool and condenses on a ceiling of the chamber forming coolant droplets thereon; and



a baffle positioned within the chamber and at least partially out of the coolant pool, said baffle further being positioned within a path traveled by the coolant droplets falling from the ceiling due to gravity, wherein said baffle is configured to guide the coolant droplets away from the heating area of the coolant pool as the coolant droplets fall from the ceiling towards the coolant pool due to gravity.

5,390,078

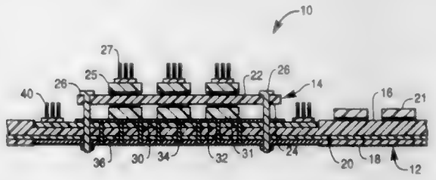
APPARATUS FOR USING AN ACTIVE CIRCUIT BOARD AS A HEAT SINK

Billy K. Taylor, Columbia, S.C., assignor to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Aug. 30, 1993, Ser. No. 113,464

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—721 4 Claims



1. A circuit apparatus comprising:
a first printed circuit board including a first copper layer, a second copper layer below the first copper layer, and a plurality of conducting vias connecting the first copper layer to the second copper layer;
a thermal conductivity layer on the first printed circuit board;
a second printed circuit board mounted on the first circuit board and having top and bottom surfaces and including circuit elements on both the top and bottom surfaces, wherein the circuit elements on the bottom surface contact the thermal conductivity layer; and
a cooling source which forces air over the first circuit board;
wherein the first printed circuit board has a thermal mass large enough to absorb heat from the second circuit board and spread heat generated from both the first and second circuit boards.

5,390,079

TAPE CARRIER PACKAGE

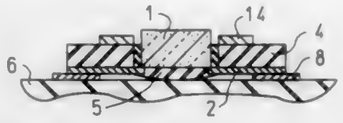
Kokichi Aomori, Chiba; Michiharu Honda, and Toshihiro Okabe, both of Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,706

Claims priority, application Japan, Sep. 10, 1991, 3-230387

Int. Cl.[6] H05K *1/00*

U.S. Cl. 361—749 2 Claims



1. A tape carrier package comprising:
a base film defining a device hole therein;
leads formed on a first side of said base film, said leads having outer lead portions to be bonded to a substrate and inner lead portions extending into said device hole; and
a support member arranged on a second side of the portion of said base film that is between said inner lead portions and said outer lead portions.

5,390,080

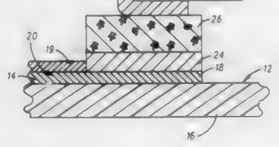
TIN-ZINC SOLDER CONNECTION TO A PRINTED CIRCUIT BOARD OF THE LIKE

Cynthia M. Melton, Bolingbrook, and Linda Weitzel, Barrington, both of Ill., assignors to Motorola, Schaumburg, Ill.

Filed May 3, 1993, Ser. No. 57,233

Int. Cl.[6] H05K *1/16*

U.S. Cl. 361—765 8 Claims



1. An electronic package comprising
a substrate comprising a first faying surface formed of copper metal,
a component comprising a second faying surface, and
a solder connection bonding the first faying surface and the second faying surface, said solder connection comprising a first layer formed of a substantially zinc-free tin-base metal and bonded to the first faying surface and a second layer formed of a tin alloy containing zinc and fused to the first layer.

5,390,081

FAULT-TOLERANT POWER DISTRIBUTION SYSTEM FOR RACK-MOUNTED HARDWARE

Keith St. Pierre, Stow, Mass., assignor to Stratus Computer, Inc., Marlboro, Mass.

Filed Mar. 22, 1993, Ser. No. 34,145

Int. Cl.[6] H01R *9/00*

U.S. Cl. 361—775 19 Claims

1. System for delivering power to a plurality of electronic cards, said cards having electrical contacts in a common physical pinout for receipt of system power, said system comprising
A. power plate means, comprising
i) a first power-carrying bus plate for coupling to a first power source, and

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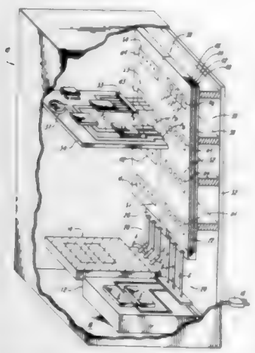
ii) a second power-carrying bus plate for coupling to a second power source,

B. port means comprising a plurality of ports for receiving said plurality of electronic cards, each said port including:

i) a primary power contact at a primary position,

ii) a secondary power contact at a secondary position, and

iii) wherein said primary power contact and said secondary power contact are in said common pinout for interaction with said card electrical contacts, and



C. connection means for connecting said power plate means to said port means, said connection means connecting:

i) said first power-carrying bus plate to said primary power contact of a first one of said ports, and said second power-carrying bus plate to said secondary power contact of said first port, and

ii) said second power-carrying bus plate to said primary power contact of a second one of said ports, and said first power-carrying bus plate to said secondary power contact of said second port.

5,390,082

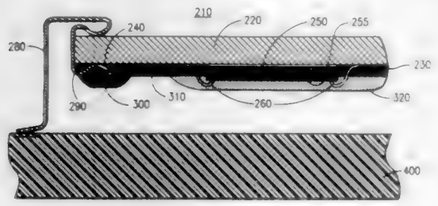
CHIP CARRIER WITH PROTECTIVE COATING FOR CIRCUITIZED SURFACE

Alan W. Chase, Little Meadows, Pa., and James W. Wilson, Vestal, N.Y., assignors to International Business Machines, Corp., Armonk, N.Y.

Continuation-in-part of Ser. No. 909,368, Jul. 6, 1992, Pat. No. 5,249,101. This application Aug. 3, 1993, Ser. No. 101,168

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—783 **6 Claims**



1. A chip carrier, comprising:

a substrate including a surface bearing electrical circuitry which includes at least one substrate contact pad;

at least one semiconductor chip mounted face-up on said substrate surface, said semiconductor chip including an upper surface bearing electrical circuitry which includes at least one chip contact pad;

at least one wire bond extending from said at least one chip contact pad to said at least one substrate contact pad, which wire bond serves to electrically connect the former contact pad to the latter contact pad; and

an encapsulant which covers and thereby encapsulates at least a portion of said electrical circuitry on said substrate surface and at least a portion of said at least one wire bond, Characterized In That

said encapsulant has an overall composition which includes a urethane and said overall composition is chosen so that said encapsulant exhibits a modulus of elasticity equal to or less than 10,000 psi at 25 degrees C.

5,390,083

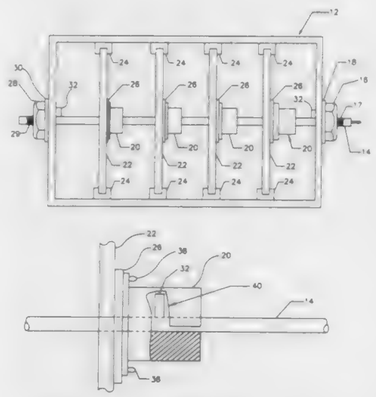
APPARATUS AND METHOD FOR STIFFENING CIRCUIT CARD ASSEMBLIES

Edmund C. Decker, Omaha, Nebr., and Richard A. Miller, Glendale, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 30, 1993, Ser. No. 129,518

Int. Cl.[6] H05K *7/14;* **H01R** *13/64;* **H01S** *4/00*

U.S. Cl. 361—796 **18 Claims**



1. An enclosure assembly comprising:

an enclosure means with interior and exterior surfaces;

at least one platelike structure with opposing first and second sides and a hole which passes through from the first side to the second side,

platelike structure positioning means within said enclosure for positioning and holding said platelike structures within said enclosure means in substantially a parallel fashion,

collar means for engaging an external structure mounted on each of said platelike structure in a location proximate to the hole through said platelike structure; and

a removable rigid attachment means with engagement pins that extend outward from said removable rigid attachment means, said removable rigid attachment means passes through each of said platelike structures and the engagement pins pass within and engage each of said collar means and rigidly attach each of said platelike structures to said enclosure means.

5,390,084

ILLUMINATION DEVICE

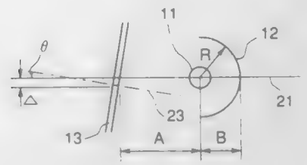
Motoyuki Ohtake, Omiya, and Koichi Ohshita, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed May 23, 1994, Ser. No. 247,231

Claims priority, application Japan, May 24, 1993, 5-144283; May 24, 1993, 5-144284

Int. Cl.[6] F21V *13/04*

U.S. Cl. 362—16 **9 Claims**



1. An illumination device comprising:

flash light means for radiating flash light;

reflection means, arranged on a side opposite to an object side with respect to said flash light means, for reflecting a light beam radiated from said flash light means, an optical axis of said reflection means and an optical axis of said flash light means being coaxial with each other, and defining a reference optical axis of said illumination device; and

a Fresnel lens, arranged on the object side with respect to said flash light means, for projecting a light beam directly radiated from said flash light means and a light beam reflected by said reflection means toward an object, said Fresnel lens having a substantially rotation-symmetrical shape with respect to a lens optical axis thereof, a surface, on the object side, of said Fresnel lens being a flat surface perpendicular to the lens optical axis, and the other surface thereof being a Fresnel surface,

wherein the lens optical axis is tilted by a predetermined angle from the reference optical axis, and a center of said Fresnel surface is shifted by a predetermined distance from a lens intersection as an intersection between the reference optical axis and said Fresnel surface, so that an offset of a light projection direction with respect to the reference optical axis due to the tilt of the lens optical axis is substantially compensated by an offset of the light projection direction with respect to the reference optical axis due to the shift of the lens center.

5,390,085

LIGHT DIFFUSER FOR A LIQUID CRYSTAL DISPLAY

Gerardo M. Mari-Roca, Boynton Beach; Lori Vaughn, Lake Worth; Jeffrey S. King, Boynton Beach, all of Fla.; Kevin W. Jelley, LaGrange Park, Ill.; Alan G. Chen, Schaumburg, Ill., and George T. Valliath, Buffalo Grove, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 19, 1993, Ser. No. 155,070

Int. Cl.[6] F21V *7/04, 7/22*

U.S. Cl. 362—31 **20 Claims**

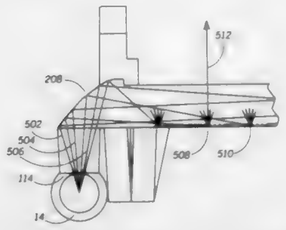
1. A light diffuser for illuminating a display comprising:

a rectangular light distributor, coupled to a light director located along an edge normal to a major axis of said light distributor, said light director for directing light received from a lamp into said light distributor;

said light distributor having a polished, planar top surface, and a bottom surface comprising a predetermined serration pattern oriented normal to said major axis of said rectangular light distributor;

said predetermined serration pattern comprising a plurality of grooves having a predetermined pitch gradient corresponding thereto;

said plurality of grooves further having roughened surfaces for diffusing light impinging thereon toward said polished, planar top surface; and



whereby the light impinging on said polished, planar top surface at less than a critical angle from said roughened surfaces of said grooves is coupled there through to uniformly illuminate the display.

5,390,086

MULTI-CHAMBER CHEMILUMINESCENT OPTICAL DISPLAY DEVICE

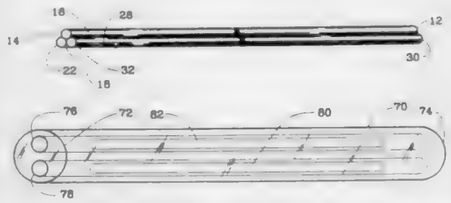
Stanley Holland, Northridge, Calif., assignor to Lexington & Associates, Inc., Northridge, Calif.

Continuation-in-part of Ser. No. 785,654, Oct. 31, 1991, Pat. No. 5,222,797. This application Jun. 21, 1993, Ser. No. 80,573

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[6] F21K *2/06*

U.S. Cl. 362—34 **13 Claims**



1. A multi-chamber chemiluminescent light device comprising:

a plurality of individual hollow elongated formable housings, each of said housings having a first end and a second end defining an interior chamber with one of an activator and an oxalate placed therein;

at least one ampule containing the other of said activator and said oxalate disposed within each of said chambers;

said formable housings being juxtaposed in a predetermined position to permit mixing of wavelengths produced by a chemiluminescent reaction upon mixing of said oxalate and said activator;

whereby one of said chambers providing a first visual wavelength and at least one other chamber produces a second visual wavelength, wherein juxtapositioning said housings permits placement of each chamber in a predetermined position providing a wavelength of distinct visual color ascertainable by the human eye, said distinct visual color being simultaneous and in addition to the chemiluminescently produced visual wavelength from each activated oxalate.

9. A multi-chamber chemiluminescent light device comprising:

an elongated flexible housing having a first end and a second end and a plurality of interior chambers extending longitudinally along at least a portion of said housing, each of said interior chambers containing one of an oxalate and an activator therewithin;

at least one ampule containing the other of said oxalate and

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said activator placed within each of said interior chambers;

said chambers being juxtaposed in a predetermined position to permit mixing in wavelengths produced by a chemiluminescent reaction upon mixing of said oxalate and said activator;

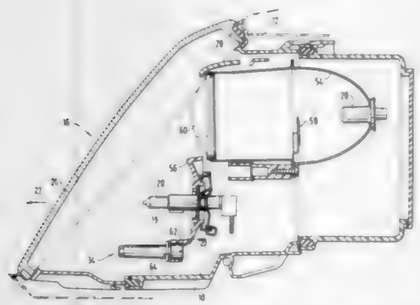
whereby one of said chambers contains a first oxalate and activator capable of chemiluminescently producing a first visual wavelength and at least one of said chambers contains a second oxalate and activator capable of chemiluminescently producing a second visual wavelength, wherein said chambers are juxtapositioned in a predetermined position providing a wavelength of distinct visual color ascertainable by the human eye, said distinct visual color being simultaneous and in addition to the chemiluminescently produced visual wavelength from each activated oxalate.

5,390,087

HEADLIGHT FOR VEHICLES

Hans Daumueller, Bodelshausen; Heinz Ruckwied, Kusterdingen-Wankheim, and Hans-Joachim Schmidt, Dusslingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 24, 1992, Ser. No. 996,659
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—61 5 Claims



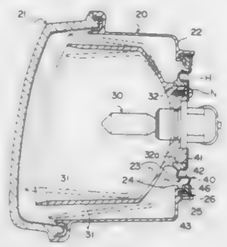
1. A headlight for a vehicle, comprising a housing having a light outlet opening; a transparent light disc covering said light outlet opening; at least one reflector arranged in said housing and provided with a curved reflecting inner surface so that the reflector being turnable relative to said housing at least in a vertical plane; and a water level for determining an inclined position of said reflector and visible through a part of said light disc from outside of the headlight, said water level being arranged in a region of said curved reflecting inner surface of the reflector and visible through a region of said light disc which extends over said light outlet opening of said housing transverse to the direction of light exiting the headlight, said reflector having an upper region for producing a low beam and a lower region for producing one of a high beam and a fog beam, said lower region of said reflector being provided with a console which extends in a direction of light exiting the headlight, said console being surrounded at least laterally and from above by said curved reflecting inner surface of said reflector, said water level being arranged on said console and protruding from the console in the direction of light exiting the headlight.

5,390,088

VEHICLE LAMP DEVICE

Hiroyuki Tsukada, Isehara, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Dec. 16, 1993, Ser. No. 167,146
Claims priority, application Japan, Dec. 16, 1992, 4-086469[U]; Jan. 22, 1993, 5-001357[U]
Int. Cl.[6] F21M *3/00*
U.S. Cl. 362—61 18 Claims



1. A vehicle lamp device comprising:

a housing having a rear wall, said rear wall having an opening formed therein;

a tiltable reflector disposed within said housing for reflecting light emitted from a light bulb supported thereon, said reflector having a rear portion, said rear portion having at least a part thereof disposed within said opening;

a gap in said opening defined by said at least a part of said rear portion and said rear wall;

an inner cylindrical wall disposed around said opening and supported by said rear wall;

a flange extending from said inner cylindrical wall in a direction toward a center of said rear opening;

an outer cylindrical wall extending from said rear wall, said outer cylindrical wall surrounding said inner cylindrical wall;

an annular groove disposed between said inner and outer cylindrical walls;

a rubber cover disposed in said gap, said rubber cover comprising an inner portion connectable to said at least a part of said rear portion, an outer cylindrical portion insertable into said annular groove, and a flexible portion between said inner portion and said outer cylindrical portion;

an annular space located within said annular groove, said annular space defined by said outer cylindrical wall and said outer cylindrical portion of said rubber cover, when said outer cylindrical portion is inserted into said annular groove;

a set ring member having at least one flat face thereon, said at least one flat face being in a clamping relationship with said flange to clamp said flexible portion therebetween when said ring member is supported by said outer cylindrical wall; and

an engagement projection extending from said outer cylindrical wall for supporting and holding said set ring member in said clamping relationship.

5,390,089

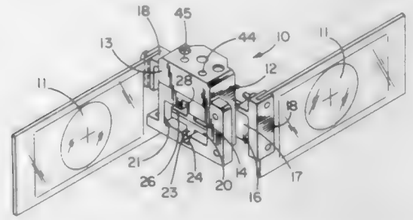
DUAL COORDINATE HEADLAMP ADJUSTER

Ronald S. Denley, Woodstock, Ill., assignor to Elco Industries, Inc., Rockford, Ill.

Filed Jun. 1, 1993, Ser. No. 69,737
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—66 7 Claims

1. A device for adjusting a headlamp component along first and second mutually perpendicular coordinates, said device comprising a housing, a carriage attachable to the headlamp component and supported by said housing to move linearly back and forth along each of said coordinates, a shaft supported by said housing for rotation about a predetermined axis

and for linear movement along said axis, an eccentric fixed to said shaft and operable when rotated to move said carriage along said first coordinate, said eccentric being operable when shifted along said axis to move said-carriage along said second coordinate, a first operating member coupled to said shaft and



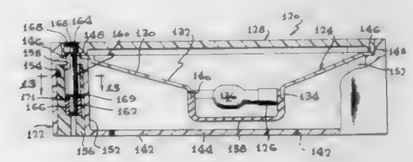
operable when rotated to rotate said shaft and said eccentric without moving the shaft and the eccentric linearly along said axis, and a second operating member coupled to said shaft and operable when rotated to cause said shaft and said eccentric to move linearly along said axis without rotating said shaft and said eccentric.

5,390,090

GROUND SUPPORTED LAMP

Larry J. Nau, 1733 Kinglett Rd., San Marcos, Calif. 92069

Continuation-in-part of Ser. No. 804,849, Dec. 9, 1991. This application Sep. 2, 1992, Ser. No. 939,140
Int. Cl.[6] E01F *9/04*
U.S. Cl. 362—153 16 Claims



1. A lamp for placement on a support surface which comprises:

an outer case having a top, sides and an interior, said outer case having a brick shape, and capable of insertion between bricks on said support surface, said lamp simulating a brick,

means forming an electric bulb housing supported in said outer case,

an electric bulb socket supported on said electric bulb housing,

a translucent lens supported on said electric bulb housing adjacent the top of said case, and closing the interior of said outer case,

means removably mounting said electric bulb housing and said translucent lens in said outer case, and

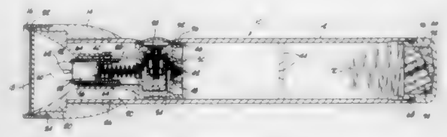
means in combination with said removably mounting means permitting expansion and contraction of said bulb housing and said translucent lens supported thereon in said outer case.

5,390,091

FLASHLIGHT AND BULB HOLDER THEREFOR

Anthony Maglica, Anaheim, Calif., assignor to Mag Instrument, Inc., Ontario, Calif.

Continuation of Ser. No. 91,071, Jul. 13, 1993, Pat. No. 5,315,494, which is a continuation-in-part of Ser. No. 866,714, Apr. 10, 1992, Pat. No. 5,226,722, which is a continuation-in-part of Ser. No. 719,156, Jun. 21, 1991, Pat. No. 5,113,326, which is a continuation-in-part of Ser. No. 553,977, Jul. 16, 1990, abandoned, which is a continuation of Ser. No. 356,361, May 23, 1989, Pat. No. 4,942,505, which is a continuation of Ser. No. 222,378, Jul. 19, 1988, Pat. No. 4,899,265, which is a continuation of Ser. No. 34,918, Apr. 6, 1987, abandoned, which is a continuation of Ser. No. 828,729, Feb. 11, 1986, Pat. No. 4,658,336, which is a continuation of Ser. No. 648,032, Sep. 6, 1984, Pat. No. 4,577,263, which is a continuation-in-part of Ser. No. 832,857, Feb. 7, 1992, Pat. No. 5,260,858. This application May 16, 1994, Ser. No. 243,471
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—207 7 Claims



1. A holder for a bulb, comprising

a peripheral wall;

an end wall closing one end of the peripheral wall;

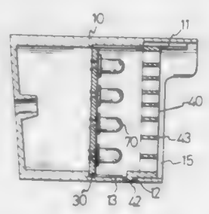
a slot to receive the bulb, the slot being defined in the end wall by a substantially U-shape resilient wall in cross section extending from the end wall to inwardly of the peripheral wall and being sized to receive the bulb in interference fit.

5,390,092

RECEPTACLE APPARATUS FOR LIGHT EMITTING DIODES

Sharming Lin, Taipei, Taiwan, Prov. of China, assignor to Formosa Industrial Computing Inc., Taiwan, Prov. of China

Filed Jun. 1, 1994, Ser. No. 252,360
Int. Cl.[6] F21V *17/06*
U.S. Cl. 362—235 2 Claims



1. A receptacle for light emitting diodes comprising

a housing defining an opening at one end and having a bottom at another end;

a circuit board from which a plurality of light emitting diodes extend being adapted to be received in substantially a middle inner periphery of the housing;

a hole being defined in a periphery of the housing;

a ridge being longitudinally formed along an inner periphery of the housing;

a stop being formed beside the ridge substantially in a same longitudinal level with the hole;

a light-resistant device including a ring frame across which a plurality of louvers are connected, a groove defined at an outer periphery of the ring frame, a snapping member

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being formed on the outer periphery of the ring frame diametrically opposite to the groove;

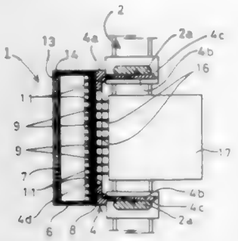
whereby the light-resistant device is positioned at substantially the opening of the housing, with the groove of the light-resistant device receiving the ridge of the housing and the snapping member of the light-resistant device being retained in the hole, a portion of the outer periphery defining the groove abutting against the stop of the housing.

5,390,093

ILLUMINATING DISPLAY DEVICE FOR USE WITH A MOSAIC PANEL

Tomiharu Himeno, and Shoji Kobsaka, both of Hyogo, Japan, assignors to K.C.C. Shokai Limited, Hyogo, Japan

Filed Feb. 18, 1994, Ser. No. 198,858
Int. Cl.[6] F21V *29/00*
U.S. Cl. 362—249 **4 Claims**



1. An illuminating device for use with a mosaic panel, comprising:

a base frame (**4**) having a plurality of flat legs (**4***b*) and a base seat (**4***a*) formed thereon of high thermal conductive material, each of the flat legs (**4***b*) penetrating through a square path (**3**) of a lattice-shaped, metallic grid (**2**) and making face-to-face contact with a partitioning wall (**2***a*) of the grid and further having an engaging claw (**4***c*) formed at one end thereof to engage the partitioning wall of the grid, the base seat (**4***a*) being located on a square path surface of the grid, and the base frame (**4**) being arranged to be mountable and removable from the grid and being made of a metal, wherein

a circuit board (**5**) on which a large number of light emitting diodes (**9**, **9**) are to be mounted is fixed at an upper face of the base seat (**4***a*) of the base frame, a reflector (**6**) having holes therein through which said light-emitting diodes (**9**, **9**) extend for reflecting light of said light-emitting diodes (**9**) forward is mounted on the circuit board (**5**), and an illuminating plate (**7**) having a light-pervious property is mounted a front end of the reflector (**6**) so as to be spaced from the light-emitting diodes (**9**, **9**) on the circuit board (**5**) at a specified interval.

5,390,094

ALL-WEATHER COLD-CATHODE LIGHTING ASSEMBLY

Jim Evanisko, Hasbrouck Heights, N.J., assignor to National Cathode Corp., New York, N.Y.

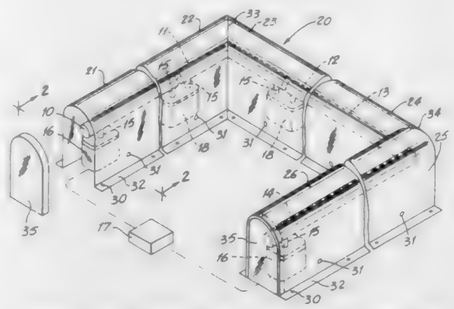
Filed Apr. 14, 1994, Ser. No. 227,454
Int. Cl.[6] F21V *29/00;* **F21S** *3/00*
U.S. Cl. 362—267 **6 Claims**

1. An all-weather cold-cathode lighting assembly comprising

(a) a series of elongated cold cathode lamp sections electrically interconnected and arrayed in a predetermined geometric configuration having a first end, at least one intermediate bend, and a second end;

(b) a series of spaced lampholders including single-socketed endmost feed lampholders supporting the first and second ends of the array and intermediate double-socketed lampholders supporting and electrically connecting adjacent intermediate end portions of the intermediate lamp sections;

(c) a weather-proof lens assembly comprising a plurality of elongated light transmissive thermoplastic housing sections having walls of generally inverted U-shaped cross



section, said housing sections being arrayed congruently with and substantially enclosing said series of lamp sections;

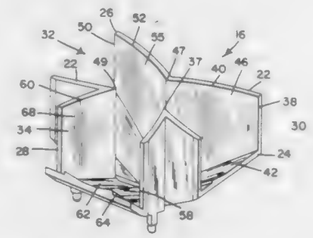
(d) said lens housing sections being butted and adhesively joined with clear cement to establish an effectively unitary lens having said predetermined geometric configuration.

5,390,095

VISUAL SIGNALING DEVICE

Thomas M. Lemons, Marblehead, and Mark J. Wierbilis, Marlboro, both of Mass., assignors to Space Age Electronics, Inc., Marlboro, Mass.

Filed Mar. 29, 1994, Ser. No. 219,278
Int. Cl.[6] F21V *7/06*
U.S. Cl. 362—301 **15 Claims**



1. A reflector for a luminous signaling device for reflecting light from an elongated light source, the source having a first end, a second end, and a horizontal central longitudinal axis, said reflector comprising;

(a) a socket for receiving the first end of the elongated source;

(b) three partial parabolic troughs, each trough having two opposed side surfaces, each side surface being parallel to the axis of the source, each trough having a cross-section, in a plane which is perpendicular to the axis of the source, which forms a portion of a parabola having a focus on said horizontal axis of the source;

(c) each trough having an input opening adjacent the source and an end output opening distant from the source;

(d) each trough having a back surface which is generally planar and which extends from each input opening adjacent the socket at an angle to the axis of the source in a direction toward the second end of the source to the respective end output opening;

(e) each trough having a front output opening which opposes said back surface;

(f) wherein each trough has a central axial plane, the central axial plane of two of the troughs being coplanar and passing through the axis of the source, the central axial plane of the third though being perpendicular to said coplanar central axial planes and also passing through the axis of the source; and

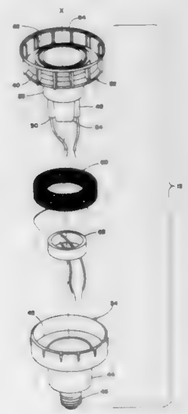
(g) all trough side walls and floors being polished and reflective.

5,390,096

REPLACEMENT COMPACT FLUORESCENT LAMP ASSEMBLY

Paul C. DeKleine, and Rick A. Perkins, both of Holland, Mich., assignors to Progressive Technology in Lighting, Inc., Holland, Mich.

Continuation-in-part of Ser. No. 964,928, Oct. 22, 1992. This application Jan. 22, 1993, Ser. No. 7,508
Int. Cl.[6] F21V *7/00*
U.S. Cl. 362—346 **23 Claims**



1. A replacement fluorescent lighting adaptor for adapting a fluorescent lamp to an incandescent lamp connector, said fluorescent lamp having a light generating tube, a base and electrical contacts on said base, comprising:

a housing having an annular wall extending around an axis of elongation;

said housing having a first outer longitudinal portion defined by said annular wall, an opposite second outer longitudinal portion defined by said annular wall, and a middle longitudinal portion defined by said annular wall and between said first and second outer longitudinal portions along said axis of elongation;

said first outer longitudinal portion including a reflective inner surface of said annular wall defining a light reflector;

said second outer longitudinal portion including a first contact assembly adapted to electrically connecting with incandescent lamp connector and a second contact assembly adapted to electrically connecting with contacts of a fluorescent lamp;

said middle longitudinal portion including a cavity defined by a cavity defining portion of said annular wall and an electrical ballast in said cavity, said ballast being electrically connected with said first and second connector assemblies; and

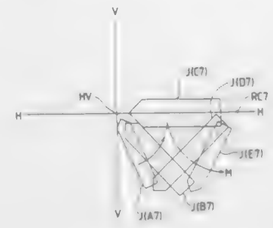
wherein said cavity defining portion of said annular wall is spaced from said first outer longitudinal portion of said housing in order to provide heat radiation surfaces on three sides of said cavity defining portion of said annular wall.

5,390,097

REFLECTOR FOR VEHICULAR HEADLIGHT

Naohi Nino, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 70,687, Jun. 2, 1993, abandoned, which is a division of Ser. No. 808,670, Dec. 17, 1991, Pat. No. 5,258,897. This application May 2, 1994, Ser. No. 236,248
Claims priority, application Japan, Jan. 25, 1991, 3-23830
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.[6] F21V *7/00*
U.S. Cl. 362—346 **5 Claims**



1. A vehicular headlight comprising a reflector having a plurality of continuously connected reflecting surfaces, and a light source with a longitudinal dimension along an optical axis of said reflector, said reflector comprising:

a first reflecting surface generally occupying an upper half of said reflector, and a second reflecting surface located below a boundary line with said first reflecting surface extending from a vertex of said reflector, said first and second reflecting surfaces being connected to each other at said boundary line, and being operative to contribute to formation of a pattern image below a cutline and a first half of a horizontal line of a low beam light-distribution pattern, said first and second reflecting surfaces being shaped so that:

a first image of said light source formed after reflection at a first point on said first reflecting surface immediately adjacent to the boundary line contributes to formation of said cutline, and a second image of said light source formed after reflection at a second point on said second reflecting surface immediately adjacent to said boundary line and below said first point is located immediately below a second half of said horizontal axis of said low beam light-distribution pattern and extends substantially in parallel with said first image, wherein said first and second points are located on an arbitrary vertical line obtained by cutting said first and second reflecting surfaces by a vertical plane in parallel with said optical axis.

5,390,098

HEADLAMP ADJUSTING MECHANISM

Bernard F. Reiland, 15 Crestwood La., Rockford, Ill. 61107

Filed Apr. 2, 1992, Ser. No. 862,438
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—421 **14 Claims**

1. A headlamp adjusting mechanism comprising:

a) a front housing half;

b) a back housing half, which together with said front housing half defines a housing;

c) a vertical cam extending between said housing halves, wherein said housing halves have portions defining a vertical cam cavity adapted to allow the vertical movement of said vertical cam and

d) a horizontal cam connected to a vehicle head lamp assembly via a horizontal stud for adjustment thereof;

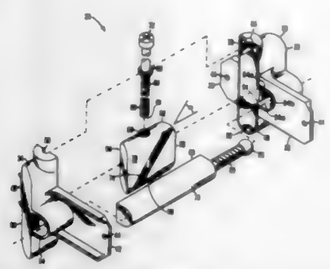
d) said horizontal cam engaged against said vertical cam and extending within said housing, wherein portions of said

housing define a horizontal cam cavity adapted to allow the horizontal movement of said horizontal cam;

e) an axially restrained vertical stud threadedly engaged with said vertical cam and extending outside said housing, such that rotation of said axially restrained vertical stud results in vertical displacement of said vertical cam;

f) portions of said vertical cam defining two faces which are inclined towards one another;

g) said front housing half defining an inclined front wall which engages against one of said inclined vertical cam faces;



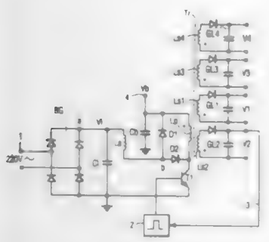
h) said back housing half defining an inclined back wall which engages another of said inclined vertical faces, such that when said front housing half is brought closer to said back housing half, said inclined housing walls are engaged against said inclined vertical cam faces to urge said vertical cam into tight engagement with said horizontal cam such that vertical movement of said vertical cam results in horizontal movement of said horizontal cam without backlash.

5,390,099

LINE-POWERED, PHASE-CONTROL CIRCUIT

Gerard Rilly, Unterkirnach, and Gerhard Morizot, Villingen, both of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Filed Apr. 7, 1993, Ser. No. 43,878
Claims priority, application Germany, Aug. 10, 1990, 4025322
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—16 5 Claims



1. A line-powered power supply circuit, comprising:

a source of an AC, mains supply voltage;

an inductance;

a rectifier coupled to said mains source for rectifying said mains supply voltage to develop a rectified supply voltage in said inductance without significant low pass filtering with respect to a frequency of said mains supply voltage;

a switching transistor operating at a switching frequency that is higher than that of said main supply voltage coupled in series with said inductance for generating current pulses in said inductance having magnitudes that vary significantly during a period of said mains supply voltage in a manner to increase a power factor associated with said mains source;

a charging capacitor;

a first diode coupled to said charging capacitor and to a junction terminal between said inductance and said transistor for coupling a charging current to said capacitor that is produced in said inductance from said current pulses;

a transformer having a primary winding that is coupled to said charging capacitor and to said transistor to form a switch mode power supply operating in a flyback manner; and

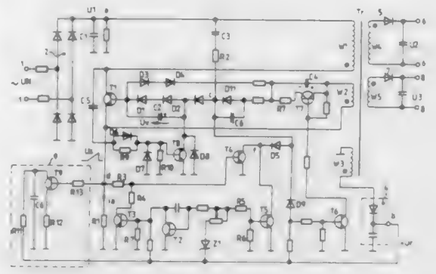
a second diode coupled to said junction terminal and to said transistor and poled to conduct in a direction of a main current path in said transistor for coupling said transistor to said inductance to generate said current pulses and for decoupling said inductance from said primary winding when said charging current is coupled to said capacitor.

5,390,100

FREELY OSCILLATING SWITCHED-MODE POWER SUPPLY

Jaromir Palata, Villingen, Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Filed Apr. 8, 1993, Ser. No. 43,714
Claims priority, application Germany, Apr. 14, 1992, 4212472
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—19 7 Claims



1. A freely oscillating switched-mode power supply comprising:

a transformer having a primary winding, a secondary winding for providing an output voltage, and a regulating winding for providing a measuring voltage;

a switching transistor, having a cutoff voltage and being coupled to said primary winding for controlling current therein;

means for generating a control voltage coupled to said measuring voltage;

first feedback means for varying said cutoff voltage responsive to said control voltage when said control voltage exceeds a first threshold value; and

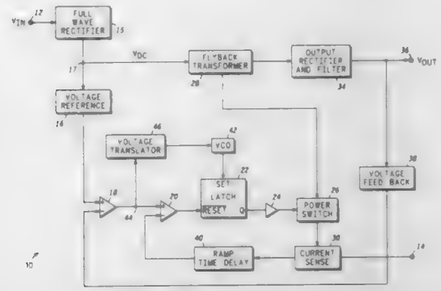
second feedback means responsive to said control voltage for initiating burst mode operation of said switching transistor when said control voltage exceeds a second threshold value.

5,390,101

FLYBACK POWER SUPPLY HAVING A VCO CONTROLLED SWITCHING RATE

Martin J. Brown, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1994, Ser. No. 177,689
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—20 18 Claims



8. A switching power supply for converting a first DC voltage to a second DC voltage, comprising:

a voltage reference circuit having an input coupled for receiving the first DC voltage and having an output for providing a reference voltage;

an error amplifier having first and second inputs and an output, said first input being coupled for receiving said reference voltage, said second input being coupled for receiving an output voltage feedback signal;

a comparator having first and second inputs and an output, said first input being coupled to said output of said error amplifier at a first node;

a voltage controlled oscillator having an input coupled to said first node and having an output;

a latching circuit having a set input, a reset input and an output, said set input being coupled to said output of said voltage controlled oscillator, said reset input being coupled to said output of said comparator;

a switching circuit having first and second conduction terminals and a control input, said control input being coupled to said output of said latching circuit;

a flyback transformer having first and second power terminals and a power control input, said first power terminal being coupled for receiving the first DC voltage, said second power terminal providing the second DC voltage, said power control input being coupled to said first conduction terminal of said switching circuit; and

a current sense feedback circuit coupled between said second conduction terminal of said switching circuit and said second input of said comparator.

5,390,102

PARALLEL RUNNING CONTROL APPARATUS FOR PWM INVERTERS

Hiroshi Araki, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

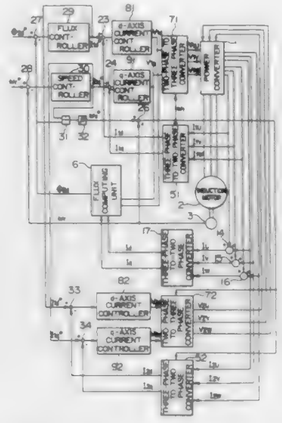
Filed Jun. 8, 1993, Ser. No. 73,038
Claims priority, application Japan, Jun. 9, 1992, 4-149132
Int. Cl.[6] H02M *7/5387*
U.S. Cl. 363—71 14 Claims

4. A parallel running control apparatus for PWM inverters which controls the parallel running of a plurality of unit inverters controlled in pulse width modulation to supply AC power to a load, output terminals of the unit inverters being connected to each other via interphase reactors, said apparatus comprising:

a current detecting means for detecting three phase AC currents output from the plurality of unit inverters;

a plurality of three-phase-to-two-phase converters each converting the three phase AC currents of one of the unit inverters detected by said current detecting means into a stator winding currents in a biaxial rotary coordinate system;

a compensating means for adding the stator winding currents converted by said plurality of three-phase-to-two-phase converters for each coordinate axis to compensate



the stator winding currents so as to eliminate components of circulating currents flowing between the plurality of unit inverters;

a control means for outputting current command values in the biaxial rotary coordinate system, respectively, to the plurality of unit inverters based on the stator winding currents compensated by said compensating means; and

a plurality of two-phase-to-three-phase converters for converting voltage command values output from said control means into three phase voltage command values.

5,390,103

SYNCHRONIZED PROGRAMMABLE CONTROLLER AND METHOD OF CONTROLLING THE SAME

Masami Sakakibara, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 763,590, Sep. 23, 1991, abandoned. This application Nov. 1, 1993, Ser. No. 144,609
Claims priority, application Japan, Sep. 26, 1990, 2-255985
Int. Cl.[6] G06F *15/46, 13/14*
U.S. Cl. 364—131 8 Claims

2. A programmable controller for controlling operation of an object device by cyclic execution of a user program, comprising:

a user memory for storing a user program;

first and second CPUs for performing independent cyclic executions of said user program;

a data RAM for storing input and output information for said object device;

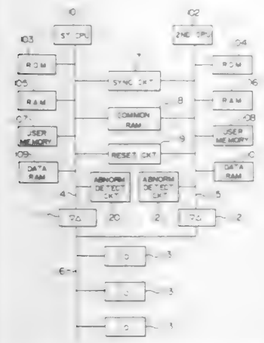
first and second interior buses coupled to said first and second CPUs, respectively, for transferring information between said first and second CPUs and said user memory and data RAM, respectively;

an input/output circuit for inputting and outputting data to and from said object device;

an input/output bus connecting said input/output circuit to said first and second interior buses; and

a synchronization circuit coupled to said first and second interior buses and detecting signals thereon for controlling

the timing of said independent cyclic executions of said user program by said first and second CPUs by providing a synchronization signal to one of said first and second CPUs in response to the execution of a predetermined



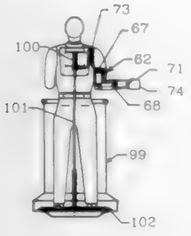
instruction of said user program by the other of said first and second CPUs as indicated by detection of a predetermined signal on a respective one of said first and second interior buses, so as to prevent simultaneous accesses to said input/output bus from the first and second CPUs.

5,390,104

ADAPTIVE CONTROL MAN-AUGMENTATION SYSTEM FOR A SUSPENDED WORK STATION

Francis M. Fulton, 20090 S. Mountain Rd., Santa Paula, Calif. 93060

Continuation-in-part of Ser. No. 503,379, Apr. 2, 1990, Pat. No. 5,196,998. This application Mar. 16, 1993, Ser. No. 31,956
Int. Cl.[6] B66F *11/04*; G06F *15/46*; G01C *9/06*
U.S. Cl. 364—167.01 9 Claims



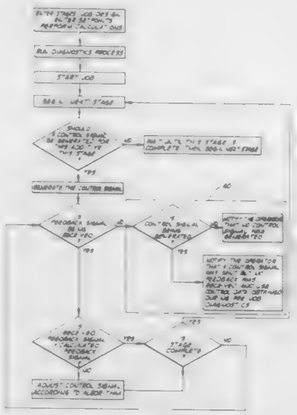
1. An adaptive control man-augmentation system for controllably moving a load manipulator, comprising:
- a support structure including at least one movable member supporting a load manipulation means;
- means for moving said at least one movable member to move said load manipulation means in preselected directions;
- means for continuously monitoring the position of said load manipulating means relative to a predetermined support structure coordinate;
- a directing member means including means for connection of said directing member to an operator's body part for movement therewith, said directing member means being an arm-mounted controller interface means;
- said arm-mounted controller interface means comprising trough-shaped sections attached to upper and lower arm sections respectively, and motion responsive means in said trough-shaped sections responsive to relative movement of said upper and lower arm;
- control means for determining movement of said directing member by said operator and resolving said movement relative to two axes normal to each other and in a substantially horizontal plane and having a substantially fixed relationship to said support structure;
- said control means including means for producing control signals related to the direction of said movement relative to said axes and related to the displacement of said directing member, to move said load manipulation means in the direction of said movement at a speed relative to said displacement, and further including a micro-processor adapted to receive signals produced by said operator's body part positioning and to generate said control signals, said micro-processor being programmable so as to transpose said operator's body reflex generated movements into precise work station movements, maintaining said load manipulator at a predetermined position.

5,390,105

METHOD AND APPARATUS FOR CONTROLLING A DEVICE

Thomas J. Worley; Charles E. Neal, III; Donald E. Bailey, and Vincent P. Rivera, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 1, 1992, Ser. No. 955,531
Int. Cl.[6] G06F *15/46*
U.S. Cl. 364—184 6 Claims



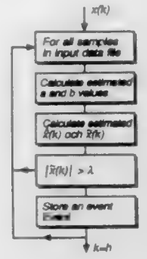
1. A method of controlling an apparatus with a control signal responsive to a feedback signal, comprising:
- detecting when a feedback signal is not being received;
- determining whether a control signal is being provided;
- adjusting the control to the apparatus depending on whether the control signal is being provided;
- testing the response of the apparatus, including providing predetermined test control signals to the apparatus and detecting responsive test feedback signals, wherein testing the response of the apparatus is performed by running a diagnostic program in a computer connected for controlling the apparatus and for storing data for later identifying respective test feedback signals with the predetermined test control signals; and
- wherein adjusting the control to the apparatus includes generating a fault-condition control signal corresponding to the test control signal that caused a selected respective test feedback signal to be detected.

5,390,106

ANALYSIS OF DISTURBANCES IN POWER SYSTEMS

Lars Cederblad, Västerås, and Roland Orre, Täby, both of Sweden, assignors to Asea Brown Boveri AB, Vasteras, Sweden

Filed Jun. 19, 1992, Ser. No. 901,233
Claims priority, application Sweden, Jun. 26, 1991, 9101966
Int. Cl.[6] G06F *15/22*; G08B *21/00*; H02H *3/20*
U.S. Cl. 364—401 5 Claims



1. A method for obtaining signal outputs signifying fault determinations of an electrical signal, represented by x(k), wherein said electrical signal has different states, with a state being defined by a constant amplitude (A) and a constant phase (0) relative to a given amplitude and phase reference, and each of said different states being caused by a raw event representing a disturbance in said electrical signal, comprising the steps of:
- detecting the actual state of said electrical signal;
- detecting the raw event causing a change of the state of said electrical signal;
- said steps of detecting the state and raw event including the step of sampling the electrical signal and operating with a truncated general Fourier series with an exponentially decreasing constant part to obtain an estimated error signal according to the equation:

$$x(k) = a_0 \exp(-b_0 k) + \sum_{i=1}^{N} [a_i \cos(i\omega k T_s) + b_i \sin(i\omega k T_s)]$$

- where, N=the number of terms in the truncated Fourier series; ω=the basic angular frequency of the input signal: T_s=the sampling time; and
- deriving an estimation error signal:

$$\varepsilon(k) = x(k) - \hat{x}(k)$$

as a difference signal between the actual electrical signal and said estimated error signal;
- detecting the occurrence of a raw event at sample k=h from said difference signal x(k) and the estimated coefficients a and b in a decision logic circuit when

$$|\varepsilon(k = h)| > \lambda$$

where:

$$\lambda = \delta \sqrt{[a^2(h-1) + b^2(h-1)]}$$

where δ is an accuracy coefficient depending on the desired accuracy in the step of detecting the raw event;
- detecting the amplitude (A) and phase (0) for each state of the different states of said electrical signal and which comprises samples k_1 to k_2 according to:

$$A = \sqrt{(a_m^2 + b_m^2)}$$

-continued

$$\phi = \arctan(b_m/a_m)$$

where:
m=(k1+k2)/2 and the event ΔA and Δφ according to:

$$\Delta A = \sqrt{(a_h^2 + b_h^2) - a_{(h-1)}^2 + b_{(h-1)}^2)}$$

$$\Delta\phi = \arctan b_h/a_h - \arctan(b_{(h-1)}/a_{(h-1)}); \text{ and}$$

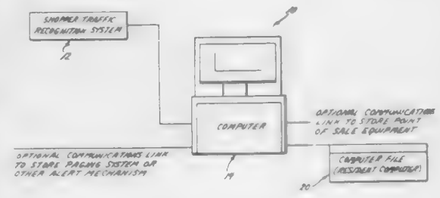
supplying the states A, φ, k=1, k=n and the events ΔA, ΔA, and k=h as respective signal outputs for determination of electrical faults on said electrical signal.

5,390,107

CHECKOUT LANE ALERT SYSTEM AND METHOD

John D. Nelson, Middletown, and Ronald G. Frey, Hackensack, both of N.J., assignors to Datatec Industries Inc., Fairfield, N.J.

Filed Apr. 28, 1993, Ser. No. 54,710
Int. Cl.[6] G06F *15/20*
U.S. Cl. 364—401 27 Claims



26. A computer implemented system for forecasting checkout lane traffic in a store, said system comprising:
- a recognition system to recognize shoppers as they enter the store and to generate data representing the entry time of each of said shoppers;
- a communication link between said recognition system and a computer so that said entry time data may be transmitted to said computer;
- a first distribution of shoppers being determined by said computer as said shoppers enter the store; and
- a second distribution of shoppers being generated by said computer, said second distribution generated from said first distribution and representative of a forecast of said shoppers' arrival times at said checkout lanes.

5,390,108

COMPUTER AUTOMATED BULLET ANALYSIS APPARATUS

Roman Baldur, Baie d'Urfe, and Michael R. Barrett, Pierrefonds, both of Canada, assignors to Forensic Technology Wai Inc., Montreal, Canada

Filed May 24, 1991, Ser. No. 705,122
Int. Cl.[6] G06F *15/20, 15/70*
U.S. Cl. 364—409 4 Claims

1. A method of comparing surface characteristics of a reference bullet with surface characteristics of a bullet under investigation, comprising:
- 1) obtaining, in an electronic processor, a band of electronic signals representative of the surface characteristics of a band around the reference bullet and the signature associated with said electronic signals;
- 2) obtaining, in an electronic processor, a second band of electronic signals representative of the surface character-

istics of a band around the bullet under examination and the signature associated with said electronic signals; each said band comprising a plurality of frames;

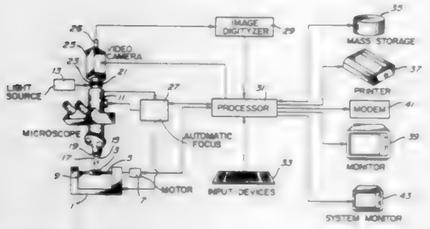
3) placing said bands in side-by-side arrangement such that the signature of a first frame of said first band is aligned with the signature of a first frame of the second band;

4) comparing the signatures of said first frame of said first band with the signature of said first frame of said second band on a segment-by-segment basis to obtain a correlation value between all segments of said frame;

5) advancing said second band by one segment such that a second frame of said second band is aligned with said first frame of said first band;

6) repeating step 4) with respect to said second frame of said second band and said first frame of said first band;

7) repeating steps 5) and 6) until all frames of said second band have been compared with said first frame of said first band to obtain a list of maximum correlation values and



selecting the maximum correlation value of said list of maximum correlation values;

8) advancing said first band so that the next frame of said first band is aligned with the first frame of said second band;

9) repeating steps 4) to 7) with respect to said next frame of said first band until all frames of said second band have been compared with said next frame of said first band;

10) repeating steps 4) to 9) until several frames of said first band have been compared with each frame of said second band and obtaining a list of maximum values of maximum correlation values;

11) aligning the two bands along the maximum value of maximum correlation values;

12) comparing the aligned bands on a segment-by-segment basis to obtain a correlation value for each segment;

13) obtaining a global correlation value by performing a mathematical calculation on the maximum values of the maximum correlation values obtained in step 12).

5,390,109

SENSOR FOR DETECTING LOCATION OF METAL BODY

Takatoshi Takemoto; Kazunari Kawashima, both of Tokyo, and Shigeru Handa, Hachioji, all of Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

PCT No. PCT/JP91/01611, § 371 Date Jul. 21, 1992, § 102(e) Date Jul. 21, 1992, PCT Pub. No. WO92/09344, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 25, 1991, Ser. No. 910,301

Claims priority, application Japan, Nov. 24, 1990, 2-320365

Int. Cl.[6] A63F *7/38*

U.S. Cl. 364—410 **6 Claims**

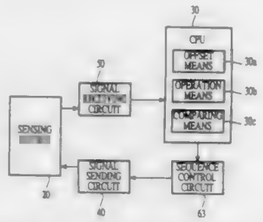
1. A sensor for detecting location of a metal body object characterized by comprising:

a magnetic sensing matrix comprised of matrix-arranged sensing units for sensing an object;

a driving means which drives the sensing matrix and receives a signal indicative of the state of each sensing unit; and

a detecting means which detects location of the object on the sensing matrix on the basis of the signal received by said driving means; and

said detecting means including an offset means which sequentially updates and memorizes a value of said received signal as an offset value at every sensing unit, an operation



means which operates a change in values between a value of a newly received signal and the offset value before updating, and a comparing means for comparing the change in values between the two with a preset value to detect the presence of the object.

5,390,110

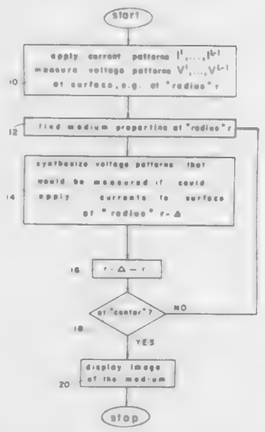
LAYER STRIPPING PROCESS FOR IMPEDANCE IMAGING

Margaret Cheney, Troy; David Isaacson, Latham, both of N.Y.; Erkki Somersalo, Helsinki, Finland, and Eli L. Isaacson, Laramie, Wyo., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Jul. 9, 1991, Ser. No. 727,075

Int. Cl.[6] G06F *15/42*; **A61B** *5/05*

U.S. Cl. 364—413.13 **6 Claims**



1. A method of creating an impedance image of a volume of a body, the volume having a selected number of finite dimensions and the volume varying in at least one of conductivity and permittivity characteristics in all of the selected number of finite dimensions, the body having an outer boundary the method comprising:

(a) applying a set of current or voltage patterns to the outer boundary to create actual resulting and-respective voltage or current patterns at the outer boundary;

(b) measuring the actual resulting and respective voltage or current patterns at the outer boundary;

(c) finding at least one of the conductivity and permittivity characteristics at the outer boundary of the body based only on the resulting patterns and information outer boundary;

(d) calculating synthesized resulting and respective voltage or patterns for a first inner boundary which is at a selected incremental distance inward of the outer boundary as a function of the measuring and finding steps only;

(e) finding said characteristics at the inner boundary of the body based on the calculated resulting patterns;

(f) calculating synthesized and respective voltage or current patterns for a second inner boundary of the body which is at the selected incremental distance inward of the first inner boundary as a function of the calculating step (d) and the

(g) repeating steps (e) and (f) for additional inner boundaries until the selected incremental distance inward reaches a selected depth in the body, the repeated calculating of step (f) also being a function of at least one previous step (f); and

(h) using said characteristics obtained to form an image of the body from the outer boundary to the selected depth.

5,390,111

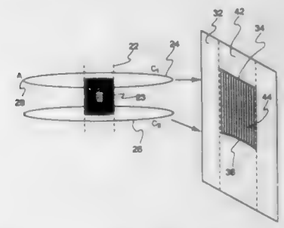
METHOD AND SYSTEM FOR PROCESSING CONE BEAM DATA FOR RECONSTRUCTING FREE OF BOUNDARY-INDUCED ARTIFACTS A THREE DIMENSIONAL COMPUTERIZED TOMOGRAPHY IMAGE

Kwok C. Tam, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 12, 1993, Ser. No. 150,901

Int. Cl.[6] G06F *15/42*

U.S. Cl. 364—413.14 **18 Claims**



1. A method of processing cone beam projection data for reconstructing substantially free of boundary-induced artifacts a three-dimensional (3D) image of at least a portion of an object using an inverse Radon transformation, said method comprising the steps of:

providing a mutually spaced cone beam source and a surface array detector in fixed relationship to one another;

using said source for irradiating at least said portion of said object positioned between said source and said detector within a field of view of said source;

moving both said source and detector relative to said object for scanning about said portion along a scan trajectory enclosing upper and lower extents of said portion by respective upper and lower scan paths joined therebetween by a predetermined connecting path;

identifying on said surface array detector a region selected to match a cone beam projection of said object bounded between respective similar projections of said upper and lower scan paths;

acquiring cone beam projection data at predetermined points situated along respective lines of integration traversing said identified region on said surface array detector;

identifying a rotation center shared by at least a pair of said lines of integration wherein said rotation center is selected for mapping within said identified region respective ones of said points situated along said line of integration pair;

retaining cone beam projection data acquired within said identified region; and

processing said retained data to reconstruct substantially free of boundary-induced artifacts a 3D image of said portion using said inverse Radon transformation.

5,390,112

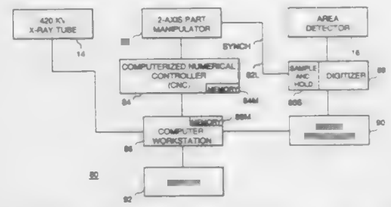
THREE-DIMENSIONAL COMPUTERIZED TOMOGRAPHY SCANNING METHOD AND SYSTEM FOR IMAGING LARGE OBJECTS WITH SMALLER AREA DETECTORS

Kwok C. Tam, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 4, 1993, Ser. No. 131,180

Int. Cl.[6] G06F *15/42*

U.S. Cl. 364—413.15 **30 Claims**



1. A scanning and data acquisition method for three dimensional computerized tomography (CT) imaging of an object in a field of view radially centered on a predetermined axis, the method comprising the steps of:

applying cone beam energy from a cone beam source to at least a portion of the object;

defining a source scanning trajectory as a path traversed by the source;

using the cone beam source fixed relative to an area detector with both source and detector movably positioned relative to the object to scan about the object;

specifying the source scanning trajectory as a helical path defining a plurality of mutually spaced stages on a predetermined geometric surface surrounding the field of view such that each plane passing through the field of view intersects the scanning trajectory in at least one point, the area detector having a predetermined dimension extending sufficiently along a direction generally parallel to the predetermined axis to span at least the two consecutive stages having the largest spacing therebetween, thereby obviating the predetermined dimension of the detector from fully spanning the field of view along the predetermined axis;

scanning at a plurality of positions along the source scanning trajectory to obtain cone beam projection data corresponding to respective portions of the object; and

using the cone beam projection data to provide a data set which can be reconstructed into an image of the object.

5,390,113

METHOD AND ELECTRONIC APPARATUS FOR PERFORMING BOOKKEEPING

Wesley C. Sampson, 4047 Newcastle Dr., Sylvania, Ohio 43560

Continuation-in-part of Ser. No. 505,061, Apr. 5, 1990, Pat. No. 5,212,639. This application May 7, 1993, Ser. No. 58,423

Int. Cl.[6] G06F *15/74*

U.S. Cl. 364—419.19 **25 Claims**

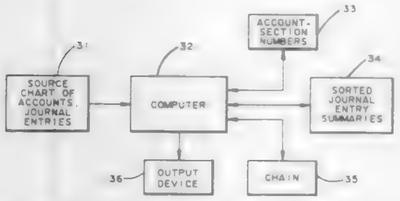
1. A method for electronically performing bookkeeping upon a plurality of accounting journal entries, said plurality of accounting journal entries comprising a parental set for a predetermined period of time, each journal entry of said plurality of accounting journal entries comprising a transaction identifier, at least one account number and at least one data

component associated with each said account number, each journal entry having been prepared based upon criteria associated with a particular definition within a predetermined chart of accounts, said method comprising the steps of:

(a) electronically reading said predetermined chart of accounts associated with said plurality of journal entries, said predetermined chart of accounts having at least one account number, each of said account numbers having an opening balance;

(b) creating a set of account-section numbers for each said account number;

(c) reading one of said plurality of journal entries and assigning one of said account-section numbers to each said account number in said journal entry;



(d) sorting said assigned account-section numbers along with said associated data components into a predetermined order;

(e) identifying a design corresponding to said predetermined order of said assigned account-section numbers and associated data components;

(f) checking stored design records for a record associated with said design and creating a design record for said design if no such record exists;

(g) adding said associated data component to an accumulated total for each said account-section number for design records corresponding to said stored design records, adding one to a tally representing the number of additions to said account-section numbers, and adding an entry number to a list for said design record; and

(h) repeating steps (c) through (g) for each journal entry.

5,390,114

ISOSTATICALLY CORRECTED GRAVITY DISPLAYS

David A. Chapin, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 13, 1993, Ser. No. 165,607

Int. Cl.[6] G06F *15/68*

U.S. Cl. 364—420 **6 Claims**



1. A method for producing isostatically corrected gravity displays using gravity measurements which have been corrected for latitude, free-air and Bouguer effects, comprising:

using said corrected data to determine the crustal density, ρ, at the atmosphere-crust interface by using fractal analysis of said data to determine the density which minimizes the topographic effect in the Bouguer correction;

using said data to determine the density contrast, $\Delta\rho$, between lower crust and mantle by cross plotting elevation versus Bouguer anomaly;

using said data to determine the crustal thickness, T, at sea level by using said data to create power spectra using grids of free-air gravity data and determining T from the slopes of the spectra;

using the values of ρ, $\Delta\rho$ and T so determined and the known elevation, h(x), at each location, x, of each gravity measurement to determine the depth to crust-mantle boundary at location **x**, t(x), according to the formula

$$t(x)=h(x)(\rho/\Delta\rho)+T;$$

using said values of t(x) to isostatically correct the gravity values and using said isostatically corrected values to generate an isostatically corrected gravity display.

5,390,115

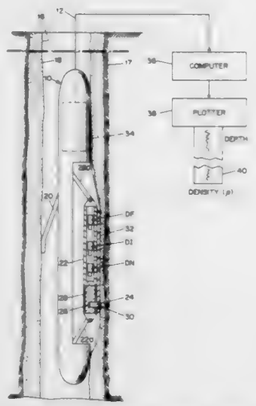
COMPENSATED GAMMA-GAMMA DENSITY SONDE USING THREE DETECTORS

Charles R. Case, West Redding, and Darwin V. Ellis, Ridgefield, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed May 10, 1993, Ser. No. 59,689

Int. Cl.[6] G06F *15/20*

U.S. Cl. 364—422 **8 Claims**



6. A method for determining the bulk density of an earth formation adjacent to a mudcake-lined borehole, comprising the steps of:

positioning a sonde in a borehole with a member thereof in engagement with a lengthwise portion of the borehole wall;

irradiating the formation with gamma rays from a gamma ray source on the member;

detecting gamma rays using three attenuation-type gamma ray detectors DN, DI and DF located on the member at fixed, successively greater distances, respectively, from the source;

generating a count rate signal representative of the intensity of the gamma ray radiation detected by each detector; and

processing the three detector count rate signals in accordance with a predetermined relationship, relating the respective detector count rate signals in calibration apparatus having formation materials of known bulk density and mudcakes of known thickness and bulk density to apparent values of formation bulk density, to derive a measurement of the bulk density of the formation corrected for mudcake thickness, the processing step including

processing the three detector count rate signals to derive respective values of the apparent formation bulk density ρ_N, ρ_I, and ρ_F as a function of mudcake thickness t_{mc};

combining signals representative of the respective apparent bulk density values ρ_N, ρ_I, and ρ_F to derive a measurement of mudcake thickness t_{mc}; and

combining signals representative of the mudcake thickness value t_{mc}, the near-detector apparent bulk density value ρ_N, and the far-detector apparent bulk density value ρ_F to derive the mudcake-corrected value of the formation bulk density.

5,390,116

SPEED CHANGE CONTROL METHOD AND APPARATUS FOR AN AUTOMATIC TRANSMISSION FOR VEHICLES TRAVELING UNDER VARIOUS ROAD CONDITIONS

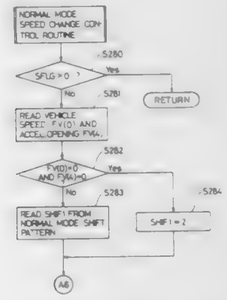
Kazuya Hayafune, Okazaki, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 851,190

Claims priority, application Japan, Mar. 13, 1991, 3-048335; Feb. 19, 1992, 4-032353

Int. Cl.[6] B60K *41/06*

U.S. Cl. 364—424.1 **11 Claims**



1. A speed change control method for an automatic transmission which is provided on a vehicle and which has a plurality of gear positions including a lowest-speed gearshift position, comprising the steps of:

(a) detecting a value of a parameter related to frictional resistance of a road surface on which the vehicle is traveling;

(b) detecting a start of the vehicle from a stop position; and

(c) prohibiting gearshift to said lowest-speed gearshift position if the frictional resistance of the road surface is judged to be low based on the value of the detected said related parameter at the time of detecting a start.

5,390,117

TRANSMISSION CONTROL WITH A FUZZY LOGIC CONTROLLER

Friedrich Graf, Regensburg; Gregor Probst, Landshut, and Hans-Georg Weil, Starnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 28, 1993, Ser. No. 84,344

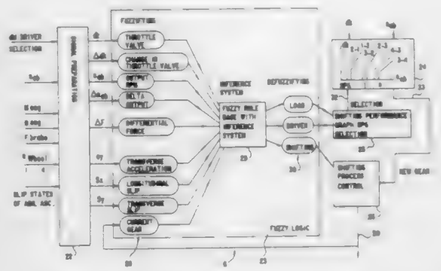
Claims priority, application European Pat. Off., Jun. 30, 1992, 92111076

Int. Cl.[6] B60K *41/06, 31/04*

U.S. Cl. 364—424.1 **7 Claims**

1. In a control for a motor vehicle transmission, through which transmission gears are automatically shifted as a function of at least a driving pedal position and vehicle speed on the basis of shifting performance graphs stored in a memory, and in dependence on a load state of the motor vehicle and the driving style of the driver, the improvement comprising:

a fuzzy logic controller with a rule base, for evaluating various signals representing driving states of the motor vehicle, and thereupon generating the following control signals:



a first correcting signal representing the load state of the motor vehicle, and a second correcting signal representing the driving style, bringing about a switchover to corresponding shifting performance graphs, and

an inhibit signal preventing shifting events that would produce a dynamically unfavorable driving state.

5,390,118

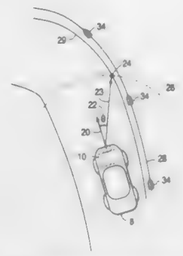
AUTOMATIC LATERAL GUIDANCE CONTROL SYSTEM

Donald Margolis, El Macero, and Yoshiyuki Yasui, Davis, both of Calif., assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 701,509, May 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 592,295, Oct. 3, 1990, abandoned. This application Nov. 24, 1993, Ser. No. 156,944

Int. Cl.[6] G06F *15/50*

U.S. Cl. 364—424.02 **34 Claims**



1. An apparatus for automatically guiding a moving vehicle with respect to a road having a plurality of markers positioned therealong, said apparatus comprising:

means for sensing the position, relative to said vehicle, of a predetermined number of said markers and for generating position signals in response thereto;

means for calculating a path approximating said road in accordance with position signals representing both the present position of said vehicle with respect to said road, and a past position of said vehicle with respect to said road;

means for sensing the speed of said vehicle and for generating speed signals in response thereto;

means for calculating a preview distance as a function of the

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speed of said vehicle in accordance with said speed signals;

means for identifying a point along said approximate path that is spaced apart from said vehicle by said preview distance; and

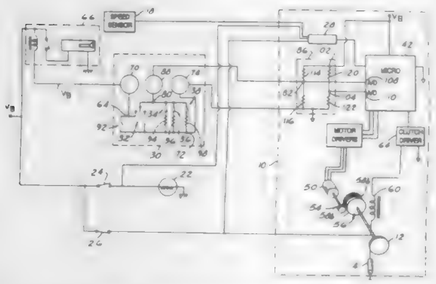
means for generating a control signal for use in steering said vehicle substantially toward said point such that said vehicle is guided substantially along said road.

5,390,119

VEHICLE SPEED CONTROL SYSTEM WITH RESUME/CANCEL FUNCTION

Kuh S. Oo, Farmington Hills, and Gary M. Klingler, Milford, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1992, Ser. No. 937,319
Int. Cl.[6] B60K *31/00*
U.S. Cl. 364—426.04 8 Claims



5. A speed control system having an actuator coupled to an engine throttle, comprising:

switch means including a plurality of operator actuable momentary switches for providing an output signal at a predetermined voltage level upon concurrent deactuation of all of said momentary switches, said switch means including a single resume/cancel switch for providing said output signal at a preselected voltage while said resume/cancel switch is depressed and all other of said momentary switches are not depressed;

control means including an integrator for providing said actuator with a throttle position command, said integrator integrating a difference between vehicle speed and a reference speed to maintain said vehicle speed at said reference speed during a control mode of operation, said integrator being reset to a value corresponding to idle throttle position during a standby mode of operation, said integrator integrating from said idle throttle position to a position corresponding to said reference speed during a resume mode of operation; and

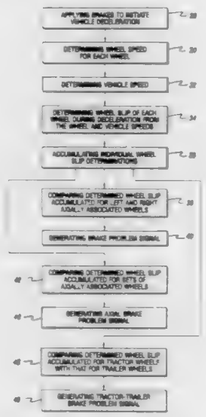
decode means responsive to each of said momentary switches for generating said standby mode when said control means is in said control mode and said preselected output voltage is detected after previously detecting said predetermined voltage, said decode means generating said resume mode when said control means is in said standby mode and said preselected voltage is detected after previously detecting said predetermined voltage.

5,390,120

METHOD AND APPARATUS FOR DETERMINING A NEED FOR VEHICLE BRAKING SYSTEM MAINTENANCE

LaVerne A. Caron, Kalamazoo, and Richard J. Youngblood, Battle Creek, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 8, 1992, Ser. No. 987,134
Int. Cl.[6] F16D *66/02;* G01D *21/00, 11/00;* B60Q *1/00*
U.S. Cl. 364—424.04 23 Claims



1. Apparatus for determining a need for vehicle braking system maintenance in a wheeled vehicle including fluid-actuated brakes having normally operable and automatically operable braking modes, the apparatus comprising:

means for determining wheel speed and for generating wheel speed signals representative thereof;

means for determining vehicle speed and for generating a vehicle speed signal representative thereof;

calculating means for determining measures of wheel slip for each wheel during periods of vehicle deceleration from data represented by the wheel speed signals and by the vehicle speed signal and for generating wheel slip signals representing the measures of wheel slip determined;

accumulating means for accumulating the measures of wheel slip for each wheel; and

comparing means for comparing the accumulated measures of wheel slip and for generating a maintenance signal in response to a predetermined minimum difference therebetween to indicate the existence of a possible braking system problem.

5,390,121

BANDED ON-OFF CONTROL METHOD FOR SEMI-ACTIVE DAMPERS

Paul T. Wolfe, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Aug. 19, 1993, Ser. No. 109,287
Int. Cl.[6] B60G *17/015;* F16F *9/18*
U.S. Cl. 364—424.05 12 Claims

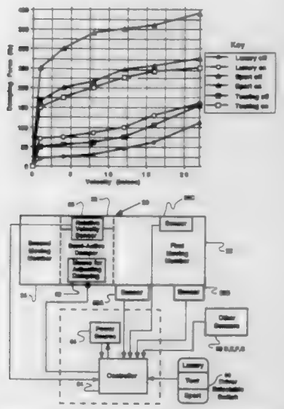
1. A controllable suspension system, comprising in combination:

(a) a semi-active damper including a shock body for attachment to one of a first moving member and a second moving member, a piston rod telescopically received within said shock body, said piston rod being attachable to the other of said first and said second moving member, a semi-active valve controllably operating said semi-active damper for semi-actively varying a damping state of said semi-active damper between an On state and an Off state in real time;

(b) a spring in parallel spring relation to said semi-active damper;

(c) driver selectable means for selecting a magnitude of damping of said On state and said Off state of said semi-active valve from a preset range of damning magnitude values in order to select a ride preference;

(d) at least two sensors for producing electrical signals from which an absolute velocity differential and a directional



sign indicative of a direction of movement between two spaced apart portions of said first moving member can be extracted; and

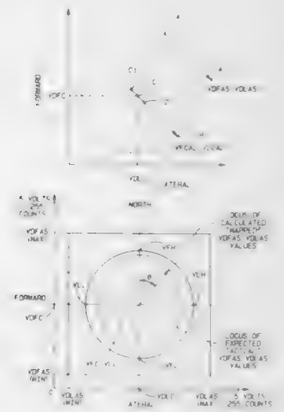
(e) means for overriding said driver selectable means when said absolute velocity differential derived from said at least two sensors' electrical signals exceeds a threshold and only when said directional signs of said electrical signals are opposite.

5,390,122

METHOD AND APPARATUS FOR CALIBRATING A VEHICLE COMPASS SYSTEM

Paul A. Michaels, Livonia; Joseph F. Supinsky, Mt. Clemens, and Robert F. Spitz, Rochester Hills, all of Mich., assignors to Lectron Products, Inc., Rochester Hills, Mich.

Filed May 7, 1993, Ser. No. 58,956
Int. Cl.[6] G01C *17/38, 25/00*
U.S. Cl. 364—443 38 Claims



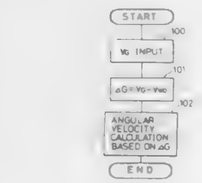
1. A vehicle compass system comprising magnetic sensing means including a magnetic sensing device having first and second sensing coils positioned within the vehicle and adapted for producing first and second output signals that vary in accordance with changes in the directional heading of the vehicle, a control circuit including a microcomputer for producing first and second compensation signals that are supplied to said first and second sensing coils, respectively, to compensate for the remnant magnetic fields associated with the vehicle and for processing said first and second output signals from said magnetic sensing means and determining therefrom the heading direction of the vehicle and producing display output signals that are supplied to a display means adapted to display the heading direction of the vehicle; the improvement comprising: memory means for storing predetermined values corresponding to the desired values for said first and second output signals when the vehicle is positioned in a single predetermined location and orientation; initiation means for initiating an initial calibration process when the vehicle is in said predetermined location and orientation; and wherein said microcomputer is programmed to be responsive to said initiation means for initially calibrating the compass system by reading said desired values from said memory means and generating appropriate compensation signals for both said first and second sensing coils to cause the actual output signals from said magnetic sensing means to bear a determined relationship to said desired values, and storing the values of said appropriate compensation signals.

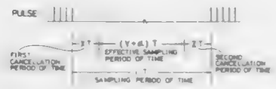
5,390,123

NAVIGATION SYSTEM WITH ACCURATE DETERMINATION OF ANGULAR VELOCITY

Masatsuka Ishikawa, San Jose, Calif., assignor to Zexel Corporation Daihatsu-Nissay, Tokyo, Japan

Filed Jun. 9, 1992, Ser. No. 896,145
Int. Cl.[6] G01C *17/38*
U.S. Cl. 364—449 16 Claims





1. A navigation system which comprises:

an angular velocity sensor for generating an output voltage corresponding to an angular velocity of a vehicle;

means for storing a reference voltage that corresponds to a value of zero for said angular velocity;

means for calculating a corrected angular velocity of said vehicle from both said reference voltage and said output voltage;

means for resetting said reference voltage;

a travel sensor for communicating a pulse whenever said vehicle runs a predetermined distance;

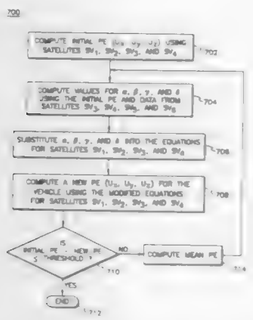
means for applying said pulse to said means for resetting;

said means for resetting employing, as an effective sampling interval, at least a part of an interval from an end of a predetermined first cancellation interval after said pulse has stopped until a start of a second cancellation interval prior to a resumption of said pulse;

said means for resetting including means for calculating an average value of said output voltage from a plurality of

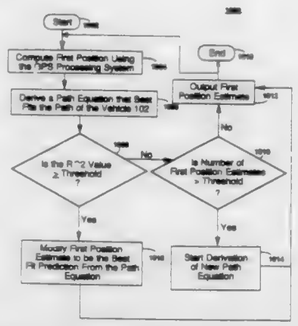
samples thereof taken periodically during said effective sampling interval;
said means for resetting including means for setting said reference voltage equal to said average value; and
said means for resetting employing, as said effective sampling interval, a one of:
(1) a whole interval from the termination of said first cancellation interval until the start of said second cancellation interval;
(2) a predetermined interval following said first cancellation interval; and
(3) a predetermined interval preceding said second cancellation interval;
means for locating said vehicle; and
means for applying said reference voltage to said means for locating.

5,390,124
METHOD AND APPARATUS FOR IMPROVING THE ACCURACY OF POSITION ESTIMATES IN A SATELLITE BASED NAVIGATION SYSTEM
Christos T. Kyrtsos, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Dec. 1, 1992, Ser. No. 984,313
Int. Cl.[6] G06F *15/50*
U.S. Cl. 364—449 12 Claims



11. An apparatus for determining the position of a vehicle at or near the surface of the Earth using signals from a satellite-based navigation system having a constellation of navigation satellites, comprising:
(a) a first receiver mounted on said vehicle to receive a first plurality of navigation signals from the constellation of navigation satellites;
(b) a second receiver located at a known position to receive a second plurality of navigation signals from the constellation of navigation satellites;
(c) first means, electrically connected to said second receiver, for computing, based on said second plurality of navigation signals and said known position, a first error coefficient representing an average error in an x direction for the constellation of navigation satellites, a second error coefficient representing an average error in a y direction for the constellation of navigation satellites, a third error coefficient representing an average error in a z direction for the constellation of navigation satellites, and a fourth error coefficient representing a mean pseudorange error for the constellation of navigation satellites; and
(d) second means, electrically connected to said first receiver, for receiving said error coefficients from said first means and for computing an accurate vehicle position based on said first plurality of navigation signals and said error coefficients.

5,390,125
VEHICLE POSITION DETERMINATION SYSTEM AND METHOD
James W. Sennott, Bloomington; Christos T. Kyrtsos, Peoria; Adam J. Gudat, Edelstein; Dana A. Christensen, Peoria; Douglas W. Friedrich, Pekin, and Darrell E. Stafford, Dunlap, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Division of Ser. No. 628,560, Dec. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 487,980, Feb. 5, 1990. This application Feb. 18, 1993, Ser. No. 19,540
Int. Cl.[6] G06F *15/50*
U.S. Cl. 364—449 2 Claims

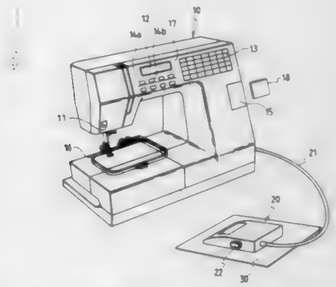


1. A system for determining an estimate of the position of a vehicle based on pseudoranges derived from a vehicle positioning system and prior position estimates, the system comprising:
(a) first means for receiving signals from a plurality of satellites, responsively determining respective pseudoranges from said satellites to the vehicle, and deriving a first position estimate of the vehicle's position as a function of said pseudoranges;
(b) second means responsive to said first means for receiving the prior position estimates and responsively determining a vehicle path model using a best fit algorithm;
(c) third means responsive to said second means, said third means for extrapolating a second position estimate from said vehicle path model; and
(d) fourth means responsive to said third means, said fourth means for setting said first position estimate equal to said second position estimate if said second position estimate is more accurate.

5,390,126
EMBROIDERING DATA PRODUCTION SYSTEM
Takeshi Kongho, and Takashi Nakamura, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Feb. 18, 1992, Ser. No. 837,163
Claims priority, application Japan, Feb. 22, 1991, 3-048638
Int. Cl.[6] G06F *15/46;* D05B *3/02, 19/00*
U.S. Cl. 364—470 7 Claims

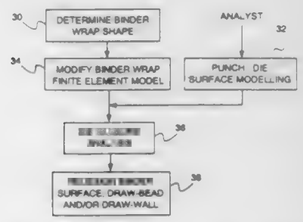
1. An embroidering data production system for a sewing machine having a needle and for producing embroidering data from an image data of an original pattern from an image input means operably connected to the sewing machine, the embroidering data production system comprising:
image data storage means for storing therein the image data, the image data having a plurality of lines and columns, both of which having sequentially incrementing numbers attached thereto from an initial number to a last number representing stitching directions and sequences thereof;
extraction means operably connected to the image data storage means for extracting an outline of the original pattern for determining positions at which the needle is destined to drop;

selection means for selecting a design to be embroidered within the original pattern which is stitched in accordance with the image data;
calculation formula storage means having calculation formulas stored therein operably connected to the selection means for determining positions at which the needle is destined to drop in accordance with the design;
embroidering data generation means operably connected to



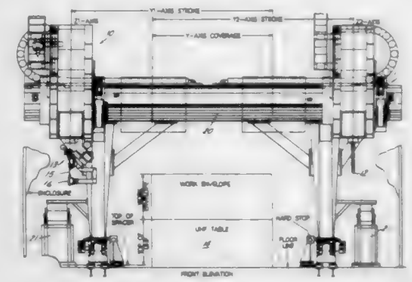
the calculation means and to the extraction means for applying the calculation formulas to the initial line numbers and the last column numbers defining the outline of the original pattern, thereby sequentially generating embroidering data representing the design of the image data; and
embroidering data storage means operably connected to the embroidering data generation means for storing therein the embroidering data.

5,390,127
METHOD AND APPARATUS FOR PREDICTING POST-BUCKLING DEFORMATION OF SHEET METAL
Sing C. Tang, Plymouth, and James C. Carnes, Willis, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Continuation-in-part of Ser. No. 994,014, Dec. 21, 1992. This application Oct. 28, 1993, Ser. No. 143,024
Int. Cl.[6] G06F *15/46;* B21D *5/02*
U.S. Cl. 364—472 20 Claims



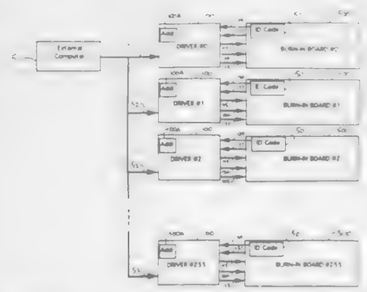
11. A system for predicting post-buckling deformation of a sheet of metal during a draw forming process, for use with sheet metal forming tools including a draw die, a punch and binder having surfaces designed to form the sheet metal into a part, the sheet metal being represented as a mesh including a plurality of nodes, the system comprising:
input means for entering data representing the sheet metal mesh:
a memory for storing the entered data and a predetermined instruction set; and
a processor in communication with the input means and the memory for
applying a displacement increment to the sheet metal nodes,
identifying a singularity in a tangent stiffness matrix associated with the sheet metal close to the onset of buckling, and
introducing a plurality of springs at the sheet metal nodes so as to correct for the singularity and enhance convergence of a numerical solution of the displacement increment to an equilibrium value.

5,390,128
ROBOTIC PROCESSING AND INSPECTION SYSTEM
Jim Ryan, Prospect, Ky.; Michael Radeke, and Mark Saberton, both of Floyds Knobs, Ind., assignors to Cargill Detroit Corporation, Clawson, Mich.
Filed Apr. 12, 1993, Ser. No. 44,701
Int. Cl.[6] G06F *15/46*
U.S. Cl. 364—474.35 17 Claims



1. Automated system for trimming and inspecting parts comprising computer programmable means for geometrically defining a part program responsive CNC means at a trimming station for trimming a program defined part, means for locating a part to be trimmed at said station, means for gauging any offset in the actual position of said part relative to programmed position for trimming by said CNC means, means for transforming the CNC program to comply with said actual position in performing said trimming operation, and correspondingly transformed program responsive CMM means for inspecting the trimmed part at said station.

5,390,129
UNIVERSAL BURN-IN DRIVER SYSTEM AND METHOD THEREFOR
James V. Rhodes, Chandler, Ariz., assignor to Motay Electronics, Inc., Chandler, Ariz.
Filed Jul. 6, 1992, Ser. No. 908,968
Int. Cl.[6] G06F *15/20*
U.S. Cl. 364—480 107 Claims



26. A burn-in driver system comprising:
test vector storage means for storing data patterns defining the sequence of electrical signals for a burn-in operation to be applied to devices under test;

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burn-in driver means for controlling the magnitude and frequency content of said electrical signal for burn-in of said devices under test, said burn-in driver means further comprising means for identifying said devices under test; and

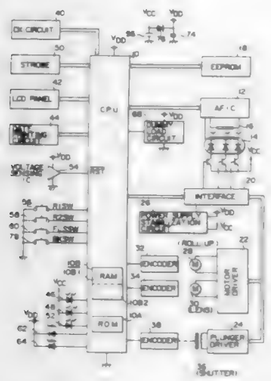
computer means coupled to said test vector storage means and coupled to said burn-in driver means for changing said sequence, said magnitude and said frequency under program control in response to said means for identifying said devices under test to dynamically modify said sequence of electrical signals for burn-in of said devices under test.

5,390,130

CAMERA BATTERY CHECKING APPARATUS

Akira Watanabe; Atsushi Maruyama; Touko Kobayashi, and Azuma Miyazawa, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1991, Ser. No. 793,614
Claims priority, application Japan, Nov. 28, 1990, 2-328330
Int. Cl.[6] G03B *17/18*
U.S. Cl. 364—483 9 Claims



1. A camera battery checking apparatus having a dummy load circuit connected to a battery checking output port of a CPU, a voltage detecting circuit, connected to a reset terminal of the CPU, for supplying a reset signal to the CPU when a power supply voltage is not more than a predetermined level while the dummy load circuit is in a conductive state, starting means for starting a battery check operation, and first and second memory means, the camera battery checking apparatus further comprising:

first determination means for determining that a power supply has been just turned on when the first memory means does not have a predetermined bit configuration, and that the power supply has not been just turned on when the first memory means has the predetermined bit configuration;

first setting means for setting the first memory means to have the predetermined bit configuration when said first determination means determines that the power supply has been just turned on;

second determination means for determining whether a state signal indicative of a state of the battery check operation is set in the second memory means when said first determination means determines that the power supply has not been just turned on;

second setting means for setting the state signal in the second memory means after one of operations of said first determination means and said first setting means is performed;

wherein at least said first and second determination means and said first and second setting means form a single circuit means in said CPU;

conduction signal output means for supplying a conduction signal to the dummy load circuit for a predetermined period of time after an operation of said second setting means;

release means for releasing the state signal from said second memory means after a lapse of the predetermined period of time;

feedback means for operating said first and second determination means again when a reset signal is output from the voltage detecting circuit operated during the predetermined period of time; and

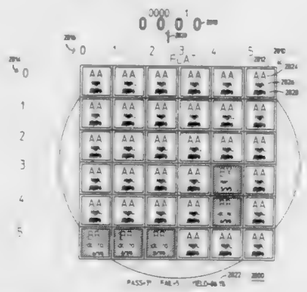
display means for displaying that a shortage of voltage in the power supply when said second determination means determines that the state signal is set in the second memory means after said feedback means performs an operation.

5,390,131

APPARATUS AND METHOD FOR DISPLAYING WAFER TEST RESULTS IN REAL TIME

John G. Rohrbaugh, Fort Collins; Thomas H. Baker, Loveland; Michael J. Bennett, Wellington; Mercedes E. Gil, and Robert W. Proulx, both of Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 6, 1992, Ser. No. 863,253
Int. Cl.[6] G06F *11/00*
U.S. Cl. 364—490 17 Claims



1. A method in an integrated circuit (IC) production test system controlled by a computer for displaying results of tests executed on dies of a wafer in real time, the method comprising the steps of:

(a) displaying, on a display device of the computer, a template having a plurality of cells, each said cell graphically representing a die on the wafer;

(b) inputting, from an IC tester, a test result for a selected die on said wafer;

(c) presenting an indication of said test result in a selected cell of said template; and

(d) repeating steps (b) and (c) for each die on said wafer.

5,390,132

DISTRIBUTED CONTROL SYSTEM HAVING A CONTROL UNIT TO DETECT AND CONTROL INTERRUPTION OF TRANSMISSION TO AND FROM REMOTE INPUT/OUTPUT DEVICES

Yasuhiko Shioe; Chuji Akiyama; Toshiaki Shirai; Hideyuki Sakamoto; Hitoshi Yasui; Makio Ishikawa, and Hideo Matsukawa, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

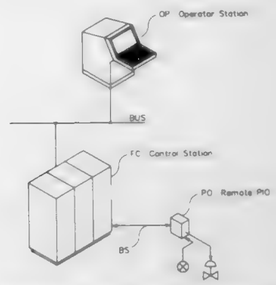
Filed Nov. 25, 1992, Ser. No. 981,378
Claims priority, application Japan, Dec. 9, 1991, 3-324333; Dec. 11, 1991, 3-327692; Dec. 11, 1991, 3-327694
Int. Cl.[6] G06K *15/00*
U.S. Cl. 364—514 12 Claims

1. In a distributed control system comprising a control station means for controlling operations of the system, a remote input/output bus, and at least one remote input/output device connected to said control station means through said remote input/output bus, wherein cyclic scan transmission is through said remote input/output bus, the improvement comprising

continuation transmission service means for transmitting through said remote input/output bus to said at least one remote input/output device, first, an urgent output, and then, for performing cyclic scan transmission after completion of transmission of said urgent output;

initialization start transmission service means for performing cyclic scan transmission of input only;

interruption duration measuring means for measuring a period of interruption of transmission of said remote input-/output bus; and



means for effecting control such that when the period of interruption measured by said measuring means is shorter than a predetermined period, said continuation transmission service means is activated, and when said period of interruption measured by said measuring means is longer than said predetermined period, said initialization start transmission service means is activated;

wherein said control station means comprises an output data holding means for holding latest output data transmitted to said at least one remote input/output device, and

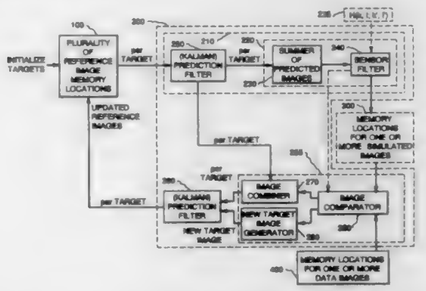
wherein said at least one remote input/output device comprises a no-response detecting means for detecting whether or not there is data transmission through said remote input/output bus, and for detecting a time up signal obtained from said control station means.

5,390,133

IMAGE PROCESSOR FOR TARGET DETECTION AND TRACKING

Guy R. L. Sohie, Schenectady, N.Y., assignor to Martin Marietta Corporation, Syracuse, N.Y.

Filed Sep. 30, 1992, Ser. No. 953,912
Int. Cl.[6] G06K *9/36*
U.S. Cl. 364—516 23 Claims



11. A method for producing intensity images for use in detecting and tracking a plurality of targets, said images being formed with an image processor by combining a plurality of externally derived intensity images, at least one of said externally derived intensity images being comprised of converted target detection signals received, said at least one intensity image constituting a converted intensity image, said detection signals providing information about locations of said targets during a particular time interval, others of said externally derived intensity images comprising a plurality of reference images, respective pairs of said reference images providing information about location and change in location of at least one of said targets during a predetermined time interval relative to said particular time interval, said method comprising the steps of:

producing a simulated intensity image of said at least one externally derived converted intensity image from said reference images by filtering said reference images; and

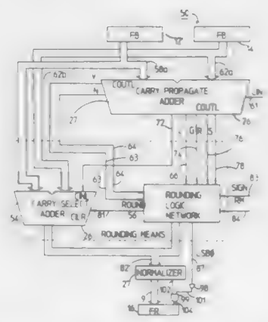
forming a plurality of combined intensity images by combining said simulated intensity image with said converted intensity image.

5,390,134

SYSTEM AND METHOD FOR REDUCING LATENCY IN A FLOATING POINT PROCESSOR

Craig Heikes, Ft. Collins, and Robert H. Miller, Jr., Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 29, 1993, Ser. No. 11,447
Int. Cl.[6] G06F *7/50*
U.S. Cl. 364—745 18 Claims



1. In a floating point processor having a carry propagate adder, an improvement for enhancing performance by reducing latency comprising a rounding means connected to said carry propagate adder, said rounding means and said carry propagate adder for receiving first, second, third and fourth inputs, said rounding means for performing a rounding operation using the first and second inputs approximately simultaneously when an addition operation is performed on the third and fourth inputs by said carry propagate adder, said rounding means for providing a rounded output, said rounding means including:

a carry select adder for adding the first and second inputs to generate a first preliminary result, and for generating second and third preliminary results by adding a logic "1" and a logic "0" to the first preliminary result;

a rounding logic network communicating with said carry propagate adder and said carry select adder, generating an input carry select signal to select one of the second and third preliminary results; and

said carry select adder and said rounding logic network for jointly providing the rounded output, based on the selected one of the second and third preliminary results.

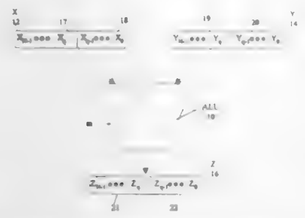
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5,390,135

PARALLEL SHIFT AND ADD CIRCUIT AND METHOD

Ruby B. Lee, Los Altos Hills, Calif., and Joel D. Lamb, Fort Collins, Colo., assignors to Hewlett-Packard, Palo Alto, Calif.

Filed Nov. 29, 1993, Ser. No. 158,646
Int. Cl.[6] G06F *7/38, 7/50*
U.S. Cl. 364—749 16 Claims



1. An apparatus for operating on the contents of an X word having bits X_i and a Y word having bits Y_i to generate a result word having bits Z_i, where i=0 to N−1, where Z_0 is the least significant bit and Z_{N-1} is the most significant bit, said apparatus comprising:

means for partitioning said X, Y and result words into a plurality of sub-words, there being one sub-word of said Y and result words corresponding to each sub-word of said X word; and

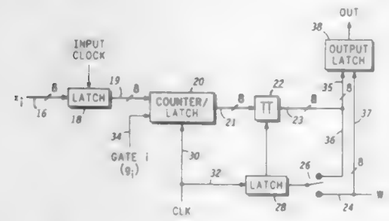
means, responsive to a first instruction, for generating the sum of each X sub-word divided by 2^m and the corresponding Y sub-word, the result thereof determining said corresponding sub-word of said result word, wherein m is an integer different from 0.

5,390,136

ARTIFICIAL NEURON AND METHOD OF USING SAME

Shay-Ping T. Wang, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 14, 1993, Ser. No. 76,602
Int. Cl.[6] G06F *7/52*
U.S. Cl. 364—754 7 Claims



1. A neuron circuit comprising:

first latch means responsive to a plurality of inputs x_i for sequentially storing each of said inputs x_i and for sequentially providing each of said stored inputs x_i as an output thereof, wherein i is a positive integer;

counter/latch means responsive to the output of said first latch means and providing said stored inputs as an output thereof;

second latch means for providing an output;

a multiplier circuit having a first input responsive to the output of said counter/latch means and a second input responsive to the output of said second latch means, and generating a product;

a multiplexer for coupling either said product or a weight value W to an input of said second latch means; and

wherein said counter/latch means includes means, responsive to a plurality of values g_i, there being a value g_i corresponding to each value x_i for counting g_i multiplication cycles of said multiplier circuit: and wherein said multiplier includes means for multiplying said input x_i by said product during each of said multiplication cycles, and for multiplying said product by said weight value during one of said multiplication cycles;

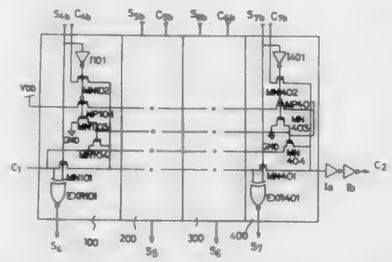
whereby said neuron circuit generates an output of the form $W\ x_1{}^{g}1\ x_2{}^{g}2\ .\ .\ .\ x_n{}^{g}n$.

5,390,137

CARRY TRANSFER APPARATUS

Jae C. Shim, Kyungsangbook-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-Do, Rep. of Korea

Filed Jan. 5, 1994, Ser. No. 177,496
Claims priority, application Rep. of Korea, Mar. 26, 1993, 4606/1993
Int. Cl.[6] G06F *7/50*
U.S. Cl. 364—787 2 Claims



1. A carry transfer apparatus comprising a plurality of groups, each of said groups comprising:

a first inverter having an input terminal connected to a first signal input terminal;

a first NMOS transistor having a gate connected to an output terminal of said first inverter and a drain connected to a second signal input terminal;

a PMOS transistor having a gate connected to the output terminal of said first inverter, a source connected to a power source voltage terminal and a drain connected to a source of a PMOS transistor in the next group;

a second NMOS transistor having a gate connected to the output terminal of said first inverter and a drain connected to a ground voltage terminal;

a third NMOS transistor having a gate connected to a source of said second NMOS transistor and to a gate of a corresponding NMOS transistor in the next group, a drain connected to a carry signal input terminal and a source connected to a source of said first NMOS transistor;

a fourth NMOS transistor having a gate connected to the first signal input terminal, a drain connected to the carry signal input terminal and a source connected to the sources of said first and third NMOS transistors and to a drain of a corresponding NMOS transistor in the next group; and

an exclusive-NOR gate having one input terminal connected to the first signal input terminal and the other input terminal coupled to the carry signal input terminal;

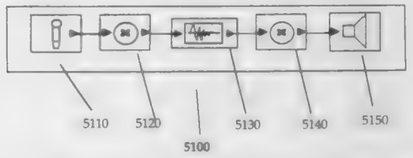
the drain of said PMOS transistor in the last group being connected to the gate of said third NMOS transistor in the last group.

5,390,138

OBJECT-ORIENTED AUDIO SYSTEM

Steven H. Milne, Palo Alto; Michael R. Dilts, Saratoga, and John C. Tobias, II, Sunnyvale, all of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Sep. 13, 1993, Ser. No. 120,268
Int. Cl.[6] H04B *1/00*
U.S. Cl. 381—119 22 Claims



1. An object-oriented operating system for enabling multimedia presentations, comprising:

(a) a processor;

(b) a storage under the control of and attached to said processor;

(c) a display under the control of and attached to said processor;

(d) a plurality of multimedia objects in said storage and displayable on said display, each of said plurality of multimedia objects including:

a displayable icon representing said each multimedia object,

subroutines for processing multimedia information,

a port location through which said multimedia information can be transmitted, said port location being connectable to another port location in at least one other of said plurality of multimedia objects, and

a list of selected ones of said plurality of multimedia objects to which said port location is connected;

(e) an audio object for processing audio information, said audio object including an audio icon displayable on said display;

(f) a connecting object represented by a geometric indicia presented on said display and stored in said storage for use in connecting a first one of said plurality of multimedia objects to said audio object, said connecting object having an input port location for receiving audio information, an output port location for transmitting received audio information, an internal buffer, means for connecting said input port location to said internal buffer and means for connecting said internal buffer to said output port location in order to temporarily store said received audio information during transmission from said input port location to said output port location;

audio conversion means for linking multimedia objects of different types; and

(g) means under the control of the processor for routing said audio information between the first one multimedia object and said audio object via said connecting object.

5,390,139

DEVICES, SYSTEMS AND METHODS FOR IMPLEMENTING A KANERVA MEMORY

Derek Smith, Lafayette, La.; Shivaling Mahant-Shetti, Richardson; Basavaraj Pawate, Dallas, both of Tex.; George R. Doddington, McLean, Va., and Warren L. Bean, Austin, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 28, 1993, Ser. No. 69,048
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—49 20 Claims

9. A Kanerva memory system comprising:

a processor;

a system data memory having a plurality of data storage elements each accessible by an active address received from said processor; and

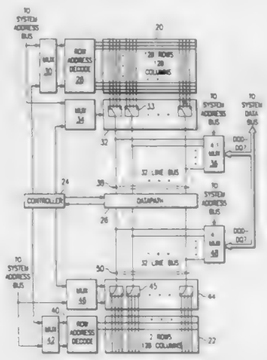
an active memory constructed as a single device comprising:

a data memory for storing plurality of address words transferred from said processor;

data memory control circuitry for selectively transferring said address words between said data memory and a first internal bus;

a broadcast memory including for storing control words and an actual address word transferred from said processor;

broadcast memory control circuitry for selectively transferring said control words and said actual address word between said broadcast memory and a second internal bus;



a datapath operable to select from ones of said address words stored in said data memory at least one said active address within a Hamming distance of said actual address word stored in said broadcast memory;

circuitry for coupling said at least one active address word to said processor; and

a controller operable in response to ones of said control words retrieved from said broadcast memory to control the sequential transfer of said address words from said data memory to said datapath via said first bus and the transfer of said actual address to datapath via said second bus.

5,390,140

SIGNAL OUTPUT CIRCUIT OPERATING STABLY AND ARRANGEMENT OF POWER SUPPLY INTERCONNECTION LINE THEREFOR IN SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Shigeki Tomishima; Hideto Hidaka; Masakazu Hirose, and Takahiro Tsuruda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1993, Ser. No. 121,853
Claims priority, application Japan, Oct. 29, 1992, 4-291136
Int. Cl.[6] G11C *5/06, 5/14*
U.S. Cl. 365—51 17 Claims

1. A semiconductor integrated circuit device formed on a chip, comprising:

a pad formed on said chip for receiving a predetermined potential;

a conductor line connected to said pad for transmitting said predetermined potential;

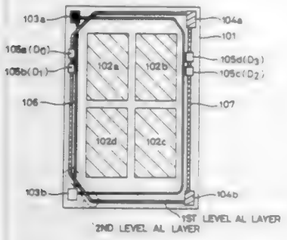
first output means receiving said predetermined potential through said conductor line and responsive to a received first data signal for generating an output signal of said predetermined potential level onto a first output node; and

second output means receiving said predetermined potential through said conductor line and responsive to a received second data signal for generating an output signal of said predetermined potential level onto a second output node;

a distance between said second output means and said pad

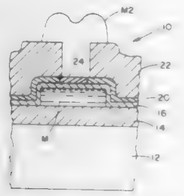
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along said conductor line being greater than a distance between said first output means and said pad;



said second output means including adjust means for increasing a rate of driving said second output node as compared to said first output means.

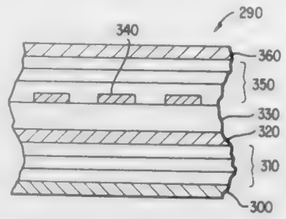
5,390,141
VOLTAGE PROGRAMMABLE LINKS PROGRAMMED WITH LOW CURRENT TRANSISTORS
Simon S. Cohen, Burlington, and Jack I. Raffel, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jul. 7, 1993, Ser. No. 88,253
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—96 **16 Claims**



1. A method of electrically programming links comprising:
providing a link structure comprising a transformable insulator between conductive elements;
in a writing circuit having at least one writing transistor, applying a current toward but not through the link structure, at a current level less than a current level required to transform the transformable insulator to a conductor, to charge capacitance of the writing circuit and thereby apply a voltage across the link structure to stress the transformable insulator; and
with breakdown of the transformable insulator at a breakdown voltage, supplying current through the link structure from the at least one transistor in the writing circuit and from the capacitance of the writing circuit at a current level through the link structure substantially exceeding the current through the at least one transistor in the writing circuit.

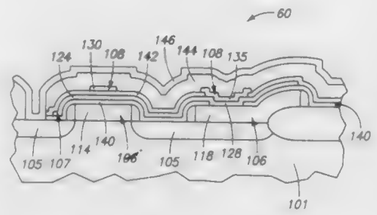
5,390,142
MEMORY MATERIAL AND METHOD FOR ITS MANUFACTURE
Shimon Gendlin, Jerusalem, Israel, assignor to Kappa Numerics, Inc., New York, N.Y.
Filed May 26, 1992, Ser. No. 889,025
Int. Cl.[6] H01L *43/08*; G03C *1/72*
U.S. Cl. 365—145 **36 Claims**

1. A composition of materials comprising:
a first layer of material having a composition of $M_{(1-x-y)}Cd_xR_y$ where M is an element selected from the group consisting of Pb, Zn, and Te, and R is an element selected from the group consisting of Si and Ge, wherein x and y are values within the ranges of $0 \leqq x \leqq 1$, $0 \leqq y \leqq 1$, and $0 \leqq (x+y) \leqq 1$;
a second layer of $Se_{(1-z)}S_z$ formed on the first layer, wherein z is a value within the range of $0 \leqq z \leqq 1$; and



a third layer of $Fe_{(1-w)}Cr_w$ formed on the second layer, wherein w is a value within the range of $0 \leqq w \leqq 1$.

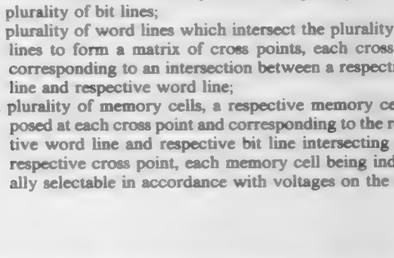
5,390,143
NON-VOLATILE STATIC MEMORY DEVICES AND OPERATIONAL METHODS
Monte Manning, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.
Filed May 17, 1993, Ser. No. 63,231
Int. Cl.[6] G11C *11/22*
U.S. Cl. 365—145 **14 Claims**



1. In a semiconductor integrated circuit containing a plurality of memory cells, a non-volatile static read/write memory cell comprising:
a semiconductor substrate;
a pair of cross-coupled driver transistors having active areas formed in the semiconductor substrate, the driver transistors having gates;
a first conductive layer which forms the driver transistor gates; and
a ferroelectric layer positioned physically adjacent the first conductive layer to be electrically polarized by the transistor gates formed by the first conductive layer during operation of the memory cell and to automatically bias the cross-coupled driver transistors upon memory cell power-up in accordance with the electric polarization of the ferroelectric layer.

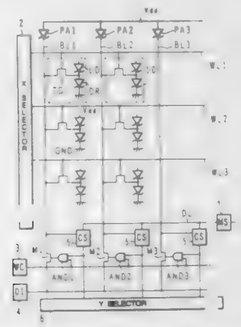
5,390,144
SEMICONDUCTOR MEMORY
Toshihiko Susuki, Ooita, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 1, 1994, Ser. No. 203,398
Claims priority, application Japan, Mar. 2, 1993, 5-041467
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—149 **9 Claims**

1. A semiconductor memory cell comprising:
a semiconductor substrate;
a bit line, made of a semiconductor layer of a first conductivity type, formed on said semiconductor substrate;
a pillared layer, made of a semiconductor layer of a second conductivity type, formed on said bit line to be projected upward;
a gate insulating film formed around said pillared layer;
a gate electrode formed around said gate insulating film, said gate electrode connected to a word line;
a separation insulating film formed so as to expose an upper portion of said pillared layer, and cover said gate electrode;
a lower electrode, made of a semiconductor layer of the first conductivity type, formed on an upper portion of said pillared layer and said separation insulating film;



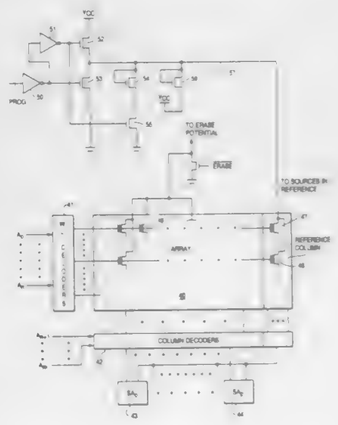
a capacitor insulating film formed on said lower electrode; and
an upper electrode formed on said capacitor insulating film to be opposite to said lower electrode,
wherein a FET including said gate electrode is provided between a portion of said bit line and a portion of said lower electrode opposite to each other through said pillared layer, and a capacitor is formed of said upper and lower electrodes and said capacitor insulating film.

5,390,145
RESONANCE TUNNEL DIODE MEMORY
Yasuhiro Nakasha, and Yuu Watanabe, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 14, 1993, Ser. No. 166,108
Claims priority, application Japan, Apr. 15, 1993, 5-088777
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—159 **20 Claims**



1. A semiconductor memory device comprising:
a plurality of bit lines;
a plurality of word lines which intersect the plurality of bit lines to form a matrix of cross points, each cross point corresponding to an intersection between a respective bit line and respective word line;
a plurality of memory cells, a respective memory cell disposed at each cross point and corresponding to the respective word line and respective bit line intersecting at the respective cross point, each memory cell being individually selectable in accordance with voltages on the corresponding bit line and the corresponding word line, each memory cell comprising:
a transfer gate having a first current terminal connected to the corresponding bit line, a control terminal connected to the corresponding word line, and a second current terminal, and
a pair of serially connected negative differential resistance memory elements having an interconnection node therebetween which is connected to the second current terminal of the transfer gate; and
a characteristic controlling circuit which is coupled to the plurality of bit lines and controls the voltage of each bit line based on whether a respective memory cell corresponding to the respective bit line is selected or not selected, the characteristic controlling circuit comprising a plurality of negative differential resistance elements respectively corresponding to, and connected to, the plurality of bit lines.

5,390,146
REFERENCE SWITCHING CIRCUIT FOR FLASH EPROM
Gregory E. Atwood, San Jose, and Owen W. Jungroth, Sonora, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Continuation of Ser. No. 863,147, Apr. 2, 1992, abandoned, which is a continuation of Ser. No. 638,338, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 365,185, Jun. 12, 1989, abandoned. This application Feb. 3, 1994, Ser. No. 192,182
Int. Cl.[6] G11C *11/34, 7/02*
U.S. Cl. 365—185 **17 Claims**



1. In an electrically programmable read-only memory array employing memory devices having electrically floating gates and first and second regions, wherein said memory devices are arranged in rows and the floating gates of said memory devices in each of said rows are coupled to a plurality of wordlines, and further wherein during programming of one of said memory devices a first programming potential is coupled to the wordline of said one of said memory devices, said array including at least one reference device used in reading the state of said one of said memory devices, said at least one reference device having an electrically floating gate for storing a charge, wherein said at least one reference device is coupled to at least one of said plurality of wordlines and has first and second regions, and further wherein said reference device is subject to said programming potential during programming of said one of said memory devices, such that said programming potential is

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applied to said floating gate of said at least one reference device, an improvement comprising:

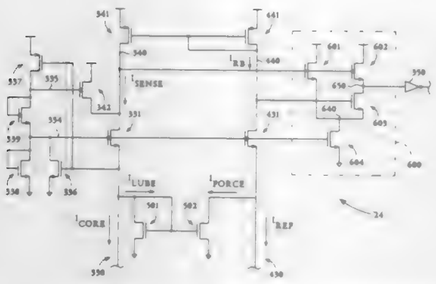
a switch coupled to the first region of said at least one reference device for decoupling said first region of said at least one reference device from a first potential supplied during reading of said one of said memory devices, and coupling said first region of said at least one reference device to a second potential when said programming potential is applied to said at least one of said plurality of wordlines, said second potential being selected so as to prevent charge accumulation on the gate of said at least one reference device, wherein said charge accumulation is attributable to repeated application of the programming potential to said at least one of said plurality of wordlines during multiple programming cycles.

5,390,147

CORE ORGANIZATION AND SENSE AMPLIFIER HAVING LUBRICATING CURRENT, ACTIVE CLAMPING AND BUFFERED SENSE NODE FOR SPEED ENHANCEMENT FOR NON-VOLATILE MEMORY

George Smarandoiu, and Emil Lambrache, both of San Jose, Calif., assignors to Atmel Corporation, San Jose, Calif.

Filed Mar. 2, 1994, Ser. No. 204,866
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—185 **13 Claims**



1. A sense amplifier circuit connected to a semiconductor memory, comprising:

(a) data node means for receiving an electric current from a selected core memory cell indicative of its memory state;

(b) sense node means for receiving an electric current from said data node means reflecting an electric current received by said data node means;

(c) reference node means for receiving a reference current from a selected reference cell indicative of the state of said reference cell;

(d) a reference current mirror circuit including first and second reference transistors, each reference transistor having respective base, drain, and source nodes, each of the source nodes of said reference transistors being connected to a selected supply voltage, the gate nodes of said first and second reference transistors being electrically connected to each other, the drain node of said first reference transistor being connected to said sense node means and the drain node of said second reference transistor being connected to its gate node and being provided with an electric current from said reference node means reflecting electric currents received by said reference node means, said reference current mirror circuit being effective for providing said sense node means with an electric reference current in proportion to electric current provided from said reference node means to said second reference transistor;

(e) pass transistor means for limiting the voltage on said data node means, said pass transistor means having a source and a drain, said drain being connected to said sense node means, and said source being connected to said data node means; and

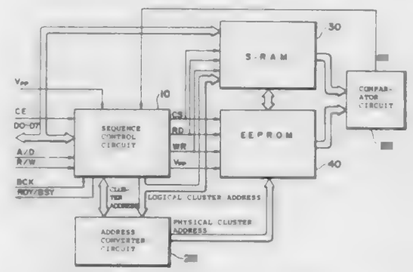
(f) a lubrication current mirror circuit including first and second lubrication transistors, each of said lubrication transistors having respective gate, drain, and source nodes, each of the source nodes of said lubrication transistors being connected to a common node, the gate nodes of said first and second lubrication transistors being electrically connected to each other, the drain node of said first lubrication transistor being connected to said data node means and being provided with current from said data node means, the drain node of said first lubrication transistor being connected to its gate node and said data node means, said lubrication current mirror circuit being effective for providing said reference node means and said reference current mirror circuit with electric current in proportion to a lubrication current provided from said data node means to said first lubrication transistor, and said lubrication current mirror circuit being effective for providing a predetermined amount of electric current to said pass transistor means, whereby said pass transistor means remains open even in the absence of current flow from a core memory cell.

5,390,148

METHOD OF REWRITING DATA IN EEPROM, AND EEPROM CARD

Osamu Saito, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 22, 1993, Ser. No. 20,541
Claims priority, application Japan, Feb. 25, 1992, 4-073255
Int. Cl.[6] G11C *16/00*; G06F *12/16*
U.S. Cl. 365—189.01 **20 Claims**



1. A method of rewriting data in an EEPROM comprising the steps of:

addressing a first area of an EEPROM in which a first unit of data that includes old data to be rewritten has been stored and reading out said first unit of data that has been stored in the first area of said EEPROM;

writing said first unit of data, which has been read out of the first area of said EEPROM, into a RAM;

generating a second unit of data in the RAM by rewriting new data for said old data into said first unit of data that has been written in the RAM;

addressing a second area of said EEPROM in which said second unit of data, which includes said new data, is to be written, and writing said second unit of data, which has been read out of the RAM, into the second area of said EEPROM; and

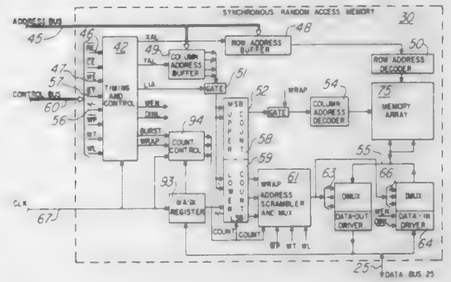
reading said second unit of data out of the RAM, reading said second unit of data, which has been written in the second area of said EEPROM, out of the second area of said EEPROM, and determining whether said second unit of data read out of the RAM and said second unit of data read out of the second area of said EEPROM coincide, by comparing the entirety of said respective second units of data in a comparator means.

5,390,149

SYSTEM INCLUDING A DATA PROCESSOR, A SYNCHRONOUS DRAM, A PERIPHERAL DEVICE, AND A SYSTEM CLOCK

Wilbur C. Vogley, Missouri City; Anthony M. Balistreri, Houston; Karl M. Guttag, Missouri City; Steven D. Krueger, Houston; Duy-Loan T. Le; Joseph H. Neal, both of Sugarland; Kenneth A. Poteet, Houston; Joseph P. Hartigan, Stafford, and Roger D. Norwood, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 690,207, Apr. 23, 1991. This application Jan. 21, 1994, Ser. No. 184,749
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—189.01 **69 Claims**



1. A method for accessing a synchronous random access memory comprising the steps of:

a) applying a system clock signal to the synchronous random access memory;

b) addressing a row of storage cells in an array of storage cells addressable by row address and column address in synchronism with the system clock signal;

c) applying an initial column address to a column address counter;

d) in response to the most significant bits residing in the column address counter, accessing a block of columns to read data bits from the addressed row of storage cells to an output multiplexer in synchronism with the system clock signal; and

e) transmitting a selected sequence of data bits through the output multiplexer by clocking the column address counter in synchronism with the system clock signal and by applying the least significant bits of the resulting series of column addresses to the output multiplexer for controlling transmission of the selected sequence of data bits through the output multiplexer to a data bus in synchronism with the system clock signal.

5,390,150

SEMICONDUCTOR MEMORY DEVICE WITH REDUNDANCY STRUCTURE SUPPRESSING POWER CONSUMPTION

Choong-Keun Kwak, Songpa-ku, and Seung-Keun Lee, Joonggang-ku, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 25, 1992, Ser. No. 934,918
Claims priority, application Rep. of Korea, Apr. 24, 1992, 1992-6956
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—227 **8 Claims**

1. A semiconductor memory device having a number of divided memory blocks, comprising:

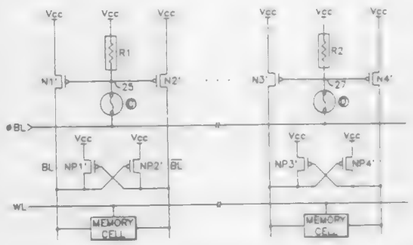
first memory means receiving a row address for driving a given word line belonging to a given memory block;

second means receiving a column address for driving a given pair of bit lines among a plurality of bit line pairs connected to the driven word line;

means for maintaining and transmitting information in a memory cell accessed by said driven word line and bit line pair in accordance with a control signal;

blocking means for blocking supply of a power voltage to said bit line pair when maintaining said information, said blocking means comprising at least one fuse connected to said power voltage;

a first transistor pair having channels connected between said bit line pair and said fuse and selectively operating in response to a given pulse;



a resistance connected between said power voltage and one terminal of said fuse, another terminal of said fuse being connected to receive said pulse;

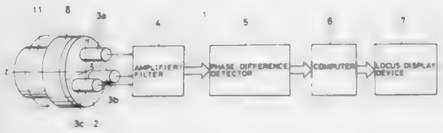
a second transistor pair having gates connected with a node formed by said resistance and said fuse and channels, one terminal of said channel being connected to said power voltage.

5,390,151

METHOD AND DEVICE FOR MEASURING THE CENTER OF ROTATION OF A ROTATING SHAFT

Norimitsu Ozawa, Tsuchiura, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 37,553
Claims priority, application Japan, Mar. 27, 1992, 4-101988
Int. Cl.[6] G01B *11/10*
U.S. Cl. 356—426 **4 Claims**



2. A device for measuring a position of a center of rotation of a rotating shaft comprising:

an optical flat attached to an end face of the rotating shaft at a slight tilt relative to an axis of the rotating shaft using a goniometer;

three non-contact type displacement sensors positioned at vertices of an equilateral triangle and disposed within a plane facing the optical flat for detecting relative displacements from the optical flat;

phase-difference detection means for detecting from the relative displacements phase differences of signal components that are synchronized with rotation of said optical flat; and

a computer for accepting the phase differences from the phase-difference detection means and the positions of the three displacement sensors as input signals and calculating the position of the center of rotation of the rotating shaft.

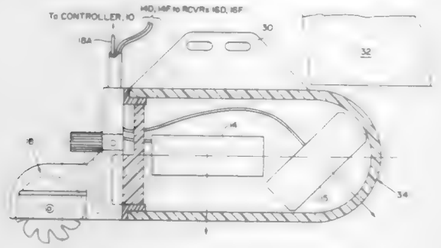
VOL 1171 ISS 2 FE 14 1995 UMI

5,390,152

FORWARD LOOKING ECHOSOUNDER

Stephen G. Boucher, Amherst, and Michael J. Simoneau, Merrimack, both of N.H., assignors to Airmar Technology Corporation, Milford, N.H.

Continuation-in-part of Ser. No. 118,893, Sep. 9, 1993, abandoned. This application Nov. 18, 1993, Ser. No. 154,746
Int. Cl.[6] G01S *15/89*
U.S. Cl. 367—12 37 Claims



1. A sonar system for detecting objects traversing a medium relative to a vessel comprising:
- a first transducer for generating a first sonar beam into the medium having a first central axis at a first inclined angle α with respect to a horizontal axis through the vessel;
- a second transducer for generating a second sonar beam into the medium having a second central axis directed downward at a second angle β with respect to the horizontal axis;
- a mount coupling the first and second transducers to the vessel and aligning the first and second central axes in a common plane;
- a first receiver for detecting reflections of the first beam from objects in the path of the first beam and generating a first set of data;
- a second receiver for detecting reflections of the second beam from objects in the path of the second beam and generating a second set of data;
- a computer for combining the first and second set of data to generate a quasi-real time representation of the objects in the path between the first and second beam over time; and
- a display for displaying the quasi-real time representation to a user.

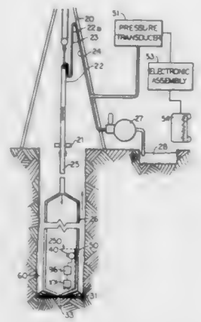
5,390,153

MEASURING WHILE DRILLING EMPLOYING CASCADED TRANSMISSION SYSTEMS

Serge A. Scherbatskoy, 3921 Clayton Rd. E., Fort Worth, Tex. 76116

Continuation-in-part of Ser. No. 749,287, Aug. 23, 1991, Pat. No. 5,182,730, which is a continuation of Ser. No. 275,706, Nov. 22, 1988, Pat. No. 5,150,333, which is a continuation of Ser. No. 140,960, Jan. 5, 1988, abandoned, which is a continuation of Ser. No. 75,686, Jul. 20, 1987, abandoned, which is a continuation of Ser. No. 924,046, Oct. 28, 1986, abandoned, which is a continuation of Ser. No. 811,952, Dec. 20, 1985, abandoned, which is a continuation of Ser. No. 718,895, Apr. 2, 1985, abandoned, which is a continuation of Ser. No. 443,138, Nov. 19, 1982, abandoned, which is a division of Ser. No. 383,269, May 28, 1982, Pat. No. 4,520,468, which is a continuation of Ser. No. 68,526, Aug. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 857,677, Dec. 5, 1977, abandoned. This application Jan. 22, 1993, Ser. No. 7,560
The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.
Int. Cl.[6] G01V *1/40*
U.S. Cl. 367—83 1 Claim

1. A logging while drilling assembly for use in a borehole and a drilling string and mud in a circulation system comprising:
- a) a first signal generator means comprising apparatus for generating a signal representative of a sensed downhole condition and mounted downhole near the drill bit of said drilling string;
- b) a second signal generator means comprising a pulser for generating pressure pulses in said mud and mounted uphole from said first signal generator means, said pulser comprising a valve located between an inside of said



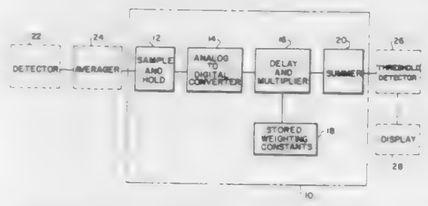
drilling string and an outside of said drilling string, said pulser further comprising means for generating said pressure pulses in said mud by opening and closing said valve;
- e) a first transmission system having its downhole end connected to said first signal generator means and its uphole end connected to said pulser;
- d) a second transmission system having its downhole end connected to said pulser and its uphole end connected to a pressure transducer at the surface of the earth;
- e) a receiver of said pressure pulses at the surface for producing an indication of said sensed downhole condition.

5,390,154

COHERENT INTEGRATOR

Aldo G. DiLoreto, Alhambra, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 14, 1983, Ser. No. 510,976
Int. Cl.[6] G01S *15/00*
U.S. Cl. 367—98 7 Claims



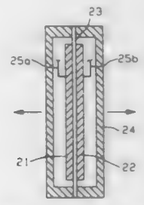
1. A post-processing coherent integrator for use in a signal processing circuit, said coherent integrator being inserted between a detector circuit and a threshold detector circuit of said signal processing circuit, which comprises:
- a sample-and-hold circuit whose input is connected to receive as an analog input signals, an output of the detector circuit of the signal processing circuit, said sample-and-hold circuit sampling its analog input signal and maintaining it for a predetermined period of time at a sampling magnitude;
- an electronic analog to digital circuit whose input is connected to receive an analog output from the sample-and-hold output, circuit for converting an input analog signal to an output digital signal;
- plurality (N) of means, whose inputs are connected to receive an output digital signal of the analog to digital circuit, for delaying sequentially each of N samples of the input signal over a delay range from 0 delay up to (N−1) T delay where T is a preselected interval of time and each delay is some different integral multiple of T;
- plurality (N) of electronic multiplying circuits, each with its input connected to an output of one of the plurality of delaying means, for multiplying each respective delayed signal by one weighting circuit from a predetermined set of weighting circuits;
- a programmable electronic memory circuit, whose output is connected to each of the electronic multiplying circuits for storing a predetermined set of weighting constants used by all of the electronic multiplying circuits; and
- an electronic summing circuit, whose input is connected to receive an output of each electronic multiplying circuit, for summing signals that are delayed and weighted from the plurality of the electronic multiplying circuits, said electronic summing circuit thereby providing a coherent output signal having portions thereof attributed to each delayed and weighted signal sample, said electronic summing circuit's output then connected to an input of the threshold detector circuit of the signal processing circuit.

5,390,155

ACOUSTIC PARTICLE ACCELERATION SENSOR AND ARRAY OF SUCH SENSORS

John D. Lea, Huntington, N.Y., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 903,428, Jun. 24, 1992, Pat. No. 5,287,332. This application Nov. 15, 1993, Ser. No. 152,357
Int. Cl.[6] H04R *17/00*
U.S. Cl. 367—149 4 Claims



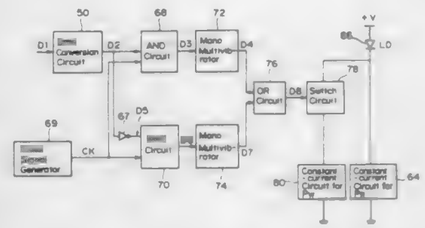
1. An acoustic particle acceleration sensor having a density that is equal to or less than a predetermined medium comprising:
- a housing, positionable in said predetermined medium, having outer surfaces and an inner chamber, said outer surfaces positionable to intercept acoustic particles of an incident acoustic wave propagating in said predetermined medium;
- a disk extending between opposite walls of said inner chamber and coupled to said housing in a manner to flex with acceleration of said acoustic particles; and
- distributed constant means coupled to said disk and responsive to flexures thereof for providing signals representative of said acceleration of said acoustic particles.

5,390,156

MAGNETO-OPTIC OVERWRITE DISK RECORDING SYSTEM FOR ERASING AND OVERWRITING IN A SINGLE PASS

Haruhiko Izumi; Masaharu Moritsugu, and Masakazu Taguchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 4, 1993, Ser. No. 130,848
Claims priority, application Japan, Oct. 9, 1992, 4-271591
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 6 Claims



1. A magneto-optic overwrite disk recording system comprising:
- a magneto-optic overwrite disk including a transparent substrate, a memory magnetic film formed on said transparent substrate, and a record magnetic film formed on said memory magnetic film;
- first magnetic field generation means for applying an initialization magnetic field with a first strength to said disk in the vertical direction thereto;
- second magnetic field generation means for applying a bias magnetic field with a second strength smaller than the first strength to said disk in the direction opposite to the initialization magnetic field;
- said memory magnetic film having its coercive force larger than the strength of said initialization magnetic field at a room temperature and smaller than the strength of said bias magnetic field at a temperature above a first elevated temperature, said record magnetic film having its coercive force being of a strength between the strength of said initialization magnetic field and the strength of said bias magnetic field at the room temperature, smaller than a coercive force at the room temperature and larger than the strength of the bias magnetic field at a temperature above the first elevated temperature, and smaller than the strength of said bias magnetic field at a temperature above a second elevated temperature higher than the first elevated temperature, the memory magnetic film having its Curie point between the first elevated temperature and the second elevated temperature, and the record magnetic film having its Curie point higher than the second elevated temperature;
- light beam generation means for generating a light beam;
- an optical head focusing said light beam on said disk;
- pulse generation means for generating square wave pulses with a predetermined period;
- duty ratio control means operatively connected with said pulse generation means for alternately increasing and decreasing a duty ratio of the square wave pulses every time data "1" of binary record data is generated;
- a first switch operatively connected with said duty ratio control means and said light beam generation means being turned on/off in accordance with the square wave pulses output from said duty ratio control means; and
- first drive means operatively connected with said first switch for driving said light beam generation means with a first driving current when said first switch is on, said light beam generation means, when a pulse with an increased duty ratio is applied to said first switch, being driven by said first drive means to generate a first light

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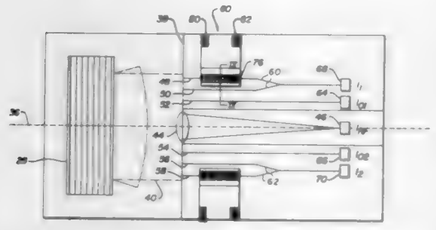
beam pulse, which first light beam pulse heats said memory magnetic film and said record magnetic film up to a temperature above the second elevated temperature and causes a mark having its direction of magnetization opposite to the direction of the initialization magnetic field to be formed in said magnetic films, and when a pulse with a decreased duty ratio is applied to said first switch, being driven by said first drive means to generate a second light beam pulse, which second light beam pulse heats said memory magnetic film and said record magnetic film up to a temperature above the first elevated temperature and below the second elevated temperature and causes a formerly formed mark in said memory magnetic film to be erased.

5,390,157

WAVEGUIDE OPTICAL PICK-UP HEAD USING MACH-ZEHNDER INTERFEROMETER WAVEFRONT SENSOR APPARATUS AND METHOD

Joseph F. Revelli, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 15, 1992, Ser. No. 913,579
Int. Cl.[6] G11B *7/135*
U.S. Cl. 369—44.12 9 Claims



1. A method for determining a focus error in an integrated optical head having an optical axis and being capable of reading from an optical data storage disk, comprising:

forming channels in said optical head and forming a first and second interferometers equally spaced a first distance from said optical axis;

detecting light emanating from said first and second interferometers;

detecting light emanating from a first channel waveguide associated with said first interferometer;

detecting light emanating from a second channel waveguide associated with said second interferometer;

obtaining a fine focus error signal by obtaining the difference in the ratios of the light emanating from the first and second interferometers divided by the light emanating from the respective first and second channel waveguides; and

compensating for the focus error using said fine focus error signal in the reading of the optical data storage disk.

5,390,158

METHOD FOR RECORDING AND REPRODUCING COMPRESSED AUDIO PCM DATA ON AND FROM OPTICAL DISC USING ADJUSTABLE INTERLEAVING FACTOR

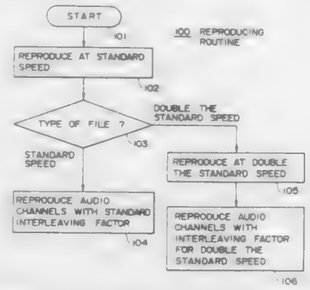
Makoto Furuhashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 976,900, Nov. 16, 1992. This application Sep. 29, 1993, Ser. No. 128,950
Claims priority, application Japan, Nov. 22, 1991, 3-333911
Int. Cl.[6] G11B *5/09;* H04N *5/76*
U.S. Cl. 369—47 6 Claims

5. A method of reproducing a compressed audio signal from a disc, said method comprising the steps of:

identifying a data transfer rate of an audio signal recorded on a disc;

rotating said disc at a speed that is directly proportional to the identified data transfer rate; and



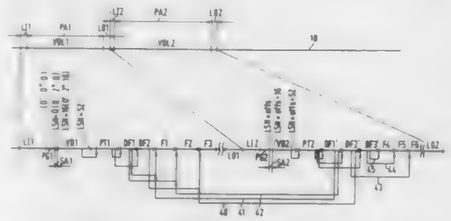
reproducing said compressed audio signal from said disc, said compressed audio signal being interleaved and arranged on said disc with an interleaving factor that is directly proportional to said data transfer rate.

5,390,159

RECORD CARRIER, READING APPARATUS FOR READING A RECORD CARRIER, AND METHOD AND RECORDING APPARATUS FOR RECORDING INFORMATION ON A RECORD CARRIER

Erik C. Schylander, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 817,579, Jan. 7, 1992, abandoned. This application Jan. 11, 1994, Ser. No. 180,002
Claims priority, application European Pat. Off., Apr. 2, 1991, 91200764; Apr. 26, 1991, 91201005
Int. Cl.[6] G11B *5/09*
U.S. Cl. 369—48 35 Claims



1. A method of recording information on a record carrier having a track, the method comprising:

recording a first information volume as sectors having corresponding addresses in the track, the first information volume including a reference to control information for use in controlling the search for information in that first information volume, that reference being accommodated in one or more sectors in a predetermined address range; and

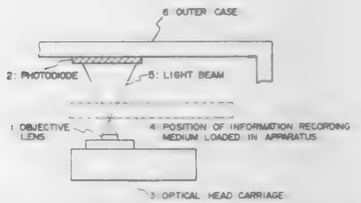
recording at least one additional information volume as sectors having corresponding addresses in the track following the end of a last-recorded information volume, each additional information volume having a reference to substitute control information for use in controlling the search for information in that additional information volume and in at least one previously-recorded information volume, the reference to the substitute control information being accommodated in one or more sectors in a recoverable substitute address range.

5,390,160

OPTICAL INFORMATION RECORDING AND REPRODUCING APPARATUS AND METHOD FOR DETECTING CONTAMINATION OF OPTICAL APPARATUS

Kenichi Sasaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 356,516, May 25, 1989, abandoned. This application Feb. 18, 1993, Ser. No. 22,598
Claims priority, application Japan, May 27, 1988, 63-128217
Int. Cl.[6] G11B *3/90*
U.S. Cl. 369—54 22 Claims



1. A contamination detection apparatus for an optical system in an optical information recording and/or reproducing apparatus, comprising:

a light source;

a first detector for monitoring a light beam emitted from said light source;

an optical system for focusing the light beam emitted from said light source on an information recording medium;

a second detector for receiving the light beam emitted from said light source and passing through said optical system;

wherein said second detector receives the light beam which does not pass through said information recording medium,

wherein said second detector receives the light beam emitted from said light source when the information recording medium is not loaded in the optical information recording and/or reproducing apparatus; and

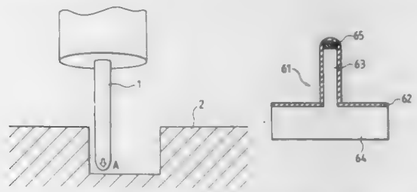
processing means for detecting the contamination of said optical system by comparing outputs from said first and second detectors.

5,390,161

MICROPROBE, METHOD FOR PRODUCING THE SAME, AND INFORMATION INPUT AND/OR OUTPUT APPARATUS UTILIZING THE SAME

Suomi Kurihara, Atsugi; Haruki Kawada; Kiyoshi Takimoto, Kawasaki; Yuji Kasanuki, Tokyo; Toshimitsu Kawase, Atsugi; Hisaaki Kawade, and Ken Eguchi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 639,219, Jan. 9, 1991, abandoned. This application May 10, 1994, Ser. No. 240,538
Claims priority, application Japan, Jan. 11, 1990, 2-002500; Mar. 28, 1990, 2-077063
Int. Cl.[6] H01J *37/26*
U.S. Cl. 369—126 66 Claims



1. A probe for effecting, at a longitudinal end thereof, at least one of information reading from an object and information input to an object, comprising:

a supporting member; and

a rod-shaped projection of which the end is positioned opposed to said object for at least one of information reading therefrom and information input thereto,

wherein said rod-shaped projection protrudes from a partial area of said supporting member,

said rod-shaped projection has a variation rate of the cross-sectional area not exceeding 10% continuously over a longitudinal length of at least 5 nm, and

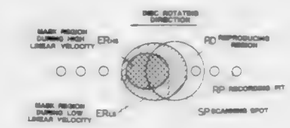
the maximum cross-sectional dimension or diameter in the end portion of said rod-shaped projection, positioned within the height of surface irregularities of said object, is within a range from 1 nm to 1 μm.

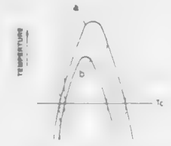
5,390,162

METHOD FOR REPRODUCING SIGNALS RECORDED ON OPTICAL RECORDING MEDIUM

Atsushi Fukumoto, Kanagawa; Toshiki Udagawa; Shunji Yoshimura, both of Tokyo; Masumi Ono, Kanagawa, and Kouichi Yasuda, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP91/01438, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/14245, PCT Pub. Date Aug. 20, 1992
PCT Filed Oct. 19, 1991, Ser. No. 941,058
Claims priority, application Japan, Feb. 5, 1991, 3-035545
Int. Cl.[6] G11B *11/10, 11/03*
U.S. Cl. 369—116 14 Claims





11. A method for reproducing information on an optical recording medium, comprising:

radiating a readout beam to an optical disc on which phase pits are formed in accordance with signals, the phase pits being changed in reflectance with temperatures,

reading said phase pits with said readout beam and partially changing the reflectance of said phase pits within a scanning spot of said readout beam as a result of being impinged by said readout beam, detecting a reproducing position on said optical recording medium when

rotating said optical recording medium at a constant rotational velocity for reproduction, and

controlling the size of a portion within the scanning spot of the readout beam in which the reflectance is changed as the result of being impinged by said readout beam.

5,390,163

DATA EXCHANGE CAPABLE OF MINIMIZING LOSS OF A DATA BLOCK

Chikashi Itoh, Tokyo, and Toshio Suzuki, Fukuoka, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 8, 1993, Ser. No. 117,618
Claims priority, application Japan, Sep. 9, 1992, 4-241013
Int. Cl.[6] H04J *3/14;* H04L *12/56*
U.S. Cl. 370—13 3 Claims

1. A data exchange for use in an asynchronous transfer mode

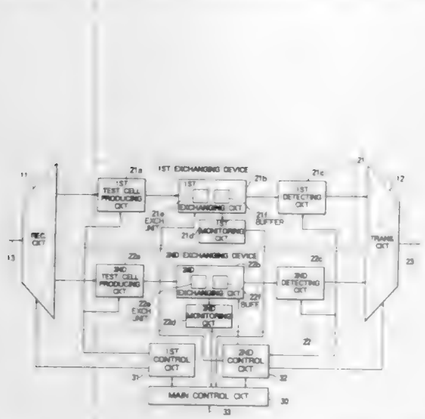
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communication system for exchanging an input data block into an output data block, said data exchange comprising first buffer means for successively memorizing said input data block as a first buffered data block to a predetermined block number to produce said first buffered data block as a first output data block, second buffer means for successively memorizing said input data block as a second buffered data block to the predetermined block number to produce said second buffered data block as a second output data block, receiving means for receiving a received data block to selectively supply said received data block as said input data block to said first and said second buffer means, and transmitting means for carrying out transmission of one of said first and said second output data blocks as said output data block, wherein said data exchange further comprises:

control signal producing means for producing a first control signal for a normal operation, said control signal producing means producing a second control signal for a change over operation;

test data supplying means for supplying a test data block to said first and said second buffer means in response to said second control signal; and

said receiving means being responsive to said first control signal to supply said received data block as said input data



block to said first buffer means, said receiving means being responsive to said second control signal to supply said received data block as said input data block to said first and said second buffer means after production of said test data block;

said data exchange still further comprising:

detecting means for detecting whether or not said first output data block is coincident with said test data block to produce a first detecting signal, said detecting means for detecting whether or not said second output data block is coincident with said test data block to produce a second detecting signal;

monitoring means for monitoring said second buffer means to produce a monitoring signal when the number of said second buffered data blocks is equal to said predetermined block number; and

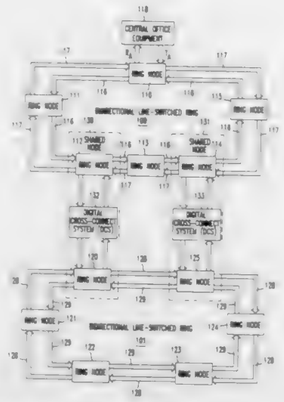
control means responsive to said first and said second detecting signals for controlling said receiving means and said transmitting means to connect said receiving means and said transmitting means to said second buffer means, said control means being responsive to said monitoring signal independently of said first and second detecting signals, for controlling said receiving means and said transmitting means to connect said receiving means and said transmitting means to said second buffer means.

5,390,164

RING INTERWORKING BETWEEN BIDIRECTIONAL LINE-SWITCHED RING TRANSMISSION SYSTEMS

Wilhelm Kremer, Andover, Mass., assignor to AT&T Corp., Murray Hill, N.J.

Filed Oct. 22, 1993, Ser. No. 141,151
Int. Cl.[6] H04L *1/20, 1/22*
U.S. Cl. 370—16.1 **7 Claims**



1. A communications system including,

a first bidirectional line-switched ring transmission system including first and second communications paths for transporting communications circuits in opposite directions around the ring,

a second bidirectional line-switched ring transmission system including first and second communications paths for transporting communications circuits in opposite directions around the ring,

each communications circuit having a first bit rate and including a plurality of digital signals each having a lower bit rate than the first bit rate,

a first interworking node having a first ring node in each of the first and second bidirectional line-switched ring transmission systems and a first inter-ring grooming apparatus interposed between the first ring nodes for arranging the lower bit rate digital signals into primary communications circuits at the first bit rate,

a second interworking node having a second ring node in each of the first and second bidirectional line-switched ring transmission systems and a second inter-ring grooming apparatus interposed between the second ring nodes for arranging the lower bit rate digital signals into primary communications circuits at the first bit rate, one of said interworking nodes being a primary interworking node and the other of said interworking nodes being a secondary interworking node,

the communications system further comprising,

a second ring node being provisioned to supply at least one secondary inter-ring groomed communications circuit to the first ring node in the same bidirectional line-switched ring transmission system, the secondary communications circuit corresponding to a primary inter-ring groomed communications circuit being supplied from the first inter-ring grooming apparatus,

means for demultiplexing the at least one secondary communications circuit to obtain the plurality of lower bit rate digital signals,

means for evaluating in accordance with prescribed criteria the lower bit rate digital signals from the secondary communications circuit on a pair-wise basis with corresponding lower bit rate digital signals of the corresponding

primary communications circuit to determine the lower bit rate signal in each pair which is least corrupted,

means responsive to the results of the evaluating for selecting the least corrupted one of the lower bit rate digital signals in the pairs,

means for combining the selected lower bit rate digital signals into a new primary communications circuit, and

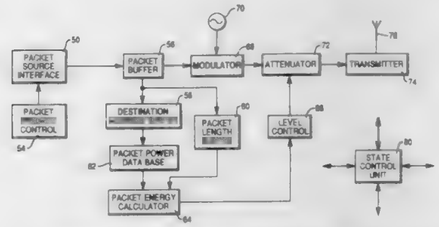
means for normally inserting the new primary communications circuit into a communications path in said same bidirectional line-switched ring transmission system, wherein the evaluation and selection of the lower bit rate digital signals is only performed in said primary interworking node.

5,390,165

METHOD AND APPARATUS FOR TRANSMITTING DIGITAL DATA PACKETS ON A WIRELESS CHANNEL

Bruce T. Tuch, CE De Bilt, Netherlands, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 4, 1992, Ser. No. 986,633
Claims priority, application United Kingdom, Jul. 23, 1992, 9215619
Int. Cl.[6] H04B *7/00;* **H04J** *3/14*
U.S. Cl. 370—17 **8 Claims**



6. A wireless data communication station adapted to transmit a digital data packet from a source station to a destination station in a wireless data communication system having a plurality of stations, said data packet containing destination station information identifying said destination station, comprising:

power level determining means (**58,60,62,64**) connected to receive said packet destination information for determining a minimum packet power level (P_x) which is necessary to transmit said packet to said destination station;

attenuation means (**72**) connected to receive said packet and responsive to said power level determining means to adjust the transmission level of said digital data packet to said determined minimum packet power level (P_x);

control means (**80**) connected to monitor said minimum packet power level (P_x) for determining if a predetermined average power level (P_o) will be exceeded for a predetermined time interval (T) by the transmission of said packet during said time period; and

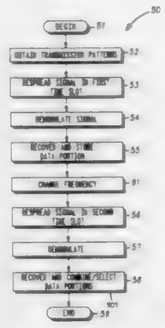
transmission means (**74**) connected to said attenuation means and responsive to said control means for transmitting said packet during said predetermined time interval (T) only if said predetermined average power level (P_o) will not be exceeded and deferring the transmission of said packet to a subsequent time interval if said predetermined average power level (P_o) will be exceeded for said predetermined time interval (T).

5,390,166

METHOD FOR RECOVERING A DATA SIGNAL USING DIVERSITY IN A RADIO FREQUENCY, TIME DIVISION MULTIPLE ACCESS COMMUNICATION SYSTEM

Kamyar Rohani, Vista, Calif., and John D. Reed, Arlington, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 14, 1993, Ser. No. 91,846
Int. Cl.[6] H04J *13/00;* **H04B** *15/00;* **H04L** *27/30*
U.S. Cl. 370—18 **19 Claims**



1. A method for recovering a data signal using diversity in a RF (Radio Frequency) TDMA (Time Division Multiple Access) communication system, said method comprising the steps of:

obtaining a frequency transmission pattern for each of a plurality of transmitters;

using a first frequency transmission pattern of a first transmitter to recover said data signal from a first transmission burst in a first time period;

using a second frequency transmission pattern of a second transmitter to recover said data signal from a second transmission burst in a second time period, said second time period being subsequent to said first time period; and

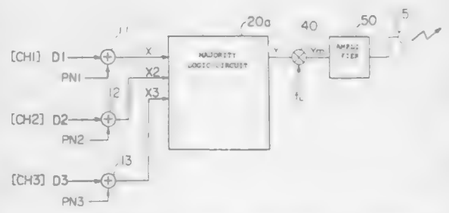
combining said data signal as recovered in said first time period with said data signal as recovered in said second time period.

5,390,167

CODE-DIVISION MULTIPLEX COMMUNICATION APPARATUS

Minoru Inatsu, 3-1-13, Matubara, Setagaya-ku, Tokyo 156, Japan, and Kimio Watanabe, Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa and Minoru Inatsu, Tokyo, both of Japan

Filed Nov. 12, 1993, Ser. No. 152,047
Claims priority, application Japan, Mar. 16, 1993, 5-055570
Int. Cl.[6] H04J *13/00*
U.S. Cl. 370—18 **14 Claims**



1. A code-division multiplex transmission apparatus for multiplexing data by using pseudo noise codes for transmission, comprising:

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n exclusive-OR means provided for respective data channels, n being an odd number, said exclusive-OR means producing exclusive ORs based on data input thereto and corresponding pseudo noise codes and outputting the exclusive ORs, respectively;

majority logic means for making a majority logic-based judgment on the exclusive ORs outputted from said exclusive-OR means, and for outputting a majority logic output; and

phase modulating means, coupled to said majority logic means, for subjecting the majority logic output to phase modulation and outputting a phase-modulated signal.

5,390,168

RADIO FREQUENCY TRANSMISSION CIRCUIT

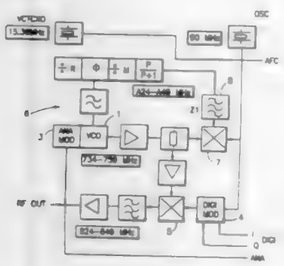
Markku Vimpari, Oulu, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Sep. 21, 1992, Ser. No. 947,755

Claims priority, application Finland, Sep. 25, 1991, 914510

Int. Cl.[6] H04B *1/50*

U.S. Cl. 370—30 **10 Claims**



1. A radio frequency (RF) transmission circuit comprising:

means for generating a first signal having a first frequency,

means for generating a second signal having a second frequency,

means for modulating one of said first and second signals with a further signal to produce a modulated signal,

first mixer means for combining the other of said first and second signals with the modulated signal to produce an RF output signal, and

a feedback circuit associated with the first signal generating means for controlling the frequency of the first signal,

characterized by second mixer means associated with the first signal generating means for combining the first signal and the second signal to produce a combined signal, and

the second mixer means being included in the feedback circuit associated with the first signal generating means, whereby the first signal is adjusted to compensate for variations in the second signal by maintaining the frequency of the combined signal substantially constant and thereby maintaining the frequency of the RF output signal substantially constant.

5,390,169

ROUTING TO INTELLIGENCE

Lawrence Bernstein, Short Hills, N.J., assignor to AT&T Corp., Murray Hill, N.J.

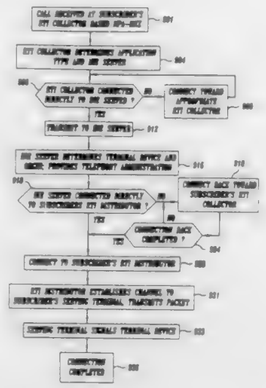
Filed Jun. 11, 1993, Ser. No. 75,977

Int. Cl.[6] H04M *7/10;* **H04Q** *3/76, 11/04*

U.S. Cl. 370—55 **24 Claims**

1. A method for use in a telecommunications network which includes a plurality of intelligent network element servers supporting respective telecommunications application types, said method comprising the steps of

receiving, at a point of collection, incoming calls of any of said application types, but all directed to a particular subscriber location, said respective different ones of said incoming call application types including two of POTS, ISDN, video and data, and



routing each of said incoming calls from said point of collection to a particular one of said intelligent network element servers supporting the application type of said each incoming call.

5,390,170

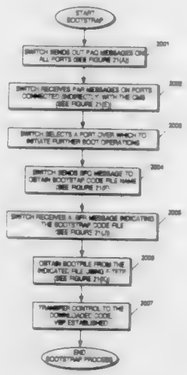
METHOD AND APPARATUS PROVIDING FOR BOOTSTRAPPING OF SWITCHES IN AN ATM NETWORK OR THE LIKE

Shiva Sawant, Santa Clara; Dilip Chatwani, Newark; Winnis Chiang, Los Altos Hills; Jonathan Davar, San Jose; Ayal Opher, Mountain View, and Rajan Subramanian, Newark, all of Calif., assignors to SynOptics Communications, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 959,732, Oct. 13, 1992. This application Jun. 29, 1993, Ser. No. 85,600

Int. Cl.[6] H04L *12/02*

U.S. Cl. 370—58.1 **21 Claims**



1. A method of booting a switch in an ATM network or the like, said method comprising the steps of:

(a) said switch transmitting, on each of its ATM ports, path access query messages;

(b) said path access query messages being transmitted through intermediate switches to a central boot manager;

(c) said central boot manager responding to said path access query messages by transmitting, through said intermediate switches, a path access response;

(d) said switch determining based on received path access responses over which of said ATM ports to allow communication with said central boot manager;

(e) said switch selecting one of said ATM ports as a boot port and initiating a boot process to obtain boot code over said selected ATM port.

5,390,171

SWITCHING SYSTEM

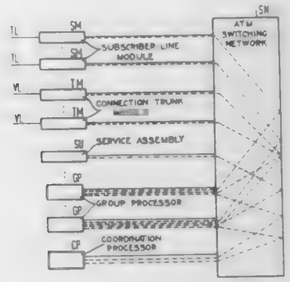
Juergen Storm, Puchheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 8, 1992, Ser. No. 880,896

Claims priority, application European Pat. Off., May 8, 1991, 91107515

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—58.2 **5 Claims**



1. A switching system, comprising:

a switching network;

a plurality of line module means for connection of subscriber lines to the switching network;

a plurality of trunk module means for connection of trunk lines to the switching network;

a plurality of group processor means for controlling the line module means and the trunk module means, said group processor means being connected to the switching network structurally independently of the line module means and trunk module means; and

coordination processor means for allocating at least one line module means or trunk module means to one group processor means and for changing the allocation of at least one of said line module means or trunk module means to another one of the group processor means during operation of the switching system.

5,390,172

ELECTRONIC DISTRIBUTION SYSTEM AND METHOD

Gilbert Kuang, P.O. Box 36035, Los Angeles, Calif. 90036

Filed Sep. 15, 1992, Ser. No. 945,010

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—60 **2 Claims**

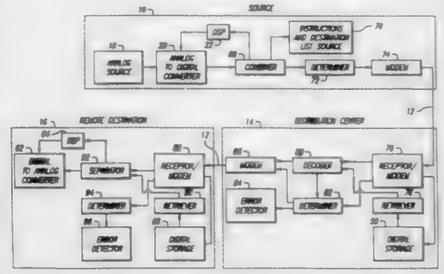
1. An electronic communications system for transmitting data signals over a communications circuit connectable to a predetermined set of remote destinations, comprising:

a combiner for combining a digital data signal with a set of instructions for use of the digital data signal and with a destination list including at least one remote destination selected from the predetermined set to form a first data package; a first determiner for determining a first error code from the first data package;

a first transmitter for transmitting the first data package and the first error code over the communications circuit to a distribution center;

a first receptor at the distribution center for receiving the first data package and the first error code from the first transmitter;

a decoder for selecting the destination list from the first data package, reading the destination list and removing the destination list from the first data package to form a second data package; a second determiner for determining a second error code from the first data package and an error detector for comparing the first error code with the second error code whereby to determine differences in the first data package after transmission to the first receptor;



a second transmitter for transmitting the second data package over the communications circuit to only the at least one remote destination included on the destination list;

a second receptor at the at least one remote destination for receiving the second data package from the second transmitter; and

a separator for separating the digital data signal from the set of instructions in the second data package.

5,390,173

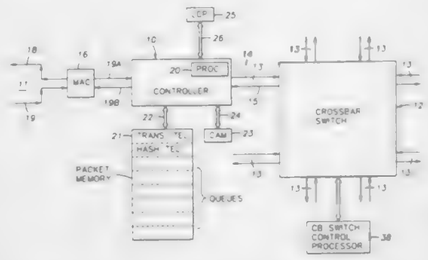
PACKET FORMAT IN HUB FOR PACKET DATA COMMUNICATIONS SYSTEM

Barry A. Spinney, Wayland; Robert J. Simcoe, Westboro; Robert E. Thomas, Hudson, and George Varghese, Bradford, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 22, 1992, Ser. No. 965,651

Int. Cl.[6] H04J *3/26;* **H04L** *12/46*

U.S. Cl. 370—60 **24 Claims**



1. A packet data communications network comprising:

a first network segment having a plurality of stations, one of said stations sending a message packet onto said first network segment of a first format; said first format including a first header and a data field with network destination address in said communications network;

a first network transfer device having an input connected to said first network segment to receive said message packet and having an output; the first network transfer device applying a second header to said message packet, said second header including a switching address translated

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from said destination address, said second header further including local status information and a plurality of status fields to indicate a message packet servicing;

a switching device having a plurality of ports, a first of said ports being connected to said output of said first network transfer device; the switching device receiving said message packet with said second header and sending said message packet with said second header to a second port as selected by said switching address, and in response to said local status information and the plurality of status fields;

a second network transfer device having an input connected to said second of said ports of said switching device and having an output connected to a second network segment, the second network transfer device receiving said message packet via said switching device to forward to said second network segment; the second network transfer device removing said second header from said message packet.

5,390,174

METHOD FOR HANDLING INFORMATION CONTAINED IN A HEADER PORTION OF MESSAGE CELLS TRANSMITTED IN ASYNCHRONOUS TRANSFER MODE

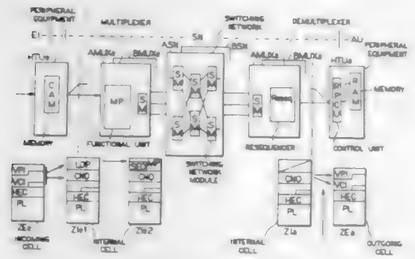
Alfred Jugel, Geretsried, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 28, 1993, Ser. No. 83,925

Claims priority, application European Pat. Off., Jun. 26, 1992, 92110784

Int. Cl.[6] H04J *3/24;* H04Q *11/04*

U.S. Cl. 370—60 1 Claim



1. A method for handling information in a header of a message cell that is transmitted in asynchronous transfer mode during routing of the message cell through a switching network of a switching center, comprising the steps of:

a) converting external component parts of a message cell header that identify traffic routes through a switching network and identify an output connection of the switching network into a neutral output-related connection number and a logical switching network output number that have a reduced number of bits relative to said external component parts, said step a) being performed by equipment at an input peripheral side of the switching center;

b) converting said logical switching network output number into one of a plurality of routing information that identifies a first path leading to a same switching network output, said step b) being performed by equipment at an input side of said switching network;

c) converting a logical switching network output number of a subsequent message cell into one of a plurality of routing information that identifies a second path leading to said switching network output, said step c) being performed by equipment at said input side of said switching network; and

d) restoring an original cell sequence of message cells that are identified by a same one of said neutral output-related connection number by using said neutral output-related connection number, said step d) being performed by equipment at an output side of said switching network.

5,390,175

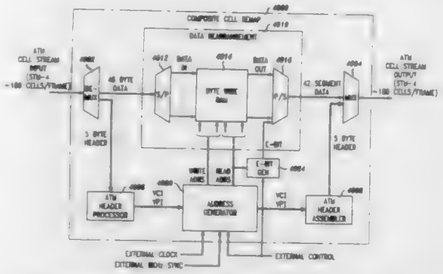
INTER-CELL SWITCHING UNIT FOR NARROW BAND ATM NETWORKS

Thomas L. Hiller, Glen Ellyn; Ronald A. Spanke; John J. Stanaway, Jr., both of Wheaton; Alex L. Wierzbicki, Bolingbrook, and Meyer J. Zola, Oak Park, all of Ill., assignors to AT&T Corp, Murray Hill, N.J.

Filed Dec. 20, 1993, Ser. No. 170,550

Int. Cl.[6] H04J *3/26;* H04L *12/56*

U.S. Cl. 370—60 11 Claims



1. A composite packet remap (CPR) circuit comprising:

means for receiving a packetized input signal comprising composite packets, each composite packet having individual periodic communication input signals different ones of which are for transmission to different ones of a plurality of switching systems;

means for switching the individual periodic signals of individual composite packets of said packetized input signal to different composite packets to form a packetized output signal, wherein said packetized output signal comprises composite packets each of which has individual periodic signals all for transmission to a single one of said plurality of switching systems; and

means for transmitting said packetized output signal.

5,390,176

LOW DELAY OR LOW LOSS SWITCH FOR ATM

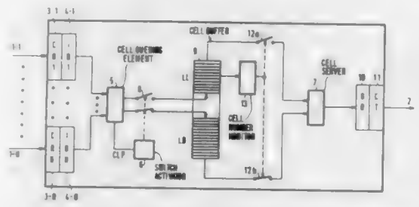
Frederik C. Schoute, Hilversum, and Geert A. Awater, Delft, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 952,878, Dec. 9, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 126,146

Claims priority, application European Pat. Off., Apr. 10, 1991, 91200835

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60.1 5 Claims



1. An a telecommunication switching arrangement for

switching digital data contained in data cells provided with a cell header, said cell header containing a predetermined location for storing a bit whose value is representative of a cell loss priority of the data cell, the arrangement comprising a crosspoint switch for switching cells from a plurality of input lines of the switch to an output line of the switch, the crosspoint switch further comprising a cell buffer memory for storing the cells to be switched through, the improved arrangement comprising:

(a) the cell buffer memory comprising first and second memory areas, the first memory area for storing first data cells whose predetermined location has a first value representative of a low delay characteristic and the second memory area for storing second data cells whose predetermined location has a second value representative of a low loss characteristic,

(b) means coupled to the input lines for determining the value in said predetermined location of the cell header of each incoming data cell to determine its cell loss priority,

(c) means in said crosspoint switch in response to the determining means determining the first value of an incoming first cell for allocating said incoming first cell to the first memory area and in response to the determining means determining the second value of an incoming second cell for allocating said incoming second cell to the second memory area,

(d) means in said crosspoint switch for reading out for switching purposes to the output line first the cells from the first memory area, unless the number of data cells stored in said second memory area exceeds a predetermined threshold value in which case the data cells stored in the second memory area are read out for switching purposes to the output line.

5,390,177

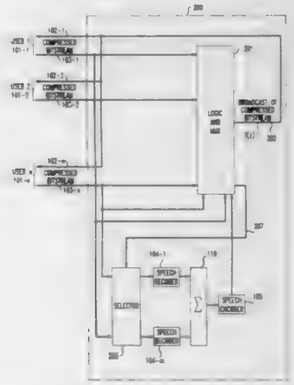
CONFERENCING ARRANGEMENT FOR COMPRESSED INFORMATION SIGNALS

Dror Nahumi, Eatontown, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Mar. 24, 1993, Ser. No. 36,588

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—62 14 Claims



1. Apparatus for providing conferencing communications comprising

means for combining signals from at least three input communications paths onto an output communications path;

means for monitoring the signal energy in each of the input communications paths; and

means responsive to the signal energy monitoring for bypassing said combining means and coupling the signal on one of the input communications paths onto the output communications path when said signal energy monitoring provides a first result.

5,390,178

COMMUNICATIONS SWITCHING NETWORK

David K. Hunter, Glasgow, United Kingdom, assignor to The University of Strathclyde, Glasgow, Scotland

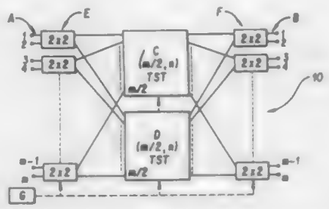
PCT No. PCT/GB92/00400, § 371 Date Sep. 7, 1993, § 102(e) Date Sep. 7, 1993, PCT Pub. No. WO92/16079, PCT Pub. Date Sep. 17, 1992

PCT Filed Mar. 6, 1992, Ser. No. 117,020

Claims priority, application United Kingdom, Mar. 7, 1991, 9104861

Int. Cl.[6] H04J *14/08;* H04Q *11/04*

U.S. Cl. 370—63 8 Claims



1. A communications switching network comprising:

M number of input terminals for receiving M number of multi-block communications signals in parallel, M being any predetermined integer,

M number of output terminals for delivering M number of signals in parallel,

first and second time-space-time (TST) switching networks each having M/2 input terminals and M/2 output terminals,

a first set of M/2 number of 2×2 switches connected between the input terminals of the TST switching networks and the M input terminals with each switch in said first set having a first output connected to the first TST switching network and a second output connected to the second TST switching network,

a second set of M/2 number of 2×2 switches connected between the output terminals of the TST switching networks and the M output terminals with each switch in said second set having a first input connected to the first TST switching network and a second input connected to the second TST switching network.

5,390,179

REMOTE PROVISIONING OF TELEPHONE CHANNEL UNIT USING INBAND DIGITAL CODE SEQUENCES TRANSMITTED OVER TANDEM LINK

Stephen T. Killian, Huntsville, and Jeffrey B. Wells, Madison, both of Ala., assignors to Adtran, Huntsville, Ala.

Filed Dec. 24, 1991, Ser. No. 813,346

Int. Cl.[6] H04S *3/00*

U.S. Cl. 370—68.1 66 Claims

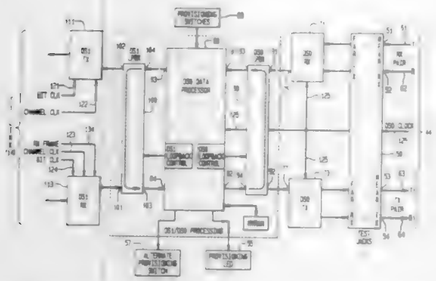
1. A method for establishing inband digital communications over a digital communications link between a control terminal and a selected communications services channel unit, so as to enable said control terminal to interrogate said selected communication services channel unit comprising the steps of:

(a) transmitting a first sequence of first code bytes, each first code byte having a first bit pattern that causes a communication services channel unit receiving said first code byte to transition to a first state, in which the receiving communication services channel unit is awaiting a second code byte to be transmitted thereto;

(b) transmitting a second sequence of second code bytes, each second code byte having a second bit pattern that causes a communication services channel unit receiving

said second code byte to transition to a second state, in which the receiving communication services channel unit is awaiting a third code byte to be transmitted thereto;

(c) transmitting a third sequence of third code bytes, each third code byte having a third bit pattern that causes a communication services channel unit receiving said third code byte to map said third code byte into a prescribed map code byte; and



(d) transmitting a fourth sequence of fourth code bytes, each fourth code byte having a fourth bit pattern that causes a communication services channel unit receiving said fourth code byte to establish inband communications with said control terminal; and wherein

said first, second, third and fourth bit patterns are different from one another.

5,390,180

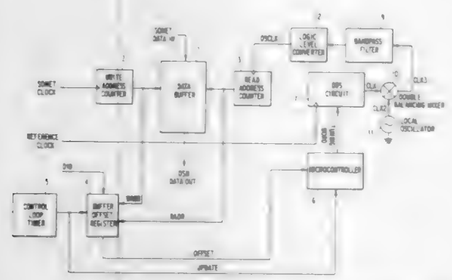
SONET DS-N DESYNCHRONIZER

Brian F. Reilly, Hillsboro, Oreg., assignor to NEC America, Inc., Melville, N.Y.

Continuation-in-part of Ser. No. 127,095, Sep. 27, 1993, Pat. No. 5,311,511, which is a continuation of Ser. No. 774,423, Oct. 10, 1991, abandoned. This application Feb. 16, 1994, Ser. No. 197,767

Int. Cl.[6] H04J *14/08;* **H04L** *7/08*

U.S. Cl. 370—84 **17 Claims**



1. An apparatus for receiving a stream of SONET data comprised of overhead information including positive and negative pointer adjustments and a SONET SPE payload for desynchronizing the SONET SPE payload to a DS-N type data, comprising:

first counting means for generating a first count in synchronism with a first clock having a first frequency;

second counting means for generating a second count in synchronism with a desynchronized clock having a second frequency;

buffer means, coupled to said first and second counting means, for storing said SONET SPE payload at a location corresponding to said first count in synchronism with said first clock, and for outputting DS-N type data from a location corresponding to said second count in synchronism with said desynchronized clock;

offset means, coupled to said first and second counting means, for determining a difference between said first count and said second count, and for outputting an offset signal representative thereof;

pointer adjustment means, responsive to said overhead information and said positive and negative pointer adjustments, for monitoring said positive and negative pointer adjustments which respectively indicate the reception of said SONET SPE payload after and before a nominal time, and for outputting a count signal representative of the pointer adjustments accumulated over a predetermined period of time;

clock generating means, responsive to a control signal, for generating said desynchronized clock; and

control means, coupled to said offset means and pointer adjustment means, for generating said control signal in response to said offset signal and said count signal so as to adjust said second frequency of said desynchronized clock such that said difference between said first and second count is maintained at a predetermined value.

5,390,181

METHOD FOR DETECTING COLLISIONS ON AND CONTROLLING ACCESS TO A TRANSMISSION CHANNEL

Graham M. Campbell, Batavia, and Wenxin Xu, Westmont, both of Ill., assignors to Illinois Institute of Technology, Chicago, Ill.

Filed Jun. 4, 1993, Ser. No. 73,206

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—85.2 **17 Claims**



1. A method for detecting a collision in a transmission channel, the method comprising the steps of:

(a) assigning a plurality of different patterns to a plurality of stations so that each said station corresponds to a unique pattern of a different Binomial coefficient C(n,k) representing One of a number of ways that k distinct objects can be selected from a set of n elements;

(b) transmitting at least one of said unique patterns to the transmission channel via a control minislot;

c) analyzing a summation of said unique patterns within said control minislot to detect whether a collision exists between said different patterns within said control minislot; and

(d) each said station receiving ternary feedback from said control minislot.

5,390,182

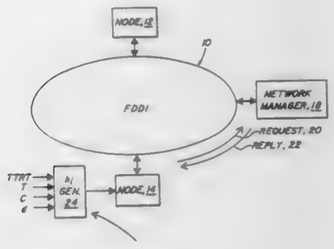
SYSTEM FOR SYNCHRONOUS BANDWIDTH ALLOCATION IN TOKEN RING NETWORKS

Qin Zheng, Belmont, Mass., assignor to Mitsubishi Electric Research Laboratories, Inc., Cambridge, Mass.

Filed Jul. 30, 1993, Ser. No. 99,918

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—85.5 **2 Claims**



1. FOR $2\pi TTRT \le d \le T+TTRT$,

$$h_i = \begin{cases} C/p & U\ q \ge C/p \\ (C+q)/(1+p) & U\ q < C/p \end{cases}$$

WHERE $p = \lfloor d/TTRT - 1 \rfloor$ and $q = \lceil d/TTRT \rceil TTRT - d$.

2. FOR $d \ge T+2\pi TTRT$,

$$h_i = (TTRT/T)C$$

3. FOR $T+TTRT < d < T+2\pi TTRT$ and $T \ge TTRT$,

$$h_i \le \begin{cases} C/p & U\ q_0 \ge C/p_0 \\ (C+q_0)/(1+p_0) & U\ q_0 < C/p_0 \end{cases}$$

WHERE $p_0 = \lfloor T/TTRT \rfloor$ and $q_0 = \lceil T/TTRT \rceil TTRT - T$.

4. FOR $2\pi TTRT < d < T+2\pi TTRT$ and $T < TTRT$,

$$h_i \le \lfloor TTRT/T \rfloor C.$$

1. A system for controlling the flow of information around a network comprising:

an FDDI network having a number of nodes, each of said nodes having means for requesting a synchronous bandwidth allocation time to permit transmission of synchronous messages over said network;

a network manager for receiving a synchronous bandwidth allocation time request from one of said nodes and for checking the request to ascertain if it can be granted based on the total allocated synchronous bandwidth times from all nodes in the system;

means for generating a signal corresponding to the target token rotation time, TTRT, for the network;

means for generating a signal corresponding to a minimum message generation time, T;

means for generating a signal corresponding to a maximum message transmission time, C;

means for generating a signal corresponding to a requested message delivery delay bound time, d;

means at each node responsive to said signals corresponding to TTRT, T, C, and d for specifying the amount of synchronous bandwidth allocation time required to support a predetermined application at said node, said means for specifying the amount of synchronous bandwidth allocation time including means for generating a synchronous bandwidth allocation time signal, h_i, for the node i corresponding to the amount of synchronous bandwidth allocation time required for said node, such that the time that any of the nodes, i, associated with said network is allowed to transmit messages in the worst case is no smaller than the time that a node i needs to satisfy the message delivery time constraints of said network; and

means for coupling said synchronous bandwidth allocation time signal, h_i, to said network manager.

5,390,183

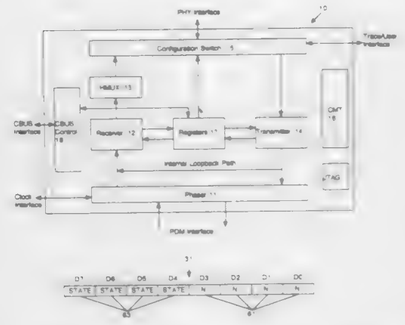
PCM PSEUDO CODE SIGNALLING USER INTERFACE

Walter R. Friedrich, Pleasanton, and David C. Brief, Palo Alto, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 9, 1992, Ser. No. 988,245

Int. Cl.[6] H04J *3/02;* **H04L** *12/42*

U.S. Cl. 370—85.15 **30 Claims**



1. A physical layer controller for controlling a physical layer of a station that is capable of insertion into a data transmission network that is capable of operating substantially in accordance with a FDDI protocol, the physical layer controller including a physical connection management entity that is capable of executing a connection management sequence in accordance with the FDDI protocol, the connection management sequence including a pseudo code signaling sequence, the physical layer controller further comprising:

a plurality of registers, the registers including a state register that a user may selectively write into in order to designate a new pseudo code signaling bit that the physical layer controller should transmit, wherein when a value indicative of a desired new pseudo code signaling bit is written into the state register, the physical layer controller will automatically transmit the desired new pseudo code signaling bit as the next pseudo code signaling bit that is to be transmitted.

5,390,184

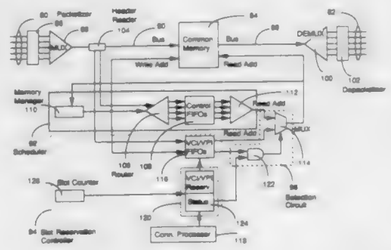
FLEXIBLE SCHEDULING MECHANISM FOR ATM SWITCHES

Todd D. Morris, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 30, 1993, Ser. No. 128,416

Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—94.2 **9 Claims**



1. A telecommunication switch for switching digital data in cells between ports, said data being a mixture of different transport types and each cell being a predetermined number of

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bytes long and containing at least a VCI in its header, comprising:

packetizing means connected to the ports for packetizing digital data into cells and depacketizing cells into digital data, and for generating a traffic descriptor indicative of the transport type of the digital data;

a common memory connected to ports for storing each cell received therefrom;

a slot reservation controller having a slot reservation table and a linear slot counter to index VCIs of selected cells to selected slot locations of the table in that the slot locations are adjustable so that a certain adjustable amount of bandwidth can be set aside for one transport type for bandwidth reservation of digital data;

a scheduler to index VCIs of remaining cells;

a header reader for reading the header of each cell received from the ports to direct the header to either the slot reservation controller or the scheduler; and

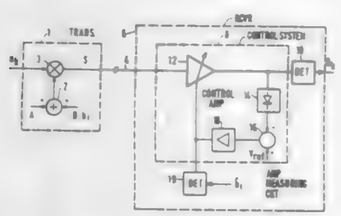
a selection circuit connected to both the slot reservation controller and the scheduler for sending to the common memory an indication of the VCI of a cell to be read out of the common memory.

5,390,185

TRANSMISSION SYSTEM FOR A COMBINATION OF A MAIN SIGNAL AND AN AUXILIARY SIGNAL

Pieter W. Hooijmans; Petrus P. G. Mols, and Markus T. Tomesen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 8, 1993, Ser. No. 134,245
Claims priority, application European Pat. Off., Oct. 9, 1992, 92203107
Int. Cl.[6] H04J *14/02, 14/06*
U.S. Cl. 370—98 15 Claims



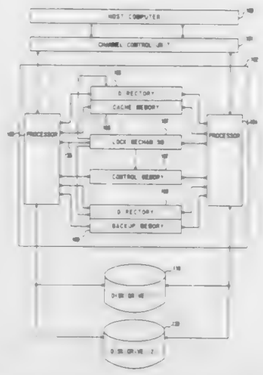
1. Transmission system comprising a transmitter for supplying a send signal to a transmission channel, the send signal being a combination of a main signal and an auxiliary signal, and a receiver for deriving a received signal from an output signal of the channel; said receiver including a control system which comprises: comparing means for deriving a difference signal corresponding to the difference value between a parameter of the received signal and a reference value, means for deriving a correction signal from the difference signal, and means for reducing the difference value in response to the correction signal; the receiver further including means for deriving the auxiliary signal from the difference signal, the frequency spectrum of the auxiliary signal being mainly situated in the bandwidth of the control system, the auxiliary signal comprising a series of digital symbols for conveying auxiliary information.

5,390,186

METHOD OF FAULT HANDLING FOR A DISK CONTROL UNIT WITH BUILT-IN CACHE

Tomohiro Murata; Masaharu Akatsu, both of Yokohama; Kenzo Kurihara, Tokyo; Shigeo Homma, Odawara, and Akira Yamamoto, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 20, 1990, Ser. No. 615,929
Claims priority, application Japan, Nov. 22, 1989, 1-303967
Int. Cl.[6] G06F *11/00, 1/00*
U.S. Cl. 371—10.1 4 Claims



1. A method of fault handling for a disk control unit with built-in cache which is connected with a capacious disk drive and a host computer, and having a cache memory and a backup memory for backing up said cache memory, said control unit operating in response to a write command for data from said host computer to said disk drive to write the data to both of said cache memory and said backup memory, and implementing a write operation from said backup memory to said disk drive asynchronously with the write operation of said write command, said method comprising:

a step of detecting a fault of reading or writing in one of said cache memory and backup memory; and

a step of judging whether track data stored in said cache memory and backup memory is non-reflective data that has not yet been written to said disk drive, and judging whether or not a track of said disk drive is a non-reflective track which is different in data content from data stored in said cache memory and backup memory;

said method, upon receiving a read or write command from said host computer which involves access to a track of said disk drive, and upon detecting a fault in one of said cache memory and backup memory by said fault detection step, and further upon judging that said track is a non-reflective track in said non-reflective track judgment step, writing the non-reflective track data which resides in the other one of said cache memory and backup memory to said track of said disk drive, and, on completion of the non-reflective track data write operation to said disk drive, executing the read or write command from said host computer for said track of said disk drive; and

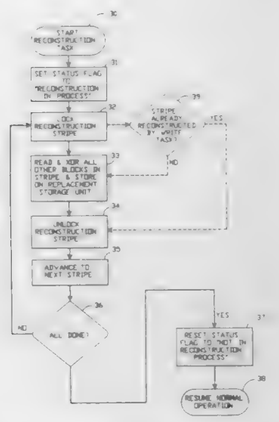
implementing a track-wise lock for non-reflective tracks in a normal memory which is accessed by a read or write command from said host computer, and a step of implementing a drive-wise lock for a disk drive to which said non-reflective tracks are written, said method including a step of implementing, during a period from the commencement of a write operation to said disk drive upon detecting the non-reflective tracks until the completion thereof, the track-wise lock and drive-wise lock for locking tracks and a disk drive pertinent to said operation, and unlocking said tracks and disk drive on completion of the write operation to said disk drive.

5,390,187

ON-LINE RECONSTRUCTION OF A FAILED REDUNDANT ARRAY SYSTEM

David C. Stallmo, Boulder, Colo., assignor to EMC Corporation, Hopkinton, Mass.

Continuation of Ser. No. 601,912, Oct. 23, 1990, Pat. No. 5,208,813. This application Feb. 16, 1993, Ser. No. 17,826
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[6] G06F *11/10, 11/20*
U.S. Cl. 371—10.1 56 Claims



1. A method for on-line reconstruction of a failed data storage unit to a replacement storage unit in a redundant array of storage units, the storage units having at least one stripe containing a plurality of data blocks and at least one associated error-correction block, comprising the steps of:

a. reconstructing each data block of the failed storage unit for each stripe in the array;

b. storing each reconstructed data block on the replacement storage unit in the corresponding stripe;

c. if the array receives a read request for a data block during reconstruction, then:

(1) if the requested data block is located on the replacement storage unit, then:

(a) accessing all other corresponding data blocks and at least one corresponding error-correction block in the stripe containing the requested data block;

(b) reconstructing the requested data block from the accessed blocks;

(2) if the requested data block is not located on the replacement storage unit, then:

(a) accessing the requested data block directly.

5,390,188

METHOD AND APPARATUS FOR MEASURING AND MONITORING THE PERFORMANCE WITHIN A RING COMMUNICATION NETWORK

John E. Dawson, Sunnyvale, Calif., assignor to Synoptics, Santa Clara, Calif.

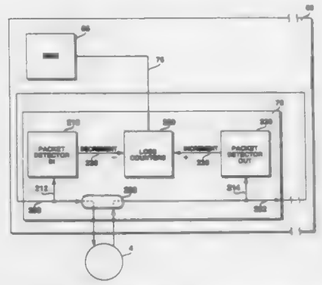
Filed Aug. 2, 1993, Ser. No. 101,390
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—20.6 56 Claims

1. An apparatus for measuring performance of a port within a communication network having a plurality of ports, said ports capable of individually interfacing with attached stations or devices, said apparatus comprising:

first packet detecting means operable within said port of said network for detecting a message packet entering said port, said first packet detecting means coupled to an input communication stream to said port;

second packet detecting means operable within said port for detecting a message packet exiting said port, said second packet detecting means coupled to an output communication stream from said port; and

counter means for maintaining a count value indicating an amount of messages lost or corrupted by said port and indicating an amount of messages lost or corrupted by said network, said counter means communicatively coupled to said first packet detecting means and communicatively coupled to said second packet detecting means.

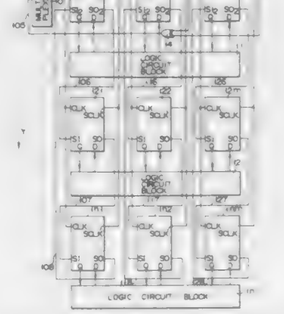


5,390,189

SEMICONDUCTOR INTEGRATED CIRCUIT

Akimitsu Tateishi, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 30, 1991, Ser. No. 767,799
Claims priority, application Japan, Oct. 1, 1990, 2-264619
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 15 Claims



1. A semiconductor integrated circuit comprising:

a flip-flop circuit group having a plurality of flip-flop circuits of n rows×m columns in which the flip-flop circuits of one row are serially connected in a direction from the scan-in terminal to the scan-out terminal thereof to constitute a row-direction shift register, the flip-flop circuits of each column are connected to constitute a column-direction shift register, and each stage of said row-direction

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shift register is so constructed that the data shifting direction thereof can be changed to a row direction or column direction according to a control signal;

a row-direction pseudo-random number generator for generating pseudo-random number data by selectively using said row-direction shift register as a linear feedback shift register, said pseudo-random number generator including a feedback loop having an exclusive OR gate which is connected between the last-stage output and first-stage input of said row-direction shift register and which has a predetermined number of inputs supplied from selected row-direction output terminals of said flip-flop circuits according to the number of column, and a multiplexer for selecting one of scan-in data and feedback data of said feedback loop as scan data input of the first stage of said row-direction shift register so that said pseudo-random number generator constitutes said linear feedback shift register by causing said multiplexer to select the feedback data of said feedback loop as the scan data input of the first stage of said row-direction shift registers; and

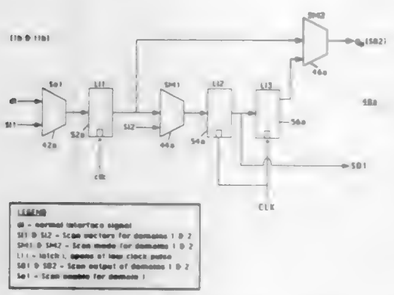
a logic circuit block connected to input or output data with respect to each stage of said column-direction shift register of each column.

5,390,190

INTER-DOMAIN LATCH FOR SCAN BASED DESIGN

Sunil Nanda, Los Altos, and Rajiv N. Patel, San Jose, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 29, 1992, Ser. No. 890,690
Int. Cl.[6] H04B *17/00*
U.S. Cl. 371—22.3 6 Claims



1. In a sequential logic design comprising a first and a second domain, each having an opposite edge clock for their flip-flops, an inter-domain latch for establishing a controllable and observable boundary point between said first and second domains, said interdomain latch comprising:

a) a first multiplexor having a normal interface signal as a first input of said first multiplexor, a first scan vector for said first domain as a second input of said first multiplexor, and a first scan enable indicator signal as a third input for said first multiplexor, said normal interface signal being an output of said first multiplexor when said first scan enable indicator signal is not asserted, said first scan vector being said output of said first multiplexor when said first scan enable indicator signal is asserted;

b) a first latch coupled to said first multiplexor and having the output from said first multiplexor as a first input of said first latch and a first clock signal as a second input of said first latch, said first input of said first latch being an output of said first latch when said first clock signal changes states;

c) a second multiplexor coupled to said first latch and having the output from said first latch as a first input of said second multiplexor, a second scan vector of said second domain as a second input of said second multiplexor and a first scan mode signal as a third input of said second multiplexor, said first input of said second multiplexor being an output of said second multiplexor when said first scan mode signal is asserted, said second scan vector for said second domain being said output of said second multiplexor when said first scan mode signal is not asserted;

d) a second latch coupled to said second multiplexor and having the output from said second multiplexor as a first input of said second latch and a second clock signal as a second input of said second latch, said first input of said second latch being an output of said second latch when said second clock signal changes states;

e) a third latch coupled to said second latch and having the output from said second latch as a first input of said third latch and a third clock signal as a second input of said third latch, said first input of said third latch being an output of said third latch when said third clock signal changes states; and

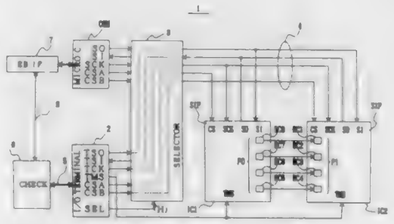
f) a third multiplexor coupled to said first and third latches and having the output from said first latch as a first input of said third multiplexor, the output from said third latch as a second input of said third multiplexor and a second scan mode signal as a third input of said third multiplexor, said second input of said third multiplexor being an output of said third multiplexor when said second scan mode signal is asserted, said first input of said third multiplexor being said output of said third multiplexor when said second scan mode signal is not asserted.

5,390,191

APPARATUS AND METHOD FOR TESTING THE INTERCONNECTION BETWEEN INTEGRATED CIRCUITS

Toru Shiono; Toshitaka Senuma, both of Tokyo; Katsumi Matsuno, Kanagawa, and Tokuya Fukuda, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,760
Claims priority, application Japan, Jan. 31, 1992, 4-042288; May 28, 1992, 4-160006
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 20 Claims



1. Apparatus for testing the interconnection of first and second integrated circuits including respective parallel data output and input terminals and serial input and output terminals, said first and second integrated circuits being controllable to perform serial to parallel and parallel to serial conversion of test data in a test mode, said serial input and output terminals being operable in said test mode to receive and supply test data and also operable in a non-test mode to receive and supply non-test serial data, and said parallel data output terminal of said first integrated circuit being connected to said parallel data input terminal of said second integrated circuit, the apparatus comprising:

means for setting said first and second integrated circuits in said test mode;

means for supplying predetermined test data to said serial input terminal of said first integrated circuit;

means for controlling said first integrated circuit to convert said predetermined test data to parallel data and to supply said parallel data as an output from said first integrated circuit at its parallel data output terminal;

means for controlling said second integrated circuit to read said parallel data supplied to its parallel data input terminal from said parallel data output terminal of said first integrated circuit, to convert said parallel data read by said second integrated circuit to serial data and to supply said serial data as an output from said second integrated circuit at its serial output terminal; and

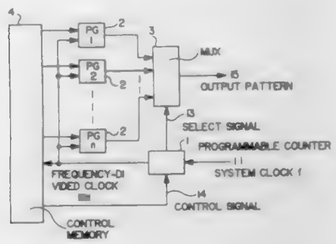
means for comparing said predetermined test data supplied to said serial input terminal of said first integrated circuit with said serial data supplied at said serial output terminal of said second integrated circuit.

5,390,192

HIGH-SPEED PATTERN GENERATOR

Takanori Fujieda, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,308
Claims priority, application Japan, Dec. 10, 1990, 2-407196
Int. Cl.[6] G01R *31/28;* G06F *11/00*
U.S. Cl. 371—27 3 Claims



1. A high speed pattern generator, comprising:

a programmable counter for dividing a frequency of a system clock signal by n, where n represents an integer not smaller than 2, to thereby generate a clock signal having a frequency of 1/n of the frequency of the system clock and a select signal representative of a count output of said programmable counter;

n pattern generating circuits each operating at a frequency determined by said clock signal for producing a pattern signal as a function;

a multiplexer for converting patterns generated by said n pattern generating circuits into a time-serial pattern in response to said select signal for sequentially selecting outputs of said n pattern generating circuits to thereby output a fast pattern; and

a control memory which operates at a frequency determined by said clock signal for producing a control signal to periodically switch a frequency division ratio of said programmable counter between a plurality of ratios.

5,390,193

TEST PATTERN GENERATION

Steven D. Millman, Mesa, and James P. Garvey, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 28, 1992, Ser. No. 967,313
Int. Cl.[6] G06F *11/28*
U.S. Cl. 371—27 5 Claims

1. A method for generating and simulating test patterns to detect faults in an integrated circuit, comprising:

identifying a plurality of nets which can potentially be shorted together as a plurality of potential faults;

listing each potential fault in a fault list;

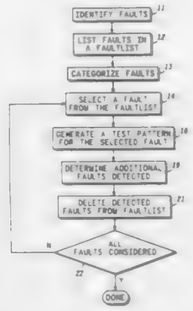
categorizing each of the plurality of potential faults into either a feedback fault or a non-feedback fault wherein categorizing each of the plurality of potential faults into either a feedback fault or a non-feedback fault includes:

assigning a level to a gate output node equal to the greatest number of intervening gates between the gate output node and a primary input;

placing an identification code for each gate output node in a linked list which corresponds to the level of the gate output node;

building a dependency list for each gate output node comprising the identification codes for each node on a path between the gate's output node and a primary input;

recursively adding the dependency list for each gate which drives an input node to the gate until all dependencies are included;



selecting a potential fault from the fault list;

inspecting the nodes to determine a high level faulty node and a low level faulty node from the nodes which comprises the potential fault; and

inspecting the dependency list associated with the high level faulty node to determine if the potential fault creates a feedback fault;

selecting one potential fault from the fault list, having a first faulty node and a second faulty node;

generating a test pattern to detect the selected potential fault; and

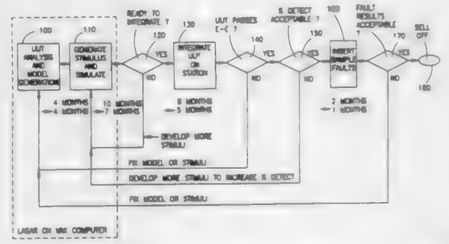
checking the test pattern to ensure that the selected potential fault is detected even if the potential fault is categorized as a feedback fault.

5,390,194

ATG TEST STATION

Thomas M. Mannle, Franklin Square, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Nov. 17, 1993, Ser. No. 153,192
Int. Cl.[6] G06F *15/20*
U.S. Cl. 371—27 9 Claims



1. Apparatus for integrating test program sets for digital circuit boards, the test program sets being output by an automatic test program generation system (ATG), comprising:

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an ATG host computer which includes means for generating test programs;

a general purpose personal computer connected to the ATG host computer for receiving program sets output by the host computer, said general purpose computer including means for running and debugging said ATG test programs provided by the ATG host computer;

a basic test unit connected to the general purpose personal computer for generating test patterns in response to running of said test programs by said general purpose computer and applying the test patterns to a digital circuit board under control of the personal computer; and

an interface for transferring stimulus data and response data between the basic test unit and the digital circuit board,

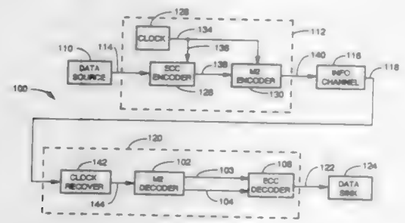
wherein said ATG host computer includes means for analyzing the performance of ATG test programs run by the general purpose computer which in turn comprises means for analyzing performance of the basic test unit and transmitting results back to the ATG host computer.

5,390,195

MILLER-SQUARED DECODER WITH ERASURE FLAG OUTPUT

Richard K. Brush, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 3, 1992, Ser. No. 863,602
Int. Cl.[6] G06F *11/10*; **H03M** *13/00*
U.S. Cl. 371—37.1 **33 Claims**



1. A decoder in a transmission system for converting an encoded input serial data stream into an output data stream, said input data stream being encoded according to at least two coding formats, one such coding format, a channel code, enabling said input serial data stream to be generally free of any net DC component and another such coding format, an error correction code providing data redundancy to said input data stream, said decoder comprising:

means for receiving said input data stream;

means for decoding serially said input data stream according to said channel code for generating a first data stream generally representative of said input data stream;

means for determining if said input data stream conforms to said channel code;

means responsive to said determining means for generating a signal indicative of a violation of said channel code arising from a data error;

means for transmitting said signal in synchronism with said first data stream, said signal being indicative of one or more data bit locations at which a data error occurs in said first data stream; and

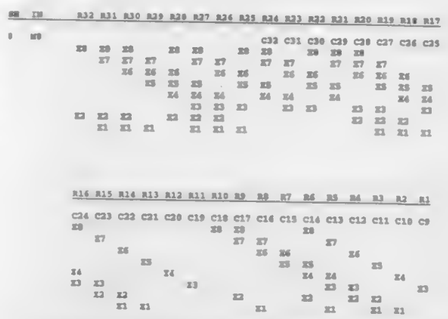
other means responsive to said signal and said first data stream for decoding said first data stream according to said error correction code for generating said output data stream.

5,390,196

BYTE-WISE DETERMINATION OF A CHECKSUM FROM A CRC-32 POLYNOMIAL

Brian D. Cecil, Gilbert, and Edmund Kaemper, Phoenix, both of Ariz., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Nov. 12, 1992, Ser. No. 975,311
Int. Cl.[6] G06F *11/12*
U.S. Cl. 371—37.1 **2 Claims**



1. A method for effecting the high integrity transfer from a source to a destination of a binary data set consisting of a plurality of 8-bit bytes, which method includes using a predetermined 32-bit binary polynomial to generate a checksum, said method comprising the steps of:

A) at the source, reversing the 32-bit binary polynomial to obtain an initial CRC;

B) XORing the least significant unprocessed byte of the data set with the least significant 8-bit byte of the CRC as currently positioned to obtain **X8**, **X7**, **X6**, **X5**, **X4**, **X3**, **X2**, **X1**, collectively Xi;

C) shifting the CRC right eight bits;

D) for Xi=**X8** to **X3**, inclusive, successively testing the highest numbered unprocessed Xi bit to determine if it is a one or a zero;

a) if the Xi bit being tested is a zero, the CRC remains unchanged for this bit;

b) if the Xi bit being tested is a one, then XOR the shifted CRC with the a 32-bit pattern of Xi corresponding to the initial CRC shifted right zero places for **X8**, one place for **X7**, two places for **X6**, three places for **X5**, four places for **X4** and five places for **X3**;

E) for Xi=**X2** and **X1**, successively testing the highest numbered unprocessed Xi bit to determine if it is a one or a zero;

a) if the Xi bit being tested is a zero, the CRC remains unchanged for this bit;

b) if the Xi bit being tested is a one, then XOR the shifted CRC with the a 32-bit pattern of Xi corresponding to a second predetermined 32-bit binary polynomial shifted right zero places for **X2** and one place for **X1**;

F) if bytes of the data set remain to be processed, returning to step B);

G) if the last byte in the data set has been processed, appending the current value of the CRC to the data set as a checksum;

H) transmitting the data set and appended checksum to the destination;

I) at the destination, dividing the data set and appended checksum by the predetermined polynomial to obtain a quotient and a remainder;

J) testing the remainder obtained in step I) to determine if it has a value of zero; and

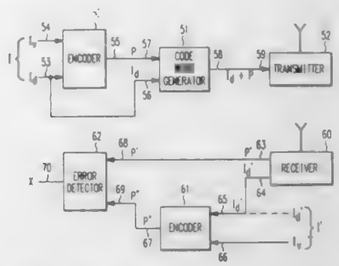
K) if the test performed during step J) reveals that the remainder does not have a value of zero, providing an indication that the data set transmitted to the destination during step H) has been corrupted.

5,390,197

VESTIGIAL IDENTIFICATION FOR CO-CHANNEL INTERFERENCE IN CELLULAR COMMUNICATIONS

Andrew J. MacDonald, Damascus; Youngky Kim, N. Potomac, and Stanley E. Kay, Rockville, all of Md., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 4, 1992, Ser. No. 985,767
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—37.1 **16 Claims**



1. A vestigial identification system for transmitting information in a cellular communications network employing frequency reuse, said vestigial identification system comprising:

means for generating a message including a plurality of information bits;

means for generating an identifier including a plurality of identification bits indicating a source of said message;

means for encoding said message and said identifier to generate a composite parity check including a plurality of parity bits;

means for combining said message and said composite parity check to form a code word; and

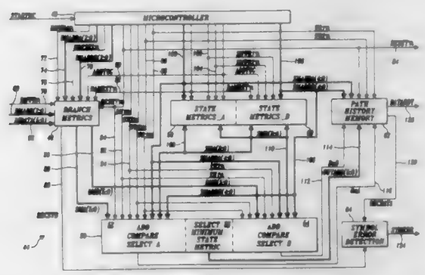
means for transmitting said code word, wherein said plurality of identification bits identify said transmitting means.

5,390,198

SOFT DECISION VITERBI DECODER FOR M-ARY CONVOLUTIONAL CODES

Robert P. Higgins, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 26, 1993, Ser. No. 67,669
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—43 **21 Claims**



16. In a communication system that encodes binary data to be transmitted using an orthogonal convolutional M-ary error correction code to represent the binary data with M different symbols, M being greater than two, a method for decoding a received signal to recover the binary data that was transmitted, even when the received signal has been affected by noise, said method comprising the steps of:

(a) for each bit of the binary data that was encoded:

(i) processing the received signal to determine one of N possible correlation values for each of the M different symbols;

(ii) determining a maximum of the correlation values determined for each of the M different symbols;

(iii) subtracting the correlation values for each of the M different symbols from the maximum of the correlation values to determine M branch metrics;

(iv) for each of two different paths leading to one of N possible current states from previous states, adding a selected one of the branch metrics to a state metric of one of the previous states to determine a path metric for each such path leading to the current state;

(v) comparing the path metrics for each of the N possible current states to determine a minimum path metric of the two paths leading to each of said current states;

(vi) assigning the minimum path metric for each of the N possible current states as a new state metric for that state; and

(vii) identifying a bit value corresponding to the minimum path metric of step (a) (vi);

(b) reiterating steps (a) (i) through (a) (vii) for each bit of the binary data that was encoded for transmission;

(c) for each iteration of step (b), storing the bit value for all of the possible states, to develop a path history;

(d) identifying a minimum state metric for each iteration, to determine a most likely path through the path history;

(e) by tracing back along the most likely path, identifying an output bit associated with an earlier state metric occurring a predetermined number of iterations ago, said most likely representing a bit of the binary data that was encoded and transmitted; and

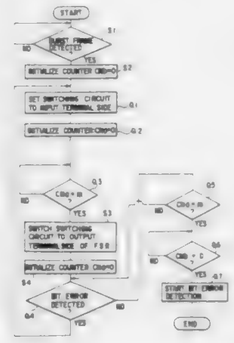
(f) repeating steps (a) through (e) for each successive bit of the binary data that was encoded to decode each remaining bit thereof.

5,390,199

ADVANCED CODE ERROR DETECTION APPARATUS AND SYSTEM USING MAXIMAL-LENGTH PSEUDORANDOM BINARY SEQUENCE

Hiroyuki Ajima, Kawasaki; Nobuki Ishiyama, Atsugi, and Tsukasa Hattori, Zama, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 908,475
Claims priority, application Japan, Jul. 19, 1991, 3-179863; Jul. 19, 1991, 3-179879; Sep. 30, 1991, 3-251693
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—67.1 **20 Claims**



1. A code error detection apparatus comprising:

a measurement terminal for receiving a reception code of an

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M-sequence having a period (2^m-1) (where m is an arbitrary natural number);

a feedback shift register (FSR) having input and output terminals, m stages of shift registers cascade-connected between the input and output terminals, and a predetermined number of exclusive OR circuits respectively connected between outputs of a predetermined stages of shift registers of said m stage of shift registers;

switching means, arranged between said measurement terminal and said FSR, for switching connection states between a first state in which the input terminal of said FSR is connected to said measurement terminal and a second state in which the output terminal of said FSR is connected to the input terminal of said FSR;

first control means for outputting a first control signal for setting the first state to said switching means at a first timing, and outputting a second control signal for setting the second state to said switching means at a second timing at which m consecutive bit data of the reception code input to said FSR from said measurement terminal in the first state are fetched, thereby setting said FSR in a self-running state;

synchronization detection comparing means for sequentially comparing bit data output from the output terminal of said FSR set in the self-running state in the second state with bit data of the reception code input to said measurement terminal;

second control means for, when the m consecutive bit data output from said FSR are determined to coincide with those output from said measurement terminal on the basis of a comparison result output from said synchronization detection comparing means, determining that the bit data output from the output terminal of said FSR set in the self-running state are a reference code, and causing said switching means to maintain the second state, and for, when the m consecutive bit data output from said FSR are determined not to coincide with those output from said measurement terminal, outputting a third control signal for setting the first state to said switching means so as to set a state in which said FSR fetches m consecutive bit data of the reception code input from said measurement terminal again;

storage means for storing consecutive bit data of the reception code input to said measurement terminal in a time interval from the instant at which said FSR starts to fetch the m consecutive bit data of the reception code in the first state to at least the instant at which it is determined by said second control means that the bit data are the reference code, and outputting stored bit data after delaying the bit data by a predetermined period of time; and

bit error detection comparing means for sequentially comparing the bit data of a delayed reception code output from said storage means with the bit data determined to be the reference code and output from the output terminal of said FSR.

5,390,200

HIGH POWER, SINGLE-FREQUENCY TUNABLE LASER

Martin Zirngibl, Middletown, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Oct. 13, 1993, Ser. No. 135,836
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—20 **10 Claims**

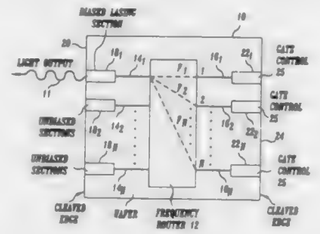
1. A tunable laser, comprising:

a laser cavity defined in a semiconductor wafer; and

a frequency routing device formed in the cavity;

a plurality of frequency selective optically transmissive pathways definable in the laser cavity, each of said frequency selective pathways having a first plurality of optical amplifiers which are selectively activatable to define a predetermined frequency selective pathway in the laser cavity; and

a second plurality of optical amplifiers disposed in said frequency routing device for creating lasing action in the predetermined frequency selective pathway and means



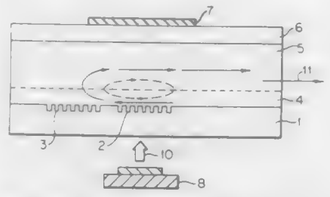
for providing bias current to the first and second plurality of optical amplifiers.

5,390,201

SELF-FREQUENCY-DOUBLER LASER ELEMENT

Takao Tomono; Tasunari Nishikata; Lyong S. Pu, all of Kanagawa, and Keisuke Sasaki, 5-4-9, Minami, Shinozaki-cho, Edogawa-ku, Tokyo, all of Japan, assignors to Fuji Xerox Co., Ltd. and Keisuke Sasaki, both of Tokyo, Japan

Filed Dec. 3, 1993, Ser. No. 160,868
Claims priority, application Japan, Dec. 4, 1992, 4-350214
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—22 **5 Claims**



1. A self-frequency-doubler laser element having a three-dimensional optical waveguide, comprising:

a first transparent insulating substrate having both a DFB grating and a grating reflector formed on one side of said DFB grating;

a Nd^{3+}-ion-doped thin glass film laid over the first transparent insulating substrate;

a thin nonlinear optical film laid over said thin glass film;

a second transparent insulating substrate laid over said thin nonlinear optical film; and

a thin reflecting film laid over said second transparent insulating substrate,

wherein said three-dimensional optical waveguide satisfies the following conditions:

nf−ng=0.01 to 0.05, and nf and ng are greater than ns and nc

where

ns=refractive index of the first transparent insulating substrate,

ng=refractive index of the thin glass film,

nf=refractive index of the thin nonlinear optical film, and

nc=refractive index of the second transparent insulating substrate;

when the Nd^{3+} thin glass film is excited, the optical waveguide generates a laser fundamental harmonic having a predetermined wavelength which is generated within said DFB grating of said first transparent insulating substrate;

said thin nonlinear optical film laid over said first insulating substrate converts the laser fundamental harmonic to a second higher harmonic having a wavelength one-half of the laser fundamental harmonic, such that said second higher harmonic is propagated in said three-dimensional

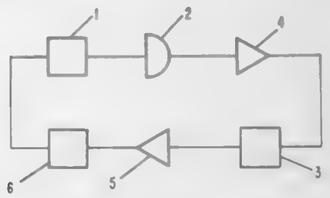
optical waveguide and reflected by said grating reflector on one side of said DFB grating before being emitted from the other side of said DFB grating.

5,390,202

REGENERATIVE OPTICAL PULSE GENERATOR

Chi Yan, Albuquerque, N. Mex.; Kalidev'Apura P. J. Reddy, Mathikere, India; Ravinder K. Jain, and John G. McInerney, both of Albuquerque, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Filed Dec. 23, 1992, Ser. No. 995,852
Int. Cl.[6] H01S *3/131, 3/136*
U.S. Cl. 372—26 **12 Claims**



7. A pulse generator comprising:

a) a modulatable source of electromagnetic radiation driven by an external, continuous drive signal and having detectable fluctuations of intensity:

b) detector means to convert a portion of the source radiation into a control signal having a frequency spectrum that corresponds to the instantaneous fluctuations of the intensity of the source;

c) a narrow bandpass filter means to filter the control signal, said filter means having a pass-band peak frequency that may be selected as desired;

d) means to modulate the source drive signal or the output thereof by the filtered control signal;

whereby the output of a continuously driven source of electromagnetic radiation is converted into pulsed radiation whose pulse repetition frequency corresponds to the selected pass-band peak frequency

e) means to vary the pass-band peak frequency such that the pulse repetition frequency of the generated pulses will correspond to the varied pass-band peak frequency.

5,390,203

METHOD AND APPARATUS FOR LOCKING LASER WAVELENGTH TO AN ATOMIC TRANSITION

Stephen A. Miller, Upland, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 13, 1994, Ser. No. 263,206
Int. Cl.[6] H01S *3/13*
U.S. Cl. 372—29 **64 Claims**

1. Apparatus for stabilizing laser light comprising:

wavelength adjusting means for adjusting the wavelength of laser light having a variable wavelength within an adjustable range of a desired wavelength;

a first volume and a second volume of a substance, said substance being chosen from the group of fluorescent substances having observable Zeeman splitting of electronic energy levels;

means for generating a magnetic field having a first magnetic field vector within said first volume and a second magnetic field vector within said second volume;

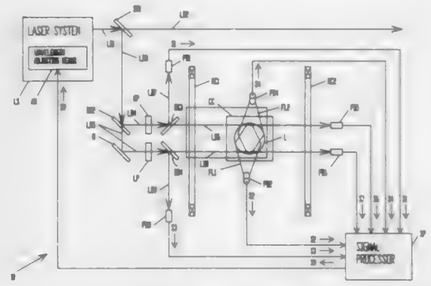
a right circular polarizer, RCP;

a left circular polarizer, LCP;

means for propagating a first portion of said laser light through said RCP and through said first volume with the direction of propagation within said first volume being substantially parallel to said first magnetic field vector, said first portion producing a first fluorescence within said first volume;

means for propagating a second portion of said laser light through said LCP and through said second volume with the direction of propagation within said second volume being substantially parallel to said second magnetic field vector, said second portion producing a second fluorescence within said second volume;

a first detector disposed to produce a first signal representative of said first fluorescence;



a second detector disposed to produce a second signal representative of said second fluorescence; and

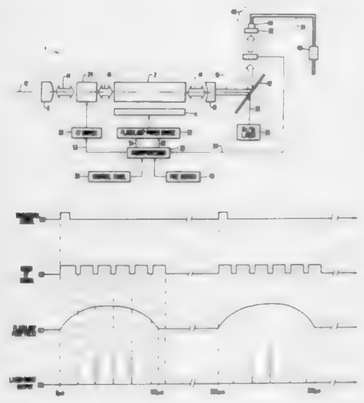
signal processing means connected to receive said first signal and said second signal for processing to produce an error signal indicative of the direction and magnitude of difference between said variable wavelength and said desired wavelength, said signal processing means having a means for converting said error signal into a controlling signal and connected to provide said controlling signal to said wavelength adjusting means.

5,390,204

INTRACAVITY MODULATED PULSED LASER WITH A VARIABLY CONTROLLABLE MODULATION FREQUENCY

Michael J. Yessik, Burlingame, and Richard G. Thompson, Santa Clara, both of Calif., assignors to Incisive Technologies, Inc., San Carlos, Calif.

Filed Sep. 25, 1992, Ser. No. 951,075
Int. Cl.[6] H01S *3/117, 3/109*
U.S. Cl. 372—38 **51 Claims**

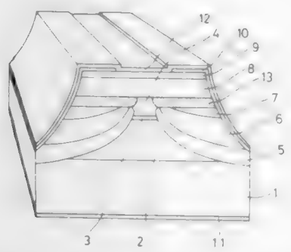


1. A laser comprising:

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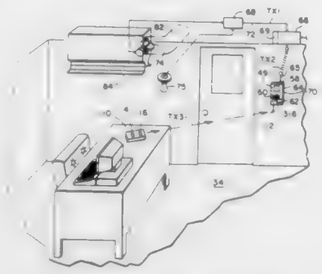
a first reflective surface and a second reflective surface disposed along an optical axis;
an amplification medium disposed along said optical axis between said first and second reflective surfaces;
a pulsed pumping means disposed adjacent said amplification medium for delivering energy pump pulses to said amplification medium;
a modulator having a variably controllable frequency disposed along said optical axis between said amplification medium and one of said reflective surfaces, said modulator being adapted to switch a beam generated by said amplification medium at a selected frequency such that said laser, upon the delivery of each pump pulse to said amplification medium, produces an output burst comprising a plurality of sub-pulses having predetermined peak powers; and
a control circuit coupled to said modulator for selecting and controlling said switching frequency of said modulator.

5,390,205
SEMICONDUCTOR LASER
Kenzo Mori; Tadashi Kimura; Yoshitatu Kawama; Nobuaki Kaneno; Tatuya Kimura; Yuji Okura, and Hitoshi Tada, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 10, 1993, Ser. No. 58,366
Claims priority, application Japan, May 14, 1992, 4-148679; Jun. 10, 1992, 4-177483; Feb. 4, 1993, 5-017185; Apr. 28, 1993, 5-102083
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—46 **19 Claims**



1. In a semiconductor laser comprising a first conductivity type semiconductor substrate:
a double-heterojunction structure including a first conductivity type cladding layer, an active layer, and a second conductivity type cladding layer successively disposed on said semiconductor substrates wherein the double-heterojunction structure is a mesa having opposite sides;
a first conductivity type mesa embedding layer, a second conductivity type current blocking layer, and a first conductivity type current blocking layer successively disposed on said semiconductor substrate and contacting the opposite sides of said mesa; and
impurity doped regions formed by adding a dopant impurity to said first conductivity type current blocking layer, said impurity doped regions electrically separating an upper part of said mesa from the second conductivity type current blocking layer at the opposite sides of said mesa.

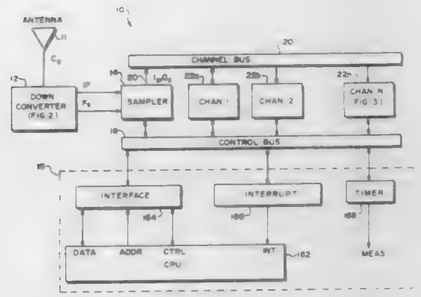
5,390,206
WIRELESS COMMUNICATION SYSTEM FOR AIR DISTRIBUTION SYSTEM
Alan D. Rein, Shoreview, Minn., and David M. Foye, La Crosse, Wis., assignors to American Standard Inc., Piscataway, N.J.
Filed Oct. 1, 1991, Ser. No. 770,055
Int. Cl.[6] H04L *27/10;* **F24F** *3/00*
U.S. Cl. 375—1 **43 Claims**



43. A hierarchical control system comprising:
a first central receiver;
a first communications medium operably connecting the first central receiver to at least one controller;
a controller operably connected to the first central receiver by the first communications medium;
a first sensor sensing conditions;
a second communication medium;
a first transmitter transmitting the sensed conditions from the first sensor to the first central receiver via the second communications medium;
the first central receiver including a first receiver receiving transmissions on the second communications medium and retransmitting the transmissions on the first communications medium;
a third communications medium;
a second sensor sensing conditions, the second sensor including a second transmitter transmitting the sensed conditions on the third communications medium;
the first sensor including a second receiver receiving sensed conditions transmitted on the third communications medium, and retransmitting transmissions from the third communications medium on the second transmissions medium;
an input connector and means for identifying and processing data received from the input connector; and
a setup tool providing programming instructions to the controller, and including a third transmitter transmitting the programming instructions on the second or third communications medium.

5,390,207
PSEUDORANDOM NOISE RANGING RECEIVER WHICH COMPENSATES FOR MULTIPATH DISTORTION BY DYNAMICALLY ADJUSTING THE TIME DELAY SPACING BETWEEN EARLY AND LATE CORRELATORS
Patrick Fenton, Calgary, Canada, and Albert J. Van Dierendonck, Los Altos, Calif., assignors to NovAtel Communications Ltd., Canada
Continuation of Ser. No. 825,665, Jan. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 619,316, Nov. 28, 1990, Pat. No. 5,101,416. This application Mar. 24, 1994, Ser. No. 217,768
Int. Cl.[6] G01S *5/02;* **H04B** *7/185*
U.S. Cl. 375—1 **19 Claims**

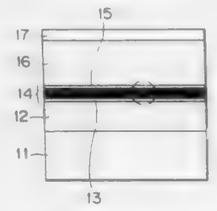
1. A receiver for demodulating and decoding a composite radio frequency (RF) signal consisting of a plurality of transmitted pseudorandom noise (PRN) encoded signals comprising:
an RF downconverter, connected to receive the composite RF signal and to provide a composite intermediate frequency (IF) signal;
means for generating a local sample clock signal;
a sampling circuit, connected to receive the composite IF signal and the local sample clock signal, and to provide digital in-phase (I) samples and quadrature (Q) samples of the composite IF signal;
a plurality of channel circuits, each channel circuit for demodulating and decoding one of the transmitted PRN encoded signals, and connected in parallel with the other channel circuits such that the each channel circuit receives the I samples and Q samples at the same time as the other channel circuits, wherein each channel circuit further comprises:



a PRN code signal generator, connected to receive a synchronizing adjustment signal and to provide a local reference PRN code signal;
means for decoding the I and Q sample signals, connected to receive the I samples, the Q samples, and the local reference PRN code signal, the decoding means for multiplying the I and Q samples by the local reference PRN code signal, and providing decoded I and Q samples; and
autocorrelation means, connected to receive the decoded I and Q samples, for determining the autocorrelation power level at a first and second code phase delay, and for providing the synchronizing adjustment signal to the PRN code generator by comparing the autocorrelation power levels at the first and second phase delays, the first and second phase delays being dynamically narrowed by being set to a predetermined wide correlator delay during an initial acquisition period, and thereafter set to a predetermined narrow correlator delay.

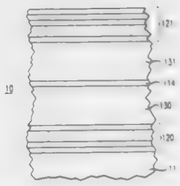
5,390,208
STRAINED QUANTUM WELL TYPE SEMICONDUCTOR LASER DEVICE
Akihiko Kasukawa, and Toshio Kikuta, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Opto-Electronics Technology Research Co., Ltd., Yokohama, both of Japan, a part interest
Filed Dec. 13, 1993, Ser. No. 165,298
Claims priority, application Japan, Dec. 11, 1992, 4-353406
Int. Cl.[6] H01S *3/18*
U.S. Cl. 372—45 **4 Claims**

1. A strained quantum well layer type semiconductor laser device comprising a light emitting active layer of a multilayer structure including a quantum well layer and a barrier layer and a pair of light confining layers respectively laid on and under the active layer, characterized in that the quantum well layer is made of $InAs_yP_{1-y}$ $(0<y\leqq 1)$ and the barrier layer



and/or the light confining layers are made of $In_{1-x}Ga_xP$ $(0<x\leqq 1)$.

5,390,209
ARTICLE COMPRISING A SEMICONDUCTOR LASER THAT IS NON-DEGENERATE WITH REGARD TO POLARIZATION
Daryoosh Vakhshoori, Chatham Township, Morris County, N.J., assignor to AT&T Corp., Murray Hill, N.J.
Filed Jan. 5, 1994, Ser. No. 177,503
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 **6 Claims**



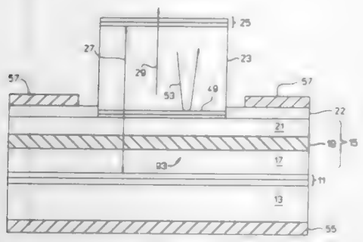
1. An article comprising a semiconductor laser comprising a multilayer epitaxial semiconductor structure comprising III–V semiconductor material, associated with said structure being a direction normal to the structure and a crystal orientation such that the crystal direction is substantially parallel to said direction normal to the structure, the structure comprising an active region between first and second cladding regions, the article further comprising contact means that facilitate flowing charge carriers into said active region.
CHARACTERIZED IN THAT
said active region has a composition selected such that the active region does not have mirror symmetry with respect to any plane that is normal to said [001] crystal direction.

5,390,210
SEMICONDUCTOR LASER THAT GENERATES SECOND HARMONIC LIGHT WITH ATTACHED NONLINEAR CRYSTAL
Julie E. Fouquet, San Carlos, Calif., and Norihide Yamada, Kokubunji, Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 22, 1993, Ser. No. 156,228
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—92 **35 Claims**

1. A semiconductor laser comprising:
a first reflector, reflective of light at a desired fundamental frequency,
a semiconductor optical amplifier adjacent the first reflector;
a nonlinear crystal affixed to the amplifier; and
a second reflector, reflective of light at the fundamental frequency and transmissive of light at twice the fundamental frequency, adjacent the nonlinear crystal, the first and second reflectors defining a laser cavity that extends from

the first reflector through the amplifier and the nonlinear crystal to the second reflector;

the semiconductor laser responsive to an external energy source to generate light in the laser cavity at the fundamental frequency, the nonlinear crystal doubling the frequency of the generated light and thereby providing a beam of frequency-doubled light through the second reflector.

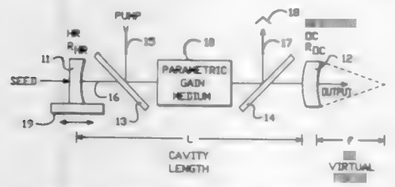


5,390,211

OPTICAL PARAMETRIC OSCILLATOR WITH UNSTABLE RESONATOR

James B. Clark, Campbell, and Bertram C. Johnson, Sunnyvale, both of Calif., assignors to Spectra-Physics Lasers, Inc., Mountain View, Calif.

Filed Aug. 24, 1993, Ser. No. 111,082
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—95 **50 Claims**



1. An optical parametric oscillator comprising:

an unstable resonator including a high reflector and an output coupler set such that a focal point of the high reflector is substantially coincident with a virtual focus of the output coupler to generate an output beam with transverse mode selectivity and controlled output beam divergence;

an optical parametric gain medium mounted within the unstable resonator; and

a pump source directing a pump beam into optical parametric gain medium.

5,390,212

INSTALLATION FOR PRODUCING MOLTEN METAL IN AN ELECTRIC FURNACE

Claude Bonnet, Andrezieux-Boutheon; Guy Forestier, Saint Just Saint Rambert, and Jacques Barbe, Saint Etienne, all of France, assignors to Clecim, Cergy-Pontoise, France

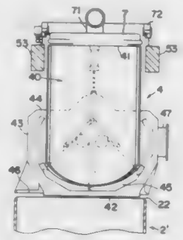
PCT No. PCT/FR91/00980, § 371 Date Aug. 6, 1992, § 102(e) Date Aug. 6, 1992, PCT Pub. No. WO92/10594, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 6, 1991, Ser. No. 917,120
Claims priority, application France, Dec. 6, 1990, 90 15320; Dec. 6, 1990, 90 15321; Dec. 12, 1990, 90 15595
Int. Cl.[6] F27D *3/00*
U.S. Cl. 373—79 **20 Claims**

1. An installation for producing metal by melting a charge of iron material, said installation comprising:

(a) at least one electric furnace (**2**) constituted by a melting vessel (**2'**) closed by a removable roof (**23**) and at least one electrode (**24**) connected to a current source (**16**) and penetrating vertically into said vessel through said roof (**23**);

(b) means (**12, 14**) for supplying individual loads of scrap emptied in sequence into said furnace;

(c) a preheating chamber (**4**) delimited by a side wall having an upper open end (**41**) and a lower open end (**42**), and containing a loading container (**40**) fitted with an opening bottom (**45**), said chamber being associated, at least in a preheating position (B') with moveable means (**7, 8**) for sealing said upper and lower open ends, and with movable means (**47, 73**) selectively connecting said chamber (**4**), on two levels offset in height, to one inlet duct (**31**) and one outlet duct (**32**) of a hot gas flow circulation circuit (**35**), said gas flow circulation circuit being used to preheat a charge contained in said loading container (**40**);



(d) a device (**5**) for transporting said chamber (**4**) with said loading container (**40**) between said preheating position (B') and a loading position (C') directly above said melting vessel (**2'**) where the charge is emptied out by opening said bottom (**45**);

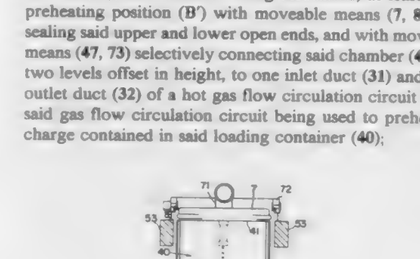
(e) wherein said side wall of said preheating chamber (**4**) comprises a lower portion forming a skirt (**43**) with said lower open end (**42**) forming a wide downwardly-directed opening, and said chamber (**4**) is combined, in said preheating position, with movable devices (**54**) for sealably engaging said lower end (**42**) with a stationary base (**3**) shaped to match said lower end (**42**), whereby said lower end (**42**) is sealed in said preheating position (B').

5,390,213

DIGITAL FM SYNTHESIZER FOR RECORD CIRCUITRY

Eugene M. O'Donnell, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

PCT No. PCT/US91/03811, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/20124, PCT Pub. Date Dec. 26, 1991
PCT Filed May 30, 1991, Ser. No. 927,512
Claims priority, application United Kingdom, Jun. 1, 1990, 9012327
Int. Cl.[6] H03K *7/08*
U.S. Cl. 375—23 **22 Claims**



1. A digital synthesizer for generating a sequence of digital

output samples representing modulation of a carrier by an input signal, comprising:

means for supplying digital input samples of said input signal;

means responsive to said digital input samples for calculating a sequence of pulse periods defining a pulse duration modulated signal that represents modulation of a carrier by said input signal; and

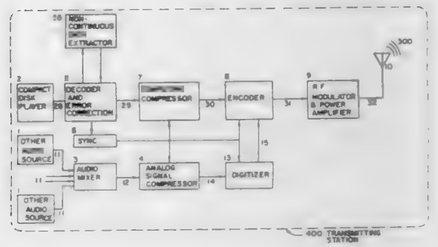
output sample means operating on said sequence of pulse periods for generating said sequence of digital output samples representing a carrier modulated output signal corresponding to said pulse duration modulated signal.

5,390,214

DIGITAL AUDIO BROADCASTING SYSTEM

John W. Hopkins, 8240 Mercer Dr., Norfolk, Va. 23505, and Anthony J. Impastato, 280 Pritchard Rd., Virginia Beach, Va. 23452

Continuation of Ser. No. 508,806, Apr. 12, 1990, Pat. No. 5,179,576. This application Jan. 8, 1993, Ser. No. 1,786
The portion of the term of this patent subsequent to Jan. 12, 2000, has been disclaimed.
Int. Cl.[6] H04L *27/00*
U.S. Cl. 375—37 **5 Claims**



1. A digital audio broadcasting system comprising:

a first digital signal; (**28**)

means for decoding said first digital signal; (**5**)

a second digital signal being generated by said means for decoding said first digital signal;

means for electronically extracting non-continuous data from said second digital signal; (**55**)

a third digital signal being generated by said means for electronically extracting said non-continuous data;

means for generating a first modulated signal from said third digital signal; (**9**)

a first modulated signal being generated by said means for generating a first modulated signal from said third digital signal; (**32**)

and means for transmitting said first modulated signal over radio frequency (**10**).

5,390,215

MULTI-PROCESSOR DEMODULATOR FOR DIGITAL CELLULAR BASE STATION EMPLOYING PARTITIONED DEMODULATION PROCEDURE WITH PIPELINED EXECUTION

Yezdi Antia, Gaithersburg; Youngky Kim, Potomac, and Hiep Pham, Gaithersburg, all of Md., assignors to Hughes Aircraft Company, Los Angeles, Calif.

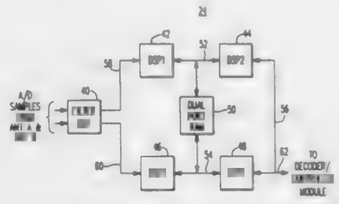
Filed Oct. 13, 1992, Ser. No. 960,343
Int. Cl.[6] H04L *27/06*; H04B *7/10*
U.S. Cl. 375—94 **16 Claims**

1. A demodulator for a base station receiver in a cellular communication system, said demodulator comprising:

means for receiving and filtering transmitted diversity signals;

a plurality of digital signal processors for executing in real time a demodulating procedure employing a multi-state maximum likelihood sequence estimator (MLSE) Process and being executable repeatedly to demodulate successive data groups in each of successive slots in a data frame;

said MLSE Process having multiple calculation components including branch metric, path metric, traceback and channel estimate components that are executed in a predetermined order in each symbol to demodulate data in each data group and that are partitioned among said processors in a predetermined manner;



means for data linking said processors to enable output data from predetermined components to be applied as input data to other predetermined components for time ordered calculations in accordance with the demodulation procedure;

at least a first of said processors having at least one of the filtered diversity signals applied as an input thereto and having means for executing a branch metric component to make branch metric calculations therefor; and

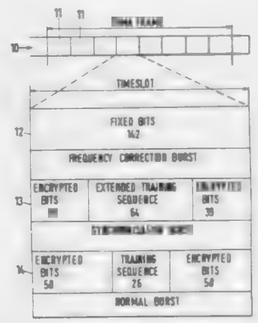
at least an output one of said processors generating a demodulated output for subsequent decoding.

5,390,216

SYNCHRONIZATION METHOD FOR A MOBILE RADIOTELEPHONE

Herbert Bilitza; Biegfried Gartner, and Hermann Neuner, all of Berlin, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 984,276, Dec. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 967,663, Oct. 28, 1992, abandoned. This application Apr. 16, 1993, Ser. No. 48,804
Claims priority, application Germany, Nov. 2, 1991, 4136147
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—106 **13 Claims**



1. A method of synchronizing a mobile radiotelephone in a cellular digital mobile radiotelephone network comprising a plurality of fixed radiotelephone stations and a plurality of mobile radio stations operating in accordance with a GSM standard or its equivalent, in which each communication frequency assignment is subdivided into interleaved time slots, a plurality of said time slots together comprising a frame, com-

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prising the following steps which are carried out in the mobile radiotelephone:

(1) conducting an initial synchronization by means of a frequency correction burst substantially fully occupying a time slot with an unmodulated wave corresponding to repetition of bits of the same binary logic value;

(2) maintaining normal synchronization during communication by means of interspersed normal synchronization bursts, each normal synchronization burst containing a training sequence occupying less than a third of a time slot, and

(3) performing extended synchronization during communication as a background procedure by means of interspersed frequency synchronization bursts, each frequency synchronization burst containing an extended training sequence occupying less than an entire time slot and more than a third of a time slot, and wherein:

said step of conducting said initial synchronization comprises the substeps of:

(1.1) conducting a coarse frequency synchronization,

(1.2) conducting a coarse frame synchronization over a plurality of said time slots which comprise a frame,

(1.3) conducting a fine frequency synchronization, and

(1.4) conducting a fine frame synchronization over said plurality of time slots which comprise a frame;

said step of maintaining said normal synchronization comprises the substeps of:

(2.1) conducting a frame synchronization with fine frequency synchronization, and

(2.2) carrying out preliminary data signal processing; and

said step of performing said extended synchronization comprises the substeps of:

(3.1) conducting a coarse frame synchronization, and

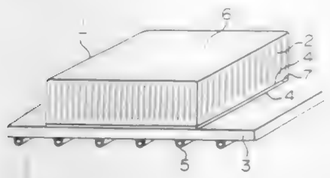
(3.2) conducting a fine frame synchronization with fine frequency synchronization.

5,390,217

CARBON FIBER-REINFORCED CARBON COMPOSITE MATERIALS PROCESSES FOR THEIR PRODUCTION, AND FIRST WALLS OF NUCLEAR FUSION REACTORS EMPLOYING THEM

Kimihiro Ioki, Tokyo; Kohei Okuyama, Kagawa; Kazuo Niwa, Kagawa; Hitoshi Seki, Kagawa, and Takanori Takahashi, Kagawa, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha; Mitsubishi Genshiryoku Kogyo Kabushiki Kaisha and Mitsubishi Kasei Corporation, all of Tokyo, Japan

Continuation of Ser. No. 343,374, Apr. 26, 1989, abandoned.
This application Apr. 24, 1992, Ser. No. 873,683
Claims priority, application Japan, Apr. 28, 1988, 63-106154; Apr. 28, 1988, 63-106157; Apr. 28, 1988, 63-106158; Sep. 7, 1988, 63-223787; Sep. 9, 1988, 63-225817; Sep. 9, 1988, 63-225818; Sep. 9, 1988, 63-225819
Int. Cl.[6] G21C *11/08*
U.S. Cl. 376—150 16 Claims



1. A carbon fiber-reinforced carbon matrix composite sheet or plate which is positioned to extend, in its thickness direction, between a high temperature region and a low temperature region, said composite sheet or plate consisting essentially of:

pitch-based carbon fibers oriented substantially in the thickness direction, wherein the ratio of the thermal conductivity in the thickness direction to the thermal conductivity in a direction perpendicular to the thickness direction is at least 2, and the thermal conductivity in thickness direction is at least 3 W/cm·°C.

5,390,218

PROCESS FOR PREPARING A FUEL PELLET FOR NUCLEAR REACTOR

Shigeru Yamagishi, and Yoshihisa Takahashi, both of Tokai, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Continuation of Ser. No. 842,983, Feb. 28, 1992, abandoned.
This application Nov. 5, 1993, Ser. No. 147,297
Claims priority, application Japan, Apr. 10, 1991, 3-164056
Int. Cl.[6] G21C *21/00*
U.S. Cl. 376—261 5 Claims

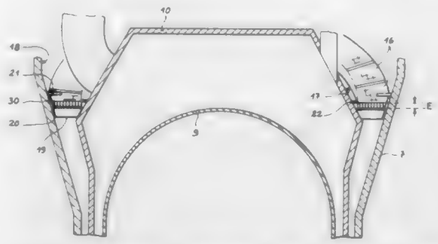
1. In the process of preparing a fuel pellet for a nuclear reactor containing one or more nuclear fuel materials selected from the group consisting of thorium, uranium and plutonium by press molding microspherical particles of the fuel materials into a cylindrical pellet and thereafter by sintering the pellet, the steps which comprise gelating either small spheres of an aqueous sol having dispersed in the sol the nuclear fuel material in the form of colloidal oxide particles or small spheres of a mixed aqueous solution of a nuclear material and organic material to obtain moist microspherical gel particles, thereafter substituting water in the moist microspherical gel particles with an organic solvent miscible with water to obtain gel particles moistened with a solution of less than 1% water concentration in the organic solvent, thereafter removing the organic solvent in the microspherical gel particles by applying at least one of a vacuum treatment or heating to the microspherical gel particles, and thereafter further heat treating the microspherical gel particles to remove water content which was not substituted with the organic solvent.

5,390,219

DEVICE FOR TRAPPING MIGRATING BODIES WITHIN THE SECONDARY CIRCUIT OF A STEAM GENERATOR

Christophe Poussin, Courbevoie, and Henri Ayme, Suresnes, both of France, assignors to Framatome, Paris la Defense, France

Filed Dec. 2, 1992, Ser. No. 984,682
Claims priority, application France, Dec. 2, 1991, 91 14900
Int. Cl.[6] G21C *19/42*
U.S. Cl. 376—313 7 Claims



1. Device for trapping migrating bodies within the secondary circuit of a steam generator of a nuclear electric power generating installation, constituted by a filtering system positioned across the annular cross-section of the secondary circuit, downstream of the intake tubes (**4**) for the water into the secondary circuit and upstream of the entry of the water into the tube bundle (**3**) of the primary circuit, the tubes of the tube bundle (**3**) being spaced by a given distance, the filtering system being constituted by grids (**16**) having meshes with a maximum width smaller than said given distance so as to only allow the passage only of migrating bodies or objects liable to jam between the tubes, said grids having a thickness (E) sufficient to give said grids (**16**) adequate mechanical strength for

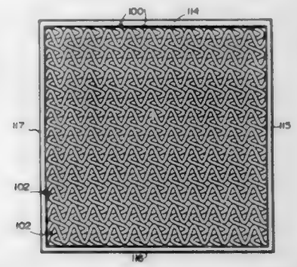
resisting stresses such as the weight of operators, hydraulic stresses in both normal and emergency operation mad local impacts of migrating bodies without deformation or fracture.

5,390,220

LOWER TIE PLATE STRAINERS INCLUDING HELICAL SPRING STRAINERS FOR BOILING WATER REACTORS

Jaime A. Zuloaga, Jr., Wilmington, and Eric B. Johansson, Wrightsville Beach, both of N.C., assignors to General Electric Company, San Jose, Calif.

Filed Nov. 29, 1993, Ser. No. 158,550
Int. Cl.[6] G21C *3/04, 19/04*
U.S. Cl. 376—313 8 Claims



1. In a boiling water reactor fuel bundle which includes a lower tie plate assembly having a fuel rod supporting tie plate grid and an inlet nozzle with an open flow volume defined therebetween, a debris catching grid construction for placement within the open flow volume comprising:

at least a first layer of helical springs, said helical springs being placed in side-by-side parallel relation;

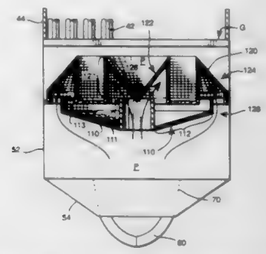
at least a second layer of helical springs, said helical springs being placed in side-by-side parallel relation at an angle with respect to said first layer of helical springs so as to intersect at a first plurality of crossing points, said first and second layers of helical springs forming a filter mass within said open flow volume.

5,390,221

DEBRIS FILTERS WITH FLOW BYPASS FOR BOILING WATER REACTORS

Gary E. Dix, Saratoga, and Bruce Matzner, San Jose, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 23, 1993, Ser. No. 110,744
Int. Cl.[6] G21C *1/04*
U.S. Cl. 376—352 8 Claims



1. In a boiling water reactor fuel bundle, a debris catcher construction for placement within the flow volume defined by an inlet plenum to the lower tie plate assembly to the upper fuel rod supporting grid comprising:

first means including spatially axially separated strainer structures across said plenum for imparting a flow direction (momentum) change to passing water coolant, said first means not forming a continuum across said plenum such that at least one substantially unobstructed flow path is preserved through said first means; and

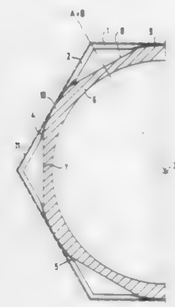
second means defining a trapping structure for trapping debris separated from said water coolant by said flow direction change imparted by said first means.

5,390,222

FUEL ASSEMBLY OR CONTROL ASSEMBLY WITH RELEASABLE LOCKING BETWEEN THE CASE AND THE UPPER OR LOWER END PART OF THE ASSEMBLY

Peter Rau, Leutenbach, and Walter Sauermann, Hemhofen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 4, 1993, Ser. No. 72,586
Claims priority, application Germany, Dec. 5, 1990, 4028748; Dec. 21, 1990, 4041350
Int. Cl.[6] G21C *15/00*
U.S. Cl. 376—364 18 Claims



1. An assembly for a nuclear reactor, comprising:

a) an elongated case having a longitudinal axis, side walls extending parallel to the longitudinal axis and defining an interior with a polygonal cross section, two ends, and at least one case opening being surrounded by a rim at one of said ends; said interior defining a flow channel for coolant passing through said opening in an axial direction;

b) said side walls having inner surfaces with a groove-like profile being machined therein and extending at a predetermined distance from said rim;

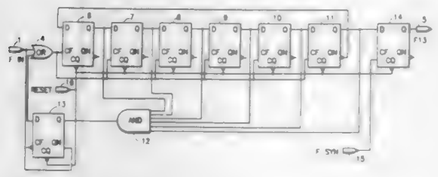
c) an end part to be received in said opening of said case and having lateral surfaces extending parallel to the longitudinal axis, said end part being adapted to the polygonal cross section of said interior of said case and having corners disposed between said lateral surfaces being rounded and shaped in the axial direction to form dovetail-like protrusions;

d) said end part being rotatable into a first position relative to said case in which said end part is insertable axially from outside into said opening in said case during installation and in which said end part is axially displaceable outwardly during disassembly, and said end part being rotatable into a second position relative to said case for operation of the nuclear reactor;

e) said lateral surfaces of said end part being opposite said side walls of said case in said first relative position, and said dovetail-like protrusions engaging said groove-like profile and being locked to said side walls of said case when said end part is rotated about the longitudinal axis into said second relative position.

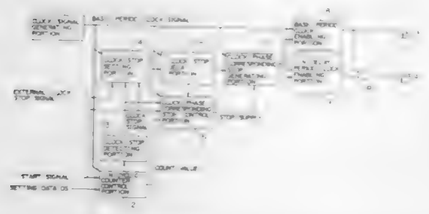
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5,390,223
DIVIDER CIRCUIT STRUCTURE
Rune Lindholm, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland
Filed Jul. 1, 1992, Ser. No. 907,189
Claims priority, application Finland, Jul. 4, 1991, 913256
Int. Cl.[6] H03K *23/54*
U.S. Cl. 377—49 2 Claims



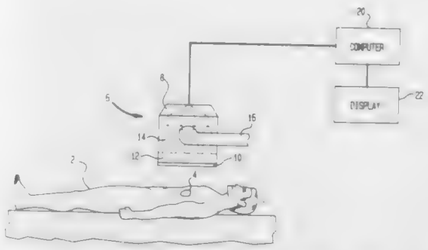
1. A divider circuit comprising:
divider means operable to divide the frequency of an input signal by a pre-determined even integer and to supply the divided signal as an output; and
adding means operable to add one cycle to the divided output signal to provide an output signal for said divider whereby the divider output signal has a frequency which is equal to the frequency of said input signal divided by a pre-determined odd integer,
wherein said adding means comprises delay means operable to delay coupling of said input signal to said dividing means by one cycle such that said divider output signal has one cycle added thereto,
wherein said divider means comprises at least one flip-flop coupled in series and said delay means is operable in response to a signal from a first logic means operable to supply the first logic means signal when the outputs from said at least one flip-flop are all in the same state, and
wherein said delay means comprises a flip-flop coupled to the logic means for receiving said first logic means signal therefrom and to supply a signal to a second logic means in response thereto, said second logic means being operable to delay coupling of said input signal to said divider means in response said second logic means signal.

5,390,224
CLOCK CONTROL APPARATUS
Hiroshi Komatsuda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 9, 1993, Ser. No. 118,248
Claims priority, application Japan, Dec. 23, 1992, 4-356926
Int. Cl.[6] H03K *21/08*
U.S. Cl. 377—56 17 Claims



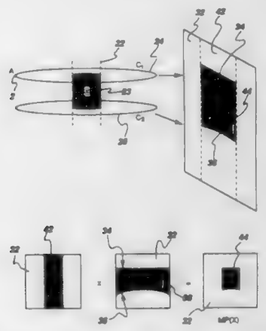
1. A clock control apparatus having a basic period clock (t) and a plurality of clocks with different phases from said basic period clock by t/N period, for use with an information processing unit, said apparatus comprising:
a clock signal generating means for generating pulses of said basic period clock;
a cycle counter for counting the number of pulses of said basic period clock received from said clock signal generating means when a start command is received and for outputting a cycle counter clock stop signal when the number of pulses becomes a predetermined count value;
a control means for outputting a basic enable period signal for controlling said basic period clock and a delay enable period signal for controlling said t/N period clocks by a flag and said cycle counter clock stop signal, said flag being pre-assignable before said start command is received;
a basic period clock enabling means for receiving pulses of said basic period clock and for outputting the pulses of said basic period clock for a period designated by said basic enable period signal; and
a t/N delay period clock enabling means for generating pulses of said t/N period clocks and for outputting the pulses for a period designated by said delay enable period signal.

5,390,225
MAPPING SLICES OF THE HUMAN BODY INTO REGIONS HAVING A CONSTANT LINEAR ATTENUATION COEFFICIENT FOR CORRECTING IMAGES ACQUIRED DURING A NUCLEAR MEDICINE STUDY FOR ATTENUATION ARTIFACTS
Eric G. Hawman, Schaumburg, Ill., assignor to Siemens Medical Systems, Inc., Iselin, N.J.
Filed Jun. 29, 1992, Ser. No. 905,947
Int. Cl.[6] G01T *1/166*
U.S. Cl. 378—6 5 Claims



1. A method for using a scintillation camera system to map a slice of a patient's body into a plurality of regions in such a manner that each region may accurately be treated as having a single linear attenuation coefficient, comprising the following steps:
conducting a SPECT study of the patient using a scintillation camera system which is set to acquire, from scintillation events caused by gamma radiation originating within said slice, those events having energies within an energy window which includes a range of energies associated only with Compton-scattered gamma radiation;
reconstructing, from events acquired during said SPECT study, a scatter image; and
processing said scatter image in such a manner as to define therewithin a plurality of bounded regions, each bounded region having a constant linear attenuation coefficient.

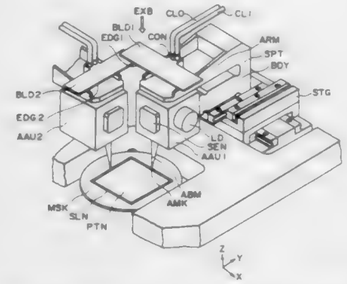
5,390,226
METHOD AND APPARATUS FOR PRE-PROCESSING CONE BEAM PROJECTION DATA FOR EXACT THREE DIMENSIONAL COMPUTER TOMOGRAPHIC IMAGE RECONSTRUCTION OF A PORTION OF AN OBJECT
Kwok C. Tam, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jul. 2, 1992, Ser. No. 908,114
Int. Cl.[6] G01N *23/083*
U.S. Cl. 378—19 8 Claims



1. A method of pre-processing beam attenuation data for reconstructing a three dimensional (3D) image of a user selectable portion of an object using an inverse Radon transformation comprising the steps of:
providing a mutually spaced irradiating beam source and a surface array radiation detector in fixed relationship to one another;
providing said object therebetween;
irradiating at least said portion of said object within a field of view of said source;
rotationally scanning said portion with respect to said fixed source and detector along a trajectory enclosing upper and lower extents of said portion by respective upper and lower scan paths joined therebetween by a connecting scan path;
identifying a select region on said array detector surface as a beam projection of said object bounded between similar said upper and lower scan path projections;
acquiring beam attenuation data at said array detector surface for a plurality of source positions along said scan trajectory;
retaining only beam attenuation data acquired within said select region; and
processing only said retained data to reconstruct a 3D image of said object by said inverse Radon transformation.

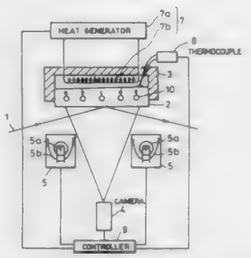
5,390,227
EXPOSURE APPARATUS
Nobutoshi Mizusawa, Yamato; Ryuichi Ebinuma, Kawasaki; Takao Kariya, Hino; Isamu Shimoda, Zama, and Shunichi Uzawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 811,916, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 729,846, Jul. 12, 1991, abandoned, which is a continuation of Ser. No. 404,612, Sep. 8, 1989, abandoned. This application May 17, 1993, Ser. No. 62,151
Claims priority, application Japan, Sep. 9, 1988, 63-224712; Sep. 9, 1988, 63-224713
Int. Cl.[6] G21K *5/00*
U.S. Cl. 378—34 17 Claims

1. A semiconductor device manufacturing method comprising:
disposing a substrate so that an alignment unit is disposed between the substrate, along a path of radiation including X-rays, and a fixed aperture for confining the radiation;
moving a blade integrally with the alignment unit along a surface of the substrate, the blade being disposed between the fixed aperture and the alignment unit;
supplying the blade with cooling liquid;



detecting an alignment mark on the substrate for alignment of the substrate by the alignment unit;
defining an exposure area of the substrate roughly by the fixed aperture and finely by the blade;
further confining the radiation confined by the fixed aperture; and
applying the radiation to the substrate.

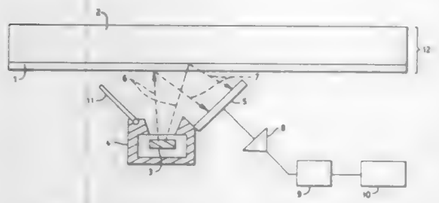
5,390,228
METHOD OF AND APPARATUS FOR STABILIZING SHAPES OF OBJECTS, SUCH AS OPTICAL ELEMENTS, AS WELL AS EXPOSURE APPARATUS USING SAME AND METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES
Masahito Niibe, Atsugi; Yasuaki Fukuda, Hadano, and Masami Hayashida, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 940,846, Sep. 4, 1992, abandoned. This application Jul. 5, 1994, Ser. No. 270,794
Claims priority, application Japan, Sep. 7, 1991, 3-255800; Jan. 13, 1992, 4-023262
Int. Cl.[6] G21K *5/02*
U.S. Cl. 378—34 21 Claims



1. A method of stabilizing a shape of a reflective surface of a reflection-type object, comprising the steps of:
measuring a temperature distribution of the reflective surface irradiated with radiation energy; and
causing the temperature of a part of the reflective surface to be changed on the basis of the measurement to control the change of shape of the object, wherein
the temperature is changed by irradiating infrared rays onto the reflective surface and adjusting an intensity distribution Of the infrared rays.

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5,390,229
LEAD-PAINT DETECTOR
Lee Grodzins, 14 Statham Rd., Lexington, Mass. 02173, assignor to D. Lee Grodzins, Lexington, Mass.
Continuation of Ser. No. 863,807, Apr. 7, 1992, Pat. No. 5,274,688. This application Jul. 23, 1993, Ser. No. 96,008
Int. Cl.[6] G01N *23/223*
U.S. Cl. 378—45 **3 Claims**



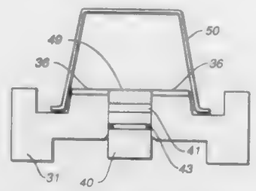
1. A device for measuring the areal density, in mass per unit area, of a target element having L electrons, the target element being near the surface of a substrate, the target element being covered by layers of covering material that do not contain the target element, comprising: a source means of photons, with energies at least greater than the L binding energy of said target element, that will induce or fluoresce L_α and L_β x-rays from the target, a detector means to measure the intensity distribution of the spectrum of photons emitted from the surface containing said target element, said detector means having sufficient energy resolution to separately measure the L_α and L_β x-rays emitted from said target element, a radiation shield means to isolate said detector from direct radiations from said source of photons, an output means to record and display the deduced value of the areal density of said target element, the device including an electronic/computer means for determining the areal density of the target element from the measured intensities of the L_α and L_β x-rays

$$m_Z = m_S \frac{I_{L\beta}^{(R1+R2)/(R1-1)} / I_{L\alpha}^{(R2+1)/(R1-1)}}{I_{L\beta S}^{(R1+R2)/(R1-1)} / I_{L\alpha S}^{(R2+1)/(R1-1)}}$$

wherein m_Z is the areal density of said target element, m_S is the areal density of a standard of known areal density of said target element, $I_{L\alpha}$ and $I_{L\beta}$ are the measured intensities of the L_α and L_β x-rays emitted by the target element, $I_{L\alpha S}$ and $I_{L\beta S}$ are the measured intensities of the L_α and L_β x-rays emitted by said standard of known areal density of the target element, R_1 is the ratio of mass attenuation coefficients for the L_α *to the* $L\beta$ x-rays and is effectively the same value for all materials, and R_2 is the ratio of the mass attenuation coefficients for the initiating radiation to the L_β radiation and is effectively the same value for all materials.

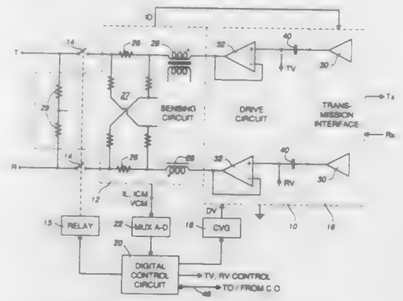
5,390,230
CONTROLLED ATMOSPHERE, VARIABLE VOLUME SAMPLE HOLDER FOR X-RAY DIFFRACTOMER
On-Kok Chang, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.
Filed Mar. 30, 1993, Ser. No. 40,058
Int. Cl.[6] G01N *23/20*
U.S. Cl. 378—80 **9 Claims**

1. A sample holder for beam diffractometry, comprising:
a holder body having a substantially flat beam-facing top surface and a through-hole, extending through said top surface;
a piston fitted in said through-hole so as to travel along an axis of said through-hole;
a substantially flat plate;
means for removably attaching said plate so as to overlie said through-hole and said flat beam-facing top surface; and



a cup-shaped cap fitted over at least a portion of said top surface surrounding said through-hole.

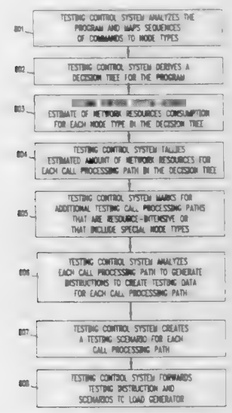
5,390,231
PROTECTION AND RECOVERY OF TELEPHONE LINE INTERFACE CIRCUITS
Paul F. Hung, Stittsville; Stanley D. Rosenbaum, Ottawa; Joseph F. M. Darveau, Aylmer; Reinhard W. Rosch, Richmond; Brian A. F. S. Sutherland, Ottawa, and Francois Y. Tremblay, Hull, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Apr. 1, 1993, Ser. No. 41,377
Int. Cl.[6] H04M *1/24, 1/00, 9/08, 9/26*
U.S. Cl. 379—2 **24 Claims**



1. An automatic protection and recovery method comprising the steps of:
interrupting a connection of a telephone line interface circuit to a telephone line in response to a fault condition;
reconnecting the interface circuit to the line in dependence upon at least one criterion; and
changing the criterion for reconnection after successive interruptions.

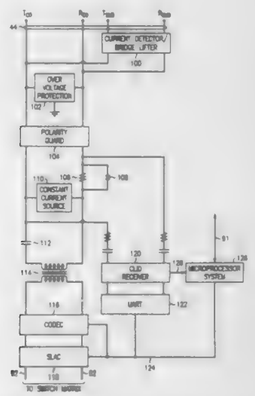
5,390,232
SYSTEM FOR CONTROL OF SUBSCRIBER PROGRAGMMABILITY
Brian D. Freeman, Howell; Daryl M. Goins, Irvington; Marc P. Kaplan, Aberdeen, and Jonathan F. Potter, Keyport, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Dec. 28, 1992, Ser. No. 997,413
Int. Cl.[6] H04M *1/24, 3/42, 3/08, 3/22*
U.S. Cl. 379—15 **18 Claims**

1. A method of testing a subscriber-designed call processing program to be executed in a communications network comprising the steps of:
receiving in a communications network a subscriber-designed call processing program;
simulating a call processing environment involving execution of said call processing program for different simulated traffic levels in the communications network;
measuring usage of network resources in said simulated call processing environment, and



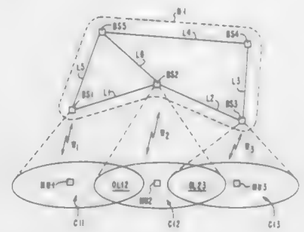
deriving network resource usage threshold values for said call processing program.

5,390,233
TELEPHONE CALL TRANSFER BETWEEN A WIRELESS AND WIRED TELEPHONE
John P. Jensen, West Chicago, Ill., and Michael R. Ross, Westminster, Colo., assignors to AT&T Corp., Murray Hill, N.J.
Filed Aug. 31, 1993, Ser. No. 114,567
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—58 **20 Claims**



1. A telecommunication arrangement that supports the transfer of an in-progress telephone call between a wireless telephone and a wired telephone comprising:
first and second communication channels connected to a telecommunication switch and a wired telephone, respectively;
third communication channel coupled to a radio frequency base station that supports at least one wireless communication channel to a wireless telephone;
interface circuit means coupled to said first, second, and third channels for coupling said first channel among said second and third channels, said interface circuit means including:
first means for connecting said first channel to one of said second and third channels thereby establishing a first call connection between the telecommunication switch and one of the wired and wireless telephones;
second means for connecting said first channel to the other of said second and third channels thereby establishing a second call connection between the telecommunication switch and the other of the wired and wireless telephones without causing the telecommunication switch to release said first call connection, said second means establishing said second call connection while maintaining said first call connection so that said wired and wireless telephones are simultaneously connected via said first communication channel as a three-way call to said telecommunication switch.

5,390,234
DYNAMIC TRACKING OF MOBILE STATIONS IN WIRELESS NETWORKS
Amotz Bar-Noy, and Ilan Kessler, both of Bronx, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 20, 1992, Ser. No. 871,253
Int. Cl.[6] H04M *11/00;* **H04Q** *7/00*
U.S. Cl. 379—59 **4 Claims**



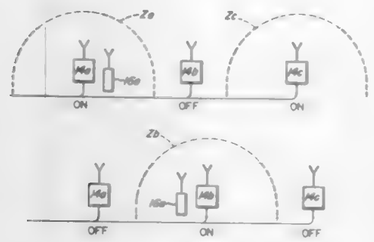
1. A method of tracking a mobile station u of a cellular network, comprising:
(a) reporting a first cell in which said mobile station is located to a base station of said network;
(b) determining the number of intercellular movements made by said mobile station after having reported its arrival in said first cell in step (a);
(c) repeating steps (a) and (b) each time after said mobile station makes an additional N(u)+1 intercellular movements after having last reported its cell location as in step (a) but from the cell in which said mobile unit is in each time an additional N(u)+1 intercellular movements are made, where N(u) is a predetermined number for said mobile unit u; and
(d) when communications with said mobile station is desired, searching for said mobile station in a L-neighborhood of a current cell, said current cell being the last cell from which said mobile unit last reported its location as in step (c), with said neighborhood being a set of all cells reachable by said mobile station travelling from said current cell along any path of length $\leq L$, where $L=N(u)\geq 1$, where the length of said path is the number of intercellular movements made as one travels from one end of said path to another end of said path.

5,390,235

CORDLESS TELEPHONE SYSTEM AND SWITCHING CONTROL METHOD THEREFOR

Andrew S. Beasley, Lake Errock, Canada, assignor to PCS Microcell International, Inc., Bridgetown, Barbados

Filed Jun. 23, 1993, Ser. No. 80,114
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—60 **6 Claims**



3. A cordless telephone system, comprising:

a cordless handset;

a plurality of signal exchanging components for broadcasting telephone signals to said handset and receiving telephone signals from said handset; and

a basestation connected to said signal exchanging components and to a switched telephone network;

said signal exchanging components being connected to said base station through a common signal conduit;

said signal exchanging components being located so that the coverage zones thereof form a roamer corridor with successive ones of said coverage zones overlapping one another at overlap areas to allow said handset to roam along the roamer corridor without call hand-off;

said signal exchanging components each having a first switched state for transmitting and receiving the telephone signals and a second switched states for interrupting the transmission and reception of the telephone signals thereby;

said basestation including:

switching control means for controlling said signal exchanging components so that each pair of signal exchanging components having mutually overlapping coverage areas also have mutually different switched states;

means for sensing a signal link quality of the telephone signals received at said basestation from said cordless handset to detect a predetermined deterioration of the signal link quality; and

means for reversing the switched states of each of said signal exchanging components in response to the detection of the predetermined deterioration.

5,390,236

TELEPHONE ANSWERING DEVICE LINKING DISPLAYED DATA WITH RECORDED AUDIO MESSAGE

Judah Klausner, Sagaponack, N.Y., and Robert Hotto, La Jolla, Calif., assignors to Klausner Patent Technologies, Sagaponack, N.Y.

Continuation-in-part of Ser. No. 860,699, Mar. 31, 1992, Pat. No. 5,283,818. This application May 12, 1992, Ser. No. 881,949
Int. Cl.[6] H04M *1/64, 11/00*
U.S. Cl. 379—67 **16 Claims**

1. A telephone message system for use with a telephone line for automatically storing and later retrieving information from incoming telephone calls, comprising:

(a) a telephone answering device coupled to a telephone line, which comprises:

means for receiving and storing first signals from said telephone line, each of said first signals specifying a caller;

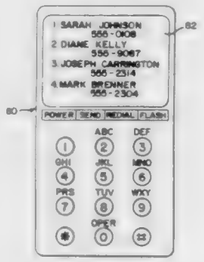
means for receiving and storing a voice message from each caller on said telephone line;

means for converting each received first signal into received identifying information;

means for linking each received identifying information with the corresponding stored voice message;

means for transmitting said received identifying information to a user of said telephone message system for assisting in the selective retrieval of at least one of said stored messages; and

(b) a remote access device, which comprises:



means for storing a predetermined list of names and associated stored identifying information;

means for receiving from said telephone answering device the received identifying information specifying the identities of the callers;

means for comparing the received identifying information with said predetermined list of stored identifying information;

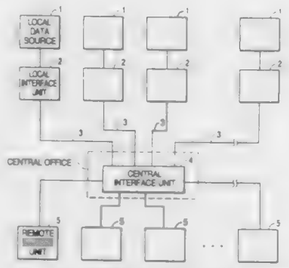
means for displaying one or more respective caller names if the comparing means matches one or more received identifying information with any stored identifying information in said list.

5,390,237

WEATHER INFORMATION INTERFACE SYSTEM

Robert H. Hoffman, Jr., Nashville, Tenn.; Armand R. Marino, Marietta, Ga., and Iliff N. Hartman, North Richland Hills, Tex., assignors to The Weather Radio Network, Inc., Nashville, Tenn.

Continuation-in-part of Ser. No. 766,212, Sep. 27, 1991, abandoned. This application Sep. 24, 1993, Ser. No. 126,210
Int. Cl.[6] H04M *11/08*
U.S. Cl. 379—67 **13 Claims**



1. A system for providing real time wide area access to continuously updated local weather information from a plurality of remote sources of continuously available updated local weather information at a plurality of geographically dispersed localities, comprising:

a plurality of local interface units, each said local interface unit being coupled to one of the remote sources, the local interface units receiving said local weather information from said remote sources and transferring the local weather information;

a central interface unit coupled to each of the local interface units and accessible by an incoming caller via telephone service, the central interface unit selectively coupling the incoming caller to one of said local interface units in response to selection of a desired locality by the incoming caller to provide the incoming caller with the local weather information in human recognizable audio form from the local interface unit of the desired locality on a real-time basis; and

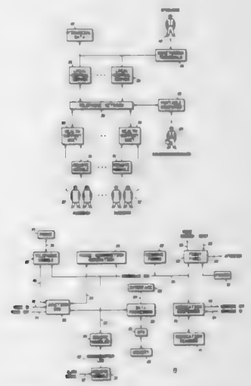
wherein the central interface unit includes means for allowing a plurality of incoming callers to be simultaneously provided with the same local weather information from the same desired locality, without said incoming callers being able to interact with other callers.

5,390,238

HEALTH SUPPORT SYSTEM

Dan M. Kirk; Norman C. Gehring, both of Scottsdale, and George J. Butorac, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 15, 1992, Ser. No. 898,270
Int. Cl.[6] H04M *11/00;* **G06F** *15/00*
U.S. Cl. 379—93 **5 Claims**



1. A health support system which comprises:

at least one health support unit for monitoring and supporting a patient, wherein the health support unit comprises:

means for medication control, including:

means for medication verification by comparison with a predetermined medication list;

means for medication scheduling to input a predetermined medication schedule;

means for medication delivery coupled to the means for medication scheduling to dispense medication verified by the means for medication verification according to the predetermined medication schedule; and

means for medication delivery verification to check patient compliance to the predetermined medication schedule;

patient interaction means for communicating with the patient, the patient interaction means coupled to the means for medication control;

central data processing means for storing and manipulating patient data generated by the means for medication control and by the patient interaction means, the central data processing means is coupled to the means for medication control and the patient interaction means;

a communications interfact for allowing access to the patient data and for accepting external data from an external source, the communications interface coupled to the central data processing means;

at least one monitoring terminal; and

a network server coupled between the at least one health support unit and the at least one monitoring terminal, the network server for exchanging information between the at least one health support unit and the at least one monitoring terminal, the network server comprising:

a local central server for receiving and transmitting information exchanged between the at least one health support unit and the at least one monitoring terminal;

a telephone network coupled to the local central server, the telephone network for transmitting information between the patient and the local central server; and

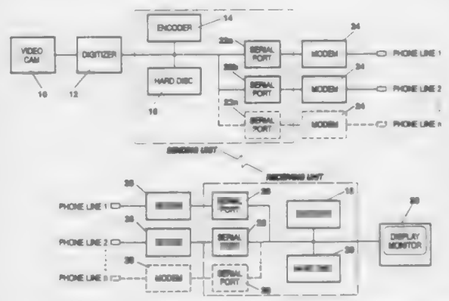
a communications link for transmitting information between the local central server and the at least one monitoring terminal.

5,390,239

METHOD FOR INCREASING DIGITAL DATA THROUGHPUT OVER TELEPHONE LINES

Gregory A. Morris, Rte. 1, Box 1752, Kellyville, Okla. 74039, and Jeffrey D. Piotrowski, 18537 E. 121st St. South, Broken Arrow, Okla. 74011

Filed Mar. 17, 1994, Ser. No. 214,973
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—93 **1 Claim**



1. A method for increasing the throughput of digital data transmission over existing telephone lines utilizing computers at the sending and receiving ends, comprising:

a sending computer with a plurality of serial ports each of which serial port is connected to a modem said modem connected to a telephone line a receiving computer with a plurality of serial ports each of which serial port is connected to a modem and said modem connected to a telephone line, the number of said receiving computer's serial ports, modems, and telephone lines being at least equal to the number of said serial ports, modems and telephone lines in the sending computer;

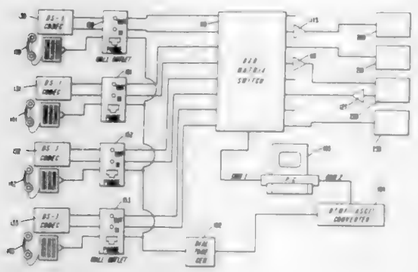
means for segmenting the data file into blocks equal to the number of actual serial ports available to the sending and receiving computers and labeling said blocks of data in a sequential order;

means for activating the transmission of said individual data blocks by the separate modems attached to the serial ports and monitoring the transmission of said data blocks, said transmissions being done concurrently, and

means for reconstituting the sequentially labeled segmented data blocks into one data file in the proper sequence at the receiving computer.

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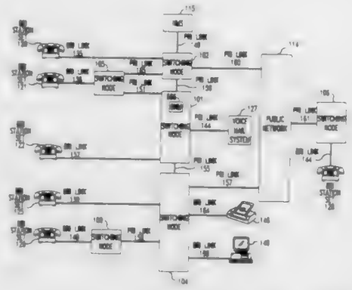
5,390,240
DATA DIAL SYSTEM AND METHOD
Cleatus R. Sensney, Tulsa, Okla., assignor to Williams Telecommunications Group, Inc., Tulsa, Okla.
Filed Oct. 8, 1992, Ser. No. 957,939
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—94 **61 Claims**



1. A data dial system comprising:
a matrix switch having a first plurality of inputs, a first plurality of outputs, a second plurality of inputs and a second plurality of outputs, wherein a first input of the first plurality of inputs, responsive to a first control signal, connects to at least one of the first plurality of outputs, and a first output of the second plurality of outputs, responsive to the first control signal, connects to one of the second plurality of inputs, respectively, and wherein said matrix switch, responsive to a second control signal, disconnects the first input from the connected one of the first plurality of outputs, and disconnects the first output from the connected one of the second plurality of inputs, respectively;
a plurality of user terminals, with each of said plurality of user terminals operatively coupled to one of the first plurality of inputs and to one of the second plurality of outputs, respectively;
a plurality of "Touch-Tone" push button telephones, with each of said plurality of "Touch-Tone" push button telephones having a dual-tone-multiple-frequency (DTMF) keypad for generating DTMF signals;
a dial tone generator, coupled to each of said plurality of "Touch-Tone" push button telephones, for providing a direct current biasing level for operating each of said plurality of "Touch-Tone" push button telephones;
a DTMF-ASCII converter, operatively coupled to said dial tone generator and responsive to each DTMF signal, for converting each DTMF signal to an ASCII signal; and
a processor, operatively coupled to said matrix switch and to said DTMF-ASCII converter, responsive to a first ASCII signal, for generating the first control signal for connecting the first input to at least one of the first plurality of outputs and for connecting the first output to one of the second plurality of inputs, and responsive to a second ASCII signal, for generating the second control signal for disconnecting the first input and the first output.

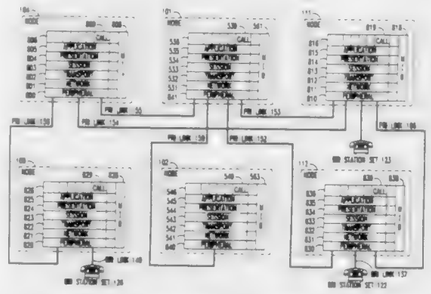
5,390,241
SHARED LINE APPEARANCE ACROSS A PLURALITY OF SWITCHING SYSTEMS
Bruce M. Bales, Louisville; Robert L. Crumpley, Westminster, and Stephen M. Thieler, Boulder, all of Colo., assignors to AT&T Corp., Murray Hill, N.J.
Filed Dec. 18, 1992, Ser. No. 995,418
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—207 **31 Claims**

17. An apparatus for providing a shared line appearance to a plurality of telephone station sets , the apparatus comprising:
each telephone station set terminating the shared line appearance and each connected to a different one of a plurality of switching nodes with the shared line appearance being identified by a shared directory number of a directory dialing plan
means, in a directory number management application, for controlling incoming calls directed to the shared line appearance using the shared directory number; and



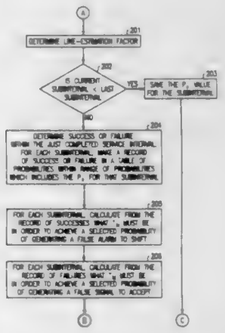
means, in the directory number management application, for transferring first call information from a calling telephone station set to each of the plurality of telephone station sets by using a secondary number of a secondary dialing plan assigned to each of the telephone station sets to route through the switching nodes.

5,390,242
REROUTING IN A DISTRIBUTED TELECOMMUNICATION SYSTEM
Bruce M. Bales, Louisville; Robert L. Crumpley, Westminster; Sandra S. North, Golden, and Stephen M. Thieler, Boulder, all of Colo., assignors to AT&T Corp., Murray Hill, N.J.
Filed Dec. 30, 1991, Ser. No. 816,359
Int. Cl.[6] H04M *7/00, 3/42;* **H04Q** *11/04;* **H04J** *3/12*
U.S. Cl. 379—221 **6 Claims**



1. A method for controlling the routing of calls within a telecommunication switching system having a plurality of switching nodes interconnected by links, comprising the steps of:
transmitting a setup message from an originating switching node to a destination switching node to set up a call path via a set of the switching nodes which does not include the originating and the destination switching nodes;
inserting a node number of each switching node of the set of the switching nodes into the setup message by each switching node of the set of the switching nodes as the setup message is received by each switching node of the set of the switching nodes
determining by a switching node of the set of the switching nodes in response to the node numbers in the setup message that to extend the call path being set up between the originating and destination switching nodes through the switching node where a first portion of the call path is already setup through a subset of the set of the switching nodes would result in a second portion of the call path having to extend through one switching node of the subset of the switching nodes a second time before the call path can terminate on the destination switching node;
communicating a redirect message by the switching node back to the subset of switching nodes to deny the extension of the call path through the switching node.

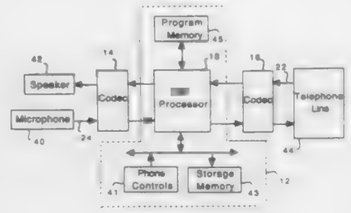
5,390,243
TELEMARKETING COMPLEX WITH AUTOMATIC THRESHOLD LEVELS
Brenda L. Casselman, Matawan; Robert A. Malmi, Middletown, both of N.J., and Bernadette M. Strout, Albany, Calif., assignors to AT&T Corp., Murray Hill, N.J.
Filed Nov. 1, 1993, Ser. No. 146,662
Int. Cl.[6] H04M *3/42, 7/00, 3/36*
U.S. Cl. 379—265 **2 Claims**



1. A method for managing a telemarketing complex having automatic call distributors and means for collecting data with respect to said automatic call distributors during each subinterval of a service interval, said method comprising the steps of determining the probability during each subinterval of having each one of said automatic call distributors achieve a predetermined performance objective at the end of said service interval, comparing said probability to a threshold level for shifting calls and to a threshold level for accepting calls, determining the number of calls to shift and the number of calls to accept based on said comparison to said threshold levels, determining success or failure in achieving said performance objective at the end of said service interval and storing a record of a success or failure along with the associated probability for each of the subintervals within said service interval thereby adding to an historical record of successes and failures for each of said subintervals, and automatically calculating said threshold for shifting calls and said threshold for accepting calls for each of said subintervals based on said record of successes and failures.

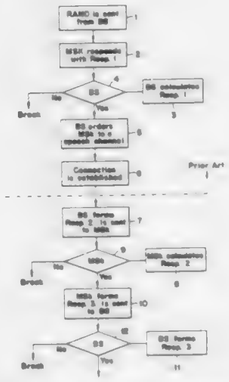
5,390,244
METHOD AND APPARATUS FOR PERIODIC SIGNAL DETECTION
Brian L. Hinman, Los Gatos; Shan-Shan Huang, Sunnyvale, and Eric K. Gaut, Foster City, all of Calif., assignors to Polycom, Inc., San Jose, Calif.
Filed Sep. 10, 1993, Ser. No. 119,498
Int. Cl.[6] H04M *9/08*
U.S. Cl. 379—386 **14 Claims**

1. A method for detecting the presence of periodic signals in an incoming telephone signal, the method comprising the steps:
generating a series of auto-correlation coefficients from the incoming telephone signal, the coefficients comprising a fundamental coefficient and a series of higher-order coefficients;
computing the sum of the auto-correlation coefficients which represents the correlation between frequency components comprising the incoming signal; and



comparing the sum of auto-correlation coefficients to a predetermined threshold value in order to determine whether the incoming signal contains periodic signals.

5,390,245
METHOD OF CARRYING OUT AN AUTHENTICATION CHECK BETWEEN A BASE STATION AND A MOBILE STATION IN A MOBILE RADIO SYSTEM
Paul W. Dent, Stehag; Alex K. Raith, Kista, and Jan. E. A. S. Dahlin, Järfälla, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Continuation of Ser. No. 655,771, Feb. 15, 1991, abandoned, which is a continuation of Ser. No. 68,234, May 27, 1993, Pat. No. 5,282,250. This application Apr. 7, 1993, Ser. No. 43,758
Claims priority, application Sweden, Mar. 9, 1990, 9000856
Int. Cl.[6] H04L *9/32*
U.S. Cl. 380—23 **8 Claims**



1. A method for establishing the authenticity of a network and a mobile station in a mobile radio system, the method comprising the steps of:
forming in each of the network and the mobile station a first signal and a second signal;
transmitting the first signal formed in the network to the mobile station;
establishing the authenticity of the network by comparing in the mobile station the first signal formed in the mobile station with the first signal received from the network;
transmitting the second signal formed in the mobile station to the network; and
establishing the authenticity of the mobile station by comparing in the network the second signal formed in the

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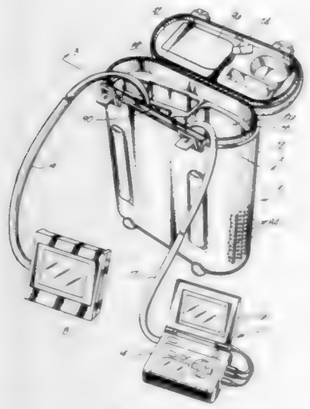
network with the second response signal received from the mobile station.

5,390,246

PORTABLE MULTIMEDIA MARKETING SYSTEM

Jean-Philippe Gay, 21530 Marchena St., and Douglas M. Brown, III, 5225 Penfield Ave., both of Woodland Hills, Calif. 91364

Filed Apr. 19, 1993, Ser. No. 49,150
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—24 2 Claims



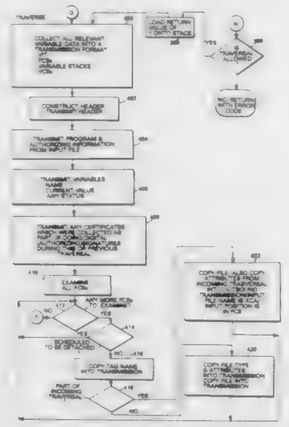
1. A portable multimedia marketing system comprising:
a self-contained integral carrying case comprising a hinged cover portion and a main body portion, the main body portion comprising:
a pair of semi-cylindrical sides defining a spaced plurality of perforations;
a power distribution circuit for receiving external AC power;
a signal distribution circuit comprising a jack panel having a plurality of output jacks;
first and second padded compartments;
first and second speaker compartments;
a portable audio and video playback device removably mounted within the first padded compartment of the carrying case for producing a first combined audio-video signal and a second combined audio-video signal;
a first portable hand-held video monitor attached to the portable audio and video playback device for receiving the first combined audio-video signal and displaying a first video image;
a first umbilical cable for carrying power from the power distribution circuit to the portable audio and video playback device and for carrying the second combined audio-video signal from the portable audio and video playback device to the signal distribution circuit;
a second hand-held video monitor removably mounted within the second padded compartment of the carrying case for receiving a video signal and displaying a second video image;
a second umbilical cable for carrying power from the power distribution circuit to the second video monitor and for carrying the video signal from the signal distribution circuit to the second video monitor; and
a pair of magnetically shielded speakers mounted within the first and second speaker compartments of the carrying case, each speaker receiving a channel of audio signal from the signal distribution circuit, each of said speakers mounted within one of the pair of semi-cylindrical sides of the body portion and oriented to direct sound through the perforations therein, the speakers mutually oriented in opposite directions from each other.

5,390,247

METHOD AND APPARATUS FOR CREATING, SUPPORTING, AND USING TRAVELLING PROGRAMS

Addison M. Fischer, 60 14th Ave. South, Naples, Fla. 33942

Continuation of Ser. No. 863,552, Apr. 6, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 123,676
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—25 29 Claims



26. In a communications system having a plurality of digital computers coupled to a channel over which digital computers exchange messages, a method for processing digital information among said computers comprising the steps of:
executing on a first digital computer a sequence of digital instructions, including digital instructions which determine at least one next destination that receives the sequence of digital instructions;
acquiring digital data from a user of at least one of said computers under the control of said sequence of digital instructions;
translating said data under the control of said sequence of digital instructions into a predefined data structure;
digitally signing at least part of said data structure via the execution of said sequence of digital instructions to create a digital signature value; and
transmitting digital information including said digital signature value to a next destination under the control of said sequence of digital instructions.

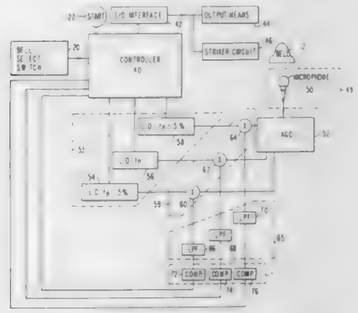
5,390,248

APPARATUS FOR DETERMINING TONAL CHARACTERISTICS OF AN OBJECT AND METHOD THEREOF

Marc H. Segan, New York, N.Y., and Michael Newsome, Franklin Park, N.J., assignors to M.H. Segan & Company, Great Barrington, Mass.

Filed Jan. 15, 1993, Ser. No. 6,074
Int. Cl.[6] H04R *29/00*
U.S. Cl. 381—56 33 Claims

1. An apparatus for grading the tonal characteristics of an object having a fixed tone with respect to a nominal tone, comprising:
automatically actuated means for causing the object having the fixed tone to generate an audio signal;
input means for inputting the audio signal;
reference signal generating means for generating a plurality of reference signals having a predetermined frequency relationship with the nominal tone;
mixing means for mixing the audio signal input by said input means with each of the plurality of reference signals; and
evaluating means for evaluating the accuracy of the audio signal with respect to the nominal tone in accordance with the audio signal mixed by said mixing means and assigning



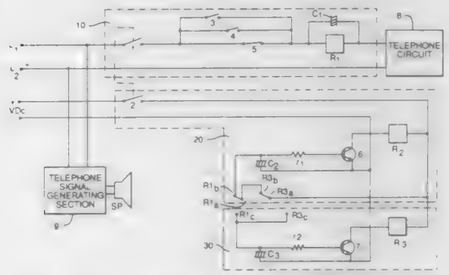
the fixed tone of the object a grade, wherein the plurality of reference signals comprise a first signal having a first frequency substantially equal to the frequency of the nominal tone, a second signal having a second frequency greater than the first frequency by a predetermined amount, and a third signal having a third frequency less than the first frequency by the predetermined amount.

5,390,249

RECEIVER DEVICE FOR RECEIVING RINGING SIGNALS IN AN OFF-HOOK LINE CONDITION

Chung H. Park, 443-52, Burn 1-dong, Dobong-gu, Seoul, Rep. of Korea

Filed Jan. 14, 1992, Ser. No. 820,034
Claims priority, application Rep. of Korea, Mar. 14, 1991, 3388/1991
Int. Cl.[6] H04M *1/74*
U.S. Cl. 379—393 3 Claims



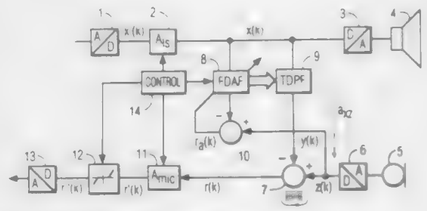
1. A telephone communication circuit comprising:
a first communication circuit (**10**) comprising:
a first hook switch (**1**) connected to a first telephone lead line,
a second hook switch (**2**) connected to said first hook switch (**1**), and connected to a positive line of a circuit operating line VDC, wherein said first hook switch and said second hook switch are operated in the same manner,
a first switch (**3**) of a first relay (R_1),
a first switch (**4**) of a second relay (R_2),
a first switch (**5**) of a third relay (R_3), wherein said first switches of said first, second, and third relays are connected in parallel between said first hook switch (**1**) and a parallel connection of said first relay and a first condenser, said parallel connection connected between said first switches of said first, second, and third relays and a telephone circuit;
a communication operating circuit (**20**) comprising:
a first side of said first relay and a first side of said second relay (R_2 and R_3) connected to said positive line of a circuit operating line VDC,
a first contact of a second switch (R_{3a}) of said third relay (R_3) connected to said positive line of said circuit operating line VDC, said second relay, and said third relay (R_2 and R_3);
a second contact of said second switch (R3b) of said third relay (R_3) connected to a first contact of a second switch (R1a) of said first relay (R_1); and
a second contact of said second switch (R1b) of said first relay (R_1) for being electrically connected to said first contact of said second switch (R_{3a}) of said third relay such that when said first and second relays are not operated, a circuit is completed between said positive line of said circuit operating line VDC, said first contact of said second switch of said first relay being connected to a base of a first transistor through a first resistor and through a first condenser to a collector of said first transistor and a negative line of said circuit operating line VDC, said first transistor operating said relay R_2; and
an operation maintaining circuit **30** comprising:
a third contact of said second switch of said third relay,
a third contact of said second switch of said first relay connected to said third contact said second switch of said third relay and to a base of a second transistor through a second resistor and through a second condenser to a collector of said second transistor and said negative line of said operating VDC, such that when said third relay is operated a circuit is made from said positive line of said circuit operating line VDC to said third contact of said second switch of said third relay and when said first relay is operated, said first contact of said second switch of said first relay is connected to said third contact of said second switch of said first relay.

5,390,250

ECHO CANCELLER WITH IMPROVED DOUBLETALK DETECTION

Cornelis P. Janse, and Franciscus A. M. van de Laar, both of Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Dec. 17, 1991, Ser. No. 810,776
Claims priority, application Netherlands, Dec. 18, 1990, 9002790
Int. Cl.[6] H04M *1/58*
U.S. Cl. 379—410 6 Claims



1. An echo canceller comprising:
a receive path and a send path each having an input and an output;
a programmable filter coupled to the receive path for producing an echo signal which is an estimate of an echo produced in an echo path from the output of the receive path to the input of the send path;
an adaptive filter having a first input oupled to the receive

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path and a first output coupled to said programmable filter to supply programming parameters thereto, said adaptive filter having an impulse response which is an estimate of the impulse response of said echo path, said adaptive filter comprising detecting means adapted to control whether programming parameters are supplied to said programmable filter;

a first subtractor circuit having a first input coupled to the input of said send path, a second input coupled to the output of said programmable filter, and an output coupled to the output of said send path;

a second subtractor circuit having a first input coupled to the input of said send path, a second input coupled to a second output of said adaptive filter, and an output coupled to a second input of said adaptive filter; and

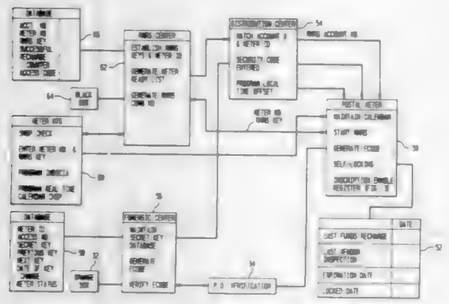
said detecting means operating to block supply of programming parameters from said adaptive filter to said programmable filter when an input signal is supplied to the send path, the presence of said input signal being detected by said detecting means based on a calculation of whether the ratio of a first quantity, derived from the power of said input signal, to a second quantity, derived from the power of an estimated echo signal produced by said adaptive filter at said second output thereof, exceeds a predetermined threshold.

5,390,251

MAIL PROCESSING SYSTEM INCLUDING DATA CENTER VERIFICATION FOR MAILPIECES

Jose Pastor, Medinaceli, Spain; George M. Brookner, Norwalk, Conn.; Robert A. Cordery, Danbury, Conn., and Hyung-Kun P. Kim, Wilton, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 8, 1993, Ser. No. 133,427
Int. Cl.[6] H04L 9/02
U.S. Cl. 380—21 12 Claims



1. A system for controlling the validity of printing of indicias on mailpieces from a plurality of users of respective postage meters of the type having computer means and a printer for printing an indicia on a mailpiece for indicating an amount of dispensed postage on the mailpiece, the system comprising apparatus disposed in each said postage meter for generating a code and for printing the code on each mailpiece using said printer, said code being an encrypted code representative of the postage meter apparatus printing the indicia and other information uniquely determinative of the legitimacy of the amount of postage printed on the mailpieces, each said code generating apparatus changing its code generation within predetermined intervals in each of said plurality of postage meters and a security center including apparatus for maintaining a security code database and for generating security codes in correspondence with the changes in each said code generating apparatus and the information printed on the mailpiece by the postage meter apparatus for comparison with the code printed on the mailpiece, an additional code is printed on the mailpiece and there is another security center for generating codes in correspondence with said additional code

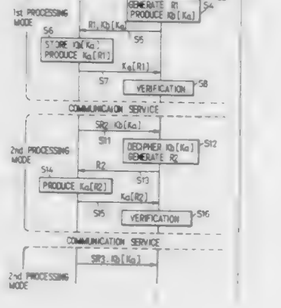
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5,390,252

AUTHENTICATION METHOD AND COMMUNICATION TERMINAL AND COMMUNICATION PROCESSING UNIT USING THE METHOD

Shigefusa Suzuki, Iruma, and Tatsuo Nohara, Hachiouji, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 171,663
Claims priority, application Japan, Dec. 28, 1992, 4-348296; Dec. 28, 1992, 4-348297
Int. Cl.[6] H04L 9/32
U.S. Cl. 380—23 22 Claims



1. In a communication system which includes a communication processing unit having a first authentication key Kb and performing communication processing, a communication terminal having a second authentication key Ka unique thereto and connected via a communication channel to said communication processing unit, and a storage storing said second authentication key Ka for authenticating said communication terminal and responsive to a request from said communication processing unit to provide thereto said second authentication key Ka, an authentication method whereby said communication processing unit verifies the validity of said communication terminal when receiving therefrom a communication request;

said authentication method including a step wherein said communication processing unit responds to a communication request signal from said communication terminal to determine if said communication request signal is a first one and if so, a first processing mode is executed and if not, a second processing mode is executed;

A. said first processing mode comprising the steps:

wherein said communication processing unit:

(a) responds to said communication request from said communication terminal to acquire said second authentication key Ka of said communication terminal from said storage; and

(b) generates authentication information Xbi enciphered by said first authentication key Kb and random information Yi and transmits an authentication request signal containing said pieces of information, to said communication terminal;

wherein said communication terminal:

(c) transmits information Ka[Yi] as an authentication response signal to said communication processing unit, said information Ka[Yi] being obtained by enciphering said random information Yi with said second authentication key Ka; and

(d) stores said enciphered authentication information Xbi; and

wherein said communication processing unit:

(e) verifies said authentication response signal using said second authentication key Ka; and

B. said second processing mode comprising the steps:

wherein said communication terminal:

(f) transmits to said communication processing unit a communication request signal containing said enciphered authentication information Xbi obtained by authentication processing executed in response to the previous communication request;

wherein said communication processing unit:

(g) deciphers said enciphered authentication information Xbi into a deciphered authentication key Kci;

(h) generates new random information Yi; and

(i) transmits an authentication request signal containing said random information Yi to said communication terminal;

wherein said communication terminal:

(j) enciphers said received random information Yi by said authentication key Kci and sends said enciphered random information as an authentication response signal to said communication processing unit; and

wherein said communication processing unit:

(k) verifies said received authentication response signal using said deciphered authentication key Kci.

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Patent Not Issued For This Number

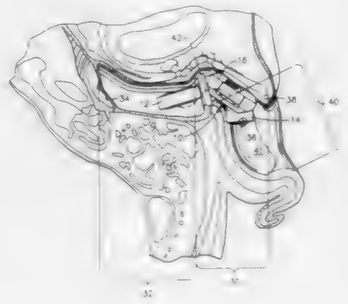
5,390,254

HEARING APPARATUS

Roger A. Adelman, 1562 Wittlou Pl., Cincinnati, Ohio 45224

Continuation of Ser. No. 642,735, Jan. 17, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,875
Int. Cl.[6] H04R 25/00
U.S. Cl. 381—68 6 Claims

1. An apparatus for use in a human external auditory canal with substantially non-compliant side walls and a compliant tympanic membrane at its innermost terminus, the external auditory canal having a cartlinginous part with an innermost section of the cartlinginous part forming an S-shaped sigmoid portion, and a bony portion that extends to the tympanic membrane, the apparatus comprising:



(a) means for receiving energy in the form of sound waves and converting the received energy into an electrical signal;

(b) means for modifying said electrical signal;

(c) means for converting said modified electrical signal into energy in the form of air-borne sound waves, said converting means including an active, compliantly supported surface having a functional area comparable to that of the tympanic membrane for creating said air-borne sound waves, said surface being located at least partially between the sigmoid portion and the tympanic membrane; and

(d) means for acoustically isolating an inner portion and an outer portion of the external auditory canal to form a closed cavity in which the compliant surface of the converting means is at least partially located.

5,390,255

ACTIVE ACOUSTIC ATTENUATION SYSTEM WITH ERROR AND MODEL COPY INPUT

Steven R. Popovich, Stoughton, Wis., assignor to Nelson Industries, Inc., Stoughton, Wis.

Continuation of Ser. No. 953,129, Sep. 29, 1992, abandoned. This application Dec. 30, 1993, Ser. No. 175,688
Int. Cl.[6] H03B 29/00
U.S. Cl. 381—71 1 Claim

1. An active acoustic attenuation system for attenuating an input acoustic wave comprising:

an output transducer introducing a canceling acoustic wave to attenuate the input acoustic wave and yield an attenuated output acoustic wave;

an error transducer sensing the output acoustic wave and providing an error signal;

a first adaptive filter model modeling the acoustic system and outputting a correction signal to the output transducer to introduce the canceling acoustic wave, the first adaptive filter model comprising:

a first algorithm filter comprising an A filter having a filter

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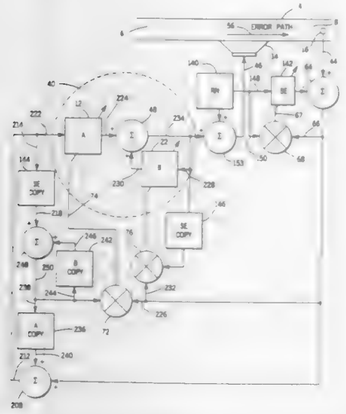
input, a filter output, and an error input from the error transducer;

a second algorithm filter comprising a B filter having a filter input from the correction signal, a filter output, and an error input from the error transducer; and

a first summer having a first input from the filter output of the A filter, a second input from the filter output of the B filter, and an output outputting a first resultant sum as the correction signal;

a first model copy comprising a copy of the A filter and having an input and an output;

a second model copy comprising a copy of the B filter and having an input and an output;



a third model copy comprising a copy of a model modeling the output transducer and the error path between the output transducer and the error transducer and having an input and a output;

a second summer summing the error signal and the output of the first model copy, and supplying a second resultant sum to the filter input of the A filter and to the input of the third model copy; and

a third summer summing the output of the third model copy and the output of the second model copy, and supplying a third resultant sum to the input of the first model copy and to the input of the second model copy and to the error input of the A filter for modifying the error input from the error transducer.

5,390,256

DYNAMIC LOADER

Douglas E. Mandell, San Francisco; Martin J. Richards, Redwood city; Mark L. Atherton, San Bruno; Paul R. Goldberg, Palo Alto, and Mark F. Davis, Pacifica, all of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 804,976, Dec. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 638,896, Jan. 8, 1991, abandoned. This application Jun. 1, 1992, Ser. No. 891,590

Int. Cl.[6] H04B *3/00*

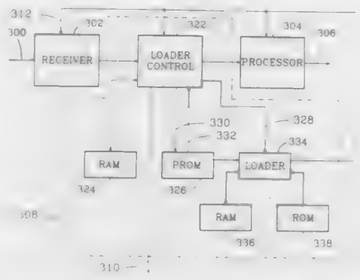
U.S. Cl. 381—77 **78 Claims**

1. Apparatus comprising

receiver means for receiving encoded information, said information including presentation material and operation material, wherein said presentation material is represented in at least two forms, the operation material comprising at least a portion of the software required to play back the presentation material represented in a first form but not required to play back the presentation material represented in another form,

processor means for generating in response to said presentation material one or more signals representing sounds and/or visual images, and

adaptor means for adapting in response to said operation material the operational characteristics of said receiver



means, said processor means, and/or said adaptor means, wherein the operational characteristics of at least one of said receiver means, said processor means, and said adaptor means is controlled by software installed in the apparatus and said adaptor means alters and/or replaces said installed software in response to operation material software so that the apparatus may play back the presentation material represented in said first form.

5,390,257

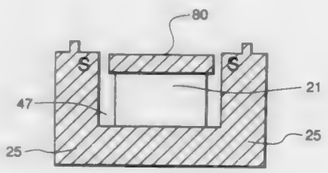
LIGHT-WEIGHT SPEAKER SYSTEM

Michael J. Oslac, Ste. 54E, 161 Chicago Ave. East, Chicago, Ill. 60611-2603, and Harry J. Moskow, 5353 Monroe St., Skokie, Ill. 60077

Filed Jun. 5, 1992, Ser. No. 894,411

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—199 **27 Claims**



1. A lightweight loudspeaker assembly comprising:

a high efficiency permanent magnet structure containing a small gap that can accommodate a voice coil having an impedance ranging from about 1,000 to about 10,000 ohms, said magnet structure being comprised of a rare earth metal magnet and an enclosure means for said rare earth metal magnet, said enclosure means being comprised of a magnetic flux carrying material;

a cone diaphragm to which is attached the voice coil;

a frame supporting said cone diaphragm and said permanent magnet structure, said frame being comprised of a lightweight material.

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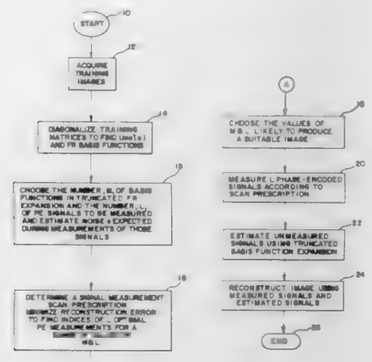
FEATURE GUIDED METHOD AND APPARATUS FOR OBTAINING AN IMAGE OF AN OBJECT

David N. Levin, Chicago, Ill., assignor to Argonne National Laboratories/University of Chicago Development Corporation, Chicago, Ill.

Filed Aug. 7, 1992, Ser. No. 927,352

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—6 **14 Claims**



1. A method for obtaining a visual image of a target object comprising the steps

selecting a plurality of training objects each of said training object having a predetermined feature in common with a target object;

placing each said training object in a position for said predetermined feature to be scanned by a scanning system;

scanning each of said plurality of training objects using scanning system for generating training signals, said scanning system sampling multiple lines to represent images of said training objects;

acquiring preselected training signals from said plurality of training objects resembling the target object to be scanned, said training signals representing images of said plurality of training objects having at least one predetermined feature in common with the target object, wherein said training signals are acquired from said plurality of training objects independent of a physical position of said training objects;

deriving, from said training signals, a set of basis functions that provide a convergent series expansion of said images of said training objects;

an operator selecting and inputting scanning systems parameters including an estimated signal-to-noise level, number of said basis functions, and number of said signal measurements of the target object into said scanning system through a user input device;

determining a signal measurement prescription for the target object based on said scanning system parameters;

selecting a target object to be scanned and placing said target object in a position for said predetermined feature to be scanned by said scanning system;

generating a control signal based on said signal measurement prescription so as to control said scanning system to scan said predetermined feature of said target object and

acquiring target signals of the target object said scanning system sampling multiple lines to represent an image of said target object;

generating a truncated basis function expansion of the image from said acquired target signals;

estimating additional signal measurements based on said truncated basis function and

reconstructing the visual image of the target object using said obtained target signals and said estimated additional signal measurements wherein said visual image is displayed on a visual display device.

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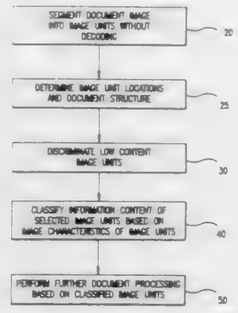
METHODS AND APPARATUS FOR SELECTING SEMANTICALLY SIGNIFICANT IMAGES IN A DOCUMENT IMAGE WITHOUT DECODING IMAGE CONTENT

M. Margaret Withgott, Los Altos; Steven C. Bagley; Dan S. Bloomberg, both of Palo Alto, all of Calif.; Daniel P. Huttenlocher, Ithaca, N.Y.; Ronald M. Kaplan, Palo Alto, Calif.; Todd A. Cass, Cambridge, Mass.; Per-Kristian Halvorsen, Los Altos, Calif.; Ramana B. Rao, San Francisco, Calif., and Douglass R. Cutting, Menlo Park, Calif., assignors to Xerox Corporation, Rochester, N.Y.

Filed Nov. 19, 1991, Ser. No. 794,191

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—9 **9 Claims**



1. A method for electronically processing at least one document stored as an electronic document image containing undecoded text to identify a selected portion thereof, said method comprising the steps or:

segmenting said at least one document image into words, each word having an undecoded textual content;

classifying the textual content of at least some of said words relative to other said words, without decoding the words, based on an evaluation of predetermined morphological characteristics of said words; and

selecting words for further processing according to the classification of said words obtained in said classifying step.

5,390,260

METHOD AND APPARATUS FOR ON-LINE, REAL TIME RECOGNITION OF STROKED HAND-DRAWN CHARACTERS

John D. Bezek, Owego, N.Y., assignor to International Business Machines, Corp., Armonk, N.Y.

Filed Jun. 28, 1993, Ser. No. 84,658

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—13 **4 Claims**

1. In a computer means for translating position and motion input to alphanumeric output comprising:

a. relative motion and/or relative position sensing input means comprising:

i. means for determining when said relative motion and/or relative position sensing input means is active;

ii. means for sensing basic motion and/or position attributes of the active relative motion and/or relative position sensing input means; and

iii. means for defining a meta attribute of the sensed input, said meta attribute chosen from the group consisting of

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one or more of turns, weighted input center, and strokes thereof; and

the improvement wherein said computer means comprises parallel processor computer means, said parallel processor computer means having a plurality of processor memory elements, at least a first one of said processor memory elements comprising:

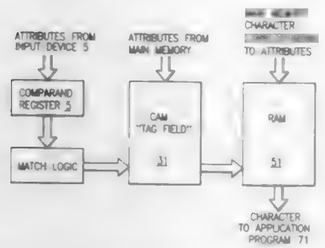
b. multi-way associative content addressable memory means, said multi-way associative content addressable memory means having

i. a comparand register for storing and iteratively updating an input object attribute word;

ii. recognition pattern tag field means for input attribute words;

iii. character data field means for output attributes;

iv. means for concurrently comparing a multi-bit input object attribute word in the comparand register to a plurality of recognition pattern tag field entries in the content addressable memory; and



iv. means for outputting from the content addressable memory as an output object the contents of the content addressable memory character data field having a recognition pattern tag field entry most closely corresponding to the multi-bit input object attribute word; and

wherein said relative motion and/or relative position sensing input means further comprises:

iv. means for forming a multi-bit input object attribute word of the sensed basic attributes and defined meta attributes of the sensed input;

said relative motion and/or relative position sensing input means and said content addressable memory means maps motion and position data to alphanumeric data; and

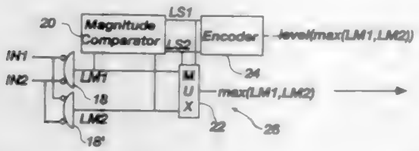
wherein at least another one of said processor memory elements is in communication with said first one of the processor memory elements for receiving output therefrom.

5,390,261

METHOD AND APPARATUS FOR PATTERN CLASSIFICATION USING DISTRIBUTED ADAPTIVE FUZZY WINDOWS

Yee-Wei Huang, 2006 Anderson Ave., and Willard W. Olson, 1852 Anderson Ave., #1, both of Manhattan, Kans. 66502

Filed May 13, 1991, Ser. No. 699,321
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—14 13 Claims



1. A method for selectively classifying at least one input pattern into a respective one of a plurality of pattern classes, each input pattern being characterized by at least first and second input values represented by respective first and second electrical input signals having magnitudes that correspond to first and second features of the respective input pattern, each pattern class being characterized by at least first and second feature classification criteria represented by respective electrical feature classification signals having magnitudes that correspond to first and second features of the respective pattern class, comprising the steps of:

A) defining, for each of said plurality of pattern classes, said first and second feature classification criteria as respective first and second fuzzy windows, each of said windows having respectively a maximum, a minimum and an optimum electrical feature classification signal value;

B) for each of said plurality of pattern classes:

1) determining if the first input value of said input pattern is within the first fuzzy window of said pattern class; and,

a) if so, providing a first similarity metric signal having a value which varies from a predetermined high significance value when the first input value corresponds to the optimum feature classification signal value of the first fuzzy window of said pattern class to a predetermined low significance signal value when the first input value corresponds to either the maximum or minimum feature classification signal value of the first fuzzy window of said pattern class; but

b) if not, assigning the first similarity metric signal a predetermined no significance value,

2) determining if the second input value of said input pattern is within the second fuzzy window of said pattern class, and

a) if so, providing a second similarity metric signal value having a value which varies from a predetermined high significance value when the second input value corresponds to the optimum feature classification signal value of the second fuzzy window of said pattern class to a low significance value when the second input value corresponds to either the maximum or minimum feature classification signal value of the second fuzzy window of said pattern class; but

b) if not, assigning the second similarity metric signal a predetermined no significance value,

C) generating level metric signals in response to the similarity metric signals produced by the input values and the respective fuzzy windows of each pattern class;

D) comparing the level metric signals for each of said pattern classes; and

E) generating a class index signal indicative of the one of said pattern classes which has the most significant level metric signal.

5,390,262

METHOD FOR SPLITTING AND CONFIGURING A MULTI-CHANNEL IMAGE PROCESSING SYSTEM

Charles K. Pope, Waterloo, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 3, 1991, Ser. No. 770,793
Int. Cl.[6] G06K 9/36
U.S. Cl. 382—41 9 Claims

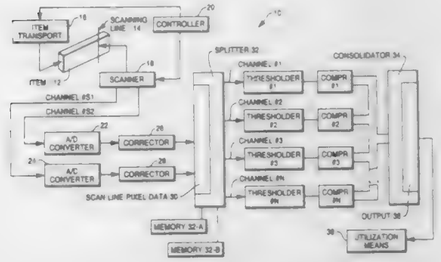
1. A machine implemented method of processing image data derived from scanning a document, with the image data presented in the form of successive scan lines of pixels, said method comprising the steps of:

(a) splitting each scan line of pixels into a plurality of processing channels, with a predetermined number of pixels being located within each of said processing channels; and

(b) initiating processing of the pixels in said processing channels in parallel after a predetermined number of successive scan lines of pixels has been generated but before the entire document has been scanned;

said splitting being effected through using a split RAM bank for each one of said processing channels, and through

using a computer implemented process which receives as inputs: track speed for moving the document past a scanner to generate said successive scan lines of pixels; scan



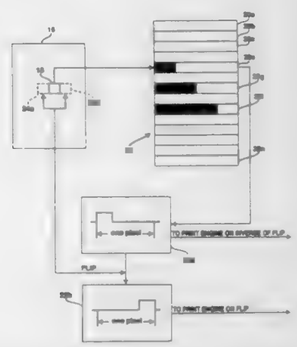
line resolution from said scanner; maximum document height; and pixel resolution to determine the number of processing channels required to meet a predetermined throughput.

5,390,263

METHOD AND APPARATUS FOR CONTEXT SENSITIVE POST PROCESSING TO SELECT AN APPROPRIATE MODULATION PATTERN FOR A PIXEL BASED UPON NEIGHBORING PIXELS

Randall G. Guay, Cupertino, and Kok Chen, Palo Alto, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 767,175, Sep. 27, 1991, abandoned. This application Jan. 18, 1994, Ser. No. 183,633
Int. Cl.[6] G06K 9/38
U.S. Cl. 382—50 18 Claims



1. A method for performing context sensitive pixel modulation in an imaging system which utilizes a plurality of multibit data pixels including imaging information for modulating a plurality of corresponding output pixels, said method comprising the steps of:

determining a first modulation pattern for a current output pixel using a corresponding first said multibit data pixel;

determining a second modulation pattern for a first neighboring output pixel to said current pixel and a third modulation pattern for a second neighboring output pixel to said current pixel using a corresponding second and third said multibit data pixel, respectively;

performing a comparison of said first modulation pattern with said second and third modulation patterns to determine the exact manner in which said current output pixel is to be imaged;

modulating said current output pixel in accordance with said comparison to generate either (1) an output modulation pattern derived from said first modulation pattern and not from said second or third modulation patterns, or (2) a reverse of said output modulation pattern; and,

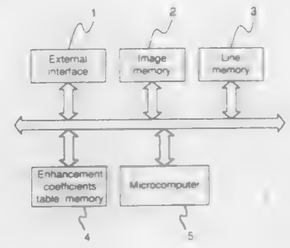
repeating each said step for each said output pixel until a final output image is completed.

5,390,264

IMAGE PROCESSING METHOD FOR CORRECTING A TARGET PIXEL USING EMPHASIZING AND SMOOTHING COMPONENTS

Hideshi Ishihara, Katano; Haruo Yamashita, Osaka, and Tsumoru Fukushima, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 8, 1992, Ser. No. 987,220
Claims priority, application Japan, Dec. 9, 1991, 3-324655
Int. Cl.[6] G06K 9/40
U.S. Cl. 382—54 7 Claims



1. A computer-implemented image signal processing method for converting an input image signal denoting a first two-dimensional image into an output image signal denoting a second two-dimensional image which is visually enhanced relative to the first two-dimensional image, said input image signal containing plural pixel signals each defining a relative image density of a corresponding pixel of the first two-dimensional image, said method comprising:

a first step of storing in a memory the plural pixel signals contained by said input image signal;

a second step of extracting, from among said plural pixels stored in the memory, a pixel as a target pixel and 4n pixels (n=1 or 2) located adjacent to said target pixel in 4×n radial directions of said first two-dimensional image each having an equal angular pitch of (360°/4n) with respect to said target pixel,

a third step of subjecting the target pixel to an enhancement process by obtaining 4×n first differences for said 4×n radial directions, each of said 4×n first differences being a difference between said target pixel and each of said 4×n pixels, and then enhancing said target pixel with 4n enhancement factors, each of said 4n enhancement factors being defined as a product of said 4×n first differences and an enhancement coefficient which is determined according to an absolute value of a corresponding one of said 4×n first differences;

a fourth step of subjecting the target pixel to a smoothing process by obtaining 4×n mean values for said 4×n pixels, each of said 4×n mean values being defined as a mean value of a pair of two pixels selected from among said 4×n pixels in such a manner that said two pixels are located in two radial directions of said two-dimensional image orthogonal to each of said 4×n radial directions, obtaining 4×n second differences for said 4×n radial differences, each of said 4×n second differences being a difference between said target pixel and each of said 4×n mean values, and then smoothing said target pixel with 4×n smoothing factors, each of said 4×n smoothing factors being defined as a product of one of said 4×n second differences and a corresponding one of said enhancement coefficients obtained in said enhancement process;

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a fifth step of repeating said second through fourth steps with respect to each remaining pixel from among said plural pixel signals stored in said memory so as to subject each said remaining pixel to said enhancement and smoothing processes to obtain corresponding enhanced and smoothed image pixel signals;

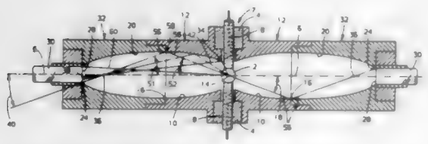
a sixth step of accumulating the enhanced and smoothed image pixels and forming the output image signal containing the enhanced and smoothed image pixel signals each defining an image density of a corresponding pixel of the second two-dimensional image.

5,390,265

FIBER OPTIC LIGHT COUPLER

Jianzhong Jiao, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1993, Ser. No. 168,258
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—15 9 Claims



1. An optical coupler arrangement comprising:

a light source;

a conduit spaced from the light source with a major axis intersecting the light source, the conduit having a circular opening for receiving light from the light source;

a first reflector surface of a partial rotated ellipse, the first reflector surface being positioned to place the light source at the focus of the ellipse, the first surface having an extreme end with a first angle between the focus of the ellipse and the extreme end; and

a second reflector surface juxtaposed between the first reflector surface and the conduit, the second reflector surface being generated from a compound parabola with a focus along the circular opening of the conduit with a parabolic axis projecting at an angle generally equal in measure to the first angle from the major axis of the conduit, the parabolic axis being rotated about the major axis of the conduit.

5,390,266

OPTICAL ELEMENT

Walter Heitmann, Gross-Bieberau, and Heinrich Stenger, München, both of Germany, assignors to Electronic Production Partners GmbH, München, Germany

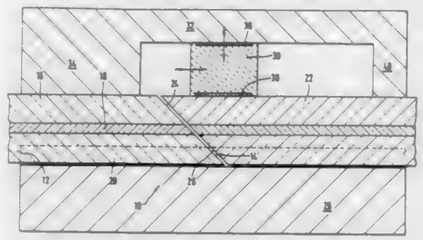
Filed Oct. 4, 1993, Ser. No. 133,731
Claims priority, application Germany, Oct. 5, 1992, 4233489
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—44 33 Claims

1. An optical element for affecting light transmission characteristics of an optical system, said optical element comprising:

at least a first and a second optical fiber, said first optical fiber having a first end section and said second optical fiber having a second end section to be optically coupled and decoupled to one another;

each one of said first and said second end sections having a slanted end face, with an angle of slant of at least one said slanted end faces exceeding a critical angle of total reflection; and

at least one of said first and said second end sections being displaceable relative to the other one of said first and said second end sections, wherein a distance of displacement between said slanted end faces is substantially smaller than



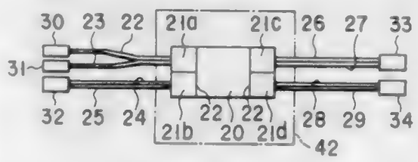
a diameter of said optical fibers so as to provide optical coupling therebetween.

5,390,267

OPTICAL FIBER/TERMINAL CONNECTING DEVICE

Hisaharu Yanagawa, and Takeo Shimizu, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 932,340, Aug. 19, 1992, abandoned.
This application Jan. 21, 1994, Ser. No. 184,781
Claims priority, application Japan, Aug. 21, 1991, 3-234112; Aug. 22, 1991, 3-235492
Int. Cl.[6] G02B 6/30
U.S. Cl. 385—49 7 Claims



1. An optical connecting device for connecting an input thereto to an output thereof depending on a destination of said input, comprising:

an optical wave guide substrate having a plurality of optical wave guides and a plurality of input and output terminals;

a first number greater than one, of input optical fiber arranging members connected to a first connecting end surface of said optical wave guide substrate;

a second number greater than one, of output optical fiber arranging members connected to a second connecting end surface of said optical wave guide substrate;

a third number greater than zero, of input optical fibers, said third number of input optical fibers respectively having a first end thereof optically coupled to at least one of said first number of input optical fiber arranging members and having a second end thereof optically coupled to at least one of a fourth number greater than one, of optical transmitting terminal devices; and

a fifth number greater than zero, of output optical fibers, said-fifth number of output optical fibers respectively having a first end thereof optically coupled to at least one of said second number of output optical fiber arranging members and having a second end thereof optically coupled to at least one of a sixth number greater than one, of receiving optical devices; and wherein

said first number of input optical fiber arranging members is equal in number to said fourth number of optical transmitting terminal devices;

said second number of output optical fiber arranging members is equal in number to said sixth number of optical receiving terminal devices;

a number of said plurality of optical wave guides formed in said substrate and said third number of input optical fibers are equal in number to each other; and

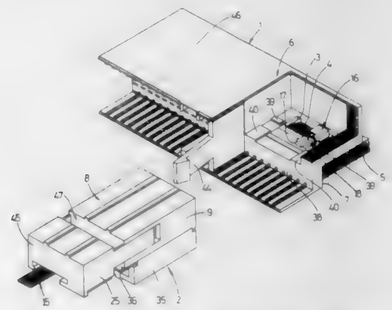
said number of said plurality of optical wave guides formed in said substrate and said fifth number of output optical fibers are respectively optically coupled to each other.

5,390,268

CONNECTOR ASSEMBLY

Danny Morlion, St. Amandsberg, and Luc Jonckheere, Dilbeek, both of Belgium, assignors to Framatome Connectrors International, Paris, France

Filed Dec, 7, 1993, Ser. No. 163,667
Claims priority, application Netherlands, Dec. 16, 1992, 9202173
Int. Cl.[6] G02B 6/00, 6/36
U.S. Cl. 385—59 12 Claims



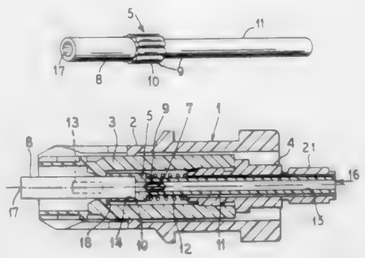
1. Connector assembly for interconnecting optical and/or electrical conductors, comprising a first connector part with a first guiding plate with one or more guiding channels for first conductors each terminated by a contact pad and a second connector part to be coupled with the first connector part and having a second guiding plate with one or more guiding channels provided in a corresponding manner for second conductors to be connected with the first conductors and each terminated by a contact pad, wherein the guiding plates comprise positioning means for mutually positioning the guiding plates in the coupled position of the connector parts in such a manner that corresponding contact pads of the first and second conductors are interconnected optically and electrically, respectively, said positioning means comprising cooperating straight reference surfaces extending in x-direction and cooperating straight reference surfaces extending in y-direction, all said reference surfaces being located at a predetermined location with respect to the guiding channels, wherein the second guiding plate is mounted moveably in x-, y- and z-directions in a housing and wherein means are provided for exerting forces for pressing the cooperating reference surfaces and the contact pads towards each other in the x-, y- and z-directions during coupling the connector parts, wherein one connector part can be inserted into the other in the longitudinal direction of the guiding channels, and wherein distance elements are provided, said distance elements being adapted to keep the contact pads of the conductors at a distance from each other in z-direction during inserting of the connector part and to enable the movement of the contact pads towards each other in z-direction as soon as the cooperating reference surfaces are substantially abutting.

5,390,269

FIBER OPTIC CONNECTOR WITH HIGH RESOLUTION TUNABLE FIBER HOLDER

Vincent J. Palecek, deceased, late of Brookfield by Patricia A. Palacek, legal represenative , and Philip W. Schofield, Oak Park, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Dec. 23, 1992, Ser. No. 995,884
Int. Cl.[6] G02B 6/36
U.S. Cl. 385—78 20 Claims



1. A fiber optic connector for terminating a length of fiber optic cable having a front shell, a load bearing portion and a reciprocating holder inserted in said shell for holding a ferrule, an optical fiber, and said fiber optic cable, said holder comprising:

a multi-surfaced exterior portion having at least twelve different adjacent positions which allows for tuning of said holder in multiple orientations of at least twelve positions to optimize concentric positioning of said holder with respect to a common mating axis, and

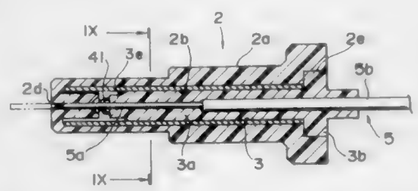
a multi-surfaced interior of said front shell having a corresponding number of surfaces therein reciprocal to said multi-surfaced exterior portion.

5,390,270

OPTICAL FIBER FERRULE ASSEMBLIES

Hideyuki Hanzawa, Tokyo, and Toshihiro Nonaka, Machida, both of Japan, assignors to Kel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 931,219, Aug. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 617,990, Nov. 26, 1990, Pat. No. 5,231,685. This application Aug. 16, 1993, Ser. No. 139,046
Claims priority, application Japan, Aug. 16, 1991, 3-229613; Sep. 3, 1991, 3-252967; Sep. 28, 1992, 4-282363
Int. Cl.[6] G02B 6/36, 6/38
U.S. Cl. 385—81 29 Claims



1. A ferrule assembly for terminating an optical fiber comprising:

an outer ferrule comprising a tubular body wall having front, mating and rear, optical fiber receiving axial ends;

an inner optical fiber clamping ferrule comprising a tubular body having a front, axial end and a rearwardly extending optical fiber-clamping portion for receipt in the outer ferrule and defining an axially extending through-passageway, an axial slit extending through the clamping portion

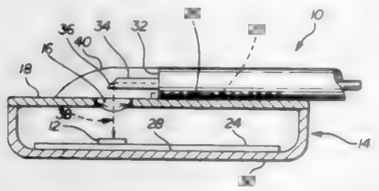
dividing the passageway into two opposed groove portions so that a prepared end of an optical fiber can be located in the groove portions extending along the through-passageway and the inner ferrule subsequently force-fitted within the outer ferrule to extend co-axially therewith, wall portions of the inner ferrule body at opposite axial ends of the slit maintaining axially extending portions of both respective opposed surfaces of the slit spaced apart from each other with the slit in open condition so that opposed walls of the groove portions are pressed into gripping engagement with the optical fiber therein by the receipt of the inner ferrule in the outer ferrule retaining the optical fiber centered accurately in the ferrule assembly.

5,390,271

OPTICAL INTERFACE FOR HYBRID CIRCUIT

John F. Priest, Tomball, Tex., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 3, 1993, Ser. No. 55,316
Int. Cl.[6] G02B 6/42
U.S. Cl. 385—92 11 Claims



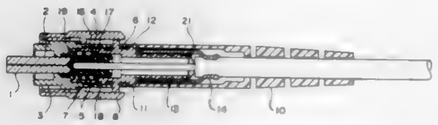
1. Apparatus for coupling the optical energy conducted through an optical fiber surrounded by a fiber jacket to an electro-optic element positioned within a case having a substantially-planar lid comprising, in combination:
a) said lid including a defined region overlying said element characterized by transparency to a predetermined bandwidth of said optical energy;
b) the terminal end of said fiber including a planar surface of reflective character for directing said optical energy in a direction substantially orthogonal to the direction of propagation of optical energy within said fiber; and
c) means for positioning said terminal end of said fiber adjacent said lid so that said predetermined bandwidth of said optical energy is directed through said defined region and at said element.

5,390,272

FIBER OPTIC CABLE CONNECTOR WITH STRAIN RELIEF BOOT

Eric J. Repta, Schaumburg; Michael T. Mayszak, Carol Stream, both of Ill., and Donald W. Duda, Williams Bay, Wis., assignors to Amphenol Corporation, Wallingford, Conn.

Filed Aug. 31, 1993, Ser. No. 113,698
Int. Cl.[6] G02B 6/44
U.S. Cl. 385—100 14 Claims



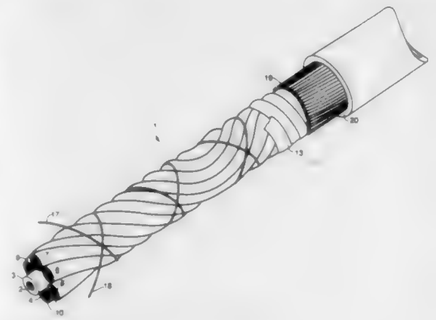
1. An optical fiber connector, comprising:
a boot which includes:
a generally cylindrical main section having a principal longitudinal axis;
a plurality of ribs in the generally cylindrical section, said ribs having a width W in the direction of the longitudinal axis defined by a plurality of cuts having a width t in the direction of the longitudinal axis;
said boot being bendable through an angle ϕ about pivot points defined by respective intersections of the longitudinal axis with bisectors of said cuts such that as said boot is bent, edges of said ribs engage each other,
wherein dimensions W, t, and ϕ, are selected to provide a predetermined minimum bending radius; and
means including a connector member and a crimp ferrule between which an optical fiber jacket portion is secured.

5,390,273

FLAME RESISTANT OPTICAL FIBER CABLE WITH OPTICAL FIBERS LOOSELY ENCLOSED IN TUBES

Mujibar M. Rahman; Grant M. Davidson, and John C. Smith, all of Columbia, S.C., assignors to Pirelli Cable Corporation, Lexington, S.C.

Continuation-in-part of Ser. No. 862,597, Apr. 2, 1992, Pat. No. 5,229,851. This application Jul. 16, 1993, Ser. No. 93,347
Int. Cl.[6] G02B 6/44
U.S. Cl. 385—112 26 Claims



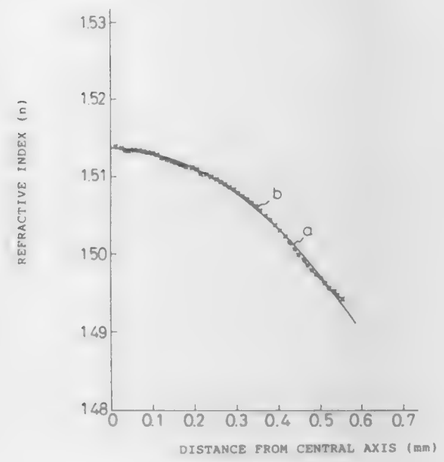
1. An optical fiber cable comprising:
a central member;
at least one substantially fluid impervious tube wound around said central member;
a plurality of optical fibers loosely received in said tube;
a sheath of plastic material encircling said tube which is around said central member, said plastic material having a predetermined flame propagating value which prevents flame propagation upon combustion of the sheath, greater than a predetermined value;
a thermal barrier layer encircling said tube and said central member and intermediate said tube and said sheath, said thermal barrier layer being electrically non-conductive and being non-combustible when subjected to the flame and the heat of combustion of said sheath;
a water blocking material in any otherwise empty spaces in said tube and between said thermal barrier layer and said tube, said water blocking material permitting said optical fibers to move with respect to said tube and permitting said tube to move with respect to said thermal barrier layer and to said central structural member.

5,390,274

DISTRIBUTED GRADED INDEX TYPE OPTICAL TRANSMISSION PLASTIC ARTICLE AND METHOD OF MANUFACTURING SAME

Nobuhiko Toyoda; Yoshihiko Mishina; Ryuji Murata; Yoshihiro Uozu; Masaaki Oda, and Teruta Ishimaru, all of Otake, Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Continuation of Ser. No. 689,880, filed as PCT/JP89/00991, Sep. 29, 1989, published as WO91/05275, Apr. 18, 1991, abandoned. This application Jul. 30, 1992, Ser. No. 908,603
Int. Cl.[6] G02B 6/18
U.S. Cl. 385—124 4 Claims



1. A distributed refractive index type optical transmission plastic article having a circular cross section of a radius r_0 and a refractive index distribution which substantially approximates a refractive index distribution curve defined by the following equation (1) at least in a range of $0.25r_0$ to $0.70r_0$ extending from a center axis toward a peripheral surface of the optical transmission article:

$$n(r)=n_0\{1-(g^2/2)r^2\} \quad (1)$$

where n_0 is a refractive index at the center axis of the optical transmission article;
n(r) is a refractive index at a position of radius r away from the center axis of the optical transmission article;
g is a refractive index distribution constant (mm^{-1}) of the optical transmission article;
r is a distance (mm) from the center axis toward the peripheral surface of the optical transmission article; and
$1.4 \leqq n_0 \leqq 1.6$
$0.4 \leqq r_0\ (mm) \leqq 0.6$
$0.15 \leqq g\ (mm^{-1}) < 0.3$
wherein when a grid image of 4 line-pairs/mm is formed through the optical transmission article on a CCD line sensor and a maximum value i_{max} and a minimum value i_{min} of light quantities of the image are measured, a modulation transfer function (MTF) calculated according to the following equation (2):

$$MTF=\{(i_{max}-i_{min})/(i_{max}+i_{min})\}\times 100 \quad (2)$$

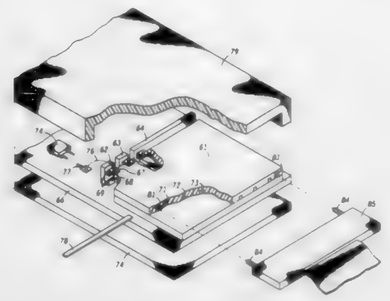
is at least 55%.

5,390,275

MOLDED WAVEGUIDE AND METHOD FOR MAKING SAME

Michael S. Lebby; Shun-Meen Kuo, both of Chandler; Davis H. Hartman, Phoenix, and Christopher K. Y. Chun, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 889,335, May 28, 1992, Pat. No. 5,265,184. This application Sep. 30, 1993, Ser. No. 124,148
Int. Cl.[6] G02B 6/10
U.S. Cl. 385—132 4 Claims



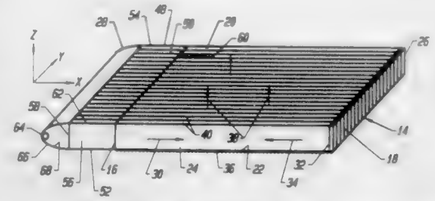
1. A molded waveguide comprising:
a first molded cladding layer having a plurality of channels with some of the plurality of channels having adiabatic tapering;
a second molded cladding layer; and
an adhesive core material, wherein the adhesive core material fills the plurality of channels securing and covering the plurality of channels of the first molded cladding layer with the second molded cladding layer, thereby making a molded waveguide;
an alignment guide placed on the cladding region of the molded waveguide for alignment of an optical connector.

5,390,276

BACKLIGHTING ASSEMBLY UTILZING MICROPRISMS AND ESPECIALLY SUITABLE FOR USE WITH A LIQUID CRYSTAL DISPLAY

Chen-Yu Tai; Han Zou, and Zhan Chen, all of Toledo, Ohio, assignors to Briteview Technologies, Toledo, Ohio

Filed Oct. 8, 1992, Ser. No. 958,238
The portion of the term of this patent subsequent to Oct. 25, 2011, has been disclaimed.
Int. Cl.[6] G02B 6/04
U.S. Cl. 385—146 40 Claims



1. An assembly for backlighting a liquid crystal display, comprising:
(a) a backlighting light pipe having opposing top and bottom surfaces and opposing sides and extending lengthwise between opposite ends;
(b) means for directing light into said light pipe and for causing it to move from one end of the light pipe towards the opposite end thereof; and

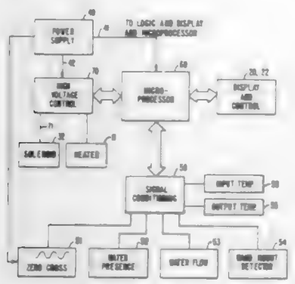
(c) an arrangement of immediately adjacent microprisms extending normal to the lengthwise axis of the light pipe from one side of said light pipe to its opposing side along the entire extent of and serving as the bottom surface of the light pipe, each of said microprisms having a triangular cross-section extending downward to a point so as to define from said point opposing, upwardly angled light reflecting surface segments for reflecting light within said light pipe upwards through its top surface in a generally collimated manner.

5,390,277

FLOW THROUGH ELECTRICAL HEAT CONTROLLER HAVING ASYMPTOTIC TEMPERATURE CONTROL ARRANGEMENT TO AVOID OVERSHOOT

Mark Van Wagner, Sandy; John Stapleton, Provo, both of Utah; Mohammed R. Hay, Yuba City, and Allan W. Byers, Biggs, both of Calif., assignors to Andermac, Inc., Yuba City, Calif.

Filed Mar. 27, 1992, Ser. No. 858,164
Int. Cl.[6] H05B *1/02*; F24M *1/10*
U.S. Cl. 392—485 14 Claims



1. A controller and single pass electrical fluid heater in combination operated from an alternating current source in which heated fluid asymptotically approaches a temperature "set point" without the danger of appreciable overshoot and with minimum undershoot comprising in combination:

a single pass electrical fluid heater placed in series between a fluid source and an outlet;

an electrical heating element in said fluid heater having electrical connection for imparting heat to fluid flowing in a single pass through said heater;

at least one flow throttling aperture;

a first temperature sensor for measuring the water outflow temperature from said heater;

a second temperature sensor for measuring the water inflow temperature to said heater;

a connected controller for setting the desired set 18 point temperature of said outflow from said heater;

means for establishing a control point temperature at level below said set point temperature as a function of said set point temperature;

means for comparing the first temperature sensor for measuring the water outflow from said heater with said control point temperature;

current control means connected between said alternating current source and said heater element operatively connected to said first temperature sensor, said second temperature sensor, said current control means having first and second current control protocols, said first current control protocol Operative when said water outflow temperature from said heater is below said control point temperature permitting computation of phase angle of said alternating current as a function of said heater input temperature, heater output temperature, and desired control point temperature;

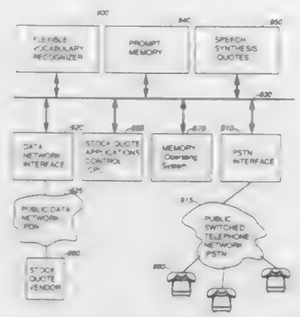
said second control protocol operative when said water temperature is between said control point and said set point to incrementally change current as a function of heater output temperature and said set point temperature whereby said heater asmpytotically equilibrates to said set point.

5,390,278

PHONEME BASED SPEECH RECOGNITION

Vishwa N. Gupta, Brossard; Matthew Lennig; Patrick J. Kenny, both of Montreal, and Christopher K. Toulson, Dollard des Ormeaux, all of Canada, assignors to Bell Canada, Montreal, Canada

Filed Oct. 8, 1991, Ser. No. 772,903
Int. Cl.[6] G10L *5/04*
U.S. Cl. 395—2.52 28 Claims



1. A method of preparing phoneme models for recognition of speech received via telephone lines comprising the steps of:

a) analyzing a training word to generate a frame sequence of acoustic parameter vectors representative thereof and obtaining a phoneme model sequence of the training word;

b) providing a first set of model parameters representative of a sequence of state-transition models corresponding to each phoneme of the phoneme model sequence in the training word, the parameters including a mean vector and weighting factor for each transition and a covariance matrix for each model;

c) computing a set of observation probabilities for each phoneme of the phoneme model sequence the training word and the first set of model parameters;

d) aligning the frame sequence of acoustic parameter vectors with the sequence of state-transition models to provide a mapping therebetween representative of a path through the sequence of state-transition models having a highest likelihood;

e) accumulating statistics for a plurality of utterances of said training word using the mapping of step d);

f) generating a second set of model parameters representative of the sequence of state-transition models corresponding to each phoneme of the phoneme model sequence the training word;

g) repeating step d) for the second set of model parameters;

h) comparing the likelihood of the first and second sets of model parameters; and

i) repeating step b) through h), replacing the first set of model parameters by the second set of model parameters when the second set of parameters provides at least a predetermined improvement in likelihood; and

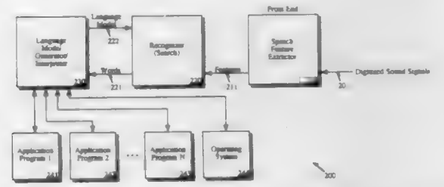
j) substituting the covariance matrix of a first model with the covariance matrix of a second model to provide a smooth covariance matrix thereby improving recognition accuracy for the first model.

5,390,279

PARTITIONING SPEECH RULES BY CONTEXT FOR SPEECH RECOGNITION

Robert D. Strong, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 31, 1992, Ser. No. 999,011
Int. Cl.[6] G01L *5/06*
U.S. Cl. 395—2 18 Claims



1. A method of continuous speech recognition including dynamic generation of a current language model and interpretation in a speech recognition system according to a current context comprising the following steps:

a. associating with each of a plurality of speech rules, a context wherein each of said speech rules will be active:

b. during initialization of said speech recognition system, determining common contexts for said plurality of speech rules, and partitioning said plurality of speech rules into a partition of speech rule sets according to said common contexts wherein each of said plurality of speech rules resides in only one of said speech rule sets of said partition;

c. upon the detection of speech, determining said current context of said speech recognition system;

d. determining all speech rule sets which each have a context matching said current context, and storing said matched speech rule sets as a context matched set of speech rules;

e. dynamically generating a current language model from said context matched set of speech rules in said partition for use by a speech recognizer;

f. said speech recognizer using said current language model to recognize words contained in said speech; and

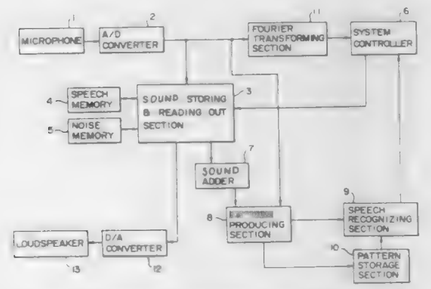
g. an interpreter using said context matched set of speech to interpret and perform actions according to said words recognized by said speech recognizer.

5,390,280

SPEECH RECOGNITION APPARATUS

Yasuhiko Kato; Masao Watari; Miyuki Tanaka, and Akihiko Fujinaka, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Nov. 10, 1992, Ser. No. 974,230
Claims priority, application Japan, Nov. 15, 1991, 3-326933
Int. Cl.[6] G10L *5/06, 9/18*
U.S. Cl. 395—2.42 2 Claims



1. A speech recognition apparatus comprising:

inputting means for inputting object speech and noise;

speech storage means for storing object speech from said inputting means;

noise storage means for storing noise from said inputting means;

pattern producing means for producing a speech pattern from the object speech from said inputting means and for adding the object speech stored in said speech storage means and the noise stored in said noise storage means to produce a standard pattern;

standard pattern storage means for storing the standard pattern produced by said pattern producing means;

recognizing means for comparing the speech pattern produced by said pattern producing means with the standard pattern stored in said standard pattern storage means to thereby recognize the object speech from said inputting means;

updating means for causing said noise storage means to successively update the noise stored therein in response to a variation between the noise from the inputting means and the noise stored in the noise storage means exceeding a first predetermined reference value; and

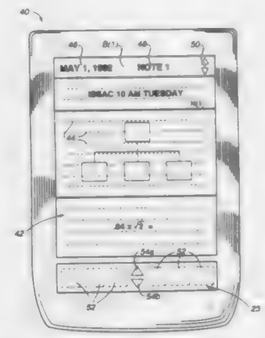
means for determining when the variation between the noise input from said inputting means and the noise stored in said noise storage means is greater than the first predetermined reference value and also greater than a second predetermined reference value which is higher than the first predetermined reference value, wherein said updating means does not update the noise stored in said noise storage means when said variation between the noise input from said inputting means and the noise stored in said noise storage means is greater than the second predetermined reference value.

5,390,281

METHOD AND APPARATUS FOR DEDUCING USER INTENT AND PROVIDING COMPUTER IMPLEMENTED SERVICES

William W. Luciw, Morgan Hill; Stephen P. Capps, San Carlos, and Lawrence G. Tesler, Portola Valley, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 27, 1992, Ser. No. 889,225
Int. Cl.[6] G06F *15/38, 15/40, 3/023*
U.S. Cl. 395—12 10 Claims



2. A method of executing an operation on a computer system in response to high level information entered in the computer system, the method comprising the following steps:

recognizing as objects pieces of information entered on a display screen of the computer system, the objects each having a recognized object type, the object types recognized by the computer system including at least persons, shapes, and times;

creating a set of objects from the information entered in the

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computer system, the set describing possible computer operations;

comparing the object type of at least one of the objects in the set of objects so created with a plurality of task templates stored in the computer system, the task templates defining operations that can be performed with the computer system, the templates also having a plurality of associated preconditions;

identifying one or more of said task templates having a precondition corresponding to an object type of at least one of the objects in said set;

selecting a single task template from among the one or more task templates identified in the previous step by finding the task template having the best agreement with regard to the object types of all text or graphics objects in the set; and

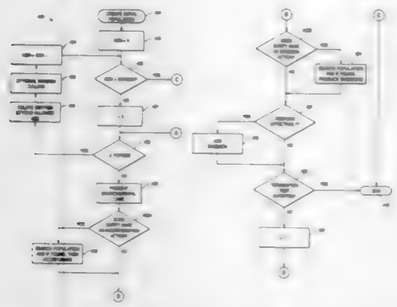
executing the task associated with the single task template if the preconditions associated with that template have been determined.

5,390,282

PROCESS FOR PROBLEM SOLVING USING SPONTANEOUSLY EMERGENT SELF-REPLICATING AND SELF-IMPROVING ENTITIES

John R. Koza, 25372 La Rena La., Los Altos Hills, Calif. 94022, and James P. Rice, Redwood City, Calif., assignors to John R. Koza, Los Altos, Calif.

Filed Jun. 16, 1992, Ser. No. 899,627
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—13 29 Claims



1. A process for solving a problem using a population of programs, wherein each of said programs is an arrangement of functions and terminals that include at least either an incorporation function or an emission function, said process comprising the steps of:

activating each program by presenting each of said programs with at least one combination of environmental conditions,

if said each program includes an incorporation function then said program searching said population for a part of one of said programs and then incorporating the portion of said one program associated with said part into said each program,

if said program includes an emission function then said program searching said population for a part and then said each program producing at least one emission, and if said each program responds effectively to said at least one combination then said at least one emission the population and if said each program fails to respond effectively then said at least one emission not entering the population;

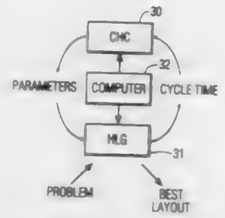
generating a solution to the problem by continuing the step of activating until one of said programs responds effectively to a specified number of combinations of environmental conditions.

5,390,283

METHOD FOR OPTIMIZING THE CONFIGURATION OF A PICK AND PLACE MACHINE

Larry J. Eshelman, Ossining, and James D. Schaffer, Wappingers Falls, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Oct. 23, 1992, Ser. No. 965,474
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—13 21 Claims



1. A method for optimizing configuration of a computer-controlled part pick-and-place machine for placing parts on a PCB, said machine comprising a support for the PCB, a plurality of gripping devices, a plurality of numbered feeders for holding parts for placing on the PCB, and means for activating the gripping devices to pick up selected parts from selected feeders and place them on selected positions on the PCB in accordance with one of a plurality of charges, each charge representing a specific set of parts which are picked and placed as a group and each group movement constituting one charge and a list of charges necessary to place on the parts on the PCB constituting a charge map capable of controlling operation of the machine, the method comprising the steps of:

(a) creating an initial population of chromosome strings each representing a set of parameters that control how a charge map is generated for controlling operation of the machine in order to place a given set of parts at given part locations on a given PCB,

(b) providing a charge map generator, responsive to a given chromosome string, for generating the configuration and for computing a placement time for placing the given set of parts-on the given PCB, with the machine in the configuration,

(c) using a genetic algorithm to generate from the chromosome strings new chromosome strings,

(d) evaluating the new chromosome strings generated in step (c) by supplying same to the charge map generator,

(e) iterating steps (c) and (d) substituting those new chromosome strings for the chromosome strings if the new chromosome strings result in a lesser placement time than the chromosome strings, until a specified number of chromosome strings have been generated and evaluated or the chromosome population has been brought to convergence, and

(f) outputting a best chromosome string found through iteration as representing a desired machine configuration.

5,390,284

LEARNING METHOD AND APPARATUS FOR NEURAL NETWORKS AND SIMULATOR WITH NEURAL NETWORK

Hisao Ogata, Kokubunji; Hiroshi Sakou, Shiki; Masahiro Abe, Iruma, and Junichi Higashino, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 23, 1992, Ser. No. 903,243
Claims priority, application Japan, Jun. 27, 1991, 3-182989
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—23 12 Claims

4. A learning machine comprising:

a neural network which operates on input data with current weight values to calculate output data, the neural network

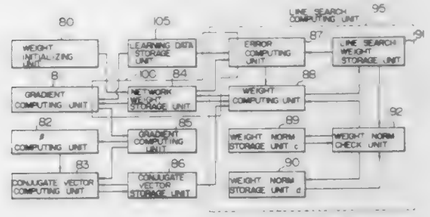
including a weight value storing means for storing the current weight values;

an error computing means for receiving the calculated output data from the neural network and desired output data and for calculating error values representing errors therebetween;

a gradient computing means for receiving the current weight values from the neural network and the error values from the error computing unit and calculating an error gradient value therefrom;

a conjugate vector computing means for generating a present line search conjugate vector from the error gradient value and a previously calculated line search conjugate vector;

a line search computing unit including:



a line search direction determining means for determining initial and subsequent search directions for searching for an error value minimum;

a weight correction value calculating means for performing a line search along the search direction to determine a weight correction value from the present line search conjugate vector;

a comparing means for comparing the weight correction value with a preselected maximum weight correction value; and

a weigh value adjusting means for combining the smaller of the weight correction value and the maximum weight correction value with the weight values stored in the neural network weight value storing means.

5,390,285

METHOD AND APPARATUS FOR TRAINING A NEURAL NETWORK DEPENDING ON AVERAGE MISMATCH

David C. Wood, Woodbridge, assignor to British Telecommunications public limited company, London, United Kingdom

PCT No. PCT/GB91/01967, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/09044, PCT Pub. Date May 29, 1992
PCT Filed Nov. 8, 1991, Ser. No. 50,399
Claims priority, application United Kingdom, Nov. 8, 1990, 9024332
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—23 8 Claims

8. A trainable neural network in combination with apparatus for training the neural network, comprising:

a neural network, the neural network comprising:

a plurality of input terminals for receiving a plurality of signals defining an input vector;

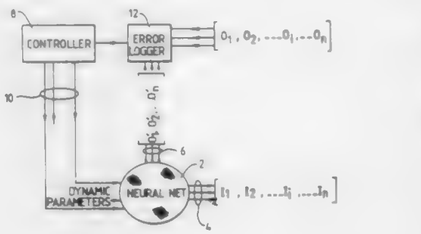
a plurality of weighting means for applying preset adjustable weights to the signals applied to the input terminals and for obtaining weighted signals, the weighting means including control input terminals to permit adjustment of the preset adjustable weights; and

an output terminal for outputting an output vector obtained in response to the weighted signals obtained from the weighting means; and

training apparatus external to the neural network for training the neural network, the training apparatus comprising:

means for repetitively applying a series of training vectors to the input terminals;

error logging means coupled to the output terminal for receiving a series of output vectors produced in response to the series of training vectors and for comparing the output vectors with target vectors to determine mismatches so as to produce an average mismatch value as a function of the number of occasions that mismatches occur for the series of input vectors; and



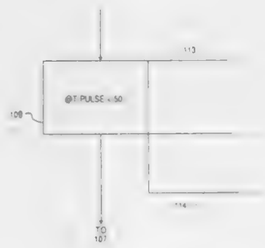
control means responsive to the average mismatch value for a series of input training vectors, for applying weight adjustment signals to the control input terminals of at least one of the weighting means, for tending to reduce the average mismatch value for the application of the next series of training vectors, and for determining when training is completed.

5,390,286

RETICULAR DISCRIMINATION NETWORK FOR SPECIFYING REAL-TIME CONDITIONS

Kamesh Ramakrishna, Milford, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 26, 1990, Ser. No. 499,039
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—64 9 Claims



1. An expert system for evaluating an expression comprising a plurality of ordered conditions, each condition in the expression being linked and related to the next condition in the order by one of a preselected set of logical operators, the evaluation of the expression being based upon values of data elements presented to the expert system the expert system comprising:

(a) a plurality of nodes, each of the nodes representing one of the conditions of the expression, the plurality of nodes being coupled in such a manner to represent the order and logical relationships of the conditions in the expression;

(b) a processor coupled to the plurality of nodes for accepting as input a series of the values of data elements, for passing the values of data elements to the nodes of the expert system for utilizing each node to test the condition it represents as a success or failure based on the values of data elements, and pass information on successful tests to

other related nodes, and for evaluating the expression based on the results of the node tests;

(c) at least one of the plurality of nodes being coupled to a memory for storing the results of condition testing in that node; and

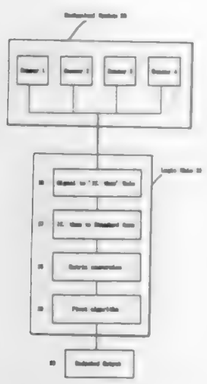
(d) the at least one of the plurality of nodes having its condition satisfied on the successful completion of two tests, the first test requiring that a value of data elements satisfies the condition represented by the at least one of the plurality of nodes, the second test requiring that the value of a previous one of the data elements stored in the memory did not satisfy the condition of the expression.

5,390,287

DEDUCTION INFERENCE SYSTEM FOR SOLVING COMPLEX PROPOSITIONAL LOGIC PROBLEMS IN RESPONSE TO SIGNALS FROM A PLURALITY OF SYSTEM SENSORS

Takashi Obata, 1-203, 3-8-21 Shimoigusa, Suginami-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 511,433, Apr. 13, 1990, abandoned. This application Mar. 19, 1992, Ser. No. 854,020
Claims priority, application Japan, Apr. 26, 1989, 1-106772
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—67 **4 Claims**



1. A deduction inference system coupled to a plurality of sensors for transmitting condition/status signals to said deduction inference system and to output means for receiving command signals from said deduction inference system, said deduction inference system comprising:

memory storage means for storing a plurality of predetermined propositional logic clauses, each propositional logic clause defining the conditions under which at least one of a plurality of flags will be set in response to transmitted condition/status signals from said plurality of sensors;

means for selecting appropriate propositional logic expressions from said memory means in response to said transmitted condition/status signals and storing them in a working memory;

transformation formulae logic means for transforming said set of propositional logic clauses into a set of derivative clauses logically equivalent to said set of propositional logic clauses;

deducing means for performing deductions on the basis of said set of derivative clauses and said transmitted condition/status signals, said deducing means comprising:

means for identifying a unit clause containing a single variable "p" within said set of derivative clauses and removing said unit clause from said set of derivative clauses, wherein said means for identifying a unit clause comprises means for selecting a dummy variable "p" from a compound clause in said set of derivative clauses when a unit clause cannot be identified;

means for identifying compound clauses containing multiple variables within said set of derivative clauses;

means for searching said compound clauses for the variable "not p";

means for deleting the variable "not p" from each of said compound clauses to form a new set of derivative clauses, wherein said identifying means, said searching means, and said deleting means are repeatedly accessed until no more unit clauses containing a single variable can be identified; and

means for generating a solution on the basis of said deductions; and

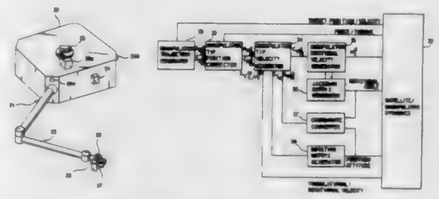
means for generating command signals to said output means based on the solution from said deducing means, said output means including an actuator mechanism which, in response to said command signals, induces a physical response by transmitting activation signals to restore the stability of at least one device whose operation is directly or indirectly monitored by said plurality of sensors.

5,390,288

CONTROL APPARATUS FOR A SPACE ROBOT

Yoshitsugu Toda, Tsukuba, and Yasushi Fukuda, Tokyo, both of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Division of Ser. No. 962,110, Oct. 16, 1992, abandoned. This application May 9, 1994, Ser. No. 239,931
Claims priority, application Japan, Oct. 16, 1991, 3-267733
Int. Cl.[6] A61B *17/56*
U.S. Cl. 395—93 **9 Claims**



1. A control apparatus for controlling a space robot, mounted on an artificial satellite and having a manipulator which has an arm connected to the satellite, and has a gripper connected to the arm to capture a flying target in space having a portion to be grasped by the gripper, comprising:

a first sensor mounted on the satellite to detect a position and velocity of the satellite;

a second sensor mounted on the manipulator to detect a relative position and attitude between the gripper and the flying target;

trajectory generating means for setting a trajectory to allow the gripper to track the flying target based on a result of detection by said first sensor and generating a corresponding operation command of the arm;

a force/torque sensor mounted on the manipulator to detect a force and torque acting on the manipulator;

first driving means for driving the arm so as to track the flying target by the manipulator along the trajectory in space set by said trajectory generating means and position the gripper to the portion of the flying target in consideration of a variation in position of the satellite;

second driving means for driving the gripper so as to locate the gripper, in a position to enable the portion of the flying target to be captured, based on a result of detection by said second sensor; and

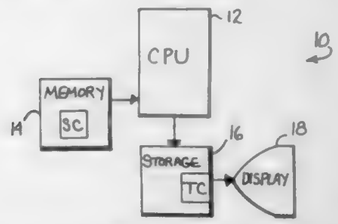
third driving means for correcting a position of the manipulator based on a result of detection by said force/torque sensor and for enabling the gripper to perform a capturing operation to the flying target in a modified position.

5,390,289

ANTI-ALIAS FONT GENERATION

Bradley J. Beitel, Woodside; Robert D. Gordon, Sunnyvale, both of Calif., and Joseph B. Witherspoon, III, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 367,063, Jun. 16, 1989, abandoned. This application Dec. 17, 1993, Ser. No. 169,750
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—100 **14 Claims**



1. In a system including data processing means and a program executed by the data processing means, a method employing the program for generating a second, substantially anti-aliased, representation of a displayable image object from a first representation of the image object, the first representation and the second representation each being comprised of a plurality of intensity values individual ones of which represent an intensity value of a corresponding one of a plurality of display means pels, wherein a single display means pel occupies a finite area upon a display screen and has an associated width, and wherein each of the display means pels is displayable with an intensity within a range of intensities that varies between a minimum intensity and a maximum intensity and including a plurality of intermediate intensities, the plurality of intensity values being organized as rows and columns of intensity values corresponding to rows and columns of display means pels, the method comprising the steps of:

determining an amount of a desired user perceivable horizontal shift for at least one row of pels of the second representation, the amount of the desired user perceivable horizontal shift corresponding to a fraction (a/b) of the width, when displayed on the display screen, of a display means pel;

for each row within the first representation of the image object and for each intensity value (DOT1) within the row,

determining with the data processing means an intensity modifying value (DOT1k), wherein DOT1k is a function of the intensity value (DOT1) and also a function of the determined amount of the desired user perceivable horizontal shift;

determining with the data processing means an intensity value (DOT2k) of a corresponding displayable pel for the second representation, the intensity value (DOT2k) of the corresponding displayable pel of the second representation being determined in accordance with the expression:

$$DOT2k=((DOT1-DOT1k)+DOT1\ (k-1)),$$

where DOT1(k−1) is the intensity modifying value of an adjacent intensity value of the row;

storing each of the determined intensity values (DOT2k) of the second representation within a character generator memory device for subsequent use in displaying an anti-aliased image object that is visually perceived as being horizontally shifted, on a row-by-row basis relative to the first representation, by the fraction of the width of a display means pel; and

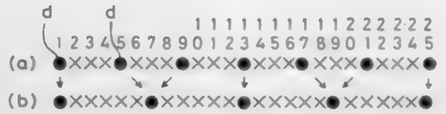
accessing the character generator memory device to retrieve the stored DOT2k intensity values and outputting the retrieved DOT2k intensity values to a display means for display on a display screen thereof as a plurality of display screen pels each of which has an intensity within the range of intensities that varies between the minimum intensity and the maximum intensity and including the plurality of intermediate intensities.

5,390,290

PRINTING METHOD FOR USE WITH DOT PRINTER

Mikio Hayashi; Hiroshi Sato; Masahiro Nishida, and Keiichiro Takahashi, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 985,518, Dec. 2, 1992, which is a continuation of Ser. No. 697,126, May 8, 1991, which is a division of Ser. No. 622,991, Dec. 6, 1990, Pat. No. 5,208,762. This application Dec. 28, 1993, Ser. No. 174,586
Claims priority, application Japan, Dec. 6, 1989, 1-316964
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—109 **8 Claims**



1. A method for printing wherein a printhead is successively scanned in a line direction to print a plurality of dots extending in said line direction and a recording medium is fed at right angles to said line direction, comprising the steps of:

receiving original dot data representative of a given line, in said line direction, of an original dot pattern including fonts, graphics and the like, having individual original dots separated from a preceding individual original dot by a minimum interval d_1;

converting said original dots, of said dot data in said given line, into n(n≧2) successive dots of secondary dot data, wherein n is an integer and each successive dot is separated by a secondary interval being equal to d_1/n;

selecting desired dots of said secondary dot data in the line direction, wherein said desired dots having an interval d_1 or d_2 between said desired dots, wherein $d_2=d_1\times m/n$ and $m>n$;

scanning the printhead at a sped faster than a speed attained when the original dot pattern is printed;

printing in the line direction using the thus selected desired dots

driving a printing element of the printhead at a shorter cycle rate than used to print said original dot data in response to a predetermined number of successive ones of said desired dots; and

driving the printing element at a cycle rate equal to that used to print said original dot data in response to remaining successive ones of said desired dots.

5,390,291

METHOD FOR INTERPOLATING BETWEEN TWO REGIONS OF A DISPLAY

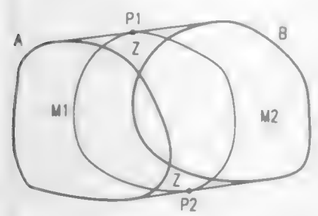
Yoshikazu Ohashi, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 593,144, Oct. 5, 1990. This application Sep. 30, 1991, Ser. No. 771,379
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—119 **1 Claim**

1. A method of three-dimensional display, comprising the steps of:

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(a) providing a first two-dimensional section containing a first region;
(b) providing a second two-dimensional section containing a second region;
(c) forming at least one two-dimensional interpolation section, said interpolation section containing an interpolation region formed by the following steps:
(i) copying said first region as a region A of said interpolation section;
(ii) copying said second region as a region B of said interpolation section;
(iii) forming one or more regions Z between regions A and B;
(iv) connecting said regions A and B where regions A and B each having a boundary, where one portion of the boundary of each of regions A and B abuts region Z;
(v) defining a first distance measure for all points in regions A or Z and outside of region B with said first



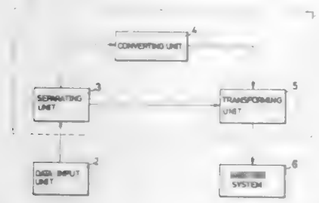
distance measure increasing from a first low value on the boundary of A to a second high value on the boundary of B;
(vi) defining a second distance measure for all points in regions B or Z and outside of region A with said second distance measure increasing from a second low value on the boundary of B to a second high value on the boundary of A;
(vii) defining said interpolation section as all points which (1) are in A and B, (2) are in A and have a first distance measure greater than a first constant, (3) are in B and have a second distance measure greater than a second constant, or (4) are in Z and have a first distance measure greater than said first constant and have a second distance measure greater than said second constant; and
(d) stacking said first, second, and interpolation sections with said interpolation section between said first and second sections to form a three-dimensional display.

5,390,292

APPARATUS FOR CONVERTING A GREGORY PATCH

Teiji Takamura, Matsudo, and Masataka Oota, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 488,832, Mar. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 149,919, Jan. 25, 1988, abandoned. This application Jun. 3, 1993, Ser. No. 85,679
Claims priority, application Japan, Jan. 26, 1987, 62-15552
Int. Cl.[6] G06F *15/60*
U.S. Cl. 395—120 **6 Claims**



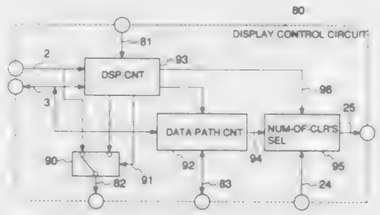
1. A computer-aided design/computer-aided manufacturing (CAD/CAM) system for designing and manufacturing a product in accordance with three dimensional data representing a shape of the product, in which the three dimensional data are defined by a Gregory patch, the system comprising;
a) signal outputting means for outputting a first signal representing data of control points defining the Gregory patch;
b) calculating means, connected to the signal outputting means, including:
1) means for calculating control points of a general patch and weights of each of the control points of the general patch on the basis of the first signal from the signal outputting means; and
2) means for outputting a second signal representing the calculated control points of the general patch and a third signal representing the calculated weights of the general patch;
c) data transforming means, connected to the calculating means, including:
1) means for receiving the second signal and the third signal;
2) means for transforming the control points and weights respectively represented by the received second and third signals into data supported by standards of cubic form; and
3) means for outputting a fourth signal representing the data supported by standards of cubic form; and
d) a computer, connected to the data transforming means, including:
1) means for receiving the fourth signal;
2) means for processing the data supported by standards of cubic form on the basis of the received fourth signal; and
3) means for generating information for designing and manufacturing the product.

5,390,293

INFORMATION PROCESSING EQUIPMENT CAPABLE OF MULTICOLOR DISPLAY

Kiyokazu Nishioka, Odawara; Hideki Kamimaki; Tsutomu Furuhashi, both of Yokohama; Kohji Takahashi, Mobara; Bunichi Fujimaki, Komaki, and Koichi Isaji, Nagoya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1993, Ser. No. 107,181
Claims priority, application Japan, Aug. 19, 1992, 4-220419
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—131 **22 Claims**



22. A display unit which displays display information in multiple colors within a predetermined number of colors to-be-developed, comprising:
a display panel which is capable of displaying N colors;
a data conversion circuit which accepts the display information containing up to (N+M) colors, and which produces said display information in the corresponding colors based on the N displayable colors of said display panel and M combinations each consisting of two colors that are selected from among said N colors in order to display a neutral tint through alternate displays thereof at specified timings;

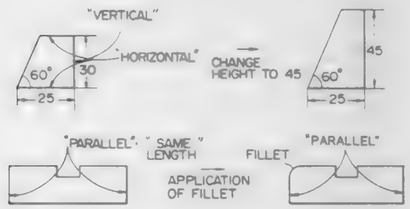
number-of-colors limitation means for producing the display information in up to said N colors in compliance with the input display information in up to said (N+M) colors in such a way that any of the M neutral tints contained in said input display information is substituted by one of said N colors, thereby limiting the maximum number of colors to-be-developed to N; and
means for producing a command for selecting either of said display information in up to said (N+M) colors as delivered from said data conversion circuit or said display information in up to said N colors as delivered from said number-of-colors limitation means, in accordance with selection information which is input from outside said display unit.

5,390,294

GRAPHIC PROCESSING SYSTEM FOR AUTOMATICALLY RECONSTRUCTING DIMENSIONAL AND GEOMETRIC CONSTRAINTS OF GRAPHICS

Kazuhiro Takeuchi, Shizuoka, Japan, assignor to Fujitsu Limited, Japan

Filed Sep. 17, 1993, Ser. No. 124,405
Claims priority, application Japan, Sep. 18, 1992, 4-249033
Int. Cl.[6] G06F *15/60*
U.S. Cl. 395—155 **12 Claims**



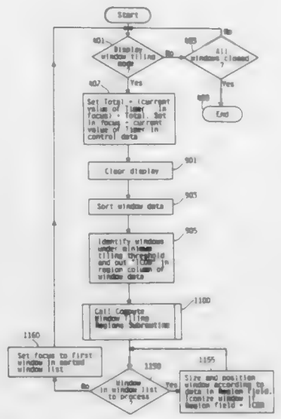
1. A graphic processing system for automatically reconstructing dimensional and geometric constraints of a graphic comprising:
a dimension-geometry constraint succession judging table which is referred to for judging whether or not the dimensional and geometric constraints of the graphic are to be succeeded;
a graphic element managing table for storing graphic information for graphic elements constituting the graphic in a one-to-one correspondence with element identifications (ID);
a dimension-geometry constraint managing table for storing the dimensional and geometric constraints for the graphic elements stored in said graphic element managing table; and
a constraint reconstructing means for updating, where editing is further applied to a certain graphic and a part of the graphic elements constituting said graphic is changed by said editing, the graphic information of said changed graphic elements in the graphic element managing table; for reading out the dimensional and geometric constraints given with respect to said changed graphic elements from the dimension-geometry constraint managing table; and for referring to the dimension-geometry constraint succession judging table for said read out dimensional and geometric constraints so as to either (i) retain the dimensional and geometric constraints when the related dimensional and geometric constraints should be succeeded in the dimension-geometry constraint managing table or (ii) delete said dimensional and geometric constraints when related dimensional and geometric constraints should be deleted from the dimension-geometry constraint managing table.

5,390,295

METHOD AND APPARATUS FOR PROPORTIONALLY DISPLAYING WINDOWS ON A COMPUTER DISPLAY SCREEN

Cary L. Bates, Rochester, and Jeffrey M. Ryan, Byron, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1991, Ser. No. 811,548
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—157 **18 Claims**



14. A method for efficiently displaying a plurality of windows on a display screen, comprising the steps of:
monitoring a length of time that each of said plurality of windows has been active;
determining a tiling area on said display screen;
splitting said tiling area into an H1 region and an H2 region wherein the size of said H1 region is proportional to said length of time that a first window and a second window have been active relative to said length of time that said first window through an Nth window has been active, and the size of said H2 region is proportional to said length of time that a third window through said Nth window have been active relative to said length of time that said first window through said Nth window have been active;
splitting said H1 region into a Q1 region and Q2 region wherein the size of said Q1 region is proportional to said length of time that said first window has been active relative to said length of time that said first window and said second window have been active, and the size of said Q2 region is proportional to said length of time that said second window has been active relative to said length of time that said first window and said second window have been active;
splitting said H2 region into a Q3 region and Q4 region; and
displaying each of a plurality of windows within a region in a size proportional to said length of time being active.

5,390,296

METHOD AND APPARATUS FOR CALCULATION WITH DISPLAY DATA

Richard L. Crandall; Ellen R. Craw; James A. Lahey; Dorothy A. Lieffers, all of Ann Arbor, and Patrick E. Miller, Pinckney, all of Mich., assignors to Comshare Incorporated, Ann Arbor, Mich.

Continuation of Ser. No. 400,812, Aug. 30, 1989, abandoned.
This application Oct. 6, 1993, Ser. No. 132,495
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—159 **28 Claims**

1. A method for facilitating analysis of data in a data file

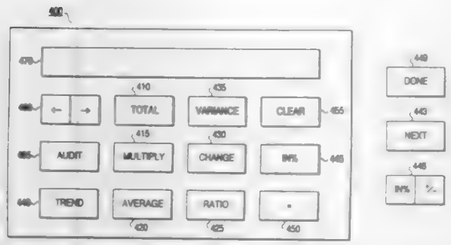
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stored in a computer system comprising the following steps executed by the computer system:

displaying on a computer screen a view of the data file, the view having data arranged in rows and columns;

displaying a calculator icon on the computer screen, the calculator icon including a plurality of button representations each corresponding to a different function that can be applied to rows and columns in the data file and a display area for displaying ones of the functions;

receiving from an input device information identifying a one of the functions selected by the user;



receiving from the input device information identifying a row or a column of the data file to which the selected function is to be applied;

displaying in the display area of the calculator icon an equation defining an application of the selected function to the identified row or column;

applying the selected function to all data in the identified row or column data to produce a set of calculated results;

entering the set of calculated results into the data file; and

displaying the set of calculated results on the computer screen as part of the displayed data file proximate to the identified row or column.

5,390,297

SYSTEM FOR CONTROLLING THE NUMBER OF CONCURRENT COPIES OF A PROGRAM IN A NETWORK BASED ON THE NUMBER OF AVAILABLE LICENSES

Jon H. Barber, Santa Barbara, Calif.; Ronald A. Woodward, Boulder, Colo.; Richard M. Burkley, Boulder, Colo.; Erwin L. Rehme, Longmont, Colo.; Matthew W. Jackson, Boulder, Colo., and Douglas M. Young, Boulder, Colo., assignors to Auto-trol Technology Corporation, Denver, Colo.

Filed Nov. 10, 1987, Ser. No. 118,909
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200 64 Claims

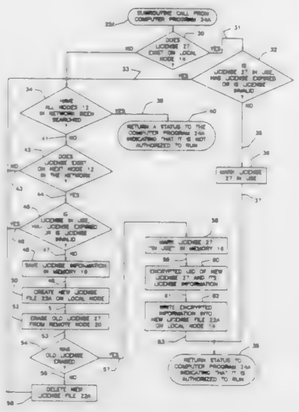
3. A license management system for limiting the number of copies of a given computer program that are permitted to run simultaneously on one or more nodes of a network in which said nodes are connected, said limiting being according to the number of licenses for said given computer program that are authorized for said network; said system comprising:

license file means on at least one of said nodes for storing at least one of said licenses;

program storage means for storing a copy of said given computer program on each of said nodes at which it is desired to run a copy of said given computer program; and

license management means operatively linked to each said copy, said license management means being responsive to a request from said copy to which it is operatively linked for searching said nodes to locate one of said license file means that has a license that is available for authorizing use at a local one of said nodes at which said requesting copy is stored, said search first being made at said local node and if no such license file means having an available license is located at said local node, said search continuing in seriatim among said nodes other than said local node until one such license file means having an available license is located or until all said nodes have been searched without locating one such license file means having an available license;

said license management means being responsive to the search of all of said nodes without locating one such



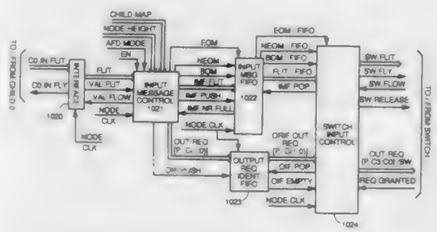
license file means having an available license for returning to said copy at said local node a message preventing said copy from being run at said local node in response to said request.

5,390,298

PARALLEL COMPUTER SYSTEM INCLUDING ARRANGEMENT FOR QUICKLY DRAINING MESSAGES FROM MESSAGE ROUTER

Bradley C. Kuszmaul, Waltham; Charles E. Leiserson, Winchester; Shaw-Wen Yang, Concord; Carl R. Feynman, Acton; W. Daniel Hillis, Cambridge; David Wells, Bolton, all of Mass., and Cynthia J. Spiller, Wakefield, R.I., assignors to Thinking Machines Corporation, Cambridge, Mass.

Division of Ser. No. 946,242, Sep. 16, 1992, Pat. No. 5,333,268, which is a continuation of Ser. No. 592,029, Oct. 3, 1990, abandoned. This application Jan. 14, 1994, Ser. No. 183,217
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200 19 Claims



1. A digital computer comprising:

A. a plurality of message processing elements, each generating messages for transfer to others of said message processing elements and for receiving messages generated by others of said message processing elements, each message including a path identifier portion identifying a path from a source message processing element to a destination message processing element;

B. a routing network for transferring messages among said message processing elements, said routing network comprising a plurality of interconnected router nodes, at least some of said router nodes being connected to receive

messages from and transmit messages to the message processing elements, each router node operating in a first mode in response to a mode control signal having a first condition to couple received messages to a router node connected thereto in accordance with the path identifier portion to thereby transfer each respective message along the path identified in its path identifier portion, each router node alternatively operating in a second mode in response to said mode control signal having a second condition to couple received messages to predetermined ones of the router nodes connected thereto, the predetermined ones of said router nodes being selected to facilitate transfer of a message to a nearby message processing element to facilitate the rapid emptying of the routing network of messages; and

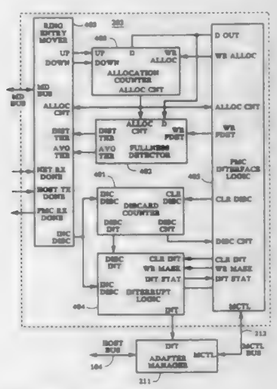
C. a control element for controlling the conditions of the mode control signals received by the router nodes to enable them to operate in the first mode or second mode generally contemporaneously.

5,390,299

SYSTEM FOR USING THREE DIFFERENT METHODS TO REPORT BUFFER MEMORY OCCUPANCY INFORMATION REGARDING FULLNESS-RELATED AND/OR PACKET DISCARD-RELATED INFORMATION

Satish L. Rege, Groton; Kadangode K. Ramakrishnan, Maynard, both of Mass., and David A. Gagne, Goffstown, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 27, 1991, Ser. No. 814,998
Int. Cl.[6] G06F *13/42, 12/00*
U.S. Cl. 395—250 15 Claims



1. A network node comprising:

a host computer;

a network adapter including a packet buffer memory, said packet buffer memory including a plurality of pages for storing packet data, means for monitoring the occupancy of said packet buffer memory, said monitoring means generating packet buffer memory occupancy information, said packet buffer memory occupancy information including packet discard-related information and packet buffer memory fullness-related information, and packet transfer managing means, said packet transfer managing means for managing said pages of said packet buffer memory as said pages are used to move said packet data from said network to said host computer and for providing said packet buffer memory occupancy information to said host computer when said packet data is transferred from said packet buffer memory to said host computer; and

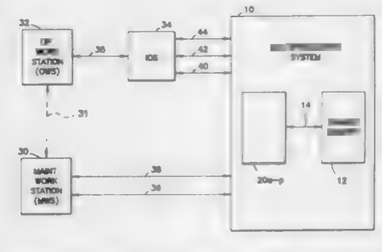
means for reporting said packet buffer memory occupancy information to said host computer, said means for reporting including a host bus coupling said network adapter to said host computer, a first message-passing mechanism for transferring commands from said host computer to said network adapter to request said occupancy information and responses from said network adapter to said host computer and a second message-passing mechanism for transferring unsolicited messages regarding occupancy information from said network adapter to said host computer, said reporting means and said packet transfer managing means of said network adapter reporting said occupancy information independently.

5,390,300

REAL TIME I/O OPERATION IN A VECTOR PROCESSING COMPUTER SYSTEM BY RUNNING DESIGNATED PROCESSORS IN PRIVILEGED MODE AND BYPASS THE OPERATING SYSTEM

Richard D. Pribnow, Chippewa Falls; Galen Flunker, Menomenie; George W. Leedom, Jim Falls, and Alan J. Schiffleger, Chippewa Falls, all of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Continuation of Ser. No. 677,647, Mar. 28, 1991, abandoned. This application Feb. 22, 1994, Ser. No. 200,921
Int. Cl.[6] G06F *9/46, 9/00*
U.S. Cl. 395—275 12 Claims



1. A method of real-time I/O processing in a multiprocessor vector computing system comprising a plurality of vector processing means sharing a common memory means, and an operating system, comprising the steps of:

(a) designating a subset of the processing means to execute real-time instructions;

(b) setting a shared memory reference priority controller such that the designated processing means has the highest priority for references to said shared common memory means;

(c) sending a real-time signal to each of the designated processing means, for signaling the designated processing means to begin executing the appropriate real-time instructions;

(d) bringing each of the designated processing means, in response to the real-time signal, into a state wherein the designated processing means is allowed access to a privileged operational mode, and therefore access to instructions corresponding to the privileged operational mode and to a system privileged communication channel connecting the processing means to the I/O control means;

(e) executing the real-time instructions in the designated processing means;

(f) signaling an I/O control means from the designated processing means when output data is available using an output signaling means; and

(g) signaling the designated processing means from the I/O control means that input data is available using an input signaling means, whereby said steps (e)–(g) are executed in said privileged operational mode.

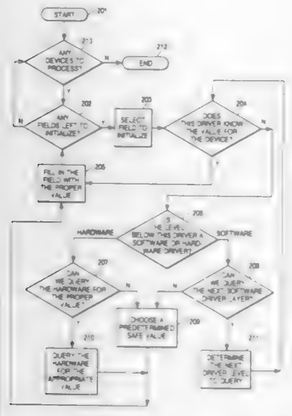
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5,390,301

METHOD AND APPARATUS FOR COMMUNICATING DEVICE-SPECIFIC INFORMATION BETWEEN A DEVICE DRIVER AND AN OPERATING SYSTEM IN A COMPUTER SYSTEM

Steve D. Scherf, Sunnyvale, Calif., assignor to Acer Incorporated, Taipei,

Filed Aug. 11, 1992, Ser. No. 929,884
Int. Cl.[6] G06F 3/00
U.S. Cl. 395—325 27 Claims



1. A method of communicating device capability information of a hardware device, each hardware device having a major number, in a computer system from a device driver which directly controls the device to a kernel of an operating system, said device driver interacting with said hardware device through a plurality of software and hardware device drivers, comprising the steps of:

obtaining, by the device driver, the device capability information for each device the device driver controls by at least one of the following:

a) obtaining the device capability information from itself, if it has the information, or if not,

b) querying successively lower-level software and hardware device drivers until the device capability information is obtained or until it cannot query any lower, and if the device capability information is not yet obtained,

c) choosing a predetermined safe value;

storing, by the device driver, the device capability information and at least a first pointer indexed by the device's major number in a data structure memory of the computer system; and

prior to the operating system performing an input or output operation using the device, obtaining, by the kernel of the operating system, the device capability information from the data structure memory by accessing the data structure memory using said pointer indexed by the device's major number.

5,390,302

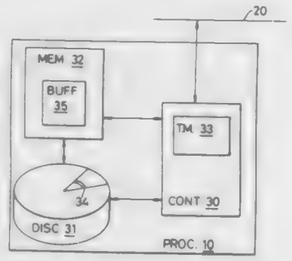
TRANSACTION CONTROL

James E. Johnson, Acton, Mass.; Mark A. Howell, Linlithgou, and Christopher Whitaker, Basingstore, both of United Kingdom, assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 658,733, Feb. 21, 1991, abandoned.
This application May 13, 1993, Ser. No. 61,754
Int. Cl.[6] G06F 15/00
U.S. Cl. 395—325 4 Claims

1. A computer system for transaction processing employing a commit protocol for insuring transaction integrity comprising:

a plurality of processors connected for executing a transaction, said transaction comprising a plurality of processes executed by said plurality of processors in the computer system, said plurality of processors being arranged in a multi-level hierarchy, said hierarchy including a coordinator processor for initiating said transaction, an intermediate processor for communicating with the coordinator processor, and a subordinate processor for communicating with the intermediate processor and for executing at least one of said processes of said transaction, each of said processors including transaction control means for generating messages concerning the status of the transaction and the identification of participating processors during and after the execution of the transaction, and further



including memory means for storing log records containing said messages;

first communication means for providing and returning said messages between said coordinator processor and said intermediate processor;

second communication means for providing and returning said messages between said intermediate processor and said subordinate processor;

means for executing said at least one of said processes in said subordinate processor in response to said messages; and

means in said intermediate processor for communicating messages from the subordinate processor to the coordinator processor immediately after execution of said at least one process by said subordinate processor and without said intermediate processor storing a log record indicating commitment of said intermediate processor to said transaction.

5,390,303

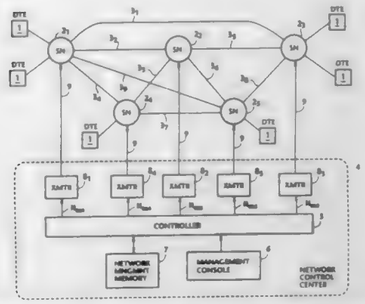
COMMUNICATIONS SYSTEM RECONFIGURABLE WITH REDUCED NETWORK CONFIGURATION DATA

Naohiro Iki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 676,971, Mar. 29, 1991, Pat. No. 5,307,465.
This application Apr. 20, 1994, Ser. No. 230,231
Claims priority, application Japan, Mar. 29, 1990, 2-82641
Int. Cl.[6] G06F 13/14
U.S. Cl. 395—325 2 Claims

1. In a communications system having a plurality of switching nodes each being capable of establishing and removing relatively static connections between transmission links in response to network configuration signals and of establishing relatively dynamic connections through the established static connections in response to information pertaining to call-by-call connection requests from user terminals, a network controller comprising:

memory means for storing circuit status bits in a first matrix pattern of rows associated respectively with predefined network configurations and columns associated respectively with predefined circuit configurations, and for storing destination status codes in a second matrix pattern rows associated respectively with said circuir configurations and columns associated respectively with said switching nodes, each of said circuit configurations comprising one or more transmission links, each of the bits stored in each column of the first matrix pattern indicating presence or absence of the circuit configuration associated with the column of the first matrix pattern, and each of said codes indicating presence or absence of transmission links from each switching node to possible destination nodes;



control means for retrieving said circuit status bits from one of said rows of said first matrix pattern and retrieving said destination status codes from each column of said second matrix pattern, respectively multiplying binary values of the retrieved circuits status bits and binary values of the retrieved destination status codes, and summing the multiplied binary values to derive network configuration data for one of said predefined network configurations; and

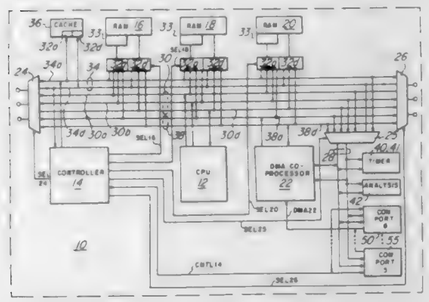
means for transmitting said network configuration data to said switching nodes as said network configuration signals.

5,390,304

METHOD AND APPARATUS FOR PROCESSING BLOCK INSTRUCTIONS IN A DATA PROCESSOR

Jerald G. Leach, Houston, and Laurence R. Simar, Richmond, both of Tex., assignors to Texas Instruments, Incorporated, Dallas, Tex.

Filed Sep. 28, 1990, Ser. No. 590,372
Int. Cl.[6] G06F 12/06
U.S. Cl. 395—375 8 Claims



1. A data processing device comprising:

a clock generator for producing pulses establishing instruction cycles;

a storage circuit for storing therein information accessible by assertion of addresses;

an instruction decode and control unit, connected to said storage circuit, having an instruction register operative to hold a program instruction, said instruction decode and control unit operative to decode a program instruction providing control signals according to a pipeline organization to control the operations of the data processing device within each instruction cycle and to initiate a block sequence responsive to an instruction code representing a block instruction;

a program sequencer circuit, connected to said storage circuit, having a program register operative to hold a program count corresponding to a program address, said program sequencer operative to access information in said storage circuit with the contents of the program register to obtain the program instruction corresponding to the program address;

an arithmetic logic unit, connected to said storage circuit, said program sequencer circuit and said instruction decode and control unit, operative to perform an arithmetic operation on data received by said arithmetic unit and to combine the contents of the program register with a data field decoded from the block instruction by said instruction decode and control unit to generate a block end address; and

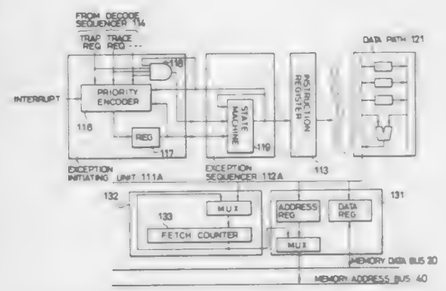
a block handler unit, connected to said instruction decode and control unit, having a block start register operative to store the contents of the program register, responsive to the control signals from said instruction decode and control unit to store the program address corresponding to the block start address to the block start register wherein the contents of the block start register correspond to a start address for a block of instructions to be executed.

5,390,305

INFORMATION PROCESSING APPARATUS CAPABLE OF EXECUTING EXCEPTION AT HIGH SPEED

Masafumi Takahashi, and Yasuo Yamada, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 26, 1992, Ser. No. 857,419
Claims priority, application Japan, Mar. 29, 1991, 3-067266
Int. Cl.[6] G06F 9/46
U.S. Cl. 395—375 12 Claims



1. An information processing apparatus comprising:

normal-instruction executing means for controlling execution of a normal instruction used for the information processing apparatus;

exception executing means independently operable from the normal instruction executing means, for controlling a transition process operation to an exception used in the information processing apparatus; and,

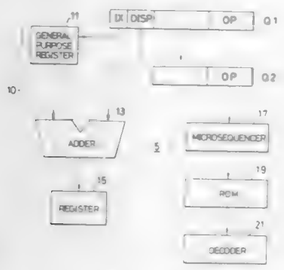
exception initiating means for initiating the transition process operation of the exception means by immediately recognizing an issuance of an exception demand, wherein upon issuance of the exception demand, the transition process operation to the exception is independently executable by the exception executing means, while the normal instruction is executed by the normal-instruction execution means.

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5,390,306
PIPELINE PROCESSING SYSTEM AND MICROPROCESSOR USING THE SYSTEM

Kousei Okamoto, Kunitachi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawaski, Japan

Continuation of Ser. No. 517,542, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 934,860, Nov. 25, 1986, abandoned. This application Sep. 8, 1992, Ser. No. 940,749
Claims priority, application Japan, Mar. 27, 1986, 61-067050
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—375 **6 Claims**

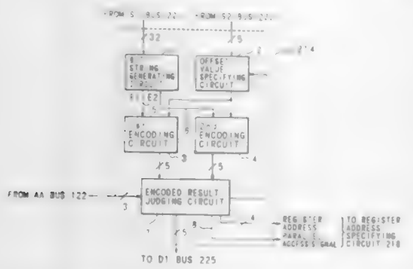


1. A data processing method comprising the steps of:
inputting a machine language instruction from a computer program input into a microprocessor;
determining whether the machine language instruction has more than one memory operand;
creating, in the microprocessor, from the machine instruction having a plurality of memory operands, a plurality of inner instructions including at least a first and second inner instruction each of said inner instructions having a single memory operand;
executing the first and second inner instruction through a single pipeline; and
simultaneously calculating an address of an operand of said second inner instruction while processing said first inner instruction.

5,390,307
APPARATUS FOR A MULTI-DATA STORE OR LOAD INSTRUCTION FOR TRANSFERRING MULTIPLE CONTIGUOUS STORAGE LOCATIONS IN ONE TRANSFER OPERATION

Toyohiko Yoshida, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 752,154, Aug. 29, 1991, abandoned.
This application May 19, 1994, Ser. No. 245,846
Claims priority, application Japan, Aug. 29, 1990, 2-231966
Int. Cl.[6] G06F *12/06*
U.S. Cl. 395—375 **6 Claims**



1. A data processor, comprising:
instruction decoding means for decoding instructions; and
instruction executing means having:
a register file including a plurality of sequentially addressed registers, each register for holding a data element having a predetermined number of bits;
a bit string register holding a register specifying bit string, having a predetermined number of bit positions each holding a bit value, where the register specifying bit string represents a register list included in an instruction decoded in said instruction decoding means, with each bit position corresponding to a register in the register file and a bit value having a first specified logic value in a bit position indicating that the corresponding register is included in said register list;
first encoding means, coupled to said bit string register to receive said register specifying bit string held in said bit string register, for encoding an identity of a first bit position into binary digits output as a first encoded value, where the first bit position holds a bit value equal to said first specified logic value and all bit positions prior to said first bit position hold bit values not equal to said first specified logic value;
a logic circuit, coupled to said bit string register, for forming the logical product of all adjacent pairs of bit values held in adjacent bit positions of said register specifying bit string to form a plurality of logical product bit values which are output in bit positions of a pair identifying bit string, with each bit position in said pair identifying bit string corresponding to a pair of sequential registers in said register file and a bit position holding a bit value equal to a second specified logic value indicates that a corresponding pair of sequential registers are specified by said register list;
second encoding means, coupled to said logic circuit to receive said pair identifying bit string output by said logic circuit, for encoding an identity of a second bit position in said pair identifying bit string into binary digits output as a second encoded value, where said second bit position holds a bit value equal to said second specified logic value and all bit positions prior to said second bit position hold bit values not equal to said second specified logic value;
judging means, coupled to said first and second encoding means to receive said first and second encoded values, for asserting a parallel access signal only when said first and second encoded values are coincident and for providing a first register address having a value equal to said coincident encoded values when the parallel access signal is asserted and a second register address equal to said first encoded value when said parallel access signal is not asserted; and
means, coupled to said judging means to receive said register address and said parallel access signal and coupled to said register file, for accessing the pair of sequential registers identified by the bit position in said pair identifying bit string encoded by said first register address when said parallel access signal is asserted and for accessing a single register specified by said first bit position encoded by said second register address when said parallel access signal is not asserted.

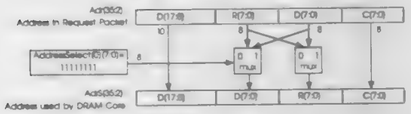
5,390,308
METHOD AND APPARATUS FOR ADDRESS MAPPING OF DYNAMIC RANDOM ACCESS MEMORY

Frederick A. Ware, Los Altos Hills, and Paul M. Farmwald, Portola Valley, both of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Filed Apr. 15, 1992, Ser. No. 869,529
Int. Cl.[6] G06F *12/02, 12/06*
U.S. Cl. 395—400 **23 Claims**

1. In a computer system comprising a bus master and memory, said memory comprising a plurality of banks identified by device bits, each bank having rows identified by row bits and each row having memory elements identified by column bits, each bank having a latch which latches a row of data to be

accessed, said bus master issuing a memory request to the memory by providing an address comprising device bits, row bits and column bits to identify a memory location in a bank to be accessed, a method for accessing memory pursuant to the memory request comprising the steps of:
swapping a predetermined number of row bits of the address with a predetermined number of device bits of the address to generate a swapped address, a minimum predetermined number of bits being equal to $\log_2$(number of banks in the memory), said step of swapping functioning to distribute spatially local rows of memory among the memory banks to minimize spatial locality;
accessing the bank of memory identified by the device bits of the swapped address;
comparing predetermined row bits of the swapped address to predetermined row bits of a swapped prior address

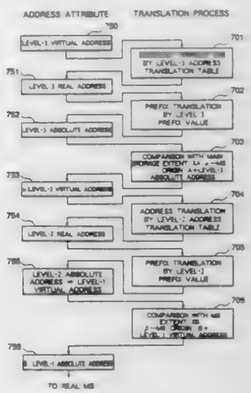


corresponding to an address for a row of data loaded into the latch;
if the predetermined row bits of the swapped address equals the predetermined row bits of the swapped prior address, accessing the memory element identified by the column bits of the swapped address in response to the memory request; and
if the predetermined row bits of the swapped address do not equal the predetermined row bits of the swapped prior address, loading the row of data identified by the row bits of the swapped address into the latch and accessing the memory element identified by the column bits of the swapped address in response to the memory request;
wherein the latch functions as a row cache and the probability of accesses directly to the latch is increased by minimizing accesses of spatial and temporal locality.

5,390,309
VIRTUAL ADDRESS TRANSLATION IN THREE LEVEL VIRTUAL MACHINE

Osamu Onodera, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 25, 1991, Ser. No. 736,022
Claims priority, application Japan, Jul. 30, 1990, 2-199042
Int. Cl.[6] G06F *12/08, 12/10*
U.S. Cl. 395—400 **11 Claims**

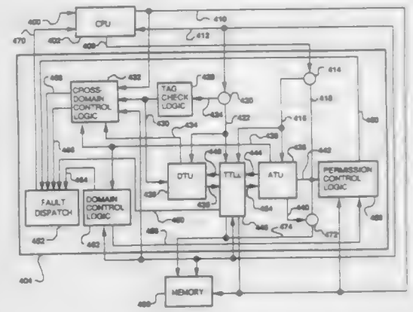


1. A method of translating an address generated in a plurality of virtual machines constructed in a virtual machine system including a real machine into a level-1 absolute address, comprising the steps of:
constructing a level-2 virtual machine under a control of a level-1 operating system (OS) operating on said real machine (level-1);
constructing a level-3 virtual machine under a control of a different operating system (OS) operating on said level-2 virtual machine;
translating a level-3 virtual address generated in said level-3 virtual machine to a level-3 absolute address;
adding a first predetermined main storage address to said level-3 absolute address to obtain a level-2 virtual address;
translating said level-2 virtual address to a level-1 virtual address; and
adding a second predetermined main storage address to said level-1 virtual address to translate said level-1 virtual address to a level-1 absolute address.

5,390,310
MEMORY MANAGEMENT UNIT HAVING CROSS-DOMAIN CONTROL

Robert V. Welland, Menlo Park, Calif., assignor to Apple computer, Inc., Cupertino, Calif.

Filed Sep. 30, 1991, Ser. No. 769,619
Int. Cl.[6] G06F *12/14, 12/10*
U.S. Cl. 395—400 **20 Claims**



1. A memory management unit for communicating with a CPU and a memory of a computer system to control said CPU's right to access said memory in order to initiate performance of an operation, said memory management unit comprising:
a tag checker coupled to receive a first data signal issued by said CPU corresponding to said operation when said operation is a write operation or an instruction fetch operation, wherein said tag checker issues a cross-domain enable signal if said first data signal comprises a pointer;
a translator coupled to receive a virtual address signal, a second data signal, and an access type signal issued by said CPU corresponding to said operation, wherein said translator translates said virtual address signal into a physical address signal and issues said physical address signal to said memory in order to initiate performance of said operation, and wherein said translator issues a data domain number signal in response to said cross-domain enable signal and issues an address domain number signal for use by said memory management unit in controlling performance of said operation, and further wherein said translator issues a first fault indication if one or more faults occur during translation of said virtual address;
a cross-domain controller coupled to receive said address domain number signal, said data domain number signal, said access type signal, and said cross-domain enable signal, wherein said cross-domain controller evaluates said

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address domain number signal and said data domain number signal to detect an attempted flow of domain specific information as a result of said operation, wherein said cross-domain controller issues a cross-domain fault indication when said cross-domain controller determines if said address domain number signal and said data domain number signal are different, such that the cross-domain controller prohibits flow of domain specific information between domains; and

an environment controller coupled to receive said address domain number signal, wherein said environment controller issues a second fault indication if said address domain number signal does not correspond to an allowed address domain number, such that said CPU's right to access said memory is denied if either said first fault indication, said second fault indication, or said cross-domain fault indication is generated.

5,390,311

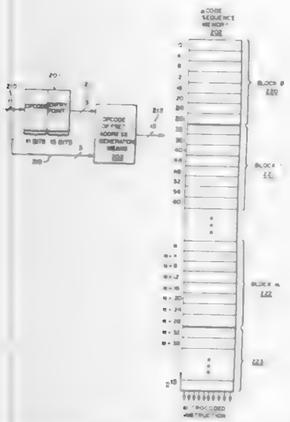
METHOD AND APPARATUS FOR ACCESSING MICROCODED INSTRUCTIONS IN A COMPUTER SYSTEM

Beatrice P. Fu, Mountain View, and Benny Eitan, Sunnyvale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 815,566, Dec. 26, 1991, abandoned, which is a continuation of Ser. No. 308,041, Feb. 8, 1989, abandoned. This application Sep. 7, 1993, Ser. No. 117,241

Int. Cl.[6] **G06F** *9/26*

U.S. Cl. 395—400 **22 Claims**



1. A microprogrammed computer system comprising:

(a) an entry point generation means for receiving an opcode and generating a base entry point address into a first memory means;

(b) said first memory means for storing microcoded instructions, said first memory means organized into a plurality of segments and an instruction overflow area, a first segment for storing a plurality of contiguously stored microcoded instructions for a first opcode, said first segment having N lines and an address location X, a second segment contiguous with said first segment, said second segment for storing a plurality of contiguously stored microcoded instructions for a second opcode, said second segment having N lines and an address location X+N, said instruction overflow area for storing microcoded instructions for said first opcode, said instruction overflow area noncontiguous with said first segment; and

(c) offset address generation means coupled to said entry point generation means and further coupled to an input line, said input line for providing an opcode, said offset generation means for receiving at least one bit of said opcode and replacing a corresponding number of selected bits in said base entry point address as a function of said at least one opcode bit to create an entry point address into said first memory means for said opcode provided over said input line.

5,390,312

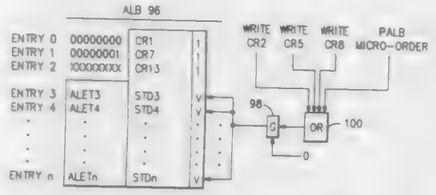
ACCESS LOOK-ASIDE FACILITY

Kevin A. Chiarot, Poughkeepsie; Robert M. Dinkjian, Woodstock, and Theodore J. Schmitt, Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 764,577, Sep. 24, 1991, abandoned. This application Mar. 23, 1994, Ser. No. 216,784

Int. Cl.[6] **G06F** *12/00, 12/10, 12/16, 9/34*

U.S. Cl. 395—400 **8 Claims**



1. A virtual address translation control system in a data processing system having a central processor with a predetermined number of general purpose registers, said central processor executing instructions, the instructions having one or more operands each specifying an effective logical address by address components included in a base general purpose register, a non-base general purpose register and a displacement field of an instruction, said control system selecting one of plural address translation tables to generate an address space identifier to be used for translating a virtual address of an operand of an instruction being executed by said central processor to a real address for locating the operand in a main storage of said data processing system, said control system comprising:

decoding means in the central processor for decoding a general purpose register address in an instruction and signalling whether a general purpose register designation in an instruction is a base general purpose register address or a non-base general purpose register address;

a plurality of access registers being respectively associated with said predetermined number of general purpose registers, each access register being loadable with an access list entry token, said access list entry token being applied to one of said plural address translation tables to provide an address space identifier;

storing means for storing said access list entry token, a corresponding address space identifier and a valid bit together, said valid bit indicating a valid or invalid state of said address space identifier;

said storing means storing a plurality of entries, at least some of said entries incorporating implied entries instead of said access list entry tokens, said implied entries always being valid and containing said control register address spaces;

selecting means for selecting an address space identifier from said storing means, with the base general purpose register address provided by the decoding means;

said selecting means including means for simultaneously comparing each subsequent access list entry token with all previously stored access list entry tokens in parallel in one processor cycle and if a match is found, and the valid bit indicates the corresponding address space identifier is valid, said selecting means generating the address space identifier without checking the address translation tables,

but if no match is found, or the valid bit indicates the corresponding space identifier is invalid, said selecting means generating a signal to perform an access register translation using said address translation tables;

said selecting means further including access register address space identifier selection logic for each entry in said storing means, each instance of said selection logic receiving a different entry from said storing means, space mode bits from a program status word and an address access list entry token, said selecting means generating the address space identifier for a corresponding entry in storing means;

said space mode bits may indicate space modes other than access register space mode, further including a plurality of control registers storing primary, secondary, and home-specified address spaces, and gating means responsive to said space mode bits for selecting the contents of one of said control registers as the address space identifier for said virtual address translation means;

means responsive to said signal for performing an address translation table check to generate an address space identifier and storing said address space identifier in said storing means;

virtual address translation means receiving an effective logical storage operand address and an address space identifier from said storing means selected by the selecting means to translate the effective logical storage operand address to a real address in the main storage of the data processing system, said plural access registers containing different access list entry tokens enabling the data processing system to concurrently access plural address spaces, and said address space identifier associated with an access register arriving at said virtual address translation means at the same time as an address space identifier associated with a control register of said data processing system;

means for clearing in a single cycle all entries except said implied entries in said storing means in response to a change in selected ones of said control registers, said entries being cleared by resetting the valid bits for each of said entries.

5,390,313

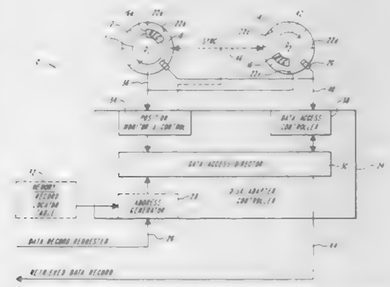
DATA STORAGE SYSTEM WITH DATA MIRRORING AND REDUCED ACCESS TIME DATA RETRIEVAL

Moshe Yanai, Framingham; Natan Vishlitzky, Brookline; Bruno Alterescu, Newton, and Daniel Castel, Framingham, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Sep. 24, 1990, Ser. No. 587,026

Int. Cl.[6] **G11B** *15/46, 5/012;* **G06F** *11/00*

U.S. Cl. 395—425 **14 Claims**



1. A system for reducing data access time comprising:

at least first and second selectable rotating data storage media, each of said rotating data storage media having a rotationally fixed position read/write mechanism, each of said rotating data storage media also including at least a plurality of generally identical data records, said first rotating data storage medium having a rotational phase relationship with said second rotating data storage medium such that said first rotating data storage medium is rotating out of phase with respect to said second rotating data storage medium;

each of said rotating data storage media further including indicator means, for providing an indication of the rotational position of each rotating data storage medium with respect to its associated fixed position read/write mechanism;

means, responsive to at least one said rotational position indication provided by each of said first and second rotating data storage media, for controlling said rotational phase relationship of said first and second rotating data storage media relative to each other, and for assuring that said first and second rotating data storage media are rotating out of phase with each other;

means for receiving a single command to write at least one data record to one of said first and second rotating data storage media;

means, responsive to said received single command to write said at least one data record, for issuing a first write command to write said at least one data record to said first rotating data storage medium, and for independently issuing a second write command to write said at least one data record to said second rotating data storage medium;

wherein said second rotating data storage medium is available for data access during the issuance of said first write command to said first rotating data storage medium, and said first rotating data storage medium is available for data access during issuance of said second write command to said second rotating data storage medium;

position monitoring means, responsive to said rotational position indication from each of said rotating data storage media, for computing and monitoring the rotational position of each of said rotating data storage media with respect to its associated read/write mechanism;

means for receiving a request for access to said at least one data record stored on said first and second rotating data storage media; and

means, responsive to said position monitoring means and to said means for receiving a request for data access, for computing said first and second projected data access times for said first and second rotating storage media, and for directing retrieval of the at least one requested data record to said first or second rotating data storage medium having the shortest projected data access time.

5,390,314

METHOD AND APPARATUS FOR DEVELOPING SCRIPTS THAT ACCESS MAINFRAME RESOURCES THAT CAN BE EXECUTED ON VARIOUS COMPUTER SYSTEMS HAVING DIFFERENT INTERFACE LANGUAGES WITHOUT MODIFICATION

Jim A. Swanson, Dallas/Fort Worth Airport, Tex., assignor to American Airlines, Inc., Dallas/Fort Worth, Tex.

Filed Oct. 9, 1992, Ser. No. 958,962

Int. Cl.[6] **G06F** *15/38*

U.S. Cl. 395—500 **10 Claims**

1. A system for converting software commands generated in a UNIX-based first programming language environment to software commands that operate in a second programming language environment, the system comprising:

a first computer system for gene rating input data signals in a first program language;

a plurality of vendor second computer systems, each having a high-level second program language different from each other and different from the first program language;

a vendor identification portion of said input data signals for selecting a desired one of the plurality of vendor second computer systems having a designated high-level language with which communication is to take place;

a command data portion of said input data signals for designating a command function to be performed by the se-

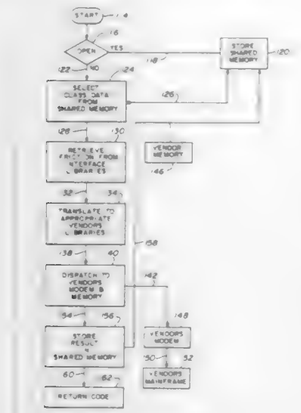
VOL 1171 ISS 2 FE 14 1995 UMI

lected one of the plurality of vendor second computer systems;

a plurality of command dispatch units, each unit generating selected output signals representing particular high-level language functions to be performed by a selected one of the plurality of vendor second computer systems according to the command data portion of the input data signal;

a class dispatch unit for receiving said input data signal including the command data portion that designates a function to be performed by one of the plurality of vendor second computer systems and coupling the command data portion to a command dispatch unit designated by the vendor identification portion of the input data signal;

an interface library memory coupled to each of the command dispatch units and storing sets of translation rules in the first program language representing a plurality of high-level language command functions to be performed



by a selected one of the plurality of vendor second computer systems;

a vendor library memory coupled to the interface library memory and storing corresponding matching command function rules in the second program language for each command in the first program language to enable each of the plurality of vendor second computer systems to perform the command; and

a shared memory coupled to the interface library memory, the class dispatch unit, and the output of the vendor library for storing the current status of an on-going command function designated by said class dispatch unit to enable selection of the appropriate interface library translation rules that will match the appropriate vendor library command function rules and cause said command function to be performed by the selected one of the plurality of vendor second computer systems in its own program language.

5,390,315

ALLOCATION OF UNIFORM CONTIGUOUS BLOCKS OF DASD STORAGE BY MAINTAINING BOTH A BIT AND A BIT MAP RECORD OF AVAILABLE STORAGE

Geoffrey O. Blandy, Vestal, and Catherine M. Rossi, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

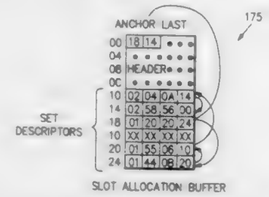
Filed Jun. 15, 1992, Ser. No. 898,874

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—425 **24 Claims**

22. A system for allocating contiguous blocks of available storage in DASD to satisfy a need for some of said storage, each said block comprising a plurality of storage locations, said system comprising:

means for making a bit map comprising a multitude of bits for a respective multitude of blocks of uniform size of at least part of said DASD, each of said bits indicating whether or not the respective block is available for allocation;



means for making from said bit map a record of locations and numbers of blocks in each of a multiplicity of sets of contiguous available blocks of said storage represented by said bit map;

means for searching said record for one or more of said sets to allocate for said need; and

means for allocating blocks from said one or more sets for said need and updating said bit map and record to indicate that the blocks have been allocated.

5,390,316

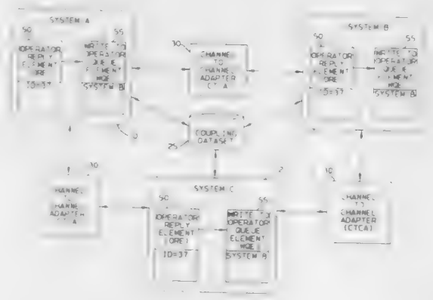
MULTICOMPUTER COMPLEX HAVING A DISTRIBUTED SHARED MEMORY SYSTEM FOR PROVIDING A SINGLE SYSTEM VIEW FROM MULTIPLE CONSOLES

Lorraine Cramer, Vestal; Scott A. Fagen, Poughkeepsie; John T. Gates, Jr., Poughkeepsie; Jon K. Johnson, Poughkeepsie; John P. S. Kong, Wappingers Falls, all of N.Y.; Ramu Mohan, Hagerstown, Md., and Christopher P. Vignola, Port Jervis, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 577,189, Aug. 31, 1990, abandoned. This application Jul. 30, 1993, Ser. No. 100,639

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—425 **10 Claims**



1. A computer system complex operable from a plurality of consoles, said computer system complex comprising:

a plurality of computer systems, each possessing means for storing redirectable message signals;

channel means linking said computer systems for transferring message signals between computer systems for within said computer system complex;

shared storage means, accessible by said computer systems, for storing system complex wide state information;

means for associating system complex wide unique identification information with said message signals which are generated within said computer systems for display at consoles attached thereto, said message signals being for transmission to the same or another of said computer systems, said system complex wide unique identification information being part of said system complex state information; and

means for serializing access to said system complex wide state information to assure consistency of information contained within control blocks within the internal storage of at least two of said computer systems.

5,390,317

TECHNIQUE TO SUPPORT PROGRESSIVELY PROGRAMMABLE NONVOLATILE MEMORY

Donald G. Weiss; Laura M. Dobbs; James S. Thomas, and Gregory A. Racino, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 739,370, Aug. 2, 1991, abandoned. This application Mar. 18, 1994, Ser. No. 210,409

Int. Cl.[6] G06F *12/00, 12/16*

U.S. Cl. 395—425 **21 Claims**

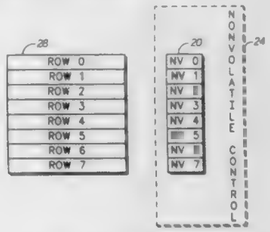
1. A nonvolatile memory, comprising:

an address bus;

a data bus;

a plurality of storage circuits having a first memory address, said plurality of storage circuits being coupled to said data bus;

decode circuitry, coupled to said address bus and coupled to said plurality of storage circuits;



a first control circuit for storing a first control value, the first control circuit corresponding to a first one of said plurality of storage circuits;

a second control circuit for storing a second control value, the second control circuit corresponding to a second one of said plurality of storage circuits;

circuit means for receiving the first memory address during a memory access and for selecting the first one of said plurality of storage circuits if the first control value is a first value, if the second control value is a second value, and if the memory access is a read access, and said circuit means for selecting the second one of said plurality of storage circuits during the memory access if the first control value is the first value, if the second control value is the second value, and if the memory access is a write access, said circuit means being coupled to said address bus, to said plurality of storage circuits, to said decode circuitry, to said first control circuit, and to said second control circuit.

5,390,318

MANAGING THE FETCHING AND REPLACEMENT OF CACHE ENTRIES ASSOCIATED WITH A FILE SYSTEM

Kadangode K. Ramakrishnan, Maynard, Mass., and Prabuddha Biswas, Nashua, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

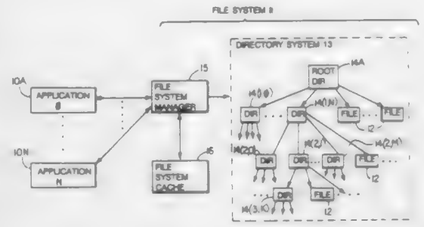
Continuation of Ser. No. 545,879, Jun. 29, 1990, abandoned. This application May 16, 1994, Ser. No. 243,041

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—425 **62 Claims**

11. A method for caching information retrieved by application programs from files organized in a file system in mass storage, comprising

organizing a cache in at least two levels having multiple cache entries, including an upper level comprising directory entries storing directory file information and representing directories in said file system, and a lower level comprising file header entries storing file header information and representing files in said file system,



identifying file header and directory entries related such that the identified directory entry represents the directory containing the file represented by the identified file header entry, and storing pointers in the cache linking the related entries,

assigning each entry a priority for storage relative to the other entries in the same level, and

managing use and re-use of said cache entries according to the priority for storage assigned to said entries.

5,390,319

Patent Not Issued For This Number

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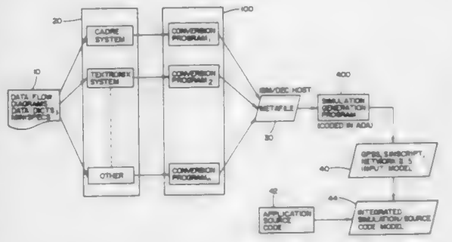
AUTOMATICALLY CONVERTING STRUCTURED ANALYSIS TOOL DATABASE OUTPUTS INTO AN INTEGRATED SIMULATION MODEL VIA TRANSPORTABLE STANDARDIZED METAFILE

Edward T. Smithline, Port Washington, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 644,028, Jan. 22, 1991. This application May 3, 1994, Ser. No. 237,317

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—500 **24 Claims**



1. A method utilizing a computer means for automatically converting structured analysis tool outputs from one or more of a variety of sources into an integrated simulation model, said structured analysis tool outputs residing in computer databases

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and containing at least one data flow diagram representing a functional system, said at least one data flow diagram having at least one data flow diagram element and at least one dataflow, said method comprising the steps of:

(a) generating a standardized METAfile from said databases, said METAfile containing inter-element relations in a format suitable for reconstruction into a simulation model format on another host computer having a simulation generation program residing therein, said METAfile automatically generated by:

(i) accessing said computer databases of said structured analysis tools outputs;

(ii) accessing said at least one data flow diagram element from said at least one data flow diagram;

(iii) ascertaining and storing a first set of information related to said data flow diagram element;

(iv) determining if said dataflows are entering or exiting said data flow diagram element;

(v) ascertaining and storing a second set of information related to said dataflow; and

(vi) determining if there are any remaining said dataflows, said data flow diagram elements, and said data flow diagrams, if there are remaining said dataflows repeat steps (iv) through (vi), if there are remaining said data flow diagram elements repeat steps (ii) through (vi) and if there are remaining said data flow diagrams repeat steps (i) through (vi);

(b) transporting said standardized METAfile into said another host computer having said simulation generation program and automatically generating a simulation model from said METAfile, said simulation model comprising simulation source code statements; and,

(c) integrating actual source code into said simulation model by automatically replacing components said simulation source code statements with actual source code to form said integrated simulation model.

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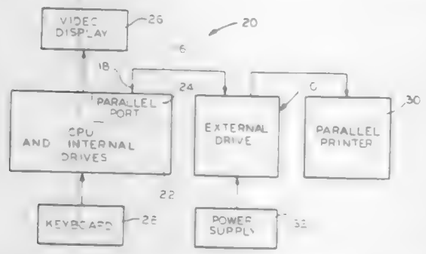
GENERAL PURPOSE PARALLEL PORT INTERFACE

Ronald J. Froesel, c/o Micro Solutions, Inc., 132 W. Lincoln Hwy., DeKalb, Ill. 60115

Continuation of Ser. No. 708,512, May 31, 1991, Pat. No. 5,335,338. This application Jul. 1, 1994, Ser. No. 269,567

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—500 18 Claims



1. A general purpose interface for connecting a mass memory storage device to a parallel port of a personal computer for facilitating data transfer between the storage device and a central processing unit of the personal computer, comprising:

a parallel port output connector, similar to the parallel port of the personal computer, for connection to a parallel peripheral device;

a parallel port input connector for connection to the parallel port of the personal computer or the parallel port output connector of another such general purpose interface to transfer data, address and CPU control signals to and from the personal computer;

a peripheral port for connection to a peripheral controller for the mass memory storage device to transfer data and interface control signals to and from the peripheral controller;

a logic circuit electrically coupled to said peripheral port input and output connectors and said peripheral port including decoding means for decoding the CPU control signals and address from the personal computer, control means responsive to the decoded CPU control signals for generating the interface control signals to said peripheral port if commands are addressed for the particular general purpose interface to control transfer of data between said connector and said peripheral port, and feedthrough means controlled by said control means for operatively connecting said parallel port input connector to said parallel port output connector if no command is addressed for the particular general purpose interface.

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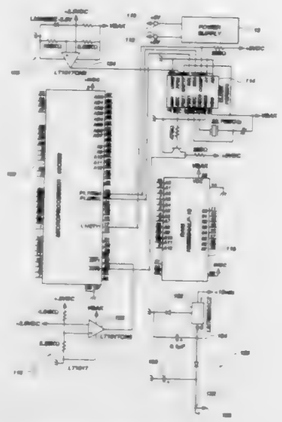
APPARATUS AND METHOD FOR RETAINING CYCLE MEMORY IN ELECTRONIC STERILIZER CONTROLS

Michael J. O'Brien, 5956 Chili Riga Ctr. Rd., Churchville, N.Y. 14428; Charles E. Ellis, 1287 Maryland Rd., Phelps, N.Y. 14532, and Kenneth A. Johnson, 3472 Ontario Ctr. Rd., Walworth, N.Y. 14568

Filed Feb. 1, 1991, Ser. No. 648,912

Int. Cl.[6] G06F *11/34, 11/00*

U.S. Cl. 395—575 14 Claims



1. A control apparatus comprising:

a CPU connected in circuit with an external source of electrical power and operably constructed and connectable to control a sterilizing apparatus to execute a sterilization cycle and to accumulate cycle data during said sterilization cycle;

power failure detection means connected in circuit with said external power source and said CPU for detecting power insufficiency and in response providing a signal reflective of said power insufficiency to said CPU;

time memory means connected in circuit with said CPU for providing time data during execution of said sterilization cycle, said time memory means including a bit normally in a first state and settable to a second state;

cycle memory means connected in circuit with said CPU to receive and store said cycle data, said cycle memory means requiring a minimum voltage for maintaining said data in storage;

a chargeable backup power source connected in circuit with said CPU for supplying backup power during a power insufficiency event to said time memory means and said cycle memory means, and connected in circuit with said external power source whereby to be charged by said electrical power source;

comparator means connected in circuit with said backup power source for comparing the voltage of said backup power source to said minimum voltage, and operable to provide an output to said time memory means to set said bit to said second state when said backup power falls below said minimum voltage; and

wherein said CPU is operably constructed to respond to said power insufficiency signal by storing said cycle data in said cycle memory means, and when power is restored from said external source, said CPU is further operably constructed to check said bit in said time memory means, continue to operate a sterilizing apparatus from the point at which said power failure interrupted said sterilization cycle if said bit is in said first state, and

restart operation of said sterilizing apparatus from the start of said sterilization cycle if said bit is in said second state.

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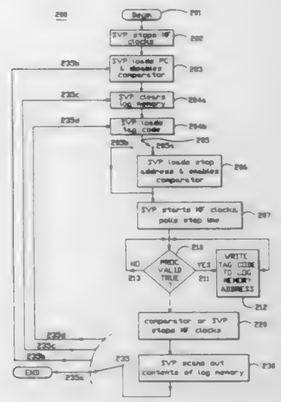
MICROSTORE REFERENCE LOGGING

Linda Newell, Fremont, and Matt Noel, Boulder Creek, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Aug. 5, 1991, Ser. No. 741,093

Int. Cl.[6] G06F *11/34, 11/00*

U.S. Cl. 395—575 7 Claims



1. A reference logging apparatus for logging references made by a microcode-processor to microcode stored in a microstore having M memory locations, the apparatus comprising:

(a) a log memory having at least a plurality of M bits each corresponding to one of the M memory locations in the microstore;

(b) clearing means, operatively coupled to the log memory, for clearing the M bits of the log memory by placing each said bit in a first state; and

(c) setting means, operatively coupled to the log memory and to the microcode-processor, for setting each log memory bit to a second state if the microcode of a corresponding microstore location is referenced by the microcode-processor during a test period;

wherein:

said microcode-processor includes an execution unit in a first computer and a pipeline for supplying microcode data words to the execution unit, said first computer having a system clock for synchronizing operations of the first computer, said pipeline having means for selectively invalidating one or more of the supplied microcode data words, said execution unit having means for selectively consuming only valid ones of the supplied microcode data words, said consumption constituting a reference by the microcode processor to the valid microcode data words;

the microstore receives microcode address words and supplies corresponding microcode data words from addressed ones of its M memory locations to a head-end of the pipeline for possible later consumption by the execution unit;

the microcode data words are shifted into the pipeline head-end in synchronism with the system clock of the first computer;

each microcode data word is accompanied by a pipeline-alterable valid bit as the microcode data word shifts through and is processed in the pipeline,

upon emergence from a tail-end of the pipeline, each pipeline-processed microcode data word continues to have an associated, pipeline-processed valid bit, the state of the pipeline-processed valid bit indicating whether the associated microcode data word is or is not consumable by the execution unit; and

the reference logging apparatus further comprises:

address linking means for linking each microcode address word to the valid bit of its corresponding pipeline-processed microcode data word as the valid bit shifts through the pipeline; and

address discriminating means for discriminating between pipeline-processed microcode address words that are each linked to a pipeline-processed valid bit having a true final pipeline-processed state which indicates the corresponding pipeline-processed microcode data word is consumable by the execution unit and pipeline-processed microcode address words that are each linked to a pipeline-processed valid bit having a false final pipeline-processed state which indicates the corresponding pipeline-processed microcode data word is not consumable by the execution unit.

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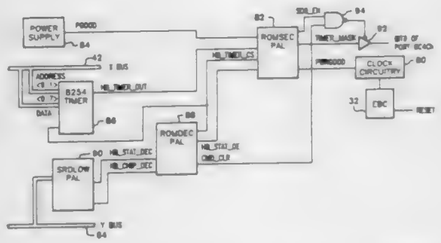
COMPUTER FAILURE RECOVERY AND ALERT SYSTEM

David M. Burckhartt; Lazaro D. Perez; Theodore F. Emerson, all of Houston; Randolph O. Dow, Cypress, and Gary A. Stimac, Montgomery, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 2, 1992, Ser. No. 955,849

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—575 8 Claims



1. A failure recovery system for a computer system having a memory, comprising:

detection means for detecting a computer system failure;

reset means responsive to said detection means for generating a reset signal when a failure is detected, wherein said reset signal resets the computer system;

a hard drive connected to the computer system and having a plurality of bootable partitions, one partition containing a normal operating system and one partition containing a diagnostic program;

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selection memory means storing a bootable partition selection; and

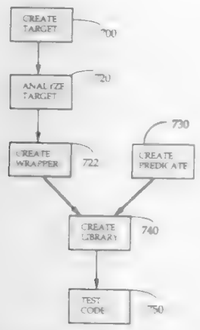
boot means connected to said hard drive, responsive to said reset signal to commence booting of the computer system from one of said plurality of bootable partitions on said hard drive and responsive to said selection memory means to select which of said plurality of bootable partitions is utilized to boot the computer system.

5,390,325

AUTOMATED TESTING SYSTEM

Christopher M. Miller, Saratoga, Calif., assignor to Taligent, Inc., Cupertino, Calif.

Filed Dec. 23, 1992, Ser. No. 996,047
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—575 **12 Claims**



1. A system for automated testing of a software program comprising parameter data and a subroutine operating on the parameter data to generate output data, the system comprising:

memory means for storing the software program and the parameter data;

processor means for controlling and coordinating the operation of the system and the memory means;

first invariant means responsive to parameter data stored in the memory means for generating a data consistent signal when the parameter data stored in the memory means is internally consistent;

precondition means responsive to the parameter data stored in the memory means and to the subroutine for generating a data valid signal when the parameter data stored in the memory means will operate with the subroutine without causing an error condition;

means responsive to the data consistent signal and to the data valid signal for running the subroutine with the parameter data stored in the memory means; and

postcondition means responsive to the parameter data stored in the memory means and to output data generated by the subroutine from the parameter data stored in the memory means for determining whether an error occurred during operation of the subroutine.

5,390,326

LOCAL AREA NETWORK WITH FAULT DETECTION AND RECOVERY

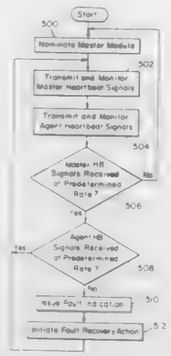
Nitin J. Shah, Northboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Apr. 30, 1993, Ser. No. 56,221
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—575 **45 Claims**

1. In a local area network having (i) a token bus formed of redundant cables and (ii) a plurality of modules connected to the token bus, a method of detecting and recovering from faults comprising the steps of:

with each module, periodically transmitting heartbeat signals on each redundant cable of the token bus at a predetermined periodic rate;

with each module, monitoring the periodic heartbeat signals on each redundant cable of the token bus, each module being adapted to receive on each of said cables every



periodic heartbeat signal from other modules connected to the token bus;

indicating a fault when the heartbeat signals fail to be received at the predetermined periodic rate; and

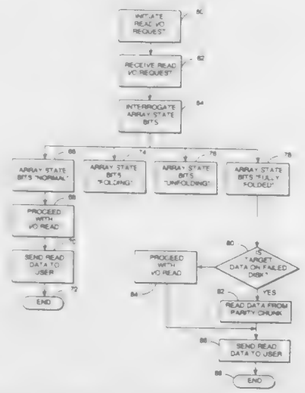
initiating a fault recovery action.

5,390,327

METHOD FOR ON-LINE REORGANIZATION OF THE DATA ON A RAID-4 OR RAID-5 ARRAY IN THE ABSENCE OF ONE DISK AND THE ON-LINE RESTORATION OF A REPLACEMENT DISK

Clark E. Lubbers, and David W. Thiel, both of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 29, 1993, Ser. No. 85,021
Int. Cl.[6] G06F *11/10, 11/20*
U.S. Cl. 395—575 **13 Claims**



1. A method of on-line reorganization of data in a storage system having n+1 disks arranged in a RAID array when one of said disks falls while preserving concurrent access to said array by a user application, each of said disks in said storage system having a plurality of data blocks, a plurality of parity blocks, each parity block associated with n data blocks, a plurality of groups of parity block state bits, each group of parity block state bits indicating that said associated parity

block contains parity information or data or the contents are undefined, and a group of array state bits indicating the condition of the array as "normal," "folding," "fully folded" or "unfolding," said method comprising the steps of:

(a) receiving a read request from said user application to read a targeted data block;

(b) interrogating said array state bits to determine the condition of said array;

(c) if said array state bits indicate said array is in said "normal" state, then proceeding with a read operation;

(d) if said array state bits indicate said array is in said "folding" state, then proceeding with a "folding" read operation;

(e) if said array state bits indicate said array is in said "fully folded" state, then proceeding with a "fully folded" read operation; and

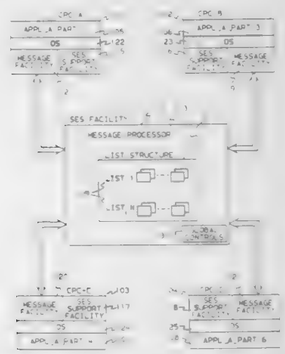
(f) if said array state bits indicate said array is in said "folding" state, then also proceeding with a deliberate process to complete said reorganization concurrently with user application access to said array.

5,390,328

DATA PROCESSING SYSTEM AND METHOD FOR PROVIDING NOTIFICATION IN A CENTRAL PROCESSOR OF STATE CHANGES FOR SHARED DATA STRUCTURE ON EXTERNAL STORAGE

Jeffrey A. Frey, Fishkill; Audrey A. Helffrich, Poughkeepsie; Jeffrey M. Nick, Fishkill, and Michael D. Swanson, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,809
Int. Cl.[6] G06F *13/00, 9/46*
U.S. Cl. 395—650 **22 Claims**



1. An apparatus for managing one or more list data structures each comprising one or more list entries, within a Structured External Storage (SES) facility in a data processing system, said apparatus comprising,

(a) one or more Central Processor Complexes (CPC's) each comprising a processing unit and main storage, each said CPC capable of executing one or more user processes;

(b) said Structured External Storage (SES) facility coupled to each of the one or more CPC's;

(c) communication means for communicating List Function requests by one or more user processes between one of said one or more CPC's and said SES;

(d) detection means in said SES, responsive to said list function requests, for detecting a state change for one of said one or more list data structures Caused by performance of said list function requests;

(e) registration means in said SES for registering interest of one of said user processes, executing on a particular one of said one or more CPC's, in said state change for a set of said one or more list data structures by associating an identifier of of a first process of said one or more user processes with a notification field with each list data structure in said set and transmitting a registration message comprising a process identified, a list identifier , and a vector means entry identifier to a registration process in said SES;

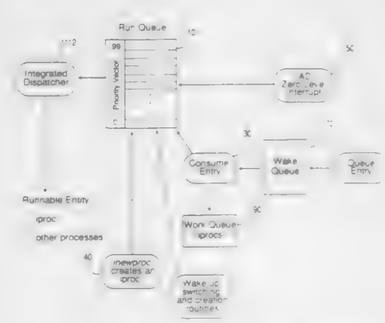
(f) means in said SES utilizing Said registration message for communicating said state change notification from said SES to said particular one of said one or more CPC's over said communication means, and means in said particular one of said one or more CPC's receiving said state change notification for directly updating said notification field to indicate that said state change has occurred.

5,390,329

RESPONDING TO SERVICE REQUESTS USING MINIMAL SYSTEM-SIDE CONTEXT IN A MULTIPROCESSOR ENVIRONMENT

Gregory G. Gaertner; Diane M. Wengelski, and Keith J. Thompson, all of Eau Claire, Wis., assignors to Cray Research, Inc., Eagan, Mo.

Continuation of Ser. No. 106,967, Aug. 16, 1993, abandoned, which is a continuation of Ser. No. 979,352, Nov. 20, 1992, abandoned, which is a continuation of Ser. No. 571,953, Aug. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 537,466, Jun. 11, 1990, Pat. No. 5,179,702. This application Jul. 20, 1994, Ser. No. 277,776
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—650 **9 Claims**



6. A method to process service requests in a data processing system including a plurality of general processing units comprising the steps of:

supplying a signal identifying a requested service to be processed;

suspending execution of a first program being executed on a receiving processing unit to which said identifying signal is supplied;

starting execution of a service process corresponding to said service request by said receiving processing unit;

transferring control of said execution of said service process to an available processing unit in said system that is executing a lower priority program;

resuming execution of said first program by said receiving processing unit when said transfer of said service process is complete:

executing the service process by said available processing unit; and

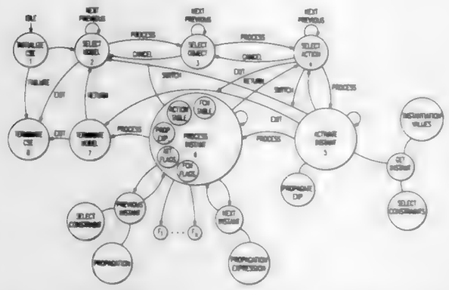
resuming execution of said lower priority program by said available processing unit when execution of said service process is complete.

5,390,330

CONTROL SYSTEM AND METHOD FOR DIRECT EXECUTION OF SOFTWARE APPLICATION INFORMATION MODELS WITHOUT CODE GENERATION

Kirit K. Talati, 207 Sun Ray La., Sunnyvale, Tex. 75102

Filed Feb. 11, 1993, Ser. No. 16,430
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—700 5 Claims



1. A control system for use in conjunction with a target computer having a user interface and a set of functions, comprising:

one or more information models, each information model representing a software application to be executed on the target computer, the software application having a process flow represented in the information model by a dictionary of attributes and at least one object, an attribute comprising a data entity and an object comprising control flags and a set of attributes taken from the dictionary of attributes, the object and one or more of the object's attributes including one or more control expressions that in conjunction with the control flags define the process flow of the software application; and

a process flow control engine common to all information models and responsive to a particular information model (i) for activating the object defined in the information model, (ii) for activating an action defined by the control flags, (iii) for instantiating attributes of the object, and (iv) for processing functions over the instantiated attributes of the object using the control flag and/or expressions to thereby cause the process flow control engine to execute the particular information model directly and without generation of code normally associated with the software application.

5,390,331

DATA PROCESSING DEVICE WHICH PROCESSES DATA IN ACCORDANCE WITH AN APPLICATION PROGRAM STORED IN A MEMORY DEVICE WHICH IS REMOVABLY CONNECTED WITH THE DATA PROCESSING DEVICE

Takaaki Yui, Houya, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 522,207, May 11, 1990, abandoned.
This application Mar. 1, 1993, Ser. No. 24,818
Claims priority, application Japan, Jun. 20, 1989, 1-155684
Int. Cl.[6] G06F *7/02*
U.S. Cl. 395—700 2 Claims

1. A data processing system which processes data in accordance with an application program stored in a memory device, comprising:

a memory device including:

program storing means for previously storing the application program, and

first ID code storing means for storing a first identification code corresponding to said application program stored in said program storing means;

a data processing device in which said memory device is detachably installed, said data processing device including:

power-on key means for using said data processing device to be turned on into an active state, when said power-on key means is operated;

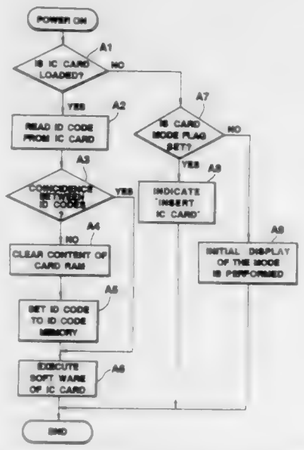
reading means for reading the first identification code stored in said first ID code storing means of said memory device, when said power-on key means is operated;

a processing unit for reading out the application program from said program storing means of said memory device, and for executing the read out application program;

work memory means coupled to said processing unit for executing the read out application program;

second ID code storing means for storing a second identification code corresponding to an application program of a memory device which was previously connected with said data processing device;

comparing means for comparing the second identification code stored in said second ID code storing means with



the first identification code read by said reading means to determine whether the first and second identification codes coincide with each other; and

controlling means having:

clearing means for, when said comparing means determines that the first and second identification codes do not coincide with each other, clearing said work memory means; and

means for, when said comparing means determines that the first and second identification codes do not coincide with each other, transferring the first identification code read by said reading means to said second ID code storing means, to store the first identification code in said second ID code storing means as a fresh second identification code in place of the second identification code previously stored in said second ID code storing means;

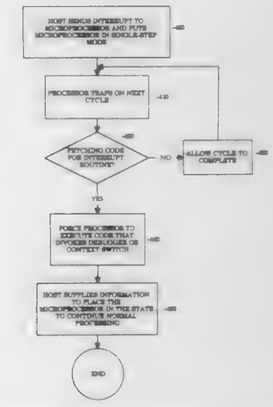
whereby when said comparing means determines that first and second identification codes coincide with each other, said work memory means is not cleared and data stored therein is used for execution or an application program stored in a memory device which is currently installed in said data processing device.

5,390,332

METHOD AND APPARATUS FOR PERFORMING A TAKEOVER OF A MICROPROCESSOR

Steven E. Golson, Carlisle, Mass., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Sep. 15, 1992, Ser. No. 945,214
Int. Cl.[6] G06F *13/24*
U.S. Cl. 395—725 21 Claims



1. In a computer system comprising a host processor, a microprocessor and memory coupled via a bus, a method for the host processor performing a takeover of the normal processing of the microprocessor comprising the steps of:

issuing an interrupt to the microprocessor, said interrupt causing the microprocessor to perform process steps to service the interrupt;

monitoring the bus cycles initiated by the microprocessor;

when the microprocessor initiates bus cycles which request information regarding the address of the interrupt service routine, intercepting the bus cycles and providing the address of a routine to be performed during the takeover of the microprocessor;

said microprocessor performing the routine starting at the address provided to the microprocessor by the host processor;

once the routine has been performed, returning the microprocessor from the interrupt state; and

said microprocessor continuing normal processing.

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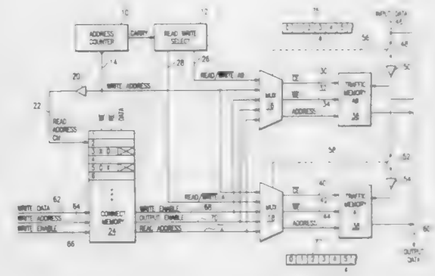
SWITCH ARRAY POWER REDUCTION APPARATUS

Harley P. Pritt, Rockwall; Michael A. Zeeff, Richardson, and Paul A. Littlewood, Plano, all of Tex., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Continuation of Ser. No. 475,597, Feb. 6, 1990, abandoned. This application Oct. 20, 1992, Ser. No. 963,507
Int. Cl.[6] G06F *1/32*
U.S. Cl. 395—750 7 Claims

1. A method for reducing power consumption in a switched matrix array memory system having a plurality of input lines, where each input line is connected to a row of addressable multiple storage location data memory element nodes in the switch matrix array, and a plurality of output lines, where each output line is connected to a column of data memory element nodes in the switch matrix array, and where each memory element node includes, in addition to traffic memory, a connect memory used to store memory addresses for indirectly addressing data to be output at given time slots of a system clock to transfer data between specific ones of said plurality of input and output lines, the method comprising the steps of:

enabling only specific nodes of said traffic memory to receive data for storage only at times coincident with an appearance on an input line of a value corresponding to an indirect address for said only specific nodes stored in said connect memory, said only specific nodes enabled for writing data into time serially addressed locations of said traffic memory; and



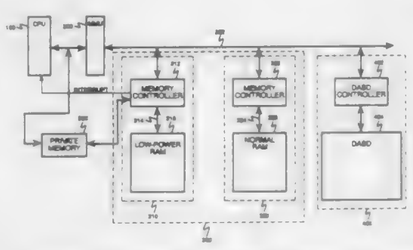
enabling only specific nodes of said traffic memory to output stored data only at times corresponding to a time of access of the connect memory indirect addresses for outputting data to said output lines.

5,390,334

WORKSTATION POWER MANAGEMENT BY PAGE PLACEMENT CONTROL

Colin G. Harrison, Brookfield, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 604,838, Oct. 29, 1990, abandoned.
This application Nov. 9, 1992, Ser. No. 973,574
Int. Cl.[6] G06F *1/32, 12/00*
U.S. Cl. 395—750 9 Claims



1. A method for managing a computer memory to conserve power, wherein the computer memory is divided into at least first and second memory banks, and a memory controller comprising a driver circuit section and a logic circuit section is operatively associated with the second memory bank, said method for managing a computer memory to conserve power comprising the steps of:

counting references to a first page of memory in said second memory bank;

calculating a reference frequency for said first page of memory;

comparing said reference frequency to an established criterion; and

transferring said first page of memory into said first memory bank if said reference frequency exceeds the established criterion;

counting references to a plurality of pages of memory in said first memory bank;

calculating a reference frequency for said plurality of pages of memory;.

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selecting a second page of memory from said plurality of pages based upon said reference frequency associated with said selected second page of memos; and

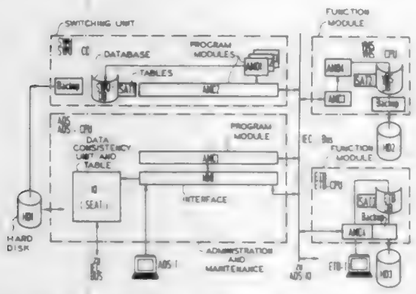
transferring said second page of memory out of said first memory bank upon said transferring of said first page of memory into said first memory bank.

5,390,335

METHOD FOR MODIFYING SYSTEM CONFIGURATION DATA SETS IN A TELECOMMUNICATIONS SWITCHING SYSTEM

Luzia Stephan, Bergkirchen-Feldgeding; Juergen Hoefner, Mammendorf, and Friedrich Woess, Otterfing, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 21, 1992, Ser. No. 915,619
Claims priority, application Germany, Jul. 31, 1991, 4125389
Int. Cl.[6] H04Q *11/04*
U.S. Cl. 395—800 **10 Claims**



1. A method for modifying system configuration data sets in a telecommunications switching system that has first function modules for processing switching-oriented and/or administration and maintenance procedures and that has second function modules for the realization of supplementary performance features, at least a part of the first function modules and at least a part of the second function modules having respective databases with system configuration data sets, whereof at least one sub-set of corresponding system configuration data sets is stored in more than one database, the system configuration data sets being modified by a system administration and maintenance computer program when triggered by administration and maintenance commands input into the system, the system administration and maintenance computer program producing database-associated backup copies of at least a part of the databases and the backup copies being deposited in memories that are separate from respective databases, comprising the steps of:

listing by means of the system administration and maintenance computer program the administration and maintenance commands, that are subsequently input into the system that modify database contents, in the form of command information in the chronological sequence of their occurrence, the listing occurring substantially isochronically with the production of database-associated backup copies;

supplementing every command information with a database-associated information that indicates implementation or non-implementation of respective administration and maintenance commands; and

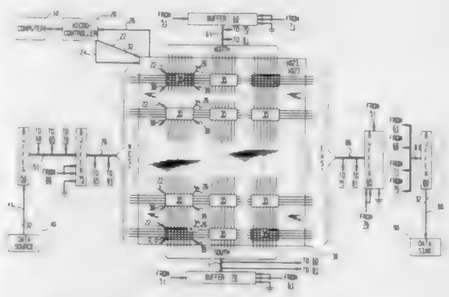
processing, given a connection of a database of a previously disconnected second function module to the system, the administration and maintenance commands corresponding to the listed command information that are supplemented by a non-implementation information in the listed sequence.

5,390,336

C' PARALLEL COMPUTER SYSTEM HAVING PROCESSING NODES WITH DISTRIBUTED MEMORY WITH MEMORY ADDRESSES DEFINING UNITARY SYSTEM ADDRESS SPACE

W. Daniel Hillis, Cambridge, Mass., assignor to Thinking Machines Corporation, Cambridge, Mass.

Division of Ser. No. 830,167, Jan. 31, 1992, abandoned, which is a division of Ser. No. 464,681, Jan. 16, 1990, Pat. No. 5,129,077, which is a continuation of Ser. No. 323,173, Mar. 15, 1989, abandoned, which is a continuation of Ser. No. 902,290, Aug. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 499,474, May 31, 1983, Pat. No. 4,814,973. This application Aug. 11, 1993, Ser. No. 105,531
Int. Cl.[6] G06F *12/06, 12/08*
U.S. Cl. 395—800 **12 Claims**



1. A computer system comprising:

A. a plurality of processing nodes, each processing node comprising:

i. a memory for storing a plurality of data items in a plurality of storage locations each defined by an address, addresses of memories of all of said processing nodes forming a unitary address space, with addresses of each processing node's memory comprising a portion of the unitary address space, the memory being responsive to memory access requests each for initiating memory access operation in connection with a data item identified in the memory access request;

ii. a processor for processing data, the processor generating data transfer requests to initiate a data transfer operation, each data transfer request including a data item location identifier identifying a storage location in one of the processing nodes' memory;

iii. a data transfer controller for receiving data transfer requests from the processing node's processor and, for each data transfer request, (a) if the data transfer request's data item location identifier identifies a storage location in the processing node's memory, generating a memory access request to enable the memory to initiate a memory access operation in connection with the identified data item and (b) otherwise generating a message to initiate a remote access operation in connection with another processing node whose memory includes a storage location identified by the data transfer requests' data item location identifier; and

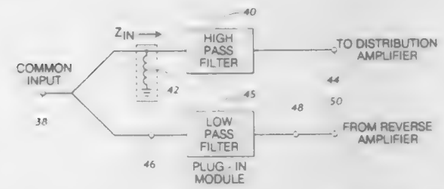
II. a communications network for transferring messages generated by said processing nodes to facilitate remote access operations among processing nodes in connection with data transfer requests generated by the processing nodes' respective processors.

5,390,337

COMBINATION SURGE AND DIPLEX FILTER FOR CATV DISTRIBUTION SYSTEMS

Catherine W. Jelinek, Lawrenceville; Leo J. Thompson, Lilburn, and Munther A. Al-Khalil, Duluth, all of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Filed May 1, 1992, Ser. No. 876,948
Int. Cl.[6] H04H *1/00;* **H03H** *7/46*
U.S. Cl. 455—5.1 **23 Claims**



1. A combination filter for a CATV distribution amplifier operative to provide a surge filter function in a one-way communications system and a diplex filter function in a two-way communications system, said combination filter comprising:

an integrated high pass and surge filter section built onto a printed circuit board;

a low pass filter section detachably mounted to said printed circuit board as a plug in module;

wherein said integrated high pass and surge filter section and said low pass filter section are matched to form a diplex filter;

wherein when said combination filter is used in said one-way communications system, said low pass filter section is not mounted onto said printed circuit board; and

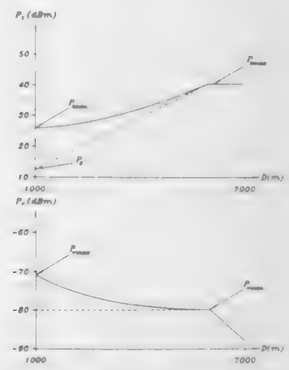
wherein when said combination filter is used in said two-way communications system, said low pass filter section is mounted onto said printed circuit board.

5,390,338

METHOD OF CONTROLLING OUTPUT POWER IN A MOBILE RADIO COMMUNICATION SYSTEM

Stig R. Bodin, Spanga, and Karl R. V. Forsselius, Bromma, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 763,231, Sep. 20, 1991, abandoned. This application Apr. 11, 1994, Ser. No. 225,940
Claims priority, application Sweden, Oct. 5, 1990, 90031964
Int. Cl.[6] H04B *1/00;* **H04Q** *7/00*
U.S. Cl. 455—33.1 **14 Claims**



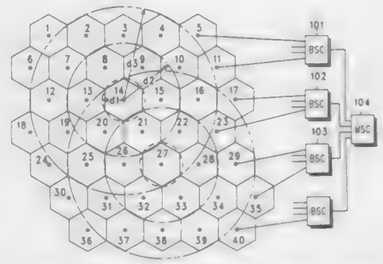
1. In a cellular mobile radio communications system, a method of controlling the output power of radio signals transmitted from a transmitter to a receiver, wherein said output power of said transmitter is controlled in dependence on a parameter, said parameter being a function of distance between said transmitter and said receiver wherein said output power of said transmitter is proportional to said distance between said transmitter and said receiver and approaches a predetermined minimum output power as said distance approaches zero and received power from said transmitter is inversely proportional to said distance between said transmitter and said receiver when said distance approaches zero.

5,390,339

METHOD AND APPARATUS FOR SELECTING A SERVING TRANSCEIVER

Eugene J. Bruckert, Arlington Heights, and Stuart W. Thro, Cary, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Oct. 23, 1991, Ser. No. 781,450
Int. Cl.[6] H04Q *7/02;* **H04B** *7/26, 17/00;* **G01S** *3/02*
U.S. Cl. 455—33.2 **10 Claims**



9. In a radio communication system having a plurality of transceivers, each of the plurality of transceivers having known locations, and at least one remote unit communicating a signal to at least one of the plurality of transceivers, a control unit for selecting a serving transceiver for the remote unit comprising:

a.) computing means for estimating the at least one remote unit's location within the radio communication system in response to a collected signal strength measured by a set of transceivers also receiving the communicated signal, wherein estimating the at least one remote unit's location further comprises;

(i) determining a relative signal arrival time delay with respect to each of the set of transceivers receiving the signal;

(ii) weighting both the relative signal arrival time and a known distance of each transceiver from at least another transceiver, in response to the collected signal strength received by each of the transceivers; and

b. means, operably coupled to computing means, for selecting the serving transceiver in response to the weighted relative signal arrival time delay and each transceiver's known distance.

5,390,340

RADIO PAGING RECEIVER CAPABLE OF ESTABLISHING CLOCK SYNCHRONIZATION EVEN IN THE ABSENCE OF A PREAMBLE SIGNAL

Hisashi Kondo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 28, 1993, Ser. No. 67,626
Claims priority, application Japan, Jun. 9, 1992, 4-147840
Int. Cl.[6] H04B *7/00*
U.S. Cl. 455—38.1 **4 Claims**

1. A radio paging receiver for receiving a radio signal carrying a call number signal preceded by a preamble signal to announce reception of said radio signal addressed to said radio paging receiver, said radio signal being demodulated into a

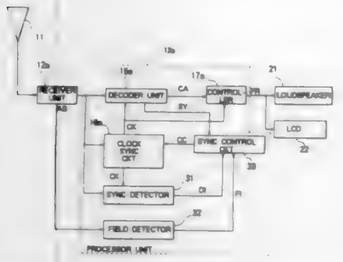
sequence of digital signals which carries said preamble signal and said call number signal and which is decoded in response to a sequence of internal clock pulses,

said radio paging receiving comprising:

a clock synchronization circuit which produces said internal clock pulse sequence by carrying out synchronization operation of said internal clock pulse sequence with said digital signal sequence;

field detection means having a predetermined threshold level, for detecting an electric field intensity level in relation to said radio signal to produce a field intensity signal representative of whether said electric field intensity level is weaker than said predetermined threshold level;

synchronization detection means, supplied with said digital signal sequence and said internal clock pulse sequence, for



calculating a selected one of phase and frequency differences between said digital signal sequence and said internal clock pulse sequence to produce a difference signal which corresponds to said selected one of the phase and the frequency differences; and

synchronization control means, supplied with said field intensity signal and said difference signal and connected to said clock synchronization circuit, for controlling said clock synchronization circuit with reference to said field intensity signal and said difference signal to establish synchronization between said internal clock pulse sequence and said digital signal sequence even when said preamble signal is not received and to maintain reception even when said electric field intensity level is weaker than said predetermined threshold level on detection of the preamble signal.

5,390,341

SYSTEM AND METHOD FOR MUTING AND UNMUTING A COMMUNICATION DEVICE

Joseph M. Ziniel, Hanover Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 15, 1991, Ser. No. 729,669

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—54.1 **10 Claims**

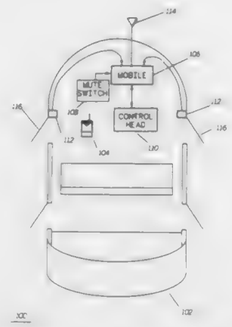
7. A communication system, comprising:

a first radio located in a vehicle having a door;

a door sensor coupled to the door for providing a door activation signal when the door sensor is activated by the opening of the door;

the first radio including a transmitter for transmitting an unmute message in response to the door activation signal;

a second radio responsive to the unmute message, the second radio unmuting upon the reception of the unmute message, and



wherein the first radio is a mobile radio mounted in the vehicle and the second radio is a portable radio.

5,390,342

RECEIVER USING SELECTIVE DIVERSITY RECEIVING SYSTEM

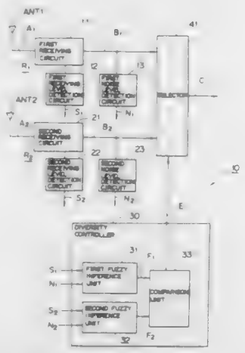
Masami Takayama, and Toshihito Ichikawa, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 12, 1991, Ser. No. 667,931

Claims priority, application Japan, Mar. 14, 1990, 2-63313; Mar. 14, 1990, 2-63315

Int. Cl.[6] H04B *17/02*

U.S. Cl. 455—134 **8 Claims**



1. A receiver, comprising:

a plurality of receiving systems connected to a plurality of respective antennas; and

a selective switching circuit for carrying out selective switching between output signals from said plurality of receiving systems to output a selected output signal of a receiving system having the most satisfactory receiving state,

said selective switching circuit comprising means for discriminating receiving states of respective receiving systems, said discrimination means comprising means for performing a fuzzy inference operation on the basis of a predetermined membership function and the output signals from the respective receiving systems and means for comparing discriminated results with each other with respect to said respective receiving systems, thus to output the selected output signal of the most satisfactory receiving system, wherein said means for performing a fuzzy inference operation comprises a fuzzy inference operation unit for performing a fuzzy inference operation on the basis of field strength detection signals and noise detection signals extracted from said output signals of the respective receiving systems to output an inference result signal, and said means for comparing comprises a comparison unit for comparing with each other said respective inference result signals to output a selected signal for selecting a receiving system having the most satisfactory state.

5,390,343

METHOD OF TUNING A RADIO RECEIVER USING RDS INFORMATION

Matthias Rupprecht, Straubenhardt; Willy Schmidt, and Wolfgang Trinks, both of Karlsruhe, all of Germany, assignors to Becker GmbH, Karlsbad, Germany

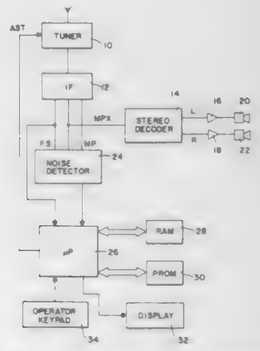
PCT No. PCT/EP92/00481, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO92/16049, PCT Pub. Date Sep. 17, 1992

PCT Filed Mar. 4, 1992, Ser. No. 941,109

Claims priority, application Germany, Mar. 4, 1991, 4106852

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—161.3 **15 Claims**



1. A method for controlling a microcomputer-controlled radio receiver while tuning to one of several transmitters, broadcasting the same program on different carrier frequencies, which best satisfies predetermined requirements for reception quality, receiving a signal and making use of radio data system information in said received signal, deriving from said received signal identity codes for said transmitters, comprising the steps of:

a) obtaining data from the radio data system information as to alternative frequencies of each transmitter to which the receiver is to be tuned, and memorizing and sorting a table of alternative frequencies associated with said identity codes;

b) tuning to one of said alternative frequencies memorized in said table, evaluating the alternative frequency to which the receiver is presently tuned to derive quality evaluation information, associating said quality evaluation information with the presently tuned alternative frequency, and memorizing said quality evaluation information in said table;

c) associating and memorizing actuality information with each quality evaluation information for each alternative frequency to which the receiver has been tuned, said actuality information representing the time elapsed since each quality evaluation is obtained; and

d) prior to tuning the receiver to one of said alternative frequencies, selecting among said alternative frequencies, on the basis of a priority scheme, wherein both of said quality evaluation information and said actuality information are taken into account by giving a higher priority to alternative frequencies which have a higher degree of actuality.

5,390,344

FM AUDIO SIGNAL RECEIVER HAVING A CHARACTERISTIC CONTROL FUNCTION

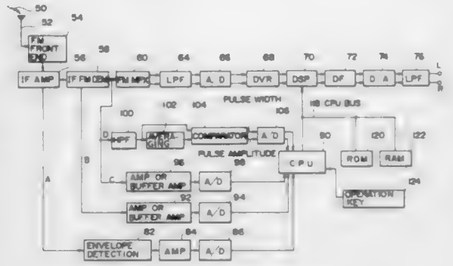
Yuichi Nagata, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 584,462, Sep. 18, 1990, abandoned. This application Dec. 8, 1992, Ser. No. 986,899

Claims priority, application Japan, Sep. 21, 1989, 1-245708

Int. Cl.[6] H04B *1/10*

U.S. Cl. 455—220 **21 Claims**



1. An FM audio signal receiver comprising:

receiving means for receiving an FM broadcast signal;

received state analyzing means for analyzing a state of an FM broadcast signal received by the receiving means, said received state analyzing means detecting variation in output amplitude and input field strength of the received FM broadcast signal;

analog-to-digital conversion means for analog-to-digital converting the FM broadcast signal received by the receiving means;

digital signal processing means for changing a characteristic of the analog-to-digital converted signal;

parameter table memory means for storing parameters for the digital signal processing means; and

control means for reading out from the parameter table memory means a proper parameter for realizing improvement of a characteristic of the analog-to-digital converted signal in response to a result of analysis by the received state analyzing means and for controlling the digital signal processing means with the read out proper parameter,

wherein said digital signal processing means performs, in response to detected values of the variation in the output amplitude and the input field strength of the received FM broadcast signal, multipath noise elimination processing for processing a multipath noise.

5,390,345

METHOD FOR PREVENTING DESENSITIZATION AND RADIO INTERFERENCE OF RADIO RECEIVERS

Masahiro Wada, Tokyo, and Kazuo Tominaga, Kanagawa, both of Japan, assignors to Nippon Telegraph and Telephone Corporation and Toyo Communication Equipment Co., Ltd., both of Japan

PCT No. PCT/JP91/00731, § 371 Date Mar. 30, 1992, § 102(e) Date Mar. 30, 1992, PCT Pub. No. WO91/19356, PCT Pub. Date Dec. 12, 1991

PCT Filed May 31, 1991, Ser. No. 829,034

Claims priority, application Japan, Jun. 1, 1990, 2-144107

Int. Cl.[6] H04B *1/10*

U.S. Cl. 455—234.1 **3 Claims**

1. A radio receiver capable of preventing radio interference caused by cross modulation of two or more disturbing waves, comprising:

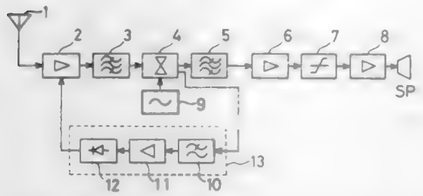
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a high-frequency amplifier for amplifying a received signal, a gain of said high-frequency amplifier being controlled by a direct current signal;

a local oscillator;

a mixer for outputting an intermediate frequency signal caused by mixing an output signal of said local oscillator and an output signal of said high-frequency amplifier; and

interference detector means for detecting a cross modulated



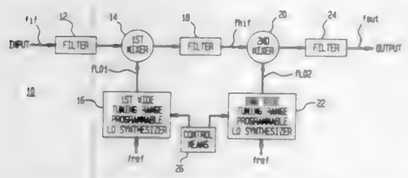
product within said intermediate frequency signal, comprising a filter which separates said cross modulated product from said intermediate frequency signal, said cross modulated product having a low frequency which is at least equal to the channel separation frequency of said two or more disturbing waves, and a rectifier for generating said direct current signal from said cross modulated product for controlling said gain of said high-frequency amplifier.

5,390,346

SMALL FREQUENCY STEP UP OR DOWN CONVERTERS USING LARGE FREQUENCY STEP SYNTHESIZERS

Daniel J. Marz, Richboro, Pa., assignor to General Instrument Corporation of Delaware, Hatboro, Pa.

Filed Jan. 21, 1994, Ser. No. 184,572
Int. Cl.[6] H04B *1/26;* H04N *5/50*
U.S. Cl. 455—260 8 Claims



1. A double conversion frequency converter comprising:

a first programmable Local Oscillator (LO) synthesizer having a first wide band tuning range for receiving a first predetermined reference signal from a control means and generating therefrom a first LO1 output signal which is changeable by first predetermined first large frequency steps of at least 125 KHz, where the first wide band tuning range is defined as having a frequency f_{hi1} which equals a highest frequency of the first wide band tuning range, a frequency f_{low1} which equals a lowest frequency of the first wide band tuning range, and a frequency band of the first wide band tuning range which is represented by

$$[(f_{hi}-f_{low})/f_{low}][(f_{hi1}-f_{low1})/f_{low1}] \geqq 0.3;$$

a first mixer for mixing an input signal to the frequency converter with the first LO1 output signal for generating a first predetermined mixer output signal;

a second programmable Local Oscillator (LO) synthesizer having a second wide band tuning range of at least 100 MHz for receiving a second predetermined reference signal from the control means and generating therefrom a second LO2 output signal which is changeable by predetermined second large frequency steps of at least 125 KHz, where the second wide band tuning range is defined as having a f_{hi2} which equals a highest frequency of the second wide band tuning range, a frequency f_{low2} which equals a lowest frequency of the second wide band tuning range, and a frequency band of the second wide band tuning range which is represented by

$$[(f_{hi}-f_{low})/f_{low}][(f_{hi2}-f_{low2})/f_{low2}] \geqq 0.3; \text{ and}$$

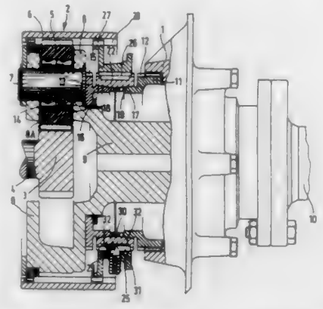
a second mixer for mixing a predetermined sideband generated in the first predetermined mixer output signal of the first mixer with the second LO2 output signal for generating a second predetermined mixer output signal which is used for an output signal of the frequency converter.

5,390,347

RANGE CHANGE TRANSMISSION FOR VEHICLES

Gerhard Buri, and Josef Bader, both of Friedrichshafen, Germany, assignors to Zahnradfabrik Friedrichshafen AG, Germany

PCT No. PCT/EP91/01218, § 371 Date Dec. 29, 1992, § 102(e) Date Dec. 29, 1992, PCT Pub. No. WO92/01173, PCT Pub. Date Jan. 23, 1992
PCT Filed Jun. 29, 1991, Ser. No. 965,415
Claims priority, application Germany, Jul. 3, 1990, 4021170
Int. Cl.[6] F16H *57/10;* F16D *23/06*
U.S. Cl. 475—303 10 Claims



1. A range change transmission for a vehicle designed as planetary transmission (2), said range change transmission comprising:

a sun gear (3) being rigidly supported adjacent one end of an output shaft (4) of a main transmission; a planet carrier (8), carrying planet gears, being rigidly connected to an output shaft (9) of said range change transmission; a separating clutch having a synchronizing device and an axially movable sliding sleeve (25); a ring gear (6) being concentrically disposed with respect to said output shaft (9) with said ring gear (6) being connectable, via said separating clutch, with a transmission casing (1) to provide a first ratio of said range change transmission and said ring gear (6) being connectable, via said separating clutch, with said output element (8 or 9) to provide a second ratio of said range change transmission; a gearing (26), supported by said sliding sleeve (25), being engageable with a coupling gear (12) supported by said transmission casing (1) when said sliding sleeve (25) is in a first axial end position, and said gearing (26) being engageable with a coupling gear (12) supported by said output element (8 or 9) when said sliding sleeve (25) is in a second axial end position;

wherein said synchronizing device comprises a single-piece synchronizer ring (22) with two friction surface (23), one of said two friction surface (23) cooperates with a mating bevel surface (19) of said transmission casing (1) and the other of said two friction surfaces (23) cooperates with a mating bevel surface (18) of said output element (8 or 9);

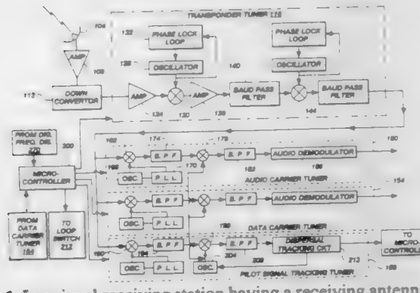
radial pressure members (29) are supported by said sliding sleeve (25) and spring loaded in a direction toward said synchronizer ring (22); ramp-like pressure pieces (30) are supported on the external periphery of said synchronizer ring and are axially movable in recesses (31) formed in said synchronizer ring, and said pressure members (29) exert an axial force upon said synchronizer ring (22) in both axial directions of movement of said sliding sleeve (25).

5,390,348

SYSTEM FOR TRACKING AND CORRECTING DRIFT AND DISPERSION IN SATELLITE TRANSMISSION SIGNALS

Gregory A. Magin, Ocala, Fla., and John W. G. McMullen, Provo, Utah, assignors to Creative Digital Inc., Orem, Utah

Filed Feb. 12, 1992, Ser. No. 835,253
Int. Cl.[6] H04B *1/10*
U.S. Cl. 455—63 9 Claims



1. In a signal receiving station having a receiving antenna for receiving a first transmitted signal which includes one or more information carrier frequencies and a pilot frequency which is separated in frequency from each one or more carrier frequencies by a respective predetermined amount, and a convertor means for converting down proportionately the frequencies in the first transmitted signal to a baseband signal,

a system for tracking and correcting any frequency drift and dispersion of the carrier frequencies and pilot frequency in the baseband signal, comprising

one or more carrier tuner means, each for receiving the baseband signal and each including

means for deriving from the baseband signal an IF carrier signal representing a respective carrier frequency,

carrier mixer means for mixing the IF carrier signal and a first local oscillator signal to produce a resultant IF information signal,

means for demodulating the resultant IF information signal to recover transmitted information, and

pilot tuner means for receiving the baseband signal and including

means for deriving from the baseband signal an IF pilot signal representing the pilot frequency,

pilot mixer means for mixing the IF pilot signal and the first local oscillator signal to produce a resultant pilot signal,

local oscillator means responsive to a first control signal level for developing the first local oscillator signal having a frequency corresponding to the first control signal level and for supplying the first local oscillator signal to the carrier mixer means and pilot mixer means to compensate for any frequency drift or dispersion of frequency of the IF carrier signals and IF pilot signal, and

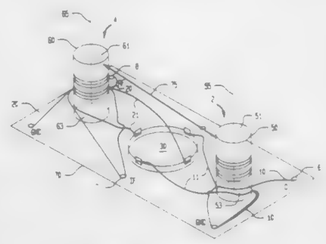
frequency discriminator means for detecting frequency drift and dispersion of the resultant pilot signal from a predetermined center frequency and for supplying to the local oscillator means the first control signal whose level identifies the frequency drift and/or dispersion, of the resultant pilot signal to thereby cause the local oscillator means to produce the first local oscillator signal which, when supplied to the carrier mixer means and pilot mixer means, compensates for any frequency drift and frequency dispersion occurring in the IF carrier signals and IF pilot signal from their operating frequencies, the frequency discriminator means including a first frequency discriminator means for generating the first control signal, the first control signal comprising a coarse control signal and a digital frequency discriminator means operatively connected to the first frequency discriminator means, the digital frequency discriminator means including a crystal oscillator means which is operatively connected to the a frequency detector for adjusting one or more operating frequencies of the carrier tuner means to track changes in the information carrier frequencies.

5,390,349

PLURAL TRANSFORMERS WITH ELONGATED CORES

Shankar R. Joshi, Elmont, N.Y., and Meta Rohde, Upper Saddle River, N.J., assignors to Synergy Microwave Corporation, Paterson, N.J.

Filed Aug. 26, 1992, Ser. No. 935,549
Int. Cl.[6] H04B *1/26;* H03B *19/16;* H01F *27/30*
U.S. Cl. 455—330 22 Claims



1. A transformer circuit comprising:

a mounting;

a first transformer comprising an elongated core with a longitudinal axis and an outer surface, and primary and secondary windings disposed on said outer surface;

a second transformer comprising an elongated core with a longitudinal axis and an outer surface, and primary and secondary windings disposed on said outer surface;

each said core having a maximum width perpendicular to the longitudinal axis of each said core, said maximum widths defining a pair measuring distance equal to the largest of said maximum widths;

first input means for providing a first electrical input signal between the frequencies of about 10 MHz to 6 GHz to said primary winding of said first transformer;

second input means for providing a second electrical input signal to said primary winding of said second transformer; and

circuit means for interconnecting said secondary windings of said transformers and associated with an output from said transformer circuit, said output providing an output signal derived from said first input signal and said second input signal;

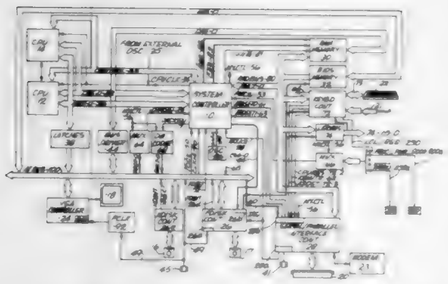
said first and second transformers being attached to said mounting wherein said longitudinal axes of said cores are substantially parallel to one another and the shortest distance between the outer surface of said first core and the outer surface of said second core is about equal to or greater than the pair measuring distance and about equal to or less than 20 times the pair measuring distance.

5,390,350

INTEGRATED CIRCUIT CHIP CORE LOGIC SYSTEM CONTROLLER WITH POWER SAVING FEATURES FOR A MICROCOMPUTER SYSTEM

Randall M. Chung, Laguna Nigel, and Shaun Astarabadi, Irvine, both of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Apr. 22, 1991, Ser. No. 689,358
Int. Cl.[6] G06F *1/32*
U.S. Cl. 395—150 33 Claims



1. A system controller for managing communication of digital data over a bus structure between a microprocessor, a memory and input/output controllers in a battery operated computer, the computer having a first switching circuit for enabling and disabling power from the battery to the microprocessor independent of power to the input/output controllers, at least one second switching circuit for enabling and disabling power from the battery to the input/output controllers, the computer providing indications of inactivity by the microprocessor and indications of requested activity for the microprocessor, which activity is required by the input/output controllers, the system controller comprising:

at least one input for receiving the indications of inactivity and indications of requested activity;

at least one output;

a power management controller operative upon occurrence of the inactivity indications received at said at least one input for enabling the first switching circuit through the at least one output to disable power to the microprocessor without disabling power to the input/output controllers, and means operative upon occurrence of the indications of requested activity provided by the computer and received at said at least one input for enabling, through the at least one output, the first switching circuit to reenable power to the microprocessor;

a plurality of first system controller outputs coupled to the microprocessor for communication of signals therebetween; and

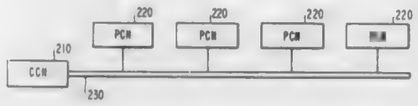
an individual signal driver coupled to each of the first system controller outputs and adapted for substantially inhibiting any power from the system controller to the microprocessor through the corresponding first system controller output between the time power to the microprocessor is disabled and the time power is reenabled.

5,390,351

SYSTEM FOR COMMUNICATING WITH PLURAL NODES IN PREDETERMINED INTERVALS DEPENDED ON INTEGERS ASSIGNED AND CHANGED BASED UPON CONFIGURATION THEREOF

Peter C. Di Giulio, Fairfield; James L. Harman, Southport; David K. Lee, Monroe, and Frederick W. Ryan, Jr., New Haven, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 6, 1992, Ser. No. 847,537
Int. Cl.[6] G06F *1/04, 13/00*
U.S. Cl. 395—725 9 Claims



1. A communications network comprising:

a) a plurality of control nodes for control of elements of a motion control system;

b) a central node for communication with each of said control nodes in accordance with a schedule; wherein,

c) said schedule comprises a sequence of equal, periodic time intervals; and,

d) for each of said control nodes an integer is associated in accordance with said schedule; wherein,

e) said central mode communicates with each particular one of said control nodes every nth of said intervals, where n is said integer associated with to said particular control node; and wherein,

f) said central node varies said integers and thereby correspondingly changes a frequency of communication with at least one of said control nodes, and wherein

g) said network further comprises means for providing said central node with configuration data, said configuration data comprising data which identifies each of said control nodes and its physical location in said network; and wherein,

h) said central node determines said schedule for communications with said control nodes in accordance with said configuration data.

5,390,352

VECTOR PROCESSING DEVICE COMPRISING A SINGLE SUPPLYING CIRCUIT FOR USE IN BOTH STRIDE AND INDIRECT VECTOR PROCESSING MODES

Koji Kinoshita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

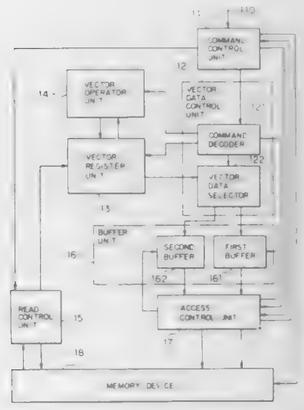
Filed Oct. 1, 1991, Ser. No. 768,040
Claims priority, application Japan, Oct. 2, 1990, 2-264139
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—800 4 Claims

1. A vector processing device, in combination with a memory device, selectively operable in a stride vector processing mode and an indirect vector processing mode, said vector processing device processing vector data into one of a stride memory input data and an indirect memory input signal including an indirect memory input data and an indirect address signal indicating a memory address of said memory device, said vector processing device comprising:

a command control unit for producing, in compliance with a program, an indirect register select signal and an indirect mode signal representative of said indirect vector processing mode, a stride register select signal and a stride mode signal representative of said stride vector processing mode, and a stride address signal indicating a memory address of said memory device;

vector register selecting means connected to said command control unit and a plurality of vector registers for selecting, in response to said indirect register select signal, first and second registers of said vector registers, to receive first and second selected data from said first and second registers, said vector register selecting means further selecting, in response to said stride register select signal, a third register of said vector registers, to receive a third selected data from said third register;

data holding means connected to said vector register selecting means for holding, as first, second and third held data, the first, second and third selected data received by said vector register selecting means; and



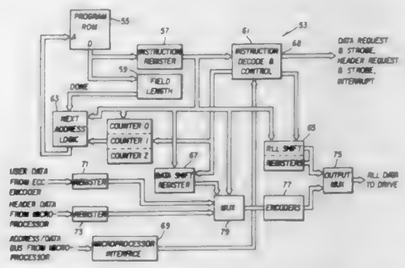
an access control unit connected to said memory device, said command control unit, and said data holding means for supplying, in response to said indirect mode signal, said first held data as said indirect address signal to said memory device and said second held data as said indirect memory input data to said memory address of said memory device that is indicated by said indirect address signal, said access control unit further supplying, in response to said stride mode signal, said stride address signal to said memory device and said third held data as said stride memory input data to said memory address of said memory device that is indicated by said stride address signal.

5,390,353

HARDWARE IMPLEMENTAL FIELD ORIENTED BIT STREAM FORMATTER FOR GENERATING USER PROGRAMMED DATA FORMATS

Robert E. Swanson, Del Mar, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 23, 1991, Ser. No. 704,556
Int. Cl.[6] G06F *7/00*
U.S. Cl. 395—800 8 Claims



1. A programmable formatter for formatting digital bit stream information from a cooperating microcomputer digital source, said formatter comprising:

an addressable memory having an address port and a data port for storing program instructions which define a data format,

a next state logic circuit for requesting a next program instruction from said addressable memory upon completion of execution of a current program instruction,

an instruction register for receiving and holding said current program instruction read out of said data port of said memory from a given address provided by said next state logic circuit;

a field state machine, coupled to said memory to receive instruction length information from said next state logic circuit, for indicating when said current program instruction has been completed and for requesting said next program instruction from said addressable memory be transferred to said instruction register;

instruction decoder, coupled to said instruction register to receive said current program instruction read out from said data port, for decoding said current program instruction;

a repetition counter, coupled to said instruction decoder, for counting a number of iterations of portions of said digital information as specified by said current program instruction;

a data register, coupled to said instruction decoder, for storing and outputting programmed data packets of said digital information as specified by said current program instruction;

said formatter further wherein each program instruction defines at least one of a field and field set of the data format, wherein a field set is a collection of fields of said digital information occurring in a specified order;

said formatter further wherein each program instruction includes a length portion for setting a length of each field, a content portion for indicating the content of each field, and a control portion for specifying a control for each program instruction; and

wherein the content portion of each program instruction specifies one of a defined internal pattern and a variable external pattern.

5,390,354

COMPUTERIZED DIRECTORY PAGINATION SYSTEM AND METHOD

Ruud de Heus, Amsterdam; Stephen Randall, JT Hilersum, both of Netherlands, and W. L. McDowell, Bedford, United Kingdom, assignors to ITT Corporation, Secaucus, N.J.

Filed Mar. 15, 1991, Ser. No. 670,255
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—800 4 Claims

1. A system for automatically paginating a printed directory having at least one directory page containing book items including reference listings, display advertisements and filler text of different sizes, shapes and permitted positions on the directory page, the system comprising a processing unit, a memory, input means for entering data including pre-formatted host-dependent data from which the type, height and width of each book item can be extracted, means for storing data, printing means, and a computer program containing a data formatting, a pre-pagination, a pagination, a cross-reference and a post-pagination module;

the data formatting module comprising a utility program which converts pre-formatted host-dependent data into input data which input data specifies the type, height and width of each book item;

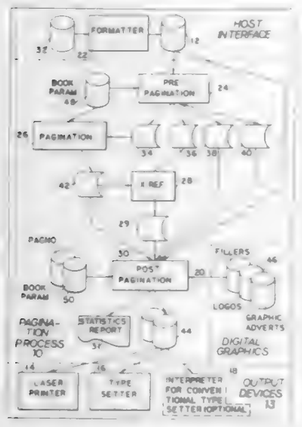
the pre-pagination module comprising a program which creates intermediate data files from the input data generated by the data formatting module which intermediate data files contain an abbreviated form of the input data, identification codes and size information on the display

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advertisements, and data on vertical separation between the book items and body height of the book items

the pagination module comprising a program which assigns a page location for each book item in the intermediate files generated by the pre-pagination module by performing a series of sorting operations on the intermediate data files based on stored pagination parameters so as to produce a paginated tabulated data file;

the cross-referencing module comprising a program which determines the relationships between the display advertisements and corresponding reference listings in the paginated tabulated data file using the intermediate data files; and



the post-pagination module comprising a program which prepares a final book layout of the printed directory using the intermediate data files by associating all of the paginated book items generated by the pagination module with their corresponding textual and graphic content;

wherein the processor executes intermediate data files to produce the final book layout of the printed directory and prints the directory.

5,390,355

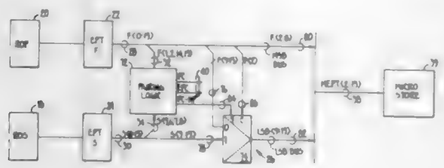
COMPUTER ARCHITECTURE CAPABLE OF CONCURRENT ISSUANCE AND EXECUTION OF GENERAL PURPOSE MULTIPLE INSTRUCTIONS

Robert W. Horst, Champaign, Ill., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 356,170, May 24, 1989, abandoned. This application May 27, 1992, Ser. No. 890,299

Int. Cl.[6] **G06F** *9/38*

U.S. Cl. 395—800 **3 Claims**



1. In a data processor that executes a target instruction set including a predetermined number of instructions, an improved instruction processing system that facilitates processing instructions at a rate of more than one instruction per clock, said system comprising;

an instruction fetch unit for fetching a plurality of instructions including a group of n, n being a predetermined integer, sequential instructions in a program where the number of possible groups that may be included in said plurality is the predetermined number raised to the nth power;

a pipeline, having a series of pipeline stages and coupled to said instruction fetch unit, said pipeline having resources, such as registers and an ALU, capable of singly executing each instruction in said target instruction set and capable of executing in parallel only a limited subset of all the possible groups of instructions so that the n instructions included in one of the groups in said limited subset can be issued from said instruction fetch unit to said pipeline during a single clock and can be retired by said pipeline during a single clock, and with at least one of said groups in said limited subset including multiple non-branching instructions with one of said non-branching instructions being a memory reference type of instruction;

a decoder, coupled to said instruction fetch unit and responsive to said fetched group of n instructions, for generating a plurality of decode result fields including status fields, each decode result field decoded from one of said instructions in a fetched group of n instructions and each status field indication resources required to execute a decoded instruction;

a conflict check unit, coupled to said decoder and responsive to said status fields decoded from said fetched group of instructions, for determining whether the simultaneous execution of said fetched group of instructions will cause a resource conflict and for asserting a control signal if no resource conflict will occur;

a grouping control unit, coupled to said decoder and to said pipeline and responsive to said control signal, for issuing said fetched group of n instructions to said pipeline during said single clock only if said control signal is asserted and said fetched group of instructions is one of said groups of instructions included in the limited subset of groups that can be executed in parallel; and

an execution unit, coupled to said decoder and said pipeline and responsive to said decode result fields, for controlling said pipeline to process an issued group of instructions and to advance said issued group through said pipeline stages.

5,390,356

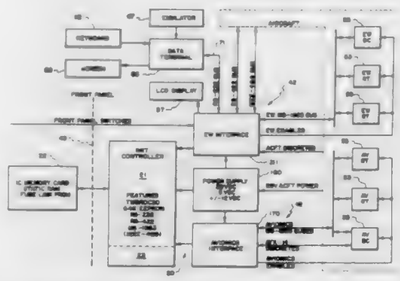
RAPID REPROGRAMMING TERMINAL

Christian L. Houlberg, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 878,704, May 5, 1992, Pat. No. 5,307,505. This application Jan. 11, 1994, Ser. No. 182,958

Int. Cl.[6] **G06F** *13/00*

U.S. Cl. 395—800 **11 Claims**



1. An apparatus for reprogramming a plurality of remote terminals and a plurality of bus controllers connected to a first communications bus, said first communications bus being a command/response time division multiplex data bus, said reprogramming apparatus interfacing with a second communications bus, said reprogramming apparatus comprising:

an integrated circuit memory card;

transceiver means for receiving data from said second communications bus and transmitting data to said second communications bus, said transceiver means formatting the data received thereby to a digital format, the data received from said second communications bus being used to reprogram said remote terminals and said bus controllers connected to said first communications bus;

digital signal processor means for providing a plurality of data transfer control signals, a plurality of address signals and a plurality of data bytes, said digital signal processor means having direct access to said integrated circuit memory card such that data to and from said second communications bus is transferred between said integrated circuit memory card and said second communications bus via said transceiver means and said digital signal processor means;

first programmed array logic means for receiving said data transfer control signals from said digital signal processor means and for decoding said data transfer control signals to control the transfer of data between said second communications bus and said integrated circuit memory card, said integrated circuit memory card storing said data therein;

said first programmed array logic means upon decoding said data transfer control signals generating at least one read signal and at least one write signal;

memory means electrically coupled to said digital signal processor means, said memory means containing software for said digital signal processor means, said software controlling the handling and interpretation of data to and from said first and second communications buses by enabling the operation of said digital signal processor means to accommodate the use of said digital signal processor means with the bus standards, data protocols and formats of said first and second communications buses;

second programmed array logic means for receiving at least one of said data transfer control signals and at least some of said address signals from said digital signal processor means, said second programmed array logic means decoding said data transfer control signals and said address signals received thereby to provide a transceiver select signal to enable said transceiver means, a plurality of interface select signals and a bus controller select signal;

programmed interface means for receiving at least two of said address signals and said data bytes from said digital signal processor means, said interface select signals from said second programmed array logic means and said read signal and said write signal from said first programmed array logic means;

said programmed interface means in response to said at least two address signals, said interface select signals, said data bytes, said read signal and said write signal selectively enabling either one of said remote terminals or one of said bus controllers for reprogramming; and

bus controller means for providing an interface between said digital signal processor means and said first communications bus, said bus controller means formatting the reprogramming data being supplied to said remote terminal or said bus controller being reprogrammed in accordance with the bus standards, data protocols and formats of said first communications bus;

said second programmed array logic means providing said bus controller select signal to said bus controller means enabling said bus controller means allowing said bus controller means to control the transfer of reprogramming data from said digital signal processor means via said first communications bus to said remote terminal or said bus controller being reprogrammed;

said digital signal processor controlling the transfer of reprogramming data from said integrated circuit memory card to said bus controller means.

5,390,357

POWER SAVING DIVERSITY RECEIVER

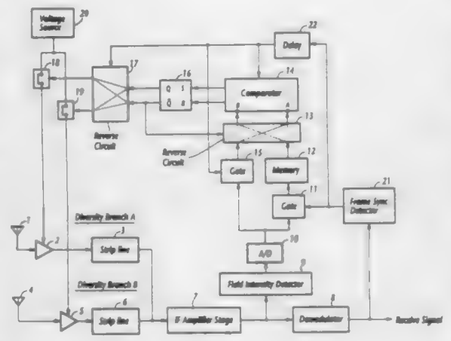
Hideaki Nobusawa, Tokyo, and Hideaki Tashiro, Kanagawa, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,317

Claims priority, application Japan, Aug. 28, 1991, 3-216789

Int. Cl.[6] **H04B** *7/08*

U.S. Cl. 455—134 **5 Claims**



1. A diversity receiver comprising:

first and second diversity branches for respectively receiving a transmitted radio-frequency signal, the diversity branches respectively having first and second high-frequency amplifiers for amplifying the received signal to produce first and second diversity branch output signals;

a diversity decision circuit coupled to said first and second diversity branches for generating a switching control signal identifying one of the first and second diversity branch output signals having a higher field intensity value than the other diversity branch output signal; and

power switch means for coupling a voltage source to one of the high-frequency amplifiers of the first and second diversity branches in response to said switching control signal so that one of said first and second diversity branches having a higher field intensity is rendered active and the other diversity branch having a lower field intensity is rendered inactive,

wherein said diversity decision circuit comprises:

field intensity detector means coupled to said first and second diversity branches to produce an intensity signal;

sampling pulse generator means for producing a first sampling pulse at periodic intervals and a second sampling pulse immediately following said first sampling pulse;

first sampling means responsive to said first sampling pulse for sampling the intensity signal and producing a first sampled signal;

second sampling means responsive to said second sampling pulse for sampling the intensity signal and producing a second sampled signal; and

comparator means for comparing the first and second sampled signals and producing therefrom said switching control signal,

said power switch means being responsive to said second sampling pulse for briefly deactivating the active diversity branch and briefly activating the inactive diversity branch.

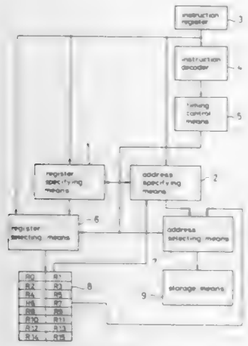
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ARITHMETIC UNIT THAT REQUIRES ONLY ONE BYTE INSTRUCTIONS

Koichi Sugino, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 915,493
Claims priority, application Japan, Jul. 18, 1991, 3-178249
Int. Cl.[6] G06F *9/302, 12/02*
U.S. Cl. 395—800 **1 Claim**



1. A data processing apparatus comprising:
an instruction register for receiving instructions,
a register having a plurality of storage areas,
a register specifying means for storing register numbers corresponding to separate ones of said storage areas,
a storage means for selectively storing and loading an information,
an address specifying means for storing an address information which specifies an address of said storage means,
a control unit comprising:
a decoder coupled to decode an instruction stored in said instruction register,
means, responsive to a first instruction that includes a register number, for storing said register number in said register specifying means and for maintaining said register number in said register specifying means until a new register number is stored therein,
means, responsive to a second instruction stored in said instruction register that does not include a register number therein, for executing the second instruction using the storage area corresponding to the register number stored in said register specifying means,
means, responsive to a third instruction that includes an address information, for storing said address information in said address specifying means and for maintaining said address information in said address specifying means until a new address information is stored therein, and
means, responsive to a fourth instruction stored in said instruction register that does not include an address information therein, for executing said fourth instruction using the address of said storage means corresponding to the address information stored in said address specifying means.

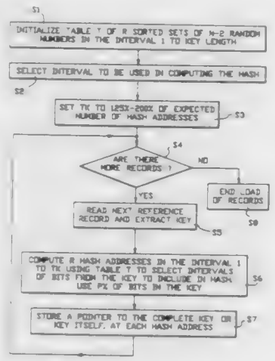
5,390,359

STORING AND RETRIEVING RECORDS IN A COMPUTER SYSTEM

Frederick J. Damerau, North Salem, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 20, 1992, Ser. No. 854,170
Int. Cl.[6] G06F *7/00*
U.S. Cl. 395—800 **6 Claims**

1. In a computer system, a method of determining whether records or edited versions thereof, are stored in said system, said method comprising:
whenever storing a first record in said system:
(a) selecting a first key for said record to be stored in said system;
(b) generating a plurality of first hash addresses from said first key by applying a hash function to a plurality of different subsets of said first key;
(c) storing said first key, or a pointer thereto, in each of said first hash addresses;
when determining whether a second record, or an edited version thereof, is stored in said system:



(d) generating a plurality of second hash addresses by applying said hash function to said plurality of different subsets of a second key for said second record which is to be checked as to whether it is stored in said system;
(e) comparing said second key with each key stored in or pointed to in said second hash addresses; and
(f) accepting said record as being stored in said system if said second key has a selected minimum number of elements which match elements in corresponding positions of any key stored in said second hash addresses.

5,390,360

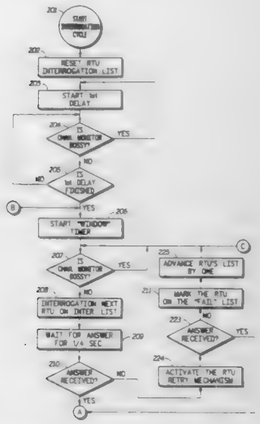
R.F. COMMUNICATION SYSTEM INTERROGATION APPARATUS AND METHOD

Shlomo Scop, Netanya, and Shmuel Katar, Tnuvot, both of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 17, 1992, Ser. No. 977,361
Claims priority, application United Kingdom, Dec. 23, 1991, 9127291
Int. Cl.[6] H01Q *9/00*
U.S. Cl. 455—34.2 **6 Claims**

1. A communication system comprising a primary unit, first and second secondary units for communicating with the primary unit over a radio channel and tertiary units for communicating with the secondary units over the channel, wherein
the primary unit comprises
means for transmitting a command to initiate contention and interrogation,
each secondary unit comprises
means for receiving said command to initiate contention and interrogation,
delay means responsive to reception of said command for delaying for a period of time selected from a set of time delays,
monitoring means for determining whether the channel is free,
transmitting means for executing an interrogation cycle by transmitting to at least one of the tertiary units if the channel is still free at the end of the selected delay period,

delay increase means for increasing the delay for the next transmission when an interrogation cycle is executed, and
delay decrease means for decreasing the delay for the next transmission when an interrogation cycle is not executed,



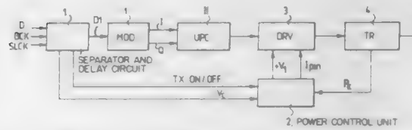
and wherein the time delays of the set of time delays of the first and second secondary units are different.

5,390,361

METHOD AND A DEVICE FOR CONTROLLING A RADIO TRANSMITTER

Seppo Seppälä, Oulu, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI92/00064, § 371 Date Nov. 3, 1992, § 102(e) Date Nov. 3, 1992, PCT Pub. No. WO92/16058, PCT Pub. Date Sep. 17, 1992
PCT Filed May 3, 1992, Ser. No. 945,653
Claims priority, application Finland, Mar. 6, 1991, 911135
Int. Cl.[6] H04B *1/02*
U.S. Cl. 455—126 **5 Claims**



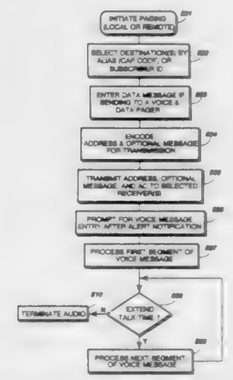
1. A method for controlling a radio transmitter that is alternately caused to assume an ON state, during which RF power is transmitted from an antenna thereof, and an OFF state in which said RF power is not transmitted from said antenna of said transmitter, for ensuring that a unit of data which is to be transmitted while said transmitter is operating in a respective instant of said ON state, is delayed from being supplied to the transmitter, until a level of said RF power being transmitted from the transmitter in the respective ON state instant is expected to have achieved a threshold level which is sufficient for adequately transmitting all of said unit of data,
said method comprising:
(a) for initiating each temporally successive transmission of a respective unit of data, sending towards an input of the transmitter, along respective circuitry effectively connected therewith,
(i) a data stream of the respective unit of data, and
(ii) a power control signal for causing the transmitter to terminate an existing OFF state instant thereof and, instead, assume an ON state instant thereof;
(b) after step (a) has been initiated, but before step (a) has resulted in the respective unit of data effectively reaching the transmitter via said respective circuitry for transmission by said transmitter, imposing a temporal delay on said data stream within said respective circuitry, of a sufficient magnitude that, when said data stream effectively reaches said transmitter, said transmitter has already achieved said threshold level and sufficient time remains for said transmitter to transmit all of the respective said unit of data before said transmitter next reverts to said OFF state thereof.

5,390,362

USER EXTENDIBLE VOICE TRANSMISSION PAGING SYSTEM AND OPERATING METHOD

Robert G. Modjeska, Boynton Beach; Donald L. Branner, Coral Springs, and Darrell Pfeffer, Delray Beach, all of Fla., assignors to Motorola, Schaumburg, Ill.

Filed Jun. 1, 1993, Ser. No. 69,791
Int. Cl.[6] H04Q *3/04*
U.S. Cl. 455—38.1 **13 Claims**



1. In a portable paging system for communicating a paging message to a selective call receiver, the paging message including a first portion comprising at least a selective call address and a first activation code, and a second portion comprising a first segment of an audio portion; a method for selectably extending the audio portion of the paging message comprises the steps of:
prompting an originator to request an extension of the second portion of the paging message, the extension including at least a second segment of the audio portion; and
extending the second portion of the paging message when the originator affirmatively requests the extension thereof and the extension of the second portion of the paging message:
does not exceed a predetermined number of extension requests; and
does not exceed a predetermined total broadcast time allocated for the second portion of the paging message.

5,390,363

TRANSMITTER AND RECEIVER CIRCUIT AND METHOD THEREFOR

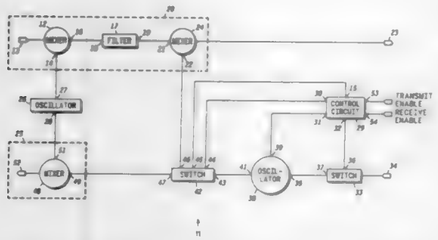
Vincent L. Mirtich, and John D. Hatchett, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1993, Ser. No. 54,479
Int. Cl.[6] H04B *1/44*
U.S. Cl. 455—87 **20 Claims**

1. A transmitter and receiver circuit comprising:
a first mixer including a first input, a second input and an output;
a first oscillator including a first output coupled to said second input of said first mixer and a second output;

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a second mixer including a first input coupled to said output of said first mixer, a second input, and an output;
a first switch including an input, a control input, and an output;
a second oscillator including an input coupled to said output of said first switch, a control input, and an output;
a second switch including an input coupled to said output of said second oscillator, a first control input, a second control input, a first output coupled to said second input of said second mixer, and a second output;
a third mixer including a first input coupled to said second



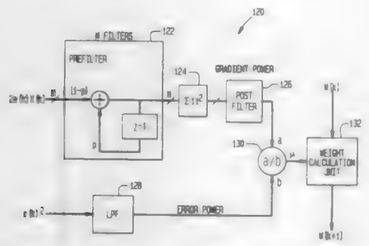
output of said second switch, a second input coupled to said second output of said first oscillator, and an output; and
a control circuit including a transmit enable input, a receive enable input, a first output coupled to said control input of said first switch, a second output coupled to said control input of said second oscillator, a third output coupled to said first control input of said second switch, and a fourth output coupled to said second control input of said second switch, whereby said control circuit enables and disables said first or second switch for transmitting or receiving a signal.

5,390,364

LEAST-MEAN SQUARES ADAPTIVE DIGITAL FILTER HAVINGS VARIABLE SIZE LOOP BANDWIDTH

Mark A. Webster, Palm Bay, and James C. Richards, Satellite Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Nov. 2, 1992, Ser. No. 970,115
Int. Cl.[6] H04B *15/00, 1/10;* **H03H** *7/30*
U.S. Cl. 455—52.3 **14 Claims**



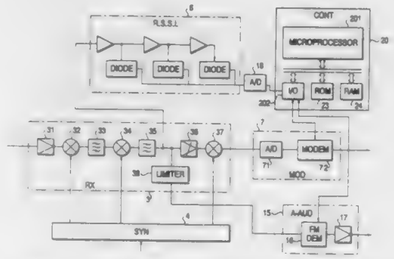
1. An apparatus for adjusting weights of an adaptive digital filter having outputs comprising:
a first low-pass filter, for low-pass filtering a signal indicative of a product of an error signal representative of a difference between actual and desired outputs of said adaptive digital filter and one or more input signals;
a squarer, for squaring an output of said first low-pass filter;
a second low-pass filter, for low-pass filtering an output of said squarer, so as to extract a D.C. component thereof;
a third low-pass filter, for low-pass filtering a signal indicative of a squared version of said error signal, so as to extract a D.C. component thereof;
a dividing unit, for dividing an output of said second low-pass filter by an output of said third low-pass filter, so as to provide a loop bandwidth signal; and
a weight calculation unit, for providing values for one or more weights of said adaptive digital filter according to previous values of said weights and a value of said loop bandwidth signal provided by said dividing unit.

5,390,365

RADIO COMMUNICATION APPARATUS HAVING A RECEIVED SIGNAL STRENGTH MEASURING FUNCTION

Masayuki Enoki, and Arata Obayashi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed May 20, 1992, Ser. No. 885,973
Claims priority, application Japan, May 20, 1991, 3-114923
Int. Cl.[6] H04B *7/00, 17/00*
U.S. Cl. 455—54.1 **6 Claims**



1. A radio communication apparatus for use in a dual mode cellular radio system wherein speech signals are selectively transmitted in an analog mode or a digital mode over a radio link established between a base station and the radio communication apparatus, the radio communication apparatus comprising:
receiving means for receiving radio frequency signals transmitted over the radio link;
measuring means, coupled to the receiving means, for measuring the strength of the radio frequency signals received by the receiving means and outputting an output signal corresponding to the measured strength of the radio frequency signals;
first storing means for storing first conversion data for digital mode signals;
second storing means for storing second conversion data for analog mode signals; and
calculating means coupled to the measuring means and selectively coupled to either of the first storing means or the second storing means for calculating a corrected received signal strength on the basis of the output signal and the first conversion data when the apparatus operates in the digital mode and for calculating a corrected received signal strength on the basis of the output signal and the second conversion data when the apparatus operates in the analog mode.

5,390,366

MOBILE COMMUNICATION SYSTEM

Teruaki Kasugai, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 26, 1992, Ser. No. 841,708
Claims priority, application Japan, Mar. 12, 1991, 3-072479; Mar. 12, 1991, 3-072481
Int. Cl.[6] H04B *1/00*
U.S. Cl. 455—56.1 **3 Claims**

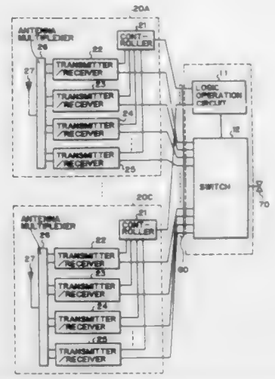
3. A method of allocating time slots of a radio control channel to a plurality of base stations which may communicate with a plurality of mobile stations, respectively, over said time slots, comprising the steps of:

(a) transmitting an idle signal from each of said base stations to the mobile stations in an allocated one of said time slots;

(b) sending back a registration signal from a particular one of said mobile stations to a particular one of said base stations from which said particular mobile station receives an idle signal with the strongest field intensity;

(c) upon receipt of said registration signal, registering said particular mobile station to said particular base station;

(d) repeating said steps of (a) to (c) to register each of the remaining mobile stations to appropriate ones of said base stations; and



(e) allocating said time slots to said base stations based on the number of mobile stations registered to each of said base stations.

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DESIGN PATENTS

GRANTED FEB. 14, 1995

ERRATA

For CLASS –	See PATENT NO.
D06–366	D 355,303
D16–339	D 355,358
D21–190	D 355,393
D21–190	D 355,394
D13–164	D 355,417
D24–143	D 355,455
D34–035	D 355,479
D34–001	D 355,511

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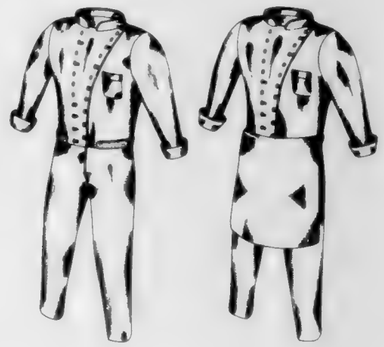
DESIGNS

FEBRUARY 14, 1995

355,294
BRASSIERE
Corina Bussey, and Constance Fletcher, both of 2405 Highbrooke Trail, Duluth, Ga. 30136
Filed Nov. 6, 1992, Ser. No. 1,205
Term of patent 14 years
U.S. Cl. D2—709



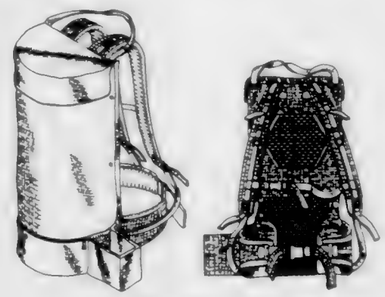
355,295
COMBINED JUMP SUIT AND APRON
Bruno Berni, Haus Mura, CH-7132 Vals, Switzerland
Filed Nov. 29, 1991, Ser. No. 809,076
Claims priority, application Switzerland, Mar. 29, 1990, 1041/90
Term of patent 14 years
U.S. Cl. D2—740



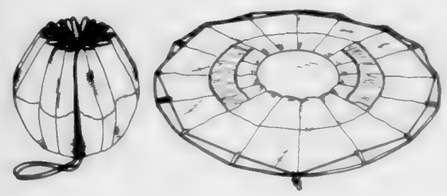
355,296
SHOE UPPER
Pamela S. Greene, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 27, 1994, Ser. No. 25,042
Term of patent 14 years
U.S. Cl. D2—970



355,297
BACKPACK FOR PORTABLE BEVERAGE DISPENSERS
William O. Ash, Jr., 2537 S. Gessner, Ste. 216, Houston, Tex. 77063
Filed Oct. 27, 1993, Ser. No. 14,665
Term of patent 14 years
U.S. Cl. D3—217

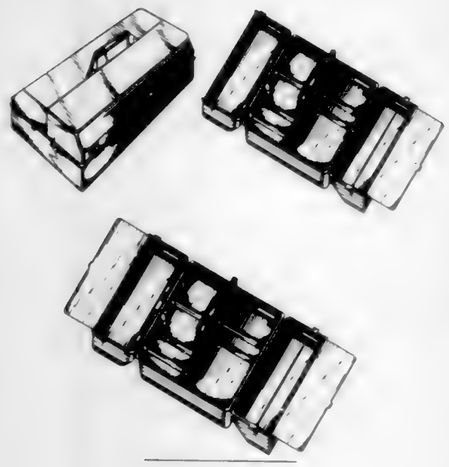


355,298
RECEPTACLE
Udo Beger, Oberndorfer Strasse 24a - 26a, 8300 Landshut, Germany
Filed Jan. 5, 1993, Ser. No. 3,445
Term of patent 14 years
U.S. Cl. D3—244

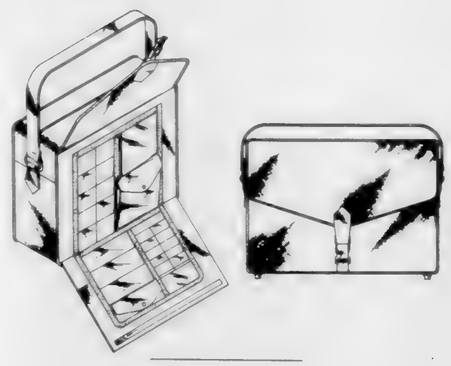


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355,299
COMPARTMENTED CARRYING CASE
James E. Lowden, P.O. Box 8148, Tyler, Tex. 75711
Filed Jul. 26, 1993, Ser. No. 11,058
Term of patent 14 years
U.S. Cl. D3—276



355,301
TRAVEL BAG
Lisa Tumulty, 2756 Macby Walk, Marietta, Ga. 30066
Filed Nov. 5, 1993, Ser. No. 14,972
Term of patent 14 years
U.S. Cl. D3—289



355,300
DUFFLE BAG
Trevor J. S. Smith, London; Victor Herbert; Judith Herbert, both of Nr. Clitheroe; Hillary Fuller, London, and Wendy Longbon, Hackbridge, all of England, assignors to Equator Group PLC, England
Filed Nov. 23, 1992, Ser. No. 1,804
Claims priority, application United Kingdom, May 29, 1992, 2023320
Term of patent 14 years
U.S. Cl. D3—287



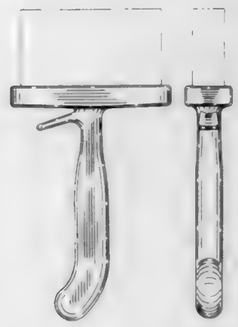
355,302
REMOTE CONTROL COVER
Shawn R. Eva, 1263 E. Crystal Ave., Salt Lake City, Utah 84106, and Myron R. McCallister, III, 3635 S. Mannway, West Valley City, Utah 84120
Filed Jan. 21, 1993, Ser. No. 3,938
Term of patent 14 years
U.S. Cl. D3—299



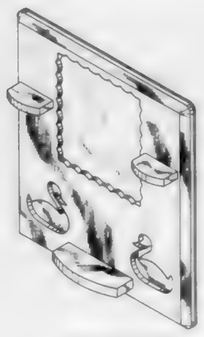
355,303
CHAIR
Robert M. Scheper, Grand Rapids; Dale M. Groendal, Jenison; James E. Abraham, Grandville; Thomas R. Hahn, Kentwood; Cheryl D. Baumgartner, East Grand Rapids; Douglas A. Smith, Grand Rapids, and Brian L. Scholten, Jenison, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed May 7, 1993, Ser. No. 8,030
Term of patent 14 years
U.S. Cl. D6—366



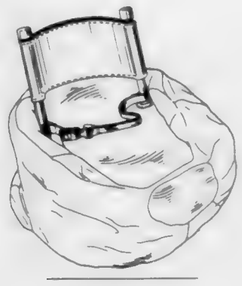
355,304
MASONRY BRUSH HANDLE
Richard K. Bukovitz, Orrville, and William P. Camp, Jr., Millersburg, both of Ohio, assignors to The Wooster Brush Company, Wooster, Ohio
Filed Jul. 1, 1993, Ser. No. 10,212
Term of patent 14 years
U.S. Cl. D4—138



355,305
COMBINED PICTURE FRAME AND SHELF UNIT
James S. Pruitt, 212 S. Wolfe St., Baltimore, Md. 21231
Filed Feb. 16, 1993, Ser. No. 4,897
Term of patent 14 years
U.S. Cl. D6—303



355,306
INFANT SUPPORT CHAIR
Lori F. Moses, 2782 Buckhorn Oaks Dr., Valrico, Fla. 33594-4201
Filed Jul. 6, 1993, Ser. No. 10,425
Term of patent 14 years
U.S. Cl. D6—333



355,307
CHAIR
Stefano Levrangi, Via Mocenigo, Italy, assignor to Fast S.p.A., Brescia, Italy
Filed Feb. 24, 1993, Ser. No. 5,123
Claims priority, application Italy, Aug. 27, 1992, BS920000023
Term of patent 14 years
U.S. Cl. D6—368

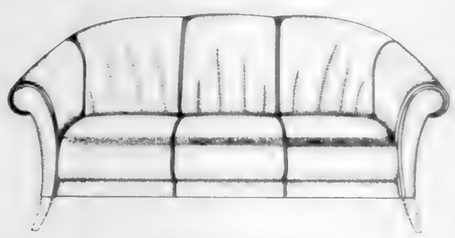


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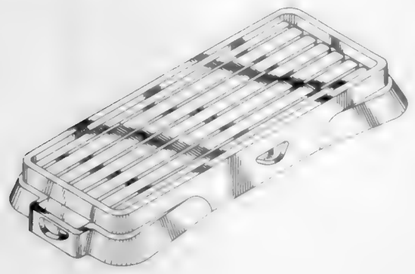
355,308
OFFICE CHAIR
Conrad M. Marini, Woodbridge, Canada, assignor to Curtis Products Corp., Coburg, Canada
Filed Oct. 27, 1993, Ser. No. 14,598
Claims priority, application Canada, Jun. 25, 1993, 250693
Term of patent 14 years
U.S. Cl. D6—379



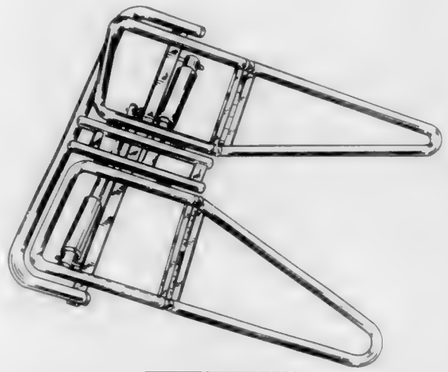
355,309
SOFA
Pasquale Natuzzi, Santeramo In Colle, and Arcangelo Scarati, Talsano, both of Italy, assignors to Industrie Natuzzi, Spa, Bari, Italy
Filed Dec. 14, 1993, Ser. No. 16,415
Term of patent 14 years
U.S. Cl. D6—381



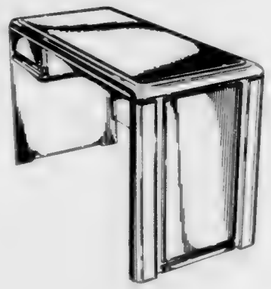
355,310
CHILD'S COT
Leon Walker, 4819 S. Greenwood Ave., Chicago, Ill. 60615
Continuation of Ser. No. 4,470, Feb. 5, 1993, abandoned. This application Jan. 31, 1994, Ser. No. 18,153
Term of patent 14 years
U.S. Cl. D6—382



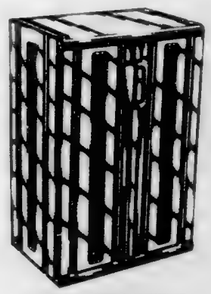
355,311
ADJUSTABLE BED FRAME
Øivind Bergersen, Kleiva 20, N-1800 Askim, Norway
Filed Jul. 14, 1993, Ser. No. 10,700
Claims priority, application Norway, Mar. 10, 1993, 930195
Term of patent 14 years
U.S. Cl. D6—392



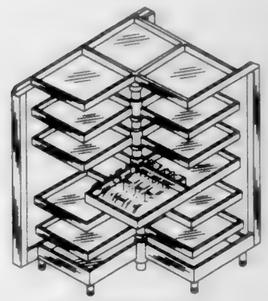
355,312
DESK
Stacy L. Wolff, Akron, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 5, 1993, Ser. No. 3,207
Term of patent 14 years
U.S. Cl. D6—422



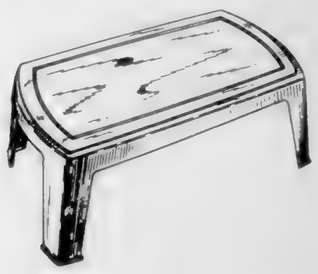
355,313
CABINET
John D. Breen; Russell P. Mottmiller, and Erik L. Skov, all of Wooster, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 8, 1993, Ser. No. 3,474
Term of patent 14 years
U.S. Cl. D6—446



355,314
THREE QUADRANT ROTARY STORAGE UNIT
Thomas N. R. Travis, 2086 Grills Rd., Newbern, Tenn. 38059
Continuation of Ser. No. 937,180, Aug. 31, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 13,573
Term of patent 14 years
U.S. Cl. D6—476



355,315
COFFEE TABLE
Glenn T. Walters, Port Washington, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.
Filed Sep. 30, 1993, Ser. No. 13,700
Term of patent 14 years
U.S. Cl. D6—484



355,316
TABLE
Elizabeth C. Kellen, Santa Monica, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 21, 1993, Ser. No. 16,657
Term of patent 14 years
U.S. Cl. D6—484

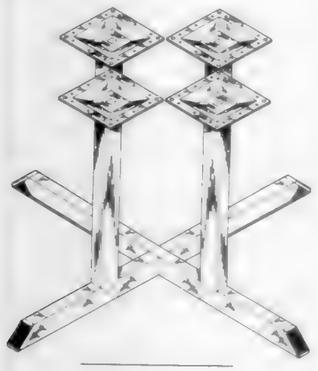


355,317
TABLE BASE CONSTRUCTION
David R. Gutgsell, Jasper, Ind., assignor to Ditto Sales, Jasper, Ind.
Filed Sep. 8, 1993, Ser. No. 12,705
Term of patent 14 years
U.S. Cl. D6—495

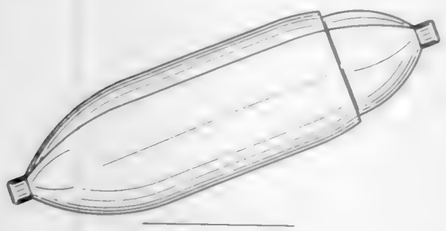


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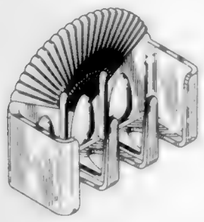
355,318
TABLE BASE CONSTRUCTION
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Filed Sep. 8, 1993, Ser. No. 12,717
Term of patent 14 years
U.S. Cl. D6—498



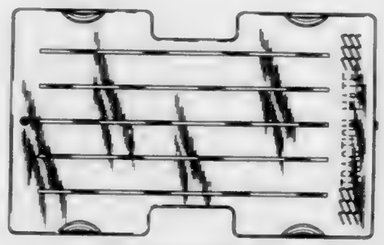
355,319
SPINDLE FOR A TOILET ROLL HOLDER
Roger T. Ng, Central, Hong Kong, assignor to Stace Industries, Ltd., Hong Kong
Filed Oct. 27, 1993, Ser. No. 14,619
Claims priority, application United Kingdom, Apr. 29, 1993, 2030766
Term of patent 14 years
U.S. Cl. D6—523



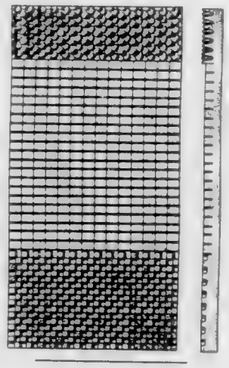
355,320
SOAP HOLDER
Dan A. Jauregui, P.O. Box 1945, Ramona, Calif. 92065
Filed Dec. 23, 1993, Ser. No. 16,738
Term of patent 14 years
U.S. Cl. D6—540



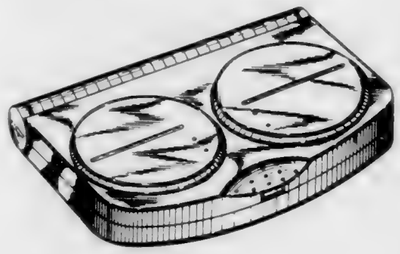
355,321
TRACTION MAT
Stephen S. Giles, HC 64 Box 723, Wilmot Flat, N.H. 03287
Filed Jan. 12, 1994, Ser. No. 17,390
Term of patent 14 years
U.S. Cl. D6—582



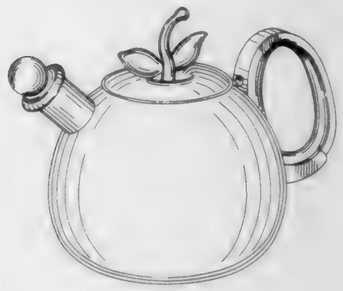
355,322
TRI-ZONE MATTRESS OVERLAY
Robert E. Ackley, Greenville, and Richard W. Raburn, Simpsonville, both of S.C., assignors to Span-America Medical Systems, Inc., Greenville, S.C.
Filed Dec. 3, 1993, Ser. No. 16,008
Term of patent 14 years
U.S. Cl. D6—596



355,323
COMPACT DISC CASE
Thomas J. Melk, Chicago, Ill., assignor to Outer Circle Products, Ltd., Chicago, Ill.
Filed Jun. 25, 1993, Ser. No. 10,035
Term of patent 14 years
U.S. Cl. D6—632



355,324
TEA KETTLE
Sam Lebowitz, New York, N.Y., assignor to Wilton Industries, Inc., Woodridge, Ill.
Filed Nov. 18, 1992, Ser. No. 1,618
Term of patent 14 years
U.S. Cl. D7—302



355,325
TEA KETTLE
Sam Lebowitz, New York, N.Y., assignor to Wilton Industries, Inc., Woodridge, Ill.
Filed Nov. 18, 1992, Ser. No. 1,619
Term of patent 14 years
U.S. Cl. D7—302



355,326
TEA KETTLE
Sam Lebowitz, New York, N.Y., assignor to Wilton Industries, Inc., Woodridge, Ill.
Filed Nov. 18, 1992, Ser. No. 1,632
Term of patent 14 years
U.S. Cl. D7—302



355,327
TEA KETTLE
Sam Lebowitz, New York, N.Y., assignor to Wilton Industries, Inc., Woodridge, Ill.
Filed Dec. 2, 1992, Ser. No. 2,114
Term of patent 14 years
U.S. Cl. D7—302



355,328
TEA KETTLE
Sam Lebowitz, New York, N.Y., assignor to Wilton Industries, Inc., Woodridge, Ill.
Filed Jan. 25, 1993, Ser. No. 4,028
Term of patent 14 years
U.S. Cl. D7—302

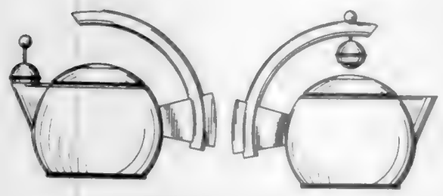


355,329
COFFEE-POT
Roland Ullmann, Offenbach-Rumpenheim, Germany, assignor to Braun Aktiengesellschaft, Germany
Filed Mar. 2, 1993, Ser. No. 5,340
Claims priority, application Germany, Sep. 3, 1992, DMA/001892
The portion of the term of this patent subsequent to Jan. 31, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—317

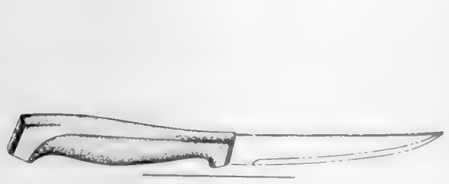


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355,330
KETTLE
Lutz Gebhardt, Immensee, Switzerland, assignor to AMC International Alfa Metalcraft Corporation AG, Switzerland
Filed Sep. 8, 1993, Ser. No. 12,720
Claims priority, application WIPO, Mar. 31, 1993, DM/025672
Term of patent 14 years
U.S. Cl. D7—318



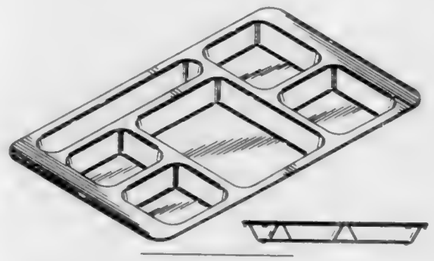
355,331
CUTLERY HANDLE
Grahame D. Rich, Millhouses, England, assignor to McPherson's Limited, Victoria, Australia
Filed Dec. 21, 1992, Ser. No. 2,825
Claims priority, application United Kingdom, Jun. 30, 1992, 2023946
Term of patent 14 years
U.S. Cl. D7—401.2



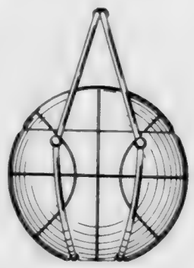
355,332
BEVERAGE CONTAINER FOR A BICYCLE
William G. Landivar, and Cynthia M. Landivar, both of 1390 Cabrillo Highway North, Half Moon Bay, Calif. 94019
Filed Jun. 8, 1993, Ser. No. 9,196
Term of patent 14 years
U.S. Cl. D7—510



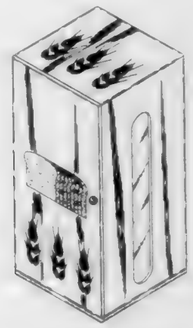
355,333
MULTI-COMPARTMENT FOOD SERVICE TRAY
Argyle Campbell, Newport Beach, Calif., assignor to Cambro Manufacturing Company, Huntington Beach, Calif.
Filed Jan. 7, 1994, Ser. No. 17,233
Term of patent 14 years
U.S. Cl. D7—553



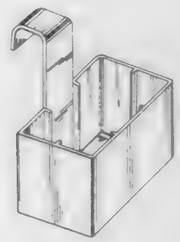
355,334
SPORTS COOLER
Craig S. Minor, 77 Maitland Place, Suite 723, Toronto, Ontario, Canada M4Y 2V6
Filed Mar. 22, 1993, Ser. No. 6,152
The portion of the term of this patent subsequent to Jul. 26, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—606



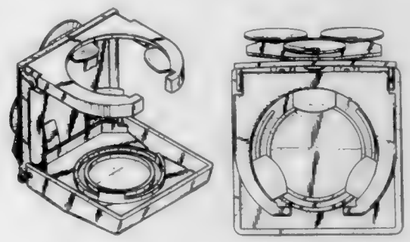
355,335
BREAD HOLDER
Sun C. Blount, 912 Jamestown Rd., Colonial Heights, Va 23834, and Jeffrey S. Blount, Colonial Heights, Va, assignors to Sun C. Blount, Colonial Heights, Va.
Filed Jun. 14, 1991, Ser. No. 715,216
Term of patent 14 years
U.S. Cl. D7—609



355,336
HOLDER FOR RECTANGULAR BEVERAGE CONTAINERS
Trent S. Dickey, 968 Spring Run La., Martinsville, N.J. 08836, and Leon N. Costa, 40 Pleasant Run, Skillman, N.J. 08558
Filed Jul. 22, 1993, Ser. No. 12,606
Term of patent 14 years
U.S. Cl. D7—620



355,337
COLLAPSIBLE CLAMP-ON DRINK CADDY
Kenneth D. Eisenbraun, Birmingham, and Kenneth J. Williamson, New Baltimore, both of Mich., assignors to United Industrial Trading Corp., Troy, Mich.
Filed Oct. 13, 1993, Ser. No. 14,137
Term of patent 14 years
U.S. Cl. D7—620



355,338
FIGURE CAN HOLDER
Robert A. DeMars, Woodland Hills, Calif., assignor to Original Ideas, Inc., Calabasas, Calif.
Division of Ser. No. 7,408, Apr. 22, 1993. This application Aug. 9, 1994, Ser. No. 26,914
Term of patent 14 years
U.S. Cl. D7—623

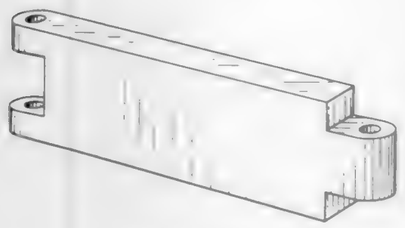


355,339
TOOL FOR SEPARATING THE CORE, RIND AND FLESH OF A FRUIT
Antonius P. Aulbers, Delft; Bernard W. Been, Den Haag; Paul I. d'Hond, Zwijndrecht, and German E. Knoppers, De Zweth, all of Netherlands, assignors to Vacu-Products B.V., Delft, Netherlands
Filed May 6, 1993, Ser. No. 9,602
Term of patent 14 years
U.S. Cl. D7—696



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355,340
LANDSCAPE LOG
Harry W. Scott, Jr., Dover; Randall W. Britt; Kenneth L. Renfroe, both of Russellville, and Robert L. Ramsey, Morrilton, all of Ark., assignors to Thompson Industries, Inc., Russellville, Ark.
Continuation-in-part of Ser. No. 577,599, Sep. 4, 1990, abandoned. This application Feb. 2, 1993, Ser. No. 4,329
Term of patent 14 years
U.S. Cl. D8—1



355,341
FRUIT PICKER
Moritz C. Canha, III, 35386 Moravian, Sterling Heights, Mich. 48312
Filed Jan. 26, 1994, Ser. No. 17,937
Term of patent 14 years
U.S. Cl. D8—1



355,342
TOOL HANDLE
John B. Davidson, Chicago, Ill.; Peter M. Roberts, Chattanooga, Tenn., and Kenneth Svetlik, Schaumburg, Ill., assignors to Roberts Tool International (USA), Inc., Chicago, Ill.
Filed Sep. 9, 1993, Ser. No. 12,766
Term of patent 14 years
U.S. Cl. D8—25



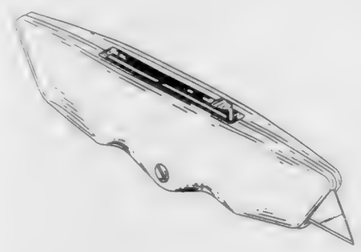
355,343
SOCKET FOR REMOVING THERMOL VALVES
Albert Gliddings, Jr., P.O. Box 1858, 800 Chetco Ave., Brookings, Oreg. 97415
Filed May 3, 1993, Ser. No. 7,796
Term of patent 14 years
U.S. Cl. D8—29



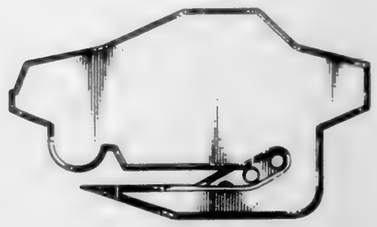
355,344
CAST CUTTER HANDPIECE
John T. Matthai; Richard F. Huyser, both of Kalamazoo, and Kris D. Enger, Richland, all of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.
Continuation of Ser. No. 8,798, May 26, 1993, abandoned. This application May 10, 1994, Ser. No. 22,640
Term of patent 14 years
U.S. Cl. D8—66



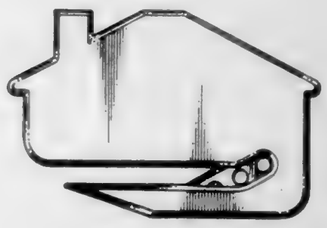
355,345
RETRACTABLE BLADE UTILITY KNIFE
Norbert F. Drust, 461 West Hatmaker, Bronson, Mich. 49028
Filed Nov. 29, 1993, Ser. No. 15,746
Term of patent 14 years
U.S. Cl. D8—99



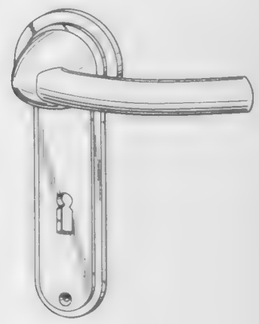
355,346
LETTER OPENER
G. Gerry Schmidt, Newport Beach, Calif., assignor to Pacific Handy Cutter, Inc., Costa Mesa, Calif.
Filed May 12, 1993, Ser. No. 8,254
Term of patent 14 years
U.S. Cl. D8—103



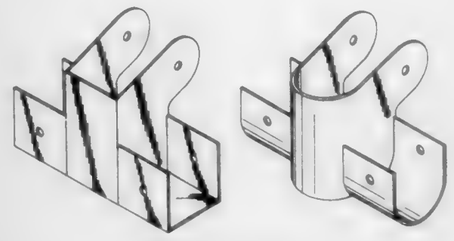
355,347
LETTER OPENER
Robert B. Wenk, Huntington Beach, Calif., assignor to Pacific Handy Cutter, Inc., Costa Mesa, Calif.
Filed May 17, 1993, Ser. No. 8,473
Term of patent 14 years
U.S. Cl. D8—103



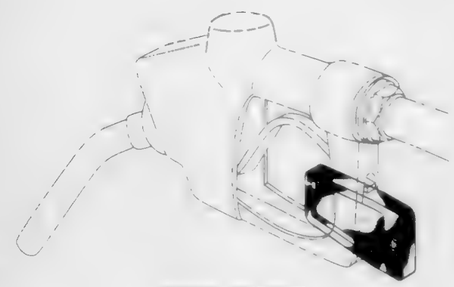
355,348
DOOR HANDLE
Franz W. Jans, Roedermark, Germany, assignor to JADO Hardware and Bathroom Manufacturing Co., Camarillo, Calif.
Division of Ser. No. 8,677, May 19, 1993, Pat. No. Des. 349,228. This application Apr. 19, 1994, Ser. No. 21,574
Term of patent 14 years
U.S. Cl. D8—301



355,349
BRACKET FOR TUBULAR MEMBERS
William J. Taparauskas, Jr., 1710 Mabry Mill, Houston, Tex. 77062
Filed Apr. 22, 1993, Ser. No. 7,422
Term of patent 14 years
U.S. Cl. D8—349



355,350
PORTABLE GAS NOZZLE TRIGGER ACCESSORY
Eugene E. Frakes, 3918 Sheffield Ave., Hammond, Ind. 46327
Filed May 24, 1993, Ser. No. 8,638
Term of patent 14 years
U.S. Cl. D8—354



355,351
TUBING HOLDER
Burrell E. Clawson, 2425 Sunset Dr., and James Weigl, 18815 Hermosa St., both of, Riverside, Calif. 92506
Filed Jun. 29, 1993, Ser. No. 10,128
Term of patent 14 years
U.S. Cl. D8—356

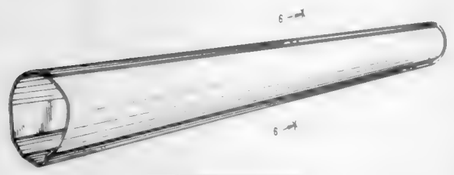


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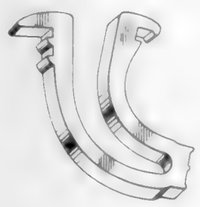
355,352
CLEAT FOR BOATS
Warwick M. Whitley, II, Lynn Haven, Fla., assignor to Attwood Corporation, Lowell, Mich.
Filed Aug. 26, 1993, Ser. No. 12,257
Term of patent 14 years
U.S. Cl. D8—356



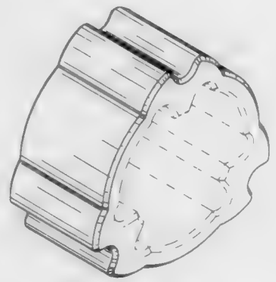
355,353
AWNING HOUSING
Carlo M. Pozzi, Ruvigliana, Switzerland, assignor to Fiamma S.P.A., Cardano, Italy
Filed Mar. 12, 1993, Ser. No. 5,827
Claims priority, application European Pat. Off., Mar. 6, 1992, 92401505.0
Term of patent 14 years
U.S. Cl. D8—377



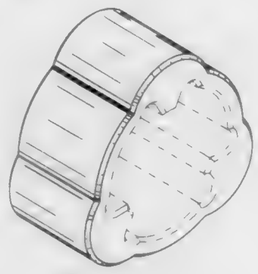
355,354
CLIP FOR FIXING DIFFUSER FRAMES INTO CEILINGS
Edward P. Sterling, Templestone, Australia, assignor to Elizabeth Sterling, Templestone, Australia
Filed Mar. 18, 1992, Ser. No. 854,466
Claims priority, application Australia, Sep. 19, 1991, 2836/91
Term of patent 14 years
U.S. Cl. D8—382



355,355
EXTERNAL SURFACE OF A SPLINED NUT
Paul B. Campbell, Roanoke, and Robert R. Kimberlin, Troutville, both of Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Oct. 9, 1992, Ser. No. 338
Term of patent 14 years
U.S. Cl. D8—397



355,356
AN EXTERNAL SURFACE OF A SPLINED NUT
Paul B. Campbell, Roanoke, and Robert R. Kimberlin, Troutville, both of Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Division of Ser. No. 000,338, Oct. 9, 1992. This application Feb. 17, 1994, Ser. No. 18,962
Term of patent 14 years
U.S. Cl. D8—39.7



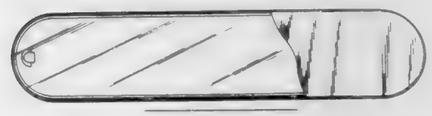
355,357
BOTTLE
Harry A. Ledowsky, 4 Wollombi Road, North Bridge, N.S.W., Australia
Filed Dec. 10, 1993, Ser. No. 16,228
Term of patent 14 years
U.S. Cl. D9—332



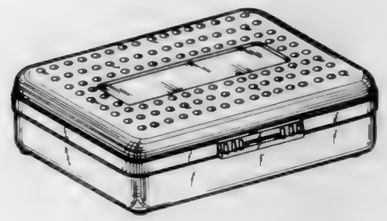
355,358
EYEGLASS FLOTATION DEVICE
Steven Starr, Rte. 1, Box 403, New Bloomfield, Mo. 65063; Curtis W. Shipley, 7514 Rte. M., Jefferson City, Mo. 65101, and Scott W. Baker, 2223 Tannerbridge Rd., Jefferson City, Mo. 65109
Filed Sep. 10, 1993, Ser. No. 12,783
Term of patent 14 years
U.S. Cl. D16—339



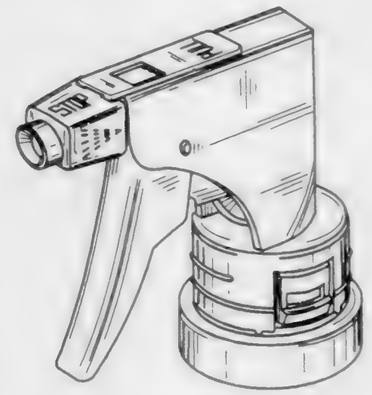
355,359
WRISTWATCH BOX
Jack L. Herzog, 5702 Durocher Street, Montreal, Canada H2V 3Y2
Filed Nov. 10, 1993, Ser. No. 15,188
Term of patent 14 years
U.S. Cl. D9—422



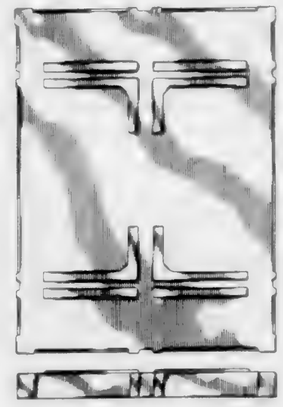
355,360
STORAGE BOX
John W. Mund, Fox Lake, Wis.; Cari Burns; Robert Chieda, both of Wheaton, Ill.; Leon C. Clouser, Jr., Lombard, Ill., and Robert A. O'Neil, Glen Ellyn, Ill., assignors to Sterling Plastics Co., Madison, Wis.
Filed Jun. 22, 1993, Ser. No. 9,797
Term of patent 14 years
U.S. Cl. D9—423



355,361
SPRAYER
Emile B. Steijns, Lierop, and Wilhelmus J. J. Maas, Someren, both of Netherlands, assignors to AFA Products, Inc., Forest City, N.C.
Division of Ser. No. 840,777, Feb. 24, 1992, Pat. No. Des. 346,547. This application Oct. 1, 1993, Ser. No. 13,793
Term of patent 14 years
U.S. Cl. D9—448



355,362
PAPERBOARD STACK COVER
Eugene F. Clift, Yorba Linda, Calif., assignor to The Upper Deck Company, Carlsbad, Calif.
Filed Feb. 22, 1993, Ser. No. 5,225
Term of patent 14 years
U.S. Cl. D9—456

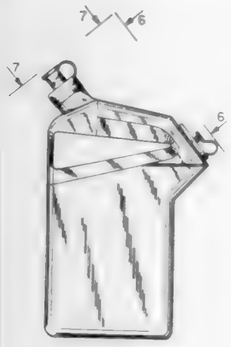


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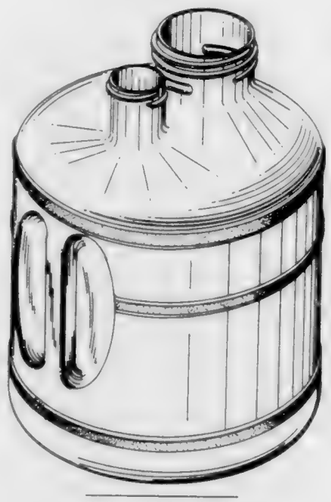
355,363
BOTTLE
John K. Iorii, Caledon, Canada, and Ashok K. Sethi, Ridgefield, Conn., assignors to American National Can Company, Chicago, Ill.
Filed Oct. 15, 1992, Ser. No. 461
Term of patent 14 years
U.S. Cl. D9—521



355,364
SPLASHLESS LIQUID POURING CONTAINER
Donald H. Schmitt, P.O. Box 53, St. Cloud, Minn. 56302
Continuation-in-part of Ser. No. 801,116, Dec. 2, 1991, Pat. No. Des. 333,980. This application Jun. 15, 1992, Ser. No. 898,758
Term of patent 14 years
U.S. Cl. D9—524



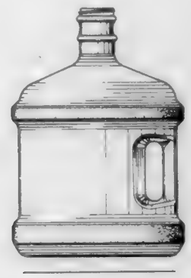
355,365
BOTTLE
Guy L. Charbonneau, 654 Merton, St-Lambert, Quebec, Canada J4P 2X3, and H. Alan Bowler, 1200 Walden Circle, #73 Mississauga, Ontario, Canada L5J 4J9
Continuation-in-part of Ser. No. 621,546, Dec. 3, 1990, Pat. No. Des.338,405. This application Aug. 16, 1993, Ser. No. 11,884
Term of patent 14 years
U.S. Cl. D9—524



355,366
CONTAINER
Michael C. Bainton, Coventry, England, assignor to Imperial Chemical Industries PLC, London, United Kingdom
Filed Sep. 17, 1991, Ser. No. 760,455
Claims priority, application United Kingdom, Mar. 22, 1991, 2013762
Term of patent 14 years
U.S. Cl. D9—532



355,367
BOTTLE
B. Joseph Rokus, Arcadia, Calif., assignor to Reid Plastics, Inc., Arcadia, Calif.
Filed Aug. 10, 1993, Ser. No. 11,578
Term of patent 14 years
U.S. Cl. D9—531



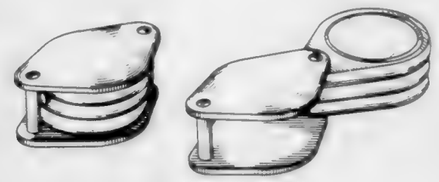
355,368
FLUTED CONTAINER WALL
Robert J. Gruodis, Palos Heights, Ill., assignor to Crown Cork & Seal Company, Oak Brook, Ill.
Filed Sep. 18, 1992, Ser. No. 948,905
Term of patent 14 years
U.S. Cl. D9—556



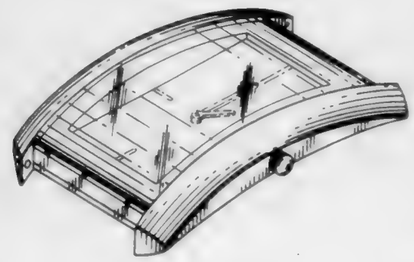
355,369
BOTTLE
Doug M. Lund, Cordova, Tenn.; Nicolas D. Pattison, London, and Stephen J. Morgan, Bedfordshire, both of United Kingdom, assignors to Intellectual Property Holding Co., Wilmington, Del.
Filed Aug. 27, 1992, Ser. No. 935,746
Term of patent 14 years
U.S. Cl. D9—558



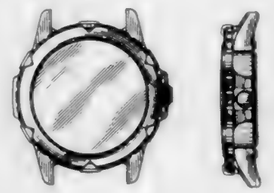
355,370
CLOCK
Jean-Pierre Chodat, Anvernier, Switzerland, assignor to Ebel S.A., Switzerland
Filed Dec. 17, 1994, Ser. No. 810,764
Claims priority, application WIPO, Jun. 19, 1991, DM/019 929
Term of patent 14 years
U.S. Cl. D10—30



355,371
WRISTWATCH CASE
Florian Strasser, Meinisberg, Switzerland, assignor to North American Watch Corporation, Lyndhurst, N.J.
Filed Feb. 5, 1993, Ser. No. 4,461
Term of patent 14 years
U.S. Cl. D10—30

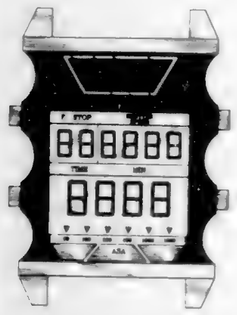


355,372
WRISTWATCH CASE
Judith Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Oct. 29, 1992, Ser. No. 914
Term of patent 14 years
U.S. Cl. D10—30



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355,373
COMBINED WRISTWATCH AND PHOTOGRAPHIC TIMER
Kim D. Knight, 172 Main St., Gorham, Me. 04038
Filed Feb. 11, 1993, Ser. No. 4,703
Term of patent 14 years
U.S. Cl. D10—30



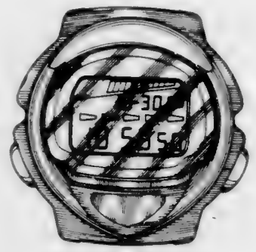
355,374
WATCH
Ernest Schneider, Evilard, Switzerland, assignor to Breitling Montres SA, Geneva, Switzerland
Filed Nov. 30, 1992, Ser. No. 2,144
Claims priority, application Hague Agreement, Jun. 24, 1992, DM/023153
Term of patent 14 years
U.S. Cl. D10—32



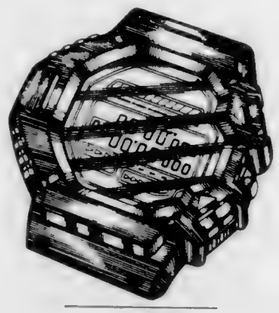
355,375
BELT WATCH
Bernard B. Bandy, II, 1798 Isabel Rd. Este, Boca Raton, Fla. 33486
Filed May 21, 1993, Ser. No. 8,573
Term of patent 14 years
U.S. Cl. D10—32



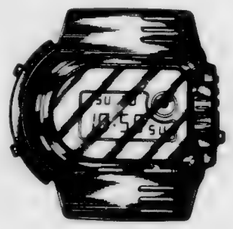
355,376
WRIST WATCH
Toshio Nakai, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 1,861
Term of patent 14 years
U.S. Cl. D10—38



355,377
WRIST WATCH
Takashi Morishima, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1992, Ser. No. 2,900
Term of patent 14 years
U.S. Cl. D10—38



355,378
WRIST WATCH
Shigeru Hanagata, Kawasaki, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1992, Ser. No. 2,901
Term of patent 14 years
U.S. Cl. D10—38



355,379
WRIST WATCH
Shigeru Hanagata, Kawasaki, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1992, Ser. No. 2,907
Term of patent 14 years
U.S. Cl. D10—38



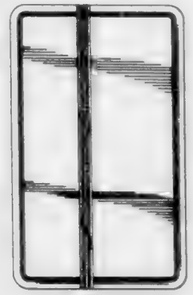
355,380
WRIST WATCH
Toshio Nakai, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 1,860
Term of patent 14 years
U.S. Cl. D10—39



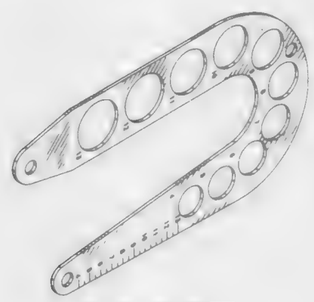
355,381
WRISTWATCH
Christopher Reich, Krattenturmstrasse 4, CH-8006 Zurich, Switzerland
Filed Jan. 25, 1993, Ser. No. 4,007
Claims priority, application WIPO, Jul. 24, 1992, DMA/001851
Term of patent 14 years
U.S. Cl. D10—39



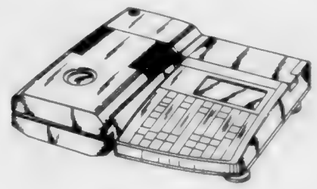
355,382
TEMPERATURE CONTROLLING DEVICE
Scott B. Long, and Michael T. Harkins, both of Portland, Oreg., assignors to Peco, Inc., Portland, Oreg.
Filed Sep. 20, 1993, Ser. No. 13,194
Term of patent 14 years
U.S. Cl. D10—49



355,383
COMBINATION FINGER AND RING SIZING DEVICE
Stephen A. Round, Foster, R.I., assignor to S. Rounds Inc., No. Scituate, R.I.
Division of Ser. No. 9,077, Jun. 3, 1993, Pat. No. Des. 349,655.
This application Apr. 15, 1994, Ser. No. 21,403
Term of patent 14 years
U.S. Cl. D10—64

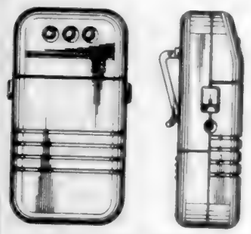


355,384
COMBINED WEIGHING AND DRYING APPARATUS
Rémy Jacquet, Le Locle, and Yves Marmier, La Chaux-de-Fonds, both of Switzerland, assignors to Mettler-Toledo AG, Greifensee, Switzerland
Filed Dec. 8, 1993, Ser. No. 16,138
Term of patent 14 years
U.S. Cl. D10—88

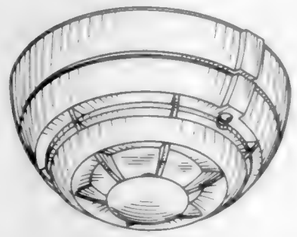


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355,385
BABY MONITOR RECEIVER
Randy L. Abrams, Leominster, Mass., assignor to Safety 1st, Inc., Chestnut Hill, Mass.
Filed May 17, 1994, Ser. No. 23,040
Term of patent 14 years
U.S. Cl. D10—104

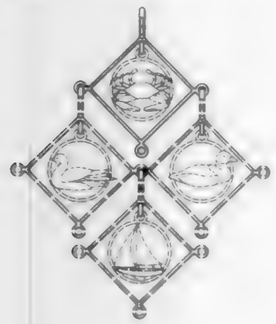


355,386
FIRE DETECTOR
Hansruedi Fellmann, Wangen/Dübendorf, Switzerland, assignor to Cerberus AG, Männedorf, Switzerland
Filed Sep. 23, 1993, Ser. No. 13,392
Claims priority, application WIPO, Mar. 24, 1993, DMA/002097
Term of patent 14 years
U.S. Cl. D10—106



D 355,387
Patent Not Issued For This Number

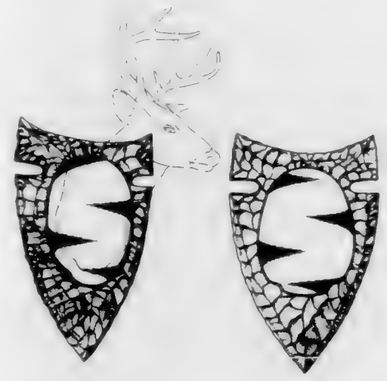
355,388
PENDANT
Barbara B. Barrow, 208 Reservoir Rd., Perryville, Md. 21903
Filed Oct. 18, 1993, Ser. No. 14,324
Term of patent 14 years
U.S. Cl. D11—79



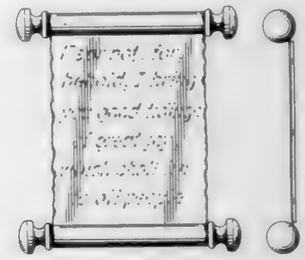
355,389
WATER DROP SHAPED GLASS BALL
Mao-Hsiung Wang, Ta-Chi 36, Pao-Shan Hsiang, Hsinchu Hsien, Taiwan, Prov. of China
Filed Jan. 5, 1994, Ser. No. 17,286
Term of patent 14 years
U.S. Cl. D11—121



355,390
TROPHY MOUNT
Steven Culbertson, 4973 Easy St., Tallahassee, Fla. 32303
Filed Oct. 8, 1993, Ser. No. 13,998
Term of patent 14 years
U.S. Cl. D11—132

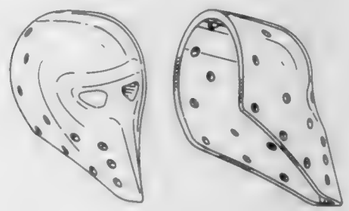


355,391
ORNAMENTAL HANGING PLAQUE
Laura J. Derk, P.O. Box 68, Cheboygan, Mich. 49721
Filed Nov. 22, 1993, Ser. No. 15,567
Term of patent 14 years
U.S. Cl. D11—133



355,392
FLOWER POT COVER
Donald E. Weder; Erwin H. Weder, both of Highland, Ill.; Wanda M. Weder, Highland, Calif.; Franklin J. Craig, Valley Park, Mo.; Wilma M. Donnelly, Highland, Ill.; Phyllis J. Bolk, Highland, Ill.; John W. Bergstrand, Highland, Ill., and Robert C. Abrams, Edwardsville, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation of Ser. No. 108,024, Oct. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. D. 293,224. This application Mar. 11, 1992, Ser. No. 850,236
Term of patent 14 years
U.S. Cl. D11—153

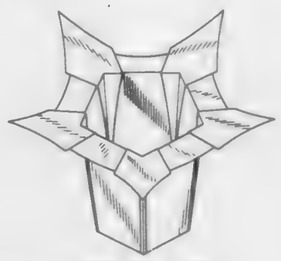
355,393
COLLECTABLE MINIATURE MASK
Jerry Bezener, and David Alves, both of Scarborough, Canada, assignors to Miniature Authentic Sports Keepers, Inc., Concord
Filed Mar. 3, 1993, Ser. No. 5,410
Term of patent 14 years
U.S. Cl. D21—190



355,394
COLLECTABLE MINIATURE MASK
Jerry Bezener, and David Alves, both of Scarborough, Canada, assignors to Miniature Authentic Sports Keepers, Inc., Concord
Filed Mar. 3, 1993, Ser. No. 5,413
Term of patent 14 years
U.S. Cl. D21—190



355,395
FLOWER POT COVER
Donald E. Weder, and Joseph G. Stracter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 808,548
Term of patent 14 years
U.S. Cl. D11—164

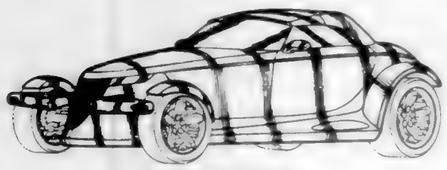


355,396
DIAMOND CUFF-LINK
Bernard J. Andran, St Clement de Riviere, France, assignor to Diamant Applications S.A., Montpellier Cedex, France
Filed Jul. 7, 1992, Ser. No. 909,438
Claims priority, application France, Jan. 7, 1992, 920046
Term of patent 14 years
U.S. Cl. D11—222

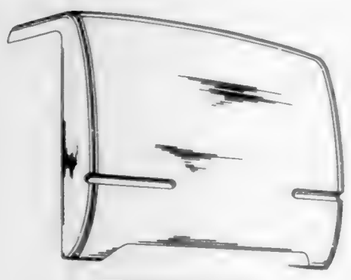


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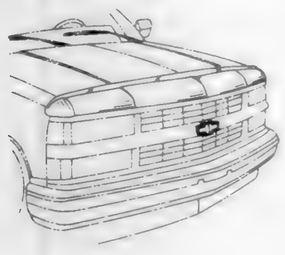
355,397
AUTOMOBILE BODY
Kevin R. Verduyn, Oceanside; Thomas G. Tremont, San Diego, both of Calif.; Thomas C. Gale, Rochester; K. Neil Walling, Leonard, both of Mich., and Timothy W. Anness, San Diego, Calif., assignors to Chrysler Corporation, Highland Park, Mich.
Continuation-in-part of Ser. No. 1,540, Nov. 17, 1992. This application Jan. 4, 1993, Ser. No. 3,439
Term of patent 14 years
U.S. Cl. D12—92



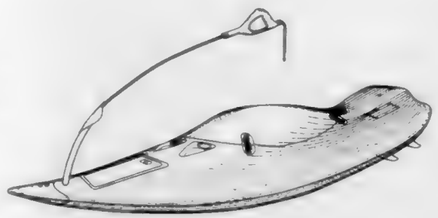
355,398
FIFTH WHEEL TRAVEL TRAILER FRONT PANEL UNIT EXTERIOR SURFACE
James F. Shea, Sr., South Bend, Ind., assignor to Gulf Stream Coach, Inc., Nappanee, Ind.
Filed Mar. 18, 1993, Ser. No. 6,209
Term of patent 14 years
U.S. Cl. D12—106



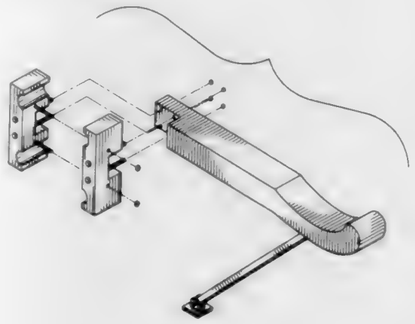
355,399
COMBINED VEHICLE HOOD SHIELD AND WINDSHIELD DEFLECTOR
James R. Lund, Champlin, Minn., assignor to Land Industries, Incorporated, Coon Rapids, Minn.
Filed Oct. 28, 1993, Ser. No. 14,698
Term of patent 14 years
U.S. Cl. D12—181



355,400
MOTORIZED WATER SKI
Robert E. Montgomery, 34478 Calle Carmelita, Capistrano Beach, Calif. 92624
Filed Aug. 5, 1993, Ser. No. 11,456
Term of patent 14 years
U.S. Cl. D12—307



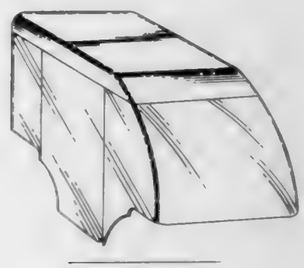
355,401
COMBINED ALTERNATIVE-FLOATATION RACK FOR VESSELS HAVING SINGLE OR DOUBLE STANCHIONS
James K. Halpin, 8 Bond St., Stanton, Del. 19804
Filed Nov. 29, 1993, Ser. No. 15,778
Term of patent 14 years
U.S. Cl. D12—317



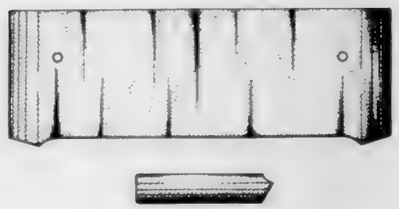
355,402
SKI BOAT PYLON
Robert Ritzenthaler, 1181 Kempton Park, McKinney, Tex. 75069
Filed Apr. 8, 1994, Ser. No. 21,083
Term of patent 14 years
U.S. Cl. D12—317



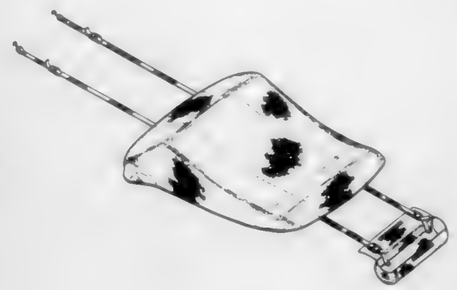
355,403
ALL TERRAIN VEHICLE CAB
Ronald D. Eberle, Grainfield, Kans., assignor to Trail-Buster Dozer, Inc., Grainfield, Kans.
Filed Nov. 5, 1993, Ser. No. 14,945
Term of patent 14 years
U.S. Cl. D12—402



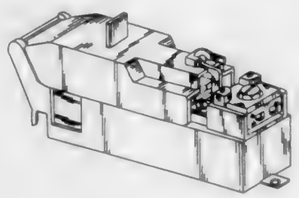
355,404
VEHICLE STORAGE COMPARTMENT COVER FOR A CONVERTIBLE TOP
Oscar A. Duran, 6722 Florence Pl., Bell Gardens, Calif. 90201
Filed Mar. 1, 1993, Ser. No. 5,258
Term of patent 14 years
U.S. Cl. D12—403



355,405
COVER FOR A CONVERTIBLE CAR
Jeanne L. Sligh, 13436 San Antonio Rd., Atascadero, Calif. 93422
Filed Dec. 6, 1993, Ser. No. 16,020
Term of patent 14 years
U.S. Cl. D12—403

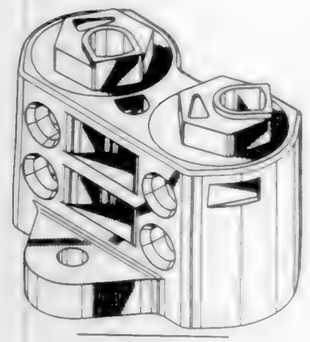


355,406
COMBINED ENVIRONMENTALLY SEALED TELEPHONE TERMINAL MODULE AND COVERED TELEPHONE JACK
Thomas J. Smith, Bay Shore, N.Y., assignor to TII Industries Inc., Copiaguec, N.Y.
Filed Mar. 9, 1992, Ser. No. 847,228
Term of patent 14 years
U.S. Cl. D13—133

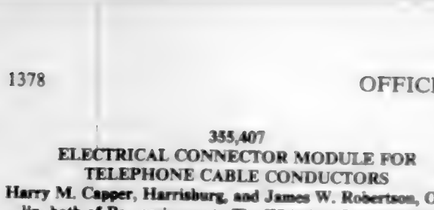


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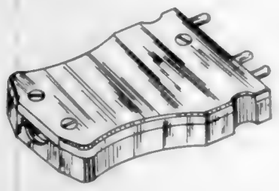
355,407
ELECTRICAL CONNECTOR MODULE FOR TELEPHONE CABLE CONDUCTORS
Harry M. Capper, Harrisburg, and James W. Robertson, Oberlin, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed May 7, 1993, Ser. No. 8,166
Term of patent 14 years
U.S. Cl. D13—133



355,408
LOW PROFILE HOUSING FOR A ROTATABLE ELECTRICAL PLUG
Mark Geis, Carmel, and Roy J. Schneider, Indianapolis, both of Ind., assignors to Woods Industries, Inc., Carmel, Ind.
Filed Nov. 17, 1993, Ser. No. 15,449
Term of patent 14 years
U.S. Cl. D13—138



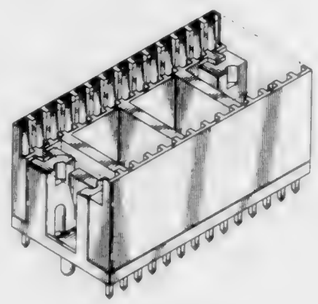
355,409
ELECTRICAL PLUG ASSEMBLY
William G. Krokaugger, Chatsworth, Calif., assignor to Mole-Richardson Co., Hollywood, Calif.
Filed Aug. 3, 1993, Ser. No. 11,358
Term of patent 14 years
U.S. Cl. D13—146



355,410
WIND DAMPER
Merrill L. Parker, 10333 Folsom Blvd., #8, Rancho Cordova, Calif. 95670, and Vernon S. Daters, 6796 Havenhurst Dr., Sacramento, Calif. 95831
Filed Aug. 17, 1993, Ser. No. 11,878
Term of patent 14 years
U.S. Cl. D13—154



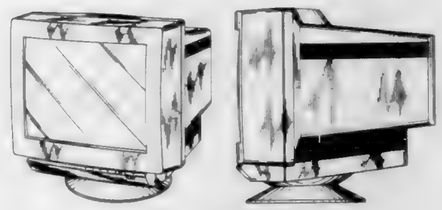
355,411
INTEGRATED CIRCUIT ELECTRONIC PACKAGE
Amir-Akbar Sadigh-Behzadi, Van Nuys, Calif., assignor to Cicon Components, Inc., Chatsworth, Calif.
Filed Jun. 4, 1993, Ser. No. 9,137
Term of patent 14 years
U.S. Cl. D13—182



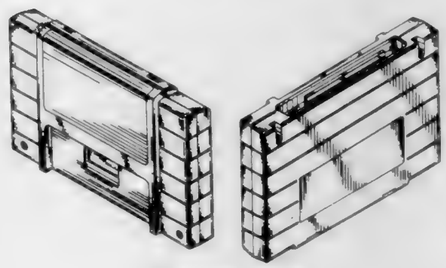
355,412
RADIO PACKET MODEM FOR WIRELESS LOCAL AREA NETWORKS
Roman P. Rak, Delta, and William E. Fenton, Surrey, both of Canada, assignors to Motorola, Schaumburg, Ill.
Filed Feb. 7, 1994, Ser. No. 18,476
Term of patent 14 years
U.S. Cl. D14—107



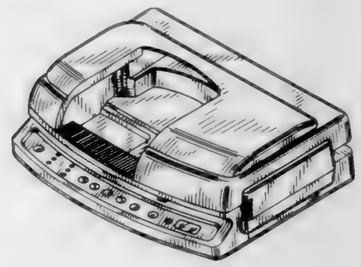
355,413
MONITOR FOR A COMPUTER
Kazutoshi Masunari, Kanagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 10, 1993, Ser. No. 12,736
Claims priority, application Japan, Mar. 12, 1993, 5-7226
Term of patent 14 years
U.S. Cl. D14—113



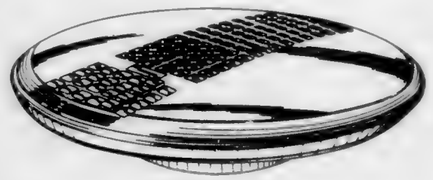
355,414
CARTRIDGE FOR VIDEO GAME MACHINE
Yoshihiro Inoue, and Masahiko Ota, both of Kyoto, Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan
Filed Jul. 2, 1993, Ser. No. 10,258
Claims priority, application Japan, Mar. 30, 1993, 5-9080; Mar. 30, 1993, 5-9081; Mar. 30, 1993, 5-9082; Mar. 30, 1993, 5-9083; Mar. 30, 1993, 5-9084
Term of patent 14 years
U.S. Cl. D14—121



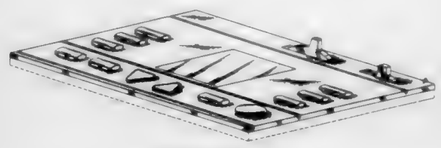
355,415
VIDEO IMAGES PLAYBACK UNIT
Makoto Isozaki, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 17, 1993, Ser. No. 11,873
Claims priority, application Japan, Feb. 25, 1993, 5-5397
Term of patent 14 years
U.S. Cl. D14—135



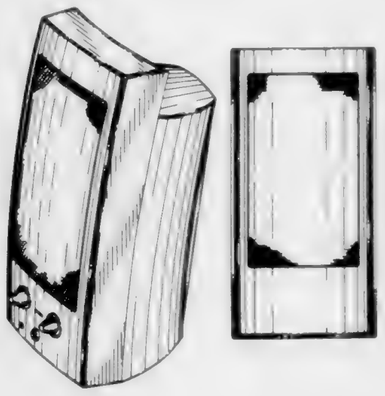
355,416
TRANSCEIVER MODULE FOR A TABLE-TOP TELECONFERENCING SYSTEM
James McCay, New York, N.Y., Jeremy F. Skene, Herndon, Va., and Steven Vordenberg, New York, N.Y., assignors to Coherent Communications Systems Corporation, Hauppauge, N.Y.
Division of Ser. No. 850,789, Apr. 28, 1992, Pat. No. Des. 346,598. This application Feb. 14, 1994, Ser. No. 18,673
Term of patent 14 years
U.S. Cl. D14—137



355,417
CONTROL PANEL FOR A ROOM AIR CONDITIONER
A. Bruce Buchholz, Tully, and Glenn D. Goodnough, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 17, 1993, Ser. No. 11,897
Term of patent 14 years
U.S. Cl. D13—164

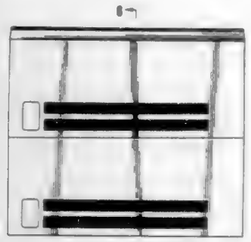


355,418
POWERED SPEAKER
Timothy Parsey, Palo Alto, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.
Filed Feb. 12, 1993, Ser. No. 4,772
Term of patent 14 years
U.S. Cl. D14—214



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355,419
HOUSING FOR TELEPHONE SWITCHBOARD
Seiji Namba, Inzai, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Dec. 22, 1992, Ser. No. 2,895
Claims priority, application Japan, Jun. 25, 1992, 4-18613[U]
The portion of the term of this patent subsequent to Jul. 17, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—241



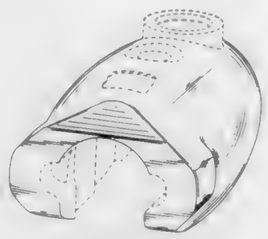
355,420
AIR WHIRLPOOL GENERATOR FOR AUTOMOBILE ENGINE
Byoung M. Cho, 753-15, Mok 4-dong, Yangchun-ku, Seoul, Rep. of Korea
Filed Sep. 23, 1992, Ser. No. 948,807
Claims priority, application Rep. of Korea, Jul. 15, 1992, 92-12058; Jul. 22, 1992, 92-13507
Term of patent 14 years
U.S. Cl. D15—5



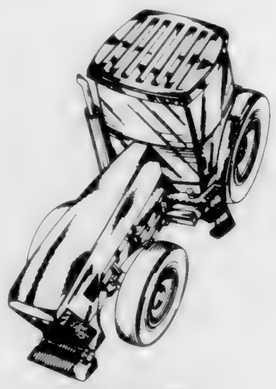
355,421
MOWER HANDLE MOUNT
David C. Simon, 5127 W. County Rd. 500N, Osgood, Ind. 47037
Filed May 28, 1993, Ser. No. 8,846
Term of patent 14 years
U.S. Cl. D12—18



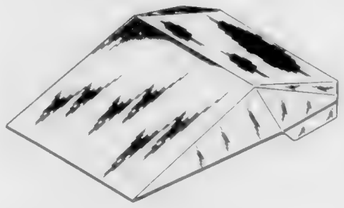
355,422
MUFFLER FOR A JACKHAMMER
Robert R. Kimberlin, Troutville, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Oct. 9, 1992, Ser. No. 340
Term of patent 14 years
U.S. Cl. D15—21



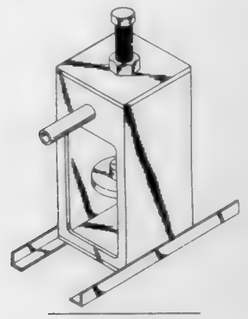
355,423
TRACTOR
Terrill W. Woods, and Lyle R. Madson, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Mar. 8, 1991, Ser. No. 667,099
Term of patent 14 years
U.S. Cl. D15—23



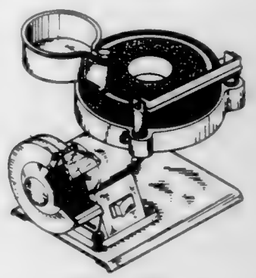
355,424
SUNSHADE FOR RIDING EQUIPMENT
Wayne D. Williams, Indianapolis, and Chris A. Geise, Arlington, both of Ind., assignors to Original Tractor Cab Company Incorporated, Arlington, Ind.
Filed Jun. 21, 1993, Ser. No. 9,787
Term of patent 14 years
U.S. Cl. D15—28



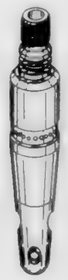
355,425
OIL FILTER CRUSHER
Lawrence C. Weaver, 14810 Brookside Forest, Houston, Tex. 77040
Filed Oct. 9, 1992, Ser. No. 360
Term of patent 14 years
U.S. Cl. D15—123



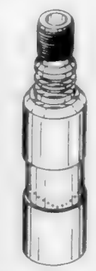
355,426
GRINDING MACHINE
Chao-Hsin Chen, No. 37, Lane 690, Fengshin Rd., Fengyuan City, Taichung Hsien, Taiwan, Prov. of China
Filed Jan. 18, 1994, Ser. No. 17,664
Term of patent 14 years
U.S. Cl. D15—125



355,427
SEVERING HEAD WITH TAPERED CENTRALIZING ASSEMBLY HAVING CENTRALIZING HOLES
Wayne B. Hatcher, P.O. Box 305, Harvey, La. 70059
Filed Sep. 27, 1993, Ser. No. 13,560
Term of patent 14 years
U.S. Cl. D15—139



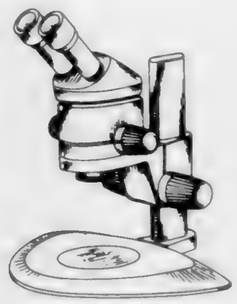
355,428
ANGLED SEVERING HEAD
Wayne B. Hatcher, P.O. Box 305, Harvey, La. 70059
Filed Sep. 27, 1993, Ser. No. 13,565
Term of patent 14 years
U.S. Cl. D15—139



355,429
EXPANDABLE SPECTACLE TEMPLE
Richard Hirschman, Albertson, N.Y., assignor to Hudson Optical Corporation, Bohemia, N.Y.
Filed Dec. 23, 1993, Ser. No. 16,804
Term of patent 14 years
U.S. Cl. D16—335

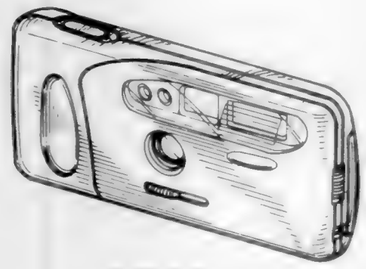


355,430
STEREOMICROSCOPE
Ernest Hofmann-Igl, Davos-Platz, Switzerland, assignor to Leica AG, Heerbrugg, Switzerland
Filed Dec. 22, 1993, Ser. No. 16,732
Claims priority, application Germany, Jul. 12, 1993, M9305537.4
Term of patent 14 years
U.S. Cl. D16—131

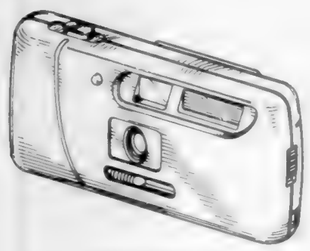


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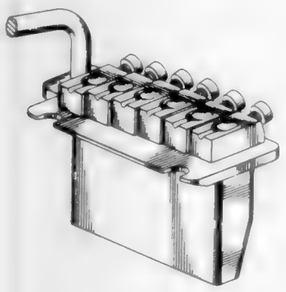
355,431
CAMERA
Shigeru Oshima, Chofu, Japan, assignor to ARC Design Room Ltd., Tokyo, Japan
Filed Feb. 16, 1993, Ser. No. 4,931
Term of patent 14 years
U.S. Cl. D16—209



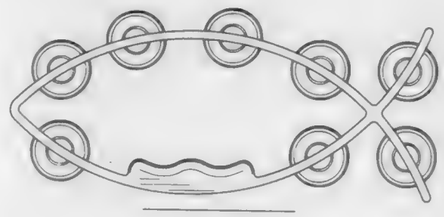
355,432
CAMERA
Shigeru Oshima, Chofu, Japan, assignor to ARC Design Room Ltd., Tokyo, Japan
Filed Feb. 16, 1993, Ser. No. 4,932
Term of patent 14 years
U.S. Cl. D16—209



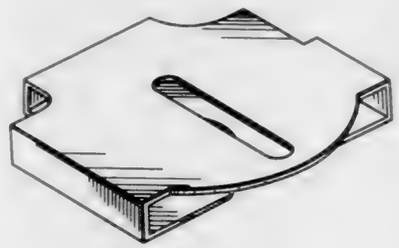
355,433
TREMOLO UNIT
George F. Blanda, Jr., Aliso Viejo, Calif., assignor to Fender Musical Instruments Corporation, Scottsdale, Ariz.
Filed Oct. 14, 1993, Ser. No. 14,192
Term of patent 14 years
U.S. Cl. D17—21



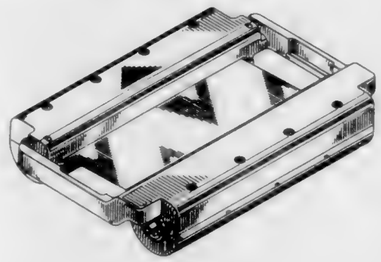
355,434
TAMBOURINE
Moshe Zur, Petah Tikva, Israel, assignor to Halilit Export (1974) Ltd., Or Yehuda, Israel
Filed Jan. 10, 1994, Ser. No. 17,270
Claims priority, application Israel, Aug. 25, 1993, 21302
Term of patent 14 years
U.S. Cl. D17—22



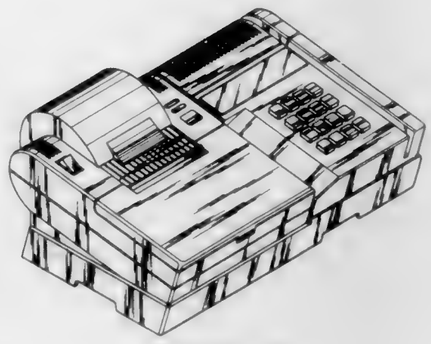
355,435
INK RIBBON HOLDER
Noboru Shimoyama, Yokohama, and Keita Yoshida, Tokyo, both of Japan, assignors to Canon Business Machines, Inc., Costa Mesa, Calif.
Filed Jul. 1, 1992, Ser. No. 907,217
Term of patent 14 years
U.S. Cl. D18—12



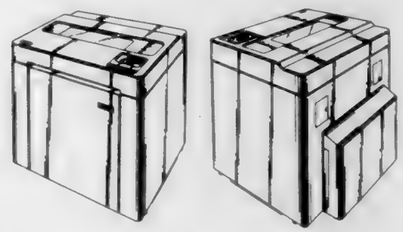
355,436
INK RIBBON CASSETTE
Kazumi Suwa, Toyonake, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Nov. 8, 1993, Ser. No. 15,116
Claims priority, application Japan, May 20, 1993, 5-14916
Term of patent 14 years
U.S. Cl. D18—12



355,437
COMBINED STAND AND CREDIT CARD PRINTER AND TERMINAL
Glenn A. Reph, San Diego, Calif., assignor to Hicklin Engineering Company, Des Moines, Iowa
Division of Ser. No. 740,763, Aug. 6, 1991. This application Sep. 20, 1993, Ser. No. 13,155
Term of patent 14 years
U.S. Cl. D18—14



355,438
PRINTER FOR ELECTRONIC COMPUTER
Isao Sugimoto, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Dec. 29, 1993, Ser. No. 16,885
Term of patent 14 years
U.S. Cl. D18—53



355,439
WRITING INSTRUMENT
Geoffrey A. Hollington, London, England, assignor to Parker Pen (Benelux) B.V., Netherlands
Filed Feb. 3, 1993, Ser. No. 4,369
The portion of the term of this patent subsequent to Aug. 17, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—43



355,440
PEN
Nien-Chun Lin, No. 71, Lane 431, Hua Cheng Rd., Hsin Chuang, Taipei Hsien, Taiwan, Prov. of China
Filed Dec. 22, 1993, Ser. No. 16,678
Term of patent 14 years
U.S. Cl. D19—51



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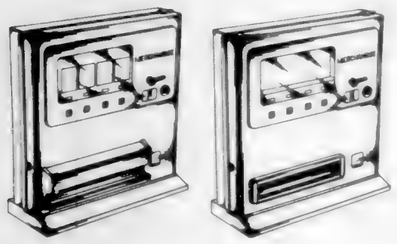
355,441
WRITING INSTRUMENT
Barry Rosenbaum, West Bloomfield, Mich., assignor to Advance Watch Company, Southfield, Mich.
Filed Dec. 29, 1993, Ser. No. 16,879
Term of patent 14 years
U.S. Cl. D19—51



355,442
COMBINED REFILLABLE ERASER TIPS AND CONTAINER THEREFOR
Cheng-Hwa Chuang, Taipei, Taiwan, Prov. of China, assignor to Pioneer Industrial Corporation, Taipei, Taiwan, Prov. of China
Filed Jan. 14, 1994, Ser. No. 17,583
Term of patent 14 years
U.S. Cl. D19—53



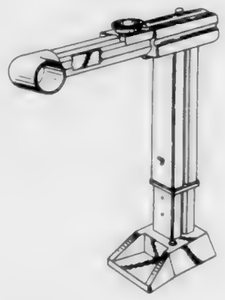
355,443
VENDING MACHINE
Hisashi Chatani, Ashiya, and Hiroyuki Haruna, Itamishi, both of Japan, assignors to WADA Metal of America Corp., Rome, Ga.
Continuation of Ser. No. 1,253, Nov. 6, 1992, abandoned. This application Jun. 23, 1994, Ser. No. 24,934
Term of patent 14 years
U.S. Cl. D20—4



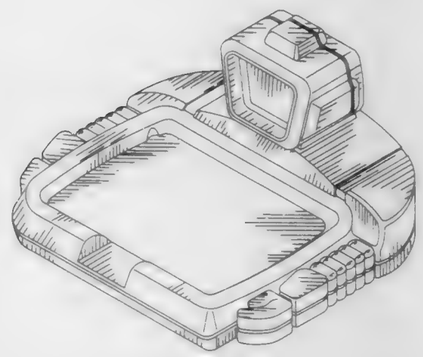
355,444
GOLF CLUB GRIP
Michael Deluca, 128 Rollingwood, San Rafael, Calif. 94901
Filed Sep. 29, 1993, Ser. No. 13,683
Term of patent 14 years
U.S. Cl. D21—222



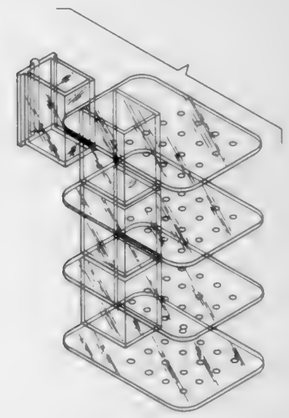
355,445
BALL PROJECTOR
Melvin L. Boyd, Columbus, Miss., assignor to Lan-Cor, Inc., Brooksville, Miss.
Filed Oct. 20, 1993, Ser. No. 14,369
Term of patent 14 years
U.S. Cl. D21—2



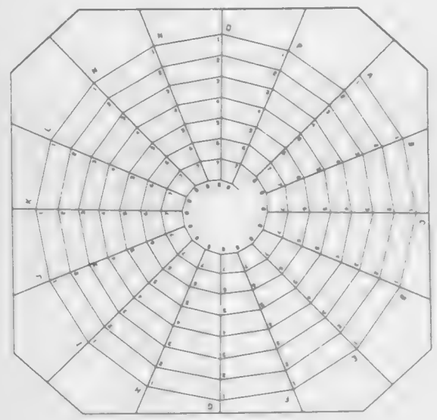
355,446
ELECTRONIC GAME HOUSING
John T. Sahler, Riverside, R.I., assignor to Playskool, Inc., Pawtucket, R.I.
Filed Sep. 24, 1993, Ser. No. 13,921
Term of patent 14 years
U.S. Cl. D21—13



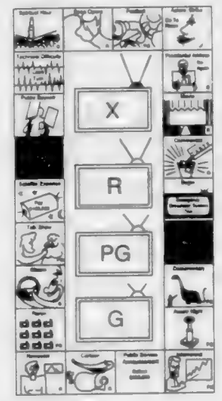
355,447
THREE DIMENSIONAL GAME
Robert F. Crump, 952 S. Third St., Louisville, Ky. 40203
Filed Jul. 15, 1992, Ser. No. 914,604
Term of patent 14 years
U.S. Cl. D21—23



355,448
SPIRAL SPIDER WEB GAME BOARD
James Walter, and Kim Walter, both of 11 High St., Andover, N.J. 07821
Filed Nov. 19, 1991, Ser. No. 794,207
Term of patent 14 years
U.S. Cl. D21—25

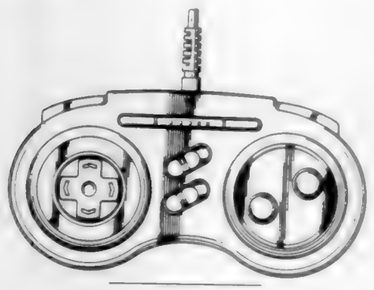


355,449
GAME BOARD
Cory J. Schulman, 12146 Island View Cir., Germantown, Md. 20874
Filed Jul. 2, 1993, Ser. No. 10,252
Term of patent 14 years
U.S. Cl. D21—25



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355,450
HAND HELD CONTROLLER FOR A VIDEO GAME MACHINE
Patrick T. Ho, Kwai Chung, Hong Kong, assignor to STD Electronic International Limited, Hong Kong, Hong Kong
Filed Jun. 4, 1993, Ser. No. 9,052
Claims priority, application United Kingdom, Dec. 8, 1992, 2027630
Term of patent 14 years
U.S. Cl. D21—48



355,451
BASEBALL POM-POM
Peter Metcalf, 2200 Roche Court, Suite 507, Mississauga, Ontario, Canada L5K 3Z6
Filed Aug. 10, 1993, Ser. No. 11,592
Term of patent 14 years
U.S. Cl. D21—100



355,452
COMBINED TOY I-BEAM AND BLOCKS
Kenneth P. Glynn, Raritan Township, Hunterdon County, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.
Filed Mar. 22, 1994, Ser. No. 20,229
Term of patent 14 years
U.S. Cl. D21—108



355,453
COMBINED TOY GIRDER BEAM AND BLOCK
Kenneth P. Glynn, Raritan Township, Hunterdon County, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.
Filed Mar. 28, 1994, Ser. No. 20,513
Term of patent 14 years
U.S. Cl. D21—108



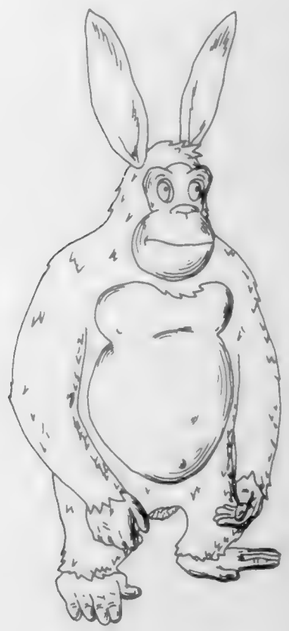
355,454
COMBINED TOY GIRDER BEAM AND BLOCKS
Kenneth P. Glynn, Raritan Township, Hunterdon County, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.
Filed Mar. 28, 1994, Ser. No. 20,535
Term of patent 14 years
U.S. Cl. D21—108



355,455
LENS INTRODUCER FORCEPS
Herbert W. Larson, 701 Poinsetta Rd., Apt 328, Belleair, Fla. 34616
Filed Aug. 16, 1991, Ser. No. 746,519
Term of patent 14 years
U.S. Cl. D24—143



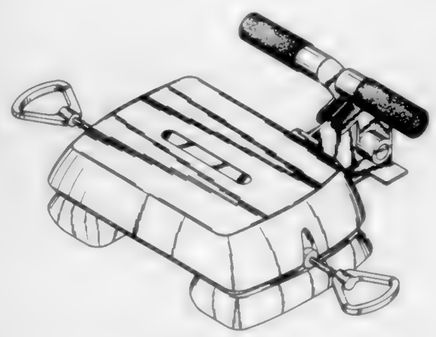
355,456
TOY FIGURE
Wendell L. Stephens, P.O. Box 160, Newburgh, Ind. 47629
Filed Mar. 4, 1993, Ser. No. 5,500
Term of patent 14 years
U.S. Cl. D21—148



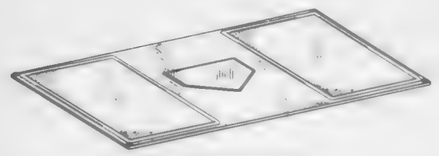
355,457
JUMPING FROG
Kenneth J. Miller, 7336 Cleargrove Dr., Downey, Calif. 90240
Filed Aug. 16, 1993, Ser. No. 11,785
Term of patent 14 years
U.S. Cl. D21—158



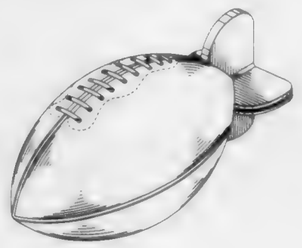
355,458
MULTI-FUNCTION PHYSICAL EXERCISER
Ting-Hsing Chen, Tainan, Taiwan, Prov. of China, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan, Prov. of China
Filed Jul. 28, 1993, Ser. No. 11,142
Term of patent 14 years
U.S. Cl. D21—171



355,459
TRAINING CARPET FOR USE IN SPORTS
Thomas E. Cornelison, 4274 Loch Highland Pkwy., Roswell, Ga. 30075-2044
Filed Apr. 2, 1993, Ser. No. 6,672
Term of patent 14 years
U.S. Cl. D21—199



355,460
TOY FOOTBALL
James E. Routzong, Essex, Mass., and Keith D. Patterson, Providence, R.I., assignors to Little Kids, Inc., East Providence, R.I.
Filed Oct. 8, 1992, Ser. No. 130
Term of patent 14 years
U.S. Cl. D21—204

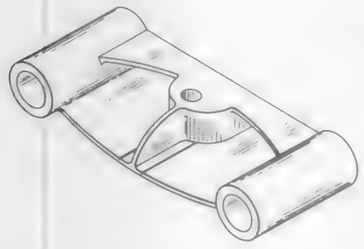


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355,461
RACQUETBALL RACKET
Brian P. Feeney, Enfield, Conn., assignor to Lisco, Inc., Tampa, Fla.
Filed Aug. 27, 1993, Ser. No. 12,231
Term of patent 14 years
U.S. Cl. D21—212



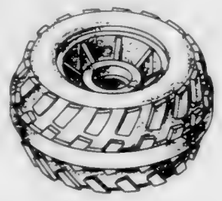
355,462
GOLF PUTTER HEAD
Paul S. Wyatt, Tulsa, Okla., assignor to Mean Beaver Manufacturing Company, Tulsa, Okla.
Filed Aug. 20, 1993, Ser. No. 12,028
Term of patent 14 years
U.S. Cl. D21—219



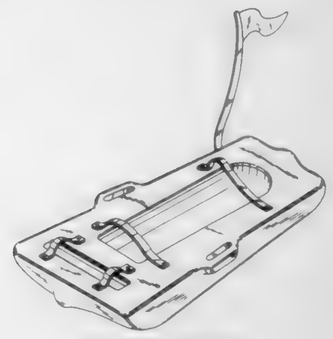
355,463
GOLF PUTTER GRIP
Charles Markward, 644 Central Ave., Glenside, Pa. 19038, and John Watt, 1819 Acorn La., Abington, Pa. 19001, assignors to Charles Markward and John Watt, Lansdale, Pa.
Filed Nov. 5, 1992, Ser. No. 1,139
Term of patent 14 years
U.S. Cl. D21—222



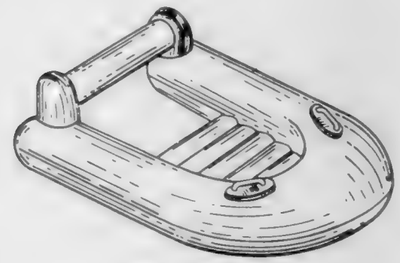
355,464
SKATEBOARD WHEEL AND TIRE
Richard W. Wilson, 11475 Meknes Way, San Diego, Calif. 92129, and Paul E. DelBosque, 1222 S. Orange, Escondido, Calif. 92025
Filed Nov. 23, 1993, Ser. No. 15,637
Term of patent 14 years
U.S. Cl. D21—226



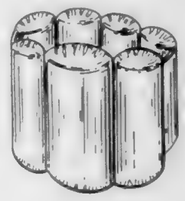
355,465
SWIM BOARD FOR CARRYING SCUBA DIVING EQUIPMENT
Timothy M. Davies, 1171 Aztec, Topanga, Calif. 90290
Filed Feb. 18, 1994, Ser. No. 18,899
Term of patent 14 years
U.S. Cl. D21—237



355,466
RECREATION PROPULSION FLOAT
Henry Wolfe, Palmetto, Fla., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Continuation-in-part of Ser. No. 12,510, Sep. 2, 1993, Pat. No. Des. 349,322. This application Jul. 1, 1994, Ser. No. 25,433
Term of patent 14 years
U.S. Cl. D21—237



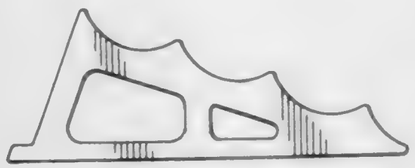
355,467
BODY FLOAT
Henry Wolfe, Palmetto, Fla., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Mar. 24, 1994, Ser. No. 20,332
Term of patent 14 years
U.S. Cl. D21—238



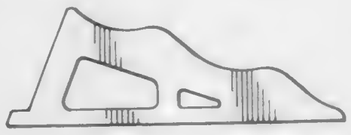
355,468
REPLACEABLE BROADHEAD BLADE
Arlan D. Lothe, Sun Prairie, Wis., assignor to Simmons Engineering Corp., Mount Prospect, Ill.
Filed Nov. 19, 1993, Ser. No. 15,548
Term of patent 14 years
U.S. Cl. D22—115



355,469
REPLACEABLE BROADHEAD BLADE
Arlan D. Lothe, Sun Prairie, Wis., assignor to Simmons Engineering Corp., Mount Prospect, Ill.
Filed Nov. 19, 1993, Ser. No. 15,549
Term of patent 14 years
U.S. Cl. D22—115



355,470
REPLACEABLE BROADHEAD BLADE
Arlan D. Lothe, Sun Prairie, Wis., assignor to Simmons Engineering Corp., Mount Prospect, Ill.
Filed Nov. 19, 1993, Ser. No. 15,550
Term of patent 14 years
U.S. Cl. D22—115

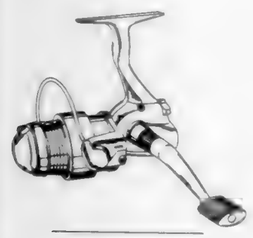


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355,471
FISHING LINE LOADER
Craig C. Karr, 1312 San Vicente Blvd., Santa Monica, Calif. 90402, and Arthur W. Saunders, 1126 Pine St., Santa Monica, Calif. 90405
Continuation-in-part of Ser. No. 602,072, Oct. 19, 1990, abandoned. This application Dec. 9, 1991, Ser. No. 793,707
Term of patent 14 years
U.S. Cl. D22—134



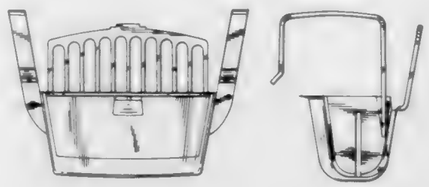
355,472
SPINNING FISHING REEL
Richard J. Robbins, Derby, Kans., assignor to Zebco Corp., Tulsa, Okla.
Filed Jul. 15, 1992, Ser. No. 914,945
Term of patent 14 years
U.S. Cl. D22—141



355,473
ROD ATTACHED FISHING SIGNAL
William M. Booth, R #Box 1142, Laurel, Miss. 39440
Filed Mar. 31, 1993, Ser. No. 6,550
Term of patent 14 years
U.S. Cl. D22—148



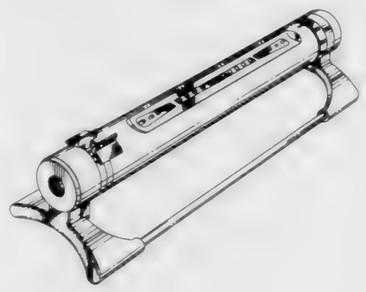
355,474
COMBINED TOILET BOWL CLEANER AND DEODORIZER
Thomas Kearnes, Akron, and Tammy Westerman, Cleveland, both of Ohio, assignors to State Chemical Manufacturing, Cleveland, Ohio
Filed May 21, 1993, Ser. No. 8,575
Term of patent 14 years
U.S. Cl. D23—208



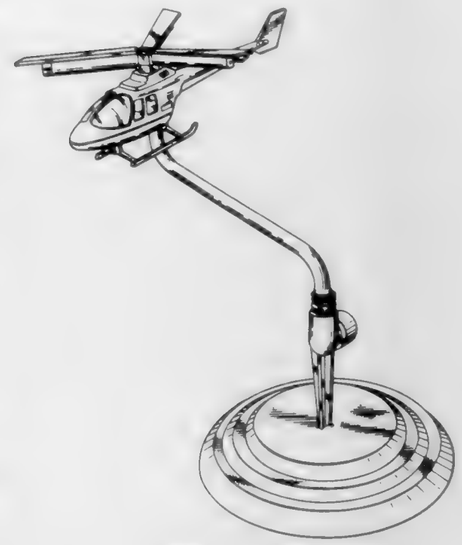
355,475
SPRINKLER
Cosmo Luppino, Murray Bridge, Australia, assignor to James Hardie Irrigation Pty Limited, Australia
Filed Jul. 23, 1993, Ser. No. 11,038
Claims priority, application Australia, Feb. 2, 1993, 27093
Term of patent 14 years
U.S. Cl. D23—214



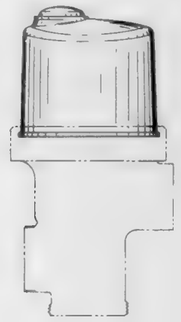
355,476
LAWN SPRINKLER
Klaus D. Schön, Altbach, Germany, assignor to Vermont American Corporation, Louisville, Ky.
Filed Aug. 13, 1993, Ser. No. 11,812
Term of patent 14 years
U.S. Cl. D23—214



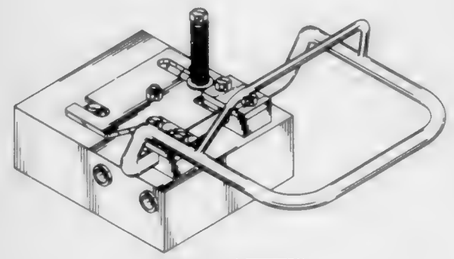
355,477
LAWN SPRINKLER
Ho M. Yang, Taiwan, Taiwan, Prov. of China, assignor to Samuel S. Yang, Orange, Calif.
Filed Mar. 18, 1994, Ser. No. 20,064
Term of patent 14 years
U.S. Cl. D23—215



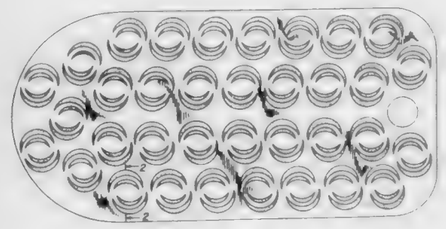
355,478
FLUSH VALVE COVER
Charles S. Allen, Kenilworth, and John R. Wilson, Naperville, both of Ill., assignors to Sloan Valve Company, Franklin Park, Ill.
Filed Oct. 28, 1993, Ser. No. 14,625
Term of patent 14 years
U.S. Cl. D23—249



355,479
COMBINED HOUSING AND HANDLE FOR A LIFTING SYSTEM
Stellan Petre, Onsala, Sweden, assignor to LP3 Maskiner AB, Moindal, Sweden
Filed Dec. 2, 1991, Ser. No. 801,071
Claims priority, application Sweden, Jun. 3, 1991, 911146
Term of patent 14 years
U.S. Cl. D34—35

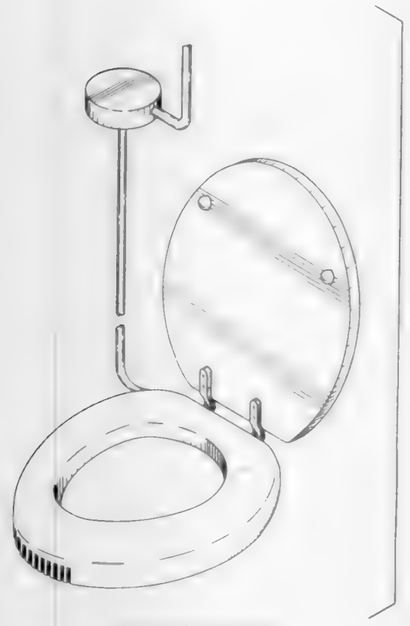


355,480
NON-SKID BATHTUB BOTTOM
Peter E. Leonard; Andrew Barrass, both of London, Great Britain; Carolyn L. Wode, and Melvin T. Forman, both of Louisville, Ky., assignors to American Standard Inc., Piscataway, N.J.
Filed Apr. 29, 1992, Ser. No. 875,706
Claims priority, application United Kingdom, Nov. 19, 1991, 2019046
Term of patent 14 years
U.S. Cl. D23—304

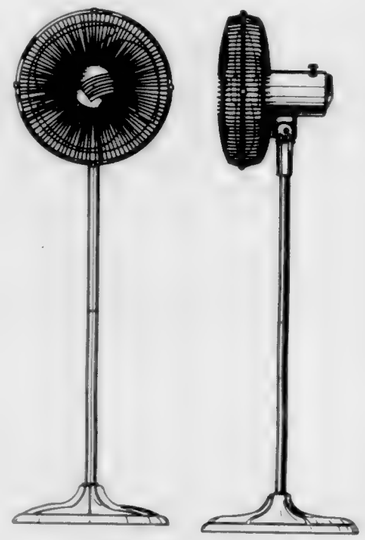


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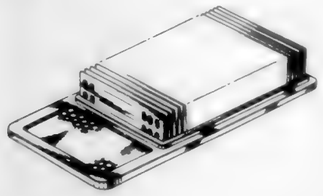
355,481
COMBINED TOILET SEAT AND EXHAUST FAN
Eric Keen, R.R. 2 Box 303, Knox, Ind. 46534
Filed Jul. 22, 1993, Ser. No. 10,917
Term of patent 14 years
U.S. Cl. D23—311



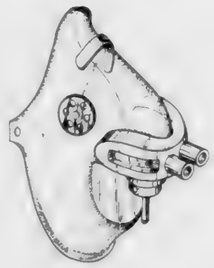
355,483
PEDESTAL FAN
Charles Litvin, West Chester, Pa., and Kurt F. Hafeken, Newark, Del., assignors to Lasko Holdings, Inc., West Chester, Pa.
Filed Dec. 22, 1993, Ser. No. 16,693
Term of patent 14 years
U.S. Cl. D23—378



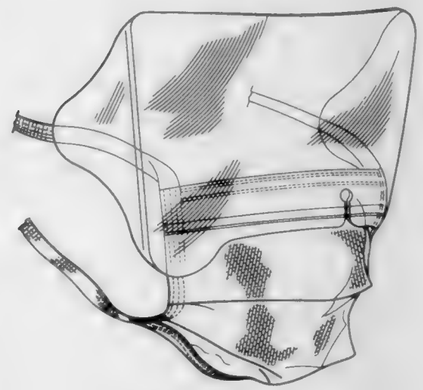
355,482
AIR FILTER FOR AN INTERNAL COMBUSTION ENGINE
Edgar Grigsby, Jr., Augusta, Ga., assignor to Textron Inc., Providence, R.I.
Filed Nov. 1, 1993, Ser. No. 14,859
Term of patent 14 years
U.S. Cl. D23—365



355,484
COMBINATION MASK WITH BREATHING APPARATUS ADAPTOR
Laney T. Rinehart, P.O. Box 4706, Panama City, Fla. 32401
Continuation-in-part of Ser. No. 3,894, Jan. 21, 1993. This application Feb. 2, 1993, Ser. No. 4,337
Term of patent 14 years
U.S. Cl. D24—110.1



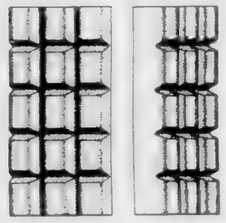
355,485
COMBINED FACE MASK AND SHIELD
Vance M. Hubbard, and Welton K. Brunson, both of Bedford, Tex., assignors to TCNL Technologies, Inc., Wilmington, Del.
Continuation-in-part of Ser. No. 846,396, Mar. 4, 1992, abandoned, and a continuation of Ser. No. 886,386, May 19, 1992, which is a continuation of Ser. No. 661,435, Feb. 25, 1991, Pat. No. 5,150,703, which is a continuation of Ser. No. 268,558, Nov. 8, 1988, Pat. No. 5,020,533, which is a continuation-in-part of Ser. No. 104,807, Oct. 2, 1987, Pat. No. 4,920,960. This application Jul. 13, 1993, Ser. No. 10,581
The portion of the term of this patent subsequent to Jun. 16, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—110.2



355,487
DRILL EXTENSION FOR USE IN ORAL IMPLANTOLOGY
Leif Broberg, Göteborg, Sweden, assignor to Aktiebolaget Astra, Sodertalje, Sweden
Filed Apr. 28, 1993, Ser. No. 7,641
Claims priority, application Sweden, Oct. 28, 1992, 92 2225
Term of patent 14 years
U.S. Cl. D24—156



355,488
BODY ALIGNER
Thomas S. Hargest, Charleston, and Richard W. Raburn, Simpsonville, both of S.C., assignors to Span-America Medical Systems, Inc., Greenville, S.C.
Filed Dec. 13, 1993, Ser. No. 16,302
Term of patent 14 years
U.S. Cl. D24—183



355,486
A RADIO FREQUENCY HAIR REMOVER
Tsunehiko Ikeda, Kanagawa, Japan, assignor to Better Life, Inc., Yokohama, Japan
Filed Jul. 9, 1993, Ser. No. 10,533
Claims priority, application Japan, May 14, 1993, 5-13826
Term of patent 14 years
U.S. Cl. D24—144



355,489
EYE PATCH KIT FOR RIDDING WRINKLES
Kay Almond, 748 N. Brindlee Mountain Pkwy., Arab, Ala. 35016
Filed Sep. 14, 1992, Ser. No. 948,737
Term of patent 14 years
U.S. Cl. D24—189



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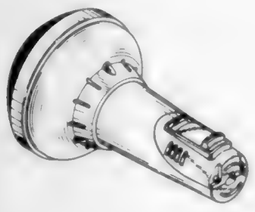
355,490
CERVICAL COLLAR COVER
Lois D. Maynard, P.O. Box 2175, Ashland, Ky. 41101
Filed Apr. 17, 1989, Ser. No. 340,154
Term of patent 14 years
U.S. Cl. D24—191



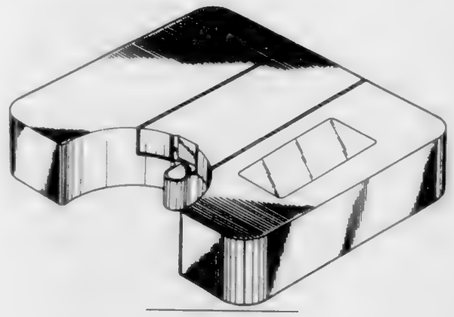
355,491
THERAPEUTIC ELECTRICAL STIMULATOR
Paul M. Monea, 2209 6th St. SW., Canton, Ohio 44706
Filed Jun. 11, 1993, Ser. No. 9,397
Term of patent 14 years
U.S. Cl. D24—200



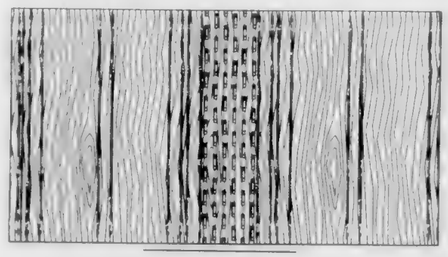
355,492
ELECTRIC MASSAGER
Jen-Chung Chou, No. 141-1, Ho Ping Rd., La Chou Hsiang, Taipei Hsien, Taiwan, Prov. of China
Filed Aug. 19, 1993, Ser. No. 11,978
Term of patent 14 years
U.S. Cl. D24—215



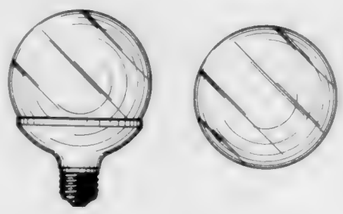
355,493
SLIDE IMMUNOASSAY DETECTION SYSTEM
Adrian Gropper, Watertown, and Stephen Rettew, Harvard, both of Mass., assignors to Cambridge Biotech Corporation, Worcester, Mass.
Filed Jan. 8, 1993, Ser. No. 3,579
Term of patent 14 years
U.S. Cl. D24—216



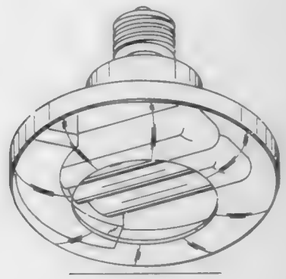
355,494
MOBILE HOME SKIRTING PANEL
Wade A. Fenske, 12349 Hardy, Overland Park, Kans. 66213
Filed Aug. 23, 1993, Ser. No. 12,115
Term of patent 14 years
U.S. Cl. D25—125



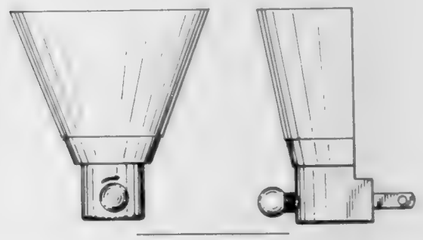
355,495
FLUORESCENT LAMP
Takeshi Matsumura, and Shiro Iida, both of Osaka, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan
Filed Oct. 7, 1993, Ser. No. 13,950
Claims priority, application Japan, Apr. 8, 1993, 5-10618
Term of patent 14 years
U.S. Cl. D26—3



355,496
COMPACT FLUORESCENT LAMP
Guenter Franck, Ebenhausen, Germany, assignor to Osram GmbH, Munich, Germany
Filed Oct. 18, 1993, Ser. No. 14,329
Claims priority, application Germany, May 4, 1993, M9303660
Term of patent 14 years
U.S. Cl. D26—3



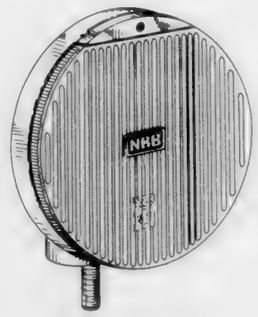
355,497
NIGHT LIGHT
Bruce Ancona; Jane Ancona, and Jose Padron, all of New York, N.Y., assignors to American Tack & Hardware Co., Inc., Monsey, N.Y.
Filed Dec. 23, 1993, Ser. No. 16,776
Term of patent 14 years
U.S. Cl. D26—26



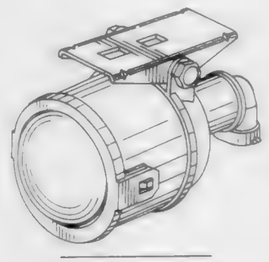
355,498
HEADLIGHT
Stefan Magnusson, Solna; Sam Peters, and Dan Brittse, both of Stockholm, all of Sweden, assignors to NBB Nordisk Bilbelysning AB, Linkoping, Sweden
Filed Nov. 4, 1993, Ser. No. 15,009
Claims priority, application Sweden, May 4, 1993, 93-1089
Term of patent 14 years
U.S. Cl. D26—28



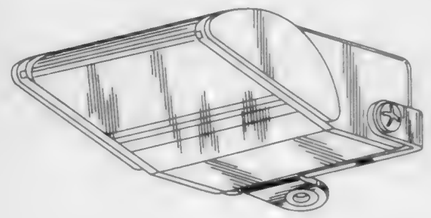
355,499
HEADLIGHT
Stefan Magnusson, Solna; Sam Peters, and Dan Brittse, both of Stockholm, all of Sweden, assignors to NBB Nordisk Bilbelysning AB, Linkoping, Sweden
Filed Nov. 4, 1993, Ser. No. 15,088
Claims priority, application Sweden, May 4, 1993, 93-1090
Term of patent 14 years
U.S. Cl. D26—78



355,500
FOG LAMP WITH MOUNTING BRACKET
Mark J. Mayer, Bolingbrook, Ill., assignor to Blazer International, Inc., Franklin Park, Ill.
Filed Feb. 4, 1993, Ser. No. 4,432
Term of patent 14 years
U.S. Cl. D26—29

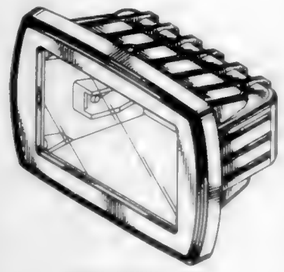


355,501
MINI FLOOD TRACK LIGHT
Scott L. Roos, Glenview, and John J. O'Rourke, Chicago, both of Ill., assignors to Juno Lighting, Inc., Des Plaines, Ill.
Filed Sep. 2, 1993, Ser. No. 12,517
Term of patent 14 years
U.S. Cl. D26—63

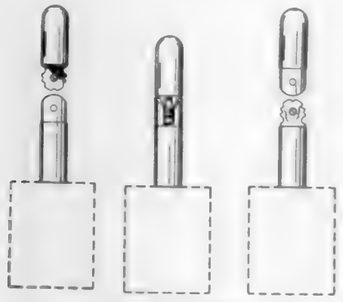


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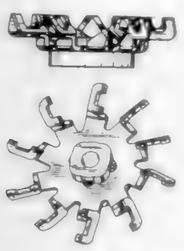
355,502
ADJUSTABLE OUTDOOR LAMP HOUSING
Chin-Chung Liao, Taipei, Taiwan, Prov. of China, assignor to Sun Luck Electrical Equipment Co., Ltd., Taipei, Taiwan, Prov. of China
Filed Sep. 21, 1993, Ser. No. 13,231
Term of patent 14 years
U.S. Cl. D26—67



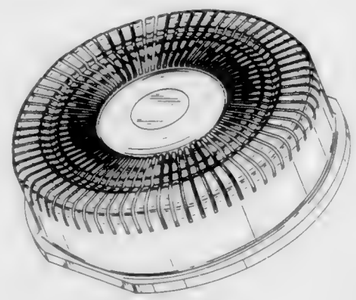
355,503
ADJUSTABLE ANGLE WAND FOR COSMETIC BOTTLE/CAP APPLICATORS
Henry J. Cassai, 163-47 85th St., Howard Beach, N.Y. 11414
Filed Oct. 25, 1991, Ser. No. 786,905
Term of patent 14 years
U.S. Cl. D28—7



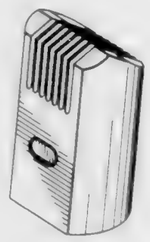
355,504
CUTTER FOR ELECTRIC SHAVER
Hiromi Uchiyama, and Masaki Okabe, both of Nagano, Japan, assignors to Izumi Products Company, Nagano, Japan
Filed Jun. 26, 1992, Ser. No. 905,635
Claims priority, application Japan, Dec. 28, 1991, 3-39725
Term of patent 14 years
U.S. Cl. D28—50



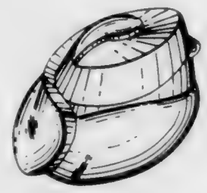
355,505
CUTTER FOR ELECTRIC SHAVER
Hiromi Uchiyama, and Masaki Okabe, both of Nagano, Japan, assignors to Izumi Products Company, Nagano, Japan
Filed Jun. 26, 1992, Ser. No. 908,006
Claims priority, application Japan, Dec. 28, 1991, 3-39728
Term of patent 14 years
U.S. Cl. D28—50



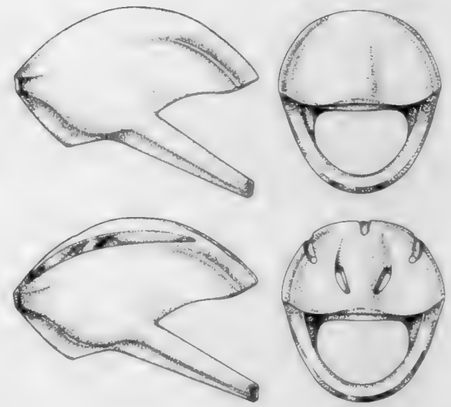
355,506
HAIR CUTTING ATTACHMENT FOR A BEARD TRIMMER
Leandro P. Rizzuto, Jr., Stamford, Conn., assignor to Conair Corporation, Stamford, Conn.
Filed May 14, 1993, Ser. No. 8,355
Term of patent 14 years
U.S. Cl. D28—54



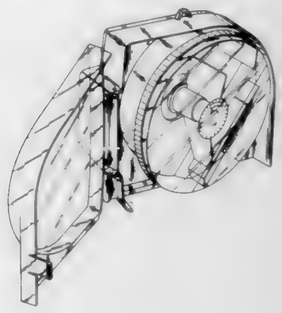
355,507
COSMETIC COMPACT
Stephan Weiss, 211 E. 70th St., New York, N.Y. 10021
Filed Aug. 27, 1993, Ser. No. 12,237
Term of patent 14 years
U.S. Cl. D29—79



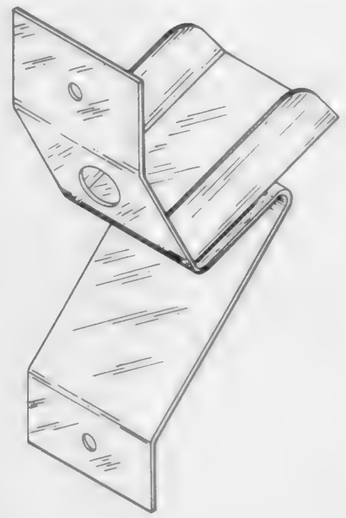
355,508
SAFETY HELMET
John Tutton, and Jerome Foy, both of Ottawa, Canada, assignors to Safe Cycle Limited, Hong Kong, Hong Kong
Filed Dec. 14, 1992, Ser. No. 2,612
Claims priority, application Canada, Jun. 25, 1992, 2506923
Term of patent 14 years
U.S. Cl. D29—102



355,509
AUTOMATIC FEEDER FOR FISH OR BIRDS
Christopher P. Kirk, Sunbury-on-Thames, United Kingdom, assignor to Pet Mate Ltd., Middlesex, United Kingdom
Filed Aug. 19, 1992, Ser. No. 931,952
Claims priority, application United Kingdom, Feb. 25, 1992, 2 021 175
Term of patent 14 years
U.S. Cl. D30—122



355,510
BOTTLE HOLDER FOR SUCKLING ANIMALS
Jimmy E. Duncan, 08 La Ladera, Los Lunas, N. Mex. 87031
Filed Sep. 4, 1992, Ser. No. 940,726
Term of patent 14 years
U.S. Cl. D30—133



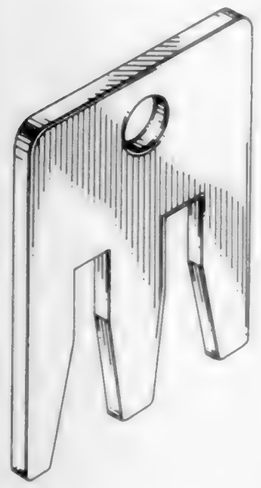
355,511
REFUSE AND TRASH CONTAINER
Timothy S. Cassel, Arlington, Mass., assignor to Tucker Housewares, Leominster, Mass.
Filed Feb. 25, 1994, Ser. No. 19,209
Term of patent 14 years
U.S. Cl. D34—1



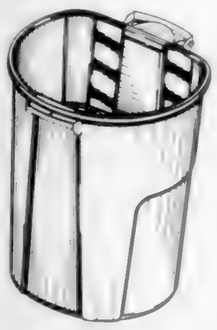
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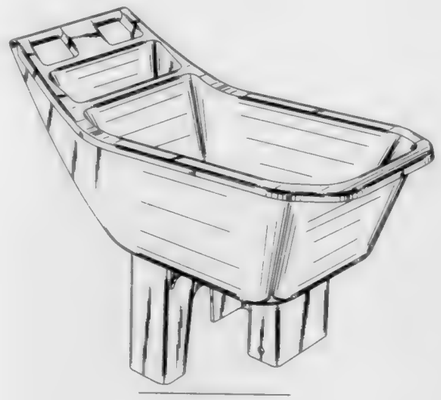
355,513
TUBING END SCRAPING TOOL
Charles R. Posenauer, 7707 N. 13th St., Phoenix, Ariz. 85020
Filed Jul. 30, 1993, Ser. No. 11,248
Term of patent 14 years
U.S. Cl. D32—40



355,514
TRASH CONTAINER BASE
John D. Breen, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 14, 1994, Ser. No. 17,475
Term of patent 14 years
U.S. Cl. D34—1



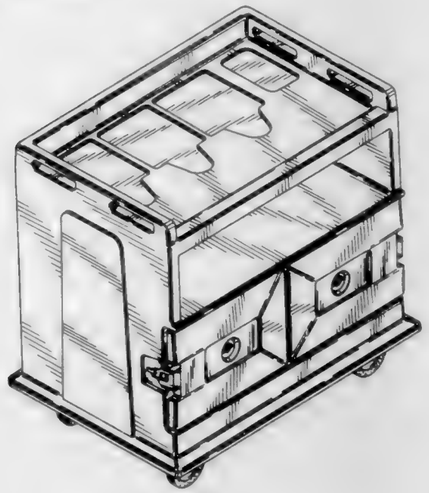
355,515
LAWN CART
Kenneth J. Spear, Vienna, Va.; Rudolph F. Planthaber, Mineral Wells, W. Va., and Steven F. Brooker, Marietta, Ohio, assignors to O. Ames Co., Parkersburg, W. Va.
Filed Apr. 20, 1994, Ser. No. 21,565
Term of patent 14 years
U.S. Cl. D34—16



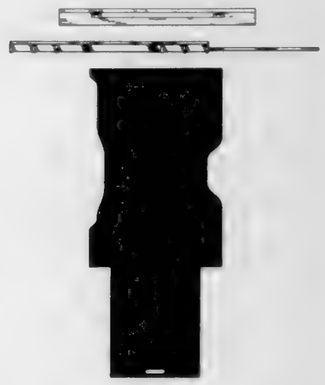
355,516
HOSPITAL CART
Mark L. Grady, Brookville, Ohio, and Gary J. Yoko, Lexington, Ky., assignors to Grandview Hospital and Medical Center, Dayton, Ohio
Filed Mar. 10, 1994, Ser. No. 19,789
Term of patent 14 years
U.S. Cl. D34—19



355,517
MEAL DELIVERY CART
Argyle Campbell, Newport Beach, and Larry D. Maddux, Westminster, both of Calif., assignors to Cambro Manufacturing Co., Huntington Beach, Calif.
Filed May 2, 1994, Ser. No. 22,138
Term of patent 14 years
U.S. Cl. D34—20



355,518
TRUCK RAMP
Michael J. Belanger, 2500 Brookhills Dr., Green Bay, Wis. 54313
Filed Mar. 3, 1994, Ser. No. 19,469
Term of patent 14 years
U.S. Cl. D34—32



355,519
WINCH HANDLE
John D. Crawford, 681 Woodland Cir., Asheboro, N.C. 27203
Filed Feb. 21, 1994, Ser. No. 20,149
Term of patent 14 years
U.S. Cl. D34—35



355,520
BURIAL VAULT
Donald R. Harrill, 122 Sherman Dr., Forest City, N.C. 28043
Filed Jan. 25, 1994, Ser. No. 17,917
Term of patent 14 years
U.S. Cl. D99—1



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF FEBRUARY, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/N Inc.: *See—*
San, Jeremy E.; Cheese, Ben; Graham, Carl N.; and Warnes, Peter R., 5,388,841, Cl. 273-435.000.

Aagard, Roger L.; Bonne, Ulrich; and Cole, Barrett E., to Gas Research Institute. Solid-state oxygen microsensor and thin structure therefor. 5,389,225, Cl. 204-426.000.

Aaslyng, Dorrit A.: *See—*
Lindegaard, Poul; and Aaslyng, Dorrit A., 5,389,307, Cl. 252-549.000.

Aasssi, Ghanem: *See—*
Peglion, Jean-Louis; Aasssi, Ghanem; Pierre, Alain; Kraus-Berthier, Laurence; Guilbaud, Nicolas; and Vilaine, Jean-Paul, 5,389,644, Cl. 514-307.000.

AB Volvo: *See—*
Alfredsson, Sverker, 5,388,472, Cl. 74-331.000.

ABB Lummus Crest Inc.: *See—*
Bhargava, Alok K.; Louie, Wai Seung W.; and Stefani, Arthur N., 5,389,234, Cl. 208-131.000.

Abbate, Richard; and Cassidy, Stephen T., to United States Surgical Corporation. Apparatus for applying a cutting edge to a needle. 5,388,373, Cl. 451-65.000.

Abbott, Joe L.; and Andrade, Michael S., to Enviro Pac International L.l.c. Lockable actuator for a dispensing canister. 5,388,730, Cl. 222-153.000.

Abbott Laboratories: *See—*
Baker, William R.; Boyd, Steven A.; Fung, Anthony K. L.; Stein, Herman H.; Denissen, Jon F.; and Hutchins, Charles W., 5,389,647, Cl. 514-326.000.
DeBernardis, John F.; Kerkman, Daniel J.; Zelle, Robert E.; and McClellan, William, 5,389,638, Cl. 514-29.100.
Joseph, Robert L.; Walker, Sherri A.; Ikeda, Caroline H.; Craig, Lisa D.; and Cashmere, Karen A., 5,389,395, Cl. 426-72.000.

Abbott, Louis E.; and Greenblat, David S., to Bruce Industries, Inc. Magnetic ballast for fluorescent lamps. 5,389,857, Cl. 315-94.000.

Abdel-Rahman, Mohamed S.; and Rizk, Maged M., to University of Medicine and Dentistry of New Jersey. Method of enhancing the anticoagulant effects of aspirin using salicylamide. 5,389,621, Cl. 514-159.000.

Abdelrazig, Ismail; and Scheiner, Paul C., to W. R. Grace & Co.-Conn. Low shrinkage cement composition. 5,389,143, Cl. 106-696.000.

Abdo, Suheil F.: *See—*
Simpson, Howard D.; and Abdo, Suheil F., 5,389,595, Cl. 502-315.000.

Abe, Hiroaki: *See—*
Tomita, Mamoru; Kawase, Kouzou; Tamura, Yoshitaka; Takase, Mitsunori; Miyakawa, Hiroshi; Yamauchi, Koji; Saito, Hitoshi; Abe, Hiroaki; Shimamura, Seiichi; and Kobayashi, Susumu, 5,389,611, Cl. 514-6.000.

Abe, Koichi: *See—*
Okazaki, Iwao; Abe, Koichi; and Nakajima, Shoji, 5,389,422, Cl. 428-141.000.

Abe, Masahiro: *See—*
Ogata, Hisao; Sakou, Hiroshi; Abe, Masahiro; and Higashino, Junichi, 5,390,284, Cl. 395-23.000.

Abe, Takaaki; Akiyoshi, Yuji; Shiraishi, Hiroshi; Shiraishi, Ikuo; and Hayama, Takashi, to Ube Industries, Ltd. 3-alkoxy-N-cycloalkylsulfonyalkanoic amide derivative and herbicide using the same. 5,389,601, Cl. 504-243.000.

Abe, Tsutomu: *See—*
Kimura, Makiko; Kashino, Toshio; Arashima, Teruo; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; Orikasa, Tsuyoshi; Ohba, Takashi; Maeoka, Kunihiko; Kawai, Jun; Abe, Tsutomu; and Nakagomi, Hiroshi, 5,389,957, Cl. 347-20.000.

Abe, Yoshitaka: *See—*
Beni, Yoshiro; Abe, Yoshitaka; and Murakami, Keiichi, 5,388,582, Cl. 128-660.070.

Abel, Steve G., to Alliedsignal Inc. Solenoid encasement with variable reluctance. 5,389,910, Cl. 335-278.000.

Accurate Metering Systems, Inc.: *See—*
Clem, Lyle W., 5,388,604, Cl. 137-4.000.

Acer Incorporated: *See—*
Scherf, Steve D., 5,390,301, Cl. 395-325.000.

Acheson Industries, Inc.: *See—*
Buckley, Michael S.; and Bowns, Richard E., 5,389,403, Cl. 427-372.200.

Ackerman, John F.: *See—*
Bigio, Laurence; Ranish, Joseph M.; Briant, Clyde L.; Wilson, Ronald H.; and Ackerman, John F., 5,389,853, Cl. 313-341.000.

Ackley, H. Sprague, to Intermec Corporation. Method and apparatus for decoding unresolved bar code profiles. 5,389,770, Cl. 235-462.000.

Acovic, Alexandre; Hsu, Ching-Hsiang; Wordeman, Matthew R.; and Wu, Being S., to International Business Machines Corporation. Method of forming a non-volatile DRAM cell. 5,389,567, Cl. 437-52.000.

Acrylic Design & Fabricators Inc.: *See—*
DeWitt, Dale, 5,388,359, Cl. 40-606.000.

Adachi, Hideo: *See—*
Asano, Takeo; Nishimura, Hisashi; Sekiguchi, Nobutoshi; and Adachi, Hideo, 5,389,849, Cl. 310-323.000.

Adachi, Kazutaka; and Yamamura, Yoshinori, to Nissan Motor Co., Ltd. Control system for actuator applicable to servo system having low resolution sensor and speed-reduction gear mechanism 5,389,867, Cl. 318-601.000.

Adachi, Masaru: *See—*
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Michaels, Paul A.; Supinsky, Joseph F.; and Spitz, Robert F., to Lectron Products, Inc. Method and apparatus for calibrating a vehicle compass system. 5,390,122, Cl. 364-443.000.

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Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Masaki: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Masayuki: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Mitsuhiro: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Nobuyuki: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Ryoichi: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Shinji: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Shinsuke: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Shoji: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Takashi: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Tetsuo: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Tomoyuki: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Yasuhiro: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Yoshiaki: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Yoshiyuki: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Yuji: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Yuko: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Yukuo: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Yuzo: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Yuzuru: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Zenichi: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Zenji: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Zenjiro: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Zenkichi: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Zenkoh: *See—*
Kawamura, Hiroshi; Sakamoto, Yoshiaki; and Yamamoto, Kazuo, 5,389,966, Cl. 354-402.000.
Sakata, Zenpei

Sakamoto, Yasuyoshi: *See—*
Takahashi, Mitsuo; Yasuda, Katsuyuki; and Sakamoto, Yasuyoshi, 5,388,982, Cl. 425-572.000

Sakatani, Athushi: *See—*
Inoue, Nori; and Sakatani, Athushi, 5,389,466, Cl. 429-178.000.

Sakou, Hiroshi: *See—*
Ogata, Hisao; Sakou, Hiroshi; Abe, Masahiro; and Higashino, Junichi, 5,390,284, Cl. 395-23.000.

Sakurai, Kiyomi: *See—*
Yoshioka, Mitsuo; Yamagami, Yoshikazu; Kashihara, Akio: and Sakurai, Kiyomi, 5,389,497, Cl. 430-315.000.

Sakurai, Shizuki; Kuwahara, Shiro; Kunie, Nakane; and Takagi, Ryota, to Toyoda Koki Kabushiki Kaisha. Capacitive sensor for detecting a physical value such as acceleration. 5,388,460, Cl. 73-517.00R.

Salomon S.A.: *See—*
Challande, Christian; and Goud, Gilles R., 5,388,851, Cl 280-625.000.

Sam, Anthonius P.: *See—*
Dirix, Cardina A. M. C.; Kamp, Hendrikus J. M.; and Sam, Anthonius P., 5,389,379, Cl. 424-451.000.

Sampson, Wesley C. Method and electronic apparatus for performing bookkeeping. 5,390,113, Cl. 364-419.190

Samsel, W. Scott, to United States Surgical Corporation. Apparatus and method for grinding points. 5,388,374, Cl. 451-245.000.

Samson, Gene: *See—*
Aita, Michael; Samson, Gene; Wand, Bruce H.; and Kotmel, Robert F., 5,389,096, Cl. 606-15.000.

Samsung Electronics Co., Ltd.: *See—*
Bae, Jum H., 5,389,974, Cl. 348-555.000
Jeong-Hun, Kim, 5,389,978, Cl. 348-622.000.
Kim, Ki-Yong, 5,389,967, Cl. 348-169.000.
Kwak, Choong-Keun; and Lee, Seung-Keun, 5,390,150, Cl 365-227.000
Lee, Myeong-hwan, 5,389,977, Cl. 348-614.000.
Lee, Sun G., 5,388,427, Cl. 62-331.000
Lim, Han-Jun, 5,390,026, Cl. 358-335.000
Yun, Joo-young, 5,389,568, Cl. 437-60.000

San, Jeremy E.; Cheese, Ben; Graham, Carl N.; and Warnes, Peter R., to A/N Inc. External memory system having programmable graphics processor for use in a video game system or the like. 5,388,841, Cl. 273-435.000

San Marco Imaging S.r.l.: *See—*
Franci, Giosue ; and Malisan, Luciano, 5,389,999, Cl. 355-28.000

Sandford, Gerald G.: *See—*
Sudhakar, Chakka; Sandford, Gerald G.; and Dolfinger, Frank, Jr., 5,389,241, Cl. 208-254.00H.

Sandoz Ltd.: *See—*
Danner, Bernard, 5,389,136, Cl. 106-271.000.
Henrick, Clive A., 5,389,651, Cl. 514-345.000.
List, Martin; and Sucker, Heinz, 5,389,382, Cl. 424-499.000.

Sands, Elizabeth M.: *See—*
Jay, Anthony S.; Sands, Elizabeth M.; Taylor, Joy C.; and Norman, Alan, 5,389,759, Cl. 219-734.000.

Sandvik AB: *See—*
Danielsen, Jan, 5,388,487, Cl. 82-158.000.

Sankyo Company, Limited: *See—*
Kojima, Koichi; Koyama, Kazuo; Amemiya, Shigeo; and Iwata, Masayuki, 5,389,626, Cl. 514-202.000.

Sannohe, Sinya: *See—*
Miyatake, Yoshito; Kimura, Yuichi; Sannohe, Sinya; and Fushimi, Yoshimasa, 5,390,048, Cl. 359-650.000.

Sano, Hiroaki; Yasukuni, Takashi; Ohata, Masaaki; Nagai, Kiyotaka, Matsuura, Hiroshi; Koshiishi, Kunio; Hirama, Yasuyoshi; and Ogawa, Kyozaburo, to Mitsubishi Jukogyo Kabushiki Kaisha; and Kao Quaker Co., Ltd. Method of manufacturing core and mold. 5,388,630, Cl. 164-39.000.

Sanshin Industry Co., Ltd.: *See—*
Nishioka, Makoto; and Ishii, Tsuneo, 5,388,779, Cl. 242-346.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Tsujii, Eiichiro, 5,389,019, Cl. 440-61.000.

Santacruz, Bolivar: *See—*
Paolercio, Anthony; and Santacruz, Bolivar, 5,388,750, Cl. 228-4.100.

Santel, Hans-Joachim: *See—*
Schallner, Otto; Lurssen, Klaus; Schmidt, Robert R.; Santel, Hans-Joachim; and Erdelen, Christoph, 5,389,599, Cl. 504-230.000.

Santini, Andree; and Miller, Richard E., to Binney & Smith Inc. Erasable marking composition. 5,389,717, Cl. 524-575.000

Sanyo Electric Co., Ltd: *See—*
Kuwahara, Makoto; Kume, Kakuji; Masuko, Eiichi; Saitou, Atsushi; Fukuda, Katsuhiro; Araki, Takashi; and Hosoda, Yuuji, 5,388,904, Cl. 312-406.200.

Sarkozi, Jeff. Adjustable seat and back support pad, and mattress 5,388,295, Cl. 5-630.000.

Sarnoff, Norton; Fletcher, Carl R.; Morris, Laura A.; and Chmela, John F., to Ensar Corporation. Microwaveable chip maker. 5,389,768, Cl 219-732.000.

Sarpeshkar, Ashok M.: *See—*
Markusch, Peter H.; and Sarpeshkar, Ashok M., 5,389,720, Cl 524-839.000.

Sasai, Osamu; and Suzuki, Masaji, to Sumitomo Wiring Systems, Ltd. Connector. 5,389,015, Cl. 439-752.000

Sasaki, Keisuke: *See—*
Tomono, Takao; Nishikata, Tasunari; Pu, Lyong S.; and Sasaki, Keisuke, 5,390,201, Cl. 372-22.000.

Sasaki, Kenichi, to Canon Kabushiki Kaisha. Optical information recording and reproducing apparatus and method for detecting contamination of optical apparatus. 5,390,160, Cl. 369-54.000.

Sasaki, Toru; and Nagao, Toru, to Fuji Jukogyo Kabushiki Kaisha. Pipe repair method using a shape-memory alloy and pipe repair member. 5,388,617, Cl. 138-99.000.

Sasaki, Yusuke, to Autex, Inc. Initiator for photopolymerization. 5,389,700, Cl. 522-47.000.

Sasisekharan, Ramnath; Lohse, Daniel L.; Cooney, Charles L.; Linhardt, Robert J.; and Langer, Robert S., to Massachusetts Institute of Technology; and University of Iowa Research Foundation. Purification of heparinase I, II, and III from *Flavobacterium heparinum*. 5,389,539, Cl. 435-220.000.

Sasse, Herrn T., to August Bilstein GmbH & Co. KG. Hydraulic dashpot for motor vehicles. 5,388,676, Cl. 188-299.000.

Sasson, Shay. Solder wave parameters analyzer. 5,388,468, Cl. 73-865.900

Satake, Kazuko, to Tokuyama Corporation. Module and device for detecting NOX gas. 5,389,340, Cl. 422-98.000.

Sato, Goro; Arima, Yusaku; and Ida, Takanori, to Catalysts & Chemicals Industries Co., Ltd. Modified crystalline aluminosilicate zeolites and process for their preparation. 5,389,357, Cl. 423-714.000.

Sato, Hiroshi: *See—*
Hayashi, Mikio; Sato, Hiroshi; Nishida, Masahiro; and Takahashi, Keiichiro, 5,390,290, Cl. 395-109.000.
Homma, Akira; Homma, Susumu; Sato, Hiroshi; and Hiroi, Hisao, 5,388,623, Cl. 152-5.000.

Sato, Hirotaka: *See—*
Yorozu, Hidenori; Sato, Hirotaka; and Doi, Yasuhiro, 5,389,678, Cl. 514-557.000.

Sato, Hisatomo: *See—*
Kawasaki, Shoji; Hirayama, Nobuhiro; Uchiyama, Kenji; Sato, Hisatomo; and Akiyama, Hiromi, 5,389,483, Cl. 430-109.000

Sato, Kazuo: *See—*
Koide, Akira; Sato, Kazuo; Suzuki, Seiko; Ichikawa, Norio; Obayashi, Hidehito; and Hayashi, Masahide, 5,389,198, Cl. 156-651.000.

Sato, Koichi: *See—*
Uehara, Shinichi; and Sato, Koichi, 5,389,331, Cl. 264-513.000.

Sato, Masaaki: *See—*
Hoshi, Akimitsu; Sato, Masaaki; Miyake, Norifumi; and Kobayashi, Kenji, 5,390,016, Cl. 355-308.000

Sato, Seiichi; Kawamura, Kiyoshi; Takahashi, Yoshio; Watanabe, Koichiro; Shimizu, Sadahiro; and Ohta, Tomio, to Kowa Co., Ltd. Diamine compound and brain protecting agent containing the same. 5,389,630, Cl 514-218.000.

Sato, Shin-ichi: *See—*
Sawayama, Shigeru; Satoh, Kohichi; Sato, Shin-ichi; and Sakakihara, Toshiaki, 5,389,203, Cl. 162-135.000.

Sato, Takashi: *See—*
Wada, Kouji; Sato, Takashi; and Shimura, Masayoshi, 5,388,426, Cl. 62-263.000.

Sato, Toshiaki: *See—*
Itamura, Sumio; Moritani, Tohei; Sato, Toshiaki; and Negi, Taichi, 5,389,709, Cl. 524-239.000.

Sato, Toshiya: *See—*
Fujita, Tatsuyuki; Maeda, Mikio; Sato, Toshiya; and Horiguchi, Tsuneo, 5,390,018, Cl. 356-73.100.

Satoh, Kohichi: *See—*
Sawayama, Shigeru; Satoh, Kohichi; Sato, Shin-ichi; and Sakakihara, Toshiaki, 5,389,203, Cl. 162-135.000.

Satoh, Tetsuya: *See—*
Imataki, Hiroyuki; Satoh, Tetsuya; Hiraoka, Mizuho; and Tamura, Tomoyuki, 5,389,313, Cl. 156-643.000.

Satoma, Shiro, to JUKI Corporation. Safety device for sewing machine. 5,388,540, Cl. 112-277.000.

Sauber, Charles J. Cable pulling and reeling apparatus having anti-spill device and method. 5,388,781, Cl. 242-388.600

Saudi Arabian Oil Company: *See—*
Omar, Ahmed A., 5,388,863, Cl. 285-55.000.

Sauermann, Walter: *See—*
Rau, Peter; and Sauermann, Walter, 5,390,222, Cl. 376-364.000

Saul, Jonathan R.: *See—*
LaPointe, Larry P.; Saul, Jonathan R.; and Komorowski, Karl J., 5,388,886, Cl. 297-75.000.

Sauter, Hubert: *See—*
Doetzer, Reinhard; Sauter, Hubert; Wingert, Horst; Kirstgen, Reinhard; Harreus, Albrecht; Lorenz, Gisela; and Ammermann, Eberhard, 5,389,619, Cl. 514-63.000.

Savage, Kelly B.; Brinkmeyer, Francis M.; and Bridges, Steven D., to Pillips Petroleum Company. Apparatus for dehydrogenation process control. 5,389,342, Cl. 422-109.000.

Sawada, Takeshi, to Canon Kabushiki Kaisha. Coil of superconducting material for electric appliance and motor utilizing said coil. 5,389,908, Cl. 335-216.000.

Sawant, Shiva; Chatwani, Dilip; Chiang, Winnis; Davar, Jonathan; Opher, Ayal; and Subramanian, Rajan, to SynOptics Communications, Inc. Method and apparatus providing for bootstrapping of switches in an ATM network or the like. 5,390,170, Cl. 370-58.100.

Sawatari, Norio: *See—*
Katagiri, Yoshimichi; Horikoshi, Yuzo; and Sawatari, Norio, 5,389,485, Cl. 430-110.000

Sawayama, Shigeru; Satoh, Kohichi; Sato, Shin-ichi; and Sakakihara, Toshiaki, to Mitsubishi Kasei Corporation. Paper-making additives comprising cationic polymers. 5,389,203, Cl. 162-135.000.

Sawyer, Gerald F. Display device for fan pulls. 5,388,710, Cl. 211-113.000.

Scaringella, David T.: *See—*
Thurston, Garrett S.; Suplinskas, Raymond J.; Carroll, Thomas J.; Connors, Donald F., Jr.; Scaringella, David T.; and Krutenat, Richard C., 5,389,152, Cl. 118-429.000.

Schadt, Martin: *See—*
Chigrinov, Vladimir G.; Kozenkov, Vladimir M.; Novoseletsky, Nicolic V.; Reshetnyak, Victor Y., Reznikov, Yuriy A.; Schadt, Martin; and Schmitt, Klaus, 5,389,698, Cl. 522-2.000.

Schaffer, James D.: *See—*
Eshelman, Larry J.; and Schaffer, James D., 5,390,283, Cl. 395-13.000

Schallner, Otto; Lurssen, Klaus; Schmidt, Robert R.; Santel, Hans-Joachim; and Erdelen, Christoph, to Bayer Aktiengesellschaft. Substituted heterocyclyltriazinediones. 5,389,599, Cl. 504-230.000.

Scharpf, Eric W.; and Flemming, Frederick C., to Air Products and Chemicals, Inc. Use of nitrogen from an air separation unit as gas turbine air compressor feed refrigerant to improve power output. 5,388,395, Cl. 60-39.020.

Scharrenbroich, Helmut, to Battenfeld Fischer Blasformtechnik GmbH. Closure arrangement for molds for manufacture of objects from thermoplastic plastics material. 5,388,981, Cl. 425-541.000

Schaudt, Gerd: *See—*
Herzog, Horst; Neese, Hans J.; Schaudt, Gerd; and Mader, Wolfgang, 5,389,220, Cl. 204-206.000.

Schaus, John M.; and Titus, Robert D., to Eli Lilly and Company. Ring-substituted 2-amino-1,2,3,4-tetra-hydronaphthalenes. 5,389,687, Cl. 514-657.000.

Scheiner, Paul C.: *See—*
Abdelrazig, Ismail; and Scheiner, Paul C., 5,389,143, Cl. 106-696.000.

Schelderup, Hans H.: *See—*
Johansen, Knut H.; Larsen, Oyvind; and Schelderup, Hans H., 5,388,317, Cl. 29-402.180.

Schelling, Pierre: *See—*
Dorsch, Dieter; Mederski, Werner; Osswald, Mathias; Schelling, Pierre; Beier, Norbert; Lues, Ingeborg; and Minck, Klaus-Otto, 5,389,642, Cl. 514-303.000.

Scherbatskoy, Serge A. Measuring while drilling employing cascaded transmission systems. 5,390,153, Cl. 367-83.000.

Scherf, Steve D., to Acer Incorporated. Method and apparatus for communicating device-specific information between a device driver and an operating system in a computer system. 5,390,301, Cl. 395-325.000.

Schering Agrochemicals Limited: *See—*
Faers, Malcom A.; and Damo, Zoltan, 5,389,665, Cl. 514-399.000

Schering Aktiengesellschaft: *See—*
Hofmeister, Helmut; Bittler, Dieter; Michna, Horst; Habenicht, Ursula; Fritzemeier, Karl-Heinrich; and Nishino, Yukishige, 5,389,624, Cl. 514-176.000.
Russell, Philip E.; and Hagemeister, Heinz H. A., 5,389,636, Cl. 514-275.000

Schering Corporation: *See—*
Neustadt, Bernard R.; Smith, Elizabeth M.; and Haslanger, Martin F., 5,389,610, Cl. 514-2.000.

Scheuble, Bernhard: *See—*
Krause, Joachim; Eidenschink, Rudolf; Bofinger, Klaus; Hopf, Reinhard; Reiffenrath, Volker; Poetsch, Eike; Scheuble, Bernhard; and Geelhaar, Thomas, 5,389,290, Cl. 252-299.610.

Schiffleger, Alan J.: *See—*
Pribnow, Richard D.; Flunker, Galen; Leedom, George W.; and Schiffleger, Alan J., 5,390,300, Cl. 395-275.000.

Schipper, Paul H.: *See—*
Harandi, Mohsen N.; and Schipper, Paul H., 5,389,237, Cl. 208-153.000.

Schirmer, Henry G.; Williams, Allen C., Jr.; and Nelson, Martin, to W.R. Grace & Co.-Conn. Blends of polypropylene and ethylene copolymer and films made from the blend. 5,389,448, Cl. 428-517.000.

Schiroky, Gerhard H.: *See—*
Kennedy, Christopher R.; Sonuparlak, Birol; Fareed, Ali S.; Garnier, John E.; and Schiroky, Gerhard H., 5,389,450, Cl. 428-552.000

Schleiffenbaum, Boris: *See—*
Tedder, Thomas F.; Schleiffenbaum, Boris; and Spertini, Olivier, 5,389,520, Cl. 435-7.240

Schlenker, Theodore R.: *See—*
Shear, Walter J., III; and Schlenker, Theodore R., 5,388,475, Cl. 74-459.000.

Schlosser, Alvin L., to Lourdes Industries. High pressure coupling with provision for preventing separation of parts and with anti-galling provision. 5,388,866, Cl. 285-92.000.

Schlumberger Technology Corporation: *See—*
Case, Charles R.; and Ellis, Darwin V., 5,390,115, Cl. 364-422.000.
Sezginer, Abdurrahman; and Straley, Christian, 5,389,877, Cl. 324-303.000

Schluter, Adolf: *See—*
Schneider, Werner; Rittershaus, Erhard; Kausch, Erwin; Borowski, Horst; Muller, Bernd-Henrik; Rudolph, Gert; Schluter, Adolf; Trinkies, Wolfgang; and Wiethaup, Wolfgang, 5,388,596, Cl. 131-360.000.

Schmahl, Calvin O.; and Apple, David L., to Deere & Company; and Amerequip Corporation. Bumper quick-attach for tractor front-end loaders. 5,388,950, Cl. 414-686.000.

Schmersahl, Hein-Uwe: *See—*
deMaria, Luigi; Lasciarrea, Claudio; Micheli, Pietro; and Schmersahl, Hein-Uwe, 5,389,372, Cl. 424-195.100.

Schmid, Karl: *See—*
Demmering, Guenther; Schmid, Karl; Bongardt, Frank; and Wittich, Leonhard, 5,389,113, Cl. 44-388.000.

Schmidt, Erik. Cycle rack. 5,388,736, Cl. 224-42.03B.

Schmidt, Hans-Joachim: *See—*
Daumueller, Hans; Ruckwied, Heinz; and Schmidt, Hans-Joachim, 5,390,087, Cl. 362-61.000.

Schmidt, Randall G.: *See—*
Brady, William P.; Cifuentes, Martin E.; Schoenherr, William J.; Stickles, David L.; Strong, Michael R.; Vanwert, Bernard; Vincent, Gary A.; and Schmidt, Randall G., 5,389,170, Cl 156-109.000.

Schmidt, Robert D.: *See—*
Muller, Robert D.; and Schmidt, Robert D., 5,389,754, Cl. 200-292.000.

Schmidt, Robert R.: *See—*
Schallner, Otto; Lurssen, Klaus; Schmidt, Robert R.; Santel, Hans-Joachim; and Erdelen, Christoph, 5,389,599, Cl. 504-230.000

Schmidt, Rolf: *See—*
Horner, Thomas; and Schmidt, Rolf, 5,388,554, Cl. 123-184.430.

Schmidt, Willy: *See—*
Rupprecht, Matthias; Schmidt, Willy; and Trinks, Wolfgang, 5,390,343, Cl. 455-161.300.

Schmitt, Hans-Georg; Exner, Otto; and Buschhaus, Hans-Ulrich, to Bayer Aktiengesellschaft. Agent for protecting sawn timber 5,389,300, Cl. 252-380.000

Schmitt, Klaus: *See—*
Chigrinov, Vladimir G.; Kozenkov, Vladimir M.; Novoseletsky, Nicolic V.; Reshetnyak, Victor Y.; Reznikov, Yuriy A.; Schadt, Martin; and Schmitt, Klaus, 5,389,698, Cl. 522-2.000.

Schmitt, Theodore J.: *See—*
Chiarot, Kevin A.; Dinkjian, Robert M.; and Schmitt, Theodore J., 5,390,312, Cl. 395-400.000.

Schmitt, Werner H., to Hoppmann Corporation. Rigid disc drive universal link. 5,389,041, Cl. 464-106.000.

Schneegans, Thomas H. Stud-welding process and a device for carrying out the process. 5,389,762, Cl. 219-99.000.

Schneider, Georg; Reder, Wolfgang O.; and Reinhart, Dieter, to Koenig & Bauer Aktiengesellschaft. Method and apparatus for placement of a doctor blade against an ink-dispensing roller. 5,388,515, Cl. 101-363.000

Schneider, Hans: *See—*
Franzmann, Gunter; Utsch, Heiko; Wolsiefer, Harald; Schneider, Hans; and Armbrust, Karl-Peter, 5,388,888, Cl. 297-284.110.

Schneider, Joseph: *See—*
Busel, Horst; and Schneider, Joseph, 5,389,308, Cl. 252-587.000.

Schneider, Werner; Rittershaus, Erhard; Kausch, Erwin; Borowski, Horst; Muller, Bernd-Henrik; Rudolph, Gert; Schluter, Adolf; Trinkies, Wolfgang; and Wiethaup, Wolfgang, to B.A.T. Cigarettenfabriken GmbH. Coaxial cigarette. 5,388,596, Cl. 131-360.000.

Schoenherr, William J.: *See—*
Brady, William P.; Cifuentes, Martin E.; Schoenherr, William J.; Stickles, David L.; Strong, Michael R.; Vanwert, Bernard; Vincent, Gary A.; and Schmidt, Randall G., 5,389,170, Cl. 156-109.000.

Schofield, Philip W.: *See—*
Palecek, Vincent J., deceased; and Schofield, Philip W., 5,390,269, Cl. 385-78.000.

Schollenberger, Gerd: *See—*
Edlund, Roy; and Schollenberger, Gerd, 5,388,615, Cl. 137-859.000.

Schonafinger, Karl; and Bohn, Helmut, to Cassella AG. Phenylfuroxans. 5,389,655, Cl. 514-364.000.

Schonenberger, Rolf; Enderlein, Robby; and Robu, Johann, to RSL Logistik. Sorting method. 5,388,703, Cl. 209-44.100.

Schoute, Frederik C.; and Awater, Geert A., to U.S. Philips Corporation. Low delay or low loss switch for ATM. 5,390,176, Cl. 370-60.100.

Schrenk, David: *See—*
Boser, Ronald; Farinola, Vito; Greenberg, Bert; and Schrenk, David, 5,389,913, Cl. 340-471.000.

Schrenk, Walter J.: *See—*
Lewis, Ray A.; Wisniewski, David M.; Ramanathan, Ravi; and Schrenk, Walter J., 5,389,324, Cl. 264-171.000.

Schroder, Niels, to Copia Forder-und Lagertechnik Gesellschaft fur Anlagenbau mbH. High-shelf system store for the storage and the removal from the store of roll-shaped material, more particularly paper rolls, having tracks arranged in pairs for storing paper rolls thereupon. 5,388,955, Cl. 414-279.000.

Schroering, Timothy: *See—*
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Zheng, Qin, to Mitsubishi Electric Research Laboratories, Inc. System for synchronous bandwidth allocation in token ring networks 5,390,182, Cl. 370-85.500
Zhou, Qun Y.: *See—*
Bunzow, James R.; Civelli, Olivier; Grandy, David K.; Zhou, Qun Y.; Caron, Marc G.; Dearry, Allen; Falardeau, Pierre; and Gingrich, Jay A., 5,389,543, Cl. 435-252.300
Ziegler, Douglas R.: *See—*
Mengeu, Gary L.; Dutt, Merbert V.; and Ziegler, Douglas R., 5,388,731, Cl. 222-545.000
Ziemek, Gerhard; and Hildebrand, Helmut, to Kabelmetal Electro GmbH. Power and control cable with a two layer metallic sheath for marine applications. 5,389,736, Cl. 174-36.000.
Zilog, Inc.: *See—*
Gyure, Alex; Berg, John; Carver, Damian; and Manos, Pete, 5,389,565, Cl. 437-52.000.
Zimmerman, Anthony M.: *See—*
Hill, James D.; Stogner, Claude R.; and Zimmerman, Anthony M., 5,388,765, Cl. 239-127.300.
Zimpro Environmental Inc.: *See—*
Berrigan, John K., Jr., 5,389,259, Cl. 210-616.000.
Lehmann, Richard W.; and Clark, Mark A., 5,389,264. Cl. 210-744.000.
Zinga Industries Inc.: *See—*
Zinga, William L., 5,389,246, Cl. 210-130.000.
Zinga, William L., to Zinga Industries Inc. Reservoir filter. 5,389,246, Cl. 210-130.000
Zingher, Arthur R.: *See—*
Gruber, Peter A.; and Zingher, Arthur R., 5,388,635, Cl. 165-80.400.
Ziniel, Joseph M., to Motorola, Inc. System and method for muting and unmuting a communication device. 5,390,341, Cl. 455-54.100.
Zipperian, Thomas E.: *See—*
Hietala, Vincent M.; Martens, Jon S.; and Zipperian, Thomas E., 5,389,837, Cl. 326-3.000
Zirngibl, Martin, to AT&T Corp. High power, single-frequency tunable laser. 5,390,200, Cl. 372-20.000.
Zizzo, Daniel M. Cutter member for scrap reduction mill. 5,388,774, Cl. 241-152.200.
Zola, Meyer J.: *See—*
Hiller, Thomas L.; Spanke, Ronald A.; Stanaway, John J., Jr.; Wierzbicki, Alex L.; and Zola, Meyer J., 5,390,175, Cl. 370-60.000.
Zoller, Gerhard: *See—*
Konig, Wolfgang; Zoller, Gerhard; Just, Melitta; and Jablonka, Bernd, 5,389,614, Cl. 514-18.000.
Zollinger, Hansrudolf, to H. A. Schlatter AG. Flash butt welding facility. 5,389,760, Cl. 219-53.000.
Zou, Han: *See—*
Tai, Chen-Yu; Zou, Han; and Chen, Zhan, 5,390,276, Cl 385-146.000
Zreiba, Nuri A.: *See—*
Passaniti, Joseph L.; Megahed, El-Sayed A.; and Zreiba, Nuri A., 5,389,469, Cl. 429-206.000
Ztong Yee Industrial Co., Ltd.: *See—*
Lin, Hsien-Chih, 5,389,462, Cl. 429-121.000.
Zuckerman, Lawrence H.: *See—*
DeLand, Daniel L.; Heimnick, Paul; Moy, Curtis T.; Zuckerman, Lawrence H.; Grossman, David G.; and Schuler, Kurt P., 5,389,920, Cl. 340-825.690
Zuloaga, Jaime A., Jr.; and Johansson, Eric B., to General Electric Company. Lower tie plate strainers including helical spring strainers for boiling water reactors. 5,390,220, Cl. 376-313.000.
Zuniga, Maria E.; Fieler, George M.; Gore, William J.; and Burkes, Alice L., to Procter & Gamble Company, The. Storage stable calcium-supplemented beverage concentrates. 5,389,387, Cl. 426-74.000.
Zurcher, Gerhard: *See—*
Bernauer, Karl; Borgulya, Janos; Bruderer, Hans; Da Prada, Mose ; and Zurcher, Gerhard, 5,389,653, Cl. 514-355.000.
Zutler, Michael B., to Marketing Congress, Inc. Container. 5,388,714. Cl. 220-4.240.
Zwack, Robert R.; and Eswarakrishnan, V., to PPG Industries, Inc. Photodegradation-resistant electrodepositable primer compositions 5,389,219, Cl. 204-181.100.
Zygo Corporation: *See—*
Biegen, James F., 5,390,023, Cl. 356-359.000.
ZymoGenetics, Inc.: *See—*
Labroo, Virender M., 5,389,646, Cl. 514-320.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF FEBRUARY, 1995

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Avantage Group, Inc., The: *See—*
Daniels, Mark E., Re. 34,856, Cl. 221-63.000.
Carter, Calvin H., Jr.: *See—*
Davis, Robert F.; Carter, Calvin H., Jr.; and Hunter, Charles E., Re. 34,861, Cl. 437-100.000.
Church & Dwight Co., Inc.: *See—*
Shank, James D., Jr., Re. 34,854, Cl. 451-102.000.
Daniels, Mark E., to Avantage Group, Inc., The. Method and apparatus for dispensing merchandise bags. Re. 34,856, Cl. 221-63.000.
Davis, Robert F.; Carter, Calvin H., Jr.; and Hunter, Charles E., to North Carolina State University. Sublimation of silicon carbide to produce large, device quality single crystals of silicon carbide. Re. 34,861, Cl. 437-100.000.
Endo, Toshio; and Sato, Mitsuo, to Ricoh Company, Ltd. Thermally operated apparatus for making a plate. Re. 34,859, Cl. 358-299.000.
Garner, Frank D. Automated device and method for harvesting plants at uniform stem lengths. Re. 34,855, Cl. 56-13.900.
Hunter, Charles E.: *See—*
Davis, Robert F.; Carter, Calvin H., Jr.; and Hunter, Charles E., Re. 34,861, Cl. 437-100.000.
Kunreuther, Steven J. Assembly of attachments and device for attaching same. Re. 34,857, Cl. 227-71.000
Kunreuther, Steven J. Button attacher with variable needle spacing. Re. 34,858, Cl. 227-71.000.
North Carolina State University: *See—*
Davis, Robert F.; Carter, Calvin H., Jr.; and Hunter, Charles E., Re. 34,861, Cl. 437-100.000.
Ricoh Company, Ltd.: *See—*
Endo, Toshio; and Sato, Mitsuo, Re. 34,859, Cl. 358-299.000.
Sato, Mitsuo: *See—*
Endo, Toshio; and Sato, Mitsuo, Re. 34,859, Cl. 358-299.000.
Shank, James D., Jr., to Church & Dwight Co., Inc. Fan nozzle. Re. 34,854, Cl. 451-102.000.
Skibsted, Eric T. Roadway conditioning apparatus. Re. 34,860, Cl 404-128.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Ahmed, Osman; Bradley, Steven A.; Fritsche, Steven L.; and Jacob, Steven D., to Landis & Gyr Powers, Inc. Apparatus for controlling the ventilation of laboratory fume hoods. B1 5,092,227, 2-14-95, Cl. 454-61.000.
Bradley, Steven A.: *See—*
Ahmed, Osman; Bradley, Steven A.; Fritsche, Steven L.; and Jacob, Steven D., B1 5,092,227, Cl. 454-61.000.
Bradshaw, Neil; and Sanderson, Neil E., to Fisons Plc. High resolution plasma mass spectrometer. B1 5,068,534, 2-14-95, Cl. 250-288.000
Cinpres Limited: *See—*
Yamazaki, Kunio; and Watanabe, Tetsuzi, B1 4,923,666, Cl. 264-572.000.
Civin, Curt I., to Johns Hopkins University, The. Human stem cells and monoclonal antibodies. B1 5,035,994, 2-14-95, Cl. 435-2.000.
Cochran, Danny B.: *See—*
Mortillo, Anthony J.; Cochran, Danny B.; and Micale, Anthony J., Jr., B1 5,159,896, Cl. 119-50.500.
Contra Vision Limited: *See—*
Hill, George R., B1 4,925,705, Cl. 427-259.000.
Corning Ware Inc.: *See—*
Nolan, Kelly J.; Squires, Emily M.; and Urruti, Eric H., B1 5,199,098, Cl. 385-128.000.
Cutler, Christopher A.: *See—*
Wallace, William D.; Cutler, Christopher A.; and Gentry, Scott D., B1 5,009,662, Cl. 606-192.000.
Dishart, Kenneth T.; and Wolff, Mark C., to Du Pont de Nemours, E. I., and Company. Cleaning composition of terpene compound and dibasic ester. B1 4,867,800, 2-14-95, Cl. 134-40.000.
Du Pont de Nemours, E. I., and Company: *See—*
Dishart, Kenneth T.; and Wolff, Mark C., B1 4,867,800, Cl. 134-40.000.
Fisons Plc.: *See—*
Bradshaw, Neil; and Sanderson, Neil E., B1 5,068,534, Cl. 250-288.000.
Ford Motor Company: *See—*
Smith, Calvin G., B1 5,105,730, Cl. 454-161.000.
Fritsche, Steven L.: *See—*
Ahmed, Osman; Bradley, Steven A.; Fritsche, Steven L.; and Jacob, Steven D., B1 5,092,227, Cl. 454-61.000.
Gentry, Scott D.: *See—*
Wallace, William D.; Cutler, Christopher A.; and Gentry, Scott D., B1 5,009,662, Cl. 606-192.000.
Georg Fischer AG: *See—*
Rianda, Kent A., B1 4,792,374, Cl. 156-503.000.
Herman, Thomas: *See—*
Lidow, Alexander; and Herman, Thomas, B1 4,705,759, Cl. 437-29.000.
Hill, George R., to Contra Vision Limited. Method of printing layers having substantially exact registration. B1 4,925,705, 2-14-95, Cl. 427-259.000.
Hoopengardner, Merle R., to Step Loc Corporation. System for holding carpet in place without stretching. B1 4,557,774, 2-14-95, Cl. 156-71.000.
International Rectifier Corporation: *See—*
Lidow, Alexander; and Herman, Thomas, B1 4,705,759, Cl. 437-29.000
Jacob, Steven D.: *See—*
Ahmed, Osman; Bradley, Steven A.; Fritsche, Steven L.; and Jacob, Steven D., B1 5,092,227, Cl. 454-61.000
Johns Hopkins University, The: *See—*
Civin, Curt I., B1 5,035,994, Cl. 435-2.000.
Konopka, John G., to Zenith Electronics Corporation. Power circuit locator. B1 4,906,938, 2-14-95, Cl. 324-529.000.
Landis & Gyr Powers, Inc.: *See—*
Ahmed, Osman; Bradley, Steven A.; Fritsche, Steven L.; and Jacob, Steven D., B1 5,092,227, Cl. 454-61.000.
Lidow, Alexander; and Herman, Thomas, to International Rectifier Corporation. High power MOSFET with low on-resistance and high breakdown voltage. B1 4,705,759, 2-14-95, Cl. 437-29.000.
Micale, Anthony J., Jr.: *See—*
Mortillo, Anthony J.; Cochran, Danny B.; and Micale, Anthony J., Jr., B1 5,159,896, Cl. 119-50.500
Mieda, Hiroaki: *See—*
Tamaki, Yoji; Mutsushika, Osamu; and Mieda, Hiroaki, B1 5,049,402, Cl. 426-599.000.
Monsanto Company: *See—*
Mortillo, Anthony J.; Cochran, Danny B.; and Micale, Anthony J., Jr., B1 5,159,896, Cl. 119-50.500.
Mortillo, Anthony J.; Cochran, Danny B.; and Micale, Anthony J., Jr., to Monsanto Company. Poultry nest pad. B1 5,159,896, 2-14-95, Cl. 119-50.500.
Mutsushika, Osamu: *See—*
Tamaki, Yoji; Mutsushika, Osamu; and Mieda, Hiroaki, B1 5,049,402, Cl. 426-599.000.
Nolan, Kelly J.; Squires, Emily M.; and Urruti, Eric H., to Corning Ware Inc. Moisture resistant optical fiber coatings with improved stability. B1 5,199,098, 2-14-95, Cl. 385-128.000.
Pokka Corporation: *See—*
Tamaki, Yoji; Mutsushika, Osamu; and Mieda, Hiroaki, B1 5,049,402, Cl. 426-599.000
Rianda, Kent A., to Georg Fischer AG. Apparatus for fusion joining plastic pipe. B1 4,792,374, 2-14-95, Cl. 156-503.000.
Sanderson, Neil E.: *See—*
Bradshaw, Neil; and Sanderson, Neil E., B1 5,068,534, Cl. 250-288.000.
Smith, Calvin G., to Ford Motor Company. Air distribution apparatus for an automotive device. B1 5,105,730, 2-14-95, Cl. 454-161.000
Squires, Emily M.: *See—*
Nolan, Kelly J.; Squires, Emily M; and Urruti, Eric H., B1 5,199,098, Cl. 385-128.000.

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Hoopengardner, Merle R., B1 4,557,774, Cl. 156-71.000.
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Urruti, Eric H.: *See—*
Nolan, Kelly J.; Squires, Emily M.; and Urruti, Eric H., B1 5,199,098, Cl. 385-128.000.
Utah Medical Products, Inc.: *See—*
Wallace, William D.; Cutler, Christopher A.; and Gentry, Scott D., B1 5,009,662, Cl. 606-192.000
Wallace, William D.; Cutler, Christopher A.; and Gentry, Scott D., to Utah Medical Products, Inc. Medical pressure sensing and display system. B1 5,009,662, 2-14-95, Cl. 606-192.000.
Watanabe, Tetsuzi: *See—*
Yamazaki, Kunio; and Watanabe, Tetsuzi, B1 4,923,666, Cl. 264-572.000.
Wolff, Mark C.: *See—*
Dishart, Kenneth T.; and Wolff, Mark C., B1 4,867,800, Cl. 134-40.000.
Yamazaki, Kunio; and Watanabe, Tetsuzi, to Cinpres Limited. Method of injection moulding. B1 4,923,666, 2-14-95, Cl. 264-572.000.
Zenith Electronics Corporation: *See—*
Konopka, John G., B1 4,906,938, Cl. 324-529.000.

LIST OF DESIGN PATENTEES

. *See—*
Pozzi, Carlo M., 355,353, Cl. D8-377.000
Abraham, James E.: *See—*
Scheper, Robert M.; Groendal, Dale M.; Abraham, James E.; Hahn, Thomas R.; Baumgartner, Cheryl D.; Smith, Douglas A.; and Scholten, Brian L., 355,303, Cl. D6-366.000.
Abrams, Randy L., to Safety 1st, Inc. Baby monitor receiver. 355,385. 2-14-95, Cl. D10-104.000.
Abrams, Robert C.: *See—*
Weder, Donald E.; Weder, Erwin H.; Weder, Wanda M.; Craig, Franklin J.; Donnellly, Wilma M.; Bolk, Phyllis J.; Bergstrand, John W.; and Abrams, Robert C., 355,392, Cl. D11-153.000.
Ackley, Robert E.; and Raburn, Richard W., to Span-America Medical Systems, Inc. Tri-zone mattress overlay. 355,322, 2-14-95, Cl. D6-596.000
Advance Watch Company: *See—*
Rosenbaum, Barry, 355,441, Cl. D19-51.000.
AFA Products, Inc.: *See—*
Steijns, Emile B.; and Maas, Wilhelmus J. J., 355,361, Cl. D9-448.000.
Aktiebolaget Astra: *See—*
Broberg, Leif, 355,487, Cl. D24-156.000.
Allen, Charles S.; and Wilson, John R., to Sloan Valve Company. Flush valve cover. 355,478, 2-14-95, Cl. D23-249.000.
Almond, Kay. Eye patch kit for ridding wrinkles. 355,489, 2-14-95, Cl. D24-189.000.
Alves, David: *See—*
Bezener, Jerry; and Alves, David, 355,393, Cl. D21-190.000
Bezener, Jerry; and Alves, David, 355,394, Cl. D21-190.000
AMC International Alfa Metalcraft Corporation AG: *See—*
Gebhardt, Lutz, 355,330, Cl. D7-318.000.
American National Can Company: *See—*
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American Standard Inc.: *See—*
Leonard, Peter E.; Barrass, Andrew; Wode, Carolyn L.; and Forman, Melvin T., 355,480, Cl. D23-304.000.
American Tack & Hardware Co., Inc.: *See—*
Ancona, Bruce; Ancona, Jane; and Padron, Jose, 355,497, Cl. D26-26.000
Ancona, Bruce; Ancona, Jane; and Padron, Jose, to American Tack & Hardware Co., Inc. Night light. 355,497, 2-14-95, Cl. D26-26.000
Ancona, Jane: *See—*
Ancona, Bruce; Ancona, Jane; and Padron, Jose, 355,497, Cl. D26-26.000.
Andrau, Bernard J., to Diamant Applications S.A. Diamond cuff-link. 355,396, 2-14-95, Cl. D11-222.000.
Anness, Timothy W.: *See—*
Verduyn, Kevin R.; Tremont, Thomas G.; Gale, Thomas C.; Walling, K. Neil; and Anness, Timothy W., 355,397, Cl. D12-92.000.
Apple Computer, Inc.: *See—*
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Wolfe, Henry, 355,467, Cl. D21-238.000.
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Oshima, Shigeru, 355,432, Cl. D16-209.000
Ash, William O., Jr. Backpack for portable beverage dispensers. 355,297, 2-14-95, Cl. D3-217.000.
Attwood Corporation: *See—*
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Bainton, Michael C., to Imperial Chemical Industries PLC. Container 355,366, 2-14-95, Cl. D9-532.000.
Baker, Scott W.: *See—*
Starr, Steven; Shipley, Curtis W.; and Baker, Scott W., 355,358, Cl. D16-339.000.
Bandy, Bernard B., II. Belt watch. 355,375, 2-14-95, Cl. D10-32.000.
Barrass, Andrew: *See—*
Leonard, Peter E.; Barrass, Andrew; Wode, Carolyn L.; and Forman, Melvin T., 355,480, Cl. D23-304.000.
Barrow, Barbara B. Pendant. 355,388, 2-14-95, Cl. D11-79.000.
Baumgartner, Cheryl D.: *See—*
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Been, Bernard W.: *See—*
Aulbers, Antonius P.; Been, Bernard W.; d'Hond, Paul I.; and Knoppers, German E., 355,339, Cl. D7-696.000.
Beger, Udo. Receptacle. 355,298, 2-14-95, Cl. D3-244.000.
Belanger, Michael J. Truck ramp. 355,518, 2-14-95, Cl. D34-32.000.
Bemis Manufacturing Company: *See—*
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Bergersen, Oivind. Adjustable bed frame. 355,311, 2-14-95, Cl. D6-392.000.
Bergstrand, John W.: *See—*
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Berni, Bruno. Combined jump suit and apron. 355,295, 2-14-95, Cl. D2-740.000
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Ikeda, Tsunehiko, 355,486, Cl. D24-144.000.
Bezener, Jerry; and Alves, David, to Miniature Authentic Sports Keepers, Inc. Collectable miniature mask. 355,393, 2-14-95, Cl. D21-190.000.
Bezener, Jerry; and Alves, David, to Miniature Authentic Sports Keepers, Inc. Collectable miniature mask. 355,394, 2-14-95, Cl. D21-190.000.
Blanda, George F., Jr., to Fender Musical Instruments Corporation. Tremolo unit. 355,433, 2-14-95, Cl. D17-21.000.
Blazer International, Inc.: *See—*
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Blount, Jeffrey S.: *See—*
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Blount, Sun C.; and Blount, Jeffrey S., to Blount, Sun C. Bread holder. 355,335, 2-14-95, Cl. D7-609.000.
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Booth, William M. Rod attached fishing signal. 355,473, 2-14-95, Cl. D22-148.000.
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Charbonneau, Guy L.; and Bowler, H. Alan, 355,365, Cl. D9-524.000
Boyd, Melvin L., to Lan-Cor, Inc. Ball projector. 355,445, 2-14-95, Cl. D21-2.000
Braun Aktiengesellschaft: *See—*
Ullmann, Roland, 355,329, Cl. D7-317.000.
Breen, John D.; Mottmiller, Russell P.; and Skov, Erik L., to Rubbermaid Incorporated. Cabinet. 355,313, 2-14-95, Cl. D6-446.000.
Breen, John D., to Rubbermaid Incorporated. Trash container base. 355,514, 2-14-95, Cl. D34-1.000.
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Schneider, Ernest, 355,374, Cl. D10-32.000.
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Brittse, Dan: *See—*
Magnusson, Stefan; Peters, Sam; and Brittse, Dan, 355,498, Cl. D26-28.000.
Magnusson, Stefan; Peters, Sam; and Brittse, Dan, 355,499. Cl. D26-78.000.
Broberg, Leif, to Aktiebolaget Astra. Drill extension for use in oral implantology. 355,487, 2-14-95, Cl. D24-156.000.
Brooker, Steven F.: *See—*
Spear, Kenneth J.; Planthaber, Rudolph F.; and Brooker, Steven F., 355,515, Cl. D34-16.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Suwa, Kazumi, 355,436, Cl. D18-12.000.
Brunson, Welton K.: *See—*
Hubbard, Vance M.; and Brunson, Welton K., 355,485, Cl. D24-110.200.
Buchholz, A. Bruce; and Goodnough, Glenn D., to Carrier Corporation. Control panel for a room air conditioner. 355,417, 2-14-95, Cl. D13-164.000.
Bukovitz, Richard K.; and Camp, William P., Jr., to Wooster Brush Company, The. Masonry brush handle. 355,304, 2-14-95, Cl. D4-138.000.
Burns, Cari: *See—*
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Gropper, Adrian; and Rettew, Stephen, 355,493, Cl. D24-216.000.
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Campbell, Argyle, 355,333, Cl. D7-553.000.
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Camp, William P., Jr.: *See—*
Bukovitz, Richard K.; and Camp, William P., Jr., 355,304, Cl. D4-138.000.
Campbell, Argyle, to Cambro Manufacturing Company. Multi-compartment food service tray. 355,333, 2-14-95, Cl. D7-553.000.
Campbell, Argyle; and Maddux, Larry D., to Cambro Manufacturing Co. Meal delivery cart. 355,517, 2-14-95, Cl. D34-20.000.
Campbell, Paul B.; and Kimberlin, Robert R., to Ingersoll-Rand Company. External surface of a splined nut. 355,355, 2-14-95, Cl. D8-397.000.
Campbell, Paul B.; and Kimberlin, Robert R., to Ingersoll-Rand Company. An external surface of a splined nut. 355,356, 2-14-95, Cl. D8-39.700.
Canon Business Machines, Inc.: *See—*
Shimoyama, Noboru; and Yoshida, Keita, 355,435, Cl. D18-12.000.
Capper, Harry M.; and Robertson, James W., to Whitaker Corporation, The. Electrical connector module for telephone cable conductors. 355,407, 2-14-95, Cl. D13-133.000.
Carrier Corporation: *See—*
Buchholz, A. Bruce; and Goodnough, Glenn D., 355,417, Cl. D13-164.000.
Casio Computer Co., Ltd.: *See—*
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Hanagata, Shigeru, 355,379, Cl. D10-38.000.
Morishima, Takashi, 355,377, Cl. D10-38.000.
Nakai, Toshio, 355,376, Cl. D10-38.000
Nakai, Toshio, 355,380, Cl. D10-39.000.
Cassai, Henry J. Adjustable angle wand for cosmetic bottle/cap applicators. 355,503, 2-14-95, Cl. D28-7.000.
Cassel, Timothy S., to Tucker Housewares. Refuse and trash container. 355,511, 2-14-95, Cl. D34-1.000.
Cerberus AG: *See—*
Fellmann, Hansruedi, 355,386, Cl. D10-106.000.
Charbonneau, Guy L.; and Bowler, H. Alan. Bottle. 355,365, 2-14-95, Cl. D9-524.000.
Chatani, Hisashi; and Haruna, Hiroyuki, to WADA Metal of America Corp. Vending machine. 355,443, 2-14-95, Cl. D20-4.000.
Chen, Chao-Hsin. Grinding machine. 355,426, 2-14-95, Cl. D15-125.000.
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Tachibana, Ryuichi; Tamura, Yuji; and Sakazaki, Ushio, 9,059, Cl. 87.000
Tachibana, Ryuichi; Tamura, Yuji; and Sakazaki, Ushio, to Suntory Limited. Verbena plant — 'Sunmaref TP-W'. 9,059, 2-14-95, Cl. 87.000.
Tamura, Yuji: *See—*
Tachibana, Ryuichi; Tamura, Yuji; and Sakazaki, Ushio, 9,059, Cl. 87.000.

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CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 14, 1995

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

13	5,388,269
93	5,388,270
115	5,388,271
200.3	5,388,272
255	5,388,273
338	5,388,274
406	5,388,275
421	5,388,276
422	5,388,277
	5,388,278

CLASS 4

144.1	5,388,279
213	5,388,280
248	5,388,281
300	5,388,282
503	5,388,283
	5,388,284
507	5,388,285
572.1	5,388,286
678	5,388,287
679	5,388,288

CLASS 5

236.1	5,388,290
450	5,388,291
	5,388,292
470	5,388,293
600	5,388,294
630	5,388,295
636	5,388,296
861	5,388,289

CLASS 7

156	5,388,297

CLASS 8

158	5,388,298
159	5,388,299
444	5,389,108
495	5,389,109
670	5,389,110

CLASS 15

104.002	5,388,300
327.1	5,388,301
334	5,388,303
344	5,388,302
345	5,388,304
385	5,388,305
424	5,388,306

CLASS 16

121	5,388,307
340	5,388,308
382	5,388,309

CLASS 19

65 A	5,388,310

CLASS 24

16 R	5,388,311
388	5,388,312
537	5,388,313
555	5,388,314
712.1	5,388,315

CLASS 27

595	5,388,323

CLASS 29

281.5	5,388,316
402.18	5,388,317
407	5,388,318
416	5,388,319
419.1	5,388,320
447	5,388,321
525	5,388,322
603	5,388,324
	5,388,325
611	5,388,326
830	5,388,327
852	5,388,328
890.049	5,388,329
894.323	5,388,330

CLASS 30

41.7	5,388,331
50	5,388,332
508	5,388,333
509	5,388,334

CLASS 33

260	5,388,335
265	5,388,336
273	5,388,337
376	5,388,338
419	5,388,339
421	5,388,340
501.03	5,388,341
503	5,388,342
	5,388,343

CLASS 34

91	5,388,344
256	5,388,345
438	5,388,346
457	5,388,347
499	5,388,348

CLASS 36

43	5,388,349
115	5,388,350
145	5,388,351

CLASS 38

102.1	5,388,352

CLASS 40

159	5,388,353
322	5,388,354
450	5,388,356
570	5,388,357
582	5,388,358
606	5,388,359

CLASS 42

1.16	5,388,361
50	5,388,360
70.02	5,388,362
71.01	5,388,363
103	5,388,364

CLASS 43

6.5	5,388,365
43.16	5,388,366
43.2	5,388,367
44.9	5,388,368

CLASS 44

300	5,389,111
	5,389,112
388	5,389,113
552	5,389,114

CLASS 47

1.5	5,388,369
57.6	5,389,115
58	5,389,116

CLASS 48

76	5,389,117

CLASS 49

100	5,388,370
377	5,388,371
408	5,388,372

CLASS 51

295	5,389,118
296	5,389,119

CLASS 52

6	5,388,376
11	5,388,377
23	5,388,378
300	5,388,379
480	5,388,380
519	5,388,381
732.1	5,388,382
741.1	5,388,383

CLASS 53

64	5,388,384
247	5,388,385
397	5,388,386
451	5,388,387
460	5,388,388
473	5,388,389
516	5,388,390
527	5,388,391
	5,388,392

CLASS 55

223	5,389,120
487	5,389,121

CLASS 56

2	5,388,393
13.9	Re.34,855
194	5,388,394

CLASS 60

39.02	5,388,395
	5,388,396
39.05	5,388,397
39.511	5,388,398
253	5,388,399
274	5,388,400
	5,388,401
276	5,388,402
	5,388,403
284	5,388,404
297	5,388,405
	5,388,406
302	5,388,407
324	5,388,408
525	5,388,409
526	5,388,410
646	5,388,411
760	5,388,412

CLASS 62

11	5,388,413
12	5,388,414
51.2	5,388,415
85	5,388,416
125	5,388,417
131	5,388,418
160	5,388,419
	5,388,420
209	5,388,421
211	5,388,422
238.3	5,388,423
239	5,388,424
262	5,388,425
263	5,388,426
331	5,388,427
402	5,388,428
446	5,388,429

CLASS 66

64	5,388,430
168	5,388,431
202	5,388,432

CLASS 70

57.1	5,388,433
58	5,388,434
101	5,388,435
226	5,388,436
276	5,388,437
366	5,388,438
456 R	5,388,439

CLASS 72

62	5,388,440
133	5,388,441

CLASS 73

10	5,388,442
31.06	5,388,443
37	5,388,444
40.5 R	5,388,445
40.7	5,388,446
54.14	5,388,447
61.71	5,388,448
64.47	5,388,449
105	5,388,452
117.1	5,388,453
118.1	5,388,454
151	5,388,455
152	5,388,456
204.26	5,388,457
438	5,388,451
505	5,388,458
517 AV	5,388,459
517 R	5,388,460
597	5,388,461
718	5,388,462
761	5,388,463
856	5,388,464
861.17	5,388,465
861.33	5,388,466
862.381	5,388,467
865.9	5,388,468

CLASS 74

61	5,388,469
84 R	5,388,470
89.15	5,388,471
331	5,388,450
	5,388,472
361	5,388,473
434	5,388,474
459	5,388,475
473 R	5,388,476
476	5,388,477
501.5 R	5,388,480
574	5,388,481
602	5,388,482
640	5,388,483

CLASS 75

370	5,389,122
393	5,389,123
722	5,389,124

CLASS 76

108.2	5,388,484

CLASS 81

57.39	5,388,478
58.2	5,388,479
64	5,388,485
124.3	5,388,486

CLASS 82

158	5,388,487

CLASS 83

56	5,388,488
117	5,388,489
880	5,388,490

CLASS 84

304	5,388,491
327	5,388,492
376 A	5,388,493
422.1	5,388,494
422.3	5,388,495
454	5,388,496
601	5,389,729
624	5,389,730
726	5,389,731

CLASS 87

34	5,388,497
50	5,388,498

CLASS 89

1.14	5,388,499
194	5,388,500

CLASS 95

11	5,389,125
45	5,389,126
281	5,389,127

CLASS 96

207	5,389,128

CLASS 99

285	5,388,501
295	5,388,502
349	5,388,503

CLASS 100

4	5,388,504
26	5,388,505
34	5,388,506
37	5,388,507

CLASS 101

123	5,388,508
128.21	5,388,509
147	5,388,510
148	5,388,511
	5,388,512
228	5,388,513
352	5,388,514
363	5,388,515
485	5,388,517

CLASS 102

289	5,388,518
292	5,388,519
293	5,388,520
311	5,388,521
434	5,388,522
521	5,388,523
529	5,388,524

CLASS 104

26.2	5,388,525
138.1	5,388,526
284	5,388,527

CLASS 105

78	5,388,528
397	5,388,529

CLASS 106

10	5,389,129
20 R	5,389,130
	5,389,131
	5,389,132
22 H	5,389,133
	5,389,134
162	5,389,135
271	5,389,136
281.1	5,389,137
287.14	5,389,138
404	5,389,139
428	5,389,140
498	5,389,141
632	5,389,142
696	5,389,143
737	5,389,144
807	5,389,145
811	5,389,146

CLASS 108

43	5,388,530
51.3	5,388,531
55.1	5,388,532
56.3	5,388,533

CLASS 110

233	5,388,534
255	5,388,535
264	5,388,536
346	5,388,537

CLASS 112

121.12	5,388,539
121.14	5,388,538
277	5,388,540

CLASS 114

74 R	5,388,541
183 R	5,388,542
242	5,388,543
248	5,388,544
316	5,388,545

CLASS 116

209	5,388,546
222	5,388,547

CLASS 117

89	5,388,548

CLASS 118

70	5,389,147
300	5,389,148
302	5,389,149
410	5,389,150
411	5,389,151
429	5,389,152
653	5,389,732
657	5,389,733
723 MP	5,389,153
723 MR	5,389,154

CLASS 119

14.14	5,388,549
50.5	B1 5,159,896
165	5,388,550
770	5,388,551

CLASS 123

90.16	5,388,552
179.8	5,388,553
184.43	5,388,554
195 C	5,388,556
195 P	5,388,555
202	5,388,557
520	5,388,558
593	5,388,559
630	5,388,560
672	5,388,561
690	5,388,562

CLASS 124

23.7	5,388,563
25.6	5,388,564

CLASS 125

203.17	5,388,574

CLASS 126

263 DC	5,388,565
512	5,388,566
626	5,388,567

CLASS 128

4	5,388,568
200.24	5,388,570
203.12	5,388,571
203.15	5,388,572
	5,388,573
204.23	5,388,575
205.13	5,388,576
639	5,388,577
642	5,388,578
	5,388,579
653.1	5,388,580
	5,388,581
660.07	5,388,582
661.05	5,388,583
662.06	5,388,584
[redacted]	5,388,585
704	5,388,586
741	5,388,587
754	5,388,588
	5,388,589
772	5,388,590
779	5,388,591
842	5,388,592
849	5,388,593

CLASS 131

329	5,388,594
	5,388,595
360	5,388,596

CLASS 132

73.5	5,388,597
275	5,388,598
311	5,388,599
323	5,388,600

CLASS 134

8	5,389,155
10	5,389,156
22.13	5,389,157
40	B1 4,867,800
56 R	5,388,601
122 R	5,388,602

CLASS 135

16	5,388,603

CLASS 136

244	5,389,158
251	5,389,159

CLASS 137

4	5,388,604
38	5,388,605
	5,388,606
88	5,388,607
343	5,388,608
355.27	5,388,609
549	5,388,610
588	5,388,611
596.2	5,388,612
625.34	5,388,613
625.65	5,388,614
850	5,388,615

CLASS 138

98	5,388,616
99	5,388,617

CLASS 139

1 R	5,388,618

CLASS 140

123.6	5,388,619

CLASS 141

20	5,388,620
21	5,388,621
198	5,388,622

CLASS 148

24	5,389,160
242	5,389,161
257	5,389,162
532	5,389,163
547	5,389,164
552	5,389,165

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185.1 5,388,624
209 R 5,388,625
454 5,388,626
5,388,627
556 5,388,628

CLASS 156

71 5,389,166
5,389,167
B1 4,557,774
77 5,389,168
98 5,389,169
109 5,389,170
155 5,389,171
5,389,172
164 5,389,173
200 5,389,174
204 5,389,175
242 5,389,176
245 5,389,177
249 5,389,178
257 5,389,180
264 5,389,181
344 5,389,182
359 5,389,183
378 5,389,184
390 5,389,185
391 5,389,186
405.1 5,389,187
473 5,389,188
503 B1 4,792,374
506 5,389,189
510 5,389,191
521 5,389,190
584 5,389,192
633 5,389,193
636 5,389,194
643 5,389,195
5,389,196
5,389,197
5,389,313
651 5,389,198
665 5,389,199

CLASS 162

5 5,389,200
57 5,389,201
103 5,389,202
135 5,389,203
5,389,204
205 5,389,205
301 5,389,206
363 5,389,207

CLASS 164

4.1 5,388,629
39 5,388,630
72 5,388,631
131 5,388,632
457 5,388,633

CLASS 165

78 5,388,634
80.4 5,388,635
95 5,388,636
104.12 5,388,637
162 5,388,638

CLASS 166

78 5,388,639
263 5,388,640
5,388,641
266 5,388,642
5,388,643
268 5,388,644
5,388,645
271 5,388,646
301 5,388,647
380 5,388,648

CLASS 174

19 5,389,734
33 5,389,735
36 5,389,736
48 5,389,737
52.4 5,389,738
5,389,739
67 5,389,740
117 F 5,389,741
209 5,389,742
262 5,389,743

CLASS 175

27 5,388,649
71 5,388,650
85 5,388,651
5,388,652
122 5,388,653
170 5,388,654
323 5,388,655

CLASS 177

111 5,389,051

CLASS 178

18 5,389,745

CLASS 180

9.21 5,388,656
168 5,388,657
197 5,388,658
219 5,388,659
5,388,660

CLASS 181

0.5 5,389,746
131 5,389,747

CLASS 182

3 5,388,661
63 5,388,662
82 5,388,663
100 5,388,664
122 5,388,665
179 5,388,666

CLASS 186

5,388,667

CLASS 187

247 5,389,748
293 5,389,749
387 5,388,668

CLASS 188

71.2 5,388,669
73.38 5,388,670
79.51 5,388,671
82.1 5,388,672
84 5,388,673
171 5,388,674
250 B 5,388,675
299 5,388,676
322.22 5,388,677

CLASS 192

3.29 5,388,678
35 5,388,679

CLASS 194

345 5,388,680

CLASS 198

365 5,388,681
367 5,388,682
379 5,388,683
465.1 5,388,684
803.2 5,388,685

CLASS 200

38 R 5,389,750
61.45 R 5,389,751
61.85 5,389,752
85 R 5,389,753
292 5,389,754
341 5,389,755
345 5,389,756
5,389,757
530 5,389,758

CLASS 203

11 5,389,208
14 5,389,209

CLASS 204

1.11 5,389,210
72 5,389,211
109 5,389,212
149 5,389,214
153.1 5,389,215
153.11 5,389,216
153.17 5,389,217
153.18 5,389,218
181.1 5,389,219
206 5,389,220
299 R 5,389,221
299.2 5,389,222
425 5,389,223
5,389,224
426 5,389,225

CLASS 205

50 5,389,226
73 5,389,227
110 5,389,228

CLASS 206

5.1 5,388,686
83.5 5,388,687
214 5,388,688
5,388,689
222 5,388,690
305 5,388,691
320 5,388,692
340 5,388,693
376 5,388,694
423 5,388,695
454 5,388,696
459.5 5,388,697
536 5,388,698
569 5,388,699
581 5,388,700
583 5,388,701
597 5,388,702

CLASS 208

5,389,230
113 5,389,231
120 5,389,232
5,389,233
131 5,389,234
134 5,389,235
152 5,389,236
153 5,389,237
157 5,389,238
161 5,389,239
226 5,389,240
254 H 5,389,241
347 5,389,242

CLASS 209

44 I 5,388,703
139.1 5,388,704
524 5,388,705
587 5,388,706
602 5,388,707
728 5,388,708

CLASS 210

90 5,389,243
106 5,389,244
129 5,389,245
130 5,389,246
151 5,389,247
5,389,248
188 5,389,249
194 5,389,250
198.2 5,389,251
223 5,389,252
248 5,389,253
257.2 5,389,254
321.75 5,389,255
346 5,389,256
602 5,389,257
603 5,389,258
616 5,389,259
652 5,389,260
674 5,389,261
719 5,389,262
729 5,389,263
744 5,389,264
745 5,389,265
747 5,389,266
758 5,389,267
777 5,389,268

CLASS 211

70.6 5,388,709
113 5,388,710

CLASS 213

8 5,388,711

CLASS 215

229 5,388,712

CLASS 219

53 5,389,760
78.14 5,389,761
5,389,762
5,389,763
506 5,389,764
635 5,389,765
5,389,766
730 5,389,767
732 5,389,768
734 5,389,759

CLASS 220

4.22 5,388,713
4.24 5,388,714
354 5,388,715
404 5,388,716
5,388,717
522 5,388,718
553 5,388,719
581 5,388,720

CLASS 221

63 Re.34,856
74 5,388,721
186 5,388,722
5,388,723
259 5,388,724

CLASS 222

1 5,388,725
83 5,388,726
94 5,388,727
105 5,388,728
130 5,388,729
153 5,388,730
545 5,388,731
572 5,388,732
600 5,388,733

CLASS 223

98 5,388,734

CLASS 224

32 R 5,388,735
42.03 B 5,388,736
42.26 5,388,737
42.45 R 5,388,738
202 5,388,739
253 5,388,740
5,388,741
255 5,388,742
264 5,388,743
324 5,388,744

CLASS 225

2 5,388,745
100 5,388,746

CLASS 226

174 5,388,747

CLASS 227

67 5,388,748
5,388,749
71 Re.34,857
Re.34,858

CLASS 228

4.1 5,388,750
4.5 5,388,751
20.1 5,388,752
42 5,388,753
118 5,388,754
123.1 5,388,755
214 5,388,756

CLASS 229

123.3 5,388,757
146 5,388,758

CLASS 232

35 5,388,759

CLASS 235

375 5,389,769
379 5,389,773
441 5,389,772
454 5,389,771
462 5,389,770

CLASS 236

345 5,388,760

CLASS 239

1 5,388,761
56 5,388,762
74 5,388,763
5,388,764
127.3 5,388,765
333 5,388,766
411 5,388,767
417.5 5,388,768
690 5,388,769

CLASS 241

17 5,388,771
5,388,772
19 5,388,773
152.2 5,388,774

CLASS 242

160.1 5,388,775
239 5,388,776
247 5,388,777
261 5,388,778
346 5,388,779
384 5,388,780
388.6 5,388,781
557 5,388,782

CLASS 244

3.14 5,388,783
5,388,784
17.19 5,388,785
138 R 5,388,786
145 5,388,787
215 5,388,788

CLASS 246

167 D 5,388,789

CLASS 248

58 5,388,790
68.1 5,388,791
74.2 5,388,802
188.1 5,388,792
201 5,388,793
219.4 5,388,794
231.9 5,388,795
246 5,388,796
370 5,388,797
459 5,388,798
519 5,388,799
551 5,388,800
564 5,388,801

CLASS 249

111 5,388,803
210 5,388,804

CLASS 250

201.1 5,389,774
208.1 5,389,775
214 LS 5,389,776
214 PR 5,389,777
214 R 5,389,778
216 5,389,779
225 5,389,780
226 5,389,781
227.17 5,389,782
234 5,389,783
288 B1 5,068,534
291 5,389,784
292 5,389,785
307 5,389,786
310 5,389,787
331 5,389,788
341.1 5,389,789
342 5,389,790
347 5,389,791
370.06 5,389,792
492.21 5,389,793
572 5,389,794
5,389,795

CLASS 251

214 5,388,805
306 5,388,806
5,388,807

CLASS 252

8 6 5,389,269
22 5,389,270
33 5,389,271
47 5,389,272
49.9 5,389,273
61 5,389,274
70 5,389,275
5,389,276
99 5,389,277
102 5,389,278
108 5,389,279
170 5,389,280
5,389,281
174.17 5,389,282
174.19 5,389,283
174.22 5,389,284
299.01 5,389,286
5,389,287
5,389,288
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299.1 5,389,285
299.61 5,389,290
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5,389,292
299.63 5,389,293
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5,389,296
312 5,389,297
313.1 5,389,298
321 5,389,299
380 5,389,300
394 5,389,301
408.1 5,389,302
544 5,389,303
546 5,389,304
5,389,305
547 5,389,306
549 5,389,307
587 5,389,308
606 5,389,309

CLASS 254

35 5,388,808

CLASS 257

10 5,389,796
21 5,389,797
25 5,389,798
77 5,389,799
94 5,389,800
139 5,389,801
194 5,389,802
197 5,389,803
5,389,804
222 5,389,805
239 5,389,806
280 5,389,807
316 5,389,808
344 5,389,809
360 5,389,811
369 5,389,810
443 5,389,812
469 5,389,813
529 5,389,814
605 5,389,815
666 5,389,816
5,389,817
676 5,389,818
727 5,389,819
5,389,820

CLASS 261

87 5,389,310
104 5,389,311

CLASS 264

1.24 5,389,312
25 5,389,314
40.1 5,389,315
46.5 5,389,316
5,389,317
5,389,318
48 5,389,319
53 5,389,320
60 5,389,321
112 5,389,322
136 5,389,323
171 5,389,324
177.12 5,389,325
184 5,389,326
210.8 5,389,327
294 5,389,328
318 5,389,329
328.1 5,389,330
513 5,389,331
530 5,389,332
572 B1 4,923,666

CLASS 266

80 5,388,809
275 5,388,810

CLASS 267

140.13 5,388,811
140.14 5,388,812

CLASS 269

41 5,388,813
48.1 5,388,814

CLASS 270

32 5,388,815
57 5,388,816

CLASS 271

180 5,388,817
209 5,388,818
220 5,388,819
277 5,388,820

CLASS 273

1.5 R 5,388,821
26 R 5,388,822
5,388,823
32 A 5,388,824
58 G 5,388,825
77 A 5,388,826
81 5,388,827
121 B 5,388,828
143 R 5,388,829
146 5,388,830
186.3 5,388,831
5,388,832
187 R 5,388,833
194 R 5,388,834
249 5,388,835
256 5,388,836
262 5,388,837
285 5,388,838
423 5,388,840
435 5,388,841

CLASS 277

81 R 5,388,843

CLASS 279

19.5 5,388,842

CLASS 280

11.17 5,388,845
11.2 5,388,844
11.22 5,388,846
215 5,388,847
300 5,388,848
425.1 5,388,849
442 5,388,850
625 5,388,851
642 5,388,852
5,388,853
652 5,388,854
675 5,388,855
707 5,388,856
708 5,388,857
728 A 5,388,858
737 5,388,859
739 5,388,860

CLASS 281

4 5,388,861

CLASS 283

82 5,388,862

CLASS 285

55 5,388,863
78 5,388,864
89 5,388,865
92 5,388,866
120 5,388,867
177 5,388,868
197 5,388,869
242 5,388,870

247 5,388,871
253 5,388,872
256 5,388,873
315 5,388,874

CLASS 290

1 R 5,389,821

CLASS 292

37 5,388,875
54 5,388,876

CLASS 294

1.1 5,388,877
15 5,388,878
64.1 5,388,879

CLASS 296

37.7 5,388,880
77.1 5,388,881
98 5,388,882
136 5,388,883
190 5,388,884
203 5,388,885

CLASS 297

75 5,388,886
195.1 5,388,887
284.11 5,388,888
302 5,388,889
411.36 5,388,892
452.48 5,388,891

CLASS 299

39 5,388,893

CLASS 303

10 5,388,894
103 5,388,895
111 5,388,896
113.3 5,388,897
116.2 5,388,898
119.2 5,388,899

CLASS 305

54 5,388,900

CLASS 307

10.1 5,389,822
5,389,823
5,389,824
5,389,825
125 5,389,826

CLASS 310

15 5,389,844
26 5,389,845
40 MM 5,389,846
197 5,389,847
322 5,389,848
323 5,389,849
329 5,389,850
340 5,389,851
366 5,389,852

CLASS 312

222 5,388,901
332 5,388,902
334.29 5,388,903
406.2 5,388,904

CLASS 313

341 5,389,853

CLASS 315

5.38 5,389,854
14 5,389,855
58 5,389,856
94 5,389,857
370 5,389,858
5,389,859
382 5,389,860
503 5,389,888

CLASS 318

10 5,389,861
254 5,389,862
549 5,389,863
562 5,389,864
568.11 5,389,865
600 5,389,866
601 5,389,867
632 5,389,868
729 5,389,869

CLASS 322

28 5,389,870

CLASS 323

282 5,389,871
354 5,389,872

CLASS 324

158.1 5,389,873
5,389,990
228 5,389,875
242 5,389,876
303 5,389,877
316 5,389,878
318 5,389,879
154 5,389,880
338 5,389,881
522 5,389,882
529 B1 4,906,938
636 5,389,883
663 5,389,884
758 5,389,874
761 5,389,885

CLASS 326

3 5,389,837
21 5,389,834
93 5,389,838
98 5,389,835
110 5,389,836

CLASS 327

72 5,389,887
96 5,389,833
120 5,389,886
161 5,389,831
172 5,389,829
223 5,389,832
263 5,389,828
276 5,389,843
291 5,389,830
307 5,389,839
357 5,389,840
391 5,389,842
434 5,389,841
544 5,389,827

CLASS 330

6 5,389,889
124 R 5,389,890
253 5,389,891
5,389,892
254 5,389,893
255 5,389,894
257 5,389,895
282 5,389,896

CLASS 331

1 5,389,897
2 5,389,898
10 5,389,899

CLASS 333

25 5,389,900
109 5,389,901
138 5,389,902
203 5,389,903
246 5,389,904

CLASS 335

78 5,389,905
172 5,389,906
216 5,389,907
5,389,908
5,389,909
278 5,389,910

CLASS 340

426 5,389,911
435 5,389,912
471 5,389,913
518 5,389,914
573 5,389,915
650 5,389,916
825.3 5,389,917
825.31 5,389,919
825.69 5,389,920
933 5,389,921

CLASS 341

51 5,389,922
61 5,389,923
106 5,389,924
108 5,389,925
120 5,389,926
139 5,389,927
150 5,389,928
156 5,389,929

CLASS 342

20 5,389,930
70 5,389,931
189 5,389,932
201 5,389,933
357 5,389,934
457 5,389,935
465 5,389,936

CLASS 343

700 MS 5,389,937
702 5,389,938
754 5,389,939
765 5,389,940
797 5,389,941
872 5,389,942
909 5,389,943
910 5,389,944

CLASS 345

85 5,389,945
106 5,389,946
145 5,389,947
147 5,389,948
154 5,389,949
156 5,389,950
174 5,389,951
212 5,389,952

CLASS 346

224 5,389,960

CLASS 347

5 5,389,953
12 5,389,956
20 5,389,957
29 5,389,961
65 5,389,962
103 5,389,958
112 5,389,955
187 5,389,959
258 5,389,954

CLASS 348

7 5,389,963
9 5,389,964
14 5,389,965
98 5,389,966
169 5,389,967
222 5,389,968
223 5,389,969
228 5,389,970
294 5,389,971
373 5,389,972
405 5,389,973
555 5,389,974
556 5,389,975
571 5,389,976
614 5,389,977
622 5,389,978
644 5,389,979
699 5,389,918

CLASS 351

139 5,389,980
158 5,389,981

CLASS 353

37 5,389,982

CLASS 354

21 5,389,983
76 5,389,984
5,389,985
81 5,389,986
82 5,389,987
106 5,389,988
5,389,989
159 5,389,991
173.1 5,389,992
291 5,389,993
324 5,389,994
402 5,389,995
403 5,389,996
430 5,389,997
484 5,389,998

CLASS 355

28 5,389,999
71 5,390,000
85 5,390,001
200 5,390,002
201 5,390,003
208 5,390,004
209 5,390,005
215 5,390,006
219 5,390,007
235 5,390,008
245 5,390,009
271 5,390,010
272 5,390,011
273 5,390,012
285 5,390,013
290 5,390,014
305 5,390,015
308 5,390,016

CLASS 356

73.1 5,390,017
5,390,018
350 5,390,019
5,390,021
356 5,390,022
359 5,390,023
376 5,390,024
400 5,390,025
426 5,390,151

CLASS 358

299 Re.34,859
335 5,390,026
5,390,027
346 5,390,028
350 5,390,020
448 5,390,029
461 5,390,030
468 5,390,031
474 5,390,032
498 5,390,033
518 5,390,034
5,390,035
519 5,390,036

CLASS 359

76 5,390,037
113 5,390,038
136 5,390,039
152 5,390,040
158 5,390,041
189 5,390,042
191 5,390,043
212 5,390,044
275 5,390,045
287 5,390,046
466 5,390,047
650 5,390,048
739 5,390,049
742 5,390,050
872 5,390,051

CLASS 360

32 5,390,052
46 5,390,053
5,390,054
85 5,390,055
94 5,390,056
96.5 5,390,057
104 5,390,058
5,390,059
105 5,390,060
113 5,390,061
126 5,390,062
132 5,390,063

CLASS 361

35 5,390,064
56 5,390,065
59 5,390,066
79 5,390,067
95 5,390,068
103 5,390,069
152 5,390,070
160 5,390,071
313 5,390,072
327 5,390,073
540 5,390,074
683 5,390,075
689 5,390,076
700 5,390,077
721 5,390,078
749 5,390,079
765 5,390,080
775 5,390,081
783 5,390,082
796 5,390,083

CLASS 362

16 5,390,084
31 5,390,085
34 5,390,086
61 5,390,087
5,390,088
5,390,089
153 5,390,090
207 5,390,091
235 5,390,092
249 5,390,093
267 5,390,094
301 5,390,095
346 5,390,096
5,390,097
421 5,390,098

CLASS 363

16 5,390,099
19 5,390,100
20 5,390,101
71 5,390,102

CLASS 364

131 5,390,103
167.01 5,390,104
184 5,390,105
401 5,390,106
5,390,107
5,390,108
410 5,390,109
413.13 5,390,110
413.14 5,390,111
413.15 5,390,112
419.19 5,390,113
420 5,390,114
422 5,390,115
424.02 5,390,118
424.04 5,390,120
424.05 5,390,121
424.1 5,390,116
5,390,117
426.04 5,390,119
443 5,390,122
449 5,390,123
5,390,124
5,390,125
470 5,390,126
472 5,390,127
474.35 5,390,128
480 5,390,129
483 5,390,130
490 5,390,131
514 5,390,132
516 5,390,133
745 5,390,134
749 5,390,135
754 5,390,136
787 5,390,137

CLASS 365

49 5,390,139
51 5,390,140
96 5,390,141
145 5,390,142
5,390,143
149 5,390,144
159 5,390,145
185 5,390,146
5,390,147
189.01 5,390,148
5,390,149
227 5,390,150

CLASS 366

163 5,388,905
173 5,388,906

CLASS 367

12 5,390,152
83 5,390,153
98 5,390,154
149 5,390,155

CLASS 369

13 5,390,156
44.12 5,390,157
47 5,390,158
48 5,390,159
54 5,390,160
116 5,390,162
126 5,390,161

CLASS 370

13 5,390,163
16.1 5,390,164
17 5,390,165
18 5,390,166
5,390,167
30 5,390,168
55 5,390,169
58.1 5,390,170
58.2 5,390,171
60 5,390,172
5,390,173
5,390,174
5,390,175
60.1 5,390,176
62 5,390,177
63 5,390,178
68.1 5,390,179
5,390,180
85.15 5,390,183
85.2 5,390,181
85.5 5,390,182
94.2 5,390,184
98 5,390,185

CLASS 371

10.1 5,390,186
5,390,187
20.6 5,390,188
22.3 5,390,189
5,390,190
5,390,191
27 5,390,192
5,390,193
5,390,194
37.1 5,390,195
5,390,196
5,390,197
43 5,390,198
67.1 5,390,199

CLASS 372

20 5,390,200
22 5,390,201
26 5,390,202
29 5,390,203
38 5,390,204
45 5,390,208
5,390,209
46 5,390,205
92 5,390,210
95 5,390,211

CLASS 373

79 5,390,212

CLASS 374

130 5,388,907
140 5,388,908
161 5,388,909

CLASS 375

1 5,390,206
5,390,207
23 5,390,213
37 5,390,214
94 5,390,215
106 5,390,216

CLASS 376

150 5,390,217
261 5,390,218
313 5,390,219
5,390,220
352 5,390,221
364 5,390,222

CLASS 377

49 5,390,223
56 5,390,224

CLASS 378

6 5,390,225
19 5,390,226
34 5,390,227
5,390,228
45 5,390,229
80 5,390,230

CLASS 379

2 5,390,231
15 5,390,232
58 5,390,233
59 5,390,234
60 5,390,235
67 5,390,236
5,390,237
93 5,390,238
5,390,239
94 5,390,240
207 5,390,241
221 5,390,242
265 5,390,243
386 5,390,244
393 5,390,249
410 5,390,250

CLASS 380

21 5,390,251
23 5,390,245
5,390,252
25 5,390,247

CLASS 381

24 5,390,246
56 5,390,248
63 5,390,253
68 5,390,254
71 5,390,255
77 5,390,256
119 5,390,138
199 5,390,257

CLASS 382

6 5,390,258
9 5,390,259
13 5,390,260
14 5,390,261
41 5,390,262
50 5,390,263
54 5,390,264

CLASS 383

100 5,388,910

CLASS 384

15 5,388,911
5,388,912
38 5,388,913
45 5,388,914
439 5,388,915
448 5,388,916
517 5,388,917
530 5,388,918

CLASS 385

15 5,390,265
44 5,390,266
49 5,390,267
59 5,390,268
78 5,390,269
81 5,390,270
92 5,390,271
100 5,390,272
112 5,390,273
124 5,390,274
128 B1 5,199,098
132 5,390,275
146 5,390,276

CLASS 392

485 5,390,277

CLASS 395

2 5,390,279
2.42 5,390,280
2.52 5,390,278
12 5,390,281
13 5,390,282
5,390,283
23 5,390,284
5,390,285
64 5,390,286

VOL
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67 5,390,287
93 5,390,288
100 5,390,289
109 5,390,290
119 5,390,291
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131 5,390,293
150 5,390,350
155 5,390,294
157 5,390,295
159 5,390,296
200 5,390,297
5,390,298
250 5,390,299
275 5,390,300
325 5,390,301
5,390,302
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375 5,390,304
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5,390,306
5,390,307
400 5,390,308
5,390,309
5,390,310
5,390,311
425 5,390,312
5,390,313
5,390,315
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5,390,317
5,390,318
500 5,390,314
5,390,320
5,390,321
575 5,390,322
5,390,323
5,390,324
5,390,325
5,390,326
5,390,327
650 5,390,328
5,390,329
700 5,390,330
5,390,331
725 5,390,332
5,390,351
750 5,390,333
5,390,334
800 5,390,335
5,390,336
5,390,352
5,390,353
5,390,354
5,390,355
5,390,356
5,390,358
5,390,359

CLASS 400

55 5,388,919
76 5,388,920
472 5,388,921
492 5,388,922
613.1 5,388,923

CLASS 401

35 5,388,924
261 5,388,925

CLASS 403

294 5,388,926

CLASS 404

84.5 5,388,927
128 Re.34,860

CLASS 405

115 5,388,928
154 5,388,929
209 5,388,930
274 5,388,931

CLASS 407

113 5,388,932

CLASS 408

72 B 5,388,933

CLASS 409

131 5,388,934
201 5,388,935
234 5,388,936

CLASS 410

9 5,388,937
101 5,388,938
139 5,388,939

CLASS 411

107 5,388,940
369 5,388,941
432 5,388,942
513 5,388,943

CLASS 414

217 5,388,944
5,388,945
279 5,388,955
281 5,388,946
401 5,388,947
425 5,388,948
480 5,388,949
[redacted] 5,388,950
746.5 5,388,951
752 5,388,952
786 5,388,953
795.7 5,388,954

CLASS 415

1 5,388,956
28 5,388,957
90 5,388,958
173.4 5,388,959
176 5,388,960

CLASS 416

61 5,388,961
95 5,388,962
198 A 5,388,963
204 A 5,388,964

CLASS 417

63 5,388,965
234 5,388,966
295 5,388,967
5,388,968
356 5,388,969
363 5,388,970
423.14 5,388,971
477.11 5,388,972

CLASS 418

55.2 5,388,973
206 5,388,974

CLASS 420

455 5,389,333
582 5,389,334

CLASS 422

21 5,389,335
28 5,389,336
29 5,389,337
58 5,389,338
64 5,389,339
98 5,389,340
100 5,389,341
109 5,389,342
191 5,389,343
264 5,389,344
5,389,345
292 5,389,346
307 5,389,347

CLASS 423

179.5 5,389,349
230 5,389,350
242.1 5,389,351
263 5,389,352
492 5,389,353
522 5,389,354
610 5,389,355
659 5,389,356
714 5,389,357
718 5,389,358

CLASS 424

10 5,389,359
49 5,389,360
59 5,389,361
5,389,362
70.122 5,389,364
70.7 5,389,363
78.03 5,389,365
78.33 5,389,366
93.2 5,389,368
94.3 5,389,381
94.4 5,389,369
195.1 5,389,370
5,389,371
5,389,372
400 5,389,373
431 5,389,374
436 5,389,375
448 5,389,376
450 5,389,377
5,389,378
451 5,389,379
490 5,389,380
499 5,389,382
650 5,389,383
661 5,389,384
667 5,389,385
717 5,389,386

CLASS 425

4 C 5,388,975
141 5,388,976
190 5,388,977
397 5,388,978
408 5,388,979
461 5,388,980
541 5,388,981
572 5,388,982
575 5,388,983

CLASS 426

72 5,389,395
74 5,389,387
242 5,389,388
269 5,389,389
332 5,389,390
335 5,389,391
531 5,389,392
575 5,389,393
593 5,389,394
599 B1 5,049,402

CLASS 427

58 5,389,396
69 5,389,397
130 5,389,398
212 5,389,399
249 5,389,400
255.2 5,389,401
258 5,389,402
259 B1 4,925,705
304 5,389,229
372.2 5,389,403
387 5,389,404
5,389,405
407.1 5,389,406
450 5,389,407
559 5,389,408

CLASS 428

31 5,389,409
34.1 5,389,410
34.6 5,389,411
35.5 5,389,412
40 5,389,413
5,389,414
5,389,415
42 5,389,416
64 5,389,417
5,389,418
5,389,419
74 5,389,420
82 5,389,421
141 5,389,422
167 5,389,423
174 5,389,424
195 5,389,425
5,389,426
209 5,389,428
210 5,389,427
212 5,389,429
246 5,389,430
288 5,389,431
5,389,432
310.5 5,389,433
323 5,389,434
324 5,389,435
327 5,389,436
354 5,389,437
355 5,389,438
373 5,389,439
391 5,389,440
395 5,389,441
396 5,389,442
413 5,389,443
457 5,389,444
5,389,445
472 5,389,446
480 5,389,447
517 5,389,448
523 5,389,449
552 5,389,450
612 5,389,451
624 5,389,452
639 5,389,453
641 5,389,454
694 EC 5,389,455

CLASS 429

27 5,389,456
66 5,389,457
90 5,389,458
101 5,389,459
5,389,470
5,389,460
113 5,389,461
121 5,389,462
142 5,389,463
152 5,389,464
172 5,389,465
178 5,389,466
194 5,389,467
206 5,389,468
5,389,469
5,389,471
219 5,389,472

CLASS 430

4 5,389,473
5 5,389,474
19 5,389,475
22 5,389,476
57 5,389,477
59 5,389,478
5,389,479
5,389,480
5,389,481
106.6 5,389,482
109 5,389,483
5,389,484
110 5,389,485
5,389,486
120 5,389,487
138 5,389,489
5,389,490
170 5,389,491
191 5,389,492
211 5,389,493
270 5,389,494
281 5,389,495
315 5,389,496
5,389,497
340 5,389,498
359 5,389,499
367 5,389,508
386 5,389,500
393 5,389,501
491 5,389,502
502 5,389,503
506 5,389,504
5,389,505
509 5,389,506
567 5,389,507
5,389,509
600 5,389,510
5,389,511

CLASS 431

12 5,388,984
116 5,388,985
344 5,388,986

CLASS 433

29 5,388,987
5,388,988
143 5,388,989

CLASS 434

38 5,388,990
55 5,388,991
114 5,388,992
118 5,388,993
236 5,388,994

CLASS 435

2 B1 5,035,994
5 5,389,512
6 5,389,513
5,389,514
5,389,515
5,389,516
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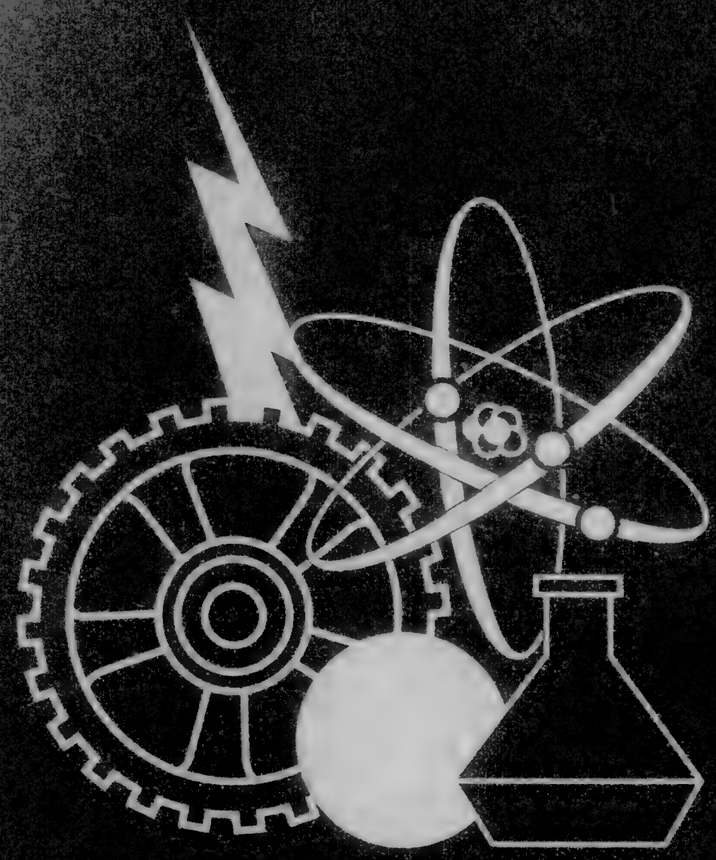
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For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1168 O.G. 100, on Nov. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Jan. 1, 1995, is as follows:

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—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 12, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 18, 1992 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

VOL
1171
ISS
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Utility Patents 5,088,114 through 5,090,052
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 16, 1988 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,724,546 through 4,726,073
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 14, 1984 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,430,759 through 4,432,098
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED December 14, 1995
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,336	07/200,957	09/18/90
(4,627,301)	(06/713,284)	(12/09/86)
Re. 34,358	07/818,641	08/31/93
(4,976,031)	(07/360,076)	(12/11/90)
4,363,143	06/300,594	12/14/82
4,363,156	06/254,066	12/14/82
4,363,176	06/252,739	12/14/82
4,363,188	06/280,153	12/14/82
4,363,195	06/216,322	12/14/82
4,363,206	06/256,902	12/14/82
4,363,217	06/229,735	12/14/82
4,363,218	06/252,799	12/14/82
4,363,241	06/219,755	12/14/82
4,363,252	06/245,695	12/14/82
4,363,274	06/227,975	12/14/82
4,363,284	06/225,351	12/14/82
4,363,293	06/254,381	12/14/82
4,363,303	06/294,056	12/14/82
4,363,307	06/240,857	12/14/82
4,363,354	06/244,244	12/14/82
4,363,358	06/264,993	12/14/82
4,363,361	06/245,529	12/14/82
4,363,364	06/269,406	12/14/82
4,363,367	06/314,803	12/14/82
4,363,368	06/243,634	12/14/82
4,363,376	06/229,573	12/14/82
4,363,402	06/261,879	12/14/82
4,363,407	06/227,477	12/14/82
4,363,421	06/269,927	12/14/82
4,363,452	06/243,481	12/14/82
4,363,462	06/227,136	12/14/82
4,363,473	06/295,571	12/14/82
4,363,488	06/264,456	12/14/82
4,363,491	06/217,793	12/14/82
4,363,501	06/230,267	12/14/82
4,363,503	06/243,798	12/14/82
4,363,505	06/255,685	12/14/82
4,363,508	06/237,886	12/14/82
4,363,525	06/229,259	12/14/82
4,363,530	06/221,885	12/14/82
4,363,545	06/247,766	12/14/82
4,363,576	06/249,025	12/14/82
4,363,578	06/215,970	12/14/82
4,363,580	06/281,778	12/14/82
4,363,585	06/224,217	12/14/82
4,363,635	06/228,119	12/14/82
4,363,637	06/252,023	12/14/82
4,363,643	06/312,152	12/14/82
4,363,645	06/287,171	12/14/82
4,363,646	06/325,594	12/14/82
4,363,647	06/263,418	12/14/82
4,363,648	06/261,658	12/14/82
4,363,650	06/261,162	12/14/82
4,363,651	06/305,860	12/14/82
4,363,657	06/253,521	12/14/82
4,363,658	06/232,931	12/14/82
4,363,661	06/252,110	12/14/82
4,363,665	06/283,137	12/14/82
4,363,670	06/222,901	12/14/82

Patent Number	Serial Number	Issue Date	4,627,144	06/709,503	12/09/86
			4,627,150	06/566,257	12/09/86
4,363,671	06/264,244	12/14/82	4,627,155	06/752,770	12/09/86
4,363,672	06/252,663	12/14/82	4,627,156	06/800,351	12/09/86
4,363,678	06/217,231	12/14/82	4,627,157	06/828,584	12/09/86
4,363,681	06/314,390	12/14/82	4,627,159	06/656,818	12/09/86
4,363,686	06/229,813	12/14/82	4,627,161	06/747,694	12/09/86
4,363,688	06/266,328	12/14/82	4,627,168	06/706,443	12/09/86
4,363,702	06/247,299	12/14/82	4,627,172	06/641,790	12/09/86
4,363,712	06/318,812	12/14/82	4,627,174	06/725,048	12/09/86
4,363,714	06/216,627	12/14/82	4,627,175	06/667,283	12/09/86
4,363,717	06/225,284	12/14/82	4,627,176	06/752,197	12/09/86
4,363,718	06/238,567	12/14/82	4,627,180	06/570,778	12/09/86
4,363,719	06/258,321	12/14/82	4,627,181	06/674,575	12/09/86
4,363,720	06/263,297	12/14/82	4,627,185	06/692,907	12/09/86
4,363,730	06/269,049	12/14/82	4,627,189	06/747,804	12/09/86
4,363,737	06/273,656	12/14/82	4,627,191	06/762,523	12/09/86
4,363,740	06/285,675	12/14/82	4,627,196	06/648,365	12/09/86
4,363,741	06/293,011	12/14/82	4,627,198	06/651,282	12/09/86
4,363,744	06/239,454	12/14/82	4,627,203	06/747,953	12/09/86
4,363,748	06/345,157	12/14/82	4,627,209	06/723,528	12/09/86
4,363,751	06/262,984	12/14/82	4,627,211	06/778,975	12/09/86
4,363,755	06/251,123	12/14/82	4,627,215	06/732,274	12/09/86
4,363,760	06/296,985	12/14/82	4,627,220	06/770,904	12/09/86
4,363,765	06/250,614	12/14/82	4,627,222	06/387,106	12/09/86
4,363,790	06/292,422	12/14/82	4,627,226	06/694,197	12/09/86
4,363,792	06/291,220	12/14/82	4,627,228	06/721,596	12/09/86
4,363,802	06/325,832	12/14/82	4,627,230	06/731,263	12/09/86
4,363,804	06/333,201	12/14/82	4,627,232	06/690,492	12/09/86
4,363,805	06/285,036	12/14/82	4,627,237	06/595,167	12/09/86
4,363,820	06/350,319	12/14/82	4,627,244	06/721,416	12/09/86
4,363,836	06/234,555	12/14/82	4,627,246	06/627,199	12/09/86
4,363,862	06/330,786	12/14/82	4,627,260	06/631,916	12/09/86
4,363,866	06/254,083	12/14/82	4,627,261	06/711,777	12/09/86
4,363,870	06/301,203	12/14/82	4,627,263	06/598,444	12/09/86
4,363,871	06/257,994	12/14/82	4,627,266	06/621,497	12/09/86
4,363,872	06/243,939	12/14/82	4,627,267	06/757,272	12/09/86
4,363,874	06/290,938	12/14/82	4,627,275	06/607,570	12/09/86
4,363,878	06/241,692	12/14/82	4,627,281	06/732,686	12/09/86
4,363,880	06/275,648	12/14/82	4,627,282	06/809,228	12/09/86
4,363,888	06/257,130	12/14/82	4,627,285	06/718,892	12/09/86
4,363,892	06/355,169	12/14/82	4,627,287	06/746,845	12/09/86
4,363,896	06/286,394	12/14/82	4,627,288	06/764,413	12/09/86
4,363,899	06/260,690	12/14/82	4,627,294	06/764,890	12/09/86
4,363,901	06/233,778	12/14/82	4,627,297	06/754,148	12/09/86
4,363,907	06/283,315	12/14/82	4,627,302	06/780,140	12/09/86
4,363,908	06/297,816	12/14/82	4,627,305	06/746,517	12/09/86
4,363,916	06/306,964	12/14/82	4,627,307	06/757,498	12/09/86
4,363,917	06/258,268	12/14/82	4,627,309	06/802,749	12/09/86
4,363,925	06/339,503	12/14/82	4,627,318	06/808,889	12/09/86
4,363,929	06/219,471	12/14/82	4,627,323	06/639,737	12/09/86
4,363,955	06/227,077	12/14/82	4,627,326	06/753,885	12/09/86
4,363,956	06/244,055	12/14/82	4,627,327	06/740,673	12/09/86
4,363,962	06/219,495	12/14/82	4,627,332	06/578,692	12/09/86
4,363,968	06/290,650	12/14/82	4,627,334	06/804,685	12/09/86
4,363,980	06/295,536	12/14/82	4,627,338	06/775,949	12/09/86
4,363,985	06/233,315	12/14/82	4,627,347	06/576,090	12/09/86
4,363,987	06/233,600	12/14/82	4,627,349	06/729,878	12/09/86
4,363,998	06/265,018	12/14/82	4,627,351	06/646,731	12/09/86
4,364,027	06/232,481	12/14/82	4,627,352	06/611,165	12/09/86
4,364,034	06/218,458	12/14/82	4,627,355	06/622,298	12/09/86
4,364,043	06/299,887	12/14/82	4,627,357	06/654,971	12/09/86
4,364,068	06/229,993	12/14/82	4,627,359	06/683,184	12/09/86
4,364,080	06/253,667	12/14/82	4,627,363	06/732,602	12/09/86
4,364,108	06/224,096	12/14/82	4,627,367	06/671,470	12/09/86
4,627,108	06/673,949	12/09/86	4,627,369	06/508,139	12/09/86
4,627,111	06/768,236	12/09/86	4,627,371	06/679,019	12/09/86
4,627,113	06/817,606	12/09/86	4,627,372	06/745,497	12/09/86
4,627,118	06/607,338	12/09/86	4,627,374	06/658,039	12/09/86
4,627,119	06/693,294	12/09/86	4,627,375	06/707,961	12/09/86
4,627,123	06/740,268	12/09/86	4,627,380	06/745,626	12/09/86
4,627,124	06/644,679	12/09/86	4,627,382	06/646,783	12/09/86
4,627,128	06/730,846	12/09/86	4,627,397	06/780,936	12/09/86
4,627,130	06/566,828	12/09/86	4,627,398	06/675,862	12/09/86
4,627,131	06/753,877	12/09/86	4,627,401	06/659,430	12/09/86
4,627,133	06/763,723	12/09/86	4,627,403	06/668,143	12/09/86
4,627,138	06/762,884	12/09/86	4,627,405	06/699,977	12/09/86
4,627,140	06/718,418	12/09/86	4,627,407	06/684,092	12/09/86
4,627,141	06/711,059	12/09/86	4,627,410	06/651,861	12/09/86

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Patent Number	Serial Number	Issue Date
4,627,414	06/679,546	12/09/86
4,627,420	06/547,250	12/09/86
4,627,423	06/649,091	12/09/86
4,627,427	06/661,688	12/09/86
4,627,433	06/835,760	12/09/86
4,627,435	06/610,169	12/09/86
4,627,438	06/640,104	12/09/86
4,627,442	06/569,661	12/09/86
4,627,445	06/720,906	12/09/86
4,627,451	06/674,743	12/09/86
4,627,455	06/675,209	12/09/86
4,627,456	06/760,922	12/09/86
4,627,461	06/783,433	12/09/86
4,627,465	06/829,444	12/09/86
4,627,478	06/697,075	12/09/86
4,627,480	06/696,623	12/09/86
4,627,481	06/636,241	12/09/86
4,627,483	06/569,218	12/09/86
4,627,484	06/569,258	12/09/86
4,627,486	06/738,430	12/09/86
4,627,488	06/703,630	12/09/86
4,627,497	06/837,337	12/09/86
4,627,500	06/474,634	12/09/86
4,627,501	06/704,291	12/09/86
4,627,502	06/756,785	12/09/86
4,627,505	06/743,905	12/09/86
4,627,506	06/634,065	12/09/86
4,627,507	06/766,509	12/09/86
4,627,509	06/727,822	12/09/86
4,627,510	06/684,903	12/09/86
4,627,513	06/611,855	12/09/86
4,627,514	06/726,662	12/09/86
4,627,515	06/765,260	12/09/86
4,627,517	06/701,082	12/09/86
4,627,519	06/594,795	12/09/86
4,627,524	06/542,199	12/09/86
4,627,539	06/603,353	12/09/86
4,627,542	06/476,751	12/09/86
4,627,546	06/579,243	12/09/86
4,627,549	06/842,299	12/09/86
4,627,550	06/764,773	12/09/86
4,627,556	06/634,745	12/09/86
4,627,564	06/585,906	12/09/86
4,627,565	06/600,213	12/09/86
4,627,568	06/599,245	12/09/86
4,627,569	06/743,163	12/09/86
4,627,573	06/581,286	12/09/86
4,627,574	06/415,950	12/09/86
4,627,584	06/842,071	12/09/86
4,627,586	06/665,866	12/09/86
4,627,587	06/632,158	12/09/86
4,627,590	06/677,568	12/09/86
4,627,594	06/746,255	12/09/86
4,627,595	06/709,421	12/09/86
4,627,598	06/824,433	12/09/86
4,627,599	06/806,790	12/09/86
4,627,601	06/748,118	12/09/86
4,627,604	06/722,201	12/09/86
4,627,609	06/723,091	12/09/86
4,627,610	06/718,153	12/09/86
4,627,613	06/624,123	12/09/86
4,627,614	06/563,161	12/09/86
4,627,616	06/753,321	12/09/86
4,627,622	06/712,364	12/09/86
4,627,624	06/797,033	12/09/86
4,627,626	06/726,596	12/09/86
4,627,627	06/743,583	12/09/86
4,627,629	06/627,350	12/09/86
4,627,630	06/654,777	12/09/86
4,627,633	06/840,304	12/09/86
4,627,634	06/772,042	12/09/86
4,627,640	06/780,896	12/09/86
4,627,647	06/707,877	12/09/86
4,627,649	06/669,025	12/09/86
4,627,651	06/844,247	12/09/86
4,627,654	06/698,768	12/09/86
4,627,655	06/460,034	12/09/86
4,627,660	06/833,603	12/09/86
4,627,662	06/719,282	12/09/86
4,627,663	06/596,689	12/09/86
4,627,664	06/544,054	12/09/86
4,627,671	06/792,007	12/09/86
4,627,674	06/744,281	12/09/86
4,627,678	06/703,259	12/09/86
4,627,681	06/702,270	12/09/86
4,627,682	06/635,539	12/09/86
4,627,683	06/638,662	12/09/86
4,627,696	06/638,471	12/09/86
4,627,697	06/819,987	12/09/86
4,627,698	06/650,351	12/09/86
4,627,699	06/694,320	12/09/86
4,627,716	06/638,716	12/09/86
4,627,724	06/511,811	12/09/86
4,627,727	06/604,849	12/09/86
4,627,740	06/597,511	12/09/86
4,627,741	06/648,511	12/09/86
4,627,744	06/630,596	12/09/86
4,627,752	06/656,456	12/09/86
4,627,763	06/627,445	12/09/86
4,627,769	06/218,711	12/09/86
4,627,773	06/253,898	12/09/86
4,627,781	06/665,549	12/09/86
4,627,783	06/714,881	12/09/86
4,627,786	06/587,785	12/09/86
4,627,788	06/642,284	12/09/86
4,627,789	06/651,886	12/09/86
4,627,791	06/440,761	12/09/86
4,627,792	06/775,160	12/09/86
4,627,793	06/738,649	12/09/86
4,627,798	06/858,561	12/09/86
4,627,801	06/686,309	12/09/86
4,627,806	06/770,949	12/09/86
4,627,810	06/781,131	12/09/86
4,627,812	06/835,430	12/09/86
4,627,813	06/614,192	12/09/86
4,627,820	06/745,911	12/09/86
4,627,821	06/622,270	12/09/86
4,627,822	06/729,725	12/09/86
4,627,823	06/633,607	12/09/86
4,627,824	06/568,850	12/09/86
4,627,825	06/728,318	12/09/86
4,627,827	06/727,567	12/09/86
4,627,829	06/698,513	12/09/86
4,627,830	06/724,591	12/09/86
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4,627,845	06/678,052	12/09/86
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4,628,789	07/567,567	12/09/86
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4,628,534	06/628,698	12/09/86
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4,975,987	07/278,719	12/11/90
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4,975,989	07/277,410	12/11/90
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4,975,992	07/428,939	12/11/90
4,975,993	07/289,835	12/11/90
4,975,994	07/526,672	12/11/90
4,975,995	07/405,450	12/11/90
4,975,997	07/514,889	12/11/90
4,975,998	07/485,633	12/11/90
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4,977,192	07/187,462	12/11/90
4,977,204	07/296,084	12/11/90
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4,977,218	07/249,597	12/11/90
4,977,219	06/904,835	12/11/90
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4,977,222	07/167,125	12/11/90
4,977,225	07/266,244	12/11/90
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4,977,240	07/433,051	12/11/90
4,977,244	06/943,406	12/11/90
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4,977,265	07/524,196	12/11/90
4,977,270	07/278,708	12/11/90
4,977,272	07/372,996	12/11/90

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4,977,291	07/408,400	12/11/90
4,977,294	07/319,449	12/11/90
4,977,302	07/451,964	12/11/90
4,977,304	07/475,800	12/11/90
4,977,307	07/298,558	12/11/90
4,977,318	07/388,944	12/11/90
4,977,329	07/197,237	12/11/90
4,977,331	06/892,719	12/11/90
4,977,332	07/347,532	12/11/90
4,977,334	07/495,990	12/11/90
4,977,343	07/420,255	12/11/90
4,977,345	07/469,975	12/11/90
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4,977,369	07/296,548	12/11/90
4,977,371	07/294,240	12/11/90
4,977,372	07/313,385	12/11/90
4,977,374	07/396,232	12/11/90
4,977,375	07/298,064	12/11/90
4,977,376	07/238,582	12/11/90
4,977,380	07/279,043	12/11/90
4,977,392	07/351,542	12/11/90
4,977,393	07/364,072	12/11/90
4,977,437	07/472,180	12/11/90
4,977,438	07/327,406	12/11/90
4,977,443	07/409,139	12/11/90
4,977,445	07/337,473	12/11/90
4,977,479	07/228,534	12/11/90
4,977,486	07/457,907	12/11/90
4,977,488	07/493,216	12/11/90
4,977,489	07/450,436	12/11/90
4,977,491	07/273,666	12/11/90
4,977,492	07/514,674	12/11/90
4,977,503	07/259,160	12/11/90
4,977,507	07/399,722	12/11/90
4,977,516	07/393,850	12/11/90
4,977,530	07/189,180	12/11/90
4,977,544	07/378,767	12/11/90
4,977,546	06/347,112	12/11/90
4,977,547	07/271,579	12/11/90
4,977,560	07/373,532	12/11/90
4,977,562	07/425,366	12/11/90
4,977,563	07/362,409	12/11/90
4,977,575	07/398,005	12/11/90
4,977,576	07/336,615	12/11/90
4,977,583	07/332,024	12/11/90
4,977,588	07/493,032	12/11/90
4,977,607	07/443,486	12/11/90
4,977,609	07/263,938	12/11/90
4,977,610	07/425,418	12/11/90
4,977,614	07/425,095	12/11/90
4,977,617	07/453,130	12/11/90

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

D. 332,612, Re. S.N. 29/031,750, Dec. 5, 1994, Cl. D15/5, ENGINE AIR INTAKE VORTEX PLATE, Kenneth F. Klus, Owner of Record: *Inventor,* Attorney or Agent: John H. Lynn, Ex. Gp.: 2904

5,100,329, Re. S.N. 08/215,324, Mar. 21, 1994, Cl. 434/327, COMPUTER ASSISTED COACHING METHOD, Kenneth C. Deesen, et. al., Owner of Record: *Inventors,* Attorney or Agent: Henry Y. S. Tang, Ex. Gp.: 3303

5,169,591, Re. S.N. 08/347,975, Dec. 1, 1994, Cl. 266/275, IMPACT PAD FOR A CONTINUOUS CASTER TUNDISH, Manfred Schmidt, et. al., Owner of Record: *Bethlehem Steel Corp., Bethlehem, Pa.,* Attorney or Agent: Harold I. Masteller, Jr., Ex. Gp.: 1101

5,207,645, Re. S.N. 08/359,281, Dec. 19, 1994, Cl. 604/141, TREATMENT FLUID BAG THEREFOR, AND METHOD FOR THE USE THEREOF, Stephen O. Ross, et. al., Owner of Record: *Medication Delivery Devices, San Diego, Calif.,* Attorney or Agent: Martin J. Jaquez, Ex. Gp.: 3303

5,227,240, Re. S.N. 08/342,470, Nov. 21, 1994, Cl. 427/558, UV CURABLE COATING COMPOSITIONS, ABRASION RESISTANT UV STABILIZED THERMOPLASTIC COMPOSITES AND METHOD, Mark G. Tilley, et. al., Owner of Record: *Inventor,* Attorney or Agent: William H. Pittman, Ex. Gp.: 1112

5,228,279, Re. S.N. 08/353,520, Dec. 9, 1994, Cl. 56/328.1, TRAY FOR FRUIT HARVESTING SYSTEM, Frank J. McKenna, et. al., Owner of Record: *Kathleen McKenna, Shaker Hts., Ohio,* Attorney or Agent: Gordon D. Kinder, Ex. Gp.: 3506

5,268,671, Re. S.N. 08/310,662, Sept. 22, 1994, Cl. 340/545, BURGLAR ALARM AND DOOR CHIME, Raymond J. Novotny, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 2617

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,421,574, Reexam. No. 90/003,679, Dec. 31, 1994, Cl. 148/111, METHOD FOR SUPPRESSING INTERNAL OXIDATION IN STEEL WITH ANTIMONY ADDITION, Grigory Lyudkovsky, Owner of Record: *Inland Steel Co., Chicago, Ill.,* Attorney or Agent: Alvin D. Shulman, Marshall, O'Toole, Gerstein, Murray & Borun, Chicago, Ill., Ex. Gp.: 1311, Requester: LTV Steel Co., Inc., Cleveland, Ohio

4,596,900, Reexam. No. 90/003,680, Jan. 3, 1995, Cl. 379/105, PHONE-LINE LINKED, TONE-OPERATED CONTROL DEVICE, Philip S. Jackson, Owner of Record: *Inventor,* Attorney or Agent: Raiford A. Blackstone, Jr., Trexler, Bushnell, Giangiorgi & Blackstone, Ltd., Chicago, Ill., Ex. Gp.: 2608, Requester: Amster, Rothstein & Ebenstein, New York, N.Y.

5,019,408, Reexam. No. 90/003,682, Jan. 5, 1994, Cl. 426/399, METHOD FOR THE ULTRAPASTEURIZATION OF LIQUID WHOLE EGG PRODUCTS, Kenneth R. Swartzel, et. al., Owner of Record: *North Carolina State University, Raleigh, N.C.,* Attorney or Agent: Kenneth D. Sibley, Bell Seltzer Park & Gibson, Raleigh, N.C., Ex. Gp.: 1302, Requester: Todd A. Noah, Degosits & Noah, San Francisco, Calif.

5,182,742, Reexam. No. 90/003,681, Jan. 3, 1995, Cl. 369/116, RECORDING AND/OR REPRODUCING APPARATUS WITH A DISK CARTRIDGE TEMPERATURE SENSOR, Kiyoshi Ohmori, et. al., Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: Theodore Naccarella, Limbach & Limbach, San Francisco, Calif., Ex. Gp.: 2516, Requester: Owner

5,196,270, Reexam. No. 90/003,677, Dec. 30, 1994, Cl. 428/523, COATED RESIN MOLDING, Sadao Kitagawa, et. al., Owner of Record: *Mitsubishi Petrochemical Co., Ltd., Tokyo-To, Japan,* Attorney or Agent: Wegner, Cantor, Mueller & Player, Washington, D.C., Ex. Gp.: 1509, Requester: Wyatt, Gerber, Burke & Badie, New York, N.Y.

5,199,470, Reexam. No. 90/003,676, Dec. 28, 1994, Cl. 141/001, METHOD AND APPARATUS FOR REFILLING INK CARTRIDGES, Barry M. Goldman, Owner of Record: *Graphic Utilities, Inc., Concord, Mass.,* Attorney or Agent: Lappin & Kusmer, Boston, Mass., Ex. Gp.: 2403, Requester: Owner

5,276,093, Reexam. No. 90/003,678, Dec. 30, 1994, Cl. 525/089, RESIN MOLDING, Sadao Kitagawa, et. al., Owner of Record: *Mitsubishi Petrochemical Co., Ltd., Tokyo-To, Japan,* Attorney or Agent: Wegner, Cantor, Mueller & Player, Washington, D.C., Ex. Gp.: 1512, Requester: Wyatt, Gerber, Burke & Badie, New York, N.Y.

Errata

"All reference to Patent No. 5,361,257 to Lars-Goran Petersen of Sweden for 'CONTROLLED ACCESS ATM SWITCH' appearing in the *Official Gazette* of November 1, 1994 should be deleted since no patent was granted."

Errata

"All reference to Patent No. D. 354,448 to Martin F. Jue of Mississippi for 'ANTENNA PERFORMANCE ANALYZER' appearing in the *Official Gazette* of January 17, 1995 should be deleted since no patent was granted."

Change Regarding CASPIR Coding of U.S. Patents

As of March 31, 1995, Patent Examining Group 2300 intends to discontinue the CASPIR coding activity of marking the specification margins of printed United States patents issuing in Class 395, Digests 1 and 2. CASPIR is a system for searching computer related inventions by means of codes representing concepts contained in patents issuing in these digests. These codes are assigned by an examiner at the time of allowance of the patent application. Previously, after the patent was printed; the margins of the specification were marked with the appropriate codes, and the marked pages of the specification were then added to the patent image data base of the Automated Patent System (APS) in the Certificate of Correction section for the patent. This has been an activity which has been both costly and difficult to properly maintain. Furthermore, reclassification of many parts of the Class 395 art has reduced the need for reliance upon CASPIR for searching.

The proper CASPIR codes will continue to be assigned at the time of allowance of a patent application, so that CASPIR coding will be maintained, but the marking of the margins of the specification with the codes after the patent is printed will be discontinued. Due to a backlog of printed patents awaiting to be marked by examiners in the Group, patents which have issued since January 1, 1994 may not have CASPIR codes marked in the specification margins.

It will still be possible to search recently issued patents by CASPIR codes in the Automated Patent System (APS) by employing the class/subclass searching technique, but CASPIR coded pages of the specifications will no longer appear in the Certificate of Correction section of the patents. For further information, please consult the GROUP 2300 USERS GUIDE FOR APS IMAGE SEARCHING (CASPIR), available from Gareth Shaw, Supervisoy Patent Examiner, Art Unit 2316.

Any comments or questions should be directed to Gareth Shaw, Supervisoy Patent Examiner, Art Unit 2316, by telephone at (703) 305-9600 or by mail marked to his attention and addressed to Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Jan. 23, 1995 BOBBY GRAY
Director, Group 2300

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 5,022,171, Roy Norfolk, Arnold Lazarus, MATRIX DISPLAY ASSEMBLY HAVING MULTIPLE POINT LIGHTING, Interference No. 103,460 final judgment adverse to the patentee rendered January 23, 1995, as to claims 1-11.

Patent No. 4,591,570, Tse-Wen Chang, MATRIX OF ANTIBODY-COATED SPOTS FOR DETERMINATION OF ANTIGENS, Interference No. 102,813, final judgment adverse to the patentee rendered September 29, 1994, as to claims 1-16, 18, 20-21.

Patent No. 4,597,961, Frank T. Etscorn, TRANSCUTANEOUS APPLICATION OF NICOTINE, Interference No. 102,530, final judgment adverse to the patentee rendered September 29, 1993, as to claims 1-15.

Patent No. 4,691,530, Milton Meckler, COGENERATION AND CENTRAL REGENERATION MULTI-CONTACTOR AIR CONDITIONING SYSTEM, Interference No. 102,879, final judgment adverse to the patentee rendered March 25, 1994, as to claims 1, 3, 5-8 and 15-17.

Patent No. 4,820,791, James C. Fletcher, Administrator of NASA, with respect to an invention of Paul M. Hergenrother, Stephen J. Havens, POLYIMIDES CONTAINING CARBONYL AND ETHER CONNECTING GROUPS, Interference No. 102,780, final judgment adverse to the patentee rendered September 28, 1994, as to claims 1 and 3.

Patent No. 4,817,601, Laurence A. Roth, Stephen J. Herman, Carl R. Turnquist, Edward L. Sinofsky, Jacob Y. Wong, CATHETER SYSTEM FOR CONTROLLED REMOVAL BY RADIANT ENERGY OF BIOLOGICAL OBSTRUCTIONS, Interference No. 102,838, final judgment adverse to the patentee rendered December 21, 1994, as to claims 1-50.

Patent No. 4,850,676, Minoru Yazaki, Yuzuru Sato, Akihiko Ito, METHOD FOR DRIVING A LIQUID CRYSTAL ELEMENT, Interference No. 103,212, final judgment adverse to the patentee rendered December 6, 1994, as to claims 1-10.

Patent No. 4,870,131, Ramesh M. Pisipati, Joseph O. Campbell, LOW GLOSS MOLDING COMPOSITION, Interference No. 102,555, final judgment adverse to the patentee rendered September 30, 1993, as to claims 1-4.

Patent No. 4,982,250, Peter W. Manos II, Roger S. Countryman, Jr., MOISTURE BARRIER FOR FLOATING GATE TRANSISTORS, Interference No. 102,861, final judgment adverse to the patentee rendered January 18, 1995, as to claims 1 and 5.

Patent No. 5,005,039, Masataka Hamada, Tokuji Tshida, Kenji Ishibashi, AUTOFOCUSING CAMERA, Interference No. 102,929, final judgment adverse to the patentee rendered September 21, 1994, as to claims 8 and 9.

Patent No. 5,026,598, Noboru Koyama, Yasushi Nakano, Setsuko Kawahara, Noboru Nakajima, MAGNETIC RECORDING MEDIUM, Interference No. 103,442 final judgment adverse to the patentee rendered December 5, 1994, as to claims 1-14.

Patent No. 5,043,982, Jean-Jacques Werner, MUTLI-CHANNEL MULTIPOINT NETWORK USING TIME-DIVI-

SION MULTIPLEXING INCORPORATING A TIME OFFSET FOR PROPAGATION DELAY, Interference No. 103,329, final judgment adverse to the patentee rendered January 24, 1995, as to claims 1-19.

Patent No. 5,045,934, Katsuya Kikuchi, ELECTRONIC ENDOSCOPE APPARATUS CAPABLE OF INDICATING OVER-EXPOSURE AREA ON FUNCTIONAL IMAGE, Interference No. 103,314, final judgment adverse to the patentee rendered December 6, 1994, as to claims 1, 2, and 4-7.

Patent No. 5,092,673, Naohiko Hayashi, CAMERA WITH SELF-TIMER DEVICE, Interference No. 103,151, final judgment adverse to the patentee rendered December 19, 1994, as to claims 1-4.

Patent No. 5,077,642, Stephen P. Lisak, HORIZONTAL ZERO ADJUSTER FOR AUTOMOTIVE HEADLAMP, Interference No. 102,980, final judgment adverse to the patentee rendered December 22, 1994, as to claims 1-15.

Patent No. 5,101,205, Akira Yasuda, AID CONVERTER INCLUDING ERROR CORRECTION FOR A LOCAL DIA CONVERTER, Interference No. 103,090, final judgment adverse to the patentee rendered August 24, 1994, as to claims 1-9, 11 and 17.

Patent No. 5,112,003, Roger G. Covington, Daniel M. Pagano, FILM CASSETTE WITH SHUTTER LIGHT-LOCK, Interference No. 103,181, final judgment adverse to the patentee rendered January 11, 1995, as to claim 1.

Patent No. 5,185,483, Hirokazu Aoyama, Takashi Yasuhara, Satoru Kono, Satoshi Koyama, Souichi Ueda, PROCESS FOR PREPARING PENTAFLUORODICHLOROPROPANES, Interference No. 103,544, final judgment adverse to the patentee rendered January 19, 1995, as to claims 1-8.

Patent No. 5,188,832, Heinz Mehlhorn, Horst Taraschewski, Gunter Schmahl, Wolfgang Raether, Manfred Rosner, AGENTS DIRECTED AGAINST PARASITES OF FISHES AND INSECTS, Interference No. 103,384, final judgment adverse to the patentee rendered January 27, 1995, as to claims 1-9 and 11.

OLIVIA M. DUVALL, *Sup'v Legal Instruments Examiner*
Board of Patent Appeals & Interferences
(703) 603-3298

Certificate of Correction
For Week of February 21, 1995

P. 8,828	5,070,488	5,225,195	5,261,378
P. 8,974	5,084,915	5,226,604	5,262,130
D. 339,954	5,091,613	5,227,992	5,266,212
D. 340,254	5,133,014	5,230,057	5,268,123
D. 344,956	5,142,117	5,235,008	5,268,271
D. 349,121	5,147,998	5,235,460	5,270,246
D. 353,285	5,148,006	5,237,355	5,270,946
4,459,340	5,158,620	5,238,844	5,270,990
4,757,148	5,162,570	5,241,745	5,275,227
4,798,846	5,167,789	5,242,216	5,277,740
4,920,203	5,169,930	5,243,318	5,279,387
4,932,521	5,176,721	5,245,371	5,280,158
4,971,779	5,177,317	5,245,743	5,282,205
4,971,801	5,179,502	5,246,147	5,283,220
4,998,191	5,199,378	5,249,122	5,283,556
5,006,250	5,206,315	5,251,082	5,284,597
5,007,406	5,208,770	5,251,299	5,284,821
5,025,388	5,213,760	5,252,458	5,285,492
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5,048,918	5,218,042	5,254,346	5,288,805
5,049,911	5,222,881	5,258,978	5,291,342
5,057,798	5,224,905	5,260,376	5,292,799
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5,208,770	5,251,299	5,284,821	
5,213,760	5,252,458	5,285,492	
5,214,277	5,253,668	5,286,660	
5,218,042	5,254,346	5,288,805	
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5,305,659	5,339,450	5,355,149	5,365,705
5,306,588	5,339,913	5,355,542	5,365,712
5,307,003	5,340,784	5,355,673	5,365,727
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5,309,387	5,341,441	5,355,964	5,366,010
5,312,229	5,341,811	5,356,177	5,366,594
5,312,919	5,342,971	5,356,915	5,367,113
5,313,572	5,343,216	5,356,927	5,367,426
5,313,961	5,343,228	5,356,929	5,367,575
5,315,382	5,343,394	5,356,967	5,367,807
5,315,562	5,343,967	5,357,057	5,368,112
5,317,152	5,344,134	5,357,075	5,368,190
5,317,743	5,344,232	5,357,196	5,368,334
5,318,042	5,344,242	5,357,553	5,368,527
5,318,370	5,344,498	5,357,812	5,368,697
5,319,115	5,344,831	5,358,596	5,368,842
5,319,210	5,344,945	5,359,331	5,368,897
5,319,288	5,345,452	5,359,635	5,369,174
5,319,520	5,346,075	5,359,884	5,369,572
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5,319,844	5,346,234	5,360,397	5,369,731
5,320,013	5,346,407	5,360,457	5,370,282
5,320,269	5,347,265	5,360,788	5,370,370
5,320,646	5,347,307	5,360,844	5,370,402
5,322,608	5,347,348	5,361,008	5,370,641
5,322,785	5,347,355	5,361,024	5,370,833
5,323,355	5,347,517	5,361,235	5,370,895
5,326,477	5,347,713	5,361,323	5,371,050
5,326,901	5,348,160	5,361,386	5,371,290
5,327,510	5,348,594	5,361,584	5,371,292
5,328,028	5,348,823	5,361,941	5,371,944
5,328,036	5,349,163	5,361,997	5,372,028
5,328,356	5,349,227	5,362,359	5,372,062
5,328,519	5,349,343	5,362,544	5,372,236
5,329,380	5,349,463	5,362,679	5,372,465
5,329,616	5,349,704	5,362,962	5,373,867
5,329,865	5,349,813	5,363,777	5,373,976
5,330,041	5,350,046	5,363,838	5,374,181
5,331,176	5,350,516	5,363,867	5,375,069
5,331,296	5,350,736	5,364,006	5,375,125
5,331,431	5,350,836	5,364,101	5,376,437
			5,378,821

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
December 19-23, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	TTAB Decision	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
12-20	CANC (R)	18,593	Miss Elaine, Inc. v. Bentley Lingerie, Inc.	2(d); abandonment	"ME" "ME 2." "MISS ELAINE" [all three marks for ladies' sleep wear]	Request for Reconsideration Denied [Opposition Sustained (on ground of abandonment only)]	"ME MADISON EAST" [ladies' pajamas, night shirts, tank tops, and underwear]		No
12-20	OPP (R)	87,616	Sears, Roebuck & Co. v. Diard, Inc.	2(d)	"DIEHARD" [boots and shoes]	Request for Reconsideration Denied [Opposition Dismissed]	"DIARD SOCKS" (and design) [socks and hosiery]		No
12-21	ILX	74/231,738	Republic New York Corp.	2(e)(4) (surname)		Refusal Affirmed	"SABAN" [banking and financial services, namely, a full range of consumer commercial and international banking services]		No
12-21	OPP	87,805	Thomas Industries, Inc. v. Titan Industries, Inc.	2(d)	"TI" (in stylized lettering, and circle design)	Opposition Sustained	"TI" (in stylized lettering) [liquid additive controllers]		No
12-22	OPP	83,776	Continental Grain Co. v. Central Soya Co., Inc	2(d); 2(e)(1)	"PEAK-DARI" [feed supplement for livestock]	Opposition Dismissed	"HI PEAK" [diary feed]		No

([1])EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
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Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
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Box PATENT APPLICATION	New patent application and associated papers and fees.
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Box Reexam	Requests for Reexamination for *original* request papers *only*.
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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
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Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
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	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

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PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	01/06/94
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	01/29/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	04/05/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	02/17/94
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMAN, Director	308-0196	08/23/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	01/29/93
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	06/14/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	12/21/93
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—Vacant	308-0771	12/13/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/14/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	06/29/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	03/23/93
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MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	11/30/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	01/20/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	11/04/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/21/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during January 1995 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,065,812 to 4,071,911 inclusive
Plant Patents.....4,174 to 4,205

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Jan. 1, 1995

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/26/94	11/14/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/05/94	10/19/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/05/94	09/19/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/01/94	10/12/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/28/94	11/02/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/12/94	09/21/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/19/94	10/18/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/19/94	09/23/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/28/94	08/25/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/21/94	11/17/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/14/94	11/14/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/09/94	11/01/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/15/94	09/06/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	07/14/94	—0—
Renewals (All Classes)	11/17/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
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REEXAMINATIONS

FEBRUARY 21, 1995

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,483,723 (2488th)
STEEL WITH ANTIMONY ADDITION
Grigory Lyudkovsky, Hammond, Ind., assignor to Inland Steel Co., Chicago, Ill.
Reexamination Request Nos. 90/002,922, Dec. 30, 1992 and 90/002,972, Feb. 17, 1993 and 90/003,229, Oct. 26, 1993 and 90/003,234, Oct. 28, 1993.
Reexamination Certificate for Patent No. 4,483,723, issued Nov. 20, 1984, Ser. No. 469,111, Feb. 23, 1983.
Division of Ser. No. 299,807, Sep. 8, 1981, Pat. No. 4,421,574
Int. Cl.[6] B21B *3/02;* **H01F** *1/04, 1/147*
U.S. Cl. 148—320

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–9** are cancelled.

[**1**. A cold rolled, annealed strip of carbon-containing electrical steel containing at least one uncombined alloying element having an affinity for oxygen greater than that of iron, said strip comprising:
a steel composition consisting essentially of, in wt. %:
carbon: up to 0.06
manganese: 0.20–0.75
silicon: 0.15–2.50
aluminum: 0.15–0.50
phosphorous: 0.12 max.
sulfur: 0.02 max.
antimony: 0.02–0.10
iron: essentially the balance
and an antimony-enriched layer at, and immediately adjacent, the suface of said steel strip;
said silicon and said aluminum providing said uncombined alloying elements having an affinity for oxygen greater than that of iron;
said steel strip being substantially resistant to the formation of an internal oxidation layer containing an oxide of said uncombined alloying elements and located adjacent the surface of said steel strip, when the steel strip is heated in an oxidizing atmosphere at a temperature which would cause the formation of said internal oxidation layer in the absence of said antimony-enriched layer.]

B1 5,089,033 (2489th)
PROCESS FOR REMOVING CONDENSABLE COMPONENTS FROM GAS STREAMS
Johannes G. Wijmans, Menlo Park, Calif., assignor to Membrane Technology and Research, Inc., Menlo Park, Calif.
Reexamination Request No. 90/003,149, Aug. 2, 1993.
Reexamination Certificate for Patent No. 5,089,033, issued Feb. 18, 1992, Ser. No. 649,305, Jan. 30, 1991.
Continuation of Ser. No. 432,592, Nov. 2, 1989, abandoned.
Int. Cl.[6] B01D *53/22, 71/24*
U.S. Cl. 95—39

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–23** is confirmed.

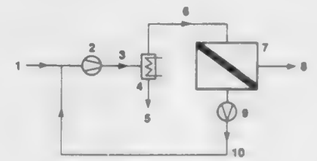
Claims **30** and **31** are cancelled.

Claims **24**, **28**, **29**, **32**, **33**, **37–39** and **43** are determined to be patentable as amended.

Claims **25–27**, **34–36**, **40–42**, **44** and **45**, dependent on an amended claim, are determined to be patentable.

New claims **46–100** are added and determined to be patentable.

24. A process for recovering a condensable *organic* component from a gas stream, comprising the steps of:
(a) providing an incoming gas stream containing a condensable *organic* component, characterized by a boiling point higher than −100° C.;
(b) performing a membrane separation step, comprising:
providing a membrane *comprising a rubbery polymer, said membrane* having a feed side and a permeate side;



providing a pressure difference between the permeate and feed sides of the membrane, such that the ratio of the pressure on the permeate side to the pressure on the feed side is in the range 0.005–0.5;
contacting said feed side with said incoming gas stream;
withdrawing from said permeate side a withdrawn stream enriched in said condensable *organic* component compared with said incoming gas stream;
wherein the membrane separation step is characterized by a stage cut less than about 40%;
(c) performing a condensation step, comprising:
bringing said withdrawn stream to a condition characterized in that the concentration of said condensable *organic* component is greater than its saturation concentration at said condition, so that condensation of a portion of said condensable *organic* component occurs;
withdrawing a condensed stream comprising said condensable *organic* component in liquid form;
withdrawing a non-condensed stream depleted in said condensable *organic* component compared with said permeate stream;
(d) recycling said non-condensed stream to said membrane separation step (b).

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,862

ELECTRODEPOSITION PROCESS

Doug Czor, 10008 Caddie, N.W., Albuquerque, N. Mex. 87114

Original No. 5,013,409, dated May 7, 1991, Ser. No. 328,069, Mar. 23, 1989. Application for reissue May 6, 1993, Ser. No. 60,212

Int. Cl.[6] **C25D** *1/10*

U.S. Cl. 205—67 **62 Claims**

27. A process for electrodepositing a metal on a mold comprising the following steps:

(a) obtaining an original solid object comprising a surface configuration which is to be essentially duplicated by the electrodeposition process;

(b) applying an elastic molding material to the surface of the original object;

(c) allowing the elastic molding material to cure or solidify to obtain a solid elastic mold comprising an object-facing surface configuration which is in a reverse configuration to the surface configuration of the object;

(d) removing the elastic mold from the surface of the original object;

(e) providing conductive means to the object-facing surface of the mold;

(f) placing the mold comprising the conductive means into an electrodeposition bath, the electrodeposition bath comprising the electrodeposition solution and at least one anode;

(g) providing mold floating prevention means to prevent the elastic mold from floating in the electrodepositon bath;

(h) electrodepositing metal onto the object-facing surface of the mold for a sufficient time to form a metal deposit on the object-facing surface of the mold;

(i) removing the mold from the electrodeposition bath; and

(j) detaching the elastic mold from the metal deposit to produce an electrodeposited metal product comprising a mold-facing surface and a back surface, the mold-facing surface having a substantially similar configuration to the surface configuration of the original object.

Re. 34,863

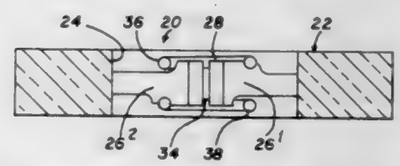
HIGH IMPEDANCE CIRCUIT FOR INJECTION LOCKED MAGNETRONS

Robert C. English, Bloomington, Ind.; Geoffrey Thornber, Aptos, Calif., and Christopher M. Walker, Montoursville, Pa., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Original No. 5,045,814, dated Sep. 3, 1991, Ser. No. 493,496, Mar. 14, 1990. Application for reissue Jun. 25, 1993, Ser. No. 83,093

Int. Cl.[6] **H03B** *9/10*; **H01J** *23/22, 25/50*

U.S. Cl. 331—86 **20 Claims**



10. A high impedance circuit for an injection locked oscillator having an inner cavity, said circuit comprising:

a plurality of vanes coaxially positionable in said cavity; and

at least one strap interconnecting a portion of said vanes, said vanes and strap being dimensioned so that said circuit has a high single cavity impedance commensurate with an interaction impedance of said oscillator which is sufficient to sustain oscillation for a preselected injection locking bandwidth of said oscillator;

wherein said injection locking bandwidth, ΔF, is given by:

$$\Delta F = \frac{2F_o\left(\frac{P_i}{P_o}\right)^{\frac{1}{2}}}{Q_e}$$

wherein F_o is the frequency of said oscillator, P_o is power out of said oscillator, P_i is the injected coherent power, and Q_e is the external Q of said oscillator;

further wherein said interaction impedance, Z_{int} is given by:

$$Z_{int} = Q_l\left(\frac{L}{C}\right)^{\frac{1}{2}}$$

wherein Q_l is the loaded Q of said circuit, and $(L/C)^{\frac{1}{2}}$ is said high single cavity impedance of said circuit; and

further wherein Q_l is given by:

$$\frac{1}{Q_l} = \frac{1}{Q_o} + \frac{1}{Q_e}$$

wherein Q_o is the unloaded Q of the circuit and said interaction impedance is at least 5,000 ohms.

Re. 34,864

CARRIER FOR COATING WITH IMMUNOLOGICALLY-ACTIVE MATERIAL

Hans-Georg Batz, Tutzing; Herbert Hopp, Weilheim, and Klaus Stellner, Bernried, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Original No. 4,980,299, dated Dec. 25, 1990, Ser. No. 129,420, Nov. 25, 1987. Continuation of Ser. No. 612,564, May 21, 1984, abandoned. Application for reissue Dec. 1, 1992, Ser. No. 984,867

Claims priority, application Germany, May 19, 1983, 3318184

Int. Cl.[6] **G01N** *33/544, 33/545*

U.S. Cl. 436—531 **16 Claims**

17. Injection molded, immunologically active carrier material having a variation coefficient of less than 5% and consisting of:

(a) a synthetic resin,

(b) a content of adjuvant or additional material of less than 1%, wherein said adjuvant or additional material is selected from the group consisting of: a stabilizer, a lubricant, a plasticiser, a separating agent, a pigment and a filling material, and

(c) an immunologically active material loaded therein.

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Re. 34,865

CEPHALOSPORIN DERIVATIVES

Friedhelm Adam, Tacoma, Wash.; Jürgen Blumbach, Niedernhausen, Germany; Walter Dürckheimer, Hattersheim am Main, Germany; Gerd Fischer, Frankfurt am Main, Germany; Burghard Mencke, Holzappel, Germany; Dieter Isert, Eschborn, Germany, and Gerhard Seibert, Darmstadt, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

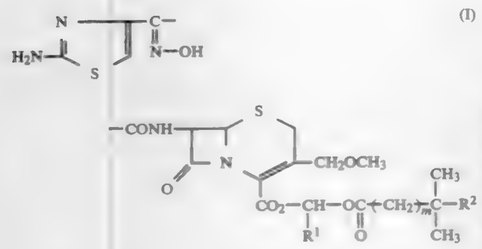
Original No. 5,100,887, dated Mar. 31, 1992, Ser. No. 555,807, Jul. 23, 1990. Continuation of Ser. No. 310,437, Feb. 15, 1989, abandoned. Application for reissue Nov. 19, 1992, Ser. No. 978,980

Claims priority, application Germany, Feb. 17, 1988, 3804841.8

Int. Cl.[6] A61K *31/545*; C07D *501/32*

U.S. Cl. 514—202 3 Claims

1. [A cephemcarboxylic acid ester of the formula I



(I)

in which

m denotes 0 or 1,

R^1 denotes hydrogen or methyl and

R^2 denotes C_1–C_6-alkyl, C_2–C_6-alkenyl, C_2–C_6-alkynyl or the group

$$-(CH_2)_n-OR^3$$

in which n stands for 0 or 1 and R^3has the meaning of C_1–C_6-alkyl, which can also be further substituted by phenyl, or of C_3–C_4-alkenyl,

in which the HO group is in the syn-position and, if m is 0 and R^1 is hydrogen, R^2 cannot be methyl physiologically tolerated acid addition salts thereof or their diastereomers] *A compound consisting essentially of pure diastereomer I of α-(2,2-dimethylpropionyloxy)-ethyl 7-[2-(2-aminothiazol-4-yl)-2-(Z)-hydroxyimino-acetamido]-3-(methoxymethyl)-3-cephem-4-carboxylate or a physiologically tolerated acid addition salt thereof.*

Re. 34,866

DEVICE FOR SEALING PERCUTANEOUS PUNCTURE IN A VESSEL

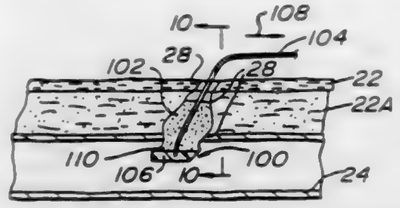
Kenneth Kensey, Chester Springs, and Harold E. Clupper, West Chester, both of Pa., assignors to Kensey Nash Corporation, Exton, Pa.

Original No. 4,890,612, dated Jan. 2, 1990, Ser. No. 194,641, May 16, 1988. Continuation-in-part of Ser. No. 15,267, Feb. 17, 1987, Pat. No. 4,744,364. Application for reissue Dec. 31, 1991, Ser. No. 816,518

The portion of the term of this patent subsequent to Jan. 2, 2007, has been disclaimed.

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—213 58 Claims



1. A closure device for sealing a puncture or incision formed percutaneously in tissue separating two internal portions of the body of a living being, *said tissue having an inside and an outside portion, said puncture or incision including a first portion extending through said tissue from said inside portion to said outside portion and a second portion extending from said first portion of said puncture or incision to the surface of said skin,* said device comprising plug means arranged for placement at a predetermined position within the body of said being and having a first holding portion and a second sealing portion [adapted], *said first holding portion being preformed in a predetermined shape and being orientable into a first orientation to enable it to be extended in a first direction through said incision or puncture and thereafter orientable into a second and different orientation without changing from said predetermined shape so that it can be retracted in a second direction opposite to said first direction* to [engage] *a position contiguous with the inside* portions of the tissue adjacent said puncture or incision *without being pulled through said puncture or incision* to hold said plug means in place, *said second sealing portion being configured for location within said second portion of said puncture or incision, and being* formed of an expandable material which expands automatically in response to the ambient surroundings when in said [predetermined position and extending through said] *second portion of* said puncture or incision to engage [the] tissue contiguous therewith to seal said puncture or incision from the flow of a body fluid therethrough [between said two internal portions].

PLANT PATENTS

GRANTED FEBRUARY 21, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,060

COLUMNAR APPLE TREE — OBELISK VARIETY

Kenneth R. Tobutt, Maidstone, United Kingdom, assignor to Horticulture Research International, Warwick, United Kingdom

Filed Jan. 10, 1994, Ser. No. 179,312

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—34.1 1 Claim

1. A new and distinct variety of apple tree having the following combination of characteristics:

(a) exhibits a columnar growth habit,
(b) commonly exhibits weak to medium vigor which is more than that exhibited by the TELAMON and CHARLOTTE varieties, and less than that exhibited by the TUSCAN variety,
(c) flowers later than other previously available columnar apple varieties,
(d) forms attractive small to medium sized fruit having a yellow ground color with a high degree of somewhat striped rich maroon red overcolor that commonly can be cold-stored until approximately April while present in an ambient atmosphere, and
(e) commonly exhibits an early October harvest date;

substantially as herein shown and described.

9,061

COLUMNAR APPLE TREE—HERCULES VARIETY

Kenneth R. Tobutt, Maidstone, United Kingdom, assignor to Horticulture Research International, Warwick, United Kingdom

Filed Jan. 10, 1994, Ser. No. 179,357

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—34.1 1 Claim

1. A new and distinct variety of apple tree having the following combination of characteristics:

(a) exhibits a columnar growth habit that is more compact than that of previously available columnar apple varieties,
(b) flowers earlier than other previously available columnar apple varieties,
(c) forms attractive large light green fruit with a red flush possessing an irregular round conical configuration with a prominent knobby crown that can be cold-stored until approximately March–April while present in an ambient atmosphere, and
(d) commonly exhibits a late September harvest date;

substantially as herein shown and described.

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PATENTS

GRANTED FEB. 21, 1995

ERRATA

For CLASS	See PATENT NO.
2–406	5,390,376
29–890	5,390,411
451–045	5,390,431
451–194	5,390,445
451–008	5,390,446
451–340	5,390,447
451–478	5,390,448
451–526	5,390,449
451–075	5,390,450
72–133	5,390,538
73–038	5,390,539
74–551	5,390,564
447–161	5,390,566
137–513	5,390,692
239–099	5,390,850
248–073	5,390,876
285–038	5,390,969
400–488	5,391,006
404–014	5,391,015
408–233	5,391,022
411–374	5,391,028
411–451	5,391,029
474–138	5,391,118
474–112	5,391,119
604–378	5,391,160
106–696	5,391,226
156–662	5,391,244
204–129	5,391,278
73–010	5,391,283
205–140	5,391,290
210–774	5,391,304
424–605	5,391,379
424–570	5,391,380
428–102	5,391,425
437–183	5,391,514
504–243	5,391,537
504–253	5,391,540
514–023	5,391,550
525–274	5,391,627
523–501	5,391,649
514–337	5,391,751
514–453	5,391,779
552–105	5,391,785

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ERRATA–CONTINUED

For CLASS	See PATENT NO.
174–036	5,391,838
327–108	5,391,933
327–110	5,391,934
327–198	5,391,935
327–094	5,391,936
327–078	5,391,937
327–071	5,391,938
326–083	5,391,939
326–021	5,391,940
326–039	5,391,942
326–041	5,391,943
327–065	5,391,944
327–156	5,391,945
327–113	5,391,946
327–346	5,391,947
327–310	5,391,948
327–053	5,391,949
327–384	5,391,950
327–438	5,391,951
313–362	5,391,962
315–308	5,391,966
327–514	5,391,997
358–400	5,392,023
347–188	5,392,059
347–240	5,392,060
347–252	5,392,061
347–049	5,392,063
359–181	5,392,147
362–078	5,392,200
363–059	5,392,205
385–024	5,392,377
395–650	5,392,426
359–653	5,392,431
455–033	5,392,453
455–032	5,392,454

PATENTS

GRANTED FEBRUARY 21, 1995

GENERAL AND MECHANICAL

5,390,367

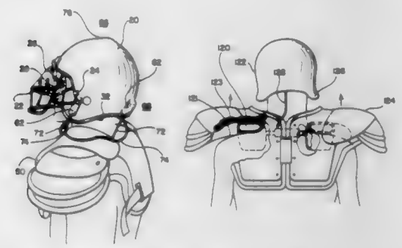
HELMET AND SHOULDER PADS HAVING INFLATABLE PROTECTIVE MEANS TO PROTECT CERVICAL SPINE

Gus A. Rush, III, 1800 12th St., Meridian, Miss. 39301

Continuation-in-part of Ser. No. 964,875, Oct. 22, 1992, Pat. No. 5,287,562, which is a continuation-in-part of Ser. No. 818,840, Jan. 10, 1992, abandoned. This application May 25, 1993, Ser. No. 66,670

Int. Cl.[6] A42B *3/02*

U.S. Cl. 2—2 20 Claims



13. A helmet and shoulder pads for protection of the cervical spine of a wearer against axial compressive force sufficient to cause serious injury, comprising:

a rigid helmet having a lower rim for at least partially encircling the head of the wearer, said helmet being defined by an exterior surface including a crown area;

extensible means generally disposed along said lower rim and normally not projecting substantially below said lower rim but being extendable therebelow to engage the shoulders of the wearer and substantially transfer to the shoulders the force of an external impact on the crown area of said helmet; and

gas-operable means carried by said helmet for extending said extensible means to engage the shoulders of a wearer within less than 25 milliseconds of an external impact on said crown area of said helmet, said gas-operable means including

(i) means carried by said helmet for almost instantaneously generating gas for operating said gas-operable means, and

(ii) sensor means for operating said gas-generating means, said sensor means having at least a portion thereof disposed externally to said helmet as defined by said exterior surface, said sensor means operating said gas-generating means on an external impact with a predetermined force to rapidly extend said extensible means to engage the shoulders of a wearer so as to be able to transfer the impact force to the shoulders instead of directly through said helmet and head of the wearer generally axially to the cervical spine of the wearer,

shoulder pads cooperating with said helmet and operatively connected to said sensor means, said shoulder pads including inflatable base means for broadening the foundation on which the extensible means can engage when worn by a user, said inflatable base means being normally deflated and restrictedly folded so as to allow normal movements of the head and neck of the wearer, said inflatable base means being in the shape of a ring attached to the inner rim encircling the neck of the wearer, said inflatable base means extending inwardly towards the wearer's neck when inflated to instantaneously broaden the foundation on which the extensible means can engage upon impact.

5,390,368

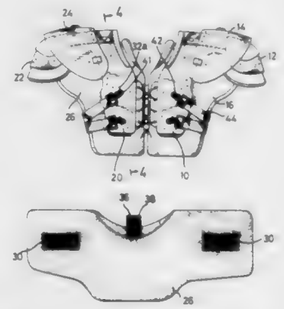
REPLACEABLE SHOULDER PADDING FOR FOOTBALL PLAYERS

Chih P. Chang, No. 4, Lane 277, Fu Teh 1st Rd., Kaohsiung City, Taiwan, Prov. of China

Filed Jan. 14, 1994, Ser. No. 182,737

Int. Cl.[6] A41D *13/00*

U.S. Cl. 2—2 1 Claim



1. A shoulder pad comprising left and right body arches each having an inner face with an anterior portion, a posterior portion, and a connecting shoulder portion, and left and right arch pads each having an outer face with an anterior portion, a posterior portion, and a connecting shoulder portion, an inner strap being securely attached to said inner face of each of said left and right body arches at two ends thereof, the improvement comprising:

said outer face of each of said left and right arch pads including a first hook fastener securely attached to each of said anterior and posterior portions thereof;

said inner face of each of said left and right body arches including a strip securely attached to each of said anterior and posterior portions thereof, each said strip having a first loop fastener securely mounted to one face thereof which faces said outer face of said left and right arch pads for releasably engaging with said first hook fastener;

said connecting shoulder portion of each of said left and right arch pads including a strap with one end thereof securely attached to a mediate section thereof, said strap extending in a direction perpendicular to a lengthwise direction of said connecting shoulder portion and having a second hook fastener provided to one face thereof; and

each said inner strap having a second loop fastener securely attached to one face thereof which faces said inner face of associated said body arch for releasably engaging with said second hook fastener.

5,390,369

MULTI-FUNCTIONAL PROTECTIVE EYEWEAR

William E. Tubin, Randolph, Mass., assignor to Scorpion Sunglasses, Inc., Randolph, Mass.

Continuation of Ser. No. 881,247, May 11, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 109,221

Int. Cl.[6] A61F *9/04*

U.S. Cl. 2—12 10 Claims

1. Protective eyewear comprising:

(a) a visor component integrally sweeping arcuately over the bridge of the nose and over both eyes between opposed extremities that are positioned rearwardly of the outer corners of both eyes;

(b) a lens component having portions sweeping arcuately across both eyes between opposed extremities that are

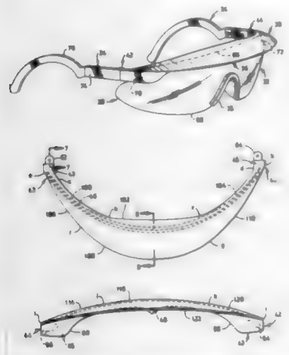
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positioned rearwardly of the outward corners of both eyes;

(c) said visor component defining arcuate seat means in which the upper profile of said lens component is seated and bonded;

(d) a pair of temple components hinged to opposite extremities of said visor component;

(e) said visor component being characterized by a rearward profile and a forward profile when viewed from above its top surface, said rearward profile including opposite end portions each having a radius of curvature of approximately 80 mm and a medial portion therebetween having



a radius of curvature of approximately 200 mm, said forward profile including opposite end portions each having a radius of curvature of approximately 100 mm and a medial portion therebetween having a radius of curvature of approximately 60 mm;

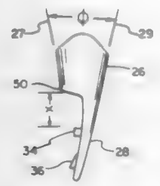
(f) said front view of said visor component being characterized by an upper profile and a lower profile when viewed from adjacent its front surface, said upper profile including opposite end portions each having a radius of curvature of approximately 200 mm and a medial portion therebetween having a radius of curvature of approximately 150 mm, said low profile having a radius of curvature of approximately 300 mm.

5,390,370

KNOT SUPPORT FOR PRE-TIED NECKTIE

Sherry Koy, 21805 Arline Ave., Hawaiian Gardens, Calif. 90716

Filed Aug. 6, 1993, Ser. No. 102,794
Int. Cl.[6] A41D *25/02, 25/00*
U.S. Cl. 2—153 2 Claims



1. A necktie knot supporting means where a necktie having a first tie portion includes a neck embracing loop having a lower end, inner edges provided with interlockable means; a zipper slide having means to interlock and unlocking said interlockable means and a gripping tab to vary the size of the loop; and a second tie portion having an upper end for securing to said necktie knot supporting means to form a knot portion, and the remainder of said second tie portion depending from said necktie knot supporting means to form a front depending panel; said necktie knot supporting means comprising:

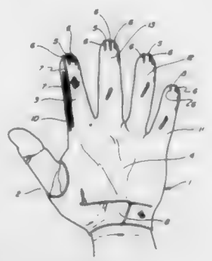
a front panel having a triangular shape with a lower tongue section, a hollow upper section including said front panel and a rear loop, where said front panel and said rear loop are equidistant, said front panel and said rear loop having arcuate carves; said hollow upper section tapering downwardly to said lower tongue section; said front panel having a backside with a u-shaped bracket means and an inclined post means fixed to said lower tongue section to receive a gripping tab of a zipper slide, where the gripping tab is removably attached to said lower tongue section by sliding the gripping tab into said bracket and engaging said inclined post means, said front panel and said lower tongue section and said rear loop forming an angle "ϕ" defined by a line extending through said rear loop and intersecting said lower tongue section at its lowest point; and said rear loop having a lower edge where a distance "x" between said lower edge and said u-shaped bracket is equal to the length of a zipper slide, whereby said hollow upper section has a pair of guide channels formed by installing a zipper slide in said u-shaped bracket means for guiding and restricting movement of said neck embracing loop.

5,390,371

GUITAR GLOVE

Richard A. Sigward, 3224 Rock Hill Rd., East Alton, Ill. 62024

Filed May 18, 1993, Ser. No. 62,981
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—159 4 Claims



1. A guitar glove comprising:

(1) a tight fitting glove made of stretch nylon, or its equivalent, wherein the thumb section is removed;

(2) wherein each very tip end of the index and middle fingers of said glove has a plurality of raised, elongated cushioning strips, said strips running parallel to the length of said fingers; and

(3) wherein each very tip end of the remaining fingers has a plurality of raised, elongated cushioning strips, said strips running parallel to the length of said fingers;

(4) further comprising a plurality of raised, elongated cushioning strips running the length of the radial side of the index finger;

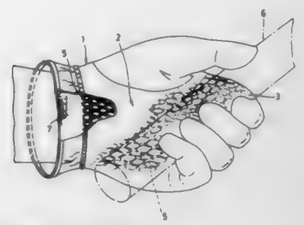
whereby said glove tightly fits about a guitar player's hand and said tip end cushioning strips enable him to depress individual guitar strings.

5,390,372

GOLF GLOVE WITH MESH LINING

Kenichi Hashimoto, Tsuruga, and Shinichi Hata, 40-66-1, Echizen-cho, Kuriya, Nyu-gun, Fukui-ken, both of Japan, assignors to Shinichi Hata, Fukui, Japan

Continuation-in-part of Ser. No. 519,527, May 4, 1990, abandoned. This application Oct. 1, 1991, Ser. No. 769,503
Claims priority, application Japan, May 8, 1989, 1-53294[U]
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.2 6 Claims



1. A golf glove comprising:

a glove body made of leather, said glove body includes a wrist portion, a hand portion, a palm portion including finger portions, and a thumb portion which covers a front side and back side of one's hand,

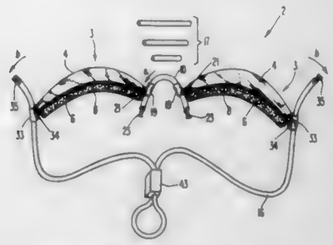
a sweat-absorbing non-slip lace material mounted on and secured to an inside surface of the glove body, said lace material being positioned only on a portion of the glove body starting at the wrist portion and covering the palm portion of a wearer's hand and also covering portions of the glove body extending from the palm portion and covering a front portion of each of one's four fingers and extending to the thumb portion but not covering a portion of the thumb, said lace material having an open mesh in the shape of a diamond in which said diamond shape has a longer diagonal line in a direction from the wrist toward the fingers than in a direction from the thumb portion across the fingers.

5,390,373

SWIM GOGGLES

Edmund L. Flory, Ketchum, Id., assignor to Flory, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 47,640, Apr. 15, 1993, Pat. No. 5,313,671. This application Mar. 18, 1994, Ser. No. 210,583
Int. Cl.[6] A61F *9/02*
U.S. Cl. 2—430 17 Claims



1. A pair of swim goggles comprising:

a) a seamless, ovoid and convex-shaped pair of lenses, each with a substantially cylindrically shaped eyelet attached to their distal and proximal ends;

b) a substantially flexible support for containment of said lenses;

c) a nosepiece consisting of resilient tubing having end portions that attach to each of said lenses at said proximally attached eyelet by means of a pointed post inserted within the ends of the tubing that secures said ends within said eyelet, and,

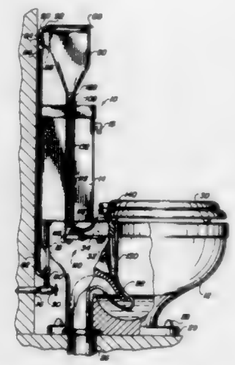
d) a head-strap attached to said distally attached eyelets for securing said goggles to the wearer's face.

5,390,374

WATER-CONSERVING URINAL

Sylvan E. Hubrig, 10734 Hutton Dr., Sun City, Ariz. 85351, and Donald K. Lachowitzer, 356 7th Ave. South, Fargo, N. Dak. 58103

Filed Jun. 21, 1993, Ser. No. 78,634
Int. Cl.[6] E03D *13/00*
U.S. Cl. 4—301 11 Claims



1. A urinal for attachment to a toilet of the type having a toilet bowl having an upper peripheral edge which defines an inlet opening and an outlet opening at a bottom edge, said outlet opening communicating with a sewer line through a trap and said toilet including a tank fluidly connected to said bowl and communicating with a water supply for selectively flushing said bowl, said urinal comprising:

(a) a urinal bowl having an interior and a discharge opening located at the bottom thereof;

(b) a first support member attachable to a fixture and being pivotal;

(c) a second support member having a first end connected to the urinal bowl and a second end connected to said first support, said second support being flexible between said first and second ends to flex between a stored position with the urinal bowl adjacent the tank and a use position forward of the tank, said second support member adapted to permit manual positioning of the location and height of the urinal bowl in said use position;

(d) a flexible waste line having a first end fluidically connected with the discharge opening of the urinal bowl and having a length adapted to extend from the discharge opening of the urinal bowl over said peripheral edge, through the outlet opening of the toilet bowl through said trap and into the sewer line to an opposite second end of said waste line; and

(e) a flexible water line adapted to be connected to said water supply and communicating with the interior of said urinal bowl for flushing the urinal bowl, whereby the urinal bowl may be manually moved from the stored position adjacent the toilet tank by pivoting said first support member and moving said second support member to position said urinal bowl at a selected height and location in said use position whereby discharged waste will flow from the interior of the urinal bowl via the waste line to the sewer line by-passing the toilet bowl thereby eliminating flushing of the toilet and odors.

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5,390,375

ADJUSTABLE TOILET TANK VALVE TO REGULATE FLUSH WATER VOLUME

John A. Fernstrum, Jr., 5950 N. 78th St. #152, Scottsdale, Ariz. 85250

Filed Oct. 12, 1993, Ser. No. 134,670
Int. Cl.[6] E03D *1/35*
U.S. Cl. 4—404 5 Claims



1. A flapper valve to be used with a toilet tank for selectively controlling the quantity and volume of water discharged from the tank at a discharge outlet into a discharge pipe during each flush by reducing the buoyancy of the flapper valve by permitting water inflow into the said flapper valve during the flushing operation, said flapper valve comprising in combination:

(a) an upper valve body portion fabricated of a relatively flexible, elastomeric material, said upper body including:

(i) an annular flange for engaging the discharge outlet and for sealing the discharge outlet against water flow into the discharge pipe from the toilet tank when the valve is in a first closed position:

(ii) a side wall integrally formed with and depending from said flange, said side wall having a lower peripheral edge;

(iii) mounting means for pivotally mounting said flapper valve to permit movement of said flapper valve from said first closed position to a second position raised above the discharge outlet and within the water toilet tank to permit water flow through the discharge outlet from the toilet tank when a flushing operation is commenced;

(iv) an air vent disposed in a predetermined location in the side wall for venting air from said valve body, said air vent being of sufficient size to prevent it from materially affecting the rate of water flowing into the said valve; and

(v) said vent being located in said side wall at a generally diametrically opposed position from said mounting means for positioning said vent in the upper part of the valve upper body when said flapper valve is in the second position; and

(b) a cone cap having sufficient rigidity so as not to appreciably deflect or flex during the flushing operation, said cone cap having a side wall with an upper peripheral edge and a lower end wall, said cone cap being in engagement with the upper valve body with the side wall of said cone cap extending downwardly from the lower peripheral edge of the upper valve body wherein said cone cap and said upper valve side wall form the wall of an interior buoyancy chamber;

(ii) whereby said cone cap provides sufficient support to the upper valve body side wall so the side wall will not appreciably deform under operating conditions in the toilet tank; and

(iii) said cone cap lower end wall defining means for adjusting the size of at least one through passageway therein to regulate the water inflow rate into the buoyancy chamber as a function of the size of the passageway.

5,390,376

BREATHABLE BODY WEAR

Gilda G. Marx, and Robert S. Marx, both of Los Angeles, Calif., assignors to Gilda Marx Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 553,963, Jul. 17, 1990, Pat. No. 5,152,014. This application Sep. 30, 1992, Ser. No. 954,587
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[6] A41B *9/04*
U.S. Cl. 2—406 18 Claims



1. A breathable garment comprising:

a main garment having a body area and a crotch area, and an inside surface and outside surface;

an inner panel having an inner and outer surface inserted in the crotch area of said main garment, and located on the inside surface of said main garment, with said inner surface of said inner panel facing, and immediately adjacent to said inside surface of said main garment;

said inner panel being formed of an open knit material formed of high surface area hydrophobic fibers;

said inner panel being formed of threads made up of bundles of said hydrophobic fibers;

said high surface area hydrophobic fibers of said inner panel having an outer peripheral surface and having longitudinally extending channels on said outer peripheral surface; and

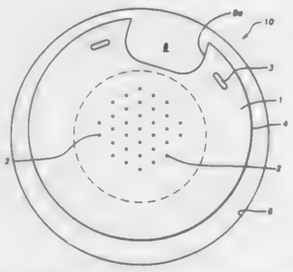
said main garment being formed of a porous material in the crotch area thereof.

5,390,377

SHEET FOR CONVERTING HOT TUB TO WADING POOL

Mark W. Blough, 2922 Cambridgeshire Rd., Carrollton, Tex. 75007

Filed Nov. 19, 1993, Ser. No. 154,877
Int. Cl.[6] A47K *3/024, 3/12*
U.S. Cl. 4—495 17 Claims



1. A device for placing in a hot tub having a periphery, a seat at the periphery and a foot well section for converting the hot tub to a wading pool, comprising:

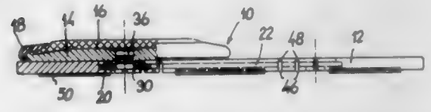
a single, substantially flat rigid sheet designed to be placed in the hot tub, the flat sheet being designed to set on the seat and cover the foot well section to provide a support surface for a user over the foot well section, the flat sheet having a plurality of small holes for water circulation and at least one larger hole designed for a hand hold for lifting the sheet.

5,390,378

BATHTUB SEAT ARRANGEMENT FOR HANDICAPPED PERSONS

Klaus Janisch, Isny, Germany, assignor to Schmidt & Lenhardt GmbH & Co. oHG, Germany

Filed Mar. 2, 1994, Ser. No. 205,942
Claims priority, application European Pat. Off., Mar. 16, 1993, 93104198
Int. Cl.[6] A47K *3/12*
U.S. Cl. 4—578.1 10 Claims



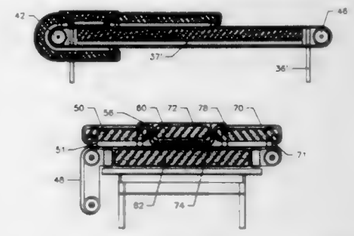
1. A seat for handicapped persons, said seat having a track on which a generally circular rotary plate is laterally displaceable between two end positions and is rotatably journalled in at least one of said end positions, a locking pin for securing said rotary plate against lateral displacement in at least one of said end positions characterized in that said track being formed as a thin base plate of extended length whose length measured along an axis of displacement of said track is at least twice as great as the diameter of said rotary plate, said track features a central longitudinal channel in which a ciruclarly contoured slide plate provided on the underside of said rotary plate is guided such that said rotary plate can be rotated and longitudinally displaced, said rotary plate and said slide plate each having a downwardly open aperture which are coaxially aligned, a base hole located in said channel at a longitudinal distance from the end of said longitudinal channel equal to the radius of said slide plate, said locking pin is capable of being axially displaced in the holes of the rotary plate and of the slide plate and engages with the base hole of the base plate at one of said at least one end positions to preclude lateral movement.

5,390,379

PERSON CONVEYOR

John M. Palmer, Jr., P.O. Box 115, Lutz, Fla. 33549, and John M. Palmer, III, P.O. Box 823291, Dallas, Tex. 75382

Filed Jan. 6, 1992, Ser. No. 817,333
Int. Cl.[6] A61G *7/00*
U.S. Cl. 5—81.1 4 Claims



1. A person conveyor system (20) for a bed comprising:

a bed frame (30);

a traveling mattress (50) on which a user may sit or lay;

a first side edge of said bed frame having a first direction changing means (44), a second side edge of said bed frame having a second direction changing means (47), a flexible sheet of material (48) extending across the top of said bed frame (30) approximately colevel with the top of said direction changing means, said traveling mattress (50) attached to the upper surface of said flexible sheet of material (48);

a first drive roller (42) and a second drive roller (46) located a distance under said direction changing means (44) and (47) respectfully, said distance an amount sufficient to allow said flexible sheet of material (48) and said traveling mattress (50) to travel across said bed frame (30) a desired amount;

a first end of said flexible sheet of material (48) disposed over said first direction changing means (44) and wrapped around and connected to said first drive roller (42), a second end of said flexible sheet of material disposed over said second direction changing means (47) and wrap, pad around and connected to said second drive roller (46);

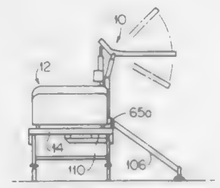
and, driving means (82) and control means (89) for winding said flexible sheet of material (48) on either of said drive rollers (42, 46) while unwinding it from the other drive roller, said drive rollers (42, 46) pulling sail flexible sheet of material (48) and said traveling mattress (50) to a desired location on said bed.

5,390,380

STABILISED BED WITH HOIST

Wallace James-Wallace, P.O. Box 30, Albany 6330, Western Australia, Australia

PCT No. PCT/AU91/00276, § 371 Date Dec. 29, 1992, § 102(e) Date Dec. 29, 1992, PCT Pub. No. WO92/00052, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 27, 1991, Ser. No. 958,130
Int. Cl.[6] A61G *7/10*
U.S. Cl. 5—84.1 9 Claims



1. A stabilised bed with hoist, the bed being capable of moving patients onto it and of it, the bed having:

a frame supported upon a floor, the frame being able to support a person in a recumbent position and capable of wheeled motion over the floor;

a lifting means for lifting the person which is attached to the frame and pivotable with respect to the frame, the lifting means comprising:

a mast pivotally mounted to the frame, the mast having an elbow located intermediate its length, the mast being pivotable about a substantially vertical axis between a first position for raising and lowering a person above the frame and a second position for raising and lowering the person adjacent the frame,

a jib having a first end for attachment to a harness for securement to the person, a second end located remotely from the first end, and an elbow located closer to the second end than to the first end, the elbow being disposed downwardly and pivotally attached to an upper end of the mast, and

a lifting member attached between the elbow of the mast and the second end of the jib, the lifting member being extendible for lowering the first end of the jib below the upper end of the mast and retractable for raising the first end of the jib above the upper end of the mast for re-

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spectively lowering and raising the person with the harness;

an attachment means, located proximate one corner of the frame, for allowing pivotable movement of the mast with respect to the frame, and for providing a low friction support for axial and radial forces produced during raising and lowering of the person and moments of inertia produced during swinging of the person between positions over and adjacent the frame,

a reinforcing means attached to the frame in the region of the attachment means for inhibiting excessive deflection of the frame during use of the bed, the reinforcing means extending at least part way along two adjoining sides of the frame at the attachment means; and,

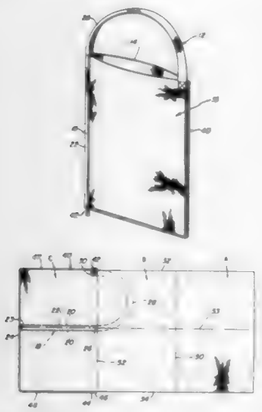
a stabilising leg attached to the frame proximate the attachment means, the stabilizing leg having a leg portion depending downwardly from the attachment means and a foot disposed downwardly from the leg portion for engagement with the floor, the stabilising leg being moveable between an in use position for resisting transverse tipping forces induced in the bed by the lifting means when the jib is in the second position and when the jib is moving between the first position and the second position, and a transport position for allowing wheeled movement of the bed.

5,390,381

BEACH TOWEL/BEACH BAG COMBINATION

Mark LaMantia, 290 Broadway St., Ste. 405, Methuen, Mass. 01844

Filed Apr. 4, 1994, Ser. No. 222,103
Int. Cl.[6] A47G *9/02*
U.S. Cl. 5—417 6 Claims



1. A beach towel/beach bag combination comprising

a rectangular sheet of toweling approximately twice as long as it is wide and having longitudinal side edges and end edges,

a strap having a first portion stitched to the toweling along the longitudinal center line of the toweling and extending from one end edge approximately one third the length of the toweling and having a second portion forming a continuation of the first portion and free of a connection to the toweling except at the end remote from the first portion which is stitched to the toweling at one longitudinal edge approximately the same distance from the said one end edge of the toweling as the other end of the second portion,

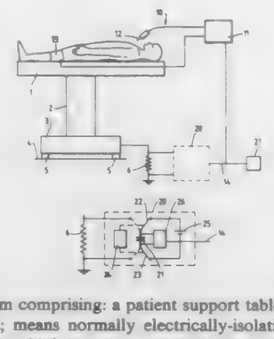
and a zipper stitched to the toweling across the said one end edge and along approximately one third of the longitudinal edges of the toweling whereby the toweling sheet can be folded transversed in third and thereafter longitudinally in half so the zipper ends may be joined and with the zipper fastened together so that the second position forms a handle loop at the end of the folded toweling remote from the said one end.

5,390,382

PATIENT SUPPORT TABLES AND MONITORS

Keith Hannant, Rustington, and John A. Gardner, Steyning, both of England, assignors to Smiths Industries Public Limited Company, London, England

Filed Nov. 4, 1992, Ser. No. 971,465
Claims priority, application United Kingdom, Nov. 28, 1991, 9125280
Int. Cl.[6] A61G *7/00;* H02H *3/00*
U.S. Cl. 5—424 9 Claims



1. A system comprising: a patient support table; an electrosurgery unit; means normally electrically-isolating the table from ground; a high impedance static discharge resistor connected in series between the table and ground; a monitor connected across the resistor, said monitor including a power supply, and said monitor being responsive to a reduction in resistance between the table and ground independent of the operation of said electrosurgery unit, and providing an output in accordance with said reduction in resistance.

5,390,383

ANTERIOR PELVIC SUPPORT DEVICE FOR A SURGERY PATIENT

Ronald M. Carn, Redding, Calif., assignor to SunMed, Inc., Redding, Calif.

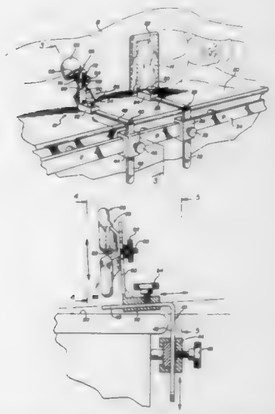
Filed Nov. 15, 1993, Ser. No. 152,845
Int. Cl.[6] A61G *13/00*
U.S. Cl. 5—624 20 Claims

1. An anterior pelvic support device for supporting a surgery patient in a lateral decubitis position on a operating table, said support device comprising:

an upstanding bracket post;

means for mounting said bracket post onto the operating table to position said bracket post proximate to the anterior pelvic region of the patient; and

a double-ended bracket arm and means for adjustable mounting of said bracket arm onto said bracket post, said bracket arm defining a pair of anterior support members disposed generally at opposite ends thereof in positions for respectively engaging and supporting the symphysis pubis and the lower side anterior superior iliac spine of the patient.

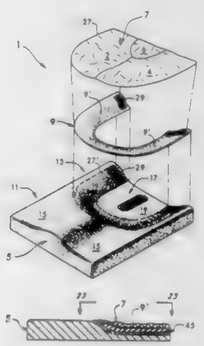


5,390,384

SELF-ADJUSTING SEATING SYSTEM

John C. Dinsmoor, III, Westminster; Grant C. Denton, Boulder, and Richard R. Runkles, Englewood, all of Colo., assignors to Jay Medical Ltd., Boulder, Colo.

Filed Aug. 13, 1993, Ser. No. 106,420
Int. Cl.[6] A47C *27/18, 7/02*
U.S. Cl. 5—654 57 Claims



1. A self-adjusting seating system including:

a relatively rigid, shaped tray having forward and rearward sections adjacent one another, said forward section having an upper surface forming a shelf to support a user's thighs and said rearward section having a depressed, contoured seating well with an upper surface intended to support the user's buttocks including the user's ischial tuberosities, said seating well having a first volume,

a fluid pad with at least a section containing a substantially fixed volume of substantially incompressible fluid, said incompressible fluid having a second volume less than said first volume of said seating well, and means for positioning said fluid pad section substantially within said first volume of said seating well, and

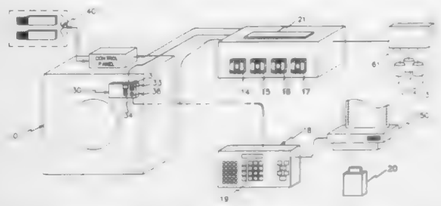
means for occupying varying amounts of said first volume substantially in proportion to the weight of the user supported by said upper surface of said seating well, said varying means occupying less of the first volume as said supported weight increases, said varying means including a layer of resilient, compressible material, and means for positioning said varying means substantially between at least a portion of said fluid pad section and a portion of the upper surface of said seating well.

5,390,385

LAUNDRY MANAGEMENT SYSTEM FOR WASHING MACHINES

Paul M. Beldham, El Toro, Calif., assignor to Knight Equipment International, Costa Mesa, Calif.

Filed May 28, 1993, Ser. No. 68,761
Int. Cl.[6] D06F *33/02, 39/02*
U.S. Cl. 8—158 11 Claims



1. A process for monitoring and controlling washing machines and operations therefor, comprising:

a.) controlling the washing machines with a controller board and an associated programmable microprocessor, using a program stored therein, the controller board being adapted to receive and store data and times corresponding to the washing machine operations;

b.) formulating and revising the program by means of a computer, including a memory and an associated input keyboard connected to the computer, the computer being adapted to feed the programs, and revisions thereto the controller board;

c.) interrogating the controller board for data from the washing machine operation contained therein, the computer and keyboard being detachably mounted to the controller board and to output means comprising a printer or display means connected to the computer;

d.) automatically selecting the appropriate chemical dispensing formulae stored in the controller board via formula select status signals from the washing machine at the commencement of each new wash load cycle; and,

e.) feeding chemical formulae from chemical containers to pumps connected to the washing machines, the pumps being adapted to receive pumping instructions from the controller, and to transmit pumping operations data to the controller board.

5,390,386

SUSPENSION BRIDGE CABLE WRAP AND APPLICATION METHOD

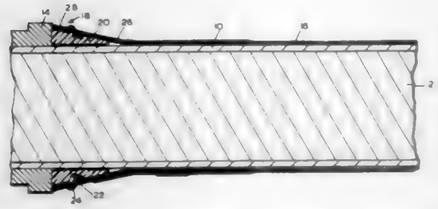
Stephen G. Mathey, Continental; Roy J. Lanham, Jerry City, both of Ohio; Bernard J. McMartin, Rehoboth Beach, Del.; Arnold L. Rader, Weston, and Daniel H. Brown, Perrysburg, both of Ohio, assignors to The D. S. Brown Company, Inc., North Baltimore, Ohio

Filed Jun. 1, 1993, Ser. No. 69,701
Int. Cl.[6] E01D *11/00*
U.S. Cl. 14—22 20 Claims

15. In a suspension bridge or cable-stayed bridge adapted for outdoor exposure, a lengthy tension load supporting cable and a protective wrap covering a substantial length of the lengthy cable, said protective wrap comprising a strand of a chlorosulfonated polyethylene material tightly spirally wound around

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the cable in a plurality of winds extending along said substantial length of the lengthy cable, each wind of the strand overlying a portion of the preceding wind and being heat sealed thereto to seal a seam that is formed therebetween,



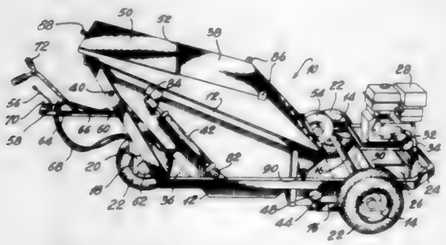
wherein said chlorosulfonated polyethylene material is a weldable thermoplastic when it is wound around the lengthy cable and is cross-linked after heat sealing to yield a vulcanized rubber coating on the lengthy cable.

5,390,387

LIGHTWEIGHT SELF-PROPELLED TURF SWEEPER

Dubé, Gérald, 176 Fort St-Louis, Boucherville, Québec, Canada J4B 1R7 , and Dubé, Michel, 2453 Chemin Val Royal, Val Morin, Québec, Canada J0T 2R0

Filed Jun. 9, 1994, Ser. No. 257,635
Int. Cl.[6] E01H *1/04*
U.S. Cl. 15—79.2 10 Claims



1. A lightweight, self-propelled, hand-guided sweeping apparatus for removing debris lying on the ground, said apparatus comprising:

a chassis having wheels with ground engaging tires;

a hopper compartment mounted pivotally on said chassis to tilt upwardly and rearwardly about said pivotal connection to dump, by gravity, its debris content;

tilting means for tilting said hopper compartment about said pivotal connection;

rotary brush means for engaging and sweeping said ground surface, said brush means being mounted integrally, horizontally and rotatively on said hopper compartment and being open to said hopper compartment to propel said debris inside said hopper compartment as said brush means rotates;

drive means, fixedly mounted to said chassis, for selectively driving:

at least one of said wheels,

said tilting means,

said rotary brush means;

control means, mounted to said chassis, for hand-guiding the sweeping apparatus and selectively operating said drive means;

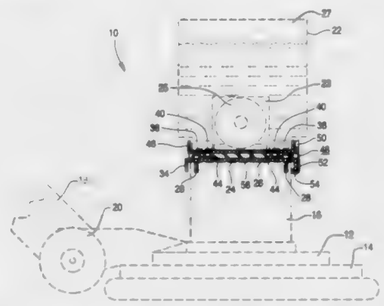
adjusting means, for regulating the tilting position of said hopper compartment and integrally mounted rotary brush relative to the ground surface.

5,390,388

APPARATUS FOR DRY CLEANING CARPETS WITH REMOVABLE SOLUTION CONTAINER

Barry L. Cutler, 7 Stanford Ct., East Windsor, N.J. 08520

Filed May 5, 1994, Ser. No. 238,483
Int. Cl.[6] A47L *11/34*
U.S. Cl. 15—98 13 Claims



1. An apparatus for dry cleaning a surface comprising:

a base:

a motor mounted on the base and having a top surface;

means mounted on the motor for supporting means for dry cleaning the surface;

a cleaning solution container having a bottom surface and mounted on the motor;

a circular bottom plate on and secured to the top surface of the motor, said bottom plate being larger in diameter than the top surface of the motor so as to project radially outwardly from the motor and having an annular flange extending downwardly from its periphery;

a top plate on and secured to the bottom surface of the container and having an annular flange extending upwardly from its outer periphery; and

a plurality of quick release clamps secured in spaced relation to the flange of the top plate and extending along and under the flange of the bottom plate to releasably engage the bottom plate to secure the container to the motor.

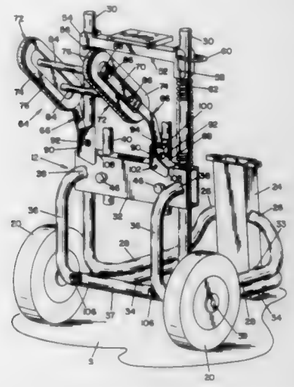
5,390,389

WHEELED LOAD CARRIER

Michael J. Rutkowski, and Kevin D. Kostalnick, both of Brunswick, Ohio, assignors to Emerson Electric Company, St. Louis, Mo.

Filed May 16, 1994, Ser. No. 242,964
Int. Cl.[6] B08B *9/02*; B62B *5/02*
U.S. Cl. 15—104.33 41 Claims

1. In a sewer cleaning machine comprising frame means, snake drum means supported on said frame means for rotation about a drum axis, means for rotating said drum means, wheel means for supporting said machine for rolling movement on an underlying surface, and slide means on said frame means for supporting said machine for sliding movement relative to horizontal edge means elevated from said surface, the improvement comprising: said slide means being mounted on said frame means for displacement relative thereto between a first position in which said slide means is positioned to engage first horizontal edge means elevated a first distance from said underlying surface and a second position in which said slide means is positioned to engage second horizontal edge means



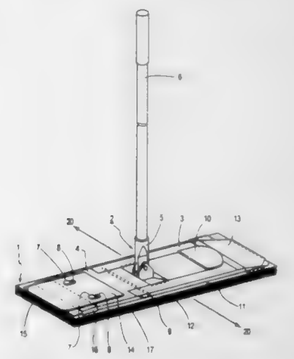
elevated from said underlying surface a distance greater than said first distance.

5,390,390

MOP HEAD WITH A POUCH AND A STRAP

Franz Kresse, Hilden; Rainer Osberghaus, Duesseldorf; Bernfried Scheller, Pulheim; Roland Schunter, Lorch-Waldhausen, and Michael Bergmann, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP90/01830, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO91/07129, PCT Pub. Date May 30, 1991
PCT Filed Nov. 13, 1989, Ser. No. 856,212
Claims priority, application Germany, Nov. 13, 1989, 3937718.0
The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.
Int. Cl.[6] A47L *13/10, 13/16, 13/255*
U.S. Cl. 15—228 22 Claims



1. A mop for the wet or damp wiping of floors, comprising:

a pole-like handle having two ends;

a mop head including first and second ends;

a mop holder for receiving said mop head;

said mop holder including:

first and second flaps each having an inner end and an outer end;

handle mount means, rigidly attached to a central portion of said inner end of said second flap, for receiving and securing one end of said handle thereto;

pivot means defining a common axis for connecting said inner ends of said first and second flaps to one another, for permitting said first and second flaps to lie in the same horizontal plane when said mop holder is positioned proximate a floor in a working position, and for permitting said first and second flaps to pivot downward about said common axis, folding together upon one another, whenever said handle is lifted upward for suspending said mop holder over the floor in a non-working position;

first fastening means proximate the outer end of said first flap and on a top surface thereof, for attachment to said mop head;

said mop head including:

an elongate textile layer carrying mop fringes, and substantially shaped to conform to the shape of said first and second flaps in the working position, said textile layer having first and second ends;

second fastening means secured to the first end of said textile layer, for engaging and being cooperative with said first fastening means of said mop holder, for releasably securing the outer end of said first flap and first end of said mop head together; and

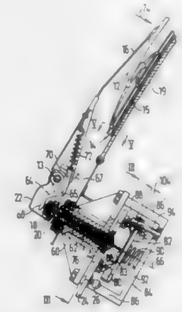
a pocket free from fastenings being formed at the second end of said textile layer, for receiving the outer end of said second flap in the working position.

5,390,391

WIPING DEVICE WITH VARIABLE CONTACT FORCE FOR WINDOWS OF MOTOR VEHICLES

Joachim Zimmer, Sasbach; Ralf Pohlers, Gaggenau; Andreas Geis, Bühl, and Jan Dietrich, Bühl-Vimbuch, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE91/00520, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993, PCT Pub. No. WO92/02391, PCT Pub. Date Feb. 20, 1992
PCT Filed Jun. 26, 1991, Ser. No. 971,764
Claims priority, application Germany, Aug. 3, 1990, 4024702; Oct. 16, 1990, 4032762
Int. Cl.[6] B60S *1/32*
U.S. Cl. 15—250.20 14 Claims



1. A wiping device for windows of motor vehicles, comprising a wiping blade which is movable in an oscillating manner over a window in a wiping field section lying between two oscillating reversal positions, said blade contacting the window with a contact force which is smaller in a region of said two oscillating reversal positions than in the region of said wiping field lying between said oscillation reversal positions; an elongated wiper shaft having a hub part, and driven in an oscillating manner about an oscillation axis by driving means; a wiping lever fastened to one end of said wiper shaft through said hub part, said wiping lever having a wiper arm supporting said wiping blade, said wiper lever and said hub part being

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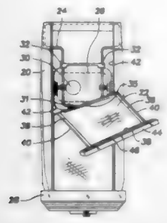
connected with one another at a joint axis lying in a plane extending between said hub part and said wiper lever; a pretensioned elongated tension spring bringing about the contact force of said wiping blade, said tension spring having one end engaging on said hub part and another end anchored on said wiper arm; a two-armed lever pivotally mounted on said hub part and having one lever arm holding said one end of said tension spring and another lever arm engaging with one end of an elongated, longitudinally displaceable tappet such that movement of said tappet pivots said two-armed lever to cause increases and decreases in a tension of said spring; and control means which moves said tappet along its longitudinal axis, said control means are formed by a cam track which is displaceable along said longitudinal axis and by pick-off means engaging with said cam track for controlling a displacement of said cam track in the direction along said longitudinal axis, said pick-off means are mounted on a rocker which is connected to said wiper shaft and extends transversely to said oscillation axis.

5,390,392

VACUUM CLEANER BAG COVER WITH ENLARGED ACCESS OPENING

Joyce K. Thomas; Michael R. Oetting, both of Lexington, and Joseph L. Mulcahy, Bloomington, all of Ill., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed May 17, 1993, Ser. No. 62,774
Int. Cl.[6] A47L *9/14*
U.S. Cl. 15—339 22 Claims



1. A vacuum cleaner comprising a floor engaging section, a handle extending upwardly from said floor engaging section, and a vacuum cleaner bag cover attached to said handle, said vacuum cleaner bag cover being adapted to enclose a removable inner bag and comprising a main section, a front panel section, and attachment means, said front panel section being formed of a different air permeable material than said main section and including a pair of lateral edges and an upper edge, wherein said upper edge and at least one of said lateral edges are releasably attached to the main section by the attachment means to allow the front panel section to partially detach from the main section and thereby provide access to an interior of the vacuum cleaner bag cover.

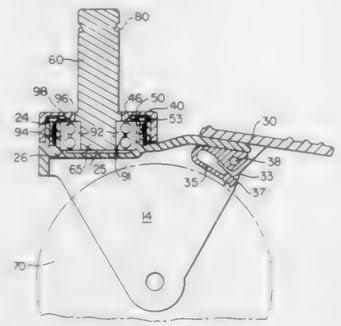
5,390,393

CASTER WITH A FOULING-RESISTANT BEARING CUP FEATURE

David A. Reppert, Brodheadsville, Pa., and James A. Kinion, Fostoria, Ohio, assignors to Metro Industries, Inc., Reno, Nev.

Filed Jan. 22, 1993, Ser. No. 8,554
Int. Cl.[6] B60B *33/00*
U.S. Cl. 16—21 19 Claims

1. A caster, comprising:
a unitary U-shaped caster horn having a web portion and a pair of downwardly-extending, opposed leg portions, and having a bearing cup formed on a top surface of said caster horn, said bearing cup being defined by an annular wall portion and a closed bottom portion, said wall portion and said bottom portion being continuous with each other;
a bearing disposed in said bearing cup;
a stem having one end fitted into said bearing and being rotatably supported by said bearing;
a cap having a centrally-located hole formed on a top surface thereof and disposed in a snug-fitting relationship with said stem and being removably mounted on said bearing cup such that said stem extends through said hole,



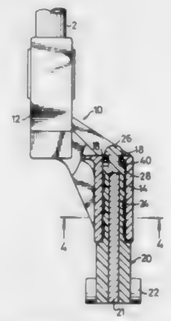
wherein said cap covers an opening of said bearing cup and substantially overlaps an exterior side wall surface of said annular wall portion to restrict ingress of foreign matter into said bearing cup; and
a wheel rotatably supported between said leg portions such that said caster horn partially surrounds said wheel.

5,390,394

DETACHABLE FRONT WHEEL ASSEMBLY FOR A STROLLER

Ming T. Huang, 4th Fl., No. 302, Sec. 7, Cheng Teh Rd., Taipei, Taiwan, Prov. of China

Filed Sep. 30, 1993, Ser. No. 129,356
Int. Cl.[6] B60B *33/00*
U.S. Cl. 16—30 3 Claims



1. A front wheel assembly for a stroller comprising:
a frame attaching member comprising a sleeve adapted to be securely attached to a front leg of a stroller, said sleeve defining a through hole with upper and lower ends, a plurality of diametrically opposed flexible tongues being formed on said upper end of said through hole with their distal ends radially extending over said through hole; and
a wheel attaching member comprising a wheel seat adapted to mount a front wheel means of said stroller and a snapping member projecting upwardly from said wheel seat for releasably engaging with said flexible tongues, said snapping member having snapping head of a diameter large enough to displace said flexible tongues beneath said snapping head to retain said snapping head in said frame

attaching member, a plurality of flanges being formed around an outer periphery of said snapping member and in rotational contact with said inner periphery of said through hole.

5,390,395

EARLESS, STEPLESS CLAMP STRUCTURE

Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparatefabrik, Zurich, Switzerland

Filed Dec. 9, 1993, Ser. No. 163,533
Int. Cl.[6] B65D *63/02*
U.S. Cl. 24—20 R 26 Claims



1. A clamp structure, comprising clamping band means, means for tightening the clamp structure about an object to be fastened thereby, and further means for holding the clamping band means in its tightened condition in such a manner that it provides internal clamping surfaces substantially devoid of any discontinuity, step or offset over substantially its entire circumference to assure a completely satisfactory fluid tight connection, said further means including a tongue-like extension at one end of the clamping band having outwardly extending hook means, a slot-like opening extending in the circumferential direction within the area of the opposite fork-like end portion of the clamping band means, said slot-like opening having a width at least equal to the width of the tongue-like extension, and said opposite end portion being bent up at such point of the clamping band means that the bent-up end section formed thereby includes a small part of said slot-like opening, and said small part of said slot-like opening having a depth, at least, approximately corresponding to the thickness of the clamping band means so that the radially inward edge of said slot-like opening in said bent-up section is adapted to engage with the corresponding hook means and at the same time prevents the tongue-like portion extending therethrough from outward escape.

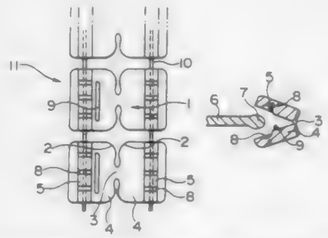
5,390,396

END STOPS OF SYNTHETIC RESIN FOR SLIDE FASTENER

Minoru Hirota, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 136,874
Claims priority, application Japan, Oct. 19, 1992, 4-082966[U]
Int. Cl.[6] A44B *19/00*
U.S. Cl. 24—436 6 Claims

5. An end stop of synthetic resin including:
front and rear leg portions each having a groove portion having a groove, said groove portion clamping and fused to an attachment core of at least one of a pair of fastener tapes, wherein each of said groove portions has at least one projection fusible to said attachment core and located in said groove and directed radially inwardly and situated remotely from opposite ends of said groove portion;



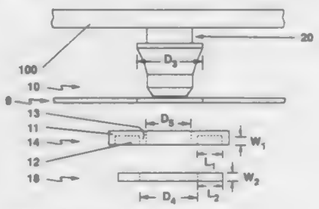
wherein said front and rear leg portions are connected together by a bridge portion, and one of said front and rear leg portions of each end stop has a fusing projection situated between said groove portion and said central bridge portion which connects said leg portions.

5,390,397

RETAINING SYSTEM

Richard L. Kremer, White Lake, and Mark J. Jacobson, New Hudson, both of Mich., assignors to Nissan Research and Development, Inc., Farmington Hills, Mich.

Filed Jul. 12, 1993, Ser. No. 89,181
Int. Cl.[6] A44B *17/00*; F16B *21/00*
U.S. Cl. 24—662 13 Claims



1. A retaining device comprising:
a tapered pin formed with at least one attached part;
a first washer with an annular channel formed on one side of said first washer, said first washer engaging with an underside of said tapered pin for securing at least one other part between the other side of said first washer and said attached part; and
a second washer engaging with said underside of said tapered pin and positioned inside said annular channel of said first washer.

5,390,398

FOIL STRETCHING MACHINE FOR SHRINKING FOILS

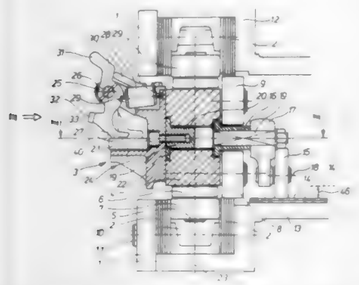
Andreas Rutz, and Rudolf Langer, both of Lindau, Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Germany

Filed Jul. 16, 1992, Ser. No. 915,000
Int. Cl.[6] D06C *3/00*
U.S. Cl. 26—93 12 Claims

1. An apparatus for treating a synthetic material film on a tentering chain conveyor, comprising two tentering chains forming said conveyor, a plurality of tentering clips carried by each tentering chain for gripping said synthetic material film along film edges, said tentering chains having chain links interconnected at a fixed chain pitch, each of said tentering clips having a clamping table and a clamping member cooperating with a table surface of said clamping table for gripping said film edges, and wherein a number of said tentering clips com-

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prises journal means mounting at least a journal section of the respective tentering clip in a journalling manner to the corresponding tentering clip, and means for rotating said journal means so that said table surface of the respective tentering clip assumes an inclined position relative to a horizontal plane



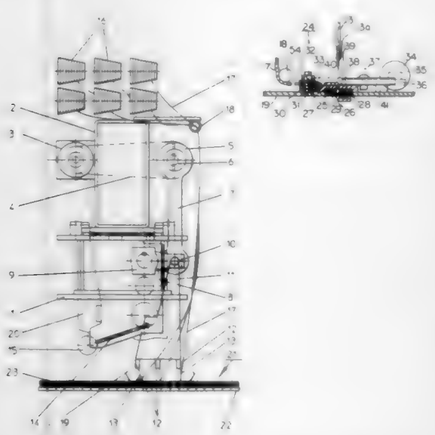
defined by a feed advance direction (**38**) of said synthetic material film through said apparatus, said inclined position of said number of tentering clips providing a film length for shrinking said synthetic material film in a longitudinal direction corresponding to said feed advance direction, whereby said fixed chain pitch remains constant.

5,390,399

APPARATUS FOR TACKING A YARN TO A NEEDLED FLEECE

Johann P. Dilo, Eberbach, Germany, assignor to Oskar Dilo Maschinenfabrik AK, Eberbach, Germany

Filed Aug. 4, 1992, Ser. No. 925,557
Claims priority, application Germany, Sep. 5, 1991, 4129560
Int. Cl.[6] B32B *5/06*
U.S. Cl. 28—109 **29 Claims**



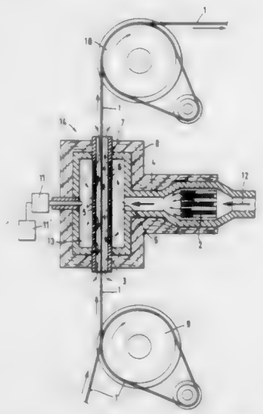
1. Apparatus for tacking a yarn onto a needled fleece in a predetermined line pattern having means for supporting said needled fleece, said apparatus comprising:
- a frame, a pressure plate unit engaging said needled fleece, said frame being movable in a plane parallel to said supporting means, said pressure plate unit comprising a yarn channel extending substantially vertically therethrough;
- means attached to said frame for supplying said yarn into said yarn channel;
- a needle support vertically movably mounted to said frame;
- a needle mounted in said needle support and having a plurality of projections for piercing fibers of said yarn into said needled fleece; and
- means for driving said needle support and needle in a generally vertical direction from a first raised position towards said pressure plate unit to a second lowered position when said needle is inserted in said yarn channel extending through said pressure plate unit and into said needled fleece.

5,390,400

PROCESS FOR HEAT TREATING MOVING YARNS AND APPARATUS THEREFOR

Ingolf Jacob, Untermeitingen, and Josef Geirhos, Bobingen, both of Germany, assignors to Hoechst Aktiengesellschaft

Filed Jul. 12, 1993, Ser. No. 90,326
Claims priority, application Germany, Jul. 10, 1992, 42 22 721.6
Int. Cl.[6] D02J *13/00*
U.S. Cl. 28—274 **23 Claims**



1. A process for heating to a desired elevated temperature, moving yarns having a surrounding boundary layer of gas, said yarns passing contactlessly through a heating apparatus having a yarn duct with a middle portion along a path, comprising the steps of:
- i) preheating a heat transfer gas to a temperature which is above the desired elevated temperature, and
- ii) feeding the preheated heat transfer gas into the yarn duct so that the heated gas impinges essentially perpendicularly on the moving yarn along a length such that the yarn heats up to the desired elevated temperature within the heating apparatus, and
- iii) continuously removing of the surrounding boundary layer of gas with the impinging heat transfer gas to ensure that the yarn comes into direct contact with the heat transfer gas.

5,390,401

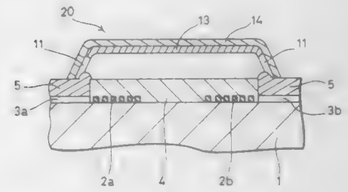
METHOD FOR PRODUCING A SURFACE ACOUSTIC WAVE DEVICE

Shinichi Shikata; Hideaki Nakahata; Akihiro Hachigo, and Naoji Fujimori, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 940,465, Sep. 4, 1992, abandoned. This application Aug. 6, 1993, Ser. No. 103,729
Claims priority, application Japan, Sep. 27, 1991, 3-249747
Int. Cl.[6] H01L *41/22*
U.S. Cl. 29—25.35 **3 Claims**

1. A method of manufacturing a surface acoustic wave device, comprising the following steps:

(a) forming at least two pairs of interdigital electrodes (**2***a*, **2***b*) and respective lead-in electrodes (**3***a*, **3***b*) on a surface of a substrate,
(b) forming a first masking on said substrate outside said electrodes,
(c) forming a piezoelectric layer (**4**) on said electrodes,
(d) forming a second masking on said piezoelectric layer (**4**),
(e) forming an insulating film (**5**) outside said second masking where there is no piezoelectric layer (**4**),
(f) forming a first photo-resist film (**6**) on said surface of said substrate to cover all areas of said surface of said substrate,
(g) forming a groove (**6***a*) in said photo-resist film (**6**) radially outwardly of said piezoelectric layer (**4**) to leave a photo-resist portion surrounded by said groove (**6***a*) and a photo-resist portion outside said groove (**6***a*),
(h) forming a gold layer (**7**) on said portions of said photo-resist film (**6**) and on a wall of said groove,



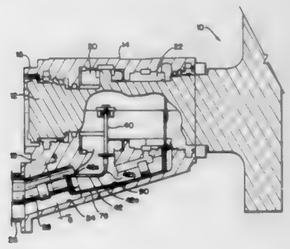
(i) forming a second photo-resist film (**9**) on said gold layer (**7**) above said surrounded photo-resist portion and at least partly above said groove (**6***a*), said second photo-resist film (**9**) having lateral holes (**8**) therein,
(j) etching said gold layer (**7**) to form a gold bridge pattern (**12**) covering said surrounded photo-resist portion and having a plurality of bridging elements (**11**) outside said holes (**8**) in said second photo-resist film (**9**),
(k) removing said photo-resist films (**6**) and (**9**) through holes between neighboring bridging elements (**11**), whereby said gold bridge pattern (**12**) with its bridging elements (**11**) forms a gold air bridge (**13**) supported by said bridging elements (**11**) above said piezoelectric layer (**4**), and
(l) depositing an insulating layer (**14**) on said gold air bridge (**13**).

5,390,402

APPARATUS FOR INSTALLING GUIDE TUBES FOR INSTRUMENTATION SIGNAL BEARING WIRES IN THE BEARING HOUSING OF A TURBINE

Loren H. White, Scotia, N.Y., and Micah F. Johnson, Greenville, S.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 26, 1993, Ser. No. 9,100
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—241 **6 Claims**



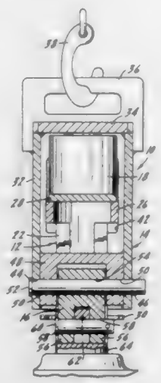
1. A turbine comprising:
a rotor;
bearings for said rotor;
a housing for the bearings of the rotor split to define upper and lower housing sections;
a lubricating drain hole opening through the lower housing section;
means for guiding signal-bearing wires from instrumentation located within said bearing housing to at least one signal readout device external of said housing and receivable within the lower housing section upon removal of the upper housing section but without removal of the rotor;
said means including a first generally linearly extending guide tube having a lower threaded end and receivable within said lower housing section, a second guide tube having an upper threaded end and receivable within the drain hole for threaded engagement with the lower end of said first guide tube, and means carried by at least one of said guide tubes at its lower end and said second guide tube at its upper threaded end for ensuring alignment of said guide tube ends to facilitate substantially blind threaded engagement of said ends within the lower housing section.

5,390,403

PIN PULLER FOR ARTICULATED CONNECTOR PINS

Richard A. Brueckert, Chicago, and Richard P. Yeates, Aurora, both of Ill., assignors to TTX Company, Chicago, Ill.

Filed Dec. 8, 1993, Ser. No. 162,998
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—252 **14 Claims**



1. A pin puller for pulling the main connector pin out of an articulated connector of the type having interfitting male and female connector arms with aligned openings defining a pocket having an open end, the main connector pin having a loop at one end protruding from the open end of the pocket, the pin puller comprising:
- a base member having at least two legs arranged to be mounted on one of the connector arms in straddling relation with the main connector pin, the legs supporting a platform spanning the legs and spaced from said one connector arm, the legs and platform defining a compartment;
- an actuator having a stationary portion mounted on the platform and a movable portion adapted for selectably applying a force in a direction away from the open end of the pocket;
- coupling means engageable with the loop of the main connector pin; and
- a sleeve engageable for translation with the movable portion of the actuator and connectable to the coupling means to transfer the actuator force to the main connector pin and thereby withdraw the pin from the pocket at least partially into the compartment of the base.

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5,390,404

PULLING TOOL

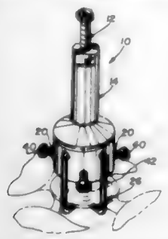
Michael Rubino, Chicago; Michael Berg, Elgin; Michael Rubino, and Carol Rubino, both of Chicago, all of Ill., assignors to Sensible Products, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 900,348, Jun. 18, 1992, Pat. No. 5,211,211, which is a continuation-in-part of Ser. No. 737,046, Jul. 29, 1991, Pat. No. 5,163,211. This application May 12, 1993, Ser. No. 61,362

The portion of the term of this patent subsequent to May 18, 2093, has been disclaimed.

Int. Cl.[6] B23P *19/04*

U.S. Cl. 29—259 18 Claims



1. A pulling tool for pulling off a rotor of a motor or a fan from a shaft, said pulling tool comprising an elongated screw having a first end and a second end, a housing with which said screw is threadingly received, said housing comprising a first open end through which threadingly passes said screw, and a second open end through which protrudes said second end of said screw, said housing comprising a first securing means for releasably holding a rotor of a motor, and second securing means for releasably holding a fan, said first securing means comprising a plurality of rotatable bolts and a first plurality of holes formed in said housing for threadingly receiving said plurality of bolts, and said second securing means comprises a plurality of hooked securing arm-members, each said arm-member having a first end and a second hooked end, and a second plurality of holes for said arm-members, said second end of each said arm-member being capable of being hung so as to protrude beyond said second open end of said housing, wherein the improvement comprises:

said housing comprising at least a first section having a circular cross section; said first and second plurality of holes being formed in said circular cross-section section; said first and second plurality of holes being formed near said second end of said housing, said first and second plurality of holes being substantially on the same plane with each other so that each of said holes of said first and second plurality of holes lie approximately the same distance from said second end of said housing.

5,390,405

Patent Not Issued For This Number

5,390,406

PROCESS AND APPARATUS FOR THE PARTIAL FILLING OF SPACER FRAMES WITH MATERIAL

Peter Lisec, Bahnhofstrasse 34, A-3363 Amstetten-Hausmening, Australia

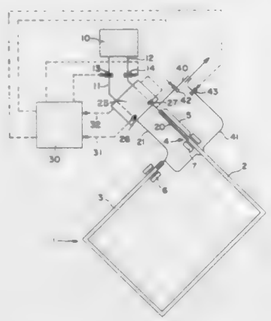
Filed Feb. 10, 1994, Ser. No. 194,385

Claims priority, application Austria, Mar. 12, 1993, 489/93

Int. Cl.[6] B23Q *17/00*

U.S. Cl. 29—407 13 Claims

1. A process for partial filling of hollow member with granulated material, comprising inserting a probe connected to a storage tank for granulated material into a hollow member to such an extent that a forward end of the probe is located at a point in the hollow member up to which the hollow member is to be filled with granulated material; feeding granulated material from said storage tank through said probe into said hollow member; discontinuing the feeding of granulated material as soon as the hollow member has been filled with granulated



material up to said forward end of the probe; and thereafter pulling the probe out of the hollow member.

5,390,407

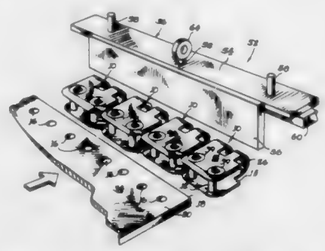
METHOD FOR FASTENING BELT ENDS TOGETHER USING PLASTIC FASTENERS WITH INTEGRAL RIVETS

Edward C. Musil, Lyons, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.

Division of Ser. No. 893,937, Jun. 5, 1992, Pat. No. 5,291,644, which is a division of Ser. No. 722,705, Jun. 28, 1991, Pat. No. 5,157,812. This application Oct. 26, 1993, Ser. No. 142,712

Int. Cl.[6] B21D *39/00*

U.S. Cl. 29—512 5 Claims



4. A method for fastening belt ends, comprising:

providing plastic fasteners having a top plate with solid ended rivets formed integral therewith and a bottom plate having holes therein to receive said solid rivet ends;

making holes in the belt ends;

inserting the plastic solid rivet ends through respective holes of the belt ends and respective holes of the fasteners to engage the fasteners to respective belt ends;

deforming the solid rivet ends and forcing the same into tight engagement with respective bottom plates, to secure the fasteners to their respective belt ends; and

interconnecting the belt fasteners of one belt end with the belt fasteners of another belt end.

5,390,408

SLOTTING

Arthur E. Bishop, Sydney; Klaus J. Roeske, Lugarno; John Baxter, and Lyle J. McLean, both of Sydney, all of Australia, assignors to A.E. Bishop & Associates Pty. Limited, North Ryde, Australia

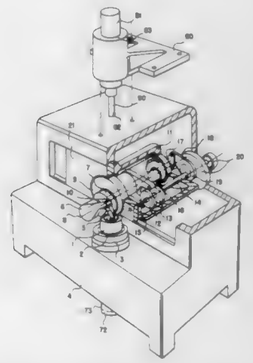
PCT No. PCT/AU92/00158, § 371 Date May 11, 1993, § 102(e) Date May 11, 1993, PCT Pub. No. WO92/18277, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 10, 1992, Ser. No. 50,244

Claims priority, application Australia, Apr. 12, 1991, PK 5592

Int. Cl.[6] B23P *13/00;* B21D *53/00*

U.S. Cl. 29—558 16 Claims



1. A method for machining an angularly disposed array of parallel longitudinally extending slots in a bore of a component comprising the steps of gripping said component in a gripping means of a workholding device mounted to an indexable workholding spindle, machining said bore of said component, cutting said array of slots in said bore by a series of progressively deeper cutting strokes of a cutting tool, the cutting of each slot being followed by indexation of said workholding spindle, said cutting of said array of slots being carried out while the component remains gripped in said gripping means in the same location and orientation as during said machining of said bore to thereby maintain the center of the array of said cut slots collinear with the axis of said bore subsequent to machining irrespective of the location and orientation of the component in the workholding device.

5,390,409

METHODS OF MANUFACTURING OF GENERATOR STATOR FRAMES

John P. Courtney, Lynnfield, Mass., assignor to General Electric Co., Schenectady, N.Y.

Filed Aug. 27, 1993, Ser. No. 112,312

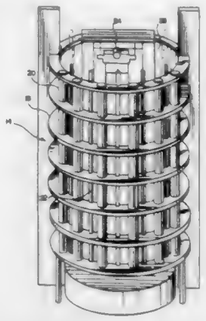
Int. Cl.[6] H02K *15/14*

U.S. Cl. 29—596 9 Claims

1. A method of fabricating dovetail connections for key bars of a generator stator frame for accurate fit with complementary dovetail connections of generator laminations comprising the steps of:

(a) securing a plurality of key bars without dovetail connections in a stator frame at circumferentially spaced locations about the frame; and

(b) subsequent to step (a), forming the dovetail connections along the key bars from within the frame to accurately fit



with complementary dovetail connections on the generator laminations.

5,390,410

TERMINAL CRIMPING APPARATUS

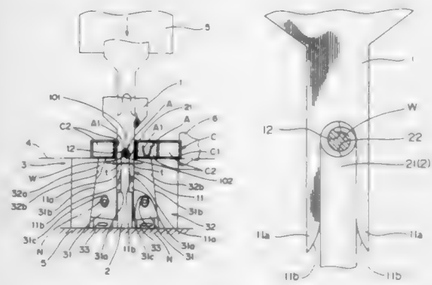
Yoshio Takenami, and Eiji Fudoo, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Aug. 23, 1993, Ser. No. 110,790

Claims priority, application Japan, Sep. 1, 1992, 4-233934

Int. Cl.[6] H01R *43/048;* B21D *37/12*

U.S. Cl. 29—753 16 Claims



1. A terminal crimping apparatus comprising:

pressure receiving means having a pressure receiving surface for receiving a terminal to be crimped loaded in a connector housing;

caulking means having a caulking surface opposed to the pressure receiving means so as to interpose the connector housing therebetween for caulking a terminal to be crimped in the connector housing against said pressure receiving means;

surrounding means integrally extending from said caulking means for surrounding said pressure receiving means such that substantially no clearance exists between said pressure receiving means and said surrounding means when said caulking means caulks a terminal against said pressure receiving means, said surrounding means having at least a portion adapted to pass through the connector housing toward said pressure receiving means when said caulking means caulks a terminal against said pressure receiving means; and

regulating means for preventing said at least a portion of said surrounding means from being deformed when said caulking means caulks a terminal against said pressure receiving means.

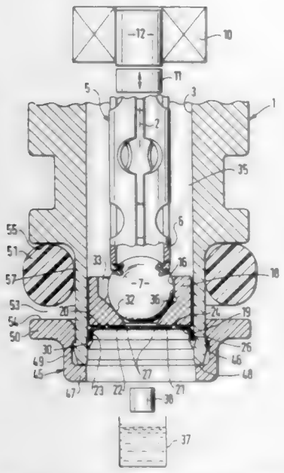
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5,390,411

METHOD FOR THE MANUFACTURE OF A FUEL INJECTION VALVE

Dieter Vogt, Korntal-Muenchingen; Ferdinand Reiter, Markgroeningen, and Martin Maier, Moeglingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Division of Ser. No. 849,066, Apr. 22, 1992, Pat. No. 5,263,648.
This application Aug. 3, 1993, Ser. No. 100,945
Claims priority, application Germany, Aug. 24, 1990, 4026721
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—890.131 4 Claims



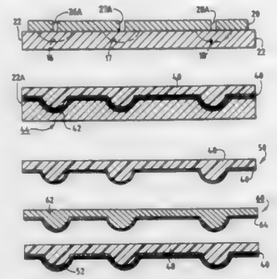
1. A method for the manufacture of an injection valve for fuel injection units of internal combustion engines, with a tubular housing, which has a longitudinal orifice extending concentrically in relation to a longitudinal axis, a valve seat body which has a valve seat area and an axial passage, a movable valve needle inserted in said longitudinal orifice which acts in conjunction with the valve seat area, a support body which has at least one injection orifice, a bottom part of said support body resting against the valve seat body, including a cylindrical and retaining edge, the method comprising forming the bottom part (**21**) of the support body with a bent retaining edge (**23**) with a free end (**26**) that has a diameter greater than a diameter of the longitudinal orifice (**3**) of the tubular housing, securing the bottom part (**21**) of the support body to an adjacent surface of said valve seat body by means of a first welding seam (**24**), in which arrangement the bent retaining edge (**23**) of said support body is facing outward away from the valve seat body (**18**); in a second process step, pushing the valve seat body and the support body together into the longitudinal orifice (**3**) of the housing with the retaining edge facing outward in order to effect a presetting of a lift of the valve needle (**5**); in a third process step, connecting the free end (**26**) of the retaining edge of the support body firmly to a wall of the longitudinal orifice (**3**) of the housing by means of a second welding seam (**30**); in a fourth process step, measuring a static actual medium volume, which is discharged during a stationary open condition of the injection valve and comparing the static actual medium volume measured with a desired, specified target volume of the medium, and in a fifth process step, deforming the support body in an axial direction, in an area between the first welding seam (**24**) and the second welding seam (**30**) for a precise setting of the valve needle lift, until the measured static actual volume of the medium agrees with the specified target volume of the medium.

5,390,412

METHOD FOR MAKING PRINTED CIRCUIT BOARDS

George D. Gregoire, 9927 Aviary Dr., San Diego, Calif. 92131

Filed Apr. 8, 1993, Ser. No. 45,366
Int. Cl.[6] H01K *3/22, 3/10*
U.S. Cl. 29—848 18 Claims



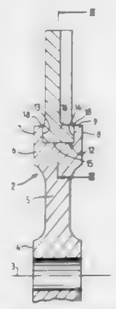
1. A method of making a three dimensional printed circuit board, comprising:
forming a three dimensional female predecessor tool;
forming a three dimensional male mold tool using said three dimensional female predecessor tool;
coating said three dimensional male mold tool with a thin layer of a highly adhesive material;
pressing said three dimensional male mold tool into a deformable plastic material to deform the plastic material into a metallized substrate having a surface with a plurality of metallized grooves disposed therein;
admitting to said plurality of metallized grooves an etch resistant material; and
etching a desired electrical circuit pattern in the surface of said metallic material.

5,390,413

BLADED DISC ASSEMBLY METHOD BY HIP DIFFUSION BONDING

Anthony L. Pratt, Bristol, England, assignor to Rolls-Royce plc, London, England

Filed Oct. 13, 1993, Ser. No. 135,440
Claims priority, application United Kingdom, Oct. 16, 1992, 9221796
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—889.21 6 Claims



1. A method of making a bladed disc assembly comprising the steps of:
in a manufacturing step:
forming a disc having axially opposed end faces and a peripheral surface extending between said end surfaces, forming in said peripheral surface a circumferentially extending groove, and

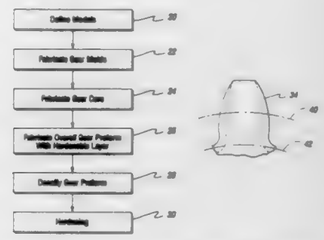
forming a plurality of bladed segments, each said bladed segment having a blade portion and a root portion;
in an assembly step:
assembling said bladed segments directly with the disc by locating said root portions in said circumferentially extending groove and positioning the bladed segments one adjacent to another;
in a vacuum electron beam welding step:
enclosing said bladed disc assembly in a vacuum chamber and electron beam welding the exposed surface points to secure each of said root portions to adjacent root portions and to said peripheral surface of the disc and thereby provide a vacuum seal between said root portions and said peripheral surface; and
in a diffusion bonding step:
applying heat and pressure to said end surfaces of the disc to bond together the unexposed surfaces of said root portions and of said disc and said circumferentially extending groove therein.

5,390,414

GEAR MAKING PROCESS

Bohdan Lisowsky, Troy, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 6, 1993, Ser. No. 43,359
Int. Cl.[6] F16H *55/17*
U.S. Cl. 29—893.34 24 Claims



1. A method of manufacturing a gear, the method comprising:
fabricating an elastomeric gear core mold having the shape of the gear core preform;
fabricating an elastomeric gear perform mold having the shape of the gear;
filling the gear core mold with a powdered metal material;
subjecting the gear core mold to high pressure to form the gear core preform;
applying hardenable metallurgical material to the gear core preform at predetermined locations by positioning the gear core preform within the gear preform mold, filling the gear preform mold at the predetermined locations with the hardenable, metallurgical material, and densifying the gear core preform and the metallurgical material; and
hardening the hardenable metallurgical material by heat treating the densified gear core preform and metallurgical material, to obtain the gear having a wear-resistant and high strength layer at the predetermined locations.

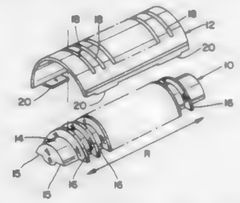
5,390,415

ELECTRIC RAZOR

Kazuhiro Momose, Nagano, Japan, assignor to Izumi Products Company, Nagano, Japan

Filed Dec. 7, 1993, Ser. No. 163,380
Claims priority, application Japan, Jan. 8, 1993, 5-002891[U]
Int. Cl.[6] B26B *19/38*
U.S. Cl. 30—41 5 Claims

1. An electric razor in which whiskers are sheared by an inner cutter comprising a plurality of blades that move relative to an outer cutter, said razor comprising a cleaning cover fitted on said inner cutter, said cleaning cover having a plurality of blade slits, said blades of said inner cutter extending through said blade slits pass with both opposing surfaces of each of said



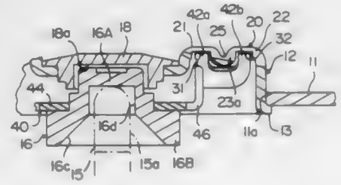
blade slits in contact with individual ones of said blades when said cleaning cover is fitted to said inner cutter, and said blade slits being positioned corresponding to said blades.

5,390,416

ELECTRIC RAZOR

Hiromi Uchiyama, and Masaki Okabe, both of Nagano, Japan, assignors to Izumi Products Company, Nagano, Japan

Filed Feb. 25, 1993, Ser. No. 23,057
Claims priority, application Japan, Apr. 17, 1992, 4-125693
Int. Cl.[6] B26B *19/14*
U.S. Cl. 30—43.6 5 Claims



1. An electric razor comprising:
an external cutting member having a circular shaving top surface, said top surface being provided with a plurality of radial slits for hair entry and divided into at least two concentric shaving surfaces by at least one concentric groove; and
an internal cutting member comprising:
a circular base rotated by a rotary power source;
a plurality of arms equally spaced around a periphery of said circular base, said arms extending upwardly and outwardly from said circular base and terminated at a distal end;
a cutter provided on each of said plurality of arms, said cutter being formed in a U-shape with a bottom of said U-shape being connected at said distal end; and
a cutting edge formed on each of two upwardly extending arms of said U-shape cutter; and
wherein:
said circular base, plurality of arms and cutters are integrally formed;
said plurality of arms are provided at a constant radius from a center of said circular base; and
said cutting edges formed on said two upwardly extending arms U-shape of said cutter engage respectively with said two concentric shaving surfaces.

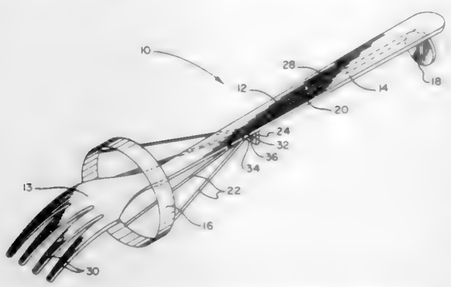
VOL 1171 ISS 3 FE 21 1995 UMI

5,390,417

SPAGHETTI FORK AND SEPARATOR SYSTEM

Richard H. Brown, 1065 Lomita Blvd. #161, Harbor City, Calif. 90710

Filed Jan. 14, 1994, Ser. No. 181,002
Int. Cl.[6] A47J *43/28*
U.S. Cl. 30—148 1 Claim



1. A spaghetti fork and separator system comprising, in combination:

a fork having a lower end and an upper end with a plurality of essentially parallel prongs at the lower end terminating in tips and an elongated handle at the upper end;

a plunger having a post extending generally parallel to the handle of the fork and having a lower end and an upper end, the upper end being bent at about 90 degrees from the post and constituting a reciprocation member for being grasped by a user for moving the post and plunger in a linear manner parallel with the handle;

a separator formed with an oval cross-section with a long axis and a short axis, the long axis of the oval being in a line substantially parallel to a line contacting the tips of the prongs of the fork and with the short axis perpendicular thereto, the separator being formed with an upper end and a lower end in a conical configuration with a smaller circumference at its lower end and larger circumference at its upper end, the separator also having struts extending upwardly from the upper end of the separator to the lower end of the post; and

guide means formed as a U-shaped member from a central extent of the fork, the guide means including an aperture adjacent to the handle and encompassing the post for guiding the motion of the fork and plunger with respect to each other when the post and separator are pulled by the reciprocation member to allow the prongs of the fork to be exposed for twirling spaghetti and when the post and separator are pushed by the reciprocation member to allow the separator to separate the spaghetti strands from the spaghetti twirled on the prongs of the fork.

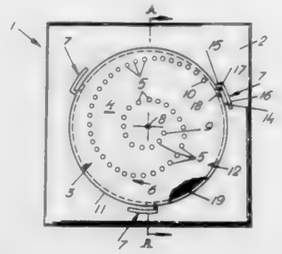
5,390,418

TOOL FOR DRAWING CIRCUMFERENCES

Patricio A. Buono, 10725 Véritz St., and Ramiro A. Buono, 10920 San Salvador St., both of (7600) Mar del Plata, Buenos Aires, Argentina

Filed Jul. 26, 1993, Ser. No. 95,553
Int. Cl.[6] B43L *9/04*
U.S. Cl. 33—27.03 11 Claims

1. A tool for drawing circumferences comprising a main plate having at least one through opening and at least one disc plate located within the through opening of the main plate, both plates being contained in a common plane, the disc plate being rotatable around an axis normal to the common plane, the axis passing by a geometrical center of the disc plate, the disc plate having a plurality of through orifices located at different distances from the geometrical center of the disc plate, each orifice forming a pass for a drawing device, the through opening of the main plate defining an inner edge of the main plate, the inner edge having locking means for interengaging a peripheral groove formed in an outer peripheral edge of the disc plate, the locking means comprising at least one



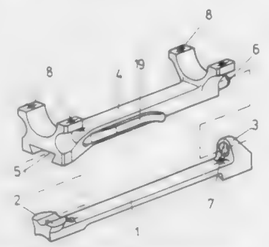
radially resilient tongue formed in the plate by a radial cut and a circular cut adjacent to the inner edge of the main plate so that the tongue elastically yields along a substantial radial direction.

5,390,419

TELESCOPIC-SIGHT MOUNT

Nehemia Sirkis, Los Angeles, Calif., assignor to VOERE Kufsteiner Gerätebau-und Handelsgesellschaft m.b.H., Kufstein, Austria

PCT No. PCT/AT93/00011, § 371 Date Nov. 19, 1993, § 102(e) Date Nov. 19, 1993, PCT Pub. No. WO93/15371, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 28, 1993, Ser. No. 122,489
Claims priority, application Austria, Jan. 29, 1992, A 142/92
Int. Cl.[6] F41G *1/387*
U.S. Cl. 33—250 11 Claims



1. A telescopic sight mount, comprising:

a support mechanism to be mounted on a weapon, said support mechanism comprising a first pair of spaced engaging elements;

a carrying mechanism to be mounted to a telescopic sight, said carrying mechanism comprising a second pair of spaced engaging elements which can be attached to said supporting mechanism; and

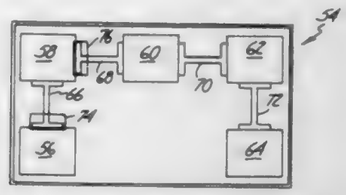
a toggle lever arranged between said engaging elements of one of said first and second pairs of spaced engaging elements, the one of said first and second pairs being braceable against the other of said first and second pairs of spaced engaging elements by changing the spacing of said engaging elements of the one of said first and second pairs, and said toggle lever comprising a tension handle.

5,390,420

MR ELEMENT-TO-CONTACT ALIGNMENT TEST STRUCTURE

Allan E. Schultz, St. Paul, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Feb. 18, 1994, Ser. No. 198,946
Int. Cl.[6] G01C *15/00*
U.S. Cl. 33—286 10 Claims



1. A device for determining alignment accuracy between magnetoresistive elements and contacts of magnetoresistive heads formed on a wafer, the magnetoresistive elements being parts of a first layer formed using a first photomask, the contacts being parts of a second layer formed using a second photomask, the device comprising:

a first alignment test structure defined using the first photomask, the first alignment test structure formed from a first material having a first characteristic sheet resistivity;

a second alignment test structure defined using a second photomask, the second alignment test structure formed from a second material having a second characteristic sheet resistivity lower than the first characteristic sheet resistivity, the second alignment test structure formed to be in contact with the first alignment test structure;

means for determining a first resistance value, the first resistance value being dependent upon the first and second characteristic sheet resistivities and upon alignment between the first alignment test structure and the second alignment test structure; and

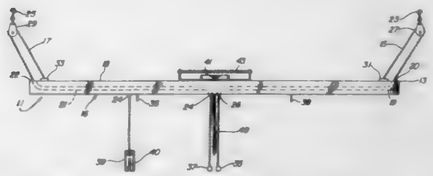
means for determining alignment between the first alignment test structure and the second alignment test structure as a function of the first resistance value, alignment between the first and second alignment test structures being indicative of alignment between magnetoresistive elements and contacts of magnetoresistive heads formed on the wafer.

5,390,421

VEHICLE LEVEL AND CENTERLINE GAUGES

John T. Richardson, 191 SE. 10th Ct., Deerfield Beach, Fla. 33441

Filed Sep. 22, 1993, Ser. No. 125,293
Int. Cl.[6] G01B *5/00*; G01D *21/00*
U.S. Cl. 33—288 17 Claims



1. Vehicle frame alignment apparatus comprising:

a hollow, elongated bar having a top and bottom surface, a first pair of openings in the top surface and a second pair of openings in the bottom surface, the second pair of openings being located near the center of said bar;

a first conduit means located within said bar for providing a first enclosed path between one of said first pair of openings and one of said second pair of openings;

a second conduit means located within said bar for providing an enclosed path between the other one of said first pair of openings and the other one of said second pair of openings; and

respective first and second suspension chain means independently freely slidable within said first and second conduit means, respectively, for providing height adjustment of said bar;

said first chain means slidably entering said one of said first pair of openings from a first point outside said bar, slidably passing through said first conduit means, and slidably exiting through said one of said second pair of openings;

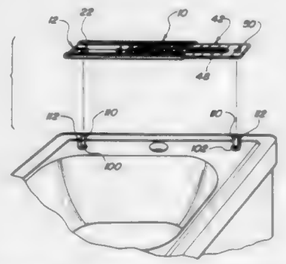
said second chain means slidably entering said other one of said first pair of openings from a second point outside said bar, slidably passing through said second conduit means, and slidably exiting through said other one of said second pair of openings.

5,390,422

APPARATUS FOR ALIGNING HANDLE VALVES

Loran R. Hill, Indianapolis, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.

Filed Jun. 11, 1993, Ser. No. 76,301
Int. Cl.[6] G01B *5/25*
U.S. Cl. 33—412 18 Claims



1. An aligning and holding device for valve stems of faucet valve assemblies comprising:

a stationary member including two longitudinally extending laterally spaced apart raised side sections and a central section intermediate said side sections, and at least one opening in said central section including a central circular shaped portion adapted to receive a valve stem and at least one radially extending fan shaped portion adapted to receive a handle stop; and

a movable member adapted to coact with said raised side sections to move longitudinally relative to said stationary member, said movable member including at least a first opening adapted to receive at least a handle stop.

5,390,423

ANALOGUE PROBE

Andrew G. Butter; Adrian C. Welsford, and David G. Powley, all of Bristol, United Kingdom, assignors to Renishaw plc, Gloucestershire, United Kingdom

Continuation-in-part of Ser. No. 34,770, Mar. 19, 1993, which is a continuation-in-part of Ser. No. 643,373, Jan. 21, 1991, Pat. No. 5,212,873. This application Mar. 17, 1994, Ser. No. 214,239
Int. Cl.[6] G01B *5/20*
U.S. Cl. 33—559 4 Claims

1. A probe for a coordinate positioning machine, the probe including a suspension assembly comprising:

a first, relatively fixed, member;

a second, relatively movable, member;

a pair of leaf springs, each leaf spring of said pair being connected to said first and second member to enable an arcuate motion of said second member in a plane extend-

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ing substantially orthogonal to the plane of each of said leaf springs; wherein

the distance, measured in said plane, between the leaf springs at the first member is greater than the distance, measured in said plane between the leaf springs at said second member, thereby to induce a rotation of said second member upon said arcuate motion thereof relative to the first member, said rotation having an axis orthogonal to said plane, and occurring in a sense opposite to that of said arcuate motion.

5,390,424

ANALOGUE PROBE

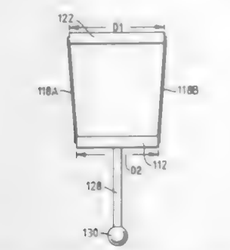
Andrew G. Butter; Adrian C. Welsford; David G. Powley, all of Bristol, and David R. McMurtry, Wotton-Under-Edge, all of United Kingdom, assignors to Renishaw Metrology Limited, Gloucestershire, United Kingdom

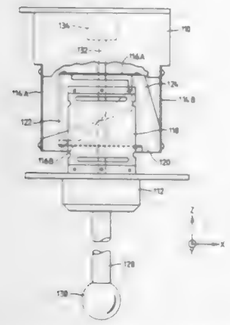
Continuation-in-part of Ser. No. 643,373, Jan. 22, 1991, Pat. No. 5,212,873. This application Mar. 19, 1993, Ser. No. 34,770

Claims priority, application United Kingdom, Jan. 25, 1990, 9001682

Int. Cl.[6] G01B *5/20*

U.S. Cl. 33—561 **4 Claims**





1. An analogue probe for use on a coordinate positioning machine, the probe, including:

a fixed structure by which the probe may be mounted to a movable arm of the machine;

a stylus supporting member;

means for supporting the stylus supporting member to enable displacement thereof relative to the fixed structure with three linear degrees of freedom; and

first, second, and third transducers for measuring displacement of said supporting member relative to the fixed structure in each of three measuring directions corresponding to said three degrees of freedom, wherein each transducer comprises:

a scale, provided on the stylus supporting member, having a series of spaced-apart lines extending transversely to the respective measuring direction;

a readhead, provided on the fixed structure and mounted in register with the scale, for reading said scale thereby to determine said displacement, wherein at least one of said scales is movable relative to the readhead in a direction transverse to both the lines of the scale and the measuring direction.

5,390,425

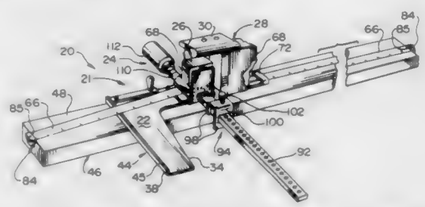
SAW GUIDE MEASURING SQUARE

Alexander Gilberts, 10265 Church St., Barrington Hills, Ill. 60010

Continuation-in-part of Ser. No. 823,820, Jan. 22, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 127,762

Int. Cl.[6] B43L *13/02;* **G01B** *3/10*

U.S. Cl. 33—764 **7 Claims**



7. A tool guiding measuring apparatus which is calibratable for use with a cutting tool for which said apparatus is calibrated to measure a portion of a workpiece and guide said cutting tool through said workpiece at a desired location measured by said tool guiding measuring apparatus, said tool guiding measuring apparatus comprising:

an elongated aligning body for orienting said tool guiding measuring apparatus along a side of a workpiece to be cut;

a tool guiding member operatively associated with said aligning body, said tool guiding member providing a straight cutting guide for guiding a cutting tool through a workpiece in a straight line at a desired measurement;

said tool guiding measuring apparatus comprising two retractable tape measures operatively associated with said aligning body for measuring the location of a cut to be made with said cutting tool positioned against and guided along said tool guiding member, said tape measures being oriented for extension in opposite directions relative to one another along the direction of elongation of said aligning body, each of said tape measures having indicia and a pointer for providing measurement information, a first tape measure of said two tape measures being calibrated relative to said guide member and a cutting tool positioned thereagainst for measuring workpieces to be cut having a length dimensioned of approximately two feet or greater, a second tape measure of said two tape measures being calibrated relative to said guide member and cutting tool positioned thereagainst for measuring workpieces to be cut which have a length dimension from approximately zero feet to approximately ten feet.

5,390,426

TAPE MEASURE CLIP

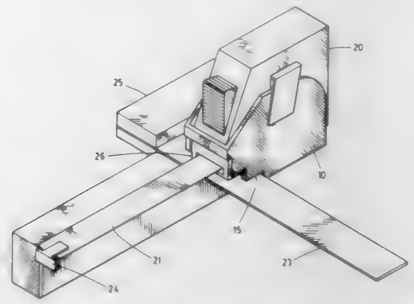
Anthony K. Hull, 169 Louth Street, St. Catharines, Ontario, Canada L2S 2R4

Filed Jun. 4, 1993, Ser. No. 71,098

Int. Cl.[6] G01B *3/10;* **B43L** *7/00*

U.S. Cl. 33—770 **4 Claims**

1. A clip for use with a tape measure comprising a generally U-shaped channel sized to permit a standard tape measure to be retained in the channel, said channel having a base, two generally parallel vertical side walls and a cross member connecting said vertical side walls at a first end of said channel without fully enclosing said first end, where a pair of horizontal slots are cut in the lower edge of said vertical side walls adjacent the first end of the channel, said slots sized to permit the ruler of a square or other straight edge to be inserted and held in place between the bottom of the tape measure inserted in said clip and the base of the channel.



5,390,427

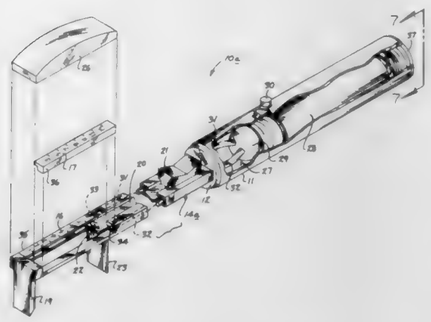
FASTENER MEASURING DEVICE

David W. Heller, and Melanie L. Heller, both of 616 Rugby Rd., Phillipsburg, N.J. 08865

Filed May 10, 1993, Ser. No. 58,030

Int. Cl.[6] G01B *5/00*

U.S. Cl. 33—811 **4 Claims**



1. A fastener measuring device, comprising,

an elongate handle symmetrically oriented about an axis, wherein the handle includes an end wall, the end wall having a support plate fixedly mounted to the end wall longitudinally aligned with said axis, with the support plate having a first side and an opposed second side, and a central slot directed through the support plate through said first side, with a first row of first referenced indicia directed along a slot first side of the support plate first side, with a row of second referenced indicia directed along a slot second side of said support plate first side, with the support plate having a support plate free end, with the free end having a fixed jaw orthogonally mounted to the support plate extending from the support plate second side, and

a track directed through the support plate, with a slide plate slidably received within the track, and the slide plate having a movable jaw fixedly and orthogonally mounted to the slide plate, with the movable jaw arranged in a facing parallel relationship relative to the fixed jaw,

the slide plate includes an indicator lug mounted to a slide plate first end oriented between the first referenced indicia and the second referenced indicia, and a slide plate boss mounted to the slide plate adjacent to the slide plate second end permitting manual displacement of the slide plate, with the slide plate boss projecting beyond the support plate first side.

5,390,428

FILM TRANSPORT MEANS FOR USE IN A FILM DRYER

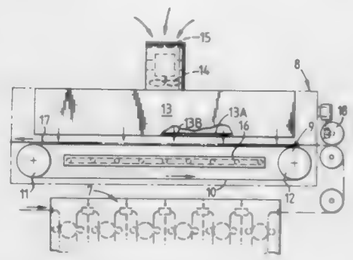
Leslie J. Pummell, Rickmansworth, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1993, Ser. No. 85,517

Claims priority, application United Kingdom, Jul. 31, 1992, 9216334

Int. Cl.[6] F26B *3/34*

U.S. Cl. 34—273 **10 Claims**



7. A method for transporting and drying a film in a film processor, comprising the steps of:

a. conveying the film along a path on a conveyor such that the film is emulsion side up;

b. directing jets of air toward the conveyor along the path whereby the film is pressed against the conveyor by said jets of air so as to maintain the film substantially flat as it is moved by the conveyor; and

c. applying heat below the conveyor so that the film is warmed from its backside while in contact with the conveyor.

5,390,429

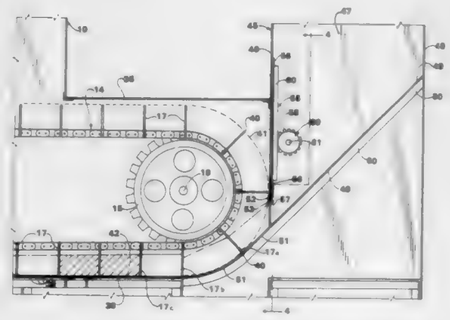
PARTICULATE MATERIAL FEEDER

David H. Long, Springfield, Ohio, assignor to Jet-Pro Company, Inc., Atchison, Kans.

Division of Ser. No. 667,271, Mar. 11, 1991, Pat. No. 5,316,128. This application May 27, 1994, Ser. No. 250,587

Int. Cl.[6] F26B *17/00*

U.S. Cl. 34—580 **12 Claims**



1. A particulate material treating apparatus comprising

A) an elongated, horizontally disposed treatment chamber having longitudinally disposed inlet and discharge ends at respective opposite ends of said chamber and through which chamber particulate material is caused to traverse from said inlet end to said discharge end with treatment of

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the material being effected during the course of its traverse, said chamber including

1) an elongated bedplate having an upwardly facing top surface for support of particulate material thereabove during its movement through said treatment chamber,

2) discharge means disposed at the discharge end of said chamber for effecting removal therefrom of treated particulate material and expended treating media utilized in effecting treatment of the particulate material,

3) treatment media supply means coupled with said treatment chamber and operable to cause the treatment media to enter into said chamber and coact with the particulate material passing therethrough, and

4) transport means for effecting displacement of particulate material through said treatment chamber, said transport means including

a) a continuous conveyor supported for revolution in a vertical plane extending longitudinally of said treatment chamber over said bedplate and having a first end disposed at the inlet end of said treatment chamber and a plurality of flights disposed in relatively spaced relationship to each other extending in transversely oriented relationship to their path of movement, said conveyor having a lower run disposed adjacent said bedplate whereby said flights engage with particulate material disposed on said bedplate to effect displacement of particulate material thereover, said conveyor being supported at the inlet end of said treatment chamber for movement of the outer extremities of the flights about an arcuate path that is tangentially oriented with respect to the top surface of said bedplate, and

b) drive means mechanically coupled with said conveyor and operable to effect revolution thereof with the flights on the lower run moving from the inlet end to the outlet end of said chamber in a direction away from said inlet end; and

B) a particulate material dispenser disposed at the inlet end of said treatment chamber and adjacent the first end of said conveyor in longitudinally aligned relationship thereto including

1) a dispensing hopper disposed closely adjacent, but spaced a distance rearwardly, to the first end of said conveyor in longitudinally spaced relationship to the path of movement of the outer extremities of said flights and adapted to receive and contain a quantity of particulate material, said dispensing hopper having a discharge throat disposed at a bottom end thereof extending transversely with respect to said conveyor's plane of revolution and through which material flows downwardly out of said hopper in a stream of predetermined transverse extent and thickness in a direction toward said conveyor, said discharge throat disposed a distance above said bedplate whereby particulate material flows out of said hopper and into association with said conveyor flights during the course of their arcuate path of movement in a downward and forward direction at said conveyor's first end, and

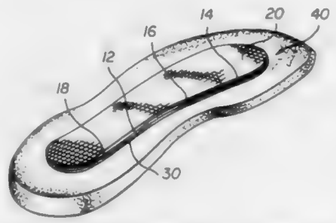
2) an elongated transfer plate disposed in underlying relationship to said throat for receiving material discharged therethrough and extending in downwardly inclined relationship in the direction of movement of the material through said treatment chamber and joining with said bedplate for conveyance of the material onto said bedplate, said transfer plate being arcuately curved for a portion of its axial length from its juncture with said bedplate in conformance with the path of movement of the radially outward extremities of said conveyor flights during the course of movement of said flights, whereby said flights are caused to enter into the material on said transfer plate and effect controlled displacement of the material onto and over said bedplate in a uniform layer of predetermined thickness.

5,390,430

SHOE SOLE CONSTRUCTED OF COMPOSITE THERMOPLASTIC MATERIAL INCLUDING A COMPLIANT LAYER

Douglas R. Fitchmun, Woodland Hills, and Niran Perera, Simi Valley, both of Calif., assignors to Medical Materials Corporation, Camarillo, Calif.

Division of Ser. No. 746,740, Aug. 19, 1991, Pat. No. 5,338,600. This application Jun. 28, 1994, Ser. No. 267,185
Int. Cl.[6] A43B *13/18, 13/12*
U.S. Cl. 36—30 R **5 Claims**



1. A thermoplastic thermoformable composite material for shaping into a complex form without rippling or buckling, including,

a core of a thermoplastic material,

layers of a fabric material respectively positioned at opposite sides of the core of the thermoplastic material,

additional layers of a thermoplastic material enveloping and impregnating the layers of the fabric material,

the core of the thermoplastic material being provided with a sufficient thickness to obtain a movement of the layers of the fabric material independently of each other during the shaping of the composite material into the complex form, and

a further layer of a thermoplastic material bonded to one of the additional layers of the thermoplastic material and having properties to enhance the abrasion resistance and impact strength of the composite material,

a shoe having a sole,

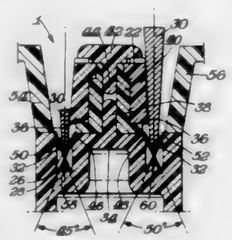
the thermoplastic composite material being disposed in the sole of the shoe with the further layer of the thermoplastic material facing outwardly from the shoe.

5,390,431

METHOD AND APPARATUS FOR KNIFE AND BLADE SHARPENING

Daniel D. Friel, Greenville, Del., assignor to Edgecraft Corporation, Avondale, Pa.

Continuation-in-part of Ser. No. 901,213, Jun. 18, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 55,856
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—45 **33 Claims**



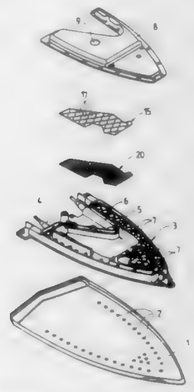
1. An apparatus for sharpening an ledge of an elongated blade comprising a housing having an exposed sharpening section, a first pair of rigidly stationarily mounted members having abrasive coated surfaces in said sharpening section, said surfaces being juxtaposed each other, said surfaces crossing to form a rigid structural vertex and to establish an angle therebetween, blade guide means in said section having a guide surface directly above said abrasive surfaces disposed solely on one side of the bisection line of said angle to contact and align the blade so that the centerline of the blade established from its edge to the center of its thickness at its back is positioned generally at said bisection line of said angle of said abrasive surfaces, said guide means including at least one rotatable member which is otherwise rigidly stationarily mounted and has an outer guide surface for making rolling contact with the blade whereby said guide means guides the blade as the blade moves along said surfaces and said rotatable member being maintained in fixed relationship to said abrasive surfaces independently of the dimensions of the blade.

5,390,432

WATER DISTRIBUTION SCREEN ON A COATED STEAM IRON VAPORIZATION CHAMBER

Henry Boulud, Diemoz, and Christian Giovalle, Pont Eveque, both of France, assignors to SEB S.A., Ecully Sedex, France

Filed Sep. 28, 1993, Ser. No. 128,067
Int. Cl.[6] D06F *75/18*
U.S. Cl. 38—77.83 **21 Claims**



1. In a steam pressing iron, the improvement comprising:

a soleplate having an ironing surface and having steam outlet openings;

a steam generating structure disposed adjacent said soleplate and defining a water vaporization chamber having a bottom surface;

means for heating water in said vaporization chamber;

a covering of a material which promotes vaporization of water disposed on said bottom surface of said vaporization chamber; and

a screen disposed above said covering for distributing water across said covering;

wherein said screen is provided with means for deflecting and distributing water above and on said covering.

5,390,433

PRESSING IRON WITH CORD SWIVEL CORD GUARD AND LOBED HEEL

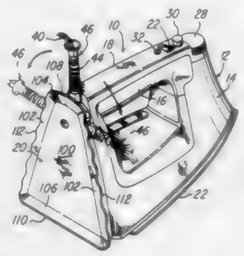
Martin Brady, Richmond, Va., assignor to Hamilton Beach/-Proctor-Silex, Inc., Glen Allen, Va.

Filed Jan. 7, 1993, Ser. No. 1,261
Int. Cl.[6] D06F *75/28, 75/30;* **H01R** *35/04*
U.S. Cl. 38—79 **14 Claims**

1. In an electric pressing iron comprising a sole plate; a body having a handle and a rear cover mounted on said sole plate;

and an electric power cord for supplying power to heat said sole plate;

said iron being used with said sole plate supported and movable in a horizontal plane for ironing and said iron being movable to a rest position with said rear cover supported in a horizontal plane and said sole plate projecting upwardly therefrom, the improvement wherein said rear cover has rearwardly facing edges that are sinusoidally wavy upon which said pressing iron is supported in an upright rest position.

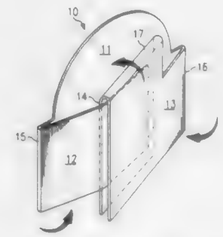


5,390,434

CLOTHING ACCESSORY LABEL

Randall R. Lockard, Coppell, Tex., assignor to TBAC Investment Trust, Arlington, Tex.

Filed Jan. 11, 1993, Ser. No. 2,665
Int. Cl.[6] G09F *3/10*
U.S. Cl. 40—299 **3 Claims**



1. A method of installation of a label for use in labeling a clothing accessory having a loop of material on a back side thereof, said method comprising the steps of:

(a) laying said label flat, said label comprising:

a front panel having a panel surface area;

a first flap having a first flap surface area extending outwardly along the plane of said panel surface area on a first side of said panel surface area, said first flap having a width, wherein said first flap has a section distal to said front panel that extends in a substantially perpendicular direction from the direction in which said first flap extends from said front panel where said first flap adjoins said front panel;

a second flap having a second flap surface area extending outwardly along the plane of said panel surface area on a second side of said front panel, said second side of said front panel opposite from said first side; and

an extension to said distal section of said first flap extending outwardly along the plane of said distal section;

(b) placing a backside of said front panel on a front side of said clothing accessory;

(c) folding said first and second flaps to encircle said clothing accessory;

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(d) folding said extension to form a U-shaped enclosure, said enclosure traversing an area enclosed by said loop of material such that said U-shaped enclosure interlocks with said loop on an opposite side of said clothing accessory from where said front panel is displayed; and

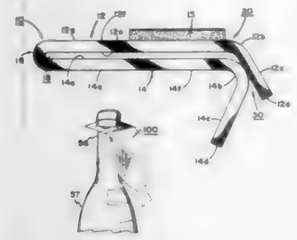
(e) attaching a distal end of said interlocked U-shaped enclosure to said first and second flaps to secure said label position with respect to said clothing accessory.

5,390,435

POINT OF SALE DISPLAY FOR HOLDING A BRANDSIGN

Allan D. Grody, West Hartford, Conn., assignor to Gastro-Gnomes, Inc., West Hartford, Conn.

Filed Oct. 26, 1993, Ser. No. 142,689
Int. Cl.[6] G09F *3/16, 3/20*
U.S. Cl. 40—310 **13 Claims**



1. A brandsign (100) capable of use with a point of sale display of the type including

a first member (12) having a first generally planar portion (12*a*), a second generally planar portion (12*c*) a non-planar portion (12*b*) arranged between the first generally planar portion (12*a*) and the second generally planar portion (12*c*), a terminating edge (12*d*) on one end of the second generally planar portion (12*c*), and an inner contacting surface (12*e*) extending along the first and second generally planar portions (12*a*, 12*c*) and the non-planar portion (12*b*) of the first member (12);

a second member (14) having a first generally planar portion (14*a*), a second generally planar portion non-planar portion (14*b*) arranged between the first generally planar portion (14*a*) and the second generally planar portion (14*c*), a terminating edge (14*d*) on one end of the second generally planar portion (14*b*), and an inner contacting surface (14*e*) extending along the first and second generally planar portions (14*a*, 14*c*) and the generally non-planar portion (14*b*) of the second member (14);

means (16) for flexibly connecting the first member (12) and second member (14) for defining a holding space (18) between said inner contacting surfaces (12*e*, 14*e*) of the first and second members (12, 14);

a part of the inner contacting surface (14*e*) of the second member (14) along the non-planar portion (14*b*) resiliently contacting a part of the inner contacting surface (12*e*) of the first member (12) along the second generally planar portion (14*c*) to define a pinch zone (20) for retaining the brandsign (100) in the holding space (18); and

the terminating edge (14*d*) of the second member (14) extending outwardly and flaring divergently away from the terminating edge (12*d*) of the first member (12) to define an entry zone for receiving the brandsign (100) and thereby facilitating entry of the brandsign (100) into the pinch zone (20);

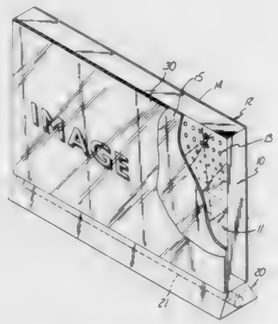
means (40) for displaying a brandname of a product; and means (50) for selectively attaching the means (40) for displaying, having a bottle necker (54) perforated therein for removing to hang the brandsign (100) on a neck (56) of a bottle (57), having a fold perforated therein for bending and inserting in the entry zone of the point of sale display, and having an adhesive backing (13) and a protective sheet over the adhesive backing (13), the protective sheet having perforations positioned along a portion thereof for peeling off a portion of the protective sheet, thereby exposing the adhesive backing (13) so as to affix the brandsign (100) to an external object.

5,390,436

DISPLAY SYSTEM

John Ashall, Runaway Bay, Australia, assignor to Illumination Research Group, Inc., Greensboro, N.C.

PCT No. PCT/AU91/00436, § 371 Date Apr. 29, 1993, § 102(e) Date Apr. 29, 1993, PCT Pub. No. WO92/05535, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 20, 1991, Ser. No. 30,416
Claims priority, application Australia, Sep. 20, 1990, PK 2392
Int. Cl.[6] G09F *13/18*
U.S. Cl. 40—546 **17 Claims**



1. An edgelit illuminated display system comprising:

a transparent medium having first and second opposing surfaces and at leastone edge operable with a light source for illuminating the first and second surfaces; and

a matrix of dots on each of the surfaces arranged to allow interaction of light between the surfaces, the matrix of dots on at least one of the surfaces substantially covering the entire surface for providing an even and increased illumination throughout the surface, wherein when a graphic image is supported over the surface, the graphic image is evenly illuminated.

5,390,437

ADVERTISING DISPLAY STAND

Stephen J. Pearson, Ingleside, Ill., assignor to Trend Plastics II, Inc., Round Lake, Ill.

Filed Mar. 4, 1993, Ser. No. 27,149
Int. Cl.[6] G09F *3/18*
U.S. Cl. 40—661 **11 Claims**

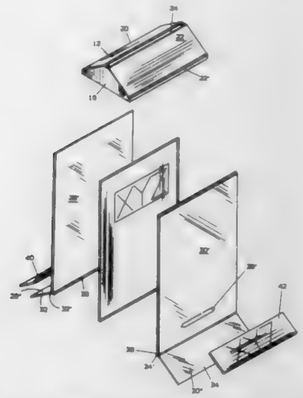
1. A display stand comprising:

a base-section having a display-panel support-surface means for securing a display-panel means, said display-panel support-surface means having a slot formed therein; and

display-panel means for displaying printed matter projecting upwardly through said slot of said display-panel support-surface means, said display-panel means comprising a pair of panels and retaining means for securing said panels to said base-section;

said display-panel support-surface means comprising a first, sloping side-wall and a second, sloping side wall, each of said first and second side walls having a first, lower end and a second upper end, said second upper ends converging toward each other, each said side wall forming an angle; said slot being formed between said second upper ends;

each of said pair of panels having a first, main portion for printed matter, said first main portion having a first end and a second end, and a second portion extending at an angle with respect to said first main portion, said second portion having a first end connected to said second end of said first main portion, and a second end; each said second portion comprising at least a portion thereof extending at an angle relative to said first main portion substantially equal to the angle of one of said first and second side walls, each said second portion being juxtapositioned opposite a respective one of said first and second side walls.

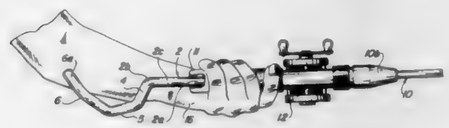


5,390,438

ARM SUPPORT FOR FISHING ROD

Alan M. Warren, Jr., 118 Country Club Dr., Benton, La. 71006

Filed Feb. 22, 1994, Ser. No. 199,754
Int. Cl.[6] A01K *87/00*
U.S. Cl. 43—23 **14 Claims**



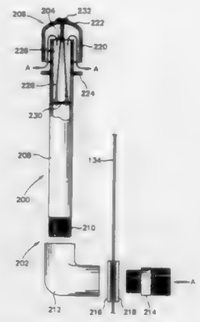
1. An arm support for stabilizing a fishing rod having a handle on the arm of a fisherman, comprising a rod for mounting on the handle of the fishing rod and positioning under the forearm of the fisherman, said rod including a straight rod portion for mounting on the handle of a fishing rod and a first rod segment extending from said straight rod portion and disposed at an angle of about 110 to about 130 degrees with respect to a vertical plane extending longitudinally through said straight rod portion, a second rod segment extending from said first rod segment and disposed at an angle from about 116 to about 136 degrees with respect to a vertical plane extending longitudinally through said first rod segment and a third rod segment extending from said second rod segment and disposed at an angle of from about 118 to about 138 degrees with respect to a vertical plane extending through said second rod segment, whereby said rod exerts pressure upwardly against the forearm and reduces pressure on the wrist of the fisherman, responsive to pressure applied to the fishing rod by a fish and retrieved lures.

5,390,439

BAIT CONTAINER FLOW REGULATOR

Leo J. Kilian, III, 15920 Litten Way, and Richard J. Lewis, 15931 Litten Way, both of Ramona, Calif. 92065

Filed Mar. 16, 1993, Ser. No. 33,610
Int. Cl.[6] A01K *63/00, 97/04*
U.S. Cl. 43—55 **35 Claims**



1. In a bait container system for transporting live bait to a fishing site, the bait container system including a water containment vessel for carrying water and a quantity of bait fish, the water containment vessel having a closed bottom, an open (or closable) top, a side wall portion, a water inlet for delivering a flow of water to the water containment vessel and one or more water outlets, a bait container flow regulator mounted to the water inlet, comprising:

a water inlet conduit extending from said water inlet to a water discharge location in the water containment vessel;

a water regulating outlet mounted on said water inlet conduit at said water discharge location; and

a discharge cap mounted on said water inlet conduit for limiting the flow of water through said water regulating outlet, said discharge cap being configured for movement in response to said flow of water between a first position substantially covering said water regulating outlet when little or no water is flowing in said water inlet conduit to a second position wherein said water regulating outlet is at least partially uncovered as water flow in said water inlet conduit increases, said discharge cap being mounted to said water inlet conduit by a connector that limits the movement of said discharge cap at said second position in response to water flow in said water inlet conduit.

5,390,440

APPARATUS AND METHOD FOR PROVIDING A MEASURED FLOW OF EXTERMINATING FLUID

Patrick M. Mihealsick, 1023 Kismet Dr., Aiken, S.C. 29803

Filed Nov. 1, 1993, Ser. No. 144,001
Int. Cl.[6] A01M *1/24*
U.S. Cl. 43—124 **3 Claims**

1. An apparatus for exterminating termites, roaches and other insects from homes, having a timing means, comprising

probe means for injecting exterminating fluids into the ground and through concrete slab surfaces infested with insects, which probe means is

a mounting yoke having a fluid chamber, an off/on fluid valve, a front opening and a bottom opening,

a cross member affixed as a T-shaped handle to the top of said mounting yoke,

an elongated hollow shaft affixed to said bottom opening of said mounting yoke;

control means, attached to said probe means, for actuating or discontinuing the flow of said exterminating fluid, which control means is

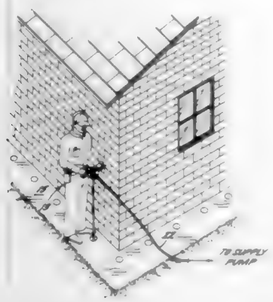
a spring loaded valve lever, attached to said off/on fluid

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valve and cantilevered to the side of said mounting yoke, in proximity to the underside of said cross member,

a magnetic switch, having two components, the first component being a normally open magnetic switch, which is attached to the underside of said cross member and the second component being a magnet which is attached to the topside of said valve lever,

electronic wiring, attached to said magnetic switch and



terminating in a bayonet type plug, for conducting current from said control means to said timing means;

timing means, connected to said control means, for identifying and memorizing the length of time it takes to inject a specific volume of exterminating fluid on the first injection and for identifying the length of time it takes to inject the same volume of exterminating fluid on each subsequent injection; and

a supply pump for bringing a continuous flow of exterminating fluid under pressure to said apparatus.

5,390,441

SNAIL AND SLUG ERADICATION STAKE

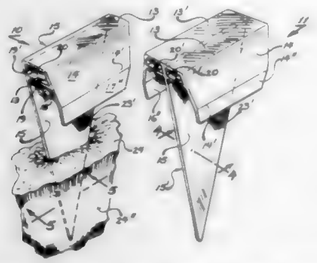
Eric S. Pence, 204 Hygeia Ct., Leucadia, Calif. 92024

Continuation-in-part of Ser. No. 878,214, May 4, 1992, Pat. No. 5,210,974. This application May 14, 1993, Ser. No. 61,912

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[6] A01M *1/20*

U.S. Cl. 43—131 **19 Claims**



1. A ground inserted stake device for the eradication of garden snails and slug pests comprising:

a single climbing body portion having a substantially planar configuration and a terminus wherein said terminus is configured for insertion into the ground;

an upper body portion connected to the climbing body portion substantially opposite the pointed terminus;

an awning attached to said upper body portion and extending outwardly from the upper body portion and downwardly toward the ground, said awning having a pair of lateral edges and an underside that collectively define a J-shaped void; and

a bait-receiving area within said J-shaped void that is accessible from either of said pair of lateral edges.

5,390,442

MULTILAYER VEGETATION ELEMENT

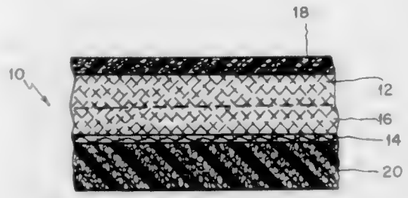
Wolfgang Behrens, Trespenmoor 25, W-2833 Gross Ippener, Germany

Filed Sep. 16, 1992, Ser. No. 945,678

Claims priority, application Germany, Jun. 12, 1992, 4219275

Int. Cl.[6] A01G *31/00*

U.S. Cl. 47—59 **19 Claims**



1. A multilayer vegetation element comprising:

a culture layer for holding vegetation;

a separation layer; and

a fire-retardant layer consisting of non-combustible material arranged on top of the separation layer and below the culture layer, wherein the fire-retardant layer consists of rock wool and has a thickness of between 1 cm and 10 cm.

5,390,443

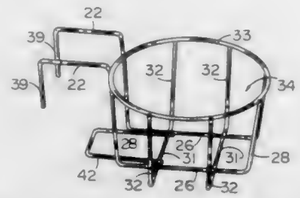
RAILING HANGER

Seymour Emalfarb, 1585 Saunders Rd., Riverwoods, Ill. 60015, and Bradley S. Emalfarb, 26529 N. Highway 83, Mundelein, Ill. 60004

Continuation of Ser. No. 742,936, Aug. 9, 1991, Pat. No. Des. 339,942, and a continuation of Ser. No. 742,940, Aug. 9, 1991, Pat. No. Des. 338,122. This application May 11, 1993, Ser. No. 60,589

Int. Cl.[6] A01G *9/02*

U.S. Cl. 47—67 **7 Claims**



1. A railing hanger for hanging an article from the top of and in laterally spaced relation with an upright support, comprising:

first means defining a frame having a vertically upwardly opening container with a bottom wall for supporting an article received in the container;

second means for selectively self connecting said first means to the top of an upright support and holding an upper end of said container in a laterally spaced relationship with the upright support, said second means including means for resisting movement of said container laterally away from the upright support; and

third means cooperating with said first and second means for holding said container in laterally spaced relation with the upright support,

said first means comprising a plurality of vertically upwardly opening hooks, each hook having a substantially straight base intermediate a pair of vertically upwardly extending legs, wherein said legs collectively define a sidewall on the container, upper ends of said legs defining an opening in the container,

said second means comprising a plurality of vertically downwardly opening hooks, each hook having a substantially straight base for engaging the top of the upright support and a downwardly extending straight leg for engaging a side of the upright support remote from the container whereby the railing hanger can be positioned on the top of the upright support in a vertically downwardly directed generally straight-line motion,

said third means comprising a spacer member extending from said bottom wall and located between said container sidewall and a vertical face of said upright support below said second means for prohibiting movement of the container bottom wall toward the upright support.

5,390,444

BARRIER DEVICE FOR CONTROLLING A PASSAGE FOR PEDESTRIANS, THE DEVICE BEING OF THE THREE-LEGGED TURNSTILE TYPE

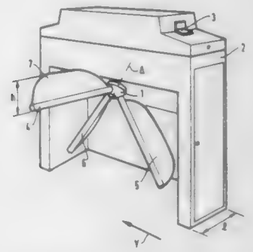
Marcel Simonin, Bretigny sur Orge, and Bernard Garbe, Lardy, both of France, assignors to Compagnie Generale d'Automatisme CGA-HBS, Bretigny sur Orge, France

Filed Oct. 25, 1993, Ser. No. 140,395

Claims priority, application France, Oct. 26, 1992, 92 12725

Int. Cl.[6] E06B *11/08*

U.S. Cl. 49—47 **2 Claims**



1. A barrier device for controlling a passage for pedestrians, comprising; a three-legged turnstile comprising a rotary hub whose axis is inclined at about 45° relative to the vertical, three unitary legs fixed to said rotary hub for successively taking up position across said passage on each rotation through one-third of a turn each time a pedestrian passes through said turnstile, a bottom edge of each leg, when located in its passage-barring position, extending substantially horizontally, and each said leg, when located in its passage-barring position, occupying a substantially vertical space spanning 150 mm to 300 mm at at least a middle portion of said leg.

5,390,445

KNIFE SHARPENING MACHINE

Enzo Giovanazzi, Spiazzo, and Loredana Cremascoli, Frazione Mortaso, 200, 38088 Spiazzo - Trento, both of Italy, assignors to Loredana Cremascoli, Spiazzo, Italy

PCT No. PCT/EP90/01193, § 371 Date Apr. 29, 1992, § 102(e) Date Apr. 29, 1992, PCT Pub. No. WO91/04132, PCT Pub. Date Apr. 4, 1991

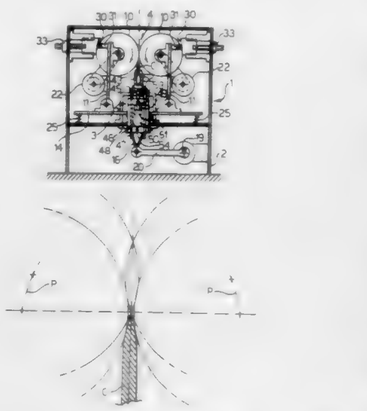
PCT Filed Jul. 20, 1990, Ser. No. 842,379

Claims priority, application Italy, Sep. 22, 1989, 21796-A/89

Int. Cl.[6] B24B *3/36*

U.S. Cl. 451—194 **8 Claims**

1. A knife sharpening machine comprising a supporting framework (2), holding means (3) for holding a knife (C) on the framework (2) at a sharpening section (4), a pair of disk grinders (10) made of a compressible resilient material arranged to act on the knife (C) at the sharpening section (4) from opposed sides thereof, motive means (22) for rotatively driving the two disk grinders (10) in opposite directions, pivotal support means carrying said disk grinders for pivotal movement on the framework (2) along respective arcuate paths (P), said arcuate paths being convex to each other and symmetrical about a plane adapted to contain the knife (C), wherein the two disk grinders



(10) are disposed in mutual contact relationship with a predetermined compression, and drive means connected to said pivotal support means for moving said disk grinders along said respective arcuate paths (P) back and forth in opposite directions from each other, whereby as one of said grinders (10) is at work on a cutting edge of the knife, the other is at work on a side of the knife.

5,390,446

GRINDING METHOD AND GRINDING MACHINE

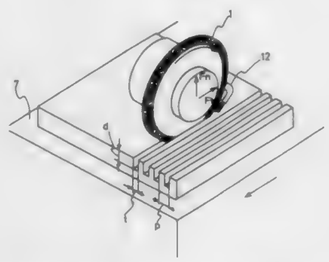
Shinichi Kazui, Hadano; Hiroyuki Ogino, Kanagawa; Kenji Morita, Isehara; Kuninori Imai, Kanagawa; Hideaki Sasaki, Hadano, and Takao Oguro, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Seiko, Ltd., Kanagawa, both of Japan

Filed Jun. 18, 1992, Ser. No. 900,572

Claims priority, application Japan, Jun. 21, 1991, 3-149098

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—8 **4 Claims**



1. A grinding method wherein a workpiece made of a ceramic is ground by rotating a disk-shaped diamond grindstone having a plurality of diamond particles on a periphery of said grindstone; comprising the steps of:

preliminarily measuring a grinding resistance of said workpiece dependent upon a peripheral speed V of the diamond grindstone for each of different sorts of a plurality of diamond grindstones which have diamond particles

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of different average size therearound respectively, determining a minimum peripheral speed of the respective diamond grindstones at which said grinding resistance of said workpiece comes to hardly change any more, determining, based upon a relationship between said average size of diamond particles and said minimum peripheral speed of each of said diamond grindstone, a constance k_1 and a constant α in a first formula:

$$V \cong k_1 \phi + \beta$$

wherein ϕ represents an average size of the diamond particles, and V represents a peripheral speed of a diamond grindstone, to thereby complete said first formula;

measuring a limitation ratio between a peripheral speed of said diamond grindstones at which said workpiece does not crack and a feed speed of said workpiece, for said each diamond grindstone, and determine, based upon a relationship between said average size of diamond particles and said limitation ratio of each of said diamond grindstone, constants k_2 and β in a second formula:

$$V/f \cong k_2 + \beta$$

wherein f represents a feed speed of a workpiece and V/f represent a ratio between a peripheral speed of a diamond grindstone and a feed speed of a workpiece, to thereby complete said second formula;

calculating said peripheral speed of said each diamond grindstone and said feed speed of said workpiece on the basis of the completed formulae by substituting an average size of diamond grindstones to be used in grinding; and

grinding said workpiece under conditions of said peripheral speed v and said feed speed of said workpiece f.

5,390,447

Patent Not Issued For This Number

5,390,448

MODULAR EXPANDABLE HONING TOOL

John J. Schimweg, St. Charles, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Apr. 22, 1993, Ser. No. 51,499
Int. Cl.[6] B24B *33/02, 33/08*
U.S. Cl. 451—478 **22 Claims**



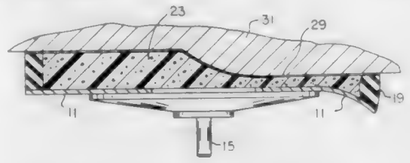
1. A honing mandrel adjustable during a honing operation comprising an elongated tubular member having means at one end portion thereof for attaching to a honing machine, a plurality of circumferentially spaced longitudinally extending slots in said elongated tubular member, a tubular honing member having inner and outer surfaces, said inner surface being conically tapered over the length thereof, said outer surface including a plurality of radially outwardly extending honing portions circumferentially spaced to correspond to the spacing of the longitudinal slots in said elongated tubular member, each of said radially outwardly extending honing portions having an abrasive surface formed thereon, means through one side of said tubular honing member to permit expansion and contraction of the diameter of said member substantially uniformly along the length thereof during a honing operation, and an elongated expander member positioned extending through said elongated tubular member, said expander member having an outer surface conically tapered over at least a portion of the length thereof, the outer surface of said expander member being tapered at the same taper rate as the conical taper of the inner surface of said tubular honing member, the tapered portion of said expander member being slidably engageable in surface-to-surface contact with the tapered inner surface of said honing member, and means at one end portion of said expander member for attaching said expander member to means for producing longitudinal movement of said expander member relative to said elongated tubular member.

5,390,449

ROTARY SANDING APPARATUS

Harry Hilton, R.R. #2, Box 156, Wiscasset, Me. 04078

Filed Dec. 6, 1993, Ser. No. 161,415
Int. Cl.[6] B24D *13/14*
U.S. Cl. 451—526 **2 Claims**



1. A rotary sanding apparatus comprising:

a circular support plate having a rotational axis;

said support plate having a front face, a rear face and a circular outer edge;

a hub structure extending from the rear face of said support plate for rotatably mounting the plate on a rotary power device;

a circular reinforcement ring carried by said support plate at the plate outer edge;

said ring being concentric around the plate rotational axis;

said ring projecting forwardly from the front face of the support plate;

said ring having a front annular surface spaced forwardly from the front face of the support plate;

said circular ring having an outer diameter and an inner diameter;

a resilient deformable foam pad secured to the front face of the support plate;

said foam pad completely filling the space circumscribed by said circular ring;

said foam pad having a front surface that is coplanar with the front surface of said circular ring;

a circular abrasive disk having a diameter that is the same as the outer diameter of said circular ring;

means for detachably securing said abrasive disk to the front face of said circular ring;

said circular ring being stiffer than said foam pad so that the ring acts as a reinforcement means for the foam pad; and

said circular ring being formed of a solid deformable stretchable material having a higher hardness and tensile strength than said foam pad, whereby said ring acts as a deformable container for said foam pad.

5,390,450

SUPERSONIC EXHAUST NOZZLE HAVING REDUCED NOISE LEVELS FOR CO_2 CLEANING SYSTEM

Lakhi N. Goenka, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 8, 1993, Ser. No. 148,233
Int. Cl.[6] B24C *5/04*
U.S. Cl. 451—75 **6 Claims**

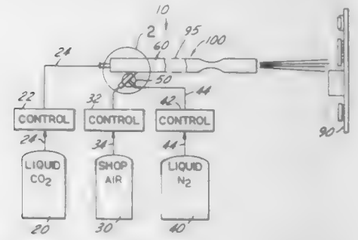
1. An apparatus for cleaning a workpiece with abrasive CO_2 snow, comprising in combination:

a nozzle for receiving and ejecting liquid CO_2 through at least one orifice sized for converting the liquid CO_2 into solid CO_2 snow,

a body defining a cavity therein, with said nozzle being coupled to said body for ejecting the CO_2 snow into said cavity,

first means, coupled to said body, for injecting pressurized air into said cavity for carrying the CO_2 snow from said orifice in said nozzle, and

an exhaust nozzle including a subsonic section coupled to said cavity within said body for receiving the CO_2 snow and air under pressure therefrom, a throat section and a



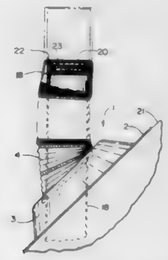
supersonic section for directing the air and CO_2 snow toward the workpiece, with said supersonic section being operated in the overexpanded mode for containing the shockwave therein, thereby reducing the noise produced by the pressurized air and CO_2 snow exiting said exhaust nozzle.

5,390,451

FLEXIBLE HIGH COLLAR ROOF FLASHING

Raun A. Kopp, Brunswick, and Roberto Rodriguez, Cleveland, both of Ohio, assignors to Oatey Co., Cleveland, Ohio

Filed Sep. 2, 1992, Ser. No. 939,716
Int. Cl.[6] F04D *1/36*
U.S. Cl. 52—58 **13 Claims**



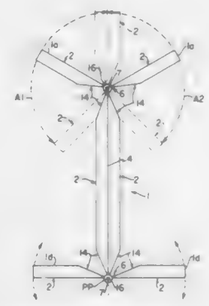
1. A roof flashing comprising a base member having an opening therethrough, and a unitary one piece corrugated metal collar means having a lower end secured to said base member around said opening and an upper end, said collar means being expandable and compressible to different lengths, said collar means having corrugations over a substantial portion of the length of said collar means including said upper end, said corrugations at said upper end being flattened out to provide corrugations at said upper end which are of less height than the remaining corrugations of said collar means for ease of folding of said upper end over an upper end of a pipe extending through said opening in said base member and into said collar means to provide a watertight seal between said collar means and the upper end of the pipe.

5,390,452

MODULAR BUILDING BLOCK

Werner Eckert, Albbruck-Buch, Germany, assignor to Lignotrend Holzblocktafel Systeme GmbH, Weilheim-Bannholz, Germany

Filed Apr. 2, 1993, Ser. No. 41,951
Claims priority, application Germany, Apr. 4, 1992, 4211380
Int. Cl.[6] E04B *1/346*
U.S. Cl. 52—71 **25 Claims**



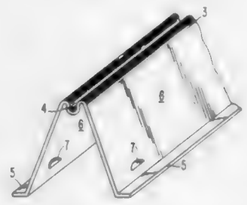
1. A building block for use in conjunction with additional building blocks, comprising two elongated rod-shaped components each having at least one longitudinally extending edge and two end portions; means for articulately connecting said elongated rod-shaped components at said edges for angular movement about a first axis; and a plurality of coupling means, at least one for each of said components and each including means for articulately securing one end portion of the respective component to a component of an additional block for angular movement about a second axis which is normal to said first axis, said first axis and said second axis crossing each other at a common point outside of said elongated rod-shaped components, at least one of said elongated rod-shaped components having a facet adjacent the respective second axis and positioned to limit the extent of angular movability of the at least one elongated rod-shaped component about the respective second axis relative to a component of an additional block which is articulately secured to the at least one elongated component by the respective coupling means, said facet being inclined relative to said one longitudinally extending edge.

5,390,453

STRUCTURAL MEMBERS AND STRUCTURES ASSEMBLED THEREFROM

Dalmain Untiedt, 36 Houghton Drive, Houghton, Johannesburg, Transvaal Province, South Africa

Filed Dec. 28, 1992, Ser. No. 996,822
Claims priority, application South Africa, Dec. 27, 1991, 91/10153; Feb. 11, 1992, 92/0973
Int. Cl.[6] E04B *7/02;* **E04C** *3/00*
U.S. Cl. 52—90.1 **9 Claims**



1. A hollow structural member comprising a sheet metal beam formed with a generally triangular cross-sectional shape

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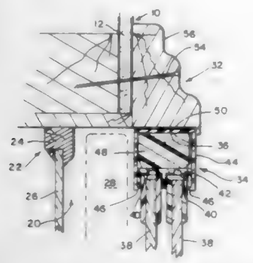
to provide a longitudinally extending peak, an inwardly extending channel with an opening at and extending along the peak, and having walls defining the sides and bottom of said channel to provide a narrow channel opening which expands beyond the opening into a wider space between the walls, and a base for securing the beam, said base lying in a plane generally parallel to and spaced from the bottom of the channel, said base being in the form of longitudinally extending outwardly directed flanges.

5,390,454

INTERIOR WINDOW ASSEMBLY

Donald L. Coddens, South Bend, Ind., assignor to Therm-O-Lite, Inc., South Bend, Ind.

Filed Feb. 26, 1993, Ser. No. 23,599
Int. Cl.[6] E06B *3/00/9/38*
U.S. Cl. 52—208 **4 Claims**



1. A window arrangement in a building comprising:
a wall portion for supporting said window arrangement within said building;
a window opening within said wall portion;
an exterior window mounted within said window opening;
an interior frame portion mounted to said wall portion without penetrating said window opening;
an interior window mounted to said interior frame portion without penetrating said opening;
a window blind mounted within said window opening between said exterior window and said interior window; and
wherein said interior frame portion includes a part thereof which covers a part of said window opening to overlap the edges of said window blind.

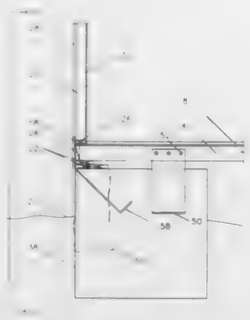
5,390,455

SYSTEM FOR PROTECTING WOOD FRAME BUILDINGS FROM SEISMIC AND WIND FORCES

Douglas R. Antolini, 3525 Mt. Everest Blvd., San Diego, Calif. 92111

Filed Sep. 25, 1992, Ser. No. 951,103
Int. Cl.[6] E02D *27/00*
U.S. Cl. 52—299 **13 Claims**

1. A building structure having a perimeter foundation, a plurality of parallel beams across said foundation in a first direction, rim joist members parallel to said beams at the edge of said foundation, and a plurality of parallel floor framing joists across said foundation in a second direction substantially perpendicular to said first direction, the ends of said beams and said floor framing joists supported by said foundation, and a system for providing increase structural resistance to seismic and wind forces, which comprises,
(a) at least two deadman positioned adjacent to said foundation spaced apart for substantial distance along a line perpendicular to said joists and parallel to said foundation,
(b) means for the transfer of forces to said deadman along said line which includes a series of compression and transfer blocks positioned between pairs of joists adjacent to said foundation, wherein,
(c) said compression blocks are diagonally positioned and are the non-parallel sides of a trapezoid pattern with the inward end of the non-parallel legs extending away from the foundation inward of the structure, and which are at lease two successive spaces between pairs of joists, and secured thereto, and wherein
(d) said transfer blocks which form the short leg of the trapezoid pattern are positioned between a pair of joist adjacent to at least one of said successive pairs of joists having said diagonally positioned compression blocks, said transfer blocks being in alignment with the ends of



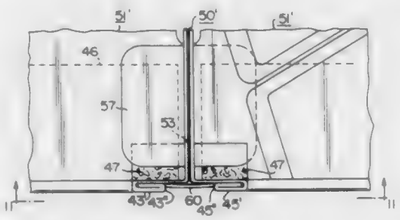
said compression blocks which extend away from the foundation and are the non-parallel sides of the trapezoid, and
(e) an elongated tie strap affixed to said transfer blocks with an end of said strap being attached to one of said deadman, and
(f) whereby a continuous stress absorption system of diagonally positioned compression blocks and linearly positioned transfer blocks tied to said deadman is provided.

5,390,456

DECORATIVE SUSPENDED CEILING

William J. Platt, Aston, Pa., and Thomas E. Rose, Dunwoody, Ga., assignors to National Rolling Mills, Inc., Frazer, Pa.

Continuation-in-part of Ser. No. 797,629, Nov. 25, 1991, Pat. No. 5,241,798, which is a division of Ser. No. 38,442, Apr. 29, 1993, Pat. No. 5,279,033. This application Jul. 7, 1993, Ser. No. 89,452
The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.
Int. Cl.[6] B44F *7/00;* **E04C** *2/30;* **E04F** *19/06;* **E04B** *9/00*
U.S. Cl. 52—311.2 **5 Claims**



1. A grid beam for a suspended ceiling having tile supported by the beam wherein
the beam is of an inverted T cross section formed of a first strip of metal bent into a bulb, a web, and a flange, the flange having
a longitudinal center line and
a lower surface with a width and sides, the improvement comprising

(1) a pair of flats on the lower surface of the flange, each of the flats
(a) formed of bends of the first strip
(b) extending substantially continuously longitudinally along opposite sides of the flange,
(c) having a lower surface exposed to viewing from below, and
(d) having the lower surface lying in a first horizontal plane, and
(2) a second strip
(a) extending substantially the full length of the flange,
(b) having a width at least substantially equal to the distance between the flats;
(c) continuously and permanently secured on the lower surface of the flange,
(d) exposed between the flats to viewing from below, and
(e) having a lower surface in a second horizontal plane located above the first horizontal plane,
so that when viewed from below, the second strip is exposed along the longitudinal center line of the flange between the flats, and the flats are exposed longitudinally along the sides of the flange, with the lower surface of the second strip above the lower surface of the flats,
whereby,
a three-dimensional effect is achieved to a viewer located below the ceiling.

5,390,457

MOUNTING MEMBER FOR FACE TILES

Oliver Sjölander, Hjortstigen 24, S-731 42 Köping, Sweden

PCT No. PCT/SE91/0754, § 371 Date May 5, 1993, § 102(e) Date May 5, 1993, PCT Pub. No. WO92/08857, PCT Pub. Date May 29, 1992
PCT Filed Nov. 8, 1991, Ser. No. 50,193
Claims priority, application Sweden, Nov. 9, 1990, 9003572
Int. Cl.[6] E04F *13/08*
U.S. Cl. 52—387 **4 Claims**



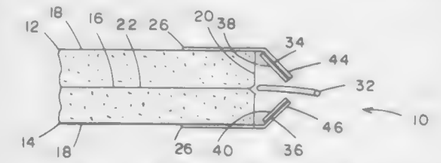
1. A mounting member for face tiles (P) of the kind which have on a front side thereof a rebate (PB) along the upper tile edge (PA) and a downwardly directed tongue (PC) along the lower tile edge and have on the back side thereof a downwardly directed support rib (PE) positioned behind the tongue (PC), and which are adapted to be positioned one above the other on a building wall (F) with vertically adjoining tiles (P) overlapping at their upper and lower edges such that the tongue (PC) of each overlying tile is received in the rebate of the next underlying tile, the mounting member comprising an elongate carrier element (11) provided with support hooks (17) which are uniformly spaced along the length of the carrier element and project in the same direction from a tile backing plane (S) defined by the carrier element (11), the carrier element being adapted to be secured in vertical position on a building wall with the support hooks (17) extending away from the building wall, each support hook (17) being adapted to receive and carry the support rib (PE) of a tile (P) and to define together with the next upper support hook (17) a space (PG) for receiving a portion (PF) of a tile which is between the support rib (PE) and the top edge (PA) thereof with the top edge (PA) vertically spaced from the said next upper support hook (17), wherein the carrier element (11) is provided beneath the said next upper support hook (17) with a retaining lip (19,119,219) which has an abutment edge (19A) facing the next lower support hook (17) and is resiliently movable towards and away from the tile backing plane (S), the retaining lip in relieved condition thereof projecting forwardly from the tile backing plane (S) such that its abutment edge (19A) will be positioned above, and closely spaced from, the top edge (PA) of a face tile (P) carried by the said next lower support hook (17), wherein the carrier element (11) comprises a substantially flat web (12) and a flange (13) which extends along the length of the web and is disposed at an angle to the web and which comprises an inner flange portion (15) joined with the web and provided with the support hooks (17) adjacent to or in the tile backing plane (S), and wherein the flange (13) further comprises a segmented outer flange portion (16) disposed substantially in the tile backing plane (S) and the retaining lip (19,119,219) is selected from the group consisting of retaining lips provided above, on top of, or within, a segment (16A) of the outer flange portion (16).

5,390,458

WALLBOARD PROTECTIVE EDGE TAPE FOR MOUNTING BOARD

Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Charlotte, N.C.

Filed May 20, 1993, Ser. No. 63,800
Int. Cl.[6] E04B *2/00*
U.S. Cl. 52—417 **18 Claims**



1. A wallboard package comprising two wallboards affixed together, said wallboards having board edge portions for attachment to a structural base, and an elongate, narrow tape affixed to said two wallboards, each said wallboard having a front face, a back face and an edge, said tape including an elongate center portion and two elongate tape edge portions, said two elongate tape edge portions being affixed respectively to the back faces of said two wallboards, and said elongate center portion extending across said wallboard edges, said elongate center portion having an inner surface with an adhesive film thereon, whereby said elongate center portion may be severed to separate said two wallboards with a substantial portion of said center portion and said adhesive film remaining connected to said board edge portion of at least one of said wallboards, said substantial portion of said center portion being for use in mounting said wallboard on said structural base.

5,390,459

CONCRETE FORM WALLS

Jan H. Mensen, Coubourg, Canada, assignor to AAB Building System Inc., Ottowa, Canada

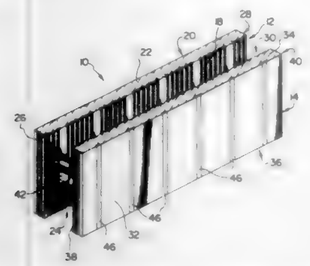
Filed Mar. 31, 1993, Ser. No. 41,412
Int. Cl.[6] E04B *2/00*
U.S. Cl. 52—426 **33 Claims**

1. A building component comprising
first and second high density foam panels each having inner

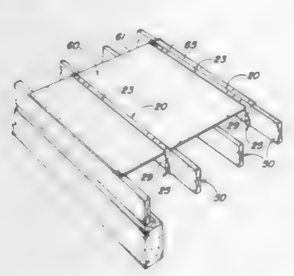
VOL 1171 ISS 3 FEB 21 1995 UMI

and outer surfaces, top and bottom, and first and second ends, said panels arranged in spaced parallel relationship with their inner surfaces facing each other, and

at least two bridging members extending between and through and molded into said panel members, each said bridging member comprising a pair of elongated end plates oriented in the top to bottom direction of said panels and abutting against said outer surfaces of said panels, said end plates extending substantially from top to bottom of said panels, and at least one web member extending between and rigidly connected to said end plates, each said web member oriented in the top to bottom direction of said panels and having a height substantially less than the height of said panels and substantially less than the height of said end plates.



5,390,460
ROOF SECURING SYSTEM
Mario Llorens, 310 W. 36th Ter., Hialeah, Fla. 33012
Filed Apr. 16, 1993, Ser. No. 46,434
Int. Cl.[6] E04B *9/00*
U.S. Cl. 52—489.1 **5 Claims**



1. A roof securing system in combination with a roof, wherein said roof including a plurality of support beams, each having a top face, a bottom face, and a pair of opposite side faces, and including a plurality of panels, each having a top surface and a bottom surface, disposed in overlying, spanning relation atop the top face of at least two of the support beams, in order to secure the panels to the support beams; said roof securing system comprising:

at least one strong, elongate strap having a top side and a bottom side,

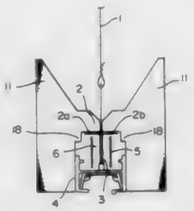
said strap including a central zone, and a pair of oppositely disposed distal zones extending substantially perpendicularly from said central zone,

said central zone spanning at least one of the panels such that said bottom side of said strap matingly overlays the top surface of the panel,

each of said distal end zones including a lower securing segment extending downwardly from said central zone of said strap conformably wrapped about the bottom face and the side faces of the support beam, and

said lower securing segment being securely engaged with the opposite side faces and the bottom face of one of the support beams such that said strap is securely positioned to maintain and securely hold the panel.

5,390,461
COFFERED SUSPENDED CEILING STRUCTURE FOR A THREE DIMENSIONAL GRID
Austin A. Dwyer, 1302 Hoyt Ave., Everett, Wash. 98201, assignor to Austin Dwyer and Dale Cohen, both of Everett, Wash.
Filed Jul. 9, 1992, Ser. No. 911,284
Int. Cl.[6] E04B *9/00*
U.S. Cl. 52—506.03 **3 Claims**



1. Rectilinear structure for suspension either in a vertical plane or in a horizontal plane from T-bar rails so as to create a 3-Dimensional grid pattern formed by a plurality of rectilinear structures in the vertical and horizontal planes, each rectilinear structure comprising:

(a) four side members formed together so as to create an integral, hollow rectilinear structure, each side member having an outer face, each outer face of the side member further having an upper half face;

(b) a flange projecting outward from and along the outer face of each side member so that the flange may engage an extending half plane of a T-bar rail for supporting the rectilinear structure, the flange further having an upper and an outer face;

(c) a slope in the flange having an angle of approximately 45 degrees rising approximately from the midpoint of the outer face of the flange and ending at approximately the midpoint of the upper face of the flange, the slope thereby forming a seating surface; and

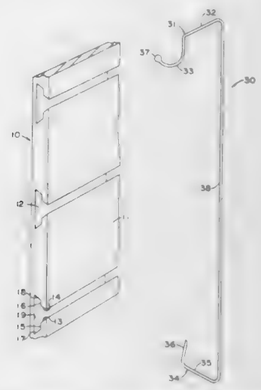
(d) an oblique angle in the upper half face of the side member from a point at which the upper face of the flange meets the upper half face of the side member so that a horizontal rectilinear structure supported by and resting within T-bar rails may accept and support a second vertical rectilinear structure constructed identically to the horizontal rectilinear structure and inserted perpendicularly to the horizontal rectilinear structure, wherein the seating surface of the flange of the horizontal rectilinear structure meets with the seating surface of the flange of the vertical rectilinear structure, and wherein the oblique angles of both rectilinear structures allow each horizontal and vertical rectilinear structure to be oriented perpendicularly to one another such that each horizontal and vertical rectilinear structure are perpendicular to one another, whereby a plurality of horizontal rectilinear structures may support a plurality of vertical rectilinear structures to therefore create a 3-Dimensional cubical of rectilinear structures for suspension within T-bar rails.

5,390,462
REMOVABLE SURFACE COVERINGS
Donald E. Kreiter, Wyckoff, N.J., assignor to Pam International Company, Inc., Saddle Brook, N.J.
Filed Jul. 6, 1990, Ser. No. 549,522
Int. Cl.[6] A47F *5/08*
U.S. Cl. 52—506.05 **20 Claims**

1. A slat-wall cover strip for altering the aesthetic appearance of a slat-wall comprising one or more slats each of which is located between grooves adjacent thereto, wherein said slat-wall cover strip comprises:

(a) a first means for securing a removable cover strip along a first side of a groove;

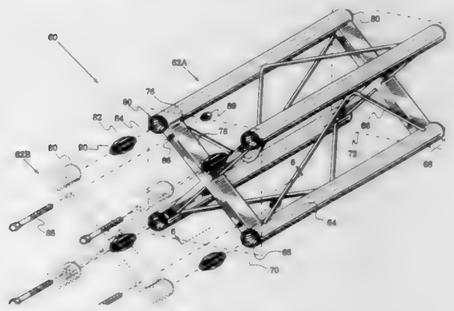
(b) a second means for securing a removable cover strip; and



(c) a panel connecting said first securing means to said second securing means,

wherein at least a portion of said first means for securing a removable cover strip is acutely angled as compared to said panel to permit said cover strip to snap onto said slat-wall, whereby said cover strip can be replaced with other cover strips of different aesthetic appearance.

5,390,463
MODULAR TRUSS STRUCTURE
Roland Sollner, Battle, England, assignor to Penn Fabrication (U.S.A.) Inc., Moorpark, Calif.
Filed Nov. 24, 1993, Ser. No. 157,817
Int. Cl.[6] F04B *1/343*
U.S. Cl. 52—726.2 **12 Claims**



1. A modular truss system, comprising:

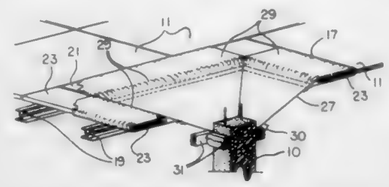
a first truss module defining an intermodule face;

a second truss module defining an intermodule face;

first and second cups, each carried by a different one of said first and second truss modules and positioned to form a recess in its intermodule face; and

an alignment member configured to have a first portion thereof received in said first cup and a second portion thereof received in said second cup when the intermodule faces of said first and second truss modules are adjoining.

5,390,464
METHOD OF FORMING A CONCRETE COLUMN CAPITAL IN A STANDARD FLAT PLATE CONCRETE SLAB
Mark West, 312 Kirchoffer Avenue, Ottawa, Ontario R2A 1Y3, Canada
Continuation-in-part of Ser. No. 946,676, Aug. 18, 1992. This application Dec. 20, 1993, Ser. No. 169,368
Int. Cl.[6] B04G *21/00*
U.S. Cl. 52—741.1 **9 Claims**



1. A method of forming a concrete capital connecting a flat reinforced concrete slab with a pre-existing support column, comprising:

(a) providing a flat slab formwork deck that includes an opening directly above the pre-existing column;

(b) forming a flexible sheet into a hollow frustum configuration, in which the sheet has an outer edge area approximating the size of the deck opening and an inner edge area sized to fit around vertical side surfaces of the pre-existing column;

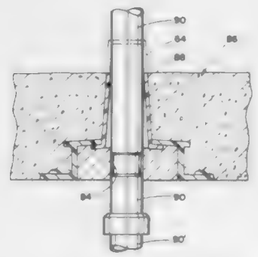
(c) forming a compression ring sized to fit snugly within the deck opening, and attaching said compression ring to outer edge areas of the flexible sheet;

(d) placing the compression ring and attached flexible sheet in the deck opening;

(e) clamping the inner edge area of the flexible sheet to side surfaces of the pre-existing column; and

(f) pouring wet concrete onto the flat slab formwork and said flexible sheet so as to form a flat slab and column capital connected to the support column.

5,390,465
PASSTHROUGH DEVICE WITH FIRESTOP
James A. Rajecki, Broadview Heights, Ohio, assignor to The Lamson & Sessions Co., Cleveland, Ohio
Continuation-in-part of Ser. No. 029,685, Mar. 11, 1993. This application Sep. 3, 1993, Ser. No. 116,719
Int. Cl.[6] F16L *5/00*
U.S. Cl. 52—741.3 **4 Claims**



1. A method of installing a plastic pipe of diameter d to extend through a building partition comprising:

a) providing a tubular sleeve member having a first section of internal diameter d1 which is greater than d, one end of the first section being closed and the other end having a radially outwardly extending cylindrical open ended flanged collar of a diameter d2 substantially greater than d joined axially thereto;

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b) filling the collar with a solid intumescent material to form a solid ring of intumescent material axially aligned with the tubular sleeve, the center of the ring having a circular opening therethrough of a diameter only slightly less than d;

c) mounting the tubular sleeve member to extend through the building partition; and,

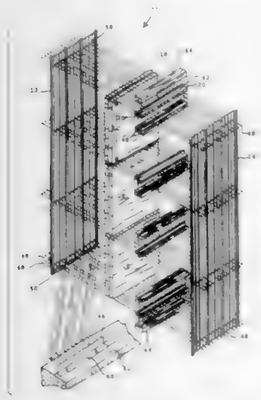
d) cutting off the closed end of the tubular sleeve and installing a plastic pipe of diameter d through the tubular sleeve by forcing the pipe axially through the center circular opening of the ring of intumescent material in interference fit relationship therewith.

5,390,466

BUILDINGS AND BUILDING COMPONENTS

Ronald K. Johnson, 402 Green St., Mount Horeb, Wis. 53572, and William M. Garrison, 1802 Elka La., Madison, Wis. 53704

Filed Apr. 3, 1992, Ser. No. 862,813
Int. Cl.[6] E04C *2/34;* **E04B** *2/00*
U.S. Cl. 52—796 **47 Claims**



1. A bridge girt assembly for use within a modular building panel to provide mechanical reinforcing to said panel and to provide structural integrity to said panel during fire conditions, said bridge girt assembly comprising:

(a) first and second noncombustible, nonmelting elongate brace members, each said elongate brace member being substantially C-shaped cross section having an outer leg, an inner leg opposite said outer leg and a back wall disposed between said outer leg and said inner leg, said outer leg having an outer surface, said outer surface configured to receive a modular building panel skin sheet thereon, said inner legs of said elongate brace members parallel with one another and spaced from one another; and

(b) noncombustible, nonmelting, thermally isolating spacing means for providing an effective thermal break between said first and second elongate brace members during fire conditions, said spacing means having a portion defining an opening for accepting a fastening means; and

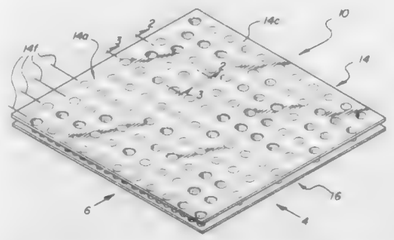
(c) fastening means for securing said spacing means between said inner legs of said first and second elongate brace members, said fastening means thereby securing said first and second elongate brace members.

5,390,467

PANEL STRUCTURE AND PALLET UTILIZING SAME

Lyle H. Shuert, 70 Kingsley Manor Dr., Bloomfield Hills, Mich. 48304

Division of Ser. No. 993,762, Dec. 18, 1992. This application Mar. 14, 1994, Ser. No. 209,463
Int. Cl.[6] E04C *2/32*
U.S. Cl. 52—797 **25 Claims**



1. A twin sheet panel structure comprising an upper plastic sheet including a planar main body portion having upper and lower surfaces and a lower plastic sheet positioned in parallel spaced relation below said upper plastic sheet and including a main body portion having upper and lower surfaces, the upper sheet further including a plurality of spaced hollow bosses opening in the upper surface of the upper sheet main body portion and each including an annular side wall portion extending downwardly from the lower surface of said upper sheet main body portion and a lower wall portion at a lower end of the side wall portion, the lower plastic sheet further including a plurality of spaced hollow bosses opening in the lower surface of the lower sheet main body portion and each including an annular side wall portion extending upwardly from the upper surface of the lower sheet main body portion and an upper wall portion at an upper end of the side wall portion, characterized in that:

the annular side wall portions have a generally circular cross-sectional configuration;

the combined area of the openings of the downwardly extending bosses of the upper sheet in the upper surface of the upper sheet main body portion constitutes less than half of the total surface area of the upper surface of the main body portion of the upper sheet;

the combined area of the openings of the upwardly extending bosses of the lower sheet in the lower surface of the lower sheet main body portion constitutes less than half of the total surface area of the lower surface of the main body portion of the lower sheet; and

the annular side wall portions of some of said upper sheet bosses are fused to the annular side wall portions of some of said lower sheet bosses.

5,390,468

FACING ELEMENT FOR FLOORS, CEILINGS, WALLS AND THE LIKE

Thilo Probst, Herrenstasse 33, 87439 Kempton, Germany

Filed Aug. 12, 1993, Ser. No. 105,595
Claims priority, application Germany, Aug. 13, 1992, 4226742
Int. Cl.[6] E04C *2/36;* **B32B** *3/12*
U.S. Cl. 52—808 **8 Claims**

1. A facing element assembly for floors, ceilings, walls and the like, comprising:

a honeycomb carrier plate (**12**) having four edges including two pairs of diagonal edges forming corners of the carrier plate, two of the diagonal edges having a plurality of form projections (**21**, **23**), and a remaining two of the diagonal edges having form recesses (**25**, **27**) complimentary to the form projections (**21**, **23**);

a rectangular top cover plate (**14**) on a top of the carrier plate;

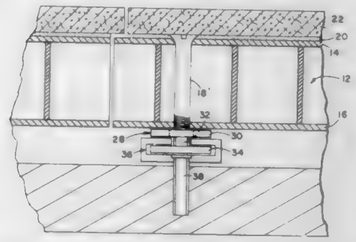
a rectangular bottom cover plate (**16**) on a bottom of the carrier plate;

the form projections (**21**, **23**) of the carrier plate projecting beyond the respective two of the diagonal edges of the cover plates (**14**, **16**), and the two of the remaining diagonal edges of the cover plates (**14**, **16**) extending beyond the form recesses (**25**, **27**);

a plurality of mechanical anchors (**18**) connecting the top and bottom cover plates to each other with the carrier plate sandwiched therebetween;

a stone plate (**22**) connected on the top cover plate (**14**) and having at least substantially the same shape as the top cover plate;

the carrier plate with top and bottom cover plates, anchors and stone plate, together forming a facing element (**10**), the shapes of the projections and recesses of the carrier plate being selected so that with four additional facing elements engaging four respective sides of a central facing element, projections of one facing element engage into recesses of another facing element with a top cover plate and a bottom cover plate of the one facing element overlapping an area of engagement between the facing elements;



a plurality of mounting shafts (**32**) projecting beyond the bottom cover plate (**16**);

a bearing flange (**34**) at an end of each mounting shaft (**32**), each bearing flange (**34**) being at a distance from the bottom cover plate (**16**) and being wider relative to its representive mounting shaft (**32**); and

two slotted mounting rails (**36**) to be fastened on a building face for mounting the facing element (**10**) to the building face, the mounting rails being provided to receive the mounting shafts (**32**) which are suspended with their bearing flanges (**34**) in the rails, the rails each comprising a hollow profile with essentially rectangular cross section and a bottom wall, two side walls and a cover wall (**42**), and in one side wall (**44**) a number of insertion openings (**46**) provided for receiving the bearing flange (**34**), the insertion openings, each being adjoined by a respective connection slot (**48**) provided in the adjoining cover wall (**42**), whose width is smaller than that of the insertion opening (**46**), but is at least as large as the width of the mounting shaft (**32**) for receiving the mounting shaft.

5,390,469

FILLING/SEALING APPARATUS FOR AMPULE OR THE LIKE AND METHOD FOR MONITORING THIS APPARATUS

Koji Shimizu, Honjo; Toshiyasu Ehara; Kazumi Maruoka, both of Saitama, and Kiyoshi Yamagishi, Kumagaya, all of Japan, assignors to Eisai Co. Ltd., Tokyo, Japan

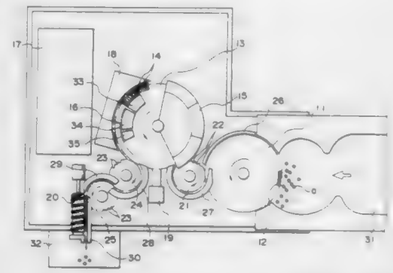
Filed Jul. 12, 1993, Ser. No. 89,443
Claims priority, application Japan, Jul. 14, 1992, 4-209636; Jul. 21, 1992, 4-215618
Int. Cl.[6] B65B *57/02, 7/16*
U.S. Cl. 53—53 **10 Claims**

1. A filling/sealing apparatus for filling empty ampules having an opened upper end with a liquid and sealing the liquid-filled ampules at the upper end, comprising:

(A) a turntable rotatable about an axis thereof in a predetermined direction for transporting a plurality of ampules around a peripheral portion thereof;

(B) a feed star wheel for feeding empty ampules to the turntable;

(C) a liquid filling unit positioned along the peripheral portion of the turntable and having a plurality of filling needles, each one of which is substantially simultaneously receivable in an opened upper end of a respective ampule of a plurality of ampules such that each ampule of the plurality of ampules substantially simultaneously receives a needle and is substantially simultaneously filled with the liquid;



(D) a sealing unit positioned along the peripheral portion of the turntable at a distance along the predetermined direction greater than that of the liquid filling unit, and having a plurality of flame spouts positioned to continuously and substantially simultaneously heat and seal upper ends of a plurality of liquid-filled ampules as the ampules are moved along the plurality of flame spouts; and

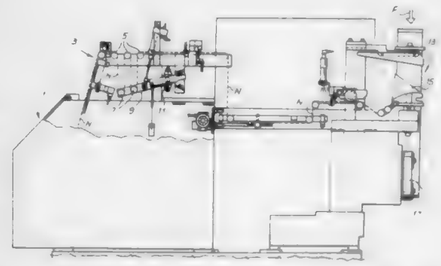
(E) pincer means adapted to pinch sides of the upper ends of the ampules during filling and sealing, such that the ampules are held in a stable, upright, vertical position during filling thereof and an uppermost portion of each sealed upper end is removed therefrom.

5,390,470

MACHINE FOR THE PRODUCTION OF PLASTIC FILM BAGS WITH MEANS OF POSITIONING WITH RESPECT TO EACH OTHER THE TRAILING END OF A FILM BEING USED UP AND THE LEADING END OF A RESERVE FILM

Pietro P. Brunini, and Alberto Mangani, both of Pistoia, Italy, assignors to Garibaldo Ricciarelli S.R.L., Pistoia, Italy

Filed Apr. 14, 1993, Ser. No. 48,265
Int. Cl.[6] B65H *19/10;* **B65B** *41/18*
U.S. Cl. 53—64 **15 Claims**



1. A machine for the production of moldable plastic film bags from a strip reel, and for filling of the bags, comprising:

bag forming and filling means for forming a bag;

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a first reel having a first strip wound thereon said first strip including a series of equidistant first bags;
a second reel having a second strip wound thereon, said second strip including a series of equidistant second bags;
a first support means for supporting said first reel in a reel unwinding position wherein said first strip is unwound and fed to said bag forming and filling means;
a second support means for supporting said second reel as a reserve reel in a waiting position;
conveyor means for moving said second reel from said waiting position to said unwinding position;
welding means for welding said first strip to said second strip, said welding means including a first welding component and a second welding component, said first welding component including receiving and holding means for receiving and holding a leading end of said second strip, said second welding component being positioned on a side of a trajectory of said second strip which is opposite said first component, said welding means having a down line side wherein said first strip is fed to said bag forming and filling means and having an up line side wherein said first strip is fed from said first reel;
first reference position means at a first reference position on a down-line side of said welding means, said first reference position means for detecting said first series of bags;
a second reference position means at a second reference position, disposed cooperating with said first welding component to detect said second series of bags at a second reference position, said second reference position being located in correspondence to said first welding component receiving and holding means adjacent said second strip when said receiving and holding means is holding said second strip;
sensing means for detecting the exhaustion of said first reel, said sensing means generating a sensing means signal;
means for delimiting a path of said first strip from said first reel to said bag forming and filling means including a first set of fixed rollers and a second set of movable roller, said second set of movable rollers being movable in position with respect to said first set of fixed rollers to move said first bags with respect to said first reference; and
control means for receiving said sensing means signal and for stopping said bag forming and filling means and activating said welding means and said cutting means when one bag of said first bags has reached a predetermined position with respect to said reference and for activating said conveyor means to move said second reel from said waiting position to said unwinding position.

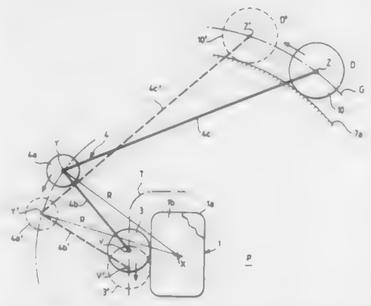
5,390,471

FOOD CAN CRIMPING HEAD INCLUDING MEANS FOR TAKING UP SLACK

Jean-Charles Marchadour, Saint Jean Trolimon, France, assignor to Hema Technologies, Quimper, France

Filed Jun. 17, 1993, Ser. No. 79,157
Claims priority, application France, Jun. 22, 1992, 92 07594
Int. Cl.[6] B65B *7/28*
U.S. Cl. 53—334 **7 Claims**

1. A crimping head for sealing food cans by crimping a lid on a can body, the lid having an edge and the can body having an outline and having an edge, the head comprising at least one crimping roller mounted on a moving support piece that causes said crimping roller to move in a plane parallel to a work plane on which the can body to be crimped stands, so as to follow a path such that said crimping roller follows exactly the outline of the can body while remaining pressed thereagainst so as to crimp the edge of the lid onto the edge of the can body, a guide connected to said support piece to constrain said roller to follow said path, said guide comprising a first rotary wheel having an axis perpendicular to said work plane, and said guide further comprising a cylindrical cam surface having generator lines perpendicular to said work plane, said generator lines following an appropriate outline that extends parallel to said work plane, said wheel running against said cam surface, a holding assembly connected to said wheel to hold said wheel in contact with said cam surface, said holding assembly comprising a second rotary wheel juxtaposed with said first wheel, such that both rotary wheels rotate about said axis, said second wheel having a bulging peripheral surface having a section in a radial plane, which section is a curved line convex toward the outside, and said holding assembly further comprising a counter-cam surface situated facing said cam surface, said counter-cam surface comprising a bearing and running surface



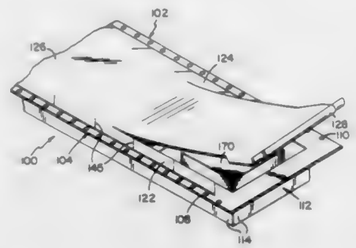
for said second wheel, said counter-cam surface extending parallel to said cam surface while being inclined at a small angle relative to the direction of said axis of said two wheels, the relative position along the direction of said axis between said second wheel and said counter-cam surface being adjustable so as to make it possible to adjust the slack between the assembly of said two wheels and said facing cam and counter-cam surfaces between which said assembly of said two wheels is interposed.

5,390,472

CARRIER TAPE WITH COVER STRIP

Joseph E. Weiler, Colfax; Dale R. Tidemann, and Timothy J. Juntunen, both of Eau Claire, all of Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 900,423, Jun. 19, 1992, Pat. No. 5,325,654. This application Feb. 3, 1994, Ser. No. 190,888
Int. Cl.[6] B65D *73/02*
U.S. Cl. 53—412 **20 Claims**



1. A unitary, flexible carrier tape for storage and seriatim delivery of electronic components by an advancement mechanism, the carrier tape comprising:
a top surface having first and second parallel longitudinal edge surfaces, at least one of said edge surfaces including means for engaging the advancement mechanism;
a plurality of pockets depending downwardly from said top surface between said edge surfaces and along the length of the carrier tape for containing the electronic components;
a flexible elongate cover strip overlying said pockets and extending along the length of the carrier tape, said cover strip having first and second parallel longitudinal bonding

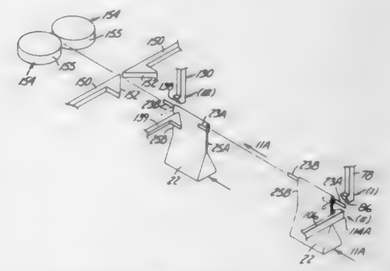
portions bonded to said first and second longitudinal edge surfaces, respectively, and a medial portion between said bonding portions and overlying said pockets;
separation means for enabling progressive separation of said medial portion of said cover strip from said bonding portions of said cover strip along a pair of longitudinal tear lines to provide access to the pockets; and
means, positioned on at least one of said longitudinal bonding portions of said cover strip, for providing a predetermined direction of tear in said bonding portions to initiate a tear along each of said longitudinal tear lines when said cover strip is removed from said top surface.

5,390,473

TIN-TIE CLIP BENDING DEVICE AND METHOD

Scott L. Nelson, and Stan W. Drietz, both of Worthington, Minn., assignors to Bedford Industries, Inc., Worthington, Minn.

Filed Sep. 16, 1993, Ser. No. 122,107
Int. Cl.[6] B65B *51/00*
U.S. Cl. 53—417 **21 Claims**



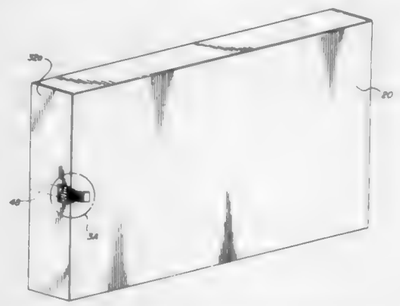
1. A tie fastener bending device for use with a packaging container having a tie-fastener secured thereon wherein an end of the tie fastener extends beyond an edge of the packaging container, the bending device comprising:
means for moving the packaging container and for maintaining the packaging container in a generally vertical plane as the container moves along a travel path from a first end of the device to a second end of the device;
first means for detecting the packaging container traveling past the first detecting means, the first detecting means disposed between the first and second ends of the device along the packaging container travel path; and
first means for bending the end of the tie fastener relative to the edge of the packaging container, the first bending means being spaced from and independent of the first detecting means and the first bending means being electrically connected to the first detecting means so that the first bending means is selectively actuated after a predetermined time delay to bend the end of the tie fastener about the edge of the packaging container upon the first detecting means detecting the packaging container, the first bending means being disposed between the first detecting means and the second end of the device along the container travel path,
wherein the first bending means includes a first paddle for contacting and bending the end of the tie fastener, the first paddle moving continuously without interruption while in contact with the tie fastener.

5,390,474

METHOD FOR PACKAGING VEHICLE BODY PANELS

John D. Goggins, 1136 E. Main St., Flushing, Mich. 48433

Filed Jan. 21, 1993, Ser. No. 7,154
Int. Cl.[6] B65B *7/20*
U.S. Cl. 53—467 **2 Claims**



2. A method of packaging manufactured components comprising:
preassembling a container having parallel upstanding side walls of a major dimension, parallel bottom and top walls of a minor dimension, an opening at one end of the container defined by end edges of said side walls and said top and bottom walls, a first end flap connected by a hinge connection to an end edge of one of said side walls, a second end flap connected by a hinge connection to an end edge of the other of said side walls, a hook/loop type closure strip secured at one end thereof to an inboard face of said first end flap and then passing through a slot in the adjacent side wall proximate the hinge connection between said first end flap and the adjacent side wall to define an operative closure strip end, and a hook/loop type closure pad positioned on an outboard face of said second end flap;
grouping a plurality of said containers proximate a discharge point of a component manufacturing line;
loading a manufactured component discharged from the component manufacturing line into each container by passing the component through the end opening of the container;
pivoting said first end flap of the container about its hinge connection to the adjacent side wall to a position closing the opening;
thereafter pivoting said second end flap of the container about its hinge connection to the adjacent side wall to a position overlying said first end flap; and
securing the operative closure strip end to the exposed outboard face of the closure pad to releasably seal the container.

5,390,475

PACKAGING METHOD AND APPARATUS THEREFOR

Shigeharu Iwauchi; Yoshikazu Morita, and Tamotsu Ogiso, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 50,960
Claims priority, application Japan, Apr. 28, 1992, 4-028460[U]
Int. Cl.[6] B65B *29/00, 55/00*
U.S. Cl. 53—474 **31 Claims**

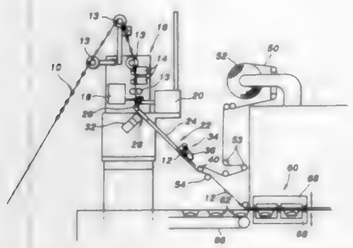
11. A method for packaging a substance, comprising:
supplying a belt-like member of freshness-keeping-agent bags in which a plurality of freshness-keeping-agent bags are in a belt-like arrangement;
supplying a belt-like member of a detection agent for detecting the conditions within a surrounding atmosphere in

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which a plurality of detection agent is formed in a belt-like arrangement;

applying adhesive to said belt-like member of freshness-keeping-agent bags;

pressing said belt-like member of freshness-keeping-agent bags to said belt-like member of detection agent via said adhesive therebetween; and



cutting said belt-like member of freshness-keeping-agent bags with said belt-like member of detection agent into individual freshness-keeping-agent bags with detection agent;

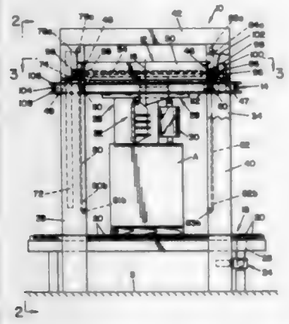
wherein said each freshness-keeping-agent bag with the detection agent is adapted to be enclosed within a package for packaging the substance.

5,390,476

APPARATUS FOR WRAPPING ARTICLES IN PLASTIC FILM

Jack I. Morantz, Westmount, Canada, assignor to Newtec International, France

Filed Jun. 30, 1993, Ser. No. 83,518
Int. Cl.[6] B65B *53/00, 11/02*
U.S. Cl. 53—556 35 Claims



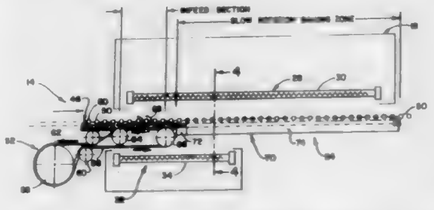
1. In apparatus for wrapping articles in film material and comprising first frame means for receiving an article to be wrapped, second frame means reciprocable vertically relative to said first frame means, means to reciprocate said second frame means, a ring member, means supporting said ring member on said second frame means for vertical displacement therewith and for rotation relative thereto about a vertical ring axis, means to rotate said ring member, and means including film carriage means on said ring member for wrapping film material about said article during rotation of said ring member, the improvement comprising: said ring member including a generally vertically extending web having an inner side and an outer side and a generally horizontally extending peripheral flange, and said means supporting said ring member on said second frame means including a plurality of wheels on said second frame means angularly spaced apart about said ring axis and each rotatable about a corresponding horizontal wheel axis, said peripheral flange resting on said plurality of wheels, and a pair of wheels on said second frame means each rotatable about a corresponding vertical wheel axis, means for mounting said pair of wheels for frictional engagement with said inner side and said outer side of said web radially therebetween.

5,390,477

SYSTEM FOR APPLYING A HEAT SHRINKABLE SLEEVE TO A CONTAINER

Harry Sowden, Southampton, Pa., assignor to McNeilab, Inc., Spring House, Pa.

Filed Nov. 19, 1991, Ser. No. 794,558
Int. Cl.[6] B65B *53/02*
U.S. Cl. 53—557 15 Claims



9. A system for applying a heat-shrinkable sleeve to a container, comprising:

means for inserting a container into a sleeve and heat tunnel assembly comprising:

heat source for shrinking a heat-shrinkable sleeve;

first and second transporting zones;

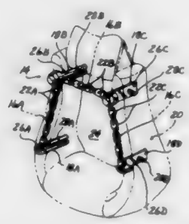
conveyor means for continuously conveying said container and sleeve from said inserting means through said first and second transporting zones; and rotation means for continuously rotating said container and sleeve at a first rate as said container and sleeve are conveyed through said first transporting zone and at a second slower rate as said container and sleeve are conveyed through said second transporting zone.

5,390,478

ORNAMENTAL SAFETY ACCESSORY FOR STIRRUPS

Herbert Holsworth, 212 Summit Ridge Dr., White Lake, Mich. 48386

Continuation-in-part of Ser. No. 61,235, May 17, 1993, abandoned. This application Oct. 5, 1993, Ser. No. 131,885
Int. Cl.[6] B68C *3/00*
U.S. Cl. 54—49 12 Claims



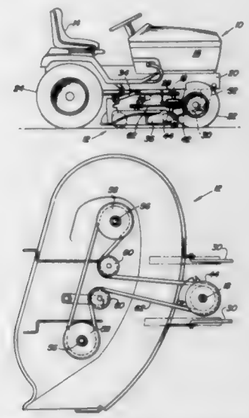
1. In combination, a safety accessory and a stirrup of a riding saddle, said stirrup comprised of a stirrup body having top, bottom, and side portions defining an opening adapted to receive the boot of a rider inserted from the rear of said stirrup body, said safety accessory comprising a plurality of elongated mounting elements arrayed about the top and side portions of said stirrup body, each mounting element detachably fixed to a portion of said stirrup body and extending to the front of said stirrup body, each of said mounting elements having an end portion located forwardly of said stirrup body; a plurality of mounting rods, each rod extending between said end portion of two adjacent mounting elements to extend along a side or top portion of said stirrup opening to be spaced forwardly from said stirrup body; at least one revolvable element mounted on each of said mounting rods to be rotatable thereon, whereby a portion of a boot of a rider protruding through said opening to the front of said stirrup body will engage at least one of said revolvable elements upon being twisted in said stirrup opening to reduce the frictional contact force between said boot and said stirrup body under said twisted condition of the rider's boot.

5,390,479

IMPLEMENT DRIVE STRUCTURE

Wayne R. Hutchison, Mayville, and Daniel A. Sebben, West Bend, both of Wis., assignors to Deere & Company, Moline, Ill.

Filed Jun. 22, 1993, Ser. No. 80,945
Int. Cl.[6] A01D *69/10*
U.S. Cl. 56—11.3 9 Claims



1. An improved implement drive structure usable with the combination of a vehicle having a chassis, at least one drive wheel, an engine carried by a vehicle chassis and mounted with its crankshaft projecting downwardly from the chassis, and a vertically adjustable implement carried by the vehicle and having a pulley carried thereon,

said drive structure including:

collar means secured with the crankshaft and extending downwardly from the end thereof,

a drive pulley removably secured with the collar means below the end of the crankshaft and an endless belt means entrained around the drive and implement pulleys whereby the drive pulley and implement pulley are operably positioned in a substantially common plane as the implement and its pulley are vertically adjusted and,

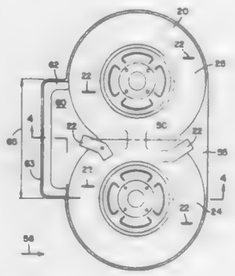
clutch means operatively coupled with the collar means for driveably engaging belt means with the pulleys.

5,390,480

MULCHING DECK SPILLGATE

Daryl L. Simonson, Sheboygan, and David P. Boebel, Waukesha, both of Wis., assignors to Garden Way Incorporated, Troy, N.Y.

Filed Sep. 17, 1993, Ser. No. 122,923
Int. Cl.[6] A01D *34/66*
U.S. Cl. 56—320.2 10 Claims



1. A rotary lawn mower comprising:

a housing accommodating two cutting blades for rotation about spaced vertical axes;

said housing having a pair of interconnected, inverted generally cup-shaped compartments, the sidewall of each cup-shaped compartment being merged along a portion of one wall portion of each cup to form a continuous downwardly extending housing skirt having a lower rim;

said housing being supported for movement over a ground surface such that rotation of the cutting blades will cut grass at a given height;

said housing having leading and trailing edges of movement;

the trailing edge portion of one merged skirt of the housing compartments being rearwardly and outwardly extended to provide an exit spiligate for grass clippings;

said spillgate having a top and rear ground facing edge being substantially coplanar with the major portion of the lower rim of each compartment of the housing in other than the merged portion;

each of the two cutting blades being supported in a substantially separate compartment in said housing; and

means rotatably driving the blades in a time controlled relationship to each other, each blade being of a length such that the circumference of circle of rotation described by one of the blade tips overlaps the other circumference of a circle of rotation of the other of the blade tips in the region of the merged wall portions with relative rotational blade drive timing such as to avoid interference of the blade ends.

5,390,481

CAROUSEL ASSEMBLY OF HELICAL TUBE BUNDLES

Carl G. Langner, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 19, 1992, Ser. No. 837,130
Int. Cl.[6] D01H *7/22*
U.S. Cl. 57—65 11 Claims

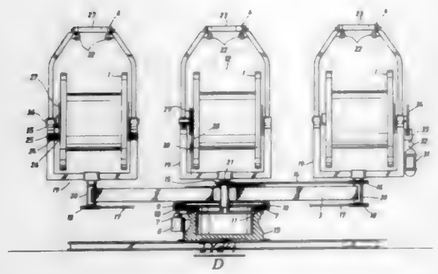
1. An apparatus for making helical coiled bundles of metal tubes which bundles do not require strapping, the apparatus comprising:

a spider which rotates around a central axis, the spider supporting a plurality of spools of individual tubes, each spool being rollable about an axis which lies in a plane which is about perpendicular to the central axis and each spool being rotatable about an axis parallel to the central axis in a direction opposite to the direction of rotation about the central axis and at about the same speed;

a braking means which provides a resistance to the rolling

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motion of each individual tube spool wherein the resistance is a force about equal to or greater than



wherein

Y is the yield stress of the individual tube,

d is the outside diameter of the tube,

t is the thickness of the tube metal, and

D is the diameter to which the tube is bent around the spool; and

a haul-off means which does not rotate about the central axis and is capable of pulling the individual tubes off the spools at a rate relative to the rate of rotation of the spider about the central axis which results in a constant pitch length helix, wherein the bending stress due to the helical configuration of the outermost tubes is within the range of about one-half of yield to about yield.

5,390,482

APPARATUS AND METHOD FOR SENDING OUT LINEAR MATERIAL

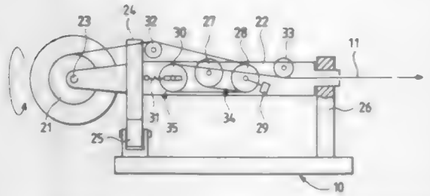
Yasushi Ito, and Satoshi Ogawa, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 22, 1992, Ser. No. 948,416

Claims priority, application Japan, Sep. 24, 1991, 3-243788

Int. Cl.[6] D01H *1/00*

U.S. Cl. 57—66.5 **4 Claims**



1. A method for paying out linear material which is disposed about a reel supported by a frame, the method comprising the steps of:

rotating said reel to unwind the material therefrom;

directing the material to a capstan assembly separate from said reel, said capstan assembly including a pair of axially spaced, rotatably supported wheels, one of said wheels being coupled to a motor;

restricting a pay-out speed of the material with said capstan assembly;

directing the material to a dancer member, said dancer member being disposed downstream of said capstan assembly;

applying a prescribed tensile force to the material by use of said dancer member;

detecting a position of said dancer member;

controlling said pay-out speed by said capstan assembly to keep said detected position unchanged; and

rotating said frame about an axis of which the material is payed out, said material including spiral grooves which are turned, said frame being rotated synchronously with the turning of said spiral grooves;

wherein the step of controlling the pay-out speed of the capstan assembly includes providing a signal so as to control rotation of said motor for driving said one wheel to control said pay-out speed.

5,390,483

TRAVELER CHANGING METHOD AND TRAVELER CHANGING APPARATUS FOR CARRYING OUT THE SAME

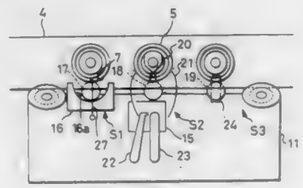
Toshiaki Koga; Hiroo Otoshima, both of Shiga, and Itaru Yokota, Uji, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Sep. 8, 1992, Ser. No. 941,396

Claims priority, application Japan, Sep. 12, 1991, 3-262682; Nov. 14, 1991, 3-326960

Int. Cl.[6] D01H *9/14;* **B23P** *19/04*

U.S. Cl. 57—262 **3 Claims**



1. An apparatus for changing a traveler on a ring of a ring spinning frame, comprising:

a carriage for traveling along the ring spinning frame and stopping at a location substantially adjacent the ring,

a traveler changing unit supported on the carriage, the traveler changing unit comprising:

positioning means for positioning the traveler changing unit relative to the ring,

yarn drawing means for drawing yarn toward the ring,

traveler attaching means for attaching a traveler to the ring, and

traveler removing means for removing a traveler from the ring, the traveler removing means comprising:

a tube that is advanceable toward the ring,

a traveler removing rod that is supported within the tube and that is turnable relative to the tube, the traveler removing rod having a free end,

a hook formed at the free end of the traveler removing rod, the hook being configured for engaging and removing a traveler from the ring, and

a holding plate supported on the tube, the holding plate being configured to hold a traveler between the hook and the holding plate.

5,390,484

SLIVER CAN TRANSPORT CARRIAGE AND METHOD FOR AUTOMATIC SLIVER CAN EXCHANGE OPERATIONS

Hans-Werner Schwalm, Moenchengladbach, Germany, assignor to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Jul. 31, 1992, Ser. No. 922,815

Claims priority, application Germany, Jul. 31, 1991, 4125383

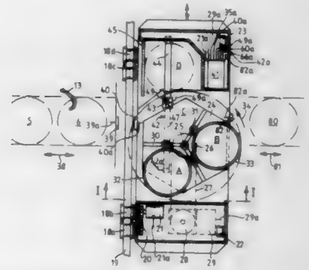
Int. Cl.[6] D01H *9/10, 13/02*

U.S. Cl. 57—281 **14 Claims**

1. Apparatus for transporting full sliver cans to the spinning stations of a textile spinning machine for exchange of full sliver cans for empty sliver cans at the spinning stations, the textile

spinning machine having a longitudinal edge along which the spinning stations are serially located and the spinning stations each having a back row position for supporting a sliver can and a front row position for supporting another sliver can laterally intermediate the back row position of the spinning station and the longitudinal edge of the textile spinning machine, the spinning machine being operational to draw sliver simultaneously from a can at the front row position and a can at the back row position into two adjacent spinning stations, apparatus comprising:

a can transport carriage movable in a direction of travel to and between the spinning stations, the can transport carriage including means forming a plurality of can supports, each for supporting a nonrunning sliver can from which no sliver is being drawn thereon, means for indexing movement of at least some of the can supports with respect to the carriage to sequentially position each indexed can support at a can transfer location with respect to the



carriage at which can transfer location a can is transferred between the can support and the textile spinning machine during a can exchange operation, means for supporting a running sliver can from which sliver continues to be drawn at a running sliver can location, said running sliver can support means being separate from said indexing means and said nonrunning can supports, means for transferring a sliver can from at least a selected one of the front and back row positions at a spinning station to the can transfer location on the can transport carriage, and means for transferring a running can from the can transfer location to said running can location on said running can support, said running can support being operable to support a running sliver can transferred to the transport carriage for the continuous drawing of sliver from the running sliver can during indexing of cans on said carriage and during a can exchange operation in which a full sliver can supported on the can transport carriage is transferred to a spinning station.

5,390,485

PNEUMATIC TYPE SPINNING APPARATUS FOR REDUCING WASTE

Hideshi Mori, Jyoyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyowa, Japan

Filed Feb. 19, 1993, Ser. No. 20,129

Claims priority, application Japan, Feb. 19, 1992, 4-016266[U]

Int. Cl.[6] D01H *5/28;* **D02G** *3/00*

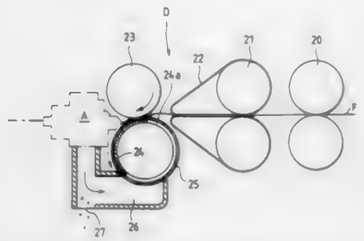
U.S. Cl. 57—328 **6 Claims**

1. An apparatus comprising:

a draft device, the draft device comprising a rotatable porous roller and means for establishing a negative pressure within the porous roller,

a pneumatic spinning device, the pneumatic spinning device comprising a nozzle block having a nozzle for exerting a whirling air current on a fiber bundle from the draft device, a spindle having an inlet, and a guide member directed toward the inlet of the spindle, and

a waste transport pipe for circulating only fibers discharged from the spinning device to the porous roller in an air flow generated by the negative pressure in the porous roller,



whereby fibers discharged from the spinning device are recycled to join with the fiber bundle from the draft device.

5,390,486

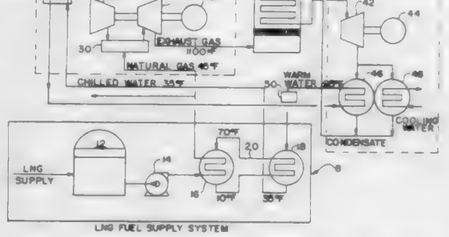
LIQUEFIED NATURAL GAS FUELED COMBINED CYCLE POWER PLANT

Paul C. Johnson, Boston, and A. Edwin Toombs, Charlestown, both of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Dec. 10, 1993, Ser. No. 165,228

Int. Cl.[6] F02C *6/18, 7/143*

U.S. Cl. 60—39.02 **17 Claims**



LNG FUEL SUPPLY SYSTEM

1. A method for enhancing the capacity and the efficiency of a combined cycle plant which comprises:

regasifying LNG to convert to natural gas;

chilling a primary heat exchange fluid by placing said primary heat exchange fluid in heat exchange relationship with a secondary heat exchange fluid which secondary heat exchange fluid is cooled by the conversion of the LNG to the natural gas;

flowing the chilled primary heat exchange fluid through a heat exchange zone through which zone flows the intake air for an air compressor to cool and densify the intake air;

flowing subsequently the primary heat exchange fluid through a condenser to condense the spent steam from a high-pressure steam turbine; and

placing subsequently the primary heat exchange fluid in heat exchange relationship with the secondary heat exchange fluid.

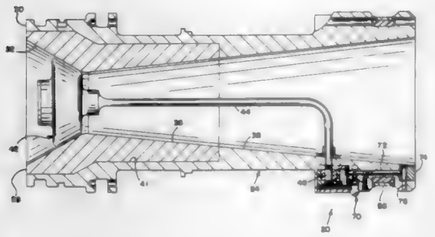
VOL 1171 ISS 3 FE 21 1995 UMI

5,390,487

IGNITION SAFETY DEVICE FOR A ROCKET MOTOR

Kenneth L. Moore, Point-of-Rocks, Md.; James E. Goble, Bedford, Tex., and Philip B. Baldwin, Glendale, Ariz., assignors to BEI Electronics, Inc., San Francisco, Calif.

Filed Nov. 16, 1993, Ser. No. 153,754
Int. Cl.[6] F02K 9/08
U.S. Cl. 60—256 20 Claims



15. An ignition safety device for controlling the detonation of an explosive device, said ignition safety device comprising housing means,

a manually operable actuator movable in said housing means between safe and armed positions,

a manually operable locking member movable in said housing means between safe and armed positions and having means for locking said actuator in its safe position when said locking member is in its safe position and for unlocking said actuator when said locking member is moved to its armed position,

biasing means for biasing said locking member toward its safe position,

means in said housing means affording a detonator opening,

an electrically operable detonator received and retained in said detonator opening,

electrical input means for receiving an electrical signal to cause detonation of said detonator,

electrical switching means in said housing means and having an operating connection to said actuator for electrically disconnecting said electrical input means from said detonator when said actuator is in its safe position and for electrically connecting said electrical input means to said detonator when said actuator is in its armed position,

means affording an exit opening for receiving explosive energy from said detonator,

a gate connected to said actuator and movable in said housing means between safe and armed positions,

said gate being operative in its safe position to block said exit opening to prevent transmission of explosive energy into said exit opening,

said gate being operative to unblock said exit opening when said gate is in its armed position whereby any explosive energy from said detonator will be transmitted to said exit opening.

5,390,488

AIR INJECTION CONTROL FOR PREHEATED CATALYSTS

Frank Ament, Troy; David A. Singer, Farmington, and David B. Brown, Shelby Township, Macomb County, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1993, Ser. No. 172,779
Int. Cl.[6] F01N 3/20
U.S. Cl. 60—274 9 Claims

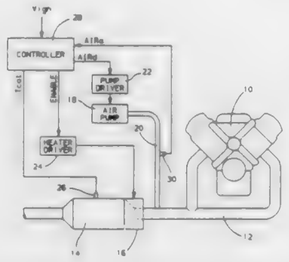
1. A method for admitting a quantity of supplemental air to an exhaust gas path of an internal combustion engine having a supplementally heated exhaust gas treatment means for catalytically treating engine exhaust gas, comprising the steps of:

detecting a vehicle startup command;

activating supplemental heating of the exhaust gas treatment means upon detecting the vehicle startup command;

sensing temperature of the exhaust gas treatment means;

comparing exhaust gas treatment means temperature to a predetermined temperature;



initiating admission of supplemental air to the exhaust gas path at a commanded rate when the exhaust gas treatment means temperature exceeds the predetermined temperature; and

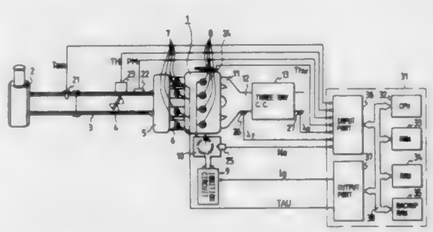
enabling engine starting after initiating admission of supplemental air to the exhaust gas path.

5,390,489

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Katsuhiko Kawai, and Hisayo Douta, both of Kariya, Japan, assignors to Niopondenso Co., Ltd., Kariya, Japan

Filed Oct. 12, 1993, Ser. No. 134,814
Claims priority, application Japan, Oct. 13, 1992, 4-274600
Int. Cl.[6] F01N 3/20
U.S. Cl. 60—276 8 Claims



1. An air-fuel ratio control system for an internal combustion engine, comprising:

fuel injection means, provided in an intake passage of said engine, for injecting an amount of fuel to be supplied to said engine;

a catalytic converter, provided in an exhaust passage of said engine, for purifying exhaust gas discharged from said engine;

downstream-side air-fuel ratio detecting means, provided in said exhaust passage downstream of said catalytic converter, for detecting an air-fuel ratio of an air-fuel mixture supplied to said engine based on said exhaust gas downstream of said catalytic converter;

upstream-side air-fuel ratio detecting means, provided in said exhaust passage upstream of said catalytic converter, for detecting an air-fuel ratio of air-fuel mixture supplied to said engine based on said exhaust gas upstream of said catalytic converter; and

fuel injection amount calculating means for calculating said fuel injection amount of said fuel injection means by performing a state-feedback control in such a manner as to control said air-fuel ratio detected by said downstream-side air-fuel ratio detecting means to a target air-fuel ratio, said fuel injection amount calculating means performing said state-feedback control using, as state variables, current and past input and output data relative to a dynamic model which is set as an approximation to a controlled object, said controlled object representing an operation sequence from said fuel injection means to said downstream-side air-fuel ratio detecting means;

wherein said controlled object is divided into first and second sections, said first section covering an operation sequence from said fuel injection means to said upstream-side air-fuel ratio detecting means and said second section covering an operation sequence from said catalytic converter to said downstream-side air-fuel ratio detecting means; and

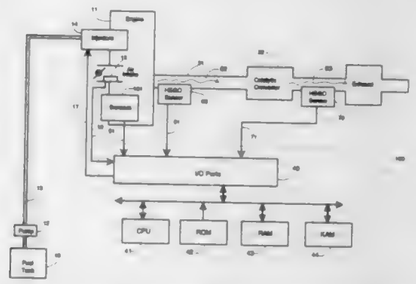
wherein said dynamic model is formed by first and second models, said first model representing an approximation to said first section of said controlled object and said second model representing an approximation to said second section of said controlled object.

5,390,490

METHOD AND APPARATUS FOR MEASURING THE EFFICACY OF A CATALYTIC CONVERTER

Timothy J. Brooks, Troy, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 4, 1993, Ser. No. 145,549
Int. Cl.[6] F01N 3/20
U.S. Cl. 60—276 11 Claims



1. In an internal combustion engine comprising a catalytic converter for processing an exhaust gas produced from the combustion of an air/fuel mixture within said engine, a system for testing the catalytic converter, comprising

first sensing means for detecting the oxygen content of the exhaust gas entering the catalytic converter,

second sensing means for detecting the oxygen content of the exhaust gas exiting the catalytic converter,

means for maintaining the air/fuel mixture at a first bias value,

means for calculating a first time value indicative of the time required for said first sensing means to detect the exhaust gas produced from the combustion of the air/fuel mixture maintained at the first bias value,

means for calculating a second time value indicative of the time required for said second sensing means to detect the exhaust gas produced from the combustion of the air/fuel mixture maintained at the first bias value, and

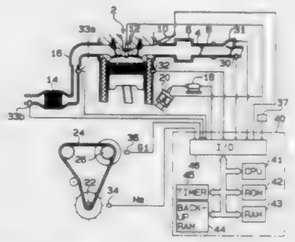
means, responsive to said first bias value and to said first and said second time values, for determining the efficacy of said catalytic converter.

5,390,491

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Toshihiro Suzumura, Nagoya, and Yukihiro Yamashita, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 25, 1994, Ser. No. 186,157
Claims priority, application Japan, Jan. 26, 1993, 5-011063; Dec. 10, 1993, 5-310576
Int. Cl.[6] F01N 3/20
U.S. Cl. 60—276 20 Claims



15. An ignition timing control system for an internal combustion engine having a catalyst for purification of exhaust gases therefrom, said system comprising:

means for detecting starting of said engine;

means for detecting a temperature of intake air supplied to said engine;

means for detecting deterioration state of said catalyst; and

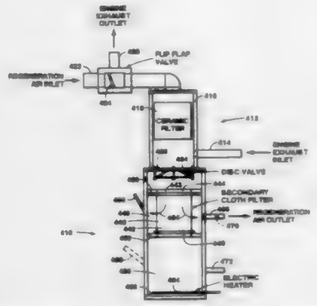
means for adjusting an ignition timing of said engine in accordance with the detected intake air temperature and the detected catalyst deterioration state when the starting of said engine is detected, so that the ignition timing is variably retarded for fast warm-up of said catalyst.

5,390,492

FLOW-THROUGH PARTICULATE INCINERATION SYSTEM COUPLED TO AN AERODYNAMICALLY REGENERATED PARTICULATE TRAP FOR DIESEL ENGINE EXHAUST GAS

Yiannis A. Levendis, Boston, Mass., assignor to Northeastern University, Boston, Mass.

Continuation-in-part of Ser. No. 78,972, Jun. 17, 1993, which is a continuation-in-part of Ser. No. 839,171, Feb. 21, 1992, Pat. No. 5,253,476. This application Feb. 25, 1994, Ser. No. 201,849
Int. Cl.[6] F01N 3/02
U.S. Cl. 60—278 29 Claims



1. A diesel engine exhaust gas filtration and incineration system for reducing total particulate emissions in diesel exhaust from a diesel engine comprising:

a diesel engine exhaust gas conduit having a diesel exhaust

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inlet port couplable to a diesel engine and a diesel exhaust outlet port couplable to ambient;

a regenerable particulate trap having pores sized to capture particles therewithin that are contained in the diesel exhaust, said filter disposed in said diesel engine exhaust conduit between said diesel exhaust inlet port and said diesel exhaust outlet port;

a source of compressed air controllably coupled to said diesel engine exhaust gas conduit between said particulate trap and said diesel exhaust outlet port;

a particulate incineration unit coupled to said diesel engine exhaust gas conduit between said particulate trap and said inlet port, said incineration unit comprising a burner and a filter, said filter comprising a generally cylindrical wall having pores sized to prevent passage of the particulates therethrough and permit passage of air therethrough, said wall further having a surface area sized to maintain a flow rate of air from said source of compressed air; and

a controller, operatively coupled to said source of compressed air and operable in a filtration mode for coupling diesel exhaust in said diesel exhaust gas conduit through said particulate trap and directing filtered exhaust gas out said diesel exhaust output port, and further operable in a regeneration mode to provide at least one pulse of high pressure Air from said source of compressed air that flows through said particulate trap in a direction that dislodges soot (laden with PAH) and ash particles that are lodged within the pores thereof and that moves the soot (laden with PAH) and ash particles into said incineration unit.

5,390,493

APPARATUS FOR CONTROLLING THE ELECTRIC HEATING OF CATALYST

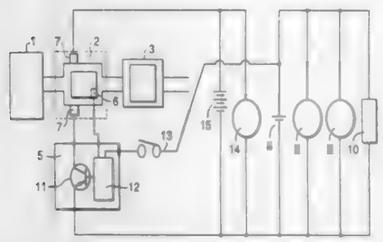
Masakatsu Fujishita, Mito; Takeshi Atago, Katsuta; Keiichi Mashino, Katsuta; Suetaro Shibukawa, Katsuta, and Shigeyuki Yoshihara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Katsuta, both of Japan

Filed Jan. 28, 1993, Ser. No. 10,620

Claims priority, application Japan, Jan. 30, 1992, 4-014719; Feb. 20, 1992, 4-033132

Int. Cl.[6] F01N *3/28*

U.S. Cl. 60—284 20 Claims



1. Method of controlling a flow of electric current to a heater for an electrically heated catalyst in a pollution control apparatus for an internal combustion engine having an ignition switch, a power supply and a starter motor, said method comprising the steps of:

causing a heating current to flow to said heater when said ignition switch is placed into an ON position and temperature of said catalyst is below a predetermined threshold value;

sensing when said starter motor commences starting of said engine;

curtailing the flow of heating current to said heater during starting of said engine;

sensing completion of starting of said engine; and

resuming the flow of heating current to said heater upon said completion of starting of said engine.

5,390,494

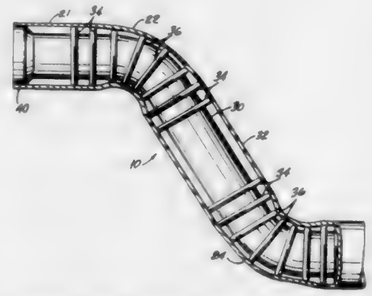
PIPE ASSEMBLY FOR EFFICIENT LIGHT-OFF OF CATALYTIC CONVERTER

Michael W. Clegg, Toledo, Ohio, assignor to AP Parts Manufacturing Company, Toledo, Ohio

Filed Apr. 27, 1993, Ser. No. 53,612

Int. Cl.[6] F01N *7/14*

U.S. Cl. 60—299 25 Claims



1. An exhaust pipe assembly comprising:

a thin-walled inner pipe having at least one bend and tangents on opposed ends of said bend, said inner pipe being formed to include corrugations through said bend defining a selected outside diameter, said inner pipe further including at least one corrugation on each said tangent in proximity to said bend, said corrugations on said tangents defining outside diameters greater than the outside diameter of said corrugations through said bend; and

a thick-walled outer pipe having at least one bend and tangents on opposed ends of said bend, such that said outer pipe is disposed in surrounding relationship to said inner pipe, said tangents of said outer pipe defining an inside diameter approximately equal to the outside diameter of the corrugations on the tangents of said inner pipe, and said outer pipe being deformed in said bend to define an inside diameter approximately equal to the outside diameter defined by the corrugations through the bend of said inner pipe.

5,390,495

ASSEMBLY OF A HYDRAULIC MOTOR AND OF A BRAKE AND COMPACTOR APPLYING SAME

Gilles G. Lemaire, Margny Les Compiegne, France, assignor to Poclain Hydraulics, Verberte Cedex, France

Filed Apr. 8, 1992, Ser. No. 865,322

Claims priority, application France, Apr. 15, 1991, 91 04596

Int. Cl.[6] F01K *1/04*

U.S. Cl. 60—442 6 Claims

1. A compactor comprising at least one assembly of a hydraulic motor and of a brake which is coupled thereto, which assembly comprises:

a central motor element traversed by a first axial recess;

a peripheral motor element mounted for relative rotation with respect to said central motor element about an axis;

a brake shaft which is fast, with respect to said relative rotation, with said central motor element and which axially extends concomitantly along the central motor element and along the brake; wherein:

a) the brake comprises a housing of which at least a part is fast with the peripheral element of the motor, and which itself comprises a bottom disposed transversely with respect to the axis;

b) the bottom comprises a through bore;

c) the brake shaft completely traverses the motor/brake assembly, in particular said bore in the bottom of the brake housing;

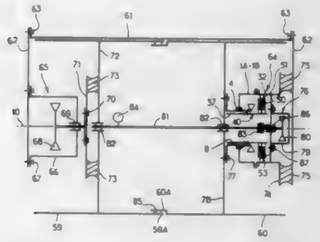
d) two O-rings are interposed between the brake shaft and, on the other hand, the first recess of the central element of the motor and, on the other hand, said bore in the bottom of the brake housing, respectively;

e) the brake shaft comprises a second recess traversing it completely;

wherein, said compactor further comprises:

two distinct cylindrical compaction rollers mounted to rotate about a common geometrical axis;

two principal hydraulic motors for driving said rollers, one of these two principal hydraulic motors being coupled between the frame of the compactor and one of said compaction rollers, the other principal hydraulic motor being



coupled between the frame of the compactor and the other compaction roller, a first of said principal hydraulic motors forming part of said assembly

an eccentric mass with respect to said geometrical axis;

a third motor for driving said eccentric mass, coupled between the frame of the compactor and said mass, and comprising two elements mounted for relative rotation with respect to each other; and wherein, on the one hand, a first of said elements of the third motor is rendered fast, with respect to rotation, with the peripheral element of the first principal hydraulic motor, on the other hand, the second of said two elements of the third motor is rendered fast, with respect to rotation, with a shaft which traverses the second recess made in the brake shaft of the brake belonging to said assembly of which said first principal hydraulic motor forms part.

5,390,496

STIRLING ENGINE WITH ANNULAR CAM

Thami El Affaqui, 108 Glenbrooke Crescent, Pointe-Claire, Québec, Canada H9R 3X8

Filed Mar. 4, 1994, Ser. No. 206,086

Int. Cl.[6] F02G *1/044*

U.S. Cl. 60—525 9 Claims

1. A Stirling engine having an engine block defining a main axis, said engine comprising:

a first and a second radial cylinder symmetrically disposed in said engine block around said main axis, each of said cylinders having a gas opening adjacent said main axis;

a circuit connected between said openings of said cylinders and containing a working gas, said circuit being provided with:

cooling means, connected to said opening of said first cylinder, for cooling said working gas;

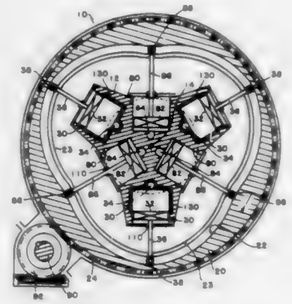
regenerator means, connected to said cooling means opposite said first cylinder, for storing heat from said working gas when flowing towards said cooling means and restoring stored heat to said working gas when flowing away from said cooling means; and

heating means for heating said working gas, said heating means having a first end connected to said regenerator means opposite said cooling means and a second end connected to said opening of said second cylinder;

an annular cam substantially concentric with said main axis and rotatable around said main axis, said annular cam having a smooth inner cam path corresponding to at least one engine cycle including a power phase and a return phase separated by dead centers;

means for guiding said annular cam around said engine block;

a first piston located in said first cylinder for compressing and transferring said working gas to said second cylinder during said power phase;



a second piston located in said second cylinder for transmitting power to said annular cam during said power phase; and

means for operatively connecting said pistons to said annular cam, whereby, in use, said annular cam is rotated with respect to said engine block and receives power from said second piston.

5,390,497

SELF-ADJUSTING CLUTCH ACTUATOR

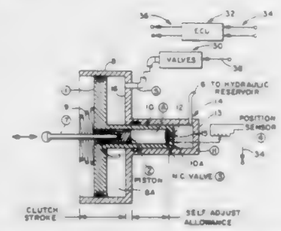
Michael J. Cottam, Nr. Preston, England, assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 873,260, Apr. 24, 1992, abandoned. This application Mar. 8, 1993, Ser. No. 28,007

Claims priority, application United Kingdom, Mar. 14, 1992, 9205661

Int. Cl.[6] F15B *7/00*; B60T *13/00*

U.S. Cl. 60—533 4 Claims



1. An actuator control system for controlling the operation of a rod (7) linkage operated vehicular master clutch constantly biased (28) to a first fully engaged position and adopted to be driven to a second position by axial movement of said rod, said system including a primary actuator piston (1) slidably and sealingly received in a primary cylinder (8) and defining a chamber (8A) connected to a selectively pneumatically pressurized and exhausted conduit (5), said system characterized by:

a hydraulic mounting assembly carried by said primary actuator piston for adjustably mounting said rod to said primary actuator piston for axial movement therewith, said hydraulic mounting assembly including a secondary cylinder (10) defined by said primary actuation piston (1),

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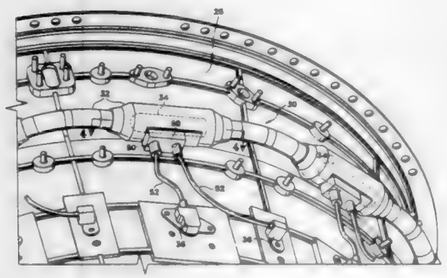
a secondary piston (2) slidably and sealing received in said secondary cylinder and defining an adjustment chamber (A) filled with hydraulic fluid, said rod axially fixed to said secondary piston, said adjustment chamber in constant fluid communication with a hydraulic reservoir by a fluid passage (10A) controlled by a normally closed valve (3) opening (15) upon said primary actuation piston moving to a preselected axial position.

5,390,498

FUEL DISTRIBUTION ASSEMBLY

David A. Sulkin, Ipswich, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 15, 1994, Ser. No. 196,728
Int. Cl.[6] F02C 7/232
U.S. Cl. 60—739 10 Claims



1. A gas turbine engine fuel distribution assembly comprising:

a fuel manifold having a central fuel distribution channel therein and an inlet for receiving fuel for flow through said distribution channel; and

a plurality of fuel distribution valves disposed inside said manifold and spaced apart from each other, each of said valves:

including a housing spaced radially inwardly in said manifold for providing a bypass channel therearound for allowing substantially unobstructed flow of said fuel through said distribution channel in turn to each of said valves;

having an inlet disposed in said housing in flow communication with said distribution channel for receiving a portion of said fuel therefrom, and an outlet extending laterally through said manifold; and

being operable for controlling flow of said fuel portion through said valve from said valve inlet to said valve outlet.

5,390,499

PROCESS TO INCREASE NATURAL GAS METHANE CONTENT

George D. Rhoades, LaGrange, and Robert J. Golueke, Naperville, both of Ill., assignors to Liquid Carbonic Corporation, Oak Brook, Ill.

Filed Oct. 27, 1993, Ser. No. 143,924
Int. Cl.[6] F25J 1/00
U.S. Cl. 62—9 13 Claims

1. A process for purifying natural gas comprising:

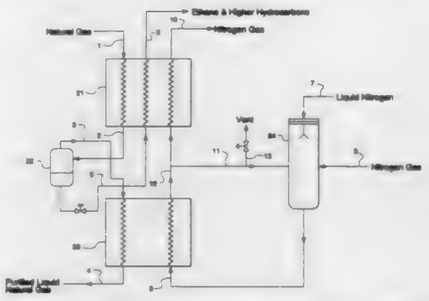
(a) introducing a natural gas feed stream into indirect countercurrent heat exchange in a first heat exchanger to cool said natural gas to the dew point of C_2 and higher hydrocarbons so as to provide a mixture consisting of a gas which is substantially pure methane and a liquid containing C_2 and higher hydrocarbons;

(b) transferring said mixture to a separator;

(c) removing a gas fraction from the top of said separator and introducing said gas fraction to a second heat exchanger into countercurrent heat exchange with liquid nitrogen so as to provide a purified liquid methane product,

(d) introducing liquid nitrogen into a third heat exchanger where said liquid nitrogen is mixed with a recycle portion of gaseous nitrogen exiting from said second heat exchanger to provide a liquid nitrogen feed stream for said second heat exchanger;

(e) dividing the gaseous nitrogen exiting from said second heat exchanger into a recycle portion for introduction into



said third heat exchanger and a heat exchange portion for introduction into indirect countercurrent heat exchange with said natural gas feed stream into said first heat exchanger; and

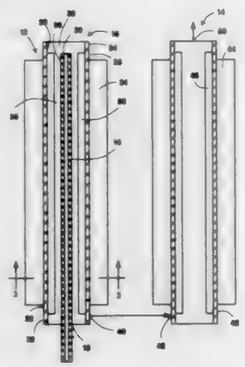
(f) removing a liquid fraction containing C_2 and higher hydrocarbons from the bottom of said separator and introducing said liquid fraction into indirect countercurrent heat exchange with said natural gas feed stream in said first heat exchanger.

5,390,500

CRYOGENIC FLUID VAPORIZER SYSTEM AND PROCESS

Norman H. White, East Aurora; Boris Pevzner, Williamsville, and Thomas D. High, Grand Island, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 29, 1992, Ser. No. 998,081
Int. Cl.[6] F17C 9/02
U.S. Cl. 62—50.2 15 Claims



1. A process for controlling the vaporization of cryogenic liquid using heat from ambient atmosphere, said process comprising:

(a) providing an outer tube enveloping an inner tube;

(b) exposing an exterior surface of said outer tube to the ambient atmosphere;

(c) passing cryogenic liquid into said inner tube;

(d) vaporizing at least a portion of the cryogenic liquid in said inner tube to form liquid and vapor;

(e) discharging the resulting liquid and vapor from said inner tube directly into an annular space between said inner tube and said outer tube;

(f) forming a layer of the vapor in the annular space between said inner tube and said outer tube to provide a controlling thermal resistance;

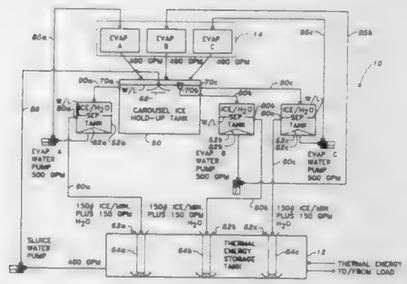
(g) transferring heat from the ambient atmosphere through said outer tube, through the layer of the vapor in the annular space, through said inner tube and into the cryogenic liquid flowing in said inner tube, so as to vaporize cryogenic liquid in said inner tube and heat the resulting vapor in the annular space.

5,390,501

HYDRAULIC CONVEYANCE OF PARTICULATE MATERIALS SUCH AS ICE PARTICLES

Thomas L. Davis, Raleigh; Alexander O. Hobbs, Cary; Joseph A. Gregory, Angier, and Barney P. Roberts, Jr., Wake Forest, all of N.C., assignors to Carolina Power & Light Company, Raleigh, N.C.

Filed Jan. 12, 1994, Ser. No. 180,924
Int. Cl.[6] F25C 5/18
U.S. Cl. 62—59 21 Claims



1. In the operation of a thermal energy production, storage and reclaim system of the type having (i) an ice machine that discharges ice particles in batches, (ii) a thermal energy storage tank that stores the ice and (iii) ice conveyance means for delivering the ice particles from the ice machine to the thermal energy storage tank, a method for leveling out the batch discharge rate of the ice particles to a more even flow condition that facilitates the conveyance of the ice particles to the thermal energy storage tank, said method comprising:

directing ice particles discharged by an ice machine in batches to a hold-up tank containing water;

imparting a rotational surface movement to the water in the hold-up tank sufficient to carry the ice floating in the tank in a rotary motion;

providing a radially outwardly directed surface flow in the water in the hold-up tank to overcome centrifugal forces and urge the rotating ice particles to the periphery of the hold-up tank;

overflowing the ice particles and a portion of the water in the hold-up tank through at least one weir located at the periphery of the tank at the water surface level at an ice particle flow rate that is leveled out to a more even rate than the rate at which ice is discharged to the hold-up tank;

conveying the ice from the at least one weir to the thermal energy storage tank at a leveled out, more even rate than the rate at which ice is discharged to the hold-up tank; and

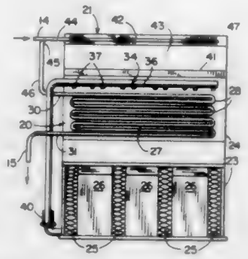
maintaining the water and ice flow rates among the ice machine, hold-up tank and thermal energy storage tank at levels that serve to balance the flow regime for the entire thermal energy production, storage and reclaim system.

5,390,502

NON-FREEZE CLOSED LOOP EVAPORATED COOLING SYSTEM

Robert D. Storbeck, Brookfield, and Walter D. Olson, Oconomowoc, both of Wis., assignors to Oven Systems, Inc., Milwaukee, Wis.

Filed Mar. 29, 1994, Ser. No. 219,391
Int. Cl.[6] F25D 17/06
U.S. Cl. 62—91 7 Claims



1. A precooling and freeze protection system for an evaporative cooler of the type having a closed loop cooling fluid circulation path including a main heat exchanging coil which coil is disposed in a main enclosing housing defining a generally vertical path for an upward flow of cooling air and a downward flow of spray water from a spray water distribution header in the main housing to a sump, said precooling system comprising:

a supplemental heat exchanging coil operatively connected in series with the main heat exchanging coil, means for mounting said supplemental heat exchanging coil to the upper end of the main housing upstream of the main coil with respect to the flow of cooling fluid, in the path of the cooling air flow, but outside the path of the spray water; and,

temperature responsive control means for shutting off the flow of spray water at a selected low ambient temperature above freezing and for subsequently turning on the flow of spray water at a selected high ambient temperature, said control being operative to drain the sump of spray water when the spray water flow is shut off and to refill the sump at an intermediate ambient temperature above said low ambient temperature.

5,390,503

RECOVERY AND RECYCLING SYSTEM FOR REFRIGERANT

Jung-Yuan Cheng, No. 22, Lane 210, Lin Sheng Road, Hsinchu City, Taiwan, Prov. of China

Filed Nov. 10, 1993, Ser. No. 150,457
Int. Cl.[6] F25B 49/00
U.S. Cl. 62—125 6 Claims

1. A recovery and recycling system for refrigerant that is received from outside cooling apparatus, said system comprising:

a tube having an inlet through which said refrigerant enters said system,

a sight glass (23) operatively connected with said tube downstream of said inlet,

a temporary storage tank (24) operatively connected with said tube downstream of said sight glass (23),

a filter (25, 26) operatively connected to said temporary storage tank (24) downstream thereof,

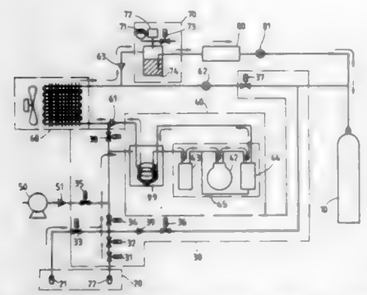
a recovery apparatus (27) downstream of said filter (25), (26) and operatively connected to receive refrigerant from said filter (25, 26), said recovery apparatus (27) comprising:

a heat exchanger (41),

an inlet tube (21) operatively connected between said filter (25, 26) and said heat exchanger (99),

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a front oil separator (**43**) operatively connected with said heat exchanger (**99**) and downstream thereof,
a rear oil separator (**44**) operatively connected with said front oil separator (**44**) and downstream thereof,
a compressor (**42**) interposed between said oil separators (**43**, **44**),
an air heat exchanger (**60**) operatively connected with said heat exchanger (**99**) and downstream thereof,
an air vent device (**70**) operatively connected with said air heat exchanger (**60**) and downstream thereof,
a dryer (**80**) operatively connected with said air vent device (**70**) and downstream thereof,
a storage tank (**10**) to receive refrigerant from said dryer (**80**), and
another sight glass (**81**) interposed between said dryer and said storage tank;
said refrigerant that is received by said system from outside cooling apparatus being recycled by flowing through the tube and passed the sight glass (**23**) to have its color observed, and then flowing rapidly into the temporary storage tank (**24**) to be stored;



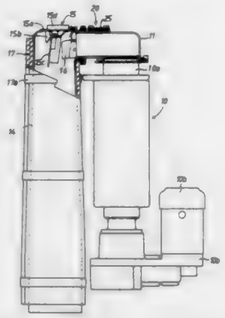
said refrigerant then being withdrawn from the temporary storage tank (**24**) and flowing through the filter (**25**, **26**) which removes dirt from said refrigerant and then said refrigerant enters said recovery apparatus (**27**) through said inlet tube (**21**);
from said inlet tube (**21**) said refrigerant entering said heat exchanger (**99**) to be transformed into vapor which then flows through the front oil separator (**43**) that removes dirty oil which may be in said vapor;
thereafter, said vapor entering the compressor (**42**) to be compressed into a high pressure and high temperature vapor which is delivered to the rear oil separator (**44**) which returns refrigeration oil to the compressor (**42**), while the refrigerant flows from the rear oil separator (**44**) through the heat exchanger (**99**) and the air exchanger (**60**) where the refrigerant is transformed into a liquid;
said liquid flowing through air vent device (**70**) where air and uncondensable gas is expelled, then passed said another sight glass (**81**) where the color of said refrigerant that has been recycled is observed, and into the storage tank (**10**).

5,390,504
PROTECTIVE DEVICE FOR AUGER TYPE ICE MAKING MACHINE

Junichi Hida, Peachtree City, Ga.; Kazuhiro Mori, Toyoake, and Susumu Tatematsu, Nagoya, both of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Filed Sep. 29, 1993, Ser. No. 128,301
Claims priority, application Japan, Jan. 10, 1992, 4-068734[U]
Int. Cl.[6] F25C *5/18*
U.S. Cl. 62—137 **4 Claims**

1. A protective device for an auger type ice making machine having an auger type ice making mechanism the refrigeration housing of which is located adjacent an ice storage bin and provided thereon with an ice discharge casing forming a lateral discharge passage for discharging ice pieces into the storage bin through an upright delivery chute, comprising:
ice detection means disposed at an upper portion of the upright delivery chute, said ice detection means for detecting a level of ice in the delivery chute; and

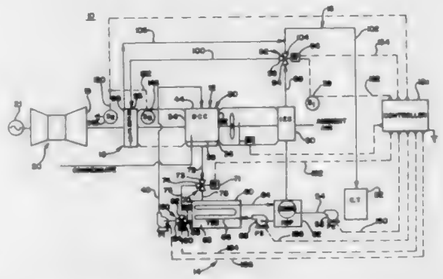


a spout switch assembly mounted on an upper wall of said ice discharge casing at a position laterally displaced from an upper end of said refrigeration housing to detect ice pieces filled in said ice discharge casing during operation of said ice making mechanism.

5,390,505
INDIRECT CONTACT CHILLER AIR-PRECOOLER METHOD AND APPARATUS

Glenn W. Smith, Mt. Airy; William D. McCloskey, Baltimore, and Robert E. Cates, Arnold, all of Md., assignors to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed Jul. 23, 1993, Ser. No. 96,744
Int. Cl.[6] F25B *29/00*
U.S. Cl. 62—173 **15 Claims**



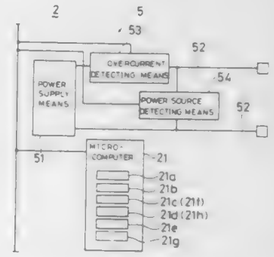
1. A precooling system for combustion air communicated to a gas turbine, said system operable to receive and treat ambient air, and to communicate said combustion air to said turbine at a desired outlet temperature, said ambient air having a wet-bulb temperature, a dry-bulb temperature, an absolute humidity and an ambient air density, said combustion-air outlet temperature being less than said ambient-air, wet-bulb temperature and said combustion air outlet density greater than said ambient-air density, said system comprising:
an indirect-evaporative chiller operable to reduce the temperature of air passing through said indirect-evaporative chiller to a first temperature, a first absolute humidity and a first air density;
an indirect-contact chiller having an air inlet side,
an air outlet side,
a coolant fluid inlet,
a coolant fluid outlet, and

means for exchanging heat between a first coolant fluid and said air passing through said indirect-contact chiller,
said turbine coupled to said air outlet side to receive said combustion air communicating through said indirect-contact chiller;
an ice thermal storage unit with a phase-changing fluid in said unit and means for reducing the temperature of said phase-change fluid to less than said air wet-bulb temperature and to freeze at least a portion of said fluid;
said phase-change fluid operable as said first coolant fluid in said indirect-contact chiller;
means for connecting said indirect-contact chiller and said thermal storage unit to communicate a phase-changing fluid;
means for recirculating a fluid, which recirculating means is coupled to said connecting means to circulate a phase-changing fluid from said thermal storage unit to said heat exchange means of said indirect-contact chiller to reduce said first temperature of said air flowing through said indirect-contact chiller to less than said ambient-air wet-bulb temperature.

5,390,506
ELECTRIC POWER SUPPLY APPARATUS OF AIR CONDITION CONTROL MACHINE

Masaharu Sogabe; Kiyoshi Shima; Keiichi Yoshisaka, and Hisashi Sumida, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP92/01598, § 371 Date Jul. 30, 1993, § 102(e) Date Jul. 30, 1993, PCT Pub. No. WO/9312393, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 8, 1992, Ser. No. 94,125
Claims priority, application Japan, Dec. 9, 1991, 3-324588
Int. Cl.[6] F24F *11/02*
U.S. Cl. 62—175 **4 Claims**

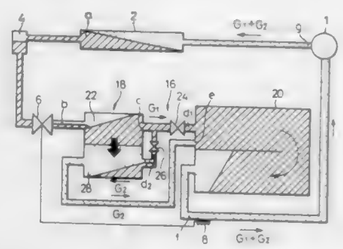


1. In an air conditioning control machine in which a plurality of air conditioning control units are connected to a single controller through wirings and air conditioning operation is controlled by sending and receiving a control signal between the controller and the air conditioning control unit, an electric power supply apparatus of the air conditioning control machine including said air conditioning control units comprising:
number memory means for previously storing different specific numbers in each air conditioning control unit;
power supply means for supplying electric power;
power supply judging means for detecting whether another air conditioning control unit is supplying electric power to the controller by monitoring the wirings;
power control means for determining to not supply electric power to the controller when the power supply judging means detects that the controller receives power;
timing means for setting a power supply time based on the specific number; and
power supply determining means for determining to supply electric power to the controller when the power supply judging means detects that the controller receives no power at the power supply time and for controlling the power supply means to supply power to the controller.

5,390,507
REFRIGERANT EVAPORATOR

Masahiro Shimoya, Chiryu; Shigeo Numazawa, Nagoya; Yoshiyuki Yamauchi, Chita; Etuo Hasegawa, Konan; Toshio Ohara, and Keiichi Yoshii, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

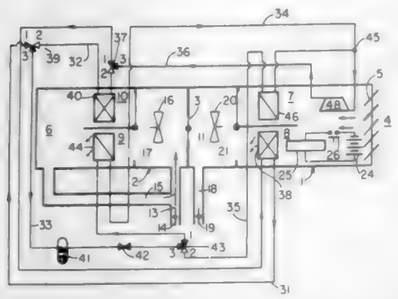
Filed Sep. 16, 1993, Ser. No. 121,947
Claims priority, application Japan, Sep. 17, 1992, 4-248064; Oct. 2, 1992, 4-264671; Nov. 19, 1992, 4-310315
Int. Cl.[6] F25B *39/02, 41/04*
U.S. Cl. 62—200 **13 Claims**



1. An evaporator for a refrigerant adapted for use in a refrigeration cycle comprising:
an evaporator inlet for introducing the refrigerant to be evaporated;
an evaporator outlet for discharging the evaporated refrigerant;
evaporating means, having at least an inlet for introducing the refrigerant to be evaporated, an outlet for discharging the evaporated refrigerant, and a plurality of refrigerant passageways connected in parallel to each other for obtaining a heat exchange between the refrigerant on the inside of said refrigerant passageways and a fluid outside the evaporating means, for evaporating the refrigerant therein;
an inlet passageway connecting between said evaporator inlet and said inlet of said evaporating means for allowing a flow of said refrigerant from said evaporator inlet to said inlet of said evaporating means;
first heat exchanging means disposed in said inlet passageway for transferring heat of the refrigerant therein to obtain a liquid-state refrigerant by cooling;
first pressure reducing means disposed in said inlet passageway between said first heat exchanging means and said evaporating means for throttling the flow of the refrigerant to said inlet of said evaporating means to reduce a pressure of the refrigerant;
second heat exchanging means disposed in such a manner as to be able to perform a heat exchange with said first heat exchanging means for absorbing heat of the refrigerant transferred from said first heat exchanging means to obtain a liquid-state refrigerant;
dividing passageway means connecting between said inlet passageway and said second heat exchanging means for dividing a part of the refrigerant which flows in said inlet passageway to pass the part of the refrigerant into said second heat exchanging means;
a preliminary pressure reducing means disposed in said inlet passageway upstream of said first heat exchanging means for throttling the flow of the refrigerant to said first heat exchanging means, to reduce a pressure of the refrigerant, so that the divided refrigerant flowing into said second heat exchanging means is a gas-liquid state; and
an outlet passageway connecting between said evaporator outlet and said outlet of said evaporating means for allowing a flow of the evaporated refrigerant from said outlet of said evaporating means to said evaporator outlet.

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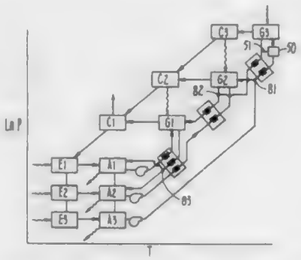
5,390,508
APPARATUS FOR AIR CONDITIONING A VEHICLE, IN PARTICULAR AN ELECTRIC VEHICLE
Olusegun O. Benedict, Les Ulis, France, assignor to Valeo Thermique Habitacle, Le Mesnil Saint Denis, France
Filed Oct. 25, 1993, Ser. No. 142,270
Claims priority, application France, Oct. 26, 1992, 92 12740
Int. Cl.[6] F25B *29/00*
U.S. Cl. 62—325 6 Claims



1. Apparatus for regulating the temperature in the passenger space of a motor vehicle comprising an air circuit having a first section subdivided over a fraction of its length into a first branch and a second branch disposed mutually in parallel and containing respectively a first condenser and a first evaporator, and a second section located downstream of the first section, subdivided over a fraction of its length into a third branch and a fourth branch disposed mutually in parallel, the third branch containing a second evaporator and the fourth branch containing a second condenser, means for circulating a refrigerant between Said first evaporator and said first condenser and between said second evaporator and said second condenser, means for producing a first flow of air in the first section, means for producing a second flow of air in the second section, selective shut-off means capable of allowing or preventing the circulation of said flows of air in each of the first, second, third and fourth branch, a controlled choke flap capable of interrupting communication between the first and second sections, an external air inlet at the upstream end of the first section, an air outlet to the exterior of the motor vehicle disposed adjacent the downstream end of the first section, a second external air inlet and a recirculation air inlet disposed adjacent the upstream end of the second section having means for regulating the proportions of external air and air in recirculation, and an air outlet to the passenger space disposed adjacent the downstream end of the second section.

5,390,509
TRIPLE EFFECT ABSORPTION CYCLE APPARATUS
Uwe Rockenfeller, and Paul Sarkisian, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.
Continuation-in-part of Ser. No. 47,625, Apr. 14, 1993, Pat. No. 5,335,515, which is a continuation of Ser. No. 800,636, Nov. 27, 1991, abandoned. This application Sep. 30, 1993, Ser. No. 130,007
Int. Cl.[6] F25B *15/00*
U.S. Cl. 62—476 63 Claims

1. A triple effect absorption cycle apparatus, comprising:
first, second and third generators each containing an aqueous absorption fluid and operating at successively higher temperatures, respectively;
first, second and third condensers operating at successively higher temperatures, respectively, and operatively communicating with said first, second and third generators, respectively, and first condensate flow means for directing refrigerant condensed in said third condenser from said third condenser in heat exchange communication with one or more of said second and first condensers;
first heat exchange means cooperating between said third condenser and said second generator, and between said second condenser and said first generator, for directing energy therebetween, respectively;
one or more first absorbers cooperating with one or more first fluid loops for supplying aqueous absorption fluid to



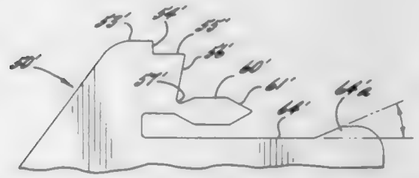
said first and second generators, and one or more second absorbers cooperating with one or more second fluid loops for supplying aqueous absorption fluid to said third generator;
second heat exchange means cooperating with said fluid loops for exchanging energy between aqueous absorption fluid flows in said loops; and
one or more evaporators operatively communicating with said absorbers.

5,390,510
PENDENT HAVING COMPACT AND DECORATIVE SCENT RECEPTACLE
Patricia P. Tirio-Cloonan, Gardena, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Jan. 14, 1993, Ser. No. 4,368
Int. Cl.[6] A47C *13/00*; A63H *3/00*
U.S. Cl. 63—1.1 11 Claims



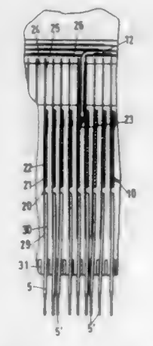
1. A pendent comprising:
a housing defining a neck, a first interior cavity in communication with said neck for receiving a liquid such as perfume and a second sealed interior cavity, a neck portion and an internal aperture;
a compact receivable within said internal aperture;
a cap receivable within said neck portion of said housing; and
a quantity of liquid having a plurality of decorative particles therein received within said second interior cavity.

5,390,511
METHOD OF MANUFACTURING A JACQUARD PILE FABRIC AND SINKERS USED THEREIN
Takao Shibata, Osaka, and Kiyoshi Hayashi, Hyogo, both of Japan, assignors to Precision Fukuhara Works, Ltd., Japan
Filed Oct. 22, 1993, Ser. No. 141,818
Claims priority, application Japan, Oct. 23, 1992, 4-309354; Aug. 27, 1993, 5-235400
Int. Cl.[6] D04B *9/12*
U.S. Cl. 66—9 R 9 Claims



1. A method of knitting a jacquard pile fabric on a circular knitting machine which includes cylinder needles having latches thereon and being mounted in grooves in a rotating cylinder and controlled by a jacquard needle selection and operating mechanism, and a ground loop forming sinker and a pile loop forming sinkers mounted in the same groove of a sinker cap mounted on the top of the rotating cylinder and individually and independently controlled by sinker cam means, said method comprising the steps of:
(a) providing a ground yarn feeder section and moving the cylinder needles and sinkers through the ground yarn feeder section while raising the cylinder needles to a knitting position, feeding a ground yarn to the cylinder needles, forming ground yarn loops comprising a ground yarn needle loop and a ground sinker loop by lowering the cylinder needles while moving the ground loop forming sinkers inwardly to push the ground sinker loops from a second upper edge of the pile loop forming sinkers and into a first sinker throat on the ground loop forming sinkers,
(b) providing a first pile yarn feeder section adjacent and downstream of the ground yarn feeder section relative to the rotation of the cylinder and moving the cylinder needles and sinkers through the first pile yarn feeder section while raising selected ones of the cylinder needles to a tucking position while maintaining the remainder of the cylinder needles in a welting position and without clearing the ground yarn needle loops from the latches of the needles, feeding a first pile yarn to the selected cylinder needles that have been raised to the tucking position, and forming first pile yarn loops comprising a first pile yarn needle loop and a pile loop forming sinker loop by lowering the selected cylinder needles and retracting the first pile yarn from a pile length determining edge of the pile loop forming sinker which is higher than the second upper edge of the pile loop forming sinker from which the ground yarn is retracted, all while maintaining the ground sinker loop in the first sinker throat of the ground loop forming sinker,
(c) providing a second pile yarn feeder section adjacent and downstream of the first pile yarn feeder section and moving the cylinder needles and sinkers through the second pile yarn feeder section while raising to the tucking position the cylinder needles that were maintained in the welting position in the first pile yarn feeder section without clearing the ground yarn needle loops from the latches of the needles and while maintaining in the welting position those needles raised to the tucking position in the first pile yarn feeder section, feeding a second pile yarn to the needles occupying the tucking position, and forming second pile yarn loops comprising a second pile needle loop and pile sinker loop by lowering the cylinder needles and retracting the second pile yarn from the pile length determining edge of the pile loop forming sinker, all while maintaining the ground sinker loop in the first sinker throat of the ground loop forming sinker, and
(d) providing a stitch forming section adjacent to and downstream of the second pile yarn feeder section and moving the cylinder needles and sinkers through the stitch forming section while forming double plating loops comprising a ground yarn loop and a pile yarn loop and clearing old sinker loops from the sinker tops and old needle loops from the needles.

5,390,512
WARP KNITTING MACHINE WITH PIEZOELECTRICALLY CONTROLLED JACQUARD PATTERNING
Kresimir Mista, Heusenstamm, Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Germany
Filed Aug. 9, 1993, Ser. No. 104,369
Claims priority, application Germany, Aug. 14, 1992, 4226899
Int. Cl.[6] D04B *27/37*; D03C *3/20*
U.S. Cl. 66—205 19 Claims



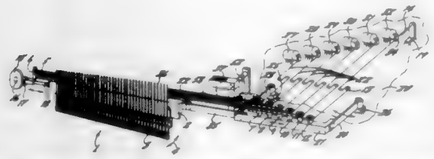
1. In a warp knitting machine, a jacquard control arrangement comprising:
a control means for providing electrical command signals signifying a jacquard sequence;
at least one guide bar;
a plurality of guides supported by said guide bar and displaceable effectively by at least one needle space; and
a plurality of piezoelectric transducers coupled to said control means and separately mounted at corresponding ones of said guides for displacing said guides in response to said electrical command signals, said piezoelectric transducers each comprising a deflecting transducer having one end attached to the guide bar and another end rigidly attached to a corresponding one of said guides, said deflecting transducers being mounted between the guides and the guide bar.

5,390,513
WARP KNITTING MACHINE HAVING A GUIDE BAR WITH INDIVIDUALLY MOVABLE THREAD GUIDES MOUNTED THEREON
Adolf Hägel, and Jürgen Lämmerhirt, both of Bad Steben, Germany, assignors to LIBA Maschinenfabrik GmbH, Naila, Germany
Filed Feb. 10, 1994, Ser. No. 194,252
Claims priority, application Germany, Feb. 10, 1993, 4303967
Int. Cl.[6] D04B *27/10, 27/06*
U.S. Cl. 66—207 10 Claims

1. A warp knitting machine having at least one guide bar (1) executing an oscillation movement and a base shift movement

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including thread guides (3) supported on said guide bar (1) and being individually movably adjustable in a to- and fro- motion in said base shift direction and being arranged to form one or more groups and being movable in a group in a pattern shift movement by a program control over an electrically controlled control motor (27–32), said motor being connected to said thread guides (3) of said one or more groups by at least one pull control cable (22) being held under tension, at least two pull control cables (22) are provided and extending over the length of said guide bar (1) and being connected to said thread guides (3) such that all said thread guides (3) of said one or more groups execute an equal pattern shift movement impressed upon said pull control cables (22) by said control motors (27–32), said control motors being mounted structurally independent from said guide bar (1), said pull control cables (22) being deflected by cable guides substantially at right angles to a shift direction of said guide bar (1) toward said control motors (27–32), said cable guides being mounted on a carrier, means for connecting one side of said guide bar (1) to said carrier (21), said means for connecting comprising a tongue (35) and being connected between said guide bar (1) and said carrier (21) in such a manner that the carrier (21) only follows the base shift movement of said guide bar (1) without oscillation movement, wherein the cable guides (7–12) are arranged at such a distance from said thread guides (3) so that, while in a shift movement, practically no pattern shift movement in an array of the corresponding pull control cables (22) will occur.



5,390,514

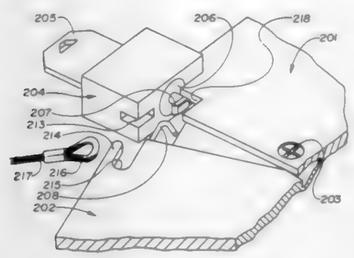
LOCKING DEVICES FOR FLOPPY DISK DRIVES

Thomas Harmon, Bel Air, Md., assignor to Leonard Bloom, Towson, Md., a part interest

Continuation-in-part of Ser. No. 60,608, May 11, 1993, and a continuation-in-part of Ser. No. 102,430, Aug. 5, 1993. This application Nov. 23, 1993, Ser. No. 156,855

Int. Cl.[6] E05B *73/00*

U.S. Cl. 70—14 7 Claims



1. In combination with a disk drive having an opening therein and further having a pair of spaced-apart rails, one on each side of the opening, a pair of plates, means for pivoting the plates together, such that the plates have an open and a closed position, the plates having respective side edges provided with abutment means, such that the plates may be inserted into the opening in the disk drive in the closed position of the plates, and such that the respective abutment means engages the side rails to prevent the plates from being removed from the disk drive, and a key-operated lock carried by one of the plates, the lock having a latch, and the other plate having a receptacle for the latch, thereby preventing movement of the pivoted plates from the closed position to the open position thereof, and thereby securing the pivoted plates within the disk drive and preventing unauthorized access thereto.

5,390,515

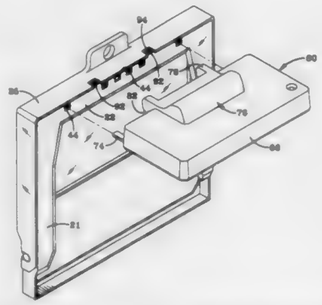
SECURITY CONTAINER AND RELEASE KEY THEREFOR

Gale W. Essick, E. Canton, Ohio, assignor to Alpha Enterprises, Inc., North Canton, Ohio

Filed Jan. 25, 1993, Ser. No. 8,632

Int. Cl.[6] B65D *55/14*

U.S. Cl. 70—63 18 Claims



10. In combination, a security container having a base forming a storage compartment, a lid mounted on the base and movable between open and closed position with respect to said base, and locking means for locking said base to said lid when in the closed position; and a key for unlocking the lid from the base to enable the lid to be moved toward the open position, said key having at least one tab for operatively engaging and unlocking the lock means of the security container, separate gripper means for releasably gripping the base while the lid is being moved toward the open position, and release means for selectively releasing the gripper means from the base after the lid has been moved toward the open position.

5,390,516

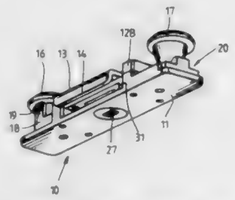
PUSHBUTTON LOCK FOR SLIDING DOORS

Michael Alchin, Orchard Hills, Australia, assignor to Dowell Australia Limited, Victoria, Australia

Filed Feb. 19, 1993, Ser. No. 20,822

Int. Cl.[6] F05B *65/08*

U.S. Cl. 70—100 11 Claims



1. A lock to prevent relative sliding apart movement between two elements, said lock comprising:

a base to be secured to a face of a first one of said elements which face is generally parallel to the direction of sliding apart movement;

a lock tongue to engage the other element to retain said other element fixed with respect to said first element, said lock tongue being mounted for movement between a retaining position with respect to said other element and a release position permitting separation of the elements;

lock means to selectively retain said tongue in said retaining position, said lock means being moveable between a first position maintaining said tongue in said retaining position and a second position permitting movement of said lock tongue to its release position;

first and second user operable means separate from and independent of said lock tongue and mounted on said base and operatively associated with said lock means so that upon manipulation of said first user operable means, said lock means is moved to its second position, and, upon manipulation of said second user operable means, said lock means is moved to its first position; and

wherein said lock tongue is pivotally mounted for movement between its retaining and release positions about a pivot axis which extends perpendicular to said direction of sliding apart movement so said lock tongue can move inward of said face for retaining, and outward of said face for releasing, and said first and second user operable means are mounted for operative movement in a direction normal to said pivot axis.

5,390,517

DOOR LOCK HANDLE ASSEMBLY

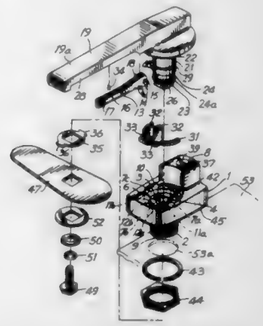
Kenichi Yamada, Tokyo, Japan, assignor to Takigen Manufacturing Co. Ltd., Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 95,674

Claims priority, application Japan, Mar. 4, 1993, 5-069250

Int. Cl.[6] E05B *13/10*

U.S. Cl. 70—210 3 Claims



1. A door lock handle assembly, comprising

a lock lever **13** having a stem with a transversal pin **18** mounted therein,

a handle **19** having inner bearing grooves **20** for receiving opposite ends of said transversal pin **18**, said handle **19** having a shaft portion **21** having an intermediate portion formed with an arcuate bearing groove **22**;

an arcuate member **31** immovably fitted in said arcuate bearing groove **22** and having pin retainers **32**, said lock lever **13** being pivoted to said handle **19** with the opposite ends of said transversal pin **18** received in said inner bearing grooves **20** such that displacement of said transversal pin **18** in a direction perpendicular thereto is prevented by said pin retainers **32**;

a stationary member **1** having a sleeve portion **2** having a shaft bore **3** and also having a retainer projection **5** projecting from a surface **4** of said shaft bore **3**, said shaft portion **21** of said handle **19** having a rear end formed with an insertion groove **23** having a front end circumferential escape groove **24**, said shaft portion **21** of said handle **19** being inserted in said shaft bore **3** of said sleeve portion **2** of said stationary member **1**, such that it can be rotated but its axial displacement is prevented with the retainer projection **5** engaged in said insertion groove **23**, a inner peripheral surface **6** of said sleeve portion **2** of said stationary member **1** being formed with an engagement groove **7**, said lock lever **13** having a fore end **14** thereof engaged in said engagement groove **7** to hold said handle **19** in a predetermined position, said lock lever **13** being biased by a spring **34** for rotation in a direction of maintaining the engagement between said fore end of said lock lever **13** and said engagement groove **7**;

a lock unit **37** buried and secured in a lock unit accommodation groove **8** and having a rotor **38**, and a locking member **42** mounted on said rotor **38** and capable of being advanced and retreated in an interlocked relation to the rotation of said rotor **38**, said locking member **42** having a fore end engaged in a locking groove **25** formed in the stem of said handle **19** to lock said handle against rotation.

5,390,518

METHOD FOR SHINING METAL SHEET SURFACES AND METHOD FOR COLD-ROLLING METALLIC MATERIALS

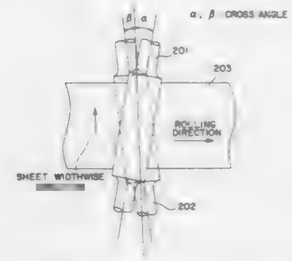
Kazuo Morimoto; Hideaki Furumoto; Tetsuo Kajihara; Kanji Hayashi, all of Hiroshima; Atsushi Tomizawa, Osaka; Kiyotaka Hori, Osaka; Toshiya Oi, Osaka; Hideo Yamamoto, Osaka; Masahiro Matsurra, Osaka; Shunji Kamata, and Toru Kaneko, both of Ibaragi, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Sumitomo Metal Industries, Ltd., Osaka, both of Japan

Filed Mar. 3, 1993, Ser. No. 27,241

Claims priority, application Japan, Nov. 10, 1992, 4-299621; Nov. 10, 1992, 4-299683

Int. Cl.[6] B21B *1/24, 37/00*

U.S. Cl. 72—10 7 Claims



1. A method for cold-rolling metallic materials, characterized in that roll cross rolling is carried out by installing work rolls in such manner that within a plane parallel to a rolling plane, angles α and β formed by axial directions of the upper and lower work rolls, respectively, with respect to the direction at right angles to the rolling direction fulfil the conditions of $\alpha\beta \neq 0$ and $\alpha - \beta \neq 0$.

5,390,519

METHOD FOR MANUFACTURING LONG PRODUCTS BY PRESS WORKING

Yoshitaka Kuroda, Anjo; Takao Ikeda, Okazaki; Kazutoshi Yamamoto, Matsumoto, and Tamotsu Inoue, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 22, 1993, Ser. No. 155,738

Claims priority, application Japan, Nov. 27, 1992, 4-318999

Int. Cl.[6] B21D *43/00, 53/04, 28/20*

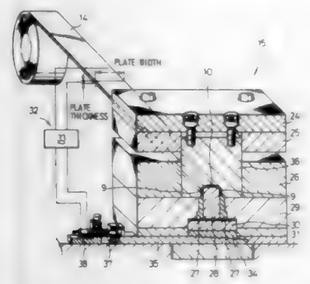
U.S. Cl. 72—16 8 Claims

1. A method for manufacturing products having various substantial lengths, by press working, from a lengthy strip-like material of given thickness and width successively fed from a raw material source into a press means in a direction corresponding to a longitudinal direction of the strip-like material, comprising a plurality of successive pressing steps which include:

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successively pressing the continuously fed lengthy strip-like material in a preforming step in a manner such that respective first predetermined longitudinal portions thereof are formed in a predetermined preliminary shape, respectively, said preforming step including bending of lateral opposite side portions of each said first predetermined longitudinal portion of said strip-like metallic material toward one another by applying a predetermined pressing force to said lateral opposite side portions in a direction corresponding to the thickness of the strip-like material to thereby form bent portions raising from a plane of the strip-like material;

successively compressing said respective predetermined longitudinal portions of the continuously fed lengthy strip-like metallic material having said predetermined preliminary shape by a force determined depending on the



given thickness and width of the lengthy strip-like metallic material in a correcting step in in such a manner that the size of second predetermined longitudinal portions of said lengthy strip-like metallic material is corrected to thereby provide said second predetermined longitudinal portions with a desired amount of stretch in a direction corresponding to a direction of length of each said second predetermined portion of said lengthy strip-like metallic material; and

perforating a plurality of perforations in predetermined positions of said lengthy strip-like metallic material after completion of the correcting step in a finishing step, said finishing step further including successively shearing said lengthy strip-like metallic material after said correcting and perforating steps so as to produce therefrom finished products having various lengths determined by demand.

5,390,520

CLOSED-FRAME TYPE PIPE-BENDING PRESS

Rolf Hermes, and Manfred Kolbe, both of Mönchengladbach, Germany, assignors to Mannesmann Aktiengesellshaft, Duesseldorf, Germany

Filed May 14, 1993, Ser. No. 61,666

Claims priority, application Germany, May 15, 1992, 4215807

Int. Cl.[6] B21D *5/02*

U.S. Cl. 72—21 7 Claims

1. A pipe-bending press having a large bending length, comprising:

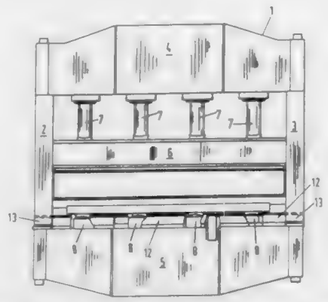
a closed frame including vertical side columns, an upper cross-piece and a lower cross-piece;

a table on which lower bending tools are carried, said table being supported at said lower cross-piece;

an upper bending tool arranged so as to be vertically guided at such side columns in a parallel manner; a plurality of identical upper piston/cylinder units arranged side-by-side so as to support said upper bending tools so that said upper bending tool can be raised and lowered relative to said upper cross-piece; a pressure medium unit connected to cylinder spaces of said piston/cylinder units by a common control line;

a plurality of lower piston/cylinder units arranged between said table and said lower cross-piece, said lower piston/-cylinder units being individually controllable and regulatable with respect to pressure as a function of distance; and

a measuring beam that is rigid against bending and extends from one of said side columns to another of said side columns so as to be parallel to a structural component part



which is subjected to bending when loaded, said measuring beam being arranged so as to cooperate with distance measuring means for detecting deviations from a rest position of the structural part when acted upon by bending forces, said measuring means producing a measured-value signal usable for acting upon said lower piston/cylinder units with a pressure medium.

5,390,521

RIDGE ROLLER DEVICE

Joseph E. Kerze, 17446 Hatteras St., Encino, Calif. 91316

Filed Aug. 3, 1993, Ser. No. 101,568

Int. Cl.[6] B21D *19/04*

U.S. Cl. 72—122 7 Claims



1. A hand operated tool used to deburr the inside circumference of a pipe comprising a plurality of rollers, each roller rotatably attached near one end of each of a pair of lever arms, means joining said lever arms together at a pivotal axis, in which a plurality of rollers are rotatably attached near the end of each lever arm.

5,390,522

TANDEM ROLLER PIPE BENDER

Robert A. Dircks, Carroll Gap, Somerton, New South Wales 2340, Australia

Continuation of Ser. No. 786,086, Oct. 31, 1991, abandoned.

This application Dec. 28, 1993, Ser. No. 175,472

Claims priority, application Australia, Oct. 31, 1990, PK3110; Aug. 16, 1991, PK7805

Int. Cl.[6] B21D *7/024*

U.S. Cl. 72—217 9 Claims

1. A pipe bender comprising:

a base;

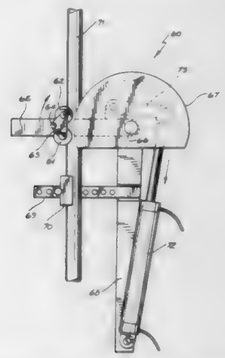
a former mounted on the base and having a former surface extending angularly at a fixed radius about a bending axis,

said former surface being provided to engage a length of pipe to be bent to conform to at least a portion of the length of said former surface;

a bending arm pivotally mounted on said base for pivoting movement about said bending axis;

a bending assembly mounted radially of said bending axis on said arm, said assembly including a roller support pivotally mounted on the bending arm and having two deforming rollers rotatably mounted thereon, said support being mounted for movement about a support axis parallel to said bending axis and spaced radially outwardly of said surface, said rollers being adapted to engage said length of pipe to cause bending thereof at a point along the pipe as the bending assembly is moved angularly about said bending axis;

said rollers each having a rotational axis which is parallel to said bending axis, the rotational axes being spaced a predetermined distance, said rollers being substantially coexten-



sive with one roller being positioned radially with respect to said bending axes so that in use said one roller is positioned at approximately said point, the other roller being spaced angularly forward of said one roller thereby permitting in combination with the pivoting of said support, the predetermined distance said rotational axes are spaced and the pivoting of said support about said support axis, positioning of said other roller radially further from said bending axis than said one roller so that said one roller is positioned at said point of said bending;

a hydraulic ram pivotally mounted on said base and pivotally connected to said arm to cause angular movement of said arm about said bending axis to thereby move said roller to deform said pipe; and

a reaction member mounted on said base and adapted to engage said length of pipe during bending thereof and to retain a bent portion of said length of pipe in contact with said former surface.

5,390,523

COUPLING FOR SHOULDER ENDED PIPES

Michael R. Corbett, 110 Ridge Road, La Lucia, Natal, South Africa

Filed Mar. 30, 1993, Ser. No. 40,351

Claims priority, application South Africa, Mar. 30, 1992, 92/2288; Aug. 4, 1992, 92/5835

Int. Cl.[6] B21D *5/06*

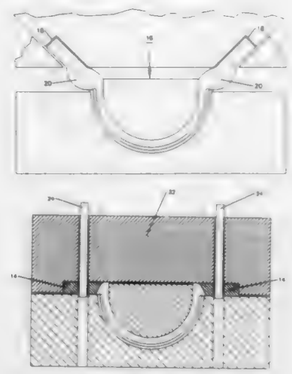
U.S. Cl. 72—377 7 Claims

1. A method of producing a coupling for pipes, which includes steps of:

subjecting a predetermined length of desired cross-sectional profiled material to a bending process in a mould having a semi-circular portion to form an item of semi-circular shape;

forming bent ends of predetermined size on the profiled material; and

then coining the bent ends to lie in an identical horizontal plane as a horizontal diameter of the item of semi-circular



shape, said coining step being accompanied by a substep of forcing excess material from the predetermined length of profiled material into a zone between the semi-circular portion of the mould and the bent ends of predetermined size on the profiled material.

5,390,524

RIVETING APPARATUS

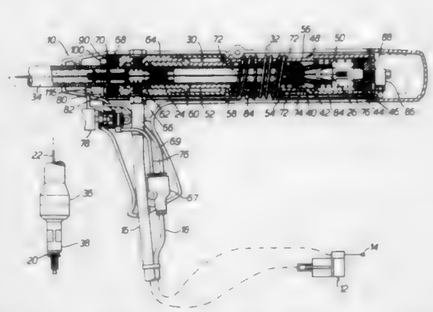
John E. Higgs, Cuffley, England, assignor to Avdel Systems Limited, Hertfordshire, England

Filed May 12, 1993, Ser. No. 59,756

Claims priority, application United Kingdom, May 15, 1992, 9210475

Int. Cl.[6] B21D *9/05;* B21J *15/06*

U.S. Cl. 72—391.6 14 Claims



1. Riveting apparatus comprising pneumatically operated mandrel-gripping means, pneumatically operated rivet-feeding means, and valve means for controlling the operation of the mandrel-gripping means and the rivet-feeding means, said valve means comprising a manually operable gripper-control valve for controlling the operation of the mandrel-gripping means, a manually operable feed-control valve for controlling the operation of the rivet feeding means, and means for interlocking both of said valves so that the rivet feeding means may be actuated to feed a rivet only when the mandrel-gripping means is also actuated to grip the mandrel.

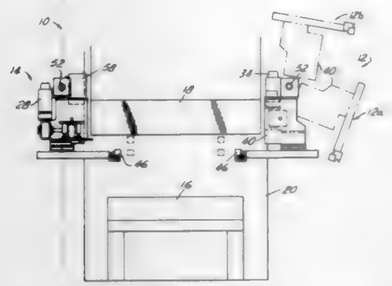
VOL 1171 ISS 3 FEB 21 1995 UMI

5,390,525

INDEXING CONVEYOR FOR A DIE TRANSFER SYSTEM

Alfred C. Fisch, Clarkston, Mich., assignor to Rapindex Incorporated, Bloomfield Hills, Mich.

Filed Dec. 2, 1993, Ser. No. 160,241
Int. Cl.[6] B21D *43/05*
U.S. Cl. 72—405 7 Claims



1. A die transfer system that includes lower die means, upper die means carried for reciprocal movement along a vertical axis toward and away from said lower die means to perform at least one operation on a workpiece positioned therebetween, and means for sequentially conveying workpieces between said die means, said conveying means comprising:

a support base,

a pair of conveyors disposed on laterally opposed sides of said lower die means, each of said conveyors including means for engaging successive workpieces and indexing the workpieces in a longitudinal direction with respect to said lower die means, and

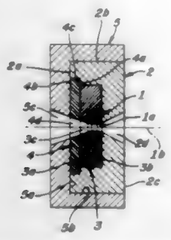
means mounting at least one of said conveyors to said base for selectively swinging such conveyor away from said lower die means in a vertical upward direction into an inoperative position, for operator access to the lower die and such conveyor, said mounting means comprising a shaft, means mounting said shaft on said support base to rotate about a fixed axis parallel to said longitudinal direction vertically above said one convey or and on a side of said one conveyor remote from said lower die means, said one conveyor being coupled to said shaft to rotate as a unit conjointly with said shaft laterally away from and vertically upwardly from said lower die means.

5,390,526

DOUBLE-PROFILE DRAWING TOOL

György Baláza, Hajdudorog; Sándor Cébely, Hajdunánás; Jenö Jádi, deceased, late of Hajdunánás; János Kúsz, Göd; András Mónus, Hajdúnáns; Lajos Nagy, Hajdunánás, and József Varga, Budapest, all of Hungary, assignors to Tungsram Co., Ltd., Hungary

Filed Nov. 9, 1993, Ser. No. 150,661
Int. Cl.[6] B21C *3/02*
U.S. Cl. 72—467 6 Claims



1. A double-profile drawing tool for drawing lead wires in the production of electric lamps, said double-profile drawing tool comprising:

a mandrel having formed therein, a profile drawing die having first and second portions associated therewith, said first and second portions being formed in opposing directions and being substantially similar to one another;

a housing body contacting at least a portion of said mandrel so as to support said mandrel thereby;

an embedding component contained within said housing body and in contact with a substantial portion of said mandrel so as to, in cooperative conjunction with said housing body, surround and support said mandrel therein;

a support plate member abutting said embedding component at an interface formed by an inner side of said support plate member and an outer side of said embedding component, said support plate member abutting a first front surface of said housing body, said support plate member being joined to said housing body in a secure manner so as to prevent displacement of said embedding component and said mandrel within said housing body;

an outer housing member disposed in surrounding relation to at least a portion of said housing body, an inner side of said outer housing member abutting at least a portion of an outer side of said support plate member and a second front surface of said housing body, said outer housing member being joined to said housing body in a fixed manner; and

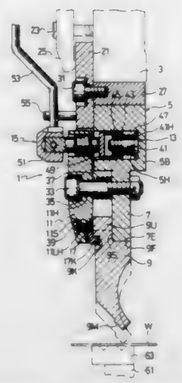
said mandrel, housing, body, embedding component, support plate member and outer housing member arranged to form the double-profile drawing tool with a longitudinal axis, first and second tapered openings formed along the longitudinal axis of said double profile tool and extending through said outer housing member, said support plate, said embedding member and said housing body so as to provide communication to said first and second portions of said profile drawing die.

5,390,527

UPPER TOOL HOLDER APPARATUS FOR PRESS BRAKE AND UPPER TOOL ATTACHABLE THERETO

Susumu Kawano, Atsugi, Japan, assignor to Amada Metrecs Company, Limited, Japan

Filed Jan. 6, 1994, Ser. No. 177,988
Claims priority, application Japan, May 18, 1993, 5-115655; May 18, 1993, 5-115665; Aug. 25, 1993, 5-210344
Int. Cl.[6] B21D *37/04*
U.S. Cl. 72—481 4 Claims



1. An upper tool holder apparatus for removably supporting an upper tool on an upper table of a press brake, comprising:

a holder body removably attached to said upper table;

an upper tool clamp pivotally attached to said holder body, for pushing and fixing an upper portion of said upper tool to a support plate provided at a lower portion of said holder body, said upper tool clamp being pivoted such that a lower portion of said upper tool clamp is movable toward and away from said support plate;

a clamping force adjusting device installed in said holder body for adjusting a clamping force of said upper tool clamp, said clamping force adjusting device urging an upper portion of said upper tool clamp away from said holder body;

a clamp releasing device provided on said upper portion of said upper tool clamp for releasing the upper tool by said upper tool clamp, said clamp releasing device being fastened to said clamping force adjusting device with a fastening means; and

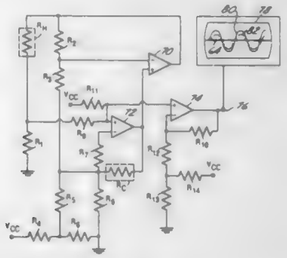
a wedge-shaped member vertically movably provided at said lower portion of said upper tool clamp said wedge-shaped member having a stop portion engageable with and disengageable from an engage portion formed in said upper tool.

5,390,528

METHOD AND APPARATUS FOR CALIBRATING A MASS AIR FLOW SENSOR USING AN OSCILLATING AIR FLOW

Lawrence A. Zurek, Mt. Clemens, and Lorna J. Clowater, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 3, 1993, Ser. No. 56,277
Int. Cl.[6] G01F *25/00*
U.S. Cl. 73—3 8 Claims



1. A method for calibrating a mass air flow sensor having an electronic circuit, comprising the steps of:

mounting said mass air flow sensor on a test stand;

generating an oscillating mass air flow;

subjecting said mass air flow sensor to said oscillating mass air flow rate to generate an output waveform having an amplitude indicative of said oscillating mass air flow rate;

displaying said output waveform on a display device, said display having a desired waveform, said desired waveform having a specified amplitude, a specified offset and a specified response time;

laser-trimming a first resistance of said electronic circuit to calibrate said output waveform to have an offset equal to said specified offset;

laser-trimming a second resistance of said electronic circuit to calibrate said amplitude of said output waveform to be substantially equal to said specified amplitude; and

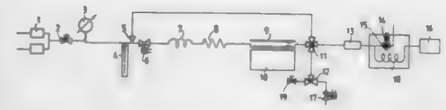
laser-trimming a third resistance of said electronic circuit to calibrate the response time of said output waveform to be substantially equal to said specified response time.

5,390,529

METHOD FOR DETERMINING HEAVY HYDROCARBONS IN ROCK MATRICES AND THE APPARATUS FOR THE PURPOSE

Claudio Ghiselli, Casalpusterlengo, Italy, assignor to AGIP S.p.A., Milan, Italy

Filed Mar. 16, 1994, Ser. No. 213,707
Claims priority, application Italy, Mar. 19, 1993, MI93A000519
Int. Cl.[6] B09B *3/00*; B01N *25/00*; B01D *53/04*
U.S. Cl. 73—23.41 15 Claims



1. A method for separating and analyzing the hydrocarbons, particularly heavy hydrocarbons, contained in sedimentary rocks, characterised by comprising the following steps:

A) loading a sample tube with the sample of sedimentary rock and one or more inert solvents able to extract the hydrocarbons contained in the rock;

B) preheating the thus loaded sample tube to a temperature of between 60° and 150° C. and maintaining it at this temperature in an inert gas atmosphere;

C) heating the sample tube in an inert gas stream to a temperature such as to remove the solvent and the hydrocarbons previously contained in the rock;

D) condensing the vapour conveyed by the inert gas in a refrigerated container;

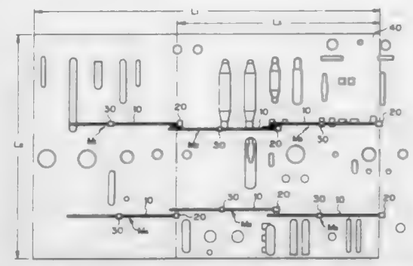
E) heating said container and feeding the contents by means of said inert transport gas to a separation and analysis means.

5,390,530

LEAK DETECTION METHOD FOR GAS, STEAM OR THE LIKE BASED, IN PART, ON THE MEASUREMENT OF WIND DIRECTION AND VELOCITY

Akira Hosonuma, Abiko; Teruyuki Onodera, Osaka; Saburoh Takahashi, Takaishi; Kunio Sakashita, Yokohama, and Yoshinori Hiroshige, Takaishi, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 845,185, Mar. 3, 1992, Pat. No. 5,297,421. This application Oct. 5, 1993, Ser. No. 131,611
Claims priority, application Japan, Mar. 5, 1991, 3-062482; Dec. 24, 1991, 3-341416
Int. Cl.[6] G01M *3/00*
U.S. Cl. 73—40 1 Claim



1. A method for estimating the position of leakage and a leakage quantity rate of gas, steam or the like through use of a detection system that includes a plurality of sampling modules arranged in a plant yard to collect samples of a surrounding atmosphere, at least one wind direction and velocity indicator for real-time determination of the direction and velocity of

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local wind, and at least one sensor module connected to each sampling module for receiving samples of the atmosphere collected by the sampling modules, the sensor modules having a built-in sensor to detect gas, steam or the like in atmosphere received from the sampling module, the method comprising:

estimating an area possibly including a point of leakage of gas, steam or the like with increasing accuracy over the passage of time by analyzing real-time fluctuations in wind direction data and data concerning a position of a sampling module which outputs a corresponding detection signal when the leakage of the gas, steam or the like is discovered;

determining plane coordinates of the center of said area as the plane coordinates of the point of leakage when said area possibly including the point of leakage is narrowed to a relatively small area over the passage of time; and

determining the leakage quantity rate by parallel analysis about a certain relational expression which can be established among at least the concentration measured by the sensor module, the wind direction and the wind velocity.

5,390,531

LEAK TESTING

Thomas C. Taylor, Falkirk, Great Britain, assignor to W. L. Gore & Associates, Inc., Newark, Del.

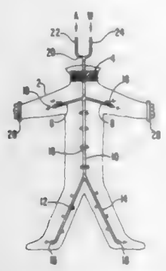
PCT No. PCT/GB92/02060, § 371 Date Mar. 26, 1994, § 102(e) Date Mar. 26, 1994, PCT Pub. No. WO93/09418, PCT Pub. Date May 13, 1993

PCT Filed Nov. 9, 1992, Ser. No. 232,077

Claims priority, application United Kingdom, Nov. 9, 1991, 9123880

Int. Cl.[6] G01M *3/04, 3/20;* **B32B** *3/26*

U.S. Cl. 73—40 **7 Claims**



1. Apparatus for leak testing a garment for liquid water leaks, which comprises:

closure members for closing openings in the garment such as to allow the garment to be inflated, which comprises a closure plug for fitting into an opening in the garment and clamps for sealing other openings in the garment;

at least one pipe passing through the closure plug and terminating in spray nozzles located within the garment for spraying the inner surface of the closed garment with liquid water; and

at least one pipe passing through the closure plug for pressurizing the closed garment with gas and for forcing sprayed liquid water through any leaks in the closed garment.

5,390,532

TEST APPARATUS FOR A FLUID DISPENSING SYSTEM

Mark Anthony, 8073 43rd Ave., Kenosha, Wis. 53142

Filed Oct. 18, 1993, Ser. No. 138,417

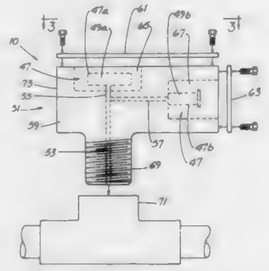
Int. Cl.[6] G01M *3/00, 3/28*

U.S. Cl. 73—40.5 R **17 Claims**

1. A pressure apparatus for use in analyzing the leak integrity of a fluid dispensing system having a single wall pipe line with at least one point along the length of the pipe line, the apparatus including:

a pressure gauge having a gauge enclosure;

a containment structure substantially surrounding the enclosure, the containment structure being threaded for removable connection to the joint; and



the pressure gauge is mounted in a fixed relationship to the containment structure, whereby inadvertent fluid leaks from the enclosure of the pressure gauge are captured by the containment structure.

5,390,533

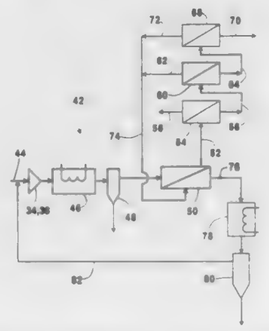
PRESSURIZING WITH AND RECOVERING HELIUM

Thomas R. Schulte, Grand Island; Carl J. Heim, Amherst; Vladimir T. Gorjaczkowski, Williamsville, all of N.Y., and Salvatore Giglia, Norwood, Mass., assignors to Praxair Technology Inc., Danbury, Conn.

Division of Ser. No. 49,776, Apr. 21, 1993, Pat. No. 5,344,480, which is a continuation-in-part of Ser. No. 880,071, May 5, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 262,298

Int. Cl.[6] G01M *3/20, 3/04*

U.S. Cl. 73—40.7 **5 Claims**



1. A method of pressurizing a vessel for integrity testing with gas comprising helium, and recovering helium for reuse, said method comprising:

(a) communicating the vessel with a low pressure tank (at pressure exceeding vessel pressure) containing gas comprising helium at a pressure less than that desired for integrity testing of the vessel;

(b) admitting gas into the vessel from said low pressure tank;

(c) ceasing communication between said low pressure tank and the vessel;

(d) communicating the vessel with a high pressure tank containing gas comprising helium at a desired pressure for integrity testing of the vessel;

(e) admitting gas into the vessel from said high pressure tank;

(f) ceasing communication of the vessel with said high pressure tank;

(g) communicating the vessel with said low pressure tank;

(h) receiving gas from the vessel into said low pressure tank by pressure difference; and

(i) ascertaining the integrity of the vessel during or after step (e) or (f).

5,390,534

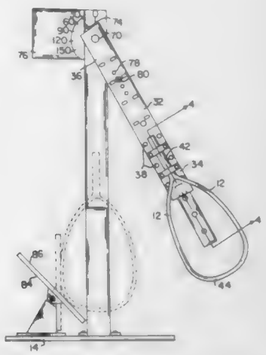
IMPACT TESTING DEVICE

Brian P. Feeney, Enfield, Conn., assignor to Lisco, Inc., Tampa, Fla.

Filed May 7, 1993, Ser. No. 60,194

Int. Cl.[6] G01N *3/00*

U.S. Cl. 73—79 **6 Claims**



1. Apparatus to test for the impact strength at which the frame of a composite game racket will break, the composite game racket being of the type having a frame of a composite material shaped centrally into a string-holding loop at the head end and with the ends of the frame in a close side relationship for being held by a player at the handle end, the apparatus comprising:

a base plate positionable on a horizontal support surface, the base plate having a horizontal upper surface;

an elongated, fixedly positioned, essentially vertically disposed, support post extending upwardly from the upper surface of the base plate, the support post having a centrally disposed longitudinal vertical centerline extending along the length thereof;

an elongated pivot arm having a lower first end and an upper second end and a longitudinal centerline therebetween, clamping components on the pivot arm adjacent to the first end for releasable securement of the handle of a game racket to be tested with at least a portion of the head extending downwardly beyond the first end;

an elongated clamping mechanism releasably secured to the pivot arm adjacent to the first end, the clamping mechanism being adapted to contact and secure the strings of the racket to be tested;

a horizontal pivot pin rotatably coupling the second end of the pivot arm with respect to the support post adjacent to its upper end for allowing a swinging motion of the pivot arm with respect to the support post about a first horizontal axis in a vertical plane of rotation, the pivot pin having a diameter coextensive with the longitudinal centerlines of the support post and the pivot arm;

an elongated pointer coupled to the second end of the pivot arm, the pointer having a longitudinal axis coextensive with the axis of the pivot arm;

an indicator plate with indicia thereon cooperable with the pointer to indicate the angle of the pointer, pivot arm and racket supported thereon to be tested with respect to the vertical centerline of the support post; and

an impact plate rotatably secured to the upper surface of the base plate, the impact plate having a striking surface positionable perpendicular to the plane of rotation of the swing arm and with a central extent at a location to be in point contact with the frame of a racket to be tested when supported by the swing arm when in a vertical orientation, the impact plate being adjustably positionable between a plurality of angular positions with respect to the vertical to vary the point on the racket frame which contacts the impact plate when the swing arm and racket are pivoted away from the impact plate and released to determine the angle of release where breakage of the racket frame occurs to thereby determine the impact strength of the racket and frame.

5,390,535

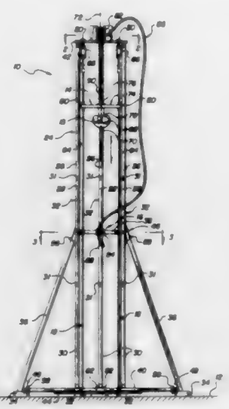
DROP TEST DEVICE

Daniel D. Smock, Highand, and Leslie R. Parry, Harrison Township, both of Mich., assignors to Detroit Testing Laboratory, Inc., Warren, Mich.

Filed Mar. 25, 1994, Ser. No. 217,984

Int. Cl.[6] G01N *3/00*

U.S. Cl. 73—79 **19 Claims**



1. A drop test apparatus (**10**) for testing the resiliency of playground surfaces (**12**), said apparatus comprising:

a drop module (**14**);

release means (**16**) for holding said drop module (**14**) at an elevated reference height and releasing said drop module (**14**) to fall to the surface (**12**);

a guide element (**18**) extending between a guide element upper end (**20**) and a guide element lower end (**22**) in an operational configuration for guiding and maintaining said drop module (**14**) in a constant attitude from release until surface (**12**) impact;

a support structure (**24**) extending between said upper (**20**) and lower (**22**) ends of said guide element (**18**) in an operational configuration for holding said guide element (**18**) in a generally vertical orientation above the surface (**12**);

conversion means for converting each of said support structure (**24**) and said guide element (**18**) between said operational configuration for surface-testing and a compact configuration for convenient transport; and

said support structure comprising generally vertical segments (**26, 28, 30**) compressively held together by said guide element (**18**) in said operational configuration.

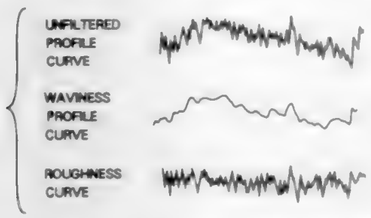
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5,390,536

APPARATUS FOR MEASURING SURFACE ROUGHNESS

Yu-Wu Zhang, Kawasaki, and Masanobu Kataoka, Kure, both of Japan, assignors to Mitutoyo Corporation, Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,753
Claims priority, application Japan, Oct. 29, 1992, 4-306414; Apr. 9, 1993, 5-107669
Int. Cl.[6] G01B *5/28*
U.S. Cl. 73—105 10 Claims



1. A surface-roughness measuring apparatus, comprising:

pickup means for scanning a surface of an object to be measured and for outputting an electric signal corresponding to an unfiltered profile curve; and

a data processing circuit comprising low-pass filter means for extracting low-frequency components corresponding to a wariness profile curve from the electric signal output from the pickup means, the low-pass filter means comprising two cascade-connected filters expressed by a transfer function G(s) having an adjusting coefficient ζ:

$$G(s)=1/\{(\alpha s/\omega c)^2+2\zeta(\alpha s/\omega c)+1\}$$

where $s=j\omega$, ωc is a cutoff frequency, ζ falls within a range from 0.7134 to 1.1083 and α is a constant;

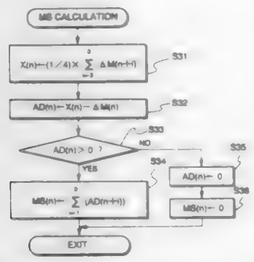
wherein the data processing circuit subtracts the low-frequency components from the electric signal corresponding to the unfiltered profile curve to produce a roughness curve, the roughness curve representing a surface roughness of the object measured.

5,390,537

COMBUSTION STATE-DETECTING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Shigetaka Kuroda; Kenichi Maeda; Kazutomo Sawamura, and Hiroshi Maruyama, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1993, Ser. No. 149,913
Claims priority, application Japan, Nov. 11, 1992, 4-325929
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.3 6 Claims



1. A combustion state-detecting system for an internal combustion engine having at least one spark plug, and a crankshaft, comprising:

crank angle signal-generating means for generating a crank angle signal with a predetermined period shorter than a firing period of said spark plug whenever said crankshaft rotates through a predetermined angle;

engine rotational speed-detecting means for detecting a value of rotational speed of said engine whenever said crank angle signal is generated;

variation rate-calculating means for calculating a rate of variation in the detected value of rotational speed of said engine over said firing period of said spark plug;

variation rate average value-calculating means for calculating an average value of the calculated rate of variation;

difference cumulative value-calculating means for comparing the calculated average value of said rate of variation with the calculated rate of variation, and for calculating a cumulative value of a difference between the calculated average value of said rate of variation and the calculated rate of variation only when the rotational speed of said engine is in the decreasing direction; and

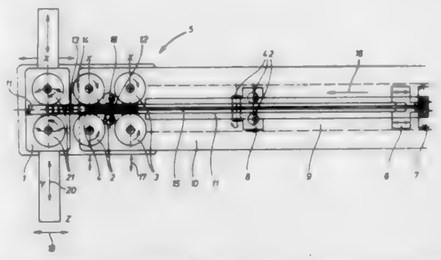
combustion state-determining means for comparing the calculated cumulative value of said difference with a predetermined value, and for determining whether said engine is in a degraded state of combustion, based on a result of said comparison of the calculated cumulative value of said difference with said predetermined value.

5,390,538

PROCESS FOR BENDING METAL HOLLOW SECTIONS AND APPARATUS FOR CARRYING OUT THE PROCESS

Walter E. Spath, Hardstrasse 8, D-7705, Steisslingen, Germany

Continuation of Ser. No. 810,964, Dec. 20, 1991, abandoned.
This application Jul. 30, 1993, Ser. No. 101,771
Claims priority, application Germany, Dec. 22, 1990, 4041668
Int. Cl.[6] B21D *7/04*
U.S. Cl. 72—133 10 Claims



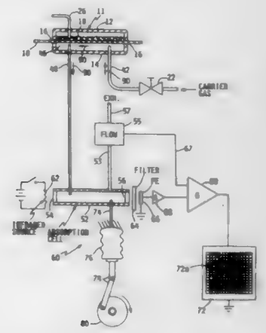
1. A method of bending hollow metal sections by rolling, comprising the steps of advancing an elongate hollow metal section having a longitudinal axis to a bending station including bending rollers; inserting a mandrel into the hollow metal section to extend to the region of the bending station; independently advancing the metal section and the mandrel to the bending station; selectively applying a rotary motion to the mandrel; applying a rotary motion to the metal section while being advanced; and selectively displacing the bending rollers at the bending station along at least one of three mutually orthogonal directions and selectively rotating the bending rollers about the axis of the metal section, whereby bending of the metal section can be accurately controlled without undesired deformation or damage to the metal section.

5,390,539

DEVICE FOR MEASURING THE PERMEABILITY OF A MEMBRANE TO WATER VAPOR

Daniel W. Mayer, St. Paul, Minn., assignor to Modern Controls, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 951,235, Sep. 25, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 126,921
Int. Cl.[6] G01N *15/08, 21/17*
U.S. Cl. 73—38 7 Claims



1. A system for measuring the permeability of a membrane to water vapor, comprising:

a) a diffusion cell having said membrane clamped between a first and second chamber, including means for introducing water vapor into said first chamber and means for introducing a flow of carrier gas through said second chamber;

b) an infrared gas analyzer connected in gas flow relation to said second chamber, said analyzer having means for generating an electrical signal representative of the water vapor content of said carrier gas;

c) a gas flow sensor connected in gas flow relation to said second chamber, said sensor having means for generating an electrical signal representative of the flow rate of said carrier gas;

d) a variable gain amplifier connected to receive said water vapor-representative signal and to receive said flow rate-representative signal, whereby said flow rate-representative signal varies the amplification gain of said amplifier; and

e) means for displaying the output signal from said variable gain amplifier.

5,390,540

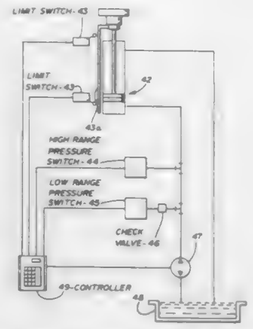
CONTROL APPARATUS FOR THE UNIFORMITY MACHINE

Frank K. Mallison, Akron, Ohio, assignor to Akron Special Machinery, Inc., Akron, Ohio

Continuation-in-part of Ser. No. 828,554, Jan. 31, 1992, abandoned. This application Jun. 25, 1993, Ser. No. 81,237
Int. Cl.[6] E01C *23/00;* G01M *17/02*
U.S. Cl. 73—146 7 Claims

1. In a tire testing machine having an upper chuck means and a lower chuck means movable through a cycle from an open to a closed position and back toward and away from the upper chuck means by a cylinder and pump, the improvement comprising:

a low-range pressure switch connected to the pump for controlling actuation of the cylinder in response to pressure encountered as the lower chuck means moves toward the upper chuck means during a substantial portion of the movement toward the upper chuck; and means for bypassing said low-range pressure switch thereafter.

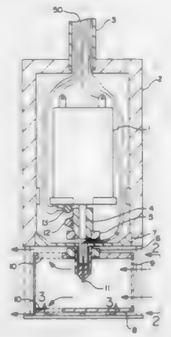


5,390,541

FLOW SENSOR INCORPORATING CYCLIC RELATIVE MOTION BETWEEN FLUID FLOW AND DETECTING ELEMENT

Murray F. Feller, Rte. 2 Box 562A, 21577 NW. 75th Ave. Rd., Micanopy, Fla. 32667

Filed Oct. 12, 1993, Ser. No. 134,590
Int. Cl.[6] G01F *1/68*
U.S. Cl. 73—204.25 20 Claims



1. A flow meter for measuring fluid flow rate, comprising:

one or more heated electrically-responsive temperature-sensitive sensing elements;

at least one of said heated electrically-responsive temperature-sensitive sensing elements generating an electrical signal in response to temperature changes produced by the removal of heat therefrom by fluid flow to be measured;

first means for producing cyclically relative motion between said fluid flow and said at least one heated electrically-responsive temperature-sensitive sensing element; and

second means connected to said at least one heated electrically-responsive temperature-sensitive sensing element for measuring the magnitude of the cyclic electric signal corresponding to the relative motion between said one heated, electrically-responsive temperature sensitive sensing element and said rate of fluid flow to be measured.

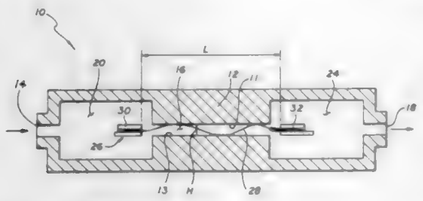
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5,390,542

MEMBRANE FOR A FLUID FLOW METER

Eugene L. O'Rourke, Corona Del Mar, Calif., assignor to Measurement Technology International, Santa Fe Springs, Calif.

Filed Dec. 21, 1993, Ser. No. 173,387
Int. Cl.[6] G01F *3/00, 1/54*
U.S. Cl. 73—269 10 Claims



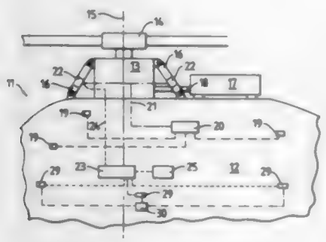
1. A fluid flow meter, comprising:
a housing having a fluid inlet and a fluid outlet and defining therebetween a fluid flow path;
a flexible membrane having an inlet end mounted at an inlet region of the fluid flow path and an outlet end mounted at an outlet region of the fluid flow path, the membrane being designed to produce an undulating motion along an active portion in response to fluid flow in said fluid flow path; and
a device responsive to the undulating motion of the membrane for measuring the fluid flow;
the membrane having:
at least a first layer of flexible material laminated to the membrane at the inlet end of the membrane;
at least a second layer of the flexible material laminated to the membrane at the outlet end of the membrane; and
wherein the first layer of flexible material is longer than the second layer of flexible material.

5,390,543

METHOD AND APPARATUS FOR IN-FLIGHT SHAKE TESTING OF AN AIRCRAFT FUSELAGE

Alan E. Staple, Stoke-sub-Hamdon; Daniel M. Wells, Yeovil, and Andrew L. Jordan, Langport, all of England, assignors to Westland Helicopters Limited, Yeovil, England

Filed Jun. 1, 1993, Ser. No. 69,356
Claims priority, application United Kingdom, Jun. 3, 1992, 9211719
Int. Cl.[6] G01H *1/00*
U.S. Cl. 73—583 9 Claims



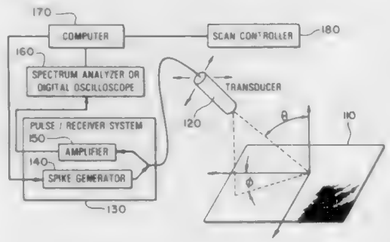
1. A method for in-flight shake testing of an aircraft structure having an active vibration control system comprising a plurality of force-generating actuators connected on the structure for inputting controlling forcing loads into the structure to reduce vibration thereof, comprising the steps of isolating one of said actuators from the vibration control system, operating said one of said actuators independently of the vibration control system so as to input a predetermined load at a predetermined frequency into said aircraft structure to excite said aircraft structure to vibrate, sensing the vibration of said aircraft structure to said input and recording said vibration.

5,390,544

METHOD AND APPARATUS FOR NON-DESTRUCTIVE EVALUATION OF COMPOSITE MATERIALS WITH CLOTH SURFACE IMPRESSIONS

Eric I. Madras, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 16, 1993, Ser. No. 110,278
Int. Cl.[6] G01N *9/24*
U.S. Cl. 73—602 7 Claims



1. A method for non-destructive evaluation of composite materials with regular surface impressions, comprising the steps of:
(a) insonifying at least one scan site on a composite material with ultrasound at a fixed polar angle larger than zero and a fixed azimuthal angle;
(b) detecting a backscattered ultrasound return signal from the composite material;
(c) amplifying the return signal;
(d) transforming the amplified return signal into a polar backscatter power spectrum for each scan site;
(e) summing the polar backscatter power spectra from each scan site to form a composite power spectrum for polar backscatter;
(f) identifying frequency ranges in said composite power spectrum where significant peaks occur;
(g) eliminating said identified frequency ranges from each polar backscatter power spectrum for each scan site of the composite material giving a corrected polar backscatter power spectrum for each scan site;
(h) integrating the corrected polar backscatter power spectrum for each scan site to obtain a value for Integrated Polar Backscatter for each scan site substantially free from artifacts caused by regular impressions on the surface of the composite material; and
(i) displaying a map comprised of pixels, wherein each pixel indicates the value of the substantially artifact-free Integrated Polar Backscatter at a corresponding scan site.

5,390,545

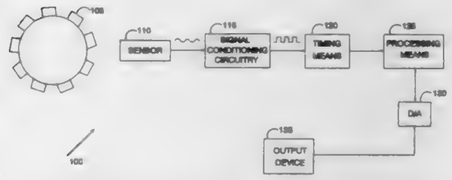
APPARATUS FOR MEASURING TORSIONAL VIBRATIONS OF ROTATING MACHINERY

Tien D. Doan, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jan. 11, 1993, Ser. No. 2,557
Int. Cl.[6] G01H *1/10*
U.S. Cl. 73—650 15 Claims

1. An apparatus for measuring torsional vibrations of rotating machinery, comprising:
a wheel having a plurality of spaced apart teeth being connected to and rotating with the rotating machinery;
a sensor adapted to detect the speed of rotation of the wheel and responsively produce a speed signal having a frequency proportional to the rotational speed of the wheel, the speed signal having a periodic pulse;

timing means for receiving the speed signal, determining the period of the most recent pulse of the speed signal, and responsively producing an instantaneous period signal having a value representative of the determined period; and
processing means for receiving the instantaneous period signal, determining an instantaneous speed value of the rotating wheel in response to the value of the instantaneous period signal, determining an average speed value of the rotating wheel based on previous wheel rotations in response to the instantaneous speed value, producing an instantaneous torsional velocity signal having a value equal to the difference of the average speed value and the instantaneous speed value, and producing an instantaneous torsional displacement signal having a value responsive to the integration of the torsional velocity signal value.

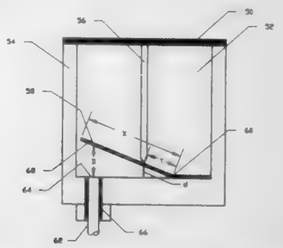


5,390,546

FIBER OPTIC DIAPHRAGM SENSORS FOR ENGINE KNOCK AND MISFIRE DETECTION

Marek T. Wlodarczyk, 6865 Vachon Dr., Bloomfield Hills, Mich. 48301

Filed Jul. 1, 1993, Ser. No. 86,245
Int. Cl.[6] G01L *7/08*
U.S. Cl. 73—715 7 Claims



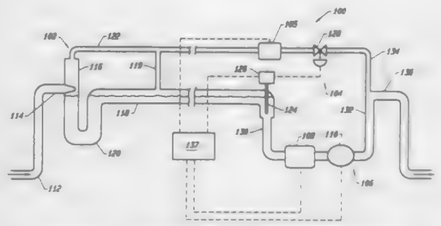
1. In a fiber optic diaphragm sensor comprising a body having a cavity approximately 3 mm across therein, a diaphragm attached to the body and partially enclosing the cavity, the diaphragm being moveable in response to changes in fluid pressure exerted upon the diaphragm, and
an optical fiber inserted in the body with the tip end of the optical fiber disposed to inject a light beam into the cavity and receive a reflected light beam,
the improvement comprising moveable reflective means interposed in the cavity to intercept and reflect back the injected light beam, mechanical means interconnecting the reflective means to the diaphragm whereby movement of the diaphragm in response to changes in fluid pressure activates responsive movement of the reflective means and modulation of the light beam reflected back to the tip end of the optical fiber, said mechanical means interposed between the diaphragm and reflective means to provide a substantial temperature differential between the diaphragm and reflective means when the diaphragm is hot.

5,390,547

MULTIPHASE FLOW SEPARATION AND MEASUREMENT SYSTEM

Ke-Tien Liu, 17149 Leal Ave., Cerritos, Calif. 90701

Filed Nov. 16, 1993, Ser. No. 153,328
Int. Cl.[6] G01F *15/08*
U.S. Cl. 73—861.04 18 Claims



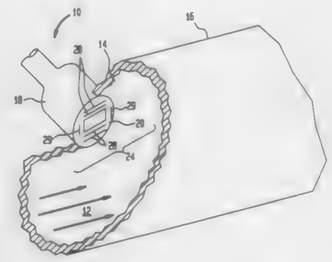
1. A system for determining the flow rate of at least first and second components in a multiphase flow stream comprising:
an inlet flow line;
a substantially horizontal flow line coupled to said inlet flow line, said substantially horizontal flow line of significantly greater cross-sectional area than said inlet flow line;
a gas flow line adapted to receive gas from said inlet flow line;
a level control means in said substantially horizontal flow line, said level control means coupled to a liquid discharge line and adapted to retain a substantially constant level in said horizontal flow line, said liquid discharge line of significantly smaller cross-sectional area than said horizontal flow line;
liquid flow measurement means in said liquid discharge line; and
gas flow measurement means in said gas flow line.

5,390,548

ELECTRODE ARRAY ELECTROMAGNETIC VELOCIMETER

Rolf F. Kasper, Old Lyme, and Lee S. Langston, Manchester, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1993, Ser. No. 38,598
Int. Cl.[6] G01F *1/58*
U.S. Cl. 73—861.15 8 Claims



1. A velocimeter for measuring boundary layer velocity volume integrals in a conductive fluid moving over a surface of a solid member, comprising:
a main body having a face that is mounted flush with the surface of the solid member;
magnetic field generating means mounted in said main body for producing a plurality of magnetic flux lines extending generally normal from the surface of the solid member;
electric field sensing means mounted in said main body and

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disposed within said plurality of magnetic flux lines for providing electrical output signals that are proportional to variations in said plurality of magnetic flux lines as the conductive fluid flows therethrough, said electric field sensing means including a plurality of parallel electrodes flush with said face of said main body, each of said plurality of parallel electrodes aligned parallel with a direction of movement of the conductive fluid, said plurality of parallel electrodes further defined by N nested sets, N≧2, of two parallel electrodes with unique spacing therebetween, each of said N nested sets centered in said plurality of magnetic flux lines;

insulation surrounding and embedding said magnetic field generating means and said electric field sensing means, and further contained within said main body; and

means conductively attached to said electrical field sensing means for processing the electrical output signals from said sensing means and for providing readouts of the velocity field.

5,390,549

MEASURING DEVICE FOR DETERMINATION OF ROTATION ANGLE OR TORQUE OF A STATIONARY OR ROTATING SHAFT

Klaus Dobler, Gerlingen, and Hansjörg Hachtel, Weissach, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

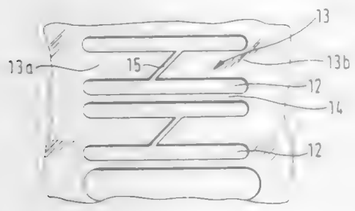
PCT No. PCT/DE91/00072, § 371 Date Aug. 26, 1991, § 102(e) Date Aug. 26, 1991, PCT Pub. No. WO91/12504, PCT Pub. Date Aug. 22, 1991

PCT Filed Jan. 24, 1991, Ser. No. 752,492

Claims priority, application Germany, Feb. 15, 1990, 4004589

Int. Cl.[6] G01L *3/02*

U.S. Cl. 73—862.331 **9 Claims**



1. In a measuring device for determining torque on and angle of rotation of a shaft, said measuring device comprising measuring means for angular orientation and a torsion pipe connectable with the shaft and having a plurality of throughgoing openings extending in an axial direction of the torsion pipe and arranged one after the other in a circumferential direction, the improvement wherein the torsion pipe (**10**) is provided with crosspieces (**13**) of greater rigidity and crosspieces (**14**) of lesser rigidity arranged one after the other in a circumferential direction, each of said crosspieces being located between two adjacent ones of the throughgoing openings (**12**), and each of said crosspieces (**13**) having a greater rigidity is provided with at least one slot (**15**) extending between the throughgoing openings (**12**) adjoining said crosspiece (**13**) of greater rigidity so that each of said crosspieces (**13**) of greater rigidity is divided into two crosspiece parts (*13a, 13b*).

5,390,550

APPARATUS FOR MEASURING TENSION IN STRETCHED CABLES

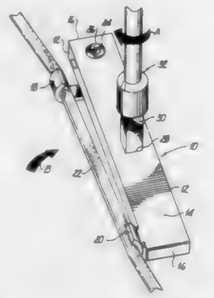
George E. Miller, 161 Spruce St., Massapequa Park, N.Y. 11762

Filed May 26, 1993, Ser. No. 67,731

Int. Cl.[6] G01L *5/00*

U.S. Cl. 73—862.46 **4 Claims**

1. Apparatus for measuring the tension of a statically stretched cable comprising a bar having at least one face and one longitudinal edge, a cable engaging member located at each end of said bar and extending outwardly from the one longitudinal edge substantially parallel to the plane of the face of said bar, a spirit level mounted on said bar adjacent one end, parallel to the face of said bar and extending at an angle to said



longitudinal edge and a recess spaced from said spirit level formed in said bar perpendicular to the face of said bar in which a torque wrench is applied whereby on application of a torque to said bar, the bar deflects the stretched cable and the spirit level brought to center, at which time the tension in said cable is determined.

5,390,551

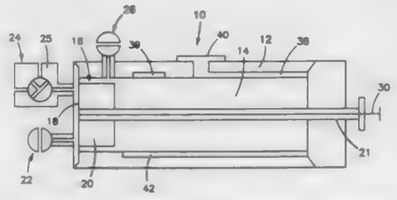
METHOD AND APPARATUS FOR THE ANALYSIS OF GAS IN A MEDIUM, ESPECIALLY HYDROCARBONS

Nelson Carvajal, Los Teques; Beatriz Silva, and Alejandro Gonzáles, both of Caracas, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Division of Ser. No. 48,127, Apr. 14, 1993. This application Jan. 31, 1994, Ser. No. 188,837

Int. Cl.[6] G01N *7/00, 1/24*

U.S. Cl. 73—863 **7 Claims**



1. A method for determining the maximum concentration of a monitored gas (C_{Gmax}) in the head space of a confined space containing a medium material, comprising the steps of:

(a) providing extracting means having a chamber for receiving a sample volume of the material to be extracted from the confined space;

(b) controlling the temperature of the chamber such that the temperature of the chamber is maintained at a desired temperature (T_1);

(c) withdrawing a sample volume (V_l) of the material from the confined space and into the chamber;

(d) feeding a volume (V_g) of inert gas into the chamber and mixing the inert gas with the material to form a mixture;

(e) allowing the mixture to reach equilibrium wherein a head space of gas is formed in the chamber over the material;

(f) withdrawing a first gas sample from the head space of the chamber;

(g) determining the concentration (C_{gl}) of the monitored gas in the first gas sample;

(h) expelling the head space gas from the head space of the chamber;

(i) repeating steps (d)–(g) so as to determine the concentration (C_{gn}) of the monitored gas in at least a second gas sample;

(j) determining the equilibrium constant (K_{T1}) of the material at the given temperature (T_1) in accordance with the following formula:

$$K_{T1} = \frac{V_g/V_l(e^x)}{1 - e^x}$$

wherein:

$$x = \frac{\ln C_{gn} - \ln C_{gl}}{n - 1}$$

and wherein:

n=the sequential number of the sample taken and is greater than 1;

(k) determining the maximum concentration (C_{Gmax}) of the monitored gas in the head space of the confined space in accordance with the following formula:

$$C_{Gmax} = C_{gl} \cdot (K_{T1} + V_g/V_l) \cdot D_f$$

where D_f is a dilution factor defined as follows:

$$D_f = \frac{V_g \cdot Wt_l}{Wt_s \cdot V_{ss}}$$

wherein:

Wt_s is the weight of the sample volume (V_l) of the material;

Wt_t is the total weight of the medium material;

V_{ss} is the volume of the head space of the confined space; and

V_g is the volume of inert gas.

5,390,552

VALVE FOR SAMPLING A LIQUID SPECIMEN

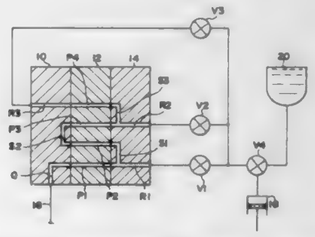
Takashi Demachi, Kobe, and Toshiaki Kuroda, Takasagoshi, both of Japan, assignors to Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Oct. 30, 1992, Ser. No. 969,574

Claims priority, application Japan, Nov. 20, 1991, 3-331283

Int. Cl.[6] G01N *1/10*

U.S. Cl. 73—863.730 **4 Claims**



1. A valve for a liquid specimen, sampling comprising: two fixed elements; and a movable element held between and movable relative to said fixed elements, said movable element having plural sample metering passages disposed therein, said movable element moving while contacting a surface of each of said fixed elements so as to define a first state for filling the metering passages with sample and a second state for pushing out said sample and transferring it outside of the sampling valve, wherein:

a flow-in passage is disposed in one of said fixed elements for communicating with at least one metering passage in said first state,

plural flow-out passages are disposed in either fixed element so as to fluidly communicate with mutually different metering passages in said first state,

relay passages are disposed in either fixed element for mutually connecting the metering passages in specified combination in said first state, and

at least one relay passage is connected with any one of the flow-in passages, flow-out passages, and other relay passage to form plural sampling routes in the sampling valve, thereby sampling the specimen by selecting a specific metering passage.

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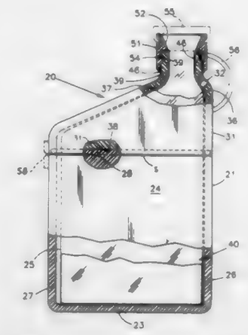
LIQUID SAMPLING APPARATUS AND METHOD

Lewis G. Lynn, 65 Hillhurst La., Rochester, N.Y. 14617

Filed Dec. 22, 1992, Ser. No. 995,572

Int. Cl.[6] G01N *1/10*

U.S. Cl. 73—864.91 **8 Claims**



7. A sample collector comprising in combination

a rigid, two-piece hollow container including an upper section having an annular neck portion defining and surrounding an inlet opening for said container, and a lower section releasably engaged with said upper section,

a flexible, plastic bag removably mounted in said container and having adjacent an upper end thereof an annular neck portion defining and surrounding an inlet/outlet opening in said bag,

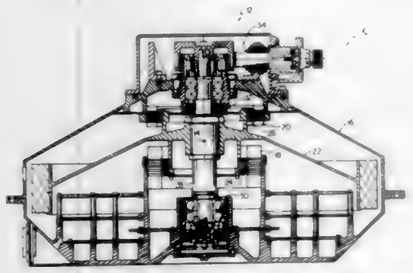
bag supporting means releasably securing said neck portion of said bag coaxially in an open position over said neck portion of said upper section of said container, whereby said bag at its lower end extends downwardly into said lower section of said container and is removably supported upright in said container to permit a liquid sample to be fed through said neck portion thereof into said bag, and whereby said liquid sample is prevented by said bag from coming into contact with the interior of said container,

said upper section of said container having therein a small vent opening communicating at one end with a space between said upper section of said container and said bag, and at its opposite end with the exterior of said container, thereby to vent said space when a liquid sample is fed into the bag, and

said upper section of said container being selectively disengageable from said lower section to form in said container a second opening larger than said inlet opening for said container, whereby when said bag has been filled and released by said bag supporting means, the filled bag may be withdrawn from said container through said second opening.

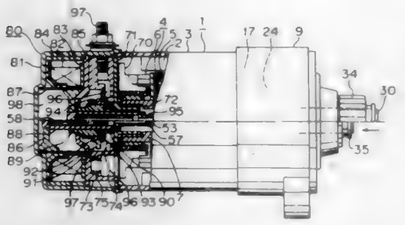
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5,390,554
SPACECRAFT COMPONENT BEARING
Edward F. Silvent, Glendale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 28, 1991, Ser. No. 783,794
Int. Cl.[6] G01C *19/76;* F16C *39/00*
U.S. Cl. 74—5.12 6 Claims



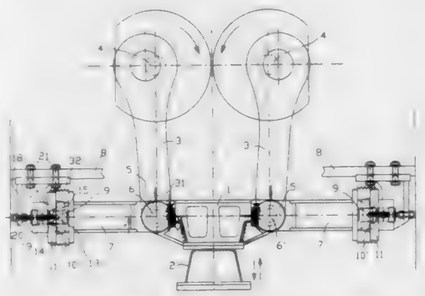
6. A method of absorbing vibration overload on a spacecraft component wheel assembly shaft during launch including the steps of:
providing a fixed bearing unit mounted on a stator of the spacecraft component and journaled on a stator shaft coaxially along a common axis;
providing a snubber piston slidably mounted on the stator and in engagement with the rotor shaft;
providing a cover disposed over the fixed bearing unit and snubber piston and joined to the stator;
providing a bellows unit mounted on the cover over an opening in the cover and subject to a pressure differential between inner and outer sides of the cover;
affixing the piston at its radially outer end to the bellows unit;
whereby the decreased pressure on the outer side of the cover and bellows after launch withdraws the piston away from the stator shaft allowing rotation of the rotor shaft relative to the stator and withdrawing support by the piston of the rotor shaft.

5,390,555
COAXIAL STARTING MOTOR
Takeo Gotou, and Shuzo Isozumi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 26, 1993, Ser. No. 67,030
Claims priority, application Japan, May 29, 1992, 4-163804
Int. Cl.[6] F02N *11/00*
U.S. Cl. 74—7 R 2 Claims



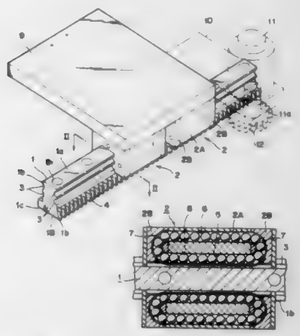
1. A coaxial starting motor comprising:
a d.c. motor whose armature has a hollow rotary shaft projected at its end forwardly, and which has a rear end provided with a brush holder;
an overrunning clutch for transmitting rotation from the rotary shaft;
an output shaft whose rear end portion is positioned in the rotary shaft, which is supported so as to be movable forwardly and backwardly, and which is rotated by the overrunning clutch;
a pinion fixed on a front end portion of the output shaft; and
an electromagnetic switch which is arranged behind the d.c. motor to be coaxial therewith, and which has a movable core attracted by a fixed core on energizing an exciting coil to forwardly move a movable rod with the movable core fixed at its rear end, thereby forwardly moving the output shaft through a pushing rod and causing a movable contact supported by the movable rod to get in touch with a fixed contact from the back to rotate the armature;
wherein the electromagnetic switch has the fixed contact and the movable contact arranged at an inner peripheral side of a brush holder and has the fixed core partitioning a contact chamber and a movable core chamber thereby providing a barrier to prevent contact powder scattered in said contact chamber from entering said movable core chamber, the movable core chamber located behind the contact chamber.

5,390,556
CONTROL SYSTEM FOR THE RECTILINEAR VERTICAL RECIPROCATING MOVEMENT IN A NEEDLING MACHINE
Massimo Nencini, Via Macallé, 39; Antonio Nencini, Via Spartitoio, 145, both of 51100 Pistoia; Graziano Nencini, Pistoia; Carlo Santi, Pistoia, and Raffaele Vezzosi, Pistoia, all of Italy, assignors to Massimo Nencini and Antonio Nencini, both of Pistoia, Italy
Filed Jan. 18, 1994, Ser. No. 182,094
Claims priority, application Italy, May 19, 1992, MI92A 001201
Int. Cl.[6] D04H *18/00;* F16C *11/04*
U.S. Cl. 74—38 17 Claims



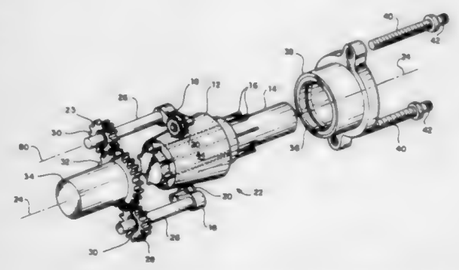
1. A control system for rectilinear vertical reciprocating movement of a needle-holder beam in a needling machine, the vertical reciprocating movement being transmitted to the needle-holder beam from a motor through a crank mechanism connected to a support of the needle-holder beam, the crank mechanism comprising:
one or more main connecting rods, each of the main connecting rods having first and second opposed ends, the first end of each of the main connecting rods being pivotally connected to the support of the needle-holder beam;
at least two auxiliary connecting rods, each of the auxiliary connecting rods having first and second opposed ends, the first end of each of the auxiliary connecting rods being pivotally connected to the first end of the respective main connecting rod;
a movable sliding block pivotally connected to the second end of each of the auxiliary connecting rods for attaching the respective auxiliary connecting rod to a structure of the needling machine and for allowing the auxiliary connecting rods to angularly oscillate in a vertical plane during operation of the crank mechanism;
a mobile profile fixed to the second end of each of the auxiliary connecting rods;
a fixed profile communicating with each mobile profile, each fixed profile being attached to the needling machine structure, each mobile profile making a rolling coupling with the respective fixed profile such that when the crank mechanism is operated, each mobile coupling rolls along and remains in contact with the respective fixed profile along contact lines which extend along parallel horizontal planes, causing the auxiliary connecting rods to simultaneously angularly oscillate in the vertical plane.

5,390,557
LINEAR GUIDE SYSTEM WITH INTEGRALLY FORMED RACK
Toru Tsukada, Maebashi, Japan, assignor to NSK Ltd., Tokyo, Japan
Filed Jul. 22, 1993, Ser. No. 95,012
Claims priority, application Japan, Aug. 11, 1992, 4-056507[U]
Int. Cl.[6] F16H *19/04;* F16C *29/06*
U.S. Cl. 74—89.17 11 Claims



1. A linear guide system with an integrally formed rack comprising:
a guide rail having opposite sides formed with rolling grooves elongated in the longitudinal direction of the guide rail for receiving rolling members;
sliders which are mounted on the guide rail so as to enable relative sliding movement of said sliders and the guide rail, each slider including a slider main body having a recess portion with rolling grooves corresponding to said rolling grooves of the guide rail and having internal return paths parallel with said rolling grooves of said recess portion, and end caps attached to opposite longitudinal ends of the slider main body which have curved paths for connecting rolling paths formed by the rolling grooves of the slider main body and the corresponding grooves of the guide rail with corresponding return paths of the slider main body in order to form endless circulation paths; and
a multitude of rolling members which are loaded for rolling in said endless circulation paths so as to reduce friction between the guide rail and the sliders during said relative sliding movement,
wherein at least one of said opposite sides of the guide rail has rack teeth which are aligned in the longitudinal direction of the guide rail, with respective tooth traces of the rack teeth being orthogonal to the rolling grooves of the guide rail.

5,390,558
CONTINUOUSLY VARIABLE TRANSMISSION
Morgan W. Weinberg, 108 3rd St., N.E., Washington, D.C. 20002
Filed May 3, 1993, Ser. No. 55,322
Int. Cl.[6] F16H *29/04*
U.S. Cl. 74—124 12 Claims



1. A continuously variable transmission including input shaft means receiving rotary input motion from an external power source, cam means having an eccentric cam outer surface, said cam means being slidably mounted on said input shaft means so as to be axially movable thereon, means to move said cam means axially along said input shaft means, output means for receiving motion from said cam means and for converting said motion to a rotary output motion, said output means comprising:
at least one torque arm means, a rotatable shaft means for each said at least one torque arm means rotatably supporting said at least one torque arm means thereon, said at least one torque arm means having cam follower means contacting said cam outer surface, said cam outer surface causing said cam follower means to oscillate when said cam means is rotated, said at least one torque arm means having a proximal end and a distal end, said proximal end being rigidly fixed to said rotatable shaft means and said distal end rotatably supporting said cam follower means, whereby said at least one torque arm means is caused to oscillate in and through a predetermined arc, said rotatable shaft means thus being caused to rotate alternately in opposing directions; and
output gear means mounted on said rotatable shaft means, said output gear means comprising one-way clutch means supported on said rotatable shaft means for rectifying alternating rotational motion in opposing directions into unidirectional rotational motion, gear means rotatably supported about said rotatable shaft means and being driven in unidirectional rotational motion by said one-way clutch means, and sun gear means receiving motion from said gear means, whereby all motion being transmitted by each and all gear means is imposed collectively upon said sun gear means;
said input shaft means having an internal axis of rotation, said cam follower means defining a torus having an internal axis of rotation, said torque arm means predetermined arc defining a plane of reference, wherein said cam outer surface is configured to assume a curve defining Cartesian coordinates generated by the equations:

$$R_{c2x}[Z+R_4 \sin \theta_7]=R_4[\theta_o\ Z] \cos \theta_c-[R_3-R_4[1-\cos \theta_7]] \sin \theta_5$$

and

$$R_{c2y}[Z+R_4 \sin \theta_7]=R_4[\theta_o\ Z] \sin \theta_c-[R_3-R_4[1-\cos \theta_7]] \cos \theta_5$$

and

$$R_{c2}=[R_{c2x}^2+R_{c2y}^2]^{\frac{1}{2}}$$

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wherein

R_{C2} is displacement of said cam follower means from said input shaft means axis of rotation;

Z is linear displacement of said cam means with respect to said plane of reference, and forming one of three Cartesian axes including an x-axis, a y-axis, and a z-axis, wherein there are defined an x-y plane; an x-z plane, and a y-z plane;

R_{C2X} and R_{C2Y} describe said cam outer surface in Cartesian coordinates as a function of said Z;

θ_C is an angle determined between said x-axis and a line spanning said input shaft means internal axis and said cam follower means internal axis, said line lying within the y-x plane;

θ_7 is an angle lying in the x-z plane and defined between a line tangent to said cam outer surface at a point of contact between said cam outer surface and said cam follower means and the z-axis;

θ_5 is an angle lying in the y-x plane and defined between a line tangent to said cam outer surface at a point of contact between said cam outer surface and said cam follower means, and the x-axis;

R_C is the distance between said input shaft means internal axis and said cam follower means internal axis;

R_3 is a maximum radius of said cam follower means about said internal axis thereof to an outer surface of said cam follower means; and

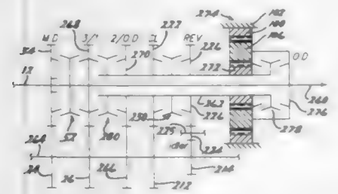
R_4 is the internal radius of said torus.

5,390,559

WIDE RANGE MANUAL TRANSMISSION FOR MOTOR VEHICLES

Steven G. Thomas, Bloomfield Hills, and David A. Janson, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1993, Ser. No. 161,617
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—325 **18 Claims**



1. A transmission for producing multiple speed ratios, comprising:

an input shaft;

an output shaft substantially coaxial with the input shaft;

an intermediate shaft substantially coaxial with the input shaft;

a countershaft disposed substantially parallel to the input shaft;

main drive means for driveably connecting the countershaft and input shaft;

multiple pairs of pinions and gears, the members of each pair being in continual mutual meshing engagement, a first member of each pair supported on the countershaft, a second member of each pair supported on one of the output shaft and intermediate shaft, each pair associated with a speed ratio, at least one pair associated with two speed ratios;

a planetary gear unit including a sun gear, a ring gear, a carrier driveably connected to the output shaft, and planet pinions supported on the pinion carrier in continual meshing engagement with the sun gear and ring gear, one component of the group consisting of the ring gear and sun gear being driveably connected to the intermediate shaft, the other component of said group being fixed against rotation, the carrier connected to the output shaft; and

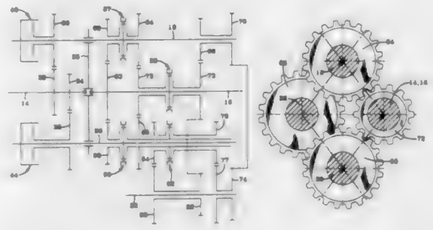
means for releasably connecting a member of each pinion-gear pair, respectively, to one of the output shaft and intermediate shaft.

5,390,560

COUNTERSHAFTS POWER TRANSMISSION

Richard A. Ordo, Greenwood, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1993, Ser. No. 15,698
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—329 **4 Claims**



1. A power transmission comprising, in combination:

input shaft means;

output shaft means;

a pair of countershaft means parallel with said input shaft means and said output shaft means;

a cluster gear supported on one of said countershaft means;

said cluster gear presenting two gear portions, each of which serves as a gear means;

an idler shaft means parallel with said input and output shaft means;

a cluster gear and a reverse cluster gear supported on said idler shaft means;

said cluster gears each presenting two gear portions, each of which serves as a gear means;

gear and clutch means for selectively drivingly connecting the input shaft means with respective ones of the countershaft means;

exclusive low ratio gear means selectively connectable between respective ones of said countershaft means;

a plurality of said gear means supported on said idler shaft means and said output shaft means for establishing two low forward ratios and at least one reverse ratio between the input and output shaft means;

exclusive high ratio gear means selectively connectable between respective ones of said countershaft means for selectively establishing a plurality of higher ratios between the input and output shaft means; and,

said exclusive low ratio gear means selectively disconnected from torque transmission and direct rotary forces during the operation of the exclusive high ratio gear means

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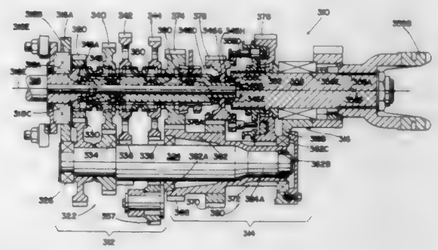
COMPOUND TRANSMISSION

Alan C. Stine, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 20, 1993, Ser. No. 63,792
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—331 **27 Claims**

1. A compound change gear transmission (**110**) comprising a multiple-speed main transmission section (**112**) connected in series with a multiple speed auxiliary transmission section (**114**), said compound change gear transmission being one of the range, splitter or combined range/splitter type, said main

and auxiliary transmission sections contained within a common transmission housing (**116**) defining a forward end wall (**116A**) and a rearward end wall (**116B**), said main transmission section including a main section countershaft (**124**) carrying at least two (**130**, **134**, **136**) main section countershaft gears fixed thereto, and said auxiliary transmission section including an auxiliary section countershaft (**162**) carrying at least two (**168**,



170, **172**) auxiliary section countershaft gears fixed thereto; said transmission characterized by:

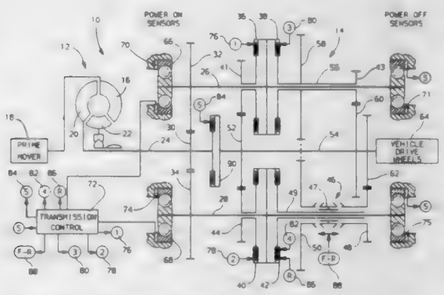
said main section and auxiliary section countershafts being independently rotatable and coaxial and together defining a coaxial assembly of countershafts supported for rotation in said housing solely by bearings carried by said forward and said rearward end walls.

5,390,562

POWER TRANSMISSION AND CONTROL

James F. Sherman, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 4, 1993, Ser. No. 71,420
Int. Cl.[6] F16H *61/00*
U.S. Cl. 74—335 **6 Claims**



1. A power transmission and control comprising:

input means;

output means;

means for providing a first and a second power path between said input and output means including selectively engageable friction torque transmitting means for establishing torque capacity in each power path, gear means for transmitting torque in each power path and being responsive to torque transmission therein for establishing a force in one direction during torque transmission from the input means to the output means and a force in another direction during torque transmission from the output means to the input means; and

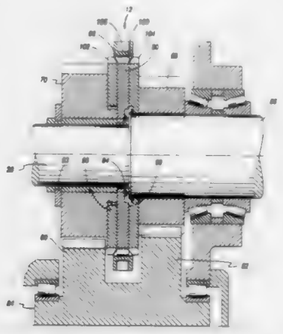
control means responsive to the forces to reduce the torque capacity of one of the torque transmitting means to complete an interchange of the torque transmitting means in the respective power paths.

5,390,563

COMPOUND TRANSMISSION HAVING SPLITTER TYPE AUXILIARY SECTION

Joseph D. Reynolds, Climax, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 14, 1993, Ser. No. 61,921
Int. Cl.[6] F16D *11/04*; **F16H** *3/08*
U.S. Cl. 74—339 **16 Claims**



1. A compound transmission comprising a main section connected in series with an auxiliary section, the auxiliary section including:

an input shaft having an auxiliary drive gear rotatably mounted thereon;

an output shaft having a splitter gear rotationally fixed thereto;

at least one auxiliary countershaft having first and second auxiliary countershaft gears rotatable with the auxiliary countershaft and rotatably engaged with the auxiliary drive gear and the splitter gear, respectively;

a strut having a first end rotationally fixed to the input shaft and a distal second end; and

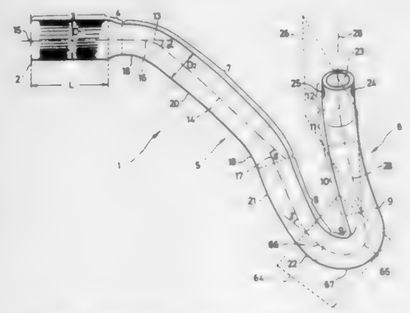
a dog tooth clutch mounted to the second end of the strut beyond a root diameter of the splitter gear, the clutch being movable between a first position wherein rotation of the input shaft is transmitted to the auxiliary drive gear and a second position wherein rotation of the input shaft is transmitted to the splitter gear.

5,390,564

BICYCLE HANDLEBAR

Jochen Klieber, Dammweg 1, 8221 Tacherting, Germany

Continuation of Ser. No. 836,066, Feb. 12, 1992, abandoned.
This application Feb. 9, 1994, Ser. No. 193,901
Claims priority, application Germany, Feb. 27, 1991, 4106154
Int. Cl.[6] B62K *21/12*
U.S. Cl. 74—551.1 **38 Claims**



1. A bicycle handlebar comprising a horizontal extension

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connection piece (3) and at least first and second handlebar segments disposed symmetrically on respectively opposite sides of said horizontal extension connection piece, each of said segments including an upper handlebar grip (5) extending from said horizontal extension connection piece in a rearwardly and downwardly direction therefrom and a lower handlebar grip (6) adjoined to said upper handlebar grip and extending forwardly and upwardly with respect to said horizontal extension connection piece, said upper handlebar grip including a first gripping portion (7) extending downwardly at a first angle (α) relative to said horizontal extension connection piece and a second lateral gripping portion (8) extending downwardly at a second angle ($\alpha+B$) relative to said horizontal extension connection piece, said second angle being greater than said first angle.

5,390,565

BICYCLE SPEED CHANGE SYSTEM, BICYCLE SPEED CHANGE METHOD AND BICYCLE SPEED CHANGE OPERATION ASSEMBLY

Koichi Tagawa, and Yoshihisa Iwasaki, both of Osaka, Japan, assignors to Maeda Industries, Ltd., Osaka and Bridgestone Cycle Co., Ltd., Tokyo, both of Japan

Continuation of Ser. No. 84,281, Jul. 8, 1993. This application Feb. 17, 1994, Ser. No. 197,831

Claims priority, application Japan, Nov. 11, 1991, 3-294667

Int. Cl.[6] F16C *1/10*; **G05G** *11/00*

U.S. Cl. 74—502.2 **4 Claims**

1. A bicycle speed change operation assembly comprising:

a cylindrical operation member rotatably supported coaxially around a grip end portion of a handlebar;

a winding reel arranged coaxially around the grip end portion for rotation with the cylindrical operation member;

cable means connected to the winding reel and a speed shifter, the cable means being pulled or paid out by the winding reel for operating the speed shifter in response to the rotation of the cylindrical operation member; and

a direction changing reel that is supported for rotation about a support shaft extending perpendicularly to the handlebar for directing the cable means, which approaches the direction changing reel in a direction along the handlebar, transversely toward the handlebar for connection to the winding reel.

5,390,566

APPARATUS FOR CONTROLLING HYDRAULIC COUPLING DEVICE IN AUTOMATIC TRANSMISSION FOR MOTOR VEHICLE

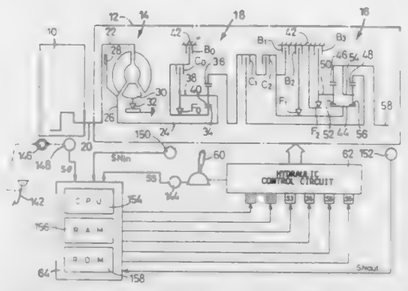
Hiromichi Kimura, Okazaki; Hidehiro Oba, Aichi, and Kunihiro Iwatsuki, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 6, 1992, Ser. No. 956,172

Claims priority, application Japan, Oct. 8, 1991, 3-289122

Int. Cl.[6] B60K *41/06*

U.S. Cl. 477—161 **16 Claims**



1. A control apparatus for controlling a hydraulic pressure to be applied to a hydraulically operated frictional coupling device of an automatic transmission for a motor vehicle, for an engaging action of the hydraulically operated frictional coupling device to establish a given operating position of the automatic transmission, said control apparatus comprising:

detector means for detecting a rate of change in a parameter indicative of a progress of said engaging action;

pressure control means for regulating said hydraulic pressure so that the rate of change in said parameter detected by said detector means changes towards a target value; and

inhibiting means for inhibiting execution of a control function which controls the vehicle, while said detector means is detecting said rate of change in said parameter, where the execution of said control function influences the detected rate of change in said parameter.

5,390,567

OPENING DEVICE OR PRESERVE CANS, TINS AND SIMILAR CONTAINERS

Robert P. Martorell, Santa Paula 1, 43201 Reus (Tarragona), Spain

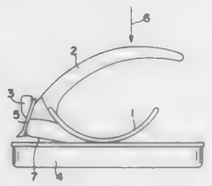
PCT No. PCT/ES92/00053, § 371 Date May 7, 1993, § 102(e) Date May 7, 1993, PCT Pub. No. WO93/01122, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 8, 1992, Ser. No. 50,398

Claims priority, application Spain, Jul. 8, 1991, 9102155[U]; Jan. 28, 1992, 9200249[U]

Int. Cl.[6] B67R *7/44*

U.S. Cl. 81—3.09 **5 Claims**



1. A device for opening of preserve cans and similar containers of the type having an opening ring on the can lid, said device comprising a body having a curved-structure surface which accepts on one end thereof a lever arm and a hook for coupling to said opening ring of said container for controlling the removal of the said opening ring, said curved structure being formed in the shape of a curved plate attached at said one end thereof to said lever arm, said lever arm being curved in a direction opposite to that of said curved plate.

5,390,568

AUTOMATIC TORQUE WRENCHING MACHINE

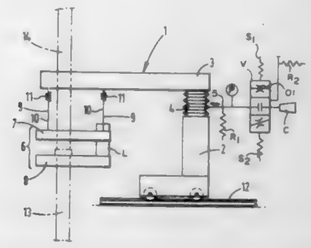
Bernd-Georg Pietras, Wedemark, Germany, assignor to Weatherford/Lamb, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 891,752, Jun. 1, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 75,687

Claims priority, application United Kingdom, Mar. 11, 1992, 9205211

Int. Cl.[6] B25B *13/50*

U.S. Cl. 81—57.16 **15 Claims**



1. An automatic torque wrenching machine for coupling and uncoupling threaded length of pipe, said automatic torque wrenching machine comprising a back-up tong for gripping a first length of pipe, a power tong for gripping a second length of pipe and rotating said second length of pipe relative to said first length of pipe, adjustable means connected to said power tong for adjustably and controllably moving said power tong towards and away from said back-up tong, said means for adjustably and controllably moving said power tong towards and away from said back-up tong comprising a pneumatic operator, means for admitting gas to said pneumatic operator to increase the pressure therein and move said power tong with respect to said back up tong, a hydraulic operator connected to said pneumatic operator whereby said pneumatic operator can be raised and lowered to a desired datum level, and means for allowing gas to leave said pneumatic operator and move said power tong with respect to said back-up tong.

5,390,569

APPARATUS FOR PRESTRESSING CASING BOLTS FOR STEAM AND GAS TURBINES

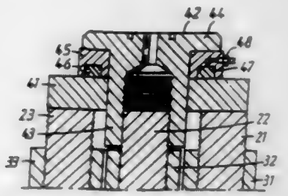
Hans Odsberg, Täby, and Staffan Sundberg, Hofors, both of Sweden, assignors to Ovako Couplings AB, Hofors, Sweden

Division of Ser. No. 29,034, Mar. 10, 1993, Pat. No. 5,339,512. This application Jan. 27, 1994, Ser. No. 187,703

Claims priority, application Sweden, Apr. 15, 1992, 9201198

Int. Cl.[6] B25B *29/02*

U.S. Cl. 81—57.38 **9 Claims**



1. An apparatus for prestressing threaded parallel casing bolts for steam and gas turbines and valves for such turbines, said casing bolts being arranged in groups and in close proximity to each other, said apparatus comprising:

(a) an essentially flat bridge element having oppositely facing first and second sides and being provided with a through opening wherein the first side of said bridge element is adapted to be supported on end faces of a first and a second of said casing bolts with a third of said casing bolts disposed between said first and second bolts, and with said through opening in centered superposition with the third bolt;

(b) a pulling sleeve insertable into said through opening and provided with a bore .at its first end which faces said third casing bolt, said bore being provided with internal threads to threadedly engage matching external threads of said third casing bolt; and

(c) an annular hydraulic means operatively associated with said pulling sleeve, said annular hydraulic means being adapted for interposition between the second side of the bridge element and a flange portion of said pulling sleeve.

5,390,570

ADJUSTABLE WRENCH FOR OIL AND FUEL FILTERS

Edward J. Reimer, 39311 Ferris, Clinton Township, Macomb County, Mich. 48036

Filed Jan. 4, 1994, Ser. No. 177,222

Int. Cl.[6] B25B *13/52*

U.S. Cl. 81—64 **18 Claims**

1. An adjustable oil and fuel filter wrench comprising:

a belt having a length, a width, first and second ends, and a plurality of teeth on one side thereof, with the teeth being positioned and located in spaced relation along the length of the belt and spanning the width thereof;

a handle member having a toothed end for engaging the teeth of the belt and a handle portion for grasping by the user; and

a coupling member being configured and positioned to surround the toothed end of the handle member and the ends of the belt for coupling the teeth of at least the first end of the belt with the toothed end of the handle member, said coupling member being movable between a first position where the first end of the belt is urged toward the handle member to retain the teeth of first end of the belt in engagement with the toothed end of the handle member, and a second position wherein the first end of the belt can be moved to adjust the length of the belt which will contact the filter, thus enabling the wrench to be used for different diameter filters.

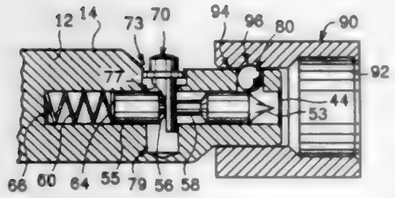
VOL 1171 ISS 3 FE 21 1995 UMI

5,390,571

PUSH BUTTON SOCKET LOCKING MECHANISM

Leonard J. Fox, III, 1920 College Blvd. #278, Oceanside, Calif. 92056, and Bruce A. Heckbert, 120 Tampa St., West Warwick, R.I. 02893

Filed Mar. 5, 1993, Ser. No. 26,828
Int. Cl.[6] B25B *13/00*
U.S. Cl. 81—177.85 5 Claims



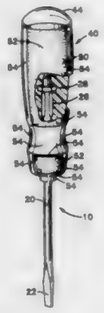
1. A shaft for releasingly locked attachment to a tool having an attachment cavity; said shaft including:
an elongated cylindrical portion having an outer surface; and a front end including:
receiving means adapted for insertion into the tool attachment cavity for attaching the tool;
a central bore within said shaft;
a detent cavity extending radially from said central bore through said receiving means;
a push-button cavity extending radially from said central bore through a reduced radius portion of said shaft aft of said receiving means;
a detent disposed in said detent cavity and movable between a locking position wherein it protrudes out of said receiving means so as to engage an attached tool attachment cavity and prevent its removal from said receiving means and a releasing position wherein it resides substantially within said receiving means so as not to engage an attached tool attachment socket;
a locking bolt within said central bore including:
a front section engaged with said detent; and
a rear section including:
button engaging means for sliding engagement with a push button; said bolt being axially moveable such that as said bolt is moved from a release position to a locking position, its said front section moves said detent from its release position to its locking position;
spring biasing means in said central bore for biasing said bolt in its locking position;
a push button disposed in said push-button cavity; said push button having:
an outer end; and
an inner end including:
bolt engaging means for sliding engagement with said locking bolt button engaging means; said push button being radially moveable such that said bolt in the locking position biases said button radially outward such that said button outer end protrudes from said push-button cavity and such that depression of said button outer end moves said locking bolt to the release position; said push button outer end at all times being radially at or below said outer surface of said elongated cylindrical portion of said shaft.

5,390,572

TOOL WITH IMMPROVED IMPACT AND TORQUE CAPABILITIES AND HAVING ERGONOMIC HANDLE

Ved P. Gakhar, and Wilfred M. McCord, both of Louisville, Ky., assignors to Vermont American Corporation, Louisville, Ky.

Filed Jul. 27, 1993, Ser. No. 94,274
Int. Cl.[6] B25B *15/00*
U.S. Cl. 81—436 18 Claims



1. A tool, comprising:
(a.) a shank, said shank having a tool end and a handle end, said shank having an impact surface area toward said handle end;
(b.) a body having a bore therethrough, said body being placed over said handle end of said shank, said body securely fitting onto said shank, said body providing means for increasing said impact surface area toward said handle end; and,
(c.) a unitary molded handle, said handle having an inner core portion having a first hardness, said handle having an outer grip portion having a second hardness, said outer grip portion extending at least partway around said inner core portion, said first hardness being harder than said second hardness, said inner core portion being molded about said shank to envelop said handle end and said body and wherein said outer grip portion is molded at least partway around said inner core portion.

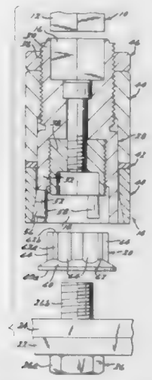
5,390,573

FASTENING SYSTEM FOR TORQUE LIMITED FASTENERS

Brian Mann, West Bloomfield, Mich., assignor to Detroit Tool Industries Corporation, Madison Heights, Mich.

Filed Apr. 30, 1993, Ser. No. 54,977
Int. Cl.[6] B25B *23/145*
U.S. Cl. 81—468 12 Claims

1. A driver for setting a nut in a joint by application of torque to the nut, the nut defining an outer periphery having a plurality of angularly spaced axially extending plastically deformable lobes extending radially outwardly from the nut to be deformed by the driver, the lobes deforming in radial compression when the nut is tightened and the material of the lobe moving radially inward towards the body of the nut to eliminate the material engaged with the driver and terminate tightening of the joint, the driver comprising:
a longitudinal driver body having an axis of rotation and a generally cylindrical forward end portion, said driver body forming a socket for receiving and encircling the outer periphery of the nut;
a race having a generally cylindrical forward end portion mounted on the driver body and defining an inwardly facing wall, said end portion of said driver body arranged concentrically within the end portion of said race; and
lobe engaging means extending axially and having line engagement with said inwardly facing wall of said race for receiving a wrenching torque applied to the driver and inelastically radially deforming a radially outward axial end portion of each of said lobes, said lobe engaging means including a plurality of axially extending slots at angularly spaced locations each extending radially through the end portion of said driver body, and an elongated roller received in each slot, said roller being rollably



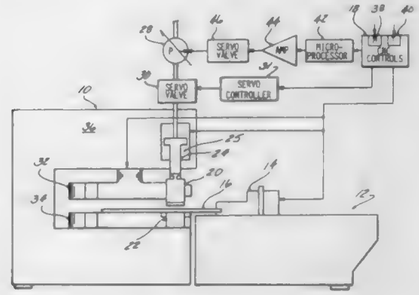
cradled in its respective slot and having a segment extending radially inwardly of the socket to engage and plastically deform the lobe, said rollers each defining a generally frusto-conically shaped outer surface and being symmetrically disposed along a central geometrical axis, the outer surface of said roller being adapted to rollably engage and plastically deform the lobe.

5,390,574

CONTROL FOR AUTOMATICALLY PROGRAMMED VARIABLE PUMP OUTPUT PRESSURE OF A HYDRAULICALLY OPERATED PUNCH PRESS

Gerard J. Schorn, 1317 Rosebud Rd., Southhampton, Pa. 18966

Filed Dec. 15, 1992, Ser. No. 992,969
Int. Cl.[6] B26D *5/12;* B30B *15/16*
U.S. Cl. 83—76.1 3 Claims



1. A punch press for programmably performing a series of punching operations on a sheet material workpiece, comprising:
a punch press frame forming a throat opening;
a press ram mounted for vertical movement on said frame at a punching station;
an upper turret rotatably driven on said press frame within said throat opening, said upper turret having a circumference, and a plurality of diverse punching tools carried by said upper turret arranged about said circumference of said upper turret;
a lower turret rotatably driven on said press frame within said throat opening aligned with said upper turret, said lower turret having a circumference and a plurality of diverse dies carried by said lower turret arranged about said circumference of said lower turret and corresponding to said plurality of punching tools;
a workpiece gripper transport mechanism for positioning a selected location on said sheet material workpiece at said punching station;
a hydraulic cylinder coupled to said press ram to enable actuation of said press ram vertical movement;
a variable output pressure pump connected to said hydraulic cylinder to enable pressurizing said hydraulic cylinder for actuation of said ram, said pump capable of producing a predetermined maximum output pressure;
means for controllably adjusting the output pressure of said pump for supplying said hydraulic ram with pressurized fluid at a predetermined pressure;
controller means for automatic operation of said press, carrying out a sequence of punching operations, according to a punching program, said controller means associated with said workpiece gripper transport mechanism, said hydraulic cylinder, and said upper and lower turrets to cause a selected punch and die to be positioned at said punching station aligned with a particular location on said workpiece, to carry out a punching operation thereon by actuation of said hydraulic cylinder, said controller means including data storage tables having data stored thereon corresponding to the shear strength and thickness of the material of said workpiece and of a shear factor of each punching tool corresponding to the punching size and type of said punching tools in said upper turret;
control signal generating means receiving said data in said data tables and calculating the minimum hydraulic pressure in said hydraulic cylinder required to completely execute all of said punching operations in said program and generating a corresponding pump pressure control signal;
pump pressure control means responsive to said control signal causing the output pressure of said pump to be adjusted to a constant minimum output pressure in correspondence to the level of said control signal throughout the course of execution of said punching program, whereby said pump output pressure is adjusted to be maintained at a constant pressure level lower than said maximum pump output pressure during each of the punching operations of a punching program not requiring said maximum pump output pressure.

5,390,575

MULTIPLE TOOL FOR PUNCH PRESS

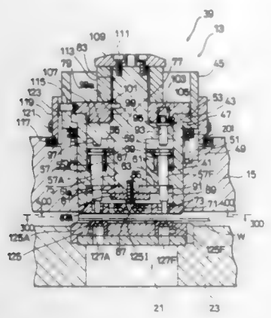
Hiroshi Saito, Odawara, Japan, assignor to Amada Metrecs Company, Limited, Japan

Filed Jul. 13, 1993, Ser. No. 90,544
Claims priority, application Japan, Jul. 14, 1992, 4-186646
Int. Cl.[6] B21D *28/12;* B26F *1/08*
U.S. Cl. 83—140 9 Claims

1. A multiple tool for a punch press, the punch press including an upper tool holding member, comprising:
a stripper guide mounted movably up and down on the upper tool holding member;
means for preventing the stripper guide from rotating relative to the upper tool holding member;
a plurality of punches arranged circularly on the stripper guide so as to be movable up and down, each punch being provided with a head section which is movable up and down in an upper inner bore formed in the stripper guide;
a punch driver disposed so as to be rotatable and movable up and down within the stripper guide; and

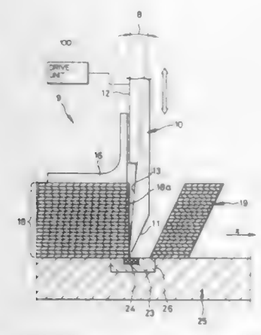
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a projecting portion formed on said punch driver, for striking any one of a plurality of said punches, wherein the



upper inner bore receives said projecting portion of said punch driver.

5,390,576
CUTTING MACHINE
Teruhiko Ishibashi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 39,775, Mar. 26, 1993, abandoned. This application Apr. 25, 1994, Ser. No. 232,406
Claims priority, application Japan, Mar. 26, 1992, 4-068717
Int. Cl.[6] B26D *1/06*
U.S. Cl. 83—613 **6 Claims**



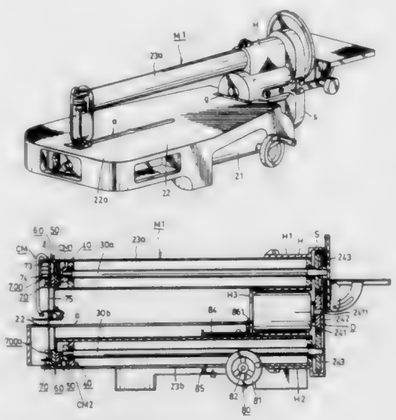
1. A cutting device including a cutter blade having a front face with a cutting face formed thereon and a back face intersecting said cutting face to form a cutting edge for cutting a number of piled sheets, said back face facing a cut surface of said piled sheets at the time of cutting, said cutting device comprising:

means for moving said cutter blade in a vertical plane, which is perpendicular to a surface of a first one of said piled sheets, to successively cut through said piled sheets; and

a flank surface defined on said back face and extending towards said front face at an angle of 1° to 7° with respect to the plane defined by said back face so as not to contact said cut surface;

said cutting face extending at an angle between a tip of the blade and said front face.

5,390,577
SAWING MACHINE
Chin-Chung Huang, No. 4, Alley 51, Lane 424, Kuo-Tzu-Keng Rd., Tai-Ping Hsiang, Taichung Hsien, Taiwan, Prov. of China
Filed Dec. 29, 1993, Ser. No. 175,277
Int. Cl.[6] B27B *19/06, 19/10*
U.S. Cl. 83—784 **8 Claims**



1. A sawing machine comprising:

a base body having a rear portion, a front portion and a worktable with a top working surface which extends horizontally from said front portion toward said rear portion, said worktable having a sawing slot which is formed therethrough near said front portion and which opens at said working surface;

a support body located adjacent to said rear portion of said base body;

an upper hollow arm having a rear end that is fixed rigidly to said support body and a front end that extends toward said front portion of said base body above said working surface of said worktable;

a lower hollow arm being mounted to said base body below said working surface and located opposite to said upper hollow arm, said lower hollow arm having a rear end that is fixed rigidly to said support body and a front end that extends toward said front portion of said base body;

an upper shaft mounted rotatably in said upper hollow arm and having a rear end and a front end;

a lower shaft mounted rotatably in said lower hollow arm and having a rear end and a front end;

a driving mechanism mounted to said support body and connected to said rear end of each of said upper and lower shafts in order to drive said upper and lower shafts to rotate synchronously;

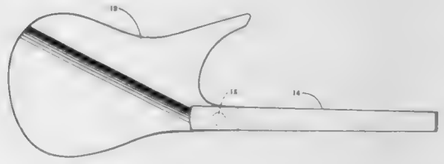
an upper saw-blade mounting member disposed above said working surface of said worktable and mounted slidably to said front end of said upper hollow arm;

a lower saw-blade mounting member disposed below said working surface and mounted slidably to said front end of said lower hollow arm, said upper and lower sawblade mounting members defining cooperatively a straight line which passes through said sawing slot of said worktable;

means for converting the synchronous rotations of said upper and lower shafts into synchronous and reciprocating linear movements of said upper and lower saw-blade mounting members along said straight line when said upper and lower shafts are driven to rotate synchronously, said converting means having an upper converting mechanism for converting the rotation of said upper shaft into the reciprocating linear movement of said upper saw-blade mounting member and a lower converting mechanism for converting the rotation of said lower shaft into the reciprocatingly linear movement of said lower saw-blade mounting member; and

an elongated saw blade extending along said straight line and passing through said sawing slot of said worktable, said elongated saw blade having two ends connected respectively to said upper and lower saw-blade mounting members, said elongated saw blade moving reciprocatingly along said straight line when said upper and lower shafts are driven to rotate synchronously so as to move reciprocatingly and synchronously said upper and lower saw-blade mounting members along said straight line.

5,390,578
GUITAR WITH ROTATING - COLLAPSIBLE NECK PORTION
Thomas G. Raymer, 4317 68th Street Ct. NW., Gig Harbor, Wash. 98335
Filed Jun. 21, 1994, Ser. No. 263,062
Int. Cl.[6] G01D *3/00*
U.S. Cl. 84—291 **3 Claims**



1. A collapsible stringed instrument comprised of an elongated body having a neck mount surface area at one end and a flat main body area at the opposite end, and having a playing face and an opposite back face and said playing face having a recessed area of sufficient dimension to allow an instrument neck with pivotal means at its mounting base, unobstructed rotation on a parallel plane in relation to main surfaces of said body, from an open position fully extended beyond perimeter of said body, to a stowed position substantially within perimeter of said body and juxtaposed to angled edge of said recess, and said neck having a neck mounting base at one end and a string anchoring portion at the opposite end, said neck mounting base and said neck mount surface area each being appropriately adapted to mate as a coupling unit, and each having a hole centered at a neck axis point common to approximate center of said neck mounting base and said neck mount surface area, enabling free rotation of said neck when said coupling unit is not engaged, and motion of said neck being completely eliminated when said coupling unit is tightly mated.

5,390,579
TUNING OF MUSICAL INSTRUMENTS
Harold S. Burgon, London, England, assignor to Torque Talk Limited, Ashford, England
PCT No. PCT/GB91/01021, § 371 Date Dec. 23, 1992, § 102(e) Date Dec. 23, 1992, PCT Pub. No. WO92/00583, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 25, 1991, Ser. No. 958,118
Claims priority, application United Kingdom, Jun. 25, 1990, 9014140
Int. Cl.[6] G10G *7/02*
U.S. Cl. 84—454 **19 Claims**

1. Apparatus arranged to automatically vary the pitch of a string, said apparatus comprising:

a string having first and second spaced ends;

an adjusting mechanism coupled to said first end of said string; and

anchoring means for anchoring said second end of said string;

said string being stretched and tensioned between said adjusting mechanism and said anchoring means;

said adjusting mechanism comprising a movable adjustment member to which said first end of the string is anchored;

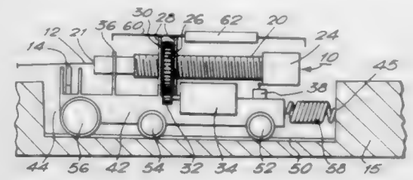
a drive motor;

means for coupling said drive motor to said adjustment member such that rotation of said drive motor moves said adjustment member and thereby adjusts the tension of the string;

detecting means arranged to produce a signal representative of the pitch produced by vibration of the string;

comparing means arranged to compare said representative signal with a predetermined reference and to produce an output dependent upon said comparison; and

means for applying the output of said comparing means to



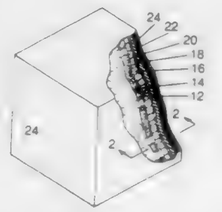
said drive motor to rotate the drive motor thereby adjusting the tension applied to said string in response to said output of said comparing means;

wherein said adjusting mechanism further comprises resilient biasing means coupled to said movable adjustment member to bias said adjustment member in a direction opposing the tension of the;

wherein said detecting means comprises pulse generating means for generating periodic pulses having a frequency representative of the pitch of the vibration of the string, and a counter receiving said periodic pulses and producing an output count representative of said pitch; and

wherein said adjustment member comprises a screw-threaded member attached to said end of said string, and said means for coupling said drive motor to said adjustment member comprises one or more gears.

5,390,580
LIGHTWEIGHT EXPLOSIVE AND FIRE RESISTANT CONTAINER
Gould Gibbons, Jr., Finksburg, and Anthony E. Finnerty, Forest Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jul. 29, 1993, Ser. No. 98,915
Int. Cl.[6] F42B *39/14*
U.S. Cl. 86—50 **4 Claims**



1. A lightweight container system having an interior defining a cargo area for storing and transporting explosives, comprising successively,

inner vented plate means adjacent the cargo area,

a membrane adjacent said inner vented plate means,

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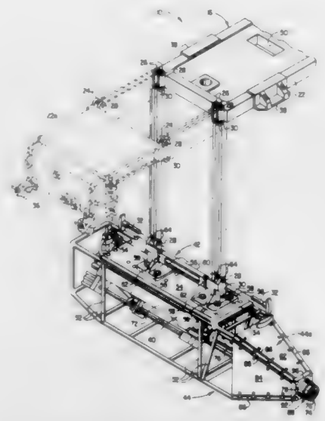
interior fire-extinguishing means for mitigating any conflagration positioned adjacent the membrane,
energy absorbing means positioned adjacent the interior fire-extinguishing means to mitigate the effect of any explosion,
structural container wall positioned adjacent said energy absorbing means and
exterior fire-extinguishing means positioned adjacent structural container wall to mitigate any blast effect on the exterior of the lightweight container system.

5,390,581
MARKER BEACON CASE
Fredrick F. Hiltz, Newport, R.I., and Charles E. Wilson, Clarksville, Md., assignors to The United States of America represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 23, 1994, Ser. No. 216,559
Int. Cl.[6] F41F *3/042*
U.S. Cl. 89—1.812 **7 Claims**



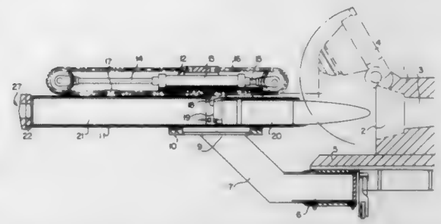
1. A multifunctional case for receiving an axisymmetrical self-propelled projectile-marker beacon unit, said case comprising:
storage and carrying means of generally concentric form about the axis of said axisymmetrical self-propelled projectile-marker beacon unit for storing and carrying same, and which completely encloses same until a removable top is displaced;
said storage and carrying case means including a first alignment means for maintaining the projectile-marker beacon unit in a predetermined angular position relative thereto, said predetermined angular position being such that launching of the projectile-marker beacon unit is inhibited;
launching means for launching said projectile-marker beacon unit from a launching base at a first elevation to a second elevation a predetermined distance above said first elevation, said launching means includes second alignment means for permitting the launching of said marker beacon and a triggering mechanism for executing the launching of said marker beacon; and
keying means for preventing rotation of said projectile-marker beacon unit with respect to said storage and carrying case means when said marker beacon is completely enclosed therewithin.

5,390,582
PLANK-MOUNTED AIRCRAFT ARMANENT APPARATUS
Paul H. Sanderson, 2019 Crippie Creek, Lewisville, Tex. 75067
Filed May 12, 1993, Ser. No. 60,867
Int. Cl.[6] F41A *23/52*
U.S. Cl. 89—37.22 **10 Claims**



1. Armament apparatus for an aircraft having a cabin area, comprising:
an elongated support plank member having a longitudinally central portion positioned between outer end portions of the plank member, each of said outer end portions including an outer tip portion;
hinge means for removable securing said outer tip portions to the balance of said plank member for pivotal movement relative thereto between extended positions in which the tip portions define outer extensions of the balance of said plank member, and retracted positions in which said tip portions are pivoted upwardly and inwardly onto said outer end portions of said plank member,
said hinge means including spaced pluralities of first hinge lugs formed on said tip portions, said spaced pluralities of first hinge lugs being removably interdigitatable with spaced pluralities of second hinge lugs formed on said outer plank member end portions inwardly of said tip portions and pin means for removably holding said pluralities of first hinge lugs in an interdigitated relationship with their associated pluralities of said second hinge lugs;
means for securing said central portion of the plank member to the aircraft within said cabin are thereof in a manner such that said outer end portions of the plank member project outwardly beyond opposite sides of the aircraft; and
means for operatively mounting weaponry on said outer tip portions of the plank member;
first and second gun pod structures each having a machine gun operatively supported therein and spaced pluralities of third hinge lugs secured to top sides thereof,
said pluralities of third hinge lugs when said outer tip portions are removed from said plank member, being interdigitatable with said pluralities of second hinge lugs and pivotally securable thereto using said pin means to thereby removable secure said gun pods to said support plank member, in a depending relationship therewith, in place of the removed outer tip portions of said support plank member,
said first and second gun pod structures having top plate members from which said machine guns depend,
said top plate members having spaced pluralities of mounting bracket members removably secured to their upper sides, and
said pluralities of third hinge lugs being formed integrally with and projecting upwardly from said bracket members.

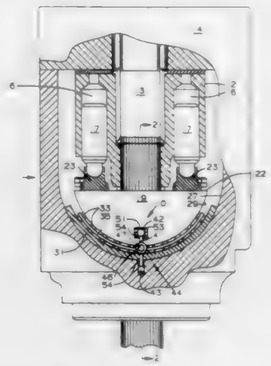
5,390,583
SINGLE-ACTION RAMMER
Bengt Berglund, Karlskoga, Sweden, assignor to Bofors AB, Karlskoga, Sweden
Filed May 6, 1993, Ser. No. 57,771
Claims priority, application Sweden, May 6, 1992, 9201434
Int. Cl.[6] F41A *9/43*
U.S. Cl. 89—47 **13 Claims**



1. A method for rapidly ramming ammunition units with at least one separate shell and propellant charge, said method including the steps of:
placing said propellant charge behind said shell in a loading carrier;
bringing said loading carrier into alignment with a breech opening of an artillery piece and centering said loading carrier on a main axis of a barrel of said artillery piece;
accelerating said loading carrier with said shell and said propellant charge positioned therein and being separate from each other, up to a predetermined ramming velocity towards the breech opening of said artillery piece;
rapidly retarding said loading carrier to a stationary position while said shell and said propellant charge are allowed to continue movement into their ramming positions in said artillery piece.

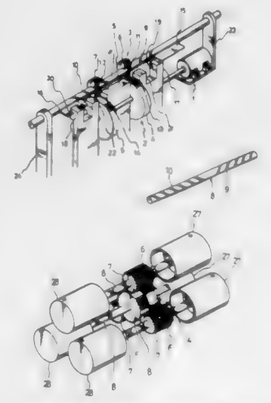
5,390,584
FOLLOW UP MECHANISM FOR A SWASHPLATE BEARING
Wayne E. Fritz, Joliet, and Thomas A. Watts, Ottawa, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Oct. 25, 1993, Ser. No. 140,952
Int. Cl.[6] F01B *13/04*
U.S. Cl. 92—12.2 **10 Claims**

1. An axial piston variable displacement hydraulic unit having a housing defining at least one concave arcuate surface, a swashplate positioned in the housing and having at least one arcuate convex surface, and an arcuate roller bearing assembly positioned between the convex and concave surfaces and having an arcuate bearing cage comprising;
a flexural elastic timing link having first and second ends;
a pivotal connection between the timing link and the bearing cage;
a first bore defined in the housing adjacent the concave surface and slidably receiving the first end of the link; and



a second bore defined in the swashplate slidably receiving the second end of the link.

5,390,585
ROTARY MOTION/CONSTANT VELOCITY LINEAR RECIPROCATING MOTION CONVERSION DEVICE AND HYDRAULIC SYSTEM USING THE SAME
Young-sun Ryuh, Ulsangoon, Rep. of Korea, assignor to Samjoo Machinery Co., Ltd., Ulsangoon, Rep. of Korea
Filed Jan. 13, 1994, Ser. No. 180,861
Int. Cl.[6] F01B *3/00*
U.S. Cl. 92—32 **4 Claims**

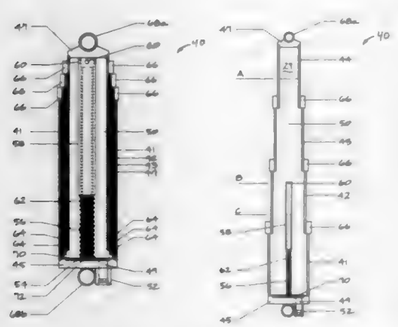


1. A rotary motion/constant velocity linear reciprocating motion conversion device comprising:
a rotary motion part having a first pair of power transmission elements each rotating at the same speed, the power transmission elements each having teeth alternatively positioned along a circumferential surface capable of transmitting power to an adjacent element;
a second pair of power transmission elements each being rotated alternatively by engagement with the teeth of an adjacent one of the first power transmission elements; and
a helical spline shaft comprising oppositely configured helix grooves formed along a surface of the shaft and extending across a length of the shaft, the helix grooves being engaged by a portion of the second power transmission elements.

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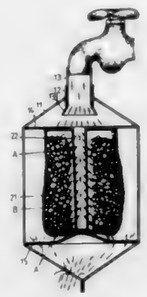
3. A hydraulic system using a rotary motion/constant velocity linear reciprocating motion conversion device comprising:
a helical spline shaft capable of linear motion, the helical spline comprising helix grooves extending along a surface portion of the shaft in opposite directions, pistons attached at opposing ends of the shaft, the pistons residing in cylinders attached to the device, the pistons residing in the cylinders being capable of pumping oil from hydraulic tanks located at both ends;
a first pair of power transmission elements, each element comprising teeth arranged along a portion of a circumferential surface of the element, the first pair of power transmission elements being mounted to a central drive shaft in such a manner that the portion of the circumferential surface of one of said elements comprising teeth corresponds to a portion of the circumferential surface of the other of said elements that does not comprise teeth, the drive shaft being rotated by a driving means; and
a second pair of power transmission elements each comprising projections positioned to engage the helix grooves in the helix shaft, the second pair of transmission elements being slidably mounted to the helical spline so that the projections engage a respective helix groove, the second pair of power transmission elements being positioned adjacent to the first pair of power transmission elements so that the toothed portion of one of the first transmission elements engages and rotates an adjacent one of said second transmission elements.

5,390,586
SELF-BLEEDING HYDRAULIC CYLINDER
Peter D. Jones, Rte. 1, Box 202, Garden City, Minn. 56034
Filed Mar. 28, 1994, Ser. No. 219,291
Int. Cl.[6] F15B *21/04*
U.S. Cl. 92—79 **13 Claims**



1. A self-bleeding extendable and retractable hydraulic cylinder system comprising:
a base plate having attached thereto a first stationary cylinder and having located therein an orifice in communication with one axial end of said cylinder;
a second cylinder coaxial with said first cylinder and extendable with respect to said first cylinder, said second cylinder having in one end thereof a pocket within which air may become entrapped;
a self-bleeding mechanism disposed within the hydraulic cylinder system for enabling entrapped air to escape from said pocket, said self-bleeding mechanism including a first stationary conduit means, said first conduit means having a first end fixedly attached to said base plate, said orifice in said base plate in communication with said first conduit means; and a second conduit means coaxial with said first conduit means, said second conduit means being extendable and retractable with respect to said first conduit means and being opened to flow communication at both its ends; and
biasing means for extending said second conduit means to a predetermined extended position relative to said first conduit means such that when the hydraulic cylinder system is being retracted from an extended state one end of said second conduit means will be in communication with said pocket for enabling entrapped air to bleed from the hydraulic cylinder system.

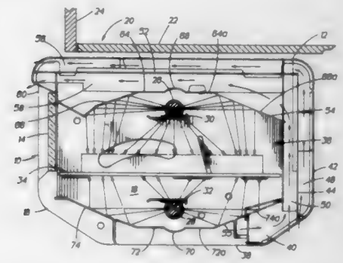
5,390,587
MEDICINAL HERB INFUSION DISPENSER
Hsien-Jung Wu, No. 36, Sec. 1, Jong Shan Rd, Yeong Her, Taipei, Taiwan, Prov. of China
Filed Dec. 6, 1993, Ser. No. 161,539
Int. Cl.[6] A47J *31/34*
U.S. Cl. 99—279 **4 Claims**



1. A medicinal herb infusion dispenser comprising:
a) an outer enclosure including an upper inlet and a lower outlet;
b) a filter assembly for containing a medicinal herb, the filter assembly being disposed within the outer enclosure for infusion by a liquid entering the outer enclosure through the upper inlet and leaving the outer enclosure through the lower outlet;
c) the upper inlet including a concentrator tube and a faucet connector tube slidably received with the concentrator tube for outward extension with respect to the concentrator tube; and
d) the faucet connector tube including an open top end for attachment to the outlet end of a faucet and receiving liquid therefrom and an open bottom end, closure means for closing the open top end and means for limiting the outward extension of the faucet connector tube with respect to the concentrator tube.

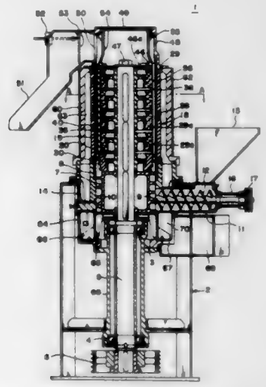
5,390,588
TOASTING CAVITY FOR AN ELECTRIC TOASTER
Charles Z. Krasznai, Fairfield, and Richard B. Kosten, West Haven, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Jan. 7, 1994, Ser. No. 178,998
Int. Cl.[6] A47J *37/04*
U.S. Cl. 99—389 **15 Claims**

1. A low-profile toaster comprising:
a housing;
a toasting cavity defined by the housing;
a comestible support rack mounted within the toasting cavity for supporting the comestible to be toasted in a horizontal plane;
a first heater mounted in a horizontal plane along a vertical axis extending substantially through the center of the toasting cavity and spaced vertically above the comestible support rack;
a first heater shield disposed below the lower surface of the heater between the heater and the top surface of the rack and including means defining a plurality of openings for transmitting radiant heat energy generated by the first heater towards the top surface of the comestible;
a radiant energy reflecting surface spaced vertically above the top surface of the first heater for directing radiant energy generated by the heater towards the top surface of the comestible;
a second heater mounted in a horizontal plane along a vertical axis extending substantially through the center of the toasting cavity and spaced vertically below the support rack;



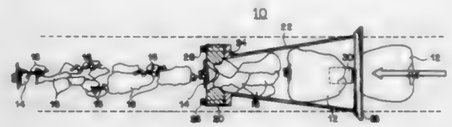
a second heater shield spaced above the top surface of the second heater between the heater and the bottom surface of the rack and including means defining a plurality of openings for transmitting radiant heat energy generated by the second heater towards the bottom surface of the comestible; and
a second radiant energy reflecting surface spaced vertically below the bottom surface of the second heater for directing radiant energy generated by the second heater towards the bottom surface of the comestible.

5,390,589
VERTICAL PEARLING MACHINES AND APPARATUS FOR PRELIMINARY TREATMENT PRIOR TO FLOUR MILLING USING SUCH PEARLING MACHINES
Satoru Satake, Tokyo; Takeshi Ishii, and Yoshihiro Tokui, both of Hiroshima, all of Japan, assignors to Satake Corporation, Tokyo, Japan
Filed Aug. 19, 1994, Ser. No. 293,212
Claims priority, application Japan, Oct. 1, 1993, 5-269952
Int. Cl.[6] B02B *3/00, 7/02*
U.S. Cl. 99—519 **14 Claims**



1. A vertical pearling machine comprising:
a vertical polygonal bran removal cylinder including a plurality of support posts and bran removal walls each stretched between adjacent ones of said support posts;
an abrasive type pearling roll assembly mounted on an upper portion of a main shaft erected rotatably within said vertical polygonal bran removal cylinder and having an outer periphery whose section is in a circular profile;
a grain feeding means connected to one end of a pearling chamber defined between said vertical polygonal bran removal cylinder and said pearling roll assembly; and
a grain discharging means connected to the other end of said pearling chamber,
said abrasive type pearling roll assembly including a plurality of abrasive type pearling rolls stacked one over another with air blowing spacers being interposed therebetween, and stirring bars provided on an outer periphery of each of said abrasive type pearling rolls and projecting into said pearling chamber, and
said bran removal cylinder having, on an inner surface thereof, resistance bars projecting into said pearling chamber.

5,390,590
APPARATUS FOR BREAKING AND CORING FOOD PRODUCTS
George A. Mendenhall, 4252 S. Eagleson Rd., Boise, Id. 83705
Filed Jun. 29, 1993, Ser. No. 84,521
Int. Cl.[6] A47J *25/00*; B26D *1/03*
U.S. Cl. 99—537 **4 Claims**



1. In a hydraulic food cutting system having a feed tank for holding a suspension of food products in a fluid, a fluid and suspended food product passageway defined by an acceleration tube for accelerating a suspension of food products in the fluid received from the feed tank, a cutter assembly housing, means for decelerating a suspension of the fluid and food pieces, means for separating the fluid from the food pieces, and a centrifugal pump, having known pump head curve characteristics, for pumping a suspension of food products and fluid through the fluid and suspended food product passageway, an impact assembly which comprises
a frustum shaped housing having a passageway therethrough for the passage of food product suspended in a fluid from a larger upstream end to a smaller downstream end;
a toroidal shaped impact ring having a central opening, attached, with its central opening in alignment with the food product passageway, to the downstream end of the housing.

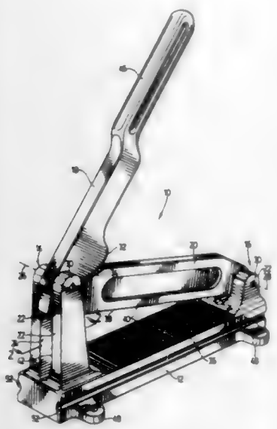
5,390,591
SHELL CRACKER
Henry Fast, Leamington, Canada, assignor to Fastlock Inc., Oakville, Canada
Filed Dec. 13, 1993, Ser. No. 165,611
Int. Cl.[6] A23N *5/00*
U.S. Cl. 99—578 **11 Claims**

1. A shell cracker comprising:
a base;
front and rear supports rigidly connected to said base;
an upper lever connected to said front support for rotation about a first axis;
a lower lever connected to said rear support for rotation about a second axis that is parallel to said first axis, said first axis being spaced along said base from said second

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axis and being located a greater vertical distance from said base than said second axis;

lower and upper jaws for contacting a shell, said lower jaw being located on said base between said front and rear supports, and said upper jaw being located on said lower lever, wherein said lower jaw is wider than said upper jaw;



a series of teeth located on each of said upper and lower jaws, each said tooth spanning the full width of said jaws, said teeth defining channels between them for permitting washing of said jaws;

a cam located on said upper lever; and

a cam follower located on said lower lever;

wherein rotation of said upper lever toward said lower jaw causes said upper jaw to move toward said lower jaw to enable cracking of said shell.

5,390,592

DEWATERING PRESS FOR COMPRESSIBLY DEWATERABLE MATERIAL

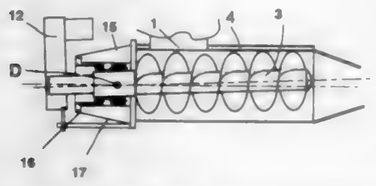
Hans Schnell, Mengen, and Armin Volk, Weingarten, both of Germany, assignors to Sulzer Escher Wyss GmbH, Ravensburg, Germany

Filed Apr. 9, 1993, Ser. No. 45,412

Claims priority, application Germany, Apr. 11, 1992, 4212275; Sep. 11, 1992, 4230383; Sep. 11, 1992, 4230384; Sep. 11, 1992, 4230385

Int. Cl.[6] B30B *9/14, 9/18*

U.S. Cl. 100—127 23 Claims



1. A dewatering press for a compressively dewaterable material comprising:

a casing defining an elongated main chamber having an inlet for receiving the material in the chamber and an outlet for discharging the material from the chamber, the casing defining a first, longitudinal axis;

a rotatable feed screw disposed in the chamber and having an in-feed end proximate the inlet, a discharges end proximate the outlet, and a screw portion intermediate the ends for advancing the material from the inlet to the outlet when the screw is rotated;

bearing means engaging the feed screw proximate to and spaced from its in-feed end and rotatably mounting the feed screw to the casing in substantial alignment with the first axis so that the screw portion is disposed within the jacket, the bearing means permitting substantially free relative pivotal movement of the feed screw about a second axis which is generally transverse to and intersects the first axis to effect a limited deflection of the feed screw out of alignment with the first axis;

drive means coupled to the feed screw proximate its in-feed end and on a side of the bearing means opposite from the screw portion for rotating the feed screw to thereby advance the material placed into the inlet with the feed screw towards the outlet of the casing, the second axis being positioned so that moments about the second axis acting on the feed screw and generated by at least one of the weight of the feed screw and generally radially acting forces cause by the material being advanced by the screw portion results in a pivotal motion of the feed screw about the second axis; and

a jacket substantially surrounding the feed screw and including a plurality of openings permitting water in the material to drain from the chamber as the rotating feed screw advances the material from the inlet to the outlet;

whereby forces generated by the material being advanced by the feed screw and acting generally transversely to the first axis on the feed screw cause a limited deflection of the feed screw about the bearing means and out of alignment with the first axis to thereby reduce forces acting on the feed screw transversely to the first axis and frictional wear of the feed screw and the jacket.

5,390,593

WASTE COMPACTOR INCLUDING GAS SPRING EJECTOR MECHANISM

Kenneth Gustavsson, Sävsjö, Sweden, assignor to AB Orwak, Säsjö, Sweden

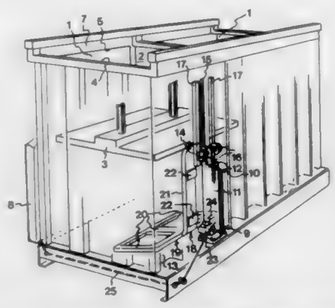
PCT No. PCT/SE92/00468, § 371 Date Jan. 7, 1994, § 102(e) Date Jan. 7, 1994, PCT Pub. No. WO93/01046, PCT Pub. Date Jan. 21, 1993

PCT Filed Jun. 25, 1992, Ser. No. 175,400

Claims priority, application Sweden, Jul. 9, 1991, 9102148

Int. Cl.[6] B30B *15/32*

U.S. Cl. 100—218 8 Claims



1. A waste compactor comprising a waste container (1) which has a first opening (4) provided for the introduction of waste, and a second opening (5) closed by an openable door (8) and provided for the discharge of waste; a press unit comprising a press plate (3) insertable in the container through the first opening (4) and adapted to compact waste in the container; and a discharging device (18) disposed in the container (1) and adapted to discharge compacted waste (6) through the second opening (5), characterised by a spring assembly (9) which is connected to the discharging device (18) so as to cause, when tripped, this device to discharge compacted waste (6); a tensioning device (14) projecting into the container (1) and adapted to cooperate with the press plate (3) so as to tension the spring assembly (9) when said plate is inserted in the container (1); and a tripping device (23) adapted to trip the spring assembly when the door (8) is open.

5,390,594

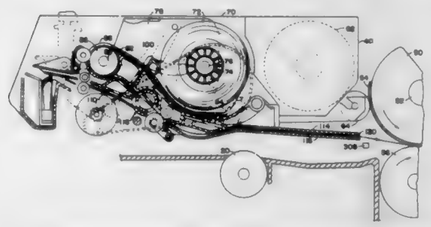
TAPE FEEDING, CUTTING AND EJECTING APPARATUS FOR A MAILING MACHINE

John R. Nobile, Fairfield, and William A. Salancy, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 11, 1994, Ser. No. 180,168

Int. Cl.[6] B41L *47/46*

U.S. Cl. 101—92 12 Claims



1. In a mailing machine having a housing including a cover that opens to reveal an interior portion of the mailing machine, an elongate feed deck, means for feeding envelopes along the feed deck, and a postage meter mounted in the mailing machine and having a printing mechanism disposed in juxtaposition with the feed deck so as to print postage indicia on successive envelopes as they are fed along the feed deck, a tape feeding and cutting apparatus mounted in the mailing machine beneath the cover of the housing but above the feed deck and adjacent to the postage meter on the upstream side thereof with respect to the direction of feed of envelopes along the feed deck for feeding successive lengths of tape to the postage meter for printing of postage indicia on a portion thereof and for cutting and ejecting the printed portion of finite lengths of tape from the mailing machine, said apparatus comprising:

A. means defining an elongate frame,

B. means for holding a supply roll of tape of indefinite length,

C. means defining a first feed path extending from said tape supply roll to the printing mechanism of the postage meter,

D. means defining a second feed path extending from a point on said first feed path away therefrom in a direction generally opposite to that in which said first feed path extends toward said printing mechanism,

E. means for feeding a finite length of tape from said tape supply roll along said first feed path to bring a portion of said finite length of tape to the printing mechanism of the postage meter for printing of a postage indicia on said portion of said finite length of tape,

F. means for severing said printed portion of said finite length of tape,

G. means for ejecting said severed printed portion of said finite length of tape from the mailing machine along said second feed path,

H. means for pivotally mounting said tape holding means for movement between a normal operating position in which said tape holding means is disposed within the housing of the mailing machine, and an operator accessible position in which said tape holding means is disposed outside of the housing of the mailing machine, and

I. sensing means responsive both to movement of said tape holding means from said normal operating position toward said operator accessible position for providing an indicating that said tape holding means is not in said normal operating position, and to the absence of tape in said first feed path for providing an indication that the tape on said tape roll is exhausted,

whereby when said tape feeding, cutting and ejecting apparatus is in said operator accessible position, said tape holding means is fully accessible to an operator for replacing a roll of tape and for threading the tape through a portion of said first fed path.

5,390,595

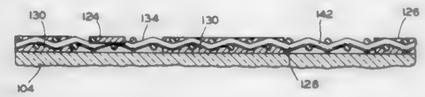
PRINTING SCREEN WITH PLUGS AND METHOD FOR PRINTING A VARIABLE THICKNESS PATTERN

Thomas V. Cutcher, 5045 Summerfield Rd., Petersburg, Mich. 49270

Continuation-in-part of Ser. No. 57,680, May 5, 1993. This application Dec. 16, 1993, Ser. No. 168,665

Int. Cl.[6] B41F *15/36*

U.S. Cl. 101—128.21 6 Claims



3. An improved method of screen printing a pattern on a plurality of non-absorbent substrates, each substrate having areas of different thickness of ink printed in a single printing operation, said method comprising:

a) preparing a screen by mounting a desired mesh fabric on a frame;

b) forming a first pattern on the mesh fabric defined by open mesh areas and a first layer of exposed emulsion;

c) forming a second pattern in the open mesh areas on the mesh fabric with a second layer of exposed emulsion such that the second pattern includes a dot pattern and that the second layer of emulsion is thinner than the first layer of emulsion;

d) positioning the screen adjacent a substrate to be printed;

e) applying ink to the mesh fabric on the screen;

f) forcing ink through the open mesh areas on the mesh fabric to deposit a layer of ink on the substrate and to restrict the accumulation of ink in the open mesh areas adjacent the emulsion dot pattern;

g) forming thinner areas of ink in the layer of ink on the substrate in the open mesh areas adjacent the emulsion dot pattern upon repositioning the screen apart from the substrate; and

h) repeating steps (d)–(g) for a plurality of substrates.

5,390,596

STRETCHING SYSTEM FOR FLEXIBLE PLANAR MATERIALS

Gregory C. Farr, 4444 - 39th Ave., NE., Salem, Oreg. 97305

Filed Jan. 6, 1992, Ser. No. 818,545

Int. Cl.[6] B41M *1/12;* B05C *17/06*

U.S. Cl. 101—129 36 Claims

26. A method for providing a stretched planar workpiece, the method comprising:

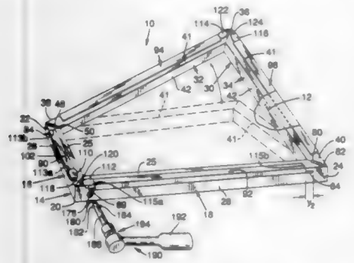
providing a planar workpiece that is generally rectangular, but that, when the workpiece is not tensioned, has arcuate edges such that the width and length of the workpiece are less at the centerlines of the workpiece than at outlying regions of the workpiece;

providing a frame having surfaces that are adapted to engage the edges of the workpiece and that are movable to predetermined positions in a plane to exert outward forces on the workpiece at each of the edges;

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securing the arcuate edges of the workpiece to the surfaces; and

moving the surfaces to the predetermined positions in the plane in such a manner that the frame applies predetermined lateral and longitudinal tensile forces to the workpiece to stretch the workpiece to a predetermined tensioned configuration wherein (a) the edges are no longer arcuate, but instead have been straightened, and (b) opposite edges have been moved apart, so that the edges lie in a rectangle of predetermined dimensions.



5,390,597

OFFSET PRESS

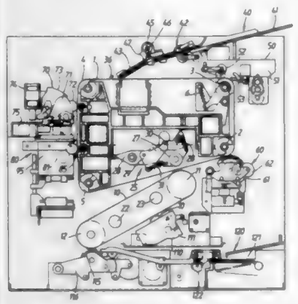
Takao Hashimoto; Hiroshi Sato, both of Iwate; Mitsuo Nagaoka, Kanagawa; Koichi Kamoi, Saitama, and Mamoru Mizuno, Setagaya, all of Japan, assignors to Gradco (Japan) Ltd., Tokyo, Japan

Continuation of Ser. No. 971,612, Nov. 5, 1992, abandoned. This application Aug. 9, 1994, Ser. No. 287,422

Claims priority, application Japan, Nov. 8, 1991, 3-319602; Oct. 21, 1992, 4-305838

Int. Cl.[6] B41F *7/02, 7/26*

U.S. Cl. 101—142 **6 Claims**



1. In offset printing equipment comprising a plate support, a blanket support, an etching unit, a dampening unit, and an inking unit, the improvement wherein: said plate support and said blanket support each includes an endless belt disposed in vertically spaced relation one above the other and extending horizontally, said endless belt of said plate support having means for gripping a plurality of plates thereon in succession, plate feeding means for supplying plates to said gripping means on said belt of said plate support in succession, plate output means for ejecting successive plates from said plate support; the etching unit, the dampening unit and the inking unit are positioned along the periphery of said endless belt of the plate support for applying etching fluid, water and ink to the plates on said endless belt of said plate support upon movement past the respective units, said belt of said blanket support being disposed adjacent to said belt of said plate support for receiving an image from the successive plates carried by said belt of the plate support, and impression means adjacent to said belt of said blanket support for transferring an image to a paper sheet at said impression means.

5,390,598

WIPING DEVICE FOR AN INTAGLIO PRINTING MACHINE

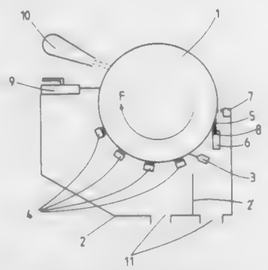
Willy Stauffer, Lausanne, Switzerland, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Filed Mar. 25, 1994, Ser. No. 217,976

Claims priority, application Switzerland, Apr. 30, 1993, 01 318/93-9

Int. Cl.[6] B41F *9/10, 9/12*

U.S. Cl. 101—167 **6 Claims**



1. A wiping device for an intaglio printing machine, comprising a wiping cylinder (**1**) having direction of rotation and length and an installation for the continuous cleaning of said cylinder, this installation including a container (**2**) for receiving the cleaning liquid which continuously acts on the wiping cylinder (t) and cleaning elements in contact with the periphery of the wiping cylinder, comprising, in the direction of rotation of this cylinder, a first cleaning element (**5**) acts on a relatively narrow part of the wiping cylinder (t) and removes the greater part of the ink from the wiping cylinder (**1**), followed, at defined distances, by a plurality of other cleaning elements, at least one row of nozzles (**7**, **8**) parallel to the axis of the wiping cylinder, the nozzles being arranged in order to eject the cleaning liquid into the zone of the region of contact of said first cleaning element (**5**) with the wiping cylinder (**1**), wherein said first cleaning element (**5**) is made of textile material in the form of a web which is mounted, folded over on itself on and along the rigid support (**6**), so as to extend beyond the latter and tangentially over a narrow part and over the entire length of the wiping cylinder, the first cleaning element (**5**) having a pair of ends and being folded over on itself intermediate the ends, one end being on the rigid support (**6**) and the other end being free and extending in the direction of rotation of the wiping cylinder (**1**).

5,390,599

ON-LINE SHEETER OF PRINTING SYSTEM AND METHOD OF CHANGING LENGTH OF CUT

Kiyoshi Matsumoto, and Takashi Okada, both of Tokyo, Japan, assignors to Nikka Kabushiki Kaisha and Niimura Insatsu Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 1, 1993, Ser. No. 114,149

Claims priority, application Japan, Sep. 11, 1992, 4-269428

Int. Cl.[6] B41F *13/26*

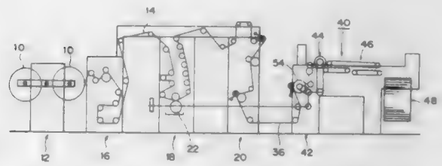
U.S. Cl. 101—226 **7 Claims**

1. An on-line sheeter of a printing system for cutting a running printed sheet fed from a printing unit having a rotationally driving plate cylinder at a predetermined length of cut, comprising:

a sheet introducing guide section for feeding said running printed sheet discharged from said printing unit to a cutting section;

a cutting section having a cutting means for cutting the running printed sheet fed from said sheet introducing guide section at the predetermined length of cut;

a drum roller mounted in said sheet introducing guide section, said drum roller having the same diameter as that of the plate cylinder in said printing unit;



means for rotating said drum roller synchronous with the plate cylinder; and

a nip roller which rotationally contacts said drum roller and nips the running printed sheet passing between said nip roller and said drum roller.

5,390,600

SHEET GRIPPER DEVICE ON A PAPER-GUIDING CYLINDER OF A SHEET-FED PRINTING PRESS

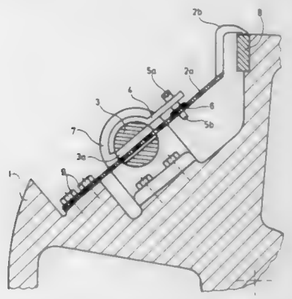
Norbert Thünker, Hirschberg, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jul. 22, 1993, Ser. No. 95,929

Claims priority, application Germany, Jul. 22, 1992, 4224189; May 12, 1993, 4315844

Int. Cl.[6] B41F *21/00*

U.S. Cl. 101—408 **12 Claims**



1. Sheet gripper device on a paper-guiding cylinder of a sheet-fed printing press, comprising a sheet gripper formed of a leaf spring and having a gripper tip located at an end thereof, a gripper pad engageable by said gripper tip, a control shaft for said gripper tip, said control shaft being actuatable so as to swivel about a longitudinal axis thereof, said leaf spring having another end opposite said end thereof whereon said gripper tip is located and being fastened by said other end thereof on the cylinder, an adjustable thrust member and means for holding said thrust member, said holding means being mounted on said control shaft so as to be fixed against rotation relative thereto, said thrust member being effective against said leaf spring during a swiveling movement of said control shaft in a closing direction of said sheet gripper.

5,390,601

GRIPPER CONTROL FOR SHEET GRIPPERS ON A SHEET-GUIDING CYLINDER OR THE LIKE IN A PRINTING PRESS

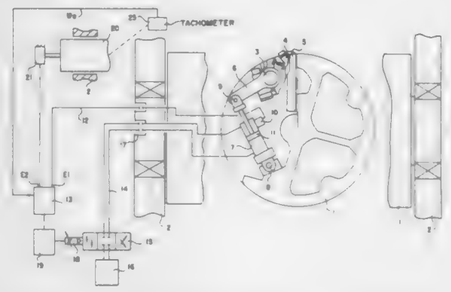
Andreas Fricke, Eberbach, and Norbert Thünker, Hirschberg, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jul. 6, 1993, Ser. No. 88,423

Claims priority, application Germany, Jul. 3, 1992, 4221929

Int. Cl.[6] B41F *21/10*

U.S. Cl. 101—409 **6 Claims**



1. A gripper control for sheet grippers of a printing press comprising:

a sheet guiding cylinder having at least one sheet gripper mounted thereon;

a piston-cylinder unit in operative engagement with said gripper for opening and closing the gripper;

a servo-valve fluidly communicating with said piston-cylinder unit, having a pressure generator connected to an input of said servo-valve;

a control computer having a control output in operative engagement with said servo-valve for controlling opening and closing of the valve, said computer having at least one control input; and

an angle measuring system having an input connected to said printing press, and an output connected to said control computer for actuating said gripper through the intermediary of said servo-valve, and said piston-cylinder unit at position setpoint values of positions of said piston-cylinder unit.

5,390,602

DEVICE FOR CLEANING INK-CARRYING SURFACES IN PRINTING UNITS

Gerhard Görl, Frankenthal, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Apr. 5, 1993, Ser. No. 43,000

Claims priority, application Germany, Apr. 4, 1992, 4211310

Int. Cl.[6] B41F *35/04*

U.S. Cl. 101—425 **13 Claims**

1. A cleaning unit for cleaning ink-carrying surfaces in printing units of rotary printing machines, comprising:

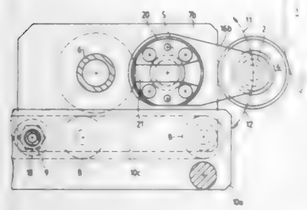
a supply reel carrying a web of washcloth; a take-up reel for receiving washcloth from said supply reel;

drive means for driving said take-up reel and coupling means for mechanically coupling said take-up reel with said drive means;

a pivotable guide element, said guide element being means for deflecting the web of washcloth extending between said supply and take-up reels; and

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means for simultaneously pivoting said guide element relative to said take-up reel towards an ink-carrying surface to



be cleaned and for transporting a portion of the web of washcloth from said supply reel to said take-up reel.

5,390,603

METHOD FOR AUTOMATIC CHANGING OF PRINTING PLATES

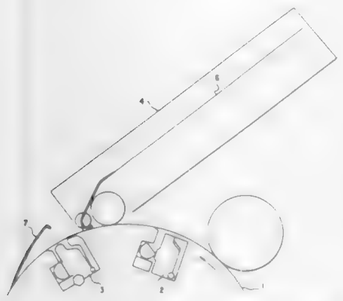
Dieter Hauck, Eberbach; Robert Müller, Mörlenbach, and Jürgen Reithofer, Nussloch, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jun. 17, 1993, Ser. No. 78,407

Claims priority, application Germany, Jun. 17, 1992, 4219870

Int. Cl.[6] B41F *27/06*

U.S. Cl. 101—485 **11 Claims**



1. Method for automatically changing printing plates for a printing machine having a plurality of printing cylinders for mounting the printing plates, wherein each printing cylinder has a respective side register, the method which comprises the steps of:

(a) driving a first printing cylinder to a printing plate release position;

(b) releasing the trailing edge of the old printing plate;

(c) turning the printing cylinder in direction for unwinding the old printing plate;

(d) stopping the printing machine in a printing plate release position of another printing cylinder;

(e) releasing the old printing plate of the other printing cylinder,

(f) turning the printing machine in direction for unwinding the old printing plate;

(g) repeating steps (d), (e) and (f) until all old printing plates are released and removed from all printing cylinders;

(h) turning the printing machine in direction for on-winding new printing plates;

(i) stopping the printing machine in printing plate feed-in position of a first printing cylinder;

(j) feeding-in a first new printing plate to the first printing cylinder of step (i), and clamping onto the printing cylinder the first new plate;

(k) repeating steps (h), (i) and (j) until all new printing plates have been clamped onto a respective printing cylinder; and

(l) zero-setting the side register for each printing cylinder before feeding-in the new printing plate.

5,390,604

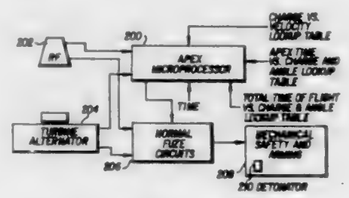
METHOD OF AND APPARATUS FOR MORTAR FUZE APEX ARMING

Philip F. Ingersoll, Grosse Pointe, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 27, 1993, Ser. No. 172,784

Int. Cl.[6] F42C *15/40*

U.S. Cl. 102—211 **16 Claims**



1. A method for electronically arming a proximity fuze in an artillery shell, comprising the steps of:

measuring the velocity of said artillery shell at a predetermined time after launching said artillery shell;

measuring the elapsed time since launching said artillery shell to said predetermined time;

calculating the flight distance travelled by said artillery shell since launch at said predetermined time;

measuring the vertical distance to ground of said artillery shell at said predetermined time;

determining the powder charge and angle of firing of said artillery shell using said calculated flight distance and measured vertical distance;

determining the apex of the travel trajectory of said artillery shell using said determined powder charge and angle of firing of said artillery shell; and

arming said proximity fuze when said artillery shell reaches the apex of its travel trajectory.

5,390,605

STABILIZED AND PROPELLED DECOY, EMITTING IN THE INFRA-RED

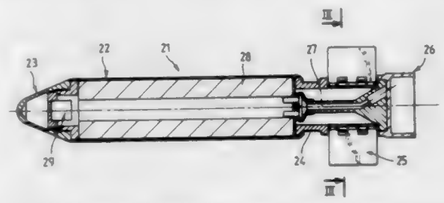
Gérard Meili, Bordeaux, and Jean-Luc Pinchot, Saint Medard en Jalles, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Aug. 11, 1993, Ser. No. 104,581

Claims priority, application France, Aug. 11, 1992, 92 09897

Int. Cl.[6] F42B *4/26*

U.S. Cl. 102—336 **12 Claims**



1. A self-propelled, stabilized decoy having a directed infrared emission, said decoy comprising a body having a nose at the front end and an opening at the rear part thereof, said rear part being cylindrical, said body containing an emissive block of pyrotechnical substance and an ignition assembly, said body comprising an ejectable pyromechanical device located near the rear part of said body, said body including a circular aperture of constant cross-section at said rear part and said emissive block having at least one channel located between said ignition assembly and said ejectable pyromechanical device.

5,390,606

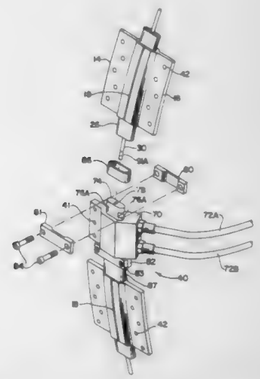
FRANGIBLE JOINT SEPARATION SYSTEM

Gary N. Harris, Manassas, Va., assignor to Orbital Sciences Corporation, Dulles, Va.

Filed Nov. 2, 1992, Ser. No. 970,363

Int. Cl.[6] F42B *15/36*

U.S. Cl. 102—378 **16 Claims**



1. An explosive separation system for joining together first and second structures and for explosively separating them, comprising:

a connecting member having a first flange portion attached to the first structure and a second flange portion attached to the second structure, a hollow portion positioned between said first and second flange portions, and a pair of parallel grooves, one on each side of said hollow portion, said grooves being located between said first and second flange portions and reducing the thickness of said connecting member on each side of said hollow portion, wherein said first and second flange portions and said hollow portion comprise a single piece of material; and

explosive means positioned at least partially within said hollow portion of said connecting member for explosively separating said first flange portion from said second flange portion.

5,390,607

NON-METALLIC POLYMER LONGITUDINAL HOOD COLLAR

Todd Lydic, Johnstown, Pa., assignor to Johnstown America Corporation, Chicago, Ill.

Filed Jan. 3, 1994, Ser. No. 176,661

Int. Cl.[6] B61D *7/02*

U.S. Cl. 105—247 **15 Claims**

1. A hopper rail car comprising

a car body being supported by truck assemblies at each end,

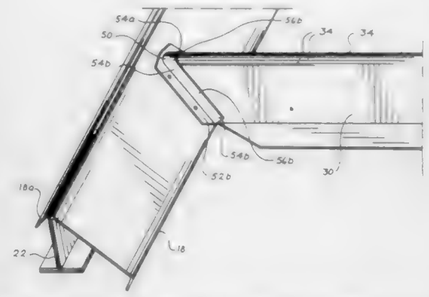
said car body having a longitudinally extending center sill and a hopper for carrying lading, said hopper formed by a pair of side walls and a pair of sloped end walls,

said hopper having a plurality of discharge chutes at its bottom,

said hopper further having a plurality of sloped floor sheets extending between said side walls at locations adjacent said plurality of discharge chutes,

longitudinal hoods covering at least the top portion of said center sill and having ends intersecting said plurality sloped sheets,

a collar for creating a connection between one of said ends of said hoods and a sloped floor sheet,



said collar receiving said one of said ends of said hoods, said collar further having a section affixed to said sloped floor sheet, and

said collar includes a slot, said slot receiving said one of said ends of said hoods.

5,390,608

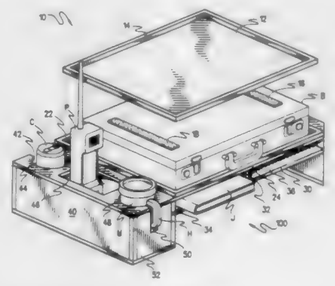
BRIEFCASE ADAPTOR

Randy L. McLaren, 236-11th Street N.E., Canada, and Douglas J. Biers, 424-30 Avenue NE, both of Calgary, Alberta, Canada

Filed Jun. 23, 1993, Ser. No. 81,793

Int. Cl.[6] A47B *23/00*

U.S. Cl. 108—44 **16 Claims**



15. A briefcase adaptor, comprising:

a substantially planar top surface;

an outer tray including an upstanding peripheral rim;

an inner tray including an upstanding peripheral ledge, said inner tray removably received in nested relation within said outer tray;

at least one cooperating fastener means for releasably securing said inner tray to an outer surface of a hinged lid of a conventional briefcase;

a floor connected to said desk and extending in spaced parallel relation with said top surface defining at least one compartment for the receipt of miscellaneous items;

a beverage holding console secured along one side of said briefcase adaptor, said beverage holding console including at least one circular aperture dimensioned to receive a mug-type beverage container and possessing a slot portion for receiving and retaining a handle of mug-type beverage container;

a positioning block secured along an opposite side of said briefcase adaptor from said beverage holding console, said positioning block possessing a pyramidal configuration

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dimensioned for receipt in a central recessed portion of a conventional automobile seat back; and

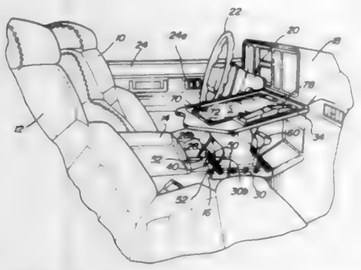
bottom surfaces of said beverage holding console and said positioning block disposed in substantially coplanar relation and spaced beneath said floor defining a central recessed zone for optionally receiving legs of a sitting or reclining individual therethrough whereby said briefcase adaptor may be used as a bed tray or lap desk.

5,390,609

DESK STRUCTURE

Carl B. McKee, 29971 Homeland Ave., New Hudson, Mich. 48165

Continuation of Ser. No. 873,772, Apr. 27, 1992, abandoned. This application Mar. 25, 1993, Ser. No. 36,695
Int. Cl.[6] A47B *23/00*
U.S. Cl. 108—45 14 Claims



1. A removable desk structure for use in a vehicle having an operator's seat and a console fixed to the vehicle in proximity to the operator's seat, said desk structure comprising:

a pair of laterally spaced leg members, each said leg member extending generally vertically between a lower portion and an upper portion and having inner and outer surfaces, said inner surfaces facing each other, at least one of said leg members having a back edge surface extending between said upper portion and said lower portion, said back edge surface adapted to face rearwardly when said desk structure is installed on the vehicle console, and said back edge surface being curvilinear between said lower portion and said upper portion to allow ready access to control mechanisms on the vehicle console by a person seated adjacent the vehicle console;

a table top member fixedly connected to said top portions of said leg members and having a plurality of cavities formed therein for receiving objects; and

adjustment means connected to said lower portions of said leg members for selectively laterally adjusting a spacing between said inner surfaces at said lower portions of said leg members whereby said adjustment means selectively moves said lower portions away from one another to facilitate installation on and removal from the vehicle console and towards one another to firmly engage said inner surfaces with the vehicle console without damaging the vehicle console.

5,390,610

CARRYING HANDLES FOR A FOLDING TABLE LEG APPARATUS

David R. Gutgsell, Jasper, Ind., assignor to Ditto Sales, Jasper, Ind.

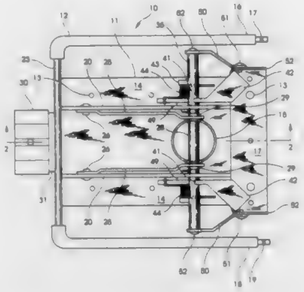
Filed Sep. 10, 1992, Ser. No. 942,980
Int. Cl.[6] A47B *3/00*
U.S. Cl. 108—132 17 Claims

1. A folding table leg apparatus for a folding table having a tabletop and at least one leg operable between a folded and an extended position, said folding table leg apparatus comprising:

a plate assembly;

means for mounting said plate assembly to the tabletop;

a pair of handles projecting from said plate assembly and defining an envelope adjacent to said plate assembly, each of said handles having a height from the tabletop greater than the effective diameter of said leg and defining an elongated opening between each of said handles and the tabletop to facilitate grasping each said handle; and



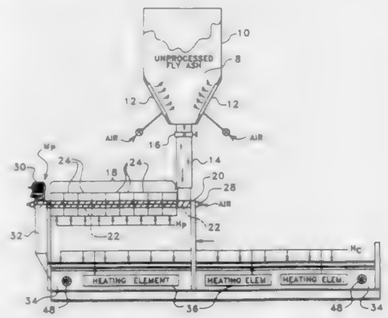
means, attachable to said leg, for folding said leg from the extended position in which said leg supports the tabletop to the folded position in which said leg is folded within said envelope, said folding means being fully contained within said envelope when said leg is in its folded position.

5,390,611

THERMAL PROCESSING OF FLY ASH

Richard E. John, 8939 Neil St., Denver, Colo. 80221

Filed Feb. 24, 1993, Ser. No. 16,203
Int. Cl.[6] F23J *1/00*
U.S. Cl. 110—165 A 11 Claims



1. Thermal processing apparatus for reducing the carbon content of fly ash, said apparatus comprising:

a combustion chamber for the fly ash;

means for heating the fly ash in said combustion chamber to an optimum combustion temperature for the carbon particles in the fly ash, said heating means being adjacent to but separated from the combustion chamber;

means for tumble mixing the fly ash and feeding the fly ash through said combustion chamber; and

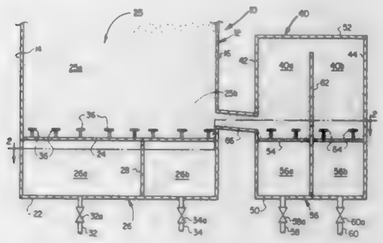
means for injecting air into the fly ash in the combustion chamber as the fly ash is tumble mixed by said mixing means and thereby facilitate the burning of the carbon particles.

5,390,612

FLUIDIZED BED REACTOR HAVING A FURNACE STRIP-AIR SYSTEM AND METHOD FOR REDUCING HEAT CONTENT AND INCREASING COMBUSTION EFFICIENCY OF DRAINED FURNACE SOLIDS

Stephen J. Toth, Clinton Township, Hunterdon County, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Mar. 1, 1993, Ser. No. 24,041
Int. Cl.[6] F23G *7/00*
U.S. Cl. 110—245 9 Claims



1. A fluidized bed reactor, comprising:

a furnace section;

means for supporting a bed of particulate material in said furnace section;

a plenum extending immediately below said supporting means;

means extending above said supporting means for partitioning said bed into two bed portions, said partitioning means having openings to allow passage of said particulate material between said bed portions; and

means for passing gas from said plenum through corresponding portions of said supporting means and into said two bed portions at different gas flows to selectively fluidize said bed portions;

means for removing from said furnace section particulate material in one bed portion having a greater gas flow than another bed portion; and

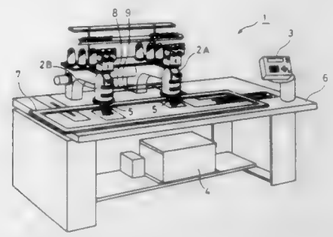
a vessel for receiving said removed particulate material, said vessel including means for cooling said removed particulate material.

5,390,613

MULTI-NEEDLE EMBROIDERING MACHINE WITH THREAD COLOR CHANGING MECHANISM

Masanori Shibata, Ichinomiya, Japan, assignor to Kabushikikaisha Barudan, Ichinomiya, Japan

Filed Nov. 3, 1993, Ser. No. 145,165
Claims priority, application Japan, Jun. 29, 1993, 5-186932
Int. Cl.[6] D05C *11/16*
U.S. Cl. 112—80.43 12 Claims



1. A multi-needle embroidering machine comprising:

a plurality of machine heads each carrying a plurality of needles;

a color changing mechanism provided in each of said heads for selecting from said needles one needle to be driven to feed a differently colored thread;

a driving means incorporated in only one of said heads for driving said mechanism of said one head and connected to said mechanism, others of said heads lacking a said driving means;

a means for transmitting a driving force from said mechanism of said one head to the color changing mechanisms of said other heads; and

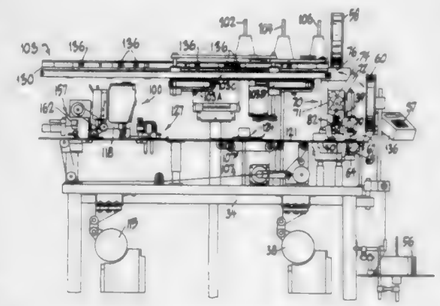
each said color changing mechanism comprising a needle unit including said needles, and a device for supporting said needle unit so as to be movable in a horizontal plane.

5,390,614

METHOD AND APPARATUS FOR AUTOMATICALLY ATTACHING A COLLARETTE DISPLAY AND LABEL TO A GARMENT BODY BY USING A TWO STEP SEWING OPERATION

Maximilian Adamski, Jr., Tega Cay, S.C.; Kenneth C. Milner, Lake Zurich, Ill.; Edward R. LaVelle, Staley, and John C. McEwen, Mocksville, both of N.C., assignors to Union Special Corporation, Huntley, Ill. and Sara Lee Corporation, Winston-Salem, N.C.

Continuation-in-part of Ser. No. 711,315, Jun. 6, 1991. This application Oct. 23, 1992, Ser. No. 961,470
Int. Cl.[6] D05B *19/00, 25/00, 35/06*
U.S. Cl. 112—121.11 25 Claims



1. An apparatus for sewing a collarette, label and display to a garment body comprising:

a first sewing machine having a first sewing head for sewing said collarette, label and display to said garment body to form a sewn assembly;

a collarette feed means for feeding collarette material under said first sewing head and causing said collarette material to be sewn to said garment body;

a display feed means for feeding display material under said sewing head on command and causing said display material to be sewn to said garment body and said collarette material;

a label feed means for feeding a label under said sewing head on command and causing said label to be sewn to said garment body and said collarette material;

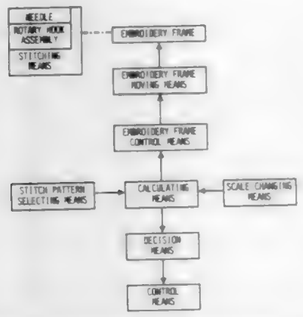
a second sewing machine having a second sewing head for applying a second sewing operation to said display;

means for transporting said sewn assembly from said first sewing machine to said second sewing machine; and

a controller means for controlling operation of said apparatus.

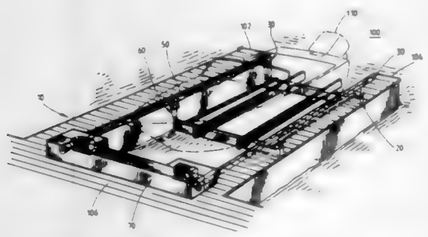
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5,390,615
EMBROIDERY MACHINE
Nami Sugimoto, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Nov. 19, 1993, Ser. No. 154,526
Claims priority, application Japan, Feb. 10, 1993, 5-022561
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—121.12 **14 Claims**



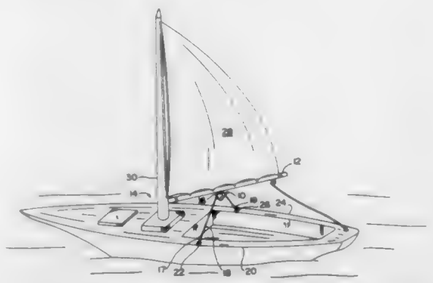
1. A stitch pattern selecting and forming system for selecting and forming a desired stitch pattern in an embroidery machine, the stitch pattern selecting and forming system comprising:
stitching means for forming a stitch pattern in a predetermined available area on a workpiece, including a needle, a needle driving mechanism for vertically reciprocating the needle and a rotary hook assembly;
an embroidery frame for detachably holding a workpiece;
embroidery frame moving means for moving the embroidery frame in directions along an X-axis and a Y-axis;
embroidery frame control means for controlling the embroidery frame moving means;
stitch pattern selecting means for selecting a stitch pattern having a predetermined area; and
scale changing means for selectively changing the scale of the stitch pattern selected by the stitch pattern selecting means in accordance with said predetermined available area, said scale changing means comprising determining means for determining which of a plurality of scales are available in accordance with said predetermined available area and said predetermined area of said stitch pattern in said plurality of scales.

5,390,616
DOCK MOUNTED SMALL BOAT LIFTING SYSTEM
Henry Roth, 714 Hurlock, Spring, Tex. 77373
Filed Jun. 21, 1993, Ser. No. 78,832
Int. Cl.[6] B63C *3/06*
U.S. Cl. 114—44 **22 Claims**



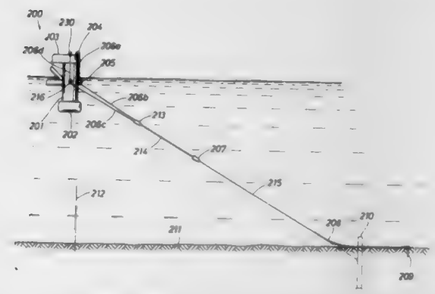
1. A system for lifting a small boat out of a body of water, said small boat lifting system comprising:
a pair of dock members extending from land into the body of water;
a boat cradle assembly constructed and arranged to be submersible in the body of water and to support the small boat by contact with the hull of the small boat;
a plurality of flexible cables extending substantially upwardly from said boat cradle assembly, said plurality of flexible cables engaging said boat cradle assembly to bear the weight of the small boat and the boat cradle assembly;
two individual substantially cylindrical longitudinal cable winding reels each being rotationally mounted to one of said pair of dock members on either side of the small boat, said substantially cylindrical longitudinal cable winding reels extending substantially the length of the small boat;
a drive system constructed and arranged to rotate each of said individual substantially cylindrical longitudinal cable winding reels;
means for affixing said plurality of flexible cables to said individual substantially cylindrical longitudinal cable winding reels, said means for affixing said plurality of flexible cables to said individual substantially cylindrical cable winding reels causing said flexible cables to wind around said individual substantially cylindrical longitudinal cable winding reels when said individual substantially cylindrical longitudinal cable winding reels are rotated by said drive system;
whereby empowerment of said drive system will cause said individual substantially cylindrical longitudinal cable winding reels to rotate which will cause said flexible cables to wind around said individual substantially cylindrical longitudinal cable winding reels which will in turn lift said cradle member thus lifting the small boat out of the water between said dock members.

5,390,617
BOOM BRAKE
Martinus Van Breems, 571 Riverside Ave., Westport, Conn. 06880
Filed Jun. 25, 1993, Ser. No. 83,909
Int. Cl.[6] B63H *9/04*
U.S. Cl. 114—98 **11 Claims**



1. A boom brake for controlling the swinging movement of a sailboat boom by engaging a line secured to opposite sides of the sailboat comprising:
a housing for attachment to the boom of the sailboat;
a plurality of bearing surfaces disposed within said housing for engaging the line;
at least one of said bearing surfaces being rotatably mounted in said housing, said plurality of bearing surfaces includes first and second spaced upper bearing surfaces and a lower bearing surface disposed below said first and second upper bearing surfaces such that the line extends over said first upper bearing surface, under said lower bearing surface and over said second upper bearing surface in a serpentine path making only a partial turn on each of said bearing surfaces; and
means for selectively controlling resistance to rotation of said rotatable bearing surface.

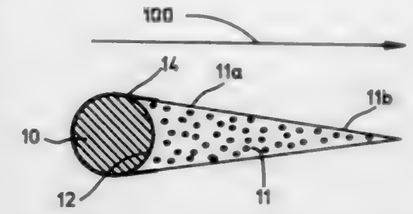
5,390,618
OFFSHORE MOORING SYSTEM
Christian V. Wolff, Houston, and Thomas S. Burns, Sugarland, both of Tex., assignors to Reading & Bates Development Co., Houston, Tex.
Filed May 17, 1993, Ser. No. 62,945
Int. Cl.[6] B63B *21/50*
U.S. Cl. 114—230 **13 Claims**



1. In a mooring system for mooring a vessel, having a hull with a waterline, in a body of water, having a water surface and a bottom at a depth beneath the water surface, in a mooring area subject to waves which generate a wave action which extends below the water surface, said mooring system comprising: a vessel mooring line having a free end; pulling equipment located on-board the vessel and attached to the vessel mooring line, for extending, retracting and tensioning the vessel mooring line; mooring tackle having a first end and a second end; and anchor means for anchoring the vessel to the bottom connected to the second end of the mooring tackle, the improvement which comprises:
a) a first fairlead attached to the vessel near the waterline for receiving the vessel mooring line first end from the pulling equipment and freely passing the vessel mooring line outward from the vessel;
b). a block, located a distance away from the vessel hull, comprising block fairlead means for receiving and freely passing the vessel mooring line free end from the first fair lead, and further comprising block connecting means for connecting the block to the first end of the mooring tackle; and
c). attachment means connected to the vessel for attaching the vessel mooring line free end received from the block fairlead to the vessel;
wherein, with the vessel moored, the vessel mooring line and the mooring tackle define a catenary from the first fair lead to the anchor means.

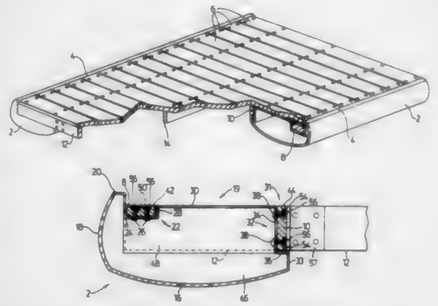
5,390,619
WATER EXPANDED COMPRESSED SPONGE CABLE FAIRING
Howard A. Miller, Encinitas, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 25, 1993, Ser. No. 115,965
Int. Cl.[6] F15D *1/10*
U.S. Cl. 114—243 **14 Claims**

1. A cable fairing, comprising:
regenerated cellulose sponge material for attachment to a cable;
said regenerated cellulose sponge material including a main body portion and an appendage portion extending from said main body portion;
said main body portion and said appendage portion achieving a flexible state when deployed in liquid, said appendage portion being shaped for streaming when in a liquid; and



said main body portion and said appendage portion compressing while in said flexible state to a compacted state for storage of said cable, wherein said main body portion and said appendage portion are conformable in said compacted state.

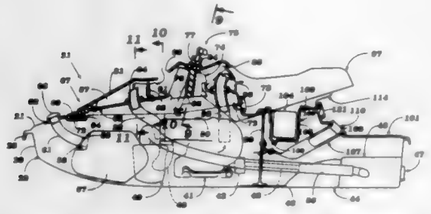
5,390,620
FLOATABLE DOCK
Gary W. Murphy, deceased, late of Whitby; Denyse Dumoulin, executor, Ile Perrot, and William J. Barnes, Claremont, all of Canada, assignors to Techstar Plastics Inc., Port Perry, Canada
Filed Jul. 30, 1993, Ser. No. 99,579
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—263 **16 Claims**



1. A dock float for a floatable dock, comprising:
a sealed, elongated, enclosed, buoyant housing having end walls, a top wall, a bottom wall and inner side wall and an outer side wall;
said housing defining at least one upwardly opening longitudinal channel for receiving a longitudinal joist forming a longitudinally extending frame member of a deck, means being provided within each said longitudinal channel for securing a joist therein; and
said housing further defining at least two longitudinally spaced laterally extending and upwardly opening channels alignable with corresponding laterly extending channels of a similar parallel dock float to receive laterally extending frame members of said deck.

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5,390,621
WATERCRAFT
Toshiyuki Hattori, and Fumihiko Ebihara, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Continuation-in-part of Ser. No. 79,899, Jun. 21, 1993, Pat. No. 5,355,826, which is a division of Ser. No. 786,536, Nov. 1, 1991, Pat. No. 5,255,626. This application Aug. 30, 1993, Ser. No. 113,857
Claims priority, application Japan, Sep. 1, 1992, 4-233716; Sep. 1, 1992, 4-233717
Int. Cl.[6] B63B *35/73*
U.S. Cl. 114—270 41 Claims



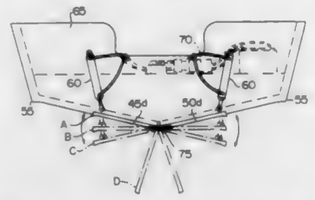
1. A hull configuration for a small personal watercraft comprised of a bow portion and an underside, the forward part of said bow portion being generally vertically disposed from an upper end to a lower end thereof, said lower end merging into said underside through a curved section having a gradual curve in side view to provide a high volume for flotation within a relatively short length and to divert water away from the upper part of said hull, the vertical height of said curved section being no greater than the vertical height of said forward part, and a pair of recessed areas extending along the sides of said bow beginning at a point rearwardly of said forward part and from said gradually curved area and continuing along the water line for reducing the upward direction of water along the sides of said hull as said watercraft travels through the body of water.

5,390,622
STEERING POLE FOR JET PROPULSION BOAT
Hideki Kishi, and Mitsuhisa Hirano, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Continuation of Ser. No. 954,897, Sep. 30, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,479
Claims priority, application Japan, Sep. 30, 1991, 3-251563
Int. Cl.[6] B63B *35/73*
U.S. Cl. 114—270 19 Claims



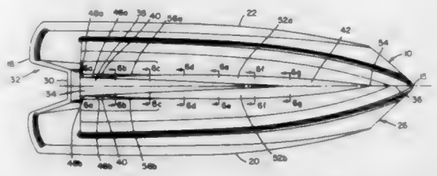
1. A watercraft having a hull, a control, and control mast for attachment to a bow portion of said watercraft for pivotal movement about a transverse, horizontal axis, said control mast being comprised of a foamed plastic core defining at least in part a control cavity for passing at least one control cable for said watercraft control, and a unitary outer plastic covering having a substantially uniform cross sectional thickness and devoid of any joints enclosing and bonded to said core for providing a unitary assembly.

5,390,623
BOAT HULL
Miles P. Mackaness, 5580 Chisolm Rd., Johns Island, S.C. 29455
Continuation-in-part of Ser. No. 847,932, Mar. 6, 1992, abandoned. This application Oct. 8, 1993, Ser. No. 133,467
Int. Cl.[6] B63B *1/30*
U.S. Cl. 114—282 40 Claims



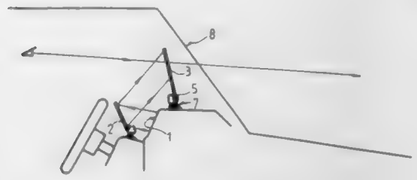
1. An improved boat hull, said hull comprising:
a primary hull section extending in a longitudinal direction and defining a bottom of a boat, said primary hull section including a fore and aft portion;
first and second longitudinally extending lift wings each pivotally attached to said primary hull section along an axis extending in the longitudinal direction of the primary hull section, said wings having a width narrower than the width of the primary hull section and extending from the aft portion of the primary hull section along the length of the primary hull section to a point past the center of gravity of the boat; and
pivoting means for pivoting said longitudinally extending lift wings between at least a first position substantially flush with said primary hull section and a second position angularly past a plane substantially parallel to the surface of the water so as to form at least an inverted V configuration, said pivoting means further maintaining said wings in such positions, whereby said wings can be adjusted between such positions to enhance the performance of the boat in a variety of water conditions and boat speeds.

5,390,624
BOAT WITH PAD BOTTOM HULL
Russell J. Barnes, Christiana, Tenn., assignor to Brunswick Corporation, Lake Forest, Ill.
Filed Mar. 24, 1993, Ser. No. 39,609
Int. Cl.[6] B63H *5/16*
U.S. Cl. 114—288 2 Claims



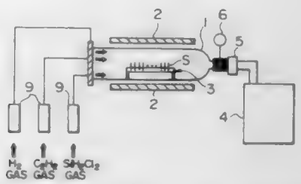
1. A boat having a stern and a bow comprising
a hull having a generally flat central bottom surface forming a portion of a pad, said surface including a forward portion and a rear portion adjacent said stern, said rear portion tipped upwardly from said forward portion towards said stern, said forward portion blending into said hull with a deadrise surface and said rear portion blending into said hull with a reverse wedge surface, said deadrise surface and said reverse wedge surface forming an intersection at about the position where said rear portion is tipped upwardly from said forward portion.

5,390,625
DRIVER'S OVERHEAD INDICATOR FOR AUTOMOBILE
Yea P. Chun, No. 3, Alley 1, Lane 364, Chung Hwa Road., Sec. 2,, Taipei, Taiwan, Prov. of China
Filed Mar. 29, 1993, Ser. No. 37,869
Int. Cl.[6] G01P *5/00;* G02B *7/198, 27/00*
U.S. Cl. 116—62.1 1 Claim



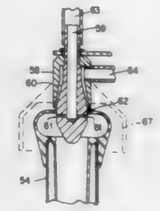
1. An automobile overhead indicator for use with an automobile instrument panel dash and front windshield comprising a clear reflecting plate and a clear projecting plate, both plates being treated to provide a clear background and reflection; first adjustable support means attachable between said reflecting plate and dash, and second adjustable support means attachable between said projecting plate and dash, said projecting plate being adapted to be disposed above the dash, said reflecting plate reflecting an image of the instrument panel onto said projecting plate so that the driver can view the projection without looking directly at the instrument panel each of said first and second support means including a frame supporting the respective plate, at least one stand member adapted to be fixed to the dash and a tightening member means for permitting or arresting rotational movement of said stand and plate relative to said frame member so that the image viewed can be adjusted by the driver.

5,390,626
PROCESS FOR FORMATION OF SILICON CARBIDE FILM
Hiroyuki Nagasawa, Akishima; Minoru Sugawara, Akigawa; Kazuhide Yamashiro, Hachiouji; Masato Kobayashi, Tokyo, and Yohichi Yamaguchi, Higashimurayama, all of Japan, assignors to Hoya Corporation, Tokyo, Japan
Continuation of Ser. No. 804,992, Dec. 10, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 37,657
Claims priority, application Japan, Dec. 11, 1990, 2-0401435
Int. Cl.[6] C30B *25/02*
U.S. Cl. 117—84 10 Claims



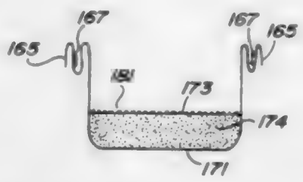
1. A process for the formation of a silicon carbide film which comprises placing at least one substrate in a reactor of a CVD system using a hot-wall, and introducing a plurality of source gases into the reactor under reduced pressure while the reactor is heated, thereby to form a silicon carbide film in which the composition ratio of Si to C is about 1 on the substrate in the reactor, wherein the source gases comprise at least a dichlorosilane gas and an acetylene gas, the flow velocity of the source gases in the reactor is at least 70 cm/second, and the temperature for heating the reactor is not more than 1,000° C.

5,390,627
METHOD OF CLEANING TEAT CUPS AND/OR AFTER-TREATING THE TEATS OF A MILKED ANIMAL, AN IMPLEMENT FOR MILKING ANIMALS APPLYING SAID METHOD(S), AND A CLEANING DEVICE APPLIED IN SUCH AN IMPLEMENT
Karel van der Berg, Bleskengraaf, and Rene Fransen, Vlaardingen, both of Netherlands, assignors to C. van der Lely, N.V., Maasland, Netherlands
Filed Jun. 4, 1993, Ser. No. 70,936
Int. Cl.[6] A01J *5/04*
U.S. Cl. 119—14.08 49 Claims



11. An apparatus for milking animals comprising teat cups, means for automatically positioning said teat cups on the animal's teats and removing said teat cups therefrom, a cleaning device comprising a spray nozzle, and interengaging means for effecting a connection of said spray nozzle with said teat cups after said teat cups have been removed from the animal's teats and maintaining said connection while said cleaning device is cleaning said teat cups.

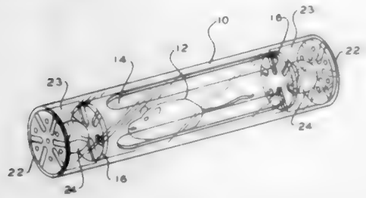
5,390,628
MECHANIZED ANIMAL LITTER APPARATUS AND METHOD OF OPERATING
Emanuel T. Vito, 685 Avenue "C", Stroudsburg, Pa. 18360
Continuation-in-part of Ser. No. 650,900, Feb. 5, 1991, Pat. No. 5,183,009. This application Feb. 2, 1993, Ser. No. 12,180
Int. Cl.[6] A01K *29/00, 1/01*
U.S. Cl. 119—170 19 Claims



1. A sanitary disposal apparatus for feline animal waste comprising:
(a) a flexible plastic container in the general form of a bag having an upper portion and a lower portion,
(b) said bag containing a predetermined amount of cat litter material calculated to be easily handleable by the average feline owner and to provide an amount of litter in which a house cat-type feline can effectively secrete its elimination products at least several times without objectionable odors or visual indication of the waste products,
(c) said flexible container being temporarily sealed with an easily opened sealing arrangement, and having means for reclosing the container subsequent to use and prior to disposal and
(d) a light, easily disruptable sheet over the litter material in the container to depress dusting after unsealing said container and while mounting in place for use.

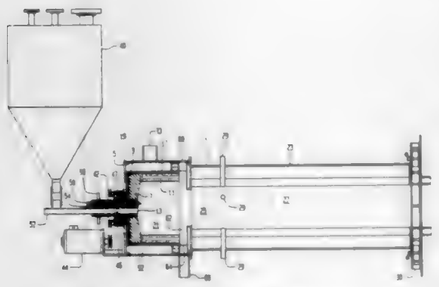
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5,390,629
PET TOY
James Simone, P.O. Box 474, Rockaway, N.J. 07866
Filed Dec. 13, 1993, Ser. No. 165,954
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—711 24 Claims



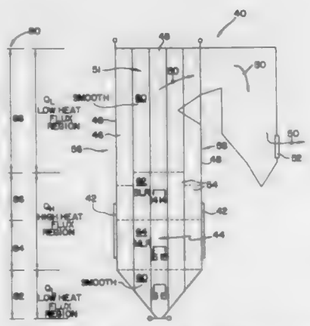
1. A pet toy comprising:
a transparent container having a primary chamber and an adjunct chamber;
at least one transverse partition mounted inside said container to separate said primary and said adjunct chambers;
a visible figure slidably fitted inside said primary chamber, longitudinal slots being located along said primary chamber to make said figure partially accessible; and
sound means fitted inside said container for making a sound in response to motion of said container, said sound means being fitted inside said adjunct chamber.

5,390,630
STATIONARY FEED ARRANGEMENT FOR USE IN A ROTARY FLUID BED GASIFIER
Michael J. Virr, Fairfield, Conn., assignor to Spinheat Ltd., Fairfield, Conn.
Filed Jun. 9, 1994, Ser. No. 257,156
Int. Cl.[6] F22B *1/00*
U.S. Cl. 122—4 D 27 Claims



1. A rotary fluid bed gasifier which comprises:
a combustor assembly which comprises a rotatable inner assembly and a stationary outer assembly, said rotatable inner assembly comprising a circumferentially extending wall which is permeable to gases and a rotatable wall perpendicularly disposed with respect to said circumferentially extending wall so as to form a gasification chamber therebetween, and said stationary outer assembly comprises a stationary housing disposed about said rotatable inner assembly;
a means for feeding a fluidizing gas through said circumferentially extending wall into said gasification chamber;
a bed of particles which, at least when said gasifier is in use, is supported on an internal face of said circumferentially extending wall and is fluidized by said fluidizing gas; and
a means for feeding a carbonaceous material from outside said gasifier and delivering said carbonaceous material to said gasification chamber, said means for feeding said carbonaceous material to said gasification chamber being a stationary conduit which is centrally disposed within said rotatable wall such that said rotatable inner assembly is capable of rotating about said stationary conduit.

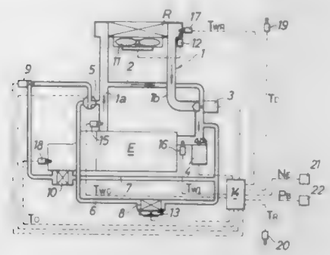
5,390,631
USE OF SINGLE-LEAD AND MULTI-LEAD RIBBED TUBING FOR SLIDING PRESSURE ONCE-THROUGH BOILERS
Melvin J. Albrecht, Homeworth, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.
Filed May 25, 1994, Ser. No. 249,183
Int. Cl.[6] F22B *15/00*
U.S. Cl. 122—235.12 20 Claims



1. A once-through steam generator suitable for sliding pressure operation over a wide load range and especially at low loads, the steam generator having a furnace partially defined by fluid-cooled enclosure walls, comprising:
fuel burner means for burning fuel and air in a combustion process which creates a vertical variation in heat flux rates on the enclosure walls including one or more low and one or more high heat flux regions; and
wherein the fluid-cooled enclosure walls surrounding the one or more low heat flux regions of the furnace incorporate smooth bore tubes, and the fluid-cooled enclosure walls surrounding the one or more high heat flux regions incorporate both single-lead ribbed (SLR) tubes and multiple-lead ribbed (MLR) tubes to avoid departure from nucleate boiling (DNB) and critical heat flux (CHF) conditions in the one or more high heat flux regions.

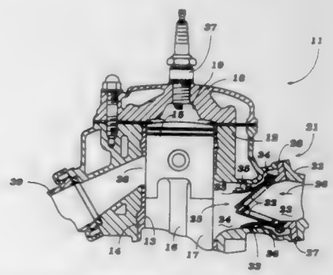
5,390,632
ENGINE COOLING SYSTEM
Hidehito Ikebe; Hiroyuki Niikura; Masaaki Hiratani; Hiroo Shimada; Koji Okazaki, and Toshio Yokoyama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 19, 1993, Ser. No. 19,969
Claims priority, application Japan, Feb. 19, 1992, 4-032331; Feb. 21, 1992, 4-035293; Apr. 9, 1992, 4-088470
Int. Cl.[6] F01P *7/00*
U.S. Cl. 123—41.02 36 Claims

1. An engine cooling system comprising
a cooling water circulation circuit interconnecting an engine body and a radiator,
a bypass circuit connected to the cooling water circulation circuit to bypass the radiator,
an electric-powered variable displacement water pump disposed in the cooling water circulation circuit adjacent an engine inlet,
a flow rate control valve for controlling a flow rate of cooling water flowing through the radiator,
an outlet water temperature detector for detecting an engine outlet water temperature in the cooling water circulation circuit,
an inlet water temperature detector for detecting an engine inlet water temperature in the cooling water circulation circuit, and
a control means having means operatively connected to said



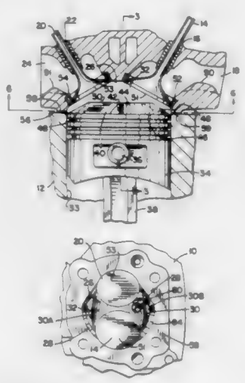
water pump, said flow rate control valve, said outlet water detector and said inlet water temperature detector for controlling the operation of the water pump and the flow rate control valve in accordance with the engine outlet and inlet water temperatures and an operational condition of the engine, other than said water temperatures, said operational condition including at least an engine speed.

5,390,633
REED VALVE MECHANISM FOR RECIPROCATING MACHINE
June Taue, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Jul. 1, 1993, Ser. No. 86,511
Claims priority, application Japan, Jul. 6, 1992, 4-177979
Int. Cl.[6] F02B *33/04*
U.S. Cl. 123—65 V 19 Claims



1. A reed valve mechanism for a reciprocating machine comprised of a variable volume chamber, a flow passage communicating with said chamber, a reed valve element positioned within said flow passage for permitting flow therethrough in one direction when in an open position and prohibiting flow in the other direction when in a closed position, a stopper plate fixed relative to said reed valve element in said flow passage for limiting the opening movement of said reed valve element, and a magnet juxtaposed to an open position of said reed valve element for retaining said reed valve element in said open position and positioned so that said reed valve element does not directly engage said magnet.

5,390,634
INTERNAL COMBUSTION ENGINE HAVING HIGH PERFORMANCE COMBUSTION CHAMBER
Craig E. Walters, Richland Center; Tim Tiller, Blue River; Dan Kinsey, LaFarge, and George B. Smith, Richland Center, all of Wis., assignors to S & S Cycle, Inc., Viola, Wis.
Filed Aug. 20, 1993, Ser. No. 110,406
Int. Cl.[6] F02B *23/08*
U.S. Cl. 123—193.5 43 Claims



1. An internal combustion engine assembly comprising:
(a) a cylinder head having a cylinder head mating surface, a combustion chamber in the cylinder head recessed from the cylinder head mating surface, the combustion chamber including a wall defining a depression, a chamber shoulder, a beveled rim surface, an inlet valve seat and an exhaust valve seat in the wall of the depression, the depression bounded around at least a part of its periphery by the chamber shoulder and the chamber shoulder being in turn bounded by the beveled rim surface which extends from the periphery of the chamber shoulder to the cylinder head mating surface; and
(b) a cylinder block including a cylinder block mating surface, a wall therein defining a cylinder, and a piston within the cylinder, with the cylinder block mating surface adjoining the cylinder head mating surface, the piston having a piston top face including a piston face reference surface and a raised piston face surface, with the piston face reference surface located on the piston such that at top dead center it lies substantially in the plane of the cylinder block mating surface and closely approaches and is parallel to the cylinder head mating surface, the raised piston face surface spaced from the piston face reference surface such that the raised piston face surface is above the cylinder head mating surface when the piston is at top dead center, the piston top face further including a beveled boundary surface extending from the piston face reference surface to the raised face surface with the raised face surface bounded by the beveled boundary surface, the piston face reference surface having at least one widened portion from which the beveled boundary surface extends to the raised face surface, and wherein the beveled boundary surface and the beveled rim surface are formed to match so that, at top dead center, the beveled boundary surface of the piston closely approaches and is parallel to the beveled rim surface of the cylinder head, a portion of the raised piston face surface closely approaches and is parallel to the chamber shoulder, and the piston face reference surface including the widened portion thereof closely approaches and is parallel to the cylinder head mating surface.

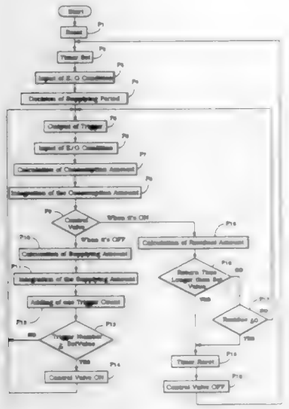
VOL 1171 ISS 3 FEB 21 1995 UMI

5,390,635

LUBRICATING OIL SUPPLYING SYSTEM FOR ENGINE

Hiroyuki Kidera, and Toru Izumi, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 18, 1992, Ser. No. 947,497
Claims priority, application Japan, Mar. 16, 1992, 4-089297
Int. Cl.[6] F01M 1/16
U.S. Cl. 123—196 R 70 Claims



1. A lubricating system for an internal combustion engine comprising a lubricant pump, lubricant control means for controlling the amount of lubricant delivered by said lubricant pump to said engine, means for sensing the running condition of the engine, means for initiating a first supply of a predetermined amount of lubricant by said lubricant control means, said predetermined amount of lubricant being determined in response to a sensed condition of said engine sensed by said sensing means .prior to the initiation of the first lubricant supply, means for continuing to sense the running condition of the engine during the first supply of the predetermined amount of lubricant to the engine, and means for changing the condition of the supply of lubricant from said lubricant control means in response to predetermined changes in the engine conditions as sensed by said sensing means after the first predetermined lubricant supply has begun.

5,390,636

COOLANT TRANSFER APPARATUS AND METHOD, FOR ENGINE/RADIATOR COOLING SYSTEM

James L. Baylor, Fontana; Russell A. Lindquist, Covina, and Michael J. Camacho, San Dimas, all of Calif., assignors to Wynn Oil Company, Azusa, Calif.

Filed Feb. 14, 1994, Ser. No. 195,098
Int. Cl.[6] F02B 77/00
U.S. Cl. 123—198A 17 Claims

1. In apparatus to supply liquid coolant, to and to transfer coolant from, an engine and radiator coolant system, the combination comprising

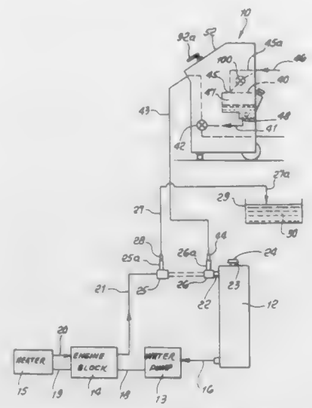
a) a supply tank having a coolant fill inlet, which is closable, and a coolant delivery outlet to deliver coolant via a hose to said engine and radiator coolant system,

b) an air pressurization inlet to said tank to receive compressed air that forces coolant from the tank via said outlet, and a source of compressed air connected to said inlet,

c) and means responsive to a predetermined coolant flow from the tank for relieving pressurization of said tank, whereby coolant flow is then interrupted,

d) and wherein said means includes a float located and movable in the tank, for sensing the top level of coolant in the tank, and a float-controlled device to interrupt air pressurization of the tank interior release air pressure from the tank,

e) and including a control panel and a carrier carrying said panel and tank, and a selector on the panel and a selector valve means connected with said selector for controllably effecting flow of pressurized coolant from the tank outlet below the float to the coolant system.

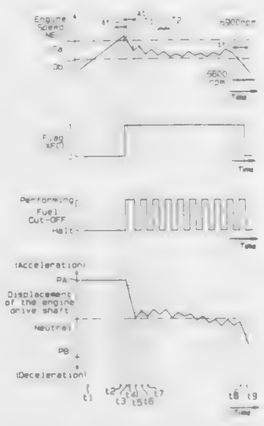


5,390,637

ENGINE SPEED CONTROLLER FOR A VEHICLE

Mamoru Yoshioka, and Kunihiko Nakata, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 15, 1993, Ser. No. 120,822
Claims priority, application Japan, Oct. 1, 1992, 4-263922
Int. Cl.[6] F02D 41/14, 41/22
U.S. Cl. 123—333 11 Claims



1. An engine speed controller for a vehicle, which includes an engine with a drive shaft; an injector for supplying fuel to the engine; a driving wheel; a propeller shaft connected to the driving wheel; and a flexible torsional member for connecting the propeller shaft with the engine drive shaft to relieve a torque impact caused by engine acceleration or deceleration, the engine speed controller comprising:

detection means for detecting a value corresponding to engine speed, and for outputting the detected value; and

injection control means for controlling the injector, based on the detected value from said detection means, such that the engine speed is kept constant while preventing overrunning of the engine, wherein said injection control means includes:

A) data storage means for storing a first determining value (Da) for the halt of fuel injection, and a second determining value (Db) for the resumption of fuel injection;

B) primary control means for halting fuel supply from the injector when the detected value exceeds the first determining value (Da), and for resuming fuel supply from the injector when the detected value becomes below the second determining value (Db); and

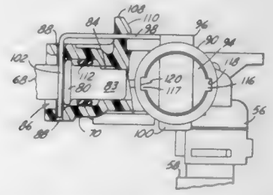
C) secondary control means for causing the injector to execute the resumption and halt of fuel injection at least one time, when the detected value is changed to a smaller value than the first value (Da) from a larger value than the first value (Da), thereby extinguishing the torsional energy accumulated in the torsional member.

5,390,638

FUEL RAIL ASSEMBLY

Michael J. Hornby, Williamsburg, and Gary D. Vattelana, Prince George, both of Va., assignors to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Feb. 25, 1994, Ser. No. 201,840
Int. Cl.[6] F02M 55/02
U.S. Cl. 123—456 11 Claims



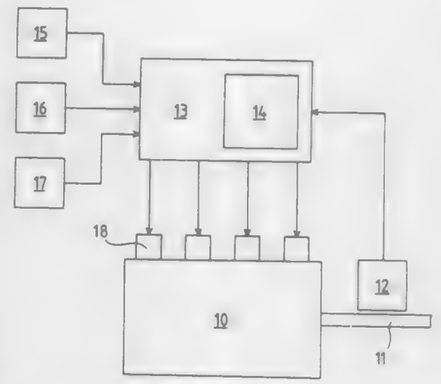
1. An internal combustion engine fuel rail assembly comprising a main fuel tube comprising multiple sockets at spaced apart locations along its length, fuel injectors inserted fluid-tight in certain of said sockets, a first component inserted fluid-tight in a first of said multiple sockets, a second component inserted fluid-tight in a second of said multiple sockets proximate said first socket, said first socket and said second socket each comprising a corresponding wall, and retainer means for retaining said first and second components fluid-tight in their respective sockets by preventing their extraction from their respective sockets, characterized in that one of said walls contains a corresponding through-opening, and said retainer means comprises a bracket having an intermediate portion and end portions at respective ends of said intermediate portion, one of said bracket end portions passes through said through-opening and into an interference relationship with the particular component inserted into the particular one of said first and second sockets whose wall contains said through-opening so as to prevent withdrawal of said particular component from said particular socket, the other of said bracket end portions assumes an interference relationship with said the other of said first and second components to prevent extraction of said second component from its socket, and fastening means for holding said intermediate portion of said bracket fast on said main fuel tube.

5,390,639

INTERNAL COMBUSTION ENGINE

Martin Lutat, Sankt Augustin, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Continuation-in-part of Ser. No. 904,982, Jun. 21, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 76,474
Claims priority, application Germany, Jun. 27, 1991, 4121242
Int. Cl.[6] F02M 51/00
U.S. Cl. 123—78 1 Claim



1. An improved fuel timing and fuel quantity control apparatus for controlling start timing and quantity of fuel injection to each cylinder of an internal combustion engine, said apparatus comprising:

an engine having:

a crankshaft;

a crankshaft rotational speed sensor affixed in proximity of said crankshaft;

a plurality of cylinders; and

a reciprocating piston in each of said cylinders;

a fuel injection system for said engine including:

a fuel injector at each cylinder operable to inject fuel thereinto;

an electrically controlled fuel valve for each of said fuel injectors;

an electronic fuel control unit individually connected to each of said fuel valves;

a rotational speed sensor affixed in proximity to a rotary driven part of said engine and connected in electric signal transmitting relation to said control unit, said speed sensor producing a repetitive electric pulse for each cylinder, said pulses being transmitted to said control unit in a pulse train;

said control unit upon receipt of the leading flank of each pulse being operative to commence calculation of the timing and quantity of fuel injection for the associated cylinder;

a piston position sensor at each cylinder in electric signal transmitting relation to said control unit, each said position sensor generating an instantaneous electric signal upon the associated piston being in a predetermined and reciprocated position;

means transmitting an electric signal to said control unit indicative of the power being demanded of said engine;

said electronic fuel control unit receiving said instantaneous signals indicative of said predetermined position of each piston and said power demand signal and being programmed to perform calculations based thereon to provide optimal injection timing and quantity signals to each of said fuel valves.

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5,390,640

METHOD OF CONTROLLING AN ENGINE FOR A FLEXIBLE FUEL VEHICLE

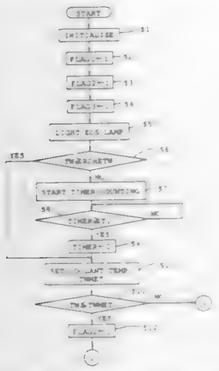
Yoichi Saito, and Takamitsu Kashima, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 796,459, Nov. 22, 1991. This application Jan. 14, 1993, Ser. No. 4,711

Claims priority, application Japan, Nov. 27, 1990, 2-327608; Dec. 27, 1990, 2-408076; Jul. 19, 1991, 3-179939

Int. Cl.[6] F02D *41/06*

U.S. Cl. 123—491 18 Claims



1. A method of starting an engine for a flexible fuel vehicle, the engine having a fuel injector for injecting mixed fuel of gasoline and alcohol into the engine, and a fuel pump for supplying the mixed fuel from a fuel tank to the injector, comprising the steps of:

inhibiting operation of a starter motor of the engine for a set time period before injecting the mixed fuel from the fuel injector; and

circulating the mixed fuel from the fuel pump to the fuel tank in response to a condition indicative of the need for mixing the fuel during said set tame period so as to mix the gasoline and alcohol for the mixed fuel.

5,390,641

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Masakazu Yamada, Nagoya; Masakazu Ninomiya, Kariya, and Yasuo Sagisaka, Komaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 8, 1993, Ser. No. 162,913

Claims priority, application Japan, Dec. 9, 1992, 4-329255

Int. Cl.[6] F02M *51/00*

U.S. Cl. 123—491 13 Claims

1. A fuel injection control system for an internal combustion engine comprising:

crank angle detecting means for detecting a crank angle;

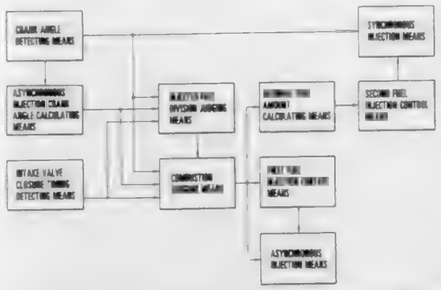
synchronous-injection means for performing synchronous injection of a fuel into an intake manifold for each cylinder in synchronism with the crank angle detected by said crank angle detecting means;

intake valve closure timing detecting means for detecting a crank angle corresponding to closure of an intake valve of each cylinder of the engine, in advance;

asynchronous injection means for performing asynchronous injection of fuel into the intake manifold of each cylinder upon at least one of engine starting state and acceleration state;

asynchronous injection crank angle computing means for determining crank angles at initiation of an asynchronous injection of fuel and termination of the asynchronous injection before initiation of said asynchronous injection to be performed by said asynchronous injection means;

injected fuel division checking means for checking whether fuel amount of the asynchronous injection performed by said asynchronous injection means is divided or not by the closure of the intake valve caused at the crank angle



detected by said intake valve closure timing detecting means in advance and said crank angles determined by said asynchronous injection crank angle computing means; and

first fuel injection control means for inhibiting fuel injection when said injected fuel division checking means detects a division of the fuel amount.

5,390,642

FUEL INJECTION SYSTEM ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

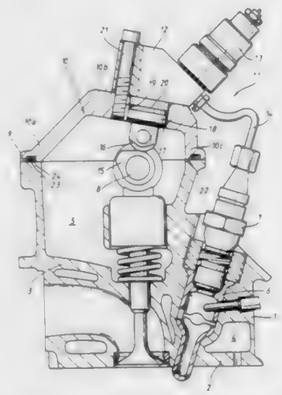
Frank Thoma, Stuttgart, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

Continuation of Ser. No. 40,889, Mar. 31, 1993, abandoned. This application Apr. 1, 1994, Ser. No. 222,723

Claims priority, application Germany, Apr. 11, 1992, 4212255

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—508 6 Claims



1. A diesel engine fuel injection system arrangement comprising as components of each cylinder a pump and an injector mounted on said Diesel engine which has a cylinder head with cylinder valves and with a camshaft mounted thereon and including for each cylinder control cam for operating the cylinder valves and a cam for operating said pump for the injection of fuel into a combustion chamber under high pressure, and with a cylinder head cover fastened to the cylinder head so as to be independently removable therefrom for access to said control cams and said cylinder valves, said cylinder head cover having a top wall portion and side wall portions angled from said top wall portion, and said injection system pump being mounted on a wall portion of the cylinder head cover, with at least one of said wall portions being reinforced for rigidly supporting said pump, said pump having roller tappets seated on the respective cams to facilitate operation of said high pressure pump by said cam, said pump further having for each cylinder a solenoid valve integrally associated with said pump for timing fuel injection into the respective combustion chambers via said injector.

5,390,643

PRESSURE CONTROL APPARATUS FOR FUEL TANK

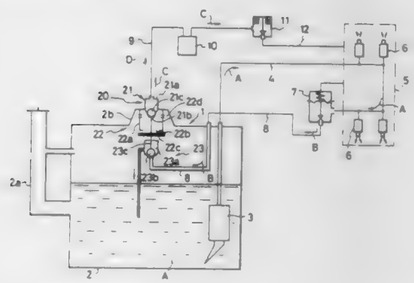
Hidetoshi Sekine, Kiryu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1993, Ser. No. 165,340

Claims priority, application Japan, Jan. 13, 1993, 5-003435[U]

Int. Cl.[6] F02M *37/00*

U.S. Cl. 123—514 13 Claims



1. A pressure control apparatus for a fuel tank, the fuel tank being in a fuel system, which fuel system includes the fuel tank for storing a fuel, a fuel pump, a fuel vapor storage device for storing a fuel vapor, a vent line for feeding said fuel vapor, a pressure regulator for regulating a fuel pressure, and a fuel return line for sending back a return fuel from said pressure regulator for regulating a fuel pressure, and a fuel return line for sending back a return fuel from said pressure regulator to said fuel tank, the apparatus comprising:

a first valve opened responsive to an existence of said return fuel and closed responsive to a nonexistence of said return fuel for admitting said fuel vapor to flow out of said fuel tank and for controlling the pressure within said fuel tank;

a second valve closed responsive to an existence of said return fuel and opened responsive to a nonexistence of said return fuel for separating said fuel vapor from said fuel; and

opening-closing means responsive to an existence of said return fuel for actuating both of said first valve and said second valve so as to open said first valve and to close said second valve.

5,390,644

METHOD FOR PRODUCING FUEL/AIR MIXTURE FOR COMBUSTION ENGINE

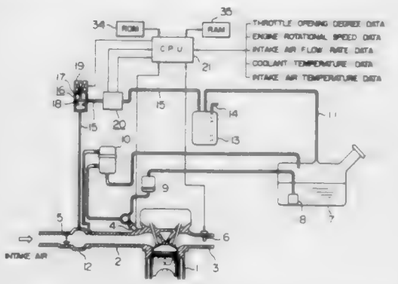
Naochika Nunogaki, Mie; Minoru Ohta, Okazaki; Hirokatsu Mukai, Kuwana; Makoto Shirai, Yokkaichi; Toshihiro Suzumura, Nagoya; Shigenori Isomura, Kariya; Tatsunori Kato, Nagoya; Hiroyuki Tatebayashi, Handa, and Akihiro Oka, Mie, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 23, 1992, Ser. No. 996,812

Claims priority, application Japan, Dec. 27, 1991, 3-347145; Dec. 27, 1991, 3-347499; May 14, 1992, 4-122224

Int. Cl.[6] F02M *25/08, 33/02*

U.S. Cl. 123—520 10 Claims



1. A method for controlling a fuel/air ratio of a mixture gas at an intake portion of an engine, comprising the steps of:

detecting a characteristic of an evaporative gas at a plurality of measuring portions in a gas path by which the evaporative gas is supplied between a fuel tank and the intake portion, wherein the evaporative gas at each one of the plurality of measuring portions has a corresponding flow speed, and wherein the corresponding flow speed at one of the measuring portions is different from the corresponding flow speed at another of the measuring portions;

determining the corresponding flow speeds and a concentration of a predetermined component which is included within the evaporative gas, based upon each detected characteristic; and

controlling the fuel/air ratio at the intake portion in accordance with the determining step.

5,390,645

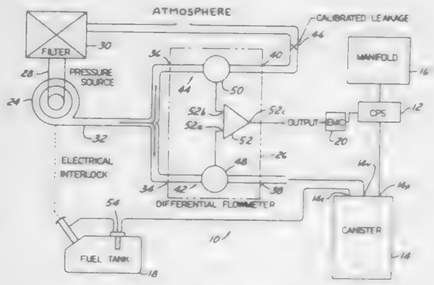
FUEL VAPOR LEAK DETECTION SYSTEM

John E. Cook, and Paul D. Perry, both of Chatham, Canada, assignors to Siemens Electric Limited, Chatham, Canada

Filed Mar. 4, 1994, Ser. No. 205,983

Int. Cl.[6] F02M *33/02*

U.S. Cl. 123—520 8 Claims



1. A canister purge system comprising a collection canister

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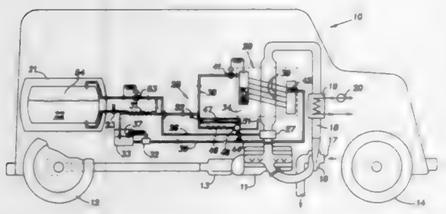
for collecting volatile fuel vapors from a fuel tank, and means for selectively purging collected fuel vapors from said canister to an internal combustion engine's intake manifold for entrainment with a combustible mixture that passes from the intake manifold into combustion chamber space of the engine for combustion therein, said means including a purge flow path between a purge port means of said canister and the intake manifold, said canister further having tank port means for communicating said canister with said fuel tank, characterized by an associated diagnostic system for detecting leakage from a portion of the canister purge system, including said canister and tank, when said portion is closed to conduct a leakage test, said diagnostic system comprising pump means for positively pressurizing said portion by conducting a first portion of the pump means flow through a first flow path from said pump means to said portion of the canister purge system and concurrently conducting a second portion of the pump means flow from said pump means through a second flow path containing a known orifice means, means for detecting the flow differential between that first portion of the pump means flow passing through said first flow path and that second portion of the pump means flow passing through said second flow path, and means for determining the leakage from the detected flow differential.

5,390,646

SECOND STAGE INTERCOOLING WITH PHASE CHANGE HEAT TRANSFER FLUID

Paul F. Swenson, Shaker Heights, Ohio, assignor to Consolidated Natural Gas Service Company, Inc., Pittsburgh, Pa.

Filed Dec. 29, 1993, Ser. No. 174,795
Int. Cl.[6] F02N *21/02*
U.S. Cl. 123—525 **4 Claims**



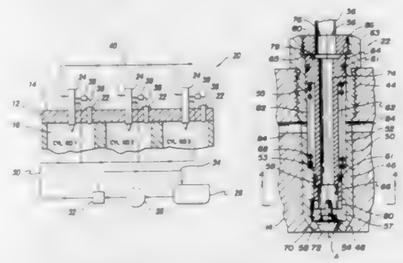
1. A vehicle comprising an internal combustion engine, drive means connected to the engine to propel the vehicle, a fuel system including a fuel tank for storing liquid natural gas or methane fuel in a cryogenic liquid state, conduit delivery means for conveying said fuel from said tank to said engine, heat exchanger means associated with the delivery means for vaporizing the liquid fuel before it is introduced to the engine, means for compressing charge air for combustion in the engine, heat exchanger means for cooling the compressed charge air before it is introduced to the engine, and a heat transfer fluid circuit for transferring heat from the compressed charge air in the compressed charge air heat exchanger to the cryogenic liquid fuel in the liquid fuel vaporizing heat exchanger, the heat transfer fluid circuit including a circulating heat transfer fluid arranged to evaporate as it absorbs heat from said charge air heat exchanger and to condense as it gives up heat to said liquid fuel heat exchanger whereby the heat transfer between the charge air and liquid fuel is substantially accomplished by phase changes in said heat transfer fluid to thereby afford close control of the temperature of the charge air as it leaves said charge air heat exchanger.

5,390,647

AIR CHARGING VALVE FOR AN AIR FORCED FUEL INJECTOR

Michael M. Schechter, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 21, 1993, Ser. No. 79,579
Int. Cl.[6] F02M *67/04*
U.S. Cl. 123—532 **11 Claims**



1. An air charging valve for use with a compressorless air-forced fuel injector in combination with a cylinder in a four-stroke internal combustion engine, the air charging valve comprising:

a valve housing having an internal throughbore therethrough, the throughbore having a first end exposed to the engine cylinder and a second end spaced from the first end;

valve means within the throughbore for selectively accepting pressurized air through the first end of the throughbore from the engine cylinder when the pressure in the engine cylinder is above a predetermined minimum pressure;

reservoir means for accepting the pressurized air from the second end of the throughbore and temporarily storing the pressurized air before it enters the air-forced fuel injector; and

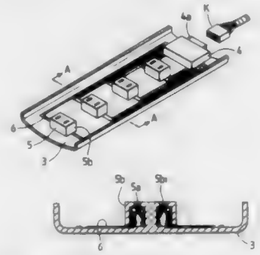
piston-plunger means for selectively prohibiting the valve means from accepting pressurized air from the engine cylinder into the throughbore when the pressure in the reservoir means reaches a predetermined level and for preventing the discharge of pressurized air from within the throughbore back into the engine cylinder.

5,390,648

ELECTRICALLY WIRING PARTS MOUNTED ON AN ENGINE

Takeshi Yanase, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 13,925
Claims priority, application Japan, Feb. 26, 1992, 4-039298
Int. Cl.[6] F02P *11/00*
U.S. Cl. 123—634 **4 Claims**



1. An electrical wiring device for distributing a signal through a wire harness to at least one of an ignition coil and an injector mounted on an upper portion of an engine via a current receiving device on each of said at least one ignition coil and injector, said wiring device comprising:

a current supplying connector associated with each of said at least one ignition coil and injector for supplying said signal, via said current receiving device, to said at least one ignition coil and injector, said current supplying connector being integrally formed on the inner surface of a cylinder head cover in such a manner that said current supplying connector electrically interfaces with said current receiving device when said cover is installed; and

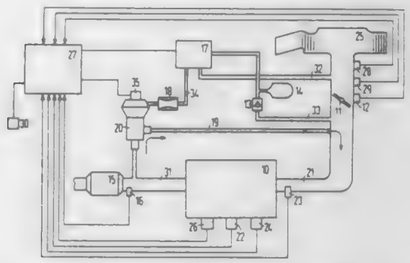
a current supplying circuit, electrically connected to said current supplying connector, for supplying said signal to said current supplying connector.

5,390,649

METHOD FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE OPERATING WITH EXHAUST GAS RECIRCULATION

Bjoern Miener, and Markus Gleissner, both of Regensburg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 7, 1993, Ser. No. 73,121
Claims priority, application European Pat. Off., Jun. 5, 1992, 92109583.2
Int. Cl.[6] F02M *15/00*
U.S. Cl. 123—676 **6 Claims**



1. A method for controlling an internal combustion engine operating with exhaust gas recirculation and including an intake-tube-pressure-guided injection system having:

an intake tube with a throttle valve, an exhaust pipe, a return conduit branching off from the exhaust pipe and discharging into the intake tube downstream of the throttle valve, an exhaust gas recirculation valve being disposed in the return conduit and having a valve stroke, an actuator influencing a degree of opening of the conduit for controlling an exhaust gas recirculation rate, and a stroke sensor detecting a degree of opening of the exhaust gas recirculation valve over its valve stroke for establishing an optimal exhaust gas recirculation rate, and taking the degree of opening of the exhaust gas recirculation valve into account in a calculation of an injection time for injection valves, which method comprises the steps of:

correcting the injection time with a pilot control value being dependent on rpm and on a pressure difference between an intake tube pressure and an exhaust gas counterpressure,

defining a stroke factor from the degree of opening of the exhaust gas recirculation valve and from a load-dependent, predetermined command value of the exhaust gas recirculation valve; and

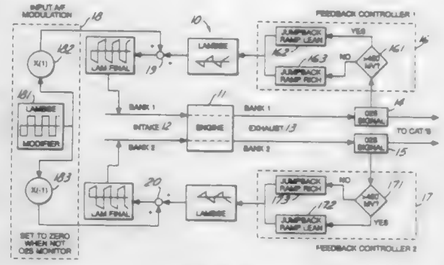
weighting the pilot control value with the stroke factor.

5,390,650

EXHAUST GAS OXYGEN SENSOR MONITORING

Thomas S. Gee, Canton; Thomas A. Schubert, Novi, and Paul F. Smith, Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 15, 1993, Ser. No. 31,408
Int. Cl.[6] F02D *41/14*; G01M *15/00*
U.S. Cl. 123—692 **2 Claims**



1. A method of controlling air/fuel ratio in an internal combustion engine so as to test the operation of an exhaust gas oxygen sensor, including the steps of:

establishing a first intake bank of cylinders;

establishing a second intake bank of cylinders different from said first bank;

establishing a first bank exhaust path for conducting exhaust from said first intake bank of cylinders;

establishing a second bank exhaust path for conducting exhaust from said second intake bank of cylinders;

placing a first exhaust gas oxygen sensor in said first bank exhaust path;

placing a second exhaust gas oxygen sensor in said second exhaust path; and

generating air/fuel ratio control signals for said first and second banks of said engine which are 180° out of phase with each other;

wherein the step of generating 180° out-of-phase air/fuel ratio control signals includes the steps of:

providing an exhaust gas oxygen sensor signal from each of the two banks;

processing each sensor signal to see if it is greater than a predetermined magnitude;

if yes, then starting at least one of a jump-back in the air/fuel ratio and ramping the air/fuel ratio lean;

if no, causing at least one of a jump-back in the air/fuel ratio and ramping air/fuel ratio rich;

applying the signal from the first exhaust gas oxygen sensor to a first summer;

applying the signal from the second feedback controller processor of the second exhaust gas oxygen signal to a second summer;

generating an air/fuel ratio modifier to drive the system during monitoring of the exhaust gas oxygen sensor;

applying a first modifier to said first summer;

applying a second modifier out-of-phase with said first modifier to said second summer;

using the output of the first summer to control the air/fuel ratio of the first bank; and

using the output of the second summer to control the air/fuel ratio of the second bank.

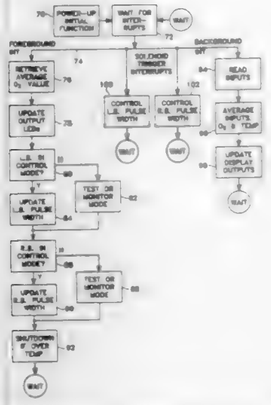
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5,390,651

AIR/FUEL RATIO CONTROLLER FOR LARGER INTERNAL COMBUSTION ENGINES

Stephen H. Nussbaum, Temecula, and Bradford A. Lessard, Santee, both of Calif., assignors to Precision Engine Controls Corporation, San Diego, Calif.

Filed Oct. 29, 1993, Ser. No. 145,391
Int. Cl.[6] F02M 7/00
U.S. Cl. 123—694 24 Claims



1. Air/fuel ratio control apparatus for use with an engine having multiple cylinders with intake and exhaust manifolds, the apparatus comprising:

an air/fuel mixer having an air inlet and a fuel inlet;

a fuel pressure regulator, for controlling the fuel pressure supplied to the fuel inlet of the mixer, in response to pressure changes in an air chamber of the regulator;

a solenoid valve coupled to the fuel pressure regulator, wherein opening the solenoid valve vents the air chamber and results in a lower fuel pressure supplied to the fuel inlet of the air/fuel mixer;

an oxygen sensor installed in the exhaust manifold, for generating a signal indicative of the oxygen level in the exhaust manifold; and

a controller having means for inputting a desired oxygen setpoint value, the controller being responsive to the signals indicative of the oxygen level, and means for generating a solenoid valve control signal, wherein the control signal is adjusted in pulse width to control the fuel pressure and flow to achieve the desired oxygen setpoint value.

5,390,652

DUAL THROWER

Steven W. Minneman, Clayton, and Michael C. Minneman, Englewood, both of Ohio, assignors to MTM Molded Products Company, Dayton, Ohio

Filed Nov. 3, 1992, Ser. No. 971,073
Int. Cl.[6] F41J 9/28; F41B 3/04
U.S. Cl. 124—5 13 Claims

1. A holder for throwing a first target and a second target, comprising:

a handle; and

a plurality of adjustable target holders for receiving said first and second targets;

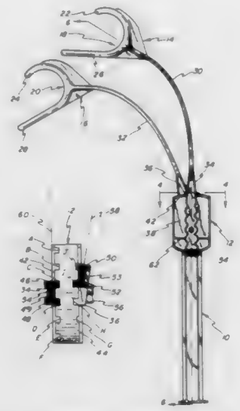
said plurality of adjustable target holders being adjustable such that said first target is thrown in a predetermined relationship with respect to said second target;

said holder further comprising:

an adjuster for adjustably securing said plurality of adjustable target holders to said handle;

said plurality of target holders comprising first holder which lies in a first plane and a second holder which lies in a second plane, respectively, said adjuster comprising at least one support for adjustably supporting said first holder in a predetermined angular position relative to said second holder;

said at least one support comprising an angular support for supporting said first holder in a predetermined angular relationship with respect to said second holder, thereby permitting said first and second targets to be launched at different trajectories.



7. A method for adjustably coupling a first target holder and a second target holder together such that a first target and a second target may be thrown on a first predetermined trajectory and a second predetermined trajectory, respectively, said method comprising the steps of:

(a) positioning a first target holder in operative relationship with a second target holder;

(b) adjusting the relative angle of said first and second target holders; and

(c) adjustably securing said first target holder to a second target holder with an adjuster.

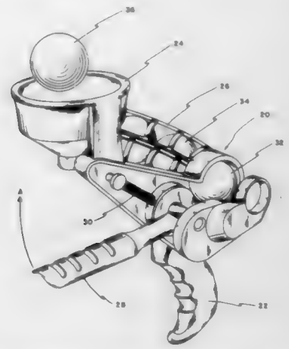
5,390,653

TWO HANDED TOSS AND CATCH TOY WITH ANGLE OF TOSS ADJUSTMENT

James S. W. Lee, Long Island, N.Y., and Chiu K. Kwan, Kowloon, Hong Kong, assignors to C. J. Associates, Ltd., Hong Kong

Filed Dec. 21, 1992, Ser. No. 994,546
Int. Cl.[6] F41B 7/08
U.S. Cl. 124—16 9 Claims

1. A toss and catch toy comprising a portable structure having a hollow handle, said structure adapted for being held and moved about by a person grasping said handle, said hollow handle having a drive spring therein, an axle having a spring arm and a trigger rod mounted thereon, said drive spring being rotatably connected to a free end of said spring arm, said trigger rod being attached to said axle to cause said spring arm to store energy in said drive spring in response to movement of the trigger rod, a ball in a launch position to be struck and driven by said trigger rod as it moves responsive to said energy stored in said drive spring, means on said toy for catching said ball as it returns from a motion imparted by said trigger rod,



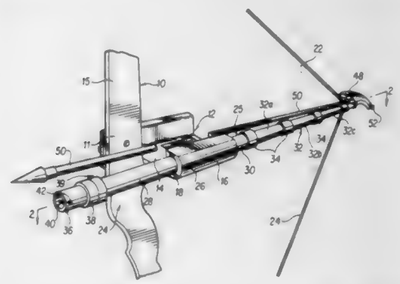
and a tunnel magazine extending from said catching means to a position where said ball is struck by said trigger rod.

5,390,654

BOW STRING STABILIZER BAR

Eugene W. Perkins, Dawsonville, Ga., assignor to Perkins Stabilizer, Inc., Cumming, Ga.

Filed Jan. 7, 1993, Ser. No. 1,679
Int. Cl.[6] F41B 5/00
U.S. Cl. 124—24.1 6 Claims



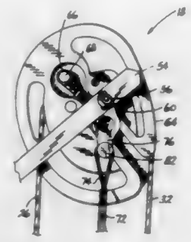
1. A stabilizer for stabilizing a drawn bow string comprising a bracket fixed to a mid-portion of a bow; a first housing member on said bracket having an open ended bore therethrough having front and rear parts and whose longitudinal axis is perpendicular to the mid-portion of said bow and laterally spaced from but parallel to a plane defined by said drawn bow string; a tube fixed within said through bore and having front and rear parts, a first extensible and retractable stabilizer bar comprising a plurality of telescoping sections including a forward section telescopically received in said rear part of said tube, adjustable means for adjusting a maximum extent to which said stabilizer bar can be telescopically extended relative to said bow, a releasable bow string clamp carried on an end of said stabilizer bar remote from said bow and including a handle graspable by an archer to retract said bow string and flex said bow in readiness for shooting an arrow while also telescopically increasing the length of said stabilizer bar to said adjusted maximum extent, and means operable by the hand of said archer for selectively releasing said bow string clamp after said bow string has been drawn to said adjusted maximum extent.

5,390,655

COMPOUND BOW AND CABLE MOUNTING BRACKET

J. Patrick Mitchell, and Terry Ploot, both of Hastings, Mich., assignors to Pro Line Company, Hastings, Mich.

Filed Aug. 12, 1993, Ser. No. 106,031
Int. Cl.[6] F41B 5/00
U.S. Cl. 124—25.6 30 Claims



1. In a compound bow comprising:

a center handle portion;

first and second limbs having inner ends connected to the center handle portion and free outer ends, each of the free outer ends being bifurcated into first and second arms and having an axle therebetween, a pulley eccentrically mounted on each axle; and

a cable extending between the free outer ends of the first and second limbs, the cable having at least one cable end;

an improvement comprising:

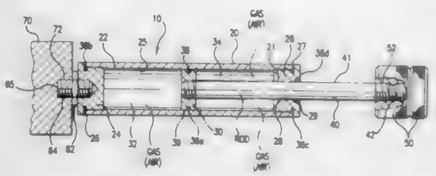
a mounting bracket mounted to at least one of the axles adjacent to the pulley between the first and second arms, the mounting bracket comprising an elongated body having a fastener spaced radially from the axle and adapted to releasably receive the at least one cable end, whereby to reduce torque on the axle when the at least one cable end is mounted to the mounting bracket and a load is placed thereon and further whereby the at least one cable end can be released from the mounting bracket without removing the axle from the free outer end of the limb.

5,390,656

PNEUMATIC STABILIZER

Teijo Villa, P.O. Box 482, Terrance Bay, Ontario, P0T 2W0, Canada, and Chris Reid, P.O. Box 362, Schreiber, Ontario P0T 2S0, Canada

Filed Apr. 7, 1992, Ser. No. 864,652
Int. Cl.[6] F41B 5/00
U.S. Cl. 124—89 10 Claims



1. A stabilizer for an instrument for emitting a projectile comprising:

a spring;

wherein said spring consists of a gas spring;

a mass means for attachment to said spring; and

means for attachment of the stabilizer to said instrument that is subjected to vibrational energy;

wherein the stabilizer functions to effectively absorb or dissipate the vibrational energy produced or imparted to the instrument, and wherein said spring has a non-linear spring constant.

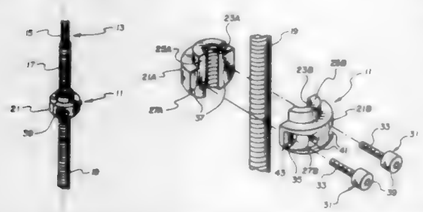
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5,390,657

ADJUSTABLE NOCK SET FOR ARCHERY BOWS

Marlow W. Larson, Ogden, Utah, assignor to Browning, Morgan, Utah

Filed Oct. 29, 1991, Ser. No. 783,902
Int. Cl.[6] F41B 5/00
U.S. Cl. 124—91 1 Claim



1. A nock set for an archery bow, said bow including a bowstring having a central stretch with a middle section characterized by a spiraling inclined plane surface configuration, said nock set comprising:

a body assembly, including a first segment and a second segment mutually adapted to clamp said middle section so that corresponding first and second contact surfaces of said first and second segments, respectively, engage said middle section, said contact surfaces being configured to register with said spiraling inclined plane surface;

connecting means for joining said first and second segments in clamping relationship with said middle section so that said assembly may be rotated clockwise or counterclockwise, as desired, to adjust the elevational position of said assembly on said middle section;

said middle section being wrapped with a serving which provides said spiraling inclined plane surface;

said contact surfaces being configured as internal threads which approximately match said spiraling inclined plane surface; and

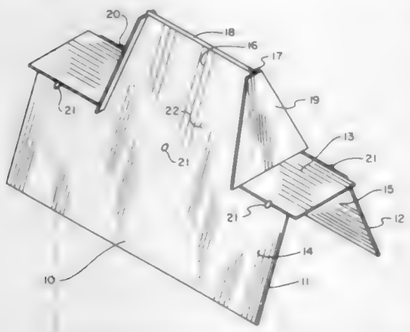
wherein said connecting means comprises threaded connectors constructed and arranged to permit selective adjustment of the clamping force exerted by said contact surfaces against said inclined plane surface, whereby said assembly may be selectively tightened into a fixed elevational position on said middle section or loosened to permit rotation of said assembly to effect an adjustment of said elevational position.

5,390,658

OPEN FIRE CAMP STOVE

Bobby J. Prock, 191 Crain St. SW., McDonald, Tenn. 37353

Filed Mar. 14, 1994, Ser. No. 212,048
Int. Cl.[6] A47J 37/00; F24B 3/00
U.S. Cl. 126—25 R 5 Claims



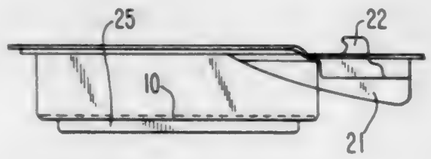
1. A open fire camp stove comprising a first angled side panel having a first angled side panel upper end; a second angled side panel having a second angled side panel upper end; means removably connecting said side panels together at the upper ends thereof; a flat cooking panel inserted between said side panels and supported thereby; and a pair of removable tapered end-closure door panels removably engaging with said side panels and said cooking panel to form a closed compartment therewith, wherein said side panels having a rectangular lower portion and a central trapezoidal upper section.

5,390,659

FLAMELESS HEATER PAD AND TRAY SYSTEMS

Robert P. Scaringe, Rockledge, and Lawrence R. Grzyll, Merritt Island, both of Fla., assignors to Mainstream Engineering Corporation, Rockledge, Fla.

Filed Dec. 21, 1993, Ser. No. 170,696
Int. Cl.[6] F24J 1/00
U.S. Cl. 126—263 R 9 Claims



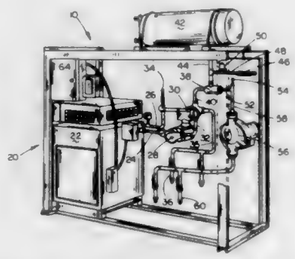
1. In a flameless heater, comprising a tray containing a compartment configured to hold a water-actuatable heater pad to produce an exothermic heating reaction and a pouch containing food or a beverage, a trough located adjacent said compartment and sized to receive an amount of water sufficient to produce, when applied to the heater pad, adequate heat for heating contents of the pouch and configured to have a greater depth at a side remote from said compartment than at a side adjacent said compartment and with a bottom sloping upwardly from the greater dept toward the side adjacent said compartment arranged so as to produce the reaction by slight tilting of the tray without spilling water.

5,390,660

PRE-WIRED AND PRE-PLUMBED MODULE FOR USE WITH AN INSTALLED HYDRONIC RADIANT FLOOR HEATING SYSTEM

Rick E. Danielson, Omaha, Nebr., assignor to System Sense, Inc., Sioux Falls, S. Dak.

Filed Apr. 14, 1993, Ser. No. 48,113
Int. Cl.[6] F23L 9/00
U.S. Cl. 126—271.2 R 3 Claims



1. A pre-wired and pre-plumbed module capable of being moved as an assembled package to a job site for connection to an installed hydronic radiant floor heating system including a manifold having at least one fluid supply line and at least one fluid return line comprising,

a portable support frame,

a fluid heater on said support frame having a fluid supply line and a fluid return line connected thereto,

a first pump means on said support frame fluidly connected to said fluid supply line of said fluid heater,

a four-way valve on said frame having first, second, third and fourth ports,

said first port being fluidly connected to said first pump,

said second port being fluidly connected to said return line of said fluid heater,

at least one fluid return valve on said frame fluidly connected to said fourth port,

at least one fluid supply valve on said frame,

a first fluid line connecting said fluid supply line and said third port,

a second pump imposed in said first fluid line,

an expansion tank on said frame fluidly connected to said first fluid line,

a fluid make-up valve operatively connected to said first line,

an in-line air separator imposed in said first line,

an electronic control panel mounted on said frame and being electrically connected to at least said fluid heater, said first pump, said four-way valve and said second pump for controlling the operation thereof,

said quick fluid return valve being adapted for connection to said fluid return line,

said fluid supply valve being adapted for quick connection to said fluid supply line,

said fluid make-up valve being adapted for quick connection to a source of fluid at the job site,

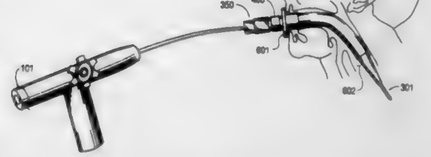
said electronic control panel being adapted for connection to a source of electrical power at the job site.

5,390,661

INTRODUCER FOR ESOPHAGEAL PROBES

Jim Griffith, Phoenix, Ariz., and Cheryl Ried, Pasadena, Calif., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Feb. 3, 1993, Ser. No. 12,714
Int. Cl.[6] A61B 1/00
U.S. Cl. 128—4 9 Claims



1. An introducer for passing medical devices or probes into a patient's esophagus, which comprises:

a pilot member and an elongated flexible crush-resistant tubular sheath of which the length fits coaxially and slidably around said pilot member;

said sheath constructed to fit into the esophagus of a patient and having a length extending from outside a patient's mouth into the esophagus;

said pilot member having a proximal handle and a distal insertion tube;

said insertion tube being an elongate, flexible, tubular element with means for rotating and deflecting the distal tip and optical means for imaging what lies beyond the distal end of said insertion tube;

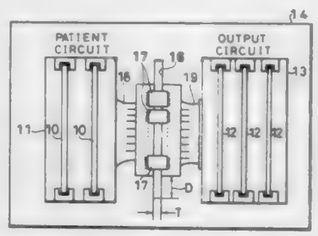
said insertion tube handle containing means for controlling the rotation and deflection of said insertion tube.

5,390,662

ELECTRONIC ENDOSCOPE APPARATUS USING CIRCUIT BOARD HAVING CAVITY

Fujio Okada, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Feb. 22, 1993, Ser. No. 20,797
Claims priority, application Japan, Mar. 2, 1992, 4-081662
Int. Cl.[6] A61B 1/04
U.S. Cl. 128—4 2 Claims



1. An electronic endoscope apparatus, comprising:

a low voltage patient circuit on a side of an electronic endoscope to be applied on a subject for observation;

a low voltage output circuit for performing a predetermined image processing with respect to a video signal; and

current flow prevention means for preventing unwanted current flow in or on a circuit board between the patient circuit and the output circuit, comprising;

an isolation device connected between the patient circuit and the output circuit to maintain a predetermined dielectric strength, and

a cavity for maintaining a predetermined dielectric strength formed on the circuit board at a connecting portion between the patient circuit and the output circuit, the cavity extending outwardly from an attaching portion of the isolation device by a predetermined length such that signal lines on the two sides to be connected to the isolation device are disposed with a distance along the circuit board therebetween capable of maintaining a predetermined dielectric strength, wherein a width of the cavity is at least 4 millimeters and the predetermined length is at least 20 millimeters;

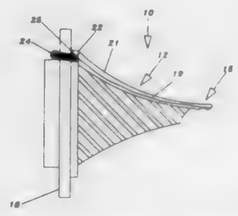
said isolation device extending over the cavity.

5,390,663

CANAL OBSTRUCTION REMOVER

Nicholas E. Schaefer, 29801 Fir Dr., Evergreen, Colo. 80439

Filed Dec. 23, 1993, Ser. No. 172,589
Int. Cl.[6] A61B 1/22
U.S. Cl. 128—9 11 Claims



1. An ear speculum for viewing an obstruction in an ear canal, the ear speculum comprising a substantially conically shaped member having a truncated distal end suitable for entering the ear canal and a proximal end for viewing, the ear speculum further comprising;

a shank extending distally from said distal end;

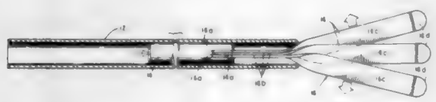
VOL 1171 ISS 3 FEB 21 1995 UMI

said shank further comprising a distal and a proximal end;
said shank further comprising a channel means running lengthwise;
a tensioning filament running continuously through said channel means;
said tensioning filament further comprising means for pulling at the proximal end of said ear speculum, wherein said shank may be inserted in the ear canal past said obstruction, and said means for pulling may be activated, thereby bending said shank at its distal end thus enabling extraction of the obstruction without exerting any off axial or rotational forces on the ear canal.

5,390,664
SURGICAL INSTRUMENT WITH EXTENDABLE BLADES

Russell Redmond, Goleta, and Claude Vidal, Santa Barbara, both of Calif., assignors to VIR Engineering, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 923,338, Jul. 31, 1992, Pat. No. 5,245,987. This application Jul. 28, 1993, Ser. No. 99,151
Int. Cl.[6] A61B *17/02*
U.S. Cl. 128—20 **6 Claims**

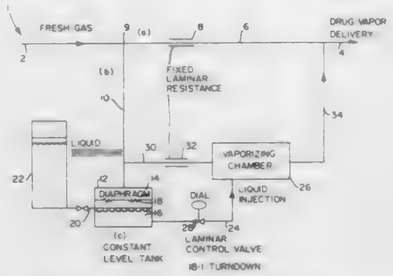


1. A surgical instrument for use in connection with the performance of laparoscopic procedures, comprising:
(a) an elongated, generally cylindrically shaped rod having first and second ends, said second end having a handle portion;
(b) first and second yieldably deformable, generally planar blades connected to said rod proximate said first end and extending therefrom, each of said blades having curved tip portions and spaced apart, generally parallel edges, each said blade having a width, a longitudinal axis and a first and second portion, said first portions being disposed in first planes and said second portions being twisted about said longitudinal axis at a location proximate the junction of said first and second portions to urge said second portions into second planes generally perpendicular to said first planes, whereby internal stresses are imparted to said blades tending to cause said second portions of said blades to fan outwardly with respect to one another so that said edges of said second portion of said first blade extend angularly with respect to said edges of said second portion of said second blade and said tip portions of said second portions of said first and second blades are angularly spaced apart; and
(c) blade constraining means for constraining movement of said blade, said means being telescopically receivable over said blades for sliding movement with respect thereto from an extended position to a retracted position, said means in said extended position functioning to restrain said blades from fanning out with respect to each other.

5,390,665
ANAESTHETIC VAPORIZER HAVING A PRESSURE SENSITIVE DIAPHRAGM CONNECTING THE ANAESTHETIC RESERVOIR AND VAPORIZING CHAMBER

Stuart C. Leach, Ilkley, England, assignor to The BOC Group plc, Windlesham, England

Continuation of Ser. No. 675,846, Mar. 27, 1991, abandoned. This application Jan. 27, 1994, Ser. No. 187,372
Int. Cl.[6] A61M *16/10;* **F16K** *11/00;* **G05D** *11/02;* **F23D** *11/00*
U.S. Cl. 128—203.25 **5 Claims**



1. An anaesthetic vaporizer which comprises:
(a) a vaporizing chamber,
(b) an inlet for carrier gas which is connected to the said vaporizing chamber by means of a passageway,
(c) an outlet for carrier gas and anaesthetic agent for delivery to a patient which is connected to said vaporizing chamber by means of a first passage,
(d) a laminar restrictor located in the passageway which connects the inlet to said vaporizing chamber,
(e) a constant level tank for containing liquid anaesthetic agent which is connected to said vaporizing chamber by means of a second passage,
(f) a laminar control valve which is located in said second passage, and
(g) means for transmitting the pressure in the passageway to liquid in the constant level tank and for driving the liquid along the second passage for injection into the vaporizing chamber, said constant level tank including said means for transmitting pressure in the passageway to liquid in the constant level tank, said transmitting means comprising a first and a second chamber, said first chamber and said second chamber separated from one another by a flexible diaphragm, said first chamber in communication with said passageway and transmitting the pressure therefrom across said diaphragm into said second chamber, said second chamber containing the liquid anaesthetic agent in said constant level tank, wherein the pressure transmitted by said diaphragm acts as said means for driving the liquid to said vaporizing chamber.

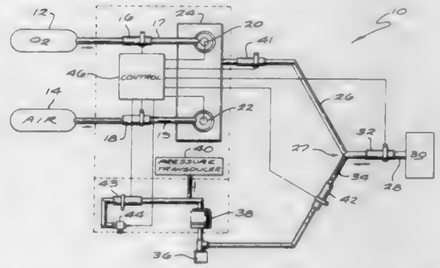
5,390,666
SYSTEM AND METHOD FOR FLOW TRIGGERING OF BREATH SUPPORTED VENTILATION

Gardner J. Kimm, Carlsbad; Glen N. Gee, Encinitas; Paul J. Fennema, Fallbrook, and Warren G. Sanborn, Escondido, all of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Continuation of Ser. No. 940,463, Sep. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 522,383, May 11, 1990, Pat. No. 5,161,525. This application Dec. 3, 1993, Ser. No. 161,177
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[6] A61M *16/00;* **A62B** *7/04;* **F16K** *31/02, 31/26*
U.S. Cl. 128—204.26 **15 Claims**

1. A method of flow triggering of breath support ventilation

to a patient supplied with a predetermined, preinspiratory, continuous flow of breathing gas from a ventilation system having a source of breathing gas, a patient breathing attachment, an exhalation valve, and a functionally open breathing gas flow path in fluid communication with said source of breathing gas, said ventilation flow path including flow sensor means for measuring flow rate of said breathing gas from said patient breathing attachment to said exhalation valve, the steps of the method comprising:
delivering said predetermined rate of flow of said breathing gas from said source to said patient breathing attachment;
measuring said flow rate of breathing gas from said source of breathing gas to said patient breathing attachment to determine a gas supply flow rate;



measuring said flow rate of breathing gas from said patient attachment to said exhalation valve to determine an exiting gas flow rate;
determining patient inspiratory effort in said flow path by comparing said gas supply flow rate with said exiting gas flow rate, and determining a flow rate change due to patient inhalation or exhalation, thereby indicating the patient's breathing efforts;
generating breath support in said delivered flow of gas when said flow rate change exceeds a predetermined threshold value; and
restoring delivery of said breathing gas from said source to said patient breathing attachment at said preinspiratory, continuous rate of flow before a patient's next inspiratory effort.

5,390,667
ABSORPTION OF CARBON DIOXIDE GAS CONTAINED IN EXHALATION OF INHALATION ANESTHETIC SUBJECT

Manami Kumakura, and Toshikazu Kawai, both of Saitama, Japan, assignors to Central Glass Company, Limited, Yamaguchi, Japan

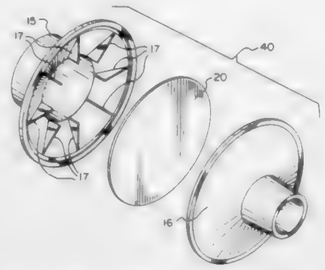
Filed Sep. 1, 1992, Ser. No. 937,771
Claims priority, application Japan, Sep. 3, 1991, 3-222567
Int. Cl.[6] A62B *7/10*
U.S. Cl. 128—205.12 **9 Claims**

1. A method of removing carbon dioxide gas from exhalation of a patient who is under inhalation anesthesia, consisting of the steps of
administering to a patient, in a closed or semiclosed anesthetic system an inhalation anesthetic which is a compound having first and second carbon atoms which are adjacent to each other, said first carbon atom being bonded to at least one halogen atom, said second carbon atom being bonded to at least one hydrogen atom, and
bringing exhalation of the patient into contact with an absorbent which absorbs carbon dioxide gas, characterized in that a magnesium compound is used as the principal material of said absorbent, and the inhalation anesthetic remains substantially undecomposed during absorption.

5,390,668
DISPOSABLE MULTITEST BACTERIA FILTER

Arlin Lehman, Louisville, Colo., assignor to Pulmonary Data Service Instrumentation, Inc., Louisville, Colo.

Filed Jun. 22, 1993, Ser. No. 81,786
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—205.27 **18 Claims**

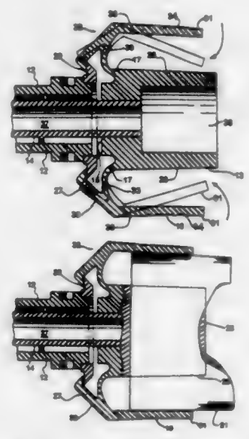


1. A one piece disposable bacteria filter comprising:
a unitary housing having a distal mouthpiece and a proximal mounting member;
said unitary housing further comprising an outside diameter;
an internal filter means functioning to collect bacteria;
said internal filter means further comprising a density;
peripheral support means for said internal filter means;
central support means for said internal filter means; and
said one piece disposable bacteria filter having an airflow resistance of 0.6 cm H_2O/liter/second or less at 12 liters per second flow, and a dead space of about 70 cc or less.

5,390,669
DEVICE USING CONNECTOR TUBE TO LOCK INNER CANNULA INSIDE OUTER CANNULA

J. Michael Stuart, and David Frigger, both of Lake Forest, Calif., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Aug. 9, 1993, Ser. No. 105,822
Int. Cl.[6] A61M *16/00;* **A62B** *9/06*
U.S. Cl. 128—207.14 **7 Claims**



1. A tracheostomy tube assembly comprising:
an outer cannula and an inner cannula within the outer cannula;
a connector head integrally formed with the inner cannula and adapted to mate with a connector;

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a readily detachable connector, having a longitudinal bore therethrough, attached to the connector head; and

a locking device associated with the connector head and the inner cannula that holds the inner cannula securely to the outer cannula, the locking device including an elongated handle portion spaced apart from the connector head and pivotally connected to the inner cannula, and a hook portion extending in a direction opposite from the handle portion and pivotally connected to the inner cannula, such that movement of the handle portion is permitted towards, and away from, the inner cannula, and such movement moves the hook portion in the opposite direction;

a space between the handle portion and the connector head which is sufficient for the connector to fit over the connector head so that when the connector is attached to the connector head the connector is between the handle portion and the connector head and the connector prevents movement of the handle portion;

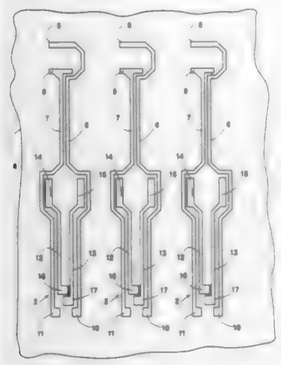
wherein the distance between the handle portion and the connector head is essentially equal to the thickness of the connector, as measured from an outer wall of the connector head to the nearest point on an outside surface of the connector such that when the connector is positioned on the connector head, the handle portion abuts the connector.

5,390,670

FLEXIBLE PRINTED CIRCUIT SENSOR ASSEMBLY FOR DETECTING OPTICAL PULSES

John A. Centa, Euclid, and Laszlo Halasz, Brecksville, both of Ohio, assignors to Gould Electronics Inc., Eastlake, Ohio

Division of Ser. No. 870,247, Apr. 17, 1992, Pat. No. 5,263,244.
This application Oct. 20, 1993, Ser. No. 139,564
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—633 10 Claims



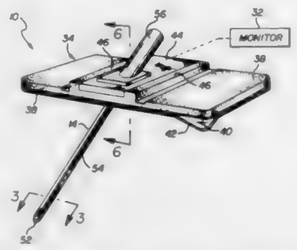
1. A flexible sensor assembly for detecting optical pulses comprising a flexible sheet containing conductive circuitry secured thereon, said conductive circuitry comprising a first pair of conductive strips insulated from each other and extending at one end to provide a first set of terminals and at the other end to provide a second set of terminals, and a second pair of conductive strips insulated from each other and from the first pair of conductive strips and extended at one end to provide a first set of terminals and at the other end to provide a second set of terminals with said second set of terminals spaced apart from the second set of terminals of the first pair of conductive strips; at least one photodetector mounted across and physically and electrically secured by a conductive clip to said first set of terminals of the first pair of conductive strips, at least one light emitting diode mounted across said first set of terminals of the second pair of conductive strips; an insulative tape secured over the photodetector, the light emitting diode and circuitry at least up to the second set of terminals of said first and second pair of conductive strips; and wherein said flexible sensor assembly is capable of being folded so that the photodetector can be spaced from and disposed over the light emitting diode.

5,390,671

TRANSCUTANEOUS SENSOR INSERTION SET

Peter C. Lord, Santa Clarita; William P. Van Antwerp, Brentwood; John J. Mastrototaro, Los Angeles; Paul S. Cheney, II, Beverly Hills, and Nannette M. Schnabel, Valencia, all of Calif., assignors to MiniMed Inc., Sylmar, Calif.

Filed Mar. 15, 1994, Ser. No. 213,101
Int. Cl.[6] A61B *5/05, 5/04*
U.S. Cl. 128—635 23 Claims



1. A transcutaneous sensor insertion set, comprising:

a mounting base adapted for mounting onto a patient's skin;

a flexible sensor having a proximal segment carried by said mounting base, and a distal segment protruding from said mounting base and having at least one sensor electrode thereon, said proximal and distal segments being misaligned with respect to each other; and

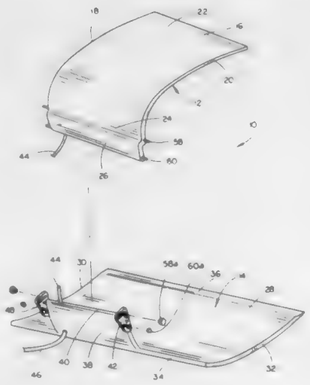
a hollow insertion needle carried by said mounting base to protrude therefrom and having said distal segment of said sensor received therein, said insertion needle defining a longitudinally extending slot along one side thereof to permit sliding withdrawal of said needle from said mounting base and said distal segment of said sensor.

5,390,672

NMR LIVER COIL

Randall W. Jones, Elkhorn, Nebr., assignor to Board of Regents Univ. of Nebraska, Lincoln, Nebr.

Filed Oct. 8, 1993, Ser. No. 134,294
Int. Cl.[6] A01B *5/055*
U.S. Cl. 128—653.5 8 Claims



1. A liver coil, comprising:

an anterior housing supporting a plurality of NMR coils, having opposing forward and rearward edges, an upper end, and a lower end;

said anterior housing curved from a generally vertically oriented lower end to a generally horizontally oriented upper end, when the anterior housing is in a working position;

a posterior housing supporting a NMR coil, having opposing forward and rearward edges, an upper end and a lower end, operably and pivotally connected along its upper end to said anterior housing lower end;

said posterior housing curved upwardly from forward to rearward end to conform to the curvature of a conventional NMR patient table;

said posterior housing upper end including an arcuate flange curving rearwardly and upwardly with an upper edge oriented generally vertically, said flange having forward and rearward edges, said anterior housing operably pivotally connected to said flange;

means for operably, pivotally connecting the lower end of the anterior housing to the upper end of the posterior housing for selective pivotal movement from an open position, with the upper end of the anterior housing moved to a substantially vertical position, to an adjustable working position, with the upper end of the anterior housing oriented generally horizontally and adjustably spaced from the lower end of the posterior housing; and

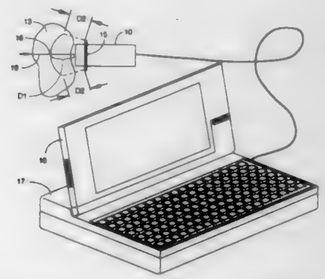
a lip formed on the lower end of the anterior housing, said lip projecting rearwardly from the anterior housing lower end and thence downwardly generally parallel to the lower end of the anterior housing, such that the upper edge of the posterior housing flange is aligned with the lower end of the anterior housing when the anterior housing is in the adjustable working position, with said lip overlapping said flange.

5,390,673

MAGNETIC RESONANCE IMAGING SYSTEM

Dan Kikinis, Saratoga, Calif., assignor to Cordata, Incorporated, Tortola, Virgin Islands (Br.)

Filed Jan. 14, 1994, Ser. No. 182,745
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.2 17 Claims



1. A hand-held probe for magnetic resonance imaging comprising;

an elongated housing having a first end and a second end and configured to be held and manipulated in a user's hand;

a permanent magnet supported within the housing with one pole facing the first end of the housing, a pole axis of the permanent magnet substantially parallel with the length of the elongated housing; and

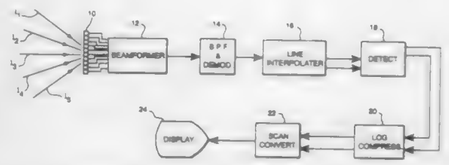
an electromagnetic combination burst and detector coil supported by the housing and positioned with an axis of the burst and detector coil coaxial with the pole axis of the permanent magnet.

5,390,674

ULTRASONIC IMAGING SYSTEM WITH INTERPOLATED SCAN LINES

Brent S. Robinson, Kirdland; Clifford R. Cooley, Seattle; Juin-Jet Hwang, Mercer Island, and Robert R. Entrekin, Bothell, all of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Dec. 30, 1993, Ser. No. 175,456
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.07 21 Claims



1. An ultrasonic diagnostic imaging system with reduced susceptibility to spatial aliasing comprising: means for transmitting ultrasonic waves into a region of a subject to be imaged;

means for receiving ultrasonic information signals from along a plurality of spatial lines of said region;

interpolation means for utilizing said received ultrasonic line information signals to produce a plurality of interpolated lines spatially interlineated between said received ultrasonic lines prior to nonlinear processing of said ultrasonic line information signals; and

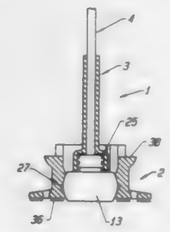
scan conversion means for utilizing said received and interlineated interpolated line information to form a spatially arranged ultrasonic image of said region of said subject.

5,390,675

TRANSCRANIAL DOPPLER PROBE MOUNTING ASSEMBLY WITH EXTERNAL COMPRESSION DEVICE/STRAP

Neil J. Sheehan, Palo Alto; Andras Boross, Belmont; Barry E. Zakar, Mountain View, and Mary E. Rossman, Los Gatos, all of Calif., assignors to Medasonics, Inc., Fremont, Calif.

Filed Oct. 6, 1993, Ser. No. 132,522
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.07 25 Claims



1. A transcranial Doppler (TCD) probe mounting assembly comprising:

a pedestal having a central bore, said central bore having a spherical retention cavity at its lower end for receiving and retaining a spherically-shaped TCD probe and a spherical lead-in wall above said spherical retention cavity for guiding a TCD probe into the spherical retention cavity when a TCD probe is inserted therein; and

means for attaching the pedestal to a patient's head.

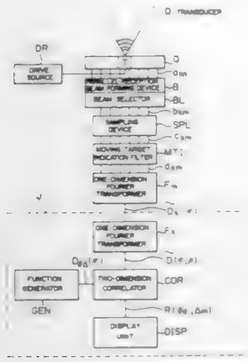
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5,390,676

ULTRASONIC FLOWMETER

Kageyoshi Katakura, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 845,949, Mar. 4, 1992, which is a continuation-in-part of Ser. No. 860,563, Mar. 30, 1992, Pat. No. 5,201,313, which is a continuation of Ser. No. 575,572, Aug. 31, 1990, abandoned. This application Dec. 8, 1993, Ser. No. 162,952
Claims priority, application Japan, Mar. 4, 1991, 3-062719
Int. Cl.[6] A61B 8/06
U.S. Cl. 128—661.09 36 Claims



1. An ultrasonic velocity analyzing method comprising:
(a) a step of transmitting of ultrasonic waves repetitively by a transducer having an array of transducer elements;
(b) a step of receiving reflection signals of said ultrasonic waves by said transducer elements;
(c) a step of converting received signals into phase delay and amplitude information;
(d) a step of converting the phase delay and amplitude information into a multi-dimensional function with parameters related to a spatial location and time of each transmitting of said ultrasonic waves; and
(e) a step of converting the multi-dimensional function into a multi-dimensional velocity vector.

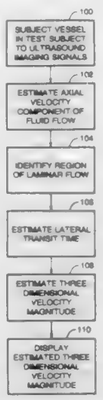
5,390,677

METHOD FOR ASSESSING AND DISPLAYING THE TRUE THREE DIMENSIONAL MAGNITUDE OF BLOOD VELOCITY

Katherine W. Ferrera, New York, N.Y., and V. Ralph Algazi, Davis, Calif., assignors to The Regents of The University of California, Oakland, Calif.

Filed May 31, 1994, Ser. No. 251,710
Int. Cl.[6] A61B 8/06
U.S. Cl. 128—661.09 27 Claims

1. A method for assessing three dimensional magnitude of velocity of a fluid flowing through an identified vessel of a test subject using ultrasound imaging, comprising the steps of:
(a) subjecting a fluid flowing through an identified vessel in a test subject to ultrasound imaging signals, said fluid flow having a three dimensional velocity magnitude, said imaging signals comprising pulses of ultrasonic beams transmitted by a transducer and reflections of said pulsed beams received by said transducer, said beams having a lateral beam width, said beams having a beam to vessel angle;
(b) estimating axial velocity of said fluid from said imaging signals;
(c) identifying a region of laminar flow of said fluid in said vessel using said axial velocity;
(d) estimating lateral transit time of said fluid across said lateral beam width in said region of laminar flow; and



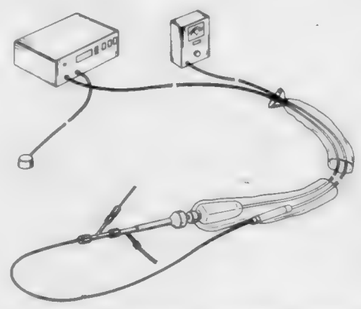
(e) estimating said three dimensional velocity magnitude for said fluid flow using said lateral transit time.

5,390,678

METHOD AND DEVICE FOR MEASURING ULTRANSONIC ACTIVITY IN AN ULTRASOUND DELIVERY SYSTEM

Douglas H. Gesswein, Mission Viejo; Timothy C. Mills, Newport Beach, and Pete B. Klumb, Corona Del Mar, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Oct. 12, 1993, Ser. No. 134,559
Int. Cl.[6] A61B 8/12
U.S. Cl. 128—662.06 23 Claims



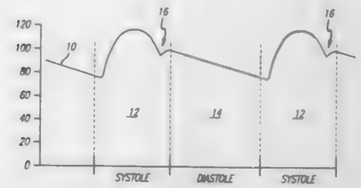
1. An improved therapeutic ultrasound delivery system comprising:
a) an ultrasound signal generator for providing an ultrasound drive signal;
b) an ultrasound transducer receiving the ultrasound drive signal for converting the ultrasound drive signal into ultrasound vibration;
c) an ultrasound catheter, having proximal and distal ends, attached at the proximal end to the ultrasound transducer, for transmitting ultrasound vibration from the ultrasound transducer to effect treatment at a desired anatomical site; and
d) a device for measuring ultrasonic activity at the distal end of the catheter to verify proper operation of the ultrasound generator, the ultrasound transducer, and the catheter.

5,390,679

CONTINUOUS CARDIAC OUTPUT DERIVED FROM THE ARTERIAL PRESSURE WAVEFORM USING PATTERN RECOGNITION

James F. Martin, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 3, 1993, Ser. No. 72,038
Int. Cl.[6] A61B 5/0215
U.S. Cl. 128—673 32 Claims



1. A system for determining the value of a characteristic of the vascular system of a patient from the blood pressure existing in that vascular system, comprising:
a sensor which senses the blood pressure in the vascular system and which provides a pressure signal representative of that blood pressure;
a digitizer which receives the pressure signal from the sensor and converts the pressure signal into a digitized pressure signal;
a memory having stored therein a plurality of representative pressure waveforms, each representative pressure waveform comprising a set of values of selected features of a respective pressure signal having associated therewith a known value of the characteristic, the memory also storing the known characteristic value corresponding to each representative pressure waveform; and
a processor which:
receives the digitized pressure signal from the digitizer;
extracts at least one feature of the selected set of features from the digitized pressure signal and determines the value of each extracted feature;
compares the value of each extracted feature from the digitized pressure signal to the value of each corresponding feature of representative pressure waveforms stored in the memory;
based on the comparison, selects the representative pressure waveform most similar to the digitized pressure signal; and
provides the characteristic value corresponding to the selected representative pressure waveform as
the value of the characteristic of the vascular system of the patient.

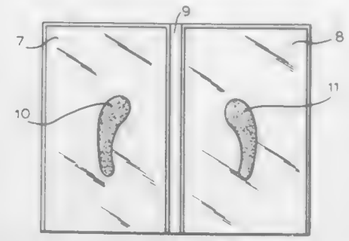
5,390,680

METHOD OF AND DEVICE FOR TAKING LIMB IMPRESSIONS

Edeltraud Brenner, Gartenstrasse 22a, 89257 Illertissen, Germany

Filed Dec. 3, 1993, Ser. No. 162,643
Claims priority, application Germany, Oct. 28, 1993, 16515[U]
Int. Cl.[6] A61B 5/117
U.S. Cl. 128—779 6 Claims

1. A device for obtaining an impression of a limb of the body, comprising:
at least one generally flat pouch having at least one flexible transparent side, an opening at one end and another side opposite said one side;
a layer of a pressure-sensitive adhesive directly coated on an inner surface of said another side of said pouch;
a cover sheet in said pouch disposed proximal to said flexible transparent side;
a single-use carbon paper sheet affixed to said cover sheet at an end thereof opposite said one end to form a continuous band from said sheets, said single-use carbon paper sheet being juxtaposed with said layer of adhesive between said cover sheet and said layer of adhesive, said band being extractable from said pouch through said opening; and



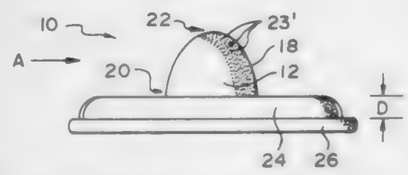
a silicone-coated foil interposed between said carbon paper sheet and said layer of adhesive in said pouch and extractable from said pouch to permit an impression applied to said flexible transparent side and said cover sheet to imprint upon said adhesive layer prior to extraction of said band from said pouch, whereby an imprint on said layer is protected in said pouch.

5,390,681

PROPHYLACTIC DEVICE FOR ORAL SEX

Todd C. Daley, P.O. Box 1116, Stafford, Va. 22554

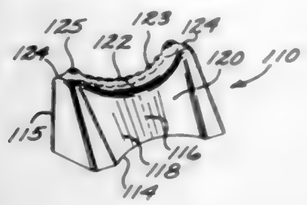
Filed Oct. 29, 1993, Ser. No. 143,147
Int. Cl.[6] A61F 6/02, 6/04
U.S. Cl. 128—842 12 Claims



1. A prophylactic device for oral sex, comprising:
a substantially flat plate body portion made of a thin flexible polymer material, said flat plate body portion having a peripheral edge of predetermined dimensions;
a tongue shaped reservoir portion extending substantially perpendicularly from one side of said flat plate body portion, said reservoir portion having an entrance opening on an opposite side of said flat plate body portion that is substantially smaller than the dimensions of said peripheral edge of said flat plate body portion and positioned inside said peripheral edge of said flat plate body portion;
a peripheral rim portion having a predetermined width and extending from said peripheral edge of said flat plate body portion on an opposite side of said body portion relative to said reservoir portion, said peripheral rim having a peripheral edge; and
a bead portion provided on said peripheral rim portion, said bead portion is set off a predetermined distance from said flat plate body portion by said peripheral rim portion, whereby a user places their fingertips inside said peripheral rim and forces their fingertips outwardly causing said peripheral rim to expand outwardly while said bead portion substantially maintains its diameter and prevents the user's finger tips from slipping outwardly and losing grip of the device.

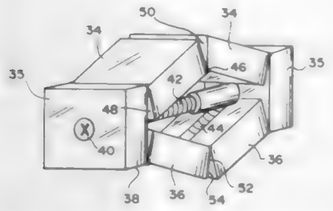
VOL 1171 ISS 3 FE 21 1995 UMI

5,390,682
SOFT TISSUE SUPPORT SYSTEM
John Iams, Poway, Calif., assignor to Superspine, Inc., Poway, Calif.
Continuation of Ser. No. 672,041, Mar. 18, 1991, abandoned, which is a division of Ser. No. 318,642, Mar. 2, 1989, Pat. No. 5,070,865. This application Feb. 16, 1993, Ser. No. 18,348
Int. Cl.[6] A61G *15/00*; A61F *5/00*
U.S. Cl. 128—845 7 Claims



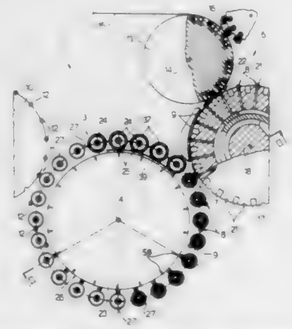
1. A cervical support pivot, comprising a pad made of a firmly compliant material having a longitudinal fulcrum and a cervical support surface shaped to fit the cervical region of the spine, and further having side portions on the lateral margins of the longitudinal fulcrum and the cervical support surface, the side portions being raised above the level of the longitudinal fulcrum and the cervical support surface, respectively.

5,390,683
SPINAL IMPLANTATION METHODS UTILIZING A MIDDLE EXPANDABLE IMPLANT
Madhavan Pisharodi, 844 Central Blvd., Suite 1200, Brownsville, Tex. 78520
PCT No. PCT/US92/01397, § 371 Date Aug. 20, 1993, § 102(e) Date Aug. 20, 1993, PCT Pub. No. WO92/14423, PCT Pub. Date Sep. 3, 1992
Continuation-in-part of Ser. No. 106,148, Aug. 13, 1993, abandoned, which is a continuation of Ser. No. 786,758, Nov. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 659,758, Feb. 22, 1991, Pat. No. 5,171,278. This PCT application Feb. 21, 1992, Ser. No. 107,750
Int. Cl.[6] A61B *19/00*; A61F *2/44*
U.S. Cl. 128—898 11 Claims



1. A method of maintaining the space between two adjacent vertebrae of a patient after removal of the disk from therebetween comprising the steps of:
inserting an elongate implant comprised of a central rod having two ends and an intermediate portion mounted thereto into the space between two vertebrae after removal of the disk therefrom, the implant having a length which approximates the anterior-posterior dimension of the body of the vertebrae and a vertical dimension small enough to allow the insertion of the implant;
rotating the central rod to expand the intermediate portion of the implant radially outwardly to conform the shape of the implant to the shape of the anatomical region of the disk space into which the implant is inserted; and
preventing the rotation of the central rod to prevent reversal of the outward radial expansion of the intermediate portion of the implant.

5,390,684
ROLLING DEVICE FOR FILTER ASSEMBLY MACHINES
Salvatore Rizzoli, Bologna, and Fiorenzo Draghetti, Medicina, both of Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy
Filed Nov. 12, 1993, Ser. No. 152,308
Claims priority, application Italy, Nov. 20, 1992, B092A 000416
Int. Cl.[6] A24C *5/10*, *5/52*, *5/47*
U.S. Cl. 131—94 10 Claims

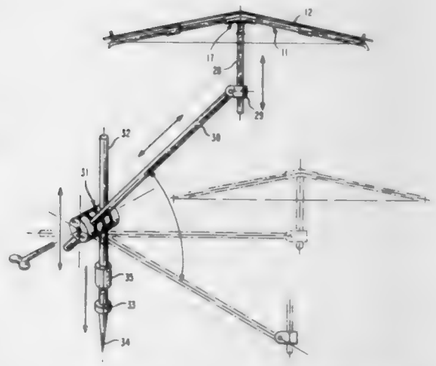


1. A rolling device for filter assembly machines, the device comprising:
a loading station for both (1) a succession of groups of elongated elements, each group including a pair of cigarette portions and an intermediate double filter aligned with one another, and (2) a corresponding succession of strips for connecting the pairs of cigarette portions to the respective double filters and forming respective double cigarettes;
an unloading station for the double cigarettes;
transfer means for feeding said groups and respective strips along a first path extending between said loading and unloading stations; and
rolling means defining a rolling surface and located between said loading and unloading stations for rolling said strips on to the respective groups;
said transfer means including a plurality of rollers rotating about respective axes and each presenting a peripheral seat for a respective said group; first drive means for moving said rollers along said rolling surface at a first given speed; and second drive means for rotating the rollers about the respective axes and cooperating with said first drive means for moving the respective seats at a variable speed along a second path through said loading and unloading stations; said second drive means imparting to said rollers a second peripheral speed which varies between a minimum and a maximum as the rollers travel along said rolling surface; the second speed of each roller being at its minimum when the roller is at said loading and unloading stations.

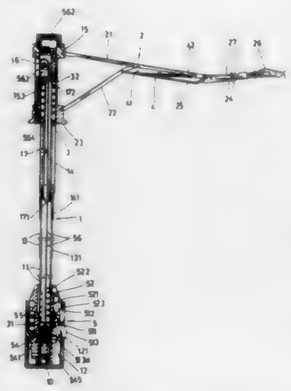
5,390,685
COLLAPSIBLE SHELTER
Jens McCoy, Quellen Str. 2, 8906 Gersthosen, Germany
Filed Mar. 26, 1993, Ser. No. 48,333
Int. Cl.[6] A45B *21/00*
U.S. Cl. 135—19 14 Claims

1. A shelter to shield a certain area of ground, said shelter comprising:

(a) a flexible sheet having a perimeter and a plurality of loops spaced around the perimeter;
(b) a framework over which to spread the sheet, said framework comprising:
(i) a spider having a support member having first and second ends, and a plurality of rod sockets each connected to the support member and extending outwardly in a direction toward a respective one of the loops when the sheet is spread over the framework and attached thereto,
(ii) a plurality of rods, each removably inserted in a respective one of the rod sockets and extending outwardly toward the region of the loop associated with the respective rod socket, and
(iii) engagement means attached to each of the rods to releasably engage the loop toward which the respective rod extends to hold the sheet taut on the framework;
(c) support means comprising:
(i) shaft means comprising:
(α) a first shaft portion having one end removably attached to the second end of the support member;
(β) a second shaft portion,
(γ) first joint means connecting the first shaft portion to the second shaft portion and adjustable to allow the first shaft portion to be set at a selected variety of angular relationships with respect to the second shaft portion and locked in the selected angular relationship,
(δ) a third shaft portion, and
(ϵ) second joint means connecting the second shaft portion to the third shaft portion and adjustable to allow the second shaft portion to be set at a selected variety of angular relationships with respect the third shaft portion, one of the joint means comprising an aperture through which the respective shaft portion connected thereto extends, whereby said one of said joint means can be slidably moved to a selected location along the length of the respective shaft portion, and tightening means to secure said one of said joint means at the selected location;
(ii) pointed means on one end of the third shaft portion facing away from the sheet to be driven into the ground, and
(iv) a flange on the third shaft means between the second joint means and the pointed means; and
(d) a tubular weight encircling and freely movable longitudinally along shaft from a point above the flange down into contact with the flange.



5,390,686
MULTIPLE-FOLD AUTOMATIC UMBRELLA
Chung-Kuang Lin, and Jung-Jen Chang, both of No. 16, Chen Tai Road, Sec. 3, Wu Ku Hsiang, Taipei Hsien, Taiwan, Prov. of China
Filed Nov. 8, 1993, Ser. No. 148,621
Int. Cl.[6] A45B *25/14*
U.S. Cl. 135—24 6 Claims



1. An automatic umbrella comprising:
a central shaft means (1) including: an inner tube (11), a grip (12) having a lower tube portion of the inner tube (11) fixed in a central portion of the grip (12), a lower sleeve (10) inserted in a central lower portion of the grip (12), a middle tube (13) slidably held on an outer and upper side of the inner tube (11), an outer tube (14) slidably held on an outer and upper side of the middle tube (13), an upper notch (15) secured on a top portion of the outer tube (14), and an inner sleeve (17) having an upper sleeve portion of the inner sleeve (17) contiguous to an upper portion of the outer tube (14);
a rib assembly (2) including: a top rib (21) having an inner rib portion of the top rib (21) pivotally secured to the upper notch (15) of the central shaft means (1), an inner stretcher rib (22) having an inner rib portion of the inner stretcher rib (22) pivotally secured to a lower runner (23) which is slidably held on the outer tube (14) and having an outermost rib end of the inner stretcher rib (22) pivotally connected with a middle portion of the top rib (21), an intermediate rib (24) having an inner rib end of the intermediate rib (24) pivotally connected with an outermost rib end of the top rib (21) and having an innermost rib end of the intermediate rib (24) pivotally connected with an intermediate connecting rod (25) of which an inner rod end of the intermediate connecting rod (25) is pivotally secured to an outer rib portion of the inner stretcher rib (22), and a rear rib (26) having an inner rib portion of the rear rib (26) pivotally connected with an outer rib portion of the intermediate rib (24) and having an innermost rib end of the rear rib (26) pivotally connected with a spring rod (27) of which an inner rod end of the spring rod (27) is pivotally connected with an outer rib portion of the top rib (21);
an opening spring (3) for opening an umbrella having a lower spring end (31) retained on an upper edge portion of the lower sleeve (10), and an upper spring end (32) retained on a retainer plate (153) secured to an inner block (151) inserted in an upper portion of the outer tube (15), the opening spring (3) slidably disposed about the inner sleeve (17);
a plurality of closing springs (4) each said closing spring having an inner spring end (41) secured to an outer rib portion of the inner stretcher ribs (22), and an outer spring end (42) of the closing spring (4) secured to an outer rib portion of the top rib (21), the closing spring (4) having a

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spring portion disposed in a longitudinal groove recessed in the top rib (**21**) for operatively closing an umbrella from an opened state by an elastic energy stored when opening the umbrella; and

a control means (**5**) including: a seesaw button (**51**) pivotally mounted in the grip (**12**) by a button pivot (**511**), an opening lever (**52**) pivotally mounted in an upper portion of the grip (**12**) and operatively depressed by an upper button portion (**512**) of the seesaw button (**51**) for opening the umbrella, and a closing controller (**53**) operatively depressible by a lower button portion (**513**) of the seesaw button (**51**) for disengaging a locking head (**55**) secured with a drag rope (**56**), which is linked among the locking head (**55**), the lower runner (**23**) and an upper portion of the outer tube (**14**), from a sliding latch (**54**) slidably held in the grip (**12**), thereby allowing each said closing spring (**4**) to restore to release its pre-stored elastic energy for closing the umbrella from an opened state.

5,390,687

QUADRUPED STICK WITH DETACHABLE QUADRIPODS

Ting-Sheng Tsai, Kaohsiung Hsien, Taiwan, Prov. of China, assignor to Save Expert Industry Co., Ltd., Taiwan, Prov. of China

Filed Jun. 2, 1994, Ser. No. 252,883
Int. Cl.[6] **A45B** *1/00*
U.S. Cl. 135—65 1 Claim



1. A quadruped comprising:

a base with four receiving holes each having a wall;

a supporting stick with a handle mounted on said base; and

a quadripod detachably mounted to each said receiving hole of said base;

wherein a protrusion projects from said wall of each said receiving hole, and said quadripod has a cutout in an engaging end thereof which is received in said receiving hole, thereby providing a positioning effect.

5,390,688

SHELTER FOR VEHICLES

Stuart M. Lipman, 7127 Third Ave. South, St. Petersburg, Fla. 33707

Filed Oct. 7, 1992, Ser. No. 957,691
Int. Cl.[6] **E04B** *1/342*
U.S. Cl. 135—97 13 Claims

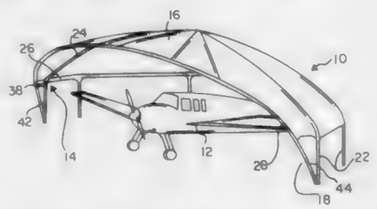
1. A semipermanent shelter for airplanes comprising:

a plurality of vertical wall tubes, each having an upper end and a lower end removably securable to the ground;

a plurality of roof tubes each having an interior end and an exterior end, located adjacent to the upper end of an associated wall tube at a juncture;

a central bracket coupling the interior ends of the roof tubes at a central, upper portion of the shelter;

a plurality of central tubes in a generally horizontal configuration coupling each juncture with its next adjacent juncture except across an opening of the shelter;



an arch tube coupling adjacent junctures at the opening of the shelter and constituting the upper extent of such opening;

a plurality of side brackets, each coupling a wall tube and its associated roof tube with the central tubes and the arch tube; and

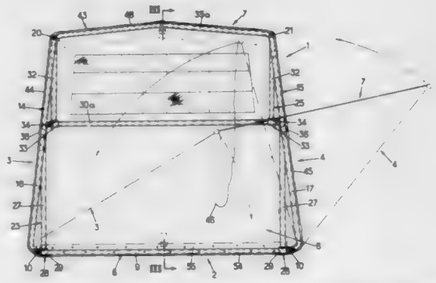
sheet material coupled to the roof tubes, central tubes and arch tube for sheltering an airplane therebeneath.

5,390,689

COLLAPSIBLE DWELLING

Alain P. V. Graillat, 4, place de la Convention, F-38130 Echirolles, France

PCT No. PCT/FR91/00076, § 371 Date Aug. 3, 1992, § 102(e) Date Aug. 3, 1992, PCT Pub. No. WO91/11577, PCT Pub. Date Aug. 8, 1991
PCT Filed Feb. 4, 1991, Ser. No. 915,859
Claims priority, application France, Feb. 5, 1990, 90 01309; Feb. 23, 1990, 90 02293
Int. Cl.[6] **E04H** *15/48*
U.S. Cl. 135—126 38 Claims



1. A dwelling which is collapsible from an opened-out position to a collapsed position, said dwelling comprising:

a base structure having opposite edges,

at least first and second opposite sidewalls each having an inner face, an outer face, a bottom part and a top part, said bottom parts of said sidewalls being articulated on opposite edges of the base so as to be inwardly foldable down over said base, one over the other,

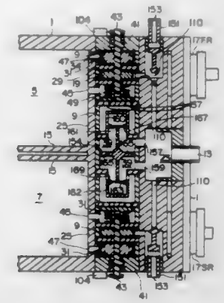
a roof extending between the top parts of said opposite sidewalls and being movable relative to these top parts, said roof having an upper face and a lower face in said opened-out position of the dwelling, said roof being movable to a collapsed position in response to folding of the opposite sidewalls one before the other, said roof being turned over during its movement to said collapsed position so that, in its collapsed position, said upper face of the roof faces down toward the outer face of the first sidewall and the lower face of the roof faces up toward the inner face of the second sidewall, said roof in its collapsed position lying between said opposite sidewalls.

5,390,690

MIXING VALVE AND FLUID TRANSFER SYSTEM VALVED AT PRESSURIZED CENTRAL HEADER TO PROVIDE UNPRESSURIZED DELIVERY CONDUITS

Alexandru Blaga, 249 Ocean Pkwy., Apt. 5A, Brooklyn, N.Y. 11218

Filed Aug. 6, 1993, Ser. No. 102,741
Int. Cl.[6] **F16K** *11/20*
U.S. Cl. 137—1 44 Claims



1. A fluid mixing valve comprising:

(A) a valve housing containing a first inlet chamber, a second inlet chamber and a multiplicity of outlet chambers mutually isolated from each other,

(B) the first inlet chamber operably connected to a pressurized source of a first fluid,

(C) the second inlet chamber operably connected to a pressurized source of a second fluid,

(D) each outlet chamber operably connected to a discharge line,

(E) individual means for providing a controlled flow of fluid into each outlet chamber from the first inlet chamber,

(F) individual means for providing a controlled flow of fluid into each outlet chamber from the second inlet chamber providing a mixture of the first fluid and the second fluid through each outlet chamber to a discharge line, each of said means for providing a controlled flow of fluid comprising:

(a) at least one aperture in a wall enclosing an outlet chamber to permit fluid to flow to an outlet chamber from an inlet chamber,

(b) means for closing each at least one aperture adapted to move to positions that alternatively cover and uncover the at least one aperture,

(c) a shaft connecting the means closing each passage with a means for imparting movement to the shaft, and

(d) a means for independently moving each shaft, transmitting rotational movement to said shaft from a rotor attached to said shaft said rotor adapted to be turned by fluid movement.

5,390,691

BLEED VALVE FOR WATER SUPPLY FOR CAMPING VEHICLE

Ronald Sproule, 113 N. Dodge St., Galena, Ill. 61036

Filed Jan. 27, 1994, Ser. No. 187,221
Int. Cl.[6] **F16K** *24/00*
U.S. Cl. 137—1 13 Claims

1. A method for draining water from the fresh water plumbing system of a camping vehicle connected by a garden hose to a fresh water supply from a hydrant, comprising

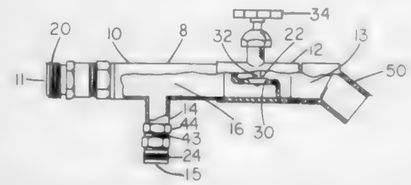
interposing a valved coupling between said garden hose and the fresh water plumbing system of the camping vehicle,

closing the hydrant,

opening the valve of said housing,

the valved coupling comprising

a housing having at least three ends and a passageway therethrough,



said housing having a selectively controlled valve therealong,

one of said ends matable with the external fresh water coupling of the camping vehicle,

a second of said ends having a coupling thereon,

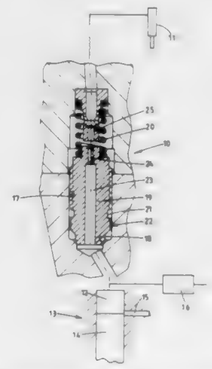
said valve operable to isolate the third of said ends from said passageway.

5,390,692

VALVE

Alan G. Jones, Gloucestershire, and Roger W. Harris, Cheltenham, both of England, assignors to Lucas Industries, England

Filed Feb. 4, 1994, Ser. No. 191,641
Claims priority, application United Kingdom, Feb. 10, 1993, 9302566
Int. Cl.[6] **F16K** *21/02;* **F02M** *39/00*
U.S. Cl. 137—513.3 3 Claims

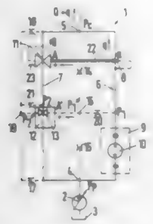


1. A valve for incorporation in a fuel delivery line extending between the pumping chamber of a spill type fuel injection pump and a fuel injection nozzle, the valve comprising a cylinder having one end connected to the pumping chamber and its other end connected to the nozzle, a seating defined in the cylinder adjacent said one end thereof, a valve member slidable within the cylinder, the valve member being shaped at one end for engagement with the seating, a portion of the valve member being fluted to guide the movement of the valve member, said valve member intermediate its ends defining a cylindrical portion having a clearance with the wall of the cylinder, a passage formed in the valve member and an orifice therein, said passage and orifice affording constant communication between the opposite ends of the cylinder, and said clearance forming a flow path connecting the ends of the

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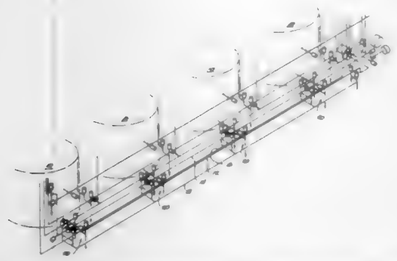
cylinder independently of said passage and orifice when the valve member is lifted from the seating by the action of fuel under pressure flowing from the pumping chamber.

5,390,693
FLOW AMPLIFIER
Svend E. Thomsen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
PCT No. PCT/DK92/00216, § 371 Date Jan. 14, 1994, § 102(e) Date Jan. 14, 1994, PCT Pub. No. WO93/03946, PCT Pub. Date Mar. 4, 1993
PCT Filed Jul. 6, 1992, Ser. No. 185,941
Claims priority, application Germany, Aug. 14, 1991, 4126846
Int. Cl.[6] B62D 5/09
U.S. Cl. 137—110 15 Claims



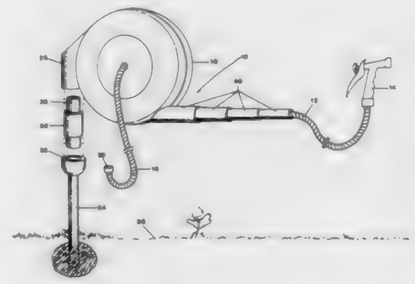
1. A flow amplifier having an inlet and an outlet, a first branch between said inlet and said outlet, a flow of a fluid to be amplified flowing in said first branch, a first throttling device, throttle resistance of said throttling device being adjusted in dependence on fluid pressure across and by fluid flow rate through the first throttling device, and a second branch having a second throttling device, throttle resistance of said second throttling device being adjusted in dependence on throttle resistance of the first throttling device, said branches being arranged parallel to one another, and including at least one pressure-divider with a central take-off point, said pressure-divider being supplied by a pressure difference between said inlet and said outlet or a pressure difference depending thereon, the pressure at the central take-off point controlling the flow rate through the second throttling device.

5,390,694
VAT BOTTOM FILL CIP SYSTEM
Robert D. Zimmerly, Kenosha, and Richard Kramer, Racine, both of Wis., assignors to Tri-Clover, Inc., Kenosha, Wis.
Filed Oct. 13, 1993, Ser. No. 136,290
Int. Cl.[6] F16K 11/20
U.S. Cl. 137—240 7 Claims



1. A fluid flow control assembly for controlling the flow of fluids to and from a container, and controlling the communication of that flow with conduits passing by said container, a first conduit for product to be pumped into said container, a second conduit for product to be drained out of said container, and a third conduit for draining of CIP solution from said containers, said control assembly comprising:
a first set of valves for regulating the flow of fluid product from the first conduit into the container;
a second set of valves for regulating the flow of fluid product out of the container into the second conduit; and
a third set of valves for regulating the flow of CIP solution out of the container into the third conduit;
each set of valves preventing flow of fluid into or out of its respective conduit when desired.

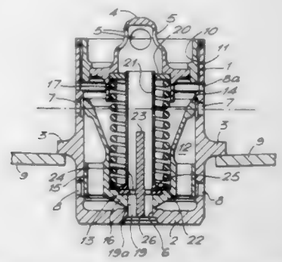
5,390,695
REEL ASSEMBLY FOR HOSE
Gary B. Howard, 7525 Huntley St., Sebastopol, Calif. 95472
Filed Oct. 5, 1993, Ser. No. 133,238
Int. Cl.[6] B65H 75/34
U.S. Cl. 137—355.27 5 Claims



1. A reel assembly for a garden hose comprising:
an annular housing adapted to be mounted in a fixed position; a reel in said housing for rotation in a plane; a hose segment adapted to be coupled to a water source;
said reel being axially mounted in the housing, said housing having a sidewall provided with an opening for receiving the hose segment and allowing the hose to be pulled into the housing and wrapped around the reel when the reel rotates in one direction relative to the housing;
a rotary fitting coupling the hose segment to the hose; and
said housing having means selectively extending outwardly from the housing for supporting the hose above ground level, said hose supporting means includes telescoping tubes, the tubes extending outwardly from and tangential to the housing, said hose extending through the tubes, the hose extending outwardly from the reel through the outermost tube when the tubes extend outwardly from the housing.

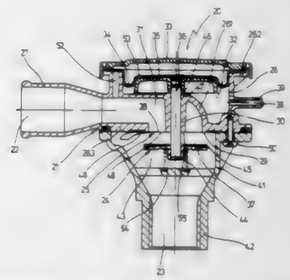
5,390,696
PRESSURE RELIEF VALVE
Jeremy G. Bird; Brian D. Birch, both of Gloucester, and Francis N. Corfield, Andoversford, all of United Kingdom, assignors to Dowty Aerospace Gloucester Limited, Gloucester, United Kingdom
PCT No. PCT/GB92/01825, § 371 Date Oct. 13, 1993, § 102(e) Date Oct. 13, 1993, PCT Pub. No. WO93/08415, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 7, 1992, Ser. No. 78,254
Claims priority, application United Kingdom, Oct. 17, 1991, 9122070
Int. Cl.[6] F16F 9/34
U.S. Cl. 137—494 16 Claims

1. A pressure relief valve comprising inlet means defining a fluid inlet port; a valve member that is movable when a predetermined pressure level is exceeded at said inlet port, between a valve closed position in which said valve member is in engagement with the inlet means and a valve open position in which said valve member is spaced away from the inlet means, and that incorporates a channel portion defining a fluid flow channel through which an initial flow of fluid passes from the fluid inlet port when the valve member is in the valve closed position; bias means that urges the valve member to the valve



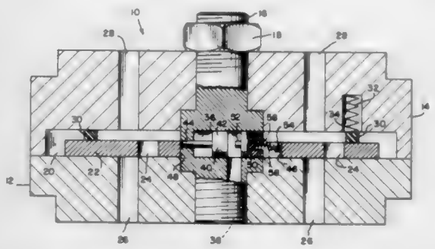
closed position; and valve opening means comprising a flow sensitive member connected to the valve member and located within said flow channel to be responsive to fluid pressure at said inlet port and to fluid flow through said flow channel from said inlet port so as to urge the valve member to the valve open position.

5,390,697
COMBINATION VALVE
Claudius Muschelknautz, Lauf, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 28, 1994, Ser. No. 203,019
Claims priority, application Germany, Mar. 12, 1993, 4307798
Int. Cl.[6] F16K 15/14
U.S. Cl. 137—494 14 Claims



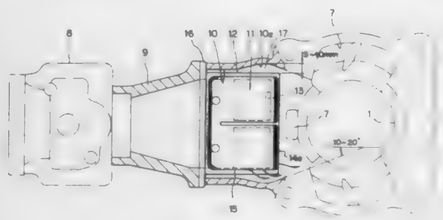
1. A combination valve, in particular for secondary air blower of an internal combustion engine with a controlled three-way catalyst, the combination valve comprising a housing having a valve inlet and a valve outlet; a pneumatically actuated shut-off valve integrated in said valve housing and operative for blocking and releasing a flow between said valve inlet and said valve outlet, said shut-off valve having a valve member which is spring loaded in a valve closing direction; a check valve integrated in said valve housing and providing blocking of said flow from said valve outlet to said valve inlet, said check valve having a closing member formed by a flat spring and a stroke guard limiting an opening stroke of said closing member, said valve housing having a valve opening which is common for said shut-off valve and said check valve and formed in a flow path between said valve inlet and said valve outlet and also cooperating with said valve member and said flat spring for closing and opening said shut-off valve and said check valve, said valve member of said shut-off valve being arranged at a side of said flat spring which faces said valve outlet and forming said stroke guard of said check valve; a valve plunger axially guided in said valve housing and centrally extending through said flat spring; and a control piston with which said valve member is connected through said valve plunger and which is loaded with a suction pressure for opening said shut-off valve and ventilated for closing said shut-off valve, said control piston having a piston surface facing away from a suction pressure load and loaded by a pressure at said valve inlet.

5,390,698
PLATE-TYPE, UNIDIRECTIONAL-FLOW, FLUID CONTROL VALVE
Edward Frazzini, Corning, N.Y., assignor to Dresser-Rand Company, Corning, N.Y.
Filed Mar. 28, 1994, Ser. No. 218,405
Int. Cl.[6] F16K 15/00
U.S. Cl. 137—496 11 Claims



1. A plate-type, unidirectional-flow, fluid control valve, comprising:
a valve seat; and
a valve guard coupled to said valve seat; wherein
said guard and said seat have means cooperative for forming a chamber therebetween; and
a valving plate interposed between said seat and guard, and movable within said chamber for removal from closure thereof upon said seat toward said guard; wherein
said seat, guard and plate are apertured to (a) accommodate fluid flow through said valve when said plate removes from said seat, and (b) prohibit fluid flow therethrough when said plate is in closure of, and upon said seat; and
means confined within said valve, and responsive to fluid pressure addressed to said seat, for moving said plate laterally within said chamber.

5,390,699
REED VALVE ASSEMBLY
Toshiyuki Yamada, Shizuoka, Japan, assignor to Suzuki Kabushiki Kaisha, Shizuoka, Japan
Continuation of Ser. No. 757,267, Sep. 10, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 994,089
Claims priority, application Japan, Sep. 12, 1990, 2-240001
Int. Cl.[6] F16K 15/16
U.S. Cl. 137—512.15 4 Claims



1. A reed valve assembly comprising:
a box-shaped valve body having an opened base end, upper

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and lower surfaces converging toward a front end and each having at least one valve opening, and side surfaces between the upper and lower surfaces;

reed valves resiliently secured to the body for covering the valve openings; and

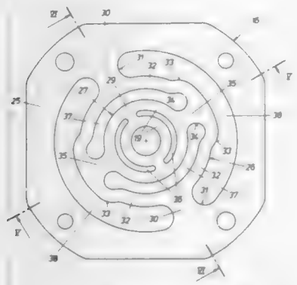
a valve chamber housing the valve body and having inner wall surfaces opposing the side surfaces of the valve body, each inner wall surface having a single, smoothly contoured, outwardly concave arcuate portion, the arcuate portions diverging upstream from the front end of the valve body and converging at and downstream from the front end each with an inclination of about to 20 degrees.

5,390,700

AUTOMATIC VALVE

Günter Fink, Schongau, and Helmut Schröcker, Schwabbruck, both of Germany, assignors to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria

Filed Dec. 22, 1993, Ser. No. 171,160
Claims priority, application Austria, Dec. 23, 1992, 2562/92
Int. Cl.[6] F16K *15/14*
U.S. Cl. 137—512.15 5 Claims



1. A valve for controlling a flow of a fluid medium, said valve comprising a seat plate having a plurality of channels therethrough through which fluid medium can flow, and a shutter plate positioned adjacent said seat plate to open or close said channels in said seat plate and control the flow of fluid medium therethrough, said shutter plate comprising:

an outer clamping ring which is positionable against said seat plate,

a guide comprising a first inner ring located within said outer clamping ring, and diametrically opposed, radially-extending first cross pieces connecting said first inner ring to said outer clamping ring, said first inner ring defining first circumferential portions which extend away from said cross pieces and opposed second circumferential portions which are offset radially outwardly relative to said first circumferential portions, and

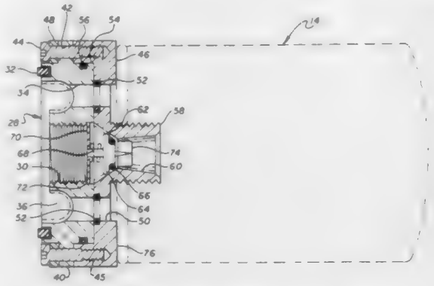
a lock means mounted within said first inner ring, said lock means comprising a second inner ring located within said first inner ring, diametrically opposed, radially-extending second cross pieces connecting said second inner ring with said second circumferential portions of said first inner ring, a third inner ring located within said second inner ring, and diametrically opposed, radially-extending third cross pieces connecting said third inner ring with said second inner ring, said third cross pieces being radially offset relative to said second radial cross pieces, said second and third inner rings being positionable against said seat plate to close corresponding channels in said seat plate or movable away from said seat plate to open said channels.

5,390,701

FILTER VALVE ASSEMBLY

Michael R. Lessley, 1500 Broadview Dr., Glendale, Calif. 91208, and Larry P. Henry, 225 N. Loara, Anaheim, Calif. 92801

Filed Apr. 6, 1994, Ser. No. 224,268
Int. Cl.[6] B10D *35/02*
U.S. Cl. 137—549 16 Claims



1. For use with a removable filter element:

a housing adapted to be fixedly mounted;

fluid inlet passages and a fluid outlet passage formed in said housing, a plurality of arcuate slots arranged in a generally circular pattern on said housing;

a valve body and fastening means passing through said slots securing said valve body to said housing, said valve body including a threaded boss for attachment of said filter element to said valve body and port means in registry with said fluid inlet passages for supplying fluid to said filter element;

a passageway through said boss in communication with said fluid outlet passage;

a check valve in said passageway; and

seal means positioned between said housing and said valve body, such that turning of said filter element in a direction to remove said element causes an initial rotation of said fastening means in said slots resulting in misalignment of said port means and said fluid inlet passages and blocking flow to said port means.

5,390,702

UNDERSEA HYDRAULIC COUPLING WITH PRE-SEALING GUIDANCE

Robert E. Smith, III, Missouri City, Tex., assignor to National Coupling Company, Inc., Stafford, Tex.

Filed Feb. 15, 1994, Ser. No. 196,956
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[6] F16L *37/28*
U.S. Cl. 137—614.04 20 Claims

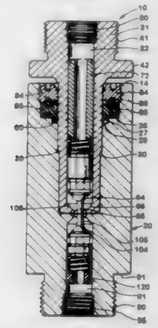
1. An undersea hydraulic coupling, comprising:

(a) a male member having a body with an external shoulder thereon to define first and second external cylindrical surfaces; the first external surface having a greater diameter than the second;

(b) a female member having an internal bore with first and second internal shoulders to define first, second, and third internal cylindrical surfaces in the bore; the first internal surface in the bore having the greatest diameter and the third internal surface having the smallest diameter; the third internal surface in the bore dimensioned to slidably receive the second external surface of the male member and the second internal surface in the bore dimensioned to slidably receive the first external surface of the male member;

(c) a ring-shaped seal insertable into the female member bore adjacent the first internal shoulder; the ring-shaped seal having an inner diameter dimensioned to seal radially with the first external surface of the male member;

(d) a sleeve member engageable with the female member and having an internal bore dimensioned to slidably receive the first external surface of the male member; the first and second external surfaces of the male member being slidably received in the sleeve member bore and the third internal surface of the female member bore, respectively,



before the first external surface of the male member comes into sealing engagement with the ring-shaped seal.

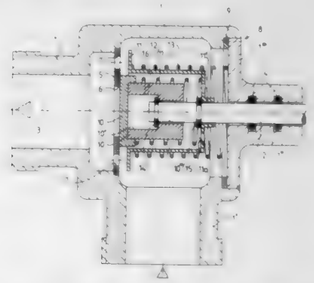
6. The undersea hydraulic coupling of claim 1 further comprising normally closed valves in the male member and the female member, the valves configured to be urged open after the first external surface of the male member comes into sealing engagement with the ring-shaped seal.

5,390,703

VALVE FOR FLOWING LIQUID-PHASE MEDIUM

Paul Tengesdal, Bjerkreim, Norway, assignor to Covent AS, Bjerkreim, Norway

PCT No. PCT/NO92/00051, § 371 Date Sep. 24, 1993, § 102(e) Date Sep. 24, 1993, PCT Pub. No. WO92/17721, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 27, 1992, Ser. No. 122,419
Claims priority, application Norway, Apr. 4, 1991, 911310
Int. Cl.[6] F16K *11/16*
U.S. Cl. 137—629 6 Claims



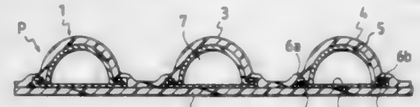
1. A valve for a flowing liquid-phase medium, said valve comprising a valve housing having an inlet and an outlet as well as a seat body having at least one flow opening for liquid defined within a central area thereof, a first spring-loaded valve body disposed on an axially displaceable valve spindle being adapted to cooperate with said at least one flow opening, in order to close or open, respectively, the latter, dependent on the axial displacement position of said valve spindle, said seat body, radially outwardly of said central area wherein said at least one flow opening is located, is formed with at least one further flow opening for liquid, and that said at least one further flow opening is adapted to be closed and opened, respectively, by means of a second valve body disposed on said spindle, said second valve body being spring-loaded and being constituted through a substantially hollow body surrounding said first valve body, said first and second valve bodies being relatively displaceably disposed on said spindle, said spindle being provided with carrier means for said first and second valve bodies, respectively, said first valve body being formed with a cavity in liquid-communication with the interior of said valve housing through at least one throttle opening, said spindle penetrating with a free end portion into said cavity, said spindle's penetration depth into said cavity varying in size as the valve changes from open to closed position, and vice versa, said penetration depth increasing whenever said spindle is being displaced corresponding to said valve's positional change from an open position toward a closed position, said spindle during the displacement thereof in the last-mentioned direction displacing liquid from said cavity out through said throttle opening, simultaneously effecting a damping braking of said spindle during a completion phase of the displacement thereof toward a completely closed valve position.

5,390,704

SYNTHETIC RESIN PIPE INCLUDING CYLINDRICAL INNER WALL AND A SPIRALLY EXTENDING CORRUGATED OUTER WALL

Shiro Kanao, 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

Filed Dec. 8, 1993, Ser. No. 163,074
Claims priority, application Japan, Dec. 9, 1992, 4-352611
Int. Cl.[6] F16L *11/11*
U.S. Cl. 138—121 5 Claims



1. A pressure-withstanding synthetic resin pipe, comprising:

a pipe wall including a substantially cylindrical inner wall and an outer wall exhibiting a spirally extending corrugated configuration;

a metallic reinforcement belt plate disposed inside a protruded corrugation portion of said outer wall, said metallic reinforcement belt plate having a substantially U-shaped sectional contour and open end portions; and

a metallic belt plate disposed at said inner wall, said metallic belt plate having end portions bent to form engagement portions and adapted to be engaged with said open end portions of said metallic reinforcement belt plate.

5,390,705

COLD-RESISTANT FUEL-LINE HOSE

Erwin Brunnhofer, Guxhagen, Germany, assignor to Technoflow Tube-Systems GmbH, Fuldabruck, Germany

Filed Jan. 27, 1993, Ser. No. 9,455
Claims priority, application Germany, Jan. 29, 1992, 4202397
Int. Cl.[6] F16L *11/00*
U.S. Cl. 138—137 7 Claims



1. A layered tubing for use in a motor vehicle, the tubing comprising:

a thick tubular inner layer formed of a synthetic resin having

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a predetermined hardness and a predetermined thickness; and

a thin coextruded tubular outer relax layer bonded externally to and surrounding the inner layer and formed of a synthetic resin having a hardness equal to at most 0.8 of the hardness of the inner layer and a thickness equal to at most 0.5 of the thickness of the inner layer and between 0.1 mm and 0.2 mm.

5,390,706

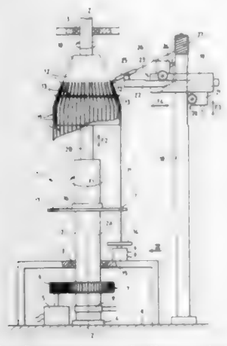
Patent Not Issued For This Number

5,390,707

METHOD AND A MACHINE FOR MAKING HOLLOW REINFORCING MEMBERS

Georges J. J. Cahuzac, Le Bouscat, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

Continuation-in-part of Ser. No. 951,829, Sep. 28, 1992, abandoned. This application Dec. 8, 1993, Ser. No. 162,938
Claims priority, application France, Oct. 3, 1991, 91 12169
Int. Cl.[6] D03D *47/04, 13/00, 37/00*
U.S. Cl. 139—11 **19 Claims**



1. A method of weaving a hollow reinforcing member formed by fibers by means of a mandrel having a periphery and an axis, comprising the steps of:

(a) distributing a plurality of flexible rods around the periphery of said mandrel;

(b) providing each rod with a shank and at one extremity thereof with a bent end;

(c) arranging said flexible rods around said mandrel so that said rods are pressed thereagainst with their bent ends projecting outwardly therefrom;

(d) forming a weft by depositing at least one continuous strand of filaments on said bent ends, in such a way that said at least one continuous strand of filaments is caused to pass over some of said bent ends and under the other bent ends, and repeatedly, in a succession, depositing said at least one continuous strand of filaments on said bent ends in such a way that said at least one continuous strand of filaments is caused to pass over some of said bent ends and under the other bent ends for progressively forming a tracery of filaments along said shanks; and

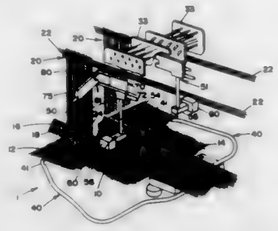
(e) displacing and removing said rods along said mandrel, as said at least one continuous strand of filaments is deposited on said bent ends, for disengaging the already-made tracery of filaments from said bent ends of said rods.

5,390,708

APPARATUS FOR TRANSLATING YARNS IN THE PROPER POSITION AND ORIENTATION FOR FORMING A WOVEN JOIN

Heinz Kuster, and Stephan Kuster, both of Sandpoint, Id., assignors to Asten Group, Inc., Charleston, S.C.

Filed Sep. 21, 1993, Ser. No. 124,921
Int. Cl.[6] D03D *41/00;* D03J *1/14*
U.S. Cl. 139—383 AA **5 Claims**



1. An improved seaming apparatus for forming a woven join between opposite ends of a length of woven fabric, formed from interwoven machine direction (MD) and cross machine direction (CMD) threads, of the type in which an auxiliary strip of threads is supported in parallel relation to the CMD threads in the woven fabric, and opposite ends of the fabric are supported on opposite sides of the auxiliary threads, each end of the woven fabric includes a fringe of (MD) threads which are successively separated from the fringe and interwoven with the auxiliary threads to thereby form the join, wherein the improvement comprises:

an apparatus for translating yarns in the proper position and orientation for weaving including

means for gripping a thread from the fringe in a first orientation;

means for repositioning the thread to a second orientation; and

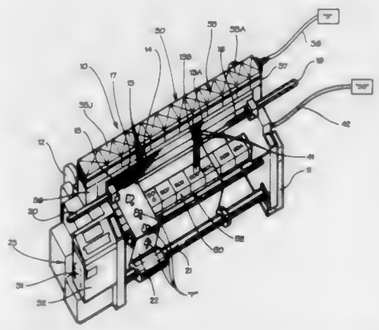
means for retaining the thread in the second orientation as it is translated to the weaving position.

5,390,709

FABRIC FORMING MACHINE INCLUDING PNEUMATIC SHEDDING APPARATUS AND METHOD

Barnabas Martonffy, 9219 Cameron Wood Dr., Charlotte, N.C. 28210

Filed Dec. 16, 1992, Ser. No. 991,101
Int. Cl.[6] D03C *3/22*
U.S. Cl. 139—456 **17 Claims**



1. A shedding apparatus for being fitted onto a fabric-forming machine for controlling the up and down movement of warp-carrying heddles to form a filling insertion shed, said shedding apparatus comprising:

(a) pattern information storage means for storing a predetermined pattern to be translated into a woven pattern on the fabric-forming machine;

(b) a plurality of pneumatic piston and cylinder assemblies for being attached to respective heddles for pneumatically moving the heddle attached thereto into and out of shed-forming position; and

(c) pattern information conveying means for being operatively associated with said pattern storage means and responsive to said pattern storage means for delivering pressurized air to predetermined piston and cylinder assemblies to thereby move the selected piston and cylinder assemblies and their respective heddles into upper and lower shed-forming positions to receive a filling yarn to thereby create a portion of the pattern stored in the pattern information storage means; and

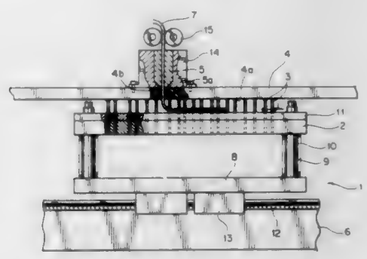
(d) a piston block for housing said piston and cylinder assemblies, said piston block defining a plurality of cylinders formed therein for receiving a respective piston for pneumatically induced shed-forming movement therein between said upper and said lower shed-forming positions.

5,390,710

ELECTRICAL INTERCONNECTION ASSEMBLY MANUFACTURING APPARATUS

Sanae Kato, and Akira Sugiyama, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,456
Claims priority, application Japan, Aug. 26, 1992, 4-226968
Int. Cl.[6] B21F *27/00*
U.S. Cl. 140—92.1 **3 Claims**



1. An electrical interconnection assembly manufacturing apparatus comprising:

a pinboard

a plurality of wire laying pins standing on the pinboard;

a slide plate opposing tips of the wire laying pins; and

a nozzle having a tip flush with a face of the slide plate opposing the pinboard, the pinboard and the slide plate being relatively movable when the pinboard opposes the slide plate while a wire fed from the nozzle is laid on the plurality of wire laying pins.

5,390,711

METHOD AND APPARATUS FOR MAKING SNOW CONES

James D. Murphey, 2438 W. Butler, Phoenix, Ariz. 85021

Continuation-in-part of Ser. No. 939,701, Sep. 2, 1992. This application Dec. 13, 1993, Ser. No. 167,401
Int. Cl.[6] B65B *1/30*
U.S. Cl. 141—1 **7 Claims**

1. A vending machine for carrying and dispensing a plurality of items, each having a unique code affixed thereto, and for policing the dispensing of said plurality of items, said vending machine comprising:

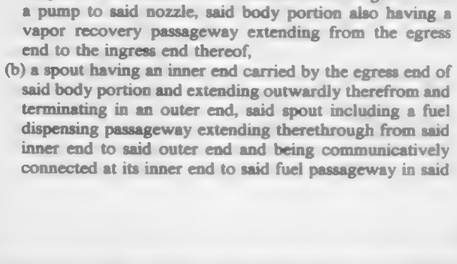
a cabinet for receiving and containing said plurality of items;

means for dispensing said plurality of items upon request;

machine control circuitry for controlling said dispensing means; and

a scanning activation system mounted within said cabinet and coupled to said machine control circuitry for scanning said plurality of items, and preventing dispensing thereof upon request, absent the proper unique code.

5. A method of policing a vending machine against use of unauthorized materials comprising the steps of:



a) providing a scanning activation system;

b) storing a plurality of items each carrying a unique code in said vending machine, at least one of which is a terminal item, next to be dispensed;

c) scanning said terminal item; and

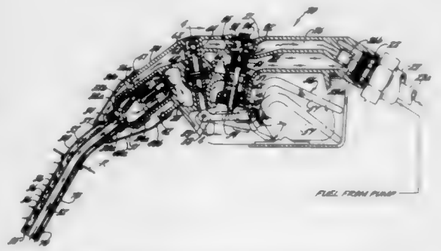
d) initiating a product delivery sequence in response to scanning a proper unique code.

5,390,712

FUEL DISPENSING AND VAPOR RECOVERY NOZZLE

David J. Parrish, Wake Forest; Chih-Kun Shih, Cary, and John L. Johnson, Raleigh, all of N.C., assignors to Emco Wheaton, Inc., Morrisville, N.C.

Filed Oct. 1, 1993, Ser. No. 130,277
Int. Cl.[6] B67D *5/00*
U.S. Cl. 141—59 **8 Claims**



1. A fuel dispensing nozzle characterized by improved vapor recovery comprising:

(a) a body portion having an ingress end and an egress end and having a fuel passageway extending from an ingress end of said body portion to an egress end of said body portion thereof, the ingress end of said body portion being adapted to be connected to a hose for delivering fuel from a pump to said nozzle, said body portion also having a vapor recovery passageway extending from the egress end to the ingress end thereof,

(b) a spout having an inner end carried by the egress end of said body portion and extending outwardly therefrom and terminating in an outer end, said spout including a fuel dispensing passageway extending therethrough from said inner end to said outer end and being communicatively connected at its inner end to said fuel passageway in said

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body portion for dispensing fuel into a vehicle fuel tank, said spout also including a vapor recovery passageway extending longitudinally therein and having at least one inlet opening adjacent the outer end of said spout and an outlet opening in said spout adjacent but spaced outwardly from the inner end of said spout and outwardly from the egress end of said body portion, and

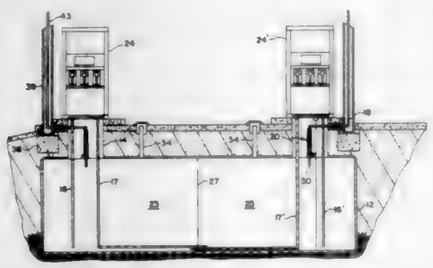
(c) vapor confinement means surrounding the portion of said spout having the vapor outlet opening therein and the egress end of said body portion and sealingly engaging said spout outwardly of said vapor outlet opening and surrounding said egress end of said body portion and defining a vapor confining chamber of substantially greater volume than the vapor recovery passageways in said spout and in said body portion and communicating with said outlet opening of said vapor recovery passageway in said spout and with said vapor recovery passageway in said body portion, whereby vapor may be recovered from a vehicle tank by entering the vapor recovery passageway in said spout through the inlet opening passing through the spout and out through the outlet opening into the vapor confinement chamber and thence into said vapor recovery passageway in said body portion.

5,390,713

UNITIZED FUEL STORAGE TANK

Manfred M. Fiech, c/o Euro Tank, P.O. Box 478, Silver Springs, Fla. 33489-0478

Filed Dec. 10, 1992, Ser. No. 988,836
Int. Cl.[6] B67D *5/60*
U.S. Cl. 141—98 20 Claims



1. A unitized tank structure comprising:

a vessel having a plurality of isolated compartments;

fill lines coupled to the vessel providing access to fill the vessel;

at least one sump riser portion coupled to the vessel and extending therefrom;

a plurality of dispensing lines disposed within the sump riser portion and penetrating the vessel so as to communicate with at least a first compartment of said plurality of compartments, at least one dispensing line of said plurality of dispensing lines extending into and through said at least the first compartment and into open communication with another one of said plurality of compartments;

at least one vacuum extraction system disposed within said sump riser portion, the extraction system including fluid return structure to permit one of vapor and liquid which accumulates in the sump riser portion to be returned to the vessel by negative pressure created within said vessel; and

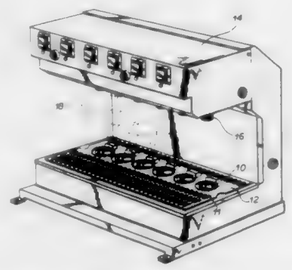
at least one vent line disposed within the sump riser portion and extending therefrom so as to be in contact with the atmosphere to vent positive pressure from said vessel.

5,390,714

CUP LOCATOR FOR BEVERAGE DISPENSER

Thomas G. North, III, Marietta, Ga.; Jose I. Smith, Miami, Fla.; Samuel Durham, and M. Zane Farmer, both of San Antonio, Tex., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 883,512, May 15, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 56,284
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—369 13 Claims



1. A cup locator for a beverage dispenser comprising:

(a) a cup rest adapted to be mounted on said dispenser and having at least one aperture therethrough;

(b) a plurality of differently sized non-concentric rings, each sized to fit a different sized cup bottom and arranged one on top of the other from smallest to largest, said rings being mounted within said aperture of said cup rest for properly locating each of said cups in an upright position with respect to a transducer on said dispenser such that each one of a plurality of different sized cups can be in only one single possible location;

(c) a base mounted to said smallest ring and having a central opening to allow ice and liquid to flow through said cup rest;

(d) a pair of ribs extending outwardly from said base to support and strengthen said cup locator; and

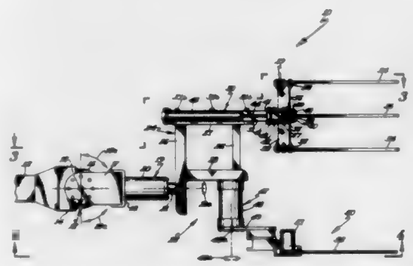
(e) a back stop extending upwardly from a rear perimeter of said largest ring.

5,390,715

TREE PRUNING APPARATUS

Terry L. Luscombe, RR 1, Armstrong, Iowa 50514

Filed May 3, 1994, Ser. No. 237,721
Int. Cl.[6] A01G *23/08*; B77L *1/00*
U.S. Cl. 144—2 Z 6 Claims



1. An apparatus for cutting and pruning trees attachable to the end of the outermost boom arm of a vehicle mounted, articulated and extensible boom assembly, comprising;

a grapple and saw assembly including a grapple and saw assembly frame, a grapple assembly mounted on said frame for gripping trees and limbs;

power operated first positioning means interconnected with said grapple and saw assembly, means for securing said first positioning means to the end of the outermost boom arm, said first positioning means being operable to pivot said grapple and saw assembly relative to the outermost boom arm through an arc of at least 180° about a first pivot axis,

power operated second positioning means interposed between and connected with said first positioning means and said grapple and saw assembly, said second positioning means being operable to rotate said grapple and saw assembly relative to said first positioning means through an arc of 360° about a second pivot axis, the rotational axis of said second positioning means being disposed substantially normal to said first pivot axis,

a power driven saw assembly,

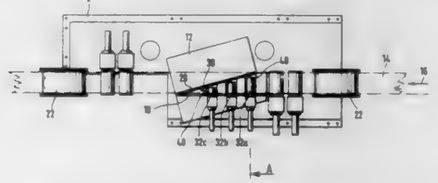
power operated third positioning means mounting said saw assembly on said grapple and saw assembly frame, said third positioning means being operable to rotate said saw assembly relative to said grapple and said saw assembly frame through an arc of 360° about a third pivot axis, said third axis being disposed substantially normal to said first and second axes.

5,390,716

DEVICE FOR THE SLICING PRODUCTION OF BOARDS

Siegmar Gönner, Oberkirch, and Braun Heinz-Hubert, Oberkirch-Bottenau, both of Germany, assignors to Firma Gebuder Linck Maschinenfabrik "Gatterlinck" GmbH & Co. KG, Oberkirch, Germany

Continuation of Ser. No. 797,445, Nov. 22, 1991, abandoned. This application Dec. 10, 1993, Ser. No. 164,992
Claims priority, application Germany, Dec. 3, 1990, 4038486
Int. Cl.[6] B26D *1/02*
U.S. Cl. 144—175 14 Claims



1. A device for the production of thin boards by the chip-free slicing removal of thin boards from timber in the form of a log or cant, said device comprising

means defining a feed path for the timber;

a slicing device located at one side of said feed path;

said slicing device including a fixed or vibratable cutting blade for severing a board;

a counterpressure rail, mounted before said cutting blade, the spacing of said counterpressure rail from said cutting blade, transversely of said feed path, substantially determining the thickness of the board to be removed;

a support table having a flat surface upon which the timber is supported;

said counterpressure rail being part of said support table;

said cutting blade and said counterpressure rail subtending an acute angle with the feed path of the timber;

a pressing device opposite said slicing device at the other side of the feed path, said pressing device comprising a series of pressing rollers adapted to press against the timber; and,

feed means for feeding the timber against said cutting blade along the feed path;

said feed means comprising at least two pairs of feed rollers for engaging the timber at opposite sides and clamping the timber therebetween and means for allowing free movement of each said pair of feed rollers as a discrete pair in a transverse direction relative to the feed direction and wherein upper rollers of said feed roller pairs are disposed in the series of said pressing rollers;

at least one pair of said feed rollers being located at an area of the feed path over which said blade extends and including a feed roller located in the area over which said blade extends and journaled so as to overhang laterally and to extend into a recess in said support table.

5,390,717

GOLF BAG COVER

Barbara A. Schenker; Wilbur A. Raumann, and Marguerite L. Raumann, all of Hobe Sound, Fla., assignors to B.B.S., Inc., Hobe Sound, Fla.

Filed Mar. 11, 1994, Ser. No. 209,863
Int. Cl.[6] A65B *55/00*
U.S. Cl. 150—159 10 Claims



1. A cover for a golf bag which has an open end from which golf clubs project, said cover comprising:

a hood having a first opening for receiving the open end of the golf bag to protect the golf clubs retained in the golf bag, a second opening through which the golf clubs can be removed from the bag, and a mechanism for closing the second opening; and

a flexible apron attached to said hood and extending from the first opening of the hood to protect a portion of the golf bag which projects from said hood, wherein said apron comprises a sheet having a first edge attached to said hood; a first wing flap along a second edge of said sheet; and a second wing flap along a third edge of said sheet; wherein first and second wing flaps extend around the golf bag to hold said apron in place.

5,390,718

ARRANGEMENT FOR RETAINING A TIRE ON A VEHICLE WHEEL

Carl-Gustav Victor, Höllviken, Sweden, assignor to Trelleborg Tyre AB, Trelleborg, Sweden

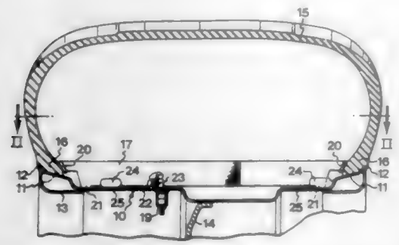
Filed Feb. 10, 1993, Ser. No. 975,927
Claims priority, application Sweden, Jun. 12, 1991, 9101782
Int. Cl.[6] B60C *15/028*
U.S. Cl. 152—400 18 Claims

1. Arrangement in a vehicle wheel with a pneumatic tire mounted on a rim, said arrangement comprising means for locking the tire against the rim and pressing the tire beads against the rim flanges and the rim seats, said means having a plurality of clamping jaws disposed in spaced-apart relationship around the rim and rotatable in the interior of the vehicle wheel, said jaws being elongate and each having a single clamping bolt which extends through the bottom of the rim, and being oriented, when in their operative position, with the longitudinal axis in the axial direction of the rim and being so dimensioned and designed as to be pressed, by means of the clamping bolt, both:

directly against the two beads of the vehicle tire in order, by means of their end surfaces, to press the tire beads out-

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wards against the rim flanges and against the rim seats, and
against the bottom of the rim in a stabilising and sealing manner,



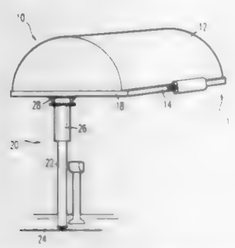
wherein the rim has a bottom, and the rim is provided on its bottom with fixing lugs, against which the jaws are applied when in their operative position to prevent the jaws from rotating about their clamping bolt.

5,390,719

CANOPY ASSEMBLY PIVOTABLE BY OVER-HEIGHT VEHICLE

Michael S. Barnes, 4300 Acworth Industrial Dr., Acworth, Ga. 30101

Filed Aug. 10, 1993, Ser. No. 103,691
Int. Cl.[6] G08B *13/08*
U.S. Cl. 160—10 6 Claims



1. In combination with a pivotal canopy assembly comprising a rigid frame having spaced apart front and rear members, opposed end members and a canopy carried by said frame; a mount pivotally supporting said frame from one end thereof to extend horizontally in cantilever fashion above ground level at a height selected to be greater than that of a majority of motor vehicles, a releasable latch for retaining said assembly in a predetermined radial position on said mount to extend over an area to be protected from weather and across which vehicles travel beneath said canopy in a direction from the front towards the rear side members of said frame, and means for releasing said latch in response to continued movement of an over-height vehicle against said canopy assembly to enable said assembly to be pivoted on said mount by said over-height vehicle from a position across its path of movement to a position clear of said path.

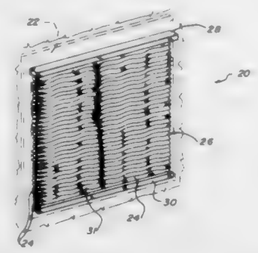
5,390,720

TUBULAR CELL WINDOW COVERING WITH UNDULATIONS ALONG THE LENGTH OF THE CELLS

Wendell B. Colson; Paul G. Swiszcz, both of Boulder, and James M. Anthony, Denver, all of Colo., assignors to Hunter Douglas, Inc., Upper Saddle River, N.J.

Filed Jul. 9, 1993, Ser. No. 89,267
Int. Cl.[6] E06B *3/94*
U.S. Cl. 160—84.1 D 37 Claims

1. An expandable and collapsible window covering comprised of a plurality of elongated, transversely collapsible tubular cells bonded together longitudinally by at least one line



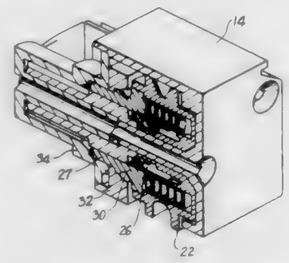
of adhesive which extends along an area of engagement between adjacent cells, each said tubular cell having an undulate surface along its length.

5,390,721

OPERATING MECHANISM FOR A BLIND OR SHIELDING DEVICE

Herman Oskam, AK Vlist, and Dirk A. Ploeg, Papendrecht, both of Netherlands, assignors to Hunter Douglas International N.V., Willemstad, Netherlands

Filed Jul. 18, 1991, Ser. No. 731,782
Claims priority, application United Kingdom, Jul. 18, 1990, 9015825
Int. Cl.[6] E06B *9/36*
U.S. Cl. 160—168.1 19 Claims



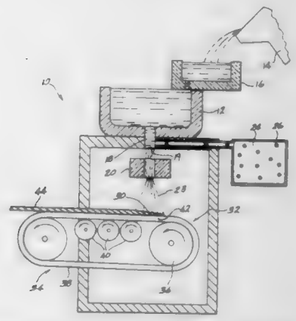
12. An operating mechanism for a blind or shielding device having angularly adjustable and retractable slats, said mechanism comprising a first driven element for pivotally adjusting the angular orientation of the slats and a second driven element for traversingly moving the slats towards and away from a retracted position, a common actuating member for sequentially driving said first and second driven elements, an axially engaging and disengaging clutch device directly connecting said first driven element to said common actuating member, lost motion mechanism for engaging said second driven element by said common actuating member and allowing transmission of a motive force to said second driven element after a predetermined number of revolutions of said actuating member in either of two different rotational senses, final engagement of said lost motion mechanism in each rotational sense inducing a reactive force assisting in a declutching of said clutch device, wherein the lost motion mechanism comprises a plurality of discs each having a first projection extending from one axial face thereof and a second projection extending from the opposite axial face thereof, said projections being adapted to entrain a next adjacent disc after a predetermined amount of rotation between said adjacent discs, and wherein the final engagement of the lost motion mechanisms comprises an inclined ramp surface on at least one of said discs, inducing the reactive force in the axial direction of said clutch device and allowing axial movement of said clutch device by an amount sufficient to declutch said clutch device.

5,390,722

SPRAY CAST COPPER COMPOSITES

Sankaranarayanan Ashok, Bethany; William G. Watson, Cheshire, and Harvey P. Cheskis, North Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 29, 1993, Ser. No. 11,450
Int. Cl.[6] B22D *19/14*
U.S. Cl. 164—46 10 Claims



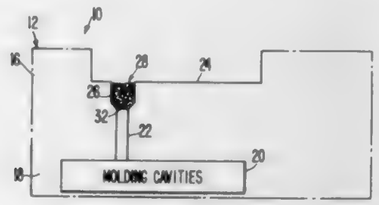
1. A method for producing a metal matrix composite, comprising the steps of:
a) melting a first constituent containing a metal or metallic alloy;
b) flowing said first constituent as a molten stream to an atomizer;
c) atomizing said first constituent into a stream of droplets; and
d) injecting a second constituent either into said molten stream or into said stream of droplets, said second constituent containing a mixture of relatively small second phase particles having an average diameter of less than 1 micron and larger reactive metal particles having an average diameter of greater than 5 microns.

5,390,723

METHOD OF TREATING CASTING METALS

Prem P. Mohla, 27546 Sherwood Dr., Westlake, Ohio 44145, and Eli David, 117 Hunt Club Dr., Apt. 1B, Copley, Ohio 44321

Continuation of Ser. No. 848,530, Mar. 9, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 137,894
Int. Cl.[6] B22C *9/08*; B22D *1/00, 27/20*
U.S. Cl. 164—57.1 8 Claims



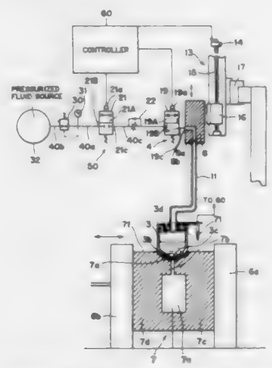
1. A casting process for production of metallurgically treated metal castings, comprising the steps of:
providing molten metal of proper chemistry to be cast;
providing a molding assembly which includes at least a molding cavity for receiving and molding the molten metal;
providing an open top treating basin in association with the molding assembly for directly receiving poured molten metal;
providing at least a reaction chamber adjacent a bottom of the treating basin and which reaction chamber is intermediate the basin and the molding cavity, the reaction chamber being coupled to the molding cavity by passage means and adapted to progressively dissolve a treating alloy in the molten metal;
temporarily plugging the passage means by a consumable plug assembly having physical and chemical characteristics which maintain a plugged relationship for a preselected retaining period before melting to allow for generally uniform treatment and homogenization of the molten metal by the treating alloy;
providing all of the treating alloy in exposed form in the reaction chamber prior to pouring of the molten metal in the basin, the treating alloy directly metallurgically reacting in a generally non-dynamic manner with the molten metal to be cast, said step of providing all of the treating alloy in exposed form effectively limiting the exposure of the treating alloy to the molten metal and minimizing flotation and burning of the treating alloy in the molten metal;
pouring the molten metal directly in the basin and reaction chamber so as to generally uniformly react with the treating alloy in a gentle boiling or mixing action facilitating the uniformity of reaction, the retaining period also sufficient to minimize flotation of undesirable products to the surface of the molten metal;
said step of temporarily plugging the passage means including using a plug material having physical and chemical characteristics sufficient to prevent the plug assembly from melting to thereby retain the molten metal in the treating basin for the preselected retaining period to ensure generally uniform reaction of the treating alloy.

5,390,724

LOW PRESSURE DIE-CASTING MACHINE AND LOW PRESSURE DIE-CASTING METHOD

Noriyoshi Yamauchi, and Hitoshi Ishida, both of Fuchu, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Filed Jun. 15, 1993, Ser. No. 76,742
Claims priority, application Japan, Jun. 17, 1992, 4-184436
The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.
Int. Cl.[6] B22D *39/00, 39/02*
U.S. Cl. 164—147.1 19 Claims



3. A low pressure die-casting apparatus including a metal mold having a casting port, and a ladle unit for retaining and

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transporting a predetermined amount of a molten metal in a metal pot to the casting port, the ladle unit having an upper portion, a bottom portion having a molten metal intake/discharge port formed therein, the intake/discharge port remaining open in the presence of the molten metal, and an inner surface defining a molten metal accumulation space, the apparatus comprising:

the intake/discharge port of the ladle unit having a cross-sectional area in a range of from 20 to 80 mm^2, and the bottom portion of the ladle unit being operative to pressure contact with the casting port;

a molten metal pressurizing means switchable to one position for selectively applying pneumatic pressure to the accumulation space in order to positively discharge the molten metal through the intake/discharge port to the metal mold, the molten metal pressurizing means being switchable to another position;

a switching means connected between the molten metal pressurizing means and the upper portion of the ladle unit and switchable between a first position for isolating the accumulation space from an atmosphere and a second position for providing fluid communication between the accumulation space and the atmosphere; and

a controller connected to the switching means and producing a first signal for driving the switching means between the first position and the second position, the controller also being connected to the molten metal pressurizing means and producing a second signal for selectively driving the molten metal pressurizing means between the one position and said another position.

5,390,725

CASTING MACHINE FOR VERTICAL CONTINUOUS CASTING IN A MAGNETIC FIELD

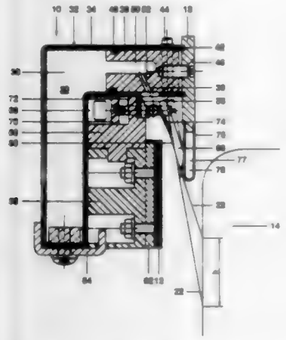
Georges Berclaz, Veyras; Bertrand Carrupt, Chamoson, and Miroslaw Plata, Vétroz, all of Switzerland, assignors to Alusuisse-Lonza Services Ltd., Zurich, Germany

Filed Sep. 20, 1993, Ser. No. 123,109

Claims priority, application Switzerland, Oct. 6, 1992, 3116/92

Int. Cl.[6] B22D *11/124, 27/02*

U.S. Cl. 164—467 **24 Claims**



1. Casting machine for continuously casting a vertical ingot in a magnetic field, which comprises: a water-cooled mold for continuously casting a vertical ingot; means for creating a magnetic field to confine the molten metal including a closed, peripheral partially shielded inductor and an electromagnetic shield; at least one cooling water channel directed at the ingot at an acute angle; at least one guiding surface of an electrically insulating material for guiding said cooling water on which a film of water forms; and a downwards movable dummy base supporting said ingot; wherein the electromagnetic shield is provided with an interior cooling passage.

20. Process for cooling an ingot in a continuous casting machine, which comprises:

continuously casting a vertical ingot in a magnetic field including providing a closed, peripheral partially shielded inductor, providing an electromagnetic shield for shielding portion of an electromagnetic field from the inductor to the ingot and providing a cooling passage in the interior of the electromagnetic shield for cooling the same;

spraying cooling water onto a guiding deflection surface to form a uniform water film thereon;

spraying the water onto the ingot; and

displacing the deflection surface to vary the water spray onto the ingot.

5,390,726

PROCESS FOR PRODUCING THIN METALLIC STRIP BY CONTINUOUS CASTING

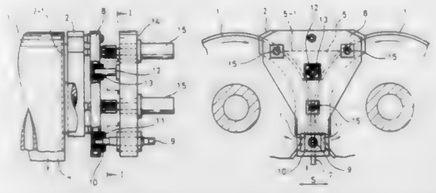
Yoshimori Fukuda, Futsu; Kensuke Shimomura, and Takashi Arai, both of Hikari, all of Japan, assignors to Nippon Steel Corporation and Mitsubishi Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 14, 1993, Ser. No. 117,173

Claims priority, application Japan, Mar. 15, 1991, 3-051202

Int. Cl.[6] B22D *11/04, 11/06*

U.S. Cl. 164—478 **2 Claims**



1. A process for producing a thin metallic strip by continuous casting, comprising forming a pouring basin portion for a molten metal between a pair of rotary cooling drums respectively having shafts parallel to each other and a pair of side gates in contact with the end faces of said cooling drums and pouring said molten metal into said pouring basin portion for a molten metal to continuously cast a thin cast strip characterized in that said casting is conducted while vibrating said side gates at a frequency, f (Hz), determined according to the following formula in a direction substantially horizontal to an imaginary line formed by connecting the shaft centers of said cooling drums to each other:

$$aA+b+cV \leqq f \leqq 50 \quad (1)$$

wherein

A is the numerical value of the amplitude (mm) of the side gate at the kissing point portion of the cooling drum and is in the range of from 0.5 to 5 mm;

V is the numerical value of the casting rate (m/min) previously determined from a desired casting sheet thickness; and

a=2, b=5, and c=0.1.

5,390,727

INORGANIC POUNDRY BINDER SYSTEMS AND THEIR USES

Yuily M. Yunovich, Westerville; Ruth A. Dudenhoefer, and Heimo J. Langer, both of Columbus, all of Ohio, assignors to Ashland Oil, Inc., Columbus, Ohio

Division of Ser. No. 785,364, Oct. 30, 1991, Pat. No. 5,279,665. This application Jan. 7, 1994, Ser. No. 179,649

Int. Cl.[6] B22C *1/18*

U.S. Cl. 164—521 **13 Claims**

1. A no-bake process for preparing a foundry shape comprising:

(A) mixing a foundry aggregate with an effective bonding amount of up to about 10% by weight, based upon the weight of the aggregate, of a binder composition comprising:

(1) an aqueous solution of a phosphoric acid selected from the group consisting of orthophosphoric acid, pyrophosphoric acid, trimetaphosphoric acid, tetrametaphosphoric acid, polyphosphoric acid, and mixtures thereof; and

(2) a mixture comprising:

(a) an iron oxide selected from the group consisting of:

(i) ferrous oxide,

(ii) ferroferric oxide, and

(iii) mixtures thereof; and

(b) magnesium oxide;

wherein the weight ratio of iron oxide to magnesium oxide in the Part B component is from 1:9 to 9:1 and the weight ratio of the Part A component to Part B component is from 5:1 to 1:1.

(B) introducing the foundry mix obtained from step (A) into a pattern;

(C) allowing the foundry mix to harden in the pattern until it becomes self-supporting; and

(D) thereafter removing the shaped foundry mix of step (C) from the pattern and allowing it to further cure, thereby obtaining a hard, solid, cured foundry shape.

5,390,728

AIR CONDITIONER FOR USE IN A VEHICLE

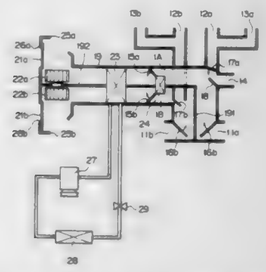
Koichi Ban, Tokai, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 15, 1993, Ser. No. 91,364

Claims priority, application Japan, Jul. 15, 1992, 4-188000

Int. Cl.[6] F25B *29/00*

U.S. Cl. 165—16 **8 Claims**



1. An air conditioner for use in a vehicle, comprising:

an air duct having an inside air entrance open to air inside a vehicle chamber and an outside air entrance open to air outside of said vehicle chamber at a first end of said air duct, and a plurality of outlets at positions opposed to a plurality of seats in said vehicle chamber at a second end of said duct;

air blowing means for generating an air flow in said air duct;

heat exchanging means provided in said air duct for exchanging heat of air in said air duct;

inside and outside air change-over means for selectively changing over said first end of said air duct between receiving air through said inside air entrance and receiving air through said outside air entrance;

air outlet change-over means for selectively operating said plurality of air outlets;

seating detection means for detecting a passenger in each of said plurality of seats; and

air outlet change-over control means for, when only one passenger is detected in said vehicle, controlling said air outlet change-over means to open a first one of said plurality of air outlets opposed to said detected passenger's respective one of said plurality of seats and to open a second one of said plurality of air outlets closest to said inside air entrance of said air duct, and controlling said inside and outside air change-over means to open said inside air entrance;

wherein, when only one passenger is detected in said vehicle, air discharged from said second one of said plurality of air outlets closest to said inside air entrance is substantially sucked back through said inside air entrance of said air duct.

5,390,729

REFRACTORY ELEMENT

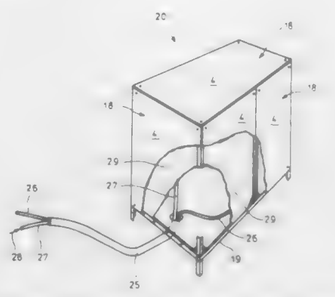
Akira Sakurai; Masahiro Shiotsu, both of Kyoto; Toshikazu Yano, Yokohama; Masao Ochi, Yokohama, and Toshihiro Sugawara, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 73,619, Jun. 8, 1993, Pat. No. 5,329,785, which is a continuation of Ser. No. 695,693, May 3, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 111,910

Claims priority, application Japan, May 21, 1990, 2-130563; May 21, 1990, 2-130564; May 21, 1990, 2-130565; Oct. 4, 1990, 2-267142

Int. Cl.[6] F28D *5/02*

U.S. Cl. 165—47 **4 Claims**



1. A refractory chamber comprising a frame defining the dimensions of said chamber and a plurality of refractory building panels joined contiguously to said frame to enclose said chamber and retain the interior cool when the exterior of said chamber is subjected to excessive heat, each panel comprising an impermeable intermediate layer having inner and outer faces, a heat transmission layer joined to the inner face of said intermediate layer and comprising first liquid passages arranged along and throughout said inner face and including a liquid supply port for connecting said first liquid passages to a liquid supply pipe for supplying liquid under pressure to said first passages to attain a cooling effect throughout said inner face, a porous ooze cooling layer joined to the outer face of said intermediate layer, second liquid passages disposed between the outer face of said intermediate layer and said porous ooze cooling layer and including a plurality of outlet ports opening into said ooze cooling layer, and fluid passage joints interconnecting said first and second liquid passages to distribute cooling liquid throughout said ooze cooling layer when liquid under pressure is delivered through said supply pipe and inlet port to said first liquid passages, said porous ooze cooling

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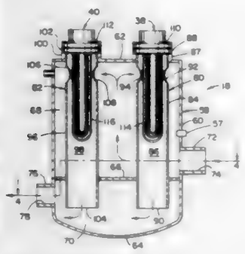
layer comprises a soft porous inner layer of refractory material and an outer layer of refractory rigid liquid pervious material.

5,390,730

FLUID COOLING SYSTEM

John V. Goelzer, Cedarburg, Wis., assignor to Sterling, Inc., Milwaukee, Wis.

Filed May 27, 1993, Ser. No. 68,637
Int. Cl.[6] F28F 9/22
U.S. Cl. 165—108 10 Claims



1. A fluid cooling system, comprising:

a vessel having an outer wall and defining a first cavity and a second cavity separated by an inner wall, the vessel including an inlet in the outer wall located adjacent the inner wall for introducing fluid to the first cavity and an outlet communicating directly through the vessel wall with the second cavity for discharging fluid from the second cavity, the outlet being thermally isolated from the first cavity;

one or more cooling tubes disposed within the vessel, each cooling tube defining an internal passage and having one or more inlet openings establishing communication between the first cavity and the cooling tube internal passage, and an outlet establishing communication between the second cavity and the cooling tube internal passage; and

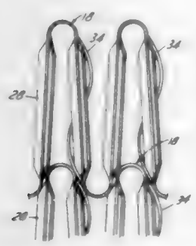
cooling means disposed within each cooling tube internal passage.

5,390,731

HEAT EXCHANGER FIN

Gerald J. Selm, Connersville, Ind., and Kathleen L. Frazier, Farmington Hills, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 29, 1994, Ser. No. 267,626
Int. Cl.[6] F28F 1/22
U.S. Cl. 165—152 6 Claims



1. A corrugated heat exchanging fin assembly for use with a heat exchanger having conduits for a heat exchanging fluid, said fin assembly being adapted to be interposed between adjacent conduits and to allow the flow of air therethrough, said fin assembly including a plurality of fin elements, each fin element comprising:

a first plurality of louvers extending therefrom at a predetermined angle with respect to the flow of air and cut to define apertures opened in substantially the same direction thereof, each of said louvers of being disposed at a predetermined angle to the plane of said fin element; and

a second plurality of louvers extending therefrom and cut to define apertures therein, each of said louvers of said second plurality being configured to intersect the plane of said fin element to prevent nesting of stacked rows of a plurality of fin assemblies.

6. A corrugated fin type heat exchanger including a plurality of fluid conduits which define a first series of passages for a first fluid and a corrugated strip defining a plurality of fin elements disposed between and thermally connected to each pair of adjacent fluid conduits to cooperate therewith to define a second series of passages for air to flow therethrough, each fin element of said plurality comprising:

a first plurality of louvers extending therefrom at a predetermined angle with respect to the flow of air and cut to define apertures opened in substantially the same direction thereof, each of said louvers including an outer edge disposed generally parallel to the plane of said fin element along substantially the entire length of said louver; and

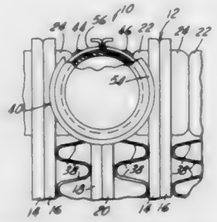
a second plurality of louvers extending therefrom and cut to define apertures therein, each of said louvers of said second plurality including a generally S-shaped curvilinear outer edge with respect to the plane of said fin element to prevent nesting of stacked rows of a plurality of fin assemblies.

5,390,732

CLAMPING APPARATUS AND METHOD FOR HEAT EXCHANGER PLATES

Pritam S. Bathla, Beaver Creek, Ohio, assignor to Chrysler Corporation, Highland Park, Mich.

Filed Feb. 14, 1994, Ser. No. 194,955
Int. Cl.[6] F28D 1/02
U.S. Cl. 165—153 8 Claims



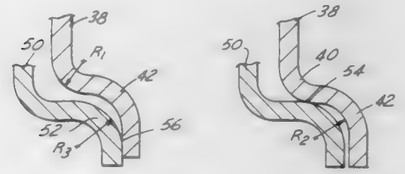
1. In the manufacture of a plate type heat exchanger having fluid tubes with an interior flow space formed between pairs of metal plates, each of the pair of plates having contacting edge portions, a fluid inlet tube with a pair of plates defining semi-cylindrical portions which when mated together have abutting edges and define an inlet aperture, a tubular inlet member with an end portion inserted into the inlet aperture, and permanent clamp means for the semi-cylindrical portions in the form of a radially constricted metal annulus of braze compatible material positioned around the semi-cylindrical portions and the inlet end portion, the constriction of the annulus pressing the semi-cylindrical portions and against the end portion of the inlet member to positively engage the edges of the semi-cylindrical portions and eliminate gaps which would not be filled in a subsequent furnace brazing operation, a method of constricting the annulus, comprising: positioning a relatively loose annulus around the mated semi-circular portions and the end portion of the inlet member; applying sufficient electromagnetic energy in close proximity to the annulus to cause the annulus to radially constrict about the semi-circular portions whereby the edge portions are engaged and gaps which braze filler would not fill are eliminated.

5,390,733

HEAT EXCHANGER MANIFOLD ASSEMBLY

Darryl L. Young, Belleville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1993, Ser. No. 172,788
Int. Cl.[6] F28F 9/02
U.S. Cl. 165—173 8 Claims



1. A manifold assembly for use with a heat exchanger having a plurality of fluid carrying tubes for an automotive vehicle, comprising:

an elongate tank member having a substantially U-shaped cross-section and defining an inner surface and an outer surface, said tank comprising a base portion and a wall circumferentially surrounding the base portion and depending generally perpendicularly to the plane thereof, said wall including a flange portion depending downwardly and outwardly from a terminating end thereof, said flange portion including a first arcuate portion having a first predetermined radius of curvature relative to the inner surface and a second arcuate portion having a first predetermined radius of curvature relative to the inner surface of said tank; and

an elongate header plate having a length substantially equal to the length of said tank member, said header plate comprising a base portion circumferentially surrounded by a flange portion depending outwardly therefrom, said base portion including a plurality of apertures therein for receiving the tubes of the heat exchanger therethrough, said flange portion terminating in an arcuate portion configured to contact said first and second arcuate portions of said tank member, said arcuate portion of said flange portion having a first predetermined radius of curvature relative to the top surface of said header plate, said first radius of curvature of said flange portion being greater than the radius of curvature of said second arcuate portion of said tank flange portion, such that at least one brazing surface is formed at said arcuate portions of said tank flange portion and said header plate flange portion by the engagement of said tank member to said header plate when said tank member and said header plate are brazed together.

8. A method of making a manifold assembly for use with a heat exchanger having a plurality of fluid carrying tubes for an automotive vehicle, comprising the steps of:

forming an elongate tank member having a substantially U-shaped cross-section which defines an inner surface and an outer surface, said tank comprising a base portion and a wall circumferentially surrounding the base portion and depending generally perpendicularly to the plane thereof;

forming a flange portion on a terminating end of said wall around the entire circumference thereof such that said flange portion is S-shaped and includes a first arcuate portion and a second arcuate portion, said second arcuate portion having a first predetermined radius of curvature relative to the inner surface of said tank;

forming an elongate header plate having a length substantially equal to the length of said tank member, said header plate comprising a generally planar base portion;

forming a plurality of apertures in said base portion of said header plate for receiving the tubes of the heat exchanger therethrough;

forming a flange portion circumferentially surrounding said base portion of said header plate such that said flange portion depends outwardly therefrom and terminates in an arcuate portion having a first predetermined radius of curvature relative to the top surface of said header plate which is greater than the first radius of curvature of said second arcuate portion of said tank flange portion;

placing said tank member into mating engagement with said header plate such that a pair of brazing surfaces are formed at said second arcuate portion of said tank flange portion and said header plate flange portion; and

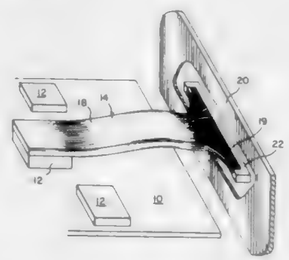
brazing the tank member to the header plate assembly in a brazing furnace at a predetermined temperature.

5,390,734

HEAT SINK

David W. Voorhes, Winchester; Richard D. Goldman, Stoughton, and Robert R. Lopez, Boxford, all of Mass., assignors to Lytron Incorporated, Woburn, Mass.

Filed May 28, 1993, Ser. No. 70,088
Int. Cl.[6] F28F 7/00
U.S. Cl. 165—185 23 Claims



1. A heat sink, comprising:

a fiber bundle expanded in a cooling region into a plurality of separate fins of one or more fibers each;

said fiber bundle including a plurality of thermally conductive fibers extending from a first fiber bundle end to a second expanded fiber bundle end forming said plurality of fins;

the fins at said second expanded fiber bundle end being spaced apart from adjacent ones of said fins in a splayed pattern; and

means for maintaining said plurality of fins in said splayed pattern, said means for maintaining being independent of said fins.

5,390,735

FULL BORE LOCK SYSTEM

Jimmie R. Williamson, Jr., Carrollton, Tex., assignor to Halliburton Company, Houston, Tex.

Continuation-in-part of Ser. No. 933,668, Aug. 24, 1992, Pat. No. 5,348,087. This application Dec. 7, 1992, Ser. No. 986,308
The portion of the term of this patent subsequent to Sep. 20, 2011, has been disclaimed.
Int. Cl.[6] E21B 23/02
U.S. Cl. 166—115 17 Claims

1. A locking system comprising:

(a) a landing nipple connectable in a well flow conduit, said landing nipple having an unrestricted longitudinal flow passage therethrough and a locking groove and profiled locating recesses in said flow passage said locating recesses having one square shoulder; and

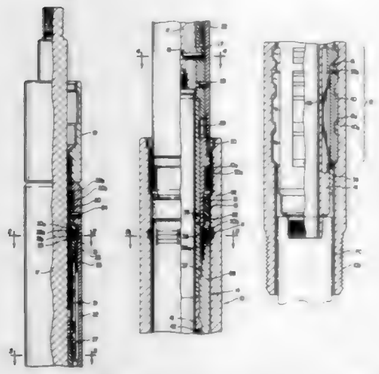
VOL 1171 ISS 3 FE 21 1995 UMI

(b) a lock mandrel to which flow control devices are connectable, said lock mandrel including:

an upper mandrel and a lower mandrel,

releasable means on said upper mandrel for locking in said landing nipple locking groove, said locking means including a number of lugs engageable in said landing nipple locking groove,

retractable, mechanically actuated sealing system means on said upper mandrel for expanding into sealing engagement with said landing nipple,



retractable locating means on said lower mandrel for automatically engaging said nipple locating recesses, said locating means having profiled locating keys with one square shoulder,

means therein for retaining said lock mandrel locked and sealed in said landing nipple, and

releasable means for releasing said lock mandrel to unlock and permit said sealing system means to retract.

5,390,737

DOWNHOLE TOOL WITH SLIDING VALVE

Ricky D. Jacobi; Kevin T. Berscheidt, and Donald F. Hushbeck, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 719,740, Jun. 21, 1991, Pat. No. 5,271,468, which is a continuation-in-part of Ser. No. 515,019, Apr. 26, 1990, abandoned. This application Jul. 29, 1993, Ser. No. 99,690

Int. Cl.[6] E21B *23/00, 33/128, 33/129, 34/14*

U.S. Cl. 166—184 20 Claims

5,390,736

ANTI-ROTATION DEVICES FOR USE WITH WELL TOOLS

Peter Budde, Chevreuse, France, assignor to Weatherford-/Lamb, Inc., Houston, Tex.

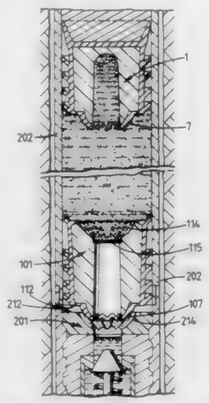
Filed Jun. 21, 1993, Ser. No. 79,614

Claims priority, application Netherlands, Dec. 22, 1992, 9202234; United Kingdom, Apr. 26, 1993, 9308594

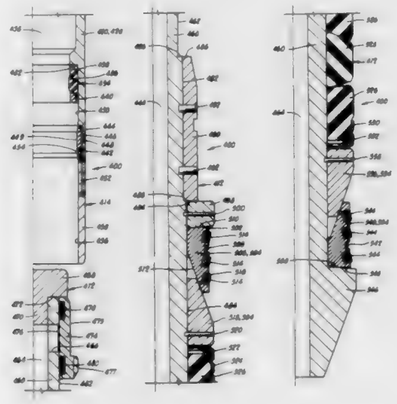
Int. Cl.[6] E21B *33/16*

U.S. Cl. 166—153 17 Claims

1. An anti-rotation device for working in combination with a female tapered corrugated device for use in a well tool, said anti-rotation device comprising a tapered male member with a top and a bottom, the top wider than the bottom, the tapered



male member having a tapered corrugated outer surface which tapers from the top to the bottom.



16. A downhole tool apparatus for use in a wellbore, said apparatus comprising a center mandrel molded of a non-metallic material and defining an unmachined, molded central opening therethrough, said mandrel being positionable at a desired location in said wellbore.

5,390,738

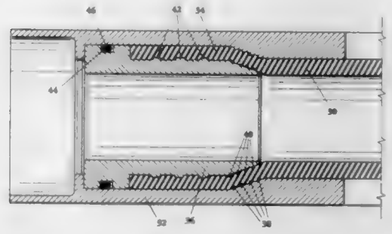
INFLATABLE PACKER INNER BLADDER RETENTION AND SEAL

David M. Eslinger, Broken Arrow, and Robert M. Sorem, Tulsa, both of Okla., assignors to Dowell Schlumberger Incorporated, Houston, Tex.

Filed Nov. 25, 1992, Ser. No. 981,712

Int. Cl.[6] E21B *33/127*

U.S. Cl. 166—187 2 Claims



1. An inflatable packer including a tubular base; an elastomeric bladder having an end portion and an inner and an outer surface, a portion of said outer surface of said bladder being in engagement with an inner bore surface of said tubular base; a retainer member having an outer surface in engagement with a portion of said inner surface of said bladder adjacent to portion of said outer surface; an elastomeric o-ring seal extending between said tubular base and said retainer member longitudinally outwardly of said bladder end portion; at least one radially extending rib located on at least one of said retainer member and said tubular member in compressive engagement with said adjacent portion of said elastomeric bladder and a plurality of radially extending teeth on both said tubular base and said retainer member longitudinally separated from said end portion of said bladder and from said at least one radially extending rib.

5,390,739

HYDRAULIC TOOL AND HYDRAULIC PRESSURE DEVICE

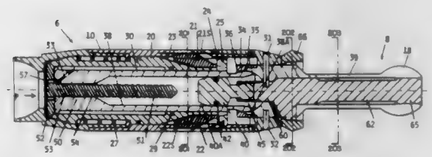
Roger Tailby, Ålgård, Norway, assignor to Den Norske Stats Oljeselskap A.S, Stavanger, Norway

Filed May 11, 1993, Ser. No. 59,333

Claims priority, application Norway, May 13, 1992, 92.1898

Int. Cl.[6] E21B *23/04*

U.S. Cl. 166—212 16 Claims



1. Hydraulic tool for automatically carrying out a sequence of relative axial movements in an oil or gas well by the application of a hydraulic pressure through a hollow tubing string run into horizontal or highly deviating well portions, comprising;

a cylindrical tool housing,

at least one concentric, hollow cylinder separately movable axially in said housing,

an inner piston axially movable within an adjacent cylinder,

retaining elements adapted to keep said inner piston and said adjacent cylinder in an initial position mutually and in relation to said housing until said retaining elements are overcome by the hydraulic pressure,

anchoring elements with associated openings in said housing for cooperation with recesses,

an outer cylinder provided with conical surfaces facing outwardly, whereby an axial movement of said outer cylinder under the influence of the hydraulic pressure is adapted to cause radial expansion of said anchoring elements by means of said conical surfaces,

a spring acting against said axial movement of the outer cylinder and serving to return the cylinder to an initial position upon termination of the application of hydraulic pressure,

springs acting against said radial expansion of the anchoring elements and serving to press the anchoring elements back radially inwards upon the return of said outer cylinder, and

parts of at least one of said cylinders and said inner piston, projecting out of said housing for carrying out said sequence of relative axial movements.

5,390,740

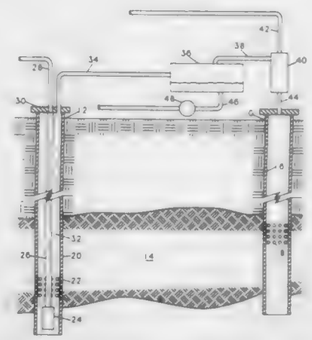
METHOD AND APPARATUS TO RECYCLE PRODUCTION WELL CASING VAPOR

Edward A. Woerheide, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 17, 1993, Ser. No. 168,292

Int. Cl.[6] E21B *43/24*

U.S. Cl. 166—266 2 Claims



1. A method for recovering and recycling production well casing vapor in a producing field wherein a patterned array of injection and production wells penetrate into a hydrocarbon containing formation to be steam flooded, comprising the steps of:

providing each injection well with casing perforated near the upper side of the formation to be treated;

providing each production well with casing perforated near the bottom of the formation, a cap closing the upper end of the casing, and production pipe extending downhole forming an annulus with the casing;

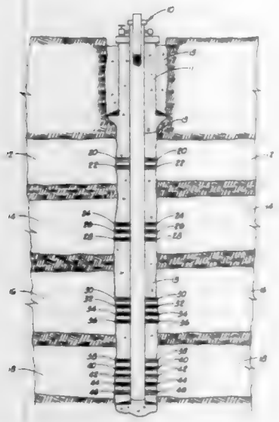
providing liquid separator means and pipe means connecting the casing annulus to the liquid separator means; providing eductor means;

providing said liquid separator means with pipe means connecting the liquid separator means to the eductor means whereby separated vapor from the liquid separator means is forwarded to said eductor means;

providing a source of pressurized steam to the eductor means whereby high pressure steam from said steam source and recovered vapors from the liquid separator means are combined and flow through the injection well to the steam chest and to the production well.

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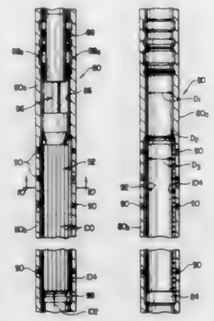
5,390,741
REMEDIAL TREATMENT METHODS FOR COAL BED METHANE WELLS
Richard A. Payton; Daniel P. Sparks, Jr., both of Birmingham, Ala.; Robert F. Singleton, Jr., Spring, Tex., and Terry L. Valentine, Alabaster, Ala., assignors to Halliburton Company, Duncan, Okla. and Taurus Exploration, Inc., Birmingham, Ala.
Filed Dec. 21, 1993, Ser. No. 171,085
Int. Cl.[6] E21B *37/00, 43/27*
U.S. Cl. 166—284 20 Claims



1. A method of remedially treating a coal bed methane and water well to enhance the production of methane therefrom, said well penetrating one or more coal seams which include one or more producing zones communicated with said well by perforations therein comprising the steps of:
(a) pumping a clean out fluid into said well and into said producing zones by way of said perforations;
(b) continuing to pump said clean out fluid while adding perforation sealers thereto to thereby seal perforations and producing zones which are not plugged and to divert said clean out fluid to perforations and producing zones which are plugged by solid materials whereby at least some of said solid materials are cleaned out of said perforations and producing zones;
(c) pumping an aqueous acid solution into said well and into said partially plugged perforations and producing zones whereby said acid solution reacts with and dissolves acid soluble solid materials in said perforations and producing zones; and
(d) reverse flowing said clean out fluid, said perforation sealers, solid materials suspended in said clean out fluid and spent acid solution out of said well.

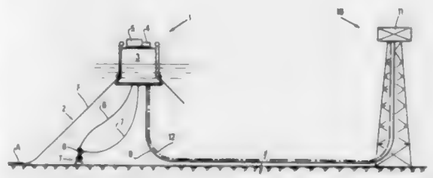
5,390,742
INTERNALLY SEALABLE PERFORABLE NIPPLE FOR DOWNHOLE WELL APPLICATIONS
Christopher A. Dines, Dallas; Clark E. Robison, Plano; Perry C. Shy, Arlington, and William R. Welch, Carrollton, all of Tex., assignors to Halliburton Company, Houston, Tex.
Continuation-in-part of Ser. No. 950,456, Sep. 24, 1992. This application Mar. 30, 1993, Ser. No. 39,851
Int. Cl.[6] E21B *33/13, 43/12*
U.S. Cl. 166—297 18 Claims

1. A subterranean well completion comprising:
a subterranean well bore;
a tubular well flow conductor extending through said well bore and having coaxially installed therein a tubular nipple extending along an axis,
said nipple having a radially enlarged annular interior side surface pocket area formed in a longitudinal section of said nipple through which flow openings radially extend; and
a tubular sealing member coaxially and nonmovably disposed within said longitudinal section, said tubular sealing member being in forcible, radially outwardly directed



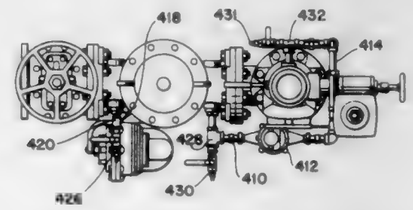
contact with the interior side surface of said longitudinal section and sealing off said flow openings,
said nipple having a minimum interior diameter less than the interior side surface diameter of said pocket area, and
said tubular sealing member having an interior diameter generally equal to or greater than said minimum interior diameter of said nipple.

5,390,743
INSTALLATION AND METHOD FOR THE OFFSHORE EXPLOITATION OF SMALL FIELDS
Jean-François Giannesini, Saint Cloud, France, assignor to Institut Francais Du Petrole, Rueil Malmaison, France
Filed Aug. 11, 1993, Ser. No. 104,571
Claims priority, application France, Aug. 11, 1992, 92 09988
Int. Cl.[6] E21B *43/017*
U.S. Cl. 166—366 11 Claims



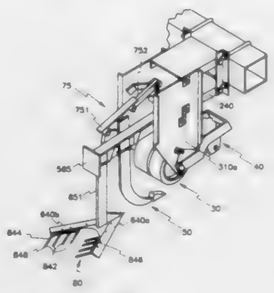
1. A system for optimizing the development of oil-containing effluent fields located below a water layer and in communication with at least one production well, said system comprising, in combination, a main platform equipped with means for treating the effluents coming from said at least one production well, at least one floating structure, a pump assembly on the floating structure, said floating structure being substantially positioned close to at least one underwater wellhead of the at least one production well, first transfer means for transferring the effluents from at least one production well via the at least one underwater wellhead upwardly towards said floating structure and second transfer means for transferring effluents from the floating structure towards the main platform via said pumping assembly; at least one means on the floating structure for taking a fluid from said effluents and at least one injection line for injecting said fluid, said injection line comprising a first end connected to said at least one means on the floating structure and a second end located substantially at the level of the at least one underwater wellhead for injecting said fluid into the first transfer means, thereby facilitating upflow of the effluents.

5,390,744
COMBINED ALARM AND BACK-FLOW PREVENTION ARRANGEMENT FOR FIRE SUPPRESSION SPRINKLER SYSTEM
George J. McHugh, Broomall, Pa., assignor to Back-Flo Alarm Valve Co., Inc., West Chester, Pa.
Continuation of Ser. No. 811,291, Dec. 20, 1991, Pat. No. 5,297,635, which is a continuation-in-part of Ser. No. 733,203, Jul. 19, 1991, Pat. No. 5,154,232, which is a continuation of Ser. No. 571,406, Aug. 23, 1990, abandoned, which is a continuation of Ser. No. 335,381, Apr. 10, 1989, Pat. No. 4,991,655, which is a continuation-in-part of Ser. No. 269,314, Nov. 10, 1988, abandoned, which is a continuation-in-part of Ser. No. 250,834, Sep. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 247,073, Sep. 21, 1988, abandoned. This application Apr. 20, 1993, Ser. No. 58,431
Int. Cl.[6] G08B *17/00*
U.S. Cl. 169—23 7 Claims



1. A backflow prevention and flow detection arrangement having a main conduit, said backflow prevention and flow detection arrangement comprising:
a first check valve provided in said main conduit;
a second check valve provided in said main conduit downstream of said first check valve, said first and second check valves together providing a double check valve, backflow prevention device;
means for providing fluid communication between said first check valve and said second check valve through a passageway;
bypass meter piping means for recording a flow through the main conduit, said bypass meter piping means having a check valve means for maintaining the integrity of the backflow prevention arrangement, an inlet of the bypass meter piping means being provided in fluid communication with the main conduit between the first and second check valves wherein said check valve means of said bypass meter piping means includes only one check valve, said arrangement further comprising a test cock provided in fluid communication with the inlet of the bypass meter piping means and in fluid communication with the main Conduit downstream of the first check valve and further comprising another test cock in fluid communication with the outlet of the bypass meter piping means.

5,390,745
CULTIVATOR WITH SWEEP AND SIFTING ASSEMBLIES
Jerrell W. Harden, Banks, Ala., assignor to Brown Manufacturing Corporation, Ozark, Ala.
Continuation of Ser. No. 901,475, Jun. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 879,318, May 7, 1992. This application Jul. 13, 1994, Ser. No. 274,373
Int. Cl.[6] A01B *39/08, 5/04*
U.S. Cl. 172—174 20 Claims



1. A cultivator, comprising:
a substantially rigid frame;
a chisel coupled to said frame so that said chisel penetrates the ground surface during operation of the cultivator for breaking up soil at and below the ground surface and urging the broken up soil upwardly toward the surface;
heave limiter means mounted to said frame in a fixed spatial relationship to said chisel so that said heave limiter means presses downwardly on and travels over the surface of the ground during operation of the cultivator for cooperating with said chisel to crush the broken up soil urged upwardly by said chisel and for maintaining the surface of the ground substantially level following passage of said chisel therethrough;
a sweep support member having one end portion mounted to said frame in a fixed spatial relationship to said chisel and located behind said chisel relative to the direction of travel of the cultivator;
a wing-like member extending outwardly of a line extending in the direction of operation of the cultivator in a plane substantially orthogonal to the longitudinal axis of said chisel fixedly mounted to a second end portion of said sweep support member so that said wing-like member travels below the surface of the ground above said chisel during operation of the cultivator; and
a sifting member coupled to said wing-like member so that said sifting member travels below the surface of the ground during operation of the cultivator for sifting weed roots and for causing the weed roots to be dislodged from the soil.

5,390,746
SIDE CHOP HOE
Ardle E. Page, 1930 Breakwood Cir., Albany, Oreg. 97321, assignor to Ardle E. Page, Albany, Oreg.
Filed Jan. 29, 1993, Ser. No. 11,278
Int. Cl.[6] A01B *1/22;* B25G *1/02*
U.S. Cl. 172—371 3 Claims

3. In a combination comprised of an elongated handle of rigid material and a gripping means, the improvement wherein said gripping means is tubular in construction and completely surrounds said handle and wherein an interior diameter of said gripping means is slightly larger than said handle and further an interior of said gripping means differs in shape from an exterior of said handle whereby said gripping means is easily

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moved along the handle and also holds the handle firmly with a grasp of a hand and yet stops itself and rests in place when



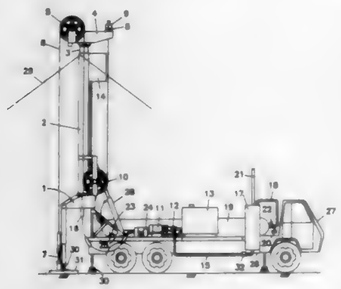
released by said hand wherein said gripping means is formed out of round and said elongated handle is round in formation.

5,390,747

WELL RIG LIFT SYSTEM AND A HYDRAULIC ENERGY-STORING WELL RIG LIFT SYSTEM

Xinyi Gu; Yunan Wang; Wei Pan; Guihua Luan; Dongchang Sun; Zhian Liu, and Ruji Bing, all of Dongying, China, assignors to Drilling Technology Research Institute of Shengli Oilfield, China

Filed Dec. 14, 1992, Ser. No. 990,663
Int. Cl.[6] E21B *19/08*
U.S. Cl. 173—4 30 Claims



1. A hydraulic energy-storing well rig lifting system for lifting and lowering a pipe string, comprising:

a well rig having a travelling-beam, a rig frame and a pair of traction ropes each having two ends extending around sheaves carried by said travelling beam;

a hydraulic source for providing high pressure oil including an oil tank, a power machine, a hydraulic pump, and oil pipelines;

an energy-storing system including a high pressure energy-storing oil cylinder connected to said oil tank for storing high pressure oil provided by said hydraulic source, and a high pressure nitrogen gas or air vessel with a constant high pressure in communication with said high pressure energy-storing oil cylinder by a gas pipe for maintaining a substantially constant high pressure in the energy-storing oil cylinder equal to said high pressure in said high pressure gas vessel;

a cylinder group mounted vertically on said rig frame and having chambers and a moving part connected to said travelling beam;

a normal pressure top oil tank mounted above said cylinder group for providing a substantially constant normal pressure oil;

conduits for intercommunication between said chambers and said high pressure energy-storing oil cylinder and between said chambers and said normal pressure top oil tank, respectively; and

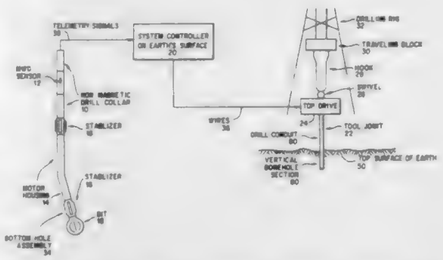
a pilot valve assembly for selectively controlling said intercommunication so as to provide an appropriate lifting force larger than the gravity of the pipe string to utilize the high pressure oil in the energy-storing oil cylinder to lift the pipe string during a lifting operation, and to provide an appropriate lifting force less than the gravity of the pipe string to lower the pipe string during a lowering operation and to press the high pressure oil back to the energy-storing oil cylinder so as to recover potential energy of the pipe string released during the lowering operation.

5,390,748

METHOD AND APPARATUS FOR DRILLING OPTIMUM SUBTERRANEAN WELL BOREHOLES

William A. Goldman, 14230 Wunderlich Rd., No. 160, Houston, Tex. 77069

Filed Nov. 10, 1993, Ser. No. 134,747
Int. Cl.[6] E21B *44/00*
U.S. Cl. 175—24 25 Claims



1. A method of drilling a borehole through formations of the earth, to a targeted position relative to the entrance to the well at the surface of the earth with a drilling mechanism including a drill bit having an orientable bit drilling face secured immediate the distal end of a drilling conduit, comprising the steps of:

a. providing:

(i) means at the surface of the earth for manipulating the drilling conduit, the drilling mechanism, and the drill bit;

(ii) means within the borehole for continuously sensing, converting, and telemetering to a receiving means data relating to the location and orientation of the borehole and the drilling mechanism;

(iii) receiving means for continuously receiving from the sensing means the current orientation and location of the drilling mechanism, and the current orientation and location of the borehole;

b. inserting into the borehole through said entrance a drilling conduit including the drilling mechanism and the drill bit,

c. continuously sensing the current orientation and position in the borehole of the drilling mechanism, and the orientation and location of the borehole;

d. continuously converting to downhole acoustic or radio frequency signals the continuously sensed data in step "c";

e. transmitting the acoustic or radio frequency signals through the telemetry means to the earth's surface; and

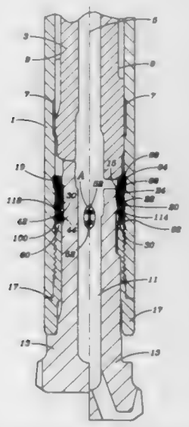
f. converting at the surface of the earth the telemetry signals received by the receiving means to control signals for re-orientation of the bit drilling face, whereby any such re-orientation results in the borehole being drilled at an optimum trajectory from the entrance to the borehole to any targeted position below the surface of the earth

5,390,749

APPARATUS FOR POSITIONING A SPLIT RETAINING RING IN A DOWN-HOLE PERCUSSIVE DRILL

Leland H. Lyon, Roanoke, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 31, 1994, Ser. No. 191,821
Int. Cl.[6] E21B *4/14*
U.S. Cl. 175—296 10 Claims



1. A chuck for a percussive, down-hole drill, for positioning a split retaining ring against an internal surface of a hollow, cylindrical drill casing, said chuck comprising:

(a) a hollow, cylindrical body encircling a longitudinal axis, said body having a longitudinal length extending between a top end and a bottom end, a radial thickness extending between an external surface and an internal surface;

(b) said external surface forming a base at said bottom end and a threaded shank at said top end;

(c) said internal surface forming a plurality of parallel, longitudinally extending splines, said splines extending to said top end and ending adjacent said bottom end; and

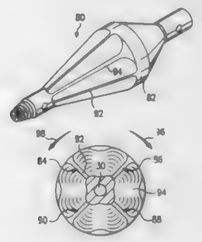
(d) means on said top end for developing a longitudinal load exerted thereon into a radial load that exceeds a preselected minimum radial load but does not exceed a preselected maximum radial load.

5,390,750

DOWNHOLE COMPACTION AND STABILIZATION BACK REAMER AND DRILL BIT

Arthur D. Deken, and Cody L. Sewell, both of Perry, Okla., assignors to The Charles Machine Works, Inc., Perry, Okla.

Continuation of Ser. No. 764,180, Sep. 23, 1991, Pat. No. 5,220,964. This application Jun. 21, 1993, Ser. No. 79,197
Int. Cl.[6] E21B *7/08, 7/28*
U.S. Cl. 175—406 2 Claims



1. A back reamer for backreaming and compacting a pilot bore, the head mounted on a drill string for rotation with the drill string about a first axis of the drill string and for linear motion with the drill string along the axis, the back reamer comprising:

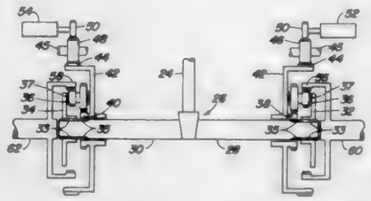
a head defining at least one bidirectional cam to contact the walls of the pilot bore to enlarge the pilot bore and compact the walls of the bore as the head is rotated in either direction about the first axis and moved along the axis, the body having a fluid passage formed therethrough, at least one controlled fluid outlet formed in the body between the passage and exterior of the body for flow of a fluid in a controlled manner from the passage exterior the body to enhance backreaming operation.

5,390,751

PLANETARY STEERING SYSTEM FOR A SKID-STEERED VEHICLE

Craig A. Puetz, Waterloo; Mervin P. Kizlyk, Cedar Falls, both of Iowa, and James A. Nagorcka, Tarrington, Australia, assignors to Deere & Company, Moline, Ill.

Filed Nov. 19, 1993, Ser. No. 154,838
Int. Cl.[6] B62D *11/18*
U.S. Cl. 180—6.48 4 Claims



1. A steering system for a tracked vehicle, the steering system comprising:

a main drive shaft;

a right drive shaft being driven by the main drive shaft, the right drive shaft being provided with a right planetary carrier having planet gears mounted thereon;

a left drive shaft being driven by the main drive shaft, the left drive shaft being provided with a left planetary carrier having planet gears mounted thereon;

means for locking the right and left drive shafts together;

a right sun gear contacts the planet gears of the right planetary carrier;

a left sun gear contacts the planet gears of the left planetary carrier;

a right hydraulic motor rotates the right sun gear;

a left hydraulic motor rotates the left sun gear;

a right ring gear contacts the planet gears of the right planetary carrier, the right ring gear is coupled to a right wheel for rotating the right wheel;

a left ring gear contacts the planet gears of the left planetary carrier, the left ring gear is coupled to a left wheel for rotating the left wheel;

whereby the left and right hydraulic motors add or subtract rotational speed of the right and left wheels independently of each other.

5,390,752

DRIVE TRAIN SUSPENSION SYSTEM

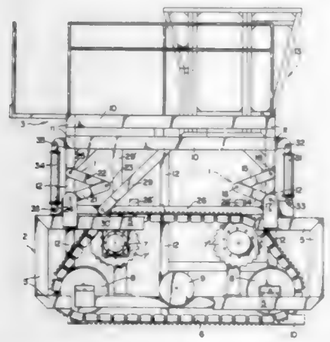
Marvin L. Urbanczyk, White Deer, Tex., assignor to Scarab Manufacturing and Leasing, Inc., White Deer, Tex.

Filed Mar. 31, 1993, Ser. No. 41,319
Int. Cl.[6] B62D *55/116*
U.S. Cl. 180—9.52 24 Claims

1. A drive train suspension system for a vehicle comprising, a vehicle drive train assembly the vehicle drive train assembly

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comprising, an open framework positioned on each side of the vehicle, an endless track and associated drive sprockets and idler wheels mounted in said open framework, a vehicle frame, a linkage assembly connected between the vehicle drive train assembly and the vehicle frame, whereby the vehicle frame is articulately connected to the vehicle drive train assembly, fluid motors connected between the vehicle frame and drive train assembly, whereby the position of the vehicle frame relative to



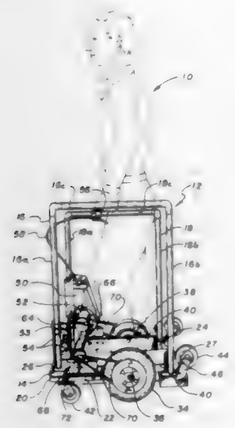
the drive train assembly can be varied, to thereby minimize potential damaging stress imparted to the drive train assembly by lateral movement of the drive train relative to the vehicle frame, and a stabilizing link assembly connected between the drive train assembly and vehicle frame, whereby potential damaging stress imparted to the drive train assembly by the forward and rearward shifting of the drive train assembly relative to the vehicle frame is minimized.

5,390,753

PERSONAL WALKER WITH POWERED WHEELS

Bruce H. Parker, 26038 Charing Cross Rd., Valencia, Calif. 91355

Continuation of Ser. No. 642,225, Jan. 15, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 17,238
Int. Cl.[6] B60K *1/00*
U.S. Cl. 180—19.1 5 Claims



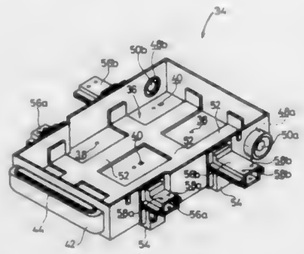
1. Personal walker for the infirm and handicapped comprising an upright for grasping by a user in a walking position, a horizontally extended, generally U-shaped base supporting said upright in use position, said base including a transverse front portion and left and right side portions extending rearwardly from said base front portion in spaced relation whereby said base is open rearwardly to admit the feet of the user, left and right drive wheels carried on said base side portions, a plurality of idler wheels carried on said side portions to support said walker in upright position cooperatively with said drive wheels, a motor supported on said base, and means coupling said drive wheels to said motor for selective operation to advance said walker in concert with walking steps of the user, said coupling means comprising first belt means coupling said motor with a drive gear, a differential having first and second gears fixed on separate tubular gear shafts, second belt means including a separate belt for drivingly coupling each of said tubular gear shafts to respective ones of said drive wheels, a central shaft extending through both of said tubular gear shafts and through said differential, said tubular gear shafts being journaled on said central shaft to define an axis of rotation for said first and second gears, and third belt means including a belt engaged with said first and second gears and a belt support plate supporting said belt between said gears, said third belt means being rotatable about said axis of gear rotation.

5,390,754

BATTERY BOX FOR AN ELECTRIC VEHICLE

Toshio Masuyama; Masami Suzuki, and Hiroyuki Fujimoto, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1993, Ser. No. 3,582
Claims priority, application Japan, Jan. 16, 1992, 4-005849; Jan. 16, 1992, 4-005933
Int. Cl.[6] B60K *1/04*
U.S. Cl. 180—68.5 26 Claims



1. A battery box, for use in an electric vehicle, comprising:
a box body for mounting on said electric vehicle for accommodating therein a plurality of batteries for powering said electric vehicle; and
a reinforcement member provided with said box body for supporting at least respective portions of all the batteries in said box body, wherein said reinforcement member comprises an inner plate means which extends within said box body and outer plate means which extend outwardly from said box body and is shaped in cross section so as to correspond to said inner plate.

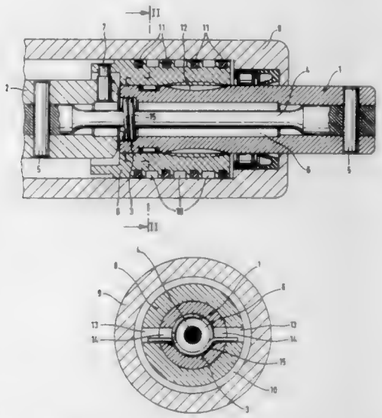
5,390,755

POWER STEERING SERVO CONTROL FOR MOTOR VEHICLES

Wolfgang Joerg, Stuttgart, and Arno Roehringer, Ditzingen, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Dec. 10, 1993, Ser. No. 164,931
Claims priority, application Germany, Dec. 10, 1992, 4241531
Int. Cl.[6] B62D *5/08*
U.S. Cl. 180—146 4 Claims

1. Serve control for power steering for a motor vehicle, comprising:
a shaft which serves for actuation and is subdivided axially into an input side primary shaft part and an output side secondary shaft part, said input shaft part projecting axially into a bush part coupled fixedly in terms of rotation to the output shaft part and forms with the latter a servo-valve arrangement working in dependence on relative rotations between the input and output shaft parts, in the manner of a rotary-slide arrangement,
a torsion bar which connects the shaft parts in a rotationally elastic manner and which is arranged in aligned axial bores of the shaft parts, said torsion bar having a smaller diameter than the axial bore in the input shaft part so as to leave an annular space free in the input shaft part, and
a prestressed spring which is effective between the bush part and the input shaft part and the prestress of which seeks to



keep the bush part and the input shaft part in a middle position relative to one another,
wherein the input shaft part and the bush part have corresponding axial slots open towards the output shaft part, said axial slots being disposed at respective ends of the input shaft part and the bush part which face the other shaft part, and wherein the prestressed spring is a leg spring arranged in the annular space between the torsion bar and the input shaft part, legs of the leg spring projecting respectively into corresponding axial slots of the bush part and of the input shaft part said legs having a smaller cross-section in a circumferential direction of a shaft axis than the axial slots, said legs resting in a middle position on respective corresponding axial edges of the axial slots.

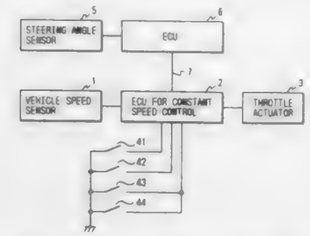
5,390,756

CONSTANT SPEED CONTROL DEVICE

Etsuya Yokoyama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1993, Ser. No. 19,259
Claims priority, application Japan, Feb. 28, 1992, 4-043066
Int. Cl.[6] B60K *31/00*
U.S. Cl. 180—178 5 Claims

1. A constant speed control device for controlling a vehicle speed at a constant speed, said device comprising:
a vehicle speed sensor for detecting an actual vehicle speed;
a steering angle detecting means for detecting a steering angle of the/vehicle;
running condition setting means for setting at least one of an aimed vehicle speed for the constant speed control, an activation and cancellation of the constant speed control; and
control means for calculating vehicle speed control variables for the constant speed control on the basis of said steering angle and a deviation between said actual vehicle speed detected by said vehicle speed sensor and said aimed



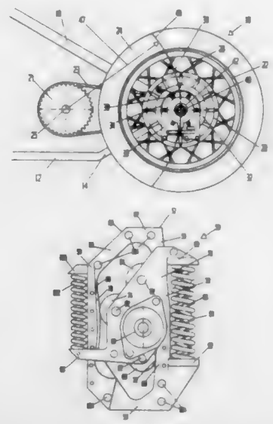
vehicle speed set by said running condition setting means, to perform said constant speed control.

5,390,757

INTRA-WHEEL REAR SUSPENSION SYSTEM FOR MOTORCYCLES

Jefferson R. Smith, Huntington Beach, Calif., assignor to Dew Manufacturing Company, Inc.

Filed Nov. 19, 1993, Ser. No. 154,936
Int. Cl.[6] B62K *11/00*
U.S. Cl. 180—227 10 Claims



1. A shock absorbing mechanism for a motorcycle having a rear wheel with an inner hub with a sprocket chain extending from a drive sprocket gear of said motorcycle to said rear wheel, which comprises:
a. an open polygon frame having two opposite and substantially parallel walls with interior side walls having a curvature substantially equal to an arc at the radius of curvature about the drive sprocket gear of the motorcycle;
b. a carrier mounted for movement with the frame and comprising first and second side plates which are secured together in a spaced-apart parallel array;
c. a plurality of cam rollers pivotally mounted between the first and second side plates of the carrier and positioned adjacent the opposite side walls so as to be in rolling bearing contact with the interior side walls of the frame;
d. a first fixed abutment bracket fixedly secured to one external edge of the frame adjacent an upper end of the frame and a second fixed abutment bracket secured to an opposite external edge of the frame;
e. a first moving abutment bracket fixedly secured to a lower end of the carrier opposite said first fixed abutment

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bracket and a second moveable abutment bracket fixedly secured to an upper end of the carrier, opposite said second fixed abutment bracket;

f. a first plura'ity of springs received between the first fixed and first moveable abutment brackets and a second plurality of compression springs retained between the second fixed and second moveable abutment brackets; and

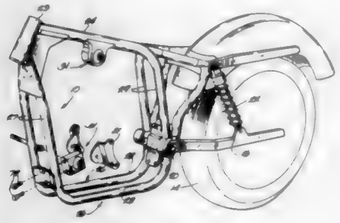
g. a wheel support shaft received between aligned journals on the first and second side plates of the carrier, orthogonal thereto.

5,390,758

MOTOR MOUNT

Timothy G. Hunter, Milwaukee; John J. Myers, Pewaukee, and Paul C. Wiers, Wauwatosa, all of Wis., assignors to Harley-Davidson, Inc., Milwaukee, Wis.

Filed Oct. 19, 1993, Ser. No. 139,406
Int. Cl.[6] B62K *11/04, 25/04;* B62M *7/04*
U.S. Cl. 180—228 6 Claims



1. The combination of a motorcycle having a frame which includes an upper section and front and rear portions, an engine, first engine mounting means on said upper section and connected to an upper portion of the engine, second engine mounting means on said front portion and connected to a front portion of the engine, pivot means mounted on said rear portion, a rear portion of the engine being pivotally connected to said pivot means, said first and second engine mounting means and said pivot means defining a plane, said engine being connected to said pivot means for pivotal movement about an axis perpendicular to said plane, a swing arm pivotally coupled to said pivot means for pivotal movement about said axis, said first and second engine mounting means each including resilient means for coupling said engine to said frame in a direction generally parallel to said plane to permit said engine to vibrate in said plane and restraining means for coupling said engine to said frame in a direction perpendicular to said plane to restrict motion in the direction perpendicular to said plane each of said-engine mounting means including elastomer means for resiliently coupling said engine to said frame and for permitting limited movement of the engine in said plane, said swing arm and engine being non-resiliently coupled to said pivot means to permit said engine and said swing arm to pivot in said plane but resists movement of said swing arm and engine in a direction perpendicular to the plane.

5,390,759

DRIVING MECHANISM FOR AN AUTOMOTIVE PROPEL DRIVE

Wilhelm Gollner, Neumunster, Germany, assignor to Sauer Inc., Ames, Iowa

Filed Aug. 10, 1993, Ser. No. 104,885
Claims priority, application Germany, Aug. 10, 1992, 4226453
Int. Cl.[6] B60K *17/14*
U.S. Cl. 180—307 8 Claims

1. A driving mechanism for a vehicle, comprising:

a plurality of wheels drivingly supporting a vehicle frame;

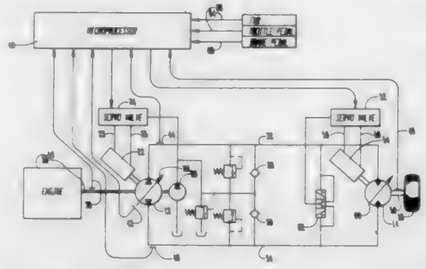
an engine on said vehicle frame for supplying rotary power at a speed to said wheels;

a hydrostatic transmission on said vehicle frame including a pump having variable displacement operatively connected to said engine and to at least one hydraulic motor;

said hydraulic motor being drivingly connected to at least one of said wheels for propelling the vehicle;

said hydrostatic transmission generating a system pressure in a pair of fluid conduits between said variable displacement pump and said hydraulic motor;

electronic control means connected to said engine and said hydrostatic transmission for controlling the displacement



of said variable displacement pump based on said speed of said engine and said system pressure of said hydrostatic transmission;

sensing means operatively attached to said pair of fluid conduits for sending signals indicative of said system pressure to said electronic control means; and

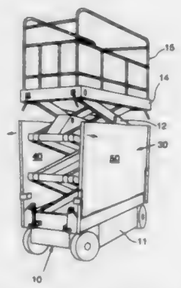
whereby said electronic control means is responsive to said system pressure and commands said variable displacement pump to alter its displacement.

5,390,760

SAFETY GUARD FOR SCISSOR LIFT

Alan E. Murphy, Kingsburg, Calif., assignor to UpRight, Inc., Selma, Calif.

Filed Apr. 12, 1994, Ser. No. 226,763
Int. Cl.[6] E04B *1/20*
U.S. Cl. 182—113 5 Claims



1. A safety guard mechanism for use in conjunction with a motorized scissor lift, the lift having a chassis and a scissor lift mechanism carried by said chassis, wherein a work platform carried by the scissor lift mechanism may be lowered to a first, lowermost position or elevated to a plurality of different heights by activating the scissor lift mechanism, said guard mechanism being movable from an inner position in which the guard mechanism is held adjacent the scissor lift mechanism when the platform is in its lowermost position, to an outer position wherein the guard mechanism is moved away from the scissor lift as the scissor lift is raised, the guard mechanism comprising:

first and second side assemblies wherein each side assembly is carried by said chassis at two or more pivot points, each side assembly having at least two posts which extend upwardly to a height which equals or is greater than the height of said scissor lift mechanism when said work platform is in its first, lowermost position,

each of said posts having a center of gravity which is located outwardly of said pivot points so that gravity tends to pull each side assembly away from said scissor lift mechanism,

limit means connected to said first and second side assemblies to restrict the outward travel of each side assembly, and

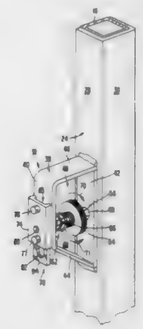
retraction means for pulling said side assemblies inwardly as said platform is lowered to its lowermost position.

5,390,761

LATCH FOR SCAFFOLDING

Eugene D. Perry, P.O. Box 306, Mooresville, Ind. 46158

Filed Sep. 21, 1993, Ser. No. 124,809
Int. Cl.[6] E06C *7/18*
U.S. Cl. 182—118 24 Claims



1. A latch mechanism for use in coupling a horizontal platform to a selected vertical position on a supporting structure, the mechanism comprising:

a frame member,

means for locking the frame member to the supporting structure, the locking means being coupled to the frame member and movable between a locking position engaging the supporting structure and an unlocking position disengaging the supporting structure, and

means for selectively blocking the locking means in the locking position, the blocking means being coupled to the frame member and including first means therein for passage of a portion of the locking means.

5,390,762

AUTOMATIC CRANKCASE OIL CHANGE AND MAKEUP SYSTEM

Donald M. Nelson, Carlsbad, Calif., assignor to Power Plus Corporation, San Marcos, Calif.

Continuation-in-part of Ser. No. 833,606, Feb. 12, 1992, abandoned, which is a continuation of Ser. No. 433,397, Nov. 7, 1989, abandoned, which is a continuation of Ser. No. 343,521, Apr. 20, 1989, abandoned, which is a division of Ser. No. 85,170, Aug. 14, 1987, Pat. No. 4,869,346. This application Feb. 24, 1992, Ser. No. 840,283
Int. Cl.[6] F01M *11/04*
U.S. Cl. 184—1.5 47 Claims

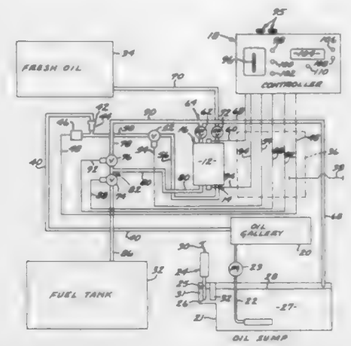
25. A system for changing oil in the lubricating oil circuit of an internal combustion engine while the engine is running, which comprises:

a source of fresh lubricating oil,

used oil displacement means having a fixed volume and having an input connected to said circuit and an output, said used oil displacement means being operable to periodically receive a series of small increments of used lubricating oil from said circuit according to said fixed volume so as to periodically remove such increments from said circuit;

first sensing means operatively associated with said used oil displacement means for sensing completion of said receiving of each of said increments of used oil from said circuit, and in response to each such sensing to cause removal of such increment just received from said displacement means; and

fresh oil displacement means having an input connected to said fresh oil source and an output connected to said



circuit and being operable to periodically receive and deliver a series of small increments of fresh oil to said circuit at substantially the same periodicity as said used oil displacement means removes used oil increments from said circuits;

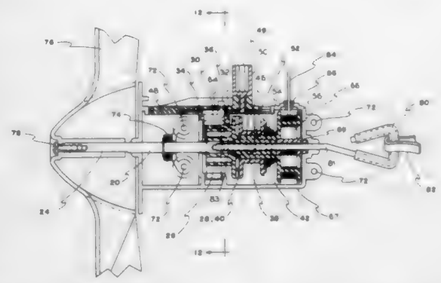
each said fresh oil increment being volumetrically not substantially less than a corresponding said used oil increment and being delivered to said circuit not substantially later than said removal of such corresponding used oil increment, whereby the volume of oil in said circuit is not materially reduced by said removing of each of said used oil increments.

5,390,763

WINDING MECHANISM FOR RUBBER BAND MOTOR

Ronald Liedtke, Fox Lake, Ill., assignor to Marchon, Inc., Vernon Hills, Ill.

Filed Feb. 12, 1993, Ser. No. 16,845
Int. Cl.[6] F03G *1/04, 1/08;* A63H *27/00*
U.S. Cl. 185—39 11 Claims



1. A winding mechanism for a rubber band motor, said mechanism comprising: a shaft having means on one end for attachment to a rubber band and means on the other end for attachment to a driven device, a pulley having a self retracting string wound thereon, and a ratchet means interposed between said shaft and said pulley for translating a rotation of said

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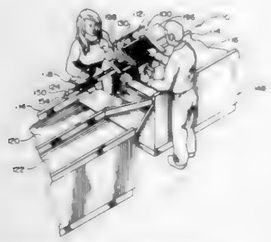
pulley into a rotation of said shaft, whereby said rubber band may be wound to store energy in response to pulling said string, said pulley being separate from said ratchet means, means for holding said shaft after said string is pulled and while said string is being self retractingly rewound on said pulley, and means for selectively releasing said holding means to deliver the energy stored in said rubber band.

5,390,764

STORE CHECKOUT STAND

Philip S. Kerber, Baudette, Minn., assignor to Services, Inc., Baudette, Minn.

Filed Mar. 29, 1993, Ser. No. 40,176
Int. Cl.[6] A47F *9/04*
U.S. Cl. 186—68 **43 Claims**



1. A store checkout stand comprising:
a) a T-shaped base comprising
i) a support channel beam having first and second ends;
ii) a cross beam attached to the second end of the support channel beam, said cross beam having first and second ends:
b) a keyboard stand mounted on the cross beam of the T-shaped base proximal to the first end of said cross beam, said keyboard stand being constructed and arranged to support an independent keyboard used by a cashier; and
c) a writing stand mounted on the cross beam of the T-shaped base, proximal to the second end of said cross beam, said writing stand arranged for use by a store patron and being located at a predetermined distance from the keyboard stand.

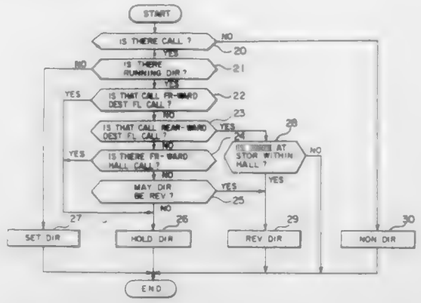
5,390,765

METHOD OF OPERATING ELEVATOR

Hideyo Ujihara, and Izumi Nanya, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 68,313, May 27, 1993, abandoned, which is a continuation of Ser. No. 754,310, Sep. 4, 1991, abandoned, which is a continuation of Ser. No. 497,640, Mar. 3, 1990, abandoned. This application Dec. 2, 1993, Ser. No. 160,330
Claims priority, application Japan, Apr. 27, 1989, 1-108078
Int. Cl.[6] B66B *1/34*
U.S. Cl. 187—380 **2 Claims**

2. A method of operating an elevator cage in accordance with specified floor and hall calls comprising the steps of:
(a) setting the cage running direction in a direction of a destination in accordance with a floor call placed after all other floor calls;
(b) maintaining the cage running direction when a new floor call is placed calling for the same cage running direction;
(c) stopping the cage to respond to hall calls placed at intermediate locations between the present position of the cage and a destination floor disposed ahead of the cage in the present running direction;
(d) maintaining the cage running direction when a hall call is placed calling for the same cage running direction and all floor calls have been extinguished;
(e) reversing the cage running direction when a new floor call is placed while the cage is at rest regardless of the presence of a previously registered floor call or hall call when a floor call is registered in a direction opposite to the set cage running direction; and



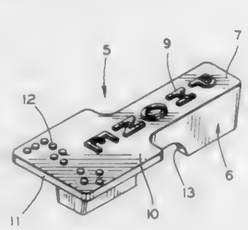
(f) setting the cage running direction to nondirectional and holding the cage in a rest position when all hall calls and floor calls have been extinguished;
whereby the running direction of the cage is passenger controlled.

5,390,766

INDICATOR PANEL FOR ELEVATOR CARS HAVING AN EMERGENCY CALLING DEVICE DOOR HANDLE WITH INFORMATION AND OPERATING AIDS

Adolf H. Martin, Glenview, Ill., assignor to Inventio AG, Hergiswil, Switzerland

Filed Jul. 26, 1993, Ser. No. 96,868
Int. Cl.[6] B25G *1/00*
U.S. Cl. 187—396 **14 Claims**



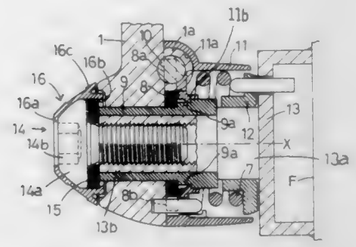
1. An indicator panel with hinged door for elevator cars, a plurality of operating elements and indicating elements mounted on the panel, a handle attached to the door, and an emergency calling device crated behind the door, the handle comprising:
a body having a front surface facing a us when said body is attached to an outer surface of a door of an elevator indicator panel;
at least one raised printed character form on said front surface of said body for indicating information about an emergency calling device to a user of an elevator;
a raised information aid formed on said front surface of said body for indicating information about an emergency calling device to a visually disabled user of an elevator, said front surface of said body including an enlarged lower portion formed by a flange extending outwardly from said body, and said information aid being formed on said enlarged lower portion; and
an operating aid formed on said body for use by a physically disabled user of an elevator for opening a door of an elevator indicator panel.

5,390,767

BRAKE CALIPER SUPPORT STRUCTURE FOR A BICYCLE

Masashi Nagano, Izumi; Tsuyoshi Sakashita, and Masanori Sugimoto, both of Sakai, all of Japan, assignors to Shimano Inc., Osaka, Japan

Continuation of Ser. No. 10,152, Jan. 28, 1993, abandoned. This application Jun. 1, 1994, Ser. No. 252,396
Claims priority, application Japan, Feb. 7, 1992, 4-004562[U]; Feb. 10, 1992, 4-004852[U]; Feb. 21, 1992, 4-007537[U]
Int. Cl.[6] B62L *1/14*
U.S. Cl. 188—24.19 **20 Claims**



1. A caliper brake for a bicycle comprising:
a stationary member fixed to a bicycle frame;
support means fixed to said stationary member;
a brake caliper pivotably supported by said support means;
an elastic member having one end thereof engaged with said brake caliper;
elasticity adjusting means disposed between said brake caliper and said elastic member for adjusting elasticity of said elastic member, said elasticity adjusting means including an engaging member freely rotatably mounted on said support means, said engaging member being engaged with said one end of said elastic member; and
restricting means for restricting displacement of said engaging member on said support means, said restricting means including a groove formed peripherally of said support means and a stopper, said stopper being engaged with said groove and thereby being restricted against displacement on said support means, said stopper being separate from said support means, said restricting means being arranged such that displacement of said engaging member on said support means is restricted to a predetermined amount by contact of said engaging member against said stopper.

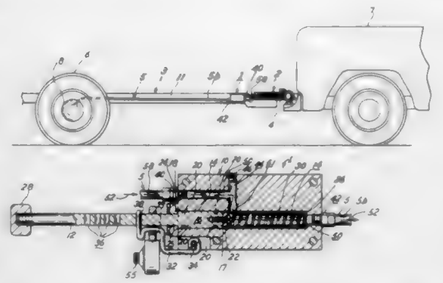
5,390,768

MANUALLY ACTUATED HYDRAULIC BRAKE DEVICE FOR USE WITH A VEHICLE SURGE BRAKE SYSTEM

Paul A. Borkowski, 56385 Westlea Dr., South Bend, Ind. 46619

Filed Jun. 30, 1993, Ser. No. 85,291
Int. Cl.[6] B60T *7/20, 11/00*
U.S. Cl. 188—112 R **9 Claims**

3. In combination a trailer with a surge brake system and brake locking device, said trailer including a frame and a plurality of wheels, said surge brake system carried by said trailer frame including a brake associated with each said wheel, and actuating means for actuating each said brake connected by a brake fluid line to each said brake to restrict movement of said associated wheel upon a reduction in forward momentum of said trailer, said brake locking device connected into said brake fluid line and including piston means for opening and closing said brake fluid line, said piston means also for pressurizing brake fluid in said brake fluid line to lock each said brake and immobilize said associated wheel, said brake locking device further including an accessible shank connected to said piston means and a pivotally disposed lock pin, said shank including a hole and said lock pin being engageable with said hole to



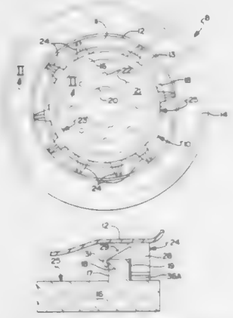
secure the position of said piston means closing and pressurizing said brake fluid line.

5,390,769

DRUM BRAKE SPRING CLIP WITH SQUEALER BAND RETAINER

John J. Bair, Plainwell, Mich., and Ralph A. Lindgren, Jr., Paradise Valley, Ariz., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 26, 1993, Ser. No. 130,815
Int. Cl.[6] F16D *65/10*
U.S. Cl. 188—218 R **3 Claims**



1. A drum brake assembly with reduced brake squeal noise comprising:
an annular brake drum having an axis of rotation and having a drum outer surface and an annular squealer band mounted to said drum outer surface, said squealer band having an inner face and an outer face, said brake drum having a flange end and an open end opposite to said flange end where said squealer band is mounted substantially toward said open end;
a wheel comprised of an annular wheel rim radially spaced from said brake drum forming a gap between said drum outer surface and said wheel rim and having a hub section mounted to said flange, said wheel rim attached to said hub section;
a spring clip dampener mounted between said wheel rim and said drum outer surface between said squealer band and said open end adjacent to said squealer band outer face, said spring clip dampener comprised of a leaf spring section, said leaf spring section having a first end contacting said drum outer surface, a center section contacting said wheel rim, and a second end contacting said drum outer surface, a holding clip attached to said leaf spring section angularly extending from said center section inward across said squealer band overlapping and contacting said

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inner face of said squealer band where said spring clip dampener creates a separation force between said brake drum and said wheel rim to increase the level of vibration dampening on said brake drum thereby lowering brake squeal noise level.

5,390,770

ROTATION DECELERATION DEVICE

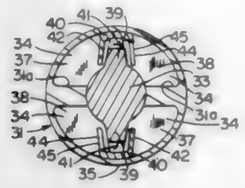
Shinjiro Miyahara, Yamatokoriyama, and Kazuaki Fujita, Nara, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Division of Ser. No. 918,367, Jul. 23, 1992, Pat. No. 5,255,396. This application Jul. 20, 1993, Ser. No. 94,846

Claims priority, application Japan, Jul. 26, 1991, 3-187358; Jul. 29, 1991, 3-188627; Aug. 22, 1991, 3-210652

Int. Cl.[6] **F16F** *9/14*

U.S. Cl. 188—307 **15 Claims**



1. A rotation deceleration device, comprising:

a cylinder having a hydraulic chamber filled with a control oil;

a rotation shaft inserted through the cylinder;

control wall means radially projected from the rotation shaft to divide the hydraulic chamber into at least two sub chambers;

control valve means provided between the control wall means and an inner surface of the cylinder, the control valve means having closing means opposed to a side surface of the control wall means so as to be attachable thereto and also having an engaging member opposed to the other side of the control wall means so as to be engageable therewith in accordance with the rotation of the rotation shaft,

wherein the control valve means is formed of a material which has a higher coefficient of thermal expansion than that of a material forming the control wall means and the cylinder, and the control wall means is interposed between the engaging member and the closing means.

5,390,771

HYDRAULIC CALIPER BRAKE ASSEMBLY FOR A BICYCLE

George H. Hinkens, Fox Point, and Curt H. Blaszczyk, Sturtevant, both of Wis., assignors to Hayes Industrial Brake, Inc., Mequon, Wis.

Filed Apr. 22, 1993, Ser. No. 51,474

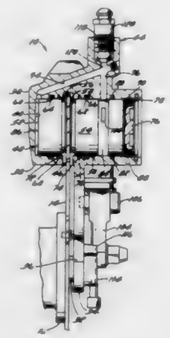
Int. Cl.[6] **B62L** *1/10;* **B60T** *11/14*

U.S. Cl. 188—344 **13 Claims**

1. A caliper brake assembly in combination with a bicycle having a frame, a fork mounted on the frame, a wheel supported on the fork and a brake disk mounted on the wheel, said assembly comprising:

a brake assembly mounted on the fork, said assembly including a unitary housing having a blind bore and a slot in said blind bore intermediate the ends of said blind bore, the brake disk being aligned with said slot, a pair of piston assemblies mounted in said blind bore for movement into engagement with opposite sides of said disk, a passage in said housing interconnecting the opposite ends of said bore,

a master cylinder in said caliper housing operatively connected to pressurize said blind bore for movement of said piston assemblies into engagement with said disk, and



means mounted on the bicycle to actuate said master cylinder to move said piston assemblies into engagement with said disk.

5,390,772

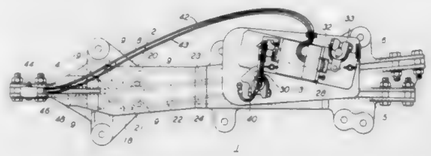
SWITCHABLE HIGH SPEED FROG MECHANISM

Cuong M. Ta, Taylors, and Randel C. Anderson, Greer, both of S.C., assignors to Westinghouse Air Brake Co., Wilmerding, Pa.

Filed Jul. 16, 1993, Ser. No. 92,643

Int. Cl.[6] **E01B** *7/10;* **B60M** *1/14*

U.S. Cl. 191—38 **15 Claims**



1. A high speed frog comprising, a main pan casting having a stationary entrance runner and stationary mainline and turnout runners, a movable runner having a pair of guide rails, an electrical operator for actuating said movable runner so that one of said pair of guide rails is cooperatively associated with the stationary entrance runner and diverts a contact shoe to the turnout runner, a mechanical deflector engageable by the contact shoe for resetting said movable runner so that the other of said pair of guide rails engages said stationary entrance runner, and a renewable runner insert disposed between said stationary entrance runner and said pair of guide rails of said movable runner.

5,390,773

NON-SLIP BICYCLE CLUTCH

Cataldo Proia, 127 W. Embargo St., Rome, N.Y. 13440

Filed Dec. 6, 1993, Ser. No. 161,414

Int. Cl.[6] **F16D** *41/06*

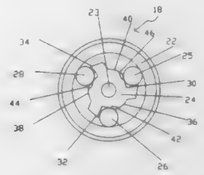
U.S. Cl. 192—45 **8 Claims**

1. A clutch assembly for use on a bicycle having a sprocket, first and second pedals positioned on opposite sides of said sprocket and a bike frame, said assembly comprising:

a) a hollow, first rotor extending between said first and second pedals and being fixedly attached to said sprocket;

b) a second rotor positioned at least partially within said first rotor and being securely attached to said first pedal whereby said first pedal transfers rotary motion to said second rotor in correspondence to said first pedal experiencing a user exerted force causing said second pedal to partially rotate in a forward direction;

c) a third repositioned at least partially within said first rotor and being securely attached to said second pedal whereby said second pedal transfers rotary motion to said third rotor in correspondence to said second pedal experiencing a user exerted force causing said second pedal to partially rotate in a forward direction;



d) means for transferring said rotary motion of said second rotor to said first rotor and;

e) said second and third rotors including:

i) respective first and second pluralities of annularly spaced, angled, radially extending webs;

ii) respective first and second pluralities of V-shaped portions extending between each successive said plurality of webs; and

iii) respective first and second pluralities of magnets attached to said second and third rotors, said magnets positioned at the vertices of said V-shaped portions.

5,390,774

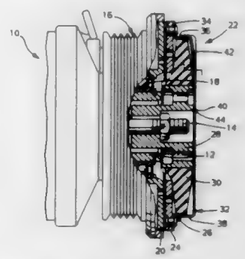
ELECTROMAGNETIC CLUTCH WITH IMPROVED GUIDANCE AND RETENTION

Michael G. Thurston, Buffalo, and Paul A. Szalach, Amherst, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 27, 1993, Ser. No. 126,418

Int. Cl.[6] **F16D** *3/76, 27/10*

U.S. Cl. 192—106.1 **3 Claims**



1. In an electromagnetic clutch assembly of the type having a central drive shaft, a central hub fixed to said drive shaft, and an annular elastomeric pad having an inner edge fixed to said hub and an outer edge fixed to an annular armature plate and capable of flexing axially relative to said hub over a predetermined axial stroke, the improvement comprising,

a generally cylindrical sleeve fixed to said elastomeric pad outer edge surrounding said central shaft and having an axial length at least equal to said stroke, and,

a generally annular guide plate having an inner edge fixed to said hub and outer cylindrical guide flange that extends axially over said sleeve in sliding engagement therewith, whereby said elastomeric pad is radially confined and axially guided relative to said central shaft so as to remain substantially concentric thereto as it flexes.

5,390,775

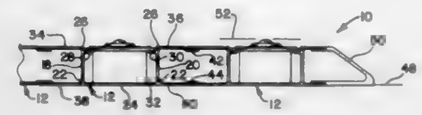
MODULAR ROLLER MAT AND ROLLER ASSEMBLY

William H. Herrick, Livonia; Ronald J. Vermeulen, Birmingham, and Robert S. Plue, Livonia, all of Mich., assignors to AAR Corp., Elk Grove Village, Ill.

Filed Oct. 21, 1993, Ser. No. 140,667

Int. Cl.[6] **B65G** *13/00*

U.S. Cl. 193—35 R **16 Claims**



1. A roller tray assembly for providing rolling movement of cargo units over a cargo deck, said roller tray assembly comprising:

a tray having a first side wall and a second side wall spaced apart from and extending parallel to said first side wall, a first support member extending inwardly from said first side wall toward said second side wall, a second support member extending inwardly from said second side wall toward said first side wall,

at least one housing, each said housing including a plate having a top surface and a bottom surface and an aperture extending through said plate, said plate extending between said first and second side walls of said tray and said bottom surface of said plate bearing on said first and second support members, and

a roller unit located in each said housing and projecting through said aperture in said plate, each said roller unit including a casing having an aperture, means for selectively engaging said housing to retain said roller unit in engagement with said housing, and a rotatable roller element associated with said casing and projecting through said aperture in said casing for rotatably supporting a cargo unit, each said housing and roller unit being independently removable and replaceable in said tray as a unit.

5,390,776

DEVICE FOR ROUTING COINS

Trevor Thompson, Nr. Andover, United Kingdom, assignor to Mars, Incorporated, McLean, Va.

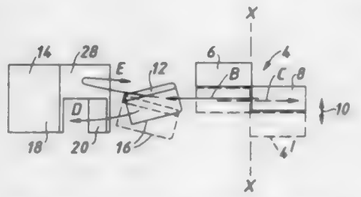
PCT No. PCT/GB92/00286, § 371 Date Sep. 15, 1993, § 102(e) Date Sep. 15, 1993, PCT Pub. No. WO92/16917, PCT Pub. Date Oct. 1, 1992

PCT Filed Feb. 18, 1992, Ser. No. 119,052

Claims priority, application United Kingdom, Mar. 21, 1991, 9106010

Int. Cl.[6] **G07F** *1/04*

U.S. Cl. 194—346 **10 Claims**



1. A device for selectively routing coins moving edgewise along an initial plane defined by the coin on to either of two paths, the device comprising a flap which is pivotable about an

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axis such that its upstream end is selectively moveable between two positions, one on each side of the initial plane, to cause the coin to go either to one side or to the other side of the flap, an electrically powered actuator for selectively moving the flap between the two positions, a coin support arranged to support, from below and at its edge, a coin going to said one side of the flap, so that the coin continues edgewise and on edge on the support past the flap, and an opening into which a coin going to said other side of the flap will fall edgewise, wherein a coin going to said other side of the flap will begin to fall at a position upstream of the pivot axis.

5,390,777

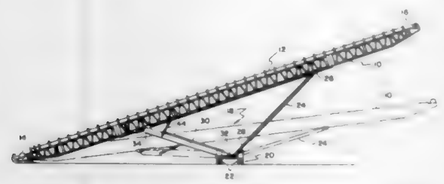
CONSTANT PIVOT MECHANISM FOR VARIABLE HEIGHT RADIAL STACKING CONVEYORS

Paul G. Gage, Aurora, Iowa, assignor to ABCO Engineering Corp., Oelwein, Iowa

Filed Feb. 14, 1994, Ser. No. 194,740

Int. Cl.[6] B65G *41/00*

U.S. Cl. 198—306 **4 Claims**



1. A variable height radial stacking conveyor for transporting material from a location at a lower level and discharging the material at a higher level, said conveyor comprising a conveyor frame having a tail end and a head end, a material conveying means carried by the conveyor frame for moving material from the tail end and discharging the material at a higher elevation from the head end, an undercarriage combined with the conveyor frame to support the frame, means for raising and lowering the head end of the conveyor frame relative to the tail end, power-driven running gear having ground engaging wheels operatively connected to the undercarriage for moving the head end of the conveyor frame along a arcuate path, the pivot point of the arcuate path being at the tail end of the conveyor with a fixed radius of curvature between the pivot point and the wheels, a rear support arm of a fixed length forming a part of the undercarriage and having a lower end pivotly connected to the running gear and an upper end operatively connected to the conveyor frame near the tail end of the frame, a lever arm having one end pivotly connected to the conveyor frame and the other end pivotly connected to the rear support arm near its upper end, and a cam follower on the upper end of the rear support arm, the conveyor frame having a curved cam slot for receiving the cam follower for limited slidable movement in the cam slot, the curvature of the cam slot substantially following the actual path travelled by the cam follower as the conveyor frame is raised and lowered.

5,390,778

APPARATUS FOR EVEN ENDING LUMBER

Edward W. Ritola, LaCenter, Wash., assignor to U.S. Natural Resources, Inc., Vancouver, Wash.

Filed Jan. 25, 1994, Ser. No. 186,763

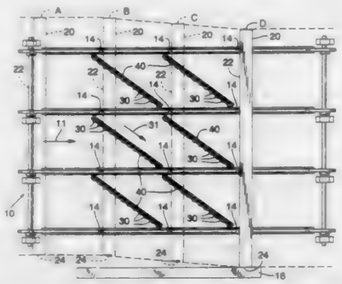
Int. Cl.[6] B65G *47/26*

U.S. Cl. 198—456 **9 Claims**

1. In combination with a conveyor for conveying pieces of lumber along a substantially longitudinal path, an even ending lumber apparatus, comprising:

a conveyor for conveying lumber pieces and defining a directed path of conveyance, a register mounted on one side of the conveyor;

an assembly of non-powered rotatable idler wheels cooperatively mounted on the conveyor, a rotational axis of said idler wheels at a common angle to the direction of conveyance and defining a rotative direction of the idler



wheels toward the register, a periphery of said wheel extending upward into the directed path a sufficient distance to be engageable with the lumber pieces as they are conveyed on said conveyor whereby the engagement by the lumber pieces moving in the direction of conveyance causes rotation of the idler wheels which urges movement of the lumber pieces against the register.

5,390,779

COMPACTING UNIT FOR GROUPS OF FLAT PRODUCTS ARRANGED SIDE BY SIDE ON EDGE

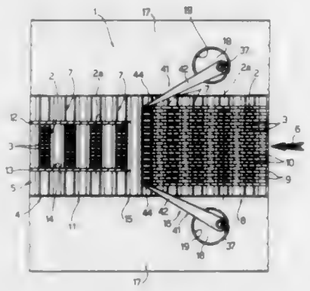
Mario Spatafora, Bologna, Italy, assignor to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A., Bologna, Italy

Filed Jan. 28, 1994, Ser. No. 187,731

Claims priority, application Italy, Feb. 19, 1993, BO93 A 000054

Int. Cl.[6] B65G *47/26*

U.S. Cl. 198—458 **6 Claims**



1. A compacting unit (**1**) for groups (**2**) of flat products (**3**) arranged side by side on edge along a first axis (*2a*) perpendicular to the products (**3**); the unit (**1**) comprising conveyor means (**4**) having a first (**8**) and second (**15**) portion and designed to feed said groups (**2**) successively in a given direction (**6**) perpendicular to the first axis (*2a*); and a compacting device (**16**) cooperating with said conveyor means (**4**); the conveyor means (**4**) comprising a number of pocket means (**7**) equally spaced in said direction (**6**) and each designed to receive a respective said group (**2**); and spacing means (**9**) extending along said first portion (**8**), for separating the products (**3**) in each group (**2**) along the first axis (*2a*); characterized by the fact that the compacting device (**16**) comprises two lever arms (**42**) in turn comprising respective operating heads (**44**) located at said second portion (**15**) and designed to engage said products (**3**) for compacting them against one another parallel to said first axis (*2a*), the lever arms (**42**) being designed to rotate about respective second axes (**38**) located on either side of said conveyor means (**4**) and substantially perpendicular to said traveling direction (**6**) and said first axis (*2a*); first actuating means (**21**) for moving each second axis (**38**) cyclically about a respective third axis (**20**) parallel to the second axis (**38**); and second actuating means (**48**) for rotating each lever arm (**42**) about said respective second axis (**38**).

5,390,780

CONVEYING APPARATUS

Brian R. Sutherland, Transvaal, South Africa, assignor to Techemet Incorporated, Transvaal, South Africa

Filed Jul. 14, 1993, Ser. No. 91,041

Claims priority, application South Africa, Jul. 15, 1992, 92/5268

Int. Cl.[6] B65G *19/00*

U.S. Cl. 193—720 **9 Claims**



1. A conveying apparatus for transferring material from a supply zone to a receiving zone, the apparatus comprising:

a feed passageway and a return passageway, each passageway having a first end and a second end, the material being moved from the first end to the second end of each passageway, the passageways comprising elongated tubes arranged in a cross-over configuration with the first end of the feed passageway located below the second end of the return passageway and the second end of the feed passageway located above the first end of the return passageway such that the feed passageway and the return passageway extend upwardly in opposed directions to each other,

a feeding station for feeding material into the conveying apparatus located at or near the first end of the feed passageway,

one or more discharge stations for discharging material from the conveying apparatus located downstream of the feeding station on the feed passageway, the return passageway defining a path for recycled excess material,

two bypass channels, the first bypass channel connecting the second end of the feed passageway to the first end of the return passageway and the second bypass channel connecting the second end of the return passageway to the first end of the feed passageway, and

moving means for conveying material from the feeding station to the one or more discharge stations and for recycling excess material not discharged at the one or more discharge stations, the moving means comprising an endless flexible element carrying a plurality of scrapers for urging the material along the feed passageway and the return passageway.

5,390,781

MOUNTING ASSEMBLY AND METHOD FOR RECIPROCATING SLAT CONVEYOR

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Continuation-in-part of Ser. No. 54,533, Apr. 28, 1993, Pat. No. 5,360,054, and Ser. No. 54,530, Apr. 28, 1993, Pat. No. 5,325,763. This application Dec. 9, 1993, Ser. No. 164,895

Int. Cl.[6] B65G *25/00*

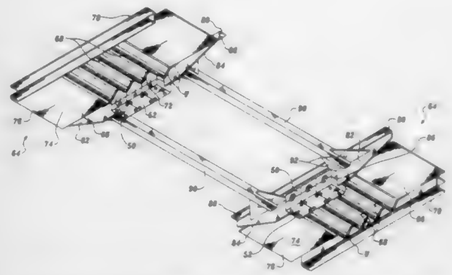
U.S. Cl. 198—750 **49 Claims**

1. A reciprocating slat conveyor, comprising:

at least two sets of conveyor slats;

a conveyor drive for moving the conveyor slats in a first direction, for conveying a load, and for retracting the conveyor slats in the opposite direction; said conveyor drive including a separate piston-cylinder drive unit for each set of conveyor slats; said drive units being positioned below the conveyor slats; and each said drive unit including a movable portion connected to its set of conveyor slats and a fixed portion including a mounting end part;

a main frame below the conveyor slats; and



a transverse drive frame member below the conveyor slats, connected to the main frame; said frame member including a generally horizontal metal plate formed to include a plurality of corrugations extending longitudinally of the conveyor generally in line with the drive units, and said corrugations including end portions confronting and connected to the mounting end parts of the drive units so that said corrugations carry axial drive forces generated by the drive units.

5,390,782

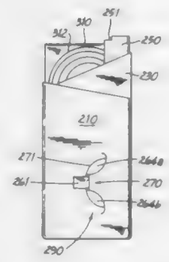
NEEDLE SHIELD DEVICE FOR SURGICAL PACKAGES

Hans-Jurgen F. Sinn, Fairfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 901,271, Jun. 19, 1992, abandoned. This application May 10, 1994, Ser. No. 240,948

Int. Cl.[6] A61L *17/02*

U.S. Cl. 206—63.3 **18 Claims**



1. In combination:

at least one surgical needle-suture combination:

a retainer member on which said surgical needle and suture are retained with at least a portion of the needle tip exposed; and,

a needle shield fabricated from a sheet of puncture resistant material which includes a first panel having at least two end panels foldably connected thereto, said sheet being separably positioned in adjacent contacting relation with said retainer member so as to at least partially surround the retainer member and to cover at least the pointed tip of said at least one surgical needle when said panels are folded at least partially around the retainer member.

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5,390,783

NON-PALLETIZED CARGO UNIT FORMED OF SELECTED UNIFORM SIZE AND WEIGHT BALES OF HAY TO FIT MULTIPLE CARGO SPACES

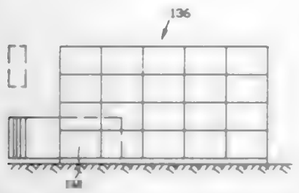
John M. Gombos, Bakersfield, and Moshe Leashno, Long Beach, both of Calif., assignors to A.C.X. Trading, Inc., Ellensburg, Wash.

Division of Ser. No. 987,120, Dec. 8, 1992, abandoned, which is a division of Ser. No. 674,863, Mar. 25, 1991, Pat. No. 5,175,981, which is a continuation-in-part of Ser. No. 526,186, May 18, 1990, Pat. No. 5,090,177, and a continuation-in-part of Ser. No. 353,811, May 17, 1989, Pat. No. 5,001,974. This application Aug. 16, 1993, Ser. No. 107,463

The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.

Int. Cl.[6] B65D *71/00*

U.S. Cl. 22 Claims



1. A non-palletized unit of cargo consisting of multiple uniform size and weight high density bales of hay comprising:

at least a first layer of multiple rows of uniform size and weight bales of hay formed into a stack having peripheral sides and defining a predetermined size and weight cargo unit; and

binding means extending exclusively around the peripheral sides of said stack and binding said stack together as unit exclusively by laterally inwardly directed peripheral binding forces applied to said peripheral sides biasing said bales inwardly, thereby at least partially compressing and forcing adjacent vertical surfaces of laterally adjacent bales into partially interlocking binding engagement with laterally adjacent bales said binding means including a binding film of multiple layers of a polymer film prestretched from about 25% to about 220% wrapped in multiple layers snugly around the peripheral sides of said stack of bales.

5,390,784

WRAP-AROUND CARRIER WITH PARTIAL END PANELS

Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Feb. 3, 1994, Ser. No. 191,226

Int. Cl.[6] B75D *65/12*

U.S. Cl. 206—148 7 Claims

1. A package comprised of a wrap-around carrier containing two rows of adjacent articles, the carrier having opposite end portions adjacent end articles in the rows, each article having a neck portion connected to a main body portion, comprising:

opposite side panels connected to a top panel and to a bottom panel, each side panel including a short outwardly sloped portion extending downwardly from the top panel;

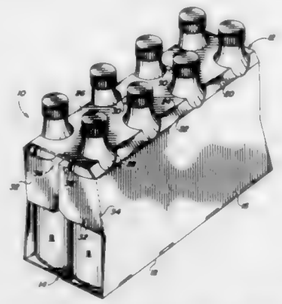
the side and top panels including opposite end edges adjacent the end portions of the carrier;

an end panel flap connected to each end edge of each side panel along a first fold line located below the short outwardly sloped portion of the associated side panel;

each end panel flap having an upper edge connected to a respective end tuck flap along a second fold line;

each end tuck flap being connected to a respective central tuck flap disposed at each end portion of the carrier, along a respective third fold line, each end tuck flap being connected to the remainder of the carrier only along said respective second and third fold lines and being unconnected to the short outwardly sloped portions;

each central tuck flap being connected to a respective adjacent end edge of the top panel along a fourth fold line, each central tuck flap underlying the top panel between two adjacent end articles and being spaced from the upper edge of adjacent end panel flaps;



each end tuck flap having an end tuck flap edge contacting the neck portion of an adjacent one of said articles, said end tuck flap edge comprising an edge portion of a cutout, the cutout also being comprised of edge portions of the associated central tuck flap and a portion of the upper edge of the adjacent end panel flap located between the associated end tuck flap and the associated side panel; and

the end panel flaps at each end of the carrier covering portions of adjacent ones of said articles.

5,390,785

PRESSURIZED SEALABLE TRANSPORTABLE CONTAINERS FOR STORING A SEMICONDUCTOR WAFER IN A PROTECTIVE GASEOUS ENVIRONMENT

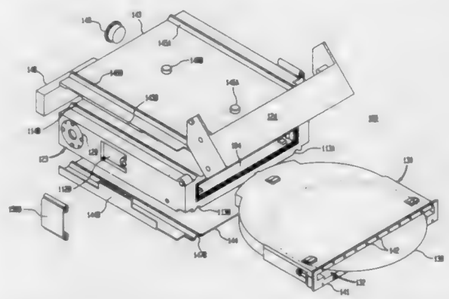
George Garric, Perthes, and André Lafond, Nemours, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1993, Ser. No. 101,599

Claims priority, application France, Aug. 4, 1992, 92 480109

Int. Cl.[6] B65D *81/28*

U.S. Cl. 206—213.1 52 Claims



1. A pressurized sealable transportable container (**100**) for storing at least one workpiece (**138**) comprising a substantially parallelepipedic-shaped cassette reservoir (**123**) comprising:

a box-shaped housing (**102**) having a main access opening (**104**) on a front lateral face and having top (**143**) and bottom (**144**) protective shells to protect housing top and bottom surfaces;

door means (**124**) mating with said main access opening (**104**) to define a sealable interior space (**103**); gas injection valve means (**129**) inserted in said housing adapted for connection to a compressed ultra pure neutral gas supply installation (**700**) to establish a determined static first or nominal pressure p within said interior space having a positive differential pressure Δp with respect to the outside ambient; and,

support means (**108**) to firmly and accurately maintain said workpiece within said interior space.

5,390,786

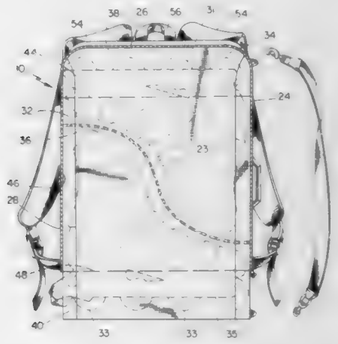
CARRIER BAG FOR ATHLETIC BOOTS

Audrey K. Challoner, 399 W. Broadway, New York, N.Y. 10012, and Michael Swick, 53 W. 70th St., Apt. 3A, New York, N.Y. 10012

Filed Sep. 2, 1992, Ser. No. 939,158

Int. Cl.[6] B65D *85/18*

U.S. Cl. 206—278 2 Claims



1. A carrier bag for carrying a pair of athletic boots comprising:

a compartment for carrying a pair of athletic boots defined by a base at least partially surrounded by a boundary wherein said compartment has a first end and a second end for accommodating respective blade portions of the pair of athletic boots;

a retainer for securing the pair of athletic boots in an inverse, planar relationship relative to each other within said compartment; and

a blade guide formed in at least one end of the compartment to allow a protruding portion of the blade portion on at least one of the athletic boots to protrude outside the compartment when the compartment is in a closed position.

5,390,787

PORTABLE COMPACT DISC STORAGE APPARATUS

David W. Macasaet, 303 Sherry Ln., Viroqua, Wis. 54665

Filed Feb. 22, 1994, Ser. No. 199,533

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—309 12 Claims

1. A new and improved portable, recorded media storage apparatus, comprising:

a housing assembly,

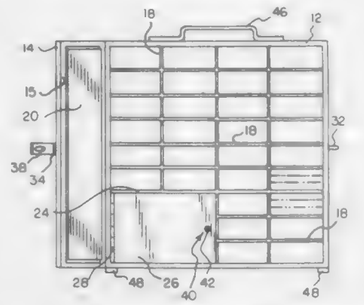
a plurality of recorded media retention assemblies supported by and retained in said housing assembly,

a door assembly including an interior side and an exterior side,

a flexible, resilient panel attached to said interior side of said door assembly,

a hinge assembly for connecting said door assembly to said housing assembly,

an auxiliary storage chamber assembly supported by and retained in said housing assembly, said auxiliary storage chamber assembly including an auxiliary chamber housing, an auxiliary chamber door, and an auxiliary hinge assembly for connecting said auxiliary chamber door to said auxiliary chamber housing, and



a door lock assembly for selectively locking said door assembly to said housing assembly.

5,390,788

GOLFBAG WITH INTEGRATED WISHBONE STAND

Robert H. Schenkkan, 3740 Blue Gum Dr., Yorba Linda, Calif. 92686

Filed Feb. 11, 1993, Ser. No. 16,728

Int. Cl.[6] A63B *55/00, 55/06*

U.S. Cl. 206—315.7 3 Claims

1. A golf bag and automatic stand for supporting said bag in an upright position comprising in combination:

(a) a golf bag having a front and a back and suited for holding and organizing golf clubs therein and having upper and lower extremities, a collar on said upper extremity of said bag, a base on said lower extremity of said bag, and a housing extending between said collar and said base at said front of said bag and defining therein a single concave elongated recess extending longitudinally along said front of said bag,

(b) an automatic bag stand including a bar having a first end rotatably attached to said collar at said front of said bag and an opposite second end having a lower extremity a spring urging said bar to rotate said second end of said bar outward away from said bag, a pair of legs having lower and upper extremities and extending longitudinally therefrom, means pivotally coupling said upper extremities of said legs to said lower extremity of said bar, a leg extension and retraction mechanism that forces said lower extremities of said legs apart from each other when said second end of said bar is rotated outward away from said bag and that collapses said lower extremities of said legs

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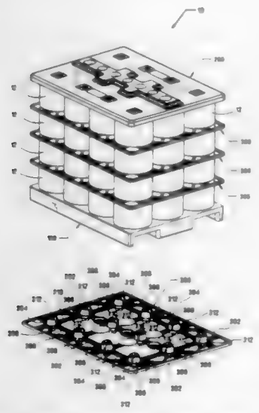
together when said bias of said spring is overcome, a cord passing through said bag from back to front and coupled to said bar, and an activation handgrip having an upper extremity pivotally connected to said collar and having a lower end connected to said cord, whereby when said lower end of said handgrip is pulled outwardly away from said bag, said legs are collapsed together and pulled into said single longitudinal recess and when said handgrip is released said spring pushes said bar outward from said bag and said lower extremities of said legs are forced apart.

5,390,789

PALLET SYSTEM FOR PACKAGING YARN SPOOL

Robert J. Darby, 2517-A Patriot Way, Greensboro, N.C. 27410, assignor to Robert J. Darby and Stephen S. Powel, Greensboro, N.C.

Filed Sep. 27, 1993, Ser. No. 127,299
Int. Cl.[6] B65D *85/672*
U.S. Cl. 206—391 **13 Claims**



5. A separator grid for insertion between layers of a stack of yarn packages assembled in a yarn pallet system which palletizes packages of strand material wound on a hollow cylindrical core comprising

(a) a plurality of support pads arranged into an array and connected;

(b) a plurality of first locator projections extending upwardly from respective support pads for insertion into the core of respective packages in an upper layer of said stack, said first locator projections each including at least three generally wedge-shaped node segments separated by slots extending radially from a center point of said first projection between adjacent node segments;

(c) a plurality of second locator projections extending downwardly from respective support pads for insertion into the core of respective packages in a lower layer of said stack, said second locator projections each including at least three fins extending radially from a center point of said second projection;

(d) said fins aligning with the slots between said wedge-shaped node segments on the opposite side of said separator sheet;

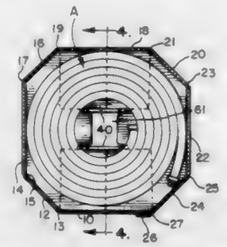
(e) whereby said fins will nest between corresponding node segments at times when said yarn packages have been unloaded and said separator sheets are stacked for return to the yarn manufacturer and whereby said nodes segments may be made larger.

5,390,790

OCTAGONAL CONTAINER WITH SMOOTH INNER BOTTOM SURFACE

Gustave O. Straub, Milwaukee, and Ronald G. Lueschen, Wineconne, both of Wis., assignors to Jefferson Smurfit Corporation, Clayton, Mo.

Filed Jul. 23, 1993, Ser. No. 95,850
Int. Cl.[6] B65D *85/67, 5/00*
U.S. Cl. 206—408 **7 Claims**



1. A collapsible one-piece octagonal container having a smooth interior bottom wall surface, said container being formed from a unitary blank of foldable paperboard, and comprising:

(a) first and second pairs of opposed major side wall panels and first and second pairs of opposed minor side wall panels arranged in alternating relationship and foldably joined to each other along vertical edges to form a tubular structure open at its upper and lower ends;

(b) a pair of bottom wall outer panels foldably joined to lower edges of opposed major side wall panels of said first pair and folded inwardly at right angles thereto;

(c) a pair of bottom wall inner panels foldably joined to lower edges of opposed major side wall panels of said second pair and folded inwardly at right angles thereto and overlying said bottom wall outer panels;

(d) said bottom wall outer panels having, projecting from opposed inner edges thereof, locking tongues folded upwardly at right angles from their respective bottom wall outer panels and extending through complementary recesses in said bottom wall inner panels to interlock said inner and outer panels together and thereby form a bottom wall closing said container lower end;

(e) said minor side wall panels having lower end edge free from connection to any other panels, and said bottom wall inner panels having outer edges of the same width as the major side wall panels to which they are foldably joined with diagonal side edges disposed adjacent lower end edges of related minor side wall panels;

(f) said bottom wall inner panels being co-planer and having inner edge surfaces disposed in abutting relationship, whereby said bottom wall has a smooth level surface free from uneven areas, to prevent indentation of a product packaged in said container.

5,390,791

TEMPERATURE CONTROLLED MEDECINE CARRIER

Steve Yeager, Redondo Beach, Calif., assignor to Medicool, Inc., Torrance, Calif.

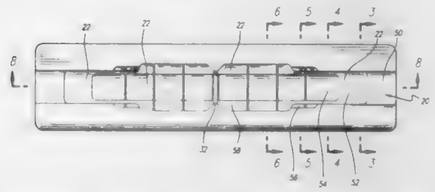
Filed Oct. 18, 1993, Ser. No. 139,298
Int. Cl.[6] A61B *17/06, 19/02;* **B65D** *81/02*
U.S. Cl. 206—438 **10 Claims**

1. A portable medicine protector for storing and transporting medicine stored in vials comprising:

a hollow, thin walled medicine carrier, said medicine carrier being substantially filled with a liquid medium;

a cavity disposed in a top surface of said carrier, said cavity being formed from a plurality of different semi-circular compartments;

wherein each of said compartments has a radius chosen to accept medicine vials of a specific size;



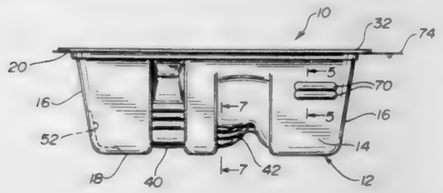
a plurality of solid ribbed members disposed transversely in said cavity, so as to prevent contact between said carrier and said medicine vials.

5,390,792

STERILE PACKAGING

William Van Ness, Flemington, and Robert J. Kalinski, Milford, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Oct. 18, 1993, Ser. No. 139,599
Int. Cl.[6] B56D *81/02;* **A61B** *19/02*
U.S. Cl. 206—439 **7 Claims**



1. A packaging for the protective sterile containment of a rigid product, and packaging comprising a self-supporting substantially rigid and resiliently flexible container including a bottom wall, sidewalls and end walls integrally formed with and extending upwardly from said bottom wall for containment of said product;

indentations formed in at least some of said walls for engaging external surface portions of said product and positioning said product within said container, at least some of said product surface-engaging wall indentations incorporating rib structure forming passages enabling the circulation of sterilizing fluids about the surface of said product; and,

covering film means being sealed to the upper peripheral edges of said upstanding walls to sealingly enclose the product in said packaging,

wherein a peripheral horizontally extending flange is formed to extend about the upper edges of said upstanding walls, said flange including a sealing surface for adhesive sealing engagement with said covering film means,

wherein said sealing surface on said flange includes a raised planar surface portion for increasing the sealing surface area contacting said covering film means,

wherein said covering film means comprises a heat sealable breathable plastic film, wherein said plastic film is constituted of polyethylene,

wherein said container is substantially rectangular, said bottom wall being flat and said sidewalls and end walls extending upwardly angled from the edges of said bottom wall to form said product-receiving containment structure, and,

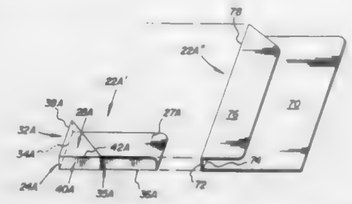
wherein a first one of said indentations forms a first support for said product extending between said sidewalls and said bottom wall; a second said indentation forms a second support for said product extending between one said end wall and said bottom wall; and a third said indentation forms means for clampingly engaging said product extending between said sidewalls and said bottom wall, said indentations collectively constituting abutments for positioning and retaining said product in said container in spaced relationship with the remaining bottom wall, sidewall and end wall surfaces.

5,390,793

CARRIER FOR A FILM PACKAGE

Thomas J. Kausch, and James E. Przybylowicz, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 26, 1994, Ser. No. 249,411
Int. Cl.[6] B65D *85/62*
U.S. Cl. 206—455 **4 Claims**



1. In a film package for delivery of film sheets as d stack, comprising

a stack of photographic film sheets,

a protective carrier partially surrounding said stack, and a light-tight flexible wrapping around said carrier and said stack,

the improvement wherein said carrier comprises a bottom panel, first and second side panels hingedly and integrally attached to adjacent side edges of said bottom panel,

and a top panel extending from an edge of one of said side panels and permanently secured to the other of said side panels to define a secured exterior corner, said top panel having dimensions such that it leaves exposed a portion of any film sheets and said bottom panel under said top panel,

and a third side panel extending integrally from said top panel and dimensioned to overlap a portion of said other side panel, securing means being disposed between said third side panel and said other side panel,

so that the permanent securing of said top panel to said other side panel rigidifies said carrier sufficiently to reduce collapsing of said carrier during removal of said flexible wrapping.

5,390,794

MULTIPLE INFORMATION UNIT PACKAGING CARD

Brian A. Vulpitta, Avon Lake, Ohio, assignor to Manco, Inc., Westlake, Ohio

Filed Jun. 24, 1993, Ser. No. 82,287
Int. Cl.[6] B65D *73/00*
U.S. Cl. 206—459.1 **2 Claims**

1. A packaging card comprising:

a top section and a bottom section, said top section having a front and a back and said bottom section having a front and a back;

a scored line separating said top section from said bottom section;

a first portion of information displayed on said front of said bottom section;

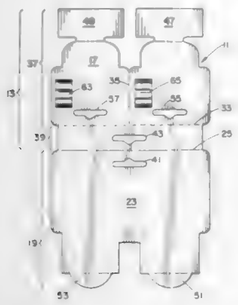
a second portion of information displayed on said front of said top section;

a third portion of information displayed on said back of said top portion;

said packaging card having a first configuration in which said card is folded along said scored line such that said back of said top section overlays said back of said bottom

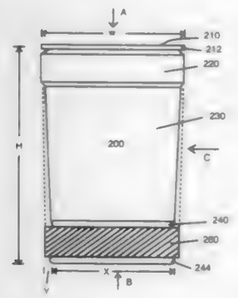
VOL 1171 ISS 3 FE 21 1995 UMI

section whereby said third portion of information is hidden; and



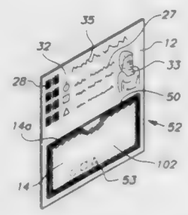
a second configuration in which said upper top section is detached from said lower top section along said perforated line whereby said third portion of information is visible.

5,390,795
CONICAL DRUM STORAGE CONTAINER
Wolfgang Jobmann; Uwe Stier, both of Hamburg, Germany, and Michael D. Naugle, Seffner, Fla., assignors to Wolfgang Jobmann Florida, Inc., Seffner, Fla.
Filed Jul. 22, 1994, Ser. No. 279,502
Int. Cl.[6] B65D *7/00*
U.S. Cl. 206—515 12 Claims



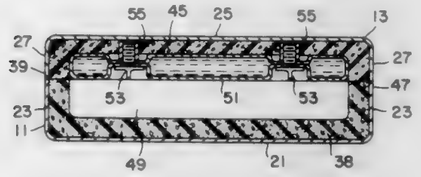
1. A storage drum for transporting goods comprising:
a generally cylindrical hollow container having a top portion, a mid portion and a lower portion, the top portion having an outer diameter which is larger than an outer diameter of the mid portion and the lower portion, wherein the top portion and the bottom portion are of a cylindrical configuration, and the mid portion forms a conical configuration; and
a bumper belt located about the outer diameter of the lower portion, the, belt having an outer diameter approximately the same as that of the outer diameter of the top portion of the container.

5,390,796
ENVELOPE APPARATUS FOR DISPENSING MEDICATIONS FROM DRUG FILES
Franklin W. Kerfoot, Jr., 678 Andover Rd., Newtown Square, Pa. 19073
Continuation-in-part of Ser. No. 959,015, Oct. 2, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 160,178
Int. Cl.[6] B65D *85/56*
U.S. Cl. 206—534 11 Claims



1. A dispensing-envelope apparatus having a front side and a rear side and having top and bottom edges relative to gravity, said apparatus comprising,
a.) an opaque backing sheet which is adapted to receive printed means from a computer-output printer on said front side of said apparatus,
b.) a transparent upward-opening pocket on said front side of said apparatus attached to said backing sheet in an area near said bottom edge;
c.) printed means on said front side of said apparatus in an area near said top edge and above said pocket;
d.) said pocket having, relative to gravity, top, bottom, left, and right sides;
e.) said pocket having a height 30 to 60% of height of said apparatus;
f.) said pocket being permanently attached on said left, right, and bottom sides to said apparatus and providing said upward-opening pocket, relative to gravity, to store small items;
g.) said pocket being semi-permanently attached on said top side of said pocket, said semi-permanent attachment providing a complete closure of said pocket, totally enclosing and sealing a space in said pocket for said small items, said semi-permanent attachment providing means for opening said top side of said pocket to allow entry or removal of said small items into or out of said pocket;
h.) said apparatus having a thickness for facile feeding through a computer-output printer and for receiving said printed means on the said front side of said apparatus in an area located above said pocket;
i.) said printed means being oriented for human readability when said top side of said upward-opening pocket is oriented upward relative to gravity.
11. An apparatus comprising:
a.) a first semi-transparent flexible sheet;
b.) a second flexible and opaque backing sheet;
c.) said first sheet being divided into two sections wherein said first section is permanently attached on its four sides and, said second section being permanently bonded on three sides and said fourth side being semi-permanently attachable to said opaque backing sheet such that a pocket is formed which may be opened and closed via said fourth side,
d.) said first section having a surface and a plurality of locations for receiving data from an impact printer,
e.) whereby various medications can be placed and dispensed from said pocket which corresponds to said data pertinent to a particular patient and said pocket being resealable to allow multiple usage.

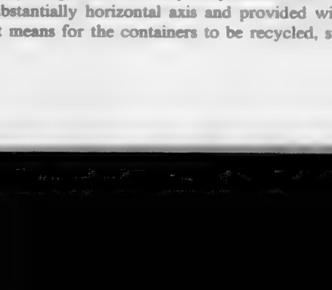
5,390,797
FOOD-CARRYING CASE
Chris Smalley, and Dave Shiers, both of 13739 Kinbrook St., Sylmar, Calif. 91342
Filed Jun. 3, 1993, Ser. No. 72,035
Int. Cl.[6] B65D *81/38;* F25D *3/08*
U.S. Cl. 206—542 2 Claims



1. A closable food-carrying case comprising:
a rigid shallow tray having a rectangular bottom wall and four upstanding side walls; said side walls having upper edges located in a common plane;
a first concave foam liner fitting within said tray; said first foam liner extending entirely around said tray; said first foam liner having an upper annular edge substantially coincident with the upper edges of the tray side walls;
a rigid openable lid comprising a top wall and four depending side walls; said lid side walls having lower edges thereof located in a common plane;
a second concave foam liner fitting within said lid; said second foam liner extending entirely around said lid; said second liner having a lower annular edge substantially coincident with the lower edges of the lid side walls so that when the lid is closed the lower annular edge of the second liner is sealably engaged with the upper annular edge of the first liner;
each said foam liner being formed of a closed cell foam material that is compressible; each foam liner having thermal insulation properties;
a thermal bottle dimensioned to fit within the space circumscribed by said second foam liner; and means for detachably mounting said thermal bottle in said lid;
said second foam liner having a flat section thereof sandwiched between the lid top wall and the thermal bottle to insulate against heat transfer between the bottle and the lid top wall;
said bottle mounting means comprising at least one internally threaded sleeve extending from the lid top wall through and beyond the flat section of said second foam liner, and a screw extending through the bottle into the threaded sleeve to secure the bottle to the sleeve;
the annular edges of the foam liners protruding slightly beyond the edges of the associated side walls so that when the lid is closed the liners form a compression seal; said foam liners cooperatively forming a complete insulative wall around the thermal bottle and food items placed in the tray.

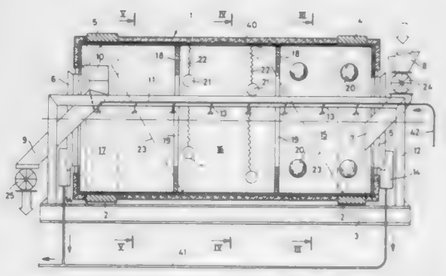
5,390,798
FOOD AND BEVERAGE SUPPORT TRAY WITH BEVERAGE VESSEL CUTOUT
Gerard Yanuzzi, Raritan Township, Somerset County, N.J., assignor to G'-Ka International, Inc., Revere, Pa.
Continuation-in-part of Ser. No. 788,887, Nov. 7, 1991, Pat. No. 5,294,000. This application Dec. 30, 1993, Ser. No. 176,083
The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.
Int. Cl.[6] B65D *1/34, 21/00*
U.S. Cl. 206—562 15 Claims

1. A tray for supporting food plates and beverage vessels, which comprises:
(a) a base structure being substantially flat and having a front and a back, a left side and a right side, and having a top and a bottom, and having an imaginary center line running from front to back and evenly distanced from said left side and right side;
(b) a first orifice through the top of said base being circular in shape and being biased to one side of said center line, said orifice adapted to receive a beverage vessel, said base also including a beverage vessel cutout, extending from the side of said base structure into said first orifice so as to permit lateral insertion of a beverage vessel into said first orifice;
(c) a second orifice through the top of said base and being circular in shape and being biased toward one side of said center line opposite said first orifice, said second orifice being adapted to receive a food plate;



(d) a first notch located on the top of said base on the front of said base near said center line, said notch being adapted to receive an area of a hand of a user between a thumb and a first finger when being held with the thumb on the top of said base and fingers on the bottom of said base; and,
(e) a second notch located on the top of said base on the back of said base near said center line, said notch being adapted to receive an area of a hand of a user between a thumb and a first finger when being held with the thumb on the top of said base and fingers on the bottom of said base;
wherein said first notch and said second notch are located opposite one another along said center line.

5,390,799
MACHINE FOR RECYCLING PLASTIC CONTAINERS, IN PARTICULAR BOTTLES
Dario Previero, Lipomo, Italy, assignor to Previero N. s.r.l., Erba, Italy
Filed May 10, 1993, Ser. No. 50,294
Claims priority, application Italy, Nov. 19, 1990, 22100 A/90
Int. Cl.[6] B07C *9/00*
U.S. Cl. 209—3 11 Claims

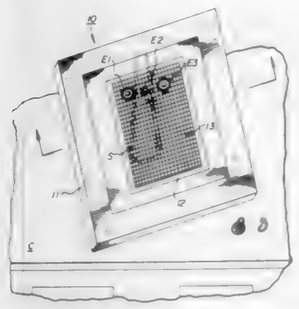


1. A machine for recycling plastic containers, in particular bottles, comprising a hollow rotary body rotated about a longitudinal substantially horizontal axis and provided with inlet and outlet means for the containers to be recycled, spraying

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means for supplying washing fluid at a predetermined temperature into the rotary body, and mechanical impact means housed in the rotary body and actuated by rotation of the rotary body to collide with the containers to be recycled, wherein said hollow rotary body has a continuous lateral wall for retaining the washing fluid inside the rotary body during a recycling operation.

5,390,800
DISPLAY OF OBJECTS
Nancy Tucker, Elm St., Norwich, Vt. 05055
Filed Oct. 13, 1993, Ser. No. 135,685
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—13 17 Claims



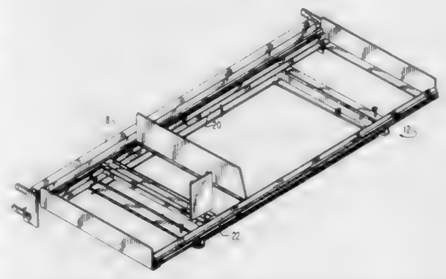
1. Apparatus for the display of objects, comprising
an outer frame;
an inner frame disposed within said outer frame;
means between the inner and outer frames for suspending the objects; wherein said inner frame has a beveled surface facing the suspending means;
thereby to facilitate the placement of said objects on said suspending means.

5,390,801
DOCUMENT HOLDER
Robert S. Hansen, P.O. Box 2238, Rohnert Park, Calif. 94928
Continuation-in-part of Ser. No. 572,428, Aug. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 563,684, Dec. 20, 1983, Pat. No. 5,046,626. This application Dec. 13, 1991, Ser. No. 807,148
Int. Cl.[6] B42F *11/00*
U.S. Cl. 211—55 22 Claims



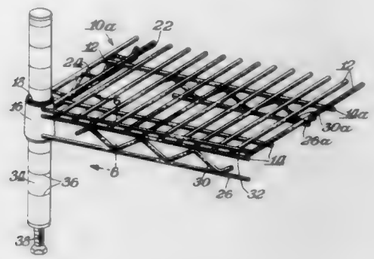
13. In a document holder for holding flexible sheets of paper in a generally upright position: first and second modular units each having a vertically inclined wall with an upwardly concave curvature and a height substantially less than the length of a sheet of paper for supporting the sheet in such manner that the sheet rests against the wall in a vertically inclined position and extends unsupported a substantial distance above the wall with an upwardly concave curvature which confers rigidity to the portion of the sheet above the wall and enables the sheet to stand without buckling under its own weight, upper and lower pairs of vertically extending slots formed in a forwardly facing wall of the first modular unit, and upper and lower pairs of hook-like tabs projecting from the second modular unit for engagement with the slots in the first unit to hold the two units together, each of the hook-like tabs in the upper pair having a generally rectangular upper portion and a rounded lower corner and being adapted for engagement with the associated slot by inserting the rectangular portion into the slot and rotating the module downwardly through an angle of approximately 90° to position the upper portion behind the wall.

5,390,802
SHELF ASSEMBLY FOR GONDOLA DISPLAY STRUCTURE
Larry Pappagallo, Wayne, and Jim Sweeney, Belvidene, both of N.J., assignors to HMG Worldwide In-Store Marketing, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 17,280, Feb. 12, 1993. This application Mar. 2, 1994, Ser. No. 205,901
Int. Cl.[6] A47F *1/04*
U.S. Cl. 211—59.3 17 Claims



1. A shelf assembly for supporting merchandise on a gondola display rack, said rack having at least one vertically extending upright defining a column of vertically spaced slots therein, comprising:
bracket means selectively engageable with the slots of the upright and selectively angularly positionable relative thereto, said bracket means including a transverse member defining an axial opening at respective ends thereof and first and second bracket assemblies having an elongate section selectively positionable within said transverse member and a flange section fastened to the elongate section and engageable with the slots of the upright whereby the distance between said flange sections may be adjusted to accommodate uprights having various widths and various spacings between columns of slots thereof:
a merchandise organization module defining at least one merchandise supporting surface for accommodating merchandise varying widths;
support means slidably secured to said bracket means for supporting said merchandise organization module and positioning said module at a selected distance from the upright; and
locking means for retaining said support means in a desired position relative to said bracket means and the upright.

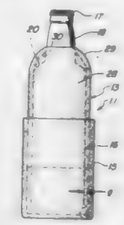
5,390,803
REINFORCED SHELF
Larry N. McAllister, Dover, Del., assignor to Metal Masters Food Service Equipment Co., Inc., Smyrna, Del.
Continuation-in-part of Ser. No. 7,585, Apr. 27, 1993. This application Dec. 3, 1993, Ser. No. 162,335
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—153 4 Claims



1. A reinforced shelf for carrying objects, mountable to at least two spaced apart vertical support posts for the shelf, comprising:
a plurality of collars connectable to the support posts;
a plurality of transverse members forming an object carrying surface for carrying objects to be placed on the shelf, the carrying surface defining a front edge and a rear edge and side edges, with at least one transverse member positioned at each side edge and connected to one or more of said collars;
a plurality of longitudinal members substantially attached at points of contact to the transverse members with at least one longitudinal member positioned below the transverse members at the front edge and connected to one or more of said collars;
a longitudinal bar, spaced apart from and substantially parallel to the longitudinal member at the front edge of the carrying surface, and connected to one or more of said collars;
a serpentine member having upper and lower bends, the serpentine member being substantially attached at the point of contact of each upper bend to the longitudinal member at the front edge of the carrying surface and substantially attached at the point of contact of each lower bend to the longitudinal bar at the front edge of the carrying surface; and
a reinforcing bar, positioned near or at the front edge and above the carrying surface and substantially attached at points of contact to the transverse members, and connected to one or more of said collars, wherein the reinforcing bar, the longitudinal member, the longitudinal bar and the serpentine member in combination form a load supporting truss for the carrying surface at the front edge of the carrying surface.

5,390,804
BULLET-NOSED LONGNECK BOTTLE COOLER APPARATUS
Thomas M. Beggins, San Juan Capistrano, Calif., assignor to Wallis H. Wallis, San Juan Capistrano, Calif.
Filed Apr. 18, 1994, Ser. No. 229,366
Int. Cl.[6] B65D *23/08*
U.S. Cl. 215—100 R 4 Claims

1. A cooler apparatus for a longneck bottle having a neck which increases in diameter down its length comprising:
a lower cylindrical enclosure having a closed end and a circular upper rim defining a circular opening into a cylindrical interior for receiving the end of said bottle;
an upper enclosure having a dome-shaped upper end unitarily and integrally forming into a lower cylindrical section, the lower cylindrical section terminating in a circular rim sized in diameter to telescopically interfit into the interior cylindrical surface of said lower enclosure while simultaneously providing an interference fit between cylindrical portions of said upper and lower enclosures;
said upper dome-shaped portion including a circular opening therein sized in diameter to pass over the top of said bottle



and come into a locking relation with the neck of said bottle at a selected diameter along said neck, said locking relation preventing further downward progress of said upper dome-shaped portion along said neck, the diameter of said opening being determined to define the extent to which the lower cylindrical section of said upper enclosure extends into said lower cylindrical enclosure.

5,390,805
SYSTEM COMPRISING A CONTAINER HAVING A SLIT VALVE AS A VENTING VALVE AND A LIQUID CONTAINED IN SAID CONTAINER
Nadi Bilani, Strombeek-Bever; Johan W. Declerck, Ichtegem, and Jorgen Hoernaert, Brugge, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 11, 1993, Ser. No. 16,412
Int. Cl.[6] B65D *51/16*
U.S. Cl. 215—260 4 Claims



2. System comprising a container (**1**) and a liquid contained therein, the container comprising:
(a) a discharge orifice (**13**);
(b) a sealing valve (**3**) covering the discharge orifice (**13**), the sealing valve comprising a flexible concave top portion (**4**) which is curved towards the discharge orifice and which is provided with at least one slit (**25**) extending from a surface of the top portion facing the discharge orifice, to a surface of the top portion located away from the discharge orifice, the slit being openable when a pressure at the sealing valve exceeds a dispensing threshold pressure; and
(c) a cap (**5**) comprising an outer side wall (**27**) and a top wall (**29**) surrounding and attached to the outer side wall, the

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cap in a storage mode of the container covering the sealing valve, the cap comprising valve restraining means (29,35,36) preventing the top portion from inverting and being removable from the sealing valve for dispensing of the liquid, the valve restraining means defined by a protrusion (35) extending from interior face of the top wall (29) towards the concave top portion (4) of the sealing valve for adjustment of a vapor threshold pressure, the protrusion (35) has a lower edge (43'), of which a first part is located near the concave top portion (4) on one side of the slit (25) and of which a second part is located near the concave top portion (4) on the other side of the slit (25), the distance between the first part of the lower edge (43') and the concave top portion (4) being different from the distance between the second part of the lower edge and the concave top portion, whereby when the container is in the storage mode, the liquid contained in the container can build up a predetermined gas or vapor pressure, the container being in the storage mode in an upright position so that gas or vapor in the container can contact the sealing valve, the valve restraining means (29,35,36) allowing opening of the top portion's slit when the force exerted by the gas or vapor on the sealing valve, exceeds a vapor threshold pressure.

5,390,806

BEAM TANK

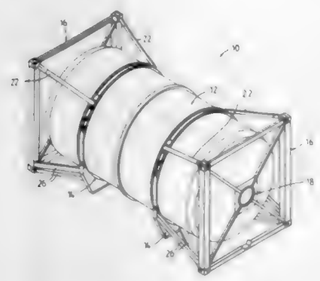
Malcolm Elston, and Peter Lehmann, both of Transvaal, South Africa, assignors to Henred-Fruehauf Trailers (Proprietary) Ltd., Transvaal, South Africa

Filed Nov. 19, 1993, Ser. No. 155,092

Claims priority, application South Africa, Nov. 20, 1992, 92/8980

Int. Cl.[6] **B65D** *88/00*

U.S. Cl. 220—1.5 4 Claims



1. A beam tank including a tank mounted on two mountings located one towards either end of the tank and with the tank being secured to the mountings by removable securing means so that the tank can be removed from its mountings, each mounting comprising a tank cradle spaced from and connected to an end frame by connecting means, and tank end connection means located at opposite ends of the tank for rotatably connecting the tank to the end frame, each tank end connection means comprising formations on the tank and on the end frame releasably locked together by locking means.

5,390,807

CONTAINER FOR PHOTOGRAPHIC FILM

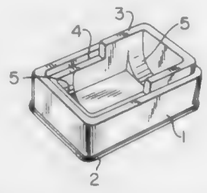
Nuno C. Galaburda, Conjunto Adrianopolis, Quadro A - Casa 09, Manaus/Amazonas - 69000, Brazil

Filed Nov. 25, 1992, Ser. No. 981,556

Int. Cl.[6] **B65D** *85/02*

U.S. Cl. 220—4.24 1 Claim

1. Container for a photographic film, comprising a box-like body fully made of polystyrene and consisting of two basic members of substantially prismatic rectangular configuration equal for said two basic members, each basic member having a base wall having a base surface, and side walls upwardly protruding from said base wall, said side walls being thicker than said base wall, said base wall including a narrow peripheral rim outwardly extending therefrom along the entire perimeter of each said member, each basic member having a free peripheral edge and including at said free peripheral edge a rib portion upwardly projecting from said side walls, and a recessed portion cut off of said side walls and adjacent said rib portion so that said rib portion and said recessed portion form two halves of said peripheral edge of the basic member, said rib portion and said recessed portion being of the same height and thickness and being of half the thickness of said side walls so that



when the two basic members are placed one over another to close the container one of said basic members fits with said peripheral edge thereof over the entire peripheral edge of another of said members to form a fully closed smooth box with inner and outer faces of the side walls of the two basic members being in alignment with each other, respectively, and with two peripheral rims of said members being opposite each other for facilitating opening of the container, wherein each basic member further includes on an inner surface thereof two spaced bosses of semicircular configuration integrally molded to said basic member so that when the two basic members are in a closed position, the bosses of the two basic members form circular end cradles for the photographic film.

5,390,808

FILLER TUBE FOR LIQUID CONTAINERS

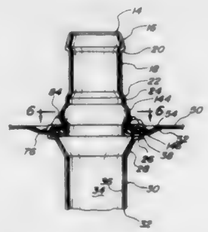
Kevin R. Choma, Canton, and Jack L. Boldt, Jr., Waterford, both of Mich., assignors to General Signal, Stamford, Conn.

Continuation-in-part of Ser. No. 935,542, Aug. 26, 1992, Pat. No. 5,253,773. This application Feb. 23, 1993, Ser. No. 20,577

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[6] **F16L** *13/14*

U.S. Cl. 220—86.2 20 Claims



1. A filler tube assembly, comprising:

a selectively deformable tube having a plurality of diameter sections disposed between first and second ends wherein at least one of said diameter sections include radially outwardly expanding portions, said tube further including a radially projecting annular flange disposed between said first and second ends;

a tank for receiving said tube, said tank including a body and a sealing arrangement having a projecting annular sleeve for hosting said tube, said annular sleeve including a plurality of radially outwardly expanded portions which are disposed contiguously over said radially outwardly expanded portions of said tube;

sealing means disposed between said filler tube and said tank; and

a retainer member which is disposable over said annular sleeve adjacent to said tank;

whereby said radially outwardly expanded portions of said tube and said annular sleeve overlap a portion of said retainer member.

5,390,809

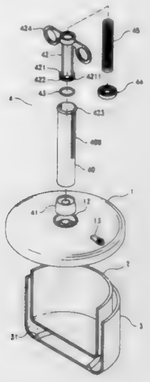
VACUUM CONTAINER

Shui C. Lin, P.O. Box 82-144, Taipei, Taiwan, Prov. of China

Filed Oct. 21, 1993, Ser. No. 138,992

Int. Cl.[6] **B65B** *31/04*

U.S. Cl. 220—212 1 Claim



1. A vacuum container comprising:

an inner container;

an outer container receiving said inner container;

a lid provided with a packing formed with an outer annular groove for receiving an upper rim of said outer container and an inner annular groove for receiving an upper rim of said inner container, said lid being formed with a recess having a first opening in communication with a space between said inner container and said outer container, said packing having a first hole aligned with said first opening and a second hole aligned with said second opening;

a flexible cap fitted in the recess of said lid;

a check valve mounted on a central portion of said lid;

a first one-way valve fitted in said first opening;

a second one-way valve fitted in said second opening;

a gas relief button disposed within the recess of said lid and connected with a top of said first one-way valve; and

a vacuum extractor arranged on said check valve, said vacuum extractor including a sleeve and a seat engaged with a lower end of said sleeve, said sleeve being a tubular member in which is inserted a piston, said piston having a lower end formed with an upper flange and a lower flange between which there is a circular portion on which is fitted a leak-proof gasket, said upper flange being formed with a pair of exhaust openings, said leak-proof gasket being a ring-like member which is slightly larger than an outer diameter of said circular portion.

5,390,810

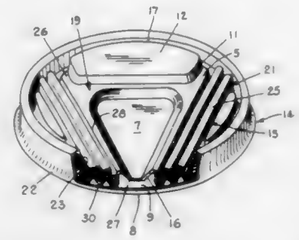
SQUEEZE OPEN LID

Crystal L. Stroble, 78 Fernwood Dr., Murrells Inlet, S.C. 29576; William F. Stokes, Rte. 2, Box 113, Branchville, S.C. 29115; Fairey S. Bradford, P.O. Box 525, Kingstree, S.C. 29556, and Nancy S. Stroble, 78 Fernwood Dr., Murrells Inlet, S.C. 29576

Continuation of Ser. No. 767,019, Sep. 27, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 22,810

Int. Cl.[6] **B65D** *43/04*

U.S. Cl. 220—281 7 Claims



1. A closure device providing squeeze to open capabilities for covering an open top of a flexible, resilient beverage container, said open top being defined by an upper rim with an inside wall, said closure comprising:

a flexible, resilient top plate;

an arcuate front edge on said top plate for abutting against an opposite portion of said inside wall of said upper rim; and

compressible sections comprising a plurality of corrugations in the top plate on each side of said arcuate front edge radiating to said arcuate front edge so that said top plate compresses upon the application of a squeezing force for permitting a portion of the upper rim opposite said arcuate front edge on said top plate to flex outwardly from said arcuate front edge thereof.

5,390,811

WAFER BASKET FOR CONTAINING SEMICONDUCTOR WAFERS

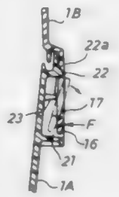
Nobuyoshi Ogino, Musashino, and Toshitsugu Yajima, Itoigawa, both of Japan, assignors to Shin-Etsu Handotai Co., Ltd. and Shin-Etsu Polymer Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 937,219, Aug. 28, 1992, abandoned. This application Mar. 4, 1994, Ser. No. 205,770

Claims priority, application Japan, Aug. 30, 1991, 3-245254

Int. Cl.[6] **B65D** *45/16*

U.S. Cl. 220—326 9 Claims



1. A container for semiconductor wafers comprising

an outer box having a main body with sides and a lid having a peripheral brim surrounding a portion of said sides of said main body when said lid is placed on said main body, said lid being further adapted to fit on an edge of said sides of said main body,

at least one side of at least one of said main body and said lid having a click boss integrally formed therewith,

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a corresponding side of the other of said main body and said lid having a hook means integrally formed therewith for engaging said click boss, at least one of said click boss and said hook means including means for causing engagement of said hook means and said click boss when said lid is fitted on sid main body, and

a means located at a periphery of said container for disengaging said hook means from said click boss when an inward force is applied to said hook means, said means for disengaging said hook means from said click boss including

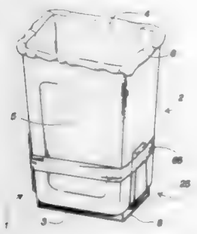
fulcrum boss member, integrally formed with at least one of said main body and said lid at a location adjacent said hook means, for causing outward motion of a portion of said hook means in response to said inward force.

5,390,812

WASTEBASKET LINER REMOVAL DEVICE

Robert B. Spiro, 1101 Rock Pointe Look, Woodstock, Ga. 30188

Filed Jun. 3, 1994, Ser. No. 253,542
Int. Cl.[6] B65D *90/04*
U.S. Cl. 220—403 18 Claims



1. A wastebasket liner removal device for use with a wastebasket, the wastebasket including a closed bottom, an open top, and at least one side wall joined to the bottom along their common edges for forming a receptacle to hold a removable wastebasket liner in the interior of the wastebasket, comprising:

a frame;

means for fastening said frame to the bottom of the wastebasket;

a plurality of footpads; and

means for holding each of said footpads on said frame so that each footpad can be moved toward and away from said frame into a retracted position and into a generally horizontal extended position;

whereby said footpads are moved into their extended position so that the feet of the person removing the wastebasket liner can be placed thereon to hold the wastebasket in position as the wastebasket liner is drawn upward and out of the wastebasket without also lifting the wastebasket upward.

5,390,813

PLASTIC CONTAINER FOR RECYCLING HOUSEHOLD WASTE

Dennis C. Anderson, Northfield; Brett A. Anderson, Prior Lake, and Harold T. Hjermstad, II, Eden Prairie, all of Minn., assignors to National Polymers Inc., Lakeville, Minn.

Filed Sep. 29, 1993, Ser. No. 128,989
Int. Cl.[6] B65D *90/04*
U.S. Cl. 220—404 19 Claims

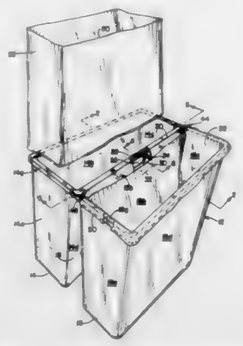
1. A recycling container to assist in the sorting of recyclable materials comprising,

a container body having left and right side-by-side compartments separated by a hollow upright partition therebetween.

each of said compartments has connected upright side walls, a bottom wall and an upper open wide mouth surrounded by a rim,

a first and a second of said upright side walls being spaced apart from one another to define said hollow upright partition,

a horizontally disposed laterally extending connected panel aligned in the plane of the upper open wide mouth of each of the compartments for joining said first and second side walls at upper edges thereof,



a center portion of said horizontally disposed connecting panel defining a handle,

said handle has a downwardly facing gripping surface,

said first and second side walls have openings therein beneath the handle to allow a person's hand to be placed below the handle, and

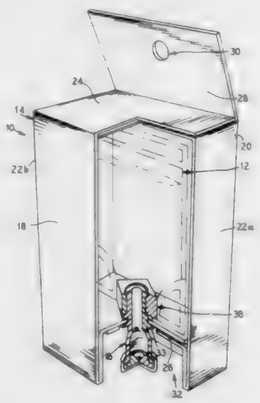
the handle is located within the container at substantially the elevation of the rim of the container that surrounds the upper open wide mouth of each compartment.

5,390,814

CONTAINER HAVING FITMENT

William Christine, and Peter DeRaymond, both of Nazareth, Pa., assignors to Inpaco Corporation, Nazareth, Pa.

Filed May 7, 1992, Ser. No. 881,517
Int. Cl.[6] B65D *90/04*
U.S. Cl. 220—465 22 Claims



1. An apparatus for storing and dispensing a liquid comprising:

a pouch formed from a heat sealable olefin plastic film defining an interior for holding the liquid;

a fitment constructed from a rigid plastic thermally welded to the pouch by a sealing sleeve, the sealing sleeve being constructed from a heat sealable plastic that is compatible with the heat sealable olefin plastic of the pouch; and

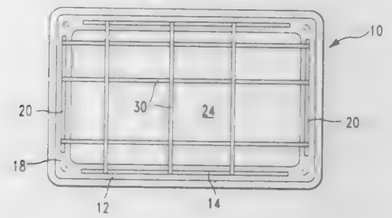
a container having a top wall and a bottom wall parallel to the top wall, the container housing the pouch and at least a portion of the fitment and allowing the fitment to extend through an aperture of the bottom wall of the container into an area defining a recess of the container wherein the fitment extends into the recess but not beyond the recess.

5,390,815

CONTAINER WITH ADJUSTABLE COMPARTMENTS

Mark B. Spiegel, 75 West Hartsdale Ave., Hartsdale, N.Y. 10530, assignor to Mark Bernard Spiegel, Hartsdale, N.Y.

Continuation-in-part of Ser. No. 110,351, Aug. 23, 1993, abandoned. This application Apr. 7, 1994, Ser. No. 224,250
Int. Cl.[6] B60R *5/00*
U.S. Cl. 220—529 7 Claims



1. A container having adjustable compartments, said container comprising

a box having an exterior surface and an interior defined by at least one sidewall, said sidewall having slot means therein, said slot means having a plurality of upstanding projections therein, and

at least one elongate piece of elastomeric material having a pair of opposed ends and extending across said interior and through said slot means of said at least one sidewall, each said elongate piece of elastomeric material having a plurality of holes positioned lengthwise along said piece, each said hole being profiled to fit on a respective said projection, whereby

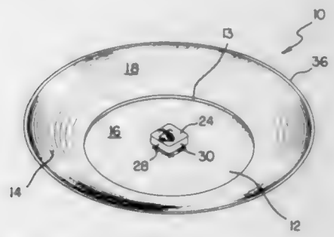
said elongate piece may be positioned in any of a plurality of positions with respect to said slot means through which said piece extends.

5,390,816

DINING PLATE HELPER

Gary L. Boyd, 328 Sneath Way, Alpine, Calif. 91901

Filed Aug. 31, 1993, Ser. No. 113,758
Int. Cl.[6] A47G *19/02*
U.S. Cl. 220—574.1 3 Claims



1. A dining plate comprising:

an annular member including a substantially flat inner portion of a first thickness and having a substantially circular shape defining an inner portion periphery therearound of an inner portion diameter, with said inner portion having a substantially flat inner portion top surface and a substantially flat inner portion bottom surface, said inner portion being operable to receive food thereon for manipulation and dissection of said food with a utensil by an individual, said inner portion further having an integrally formed upstanding abutment member positioned in a center of said inner portion top surface, said abutment member having a top surface and a side wall surface, said side wall surface being operable to engage said food when said food is moved across said inner portion by said utensil operated by said individual, thereby stopping said food from further traversing said inner portion and forcing said food onto said utensil, said abutment member having an abutment member height defined by a distance between said abutment member top surface and said inner portion top surface from which said abutment member upwardly projects;

said annular member further including an annular outer rim portion integrally extending from said inner portion periphery, said outer rim portion being of a second thickness greater than said first thickness such that an annular shoulder is defined along said inner portion periphery on said inner portion top surface at a juncture of said outer rim portion and said inner portion with said inner portion being substantially recessed relative to said outer rim portion, said outer rim portion having an outer rim portion top surface and an outer rim portion bottom surface, said outer rim portion being substantially convex along said bottom surface thereof and substantially concave along said top surface thereof such that said food will be gravitationally biased from said rim portion towards said inner portion when said annular member is positioned substantially horizontally;

said annular member further including a plurality of integrally formed leg members extending from said inner portion bottom surface at said juncture of said outer rim portion and said inner portion, said leg members each being substantially arcuately shaped so as to be aligned along a corresponding portion of said inner portion periphery, said leg members each having an outside sur#ace and a leg member height defined as a distance from which the leg members project from said inner portion bottom surface with said leg member height being substantially slightly greater than said abutment member height, said leg members being arcuately spaced from each other along said upper portion periphery such that said dining plate can be stacked onto another substantially identically constructed dining plate with said leg members of said dining plate abutting said annular shoulder of said another dining plate to preclude sliding of said dining plate relative to said another dining plate.

5,390,817

PACKAGING CONTAINER

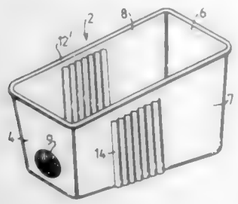
Ake Rosén, Helsingborg, Sweden, assignor to Tetra Laval Holdings & Finance SA, Pully, Switzerland

Filed Sep. 17, 1993, Ser. No. 122,284
Claims priority, application Sweden, Sep. 28, 1992, 9202784
Int. Cl.[6] B65D *90/02*
U.S. Cl. 220—669 11 Claims

1. A packaging container which is deep drawn from a thermoformable material, a first part of the container including a front wall; two side walls; a top wall and a bottom wall; said first part being adapted to be joined together with a second part for forming a rear wall of the container, the top wall being provided with an opening arrangement, the front wall forming an angle of less than 90° with the bottom wall and an angle of

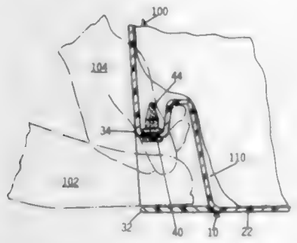
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more than 90° with the top wall, and each of the side walls forming an angle of greater than 90° with the front wall to



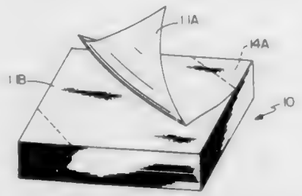
thereby facilitate nesting of the first part with another first part.

5,390,818
RECEPTACLE FOR HOLDING TRASH LINER
Michele LaBuda, 3431 E. 4th St., Tucson, Ariz. 85716
Division of Ser. No. 908,288, Jul. 2, 1992, Pat. No. 5,269,434.
This application Oct. 28, 1993, Ser. No. 144,740
Int. Cl.[6] B65D *90/34*
U.S. Cl. 220—676 13 Claims



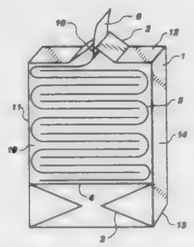
1. An apparatus for receiving and holding a flexible and collapsible trash liner comprising:
- a rigid upright trash receptacle having an upwardly extending main body with a generally closed bottom and an open top, said receptacle resting on an underside surface of said bottom, said bottom having a periphery about which said bottom is affixed to said main body;
- said periphery having integrally molded therealong at least one sidewardly open cavity, said at least one sidewardly open cavity extending upwardly from the underside surface to extend into a portion of said main body, wherein the underside surface and each said at least one sidewardly open cavity effectively form a foothold for a user in removing said trash liner from said receptacle and a handhold for said user in transporting said trash receptacle; and
- wherein at least one said at least one sidewardly open cavity has an aperture therethrough communicating the interior of said receptacle with the exterior thereof, said aperture having inserted therein a means for allowing air to enter the interior of the receptacle while retaining liquid in the interior, wherein the means for allowing air to enter the interior of the receptacle allows air flow only when there is a lower pressure in the interior of the receptacle than on the exterior and restricts air flow when there is a higher pressure in the interior of the receptacle than on the exterior.

5,390,819
STACK AND DISPENSER OF REPOSITIONABLE ADHESIVE SHEETS
Howard B. Kaye, Syracuse, N.Y., assignor to PCI Paper Conversions, Inc., Syracuse, N.Y.
Filed Jul. 15, 1993, Ser. No. 91,379
Int. Cl.[6] C09J *7/02*
U.S. Cl. 221—45 7 Claims



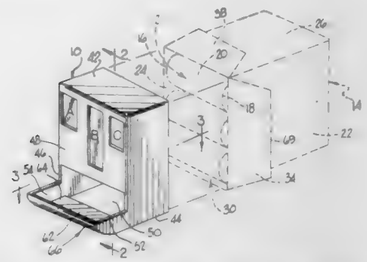
1. A stack of flexible polygonal sheets in combination with a dispenser disposed over one another with low-tack repositionable adhesive on alternate opposite coated areas of successive sheets in the stack, the improvement comprising
- a) said adhesive-coated areas being confined to alternate opposite corner areas of successive sheets in the stack, and
- b) the dispenser defining an exit slot over the stack through which each successive sheet is withdrawable with a corner leading,
- c) whereby as each successive sheet is withdrawn through the dispenser slot and peeled away from the next sheet an advancing line of separation between its adhesive-coated corner area and the next sheet becomes progressively shorter until reducing to a point upon complete separation.

5,390,820
ELEVATING DISPENSING DEVICE FOR FLEXIBLE SHEET MATERIAL
Kenneth E. Wright, and Shirlene Wright, both of 6785 S. 1544 West, West Jordan, Utah 84084
Filed Feb. 25, 1994, Ser. No. 202,261
Int. Cl.[6] B65H *1/08*
U.S. Cl. 221—52 21 Claims



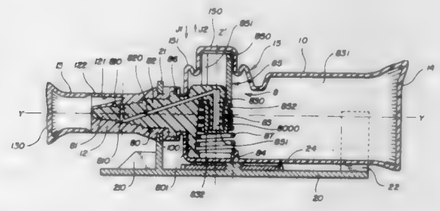
1. An elevating dispenser for a stack of a plurality of interleafed, flexible sheet materials comprising a carton having a top wall with a dispensing aperture therein, opposing vertical sidewalls, and opposing vertical end walls and said carton having an upwardly extendable elevating platform in the chamber of the carton at the bottom upon which the stack of sheet materials rests, said elevating platform being flexibly attached on each of two opposing sides to the base of the opposing side walls of the carton by one of two flexibly folded extension panels, said extension panels being flexibly folded beneath the elevating platform, and said elevating platform being unattached to the opposing end walls of the carton.

5,390,821
METHOD AND APPARATUS FOR DISPENSING ROLLABLE ARTICLES
Stephen M. Markel, 6892 Quail St., Arvada, Colo. 80004
Filed Feb. 4, 1994, Ser. No. 192,412
Int. Cl.[6] G07F *11/02*
U.S. Cl. 221—194 20 Claims



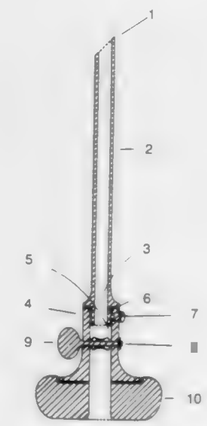
1. An apparatus for controllably dispensing rollable articles from a package, container or the like, said apparatus comprising:
- retainer means for placement over an opening in a package to prevent rollable articles contained in the package from rolling en masse out of the package, said retaining means also defining a port through which rollable articles are dispensed from the package;
- holding means cooperating with said retainer means for rollingly receiving a predetermined number of articles dispensed from the package through said port and permitting access to received articles so that an individual may retrieve an article from the holding means by grasping it; and
- attachment means for securing said retainer means to the package.

5,390,822
PACKAGING VIAL FOR A LIQUID PRODUCT IN PARTICULAR MEDICINAL OR COSMETIC
Gilbert Lataix, Clermont-Ferrand, France, assignor to Merck & Co., Inc., Rahway, N.J.
Filed Jul. 26, 1993, Ser. No. 97,635
Int. Cl.[6] B67D *5/24*
U.S. Cl. 222—30 5 Claims



1. A packaging vial for dispensing in calibrated successive doses a liquid medicinal product comprising:
- a flexible casing containing the product, being free from air, comprising a pocket having a thin and deformable wall, and having a tubular nozzle connected to said casing for discharging the product;
- a pump including a fixed body inserted into said nozzle and a moveable actuating member disposed inside said casing and displaced through said thin and deformable wall of said casing, said fixed body including a chamber wherein movement of said actuating member in a first direction draws the product into said chamber while movement of said actuating member in an opposite second direction discharges a calibrated dose of the product from the chamber; and
- a rigid support coupled to said casing and having a counting means for counting the number of doses of the product dispensed, said counting means comprising a first freely rotating toothed gear and a second freely rotating toothed gear, said first gear having an actuating leg connecting said first gear to said second gear whereby actuating said actuating member causes the product dose to be dispensed and also turns said first gear a fraction of a turn and whereby upon a complete revolution of said first gear said second gear turns a fraction of a turn thereby counting the number of product doses dispensed.

5,390,823
OIL FILTER HAND PUNCH AND DRAIN TOOL
Gary H. Kilgore, 206 Laurel Heights Pl., San Antonio, Tex. 78212
Filed Jan. 19, 1994, Ser. No. 183,363
Int. Cl.[6] B67D *5/00*
U.S. Cl. 222—81 1 Claim



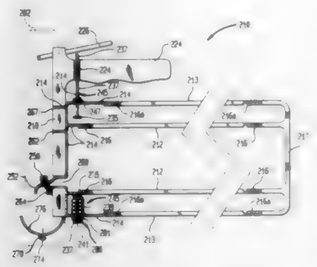
1. An oil filter puncturing and drainage tool comprising: a hollow shaft, with an angular metal punching means Integral with one end of the hollow shaft and on the opposing end of the hollow shaft, an attachment means; a corresponding attachment means at the end of a handle that removably interconnects with said attachment means at the end of said hollow shaft; said handle having a cavity longitudinally there-through into which the shaft attachment means is inserted into said end to connect with said attachment means of said handle; seal means being provided at the juncture of said shaft and handle attachment means to form a fluid tight juncture there-between; said cavity having a dispensing aperture at the opposite end of said handle; said cavity further Including a valve means that is actuated by hand manipulation to obstruct said cavity to control flow therethrough; said handle being selected from the group of Impact tolerant handle materials; wherein with said valve means not obstructing said cavity,said hollow shaft and said cavity define a flow path from the punching means to said aperture for punching and selectively draining oil from oil filters.

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5,390,824
MEASURING DISPENSER FOR ONE OR MORE LIQUIDS

Eustathios Vassiliou, 12 S. Townview La., Newark, Del. 19711

Continuation-in-part of Ser. No. 55,139, Apr. 29, 1993, abandoned. This application Aug. 23, 1993, Ser. No. 110,587
Int. Cl.[6] B67D *5/60*
U.S. Cl. 222—133 6 Claims



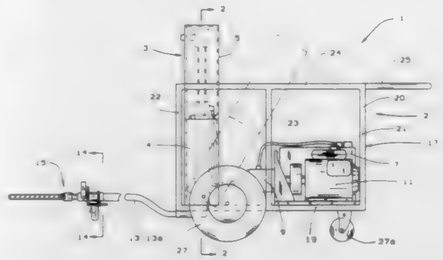
1. A measuring dispenser for dispensing a first liquid from a first container comprising first valve means having a normally closed configuration with respect to said first container for selectively releasing a flow of said first liquid from said first container upon opening said first valve means, metering means arranged downstream of said first valve means for receiving and selectively retaining a predetermined supply of said first liquid received from said first valve means, second valve means having a normally open configuration with respect to said first container for selectively releasing said predetermined supply of said first liquid from said metering means, and valve control means for controlling said first and second valve means so as to selectively actuate said first valve means from said closed configuration to an open configuration upon simultaneously actuating said second valve means from said open configuration to a closed configuration, said dispenser also comprising a supplementary container adaptable to contain and dispense a second liquid, the supplementary container comprising third valve means having a normally closed configuration for selectively releasing a flow of the second liquid from the supplementary container upon opening the third valve means[.],the third valve means obtaining the open and closed configuration substantially concurrently and respectively with open and closed configuration of the first valve means, so that the first liquid is dispensed after the second liquid has been dispensed.

5,390,825
PORTABLE, SELF CONTAINED, TWO-PART ADHESIVE DISPENSING DEVICE

Christopher M. Rockel, 1929 Greenpoint Apt. 302, Kirkwood, Mo. 63122

Filed Mar. 10, 1993, Ser. No. 29,126
Int. Cl.[6] B67D *5/52*
U.S. Cl. 222—135 17 Claims

1. A device for the delivery of a two component adhesive comprising:
- a support structure;
- a dispensing assembly on the support structure having a first member and a second member, one of the members having a pair of cylindrical receptacles for receiving filled cartridges containing adhesive components and the other of said members containing means for dispensing the adhesive components from the cartridges, the member containing said dispensing means being movable with respect to the member having said pair of cylindrical receptacles whereby the dispensing means are movable into and out of alignment with the receptacles so that the cartridges can be loaded and unloaded into the receptacles;
- means for locking the two members in position whereby the dispensing means and the receptacles are in alignment; and

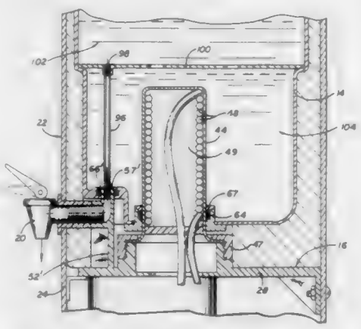


- means for moving the dispensing means in concert against one end of each of the filled cartridges to drive the adhesive components out of the other ends of the cartridges.

5,390,826
BOTTLED WATER STATION WITH REMOVABLE RESERVOIR AND MANIFOLDED SUPPORT PLATFORM

Bruce D. Burrows, Valencia, Calif., assignor to Ebtech, Inc., Columbus, Ohio

Filed Feb. 28, 1994, Ser. No. 202,722
Int. Cl.[6] B67D *5/62*
U.S. Cl. 222—146.6 18 Claims

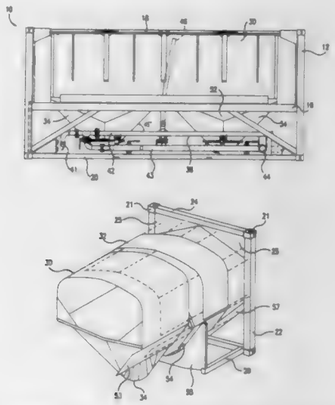


16. A water station, comprising:
- a reservoir having a hollow interior for receiving and storing a supply of water;
- a station housing having a support platform for receiving and supporting said reservoir, said reservoir being adapted for slide-fit drop-in installation into said station housing and lift-out removal therefrom;
- baffle plate means dividing the interior of said reservoir into first and second chambers;
- a temperature control device supported by said support platform in thermal communication with water within said first chamber to control the temperature thereof;
- said first slide-fit connector and said first dispenser fitting cooperatively defining a flow path coupled to said first chamber upon installation of said reservoir to said station housing;
- said second slide-fit connector and said second dispenser fitting cooperatively defining a flow path coupled to said second chamber upon installation of said reservoir into said station housing; and
- first and second faucet valves mounted respectively to said first and second dispenser fittings and manually operable to dispense water therefrom.

5,390,827
DRY BULK PRESSURE DIFFERENTIAL CONTAINER WITH EXTERNAL FRAME SUPPORT

John J. Toth, Danbury, Conn., and Richard McNealy, McKenney, Tex., assignors to Northbrook Rail Corporation, Arlington Heights, Ill.

Continuation-in-part of Ser. No. 48,518, Apr. 20, 1993. This application Nov. 19, 1993, Ser. No. 155,721
Int. Cl.[6] B65D *88/30, 88/72*
U.S. Cl. 222—181 13 Claims



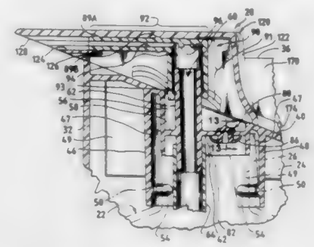
1. A container for storing and transporting bulk product, comprising
- a) a vessel comprising a plurality of hoppers for holding and storing said product, each said hopper having a top, bottom and plurality of sides;
- b) means for unloading said product from said vessel;
- c) an external frame comprised of a first end piece adjacent one of said hoppers and a second end piece adjacent a second of said hoppers, each said end piece having a top portion, said external frame further comprising a bottom portion and at least a first and second side portions connecting said top portion to said bottom portion, and a plurality of longitudinal members connecting said end pieces;
- d) side panels secured to the side of each said hopper and extending the length of said vessel;
- e) means for attaching said side panels to each said end piece of said external frame.

5,390,828
CLOSURE WITH TWO-PART SLIDABLE DISPENSING CAP

Richard A. Gross, Oconomowoc, Wis., assignor to Aptargroup, Inc., Crystal Lake, Ill.

Filed May 20, 1993, Ser. No. 65,553
Int. Cl.[6] B65D *37/00*
U.S. Cl. 222—211 20 Claims

1. A dispensing closure for an opening to a squeezable container for holding fluid, said container being of the type having a flexible and resilient wall which can be elastically deformed when subjected to above-ambient external squeezing pressure to temporarily reduce the container volume to force said fluid through said opening and which tends to return to the original undeformed shape upon release of the squeezing pressure, said closure comprising:
- a body which has a top wall and which can be mounted to said container with said top wall disposed over said container opening, said body having a discharge passage through said top wall in communication with said container opening;
- a cap movable on said top wall laterally across said top wall and defining a dispensing conduit extending between an inlet aperture and a dispensing aperture; and
- a hollow fitment separate from, but engaged with, said cap, said fitment having a first portion slidably disposed along said discharge passage and having a second portion that projects into said cap inlet aperture and hat is disposed in said cap dispensing conduit to accommodate sliding movement of said cap relative to said fitment, said fitment

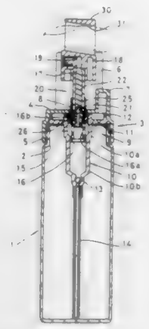


defining an intermediate passage for communicating between said body discharge passage and said cap dispensing conduit, said fitment being movable along said discharge passage between (1) an elevated dispensing position accommodating fluid flow out of said cap dispensing aperture and (2) a lowered closed position wherein fluid is prevented from flowing out of said cap dispensing aperture.

5,390,829
LIQUID INJECTION CONTAINER WITH FINGER KNOB

Tadao Saito, Adachi; Takamitsu Nozawa, Suginami, and Kazunori Hashimoto, Koto, all of Japan, assignors to Yoshino Kogyosho Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 910,272, Aug. 6, 1992, abandoned. This application May 18, 1994, Ser. No. 246,366
Claims priority, application Japan, May 15, 1989, 1-55473; Nov. 21, 1989, 1-135213; Nov. 24, 1989, 1-136461; Nov. 29, 1990, 2-128985
Int. Cl.[6] G01F *11/00*
U.S. Cl. 222—321 4 Claims



1. A manually-operated liquid discharge container comprising:
- a container body having a neck portion;
- a cap-shaped member including a top wall connected to a circumferential wall fitted on said neck portion;
- a pump cylinder having a suction valve, said pump cylinder extending downwardly from said cap-shaped member into said container body;
- an actuator having a piston arranged slidably in said pump

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cylinder, a stem extending upwardly from said piston through said top wall, and an operation head attached on a top of said stem and provided with a discharge nozzle having a front face and a generally ring-shaped finger knob with a hole for receiving a finger of a user, said actuator being adapted to suck a liquid from within said container body into said pump cylinder and to discharge the liquid out of said discharge nozzle in a direction by vertical movement of said piston; and

a pair of auxiliary walls extending upwardly from said top wall along opposed side surfaces of said operation head for protecting and guiding said operation head through a gap therebetween, said auxiliary walls also serving as grips for fingers of a user,

wherein said piston is free from automatic upward bias and said finger knob is provided on an upper end of said operation head for manually pulling up and depressing down said piston,

and said finger knob hole is oriented in the same direction as the discharge from said discharge nozzle and said auxiliary walls are disposed on opposed sides of the stem at generally right angles to the front face of the discharge nozzle.

5,390,830

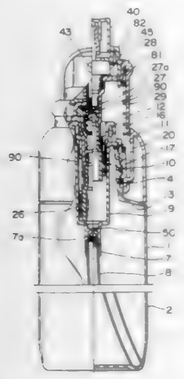
AEROSOL-TYPE SPRAYER FOR LIQUIDS

Hiroshi Mizushima; Tadao Saito, and Takamitsu Nozawa, all of Koto, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 177,185, Jan. 3, 1994, Pat. No. 5,346,103, which is a continuation of Ser. No. 848,966, Apr. 24, 1992, abandoned. This application Jun. 16, 1994, Ser. No. 260,830

Int. Cl.[6] B65D *88/54*

U.S. Cl. 222—321 9 Claims



1. A liquid sprayer comprising:

a container body provided with a neck portion extending therefrom;

a cylinder supported by said neck portion and hanging into the container body;

a suction valve provided at the lower end portion of the cylinder;

a suction pipe extending from the suction valve to the inner bottom of the container body;

an erecting wall having an upper end portion engaged with the upper portion of said cylinder and being connected to the outer surface of said neck portion;

an erecting guide trunk connected to the lower end of the erecting wall, and surrounding the erecting wall from outside with a constant distance therefrom;

a trunk piston upwardly and downwardly movably fitted into said cylinder;

a stem extending from the piston;

a connecting piece attached to the upper end of the stem;

a sliding trunk hanging from the connecting piece and being upwardly and downwardly movably fitted into the gap between said erecting wall and guide trunk;

a head provided above said stem, and having a spraying aperture communicating with the interior of said stem; and

a discharge valve provided in the upper portion of said stem, wherein said discharge valve is an aerosol-type valve which is opened when the stem and the piston are depressed by depressing the head.

5,390,831

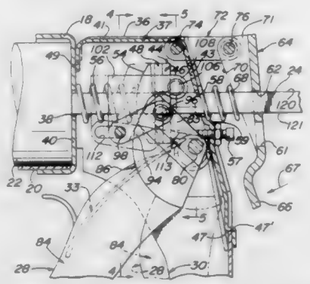
DISPENSING DEVICES FOR HIGH VISCOSITY COMPOSITIONS

Mark C. Schneider, Riverton, N.J., assignor to Albion Engineering Company, Philadelphia, Pa.

Filed Dec. 6, 1993, Ser. No. 162,561

Int. Cl.[6] B67D *5/42*

U.S. Cl. 222—391 13 Claims



1. A dispensing device for high viscosity compositions, said device including:

a. an elongate drive rod movable in a linear direction for dispensing a high viscosity composition;

b. a driving grip for engaging the drive rod and moving said drive rod in the linear direction, said driving grip including a passage therethrough and said elongate drive rod extending through said passage in close conformity with surfaces defining said passage;

c. a trigger pivotally secured to an axle and including a hand gripping section for actuating the trigger and a first link section, said hand gripping section and the first link section being integrally joined to move as a single unit about said axle;

d. a second link pivotally secured to said first link section of the trigger through a toggle axle spaced from the axle of the trigger, said second link and said first link section being movable from a first, retracted condition prior to manual actuation of the trigger to a second, extended condition upon manual actuation of the trigger to provide a high thrust to the second link;

e. a force transmitting member engaging the driving grip; and

f. means operably connecting the second link to the force transmitting member for imparting the high thrust from the second link to the force transmitting member and to the driving grip engaged by said force transmitting member.

5,390,832

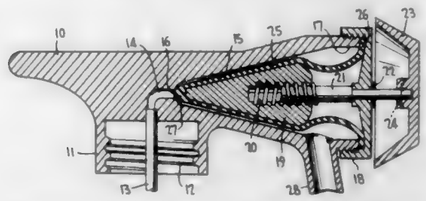
APPARATUS FOR DISPENSING A PRESSURIZED LIQUID

Samuel N. Lombardo, 1822 Fifth Ave., Arnold, Pa. 15068

Division of Ser. No. 856,690, Mar. 24, 1992, Pat. No. 5,244,117. This application Aug. 13, 1993, Ser. No. 105,565

Int. Cl.[6] B65D *83/00*; B67D *5/60*; F16K *47/00*

U.S. Cl. 222—394 15 Claims



1. Apparatus for dispensing liquid from a container having a top end and a headspace above the contained liquid, said apparatus comprising:

a cap valve closing said container and sealing the top end of the container against escape of pressurized fluid from the headspace;

a charge of pressurized gas sealed in said headspace by said cap valve;

a siphone tube having inlet and outlet ends;

an elastomeric check valve mounted in said cap valve for permitting insertion of said siphon tube through the check valve and into the liquid while preventing escape of pressurized gas about the siphon tube exterior;

dispenser assembly means for securing said siphon tube to said container with said inlet end of the siphon tube extending into said liquid proximate the bottom of said container and with the outlet of said siphon tube extending upwardly beyond said headspace;

wherein said dispensing assembly includes a manually actuable throttling and diffusing valve connected to the outlet end of said siphon tube, said valve including a restricted flow passage for throttling liquid flowing through the siphon tube and into said valve, said flow passage having a gradually increasing flow cross-section to diffuse flow therethrough by gradually reducing the pressure of the flowing liquid from the container interior pressure to ambient pressure; and

wherein said pressurized gas is substantially inert relative to said liquid and is at a pressure sufficient to drive all of said liquid from said container through said siphon tube and said throttling and diffusing valve.

5,390,833

ROOM SPRAY DISPENSER

Manfred Baumann, Diepoldsau, Switzerland, assignor to CWS International AG, Baar, Switzerland

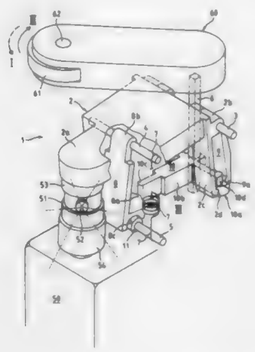
Filed Aug. 19, 1993, Ser. No. 109,130

Claims priority, application Switzerland, Aug. 21, 1992, 02609/92

Int. Cl.[6] B67D *5/00*

U.S. Cl. 222—505 13 Claims

1. A room spray dispenser comprising a receptacle for a liquid to be atomized, said receptacle having a neck bearing a spray valve comprising a nozzle and pump; an impact lever pivotly mounted for engagement with said spray valve to actuate a spray, said input lever being normally biased against said spray valve; a cocking and detaining element having a vertical swivel shaft and a swivel lever mounted to said swivel shaft for rotation about said swivel shaft in a generally horizontal plane, said cocking and detaining element being mounted such that rotation of said swivel lever in a first direction from a first position to a second position raises said impact lever away from the biased position against said spray valve and rotation in a second direction from said second position to said first position releases said impact lever for return towards said spray valve to actuate a spray and to place said impact lever into a safe position.



5,390,834

TROLLEY DESIGNED FOR USE AS A CONVEYING TROLLEY FOR CONVEYING PRODUCTS, IN PARTICULAR FOODS AND DRINKS FOR SALE

Jacobus M. Bitter, Naaldwijk; Camille W. van den Brande, Haarlem; Reinardus L. M. Hazelebach, Capelle aan den IJssel; Niklaas E. van Hylckama Vlieg, Delft; Andries Rijfers, Alphen aan den Rijn; Johannes J. Smits, Hoek van Holland; Theodorus J. H. v. Steenbergen, Bergschenhoek, and Jacco M. Van Stenis, Ridderkerk, all of Netherlands, assignors to Compagnie Internationale des Wagons-Lits et du Tourisme, S.A., Brussels, Belgium

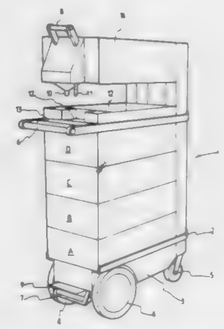
PCT No. PCT/NL91/00210, § 371 Date Jun. 23, 1993, § 102(e) Date Jun. 23, 1993, PCT Pub. No. WO92/06617, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 23, 1991, Ser. No. 39,462

Claims priority, application Netherlands, Oct. 23, 1990, 9002312

Int. Cl.[6] A47B *31/02*

U.S. Cl. 222—608 9 Claims



1. Trolley designed for use as a conveying trolley for conveying products, in particular foods and drinks for sale, comprising a frame provided with wheels and carrying at least one container, characterized in that said frame has means for carrying plural containers one above the other in the frame, the frame in the bottom thereof having a fixed water supply container with insulation and heating means, and a pump with battery supply for conveying the water heated in said fixed

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water supply container to at least one tap point, supply means connected to at least one tap point for adding an extract to water heated in said fixed water supply container, and wherein said at least one container carried in said frame is selected from the group consisting of:

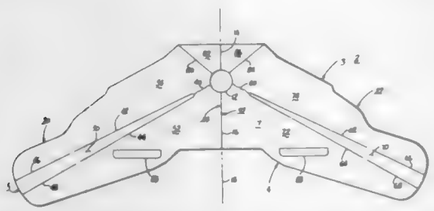
(i) an insulated heat-conserving container with heating means;
(ii) an insulated cooling container;
(iii) an insulated hot water container which is to be coupled to the fixed water supply container; and
(iv) a supply container;
(v) an insulated hot water container which is to be coupled to the fixed water supply container and which is provided with heating means; and
(vi) a supply container which is insulated.

5,390,835

COVER FOR GARMENT A HANGER

William L. Murphy, Hinsdale, and Robert Gorecki, Downers Grove, both of Ill., assignors to Reliable Packaging, Inc., Chicago, Ill.

Filed Mar. 1, 1994, Ser. No. 204,620
Int. Cl.[6] A47G *25/14*
U.S. Cl. 223—98 **8 Claims**



1. A cover for a garment hanger comprising a hook and opposed arms extending from the hook for supporting a garment, the cover comprising a blank having:

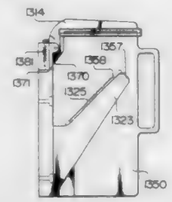
an upper surface and a lower surface and a perimeter defined by a top edge, a bottom edge, and opposed side edges connecting the top edge and the bottom edge;
an aperture disposed centrally of the blank;
a first fold line extending from the bottom edge to the aperture;
a slot aligned with the first fold line and extending from the aperture to the top edge;
a folding axis defined by the first fold line and the slot, the folding axis dividing the blank into opposed first and second arms, the arms being generally symmetrical with respect to the folding axis;
a second fold line formed in the first arm and extending from the folding axis to the top edge to define a first arm flap portion of the cover disposed between the second fold line and the slot;
a third fold line formed in the second arm and extending from the folding axis to the top edge to define a second arm flap portion of the cover disposed between the third fold line and the slot, whereby when the blank is folded about the folding axis, the first arm flap overlies the second arm flap and the first arm coterminously overlies the second arm; and
means for securing the first arm flap to the second arm flap.

5,390,836

RECEPTACLE AND CO-OPERATIVE CARRIER THEREFOR

Kevin M. Faulds, 1137 Moselle Crescent, Orleans, Ontario, Canada K1C 2S8

Division of Ser. No. 691,616, Apr. 25, 1991, Pat. No. 5,238,160. This application Aug. 11, 1993, Ser. No. 104,620
Int. Cl.[6] B62J *7/00*
U.S. Cl. 224—32 R **11 Claims**



1. At least one receptacle and mount combination in which said receptacle is selectively removably secured to said mount, said mount comprising: a base, a lower pair of laterally-spaced-apart, angularly-upwardly-projecting support arms projecting from said base, when said base is in a vertical orientation and at lease one upper pivotally-mounted, resiliently-biased outwardly-projecting lid;

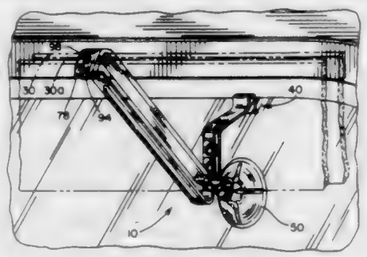
said receptacle comprising a rectangular parallelepiped, open-topped receptacle having two laterally-spaced-apart depressions which are adapted to mate with said laterally-spaced-apart support arms, the spacing of a transverse space between said two laterally-spaced-apart depressions in said receptacle being the same as the space between said pair of support arms, said open top of said receptacle being adapted to be closed by said lid by means of actuated pivoting of said lid with respect to said base through action of an engagement face on the rear edge of said receptacle against a lever depending downwardly from a rear face of said lid.

5,390,837

SNOWBOARD RACK

Ralph J. Ruffolo, Jr., Kenosha, Wis., assignor to Ruffolo Enterprises, Inc., Kenosha, Wis.

Continuation-in-part of Ser. No. 4,737, Feb. 11, 1993, Pat. No. Des. 350,109. This application Nov. 5, 1993, Ser. No. 147,929
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—42.45 R **11 Claims**



1. A snowboard carrier, adapted to be mounted to a roll-down window of an automotive vehicle, comprising in combination:

a suction cup for securement to an exterior surface of the window and including a bracket-receiving means;
a bracket having two ends and a bend intermediate the ends, one end of the bracket being secured to the bracket-receiving means, and the other end forming a U-shaped hanger for engaging a top edge portion of the window;
a support arm having a length sufficient to underlie the entire width of a mounted snowboard and having one end secured to the bracket intermediate the ends of the bracket, the support arm extending away from the window exterior surface at a substantial angle above the horizontal, the support arm including a hooked end opposite the end secured to the bracket the length of the support arm being greater than the length of the bracket; and
a securing strap having a first end secured adjacent the suction cup, and a second end including openings adapted to receive the hook end of the support arm.

5,390,838

PERSONAL BEVERAGE CUP HOLDER

Naser Jafarkhani, 8984 Sage Dr., Alta Loma, Calif. 91701

Filed Jun. 9, 1993, Ser. No. 73,387
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—148 **1 Claim**



1. A retractable apparatus, for holding and carrying beverage cups of various sizes, adjustably to be worn around a person's neck, comprising:

an elongated cylindrical support element having a longitudinal axis, said elongated cylindrical support element includes a slot through a mid-section thereof and a slit through an end thereof;
a receiving member, said receiving member comprising:
a ring member attached to said support element at an intermediate portion thereof and extending laterally therefrom in a plane parallel to said axis, said ring member having a circular opening therethrough, said circular opening having a circumferential edge bounding said opening; and
two small circular elements each having an opening therethrough and attached to said ring member diametrically opposed with respect to each other;
an L-shaped receptacle member having a first leg with one end secured to said support element and extending therefrom perpendicularly to said ring member and a second end connected to a second leg extending therefrom and parallel to said ring member for receiving cylindrical cans and cups;
a strap member having a first end connected to said support element and an opposite end passed through said small circular elements and secured in said slit for releasably and adjustably coupling said cylindrical support element around a persons neck;
a separator member having a flap member inserted into said slot and extending between said receptacle member and a user for preventing spillage from the cup onto a user's chest; and
a neck pad on said strap for separating said strap member from a user's neck.

5,390,839

COMBINATION DECOY CARRIER AND DOG STAND

Francis Peters, 450 Clinton St., Carlyle, Ill. 62231

Filed Jun. 7, 1993, Ser. No. 72,411
Int. Cl.[6] A45F *4/02*
U.S. Cl. 224—153 **4 Claims**

1. A combination duck decoy carrier and horizontal dog stand device, comprising:

(a) an essentially rectangular frame having a top edge, a bottom edge, and two sides said frame having interwoven webbing attached to the inner area of said frame forming a platform;
(b) four essentially straight legs, each leg having an upper curved end, said upper curved end pivotably attached to said rectangular frame and having a stop, wherein a pair of said legs are pivotably attached near the top edge of said frame, one on each side, and a pair of said legs are pivotably attached near the bottom edge of said frame, one on each side;
(c) two inverted U-shaped cross-supports for said legs, one of said supports attached between each pair of legs, said cross-supports attached near the lower end of said legs;



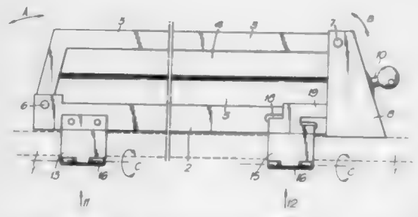
(d) a duck decoy net capable of carrying a number of large duck decoys attached to said frame; and
(e) a shoulder harness attached to said frame for carrying said device;
whereby, when said legs are pivoted so that they are parallel to said frame one can carry said device using said harness; and
whereby, when said legs are perpendicular to said frame a horizontal dog stand is deployed; and
whereby said cross-supports allow a lower portion of each of said legs to be pushed into the ground to the level of said cross-supports.

5,390,840

APPARATUS IN LOAD CARRIERS

Jan I. Arvidsson, Hillerstorp, Sweden, assignor to Industri AB Thule, Sweden

PCT No. PCT/SE90/00083, § 371 Date Sep. 6, 1991, § 102(e) Date Sep. 6, 1991, PCT Pub. No. WO90/10557, PCT Pub. Date Sep. 20, 1990
PCT Filed Feb. 8, 1990, Ser. No. 752,477
Claims priority, application Sweden, Mar. 8, 1989, 8900814
Int. Cl.[6] B60R *9/12*
U.S. Cl. 224—324 **11 Claims**



1. An apparatus for use with load carriers of the type having a carrier strut extending transversely across a vehicle roof, comprising:

a holder device including a holder portion for retaining a load in the holder device;
means for locking the holder device, the locking means

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locking a load retained in the holder device in the holder device when the locking means is in a locked position;

a retainer element attached to the holder device, the retainer element including a fixed portion fixed to the holder device and a first portion that is movable relative to the fixed portion between an open and a closed position, the retainer element, when the first portion is in the closed position, surrounding a carrier strut to secure the holder device on the carrier strut, the retainer element, when the first portion is in the open position, permitting removal of the holder device from the carrier strut, the first portion being secured in the closed position by the locking means by being at least partially covered by a portion of the locking means when the locking means is in the locked position.

5,390,841

METHOD OF DRAWING LARGE-SIZE ELONGATE CABLE FOR INSTALLATION

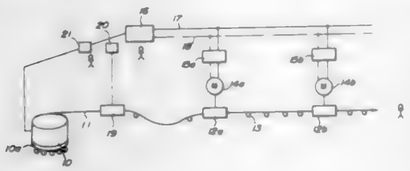
Tadanori Horiuchi, Kanagawa, and Yoshiyuki Hanano, Ibaraki, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Japan

Filed Sep. 11, 1992, Ser. No. 944,058

Claims priority, application Japan, Sep. 13, 1991, 3-261309; Jan. 6, 1992, 4-000165

Int. Cl.[6] B65H *20/00*

U.S. Cl. 226—4 **20 Claims**



1. A method of continuously drawing an elongate cable from a rotatable container controlled by a control panel with a plurality of spaced cable drawing machines associated with respective slave controllers controlled by a master controller, comprising the steps of:

supplying a first control signal from said control panel to rotate said container so as to supply said cable at a predetermined speed; and

supplying a second control signal from the master controller to the slave controllers to actuate the cable drawing machines at substantially the same predetermined speed for thereby drawing the cable from the container along a predetermined cable laying route.

5,390,842

UNDERPINNING MACHINE

Walter A. J. Joyce, Chorleywood, United Kingdom, assignor to Magnolia Group PLC and W. & M. Joyce Engineers Ltd., both of England

Filed Jan. 7, 1993, Ser. No. 1,465

Claims priority, application United Kingdom, Jan. 8, 1992, 9200295

Int. Cl.[6] B25C *5/02*

U.S. Cl. 227—110 **4 Claims**

1. An underpinning machine for underpinning a joint in a pair of members using one or more underpinning wedges, said underpinning machine comprising:

a work table;

a pair of abutments on said work table to locate said members;

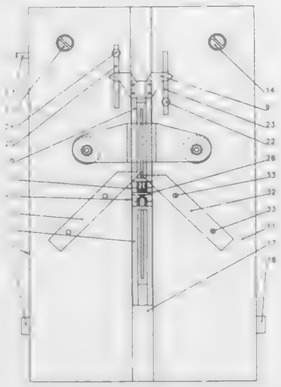
top clamps for clamping said members to said work table in abutment with each other and with said abutments;

a plurality of underpinning heads, each said underpinning head having an actuating mechanism;

each of said actuating mechanisms being mounted below said work table;

a power operated drive plate being provided below said work table;

at least one of said underpinning heads being capable of a range of positional adjustment relative to said abutments on said work table;



each of said actuating mechanisms drivable by said power operated drive plate throughout said range of positional adjustment, to drive one of said underpinning wedges into said pair of members to underpin said pair of members; and

at least one of said actuating mechanisms including a selectively actuable disabling device for disabling said underpinning head operable by said at least one actuating mechanism.

5,390,843

METHOD OF PRODUCING A CARBURIZED CERAMIC-STEEL JOINED BODY

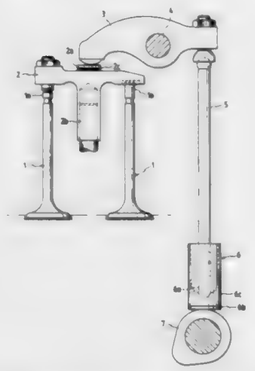
Masaya Ito, and Masato Taniguchi, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Division of Ser. No. 684,319, Apr. 12, 1991, abandoned. This application Nov. 19, 1991, Ser. No. 795,171

Claims priority, application Japan, Apr. 17, 1990, 2-102491

Int. Cl.[6] B23K *1/19, 35/22;* **F01L** *1/46*

U.S. Cl. 228—124.1 **2 Claims**



1. A method of producing a joined body of ceramic and steel, comprising the steps of:

selecting a steel which is hardened by heat treatment of brazing;

carburizing the steel prior to brazing:

removing a carburized portion of the steel, the portion being at a location where the steel is to be brazed to the ceramic; and

brazing the steel and the ceramic at a temperature higher than the A_1 transformation point.

5,390,844

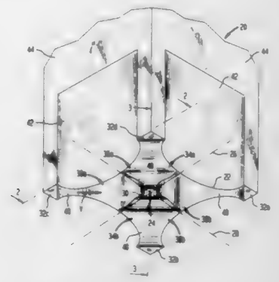
SEMICONDUCTOR INNER LEAD BONDING TOOL

Thomas H. Distefano, Bronxville; Igor Y. Khandros, Peekskill; Gaetan Mathieu, Carmel; Jason Sweis, Ossining; John Grange, Red Hook, and Gary W. Grube, Monroe, all of N.Y., assignors to Tessera, Inc., Elmsford, N.Y.

Filed Jul. 23, 1993, Ser. No. 96,700

Int. Cl.[6] H05K *3/32*

U.S. Cl. 228—180.21 **19 Claims**



1. A tool for bonding leads to contacts on semiconductor chips, said tool comprising a body having a lower end defining a bonding surface region, and guide surfaces for engaging elongated leads disposed beneath said lower end upon downward movement of said tool from above such leads, said guide surfaces being adapted to engage an elongated lead extending generally in a first horizontal direction beneath said lower end and guide such lead generally in a second horizontal direction orthogonal to said first horizontal direction so as to align such lead with said bonding region, said guide surfaces also being adapted to engage an elongated lead extending generally in said second horizontal direction beneath said lower end and to guide such lead generally in said first horizontal direction so as to align such lead with said bonding region.

5,390,845

LOW-BRIDGING SOLDERING PROCESS

Martin G. McDonald, Riverdale, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 24, 1992, Ser. No. 903,450

Int. Cl.[6] B23K *1/00*

U.S. Cl. 228—217 **9 Claims**

1. A process for reducing the incidence of bridging in joining at least two substrates with solder, said process comprising providing a supply of molten solder containing from about 0.0001 to about 1% by weight of at least one material selected from the group consisting of phosphorous, calcium, bismuth, copper, gold, mercury, barium, lithium, sodium, tellurium, potassium, rubidium, cesium, aluminum, zinc and cadmium and contacting the substrate or substrates with said supply of solder in an atmosphere of diluent gas, said atmosphere containing up to about 10% by volume oxygen, wherein said step of providing a supply of molten solder containing said material comprises providing a supply of molten solder, and, prior to contacting with molten solder, contacting the substrate or substrates with a flux or flux vehicle containing said material.

5,390,846

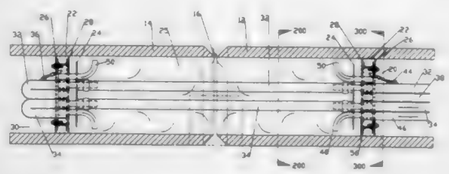
WELDING GAS PURGING APPARATUS AND METHOD

Jonathan E. Thode, R.R. 2, Box 665, Brockway, Pa. 15824

Filed Aug. 11, 1993, Ser. No. 105,495

Int. Cl.[6] B23K *9/16*

U.S. Cl. 228—219 **39 Claims**



1. A welding gas purging apparatus comprising:

at least two gas dams situated on opposite sides of a gap to be welded; and

means for supplying a gas flow toward the gap from opposite sides of the gap.

5,390,847

FRUIT AND PRODUCE CONTAINER

Thomas R. Young, 1535 E. Orangewood, #118, Anaheim, Calif. 92803

Continuation-in-part of Ser. No. 45,756, Apr. 8, 1993, Pat. No. 5,335,884, which is a continuation-in-part of Ser. No. 932,892, Aug. 19, 1992, Pat. No. 348,607. This application Nov. 9, 1993, Ser. No. 150,431

Int. Cl.[6] B65D *5/32*

U.S. Cl. 229—23 R **35 Claims**

1. An improved fruit and produce container comprising:

a) a bottom and two side walls formed of a common piece of corrugated cardboard;

b) two end walls formed of laminated paperboard attached to said bottom and said side walls so as to define a box; and

c) wherein said two laminated paperboard end walls enhance stacking strength and moisture resistance of the container.

5,390,848

PRODUCT SLEEVE WITH PRODUCT SUPPORTS

Gregory Gungner, Port Coquitlam, and John Zimmermann, Scarborough, both of Canada, assignors to Somerville Packaging, Divison of Paperboard Industries Corporation, Mississauga, Canada

Filed Feb. 22, 1993, Ser. No. 20,752

Int. Cl.[6] B65D *5/42*

U.S. Cl. 229—103.2 **8 Claims**

1. A paperboard product sleeve blank having opposite sides and a first and second end and comprising:

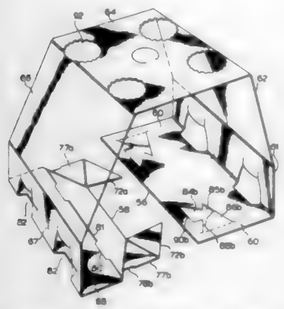
a plurality of panels joined end-to-end at transverse hinge lines,

a tab joined at a hinge line to the panel of said plurality of panels which is at said first end, said first end panel tab

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having at least one further hinge line making an angle with said hinge line, said tab comprising a first triangular portion between said hinge line and said further hinge line and a second triangular portion extending from said further hinge line such that said first end panel tab may be folded about said hinge line and said at least one further hinge line into a protuberance, said first end panel tab also having a notch, and

an opening through the panel of said plurality of panels at said second end sized to receive said first end panel tab



when said first end panel tab is folded into said protuberance,

said notch of said first end panel tab for engaging with a portion of said second end panel in order to lock said first end panel tab within said opening and to lock said first end panel tab in its folded state as said protuberance, whereby said first end panel tab, when locked within said opening in a folded state as a protuberance, holds said plurality of panels in a sleeve configuration and is for abutting the base of products within the sleeve to assist in maintaining the products in position.

5,390,849

APPARATUS FOR MAIL TRANSFER

Jacques P. Frissard, 17 rue G. Peri, 92320 Chatillon, France

PCT No. PCT/FR92/00704, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO93/02601, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 17, 1992, Ser. No. 30,111

Claims priority, application France, Jul. 29, 1991, 91 09607

Int. Cl.[6] B65G *11/04*

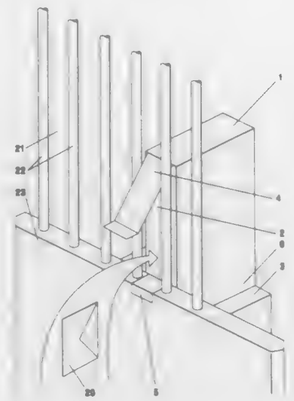
U.S. Cl. 232—45 **7 Claims**

1. In a mail receiving device for a structure having at least two rods which are oriented generally vertically and spaced apart laterally so as to define an oblong opening therebetween which extends generally parallel to said rods, the improvement comprising:

a means for attaching said device to said structure;

a hood having an oblong, narrow slot through which said mail is receivable into said hood, said slot being lengthwise aligned with said oblong opening when said device is attached to said structure by said attaching means;

a receiving box for said mail; and



an elongate transfer conduit connecting said hood and said receiving box and through which said mail transfers by gravity from said hood to said receiving box.

5,390,850

HIGH-FREQUENCY FLUID PULSATOR

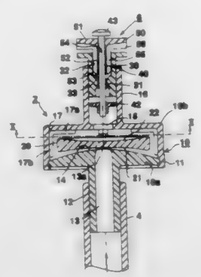
Peretz Rosenberg, 30 046, Moshav Beit Shearim, Israel

Filed Oct. 20, 1993, Ser. No. 138,285

Claims priority, application Israel, Oct. 28, 1992, 103576

Int. Cl.[6] B05B *1/08*

U.S. Cl. 239—99 **19 Claims**



1. A fluid-flow control device, comprising:

a housing having an inlet opening extending through an inner face of the housing and connectible to a source of pressurized fluid, and an outlet opening extending from an inner face of the housing for discharging the fluid from the housing;

an oscillating member freely movable within said housing and having one face movable into and out of contact with said inner face of the housing through which said inlet opening extends to close and open said inlet opening;

said contacting faces of the oscillating member and housing being configured such as to set the oscillating member into rapid oscillation opening and closing the inlet opening when the inlet opening is connected to a source of pressurized fluid;

and spacing means spacing the oscillating member from the inner face of the housing formed with said outlet opening so as to prevent the oscillating member from closing the outlet opening;

characterized in that said outlet opening is formed in the opposite side of the housing, in axial alignment with said inlet opening, and is cooperable with said opposite face of the oscillating member such that the rapid oscillations of said oscillating member drive the fluid out of said outlet opening in the form of high-frequency pulses.

5,390,851

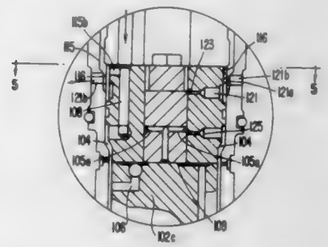
SOLENOID OPERATED UNIT FUEL INJECTOR WITH SUPPLY LINE BACKFLOW PRESSURE RELIEF VALVE

Martin W. Long; George L. Muntean, and Paul D. Free, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jan. 21, 1994, Ser. No. 183,851

Int. Cl.[6] F02M *47/02*

U.S. Cl. 239—88 **15 Claims**



1. A solenoid operated unit fuel injector for internal combustion engines of the type capable of having distinct timing, metering and injection periods and which comprises an injector body having an axial bore in respective portions of which a variable volume timing chamber and a variable volume metering chamber are formed, a fuel supply circuit being provided in said injector body, said fuel supply circuit having a first portion defining a path which leads to said metering chamber and a second portion which defines a path which leads to said timing chamber, a solenoid valve in said second portion of the fuel supply circuit for blocking and unblocking flow along said second portion of the fuel supply circuit to and from said timing chamber, and a drain path formed in said injector body along which fuel in the timing chamber is drained from a timing chamber spill port to a drain port for draining the fuel out of the injector body, and pressure responsive means for venting fuel from said fuel supply circuit into said fuel drain path when the pressure of fuel in said fuel supply circuit exceeds a predetermined value; wherein said pressure responsive means comprises a radial bore in the injector barrel which leads directly from the second portion of the fuel supply circuit to the fuel drain path and a C-shaped spring valve mounted on the injector barrel for controlling venting of fuel through the radial bore.

5,390,852

PORTABLE MISTING DEVICE HAVING A ROTTABLE SPRAY ARM

Helen E. Schuenemann, 727 S. Alma St., #11, San Pedro, Calif. 90731; Mark O. McSpadden, San Pedro, Calif.; Paul A. Berman; Darrell G. Greenland, both of Los Angeles, Calif., and Kenneth Tarlow, Santa Monica, Calif., assignors to Helen E. Schuenemann and Mark McSpadden, both of San Pedro, Calif.

Filed Apr. 22, 1993, Ser. No. 51,169

Int. Cl.[6] B05B *3/00*

U.S. Cl. 239—263.1 **23 Claims**

1. An improved misting apparatus comprising:

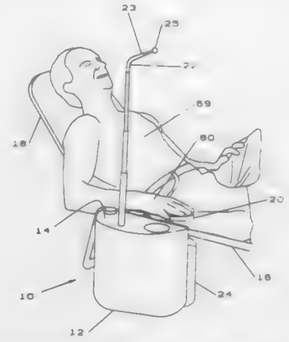
a portable device having a fluid reservoir,

a spray arm projecting upwardly from said device and extendable to a desired elevation above said device,

a spray head mounted on one end of said spray arm,

a pump for spraying liquid from said device through said spray head,

means for moving said spray head backward and forward to



cause liquid sprayed by said spray head to be delivered over a desired area,

a rocker arm pivotally mounted on said device, and

linkage means coupling said rocker arm to cause rotation of said spray head.

5,390,853

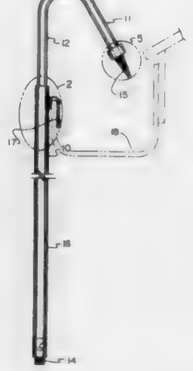
GUTTER CLEANING TOOL AND SYSTEM

Renald J. Ellul, 4015 Sashaban, Waterford, Mich. 48329

Filed Apr. 22, 1993, Ser. No. 50,609

Int. Cl.[6] B05B *15/06*

U.S. Cl. 239—282 **1 Claim**



1. A gutter cleaning device comprising:

a water carrying tube having a straight section and a curved upper portion, said water carrying tube having first and second ends thereof, said water carrying tube further having a first ball bearing race extending circumferentially around said first end thereof and projecting outwardly therefrom;

a substantially straight, elongated external tube having upper and lower ends with a second ball bearing race at said upper end thereof, said second ball bearing race projecting inwardly therefrom, said first end of said water carrying tube being positioned within said external tube in a telescoping relationship therewith, said ball bearing races

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being operable to preclude axial separation of said water carrying tube from said external tube;

a first plurality of ball bearings positioned within said first ball bearing race;

a second plurality of ball bearings positioned within said second ball bearing race;

a substantially U-shaped hook member fixedly mounted to said external tube proximal to said upper end thereof for engaging a gutter to support said cleaning device;

a high pressure water nozzle connected to said second end of said water carrying tube;

and,

means for connecting said external tube to a pressurized water source.

5,390,854

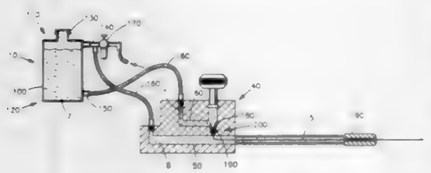
COOLANT SPRAY SYSTEM

Lee E. Hench, 24141 Hurst, Lake Forest, Calif. 92630

Continuation-in-part of Ser. No. 955,321, Oct. 1, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 110,633

Int. Cl.[6] B05B *7/32*

U.S. Cl. 239—337 **9 Claims**



1. A low pressure sprayer system for delivering a combination of gas and liquid without finely atomizing the liquid comprising:

a combining assembly having a first chamber and a second chamber, a combining means connecting the first and second chambers, a valve means in said combining means for controlling a flow of liquid which enters the second chamber from said first chamber a nozzle means connected to said second chamber downstream from where said combining means connects said first chamber to said second chamber, said nozzle means allowing the flow of liquid and gas therethrough,

a container containing a supply of liquid, a tubular means for connecting said container to said first chamber, a gas admitting means, a second tubular means connecting said gas admitting means to said second chamber, the gas admitting means further being connected to said container to pressurize the liquid therein, a gas pressure controller in communication with said gas admitting means for maintaining the pressure of the gas flowing to said container and aid second chamber in the range of 15 to 50 p.s.i.,

whereby when gas and liquid are supplied to said combining assembly, said valve means controls said flow of liquid into said second chamber such that the pressure of the liquid in said first chamber is the same as the pressure of the gas in said second chamber so that when the liquid and gas combine in said second chamber the liquid passes through said second chamber and said nozzle means as a substantially coherent stream drawn by the surrounding gas stream.

5,390,855

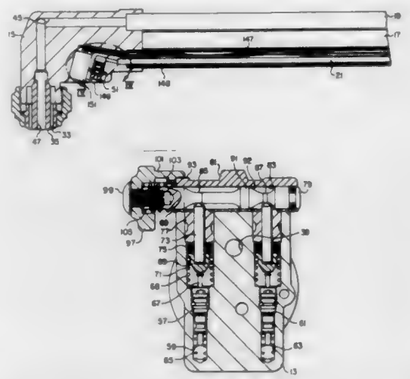
PILOT IGNITER TORCH WITH CUTOFF PREHEAT VALVES

Carl W. Mims, Sanger, and Roger D. Zwicker, Arlington, both of Tex., assignors to Victor Equipment Company, Denton, Tex.

Filed Apr. 23, 1993, Ser. No. 52,491

Int. Cl.[6] F23D *14/32, 14/42*

U.S. Cl. 239—414 **17 Claims**



9. In a torch having a body having an oxygen passage and a fuel passage connected a tip, adjustable oxygen valve means mounted to the body for delivering oxygen through the oxygen passage to the tip, adjustable fuel valve means for delivering a gaseous fuel through the fuel passage to the tip for mixing with the oxygen to create a flame, an improved means for extinguishing the flame while retaining preset adjustment of the oxygen valve means and fuel valve means, comprising in combination:

an oxygen cutoff valve means mounted in the oxygen passage and a fuel cutoff valve means mounted in the fuel passage for linear movement between open and closed positions to open and block flow through the oxygen passage and fuel passage, respectively, each of the cutoff valve means having a plunger with an axis, the plungers being mounted side-by-side and with their axes parallel with each other, each of the plungers being movable along its axis for opening and closing one of the cutoff valve means; and

actuator means having a linear movable actuator member which has an external knob adapted to be manually gripped for slidably moving the actuator member along a line perpendicular to the axes of the plungers for simultaneously moving the plungers of the cutoff valve means between the open and closed positions, and for retaining each of the cutoff valve means in the open and closed positions without the need for manual pressure to be continuously applied.

5,390,856

FUEL INJECTORS FOR DIESEL ENGINES

Ronald A. Bickerton, West Sussex, England, assignor to Ricardo Consulting Engineers Limited, West Sussex, England

PCT No. PCT/GB92/01845, § 371 Date Mar. 30, 1994, § 102(e) Date Mar. 30, 1994, PCT Pub. No. WO93/07377, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 9, 1992, Ser. No. 211,377

Claims priority, application United Kingdom, Oct. 11, 1991, 9121592

Int. Cl.[6] F02M *43/04, 45/08*

U.S. Cl. 239—533.5 **5 Claims**

1. A fuel injector for use in a diesel engine adapted to inject two different fuels sequentially, said fuel injector comprising a body including an injection nozzle, said nozzle defining one or more injection orifices, a main fuel supply passage and a pilot fuel supply passage which includes a first non-return valve arranged to prevent fuel flowing in it away from said injection nozzle, said nozzle being controlled by a valve needle which affords a surface directed towards said injection orifice(s) and exposed to a fuel supply gallery, said body containing a cylinder which has two ends and slidably receives a piston, said main fuel passage communicating with said cylinder adjacent one of said ends, said pilot fuel passage communicating with



said cylinder adjacent the other of said ends and with a first outlet passage which communicates with the fuel gallery and includes a second non-return valve arranged to prevent fuel flowing from said fuel gallery into said pilot fuel passage, said fuel injector further comprising a second outlet passage which communicates with said fuel gallery and with said cylinder at a point intermediate said ends, whereby said main fuel passage communicates with said fuel gallery via said cylinder and said second outlet passage when said piston is at the said other end of said cylinder but not when it is at said one end of said cylinder.

5,390,857

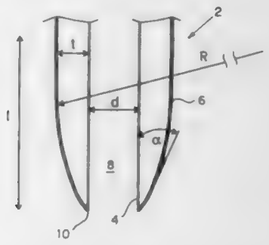
GAS INJECTOR NOZZLE

Ivar I. Primdahl, Copenhagen NV, Denmark, assignor to Haldor Topsoe A/S, Lyngby, Denmark

Filed Jun. 1, 1994, Ser. No. 252,267

Int. Cl.[6] B05B *1/00*

U.S. Cl. 239—589 **9 Claims**



1. Gas injector nozzle comprising a discharge chamber with a cylindrical inner wall and having at its outlet end a circular gas discharge orifice, an outer wall concentrically surrounding the inner wall, the outer wall following a continuously curved path at the chamber outlet end and being joint sharp-edged with the inner wall at the discharge orifice, wherein the curved path has a curvature radius R complying with the relationship:

$$R = \frac{l - t}{\sin\alpha}$$

where

l is the length of the continuously curved path measured along the longitudinal axis of the nozzle,

t is the maximal horizontal distance between the inner and outer wall, and

α is the tip angle between a line drawn tangent to the outer wall at the discharge orifice and the longitudinal axis of the nozzle.

5,390,858

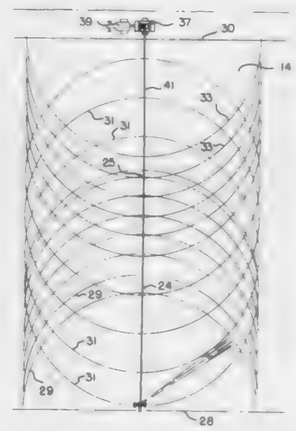
REMOTELY CONTROLLED, MOVING SPRINKLER APPARATUS

Galen T. Watson, Highway 129 South, Trenton, Fla. 32693

Filed Sep. 20, 1993, Ser. No. 123,262

Int. Cl.[6] B05B *3/18*

U.S. Cl. 239—744 **5 Claims**



1. A new and improved sprinkler apparatus for use on a trolley pulled across a field to be sprayed with water, comprising:

a rotatable sprinkler head assembly carried by the trolley, wherein said rotatable sprinkler head assembly includes a stationary portion supported by the trolley, and includes a rotatable portion, supported by the stationary portion, which is capable of rotating unidirectionally in repetitive full circles and is also capable of oscillating bidirectionally in partially circular arcs, and

a rotation direction control assembly for controlling direction of rotation of said rotatable portion of said rotatable sprinkler head assembly,

wherein said rotation direction control assembly includes a revolving control element connected to said rotatable portion of said rotatable sprinkler head assembly,

wherein said rotation direction control assembly also includes a remotely controlled spray pattern selection assembly which includes a first portion located adjacent to said stationary portion of said rotatable sprinkler head assembly, and

wherein said rotation direction control assembly controls a water spray pattern on the field by said remotely controlled spray pattern selection assembly contacting said revolving control element.

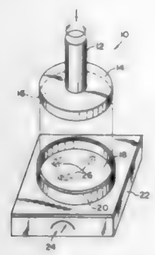
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5,390,859

LOW PRESSURE, SHEAR-TYPE CELL HOMOGENIZER AND METHOD OF USING

Ayyappan K. Rajasekaran, New York, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Oct. 6, 1993, Ser. No. 132,475
Int. Cl.[6] B09B *3/00*; B02C *19/08*
U.S. Cl. 241—2 8 Claims



1. A method for homogenizing cells while leaving substantially intact, intracellular organelles, the method employing a flat-bottom dish for holding the cells, a pestle having a planar bearing member that intimately mates with said flat-bottom dish, the method comprising the steps of:

emplacing said cells and an isotonic solution in said dish;

placing said bearing member of said pestle in contact with said cells;

applying pressure between said bearing member and said dish, said pressure substantially evenly distributed over mating surfaces of said bearing member and said dish, and

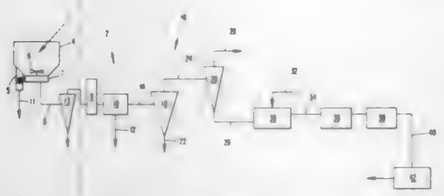
causing relative rotative movement between said bearing member and said dish, said relative rotative movement comprising plural successive clockwise and counterclockwise rotations.

5,390,860

METHOD AND APPARATUS FOR SEPARATING PAPER FIBER AND PLASTICS FROM MIXED WASTE MATERIALS AND PRODUCTS OBTAINED THEREBY

Hyder Ali, Federal Way, Wash., and Tommy Nystrom, Lund, Sweden, assignors to Tetra Laval Holdings & Finance SA, Pully, Switzerland

Continuation-in-part of Ser. No. 883,175, May 15, 1992, abandoned. This application Apr. 14, 1993, Ser. No. 45,696
Int. Cl.[6] B02C *23/10, 23/18*
U.S. Cl. 241—20 15 Claims



1. A method of separating paper fiber from mixed waste materials which contain sources of paper fiber and plastic, said method comprising:

(a) agitating the mixed waste materials in the presence of water in a hydrapulper to form a slurry comprised of a paper-fiber portion and a plastic portion;

(b) extracting water and plastic and a substantial amount of the paper-fiber portion from the slurry out of the hydrapulper to form a liquid stream;

(c) removing plastic from the liquid stream by passing the stream in sequence through a coarse screen and a slotted screen to produce a paper fiber-enriched stream;

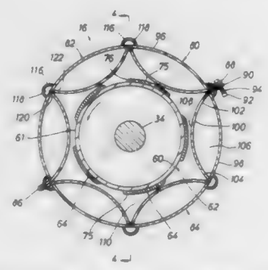
(d) subsequently removing light contaminants from the fiber-enriched stream to thereby obtain wet paper fiber.

5,390,861

METHOD AND APPARATUS FOR REDUCING RUBBER TIRE MATERIAL TO A PULVERULENT FORM

Raymond T. Bishop, Houston, Tex., assignor to National Rubber Recycling, Inc., San Antonio, Tex.

Filed Jul. 20, 1993, Ser. No. 94,506
Int. Cl.[6] B02C *7/12*
U.S. Cl. 241—24 15 Claims



1. A method of reducing rubber tire material having a metal constituent to a pulverulent form having a predetermined range of particulate dimension, comprising:

(a) providing a pair of generally cylindrical relatively movable surfaces disposed in radially spaced converging relation and defining at least one rubber tire processing chamber therebetween having an inlet opening into which rubber tire material is fed and a discharge opening from which pulverulent rubber tire material is discharged therebetween for movement of rubber tire material therethrough, said rubber tire processing chamber having a plurality of circumferentially spaced inclined wedge surfaces each defining gradually reducing clearance between said relatively movable surfaces in the direction of rubber tire material movement within said rubber tire processing chamber;

(b) imparting relative movement to said relatively movable surfaces causing movement of said rubber tire material within said processing chamber;

(c) forcing said rubber tire material to move through said processing chamber and through into said gradually reducing clearance defined by said plurality of circumferentially spaced inclined wedge surfaces, during said relative movement of said surfaces during said relative movement, said inclined wedge surfaces applying mechanical compression to said rubber tire material by wedging activity causing said rubber tire material to be worked against said metal constituent thereof and mechanically broken down to a pulverulent form; and

(d) discharging pulverulent rubber tire material from said outlet following pulverization of said rubber tire material.

5,390,862

APPARATUS FOR CHIPPING AND GRINDING TREE LIMBS

John H. Eglin, Polk, Ohio, assignor to 7/7/77 Incorporated, West Carrollton, Ohio

Continuation of Ser. No. 897,493, Jun. 12, 1992, abandoned. This application Jul. 20, 1993, Ser. No. 93,662
Int. Cl.[6] B02C *19/12*
U.S. Cl. 241—29 19 Claims

1. An apparatus for reducing tree limbs and branches to fine particles comprising:

a mobile frame assembly;

a first housing affixed to said frame assembly having an infeed opening, an outfeed opening and cavity therein;

means for chipping the limbs disposed within said cavity, said chipping means including a rotor drum centrally disposed within said cavity;

a substantially horizontally disposed feed chute affixed to said infeed opening and communicating with said cavity for substantially horizontally guiding the limbs to said chipping means;

means for rotating said rotor drum;

an outfeed chute affixed to said outfeed opening for guiding chipped particles out of said cavity;

a second housing affixed to said frame assembly and disposed substantially horizontally adjacent to said first housing, said second housing having an interior portion, an inlet opening and an exit opening, said outfeed chute affixed to said inlet opening;

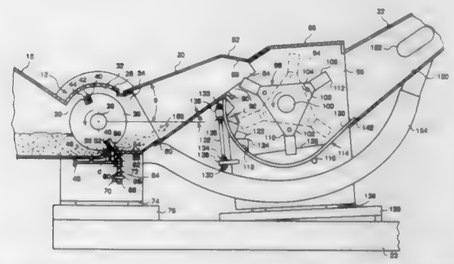
means for grinding disposed within said interior portion for grinding the chipped particles exiting said chipping means, said grinding means including a rotor assembly centrally rotatably mounted within said interior portion;

means for rotating said rotor assembly; and

a discharge chute affixed to said exit opening for discharging ground particles exiting said second housing,

said chipping means comprising:

a plurality of chipping knives disposed on an outer peripheral surface of said rotor drums each chipping knife of said plurality of chipping knives extending generally an entire axial length of said rotor drum;



a feed plate mounted to a lower surface of said first housing; and

a bed knife affixed to an end of said feed plate extending into said cavity so as to define a clearance distance between said plurality of chipping knives and said bed knife, said plurality of chipping knives and said bed knife being constructed and arranged to engage a tree limb so as to move the limb generally horizontally into the cavity to be chipped therein, said outfeed chute extending generally upwardly between said outfeed opening of the first housing and said inlet opening of the second housing so as to direct the chipped particles generally upwardly from said first housing into said second housing without clogging.

16. A method for reducing tree limbs and branches to fine particles utilizing an apparatus having an infeed chute, a chipping device including a rotor drum and a plurality of rotatable chipping knives disposed on an outer peripheral surface of said rotor drum with each chipping knife of said plurality of chipping knives extending generally an entire axial length of said rotor drum and at least one stationary bed knife, a grinding device for reducing the chipped particles, an outfeed chute extending generally upwardly between said chipping device and said grinding device and connecting said chipping device to said grinding device, and a discharge chute coupled to the grinding device, the method comprising the steps of:

horizontally introducing the limbs into the infeed chute;

engaging the limbs with the chipping knives so as to draw the limbs substantially horizontally through the infeed chute and into the chipping device;

chipping the limbs in the chipping device by cooperation of said chipping knives and said bed knife to produce chipped particles;

sending the chipped particles generally upwardly through said outfeed chute and into the grinding device in such a manner so as to prevent clogging of the chipped particles,

grinding the chipped particles in said grinding device so as to further reduce the size thereof into ground particles; and

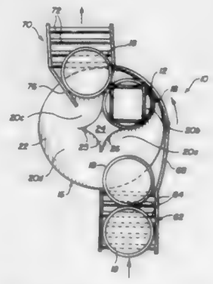
sending the ground particles through the discharge chute to be discharged from the grinding device.

5,390,863

REFUSE DISPOSAL AND RECYCLING APPARATUS FOR HIGH RISE BULDINGS

Frank Tondo, 19 Grey Ave., Allendale, N.J. 07514

Filed Apr. 27, 1993, Ser. No. 53,455
Int. Cl.[6] B02C *25/00*
U.S. Cl. 241—36 22 Claims



1. A refuse disposal and recycling apparatus for use with a high rise building having a refuse chute that extends in a generally vertical manner through the building, is accessible from a plurality of different floors of the building and is open at a lower end thereof, said refuse disposal and recycling apparatus comprising:

carousel means for holding a plurality of refuse bins thereon at a plurality of different positions at a common level of the building, said different positions including a deposit position directly beneath the open, lower end of said refuse chute;

drive means for moving said refuse bins to said different positions;

input conveyor means for conveying empty ones of said refuse bins, one at a time, onto said carousel means;

output conveyor means for conveying filled ones of said refuse bins, one at a time, from said carousel means; and

control means for controlling said drive means to move an empty one of said refuse bins to said deposit position:

at predetermined time periods, and

when a bin at said deposit position is filled to a predetermined level.

5,390,864

APPARATUS FOR FORMING FINE PARTICLES

Dennis R. Alexander, Lincoln, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation-in-part of Ser. No. 712,724, Jun. 10, 1991, Pat. No. 5,176,328, which is a division of Ser. No. 492,928, Mar. 13, 1990, Pat. No. 5,044,565. This application Jan. 4, 1993, Ser. No. 371
Int. Cl.[6] B02C *23/00*
U.S. Cl. 241—39 16 Claims

1. Apparatus for forming and using small particles comprising:

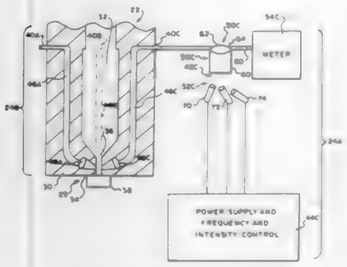
feeder means for supplying a feedstock material; and

atomizer means for breaking the feedstock material into particles using vapor explosion and/or plasma formation;

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said atomizer means receiving the feedstock material from said feeder means;

said feeder means including tubular means for supplying medication into a patient;



said atomizer means including a laser and light conductor for supplying light into the patient wherein said medication is atomized in the patient.

5,390,865

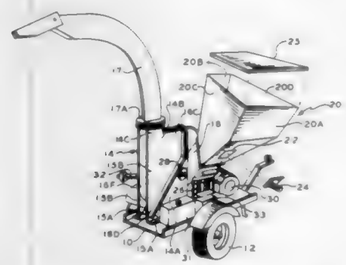
PROCESSOR FOR CHIPPING AND SHREDDING VEGETATATION

Aldo Vandermolen, 16 Welsh Rd., Essex Fells, N.J. 07020, and Terry Rhodes, 426 Olive St., Mulvane, Kans. 67110

Filed Jan. 5, 1993, Ser. No. 621

Int. Cl.[6] B02C *13/16, 13/288*

U.S. Cl. 241—101.7 **53 Claims**



34. A processor for chipping and shredding vegetation including wood and one or more of various other materials such as agricultural products, yard and garden debris, or forestry brush and waste, said processor comprising:

a housing having a hopper opening with, at least partially, a polygonal border having one interior obtuse angle;

a rotor rotatably mounted in said housing, said hopper opening having a lower edge aligned radially with respect to rotation of said rotor;

drive means adapted to drive said rotor;

a cutter mounted on said rotor to swing past said opening;

a stationary bar mounted at said lower edge of said hopper opening for interacting with passage of said cutter; and

a hopper mounted at said hopper opening on said housing for feeding said material toward and past said cutter.

5,390,866

MILL DRUM

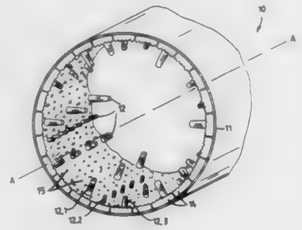
Vladimir G. Kochnev, and Sergey A. Simankin, both of Spt. Petersburg, Russian Federation, assignors to Prima Industria Holdings (Proprietary) Ltd., Benoni, South Africa, a part interest

Filed Sep. 20, 1993, Ser. No. 123,734

Claims priority, application South Africa, Sep. 22, 1992, 92/7229

Int. Cl.[6] B02C *17/22*

U.S. Cl. 241—181 **24 Claims**



1. A mill drum for milling fragments comprising:

a hollow bore drum structure mounted to rotate about a substantially horizontal axis extending longitudinally through the bore, said structure having a surface defining the bore, said bore having a bottom region and an upper region, said fragments being received in the bottom region; and

a plurality of lifter members mounted to the drum structure and extending into the bore, said lifter members being dimensioned and spaced to selectively catch and scoop up first fragments of a first dimension and second fragments of a second dimension smaller than the first dimension from the bottom region when the drum structure rotates such that fragments smaller than the first and second fragments remain in the bottom region, the scooped up fragments at the upper region falling onto the fragments in said bottom region causing a milling action, said lifter members being arranged in at least one first row and at least one second row spaced from each other, each row extending along the longitudinal length of the bore, the at least one first row comprising lifter members of a first length projecting into the bore and having a first spacing from each other, the first length and first spacing for catching only the first fragments allowing smaller fragments to pass therethrough, the at least one second row comprising lifter members having a second length shorter than the members of the first row projecting into the bore and having a second spacing from each other, the second length and second spacing for catching only the second fragments and for allowing smaller fragments to pass therethrough while allowing fragments larger than the second fragments to roll thereover.

5,390,867

YARN TAKE-UP MACHINE

Weiming Zhang, Uji; Minoru Kuninaga, Oumihachiman, and Kinzo Hashimoto, Kyoto, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 3, 1992, Ser. No. 984,850

Claims priority, application Japan, Dec. 5, 1991, 3-349253

Int. Cl.[6] B65H *54/00, 67/048*

U.S. Cl. 242—18 R **5 Claims**

1. A yarn take-up machine, comprising:

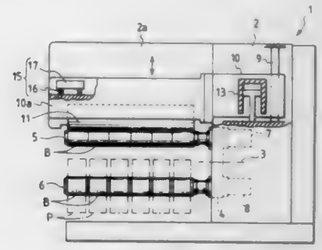
a machine frame,

at least one cantilevered bobbin holder mounted on the machine frame for holding at least one bobbin on which a package is formed, the at least one cantilevered bobbin holder defining a free end,

a touch roller for rotating in contact with the bobbin holder,

a vertically moveable frame member supported on the machine frame for holding the touch roller, the frame member defining a top portion, and

a dynamic vibration absorber mounted on the top portion of



the frame member at a region substantially adjacent the free end of the bobbin holder for reducing vibration of the frame member, the dynamic vibration absorber comprising at least one rubber member in contact with the frame member and a weight in contact with the at least one rubber member.

5,390,868

BOBBIN CONVEYOR SYSTEM FOR CARRYING AND DISCRIMINATING AMONG VARIOUS KINDS OF BOBBINS

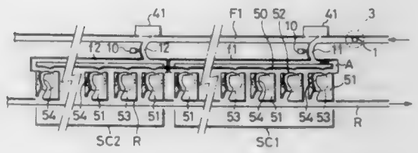
Masaharu Kiriake, Uji, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Apr. 30, 1993, Ser. No. 56,027

Claims priority, application Japan, May 7, 1992, 4-143194

Int. Cl.[6] B65H *67/06;* **D01H** *9/18*

U.S. Cl. 242—35.50 A **5 Claims**



1. A system for conveying a plurality of bobbins having different types of yarn thereon, comprising:

a plurality of trays, each of the plurality of trays having a yarn type identifier corresponding to one of the different types of yarn,

a plurality of cores configured to be placed on the trays and around which yarn is windable, each of the plurality of cores having a yarn type identifier corresponding to one of the different types of yarn,

a plurality of winding unit groups,

a main line for conveying the plurality of trays toward the winding unit groups,

a plurality of delivery lines for conveying the plurality of trays from the main line to the plurality of winding unit groups,

at least one tray selector provided substantially adjacent the main line for directing a tray from the main line to at least one of the plurality of delivery lines based upon the yarn type identifier of the tray, and

at least one sensor provided substantially adjacent the delivery line for sensing the yarn type identifier of the core placed on the tray directed to the delivery line.

5,390,869

BAITCASTING REEL HAVING A LEVEL WIND MECHANISM

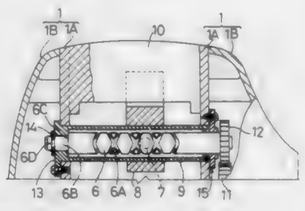
Shinichi Morimoto, Nishinomiya, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Dec. 4, 1992, Ser. No. 986,084

Claims priority, application Japan, Dec. 16, 1991, 3-103198[U]

Int. Cl.[6] A01K *89/00*

U.S. Cl. 242—279 **5 Claims**



1. A baitcasting reel comprising:

first and second frames;

a spool rotatably supported between said first and second frames; and

a level wind mechanism comprising:

a screw shaft rotatably supported between said first and second frames, said screw shaft having a step surface defined on one end region thereof and lying in a plane perpendicular to a rotational axis thereof, and a small diameter portion continuous with said step surface and extending along said rotational axis,

a tubular element disposed through and in contact with said first and second frames in a position to cover an upper surface of said screw shaft, an end of said tubular element acting as a bearing to receive and rotatably support said small diameter portion of said screw shaft, said tubular element further having a flange extending radially outwardly of and formed integrally with said bearing, said flange being fixed to said first frame by fixing means,

a retainer mounted on said small diameter portion, said bearing being located between said retainer and said step surface, whereby said screw shaft is substantially fixed along a longitudinal axis of said tubular element and is rotatable about said longitudinal axis,

a bush for receiving and rotatably supporting an end portion of said screw shaft opposed to said end of the screw shaft forming said small diameter portion, said bush being fixed to said second frame via an attaching portion,

a line guide coupled to said screw shaft and reciprocable along said axis of the screw shaft in response to rotation of the screw shaft, and

a guide element allowing reciprocating movement of said line guide while preventing rotation of the line guide.

5,390,870

RECORDING MEDIUM CASSETTE AND A RECORDING/REPRODUCING APPARATUS

Takashi Sawada; Yoichirou Senshu, both of Kanagawa; Akihiro Uetake, Tokyo; Chiaki Sugai; Shuichi Ota, both of Kanagawa; Hiroshi Fujii, Tokyo; Shinichi Hasegawa, Chiba; Kazuyoshi Suzuki, Tokyo, and Tetsuro Morii, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 27, 1993, Ser. No. 67,811

Claims priority, application Japan, Jun. 1, 1992, 4-163414; Jun. 2, 1992, 4-165443; Jul. 15, 1992, 4-209470

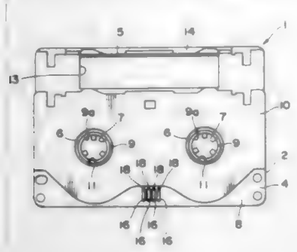
Int. Cl.[6] G11B *15/04*

U.S. Cl. 242—344 **16 Claims**

1. A recording medium cassette having a case containing a recording medium and a plurality of information indicating contacts, said case having at least one slot and a recess formed in a wall of said case, said information indicating contacts are

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formed on a printed wiring board which is arranged in said recess such that said information indicating contacts are positioned so as not to extend beyond an outer surface of said wall of said case and are accessible through said at least one slot from outside said recording medium cassette.



5,390,871

LOW COST VIDEO CASSETTE WITH LIGHT SCREEN

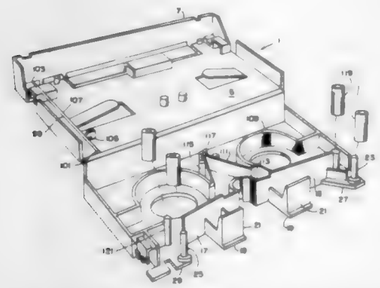
Paul J. Gelardi; John A. Gelardi, and David A. Capotosto, all of Cape Porpoise, Me., assignors to LCV Associates, Kennebunkport, Me.

Continuation-in-part of Ser. No. 639,516, Jan. 10, 1991, Pat. No. 5,114,092. This application Mar. 9, 1992, Ser. No. 848,046

The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.

Int. Cl.[6] G11B *23/087*

U.S. Cl. 242—347.2 **6 Claims**



1. A low cost integrally molded video cassette comprising a base, a rear wall connected to the base and extending upward from the base, a cover hinged to the top of the rear wall by an integrally formed living hinge, first and second springs integrally formed with the cover for pressing respective tape reels downward toward the base, wherein the base and cover are made of translucent material, and further comprising first and second opaque light screens connected to a forward portion of the base adjoining first and second side walls, respectively, for screening a tape signalling light from a video cassette recorder when the cassette is in use.

5,390,872

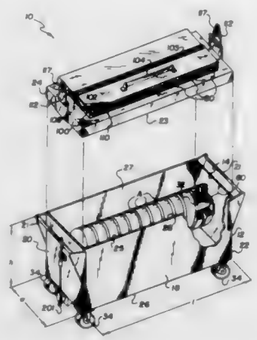
PACKAGE FOR ROLLS OF PHOTOSENSITIVE WEB

Thomas A. Cipolla, Rochester; Janis J. Ozols, Pittsford; Richard P. Garnsey, Fairport; Kathleen L. Myers; Howard D. Cook, both of Rochester; Andrea J. Tenny, Brockport; William S. Raymond; Michael L. Lucey, both of Rochester, and Christopher K. Jestin, Baldwinsville, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 30, 1993, Ser. No. 129,889

Int. Cl.[6] B65H *16/06*; **G03B** *1/02*

U.S. Cl. 242—348.4 **9 Claims**



1. Package for storing photosensitive web and delivering the web to a photoprinter, the package comprising:

a housing comprising an interior compartment having a bottom wall supporting upstanding first and second opposed end walls and sidewalls, said first and second end walls and sidewalls defining a top edge surrounding an opening;

a plurality of casters mounted for rotation for positioning said housing;

a shaft positionable in said interior compartment through said opening for supporting at least one roll of photosensitive web, said shaft being removably mounted to said first and second opposite end walls;

a top wall removably mounted to said top edge of said housing, said top wall having an openable member for accessing the interior compartment;

means for light-locking said housing; and,

slot-like openings in communication with the interior compartment, each said slot-like opening providing a path for delivering a strip of photosensitive web from said interior compartment to a photoprinter.

5,390,873

SEAT BELT RETRACTOR

Yoshiichi Fujimura, Shiga, and Shizutaka Matsuura, Hikone, both of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 859,829

Claims priority, application Japan, Apr. 11, 1991, 3-079144

Int. Cl.[6] B60R *22/38*, *22/40*

U.S. Cl. 242—383.2 **2 Claims**

1. A seat belt retractor for use in a vehicle, comprising:

a reel shaft for taking up a seat belt;

a frame for freely rotatably supporting said reel shaft at both ends thereof;

locking means disposed between said frame and said reel shaft for allowing said reel shaft to turn when ordinary conditions prevail and for being actuated when necessary to lock said reel shaft against turning at least in a pulling direction of the seat belt;

deceleration sensing means actuated when deceleration in excess of a predetermined value acts upon the vehicle; and

lock actuating means for actuating said locking means in response to actuation of said deceleration sensing means;

said locking means comprising:

a first engaged portion provided on said frame on a side thereof corresponding to one end of said reel shaft;

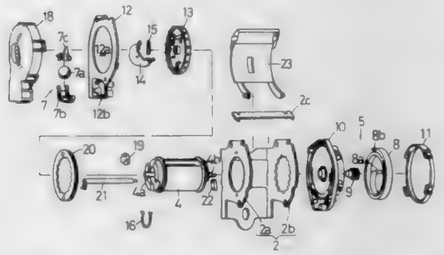
a first engaging member supported on the one end of said reel shaft and capable of being engaged with said first engaged portion;

a second engaged portion provided on said frame on a side thereof corresponding to the other end of said reel shaft;

a second engaging member supported on the other end of said reel shaft and capable of being engaged with said second engaged portion,

wherein said first engaged portion and said second engaged portion are composed of a predetermined number of first teeth and second teeth, respectively, formed on an inner circumferential surface of a circular hole formed in said frame;

said first engaging portion and said second engaging portion are composed of a first pawl and a second pawl, respectively capable of being engaged with the first and second teeth, respectively,



wherein lock actuating means comprises:

a first cam formed by a cam hole in a diametric direction for guiding and actuating said first pawl;

a second cam formed by a generally L-shaped hole composed of a hole in a diametric direction and a hole in a circumferential direction for guiding and actuating said second pawl; and

linking means for operatively associating said first pawl and said second pawl, and

wherein said lock actuating means selects a tooth from among the second teeth that is to be engaged by said second pawl after said lock actuating means selects a tooth among the first teeth that is to be engaged by said first pawl, thereby causing said first engaged portion to be engaged with said first engaging member before said second engaged portion is engaged with said second engaging member upon action of said deceleration sensing means.

5,390,874

VEHICLE SENSITIVE RETRACTOR

Wendell C. Lane, Jr., Romeo, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Sep. 10, 1993, Ser. No. 119,941

Int. Cl.[6] B65H *75/48*

U.S. Cl. 242—384.6 **9 Claims**

1. A vehicle seat belt retractor comprising:

a housing;

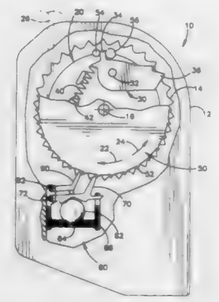
a spool on which seat belt webbing is wound and which is rotatable in belt withdrawal and belt retraction directions;

an externally toothed ratchet wheel rotatable with said spool in the belt withdrawal direction;

a first pawl supported on said housing for pivotal movement relative to said ratchet wheel about a fixed first axis into engagement with said ratchet wheel to block rotation of said ratchet wheel in the belt withdrawal direction;

an inertia member supported on said housing and movable in response to vehicle deceleration greater than a predetermined deceleration to effect pivotal movement of said first pawl into engagement with said ratchet wheel to block rotation of said ratchet wheel in the belt withdrawal direction;

spool locking means responsive to the blocking of rotation of said ratchet wheel in the belt withdrawal direction for blocking rotation of said spool in the belt withdrawal direction; and



a second pawl supported on said housing for pivotal movement relative to said ratchet wheel about a second axis spaced from said first axis, said first pawl having a portion for supporting said second pawl and for, upon movement of said first pawl about said first axis, effecting pivotal movement of said second pawl about said second axis into a ready position in which said second pawl is engageable with said ratchet wheel to block rotation of said ratchet wheel in the belt withdrawal direction.

5,390,875

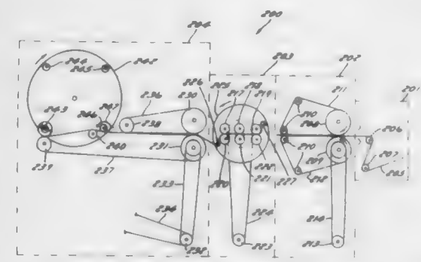
METHOD AND APPARATUS FOR INTERLEAVING PLASTIC BAGS

Peter J. Gietman, Jr., Combined Locks, and Stephen A. Saindon, Appleton, both of Wis., assignors to CMD Corporation, Appleton, Wis.

Continuation-in-part of Ser. No. 877,629, May 1, 1992, which is a continuation-in-part of Ser. No. 967,691, Oct. 27, 1992. This application May 3, 1993, Ser. No. 56,528

Int. Cl.[6] B65H *18/08*, *20/06*

U.S. Cl. 242—521 **17 Claims**



1. An apparatus for winding a roll of bags, each bag having a length L, a leading end and a trailing end from a film of bags comprising:

a dancer assembly;

a haul-in assembly, including at least one haul-in roll operating at a haul-in speed;

a tumbler assembly disposed to receive the film from said haul-in assembly, said tumbler assembly including a rotating tumbler means for separating adjacent bags and for

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increasing the length of the path the trailing end of each bag travels by at least a length $S=DI*(1-(L-D)/L)$ where DI is an infeed bag length, and said tumbler assembly further includes means for interleaving the bags, whereby the leading end of a second bag is downstream of the trailing end of a first bag by a length D; and

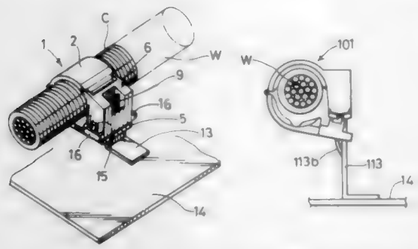
a winding assembly disposed to receive the film from said tumbler assembly, wherein said winding assembly operates at a speed less than said haul-in speed.

5,390,876

HOLDER FOR FIXING WIRING HARNESS AND THE LIKE TO AUTOMOBILE BODY

Takanori Hatano, Okazaki; Takayoshi Ito, Yokkaichi; Noboru Miyazaki, Wako; Ryuji Umehara, Wako, and Tomoharu Kamo, Wako, all of Japan, assignors to Sumitomo Denso Kabushiki Kaisha, Yokkaichi and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Nov. 19, 1993, Ser. No. 154,517
Int. Cl.[6] F16L *3/00*
U.S. Cl. 248—73 10 Claims



1. A holder of the type used for a bracket mounted on an automobile body for fixing an article such as wiring harness to the automobile body, comprising:

a fastening member having a curved surface;

a base member having a curved surface;

a hinged connecting member for interconnecting said fastening member and said base member in a manner that said fastening member can be pivoted relative to said base member; and

locking means provided on said fastening member and said base member for keeping said fastening member in a closed position generally opposing to said base member,

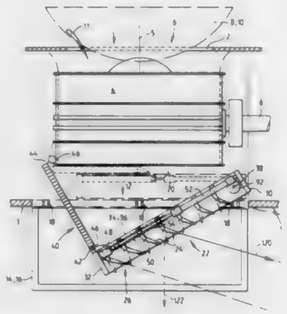
said fastening member having a mounting block provided on the free end thereof, said mounting block including a through hole which receives said bracket therein, said base member having a mating portion provided on the free end thereof, said mating portion including an insertion opening which receives said bracket therein, said insertion opening aligning with said through hole when said fastening member is pivoted to the closed position, said mounting block having engagement means provided in said through hole, said engagement means being adapted to engage engagement means provided on said bracket, said fastening member, when pivoted to the closed position, being operable to clamp the article between said curved surfaces of said base member and said fastening member, said engagement means provided on said bracket being adapted to engage said engagement means provided on said mounting block when said bracket is received in said through hole passed through said insertion opening, whereby said fastening member is mounted on said bracket in the closed position thereof.

5,390,877

VECTORABLE NOZZLE FOR AIRCRAFT

Douglas J. Nightingale, Jonesboro, Ga., assignor to Rolls Royce plc, Bristol, England

Filed Jun. 25, 1993, Ser. No. 84,706
Int. Cl.[6] B64C *29/00*
U.S. Cl. 244—23 D 14 Claims



1. A vectorable nozzle for a vertical lift aircraft provided with vertical lift means housed within the aircraft extending out of the aircraft through an exit aperture formed in an underside of the aircraft, the nozzle comprising:

first and second members pivotally hung on first and second opposite sides of the aperture and movable to a closed position to conceal the aperature,

a third member pivotally hung between the first and second members,

the first, second and third members being deployed when the vertical lift means is in operation to co-operate to form a nozzle facing a downward side and a rearward side of the aircraft to direct a lift gas stream from the lift means, and

a plurality of guide vanes supported within a frame suspended between the first and second members, said guide vanes acting to vector the lift gas stream, the guide vane frame being pivotally mounted to the aircraft adjacent a rearward edge of the exit aperture and supported by the third member pivotally attached to a forward edge of the frame.

5,390,878

STRAIN ISOLATOR ASSEMBLY

Vincent T. Padden, Brightwaters, N.Y., assignor to Grumman Aerospace Corporation, Long Island, N.Y.

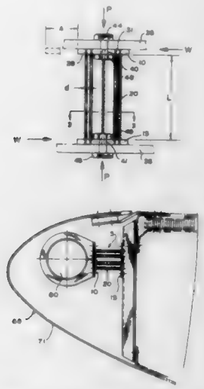
Filed Feb. 9, 1993, Ser. No. 15,122
Int. Cl.[6] B64D *27/00*
U.S. Cl. 244—53 R 10 Claims

1. An isolator assembly for use in minimizing thermal and/or vibrationary strains between a hot air blower tube and a cowling of a jet engine comprising:

a jet engine unit including a cowling member located about an air intake portion of said jet engine unit;

a hot air blower tube located within said cowling about said air intake portion;

first and second spaced base members, said first base member being fixedly secured to said jet engine unit and said second base member having said air blower tube attached thereto; and



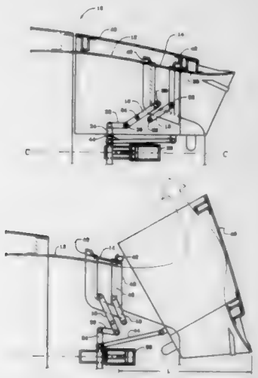
a plurality of rods, each of said rods having first and second ends fixedly secured to a respective one of said first and second base members.

5,390,879

JET PIPE FOR SUPPORTING A THRUST REVERSER FOR AIRCRAFT JET ENGINES

Jean-Pierre Lair, 100 W. El Prado, Suite 308, San Antonio, Tex. 78212

Filed Nov. 23, 1992, Ser. No. 980,170
Int. Cl.[6] B64D *33/04*
U.S. Cl. 244—110 B 9 Claims



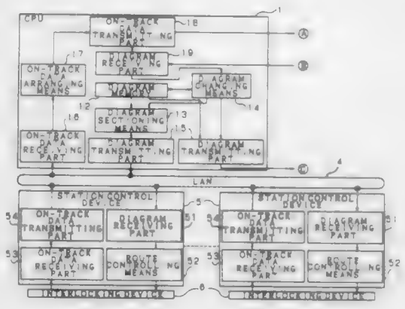
1. A jet exhaust pipe for aircraft jet engines comprising a fixed structure, a pair of shells surrounding the gas discharge end of said fixed structure, linkage means pivotally connecting each of said shells to said fixed structure on opposite sides thereof, and means for moving said shells between a first position wherein said shells forms a portion of the gas flow surface of the jet exhaust pipe, and a second position out of the gas flow, a pair of thrust reverser doors pivotally connected to said fixed structure, and means for moving said thrust reverser doors and said shells substantially simultaneously between said first position and second positions, actuator means for operating said moving means, said actuator means comprising a cross member connected to both of said moving means for simultaneously actuating both of said moving means, and said cross-member being connected to first link arms for moving said thrust reverser doors and second link arms for moving said shells.

5,390,880

TRAIN TRAFFIC CONTROL SYSTEM WITH DIAGRAM PREPARATION

Tatsuya Fukawa, and Kenji Morihara, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 79,754
Claims priority, application Japan, Jun. 23, 1992, 4-164814
Int. Cl.[6] B61L *3/00*
U.S. Cl. 246—167 R 5 Claims



1. A train traffic control, comprising:

an input device for inputting current data of trains in operation as initial data of a shuttle service at the time of changing the train operation to the shuttle service;

a file for storing predetermined decision rules including the propriety of approach and departure of the train at each station;

a simulation means for estimating arrival and departure times of the train by a partial simulation in use of the initial data of the shuttle service at each station within a route operated by the shuttle service:

means for deciding arrival and departure times of the train at each station according to the simulation result and to the decision rules;

a diagram preparing means for preparing a shuttle service diagram according to the decision result;

a central processing unit for transmitting the shuttle service diagram to each station; and

a station control device for controlling train routes at the station according to the transmitted shuttle service diagram;

wherein said diagram preparing means comprises:

means for judging for each train one of a current stopping station and a position between stations based upon on-track data;

means for determining whether a train is between two turn-back stations which surround a location of service interruption;

means for stopping a first train between said turn-back stations at a station nearest to said first train within a preparation time of said shuttle diagram, and for stopping said first train at its current location if said first train cannot be stopped at said nearest station within said preparation time; and

means for setting a state of a second train located outside said two turn-back stations from one of a stopping station or a position between stations other than said turn-back stations.

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5,390,881

ROLLER ASSEMBLY FOR A SWITCH TONGUE USED WITH A STOCK RAIL

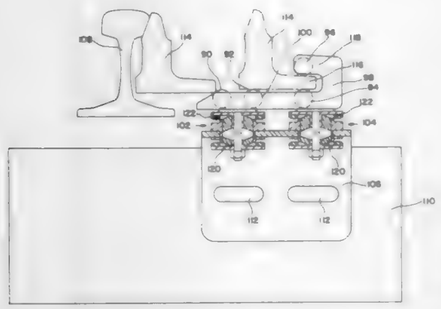
Sebastian Benenowski, Butzbach; Erich Nuding, Aalen, and Hans-Ulrich Dietze, Wusterwitz, all of Germany, assignors to BWG Butzbacher Weichenbau GmbH, Butzbach, Germany

Filed Jul. 12, 1993, Ser. No. 89,575

Claims priority, application European Pat. Off., Jul. 22, 1992, 92112528

Int. Cl.[6] E01B 7/00

U.S. Cl. 246—453 7 Claims



1. A roller assembly and receiver for a switch tongue used with a stock rail and extending from a supporting railroad tie, comprising a substantially U-shaped receiver and roller elements to movably support the switch tongue on said roller elements, said U-shaped receiver in turn supported on at least one spring mechanism, wherein the spring mechanism includes first and second spring elements having different characteristics, the first spring element having a substantially constant rigidity and the second spring element having a varying rigidity, the first and second spring element being mechanically coupled with one another by connecting means so that when the roller elements are loaded by the switch tongue, each spring element operates in a spring-active state and changes in length in response to loading and unloading whereby vibrations are damped.

5,390,882

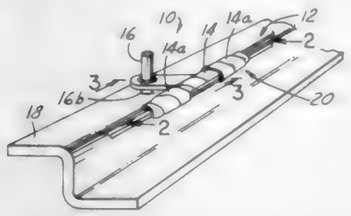
STACKABLE CLIP WITH A FLAT PROFILE ON A WELD STUD, WITH METHOD

Daniel A. Lee, Troy; Jose L. Farah, Oak Park; Michael M. Filicky, Warren, and Mava M. Vandervennet, Westland, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 23, 1993, Ser. No. 125,394

Int. Cl.[6] F16L 3/22

U.S. Cl. 248—68.1 14 Claims



1. The combination of at least one group of wires taped together, at least one stud, and at least one clip for securing the group of wires with respect to said stud, the combination comprising:

a stud secured to a vehicle frame;

at least one wire; and

at least one clip having a beam including a beam opening, said opening having means to grip said stud to secure said clip thereon, said at least one wire being secured to said clip, whereby said at least one wire is secured to said stud when said clip is secured on said stud,

wherein said at least one clip includes a clip having a support member for supporting a group of wires,

wherein said at least one wire is a group of wires restrained together in a wiring harness and said group of wires is supported by said support member,

wherein said support member has an upper side and an underside and extends longitudinally between a first end and a second end, each of said first and second ends having a slot that communicates with a round wire securing opening through the support member, and wherein said group of wires is secured to said clip by at least one wire being routed into the slot and then the wire securing opening at said first end and routed along the underside of said support member and into the slot and then the wire securing opening at said second end.

5,390,883

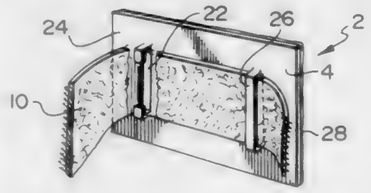
RELEASABLE MOUNTING BINDER FOR WIRES AND CABLES

Ronald W. Songhurst, 3439 Bethune Avenue, Victoria, B.C., Canada V8X 1W1

Filed Apr. 11, 1994, Ser. No. 225,629

Int. Cl.[6] F16L 3/08

U.S. Cl. 248—74.3 8 Claims



1. A releasable mounting binder for wires, cables and the like, the binder comprising a one-piece buckle, a pair of spaced slots in the buckle, means to receive securing means for securing the buckle in position on a surface of a body, and a flexible strap having ends to be fitted through the slots so that the buckle is free to move relative to the strap, on the strap, each opposite surface of at least each end of the strap having cooperating hook or pile securing means so that the ends are releasably securable to each other, when in overlapping, abutting relationship, for releasably looping about wires and cables to secure them on the buckle, and wherein the slots are formed under raised, elongated members bridging the buckle on one surface thereof in parallel fashion, so that the strap slides thereunder, to be held between the members and that surface of the buckle.

5,390,884

LANTERN HOLDER

James A. Skoff, and Peggy M. Skoff, both of 21765 362nd Ave., Bellevue, Iowa 52031-9054

Filed Sep. 22, 1993, Ser. No. 124,793

Int. Cl.[6] A45F 3/44

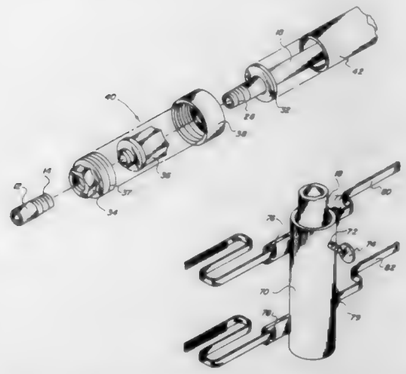
U.S. Cl. 248—156 8 Claims

1. A lantern holder for releasably supporting a lantern comprising:

a first rod having a first threaded end and a second threaded end;

a second rod having a first distal end, a second threaded end and a disk coupled to the second rod at the second end, the first distal end forming an S-shape fox releasably supporting a lantern;

a connection means for releasably coupling said first rod and said second rod, the connection means including a nut member having threads on the external surface thereof threadably engaging the first end of the first rod, a lug



member threadably engaging the second end of the second rod adjacent to the disk, a cap member rotatably positioned intermediate the lug member and said disk for threadably engaging the nut member; and,

a hammer means having a hollow extent therethrough for positioning about the second rod reciprocal thereabout for engaging the disk for driving the lantern holder into a surface.

5,390,885

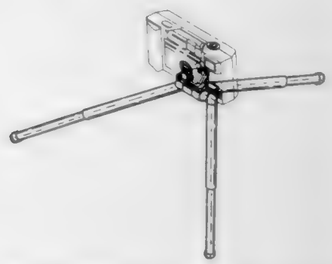
LOCKING MECHANISM FOR A PORTABLE TRIPOD OF A Q-PAD

Jack Shen, 6F, No. 416, Sec. 4, Jen Ai Rd., Taipei, Taiwan, Prov. of China

Filed Mar. 21, 1994, Ser. No. 215,412

Int. Cl.[6] F16M 11/38

U.S. Cl. 248—168 4 Claims



1. A locking mechanism for a portable tripod of a Q-Pad comprising

a casing assembly jointly assembled by a lower casing and an upper casing, a receiving slot being provided at the lower portion of the casing for receiving a leg thereof, a retaining cutout being provided at the upper portion of the casing assembly, a post slot being provided at one end of the retaining cutout and a rectangular slot being provided at the opposite end of the cutout, the upper casing and lower casing having a symmetrical configuration and fastened together by a screw;

a supporting body defining a supporting surface for supporting a camera at top and a wedge block at the underside, said wedge block being pivoted received by said retaining cutout of said casing assembly, a post and rod being provided at both end of the wedge block, said rod having a top with radial slot thereof;

a locking block defining a block body and a boss extending downward from said block body, the end portion of the boss having a plurality of radial slots with respect to said top of said rod, said locking block being received by the rectangular slots;

a trigger member defining a head portion and a handle, a post being provided at each side of the head portion, the post on said head portion of said trigger member being movably received by the rectangular slot; and

a leg defining a head portion with an inclined surface and a shoe, a shaft member being provided at the inclined surface, said shaft member being received by said receiving slot of said casing assembly, said head portion further including a recessed slot and a positioning post.

5,390,886

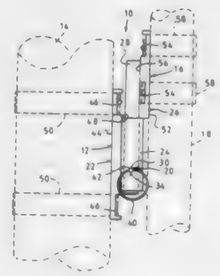
SCUBA ACCESSORY INTERCHANGE SYSTEM

Irwin Lawner, 183-10 69th Ave., Fresh Meadows, N.Y. 11365; Michael J. Spergel, 210 Chance Dr., Oceanside, N.Y. 11572, and Tod W. Lentini, 717 Park Ave., Huntington, N.Y. 11743

Continuation-in-part of Ser. No. 656,210, Feb. 15, 1991, abandoned. This application Mar. 3, 1993, Ser. No. 25,871

Int. Cl.[6] A47B 96/06

U.S. Cl. 248—224.3 1 Claim



1. An improved quick disconnect device for scuba tanks, comprising;

a female bracket being mountable to a first scuba tank, having

a first mounting plate attachable to the first scuba tank and

a cylindrical sleeve affixed to said first mounting plate, wherein

said first mounting plate has a curved back surface so that said first mounting plate can be firmly attached to the first scuba tank, and said first mounting plate has a pair of spaced apart transverse grooves on its front surface so that two clamps can fit into said grooves to hold said first mounting plate to the first scuba tank;

a male bracket being mountable to a second scuba tank, having

a second mounting plate attachable to the second scuba tank and

a projecting finger affixed to and extending downwardly from said second mounting plate, wherein

said second mounting plate has a curved back surface so that said second mounting plate can be firmly attached to the second scuba tank, and said second mounting plate has a pair of spaced apart transverse grooves on its front surface so that two clamps can fit into said grooves to hold said second mounting plate to the second scuba tank;

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means for attaching and detaching the first and second scuba tanks comprising;

a transverse aperture extending through said cylindrical sleeve perpendicular to a longitudinal axis of said sleeve;

a cross bore extending through said projecting finger perpendicular to a longitudinal axis of said finger;

quick release pin means suited for insertion into said transverse apertures, wherein attachment is achieved when

said finger of said male bracket is inserted into said sleeve of said female bracket until said transverse aperture and said cross bore are aligned to form a through passage, and said removable quick release pin means is inserted into said through passage so as to lock said finger in said sleeve, and wherein detachment is achieved when

said quick release pin means is removed from said through passage and said finger of said male bracket is removed from said sleeve of said female bracket.

5,390,887

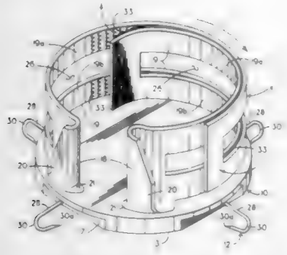
ADJUSTABLE BEVERAGE CONTAINER HOLDER FOR USE IN VEHICLES

Kirby K. Campbell, 6880 Mullan Rd., Missoula, Mont. 59802

Continuation-in-part of Ser. No. 69,764, Jun. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 841,333, Feb. 25, 1992, abandoned. This application Apr. 22, 1994, Ser. No. 231,505

Int. Cl.[6] A47K *1/08*

U.S. Cl. 248—311.2 **8 Claims**



1. A beverage container holder for releasable attachment on an interior surface of a vehicle to support and positionally maintain variably sized beverage containers, comprising in combination:

a rigid flat base disk having means on its undersurface for releasable attachment on a somewhat horizontal interior surface of a vehicle; and

upstanding support structure releasably carried by the base disk comprising two similar support members defining spacedly adjacent, upstanding support columns defining a channel therebetween, each support column having a flexible support arm extending horizontally therefrom to overlap with the other support arm in an area substantially diametrically opposed to the space between support columns, each adjacent overlapping portion of the support arms carrying one element of a fastener for adjustable and releasable fastening of the overlapping portions of the support arms to each other.

5,390,888

SUSPENDED HOLDER FOR SUPPORTING A CONTAINER OF PAINT AND BRUSH

Wayne A. Rogers, 275 Lakeview Dr., Aurora, Ill. 60506

Filed Mar. 16, 1994, Ser. No. 213,548

Int. Cl.[6] A47H *1/10*

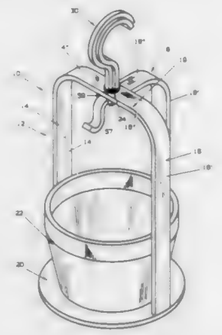
U.S. Cl. 248—318 **17 Claims**

1. A holder for supporting a container, comprising:

a main frame having a bottom support-shelf for supporting a container, or the like, thereon;

said main frame having a plurality of vertical, spaced-apart brace-members, each said brace member having a bottom end to which is secured said bottom support-shelf; and

a hook-member projecting upwardly from said main frame for suspending said main frame from a support;



each of said brace-members comprising a vertical leg-section having a lower end and an upper end, and a horizontal leg-section extending from the upper end of said vertical leg-section; said horizontal leg-sections meeting at a central location; said hook-member being mounted at said central location to at least one of said horizontal leg-sections.

5,390,889

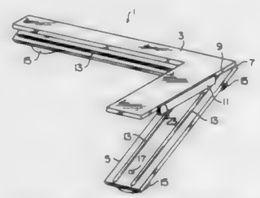
POSTER CLAMP

Anthony S. Hiscock, 977 Pitcairn Court, Kelowna, British Columbia, Canada V1Y 4E5

Filed Dec. 21, 1993, Ser. No. 171,514

Int. Cl.[6] A47F *7/14*

U.S. Cl. 248—488 **9 Claims**



1. A poster clamp comprising a clam-shell clamp having an upper member and a lower member, said upper and lower members rotatable about a common hinge between open and closed positions, and when in said closed position a first clamp arm on said upper member overlaying a first clamp arm on said lower member, and when in said closed position a second clamp arm on said upper member, coplanar with said first clamp arm on said upper member, overlaying a second clamp arm on said lower member, said second clamp arm on said lower member coplanar with said first clamp arm on said lower member, said second clamp arms extending substantially at right angles to said first clamp arms, said first and second clamp arms having longitudinal outside edges, said hinge along said longitudinal outside edges of said first clamp arms, whereby when in said closed position said first and second arms of said upper member are in substantially parallel engagement with said first and second arms of said lower member to thereby releasably frictionally engage a sheet placed between said upper and lower members.

5,390,890

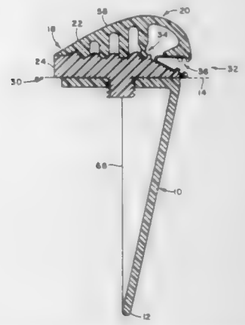
BEACH BLANKET RETAINING DEVICE

Lois G. Ferguson; Michael D. Corsi, both of R.R. No. 3, Box 324-D, Greenvalley Rd., Eighty Four, Pa. 15330, and Paul M. Doman, 1136 Mike Reed Dr., Library, Pa. 15129

Filed Sep. 15, 1993, Ser. No. 121,702

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—545 **14 Claims**



1. A beach blanket retaining device comprising:

(a) a base spike member comprising a lower pointed end adapted to be driven into a sandy beach surface and an upper platform end; and

(b) a clamp member superimposed on the upper platform end of the base spike member wherein the clamp member comprises an upper jaw and a lower jaw and the upper jaw is pivotable in a vertical arc upwardly from the lower jaw and downwardly therefrom, the clamp member is retained in a closed position with the upper jaw abutting the lower jaw by a spring means, the clamp member has a front end and a rear end and the upper and lower jaws are pivotally connected one to the other at a pivotal connection point positioned medially between said front end, said rear end, a leaf spring is positioned between the upper and lower jaws of the clamp member rearwardly from the pivotal connection point, the leaf spring is V-shaped and has an upper side and a lower side and an angle interposed between said upper side and said lower side and said upper side is fixed to the upper jaw of the clamp member and the lower side is fixed to the lower jaw of the clamp member such that the upper jaw is pivotal in a vertical arc upwardly from the lower jaw when force is applied downwardly on the upper jaw at a point positioned rearwardly of the pivotal connection point, and the upper jaw of the clamp member has a lower concave side from which a leg member having a lower terminal ball projects downwardly to engage a socket on the upper side of the lower jaw member so as to form the pivotal connection point.

5,390,891

APPARATUS FOR MOUNTING EQUIPMENT IN A SHOCK ABSORBING MANNER

Ernst Hornung, Stuhr; Hans Maager, Worpswede, and Huba Oery, Aachen, all of Germany, assignors to ERNO Raumfahrttechnik GmbH, Bremen, Germany

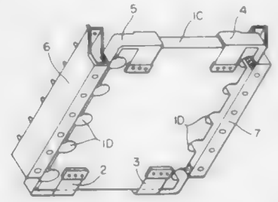
Filed Jun. 4, 1993, Ser. No. 72,144

Claims priority, application Germany, Jun. 5, 1992, 4218586

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—581 **6 Claims**

1. An apparatus for mounting equipment in a shock absorbing manner to a support, comprising a platform, a plurality of shock absorbing elastic spring devices securing said platform to said support, each of said elastic spring devices having a low damping constant, and means for fixedly connecting said elastic spring devices to said platform and to said support, each of said elastic spring devices comprising three leaf spring elements and a land arranged so that two of said leaf spring elements are interconnected by said land (10) forming a U-configuration with said two leaf spring elements extending in parallel to each other, and wherein a third leaf spring element of said three leaf spring elements forms substantially an L-configuration extending laterally away from said land of said



U-configuration surface area contact reducing members between said elastic spring devices and said platform, and wherein, said apparatus further comprising surfaces of said third leaf spring element extend at a right angle to surfaces of said two leaf spring elements, and at least one of said leaf spring elements does not directly contact the platform during operation.

5,390,892

VIBRATION ISOLATION SYSTEM

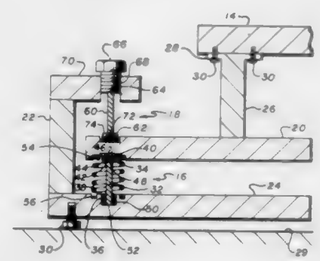
David L. Platus, Los Angeles, Calif., assignor to Minus K Technology, Inc., Inglewood, Calif.

Continuation of Ser. No. 708,995, May 31, 1991, Pat. No. 5,178,357, and a continuation-in-part of Ser. No. 681,808, Apr. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 395,093, Aug. 16, 1989, abandoned. This application Jan. 11, 1993, Ser. No. 2,633

The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—619 **12 Claims**



1. A vibration-isolating suspension system for supporting an object having changing mass in an acceleration field having an axial direction and maintaining the object in an equilibrium position relative to a base structure while suppressing the transmission of vibratory motion between the object and the base structure, comprising:

a first and second support structure operatively connected axially in series with each other and to the base structure and object, each support structure having a negative-stiffness effect in response to axial compressive loading for reducing the transverse stiffness of each of said support structures for reducing the transmission of vibratory motion in any transverse direction between the object and base structure, said support structures being disposed relative to each other such that a change in the mass of the object causes a change in the compressive load on said first support structure which is substantially opposite in

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magnitude to the change in the compressive load on said second support structure; and

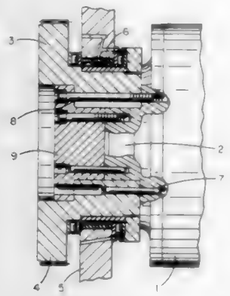
means for supplying axial compressive preload to said support structures.

5,390,893

MOUNTING FOR CYLINDERS AND DRUMS IN PRINTING MACHINES

Harald Bayer, Rodgau, and Klemens Kemmerer, Seligenstadt, both of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed Aug. 19, 1993, Ser. No. 109,084
Claims priority, application Germany, Aug. 21, 1992, 4227643
Int. Cl.[6] F16M *1/00*
U.S. Cl. 248—659 11 Claims



1. Apparatus for rotatably mounting the driven end of a printing press cylinder in one of a pair of spaced apart press side frames comprising, in combination,

a bearing and means defining an aperture in said one side frame for receiving and supporting said bearing in close-fitting relation therein,

a driving gear having a hollow collar extending coaxially therefrom, said collar having inner and outer peripheral surfaces with said outer peripheral surface dimensioned for close-fitting insertion in and rotational support by said bearing,

a journal on the driven end of said printing press cylinder, said journal dimensioned for close-fitting insertion in and support by said inner peripheral surface of said collar, and

means for positively securing said collar to said journal, said securing means being selectively engageable and releasable.

5,390,894

POUR CUP

James E. Meehan, Hopewell Township, Mercer County, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

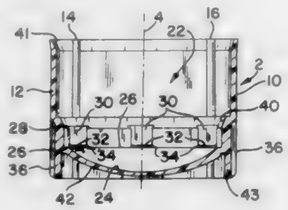
Filed Dec. 10, 1993, Ser. No. 165,384
Int. Cl.[6] B29C *33/10*
U.S. Cl. 249—96 6 Claims

1. A pour cup for shaping one end of a product stick in a bottom filling process, comprising:

means forming a concave surface;

a sealing ledge around the periphery of said surface;

a wall around the outer edge of said sealing ledge; and



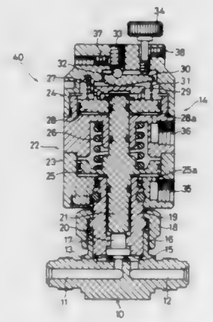
means forming channels in the inside of said wall that terminate a given distance from said sealing ledge.

5,390,895

SLOW VENT VALVE

Toshiaki Iwabuchi, Yabutsukahonmachi, Japan, assignor to Benkan Corporation, Tokyo, Japan

Filed Jan. 26, 1994, Ser. No. 186,537
Claims priority, application Japan, Apr. 2, 1993, 5-100428
Int. Cl.[6] F16K *31/122*
U.S. Cl. 251—60 1 Claim



1. A slow vent valve for controlling gas flow to a vacuum chamber in semiconductor wafer manufacturing equipment, comprising a valve casing, a valve seat mounted in the valve casing, a diaphragm made of a resilient metal mounted above the valve seat and provided to flex on its own resilience into fluid-tight contact or away from the valve seat to control the fluid-flow relationship between an inlet passage and an outlet passage that are mounted in the valve casing, the outlet passage being adapted for connection to an external vacuum chamber, a valve rod vertically slidably disposed in a stationary bonnet that is mounted above the valve casing and made to clamp the diaphragm along a periphery thereof around the valve seat, the valve rod being reciprocated to drive the diaphragm, while being held in contact therewith, between fully closed and open positions, a first piston which is reciprocally disposed and made integral with the valve rod for united movement therewith in the bonnet, a first compression spring adapted to exert downward force on the first piston, a first inlet port provided to supply a regulated amount of compressed air to a first fluid tight chamber to thereby push up the first piston against the force of the first spring to allow the diaphragm to flex away from the valve seat to its fully-open position to vent the vacuum chamber, a second piston reciprocally disposed above the first piston having a throughhole centrally bored therein into which the valve rod extends, an end ring integral with the valve rod whereby the upward movement of the second piston, valve rod upwardly, a second compression spring

mounted on top of the second piston and provided to exert downward pressure on the second piston to move downwardly the valve rod, a cam follower mounted on top of the second piston with which the cam follower is integrated for unified vertical movement, a cam having a V-shaped bottom and movably disposed above the second piston for pivoting about a fulcrum ball, the cam being balanced to have the apex of the V-shaped bottom pressed into contact with the top surface of the cam follower, the cam being supported at a lateral end by the second spring which urges the cam to be moved to a tilted position, a second inlet port provided to supply a regulated amount of compressed air to a second chamber defined beneath the second piston to push the second piston upward against the force of the second piston and hence the valve rod to allow the diaphragm to flex to a slightly open position, a valve open timing adjuster operatively connected to the cam in such a manner as to adjust the initial diaphragm pressing force on the valve seat to thereby determine the time that the valve is open, and a slow venting adjuster engaging the cam at an end where the cam is supported on the second spring and adapted in such a manner as to enable the cam to adjust the force of the second spring to resist the second piston being pushed upward by the pressure of the air entering the second chamber, to thereby adjust the venting flow rate of venting for the vacuum chamber.

5,390,896

ENERGY LOSS DEVICE

Paul A. Smirl, Laguna Beach, Calif., assignor to Control Components, Inc., Rancho Santa Margarita, Calif.

Filed Dec. 20, 1993, Ser. No. 170,911
Claims priority, application United Kingdom, Dec. 18, 1992, 9226404
Int. Cl.[6] F16K *47/08*
U.S. Cl. 251—127 6 Claims

1. A fluid flow controlling device comprising:

a plurality of members joined together into a rigid structure to define a series of radial respectively isolated energy loss paths for fluid flow, said plurality of members including a series of disks having abutting surfaces and forming said energy loss paths in a respective common plane there between for fluid flow there along wherein at least one of the energy loss paths of the disk includes a void between the inlet and outlet of the disk, the void expanding the cross-sectional area of the said energy loss path of the disk;

inlet means centrally formed in said members along a first configuration to define a predetermined inlet area for conducting fluid to the series of paths formed by said plurality of members; and,

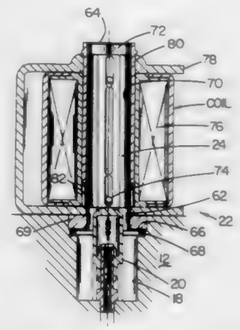
outlet means associated with said inlet means and about said rigid structure to provide a series of openings for exhausting fluid from the energy loss paths of said rigid structure.

5,390,897

EXPANSION VALVE FOR AIR CONDITIONING SYSTEM WITH PROPORTIONAL SOLENOID

Chester D. Campbell, Rancho Santa Margarita; Sandra L. Harper, Dana Point; Virender Jain, Lake Forest; Richard L. Kenyon, Irvine, all of Calif.; Alan Matthies, Milwaukee, Wis.; Roger G. Riefler, Brandon, Miss.; Roy M. Yabuki, Los Angeles, and Ashok Zopey, Anaheim Hills, both of Calif., assignors to Parker Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 961,567, Oct. 15, 1992, Pat. No. 5,295,656, which is a continuation-in-part of Ser. No. 951,259, Sep. 25, 1992, Pat. No. 5,252,939. This application Dec. 3, 1993, Ser. No. 161,000
The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.
Int. Cl.[6] F16K *31/06*
U.S. Cl. 251—129.02 17 Claims



1. A valve for controlling flow of fluid material comprising:

a body, said body including an inlet; an outlet; and a control element for controlling a rate of flow of material from said inlet to said outlet;

said body further including an opening, said control element accessible through said opening;

a variable permeance element comprised of magnetic material, said variable permeance element in generally surrounding relation of said opening;

an isolation member comprised of nonmagnetic material, said isolation member extending through said opening and terminating at an outer end, said isolation member having an interior area, said interior area extending longitudinally in said isolation member;

an actuating member, said actuating member positioned in said interior area of said isolation member and longitudinally movable therein, said actuating member comprised of magnetic material and sized for acceptance in said opening, said actuating member operatively connected with said control element, and wherein flow through said control element varies with movement of said actuating member;

biasing means for biasing said actuating member toward said outer end of said isolating member;

a sleeve member generally surrounding said isolating member, said sleeve member comprised of magnetic material;

electrical coil means in surrounding relation of said sleeve member for producing electromagnetic flux responsive to delivery of electrical power thereto, said electrical coil means having a first end adjacent said outer end of said isolating member, and a second opposed end adjacent said variable permeance element;

a frame comprised of magnetic material supporting said coil

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means, said frame in connection with said sleeve member and extending between said ends of said coil means;

flux saturation means disposed longitudinally between said opening and said sleeve member for providing an area of magnetic flux saturation;

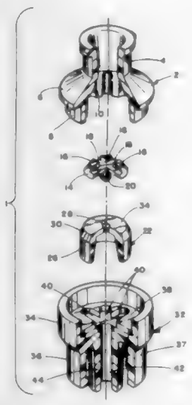
wherein electrical power delivered to said coil means moves said actuating member against the force of said biasing means and into said opening, whereby control of flow rate through said control element is achieved.

5,390,898

NEEDLELESS DUAL DIRECTION CHECK VALVE

William H. Smedley, Lake Elsinore; Terry M. Haber, El Toro, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Apr. 6, 1994, Ser. No. 223,058
Int. Cl.[6] F16L *37/28*
U.S. Cl. 251—149.6 9 Claims



1. A check valve having a fluid receiving end, a fluid expulsing end, a fluid path extending between said fluid receiving and expulsing ends, and comprising:

a first sealing surface located in said fluid path;

a valve core to control the flow of fluid through the fluid path of said check valve, said valve core being formed from a spring-like elastomeric material and having a second sealing surface, said valve core being compressed in response to an axial pushing force applied thereto for causing said valve core to move in said fluid path from a closed valve position where said first and second sealing surfaces engage one another to block said fluid path and prevent the flow of fluid through said check valve to an open valve position where said second sealing surface is spaced from said first sealing surface to establish a gap therebetween and thereby open said fluid path to the flow of fluid through said check valve, and

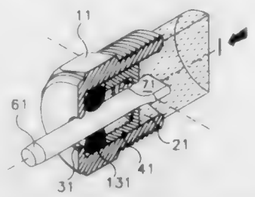
a rigid pressure cap affixed to said elastomeric valve core for receiving the axial pushing force and transferring said pushing force to said valve core for compressing said valve core and thereby causing said valve core to move in said fluid path.

5,390,899

FLOW VALVE OPERATED BY THE ANGULAR OR CROSS DISPLACEMENT OF AN AXIAL STEM

Sergio Pérez C., Estado 235 of., 511 Santiago, Chile

Filed Aug. 3, 1993, Ser. No. 100,946
Claims priority, application Chile, Oct. 26, 1992, 1204-92
Int. Cl.[6] F16K *39/00, 11/14*
U.S. Cl. 251—339 16 Claims



1. A valve for controlling fluid flow, comprising:

a) a body having an inlet and an outlet, said body having an opening at one end;

b) a controlling stem disposed axially of said body with one end portion extending through said body opening, said stem being pivotable about said body opening between a normal position wherein said valve is closed and a pivoted position wherein said valve is open;

c) a first elastic ring disposed within said body in sealing radial contact with said stem and said body and disposed between with said inlet and said outlet, thereby to prevent fluid flow from said inlet to said outlet; and

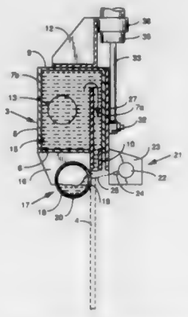
d) said stem when in said pivoted position being adapted to deform said first elastic ring to create an opening between said stem and said first elastic ring, thereby to permit fluid to flow from said inlet through said opening to said outlet.

5,390,900

METAL STRIP COOLING SYSTEM

Vladimir B. Ginzburg, 612 Driftwood Dr., Pittsburgh, Pa. 15238

Filed Apr. 26, 1994, Ser. No. 233,260
Int. Cl.[6] C21D *1/62;* B21B *45/02*
U.S. Cl. 266—113 10 Claims



7. An apparatus for cooling a metal workpiece passing by said apparatus comprising:

means for directing a curtain of water onto and across the width of said metal workpiece;

a water collector on one side of said curtain of water;

an air source on the other side of said curtain of water arranged to direct a flow of air across said curtain of water so as to divert the same and direct said water into said water collector; and

a deflector, disposed directly opposite said water collector and between said water collector and said air source,

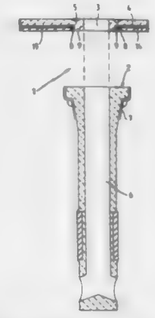
comprising a metal plate, having a downwardly depending central section, slidably movable across said flow of air, between said air source and said curtain of water, arranged to interrupt at a portion of said flow of air so that at least a portion of said flow of air is blocked across the width of said moving metal workpiece, while at least a portion of said curtain of water is undiverted and contacts and thus cools the metal workpiece.

5,390,902

BELT FOR SEALING A POURING TUBE

Stanislav Szadkowski, Marly, Switzerland, assignor to International Industrial Engineering S.A., Braine-L'Alleud, Belgium

PCT No. PCT/BE92/00016, § 371 Date Nov. 19, 1993, § 102(e) Date Nov. 19, 1993, PCT Pub. No. WO/9220480, PCT Pub. Date Nov. 26, 1992
PCT Filed May 7, 1992, Ser. No. 142,288
Claims priority, application Belgium, May 21, 1991, 9100475
Int. Cl.[6] B22D *41/42*
U.S. Cl. 266—217 7 Claims



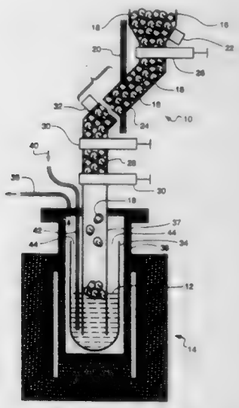
1. A belt for sealing a discharge device of a bottom-pouring ferrous-metallurgical vessel, comprising a top or reference plate applied from below against the bottom of the vessel and a bottom plate, which is fixed or movable, carrying a pouring tube, wherein said sealing belt consists of two concentric grooves formed in one or the other of the abovementioned plates and centered on the axis of the tap hole, so as to delimit three separate zones, namely a first, inner, annular zone surrounding the tap hole, a second, intermediate, annular zone delimited by the two grooves and a third, outer, zone lying between the outer groove and the periphery of the plate, and wherein the outer groove is connected to a vacuum source and the inner groove to an inert-gas source.

5,390,901

ENERGETIC MATERIAL FEEDER

Richard L. Gay, Chatsworth; Jerold Guon, Woodland Hills; John C. Newcomb, Simi Valley, and Albert E. Stewart, Lake View Terrace, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 27, 1993, Ser. No. 126,855
Int. Cl.[6] C21C *7/00;* B01J *4/00*
U.S. Cl. 266—216 7 Claims



1. A feed system for feeding propellant or explosive energetic waste into a molten salt-containing furnace while avoiding detonation of said waste which comprises

a feed hopper for receiving solid pieces of said waste,

a furnace containing a molten salt, separated from said hopper,

a barrier between said feed hopper and said furnace, said barrier having an aperture therein

an inclined chute communicating with said feed hopper and said furnace for transporting said solid pieces of waste to said furnace and into said molten salt, said chute passing through said aperture in said barrier,

a first tube in said furnace, said molten salt being disposed solely in said tube,

a downcomer within said tube and communicating therewith, whereby pieces of solid waste are discharged into said downcomer and into said tube,

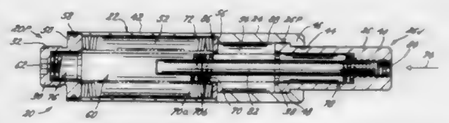
a narrow tube within said first tube and outside said downcomer for passing process air into the molten salt in said first tube.

5,390,903

VARIABLE FORCE DIE SPRING ASSEMBLY

Erich D. Fidziukiewicz, Canton, Mich., assignor to Connell Limited Partnership, Boston, Mass.

Filed Sep. 3, 1993, Ser. No. 117,399
Int. Cl.[6] B60G *11/34*
U.S. Cl. 267—28 21 Claims



1. A variable force spring assembly for use in a cam unit, the spring assembly supplying increasing resistance when subjected to an external axial force and comprising, in combination:

a casing having at least two slidably coupled telescoping components adapted to move between an extended position and a compressed position when subjected to the axial force, the casing defining at least one internal cavity,

means for restricting the extended position of the casing,

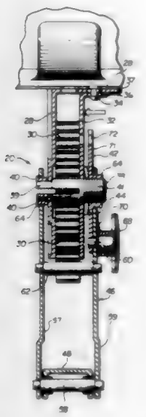
a low force spring having a relatively low spring rate such that the low force spring compresses relatively large distances when subjected to a relatively low axial force,

a high force spring having a relatively high spring rate such

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that the high force spring compresses relatively small distances when subjected to a relatively high axial force, the low and high force springs being disposed within the internal cavity such that as the casing components move between the extended and the compressed positions the low force spring substantially compresses before the high force spring compresses, the high force spring being restricted in a preloaded condition by an internal structure of at least one of the telescoping components.

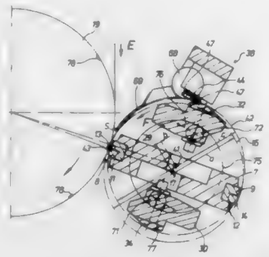
5,390,904
ATTENUATED HINGE SPRING ASSEMBLY
Corey M. Rivard, Batavia; Eric G. Parker, Elgin, and Robert K. Dutzi, Buffalo Grove, all of Ill., assignors to Illinois Tool Works, Inc., Glenview, Ill.
Filed Oct. 8, 1993, Ser. No. 134,409
Int. Cl.[6] B60G *13/00*
U.S. Cl. 267—204 13 Claims



1. A hinge spring assembly for a lid, comprising:
a bracket mountable in a fixed position adjacent to a lid;
a coiled spring having coils connected to said bracket;
an arm member having a first end portion operatively interconnectable with said lid, and a second end portion operatively inter-connected with said coiled spring for movement of said arm member between a first position and a second position for moving the lid between a closed position and an open position, said coiled spring uncoiling when said arm member is moved between the first position and the second position; and
frictional braking .means for frictionally restraining movement of said coiled spring, said frictional braking means directly engaging a plurality of the coils of the coiled spring when said arm member is moved toward said second position to slow the momentum of the lid as the lid moves to said open position.

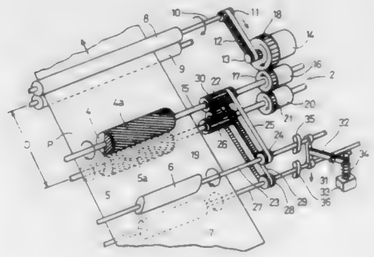
5,390,905
APPARATUS FOR CUTTING AND BINDING MULTI-LAYERED PRINTED PRODUCTS
Wolfgang Melchior, Hessheim, Germany, assignor to Albert-Frankenthal Aktiengesellschaft, Wurzburg, Germany
Filed Aug. 23, 1993, Ser. No. 110,171
Claims priority, application Germany, Aug. 22, 1992, 4227930
Int. Cl.[6] B41F *13/56*; B27F *7/17*
U.S. Cl. 270—21.1 6 Claims

1. An apparatus for cutting and binding multi-layered printed products in a folding apparatus of a printing assembly, said apparatus comprising:
a gripping and folding blade cylinder adapted to receive a multi-layered printed product to be cut and bound;
a cutting cylinder having at least a first cutter and being rotatable about a cutting cylinder axis of rotation and defining a first circular envelope; and
a binding cylinder having at least a first binder head and being rotatable about a binding cylinder axis of rotation



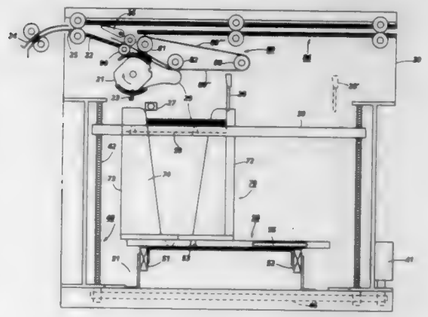
and defining a second circular envelope, said cutting cylinder axis of rotation and said binding cylinder axis of rotation being parallel to each other and spaced from each other, said first and second circular envelopes intersecting each other adjacent said gripping and folding blade cylinder, and looked at in paper feed direction, before a binding and cutting line.

5,390,906
PAPER SUPPLYING DEVICE
Yoshifumi Ishii, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Mar. 5, 1993, Ser. No. 26,804
Claims priority, application Japan, Mar. 7, 1992, 4-084741; Mar. 7, 1992, 4-084742
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—10 7 Claims



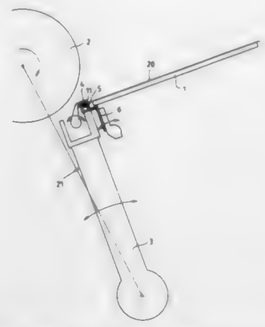
1. A paper supplying device for supplying manuscript sheets from a bundle of manuscript sheets stacked on a paper supply tray to a manuscript table, said device comprising:
a pair of opposite upper and lower paper supply rollers having respective axes of rotation, each said paper supply roller having two hemicylindrical surface portions including a first said surface portion having a greater frictional resistance than a second said surface portion;
a pair of feed rollers positioned in a downstream direction from said paper supply rollers by a distance less than a circumferential length of said first surface portion of each of said paper supply rollers;
drive means for generating rotation in a drive direction;
rotation change-over means, operative to receive rotation from said drive means and operatively connected to said paper supply rollers to transmit rotation to a selected one of said paper supply rollers, for selectively changing said selected one paper supply roller between a first said paper supply roller that is caused to rotate in a regular direction corresponding to said drive direction and a second said paper supply roller that is caused to rotate in a reverse direction opposite to said drive direction;
rotation force transmitting means, operatively connected to said paper supply rollers, for transmitting rotation of said selected one paper supply roller to rotation in the same direction of the other paper supply roller, such that both said paper supply rollers rotate in the same direction; and
a pair of opposite upper and lower assist rollers positioned in an upstream direction from said paper supply rollers and rotatable in the same direction synchronously with said paper supply rollers, said assist rollers being located such that the bundle of manuscript sheets is positionable therebetween, one said assist roller being operable as a support member supporting a first side of the bundle, and the other said assist roller being operable as an urging member acting on a second side of the bundle to urge a manuscript sheet therefrom in a downstream direction toward said paper supply rollers;
whereby a manuscript sheet is urged by said other assist roller to said paper supply rollers, wherefrom the manuscript sheet is moved by said first surface portion of a corresponding said paper supply roller to said feed rollers, that then pass the manuscript sheet to the manuscript table.

5,390,907
SHEET STACKING APPARATUS
Otto R. Dole, Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Continuation of Ser. No. 757,092, Sep. 10, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,675
Int. Cl.[6] B65H *31/04*
U.S. Cl. 271—214 7 Claims



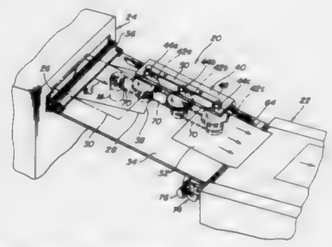
1. A multi-mode sheet stacker apparatus for stacking a wide variety of sheet sizes fed thereto by a feeder means, comprising:
a vertically liftable main pallet adapted to receive sheets directly thereon from the feeder means when the stacker apparatus is operating in a first mode;
a container having upstanding walls positioned on said main pallet when the stacker apparatus is operating in a second mode;
a removable container pallet positioned within said container onto which sheets are placed by the feeder means when the stacker apparatus is operating in said second mode; and
elevator means for lifting only said container pallet into position to receive sheets from said feeder means when the stacker apparatus is operating in said second mode.

5,390,908
DEVICE AND METHOD FOR DETECTING AND GRIPPING SHEETS
Heiner Luxem, Wilhelmsfeld, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany
Filed Jun. 28, 1993, Ser. No. 84,343
Claims priority, application Germany, Jul. 1, 1992, 4221578
Int. Cl.[6] B65H *9/04*
U.S. Cl. 271—247 12 Claims



1. In a paper sheet processing machine having front lays with stop surfaces for aligning paper sheets at leading edges thereof in a given paper sheet plane, and means for accelerating the papers sheets to a speed sufficient for transferring the paper sheets to a paper sheet processing unit, a measurement device for detecting a sheet in the region of the front lays, comprising
an upper sensor member and a lower sensor member, said sensor members defining a gap therebetween for receiving paper sheets aligned at the front lays, said upper and lower sensor members forming upper and lower boundaries, respectively, of a sensing region defined perpendicularly relative to said given paper sheet plane, said sensor members being means for detecting paper sheets intersecting the stop surfaces of the front lays, and means for moving at least one of said sensor members between a waiting position outside a sheet travel region into a measurement position and back into the waiting position.

5,390,909
SHEET JUSTIFIER
Robert F. Herrick, Jr., Deep River, Conn., assignor to Roll Systems Inc., Burlington, Mass.
Continuation of Ser. No. 939,064, Sep. 2, 1992, Pat. No. 5,280,903. This application Jan. 5, 1994, Ser. No. 177,730
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.[6] B65H *9/16*
U.S. Cl. 271—251 13 Claims



8. A sheet justifier comprising:

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a supporting surface having an upstream end and a downstream end;

a raised edge guide extending along the supporting surface aligned substantially from the upstream end to the downstream end;

a first rotating surface having a first axis of rotation and a first freely rotating mass positioned thereover and contacting the first rotating surface at a point remote from the axis of rotation;

a second rotating surface positioned downstream of the first rotating surface and positioned proximate the raised edge guide and having a second axis of rotation and a second freely rotating mass contacting the second rotating surface at a point remote from the second axis of rotation; and

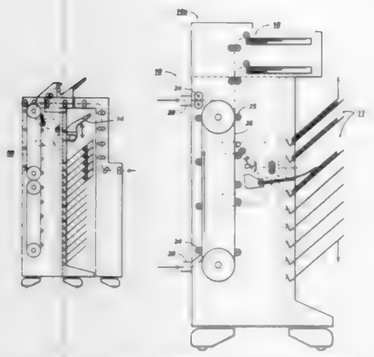
the first freely rotating mass and the second freely rotating mass being located relative to each of the first rotating surface and the second rotating surface, respectively, so that a sheet is driven by each of the first rotating surface and the second rotating surface by resolved components of force with an edge of the sheet maintained against the raised edge guide and moving in a downstream direction along the edge guide, the sheet moves from the upstream end into engagement with the first rotating surface and from the first rotating surface into engagement with the second rotating surface and from the second rotating surface to the downstream end of the supporting surface along the edge guide in a justified orientation.

5,390,910

MODULAR MULTIFUNCTIONAL MAILBOX UNIT WITH INTERCHANGEABLE SUB-MODULES

Barry P. Mandel, Fairport, and Gerald A. Buddendeck, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 24, 1993, Ser. No. 66,825
Int. Cl.[6] B65H *39/10*
U.S. Cl. 271—296 **5 Claims**



1. In a mailbox module with sheet transport paths for separately collecting the print job sheets outputted by a shared user printer and selectably separating and feeding said print jobs of respective users into a superposed array of plural descrete mailbox print job sheet collection trays, the improvement wherein:

said mailbox module has left and right side printer job output sheet inputs,

said mailbox module has at least one vertically modular replaceable sub-module,

said mailbox module has both a right side generally vertical sheet transport input path, and a left side generally vertical sheet transport input path, for sequentially feeding sheets respectively from said left or right side sheet inputs vertically to said replaceable sub-module,

said mailbox module has a third generally vertical sheet transport path from said replaceable sub-module past said array of plural mailbox print job sheet collection trays to provide a tray selection path; and

said replaceable mailbox sub-module comprising at least one interchangeable sheet processing apparatus connecting between said mailbox sub-module sheet transport input paths and said third sheet transport path to form a part of said mailbox module sheet path;

said sheet processing apparatus operating on sheets in said mailbox sub-module prior to said separating and feeding of print job sheets into said mailbox print job sheet collection trays;

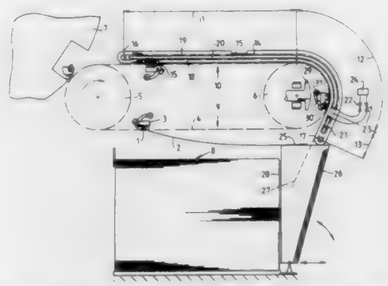
wherein a sheet stacking elevator and a selectable plurality of mailbox bins are removably mounted to said mailbox module to be selectably fed said printer output sheets by said third vertical sheet transport passing thereby.

5,390,911

DEVICE FOR CONVEYING SHEETS FROM A PRINTING PRESS TO A SHEET PILE

Gotthard Schmid, Nussloch, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jan. 21, 1994, Ser. No. 185,592
Claims priority, application Germany, Jan. 27, 1993, 4302127
Int. Cl.[6] B65H *39/10*
U.S. Cl. 271—300 **14 Claims**



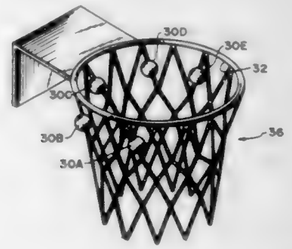
1. Device for conveying sheets from a printing press to a sheet pile, comprising revolving endless conveyor members looped about at least two rotating members having respective horizontal axes of rotation disposed parallel to one another, one of the rotating members being disposed at a location remote from the printing press, mechanical grippers carried by the endless conveyor members for gripping only respective leading edges of sheets, said endless conveyor members having respective upper sides moving along a conveying path in a given conveying direction for carrying thereon sheets conveyable away from the printing press, revolving endless guiding members disposed over part of said conveying path along and adjacent said upper side of said endless conveyor members and along a part of said endless conveyor members looped about said one of said rotating members disposed at said location of said endless conveyor members remote from the printing press, and pneumatic means disposed along said endless guiding members for exerting a force in a direction substantially perpendicular to said conveying direction upon the respective sheets being conveyed, said endless conveyor members having an underside, and the sheet pile being disposed below said underside of said endless conveyor members.

5,390,912

BASKETBALL SHOOTING TARGET FOR GAME CONDITION USE

Howard Silagy, 100A Tec St., Hicksville, N.Y. 11801

Filed Aug. 18, 1994, Ser. No. 292,250
Int. Cl.[6] A63B *63/08*
U.S. Cl. 273—15 A **1 Claim**



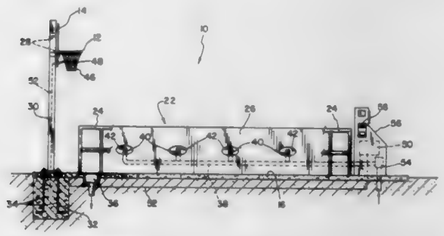
1. An aiming device in attached relation to a basketball hoop of a type consisting of a circular rim and a cylindrically shaped net formed by an arrangement of plural interconnected yarns connected in depending relation about said rim in the use of which a basketball is typically caused to pass through said net by a manual thrust therethrough and by a thrown trajectory, said aiming device comprising at least one target in the form of a small-sized circular ball, and a selected site for the attachment of said target ball being on a yarn of said net below said rim to serve as a visual sighting target for said thrown trajectory and in a position of clearance from said manual thrust, whereby said aiming device contributes to proficiency in scoring by a thrown trajectory without impeding scoring by a manual thrust and is thereby advantageous for game conditioning use.

5,390,913

BASKETBALL GAME WITH WATER SPRAY SYSTEM

Jack Kepler, Eastpointe, Mich., assignor to Spray Shot, Inc., Madison Heights, Mich.

Filed Jun. 13, 1994, Ser. No. 259,326
Int. Cl.[6] A63B *63/08, 71/02*
U.S. Cl. 273—1.5 R **18 Claims**



15. A sport facility sized to accommodate at least two players which are competing against each other by playing a game in which said at least two players are equipped with two basketballs, said sport facility comprising:

a playing area;

a divider placed in said playing area so as to divide said playing area into two juxtaposed playing areas, each of said two juxtaposed playing areas having a playing surface and a periphery;

first spraying means mounted at said periphery of a first playing area of said two juxtaposed playing areas for selectively spraying water into said first playing area, said first spraying means comprising multiple spray nozzles located along at least a portion of said periphery of said first playing area;

second spraying means mounted at said periphery of a second playing area of said two juxtaposed playing areas for selectively spraying water into said second playing area, said second spraying means comprising multiple spray nozzles located along at least a portion of said periphery of said second playing area;

an annular-shaped goal supported above each of said playing surfaces, said annular-shaped goal being sized to permit one of said two basketballs to pass therethrough;

sensing means associated with each of said annular-shaped goals for detecting when one of said two basketballs passes through a corresponding one of said annular-shaped goals; and

control means in communication with said sensing means and said first and second spraying means for initiating flow of water through said first and second spraying means so as to produce a water spray into at least one of said two juxtaposed playing areas;

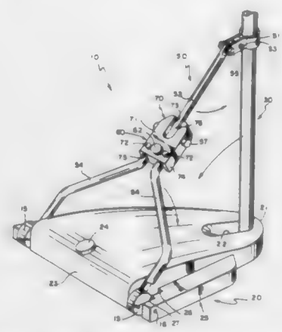
whereby said control means initiates said water spray into said at least one of said two juxtaposed playing areas upon receiving a signal from said sensing means.

5,390,914

FOLDABLE, PORTABLE BASKETBALL GOAL ASSEMBLY

Edward A. Schroeder, Marengo, Ill., assignor to Porter Athletic Equipment Company, Broadview, Ill.

Continuation of Ser. No. 98,725, Jul. 29, 1993, abandoned. This application Jul. 6, 1994, Ser. No. 267,983
Int. Cl.[6] A63B *63/08*
U.S. Cl. 273—1.5 R **14 Claims**



1. A foldable portable basketball goal assembly comprising:

a base having first and second ends and a first weight;

a support pivotally connected adjacent said first end of said base;

a backboard-rim combination connected to said support and having a second weight substantially less than said first weight;

at least one wheel adjacent said second end of said base for transporting said assembly when said base is tilted;

first and second brace means, of preselected lengths, pivotally connected to each other at their first ends and pivotally connected at their second ends respectively at fixed positions to said base and said support;

said first and second brace means determining, in a playing position, a fixed erect position of said support forming substantially a ninety degree angle with said base, predetermined by said preselected lengths of said first and second brace means and, in a transport position, a fixed lowered position of said support forming an acute angle greater than zero with said base, predetermined by said preselected lengths of said first and second brace means,

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to aid tilting of said base and counter-balancing the weight of said base with the weight of said backboard-rim combination during transporting of said assembly;

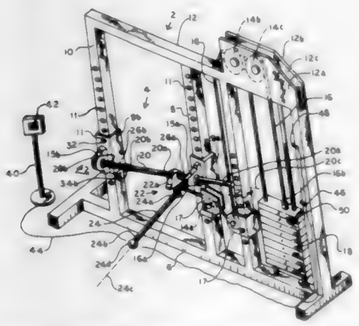
lock means operatively connected to said first and second brace means for locking said first and second brace means in said playing position in a locking condition of said lock means and permitting said first and second brace means to assume said transport position in an unlocked condition of said lock means.

5,390,915

BASEBALL BATTING TRAINING MACHINE

Samuel R. Levatino, 3608 Woodland Ridge Blvd., Baton Rouge, La. 70816

Continuation-in-part of Ser. No. 49,113, Apr. 19, 1993, Pat. No. 5,318,291, which is a division of Ser. No. 863,087, Apr. 3, 1992, Pat. No. 5,226,646, which is a continuation-in-part of Ser. No. 824,526, Jan. 23, 1992, Pat. No. 5,228,684. This application Oct. 4, 1993, Ser. No. 130,791
Int. Cl.[6] A63B *69/40*
U.S. Cl. 273—26 R 5 Claims



1. A kinetic adapter mounted on a stationary shaft, for providing freedom of movement for a rigid, elongated member, the adapter comprising:

(a) a linear bearing having an opening therein extending therethrough, the stationary shaft being disposed within and extending through the opening in the linear bearing, whereby the linear bearing is slidably and rotatably mounted on the stationary shaft;

(b) a second shaft having first and second ends, the first end of the second shaft being fastened to the linear bearing in an orientation such that the stationary shaft and the second shaft are substantially perpendicular to one another; and

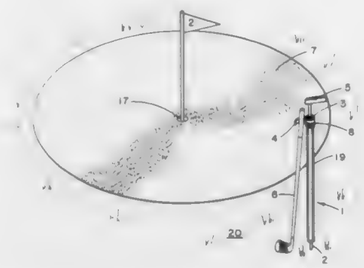
(c) a spherical member connected to the second end of the second shaft; the rigid, elongated member having first and second ends, the first end of the rigid, elongated member being rotatably connected to the spherical member, and the second end of the rigid, elongated member being free, to serve s a handle for grasping and moving the rigid, elongated member; the stationary shaft, the linear bearing, the second shaft, the spherical member, and the rigid, elongated member being so constructed and arranged that the combination thereof provides for the rigid, elongated member freedom of movement, both linear and rotational, in three dimensions and an infinite number of planes.

5,390,916

COMBINATION GOLF PUTTER CONTAINER AND CLUB HOLDER

David A. Govoni, Daytona Beach, Fla., assignor to Par 3 Enterprises Corporation, Jacksonville, Fla.

Filed Aug. 12, 1993, Ser. No. 105,145
Int. Cl.[6] A63B *55/04, 55/10, 57/00*
U.S. Cl. 273—32 B 5 Claims



1. A combination container and holder consisting essentially of:

a single elongated tube sized to accomodate the shaft of a single golf club and having an open top and closed bottom;

a spike attached to the bottom of the tube for holding the tube upright when the spike is inserted into the ground; and

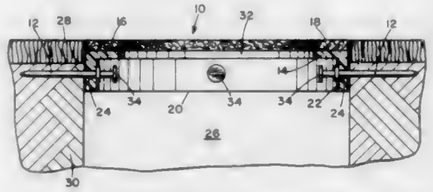
a generally semicircular hook extending from near the top of the tube to retain another golf club resting against the tube.

5,390,917

PUTTING PRACTICE DEVICE

Henry Mendoza, 9137 Inverness Rd., Santee, Calif. 92071

Filed Mar. 28, 1994, Ser. No. 218,823
Int. Cl.[6] A63B *57/00*
U.S. Cl. 273—34 B 12 Claims



1. A putting practice device for reducing the diameter of a cylindrical golf hole, comprising:

a body having an annular surface and a tubular portion connected to and coaxially disposed with respect to said annular surface, said tubular portion having a wall defining an inner diameter and an outer diameter with a plurality of holes extending through said wall and distributed around said tubular portion, said annular surface having an outer diameter and an inner diameter, said outer diameter substantially equal to a diameter of said golf hole, said inner diameter less than said diameter of said golf hole; and

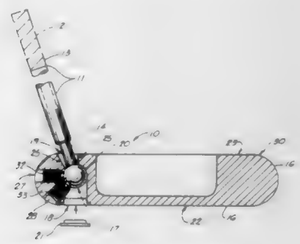
a plurality of pins, each disposed in one of said holes, said pins selectably extendable and retractable in a radial direction with respect to said annular surface, each pin having an elongated grip for grasping between a person's fingers, said grip disposed inside said wall when a portion of said pin extends through one of said holes and into the material surrounding said cylindrical gold hole.

5,390,918

ADJUSTABLE GOLF PUTTER HEAD

Frederick C. Meyers, 7 W. Ayres St., Hinsdale, Ill. 60521, and Charles H. Travis, 212 Middaugh, Clarendon Hills, Ill. 60514

Filed May 9, 1994, Ser. No. 239,452
Int. Cl.[6] A63B *53/02*
U.S. Cl. 273—79 23 Claims



23. An adjustable golf putter comprising:

a) an elongated shaft having an upper end portion with a gripping surface and a lower end portion that includes an enlarged spherical tip portion with a center point that is removably attachable to said lower end portion;

b) a putter head having an external surface that includes upper and lower surface portions, each having respective upper and lower surface openings;

c) a socket for receiving the enlarged spherical tip portion of the shaft the socket having a lower end portion that communicates with the lower surface opening, the socket being sized and shaped to receive the spherical tip via the lower surface opening;

d) a plurality of openings extending between the socket and the external surface along lines that extend to the center point;

e) a plurality of set screws extending through the openings, each having a pointed end to engage the enlarged tip portion of the shaft; and

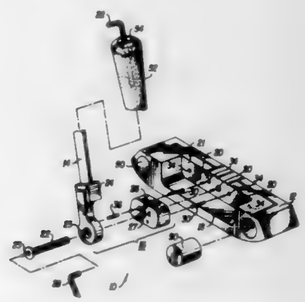
f) wherein each of the set screws forms an angle with each of the other set screws.

5,390,919

ADJUSTABLE GOLF PUTTER

Charles H. Stubbs, Chamblee, and Earl N. Choy, Cumming, both of Ga., assignors to Tru-Line U.S.A., Inc., Alpharetta, Ga.

Filed Nov. 9, 1993, Ser. No. 149,363
Int. Cl.[6] A63B *53/02, 53/06*
U.S. Cl. 273—80.1 18 Claims



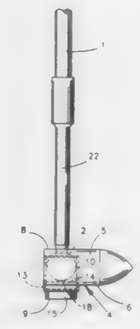
1. A golf putter comprising a club head having a longitudinal axis and a rearward face having a planar mounting surface, a shaft having a shaft axis and a hosel member connecting said club head to said shaft on a pivot axis, means for adjusting the angle between the shaft axis and the longitudinal axis of the club head about said pivot axis and means for shifting said pivot axis into a plurality of positions along the longitudinal axis of the club head, said angle adjusting means including said hosel member, said hosel member comprising a swing arm member mounted for relative rotation about said pivot axis and a block member mounted between said planar mounting surface and said swing arm member, said swing arm member being angularly positionable relative to said block member into a plurality of fixed positions, and said block member having a planar surface engagable with said planar mounting surface at said plurality of positions along the longitudinal axis of the club head.

5,390,920

ADJUSTABLE HEAD GOLF CLUB WITH POSITIVE LOCKING MECHANISM AND LOCKING SCREW THEREFORE

Robert H. Nickum, c/o Norwood Tool & Die Co., 5123 Montgomery Rd., Cincinnati, Ohio 45212

Filed Jan. 26, 1994, Ser. No. 186,841
Int. Cl.[6] A63B *53/02*
U.S. Cl. 273—80.1 9 Claims



1. A golf club comprising:

a shaft having a lowermost end, the lowermost end of said shaft terminating in a generally spherical pivot ball having an exterior bearing surface including a lower bearing surface and an upper bearing surface;

a golf club head having an upper surface and a lower surface and including a bore extending from said upper surface to said lower surface of said head, said bore having an upper end and a lower end, said ball being rotatably and pivotally captured within said bore, said upper end of said bore being provided with an inwardly directed annular shoulder having a central opening smaller than the diameter of the ball for preventing disengagement of said ball from said bore and a pivot ball contacting portion; and

a locking screw having an upper end and a lower end threadedly engaging a portion at least of said lower end of said bore, said locking screw when in a loosened position permitting free rotation and pivotal motion of said ball within said bore so that said golf club head can be adjusted to a desired position, said upper end of said locking screw when in a tightened position contacting a portion at least of said lower bearing surface of said ball so as to force a portion at least of said upper bearing surface of said ball into engagement with said shoulder to prevent rotation and pivotal motion of said ball, thereby positively locking the golf club head in the desired position with respect to said shaft;

said locking screw including a lower portion configured to

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be engaged by a tightening tool, said locking screw further including an upper portion having an upper surface configured to forcibly engage said lower bearing surface of the pivot ball, and a frangible portion connecting said upper and lower locking screw portions, said frangible portion being configured to cause separation of the upper and lower locking screw portions when the engagement force applied to the pivot ball by the upper locking screw portion exceeds a predetermined amount sufficient to positively lock the golf club head in the desired position with respect to the shaft.

5,390,921

TUBULAR GOLF SHAFT EXTENDING DEVICES

Eugene J. De Ruyter, 7941 Roswell Rd., Suite A, Atlanta, Ga. 30350

Filed Apr. 5, 1994, Ser. No. 223,015
Int. Cl.[6] A63B *53/16*
U.S. Cl. 273—81.2 5 Claims



1. A new and improved tubular golf shaft extending device comprising, in combination:
   a tubular member fabricated of steel having an upper open end and a lower open end, the interior diameter of the member being about ¼ inch, slightly greater than the exterior diameter of the upper end of a golf club shaft, the length of the member being about 3½ inches whereby the majority of the member may be positioned over or in the upper end of a shaft with a portion of the member extending beyond the upper end of the shaft;
   a circumferential mark on the shaft to indicate the proper positioning of the lower end of the member with respect to the shaft;
   an adhesive located between the upper end of the shaft and the interior lower end of the member to form an adhesive bond therebetween; and
   a grip positioned over the member and the upper extent of the shaft.

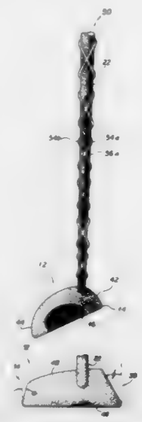
5,390,922

GOLF CLUBS AND METHODS

Joseph J. Cornish, III, Marietta, Ga., assignor to Bradley K. Stone, Roswell, Ga.

Continuation-in-part of Ser. No. 32,376, Mar. 18, 1993. This application Mar. 17, 1994, Ser. No. 210,140
Int. Cl.[6] A63B *53/04, 53/10*
U.S. Cl. 273—81.6 18 Claims

1. A golf club improvement for a golf club having a head for striking a golf ball and a shaft connected to said head at a first end and having a handle at a second end, the improvement for substantially reducing air resistance to said golf club while in motion, comprising a series of rib elements having a center point and at least three arms extending therefrom, said rib elements protruding outwardly from an exterior surface of said



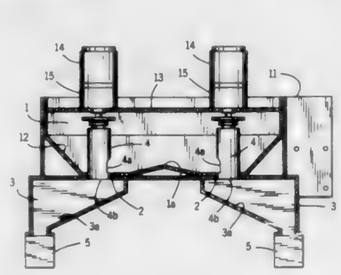
shaft a distance sufficient to reduce said air resistance and disposed longitudinally along said shaft.

5,390,923

MEDAL PIECE FEED SYSTEM FOR GAME MACHINES

Takatoshi Takemoto, Tokyo, and Meiji Muramatsu, Yokohama, both of Japan, assignors to Kabushiki Kaisha Ace Denken, Japan

PCT No. PCT/JP91/01392, § 371 Date Jan. 27, 1994, § 102(e) Date Jan. 27, 1994, PCT Pub. No. WO93/03805, PCT Pub. Date Mar. 4, 1993
PCT Filed Oct. 11, 1991, Ser. No. 182,185
Claims priority, application Japan, Aug. 14, 1991, 3-204079
Int. Cl.[6] A63F *9/00*; G07F *17/34*
U.S. Cl. 273—148 R 7 Claims



1. A medal piece feed system for game machines, said medal piece feed system receiving medal pieces and thereafter feeding the medal pieces to a receiver for use with the game machines, said medal piece feed system comprising:
   a container for receiving the medal pieces, said container having at least one hole formed at its bottom;
   a chute underlying said hole and communicating with said receiver;
   a feed cylinder having its lower part snugly inserted into said hole, said feed cylinder having an acceptance opening for accepting medal pieces therethrough, said acceptance opening being formed in a peripheral wall of said feed cylinder and facing the interior of said container, said feed cylinder further comprising a delivery opening formed on the bottom of said feed cylinder and communicating with said underlying chute for feeding said medal

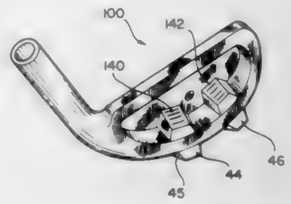
pieces to said receiver; and
   a motor having a rotation driving shaft means connected to said feed cylinder for rotating said feed cylinder about its cylindrical axis.

5,390,924

IRON-TYPE GOLD CLUB HEAD WITH IMPROVED WEIGHT DISTRIBUTION AT THE REAR CLUB FACE AND UPPER SOLE OF THE CLUB HEAD

Anthony J. Antonious, 7738 Calle Facil, Sarasota, Fla. 34238

Filed Oct. 13, 1993, Ser. No. 135,507
Int. Cl.[6] A63B *53/04*
U.S. Cl. 273—169 8 Claims



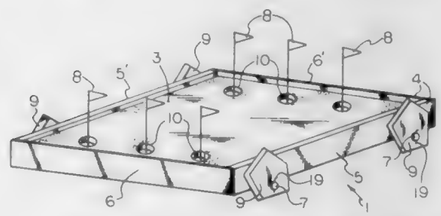
1. An iron type golf club head for hitting a golf ball comprising:
   a golf club head body having a heel portion, a toe portion, a sole, a top ridge, a rear club face, and a planar, lofted ball striking face having a loft greater than 12 degrees, the ball striking face intersecting with a forwardmost progression of said sole to define a leading edge of the ball striking face of said golf club head, the bottom of said sole extending rearwardly from said leading edge and the top of said sole extending rearwardly from said ball striking face to form a shelf having an upper surface and intersecting with the rear club face;
   at least two opposing weight members fixed to a portion of the rear club face and extending outwardly and rearwardly from the rear club face and along a portion of the upper surface of the shelf, the weight members being located apart from each other and on opposite sides of the center of percussion of the club head, the weight members extending upwardly from the upper surface of the shelf and along the rear club face to respective points spaced below the top ridge, thereby providing balanced, increased mass at a bottom portion of the club head; and
   a pair of runners extending outwardly and rearwardly from the sole, said weight members being respectively aligned with said runners.

5,390,925

ADJUSTABLE PUTTING DECK

Vern Wiltse, 311 Rambling Ct., Euless, Tex. 76039

Filed Oct. 26, 1993, Ser. No. 142,692
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—176 H 15 Claims



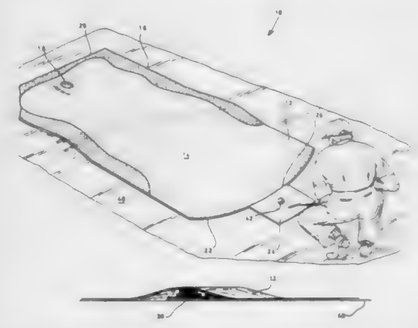
1. An adjustable putting deck, said putting deck comprising a support structure including two side members and two end members fastened together in an end to end relationship to form an open, essentially rectangular frame, said frame having a top, a bottom, an interior, and an outside bottom edge;
   a flexible flat top, said flat top being detachedly fixed to the interior of the rectangular frame below the top of the frame and being supported primarily by at least two support beams fixed to the support structure, said flat top covering all of the opening provided by the rectangular frame, said top having a plurality of openings therethrough;
   said support structure having on each of its side members, essentially near its outside bottom edge, two, spaced-apart multi-height adjustable supports, each said multi-height adjustable support being rotatably mounted eccentrically on a fixed shaft which is supported by the support structure, each said multi-height adjustable support being capable of being independently adjusted in height by rotation around the shaft thereof.

5,390,926

PRACTICE PUTTING GREEN

Greg A. Hanson, and Todd A. Walchli, both of Maryville, Tenn., assignors to GT Sports Marketing, Maryville, Tenn.

Filed May 31, 1994, Ser. No. 251,610
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—178 B 15 Claims



1. A practice putting green for practicing golf putts, said practice putting green comprising:
   a putting mat defining a putting surface and an opening, said putting surface defining a selected texture to simulate actual putting conditions, said opening being disposed proximate a distal end of said putting surface to simulate the opening of a conventional golf cup, said putting mat being fabricated from a flexible material; and
   a plurality of contour gradient pads for being selectively positioned under said putting mat such that a selected contour is defined, said plurality of contour gradient pads defining at least one configuration, each of said plurality of contour gradient pads being fabricated from a flexible material, said plurality of contour gradient pads being positionable at least a portion of one over another.

5,390,927

GOLF SIMULATOR HAVING SYSTEM FOR CALCULATING SLICE/HOOK COMPONENT OF BALL TRAJECTORY

Arthur C. Angelos, 501 Slaters La., #1109, Alexandria, Va. 22314

Filed Jan. 27, 1994, Ser. No. 187,077
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—185 A 28 Claims

1. A golf simulator having a frame supporting a target

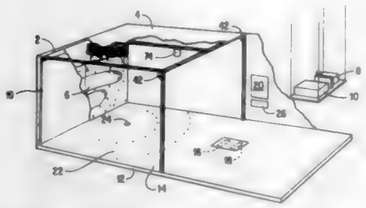
VOL 1171 ISS 3 FE 21 1995 UMI

screen, the golf simulator operating in accordance with impact between a clubhead and a golf ball, the golf simulator comprising:

a projector for projecting a golf course image on said target screen;

a tracer for projecting a ball image on said course image on said target screen, said tracer comprising means for dynamically illustrating a ball trajectory; and

a controller for determining said ball trajectory in accordance said impact and for controlling said tracer in accordance with said determined ball trajectory, said controller comprising a data processor for determining a simulated golf ball travel distance, a screen impact sensor for sensing an actual impact point on said target screen, and a slice/-hook determining means for determining a theoretical impact point on said target screen, wherein a slice/hook component of said ball trajectory is determined in accordance with a comparison between said theoretical impact point and said actual impact point.



5,390,928

GOLFING AID

Eraldo V. Salini, 7 Liwynceiyn Road, Glanamman, Ammanford, Dyfed SA18 2AE, Great Britain

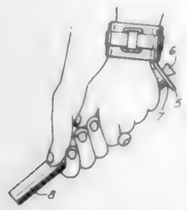
PCT No. PCT/GB92/00168, § 371 Date Jul. 29, 1993, § 102(e) Date Jul. 29, 1993, PCT Pub. No. WO92/13607, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 29, 1992, Ser. No. 94,113

Claims priority, application United Kingdom, Feb. 2, 1991, 9102300; Apr. 11, 1991, 9107735

Int. Cl.[6] A63B *69/36*

U.S. Cl. 273—187.2 16 Claims



1. A golfing aid for use by a person in combination with a golf club, said person having an upper hand, an upper wrist connected thereto and a lower hand, said club including a ball striking head, a butt-end and a shaft therebetween, said shaft including a gripping portion adjacent said butt-end, said gripping portion adapted to be held by said upper and lower hands of said person, said upper hand adjacent said butt-end and said lower hand spaced from said butt-end, said golfing aid comprising an elongate strap adapted to be wrapped around said upper wrist, means for securing said strap to said upper wrist when said gripping portion is held by said hands, a side arm having a length extending from said elongate strap to said butt-end for attachment thereto, said securing means adapted to maintain said upper wrist in a controlled position relative to said butt-end of said shaft when said side arm is attached thereto.

5,390,929

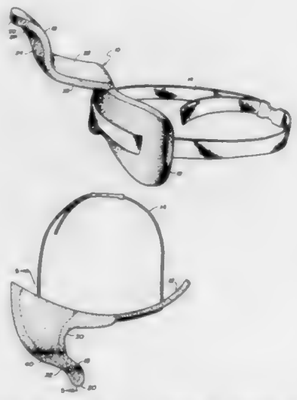
APPARATUS FOR GUIDING A GOLF SWING

Frank Todaro, San Ramon, Calif., assignor to Turn & Strike Golf Systems Inc., Grants Pass, Oreg.

Filed Aug. 4, 1993, Ser. No. 101,703

Int. Cl.[6] A63B *69/36*

U.S. Cl. 273—187.2 8 Claims



1. Apparatus to be worn by a golfer for guiding the wearer's golf swing when hitting a ball to a target location spaced from the wearer, said apparatus comprising, in combination:

attachment means for attaching the apparatus to the wearer's waist;

stabilizer means for stabilizing the position of said apparatus relative to the wearer's waist when the apparatus is attached thereto by said attachment means; and

an elongated guide member having opposed first and second sides secured to said stabilizer means and projecting outwardly and upwardly from said stabilizer means, said first and second sides being spaced from one another and said first side generally facing toward the target location when on a wearer's waist and said second side generally facing away from the target location when on a wearer's waist, said elongated guide member for engagement by at least one arm of the wearer during at least a portion of either the wearer's back swing or the wearer's down swing, said elongated guide member having a free distal end spaced from the wearer's body and defining a first recess at the first side thereof for receiving an arm of the wearer during at least a portion of either the back swing or the down swing and said elongated guide member further defining a second recess at the second side thereof for the receiving an arm of the wearer during at least a portion of the back swing or the down swing, and said stabilizer means maintaining said free distal end positioned outwardly of and at a level above the wearer's waist during both the back swing and the down swing for observation by the wearer.

5,390,930

MAGNETICALLY RESTORED GOLF PRACTICE DEVICE

Chih-Chang Hu, and Cha-Che Hu, both of c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei, Taiwan, Prov. of China

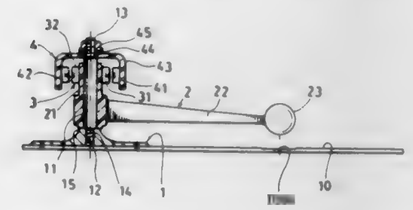
Filed Apr. 26, 1994, Ser. No. 233,689

Int. Cl.[6] A63B *69/36*

U.S. Cl. 273—197 R 7 Claims

1. A golf practice device comprising: a base (1) having a shaft (11) vertically erected on said base when said base is laid on a supporting surface; a ball means (2) including a sleeve (21) rotatably mounted on said shaft (11), a linking arm (22) having a first end of said arm secured on said sleeve (21) and having a second end of said arm fixed with a golf ball (23) thereon; a rotor magnet means (3) secured on said sleeve (21) of said ball means (2) having at least two outer magnetic poles having opposite polarities with each other and diametrically disposed on two opposite end portions of said sleeve (21); and

a stator magnet means (4) secured on said base (1) and having at least two inner magnetic poles having opposite polarities with each other and diametrically disposed on two opposite sides of a bracket (43), with each said inner



magnetic pole of said stator magnet means (4) being opposite in polarity to and approximately facing each said outer magnetic pole of said rotor magnet means (3), said rotor magnet means (3) operatively rotatable within said stator magnet means (4) and magnetically attracting said stator magnet means (4) to normally position said ball (23) on a starting point (100*a*) on the supporting surface, whereby upon striking on said ball (23) to rotate said ball (23), said arm (22) and said sleeve (21) will rotate about said shaft (11) and when the ball connected with said arm is stopped after the rotation, the ball will be automatically restored to the starting point due to magnetic attraction between said rotor magnet means (3) and said stator magnet means (4).

5,390,931

GOLF BALL TEE DEVICE

Maurice J. Chiasson, 46 Brek Dr., Merrimack, N.H. 03054

Filed Apr. 20, 1994, Ser. No. 230,210

Int. Cl.[6] A63B *69/36*

U.S. Cl. 273—201 10 Claims



1. A golf ball teeing device comprising;

a platform upon which a golfer stands to hit a golf ball;

said platform being of shallow depth and having a compartment for housing an automatic teeing device;

said automatic teeing device being located in said compartment comprising;

an inclined tube adapted to receive a series of golf balls;

an elevator mechaniam located adjacent the lower end of said inclined tube;

a lever arm extending generally parallel to the inclined tube and alongside thereof;

said lever arm being pivoted at one end thereof;

golf ball teeing means secured to said lever arm;

said elevator mechanism including means to receive a golf ball from said inclined tube;

support means to receive a golf ball from said elevator mechanism;

said elevator mechanism being operable to raise a golf ball to said support means;

means to pivot said lever arm to lower the teeing means;

means to move a golf ball from the support means to the teeing means in its lower position; and

means to pivot said lever arm to raise the teeing means with the golf ball thereon to a position above said platform.

5,390,932

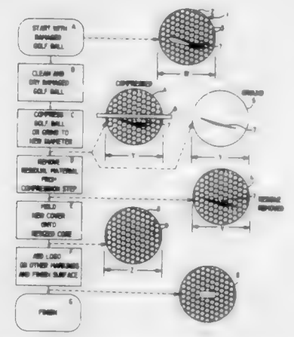
METHOD FOR MAKING LIKE-NEW GOLF BALLS FROM RECLAIMED GOLF BALLS

Robert F. Russo, Sr., 16428 N. 66th St., Scottsdale, Ariz. 85254

Continuation-in-part of Ser. No. 940,975, Sep. 4, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 104,176

Int. Cl.[6] A63B *37/06, 37/12*

U.S. Cl. 273—220 5 Claims



1. The method of renewing an existing golf ball, said method comprising the steps of:

a. providing a golf ball in the shape of a first sphere having a solid elastomeric core and an outer dimple thermoplastic cover having a first substantially uniform thickness.

b. compression molding said golf ball under sufficient heat and pressure to melt and remove from said cover sufficient amount of the cover material in which the dimples are formed to provide an intermediate ball in the shape of a second sphere which is smaller than said first sphere and has a thinned cover of substantially uniform thickness which is less than said first substantially uniform thickness then

c. molding a new thermoplastic spherical dimpled cover around said intermediate ball under sufficient heat and pressure to fuse said new cover to said thinned cover to form a third sphere substantially equal in size to said first sphere.

5,390,933

BASEBALL GAME APPARATUS

Thomas A. Kraus, 1248 Coventry Pl., Palmdale, Calif. 93551

Filed Dec. 6, 1993, Ser. No. 163,739

Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—244 6 Claims

1. A game apparatus comprising:

a game board having a flat planar surface displaying a continuous track representing baseball bases;

player tokens movably carried on said game board adapted to be selectively moved about said baseball bases;

chance determining means operable by the players for selecting values of player moves about said playing track baseball bases;

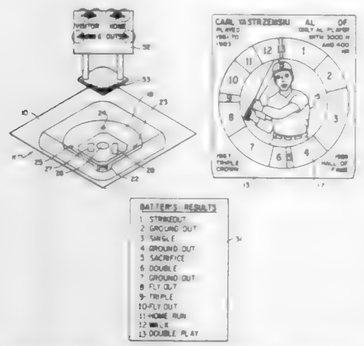
said chance determining means includes

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a first card stack comprising a plurality of pitcher cards, each pitcher card representing the lifetime pitching statistics of an actual baseball player, said pitching statistics on each pitcher card comprising a plurality of different indicia wherein each different indicia corresponding to a different pitching result, the particular indicia and the i number of different indicia to be placed on each of said pitching cards being predetermined and non-random in order to,correspond to the lifetime pitching statistics of the respective baseball player;

a second card stack comprising a plurality of batter cards, each batter card representing the lifetime batting statistics of an actual baseball player, said batting statistics on each batter card comprising a plurality of different indicia wherein each different indicia corresponding to a different batting result, the particular indicia and the number of different indicia to be placed on each of said batting cards being predetermined and non-random in order to correspond to the lifetime batting statistics of the respective baseball player;

a holder having an open cavity for insertably receiving selected ones of said pitcher cards and said batter cards;



said holder having a spinner operable in cooperation with said card indicia to select said player token move on said playing track;

said chance determining means further includes a stolen base card and a pick-off card adapted to be inserted in said holder cavity;

said stolen base card and said pick-off card having a segmented band with indicia of different values on each segment representative of known player statistics;

said holder includes a transparent panel exposing said indicia carried on selected ones of said cards;

a pair of spaces carried on said game board surrounded by said playing track;

a pitcher's results card and a batter's results card carried on each of said spaces on said game board; and

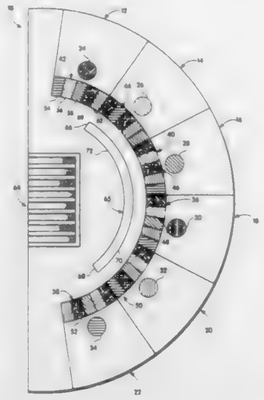
said pitcher results card and said batter's results card include indicia corresponding to said indicia displayed on said pitcher cards and said batter cards, respectively, said pitcher's result card and said batter's result card occupying said holder cavity for advancing or retarding movement of said player's token along said playing track.

5,390,934
MULTIPLE POSITION PLAY TWENTY ONE GAME
Louis J. Grassa, 21 Marshall St., Somerville, Mass. 02145
Filed Apr. 12, 1993, Ser. No. 57,960
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **1 Claim**

1. A method of playing a Twenty One card game wherein each player at any one playing position can make a wager against the dealer and can make additional wagers against the dealer by betting on the outcome of any other playing positions against the dealer comprising:

(a) providing a table for playing the card game, said table being defined by a multiple number of playing positions, a betting location being provided in each said position characterized by means identifying that playing position, and an extra play location being provided in each playing position, said extra play location being defined by means identifying each of the other playing positions;

(b) each player at each playing position making a wager against the dealer and placing such in the betting location provided at that playing position;



(c) the dealer than announcing that each positional player can make an extra play against the dealer along with the player at any of the other playing positions;

(d) each positional player then making additional wagers against the dealer by betting along with any other positional player, the wager being placed by the positional player in the extra play location identifying each other positional player wagered on; and

(e) playing the game out in usual manner for playing a conventional Twenty One game.

5,390,935
PUZZLE CARD GAME
Charles A. Wilkins, 30 Hunting Country Trails, Tryon, N.C. 28782
Continuation of Ser. No. 803,459, Dec. 6, 1991, abandoned. This application May 14, 1993, Ser. No. 62,300
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—298 **15 Claims**

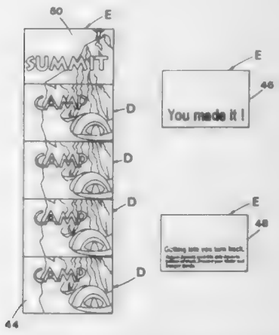
6. A card game consisting of various cards which are drawn and played in various fashion comprising:

a main card deck which includes a plurality of first playing cards which are drawn and played by a player having indicia for incremental advancement of a player toward a game objective;

said main card deck including a plurality of second playing cards drawn by and played by said player which embody stated prescribed conditions which impede and suspend said advancement of said player until said prescribed condition is satisfied; and

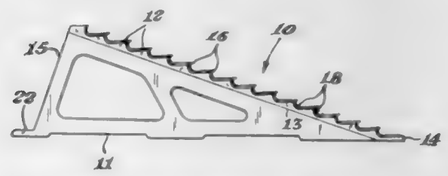
said main card deck includes a plurality of third playing cards drawn by and played said player which embody stated remedies which match said stated prescribed conditions of said plurality of second playing cards to satisfy said prescribed condition and remove said second playing card so that said player may resume said advancement toward said game objective; and

a plurality of pictorial cards which are drawn upon reaching predetermined level of advancements, said pictorial cards



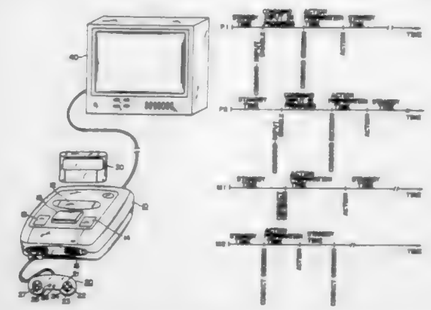
fitting together in a prescribed manner in order to reach said game objective.

5,390,936
BLADE FOR ARROW BROADHEAD
Michael E. Westenburg, 1409 4th St., Bay City, Mich. 48708
Filed Oct. 25, 1993, Ser. No. 140,435
Int. Cl.[6] F42B *6/08*
U.S. Cl. 273—422 **2 Claims**



1. A generally triangular blade for an arrow broadhead comprising, a mounting edge, a cutting edge extending rearwardly from the front end of the mounting edge at an angle thereto and a rear edge extending between the rear end of the cutting edge and the rear end of the mounting edge, the cutting edge having from about 6 to about 12 teeth per inch, each tooth comprising a curved front edge, a forwardly facing point and a side cutting edge, the curved front edge having a first portion extending rearwardly and in a direction away from the mounting edge, and a second portion extending forwardly from the first portion and in a direction away from the mounting edge, the second portion intersecting the side cutting edge of the tooth to form the forwardly facing point thereof, the side cutting edge beginning at the forwardly facing point and extending rearwardly from the point, generally parallel to the mounting edge, to the first portion of the front edge of the next tooth, the forwardly facing and side cutting edges of each tooth being sharpened and the perpendicular distance between succeeding side cutting edges being in the range from about 30 thousandths to about 60 thousandths of an inch.

5,390,937
VIDEO GAME APPARATUS, METHOD AND DEVICE FOR CONTROLLING SAME
Hironobu Sakaguchi, and Hiroyuki Itou, both of Tokyo, Japan, assignors to Square Co., Ltd., Tokyo, Japan
Filed Mar. 16, 1992, Ser. No. 852,057
Claims priority, application Japan, Jul. 16, 1991, 3-199828
Int. Cl.[6] A63F *9/22*
U.S. Cl. 273—434 **9 Claims**



1. In a video game apparatus in which a player character and an enemy character are displayed on a display screen of a display unit and the player character and enemy character carry out attacks on each other in accordance with an inputted action command or a predetermined action schedule, a method of controlling the video game apparatus comprising the steps of:

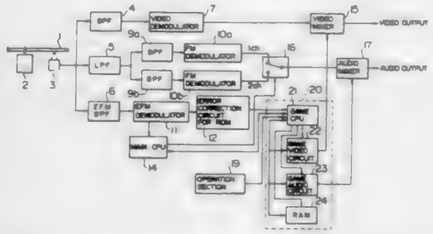
clocking a time, which has been stipulated for each character, from the end of a previous action of a character;

generating a signal for character when the time clocked in said clocking step is equal to or greater than a predetermined time assigned to that character;

allowing, in response to said generated signal, input of an action command if the character is a player character, and processing in accordance with the inputted action command; and

processing, in response to said generated signal, an action in accordance with the predetermined action schedule if the character is an enemy character.

5,390,938
VIDEO GAME APPARATUS
Noriyoshi Takeya, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo and Hudson Soft Co., Ltd., Hokkaido, both of Japan
Filed Sep. 10, 1993, Ser. No. 118,624
Claims priority, application Japan, Sep. 11, 1992, 4-243806
Int. Cl.[6] A63F *9/22*
U.S. Cl. 273—434 **2 Claims**



1. A video game apparatus comprising:
game control means for executing a game program in order

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to produce a video signal in accordance with a manipulation;

means for simultaneously generating audio signals for a plurality of channels in accordance with the execution of said game program by said game control means;

switch signal generating means for detecting that said game control means executes a specific step in said game program, and for generating a switch signal in response to said detecting;

switching means for selectively outputting an audio signal of one channel from among audio signals for said plurality of channels in accordance with said switch signal; and

judging means for determining if a present game program to be executed by said game control means is the same as a last game program executed by said game control means,

wherein said switch signal generating means functions only when said judging means determines that the present game program is the same as the last executed game program.

5,390,939

JOINT SEALING MEMBER

Michiyoshi Terauchi; Hiroshi Shinjo; Kazuhiro Takasaki, and Takahide Kameda, all of Saitama, Japan, assignors to C. I. Kasei Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 406,173, Sep. 12, 1989, abandoned, which is a continuation of Ser. No. 681,772, Dec. 14, 1984, abandoned. This application Dec. 19, 1990, Ser. No. 629,173

Claims priority, application Japan, Dec. 16, 1983, 58-192967[U]; Mar. 28, 1984, 59-43195[U]

Int. Cl.[6] F16T *15/24*

U.S. Cl. 277—227 3 Claims



1. A band-like joint-sealing member for providing a watertight seal between opposing frame members in a civil engineering construction, comprising: a central longitudinally extending portion made of water-expansible rubber having opposing surfaces, each of said opposing surfaces of the central portion facing a respective one of said opposing frame members, and lateral portions made of non-expansible rubber, one side of each of said lateral portions being bounded by and bonded to one of said opposing frame members, each of said lateral portions extending at least along a longitudinal length of said central portion so as to bound said central portion on two sides, said central portion further being bounded on one of said opposing surfaces by said one of said opposing frame members to which said lateral portions are bonded, the thickness of said central portion along at least one longitudinal line being thicker than said lateral portions, wherein said watertight seal is achieved through contact of said central portion with water, the foregoing arrangement being such that said sealing member retains its position through bonding of said lateral portions with said one of said opposing frame members.

5,390,940

KEYLESS CHUCK WITH INTEGRAL THREADED RING

John J. Mortino, Clemson, and John L. Wilson, Belton, both of S.C., assignors to Jacobs Chuck Technology Corporation, Wilmington, Del.

Filed May 26, 1993, Ser. No. 67,686

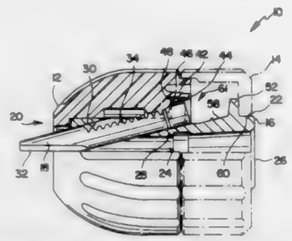
Int. Cl.[6] B23B *31/12*

U.S. Cl. 279—62 15 Claims

1. A chuck for use with a manual or powered driver having a rotatable drive shaft, said chuck comprising:

a generally cylindrical body member having a nose section and a tail section, said tail section having an axial bore formed therein to mate with said drive shaft of said driver and said nose section having an axial bore formed therein and a plurality of angularly disposed passageways formed therethrough and intersecting said axial bore;

a plurality of jaws slidably positioned in said angularly disposed passageways, each of said laws having a jaw face formed on one side thereof and threads formed on the opposite side thereof;



a generally cylindrical front sleeve member overlaying said nose section of said body member and rotatable with respect thereto, said front sleeve member including a threaded nut portion integral therewith and in engagement with said threads on said jaws such that when said front sleeve member is rotated with respect to said body member, said jaws will be moved thereby; and

wherein said body member includes a thrust ring.

5,390,941

POWER GENERATOR DEVICE PARTICULARLY FOR WHEELED SPORTS IMPLEMENTS

Alessandro Pozzobon, Paderno Di Ponzano Veneto; Bruno Borsoi, Conegliano, and Adolfo Pozzebon, Sala D'Istrana, all of Italy, assignors to Nordica S.p.A., Trevignano, Italy

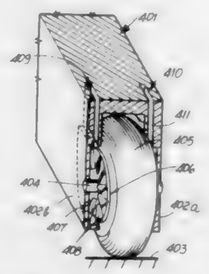
PCT No. PCT/EP92/02004, § 371 Date Apr. 26, 1993, § 102(e) Date Apr. 26, 1993, PCT Pub. No. WO93/04745, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 31, 1992, Ser. No. 39,475

Claims priority, application Italy, Sep. 6, 1991, MI91A002355; Sep. 6, 1991, MI91A002357; Sep. 6, 1991, MI91A002372

Int. Cl.[6] A63C *17/06, 17/22*

U.S. Cl. 280—11.19 4 Claims



1. A power generator device in combination with a wheeled sports implements, comprising:

a substantially C-shaped rigid support having a pair of wings and a base interconnected between said wings;

at least one wheel with a hub;

a pin for rotatably supporting said at least one wheel between said wings of said rigid support;

an item of footwear having a sole which is supported by said rigid support;

at least one fan defined laterally on said hub of said at least one wheel;

at least one channel defined in a shoulder which protrudes substantially at a right angle to said base of said rigid support, said channel being disposed for receiving an air flow created by said fan when said at least one wheel rotates, said channel extending through the entire thickness of said rigid support.

5,390,942

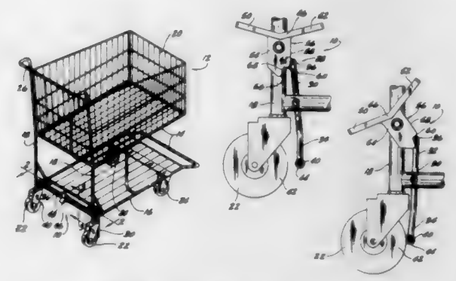
BRAKE ASSEMBLY FOR SHOPPING CARTS

Mary R. Schuster, and Reinhard Schuster, both of 2210 Whitney Pointe Dr., Chesterfield, Mo. 63005-4515

Filed Dec. 7, 1993, Ser. No. 163,087

Int. Cl.[6] B62B *5/04*

U.S. Cl. 280—33.994 23 Claims



1. A shopping cart comprising:

a frame including a base and two laterally spaced stanchions extending upwardly generally from the rear of the base;

a basket mounted on the frame for carrying articles;

a pair of rear wheels mounted for rotation on the frame generally at laterally opposite sides thereof;

a pair of front wheels mounted for rotation on the frame generally at laterally opposite sides thereof, the front and rear wheels supporting the frame and basket for movement across a surface;

a handle for gripping to move the shopping cart across the surface; and

a brake assembly including a brake shoe having a unitary construction and being sized and arranged for simultaneously applying a braking force to both of the rear wheels of the shopping cart, the brake shoe including elongate lever means pivotally mounted on the frame and having upper and lower end portions, an elongate actuator bar extending generally laterally of the upper end portions of said lever means, and wheel engaging means extending generally laterally of the lower end portions of said lever means in proximity to the rear wheels;

the brake assembly further including a pedal pivotally mounted on the frame and linkage means connecting the pedal to the actuator bar of the brake shoe, said linkage means being operable upon actuation of the pedal to swing the brake shoe on said lever means between an unbraked position in which said wheel engaging means is simultaneously spaced from both of the rear wheels to permit free rotation of the rear wheels, and a braked position in which said wheel engaging means simultaneously engages the rear wheels and applies a braking force thereto to prevent movement of the shopping cart.

5,390,943

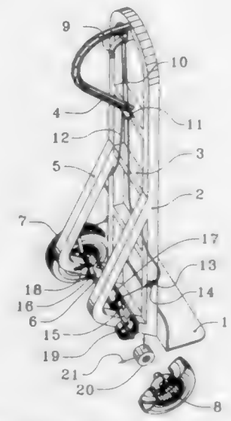
HAND BRAKE DEVICE FOR HANDTRUCK

Hal T. Hedrick, Rte. 1 Box 6429, Conover, N.C. 28613

Filed Oct. 28, 1993, Ser. No. 144,763

Int. Cl.[6] B60T *1/00*

U.S. Cl. 280—47.24 1 Claim



1. In a handtruck common in the art of the type consisting of two parallel wheels on a common axle, a vertical frame with a centrally-located handle device on the upper portion thereof, and a platform disposed approximately parallel to the ground surface and approximately perpendicular to said vertical frame, a brake device comprising a brake actuating handle mounted by a pivot to a bracket on the centrally located handle of a handtruck, two brake actuating cables fixed in two brake cable receiving slots rigidly mounted to said brake actuating lever, each of said brake actuating cables being independent of each other at all points except attachment at said brake cable receiving slots, and each of said brake actuating cables slidably operating within a rigid outer casing, said rigid outer casing terminating at a brake adjusting screw mounted to the vertical frame of said handtruck by an adjusting screw support bracket, said brake actuating cable continuing through said adjusting screw to a brake cable end clamp attached to the end of a brake actuating lever, the other end of said brake actuating lever being rotatably attached to the axle of the handtruck, rotation of said brake actuating lever being opposed by a brake release spring, one end of said brake release spring being attached to the axle support frame member of said handtruck, the other end of said brake release spring being attached to said brake actuating lever; said brake actuating lever being attached at a lower point to an end of a flexible brake band, the other end of said flexible brake band being rigidly attached to a brake connecting bar, said flexible brake band being disposed circularly about a brake drum, which is immovably attached by set screws to a wheel hub, which is connected to a wheel.

5,390,944

GARDEN IMPLEMENT AND SUPPLY CARRIER AND ORGANIZER

William C. Sherwin, 926 E. 800 South, St. George, Utah 84770

Filed Apr. 23, 1993, Ser. No. 51,400

Int. Cl.[6] B62B *3/10*

U.S. Cl. 280—47.35 13 Claims

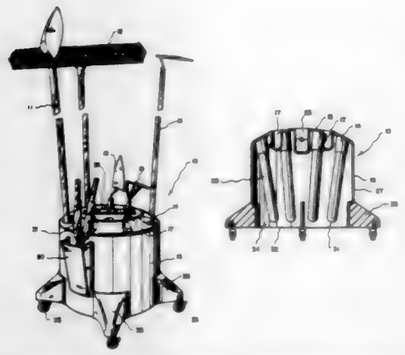
1. A storage and organizing device for accommodating a wide range of garden and lawn care implements, accessories and supplies, including implements each comprising an elongate generally cylindrical handle member each connected at one end thereof to a working head, said device having:

a generally hollow body with a vertically upstanding wall

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structure having an uppermost and a lowermost extension, said uppermost extension being spanned horizontally by a closing member;

a multiplicity of elongate, tubular wells each having an uppermost and a lowermost end, each supported only by connection of the uppermost end thereof to the closing member, to pend downwardly therefrom, the lowermost end thereof terminating in a well closing member thereacross integral therewith, each well being sized in cross



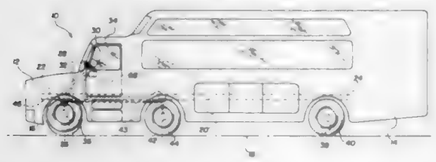
section and in depth to loosely accept an end portion of a handle member of one of the implements, said implement being supported with the end of the handle thereof resting upon the well closing member and with the implement working head uppermost and above the well; and at least one of the tubular wells accepts and supports a long handled implement and is suspended from the closing member at an angle upwardly and outwardly from the center of the body.

5,390,945

LOW-SPEED MANEUVERABILITY ENHANCEMENT FOR LONG SINGLE-UNIT VEHICLES

Larry W. Orr, Bellevue, Wash., assignor to Paccar Inc., Bellevue, Wash.

Filed Nov. 23, 1993, Ser. No. 157,945
Int. Cl.[6] B62D *9/00*
U.S. Cl. 280—98 **23 Claims**



1. An elongated single-unit vehicle having a steering system that provides increased vehicle maneuverability, comprising:

a vehicle frame having front and rear portions;

a front steering axle connected to said front portion of said frame and connected to steerable front wheel assemblies, said front wheel assemblies being adapted to engage the ground;

means for steering said front wheel assemblies through a first range of angles;

at least one rear axle connected to said rear portion of said frame and connected to rear wheel assemblies that engage the ground;

an auxiliary steering axle connected to said frame between said front steering axle and said rear axle, said auxiliary steering axle being connected to steerable auxiliary wheel assemblies that engage the ground, said auxiliary wheel assemblies coupled to said means for steering said front wheel assemblies, said auxiliary wheel assemblies adapted to be steered through a second range of angles, wherein a ratio between said first range of angles and said second range of angles is a steering ratio; and

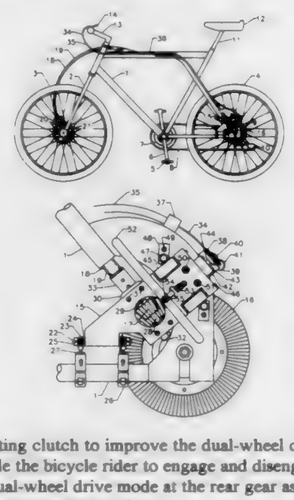
means for remotely adjusting said steering ratio coupled to said auxiliary wheel assemblies.

5,390,946

SHIFTING CLUTCH FOR DUAL-WHEEL DRIVEN BICYCLE

Eugene Spicer, 624 S. Villa Dr., Evansville, Ind. 47714

Filed Jul. 7, 1993, Ser. No. 88,814
Int. Cl.[6] B62M *1/02*
U.S. Cl. 280—259 **1 Claim**



1. A shifting clutch to improve the dual-wheel driven bicycle to enable the bicycle rider to engage and disengage, at any time, the dual-wheel drive mode at the rear gear assembly and rear ring gear comprising of:

(a) a clutch attached to bicycle frame;

(b) a pair of bearings for a shaft mounted to said clutch frame;

(c) a shaft mounted onto said bearings; and a gear attached to said shaft

(d) a stop attached to said shaft as a means to secure said shaft upon said bearings;

(e) a coupling device mounted to said shaft as a means to;

1. retain said shaft upon said bearings; and
2. a method to attach said shaft to a flexible shaft to transfer the torque to the front wheel of the bicycle;

(f) a hinge shaft attached to said clutch frame as a means to hinge said clutch frame;

(g) a set of rod end bearings as a means to adjust said hinge shaft;

(h) a pair of stops attached to said hinge shaft as a means to secure said hinge shaft to said clutch frame;

(i) a clamping device as a means to secure said clutch frame to said bicycle;

(j) a set of roller wheels attached to said clutch frame;

(k) a set of guide rods attached to said bicycle frame as a means to allow said roller wheels to roll against as said clutch frame hinges inward and outward as the duel-wheel drive mode is operated on or off respectively;

(l) a wire attached to said clutch frame;

(m) a handlebar attached to said bicycle;

(n) a clutch shift lever attached to said handlebar as a means to pull or release attached said wire as a means to engage or disengage said clutch;

(o) a casing enclosing said wire as a means to direct said wire to said clutch frame;

(p) a series of casing guides attached to said bicycle frame as a means to guide said wire enclosed in said casing to said clutch;

(q) a casing stop attached to said bicycle frame as a means to allow said casing to stop and said wire to exit and be attached to said clutch frame;

(r) a wire guide wheel attached to said bicycle frame as a means to guide said wire to said clutch frame;

(s) A wire binder assembly attached to said clutch frame as a means to bind said wire to said clutch frame;

(t) An inward hinge stop mounted to said clutch frame as a means to control inward hinge motion of said clutch frame;

(u) A curved bar attached to said bicycle frame as a means to surround and protect said clutch frame;

(v) A spring mounted to said curve bar and said clutch frame as a means to

1. Spring-load spring clutch frame;
2. To hold disengagement of said clutch frame when wire tension from said clutch lever is released; and

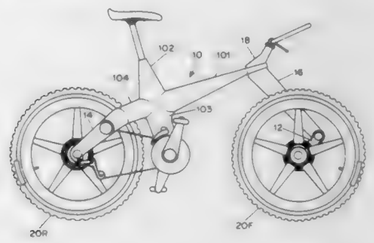
(w) An outward hinge stop attached to said curve bar as a means to control extent of outward hinge motion when said clutch frame is disengaged.

5,390,947

BICYCLE WHEEL MOUNT

Alex Pong, Langley, and Skooks Pong, Freeland, both of Wash., assignors to Cannondale Corporation, Georgetown, Conn.

Filed Sep. 16, 1993, Ser. No. 122,143
Int. Cl.[6] B60B *37/00*
U.S. Cl. 280—286 **11 Claims**



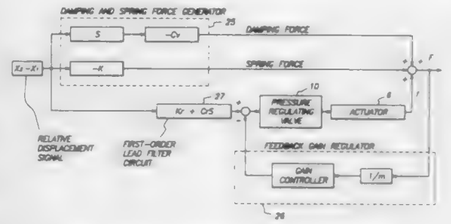
1. A bicycle comprising a wheel-mounting member having a narrow large diameter sleeve portion, a tubular stub wheel spindle having a journal portion received in the sleeve portion and mounted for rotation on a thin wall, large diameter angular contact bearing the spindle further having a tubular wheel attachment portion extending laterally out of the sleeve portion in cantilevered relation, a wheel having a hub received on the wheel attachment portion of the spindle, the wheel attachment portion of the spindle having a large diameter conical surface and the wheel hub having a large diameter conical surface mating directly with the conical surface of the wheel attachment portion of the spindle so as to provide precise alignment of the wheel, and means for detachably fastening the wheel to the spindle.

5,390,948

ACTIVE VEHICLE SUSPENSION SYSTEM AND A CONTROL METHOD THEREFOR

Nobuharu Kuriki; Seiji Osaki; Yoshiki Noro, and Hideaki Shibue, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1991, Ser. No. 771,364
Claims priority, application Japan, Oct. 15, 1990, 2-275752
Int. Cl.[6] B60G *17/015*
U.S. Cl. 280—707 **19 Claims**



1. An active vehicle suspension system, comprising:

a spring interposed between a vehicle body and a wheel which is supported by said vehicle body in a vertically movable matter;

an actuator interposed between said vehicle body and said wheel in parallel with said spring;

a stroke sensor for detecting a relative displacement between said wheel and said vehicle body; and

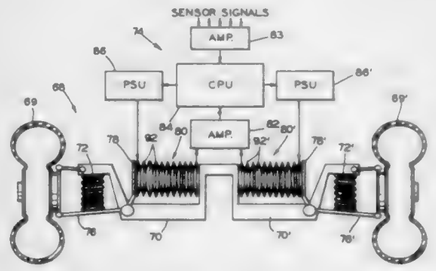
control means for controlling said actuator so as to apply a force to said vehicle body which cancels a spring force applied by said spring to said vehicle body and a damping force applied by said actuator to said vehicle body, said force being substantially proportional to a signal obtained by processing an output of said stroke sensor with a first-order lead filter circuit.

5,390,949

ACTIVE SUSPENSION SYSTEMS AND COMPONENTS USING PIEZOELECTRIC SENSING AND ACTUATION DEVICES

Ganapathy Naganathan, Maumee, and Sridhar R. Thirupathi, Toledo, both of Ohio, assignors to The University of Toledo, Toledo, Ohio

Filed Mar. 8, 1993, Ser. No. 27,469
Int. Cl.[6] B60G *11/00*
U.S. Cl. 280—707 **13 Claims**



1. A system for controlling the stiffness and damping of a vehicle suspension spring comprising:

a) a plurality of piezoelectric elements integrally affixed to the vehicle suspension spring, said piezoelectric elements including means for transmitting an input signal in response to a mechanical stress applied to the spring, and including means for receiving an excitation signal to effect a variable force on the spring;

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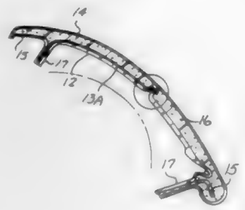
b) sensor means for generating a plurality of control signals representative of selected driving conditions;
c) amplifier means, including a first amplifier electrically connected to said piezoelectric elements for receiving and amplifying the input signal from said piezoelectric elements, and a second amplifier for receiving and amplifying the control signals representative of selected driving conditions from said sensor means; and
d) control means connected to the first amplifier for receiving and analyzing the input signal, and connected to the second amplifier for receiving and analyzing the control signals, said control means transmitting, in response to the selected driving conditions, a modulated excitation signal to said piezoelectric elements, the modulated excitation signal from said control means varying the force exerted by said piezoelectric elements on the spring in response to an instantaneous motion of the spring caused by the mechanical stress, which controls the damping of the spring, and simultaneously varying the force exerted by said piezoelectric elements on the spring in response to the control signals from said sensor means, which controls the stiffness of the spring.

5,390,950

METHOD AND ARRANGEMENT FOR FORMING AN AIR BAG DEPLOYMENT OPENING IN AN AUTO INTERIOR TRIM PIECE

Kenneth J. Barnes, 50098 Quinton Ct., Site 198A, Shelby Township, Shelby County, Mich. 48315, and David J. Bauer, 7356 Meadowridge Cir., West Bloomfield, Mich. 48322

Filed Mar. 4, 1993, Ser. No. 27,114
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728 B 13 Claims



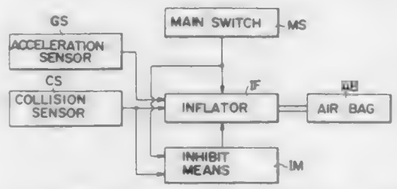
1. An air bag system for a vehicle having a passenger compartment with interior trim pieces lining the interior of said passenger compartment, said air bag system including at least one folded air bag and receptacle stored behind a section of a trim piece lining said interior of said passenger compartment, said trim piece comprised of a rigid substrate, a foam intermediate layer and an overlying decorative skin, an arrangement for forming a deployment opening for said air bag in said trim piece, said arrangement comprising one or more door sections of said substrate each attached along a hinging side to the remaining substrate section, said one or more door sections together forming a deployment opening in the substrate, a channel formed along the remaining sides of said one or more door sections of said substrate extending in a pattern defining the sides of said one or more door sections, said channel open outwardly towards said overlying skin; and a linear energy generating cutting element disposed within said channel and extending along the length thereof; and means for activating said linear energy generating element upon activation of said air bag system.

5,390,951

OPERATION CONTROL SYSTEM FOR VEHICULAR AIR BAG SYSTEM

Motomi Iyoda, Seto, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 21, 1993, Ser. No. 79,380
Claims priority, application Japan, Jun. 22, 1992, 4-187485; Dec. 25, 1992, 4-359506; May 31, 1993, 5-152750
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—730 A 8 Claims



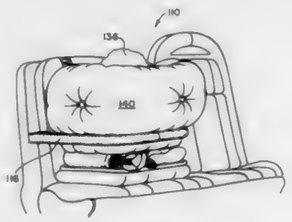
1. An operation control system to be used with a vehicular air bag system for protecting an occupant of a vehicle against an impact of a vehicular collision by expanding a first air bag, comprising:
a first collision sensor for detecting a deformation of a body of said vehicle during said vehicular collision;
a first inflator for producing and feeding a gas to said first air bag, when said first inflator is electrically energized and ignited;
a main switch of said vehicle for feeding an electric current to electrically energize said first inflator in a closed position of said main switch;
first inhibit means for inhibiting said electrical energization of said first inflator when said first collision sensor detects said deformation of said body of said vehicle while said main switch is in an open position; and
an acceleration sensor for detecting an acceleration in said body of said vehicle due to said vehicular collision;
wherein said first inflator is electrically energized irrespective of said inhibition by said first inhibit means when said acceleration sensor detects said acceleration due to said vehicular collision.

5,390,952

INTEGRAL INFLATABLE OCCUPANT RESTRAINT SYSTEM

Dan Goor, Colorado Springs, Colo., assignor to Goor Associates, Inc., Colorado Springs, Colo.

Continuation-in-part of Ser. No. 618,397, Nov. 27, 1990, Pat. No. 5,100,169, and Ser. No. 822,272, Jan. 17, 1992, Pat. No. 5,184,844. This application Jan. 8, 1993, Ser. No. 2,334
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—730 R 8 Claims



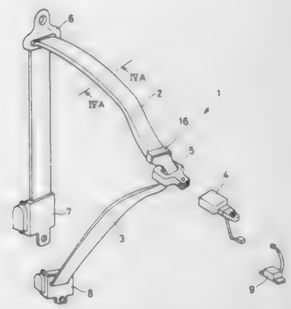
1. A vehicle seat for a passenger, comprising:
a primary seating surface;
a backrest proximate said primary seating surface, including a cushion having a first side and a second side, said cushion movable from a first position to a second position, said first side providing a backrest surface when said cushion is in said first position, said second side forming a secondary seating surface when said cushion is in said second position
a restraint device secured to said backrest by at least one articulating support and movable from a non-restraining position to a passenger restraint position; and
an airbag integral with said restraint device, said airbag having a shade so that upon inflation of said airbag a three-sided enclosure is provided around said passenger to cushion said passenger from impact forces.

5,390,953

INFLATABLE SEATBELT SYSTEM

Yoshihiko Tanaka, Tokyo, and Tsuneo Chikaraishi, Hikone, both of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Jul. 30, 1993, Ser. No. 99,465
Claims priority, application Japan, Aug. 6, 1992, 4-210353
Int. Cl.[6] B60R *21/18*
U.S. Cl. 280—733 12 Claims



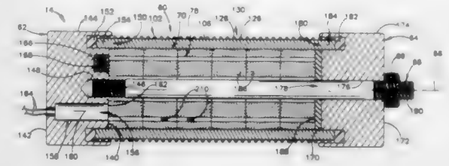
1. An inflatable seatbelt system for a vehicle including at least: means for generating a gas when deceleration acting on the vehicle exceeds a first set deceleration indicating occurrence of an emergency situation; a webbing having a portion brought into contact with an occupant's body, at least a part of said contact portion being formed as a bag-shaped portion; said webbing being arranged such that when no gas is generated from said gas generating means, said webbing is maintained in the shape of a strap having a predetermined width, and when a gas is generated from said gas generating means, said bag-shaped portion is inflated by the gas; a retractor operating such that when the deceleration on the vehicle is not higher than it second set deceleration, which is lower than said first set deceleration, said retractor allows said webbing to be freely wound up and unwound, and when the deceleration on the vehicle exceeds said second set deceleration, said retractor prevents unwinding of said webbing; a tongue connected to said webbing; and a buckle device with which said tongue is disengageably engaged;
wherein at least said bag-shaped portion of said webbing is formed of a webbing base fabric made out of a woven fabric, said webbing base fabric having warps disposed in a longitudinal direction of the seatbelt and wefts disposed in a lateral direction of the seatbelt, :said warps having load-elongation characteristics and almost no stretchability such that said bag-shaped portion can function as a seatbelt for restraining the occupant's body even when tension is applied thereto by expansion force generated when said bag-shaped-portion is inflated by the gas from said gas generating means upon the, occurrence of said emergency situation, and said wefts being formed so as to be stretchable by a predetermined amount when tension is applied thereto by expansion force generated when said bag-shaped portion is inflated.

5,390,954

INFLATOR ASSEMBLY

Ernst M. Faigle, Imlay City; John H. Semchena, Royal Oak; Richard J. Thompson, Imlay City, and Tracy S. Sparks, Lapeer, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Continuation-in-part of Ser. No. 24,851, Feb. 26, 1993, which is a continuation of Ser. No. 719,322, Jun. 21, 1991, abandoned. This application Nov. 2, 1993, Ser. No. 146,967
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—736 25 Claims



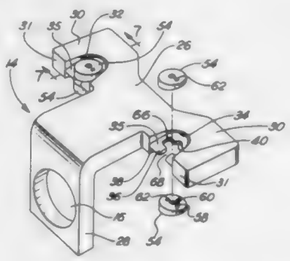
1. Apparatus for inflating an inflatable vehicle occupant restraint, said apparatus comprising:
an ignitable gas generating material which, when ignited, generates gas for inflating the restraint; and
a cylindrical inflator having a tubular part with a longitudinal central axis and axially opposite end portions, said tubular part of said inflator including means for defining a combustion chamber containing said gas generating material, said tubular part of said inflator further including cylindrical filter means for filtering said gas as said gas flows radially outward of said combustion chamber;
said inflator being free of a tubular body wall defining gas flow openings at a location radially outward of said means for defining said combustion chamber;
said inflator including constraining means for constraining said filter means from being deflected radially outward by the pressure of said gas, said constraining means extending over said filter means axially between said opposite end portions of said tubular part and circumferentially around said tubular part.

5,390,955

STEERING COLUMN RELEASE CAPSULES

Thomas S. Kaliszewski; David E. Thomas, both of Rochester Hills, and William M. Snell, Grand Blanc, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 23, 1993, Ser. No. 172,308
Int. Cl.[6] B62D *1/11*
U.S. Cl. 280—777 8 Claims



1. Apparatus for supporting the elongated steering column of an automotive vehicle and dampening vibration of the steer-

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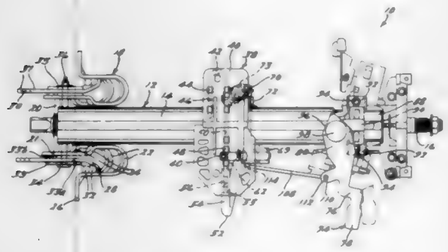
ing column when the vehicle is in motion and also permitting axial collapse of the steering column in a collision, comprising support structure secured to the vehicle frame, a bracket secured to the steering column, and means for clamping said bracket to said support structure comprising a support flange on said support structure, a bracket flange on said bracket opposed to said support flange, a fastener assembly connecting said flanges, said fastener assembly comprising a bolt and a nut threaded on said bolt, vibration dampeners carried by said bolt, said bracket flange being clamped between said dampeners and frictionally held by said dampeners when said nut is tightened but capable of breaking free of the frictional hold of the dampeners to permit collapse of the steering column in the event of a collision, said bracket flange being tapered in a direction opposite the direction of collapse of the steering column to facilitate release of the frictional hold of the dampeners on said bracket flange.

5,390,956

STEERING COLUMN ASSEMBLY

Robert M. Thomas, South Lyon, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 17, 1994, Ser. No. 245,386
Int. Cl.[6] B62D 1/11
U.S. Cl. 280—777 7 Claims



1. A steering column assembly for a collapsible energy absorbing vehicle steering column comprising:

a lower support bracket for pivotally attaching a lower portion of the steering column to vehicle support structure;

said lower support bracket comprising a cross strap extending laterally and generally perpendicular to the longitudinal axis of the steering column and a side member extending longitudinally from each lateral side of the cross strap;

at least one loop extending from each side member and having an inverted U-shape;

an offset interconnecting each side member and said at least one loop to cause said at least one loop to be offset from said side member and bend toward the steering column;

a mounting flange extending laterally from one end of said at least one loop and a tongue extending laterally and longitudinally from said mounting flange, said tongue extending generally parallel to said side members and spaced laterally therefrom; and

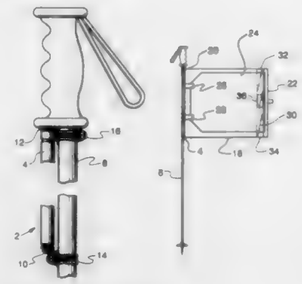
an upper mounting mechanism for attaching an upper portion of the steering column to vehicle support structure; and said lower support bracket including means for absorbing energy of the steering column and for guiding movement of the steering column along a predetermined path during a collision.

5,390,957

MAP HOLDER

Joseph T. Metzler, 5114 New Kent Rd., Wilmington, Del. 19808-2706

Filed Feb. 2, 1993, Ser. No. 12,416
Int. Cl.[6] A63C 11/22
U.S. Cl. 280—819 4 Claims



1. A sheet holder comprising:

a) an elongated hollow shaft, spring means for biasing the shaft to rotate in one direction and resist rotation in an opposite direction,

b) a planar material with two opposite sides, one side being affixed to the shaft and the second side being free from the shaft, said second side having two corners, said spring means rotates the shaft in one diretion to wrap the planar material around the shaft, the second side of the planar material being movable away from the shaft to rotate the shaft in an opposite direction to unwrap the planar material from the shaft, and

c) mounting means for affixing a sheet with two side portions to the planar material with one side portion of the sheet being firmly affixed at the one side of the planar material and the second side portion of the sheet being freely floating at the second side of the planar material, but held adjacent the planar material, the mounting means including a strap having opposite ends, the strap being affixed only at the opposite ends to respective upper and lower edges of the planar material proximate the corners of the second side of the planar material, said second side portion of the sheet being located between the strap and the second side of the planar material, and an adhesive tab affixed to the midregion of the strap, the adhesive tab being located between the strap and the second side portion of the sheet for securing the midregion of the strap to the sheet while permitting the midregion of the strap to be free floating relative to the planar material.

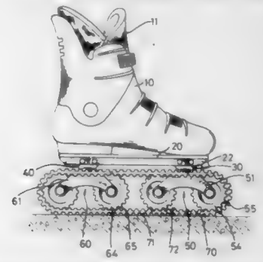
5,390,958

TRACK/ROLLER SKATE

Mike Soo, No. 403, Chung Shan Rd., Jen Teh Hsiang, Tainan Hsien, Taiwan, Prov. of China

Filed Sep. 3, 1993, Ser. No. 117,254
Int. Cl.[6] A63C 17/10
U.S. Cl. 280—844 2 Claims

1. A continuous track roller skate comprising: a longitudinally extending upper foot supporting structure defining an underside base; a pair of parallel ribs projecting downwardly from said base and extending longitudinally of said structure; front and rear roller assemblies mounted between said ribs, each assembly including a pair of bridge member having front and rear ends and together defining a compartment therebetween; a resilient shock absorber mounted In each said compartment; a pair of rollers rotatably mounted on each of said front and rear ends of each said bridge member, each of said pair of rollers being aligned with corresponding rollers on each roller assembly to define two arrays of rollers, and each said roller having a plurality of external transverse teeth on an outer periphery thereof; and an externally treaded track removably mounted around each said roller array, said track



having a plurality of internal teeth on the inner surface thereof for operative engagement with said roller teeth.

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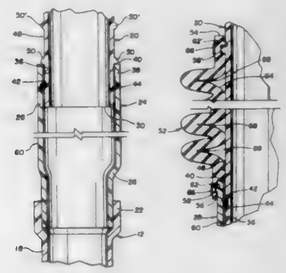
Patent Not Issued For This Number

5,390,960

CONDUIT BRANCH FITTING FOR FLUID MAIN LINE

Willard R. Blake, 7939 Humboldt Ave. North, Minneapolis, Minn. 55444

Filed Jun. 9, 1993, Ser. No. 73,567
Int. Cl.[6] E03F 3/04; F16L 27/12
U.S. Cl. 285—3 6 Claims



1. Apparatus for mating an upwardly extending T-shaped member of a generally horizontal main line for conveying fluid material beneath the ground, to a generally vertically-disposed, upwardly-extending branch line, comprising:

(a) a conduit segment carried by the T-shaped member of the main line, said conduit segment having an inside diameter approximating an outside diameter of the branch line such that the branch line can be received within said conduit segment and interfitted relative thereto for telescoping movement relative to said conduit segment; and

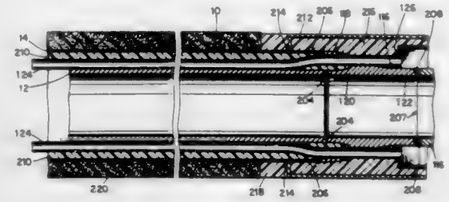
(b) a generally annular sleeve receiving therewithin the interfitting of said conduit segment and the branch line, said sleeve having an upper end securely mated to an outer surface of the branch line and a lower end securely mated to an outer surface of said conduit segment, said sleeve having formed therein a plurality of accordion folds sufficiently rigid so that, as an assembly of the main line and branch line is installed in an excavation in which such an assembly is intended to be received, the branch line will be maintained at a desired axial location relative to said conduit segment, yet sufficiently collapsible so that, as settling of the branch line occurs after filling of the excavation, said accordion folds will fold back on each other to permit relative telescoping movement of the branch line into said conduit segment.

5,390,961

DUAL WALL THERMALLY INSULATED CONDUIT INCLUDING SKIN EFFECT HEAT TRACING PIPES

Thomas K. Guthrie, New Braunfels, Tex., assignor to Thermon Manufacturing Company, San Marcos, Tex.

Filed Apr. 28, 1993, Ser. No. 54,895
Int. Cl.[6] F16L 59/16, 53/00
U.S. Cl. 285—41 9 Claims



1. A method for preparing an insulated, heat traced pipeline for carrying a material, the basic pipe sections comprising two concentrically disposed pipes of different diameter, the inner pipe having a first diameter and the outer pipe having a second diameter which is larger than said first diameter, said inner and outer pipes defining therebetween an annular gap, insulation located in said annular gap and joint connector sections at each end of said inner and outer pipes, said joint connector sections being generally Y-shaped and having an inner portion to mate with said inner pipe, an outer portion to mate with said outer pipe, a butt section for mating with said butt section of another joint connector and a yoke portion joining said inner, outer and butt portions, the heat tracing comprising longitudinal heat tracing means located external and adjacent to said inner pipe in the annular gap and external and adjacent to said butt portion of said joint connector, said heat tracing means providing a predetermined amount of heat, said yoke including holes allowing passage of said heat tracing means, wherein said insulation has a maximum desired temperature and the material has a minimum desired temperature thereby defining a critical temperature gradient, the method comprising the steps of:

determining the insulation maximum temperature and the material minimum temperature;

selecting an initial thickness of said annular gap to receive said insulation and predetermined amount of heat provided by the heat tracing means;

determining the maximum insulation temperature and the minimum material temperature for the given insulation thickness and amount of heat;

if said determined maximum insulation temperature and minimum material temperature are not both satisfactory, reducing the thickness of said annular gap;

after reducing the annular gap thickness, repeating the step of determining the maximum insulation temperature and the minimum material temperature for the new annular gap thickness; and

if said determined maximum insulation temperature and minimum material temperature are both satisfactory, constructing a pipe section having the determined annular gap thickness and heat tracing means heat output.

5,390,962

FLEXIBLE JOINT FOR EXHAUST PIPE OF MOTOR VEHICLE

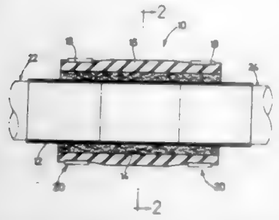
Yumi Sekiguchi; Masaaki Hamada, both of Komaki, and Masahiko Fukui, Kagamihara, all of Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed May 11, 1992, Ser. No. 881,498
Claims priority, application Japan, May 17, 1991, 3-142579
Int. Cl.[6] F16L 11/12
U.S. Cl. 285—53 8 Claims

1. A flexible joint for an exhaust pipe of a motor vehicle, comprising:

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a cylindrical inner layer which consists of a cloth made of ceramic fibers, said inner layer being expansible in an axial direction thereof;



an intermediate layer formed of a heat insulating material, for covering an outer circumferential surface of said inner layer; and

a cylindrical outer layer disposed radially outwardly of said intermediate layer and formed of an elastic material.

5,390,963

TUBE COUPLER

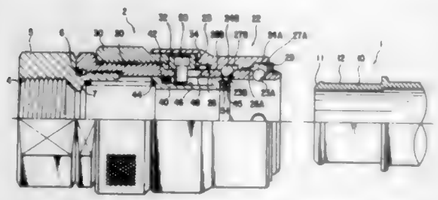
Yukio Namekawa, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1993, Ser. No. 156,720

Claims priority, application Japan, Nov. 26, 1992, 4-87313[U]

Int. Cl.[6] F16L *55/00, 37/18*

U.S. Cl. 285—86 **11 Claims**



1. A tube coupler for effecting fluid connection between a first tube and a second tube, comprising a main tubular socket body having a first end portion connected to said first tube and a second end portion which is open, a main tubular plug body removably connected to said main tubular socket body and having a first end portion connected to said second tube and a second end portion inserted in said second end portion of said main tubular socket body, and a locking mechanism for locking together said main tubular socket body and said main tubular plug body in a state in which said second end portion of said main tubular plug body is inserted in said second end portion of said main tubular socket body, said locking mechanism having a sleeve slidably mounted on an outer peripheral surface of said second end portion of said main tubular socket body and a plurality of locking balls whose engagement with and disengagement from an outer peripheral surface of said main tubular plug body are controlled by operation of said sleeve,

said tube coupler further comprising:

an operating ring threadably engaging an outer peripheral surface of said first end portion of said main tubular socket body;

a slide ring mounted on said outer peripheral surface of said main tubular socket body so as to be slidable axially between said operating ring and said sleeve;

first urging means for urging said slide ring and said sleeve in directions in which said slide ring and said sleeve are separated from each other;

a cylindrical holder slidably fitted in said main tubular socket body and having a groove open radially outward;

second urging means for urging said holder toward said second end portion of said main tubular socket body;

sealing means provided on said holder and sealingly engageable with said second end portion of said main tubular plug body inserted into said second end portion of said main tubular socket body;

said main tubular socket body formed in a tubular wall thereof with at least one elongated hole extending axially of said main tubular socket body; and

at least one pin provided on said slide ring and having a distal end portion extending in said groove, said pin being capable of pushing said holder in the same direction as a direction of movement of said operating ring toward said main tubular socket body.

5,390,964

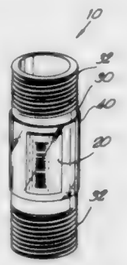
LABELED PIPE FITTING AND METHOD

Lawrence C. Gray, Jr., 1500 San Pasqual St., Pasadena, Calif. 91106-3546

Filed Oct. 1, 1992, Ser. No. 957,501

Int. Cl.[6] F16L *35/00*

U.S. Cl. 285—93 **18 Claims**



1. An individually labeled pipe fitting comprising:

(a) an individual pipe fitting having an outer surface and connection means on opposing ends of the pipe fitting;

(b) on the outer surface of the pipe fitting, a label having indicia relating to the pipe fitting thereon; and

(c) a heat reduced, substantially transparent, tube of plastic shrunk around the outer surface of the pipe fitting and the label, the tube of plastic being sufficiently short to leave at least one of the connection means exposed for testing and installing the pipe fitting without removing the tube and the tube being sufficiently long so the entire label is covered by the tube;

wherein the pipe fitting is individually packaged.

5,390,965

PIPE CONNECTORS

John Few, Edmonton, England, assignor to Edward Barber & Company Limited, London, England

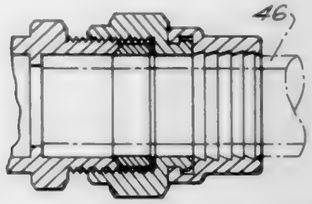
Filed Mar. 22, 1994, Ser. No. 215,732

Claims priority, application United Kingdom, Mar. 26, 1993, 9306299

Int. Cl.[6] F16L *35/00*

U.S. Cl. 285—116 **8 Claims**

1. A connector for forming a fluid tight connection to a pipe, comprising a first connector element having a cavity therein for receiving an end of a pipe to be connected, a second connector element having a through bore for the passage therethrough of said pipe, sealing means within one of said first or second connector elements for sealing the pipe to said first connector element and clamping means carried by the second connector element and operable to grip a pipe when present in said bore in said second connector element so as to prevent axial movement of said pipe, said first and second connector elements being connectable together with a said pipe extending through said second connector element into said first connector element by means operable to draw the said connector elements progressively together axially of a said pipe upon rotation of the connector elements with respect to one another so as to effect a fluid tight connection of said pipe to said first connector element by said seal means, wherein said clamping



means is mounted to the second connector element so as to be rotatable with respect thereto even after a said fluid tight connection has been made, so as by said rotation to bring said clamping means into a desired rotational position, and said clamping means is radially constrictable while in said rotational position to grip said pipe.

5,390,966

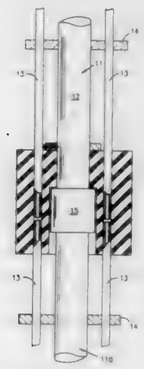
SINGLE CONNECTOR FOR SHUNT CONDUITS ON WELL TOOL

Larry L. Cox, Carrollton, and Tommy J. Yates, Coppell, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 22, 1993, Ser. No. 139,676

Int. Cl.[6] F16L *39/00*

U.S. Cl. 285—137.1 **8 Claims**



1. A well tool comprising:

at least two joints, each of said joints comprising:

a central conduit; and

a plurality of parallel, axially-extending shunt conduits carried by central conduit;

means for connecting said central conduits of said at least two joints together whereby said plurality of shunt conduits on one of said joints will be axially aligned respectively with said plurality of shunt conduits on the other of said joints; and

a single connector for fluidly connecting respectively each of said plurality of shunt conduits on said one joint to each of said plurality of shunt conduits on said other joint; said single connector comprising:

a body positioned on said central conduit of said one joint, said body having a central bore adapted to receive said central conduit of said one joint when said body is positioned on said one joint; and

a plurality of passages axially extending through said body, each of said passages adapted to receive a respective one of said plurality of shunt conduits on said one joint into a first end of said passage and a respective one of said plurality of shunt conduits on said other joint into the other end of said passage to thereby fluidly connect said respective aligned shunt conduits when said single connector is in a connected position.

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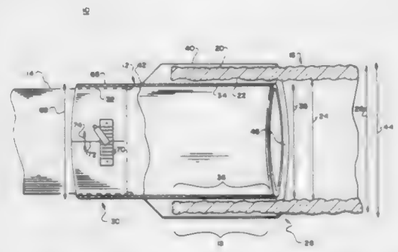
FLEXIBLE VENT PIPE CONNECTOR SYSTEM

Wayne R. Gooderham, Bolton; Vasilios Rallis, Barrie, and Michael A. Brunt, Toronto, all of Canada, assignors to Z-Flex, Inc., Richmond Hill, Canada

Filed Aug. 10, 1993, Ser. No. 104,802

Int. Cl.[6] F16L *25/00*

U.S. Cl. 285—177 **18 Claims**



1. A connector system for coupling first and second venting devices, at least one of said first and second venting devices comprising a flexible vent pipe, said connector system comprising:

first and second venting devices to be coupled together, at least one of said first and second venting devices comprising a flexible vent pipe including a coupling region for engaging with a venting device connector, said coupling region having a grooved exterior region having a predetermined outside diameter and a grooved interior region, having a predetermined inside diameter;

a venting device connector having first and second ends, said first end of said venting device connector coupled to said coupling region of said flexible vent pipe, said second end of said venting device connector coupled to a first end of the other of said first and second venting devices;

said first end of said venting device connector including:

an inner, generally circular shaped, vent member including an end portion having a predetermined outside diameter which is generally smaller than said predetermined inside diameter of said grooved interior region of said flexible vent pipe coupling region;

an outer, generally circular shaped, flexible vent pipe restraining member, said flexible vent pipe restraining member coupled proximate a central region of said inner vent member of said venting device connector, said outer flexible vent pipe restraining member circumferentially surrounding at least said end portion of said inner vent member, and having an inside diameter substantially larger than an outside diameter of said inner vent member, and generally larger than said outside diameter of said grooved exterior region of said flexible vent pipe coupling region, said outer, flexible vent pipe restraining member forming an annular shaped flexible vent pipe receiving region circumferentially surrounding at least said end portion of said inner, generally circular shaped, vent member; and

said flexible vent pipe restraining member further including a circumference reducer mechanism releasably and adjustably reducing the circumference of said outer flexible vent pipe restraining member and said annular shaped, flexible vent pipe receiving region, for engaging

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and restraining said grooved interior and exterior regions of said flexible vent pipe coupling region between said inner vent member and said outer flexible vent pipe restraining member of said first end of said venting device connector; and

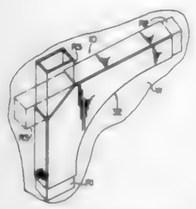
said second end of said venting device connector including a generally circular shaped venting device engaging member including an end portion having a predetermined outside diameter, said venting device engaging member of said second end of said venting device connector coupled to and in fluid communication with said inner vent member of said first end of said venting device connector, said second end of said venting device connector coupled to said first end of the other of said first and second venting devices, for securely coupling said first and second venting devices in fluid communication, for allowing venting of gases from one of said first and second venting devices to the other.

5,390,968

FLAT ELBOW/ONE DIRECTION TEE FITTING

Mark L. Favalora, Niantl, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed Aug. 16, 1993, Ser. No. 106,858
Int. Cl.[6] F16L *27/00*
U.S. Cl. 285—179 22 Claims



1. A flat elbow/one direction tee fitting comprising a hollow generally L-shaped body having inner and outer sidewalls, said sidewalls partially defining axially elongate and angularly spaced apart first and second legs, said legs having free ends respectively defining first and second raceway receiving openings communicating with the interior of said fitting for respectively receiving end portions of first and second raceways, and knockout means on said body for breakaway separation from the remainder of said body to define a third raceway receiving opening in said remainder of said body and communicating with said interior of said body for receiving a third raceway in a first position wherein the third raceway extends from the third raceway receiving opening and in a direction of axial extent of said first leg and in a second position wherein the third raceway extends from the third raceway receiving opening and in a direction of axial extent of said second leg.

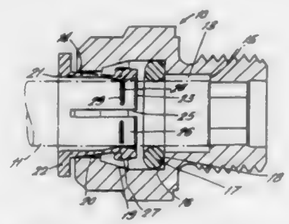
5,390,969

COLLETS FOR TUBE COUPLINGS

John D. Guest, "Ions", Cannon Hill Way, Bray, Maidenhead, Berks, United Kingdom

Filed Sep. 9, 1993, Ser. No. 118,991
Claims priority, application United Kingdom, Sep. 9, 1992, 9219041
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—38 11 Claims

1. A cylindrical collet for a tube coupling body, the collet having a wall and an arm of arcuate cross section which is free to flex radially under the action of an encircling tapered cam surface in the tube coupling body, the arm having a tooth which projects radially inwardly from an inner side of said arm, said tooth having an inner edge to engage and grip a tube extending through the collet, the inner edge of the tooth extending linearly transversely of the arm to engage a said tube



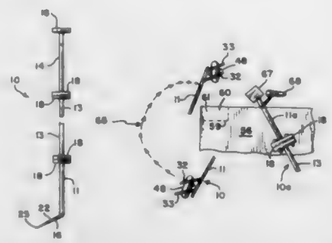
tangentially and, with pressure from said cam surface, to bite into the surface of the tube.

5,390,970

SHIPPING CONTAINER STACKING PIN TOOL

William H. Gray, Rte. 3, Box. 268, Smithfield, Va. 23430

Filed Sep. 27, 1993, Ser. No. 125,231
Int. Cl.[6] B25J *1/04*
U.S. Cl. 294—19.1 7 Claims



1. A stacking pin tool for insertion and removal of stacking pins in a first cargo container wherein the stacking pins are employed to provide spacing support for a second cargo container stacked therein, comprising:

a rigid elongated handle;

a stacking pin engaging and retention structure disposed on one end of said elongated handle;

means for releasably securing said stacking pin engaging and retention structure to said one end of said rigid elongated handle;

said stacking pin engaging and retention structure including at least one forked plate,

said at least one forked plate being disposed in a plane angularly oriented relative to said rigid elongated handle and including a pair of spaced tines,

said pair of spaced tines being provided with parallel outer surfaces and parallel inner surfaces over a major portion of the length thereof and convergent inner surfaces provided over a minor length portion thereof to form tip end portions on said pair of spaced tines,

said convergent inner surfaces defining a tapered tip opening between the tip end of said pair of spaced tines, and

each of said tip ends having upper and lower surfaces that taper to a sharp leading edge.

5,390,971

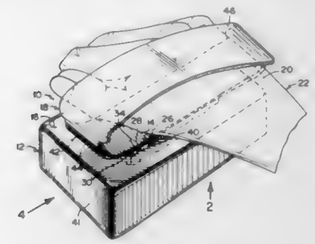
HOLDER FOR A BAR OF SOAP

Tony Warren, 134 W. 58th St.; Apt. 304, New York, N.Y. 10019

Filed Dec. 6, 1993, Ser. No. 161,590
Int. Cl.[6] A47K *5/05*
U.S. Cl. 294—25 8 Claims

1. A holder for a bar of soap which comprises:

a) means for affixing firmly into a surrounding mass on an outer surface of the bar of soap, said affixing means is an embedding receptacle to be inserted into the outer surface of the bar of soap, said embedding receptacle including a rectangular top plate, a pair of end walls, each extending downwardly from an opposite short edge of said top plate, and a pair of side walls, each extending downwardly from an opposite long edge of said top plate, so as to form a chamber to receive a portion of the bar of soap at the outer



surface, each said side wall includes an undulating surface, so as to better engage with the soft material of the bar of soap when inserted into the outer surface of the bar of soap;

b) means for holding by a hand of a person; and

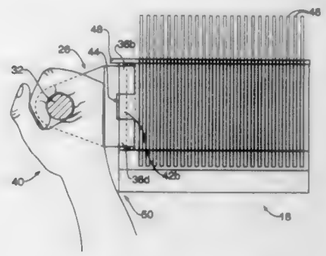
c) means for attaching said holding means to said affixing means, so that the hand of the person can conveniently retain the bar of soap when it becomes wet and slippery.

5,390,972

WAFER CASSETTE HANDLE

Judy U. Galloway, Fair Oaks Ranch, Tex., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 3, 1993, Ser. No. 12,680
Int. Cl.[6] B65D *25/28*
U.S. Cl. 294—27.1 19 Claims



1. A wafer cassette handle comprising:

a support plate having a hand engaging surface;

a rigid generally linear handle means coupled to said support plate such that it is substantially horizontal and parallel to said hand engaging surface and is spaced from said hand engaging surface by approximately the thickness of a human hand; and

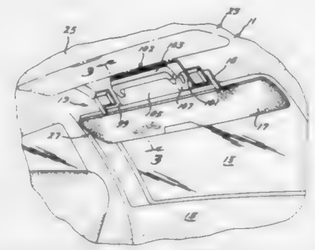
cassette engagement means coupled to said support plate for engagement with a portion of a wafer cassette.

5,390,973

SIDE WINDOW SUN VISOR ASSEMBLY

Angelo R. Melotti, Troy, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Aug. 2, 1993, Ser. No. 100,757
Int. Cl.[6] B60J *3/02*
U.S. Cl. 296—97.5 19 Claims



1. In combination, a sun visor assembly and an automotive vehicle, said sun visor assembly partially blocking sunlight from entering a vehicle side window, said combination comprising:

an inner structural member being located above said side window of said vehicle and being attached to a roof panel, said inner structural member having an inside surface formed thereupon;

a headliner panel having a substrate and a cover material bonded therebelow, said headliner panel being proximately below said inside surface of said inner structural member;

a side rail functional component being juxtapositioned against said headliner panel and being affixed to said inner structural member;

means for controlling pivotal movement of a pair of pivot arms being located against said headliner panel adjacent to said functional component, said pivot control means being affixed to said inner structural member, said pivot control means further having said pair of pivot arms being rotationally affixed thereto, said pivot arms being rotational in a vertical plane normal to said headliner panel;

a sun visor blade being substantially rigid and having an elongated rectangular shape with a thin cross sectional profile, said sun visor blade having said pair of pivot arms attached thereto;

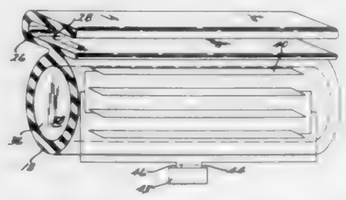
whereby said sun visor blade can be pivotally moved from a stowed position against said headliner panel to a functional lower position adjacent and parallel to said window, said sun visor blade being pivotally moved vertically around said functional component.

5,390,974

VARIABLE HARDNESS WEATHERSTRIP

Peter K. Theodorakakos, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1993, Ser. No. 173,005
Int. Cl.[6] B60J *10/08*
U.S. Cl. 296—146.9 16 Claims



1. A sealing assembly for a door mounted for movement

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between open and closed positions with respect to an aperture in a vehicle body sealing assembly comprising:

a source of electrical power carried with the vehicle;

a hollow tubular seal member carried between the body and the door and at least partially surrounding the aperture;

an electrorheological fluid carried within the seal member operative to harden upon application of a predetermined voltage thereto; and

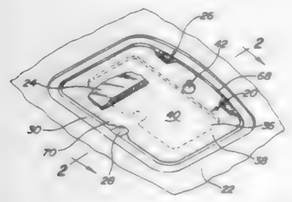
control means operatively interconnecting the electrical power source and the fluid to apply the predetermined voltage in response to movement of the door to the closed position.

5,390,975

VEHICLE WINDOW SHADE

Randy S. Stephens, Mount Clemens, Mich., assignor to Indian Head Industries, Inc., Charlotte, N.C.

Filed Sep. 8, 1993, Ser. No. 118,448
Int. Cl.[6] B60J 7/10
U.S. Cl. 296—211 17 Claims



1. A removable shade for a vehicle window, said vehicle window incorporated into a window assembly including hinges, said vehicle window pivotally supported on said hinges along a margin thereof in a vehicle opening, said shade including a relatively rigid panel having a size and shape configured to generally cover said window and said shade extending between two edges, a retainer button substantially permanently attached to said vehicle window, said retainer button including a first side having adhesive thereon adhesively bonding said button to said window and a second opposed side having a releasable retainer element, a connector button secured on one side of said shade panel adjacent one of said edges, and including a face having a mating releasable retainer element generally coaxially aligned with said retainer button when said shade panel covers said window, said retainer elements of said buttons releasably retaining said shade panel on said window, the other of said edges also being supported by said window assembly, and said shade panel movable with said window upon pivotal movement of said window about said hinges to open and close said window; and

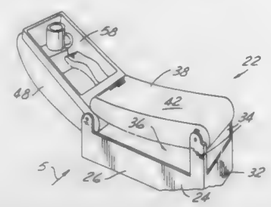
said shade including a handle attached to said shade panel adjacent to said connector button on a side of said panel opposite said one side of said shade panel, said handle being attached to said shade panel generally coaxially aligned with said buttons, and said connector elements comprising a plurality of resilient, generally linear connector elements projecting from said buttons and said connector elements associated with at least one of said connector button and said retainer button having a generally transverse end connector portion, said end connector portions providing a reliable connection between said buttons.

5,390,976

CONVERTIBLE FLOOR CONSOLE AND AUXILIARY SEAT FOR AN AUTOMOTIVE VEHICLE

John F. Doughty, Orchard Lake, Mich.; Christopher S. Clements, Rayleigh, England; Jospeh M. Naujokas, Livonia, and Shabbir A. Kathiria, West Bloomfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 26, 1993, Ser. No. 67,306
Int. Cl.[6] A47C 13/00
U.S. Cl. 297—115 19 Claims



1. A console assembly for use in an automotive vehicle body passenger compartment having a floor for mounting a pair of seats in laterally spaced relationship about a vertical plane through the longitudinal axis of the vehicle body, each of said seats having a seat cushion and a seat back in generally orthogonal relationship, said console assembly comprising:

a housing member for interposition between said pair of seats and including a pair of upwardly projecting rear pillars at a rear end thereof and a pair of upwardly projecting front pillars at a front end thereof and defining an internal storage cavity therein;

an armrest member pivotably secured to said rear pillars and operative to pivot from a first generally vertical position contiguous with and complementary to the seat backs, when interposed between said pair of seats, to a second generally horizontal position over said housing member; and

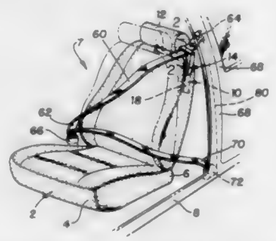
a bottom member pivotably secured to said front pillars and operative to pivot from a first generally horizontal position covering said housing member and being contiguous with and complementary to said seat cushions, when interposed between said pair of seats, to a second position longitudinally forward of said console assembly to expose said internal storage cavity of said housing member, whereby when said armrest member and said bottom member are in the first positions, said console assembly defines an auxiliary passenger seat interposed between said pair of seats.

5,390,977

D-RING FOR SEAT BELT RESTRAINTS

Harold J. Miller, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 24, 1993, Ser. No. 65,299
Int. Cl.[6] B60R 22/26
U.S. Cl. 297—216.13 2 Claims



1. A vehicle seat and occupant restraint arrangement for a vehicle having forward and rearward ends, the arrangement comprising:

a seat pan member having forward and rearward ends;

a seat back joined with the seat pan rearward end, the seat back having an upper end;

a D-ring joined to the seat back generally adjacent the upper end of the seat back;

a first anchor means including a retractor which locks upon experiencing an excessive forward acceleration of the vehicle being generally fixed with respect to the vehicle;

a shoulder harness with a first end operatively associated with the first anchor means, the shoulder harness being threaded through the D-ring, and the shoulder harness being normally freely passable through the D-ring; and

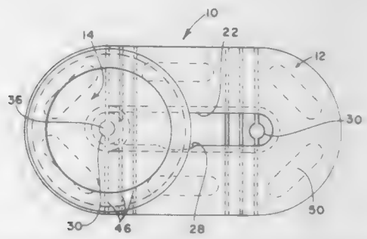
inertia locking means in the D-ring to cause the D-ring to catch the shoulder harness upon sudden excessive acceleration of the vehicle in the forward direction to tension the shoulder harness between the D-ring and the anchor means to minimize angular movement of the seat back rearwardly.

5,390,978

ROTATABLE AND DISPLACEABLE SEAT

Klaus Janisch, Isny, Germany, assignor to Schmidt & Lenhardt GmbH & Co. oHG, Isny, Germany

Filed Mar. 14, 1994, Ser. No. 212,369
Claims priority, application European Pat. Off., Mar. 16, 1993, 93104198; Jan. 15, 1994, 94100547
Int. Cl.[6] A61G 7/10
U.S. Cl. 297—240 5 Claims



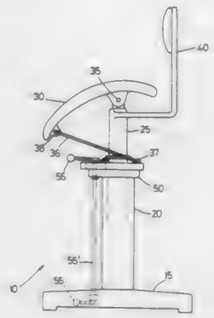
1. Rotatable and displaceable plate arrangement as a seating surface for physically handicapped people, with a rotary plate (**14**) which is pivot-mounted on an oblong bottom plate (**12**) and guided by means of a displaceable plate (**20**) provided in a sliding guideway (**22**) of the oblong bottom plate (**12**) for reciprocating movement between two end positions, the bottom plate (**12**) being divided into several sections which are relatively foldable around axes running transverse to the longitudinal direction of said bottom plate (**12**), characterised in that the bottom plate (**12**) is constructed as a single-piece plastics component, and that provided between each pair of relatively foldable sections is a transverse groove (**46**) emanating from the underside surface of the bottom plate (**12**) and forming an articulating web (**48**), said transverse groove (**46**) extending over the full width of said bottom plate (**12**).

5,390,979

ADJUSTABLE CHAIR

Esmond N. Corlett, Nottingham, England, assignor to British Technology Group Ltd., London, England

Continuation-in-part of Ser. No. 774,735, Oct. 10, 1991, Pat. No. 5,253,922, which is a continuation of Ser. No. 442,696, Nov. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 197,002, May 23, 1988, abandoned. This application Apr. 10, 1992, Ser. No. 866,039
Claims priority, application United Kingdom, Apr. 11, 1991, 9107661
Int. Cl.[6] A47C 3/00
U.S. Cl. 297—344.12 9 Claims



1. A chair for supporting a user in one of a sitting and semi-standing position, including:

a seat,

said chair having co-operative adjustment means for simultaneously adjusting tilt of the seat and the height of the seat, and

second independent adjustment means for adjusting only tilt of the seat independently of the co-operative adjustment means.

5,390,980

ZERO CHUCK VEHICLE SEAT LATCHING MECHANISM

Gulam Premji, and Simon X. He, both of Mississauga, Canada, assignors to Bertrand Faure Ltd., Mississauga, Canada

Filed Feb. 10, 1993, Ser. No. 15,793
Int. Cl.[6] B60N 2/02
U.S. Cl. 297—378.12 16 Claims



1. A seat back latching mechanism for use in a vehicle seat hinge assembly installed in a vehicle seat having a seat back member pivotally tiltable over a seat member, wherein said hinge assembly has first and second hinged members pivotally

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mounted about a common first pivot for pivotal movement about a hinge pivot axis in forward and rearward angular directions between a first relatively upright angular orientation and a second relatively folded angular orientation and wherein said latching mechanism is used to secure said seat back member against pivotal movement in a forward angular direction relative to said seat member, said latching mechanism comprising:

first and second stop means securely affixed to said first hinged member;

first and second abutment means securely affixed to said second hinged member;

a selectively positionable latch member movably mounted on a selected one of said first and second hinged members for movement between a latching position and an unlatching position, with said first and second hinged members being held in said first relatively upright angular orientation when said selectively positionable latch member is in said latching position, and with said first and second hinged members being free to move between said first relatively upright angular orientation and said second relatively folded angular orientation when said selectively positionable latch member is in said unlatching position;

wherein, when said selectively positionable latch member is in said latching position:

(a) said first stop means and said first abutment means are in intimate contact with one another so as to preclude substantially all pivotal movement of said first and second hinged members with respect to each other in said rearward angular direction; and,

(b) (i) a first contact surface on said selectively positionable latch member and said second abutment means are in intimate contact with one another; and,

(b) (ii) said selectively positionable latch member is functionally interconnected between said second stop means and said second abutment means;

so as to both securely retain said first and second hinged members in said first relatively upright angular orientation and to preclude substantially all pivotal movement of said first and second hinged members with respect to each other in said forward angular direction, such that there is substantially no radial lost motion between said first hinged member and said second hinged member in said first relative upright angular orientation.

5,390,981

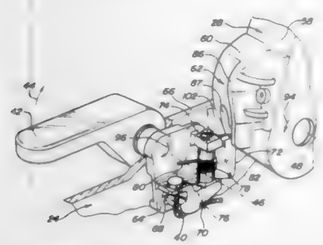
SEAT ASSEMBLY WITH A SINGLE POSITION MEMORY DUMP MECHANISM

Les Griswold, Ann Arbor, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Sep. 30, 1993, Ser. No. 128,729

Int. Cl.[6] B60N *2/02*

U.S. Cl. 297—378.12 **10 Claims**



1. A seat assembly for a motor vehicle having a seat cushion and a seat back extending upwardly from said seat cushion, said seat assembly comprising:

a seat frame having a base portion adapted to be mounted to a motor vehicle and a back portion pivotally mounted to said base portion for rotation relative to said base portion about a transverse pivot axis, said back portion pivoting within a range of use positions bounded by a front use position and a rearward most use position, said back portion having a predetermined set position within said range of use positions rearward of said front use position and said back portion being rotatable to a forward dump position forward of said range;

recliner latch means for holding said back portion in a selected position within said range of use positions;

release means for selectively releasing said recliner latch means to enable rotation of said back portion whereby the position of said back portion within said range can be adjusted and said back portion can be rotated to said dump position, said release means including an operating lever coupled to said recliner latch means and being pivotally mounted to said base portion for rotation about a lever axis spaced from said pivot axis and being movable from a latch position to a release position for releasing said recliner latch means, said operating lever being biased into said latch position; and

cam and follower means operatively associated with said operating lever and said back portion for holding said operating lever in said release position when said back portion is moved forward beyond said front use position toward said dump position until said back portion has been returned rearward to said predetermined set position, said cam and follower means including a follower coupled to said lever for rotation with said lever about said lever axis and a cam fixed to said back portion and engagable by said follower when said back portion is moved forward beyond said front use position toward said dump position to hold said lever in said release position until said back portion has been returned rearward to said predetermined set position.

5,390,982

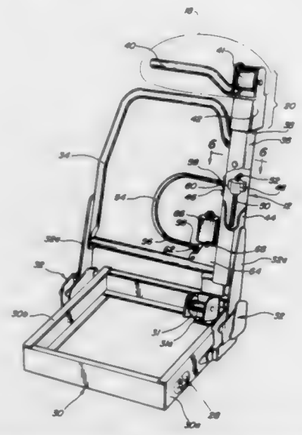
ADJUSTABLE BELT GUIDE AND HEADREST

Richard F. Johnson, Bloomfield Hills, and Blaine J. Michael, Farmington Hills, both of Mich., assignors to Douglas & Lomason Company, Farmington Hills, Mich.

Filed Apr. 16, 1993, Ser. No. 48,483

Int. Cl.[6] B60R *22/28*

U.S. Cl. 297—410 **20 Claims**



1. A vehicle seat having a vertically adjustable shoulder belt guide and headrest apparatus, said apparatus comprising:

first track means extending longitudinally through a seat back portion of said seat, said first track means being fixedly secured to a frame member of said vehicle seat;

second track means slidable relative to said first track means for vertically positioning relative to said seat back portion a headrest and a shoulder belt guide affixed to the upper end of said second track means such that said shoulder belt guide is caused to move with said headrest in response to linear movement of said second track means; and

operator controllable driving means for controllably driving said second track means linearly relative to said first track means to thereby cause said headrest and said shoulder belt guide to be adjustably positioned vertically relative to said seat back portion.

5,390,983

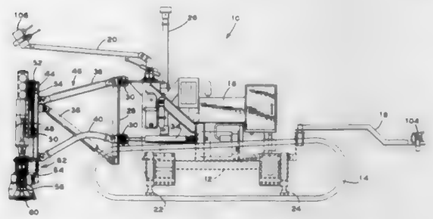
ROADBED PROFILER AND METHOD OF PROFILING

Gregory R. Baiden, Lively; Donald D. Young, Sudbury, and Donald A. Desjardins, Garson, all of Canada, assignors to Inco Limited, Toronto, Canada

Filed Jan. 7, 1994, Ser. No. 179,470

Int. Cl.[6] E21C *25/02, 25/04*

U.S. Cl. 299—10 **20 Claims**



15. A method for profiling a flat surface, the method comprising:

a) placing a roadbed profiler upon the surface to be profiled, the roadbed profiler including a percussive device and a flat faced drill bit,

b) causing the drill bit to collar a first hole,

c) moving the drill bit to an adjacent, contiguous location and collaring a second hole, the first and second holes forming an overlapped continuous void having a substantially flat bottom surface, and

d) repeating steps b) and c).

5,390,984

METHOD OF PRODUCING TOOTH BRUSHES

Leonel P. Boucherie, and Bart G. Boucherie, both of Izegem, Belgium, assignors to G. B. Boucherie N.V., Izegem, Belgium

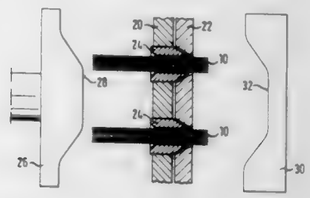
PCT No. PCT/EP93/01025, § 371 Date Dec. 22, 1993, § 102(e) Date Dec. 22, 1993, PCT Pub. No. WO93/21796, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 28, 1993, Ser. No. 170,201

Claims priority, application European Pat. Off., Apr. 28, 1992, 92107205

Int. Cl.[6] A46D *3/04*

U.S. Cl. 300—21 **12 Claims**



1. A method of producing tooth brushes, comprising the steps of:

a) providing a base member for each brush to be produced, said base member having a front face and a rear face and a plurality of holes passing between said front and rear faces and arranged in a pattern corresponding to a pattern of bristle tufts to be implanted in said base member;

b) providing a supply of pre-cut bristles of equal length in an axially aligned and radially compressed state wherein each bristle has a rounded end and an opposed base end;

c) providing a vise having a number of through holes arranged in a pattern corresponding to that of said base member, each through hole being associated with clamping means for releasably clamping a tuft of bristles inserted therein;

d) picking individual tufts of bristles from said supply and introducing each tuft into one of said through holes of said vise, said clamping means being in a released state, and at least one of said bristle ends projecting from said through holes;

e) providing a die member having a profiled face and simultaneously engaging said projecting ends with said profiled face to push said bristles axially within said through holes so that both bristle ends are aligned in parallel surfaces corresponding in shape to said profiled face;

f) engaging said clamping means to hold said bristles in said vise while their ends are in an aligned state;

g) introducing the base ends of said bristles into the holes of said base member, trimming the base ends of said bristles and affixing the bristles to said base member;

h) releasing said clamping means of said vise; and

i) withdrawing the bristles from the through holes of said vise.

5,390,985

NON-PNEUMATIC, GROUND-ENGAGING CUSHIONING MEANS WITH RAISED TREADS FOR TIRES OR ENDLESS TRACKS

Graeme A. Chandler, Morley, Australia, assignor to AirBoss Limited, West Pert, Australia

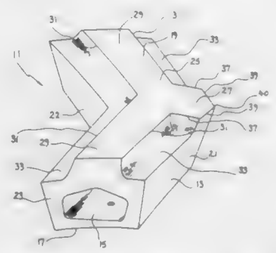
PCT No. PCT/AU91/00201, § 371 Date Nov. 13, 1992, § 102(e) Date Nov. 13, 1992, PCT Pub. No. WO91/17899, PCT Pub. Date Nov. 28, 1991

PCT Filed May 10, 1991, Ser. No. 949,545

Claims priority, application Australia, May 14, 1990, PK0107

Int. Cl.[6] B60B *15/00;* **B60C** *7/05*

U.S. Cl. 301—44.2 **21 Claims**



1. A hollow, resilient, integral, ground-engaging, cushioning segment for a wheel or endless track for a vehicle, said wheel or endless track having a band-shaped base cyclically movable around at least one axis, multiple said cushioning segments being mountable in a side-by-side, closely interfitting disposition around said base to provide a continuous ground-engaging support cushion for said vehicle, individual said cushioning segments being elongated, tubular and open-ended to define at least one longitudinally extending aperture providing interior access to said hollow segment, said cushioning segments extending across said band-shaped base between segment ends at opposed sides of said band, when mounted on said base, and each comprising:

a) a longitudinal inner portion for engagement with said base;

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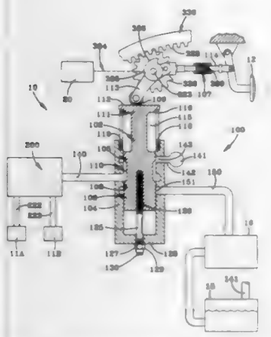
b) a longitudinal outer segment portion carrying a ground-engaging surface;
c) longitudinal side faces extending between said inner and outer faces and providing resilient support for said outer segment portion;
d) a longitudinally extending raised tread carrying said ground-engaging surface, said raised tread being located on said outer segment portion between and spaced from said side faces and defining a tread-bearing portion of said hollow segment; and
e) said at least one longitudinally extending ventilation aperture, said aperture being defined between said inner, outer and side portions and opening to atmosphere at each said segment end to cool said ground-engaging segment;
wherein said ventilation aperture has a cross-sectional shape including a raised portion extending beneath said raised tread along said tread whereby, under ground-engaging loads, said tread-bearing portion is movable inwardly toward said inner portion and said ground-engaging loads are directed laterally of said side walls toward neighboring segments and wherein said cushioning segments are configured to be interfittable around said at least one axis, with said segment, said tread and said ventilation aperture being shaped to extend laterally toward a neighboring segment, when mounted, said shaping being symmetrical about a midpoint of each segment's length.

5,390,986

SELF-ENERGIZING VEHICULAR BRAKE SYSTEM WITH ELECTRONICALLY ACTUATED HYDRAULIC BALANCE FORCES

Arthur Hall III, Cicero, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 9, 1993, Ser. No. 28,510
Int. Cl.[6] B60T *13/74*
U.S. Cl. 303—3 **2 Claims**



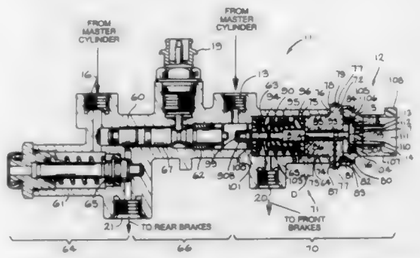
1. A brake apply control system for a vehicle having a rotatable output member subjected to deceleration during braking, said control system comprising:
a mechanical input subject to operator input force to initiate brake apply and deceleration of the output member;
self-energizing means responsive to said mechanical input for increasing brake apply and deceleration of the output member;
electronically controlled hydraulic means for applying a force to counteract said self-energizing means to maintain the deceleration of the output member at a value predetermined by said manual input, said means for applying having pedal means to deflect in response to operator input force and means to sense the deflection of said pedal means;
a force apply/feed-back device interposed between said pedal means and said mechanical input to permit deflection of said pedal means in proportion to the magnitude of operator input force even when said mechanical input does not physically move; and,
said force apply/feed-back device having a spring means to pass compressive forces up to a predetermined magnitude and provide a reaction force to actuate said hydraulic means.

5,390,987

BRAKE SYSTEM METERING VALVE WITH A PRESSURE ACTUATED BRAKE SWITCH

Gary A. Willi, Ann Arbor, and James M. Cossins, Taylor, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Mar. 8, 1993, Ser. No. 28,480
Int. Cl.[6] B60T *8/26*
U.S. Cl. 303—9.62 **11 Claims**



1. A valve for a vehicle hydraulic brake system having a master cylinder and at least one wheel brake, the valve comprising:
a valve housing having a bore formed therein, said housing including an inlet port formed therein and communicating with said bore, said inlet port adapted to be connected to the master cylinder, said housing further including an outlet port formed therein and communicating with said bore, said outlet port adapted to be connected to the wheel brake;
a brake switch attached to said housing; and
a metering valve disposed within said valve housing bore between said inlet and outlet ports, said metering valve operable to prevent communication between said inlet and outlet ports when hydraulic pressure is initially applied to said inlet port, said metering valve connected to a shiftable metering valve element disposed within said valve housing bore to actuate said brake switch, said shiftable metering valve element being shifted when hydraulic pressure is initially applied to said inlet port to actuate said brake switch.

5,390,988

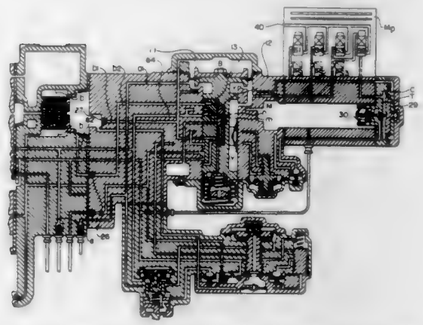
AIR BRAKE PILOT ADAPTOR

Donald B. Shank, Duluth, Minn., assignor to Duluth & Iron Range Co., Inc., Duluth, Minn.

Filed Feb. 2, 1993, Ser. No. 12,303
Int. Cl.[6] B60T *7/00*
U.S. Cl. 303—15 **10 Claims**

1. In combination with a pneumatic control valve used in a car in tandem with the locomotive of a train to effect applying and releasing of a pneumatic brake of the car in response to variation, from the locomotive, of gas pressure in a brake pipe extending the length of the train, wherein applying of the brake involves normally venting of gas, previously provided to a first chamber defined on one side by a first face of a service diaphragm piston, a second chamber defined on one side by a first face of an accelerated release diaphragm piston, and a passage interconnecting the first and second chambers, from the first and second chambers and the interconnecting passage through a quick service volume choke; apparatus for expediting venting

of the gas from the first and second chambers and the interconnecting passage to substantially immediately effect applying of the brake, comprising:
(a) a valving member having a first passage formed therein, said first passage formed in said valving member being operatively connected to one of the pneumatic control valve passage interconnecting the first and second chambers and the first and second chambers, so as to be in fluid communication therewith, and a first port affording ex-



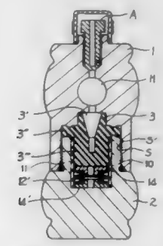
haust egress from said first passage formed in said valving member;
(b) a first valve element mounted in said valving member for movement between a first position occluding said first port, and a second position wherein gas in said first passage formed in said valving member is exhausted through said first port; and
(c) control means, segregated from gas pressure in the brake pipe, for accomplishing movement of said first valve element between said first and second positions thereof.

5,390,989

ADJUSTABLE PRESSURE VARIABLE RESPONSE FLUID BRAKE SYSTEM ACCUMULATOR

Joowon Kim, 102-703 Newseoul Apt. 255-1, Sankok-Dong, Puk-Ku, Inch'on, Rep. of Korea

Filed Aug. 17, 1993, Ser. No. 107,060
Claims priority, application Rep. of Korea, Mar. 24, 1993, 1993-4432
Int. Cl.[6] B60T *17/04*
U.S. Cl. 303—87 **5 Claims**



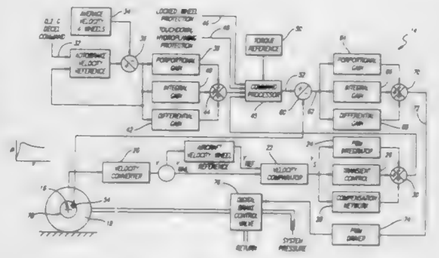
1. A brake system fluid accumulator for use in fluid brake systems, comprising:
a housing including an upper body portion threadably connected to a lower body portion;
a bulb cavity substantially enclosed within said upper and lower body portions;
said bulb cavity including an axial bore in said lower body portion having a bottom wall;
a tubular body fitted in said axial bore and being substantially coextensive with said axial bore, said tubular body having an inner wall;
a resilient bulb mounted within said bulb cavity, said resilient bulb having an interior fluid pressure inducing chamber portion and an expandable portion;
a brake fluid passage-way through said housing in communication with, and adapted to communicate brake fluid to, said interior fluid pressure inducing chamber portion for expanding said expandable portion;
said expandable portion having a side wall and a bottom end wall, at least said expandable portion extending into said tubular body with said side wall of said expandable portion in contact substantially throughout the length thereof with said inner wall of said tubular body to prevent radial expansion of said side wall and to allow only axial expansion of said bottom end wall of said expandable portion;
upper and lower annular members in said tubular body respectively in contact with said bottom end wall of said expandable portion and said bottom wall of said axial bore, spring means connected between and maintaining said upper and lower annular members in contact with said bottom end wall and said bottom wall, and boss portions with respective stop surfaces spaced from each other on said upper and lower annular members respectively;
whereby responsive to increased pressure within said interior fluid pressure inducing chamber only axial expansion of said bottom end wall of said expandable portion results, compressing said spring means until said stop surfaces are moved into abutment thereby preventing further expansion of said expandable portion.

5,390,990

BRAKE ENERGY BALANCING SYSTEM FOR MULTIPLE BRAKE UNITS

Robert D. Cook, Valencia, and Bijan Salamat, Santa Clarita, both of Calif., assignors to Hydro-Aire Division of Crane Company, Burbank, Calif.

Filed Nov. 24, 1993, Ser. No. 157,692
Int. Cl.[6] B60T *8/58*
U.S. Cl. 303—93 **12 Claims**



1. A brake energy balancing system for a vehicle having a plurality of trucks carrying a plurality of cars each having a group of wheels, for applying and controlling a plurality of brakes of each said group of wheels of said vehicle independently of operator brake application, comprising:
torque signal generating means for producing brake torque signals that are a function of the braking torque applied to each said wheel;
command brake torque signal generating means for generating a command brake torque signal in response to a deceleration command;
torque comparison means for comparing said brake torque signals with said command brake torque signal for generating brake torque difference signals indicative of the difference between said brake torque signals and said command brake torque signal;
brake application means for applying brake pressure to said wheel independently of operator brake application; and

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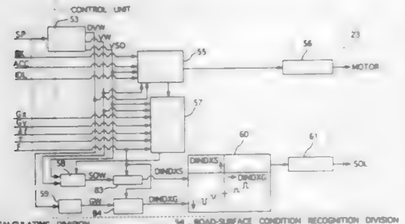
control means for providing an energy balancing brake application energy balancing control signal to said brake application means to control said brake application means independent of operator brake application, in response to said brake torque difference signals.

5,390,991

ANTI-SKID CONTROL SYSTEM

Kenji Tozu; Kenji Asano, and Hiroaki Kawai, all of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 28, 1992, Ser. No. 951,736
Claims priority, application Japan, Sep. 26, 1991, 3-247996
Int. Cl.[6] B60T *8/60*
U.S. Cl. 303—97 **20 Claims**



1. An anti-skid control system for use in an automotive vehicle comprising:

real slip rate detecting means for detecting a real slip rate of the vehicle;

target slip rate setting means for setting a target slip rate of the vehicle;

load measuring means for measuring a load applied to the vehicle;

correction means for obtaining a corrected deviation by multiplying a coefficient with a deviation between the target slip rate and the real slip rate;

coefficient changing means for decreasing the coefficient as the load decreases; and

braking force control means for controlling a braking force in such a manner that the real slip rate approaches the target slip rate, the control sensitivity of the braking force control means being dependent on the corrected deviation.

5,390,992

VEHICLE ELECTRIC BRAKE SYSTEM WITH STATIC BRAKE TORQUE CONTROL

Allen J. Walenty, Macob, and Kevin G. Leppek, Rochester Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

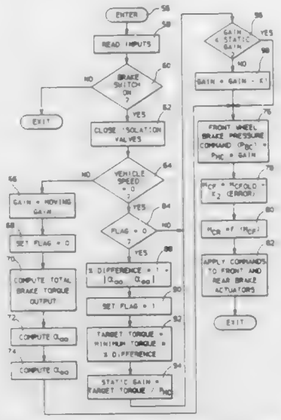
Filed Mar. 4, 1993, Ser. No. 26,040
Int. Cl.[6] B60T *13/74*
U.S. Cl. 303—112 **6 Claims**

1. A method of braking a vehicle having a brake system for applying a brake torque for braking the vehicle, the method comprising the steps of:

sensing a braking command;

while the vehicle is moving (A) controlling the brake system for applying the brake torque for braking the vehicle at a level in accord with predetermined parameters including the braking command, (B) determining an actual vehicle deceleration, and (C) determining an expected vehicle deceleration resulting from the applied brake torque and a predetermined vehicle braking condition;

determining a stopped vehicle target brake torque value as a predetermined function of a difference between the determined actual vehicle deceleration and the determined expected vehicle deceleration; and



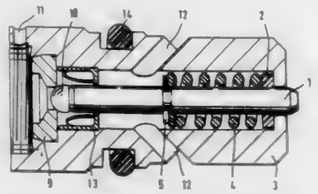
while the vehicle is stopped, controlling the brake system to apply the brake torque at the stopped vehicle target brake torque value.

5,390,993

PRESSURE CONTROL VALVE FOR SLIP-CONTROLLED HYDRAULIC BRAKE SYSTEMS

Erhard Beck, Adolfstrasse 14, 6290 Weilburg; Anton David, Goldgru benstrasse 15, 6071 Goetzenhain; Helmut Weisbrod, Am Nauheimer Bach 2 B, 6350 Bad Nauheim, and Horst Kornemann, Rotlintstrasse 26, 6000 Frankfurt/Main 1, all of Germany

Division of Ser. No. 856,072, May 8, 1992, Pat. No. 5,290,096. This application Nov. 1, 1993, Ser. No. 144,338
Claims priority, application Germany, Sep. 8, 1990, 40 28 606.1
Int. Cl.[6] B60T *8/32*; **F16K** *17/06*
U.S. Cl. 303—113.1 **3 Claims**



1. In a slip-controlled hydraulic brake system, a pressure control valve controlling the pressure of hydraulic fluid in said slip-controlled hydraulic brake system, said pressure control valve comprising a valve housing formed with a bore, an elongated valve tappet guided for movement in said bore in said valve housing, a compression spring received over said valve tappet and in driving engagement therewith to act on said valve tappet, said compression spring comprising a helically wound elongated form received over said valve tappet, a stop fixed on said valve tappet which an end of said compression spring contacts to establish said driving engagement with said valve tappet, an abutment formed in said valve housing, another end of said compression spring held by said abutment, said compression spring thereby compressed between said stop and said abutment to generate a spring force, a valve closure member on one end of said valve tappet, a corresponding valve seat in said valve housing configured to mate with said valve

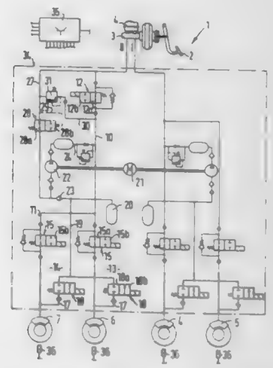
closure member, a pressure fluid source and a pressure return channel in said valve housing, said valve seat defining a fluid connection between said pressure supply port and said pressure return channel, longitudinal axial movement of said valve tappet in one direction against said spring force of said compression spring causing movement of said valve closure member off said valve seat once pressure has reached a specific pre-set desired value to allow fluid communication between said supply port and return channel, longitudinal movement of said valve tappet in the opposite direction moving said valve closure element back onto said seat, an elastomeric friction ring element received over said valve tappet, one end of said compression spring acting to hold said elastomeric ring in position, and means causing frictional scrubbing of said friction ring element by said movement of said valve tappet, said frictional scrubbing resisting said longitudinal movement of said valve tappet in both directions.

5,390,994

HYDRAULIC BRAKE SYSTEM WITH ANTI-LOCK AND DRIVE SLIP CONTROL DEVICE, FOR MOTOR VEHICLES

Wolf-Dieter Jonner, Beilstein-Schmidhausen; Wolfgang Bernhardt, Korntal; Helmut Pueschel, Marbach, and Guenther Schmidt, Tamm-Hohenstange, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE92/00442, § 371 Date Dec. 2, 1993, § 102(e) Date Dec. 2, 1993, PCT Pub. No. WO93/00239, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 2, 1992, Ser. No. 157,057
Claims priority, application Germany, Jun. 29, 1991, 4121604
Int. Cl.[6] B60T *13/14*
U.S. Cl. 303—113.2 **2 Claims**



1. A hydraulic brake system (**1**) with an anti-lock and drive-slip control device (**34**) for motor vehicles,

having a brake conduit (**10**), with a valve arrangement (**13**) for brake pressure modulation in a wheel brake, extending between a pedal-actuated main brake cylinder (**3**) and the wheel brake (**6**),

a pressure medium return conduit (**17, 19**) from the valve arrangement (**13**) to a suction side of a high-pressure pump (**22**), which return conduit (**17, 19**) is connected at a pressure end to a feed conduit (**24**) between the main brake cylinder (**3**) and the valve arrangement on the brake conduit (**10**),

a first shut-off valve (**12**) which is arranged in the brake conduit (**10**) between the main brake cylinder (**3**) and the feed conduit (**24**),

a second shut-off valve (**28**), which has a through-flow position (**28*a***) and a shut-off position (**28*b***), in a suction conduit (**27**) which starts from the brake conduit (**10**) between the main brake cylinder (**3**) and the first shut-off valve (**12**) and is in connection with the suction side of the high-pressure pump (**22**),

an electronic control unit (**35**) which switches the valves (**12, 15, 18**) and the pump (**22**) as a function of wheel rotational behavior, and

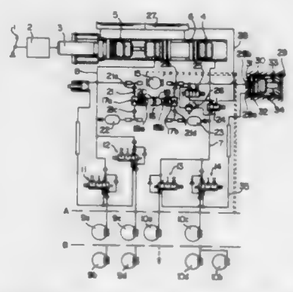
the second shut-off valve (**28**), which takes up its through-flow position (**28*a***) as its basic position, can be switched into its shut-off position by the pressure in the suction conduit (**27**) at the main brake cylinder end.

5,390,995

BRAKE PRESSURE CONTROL SYSTEM FOR BRAKING SYSTEMS

Wilhelm Zirps, Hemmingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/EP90/02086, § 371 Date May 20, 1993, § 102(e) Date May 20, 1993, PCT Pub. No. WO91/08130, PCT Pub. Date Jun. 13, 1991
PCT Filed Dec. 4, 1990, Ser. No. 852,237
Claims priority, application Germany, Dec. 5, 1989, 3940180
Int. Cl.[6] B60T *13/14*
U.S. Cl. 303—116.1 **14 Claims**



12. In a brake pressure control system which includes an expansion chamber (**29**), said expansion chamber includes an inflow orifice and an outflow orifice, a valve seat surrounding said outflow orifice, a piston (**30**) with a closing body (**31**) and a spring which applies a force on the piston to seat said closing body on said seat, said spring is in a chamber which is open to the atmosphere, and said outflow orifice communicates with an inlet of a recirculating pump (**16**), which forms part of said brake pressure control system.

5,390,996

TRACKED VEHICLE WITH APPARATUS FOR DETERMINING TRACK FORCE APPLIED TO WHEELS

Jeremy H. A. Bliss, Norwich, United Kingdom, assignor to Lotus Cars Limited, Norfolk, United Kingdom

PCT No. PCT/GB92/00567, § 371 Date Sep. 28, 1993, § 102(e) Date Sep. 28, 1993, PCT Pub. No. WO92/17364, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 27, 1992, Ser. No. 122,531
Claims priority, application United Kingdom, Mar. 28, 1991, 9106735
Int. Cl.[6] B62D *55/30*
U.S. Cl. 305—10 **10 Claims**

1. A tracked vehicle having a plurality of wheels and a track extending around the wheels wherein there is provided means for determining the force applied on to a wheel resulting from the interaction of the wheel with the ground over which the vehicle passes comprising;

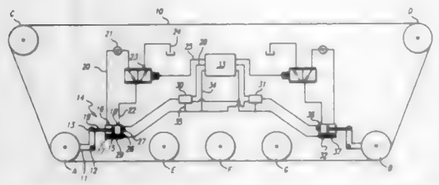
a first signal generating means which generates signals indicative of the force transmitted from the wheel to the vehicle body,

second signal generating means which generates signals indicative of the track force applied to the wheel and

processor means for combining the signals generated by the

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first and second signal generating means to remove from the signals indicative of the force transmitted from the



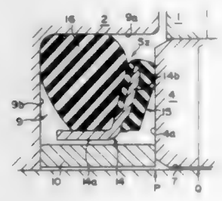
wheel to the vehicle body those signals attributable to the track force applied to the wheel.

5,390,997

END FACE SEALING ASSEMBLY DEVICE FOR TRACK SHOE COUPLING

Hiroyuki Nakaishi, and Hideo Yagi, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 16, 1993, Ser. No. 168,662
Claims priority, application Japan, Dec. 21, 1992, 4-092128[U]
Int. Cl.[6] B62D *55/088*
U.S. Cl. 305—11 20 Claims



1. An end face sealing assembly device for sealing an annular space between a bushing and a member where the member contains an annular counterbore with a generally axial side wall and a generally radial end wall, and the bushing has a bushing end face facing the annular counterbore, said end face sealing assembly device being positionable in the annular counterbore and comprising:

an annular support ring having an axial direction side member and a radial direction side member joined together so as to form an annulus having an approximately L-shaped cross section in a radial plane;

an annular seal ring having a backside and a frontside with an annular lip formed on said frontside, said annular seal ring being in contact with and held by said radial direction side member so that said annular lip forms an annular seal surface with the bushing end face when said annular lip comes into contact with the bushing end face; and

an annular load ring positioned so as to apply a pressure to the backside of said seal ring toward the bushing end face, said annular load ring having a periphery comprising:

an outer annular contact surface which contacts the generally axial wall of the annular counterbore,

an annular peripheral front surface formed as a curved surface extending from the outer annular contact surface to the backside of the seal ring,

an annular peripheral rear surface formed as a combination of a generally linear inclined annular surface and a generally curved annular surface, with the generally linear inclined annular surface extending from the generally radial end wall of the annular counterbore toward the support ring, and the generally curved annular surface extending from the linear inclined annular surface to the axial direction side member of the support ring, and

an inner annular contact surface in contact with the support ring and the seal ring and extending from a front end of the generally curved annular surface to a front end of the annular peripheral front surface,

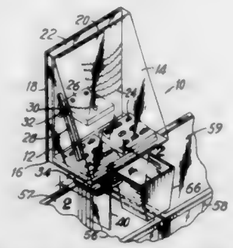
the load ring being adapted to be compression-deformed to provide a uniform bulge without irregularities when the end face sealing assembly device is compressed between the bushing end face and the generally radial end wall of the annular counterbore.

5,390,998

DISPLAY CASE FOR JEWELRY

Kenneth Friedman, New York, N.Y., assignor to Charles Wolf & Sons, Inc., New York, N.Y.

Filed Apr. 26, 1993, Ser. No. 53,999
Int. Cl.[6] A47F *3/00, 9/00*
U.S. Cl. 312—117 9 Claims



1. A jewelry display case for elevated mounting to a floor display cabinet, having a substantially horizontal countertop, said display case comprising an enclosure for exhibiting merchandise, said enclosure being defined by a base member and at least one wall extending upwardly from the base member, pedestal means for supporting the enclosure spaced above the countertop, said pedestal means defining an upper flange and a lower flange, said upper flange being secured to the base member, said lower flange being adapted for placement on the countertop, said pedestal means further including stabilizer means extending from the lower flange, said stabilizer means being substantially coincidental to a longitudinal axis of the pedestal means extending perpendicular to a horizontal plane defined by the lower flange, said stabilizer means further being positionable below the countertop for clampable engagement at a juncture between two contiguous display cabinets to releasably secure the display case.

5,390,999

FOLDING BENCH

A. Clayton E. Fuller, 2 Pine Tree Dr., Buzzards Bay, Mass. 02532

Filed Dec. 22, 1992, Ser. No. 995,036
Int. Cl.[6] A47B *83/00*
U.S. Cl. 312—235.5 18 Claims

1. A folding bench comprising:

a first surface having first surface support girders;

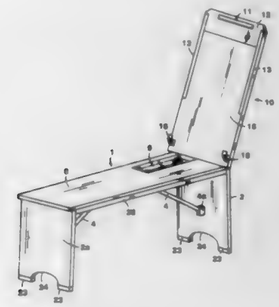
first and second support members selectively positionable in a first extended support position generally perpendicular to said first surface and in a second retracted support position generally parallel and adjacent to said first surface;

a second surface selectively positionable in a first extended surface position forming a generally obtuse angle relative to said first surface and in a second retracted surface position generally parallel and adjacent to said first surface;

said second surface connected to said first surface with a first

mechanism and connected to said first support member with a second mechanism; and

a third mechanism arranged to stabilize said support members in said first extended support position and allow said support members to assume said second retracted support position,



wherein said third mechanism comprises support member stabilizing rods pivotally connected to said support members and having rod ends resembling fangs,

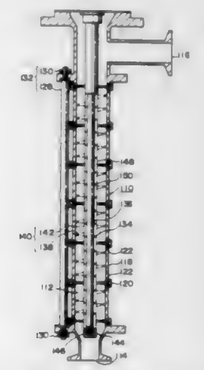
and a channel member attached to said first surface and formed with openings accommodating said rod ends.

5,391,000

MIXING APPARATUS

Toru Taniguchi, Tokyo, Japan, assignor to Reica Corporation, Tokyo, Japan

Continuation of Ser. No. 978,408, Nov. 18, 1992, abandoned, which is a division of Ser. No. 666,670, Mar. 7, 1991, Pat. No. 5,178,461. This application May 25, 1994, Ser. No. 249,070
Claims priority, application Japan, Mar. 7, 1990, 2-55785; Jan. 17, 1991, 3-4004
Int. Cl.[6] B01F *11/00*
U.S. Cl. 366—332 5 Claims



1. A mixing apparatus for agitating and mixing fluids together, said apparatus comprising:

a casing through the interior of which fluids pass;

a stationary vane fixedly mounted in said casing and extending inwardly from an inner wall of said casing, said stationary vane comprising a plurality of inwardly extending plate-like members disposed on said inner wall of said casing and spaced axially away from one another at a predetermined distance;

an agitator movably disposed within said casing, said agitator including a shaft and a fixed vane mounted thereon around the circumference of said shaft, said fixed vane comprising a spiral vane having openings formed therein, each of said openings located out of phase relative to each other without overlapping in the axial direction; and

a source of oscillation connected with said shaft to oscillate said agitator in the axial direction, whereby said fixed vane can be oscillated while permitting fluids to pass through said casing, thereby creating a relative motion between said fixed and stationary vanes so as to agitate and mix the fluids together,

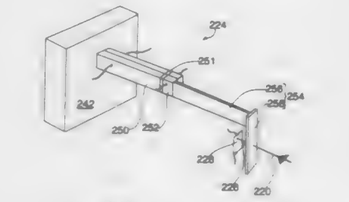
wherein each of said plate-like members having an opening formed therein to permit the passage of both the fluids and a portion of said fixed vane, said opening of each of said plate-like members of said stationary vane comprising a central aperture permitting said shaft of said agitator to pass therethrough and a slit-like aperture permitting the passage of said fixed vane therethrough.

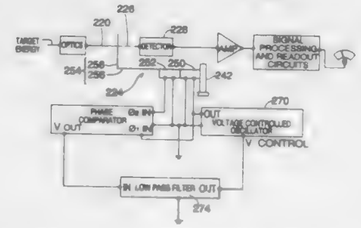
5,391,001

THERMOMETER FOR REMOTE TEMPERATURE MEASUREMENTS

Robert E. Rupert, South Dennis; Norman C. Anderson, Chatham, and Morris Weiss, N. Harwich, all of Mass., assignors to Infratemp, Inc., South Dennis, Mass.

Filed Nov. 10, 1993, Ser. No. 149,864
Int. Cl.[6] G01J *5/08;* G01K *1/00*
U.S. Cl. 374—130 8 Claims





1. An instrument for measuring the temperature of an object from infrared radiation emitted by the object, comprising:

a radiation detector adapted to generate an electrical output in response to radiation impinging thereon;

means for forming and directing a beam of radiation against said detector from the infrared radiation emitted by the object;

a temperature indicator connected to said detector for converting the electrical output of said detector into a display representative of the temperature of said object;

a modulator disposed in a path of said beam and vibrated in and out of said path to convert said beam into a series of pulses,

said modulator having a resonant frequency, and including a primary piezoelectric element adapted to vibrate when subjected to driving signals at a frequency related to the resonant frequency of said modulator, and a secondary piezoelectric element connected with said primary piezoelectric element to vibrate with said primary element, said secondary piezoelectric element being electrically insulated from said primary piezoelectric element; and

a circuit coupled to said primary and secondary piezoelec-

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tric elements and operating to provide the driving signals to said primary element,

said secondary piezoelectric element being responsive to vibrations of the primary piezoelectric element to generate a reference signal indicative of the phase and frequency of said primary piezoelectric element,

wherein the reference signal is input to the circuit to lock said circuit at the resonant frequency of said modulator.

5,391,002

HYDROSTATIC RADIAL POCKET BEARING FOR A SERVO CYLINDER

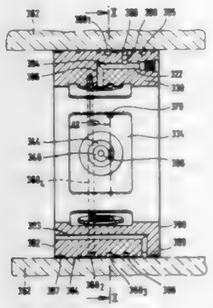
Karl-Heinz Eigenbrod, Gemünden, Germany, assignor to Mannesmann Rexroth GmbH, Germany

Continuation of Ser. No. 872,394, Apr. 23, 1992, abandoned. This application Jun. 9, 1994, Ser. No. 257,581

Claims priority, application Germany, Apr. 25, 1991, 4113540; Apr. 15, 1992, 4212630

Int. Cl.[6] F16C *32/06*

U.S. Cl. 384—12 44 Claims



1. A hydrostatic radial pocket bearing for an axially moveable servo cylinder for receiving transverse forces acting on a piston rod thereof which projects from a working cylinder thereof, comprising an even number of bearing pockets which are uniformly distributed over the bearing periphery and which are fed from a source of pressure fluid by way of associated preliminary throttles connected to pressure supply conduits which are at pump pressure and by way of an associated connecting conduit which is at an intermediate pressure, characterized in that the preliminary throttles (**46**; **146**; **146'**; **246**) are formed by a bearing gap between a supply orifice (**48**; **148**; **248**; **396**) and at least one outlet groove (**44**; **144**; **244**; **344**) which is in the form of a depression defined in surrounding relation to said supply orifice, and a pressure drop of the pressure fluid flow axially away from the bearing pocket (**34**; **134**; **234**; **334**) is different on both sides, an axial length of a guiding surface of said piston rod within said cylinder on each side of said bearing pocket assembly being adapted to a pressure prevailing on said respective side of said piston.

5,391,003

ROLLING GUIDE UNIT

Yasumasa Ooya, Gifu, Japan, assignor to Nippon Thomson Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 40,030

Claims priority, application Japan, Mar. 31, 1992, 4-103826

Int. Cl.[6] F16C *31/06*

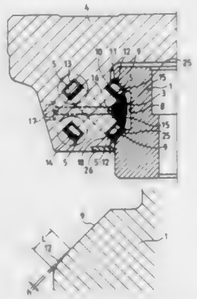
U.S. Cl. 384—44 13 Claims

1. A rolling guide unit comprising:

a first raceway body having first raceway surfaces formed on the sidewalls thereof;

a second raceway body having second raceway surfaces at a position facing the first raceway surface, the second raceway body being slidable relative to the first raceway body; and

cylindrical rolls rollable between the first raceway surfaces of the first raceway body and the second raceway surfaces of the second raceway body;



wherein end portions of the first raceway surfaces, or the second raceway surfaces, whichever are loaded, are on a side against which the cylindrical rolls are pressed, and wherein the end portions are crowned to make the surfaces of the end portions curved, whereby stress concentration is avoided over the end portions.

5,391,004

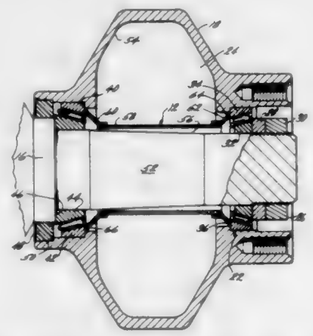
HUB SEAL ASSEMBLY

Stanley E. Matczak, Ellington, and Joseph A. Matczak, Talcottville, both of Conn., assignors to Seals-It, East Hartford, Conn.

Filed Jan. 15, 1993, Ser. No. 5,483

Int. Cl.[6] F16C *33/78*

U.S. Cl. 384—477 26 Claims



1. A seal assembly for providing a seal about a shaft having a pair of spaced apart bearings disposed thereon comprising:

an elongated cylinder disposed about the shaft; and

flexible sealing means for sealing affixed to said elongated cylinder at about each end thereof, each of said sealing means engaging a corresponding one of the bearings, each of said sealing means comprising,

a cylindrical portion attached to a corresponding one of said ends of said elongated cylinder, and

a conical portion depending from said cylindrical portion and extending away from said corresponding one of said ends of said elongated cylinder.

5,391,005

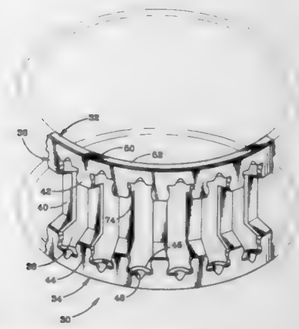
BEARING CAGE WITH DEPRESSED SLOT END

Richard L. Alling, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Mar. 30, 1993, Ser. No. 40,399

Int. Cl.[6] F16C *33/54, 33/46*

U.S. Cl. 384—575 8 Claims



1. A roller bearing cage comprising:

first and second end rims axially spaced apart with respect to a common axis, each of the end rims having an axially outward end, an axially extending side portion, and a plurality of periodic depressions axially spaced from the outward ends; and

crossbars joining the first and second end rims such that roller receiving slots are formed therebetween, the crossbars having laterally outward portions and a central portion radially offset with respect to the laterally outward portions;

the crossbars being configured such that a roller within one of the roller receiving slots is retained in the radial directions by engagement with the central portion and with the laterally outward portions;

the periodic depressions being located between the crossbars, one at each end of the roller receiving slots, such that a roller within one of the roller receiving slots is retained in the axial directions by engagement with the periodic depressions at each end of the roller receiving slot.

5,391,006

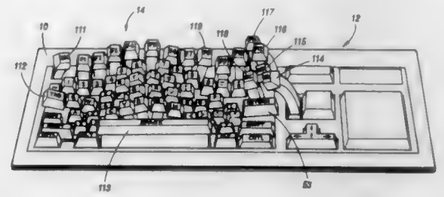
SNAP ON ERGONOMIC KEYCAPS

Paul Danziger, 11807 Bunker Hill Cir., Houston, Tex. 77024

Filed Aug. 20, 1993, Ser. No. 109,529

Int. Cl.[6] B41J *5/16*

U.S. Cl. 400—488 4 Claims



1. A keyboard with a plurality of keys adapted to electronically transmit keystroke information, said keyboard comprising:

a keypad where each keycap is fixed and nonadjustable and the "cap lock" keycap is higher than the "A" keycap, the "A" keycap is higher than the "S" keycap, the "D" keycap is higher than the "S" keycap, the "F" keycap is higher than the "D" keycap, the "G" keycap is higher than the "F" keycap, the "G" keycap is substantially the same height as the "H" keycap, the "H" keycap is higher than the "J" keycap, the "J" keycap is higher than the "K" keycap, the "K" keycap is higher than the "L" keycap, the "L" keycap is higher than the ":/;" and "'/"" keycaps and the "return" is higher than the ":/;" and "'/"" keycaps.

5,391,007

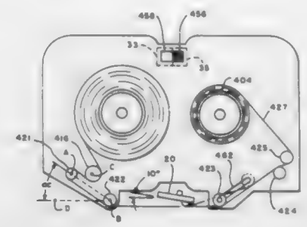
THERMAL RIBBON CASSETTE HAVING ADJUSTABLE GUIDE POSTS

Walter J. Kulpa, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 21, 1992, Ser. No. 993,995

Int. Cl.[6] B41J *35/28*

U.S. Cl. 400—208 4 Claims



1. An improved thermal ribbon cassette for detachably mounting to a thermal printing apparatus having a plurality of thermal print elements aligned along one surface of said thermal print head, said thermal ribbon cassette having a housing containing an opening, a plurality of posts some of which posts are located to each side of said opening, a take-up spool and a supply spool rotatively mounted in said housing, and a thermal ink transfer ribbon supply wrapped around said supply spool and extending to said take-up spool threaded from and between said posts and extending through said opening, said opening receiving said thermal print head therein such that said transfer ribbon traverses below the print element of said thermal print head, wherein said improvement comprises: means for selectively setting the angle of said thermal ink transfer ribbon relative to the alignment of said print head from one of a first angle in the direction of said take-up spool of said cassette opening and a second angle in the direction of said take-up spool of said cassette opening, said means for selectively setting comprising a slot, one of said posts being mounted in said slot such that setting the position of said one of said posts within said slot sets the angle of said ribbon relative to said print head.

5,391,008

PRINTER HAVING CONTINUOUS SHEET SUPPLY MECHANISM AND AUTOMATIC CUT SHEET SUPPLY MECHANISM

Makoto Hattori, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 29, 1993, Ser. No. 128,104

Claims priority, application Japan, Oct. 12, 1992, 4-273158; May 20, 1993, 5-118408

Int. Cl.[6] B41J *11/58*

U.S. Cl. 400—605 20 Claims

1. A printer including a printing section capable of printing on both continuous sheet and cut sheet paper, comprising:

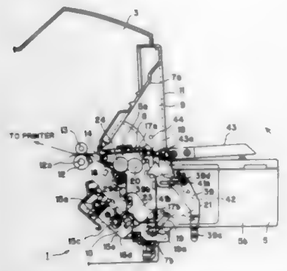
a printer housing containing the printing section, a pivot shaft being provided to tile printer housing;

continuous sheet supply means for supplying continuous sheet to the printing section;

an automatic sheet supply mechanism supported by the pivot shaft and pivotable between a cut-sheet supply position, for supplying one cut sheet at a time to the printing sec-

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tion, and a separation position, for separating the automatic sheet supply mechanism from the continuous sheet supply means and for providing an open space therebetween; and



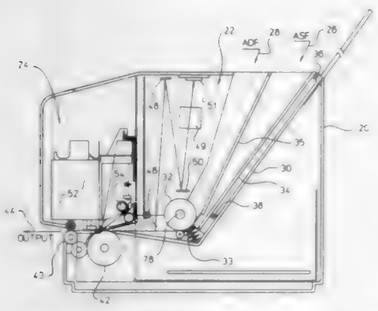
a fixing means for fixing the automatic sheet supply mechanism in the separation position.

5,391,009

SINGLE MOTOR ACTUATION FOR AUTOMATIC STACK FEEDER SYSTEM IN A HARDCOPY DEVICE

Samuel A. Stodder, Encinitas, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 29, 1993, Ser. No. 144,943
Int. Cl.[6] B41J *11/50*
U.S. Cl. 400—605 20 Claims



1. A hardcopy device for feeding pages from a stack of sheets or documents into a paper path for processing by the hardcopy device, comprising:

an input feeder integrated into the hardcopy device for holding the stack in an angled position with a leading edge of the pages at a lower position than a trailing edge of the pages;

pick means in close proximity to said input feeder;

pressure plate means movably attached to said input feeder; and

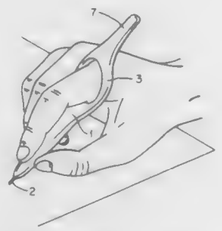
a single drive motor coupled through a gear mechanism to said pick means and said pressure plate means, for driving said pick means at a predetermined rate as well as for moving said pressure plate means between an engagement position during the picking of a page and a dis-engagement position.

5,391,010

WRITING DEVICE

Alexei E. Gorbunov, ul. Gamalei d.10,kv.24, Moscow 123098, Russian Federation

PCT No. PCT/RU92/00175, § 371 Date Jul. 7, 1993, § 102(e) Date Jul. 7, 1993, PCT Pub. No. WO93/13949, PCT Pub. Date Jul. 22, 1993
PCT Filed Sep. 21, 1992, Ser. No. 87,779
Claims priority, application Russian Federation, Jan. 13, 1992, 5022490/12
Int. Cl.[6] B43K *23/00, 25/00*
U.S. Cl. 401—8 6 Claims



1. A writing device having a support point adapted for supporting a finger, the device comprising:

a body with a longitudinal axis and having a writing element at one end thereof and an integrally formed elliptical ring at an opposite end thereof, the support point being located at said opposite end where said body and said elliptical ring meet;

said elliptical ring being formed within a plane and including a major axis disposed at an angle with respect to said longitudinal axis;

a projection-shaped counterweight connected to said elliptical ring and located on a side of said elliptical ring plane opposite said body; and

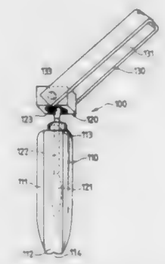
wherein said counterweight is positioned and weighted so that a center of gravity of the device is located at the support point whereby the writing device is devoid of torque during use.

5,391,011

APPLICATOR FOR MAKEUP OR FOR A HAIR-CARE PRODUCT

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Feb. 2, 1994, Ser. No. 190,526
Claims priority, application France, Feb. 9, 1993, 9301398
Int. Cl.[6] A45D *40/22*
U.S. Cl. 401—126 11 Claims



1. Applicator for a cosmetic product to be applied, comprising:

a reservoir containing the product;

a removable cap closing a mouth of said reservoir, said cap having a closure bearing surface to interact with a seat at the mouth of the reservoir;

an application member connected to an end of a rod extending only from inside the cap; and

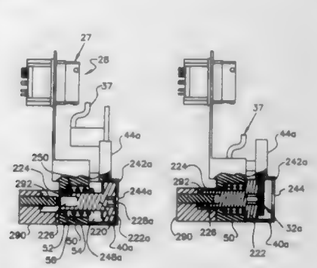
a handle for the cap articulated about an axis of the cap and pivotable between a folded-up compact position against the reservoir and an extended position at an angle to the reservoir, said handle including at least one arch of which the dimensions are such that, in the folded-up position, said arch surrounds said reservoir, said arch being equipped with a locking stop interacting with a base of said reservoir, the interaction holding said closure bearing surface of said cap in a leaktight manner on said seat.

5,391,012

MECHANICAL-ELECTRICAL SAFETY LOCKING SYSTEM

William M. Blenkush, Elk River; Harry R. Brown, Buffalo; Michael A. Knipfer, and Wade D. Palashewski, both of Maple Grove, all of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Continuation of Ser. No. 993,347, Dec. 18, 1992. This application Jun. 7, 1994, Ser. No. 255,152
Int. Cl.[6] H01R *13/30*
U.S. Cl. 403—4 6 Claims



6. Apparatus for use with a chassis having a connector thereon to which connection is made in a first direction and a support frame for mounting the chassis, the apparatus operable to permit connecting access to the connector in the first direction only when the chassis is mounted on the support frame, comprising:

a moveable fastening member on the chassis which, in a first position, is connected to the support frame to hold the chassis thereto, and, in a second position, is disconnected from the support frame to permit removal of the chassis; and

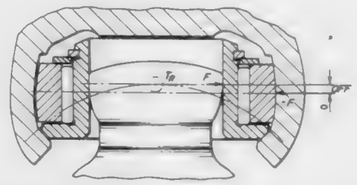
a blocking member mounted on said chassis and moveable in a second direction transverse to the first direction from a blocking position in which the moveable member blocks connecting access to the connector and is prevented from moving by the fastening member in the second position to an un-blocking position in which access to the connector is permitted, the movement of the moveable member in the second direction from the blocking position to the un-blocking position being permitted by movement of the fastening member from the second position to the first position.

5,391,013

TRIPOD JOINT

Michael Ricks, Bad Vilbel; Norbert Hofmann, Rodgau; Friedhelm John, Hanau-Steinheim; Werner Krude, Neunkirchen-Wolperath; Dieter Jost, Troisdorf; Peter Harz, and Jörg Bensinger, both of Hennef, all of Germany, assignors to Lohr & Bromkamp GmbH, Offenbach am Main and GKN Automotive AG, Sieburg, both of Germany

Filed Sep. 10, 1992, Ser. No. 943,331
Claims priority, application Germany, Sep. 11, 1991, 4130183
Int. Cl.[6] F16D *3/00*
U.S. Cl. 403—59 20 Claims



1. A tripod joint comprising

an outer joint part with three circumferentially distributed, axis-parallel recesses forming circumferentially opposed tracks;

an inner joint part having a star-shaped cross-section and three circumferentially distributed arms engaging the recesses in the outer joint part, said inner and outer joint parts defining a joint axis;

roller assemblies supported on said arms, each including a roller carrier assembly and a roller, with at least the roller, relative to the respective arm, arranged axially movable relative to the arm axis and angularly movably pivotable relative to the arm axis;

spherical faces at the arms or at the roller carrying assembly of the respective roller assembly and internally spherical or internally cylindrical counter faces of the roller carrier assembly or the rollers, on the one hand, and the outer surfaces of the rollers and the track surfaces in contact therewith, on the other hand, when torque is transmitted with the joint being in a non-articulated position, a first resultant of the forces acting from the inner joint part directly on the roller between the arm faces or roller assembly faces at a shorter perpendicular distance from the joint axis than a second resultant of the counter forces acting at the outer joint part on the roller between the internally spherical or internally cylindrical counter faces of the roller carrier assembly so that the first resultant is offset from the second resultant, and so that, when torque is introduced into the joint, at any angle of articulation in the operating range, the roller is subject to a tilting moment which tilts the roller inwardly towards the joint axis around the contact faced at the loaded track.

5,391,014

UNIVERSALLY ROTATABLE NIPPLE FOR A BRAKE CABLE

Chao F. Chen, Taichung Hsien, , assignor to Kalloy Industrial Co., Ltd., Taichung Hsien,

Filed Sep. 14, 1993, Ser. No. 98,848
Int. Cl.[6] F16C *1/14*
U.S. Cl. 403—74 2 Claims

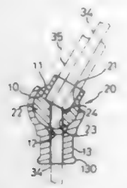
1. A universally rotatable nipple for a brake cable and comprising:

a socket means having a hemispherical body which defines a hemispherical cavity therein and a first tube extending from a peripheral portion of said hemispherical body, said first tube being in communication with said hemispherical cavity via a first hole and having a plurality of slots defined in the periphery of said first tube from a distal end

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portion thereof to nearly the periphery of said hemispherical body, thereby defining a plurality of flexible plates; and

a rotatable means including a sphere and a second tube extending from a peripheral portion of said sphere, said second tube defining a first passage therein which further extends inward to a center of said sphere, said sphere including a second passage internally defined therein which is in communication with said first passage, said



first passage having a diameter greater than that of said second passage, said first passage and said second passage intersecting at an obtuse angle along respective longitudinal directions thereof;

whereby, said sphere is rotatably received in said hemispherical cavity of said hemispherical body of said socket means with said second tube being in communication with said first tube thereby allowing a brake cable to be guided from said second tube through said first tube.

5,391,015

PAVEMENT MARKERS WITH SILICONE ADHESIVE

James M. Kaczmarczik, Saint Paul; James E. Lasch, Oakdale; Gregory F. Jacobs, Woodbury, all of Minn.; David C. May, Roberts, Wis., and Daniel J. Willie, Minneapolis, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 978,451, Nov. 18, 1992, Pat. No. 5,310,278, which is a continuation of Ser. No. 662,773, Feb. 28, 1991, abandoned. This application Sep. 10, 1993, Ser. No. 119,876

Int. Cl.[6] E01F *9/06, 9/08*

U.S. Cl. 404—14 20 Claims



1. A pavement marker having an upper surface useful as a pavement marking indicium and comprising a bottom layer of polyorganosiloxane pressure-sensitive adhesive.

5,391,016

METAL BEAM RAIL TERMINAL

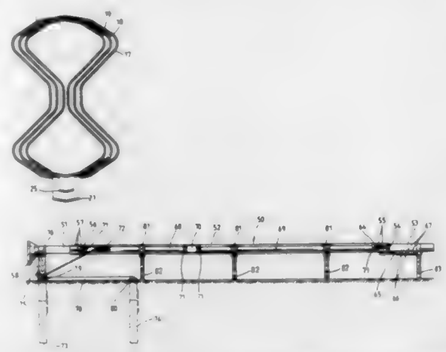
Don L. Ivey, Bryan; Carl E. Buth, Wellborn; King K. Mak, San Antonio, and Dean Sicking, College Station, all of Tex., assignors to The Texas A&M University System, College Station, Tex.

Filed Aug. 11, 1992, Ser. No. 928,270

Int. Cl.[6] E01F *13/00*

U.S. Cl. 404—6 20 Claims

1. A terminal including a downstream end for attachment to a roadside or median guardrail or barrier, said terminal also including an upstream end to receive and attenuate vehicle impacts, said terminal comprising a telescoping assembly of nested, elongated tubular-like segments including an inner segment and a cross-sectionally larger outer segment that concentrically and telescopically receives and envelops the



inner segment in response to pressure applied to the terminal's upstream end.

5,391,017

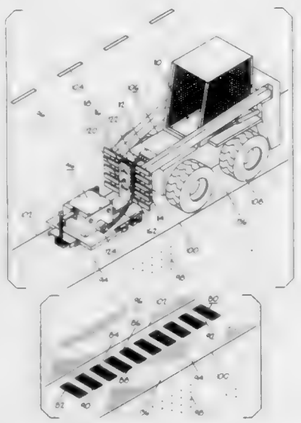
CONTINUOUS MOVING DEPRESSION CUTTING TOOL FOR HIGHWAY USE

Glen E. Thomas, and Amona D. Thomas, both of P.O. Box 1083, Moore Haven, Fla. 33471

Filed Sep. 10, 1993, Ser. No. 118,961

Int. Cl.[6] E01C *23/09*

U.S. Cl. 404—90 15 Claims



1. A machine for continuous cutting of depressions in an asphalt road surface mounted to a self propelled vehicle comprising;

a) at least one cutting head, said cutting head having a plurality of teeth, a predetermined diameter, and a predetermined length,

b) rotation generation means to facilitate rotation of said cutting head,

c) alignment means to align said cutting head to said asphalt road surface,

d) drive means to propel said self propelled vehicle,

e) control means to manage said drive means,

f) at least one wheel, said wheel in contact with said surface of said asphalt road and rotating in a synchronized manner to said surface,

g) at least one shaft, said shaft to partially support said cutting head,

h) offset means to install said shaft eccentrically in said wheel,

i) a pivot point, said pivot point on opposing side of said cutting head from said wheel, wherein said pivot point cooperates with said at least one wheel for partially supporting cutting head,

whereby the machine would move along the desired path of the series of cuts and the wheel with the off center shaft would cause the cutting head to pivot down and into contact with the surface and up and out of contact with the surface causing a series of cuts to be made.

5,391,018

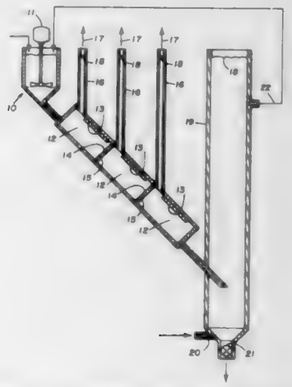
PROCESS FOR WASHING CONTAMINATED SOIL

Harry W. Parker, Lubbock, Tex., assignor to Toxic Environmental Control Systems, Inc., Lubbock, Tex.

Filed Apr. 2, 1992, Ser. No. 862,422

Int. Cl.[6] B09B *3/00*

U.S. Cl. 405—128 24 Claims



1. A process for removing contaminants from particulate materials, comprising:

mixing contaminated particulate materials with water;

converting the contaminated particulate materials and water mixture into a water slurry;

energizing the water slurry to volume boiling conditions by causing an electrical current to flow through the slurry of water and contaminated particulate materials;

initiating particulate nucleated boiling and dislodging Of contaminants from the particulate by steam bubble formation on the contaminated particulate surface;

separating the particulate materials which are substantially free of contaminants from the slurry; and

recovering the contaminants from the slurry.

5,391,019

ENVIRONMENTAL ENCLOSURE STRUCTURE AND METHOD OF MANUFACTURE

J. P. Pat Morgan, P.O. Box 1089, St. George, Utah 84771

Continuation-in-part of Ser. No. 757,813, Sep. 11, 1991, Pat. No. 5,209,603. This application May 6, 1993, Ser. No. 58,483

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

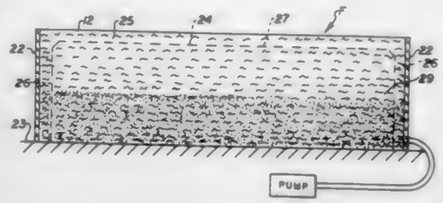
Int. Cl.[6] B65G *5/00*

U.S. Cl. 405—128 28 Claims

1. An improved environmental enclosure structure for containing and protecting hazardous materials, explosives, telecommunications equipment, and the like, the improved environmental enclosure structure comprising:

a cement-based fiber composite bottom wall, at least one cement-based fiber composite side wall, and a top wall defining an interior volume configured to receive and enclose hazardous materials, explosives, telecommunications equipment, and the like; and

said cement-based fiber composite bottom wall and said



cement-based fiber composite side wall each containing a uniform continuous mass of individual interlocked fibers completely infiltrated by and embedded in a cementious matrix mixture of Portland cement, fly ash, water, and a water-reducing superplasticizer and having a fiber volume density in the range of from about 4% to about 25%.

5,391,020

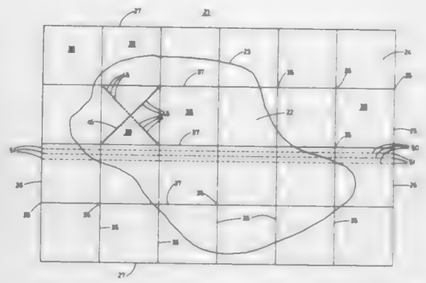
METHOD FOR REMOVING A SUBSTANCE FROM A MEDIUM

John B. Williamson, Visalia, Calif., assignor to SDVC, Inc., Visalia, Calif.

Filed May 6, 1992, Ser. No. 879,838

Int. Cl.[6] B09B *3/00*

U.S. Cl. 405—129 16 Claims



1. A method of removing contaminants from soil or the like, comprising the steps of

selecting a treatment area at any location encompassing soil which is believed to contain contaminants to be removed;

preparing the treatment area for planting by cultivating the soil therewithin, but without forming a barrier beneath said soil;

demarking said treatment area into test areas covering substantially all of said treatment area;

testing said test areas to locate the contaminants therewithin so as to determine the contaminated area of said treatment area containing the contaminants to be removed;

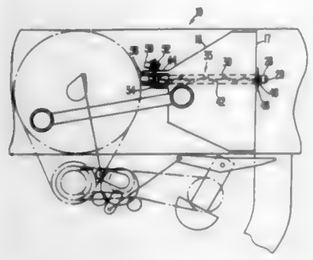
growing carrot plants in said treatment area throughout the contaminated area in a multiplicity of closely spaced rows for the absorption of contaminants from the soil;

harvesting substantially all of said carrot plants from the treatment area; and

disposing of said carrot plants.

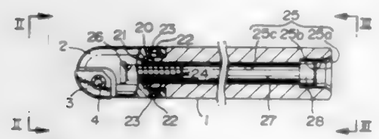
VOL 1171 ISS 3 FEB 21 1995 UMI

5,391,021
HAY BALER AERATOR
Velere D. Stromer, Klemme, and Harold R. Winston, Mason City, both of Iowa, assignors to Quality Hay of Iowa, Co., Mason City, Iowa
Division of Ser. No. 10,008, Jan. 27, 1993, Pat. No. 5,301,607.
This application Jan. 5, 1994, Ser. No. 177,412
Int. Cl.[6] B23B *41/00, 47/34, 51/04*
U.S. Cl. 408—67 **8 Claims**



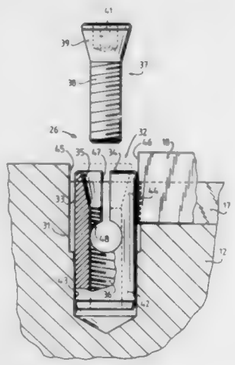
1. An apparatus for cutting and removing material from compressed bales of material such as hay or straw to form at least one hole therethrough comprising:
a cutter means for cutting and removing a plug of material from the bale;
a tubular body reciprocally mounted on a support structure and extending from said cutter means mounted thereto to permit material cut by said cutter means to pass therethrough; and
a removal means cooperating with said tubular body for removing said plug of material, wherein said cutter means is substantially conical in shape to allow expansion of the plug within said cutter means.

5,391,022
CUTTING TOOL
Masaaki Nakayama; Masayuki Okawa, and Junichi Saito, all of Ibaraki, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan
Division of Ser. No. 851,204, Mar. 13, 1992, Pat. No. 5,314,273.
This application Mar. 22, 1994, Ser. No. 215,578
Claims priority, application Japan, Mar. 13, 1991, 3-48462; Mar. 20, 1991, 3-16925
Int. Cl.[6] B23B *51/00*
U.S. Cl. 408—233 **9 Claims**



1. A cutting tool comprising:
a head segment rotatable around an axis thereof having a forward end portion having at least one cutting-insert receiving seat and a rearward end portion;
a shank segment rotatable around an axis thereof having a forward end portion adapted to be coaxially joined with said rearward end of the head segment and a rearward end portion adapted to be fixedly secured to a machine spindle;
an engaging hole coaxially formed on one of said segments, which is provided with at least two internal threads communicating between said hole and the external surroundings through a peripheral surface of said segment;
an engaging projection coaxially formed on other one of said segments and engagingly fitted into said hole;
clamp screws respectively threaded through each internal thread, in which bottom ends of said clamp screws are contacted with a surface of said engaging projection;
a through hole coaxially formed in said shank segment and said engaging projection;
an internal thread coaxially formed on a bottom face of said engaging hole; and
a clamp bolt coaxially passing through said shank segment and said engaging projection and engagingly fitted into said internal thread.

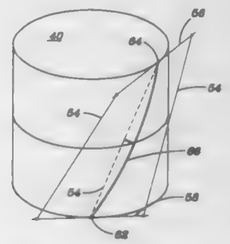
5,391,023
MACHINE REAMER
Andreas Baxteck, Oberer Schloesberg 6, 71686 Remseck, Germany
Filed Dec. 20, 1993, Ser. No. 170,583
Claims priority, application Germany, Dec. 22, 1992, 4243586
Int. Cl.[6] B23B *51/00*
U.S. Cl. 408—146 **6 Claims**



1. Machine reamer comprising
a main body with a blind bore and a guide slot with an end region,
a cutter arranged to be guided longitudinally in said guide slot,
a metallic stop pin having a head arranged to project into said end region of said guide slot to bear against said cutter to position said cutter in said guide slot,
clamping means for clamping fast said cutter in said guide slot, and
wedge means for expanding said head of said stop pin radially with fine adjustment to position said cutter in said guide slot with fine adjustment.

5,391,024
METHOD FOR MULTI-CRITERIA FLANK MILLING OF RULED SURFACES
Alan R. Levine, Westwwod, and Brad W. Amidon, Malden, both of Mass., assignors to Northern Research & Engineering Corporation, Mass.
Filed Mar. 31, 1994, Ser. No. 221,211
Int. Cl.[6] G06F *15/40*
U.S. Cl. 409—84 **7 Claims**

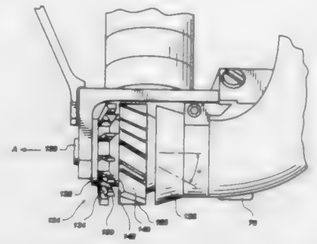
1. A method of determining machining instructions during machining of a workpiece using a machine having a cutter, the surfaces of the workpiece being defined by a plurality of guide curves, including the steps of:
determine a nominal flank milling machining instruction at an individual cutter location;
evaluate the intersection of the cutter and the workpiece surface to determine the cutter orientation and to determine the undercut;
modify the cutter orientation, evaluate the intersection of the cutter and the workpiece surface at a plurality of cutter orientations to determine the undercut, determine the cutter orientation having the minimum undercut;
at a first plurality of cutter locations, repeat the steps of: determining a nominal flank milling instruction at a cutter location; determining the cutter orientation and undercut; modifying the cutter orientation, determining a plurality of undercuts at the plurality of cutter orientations and determining the cutter orientation having the minimum undercut at the first plurality of cutter locations around the workpiece surface contour being machined;
using the plurality of cutter locations and orientations having minimum undercut, determine curves which fit the cutter orientation spherical coordinates, θ and ϕ;
for each individual cutter location, using the values θ from the θ curve fit, determine a value for ϕ' such that the cutter lies on a workpiece guide curve;
for each individual cutter location, using the values ϕ from the ϕ curve fit, determine a value for θ' such that the cutter lies on a workpiece guide curve;



evaluate the plurality of θ' values and the plurality of ϕ' values to select which curve fit results in the least motion of the other spherical coordinate;
using the selected curve fit, determine undercut at a second plurality of cutter locations intermediate to the first plurality of cutter locations;
compare the determined undercut to a predetermined value, for such locations where the determined undercut exceeds the predetermined value, add an additional location to the first plurality of cutter locations and repeat the steps of: using a first plurality of cutter locations to determine the cutter location having a minimum undercut; determining curve fits for the cutter orientation spherical coordinates; determining values for ϕ' and θ'; evaluating the ϕ' values and the θ' values to select the curve fit which results in the least motion of the other spherical coordinate; and determining the undercut at the second plurality of locations intermediate to the first plurality of locations;
for each of the plurality of first locations, determine the ratio of machine motion to workpiece motion;
compare the determined ratio to a predetermined ratio;
for locations where the determined ratio exceeds the predetermined ratio and the cutter ϕ spherical angle is less than a predetermined angle, modify the cutter orientation to reduce the ratio of machine motion to part motion.

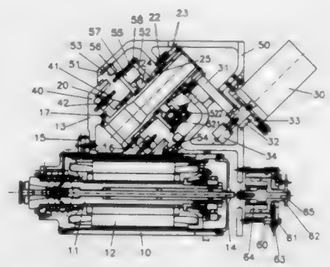
5,391,025
PROPELLANT GRAIN MACHINING DEVICE
Paul W. Hoekstra, Ogden, Utah, assignor to Thiokol Corporation, Ogden, Utah
Filed Apr. 21, 1992, Ser. No. 871,966
Int. Cl.[6] B23C *3/34*
U.S. Cl. 409—137 **20 Claims**

1. A tool for cutting away a portion of propellant grain along a path, comprising:
a bracket;
a primary cutter attached to said bracket, said primary cutter including a cutting blade configured for cutting away the portion of propellant grain along the path; and
a secondary cutter attached to said bracket, said secondary



cutter including at least one cutting blade arm positioned to make cuts through the portion of propellant grain along the path and configured to make cuts in the propellant grain at an angle to the cuts made in the propellant grain by said primary cutter, such that the portion of propellant grain is cut away in a plurality of pieces.

5,391,026
SPINDLE FOR VERTICAL-HORIZONTAL MACHINE TOOLS
Jinn-Fa Wu; Chyi-Liou Lin; Dong-Jou Shien, and Chun-Hung Huang, all of Hsinchu, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China
Filed Sep. 16, 1993, Ser. No. 122,908
Int. Cl.[6] B23C *1/12*
U.S. Cl. 409—201 **4 Claims**



1. An improvement of spindle for vertical-horizontal machine tools, said machine tools having horizontal and vertical datum lines, said improvement comprising:
a mounting and a mounting seat integrally fixed together;
a spindle having a mandrel and a built-in motor for driving said mandrel in rotation, and said spindle can be led by a rotating base in rotation, said spindle having a spindle head with a housing;
said rotating base being mounted on the housing of said spindle head and rotatably and slidably fit with said mounting seat, said rotating base having a rotating shaft which is at a 45° angle with respect to said spindle center line of said spindle head, and said horizontal and vertical datum lines of said machine tools;
said rotating shaft having defined therein a through passage to allow for power cable and various pipelines to pass therethrough and connect with an external power cable, said rotating shaft being located in the center of said rotating base and fixed attached thereto, said rotating shaft being connected to a piston, which receives a hydraulic

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pressure from an oil cylinder via an oil line to push said rotating shaft to move up and down;

a drive device for driving said rotating shaft in rotation indirectly by means of a belt to lead said spindle centrally rotating around said rotating shaft to cause said spindle mandrel to change into a vertical or horizontal manner; and

a locating device for holding said spindle in position and therefore ensuring said spindle mandrel to be accurately in a vertical or horizontal position;

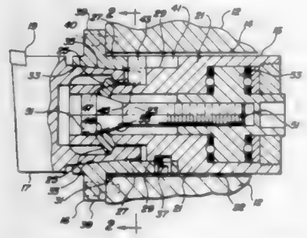
whereby said spindle mandrel can be directly driven by said built-in motor so as to allow said spindle to have improved operating speed and efficiency as well as simplified drive structure; further because said spindle pipelines are incorporated within said rotating shaft, said spindle is provided with improved operational facility and outlook.

5,391,027

MACHINE TOOL SYSTEM

Richard S. Green, Lapeer, Mich., assignor to Valenite Inc., Madison Heights, Mich.

Filed Mar. 28, 1994, Ser. No. 218,407
Int. Cl.[6] B23C *5/26;* **B23B** *31/02*
U.S. Cl. 409—233 **5 Claims**



1. A machine tool system comprising an annular clamping unit having an axis; a cutting tool holder insertable into said clamping unit; and a drawbar movable on said axis for operating said clamping unit; said clamping unit comprising an annular guide member having a multiple number of guide slots extending radially away from the clamping unit axis, individual wedge lock elements slidably mounted in said guide slots, and a sleeve having a telescopic fit on said annular guide member; said sleeve having an internal frusto-conical socket surface and a single axial key slot spaced from said socket surface; a flat drive key seated in said key slot, said key having an inner edge abutting said annular guide member to limit radial insertional movement of said key; said tool holder comprising a tubular section having an outer frusto-conical surface adapted to mate with said frusto-conical socket surface, and an inner annular lip surface adapted to mate with said wedge lock elements; said tubular section having an axial groove adapted to fit onto said flat key when the tool holder is inserted into the clamping unit whereby the tool holder has a predetermined position of adjustment in the circumferential direction; said drawbar having cam surfaces engageable with the wedge lock elements for moving said elements into said annular lip surface.

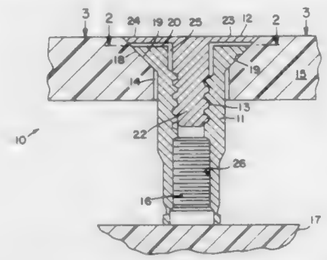
5,391,028

METHOD FOR REDUCING RADAR CROSS-SECTION OF AIRCRAFT FASTENERS, AND FASTENER ASSEMBLIES FOR USE THEREIN

James F. Charles, San Clty, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed May 12, 1993, Ser. No. 60,943
Int. Cl.[6] F16B *19/00, 35/02;* **B64C** *1/12*
U.S. Cl. 411—374 **12 Claims**

1. A fastener assembly comprising a lower bolt section for insertion into a surface bore of a surface plate to fasten the surface plate to a support member, and an upper shield bolt of composition different from that of said lower bolt section, said lower bolt section having a head adapted to be recessed below an outer surface of the surface plate, and having a receptive bore at a center of said head, and said upper shield bolt being engagable within the receptive bore of said lower bolt section



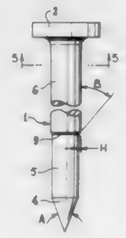
and having a thin flexible head portion adapted to engage the surface bore of the surface plate proximate said outer surface of the surface plate, and adapted to flex into planar conformity with the outer surface of the surface plate when the upper shield bolt is tightened into said lower bolt section to cover the surface bore and shield the lower bolt section.

5,391,029

FASTENING NAIL

Emanuel S. Fardell, Glen Haven, Australia, assignor to W. A. Deutsher Pty. Ltd., Moorabbin, Australia

Filed Jun. 28, 1993, Ser. No. 82,567
Int. Cl.[6] F16B *15/08*
U.S. Cl. 411—451 **26 Claims**



1. A nail, comprising:

an elongate shank;

a head provided at one end of said shank;

a pointed tip portion provided at an opposite end of said shank;

a substantially smooth penetrating portion of said shank extending from said tip portion to a location intermediate said tip portion and said head, and having a first predetermined diametrical dimension, for cooperating with said tip portion for forming a hole within a member having a first diametrical dimension corresponding to said first predetermined diametrical dimension of said penetrating portion of said shank;

a substantially smooth gripping portion of said shank extending from said location, intermediate said tip portion and said head, to said head, and having a second predetermined diametrical dimension which is greater than said first predetermined diametrical dimension of said penetrating portion of said shank for enlarging said hole formed within said member by said substantially smooth penetrating portion of said shank and thereby facilitating gripping of said nail within said member; and

a stepped, chamfered portion disposed at said location intermediate said tip portion and said head for interconnecting

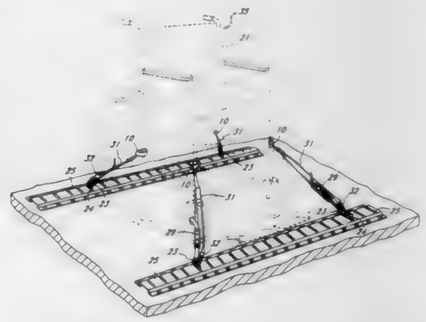
said penetrating portion, having said first predetermined diametrical dimension, and said gripping portion, having said second diametrical dimension, in a substantially abrupt manner so as to commence enlargement of said hole, initially formed within said member by said penetrating portion of said shank having said first predetermined diametrical dimension, and for permitting said gripping portion of said shank to complete enlargement of said hole within said member such that said hole formed within said member finally has a second predetermined diametrical dimension which corresponds to said second predetermined diametrical dimension of said gripping portion of said shank whereby said nail is securely gripped within said member as a result of said substantially smooth, gripping portion, having said larger, second diametrical dimension as compared to said smaller, first diametrical dimension of said penetrating portion of said shank, engaging sidewall portions of said member defining said hole within said member.

5,391,030

WHEELCHAIR RESTRAINT AFFIXMENT STRAPS

Ray Lee, 27082 Segovia Cir., Mission Viejo, Calif. 92691

Filed Oct. 14, 1992, Ser. No. 960,810
Int. Cl.[6] B60N *2/00;* **B60P** *7/08*
U.S. Cl. 410—12 **12 Claims**



1. A plurality of short straps affixed to a wheelchair to facilitate the tying down of a wheelchair to a floor or other structural portion of a vehicle for the purpose of restraining the wheelchair during starting and stopping of said vehicle, said plurality of short straps being affixed to the wheelchair frame, each of said short straps comprising:

a length of webbing having a first terminus and a second terminus which are overlapped by an amount equal to an overlapped distance, said length of webbing being sewn into a first loop by sewing along a sewn length along most of the overlapped distance thereby forming an exterior first terminus and an interior second terminus, and said sewn length being a first loop sewn length;

a smaller loop formed by sewing a length of the first loop together along a sewn distance and this sewn distance being a small loop sewn length and positioned so that as the first loop is flattened to form a flattened loop having the smaller loop at one end, and a larger loop at another end, the flattened loop comprising a smaller loop end and a larger loop end, the small loop sewn length is about the same distance from the smaller loop end as the first mentioned sewn length is from the larger loop end; and

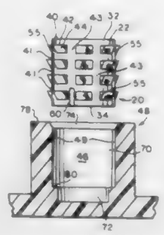
said larger loop end being capable of being encircled about a portion of the frame of the wheelchair and extended through the smaller loop to provide an attachment loop accessible to tie-down straps.

5,391,031

METHOD AND INSERT FOR CONNECTING COMPONENTS TO PLASTIC MEMBERS

James Medal, Cape Coral, Fla., assignor to Unimation, Inc., Ft. Myers, Fla.

Continuation-in-part of Ser. No. 887,722, May 22, 1992, Pat. No. 5,222,850. This application Jun. 29, 1993, Ser. No. 84,699
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[6] F16B *37/04, 39/02*
U.S. Cl. 411—82 **5 Claims**



1. In a plastic article, the combination comprising:

a first body made of plastic and having an interior surface and an exterior surface;

a second body made of plastic and having an interior surface and an exterior surface;

a first bore wall defining a bore in the first body;

a second bore wall defining a bore in the second body for alignment with the first bore wall when the interior surface of the first body is engaging the interior surface of the second body;

at least one plastic fastener for insertion into the respective first bore and into second bore to join the first body to the second body;

integral plastic projections projecting outwardly from the plastic fastener for compression by the first and second bore walls when the plastic fastener is forced into the first and second bores; and

the plastic of the projections in the fastener being integrally bonded to the plastic of the first body by bringing the protrusions engaging the first bore wall to a flowable condition to intermix and then to solidify to join the first body to the plastic fastener, the plastic of the projections in the fastener being integrally bonded to the plastic of the second body by bringing the protrusions engaging the second bore wall to a flowable condition to intermix and then to solidify and join the second body to the plastic fastener so that the first and second bodies are joined by a common plastic fastener.

5,391,032

REUSABLE POSITIVE BOLT LOCKING DEVICE

Michael Vassalotti, 2510 Halterbreak Ct., Herndon, Va. 22071

Filed Oct. 27, 1993, Ser. No. 141,515
Int. Cl.[6] F16B *39/04, 39/10, 39/12*
U.S. Cl. 411—214 **17 Claims**

1. A reusable positive locking device for a bolt shank end portion having threads of a certain first direction comprising

a) a locking element internally threaded to be screwed onto the shank end portion with threads of said first direction,

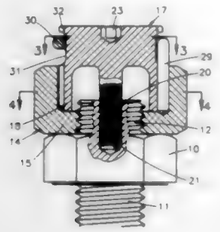
b) a crown element of generally cup shape having a rim positionable around the shank end portion,

c) elastically deformable biasing means fixed at one end to the inside of the crown element and threadable at its opposite end to the shank end portion with threads of a direction opposite said first direction so that upon turning of the crown element its rim engages the locking element and with an additional increment of turning the biasing

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means strains elastically to close up play among the shank end portion and the crown and locking elements, and

d) releasable detent means for selectively securing the lock-



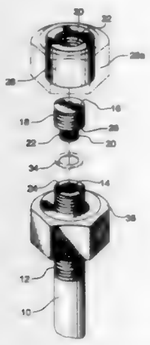
ing and crown elements together against relative rotation when the biasing means is in said elastically strained condition thus preventing rotation of both on the shank end portion.

5,391,033

NUT LOCK

Rodney M. Gibbons, 7305 Woodbine Avenue, Unit 345, Markham, Ontario, Canada L3R 3V7

Filed Mar. 1, 1993, Ser. No. 24,331
Int. Cl.[6] F16B *35/02, 39/28*
U.S. Cl. 411—263 5 Claims



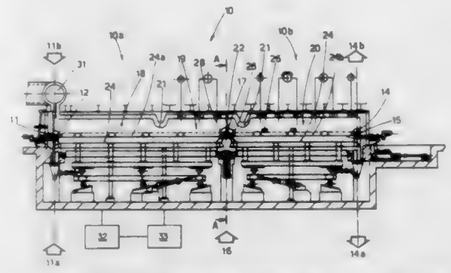
1. An apparatus for locking a threaded nut onto a threaded shank comprising a threaded shank having an external screw thread of a first pitch and a threaded bore at one end of the threaded shank, coaxial with the external screw thread, having an internal screw thread of a second pitch, both the said external screw thread and the internal screw thread having a same direction of rotation, a shank extension having an external pitch of the first pitch and a threaded projection coaxial therewith of the second pitch adapted to engage the screw threaded bore of the shank, a threaded nut adapted to engage the external threads of the shank and the shank extension, and a friction means adapted to engage the shank extension and the threaded nut whereby reverse rotation of the nut to remove the nut from the shank rotates the shank extension for jamming the nut on the threaded shank.

5,391,034

FURNACE WITH REFRACTORY LONGITUDIANL MEMBERS AND WITH CENTRAL CHARGING FOR HEATING AND STORING HOT PRODUCTS

Bruno Di Giusto, Udine, and Giampietro Benedetti, Campoformido, both of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed May 18, 1992, Ser. No. 884,177
Claims priority, application Italy, May 21, 1991, UD91 A 000085
Int. Cl.[6] C21D *1/00;* F27B *9/24*
U.S. Cl. 414—156 8 Claims



1. A furnace for heating and storing hot products, comprising:

a first furnace portion extending along a longitudinal axis having an inlet at an upstream end for introduction of a cold charge;

a second furnace portion extending along said longitudinal axis downstream of said first furnace portion and having an outlet at a downstream end for discharge of a heated charge;

a plurality of parallel spaced stationary longitudinal members extending along said longitudinal axis within said first and second furnace portions;

a first set of parallel spaced movable longitudinal members extending along said longitudinal axis and interposed between said plurality of parallel spaced stationary longitudinal members within said first furnace portion;

a second set of parallel spaced movable longitudinal members extending along said longitudinal axis and interposed between said plurality of parallel spaced stationary longitudinal members within said second furnace portion;

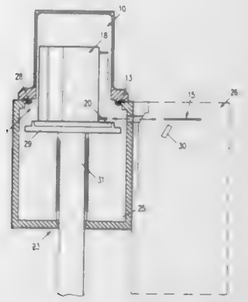
a central intake and guide channel extending substantially normal to said longitudinal axis and provided between said first and second furnace portions for introduction of charge from a continuous casting plant or from a previous hot process in a feed direction substantially normal to said longitudinal axis, a bed of said central intake and guide channel being defined by said plurality of parallel spaced stationary longitudinal members, and a width of said central intake and guide channel being defined by a space between facing downstream ends of said first set of parallel spaced movable longitudinal members and upstream ends of said second set of parallel spaced movable longitudinal members when said first and second sets of parallel spaced movable longitudinal members are in a raised position, said width of said central intake and guide channel being in proportion to a cross-section of said charge from said continuous casting plant or from said previous hot process, wherein sides of said downstream end of said first set of parallel spaced movable longitudinal members and sides of said upstream end of said second set of parallel spaced movable longitudinal members facing said feed direction comprise an initial bevelled segment thereby forming a funnel-like guide to position said charge.

5,391,035

MICRO-ENVIROMENT LOAD LOCK

Gordon P. Krueger, San Jose, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 973,112, Nov. 6, 1992, abandoned. This application Apr. 18, 1994, Ser. No. 229,071
Int. Cl.[6] B65B *21/02*
U.S. Cl. 414—217 4 Claims



1. A micro-environment load lock for coupling a sealed micro-environment container directly to a process chamber, comprising:

a load lock chamber in direct communication with at least one process chamber;

a port in communication with said load lock chamber;

a seal operable to accept and sealably couple said micro-environment container to said load lock chamber such that said micro-environment container, when opened, has an interior volume which is a sealed extension of said load lock chamber, and has an exterior surface which remains exposed to the ambient;

a base selectably operable to open and close said micro-environment container and to selectably draw a cassette of wafers from said micro-environment container through said port and into said load lock chamber, and operable to seal said port in the absence of said micro-environment container; wherein said base is operable to apply a pressure differential to said micro-environment container for drawing said cassette of wafers into said load lock chamber;

a lift indexer for coordinating operation of said base and said robot to effect transfer of said one wafer at a time between said cassette of wafers and said process chamber; and

a single robot for moving one wafer at a time between said cassette of wafers and said process chamber.

5,391,036

MAGNETIC TRANSFER DEVICE

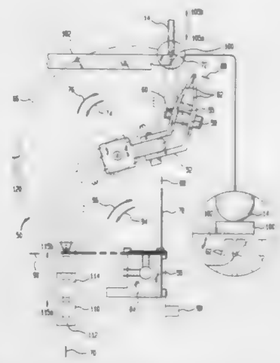
Tibor L. Bauer, Hopewell Junction; William A. Cavaliere, Verbank; David K. Green, Poughkeepsie; John P. Karidis, Ossining, and David C. Linnell, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 15, 1993, Ser. No. 31,520
Int. Cl.[6] B25J *15/06*
U.S. Cl. 414—225 16 Claims

1. A transfer device especially suitable for transferring a minute electronic component part along a transfer path from a first location and .position to a second location and position, the component part having critical facet sides of high integrity and at least one non-critical sider said device comprising:

means for engaging the component part non-destructively on the non-critical side thereof, said engaging means being moveable along the transfer path between a home position and a decoupling position and further having an addressing position located inbetween the home and decoupling positions, the addressing position being a position along the transfer path prior to an engagement position wherein the component part, being in the first location and position, is engaged by said engaging means, further wherein said engaging means comprises a magnet having a south pole end and a north pole end thereof and further comprises a pair of magnetic transfer tips in contact with the south pole end and north pole end of the magnet, respectively, said engaging means further being pivotally mounted upon a support for pivotal movement about the transfer path between the home and decoupling positions;

means for controlling said engaging means, in sequence, to i) move said engaging means from the home position to the



addressing position wherein said engaging means addresses the component part in the first location and position and ii) move said engaging means from the addressing position to the decoupling position whereby said engaging means engages the component part at the engagement position and transfers the same along the transfer path to the decoupling position; and

means for decoupling the component part from said engaging means at the second location and position, said decoupling means physically contacting the component part on edge portions of the non-critical side thereof, whereby the integrity of the essential facet sides of the component part is maintained.

5,391,037

RACK FOR SUPPORTING BOBBINS OF TEXTILE FILAMENT

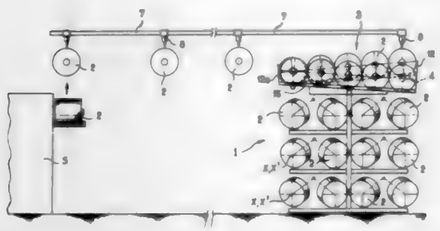
Robert Enderlin, Morschwiller; Clément Meyer, Bernwiller, and Antoine Chochol, Kingersheim, all of France, assignors to Superba, Mulhouse, France

Filed Sep. 28, 1992, Ser. No. 952,652
Claims priority, application France, Oct. 2, 1991, 91 12124
Int. Cl.[6] B65H *49/38*
U.S. Cl. 414—276 18 Claims

1. Rack (1) for supporting bobbins (2) of filament, located upstream of a textile installation towards which the filament unwound from said bobbins is conveyed, said rack (1) being made up of several superposed rows of bobbins (2) mounted on spindles (X–X'), characterized in that it has a zone (3, 24, 30) for intermediate storage of bobbins (2) in which said bobbins are placed next to each other on a support (4, 25), means (7, 8) being provided for automatically conveying the bobbins (2) to said intermediate storage zone (3, 24, 30), and said intermediate storage zone (3, 24, 30) extending above said rows of bobbins (2), said storage zone (3) comprising an inclined ramp (4) on which the bobbins (2) are placed next to each other, said ramp (4) being provided at its opposite ends with walls (12, 12a) forming stops for the bobbins (2), said ramp (4) being inclined in the direction of the row of bobbins and being horizontal in

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the directions at right angles to the latter, and a second ramp (15) extending next to the first ramp (4) and having a slope



opposite to that of the first ramp (4) corresponding to the top end of the second ramp (15).

5,391,038

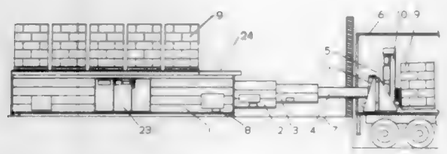
PALLET HANDLING ADJUSTABLE CONVEYOR

William T. Stewart, Zanesville, Ohio, assignor to Stewart-Glapat, Zanesville, Ohio

Continuation-in-part of Ser. No. 748,817, Aug. 22, 1991, abandoned. This application Jun. 10, 1993, Ser. No. 74,734

Int. Cl.[6] B65G *67/20, 1/06*

U.S. Cl. 414—392 2 Claims



1. A pallet handling adjustable conveyor for transferring palletized and non-palletized loads between a cargo vehicle and a cargo handling facility comprising:

a longitudinally adjustable boom system located in a cargo handling facility for extending into a cargo vehicle to be loaded or unloaded;

front-end load handling means attached to the adjustable boom system for lifting and placing palletized and non-palletized loads in a vehicle, the front-end load handling means comprising a mast; vertically movable means movably connected to the mast for moving said load handling means vertically; horizontal support members attached to the front-end load handling means; transverse movement means movably attached to the horizontal support members for transporting said front-end load handling means in a transverse direction in the cargo vehicle; and a rotating bearing means for supporting and permitting the vertically movable means to rotate three hundred sixty degrees in a horizontal plane; and

conveyor system means for bringing palletized and non-palletized loads to be loaded to the front-end load handling means for subsequent placement in the cargo vehicle;

the cargo vehicle having a floor and the front-end load handling means further comprising substantially non-load bearing rollers which come in contact with the floor of the cargo vehicle to be loaded or unloaded to provide torsional stability for the pallet handling adjustable conveyor only as loads are moved transversely along said horizontal support members and only when torsional forces are strong enough to twist the pallet handling adjustable conveyor from a horizontal position; and

wherein the movement of the longitudinally adjustable boom system and the movement of the front-end load handling means are controlled via logic means adapted to accept cargo vehicle dimensions for the purpose of determining the front-end load handling means position within the cargo vehicle to be loaded or unloaded, the pallet handling adjustable conveyor further comprising means for automatically measuring the cargo vehicle dimensions, storage means for storing cargo vehicle dimension information, the logic means adapted to automatically control the front-end load handling means in loading and unloading the cargo vehicle based on the cargo vehicle dimension information.

5,391,039

REFUSE LOADER ARM

Stephen W. Holtom, Greystanes, Australia, assignor to Matrik Pty. Ltd., Australia

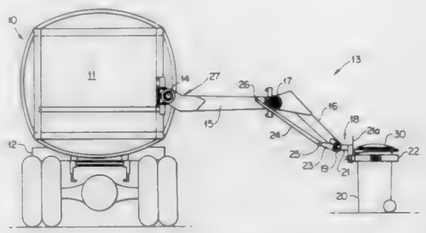
PCT No. PCT/AU91/00331, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO92/01612, PCT Pub. Date Feb. 6, 1992

Continuation of Ser. No. 842,161, May 26, 1992, abandoned. This PCT application Jul. 24, 1991, Ser. No. 124,858

Claims priority, application Australia, Jul. 24, 1990, PK 1362

Int. Cl.[6] B65F *3/06*

U.S. Cl. 414—408 16 Claims



1. A refuse loader arm assembly for reaching and grabbing a refuse bin from a rest position on the ground laterally spaced from a refuse storage chamber fitted with said refuse loader arm assembly, and for raising said bin to a dump position in which refuse in said bin falls by action of gravity into said refuse storage chamber, said arm assembly comprising:

a first limb having at one end thereof a pivotal connection at a first pivot point and being pivotally connected at an opposite end thereof to one end of a second arm assembly, said second arm assembly including, at an opposite end from said one end thereof, a grab assembly for grabbing said bin; and

a linkage means, coupled between said first limb and said grab assembly, for providing that said grab assembly is maintained at a fixed angular orientation with respect to said first limb independently of the angular orientation of said second arm assembly with respect to said first limb throughout raising of said bin, and providing that by pivoting said first limb said bin is disposed in said dump position so that said refuse in said bin is automatically dumped into said refuse storage container.

5,391,040

APPARATUS FOR HANDLING BOXES

Torbjörn Karlsen, Teknikvagen 119, Järfälla, Sweden 175 75

PCT No. PCT/SE90/00477, § 371 Date Jan. 3, 1992, § 102(e) Date Jan. 3, 1992, PCT Pub. No. WO91/00230, PCT Pub. Date Jan. 10, 1991

PCT Filed Jul. 3, 1990, Ser. No. 793,370

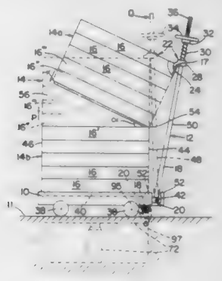
Claims priority, application Sweden, Jul. 3, 1989, 8902411-1; May 14, 1990, 9001725-2

Int. Cl.[6] B65G *21/02*

U.S. Cl. 414—469 6 Claims

1. Apparatus for use with mutually stacked boxes (16) of

which an upper edge (17) of a lower box (16') is in guiding engagement with a lower edge (19) of an overlying box (16''), wherein means (12) are provided for holding a stack of boxes (14) together; and said box-holding means (12) includes an elongated element (18), a gripping and holding device (22) mounted on a top portion of said element (18), spring means (30) operative to urge said device essentially downwards against an upper side edge (17) of an uppermost box (16) of the stack (14), pivot means (20) by means of which the element (18) is pivotally mounted on or adjacent to a support surface of a base (10) of said apparatus for carrying said stack (14), said



pivot means (20) being such as to enable the element (18) to be swung out from a first position (48) in which said element extends substantially parallel with one of the sides (44) of the stack (14), to a further position (50) at which an angle is formed at said pivot means (20) between said element (18) and said side (44), wherein said base (10) incorporates means (66, 67, 68, 70) which function to hold all of the boxes in said stack (14) together, and means (64, 71) for tipping the stack to enable all of the boxes (16) in said stack to be emptied simultaneously.

5,391,041

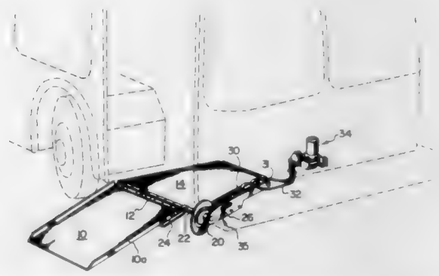
HYDRAULICALLY OPERATED BUS RAMP MECHANISM

David A. Stanbury; Glenn M. Campbell, both of Winnipeg, and Philip J. Fleury, Headingly, all of Canada, assignors to New Flyer Industries Limited, Winnipeg, Canada

Filed Jan. 6, 1993, Ser. No. 977

Int. Cl.[6] B65G *67/00*

U.S. Cl. 414—537 8 Claims



1. A hydraulically operated mechanism for rotating a vehicle access ramp member about a horizontal axis between a stowed, generally horizontal position within the vehicle and a deployed, generally outwardly and downwardly sloping position permitting passenger access to the vehicle comprising:

a source of hydraulic fluid pressure having a high pressure feed line and a low pressure return line;

valve means connected to said feed and return lines;

a double acting hydraulic cylinder having a piston end and a rod end and connected to said valve means and responsive to a pressure differential at its piston and rod ends for effecting linear movement;

transmission means connected to said hydraulic cylinder and to said ramp member for translating said linear movement into more than 180° of rotational movement of said ramp member about said axis;

said valve means having first and second positions for selectively connecting said feed and return lines to said piston and rod ends or said rod and piston ends respectively, for effecting reversible movement of said hydraulic cylinder and having a third position for hydraulically connecting said rod end to said piston end, thereby permitting said ramp member to be rotated manually through its entire range of movement without disconnecting said transmission means.

5,391,042

TRUCK FOR CARRYING GOODS

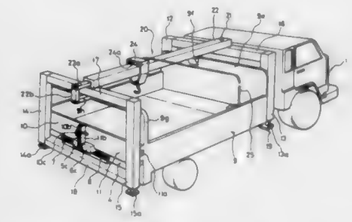
Hwa S. Song, 209 Ssangchon-dong, Seo-gu, Kwangju-city 502-260, Rep. of Korea

Filed Oct. 20, 1993, Ser. No. 139,931

Claims priority, application Rep. of Korea, Mar. 6, 1993, 1993-3394

Int. Cl.[6] B60P *1/54*

U.S. Cl. 414—542 1 Claim



1. A truck for carrying goods comprising:

a truck body (1) including a bottom plate (2) having front and rear ends and two opposite sides;

a supporting member (4) installed on the bottom plate (2) and slidable forwardly and rearwardly on the bottom plate (2), the supporting member (4) providing a goods-carrying platform, having front, rear and opposite side edges, and including a pair of projections (4*e*) (4*f*) extending from the opposite side edges at the rear thereof;

a side member (9) mounted on the supporting member (4) so as to allow forward and rearward sliding movement along the supporting member (4), the side member (a) comprising a front wall, opposing side walls and a rear door frame member (9*g*) hingedly supporting a pair of rear doors (10) (11); the side member (9) further comprising lower extremity portions (9*c*) (9*d*) on opposite sides of the front wall which are engaged by the projections (4*e*) (4*f*) of the supporting member (4) when the supporting member is moved rearward;

means (3) for moving the supporting member (4) forward and rearward along the bottom plate;

releasable locking means (5) (5*a*) (5*b*), (6) (6*a*) (6*b*) (7) (8) for locking the doors (10 (11) in closed position and releasing the doors in response to rearward positioning of the side member (9) relative to the support member (4);

a pair of upwardly extending from pillars (12) (13) fixedly joined to the opposite sides of the bottom plate (3) at the front, the front pillars each including therein a downwardly extending telescoping front supporting bar (12*a*) (13*a*);

hydraulic means for raising and lowering the front supporting bars (12*a*) (13*a*);

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an upper front crossbar (**16**) fixedly joining the two front pillars at upper ends thereof;

a lower rear crossbar (**18**) fixed to the rear of bottom plate (**2**), the lower rear crossbar including telescoping cylinder bars (**18***a*) (**18***b*) extending from each end thereof;

two upwardly extending rear pillars (**14**) (**15**) at opposite sides of the bottom plate (**2**) at the rear thereof, the rear pillars connected at the upper ends thereof to a pair of slide bars (**17***a*) (**17***b*) slidably carried within an upper rear crossbar (**17**), each rear pillar (**14**) (**15**) connected at a lower end thereof to the bottom plate (**2**) by attachment to the cylinder bar (**18***a*) (**18***b*) extending toward that pillar's respective side, and each rear pillar (**14**) (**15**) including therein a downwardly extending telescoping rear supporting bar (**14***a*) (**15***a*);

hydraulic means for raising and lowering the rear supporting bars (**14***a*) (**15***a*);

hydraulic means for extending and retracting the cylinder bars (**18***a*) (**18***b*);

a guide bar (**22**) pivotally fixed at one end to the upper from crossbar (**16**) at a central axis (**21**) and supported at the other end by the upper rear crossbar (**17**), the guide bar carrying a moveable hook (**24**);

a working bar (**22***a*) slidably mounted in the guide bar (**22**) and extending out from said other end of the guide bar;

hydraulic means for extending and retracting the working bar; and

means (**22***b*) (**9***h*) removably connecting the working bar to the door frame member (**9***g*).

5,391,043

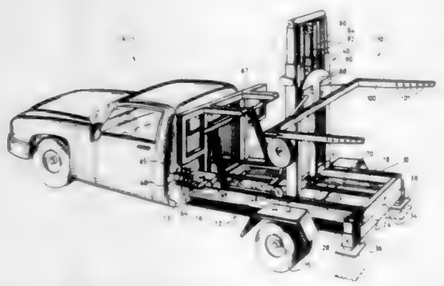
TRUCK MOUNTED LIFTING MECHANISM FOR LIFTING AND TRANSPORTING CONTAINERS

John F. Bohata, 45 Norwick La., Smithtown, N.Y. 11787, and Anthony Leteri, 18 Allenby Dr., Northport, N.Y. 11768

Filed Oct. 25, 1993, Ser. No. 140,524

Int. Cl.[6] **B65G** *67/02*

U.S. Cl. 414—544 **18 Claims**



14. A loading mechanism for loading and unloading a container onto a truck having a box frame, said mechanism comprising:

a horizontal track including two parallel horizontally spaced rails mounted on the frame and extending substantially the entire length of the frame;

a vertical mast having a base axle supporting a first pair of rollers located to one side of said vertical mast, said first pair of rollers engaging said rails;

a horizontal carriage coupled at one end to said base axle and having at another end a second pair of rollers, said second pair of rollers engaging rails;

means for coupling said vertical mast to said horizontal carriage for tilting said vertical mast in two opposite directions around said base axle so that said horizontal carriage remains in a horizontal position while said vertical mast tilts;

means for moving said carriage along said track;

lifting fork means for lifting a container, said lifting fork means coupled to the other side of said mast; and

means for moving said lifting fork means up and down said vertical mast.

5,391,044

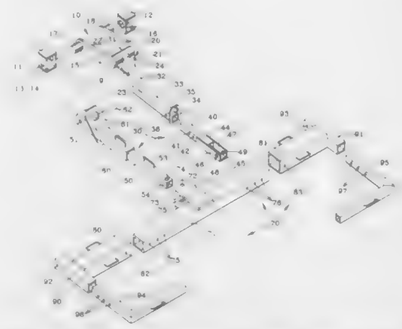
LIFTING AND TOWING APPARATUS

Robert N. Young, 1603 Scenic Ridge, Houston, Tex. 77284

Filed Apr. 22, 1993, Ser. No. 50,585

Int. Cl.[6] **B60P** *3/12*

U.S. Cl. 414—563 **11 Claims**



1. Lifting and towing apparatus for attachment to a towing vehicle having a winch with winch cable thereon and a frame which includes a pair of spaced apart longitudinal beams at least partially supported on a rear axle of said vehicle, said apparatus comprising:

support means for extending transversely between said pair of beams, opposite outer ends of said support means being attachable to opposing ones of said beams for supporting the entire weight of said apparatus directly above said rear axle;

an arm assembly comprising a pivot arm having a proximal end which is swivelingly connected to said support means for rotation about an axis which is parallel to the rear axle of said vehicle, extending rearwardly from said support means for perpendicular alignment with said rear axle and having at least one lifting connection for connection to said winch cable and by which a distal end of said arm assembly may be lifted., said arm assembly also comprising an extension arm having a first portion slidingly and coaxially engageble with the distal end of said pivot arm and a second portion one end of which is connected to said first extension arm portion for articulated movement about an axis which is parallel to said rear axle and the other end of which provides the distal end of said arm assembly; and

a cradle assembly connected to said distal end of said arm assembly substantially perpendicular thereto and to which front or rear wheels of a towed vehicle may be secured for lifting above the ground in response to lifting of the distal end of said arm assembly by said winch cable.

5,391,045

CAN MANIPULATING DEVICE FOR AUTOMATIC CAN EXCHANGE

Hans Raasch, and Hans-Werner Schwalm, both of Mönchengladbach, Germany, assignors to W. Schlafhorst AG & CO., Moenchengladbach, Germany

Continuation of Ser. No. 948,029, Sep. 21, 1992, abandoned. This application Feb. 17, 1994, Ser. No. 198,206

Claims priority, application Germany, Sep. 21, 1991, 4131455

Int. Cl.[6] **D01H** *9/18*

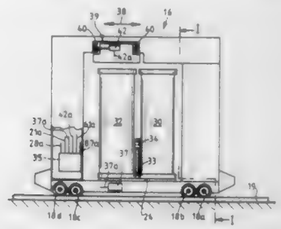
U.S. Cl. 414—626 **11 Claims**

1. In sliver-processing textile machines and can exchange stations including a can transport carriage to be moved in a given direction of motion for manipulating sliver cans having upper rims with outer peripheries,

a can manipulating device being movable on the can transport carriage above the cans in a direction transverse to the given direction of motion for manipulating the sliver cans during an automatic can exchange, comprising:

four gripper elements for gripping the sliver cans to be manipulated at four mutually spaced-apart locations at the outer peripheries of the upper rims of the cans;

first means associated with two of said four gripper elements for simultaneously actuating said two gripper elements, and second means associated with the other two of said



four gripper elements for simultaneously actuating said other two gripper elements, said first and second means being mechanically coupled for simultaneously actuating said four gripper elements;

the cans being disposed adjacent and behind one another in rows defining areas of greatest intermediate spaces between the cans, and said gripper elements gripping the cans in the areas of greatest intermediate spaces; and

means for simultaneously raising and lowering said gripper elements for lifting and depositing the cans with substantially vertical lifting strokes, and means for pivoting said gripper elements for gripping and releasing the cans in any lifting position.

5,391,046

AUTOMATED APPARATUS FOR LOADING AND UNLOADING MOTOR VEHICLES

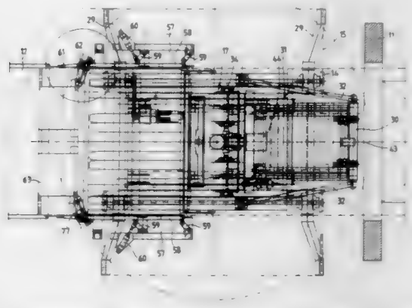
Arturo Colamussi, Ferrara, Italy, assignor to Vortex Systems S.r.l., Fossalta, Italy

Filed Jun. 14, 1993, Ser. No. 76,150

Claims priority, application Italy, Jun. 15, 1992, MI92 A 001465

Int. Cl.[6] **B65G** *67/02, 67/26*

U.S. Cl. 414—667 **10 Claims**



1. An automated apparatus for positioning between a loading platform and a vehicle positioning region for loading and unloading a load floor of a motor vehicle located in said vehicle positioning region, comprising:

a base frame supported for horizontal movement laterally of said loading platform;

a manipulator-conveyor unit provided at one end thereof with at least one of a lifter and a gripper for articles to be loaded or unloaded;

a support element supporting said manipulator-conveyor unit, via at least one pair of motorized wheels, above and in relation to said base frame, for rotation through at least 180° about a vertical axis;

said manipulator-conveyor unit being substantially horizontally extensible for moving said at least one of a lifter and gripper alternately to a position above said loading platform and a position above said load floor;

an aligner between said base frame and said support element for aligning said support element with said load floor for facilitating transfer of articles from said manipulator-conveyor unit to said load floor and from said load floor to said manipulator-conveyor unit along a straight line;

a central processor;

sensors associated with said manipulator-conveyor unit for sensing movement of said manipulator-conveyor unit above said support element;

an actuator, operatively associated with said motorized wheels for actuating said motorized wheels for positioning said manipulator-conveyor unit;

said sensors being operatively associated with said central processor and said actuator, for causing said actuator to correctly position said manipulator-conveyor unit;

said sensors including at least one laser emitter supported on said support element, and at least one laser receiver supported on said manipulator-conveyor unit; said laser receiver being arranged to receive a laser emission from said laser emitter;

said manipulator-conveyor unit including a plurality of forks engageable with said articles for loading or unloading articles;

actuators associating at least some of said forks with a remainder of said manipulator-conveyor unit, for moving said forks horizontally laterally of said vehicle positioning region, whereby some of said forks are movable forks;

an articulated pantograph interposed between said manipulator-conveyor unit and said support element, said pantograph being fixed at one end to said support element, and having a free end supporting said manipulator-conveyor unit for horizontal longitudinal movement towards and away from said vehicle positioning region; and

said forks being supported on said manipulator-conveyor unit via a fixed crossmember provided on said free end of said articulated pantograph, said crossmember supporting a counter-crossmember for vertical movement therealong; said forks being carried on said counter-crossmember.

5,391,047

APPARATUS FOR LOADING AND UNLOADING WORKPIECES

Patrick A. Dolgas, Milford, Ohio, assignor to Globe Products Inc., Huber Heights, Ohio

Division of Ser. No. 693,718, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 416,301, Oct. 3, 1989, abandoned. This application Aug. 10, 1993, Ser. No. 104,671

Int. Cl.[6] **B65G** *65/02*

U.S. Cl. 414—751 **4 Claims**

1. An apparatus having a gripper assembly, a mount for the gripper assembly for moving a motor armature axially and transversely while gripping one end of a shaft of the armature

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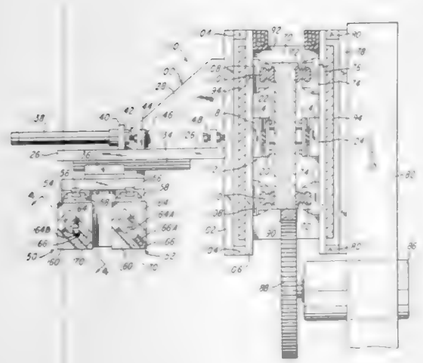
to deliver the armature to a fixed axis of a collet of an armature winding machine,

a support for an armature below the gripper assembly when the gripper assembly is in a location remote from the collet, and

an elevator for said support for raising an armature to a position adjacent said gripper assembly, the improvement wherein the gripper assembly comprises:

a fixed upper clamp jaw having a horizontal top surface and an adjacent vertical surface forming therewith a fixed V-groove that faces downwardly such that the V-groove is bisected by an imaginary plane extending along the length of the base of the fixed V-groove and lying at a 45 degree angle relative to vertical,

a lower clamp jaw having a clamping surface facing said fixed V-groove and mounted for movement of said clamping surface toward and away from said fixed jaw along the 45 degree angle of said imaginary plane,



said lower jaw, when the clamp is open, being clear of obstruction of an armature shaft when an armature is elevated into the assembly, and said lower jaw clamping an armature shaft against said V-groove when the clamp is closed, and

a drive mechanism for moving said lower jaw so that its said clamping surface moves toward and away from said upper jaw along said 45 degree angle of said imaginary plane to clamp and unclamp armature shafts.

5,391,048

Patent Not Issued For This Number

5,391,049

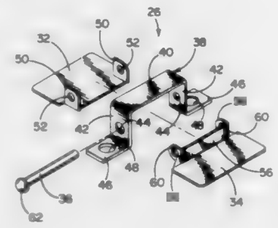
DUAL PLATE CATCHER FOR USE IN A COMPONENT STACKER

William C. Reschlein, 1608 Cynthia Dr., Rockford, Ill. 61107

Filed Aug. 24, 1993, Ser. No. 110,993

Int. Cl.[6] **B65G** *57/30*

U.S. Cl. 414—795.3 **4 Claims**



1. A catcher for use in a stacker for stacking components die cut from a continuous web of material, said catcher comprising;

a mounting bracket in the form of a generally U-shaped yoke,

a pivot pin, and

first and second catcher plates attached to said bracket by said pin, normally extending generally horizontally from opposite sides of said bracket and supported by said pin for upward and downward pivoting between generally horizontal and generally vertical positions., said first plate being formed with two upwardly extending ears spaced along said pin, and said second plate having an upwardly extending flange terminating in two ears disposed generally perpendicular to said flange and spaced along said pin.

5,391,050

DEVICE FOR PICKING UP, MOVING AND DEPOSITING A PILE OF CARTON BLANKS

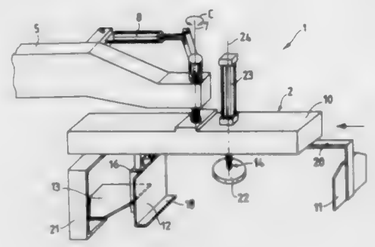
Emanuele Gatteschi, Parma, Italy, assignor to OCME S.r.l., Parma, Italy

Filed Nov. 9, 1993, Ser. No. 149,201

Claims priority, application Italy, Nov. 11, 1992, MI92 A 002576

Int. Cl.[6] **B65G** *59/02;* **B65H** *3/24*

U.S. Cl. 414—796 **3 Claims**



1. A device (**1**) for picking up, moving and depositing a pile (**9**) of carton blanks, wherein said device comprises a picking up element (**2**) for picking up the blanks and an element (**3**) for moving said picking up element (**2**) according to three Cartesian axes and rotating said element (**2**), around a vertical axis (**7**), in which said picking up element (**2**) comprises a framework (**10**) supporting three movable plates (**11-13**) and a pressing element (**14**), in which:

the first plate (**11**) is arranged according to a vertical plane and is movable perpendicularly to it,

the second plate (**12**) is parallel to the first one and is movable both according to its laying plane and perpendicularly to it,

the third plate (**13**) is slidable under the along a plane perpendicular to said first (**11**) and second (**12**) plates,

the pressing element (**14**) acts along a vertical axis (**24**) inside the free room comprised between said first (**11**) and second (**12**) plates.

5,391,051

UNSTACKER FOR UNSTACKING FLAT ITEMS, THE UNSTACKER INCLUDING REALIGNMENT APPARATUS

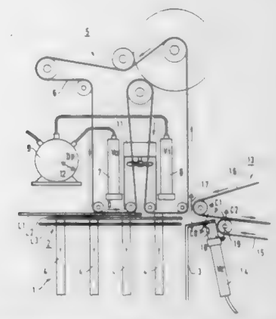
Louis Sabatier, Montelier; Franck Walpole, Paris, and Olivier Roch, Valence, all of France, assignors to Compagnie Generale d'Automatisme CGA-HBS, Bretigny sur Orge, France

Filed Sep. 24, 1993, Ser. No. 126,300

Claims priority, application France, Sep. 25, 1992, 92 11468

Int. Cl.[6] **B65H** *3/12, 5/08;* **B65G** *59/02*

U.S. Cl. 414—797.2 **13 Claims**



1. Unstacking apparatus for unstacking flat items, in particular mail items, the apparatus comprising an alignment plate (**3**) having an abutment surface against which a stack (**2**) of flat items (L1, L2, L3) on edge abuts, an endless belt (**6**) continuously advancing past the free face of the first item in the stack so as to convey the items from the stack towards an outlet, first gripping means (**7**) disposed on the abutment surface side of the alignment plate so that when actuated said first gripping means (**7**) take the items from the stack and hold them against the endless belt, second gripping means (**8**) disposed between the first gripping means and the alignment plate so that when actuated said second gripper means (**8**) take the items from the stack and hold them against the endless belt, at least one sensor (**18**) disposed on that side of the alignment plate which is opposite from the abutment surface so as to supply a signal in response to the presence or the absence of an item being detected at the outlet, control means (**10**) for selectively actuating the second gripping means in response to the signal supplied by said one sensor (**18**) so as to perform an unstacking cycle, said apparatus being characterized in that the control means are organized so as to detect that the first item in the stack is backwardly misaligned from said second gripping means by monitoring the operation of the second gripping means (**8**) during the unstacking cycle, and so as to respond only to backward misalignment being detected by performing a realignment cycle during which said control means both selectively and successively actuate the first gripping means (**7**) and the second gripping means (**8**).

5,391,052

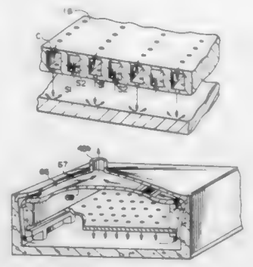
IMPINGEMENT COOLING AND COOLING MEDIUM RETRIEVAL SYSTEM FOR TURBINE SHROUDS AND METHODS OF OPERATION

Victor H. Correia, Scotia; Theresa A. Brown, Ballston Lake, and R. Paul Chiu, Scotia, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Nov. 16, 1993, Ser. No. 152,363

Int. Cl.[6] **F01D** *25/12*

U.S. Cl. 415—115 **14 Claims**



1. Impingement steam cooling apparatus for turbines comprising:

a turbine shroud having first and second walls spaced from one another and an impingement plate spaced between said walls to define on opposite sides of said impingement plate first and second chambers substantially sealed from one another, said impingement plate having a plurality of flow passages therethrough providing for communication of cooling steam between said chambers through said passages;

a supply passage in communication with said first chamber for supplying cooling steam into said first chamber for flow through said passages and affording impingement cooling of said second wall; and

an exhaust passage in communication with said second chamber for exhausting post-impingement cooling steam from said second chamber;

said compartment including side and end walls defining with said impingement plate and said first and second walls, said first and second chambers, respectively, said plurality of exhaust ports being spaced along each of said side walls, said manifold lying in communication with said ports and located on a side of said impingement plate remote from said second chamber.

11. Impingement cooling apparatus for a turbine comprising:

a turbine shroud having first and second walls spaced from one another and an impingement plate spaced between said walls to define on opposite sides of said impingement plate first and second chambers substantially sealed from one another, said impingement plate having a first set of a plurality of flow passages therethrough providing for communication of a cooling medium between said chambers through said passages, said flow passages being spaced from one another;

a supply passage in communication with said first chamber for supplying the cooling medium to said first chamber for flow through said first set of passages and across said second chamber for impact against and impingement cooling of said second wall;

said impingement plate carrying a second set of a plurality of flow passages with the flow passages of said second set being interspersed between and among the flow passages of said first set thereof to enable post-impingement flow of the cooling medium to be extracted from adjacent the

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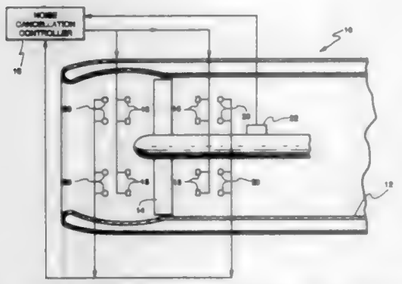
locations of impact of the cooling medium against said second wall thereby substantially avoiding cross-flow effects of post-impingement cooling medium on the cooling medium flowing across said second chamber toward said second wall.

5,391,053

ACTIVE NOISE CONTROL USING NOISE SOURCE HAVING ADAPTIVE RESONANT FREQUENCY TUNING THROUGH VARIABLE PANEL LOADING

Frederic G. Pla, Schenectady; Harindra Rajivah, Clifton Park; Anthony A. Renshaw, Albany, and Robert A. Hedeen, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1993, Ser. No. 143,604
Int. Cl.[6] F01D *25/00*
U.S. Cl. 415—119 22 Claims



1. A noise source for use in an active noise cancellation system which minimizes noise emanating from an aircraft engine having an outer shroud and a fan, said noise source comprising:

a noise radiating element;

a frame enclosing said noise radiating element, said frame being mounted to said outer shroud;

means for expanding and contracting said frame;

means for producing a blade passage frequency signal corresponding to the blade passage frequency of said fan; and

a controller having an input connected to said means for producing a blade passage frequency signal and an output connected to said means for expanding and contracting said frame, said controller being responsive to said blade passage frequency signal to determine a control signal which is sent to said means for expanding and contracting said frame, said control signal causing said means for expanding and contracting said frame to change the size of said frame.

5,391,054

COMPRESSOR END SHELL

James W. Bush, Skaneateles, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

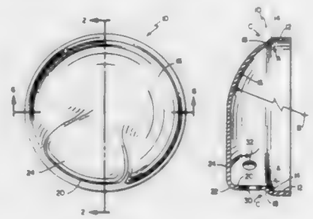
Filed Jul. 13, 1992, Ser. No. 912,356
Int. Cl.[6] F01D *25/24*
U.S. Cl. 415—182.1 5 Claims

1. An end shell comprising:

an annular cylindrical portion having a first end and a second end with said first end being open and adapted for connection to a shell of a hermetic compressor;

a first annular curved portion extending radially inward from said second end;

a second annular curved portion coacting with said first annular curved portion to form an ess;



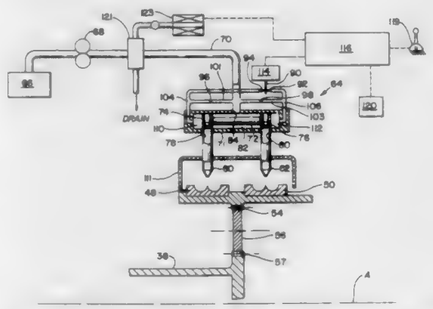
a spherical surface blended into said second annular curved portion for at least 230° of said second annular curved portion.

5,391,055

PROPELLER PITCH CHANGE MECHANISM WITH IMPULSE TURBINES

Paul A. Carvalho, Westfield, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 24, 1993, Ser. No. 158,051
Int. Cl.[6] B64C *11/42*
U.S. Cl. 416—157 A 10 Claims



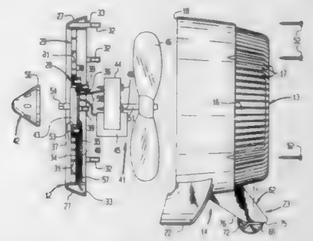
1. For a variable pitch fan or variable pitch propeller of a gas turbine engine, said fan or propeller having a plurality of blades, means for varying the pitch of said blades, said means including a pitch change actuator operatively connected to each of said plurality of blades, means including a pair of impulse turbines for controlling said pitch change actuator, one of said impulse turbines for controlling said pitch change actuator to move said blades to a course blade angle and the other of said impulse turbines for controlling said pitch change actuator to move said blades to a fine blade angle, said pitch change actuator including a ball screw operatively connected to said pair of impulse turbines, a ball screw nut in meshing relationship with said ball screw for rectilinear motion, each of a plurality of trunnions attached to the base of each of said blades, a yoke operatively connected to said ball screw nut and connection means operatively interconnecting said yoke and said trunnions to impart pitch change movement during transient conditions of said pitch change actuator and gearing means defining a gear train in meshing relationship including an internal gear operatively connected to said pair of impulse turbines, a spur gear mounted on one end of said ball screw and a feed-through gear interconnecting said internal gear and said spur gear for imparting rotary motion to said ball screw in a selective clockwise direction and counterclockwise direction.

5,391,056

TRI-POD PORTABLE FAN

Jui-Shang Wang, Taipei, , assignor to Duracraft Corporation, Whitinsville, Mass.

Continuation of Ser. No. 726,676, Jul. 8, 1991, Pat. No. 5,304,040. This application Oct. 26, 1993, Ser. No. 143,408
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[6] F04D *29/70*
U.S. Cl. 416—247 R 11 Claims



1. An air blower comprising:

a) first housing means defining a plurality of first air passages;

b) second housing means secured to said first housing means and having a central portion, an annular portion disposed radially outwardly of said central portion, and a grillwork portion forming second air passages extending between said annular portion and said central portion, wherein said first air passages and said second air passages are aligned axially;

c) a fan assembly secured to said central portion, said fan assembly comprising an electrical motor and a fan blade rotatably coupled therewith for rotation about an axis;

d) said grillwork portion comprising a plurality of vanes, each of which has a curved shape for absorbing torque created by rotation of said fan, said curved shape extending between opposite first and second ends of the vane; and

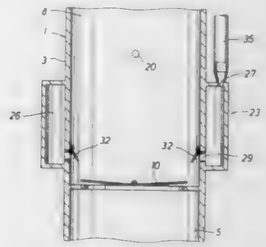
e) said vanes being connected between said central portion and said annular portion with said first end of each vane being connected to said central portion and said second end of each vane being connected to said annular portion.

5,391,057

COMPRESSING GAS FLOWING THROUGH A CONDUIT

Stephen G. Bryce; Christopher Morley, and Leslie C. Shirvill, all of Chester, United Kingdom, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 19, 1993, Ser. No. 49,692
Claims priority, application United Kingdom, Apr. 22, 1992, 92201141
Int. Cl.[6] F04F *1/16*
U.S. Cl. 417—73 1 Claim



1. A method of compressing a combustible gas flowing through a conduit having an inlet end and an outlet end being provided with a non-return inlet valve at its inlet end, which method comprises the steps of:

(a) supplying intermittently a combustible mixture in the conduit downstream of the non-return valve by intermittently supplying an oxidant into the conduit downstream of the non-return inlet valve;

(b) allowing the combustible mixture to ignite, which ignition yields a high pressure wave front closing the non-return inlet valve and pushing gas out of the outlet end of the conduit and a low pressure wave front; and

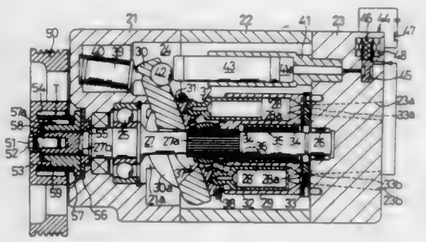
(c) allowing the non-return valve to open on arrival of the low pressure wave front to allow gas to enter into the conduit.

5,391,058

FLUIDIC APPARATUS

Kunifumi Goto; Nobuaki Hoshino; Tatsuyuki Hoshino; Takashi Ban; Shigeru Suzuki, all of Kariya; Ken Suzuki, Kanagawa; Akira Umebayashi, Kanagawa, and Yukiharu Yusa, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya and NHK Spring Co., Ltd., Yokohama, both of Japan

Filed Mar. 22, 1993, Ser. No. 34,232
Claims priority, application Japan, Mar. 23, 1992, 4-064777
Int. Cl.[6] F09B *49/02*
U.S. Cl. 417—223 9 Claims



1. A fluidic apparatus, comprising:

a pulley for driven coupling to an engine;

torque limiting means disposed in said pulley for interrupting the transmission of driving force by said pulley when overload is applied thereto; and

a driving shaft coupled to an output of said torque limiting means;

said torque limiting means including:

a boss formed coaxially with said pulley and having an outer peripheral surface;

a collar disposed integrally and coaxially with said driving shaft and having an outer peripheral surface; and

a coiled spring coiled with a predetermined tightening allowance about said outer peripheral surfaces of said boss and said collar for transmitting driving force to said shaft in the absence of an overload.

5,391,059

RADIAL PISTON MOTOR OR PUMP

Jorgen Hallundbaek, Lyngby, Denmark, assignor to H T C A/S, Glostrup, Denmark

PCT No. PCT/DK91/00385, § 371 Date Jun. 8, 1993, § 102(e) Date Jun. 8, 1993, PCT Pub. No. WO92/10676, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 9, 1991, Ser. No. 74,815
Claims priority, application Denmark, Dec. 10, 1990, 2926/92
Int. Cl.[6] F04B *1/04*
U.S. Cl. 417—27.3 2 Claims

1. A motor or pump assembly, comprising

a cylinder block with a plurality of radially positioned cylinders;

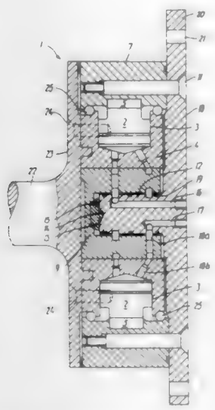
VOL 1171 ISS 3 FEB 21 1995 UMI

a piston arranged slidably reciprocable in each of the cylinders;

a cam ring having a plurality wave-shaped cams on an inner side of the cam ring, the cam ring cooperating with the pistons and being rotatably journalled on the cylinder block;

a distributor valve arranged centrally in the cylinder block to control a flow of fluid to and from the cylinders in operation;

wherein the cam ring is journalled on the cylinder block with at least one bearing arranged on each side of the



cylinder block, the cylinder block has a shape of a disc with the bearings at least partly positioned between planes containing sides of the disc and at a periphery of the disc, and the cylinder block and the cam ring constitute an inner and an outer surfaces, respectively, of said bearings; and

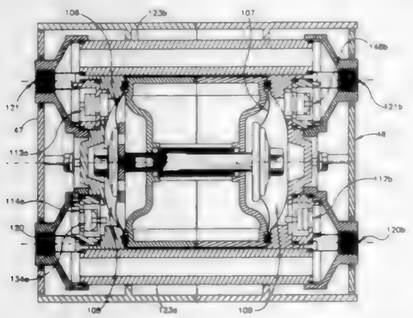
wherein the cylinder block and the cam ring have substantially a same width, and the cam ring and the distributor valve are interconnected by means of a disc-shaped carrier plate extending past one side of the cylinder block at a distance from it.

5,391,060

AIR OPERATED DOUBLE DIAPHRAGM PUMP

Nicholas Kozumplik, Jr., and Gerald M. Distel, both of Bryan, Ohio, assignors to The Aro Corporation, Bryan, Ohio

Filed May 14, 1993, Ser. No. 61,883
Int. Cl.[6] F04B *43/06*
U.S. Cl. 417—393 **7 Claims**



1. A double diaphragm pump construction comprising:

a substantially cylindrical transverse split shell each of;

end cover plates disposed at each end of said shell; each of said end plates being further provided with both inlet and outlet pumped fluid connections so as to provide inline piping connection capability; and

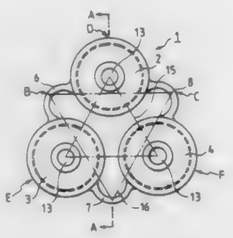
said pumped fluid connections of the end cover plates are selectively interconnected by replaceable and internal manifold tubes within said shell housing.

5,391,061

HERMETIC TERMINAL COVER AND COMPRESSOR INCORPORATING SAME

Tatsuyuki Iizuka, Chigasaki, and Etsuro Suzuki, Fujisawa, both of Japan, assignors to Matsushita Refrigeration Company, Osaka, Japan

Filed Mar. 12, 1993, Ser. No. 30,978
Claims priority, application Japan, Mar. 18, 1992, 4-061672
Int. Cl.[6] F04B *35/04;* **H01B** *17/30*
U.S. Cl. 417—410.1 **12 Claims**



1. A hermetic terminal cover of an insulating material arranged to be attached to a hermetic terminal which includes a metallic base having a plurality of metallic tubular sections and terminal pins each fixedly passing through the corresponding metallic tubular section with an insulator interposed therebetween, said hermetic terminal cover comprising:

a plurality of terminal caps each of which is tightly fitted around at least said metallic section and said terminal pin, said terminal caps being mutually coupled by flexible rib means, wherein said rib means includes a plurality of flexible ribs each of which having a curved shape and connecting adjacent two of the terminal caps.

5,391,062

ELECTRIC FUEL PUMP WITH ARCUATE RELIEF RECESS

Hiroshi Yoshioka, Hiroshima, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 989,638, Dec. 11, 1992, abandoned. This application Nov. 30, 1993, Ser. No. 159,112
Claims priority, application Japan, Jan. 14, 1992, 4-004848
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—423.3 **6 Claims**

1. An electric fuel pump comprising:

a disk-shaped impeller having vane grooves in the periphery;

a pump casing including:

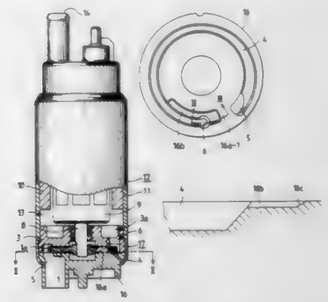
slide surfaces defined by confronting said pump casing with both sides of said impeller through small gaps to support said impeller;

an arcuate-belt-shaped pump chamber extended outside said slide surfaces and along the periphery of said impeller, said arcuate-belt-shaped pump chamber having a fuel suction inlet at one end and a pump chamber outlet at the other end; and

an electric motor section for driving said impeller,

wherein a relief recess larger in depth than said small gaps is formed in said slide surface which is confronted with said

pump chamber outlet, near said pump chamber outlet and inside said pump chamber, said relief recess extending



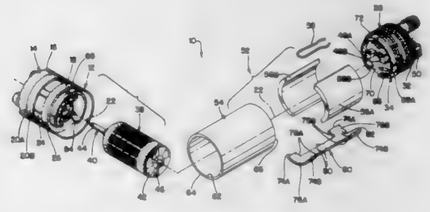
circumferentially along the periphery of said impeller and past said pump chamber outlet.

5,391,063

MAGNET ASSEMBLY FOR ELECTRIC FUEL PUMP

Edward A. Hantle, Caro, and Orrin A. Woodward, Davison, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 25, 1994, Ser. No. 233,102
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—423.7 **4 Claims**



1. In a motor vehicle fuel pump including

a thin-walled tubular shell,

a pump in said shell at a first end thereof,

an end housing assembly in said shell at a second end thereof, and

an electric motor in said shell including an armature supported on said shell for rotation about a longitudinal centerline thereof and a commutator, and

a pair of carbon brushes on said end housing assembly slidably engaging said commutator in a plane perpendicular to said longitudinal centerline,

a magnet assembly comprising:

a tubular ferromagnetic flux carrier closely received in said shell around said armature having a cylindrical inner wall surface and a first uninterrupted annular end abutting said pump and a second uninterrupted annular end abutting said end housing assembly,

a pair of magnets on said inner wall surface of said flux carrier arc-shaped to conform to the curvature of said inner wall surface having a non-magnetic state as formed and a magnetic state after exposure to magnetic flux,

a spring clip urging relative separation between said magnets in said non-magnetic state thereof in the circumferential direction of said inner wall surface,

an arc-shaped plastic locator on said inner wall surface curved to conform to the curvature of said inner wall surface having a pair of side edges parallel to said longitudinal centerline and a pair of end edges substantially flush with corresponding ones of said first and said second annular ends of said flux carrier,

means defining an outward opening magnet pocket in each of said side edges of said plastic locator each having a pair of lateral short sides at opposite ends of a long side,

said spring clip biasing each of said magnets in said non-magnetic state thereof to a seated position in a corresponding one of said magnet pockets against said long side thereof and captured between said pair of short sides thereof whereby said magnets are located longitudinally relative to said first and said second annular ends of said flux carrier, and

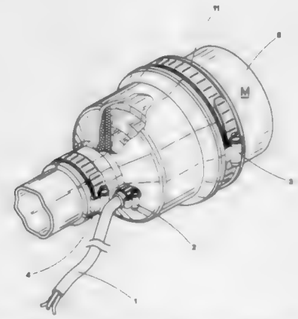
means on said end housing assembly closely receiving said plastic locator whereby the angular position of said brushes on said end housing is established relative to said magnets in said magnet pockets in said plastic locator.

5,391,064

FRAME INDEPENDENT ELECTRIC BLOWER HALF-HOUSING

Robert Lopez, 1219 S. Bonview Ave., Ontario, Calif. 91761

Continuation-in-part of Ser. No. 699,908, May 14, 1991, Pat. No. 5,224,844. This application Oct. 26, 1992, Ser. No. 967,677
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—423.14 **13 Claims**



1. A one-piece blower housing, suitable for housing a blower motor which blows fluids, including air, comprised of:

a. said one-piece blower housing with three openings: 1) an intake opening to receive a portion of the blower motor such that the intake of said motor would protrude from said intake opening, 2) an extended output opening to receive one end of the output flow piping, on the opposite end of said housing in relation to said intake opening, and 3) an extended cable opening to receive a portion of the electric power cable which is connected to said motor,

b. a fastening means for securing and air-sealing said portion of said motor within said intake opening of said housing,

c. a fastening means for securing and air-sealing said portion of said electric power cable within said extended cable opening and said housing,

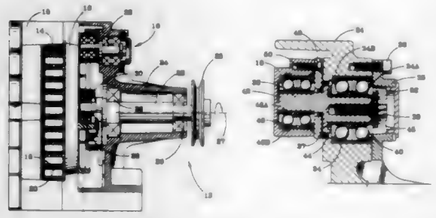
d. a fastening means for securing and air-sealing said output flow piping end within said extended output opening,

e. an output restraint notch for restraining said output flow piping end from being inserted too deep into said housing, and

f. an interior geometry of said housing, which consists of essentially nonparallel interior walls, and said walls may have a geometry which is spherical, the zone of a sphere, cylindrical, conical, the frustrum of a cone, or a combination of these geometries.

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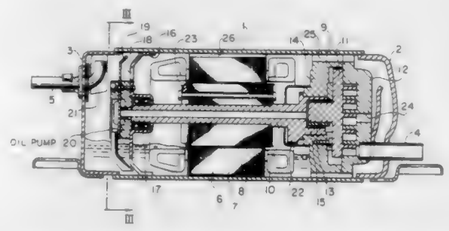
5,391,065
PARALLEL ADJUSTMENT ASSEMBLY FOR A SCROLL COMPRESSOR
Steven R. Wolverton, and Terry L. Kietzman, both of Mooresville, N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Oct. 26, 1993, Ser. No. 143,413
Int. Cl.[6] F04C *18/04*
U.S. Cl. 418—55.3 5 Claims



1. In a scroll compressor having a housing, a fixed scroll member fixedly attached to the housing, and an orbiting scroll member which is mounted on an eccentric drive shaft which drives the orbiting scroll member through a predetermined circular path in interengaging relation with the fixed scroll, a pressure being generated between the fixed and orbiting scroll members during scroll compressor operation which loads the orbiting scroll member with a predetermined force and which drives the orbiting scroll member in a direction away from the fixed scroll member, an adjustment assembly for achieving parallelism between the orbiting scroll member and the fixed scroll member, the adjustment assembly comprising:
an eccentric guide shaft having opposed first and second ends, and a step located at an intermediate position along the shaft, and wherein the second end is connected to the orbiting scroll member;
a bearing, mounted by the housing and having an inner and an outer race, rotatably mounting the first end of the eccentric guide shaft, the first end of the eccentric guide shaft ending moveable axially, along a predetermined path of travel, relative to the inner race;
means for biasing the eccentric guide shaft along the predetermined path of travel in a direction away from the bearing, the biasing means comprising a predetermine number of Belleville washers which are positioned between the step and the bearing, and which generate a total biasing force which is greater than the load upon the orbiting scroll member; and
means for selectably positioning the eccentric guide shaft in a predetermined location along the path of travel.

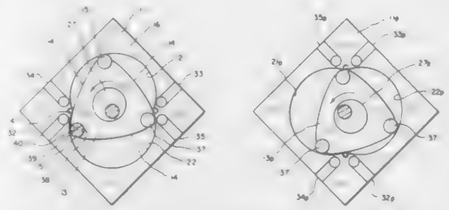
5,391,066
MOTOR COMPRESSOR WITH LUBRICANT SEPARATION
Kiyoshi Sawai, Otsu; Manabu Sakai, Kusatsu; Sadao Kawahara, Otsu; Shotaro Ito, Shiga; Yoshinori Kojima; Michio Yamamura, both of Kusatsu, and Shuichi Yamamoto, Otsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 12, 1992, Ser. No. 974,425
Claims priority, application Japan, Nov. 14, 1991, 3-298761
Int. Cl.[6] F04C *29/02*; B01D *45/08*
U.S. Cl. 418—55.6 6 Claims

1. A motor compressor comprising, within a closed container thereof:
a compression mechanism section;
a motor serving to drive said compression mechanism section;
a crankshaft serving to transmit a turning force of said motor to said compression mechanism section;
a partition wall member serving to divide a space in said closed container into two parts including a first space in which said compression mechanism section exists and a second space, said partition wall member being formed therein with gas jetting holes through which a high pressure gas released from said compression mechanism section is passed;
a discharge pipe extending into said second space,
a gas collision plate disposed between said partition wall member and an inner surface of said closed container in opposed relation to said gas jetting holes;



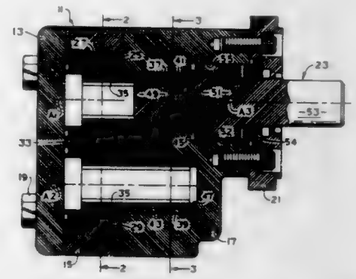
a bearing serving to support one end of the crankshaft; and
an oil pump serving to supply lubricating oil to sliding portions of the compression mechanism section, said bearing and oil pump being fixed to the partition wall member, and wherein the gas collision plate is attached to said oil pump, and the compression mechanism section is installed substantially horizontally as a whole.

5,391,067
ROTARY FLUID DISPLACEMENT DEVICE
James E. Saunders, 2069 Madison Ave., Ogden, Utah 84401
Filed Jul. 20, 1993, Ser. No. 93,891
Int. Cl.[6] F01C *1/22, 19/04*
U.S. Cl. 418—60 4 Claims



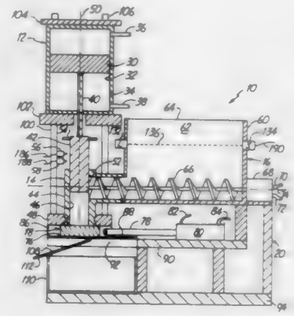
1. A rotary device such as a fluid pump, compressor, expansion engine or the like, comprising:
a chamber geometrically centered about an axis, said chamber being formed by a pair of parallel spaced apart end walls, each with an inwardly facing planar surface, and a sidewall with an inwardly facing contoured surface centered about said axis;
a shaft disposed through the end walls to rotate about the axis of the chamber;
a radially projecting circular cylindrical cam affixed to the shaft to rotate therewith , the center of said cam being an eccentric distance from the axis of the shaft;
a rotor mounted for relative motion within the chamber, having a central perforation disposed about the cam in sliding contact therewith, the edge surface of said rotor having three joined identical curved portions each defined by points offset normally outward said cam eccentric distance from a conic section curve, so that said edge surface includes three apexes with radii equal to said eccentric distance; wherein
the inwardly facing surface of the sidewall of the chamber comprises a pair of identically shaped lobe portions joined by a pair of cusp-like portions, the size and shape of said inwardly facing surface being such that the rotor revolves with said radiused apexes all continuously in contact therewith and with said rotor edge surface continuously in contact with both of said cusp-like portions, the cam and the shapes of the rotor and the inwardly facing surface of the sidewall being the sole means for guiding the rotor within the chamber, a plurality of fluid working chambers being formed between the rotor and the sidewall; and
a pair of fluid flow passages through the sidewall comprising one passage at each side of each cusp-like portion, so that one passage may serve as a fluid outlet and the other as a fluid inlet.

5,391,068
GEAR PUMP
Sohan L. Uppal, Bloomington, Minn., assignor to Eaton Corporation, Cleveland, Ohio
Filed Feb. 15, 1994, Ser. No. 196,668
Int. Cl.[6] F01C *1/18*
U.S. Cl. 418—206 20 Claims



1. A rotary gear device usable as a pump or motor, the device being of the type comprising a housing defining an inlet port and an outlet port, and first and second gear cavities, defining first and second axes of rotation, respectively; first and second gears rotatably disposed in said first and second gear cavities, respectively, and rotatable about said first and second axes of rotation, respectively, and having gear teeth intermeshing; an inlet chamber at one side of the intermeshing teeth and in fluid communication with said inlet port, and an outlet chamber at the other side of the intermeshing teeth, and in fluid communication with said outlet port; a shaft means operably associated with said first gear, and disposed toward a forward end of said gear device, whereby rotation of said shaft means causes rotation of said first and second gears, and rotation of said first and second gears causes rotation of said shaft means; means operable to support said shaft means for rotation relative to said housing; characterized by:
(a) each of said first and second gears comprises a gear portion and a generally cylindrical forward portion disposed on the forward axial side of said gear portion;
(b) said housing defining first and second generally cylindrical, internal pilot surfaces, disposed concentrically about said first and second axes of rotation, respectively;
(c) said first and second internal pilot surfaces receiving and rotatably supporting said cylindrical forward portions of said first and second gears, respectively; and
(d) the engagement of each of said cylindrical forward portions and its respective internal pilot surface comprising substantially the only bearing support for said first and second gears.

5,391,069
APPARATUS FOR COMPACTING METAL SHAVINGS
Ervin J. Bendzick, R.R. No. 1, Box 307A, New Prague, Minn. 56071
Filed Jun. 10, 1993, Ser. No. 74,946
Int. Cl.[6] B30B *9/02*
U.S. Cl. 425—78 17 Claims



1. A compactor for compacting fluid-laden incompressible metal chips and shavings comprising, in combination:
a compaction chamber forming an enclosing wall, an opening to the chamber through which the metal chips and shavings are introduced, the chamber having a first end adjacent which metal pellets are formed from the metal chips and shavings;
a first piston closing a second end of the chamber opposite the first end;
a barrier adjacent the first end of the chamber, the barrier being movable between a first position at which the barrier blocks the first end to prevent metal pellets in the chamber from being discharged through the first end and a second position at which the barrier permits metal pellets to be discharged, the barrier being so disposed and arranged with respect to the enclosing wall of the chamber to permit fluid to be expelled from the chamber between the barrier and the enclosing wall when the barrier is in its first position;
first drive means for moving the first piston between positions relative to a second end of the chamber, the first drive means comprising a hydraulic cylinder containing a second piston connected to the first piston, the second piston being operated by hydraulic pressure, a hydraulic circuit connected to the cylinder to operate the second piston, the hydraulic circuit including a hydraulic conduit connected to a source of low pressure, and connection means selectively connecting a source of high pressure to the conduit, the second piston being responsive to the source of low pressure to move the first piston between a first position in which the first piston permits the metal chips and shavings to enter the chamber through the opening between the first piston and the first end; and
a second position in which the first piston blocks the opening and imparts a first compacting pressure on the metal chips and shavings in the chamber when the barrier is in its first position, the first compacting pressure being of such magnitude as to expel fluid from the metal chips and shavings and from the chamber and to form a loosely compacted pellet from the metal chips and shavings in the chamber, the loosely compacted pellet having substantial interstices therein; and
the second piston being responsive to the source of high pressure to operate the first piston to move between its second position and a third position in which the first piston imparts a second compacting pressure on the loosely compacted pellet in the chamber when the barrier is in its first position, the second compacting pressure

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being greater than the first compacting pressure and being of such magnitude as to expel fluid from the loosely compacted pellet and from the chamber to form a compact metal pellet from the loosely compacted pellet substantially devoid of fluid and interstices,

the second piston being further responsive to the source of low pressure to move the first piston to a fourth position when the barrier is in its second position to discharge the compact metal pellet from the chamber;

second drive means for operating the barrier between its first and second positions; and

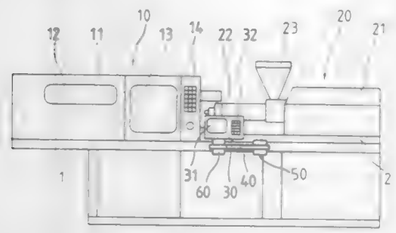
feed means for feeding metal chips and shavings through the opening in the chamber when the first piston is in its first position.

5,391,070

INJECTION MOLDING MACHINE EQUIPPED WITH A MOVABLE DISPLAY UNIT

Susumu Ito; Masato Yamamura, and Koichi Nishimura, all of Oshino, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

Continuation of Ser. No. 801,857, Jun. 18, 1992, abandoned. This application Oct. 25, 1993, Ser. No. 140,892
Claims priority, application Japan, Nov. 2, 1990, 2-295542
Int. Cl.[6] B29C *45/76*
U.S. Cl. 425—135 **5 Claims**



1. An injection molding machine comprising

a base comprised of a hollow rectangular pipe and having a front surface and an upper surface;

a mold clamping unit mounted on said base;

an injection unit mounted on said base opposite to said mold clamping unit;

a swing arm having a base end portion and a front end portion, said front end portion having an outer end and a top surface;

first supporting means disposed on said front surface of said base adjacent said upper surface of said base for pivotably mounting said base end portion of said swing arm to said base whereby said swing arm is swingable in a horizontal plan and said front end portion extends horizontally from said base end portion at substantially the same height as said upper surface of said base;

said first supporting means including a bracket having a vertical wall mounted to said front surface of said base and at least two spaced horizontal upper and lower walls extending outwardly from said vertical wall and a supporting shaft extending through said horizontal upper wall to pivotally mount said base and portion of said swing arm;

a display unit; and

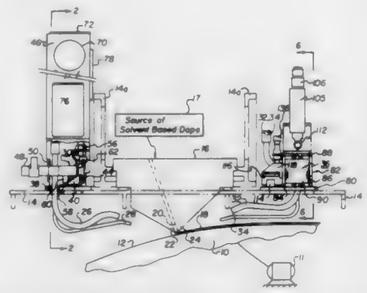
second supporting means mounted adjacent the outer end of the top surface of said front end portion of said swing arm for rotatably mounting said display unit on top of said swing arm.

5,391,071

APPARATUS AND METHOD FOR INSPECTING AND CLEANING LIPS OF CASTINGS DIE

Roopnarine Hazarie, Rochester; Edward S. Jones, East Rochester; Timothy R. Mahns; Vratislav M. Michal, both of Rochester, and Scott C. Ofslager, Albion, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1993, Ser. No. 146,263
Int. Cl.[6] B29C *47/14, 47/92*
U.S. Cl. 425—135 **8 Claims**



1. In an apparatus for producing thin polymeric film, the apparatus including a source of a solution of polymer and solvent; a casting member having an outer surface for receiving a cast layer of polymer and solvent, the layer having a transverse width; a casting die for casting the layer of polymer and solvent onto the outer surface, the die comprising a transverse slot with adjacent upstream and downstream lips between which the polymer and solvent flow during casting, the lips having lengths approximating the transverse width of the layer; and means for moving the outer surface past the casting die, the improvement comprising:

means for optically inspecting at least one of the lips to detect a presence of agglomerations of polymer on the lip;

means for directing a stream of solvent at the lip to wash away any detected agglomeration;

mean for supporting the means for inspecting and the means for directing; and

means for traversing the means for supporting back and forth along the length of the lip to facilitate inspecting and washing of the lip.

5,391,072

SOLID IMAGING APPARATUS HAVING A SEMI-PERMEABLE FILM

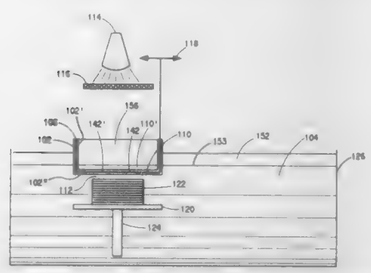
John A. Lawton, Landenberg, Pa., and Jerome T. Adams, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 604,982, Oct. 29, 1990, Pat. No. 5,122,441. This application Feb. 3, 1992, Ser. No. 829,243
Int. Cl.[6] B29C *35/08*
U.S. Cl. 425—174.4 **8 Claims**

1. An apparatus comprising:

a) a substantially transparent, composition-inert, composition-impermeable, semi-permeable film, having a first surface and a second surface, said first surface being positioned to partially contact an imaging atmosphere capable of permeating said film, and said second surface being positioned to partially contact a photoformable composition;

b) means for creating imagewise radiation through said film in order to form a photoformed layer and a deformable-composition-release-coating at said film second surface; and



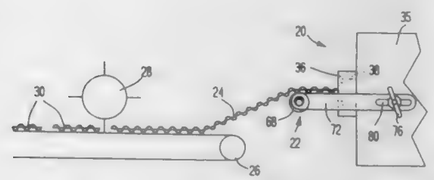
c) means for separating said film from said photoformed layer.

5,391,073

HORIZONTAL EXTRUSION OF EDGE RIPPLED SNACK PRODUCT

David P. Herod, Irving, and Nancy J. Moriarity, Dallas, both of Tex., assignors to Recot, Inc., Plano, Tex.

Continuation of Ser. No. 942,441, Sep. 9, 1992, abandoned, which is a division of Ser. No. 690,666, Apr. 24, 1991, Pat. No. 5,167,980. This application May 9, 1994, Ser. No. 239,839
Int. Cl.[6] A23L *1/00*; A23P *1/12*
U.S. Cl. 425—377 **10 Claims**



1. An apparatus for producing strips of food product with regular, evenly-formed undulating edges, comprising:

an extrusion die having means for horizontally extruding a strip of dough, the strip of dough having undulating edge portions on opposite lateral edges of a substantially horizontal central portion upon said strip exiting the extrusion die;

ripple supporting means for supporting the strip of extruded dough after the strip exits the extrusion die for a distance that is sufficient to permit the undulating edge portions of said dough strip to be fully formed so as to produce regular evenly-spaced undulating edge portions in the strip of dough.

5,391,074

ATMOSPHERIC GAS BURNER AND CONTROL SYSTEM

John Meeker, 24 Jamestown St., Sinclairville, N.Y. 14782-0568

Filed Jan. 31, 1994, Ser. No. 189,402
Int. Cl.[6] F23N *5/20*
U.S. Cl. 431—6 **23 Claims**

1. An atmospheric heating device, comprising:

a chamber;

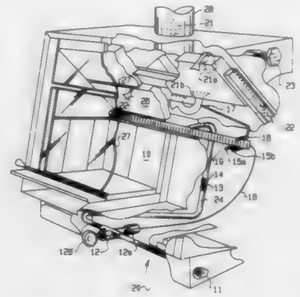
a burner located within said chamber receiving a fluid fuel from a fuel source for providing a flame and producing combusted gas;

a flue in flow series with said chamber for receiving said combusted gas therefrom;

a valve communicating with said burner to control the flow of fuel from said fuel source; and

a control system for controlling said valve, wherein said control system comprises:

a first temperature sensor located to sense the flame temperature at the burner to provide a first open signal when the flame temperature is above a predetermined value,



a second temperature sensor located approximate said flue to sense the combusted gas temperature therein and provide a second open signal when said combusted gas temperature is above a predetermined value, and

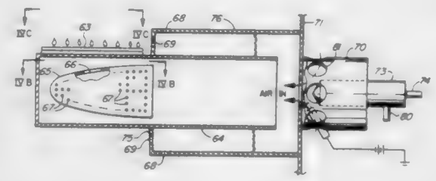
actuator means responsive to said control signals to operate said valve in accordance therewith.

5,391,075

MULTI-FUEL BURNER

Edgar C. Robinson, 2791 E. 23rd Avenue, Vancouver, British Columbia, Canada V5R 1A7 , and Leonard Fleming, 205 - 4733 River Road West, Delta, British Columbia, Canada V4K 1R9

Filed Jul. 9, 1993, Ser. No. 89,763
Int. Cl.[6] F23Q *7/06*
U.S. Cl. 431—258 **9 Claims**



1. A burner having a burner tube, a nozzle holder operably connected to said burner tube, a nozzle operably inserted in one end of said nozzle holder to eject atomized liquid fuel from said nozzle, an igniter mounted in said nozzle holder such that said igniter is in the path of atomized liquid fuel emitted from said nozzle, a secondary air injection plate located between said nozzle and said burner tube, said secondary air injection plate having secondary air holes allowing air to enter said burner tube at a location different from the location said atomized liquid fuel enters said burner tube.

5,391,076

GAS BURNER FOR OUTDOOR BARBECUING DEVICE

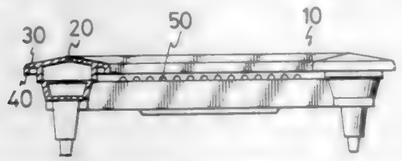
William Home, 9-3 Fl., No. 374, Sec. 2, Pa Teh Rd., Taipei, Taiwan, Prov. of China

Filed Mar. 5, 1993, Ser. No. 27,193
Int. Cl.[6] F23D *14/62*
U.S. Cl. 431—354 **2 Claims**

1. A gas burner comprising a domed head, a plurality of gas outlets provided along the periphery of said gas burner and

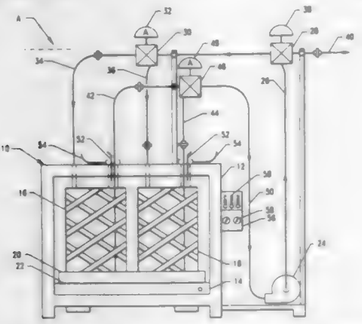
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extending outwardly, a flange extending outwardly along a periphery of said domed head, a skirt extending downwardly



from and along a periphery of said flange, and a recess formed between said flange and said skirt.

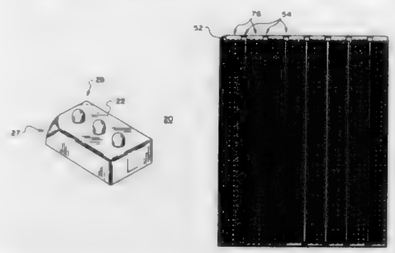
5,391,077
DRUM OVEN
Patrick R. Rosebeary, Guthrie, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.
Filed Dec. 23, 1993, Ser. No. 172,341
Int. Cl.[6] F27B *3/22*
U.S. Cl. 432—176 **4 Claims**



1. An apparatus for heating material stored in at least one container, comprising:
a housing;
a heater mounted to said housing;
a venting system in fluid communication with a container in said housing to facilitate movement of vapors with respect to said container to a point removed from said housing while said container is being heated;
a pumping system for moving the contents of said container while placed in said housing, said pumping system comprising at least one circulating pump and piping connecting said pump to and from said container placed in said housing; and
a control system to direct flow from said pump to recirculate to said container in said housing or to transfer the contents of said container to a point outside of said housing.

5,391,078
SYMBOLIC LANGUAGE TEACHING AND COMMUNICATIONS SYSTEM UTILIZING TACTILE PATTERN DISCRIMINATION
Kevin Murphy, 97 Forrest St., Plaistow, N.H. 03865
Filed Jun. 10, 1993, Ser. No. 74,795
Int. Cl.[6] G09B *21/02*
U.S. Cl. 434—113 **20 Claims**

16. A tactile communication system including a block retaining slate for use with tactile recognition teaching and communication blocks, comprising:
a plurality of block engaging members, said block engaging members adapted for mating with at least one block retaining slate engaging member on a bottom region of at least one block;
said block engaging members disposed in at least one predefined pattern on a first surface of said block retaining slate, said at least one predefined pattern including at least one of a predetermined number of rows and columns of said block engaging numbers; and

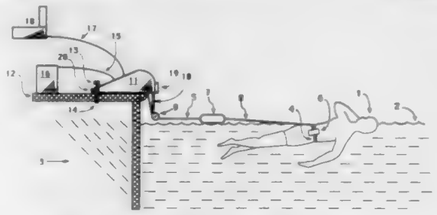


wherein said at least one predefined pattern of block engaging members are separated, respectively, by one of at least one row surface area and at least one column surface area on which there is no block engaging member on said first surface of said block retaining slate for facilitating the placement and spacing of said block on said block retaining slate to form at least one of a word, phrase and sentence.

5,391,079

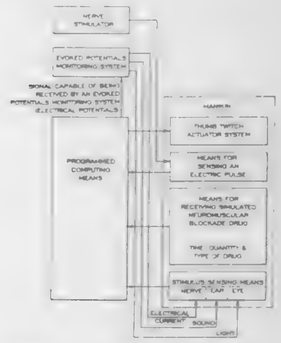
Patent Not Issued For This Number

5,391,080
SWIM INSTRUCTION, TRAINING, AND ASSESSMENT APPARATUS
Robert H. Bernacki, 4495 Benton Ct., Bloomington, Ind. 47408, and Joel M. Stager, Bloomington, Ind., assignors to Robert H. Bernacki, Bloomington, Ind.
Filed Jul. 15, 1993, Ser. No. 92,362
Int. Cl.[6] A63B *69/12*
U.S. Cl. 434—254 **91 Claims**



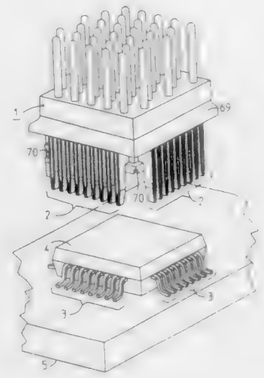
86. A swim instruction apparatus comprising:
a cable having a proximal end and a distal end;
means for coupling the distal end of the cable to a swimmer;
means coupled to the proximal end of the cable for winding and unwinding the cable for applying positive and negative forces to the cable;
speed sensing means for generating an output signal proportional to the speed of the swimmer;
force sensing means coupled to the cable for generating an output signal responsive to the force exerted by the swimmer on the cable;
means for generating a perceptible warning signal coupled to the output signal from the force sensing means, the warning signal means being responsive to the output signal to generate a perceptible warning signal when the output signal is within a predetermined range of values; and
a controller coupled to the output signal from the speed sensing means and to the winding and unwinding means, the controller being responsive to the output signal from the speed sensing means for controlling the speed of the swimmer by varying the force applied to the swimmer by the winding and unwinding means.

5,391,081
METHOD AND APPARATUS FOR SIMULATING NEUROMUSCULAR STIMULATION DURING MEDICAL SURGERY
Samsun Lampotang; Michael S. Good; Joachim S. Gravenstein, and Ronald G. Carovano, all of Gainesville, Fla., assignors to University of Florida Research Foundation, Incorporated, Gainesville, Fla.
Filed May 13, 1992, Ser. No. 882,467
Int. Cl.[6] G09B *23/28*
U.S. Cl. 434—262 **23 Claims**



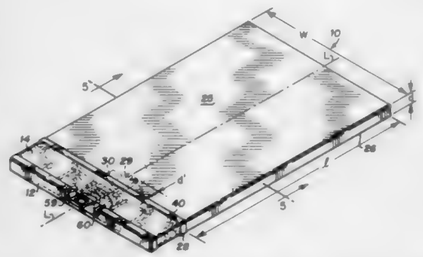
12. An apparatus for simulating ulnar nerve neuromuscular stimulation in response to a simulated degree of neuromuscular blockade during simulated medical surgery, comprising:
(A) a manikin;
(B) at least one output device associated with the manikin;
(C) means for sensing an electric pulse associated with the manikin, wherein the means for sensing an electric pulse is capable of detecting pulse frequency, pulse current and the time interval between electric pulses;
(D) means for applying at least one electric pulse corresponding to a nerve stimulation protocol to the means for sensing an electric pulse; and
(E) programmed computing means associated with the means for sensing an electric pulse for identifying the corresponding nerve stimulation protocol and for calculating a simulated response to the identified nerve stimulation protocol and the simulated degree of neuromuscular blockade and for actuating at least one output device associated with the manikin, wherein the output device is a thumb twitch actuator which moves a thumb on a hand of the manikin relative to the fingers on the hand a distance, time duration and pattern computed according to the nerve stimulation protocol and the simulated degree of neuromuscular blockade associated with the manikin, to simulate the neuromuscular stimulation in real time according to a time- and event-based script, a computer model or a combination of a time- and event-based script and a computer model, and wherein the thumb twitch actuator comprises means of transmitting a force related to the distance computed according to the nerve stimulation protocol and the simulated degree of neuromuscular blockade when movement of the thumb is impeded.

5,391,082
CONDUCTIVE WEDGES FOR INTERDIGITATING WITH ADJACENT LEGS OF AN IC OR THE LIKE
Durwood Airhart, 60437 255th St., Litchfield, Minn. 55355
Filed Oct. 26, 1993, Ser. No. 143,004
Int. Cl.[6] G01R *1/04*
U.S. Cl. 439—68 **2 Claims**



1. Apparatus comprising:
a plurality of n fingers, each comprising a core of alternating layers of adhesive and filler, at least one layer of which is nonconductive, and a conductive cladding on each of two opposing sides of the core, each finger of the plurality having a first end where the conductive claddings lie within planes that are parallel and each finger having a second end where the conductive claddings converge; and
a plurality of n−1 spacers, each spacer adhered on two opposing sides to the respective conductive claddings at the first ends of two adjacent fingers.

5,391,083
COMPUTER CARD CONNECTOR
Joseph V. Roebuck, Cupertino; Charles A. Centofante, Hollister; Rudolf Albrecht, San Jose, and Henry A. Jupille, Placerville, all of Calif., assignors to R. A. Tool & Die, Inc., Santa Clara, Calif.
Filed Feb. 25, 1994, Ser. No. 201,802
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—76 **26 Claims**

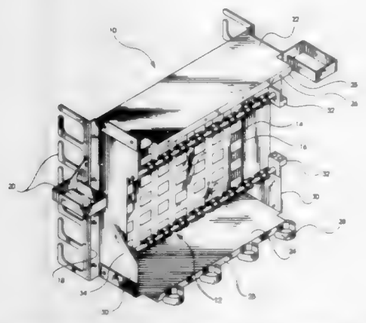


1. A personal computer card apparatus for interconnecting with and securely retaining a removable plug, comprising
a computer card for interconnection within a personal computer;
a connector board with electrical connectors projecting

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from one end thereof for electrical engagement with the computer card and for receiving a removable plug;
an elastic boot encircling about said connector board and for interfacing with a removable plug engaged to said electrical connectors, the boot-having one end open for sliding said boot over said connector board and engaged plug; and
whereby the elasticity of the boot causes an interfacing engagement of the boot with an attached removable plug to secure said plug in place.

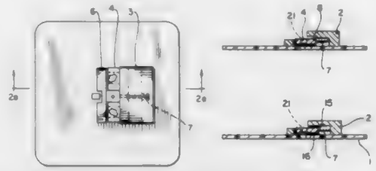
5,391,084
GROUNDING ASSEMBLY FOR ELECTRICAL DISTRIBUTION PANELS
William D. Kreitzman, Elk, Wash., assignor to Chatsworth Products, Inc., Chatsworth, Calif.
Filed Mar. 11, 1994, Ser. No. 190,381
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—98 **5 Claims**



1. A grounding assembly for use with an electrical distribution panel for grounding electrical cables associated with such panel, said grounding assembly including:
(a) a support member formed of electrically conductive material, and extending longitudinally with respect to said panel and connectable with a grounding block mounted on said panel; and
(b) at least one grounding clip mounted on said support member, said grounding clip including at least one mounting flange formed with an opening for receiving said support member and permitting movement of said grounding clip along said longitudinal extent of said support member, and a plurality of flexible arms carried by said mounting flange with each said arm being movable between a first position to provide a spacing between said arm and said support member large enough to receive a respective one of said cables, and a second position at which said respective one of said cables is clamped in place against said support member by said arm.

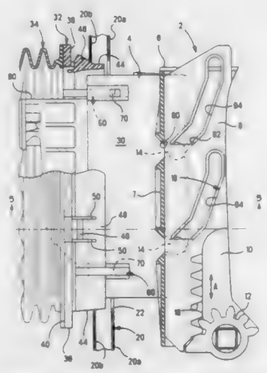
5,391,085
ELECTRICAL SOCKET ASSEMBLY INCLUDING SAFETY DEVICE
Alexander B. Tigner, 145 E. 27th St., Apt. 10 F, New York, N.Y. 10016
Filed Jun. 24, 1993, Ser. No. 82,272
Int. Cl.[6] H01R *13/453*
U.S. Cl. 439—137 **13 Claims**

1. An electrical socket assembly comprising:
a cover plate having first and second openings for receiving first and second prongs of a plug;
a shutter plate
means for slidably mounting said shutter plate in adjoining relation to said cover plate such that said shutter plate is slidable in a direction which is perpendicular to an imaginary line connecting said first and second openings and between a closed position where it occludes said first and second openings and an open position wherein said first and second openings are exposed;
means for allowing said shutter plate to pivot about an axis extending substantially perpendicular to said imaginary line and parallel to said cover plate, between a first rotational position and a second rotational position; and



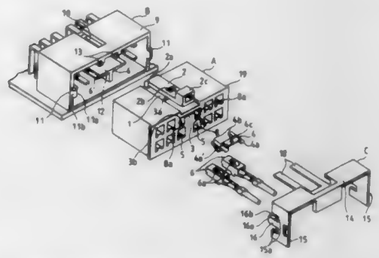
barrier means including a projection extending from said cover plate for engaging an outer edge of said shutter plate, thereby restricting the movement of said shutter plate from said closed position to said open position, said barrier means preventing said shutter plate from sliding from said closed position to said open position when said shutter plate is in said second rotational position but allowing said shutter plate to slide from said closed position to said open position when said shutter plate is in said first rotational position.

5,391,086
AUTOMOTIVE DOOR-TO-BODY ELECTRICAL CONNECTOR
Josef Woller, Griesheim, and Peter H. Hilser, Nauheim, both of Germany, assignors to The Whitaker Corporation, Wilmington, Del.
Filed Aug. 31, 1993, Ser. No. 114,536
Claims priority, application United Kingdom, Sep. 11, 1992, 9219328
Int. Cl.[6] H01R *13/629*
U.S. Cl. 439—157 **20 Claims**



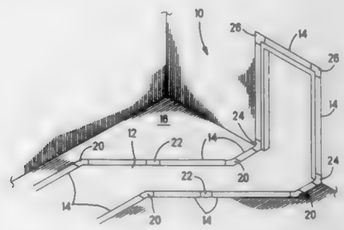
15. An electrical connector assembly for establishing an interconnection through an opening in a panel, said assembly comprising first and second connectors having complementary terminals and contacts therein and complementary actuating members for drawing the two connectors together, the second connector having a housing profiled for receipt through the opening to mate with the first connector and carrying a peripherally extending shroud therealong, the connector assembly being characterized in that actuation of the complementary actuating members causes the shroud to be brought into engagement with the panel, the two connectors to be mated and the shroud to break free of the housing.

5,391,087
CONNECTOR
Masaru Fukuda, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Dec. 10, 1993, Ser. No. 164,752
Claims priority, application Japan, Dec. 14, 1992, 4-333076
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—188 **4 Claims**



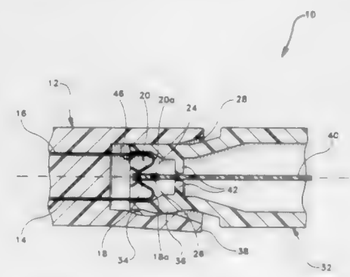
1. A connector comprising:
a male connector housing having a flexible locking arm and chambers for respectively receiving a plurality of first terminals;
a female connector housing having an engagement member for engaging the flexible locking arm of the male connector housing, a plurality of second terminals, and a pair of detecting circuit terminals;
a lock detecting member for detecting a locked condition of the male and female connector housings when the lock detecting member is released from the male connector housing upon connection of the female connector housing to the male connector housing with pairs of the first and second terminals in engaged relation; and
a short circuit member for short-circuiting the first terminals accommodated in the chambers of the male connector housing when the male connector housing and the female connector housing are in a disconnected state, and for short-circuiting the pair of detector circuit terminals in the female connector housing when the male connector housing and the female connector housing are in the locked condition.

5,391,088
SURFACE MOUNT COUPLING CONNECTOR
Michael J. Tomchak, Harrisburg; George R. Schmedding, Hummelstown, and Albert Casciotti, Hershey, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Feb. 24, 1993, Ser. No. 21,837
Int. Cl.[6] H01R *23/02, 13/03*
U.S. Cl. 439—216 **17 Claims**



1. A coupling connector for electrically coupling power conductors in a first light strip with power conductors in an adjacent second light strip for transmitting electrical power from the first to the second light strip comprising:
(a) a pair of connector ends, one of which is attached to said first light strip and the other of which is attached to said second light strip, each connector end including means for making electrical contact with the power conductors of its associated light strip, where said means includes a quantity of electrically conductive gel in electrical contact with a flexible conductor, said conductive gel being urged into electrical contact with the power conductors of one of said light strips when said connector end is attached to said light strip;
(b) said flexible conductor interconnecting said means for making electrical contact of one of said connector ends with that of the other of said connector ends; and
(c) a cover arranged for attachment to each of said connector ends to substantially cover said flexible conductor during use, said cover being replaceably removable to permit attachment and detachment of said connector ends to their respective light strips.

5,391,089
CAM ACTION ELECTRICAL EDGE CONNECTOR
G. Quickel, Salt Lake City, and K. Richardson, Herriman, both of Utah, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Aug. 26, 1993, Ser. No. 112,739
Int. Cl.[6] H01R *13/15*
U.S. Cl. 439—260 **3 Claims**

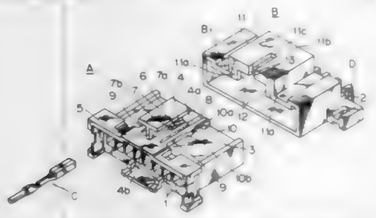


1. An electrical connector, comprising:
a fist housing with a first longitudinal axis and a first cavity, having an open mouth with beveled edges, at least one wall of the cavity having a cut out portion therein;
a first conductor having a fixed end and a free end mounted in the first cavity offset from the first longitudinal axis, the free end of the first conductor being reversely bent so as to have an arm that extends toward the fixed end and the first longitudinal axis;
a second housing having a proximal end and a distal end with a second longitudinal axis and a second cavity with a second open mouth formed therein at the distal end, the second housing being adapted to fit at least partially into the first cavity and having a detent portion adapted to fit into the cut-out in the wall of the first cavity;
a second conductor mounted in the second cavity adjacent to the second open mouth; and
the second cavity defining a camming surface with a proximal end and a distal end substantially radially aligned with a proximal portion of the second conductor and extending at an angle to the second longitudinal axis with the proximal end closer to the longitudinal axis than the distal end so that when the first housing is mated with the second housing the arm of the free end of the first conductor is urged into contact by the camming surface with the second conductor only after the free end of the first conduc-

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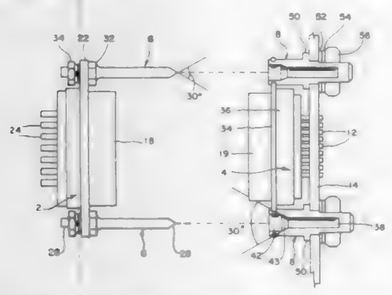
tor is substantially radially aligned with the second conductor.

5,391,090
LOCKING MECHANISM FOR CONNECTORS
Michael M. Power, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jul. 26, 1993, Ser. No. 96,493
Claims priority, application Japan, Jul. 29, 1992, 4-202268
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—354 6 Claims



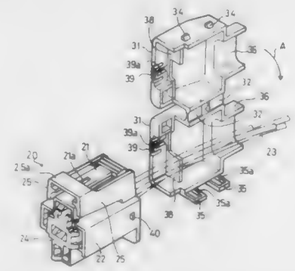
1. A locking mechanism for connectors comprising:
a resilient locking arm and resilient auxiliary locking pieces, both provided at a first connector housing;
locking projections provided at the locking arm, the locking projections including:
a tapered engagement guide surface sloping upwardly from the front toward the rear; and
a lock-engagement surface at the rear end of the locking projections;
engagement projections provided at the auxiliary locking pieces with longitudinally extending tapered guide surfaces;
an engagement frame provided at a second connector housing to receive the locking arm and auxiliary locking pieces, the engagement frame including lock-engagement projections to engage the locking projections of the locking arm of the first connector housing, and engagement portions for engaging with the engagement projections of the locking pieces of the first connector housing; and
an unlocking portion extending from the top of the locking arm of the first connector housing, the unlocking portion projecting upwardly from the engagement frame of the second connector housing when the connector housings are engaged.

5,391,091
CONNECTION SYSTEM FOR BLIND MATE ELECTRICAL CONNECTOR APPLICATIONS
Alvin R. Nations, Simi Valley, Calif., assignor to American Nucleonics Corporation, Westlake Village, Calif.
Filed Jun. 30, 1993, Ser. No. 85,564
Int. Cl.[6] H01R *13/645*
U.S. Cl. 439—378 16 Claims



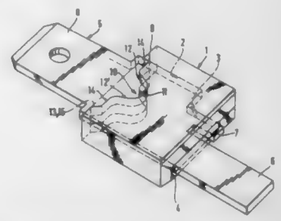
1. An electrical connection system, which comprises:
an electrical connector which includes integral means for mounting said connector;
an electrical receptacle mateable with the electrical connector and which includes integral means for mounting said receptacle;
at least one guide pin having a proximal end secured to the integral mounting means for one of the electrical connector and mating electrical receptacle; and
at least one guide pin socket having an axial bore therein dimensioned for receiving said guide pin, said socket being secured to the other integral mounting means of said electrical connector and mating electrical receptacle such that when said guide pin is received by said socket, said electrical connector is aligned with and easily coupled to said mating electrical receptacle and wherein said integral mounting means of said connector and receptacle for securing said guide pin and socket maintains the connection system within a length and width confine of said electrical connector and mating receptacle, and wherein said electrical connector and receptacle is a D-type subminiature connector assembly.

5,391,092
CONNECTOR COVER AND METHOD FOR ASSEMBLING CONNECTOR COVER
Tatsuya Sumida, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan
Filed Sep. 2, 1993, Ser. No. 114,306
Claims priority, application Japan, Oct. 6, 1992, 4-075881[U]
Int. Cl.[6] H01R *13/58*
U.S. Cl. 439—470 9 Claims



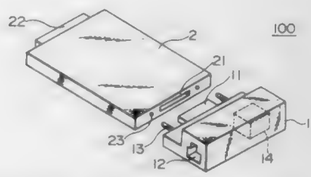
1. A connector cover for covering a wire lead-out portion of a connector housing, comprising:
a pair of cover members that are obtained by longitudinally splitting a tubular member into halves, said cover members integrally molded to be interconnected by a hinge portion, said pair of cover members forms a cover body of a hollow tubular configuration to enclose wires of the connector housing by engaging with each other;
engagement projection portions formed on an end portion of an outer peripheral surface of one cover member;
engagement pieces each having an engagement hole formed on an end portion of an outer peripheral surface of the other cover member, said engagement projection portions engageable respectively in said engagement holes to hold said pair of cover members in a closed condition; and
elastically-deformable retaining pieces connected to respective side walls of said cover members and extending toward the front end of each cover member, each retaining piece having a retaining hole to be engaged with respective retaining projections formed on respective side surfaces of the connector housing as said cover is slid axially over said connector housing.

5,391,093
CERAMIC INSULATING BLOCK
Peter Schlaghaum, Leinburg; Helmut Stuhler, Nürnberg, and Wilfried Krings, Würselen, all of Germany, assignors to Hoechst CeramTec Aktiengesellschaft, Selb, Germany
Filed Nov. 9, 1992, Ser. No. 972,022
Claims priority, application Germany, Nov. 9, 1991, 4136868
Int. Cl.[6] H01R *17/00*
U.S. Cl. 439—617 6 Claims



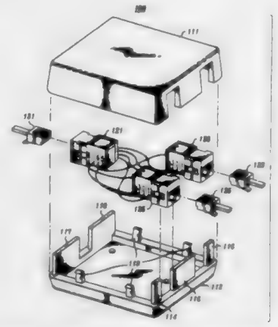
1. A ceramic insulating block having a height H for receiving a contact pin of a halogen lamp, which has a shallow channel having a re-entrant projection at its exit side, which ceramic insulating block is provided, at an entry side of the shallow channel, with a recess having a bell-shaped contour whose apex extends towards an exit side of the shallow channel, the recess having an apex height H_S of ≦40% of the height H of the insulating block, an apex radius R_S of ≦20% of the height H of the insulating block, and a base radius R_S of between 140% and 60% of R_S.

5,391,094
CARD-TYPE LINE INTERFACE DEVICE
Wataru Kakinoki, Yokohama; Masanobu Okada, and Yasumasa Ueda, both of Sagamihara, all of Japan, assignors to Murata Mfg. Co., Ltd., Kyoto, Japan
Filed Nov. 12, 1993, Ser. No. 152,602
Claims priority, application Japan, Nov. 20, 1992, 4-310726
Int. Cl.[6] H01R *33/90, 29/00*
U.S. Cl. 439—638 11 Claims



1. A card-type line interface device comprising:
a card unit which is inserted into a card slot of a communication terminal device, said card unit including:
a cardlike body,
a terminal connector arranged at one end of said cardlike body and connected with said communication terminal device, and
an adapter connecting connector arranged at another end of said cardlike body; and
an adapter unit arranged separately from said card unit, said adapter unit including:
a boxlike body,
a substantially inflexible card connecting connector arranged directly on a part of said boxlike body, without a flexible cable therebetween, for connecting with said adapter connecting connector,
a line connector arranged on another part of said boxlike body for connecting with a communication line, and
an interface circuit arranged internally of said boxlike body between said card connecting connector and said line connector for connecting said card connecting connector to said line connector.

5,391,095
ENHANCEMENT OF 10 BASE T NETWORKS
Timothy D. Bora, St. Charles, Ill., assignor to AT&T Corp., Murray Hill, N.J.
Filed Aug. 31, 1993, Ser. No. 114,565
Int. Cl.[6] H01R *23/02*
U.S. Cl. 439—676 4 Claims



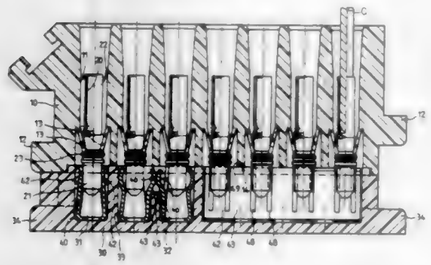
1. A connecting block for use with eight-wire twisted pair signal cables comprising:
one jack having eight terminals for connection via a plug to one end of an eight-wire twisted pair signal cable; and
two jacks, each having eight terminals, each for connection via a plug to one end of each of two additional twisted pair signal cables;
each of said two jacks for connecting one four-wire signal set from a predetermined set of terminals of said each jack via one of said additional twisted pair signal cables to a communication device or data network termination;
four of the terminals of said one jack being connected to said predetermined set of four terminals of a first of said two jacks, and the other four terminals of said one jack being connected to said predetermined set of four terminals of a second of said two jacks.

5,391,096
DEVICE FOR SELECTIVELY INTERCONNECTING A SERIES OF CONDUCTORS
Bertrand Chiron, Coulaines; Jean Raoelison, Le Mans, and Patrick Leger, Mulsanne, all of France, assignors to Framatome Connectors International, Paris, France
Filed Jun. 24, 1993, Ser. No. 81,963
Claims priority, application France, Jun. 26, 1992, 92 07913
Int. Cl.[6] H01R *11/09*
U.S. Cl. 439—724 9 Claims

1. Device for selectively interconnecting a series of conductors comprising:
an insulative housing provided with a series of parallel passages through it each adapted to receive a conductive pin whose free end forms a male connection member and whose opposite end is connected to one of said conductors, the pins all emerging at their free end on a common side of said housing, and
an insulative cover closing said common side provided internally with at least one interconnect member forming female connection members each facing a plurality of said passages and adapted to cooperate with a plurality of said pins by coming into contact with the free ends thereof so as to short-circuit them electrically together,
wherein said housing comprises, in each passage, retaining members in one piece with said housing and cooperating

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with a shoulder on said pin, after insertion thereof into said passage, so as to oppose movement of the pins out of the housing by axial loads exerted on said pins by said conductor and, so retain said pin axially in its passage and



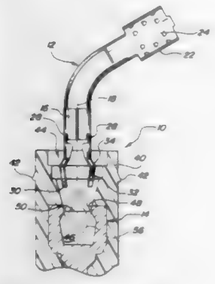
maintain the end of said pin, said cover having U-shape passages, said at least one interconnect member being a U-shaped bar and said cover and said bar being substantially devoid of means for axial mechanical retention of the pins.

5,391,097

LOW INSERTION FORCE TERMINAL ASSEMBLY

Joseph A. Kerul, Girard, Ohio, assignor to Interlock Corporation, Westland, Mich.

Filed Oct. 29, 1993, Ser. No. 142,935
Int. Cl.[6] H01R *13/05*
U.S. Cl. 439—825 **7 Claims**



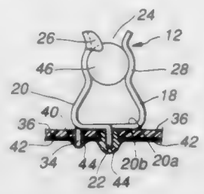
1. A terminal assembly comprising:
a male member;
a female member adapted to engage said male member along a mating axis;
said male member including mounting means, a body portion and a contact portion, said mounting means extending from said body portion for mounting said male member to a wire lead, said contact portion extending from said body portion and having a lead end and a first ramp surface adjacent to said lead end, said first ramp surface generally defining an incline proceeding from said lead end at a first ramp angle with respect to said mating axis, a second ramp surface located between said first ramp surface and said mounting means, said second ramp surface defining a decline proceeding from said lead end at a second ramp angle with respect to said mating axis, said second ramp angle being greater than said first ramp angle, said male member also including biasing means for biasing said first and second ramp surfaces outward from said mating axis and into engagement with said female member; and
said female member including portions defining an insertion opening at one end thereof and a receiving cavity for receiving at least a portion of said male member therein, said portions defining said opening including an entrance ramp surface generally angularly corresponding to said first ramp surface and said first ramp angle of said male member, said entrance ramp surface cooperating with said first ramp surface and said biasing means to provide a predetermined amount of resistance to insertion of said male member into said female member, said portions defining said receiving cavity including an exit ramp surface generally angularly corresponding to said second ramp surface and said second ramp angle of said male member, said exit ramp surface cooperating with said second ramp surface and said biasing means to provide a predetermined amount of resistance to withdrawal of said male member from said female member, said predetermined amount of resistance to withdrawal being greater than said predetermined amount resistance to insertion.

5,391,098

METHOD OF MOUNTING FUSE HOLDING CLIPS FOR A FUSE HOLDER

Kozi Ohashi, Saitama, Japan, assignor to Kyoshin Kogyo Co., Ltd., Japan

Filed Apr. 19, 1993, Ser. No. 49,552
Claims priority, application Japan, Apr. 20, 1992, 4-125480
Int. Cl.[6] H01R *4/48*
U.S. Cl. 439—830 **8 Claims**



1. A method of mounting fuse holding clips for a fuse holder on a circuit board by an automatic part inserter which inserts mounting legs of said fuse holding clips into respective mounting holes in a circuit board, said fuse holding clips each having a stop provided on a clip body of said fuse holding clips so that a cartridge fuse held by said fuse holder is never axially removed therefrom out thereof, said method being characterized by comprising a step of inserting a fuse holding clip by the automatic inserter while a direction detector provided on said fuse holding clip extends through a detection hole in said circuit board if said fuse holding clips are inserted in a correct direction.

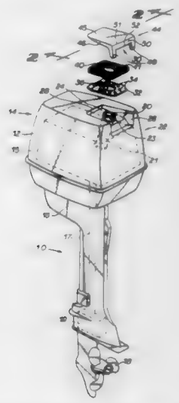
5,391,099

AIR INTAKE PROTECTOR FOR OUTBOARD MOTOR

Charles V. Allain, 909 2nd St., Franklin, La. 70538

Filed Jan. 7, 1994, Ser. No. 178,894
Int. Cl.[6] B63H *21/26*
U.S. Cl. 440—77 **10 Claims**

1. An air intake protection system for an outboard motor of the type having an air intake port with an air plenum thereabove and an air chamber thereabout, and with the system comprising a plate disposed between the air chamber and the air plenum defining both a series of spaced-apart openings that communicate with the air intake port and a port opening that permits the plate to be received on the air intake port, and a diverter screen disposed on an upper surface of the plate mounted about the air intake port between the air chamber and air plenum, whereby during outboard motor operation water spray entrained in air flowing into the air chamber is inhibited by the diverter screen from upward entry into the air plenum and air intake port, and whereby between outboard motor operations foreign matters such as insects are inhibited by the



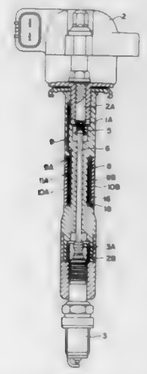
diverter screen from entry into and nesting in the air plenum and air intake port.

5,391,100

METHOD OF MANUFACTURING OF SPARK PLUG CAP WITH IGNITION VOLTAGE DETECTIVE CAPACITOR

Shigeru Maruyama; Yuichi Shimasaki; Masaki Kanehiro; Takashi Hisaki; Shigeki Baba; Takuji Ishioka; Jiro Takagi, and Eitetsu Akiyama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1993, Ser. No. 149,647
Claims priority, application Japan, Nov. 10, 1992, 4-326165; Nov. 10, 1992, 4-326168
Int. Cl.[6] F02P *17/00*
U.S. Cl. 445—7 **30 Claims**



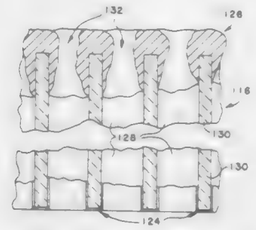
1. A method of manufacturing a spark plug cap covering a spark plug for an internal combustion engine, equipped with an ignition voltage detective capacitor having;
a first conductor for carrying an ignition voltage produced by an ignition coil to the spark plug;
an insulative body made of an insulative material and housing the first conductor; and
a second conductor located a predetermined fixed distance from the first conductor while sandwiching at least the insulative material such that the capacitor is formed between the first and second conductors for detecting the ignition voltage;
comprising the steps of;
fabricating said insulative body separately fabricating a member from an insulative material embedding said second conductor therein; and
fixing the member to said insulative body such that said detective capacitor is formed.

5,391,101

METHOD OF MANUFACTURING A FEEDBACK LIMITED MICROCHANNEL PLATE

Verle W. Aebi, Menlo Park, and Kenneth A. Costello, East Palo Alto, both of Calif., assignors to Intevac, Inc., Santa Clara, Calif.

Division of Ser. No. 724,041, Jul. 1, 1991, Pat. No. 5,268,612. This application Oct. 12, 1993, Ser. No. 135,014
Int. Cl.[6] H01J *9/12*
U.S. Cl. 445—50 **10 Claims**



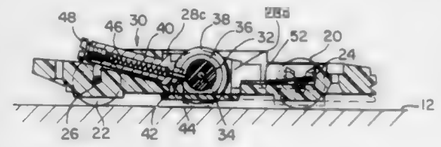
5. The method of making a multichannel plate comprising the steps of:
forming a boule of a multitude of optical fibers each composed of a core glass surrounded by a cladding glass;
cutting the boule to form a plate member;
removing the core glass from the plate member to leave a multitude of channel members fused together, each channel member being less than about 12 microns in diameter and having an input end and output end;
forming a semiconductor layer on the channel wall surface; and
applying an output electrode on the output face of the channel plate which electrode covers at least 10 percent of the open area of the output end of said channels.

5,391,102

SPARKING TOY VEHICLE

Warren E. Bosch, Burlington, N.J., assignor to Matchbox Toys (U.S.A.) Limited, Mount Laurel, N.J.

Filed Dec. 8, 1993, Ser. No. 164,083
Int. Cl.[6] A63H *17/045*
U.S. Cl. 446—23 **16 Claims**



1. A sparking toy vehicle for being supported on a play surface, said vehicle comprising:
(a) a vehicle body;
(b) a plurality of wheels rotatably mounted on said vehicle body, said wheels being mounted with respect to said body for movement between a first position in which said body is a first distance from the play surface when the wheels

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are in engagement with the play surface and a second position in which said body is a second distance from the play surface when the wheels are in engagement with the play surface, said first distance being greater than said second distance;

(c) a spark generating mechanism mounted on said body, said spark generating mechanism being spaced from the play surface when said body is in said first position and in contact with the play surface when said body is in said second position, said spark generating mechanism comprising:

(i) a sparking wheel rotatably mounted on said body; and

(ii) a spark-producing element in contact with said sparking wheel such that upon rotation of said sparking wheel a spark is produced whereby when said body is in said second position and the vehicle is moved across the play surface said spark generating mechanism is in rolling contact with the play surface and said spark generating mechanism generates a spark.

5,391,103

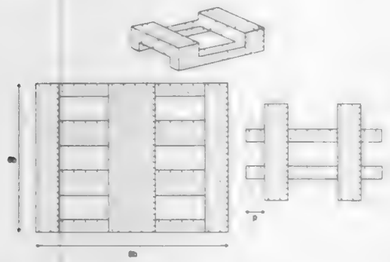
BUILDING BLOCK CONFIGURED FOR PLURAL CONNECTIONS

Dong K. Mak, 93 Banner Road, Nepan, Canada K2H 9K9

Filed Feb. 24, 1992, Ser. No. 840,157

Int. Cl.[6] A63H *33/08*

U.S. Cl. 446—125 **3 Claims**



1. A rectangular building block with an upper and lower surface, said block with a pre-determined thickness, b, width, 2*b*, and length, 4*b*, the upper surface with a first central symmetrical channel with length 2*b* and rectangular cross-section with width 2*b* and depth *b*/2, intersecting at a right angle and on top of a second central symmetrical channel on the lower surface, with length 4*b* and rectangular cross section with width b and depth *b*/2.

5,391,104

SUSPENDED BUNGEE CORD DOLL

Kenneth S. George, 502 6th St., Ogden, Utah 84404

Filed Oct. 18, 1993, Ser. No. 137,405

Int. Cl.[6] A63H *3/00, 3/20*

U.S. Cl. 446—177 **12 Claims**

12. A suspended doll comprising:

a figurine;

a cord coupled to said figurine;

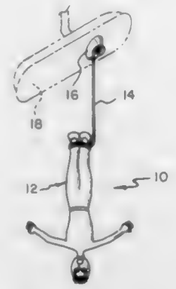
an attachment means coupled to said cord for coupling said cord to an object whereby said figurine may be suspended therefrom in an inverted position

a label means removably coupled to said figurine for receiving and displaying a card, said label means comprising a shoulder strap having a pair of ends and defining a tubing interior into which said card may be received; and a fastening means coupled to said ends for removably coupling said shoulder strap to said figurine, said label means further comprising a waist strap having a pair of ends and defining a tubing interior into which an additional card may be received; and a fastening means coupled to said ends for removably coupling said waist strap to said figurine;

wherein said straps are formed of a substantially transparent material;

wherein said figurine comprises a body defining an interior cavity; and a pair of legs coupled to said body, at least one of said legs defining a journal therethrough providing communication between said interior cavity and an exterior of said figurine, whereby a portion of said cord passes through said journal to be removably stored within said interior cavity;

and further comprising a retracting means positioned within said interior cavity for selectively retracting and dispensing said cord;



wherein said figurine further comprises a neck attached to said body and having an aperture therethrough; and a head rotatably coupled to said neck, and said retracting means comprises an axle rotatably mounted within said interior cavity and extending through said aperture in said neck to fixedly engage said head; and a spool supported by said axle and coupled to said cord whereby said cord may be selectively retracted and dispensed through said journal; and,

wherein said attachment means comprises a suction cup and said cord comprises a substantially resiliently deformable elastic cord.

5,391,105

PICTURE TOY HAVING MOVABLE LIGHT CODUCTING PEGS TO FORM PATTERNS

Lawrence T. Jones, Westlake Village, Calif., assignor to Inno-Land, Inc., Pineville, N.C.

Filed Feb. 1, 1994, Ser. No. 190,255

Int. Cl.[6] A63H *33/22, 33/04, 33/26;* **F21V** *7/04*

U.S. Cl. 446—219 **9 Claims**



1. A picture toy for creating illuminated indicia by selectively depressing a plurality of light pipes:

a housing;

a first opaque plate attached to the housing, the first opaque plate including a back surface and a first array of apertures;

a second opaque plate attached to the housing, the second opaque plate including a second array of apertures, the second opaque plate being positioned over the first opaque plate and the housing such that light can enter the picture toy only through the apertures of the first and second arrays and such that each aperture of the first array is axially aligned with a corresponding aperture of the second array;

a source of light attached to the housing and facing the back surface of the first opaque plate; and

a plurality of light pipes supported by the first and second opaque plates, each light pipe including a rear section slidably fitted into one of the apertures of the first array and a front section slidably fitted into the corresponding aperture of the second array, each light pipe including a central section joining the rear and front sections, the rear section of each light pipe including an opaque end surface which substantially prevents light from entering the light pipe through the rear section when the light pipe is slid into a raised position with the opaque end surface being substantially contiguous with the first opaque plate and, when the light pipe is slid into a depressed position with the rear section protruding from the picture toy through the first aperture, light being allowed to enter the light pipe through the rear section for creating illuminated indicia by selectively depressing a selected plurality of light pipes, the rear section of each light pipe being characterized by a rear section diameter increasing toward the central section, the front section of each light pipe being characterized by a front section diameter increasing toward the central section, the rear section frictionally fitting within one of the apertures of the first array when the light pipe is slid into the depressed position, and the front section frictionally fitting within one of the apertures of the second array when the light pipe is slid into the raised position, each light pipe additionally including a ridge attached to the central portion of the light pipe for preventing each of the plurality of light pipes from sliding beyond a range of positions spanning between the raised position and the depressed position.

5,391,106

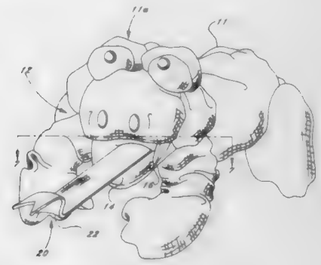
ANIMATED TOY HAVING A RETRACTABLE APPENDAGE

Albert W. Lidert, Jr., 3129 Peachtree Cir., Davie, Fla. 33328

Filed Feb. 25, 1994, Ser. No. 201,636

Int. Cl.[6] A63H *3/36, 3/24, 3/12*

U.S. Cl. 446—337 **13 Claims**



1. An animated toy figure, comprising:

a head including a throat;

an articulate jaw disposed in said head to define a movable mouth, said articulate jaw movable between an open position and a closed position to cause the mouth to be opened and closed, respectively; and

a tongue member disposed in said mouth and having a proximal end and a distal end, said tongue member distal end fixedly attached to said throat, said tongue member being movable between an extended position and a retracted position, said tongue member having an arcuate curvature cross section in the extended position, thereby allowing said tongue member to remain in the extended position indefinitely, said tongue member automatically retracting upon actuation by contact when the arcuate curvature is deformed by a force that causes a displacement in the arcuate curvature, wherein said tongue member is retracted and coiled for storage inside the mouth when said jaw is closed.

5,391,107

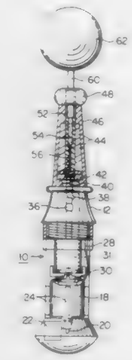
DEVICE FOR MAKING A CANDY SUCKER JIGGLE

Thomas J. Coleman, Bristol, Va., assignor to B.A.A.T Enterprises Inc., Bristol, Va.

Filed Sep. 17, 1993, Ser. No. 122,680

Int. Cl.[6] A63H *33/26*

U.S. Cl. 446—484 **3 Claims**



1. A device for making a candy sucker jiggle including a housing,

said housing including an upper end and a lower end with said lower end separatable from said upper end,

said lower end of said housing including an electric motor,

a motor frame in contact with an inner surface of said lower end of said housing and in contact with an outer surface of said motor,

a shaft extending axially downwardly from said motor and rotatable by said motor,

an off centered weight secured to said shaft,

a battery power supply for connection with said motor,

switch means for completing an electrical circuit from said battery to said motor for activating said motor,

said upper housing including an elongated candy sucker stick holder in contact with said upper end of said housing,

said candy sucker stick holder including an enlarged outer end portion with an axial opening with fixed sections of different diameter in said upper end housing for receipt of one end of a candy sucker stick of a size to fit into one section of different diameter in which the outermost diameter section is of a largest diameter whereby activation of said motor causes a candy sucker on an outer end of said candy sucker stick to vibrate for insertion into a users mouth for consumption of said candy sucker.

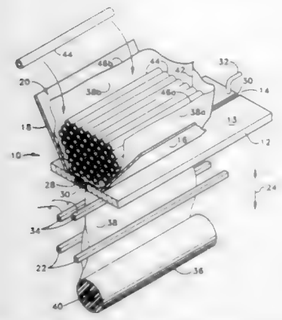
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5,391,108

METHOD AND APPARATUS FOR PACKAGING OF SHIRRED FOOD CASINGS AND RESULTING ARTICLE

Raymond A. Feldt, Hickory Hills, Ill., assignor to Viskase Corporation, Chicago, Ill.

Filed Mar. 29, 1994, Ser. No. 219,564
Int. Cl.[6] B65D *85/20;* **A22C** *13/00*
U.S. Cl. 452—21 **21 Claims**



1. A method of forming a package composed of a plurality of shirred strands of food casings tightly bundled together by a stretch film, comprising the steps of:

a) arranging a supply of a stretchable and a heat sealable film below a horizontal table;

b) drawing superimposed sheets of said film from said supply and passing them upwardly through an elongated slot in said table until there is a sufficient length of film above the horizontal table to form a desired package;

c) spreading said sheets to provide a space therebetween with portions of said sheets being draped along said table;

d) loading strands of shirred food casings into said space and onto said table to form a stack comprising rows of said strands piled one on another;

e) closing said sheets over said stack and pulling on said film from below said table to draw film downwardly through said slot and tension said sheets about said stack;

f) clamping said sheets together across the film width at a location beneath said stack to maintain tension of the sheets about said stack; and

g) heat sealing said sheets together across the film flat width below said clamping location and thereafter unclamping said sheets and severing said film supply below said heat seal to provide a tightly bundled stack of said shirred food casing strands.

5,391,109

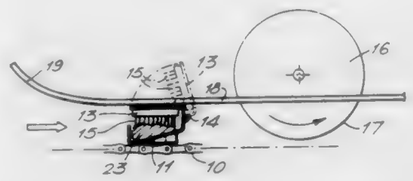
CUTTING OF FOODSTUFF TRANSPORTED IN A CARRIER

Lars G. A. Wadell, Aengelholm, Sweden, assignor to Nestec S.A., Vevey, Switzerland

Filed Aug. 20, 1993, Ser. No. 110,165
Claims priority, application European Pat. Off., Sep. 10, 1992, 92115477
Int. Cl.[6] A22C *17/02*
U.S. Cl. 452—155 **18 Claims**

1. In an apparatus assembly for cutting a foodstuff article having a cutting device having a circular blade, a conveyor and means for advancing the conveyor, a carrier and a pusher for positioning a foodstuff article on the carrier for cutting, wherein the carrier is affixed to the conveyor and has a base and opposing sidewalls which extend from the base and has a gap therein which separates the carrier into first and second portions for passing the blade from one sidewall to the other between the portions for cutting a foodstuff article supported on the base and contained between the sidewalls into pieces, and wherein the conveyor, carrier and blade are arranged for transporting the carrier containing a foodstuff article to and past the blade for cutting a foodstuff article in the carrier, the improvements comprising:

a cover for covering and uncovering the first carrier portion and a hinge which connects the cover to one sidewall of the first carrier portion wherein the cover is positioned to extend from a position adjacent the gap and wherein the cover is configured for, upon covering the first carrier portion, extending between the sidewalls and for holding a foodstuff article positioned on the base and between the sidewalls in a fixed position during cutting but allowing the foodstuff article to be pushed from the second carrier



portion to the first carrier portion under the cover for positioning for cutting; and

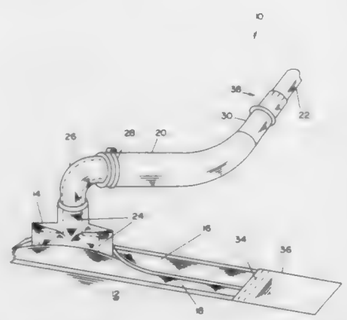
a reciprocative pusher positioned for reciprocating into and out of the carrier having a covered first portion in a direction parallel to the carrier sidewalls for pushing a portion of a foodstuff article in the carrier from the first carrier portion to the second carrier portion under the cover for positioning the foodstuff article and so that in a direction of conveyor transport of the carrier to the blade, the pusher is positioned so that upon conveyor transport of the carrier, the pusher reciprocates into and out of the carrier at a position prior to the carrier reaching the blade.

5,391,110

EXHAUST GAS DISCHARGE APPARATUS

G. Douglas Linberg, 3003 Stuart Way, Lansdale, Pa. 19446; David J. Linberg, 143 Jefferson Ct., and Gregory Linberg, both of Norristown, Pa. 19401

Filed Jun. 15, 1994, Ser. No. 260,303
Int. Cl.[6] F23J *11/02*
U.S. Cl. 454—64 **7 Claims**



1. An apparatus for the removal of gases from a source within a building, comprising:

a blower evacuated sealed duct installed below a building floor, with the duct including a structure with a top wall located adjacent to the floor and the top wall including a slot which is an opening between the duct and the space above the floor, a bottom surface spaced from and located below the top wall, and first and second spaced apart side

surfaces located between the top wall and the bottom surface;

a sealing means covering the slot, the sealing means comprising first and second flexible flaps located in a plane parallel to the floor, each flap with one edge overlapping the other flap and a second edge attached to the top wall of the duct;

a hose dolly comprising a structure with outer surfaces and an internal sealed passage which has a top opening located above the floor and a bottom opening located within the duct, with the hose dolly configured so that it fits through the slot in the top wall of the duct, and with the outer surfaces of the hose dolly shaped so that when the hose dolly outer surfaces contact the seal means they separate the flaps at their overlap and move the flaps from a position parallel to the floor to a position in which each flap is held against surfaces of the hose dolly which are transverse to the floor while the flaps prevent air flow between the outer surfaces of the dolly and the flaps;

wheels attached to the hose dolly and located within the duct, at least two wheels being positioned to roll on the bottom surface, at least one wheel being positioned to roll against the first side surface, and at least one wheel being positioned to roll against the second side surface; and

a hose with one end connected to the top opening of the hose cart passage and a second end interconnected with a source of gases.

7. A tail pipe coupling apparatus to attach a hose to a tail pipe of a vehicle, the tail pipe coupling comprising;

a first through pipe with a first diameter and a first length, with a first end of the first pipe dimensioned to fit tightly around a vehicle tail pipe;

a second pipe with a second diameter which is larger than the first diameter and a second length which is less than the first length, the second pipe being concentrically and rotatably attached around the first pipe to form an annular space between the first pipe and the second pipe; and

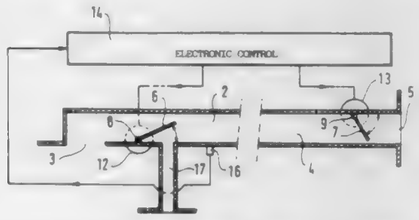
openings at both ends of the annular space which permit air to flow through the annular space and exhaust gases to flow through the first pipe when a hose with a negative pressure is connected to the second pipe by inserting the second pipe within the hose.

5,391,111

METHOD AND APPARATUS FOR ELIMINATING SUDDEN CHANGES OF PRESSURE INSIDE VEHICLES, IN PARTICULAR GROUND VEHICLES

Hervé Girard, La Rochelle; Jean-Laurent Peube, and Yves Gervais, both of Poitiers, all of France, assignors to GEC Alsthom Transport SA, Paris, France

Filed Jul. 16, 1993, Ser. No. 91,987
Claims priority, application France, Jul. 16, 1992, 92 08798
Int. Cl.[6] B61D *27/00*
U.S. Cl. 454—70 **6 Claims**



2. A device for eliminating sudden changes of pressure in a ventilated or air-conditioned vehicle, the vehicle comprising;

an inlet orifice for outside air and an outlet orifice for inside air the inlet orifice being connected to a suction duct directing sucked-in air toward the ventilation or air-conditioning system, the outlet orifice being connected to an exhaust duct exhausting inside air to the outside;

a detector for detecting the pressure wave of the vehicle and for delivering signals representative of said pressure wave;

closure means for closing the suction duct and the exhaust duct; and

a control unit that receives the signals from the detector;

wherein:

the detector detects variations in the outside or the inside pressure of the vehicle as a function of time;

the control unit controls closure of the ducts on the basis of a first determined rate of change in inside or outside pressure as a function of the, said unit also controlling re-opening of the ducts after the rate of change in inside or outside pressure as a function of time has dropped below a second determined rate;

wherein:

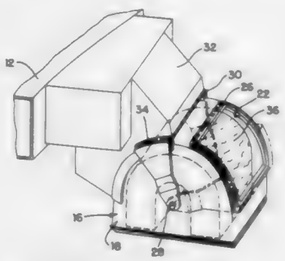
balancing means are provided for balancing the inside and outside pressures by causing a controlled flow of air between the outside and the inside of the vehicle in such a manner as to keep change in the pressure inside the vehicle as a function of time below a set value, said balancing means comprising a branch connection in communication with one of said ducts closure means for closing said branch connection; and the control unit controls opening of the branch connection upon the closure of the ducts.

5,391,112

VEHICLE AIR INLET AND FILTER ASSEMBLY

Kenneth L. Wardlaw, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 4, 1994, Ser. No. 222,060
Int. Cl.[6] B60H *3/06*
U.S. Cl. 454—139 **3 Claims**



1. In a vehicle having an interior and exterior space defined by a vehicle body, and a fan powered heating, cooling and ventilation module, a combined air inlet and filter assembly for said module, comprising,

an inlet housing located upstream of said module, and having a generally hollow interior with an outside air inlet opening to the vehicle exterior and an opposed inside air inlet opening to the vehicle interior,

a valve cover operably associate with inlet housing so as to be moved over the outside of said inlet housing from a first position covering said inside air inlet to a second position covering said outside air inlet, and,

a filter having a length sufficient to cover both of said inlet openings when placed inside said housing and a width capable of fitting through said inside inlet opening when uncovered,

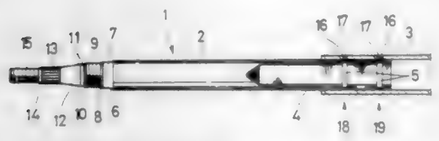
whereby, said filter may be inserted and removed in one piece into said inlet housing through said inside inlet opening, while selectively filtering either exterior or interior air, depending upon said valve cover position.

5,391,113

IMPACT ABSORBING STEERING SHAFT COMPRISING A PRESS-WORKED HOLLOW METAL PIPE

Takeru Tanaka, 1-3-18, Minamishimizu-cho, Sakai-shi, Osaka-pref, Japan

Continuation of Ser. No. 739,709, Aug. 5, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 33,946
Int. Cl.[6] F16C *3/03*
U.S. Cl. 464—91 2 Claims



1. A steering shaft comprising
an elongated hollow metal pipe (2) press-worked to have a first end and a second end and an outer diameter of about 22 mm and wall thickness of 2 to 3 mm;
an outer sleeve (3) surrounding said metal pipe at said first end thereof and being coaxial therewith;
said first end being roll-worked to define a plurality of annular grooves (5) of diameter of 18 to 19 mm and width of 1.5 to 2 mm;
energy absorbers formed by synthetic resin (17) filled in said annular grooves and in contact with said metal pipe and said outer sleeve;
said metal pipe being press-worked to define a flat portion (4) connected to said outer sleeve;
said metal pipe also being press-worked to define in order the following
a first threaded portion (15) located at said second end of said metal pipe for engaging a retaining nut;
a first tapered portion (14);
a serrated portion (13) located adjacent to said first tapered portion for engaging a steering wheel;
a second tapered portion (12);
a shank portion (11);
a third tapered portion (10);
a second threaded portion (9) located adjacent to said third tapered portion for engaging a bearing nut;
a fourth tapered portion (8);
an upper bearing mount (7) located adjacent to said fourth tapered portion; and
a curved portion (6);
whereby impact absorption is provided at the first end of said metal pipe of said steering shaft solely by said energy absorbers and shaft connection to said steering wheel is provided by the different portions defined at the second end of said metal pipe.

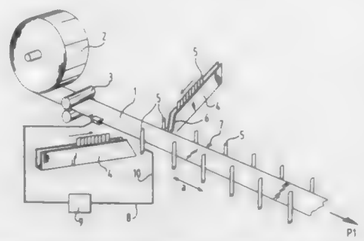
5,391,114

NAIL ELEMENT AND METHOD FOR ITS MANUFACTURE

Klaas W. De Groot, Multatulistraat 1, 3221 TP Hellevoetsluis, Netherlands

Filed Apr. 15, 1993, Ser. No. 45,875
Int. Cl.[6] B21G *3/18;* B23K *11/02*
U.S. Cl. 470—38 13 Claims

1. A method of manufacturing a nailing connector comprising a plate and at least one elongate element attached to and protruding from said plate, and said method comprising the steps of:
positioning an element contact point, along a length of said element, in contact with said plate such that said element extends at an angle to, and from opposite faces of, said plate; and



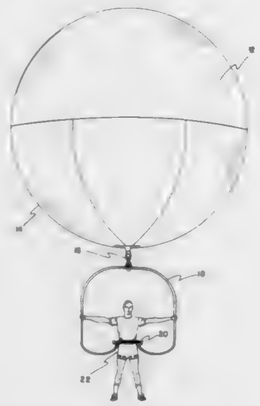
welding said element and plate together at said contact point by heating said element and plate sufficiently to effect melting of materials thereof at said contact point.

5,391,115

LOW GRAVITY JUMPING APPARATUS

Vance Bessey, 2 Adams Ct., Bath, Me. 04530

Filed May 25, 1993, Ser. No. 66,891
Int. Cl.[6] A63H *27/10*
U.S. Cl. 472—80 12 Claims



1. A low gravitational jumping apparatus for an individual comprising:
a balloon with a buoyant upward force that is a predetermined percentage of the weight of said individual;
a harness for securement of said individual;
a frame;
means for securing said frame to said harness:
means for securing said frame to said balloon;
means for permitting said individual to simultaneously move in a vertical, horizontal and rotational manner wherein the range of motion is substantial greater than said individual would be able to accomplish without the apparatus.

5,391,116

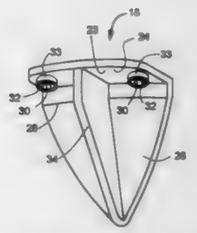
GUIDE FINGER FOR A PINSETTER

Roy A. Burkholder, Whitehall, and Ted Brim, Grand Haven, both of Mich., assignors to Brunswick Bowling & Billiards, Muskegon, Mich.

Filed Aug. 17, 1993, Ser. No. 107,924
Int. Cl.[6] A63D *5/00*
U.S. Cl. 473—73 4 Claims

1. A guide finger as used in a pinsetter, for guiding bowling pins into position, comprising:

a pinsetter having a deck;
said deck having a plurality of mounting apertures;
a mounting plate having a plurality of mounting apertures, said plate having a surface for engaging said deck;
a guide plate integrally joined to an edge of the mounting plate and extending at an acute angle from said mounting plate, said guide plate having a pin engaging surface;
said mounting plate and guide plate made from a slick, smooth, plastic material having a low coefficient of friction and being somewhat yieldable; and



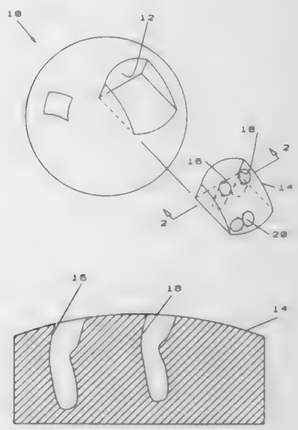
a plurality of bolts and associated nuts, said bolts extending through the mounting apertures in the mounting plate and the deck, with the associated nuts attached to a threaded end of said bolts;
wherein said bolts each include a bolt head and said mounting apertures each include a cut-out socket portion therein with the cut-out socket portions having a means for having snugly but yieldingly receiving the bolt heads therein such that overtorquing of the bolt head does not permanently deform the cut-out socket portion.

5,391,117

BOWLING BALL

John R. Miller, 10808 NE. 9th St., Vancouver, Wash. 98664

Filed Jan. 8, 1993, Ser. No. 2,245
Int. Cl.[6] A63B *37/00*
U.S. Cl. 473—128 8 Claims



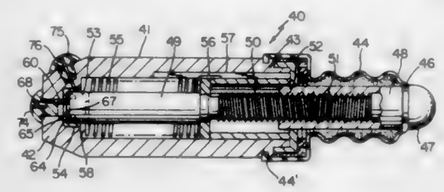
1. A bowling ball comprising:
a ball in the shape of a sphere having at least one recess, and
an insert generally filling said recess and formed of a material molded about at least one finger of the user of the ball to provide at least one finger hole formed in said insert corresponding precisely to the size, and curvature of at least one of the fingers of the user of the ball.

5,391,118

BELT TENSIONER, ACTUATOR THEREFOR AND METHODS OF MAKING THE SAME

M. Michael Tsai, Rochester Hills; David E. Fletcher, Flint, and Joseph W. Zamm, Rochester Hills, all of Mich., assignors to Dayco Products, Inc., Dayton, Ohio

Filed May 24, 1994, Ser. No. 248,134
Int. Cl.[6] F16H *7/08*
U.S. Cl. 474—138 20 Claims



1. In a belt tensioner for an endless transmission belt construction arranged to move in a certain path, said tensioner comprising a support means, an arm pivotally mounted to said support means, a pulley rotatably carried by said arm for being disposed in engagement with said belt construction, and an actuator carried by said support means and having opposed ends, said actuator having a movable piston projecting out of one of said opposed ends thereof for being in engagement with said arm to pivot said arm in a direction to urge said pulley into said belt construction as said piston is extended outwardly from said one of said opposed ends of said actuator, said actuator having spring means therein that is operatively associated with said piston for urging said piston outwardly, said actuator having a rotatable shaft means that is operatively interconnected to said spring means and that is provided with opposite end means one of which is operatively interconnected to said piston, said actuator having a casing provided with an internal recess means therein that receives the other of said opposite end means of said shaft means therein, said recess means having end surface means, said spring means being adapted to rotate said shaft means to extend said piston while said other end means of said shaft means rotates in said recess means and bears against said end surface means thereof, the improvement wherein said other end means of said shaft means comprises a thrust washer means assembled to said shaft means to be carried thereby.

5,391,119

AUTO TENSIONER

Tadashi Kondo; Masahide Ogawa, both of Fujisawa; Hiroyuki Sawai, Kamakura; Takashi Yoshikai, Yokohama, and Toshiki Watanabe, Kamakura, all of Japan, assignors to NSK Ltd., Tokyo, Japan

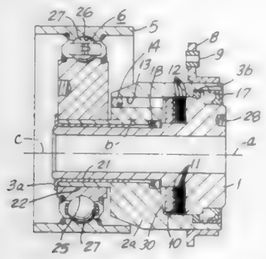
Filed Jul. 13, 1993, Ser. No. 91,270
Claims priority, application Japan, Jul. 14, 1992, 4-054949[U]
Int. Cl.[6] F16H *7/08*
U.S. Cl. 474—112 3 Claims

1. An auto tensioner comprising a fixed shaft having a first central axis and an outer peripheral surface, a pivotal member having an outer peripheral surface and supported on said outer peripheral face of said fixed shaft so as to be freely rotatable thereabout, a bearing provided on said outer peripheral face of said pivotal member and having a second central axis parallel to said first central axis, a tension pulley rotatably supported on said bearing, and a spring means provided so as to urge said tension pulley,
said pivotal member comprising a main member rotatably supported on said outer peripheral face of said fixed shaft, and an auxiliary member fixedly fitted onto a portion of said main member,
said main member having both inner and outer peripheral

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faces thereof formed axially symmetric with reference to said first central axis,

said auxiliary member having an inner peripheral face with a central axis thereof coinciding with said first central axis



and an outer peripheral face with a central axis thereof coinciding with said second central axis, and

said bearing being provided on said outer peripheral face of said auxiliary member.

5,391,120

TRANSMISSION BELT WITH INCORPORATED MOUNTING TENSION INDICATOR

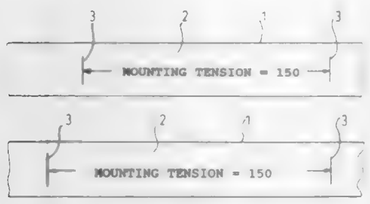
Patrick Salmon, Laventie, France, assignor to Colmant Cuvelier, France

Filed Apr. 28, 1993, Ser. No. 53,272

Claims priority, application France, Apr. 28, 1992, 92 05221

Int. Cl.[6] F16H *7/22*

U.S. Cl. 474—102 **4 Claims**



1. Transmission belt with incorporated mounting tension indicator, wherein the belt has over its length two marks spaced from each other as well as an indication of a distance needed to separate said marks when the belt is being installed in order to apply to the belt a recommended initial tensioning, said indication of distance being according to the section, length and technical characteristics of the belt.

5,391,121

METHOD AND APPARATUS FOR TOOL-LESS DRIVE-BELT INSTALLATION

Michael R. Schramm, 120 Glacier Ave. So., Pacific, Wash. 98047

Continuation of Ser. No. 177,415, Jan. 5, 1994. This application May 10, 1994, Ser. No. 241,142

Int. Cl.[6] F16G *7/00*

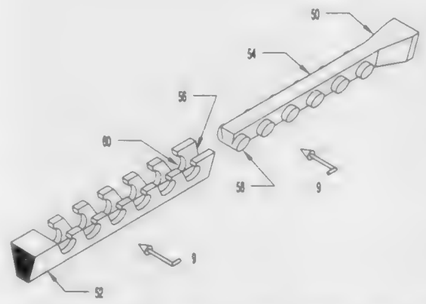
U.S. Cl. 474—253 **4 Claims**

1. A continuous, length adjustable, torque transmitting belt capable of resisting an axial load having an inner surface for contacting and rotating pulleys and an outer surface, wherein said belt comprises:

an open ended central portion having two opposed ends,

a male end integrally connected to one end of said central portion, said male end having a central body portion being defined by said outer surface of said belt and said inner surface opposite said outer surface, wherein said central body portion of said male end includes a plurality of axially displaced coupling prongs extending laterally from opposite sides of said central body portion of said male end,

a female end integrally connected to the other end of said central portion of said belt, said female end having a central channel adapted to receive said central body portion of said male end, said female end also having opposing walls parallel to the longitudinal axis of said belt, said opposing walls commencing on either side of said channel and extending upward from said inner surface toward said outer surface, said walls of said female end having a plurality of axially displaced prong retaining slots being adapted to receive said laterally extending prongs on said male end,



said central body portion of said male end being slideably insertable into said channel in said female end thereby permitting said laterally extending prongs on said male end to be slideably placed within said prong retaining slots in said walls of said female end thereby forming a continuous loop, such that the connection of said laterally extending prongs on said male end with the prong retaining slots in said female end provides resistance to said axial load.

5,391,122

HYDROMECHANICAL DRIVE SYSTEM

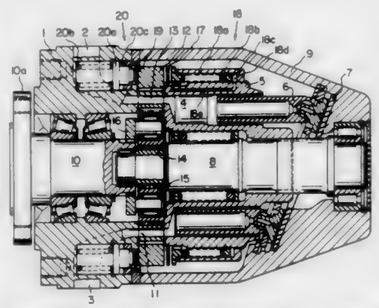
Franz Forster, Karlstadt-Muhlbach, Germany, assignor to Linde Aktiengesellschaft, Germany

Filed Feb. 26, 1993, Ser. No. 23,614

Claims priority, application Germany, Feb. 27, 1992, 4206101.6

Int. Cl.[6] F16H *47/04*

U.S. Cl. 475—72 **16 Claims**



1. A hydromechanical drive system having a swash-plate type hydrostatic axial piston engine and a mechanical transmission, said axial piston engine including an outer housing having an interior cylindrical surface, a rotary cylindrical drum having an exterior surface spaced from said interior surface of said outer housing and working cylinders located in said cylindrical drum, a reciprocating working piston located in each of said working cylinders, a connection plate fixed to said outer housing and having a control surface formed thereon in flow connection with said working cylinders, hydraulic-medium channels formed in said connection plate opening on said control surface, whereby said working cylinders are periodically connected with said hydraulic-medium channels during rotation of said cylindrical drum to reciprocate said working pistons, and a gear element located adjacent to said control surface on said connection plate.

5,391,123

HYDROMECHANICAL FINAL DRIVE

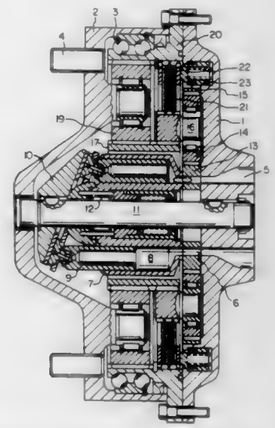
Franz Forster, Karlstadt-Muhlbach, Germany, assignor to Linde Aktiengesellschaft, Germany

Filed Feb. 26, 1993, Ser. No. 23,928

Claims priority, application Germany, Feb. 27, 1992, 4206087

Int. Cl.[6] F16H *47/04*

U.S. Cl. 475—83 **17 Claims**



1. A hydromechanical final drive having a fixed hub support with a cylindrical outer surface and an annular rotary hub with a cylindrical inner surface and an output side, a hydrostatic swash-plate type axial piston motor having a cylindrical drum with an outer surface and an inner surface, a plurality of work cylinders located within said cylindrical drum and a work piston located in each of said plurality of work cylinders, a planetary gear having an axial length located within the axial length of said piston motor and connected to the output side of said rotary hub, said planetary gear and said cylindrical drum being coaxial, a control surface formed on said fixed hub support, pressure medium conduits formed in said fixed hub support and having outlets opening on said control surface and in flow connection with said plurality of work cylinders in said cylindrical drum, a cylindrical machine part surrounding said outer surface of said cylindrical drum and non-rotatably connected to said rotary hub, whereby said cylindrical drum is non-rotatably connected directly to said cylindrical machine part, and a bearing located between said cylindrical inner surface of said rotary hub and said cylindrical outer surface of said fixed hub support for absorbing forces of said axial piston motor and outside forces affecting the final drive.

5,391,124

POWER TRANSMISSION FOR DRIVING AN OUTPUT SHAFT OF A STEERABLE HOUSING HAVING A DIFFERENTIAL WITH COMPENSATION FOR STEERING TORQUES

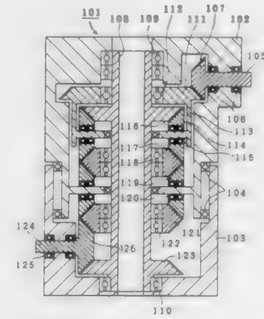
Fumio Kasahara, 467 Yashiki, Higashibessho-cho, Anjo-shi, Aich-ken, 446, Japan

Filed Jan. 8, 1993, Ser. No. 2,483

Claims priority, application Japan, Jan. 10, 1992, 4-021742; Aug. 19, 1992, 4-244233; Dec. 24, 1992, 4-359055

Int. Cl.[6] F16H *1/00, 1/20*

U.S. Cl. 475—198 **10 Claims**



1. A power transmission comprising:

a first housing and a second housing coupled to rotate relative to each other;

a first external connecting shaft rotatably disposed in said first housing;

a second external connecting shaft rotatably disposed in said second housing;

an internal transmission shaft and an external transmission gear concentrically arranged on the axis of relative rotation of said first and second housings;

a first transmission mechanism for transmitting rotations between said first external connecting shaft, and said internal transmission shaft and said external transmission gear to rotate said internal transmission shaft and said external transmission gear in opposite directions relative to each other;

a second transmission mechanism for transmitting rotations between said second external connecting shaft, and said internal transmission shaft and said external transmission gear to rotate said internal transmission shaft and said external transmission gear in opposite directions relative to each other, and for absorbing the difference, which is caused by the relative rotation of said first and second housings, between the rotating speeds of said internal transmission shaft and said external transmission gear;

wherein said first and second transmission mechanisms are disposed on an outer circumference of said internal transmission shaft coaxially with each other.

5,391,125

EPICYCLIC SPEED REDUCER DESIGNED FOR FITMENT TO THE TRANSMISSION BETWEEN THE GAS TURBINE AND AIR COMPRESSOR OF AN AIRCRAFT ENGINE

Sergio Turra, Turin, and Valter Bologna, Grugliasco, both of Italy, assignors to Fiat Avio S.p.A., Turin, Italy

Filed Nov. 12, 1992, Ser. No. 975,414

Claims priority, application Italy, Nov. 12, 1991, T091A 000871

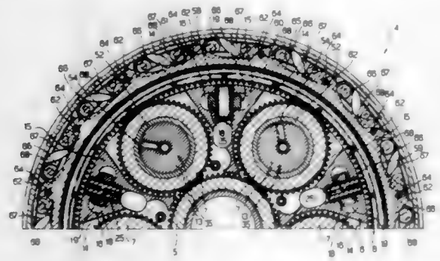
Int. Cl.[6] F16H *1/28*

U.S. Cl. 475—346 **13 Claims**

1. An epicyclic speed reducer designed for fitment to a

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transmission between a gas turbine and air compressor of an aircraft turbine engine, said reducer comprising a sun gear (5) connected to said turbine; a planet carrier (6) connected to said air compressor coaxially to said sun gear (5) and supporting a number of planetary gear (7) meshing with one of said sun gear (5); and a ring gear (8) fitted to a mounting (9) of said engine and with which said planetary gear (7) mesh; characterized by the fact that said planet carrier (6) comprising a first annular element (10) having a number of pairs of seats (11) for pins (13) on each of which rotates one of said planetary gears (7), and a number of holes (16) each interposed between two continuous



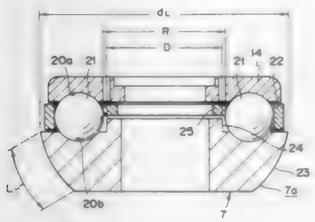
planetary gears (7); a second annular element (17) connected to said compressor and having a number of cantilever axial arms (18), each designed to fit inside one of said holes (16) on said first element (10); connecting means (19) for connecting the end of each said cantilever axial arms (18) to a portion (20) of said first element (10), which portion (20) is substantially equidistant in relation to these seats (11) in each said pair of seats of said pins (13); said connecting means comprising a hinge (19) having a proper axis which is positioned radially in relation to a reducer axis, and is equidistant in relation to the seats (11) in each said pair of seats of said pins (13).

5,391,126

TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION

Hiroshi Fukushima, Ayase, and Hisashi Machida, Fujisawa, both of Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jul. 22, 1993, Ser. No. 95,014
Claims priority, application Japan, Aug. 5, 1992, 4-060209[U]; Oct. 28, 1992, 4-080261[U]
Int. Cl.[6] F16H *15/38*; F16C *33/46*
U.S. Cl. 476—46 5 Claims



1. A toroidal type continuously variable transmission comprising:

an input shaft;

an input side disk having one side surface in the axial direction, the cross-section of which is made arcuate to form an input side concave surface, and mounted for rotation by said input shaft; an output side disk having one side surface in the axial direction, the cross-section of which is made arcuate to form an output side concave surface, and supported coaxially with said input shaft for rotation relative to said input shaft, said output side concave surface opposing said input side concave surface;

a plurality of trunnions, arranged for swing motion about pivots located at twisted positions relative to said input shaft;

a plurality of displacement shafts each fixedly supported by a corresponding trunnion at a base end thereof;

a plurality of outer rings each arranged around the base end of a corresponding displacement shaft and having a first race on one side;

a plurality of annular power rollers each rotatably supported at a distal end of a corresponding displacement shaft and having a second race on a surface opposing the corresponding first race, a convex surface portion which abuts said input side concave surface and said output side concave surface, and a cylindrical surface portion protecting from said surface having said second race, said cylindrical surface portion being disposed inwardly of said second race and having an outer diameter smaller than an inscribed circle diameter of a plurality of rolling bodies disposed in said second race and the corresponding first race; and

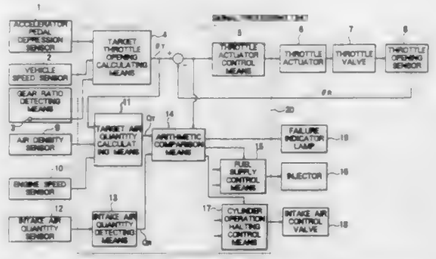
a respective retainer disposed between each annular power roller and the corresponding outer ring for holding the corresponding plurality of rolling bodies, the retainer having an inner circumferential portion disposed between the cylindrical surface portion of the corresponding power roller and the corresponding outer ring, a thickness of said inner circumferential portion being smaller than that of an outer circumferential portion of said retainer.

5,391,127

CONTROL APPARATUS IN A MOTOR VEHICLE FOR CONTROLLING A THROTTLE VALVE ON THE BASE OF ACTUATION OF AN ACCELERATOR PEDAL AND INTAKE AIR QUANTITY

Yukinobu Nishimura, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1993, Ser. No. 60,962
Claims priority, application Japan, May 15, 1992, 4-123356
Int. Cl.[6] F02D *9/00*
U.S. Cl. 477—110 8 Claims



1. A control apparatus for a motor vehicle, comprising:

accelerator pedal actuation detecting means for detecting a magnitude of actuation of an accelerator pedal of said motor vehicle and generating a corresponding output signal;

vehicle speed detecting means for detecting a running speed of said motor vehicle and generating a corresponding output signal;

gear ratio detecting means for detecting a gear ratio of a transmission of said motor vehicle and generating a corresponding output signal;

a throttle actuator for moving a throttle valve in an intake manifold of the motor vehicle; and

a signal processing unit responsive to the output signals from said accelerator pedal actuation detecting means, said vehicle speed detecting means and said gear ratio detecting means for controlling said throttle actuator based on the magnitude of actuation of said accelerator pedal, the vehicle speed and the gear ratio;

said signal processing unit including:

storage means for storing a plurality of target throttle opening patterns representing relations between target values of throttle opening degree and magnitudes of actuation of said accelerator pedal; and

control means

(a) for determining a target throttle opening pattern from the plurality of target throttle opening patterns on the basis of the vehicle speed and the gear ratio,

(b) for determining a target throttle opening on the basis of the determined optimum target throttle opening pattern, and the magnitude of actuation of said accelerator pedal, and

(c) for controlling said throttle actuator on the basis of the determined target throttle opening;

wherein said patterns are previously established in dependence on at least one of a load condition and a running condition of said motor vehicle.

2. A control apparatus for a motor vehicle, comprising:

intake air quantity detecting means for detecting a quantity of intake air fed to an internal combustion engine of said motor vehicle and generating a corresponding output signal;

accelerator pedal actuation detecting means for detecting a magnitude of actuation of an accelerator pedal of said motor vehicle and generating a corresponding output signal;

a throttle actuator for moving a throttle valve in an intake manifold of the motor vehicle; and

a signal processing unit responsive to the output signals from said intake air quantity detecting means and said accelerator pedal actuation dectecting means for controlling said throttle actuator based on the quantity of intake air and the magnitude of actuation of said accelerator pedal, said signal processing unit being operable to determine a target intake air quantity on the basis of the magnitude of actuation of said accelerator pedal;

said signal processing unit including:

comparison means for comparing the target intake air quantity with an actual intake air quantity as detected by said intake air quantity detecting means; and

control means for reducing the output power of said internal combustion engine when the actual intake air quantity is substantially greater than the target intake air quantity;

wherein the target air quantity is determined on the basis of an atmospheric air density, an engine rotational speed and a target throttle opening which corresponds to the magnitude of actuation of said accelerator pedal.

5,391,128

OBJECT DELIVERY EXERCISE SYSTEM AND METHOD

Patricia C. deBear, Royal Oak, Mich., assignor to Rahabilitation Institute of Michigan, Detroit, Mich.

Continuation of Ser. No. 711,677, Jun. 6, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 94,813
Int. Cl.[6] A63B *24/00*
U.S. Cl. 482—4 47 Claims

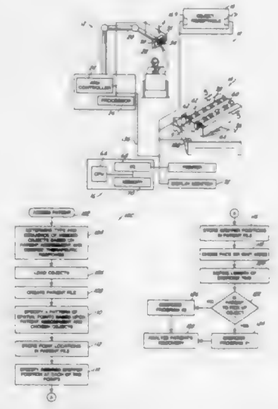
1. A patient exercise system, comprising:

object delivery means for automatically providing an object to be fetched by a patient;

reception means, movable to a certain first one of a plurality of spatial positions, for receiving said object from said patient upon movement to said certain first one of said plurality of spatial positions and for selectively grasping and moving said object to a certain second one of said plurality of spatial positions and for allowing said patient to fetch said object when said object has been placed at said certain second one of said plurality of spatial positions; and

movement control means for controlling movement of said reception means and for selectively moving said reception means to said certain second one of said plurality of spatial positions.

31. A method for exercising an appendage of a patient in a patient exercise system wherein said patient exercise system has an object delivery means for arranging and sequentially providing each of a plurality of objects to be fetched by a patient, reception means for sequentially receiving each of said objects from said patient and controls means coupled to said object delivery means and said reception means for moving said reception means to a certain one of a plurality of spatial positions, comprising the steps of:



specifying several objects that are to be grasped by an appendage of a patient;

arranging said specified objects in a certain order;

automatically delivering each of said objects to said patient according to said certain order from said object delivery means; and

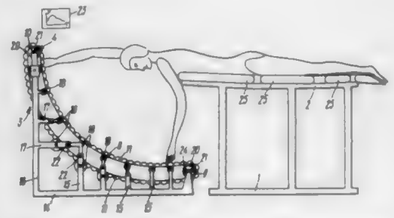
causing said patient to grasp said objects delivered from said reception means by use of said appendage and to move each of said delivered objects on said reception means to a predetermined spatial position.

5,391,129

SWIMMER TRAINING DEVICE

Viatcheslav K. Zaitsev, Moskau, Russian Federation, assignor to Promotech Corporation, Liechtenstein, Germany

PCT No. PCT/EP93/01379, § 371 Date Apr. 7, 1994, § 102(e) Date Apr. 7, 1994, PCT Pub. No. WO93/24190, PCT Pub. Date Dec. 9, 1993
PCT Filed Jun. 2, 1993, Ser. No. 193,070
Claims priority, application Germany, Jun. 4, 1992, 4218478
Int. Cl.[6] A63B *69/10*
U.S. Cl. 482—56 8 Claims



1. A muscle training device, particularly for swimmers: having a user supporting surface (2);

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having an endless traction element (6) which turns about two pivots (9, 10) arranged in front of the user supporting surface (2), said traction elements being provided with gripping elements (7) and a loading device (4) for applying a force opposing movement of the traction element (6);

characterized in that:

a further endless traction element (6) is provided;

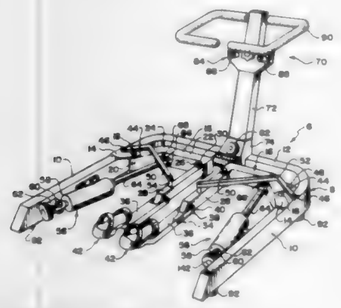
both traction elements (6) being symmetrically arranged at an angle e with respect to a longitudinal axis of the user supporting surface (2), whereby a spacing between the traction elements (6) at their pivots (9) nearest to the user supporting surface (2) is greater than a spacing between their pivots (10) farthest from the user supporting surface (2); and

upper strands of the traction elements have curved upper surfaces (8), whereby the pivots (9) nearest the user supporting surface (2) lie lower than the pivots (10) farthest from the user supporting surface.

5,391,130
LEG EXERCISER

Edward J. Green, 238 Wolf Ridge Close, Edmonton, Alberta, Canada T5T 5M6 ; Gerald R. Kendall, 267 Varsity Estates Gr., Calgary, Alberta, Canada T3B 4C8 ; Mark Lumbard, 1631-15th Avenue S.W., Calgary, Alberta, Canada T3C 0Y3 , and Arvind Naran, 501 Adsum Drive, Winnipeg, Manitoba, Canada R20 0W8

PCT No. PCT/CA90/00036, § 371 Date Oct. 3, 1991, § 102(e) Date Oct. 3, 1991, PCT Pub. No. WO90/08572, PCT Pub. Date Aug. 9, 1990
PCT Filed Feb. 2, 1990, Ser. No. 730,919
Claims priority, application United Kingdom, Feb. 3, 1989, 8902470
Int. Cl.[6] A63B *22/00, 69/18*
U.S. Cl. 482—71 **16 Claims**



1. An exercise apparatus comprising:

a frame;

two first arms pivotally connected to the frame;

two second arms pivotally connected to respective ones of the first arms at positions spaced from the connections of the first arms to the frames;

two tie rods, each pivotally connected to the frame and a respective one of the second arms so as to provide, with the first and second arms and the frame, two four bar linkages;

a foot pad mounted on each second arm; and

resistance means comprising two fluid cylinders, each connected between the frame and a respective one of the first arms for resisting pivotal movement of each first arm with respect to the frame,

each fluid cylinder being a double acting cylinder comprising:

a cylinder barrel;

fluid port means at each end of the cylinder barrel;

one-way valve means communicating with each fluid port means for passing fluid into the cylinder barrel and preventing fluid flow from the cylinder barrel;

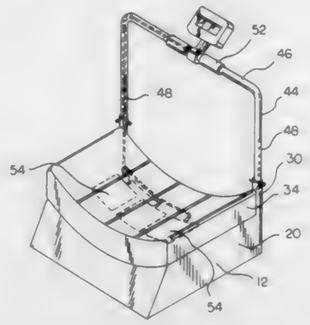
adjustable control valve means connected to the fluid port means for controllably restricting flow from the fluid port means;

a piston slideable in the barrel and a piston rod secured to the piston and projecting from one end of the barrel; means for pivotally connecting the cylinder to the frame and means for pivotally connecting the piston rod to the associated first arm; stop means for limiting the stroke of the piston in the cylinder barrel, the stop means, comprising a rod projecting into the cylinder barrel from an end thereof opposite the piston rod for engagement with the piston.

5,391,131
SNOW SKI ENHANCER

Kirk L. Gordon, 11 Craney Hill Rd., Weare, N.H. 03281

Filed May 9, 1994, Ser. No. 240,175
Int. Cl.[6] A63B *22/20, 23/04*
U.S. Cl. 482—71 **4 Claims**



1. A new and improved snow ski enhancer comprising, in combination:

a weighted base having a front side, a back side, a left sidewall, a right sidewall, an upper surface and a lower surface, the front side having a lower bottom edge and an upper top edge, the upper surface being concave, the weighted base having a width of about five feet and a depth of about twenty inches, the upper concave surface having a height of about five inches at the left sidewall, a height of about five inches at the right sidewall, and a height of about three inches therebetween, the front side of the weighted base being inclined from the lower bottom edge to the upper top edge, two hollow cylindrical vertical extensions integral with the back side of the weighted base, an aperture formed in each of the two hollow vertical extensions;

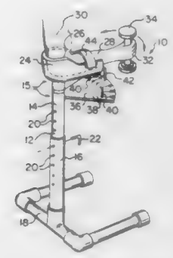
a foam cushion having a top surface and a bottom surface, the bottom surface secured to the upper concave surface of the weighted base, a plurality of foot position markers positioned on the top surface of the foam cushion, the foam cushion having a width of about three inches; and

a U-shaped piece having two lower legs and an intermediate extent therebetween, a plurality of apertures formed along the two lower legs, the two lower legs adapted to be received within the two hollow cylindrical vertical extensions of the weighted base, the plurality of apertures of the two lower legs adapted for registration with the apertures formed in the two hollow cylindrical vertical extensions of the weighted base, a fastening means cooperating with the apertures of the two lower legs and the apertures of the hollow cylindrical vertical extensions, the fastening means functioning to secure the two lower legs relative to the hollow cylindrical vertical extensions, the fastening means being removable allowing the U-shaped piece to adjust from about 32 inches to about 48 inches in height, and two hand grips are located on the intermediate extent of the U-shaped piece.

5,391,132
FREE STANDING ROTATOR CUFF DEVELOPMENT DEVICE

Dale R. Greenwald, 1190 Ithaca Dr., Boulder, Colo. 80303

Continuation-in-part of Ser. No. 945,537, Sep. 16, 1992. This application Jun. 16, 1993, Ser. No. 78,518
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—91 **26 Claims**



1. An exercise device which is useful for the development of rotator cuff musculature of a user by isolating the head of the humerous in the glenoid cavity during internal and external rotation, including in combination:

an upright vertical stand which includes at least one portion which is to be located adjacent to the elbow of a user;

an elbow receiving and securing means which is rotatably mounted on said upright vertical stand at one said portion which is to be located adjacent to the elbow of a user, said elbow receiving and securing means being in the form of an L-shaped receptacle which is anatomically contoured to receive the elbow of a user in a snug fit, and which further includes an open substantially concave extension which is adapted to be parallel to the axis of the forearm of a user and to receive at least a portion of the forearm of a user, and an open substantially concave extension which is adapted to be parallel to the axis of the upper arm of a user and receive at least a portion of the upper arm of a user at the elbow and hold the lower arm of a user at about a 90° angle to the upper arm of that user, and, during internal and external shoulder rotation, guides the lower arm of a user at about a 90° angle to the upper arm of that user; whereby, when a user positions an elbow in said means for receiving and securing the elbow, with the lower arm positioned at about 90° from the upper arm of the user, and then rotates that arm, the head of the humerus is substantially isolated in the glenoid cavity during both internal and external rotation, so that the inner rotator cuff muscles and the outer rotator cuff muscles of the user are exercised.

5,391,133
UNDERWATER BUOYANT EXERCISE APPARATUS

Anthony A. Ruffa, 10 Orchard St., Niantic, Conn. 06357

Filed Jul. 1, 1993, Ser. No. 84,464
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—92 **5 Claims**

1. An underwater buoyant exercise apparatus comprising:

an elongated bar having a center portion, and a first end spaced from a second end, with a first circumferential journal extending around said bar proximal to said first end thereof, and a second circumferential journal extending around said bar proximal to said second end thereof;

a first collar secured on said bar between said center portion and said first circumferential journal;

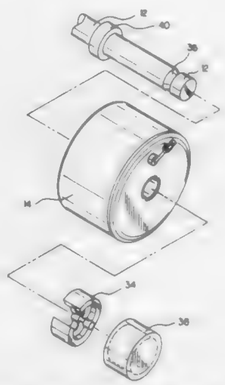
a second collar secured on said bar between said center portion and said second circumferential journal;

a first buoyancy chamber positioned on said bar between said first collar and said first end of said bar;

a second buoyancy chamber positioned on said bar between said second collar and said second end of said bar;

a first clasp positioned on said bar having a member and engaged to said first journal, said first clasp being pivotally openable;

a second clasp positioned on said bar and engaged to said



second journal, said second clasp being pivotally openable;

a first cylindrical retainer positioned over said first clasp so as to preclude pivotal opening of said first clasp, thereby locking said first clasp on said bar and capturing said first buoyancy chamber between said first collar and said first clasp;

and,

a second cylindrical retainer positioned over said second clasp so as to preclude pivotal opening of said second clasp, thereby locking said second clasp on said bar and capturing said second buoyancy chamber between said second collar and said second clasp.

5,391,134
EXERCISING AND/OR AMUSEMENT DEVICE

Richard L. Heatwole, 1285 Grange Hall Rd., Corydon, Ind. 47112

Continuation-in-part of Ser. No. 81,457, Jun. 22, 1993, Pat. No. 5,320,593. This application Mar. 24, 1994, Ser. No. 217,337
Int. Cl.[6] A63B *23/04*
U.S. Cl. 482—146 **20 Claims**

1. An exercising and/or amusement device for working the upper and lower body of a user, comprising:

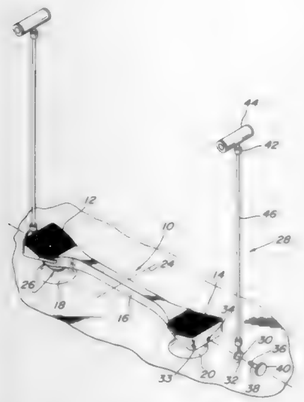
first and second platforms spaced from each other, each platform having an upper surface being adapted to receive one of the feet of the user;

a ground engaging element associated with each platform and having a bottom surface for engaging the ground surface;

a pivotable joint connecting the platform and its associated ground engaging elements comprising a curved surface on the platform spaced from the upper surface and a complimentary curved surface on the ground engaging element spaced from the bottom surface wherein the curved surfaces slideably engage each other, the curved surface of the platform having an opening, a link extending from the curved surface of the ground engaging element and through the opening in the curved surface of the platform

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for controlling relative movement between the curved surfaces, and bias means for urging the curved surface of the ground engaging element into engagement with the curved surface of the platforms and for biasing the ground



engaging element towards a center position relative to the platform; and

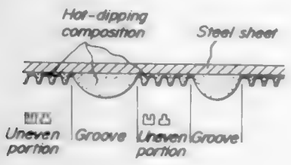
an upper body exerciser releasably attached to the platforms and adapted to work the upper body of the user.

5,391,135

ROLLS FOR HOT DIPPING BATH

Nobuyuki Kuroki, Chiba; Akiyosi Kohma, Hyogo; Hidekatu Okuma, and Shoichi Fukamizu, both of Chiba, all of Japan, assignors to Tocalo Co., Ltd., Hyogo and Kawatetsu Galvanizing Co., Ltd., Tokyo, both of Japan

Filed Apr. 26, 1993, Ser. No. 51,858
Int. Cl.[6] B05C *1/00*
U.S. Cl. 492—35 16 Claims



1. A roll for hot dipping bath comprising:

a roll having an outer peripheral surface;

at least one groove capable of discharging dross in said outer peripheral surface; and

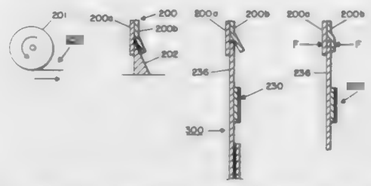
at least one portion of said outer peripheral surface having a roughness comprising undulations having a height within a range of 0.5–5 mm capable of applying a molten metal composition to a sheet of metal without transferring a groove mark to the sheet of metal.

5,391,136

TAMPER-EVIDENT SEALING SYSTEM FOR ENVELOPE AND METHOD OF MAKING SAME

Kenneth R. Makowka, 19 Stirrup La., Wilton, Conn. 06897

Division of Ser. No. 814,329, Dec. 23, 1991, which is a continuation of Ser. No. 576,169, Aug. 30, 1990, abandoned, which is a continuation of Ser. No. 274,321, Nov. 21, 1988, abandoned. This application Dec. 8, 1993, Ser. No. 164,985
Int. Cl.[6] B31B *1/90*
U.S. Cl. 493—210 7 Claims



1. The method of adhering a tamper-evident sealing means having a destructible adhesive means with a protective liner overlying the adhesive on a closing means used to close the opening of an envelope so that a portion of the adhesive means adheres to the closing means and the remainder of the adhesive means extends beyond the closing means and retains the liner over the adhesive comprising:

separating the liner from that portion of the adhesive means that is to adhere to the closing means while retaining the liner on the remainder of the adhesive whereby a gap is created between the separated portion of the liner and adhesive;

feeding the closing means relative to the adhesive means and into the gap; and

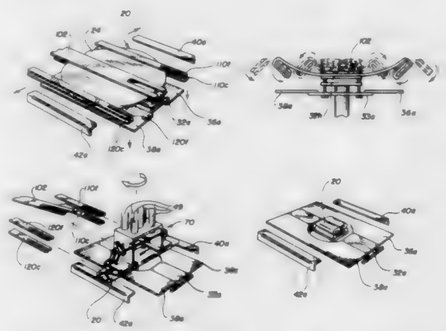
applying pressure to the adhesive means and closing means to adhere the adhesive means to the closing means while retaining the liner on the portion of the adhesive means extending beyond the closing means.

5,391,137

AIRBAG FOLDING APPARATUS AND METHOD

Jerry DePoy, Bradford, and Scott F. Mason, New Carlisle, both of Ohio, assignors to The Omega Company Inc., Dayton, Ohio

Filed Oct. 29, 1993, Ser. No. 145,968
Int. Cl.[6] B60R *21/16*
U.S. Cl. 493—405 12 Claims



10. A method for folding an airbag comprising the steps of:

clamping a first portion of said airbag;

folding second and third portions of said airbag to create first folds in said airbag to form a partially folded airbag;

engaging said partially folded airbag to maintain said first folds in said partially folded airbag;

rotating said engaged partially folded airbag about a vertical axis; and,

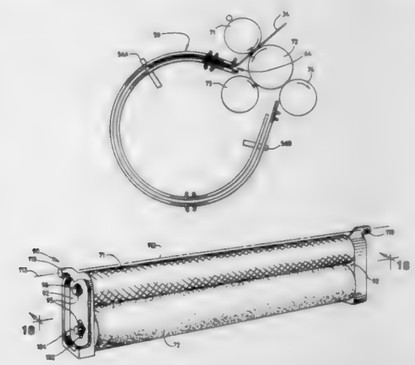
folding opposing portions of said partially folded airbag to create second folds in said partially folded airbag to form a completely folded airbag.

5,391,138

SHEET FEEDING SYSTEM FOR A SHEET FOLDING APPARATUS

Richard J. Abramson, Glen Ellyn, and Rudolf Retzl, Tinley Park, both of Ill., assignors to The Hedman Company, Chicago, Ill.

Filed Mar. 24, 1993, Ser. No. 36,557
Int. Cl.[6] B65H *45/14*
U.S. Cl. 493—421 12 Claims



1. A sheet feeding system for use in a buckle-type sheet folding apparatus having sheet-receiving chutes and rollers for folding a sheet, said sheet feeding system comprising:

a frame in which said sheet-receiving chutes are disposed and in which two of said rollers are rotatably mounted in parallel adjacent said chutes;

a roller holder removably mounted in said frame; and

a main roller and a coacting roller rotatably mounted in said holder parallel to said two rollers to define three roller pairs each presenting a nip through which said sheet is fed, said holder being readily removable to accommodate replacement with a new holder.

5,391,139

REAL TIME RADIATION TREATMENT PLANNING SYSTEM

Gregory K. Edmundson, Farmington Hills, Mich., assignor to William Beaumont Hospital, Royal Oak, Mich.

Continuation of Ser. No. 940,077, Sep. 3, 1992, abandoned. This application Feb. 23, 1994, Ser. No. 201,484
Int. Cl.[6] A61B *6/00*
U.S. Cl. 600—7 22 Claims

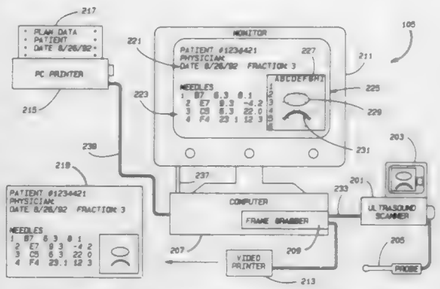
1. A real time radiation treatment dosage planning system for use in effecting radiation therapy of a preselected anatomical portion of an animal body, the system comprising:

radiation delivery means for defining a plurality of positions having a spatial relationship within a volume of the anatomical portion and for placing a radiation source at said plurality of positions;

imaging means for generating real time visual image data corresponding to the anatomical portion;

means responsive to the real time visual image data for monitoring said plurality of positions to detect a change in the spatial relationship of said positions;

processing means for automatically generating, in response to a detected change in the spatial relationship of said positions, a treatment plan including a generated value of the radiation source and a generated time period the radiation source is to be placed at each position by the radiation delivery means.



5,391,140

THERAPY APPARATUS FOR LOCATING AND TREATING A ZONE IN THE BODY OF A LIFE FORM WITH ACOUSTIC WAVES

Ulrich Schaetzle, Roettenbach, and Bernd Granz, Oberasbach, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 27, 1993, Ser. No. 172,732
Claims priority, application Germany, Jan. 29, 1993, 4302537
Int. Cl.[6] A61B *17/22*
U.S. Cl. 601—4 29 Claims

1. A therapy apparatus for locating and treating a zone in the body of a living subject with acoustic waves comprising:

means for generating therapeutic acoustic waves at a first frequency and for focusing said therapeutic acoustic waves onto a zone of action; and

acoustic locating means for generating an image of a zone to be treated in said subject simultaneously with the generation of therapeutic acoustic waves, for assisting in bringing said zone of action into coincidence with said zone to be treated, said acoustic locating means including means for emitting diagnostic acoustic waves at a second frequency and for receiving parts of said diagnostic acoustic waves reflected in the body of said subject and for converting said parts into electrical signals, means for generating said image from said electrical signals, and filter means for suppressing a fundamental of the focused therapeutic acoustic waves having a transfer function with a rejection band wherein said first frequency lies and a passband wherein said second frequency lies.

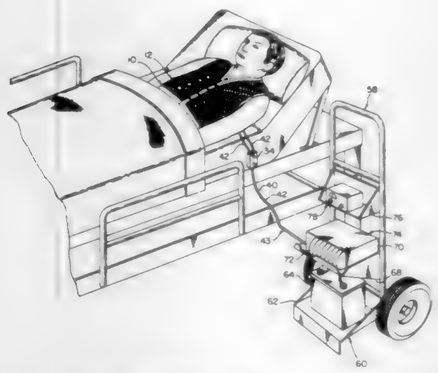
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5,391,141

ADJUSTABLE SIZE AND VARIABLE PRESSURE REGULATED MEDICAL BINDER USED BY A PATIENT AFTER HER OR HIS BODY SURGERY

Josef N. Hamilton, 1624 S. Forrest, Westport, Wash. 98595

Filed Nov. 10, 1992, Ser. No. 974,139
Int. Cl.[6] A61F 5/02
U.S. Cl. 601—151 2 Claims



1. A hand truck supported assembly of intercooperating components, centering on the utilization of an adjustable size and variable pressure regulated medical binder used by a patient after her or his open heart surgery, comprising:

a. a hand truck having a vertical frame, a handle at the top of the frame, axle and wheels at the bottom of the frame, spaced shelves secured to the frame and extending horizontally out from the vertical frame;

b. an adjustable size and variable pressure regulated medical binder supported on the spaced shelves of the hand truck, comprising, in turn:

i. an inflatable air cushion for placement over the locale of the surgical wound during a healing period;

ii. an air compressing and pumping means to inflate the inflatable cushion to a pressure selected by the patient; and

iii. a strong netting arranged as a vest and having adjustable fastener assemblies for fitting closely over the inflatable cushion, when the inflatable cushion is over the locale of the surgical wound, and to continue on for fitting closely around a body portion of the patient, to thereby keep the inflatable cushion located over the locale of the surgical wound, when the inflatable air cushion is inflated to pressures selected by a patient, to assist the patient in reducing his or her pain, whenever coughing or other happenings occur, which tend to try to stress the healing wound;

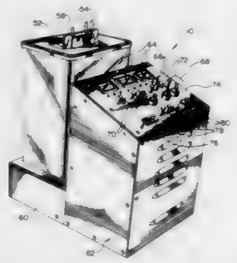
c. wherein, said air compressing and pumping means is an assembly of an electric motor, an air compressor driven by the electrical motor, electrical wires connected between a source of electrical power and the electric motor and between the electric motor and a control box having an electrical switch, air conduits connected between the air compressor, the inflatable air cushion and an air valve in the control box, and control box including both the electrical switch comprising means for starting and stopping the electrical power used in operating the electric motor, and the air valve connected to the air conduits, which comprises means for releasing pressurized air from the air conduits, and the control box is positioned on a shelf of the hand truck, and there are sufficient lengths of electrical wires and air conduits so the control box can be placed within the convenient reach of a patient, when needed.

5,391,142

APPARATUS AND METHOD FOR THE EXTRACORPOREAL TREATMENT OF THE BLOOD OF A PATIENT HAVING A MEDICAL CONDITION

Jeffrey P. Sites, Plymouth, and Wei Chen, St. Paul, both of Minn., assignors to Organetics, Ltd., Coon Rapids, Minn.

Filed Jul. 29, 1992, Ser. No. 922,034
Int. Cl.[6] A61M 1/03
U.S. Cl. 604—4 16 Claims



1. A method for treating a patient for acquired immune deficiency syndrome (AIDS), comprising the steps of:

(a) cannulating the patient for extracorporeal blood circulation wherein a blood flow circuit is defined between a first point of cannulation at a blood vessel of a patient and a second point of cannulation at a different blood vessel of the patient;

(b) pumping the patient's blood through the circuit with a motor driven pump;

(c) measuring the motor speed of said motor driven pump, the rate of flow of blood through the circuit and the fluid temperature and pressure within said circuit;

(d) heating the patient's blood to a first elevated temperature for a relatively short period of time as it passes through the circuit;

(e) subsequently heating the patient's blood to a second elevated temperature, lower than said first elevated temperature, for a more extended period of time as it passes through said flow circuit; and

(f) adjusting the motor speed as a function of a deviation of one of current motor speed, said fluid pressure, said fluid temperature and said rate of flow from a desired set-point value.

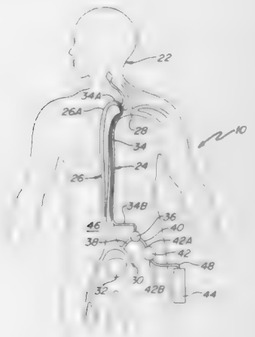
5,391,143

METHOD AND SYSTEM FOR EFFECTING WEIGHT REDUCTION OF LIVING BEINGS

Kenneth Kensey, Chester Springs, Pa., assignor to Kensey Nash Corporation, Exton, Pa.

Filed Mar. 12, 1993, Ser. No. 31,005
Int. Cl.[6] A61M 37/00
U.S. Cl. 604—5 65 Claims

1. A method for effecting obesity control of a living being by removing at least one fat-like material from the lymphatic fluid flowing through the body of said living being, said fat-like material being selected from the group consisting of fats, cholesterols, phosphoglycerides, triglycerides, and lipoproteins, said method comprising coupling a first conduit to a duct within the body of said being having said lymphatic fluid flowing therethrough so that said lymphatic fluid flows into through said first conduit, whereupon said fat-like material



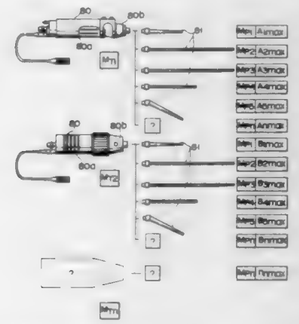
within the lymphatic fluid is removed from the body of the being continually over a protracted period of time.

5,391,144

ULTRASONIC TREATMENT APPARATUS

Tomohisa Sakurai; Hideo Nagazumi; Kazuya Hijii; Toshihiko Suzuta; Masahiro Kudo, all of Hachioji; Kenji Yoshino, Tama; Tetsumaru Kubota, Hachioji; Tatsuya Kubota, Sagamihara; Hiroaki Kagawa, Hachioji; Yuichi Ikeda, Hachioji; Mitsumasa Okada, Hachioji; Hitoshi Karasawa, Hachioji, and Tadao Hagino, Yokohama, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 680,099, Apr. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 628,650, Dec. 14, 1990, abandoned. This application Jul. 20, 1993, Ser. No. 94,910
Claims priority, application Japan, Feb. 2, 1990, 2-22241; Feb. 13, 1990, 2-32099; Mar. 27, 1990, 2-77375; Mar. 28, 1990, 2-79716; Mar. 29, 1990, 2-78918; Mar. 29, 1990, 2-78919; Apr. 3, 1990, 2-89685; Jun. 15, 1990, 2-155522; Jun. 29, 1990, 2-170232; Jul. 24, 1990, 2-193802; Jul. 31, 1990, 2-201132; Oct. 23, 1990, 2-283322; Oct. 26, 1990, 2-286976
Int. Cl.[6] A61B 17/36
U.S. Cl. 604—22 70 Claims



1. An ultrasonic treatment kit comprising:

at least one hand piece having ultrasonic oscillation means for generating ultrasonic vibration;

a plurality of probes attachable to said at least one hand piece, and a selected one of said plurality of probes being attached to a designated one of said at least one hand piece so that the selected probe transmits the ultrasonic vibration generated by said one designated hand piece attached thereto;

ultrasonic drive means connected to said one designated hand piece, for driving said ultrasonic oscillation means; and

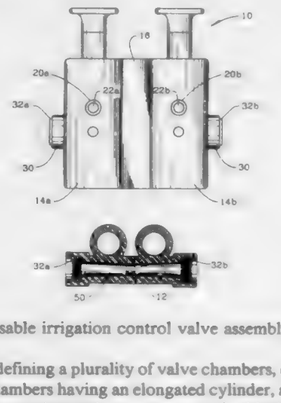
means for regulating each said ultrasonic oscillator means in such a manner that the ultrasonic vibration generated by the ultrasonic oscillator means is maintained constant for each probe from among said plurality of probes attached to said one designated hand piece.

5,391,145

IRRIGATION CONTROL VALVE FOR ENDOSCOPIC INSTRUMENT

James H. Dorsey, III, 2117 NE. 44th St., Lighthout Point, Fla. 33064

Continuation-in-part of Ser. No. 470,771, Jan. 26, 1990, Pat. No. 5,188,591. This application Feb. 19, 1993, Ser. No. 20,062
Int. Cl.[6] A61M 1/00
U.S. Cl. 604—33 9 Claims



1. A disposable irrigation control valve assembly, comprising:

a housing defining a plurality of valve chambers, each of said valve chambers having an elongated cylinder, a piston and means for reciprocating movement of said piston within said valve chamber, each of said valve chambers being further provided with an inlet orifice connectable to a source of vacuum or irrigation fluid and a second orifice formed in the cylinder wall and connected to a common conduit, the piston for each valve assembly being of a defined length relative to the length of the valve cylinder to allow for reciprocating movement of the pistons within their respective cylinders, each piston being further provided with an aperture, the size and shape of which being determined by the relative distance between the inlet and second orifices within the valve cylinder wall and, upon reciprocating movement of each piston within its respective cylinder, allowing for communication between the inlet and second orifices in said cylinder wall through the aperture in said pistons; and a common conduit formed in the value assembly at right angles relative to the cylinders of said valve body and communicating with each cylinder in said valve body through the second orifice in the cylinder wall thus allowing for simultaneous suction and irrigation, the common conduit having means for attaching a surgical probe permitting said simultaneous suction and irrigation.

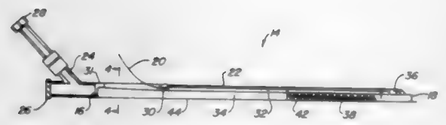
VOL 1171 ISS 3 FE 21 1995 UMI

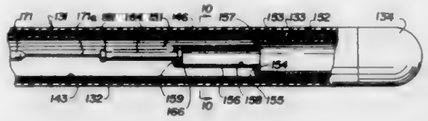
5,391,146

MECHANISM FOR MANIPULATING THE DISTAL END OF A BIOMEDICAL DEVICE

Dai T. That, San Jose, and Robert Woodard, Fremont, both of Calif., assignors to Conceptus, Inc., Fremont, Calif.

Filed Jun. 24, 1993, Ser. No. 84,457
Int. Cl.[6] A61M *37/00, 25/00*
U.S. Cl. 604—95 **18 Claims**





1. A device having a mechanism for manipulating its distal end, comprising:

an elongate shaft having proximal and distal ends and a wire lumen extending therethrough;

only one wire, the wire within the wire lumen of the shaft, the wire having proximal and distal ends, wherein the wire substantially extends from the proximal to the distal ends of the shaft and wherein the wire lumen has a cross-section area, and the wire has a cross-sectional area, wherein the cross-sectional area of the wire lumen is in between 120% to 400% of the cross-sectional area of the wire over the entire length of the lumen; and

a means for anchoring the distal end of the wire at substantially the distal end of the shaft, the means for anchoring located eccentrically with respect to the central longitudinal axis of the elongate device, such that the distal end of the device is deflected in a first direction by pulling on said only one wire and deflected in a second direction opposite to said first direction by pushing on said only one wire.

5,391,147

STEERABLE CATHETER WITH ADJUSTABLE BEND LOCATION AND/OR RADIUS AND METHOD

Mir A. Imran, Palo Alto; Mark L. Pomeranz, Los Gatos, and Brian A. Glynn, Sunnyvale, all of Calif., assignors to Cardiac Pathways Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 134,487, Oct. 12, 1993, which is a continuation of Ser. No. 983,962, Dec. 1, 1992, abandoned.
This application Nov. 5, 1993, Ser. No. 147,753
Int. Cl.[6] A61M *37/00, 25/00;* **A61B** *6/00*
U.S. Cl. 604—95 **23 Claims**

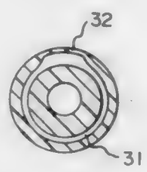
1. A steerable catheter comprising a flexible elongate tubular member having proximal and distal extremities, a handle secured to the proximal extremity, said tubular member having a lumen extending therethrough, a mandrel slidably mounted in the lumen and extending into the distal extremity and means extending through the tubular member for causing bending of the distal extremity with respect to the mandrel disposed therein, said mandrel having a portion of reduced stiffness so that the bend location can be selected depending upon the position of the region of reduced thickness.

5,391,148

RUPTURABLE BALLOON SAFETY CATHETER

Peter Bonis, 2 Clarendon St. #408, Boston, Mass. 02116

Filed Jul. 8, 1991, Ser. No. 726,908
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—96 **17 Claims**



1. Apparatus for insertion into a passageway, comprising

an elongated hollow member having opposite ends;

said member having, spaced from one end, an inflatable portion with a weakened region; and

means for inflating said portion after said member has been inserted into said passageway;

whereby the weakened region of said inflatable portion releases the inflation of said portion when said member is pulled from its inflation position; wherein said inflatable portion surrounds said member with a non-uniform thickness to provide said weakened region.

5,391,149

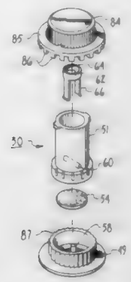
Patent Not Issued For This Number

5,391,150

IV BAG WITH NEEDLELESS CONNECTOR PORTS

Frank Richmond, 205 A Grant St., Harvard, Ill. 60033

Filed Dec. 28, 1992, Ser. No. 997,610
Int. Cl.[6] A61M *5/00, 37/00;* **A61B** *19/00*
U.S. Cl. 604—111 **1 Claim**



1. A device for holding fluid to be infused to a patient, comprising:

a hollow container having flaccid walls for holding the fluid, the container having an opening formed therein;

a valve positioned within the opening to selectively block fluid communication therethrough, the valve being operable by engagement with a spikeless or needleless IV component, the valve including:

a hollow body defining a fluid passageway therethrough, the body being formed with a luer fitting and a plurality of ratchet teeth;

a resilient valve disc positioned in the fluid passageway and being biased into a closed configuration, wherein the disc blocks fluid flow through the fluid passageway, the disc being movable to an open configuration wherein fluid flow is permitted through the fluid passageway;

a support element positioned on the valve body between the valve disc and the inside of the container for supporting the valve disc at the center of the disc;

at least one protrusion found on the body for contacting the disc in the open configuration:

a retainer element positioned in the valve on the opposite side of the disc from the support element, to hold the center of the disc against the support element;

an urging member reciprocally disposed in the fluid passageway of the valve on the same side of the disc as the retainer element, the urging member being movable between a first position, wherein the urging member is distanced from the valve disc, and a second position, wherein the urging member is contacted by a syringe to cause the urging member to contact the valve disc to move the disc into its open configuration; and

a cap including a plurality of blades for engaging the ratchet teeth to cover the luer fitting and to permit rotation of the cap relative to the valve body in a first direction, and to cause the blades to strip when the cap is rotated in a direction opposite to the first direction.

5,391,151

SUBCUTANEOUS INJECTOR

John G. Wilmot, Kent, England, assignor to Survival Technology, Inc., Rockville, Md.

PCT No. PCT/GB92/00081, § 371 Date Aug. 2, 1993, § 102(e) Date Aug. 2, 1993, PCT Pub. No. WO92/12745, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 14, 1992, Ser. No. 87,804
Claims priority, application Guinea, Jan. 15, 1991, 9100819
Int. Cl.[6] A61M *5/20*
U.S. Cl. 604—139 **22 Claims**

1. An automatic injector comprising:

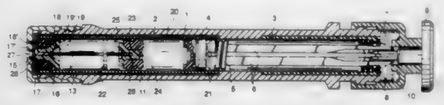
a body;

a charge of medicament normally disposed within said body;

a needle normally disposed in a normally sealed air-space within said body;

a seal for sealing said air-space at a forward end of said body, said needle being drivable into a projecting position from the forward end of said body through a predetermined portion of said seal;

a moveable plunger for forcing said medicament through said needle; and



a releasable spring for driving said needle from said air-space into said projecting position from the forward end of said body and for moving said plunger to force said medicament through said needle,

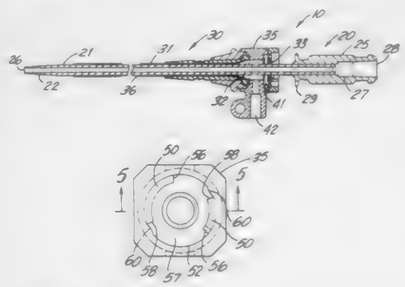
said injector having a normally sealed air release path associated therewith, said air release path being conditionable to permit at least some of the air normally contained in said air-space to exit said injector body before said needle is driven through said predetermined portion of said seal.

5,391,152

CATHETER INTERLOCK ASSEMBLY

Frank V. Patterson, Exeter, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Mar. 12, 1993, Ser. No. 30,991
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—165 **57 Claims**



1. A catheter assembly comprising:

a first catheter element having a proximal end and a distal end, the first catheter element having a hub disposed at the proximal end thereof;

a second catheter element having a proximal end and a distal end, the second catheter element having a hub disposed at the proximal end thereof wherein the second catheter element hub is engageable with the first catheter element hub;

rotatable interlock means complementarily associated with the first catheter element hub and the second catheter hub for rotatably releasably engaging the first catheter element hub and the second catheter element hub in an axial alignment;

axial securement means for securing the axial alignment of the engaged first catheter element hub and second catheter element hub; and

rotational securement means for inhibiting a rotational disengagement of the engaged first catheter element hub and second catheter element hub, the rotational securement means is in an interference fit relationship with the rotatable interlock means.

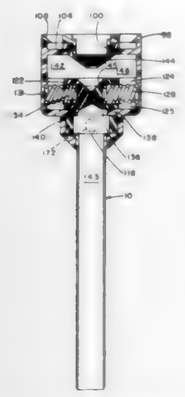
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5,391,153

TROCAR WITH LINEAR MOVEMENT SEAL

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Apr. 9, 1993, Ser. No. 45,857
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—167 28 Claims



18. A seal for use with a surgical object and hollow body defining a path, the surgical object and the body being used in a minimally invasive surgical procedure, the body having proximal and distal ends, comprising:

first and second sealing elements positioned along the path, each sealing element movable laterally along a linear path from a sealing position to an object passing position;

first and second spring biasing the sealing elements towards the sealing position;

said first and second sealing elements having confronting sealing surfaces which sealingly engage one another when the sealing elements are in the sealing position so to seal the path when an object is not positioned along the path, said sealing elements configured to permit the object to pass therethrough.

5,391,154

TROCAR SEAL SYSTEM

Wayne P. Young, Brewster, N.Y., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Aug. 30, 1993, Ser. No. 113,931
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—167 31 Claims

1. Valve assembly for sealed reception of an elongated object, which comprises:

(a) valve body defining at least one opening configured and dimensioned to permit entry of the elongated object;

(b) valve member formed of a resilient material and defining an aperture in general alignment with said at least one opening of said valve body, said aperture being configured and dimensioned such that insertion of the object into said aperture causes the resilient material defining said aperture to resiliently engage the outer surface of the object in a substantially fluid tight manner, a portion of Said valve member capable of collapsing from a generally open position to a substantially closed fluid tight position in the absence of the elongated object;

(c) at least one lever member disposed within said valve body and positioned adjacent said valve body, said at least one lever member normally biased to engage at least a portion of said valve member and collapse said valve portion such that said valve member assumes said substantially closed fluid tight position;

(d) manually rotatable control means associated with said valve member to selectively open and close said aperture to permit entry of the object therethrough, said control



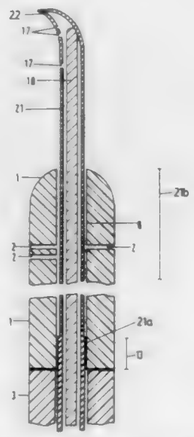
means including a camming member rotatable about an axis of rotation and having camming surfaces dimensioned to engage and displace said at least one lever member upon rotation of said camming member to permit said valve member to assume said generally open position.

5,391,155

ARRANGEMENT COMPRISING A URETER TUBE, AN AUXILIARY TUBE AS WELL AS A MANDRIN

Hans Sachse, Lerchenstrasse 55, 8500 Nürnberg, Germany

Filed Sep. 11, 1992, Ser. No. 942,891
Claims priority, application Germany, Sep. 13, 1991, 4130433.0; Dec. 13, 1991, 4141154.4
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—170 5 Claims



1. An arrangement for the insertion of a ureter tube into the ureter or renal pelvis comprising a ureter tube, an auxiliary tube and a mandrin, each having a distal and a proximal end, said mandrin being movable in longitudinal direction relative

to the ureter tube and the auxiliary tube and the ureter tube are slidable over the mandrin, wherein,

the mandrin is a hollow single mandrin (21) encompassing a hollow space (8) inside of the mandrin whose cross-section is open for injection of an X-ray contrast medium,

the hollow space (8) inside of the mandrin (21) has near its distal tip (22) at least one outlet opening for the passage of an X-ray contrast medium which outlet opening has an entry to the ureter,

the hollow-space (8) inside of the mandrin (21) has at its proximal end (24), projecting from the auxiliary tube (3), a connecting-piece (6) for the introduction of the X-ray contrast medium, and

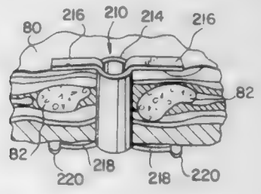
the ureter tube (1) has a front-side opening of its distal tip (12).

5,391,156

FLEXIBLE ENCOSCOPIC SURGICAL PORT

Roger L. Hildwein; Robert C. Uschold, both of Cincinnati; J. D. Staley, Jr., Loveland; Paul Riestenberg, Cincinnati; Laura Gallagher, Maineville, and Rex Nagao, Cincinnati, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 906,774, Jun. 30, 1992, abandoned. This application Jan. 6, 1994, Ser. No. 178,211
Int. Cl.[6] A61B *17/00, 17/34*
U.S. Cl. 604—174 5 Claims



1. A surgical port for insertion through a body wall at an intercostal location to allow a surgical instrument to be inserted therein and manipulated inside a thoracic cavity, comprising:

a pair of spaced parallel stay rods;

a flexible band connecting said stay rods together at the midsections thereof;

said stay rods being adapted for insertion through an intercostal opening in the body wall extending into the thoracic cavity with said flexible band located within the opening;

each of said stay rods being adapted to bend outwardly at its proximal and distal ends into engagement with the body wall to protect the body wall from trauma when a surgical instrument is inserted and manipulated in said surgical port;

wherein each stay rod has its proximal end extending above said flexible band and its distal end extending below said flexible band; and

wherein each of said stay rods includes an enlarged flange at its distal end for protecting the inner surface of the body wall from trauma.

5,391,157

END OF DOSE INDICATOR

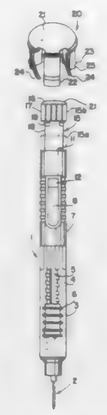
Dale C. Harris, Fairland, Ind., and John S. Ploof, Mundelein, Ill., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 20, 1992, Ser. No. 963,801
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—208 5 Claims

1. An injection syringe having a dose knob and an end of dose indicator which is adapted to fit into said dose knob, wherein said end of dose indicator comprises:

a) top section

b) resilient legs perpendicularly dependent from the top section wherein the resilient legs have a means for cooperating with and retaining the resilient legs in a predetermined position in the dose knob as pressure is applied to the top section until the end of the dose and at the end of



the dose are released from the predetermined position causing a sound;

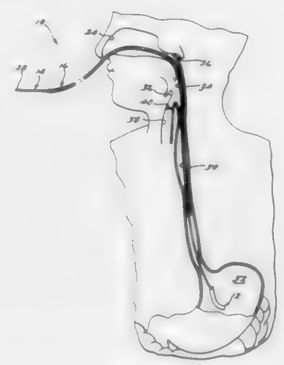
c) means for returning the resilient legs to the predetermined position in the dose knob when pressure is released from the top section.

5,391,158

NASOGASTRIC TUBE

Michael J. Peters, 2196 Wycliffe, West Bloomfield, Mich. 48323

Filed Feb. 24, 1994, Ser. No. 201,556
Int. Cl.[6] A61M *25/00, 31/00*
U.S. Cl. 604—265 3 Claims



1. A system for introducing a nasogastric tube to the stomach of a patient comprising:

a digestible weight capable of being swallowed by the patient;

a digestible guide string having an insertion end portion attached to said weight and of a length commensurate with the distance between the patient's head and stomach, and having a free end portion of greater length than the insertion end portion and extending exteriorly of the patient's head; and

a tube initially telescoped about the free end portion only of

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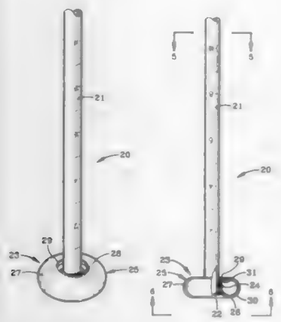
said guide string exteriorly of the patient, said tube being guidable by said guide string into the stomach of said patient subsequent to swallowing of said weight and the insertion end portion of said guide string by the patient, retraction of said tube from the patient conditioning said guide string and weight for digestion in the patient's stomach.

5,391,159

GASTROSTOMY TUBE WITH IMPROVED INTERNAL RETAINING MEMBER

William H. Hirsch, 5357 Fortress Trail, Gahanna, Ohio 43230, and Donald J. Goldhardt, 1535 Cree Ct., Grove City, Ohio 43123

Filed Feb. 4, 1994, Ser. No. 192,229
Int. Cl.[6] A61M *5/32, 25/00, 5/00*
U.S. Cl. 604—268 9 Claims



1. A gastrostomy tube comprising:

(a) a flexible tubular member, with a first end and a second end, and (b) a hollow energy-absorbing internal retaining member; the internal retaining member having a foreshortened stem portion and a body portion; the stem portion surrounding the first end of the tubular member and being sealingly attached thereto;

the body portion being substantially toroidal-like in form and substantially concentrically surrounding the stem portion and being connected thereto and having at least one drainage hole aperature formed therethrough radially outwardly from the stem portion;

the body portion having two stable resiliently reversible physical configurations, the toroidal-like form and a goblet-like form, the toroidal-like form being invaginatable to the goblet-like form and vice versa, the body portion when in toroidal-like form is concentric with and surrounds the stem portion and has a base wall curving out laterally beyond the first end of the tubular member and curling back towards itself to a rim which is disposed radially outwardly of the stem portion and defines a circular apperature which allows the body portion to be invaginated to the goblet-like form.

5,391,160

DISPOSABLE ABSORBENT ARTICLE WHICH COMPRISES A HOSE-LIKE ABSORPTION BODY

Bo Runeman, Partille, and Peter Rönnberg, Mölndal, both of Sweden, assignors to Mölnlycke AB, Göteborg, Sweden

Continuation of Ser. No. 1,923, Jan. 7, 1993, Pat. No. 5,342,337, which is a continuation of Ser. No. 773,969, Nov. 15, 1991, abandoned. This application May 13, 1994, Ser. No. 242,333
Claims priority, application Sweden, May 16, 1989, 8901739
Int. Cl.[6] A61F *13/46*
U.S. Cl. 604—378 13 Claims

1. A disposable absorbent article that includes a crotch part which lies in the region of the crotch of the body of the wearer when the article is worn, said article comprising an inner liquid-permeable casing sheet which lies nearest the body of the wearer when the article is worn, an outer liquid-impermeable casing sheet and an absorbent pad enclosed between said inner and outer casing sheets, the absorbent pad, at least within the crotch part of the absorbent article, including a tubular body comprised of a shape-stable material of very high liquid-



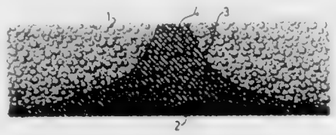
permeability, the tubular body being centrally positioned and extending in the longitudinal direction of the article and being surrounded by absorbent material on at least the side thereof remote from the inner sheet, a part of the tubular body facing the wearer during use of the article having an outwardly convex shape abutting the body of the wearer in the region of a wetting location when the article is worn.

5,391,161

ABSORPTION MATERIAL, PREFERABLY FOR USE IN DISPOSABLE ARTICLES SUCH AS DIAPERS, SANITARY NAPKINS OR WOUND DRESSINGS

Maud Hellgren, Mölnlycke, and Henry Zöller, Frölunda, both of Sweden, assignors to Molnlycke AB, Goteborg, Sweden

Continuation of Ser. No. 866,096, Apr. 6, 1992, abandoned, which is a continuation of Ser. No. 201,275, May 23, 1988, abandoned, which is a continuation of Ser. No. 866,100, Jul. 16, 1986, abandoned. This application Nov. 3, 1992, Ser. No. 970,959
Claims priority, application Japan, Jul. 31, 1985, 60-169625
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—366 2 Claims



1. Absorption material for use in diapers, sanitary napkins or wound dressings, which comprises 70–95% of at least one type of absorbing fibers, 2–20% of bonding fibers activated by heat, and 2–25% of a highly absorbent material, wherein the material has been compressed to produce an absorbent body, and all the bonding fibers are heat-fused and thus bond the absorbing fibers and the highly absorbent material into a coherent body which has a linearly continuous density gradient in a direction parallel to its thickness.

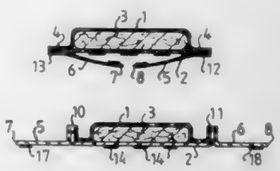
5,391,162

SANITARY NAPKIN OR AN INCONTINENCE GUARD HAVING FLEXIBLE SIDE-FLAPS

Urban Widlund, Mölnlycke, Sweden; Helena Engqvist, Düsseldorf, Germany, and Agneta Thorén, Landvetter, Sweden, assignors to Molnlycke AB, Goteborg, Sweden

PCT No. PCT/SE91/00735, § 371 Date Jul. 2, 1993, § 102(e) Date Jul. 2, 1993, PCT Pub. No. WO92/07536, PCT Pub. Date May 14, 1992
PCT Filed Oct. 31, 1991, Ser. No. 50,141
Claims priority, application Sweden, Nov. 1, 1990, 9003490-1
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.2 9 Claims

1. In an absorbent article to be worn by a person, comprising an elongated absorbent pad (3) enclosed between a liquid-permeable casing sheet (1) facing the wearer in use of the article and a liquid-impermeable casing sheet (2), at least one of said casing sheets extending laterally beyond the absorbent pad forming an outwardly projecting, longitudinally extending edge, flexible side-flaps (5, 6) arranged at the long side edges of the absorbent pad (3) and being adapted when the article is opened and extended, to be folded around the edges of the wearer's undergarment (9) in the crotch part thereof and attached to the outside of the undergarment, uplifted liquid barrier devices (10, 11) provided on that side of the article which faces the wearer in use on both sides of the absorbent



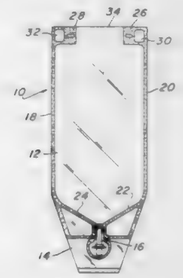
pad (3) along at least parts of the long side edges thereof between the absorbent pad and the flexible side-flaps; the improvement wherein an end portion (12, 13) of each side-flap (5, 6) is attached to the corresponding outwardly projecting edge of the casing sheet on that side thereof which, when the side-flaps are folded against the side of the article distal from the wearer in use, is facing away from the wearer, said end portion (12, 13) having an extent which is attached to said projecting edge at a distance inwardly from the outermost limit of said projecting edge corresponding to the height desired for the respective liquid barrier device (10, 11).

5,391,163

POUCH FOR ADMINISTERING MEDICAL FLUIDS

William C. Christine, and Peter G. DeRaymond, both of Nazareth, Pa., assignors to Inpaco Corporation, Nazareth, Pa.

Filed Jan. 31, 1992, Ser. No. 829,846
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—408 19 Claims



1. An apparatus for administering fluids comprising:

a flexible pouch, the pouch having a sealed fluid reservoir and an exhaust channel for the reservoir;

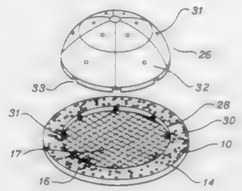
a seal formed between the reservoir and the exhaust channel, coupler means sealed within the exhaust channel of the pouch, and a portion of the pouch formed around the coupler means having a peelable heat seal for releasably enclosing and sealing the coupler means within the pouch, the coupler means being movable within the channel between a first sealed position and a second fluid passage position, the second position permitting fluid passage through the coupler from the reservoir, the opening of the reservoir/exhaust channel seal being created by the movement of at least a portion of the coupler means into the reservoir.

5,391,164

SUBCUTANEOUS IMPLANTABLE MULTIPLE-AGENT DELIVERY SYSTEM

Vincent C. Giampapa, 89 Valley Rd., Montclair, N.J. 07042

Continuation-in-part of Ser. No. 695,107, May 3, 1991, Pat. No. 5,201,728. This application Mar. 1, 1993, Ser. No. 24,426
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[6] A61K *9/22*
U.S. Cl. 604—891.1 14 Claims



1. A subcutaneously implantable, bio-acting agent delivery system, comprising:

(a) a pod for subcutaneous implantation beneath the dermis of the human body, said pod comprising a porous surface between an interior and exterior of a bottom thereof and further comprising fluid transfer means in fluid communication with said porous surface, said pod having an opening at a top thereof, said pod formed of a biocompatible material, the exterior of the bottom of said pod provided with one or more biologically active materials to promote growth of blood capillaries into and about said porous surface;

(b) a removable dome proportioned for detachable securement about said opening of said pod, said dome including at least one chamber having selectable fluid communication with said fluid transfer means of said pod, in which bio-acting agents may be stored within said chamber of said dome prior to implantation, said dome formed of a biocompatible material; and

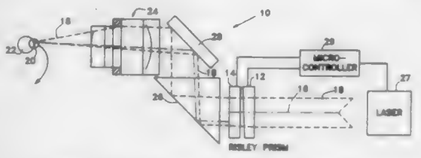
(c) programmable time dependent biologic agent release means within said chamber of said dome and in fluid communication with said fluid transfer means of said pod, whereby said agents are controllably released from said chamber of said dome and into said pod and, therefrom, through said porous surface into the bloodstream, in which said dome, after exhaustion of the agents therewithin, may be removed, refilled and resecured to said pod.

5,391,165

SYSTEM FOR SCANNING A SURGICAL LASER BEAM

William D. Fountain, Fremont, and Carl F. Knopp, San Mateo, both of Calif., assignors to Phoenix Laser Systems, Inc., Fremont, Calif.

Continuation of Ser. No. 571,244, Aug. 22, 1990, abandoned. This application Feb. 11, 1992, Ser. No. 833,604
Int. Cl.[6] A61N *5/02*
U.S. Cl. 606—4 7 Claims



1. In a laser delivery system including a laser producing a laser beam directed along a path, and optics including an objective lens for delivering the beam toward a target to be operated

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upon by the laser beam, a beam steering assembly for directing the laser beam through appropriate patterns traced on the target to effect a particular operation on the target as selected, comprising,

a pair of adjacent weak prisms positioned serially in the path of the laser beam,

rotating stage means including a rotating stage connected to each prism for enabling rotation of each of the prisms, either together or relative to one another, about a common axis generally aligned with the path of the laser beam approaching the prisms, and

motor means connected to each rotating stage for individually controlling and varying the rotational position and the direction and speed of rotation of each prism independently,

whereby the rotational position and the direction and speed of rotation of each prism may be independently controlled in accordance with a selected location and pattern desired for tracing of the laser beam on a target, including radial traces, non-radial linear traces, circular or elliptical traces and any other combination of translation and/or rotation of the beam across the target.

5,391,166

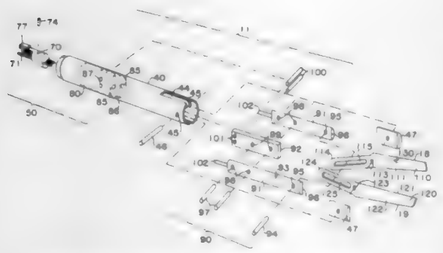
BI-POLAR ELECTROSURGICAL ENDOSCOPIC INSTRUMENTS HAVING A DETACHABLE WORKING END

Philip E. Eggers, Dublin, Ohio, assignor to Hemostatic Surgery Corporation, Grand Cayman, Cayman Islands

Continuation-in-part of Ser. No. 877,704, May 1, 1992, Pat. No. 5,330,471, which is a continuation-in-part of Ser. No. 711,920, Jun. 7, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 959,046

Int. Cl.[6] A61B *17/38*

U.S. Cl. 606—48 **31 Claims**



1. A detachable working end for use in endoscopic electrosurgery, the detachable working end adapted to be connected to an end of a reusable handle portion having an elongated barrel, the detachable working end adapted to be actuated by a drive rod reciprocated through the elongated barrel, the drive rod providing first and second electrical contacts, the working end comprising:

an outer sleeve adapted to be engaged in fixed relation to the elongated barrel;

a connector block slidably disposed within the outer sleeve and adapted for coupling to the drive rod for translational movement relative to the outer sleeve, the connector block having a proximal end including means for mating with the first and second electrical contacts and a distal end including first and second legs;

a pivot pin having first and second ends mounted in the outer sleeve;

first and second members disposed on the pivot pin for relative rotation from a first position to a second position, the first and second members having shank portions defining longitudinally directed slots, the shank portions of the first and second members electrically coupled to the means for mating with the first and second electrical contacts; and

a drive pin mounted between the first and second legs and disposed through the longitudinally directed slots of the first and second members, so that the first and second members are movable responsive to reciprocation of the drive rod and the first and second members provide first and second electrodes for passing current through tissue to cause hemostasis thereof.

5,391,167

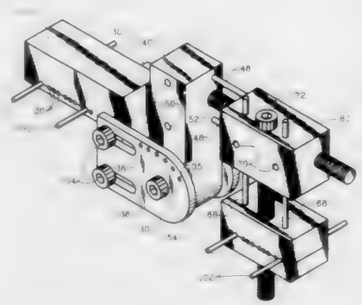
ARTICULATING EXTERNAL FIXATION DEVICE

Henry Pong, and Thomas J. McCauley, both of West Palm Beach, Fla., assignors to Ortho-Motion, Inc., Coral Springs, Fla.

Filed Sep. 1, 1992, Ser. No. 938,621

Int. Cl.[6] A61B *17/60*

U.S. Cl. 606—57 **10 Claims**



1. A multi-directional articulating external fixator providing passive or active flexion/extension range of motion for the proximal phalanx and middle phalanx of the human hand, said fixator comprising:

a proximal base member construction from a bifurcated block defined by a top surface, a bottom surface, and two side surfaces, said bifurcated block having a means for clamping at least two spaced apart first orthopedic pins such that said first orthopedic pins are capable of extending perpendicular to the longitudinal axis of a patient's proximal phalanx bone and are capable of being attached longitudinally to the proximal phalanx, said base member having at least two spaced apart coupling holes formed therein;

a hinge bracket defined by two separate and spaced apart plates disposed in parallel relation to one another and juxtapositioned to each side surface of said proximal base member, each said plate having two elongated slots with a mounting bolt being operatively disposed through each elongated slot and into one of said coupling holes for providing slidable movement of said hinge bracket along a plane parallel to the longitudinal axis of the proximal phalanx and providing longitudinal adjustment of a mounting aperture disposed through said hinge bracket;

a first and second offset adjustment screw;

an upright rotatable hinge member operatively associated with said hinge bracket so as to allow an articulation axis of rotation about said mounting aperture, said hinge member having a longitudinal axis and a bore for receiving said first offset adjustment screw through said hinge member;

means for adjustably securing said hinge member in a fixed position;

a rectangular shaped distraction/compression block having a longitudinal axis perpendicular to the longitudinal axis of said hinge member, said distraction/compression block having a threaded aperture for engagement with said first offset adjustment screw thereby providing a means for adjusting spacial distance between said hinge member and said distraction/compression block and providing distraction or compression of the middle phalanx, said block having a bore for receiving said second offset adjustment screw therethrough and a means for aligning said distraction/compression block to said hinge member; and

a rectangular shaped dorsal/volar relocation member having a threaded aperture for engagement with said second offset adjustment screw thereby providing a means for adjusting spacial distance between said relocation member and said distraction/compression block and providing vertical displacement of the middle phalanx, said relocation member having a means for being aligned to said distraction/compression block and a means for clamping at least two spaced apart second-orthopedic pins such that said second pins are capable of extending perpendicular to the longitudinal axis of the patient's middle phalanx bone and are capable of being attached longitudinally to the middle phalanx.

5,391,168

DEVICE FOR CORRECTING THE SHAPE OF THE HUMAN SPINAL COLUMN AND/OR FOR FIXING THE HUMAN SPINAL COLUMN

M. M. Sanders, Bodegraven; J. C. Cool, Pijnacker; A. G. Veldhuizen, Eelde; P. Timmerman, Enscheds; G. J. Bazuin, Zwolle, and Y. Y. N. Best, Nunspeet, all of Netherlands, assignors to Acromed B.V., Netherlands

Filed Apr. 1, 1993, Ser. No. 41,248

Claims priority, application Netherlands, Apr. 1, 1992, 9200612

Int. Cl.[6] A61B *17/58*

U.S. Cl. 606—61 **19 Claims**

1. A device for correcting the shape of the human spinal column and/or for fixing the human spinal column, comprising at least one rod extending in a longitudinal direction, and at least one attachment element comprising two hooks, a bridge, and rod connecting means, the bridge forming the connection between the hooks, and the rod connecting means being adapted for detachably connecting the attachment element with said at least one rod, wherein the hooks substantially extend in a plane extending perpendicularly to said at least one rod, the respective hooks being detachably connected with the bridge through a first end and being directed toward each other through second, hook-shaped, free ends.

5,391,169

PATELLAR TENDON HARVESTER

David A. McGuire, 3418 Lakeside Dr., Anchorage, Ala. 99515

Continuation-in-part of Ser. No. 806,906, Dec. 13, 1991, Pat. No. 5,257,996. This application Feb. 19, 1993, Ser. No. 19,546

Int. Cl.[6] A61B *17/00;* **A61F** *5/00;* **B26B** *3/00*

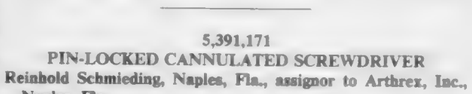
U.S. Cl. 606—79 **20 Claims**

1. A tendon harvester comprising:

a handle;

a two-tined fork extending forward of said handle; and

a pair of blades mounted on the tines of said fork such that each blade projects from one of the tines of said fork with a sharp concave cutting edge of said each blade facing



forward, said blades mounted so as to extend side-by-side substantially perpendicular to an imaginary plane including the two tines of said fork.

5,391,170

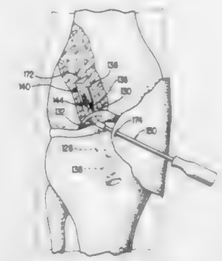
ANGLED SURGICAL SCREW DRIVER AND METHODS OF ARTHROSCOPIC LIGAMENT RECONSTRUCTION

David A. McGuire, 3418 Lakeside Dr., Anchorage, Ak. 99515; Steven Ek, Bolton, Mass.; Sam R. Marchand, Dunedin, and Matthew R. Frushell, Clearwater, both of Fla., assignors to David A. McGuire, Anchorage, Ak.

Continuation-in-part of Ser. No. 806,906, Dec. 13, 1991, Pat. No. 5,257,996, and a continuation-in-part of Ser. No. 839,466, Feb. 19, 1992. This application Oct. 2, 1992, Ser. No. 956,733

Int. Cl.[6] A61F *5/00, 2/32, 2/08, 2/44*

U.S. Cl. 606—86 **22 Claims**



1. A method for arthroscopic ligament reconstruction in a joint of the body:

(a) forming in a bone of the joint a bone tunnel having a central longitudinal axis;

(b) positioning a ligament having a terminus at each end so that a first terminus is disposed in the tunnel;

(c) introducing a surgical screw driver from a portal that is substantially offset from the central longitudinal axis;

(d) inserting an interference bone fixation screw in the bone tunnel with the surgical screw driver and driving the interference bone fixation screw to fixate the first terminus within the bone tunnel; and

(e) fixating the second terminus to another bone of the joint.

5,391,171

PIN-LOCKED CANNULATED SCREWDRIVER

Reinhold Schmieding, Naples, Fla., assignor to Arthrex, Inc., Naples, Fla.

Continuation-in-part of Ser. No. 836,721, Feb. 19, 1992, Pat. No. 5,211,647. This application Feb. 18, 1993, Ser. No. 19,357

Int. Cl.[6] A61B *17/58*

U.S. Cl. 606—104 **4 Claims**

1. A method of endosteal fixation of a graft by screw insertion, comprising the steps of:

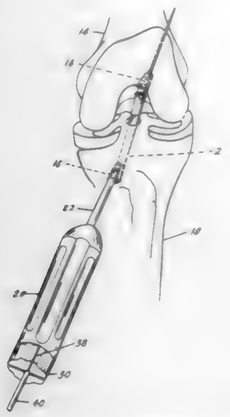
drilling a graft tunnel through adjacent bone masses;

extending a graft attached between bone blocks under tension in said graft tunnel between said adjacent bone masses;

inserting a guide pin into a cannulated screwdriver, said screwdriver including locking means for releasably secur-

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ing said guide pin to prevent longitudinal movement of said guide pin relative to said screwdriver, and an elongated shaft for preventing bending of said guide pin;
releasably securing said cannulated screwdriver to said guide pin with said locking means, adjusting the position of said pin within said screwdriver and locking said guide pin with said locking means;
inserting said guide pin into said graft tunnel between one of said bone blocks and one of said adjacent bone masses using said screwdriver as a handle;



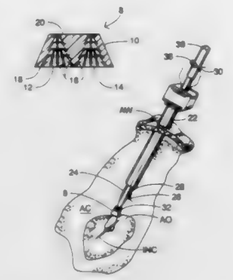
releasing and removing said cannulated screwdriver from said guide pin, said guide pin remaining positioned between said one bone block and bone mass;
positioning a cannulated interference screw on a distal end of said screwdriver;
sliding said screwdriver and interference screw over said positioned guide pin;
securing said cannulated screwdriver onto said guide pin;
driving said interference screw between said one bone mass and bone block with said cannulated screwdriver secured to said guide pin; and
removing said cannulated screwdriver and guide pin.

5,391,172
STENT DELIVERY SYSTEM WITH COAXIAL CATHETER HANDLE
Michael S. Williams, Chapel Hill, N.C.; Farhad Khosravi, Belmont, and August Yambao, Fremont, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Filed May 24, 1993, Ser. No. 67,514
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—108 19 Claims



1. A stent delivery system comprising:
a stent delivery catheter assembly having a delivery catheter, a handle housing coaxially positioned on a proximal end of said delivery catheter, a balloon portion on a distal end of said delivery catheter, a stent mounted on said balloon portion, and a sheath overlying said delivery catheter and adapted for relative axial movement with respect to said delivery catheter; and
a plunger assembly enclosed by said handle housing, said plunger assembly connected to said sheath, whereby movement of said plunger assembly proximally provides relative motion between said sheath and said delivery catheter, to retract said sheath proximally from overlying said stent on said balloon portion.

5,391,173
LAPAROSCOPIC SUTURING TECHNIQUE AND ASSOCIATED DEVICE
Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023
Filed Feb. 10, 1994, Ser. No. 195,749
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—144 27 Claims

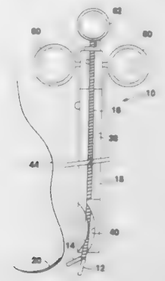


1. A suturing method comprising the steps of:
providing a suture;
providing a locking device made of biocompatible material and having at least one passageway for receiving said suture, said locking device being further provided along said passageway with means for preventing a suture from passing in a first predetermined direction along said passageway while allowing the suture to slide relative to said locking device in an opposite direction through said passageway;
passing said suture through organic tissues of a patient so that two strands of said suture extend from said organic tissues on opposite sides of an opening in said tissues;
inserting at least one of said strands into said passageway;
sliding said locking device along said two strands until said locking device is substantially juxtaposed to said organic tissues at said opening, thereby drawing said strands together and locking said strands in a tightened closure configuration; and
severing said strands on a side of said locking device opposite said organic tissues and said opening.

5,391,174
ENDOSCOPIC NEEDLE HOLDERS
Peter V. Weston, 705 Oak Hills Medical Bldg., 7711 Louis-Pasteur Dr., San Antonio, Tex. 78229
Filed Nov. 29, 1991, Ser. No. 800,230
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 5 Claims

1. A holder for a surgical needle comprising:
needle holding means for securely grasping a surgical needle, said needle holding means being movably attached to a casing member, said needle holding means comprising a pair of jaws secured and supported for hinge-like relative movement; and
guide means for restricting movement of said needle holding means between a first position wherein the surgical needle held by said needle holding means is substantially fully retracted within said casing member, and a second position where substantially all of the surgical needle extends from said casing member, along a curved path defined by said guide means, wherein said guide means is a channel formed within said casing member;

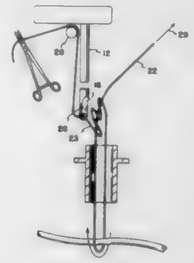
said jaws being sized and shaped for passage through and beyond said channel and whereby said jaws are held in a closed position for securely grasping the surgical needle when said jaws are situated in said channel, but capable of releasing the needle when said jaws exit said channel, said casing member comprises first and second substantially cylindrical channel segments which are rotatably connected one to the other for permitting rotation of said first and second channel segments about a common axis; and



actuating means for moving said needle holding means from said first position to said second position, wherein said actuating means is a rod-like member comprising first and second rod segments which are rotatably connected one to the other, said second rod segment being operably connected with said needle holding means and said first rod segment extending outside of said casing member at a terminus of said first channel segment for permitting actuation of said rod-like member by a user of said needle holder

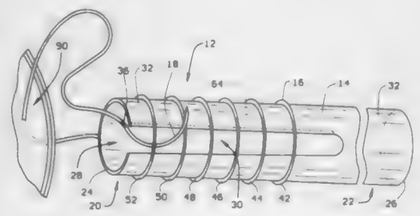
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5,391,175
METHOD OF USING AN ENDOKNOT PUSHER SURGICAL INSTRUMENT
Leslie A. Sharpe, Edina, Minn., and Francis C. Peterson, Prescott, Wis., assignors to Sharpe Endosurgical Corporation, St. Paul, Minn.
Filed Nov. 29, 1991, Ser. No. 800,498
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 3 Claims



1. A method of ligating an internal structure comprising the steps of:
(a) passing a ligature around the internal structure;
(b) extracting the strands of said ligature through a single percutaneous port;
(c) defining a free standing strand and defining a captive tying strand;
(d) tying a knot in said captive tying strand wherein said knot engages said free standing strand;
(e) threading said captive tying strand through a knot restraining aperture having a closed periphery, said aperture formed in an elongate rod, said elongate rod having a knot reception volume formed proximate said aperture, such that said knot is positioned within said knot reception volume;
(f) holding said captive tying strand against said rod;
(g) advancing said knot, said rod, and said captive tying strand together into position adjacent said internal structure;
(h) applying traction to said knot by holding said rod and said captive tying strand together and by pushing said rod and captive tying strand past said structure while holding said captive tying strand stationary, thereby tightening said knot.

5,391,176
SURGICAL INSTRUMENT FOR TYING A KNOT IN A LENGTH OF SUTURE AT A REMOTE LOCATION
Roger de la Torre, Lake St. Louis, Mo., assignor to General Surgical Innovations, Inc., Palo Alto, Calif.
Filed Jun. 2, 1993, Ser. No. 71,297
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 22 Claims



5. A surgical instrument for tying a knot in a length of suture, the instrument comprising:
a rod having a longitudinal length with opposite first and second ends and an exterior surface extending between the first and second ends;
a slot formed in the first end of the rod;
a length of suture having opposite first and second ends, the first end of the suture being secured to a needle and the second end of the suture being positioned adjacent the second end of the rod, the length of suture extending from its second to its first end along the rod from the rod second end to the rod first end with at least one loop being formed in the suture and wrapped laterally around the exterior surface of the rod and over the slot formed in the first end of the rod, the loop is formed, in the suture by the suture extending longitudinally along the rod from the rod second end toward the rod first end to a first bend formed in the suture intermediate the rod first and second ends and adjacent the slot, the suture next extending laterally relative to the rod from the first bend and wrapping laterally at least one complete revolution around the exterior surface of the rod and over the slot to a second bend formed in the suture engaging around the first bend, and then the suture extending longitudinally relative to the rod from the second bend toward the rod first end and to the needle secured to the suture first end with a sufficient length of the suture provided between the second bend and the needle enabling the needle to pass through a tissue to be ligated and then through the loop formed in the suture thereby tying a knot in the suture.

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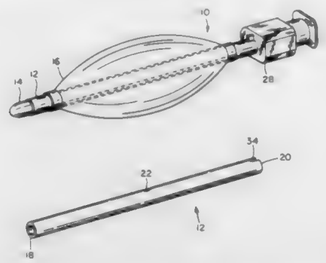
5,391,177
OPHTHALMIC LANCE
Daniel M. Schwartz, 44 Calhoun Ter., San Francisco, Calif. 94133
Filed Feb. 12, 1993, Ser. No. 17,508
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—167 10 Claims



1. An ophthalmic lance for making incisions in a patient comprising:
a. a blade including a stem;
b. a hollow elongated sheath for slidably accepting the blade within a hollow interior wherein the blade has a limited travel range within the sheath from a first position wherein the blade is covered for protecting a user to a second position wherein the blade is exposed for making the incisions in a patient, the sheath having an H-shaped cutout through a wall of the sheath from the interior to an exterior, wherein pressure applied to a distal end of the blade propels the blade to the second position;
c. a spring mounted inside of the sheath and resting against a stop means, the spring for automatically predisposing the blade into the first position when the pressure is released from the stem; and
d. a locking pin for locking the blade in the first position so that it cannot be exposed when pressure is put on the stem, the locking pin slidably positioned inside of the H-shaped cutout and coupled to the stem, the locking pin positioned in a short leg of the H-shaped cutout when the blade is in the first position.

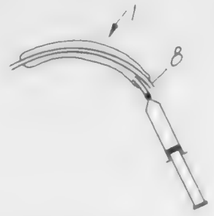
5,391,178
CEREBRAL DILATOR
Wesley Yapor, 5525 S. Keeler, Chicago, Ill. 60629
Filed Feb. 14, 1994, Ser. No. 196,291
Int. Cl.[6] A61M *25/00*
U.S. Cl. 606—192 30 Claims

1. A dilator assembly for creation of a bloodless opening comprising:
(a) an outer needle having an open distal end, an open proximal end and a first aperture through which fluid may pass;
(b) an inner needle which is insertable into said outer needle, said inner needle having a closed distal end, a proximal end, and a second aperture alignable with said first aperture when said inner needle is fully inserted into said outer needle, said distal end of said inner needle forming a seal with the outer needle when fully inserted, and said proximal end of said inner needle having a means for connecting to a fluid source; and



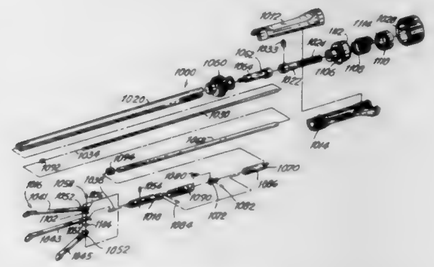
(c) an expandable sac attached to said outer needle intermediate said proximal end and said distal end.

5,391,179
NASAL AND/OR RHINOPHARYNGEAL TAMPON
Giorgio Mezzoli, Via Ricci Curbastro 56/1, 48022 Lugo (Province of Ravenna, Italy
Filed Jul. 28, 1993, Ser. No. 98,090
Claims priority, application Italy, Sep. 4, 1992, B092 A 000314
Int. Cl.[6] A61M *1/00*
U.S. Cl. 606—196 5 Claims



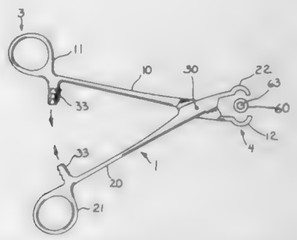
1. A nasal tampon comprising:
a shaped body formed of a mass of elastic spongy material for insertion in a nasal cavity, the shaped body having an outer surface;
a hollow elongated core element inserted in said mass of elastic spongy material of said shaped body, the hollow elongated core element having an inside;
at least one hole means provided in said hollow elongated core element for permitting air flow between the mass of elastic spongy material of the shaped body and the inside of said hollow elongated core element;
a deformable membrane impervious to air which substantially entirely covers the outer surface of said shaped body; and
a hollow stem element which is inserted through said deformable membrane and which is connected to said hollow elongated core element, said hollow stem element defining an air passage for air flow between the inside of said hollow elongated core element and an environment outside of the deformable membrane;
said deformable membrane defining an air chamber in which said mass of elastic spongy material is accommodated and which communicates with the environment outside of the deformable membrane by means of said hollow stem element, and said hollow stem element being connectable to an aspirator device for subjecting said air chamber to vacuum thereby to elastically compact said mass of elastic spongy material for effective insertion and removal of said shaped body respectively into and from the nasal cavity.

5,391,180
ARTICULATING ENDOSCOPIC SURGICAL APPARATUS
H. Jonathan Tovey, Milford, and Brian G. Russell, Monroe, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation-in-part of Ser. No. 949,071, Sep. 22, 1992, which is a continuation-in-part of Ser. No. 925,496, Sep. 4, 1992, which is a continuation-in-part of Ser. No. 834,687, Feb. 12, 1992, and a continuation-in-part of Ser. No. 874,743, Apr. 27, 1992, which is a continuation-in-part of Ser. No. 740,443, Aug. 5, 1991, Pat. No. 5,199,419. This application Apr. 21, 1993, Ser. No. 50,853
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—205 14 Claims



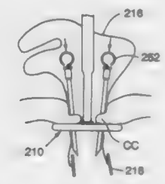
1. A surgical apparatus comprising:
a) a handle portion;
b) a body extending from said handle portion, said body defining a longitudinal axis;
c) a retractor assembly operatively associated with a distal portion of said body and including a plurality of interleaved retractor blades movable about a common pivot axis, said pivot axis extending perpendicular to said longitudinal axis of said body;
d) actuation means associated with said handle portion and said body for moving said plurality of retractor blades between an open position and a closed position; and
e) spacer means disposed between adjacent retractor blades of .said retractor assembly coaxial with said pivot axis for maintaining clearance therebetween.

5,391,181
ORTHOPAEDIC HOLDING FORCEPS
Erin M. Johnson, and Mark A. Lazzeri, both of Warsaw, Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Oct. 22, 1993, Ser. No. 141,769
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—207 9 Claims



1. An orthopaedic holding forceps for simultaneously holding therein a surgical screw having an enlarged head with a driving recess therein and a shaft extending therefrom and holding a screwdriver having an enlarged gripping head with a distal driving tip extending therefrom, wherein the forceps includes a distal tip having an upper chamber adapted for receiving the enlarged gripping head of the screwdriver and a lower chamber adapted for receiving the head of the screw and an interconnecting chamber therebetween adapted for receiving the driving tip of the screwdriver, and wherein the distal tip includes a top surface and a bottom surface and wherein the top surface includes a top opening therein extending into the upper chamber and the bottom surface includes a bottom opening therein extending into the bottom chamber, and wherein the width of the top opening is narrower than the upper chamber to form a first upper retaining surface and the width of the bottom opening is narrower than the bottom chamber to simultaneously retain the head of the surgical screw and the enlarged gripping head of the screwdriver securely therein.

5,391,182
APPARATUS AND METHOD FOR CLOSING PUNCTURE WOUNDS
Albert K. Chin, Palo Alto, Calif., assignor to Origin Medsystems, Inc., Menlo Park, Calif.
Filed Aug. 3, 1993, Ser. No. 100,926
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—213 21 Claims



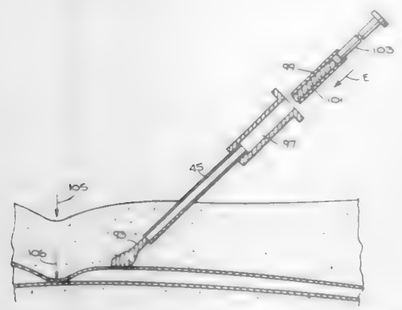
1. An apparatus kit for closing a wound comprising:
a suture having at least two ends;
a suture receiving means for insertion through the wound and into a body cavity underlying the wound;
a needle means for carrying the ends of the suture through tissue surrounding the wound and to the suture receiving means;
anchoring means attached to the ends of the suture, for passage through the tissue by the needle means, and for anchoring the suture ends to the suture receiving means while within the body cavity;
withdrawing means for engaging the suture-receiving means inside the body cavity and for withdrawing the suture-receiving means, with the anchoring means and the suture ends attached thereto, through the wound and out of the body cavity.

5,391,183
DEVICE AND METHOD SEALING PUNCTURE WOUNDS
Ernst Janzen, Laren, Netherlands; Gunter Ruttgers, Stolberg, Germany, and Lawrence Saper, New York, N.Y., assignors to Datascope Investment Corp, Montvale, N.J.
Continuation-in-part of Ser. No. 634,478, Dec. 27, 1990, abandoned. This application Aug. 16, 1991, Ser. No. 746,339
Claims priority, application European Pat. Off., Sep. 21, 1990, 90118186.7
Int. Cl.[6] A61B *17/08;* A61D *1/00*
U.S. Cl. 606—213 6 Claims

1. A device for use in sealing a puncture in a wall of a blood vessel of a patient where said blood vessel is separated from the skin of the patient by a layer of tissue, where a tissue channel communicates between said puncture and the patient's skin and where a guide wire having proximal and distal ends extends at least from said puncture through said channel, to the patient's skin, comprising
(a) a tissue dilator having a front portion and a rear portion,

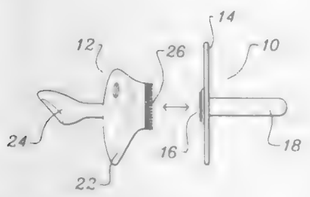
VOL 1171 ISS 3 FE 21 1995 UMI

(b) a dilator channel running through said dilator from said front portion to said rear portion, said dilator channel being adapted to receive therein and pass therethrough the proximal end of said guide wire,
(c) an elongated hollow sheath having a distal end and a proximal end, said sheath being adapted to pass over said dilator, said sheath having a lumen running therethrough from said proximal end to said distal end,
(d) a plug holder having a channel,
(e) hemostatic material which is retained within said channel in said plug holder prior to its insertion into said sheath,



(f) means for inserting said hemostatic material into said sheath,
(g) means for advancing said hemostatic material through said sheath out of the distal end thereof against said vessel wall around said puncture, and
(h) means for aligning said sheath lumen with said plug holder channel when said tissue dilator is removed, whereby said hemostatic material can be fed from said plug holder channel into said sheath lumen.

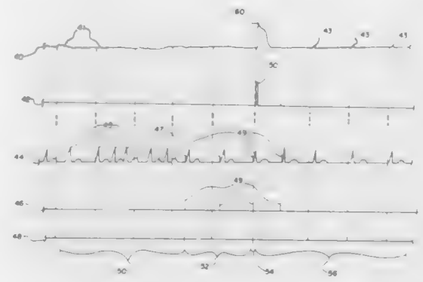
5,391,184
PACIFIER SYSTEM FOR INFANTS
Mary E. Rosenthal, 3625 N. Country Club Dr., El Dorado Three, Apartment 1901, North Miami Beach, Fla. 33180
Filed Feb. 11, 1993, Ser. No. 15,198
Int. Cl.[6] A61J *17/00*
U.S. Cl. 606—236 **2 Claims**



1. An infant pacifier system, comprising:
(a) a bracelet element comprising an expansible fabric-formed bracelet and, secured to an outer tangential surface thereof, a planar surface having, on a non-secured side of said planar surface, first fabric engagement means; and
(b) a pacifier element including a planar base thereof and integrally dependent therefrom a nipple, said base on a surface opposite said nipple having second fabric engagement means, complemental in surface property to said first fabric engagement means, said first and second engagement means detachably attachable through the respective application of pulling and pressing forces upon an interface therebetween,

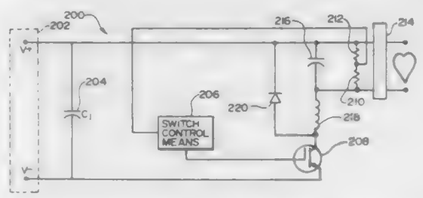
whereby said pacifier element of said system may be employed either with or without said bracelet element thereof.

5,391,185
ATRIAL CARDIOVERTER WITH VENTRICULAR PROTECTION
Mark W. Kroll, Minnetonka, Minn., assignor to Angeion Corporation, Plymouth, Minn.
Filed Feb. 22, 1993, Ser. No. 20,573
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—4 **4 Claims**



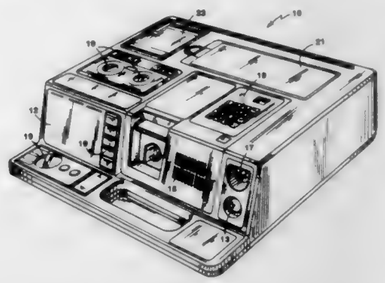
1. An improved implantable atrial cardioverter for treating an atrial dysrhythmia of a human heart with cardioverting electrical energy, the cardioverter having atrial dysrhythmia detecting means for detecting an atrial dysrhythmia using a plurality of atrial sensing electrodes, pacing means for selectively providing pacing pulses to a plurality of ventricular pacing electrodes, charge storage means for selectively providing a cardioverting electrical energy to a plurality of implantable cardioversion discharge electrodes, and control means operatively connected to the detecting means, the pacing means and the charge storage means for selectively controlling the discharge of each, wherein the improvement comprises:
means within the control means for controlling the pacing means and the charge storage means such that upon detecting an atrial dysrhythmia the pacing means immediately begins providing pacing pulses to the ventricles and subsequently synchronizes the cardioverting electrical energy discharge of the charge storage means with the pacing pulses.

5,391,186
METHOD AND APPARATUS FOR UTILIZING SHORT TAU CAPACITORS IN AN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR
Mark W. Kroll, and Kai C. Kroll, both of Minnetonka, Minn., assignors to Angeion Corporation, Plymouth, Minn.
Filed Dec. 13, 1993, Ser. No. 166,216
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—5 **8 Claims**



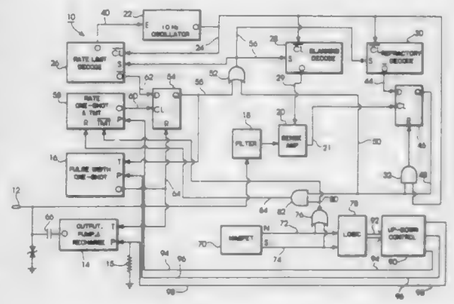
1. An implantable cardioverter defibrillator apparatus electrically connected to two or more implantable discharge electrodes adapted to be located in a human patient for treating cardiac dysrhythmias, the apparatus comprising:
a) sensing means for sensing cardiac dysrhythmias;
b) charge storage means for storing an electric charge to be delivered to the two or more implanted electrodes, the charge storage means having a charge storage means capacitance value that is less than about 60 μF and the charge storage means and the implanted electrodes having a time constant defined by an inter-electrode resistance value multiplied by the charge storage means capacitance value that is substantially at or below a maximum defibrillation chronaxie duration for the human patient heart of about 5 milliseconds;
c) power source means for charging the charge storage means;
d) discharge means for selectively discharging the charge storage means through the two or more implanted electrodes in response to the sensing of a cardiac dysrhythmia to deliver the electrical charge as a cardioversion countershock; and
e) control means electrically connected between the charge storage means and the discharge means for intermittently interrupting the discharge of the charge storage means to effectively lengthen the time of the cardioversion countershock substantially at or greater than the maximum defibrillation chronaxie duration of the human patient heart.

5,391,187
SEMIAUTOMATIC DEFIBRILLATOR WITH HEART RATE ALARM DRIVEN BY SHOCK ADVISORY ALGORITHM
Gary A. Freeman, Newton Centre, Mass., assignor to ZMD Corporation, Wilmington, Del.
Filed Feb. 22, 1994, Ser. No. 200,781
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **6 Claims**



1. A semiautomatic cardiac defibrillator for receiving an ECG signal from a patient, providing an advisory indication to an operator, and allowing the operator to initiate delivery of a defibrillating shock to a patient through electrodes applied to the patient's chest, said defibrillator comprising:
an input circuit for receiving an ECG signal from the patient;
processing circuitry connected to the input circuit for processing the ECG signal to determine an average QRS rate and to determine whether to issue a shock advisory indication recommending delivery of a shock;
a display for displaying the advisory indication to the operator;
energy storage circuitry for generating a defibrillating shock for delivery to the patient;
an output circuit for delivering the defibrillating shock to the electrodes;
a manually operable switch controlling the output circuit, the switch being capable of being moved by the operator to a position in which a shock is delivered to the electrodes if there is an advisory indication recommending delivery of a shock; and
a heart rate alarm circuit in which the inputs comprise an averaged QRS rate and the shock advisory indication.

5,391,188
LOW COST IMPLANTABLE MEDICAL DEVICE
Gary E. Nelson, Balsam Lake, Wis., and David L. Thompson, Fridley, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 44,433, Apr. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 877,639, May 1, 1992, Pat. No. 5,292,342. This application Jun. 17, 1993, Ser. No. 78,382
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—9 **24 Claims**



1. A method of adjusting an operating parameter in an implantable cardiac pacemaker, said pacemaker having at least one transistor having a floating gate, wherein voltage on said floating gate controls said operating parameter, said method comprising the following ordered steps:
a. activating said implantable cardiac pacemaker;
b. measuring said operating parameter;
c. determining if said operating parameter is less than a predetermined value;
d. applying a programming pulse to the floating gate of said transistor to increase said operating parameter if said operating parameter is less than said predetermined value;
e. measuring said operating parameter after said application of said programming pulse; and
f. repeating steps c through e continuously until said operating parameter is at least equal to said predetermined value.

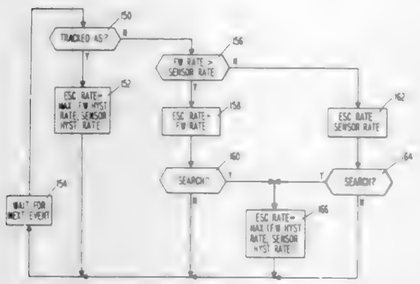
5,391,189
RATE ADAPTIVE DUAL CHAMBER PACING SYSTEM AND METHOD WITH AUTOMATIC ADJUSTMENT OF OPERATING PARAMETERS FOR MINIMIZING SENSOR-SINUS COMPETITION
Frits M. van Krieken; Gustaaf A. Stoop, both of Dieren, and Johannes S. van der Veen, Arnhem, all of Netherlands, assignors to Vitatron Medical, B.V., Dieren, Netherlands
Filed Nov. 4, 1993, Ser. No. 147,347
Int. Cl.[6] A61N *1/365*
U.S. Cl. 607—17 **51 Claims**

1. A dual chamber cyclically operating rate responsive pacemaker, having generator means for generating pace pulses for delivery to a patient's heart, atrial sense means for sensing atrial signals from said patient's atrium, ventricular sense means for sensing ventricular signals from said patient's ventricle, RR means for cyclically developing sensor-indicated pacing rate signals (RR signals) over a range of rates as a curvilinear function of at least one sensed body parameter, pace control means for controlling generation of pace pulses by said generator means in the absence of sensed heart signals, said pace control means having RR adjusting means for adjusting

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the rate of generated pace pulses in accordance with said RR signals, characterized by:

atrial rate means for determining a measure of atrial rate corresponding to respective sensed atrial signals within said range,



determining means for determining data representative of the relation of said RR signals to corresponding values of said measure of atrial rate, and storing means for storing said data, and

function adjusting means for adjusting said curvilinear function over said range of rates in accordance with said stored data.

5,391,190

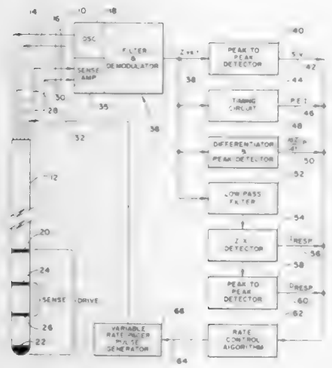
VARIATION IN CARDIAC CHAMBER VOLUME OR PRESSURE AS A CONTROLLING PARAMETER

Brian D. Pederson, St. Paul, and Rodney W. Salo, Fridley, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Continuation of Ser. No. 664,461, Mar. 1, 1991, Pat. No. 5,137,019, which is a continuation of Ser. No. 490,392, Mar. 8, 1990, abandoned. This application Apr. 7, 1992, Ser. No. 864,666 The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.

Int. Cl.[6] A61N *1/362*

U.S. Cl. 607—23 **4 Claims**



1. A rate adaptive pacer comprising:

implantable pulse generator means for normally producing cardiac stimulating pulses at a predetermined lower rate;

sensing means for sensing impedance in the blood in a selected cardiac chamber;

means for producing a time varying impedance signal proportional to the intracardiac impedance sensed in the selected cardiac chamber due to the beating action of the heart;

means for extracting from the time varying impedance signal a modulation signal due to volume changes;

means for relating the modulation signal to the respiratory activity of the patient and processing the modulation signal to extract quantitative information therefrom with respect to the respiratory activity of the patient in whom the pulse generator means is implanted, the respiratory activity information including that relating both to the respiration interval (I_{RESP}) and the respiration depth (D_{RESP}) wherein the means for relating the modulation signal to I_{RESP} comprises a zero-crossing detector and wherein the means for relating the modulation signal to D_{RESP} comprises a peak to peak amplitude detector; and

means for producing a rate control signal from the processed modulation signal which, when applied to the pulse generator means, changes the rate at which the stimulating pulses are produced from the predetermined lower rate to a higher rate in accordance with a known relationship between I_{RESP} and D_{RESP} expressed as an empirical algebraic function.

5,391,191

DEVICE FOR TISSUE STIMULATION

Nils Holmström, Järfälla, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Germany

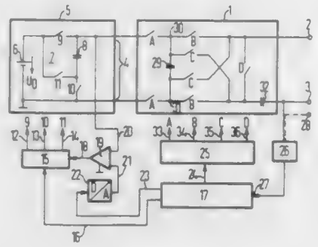
PCT No. PCT/EP91/00779, § 371 Date Aug. 26, 1992, § 102(e) Date Aug. 26, 1992, PCT Pub. No. WO91/16102, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 23, 1991, Ser. No. 924,025

Claims priority, application Germany, Apr. 24, 1990, 4013048

Int. Cl.[6] A61N *1/36*

U.S. Cl. 607—28 **7 Claims**



1. A device for tissue stimulation in a living organism comprising:

a voltage source;

means, fed from said voltage source having a maximum available voltage, for generating stimulation pulses at a stimulation energy;

means adapted for interacting with tissue for delivering said stimulation pulses to said tissue;

means adapted for interacting with tissue to which said stimulation pulses have been delivered for detecting a reaction of said tissue following a stimulation pulse, said tissue exhibiting a stimulation sensitivity;

control means for operating said means for generating stimulation pulses, during a mode for determining the stimulation sensitivity of said tissue, for causing said means for generating stimulation pulses to alter said stimulation energy from pulse-to-pulse in steps by generating stimulation pulses each having a pulse amplitude at a voltage below said maximum available voltage by a selected safety factor and respectively having a pulse duration altered in steps starting from a first duration until a change in the reaction of said tissue to one of said stimulation pulses is detected by said means for detecting, and for operating said means for generating stimulation pulses, during a therapy mode, for causing said means for generating stimulation pulses to emit stimulation pulses each having a pulse amplitude at said maximum available voltage and each having a pulse duration equal to the pulse duration of said one of said stimulation pulses.

5,391,192

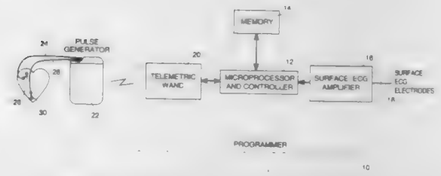
AUTOMATIC VENTRICULAR PACING PULSE THRESHOLD DETERMINATION UTILIZING AN EXTERNAL PROGRAMMER AND A SURFACE ELECTROCARDIOGRAM

Richard M. T. Lu, Highlands Ranch; Bruce M. Steinhaus, Parker; Peter A. Crosby, Greenwood Village, and Janice Nolan, Conifer, all of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Mar. 4, 1994, Ser. No. 205,721

Int. Cl.[6] A61N *1/37*

U.S. Cl. 607—28 **27 Claims**



1. A method of externally determining the minimum energy of a pacing pulse necessary to evoke a ventricular depolarization response in the heart of a patient, comprising the steps of:

providing a series of test pacing pulses of sequentially decreasing energy to the heart;

obtaining the depolarization potential signal evoked by each pulse on a surface electrocardiogram;

providing for each pacing pulse a sample interval for the respective depolarization potential signal;

integrating each depolarization potential signal during its sample interval;

determining whether or not the first two sample interval integrals represent similar evoked depolarization potential signals and, if they do, then averaging said first two sample interval integrals and taking a fraction thereof as the capture threshold;

determining whether or not each succeeding sample interval integral is larger than said capture threshold and, if it is, then averaging the prior sample interval integrals and the current sample interval integral and taking a fraction thereof as the new capture threshold;

determining that a pacing pulse did not evoke a depolarization response if its sample interval integral is not larger than the capture threshold then in effect; and

responsive to pacing pulses no longer evoking depolarization response, registering the energy of the last pacing pulse whose respective sample interval integral was larger than the capture threshold then in effect.

5,391,193

METHOD AND APPARATUS FOR BATTERY DEPLETION MONITORING

David L. Thompson, Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 5, 1993, Ser. No. 14,296

Int. Cl.[6] A61N *1/08*

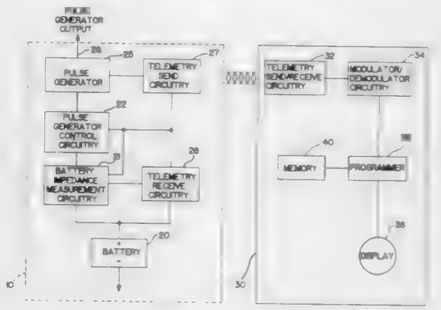
U.S. Cl. 607—29 **11 Claims**

8. A system for determining longevity of an implantable device battery, comprising:

an implantable device housing containing a battery;

an impedance measurement circuit for generating impedance signals corresponding to measured impedances of said battery;

means for generating time values corresponding to times of generation of said impedance signals; and



means for calculating estimated battery longevity based upon said impedance signals and said time values.

5,391,194

APPARATUS FOR USE IN PROGRAMMING CARDIAC PACEMAKERS AND METHOD OF USING THE SAME

Bruce N. Goldreyer, Rancho Palos Verdes, Calif., assignor to Pressure Products Medical Supplies, Inc., Rancho Palos Verdes, Calif.

Filed Jan. 28, 1993, Ser. No. 10,047

Int. Cl.[6] A61N *1/372*

U.S. Cl. 607—31 **14 Claims**



1. An apparatus for use in programming an implanted pacemaker comprising:

a double sided adhesive pad for fixing on a first side of said pad to a skin implantation site over said implanted pacemaker and for fixing on a second side to an auxiliary device used in programming said implanted pacemaker;

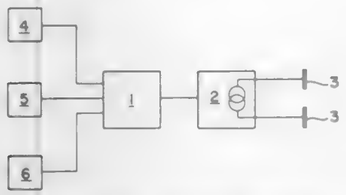
means for visually registering said pad relative to said implanted pacemaker as said pad is being fixed to said skin implantation site; and

means for visually registering said auxiliary device relative to said pad,

whereby said pacemaker may be reliably programmed without risk of relative movement of said auxiliary device with respect to said pacemaker during programming of said pacemaker.

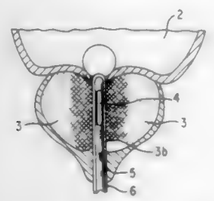
VOL 1171 ISS 3 FE 21 1995 UMI

5,391,195
DEVICE FOR CARRYING OUT AN IONTOPHORESIS TREATMENT ON A PATIENT
Johannis Van Groningen, Achthuizen, Netherlands, assignor to B.V. Optische Industrie De Oude Delft, Delft, Netherlands
PCT No. PCT/NL92/00077, § 371 Date Feb. 10, 1993, § 102(e) Date Feb. 10, 1993, PCT Pub. No. WO92/18197, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 15, 1992, Ser. No. 962,196
Claims priority, application Netherlands, Apr. 17, 1991, 9100662
Int. Cl.[6] A61N *1/18*
U.S. Cl. 607—72 **5 Claims**



1. A device for effecting iontophoresis treatment on a patient, which comprises a signal generator for generating a treatment signal and having an output stage including two electrodes for connection to said patient, said signal generator generating a treatment signal of a pulsed direct current at a frequency of at least 1 kHz with a duty cycle of said pulsed direct current being greater than 80%.

5,391,196
METHOD FOR THERAPEUTIC TREATMENT OF AN OBSTRUCTED NATURAL CANAL
Marian Devonec, 81 avenue des Balmes, 01700 Miribel, France
Filed Jun. 18, 1993, Ser. No. 78,025
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—96 **9 Claims**



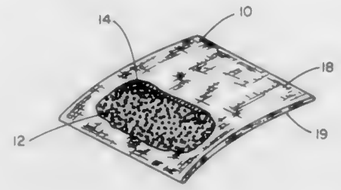
1. Method for therapeutic treatment of a natural canal of a human or animal body for passage of fluid, delimited by a living wall, and whose passage undergoes a stenosis or is obstructed by centripetal compression exerted by a hypertrophic extrinsic tissue, comprising:
(a) selectively damaging the extrinsic tissue by introducing within it a controlled dose of ionizing or non-ionizing treatment energy in order to necrose at least a part of said tissue;
(b) fitting a prosthesis into said natural canal, immediately after step (a), said prosthesis comprising a tubular element biologically compatible with the wall, exerting on the wall a centrifugal compression, and optionally imparting a posture, and defining an open and permanent passage in said canal;
(c) permitting the extrinsic tissue to heal on and around the prosthesis; and
(d) after healing of the extrinsic tissue, extracting the prosthesis from the natural canal to obtain in the canal a definitive passage modeled on a external dimension of said prosthesis.

5,391,197
ULTRASOUND THERMOTHERAPY PROBE
Everette C. Burdette, Champaign, Ill., and Richard diMonda, Marietta, Ga., assignors to Dornier Medical Systems, Inc., Champaign, Ill.
Continuation-in-part of Ser. No. 976,232, Nov. 13, 1992. This application Jun. 25, 1993, Ser. No. 83,967
Int. Cl.[6] A61F *7/12*
U.S. Cl. 607—97 **19 Claims**



1. A method of providing thermal therapy to prostate tissue of a patient, comprising:
providing a substantially cylindrical ultrasound transducer for producing an energy field focused along a line;
locating said substantially cylindrical ultrasound transducer substantially within an applicator housing, said substantially cylindrical ultrasound transducer being dimensioned to have a radius of curvature larger than a radius of curvature of said applicator housing; and
providing a power source for said ultrasound transducer to produce the line focused energy field for providing said thermal therapy to prostate tissue of a patient.

5,391,198
REUSABLE THERMAL COMPRESS
Henry H. Cheney, III, 19 Charles St., Braintree, Mass. 02184, and Michael Vecchione, 106 Banwell La., Mt. Laurel, N.J. 08054
Filed Feb. 16, 1994, Ser. No. 197,244
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—114 **5 Claims**

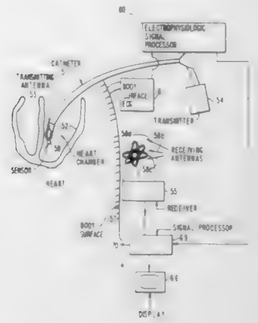


1. A reusable thermal compress used in the process of cooling or warming a human or animal body part comprising:
a water porous fabric bag;
a plurality of dehydrated water soluble acrylic polymer crystals contained within said bag and of large enough size to remain contained within said bag, wherein said water soluble acrylic polymer is a crosslinked modified acrylic polymer; and
a thickening agent contained within said fabric bag, wherein said thickening agent is trisaminothane.

5,391,199
APPARATUS AND METHOD FOR TREATING CARDIAC ARRHYTHMIAS
Shlomo Ben-Haim, Haifa, Israel, assignor to Biosense, Inc., Orangeburg, N.Y.
Filed Jul. 20, 1993, Ser. No. 94,539
Int. Cl.[6] A61N *1/18*
U.S. Cl. 607—122 **28 Claims**

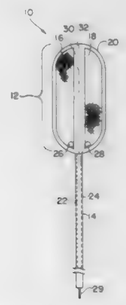
1. A method of treating cardiac arrhythmias, which comprises the steps of:

(a) positioning the distal tip of each of one or more catheters at a site adjacent to or within a patient's heart;
(b) sensing location information at the site;
(c) sensing local information concerning the heart's electrical activity at the site;
(d) processing sensed information from steps (b) and (c) to create one or more data points;



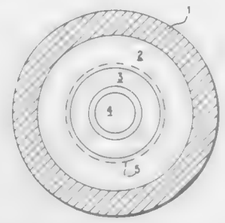
(e) repeating steps (a) , (b) , (c) and (d) one or more times to create sufficient data points for a map of the heart's electrical pathways; and
(f) ablating a portion of the heart whose electrical pathways cause said arrhythmias.

5,391,200
DEFIBRILLATION PATCH ELECTRODE HAVING CONDUCTOR-FREE RESILIENT ZONE FOR MINIMALLY INVASIVE DEPLOYMENT
Bruce H. KenKnight, Minneapolis, and Jeffrey A. Hall, Bloomington, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.
Continuation of Ser. No. 954,616, Sep. 30, 1992, abandoned. This application Mar. 10, 1994, Ser. No. 209,356
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—129 **14 Claims**



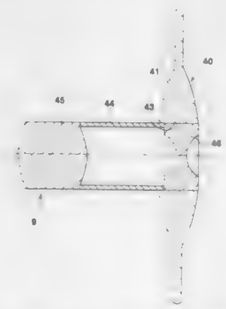
1. A cardioversion/defibrillation patch electrode for insertion through a thoracoscopic port comprising::
an insulative element having first and second opposing surfaces; and at least two electrically conductive elements disposed on said first surface of said insulative element and separated from each other by a conductor-free region of said first surface of said insulative element, said conductor-free region defining a hinge about which the electrode is caused to bend by deformation forces encountered during implantation from a substantially planar orientation in a relaxed state to a folded, springy orientation, said springy orientation causing said electrode to return to said substantially planar configuration when said deformation forces are removed.

5,391,201
METHOD OF USING A CORNEAL RING INLAY
Graham D. Barrett, Perth, Australia, and Cary J. Reich, Laguna Hills, Calif., assignors to Chiron IntraOptics, Inc., Irvine, Calif.
Continuation of Ser. No. 993,657, Dec. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 816,007, Jan. 2, 1992, abandoned. This application Jul. 5, 1994, Ser. No. 267,755
Int. Cl.[6] A61F *2/14*
U.S. Cl. 623—5 **8 Claims**



1. A method for altering the curvature of the central optical region of the cornea of the eye of a patient, comprising:
a) making a circular peripheral cut in the cornea peripheral to the optical zone;
b) undermining the stroma through Bowman's membrane in a circular fashion;
c) placing into the undermined portion of the stroma an inlay ring apparatus composed of a biocompatible continuous ring of a material having a geometry effective for altering the curvature of the cornea; and
d) resealing the periphery of the tissue.

5,391,202
INTRAOCULAR INSERT FOR IMPLANTATION IN THE HUMAN EYE
Isaac Lipshitz, 89A Hanassi Street, 46399 Herzlia, and Joseph Gross, 73 160, Moshav Mazor, both of Israel
Continuation-in-part of Ser. No. 13,387, Feb. 4, 1993. This application Jan. 31, 1994, Ser. No. 188,979
The portion of the term of this patent subsequent to Oct. 11, 2011, has been disclaimed.
Int. Cl.[6] A61F *2/16*
U.S. Cl. 623—6 **10 Claims**



6. An intraocular insert for implantation in the interior of a human eye, characterized in that said insert includes a body member of a transparent material formed with a central cavity adapted to receive a positive lens at one end of the cavity and a negative lens at an opposite end of the cavity.

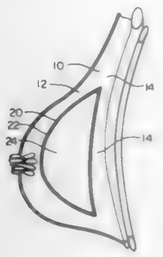
VOL 1171 ISS 3 FE 21 1995 UMI

5,391,203

METHOD OF DRAINING AND FILLING SOFT TISSUE IMPLANT

Scott P. Bartlett, 500 W. Moreland Ave., Chestnut Hill, Pa. 19118; Kant Lin, Charlottesville, Va., and Kiyoshi Matsuo, Matsumoto, Japan, assignors to Scott P. Bartlett, Philadelphia and Linton A. Whitaker, Wynnewood, both of Pa.

Filed Apr. 13, 1992, Ser. No. 867,992
Int. Cl.[6] A61F 2/12
U.S. Cl. 623—8 8 Claims



1. A method for diminishing the risk of adverse physiological reaction to a mammalian soft tissue implant of the type having a containment sac containing a filling, comprising the steps of draining or aspirating said filling from said sac, irrigating said sac, introducing a mucopolysaccharide filling into said sac, and sealing the sac drainage or aspiration site.

5,391,204

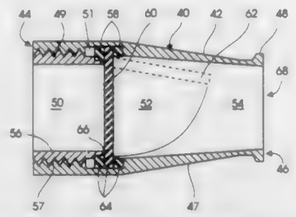
Patent Not Issued For This Number

5,391,205

TRACHEOESOPHAGEAL VOICE PROSTHESIS

Roy F. Knight, P.O. Box 1516, Norman, Okla. 73070

Filed Dec. 17, 1991, Ser. No. 809,665
Int. Cl.[6] A61F 2/20; A61M 16/00; A62B 9/06
U.S. Cl. 623—9 9 Claims



1. A tracheoesophageal voice prosthesis device, comprising:
a generally cylindrical tapered housing having a bore therethrough, wherein said housing includes a large diameter end having an inner threaded surface portion which terminates in inner grooved surface portion, a small diameter end, and a tapered transition portion connecting said large diameter end and said small diameter end; and a collar radially outwardly extending from a terminating point of said small diameter end, wherein said collar is characterized to be of a size and shape to allow for relative easy and painless insertion into a tracheal-esophageal fistula while cooperating with said tapered transition portion to provide retention of said device in esophageal tissue surrounding the fistula and substantially prevent movement of said device therethrough;
readily removable valve means operably connected within said housing, wherein said valve means are operably disposed adjacent said inner grooved surface portion; and
a retainer readily connectable within said housing to retain said valve means.

5,391,206

METHOD FOR DYEING KERATINOUS FIBERS USING 4-HYDROXYINDOLE AT ACID PH AND COMPOSITION USED

Jean Cotteret, Verneuil-sur-Seine, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 726,262, Jul. 5, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 49,657
Claims priority, application France, Jul. 5, 1990, 90 08569
Int. Cl.[6] A61K 7/13
U.S. Cl. 8—408 29 Claims

19. An agent for dyeing keratinous fibre, which comprises at least two components: a component (A) consisting of a composition containing, in a medium appropriate for dyeing, from 0.01 to 4% by weight, relative to the total weight of the component (A), of at least 4-hydroxyindole or a salt thereof as a coupler and at least one oxidation dye precursor, the oxidation dye precursor and the coupler being present in proportions from 0.05 to 7% by weight, relative to the total weight of component (A), of an oxidation dye precursor, and a component (B) consisting of a composition containing an oxidizing agent in a sufficient amount to oxidize the coupler and oxidation dye precursor contained in component (A) and an acid component in a medium appropriate for dyeing, the acid component being present in a sufficient amount in component (B) such that, after mixing in proportions of 90 to 10% in respect of component (A) and of 10 to 90% in respect of component (B), the resulting composition has a pH of less than 7, said resulting composition being substantially free from an amount of iodide ions sufficient to oxidize 4-hydroxyindole and the oxidation dye precursor.

5,391,207

LIQUID DYESTUFF PREPARATIONS

Rainer Gerlach; Winfried Mennicke, both of Leverkusen, and Wolfgang Müllers, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 913,503, Jul. 14, 1992, abandoned. This application Mar. 30, 1994, Ser. No. 221,272
Claims priority, application Germany, Jul. 24, 1991, 4124451
Int. Cl.[6] D06P 3/32
U.S. Cl. 8—437 16 Claims

1. A process for the dyeing of leather which comprises applying to the leather a liquid dyestuff preparation containing
5 to 30 parts by weight of at least one ionic metal-free azo dyestuff or metal-containing azo or azomethine dyestuff,
15 to 80 parts by weight of at least one alkoxy alcohol of the formula

$$R—O—(—A—O—)_n—H \quad (I),$$

in which
R denotes straight-chain or branched C_1–C_4-alkyl,
A denotes straight-chain or branched C_2–C_3-alkylene and
n denotes 1, 2 or 3,
6 to 40 parts by weight of at least one of a lactone, lactam or cyclic urea, and
5 to 50 parts by weight of water.

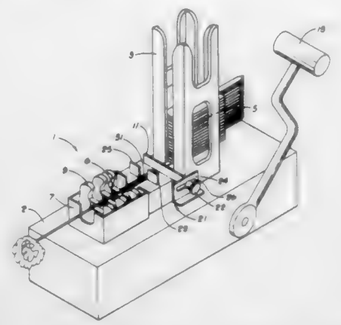
5,391,208

METHOD AND APPARATUS FOR STEMMING FLOWERS

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Filed Sep. 22, 1992, Ser. No. 949,411
Int. Cl.[6] A01G 7/00
U.S. Cl. 47—1.01 10 Claims

1. An apparatus for stemming a flower for use with a stem pick adapted to be attached to the stem of a flower to be stemmed, the stem pick including attachment means for attaching the stem pick to the flower stem and a piercing prolongation extending from the attachment means, said apparatus comprising;
means for attaching the stem pick to the flower stem by effecting engagement of the stem pick attachment means with the flower stem;
means for cutting through the stem of the flower to sever the flower stem at a location on the flower stem between the



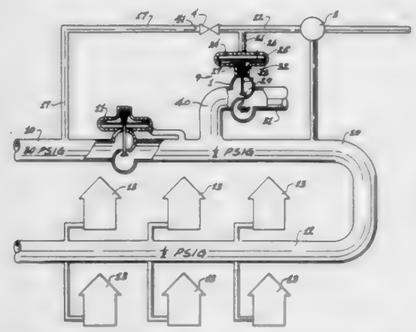
region of attachment of the stem pick and the piercing prolongation of the stem pick; and
means for displacing air in the region of severance of the flower stem, which air would otherwise be drawn into the vascular tissue of the flower stem after severance.

5,391,209

METHOD FOR CONTROLLING OVERPRESSURIZATION IN A GAS LINE

Mark J. Pelkey, Clarence, N.Y., assignor to Leidy Hub, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 626,634, Dec. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 538,912, Jun. 15, 1990, Pat. No. 4,997,459, and a continuation-in-part of Ser. No. 538,913, Jun. 15, 1990, Pat. No. 5,000,214. This application Nov. 23, 1992, Ser. No. 980,472
The portion of the term of this patent subsequent to Mar. 5, 2008, has been disclaimed.
Int. Cl.[6] F17D 1/04
U.S. Cl. 48—191 2 Claims



1. A method for controlling overpressurization in a main gas line system which comprises a main gas line with a district pressure regulator therein, and an auxiliary gas line and a pressure safety device, each connected to the main gas line said pressure safety device comprising in gas flow connection a first normally closed gas venting means, a needle valve, a spring-diaphragm actuator and a pressure sensing pilot means, connecting said auxiliary gas line to the main gas line, and extending said auxiliary gas line in gas flow connection from a point upstream of said district pressure regulator to said needle valve, connecting in gas flow connection said needle valve said

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pressure sensing pilot means and said spring-diaphragm actuator, providing in said pressure sensing pilot means to detect any increase in pressure in said main gas line downstream of said district pressure regulator over a predetermined gas pressure and to use this increase in pressure to open a second normally closed gas venting means connected to said pressure sensing pilot means, and to thereby cause the venting of pressure in said spring-diaphragm actuator to atmosphere through said second normally closed gas venting means at a rate greater than said needle valve will allow replenishment of said spring-diaphragm actuator, and thereby providing a reduction in pressure in said spring-diaphragm actuator thereby allowing the spring in said spring-diaphragm actuator to force said first normally closed gas venting means to open, thereby allowing excess gas to be vented from the main gas line downstream of said district pressure regulator to the atmosphere, thereby reducing the gas pressure in said main gas line downstream of said district pressure regulator.

5,391,210

ABRASIVE ARTICLE

Zayn Bilkadi, Mahtomedi, and Thomas P. Klun, Lakeland, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 16, 1993, Ser. No. 168,655
Int. Cl.[6] C09K *3/14*
U.S. Cl. 51—298 **34 Claims**

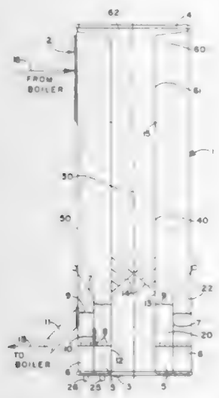
1. An abrasive article comprising a plurality of abrasive grits and a binder comprising a cured ceramer, said ceramer comprising non-aggregated colloidal metal oxide particles provided as a sol and dispersed in a free-radically polymerizable composition.

5,391,211

INTEGRAL CYLINDRICAL CYCLONE AND LOOPSEAL

Michael G. Alliston, Lewisburg; Song Wu, S. Williamsport; Brian T. Sinn, and Kevin Lato, both of Williamsport, all of Pa., assignors to Tampella Power Corporation, Williamsport, Pa.

Filed Jan. 24, 1994, Ser. No. 187,197
Int. Cl.[6] B01D *45/12*
U.S. Cl. 55—269 **19 Claims**



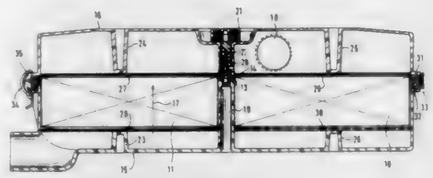
1. An arrangement for separating solids from a process gas produced in a solids-processing device and for providing a pressure seal for the device, the arrangement comprising:
a main housing having a longitudinal axis;
an inlet communicating with the main housing for receiving a solids-laden process gas and separating the solids from the gas;
a partition wall in the main housing for separating an outer chamber from an inner chamber within the main housing;
means for diverting solids falling in the main housing, into the inner chamber;
first means for passing solids between the inner and outer chambers;
means for providing fluidizing air to the outer and the inner chambers for creating fluidized beds of solids in the outer and the inner chambers; and
second means for passing solids from the outer chamber out of the main housing and back to the solids-processing device.

5,391,212

FILTER SYSTEM, ESPECIALLY FOR FILTERING THE AIR INTAKE OF AN INTERNAL COMBUSTION ENGINE

Volker Ernst, Sachsenheim; Arthur Klotz, Remseck, and Rudolf Leipelt, Marbach, all of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

Filed Jun. 4, 1993, Ser. No. 70,986
Claims priority, application Germany, Jun. 4, 1992, 4218396
Int. Cl.[6] B01D *35/30*
U.S. Cl. 55—385.3 **9 Claims**



1. A filter arrangement comprising:
a housing comprising a housing bottom and a housing cover;
a first filter insert positioned in said housing and comprising a pleated filter paper or filter batting and having a gasket extending at least partially around an outer margin thereof;
a second filter insert positioned in said housing with one side adjacent a parallel side of said first filter insert, said second filter insert comprising a pleated filter paper or filter batting through which filtered air passes and having a gasket extending at least partially around a circumferential margin thereof;
a junction strip joining the adjacent parallel sides of said first and second filter inserts and sealing a raw air chamber on one side of said filter inserts from a clean air chamber on an opposite side of said filter inserts; and
a fastener carried by said housing bottom for connecting said housing bottom to said housing cover, said fastener being aligned with an opening in said junction strip and extending through said opening to sealingly close said opening.

5,391,213

METHOD FOR MANUFACTURING FIBRE-REINFORCED STRUCTURES WITH A GLASS MATRIX

Malte R. Frövel, Braunschweig, Germany, assignor to Deutsche Forschungsanstalt fur Luft- und Raumfahrt e.V., Linder Hohe, Germany

Filed Dec. 3, 1992, Ser. No. 985,574
Claims priority, application Germany, Dec. 3, 1991, 4139785
Int. Cl.[6] C03B *19/06;* **C03C** *25/00;* **B29C** *67/00*
U.S. Cl. 65—17.3 **13 Claims**

1. A method of manufacturing a fiber-reinforced, glass matrix structure comprising the steps of:
dissolving a boric acid and a plurality of metal nitrates in a predetermined quantity of distilled water to form a solution, said distilled water having a temperature of about 85 degrees C.;
dispersing an SiO_2 colloid in said solution in a ratio of about 1 part by weight of said SiO_2 colloid to about 1 part by weight of said solution to form an SiO_2 colloid dispersion, said metal nitrates and said boric acid reducing a softening temperature of said SiO_2 colloid;
impregnating a plurality of fibers with said SiO_2 colloid dispersion;
molding said impregnated fibers to a desired molded structure;
drying said molded structure; and
sintering said dried molded structure at a temperature between 1150 and 1250 degrees C.

5,391,214

METHOD AND APPARATUS FOR MANUFACTURING GLASS BOTTLES

Manabu Nakagawa, and Masatoshi Shibata, both of Tokyo, Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1993, Ser. No. 115,824
Claims priority, application Japan, Nov. 20, 1992, 4-311976
Int. Cl.[6] C03B *35/10*
U.S. Cl. 65—29.1 **4 Claims**



1. In a method of manufacturing glass bottles comprising the steps of receiving bottles successively discharged in a hot state from a plurality of discharging positions on a bottle manufacturing machine arranged substantially in line and substantially with same distances therebetween and putting said bottles onto bottle feeding conveyors, for feeding said bottles to an annealing furnace, the improvement comprises:
(a) discharging bottles in the order from the discharging position farthest from the annealing furnace successively to the position nearest to the annealing furnace so that the bottle at the position farthest from the annealing furnace firstly comes out and the bottle at the position nearest to the annealing furnace lastly comes out:
(b) receiving the discharged bottles on a first bottle feeding conveyor running towards said annealing furnace with the same order of said bottles arranged on said first conveyor as the discharging order, so that the firstly discharged bottle stands at the position nearest to the annealing furnace and the lastly discharged bottle stands at the position farthest from the annealing furnace;
(c) shifting the group of bottles arranged on the first conveyor onto a second conveyor which is arranged in parallel relationship with the first conveyor so as to reach the annealing furnace;
(d) controlling the speeds of said two conveyors as described in the equation:

$$V_2 = V_1 - h/t$$

wherein, the speed of first conveyor is designated by V_1, the speed of second conveyor is designated by V_2, the distance between adjacent discharging positions is designated by h, and the time lag between bottle discharges from adjacent discharging positions is designated by t.

5,391,215

METHOD FOR PRODUCING HIGH-PURITY METALLIC CHROMIUM

Kenichi Kobayashi, Yamagata, and Tatsuhiko Fujinuma, Nihonbashi, both of Japan, assignors to Japan Metals & Chemicals Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 923,456
Int. Cl.[6] C22B *34/32*
U.S. Cl. 75—623 **10 Claims**

5. A method for manufacturing high-purity metallic chromium having reduced concentration levels of sulfur, nitrogen and oxygen, comprising steps of mixing powdered crude metallic chromium containing impurities with carbon powder and powder of one or more than one easily sulfidable metals selected from tin, nickel and copper and subjecting the mixture to a heat treatment process in vacuum, said heat treatment process being conducted at a temperature between 1,200° and 1,500° C. and pressure between 0.1 and 5 torr in a vacuum furnace equipped with heating elements of graphite.

5,391,216

Patent Not Issued For This Number

5,391,217

METHOD FOR ELIMINATING MERCURY FROM LIQUIDS

Guenter Zoche, Bonn, Germany, assignor to Huels Aktiengesellschaft, Marl, Germany

Filed Jun. 28, 1993, Ser. No. 82,542
Claims priority, application Germany, Jun. 27, 1992, 4221207
Int. Cl.[6] C22B *3/46*
U.S. Cl. 75—724 **15 Claims**

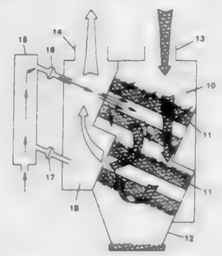
1. A method for eliminating mercury from a mercury-containing liquid, comprising:
contacting the mercury-containing liquid with a plurality of fibers having a coating of silver, wherein said plurality of fibers is made of fibers having diameters of from 5 to 500 μm, by passing the mercury-containing liquid through a mass formed of said silver coated fibers.

5,391,218

DIAGNOSTIC AND CONTROL SYSTEM FOR DUST COLLECTOR

Ronald L. Jorgenson, Apple Valley, Minn., and David A. Saar, Lawrenceville, N.J., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Sep. 8, 1993, Ser. No. 118,507
Int. Cl.[6] B01D *46/42*
U.S. Cl. 95—20 **20 Claims**



1. A method of detecting a cleaning failure in a dust collector having one or more chambers with filters for removing particles from air and having cleaning systems including a manifold for delivering a reverse burst of air pressure in order to clean the filters, comprising the steps of:
a) monitoring air pressure in the manifold of the dust collector;
b) detecting an attempt to clean the one or more filters with

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the reverse burst of air pressure delivered from the manifold;

c) monitoring the manifold for a decrease in the manifold air pressure; and

d) indicating a cleaning failure if the decrease in the manifold air pressure does not occur.

5,391,219

METHOD FOR THE SEPARATION AND CONCENTRATION OF GAS USING A COMPOSITE OR ASYMMETRIC FLUORINE-CONTAINING POLYIMIDE MEMBRANE

Kenji Matsumoto, and Xu Ping, both of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

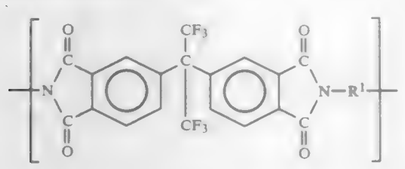
Continuation of Ser. No. 965,078, Oct. 22, 1992, abandoned, which is a division of Ser. No. 879,186, May 6, 1992, Pat. No. 5,178,940, which is a division of Ser. No. 859,874, Mar. 30, 1992, Pat. No. 5,165,963. This application Oct. 18, 1993, Ser. No. 137,519

Claims priority, application Japan, Apr. 15, 1991, 3-111164; Oct. 4, 1991, 3-285732

Int. Cl.[6] **B01D** *53/22, 71/64*

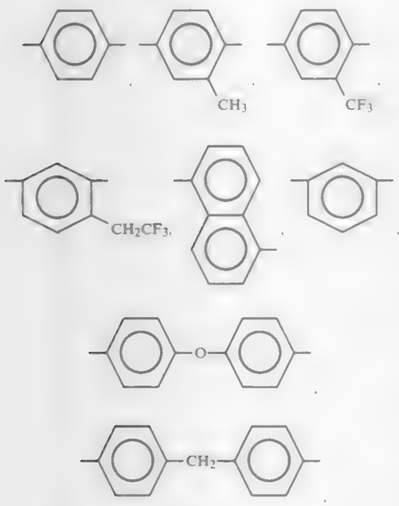
U.S. Cl. 95—51 **8 Claims**

1. A method for the separation and concentration of gases which comprises bringing a mixture of two or more gases into contact with a composite fluorine-containing polyimide membrane comprising a supporting film of a fluorine-containing polyimide resin consisting mainly of repeating units represented by formula (1)

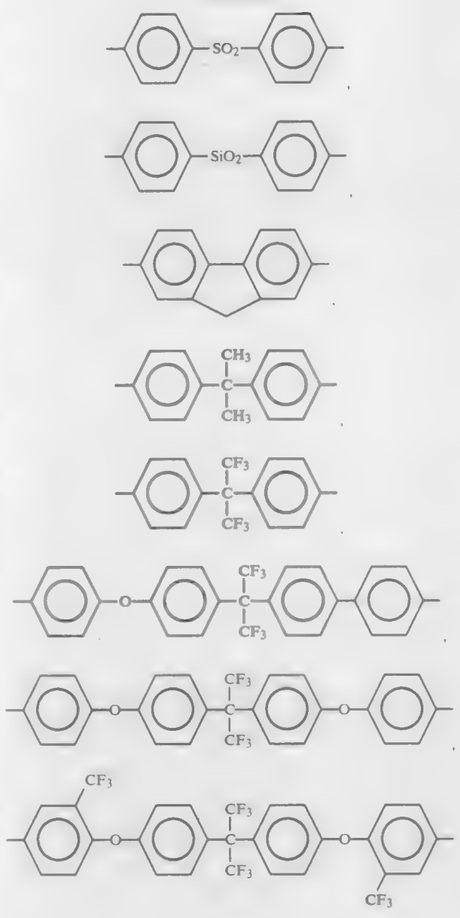


(1)

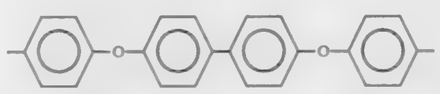
wherein R^1 is selected from the group consisting of a divalent alicyclic hydrocarbon group, a divalent aliphatic hydrocarbon group,



-continued



and



and thin film of an elastomeric polymer formed on said supporting film; so that a particular component of said mixture may selectively be allowed to pass through said membrane.

5,391,220

POLLUTION CONTROL SYSTEM AND METHOD OF USING SAME

Ronald G. Patterson, San Diego, Calif., assignor to Calvert Environmental, Inc., San Diego, Calif.

Filed Jan. 3, 1994, Ser. No. 181,623

Int. Cl.[6] **B01D** *50/00*

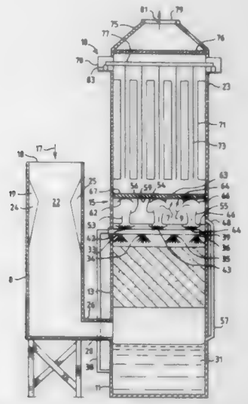
U.S. Cl. 95—69 **15 Claims**

1. A method of removing unwanted particles from hot flue gases emitted by an incinerator or similar source of such gases, comprising the steps of:

(a) cooling the emitted hot flue gases to saturation in a quencher;

(b) passing the saturated gases through a condenser to further cool the saturated gases while growing the size of at least smaller ones of the particles whereby the at least smaller ones act as nuclei for the condensation of water vapor onto the at least smaller ones of the particles to form, at the outlet of said condenser, particles suspended in water droplets;

(c) passing the gases and water droplets, and thus the particles, through at least one aperture to effect, at an outlet of the aperture, a concentration of the gases and water droplets;



(d) providing a gas reverser in substantial alignment with the outlet of the aperture whereby the gases impinge on and the water droplets impact said gas reverser functioning as an entrainment separator and diffuser whereby the impacting water droplets are broken into fine particulates and fine water droplets admixed with the gases; and

(e) precipitating the fine particulates and fine water droplets to clean the gases by removing the unwanted particles therefrom while exhausting the cleaned gases to atmosphere.

5,391,221

GAS CHROMATOGRAPH AND METHOD OF USING SAME

Toyoaki Fukushima; Kazuya Nakagawa; Masahito Ueda, and Satoru Miyoshi, all of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 19, 1993, Ser. No. 34,677

Claims priority, application Japan, Apr. 6, 1992, 4-114160

Int. Cl.[6] **B01D** *15/08*

U.S. Cl. 95—82 **12 Claims**

1. A method of operating a gas chromatograph which includes:

a column with an inlet;

a sample injection chamber at said inlet of said column;

a three-way valve with an inlet, a first outlet and a second outlet, said inlet being connected to a carrier gas source;

a first piping line connected between said first outlet of said three-way valve and said sample injection chamber;

a split line connected to said sample injection chamber immediately upstream of said inlet of said column for discharging therethrough a portion of a gas being sent out from said sample injection chamber;

a second piping line connected between said second outlet of said three-way valve and said split piping line; and

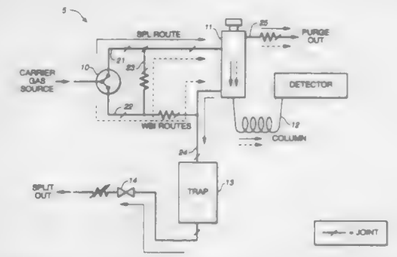
a third piping line connected between said first and second piping lines;

said method comprising the steps of:

introducing a carrier gas through said inlet of said three-way valve and entirely through said first outlet thereof into said sample injection chamber at intake flow rate U to thereby cause a portion of said carrier gas to flow through said column at column flow rate U_c and another portion of said carrier gas to be split out at split flow rate U_s through said split line, split ratio being defined as the ratio between said column flow rate U_c and said split flow rates U_s;

injecting a sample into said sample injection chamber;

specifying a pressure value P_0 and a split ratio value S_0;



calculating a column flow rate value U_{c0} corresponding to said pressure value P_0 by using a predetermined functional relationship between said column flow rate U_c and pressure at said inlet of said column;

calculating an intake flow rate value U_0 corresponding to said pressure value P_0, said column flow rate value U_c0 and said split ratio value S_0 by using a predetermined functional relationship of said intake flow rate U with said pressure at said inlet of said column and said split ratio;

adjusting said pressure at said inlet of said column to said pressure value P_0; and

adjusting said intake flow rate U of said carrier gas to said intake flow rate value U_0.

5,391,222

IN PLACE DISCHARGE ELECTRODE REPLACEMENT ON RIGID FRAME ESP'S

Norman D. Nelson, Franklin Township, Summit County, and Robert W. Kronenberger, Lake Township, Stark County, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 15, 1993, Ser. No. 48,021

Int. Cl.[6] **B03C** *3/86*

U.S. Cl. 96—90 **3 Claims**

1. A discharge electrode arrangement for an electrostatic precipitator, which facilitates field replacement of discharge electrode wire,the precipitator having a rigid discharge frame with a plurality of tubes, the arrangement comprising:

an end clip detachably engagable with a tube of the discharge frame;

a discharge electrode wire attached to the end clip at one end of the wire by a welded connection to the discharge electrode wire and the end clip;

an in-line spring detachably connected with the other end of the wire at one end of the spring; and

a second end clip detachably engagable with a second tube

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of the discharge frame, the second end clip being detachably connected with the other end of the spring for re-



movably extending the discharge wire between the tubes of the discharge frame.

5,391,223

METALLIZATION COMPOSITIONS FOR BI AND PB-CONTAINING CERAMIC DIELECTRICS

Joseph P. Dougherty; Sea-Fue Wang, both of State College, Pa., and Wayne Huebner, Rolla, Mo., assignors to The Penn State Research Foundation, University Park, Pa.

Filed Aug. 20, 1993, Ser. No. 110,039
Int. Cl.[6] C23C *20/04*
U.S. Cl. 106—1.19 **5 Claims**

1. A metallization which can be co-fired with a supporting ceramic which includes a Pb compound, said metallization comprising:

an Ag, Pb and Pd solid solution, said Ag and Pd having a molar ratio wherein said Pd constitutes a percentage of approximately 40% to 100%,

said Pb present in said solid solution in an amount to exhaust a potential solubility for Pb at said molar ratio and varying from approximately 1.5 to 14 atomic percent as said percentage of Pd varies from approximately 40% to 100%.

5,391,224

AQUEOUS-BASED STOP-LEAK FORMULATION

Joseph E. Pasuit, Goodrich, and James J. Stevens, Cheboygan, both of Mich., assignors to Fre-Bar Inc., Holly, Mich.

Filed Jul. 8, 1994, Ser. No. 272,013
Int. Cl.[6] C09K *3/12*
U.S. Cl. 106—33 **13 Claims**

1. A substantially oil-free, storage-stable, aqueous-based, stop-leak formulation for use in a heat exchange system, said formulation consisting essentially of:

1–50 parts by weight of a plant root powder;

1–15 parts by weight of an alkali or alkaline earth metal salt of a C1–C3 carboxylic acid; and

120–180 parts by weight of water.

5,391,225

ALKENYLSUCCINI ACID EMULSION SIZING AGENT

Hatanaka Shigeto, Kanagawa, and Hideto Umekawa, Miyagi, both of Japan, assignors to Mitsubishi Oil. Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1993, Ser. No. 134,904
Claims priority, application Japan, Oct. 16, 1992, 4-303174
Int. Cl.[6] C09D *7/12*; D21H *17/16*
U.S. Cl. 106—287.2 **19 Claims**

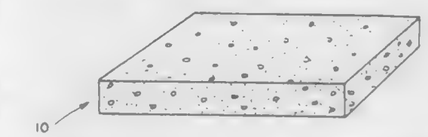
1. An alkenylsuccinic acid emulsion sizing agent, wherein said alkenylsuccinic acid emulsion sizing agent has a solid concentration of at least 25% by weight, and comprises active components comprising an alkenylsuccinic acid present in an amount of at least 50 parts by weight, per 100 parts by weight of the total active components in the alkenylsuccinic acid emulsion sizing agent; and, wherein said alkenylsuccinic acid is obtained by dispersing a product prepared by reacting a branched inner olefin having from 9 to 18 carbon atoms with maleic anhydride in water using an amphoteric acrylamide-series polymer comprising (a) at least one of a water-soluble cationic monomer and a salt thereof, (b) at least one of a water-soluble anionic monomer and a salt thereof, and (c) at least one of acrylamide and methacrylamide.

5,391,226

RUBBER-CRUMB-REINFORCED CEMENT CONCRETE

Richard Frankowski, Mobile, Ala., assignor to Tiremix Corporation, Mobile, Ala.

Continuation-in-part of Ser. No. 872,494, Apr. 23, 1992, Pat. No. 5,290,356. This application Jan. 10, 1994, Ser. No. 179,099
The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.
Int. Cl.[6] C04B *18/22*; E01C *05/22*
U.S. Cl. 106—696 **18 Claims**



1. A concrete product made from a mixture consisting essentially of:

a) 100 parts by weight of cement;

b) 1–30 parts by weight of rubber;

c) 10–70 parts by weight of water; and

d) 100–700 parts by weight of material from the group consisting of sand, aggregate, and light aggregate,

the concrete product having a compressive strength of at least 75 p.s.i.

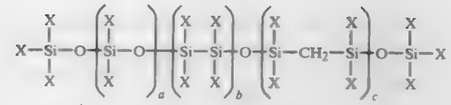
5,391,227

SILOXANE FLUID FROM METHYLCHLOROSILANE RESIDUE WASTE

Robert G. Stank, Ballston Spa; Luisito A. Tolentino, Clifton Park; Alan Ritzer, Sand Lake, and Frank J. Traver, Troy, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 867,938, Apr. 13, 1992, Pat. No. 5,312,946. This application Dec. 30, 1993, Ser. No. 175,897
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[6] C07F *7/08*; C09D *3/82*; C08K *3/00*
U.S. Cl. 106—287.13 **4 Claims**

1. An article of manufacture prepared from a silicone fluid comprising a silicone fluid comprising a siloxane polymer having the following general formula:



wherein X represents an alkyl group or a siloxane branch; a is an integer greater than 0; b and c are 0 or integers greater than 0; provided that b and c are both not 0; and wherein a, b and c are randomly ordered on the polymer backbone, and which is an antifoam, a process aid, or a paint additive.

5,391,228

METHOD FOR PREPARING HIGH SOLIDS BENTONITE SLURRIES

Paul W. Carroll, Gonzales, Tex., assignor to Southern Clay Products, Inc., Gonzales, Tex.

Continuation-in-part of Ser. No. 631,919, Dec. 21, 1990, Pat. No. 5,266,538. This application May 1, 1992, Ser. No. 877,836
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[6] C04B *33/02*
U.S. Cl. 106—486 **41 Claims**

1. A method for preparing a time-stable, low viscosity, high solids aqueous bentonite slurry which has effective application properties to enable use as a viscosifier or retention aid upon dilution and use; said method comprising:

preparing an aqueous solution of at least first and second salt components in which there is dispersed at least 8% by weight of the resultant slurry of a powdered bentonite;

said first salt component comprising at least 5% by weight of said solution and being selected to give if used alone a sufficiently low viscosity to said slurry at said high solids to enable pumpability, and at least effective application properties to enable use as a viscosifier or retention aid upon said dilution and use; and said second salt component being selected and being in an effective concentration to act in combination with said first salt component to further decrease the said acceptably low viscosity at said high solids content or to enable increase of the solids content while maintaining said low viscosity, while not impairing said application properties; said first salt component being selected from one or more members of the group consisting of sodium salts and lithium salts; and said second salt component being selected from one or more members of the group consisting of potassium salts and dispersant salts having a monovalent cation.

5,391,229

APPARATUS FOR CHEMICAL VAPOR DEPOSITION OF DIAMOND INCLUDING GRAPHITE SUBSTRATE HOLDERS

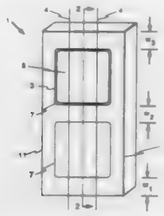
Philip G. Kosky, Schenectady, N.Y.; David E. Slutz, Columbus, and Friedel S. Knemeyer, Granville, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 26, 1993, Ser. No. 96,392
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—500 **13 Claims**

1. Apparatus for receiving diamond produced by chemical vapor deposition, said apparatus comprising:

at least one substrate holder comprising graphite, said substrate holder having at least one recess adapted to hold a substrate such that the surface of said substrate is flush with the surface of said holder surrounding said recess; and

at least one substrate mounted in said recess, said substrate comprising a material effective to receive and subsequently release a layer of diamond, said material being selected from the group consisting of boron, boron nitride, platinum, molybdenum, copper, aluminum nitride, silver,



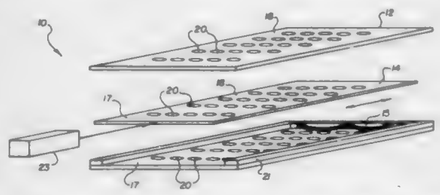
copper, iron, nickel, silicon, alumina, silica and combinations thereof.

5,391,230

APPARATUS FOR HOLDING SOLID COMPACT MEDICAMENTS DURING PROCESSING

Peter A. Pastecki, Rochester; Thomas C. Reiter, Hilton, and Charles W. Pierson, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 7, 1993, Ser. No. 88,467
Int. Cl.[6] B05C *13/00*; B25B *1/20*; B23Q *3/00*; A61K *9/00*
U.S. Cl. 118—503 **11 Claims**



1. Apparatus for holding a portion of a solid compact medicament, said medicament having a thickness and length, the apparatus comprising:

first, second and third members, each member having a surface with at least one throughole therein, each said throughole having a diameter [somewhat]greater than the thickness of said solid compact medicament and an interior wall having an axial length less than the length of said solid compact medicament; and,

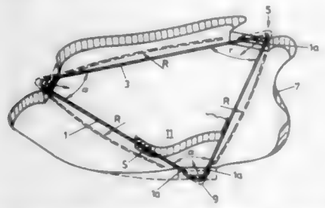
moving means for displacing said second member between said first and third members from a first position wherein said correspondingly aligned throughholes in said first and third members are in alignment with said throughole in said second member, said aligned throughholes defining an open gripping jaw for receiving and subsequently releasing said solid compact medicament from said first, second and third members; to a second position wherein said throughole in said second member is misaligned relative to said correspondingly aligned throughholes in said first and third members and wherein said interior wall of said second member firmly engages a circumferential portion of said solid compact medicament thereby correspondingly forcing said solid compact medicament into capturing engagement with said interior walls of said throughholes in said first, second and third members.

5,391,231

HOLDING ARRANGEMENT FOR A PLANAR WORKPIECE AND AT LEAST ONE SUCH HOLDING ARRANGEMENT

Roman Schertler, Wolfurt, Austria, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Apr. 6, 1993, Ser. No. 43,179
Claims priority, application Switzerland, Apr. 6, 1992, 1114/92
Int. Cl.[6] C23C *16/00*; B25B *1/00*
U.S. Cl. 118—503 19 Claims



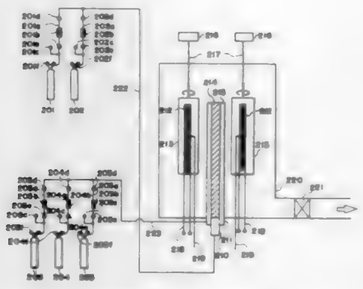
1. A holding arrangement for a workpiece comprising:
a frame defining an open space for receiving a workpiece, the frame having an edge surface around the open space, with a plurality of recesses in the edge surface;
at least two elongated spring bars extending freely across said open space, each bar having opposite ends; and
each end of each of said spring bars being disposed in one of said recesses in the edge surface of the frame, each end being movable in its respective recess so as to allow movement of said ends as said bars are bent to introduce a workpiece between said bars and thereby a distance between said ends is changed.

5,391,232

DEVICE FOR FORMING A DEPOSITED FILM

Masahiro Kanai, Tokyo; Masaki Hirooka, Toride; Junichi Hanna, Yokohama; Isamu Shimizu, Yokohama, and Eiji Takeuchi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 769,163, Oct. 11, 1991, abandoned, which is a continuation of Ser. No. 275,619, Nov. 25, 1988, abandoned, which is a continuation of Ser. No. 945,580, Dec. 23, 1986, abandoned. This application Jun. 8, 1993, Ser. No. 73,976
Claims priority, application Japan, Dec. 26, 1985, 60-292313; Dec. 26, 1985, 60-294451
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—715 26 Claims



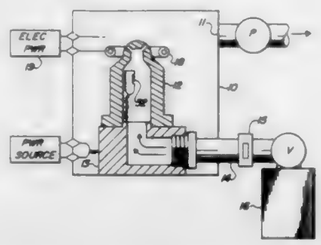
1. A device for introducing a mixture of gaseous starting material for the formation of a deposited film and a gaseous halogenic oxidizing agent having the property of oxidation action on said starting material into a reaction space to thereby form a gaseous mixture and produce a deposited film on a plurality of cylindrical substrates in said reaction space, comprising:
a plurality of coaxially aligned conduits for transporting the gaseous starting material and the gaseous oxidizing agent, said plurality of conduits including an outer conduit and at least one inner conduit having a side wall, at least one of said plurality of conduits having an opening to supply said gaseous starting material or said gaseous halogenic oxidizing agent toward the substrates in the reaction space; and
a plurality of means for holding and rotating the substrates arranged concentrically around the plurality of coaxially aligned conduits the plurality of coaxially aligned conduits being located at the center of the plurality of means for holding and rotating the substrates, said means not only holding the substrates but also rotating the substrates wherein the distance between said substrates and said opening is several mm to 20 cm;
wherein at least one inner conduit includes at least one radially extending aperture in said side wall for permitting gas in said inner conduit and gas in an adjacent conduit to communicate, wherein upon communication, the gaseous mixture formed effects formation of the deposited film on said substrates; and
wherein a diameter of said inner conduit is 0.1–50 mm, a diameter of said outer conduit is 0.2–60 mm, and said gaseous starting material is selected from the group consisting of straight chain silane compounds of the formula Si_nH_{2n+2} where n=1–8, branched chain silane compounds $SiH_3SiH(SiH_3)SiH_2SiH_3$, cyclic silane compounds of the formula Si_nH_{2n} wherein n=3–6 and chain germanium compounds of the formula Ge_mH_{2m+2} where m=1–5.

5,391,233

APPARATUS FOR DEPOSITING HARD COATING IN A NOZZLE ORIFICE

Paul L. Flynn, Fairview, and Anthony W. Giammarise, Erie, both of Pa., assignors to General Electric Company, Erie, Pa.

Division of Ser. No. 965,659, Aug. 6, 1992, which is a division of Ser. No. 675,395, Mar. 26, 1991, abandoned, which is a division of Ser. No. 501,443, Mar. 30, 1990, abandoned. This application May 31, 1994, Ser. No. 251,223
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—725 6 Claims



1. An apparatus for selectively applying an interior coating to a fuel injection nozzle having at least one aperture operatively positioned therein, the apparatus comprising:
a chamber;
means for introducing unheated reaction gas into the chamber;
means for controlling the flow of the reaction gas into the chamber;
means for directing the reaction gas from the gas introduction means into the fuel injection nozzle; and
means for heating a selected portion of the fuel injection nozzle proximate the aperture, the nozzle being positioned in the chamber so that the concentration and velocity of the reaction gas increases as the gas flows through the nozzle and out the aperture.

5,391,234

CLEANING OR STRIPPING COMPOSITION AND METHOD

Donald P. Murphy, Rochester Hills, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 739,952, Aug. 5, 1991, abandoned. This application Oct. 22, 1992, Ser. No. 964,733
Int. Cl.[6] C23G *1/14*; C11D *7/06*; B08B *3/04*
U.S. Cl. 134—38 20 Claims

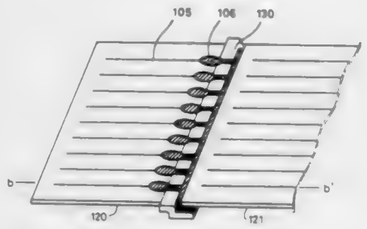
1. A process of stripping a solid adherent coating comprising acrylic, epoxy, vinyl, or alkyd rosins from a metal substrate on which it is coated by contacting the coating for a period of at least 2 minutes with an aqueous liquid composition of matter maintained at a temperature in the range from about 90° to about 100° C., wherein said aqueous liquid composition has a pH of at least 12.0 and consists essentially of water and:
(A) an alkaline solute component selected from the group consisting of alkali metal silicates, hydroxides, carbonates, borates, phosphates including condensed phosphates, and mixtures thereof, said alkaline solute component including alkali metal silicate constituting at least about 10% of said alkaline solute component; and
(B) a dissolved product of reaction between alkali metal silicate and an acid selected from the group consisting of hydrochloric, sulfuric, nitric, phosphoric, acetic, formic, propionic, boric, and hydroxy and multihydroxy organic acids, said dissolved product of reaction being present in an amount that is at least about 2.5% of the amount of total alkali metal silicate, including the part reacted with said acid selected from the group consisting of hydrochloric, sulfuric, nitric, phosphoric, acetic, formic, propionic, boric, and hydroxy and multihydroxy organic acids, that is dissolved in the composition; and, optionally,
(C) a stripping accelerant selected from the group consisting of phenols, alkylene glycols, ethers of phenols and alkylene glycols, and organic amines; and, optionally,
(D) a component selected from the group consisting of gluconic acid, alkali metal gluconates and glucoheptonates, and glucono-delta-lactone; and, optionally,
(E) surface active agents that are not part of components (A)–(D); and, optionally,
(F) dispersing agents that are not part of components (A)–(E); and, optionally,
(G) materials which impart a pleasant odor and are not part of components (A)–(F), said aqueous liquid composition having at least one of the following properties (I) and (II) with respect to a reference composition, said reference composition being composed of the same ingredients as said aqueous liquid composition except that the acid reacted to produce component (B) in the aqueous liquid composition is replaced by a fully neutralized salt of the same acid in the reference composition and the pH of the reference composition is adjusted, if necessary, to match that of the aqueous liquid composition by addition of sodium hydroxide to raise the pH or of gluconic acid to lower the pH:
(I) a test panel of highly polished aluminum coated with a standardized acrylic lacquer coating amount and thickness over a conventional zinc phosphate conversion coating, when immersed in the aqueous composition at a temperature of 93° C., is passively completely stripped of its coating within a time that is not more than 85% of the time required to strip an identically prepared-test panel with the reference composition at the same temperature, and no visually observable damage of the test panel occurs when so stripped with the aqueous composition;
(II) a test panel of highly polished aluminum coated with a standardized acrylic lacquer coating amount and thickness over a conventional zinc phosphate conversion coating, when immersed in the aqueous composition at a specified temperature for a time sufficient to completely passively strip the coating therefrom is visually observed to undergo less damage of the stripped surface than an identical panel immersed at the same temperature for the same time in the reference composition.

5,391,235

SOLAR CELL MODULE AND METHOD OF MANUFACTURING THE SAME

Yuji Inoue, Nagahama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,623
Claims priority, application Japan, Mar. 31, 1992, 4-077445
Int. Cl.[6] H01L *31/05, 31/18*
U.S. Cl. 136—244 17 Claims



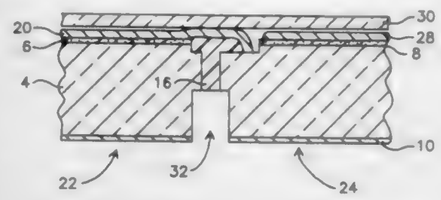
1. A solar cell module comprising:
a plurality of solar cells formed on corresponding substrates;
a plurality of connection members for series electrically connecting each of the electrodes of said plurality of solar cells to an opposite polarity electrode of an adjacent solar cell, wherein
each said connection member is in the form of an elongated strip having a laminated structure composed of a transparent insulating member and a comb-shaped conductive member formed on portions of said insulating member.

5,391,236

PHOTOVOLTAIC MICROARRAY STRUCTURE AND FABRICATION METHOD

Dmitri D. Krut, Encino; Denise E. Michaels, Northridge, and B. Terence Cavicchi, North Hollywood, all of Calif., assignors to Spectrolab, Inc., Sylmar, Calif.

Filed Jul. 30, 1993, Ser. No. 99,756
Int. Cl.[6] H01L *31/05, 31/18*
U.S. Cl. 136—249 30 Claims



17. A photovoltaic cell array, comprising:
a bulk semiconductor substrate having a photovoltaic front side and a back side;
a network of trenches extending through said substrate between said front and back sides and dividing said substrate into an array of separate cells, said photovoltaic front side of the substrate including a photosensitive pn junction that extends in a single plane substantially continuously across said array, interrupted substantially only by said trenches, with said trenches positioned between and lateral to the pn junctions of adjacent cells;
an insulative filler material filling at least a portion of said trenches, said filler material adhering to the substrate

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material on both sides of said trenches to maintain the mechanical integrity of said substrate; and

respective back electrodes on the back side surfaces of said cells generally parallel to said pn junction.

5,391,237

METHOD OF MANUFACTURING A METAL WORKPIECE BY OXYGEN CUTTING, OXYGEN-CUTTING DEVICE AND METAL WORKPIECE OBTAINED

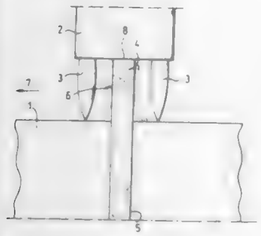
Dominique Vial, Lyon; Gérard Defay, Rives de Gier, and Michel Blanchet, Saint Joseph, all of France, assignors to Creusot-Loire Industrie, Puteaux, France

Filed Jun. 14, 1993, Ser. No. 76,184

Claims priority, application France, Jun. 12, 1992, 92 07121

Int. Cl.[6] B23K *7/08*

U.S. Cl. 148—205 **25 Claims**



1. Method of manufacturing a metal workpiece by cutting a metal product having a thickness of 0.300 to 2 meters by oxygen cutting, which comprises:

preheating the metal product in a cutting zone corresponding to an edge of the workpiece, with the aid of a nozzle forming a heating ring,

sending an oxygen cutting jet onto the preheated cutting zone and forming a peripheral sleeve of an additional low-pressure gas around the oxygen cutting jet so as to send, into the cutting zone, a coaxial double jet constituted by the oxygen jet surrounded by the sleeve of additional gas,

forming the peripheral sleeve from an additional gas selected from the group consisting of fuel gas, argon and nitrogen having an overpressure in relation to atmospheric pressure of less than 1 bar, and

separately regulating the flowrate and the pressure of the cutting oxygen on the one hand and the flowrate and the pressure of the additional gas on the other hand.

5,391,238

METHOD AND COMPOSITION FOR TREATMENT OF ALUMINUM

David W. Reichgott, Richboro, and Fu Chen, Newtown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

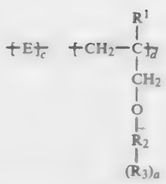
Continuation of Ser. No. 901,340, Jun. 19, 1992, Pat. No. 5,292,379, which is a continuation of Ser. No. 654,159, Feb. 12, 1991, Pat. No. 5,158,622. This application Oct. 22, 1993, Ser. No. 142,751

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

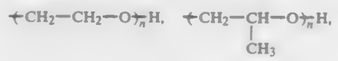
Int. Cl.[6] C23C *22/06*

U.S. Cl. 148—247 **9 Claims**

1. A composition for forming a conversion coating on a metal surface comprising: a water soluble or water dispersible polymer having repeat units represented by the formula



wherein E is the repeat unit remaining after polymerization of an alpha, beta ethylenically unsaturated compound, R_1 is H or lower (C1–C4) alkyl, R_2 is



monohydroxylated C1–C8 alkyl, monohydroxylated C1–C8 alkylene, di- or polyhydroxy C1–C8 alkylene, n is an integer of from 1 to about 20, a is 0 or 1, R_3 is hydrogen or an acetate formed by reacting an acetylating agent with an allyl ether, the molar ratio of repeat units c:d is from about 15:1 to about 1:10; and an acid selected form the group consisting of acetic acid, glycolic acid, dihydrohexafluotitanic acid, dihydrohexafluosilicic acid, dihydrohexafluozirconic acid, fluorboric acid and combinations thereof.

5,391,239

CONVERSION COATING OF ALUMINUM AND ITS ALLOYS AND COMPOSITIONS AND CONCENTRATES THEREFOR

Mervet S. Boulos, Troy, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Nov. 1, 1993, Ser. No. 146,242

Int. Cl.[6] C23C *22/36*

U.S. Cl. 148—253 **19 Claims**

1. A process of forming on a substrate of aluminum or an aluminum alloy containing at least about 45% by weight of aluminum an adherent conversion coating that exhibits X-ray diffraction peaks characteristic of crystalline alkali metal hexafluoroaluminates of a composition according to the formula $K_xNa_{(3-x)}AlF_6$, where x is a number between 0 and 2 inclusive, said conversion coating being formed by spontaneous chemical reaction upon contacting the substrate with an aqueous liquid composition for a time of not more than 10 minutes at a temperature of not more than 85° C., said aqueous liquid composition having a pH from about 3.0 to about 4.8 and consisting essentially of water and;

(A) from about 200 to about 5000 ppm of free fluoride;

(B) from about 0,02 to about 2.2% of sodium ions; and

(C) from about 0.02 to about 3.5% of phosphate ions.

5,391,240

PROCESS FOR THE PASSIVATING POST-TREATMENT OF PHOSPHATIZED METAL SURFACES

Reinhard Seidel, Monheim; Karl-Dieter Brands, Duesseldorf, and Karl-Heinz Gottwald, Erftstadt, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/01870, § 371 Date Apr. 8, 1993, § 102(e) Date Apr. 8, 1993, PCT Pub. No. WO92/06226, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 30, 1991, Ser. No. 39,106

Claims priority, application Germany, Oct. 8, 1990, 4031817

Int. Cl.[6] C23C *22/82*

U.S. Cl. 148—256 **20 Claims**

1. A process for the passivating post-treatment of phosphated metal surfaces of iron, steel, galvanized steel, zinc, aluminum and alloys thereof with chromium-free silicate-containing aqueous solutions, wherein the phosphated metal surfaces are contacted at temperatures of 10° to 60° C. with acidic, silicate-containing aqueous solutions which have a pH value of 2 to 5 and which contain 0.5 to 50 g/l of SiO_2 and 0.5 to 100 g/l of an acid.

5,391,241

FE-NI ALLOY COLD-ROLLED SHEET EXCELLENT IN CLEANLINESS AND ETCHING PIERCEABILITY

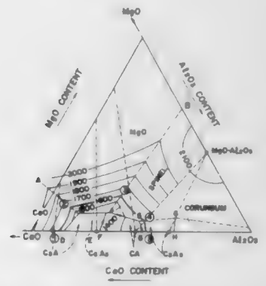
Atsushi Watanabe; Teruyuki Hasegawa; Tadashi Inoue; Tomoyoshi Okita; Yoshiteru Kikuchi, and Hidetoshi Matsuno, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation of Ser. No. 3,617, Jan. 13, 1993, abandoned, which is a division of Ser. No. 887,385, May 18, 1992, Pat. No. 5,207,844, which is a continuation of Ser. No. 667,968, Mar. 12, 1991, abandoned. This application May 23, 1994, Ser. No. 247,528

Claims priority, application Japan, Mar. 22, 1990, 2-72651

Int. Cl.[6] C22C *38/08*

U.S. Cl. 148—336 **3 Claims**



1. An Fe—Ni alloy cold-rolled sheet excellent in cleanliness and etching pierceability, which consists essentially of:

nickel: from 30 to 45 wt. %

manganese: from 0.1 to 1.0 wt. %

aluminum: from 0.003 to 0.030 wt. %

and

the balance being iron and incidental impurities, where the respective contents of silicon, chromium, carbon, nitrogen, sulfur, phosphorus, oxygen and non-metallic inclusions as the incidental impurities being:

up to 0.4 wt. % for silicon,

up to 0.1 wt. % for chromium,

up to 0.005 wt. % for carbon,

up to 0.005 wt. % for nitrogen,

up to 0.002 wt. % for sulfur,

up to 0.010 wt. % for phosphorus,

up to 0.002 wt. % for oxygen, and

up to 0.002 wt. % as converted into oxygen for non-metallic inclusions;

said non-metallic inclusions comprising a composition having a non-metallic inclusion density of at least 1 non-metallic inclusion per mm^2 with a non-metallic inclusion particle size of up to 6 μm in a region of a melting point of at least 1,600° C., which region is defined by the liquidus curve of 1,600° C., in the CaO—Al_2O_3—MgO ternary phase diagram, and said composition comprising at least one of CaO, Al_2O_3 and MgO;

said Fe—Ni alloy cold-rolled sheet being manufactured by a method which comprises the steps of:

preparing an Fe—Ni molten alloy, containing nickel in an amount within a range of from 30 to 45 wt. %, and subjected to dephosphorization and decarburization;

adding aluminum and flux to said Fe—Ni molten alloy thus prepared, in a ladle made of an MgO—CaO refractory containing CaO in an amount within a range of from 20 to 40 wt. %;

strongly stirring said Fe—Ni molten alloy which contains said added aluminum and flux in said ladle to produce a CaO—Al_2O_3—MgO slag in said ladle, so as to react said Fe—Ni molten alloy with said CaO—Al_2O_3—MgO slag to deoxidize said Fe—Ni molten alloy while controlling a value of activity of SiO_2 (a_{SiO2}) within a range of from 0.001 to 0.005 and a value of activity of Al_2O_3(a_{Al2O3}) within a range of from 0.1 to 0.3 in said CaO—Al_2O_3—MgO slag, and said CaO—Al_2O_3—MgO slag having the following chemical composition so as to satisfy said values of activities of SiO_2 (a_{SiO2}) and Al_2O_3 (a_{Al2O3}):

CaO and Al_2O_3: at least 57 wt. %,

wherein, the ratio of CaO/(CaO+Al_2O_3) being at least 0.45,

MgO: up to 25 wt. %,

SiO_2: up to 15 wt. %,

and

oxides of metals having an oxygen affinity lower than that of silicon: up to 3 wt. % in total;

casting said deoxidized Fe—Ni molten alloy into an ingot; and

blooming, hot-rolling and cold-rolling said ingot to manufacture an Fe—Ni alloy cold-rolled sheet containing non-metallic inclusions comprising a composition in a region of a melting point of at least 1,600° C., which region is defined by a liquidus curve of 1,600° C. in a CaO—Al_2O_3—MgO ternary phase diagram and having a particle size of up to 6 μm in a total amount of up to 0.002 wt. % as converted into oxygen.

5,391,242

HIGH-STRENGTH AND HIGH-CONDUCTIVITY COPPER ALLOY SHEET

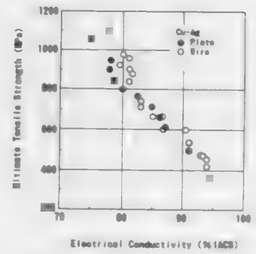
Yoshikazu Sakai; Kiyoshi Inoue, and Hiroshi Maeda, all of Tsukuba, Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Sep. 17, 1993, Ser. No. 128,762

Claims priority, application Japan, Sep. 17, 1992, 4-272548

Int. Cl.[6] C22C *9/00*

U.S. Cl. 148—432 **7 Claims**



1. A copper alloy sheet having high-strength and high-conductivity properties, consisting essentially of from 6 to 24 weight percent Ag, and with the balance being Cu and a small amount of inevitable impurities, said copper alloy sheet having a sheet-shaped structure where both Cu and Ag solid solutions are stretched into fiber shapes.

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5,391,243

METHOD FOR PRODUCING WIRE FOR ELECTRIC RAILWAYS

Motoo Goto; Shizuo Kawakita, both of Ohte; Yoshiharu Mae, Ohmiya; Takuro Iwamura; Yutaka Koshiba, both of Ohte; Kenji Yajima, Ohmiya; Syunji Ishibashi, Ohte; Hiroki Nagasawa, Kokubunji; Atsushi Sugahara, Kokubunji; Sumihisa Aoki, Kokubunji, and Haruhiko Asao, Ohte, all of Japan, assignors to Mitsubishi Materials Corporation and Railway Technical Research Institute, both of Tokyo, Japan

Division of Ser. No. 55,205, Apr. 30, 1993. This application Oct. 28, 1993, Ser. No. 145,474

Claims priority, application Japan, May 8, 1992, 4-143201; Nov. 17, 1992, 4-331024

Int. Cl.[6] **C22F** *1/08*

U.S. Cl. 148—554 **74 Claims**

38. A method of producing a wire for an electric railway, comprising the steps of:

(a) hot working a copper alloy billet consisting essentially, by weight percent, of 0.1 to 1.0% Cr, 0.01 to 0.3% Zr, 10 ppm or less O, and the balance being Cu and inevitable impurities, at a temperature of 860° to 1000° C. and at a draft of 90% or more into an element wire;

(b) then allowing the element wire from step (a) to cool in air;

(c) subjecting the cooled element wire from step (b) to a solution treatment, including heating the cooled element wire to a temperature of 860° to 1000° C. and then quenching the element wire;

(d) cold working the quenched element wire from step (c) at least once; and

(e) aging the cold worked element wire from step (d).

5,391,244

DRY ETCHING METHOD

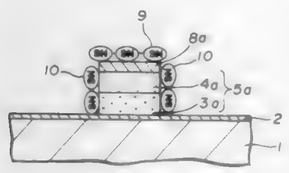
Shingo Kadomura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 4, 1993, Ser. No. 13,325

Claims priority, application Japan, Feb. 14, 1992, 4-059106

Int. Cl.[6] **H01L** *21/00*

U.S. Cl. 156—662 **27 Claims**



1. A dry etching method for etching a polycide film formed on a substrate, said method comprising:

carrying out a plasma etching using an etching gas containing a gas capable of releasing free sulfur into a plasma under conditions of discharge dissociation, and while performing the plasma etching, heating the substrate at a temperature capable of depositing a protection film of sulfur on a sidewall of the polycide film.

5,391,245

FIRE-RESISTANT BUILDING COMPONENT

Terry A. Turner, 5778 N. Adams Dr., Madras, Oreg. 97741

Filed Sep. 21, 1992, Ser. No. 948,303

Int. Cl.[6] **B29C** *39/02*

U.S. Cl. 156—39 **13 Claims**

1. A method of preparing a fire-resistant panel comprising:

preparing an aqueous slurry of fire-resistant particulate material and water with the slurry being spreadable in a mold to produce a layer of slurry,

the slurry being prepared with a major portion of the particulate material consisting of gypsum cement and diatomaceous earth whereby the slurry is hardenable in a green cure stage to permit handling,



spreading the slurry in a mold and forming a layer of the slurry within the mold,

permitting the slurry to harden during a green cure stage and with such hardening to form a slab from the slurry, and then permitting the slab to finally cure and harden to produce the panel.

5,391,246

FIRE PREVENTION IN THE APPLICATION OF ROOFING

William G. Stephens, 2844 S. Lenox, Milwaukee, Wis. 53207

Continuation of Ser. No. 804,358, Dec. 9, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 93,447

Int. Cl.[6] **F04B** *2/00*

U.S. Cl. 156—71 **4 Claims**

1. A method of installing roofing material onto a rooftop of a building, wherein the rooftop comprises a substratum, parapet walls, flashing or other structural parts thereof constructed at least in part by untreated wood, plywood or other combustible material, the method comprising:

saturating the surfaces of said combustible material with a fire-retardant liquid by brushing, rolling or spraying from upon the rooftop at ambient temperature and pressure an aqueous solution of fire-retardant boron compounds buffered with boric acid onto said substratum and parapet walls, underneath said flashing, and onto the other combustible surfaces of the roof;

unrolling a roll of a modified bitumen roofing membrane which comprises a layer of bitumen waterproofing material embedded with a reinforcing fabric; and,

heat welding the membrane to the roof substratum by concurrently flame heating the underside of the membrane and the surface of the substratum.

5,391,247

HOT STAMPING GLASS

Melvin E. Kamen, Highlands; Bhupendra Patel, Edison, both of N.J., and Phillip Bernstein, Yardley, Pa., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Continuation of Ser. No. 67,182, May 26, 1993, which is a division of Ser. No. 824,968, Jan. 24, 1992. This application May 6, 1994, Ser. No. 239,262

Int. Cl.[6] **B41M** *5/00;* **B44C** *3/00;* **C03C** *17/00*

U.S. Cl. 156—233 **25 Claims**

1. A method of decorating a glass substrate with hot stamping foil consisting essentially of:

a) applying a radiation curable adhesive ink to the glass substrate in a predetermined design that leaves some areas of the glass ink-free, said ink being operable, when cured, to bond to glass and, when heated after curing to adhere to hot stamping foil,

b) curing the ink on the substrate by exposing it to the radiation by which it is curable, thereby bonding the ink design to the glass;

c) pressing a sheet of hot stamping foil against the substrate with a compress heated to a temperature sufficient to cause the foil to adhere to the heated, cured ink design but not to the ink-free areas of the glass; and

d) peeling the foil away from the substrate, thereby leaving behind a portion of the foil adhered to the adhesive ink design.

5,391,248

METHOD OF MAKING AN ARTIFICIAL AIRWAY DEVICE

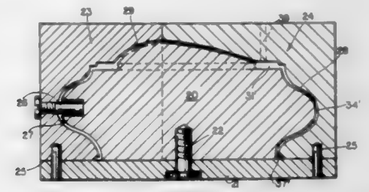
Archibald I. J. Brain, St. Andrews, Abney Court Drive, Bourne End, Bucks, United Kingdom

Division of Ser. No. 3,900, Feb. 1, 1993, Pat. No. 5,305,743. This application Jun. 25, 1993, Ser. No. 83,095

Claims priority, application United Kingdom, Mar. 5, 1992, 9204754

Int. Cl.[6] **B29C** *45/16*

U.S. Cl. 156—242 **16 Claims**



1. The method of constructing a laryngeal mask wherein a back-plate formation provides in essentially a single geometric plane an apertured base-mounting rim of generally elliptical configuration to otherwise close a ventilation lumen within an inflatable toroidal ring of flexible material the inner circumference of which is connected to the periphery of said rim, said method comprising the steps of:

(a) moulding a peripherally continuous skirt of uniformly thin flexible material, said skirt extending in an axial direction between peripherally continuous upper and lower ends, and said skirt having an outwardly bulging body portion between said ends;

(b) peripherally continuously connecting the upper end of said skirt to said rim;

(c) inverting said skirt to the extent of flexibly defining said ring peripherally continuously around said rim, with the bulging body of the skirt externally surrounding said rim and the inverted lower edge of the skirt downwardly directed within at least a portion of the inverted bulging body and into proximity with the region of said upper-end connection to said rim; and

(d) establishing a peripherally sealed connection of the inverted lower end of the skirt with the region of said upper-end connection to said rim.

5,391,249

METHOD AND APPARATUS FOR PRODUCING INTERNALLY APERTURED PRESSURE-SENSITIVE LABELS

Richard E. Senft, Jefferson Borough, Pa., assignor to Uarco Incorporated, Barrington, Ill.

Filed Nov. 1, 1993, Ser. No. 143,663

Int. Cl.[6] **B32B** *31/00*

U.S. Cl. 156—248 **6 Claims**

1. A method of making internally apertured pressure-sensitive labels removably adhered to a continuous flexible non-apertured liner, comprising the following steps in the order listed:

a). providing a continuous flexible label web removably adhered by a pressure-sensitive adhesive to a continuous flexible first liner selected such that (i) a first release force is required to separate the label web from the first liner and (ii) upon such separation the pressure-sensitive adhesive remains with the label web;

b). cutting the borders of the internal apertures in proper registry for each label through the label web but not through the first liner, thereby forming aperture slugs separate from the label web;

c). removing the first liner, with the aperture slugs adhering thereto, from the label web;

d). removably adhering the label web to a continuous flexible second liner selected such that (i) a second release force is required to remove the label web from the second liner and (ii) upon such removal the pressure-sensitive adhesive remains with the label web;

e). cutting the external peripheries of the labels through the label web but not through the second liner, thereby forming individual labels separate from the label web; and

f). removing the label web from the second liner, thereby leaving individual internally apertured labels removably adhered to the second liner.

5,391,250

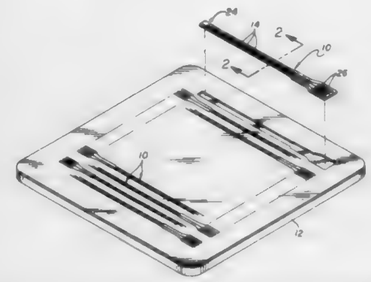
METHOD OF FABRICATING THIN FILM SENSORS

Paul S. Cheney, II, Beverly Hills, and William P. Van Antwerp, Los Angeles, both of Calif., assignors to MiniMed Inc., Sylmar, Calif.

Filed Mar. 15, 1994, Ser. No. 212,961

Int. Cl.[6] **B29C** *65/00;* **B32B** *31/00*

U.S. Cl. 156—268 **13 Claims**



1. A method of making a thin film electrochemical sensor, said method comprising the steps of:

applying a curable adhesive in a closed loop pattern to a flat surface of a rigid substrate;

assembling a base layer of insulative sheet material with the substrate, with the adhesive interposed between the substrate and the base layer generally at the perimeter of the base layer, so that a shallow cavity is formed between the substrate and a central portion of the base layer;

applying heat and pressure to the assembled base layer and substrate to expel air from the cavity and to position the central portion of the base layer in intimate surface contact with the substrate, and further to cure the adhesive to seal the cavity and thereby prevent air return flow into the cavity;

forming at least one conductive sensor element on the base layer;

forming a cover layer of insulative material to cover the at

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least one conductive sensor element and to extend beyond the marginal edges thereof in sealed contact with the base layer; and

removing the sensor from the substrate by cutting through the cover and base layers along a line circumscribing and spaced outwardly from the at least one sensor element.

5,391,251

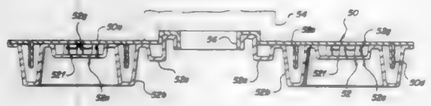
METHOD OF FORMING A PALLET

Lyle H. Shuert, 1034 Stratford Pl., Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 524,299, May 15, 1990, abandoned. This application Jan. 28, 1992, Ser. No. 826,842

Int. Cl.[6] B65D *19/32;* B29C *51/02*

U.S. Cl. 156—292 6 Claims



1. A method of forming a pallet comprising:

thermoforming a first plastic sheet to provide a main body planar portion and a series of leg portions extending downwardly from said main body portion and defining a respective series of grooves opening in the upper face of said main body portion;

thermoforming a second plastic sheet to provide a main body planar portion corresponding generally in size and configuration to said first sheet main body portion and a plurality of hollow pins extending downwardly from said second sheet main body portion, opening in the upper face of said second sheet main body portion, and arranged to form a series of pin assemblies with each pin assembly comprising a plurality of pins arranged in a configuration corresponding generally in size and configuration to a respective groove; and

nestingly inserting each pin assembly into a respective groove and fusing material of the pin assembly to material of the groove to form the pallet.

5,391,252

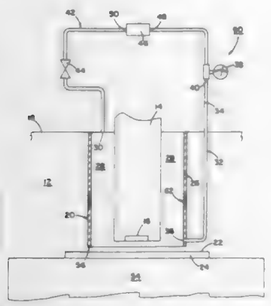
PLASMA PRESSURE CONTROL ASSEMBLY

William D. Taylor, Sandy Hook, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 986,649, Dec. 8, 1992, abandoned. This application Jun. 2, 1994, Ser. No. 252,630

Int. Cl.[6] C23F *1/42*

U.S. Cl. 156—345 16 Claims



1. A plasma assembly comprising:

means, disposed within a vacuum chamber for generating a confined plasma, said means including an RF head having an RF electrode disposed proximate a surface and spaced therefrom wherein said RF electrode has a surface area which is smaller than said surface;

means for controlling the plasma pressure between said RF electrode and said surface, said plasma pressure control means comprising:

a sidewall surrounding said RF head and said RF electrode, located entirely within and affixed within said chamber at one end thereof and extending closer to said surface than said RF electrode such that a controlled plasma pressure region is formed between said RF electrode and said surface wherein said sidewall and said RF head define a plenum region therebetween;

means for introducing a make-up gas into said plenum region;

means for enabling said make-up gas to exit said controlled plasma pressure region; and

means for monitoring the pressure within said plasma pressure region.

5,391,253

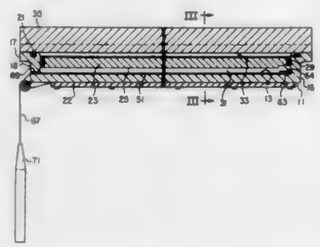
APPARATUS FOR FORMING LAMINATES

Richard E. Howell, 9000 Belle Haven Ave. Northeast, Albuquerque, N. Mex. 87112, and Weldon M. Johnson, 5220 Byers, Fort Worth, Tex. 76107

Division of Ser. No. 744,344, Aug. 13, 1991, Pat. No. 5,256,235. This application Jul. 8, 1993, Ser. No. 88,763

Int. Cl.[6] B32B *31/20;* B30B *5/00*

U.S. Cl. 156—382 20 Claims



1. An apparatus for forming a laminated strip, comprising in combination:

an elongated housing having a cavity therein with sidewalls and a base for receiving a laminate with a plurality of layers and a heat curing resin between the layers;

a partition having a perimeter and a planar face, the face being spaced above the base with the laminate adapted to be sandwiched between the partition and the base, the partition dividing the cavity into an upper section and a lower section;

seal means for sealing the perimeter of the partition to the sidewalls to seal the upper section of the cavity from the lower section of the cavity;

closure means for sealingly closing the upper section of the cavity;

means for evacuating the lower section of the cavity to remove air bubbles from the laminate;

pressure means for applying fluid pressure to the upper section of the cavity which is greater than ambient atmospheric pressure surrounding the apparatus to apply a force to the partition to apply pressure to the laminate; and

heating means for heating the base while fluid pressure is maintained to cure the resin of the laminate to cause the layers to bond together.

5,391,254

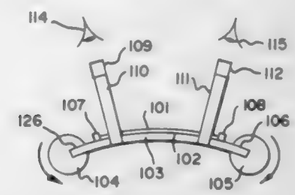
ALIGNMENT APPARATUS AND ASSOCIATED METHODS FOR DEPTH IMAGES

Roger A. Morton, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 8, 1993, Ser. No. 45,447

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—494 10 Claims



1. Apparatus for aligning images of a film member relative to a lenticular member comprising:

means for changing the scale of one member relative to the other; and

means for observing the degree of alignment of the film member and the lenticular member as the scale is changed to identify the achievement of a desired degree of alignment.

5,391,255

APPARATUS AND METHOD FOR PRODUCING COMPOSITE SECTIONS FROM AT LEAST TWO INDIVIDUAL PROFILES

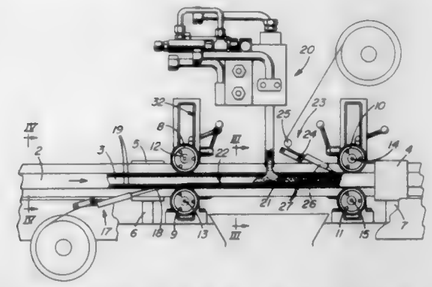
Paul Vente, Leverkusen; Heinrich Pesch, Dormagen; Udo Post, and Ulrich Knipp, both of Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 15, 1992, Ser. No. 884,508

Claims priority, application Germany, Jun. 1, 1991, 4118049.6; Mar. 23, 1992, 4209345

Int. Cl.[6] B29C *39/02*

U.S. Cl. 156—500 6 Claims



1. In an apparatus for producing composite sections from at least two individual profiles with at least one web connecting said profiles, comprising: a production line having guides for conveying two individual profiles, in a conveying direction, parallel to and spaced from each other, an insertion device for introducing a sealing strip between said individual profiles, and a delivery device which opens into a channel defined by the individual profiles and the sealing strip and which delivers plastic material in a liquid state, the improvement wherein i) said guides can be adjusted both transversely and vertically to the conveying direction, ii) horizontally and vertically adjustable guide rollers are provided for each profile above and below said profiles, each of said guide rollers comprising two guide surfaces which are arranged at an angle to each other, one of said guide surfaces bearing against the individual profile associated therewith from the bottom or top and the other guide surface bearing against the individual profile associated therewith on one side thereof, and iii) an additional guide surface bears against the other side of said individual profile.

5,391,256

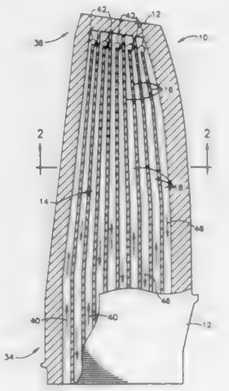
HOLLOW AIRFOIL CAVITY SURFACE TEXTURE ENHANCEMENT

Kurt L. Hansen; Johnny F. Hill, II, both of Cincinnati, and Arthur L. Ludwig, Hamilton, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 5, 1993, Ser. No. 43,110

Int. Cl.[6] B44C *1/22;* C23F *1/00*

U.S. Cl. 156—630 1 Claim



1. A method of etching the interior of a hollow structure, the method comprising the steps of:

diffusion bonding a plurality of pieces to form a single structure having a hollow interior portion including a plurality of passages accessible through openings at a first end of said structure wherein said openings are substantially equal in size and shape to said passages and alternate adjoining ones of said passages are connected by an opening at an end thereof opposite said first end;

superplastically forming the plurality of pieces; and

introducing an etchant to a cavity section between the plurality of pieces to etch away contaminants and surface irregularities from the interior surface of the structure.

5,391,257

METHOD OF TRANSFERRING A THIN FILM TO AN ALTERNATE SUBSTRATE

Gerard J. Sullivan, Thousand Oaks; Mary K. Szwed, Huntington Beach, and Mau-Chung F. Chang, Thousand Oaks, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Dec. 10, 1993, Ser. No. 165,050

Int. Cl.[6] H01L *21/306;* B44C *1/22*

U.S. Cl. 156—630 17 Claims

1. A method of transferring a thin film to an alternate substrate, comprising the steps of:

providing a first semiconductor substrate;

forming an etch-stop layer atop said first substrate;

depositing said thin film atop said etch stop layer, said thin film comprising at least one layer of deposited material;

providing a rigid host substrate;

coating said thin film and said host substrate with respective layers of adhesive barrier metal;

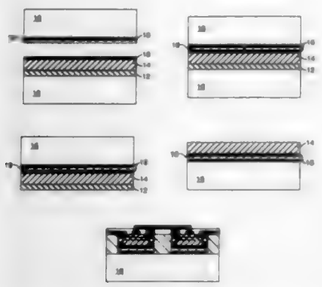
applying a layer of bonding metal to at least one of said layers of adhesive barrier metal:

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bringing said coated thin film and said coated host substrate together with said bonding metal in between; and

heating said layers so that said bonding metal solders said adhesive barrier metal layers to form a thermally conductive bond between said thin film and said host substrate; and

removing said first substrate and said etch-stop layer from said thin film.



5,391,258

COMPOSITIONS AND METHODS FOR POLISHING

Gregory Brancaleoni, Newark, Del., and Lee M. Cook, Steelville, Pa., assignors to Rodel, Inc., Newark, Del.

Filed May 26, 1993, Ser. No. 67,234
Int. Cl.[6] H01L *21/306*
U.S. Cl. 156—636 16 Claims

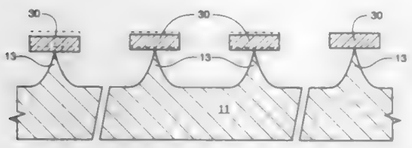
1. A method of polishing a composite, one component of which is silicon, silica or silicates in which a polishing composition comprising: an aqueous medium, abrasive particles, an oxidizing agent and a compound or compounds which suppress the rate of removal of silica wherein each of said compound or compounds contains at least two acid groups and where the pKa of the first dissociable acid is not substantially larger than the pH Of the polishing composition is used as the polishing slurry.

5,391,259

METHOD FOR FORMING A SUBSTANTIALLY UNIFORM ARRAY OF SHARP TIPS

David A. Cathey, and Kevin Tjaden, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 883,074, May 15, 1992, Pat. No. 5,302,238. This application Jan. 21, 1994, Ser. No. 184,819
Int. Cl.[6] H01J *9/00*
U.S. Cl. 156—643 24 Claims



1. A method for forming a substantially uniform array of sharp emitter tips, comprising the following steps of:

masking a substrate, thereby defining a masked array;

plasma etching said substrate to form an array of pointed tips, said plasma etching of said substrate continuing after full undercut while said mask remains balanced on said pointed tips; and

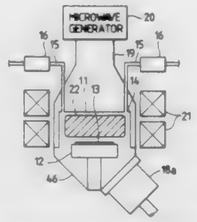
removing said mask when substantially all of said tips have become sharp.

5,391,260

VACUUM PROCESSING APPARATUS

Akitaka Makino; Naoyuki Tamura, both of Kudamatsu, and Tetsunori Kaji, Tokuyama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,459
Claims priority, application Japan, Mar. 27, 1992, 4-070610
Int. Cl.[6] C23C *16/00*
U.S. Cl. 156—646 12 Claims



1. A vacuum processing apparatus comprising:

a vacuum processing chamber having a gas inlet and a gas outlet for processing a sample located therein by using a processing gas introduced through said gas inlet; and

an exhaust pump having a suction port coupled to said gas outlet of said vacuum processing chamber for exhausting said processing gas introduced into said vacuum processing chamber, a cross-sectional area of said suction port of said exhaust pump being not larger than a cross-sectional area of said gas outlet of said vacuum processing chamber.

10. A vacuum processing method for a vacuum processing apparatus having a vacuum processing chamber and an exhaust pump for exhausting a used gas from said vacuum processing chamber, comprising the steps of:

introducing a processing a gas into said vacuum processing chamber;

treating a sample disposed in said vacuum processing chamber by use of an introduced said processing gas; and

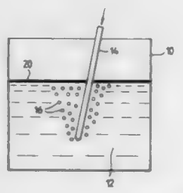
after the step of treating, exhausting a used said processing gas from said vacuum processing chamber through an outlet provided in a wail in said vacuum processing chamber using said exhaust pump having a suction port with a cross-sectional area which is equal to or smaller than a cross-sectional area of said outlet of said vacuum processing chamber.

5,391,261

METHOD OF BLEACHING DE-INKED PULP AND REMOVING THE INK PARTICLES WITH STEAM

Luc Van Den Bergh, Tisselt, Belgium, assignor to Morton International, Inc., Chicago, Ill.

Filed Apr. 13, 1993, Ser. No. 46,223
Claims priority, application United Kingdom, Apr. 15, 1992, 9208266
Int. Cl.[6] D21C *5/02, 9/10*
U.S. Cl. 162—4 9 Claims



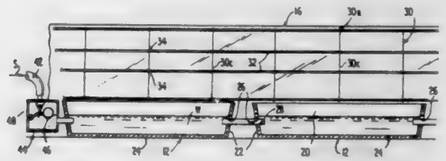
1. A process for bleaching de-inked pulp and removing ink particles therefrom, which comprises in combination the steps of adding sulfite or bisulfite ions and a reducing agent to the pulp, bubbling steam therethrough to cause ink particles to rise to the surface of the pulp, and removing the ink particles from the surface wherein steam is bubbled through cold pulp having a consistency of 2–5% for a period of 5–30 minutes to raise the temperature of the pulp to 60–90° C., said combination of steps resulting in pulp having an increased brightness gain while reducing the quantity of chemicals required.

5,391,262

SOLAR STILL VIBRATOR

William Wilkerson, Jr., 4214 University Dr., Charlotte, N.C. 28209

Filed Apr. 23, 1990, Ser. No. 513,385
Int. Cl.[6] B01D *3/00*
U.S. Cl. 203—10 8 Claims



1. A solar still comprising:

container means for holding a supply of liquid to be evaporated,

inclined solar transmissive cover means mounted on said container means upon which droplets of condensation form and

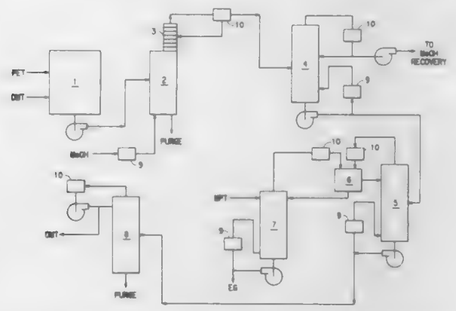
vibrator means mounted on said solar still for imparting vibrations to said cover means to facilitate downward flow of said droplets on said inclined cover means.

5,391,263

PROCESS FOR THE SEPARATION OF GLYCOLS FROM DIMETHYL TEREPHTHALATE

Richard R. Hepner; Robert E. Michel, both of Wilmington, N.C., and Robert E. Trotter, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 26, 1994, Ser. No. 186,088
Int. Cl.[6] B01D *3/36*
U.S. Cl. 203—51 2 Claims



1. A process for the recovery of dimethyl terephthalate, ethylene glycol and diethylene glycol from a mixture of azeotropes of ethylene glycol with dimethyl terephthalate and diethylene glycol with dimethyl terephthalate which comprises: adding an azeotropic agent selected from the group consisting of the methyl ester of p-toluic acid, methyl benzoate, and mixtures of the methyl ester of p-toluic acid and methyl benzoate to the mixture of azeotropes in an amount sufficient to form new azeotropes and then distilling the new azeotropes from the resulting mixture and recovering as bottoms dimethyl terephthalate, cooling the distillate and allowing the azeotropes to separate into two phases, namely a phase rich in the azeotropic agent, and a phase rich in ethylene glycol and diethylene glycol, and separating the two phases.

5,391,264

SEPARATION OF ALPHA-PHELLANDRENE FROM D-LIMONENE BY AZEOTROPIC DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

Filed Mar. 14, 1994, Ser. No. 209,248
Int. Cl.[6] B01D *3/36;* C07C *7/06*
U.S. Cl. 203—57 1 Claim

1. A method for recovering alpha-phellandrene from a mixture of alpha-phellandrene and d-limonene which comprises distilling a mixture of alpha-phellandrene and d-limonene in the presence of an azeotrope forming agent, recovering alpha-phellandrene and the azeotrope forming agent as overhead product and obtaining the d-limonene as bottoms product, wherein said azeotrope forming agent consists of one material selected from the group consisting of isopropyl ether, methyl ethyl ketoxime, sulfolane, isobutyl acetate, n-butyl acetate and isobornyl acetate.

5,391,265

PROCESS FOR THE PRODUCTION OF PURE NICKEL HYDROXIDE AND ITS USE

Ulrich Krynitz, Goslar; Dirk Naumann, Bad Harzburg, and Armin Olbrich, Seesen, all of Germany, assignors to H. C. Starck GmbH & Co. KG, Goslar, Germany

Filed Nov. 16, 1993, Ser. No. 152,719
Claims priority, application Germany, Nov. 23, 1992, 4239295
Int. Cl.[6] C25B *1/16*
U.S. Cl. 204—96 10 Claims

1. A process for the the production of essentially pure nickel hydroxide comprising the steps of:

(a) providing metallic nickel source material in aqueous electrolyte solution which includes sulfate ions and chloride ions, the concentration of sulfate ions being in the range of 0.001 to 2.0 molar and the concentration of the chloride ions being in the range of 0.3 to 5 molar, the molar ratio of chloride to sulfate ions being in the range of from 200:1 to 1:1;

(b) conducting a substantially continuous anodic oxidation of the nickel in the solution to form nickel hydroxide while maintaining said concentrations of sulfate and chloride ions and molar ratio ranges and a pH of 6 to 13 in the solution and removing such nickel hydroxide from said solution;

(c) treating the nickel hydroxide by exposure, in a post-anodic treatment solution, to alkali metal hydroxide in a concentration of 10^{-3} to 2 molar for a period of 1 to 48 hours at a temperature of 20° to 80° C. and at elevated pH compared to pH of the electrolysis solution;

(d) filtering and drying,

to thereby obtain an essentially pure nickel hydroxide product with high density, high surface area and a high degree of crystallinity.

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5,391,266

METHOD OF REGULATING THE THROUGHPUT IN THE ELECTROCHEMICAL REGENERATION OF CHROMOSULFURIC ACID

Jürgen Stenzel, Gersthofen, and Hans Herbst, Meitingen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/EP91/00842, § 371 Date Nov. 3, 1992, § 102(e) Date Nov. 3, 1992, PCT Pub. No. WO91/17117, PCT Pub. Date Nov. 14, 1991

PCT Filed May 3, 1991, Ser. No. 945,986

Claims priority, application Germany, May 5, 1990, 4014429

Int. Cl.[6] C25B *1/22*

U.S. Cl. 204—97 13 Claims

1. A method of regulating the throughput in the electrolytic regeneration of chromosulfuric acid by continuously feeding chromium (III) sulfate solution containing sulfuric acid to the electrolysis cells, said cells having anode chambers and being arranged in cascades, the regenerated chromosulfuric acid being collected in an acid-collecting container, said method comprising;

keeping the chromium (III) sulfate solution containing sulfuric acid under pressure in a closed pipe system and passing it through a replaceable orifice in a cell feed line into the anode chamber of the first cell of each cascade, the amount of electrolyte fed into the cells being controlled via the pressure in the pipe system and the diameter of the opening in the orifices, and the level in the acid collecting container serving as the regulating quantity for the inlet pressure of the electrolyte feed and wherein the chromium (III) sulfate solution containing sulfuric acid is obtained from the bleaching of montan wax with chromosulfuric acid.

5,391,267

PROCESS FOR THE PRODUCTION OF ALKALI METAL HYDROXIDES AND ELEMENTAL SULFUR FROM SULFUR-CONTAINING ALKALI-METAL SALTS

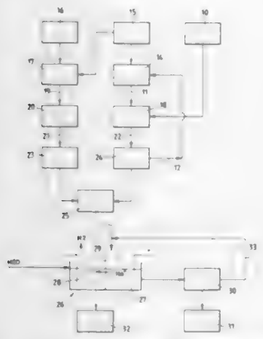
Gianni Zoppi, Dino di Sonvico, Switzerland, assignor to Ecochem Aktiengesellschaft, Triesen, Liechtenstein

Filed Aug. 25, 1993, Ser. No. 111,404

Claims priority, application Switzerland, Aug. 25, 1992, 02627/92

Int. Cl.[6] C25B *1/16, 1/02, 1/00*

U.S. Cl. 204—98 6 Claims



1. A process for producing alkali metal hydroxide and elemental sulfur, comprising:

(a) providing an electrochemical cell having a single membrane permeable for alkali metal cations, separating an anodic compartment from a cathodic compartment, so that the alkali metal cation can migrate from the anodic compartment to the cathodic compartment;

(b) charging the anodic compartment with a concentrated solution of an alkali mental salt also containing a homogeneous catalyst with an oxidation potential which is between the oxidation potential of the reaction

$$S^{2-} - 2e^- \rightarrow S^0$$

and the oxidation potential of the reaction

$$H_2O \rightarrow 2H^+ + \tfrac{1}{2}O_2 + 2e^-,$$

as an anolyte;

(c) charging the cathodic compartment with an alkali metal hydroxide solution, as a catholyte;

(d) applying an electrical potential across an anode of the anodic compartment and a cathode of the cathode compartment for operating the cell; and

(e) feeding an alkali metal sulfide to the anodic compartment and continuing to conduct step (d).

5,391,268

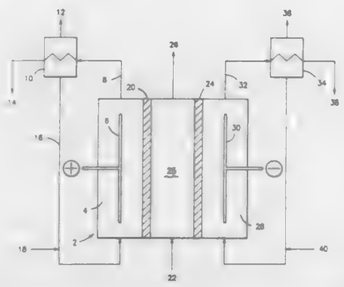
ELECTROCHEMICAL PROCESS FOR THE REMOVAL OF RESIDUAL NITRIC ACID FROM AQUEOUS HYDROXYLAMMONIUM NITRATE

Jerry J. Kaczur; Kenneth E. Woodard, Jr.; David W. Cawlfield, and Elizabeth K. Muse, all of Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jul. 20, 1994, Ser. No. 278,527

Int. Cl.[6] C25B *1/02;* B01D *61/00*

U.S. Cl. 204—102 22 Claims



1. A process for electrolytically removing excess nitric acid from an aqueous hydroxylammonium nitrate solution containing an excess of nitric acid to form a nitric acid-depleted hydroxylammonium nitrate solution in an electrolytic cell having an anolyte compartment comprising an anode and an anolyte solution, a catholyte compartment comprising a cathode and aqueous catholyte solution, and at least one ion exchange compartment between the anode compartment and the cathode compartment, with the provisos that said catholyte compartment is separated from said ion-exchanging compartment by means of an anion permeable membrane and that said anolyte compartment is separated from said ion exchange compartment by a separator, optionally another anion permeable membrane, which comprises:

(a) feeding said aqueous hydroxylammonium nitrate solution containing excess nitric acid into said ion-exchanging compartment,

(b) electrolyzing said catholyte solution to produce hydroxyl ions in said catholyte compartment,

(c) electrolyzing said anolyte solution to produce hydrogen ions in said anolyte compartment,

(d) electrolytically passing said hydroxyl ions from said catholyte compartment through said anion permeable membrane into said ion exchange compartment and reacting said hydroxyl ions with said excess nitric acid to form water and nitrate ions,

(e) electrolytically passing said nitrate ions from said ion exchange compartment through said separator into said anolyte compartment and combining said nitrate ions with said hydrogen ions to form nitric acid in said anolyte compartment, and

(f) forming a nitric acid-depleted aqueous hydroxylammonium nitrate solution in said ion exchange compartment and removing said nitric acid-depleted aqueous hydroxylammonium nitrate solution from said ion exchange compartment.

5,391,269

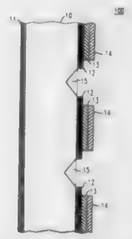
METHOD OF MAKING AN ARTICLE COMPRISING A SILICON BODY

Jason O. Fiering, Providence, R.I.; Barry Miller, and Joseph Shmulovich, both of Murray Hill, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jun. 29, 1993, Ser. No. 84,689

Int. Cl.[6] B23H *3/00*

U.S. Cl. 204—129.75 9 Claims



1. A method of manufacturing an article that comprises, at least at some stage of its manufacture, a silicon body having a major surface, the method comprising

a) providing a patterned dielectric layer on said major surface and a patterned Ti-comprising metal layer on the dielectric layer, the dielectric layer and the metal layer patterned such that a portion of the silicon surface is exposed;

b) providing an auxiliary electrode;

c) contacting the exposed portion of the silicon surface, the auxiliary electrode and at least a portion of the patterned metal layer with an amine-based anisotropic etchant for silicon; and

d) flowing a current between said auxiliary electrode and said metal layer, with said metal layer being the anode, said current being flowed during at least part of the time the exposed portion of the silicon surface is contacted with said anisotropic etchant.

5,391,270

DETECTION AND MEASUREMENT OF HEAVY METALS

John Y. Gui, Schenectady, and Donald F. Foust, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 11, 1993, Ser. No. 104,684

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—153.1 11 Claims

1. A method for rapidly measuring the amount of a metal contained in sample, said metal being nonreactive with water, comprising the steps of:

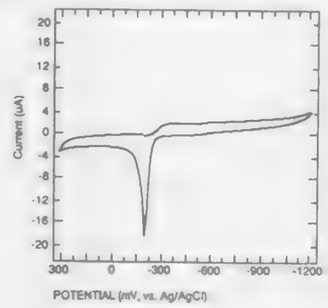
a) converting all species of the metal in the sample being measured to a soluble metallic complex which can be electrochemically analyzed, by extracting the metal with an iodine/iodide solution;

b) voltammetrically determining the peak stripping current value for the metallic complex in the iodine/iodide solution; and then

c) calculating the level of metal by substituting the stripping current value into the formula

$$C = \left(\frac{1}{K}\right)Y + A$$

wherein C is the concentration of the metal in the solution prepared for the sample; K and A are is the precalculated slope and constant of a voltammetric calibration curve



which plots stripping current as a function of known concentrations of the metal; and Y is the peak stripping current value observed in step (b) for the metal.

5,391,271

METHOD OF MONITORING ACID CONCENTRATION IN PLATING BATHS

Frank A. Ludwig, Rancho Palos Verdes, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 27, 1993, Ser. No. 127,018

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—153.1 11 Claims

1. A method of monitoring a concentration of a major constituent within a plating bath solution, said method comprising the steps of:

providing at least one sensing electrode in contact with said solution;

applying a voltammetric signal to said sensing electrode, said voltammetric signal comprising an ac signal having an amplitude of about 10 to 200 mv rms and a frequency of about 5 to 60 kHz superimposed on a dc signal set at an anodic potential within the range of about 2.0 to 3.5 volts and having a duration of about 5 to 15 seconds, said voltammetric signal producing an ac response current having a steady state value proportional to said concentration of said major constituent; and

measuring said steady state value of said response signal current to determine said concentration of said major constituent.

5,391,272

ELECTROCHEMICAL IMMUNOASSAY METHODS

John P. O'Daly, Carrboro; Robert W. Henkens, Durham; Junguo Zhao, and Honghua Zhang, both of Chapel Hill, all of N.C., assignors to Andcare, Inc., Durham, N.C.

Continuation-in-part of Ser. No. 83,349, Jun. 28, 1993, Pat. No. 5,334,296, which is a division of Ser. No. 846,229, Mar. 6, 1992, Pat. No. 5,225,064. This application Mar. 8, 1994, Ser. No. 208,146

Int. Cl.[6] G01N *27/26*

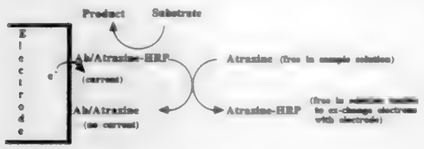
U.S. Cl. 204—153.12 47 Claims

6. An electrochemical enzyme-linked immunoassay comprising:

(a) contacting a sample suspected of containing an analyte with an electrode on which is deposited a colloidal gold adsorbed anti-analyte antibody bound to a redox-enzyme/analyte conjugate; and

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(b) determining catalytic current decrease in the presence of a substrate of the redox enzyme when the electrode is



coupled with a reference electrode wherein said decrease is related to the level of analyte present in the sample.

5,391,273

PROCESS FOR THE PREPARATION OF A SOLUTION CONTAINING SEMITRICHINOYL

Dieter Reinstorff, Bruno-Lauenroth-Weg 31, Hamburg 62 D-2000, Germany

Filed Apr. 16, 1993, Ser. No. 48,600
Int. Cl.[6] C07C *45/28*
U.S. Cl. 204—157.93 **1 Claim**

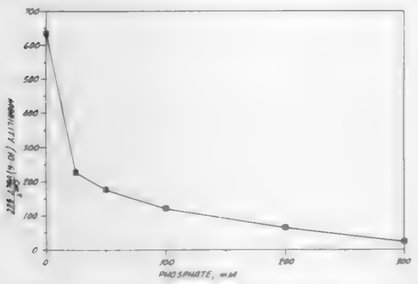
1. A process for the preparation of a solution containing triquinoyl radicals which comprises mixing a solution of rhodizonic acid and a solution of triquinoyl octahydrate and subjecting the mixture to the action of daylight lamp, said solutions of rhodizonic acid and triquinoyl octahydrate having the same molarity, whereby a solution of triquinoyl radicals is formed.

5,391,274

METHODS FOR CONTROLLING ELECTROOSMOTIC FLOW IN COATED CAPILLARY ELECTROPHORESIS COLUMNS

Chia-Hui Shieh, Irvine, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 18, 1993, Ser. No. 138,324
Int. Cl.[6] B01D *57/02, 61/42*
U.S. Cl. 204—180.1 **18 Claims**



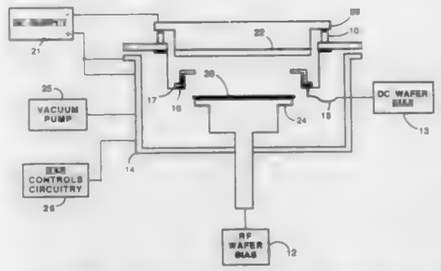
1. A method for controlling electroosmotic flow in a capillary electrophoresis column, said method comprising the steps:
providing a capillary column comprising a length of tubing having an interior surface coated with an organic multi-valent ionic compound, said coated capillary column having a characteristic electroosmotic flow during electrophoretic separation conditions using an electrophoretic buffer composition having a first multi-valent buffer concentration;
immersing one end of said capillary column in an anodic reservoir and immersing a second end of said capillary column in a cathodic reservoir;
introducing a composition comprising a multi-valent buffer compound into said capillary, said composition having a second multi-valent buffer compound concentration such that to increase said electroosmotic flow said second multi-valent buffer compound concentration is smaller than said first multi-valent buffer concentration, and to decrease said electroosmotic flow said second multi-valent buffer compound concentration is greater than said first multi-valent buffer concentration;
introducing a sample composition having at least one sample constituent into said length of capillary tubing at said first end or said second end; and
applying an electric field across said reservoirs, said electric field capable of causing said at least one sample constituents to migrate within said capillary, wherein said electroosmotic flow varies with said second multi-valent buffer concentration.

5,391,275

METHOD FOR PREPARING A SHIELD TO REDUCE PARTICLES IN A PHYSICAL VAPOR DEPOSITION CHAMBER

Donald M. Mintz, Sunnyvale, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 895,209, Jun. 8, 1992, Pat. No. 5,202,008, which is a continuation of Ser. No. 715,883, Jun. 17, 1991, abandoned, which is a continuation of Ser. No. 487,567, Mar. 2, 1990, abandoned. This application Aug. 11, 1992, Ser. No. 928,566
Int. Cl.[6] C23C *14/34*; B44C *1/22*; B24B *1/00*
U.S. Cl. 204—192.32 **17 Claims**



1. A method of cleaning a shield and/or clamping ring prior to use in a physical vapor deposition chamber comprising:
a) bead blasting the shield and/or clamping ring;
b) ultrasonically cleaning the shield and/or clamping ring after step a); and
c) sputter-etch cleaning the shield and/or clamping ring.

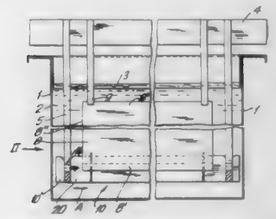
5,391,276

DEVICE FOR SCREENING OFF LINES OF ELECTRIC FLUX IN AN INSTALLATION FOR ELECTROLYTICALLY PROCESSING ESSENTIALLY FLAT ELEMENTS (III)

Kurt Astor, Hilpoltstein; Peter Haase, Feucht, and Manfred Gute, Nürnberg, all of Germany, assignors to Atotech Deutschland GmH, Berlin, Germany

PCT No. PCT/DE92/00182, § 371 Date Oct. 28, 1993, § 102(e) Date Oct. 28, 1993, PCT Pub. No. WO92/15727, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 28, 1992, Ser. No. 108,690
Claims priority, application Germany, Mar. 2, 1991, 4106733
Int. Cl.[6] C25D *17/06, 17/16*
U.S. Cl. 204—198 **21 Claims**

1. A device for screening off lines of electric flux in an installation for electrolytic processing of substantially planar material which hangs down from a goods carrier and is immersed in a bath vessel containing a bath liquid when the goods carrier is lowered, the device comprising:
a screen which adjusts in a vertical direction and which screens off lines of electric flux at a lower region of the material to be processed, the screen having two end regions;
hold-down means for vertically adjusting the screen, the hold-down means moves with the goods carrier, the hold-down means including rods which project downward from the goods carrier to bear upon the two end regions of the screen, the rods having lower ends which are constructed together with the end regions of the screen so that the screen cannot be displaced relative to the rods at least in a longitudinal direction of the screen, the rods are spaced at a distance that is greater than the complete width of the material to be processed which is located between the rods during processing; and
means for transporting the screen from a lower working position into an upper parking position so that the material to be processed hangs down from the goods carrier without lateral holders and so that no guides are present between the bath vessel and the screen.

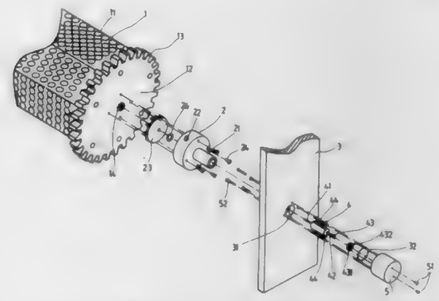


5,391,277

STRUCTURE OF ELECTRO-PLATING BARREL

Evans Weng, No. 1, Alley 4, Lane 63, Fu-Hsing Rd., Taipei City, Taiwan, Prov. of China

Filed Apr. 22, 1994, Ser. No. 231,508
Int. Cl.[6] C25D *17/20*
U.S. Cl. 204—213 **1 Claim**



1. An electro-plating barrel of the type having a cylinder with peripheral holes mounted between a first supporting frame and a second supporting frame and a impeller vane pump driven by the barrel to constantly pump plating solution out of said cylinder through an output port thereof for circulation through peripheral holes thereof so as to equalize the concentration of the plating solution internally as well as externally, the improvement comprising a socket member fastened to one end of the perforated cylinder to hold said impeller vane pump on the inside and having a hollow shaft inserted through a hole on said first supporting frame and an outlet for letting inside plating solution be pumped out of said cylinder, a holder cap fastened to said first supporting frame and covered over said hollow shaft of said socket member, a speed increaser received inside said hollow shaft of said socket member and turned by said socket member to rotate said impeller vane pump causing it to pump plating solution into said perforated cylinder, said speed increaser comprising an internal gear integrally made around a tubular shell thereof and driven by said hollow shaft of said socket member, a plurality of sun and planet gear sets coupled in series and meshed with said internal gear, a first axle and a second axle coupled to said sun and planet gear sets at two opposite ends, said first axle being driven by said sun and planet gear sets to turn said impeller vane pump, said second axle terminating in a square block fitted into a square hole on a constraint member being affixed to an inside wall of said holder cap.

5,391,278

PROCESS FOR REMOVAL OF HYDROGEN SULFIDE

Kosaku Honna; Hiroshi Noguchi; Hiroshi Iida, and Masayuki Goto, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd. and Petroleum Energy Center, both of Tokyo, Japan

Filed Jan. 21, 1994, Ser. No. 184,679
Claims priority, application Japan, Feb. 25, 1993, 5-036653; Aug. 24, 1993, 5-209153
Int. Cl.[6] C01B *17/05, 17/02*
U.S. Cl. 204—129 **22 Claims**

1. A process for removal of hydrogen sulfide which comprises the steps of bringing a hydrogen sulfide-containing gas into contact with a sulfuric acid-iron sulfate solution containing ferric ions to absorb hydrogen sulfide and to carry out an oxidation reaction in a hydrogen sulfide gas absorption-oxidation step, whereby a solution containing ferrous ions, sulfur and secondarily produced sulfuric acid is produced; introducing a solution at the outlet of the hydrogen sulfide gas absorption-oxidation step into a sulfur separation step to separate sulfur from the solution; introducing a solution at the outlet of the sulfur separation step into an electrochemical-regeneration step to generate and recover hydrogen; circulating a solution at the outlet of the electrochemical regeneration step through the hydrogen sulfide gas absorption-oxidation step; introducing a part of the solution at the outlet of the sulfur separation step into a secondarily produced sulfuric acid reduction step to bring the solution into contact with hydrogen and to thereby reduce secondarily produced sulfuric acid contained in the solution, thereby producing hydrogen sulfide; returning the thus produced hydrogen sulfide to the hydrogen sulfide gas absorption-oxidation step, or the front or the rear of this hydrogen sulfide gas absorption-oxidation step; and then returning a solution at the outlet of the secondarily produced sulfuric acid reduction step to the sulfur separation step or the front of this sulfur separation step.

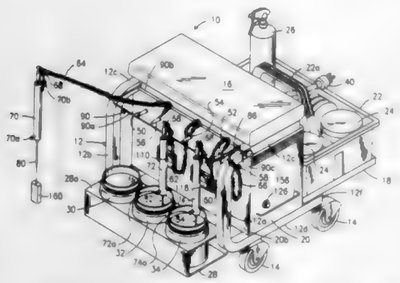
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5,391,279

MOBILE ELECTROPLATING UNIT

Daniel A. McLaughlin, Madeira Breach, Fla., assignor to Gold Effects, Inc., Largo, Fla.

Continuation-in-part of Ser. No. 126,375, Sep. 24, 1993, Pat. No. 5,346,602. This application Aug. 5, 1994, Ser. No. 286,540
The portion of the term of this patent subsequent to Sep. 13, 2011, has been disclaimed.
Int. Cl.[6] C25D *17/14*
U.S. Cl. 204—224 R 20 Claims



9. A portable apparatus for plating a metal surface comprising,

a support member having a top and bottom surface,

a seat support frame having a top portion, the seat support frame attached to the top surface of the support member,

a removable seat mountable to the top portion of the seat support frame, the seat enabling an operator to assume a sitting position upon the apparatus to plate the metal surface,

a removable DC power source having a plurality of voltage output receptacles, the DC power source carried upon the top surface of the support member,

means for moving the apparatus to any desired position during a metal plating process,

means for sequentially applying chemical solutions to the metal surface to be plated, electrically coupled to the DC power source, and

means for completing an electrical circuit from the DC power source to the metal surface to be plated, electrically coupled to the DC power source.

5,391,280

ELECTROLYTIC ELECTRODE AND METHOD OF PRODUCTION THEREOF

Takayuki Shimamune, and Yasuo Nakajima, both of Tokyo, Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Jul. 14, 1993, Ser. No. 92,437
Claims priority, application Japan, Jul. 17, 1992, 4-213481
Int. Cl.[6] C25B *11/06*
U.S. Cl. 204—290 F 6 Claims

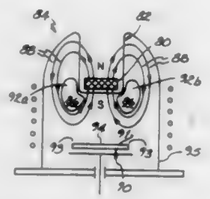
1. An electrolytic electrode comprising a metallic core material, a lead plating layer formed on the surface of the metallic core material, an α-lead dioxide layer formed on the surface of the lead plating layer, and a β-lead dioxide layer formed on the α-lead dioxide layer.

5,391,281

PLASMA SHAPING PLUG FOR CONTROL OF SPUTTER ETCHING

Robert Hieronymi, Rock Tavern, N.Y., and Steven Hurwitt, Park Ridge, N.J., assignors to Materials Research Corp., Orangeburg, N.Y.

Filed Apr. 9, 1993, Ser. No. 45,368
Int. Cl.[6] C23C *14/00*
U.S. Cl. 204—298.37 22 Claims



1. A process chamber for sputter etching the surface of a wafer with an ionized plasma, the chamber comprising:

a base;

a cover surrounding the base to create an enclosure for containing an ionized plasma in proximity to a wafer to be sputter etched;

a support within said enclosure for supporting a wafer to be etched;

an electrical source for electrically biasing said wafer;

an element coupled to the chamber for introducing an ionizable gas into said enclosure;

an ionizing source for ionizing the gas to provide a plasma containing ionized gas particles, said ionized particles having an electrical charge opposite in polarity to said biased wafer so that the ionized particles are attracted away from the plasma toward said wafer to bombard the surface of said wafer and sputter etch the wafer surface; and

a non-conductive plug having at least one dimension and extending inside said enclosure into said ionized plasma, the plug dimension selected such that the plug selectively physically displaces said plasma and selectively varies the ion concentration relative to said wafer surface to thereby provide a selectively variable sputter etch rate across the wafer surface.

5,391,282

SYSTEM FOR DETERMINING DETERIORATION OF OXYGEN CONCENTRATION SENSOR

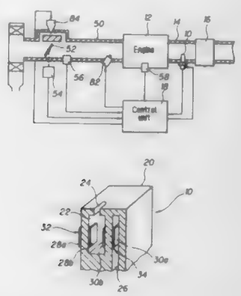
Yukio Miyashita; Hiroshi Ohno, and Shinichi Kubota, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 878,596, May 5, 1992, abandoned. This application Nov. 15, 1993, Ser. No. 152,090
Claims priority, application Japan, Jun. 14, 1991, 3-169456
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—401 18 Claims

1. A system for determining deterioration of an oxygen concentration sensor for an internal combustion engine, said oxygen concentration sensor having an oxygen-pumping element and a cell element, each is composed of a member of a solid electrolytic material having oxygen ion-conductivity and a pair of electrodes having said member interposed therebetween, said oxygen-pumping element and said cell element defining a diffusion restriction region therebetween, voltage applying means connected to said oxygen-pumping element for applying an output voltage, corresponding to a difference between a voltage developed between said electrodes of said cell element and a predetermined reference voltage, to said oxygen-pumping element, and current detecting means connected to said oxygen-pumping element for detecting current

flowing as oxygen concentration, said system for determining deterioration of said oxygen concentrator sensor comprising:

current fluctuation detecting means for detecting fluctuation of the detected current from said current detecting means;



fluctuation comparing means for comparing the fluctuation with a reference value; and

deterioration determining means for determining the oxygen concentration sensor deterioration if the fluctuation exceeds the reference value.

5,391,283

DETECTOR HAVING SELF-CALIBRATION FUNCTION

Satoshi Shimada, Hitachi; Seiko Suzuki, Hitachiota; Shigeki Tsuchitani, Mito; Seiichi Ugai, Hitachi; Masayoshi Kaneyasu, Hitachi; Hiroshi Kuroiwa, Hitachi, and Yoshihiro Yokota, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 595,824, Oct. 10, 1990, Pat. No. 5,174,884. This application Dec. 7, 1992, Ser. No. 985,654
Claims priority, application Japan, Oct. 20, 1989, 1-271666
Int. Cl.[6] G01L *1/14*; G01P *15/08*
U.S. Cl. 73—1 D 13 Claims

9. A method of sensing acceleration utilizing an electrostatic capacity acceleration sensor having fixed electrode means and movable electrode means wherein the movable electrode means is movable toward and away from the fixed electrode means, the method comprising the steps of:

applying an exciting voltage signal across the fixed and movable electrode means so as to displace the movable electrode means; and

measuring a displacement of the movable electrode means caused by the application of the exciting voltage signal;

wherein the step of measuring the displacement of the movable electrode means includes effecting measurement of the displacement in accordance with a variation in an electrostatic capacity between the fixed and movable electrode means.

5,391,284

ARRANGEMENT FOR DETERMINING THE LAMBDA VALUE OF AN AIR/FUEL MIXTURE

Gerhard Hötzel, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 18, 1994, Ser. No. 198,291
Claims priority, application Germany, Feb. 18, 1993, 4304966
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—425 7 Claims

1. An arrangement for determining a voltage which indicates the lambda value of an air/fuel mixture supplied to a combustion engine generating exhaust gas during the operation thereof, the arrangement comprising:

a two-cell oxygen probe mounted in the exhaust gas flow of the engine;

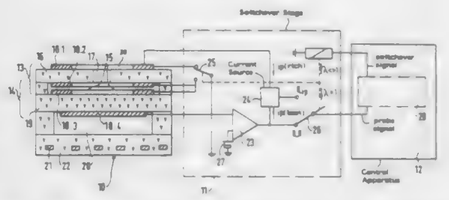
said two-cell oxygen probe including a housing structure defining an exhaust-gas space for said exhaust gas and an ambient-air space for ambient air;

said housing structure having a pump cell and a sensing cell arranged therein;

said cells conjointly defining a diffusion gap therebetween common to both cells and said housing structure defining a pass-through opening between said exhaust-gas space and said diffusion gap for facilitating an exchange of gas therebetween;

said pump cell having a first pump-cell electrode facing into said exhaust-gas space and a second pump-cell electrode facing into said diffusion gap;

said sensing cell having a first sensing-cell electrode facing into said ambient-air space and a second sensing-cell electrode facing into said diffusion gap;



said first sensing-cell electrode and any one of said second sensing-cell electrode, said first pump-cell electrode and said second pump-cell electrode having a Nernst voltage thereacross;

a switchover stage including changeover means switchable between a first position for outputting a first voltage Uip when controlling to a lambda value deviating from a lambda value of one and a second position for outputting a second voltage when controlling to the lambda value one; and,

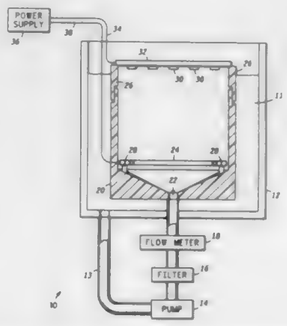
said switchover stage further including circuit means for supplying said Nernst voltage UN as said second voltage to said changeover means.

5,391,285

ADJUSTABLE PLATING CELL FOR UNIFORM BUMP PLATING OF SEMICONDUCTOR WAFERS

William H. Lytle, Chandler; Tien-Yu T. Lee, Scottsdale, and Bennett L. Hileman, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 25, 1994, Ser. No. 202,210
Int. Cl.[6] C25D *7/12, 17/06, 17/12*
U.S. Cl. 205—123 19 Claims



9. A method of plating a surface of a semiconductor wafer, comprising the steps of:

receiving a plating solution at an inlet to a cavity of a plating cell;

blocking passage of said plating solution into said cavity of

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said plating cell with an anode plate having a solid center region; and

passing said plating solution through outer region of said anode plate into said cavity of said plating cell to create an even flow of said plating solution at the surface of the semiconductor wafer.

5,391,286

PROCESS FOR CATALYTIC DEWAXING OF HYDROCARBON FEEDSTOCKS

Pei-Shing E. Dai; Robert J. Taylor, Jr.; Randall H. Petty, all of Port Arthur, and Joseph A. Durkin, Groves, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 3, 1993, Ser. No. 145,274

Int. Cl.[6] C10G *73/38, 73/00*

U.S. Cl. 208—27 **15 Claims**

1. A process for hydrodewaxing a hydrocarbon oil feedstock boiling above about 350° F. which comprises contacting "a hydrocarbon oil feedstock boiling above about 350° F." and hydrogen at a hydrogen pressure of from about 300 to about 2000 psig, a temperature of from about 400° to about 900° F., and a space velocity of about 0.1 to about 10 LHSV, with a catalyst comprising about 0.5 to about 30 wt. %, based on the total weight of the catalyst, of an oxide of a Group VIII metal and an oxide of a Group VIB metal supported on a porous support, comprising a matrix containing about 50 to about 95 wt. % of a crystalline aluminosilicate zeolite selected from the group consisting of ZSM-5, ZSM-11, ZSM-12, ZSM-23, ZSM-35 and ZSM-38, based on the weight of the support, wherein the said support has a polyoxometalate-modified surface and wherein the catalyst is prepared by (1) impregnating the porous support with an aqueous solution of a heteropoly acid of a Group VIB metal, (2) drying the impregnated support in air at a temperature of about 140° F. to about 350° F. (3) impregnating the dry impregnated support prepared in step (2) in a second impregnation with an aqueous solution of a Group VIII metal salt and (4) calcining the impregnated support at a temperature of 500° to about 1150° F. thereby forming the catalyst having provided on the support a polyoxometalate-modified surface and the Group VIB metal and the Group VIII metal in oxide form.

5,391,287

HYDROCARBON CONVERSION PROCESS USING ZEOLITE SSZ-35

Yumi Nakagawa, Kensington, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Division of Ser. No. 959,205, Oct. 9, 1992, Pat. No. 5,316,753. This application Dec. 1, 1993, Ser. No. 161,841

Int. Cl.[6] C10G *47/02, 11/02, 35/06, 45/00*

U.S. Cl. 208—46 **22 Claims**

1. A process for converting hydrocarbons comprising contacting a hydrocarbonaceous feed at hydrocarbon converting conditions with a catalyst comprising a zeolite having a mole ratio of an oxide selected from the group consisting of silicon oxide, germanium oxide and mixture thereof to an oxide selected from the group consisting of aluminum oxide, gallium oxide, iron oxide, titanium oxide, boron oxide and mixtures thereof greater than about 15 and having the x-ray diffraction lines of Table II.

5,391,288

GASOLINE UPGRADING PROCESS

Nick A. Collins, Medford, N.J.; Paul P. Durand, Wilmington, Del.; David L. Fletcher, Turnersville, N.J.; Mohsen N. Harandi, Langhorne; Edward F. Kondis, New Hope, both of Pa.; Hartley Owen, Belle Mead, N.J.; Michael S. Sarli, Haddonfield, N.J., and Stuart S. Shih, Cherry Hill, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 961,592, Oct. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 850,106, Mar. 12, 1992, which is a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991. This application Jun. 10, 1993, Ser. No. 74,572

Int. Cl.[6] C10G *45/00, 69/00*

U.S. Cl. 208—89 **37 Claims**

1. A process of upgrading an olefinic sulfur-containing catalytically cracked fraction having a 95% point of at least about 325° F. and boiling in the gasoline boiling range which comprises the steps of:

contacting the sulfur-containing catalytically cracked fraction with a hydrodesulfurization catalyst in a first reaction zone operated under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen, to produce an intermediate product comprising a normally liquid fraction which has a reduced sulfur content and a reduced octane number as compared to the feed;

contacting at least the gasoline boiling range portion of the intermediate product in a second reaction zone over a catalyst of acidic functionality to effect cracking of heavy paraffins to lighter paraffins and cracking of low octane n-paraffins in the intermediate product; and

co-contacting a benzene-rich fraction in the first reaction zone and/or the second reaction zone to produce a product in the second reaction zone which contains alkylbenzene formed by alkylation of the benzene with at least a portion of the cracked paraffins to produce a product in the second reaction zone comprising a fraction boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the intermediate product.

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FCC PROCESS WITH RAPID SEPARATION OF PRODUCTS

Ralph M. Forde, Benicia, and Bruce E. Stangeland, Berkeley, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Sep. 4, 1990, Ser. No. 577,345

Int. Cl.[6] C10G *11/00, 35/00;* **B01D** *19/00*

U.S. Cl. 208—113 **1 Claim**

1. A method of fluid catalytic cracking a hydrocarbon feed comprises the steps of:

contacting said feed with catalyst particles at elevated temperatures in a riser cracking zone operationally connected to a reactor vessel, wherein said feed is cracked to form a mixture comprising said particles and gaseous cracked products;

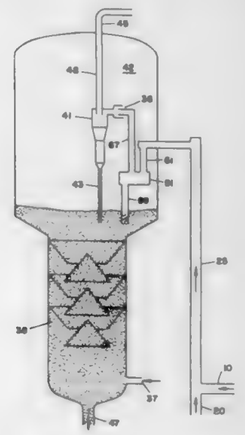
passing said mixture from said riser to an inertial separator positioned within said reactor vessel through a first conduit oriented in a downward direction;

separating at least a portion of said catalyst particles from said mixture by passing said mixture from said first conduit in a downward direction through an inlet into said separator wherein the flow path to said mixture changes direction by 90° relative to the flow of said mixture, the flow path of said gaseous cracked products changes direction by an additional 90° relative to the flow of said mixture so that said gaseous cracked products exit said separator upwardly through a first outlet, and the flow path of said catalyst particles changes direction by an additional 90° relative to said downward direction so that said catalyst particles exit said separator downwardly through a

second outlet, wherein said separator comprises a chamber of substantially circular cross-section and contains truncated baffles which inhibit the re-entrainment of particles by said gases and the removal of said particles through said first outlet;

passing said catalyst particles from said second outlet downward to a stripping zone wherein a stripping gas removes hydrocarbons entrained with said catalyst particles, said stripping gas and removed hydrocarbons flowing upwardly from said stripping zone within said reactor;

passing said gaseous cracked products from said first outlet



upwardly through a second conduit into one or more cyclone separators positioned within said reactor vessel, either or both said second conduit and said first conduit is or are in open gaseous communication with said stripping gas and removed hydrocarbons through a port;

passing at least a portion of said stripping gas and removed hydrocarbons directly into said cyclone;

passing a gaseous effluent comprising gaseous cracked products, stripping gas and removed hydrocarbons, from said cyclone separator to a fractionation zone; and

passing said catalyst particles from said stripping zone to a regeneration zone.

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METHOD FOR CONTINUOUSLY TIN-ELECTROPLATING METAL STRIP

Mikiyuki Ichiba; Hiroki Iwasa; Toyofumi Watanabe; Masaaki Yamashita, and Katsumi Kojima, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,529

Claims priority, application Japan, Apr. 21, 1992, 4-128201; Sep. 16, 1992, 4-272335; Oct. 13, 1992, 4-299133

Int. Cl.[6] C25D *5/20*

U.S. Cl. 205—140 **4 Claims**

1. In a method for continuously tin-electroplating a metal strip, which comprises the steps of:

causing a DC electric current to flow between a metal strip and an anode arranged adjacent to said metal strip, while passing said metal strip at a travelling speed of at least 1 m/minute through an acidic tin-electroplating solution to form a tin-electroplating layer on at least one surface of said metal strip; and

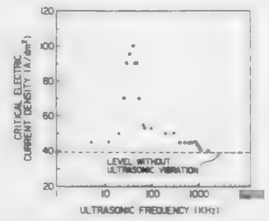
applying an ultrasonic vibration, emitted from at least one ultrasonic vibrator to said acidic tin-electroplating solution between said metal strip and said anode;

the improvement comprising:

said acidic tin-electroplating solution containing tin ions and an organic acid within a range of from 4.8 to 98 g/l as converted into sulfuric acid, and a phenyl hydroxide compound within a range of from 0.1 to 5 g/l;

passing said metal strip at a travelling speed of at least 100 m/minute through said acidic tin-electroplating solution; and

said ultrasonic vibration having an intensity within a range



of from 0.01 to 1,000 W/100 cm^2 and a frequency within a range of from 25 to 55 kHz;

thereby removing a diffusion layer of tin ions existing in said acidic tin-electroplating solution adjacent to the surface of said metal strip, and increasing a critical electric current density to a range of from 65 to 110 A/dm^2.

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HYDROGENATION CATALYST AND PROCESS

Bruce H. C. Winquist; Brendan D. Murray, both of Houston; Stanley N. Milam, Spring; Robert C. Ryan, Houston, all of Tex., and Thomas W. Hastings, Barto, Pa., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 719,207, Jun. 21, 1991, abandoned. This application Dec. 13, 1993, Ser. No. 164,219

Int. Cl.[6] C10G *23/04*

U.S. Cl. 208—143 **27 Claims**

1. A process for the hydrogenation of hydrocarbon feedstocks containing hydrogenatable components and which have a boiling range between about 125° C. and about 625° C. which process comprises contacting said feedstock at a temperature ranging between about 150° C. and about 400° C. with hydrogen and a catalyst comprising one or more Group VIII noble metal(s) on a support wherein the support comprises a zeolite prepared by contacting a starting Y zeolite having a unit cell size of less than about 24.65 angstroms, a silica to alumina molar ratio greater than about 5, and an alkali metal content of less than about 0.3 percent (basis metal) with one or more aqueous solution(s) comprising alkali(ne-earth) metal ions under conditions sufficient to provide a final alkali(ne-earth) metal content (measured in terms of gram equivalent weight per gram of zeolite) of at least about 1.5 times greater than the alkali metal content (measured in terms of gram equivalent weight per gram of zeolite) of the starting zeolite.

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CYCLIC REFORMING CATALYST REGENERATION

James J. Schorfheide, and Albert E. Schweizer, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 17, 1993, Ser. No. 169,447

Int. Cl.[6] C10G *35/22, 35/085;* **B01J** *23/96, 38/18*

U.S. Cl. 208—140 **10 Claims**

1. In a process for catalytically reforming a gasoline boiling range hydrocarbonaceous feedstock in the presence of hydrogen in a reforming process unit comprised of a plurality of serially-connected reactors, including a swing reactor, wherein each of the reactors contains a supported Group VIII noble metal-containing reforming catalyst and wherein the swing reactor is used to replace a reactor which is brought off-stream for catalyst regeneration, the improvement which comprises treating said regenerated catalyst with an effective amount of

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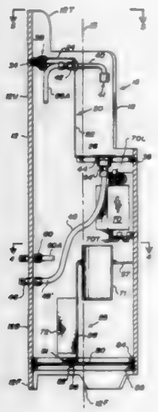
hydrogen and an effective amount of one or more aromatic compounds at a temperature from about 300° C. to 540° C. prior to the catalyst being brought back on stream, said aromatic compounds are selected from single-ring aryl or single-ring arylalkyl compounds, wherein said alkyl group contains from about 1 to 4 carbon atoms.

5,391,293

FILTERED WATER DISPENSING APPARATUS

George M. Hansen, Medina, Minn., assignor to Water Horse Inc., Golden Valley, Minn.

Filed Apr. 23, 1993, Ser. No. 52,427
Int. Cl.[6] B01D *35/30*
U.S. Cl. 210—109 **18 Claims**



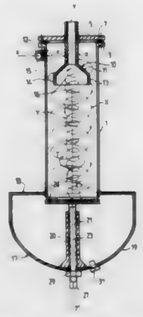
1. Filtered water dispensing apparatus comprising:
a) an elongated hollow cylindrical seamless casing having a preselected longitudinal length, said casing being a section cut from a relatively long length of extruded PVC pipe having preselected inner and outer diameters,, said casing being further characterized by having a longitudinal axis, an upper portion and a lower portion;
b) an upper partition member having a vertical central section and integral oppositely disposed top and bottom horizontally extending sections with thee edges thereof being shaped to fit with said preselected inner diameter, said upper partition member being removably mounted within and connected to said upper portion of said casing;
c) water spigot means connected to said vertical section and having a dispensing end and a supply end;
d) a lower partition member having a vertical section and integral oppositely disposed top and bottom horizontally extending sections, said lower partition member being fixed within said lower portion of said casing;
e) water filtering means mounted on said lower partition member and having a filtered water outlet and an inlet adapted to receive unfiltered water;
f) means connecting said outlet to said supply end of said water spigot means; and
g) manually actuated control means for controlling the flow of filtered water through said water spigot means.

5,391,294

PARTICLE SEPARATOR DEVICE WITH CIRCULATION OF FLUID, WITH DOUBLE EFFECT OF EXTRACTION

Dominique Mercier, Meudon-la-Foret, France, assignor to Codiex (S.N.C.), Velizy Cedex, France

PCT No. PCT/FR92/00281, § 371 Date Sep. 21, 1993, § 102(e) Date Sep. 21, 1993, PCT Pub. No. WO92/17278, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 27, 1992, Ser. No. 122,574
Claims priority, application France, Mar. 28, 1991, 91 03813
Int. Cl.[6] C02F *3/06;* **B01D** *43/00*
U.S. Cl. 210—151 **20 Claims**



1. Device for separating particles contained in a liquid to be treated, comprising a cylindrical enclosure (**1**), closed at its upper end, a single means (**15**) for injecting the liquid to be treated at the upper end, oriented tangentially with respect to the inner wall of the enclosure (**1**), so as to create therein a forced eddying flow, said enclosure (**1**) comprising, at its base, a radially outwardly opening annular channel (**26**) delimited by the inner face of the cylindrical enclosure and a central deflector core to ensure evacuation of the particles contained in the fluid to be treated, and a retention chamber (**17**) to collect said particles, the deflector core generating an ascending central eddying flow of treated fluid, an axial outlet tube (**9**) in the upper part of the enclosure (**1**) to ensure evacuation of the ascending central eddying flow of treated fluid from the enclosure (**1**), the deflector core comprising a deflector plate having a diameter at least equal to the inner diameter of the base of said enclosure (**25**) spaced below the lower end of said enclosure and comprising at least one flat central part, means for adjusting the longitudinal position of said plate, making it possible to modify and adjust the width of said annular channel (**26**), the axial outlet tube being extended downwardly by a flux regulating element (**10**) constituted, from upstream to downstream, by a downwardly widening truncated part, extended by a cylindrical part with an outer diameter less than the inner diameter of the cylindrical enclosure (**1**) so as to create therebetween a flux regulating flow stream (**14**) of annular section.

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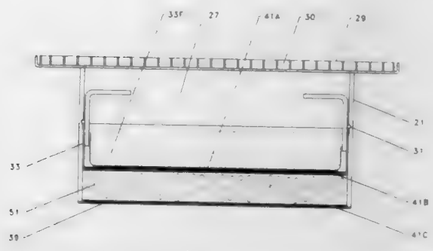
SPILL CONTAINMENT SYSTEM

Jack M. Wilcox, 1313 Bryan Dr., Bedford, Tex. 76022, and Keith D. von Kohn, 3903 Parker Oaks Ct., Arlington, Tex. 76106

Filed Sep. 27, 1993, Ser. No. 127,324
Int. Cl.[6] E03F *5/14*
U.S. Cl. 210—165 **12 Claims**

5. A drain comprising:
a housing having upper and lower ends with an opening formed therethrough,
said upper end of said housing forming an inlet to said drain and said lower end of said housing forming an outlet of said drain,
a grating secured across the lower end of said housing,

a layer of hydrophobic swellable polymer particles located above said grating,
lower means porous to water located between said grating and said layer of hydrophobic swellable polymer particles for holding said hydrophobic swellable polymer particles in said housing,
a removeable basket located above said layer of hydrophobic swellable polymer particles,



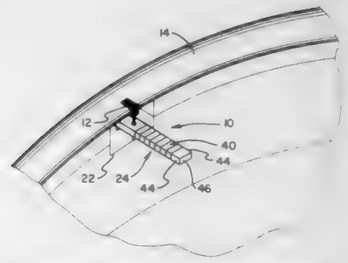
said basket having upper and lower ends with an opening extending therethrough,
a basket grating secured across the lower end of said basket, and
a filter located in said basket,
said hydrophobic swellable polymer particles being characterized in that said particles swell upon reaction with organic liquids to block liquid flow through said drain upon contact with organic liquids.

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POOL SKIMMER DEFLECTING DEVICE

David A. Rotundo, 9918 Mollyknoll Ave., Whittier, Calif. 90603, and Peter J. Pantazes, 5512 Donner Ave., Buena Park, Calif. 90621

Filed Jan. 5, 1994, Ser. No. 177,407
Int. Cl.[6] E04H *4/12, 4/06*
U.S. Cl. 210—169 **7 Claims**



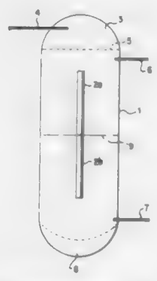
1. A pool skimmer deflecting device comprising:
a clamp assembly releasably securable to a pool edge;
an inner guide rod extending downwardly, substantially vertically from said clamp assembly;
an outer guide rod extending downwardly, substantially vertically from said clamp assembly, said outer guide rod being spaced from and substantially parallel to said inner guide rod;
a buoyant deflector having a pair of spaced, through-extending apertures, said buoyant deflector comprising a top wall supported in a spaced, substantially parallel relationship to a bottom wall by a pair of spaced side walls orthogonally coupled to both said top wall and said bottom wall, and a pair of spaced end walls substantially orthogonally coupled to said side walls, said top wall, and said bottom wall, said buoyant deflector including at least one frangible area which separates upon impact, said at least one frangible area comprising adjoining circumferential notch means in said side walls, said top wall, and said bottom wall, such that said deflector will fracture upon impact with a swimmer;
and,
a pair of bushings, one of said bushings being positioned within one of said apertures and another of said bushings being positioned within another of said apertures, said bushings being concentrically received upon cooperatively spaced guide rods to movably support said deflector proximate said pool edge.
3. A pool skimmer deflecting device comprising:
a clamp assembly releasably securable to a pool edge;
an inner guide rod extending downwardly, substantially vertically from said clamp assembly;
an outer guide rod extending downwardly, substantially vertically from said clamp assembly, said outer guide rod being spaced from and substantially parallel to said inner guide rod;
a buoyant deflector having a pair of spaced, through-extending apertures and at least one frangible area which separates upon impact, said deflector comprising an interior portion pivotally coupled to an exterior portion, said interior portion having a sphere cavity and said exterior portion having a sphere cavity;
a connector having spaced spheres with one of said spheres being received within said sphere cavity of said interior portion and another of said spheres being received in said sphere cavity of said exterior portion to pivotally couple said portions together;
and,
a pair of bushings, one of said bushings being positioned within one of said apertures and another of said bushings being positioned within another of said apertures, said bushings being concentrically received upon cooperatively spaced guide rods to movably support said deflector proximate said pool edge.

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PROCESS FOR GAS TREATMENT AND DEGERMINATION AND APPARATUS FOR SIMULTANEOUSLY DEGERMINATING AND TREATING A LIQUID WITH GAS

Michael Sell, Peine, and Andreas Mann, Hanover, both of Germany, assignors to Solvay Umweltchemie GmbH, Hanover, Germany

Filed Jun. 23, 1993, Ser. No. 79,906
Claims priority, application Germany, Jul. 2, 1992, 4221774
Int. Cl.[6] C02F *1/32*
U.S. Cl. 210—192 **6 Claims**



1. An apparatus for simultaneously treating a liquid with a gas and with degerminating irradiation, said apparatus comprising a closeable container for receiving said liquid, said container having an inlet for introducing the liquid into the container and an outlet for discharging the liquid from the container whereby the liquid flows through said container in a

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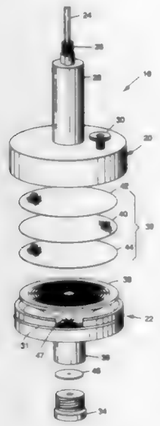
predetermined direction, an inlet for introducing a treatment gas into contact with said liquid in said container, a gas distributor means for distributing the treatment gas in the liquid to produce a gas phase or a foam phase which forms an interface with the liquid, a UV light source comprising two bar-shaped UV radiators disposed in succession along said predetermined direction of liquid flow for exposing liquid in said container to degerminating radiation, and means for controlling the introduction of liquid through said inlet and the discharge of liquid through said outlet and for maintaining said interface substantially at a level between said two successive UV radiators.

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METHOD FOR PERFORMING A SOLID-PHASE EXTRACTION UNDER PRESSURIZED CONDITIONS

Richard M. Pieper, St. Paul, and James E. Aysta, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 5, 1993, Ser. No. 27,080
Int. Cl.[6] B01D *15/00*
U.S. Cl. 210—638 10 Claims



1. A method of performing a solid-phase extraction on an aqueous fluid using a hydrophobic, solid-phase extraction disk, which method comprises:

(a) placing a hydrophobic, solid-phase extraction disk inside of a pressurizable housing having an inlet and an outlet, the hydrophobic, solid-phase extraction disk being positioned in the pressurizable housing such that a liquid moving from the inlet to the outlet passes through the hydrophobic, solid-phase extraction disk;

(b) priming the hydrophobic, solid-phase extraction disk with a water-miscible organic liquid by passing the water-miscible organic liquid from the inlet to the outlet under positive pressure; and

(c) passing an aqueous liquid from the inlet to the outlet under positive pressure;

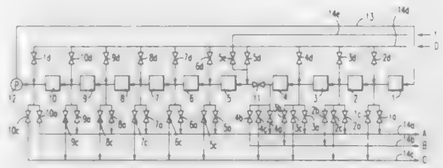
wherein the water-miscible organic liquid and the aqueous liquid are passed from the inlet to the outlet such that the hydrophobic, solid-phase extraction disk is completely and continuously immersed in liquid in the pressurizable housing during steps (b) and (c).

5,391,299

PROCESS FOR PRODUCTION OF STARCH SUGARS

Takayuki Masuda, Inzaimachi; Kuniaki Kawano, Matsudo, and Isamu Miyawaki, Kamakura, all of Japan, assignors to Organo Corporation, Tokyo, Japan

Filed Feb. 9, 1994, Ser. No. 193,865
Claims priority, application Japan, Feb. 12, 1993, 4-047515
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—659 8 Claims



1. A process for production of starch sugars, wherein an aqueous starch sugars solution produced from starch is subjected to chromatographic fractionation to produce a glucose fraction with a glucose purity of at least 97% by weight, a maltose fraction with a maltose purity of at least 80% by weight and an oligosaccharide fraction in one operation, which process uses, as a feed to be fractionated, an aqueous starch sugars solution prepared by allowing a liquefaction enzyme to act on starch to produce liquefied starch, allowing saccharification enzymes for producing glucose and maltose to act on the liquefied starch to produce an aqueous starch sugars solution containing 10–50% by weight, based on the total solid content, of glucose, 30–50% by weight, also based on the total solid content, of maltose and oligosaccharides having molecular weights the same as or larger than maltotriose molecular weight, and concentrating the aqueous starch sugars solution so as to have a total solid content of 40–70% by weight, and which process further employs, for fractionation of a feed to be fractionated, a chromatographic separator capable of fractionating the feed into three or more fractions, constituted in such a way that a plurality of columns packed with an adsorbent, which is a cation exchange resin, are connected by fluid paths so as to form an endless serial circulation channel, that at each connection point between the columns, the feeding of an eluant and the withdrawal of an eluate fraction can be conducted, that a shutoff valve is provided at a particular position of the circulation channel and that a feed feeding path is connected with the circulation channel just downstream of the shutoff valve, the operation of said chromatographic separator being comprised of a first step of closing the shutoff valve, feeding a feed or a feed and an eluant and simultaneously withdrawing a maltose fraction or a maltose fraction and an oligosaccharide fraction, and a second step of opening the shutoff valve, feeding the eluant alone without suppyling the feed and simultaneously withdrawing an oligossacharide fraction and a glucose fraction while sequentially shifting the position for feeding the eluant and the positions for withdrawing the oligosaccharide fraction and the glucose fraction toward the downstream side of the circulation channel, thus the first and second steps accomplishing the chromatographic fractionation of said aqueous starch sugars solution as feed into at least the following three fractions:

a. a glucose fraction wherein the glucose is enriched to a purity of at least 97% by weight,

b. a maltose fraction wherein the maltose is enriched to a purity of at least 80% by weight, and

c. an oligosaccharide fraction wherein the oligosaccharides having molecular weights the same as or larger than maltotriose molecular weight are enriched.

5,391,300

METHOD FOR THE REMOVAL OF HALOGENATED ORGANIC COMPOUNDS FROM AN ENVIRONMENT

Jimmy L. Webb, Ballston Lake; Timothy M. Sivavec, Clifton Park, and David G. Gascoyne, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 3, 1993, Ser. No. 55,599
Int. Cl.[6] B01D *15/00*
U.S. Cl. 210—670 11 Claims

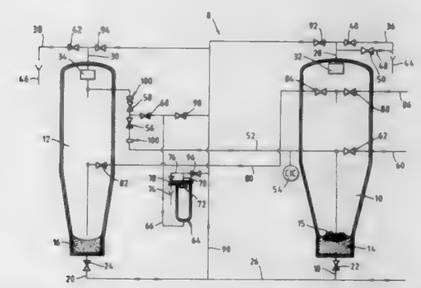
1. A method for removing halogenated organic compounds from a contaminated medium which comprises the steps of contacting the contaminated medium with an aqueous surfactant solution to disperse the compound in the solution, contacting the solution containing dispersed compound with a sorbant polymeric material capable of selectively sorbing the halogenated organic compounds from the surfactant solution, said polymeric material comprising soft blocks and hard blocks in the polymer backbone or being soft rubber admixed with a hard filler, separating the polymeric material and sorbed organic compounds from the surfactant solution, and recycling the surfactant solution into contact with the contaminated medium to disperse more halogenated organic compounds from the contaminated medium.

5,391,301

METHOD OF REGENERATING RESIN BEADS FOR USE IN WATER PURIFICATION

Michael A. Sadler, Bristol, England, assignor to Northern Engineering Industries plc, Derby, England

Filed Oct. 8, 1993, Ser. No. 133,344
Claims priority, application United Kingdom, Oct. 17, 1992, 9221947
Int. Cl.[6] C02F *1/42*
U.S. Cl. 210—675 1 Claim



1. A method of regenerating anion and cation resin beads which have been used in a water purification process using a selected volume of anion and cation resin beads comprising the steps of:

(a) providing a first vessel with a quantity of regenerated anion resin beads,

(b) adding thereto a mix of unregenerated anion and cation resin beads, the quantity of the former being greater than the quantity of anion beads already in said first vessel,

(c) separating therefrom the cation beads and said cation and anion beads which form an interfacial mix between the anion and cation beads, into respective second and third vessels,

(d) regenerating the anion resin beads by soaking in sodium hydroxide in liquid form,

(e) re-combining the regenerated anion resin beads with the unregenerated cation resin beads and mixing them

(f) re-separating and returning the unregenerated cation resin beads to said second vessel,

(g) regenerating the cation resin beads by immersing them in hydrochloric acid or sulphuric acid,

(h) transferring a selected volume of regenerated anion resin beads to a fourth vessel, said selected volume corresponding to the selected volume of cation resin beads that are used in the purification process,

(i) re-mixing the regenerated cation resin beads with the reduced volume of regenerated anion resin beads left in the first vessel and leaving the mix to stand for a predetermined time,

(j) re-separating the regenerated cation resin beads and returning them to the second vessel and transferring the reduced volume of regenerated anion resin beads and interfacial mix to the third vessel,

(k) re-combining the regenerated anion resin beads with the regenerated cation resin beads in the first vessel and transferring the resulting mix to a fourth vessel, and

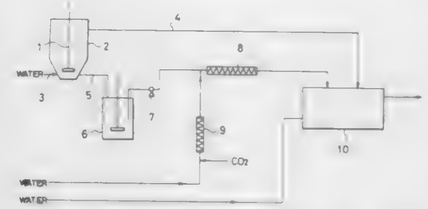
(l) returning all of the beads in the third vessel to the first vessel prior to receiving an additional mix of unregenerated anion and cation resin beads.

5,391,302

METHOD OF IMPROVING CITY WATER

Isao Funahashi, Iwaki, and Kiwamu Yamamoto, Yokosuka, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 939,514
Claims priority, application Japan, Oct. 9, 1991, 3-262271
Int. Cl.[6] C02F *5/02*
U.S. Cl. 210—696 3 Claims



1. A method of improving the Langelier index and pH of city water using slaked lime comprising the steps of:

(1) preparing an aqueous solution of slaked lime by dissolving slaked lime in water in a dissolving vessel;

(2) withdrawing any undissolved matter remaining in the slaked lime dissolving vessel as an aqueous slurry;

(3) mixing and reacting the aqueous slurry with carbonic acid-containing water to produce an aqueous solution of calcium hydrogen carbonate; and

(4) adding the aqueous solution of calcium hydrogen carbonate to city water together with the aqueous solution of slaked lime obtained in the slaked lime dissolving vessel.

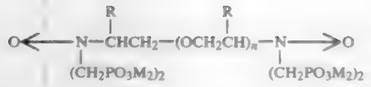
5,391,303

POLYETHER POLYAMINO METHYLENE PHOSPHONATE N-OXIDES FOR HIGH PH SCALE CONTROL

Raymond J. Schaper, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Division of Ser. No. 860,466, Mar. 30, 1992, Pat. No. 5,322,636.
This application Oct. 7, 1993, Ser. No. 133,488
Int. Cl.[6] C02F *5/14*
U.S. Cl. 210—700 8 Claims

1. A method of inhibiting the formation, deposition and adherence of scale-forming salts including calcium carbonate in an aqueous system characterized by high pH and high calcite saturation levels wherein the pH is at least 8.5 and the calcite saturation level is at least 150 times the solubility limit of calcium as calcite, comprising the step of adding to said system an amount sufficient to establish a concentration of from 1 to 100 mg/L of a composition comprising polyether polyamino methylene phosphonate N-oxides of the formula:



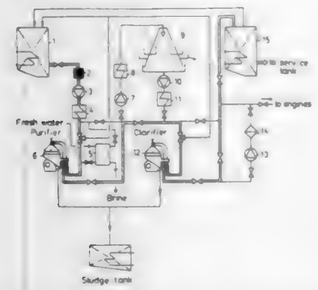
where n is an integer or fractional integer which is, or on average is, from about 2 to about 12, inclusive; M is hydrogen or a cation of an alkali metal salt; and each R may be the same or different and is independently selected from hydrogen and methyl.

5,391,304

METHOD FOR DECREASING THE LEVEL OF CONTAMINATION OF FUELS SUCH AS RESIDUAL FUELS AND OTHER LIQUID FUELS CONTAINING RESIDUAL HYDROCARBONS USED FOR DIESEL ENGINES AND GAS TURBINES

Federico E. Lantos, Aristobulo del Valle 971, Vicente Lopez, 1638 Pcia, Buenos Aires, Argentina

Filed Sep. 2, 1992, Ser. No. 939,151
Int. Cl.[6] B01D *5/00*
U.S. Cl. 210—774 **5 Claims**



1. A method for purifying a hydrocarbon fluid comprising residual hydrocarbons or a blend of residual hydrocarbons with distilled hydrocarbons, to be used as fuel for a diesel engine or a gas turbine, said hydrocarbon fluid containing contaminants colloidally dispersed as stable micelles, said method comprising the following steps, in sequence:

(a) disrupting colloidal structure of said micelles by heating said hydrocarbon fluid under pressure to a temperature of at least 110° C. and injecting said heated, pressurized hydrocarbon fluid into a flash chamber with cooled walls maintained at a pressure below the pressure of said hydrocarbon fluid and collecting an oily phase product at the bottom of the flash chamber, the pressure differential between the pressurized hydrocarbon fluid and the flash chamber being at least five bar,

(b) recovering co-distilled volatile product fractions by condensation on the cooled flash chamber walls, and

(c) separating solids from the collected oily phase product by centrifuging and/or filtration through at least one low pore filter.

5,391,305

DEHALOGENATION OF HALOGENATED HYDROCARBONS IN AQUEOUS COMPOSITIONS

Deborah A. Haitko, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 223,401, Apr. 4, 1994. This application Jun. 15, 1994, Ser. No. 260,432
Int. Cl.[6] C02F *1/70*
U.S. Cl. 210—757 **9 Claims**

1. A method for dehalogenation of aqueous compositions contaminated with halogenated hydrocarbon compounds without the formation of environmentally harmful byproducts consisting essentially of admixing the aqueous composition with an amount of ferrous oxide effective to dehalogenate the halogenated hydrocarbons at a pH between about 3.0 and 9.0 and at a temperature of at least about 17° C.

5,391,306

SETTLER WITH PRESET OUTLET AREA DECK AND VARIABLE ANGLE REMOVABLE LAMINA AND METHOD OF USING SETTLER

Charles L. Meurer, Golden, Colo., assignor to Meurer Research, Inc., Golden, Colo.

Filed Jul. 30, 1993, Ser. No. 99,830
Int. Cl.[6] B01D *21/02*
U.S. Cl. 210—802 **32 Claims**



1. Apparatus for clarifying liquid in which solids are suspended, comprising:

basin means for containing the liquid and the solids suspended therein:

a plurality of separate flow control members having a width extending across at least a part of said basin means; and

means for mounting said plurality of members for rotation on axes positioned in a common plane extending across at least said part of said basin means;

each said mounted member having an arcuate flow control surface spaced from its respective one of said axes;

said mounting means providing means for mounting pairs of said members adjacent to each other but spaced by an elongated gap;

said mounting means providing means for mounting opposite ones of said surfaces of said adjacent members to form a flow control area in said common plane, said area determined by said width and said gap and having a selected value according to a given angle of rotation of each said member on its respective one of said axes in said plane.

5,391,307

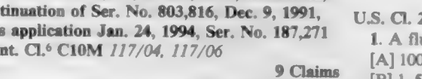
LUBRICATING OIL COMPOSITION

Akira Yamazaki, Saitama; Setsuo Yoshida, Okazaki; Tatsuo Yoshioka, Toyota; Isamu Kawaji, and Tadamori Sakakibara, both of Saitama, all of Japan, assignors to Tonen Corp., Tokyo and Toyota Jidosha Kabushiki Kaisha, Aichi, both of Japan

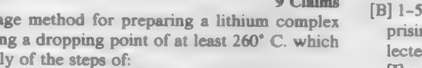
Division of Ser. No. 548,076, Jul. 5, 1990, abandoned. This application Sep. 10, 1992, Ser. No. 942,950
Claims priority, application Japan, Jul. 7, 1989, 1-174257; Jul. 7, 1989, 1-174258
Int. Cl.[6] C10M *169/04, 141/00*
U.S. Cl. 252—32.5 **12 Claims**

1. A lubricating oil composition comprising a base oil and, incorporated therein, the following components (i), (iii), (v) and (vi):

(i) at least one member selected from the group consisting of phosphoric acid esters, phosphorous acid esters and amine salts thereof represented by the following general formulae (2) and (4):



(2)



(4)

wherein l is an integer of from 1 to 3, m and n each represent an integer of 1 or 2, and R and R′ and which may be the same or different, represent alkyl, aryl or alkyl-substituted aryl group having 4 to 30 carbon atoms,

(iii) an aliphatic dicarboxylic acid compound,

(v) boron-blocked succinimide, and

(vi) perbasic magnesium sulfonate having a total base number value of at least 300, and wherein the components (i) and (iii) are 0.01 to 2.0% by weight.

5,391,308

LUBRICANT FOR TRANSPORT OF P.E.T. CONTAINERS

Aris D. Despo, Ocean, N.J., assignor to Despo Chemicals International, Inc., Perth Amboy, N.J.

Filed Mar. 8, 1993, Ser. No. 27,426
Int. Cl.[6] C10M *173/02, 137/02*
U.S. Cl. 252—32.5 **20 Claims**

1. An aqueous conveyor lubricant concentrate capable of being diluted with water for applying to the exterior of P.E.T. containers being transported along a conveyor system comprising:

(a) a long chain fatty acid;

(b) emulsifying agent;

(c) stress crack inhibiting agent; which is an alkyl aryl phosphate ester or an alkyl phosphate ester;

(d) saponifying agent;

(e) sequestrant;

(f) coupling agent/hydrotope;

(g) water; and

(h) optionally, an inorganic phosphate

wherein the pH of said concentrate is in the range of 9 to 10.5.

5,391,309

METHOD OF PREPARING HIGH DROPPING POINT LITHIUM COMPLEX SOAP GREASES

Phillip W. Brewster, Camlachie; A. Gordon Alexander, Sarnia, and Terrance O. Brown, Corunna, all of Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 987,523, Dec. 8, 1992, abandoned, which is a continuation of Ser. No. 803,816, Dec. 9, 1991, abandoned. This application Jan. 24, 1994, Ser. No. 187,271
Int. Cl.[6] C10M *117/04, 117/06*
U.S. Cl. 252—41 **9 Claims**

1. A single stage method for preparing a lithium complex soap grease having a dropping point of at least 260° C. which consists essentially of the steps of:

(a) dissolving a C_{12} to C_{24} hydroxy fatty acid and a C_2 to C_{12} aliphatic dicarboxylic acid in a lubricating oil to form an oil-acid mixture in a pressure vessel at a temperature of from about 105° C. to about 150° C., the amount of lubricating oil added ranging from about 20 to about 90 wt. % of the total amount oil present in the finished grease composition,

(b) adding an aqueous solution of lithium hydroxide monohydrate to the oil-acid mixture formed at a temperature of from about 105° C. to about 150° C., the amount of lithium hydroxide monohydrate being slightly in excess of that required to neutralize the acids present in the oil-acid mixture,

(c) maintaining the reaction conditions at a temperature of from about 105° C. to about 150° C. for a period of time sufficient to obtain essentially complete neutralization of the acids and lithium hydroxide monohydrate,

(d) dehydrating the mixture formed in step (c) at a temperature of from about 110° C. to about 180° C.,

(e) heating the mixture until it is uniformly at a temperature of from about 200° to about 220° C.,

(f) maintaining the temperature in step (e) for from about 15 to about 60 minutes,

(g) cooling the mixture from step (f) to a temperature of about 200° C. or below, and

(h) incorporating the remainder of the lubricating oil into the mixture.

5,391,310

SULFURIZED AQUEOUS MACHINING FLUID COMPOSITION

Mark K. Krueger, Loveland; Jerry P. Byers, Cincinnati, and Henry Turchin, Loveland, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 23, 1993, Ser. No. 156,323
Int. Cl.[6] C10M *135/02*
U.S. Cl. 252—45 **27 Claims**

1. An aqueous machining fluid composition comprising a) water, b) a sulfurized organic material selected from the group consisting of sulfurized unsaturated aliphatic carboxylic acids having from 6 to 22 carbon atoms and salts thereof, sulfurized unsaturated esters of aliphatic carboxylic acids having from 1 to 22 carbon atoms, sulfurized polymerized unsaturated fatty acids and salts and esters thereof, and mixtures thereof, c) a sulfurized hydrocarbon and d) an aliphatic ester of a dialkyldithiocarbamic acid.

5,391,311

FLUID COMPOSITIONS FOR REFRIGERATORS

Noboru Ishida; Hiroshi Hasegawa; Umekichi Sasaki, and Tatsuyuki Ishikawa, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

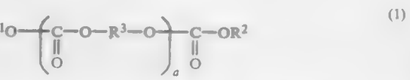
Continuation-in-part of Ser. No. 685,535, Apr. 15, 1991, Pat. No. 5,262,076. This application Oct. 7, 1993, Ser. No. 133,742
Claims priority, application Japan, Apr. 20, 1990, 2-105773; Apr. 20, 1990, 2-105774; May 11, 1990, 2-120046; May 11, 1990, 2-120047; Jun. 28, 1990, 2-168298
The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.
Int. Cl.[6] C10M *105/36*
U.S. Cl. 252—52 A **6 Claims**

1. A fluid composition for refrigerators, which comprises

[A] 100 parts by weight of a halogenocarbon refrigerant, and

[B] 1–500 parts by weight of a synthetic lubricating oil comprising as a base oil at least one carbonic acid ester selected from the group consisting of:

[I] a carbonic acid ester represented by the general formula (1)



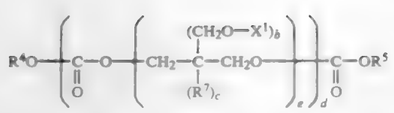
(1)

wherein R^1 and R^2 are identical with, or different from, each other and are each a group selected from the group consisting of alkyl groups having 1–15 carbon atoms and dihydric alcohol residues having 2–12 carbon atoms, R^3 is an alkylene group having 2–12 carbon atoms, and a is an Integer of 1–30;

[II] a carbonic acid ester represented by the general formula (2)

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(2)

wherein X^1 is a hydrogen atom or a group represented by the general formula



R^4, R^5 and R^6 identical with, or different from, one another and are each a group selected from the group consisting of alkyl groups having 1–12 carbon atoms, cycloalkyl groups having 5–12 carbon atoms and neopentyl type polyol residues having 5–30 carbon atoms and 3–8 hydroxyl groups; R^7 is an alkyl group having 1–6 carbon atoms; b is an integer of 1 or 2, c is an integer of 0 or 1 with the proviso that the sum of b and c equals to 2; d is an integer of 0–30, at least one of R^4 and R^5 indicating a neopentyl type polyol residue when d is 0; and e is an integer of 1–3; and

[III] a carbonic acid ester other than said carbonic acid esters [I] and [II], which is prepared from a source of carbonic acid moieties and the following alcoholic components:

(i) a monohydric alcohol having 1–15 carbon atoms,

(ii) a dihydric alcohol having 2–12 carbon atoms, and

(iii) a neopentyl type polyol having 5–7 carbon atoms and 3–4 hydroxyl groups, or a dimer or trimer of the polyol.

5,391,312

LUBRICANT ADDITIVES

K. Pushpananda A. Senaratne; Patrick S. Bynum, and Mahmood Sabahi, all of Baton Rouge, La., assignors to Albemarle Corportion, Richmond, Va.

Filed Aug. 2, 1993, Ser. No. 100,225

Int. Cl.[6] C10M *129/72*

U.S. Cl. 252—56 R 8 Claims

1. A composition comprising a lubricant and, as a seal-swell agent, an ester oil composed of molecules corresponding to the formula ROOC—CH_2CH_2—[(ROOC)CH—CH_2]$_m$—C(-COOR)$_2$—[CH_2CH(COOR)]$_n$—CH_2CH_2COOR in which the R's represent alkyl groups of 1–30 carbons, and each of m and n represents zero or a positive integer such that the sum of m and n in a molecule is 0–30.

5,391,313

REFRIGERATION WORKING FLUID CONTAINING COMPLEX ESTER AND TETRAFLUOROETHANE

Shlomo Antika, Maplewood; Thomas G. Dietz, Millington, both of N.J.; Richard H. Schlosberg, Baton Rouge, La.; David W. Turner, Houston, Tex., and George A. Weisgerber, Cranford, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 811,448, Dec. 19, 1991, abandoned. This application Apr. 2, 1993, Ser. No. 42,031

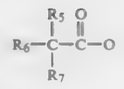
Int. Cl.[6] C10M *105/18*; C09K *5/00*

U.S. Cl. 252—68 6 Claims

1. A refrigeration working fluid comprising:

(a) 1,1,1,2-tetrafluoroethane, and

(b) a synthetic ester lubricant with a viscosity of about 150 cSt or less at 40° C. and having the formula $(R_1\text{–}R_2)_n R_3$ wherein R_1 is



in which R_5, R_6 and R_7 are each independently hydrocarbyl group of from 1 to 7 carbon atoms with the proviso that the sum of carbon atoms in $R_5+R_6+R_7$ is from 7 to 8,

R_2 is (CH_2–CH_2 —O—)$_b$, where b is an integer from 1 to 3,

R_3 is a monobasic or polybasic carboxylic acid radical of the formula



where R_4 is a hydrocarbyl group having m carbon atoms where m is an integer from 1 to 9, and

n is an integer from 1 to 4.

5,391,314

ELECTROVISCOUS FLUID COMPOSITION COMPRISING A SILICONE OIL, SYNTHETIC FLUORINATED OIL AND AN ADDITION POLYMER

Masahiko Minemura, and Satoshi Kuwata, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 701,723, May 17, 1991, abandoned. This application Sep. 3, 1993, Ser. No. 115,809

Claims priority, application Japan, May 18, 1990, 2-128887

Int. Cl.[6] C10M *169/04, 171/00*

U.S. Cl. 252—78.3 11 Claims

1. An electroviscous fluid composition comprising a dispersion medium of two non-miscible components (A) and (B) as below, the volume ration of (A)/(B) being in the ratio 99/1–1/99, and a dispersoid (C) as below, wherein the true specific gravity of the dispersoid (C) is greater than the specific gravity of said component (A) and less than specific gravity of said component (B);

Component (A):

A silicone oil of general formula (I):

wherein each R, independently is a monovalent hydrocarbon group with 1–18 carbon atoms and "a" lies in the range $1.8<a<3.0$, having a viscosity of 1–1,000 centistokes at 25° C. and a specific gravity of 0.8–1.5,

Component (B):

A perfluoropolyether synthetic fluorinated oil having a viscosity of 1–1,000 centistokes at 25° C. and a specific gravity greater than 1.4,

Component (C):

An addition polymer obtained by polymerizing at least one monomer selected from the group consisting of acrylic acid an ester or a metal salt of acrylic acid, methaerglia acid, and an ester or metal salt of methacrylic acid.

5,391,315

SOLID CAKE DETERGENT CARRIER COMPOSITION

Abraham Ashkin, 1330 Beech St., Terre Haute, Ind. 47804

Filed Sep. 27, 1991, Ser. No. 767,083

Int. Cl.[6] C11D *9/00*

U.S. Cl. 252—108 2 Claims

1. A solid cake cleaning product disposed in a shallow plastic tub, comprising up to about 6 to 20 weight per cent active agents;

5–20 weight per cent non-ionic surfactant of the general formula R-(R′)n OH, in which R is C6-C20 alkyl group, R′ is a polyoxy of ethylene or propylene, or a combination thereof, and n is an integer greater than 9 and as high as 30;

3–10 weight per cent sodium stearate; and

3–15 weight per cent of a fatty acid soap other than sodium stearate, said solid cake cleaning product containing no more than about 40 weight per cent of solids in an aqueous alkali medium, being sparingly soluble in cold water at room temperatures, and having an average melting point in the range of 35–50 degrees C., said solid cake cleaning product being capable of releasing effective amounts of active agents onto a dampened cloth or sponge when rubbed thereby, with no change in the solubility level of the solid cake cleaning product.

5,391,316

LOW-FOAMING, LIQUID CLEANING COMPOSITIONS CONTAINING PARAFFIN AND FATTY ACID SALT

Peter R. Garrett, Pantymwyn; Terry Instone, Great Sutton, both of Great Britain; Francesco M. Puerari, Cremona, Italy; David Roscoe, Liverpool, and Philip J. Sams, Willaston, both of Great Britain, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Mar. 8, 1993, Ser. No. 27,970

Claims priority, application United Kingdom, Mar. 6, 1992, 9204976; Aug. 11, 1992, 9217001

Int. Cl.[6] C11D *9/04*

U.S. Cl. 252—126 6 Claims

1. A liquid, aqueous composition for use in neat or dilute form for cleaning hard surfaces which consisting essentially of:

a. 0.2–5.0% wt of a saturated alkane hydrocarbon with a 50% wt loss boiling point in the range 170°–300° C.;

b. 0.2–3.0% wt of a first surfactant which is an alkali metal salt of a saturated fatty acid or a fatty acid having an average carbon chain length in the range 12–16, the alkali metal salt forming a calcium salt which is no more than sparingly soluble in an aqueous solution of a second foaming surfactant;

c. a second foaming surfactant present in the composition in weight excess over the first surfactant and which is different from the first surfactant, said second surfactant being selected from a group consisting essentially of primary and secondary alcohol sulfates, alkyl aryl sulfonates, alkoxylated alcohols, primary and secondary alkane sulfonates, lacto-bionamides, alkyl polyglucosides, polyhydroxyamides, alkyl glucamides, alkoxylated carboxylates, mono- or dialkyl sulfosuccinates, alkyl carboxylic acid ester sulfonates, alkyl isethionates and derivatives thereof and mixtures thereof wherein a ratio of the first surfactant to the hydrocarbon in the composition is in a range of 0.4 to 2:1;

d. 5–15% wt of a solvent selected from the group consisting of glycol ethers, ethyl acetate, alcohols and mixtures thereof;

e. optionally 1–5% wt of a potassium salt, all percentages by weight being based on the total weight of the composition.

5,391,317

PROCESS FOR PREPARING A POLYURETHANE FOAM IN THE PRESENCE OF A HYDROCARBON BLOWING AGENT

Guido F. Smits, Wijnegem, Belgium, assignor to The Dow Chemical, Midland, Mich.

Continuation of Ser. No. 174,555, Dec. 27, 1993. This application Jun. 6, 1994, Ser. No. 254,226

Int. Cl.[6] C09K *3/00*; C08J *9/14*

U.S. Cl. 252—182.24 1 Claim

1. An isocyanate-reactive composition for use in the preparation of polyurethane or polyisocyanurate foam which comprises a polyahl, water, and a physical blowing agent characterized in that:

a) the polyahl contains an aromatic-initiated polyether polyol present in from 30 to 90 parts per 100 parts by total weight of polyahl;

b) the water is present in from about 1.5 to about 10 parts per 100 parts by total weight of polyahl; and

c) the physical blowing agent consists, based on total amounts of c1) and c2), of:

c1) from about 5 to about 80 mole percent of a C_{5-6}alicyclic alkane or mixtures of such; and

c2) from about 95 to about 20 mole percent of isopentane and n-pentane present in a mole ratio of from about 80:20 to about 20:80.

5,391,318

LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE CONTAINING THE SAME

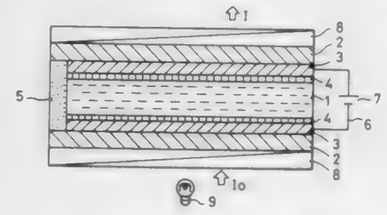
Masataka Yamashita; Masahiro Terada; Shousei Mori, all of Kanagawa, and Kazuharu Katagiri, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1991, Ser. No. 645,720

Claims priority, application Japan, Jan. 29, 1990, 2-19883

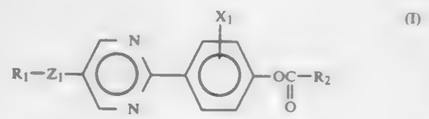
Int. Cl.[6] C09K *19/34, 19/30, 19/20*; G02F *1/13*

U.S. Cl. 252—299.61 18 Claims



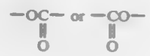
1. A liquid crystal composition having a chiral smectic phase, said liquid crystal composition comprising a mixture of:

at least one liquid crystal compound having said general formula (I);



(I)

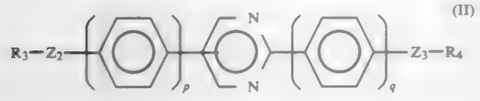
wherein R_1 and R_2 each is a linear or branched alkyl group which may have an alkoxy group having 1 to 16 carbons, Z_1 is a single bond, —O—,



and X_1 is a halogen atom;

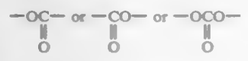
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at least one liquid crystal compound having the following general formula (II):



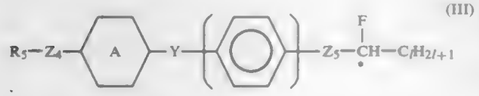
(II)

wherein R_3 and R_4 are linear or branched alkyl groups having 1 to 18 carbons which may contain an alkoxy group having 1 to 12 carbons, R_3 and R_4 each shows non-optical activity, Z_2 and Z_3 each is a single bond, —O—,



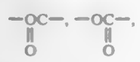
and p+q is 1 or 2; and

at least one liquid crystal compound having the following general formula (III):



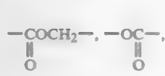
(III)

wherein R_5 is a linear or a branched alkyl group having 1 to 18 carbons which may have an alkoxy substituent, Y is a single bond,

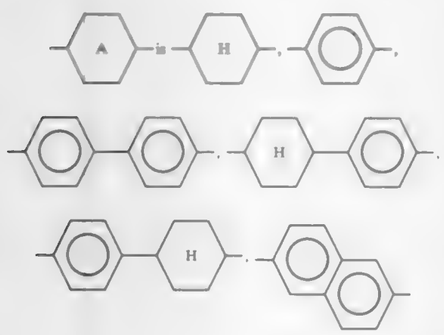


—CH_2O—, OCH_2—, —COS—, —SCO—, or —CH=CH—COO—, Z_4 is a single bond, —O—,

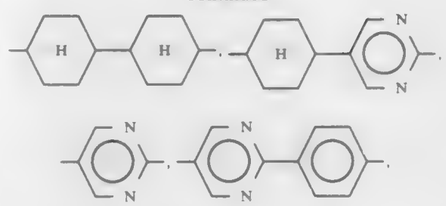
Z_5 is —OCH_2—



or —O—$(CH_2)_k$—O—CH_2, wherein k is an integer from 1 to 4,



-continued



r is 1 or 2 and l is an integer from 1 to 12.

5,391,319

LIQUID-CRYSTALLINE MIXTURE

Michael Junge, Pfungstadt; Herbert Plach; Alasdair Jelfs, both of Darmstadt, and Michael Kompter, Riedstadt, all of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

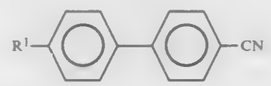
Filed Nov. 17, 1993, Ser. No. 153,143

Claims priority, application United Kingdom, Nov. 18, 1992, 9224132

Int. Cl.[6] C09K *19/52, 19/30, 19/20;* **G02F** *1/13*

U.S. Cl. 252—299.01 **16 Claims**

1. A liquid-crystalline mixture comprising two or more compounds of the formula I,



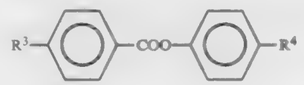
I

in which R^1 is a straight-chain alkyl having 3, 5 or 7 carbon atoms, one or more compounds of the formula II,



II

in which R^2 is a straight-chain alkyl having 2 to 7 carbon atoms, three or more compounds of the formula III,



III

in which R^3 and R^4 are each independently alkyl or alkoxy with 1 to 10 carbon atoms, and two or more compounds of the formula IV,



IV

in which R^5 and R^6 each independently have one of the meanings indicated for R^3 and m is 0 or 1.

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TERBIUM ACTIVATED SILICATE LUMINESCENT GLASSES

Robert A. Buchanan, Palo Alto, and Clifford Bueno, Sunnyvale, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 398,873, Aug. 28, 1989, abandoned. This application Jun. 24, 1991, Ser. No. 719,445

Int. Cl.[6] C09K *11/79*

U.S. Cl. 252—301.4 F **7 Claims**

1. A luminescent terbium-activated silicate glass exhibiting luminescence responsivity under x-ray radiation in the range of from about 5 keV to about 16 MeV and consisting essentially by weight on the oxide basis, of about 3–25% R_2O wherein R_2O consists of 0–5% Li_2O, 0–25% Na_2O, 0–25% K_2O, 0–25% Rb_2O and 0–25% Cs_2O; 5–55% RO wherein RO consists of 0–20% MgO, 0–30% CaO, 0–45% SrO and 0–55% BaO; 35–56.1% SiO_2; 0–20% R_2O_3 wherein R_2O_3 consists of 0–20% La_2O_3 and 0–15% Y_2O_3; 0.1–2% of at least one oxide selected from the group consisting of cerium oxide and europium oxide; 0.75–20% Tb_2O_3 and 1–15% Gd_2O_3.

5,391,321

LIQUID OR PASTY, STORAGE-STABLE MULTIPLE EMULSIONS OF THE $O^1/W/O^2$ TYPE

Burghard Grüning; Peter Hameyer, and Christian Weitemeyer, all of Essen, Germany, assignors to Th. Goldschmidt AG, Essen, Germany

Filed Feb. 24, 1993, Ser. No. 21,718

Claims priority, application Germany, Mar. 4, 1992, 4206732

Int. Cl.[6] B01F *17/34;* **B01J** *13/00*

U.S. Cl. 252—309 **5 Claims**

1. A liquid or pasty, storage-stable, multiple emulsion of the $O^1/W/O^2$ type, wherein O^2 forms an outer phase of the multiple emulsion, a hydrophilic emulsifier being present at the O^1/W interface and a hydrophobic emulsifier being present at the W/O^2 interface, further comprising that

(1) the hydrophobic emulsifier has an HLB value of at most 8 and is

a_1) a polyacrylate ester with long-chain hydrocarbon and polyoxyalkylene groups, or

a_2) a polyoxyalkylenepolysiloxane with long-chain alkyl groups linked to silicon atoms, and

(2) the hydrophilic emulsifier is a nonionic emulsifier with an HLB value of more than 8, provided that oily phase O^1 is a liquid.

5,391,322

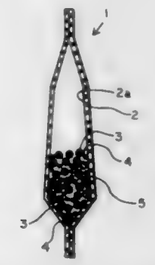
METHOD FOR EXTENDING THE SERVICE LIFE OF A VAPOR-CORROSION INHIBITOR

Donald P. Mayeaux, Prairieville, La., assignor to A+ Corp., Prairieville, La.

Continuation of Ser. No. 990,041, Dec. 14, 1992, Pat. No. 532,448. This application Apr. 4, 1994, Ser. No. 222,711

Int. Cl.[6] C23F *11/14*

U.S. Cl. 252—394 **18 Claims**



1. A method for extending the service life of a vapor-corrosion inhibitor used in an enclosure containing ambient air and metal components, for protecting the metal components from corrosion caused by ambient water vapor, the method comprising the steps of:

(a) preparing a granular composition for inhibiting corrosion caused by water vapor in the ambient air, by mixing a granular vapor-corrosion inhibitor with a granular dessicant which gels upon exposure to the water vapor in the ambient air, thereby transforming the granular composition into a gelatinous mass and slowing the rate of diffusion of vapor from the vapor-corrosion inhibitor;

(b) sealing the granular composition in a solid film that is permeable to water vapor and to the vapor of the vapor-corrosion inhibitor; and

(c) disposing the sealed granular composition in the enclosure containing the ambient air and the metal components, thereby transforming the granular composition into a gelatinous mass as the granular composition is exposed to the ambient water vapor, slowing the rate of diffusion of the vapor from the vapor-corrosion inhibitor, and prolonging the useful life of the vapor-corrosion inhibitor;

the dessicant being selected from the group consisting of potassium poly(acrylate) and the partial sodium salt of crosslinked poly(propenoic acid).

10. A method for extending the service life of a vapor-corrosion inhibitor used in an enclosure containing ambient air and metal components, for protecting the metal components from corrosion caused by ambient water vapor, the method comprising the steps of:

(a) preparing a granular composition for inhibiting corrosion caused by water vapor in the ambient air, by mixing a granular vapor-corrosion inhibitor with a granular dessicant comprising an alkali-metal salt of poly(acrylic acid), thereby forming a granular composition which upon exposure to water vapor is transformed into a gelatinous mass;

(b) sealing the granular composition in a solid film that is permeable to water vapor and to the vapor of the vapor-corrosion inhibitor; and

(c) disposing the sealed granular composition in the enclosure containing the ambient air and the metal components, thereby transforming the granular composition into a gelatinous mass as the composition is exposed to the ambient water vapor, slowing the rate of diffusion or the vapor from the vapor-corrosion inhibitor, and prolonging the useful life of the vapor-corrosion inhibitor.

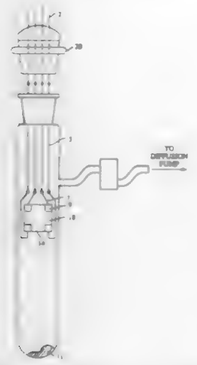
VOL 1171 ISS 3 FEB 21 1995 UMI

5,391,323

CONDUCTIVITY IN CARBONACEOUS COMPOUNDS AND DEVICES USING SUCH COMPOUNDS

Robert C. Haddon, Dover; Arthur F. Hebard, Bernardsville; Donald W. Murphy, Green Brook, and Matthew J. Rosseinsky, Piscataway, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 671,275, Mar. 18, 1991, abandoned. This application Nov. 22, 1993, Ser. No. 156,664
Int. Cl.[6] C01B *31/00*; H01B *1/04*
U.S. Cl. 252—502 10 Claims



1. A solid phase fullerene having electrons added thereto by doping, said solid phase fullerene having a conductivity greater than 10^{-4} Siemens/cm.

5,391,324

AQUEOUS SUSPENSIONS OF PEROXYCARBOXYLIC ACIDS

Gerd Reinhardt, Kelkheim; Vera Friderichs, Kesten, and Ulrike Rudolf, Hofheim am Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 31, 1992, Ser. No. 829,740
Claims priority, application Germany, Feb. 1, 1991, 4102970
Int. Cl.[6] C11D *3/33, 3/395, 1/722, 3/39*
U.S. Cl. 252—543 20 Claims

1. A storage-stable aqueous suspension of an organic peracid, wherein the suspension contains 1 to 50% by weight of a surfactant mixture consisting essentially of the components (a) 1 to 4 parts by weight of a C_8–C_{22}-fatty alcohol, ethoxylated with 1 to 5 units of ethylene oxide, and (b) 4 to 1 parts by weight of an ethoxylated fatty alcohol selected from the group consisting of:

(1) C_8–C_{18} fatty alcohol ethoxylated with 8 to 25 units of ethylene oxide,

(2) C_8–C_{12} fatty alcohol ethoxylated with 6 to 8 units of ethylene oxide, and

(3) C_{18}–C_{22} fatty alcohol ethoxylated with 12 to 25 units of ethylene oxide, and wherein the suspension contains at least one additional component selected from the group consisting of complexing agents, acid, antifoam agents, optical brighteners, perfumes, dyes, antioxidants and hydrogen peroxide.

5,391,325

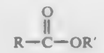
NON-TOXIC BIODEGRADABLE EMULSION COMPOSITIONS FOR USE IN AUTOMATIC CAR WASHES

Robert A. Swenson, Janesville, Wis., and William E. Welch, Chicago, Ill., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Sep. 29, 1993, Ser. No. 128,610
Int. Cl.[6] C11D *1/62, 1/38, 3/20, 3/44*
U.S. Cl. 252—547 10 Claims

1. A composition for use as a rinse aid in automatic car washes comprising:

30–60% of a simple ester of natural fatty acids having the general structural formula:



wherein R—C is from an acid moiety having approximately 12–26 carbon atoms, and R′ is from an alcohol moiety having approximately 1–5 carbon atoms;

40–55% of an emulsifier component, said emulsifier component including at least one cationic emulsifier; and

5–15% of a coupling solubilizer.

5,391,326

GRANULAR LAUNDRY DETERGENT

Kim R. Smith, Huntington, Ind.; James E. Borland, Baton Rouge, La.; Terry Crutcher, Fitchburg, Wis., and Joe D. Sauer, Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 851,600, Mar. 16, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 96,399
Int. Cl.[6] C11D *1/831, 1/75, 3/08, 3/12*
U.S. Cl. 252—559 16 Claims

1. A phosphate-free granular detergent having a surfactant content of 1–30% and a detergent builder content of at least 50% by weight and comprising:

(A) a surfactant mixture consisting of 20–98% by weight of an ethoxylated fatty alcohol corresponding to the formula $Z(OCH_2CH_2)_nOH$ in which Z is an alkyl group containing 8–30 carbons and n is an integer of 1–50, 1–75% by weight of an alkali metal or ammonium salt of an alkylbenzene sulfonate in which the alkyl group contains 10–18 carbons and 1–20% by weight of an amine oxide corresponding to the formula RR′R″NO in which R is a primary alkyl group containing 8–24 carbons, R′ is methyl, ethyl, or 2-hydroxyethyl and R″ is independently selected from methyl, ethyl, 2-hydroxyethyl, and primary alkyl groups containing 8–24 carbons and

(B) a detergent building mixture consisting of a sodium aluminum silicate, and anti-redeposition agent selected from the group consisting of sodium polyacrylate, sodium carboxymethylcellulose and mixtures thereof, sodium silicate, and at least one different water-soluble inorganic salt selected from the group consisting of sodium sulfate, sodium carbonate and sodium bicarbonate in proportions that the laundry detergent contains 1–50% by weight of the sodium aluminum silicate, 0.1–5% by weight of the anti-redeposition agent, 1–20% by weight of the sodium silicate, and 10–80% by weight of the different inorganic salt.

5,391,327

PHOTOCHROMIC COMPOSITIONS OF IMPROVED FATIGUE RESISTANCE

John S. Ligas, Palm Harbor, Fla.; Michael S. Misura, Jr., Barberton, Ohio, and Cletus N. Welch, Murrysville, Pa., assignors to Transitions Optical, Inc., Pinellas Park, Fla.

Continuation of Ser. No. 951,284, Sep. 25, 1992, abandoned. This application Jun. 9, 1994, Ser. No. 257,234
Int. Cl.[6] G02B *5/23*
U.S. Cl. 252—586 22 Claims

1. A photochromic optical article of improved resistance to light fatigue comprising an organic polymeric host material and a photochromic composition comprising, in combination,

(a) a photochromic amount of organic photochromic material having a minima luminous transmission in the range of 560 to 630 nanometers,

(b) a photochromic amount of organic photochromic material having a minima luminous transmission in the range of 430 to 520 nanometers, and

(c) from 0.3 to 1.5 parts, per part of organic photochromic material, of light stabilizers comprising, in combination,

(1) hindered amine light stabilizer, and

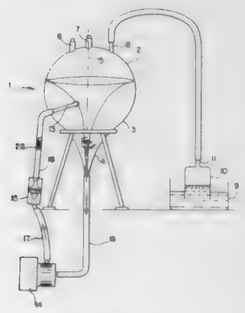
(2) asymmetric diaryloxalamide light stabilizer, the weight ratio of diaryloxalamide to hindered amine light stabilizer being from about 1:1 to about 3:1.

5,391,328

APPARATUS FOR INTRODUCING AND BONDING GAS INTO WATER

Walter Ott, deceased, late of Stäfa, Switzerland; Peter Kolia, Pécs; Michael Lantos, Budapest, both of Hungary, and Jürg Kehrli, Jona, Switzerland, assignors to Tecno-Bio Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 957,395, Apr. 22, 1993, abandoned, which is a division of Ser. No. 348,010, Aug. 23, 1989, abandoned. This application Mar. 11, 1994, Ser. No. 212,680
Claims priority, application Germany, Oct. 23, 1987, 87115583; Sep. 30, 1988, 88116279
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—36.1 9 Claims



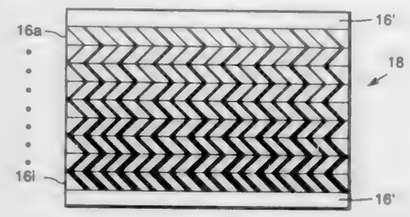
1. Apparatus for introducing gas into water, comprising a container (**1**, **34**) storing said water and having a space above water filled with gas to be introduced, a closed path of conduits (**16**, **17**, **18**) starting from and ending in said container, a pump (**14**) inserted in said path to recirculate water in said path, characterized in that a reaction chamber (**15**) is connected in said path, the reaction chamber (**15**) has an inner space with a rotational symmetrical form that has an axis, a plurality of tangential inflow openings (**24**) are provided near inflow end of said inner space to cause rotation of inflowing water around said axis, in the path of rotating flow of water in front of the openings (**24**) the reaction chamber (**15**) has a part (**26**) with continuously tapering cross section ending in a short duct (**27**), said path has a widening portion in front of the duct (**27**), and said closed path comprises means for intensively contacting said gas with said water.

5,391,329

PROCESS FOR MAKING A SOLID OPTICAL LIMITER CONTAINING A GRADED DISTRIBUTION OF REVERSE SATURABLE MATERIAL

Thomas K. Dougherty, Playa Del Rey; William E. Elias, El Segundo; Alan R. Kost, Woodland Hills, and Marvin B. Klein, Pacific Palisades, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 23, 1993, Ser. No. 109,884
Int. Cl.[6] B29D *11/00*
U.S. Cl. 264—1.7 15 Claims



1. A process for fabricating an optical limiter comprising a body having an optical axis therethrough and containing a graded distribution of a reverse saturable absorber in a host matrix, said graded distribution lying along said optical axis, the process comprising;

(a) dissolving said reverse saturable absorber and said host matrix in a suitable solvent to form a solution having a pre-selected ratio of reverse saturable absorber to host matrix;

(b) casting said solution onto a surface to form a film;

(c) evaporating said solvent to form a free-standing film having a thickness of about 0.051 to 0.254 millimeters;

(d) performing steps (a)–(c) for each different desired ratio of reverse saturable absorber to host matrix;

(e) stacking said free-standing films in a desired order; and

(f) hot-pressing said stack to form said optical limiter.

5,391,330

PROCESS FOR PREPARING NAPHTHALENEDICARBOXYLIC ACID CONTAINING POLYMER BLENDS HAVING REDUCED FLUORESCENCE

Allan S. Jones, Church Hill, and David E. Mills, Kingsport, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation-in-part of Ser. No. 103,646, Aug. 9, 1993. This application May 5, 1994, Ser. No. 238,771
Int. Cl.[6] C09K *11/00*
U.S. Cl. 264—21 7 Claims

1. A process for preparing a poly(ethylene 2,6-naphthalene dicarboxylate) blend which exhibits reduced fluorescence comprising:

(I) melt blending

(A) 95.0 to 99.9 weight percent of a polyester which comprises

(1) a dicarboxylic acid component comprising repeat units from 0.1 to less than 85 mole percent of a dicarboxylic acid selected from the group consisting of naphthalene-2,6-dicarboxylic acid, and naphthalene-2,6-dicarboxylate ester;

(2) a diol component comprising repeat units from at least 85 mole percent ethylene glycol, based on 100 mole percent dicarboxylic acid and 100 mole percent diol; and

(B) 0.1 to 5.0 weight percent of a fluorescence quenching compound selected from the group consisting of an aro-

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matic ketone and a naphthol compound, provided said fluorescence quenching compound contains an aromatic ring having at least one acyl group or hydroxyl group directly attached to the aromatic ring, wherein the combined weights of (A) and (B) total 100 percent; and (II) forming the blend into an article.

5,391,331

METHOD FOR FACING A WALL

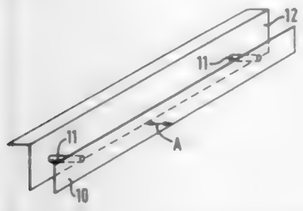
Colin A. Baker, 44 Parvilla, Waltham Abbey, Essex EN9 1QG, United Kingdom

Filed Apr. 23, 1993, Ser. No. 52,565

Claims priority, application United Kingdom, Sep. 21, 1992, 9219867

Int. Cl.[6] B28B *1/16, 7/14, 11/08;* **E04B** *1/16*

U.S. Cl. 264—34 **12 Claims**



1. A method of forming a brickwork resembling layer on a wall, the method comprising the steps of:

(a) applying a layer of unset settable building material to a surface on said wall;

(b) manually pressing into said layer of unset settable building material a bladed tool comprising a plurality of pairs of blades having a predetermined arrangement representative of joint lines of a brickwork pattern, whereby said plurality of pairs of blades slice into said unset settable building material to cut a plurality of pairs of cut lines therein; and

(c) removing said unset building material from between said plurality of pairs of cut lines, whereby said joint lines of said brickwork pattern are formed in said layer of unset building material, which layer is then allowed to set to form said brickwork resembling layer on said wall.

5,391,332

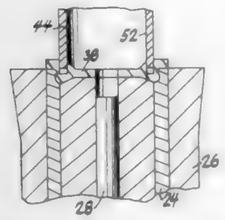
METHOD OF REMOVING STUCK SPRUE

Norman B. Campbell, Chino; Francisco Garcia, Los Angeles, and Stefan Diosan, Norwalk, all of Calif., assignors to WEA Manufacturing Inc., Olyphant, Pa.

Filed Dec. 21, 1993, Ser. No. 171,097

Int. Cl.[6] B29C *45/40*

U.S. Cl. 264—39 **7 Claims**



1. A method of removing a sprue of plastic stuck in a sprue ejector mechanism of an injection molding apparatus including the steps of

heating a hollow tool having an open lower end,

inserting the lower end of said heated tool into the stuck sprue,

cooling said tool after said inserting step to cause said sprue to adhere to said tool,

then rocking said tool to loosen said sprue from said ejector mechanism and

removing said tool and the sprue carried thereby from said ejector mechanism.

5,391,333

METHOD OF MAKING A GASKET

Friedhelm Stecher, Lohrstrasse 72, D-5090 Leverkusen-Hitdorf, and K. Gerd Friedrichs, Beilngries, both of Germany, assignors to Friedhelm Stecher, Leverkusen-Hitdorf, Germany

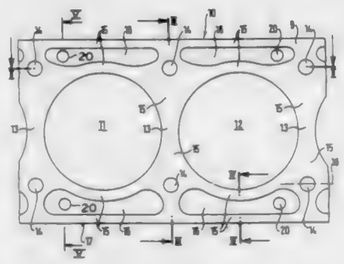
PCT No. PCT/EP91/02149, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO92/08916, PCT Pub. Date May 29, 1992

PCT Filed Nov. 14, 1991, Ser. No. 890,599

Claims priority, application Germany, Nov. 14, 1990, 4036255; Nov. 15, 1990, 4036439; Apr. 11, 1991, 4111791; European Pat. Off., Jul. 15, 1991, 91111793

Int. Cl.[6] B29C *43/58*

U.S. Cl. 264—40.1 **9 Claims**



1. Method for producing a cylinder head gasket for an engine which, prior to assembly is already adapted to a deformation of a cylinder head and engine block to be sealed occurring in an operating state, comprising the steps of:

determining the topography of a cavity, which is formed between the sealing surfaces of the cylinder head and engine block to be sealed due to bending forces imposed on the cylinder head and the engine block in an assembly state;

b) evaluating the determined topography and modifying topographical values determined as a function of the effect of engine-specific parameters under different engine operating conditions, so that a pressure distribution necessary for sealing is achieved considering operating and material parameters of the cylinder head and engine block to be sealed;

c) forming of the cylinder head gasket in accordance with the modified topographical values according to step b), using a material which, in the assembled state and under all operating conditions, is pressure-resistant and rigid against thickness-deformation, so that the cylinder head gasket has, at least in every bearing sealing area, a prefabricated, three-dimensional uninterrupted sealing surface which is complementary to deflection of the surfaces to be sealed.

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METHOD FOR PRODUCING REINFORCED HOSE

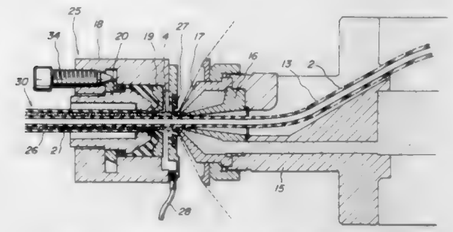
Yukinobu Enomoto, Seki, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Aug. 12, 1993, Ser. No. 105,155

Claims priority, application Japan, Aug. 17, 1992, 4-217950

Int. Cl.[6] B29C *47/06*

U.S. Cl. 264—40.7 **6 Claims**



1. A method for producing a reinforced hose having an inner rubber layer, outer and inner reinforcement layers arranged on the outer circumference of said inner rubber layer, an adhesion rubber layer between the reinforcement layers, and an outermost rubber sheath, said method comprising the steps of: extruding the inner rubber layer, covering the inner rubber layer with cylindrical braided wires prepared by braiding wires on a tapered hollow mandrel to form the inner reinforcement layer on the outer circumference of the inner rubber layer, extruding the adhesion rubber layer on the inner reinforcement layer, firmly covering the adhesion rubber layer with cylindrical braided wires prepared by braiding wires on a tapered hollow mandrel to form the outer reinforcement layer, pulling a composite body, including said inner rubber layer, said inner and outer reinforcement layers and said adhesion rubber layer, at a speed higher than the braiding speed of the outer reinforcement layer and applying a rubber sheath to the composite body to form an unvulcanized hose, pulling said unvulcanized hose at a lower speed that is still higher than said braiding speed to contract said unvulcanized hose in a length direction and expand in a radial direction and, vulcanizing said unvulcanized hose while the pulling speed is kept at said lower speed.

5,391,335

METHOD OF PRODUCING A FOAM-INSULATED ELECTRIC WIRE USING A BLOWING AGENT MIXTURE

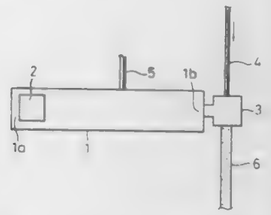
Kazuhide Sakamoto, Tokyo, and Masanobu Sugimura, Ichihara, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 812,754, Dec. 23, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 86,505

Claims priority, application Japan, Dec. 26, 1990, 2-406865; Nov. 11, 1991, 3-294257

Int. Cl.[6] B29C *67/22*

U.S. Cl. 264—45.9 **11 Claims**



1. A method of producing a foam-insulated electric wire, which provides a cell content of at least 50% and a normal temperature deformation ratio not greater than 10%, comprising:

(a) supplying a polyolefin resin composition into a resin inlet of a screw extruder;

(b) injecting a foaming agent through a portion between said resin inlet and an extrusion port of said extruder; and

(c) extruding a molten mixture of said polyolefin resin composition and said foaming agent to coat a surface of a wire conductor with said mixture, wherein said foaming agent is a liquid mixture of at least one liquid compound of Group (I) selected from the group consisting of at least one ether, at least one ester, at least one ketone and at least one saturated hydrocarbon, having boiling points of 100° C. or below, and at least one liquid compound of Group (II) selected from the group consisting of at least one ether, at least one ester, at least one ketone, at least one saturated hydrocarbon and at least one alcohol, having boiling points higher than 100° C., but not exceeding 150° C., said foaming agent comprising said at least one compound of Group (I) and said at least one compound of Group (II) in a mole ratio of Group (I) to Group (II) of 1:1 to 9:1.

5,391,336

METHOD FOR FABRICATING FOAM GASKETS

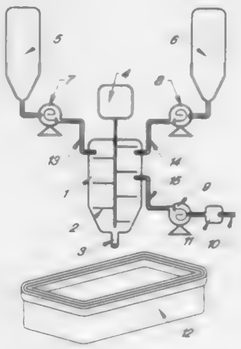
Hiroshi Akitomo; Tsugio Nozoe, and Hideo Shinmi, all of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1993, Ser. No. 173,312

Claims priority, application Japan, Dec. 28, 1992, 4-361140

Int. Cl.[6] B29C *67/22*

U.S. Cl. 264—46.4 **5 Claims**



1. A method for fabricating foam gaskets, said method comprising the sequential steps of

a) transporting to a mixing chamber a base portion and a curing agent portion of a curable organosiloxane foamable composition where said composition foams by reaction of silicon bonded hydrogen atoms with hydroxyl groups and cures by a hydrosilation reaction,

b) blending said base portion with said curing agent portion in said mixing chamber to form said foamable composition,

c) extruding said foamable composition from said mixing chamber through an orifice onto a seal region of a substrate, and

d) allowing said composition to foam and cure to form a gasket with a homogeneous distribution of uniformly small cells, whereby prior to extruding from said mixing chamber, said base portion, said curing agent portion or said foamable composition is injected with an amount of an inert gas under a pressure of from 1 to 7 kg/cm^2 equivalent to from about 13 to about 31 ml of gas per 100 g of said composition and said gas is uniformly dispersed throughout said composition prior to extrusion of said composition from said mixing chamber.

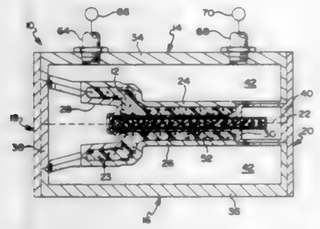
VOL 1171 ISS 3 FE 21 1995 UMI

5,391,337

METHOD FOR MAKING EVAPORATIVE CASTING PATTERNS

Dolores C. Kearney, and Bruno Matz, both of West Bloomfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 24, 1991, Ser. No. 720,147
Int. Cl.[6] B29C 67/22
U.S. Cl. 264—51 8 Claims



1. A method for making patterns used in evaporative casting comprising:
selecting a plurality of mold parts, each mold part having at least one mold wall configured to shape a surface portion of said pattern and at least one mold housing wall spaced from said at least one mold wall to form heat exchange cavities between at least one said mold wall and said housing wall;
inserting a heat pipe closed to fluid communication with the heat exchange cavity in at least one said mold part adjacent at least one mold wall portion and in communication with said heat exchange cavity;
joining said mold parts so that said mold walls confine a part forming space and said housing walls confine said heat exchange cavities of each mold part in fluid communication with said heat exchange cavities of an adjacent mold part;
introducing heat expandable foam making material into said part forming space;
introducing a heated fluid heat exchange medium into said heat exchange cavities;
removing said heated fluid medium from said cavity after a predetermined time; and
separating said plurality of mold parts to release said pattern.

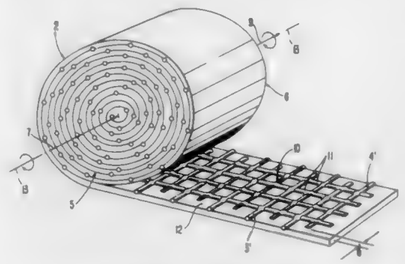
5,391,338

MANUFACTURE OF A CARBON PARTICLE FILTER

Wolfgang Bandel, Leinfelden-Echterdingen; Helmut Daudel, Schorndorf; Gerhard Griebling, Habnenweg 14, 5431 Mogendorf; Alfred Normann, Alsbach, and Friedrich Sperling, Montabaur, all of Germany, assignors to Daimler-Benz AG and Gerhard Griebling, both of Germany, a part interest

Filed Feb. 27, 1989, Ser. No. 315,903
Claims priority, application Germany, Feb. 26, 1988, 3806131.7
Int. Cl.[6] C04B 38/06
U.S. Cl. 264—59 33 Claims

1. A process for manufacturing from a layered or woven porous ceramic material a carbon particle filter with inlet channels which open toward an off-flow side of the filter spaced from the inlet channels, comprising the steps of applying a coating of slip-like ceramic starting material to a fabric having longitudinal threads which extend at least in the longitudinal direction of the filter and are displaced with respect to one another by a spaced interval in the longitudinal direction such that an end of alternate ones of the longitudinal threads are offset from an end of adjacent longitudinal threads by the spaced interval, as viewed transversely to the longitudinal direction, forming the carbon filter body by layering the coated fabric, and then ceramic firing the carbon filter body to



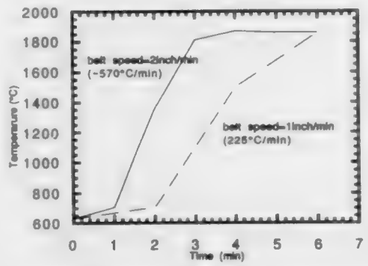
burn away the longitudinal threads to produce the inlet and outlet channels.

5,391,339

CONTINUOUS PROCESS FOR PRODUCING ALUMINA-TITANIUM CARBIDE COMPOSITES

George C.-T. Wei, Weston, and John Walsh, Milford, both of Mass., assignors to Valenite Inc., Madison Heights, Mich.

Filed Dec. 31, 1992, Ser. No. 999,501
The portion of the term of this patent subsequent to Aug. 30, 2011, has been disclaimed.
Int. Cl.[6] C04B 35/10, 35/64
U.S. Cl. 264—65 12 Claims



1. A method of making a continuously sintered ceramic body comprising the steps of:
preparing a ceramic green body from a powder mixture comprising aluminum oxide, or a precursor thereof, and a hard refractory material selected from the group consisting of titanium carbide and titanium carbonitride, or a precursor thereof, in a weight ratio selected to produce in said sintered ceramic body a weight ratio of aluminum oxide to hard refractory material of about 40:60 to about 95:5, and further comprising an effective amount of a densification aid, and titanium dioxide in an amount selected to produce in said sintered ceramic body a weight ratio of titanium dioxide to aluminum oxide plus hard refractory material of 0:100 to about 2:98;
continuously rapid sintering said green body by heating in a sintering atmosphere using a tungsten element belt furnace including at least one heating zone to a sintering temperature of about 1800°–1920° C. for a time sufficient to densify said green body to a density of at least about 4.12 g/cc, wherein the rate of travel of said green body through said tungsten element belt furnace is selected to provide a heating rate above about 800° C. between about 225° C./min. and the rate at which said green body experiences thermal shock, and said sintering atmosphere is selected from the group consisting of argon-hydrogen and nitrogen-hydrogen in a molar ratio of argon or nitrogen to hydrogen of about 92:8 to 100:0;
introducing carbon monoxide to said sintering atmosphere during said sintering step only after said sintering temperature exceeds about 1400° C., wherein the amount of said carbon monoxide introduced is selected to inhibit reaction between said aluminum oxide and said hard refractory material.

5,391,340

METHOD OF MANUFACTURE OF TOP COATED CELLULOSIC PANEL

George E. Mirous, Tacoma, and Bernard E. Sullivan, Kent, both of Wash., assignors to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Filed Jun. 25, 1993, Ser. No. 81,210
Int. Cl.[6] B32B 27/00
U.S. Cl. 264—112 4 Claims

1. A process for the manufacture of a panel, said process comprising:
forming into a planar panel an admixture comprising cellulosic fragments coated with a sufficient quantity of binder resin to bind together said fragments under heat and pressure;
applying to at least one surface of said planar panel a top coating exhibiting a softening point within the range from about 130° to about 300° C., wherein said top coating comprises: (a) a thermoset resin having free formaldehyde admixed with said resin; and (b) a thermoplastic polymer thoroughly admixed with said resin, wherein said thermoplastic polymer exhibits amine groups capable of reacting with at least a portion of said free formaldehyde under resin curing conditions;
heating the coated panel to a temperature and under a pressure sufficient to cure said binder resin and said top coating, and
embossing a pattern onto the coated side of said panel.

5,391,341

PROCESS AND BINDER FOR THE MANUFACTURE OF CERAMIC SHELLS FOR USE AS MOLDS

Heinrich Ballewski, Wittrahmsweg 39, D-4133 Neukirchen-Vluyn; Herbert Graf, Eichsenstrasse 190, D-4130 Moers 1, and Wolfgang Grossmann, Boscheideweg 40, D-4130 Moers 2, all of Germany, assignors to Heinrich Ballewski, Neukirchen-Vluyn; Herbert Graf and Wolfgang Grossmann, both of Moers, all of Germany

PCT No. PCT/EP91/01217, § 371 Date Jan. 17, 1992, § 102(e) Date Jan. 17, 1992, PCT Pub. No. WO92/12813, PCT Pub. Date Aug. 6, 1992
PCT Filed Jun. 28, 1991, Ser. No. 820,869
Claims priority, application Germany, Jan. 19, 1991, 4101501; May 22, 1991, 4116609
Int. Cl.[6] B29C 67/00
U.S. Cl. 264—113 15 Claims

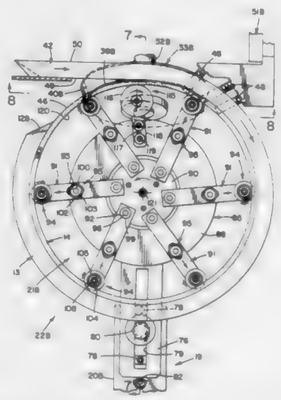
1. A process for preparing ceramic shells for use as casting molds, the process comprising the steps of:
a) preparing a pattern of the part to be cast;
b) dipping said pattern into a slurry of refractory material and binder, said binder containing a colloidal, aqueous silica sol, and an emulsion from the group consisting of silicon-organic compounds to form a wet coating on the mold which after drying forms a dry coating that is substantially impermeable to liquid water and substantially permeable to water vapor, said aqueous colloidal silica SOL contains 0.005% to 20% by weight of the total water content of the binder of said emulsion from the group of silicon organic compounds;
c) spraying a coarse refractory powder onto said wet coating;
d) drying the wet coating;
e) repeating steps b), c) and d) until a ceramic shell of desired thickness has be created.

5,391,342

METHOD OF FORMING AN APEX FILLER

Dale R. Moody, Dana Point, and Robert A. Cronin, Irvine, both of Calif., assignors to Heico Aluminum Products, Inc., Akron, Ohio

Division of Ser. No. 791,043, Nov. 12, 1991, Pat. No. 5,203,938, which is a division of Ser. No. 648,898, Jan. 31, 1991, Pat. No. 5,100,497. This application Feb. 17, 1993, Ser. No. 18,650
Int. Cl.[6] B29C 43/40, 47/08
U.S. Cl. 264—210.2 2 Claims



1. A method of forming an apex filler comprising the steps of:
extruding a substantially linear, elastomeric strip having a base and a pair of sidewalls converging from the base to an apex;
engaging the sidewalls of the elastomeric strip with a nip presented by a pair of opposed frusto-conical rollers and a base support to engage the base of the elastomeric strip; and
rotating the rollers to work the elastomeric strip within the nip and at the same time to effect rotation of the base at a first linear speed, the apex at a second, and greater, linear speed and the sidewalls at linear speeds substantially proportional to the distance from the base to the apex.

5,391,343

THIN-WALLED ARTICLES OF POLYURETHANEUREA

Richard L. Dreibelbis, Waynesboro; Nathan E. Houser, Afton, both of Va., and Jacob Lahijani, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 26, 1992, Ser. No. 965,600
Int. Cl.[6] B29D 7/00; B28B 1/38; C08J 3/20; C08L 75/00
U.S. Cl. 264—216 2 Claims

1. A process for fabricating a thin-walled elastic article comprising
preparing a polyetherurethaneurea by reacting methylene-bis(4-phenylisocyanate) with a polyether diol derived from a homopolymer of tetrahydrofuran or a copolymer of tetrahydrofuran and 3-methyltetrahydrofuran in a weight ratio in the range of 96/4 to 80/20, said polyether diol having a number average molecular weight in the range of 3,000 to 6,000, to form an isocyanate-capped prepolymer having an isocyanate group content in the range of 1.4 to 2.0 weight %, and
then chain-extending the isocyanate-capped prepolymer

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with ethylenediamine or 1,3-diaminocyclohexane to form the polyetherurethaneurea,
forming a solution of the polyetherurethaneurea in an organic solvent that is substantially free of metal chlorides, the polyetherurethaneurea being present in the solution at a concentration in the range of 12% to 20% by total solution weight, and the solution having a viscosity, measured at 30° C., in the range of 25 to 125 poise,
degassing the thusly formed polyetherurethaneurea solution,
dipping a mandrel into the solution and then
removing the mandrel therefrom to form a solution-coated mandrel,
drying the coated mandrel and
removing the resulting dried thin-walled article from the mandrel.

5,391,344

PRODUCTION OF CLASS A SURFACE OF FIBER REINFORCED POLYURETHANE MOLDED PRODUCTS

Randall C. Rains, Pittsburgh, and Kristen L. Parks, Wexford, both of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 798,479, Nov. 26, 1991, abandoned. This application Dec. 1, 1993, Ser. No. 159,891
Int. Cl.[6] B29C *45/14*
U.S. Cl. 264—257 **8 Claims**

1. A process for preparing a Class A surface, fiber reinforced molded article comprising:
(A) providing a mold, including at least two cooperating mold sections, having a cavity therein for forming the fiber reinforced molded article, wherein at least a portion of the mold cavity defines a mold cavity surface, said surface having an SPI-SPE polished rating of at least 3, and against which surface the article is to be molded,
(B) laying one or more fiber surfacing veils against said mold cavity surface in an amount of at least 0.1 kilogram per square meter,
(C) laying one or more layers of a reinforcing fiber mat over said surfacing veil, said mat being used in an amount of at least 0.5 kilograms per square meter,
(D) laying one or more fiber surfacing veils over said fiber mat in an amount substantially the same as the amount of surfacing veil laid over said mold cavity surface, the total amount of said surfacing veils and said mat being such that the total amount of fiber in said molded article is from 15 to 45% by weight based upon the total weight of the molded product,
(E) closing the mold,
(F) injecting a reaction mixture into said mold cavity, wherein the reaction mixture fills the mold cavity and simultaneously impregnates said mat and deforms said veil into intimate contact with said mold cavity surface, said reaction mixture comprising one or more polymethylene poly(phenyl isocyanates) (1) having a diisocyanate content of from 25 to less than 50% by weight, (2) containing less than 2% by weight of 2,4'-methylene bis(phenyl isocyanate), and (3) containing less than 0.5% by weight of 2,2'-methylene bis(phenyl isocyanate), and a polyol blend comprising: (i) at least one polyether polyol having an hydroxyl functionality of from 2 to 8 and a molecular weight of from 350 to below 1800, (ii) at least one hydroxyl functional organic material containing from 2 to 8 hydroxyl groups and having a molecular weight below 350, components (i) and (ii) being used in a weight ratio of from about 10:1 to about 1:10, and (iii) no more than 45% by weight based on the total weight of components (i), (ii), and (iii), of one or more active hydrogen containing compounds having a molecular weight of 1800 or more, said reaction mixture being processed as a one shot system by the RIM process at an isocyanate index of from about 70 to about 130,
(G) allowing the reaction mixture to fully react, and removing the resultant molded product from the mold.

5,391,345

SURGICAL WRAP

Harish Patel, Norfolk, Mass., assignor to The Kendall Company, Mansfield, Mass.

Filed Mar. 31, 1994, Ser. No. 220,857
Int. Cl.[6] B32B *31/04*
U.S. Cl. 264—258 **5 Claims**



1. A process for producing an eight ply surgical wrap comprising, in order, the steps of:
(1) weaving a single ply gauze fabric having a first and second selvege edge;
(2) purifying the fabric by bleaching and washing the single woven gauze fabric;
(3) folding the purified single ply fabric into a four ply fabric;
(4) overfeeding the bleached and washed four ply fabric into a hot bath and while the fabric is in the hot bath mechanically embossing the fabric to cause the fabric warp and fill yarns to become distorted into an oblique and serpentine arrangement;
(5) removing the fabric from the hot bath and drying the fabric without tension; and
(6) folding the four ply fabric into an eight ply fabric.

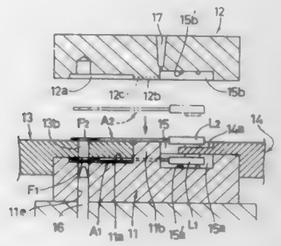
5,391,346

METHOD FOR MAKING MOLDED PHOTOINTERRUPTERS

Nobuyuki Nakamura, and Kazunori Fuji, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 20, 1992, Ser. No. 979,281
Claims priority, application Japan, Nov. 20, 1991, 3-304759; Feb. 25, 1992, 4-038140; Sep. 16, 1992, 4-246465
Int. Cl.[6] B29C *45/14, 45/32*
U.S. Cl. 264—272.14 **8 Claims**

1. A method of making molded photointerrupters including light emitting and light receiving devices by using a molding unit, a first leadframe carrying a plurality of said light emitting devices, and a second leadframe carrying a plurality of said light receiving devices, the molding unit comprising: a lower mold member; an upper mold member movable vertically toward and away from the lower mold member; and a pair of side mold members movable laterally toward and away from each other between the upper and lower mold members; the respective mold members forming a plurality of molding cavities when the molding unit is closed; the method comprising the successive steps of:
placing one of the first and second leadframes on the lower mold member in a generally horizontal posture while the upper mold member is raised away from the lower mold member with the respective side mold members retreated away from each other;
advancing the respective side mold members toward each other;
placing the other of the first and second leadframes on one of the side mold members in a generally horizontal posture such that said one of the side mold members is positioned between said first and second leadframes;



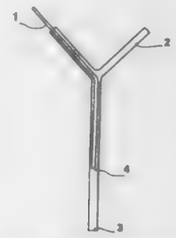
lowering the upper mold member toward the lower mold member to close the molding unit with a light emitting device and a light receiving device in each of said plurality of molding cavities; and
introducing fluid resin into the respective molding cavities to form said molded photointerrupters.

5,391,347

PROCESS FOR THE PRODUCTION OF SINTERED NUCLEAR FUEL PELLETS FROM PRECIPITATED SOLUTIONS WITH THE AID OF HYDROGEN PEROXIDE IN AN ACID MEDIUM

Bernard Bastide, RN 75 Le Village, 38500 La Buisse, and Antoine Floreancig, 4 Les Mas de la Murette, 38140 La Murette, both of France

Continuation of Ser. No. 808,874, Dec. 19, 1991, abandoned. This application Jan. 12, 1994, Ser. No. 180,478
Claims priority, application France, Dec. 19, 1990, 90 16381
Int. Cl.[6] B22F *1/00*; C01G *56/00*
U.S. Cl. 419—38 **13 Claims**



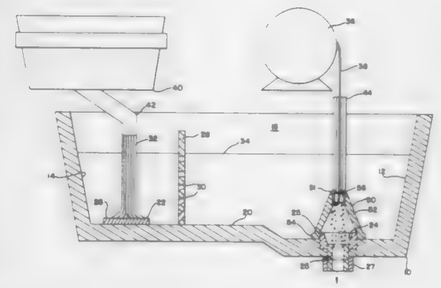
1. Process for obtaining pellets of sintered oxides MxOy, M representing one or more metals or elements used in the constitution of nuclear fuel pellets, said process comprising the successive steps of:
(a) precipitation treatment of an initial solution of soluble salts of the element or elements M in an acid medium by means of a hydrogen peroxide solution;
(b) obtaining a precipitate of peroxides in suspension in a mother liquor;
(c) separating said precipitate from said mother liquor;
(d) drying, calcining and optionally reducing said precipitate leading to intermediate oxide powders; and,
(e) compressing and sintering said powder,
wherein said precipitation treatment is carried out in an acid medium in the absence of a neutralizing agent in a reactor where there is an instantaneous dispersion of one reagent in the other in a continuous liquid phase confined in an enclosure having minimal dimensions, in order to obtain, also instantaneously, a homogeneous mixture and a precipitation of nuclei, while avoiding enlargement of said nuclei through rapid exhaustion of said mother liquors, said process making it possible to directly obtain pellets of sintered oxides having a density generally exceeding 96% of a theoretical density and improved quality, while avoiding particular conditioning treatments of said intermediate oxide powders.

5,391,348

APPARATUS AND METHOD FOR MAKING STEEL ALLOYS IN A TUNDISH

Madjid Soofi, St. Charles, Ill., assignor to Magneco/Metrel, Inc., Addison, Ill.

Filed Jan. 11, 1994, Ser. No. 179,930
Int. Cl.[6] C21B *3/04*
U.S. Cl. 420—129 **16 Claims**



1. A method of making steel alloy, comprising the steps of:
feeding a base steel into a tundish vessel;
purifying the base steel inside the tundish vessel;
feeding the purified base steel to a chamber located in the tundish vessel;
adding one or more alloying ingredients to the purified base steel in the chamber;
mixing the alloying ingredients with the purified base steel to form the steel alloy in the chamber in the tundish vessel; and
discharging the steel alloy from the tundish vessel.

5,391,349

METHOD FOR INHIBITING CORROSION OF METAL IMBEDDED IN CONCRETE

Charles N. Hansen, 1448 S. 1700 East, Salt Lake City, Utah 84108-2602

Filed Nov. 12, 1993, Ser. No. 151,210
The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.
Int. Cl.[6] C23F *11/00, 11/08*
U.S. Cl. 422—7 **23 Claims**

14. A method for inhibiting the corrosion of a metal imbedded in concrete which contains a chloride, comprising the steps of:
applying water to the concrete to draw chloride ions away from the metal and into the water;
removing the water containing chloride ions; and
applying a composition comprising a corrosion inhibiting effective amount of ammonium carbamate to the concrete.

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5,391,350

APPARATUS AND METHOD FOR STERILIZING CONTAINERS IN AN AUTOCLAVE

Jeffrey R. Wagner, Shortsville, N.Y., assignor to Nalge Company, Rochester, N.Y.

Filed Mar. 9, 1994, Ser. No. 208,639
Int. Cl.[6] A61L 2/06
U.S. Cl. 422—26 17 Claims



8. A method of sterilizing a container and closure in an autoclave comprising:

providing a container having an opening, a closure capable of sealing said opening of said container, a bag with an interior and having an opening, and a fastener,

placing said closure within said interior of said bag in non-sealing relationship to said opening of said container,

placing said opening of said container into said interior of said bag through said bag opening,

forming a sterilizable system by fastening said opening of said bag in encircling relation to said container opening using said fastener with said closure located within said bag interior, and

maintaining said sterilizable system in an autoclave until said sterilizable system is sterilized.

5,391,351

BODY WASTE FLUIDS SOLIDIFICATION SYSTEM

Jack W. Kaufman, 357 Frankel Blvd., Merrick, N.Y. 11566

Division of Ser. No. 507,966, Apr. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 215,370, Jul. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 105,875, Oct. 7, 1987, abandoned. This application Oct. 5, 1992, Ser. No. 956,582
Int. Cl.[6] A61L 2/16
U.S. Cl. 422—28 31 Claims

1. A body waste fluid solidification device for facilitating disposal, comprising:

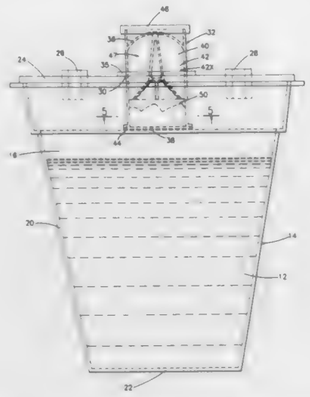
a lid having a waste inlet line;

a substantially rigid, self standing medical collection vessel, having a rim, said vessel for collecting body waste fluids which flow via said waste inlet line in said lid for collection in said medical collection vessel, and said lid closing off the rim of said medical collection vessel for sealing same from ambient conditions; container means separate from said medical collection vessel of hollowed cylindrical shape having a chamber substantially filled with a hydrophilic xerogel composition;

said container means further having a chamber separating means for separating at least one disinfectant from said hydrophilic xerogel, said chamber separating means formed by at least a continuous side wall and an upper wall flexibly and integrally connected to said continuous side wall;

said container means mounted in an opening on said lid; and

a pressure responsive plunger release means operatively associated with said container means for sequentially dispensing when activated by pressure said at least one disinfectant and then subsequently said hydrophilic xerogel composition when desired from said container means into said medical collection vessel for contacting said body waste fluids collected in said medical collection vessel, for said initial sterilizing or disinfecting and then subsequently for solidifying said fluids, as desired, thereby



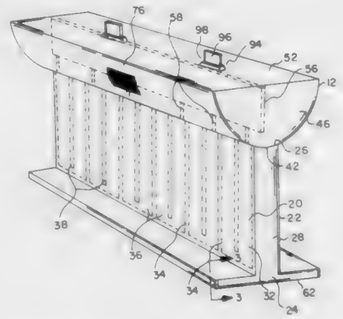
minimizing the hazards of handling the solidified waste fluids collected in said substantially rigid, self standing medical collection vessel.

5,391,352

BLOOD ANALYSIS APPARATUS

Billy E. Hendrix, 5106 Foxbridge Cir., Clearwater, Fla. 34260, and Kurt H. Myrmel, 5430 Worthington Loop, Palm Harbor, Fla. 34685

Filed Sep. 7, 1993, Ser. No. 117,412
Int. Cl.[6] G01N 21/00
U.S. Cl. 422—65 2 Claims



1. A system for analyzing a sample of blood for a plurality of characteristics comprising, in combination:

a plurality of cuvettes, each cuvette having a front wall, a rear wall, a closed lower edge, an open upper edge and parallel side walls therebetween, thereby providing a lower space of a predetermined volume, a plurality of long divider members located at spaced locations between the front and rear walls and the upper and lower edges to divide up the cuvette into a plurality of separate chambers, each chamber having an intermediate short divider member extending downwardly from the upper edge to a location above the lower edge thereby forming the chambers into essentially U-shaped chambers, a first horizontal sheet extending across the divider members between the front and rear walls and side walls to seal the chambers one with respect to the other, each chamber supporting a

vacuum with a different reagent therein, a second horizontal sheet above the first horizontal sheet to form a horizontal reservoir with a fluid diluent positioned between the horizontal sheets to overlie the chambers, a plate within the reservoir with downwardly directed pins at spaced points corresponding to the separated chambers whereby downward movement of the plate and pins will puncture the first horizontal sheet and allow the flow of fluid from the horizontal reservoir into the separated chamber for reacting with the reagents, the cuvette having a lower extent with a horizontal support for being retained by a base, the second horizontal sheet also being formed with a small aperture with an associated stopper for allowing the addition of body fluids into the horizontal reservoir for analysis;

a housing assembly having a fixed frame and a movable support subassembly reciprocable with respect to the frame, the frame including a base with a longitudinal slot for retaining said plurality of cuvettes in edge-to-edge relationship in a linear array and means to move the movable support subassembly with respect to the retained cuvettes in a linear path of travel; and

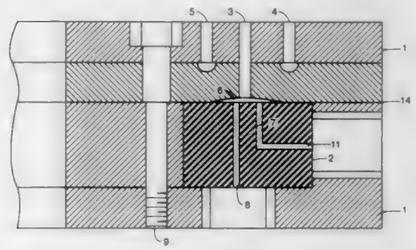
processing means in the housing assembly including first means to drive the pins downwardly to form holes in the first horizontal sheet with a hole over each chamber whereby body fluids intermixed with diluent in the horizontal reservoir will be drawn into the chambers for mixing with the reagent to facilitate the analysis thereof, the processing means further including a movable fiber optic light source and an associated movable fiber optic sensor located in an operative relationship with the light source on opposite sides of a path of travel and fixed computer means operating with the sensor to determine a plurality of characteristics of the fluids within the chambers, one characteristic for each chamber.

5,391,353

METERING DEVICE WITH RADIAL ARRANGEMENT OF VALVES

Horst Graffunder, Berlin, Germany, assignor to WITA GmbH, Technologiezentrum Teltow, Teltow, Germany

PCT No. PCT/DE91/00333, § 371 Date Nov. 5, 1992, § 102(e) Date Nov. 5, 1992, PCT Pub. No. WO91/17420, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 23, 1991, Ser. No. 949,238
Claims priority, application Germany, May 7, 1990, 4014602
Int. Cl.[6] G01N 1/00
U.S. Cl. 422—103 4 Claims



1. A metering device comprising a plurality of independently controllable valves, arranged substantially in a circle on an annular support,

the annular support enclosing a substantially circular hollow space and consisting of a first ring and a second ring, the second ring consisting of a chemically inert material, the first ring being secured to the second ring by a holding element, and a diaphragm consisting of a chemically inert material being disposed between the first ring and the second ring,

each controllable valve comprising a through-hole radially disposed in the first ring, said hole debouching into a dome-shaped depression, and two through-holes in the second ring debouching opposite the dome-shaped depression, one of the two through-holes of second rise serving as a feed line and the other as a discharge line,

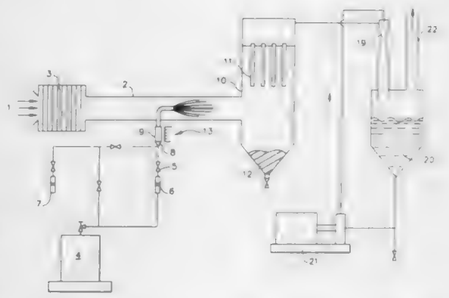
wherein the valve is in a closed condition when the diaphragm is pressed against the second ring and the valve is in an open condition when the diaphragm is lifted off the second ring.

5,391,354

PROCESS FOR GAS PHASE CONVERSION OF DIETHYLZINC TO ZINC OXIDE POWDER

George E. Petersen, Fremont, and Randall N. Robinson, San Jose, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 30, 1993, Ser. No. 112,923
Int. Cl.[6] C01G 9/02
U.S. Cl. 422—129 6 Claims



1. A system for converting a zinc compound in liquid form to zinc oxide powder, comprising:

a vessel containing a zinc compound in liquid form, the zinc compound being selected from the group consisting of diethylzinc and dimethylzinc;

a source of dry nitrogen gas;

a first conduit connected to an outlet of said vessel;

a second conduit connected to an outlet of said source of dry nitrogen gas;

means for atomizing the liquid zinc in a flow of compound the dry nitrogen gas, said atomizing means being connected to said first conduit for receiving liquid zinc compound from said vessel and to said second conduit for receiving dry nitrogen gas from said source;

means coupled to the atomizing means for heating the atomized liquid zinc compound in the dry nitrogen gas to a temperature above the vaporation temperature of the zinc compound thereby forming a gas mixture containing gaseous zinc compound;

a third conduit connected to an ambient air inlet for receiving ambient air;

means for injecting the gas mixture containing gaseous zinc compound into ambient air inside said third conduit, wherein a fume of zinc oxide particles suspended in a mixture of gaseous reaction products is formed; and

means for separating the zinc oxide particles from the gaseous reaction products to form zinc oxide powder.

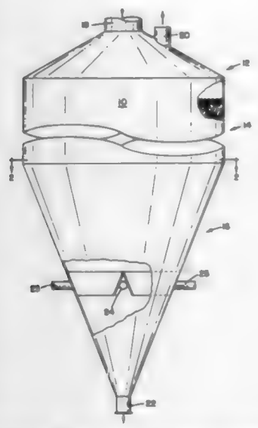
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5,391,355

VESSEL FOR THE TREATMENT OF PARTICULATE MATERIALS

Merton L. Dibble, Kingsport, and Paul K. Scherrer, Johnson City, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jul. 21, 1993, Ser. No. 95,644
Int. Cl.[6] C08F 2/00; B01J 8/08; C08G 2/00
U.S. Cl. 422—131 4 Claims



1. A substantially vertically disposed tubular reactor for the continuous gravity plug flow solid state polymerization of low molecular weight polyester resin particles to high molecular weight polyester resin, said reactor comprising a continually downwardly flowing column of polymerizing polyester resin maintained at an essentially constant level by the continuous addition of low molecular weight polyester resin to the reactor at a rate essentially equivalent to the rate of continuous withdrawal of high molecular weight polyester resin from the reactor, said reactor further comprising

(a) a top section having an fluid outlet and a low molecular weight polyester resin inlet to allow continuous addition of said resin to said reactor,

(b) an elongated tubular intermediate section fixed to and cooperating with said top section for the uniform plug flow of polyester resin particles therethrough by gravity,

(c) a converging bottom section fixed to and cooperating with said tubular section, and having a high molecular weight polyester resin outlet to permit continuous withdrawal of said resin from said reactor,

(d) means for introducing inert fluid into said reactor for countercurrent flow with respect to said polyester resin particles, and

(e) means for improving the uniformity of said inert fluid flow through said reactor without hindering plug flow of the particulate polyester resin material, said means comprising

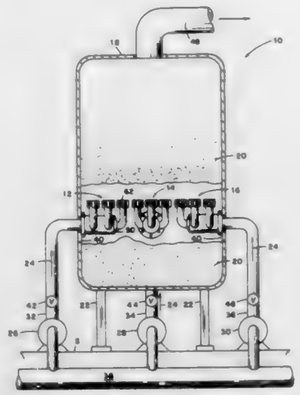
(1) at least one inert fluid inlet in said reactor and a generally horizontally extending fluid distributor extending therefrom for the introduction of inert gas into said vessel, said fluid distributor having a polyester particle deflector portion and a fluid discharge portion, the particle deflector portion being sloped relative to the gravity flow of polyester resin particles such that mass flow of said particles will occur and the fluid discharge portion having at least one opening positioned to discharge fluid substantially horizontally or at an angle between substantially horizontal and the direction of flow of polyester resin particles.

5,391,356

FLOW DISTRIBUTOR FOR A FLUIDIZED BED REACTOR

Raymond P. Thorman, Mahwah, N.J., assignor to International Paper Company, Purchase, N.Y.

Filed Mar. 26, 1993, Ser. No. 37,264
Int. Cl.[6] B01J 8/18, 8/44
U.S. Cl. 422—143 9 Claims



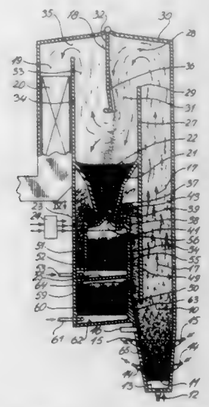
1. A flow distributor for distributing a flow of fluid to a bed of particles in a fluidized bed reactor which comprises a plurality of spaced apart elongate discharge conduits positioned adjacent one another within said reactor for distributing the flow of fluid into said bed of particles from a plurality of spaced apart locations spread generally across the width of the reactor, each of said conduits having an entrance open end and an exit open end and a substantially uniform cross-section between the entrance end and the exit end to promote a substantially linear flow path for fluid flowing from the entrance open end to the exit open end for delivering the flow of fluid from the conduit into the reactor from said spaced apart locations, discharge conduit support means located within said reactor for supporting said discharge conduits within said reactor at locations in the reactor adjacent one another, delivery means for delivering a flow of fluid to said discharge conduits from a fluid source outside of said reactor for being delivered to the reactor through said exit open ends of said conduits, and a grid plate supported in each of said conduits between the entrance end and the exit end, each of said grid plates having a plurality of substantially regularly spaced apart openings, each of said openings being defined by a surrounding wall with the wall of each opening being disposed substantially parallel to the walls of the other openings of the grid plate and to the length axis of its associated conduit, wherein the length of each conduit between the grid plate and the exit open end is no less than the center-to-center distance between adjacent openings of the grid plate therein divided by about 0.096, whereby the flow entering each conduit through the entrance open end is divided by passage through the grid plate into a plurality of regularly spaced apart, substantially parallel flow streams emanating from said openings in said grid plate and expanding from said openings at an included angle of about 11 degrees and wherein said plurality of substantially parallel flow streams merge together to provide a merged flow stream which extends substantially across the width of the conduit prior to discharge from the exit open end so that turbulence and creation of low pressure zones within the conduit are avoided and the length of the conduit may be reduced for a given flow velocity of fluid entering the conduit as compared to a conduit which does not contain said grid plate.

5,391,357

CIRCULATING FLUIDIZED BED REACTOR

Peter Stoholm, Rormosen 7, 1. th., Roskilde, Denmark DK-4000

Continuation of Ser. No. 28,610, Mar. 8, 1993, Pat. No. 5,275,788, which is a continuation of Ser. No. 721,489, Jul. 9, 1991, abandoned. This application Dec. 29, 1993, Ser. No. 175,118
Claims priority, application Denmark, Nov. 11, 1988, 6334/88
The portion of the term of this patent subsequent to Jan. 9, 2011, has been disclaimed.
Int. Cl.[6] F27B 15/08; B01J 8/18; F22B 1/00; F23G 5/00
U.S. Cl. 422—145 24 Claims



1. A circulating fluidized bed reactor comprising

a vertical extending reaction chamber defined by upright walls and a bottom surface, and having an upper part and a lower part, with means for providing a fluidized bed in the lower part comprising means for supplying fluidizing gas from outside the reactor,

said means for supplying comprising first inlet means for distributing fluidizing gas over the bottom surface and second inlet means in the upright walls,

gas discharge means communicating with the upper part of the reaction chamber for discharging a flow of gas and particulate solid material therefrom, and comprising a separator defining a separator chamber for separating solid particulate material from a flow of gas being discharged, the separator chamber and reaction chamber being arranged side by side,

recycling means for recycling separated particulate solid material from the separator chamber to the reaction chamber and including a downwardly extending recycling passage interconnecting the separator chamber and the reaction chamber, a receptacle in said recycling passage, arranged below the separator chamber for receiving separated particulate solid material from the separator chamber and accumulating particulate material across the width of said recycling passage, thereby forming a pressure barrier across the recycling passage, said receptacle having an upper inlet and an outlet disposed therebelow,

said recycling passage defining at least two separate particle return paths disposed between the receptacle outlet and the reaction chamber for returning particles from the receptacle to the reaction chamber, and including particle discharge means located adjacent to the receptacle outlet for directing particles from the receptacle to the respective return paths, at least one of said return paths comprising particle cooling means comprising one or more cooling devices located below the receptacle,

said reactor including a common partition wall between the reaction chamber and the recycling passage, at least one particle return passage being defined between the partition wall and the adjacent one or more cooling devices,

recycling outlet means comprising at least one opening into said reaction chamber providing fluid communication between said particle return paths and said reaction chamber, at least one said opening being located at a vertical elevation such that it is above both said first and second inlet means, and

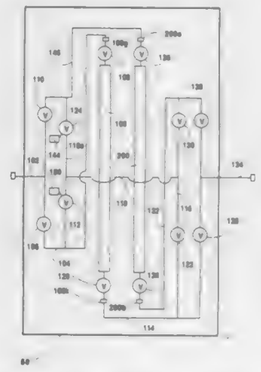
control means operatively connected to the particle discharge means for controlling the discharge of particles to the respective return paths.

5,391,358

GAS PURIFICATION SYSTEM

Carl J. Heim, Amherst, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Aug. 21, 1992, Ser. No. 933,136
Int. Cl.[6] B01D 53/14, 53/30; B01J 8/04; C01B 23/00
U.S. Cl. 422—171 11 Claims



1. A purification system capable of shifting or reversing a flow of contaminated helium group gas, said system comprising:

(a) at least one first vessel containing desiccants, adsorbents, and/or oxidation catalysts, said at least one first vessel being capable of being maintained at about 1 psig to about 250 psig and having at least one inlet and at least one outlet;

(b) at least one second vessel containing desiccants, adsorbents and/or oxidation catalysts, said at least one second vessel being capable of being maintained at about 1 psig to about 250 psig and having at least one inlet and at least one outlet;

(c) at least one first conduit means for connecting said at least one outlet of said first vessel and said at least one inlet of said second vessel, said at least one first conduit means having at least one sampling means;

(d) at least one second conduit means for connecting said at least one inlet of said first vessel and said at least one first conduit means, said at least one second conduit means having at least two valves for directing a flow of contaminated helium group gas directly to said at least one first conduit means or directly to said first vessel;

(e) at least one helium group gas inlet conduit means having first and second ends, with the first end being connected to said at least one second conduit means between said at least two valves;

(f) a source containing a high purity helium group gas in fluid communication with said at least one helium group gas inlet conduit;

(g) at least one third conduit means for connecting said at least one outlet of said second vessel and a section of said

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at least one second conduit means, said section being disposed between said at least one inlet conduit mean and said at least one inlet of said first vessel; and

(h) at least one outlet means disposed on or connected with said at least one third conduit means and/or said at least one first conduit means.

5,391,359

WATER DISPERSIBLE THICKENERS COMPRISING HYDROPHILIC POLYMERS COATED WITH PARTICULATE FATTY ACIDS OR THE SALTS THEREOF

Bharat B. Patel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 29, 1993, Ser. No. 11,053

Int. Cl.[6] B05D *1/00;* **C09D** *101/26, 103/02, 105/00*

U.S. Cl. 427—180 **32 Claims**

15. A method for improving the water dispersibility of water soluble particulate polymers which comprises:

contacting a water soluble particulate polymer selected from the group consisting of cellulose ethers, starches, and gums, with a finely divided particulate dispersant comprised of at least one water insoluble or sparingly soluble fatty acid or fatty acid salt thereof in an amount effective to improve the dispersibility of said water soluble particulate polymer, so that the surface of said particles of said water soluble particulate polymer has dispersed thereon said finely divided particulate dispersant.

5,391,360

OVERCENTER, CAM DRIVEN LOCKING MECHANISM

Werner W. Kochte, Kent, and Bill R. Stanford, Mentor, both of Ohio, assignors to Steris Corporation, Mentor, Ohio

Continuation-in-part of Ser. No. 681,118, Apr. 5, 1991, Pat. No. 5,217,698, which is a continuation-in-part of Ser. No. 349,304, May 9, 1989, Pat. No. 5,091,343, which is a continuation-in-part of Ser. No. 140,388, Jan. 4, 1988, Pat. No. 4,892,706, which is a continuation-in-part of Ser. No. 826,730, Feb. 6, 1986, Pat. No. 4,731,222, said Ser. No. 681,118, is a continuation-in-part of Ser. No. 342,189, Apr. 24, 1989, Pat. No. 5,116,575, which is a continuation-in-part of Ser. No. 229,917, Aug. 8, 1988, Pat. No. 5,077,008, which is a continuation-in-part of Ser. No. 165,189, Mar. 7, 1988, Pat. No. 5,037,623, and a continuation-in-part of Ser. No. 140,388, Mar. 7, 1988, said Ser. No. 165,189, is a continuation-in-part of Ser. No. 826,730, Mar. 7, 1988, said Ser. No. 140,388, is a continuation-in-part of Ser. No. 826,730, Mar. 7, 1988. This application Feb. 23, 1993, Ser. No. 20,575

Int. Cl.[6] A61L *2/18*

U.S. Cl. 422—292 **17 Claims**

1. A microbial decontamination system comprising:

a housing portion including a microbial decontamination chamber for receiving items to be microbially decontaminated and a microbial solution circulating means for selectively circulating a microbial decontamination fluid through the microbial decontamination chamber;

a door member connected with the housing portion for movement about a generally vertical access between an open and a closed position, the door member providing access to the microbial decontamination chamber in the open position and providing a fluid tight seal in the closed position;

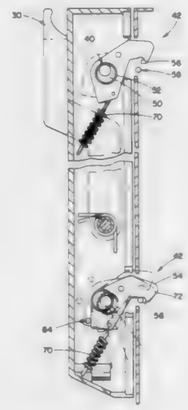
a mechanical locking means for mechanically locking the door member into an assured fluid tight sealing relationship with the housing portion, the mechanical locking means including:

a latch surface mounted to one of the housing portion and the door member;

a circular cam member eccentrically mounted relative to an axis of rotation;

a hook member having a latch engaging surface, the hook member being rotatably mounted on the cam member such that the hook member and the cam member are free to undergo relative rotation, the cam member moving the latch engaging surface of the hook member generally along an axis of travel which extends through the axis of rotation and the latch surface to move the hook member between at least a latch surface engaging, locked position and a latched surface disengaged, unlocked position;

a rotating means for rotating the cam member about the



axis of rotation to move the hook member at least between the locked and unlocked positions, the rotating means rotating a major axis of the cam a few degrees past the axis of travel in an overcenter locking movement; and

a stop means for preventing the rotating means from rotating the cam member beyond the few degrees past the axis of travel.

5,391,361

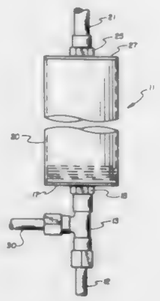
CONDENSATE SEPARATOR

Bhabesh K. Thakur, West Henrietta, and Leonard L. Hallings, East Rochester, both of N.Y., assignors to MDT Corporation, Torrance, Calif.

Filed Jan. 23, 1991, Ser. No. 644,449

Int. Cl.[6] A61L *2/20*

U.S. Cl. 422—295 **7 Claims**



1. In a condensate separator for use in a sterilizer of the type having means for venting a stream of chemical vapor sterilant through a conduit of a venting system from a sterilizer chamber to atmosphere following a sterilization cycle and including an improved means for capturing droplets of moisture and sterilant from said vent stream, wherein said improved means comprises:

a separator body with an inlet receiving said vent stream and an outlet discharging said vent stream;

said outlet being located vertically higher than said inlet; and means providing a sufficiently lower vent stream velocity within said separator body than is present in said inlet to permit droplets entering said seperator body with a vent stream to fall by gravity towards said inlet as said vent stream flows to said outlet.

5,391,362

HIGH SURFACE AREA ZIRCONIA

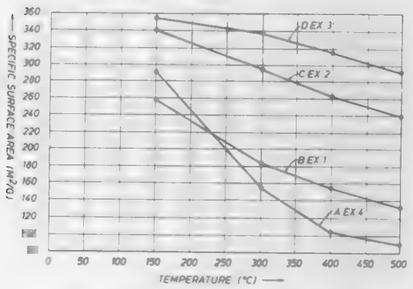
Donald Reinalda, and Anke Derking, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 13, 1991, Ser. No. 668,847

Claims priority, application United Kingdom, Jun. 5, 1990, 9012524

Int. Cl.[6] C01G *25/02*

U.S. Cl. 423—81 **10 Claims**



1. A process for producing zirconia having a specific surface area of above 200 m^2/g, which comprises precipitating zirconium hydroxide from a solution of a zirconium compound in water by mixing said solution with an alkali compound selected from the group consisting of ammonia, urea, hexamethylene tetramine, ethanolamines, sodium hydroxide, and potassium hydroxide, washing the precipitate of zirconium hydroxide with water to remove alkali compound therefrom, aging the washed precipitate in the presence of a phosphoric acid, and subsequently calcining the aged precipitate at a temperature of about 250° to 550° C.

5,391,363

CONTINUOUS PURIFICATION OF AN OFF-GAS COMPOSED OF CO_2+HCL+$COCL_2$

Peter Ksoll, Dossenheim; Wolfgang Reuther, Heidelberg, and Peter Wittmer, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 10, 1992, Ser. No. 943,023

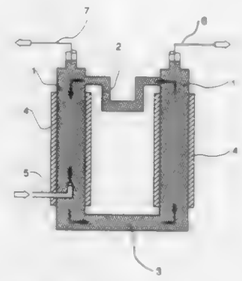
Claims priority, application Germany, Sep. 13, 1991, 4130427

The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[6] C01B *7/00*

U.S. Cl. 423—240 R **1 Claim**

1. A continuous process for purifying an off-gas comprising CO_2, HCl and $COCl_2$, which process comprises the steps of passing the off-gas through a separator filled with N,N-dialkylformamide and HCl, producing CO_2 and an adduct of $COCl_2$



and N,N-dialkylformamide, and removing the CO_2 from the separator, which CO_2 contains a minor amount of HCl.

5,391,364

INORGANIC OXIDE AEROGEL MICROBEADS OF NARROW PORE DIAMETER DISTRIBUTION AND THE METHOD FOR THEIR PREPARATION

Guido Cogliati, Rome, Italy, assignor to Enichem Partecipazioni S.p.A., Milan, Italy

Filed Apr. 24, 1991, Ser. No. 690,305

Claims priority, application Italy, Apr. 24, 1990, 20126A/90

The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.

Int. Cl.[6] C01B *33/12;* **B01J** *21/08*

U.S. Cl. 423—335 **6 Claims**

1. Microbeads of aerogels of one or more oxides selected from those of metals of Groups II to VI, VIIB and VIII of the Periodic Table and of silicon and characterised by a surface area exceeding 300 m^2/g, a total pore volume exceeding 1 ml/g, and at least 90% of the pores present have a diameter lying between 50 and 1000 Å, the difference between the maximum and minimum of this range never exceeding 50 Å.

5,391,365

PROCESS FOR PRODUCING MANGANESE DIOXIDE

Enoch I. Wang, Mansfield, Mass.; William L. Bowden, Nashua, N.H., and Paul Gionet, Lowell, Mass., assignors to Duracell Inc., Bethel, Conn.

Continuation-in-part of Ser. No. 952,034, Sep. 28, 1992, Pat. No. 5,277,890. This application Nov. 16, 1993, Ser. No. 153,259

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.[6] C01G *45/02*

U.S. Cl. 423—605 **24 Claims**

1. A process for the manufacture of a cathode for an electrochemical cell comprising the steps of:

a) reacting a manganese salt and $Na_2S_2O_8$ in a solution to produce a reaction product mixture comprising a precipitate of gamma MnO_2;

b) removing the gamma MnO_2 precipitate from said reaction product mixture;

c) drying said precipitate; and

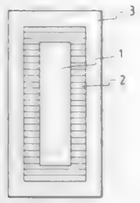
d) compacting said precipitate.

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5,391,366
HYDROGEN STORING MEMBER AND PROCESS FOR STORING HYDROGEN INTO THE HYDROGEN STORING MEMBER

Keisuke Yamamoto, Atsugi, and Toshiyuki Komatsu, Hiratsuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 562,904, Aug. 6, 1990, abandoned. This application Mar. 22, 1993, Ser. No. 34,648
Claims priority, application Japan, Aug. 4, 1989, 1-203036
Int. Cl.[6] C01B *3/04;* **F17C** *11/00*
U.S. Cl. 423—658.2 **12 Claims**



1. A hydrogen storing member which comprises a first region comprising a first hydrogen storing material, a second region comprising a second hydrogen storing material which covers all of said first region and a third region comprising said first hydrogen storing material which covers all of said second region, wherein said second hydrogen storing material is capable of releasing or storing hydrogen in a temperature or pressure range in which said first hydrogen storing material is in a β phase.

6. A process for storing hydrogen into a hydrogen storing member, which comprises the steps of:

supplying hydrogen or a hydrogen isotope to a hydrogen storing member comprising a first region comprising a first hydrogen storing material, a second region comprising a second hydrogen storing material which covers all of said first region and a third region comprising said first hydrogen storing material which covers all of said second region, wherein said second hydrogen storing material is capable of releasing or storing hydrogen in a temperature or pressure range in which said first hydrogen storing material is in a β phase; and

repeatedly (i) subjecting said hydrogen storing member to a temperature and pressure at which both the first and second hydrogen storing materials store hydrogen and (ii) subjecting said hydrogen storing member to said range of temperature or pressure at which only the second hydrogen storing material releases hydrogen and said first hydrogen storing material is in said B phase.

5,391,367
ANTIFUNGAL NAIL SOLUTION

Teresa J. DeVincentis, Flanders; Darius D. Dubash, Pine Brook; Debbie L. Burnett, Basking Ridge, and Athanasios S. Ladas, Parsippany, all of N.J., assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 28, 1993, Ser. No. 97,422
Int. Cl.[6] A61K *7/04*
U.S. Cl. 424—61 **5 Claims**

1. A topical antifungal composition comprising:

(a) from about 15 to about 30 weight percent tioconazole;

(b) from about 1 to about 10 weight percent water;

(c) from about 50 to about 90 weight percent alcohol;

(d) from about 0.5 to about 5 weight percent of a water-soluble gel-forming agent which is hydroxy propyl cellulose and

(e) from about 0.5 to about 10 weight percent of propylene glycol dipelargonate as the plasticizer, said composition when applied to the nails of a human infected with onychomycosis creating a reservoir from which tioconazole continuously penetrates the nail.

5,391,368
HAIR STYLING SHAMPOOS

Terry Gerstein, East Brunswick, N.J., assignor to Revlon Consumer Products Corporation, New York, N.Y.

Filed Aug. 9, 1993, Ser. No. 103,615
Int. Cl.[6] A61K *7/075*
U.S. Cl. 424—70.13 **8 Claims**

1. An aqueous composition for cleansing, conditioning, and styling the hair comprising:

(a) 3–40% anionic surfactant,

(b) 0.5–20% amphoteric surfactant,

(c) 0.1–15% hair styling polymer,

(d) 0.001–5% of a cationic conditioning polymer; and

(e) 40–95% water

wherein said composition is free of nonaqueous solvents and the ratio of amphoteric surfactant to hair styling polymer is 1–20:20–1 respectively and the amphoteric surfactant solubilizes the hair styling polymer.

5,391,369
GELLED POLYVINYL ALCOHOL BIOCIDAL TREATMENTS

Donald C. Roe, Tabernacle, N.J., and David M. Polizzotti, Yardley, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 47,729, Apr. 15, 1993, Pat. No. 5,266,218. This application Aug. 10, 1993, Ser. No. 105,088
Int. Cl.[6] A61K *31/74;* **A01N** *25/10*
U.S. Cl. 424—78.37 **3 Claims**

1. A gelled biocidal composition comprising about 1–20 weight percent of a polyvinyl alcohol and about 0.1–2 weight percent of gallic or boric acid, in combination with additional components selected from the group consisting of:

(a) about 5–20 weight percent of an isothiazolin compound or, alternatively,

(b) about 5–20 weight percent of a quaternary ammonium halide salt and about 2.5–10 weight percent of 2-bromo-2-nitropropane-1,3-diol with the remainder of the composition being water.

5,391,370
GELLED PEG BIOCIDAL TREATMENTS

Donald C. Roe, Tabernacle, N.J., and David M. Polizzotti, Yardley, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 47,728, Apr. 15, 1993, Pat. No. 5,266,218. This application Aug. 10, 1993, Ser. No. 105,089
Int. Cl.[6] A61K *31/174;* **A01N** *25/10*
U.S. Cl. 424—78.37 **2 Claims**

1. A gelled biocidal composition comprising about 50–90 weight percent of a polyethylene glycol having a molecular weight of from about 400 to 2,000 about 3–30 weight percent of bis(trichloro methyl) sulfone, about 3–30 weight percent of a quaternary ammonium halide salt and about 1–5 weight percent of an alkylphenol ethoxylate.

5,391,371
USE OF AN ENZYME CONTAINING GRANULATE IN A METHOD FOR PRODUCTION OF A PELLETIZED FODDER

Kim T. Jacobsen, Greve Strand, and Poul E. Jensen, Allerod, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK92/00026, § 371 Date Jun. 4, 1993, § 102(e) Date Jun. 4, 1993, PCT Pub. No. WO92/12645, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 24, 1992, Ser. No. 70,402
Claims priority, application Denmark, Jan. 25, 1991, 134/91
Int. Cl.[6] A61K *37/48*
U.S. Cl. 424—94.2 **13 Claims**

1. A method for the manufacture of a pelletized fodder, the method comprising the following subsequent steps:

(a) mixing one or more fodder components with an enzyme containing T-granulate, which granulate is coated with a coating agent comprising a high melting fat or a high melting wax;

(b) subjecting the mixture to a steam treatment; and

(c) pelletizing the steam treated mixture.

5,391,372
METHODS OF TREATING COLIC AND FOUNDER IN HORSES

Elizabeth Campbell, 7842 S. Marshall Ct., Littleton, Colo. 80123

Filed Jun. 28, 1993, Ser. No. 82,553
Int. Cl.[6] C08G *63/02*
U.S. Cl. 424—195.1 **10 Claims**

1. A method of treatment for the relieving of the symptoms of colic in horses, said method comprising orally administering an effective amount of a pine tea prepared by boiling pine needles in water at a ratio of about four ounces of pine needles per one pint of boiling water to the horse sufficient to relieve the symptoms of colic.

5,391,373
SKIN CREAM COMPOSITION

Jack Mausner, New York, N.Y., assignor to Chanel, Inc., New York, N.Y.

Filed Jul. 1, 1992, Ser. No. 907,487
Int. Cl.[6] A61K *7/48*
U.S. Cl. 424—401 **3 Claims**

1. A skin cream composition comprising: water, and dispersed in the water:

(a) about 4.25% to about 5.75% of sodium lactate;

(b) about 2.5% to about 3.5% of a complex comprising horse chestnut extract, phospholipids, and glycosphingolipids;

(c) about 2.5% to about 3.5% of a complex comprising serum proteins and glycogen;

(d) about 0.001% to about 0.1% of a carbohydrate-based complex comprising dextran, glycine, and glucosamine;

(e) about 0.05% to about 0.15% of a long-chain fatty acid ester of retinol selected from the group consisting of retinyl palmitate, retinyl myristate, and retinyl stearate;

(f) about 0.01% to about 0.02% of ascorbyl palmitate;

and (g) about 0.4% to about 0.6% of a short-chain carboxylic acid ester of tocopherol selected from the group consisting of tocopheryl acetate and tocopheryl propionate; the sodium lactate, the complex comprising horse chestnut extract, phospholipids, and glycosphingolipids, the complex comprising serum proteins and glycogen, the carbohydrate-based complex, the retinyl ester, the ascorbyl palmitate, and the tocopheryl ester each being present in a quantity sufficient to increase the smoothness and/or firmness of skin to which the composition is applied.

2. The skin cream composition of claim 1 wherein the complex comprising horse chestnut extract, phospholipids, and glycosphingolipids is a micellar complex further comprising Crataegus extract, water, panthenol, propylene glycol, phenoxyethanol, chlorphenesin, and cholesterol, wherein the horse chestnut extract and the Crataegus extract each comprise from about 9% to about 18% of the micellar complex, the water comprises from about 24% to 36% of the micellar complex, and the panthenol, the propylene glycol, the phospholipids, the phenoxyethanol, the glycosphingolipids, the chlorphenesin, and the cholesterol each comprise from about 3% to about 9% of the micellar complex.

5,391,374
FRAGRANCE DELIVERY COMPOSITIONS HAVING LOW AMOUNTS OF VOLATILE ORGANIC COMPOUNDS

Jack W. Charbonneau, Somerset, Wis., and Daniel B. Pendergrass, Jr., Mendota Heights, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

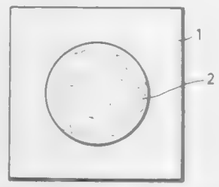
Filed May 10, 1993, Ser. No. 59,500
Int. Cl.[6] A61K *7/00, 7/035*
U.S. Cl. 424—401 **18 Claims**

1. A fragrance delivery coherent cake consisting essentially of cakeforming components and microcapsules containing fragrance oil, said cake having a Shore A hardness value of at least about 1.2 Newtons, wherein the majority of the microcapsules may be removed from the cake by light finger pressure without breakage of the microcapsules,and wherein said fragrance delivery cake has a VOC content less than 250 grams per liter less water, fragrance oil and exempt solvents, and wherein the cake is at least 0.1 cm thick.

5,391,375
TRANSDERMAL THERAPEUTICAL SYSTEM WITH PHYSOSTIGMINE AS ACTIVE COMPONENT AND PROCESS FOR THE PRODUCTION THEREOF

Thomas Hille; Hans-Rainer Hoffmann, both of Neuwied; Hans-Joachim Huber; Axel Knoch, both of Munich; Gerhard Schneider, Baldham, and Fritz Stanislaus, Munich, all of Germany, assignors to LTS Lohmann Therapie-Systeme GmbH & Co., KG, Neuwied and Klinge Pharma GmbH, Munich, both of Germany

Continuation of Ser. No. 727,324, Mar. 3, 1991, abandoned, which is a continuation of Ser. No. 452,530, Dec. 18, 1989, abandoned. This application Apr. 26, 1993, Ser. No. 76,682
Claims priority, application Germany, Dec. 22, 1988, 3843238
Int. Cl.[6] A61F *13/02*
U.S. Cl. 424—449 **15 Claims**



1. A transdermal therapeutic system for the administration of physostigmine to the skin comprising a cover layer which is impermeable to active substances, a pressure-sensitive adhesive reservoir layer, the reservoir layer comprising 10–19%-wt material selected from the group consisting of block copolymers on the basis of styrene and 1,3-dienes, polyisobutylenes, polymers on the basis of acrylate and/or methacrylate and esters of hydrogenated colophonium, the polymeric material being rendered basic by a basic polymer, whereby the solubility of the physostigmine is reduced, 0–30%-wt softener on the basis of hydrocarbons and/or esters, the active substance deposit immediately after production comprising 15–85%-wt of a 0.1–70%-wt physostigmine solution, in a solvent with at least one acidic group.

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5,391,376

METHOD FOR PREVENTING AND TREATING CACHEXIA

David M. Long, Jr., 10988 Horizon Hills Dr., El Cajon, Calif. 92020, and Raymond A. Long, 301 Nautilus St., La Jolla, Calif. 92037

Division of Ser. No. 790,855, Nov. 12, 1991, Pat. No. 5,264,220. This application Sep. 15, 1993, Ser. No. 122,192
Int. Cl.[6] A61K *9/127, 31/33, 9/50*
U.S. Cl. 424—450 4 Claims

1. A method for preventing or treating cachexia in a mammal which comprises the administration of a therapeutically effective amount of an anti-cachexia agent to a mammal in need of said prevention or treatment, wherein said anti-cachexia agent is nicotinamide.

5,391,377

BIPHASIC RELEASE FORMATIONS FOR LIPOPHILIC ACIDS

Stephen G. Barnwell, Chester, England, assignor to Cortecs Limited, Middlesex, England

PCT No. PCT/GB91/01824, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/06680, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 18, 1991, Ser. No. 50,064
Claims priority, application United Kingdom, Oct. 19, 1990, 9022788
Int. Cl.[6] A61K *9/48*
U.S. Cl. 424—463 13 Claims

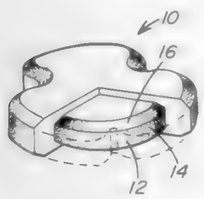
1. A biphasic pharmaceutical formulation comprising:
(a) a sustained release component consisting essentially of a fatty acid moiety of at least one C_{12}–C_{24} fatty acid and a pharmaceutical moiety; and
(b) a non-sustained release component comprising at least one C_{12}–C_{24} fatty acid;
wherein the fatty acid of (a) and (b) may be the same or different.

5,391,378

TWO-PART MEDICINAL TABLET AND METHOD OF MANUFACTURE

Richard Sanderson, McKeesport, Pa., assignor to Elizabeth-Hata International, Inc., North Huntingdon, Pa.

Filed Feb. 22, 1993, Ser. No. 20,611
Int. Cl.[6] A61K *9/20, 9/24*
U.S. Cl. 424—464 16 Claims



1. A mechanical configuration for a medicinal tablet comprising:
a solid core unit in the shape of a flat cylindrical tablet formed from a medically beneficial, biocompatible, non-toxic, drug;
an outer unit, surrounding said core unit, said outer unit being formed of a biocompatible, non-toxic polymer composition insoluble in the gastro-intestional tract of warm blooded animals while said core unit is being absorbed through said gastro-intestional tract;
said outer unit being of a shape that said outer unit exposes a portion of the outer cylindrical surface area said core unit therethrough when said outer unit is formed around said core unit.

5,391,379

ACID SANITIZER COMPOSITION

Michael D. McKinzie, and Murray W. Winicov, both of Kansas City, Mo., assignors to West Agro, Inc., Kansas City, Mo.

Continuation-in-part of Ser. No. 131,869, Oct. 5, 1993, Pat. No. 5,330,769, which is a continuation of Ser. No. 973,826, Nov. 9, 1992, abandoned. This application Nov. 24, 1993, Ser. No. 157,700
The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.
Int. Cl.[6] A61K *33/42, 33/04, 31/19, 31/20*
U.S. Cl. 424—605 15 Claims

1. An aqueous, dilutable acid sanitizer concentrate composition comprising individual amounts of water, from about 2–12% by weight of an aliphatic C_6–C_{11} germicidally effective fatty acid, from about 5–20% by weight of hydrotrope-solubilizer selected from the group consisting of nonionic and anionic hydrotrope-solubilizers, from about 5–40% by weight of a strong acid selected from the group consisting of phosphoric and sulfuric acids and mixtures thereof, and a component for giving the composition enhanced stability, said stabilizing component comprising an effective amount of from about 3.5–15% by weight of a weak acid selected from the group consisting of propionic, butyric and valeric acids and mixtures thereof, said composition, when diluted in water to form a use solution having a pH of from about 1–5.

5,391,380

THROMBOPLASTIN EXTRACT, REAGENT, AND PREPARATION THEREOF

David A. Barrow, Sour Lake, and Richard L. Rullman, Beaumont, both of Tex., assignors to Helena Laboratories, Corp., Beaumont, Tex.

Division of Ser. No. 733,325, Jul. 22, 1991, Pat. No. 5,254,350. This application May 14, 1993, Ser. No. 60,980
Int. Cl.[6] A61K *35/12, 35/30, 35/50*
U.S. Cl. 424—570 17 Claims

1. A thromboplastin extract comprising an aqueous thromboplastin extract of a powdered natural thromboplastin source and a metal ion chelator wherein the chelator is added during the extraction of the thromboplastin from the natural thromboplastin source.

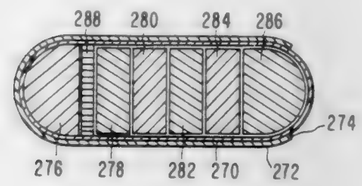
5,391,381

DISPENSER CAPABLE OF DELIVERING PLURALITY OF DRUG UNITS

Patrick S. L. Wong, Palo Alto; Felix Theeuwes, Los Altos Hills; James B. Eckenhoff, Los Altos; Steven D. Larsen, Dublin, and Hoa T. Huynh, Union City, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 873,901, Apr. 24, 1992, Pat. No. 5,236,689, which is a continuation-in-part of Ser. No. 701,927, May 17, 1991, Pat. No. 5,110,597, which is a continuation of Ser. No. 495,825, Mar. 19, 1990, Pat. No. 5,023,088, which is a continuation-in-part of Ser. No. 283,772, Dec. 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 270,730, Nov. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 66,905, Jun. 25, 1987, abandoned. This application May 11, 1993, Ser. No. 60,372
The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.
Int. Cl.[6] A61K *9/24*
U.S. Cl. 424—473 21 Claims

1. A dispenser for the delivery to a fluid-containing environment of a drug which exhibits a significant or extensive first pass effect, the dispenser comprising, in combination:
a. a rigid housing open at one end to provide outlet means therefor, at least a portion of said housing proximate the end of said housing opposite the outlet means permitting passage of the fluid in said environment to the interior of said housing;
b. a fluid-activated driving means within said housing in fluid-transmitting relationship with the fluid-passing portion of said housing proximate the end of said housing opposite said outlet means, said driving means, upon exposure of said dispenser to said fluid environment, being the source of motive power for moving the contents of said housing through said outlet means; and



c. a plurality of solid, discrete dosage units comprising a drug which exhibits a significant or extensive first pass effect longitudinally disposed within said housing between said driving means and said outlet means, whereby said drug units will be sequentially displaced from said housing into said fluid environment by said driving means upon exposure of said dispenser to said fluid environment.

5,391,384

PROCESS FOR CONTROLLING AFTER-COOKING DARKENING IN PAR-FRIED FRENCH FRIED POTATOES

Giuseppe Mazza, 431 7th Street, Morden, Manitoba, Canada R0G 1J0

Continuation of Ser. No. 897,082, Jun. 11, 1992, abandoned. This application Jun. 14, 1994, Ser. No. 261,238
Int. Cl.[6] A23L *1/217*
U.S. Cl. 426—267 17 Claims

1. A process for controlling after-cooking darkening in par-fried potato food products susceptible to said after-cooking darkening, which comprises the following steps: a) forming treated potato strips by contacting blanched, rinsed potato strips with an agent in quantities sufficient to inhibit after-cooking darkening, said agent comprising:
i) a first calcium ion component for complexing any chlorogenic acid on the surface of the potato strips, and
ii) a second component which inhibits the oxidation of ferrous ion species present on said surface of the potato strips; and
b) at least partially frying the said treated potato strips.

5,391,385

METHOD OF FRYING OIL TREATMENT USING AN ALUMINA AND AMORPHOUS SILICA COMPOSITION

Jed C. Seybold, Exton, Pa., assignor to The PQ Corporation, Valley Forge, Pa.

Continuation of Ser. No. 833,598, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 480,685, Feb. 15, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 91,399
Int. Cl.[6] A23D *9/00;* C11B *3/00*
U.S. Cl. 426—417 14 Claims

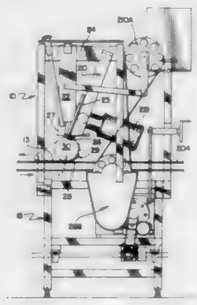
1. A process for treating cooking oil containing contaminants comprising the steps of:
a. heating said oil to a temperature of 180° F. to 400° F.;
b. contacting said oil with a composition consisting of a mixture of 60% to 80% amorphous silica and 20 to 40% alumina for a time sufficient to remove contaminants from said oil; and
c. separating said composition from the oil.

5,391,386

APPARATUS AND METHOD FOR TRANSFERRING MULTIPLE FOOD PRODUCT SLICES

Timothy G. Mally, Oregon, Wis., assignor to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Sep. 20, 1993, Ser. No. 123,650
Int. Cl.[6] A23L *1/00;* B26D *7/00;* B65B *35/00*
U.S. Cl. 426—420 25 Claims



23. A method of transferring multiple food product slices arranged in a prearranged pattern from a slicing station where the multiple slices are sliced in the pattern from a supply source containing multiple food supply members of a dry, food prod-

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5,391,382

LOW DUST POWDERED CELLULOSE

Rulon A. Chappell, North St. Paul, Minn., assignor to Qualcepts Nutrients, Inc., Minneapolis, Minn.

Filed Jan. 31, 1994, Ser. No. 189,431
Int. Cl.[6] A23C *19/00*
U.S. Cl. 426—96 8 Claims

1. The method of producing low dust powdered cellulose anti-caking agent comprising the step of agglomerating particulate material in an airborne fraction of suspended powdered cellulose dust associated with the agitation of powdered cellulose in an enclosed space by contacting the airborne fraction of suspended powdered cellulose particles with a finely divided spray of a dilute aqueous solution of low viscosity cellulose gum and mixing the agglomerated material to uniformity, wherein the dilute solution of low viscosity cellulose gun contains from about 1% to about 10% total slides.

5,391,383

EDIBLE SPRAY OIL

Joanne Sullivan, Wyckoff, and Michael M. Chrysam, Blairstown, both of N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 804,140, Dec. 6, 1991, Pat. No. 5,258,197, which is a continuation-in-part of Ser. No. 624,056, Dec. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 410,161, Sep. 20, 1989, abandoned. This application Jan. 22, 1993, Ser. No. 7,447
The portion of the term of this patent subsequent to Jan. 3, 2012, has been disclaimed.
Int. Cl.[6] A23D *9/00;* A23P *1/08*
U.S. Cl. 426—99 28 Claims

1. A food product prepared by spray-coating an edible substrate with a spray oil comprising at least 50% low-calorie triglycerides bearing both C_2 to C_4 short acid residues and long C_{16} to C_{24} saturated fatty acid residues, wherein the oil has a solid fat index of at least about 50% at 70° F. and at least about 40% at 80° F.

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uct to a support member, without substantially altering said pattern, comprising the steps of:

providing a food product supply source wherein multiple food product supply members are held in said pattern such that each food product supply member is arranged relative to all of said food product supply members;

supplying said pattern of said food product slices to a food slice pattern pickup location by contacting said supply source with a slicing means;

providing a rotating transfer member having a curved outer transfer surface adjacent the food slice pattern pickup location;

engaging said pattern of food product slices on said transfer surface by having a vacuum at one area of said transfer member to adhere said food product slice pattern cut from said supply source onto said transfer surface;

rotating said transfer member to transfer said food product slice pattern from said food slice pattern pickup location to a food slice pattern transfer location; and,

urging said pattern of food slices off of said transfer member onto said support member within a predesignated target area defined thereon without substantially altering said pattern of food product slices.

5,391,387

PROCESS AND APPARATUS FOR MANUFACTURING SHAPED CONFECTIONERY PRODUCTS

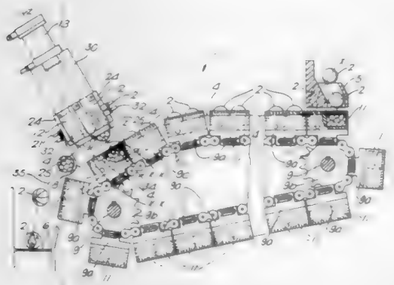
Michael D. Peters, Gloucestershire, England, assignor to A.C. Machines Limited, Ireland

PCT No. PCT/GB92/00697, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO93/20705, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 15, 1992, Ser. No. 941,434

Int. Cl.[6] A23G *3/00*; A23P *1/00*

U.S. Cl. 426—512 **20 Claims**



1. A process for manufacturing confectionery products, comprising the steps of:

producing a plastically deformable intermediate product having an interior portion and a size smaller than a size of a final product;

positioning said intermediate product within a mold having upper and lower parts of a preselected internal shape;

connecting said interior portion of said intermediate product to a source of pressurized fluid;

feeding said pressurized fluid into said interior portion to conform said intermediate product to said preselected internal shape of the upper and lower mold parts to produce said final product; and

extracting said final product from said mold.

5,391,388

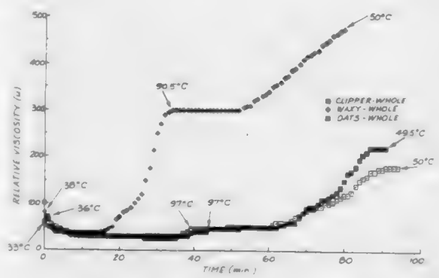
CEREAL FOOD PRODUCT FOR HOT AND COLD USAGES

Victor M. Lewis, and David A. Lewis, both of Rushcutters Bay, Australia, assignors to Byron Agricultural Company Pty. Ltd., Rushcutters Bay, Australia

Filed Apr. 5, 1990, Ser. No. 505,034

Int. Cl.[6] A23L *1/10, 1/168*

U.S. Cl. 426—618 **15 Claims**



1. A processed cereal food product, said product being obtained by treating cereal grains chosen from at least one of barley, corn, rice, sorghum or other starchy grains having an amylose content which is less than about 10% by weight of the total starch content in the grains so as to plasticize the grains, not more than 30% of the total starch content in the grains being gelatinized, and shaping the resultant product.

5,391,389

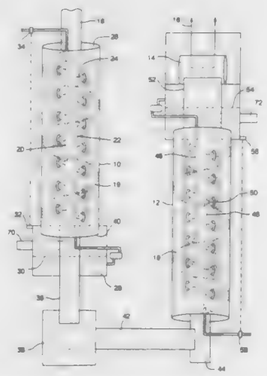
PRODUCT AND PROCESS OF BLANCHING NUTS

Dewey P. George, P.O. Box 1527, San Andreas, Calif. 95249; Ronald J. Rigge, 2257 Goldcrest Cir., Pleasanton, Calif. 94566, and Delbert L. Williams, 7535 Baldwin Rd., Valley Springs, Calif. 95252

Filed Mar. 23, 1993, Ser. No. 35,721

Int. Cl.[6] A23L *1/36*

U.S. Cl. 426—632 **28 Claims**



1. A method for removing skin from nut meats, the method comprising the steps of: providing a first chemical solution comprising a solution of a food grade alkaline compound the first chemical solution having a concentration of approximately 1% to saturated, and a second chemical solution comprising a solution of a food grade peroxygen compound that is capable of reacting with the first chemical solution to form a gas, the second chemical solution having a concentration of approximately 10–40%;

wetting a nut meat with the first chemical solution after removal of the nut meat from its shell;

wetting the nut meat with the second chemical solution, forming a gas between the nut meat and a skin on the nut meat to loosen the skin; and

removing the skin from the nut meat.

5,391,390

TREATMENT OF BULB VEGETABLES SUCH AS GARLIC, ONIONS AND THE LIKE TO FREE THEM FROM THE SO-CALLED DAY-AFTER EFFECT

Franca Leo, Corso Francia, 35, 10138, Torino, Italy

Filed Oct. 16, 1992, Ser. No. 962,970

Claims priority, application Italy, Oct. 21, 1991, MI91 A [illegible]

Int. Cl.[6] A23B *7/024*; A23L *1/211, 1/223*

U.S. Cl. 426—638 **4 Claims**

1. A treatment for strong-smelling bulb vegetables to free them from the so-called "day after effect" comprising the successive steps of:

forming a suspension of the bulbs in water in a bulb/water ratio in the range ½ to 1/5 by weight, wherein said suspension is obtained by whisking the bulb vegetables in water; and

freeze drying said suspension with a preliminary freezing phase of the suspension down to −50° C. for 4 to 8 hours followed by a gradual heating phase for 12 to 24 hours to a temperature not exceeding 50° C. to obtain a powder from said bulbs having a rela[illegible] moisture content of between 1 and 3%.

5,391,391

Patent Not Issued For This Number

5,391,392

METHOD FOR MANUFACTURING ELECTRICAL COMPONENTS

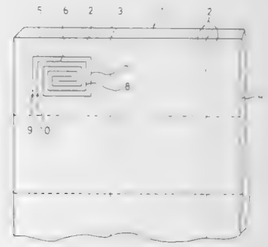
Hiroji Kitagawa, Nagoya, Japan, assignor to Kitagawa Industries Co., Ltd., Japan

Continuation of Ser. No. 868,003, Apr. 14, 1992, abandoned. This application Dec. 1, 1993, Ser. No. 160,443

Claims priority, application Japan, Aug. 19, 1991, 3-206949

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—81 **8 Claims**



1. A method of manufacturing an electrical component,

5,391,393

METHOD FOR MAKING A SEMICONDUCTOR DEVICE HAVING AN ANHYDROUS FERROELECTRIC THIN-FILM IN AN OXYGEN-CONTAINING AMBIENT

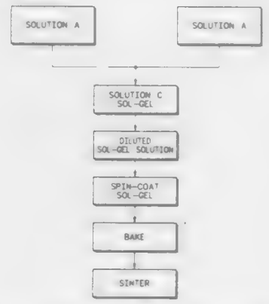
Papu D. Maniar, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 864,281, Apr. 6, 1992, Pat. No. 5,271,955. This application Aug. 19, 1993, Ser. No. 108,278

The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—100 **17 Claims**



1. A method of making a semiconductor device comprising the steps of:

providing a semiconductor substrate;

providing an anhydrous sol-gel solution,

wherein the solution is synthesized in the absence of an

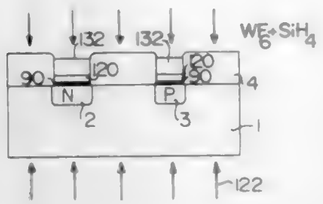
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hydrolysis step by heating a mixture of lead acetate anhydrous and zirconium and titanium precursors,
wherein each precursor is solubilized in an anhydrous organic solvent;
applying the anhydrous sol-gel solution onto the substrate to form an anhydrous sol-gel coating overlying the substrate; and
crystallizing the anhydrous sol-gel coating,
wherein one or more steps of synthesizing, applying, and crystallizing are carried out in the presence of an oxygen-containing atmosphore, selected from the group consisting of air, oxygen, and an oxygen gas mixture.

5,391,394
TUNGSTEN DEPOSITION PROCESS FOR LOW CONTACT RESISTIVITY TO SILICON

Keith J. Hansen, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 461,959, Jan. 8, 1990, abandoned. This application Jul. 29, 1991, Ser. No. 739,773
Int. Cl.[6] C23C *16/00*
U.S. Cl. 427—124 **22 Claims**



1. A method for forming a barrier layer for electrically connecting a conductive interconnect layer to one or more exposed silicon regions on a wafer comprising the steps of:
forming an optically opaque layer of refractory metal on said exposed silicon regions, said exposed silicon regions including an N-type region and a P-type region, prior to a temperature of said regions exceeding approximately 100° C.;
heating said wafer in a CVD chamber at a substantially constant deposition temperature substantially above 100° C. after forming said opaque layer while supplying an amount of reducing gas and an amount of gas containing atoms of a refractory metal for a time to form a barrier layer comprising said refractory metal having a desired thickness; and
annealing said wafer to form a silicide at an interface of said refractory metal and said silicon regions.

5,391,395
METHOD OF PREPARING SUBSTRATES FOR MEMORY DISK APPLICATIONS

Joseph R. Duchene, Howell, Mich., assignor to Witco Corporation, New York, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,453
Int. Cl.[6] C23C *26/00*
U.S. Cl. 427—129 **16 Claims**

1. A double zinc plating process for preparing aluminum and aluminum alloys for magnetic memory disk substrates comprising applying a zinc coating on the aluminum using a double zinc plating procedure wherein a nitrate free, sulfur containing acid solution is used to treat the first zinc coated substrate prior to depositing the second zinc coat, said solution formulated with a peroxydisulfate component and with a sulfonic acid component, said peroxydisulfate component selected from the group consisting of sodium peroxydisulfate, potassium peroxydisulfate, and ammonium peroxydisulfate components and mixtures thereof and said sulfonic acid component selected from the group consisting of C_1–C_{18} alkyl sulfonic acids and mixtures thereof.

5,391,396
METHOD FOR PROTECTING METAL PRODUCTS AGAINST CORROSION AND METAL PRODUCTS OBTAINED FROM SAID METHOD

Claude Morrand, Miramas, France, assignor to Sollac, Puteaux, France

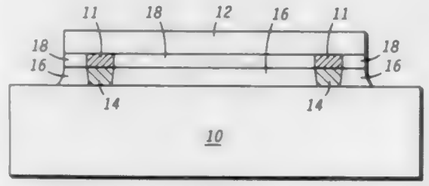
Filed Jun. 29, 1993, Ser. No. 82,940
Claims priority, application France, Jun. 30, 1992, 92 08037
Int. Cl.[6] B05D *7/14*; C09D *5/08*
U.S. Cl. 427—156 **19 Claims**

1. A method for providing temporary protection against corrosion of a cleaned metal product comprising the steps of:
a) drying said cleaned metal product;
b) coating at least one part of the metal product with an emulsion obtained by dispersion in water of 3 to 13% by volume of an oily phase, said oily phase comprising 75 to 90% by volume of at least one mineral oil, 5 to 10% by volume of at least one surface-active agent and 5 to 15% by volume of at least one corrosion inhibitor; and
c) drying the resulting coated metal product by heating it to a temperature between 70° to 100° C. until a dry film is obtained, said dry film being present in an amount of from 300 to 800 mg/m^2 of coated product.

5,391,397
METHOD OF ADHESION TO A POLYIMIDE SURFACE BY FORMATION OF COVALENT BONDS

Prosanto K. Mukerji, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 5, 1994, Ser. No. 223,184
Int. Cl.[6] B05D *5/10*
U.S. Cl. 427—207.1 **16 Claims**



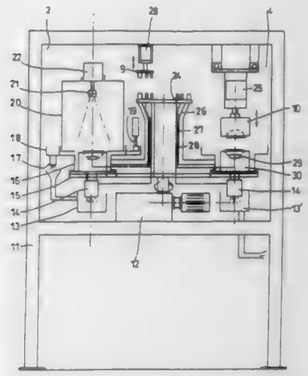
10. A method of adhesion to a polyimide surface, comprising the steps of:
disposing a hydroxyl amine solution at a temperature above ambient on the polyimide surface to pretreat the polyimide surface by forming amino-ester and amide groups;
disposing an epoxy material on the polyimide surface; and
curing said epoxy material to form covalent bonds to the polyimide surface.

5,391,398
METHOD OF COATING EXPANDED POLYSTYRENE PIECES

Gerard Mailharin, Villefranque, France, assignor to Societe Anonyme de Fonderies et Ateliers de Mousserolles, Bayonne, France

Filed Sep. 3, 1992, Ser. No. 940,179
Claims priority, application France, Sep. 9, 1991, 91 11095
Int. Cl.[6] B05D *1/32, 3/12*
U.S. Cl. 427—244 **2 Claims**

1. Method for the series mounting of expanded polystyrene pieces, comprising the steps of:
mounting the pieces in a support having an upper surface;
submerging the support in a container filled with water, such that a portion of each of said pieces to be glued emerges above the surface of the support and the water; and
spraying an aqueous suspension, emulsion or solution of glue only on the portion of each of said pieces which emerges above the surface of the water, wherein the surface of the water is kept at a level above the surface of the support, the level of water not reaching that of the portions of the pieces to be glued forming the glue plane, so as to prevent the glue from striking the surface of the support in order to protect the support from being soiled by the glue deposit.



5,391,399
IN-MOLD COATING WITH EPOXY ACRYLATE AND OH OR AMIDE-CONTAINING MONOMER

David S. Cobbledick, Kent; Donald F. Reichenbach, Massillon; Brian Sullivan, Akron, and Robert L. Spencer, Lyndhurst, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Division of Ser. No. 120,702, Sep. 13, 1993, which is a continuation of Ser. No. 703,988, May 22, 1991, abandoned, which is a division of Ser. No. 351,353, May 12, 1989, Pat. No. 5,084,353. This application Jun. 9, 1994, Ser. No. 257,760
Int. Cl.[6] B05D *03/02*
U.S. Cl. 427—370 **4 Claims**

1. An in-mold coating process, comprising:
coating a molded thermoset polyester resin or thermoset vinyl ester resin fiber composition containing from about 10 percent to about 75 percent by weight of fibers with a reduced amount of thermosetting in-mold coating composition, and subjecting said composition to a pressure at a temperature for an effective amount of time to cure said in-mold coating composition to form an adherent thermoset coating on said molded thermoset resin fiber composition, said in-mold coating composition consisting essentially of:
(a) 100 parts by weight of at least one polymerizable epoxy based oligomer having at least two acrylate groups and a weight average molecular weight of from about 500 to about 1,500.
(b) from about 80 to about 160 parts by weight of at least one copolymerizable ethylenically unsaturated monomer than those of component (c);
(c) from about 10 to about 120 parts by weight of at least one copolymerizable monoethylenically unsaturated compound having a —CO— group and one or more members of the group consisting of —NH_2, —NH—, and —OH group; and
(d) up to 15 parts by weight of a polyvinyl acetate adhesive agent;
said coating composition having a viscosity of from 5,000 to 10,000 cps at 86° F.

5,391,400
AQUEOUS EMULSION CONTAINING AN OXIDATIVELY CROSSLINKED AMINOPOLYSILOXANE

Sue-Lein L. Yang, Thornwood, N.Y., assignor to OSi Specialties, Inc., Danbury, Conn.

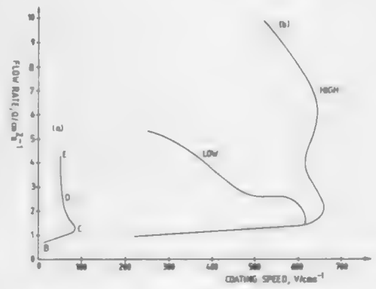
Filed Dec. 16, 1992, Ser. No. 991,384
Int. Cl.[6] B05D *5/08*
U.S. Cl. 427—389.9 **9 Claims**

1. A method for imparting slickness and durability to a textile fibrous substrate without releasing volatile organic compounds, which method comprises contacting the fibrous substrate with an aqueous emulsion comprising:
(a) an aminopolysiloxane having an amine content ranging from about 0.05% to 3.0% by weight, present at 0.1 to 60 parts per hundred of the total emulsion and having the formula $R_3SiO(R_2SiO)_a(RQSiO)_bSiR_3$ wherein: each R is the same or different and is a hydroxyl or a monovalent hydrocarbon group having 1 to 10 carbon atoms; a is from 1 to 5000; b is a number from 1 to 100; Q has the formula: $—(X)_d(X')_e(Y)_f—N(R^1)(R^2)$, wherein X is a linear or branched alkylene group having 1 to 8 carbon atoms; X' is a divalent organic radical; Y is selected from the group consisting of a hydroxyl-substituted acyclic alkylene group 2 to 8 carbon atoms and a hydroxyl-substituted cyclic alkylene group having up to 8 carbon atoms; d, e and f are zero or one provided the sum of d+e is one and the of sum e+f is zero or two; and R^1 and R^2 are independently selected from the group consisting of hydrogen, an alkyl group having 1 to 8 carbon atoms, a hydroxyalkyl group having 2 to 4 atoms, and an alkyleneamino group having the formula: $—C_gH_{2g}N(R^3)(R^4)$, wherein R^3 and R^4 are independently either hydrogen or an alkyl group having 1 to 8 carbon atoms and g is an integer from 2 to 8;
(b) a water soluble oxidant present at 0.05 to 5 parts per hundred of the total emulsion; and
(c) water.

5,391,401
COATING PROCESSES

Terence D. Blake, Tring; Rosemary Dobson, North Hykeham; Gregory N. Batts, Bushey, and William J. Harrison, St. Albans, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/02414, § 371 Date Jun. 17, 1993, § 102(e) Date Jun. 17, 1993, PCT Pub. No. WO92/11094, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 16, 1991, Ser. No. 78,280
Claims priority, application United Kingdom, Dec. 20, 1990, 9027676
Int. Cl.[6] B65D *1/30*
U.S. Cl. 427—420 **9 Claims**



1. A curtain coating process in which liquid material comprising one or more layers is coated on to a moving support, such that at least the layer of liquid material adjacent the

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support is a pseudoplastic liquid having viscosity greater than 20 mPas at shear rates less than 500 s^{-1}, and a viscosity of less than 10 mPas at shear rates greater than 10^6 s^{-1}, characterized in that the viscosity of the pseudoplastic liquid approaches a substantially constant value at a shear rate which lies in a range between 10^4 and 10^8 s^{-1}.

5,391,402

IMMERSION PLATING OF TIN-BISMUTH SOLDER

Cynthia M. Melton, Bolingbrook; Alicia Growney, Barrington, and Harry Fuerhaupter, Lombard, all of Ill., assignors to Motorola, Schaumburg, Ill.

Filed Dec. 3, 1993, Ser. No. 160,769
Int. Cl.[6] B05D *1/18*
U.S. Cl. 427—437 **9 Claims**

9. An electroless immersion plating process for depositing a tin-bismuth plate onto a copper surface, the process comprising

formulating an acidic aqueous solution comprising between about 100 and 150 grams per liter methane sulfonic acid, tin methane sulfonate in an amount effective to produce a tin concentration between about 30 and 40 grams per liter, bismuth methane sulfonate in an amount effective to produce a bismuth concentration between about 0.2 and 0.6 gram per liter, and between about 80 and 100 grams per liter thiourea, said solution comprising a ratio of tin concentration to bismuth concentration of at least 50 to 1, and

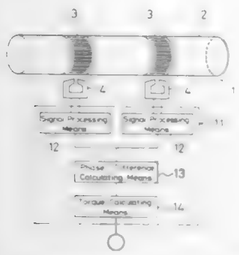
immersing a copper surface into the acidic aqueous solution at a temperature between about 25° C. and 70° C. for a time between about 0.5 and 1.5 seconds to deposit a plate composed of at least 70 weight percent tin and the balance bismuth and having a thickness between about 0.5 and 1.5 microns.

5,391,403

METHOD OF MANUFACTURING A SENSOR HAVING A MAGNETIC FILM

Yasuhumi Kawado, Yamaguchi; Tsutomu Shimizu, Hiroshima; Jiro Kondo, Hiroshima, and Hideharu Iwakuni, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 801,644, Dec. 2, 1991, abandoned. This application Oct. 29, 1993, Ser. No. 146,437
Claims priority, application Japan, Nov. 30, 1990, 2-340068
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—453 **6 Claims**



1. A method of manufacturing a sensor having a magnetic film for sensing either torque, rotating speed or rotating angle of a shaft member comprising the steps of:

crushing particles capable of being magnetized to obtain minute magnetic particles, each size of which is not larger than 10 μm;

forming thermal spraying particles, each size of which is not smaller than 10 μm by mixing said minute magnetic particles with a binding material in which said minute magnetic particles are dispersed;

forming a nonmagnetic film composed of a nonmagnetic material on a circumferential surface of said shaft member; and

forming a magnetic film, which is capable of recording a magnetic signal, on said nonmagnetic film by spraying said thermal spraying particles upon said nonmagnetic film.

5,391,404

PLASMA SPRAYED MULLITE COATINGS ON SILICON-BASE CERAMICS

Kang N. Lee, Westlake; Robert A. Miller, Brecksville, and Nathan S. Jacobson, Bay Village, all of Ohio, assignors to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 15, 1993, Ser. No. 31,444
Int. Cl.[6] B05D *1/08*
U.S. Cl. 427—452 **7 Claims**

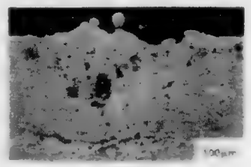


FIG. 1

1. A method of applying a chemical and thermal barrier coating to a surface of a silicon-base ceramic substrate comprising the steps of

etching said surface of the substrate in molten sodium carbonate,

burning out residual carbon from said etched surface,

dissolving silica on said etched surface in 10% HF,

placing the substrate in a furnace,

raising a temperature inside said furnace to uniformly heat said substrate prior to applying said coating,

monitoring the temperature inside said furnace to determine when said substrate is heated to a first temperature greater than about 1000° C.,

plasma spraying mullite powder having a crystallization temperature of about 1000° C. onto said etched surface of said substrate while maintaining said substrate at said first temperature whereby said mullite crystallizes as it solidifies at a rate that facilitates the formation of a crystalline mullite coating that is resistant to cracking and delamination, and,

cooling the coated substrate to a second temperature that is ambient.

5,391,405

METHOD FOR SURFACE-RELEASE COATING AND COATING AGENT THEREFOR

Shinji Irifune, and Toshio Ohba, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 824,674, Jan. 23, 1992, abandoned. This application Oct. 22, 1992, Ser. No. 964,685
Claims priority, application Japan, Jan. 23, 1991, 3-41424
Int. Cl.[6] B05D *3/06*; **C08G** *77/20*; **C08F** *2/50*
U.S. Cl. 427—515 **19 Claims**

1. A radiation-curable organopolysiloxane compound represented by the general formula

$$Q—O—[—SiR^2(OQ)—O—]_c—Q,$$

in which Q is a monovalent group represented by the general formula

$$R^2R^1{}_2Si—(—O—SiR^1R^2—)_d—,$$

R^1 is a hydrogen atom or a monovalent hydrocarbon group selected from the class consisting of alkyl groups having 1 to 4 carbon atoms and phenyl group, R^2 is R^1 or a (meth)acryloxyalkyl group of the formula

$$CH_2=CR^3—CO—O—C_nH_{2n}—,$$

R^3 being a hydrogen atom or a methyl group and n being 1, 2 or 3, with the proviso that from 3 to 30% by moles of the groups in a molecule denoted by R^2 are the (meth)acryloxyalkyl groups, each of the subscripts a is, independently from the others, a positive integer in the range from 10 to 200 and the subscript c is 1, 2 or 3.

5,391,406

PROCESS OF PREPARING HOT MELT PRESSURE SENSITIVE ADHESIVES ON A SUBSTRATE

Roopram Ramharack, Montgomery, and Rama Chandran, South Bound Brook, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Mar. 25, 1994, Ser. No. 217,574
Int. Cl.[6] B05D *5/10*
U.S. Cl. 427—516 **9 Claims**

1. A process for the preparation of a hot melt pressure sensitive adhesive on a substrate that comprises the steps of:

(a) copolymerizing

(i) 100 parts by weight acrylic, or a combination of acrylic and vinyl, monomers, with

(ii) 0.1 to 25 parts of at least one acrylic or vinyl monomer that also contains a functional group selected from the group consisting of hydroxyl, amine, carboxyl and amide group, and

(iii) 0.1 to 10 parts of at least one acrylic or vinyl monomer that also contains photoinitiator functionality,

the monomers chosen to result in a copolymer that is a viscoelastic solid at ambient temperature, has a glass transition temperature (Tg) in the range of −60° C. to +5° C., and has a Brookfield viscosity in the range of 500,000 to 1,000 mPa.s at temperatures in the range of 80° C. to 180° C.;

(b) reacting the functional group on the copolymer with 1-(1-isocyanato-1methyl ethyl)-3-(1-methyl ethenyl)benzene (m-TMI) in a condensation reaction to provide a copolymer having pendant vinyl groups; and

(c) heating the resultant polymeric solid to a temperature in the range of 80° C. to 180° C. to render the solid fluid and coatable;

(d) coating the melted polymer onto a substrate; and

(e) exposing the coated polymer to ultraviolet radiation sufficient to crosslink the pendant vinyl groups and provide a pressure sensitive adhesive.

5,391,407

PROCESS FOR FORMING PROTECTIVE DIAMOND-LIKE CARBON COATINGS ON METALLIC SURFACES

Geoffrey Dearnaley, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Mar. 18, 1994, Ser. No. 215,468
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—527 **23 Claims**

1. A process for coating a metal surface, comprising the steps of:

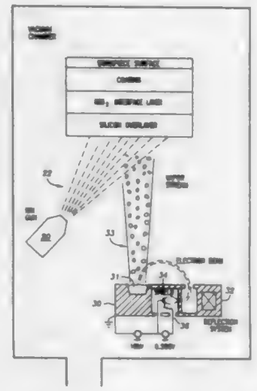
(a) immersing a metal workpiece comprising an uncoated metal surface in a Ni/P electroless deposition solution heated to a sufficient temperature that a Ni/P coating forms on the metal surface;

(b) placing the workpiece in a vacuum chamber and heating the workpiece to approximately 315° C. for a sufficient amount of time to harden the Ni/P coating;

(c) simultaneously with the heating step (b), directing a vaporized stream of silicon onto the Ni/P coating;

(d) simultaneously with the heating and directing of steps (b) and (c), bombarding the stream of silicon over the Ni/P coating with an ion beam and at an energy level of 200 eV–100 KeV for a sufficient amount of time that a layer of $NiSi_2$ forms at the interface of the Ni/P coating and the silicon and that a silicon overlayer forms above the $NiSi_2$ interface layer;

(e) directing a vaporized stream of carbon-containing precursor molecules having carbon-to-carbon and carbon-to-hydrogen bonds onto the surface of the silicon overlayer



for a sufficient amount of time that a film of the precursor molecules condenses on the silicon overlayer; and

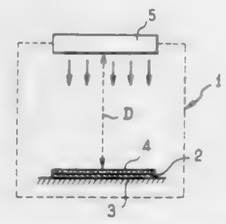
(f) bombarding the film of precursor molecules with an ion beam of a sufficient energy level and for a sufficient amount of time that a sufficient number of the carbon-to-carbon and carbon-to-hydrogen bonds in the precursor molecules break to result in the formation of a diamond-like carbon coating on the silicon overlayer.

5,391,408

METHOD FOR FIRING ENAMEL ON A METAL ARTICLE

Henri Piera, Rumilly, France, assignor to Seb S.A., Selongey, France

PCT No. PCT/FR92/00507, § 371 Date Jan. 29, 1993, § 102(e) Date Jan. 29, 1993, PCT Pub. No. WO92/21791, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 5, 1992, Ser. No. 966,184
Claims priority, application France, Jun. 5, 1991, 91 06789
Int. Cl.[6] B05D *5/00*
U.S. Cl. 427—542 **4 Claims**



1. A method for firing enamel on a metal article subjected to a prior step for depositing, onto at least part of its surface, an enamel frit slip, followed by a drying step, which comprises, after the drying step, a step for exposing only the enamel on the article to infrared radiation of a wavelength such that it directly heats only the enamel without directly heating the metal article.

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5,391,409

LOW TEMPERATURE METHOD FOR SYNTHESIZING DIAMOND WITH HIGH QUALITY BY VAPOR PHASE DEPOSITION

Takayuki Shibata, Otaru; Nobuhiro Ota, and Naoji Fujimori, both of Hyogo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 1, 1992, Ser. No. 861,540

Claims priority, application Japan, Apr. 1, 1991, 3-096367

Int. Cl.[6] B05D *3/06; C23C 16/26*

U.S. Cl. 427—577 **13 Claims**

1. A method for low temperature synthesis of diamond from vapor phase comprising the steps of: preparing a material gas consisting of hydrogen gas, carbon and halogen,

said carbon being hydrocarbon gas or halogenized hydrocarbon gas or a mixture thereof, and

said halogen being halogen gas or halogenized hydrocarbon gas or a mixture thereof; introducing the material gas into a vacuum chamber, decomposing the material gas by heat, microwave, light or electric discharge and depositing a diamond film on a substrate body heated at 250° C. to 700° C. such that the concentration of nitrogen in the material gas is less than 1000 ppm.

5,391,410

PLASMA CVD OF AMORPHOUS SILICON THIN FILM

Tetsuro Nii, Tokyo; Porponth Sichanugrist, Kanagawa, and Takahisa Kase, Tokyo, all of Japan, assignors to Showa Shell Sekiku K.K., Tokyo, Japan

Filed May 28, 1993, Ser. No. 68,070

Claims priority, application Japan, Jun. 3, 1992, 4-142660; Dec. 21, 1992, 4-356379

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—578 **3 Claims**

1. A method for producing an amorphous silicon thin film comprising: depositing a silicon thin film on a substrate by plasma chemical vapor deposition, and supplying a mixture consisting essentially of a hydrogen-diluted SiH_4 gas and N_2O during the plasma chemical vapor deposition as reacting gases for the plasma chemical vapor deposition, wherein the degree of hydrogen dilution is from 10 to 20.

5,391,411

GLAZING ASSEMBLIES AND METHOD

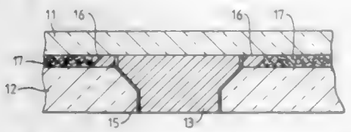
Eric Rowland, Ormskirk, and Vincent Wilcock, St. Helens, both of United Kingdom, assignors to Pilkington PLC, United Kingdom

Filed Feb. 8, 1993, Ser. No. 14,494

Claims priority, application United Kingdom, Feb. 13, 1992, 9203044

Int. Cl.[6] B32B *17/10; C03C 27/10*

U.S. Cl. 428—34 **9 Claims**



1. A cast-in-place laminated glazing assembly including at least first and second separate sheets of glass at least one of which first and second sheets incorporates at least one aperture for the location of attachment means and the first and second sheets of glass are arranged face-to-face in close substantially parallel spaced-apart relationship by means of a peripheral spacing means and an interlayer of cured resin material between the inner faces of the first and second sheets of glass, wherein resilient sealing tape is located around the or each aperture between the opposing inner faces of the first and second sheets of glass spaced inwardly from said peripheral spacing means and the sealing tape serves to prevent resin material escaping into the or each aperture prior to curing of the resin material.

5,391,412

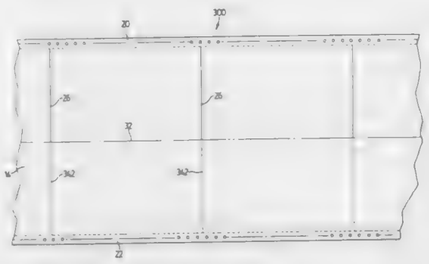
CONTINUOUS FORM

John A. Long, 41 Lamont Avenue, Scarborough, Ontario, Canada M1S 1A8

Continuation-in-part of Ser. No. 35,702, Mar. 23, 1993, which is a continuation-in-part of Ser. No. 859,879, Mar. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 816,712, Jan. 3, 1992, Pat. No. 5,275,857, which is a continuation-in-part of Ser. No. 800,285, Nov. 29, 1991, Pat. No. 5,219,631. This application May 26, 1993, Ser. No. 67,057

Int. Cl.[6] B32B *3/10*

U.S. Cl. 428—43 **8 Claims**



1. A paper continuous form, comprising:

a first edge and an opposed second edge;

a plurality of linear transverse cuts, each of said cuts extending in said continuous form from said first edge, said plurality of transverse cuts being of uniform length and being uniformly longitudinally spaced along said continuous form;

a transverse light line of perforation extending from the inner end of each transverse cut to said second edge of said continuous form;

each transverse cut being at least several times longer than any cut forming part of said light line of perforation.

5,391,413

OPTICAL RECORDING MEDIUM

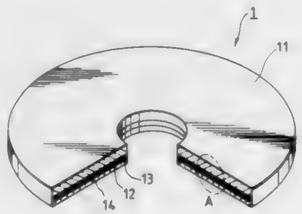
Shuichi Yanagisawa; Tatsuro Sakai; Satoru Tanaka; Takashi Chuman; Yasushi Araki, and Fumio Matsui, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 17, 1991, Ser. No. 808,623

Claims priority, application Japan, Jun. 25, 1991, 3-153386

Int. Cl.[6] B32B *3/00*

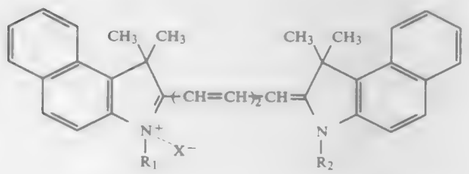
U.S. Cl. 428—64 **4 Claims**



1. An optical recording medium comprising a light-transparent substrate including pregrooves formed in a surface of said substrate, a light-absorbing layer having a thickness of about 30 to 900 nm formed on said pregrooves, and a light-reflecting layer formed on said light-absorbing layer,

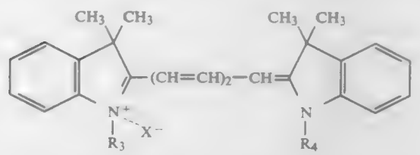
wherein said pregrooves have a depth of from about $\lambda/6.5$ n to $\lambda/2.5$ n, wherein λ is the wavelength of recording or reproducing light in nanometers and n is the refractive index of the substrate, and wherein said pregrooves further have a width of from about 0.35 to 0.47 μm,

wherein said light-absorbing layer contains a first cyanine dye represented by the following general formula (I):



wherein R_1 and R_2 are each an alkyl group having 1–8 carbon atoms, and X^- is a counter ion,

and a second cyanine dye represented by the following general formula (II):



wherein R_3 and R_4 are each an alkyl group having 1–8 carbon atoms, and X^- is a counter ion, and

wherein information is recorded or reproduced in said light-absorbing layer in a wavelength region of about 780–830 nm.

5,391,414

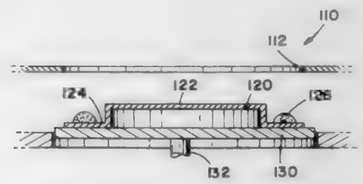
DISKETTES HAVING CROSSLINKED ADHESIVE BOND TO HUB

Arlin Doering, South St. Paul, and Clayton A. George, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 21, 1992, Ser. No. 947,731

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—64 **8 Claims**



1. A recording diskette comprising an annular recording medium disk having a top surface and a bottom surface, and a hub having a circular flange portion, bonded to the disk with a pressure sensitive adhesive, wherein the adhesive comprises:

a crosslinked pressure-sensitive adhesive comprising a crosslinked copolymer including, as monomers, A and a crosslinking agent wherein:

A is a monomeric acrylate or methacrylate ester of a non-tertiary alcohol or a mixture of non-tertiary alcohols, said alcohols having from 1 to about 14 carbon atoms; and

the crosslinking agent is PX, a copolymerizable mono-ethylenically unsaturated aromatic ketone monomer substantially free of ortho-aromatic hydroxyl groups; the copolymer being crosslinked by means of PX; wherein PX monomer units are present in the copolymer in a proportion of about 0.025 to about 1.0% by weight of said copolymer.

5,391,415

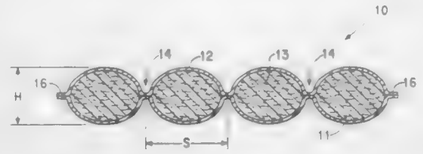
ARTICLE FOR ABSORBING OILS

Thomas I. Bair, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 30, 1993, Ser. No. 129,563

Int. Cl.[6] B32B *1/06*

U.S. Cl. 428—74 **4 Claims**



1. An oil-absorbing article having a porous outer fabric surrounding an absorbent filling material of fibrous organic polymer, wherein

the filling material weighs in the range of 400 to 800 g/m^2 has a density in the range of 0.05 to 0.09 g/cm^3 and consists essentially of balls of fluff formed from out-of-plane crimped fibers of 0.5 to 5 dtex,

the porous outer fabric weighs in the range of 100 to 170 g/m^2, is of polyester or polypropylene fibers and forms an upper surface and a lower surface of the oil-absorbing article,

the oil-absorbing article has a generally planar shape, a pattern of compressed narrow longitudinal lanes wherein the upper and lower surfaces are connected to each other, the lanes being no more than 0.4-cm wide and forming channels between successive lanes, the channels having a width in the range of 1 to 4 cm and a maximum thickness in the range of 0.8 to 1.4 cm and

the oil-absorbing article is capable of absorbing at least 8.3 kilograms of oil per square meter of article planar cross-section, the absorbed oil amounting to at least six times the original weight of the oil-absorbing article, and of being re-used at least five times.

5,391,416

GLASS PANE ASSEMBLY

Heinz Kunert, Cologne, Germany, assignor to St. Gobain Vitrage International, Courbevoie, France

Filed Jan. 10, 1992, Ser. No. 819,414

Claims priority, application Germany, Jan. 11, 1991, 4100631

Int. Cl.[6] B60R *13/06*

U.S. Cl. 428—122 **29 Claims**

1. A glass pane assembly for adhesive bonding to the window frame of an automobile body, comprising:

a glass pane of predetermined weight;

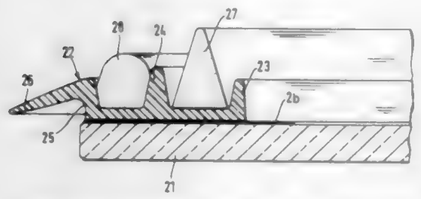
a profiled spacer firmly bonded to one surface of said glass pane proximate to a peripheral edge thereof for supporting the weight of the glass pane and having at least one web aligned substantially perpendicular to said glass pane and extending towards a fastening flange oriented substantially parallel to at least one edge of the pane;

a first bead of reaction adhesive composition extending beyond said at least one web, said bead of reaction adhesive composition arranged parallel to and on a first side of said web; and

a second bead of a plastic adhesive having a faster curing rate than said reaction adhesive, said plastic adhesive

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formed on a second side of said web to adhesively fix said glass pane relative to a fastening flange on said window frame during curing of said reaction adhesive whereby



said plastic adhesive and said reaction adhesive bond said assembly to said flange of said frame without mechanical fasteners.

5,391,417

ASPHALTIC ROOFING MATERIAL WITH CLASS F FLY ASH FILLER

Clinton W. Pike, Coweta, Ga., assignor to JTM Industries, Inc., Kennesaw, Ga.

Continuation of Ser. No. 705,372, May 24, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 51,162

Int. Cl.[6] **B32B** *5/16, 9/00;* **E04D** *1/00*

U.S. Cl. 428—143 **6 Claims**

1. Asphaltic roofing material in the form of a roll or shingle in which a hot mixture of an asphaltic base and inert filler is applied to a substrate such as a felt or mat of fiber glass, the improvement in which said filler comprises Class F fly ash.

5,391,418

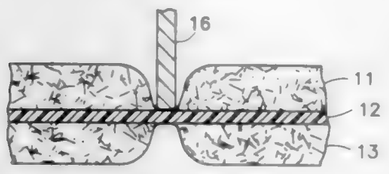
METHOD AND APPARATUS FOR PRODUCING MATTRESS PADS AND THE LIKE

Bruce Strongwater, Englewood, N.J., assignor to J. Lamb, Inc., Englewood, N.J.

Filed Jun. 11, 1993, Ser. No. 76,246

Int. Cl.[6] **B32B** *5/26, 7/10*

U.S. Cl. 428—171 **10 Claims**



1. A washable quilted reversible laminate produced according to the following method comprising the steps of:

(a) providing a first web of a thermoplastic film material to provide a moisture barrier layer;

(b) placing second and third webs of a non-woven fibrous material having intermingled fibers for absorbing and retaining moisture into engagement with opposite major surfaces of said first web;

(c) placing the aforementioned engaging webs within a dielectric heating assembly comprised of a conductive backing platen electrode and a die electrode having a predetermined pattern;

pressing said die pattern into an exposed major surface of one of said fibrous webs to thereby firmly press together those portions of said fibrous webs beneath said die pattern against said first web in accordance with said die pattern while allowing said fibrous webs not compressed between said die and said platen to remain in their uncompressed state; and

(e) applying electrical energy across said die and said platen to dielectrically heat the compressed portions sufficient to compress and bond said fibrous webs to said web to form an aesthetically appealing pattern on both exposed major surfaces of said fibrous webs, said bond being capable of withstanding repeated washing, without destroying the bonds.

5,391,419

LOOP FORMATION IN ON-MACHINE-SEAMED PRESS FABRICS USING UNIQUE YARNS

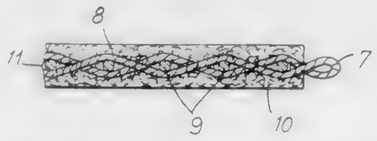
Francis L. Davenport, Ballston Lake, N.Y., assignor to Albany International Corp., Albany, N.Y.

Continuation-in-part of Ser. No. 395,363, Aug. 17, 1989, Pat. No. 5,204,150. This application Apr. 24, 1992, Ser. No. 874,185

The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.

Int. Cl.[6] **B32B** *23/02, 5/06;* **D03D** *23/00, 15/00*

U.S. Cl. 428—193 **11 Claims**



1. An open-ended press fabric, for use on the press section of a papermaking machine, and designed for pin-seam closure, comprising:

a system of machine-direction (MD) yarns and a system of cross-machine direction (CD) yarns, said yarns of said system of machine-direction (MD) yarns being interwoven with said yarns of said system of cross-machine direction (CD) yarns to form said open-ended press fabric in a rectangular shape with a length, a width, two lengthwise edges, and two widthwise edges, said machine-direction (MD) yarns extending for said length of said open-ended press fabric between said two widthwise edges, said machine-direction (MD) yarns further forming loops along each of said two widthwise edges for joining said two widthwise edges to one another with a pin seam, said pin seam being integral to said open-ended press fabric, said machine-direction (MD) yarns extending for the length of said open-ended press fabric being composite yarns including a core yarn and having a sleeve-like coating to form a monofilament-like strand, said core yarn being of a synthetic polymeric resin, said composite yarns forming said loops along said two widthwise edges of said open-ended press fabric to facilitate the intermeshing of said loops when said two widthwise edges are brought together to form said pin seam.

5,391,420

FRAGRANCE-LADEN POUCH SAMPLERS AND PROCESS FOR THEIR MANUFACTURE

Matthew W. Bootman, Medfield; Daniel L. Brown, Wayland, both of Mass.; Elaine Trebek-Kares, Los Angeles, Calif., and Randall E. Adams, Billerica, Mass., assignors to Thermedics Inc., Woburn, Mass.

Continuation-in-part of Ser. No. 893,521, Jun. 4, 1992, which is a division of Ser. No. 730,653, Jul. 16, 1991, abandoned. This application May 7, 1993, Ser. No. 59,452

Int. Cl.[6] **B32B** *9/00*

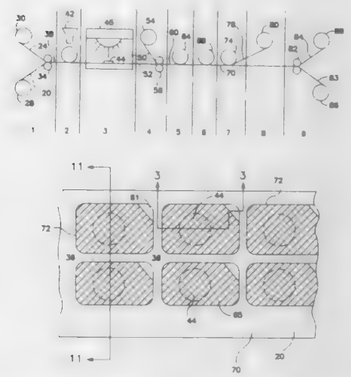
U.S. Cl. 428—195 **23 Claims**

1. a fragrance-laden pouch for sampling of fragrances comprising:

(a) a bottom barrier film member;

(b) a top barrier film member hermetically and releasably joined to said bottom barrier member to form an enclosure;

(c) a fragrance-laden polymer contained within said enclosure and in contact with said top and bottom barrier film members, said fragrance-laden polymer gel comprising, by weight, 10 to 40 percent of a fragrance oil, 30 to 70



percent ethyl alcohol, 0.1 to 10 percent of a polymer 0 to 0.1 percent of an antioxidant, balance water; and

(d) means for separating said top barrier film member from said bottom barrier film member to permit release of fragrance from said enclosure.

5,391,421

ADDITIVE PLATING PROCESS

Michael Gulla, Millis, Mass., assignor to Shipley Company Inc., Marlborough, Mass.

Division of Ser. No. 989,377, Dec. 11, 1992, Pat. No. 5,262,041. This application Nov. 15, 1993, Ser. No. 153,072

Int. Cl.[6] **B32B** *9/00*

U.S. Cl. 428—209 **13 Claims**

1. A printed circuit board comprising a nonconductive substrate coated with electroplated metal in a discrete pattern of circuit lines and through-holes, said electroplated metal having a thin film of non-metallic conductive coating having a surface resistivity not exceeding 100 megaohms between it and said substrate but not elsewhere on said substrate.

5,391,422

DIAMOND- OR DIAMOND-LIKE CARBON-COATED HARD MATERIALS

Naoya Omori, and Toshio Nomura, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

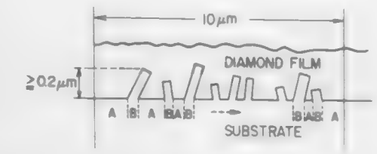
Continuation of Ser. No. 831,547, Feb. 5, 1992, abandoned. This application Jan. 7, 1994, Ser. No. 178,622

Claims priority, application Japan, Feb. 18, 1991, 3-023495; Feb. 18, 1991, 3-023496

Int. Cl.[6] **C30B** *29/04*

U.S. Cl. 428—212 **2 Claims**

1. A coated hard material comprising a diamond- and/or diamond-like carbon-coating layer formed on the surface of a hard material substrate, characterized in that (1) microscopic roughness is present on the surface of the substrate, (2) protrusive parts thereof having a height of at least 0.2 μm are defined by a surface roughness Rmax within a range of 1 to 30 μm in a standard length when the standard length is 50 μm in the interface bf the diamond- and/or diamond-like carbon-coated layer and the substrate, (3) at least one protrusive part having a height of at least 1 μm is present in a standard length when



the standard length is 10 μm and the ratio of sum A of the lengths of dent parts to sum B of the lengths of the protrusions is in the range of 0.2 to 20, (4) the protrusive parts are intruded into the diamond-coated layer and (5) the material of the substrate is a cemented carbide or cermet.

5,391,423

BIODEGRADABLE, LIQUID IMPERVIOUS MULTILAYER FILM COMPOSITIONS

Andrew J. Wnuk, Wyoming; Thurman J. Koger, II, Hamilton, and Terrill A. Young, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 905,057, Jun. 26, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 126,672

Int. Cl.[6] **B32B** *7/02, 27/36, 27/00*

U.S. Cl. 428—217 **11 Claims**

1. A biodegradable liquid-impervious multilayer film comprising:

a first polymer film layer and a second polymer film layer joined to said first layer; said polymer film layers comprising a thermoplastic polymer capable of forming a film by a melt process, said thermoplastic polymer being selected from the group consisting of:

(a) moisture sensitive polymers selected from the first group consisting of interpenetrated networks of destructurized starch, mixtures of destructurized starch, thermoplastic polyvinyl alcohol compositions, hydroxypropyl cellulose, and mixtures thereof;

(b) thermally sensitive polymers selected from the group consisting of polycaprolactone, other aliphatic polyesters having melting points below about 65° C. or Vicat softening points of 45° C. or less, and mixtures thereof;

(c) mechanically limited polymers selected from the group consisting of cellulose esters, cellulose ester blends with polycaprolactone, cellulose ester blends with polyhydroxybutyrate/valerate copolymers, and mixtures thereof;

(d) poly(alpha-hydroxy alkanoates);

(e) hydrolytically cleavable aromatic/aliphatic polyester copolymers selected from the group consisting of copolymers of polyethylene terephthalate and polybutylene terephthalate, wherein the aliphatic fraction of said copolymer is derived from the group consisting of oxalates, malonates, succinates, glutarates, adipates, pimelates, suberates, azelates, sebacates, nonanedioates, glycolates, and mixtures thereof;

(f) oxidized ethylene/carbon monoxide copolymers;

(g) aliphatic polyesters having melting temperatures or glass transition temperatures above 65° C.; and

(h) thermoplastic, biodegradable elastomers selected from the group consisting of polycaprolactone/diene block copolymers and aliphatic polyester urethanes;

said first and second polymer film layers comprising different polymers;

said multilayer film having:

a machine direction (MD) tensile modulus from about

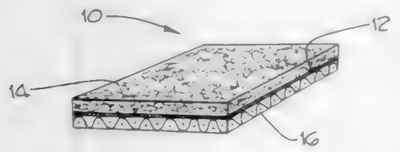
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6.895×10^8 dynes/sq. cm. to 6.895×10^9 dynes/sq. cm. (10,000 to about 100,000 lbs./sq. in.);
a MD tear strength of at least 70 grams per 25.4 microns of thickness;
a cross machine direction (CD) tear strength of at least 70 grams per 25.4 microns of thickness;
an impact strength of at least 12 centimeters as measured by falling ball drop;
a moisture transpod rate less than about 0.0012 grams per square centimeter per 16 hours;
a modulus at 60° C. of at least 5.52×10^7 dynes/sq. cm. (800 lbs./sq. in.); and
a thickness from about 12 microns to about 75 microns.

5,391,424
LIGHTWEIGHT FILLER AND A PROCESS FOR ITS MANUFACTURE
Klaus Kolzer, Denrather Schlossufer 65b, D-4000 Dusseldorf 13, Germany
Filed Feb. 3, 1992, Ser. No. 830,014
Claims priority, application Germany, Feb. 5, 1991, 4103351
Int. Cl.[6] B32B *7/02, 5/16, 7/12*
U.S. Cl. 428—220 16 Claims

1. A lightweight filler comprising a non-woven fabric of substantially two-dimensionally oriented spun fibers which are loosened up and held together by expanded microspheres of plastic material.

5,391,425
COMPOSITE MATERIAL WITH SHRINKAGE BARRIER
Frederick P. Isley, Jr., Tracy, and John D. Neuner, West Pittsburgh, both of Calif., assignors to Hexcel Corporation, Pleasanton, Calif.
Filed Jul. 30, 1992, Ser. No. 922,629
Int. Cl.[6] B32B *3/06*
U.S. Cl. 428—102 12 Claims



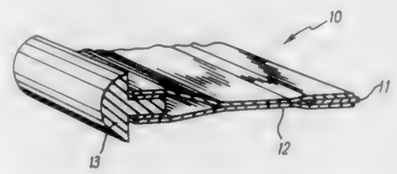
1. An article comprising:
a composite body having a surface, said composite body comprising a plurality of fibers embedded in a first resin matrix wherein at least a portion of said fibers embedded in said first resin matrix form a fiber pattern, said fiber pattern being located sufficiently close to the surface of said composite body so that said fiber pattern is transferred to said surface; and
a layer of filled resin comprising microspheric particles embedded in a second resin matrix, said layer of filled resin having an interior located on said composite body surface and an exterior surface which defines the surface of said article, wherein said layer of filled resin is sufficiently thick so that the fiber pattern is not transferred to the exterior surface of said layer of filled resin.

5,391,426
POLYALKYLENEIMINE COATED MATERIAL
Huey S. Wu, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.
Continuation-in-part of Ser. No. 915,479, Jul. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 894,875, Jun. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 849,546, Mar. 11, 1992, abandoned. This application Dec. 14, 1992, Ser. No. 990,307
Int. Cl.[6] B32B *7/14, 27/04*
U.S. Cl. 428—246 8 Claims



1. A protective covering that protects against noxious gases or chemical agents, which is a composite comprising:
a layer of a gas-blocking, water vapor-permeable polymeric material consisting essentially of a crosslinked polyalkyleneimine wherein the alkylene moiety is 2 to 8 carbon atoms, said layer being sandwiched between two layers of a pliable material selected from the group consisting of microporous polymeric films and nonporous polymeric films, said pliable material is liquid water resistant but permeable to water vapor, and in which the polyalkyleneimine layer is present in said covering in an amount of between 2 and 250 g/m^2.

5,391,427
FILTER BELT
Shyam Kumaran, Victoria, Australia, assignor to Scapa Group plc, Blackburn, England
Filed Aug. 25, 1992, Ser. No. 934,849
Claims priority, application Australia, Aug. 28, 1991, PK7993
Int. Cl.[6] B32B *7/00, 25/12;* D04H *1/58*
U.S. Cl. 428—284 7 Claims



1. A filter belt comprising:
a length of filter cloth;
an elongated track made of an elastomeric thermoplastic olefin material including which softens under heat in order to provide adhesion, said track being disposed adjacent at least one edge of said length of filter cloth; and
at least one piece of reinforcement fabric heat welded at one edge thereof to said track and secured to said length of filter cloth so as to connect said track to said length of filter cloth and form said filter belt.

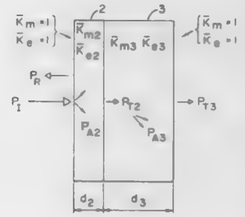
5,391,428
MONOLITHIC CERAMIC/FIBER REINFORCED CERAMIC COMPOSITE
Mark D. Zender, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 897,879, Jun. 12, 1992, abandoned. This application Feb. 16, 1994, Ser. No. 197,351
Int. Cl.[6] B32B *5/22*
U.S. Cl. 428—297 19 Claims

15. A shaped ceramic-ceramic composite article comprising a shaped ceramic monolith, one of a ceramic fiber matrix or a carbon fiber matrix thereover, a carbonaceous coating on said matrix, and overlying said coating a coating of silicon carbide, said shaped ceramic monolith being selected from the group consisting of a shaped alumina ceramic monolith, a shaped mullite ceramic monolith, a shaped silicon carbide ceramic monolith, and a shaped zirconia ceramic monolith.

5,391,429
POLYESTER FILM
Yuzo Otani, Tokyo; Toshifumi Takisawa, Kawasaki; Shin-ichi Kinoshita, and Masato Fujita, both of Machida, all of Japan, assignors to Diafoil Hoechst Company, Limited, Tokyo, Japan
Filed Jan. 4, 1993, Ser. No. 368
Claims priority, application Japan, Jan. 7, 1992, 4-001057; Feb. 27, 1992, 4-041457; Apr. 7, 1992, 4-085625
Int. Cl.[6] B32B *27/36;* B29C *55/12*
U.S. Cl. 428—327 19 Claims

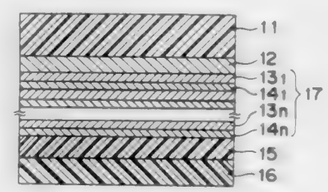
1. A polyester resin film which is biaxially oriented and again oriented in a machine direction and a continuous coating layer formed on at least one surface of said film, wherein said continuous coating layer contains at least 50% by weight of a water-soluble or water-dispersible polyester resin having a glass transition temperature of at least 20° C.

5,391,430
THERMOSTATING FOIL-BASED LAMINATE MICROWAVE ABSORBERS
Thomas J. Fabish, Export; Arthur Benson, Pittsburgh; Thomas L. Levendusky, Greenburg; Barbara O. Hall, Monroeville; J. Glenn Davidson, Freeport, and James E. Stillwagon, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Jun. 23, 1992, Ser. No. 902,883
Int. Cl.[6] B32B *5/16;* H05B *6/68*
U.S. Cl. 428—328 5 Claims



1. A laminate for heating a food load at different rates using microwave radiation, said laminate comprising:
a continuous metal substrate opaque to microwave radiation; and
a polymer matrix overlayer located on one side of the opaque metal substrate for receiving microwave radiation incident upon the polymer matrix overlayer;
said overlayer comprising a layer of polymer material having a predetermined thickness and containing dielectric and magnetic particles that provide a favorable impedance match of the laminate, as comprised of the overlayer and microwave opaque metal, to the microwave radiation incident from free space such that the particles of the overlayer interact with the electric and magnetic components of the microwave radiation wherein primarily magnetic losses occur thereby enabling absorption of a portion of the incident radiation and thus conversion of said radiation to heat within the overlayer, said dielectric particles including aluminum flake, carbon, graphite, pillared clays or ferroelectric crystals of perovskite structure, and combinations thereof, while said magnetic particles include iron or ferrite, or both;
said particles providing, after a predetermined time of exposure to the radiation at a predetermined temperature of the overlayer, an increase or a decrease in the amount of the interaction and absorption, and thus providing an increase or decrease in the amount of heat generated;
said particles having a heat conducting capability and a bulk density in the polymer overlayer that provides particle-to-particle coupling of thermal phonons through the overlayer to the opaque substrate at a rate that can increase or decrease at a predetermined time of exposure to the radiation at a predetermined temperature of said matrix overlayer.

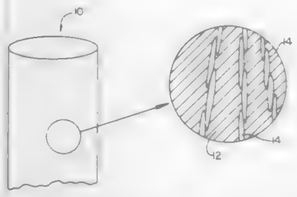
5,391,431
MAGNETO-OPTICAL RECORDING MEDIUM
Yoshihiko Kudoh, Yawata, and Masahiro Birukawa, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Mar. 1, 1993, Ser. No. 24,317
Claims priority, application Japan, Feb. 28, 1992, 4-041865
Int. Cl.[6] B32B *5/16;* G11B *5/66*
U.S. Cl. 428—336 12 Claims



1. A magneto-optical recording medium which comprises:
a substrate through which an incident light signal to be recorded is transmitted, said substrate having a plane;
a base film formed on said substrate, said base film being comprised of any one crystal material selected from the group consisting of hexagonal crystal material and rhombohedral crystal material, having its (00l) plane oriented in parallel to the plane of said substrate;
a magnetic recording film formed on said base film for recording the light signal therein, said recording film comprised of plural pairs of Mn alloy magnetic film layers and nonmagnetic film layers alternately laminated with each other, wherein each Mn alloy magnetic film layer has a thickness in a range of 0.5 to 5 nm and is comprised of a hexagonal crystal material having a C-axis-oriented crystalline magnetic anisotropy with a lattice constant in its (00k) plane which is approximately equal to the lattice constant in the (00l) plane of said base film, while each nonmagnetic film layer has a thickness in a range of 0.5 to 5 nm and is comprised of any one crystal material selected from the group consisting of hexagonal crystal material and rhombohedral crystal material having a lattice constant in its (00h) plane which is approximately equal to the lattice constant in the (00l) plane of said base film, and wherein l, k, and h represent positive integers.

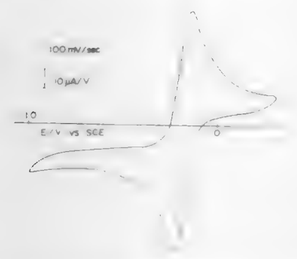
VOL 1171 ISS 3 FE 21 1995 UMI

5,391,432
ANTISTATIC FIBERS
Mark Mitchnick, P.O. Box 1451, Wainscott, N.Y. 11975, and Mamoun Muhammed, Eketorpsvägen 25, S-18261 Djursholm-(Stockholm), Sweden
Filed Apr. 28, 1993, Ser. No. 54,039
Int. Cl.[6] B32B 19/00
U.S. Cl. 428—357 12 Claims



1. A conductive fiber comprising a fiber-forming polymer in combination with zinc oxide particles having a substantially rod shape, said substantial rod shape comprising an elongated spherical shape.

5,391,433
CARBON MATERIAL FOR ELECTRODES AND PROCESS FOR PREPARING IT
Takamasa Kawakubo, Tano, and Yoshihisa Suda, Maebashi, both of Japan, assignors to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 4, 1992, Ser. No. 971,283
Claims priority, application Japan, Nov. 29, 1991, 3-339462
Int. Cl.[6] G01N 27/30
U.S. Cl. 428—408 2 Claims



1. A carbon material for electrodes which is a graphite/glass like carbon composite material having a structure in which the crystals of the graphite are oriented in one direction in the matrix of the glass like carbon so as to possess an electrode reaction activity inherent in the graphite crystals, having a maximum pore diameter of 150 Å or less, and having electrolyte non-penetrative properties substantially corresponding to those of the glass like carbon.

5,391,434
HOT MELT ADHESIVE COMPOSITIONS COMPRISING LOW MOLECULAR WEIGHT ETHYLENE COPOLYMERS
Lawrence Krutzel, Morristown, N.J., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.
Division of Ser. No. 131,921, Oct. 4, 1993, Pat. No. 5,340,863, which is a continuation of Ser. No. 850,647, Mar. 13, 1992, abandoned. This application May 12, 1994, Ser. No. 241,539
Int. Cl.[6] B32B 27/36, 15/08, 27/06, 27/08
U.S. Cl. 428—412 31 Claims

1. A laminar structure comprising:
(I) a first substrate;
(II) a second substrate; and
(III) a hot melt adhesive comprising:
(a) a base polymer constituent having a melt index of 0.2 to 3000g/10min as measured by ASTM D-1238;
(b) a tackifying constituent;
(c) optionally a wax constituent; and
(d) a low molecular weight constituent having a melt index of greater than 3000g/10 min as measured by ASTM D-1238, said low molecular weight constituent being selected from the group consisting of:
(i) random ethylene/carbon monoxide copolymers;
(ii) random ethylene/vinyl alcohol copolymers consisting of less than about 10 mol percent vinyl alcohol;
(iii) random ethylene/vinyl alcohol/vinyl acetate terpolymers consisting of less than about 10 mol percent vinyl alcohol;
(iv) random polymers of (i), (ii), and (iii) with additional recurring monomeric units derived from monomers selepted from the group consisting of alkyl acrylates, acrylic acid, methacrylic acid, maleic anhydride, and vinyl acetate; and
(v) at least partially oxidized said (i), (ii), (iii), and (iv)
wherein said first substrate (I) and said second substrate (II) are joined by an intermediate layer of said hot melt adhesive (III) in interfacial contact therewith and said low molecular weight constituent (d) is present in an amount sufficient to provide greater adhesion to said substrates than a comparative composition in which said low molecular weight constituent is absent.

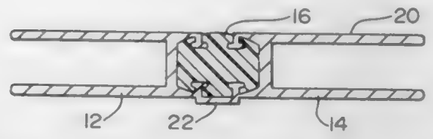
5,391,435
INTERPENETRATING NETWORK OF RING-CONTAINING ALLYL POLYMERS AND EPOXY RESIN LAMINATE
Jan A. J. Schutyser, JJ Dieren; Antonius J. W. Buser, DA Wehl; Pieter H. Zuuring, LW Nijmegen, and Hendrik J. Slot, PV Rijssen, all of Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands
Division of Ser. No. 563,571, Aug. 7, 1990, Pat. No. 5,210,157. This application Dec. 8, 1992, Ser. No. 987,226
Claims priority, application Netherlands, Aug. 15, 1989, 8902066
Int. Cl.[6] B32B 15/08; C08L 39/04
U.S. Cl. 428—416 13 Claims

1. A laminate comprising a layer of metal and a polymeric material comprising an interpenetrating polymer network composed of a first component consisting essentially of a cyclic moiety-containing polyallyl compound, optionally in combination with an aromatic difunctional methacrylate, polymerized and cross-linked in the presence of a free radical initiator and a second component consisting essentially of an epoxy resin cross-linked with a polyhydric phenol.

5,391,436
METAL CASING WITH POLYURETHANE THERMAL BREAK
Kevin J. Reid, White Bear, Minn., assignor to H. B. Fuller Licensing & Financing, Inc., Wilmington, Del.
Continuation of Ser. No. 869,389, Apr. 16, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 72,248
Int. Cl.[6] B32B 15/04
U.S. Cl. 428—423.1 13 Claims

1. A metal casing comprising a formed-in-place polyurethane thermal break wherein the polyurethane has been formed from a polyol/polyisocyanate mixture which has been

catalyzed by a tertiary amine selected from the group consisting of 1,4-diazabicyclooctane and N-(3-dimethylamino)propyl-



N,N',N'-trimethyl-1,3-propanediamine, the mixture formulated for a crosslink density, M, in the range of about 550–680.

5,391,437
HIGH-STRENGTH COMPOSITE MATERIAL AND PROCESS FOR PRODUCING THE SAME
Takaaki Miyasaka, Higashimurayama; Akira Kajikawa, Funabashi; Masayuki Kiyomoto, Yono; Hiroshi Sakurai, Iruma, and Motokazu Mano, Urawa, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 640,418, Jan. 11, 1991, abandoned. This application Aug. 20, 1993, Ser. No. 110,644
Claims priority, application Japan, May 22, 1989, 1-126644; Jul. 17, 1989, 1-182526
Int. Cl.[6] C04B 26/02, 26/16
U.S. Cl. 428—425.5 4 Claims

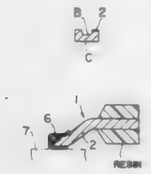
1. A composite material having a flexural strength of 244 to 1191 kgf/cm^2 which is obtained by kneading a mixture comprising a non-hydraulic inorganic material selected from the group consisting of blast-furnace slag powder, silica fume, fly ash, silica sand, silica rock powder, calcium carbonate, talc, clay, zeolite, pearlite, diatomaceous earth, kaolin, alumina, titania and zirconia, a water-soluble polymer and water, the water being present in an amount of 5 to 30% by weight based on the non-hydraulic inorganic material, molding the kneaded mixture, and drying the thus molded material.

5,391,438
POLYMER TREATING PROCESS
Mordechai Pasternak, Spring Valley, N.Y., assignor to Texaco Inc., White Plains, N.Y.
Filed Oct. 1, 1993, Ser. No. 130,410
Int. Cl.[6] B32B 27/32
U.S. Cl. 428—523 17 Claims

15. A polyolefin polymer of modified surface properties prepared by the process which comprises
contacting surface of a polyolefin polymer with an amine donor thereby forming a polyolefin polymer with a surface bearing residues of said amine donor composition;
irradiating said surface bearing residues of amine donor with ultraviolet irradiation of wave-length of 1800Å–2800Å thereby forming said polyolefin polymer having a surface of modified properties; and
recovering said polyolefin polymer having a surface of modified properties.

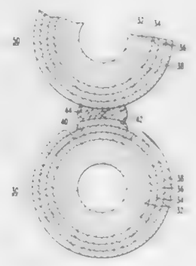
5,391,439
LEADFRAME ADAPTED TO SUPPORT SEMICONDUCTOR ELEMENTS
Koji Tomita; Kazunori Kato, both of Tokyo, and Jun Kato, Shizuoka, all of Japan, assignors to Dai Nippon Printing Co., Ltd. and Yamaha Corp., Japan
Continuation of Ser. No. 17,988, Feb. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 765,981, Sep. 26, 1991, abandoned. This application Feb. 4, 1994, Ser. No. 191,714
Claims priority, application Japan, Sep. 27, 1990, 2-258279
Int. Cl.[6] H01L 23/495
U.S. Cl. 428—571 11 Claims

1. A leadframe provided with a plurality of outer lead sections of an elongated shape having outer ends to be cut along a cutting line before mounting, by soldering, said outer lead sections on a printed circuit board, each of said outer lead sections being formed with half-etched recess means providing means for receiving solder in a soldering region including said cutting line, each of said outer lead sections having a length, a width, a thickness and opposite front and rear major surfaces, said rear major surface being adapted to be soldered to said



printed circuit board in face-to-face contact, said recess means comprising an elongated, substantially rectangular groove formed in said rear major surface and extending along said length transversely to said cutting line and centrally of the width of each outer lead section, said groove having a substantially flat, elongated bottom which extends along said length in substantially parallel relation to said major surfaces and which is located in an intermediate position of said thickness.

5,391,440
METHOD OF FORMING A LEAK PROOF PLASMA SPRAYED INTERCONNECTION LAYER ON AN ELECTRODE OF AN ELECTROCHEMICAL CELL
Lewis J. H. Kuo, and Shailesh D. Vora, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 14, 1994, Ser. No. 195,335
Int. Cl.[6] H01M 8/12; B05D 5/12
U.S. Cl. 429—27 20 Claims



18. A high temperature, solid oxide electrochemical cell, comprising:
a first electrode;
a solid oxide electrolyte disposed on a portion of the first electrode;
a second electrode disposed on a portion of the solid electrolyte;
an electrically conductive, substantially gas-tight interconnection material disposed on another portion of the first electrode for electrical coupling to an adjacent cell, said interconnection comprising a thermally sprayed flux added feed powder comprising a mixture of $LaCrO_3$ particles and flux particles, said mixture further including dopant selected from the group consisting of Ca, Sr, Ba, Mg, Co, Ni and Al, and heat treated at about 1200° to 1350° C.

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5,391,441

EXPOSURE MASK AND METHOD OF MANUFACTURE THEREOF

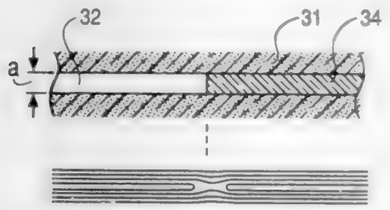
Akira Imai, Hachioji, and Norio Hasegawa, Hinodemachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 19,889

Claims priority, application Japan, Feb. 21, 1992, 4-034740; Mar. 24, 1992, 4-065747

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 47 Claims



1. A phase-shifting mask having light transmission regions, the light transmission regions having first parts with a first light phase shifting layer thereon and second parts without said first light phase shifting layer thereon, an edge being provided between the first and second parts of the light transmission region, the first phase shifting layer extending to said edge, and further comprising second light phase shifting layers overlying said edge and an adjacent portion of the second parts and not covering an entirety of the first phase shifting layer.

5,391,442

METHOD OF FORMING COLOR PATTERN ON A POLYSILANE LAYER

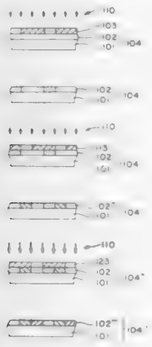
Hiroshi Tsushima, Takatsuki; Iwao Sumiyoshi, Osaka, and Masaaki Yokoyama, Toyonaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jan. 14, 1993, Ser. No. 4,613

Claims priority, application Japan, Jan. 14, 1992, 4-004539; Mar. 26, 1992, 4-068243

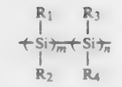
Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—7 7 Claims



1. Method of forming multi-color dyed pattern on a polysilane layer comprising the following steps:

a) a latent image forming step to form a latent image of dyed pattern by selectively exposing a polysilane layer formed on a substrate to UV radiation, said polysilane layer comprising polysilane with the chemical structure indicated by the formula:



wherein, R_1, R_2, R_3 and R_4, respectively, are selected from the group consisting of a substituted or non-substituted aliphatic hydrocarbon group, an alicyclic hydrocarbon group and an aromatic hydrocarbon group, and m and n are integral numbers,

b) a pattern dyeing step wherein said polysilane layer from step a) on which the latent image of dyed pattern is formed is immersed in a dye bath containing at least one type of basic dye,

c) another pattern dyeing step conducted at least once in the same way as in the aforesaid pattern dyeing step except that images of different dyed patterns are formed in said polysilane layer and different types of basic dye are used, having different speeds of absorption on the polysilane layer and

d) at least twice repeating;said pattern dyeing, one after another, starting with the pattern dyeing step which uses a dye having the fastest speed of adsorption on the polysilane layer.

5,391,443

PROCESS FOR THE EXTRACTION OF SPECTRAL IMAGE RECORDS FROM DYE IMAGE FORMING PHOTOGRAPHIC ELEMENTS

Michael J. Simons, Eastcote, United Kingdom, and James E. Sutton, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 905,053, Jun. 26, 1992, abandoned. This application Oct. 26, 1992, Ser. No. 966,623

Claims priority, application United Kingdom, Jul. 19, 1991, 9115620

Int. Cl.[6] G03F *3/10;* G03C *7/24*

U.S. Cl. 430—21 26 Claims

26. A method of extracting independent spectral image records from an imagewise exposed photographic element that contains superimposed silver halide exposure recording layer units that form latent images in the blue, green and red regions of the spectrum and each form a latent image indicative of exposure to a different one or portion of the blue, green and red regions of the spectrum comprising

photographically processing the imagewise exposed photographic element to produce spectrally noncoextensive images,

scanning the images produced by photographic processing, and

deriving image records corresponding to the latent images from the scanned images,

wherein

N+1 of the superimposed silver halide exposure recording layer units are present, N ranging from 2 to 9,

photographic processing is conducted to produce a silver image in N+1 of the exposure recording layer units and a dye image distinguishable from other dye images in at least N exposure recording layer units,

the photographic element is in one instance scanned in a spectral region of silver absorption and minimal image dye absorption to provide a first image density record,

the photographic element is also scanned in N spectral regions each within the half peak absorption band width of a different image dye to provide N additional image density records,

the density of the first image density record is subtracted from the density of each of the N additional image density records to obtain a net dye image density for each of the additional image density records,

each net dye image density is then employed to obtain a corresponding silver image density, and

the corresponding silver image densities are then subtracted from the first image density record to obtain the silver image density in the recording layer unit that is in addition to the recording layer units providing the N additional image density records, thereby providing N+1 image records each corresponding to a different latent image in the exposed photographic element.

5,391,444

METHOD OF FORMING A PATTERN ON A SUBTRATE, METHOD OF MANUFACTURING A DISPLAY DEVICE, DISPLAY DEVICE

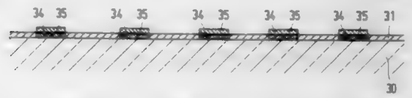
Sebastianus N. G. Cuppen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 3, 1991, Ser. No. 709,684

Claims priority, application Netherlands, Jul. 5, 1990, 9001530

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—23 18 Claims



1. A method of providing material on a substrate to form a pattern on the substrate comprising the steps of

(a) applying to said substrate a layer which becomes tacky upon exposure to radiation,

(b) exposing said layer to said radiation through a first mask to form a first pattern of tacky portions,

(c) providing first powder particles on said tacky portions of said layer and removing loose first powder particles,

(d) exposing said layer to said radiation through a second mask to form at least one second pattern, said second pattern at least partly overlapping said first pattern, wherein said second pattern including the at least partly overlapping portions becomes tacky,

(e) providing at least second powder particles on said second pattern and removing loose second powder particles, and

(f) simultaneously fixing adhered and second powder particles to said substrate.

5,391,445

ELECTROPHOTOGRAPHIC MATERIAL FOR COLOR PROOFING

Eiichi Kato, and Sadao Osawa, both of Haibara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 30, 1993, Ser. No. 39,762

Claims priority, application Japan, Jul. 1, 1992, 4-174384

Int. Cl.[6] G03G *13/14*

U.S. Cl. 430—49 17 Claims

1. An electrophotographic material for color proofing which comprises a substrate, a photoconductive layer and a transfer layer in this order, and is used for preparing a color proof in a process wherein at least one color toner image is electrophotographically formed on the transfer layer and then transferred together with said transfer layer to a sheet material to prepare the color proof, wherein said photoconductive layer comprises a polymer (P) selected from the group consisting of the following polymers (P_1), (P_2), (P_3) and (P_4); a polymer (Q) selected from the group consisting of the following polymers (Q_1) and (Q_2); and a polymer (R) containing at least one unit having photo and/or thermosetting group(s),

the polymer (P) is present at least in the region near the surface facing said transfer layer,

the polymer (P) comprises at least one polymer segment (X) containing not less than 50% by weight of units having fluorine atom(s) and/or silicon atom(s) and at least one polymer segment (Y) containing units having photosetting and/or thermosetting group(s), wherein segment (X) is oriented toward the transfer layer and segment (Y) is oriented toward the inside of the photoconductive layer, and

the surface of said photoconductive layer which contacts with the transfer layer has tack strength of not more than 150 gram.force, which is measured by Pressure Sensitive Tape and Sheet Test of JIS Z0237-1980,

the polymer (P1):

a linear block copolymer which contains at least one polymer segment (X) containing not less than 50% by weight of units having fluorine atom(s) and/or silicon atom(s) and at least one polymer segment (Y) containing units having photosetting and/or thermosetting group(s);

the polymer (P_2)

a star type copolymer which contains at least three AB type block copolymer chains consisting of a polymer segment (X) containing not less than 50% by weight of units having fluorine atom(s) and/or silicon atom(s) and a polymer segment (Y) containing units having photosetting and/or thermosetting group(s), and said block copolymer chains are bonded through an organic group;

the polymer (P_3):

a graft copolymer which contains at least one polymer segment (X) containing not less than 50% by weight of units having fluorine atom(s) and/or silicon atom(s) and at least one polymer segment (Y) containing units having photosetting and/or thermosetting group(s);

the polymer (P_4):

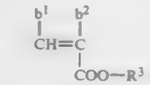
an AB type or ABA type block copolymer which contains at least one polymer segment (X) containing not less than 50% by weight of units having fluorine atom(s) and/or silicon atom(s) and at least one polymer segment (Y) containing units having photosetting and/or thermosetting group(s), wherein at least one said polymer segment (X) is the following graft type polymer segment (X'), at least one said polymer segment (Y) is the following graft type polymer segment (Y'), or at least one said polymer segment (X) is the following graft type polymer segment (X') and at least one said polymer segment (Y) is the following graft type polymer segment (Y'):

the graft type polymer segment (X'): a polymer segment which has a weight-average molecular weight of $1\times10^3\sim2\times10^4$, and contains at least one macromonomer segment (M_A) which contains not less than 50% by weight of units having fluorine atom(s) and/or silicon atom(s);

the graft type polymer segment (Y'): a polymer segment which has a weight-average molecular weight of $1\times10^3\sim2\times10^4$, and contains at least one macromonomer segment (M_B) which does not contain units having fluorine atom(s) and/or silicon atom(s);

the polymer (Q_1):

a graft type copolymer having a weight-average molecular weight of $1\times10^3\sim2\times10^4$ which is obtained by polymerizing at least one monomer represented by the formula (I):

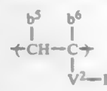


wherein b^1 and b^2 each represents independently a hydrogen atom, a halogen atom, a cyano group or a hydrocarbon group and R^3 represents a hydrocarbon group; and at least one monofunctional macromonomer (M_C) having a weight-average molecular weight of not more than 1×10^4, which contains one or more units having at least one polar group selected from the group consisting of $-PO_3H_2$, $-SO_3H$, $-COOH$, $-PO(OH)R^1$ (R^1 is a hydrocarbon group or $-OR_2$ (R^2 is a hydrocarbon group)) and a residue of a cyclic anhydride in its main chain and contains a group having polymerizable double bond represented by the formula (II):



wherein V^1 represents —COO—, —OCO—, —CH_2OCO—, —CH_2COO—, —O—, —SO_2—, —CO—, —CONHCOO—, —CONHCONH—, —$CONHSO_2$—, —$CON(T^1)$—, —$SO_2N(T^1)$— or —C_6H_5— wherein T^1 represents a hydrogen atom or a hydrocarbon group, and b^3 and b^4 each represents independently a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, —$COOZ^1$ or —Z^2—$COOZ^1$ wherein Z^1 represents a hydrogen atom or a hydrocarbon group and Z^2 represents a hydrocarbon group, in only one end of the main chain; the polymer (Q_2):

a graft type copolymer having a weight-average molecular weight of $1\times10^3\sim2\times10^4$ which contains at least one unit corresponding to monofunctional macromonomer (M_D) which is a AB block copolymer composed of A and B blocks and contains a polymerizable double bond at end of B block, wherein A block contains at least one unit having at least one polar group selected from the group consisting of —PO_3H_2, —SO_3H, —COOH, phenolic hydroxyl group, —$PO(OH)R^1$ (R^1 has the sane meaning as defined in formula (I)) and a residue of a cyclic anhydride and B block contains at least one unit represented by the formula (III):



wherein V^2 represents —COO—, —OCO—, —$(CH_2)_a$—OCO—, COO— (a is an integer of 1 to 3), —O—, —CO—, —$CON(T^1)$—, —$SO_2N(T^1)$—, —CONHCOO—, —CONHCONH— or —C_6H_5— (T^1 has the same meaning as defined in formula (II)), R^4 represents a hydrogen atom or a hydrocarbon group and b^5 and b^6 each has independently the same meaning as b^1 or b^2.

5,391,446

IMAGE HOLDING MEMBER

Noriko Ohtani, Yokohama; Akio Maruyama; Shin Nagahara, both of Tokyo, and Shinya Mayama, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

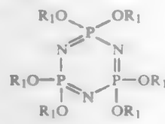
Filed Jul. 2, 1991, Ser. No. 103,033

Claims priority, application Japan, Jul. 2, 1990, 2-175843; Aug. 3, 1990, 2-206603; Aug. 3, 1990, 2-206611; Aug. 3, 1990, 2-206618

Int. Cl.[6] G03G *5/147, 5/047*

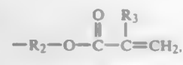
U.S. Cl. 430—58 22 Claims

1. An electrophotographic photosensitive member, comprising in sequence: a support, a photosensitive layer and a resinous protective layer, the resinous layer comprising a resin formed by polymerization of a compound represented by the following Formula (I):



(I)

wherein R_1 in Formula (I) is a group represented by Formula (II) below:



(II)

wherein R_2 is an alkylene group, arylene group, alkyl-substituted arylene group, alkylamide group or arylamide group, and R_3 is a hydrogen atom or a methyl group;

said resinous protective layer containing metal particles or metal oxide particles dispersed therein.

12. An electrophotosensitive photosensitive member according to claim 1, wherein said photosensitive layer has a laminated structure including a charge generation layer and a charge transport layer.

5,391,447

LAYERED PHOTORECEPTOR STRUCTURES WITH OVERCOATINGS CONTAINING A TRIPHENYL METHANE

Damodar M. Pai, Fairport; Paul J. DeFeo, Sodus Point, and Kathleen M. Carmichael, Williamson, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 997,412, Dec. 28, 1992, abandoned. This application Jun. 17, 1994, Ser. No. 261,651

Int. Cl.[6] G03G *5/14*

U.S. Cl. 430—59 15 Claims

1. An electrophotographic imaging member comprising a substrate, a charge generating layer, a charge transport layer comprising electrically active charge transporting molecules dissolved or molecularly dispersed in a first electrically inactive polymer binder, and a charge transporting overcoat layer having a thickness between about 0.5 micrometer and about 10 micrometers, said overcoat comprising a triphenyl methane molecularly dispersed in an electrically inactive second polymer binder, said second polymer binder being soluble in a solvent in which said first polymer binder is insoluble and said charge transport layer being substantially free of any triphenylmethane molecules.

5,391,448

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR AND A METHOD FOR MANUFACTURING THE SAME

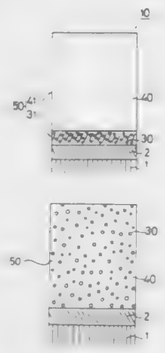
Satoshi Katayama; Yoshihide Shimoda, both of Nara, and Makoto Kurokawa, Kitakatsuragi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 21, 1993, Ser. No. 79,050

Claims priority, application Japan, Jun. 22, 1992, 4-162935; Aug. 19, 1992, 4-220484; Nov. 11, 1992, 4-301127

Int. Cl.[6] G03G *5/14*

U.S. Cl. 430—65 7 Claims



1. An electrophotographic photoconductor comprising:

a conductive support,

an undercoating layer formed on the conductive support, and

a photosensitive layer laminated on the undercoating layer,

wherein the undercoating layer comprises non-conductive titanium oxide particles having a resistance of 10^5 Ω-cm or more with respect to 100 kg/cm^2 of smashed particle and an average particle diameter of 1 μm or less and a polyamide resin, the content of the non-conductive titanium oxide particles is 80 to 99 wt % of the undercoating layer, and the undercoating layer has a thickness of 0.5 to 4.8 μm

provided the content of the non-conductive titanium oxide particles in the undercoating layer is A wt % and the undercoating layer has a thickness of B μm satisfying the following equations:

$0.5\leqq B\leqq 0.2A-15$ and $80\leqq A\leqq 99$.

5,391,449

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Akio Maruyama; Shin Nagahara, both of Tokyo; Noriko Ohtani, Yokohama, and Shinya Mayama, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 709,822, Jun. 4, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 31,023

Claims priority, application Japan, Jun. 4, 1990, 2-146431

Int. Cl.[6] G03G *5/14*

U.S. Cl. 430—66 13 Claims

1. An electrophotographic photosensitive member, comprising: an electroconductive support, a photosensitive layer and a protective layer disposed in this order, said protective layer formed by polymerization of a coating liquid comprising (a) a curable acrylic monomer having at least three acrylic groups and (b) electroconductive particles dispersed therein.

5,391,450

TONER IMAGE HEAT-FIXING METHOD

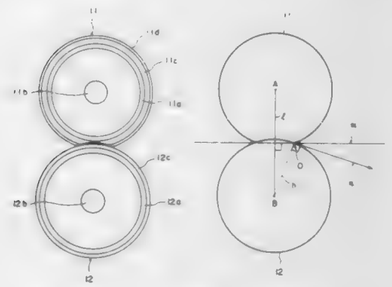
Takayuki Nagatsuka, Yokohama; Tatsuya Nakamura, Tokyo; Hiromi Mori, Yokohama, and Takaaki Kohtaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 737,038, Jul. 29, 1991, abandoned. This application Apr. 22, 1994, Ser. No. 232,340

Claims priority, application Japan, Jul. 31, 1990, 2-201158; Jul. 18, 1991, 3-178222

Int. Cl.[6] G03G *13/20*

U.S. Cl. 430—99 50 Claims



1. A heat-pressure fixing method comprising;

transferring to a transfer medium a negatively charged toner image formed on an electrostatic-image bearing member, said toner containing a wax with a weight average molecular weight (Mw) of from 500 to 1,500 and a melting point of from 55° C. to 100° C., in an amount of from 10 parts by weight to 50 parts by weight based on 100 parts by weight of a vinyl resin; said wax being enclosed in each toner particle by said vinyl resin, wherein the molecular weight distribution of a tetrahydrofuran(THF)-soluble matter measured by gel permeation chromatography, the weight average molecular weight (Mw) is from 10,000 to 500,000, the number average molecular weight (Mn) is from 1,000 to 100,000, the Mw/Mn (value-A) is from 4 to 20, and the Mw/Mn (value-B) for THF-soluble matter in the region of a molecular weight of not less than 1,500, is from 2 to 10; and

fixing said toner image on the transfer medium by the use of a fixing means comprising a fixing roller and a pressure roller that are so provided as to be in mutual pressure contact, through which said transfer medium comes out in the direction inclined toward the pressure roller from the line perpendicular to a line connecting the center of the fixing roller and the center of the pressure roller; the pressure applied between the fixing roller and the pressure roller being not less than 2 kg/cm^2; and the surface of said fixing roller being made of a material comprising a fluorine-containing material.

5,391,451

DEVELOPER COMPRISING TONER COMPOSED OF SPECIFIED RESIN AND CARRIER COATED WITH POLYOLEFINIC RESIN

Naoki Yoshie, Takatsuki; Junji Machida, Toyonaka; Masahiro Anno, Sakai, and Makoto Kobayashi, Settsu, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 27, 1993, Ser. No. 9,763

Claims priority, application Japan, Jan. 29, 1992, 4-013703

Int. Cl.[6] G03G *9/083*

U.S. Cl. 430—106.6 8 Claims

1. A developer for developing electrostatic latent images, which comprises:

a toner containing a binder resin being a thermoplastic resin composed of a copolymer of styrene and acrylic acid ester and/or methacrylic acid ester, with $6\leqq\eta(110)/\eta(130)\leqq25$ (where $\eta(110)$ represents the melting viscosity at 110° C., and $\eta(130)$ the same at 130° C.), and carbon black having pH 6 or above; and

a carrier having its magnetic core coated with a polyolefinic resin, the carrier's core content being 94–99% by weight, the weight average molecular weight of the polyolefinic resin 5×10^4–3×10^5 and the carrier's electric resistance 1×10^7–1×10^{12} Ω.cm, with 1–15% by weight of electrically conductive fine particles in proportion to the polyolefinic resin added thereto.

5,391,452

POLYESTER TONER AND DEVELOPER COMPOSITIONS

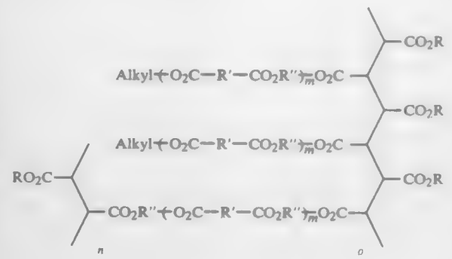
Guerino G. Sacripante, Oakville, Canada; Bernard Grushkin, Pittsford, N.Y.; Stephan V. Drappel, Toronto, and Allan K. Chen, Oakville, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1993, Ser. No. 100,842

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—106.6 29 Claims

1. A dry toner composition comprised of pigment, an optional charge enhancing additive and a side chain polymer comprised of a polyester present as a side chain on a polyalkylene of the following formula



wherein m, n, and o represent the number of monomer segments present; R is independently selected from the group consisting of hydrogen and alkyl; R′ is independently selected from the group consisting of arylene and alkylene; R″ is alkylene with from 2 to 12 carbon atoms; and wherein m is from

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about 10 to about 1,000, n is from about 1 to about 1,000 and o is from about 10 to about 1,000.

27. A developer composition comprised of the toner composition of claim 1 and carrier particles.

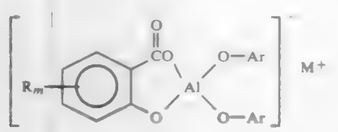
5,391,453

TONER COMPOSITIONS WITH ALUMINUM COMPLEX COMPOSITE CHARGE ADDITIVES

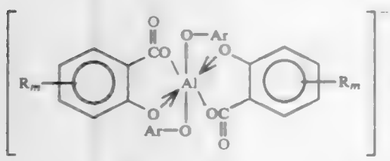
Beng S. Ong, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 19, 1993, Ser. No. 47,902
Int. Cl.[6] G03G *9/00*
U.S. Cl. 430—110 30 Claims

1. A negatively charged toner composition consisting essentially of resin, pigment or dye particles, optional surface additives, and an aluminum complex composite charge additive containing active charge enhancing components as represented by the following formulas



(I)



(II)

wherein R is a hydrogen, halogen, alkyl, aryl, alkoxy, aryloxy, hydroxy, nitro, or an amino substituent; Ar represent an aromatic group; M+ is a proton, an alkaline metal cation, or an ammonium ion; and m is a number of from 1 to about 3.

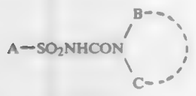
5,391,454

ELECTROSTATIC IMAGE DEVELOPING TONER

Osamu Mukudai; Yuji Matsuura; Mitsutoshi Anzai, and Kayoko Watanabe, all of Tsukuba, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1994, Ser. No. 200,170
Claims priority, application Japan, Mar. 9, 1993, 5-072807
Int. Cl.[6] G03G *9/097*
U.S. Cl. 430—110 3 Claims

1. An electrostatic image developing toner containing at least one compound selected from the group consisting of sulfonylurea compounds of the following formula (1):



(1)

wherein A is a phenyl group which may have a substituent, or a naphthyl group which may have a substituent, and each of B and C which are independent of each other, is a hydrogen atom, an alkyl group, a phenyl group which may have a substituent, or a naphthyl group which may have a substituent, or B and C together form a ring; or the following formula (2):

$$D—SO_2NHCONH—X—NHCONHSO_2—E \quad (2)$$

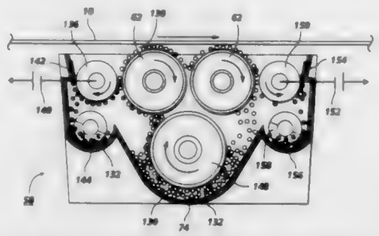
wherein each of D and E which are independent of each other, is an alkyl group, a phenyl group which may have a substituent, or a naphthyl group which may have a substituent, and X is a phenylene group which may have a substituent, a biphenylene group which may have a substituent, or a naphthylene group which may have a substituent.

5,391,455

PICK-OFF ROLL FOR DAD DEVELOPMENT TO PRESERVE DEVELOPER CONDUCTIVITY AND REDUCE PHOTORECEPTOR FILMING

Richard W. Bigelow, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1993, Ser. No. 155,494
Int. Cl.[6] G03G *13/22, 15/22*
U.S. Cl. 430—120 20 Claims



1. A method of printing toner images, said method including the steps of:

creating latent electrostatic images on a charge retentive surface;

developing said latent electrostatic images using developer material containing additives used for enhancing developer performance but which tend to independently and/or selectively deposit on the imaging surface;

intercepting said additives prior to said toner images being developed on said imaging surface; and

returning said intercepted additives back to a supply of said developer material.

5,391,456

TONER AGGREGATION PROCESSES

Raj D. Patel, Oakville; Grazyna E. Kmiecik-Lawrynowicz, Burlington; Michael A. Hopper, Toronto, and Melvin D. Croucher, St. Catharines, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 28, 1994, Ser. No. 203,095
Int. Cl.[6] G03G *9/087*
U.S. Cl. 430—137 24 Claims

1. A process for the preparation of toner compositions comprising:

(i) forming a dispersion of resin in an aqueous ionic surfactant solution from a latex prepared by emulsion polymerization utilizing an ionic surfactant and optionally a nonionic surfactant;

(ii) preparing pigment dispersions in water of three different pigments each of a dissimilar color, each dispersion being comprised of a pigment dispersed in water and which preparation utilizes nonionic dispersants, and optionally an ionic surfactant of the same polarity as that employed in preparing the resin latex of step (i);

(iii) blending the prepared resin dispersed as a latex with two, or optionally three of the different color pigment dispersions of step (ii), the total pigment loading in the water suspension optionally being between 2 and 30 percent by weight of the solid contents of said suspension;

(iv) adding an aqueous solution of counterionic surfactant as a coagulant to the formed resin-pigment blends, while continuously subjecting the mixture to high shear, to induce a homogeneous gel of the flocculated resin-pigments blend;

(v) heating the above sheared gel at temperatures between about 20° C. and about 5° C. below the glass transition temperature (Tg) of the resin while continuously stirring at speeds between about 200 and about 500 revolutions per minute to form statically bound toner sized aggregates between about 2 and about 12 microns in average volume diameter with a narrow size dispersity and with a geometric size distribution (GSD) between 1.10 and 1.25, and subsequently optionally adding additional ionic surfactant optionally in amounts of between 0.01 and 5 percent by weight of the solid content of the suspension, which ionic surfactant is of the same polarity as that utilized to form the resin and pigment dispersions, and wherein the ionic surfactant functions primarily to stabilize the particles against further growth during the following heating stage;

(vi) heating the statically bound aggregated particles at temperatures of from between 25° C. and 40° C. above the Tg of the resin to form coalesced rigid particles of a toner composition comprised of polymeric resin, and pigment agent; and optionally

(vii) separating and drying said toner.

5,391,457

PREPARATION OF LITHOGRAPHIC PRINTING PLATE WITH THIOETHER SOLVENTS

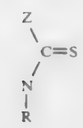
Katsumi Hayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd, Kanagawa, Japan

Filed Nov. 3, 1992, Ser. No. 970,810
Claims priority, application Japan, Nov. 5, 1991, 3-317425
Int. Cl.[6] G03C *5/54*
U.S. Cl. 430—204 1 Claim

1. A method for preparing a lithographic printing plate from a photosensitive material comprising at least a silver halide emulsion layer and a physical development nucleus layer on a support in accordance with a silver complex diffusion transfer process, said method comprising the steps of:

(a) imagewise exposing the photosensitive material, and

(b) developing the silver halide by diffusion transfer processing the photosensitive material in a diffusion transfer alkaline processing solution comprising at least one compound of formula (I) and at least one compound of formula (II) defined below, thereby forming a lithographic printing plate utilizing the transferred silver as an ink receptive site,



(I)

wherein Z represents a group of atoms necessary to form a five- or six-membered heterocyclic ring with the nitrogen and carbon atoms, and R is selected from the group consisting of a hydrogen atom, alkyl radical, aryl radical and aralkyl radical,

$$(II)\ R^1—(S—R^3)_m—S—R^2$$

wherein R^1 and R^2 are independently alkyl radicals or R^1 and R^2, taken together form a ring, R^3 is an alkylene radical which may have an intervening divalent radical, letter m is 0 or an integer of from 1 to 4, and the R^3 radicals may be the same or different where m is 2 or more.

5,391,458

PHOTORESIST PROCESSING FOR IMPROVED RESOLUTION HAVING A BAKE STEP TO REMOVE THE TACKINESS OF THE LAMINATED PHOTOSENSITIVE LAYER PRIOR TO CONTACT IMAGEWISE EXPOSURE

Charles T. Conrad, El Toro, Calif., assignor to Morton International, Inc., Chicago, Ill.

Filed Dec. 18, 1992, Ser. No. 992,934
Int. Cl.[6] G03C *1/805;* G03F *7/38*
U.S. Cl. 430—258 2 Claims

1. A method of preparing a high-resolution exposed and developed photoresist layer on a substrate, the process consisting essentially of performing, in order, the steps of:

providing a dry film comprising a support sheet, a photoresist layer in direct contact with said support sheet and a protective sheet on the side of said photoresist layer opposite said support sheet, said photoresist layer being negative-imaging and developable in alkaline aqueous solution,

removing said protective sheet and laminating said photoresist layer to said substrate,

removing said support sheet from said laminated photoresist layer,

baking said laminated photoresist layer at such time and temperature as to render the exposed surface of said photoresist layer non-tacky,

laying art-work in direct contact with said non-tacky exposed surface of said photoresist layer,

exposing said photoresist layer to actinic radiation through said artwork in direct contact with said non-tacky surface, and

developing said photoresist layer in alkaline aqueous solution.

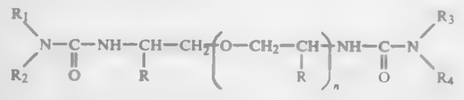
5,391,459

BIS UREIDO COMPOSITIONS

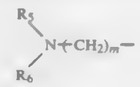
Syeda Husain, Middletown; Allan P. Piechowski, Califon, and John F. Pilot, Carteret, all of N.J., assignors to Sun Chemical Corporation, Fort Lee, N.J.

Division of Ser. No. 118,556, Sep. 9, 1993, Pat. No. 5,380,942.
This application Jun. 23, 1994, Ser. No. 264,826
Int. Cl.[6] G03C *1/06*
U.S. Cl. 430—264 20 Claims

1. A lithographic film article comprising a film substrate having coated thereon a silver halide emulsion containing at least one hydrazine nucleating agent and a bis ureido composition having the structure:



wherein R is a C_1–C_8 straight or branched chain alkyl group or hydrogen and n is at least 3 when R is an alkyl group and at least 1 when R is hydrogen; and R_1, R_2, R_3, and R_4 are independently selected from the group consisting of hydrogen, C_6–C_{18} aryl groups, C_1–C_8 straight or branched chain alkyl groups and dialkylaminoalkyl groups having the structure:



wherein R_5 and R_6 are the same or different C_1–C_8 straight or branched chain alkyl groups and m is 2–6.

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5,391,460

RESIN COMPOSITION AND PROCESS FOR INVESTMENT CASTING USING STEREOLITHOGRAPHY

Thomas K. Dougherty, Playa Del Rey; William E. Elias, El Segundo; Timothy C. Thelander, Riverside, and Mahesh N. Bhavnani, Diamond Bar, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 12, 1993, Ser. No. 89,544
Int. Cl.[6] G03C *5/00*
U.S. Cl. 430—269 **18 Claims**

1. A stereolithographic resin for investment casting comprising;
(a) at least one light-curable, ethylenically unsaturated liquid resin;
(b) at least one photoinitiator, ranging in concentration from about 2 to 10%, and
(c) at least one solvent having a boiling point of about 200° to 300° C., inert to said light-curable, ethylenically unsaturated liquid resin and soluble in said resin, wherein said solvent is present in the amount of about 5 to 30 weight percent.

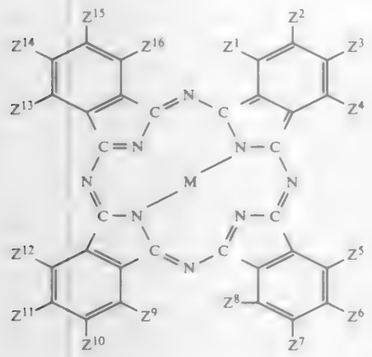
5,391,461

OPTICAL RECORDING MEDIUM AND RECORDING METHOD

Tadashi Koike, Kamakura; Shin Aihara; Keiji Ueno, both of Yokohama; Shinichi Murakami, Kamkura, and Sumio Hirose, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 718,881, Jun. 21, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 35,097
Claims priority, application Japan, Jun. 22, 1990, 2-162597
Int. Cl.[6] G11B *7/24*
U.S. Cl. 430—271 **18 Claims**

1. An optical recording medium of a single plate type capable of pit length recording with excellent error rate and jitter value which comprises a transparent injection molded resin substrate, a recording layer containing a phthalocyanine dye overlying the substrate and a covering layer overlying the recording layer, wherein the phthalocyanine dye is of the formula (1),



(1)

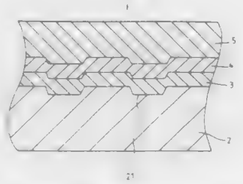
wherein M is a divalent metal and in each of the pairs of substituents, Z_1 and Z_4, Z_5 and Z_8, Z_9 and Z_{12}, and Z_{13} and Z_{16}, one substituent of each pair is independently selected from the group consisting of
(a) R_1,
(b) OR_2, and
(c) SR_3,
wherein R_1, R2 and R_3 are independently selected from the group consisting of unsubstituted or substituted alkyl, aryl and unsaturated alkyl, and the other substituent in each of the above pairs of substituents is independently selected from the group consisting of hydrogen and halogen, provided that at least one of Z_1, Z_4, Z_5, Z_8, Z_9, Z_{12}, Z_{13} and Z_{16} is halogen and the total number of carbon atoms in substituents Z_1, Z_4, Z_5, Z_8, Z_9, Z_{12}, Z_{13} and Z_{16} is 16–100;
the substituents Z_2, Z_3, Z_6, Z_7, Z_{10}, Z_{11}, Z_{14} and Z_{15} are independently hydrogen or halogen; and
further provided that at least one of Z_1–Z_{16} is hydrogen.

5,391,462

OTICAL RECORD DISK

Hiroyuki Arioka; Koji Yasukawa; Junji Tominaga, and Atsuko Motai, all of Nagana, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 15, 1993, Ser. No. 91,434
Claims priority, application Japan, Aug. 28, 1992, 4-253834
Int. Cl.[6] B32B *3/00*
U.S. Cl. 430—271 **2 Claims**



1. An optical recording disk, comprising:
a substrate,
a dye base recording layer on the substrate, and
a reflective layer on the recording layer,
said recording layer contains at least one copper complex having copper as a center metal,
said reflective layer is formed of a silver-copper alloy having 1 to 10 by total percentage weight of copper.

5,391,463

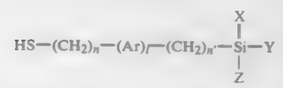
SURFACE MODIFICATION TO CREATE REGIONS RESISTANT TO ADSORPTION OF BIOMOLECULES

Frances S. Ligler, Potomac, Md.; Suresh Bhatia, Burke, Va.; Lisa C. Shriver-Lake, Silver Spring, Md.; Jacque Georger, Springfield; Jeff Calvert, Burke, both of Va., and Charles Dulcey, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C. and Geo-Centers, Inc., Newton Centre, Mass.

Continuation-in-part of Ser. No. 182,123, Apr. 14, 1988, Pat. No. 5,079,600. This application Apr. 25, 1991, Ser. No. 691,491
Int. Cl.[6] G03C *1/73;* **C12N** *11/06*
U.S. Cl. 430—272 **10 Claims**



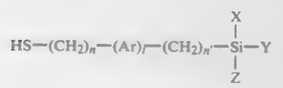
1. A method for preparing a patterned surface, comprising:
(i) irradiating in a patternwise fashion with ultraviolet light a surface having thiol groups to obtain a treated surface having (a) an area which has been irradiated and exhibits a resistance to biomolecule adsorption and (b) an area which has not been irradiated; and
(ii) contacting said treated surface with a heterobifunctional crosslinking reagent, which binds to the area of said surface which has not been irradiated, to convert the area of said surface which has not been irradiated to an area which exhibits biomolecule adsorption, wherein said surface having thiol groups is prepared by reacting a substrate with a compound of formula (I)



(I)

wherein X, Y, and Z are each independently C_{1-4}-alkyl or C_{1-4}-alkoxy, provided that at least one of X, Y, and Z is C_{1-4}-alkoxy, Ar is aryl, n is 1 to 20,n' is 1 to 20, l is 0 or 1, with the proviso that when l is 0, n' is 0.

6. A patterned surface, prepared by a method, comprising:
(i) irradiating in a patternwise fashion with ultraviolet light a surface having thiol groups to obtain a treated surface having (a) an area which has been irradiated and exhibits a resistance to biomolecule adsorption and (b) an area which has not been irradiated; and
(ii) contacting said treated surface with a heterobifunctional crosslinking reagent, which binds to the area of said surface which has not been irradiated, to convert the area of said surface which has not been irradiated to an area which exhibits biomolecule adsorption, wherein said surface having thiol groups is prepared by reacting a substrate with a compound of formula (I)



(I)

wherein X, Y, and Z are each independently C_{1-4}-alkyl or C_{1-4}-alkoxy, provided that at least one of X, Y, and Z is C_{1-4}-alkoxy, Ar is aryl, n is 1 to 20, n' is 1 to 20, l is 0 or 1, with the proviso that when l is 0, n' is 0.

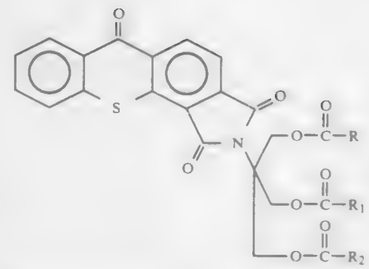
5,391,464

THIOXANTHONE SENSITIZER FOR RADIATION SENSITIVE POLYIMIDES

Ali Afzali-Ardakani, Yorktown Heights, N.Y.; Phillip J. Brock, Sunnyvale; Daniel J. Dawson, San Jose, both of Calif., and Jeffrey D. Gelorme, Plainville, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1993, Ser. No. 174,650
Int. Cl.[6] G03C *1/725, 1/73*
U.S. Cl. 430—281 **5 Claims**

1. A radiation sensitive composition for use in the manufacture of integrated circuits comprising:
(i) a polymer selected from a polyamic acid ester having a crosslinkable substituent, a polyamic acid salt having a crosslinkable substituent or a polyimide having a crosslinkable substituent
(ii) a crosslinking initiator, and
(iii) a thioxanthone having the formula:



where R, R_1 and R_2 are each independently C_{1-10} alkyl.

5,391,465

METHOD OF USING SELECTED PHOTOACTIVE COMPOUNDS IN HIGH RESOLUTION, ACID HARDENING PHOTORESISTS WITH NEAR ULTRAVIOLET RADIATION WHEREIN THE PHOTORESIST COMPRISE CONVENTIONAL DEEP UV PHOTOACID GENERATORS

Wayne E. Feely, Rydal, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 369,438, Jun. 20, 1989, abandoned. This application Apr. 19, 1990, Ser. No. 511,890
Int. Cl.[6] G03F *7/30, 7/40*
U.S. Cl. 430—325 **11 Claims**

1. A method for producing high resolution negative photoresist images comprising pattern wise exposing a photoresist to near ultraviolet radiation, said photoresist comprising in admixture from about 0.5 to 25 percent of a member selected from the group consisting essentially of phenothiazine and phenothiazine derivatives, from about 0.5 to 25 percent of a deep UV halogenated photoacid generator that is not a metal halide-containing onium salt and from about 50 to 98 percent of an acid hardening resin system consisting essentially of an aminoplast and a reactive hydrogen-containing compound selected from the group consisting essentially of a novolak resin and a polyvinyl phenol, heating said photoresist, and developing the photoresist to form an image by removing unexposed areas with a developer.

5,391,466

CHEMICAL COMPOSITIONS AND A PROCESSING METHOD USING THE SAME FOR PROCESSING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

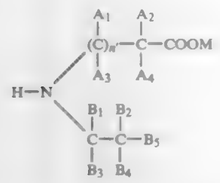
Yutaka Ueda, and Kenji Kuwae, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Nov. 22, 1993, Ser. No. 156,804
Claims priority, application Japan, Nov. 25, 1992, 4-315266
Int. Cl.[6] G03C *7/00, 5/18, 5/44, 5/38*
U.S. Cl. 430—393 **13 Claims**

9. A method for processing exposed silver halide color photographic light-sensitive material comprised of a support and at least one silver halide emulsion layer which contains silver halide grains and a color forming coupler, comprising the steps of
developing the color photographic light-sensitive material with a color developer containing a color developing agent, and
bleaching and fixing said developed light-sensitive material with a bleaching solution comprising a bleaching agent and a fixing solution comprising a fixing agent or a bleach-fixing solution,
wherein said bleaching solution or said bleach-fixing solution contains a ferric complex salt of a compound repre-

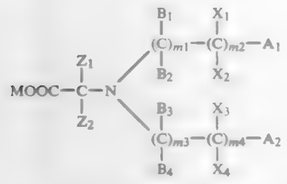
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sented by Formula I, II, III or VI in an amount of 0.05 to 2.0 mol/l;



(I)

wherein n' is an integer of 1 to 3; A_1, A_2, A_3, A_4, B_1, B_2, B_3, B_4 and B_5 are each independently a hydrogen atom, an —OH group, a $—C_nH_{2n+1}$ group, or a $—(CH_2)_lX$ group in which n is an integer 1 to 3; l is an integer of 0 to 3; X is a —COOM group, an $—NH_2$ group or an —OH group, in which M is a hydrogen atom, an alkali metal ion or another cation; provided that all of B_1, B_2, B_3, B_4 and B_5 are not hydrogen atoms at the same time;

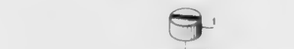


(II)

wherein B_1, B_2, B_3, B_4, X_1, X_2, X_3 and X_4 are each independently a hydrogen atom, a $—C_nH_{2n+1}$ group or a $—(CH_2)_lY$ group; n and l are each an integer of 1 to 3 and 0 to 3, respectively; Y is a —COOM group, an $—NH_2$ group or a —OH group in which M is a hydrogen ion, an alkali metal ion or another cation, provided that all of B_1, B_2, B_3 and B_4 are not hydrogen atoms at the same time, and all of X_1, X_2, X_3 and X_4 are not hydrogen atoms at the same time and any number, except 2, of X_1, X_2, X_3 and X_4 may be —OH groups at the same time; m1, m2, m3 and m4 are independently an integer of 1 to 3; and A_1 and A_2 are each a $—COOM_1$ group, a $—COOM_2$ group, an $—NH_2$ group or an —OH group, wherein M_1 and M_2 are each a hydrogen ion, an alkali metal ion or another cation; and Z_1 and Z_2 are each a hydrogen atom, a $—COOM_1$ group, a $—COOM_2$ group, an alkyl group having 1 to 3 carbon atoms or an —OH group, wherein M_1 and M_2 are each a hydrogen ion, an alkali metal ion or another cation;

$$(R_1)(R_2)N—X_1—(Z—X_2)_n—N(R_3)(R_4) \quad \text{(III)}$$

wherein R_1, R_2 and R_3 are each a $—L_1—Y_1$ group in which L_1 is a substituted or unsubstituted alkylene group having 1 to 3 carbon atoms and Y_1 is an —OH group, an $—NH_2$ group or a —COOM group, M is a hydrogen ion, an alkali metal ion or another cation; R_4 is a hydrogen atom, a $—CH_3$ group or a $—C_2H_5$ group; n is an integer 0 to 4; Z is an alkylene group, an —O— atom, an —NH— group, an $>N—L_2—Y_2$ group or a $>CH—L_3—Y_3$ group in which L_2 and L_3 are each a substituted or unsubstituted alkylene group having 1 to 4 carbon atoms; Y_2 and Y_3 are each a hydrogen atom, an —OH group, an $—NH_2$ group, a $—COOM_1$ group or a $—COOM_2$ group in which M_1 and M_2 are each a hydrogen ion, an alkali metal ion or another cation; X_1 and X_2 are each a substituted or unsubstituted alkylene group having 1 to 6 carbon atoms or a $>CH—L_4—Y_4$ group in which L_4 is a substituted or unsubstituted alkylene group having 1 to 4 carbon atoms and Y_4 is a hydrogen atom, an —OH group, an $—NH_2$ group, a $—COOM_1$ group or a $—COOM_2$ group, M_1 and M_2 are each a hydrogen ion, an alkali metal ion or another cation; provided that when n=0, X_1 is a substituted or unsubstituted alkylene group having 2 to 6 carbon atoms;



(VI)

wherein X_1 is an oxygen atom or a sulfur atom; and R_1, R_2 and R_3 are each a hydrogen atom or a
group in which Z_1 and Z_2 are each a hydrogen atom, a —COOM group, an —OH group or an $—NH_2$ group, m1, m2 and m3 are each an integer of 0 to 2, provided that a least one of the R_1, R_2 and R_3 is
and at least one of Z_1 and Z_2 is a —COOM group, and M is a hydrogen ion, an alkali metal ion or another cation.

5,391,467

METHOD FOR CONTINUOUSLY PROCESSING SILVER HALIDE COLOR PHOTOSENSITIVE MATERIAL

Kazuaki Yoshida, and Akira Abe, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Jun. 8, 1994, Ser. No. 257,031
Claims priority, application Japan, Jun. 11, 1993, 5-164998
Int. Cl.[6] G03C *7/407*
U.S. Cl. 430—434 21 Claims



1. A method for continuously processing a silver halide color photographic photosensitive material by treating this material with a color developer containing at least one aromatic primary amine color developing agent, which comprises the steps of covering the surface of a color developer replenisher in a color developer replenisher tank with a layer of a floating fluid and replenishing 20 to 100 ml of the color developer replenisher per m^2 of the photosensitive material to a color developing tank.

5,391,468

REVERSAL PHOTOGRAPHIC ELEMENTS CONTAINING TABULAR GRAIN EMULSIONS

Jacob I. Cohen, Rochester; Bradley K. Jensen, Webster, and Carl Kotlarchik, Jr., Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1993, Ser. No. 146,269
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—503 10 Claims

1. A photographic element capable of forming a reversal image comprised of
a support and,
coated on said support, at least one image recording emulsion layer comprised of a blend of
a tabular grain emulsion containing silver iodohalide tabular grains and a spectral sensitizing dye exhibiting a peak absorption in one of the blue, green and red wavelength regions of the visible spectrum adsorbed to the surface of the tabular grains and

a second emulsion that is at least one stop slower than the tabular grain emulsion, the second emulsion grain population having an average equivalent circular diameter of less than 0.3 μm and being formed of one or more silver salts having a higher overall solubility than the silver iodohalide forming the tabular grains, and said second emulsion containing adsorbed to the surface of the second grain population a second dye exhibiting an absorption peak in a blue, green or red wavelength region differing from that in which the spectral sensitizing dye exhibits an absorption peak.

5,391,469

RADIOGRAPHIC ELEMENTS EXHIBITING REDUCED PRESSURE INDUCED VARIANCES IN SENSITIVITY

Robert E. Dickerson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 27, 1993, Ser. No. 143,673
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—506 7 Claims

1. A radiographic element comprised of
a support and,
coated on the support, a blend of at least two tabular grain emulsions in each of which greater than 50 percent of total grain projected area is accounted for by tabular grains of high tabularity satisfying the relationship:

$$ECD_{av.} \div t_{av.}^2 > 25$$

where
$ECD_{av.}$ is tabular grain average equivalent circular diameter in micrometers (μm) and
$t_{av.}$ is tabular grain average thickness in μm, said tabular grains coated on the support exhibiting a face centered cubic crystal lattice structure formed by silver bromide with a selected portion of said tabular grains, ranging from 25 to 75 percent, based on total tabular grain silver, additionally containing iodide distributed through the crystal lattice structure in an overall concentration of at least 0.5 mole percent, based on silver in the tabular grains of the selected portion, with iodide concentrations at any one site within the tabular grains being less than 4 mole percent.

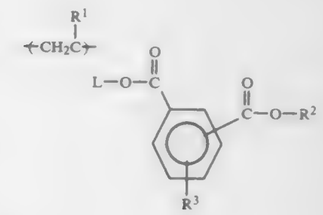
5,391,470

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Tomokazu Yasuda; Junichi Yamanouchi, and Koji Tamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 11, 1993, Ser. No. 104,649
Claims priority, application Japan, Aug. 13, 1992, 4-236305
Int. Cl.[6] G03C *1/06*
U.S. Cl. 430—517 15 Claims

1. A silver halide photographic material containing a dispersion of lipophilic fine particles comprising a hydrophobic compound, and a water-insoluble, organic solvent-soluble polymer comprising a repeating unit represented by formula (I):



(I)

wherein
R^1 represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, or a halogen atom;
R^2 represents a substituted alkyl group or a substituted aryl group, the substituent for either the substituent alkyl group or the substituted aryl group being selected from the group consisting of an aryl group, a nitro group, a hydroxyl group, a cyano group, a sulfo group, an alkoxyl group, an aryloxyl group, an acyloxyl group, an acylamino group, a sulfonamide group, a sulfamoyl group, a halogen atom, a carboxyl group, a carbamoyl group, an alkoxy carbonyl group and a sulfonyl group;
R^3 represents a hydrogen atom or a substituent; and
L represents a divalent linkage group.

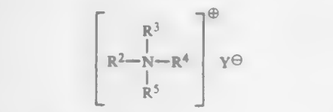
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SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

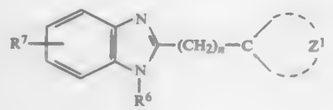
Naoto Ohshima; Kentaro Okazaki, and Shigeaki Ohtani, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 14, 1993, Ser. No. 76,143
Claims priority, application Japan, Jul. 8, 1992, 4-203220; Jul. 15, 1992, 4-209491; Jul. 16, 1992, 4-210749
Int. Cl.[6] G03C *1/76*
U.S. Cl. 430—523 8 Claims

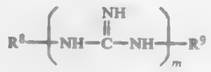
1. A silver halide color photographic material comprising on a support a photographic constituting layer containing at least one light-sensitive emulsion layer and at least one hydrophilic colloidal layer containing a white pigment between said support and said light-sensitive emulsion layer, wherein said white pigment is incorporated in an amount in the range of 20% by weight or more, at least one of layers constituting said light-sensitive emulsion layer comprises silver bromochloride emulsion grains or silver chloride emulsion grains having a silver chloride content of 90 mol % or more sensitized with a gold compound at a pH in the range of 5.0 to 7.5, and either a light-sensitive layer or a light-insensitive layer in the material comprises at least one of compounds represented by the following general formulae (I) to (IX):



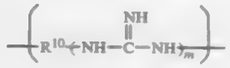
(I)



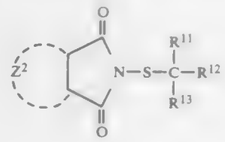
(II)



(III)



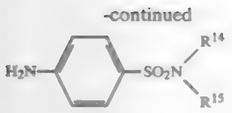
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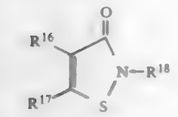


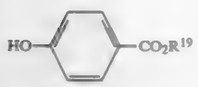
(V)

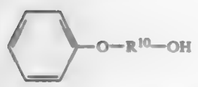
VOL 1171 ISS 3 FE 21 1995 UMI

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wherein R^2, R^3, R^4, R^5, R^6, R^8 and R^9 each represents a hydrogen atom, alkyl group or aryl group; R^7 represents a hydrogen atom, alkyl group, aryl group, nitro group, carboxyl group, sulfo group, sulfamoyl group, hydroxyl group, halogen atom, alkoxy group or thiazolyl group; R^{10} represents an alkylene group or arylene group; R^{11}, R^{12} and R^{13} each represents a halogen atom or alkyl group; R^{14} and R^{15} each represents a hydrogen atom, alkyl group, aryl group or nitrogen-containing heterocyclic residue; R^{16} and R^{17} each represents a hydrogen atom, halogen atom, alkyl group, aryl group or aryloxy group, with the proviso that R^{16} and R^{17} may be connected to each other to form a benzene ring; R^{18} represents a hydrogen atom or alkyl group; R^{19} represents an alkyl group or aryl group; Y represents a halogen atom; Z^1 represents a nonmetallic atom group necessary for the formation of a thiazolyl ring; Z^2 represents a nonmetallic atom group necessary for the formation of a 6-membered ring; n represents an integer 0 or 1; and m represents an integer 1 or 2.

5,391,472

PERMANENT ANTISTATIC PRIMER LAYER

Bavo Muys, Mortsel; Dirk Quintens, Lier; Jozef Boeykens, Bornem; Etienne Van Thillo, Essen, and Geert Defieuw, Temse, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Dec. 8, 1993, Ser. No. 162,772

Claims priority, application European Pat. Off., Dec. 17, 1992, 92203978

Int. Cl.[6] G03C *1/85*

U.S. Cl. 430—527 **16 Claims**

1. A method of preparing a silver halide photographic material comprising the steps of:

(i) stretching a polyester sheet or web first in one direction and second in a direction perpendicular thereto

(ii) coating said hydrophobic polyester sheet or web, either before stretching or between said first and second stretching operation, on one or both sides, with a transparent antistatic primer layer, wherein the coating composition of said transparent antistatic primer layer comprises (1) a dispersion of a polythiophene with conjugated polymer backbone and a polymeric polyanion compound and (2) a latex polymer having hydrophilic functionality

(iii) coating one or more hydrophilic colloid layer(s), including at least one silver halide emulsion layer, on one or both sides of said hydrophobic polyester sheet or web.

5,391,473

PHOTOGRAPHIC PAPER WITH LOW OXYGEN PERMEABILITY

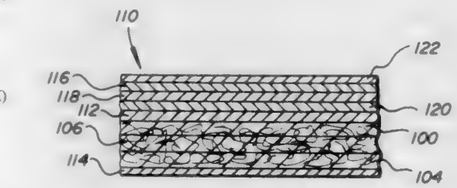
David J. Lacz, Honeoye Falls; Todd R. Skochdopole, Rochester; Larry D. Hagemeier, Rochester; Anita M. Fees, Rochester; Brian Thomas, Pittsford, and Gary J. McSweeney, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 756,262, Aug. 19, 1991, abandoned. This application Apr. 16, 1993, Ser. No. 39,340

Int. Cl.[6] G03C *1/775*

U.S. Cl. 430—538 **13 Claims**

(VIII)



1. An imaging element comprising at least one layer of photosensitive material said at least one layer comprising silver halide and dye forming couple overlaying a paper wherein said paper comprises wood fiber and polyvinyl alcohol with the proviso that said polyvinyl alcohol is located in heavier concentration nearer the surface of said paper than at the interior and with the proviso that said paper has an O_2 leak rate of less than 25 cc/m^2/day and said polyvinyl alcohol does not form a layer above the surface of said paper.

5,391,474

IRIDIUM AND BROMIDE IN SILVER HALIDE GRAIN FINISH

John A. Haefner, Rush, and Jess B. Hendricks, III, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 876,262, Apr. 30, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 181,267

Int. Cl.[6] G03C *1/015*

U.S. Cl. 430—569 **16 Claims**

1. A process for forming an emulsion with reduced reciprocity failure comprising

forming an emulsion comprising at least 90 percent silver chloride,

washing said emulsion, and after the completion of emulsion formation and said washing,

chemically sensitizing said emulsion with gold sensitizing salt,

adding an iridium complex containing halogen ligands and adding bromide after said iridium complex.

5,391,475

SILVER HALIDE COLOR PHOTOGRAPHIC PHOTOSENSITIVE MATERIALS

Junji Nishigaki; Fumitaka Ueda, and Akihiko Ikegawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 4, 1993, Ser. No. 56,782

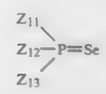
Claims priority, application Japan, May 12, 1992, 4-144981

Int. Cl.[6] G03C *1/09*

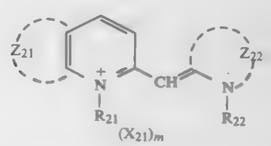
U.S. Cl. 430—600 **9 Claims**

1. A silver halide color photographic photosensitive material which has been sensitized with a selenium sensitizer represented by formula (I) below and which comprises a green sensitive photosensitive silver halide emulsion layer which has been spectrally sensitized with a sensitizing dye represented by formula (II) below:

(I)



wherein Z_{11}, Z_{12} and Z_{13} may be the same or different and each represents an alkyl group, an aryl group, a heterocyclic group, a halogen atom, a hydrogen atom, —OR_{11}, —$NR_{12}(R_{13})$, —SR_{14} or —SeR_{15}, R_{11}, R_{14} and R_{15} may be the same or different and represent alkyl groups, aryl groups, heterocyclic groups, hydrogen atoms or cations, and R_{12} and R_{13} may be the same or different and represent alkyl groups, aryl groups, heterocyclic groups or hydrogen atoms,



wherein R_{21} and R_{22} each represents an alkyl group, Z_{21} represents a group of atoms which is required to form a benzene ring, Z_{22} represents a group of atoms which is required to form a benzothiazole or benzoselenazole nucleus, X_{21} represents a counter-ion, m represents 0 or 1, and m is 0 where an intramolecular salt is formed.

5,391,476

NON-IONIC SURFACE ACTIVE COMPOUNDS

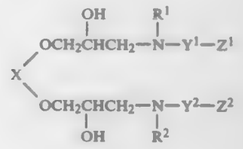
Alan R. Pitt, St. Albans, and Ian M. Newington, Hazlemere, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 730,965, Jul. 29, 1991, Pat. No. 5,270,161. This application Sep. 17, 1993, Ser. No. 123,414

Int. Cl.[6] G03C *1/005;* **C07C** *233/05*

U.S. Cl. 430—637 **10 Claims**

1. A water-soluble, non-ionic surface active compound having the formula



wherein

R^1 and R^2 are each independently hydrogen or an alkyl group having from 1 to 4 carbon atoms;

X is a hydrophobic substituted or unsubstituted arylene group or a hydrophobic substituted or unsubstituted alkylene group;

Y^1 and Y^2 are each independently, —CO— or —$(CH_2)_mNR^3CO$—;

m is an integer from 1 to 6;

R^3 is as defined for R^1 and R^2; and,

Z^1 and Z^2 are each independently a hydrophilic polyhydroxyalkyl group.

5,391,477

IN SITU MODIFICATION OF GELATIN CARBOXYL GROUPS

Timothy D. Weatherill, Hendersonville, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

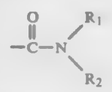
Continuation of Ser. No. 905,426, Jun. 29, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 172,292

Int. Cl.[6] G03C *1/005, 1/494, 1/30, 1/76*

U.S. Cl. 430—642 **3 Claims**

1. A silver halide photographic recording element comprising at least one layer comprising a modified gelatin formed from gelatin containing pendant amine groups and pendant carboxylic acid groups wherein at least one carboxylic acid moiety of said gelatin is modified to form a carbamoyl of the formula

(II)



wherein

R_1 and R_2 independently represent hydrogen; unsubstituted alkyl of 1–10 carbons; alkyl of 1–10 carbons substituted with at least one substituent chosen from the group consisting of fluoride, chloride, and hydroxy; unsubstituted aryl of 6–14 carbons; aryl of 6–14 carbons substituted with at least one substituent chosen from the group consisting of fluoride, chloride, and hydroxy; unsubstituted arylalkyl of 7–20 carbons; or arylalkyl of 7–20 carbons substituted with at least one substituent chosen from the group consisting of fluoride, chloride, and hydroxy; with the proviso that at least one of R_1 or R_2 is chosen from the set consisting of t-butyl, cyclohexyl, norbornyl, norbornylenyl, norbornadienyl and adamantyl.

5,391,478

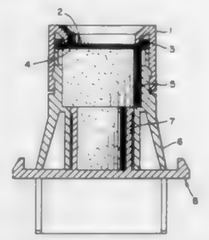
ASSAY DEVICE AND IMMUNOASSAY

Richard A. Greene, Westford, Mass., and Patricia A. Kasila, Windham, N.H., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 192,087, May 10, 1988, Pat. No. 5,137,804. This application Feb. 21, 1992, Ser. No. 838,662

Int. Cl.[6] C12Q *1/70;* **G01N** *21/00*

U.S. Cl. 435—5 **25 Claims**



1. In a membrane-based assay device for detecting or quantitating the presence or absence of a substance in a sample suspected to contain said substance, said device having multiple layers comprising:

(a) a permeable membrane having a capture reagent attached thereto,

(b) an intermediate layer, and

(c) an absorbent layer, wherein layer (b) is in direct communication with layers (a) and (c),

the improvement wherein layer (b) is a substantially water impermeable membrane, the membrane having at least one hole therethrough, the hole or holes are directly below the capture reagent and the area of the hole or the

combined areas of the holes is less than the area covered by the capture reagent.

10. The device according to claim 1 wherein the absorbent layer is selected from the group consisting of cellulose, cellulose acetate, polyester, polyethylene and polyethyleneterephthalate.

5,391,479

METHOD FOR DETERMINING TOTAL ANALYTE CONCENTRATION IN A SAMPLE HAVING BOTH FREE AND BOUND ANALYTE

Mark N. Bobrow, Woburn, Mass., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1992, Ser. No. 968,098
Int. Cl.[6] C12Q *1/70*
U.S. Cl. 435—5 3 Claims

1. A method for determining total analyte concentration in a sample which comprises:

(a) assaying for the concentration of free analyte in the sample wherein said sample has been subjected to immune complex disruption;

(b) assaying for the concentration of free analyte in the sample wherein said sample contains a known quantity of analyte which has been added to the sample and further wherein the sample containing the known quantity of analyte has been subjected to immune complex disruption, said determination being made at least once; and

(c) determining total analyte concentration from the assayed concentrations obtained in steps (a) and (b).

5,391,480

METHOD FOR DETECTING A NUCLEOTIDE AT A SPECIFIC LOCATION WITHIN A NUCLEIC ACID USING EXONUCLEASE ACTIVITY

Ronald W. Davis, Palo Alto, Calif., and Arthur Myles, Hopedale, Mass., assignors to Collaborative Research, Inc., Waltham, Mass.

Continuation of Ser. No. 352,956, May 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 326,537, Mar. 21, 1989, abandoned. This application Dec. 3, 1991, Ser. No. 803,683
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 13 Claims



1. A method for detecting the presence or absence of a first nucleotide, at a position within a strand of DNA in a sample, comprising:

forming an admixture of primer and said strand of DNA in said sample and imposing hybridization conditions on said primer and said DNA strand to form a hybridization product, said primer comprising a sequence of DNA which hybridizes with said strand of DNA adjacent said first nucleotide position and having a second nucleotide opposite said first nucleotide position, said second nucleotide associated with a label, said second nucleotide hybridizing to said first nucleotide in the event said second nucleotide is complementary to said first nucleotide and said second nucleotide not hybridizing to said first nucleotide in the event of said second nucleotide is not complementary;

applying an enzymatic exonucleolytic agent to the hybridization product under conditions in which said second nucleotide is preferentially excised to form a labeled nucleotide product in the event said second nucleotide is not hybridized to said first nucleotide; and

monitoring said sample for the presence of label in association with at least one of said products or primers, which label associated with said nucleotide product in concentrations greater than background is indicative of the absence of said first nucleotide, and which label associated with said primer or hybridization product in concentrations greater than background is indicative of the presence of said first nucleotide.

5,391,481

ANTIBODY WHICH IS DIRECTED AGAINST AND INHIBITS COLLAGEN BINDING TO A VLA-1 EPITOPE AND USES THEREOF

Leonard Chess, Scarsdale, N.Y., and Ilan Bank, Ramat-Hasharon, Israel, assignors to The Trustees of Columbia University, New York, N.Y.

Filed Aug. 31, 1990, Ser. No. 576,606
Int. Cl.[6] C07K *15/28*; G01N *33/577*
U.S. Cl. 435—7.24 22 Claims

1. An antibody which specifically forms a complex with VLA-1, inhibits collagen binding to VLA-1, and is directed to the epitope to which monoclonal antibody 1B3.1 (ATCC No. HB10536) is directed.

5,391,482

METHOD AND DIAGNOSTIC AGENT FOR ENZYME SUBSTRATE STABILIZATION USING 1-ARYLSEMICARBAZIDES

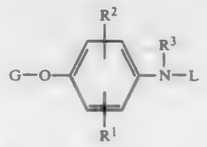
Dieter Mangold, Maxdorf, Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Dec. 21, 1990, Ser. No. 633,213
Claims priority, application Germany, Dec. 21, 1989, 3942356
Int. Cl.[6] C12Q *1/62, 1/00, 1/54*; G01N *21/75*
U.S. Cl. 435—18 24 Claims



1. A hydrolase enzyme substrate stabilized by a 1-arylsemicarbazide stabilizer of the formula $Ar—NHNHCONH_2$ wherein Ar is an unsubstituted aryl radical or is aryl substituted by alkyl, alkoxy or halogen for a reaction wherein a leuko color substance is formed from the substrate by enzymatic hydrolysis and said leuko color substance is reacted by an oxidation agent to give a colored product and wherein the enzyme substrate is an N— and O— substituted aminophenol derivative of the formula

(II)

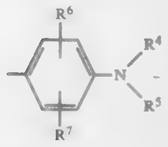


wherein

G is an organic or inorganic acid residue or a glycoside residue, R^1 and R^2, which are the same or different, are hydrogen or halogen atoms, SO_3H, PO_3H_2 or a salt of the acid groups, hydroxyl, nitro, carboxyl, carboxamido or cyano groups or alkyl, alkenyl, alkoxy, alkylsulphinyl, alkylsulphonyl, alkoxycarbonyl, alkylcarbonyl, aryl or aralkyl radicals unsubstituted or substituted at least once by hydroxyl, carboxyl, halogen, cyano, SO_3H or PO_3H_2 radicals or a salt of the acid radicals or, when the R^1 and R^2 substituents are present on neighboring carbon atoms, they form a 1,4-butadiendiyl radical which is unsubstituted or substituted one or more times by SO_3H, PO_3H_2 or a salt of the acid groups, an alkyl or a carboxyl group, R^3 is hydrogen or —CO—COOH, SO_3H, PO_3H_2 or a salt of these acid groups, an alkylcarbonyl radical unsubstituted or substituted one or more times by halogen, COOH, SO_3H or PO_3H_2 or a salt of the acid groups or an arylcarbonyl radical unsubstituted or substituted one or more times by SO_3H, PO_3H_2 or a salt of the acid groups, and

L is a radical of the formula:

(III)



wherein

R^4 and R^5, which can be the same or different, are alkyl radicals or together represent a saturated C_3–C_6 hydrocarbon chain which is uninterrupted or interrupted by oxygen, sulphur or nitrogen, wherein the alkyl or the hydrocarbon chain is unsubstituted or substituted one or more times by hydroxyl, carboxyl, alkoxycarbonyl, alkoxy, SO_3H_2 groups, a salt of one of the acid groups or halogen, and

R^6 and R^7, which can be the same or different, are hydrogen or halogen atoms, hydroxyl or carboxamido groups or alkyl, alkoxy, alkylcarbonyl, alkoxycarbonyl, aryl or aralkyl radicals unsubstituted or substituted by one or more hydroxyl, carboxy, halogen, SO_3H or PO_3H_2 groups or a salt of the acid groups, or

L is a pyrazolo-heterocyclic radical of the general formula:

(IV)



wherein

X—Y is $—NR^8—CO—$ or $—N=CR^9$, wherein R^8 is a hydrogen atom or an alkyl radical and R^9 is an alkyl, alkenyl, alkoxy, alkylthio, aryl, aralkyl, each being unsubstituted or substituted by hydroxyl, dialkylphosphinyl, carboxyl, SO_3H, PO_3H_2, a salt of the acid groups or alkoxycarbonyl; or R^9 is an amino which is unsubstituted or substituted by one or two alkyl radicals that can be substituted by one or more hydroxyl, carboxyl or alkoxycarbonyl radicals, or when said amino is substituted by two alkyl radicals these radicals can also be joined to form a ring which apart from the first nitrogen atom of the amino group are uninterrupted or interrupted by oxygen, sulphur or a second nitrogen atom or amino is optionally substituted by one or two acyl radicals, alkoxy- or aralkoxycarbonyl radicals, $H_2N—CO—$, alkyl, aralkyl or arylcarbamoyl radicals; or

R^9 is hydrogen, carboxyl, alkoxycarbonyl, carboxamido or halogen, and

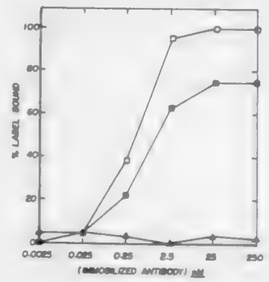
Z is $—NR^{10}—N=N—$, wherein R^{10} is a hydrogen atom or an alkyl or aralkyl radical or Z is an unsaturated chain with 3 to 5 members of nitrogen atoms or carbon atoms or with one or more nitrogen or sulphur atoms, wherein the carbon atoms in the chain are unsubstituted or substituted by alkyl, alkoxy, hydroxyalkyl, alkylthio, hydroxyl, aralkyl, aryl, carboxy, carboxamido, alkoxycarbonyl, cyano, or an amino optionally substituted by one or two alkyl radicals that can be unsubstituted or substituted by one or more hydroxyl, carboxyl or alkoxycarbonyl radicals or halogen, as well as nitrogen atoms, which are not connected via a double bond are unsubstituted or substituted by alkyl or aralkyl or two neighboring chain substituents to form an alkylene radical which alkylene is unsubstituted or substituted or anellated with aryl or a corresponding tautomeric radical of formula II.

5,391,483

LIGAND ANALOGOS FOR IMMUNOASSAYS DERIVED FROM DICARBOXYLIC ACID OXIDATION PRODUCTS

Susan J. Danielson, and Michael R. Detty, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 564,940, Jul. 27, 1990, abandoned. This application Jul. 1, 1992, Ser. No. 907,345
Int. Cl.[6] C12Q *1/28, 1/26, 1/00*; C07H *15/00*
U.S. Cl. 435—28 5 Claims



1. A method of making a ligand analog comprising a dicarboxylic acid oxidation product of a immunologically reactive monosaccharide or polysaccharide having vicinal diols, to which a label or a support is appended through an amide or thioester linkage, comprising the steps of:

(a) providing a monosaccharide or polysaccharide having i) a group capable of specific binding with an immunologically reactive analyte and ii) two vicinal diols located on a terminal saccharide group;

(b) oxidizing the terminal saccharide group at the vicinal diols with a mixture of periodic acid and chromium trioxide in an aqueous solution of a water-miscible organic solvent mixture, to produce the dicarboxylic acid product; and

(c) condensing the dicarboxylic acid product with a label or support containing an amino or sulfhydryl group.

5,391,484

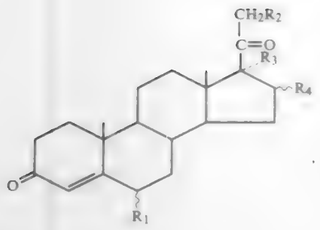
PROCESS FOR THE PRODUCTION OF 4-PREGNENE-3,20-DIONE AND ITS DERIVATIVES USING MYCOBACTERIUM NRRL B-3805

Alfred Weber, and Mario Kennecke, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

PCT No. PCT/DE91/00620, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO92/03571, PCT Pub. Date Mar. 5, 1992
PCT Filed Jul. 30, 1991, Ser. No. 861,807
Claims priority, application Germany, Aug. 18, 1990, 4026464
Int. Cl.[6] C12P *33/04, 33/02, 35/02*
U.S. Cl. 435—61 18 Claims

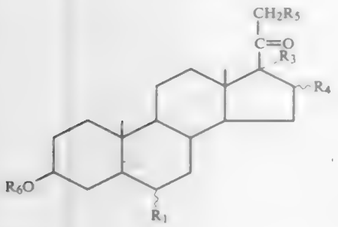
1. A process for production of 4-pregnene-3,20-diones of formula I

VOL 1171 ISS 3 FE 21 1995 UMI



(I)

wherein
R_1 is hydrogen, fluorine, or methyl,
R_2 is hydrogen or hydroxyl and
R_3 and R_4 together are a carbon-carbon bond or R_3 is hydrogen, hydroxy or alkanoyloxy with up to 6 carbon atoms and R_4 is hydrogen or methyl,
said process comprising:
fermenting a pregnane or pregnene compound of formula II



(II)

wherein
R_1 is hydrogen, fluorine or methyl,
R_3 and R_4 together are a carbon-carbon bond or R_3 is hydroxy or alkanoyloxy with up to 6 carbon atoms and R_4 is hydrogen or methyl,
--- is a single bond or a double bond,
R_5 is hydrogen, hydroxy or alkanoyloxy with at most 6 carbon atoms, and
R_6 is hydrogen or alkanoyl with at most 6 carbon atoms, with a bacterial culture of species Mycobacterium spec. NRRL B-3805.

5,391,485

DNAS ENCODING ANALOG GM-CSF MOLECULES DISPLAYING RESISTANCE TO PROTEASES WHICH CLEAVE AT ADJACENT DIBASIC RESIDUES

Michael C. Deeley, and Virginia L. Price, both of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Filed Aug. 6, 1985, Ser. No. 763,130
Int. Cl.[6] C12N *15/27, 15/81, 1/19*
U.S. Cl. 435—69.5 **27 Claims**

1. An isolated DNA molecule encoding a polypeptide that is a variant of a naturally-occurring human granulocyte-macrophage colony stimulating factor, wherein (A) at least one amino acid of a pair of adjacent arginine amino acids occurring in said factor is replaced, in said polypeptide, with a non-basic amino acid and (B) said polypeptide displays biological activity in a human bone-marrow colony assay.

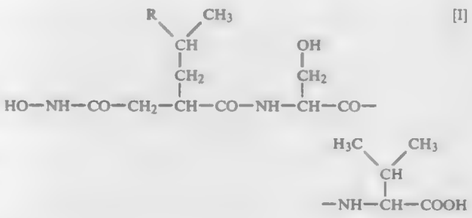
5,391,486

PHYSIOLOGICALLY ACTIVE SUBSTANCE BE-16627

Akira Okuyama; Nobuo Kanbayashi; Kyozo Naito; Hajime Suzuki; Shigeru Nakajima; Hiroyuki Suda, all of Tokyo, and Masanori Okanishi, Kawasaki, all of Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1991, Ser. No. 720,828
Claims priority, application Japan, Nov. 24, 1989, 1-305764
Int. Cl.[6] C07C *229/08;* **C12N** *1/20;* **C12P** *21/02*
U.S. Cl. 435—71.2 **2 Claims**

1. A process for production of a physiologically active substance BE-16627 represented by the general formula:



[I]

wherein R represents a hydrogen atom or a methyl group, or a pharmaceutically acceptable salt thereof, characterized by culturing Streptomyces sp. A16627 or a mutant thereof producing the substance BE-16627 to accumulate the substance BE-16627, and recovering the same.

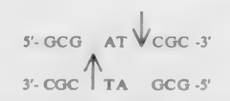
5,391,487

RESTRICTION ENDONUCLEASE SGFI FROM *STREPTOMYCES GRISEORUBER*

James R. Kappelman; Raymond J. Williams; Elizabeth E. Murray, and Nadia I. Vesselinova, all of Madison, Wis., assignors to Promega Corporation, Madison, Wis.

Filed Aug. 13, 1993, Ser. No. 106,934
Int. Cl.[6] C12P *19/34;* **C12N** *9/22, 1/00*
U.S. Cl. 435—91.53 **13 Claims**

1. A restriction endonuclease isolated from Streptomyces which specifically recognizes and specifically cleaves DNA comprising an octanucleotide having the sequence



wherein said octanucleotide is cleaved at positions indicated by the arrows.

5,391,488

BIOCATALYTIC OXIDATION OF A REACTIVE PRIMARY ALCOHOL USING SOYBEAN PEROXIDASE

Mark A. Johnson, Chillicothe; Alexander R. Pokora, Pickerington, and William L. Cyrus, Jr., Ray, all of Ohio, assignors to Enzymol International, Inc., Colombus, Ohio

Filed Apr. 19, 1993, Ser. No. 49,580
The portion of the term of this patent subsequent to Sep. 15, 2019, has been disclaimed.
Int. Cl.[6] C12P *7/24*
U.S. Cl. 435—147 **13 Claims**

1. A method for the biocatalytic oxidation of a reactive primary alcohol which comprises preparing a solution of said reactive primary alcohol in an aqueous medium and contacting said solution with soybean peroxidase in the presence of a peroxide.

5,391,489

PROTEOLYTIC ENZYMES FROM HYPERTHERMOPHILIC BACTERIA AND PROCESSES FOR THEIR PRODUCTION

Robert M. Kelly, Ellicott City, Md.; Anne K. S. Robinson, Philadelphia, Pa.; Ilse I. Blumentals, Silver Spring, Md.; Stephen H. Brown, Owings Mills, Md., and Christian B. Anfinsen, Baltimore, Md., assignors to Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 406,327, Sep. 12, 1989, Pat. No. 5,242,817.
This application Jun. 30, 1993, Ser. No. 83,536
Int. Cl.[6] C12P *21/04;* **C12N** *9/52, 9/50*
U.S. Cl. 435—220 **8 Claims**

1. A purified proteolytic enzyme preparation obtained from *Pyrococcus furiosus* comprising the steps of cultivating *Pyrococcus furiosus* in nutrient medium suitable for *Pyrococcus furiosus* growth, disrupting said *Pyrococcus furiosus* to obtain a cell extract, and maintaining the resulting cell extract at about 100° C. for a time period in the range of from about 1 hour to about 105 hours.

5,391,490

UBIQUITIN-SPECIFIC PROTEASE

Alexander J. Varshavsky, Boston, and John W. Tobias, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 573,958, Aug. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 521,089, May 9, 1990, abandoned. This application Jan. 25, 1994, Ser. No. 186,434
Int. Cl.[6] C12N *9/60*
U.S. Cl. 435—224 **7 Claims**

1. An essentially pure ubiquitin-specific protease designated UBP1.

5,391,491

AVIAN EMBRYO CELL AGGREGATE BIOMASS FOR PRODUCING TICK-BORN ENCEPHALITIS VIRUS/VIRUS ANTIGEN

Wolfgang Mundt, Vienna; Wilfried Woehrer, Bad Voeslau; Friedrich Dorner, and Johann Eibl, both of Vienna, all of Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

PCT No. PCT/AT91/00003, § 371 Date Jul. 6, 1992, § 102(e) Date Jul. 6, 1992, PCT Pub. No. WO91/09937, PCT Pub. Date Jul. 11, 1991
PCT Filed Jan. 3, 1991, Ser. No. 854,630
Claims priority, application Austria, Jan. 4, 1990, 18/90
Int. Cl.[6] C12N *5/00, 5/02, 7/00;* **A01N** *1/02;* **C12P** *21/02*
U.S. Cl. 435—240.2 **8 Claims**

1. A biomass for producing tick-borne encephalitis virus/-virus antigen comprising cell aggregates of avian embryo cells, wherein said cell aggregates have diameters of between 100 μm and 1,000 μm and have been infected with tick-borne encephalitis virus.

5. A method of producing tick-borne encephalitis virus/-virus antigen comprising the steps of:
(a) infecting a biomass comprised of cell aggregates of avian embryo, cells, wherein said cell aggregates have diameters of between 100 μm and 1,000 μm, with tick-borne encephalitis virus in a culture medium having an oxygen concentration of at least 0.01 mmol/l and wherein said culture medium contains at least 10 mg of cell aggregates per ml;
(b) producing a cell aggregate mixture containing tick-borne encephalitis virus/virus antigen; and
(c) recovering said tick-borne encephalitis virus/virus antigen from the cell aggregate mixture.

5,391,492

A83850 ANTIBIOTICS

Robert L. Hamill, Greenwood, and Raymond C. Yao, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 924,137, Aug. 3, 1992, abandoned, which is a division of Ser. No. 568,578, Aug. 16, 1990, Pat. No. 5,187,082.
This application May 21, 1993, Ser. No. 66,352
Int. Cl.[6] C12N *1/12, 1/20*
U.S. Cl. 435—252.1 **1 Claim**

1. A biologically pure culture of *Amycolatopsis albus* NRRL 18532 or an A83850-producing mutant thereof.

5,391,493

STREPTOMYCES NCIMB 40227 ACTIVE IN THE BIOSTIMULATION OF AGRICULTURAL PRODUCTION

Ernesto Signorini; Giorgio Pirali, both of Varese; Mario Ferri, Novara, and Sergio Quaroni, Pavia, all of Italy, assignors to Ministero Dell 'Universita' e Della Ricerca Scientifica e Tecnologica, Italy

Division of Ser. No. 103,166, Aug. 6, 1993, Pat. No. 5,302,578, which is a continuation of Ser. No. 683,644, Apr. 11, 1991, abandoned. This application Jan. 18, 1994, Ser. No. 182,328
Claims priority, application Italy, Apr. 12, 1990, 20014 A/90
Int. Cl.[6] C12N *1/20;* **A01N** *63/04*
U.S. Cl. 435—253.5 **1 Claim**

1. Streptomyces <<NCIMB 40227>> or a biologically pure culture thereof.

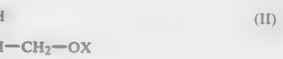
5,391,494

PROCESS FOR SELECTIVELY PRODUCING OPTICALLY ACTIVE 1-DERIVATIZED-2-DIOL USING LIPASE CES AND TRIGLYCERIDE

Kazutoshi Miyazawa, and Naoyuki Yoshida, both of Ichihara, Japan, assignors to Chisso Corporation, Osaka, Japan

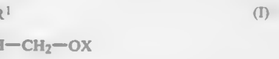
Continuation of Ser. No. 866,878, Apr. 10, 1992, abandoned, which is a division of Ser. No. 764,072, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 444,784, Dec. 1, 1989, abandoned. This application Aug. 10, 1993, Ser. No. 104,408
Claims priority, application Japan, Dec. 9, 1988, 63-309832; Apr. 24, 1989, 1-101689
Int. Cl.[6] C12P *41/00*
U.S. Cl. 435—280 **2 Claims**

1. A process for producing an optically active compound which comprises reacting under substantially anhydrous conditions and in the presence of Lipase CES to catalyze the reaction, a triglyceride and a compound represented by the formula (II):



(II)

wherein R^2 is alkyl of 2–5 carbon atoms, and X is tetrahydropyranyl, to effect a transesterification reaction, and resolving to an optically active alcohol which has either the R- or S-configuration and the corresponding ester of the S- or R-alcohol represented by the formula (I):



(I)

wherein R^1 is alkanoyl of 2–20 carbon atoms, R^2 is alkyl of 2–5 carbon atoms, and X is tetrahydropyranyl, and recovering the optically active alcohol and the corresponding ester.

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5,391,495

STEREOSELECTIVE REDUCTION OF KETONES

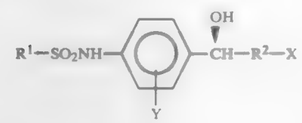
Ramesh N. Patel, Bridgewater, N.J.; Amit Banerjee, Yardley, Pa.; Clyde G. McNamee, Lawrenceville, and Laszlo J. Szarka, East Brunswick, both of N.J., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 972,286, Nov. 5, 1992, abandoned. This application Oct. 27, 1993, Ser. No. 143,976

Int. Cl.[6] **C12P** *7/22;* **C12N** *1/20, 1/14*

U.S. Cl. 435—280 **15 Claims**

1. A process for preparation of an optically active alkanol compound of the formula:



(I)

wherein

R^1 is lower alkyl or aryl;

R^2 is an alkylene group of 1 to 4 carbon atoms joining —X and



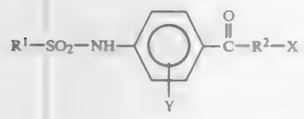
through from 1 to 2 carbon atoms;

Y is hydrogen, halogen, hydroxy, nitro, lower alkoxy, benzyloxy, lower alkyl, or R^3SO_2NH— wherein R^3, independently, has the same meaning as R^1; and

X is chloro, bromo, iodo, amino, monoalkylamino, or dialkylamino,k or the hydrochloride of amino, monoalkylamino, or dialkylamino;

comprising

contacting a ketone compound of the formula



(II)

wherein R^1, X and Y are as previously defined, and

R^2 is an alkylene group of 1 to 4 carbon atoms joining —X and



through from 1 to 2 carbon atoms;

with a microorganism capable of catalyzing the stereoselective reduction of the compound of Formula II to form the compound of Formula I wherein said microorganism is selected from the group consisting of *Aureobasidium pullulans* ATCC 16623, *Hansenula polymorpha* ATCC 26012, *Mucor hiemalis* ATCC 8977, *Mortierella alphina* ATCC 36965, *Trichoderma polysporium* ATCC 28014, *Rhodococcus erythropolis* ATCC 4277, Rhodococcus sp. ATCC 12975, Rhodococcus sp. ATCC 29675, Rhodococcus sp. ATCC 21243, *Rhodococcus fascians* ATCC 21950, *Rhodococcus globerulus* ATCC 21505, and *Rhodococcus equi* ATCC 14887;

followed by the additional step of separating the compound of formula I.

5,391,496

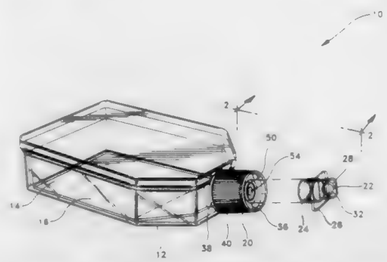
CULTURING VESSEL AND CLOSURE ASSEMBLY

John J. Kayal, Wayne; Susan L. Barker, Tenafly, and John M. Janson, Piscataway, all of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 1, 1993, Ser. No. 115,948

Int. Cl.[6] **C12M** *1/24*

U.S. Cl. 435—286 **7 Claims**



1. A culture vessel constructed to grow cell cultures in incubators comprising:

a vessel comprising a chamber and a neck connected to said chamber having an opening for introducing cells and culture fluids into said chamber;

a cap for covering said opening in said neck comprising a top surface, a bottom stop ledge, an annular skirt extending from said top surface, to said stop ledge and having an inner surface and outer surface, an inverted skirt portion surrounded by said inner surface of said annular skirt and extending from said stop surface toward a bottom surface inverting at said bottom surface and upwardly extending toward said top surface forming an upwardly extending annular compartment area, an orifice in said inverted skirt portion surrounded by said annular compartment area, a gas permeable membrane or allowing gas diffusion into and out of said vessel inside said orifice and means for removably mounting said cap to said neck; and

a plug removably attached to said cap for occluding gas diffusion into and out of said vessel that comprises a cylindrical base, an intermediate flange and a hanger tab.

5,391,497

HUMAN K-CASEIN

Ravi S. Menon, Lafayette; Kathleen F. Jeffers, Denver; Ying-Fon Chang, Arvanda, and Richard G. Ham, Boulder, all of Colo., assignors to University of Colorado Foundation, Inc., Boulder, Colo.

Filed Oct. 13, 1992, Ser. No. 962,569

Int. Cl.[6] **A23J** *1/20;* **A61K** *37/16;* **C07K** *3/00, 13/00*

U.S. Cl. 435—320.1 **4 Claims**

1. A cDNA sequence encoding human κ-casein.

5,391,498

TEST FOR FECAL OCCULT BLOOD

Josefina T. Baker, Cupertino; Peter U. Ly, San Jose, and Eli Z. Olivet, Sunnyvale, all of Calif., assignors to Smithkline Diagnostics, Inc., San Jose, Calif.

Division of Ser. No. 681,489, Apr. 19, 1991, abandoned, which is a continuation of Ser. No. 96,995, Sep. 16, 1987, abandoned. This application Dec. 13, 1991, Ser. No. 806,752

Int. Cl.[6] **G01N** *33/52*

U.S. Cl. 436—66 **12 Claims**

1. A solution for developing a fecal occult blood test employing a guaiac matrix, the solution comprising from about 1% to about 10% by weight of hydrogen peroxide, from about 0.4% to about 20% by weight of a phenolic enhancing agent, from about 60% to about 90% by weight of alcohol, and from about 7% to about 23% by weight of water.

5,391,499

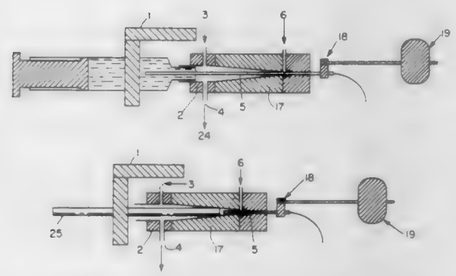
AUTOMATED SAMPLING METHOD FOR MEDICAL DIAGNOSTIC INSTRUMENT

Peter N. Karkantis, Acton; Beat R. Degen, Bellingham; Richard A. Dussault, North Attleboro; Richard L. Schulkind, Sharon, and Norman K. Parker, Northfield, all of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Continuation of Ser. No. 891,553, May 29, 1992. This application Nov. 24, 1993, Ser. No. 158,107

Int. Cl.[6] **G01N** *1/10, 33/48, 35/02*

U.S. Cl. 436—180 **3 Claims**



1. A method for sampling material which is held within a container said method comprising:

inserting said container into the large end of an inwardly tapered bore on a holder,

detecting the presence and diameter of the container of said material, said container being one of a syringe and a capillary,

comparing the diameter to a stored data base to determine whether the container is a syringe or a capillary, and if a syringe what the volume is,

withdrawing a sample of said material, wherein said withdrawing is controlled in response to the presence and diameter of said container, said withdrawing comprising,

when the container is a syringe, inserting a sampling probe through the small end of said holder bore into said syringe to a depth determined by the volume of said syringe, followed by applying a vacuum to said probe to withdraw the sample therethrough,

when the container is a capillary, applying a vacuum to a sampling probe, said sampling probe having been inserted into the small end of the holder bore, and

cleaning said holder bore and probe exposed to said material between the withdrawal of subsequent samples, using a cleaning solution, said cleaning comprising,

generating reproducible air-liquid microsegments using a T junction connecting an air inlet with at least two pump tubes, a first one of which carries a wash solution and a second one which carries air for the liquid microsegments,

allowing the microsegments carried by the second tube to form an air-liquid reproducible mixture, and

allowing the air-liquid mixture to form a foam wash in said bore.

5,391,500

Patent Not Issued For This Number

5,391,501

METHOD FOR MANUFACTURING INTEGRATED CIRCUITS WITH A STEP FOR REPLACING DEFECTIVE CIRCUIT ELEMENTS

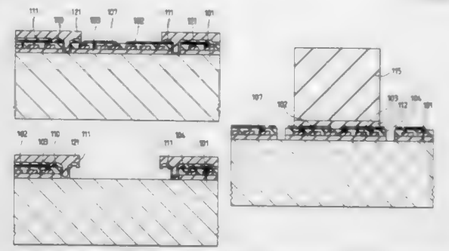
Mitsuo Usami, Akishima, and Keijiro Uehara, Sagamihara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 5, 1993, Ser. No. 147,569

Claims priority, application Japan, Nov. 12, 1992, 4-302053

Int. Cl.[6] **H01L** *21/00*

U.S. Cl. 437—7 **12 Claims**



1. A method for manufacturing a semiconductor integrated circuit device which comprises:

providing an SOI substrate which has a first insulating film and a semiconductor layer formed on said first insulating film;

forming, in a region of said semiconductor layer of said SOI substrate, a chip which comprises a plurality of macrocells each of which comprises an integrated circuit element having a second insulating film whose etching rate is substantially the same as that of said first insulating film and a portion of which is on said first insulating film;

forming primary wirings in the respective macrocells, said primary wirings being independent of one another;

forming a trench extending through said first insulating film around an outer periphery of a first macrocell;

forming, on said SOI substrate having the trench, a protective film whose etching rate differs from the first and second insulating films;

exposing said protective film on said first macrocell while keeping said protective film on the trench as covered;

etching the exposed protective film;

etching the first and second insulating films and removing said first macrocell from said SOI substrate;

removing the protective film;

embedding a second macrocell, which differs in operational characteristics from said first macrocell, in the position where said first macrocell has existed and fixing said second macrocell in the position;

forming a third insulating film on said SOI substrate having said trench and the first primary wiring layer to flatten the surface;

forming openings in position of said third insulating film; and

forming secondary wirings on said SOI substrate having the openings and interconnecting adjacent macrocells with each secondary wiring through the openings.

5,391,502

PER-WAFER METHOD FOR GLOBALLY STRESSING GATE OXIDE DURING DEVICE FABRICATION

Yi-Hen Wei, Santa Clara, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 27, 1993, Ser. No. 113,497

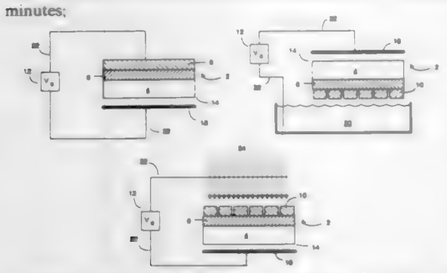
Int. Cl.[6] **G01R** *31/26*

U.S. Cl. 437—8 **16 Claims**

1. A per-wafer method of stressing gate oxide on a wafer including a substrate and a layer of said gate oxide thereon, said gate oxide fabricated to have a desired breakdown voltage $V_{nominal}$, the method comprising a step of coupling, prior to deposition of gate material overlying said gate oxide, a source of voltage V_S between an upper surface of said gate oxide and

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a lower surface of said wafer for less than about twenty-five minutes;



wherein said voltage V_S has a magnitude less than said desired breakdown voltage $V_{nominal}$.

5,391,503

METHOD OF FORMING A STACKED SEMICONDUCTOR DEVICE WHEREIN SEMICONDUCTOR LAYERS AND INSULATING FILMS ARE SEQUENTIALLY STACKED AND FORMING OPENINGS THROUGH SUCH FILMS AND ETCHINGS USING ONE OF THE INSULATING FILMS AS A MASK

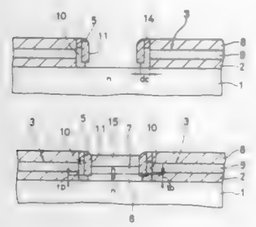
Hiroyuki Miwa, Kanagawa; Takayuki Gomi, Tokyo; Takashi Noguchi, and Norikazu Ohuchi, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 881,869, May 12, 1992, abandoned. This application Sep. 4, 1992, Ser. No. 944,261

Claims priority, application Japan, May 13, 1991, 3-107387; May 14, 1991, 3-138505; May 31, 1991, 3-155179

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **4 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

after a first insulating film, a first semiconductor layers of a second conductivity type, and a second insulating film are sequentially stacked on a substrate of a first conductivity type, forming a first opening to reach a surface of said substrate;

after a second semiconductor layer of the second conductivity type and a third insulating film are sequentially stacked on the entire surface of the resultant structure including said first opening, etching back said third insulating film by anisotropic etching to be left on a side wall of said second semiconductor layer, and removing said second semiconductor layer on said substrate by isotropic etching using said third insulating film as a mask to expose a part of said substrate, thereby forming a second opening;

forming a first single-crystal semiconductor layer of the second conductivity type in said second opening using a molecular beam epitaxial selective growth method; and

forming a third semiconductor layer of the first conductivity type on said first single-crystal semiconductor layer.

5,391,504

METHOD FOR PRODUCING INTEGRATED QUASI-COMPLEMENTARY BIPOLAR TRANSISTORS AND FIELD EFFECT TRANSISTORS

Darrell Hill, Plano, and Albert H. Taddiken, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 923,046, Jul. 31, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 147,108

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **12 Claims**

1. A method of forming an integrated circuit comprising the steps of:

forming a metal emitter contact and a gate contact simultaneously on a layer adjacent an emitter layer in a material structure comprising:

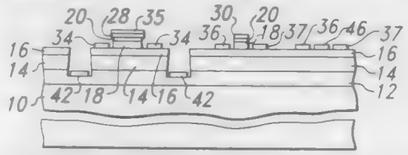
a collector layer;

a base layer; and

said emitter layer;

removing said emitter layer from areas not covered by said emitter contact and said gate contact;

forming metal on said base layer to simultaneously form at least one base contact, a drain contact, and a source contact; and



removing a portion of said base layer to isolate a source/-channel/drain region of a field affect transistor from a base mesa of a bipolar transistor.

5,391,505

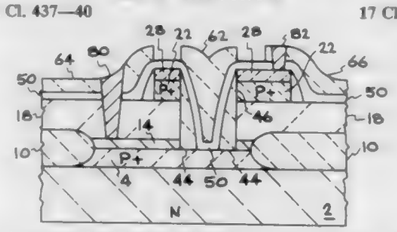
ACTIVE DEVICE CONSTRUCTED IN OPENING FORMED IN INSULATION LAYER AND PROCESS FOR MAKING SAME

Ashok K. Kapoor, Palo Alto, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Nov. 1, 1993, Ser. No. 147,290

Int. Cl.[6] H01L *21/266*

U.S. Cl. 437—40 **17 Claims**



1. A process for forming an MOS type active device at least partially in an opening in an insulation layer over a semiconductor substrate which comprises:

a) forming a first source/drain region in a semiconductor substrate;

b) forming an insulation layer over said semiconductor substrate;

c) forming a first opening in said insulation layer extending down to said semiconductor substrate and in at least partial registry with said first source/drain region in said substrate;

d) forming a semiconductor channel portion on the sidewall of said first opening in said insulation layer with a first end in electrical communication with said first source/drain region;

e) forming a second source/drain region on said insulation layer adjacent said channel portion in said first opening and in electrical communication with a second end of said semiconductor channel portion in said first opening;

f) forming a gate oxide over said semiconductor channel portion; and

g) forming a gate electrode over said gate oxide.

5,391,506

MANUFACTURING METHOD FOR SEMICONDUCTOR DEVICES WITH SOURCE/DRAIN FORMED IN SUBSTRATE PROJECTION.

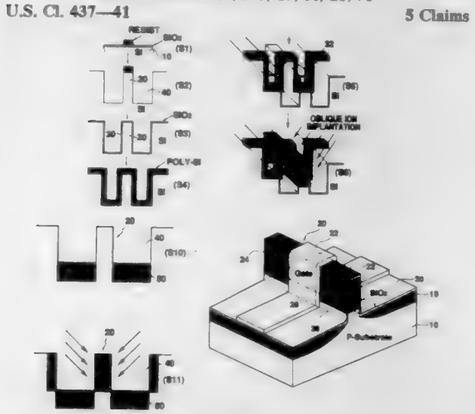
Yoshihide Tada, and Hiroyasu Kunitomo, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jan. 27, 1993, Ser. No. 9,747

Claims priority, application Japan, Jan. 31, 1992, 4-017176; Jan. 31, 1992, 4-017177; Jun. 10, 1992, 4-150682

Int. Cl.[6] H01L *21/265, 29/06, 21/76*

U.S. Cl. 437—41 **5 Claims**



1. A method of making a semiconductor device which includes at least one projection formed on a substrate having a conductivity type, the at least one projection including at least one vertical MOS transistor having a channel region, a source region and a drain region, the method comprising the steps of:

(1) forming a plurality of grooves in the semiconductor substrate by anisotropic etching to form the at least one projection, the at least one projection having a top surface extending in a longitudinal direction;

(2) forming a gate insulating film on the outer surface of the at least one projection;

(3) forming a gate electrode on said gate insulating film extending entirely across a portion of the top of and a portion of sidewalls of the at least one projection perpendicular to the longitudinal direction; and

(4) introducing an impurity of the opposite conductivity type from the conductivity type of the substrate into an upper part of said at least one projection to form the source region and the drain region while leaving an isolation region with no impurity doped in a lower part of the at least one projection between the upper part of the at least one projection and the substrate, wherein a height of the upper part of said at least one projection is greater than a height of the lower part of said at least one projection.

5,391,507

LIFT-OFF FABRICATION METHOD FOR SELF-ALIGNED THIN FILM TRANSISTORS

Robert F. Kwasnick, and George E. Possin, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

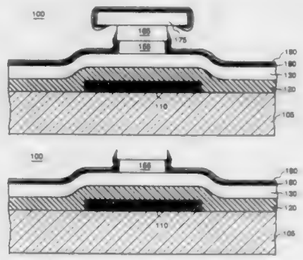
Filed Sep. 3, 1993, Ser. No. 115,973

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—41 **25 Claims**

1. A method of fabricating a self-aligned thin film transistor (TFT) assembly on a substrate, comprising the steps of:

forming a multi-tiered island on a layer of semiconductor material overlying a gate electrode, said multi-tiered island comprising an upper cap layer comprising a substantially optically transparent conducting oxide and having a lateral dimension corresponding to said gate electrode as determined by a back-side exposure technique, an intermediate body layer comprising a substantially transparent organic dielectric material, and a base layer comprising an inorganic dielectric material, said base layer of said multi-tiered island having a lateral dimension less than the corresponding lateral dimension of the overlying upper cap layer and being disposed on said semiconductor layer over



said gate electrode such that said lateral dimension of said base layer determines a respective overlap distance of a source and a drain electrode with respect to said gate electrode;

forming source and drain electrodes having said respective overlap of said gate electrode; and

removing said upper cap layer with a lift-off technique and removing said intermediate body layer from said multi-tiered island such that said base layer remains disposed between the patterned source and drain electrodes.

5,391,508

METHOD OF FORMING SEMICONDUCTOR TRANSISTOR DEVICES

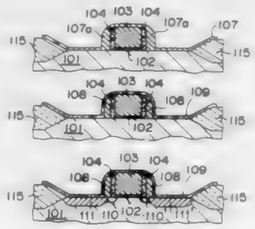
Toshimasa Matsuoka, Yao; Hiroshi Kotaki, and Seizo Kakimoto, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1993, Ser. No. 170,771

Claims priority, application Japan, Dec. 21, 1992, 4-339913; Jul. 28, 1993, 5-185946

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—41 **4 Claims**



1. A method of forming semiconductor devices comprising the steps of:

blocking the surfaces of a semiconductor substrate having a conductivity type so as to form active regions and forming an approximately rectangular gate electrode on a gate insulating film in an approximate center of the active region;

forming a side wall insulating film on both the side faces of the gate electrode;

accumulating a semiconductor film to approximately uni-

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form thickness on the gate electrode, side wall insulating film and substrate;

effecting an anisotropical etching operation with respect to the semiconductor film so as to leave thin portions thereof existing on the surface of the gate electrode and the substrate surface of the active region of the semiconductor film, while leaving a thick portion in contact with the side face of the side wall insulating film of the semiconductor film;

oxidizing or nitriding the exposed faces of the semiconductor film so as to change portions, existing on the surface of the gate electrode and the substrate surface of the active region of the semiconductor film into a protective insulating film, while leaving a portion in contact with the side face of the side wall insulating film of the semiconductor film of a thickness so as to form semiconductor side walls;

introducing conductive type impurities different from the conductive type substrate, using the gate electrode, the side wall insulating film and the semiconductor side wall as masks, said step of introducing impurities includes implanting ions into the substrate, with accelerating energies reaching the substrate surface through the protective insulating film in the active regions on both the sides of the masks; and

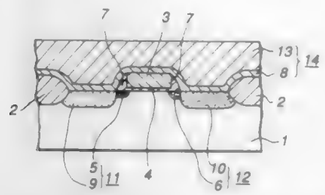
effecting a thermal treating operation, diffusing impurities implanted into the semiconductor side wall into the substrate surface, forming a local shallow source/drain diffusing layer on both the sides of the gate electrode, and also, activating impurities implanted into the substrate surface in the active regions on both the sides of the masks, coupling to a side opposite to the gate electrode of the local shallow source/drain diffusing layer so as to form a deep source/drain diffusing layer having a junction depth deeper than the junction depth of the local shallow source/drain diffusing layer.

5,391,509

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE FORMING A HIGH CONCENTRATION IMPURITY REGION THROUGH A CVD INSULATING FILM

Naoki Matsukawa; Makoto Mizuno, and Katsuhiro Shimazu, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Dec. 10, 1993, Ser. No. 164,954
Claims priority, application Japan, Dec. 15, 1992, 4-334566
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—44 9 Claims



1. A method of manufacturing a semiconductor device comprising the steps of:

forming a low concentration impurity region by introducing impurities through a gate insulating film by using a gate electrode formed on a semiconductor substrate as a first mask;

depositing a side wall film on a whole surface of the semiconductor substrate;

forming side walls on side surfaces of the gate electrode, wherein the side wall film and the gate insulating film are etched to expose the substrate above at least a high concentration impurity region;

forming an insulating film on the whole surface of the semiconductor substrate having the side walls formed thereon solely by a chemical vapor deposition method;

after forming the insulating film, forming the high concentration impurity region by introducing impurities and by using the gate electrode and the side walls as a second mask;

performing a thermal treatment of the semiconductor substrate having the high concentration impurity region formed therein to recrystallize surfaces of the low concentration impurity region and the high concentration impurity region; and

forming an interlayer insulating film on the whole surface of the semiconductor substrate after the thermal treatment thereof.

5,391,510

FORMATION OF SELF-ALIGNED METAL GATE FETS USING A BENIGNANT REMOVABLE GATE MATERIAL DURING HIGH TEMPERATURE STEPS

Louis L. Hsu, Fishkill; Gangadhara S. Mathad, Poughkeepsie, and Rajiv V. Joshi, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 843,049, Feb. 28, 1992, abandoned. This application Apr. 7, 1994, Ser. No. 225,360
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—44 3 Claims



1. A process for making partial FET devices comprising:

providing a semiconductor substrate,

forming a gate dielectric member on said substrate,

forming a masking material of diamond-like-carbon on said dielectric member coextensive with said dielectric member, forming source and drain regions in said substrate adjacent said dielectric member by using said masking material as the mask therefor,

annealing said regions at a predetermined temperature of at least 400° C.,

said masking material being characterized by being capable of withstanding said predetermined temperature without contaminating and stressing said dielectric member,

removing said masking material by employing an O_2/Ar plasma etch.

5,391,511

SEMICONDUCTOR PROCESSING METHOD OF PRODUCING AN ISOLATED POLYSILICON LINED CAVITY AND A METHOD OF FORMING A CAPACITOR

Trung T. Doan, and Charles H. Dennison, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 869,615, Apr. 16, 1992, which is a continuation-in-part of Ser. No. 838,537, Feb. 19, 1992, Pat. No. 5,206,183. This application Jan. 5, 1993, Ser. No. 891
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—49 4 Claims

1. A semiconductor processing method comprising:

providing an area atop a semiconductor wafer to which electrical connection to a polysilicon containing component is to be made;

providing a layer of first material atop the semiconductor wafer, the first material layer having an upper surface;

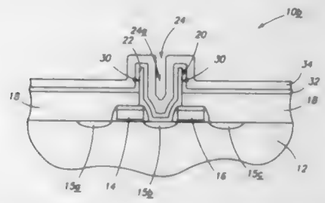
providing a contact opening in the layer of first material to the area, the contact opening having a selected open diameter;

providing a layer of polysilicon to a selected thickness atop the layer of first material and within the contact opening to contact the area, the selected thickness being less than one-half the open diameter such that polysilicon less than completely fills the contact opening and thereby defines an outwardly open polysilicon lined cavity;

with the wafer having the polysilicon lined cavity outwardly open, chemical mechanical polishing with a chemical mechanical polishing slurry the polysilicon atop the first material layer to the upper first material layer surface to define an isolated polysilicon lined cavity;

removing chemical mechanical polishing slurry residuals from the outwardly open polysilicon lined cavity; and

wherein the first material comprises SiO_2, the chemical mechanical polishing slurry comprises SiO_2 grit, the isolated polysilicon lined cavity has outer sidewalls, and the method further comprising dipping the wafer with the isolated polysilicon lined cavity into an HF solution to remove SiO_2 grit from within the cavity and to etch the first material and thereby expose at least a portion of the cavity outer sidewalls.

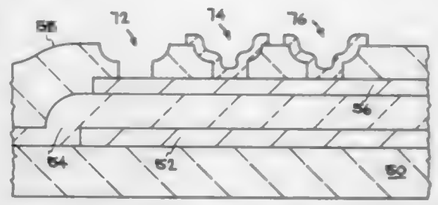


5,391,513

WET/DRY ANTI-FUSE VIA ETCH

Miguel A. Delgado, and Stacy W. Hall, both of San Antonio, Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 22, 1993, Ser. No. 171,590
Int. Cl.[6] H01L *21/70, 27/00*
U.S. Cl. 437—60 11 Claims



1. An improved anti-fuse semiconductor device formation method comprising the steps of:

forming an inter-metal oxide layer over a first metallic layer disposed on a semiconductor substrate,

depositing a second metallic layer over said inter-metal oxide layer,

depositing an oxide layer over said second metallic layer,

forming vias extending completely through said oxide layer to said second metallic layer by;

performing a first etch on portions of said oxide layer where said vias are to be formed, said first etch partially removing said oxide layer from said portions such that a first recessed area is formed extending only partially through said oxide layer,

performing a second etch on said portions of said oxide layer where said vias are to be formed, said second etch removing said oxide layer and forming a second recessed area extending completely through said oxide layer such that said second metallic layer is exposed in the bottom of said second recessed area, said second recessed area formed within said first recessed area, said second recessed area further formed having a cross sectional area smaller than the cross sectional area of said first recessed area such that said first recessed area peripherally borders said second recessed area,

depositing a layer of amorphous silicon over said oxide layer such that said amorphous silicon is deposited into said vias,

removing said amorphous silicon from at least one of said vias,

depositing a third metallic layer over said layer of amorphous silicon and into said at least one via from which said amorphous silicon has been removed,

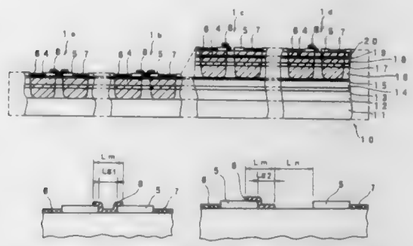
completing the formation of an anti-fuse semiconductor device by performing subsequent processing steps.

5,391,512

METHOD OF PRODUCING A MULTI-STAGE AMPLIFIER DEVICE

Nobuo Shiga, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Division of Ser. No. 873,025, Apr. 24, 1992, Pat. No. 5,291,042. This application Dec. 21, 1993, Ser. No. 170,752
Claims priority, application Japan, Apr. 26, 1991, 3-96872; Apr. 26, 1991, 3-96877
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—56 7 Claims



1. A method of producing a multi-stage amplifier device having a first stage amplifier with a first MESFET and a second stage amplifier with a second MESFET, said stages being cascade-connected to each other and formed on a same semi-insulating semiconductor substrate, said method comprising the steps of:

forming a first epitaxial layer on said semi-insulating semiconductor substrate;

forming a second epitaxial layer on said first epitaxial layer;

partially removing said second epitaxial layer to provide an exposed portion of said first epitaxial layer;

forming a first source high impurity density region and a first drain high impurity density region in said exposed portion of said first epitaxial layer;

forming a second source high impurity density region and a second drain high impurity density region in said second epitaxial layer;

forming an insulating film on said first and second source and drain high impurity density regions;

forming a first gate electrode between, and in self-alignment with said first source and said first drain high impurity density regions;

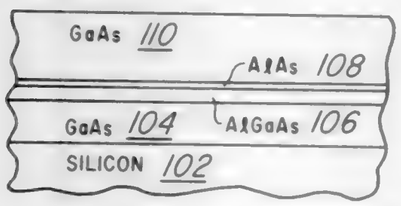
forming a second gate electrode which has a source side edge portion which partially overlaps said insulating film on said second source high impurity density region and a drain side edge portion which does not extend to said second drain high impurity density region.

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5,391,514
LOW TEMPERATURE TERNARY C4 FLIP CHIP BONDING METHOD
Thomas P. Gall, Endwell, and Anthony P. Ingraham, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 19, 1994, Ser. No. 229,883
Int. Cl.[6] H01L *21/28, 21/58, 21/60*
U.S. Cl. 437—183 **6 Claims**

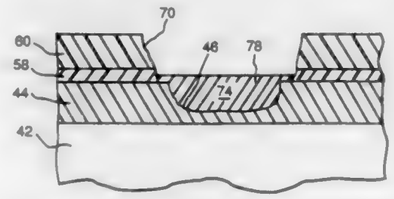
1. A method of flip chip bonding an integrated circuit chip to a chip carrier comprising the steps of: depositing a first, high melting temperature composition on contacts of one of the chip and the chip carrier, and depositing a second, lower melting temperature composition on facing contacts of the opposite one of the chip and chip carrier; heating the chip and chip carrier to cause the lower melting temperature composition to melt and dissolve the higher melting temperature composition therein to form a third, still lower melting temperature composition and a solder bond of a low melting point alloy and form a third, lower melting temperature, and dissolve the higher melting temperature composition therein to form a solder bond of a low melting point alloy.

5,391,515
CAPPED ANNEAL
Yung-Chung Kao, and Donald L. Plumton, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 623,488, Dec. 4, 1990, abandoned, which is a continuation of Ser. No. 264,237, Oct. 28, 1988, abandoned. This application Jun. 17, 1992, Ser. No. 900,226
Int. Cl.[6] H01L *21/324*
U.S. Cl. 437—133 **7 Claims**



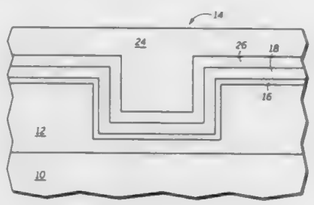
1. A method of forming a heteroepitaxial structure, comprising the steps of:
(a) forming a heteroepitaxial layer of a second material on a layer of a first material;
(b) forming a capping layer of a third material on said heteroepitaxial layer, wherein said capping layer is substantially lattice matched to said second material, and is composed of a compound semiconductor;
(c) annealing said heteroepitaxial and capping layers such that a constituent element of said compound semiconductor desorbs from a surface region of said capping layer, thereby forming a layer of a fourth material in said surface region of said capping layer, said layer of fourth material being a barrier to further desorption of said constituent element from said capping layer or said layer of second material; and
(d) forming a top layer of material on said layer of fourth material, said top layer substantially lattice matched to said fourth material.

5,391,516
METHOD FOR ENHANCEMENT OF SEMICONDUCTOR DEVICE CONTACT PADS
Robert J. Wojnarowski, Ballston Lake, and Bernard Gorowitz, Clifton Park, both of N.Y., assignors to Martin Marietta Corp., King of Prussia, Pa.
Filed Oct. 10, 1991, Ser. No. 774,427
Int. Cl.[6] H01L *21/268, 21/441, 21/311*
U.S. Cl. 437—174 **11 Claims**



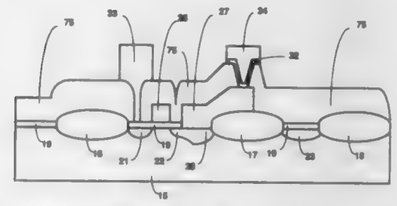
1. A method for enhancing a contact pad on a surface of a semiconductor device, comprising:
applying a layer of resist material over the semiconductor device surface and over the contact pad;
forming in the layer of resist material an enhancement access vial of re-entrant hole shape which is wider at the bottom than at the top, to expose a region of the contact pad including a portion of the contact pad to be enhanced;
metallizing the region of the contact pad to be enhanced by applying metal over both the layer of resist material and the exposed portion of the contact pad, while leaving a discontinuity between the metal over the layer of resist material and the metal over the portion of the contact pad to be enhanced; and
removing the metal over the layer of resist material, without removing the metal over the region of the contact pad to be enhanced.

5,391,517
PROCESS FOR FORMING COPPER INTERCONNECT STRUCTURE
Avgerinos V. Gelatos, and Robert W. Fiordalice, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.
Filed Sep. 13, 1993, Ser. No. 120,097
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—190 **15 Claims**



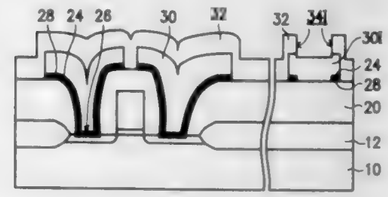
1. A process for fabricating a semiconductor device comprising the steps of:
providing a device substrate having a dielectric layer thereon;
forming an interface layer overlying the dielectric layer, wherein the interface layer includes at least a diffusion barrier layer and a refractory metal adhesion layer overlying the barrier layer;
forming a copper layer overlying the interface layer; and
annealing the substrate to form an intermetallic layer between the copper layer and the interface layer, wherein the copper layer is in intimate contact with intermetallic layer.

5,391,518
METHOD OF MAKING A FIELD PROGRAMMABLE READ ONLY MEMORY (ROM) CELL USING AN AMORPHOUS SILICON FUSE WITH BURIED CONTACT POLYSILICON AND METAL ELECTRODES
Bharat Bhushan, Santa Clara, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.
Filed Sep. 24, 1993, Ser. No. 126,624
Int. Cl.[6] H01L *21/441*
U.S. Cl. 437—190 **10 Claims**



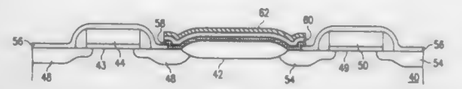
1. A method for fabricating a programmable read only memory cell, the method comprising the steps of:
(a) forming an implant region within a substrate;
(b) forming a first conductive layer over the substrate;
(c) selectively etching the first conductive layer to form a first electrode on the substrate in physical and electrical contact with the implant region and to form a gate region for a transistor;
(d) implanting atoms of a first conductivity type into the substrate into a first source/drain region on a first side of the gate region and into a second source/drain region on a second side of the gate region, wherein the second source/drain region is electrically coupled to the implant region;
(e) forming an insulating layer over the first electrode, the insulating layer having a link contact which extends to the first electrode and having a contact hole extending to the first source drain region;
(f) forming an amorphous silicon layer within the link contact and in contact with the first electrode;
(g) depositing a metal layer; and,
(h) etching the metal layer to form a second electrode in contact with the amorphous silicon layer and electrically separated from the first electrode by the amorphous silicon layer, and to form a metal contact to the first source/drain region through the contact hole.

5,391,519
METHOD FOR INCREASING PAD BONDING OF AN IC (I)
Water Lur, Taipei; Ming-Tsung Liu, Hsinchu, and Der Y. Wu, Miao-Li, all of Taiwan, Prov. of China, assignors to United Microelectronics Corp., Hsinchu, Taiwan, Prov. of China
Filed Dec. 9, 1993, Ser. No. 164,342
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—190 **6 Claims**



1. A method of improving pad bonding of an IC, wherein said IC is prepared by (a) forming at least one active region on a Si substrate, (b) forming at least one transistor on said active region, (c) forming a premetal SiO_2 layer for isolation, (d) forming a plurality of metal contact windows, (e) forming a diffusion barrier layer in said contact windows and on said premetal SiO_2 layer, (f) forming a metal layer on said diffusion barrier layer and patterning, (g) forming a passivation layer on said metal layer and patterning, and (h) forming at least one pad area by masking and etching the passivation layer, said method comprising a step of (i) removing the diffusion barrier layers in said at least one pad area by masking and etching operations after step (e) and before step (f).

5,391,520
METHOD FOR FORMING LOCAL INTERCONNECT FOR INTEGRATED CIRCUITS
Fusen Chen, Dallas; Fu-Tai Liou, Carrollton, and Girish Dixit, Dallas, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Division of Ser. No. 981,908, Nov. 23, 1992, Pat. No. 5,319,245. This application Oct. 18, 1993, Ser. No. 139,268
Int. Cl.[6] H01L *21/283, 21/302*
U.S. Cl. 437—200 **6 Claims**



1. A method for forming local interconnect in an integrated circuit device, comprising the steps of:
forming first and second conductive structures on a substrate;
forming an insulating layer over the substrate and the first and second conductive structures;
removing a portion of the insulating layer to expose portions of the first and second conductive structures;
forming a refractory metal layer over the insulating layer and the exposed portions of the first and second conductive structures;
annealing the refractory metal layer in a nitrogen ambient atmosphere to form refractory metal silicide on the exposed portions of the first and second conductive structures, and refractory metal nitride elsewhere;
depositing a layer of refractory metal nitride over the annealed refractory metal nitride;
depositing a layer of refractory metal silicide over the deposited refractory metal nitride layer; and
patterning and etching the silicide and nitride layers to form local interconnect between the first and second conductive structures.

5,391,521
METHOD FOR FABRICATING LOW RESISTANCE CONTACTS OF SEMICONDUCTOR DEVICE
Sang Y. Kim, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea
Filed Dec. 27, 1993, Ser. No. 173,552
Claims priority, application Rep. of Korea, Dec. 30, 1992, 1992-26723
Int. Cl.[6] H01L *21/283*
U.S. Cl. 437—200 **3 Claims**

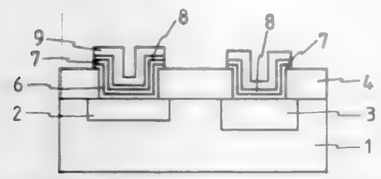
1. A method for fabricating contacts of a highly integrated semiconductor device, comprising the steps of:
forming a N^+ diffusion layer and a P^+ diffusion layer on a silicon substrate;
depositing an inter-layer insulating film over the N^+ and P^+ diffusion layers, coating a first photoresist film over said insulating film, and forming a first contact hole over said N^+ diffusion layer by use of a masking process and an etching process;
removing the remaining first photoresist film;

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depositing a first contact layer made of a first metal silicide exhibiting a low potential barrier to the N^+ diffusion layer over said first contact hole for the N^+ diffusion layer, and forming a pattern of said first contact layer for the N^+ diffusion layer by use of a masking process;

coating a second photoresist film over the first contact layer and the insulating film, and forming a second contact hole over said P^+ diffusion layer by use of a masking process and an etching process;

removing the remaining second photoresist film;



depositing a second contact layer made of a second metal silicide exhibiting a low potential barrier to the P^+ diffusion layer and over said first contact hole for the N^+ diffusion layer, and forming a pattern of said second contact layer for the P^+ diffusion layer and the N^+ diffusion layer by use of a masking process; and

sequentially depositing a diffusion barrier metal layer and a metal wiring layer over said first and second contact layers and the insulating film, and forming a metal wiring by use of a masking process.

5,391,522

GLASS-CERAMIC FOR MAGNETIC DISKS AND METHOD FOR MANUFACTURING THE SAME

Naoyuki Goto, and Katsuhiko Yamaguchi, both of Sagamihara, Japan, assignors to Kabushiki Kaisya Ohara, Kanagawa, Japan

Continuation of Ser. No. 92,551, Jul. 16, 1993, abandoned. This application May 25, 1994, Ser. No. 248,757
Claims priority, application Japan, May 19, 1993, 5-139989
Int. Cl.[6] C03C *10/12, 10/14*
U.S. Cl. 501—4 **14 Claims**

1. A glass-ceramic for magnetic disks formed by subjecting to heat treatment a base glass which consists essentially of in weight percent:

SiO_2	65–83%
Li_2O	8–13%
K_2O	0–7%
MgO + ZnO + PbO	0.5–5.5%
in which	
MgO	0.5–5.5%
ZnO	0.5–5%
PbO	0–5%
P_2O_5	1–4%
Al_2O_3	0–7%
$As_2O_3 + Sb_2O_3$	0–2%

said glass-ceramic containing lithium disilicate ($Li_2O.\ 2SiO_2$) and alpha-quartz (SiO_2) as the main crystal phases.

5,391,523

ELECTRIC LAMP WITH LEAD FREE GLASS

Richard C. Marlor, 77 Lothrop St., Beverly, Mass. 01915

Filed Oct. 27, 1993, Ser. No. 144,114
Int. Cl.[6] C03C *3/085, 8/00*
U.S. Cl. 501—14 **15 Claims**

1. An electric lamp with a lead free glass comprising:

a) a light source enclosed in

b) a glass body including at least a portion formed from a sealing glass having a weight percent composition of:



SiO_2	64.3 to 70.7
B_2O_3	6.2 to 10.5
CaO + MgO	2.5 to 5.7
Na_2O	7.0 to 12.0
K_2O	5.5 to 10.2
Li_2O	0.0 to 2.0
Al_2O_3	3.0 to 5.3
B_2O_3	0.0 to 3.0
a fining agent	0.0 to 1.0

c) electric leads having interior ends coupled to the light source, having middle sections passing from the interior of the envelope to the exterior of the glass body, and exterior ends; and

d) contacts coupled to the exterior ends of the electric leads for receiving electric power.

5,391,524

PRODUCTION OF HEAVY METAL CARBIDES OF HIGH SPECIFIC SURFACE AREA

Marc-Jacques Ledoux; Jean-Louis Guille; Cuong Pham-Huu, and Sophie Marin, all of Strasbourg, France, assignors to Pechiney Electrometallurgie, Courbevoie, France

Division of Ser. No. 613,627, Nov. 27, 1990, Pat. No. 5,308,597. This application Jan. 7, 1993, Ser. No. 32,858
Int. Cl.[6] C04B *35/52*
U.S. Cl. 501—91 **13 Claims**

1. A method of producing a composite carbide of high specific surface area, comprising reacting a compound of a heavy metal in a gaseous state with reactive carbon having a specific surface area at least equal to 200 sq.m/g at a temperature between 900° C. and 1400° C., limiting the conversion of reactive carbon into carbide to obtain a product comprising a core of reactive carbon and an outer layer of metallic carbide with a specific surface area at least 20 m^2/g, and

treating said product to convert said core to silicon carbide or a heavy metal carbide different from said outer layer.

5,391,525

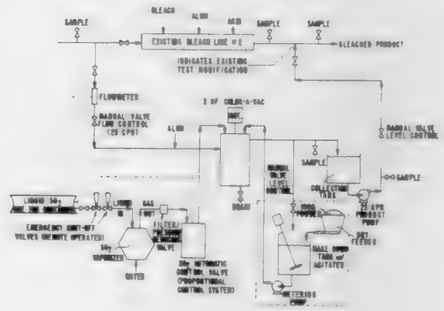
Patent Not Issued For This Number

5,391,526

SITU METHOD FOR PRODUCING HYDROSULFITE BLEACH AND USE THEREOF

Mitchell J. Willis; Raymond H. Young, both of Macon; Ellen S. Forbus, Jones, and Larry W. Donaldson, Macon, all of Ga., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 89,908, Jul. 9, 1993, abandoned, which is a continuation of Ser. No. 901,652, Jun. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 776,507, Oct. 11, 1991, Pat. No. 5,145,814. This application Mar. 14, 1994, Ser. No. 214,073
The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.
Int. Cl.[6] C04B *33/02*
U.S. Cl. 501—146 **5 Claims**



1. An improved continuous method for bleaching kaolin clay which also results in a reduction of the viscosity of the clay, which method comprises:

(a) suspending particulate iron in a flocculated aqueous slurry of a bleachable kaolin;

(b) continuously introducing the resulting suspension from step (a) into a mixer provided with means therein for internal recirculation while simultaneously continuously introducing into said mixer both an aqueous slurry of another portion of said bleachable kaolin and sulfur dioxide gas, said sulfur dioxide gas being inducted into said slurry by vacuum, the relative proportion of sulfur dioxide to particulate iron being introduced into the mixer being at least sufficient for all of the iron to react with the sulfur dioxide and the amounts of iron and sulfur dioxide being sufficient to bleach bleachable matter in said kaolin clay;

(c) continuously withdrawing an aqueous suspension of bleached kaolin from said mixer;

(d) separating said bleached kaolin from the aqueous phase of said suspension;

(e) filtering said suspension;

(f) washing the resulting filter cake;

(g) dispersing the washed filter cake with a conventional kaolin dispersant, and recovering bleached kaolin having a reduced viscosity.

5,391,527

REGENERATION OF A MODIFIED ALKYLATION CATALYST WITH HYDROGEN

Masami Kojima, Mt. Prospect, and Joseph A. Kocal, Gurnee, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 43,954, Apr. 5, 1993, Pat. No. 5,310,713. This application Dec. 27, 1993, Ser. No. 172,960
The portion of the term of this patent subsequent to May 10, 2014, has been disclaimed.
Int. Cl.[6] B01J *23/96, 27/32, 38/10, 38/58*
U.S. Cl. 502—53 **17 Claims**

1. A process of regenerating an alkylation catalyst, said catalyst comprising 1) the reaction product of a first metal halide and the bound surface hydroxyl groups of a refractory inorganic oxide, 2) a zerovalent second metal, and 3) a third metal cation, where said first metal halide is a fluoride, chloride, or bromide and the first metal is selected from the group consisting of aluminum, zirconium, tin, tantalum, titanium, gallium, antimony, phosphorus, and boron and any combination thereof, where said second zerovalent metal is selected from the group consisting of platinum, palladium, nickel, ruthenium, rhodium, osmium, iridium, rhenium, silver, copper, and any combination thereof, and where said third metal cation is selected from the group consisting of monovalent metal cations selected from the group consisting of alkali metal, silver, and Cu(I) cations in an amount from 0.0026 up to about 0.051 gram atoms per 100 grams refractory inorganic oxide, alkaline earth metal cations in an amount from about 0.0013 up to about 0.0255 gram atoms per 100 grams of refractory inorganic oxide, and any combination thereof, said catalyst having become at least partially deactivated during its catalysis of the liquid phase alkylation of an alkene having from 2 up to 6 carbon atoms with an alkane having from 4 up to about 6 carbon atoms, said process comprising removing all of the liquid phase from the catalyst, treating said catalyst with hydrogen at a partial pressure of from about 1 up to about 2000 psi for a time from about 1 up to about 20 hours at a temperature from about 10 up to about 300° C. and recovering a regenerated catalyst having substantially increased activity.

5,391,528

CATALYST WITH AN OMEGA ZEOLITE BASE, CONTAINING AT LEAST ONE GROUP IIA, IVB, IIB OR IVA METAL, AND USE THEREOF IN THE ISOMERIZATION OF AN AROMATIC C_8 CUT

Eric Benazzi, La Celle St Cloud; Jean-François Joly, Paris; Christine Travers, Rueil Malmaison; Jean-Marie Basset, and Agnes Choplin, both of Villeurbane, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed May 6, 1993, Ser. No. 57,379
Claims priority, application France, May 6, 1992, 92 05680
Int. Cl.[6] B01J *29/30, 29/06*
U.S. Cl. 502—66 **14 Claims**

1. A catalyst containing a matrix, at least one group VIII metal and an omega zeolite containing at least one metal selected from group IIa, IIb, IVa and IVb metals and such that:

its global Si/Al atomic ratio is between 2.5 and 100,

its content by weight of sodium in relation to the weight of dry omega zeolite is less than 2000 ppm, and wherein:

the metal(s) is/are deposited on the omega zeolite by grafting with at least one organometallic compound of said metal(s).

2. A catalyst according to claim 1, obtained by the process comprising depositing by grafting on the omega zeolite at least one of the group IIa, IVb, IIb and IVa metals, and then mixing the grafted omega zeolite with a matrix containing a group VIII metal.

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5,391,529

SILOXY-ALUMINOXANE COMPOSITIONS, AND CATALYSTS WHICH INCLUDE SUCH COMPOSITIONS WITH A METALLOCENE

Samuel A. Sangokoya, Baton Rouge, La., assignor to Albemarle Corporation, Richmond, Va.

Filed Feb. 1, 1993, Ser. No. 11,599
Int. Cl.[6] B01J *31/00;* C08F *4/02*
U.S. Cl. 502—103 20 Claims

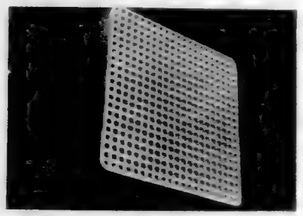
1. A siloxy-aluminoxane composition comprising the reaction product of an alkyldisiloxane, which is substantially free of Si—OH or Si—O—C bonds, and an aluminoxane, where said alkyldisiloxane and said aluminoxane are reacted in an organic solvent at a temperature of from about 25° to 100° C. and the molar portions of aluminum to alkyldisiloxane are from about 1:1 to 50:1.

5,391,530

CATALYST FOR REMOVING NITROGEN OXIDES FROM A WASTE GAS, AND PROCESS FOR THE PRODUCTION OF THE CATALYST

Bernd Nowitzki, Marl; Jürgen Jung, Dorsten, and Helmut Kretschmer, Haltern, all of Germany, assignors to Huels Aktiengesellschaft - PB15, Marl, Germany

Filed Jul. 20, 1993, Ser. No. 93,688
Claims priority, application Germany, Sep. 2, 1992, 4229255
Int. Cl.[6] B01J *21/02, 21/14, 27/18, 35/04*
U.S. Cl. 502—204 9 Claims



6. A catalyst for removing nitrogen oxides from a waste gas, prepared by a process comprising the steps of:

a) mixing a member selected from the group consisting of a tungstate, a vanadate and mixture thereof with a titanium oxide,

b) shaping a mixture comprising the product of step a),

c) drying the shaped product of step b) to form a green element,

d) immersing a gas-inlet side of said green element into an aqueous preparation comprising an inorganic material selected from the group consisting of a biphosphate, a condensed phosphate, a silicate, a borate, add a mixture thereof to form a coated green element, and

e) heating said coated green element at a temperature of from 300° to 700° C.

5,391,531

PREPARATION OF DEHYDROXLATED SUPPORTS

David G. Ward, Laurel, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jun. 13, 1994, Ser. No. 258,396
Int. Cl.[6] B01J *20/22*
U.S. Cl. 502—208 18 Claims

6. A method of removing hydroxyl groups from the surface of an oxide particle, said method comprising:

(a) contacting said hydroxyl-containing oxide with a carbonate selected from the group consisting of dialkylcarbonates, diarylcarbonates, and mixtures thereof and a base to form a mixture,

(b) heating said mixture whereby said hydroxyl-containing oxide and carbonate react to eliminate at least a portion of said hydroxyl groups and to form alkoxy and/or aryloxy groups on the surface of said oxide,

(c) recovering the dehydroxylated oxide formed in step (b).

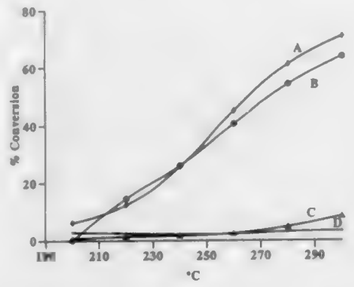
17. The method of claim 6 wherein said hydroxyl-containing oxide is selected from the group consisting of silica, alumina, silica alumina, alumina phosphate, and mixtures thereof.

5,391,532

ZIRCONIUM HYDROXIDE SUPPORTED METAL AND HETEROPOLYACID CATALYSTS

Stuart L. Soled, Pittstown; Gary B. McVicker, Califon; Sabato Miseo, Pittstown, and William E. Gates, Lebanon Township, Hunterdon County, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed May 6, 1993, Ser. No. 58,602
Int. Cl.[6] B01J *27/188, 27/185, 21/08*
U.S. Cl. 502—210 7 Claims



1. A solid acid catalyst composition comprising a zirconium hydroxide support about 0.01 to about 10 wt. % of a Group VIII metal and about 0.01 to about 60 wt. % of an exchanged heteropolyacid salt selected from the group consisting of the exchanged aluminum acid salt of 12-tungsto- phosphoric acid, the exchanged aluminum acid salt of 12-tungstosilicic acid, and mixtures thereof.

5,391,533

CATALYST SYSTEM FOR PRODUCING CHLORINE DIOXIDE

Thomas H. Peterson, Rochester; James V. Griepenburg, Pittsford, both of N.Y., and Kevin F. Keating, Austin, Tex., assignors to AMTX, Inc., Canandaigua, N.Y.

Filed Feb. 19, 1993, Ser. No. 19,868
Int. Cl.[6] B01J *21/04, 21/12, 23/44, 37/08*
U.S. Cl. 502—262 33 Claims

1. A catalyst system, comprising a porous sintered alumina and silicate agglomerate catalyst substrate having alumina particles joined to other alumina particles via point bonding silicates, said catalyst system produced by compressing a particulate material at low pressure, adding silicates and organic materials and heating at a temperature not exceeding 900° C. to burn off said organic materials and cause said silicates to migrate to points of contact of said alumina particles, and at least one member selected from the group consisting of Group VIII metals and Group VIII metal oxides deposited on internal surfaces of said substrate sintered prior to depositing said member.

5,391,534

PROCESS FOR PRODUCING ACTIVATED CHARCOAL

Angelo Carugati, Manera; Gastone Del Piero, Milan, and Riccardo Rausa, San Donato Milanese, all of Italy, assignors to Enitricerche S.p.A., Milan, Italy

Filed Nov. 2, 1993, Ser. No. 144,428
Claims priority, application Italy, Nov. 6, 1992, MI 92/A/002551
Int. Cl.[6] C01B *31/12;* B01J *20/20*
U.S. Cl. 502—425 12 Claims

1. A process for producing activated charcoal comprising:

(a) mixing a carbonaceous substance selected from regenerated humic acids, derived from acidifying, with mineral acids, a fraction of oxidized coal which had been solubilized in an aqueous solution of alkali metal or ammonium hydroxides, with phosphoric acid to produce a mixture;

(b) thermally treating said mixture at a temperature of from 350° to 900° C.;

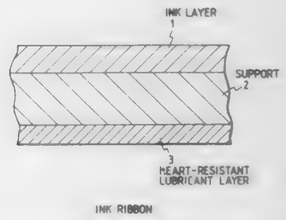
(c) recovering the so produced activated charcoal.

5,391,535

INK RIBBON AND IMAGE FORMING METHOD USING THE SAME

Kengo Ito, and Hideki Hirano, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 23, 1992, Ser. No. 950,654
Claims priority, application Japan, Sep. 26, 1991, 3-247932
Int. Cl.[6] B41M *5/035, 5/38*
U.S. Cl. 503—227 11 Claims



INK RIBBON

1. A method of forming an image, in which an ink ribbon containing an amphiphilic acid dye or basic dye is brought into contact with a photographic paper containing a precipitating agent capable of laking by salt formation with an acid dye or basic dye, and the acid dye or basic dye is transferred and fixed from the ink ribbon to the photographic paper by thermal stimulation to form an image on the paper.

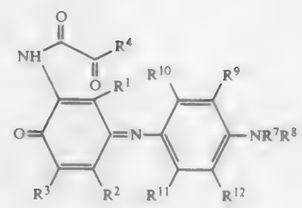
5,391,536

OXALYLAMINO SUBSTITUTED INDOANILINE DYES FOR USE IN THERMAL SUBLIMATION TRANSFER PRINTING

Luc Vanmaele, Lochristi, Belgium, assignor to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Jun. 28, 1994, Ser. No. 267,465
Claims priority, application European Pat. Off., Jul. 8, 1993, 93202000
Int. Cl.[6] B41M *5/035, 5/38*
U.S. Cl. 503—227 5 Claims

1. Dye-donor element for use according to thermal dye sublimation transfer, said dye-donor element comprising a support provided with a dye layer containing a dye and-a polymeric binder, characterized in that said dye corresponds to the following formula (I):



wherein:

R^1, R^2 and R^3 each independently represents hydrogen, halogen, nitro, an alkyl group, a cycloalkyl group, an aryl group, an allyl group, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an acylamino group, an amino group, CN, a carboalkoxy group, a sulfonylamino group, a carbonamido group, which groups may be substituted, or R^2 and R^3 together with the atoms to which they are attached represent the necessary atoms to form a ring;

R^4 represents OR^5, SR^5, NR^5R^6 or a heterocyclic ring;

R^5 and R^6 each independently represents hydrogen, an alkyl group, an allyl group, an aryl group, a cycloalkyl group, an alkenyl group, a heterocyclic ring or R^5 and R^6 together with the atoms to which they are attached represent the necessary atoms to form a heterocyclic ring;

R^7 and R^8 each independently represents hydrogen, an alkyl group, an aryl group, a heterocyclic group, or R^7 and R^8 together with the atoms to which they are attached represent the necessary atoms to form a heterocyclic ring, or R^7 or R^8 together with R^9 or R^{12} together with the atoms to which they are attached represent the necessary atoms to form a ring;

R^9, R^{10}, R^{11} and R^{12} each independently represents hydrogen, hydroxy, halogen, an alkyl group, a cycloalkyl group, an aryl group, an amino group, an alkyloxy group, an aryloxy group, a carbamoyl group, a sulfamoyl group, $NH—SO_2R^{13}$, $NH—COR^{13}$, $O—SO_2R^{13}$, $O—COR^{13}$, or R^9 and R^{10} or R^{11} and R^{12} together with the atoms to which they are attached represent the necessary atoms to form a ring;

R^{13} represents an alkyl group, a cycloalkyl group, an alkenyl group, an aralkyl group, an aryl group, an alkyloxy group, an aryloxy group, an alkylthio group, an arylthio group, an amino group or a heterocyclic group.

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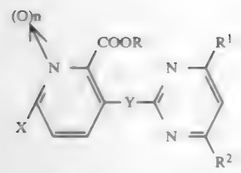
PICOLINIC ACID DERIVATIVE, AND HERBICIDAL COMPOSITION

Fumiaki Takabe, Iwata; Yoshihiro Saito; Masatoshi Tamaru, both of Kakegawa; Shigehiko Tachikawa, Shizuoka, and Ryo Hanai, Ogasa, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd. and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 842,163, Mar. 31, 1992, abandoned. This application Oct. 14, 1992, Ser. No. 960,844
Claims priority, application Japan, Oct. 25, 1990, 2-288180
Int. Cl.[6] A01N *43/54;* C07D *401/12*
U.S. Cl. 504—243 13 Claims

1. A picolinic acid derivative having the formula:

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wherein R is a hydrogen atom, a (C_1–C_4) alkyl group, a (C_2–C_4) alkenyl group, a (C_2–C_4) alkynyl group, a benzyl group, a halogen-substituted (C_1–C_4) alkyl group, a cyano (C_1–C_4)alkyl group, a (C_1–C_4) alkoxy (C_1–C_4) alkyl group, a (C_1–C_4) alkoxycarbonyloxy (C_1–C_4) alkyl group, a (C_1–C_4) alkyl group, a cyclo (C_4–C_7) alkylcarbonyloxy (C_1–C_4) alkyl group, a cyclo (C_3–C_6) alkyl (C_1–C_4) alkyl group, an alkali metal atom selected from the group consisting of sodium and potassium, an alkali earth metal atom or an organic amine cation selected from the group consisting of a (C_1–C_4) alkylamino and a di-(C_1–C_4) alkylamine; R^1 and R^2 are the same or different, and are a (C_1–C_4) alkyl group, a (C_1–C_4) alkoxy group, a halogen atom, a halogen-substituted (C_1–C_4) alkoxy group or a (C_1–C_4) alkylsulfonyl group; X is a group having the formula



wherein R^3 and R^4 are the same or different, and are a hydrogen atom, a (C_1–C_4) alkyl group, a phenyl group or a (C_1–C_4) acyl group; a cyano group; a phenyl group which may be substituted with a halogen atom, a (C_1–C_4) alkyl group or a (C_1–C_4) alkoxy group; a phenoxy group; a (C_2–C_4) alkenyl group; a (C_2–C_4) alkynyl group; a hydroxyl group; a trimethylsilylethynyl group; a nitro group; a 4,6-dimethoxypyrimidin-2-yloxy group; or a hydrogen atom; Y is an oxygen atom or a group having the formula



wherein R^5 is a hydrogen atom or a formyl group; and n is 0 or 1; provided that when X is a hydrogen atom, Y is a group having the formula



or a salt thereof.

5,391,538

METHOD AND COMPOSITIONS FOR THE BIOLOGICAL CONTROL OF FIELD BINDWEED

Dana D. K. Heiny, and George E. Templeton, II, both of Fayetteville, Ark., assignors to Sandoz Ltd., Basel, Switzerland

Filed Jan. 19, 1991, Ser. No. 641,224

Int. Cl.[6] A01N *63/04*

U.S. Cl. 504—117 **2 Claims**

1. A method for controlling field bindweed which comprises applying to the weed or the locus thereof a plant growth controlling amount of the fungus *Phoma proboscis* Heiny having the identifying characteristics of ATCC 74032, or a fungus having the identifying characteristics thereof, of a field bindweed controlling mutation thereof.

5,391,539

HERBICIDAL COMPOSITION COMPRISING GLUFOSINATE AND A HETEROCYCLIC SULFONYLUREA HERBICIDE

Nobuyuki Sakashita; Hiroshi Yoshii; Tsunezo Yoshida; Shooichi Honzawa, and Hiroshi Kikugawa, all of Shiga, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Continuation of Ser. No. 903,446, Jun. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 718,463, Jun. 20, 1991, abandoned. This application Dec. 3, 1993, Ser. No. 161,060

Claims priority, application Japan, Jun. 20, 1990, 2-162191; Mar. 26, 1991, 3-132444

Int. Cl.[6] A01N *57/04, 43/54*

U.S. Cl. 504—128 **7 Claims**

1. A herbicidal composition comprising, as active ingredients, 1-(4,6-dimethoxypyrimidin-2-yl)-3-(3-trifluoromethyl-2-pyridylsulfonyl)urea and an ammonium salt of homoalanin-4-yl(methyl)phosphinic acid in a weight ratio of from 1:0.3 to 1:80.

5,391,540

SUBSTITUTED PYRIDINE COMPOUNDS

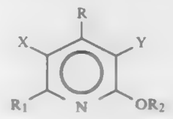
Donald E. Korte, St. Louis, and Len F. Lee, St. Charles, both of Mo., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 871,525, Apr. 20, 1992, Pat. No. 5,228,897, which is a division of Ser. No. 660,480, Feb. 25, 1991, Pat. No. 5,125,956. This application Apr. 12, 1993, Ser. No. 45,154

Int. Cl.[6] C07D *401/06*

U.S. Cl. 504—253 **18 Claims**

1. A compound represented by the formula



wherein:

R_1 is fluorinated methyl, chlorofluorinated methyl or fluorinated ethyl;

R_2 is hydrogen, C1-C7 alkyl, trichloromethyl, C2-C8 cyanoalkyl, C3-C7 alkenyl, or C3-C7 alkynyl;

R is C1-C6 straight or branched alkyl, C1-C7 haloalkyl, C2-C14 alkylthioalkyl, C2-C14 alkoxyalkyl, C2-C8 carboxyalkyl, C3-C4 cycloalkyl, or cyclopropylmethyl;

One of X and Y is



where Z_1 is oxygen or NR_3 where R_3 is lower alkyl; and where Z is hydrogen; halogen; hydroxy; C1-C7 alkoxy; C1-C7 haloalkoxy; C3-C7 alkynyloxy; C1-C7 alkylthio; NR4R5 where R4 and R5 are independently hydrogen or lower alkyl; acetylamino; C1-C7 hydroxyalkyl; C1-C7 haloalkyl; or C2-C8 alkoxymethyleneamino; and

the other of X and Y is



where Z_1 is oxygen or NR_3 where R_3 is lower alkyl; and where Z is pyrazolyl,

wherein the pyrazolyl is optionally substituted by one or more substituents selected from lower alkyl; halo; nitro; acetylamino; amino; and cyano.

5,391,541

HERBICIDAL 3-(SUBSTITUTED-BENZYL)-1-METHYL-6-TRIFLUOROMETHYLURACILS

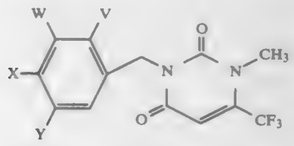
Marvin J. Konz, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 105,075, Aug. 11, 1993, abandoned. This application Apr. 8, 1994, Ser. No. 224,423

Int. Cl.[6] A01N *43/54;* **C07D** *239/55*

U.S. Cl. 504—243 **23 Claims**

1. A compound of the formula



in which V is hydrogen or halogen;

W is hydrogen, halogen, lower alkoxy, lower alkylaminocarbonyl, propargyloxy, or cyano;

X is hydrogen or chlorine; and

Y is hydrogen, halogen, cyano, lower alkylaminocarbonyl, or carboxy, in which lower means having 1 to 3 carbon atoms, and with the proviso that when Y is other than hydrogen or chlorine, V and W are each chlorine, and when W is other than hydrogen or chlorine, V and Y are each chlorine.

5,391,542

METHOD OF ENHANCING THE GROWTH OF PLANTS USING ALKYLOXYPOLYETHYLENEOXYETHANOLS

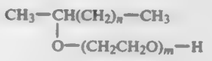
Henry A. Browning, Rte. 1, Box 90, Quitman, Ga. 31643

Filed Jun. 10, 1993, Ser. No. 74,457

Int. Cl.[6] A01N *31/02*

U.S. Cl. 504—351 **17 Claims**

1. A method of enhancing the growth of plants in soil, comprising applying to the soil an effective amount of a composition to enhance plant growth, said composition consisting essentially of a liquid carrier and at least one nonionic surfactant represented by the formula:



wherein n is from 9–15 and m is from 3–40.

5,391,543

MICROWAVE RESONATOR OF COMPOUND OXIDE SUPERCONDUCTOR MATERIAL HAVING A TUNING ELEMENT WITH A SUPERCONDUCTIVE TIP

Kenjiro Higaki; Akihiro Moto, and Hideo Itozaki, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 8, 1992, Ser. No. 910,573

Claims priority, application Japan, Jul. 8, 1991, 3-193427; May 22, 1992, 4-155580

Int. Cl.[6] H01P *7/08;* **H01B** *12/02*

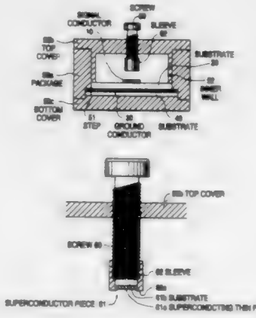
U.S. Cl. 505—210 **14 Claims**

1. A microwave resonator comprising:

a first dielectric substrate;

a patterned superconducting signal conductor provided on one surface of said first dielectric substrate and a superconducting ground conductor provided adjacent to an opposite surface of said first dielectric substrate, said superconducting signal conductor and said superconducting ground conductor being respectively comprised of an oxide superconducting thin film; and

a rod, adjustably positioned to be able to penetrate into an electromagnetic field created when a microwave signal is applied to and propagated through said superconducting



signal conductor, wherein a resonating frequency f_0 of said microwave resonator is adjustable by controlling a distance between a tip end of said rod and said patterned superconducting signal conductor as said rod moves within said electromagnetic field in a direction substantially perpendicular to said one surface of said first dielectric substrate.

5,391,544

CYATHANE DERIVATIVES AND ANTIMICROBIAL AGENTS CONTAINING SAME

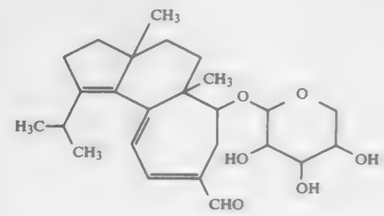
Hirokazu Kawagishi, Shizuoka; Fumihiro Ojima, Tochigi; Kenji Okamoto, Tochigi; Hideki Sakamoto, Tochigi, and Yukio Ishiguro, Tochigi, all of Japan, assignors to Kagome Kabushiki Kaisha, Aichi, Japan

Filed Feb. 10, 1994, Ser. No. 196,049

Int. Cl.[6] A61K *31/70, 31/335;* **C07H** *15/24;* **C07D** *321/00*

U.S. Cl. 514—33 **4 Claims**

1. A compound of the formula:



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5,391,545

COMBATING OF UNDESIRED ORGANISMS

Robert J. J. Pickford, North Humberside, England, assignor to Aquaspersions Limited, West Yorkshire and Humber Growers Marketing Organisation Limited, North Humberside, both of United Kingdom

Continuation-in-part of Ser. No. 890,224, May 29, 1992, abandoned, which is a continuation of Ser. No. 634,189, Jul. 12, 1989, Pat. No. 5,140,017. This application Dec. 23, 1992, Ser. No. 997,308

Claims priority, application United Kingdom, Jul. 12, 1988, 8816542; May 22, 1989, 8911744

The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.

Int. Cl.[6] A61K *9/34*; A01N *25/34*; B01J *13/02*; C12N *11/10*

U.S. Cl. 514—58 13 Claims

1. A method of treatment of a plant to combat an undesired insect, mite or fungal organism which is infecting the plant or may subsequently infect the plant, comprising the step of foliar application of a liquid composition comprising, as an active ingredient, a dextrinised starch material.

5,391,546

COMPOSITION COMPRISING ORGANO-SILICON COMPOUNDS FOR THERAPEUTIC USE

Loic Le Ribault, La Teste De Buch, France, assignor to Michel B. Lamothe and Rene Nardou, France, a part interest

Continuation of Ser. No. 708,841, May 30, 1991, abandoned, which is a continuation of Ser. No. 283,026, Dec. 9, 1988, abandoned, which is a continuation of Ser. No. 944,506, Dec. 22, 1986, abandoned. This application Apr. 12, 1993, Ser. No. 46,466

Claims priority, application France, Dec. 23, 1985, 85 19204

Int. Cl.[6] A61K *31/695, 33/04*

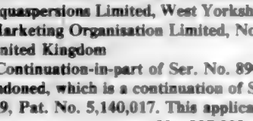
U.S. Cl. 514—63 8 Claims

1. A composition comprising in aqueous solution:

(1) at least one organo-silicon compound represented by either of the formulas:

$$R^1{}_x\text{—Si—(OM)}_{4-x} \quad (A)$$

or



(B)

wherein

R is aliphatic, aromatic, cyclic or heterocyclic;

n is a whole number between 0 and 20;

R^1 is alkyl, acyl or aryl;

x is a whole number between 0 and 3;

M is a hydrogen atom or an alkali metal;

said organo-silicon compound being used at a concentration between 10^{-5} and 10^{-1} atom-gram of silicon per liter H_2O; and

(2) sodium hyposulfite ($Na_2S_2O_3$—5 H_2O) or magnesium hyposulfite;

the ratio of hyposulfite to organo-silicon solution being 5 to 50 grams of hyposulfite per liter of organo-silicon solution.

5,391,547

METHOD USING 5,10,15,20-TETRAKIS(4-CARBOXYPHENYL)PORPHINE FOR TREATING CANCERS OF THE LUNG

Dean A. Cole, Germantown, Md.; David C. Moody, III, Superior, Colo.; L. Edward Ellinwood, Grand Junction, Colo., and M. Gerard Klein, Grand Junction, Colo., assignors to University of California Office of Technology Transfer, Alameda, Calif.

Division of Ser. No. 539,999, Jun. 15, 1990, Pat. No. 5,162,231. This application Jul. 15, 1992, Ser. No. 914,376

Int. Cl.[6] A61K *31/555, 43/00*

U.S. Cl. 514—184 2 Claims

1. A method for treating lung cancer, comprising the step of injecting a sample of the ^{67}Cu complex of 5,10,15,20-tetrakis(4-carboxyphenyl)porphinato into the bloodstream of a patient to be treated in an effective amount.

5,391,548

TRANSDERMAL FLUX ENHANCING COMPOSITIONS TO TREAT HYPERTENSION, DIABETES AND ANGINA PECTORIS

Michael L. Francoeur, Los Altos, and Russell O. Potts, San Francisco, both of Calif., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 759,705, Sep. 11, 1991, Pat. No. 5,196,410, which is a continuation of Ser. No. 511,820, Apr. 16, 1990, abandoned, which is a continuation of Ser. No. 161,926, Feb. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 925,641, Oct. 31, 1986, abandoned. This application Nov. 17, 1992, Ser. No. 977,369

Int. Cl.[6] A61K *31/55, 31/44, 31/22, 9/70*

U.S. Cl. 514—213 4 Claims

1. A method of treating diabetes in a human or lower animal which comprises transdermally administering to a human or lower animal in need of such treatment a safe and effective amount of glipizide or a pharmaceutically acceptable acid addition salt thereof in an aqueous solvent system comprising from about 30 to 75% by volume of one or more water miscible solvents and from about 0.01 to 5% (w/v) of a penetration enhancer selected from a 1-alkylazacycloheptan-2-one, said alkyl having from 8 to 16 carbon atoms, and a cis-olefin compound of the formula

$$CH_3(CH_2)_xCH{=}CH(CH_2)_yR^3$$

where R^3 is C_2OH, CH_2NH_2 or COR^4, and R^4 is OH or (C_1–C_4-)alkoxy, x and y are each an integer from 3 to 13 and the sum of x and y is from 10 to 16.

5,391,549

CINNOLINE-3-CARBOXYLIC ACID DERIVATIVES

Akira Maruyama, Kashima; Shigeru Ogawa, Machida; Satoshi Yamazaki, Sagamihara, and Akihiro Tobe, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

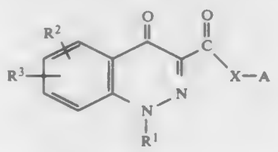
Filed Mar. 10, 1993, Ser. No. 29,431

Claims priority, application Japan, Mar. 12, 1992, 4-053863

Int. Cl.[6] A61K *31/55, 31/50*; C07D *237/28, 401/12*

U.S. Cl. 514—214 5 Claims

1. A cinnoline compound of the following formula (I):

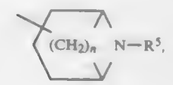


(I)

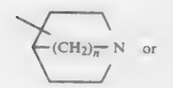
wherein X is —O— or a group of the formula:



(wherein R^4 is a hydrogen atom or C_1–C_5 alkyl group); A is a group of the formula:

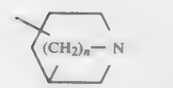


(II)



(III)

or



(IV)

(wherein n is an integer selected from 1 to 3; R^5 is a hydrogen atom, C_1–C_6 alkyl group, C_3–C_6 cycloalkyl group or C_7–C_{15} aralkyl group); R^1 is a hydrogen atom, C_1–C_5 alkyl group, C_2–C_6 alkenyl group, C_2–C_4 alkynyl group, C_3–C_8 cycloalkyl group, C_4–C_9 cycloalkylalkyl group, C_2–C_{10} alkoxyalkyl group or C_7–C_{15} aralkyl group; R^2 and R^3 each is independently a hydrogen atom, halogen atom, trifluoromethyl group, hydroxyl group, C_1–C_5 alkoxy group, cyano group, nitro group, amino group, C_1–C_5 alkylamino group, C_2–C_{10} dialkylamino group, C_1–C_5 alkylthio group, C_1–C_5 alkyl group, C_3–C_8 cycloalkyl group, C_7–C_{15} aralkyl group or C_2–C_{10} acyl group or its pharmaceutically acceptable salts, its N-oxide derivatives, or solvates thereof.

5,391,550

COMPOSITIONS OF MATTER AND METHODS FOR INCREASING INTRACELLULAR ATP LEVELS AND PHYSICAL PERFORMANCE LEVELS AND FOR INCREASING THE RATE OF WOUND REPAIR

Francis J. Carniglia, Windsor Locks, and Alan J. Kenyon, Hartford, both of Conn., assignors to Raymond A. Roncari, Windsor Locks, Conn.

Continuation-in-part of Ser. No. 139,288, Dec. 29, 1987, Pat. No. 4,871,718. This application Oct. 2, 1989, Ser. No. 416,248

The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—23 17 Claims

1. A composition of matter for increasing the intracellular level of ATP comprising:

at least one amino acid selected from the group consisting of amino acid metabolic precursors of ATP and mixtures thereof;

at least one metabolite selected from the group consisting of choline, inositol and carnitine; and

a compound selected from the group consisting of ribose, and saccharides and polysaccharides which upon hydrolysis or metabolization yield ribose, and mixtures of such compounds.

5,391,551

METHOD OF LOWERING BLOOD LIPID LEVELS

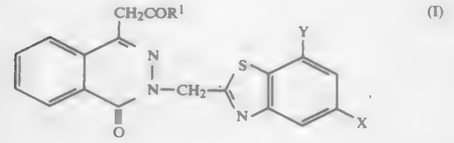
Michael J. Peterson, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed May 10, 1993, Ser. No. 59,688

Int. Cl.[6] A61K *31/495, 31/50*

U.S. Cl. 514—248 6 Claims

1. A method of lowering blood lipid levels in humans, comprising administering to a human in need of such treatment an effective amount of a compound of formula I



(I)

or a pharmaceutically acceptable salt thereof, wherein

R^1 is hydroxy or a group capable of being removed in vivo to produce a compound of formula I wherein R^1 is OH; and

X and Y are the same or different and are selected from hydrogen, trifluoromethyl, fluoro, and chloro.

5,391,552

DIPHENYLPIPERAZINE DERIVATIVE AND DRUG FOR CIRCULATORY ORGAN CONTAINING THE SAME

Masato Inazu; Yoshiyuki Miyata; Toshihiro Morimoto; Takeshi Yamamoto; Yuji Yoshiko; Kazunori Harada; Yoshiharu Momota; Masayuki Yanagi; Ryoko Yokota; Tetsuo Katoh; Takayuki Namiki; Makoto Kimura, and Nobuyuki Kawakatsu, all of Yokohama, Japan, assignors to Pola Chemical Industries, Inc., Shizuoka, Japan

PCT No. PCT/JP91/01227, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/05165, PCT Pub. Date Apr. 2, 1992

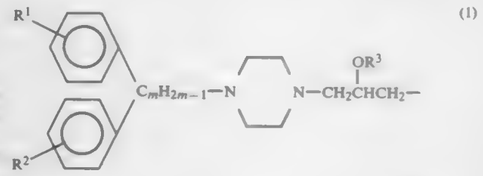
PCT Filed Sep. 13, 1991, Ser. No. 988,911

Claims priority, application Japan, Sep. 13, 1990, 2-243526

Int. Cl.[6] A61K *31/495*; C07D *295/088*

U.S. Cl. 514—255 9 Claims

1. A diphenylpiperazine compound represented by the following formula (1) or pharmaceutically acceptable salts thereof:



(I)

wherein, R^1 and R^2 are the same or different and independently represent a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a nitro group, an amino group, a hydroxy group, a carboxyl group, an esterified carboxyl group or a trifluoromethyl group; R^3 represents a hydrogen atom, an alkyl group, an aralkyl group, an acyl group, a nitro group, a carboxymethyl group, or an esterified carboxymethyl group; Ar represents a phenyl or naphthyl group which may have 1 to 3 substituents selected from the group consisting of halogen, alkyl, alkoxy, aryloxy, aralkyloxy, nitro, an amino, cyano, acyl, hydroxy, carboxyl, esterified carboxyl, methanesulfonyl, p-toluenesulfonyl, aryl or trifluoromethyl; Z represents a group of $-NR^4-$, wherein R^4 represents a hydrogen atom, an alkyl group, an aralkyl group, an acyl group, an aryl group, a methanesulfonyl group, a p-toluenesulfonyl group, a carboxyl group, or an esterified carboxyl group; m represents a number of 1 to 5; and n represents a number of 0 to 5; with the proviso that the alkyl group has 1–10 carbon atoms; the alkoxyl group has 1–8 carbon atoms; the aralkyl group is selected from the group consisting of benzyl, phenylethyl, methylbenzyl, and naphthylmethyl; the aryl group is a phenyl group or a phenyl group having one or more substituents selected from the group

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consisting of halogen, alkyl, alkoxyl, hydroxy and amino; and the acyl group is an acetyl, propionyl, butyryl, benzoyl, halogenobenzoyl or alkoxybenzoyl group.

5. The diphenylpiperazine compound or pharmaceutically acceptable salts thereof, selected from the group consisting of:

1-[4,4-bis(4-fluorophenyl)butyl]-4-(2-hydroxy-3-phenylaminopropyl]piperazine,

1-[4,4-bis(4-fluorophenyl)butyl]-4-[2-hydroxy-3-(4-methylphenylamino)propyl]piperazine,

1-[4,4-bis(4-fluorophenyl)butyl]-4-[3-(4-fluorophenylamino)-2-hydroxypropyl]piperazine,

1-[4,4-bis(4-fluorophenyl)butyl]-4-[2-hydroxy-3-(4-hydroxyphenylamino)propyl]piperazine, and

1-[4,4-bis(4-fluorophenyl)butyl]-4-[2-hydroxy-3-(4-methoxyphenylamino)propyl]piperazine.

5,391,553

SUBSTITUTED 9-AMINO-TETRAHYDROACRIDINES AND RELATED COMPOUNDS

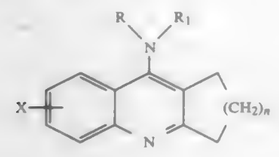
Gregory M. Shutske, Somerset; Grover C. Heisley, Pluckemin, and Kevin J. Kapples, Little York, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 26,730, Mar. 17, 1987, abandoned. This application Sep. 14, 1988, Ser. No. 244,212

Int. Cl.[6] **C07D** *219/10, 221/16;* **A61K** *31/435*

U.S. Cl. 514—290 **65 Claims**

1. A compound having the formula



wherein

n is an ineger of 1 to 4;

X is alkyl of 6–18 carbon atoms, cycloalkyl of 3–7 carbon atoms or cycloalkylloweralkyl;

R is hydrogen, loweralkyl or loweralkylcarbonyl; and

R_1 is hydrogen, loweralkyl, loweralkylcarbonyl, aryl, diarylloweralkyl, diloweralkylaminoloweralkyl, arylloweralkyl, diarylloweralkyl, aryl$(CH_2)_m$—O—$(CH_2)_1$or diaryl$CH(CH_2)_k$—O—$(CH_2)_l$—;

the term aryl in each occurrence signifying a phenyl group optionally substituted with 1, 2 or 3 substituents each of which being independently loweralkyl, loweralkoxy, halogen, hydroxy, trifluoromethyl, phenoxy or benzyloxy, m is an integer of 0 to 4. k is an integer of 0 to 3, and l is an integer of 2, 3, 4 or 5 where the sum of m+l is≦6 and the sum of k+l is ≦5; a stereo, optical or geometrical isomer thereof, or a pharmaceutically acceptable acid addition salt thereof.

5,391,554

DIHYDRO- AND TETRAHYDRONAPHTHYRIDINES

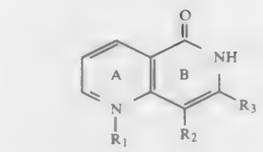
Howard D. H. Showalter, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 9, 1992, Ser. No. 942,244

Int. Cl.[6] **A61K** *31/44;* **C07D** *471/04*

U.S. Cl. 514—300 **9 Claims**

1. A compound of Formula



I

or a pharmaceutically acceptable salt thereof wherein the — lines indicate double bonds in Ring A and in Ring B the — line indicates a single bond

R_1 is absent,

R_2 is hydrogen, alkyl, or halogen;

R_3 is hydrogen or alkyl.

5,391,555

METHODS FOR TREATING INFLAMMATORY BOWEL DISEASE WITH LEUKOTRIENE SYNTHESIS INHIBITORS

Paul J. Marshall, Madison; David D. Wood, Wilton; Cheryl L. Nickerson-Nutter, Milford, all of Conn., and Reiner Müller-Peddinghaus, Bergisch-Gladbach, Germany, assignors to Miles Inc., West Haven, Conn.

Continuation of Ser. No. 3,253, Jan. 11, 1993, abandoned, which is a continuation of Ser. No. 790,960, Nov. 12, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 24,199

Int. Cl.[6] **A61K** *31/47*

U.S. Cl. 514—311 **4 Claims**

1. A method of treating inflammatory bowel disease in a mammal suffering therefrom comprising administering a therapeutically effective amount of R-(−)-2-cyclopentyl-2-[4-(2-quinolinyl-methoxy)-phenyl]-acetic acid.

5,391,556

BENZIMIDAZOLYL DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS AND PROCESSES FOR PREPARING THEM

Armin Heckel, Biberach; Robert Sauter, Laupheim; Manfred Psiorz, Ingelheim am Rhein; Klaus Binder, Warthausen; Thomas Mueller, Biberach, and Rainer Zimmermann, Mittelbiberach, all of Germany, assignors to Karl Thomae GmbH, Biberach an der Riss, Germany

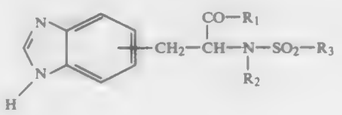
Filed Feb. 8, 1993, Ser. No. 14,598

Claims priority, application Germany, Feb. 13, 1992, 4204270

Int. Cl.[6] **C07D** *401/12, 401/06;* **A61K** *31/445, 31/44*

U.S. Cl. 514—322 **7 Claims**

1. A benzimidazolyl derivative of the formula I



(I)

wherein:

R_1 denotes a piperidino group optionally substituted by a phenyl, hydroxy, carboxy, alkylcarbonyl, aminocarbonyl, cyano or N-alkanoyl-alkylamino group, wherein the hydroxy group may not be in the α-position to the ring nitrogen atom, wherein said piperidino group may additionally be substituted by an alkyl group and, in addition, the methylene group in the 4-position of the piperidino group may be replaced by a carbonyl group, or an ethylene group in the 3,4-position of the piperidino group may be replaced by an ethenylene group;

a piperidino group substituted by three alkyl groups wherein the alkyl substituents may be identical or different;

R_2 denotes a hydrogen atom or an alkyl group; and,

R_3 denotes a phenyl group optionally substituted by a fluorine, chlorine or bromine atom or by an alkyl, nitro, amino, alkylamino, dialkylamino, phenyl or cyclohexyl group, whilst the phenyl substituent may also be substituted by a fluorine, chlorine or bromine atom or by a nitro or amino group;

a phenyl group disubstituted by fluorine, chlorine or bromine atoms or by alkyl or alkoxy groups, whilst one of the substituents may also denote a nitro or amino group;

a phenyl group substituted by a hydroxy, amino, alkylamino, dialkylamino or pyrrolyl group, whilst at the same time the phenyl group is substituted by two chlorine or bromine atoms or by two C_{1-4}-alkyl groups and the pyrrolyl group may be substituted by one or two alkyl groups;

a naphthyl group optionally mono- or disubstituted by hydroxy, alkoxy or dialkylamino groups;

an optionally alkyl-substituted indanyl group;

whilst, unless otherwise specified, the alkyl, alkanoyl and alkoxy moieties mentioned in the definition of groups R_1 to R_3 may each contain 1 to 3 carbon atoms;

or a pharmaceutically acceptable salt thereof.

5,391,557

METHODS FOR THE TREATMENT OF PERI-MENOPAUSAL SYNDROME

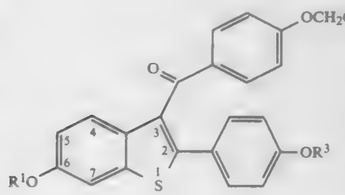
George J. Cullinan, Trafalgar, and John D. Termine, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 15, 1993, Ser. No. 138,287

Int. Cl.[6] **A61K** *31/445, 31/40, 31/38*

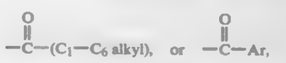
U.S. Cl. 514—324 **3 Claims**

1. A method of treating peri-menopausal syndrome comprising administering to a human in need of treatment an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen, —CH_3,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidine and piperidino; or a pharmaceutically acceptable salt of solvate thereof.

5,391,558

COMPOSITION FOR ACCELERATING HEALING OF WOUND

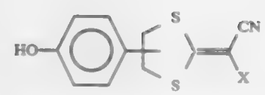
Akira Seo, Wakayama; Kunikazu Hiraga, Osaka; Hiroyasu Koga, Osaka, and Yoshimi Niwano, Osaka, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,453

Int. Cl.[6] **A61K** *31/415;* **C07D** *403/00*

U.S. Cl. 514—341 **4 Claims**

1. A topical composition for accelerating healing of a wound comprising as an active ingredient a compound represented by the formula (I'):



(I')

wherein X represents a 1-imidazolyl group or a 1,2,4-triazol-1-yl group.

5,391,559

NEW PYRIDYLSULPHONYLUREA COMPOUND

Bernard Masereel, Libin; Bernard Pirotte, Oupey; Marc Schynts, Loncin, and Jacques Delarge, Dolembreux, all of Belgium, assignors to Adir et Compagnie, Courbevoie, France

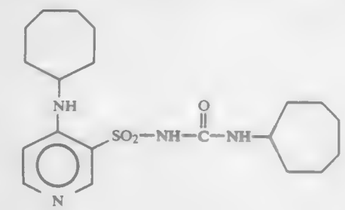
Filed Jan. 5, 1993, Ser. No. 474

Claims priority, application France, Jan. 6, 1992, 92 00031

Int. Cl.[6] **C07D** *213/71;* **A61K** *31/44*

U.S. Cl. 514—347 **6 Claims**

1. A compound selected from those having formula (I)



(I)

which is N-{[4-(cycloheptylamino)pyrid-3-yl]sulphonyl}-N'-(cycloheptyl)urea and the addition salts thereof with a pharmaceutically acceptable acid or base.

5,391,560

SUBSTITUTED CARBAMOYLPYRAZOLINES

Rainer Fuchs, Wuppertal; Johannes Kanellakopulos, Hilden; Christoph Erdelen, Leichlingen, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

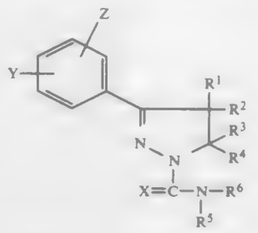
Filed Sep. 30, 1993, Ser. No. 129,929

Claims priority, application Germany, Oct. 7, 1992, 4233715

Int. Cl.[6] **C02D** *403/04;* **A01N** *47/38*

U.S. Cl. 514—363 **5 Claims**

1. A substituted carbamoylpyrazoline of the formula

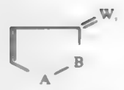


(I)

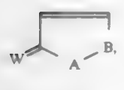
in which

R^1represents an azolinone, azolinethione or azolineimino radical, optionally monosubstituted or di-substituted by identical or different substituents and bonded via nitrogen, from the group consisting of

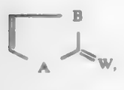
VOL 1171 ISS 3 FE 21 1995 UMI



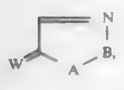
(R¹-a)



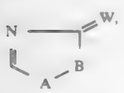
(R¹-b)



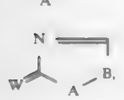
(R¹-c)



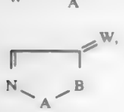
(R¹-d)



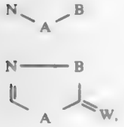
(R¹-e)



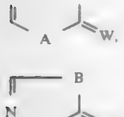
(R¹-f)



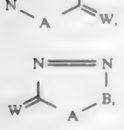
(R¹-g)



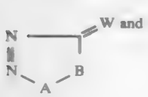
(R¹-h)



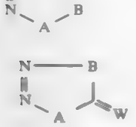
(R¹-i)



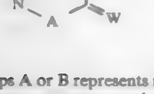
(R¹-k)



(R¹-l)



(R¹-m)



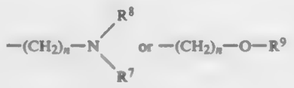
in which

one of the groups A or B represents nitrogen while the other (B or A) represents oxygen, sulphur, the group —N alkyl(C_1–C_4) or a methylene group —CH_2—,

W represents oxygen, sulphur or the group —N alkyl (—CH_1–C_4), and the substituents on the azolinone, azolinethione or azolineimino radicals are alkyl (C_1–C_6), alkoxy (C_1–C_6), alkyl (C_1–C_6) thio, amino, alkyl (C_1–C_6) amino, halogenoalkyl (C_1–C_4), dialkyl (C_1–C_6) amino, and phenyl which is optionally substituted by halogen, alkyl (C_1–C_4), alkoxy (C_1–C_4), halogenoalkyl (C_1–C_4), halogenoalkoxy(C_1–C_4)- or halogenoalkyl (C_1–C_4)thio,

R^2 represents hydrogen, alkyl (C_1–C_6), or represents cycloalkyl (C_3–C_7) which is optionally substituted by halogen or halogenoalkyl-(C_1–C_4); or represents halogenoalkyl (C_1–C_4), halogenoalkyl (C_1–C_4) thio or alkoxy (C_1–C_6-)carbonyl,

R^3 represents hydrogen, alkyl(C_1–C_6) or a group



in which

R^7 and R^8 in each case independently of one another represent hydrogen, alkyl(C_1–C_6), or phenyl which is optionally substituted by alkyl (C_1–C_4), alkoxy(C_1–C_4), alkyl(-C_1–C_4)thio, halogen, halogenoalkyl(C_1–C_4), halogenoalkoxy(C_1–C_4) or halogenoalkyl (C_1–C_4)thio and

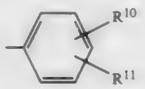
R^9 represents hydrogen, alkyl(C_1–C_6) or optionally substituted phenyl, wherein the substituents are the same as those recited for R^8, and

n represents the numbers 1 to 4,

R^4 represents hydrogen or alkyl (C_1–C_6),

R^5 represents hydrogen, alkyl (C_1–C_6), phenyl or alkyl(-C_1–C_6)thio,

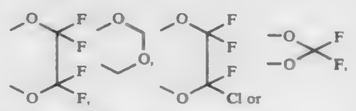
R^6 represents alkyl(C_1–C_8) which is optionally substituted by halogen, halogenoalkyl (C_1–C_4) or halogenoalkoxy (C_1–C_4), or represents cycloalkyl (C_3–C_7) which is optionally substituted by halogen, halogenoalkyl(C_1–C_4) or halogenoalkoxy(C_1–C_4), or represents the radical



in which

R^{10} and R^{11} can be identical or different and represent halogen, alkyl(C_1–C_6), nitro, cyano, halogenoalkyl(-C_1–C_4), alkoxy(C_1–C_6), halogenoalkoxy(C_1–C_4), alkyl(C_1–C_4)thio, halogenoalkyl (C_1–C_4)thio, or represent phenoxy or phenylthio, each of which is optionally substituted by halogen, halogenoalkyl (C_1–C_4) or alkoxy(C_1–C_4), or represents mono- or dialkylamino, each of which has 1 to 6 carbon atoms in the alkyl radical and each of which is optionally substituted by halogen, alkoxy(C_1–C_4) or halogenoalkyl(C_1–C_4), or represent cycloalkyl(C_3–C_7) which is optionally substituted by alkyl (C_1–C_4), alkoxy(C_1–C_4), halogen or alkyl(-C_1–C_4)thio, or represent alkoxy(C_1–C_4)carbonyl, alkenyl(C_2–C_6)oxy, alkinyl(C_2–C_8), alkyl(C_1–C_4)thionyl, alkyl(C_1–C_4) sulphonyl, halogenoalkyl (C_1–C_4)thionyl, halogenoalkyl (C_1–C_4) sulphonyl or halogenoalkoxy (C_1–C_4) carbonyl, or in which

R^{10} and R^{11} together represent one of the following bivalent radicals



X represents oxygen or sulphur and

Y and Z can be identical or different and represent hydrogen, alkyl (C_1–C_6), halogen, halogenoalkyl (C_1–C_5), alkoxy(C_1–C_6), alkyl(C_1–C_5)thio, halogenoalkoxy(C_1–C_4), halogenoalkyl (C_1–C_4) thio, alkoxy (C_1–C_4) carbonyl, halogenoalkoxy(C_1–C_4)carbonyl, or represent phenoxy or phenylthio, each of which is optionally substituted by halogen, alkyl(C_1–C_4), alkoxy(C_1–C_4) or halogenoalkyl(C_1–C_4), or represent alkenyl(C_1–C_6)oxy, alkinyl (C_2–C_6), alkyl (C_1–C_4)thionyl, alkyl (C_1–C_4)sulphonyl, halogenoalkyl(C_1–C_4)thionyl, halogenoalkyl (C_1–C_4) sulphonyl, nitro or cyano, or in which

Y and Z together represent 3,4-methylenedioxy or 3,4-ethylenedioxy, each of which is optionally substituted by fluorine and/or chlorine.

5,391,561

HALOPROPARGYL COMPOUNDS, COMPOSITIONS, USES AND PROCESSES OF PREPARATION

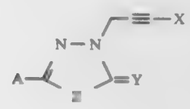
Adam C.-T. Hsu, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 530,770, May 29, 1990, Pat. No. 5,297,762, which is a continuation-in-part of Ser. No. 370,373, Jun. 22, 1989, abandoned. This application Nov. 5, 1993, Ser. No. 148,780

Int. Cl.[6] **C07D** *271/113, 249/12;* **A01N** *43/653, 43/82*

U.S. Cl. 514—364 **8 Claims**

1. A compound of the formula



(I)

wherein

A is selected from the group consisting of hydrogen, (C_1–C_{18}) straight or branched alkyl; (C_3 to C_8) cycloalkyl; (C_3 to C_6) alkenyl; (C_3 to C_5) alkynyl; (C_7 to C_{12}) aralkyl; (C_6 to C_{12}) aryl; (C_6 to C_{12}) aryl substituted with 1 to 3 substituents selected from the group consisting of halogen, (C_1 to C_4) alkyl, (C_1 to C_4) alkoxy, nitro, cyano, carboxyl (C_1 to C_4) alkoxycarbonyl, (C_1 to C_4) alkyl thio, —S-$(O)_nR^2$ where n is 1 or 2 and R^2 is (C_1–C_4) alkyl; and a halo-substituted, nitro-substituted, or un-substituted moiety selected from the group consisting of 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl, 3-pyridyl, and 4-pyridyl;

Y is selected from the group consisting of O, S, and N—R;

Z is selected from O and N—R

R is selected from the group consisting of hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted phenyl, and substituted or unsubstituted heterocyclic; and

X is selected from the group consisting of I and Br.

5,391,562

GUANIDINE DERIVATIVES

Shin-ichi Tsuboi; Koichi Moriya, both of Tochigi; Yumi Hattori; Shinzaburo Sone, both of Ibaragi, and Katsuhiko Shibuya, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

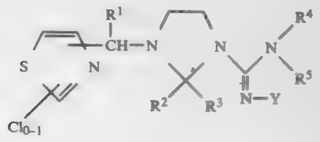
Division of Ser. No. 987,513, Dec. 7, 1992, Pat. No. 5,308,855. This application Aug. 30, 1993, Ser. No. 114,022

Claims priority, application Japan, Dec. 19, 1991, 3-354053

Int. Cl.[6] **A61K** *31/38;* **C07D** *417/06*

U.S. Cl. 514—365 **8 Claims**

1. A guanidine compound of the formula



wherein

R^1 is hydrogen or a C_{1-4} alkyl group,

R^2 and R^3 each independently is hydrogen, C_{1-4} alkyl, C_{1-4} haloalkyl, or chlorophenyl,

R^4 and R^5 each independently is hydrogen, C_{1-4} alkyl, C_{3-4} alkenyl, C_{3-4} alkynyl, benzyl, chloro benzyl, and

y is nitro or cyano.

5,391,563

ANTI-NEOPLASTIC, ANTI-VIRAL AND RIBONUCLEOTIDE REDUCTASE ACTIVITY AFFECTING PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT

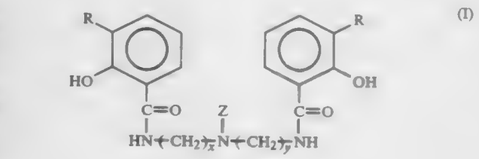
Raymond J. Bergeron, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Division of Ser. No. 993,620, Dec. 21, 1992, Pat. No. 5,292,755, which is a division of Ser. No. 645,644, Jan. 25, 1991, Pat. No. 5,173,505, which is a division of Ser. No. 313,734, Feb. 22, 1989, Pat. No. 5,128,353, which is a continuation-in-part of Ser. No. 746,672, Jun. 20, 1985, abandoned. This application Sep. 22, 1993, Ser. No. 124,557

Int. Cl.[6] **A01N** *43/36, 43/38, 43/76;* **A61K** *31/40*

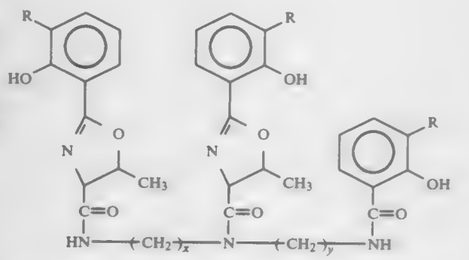
U.S. Cl. 514—374 **10 Claims**

1. A method for treating a human or non-human animal afflicted with a vital infection comprising administering thereto an anti-viral effective amount of a compound of the formula:



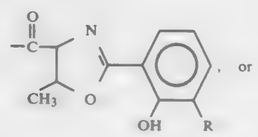
(I)

or

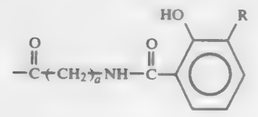


Wherein:

Z is



or



R is H or OH,

x is 3 or 4,

y is 3 or 4, and

a is 1, 2 or 3, or

or a pharmaceutically acceptable salt or complex thereof.

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5,391,564

RHIZOXIN DERIVATIVES AND THEIR USE AS ANTI-TUMOR AGENTS

Masakatsu Kaneko; Makoto Kamokari; Tomowo Kobayashi, and Kazuhiko Sasagawa, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 928,889, Aug. 12, 1992, abandoned, which is a continuation of Ser. No. 737,252, Jul. 26, 1991, abandoned, which is a continuation of Ser. No. 520,979, May 8, 1990, abandoned, which is a continuation of Ser. No. 375,869, Jul. 5, 1989, abandoned. This application Feb. 14, 1994, Ser. No. 195,574

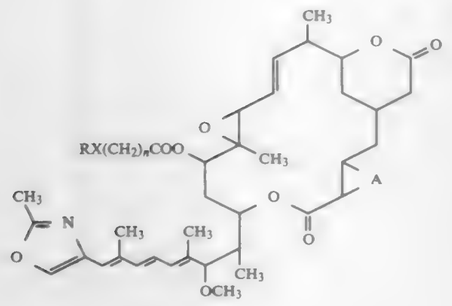
Claims priority, application Japan, Jul. 6, 1988, 63-168152

The portion of the term of this patent subsequent to Oct. 4, 2011, has been disclaimed.

Int. Cl.[6] **C07D** *493/18*

U.S. Cl. 514—374 **6 Claims**

1. A compound of formula (I):



(I)

in which

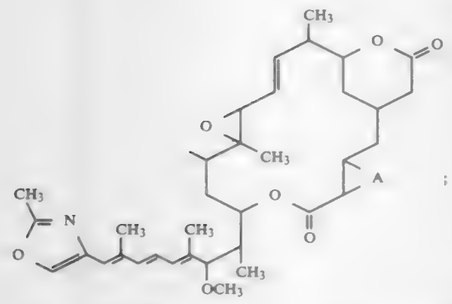
n represents an integer of from 2 to 11,

A represents an oxygen atom,

X represents a sulfur atom or an NH group and

when X represents a sulfur atom, R represents a C_{1-4}alkylthio group, a benzylthio group and a Rhz-$OOC(CH_2)_2S$ group;

Rhz represents a group of formula (II):



(II)

when X represents an NH group, R represents a hydrogen atom.

5,391,565

OXAZOLIDINE DIONE DERIVATIVES

Richard M. Hindley, Epsom, England, assignor to Beechan Group p.l.c., Brentford, England

PCT No. PCT/GB91/01337, § 371 Date Feb. 3, 1993, § 102(e) Date Feb. 3, 1993, PCT Pub. No. WO92/02520, PCT Pub. Date Feb. 20, 1992

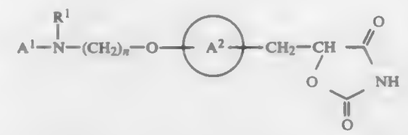
PCT Filed Aug. 5, 1991, Ser. No. 978,706

Claims priority, application United Kingdom, Aug. 6, 1990, 9017218

Int. Cl.[6] **C07D** *413/12*

U.S. Cl. 514—375 **9 Claims**

1. A compound of formula (I):



(I)

or a tautomeric form thereof and/or a pharmaceutically acceptable salt thereof, and/or a pharmaceutically acceptable solvate thereof, wherein:

A^1 represents a substituted or unsubstituted oxazole substituted by up to 4 substituents selected from the group consisting of C_{1-6}-alkyl, C_{1-6}-alkoxy, phenyl and halogen or any two substituents on adjacent carbon atoms, together with the carbon atoms to which they are attached, form a benzene ring, and wherein the carbon atoms of the benzene ring represented by the said two substituents are unsubstituted or substituted with up to three groups selected from halogen, C_{1-6}-alkyl, phenyl, C_{1-6}-alkoxy, halo-C_{1-6}-alkyl, hydroxy, amino, nitro, carboxy, C_{1-6}-alkoxycarbonyl, C_{1-6}-alkoxycarbonyl-C_{1-6}-alkyl, C_{1-6}-alkylcarbonyloxy and C_{1-6}-alkylcarbonyl;

R^1 represents a hydrogen atom, a C_{1-6}-alkyl group, a C_{1-6}-alkylcarbonyloxy group, a phenyl-C_{1-6}-alkyl group, wherein the phenyl moiety may be substituted or unsubstituted, or a substituted or unsubstituted phenyl group, wherein the said phenyl groups may be substituted with up to three groups selected from halogen, C_{1-6}-alkyl, phenyl, C_{1-6}-alkoxy, halo-C_{1-6}-alkyl, hydroxy, amino, nitro, carboxy, C_{1-6}-alkoxycarbonyl, C_{1-6}-alkoxycarbonyl-C_{1-6}-alkyl, C_{1-6}-alkylcarbonyloxy and C_{1-6}-alkylcarbonyl;

A^2 represents a benzene ring having in total up to five substituents wherein three optional substitutents are selected from halogen, C_{1-6}-alkyl, phenyl, C_{1-6}-alkoxy, halo-C_{1-6}-alkyl, hydroxy, amino, nitro, carboxy, C_{1-6}-alkoxycarbonyl,

C_{1-6}-alkoxycarbonyl-C_{1-6}-alkyl, C_{1-6}-alkylcarbonyloxy and C_{1-6}-alkylcarbonyl; and

n represents an integer from 2 to 6.

5,391,566

BENZIMIDAZOLINONES SUBSTITUTED WITH PHENOXYPHENYLACETIC ACID DERIVATIVES

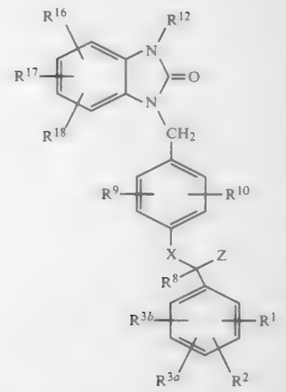
Prasun K. Chakravarty, Edison; Elizabeth M. Naylor, Scotch Plains; James R. Tata, and Thomas F. Walsh, both of Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 20, 1993, Ser. No. 94,592

Int. Cl.[6] **A61K** *31/415;* **C07D** *235/26*

U.S. Cl. 514—387 **17 Claims**

1. A compound of structural Formula I:



I

or a pharmaceutically acceptable salt thereof, wherein:

R^1, R^2, R^3a and R^3b are independently:

(a) H,
(b) F, Cl, Br, or I,
(c) $—NO_2$,
(d) $—NH_2$,
(e) $—NH(C_1–C_4)$-alkyl,
(f) $—N[(C_1–C_4)\text{-alkyl}]_2$,
(g) $—SO_2NHR^7$,
(h) $—CF_3$,
(i) $(C_1–C_4)$-alkyl,
(j) $—OR^7$,
(k) $—S(O)_n—(C_1–C_4)$-alkyl,
(l) $—NHCO—(C_1–C_4)$-alkyl,
(m) $—NHCO—O(C_1–C_4)$-alkyl,
(n) $—CH_2O—(C_1–C_4)$-alkyl,
(o) $—O—(CH_2)_m—OR^7$,
(p) $—CONR^7R^{11}$, or
(q) $—COOR^7$;

n is 0, 1 or 2;

m is 2, 3 or 4;

R^1 and R^2 on adjacent carbon atoms can be joined together to form a ting structure:



A represents:

a) $—Y—C(R^4)=C(R^5)—$,
b) $—Y—[C(R^6)(R^6)]_s—Y—$,
c) $—Y—C(R^6)(R^6)—C(R^6)(R^6)—$,
d) $—C(R^4)=C(R^5)—Y—$,
e) $—C(R^6)(R^6)—C(R^6)(R^6)—Y—$, or
f) $—C(R^4)=C(R^5)—C(R^4)=C(R^5)—$;

s is 1 or 2;

Y is —O— and —S(O)n;

R^4 and R^5 are independently:

(a) H,
(b) $(C_1–C_6)$-alkyl or $(C_2–C_6)$-alkenyl each of which is unsubstituted or substituted with one or two substituents selected from the group consisting of:
(i) —OH,
(ii) $—O—(C_1–C_4)$-alkyl,
(iii) $—S(O)_n—(C_1–C_4)$-alkyl,
(iv) $—NR^7—(C_1–C_4)$-alkyl,
(v) $—NHR^7$,
(vi) $—COOR^7$,
(vii) $—CONHR^7$,
(viii) $—OCOR^{11}$, or
(ix) $—CONR^7R^{11}$,
(c) $(C_3–C_7)$-cycloalkyl,
(d) F, Cl, Br, I,
(e) CF_3,
(f) $—COOR^7$,
(g) $—CONR^7R^{11}$,
(h) $—NR^7R^{11}$,
(i) $—NR^7CONR^7R^{11}$,
(j) $—NR^7COOR^{11}$,
(k) $—SO_2NR^7R^{11}$,
(l) $—O—(C_1–C_4)$-alkyl,
(m) $—S(O)_n—(C_1–C_4)$-alkyl, or
(n) $—NHSO_2R^{11}$;

R^6 is:

(a) H,
(b) $(C_1–C_4)$-alkyl unsubstituted or substituted with one of the following substituents:
(i) —OH,
(ii) $—NR^7R^{11}$,
(iii) $—COOR^7$,
(iv) $—CONHR^7$, or
(v) $—CONR^7R^{11}$, or
(c) F;

R^7 is:

(a) H,
(b) $(C_1–C_6)$-alkyl,
(c) phenyl,
(d) benzyl, or
(e) $(C_3–C_7)$-cycloalkyl;

R^8 is:

(a) H,
(b) $(C_1–C_6)$-alkyl, unsubstituted or substituted with a substituent selected from the group consisting of:
(i) —phenyl,
(ii) $—(C_3–C_7)$-cycloalkyl,
(iii) $—NR^7R^{11}$,
(iv) —OH,
(v) $—CO_2R^7$, or
(vi) $—CON(R^7)_2$,
(c) phenyl, unsubstituted or substituted with a substituent selected from the group consisting of:
(i) $(C_1–C_4)$-alkyl,
(ii) $—O—(C_1–C_4)$-alkyl,
(iii) $—CONR^7R^{11}$,
(iv) F, Cl, Br or I, or
(v) $—COOR^7$;

R^9 and R^{10} are independently:

(a) H,
(b) $(C_1–C_6)$-alkyl, unsubstituted or substituted with $(C_3–C_7)$-cycloalkyl,
(c) $(C_2–C_6)$-alkenyl,
(d) $(C_2–C_6)$-alkynyl,
(e) Cl, Br, F, I,
(f) $(C_1–C_6)$-alkoxy,
(g) when R^9 and R^{10} are on adjacent carbons, they can be joined to form a phenyl ring,
(h) perfluoro-$(C_1–C_6)$-alkyl,
(i) $(C_3–C_7)$-cycloalkyl, unsubstituted or substituted with $(C_1–C_6)$-alkyl,
(j) phenyl,
(k) $(C_1–C_6)$-alkyl-$S(O)_n—(CH_2)_n—$,
(l) hydroxy-$(C_1–C_6)$-alkyl,
(m) $—CF_3$,
(n) $—CO_2R^7$,
(o) —OH,
(p) $—NR^7R^{11}$,
(q) $—[(C_1–C_6)\text{-alkyl}]NR^7R^{11}$,
(r) $—NO_2$,
(s) $—(CH_2)_n—SO_2—N(R^7)_2$,
(t) $—NR^7CO—(C_1–C_4)$-alkyl, or
(u) $—CON(R^7)_2$;

R^{11} is:

VOL 1171 ISS 3 FE 21 1995 UMI

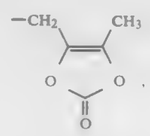
(a) (C_1–C_6)-alkyl,
(b) phenyl,
(c) —(C_1–C_4)-alkyl-phenyl, or
(d) (C_3–C_7)-cycloalkyl;

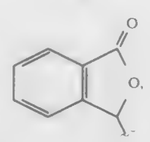
R^{12} is:
(a) H,
(b) (C_1–C_6)-alkyl, unsubstituted or substituted with one or two substituents selected from the group consisting of:
i) —OH,
ii) —O—(C_1–C_4)-alkyl,
iii) —O—(C_1–C_4)-cycloalkyl,
iv) —$S(O)_n$—(C_1–C_4)-alkyl,
v) —NR^7—(C_1–C_4)-alkyl,
vi) —NR^7R^{11},
vii) —$COOR^7$,
viii) —$CONHR^7$,
ix) —$OCOR^{11}$,
x) —$CONR^7R^{11}$,
xi) —$NR^7CONR^7R^{11}$,
xii) —NR^7COOR^{11},
xiii) —$C(R^6)(OH)$—$C(R^6)(R^7)(OH)$, or
xiv) —$SO_2NR^7R^{11}$,
(c) (C_3–C_7)-cycloalkyl,
(d) (C_1–C_4)-perfluoroalkyl,
(e) aryl, unsubstituted or substituted with one to three substituents selected from the group consisting of:
i) F, Cl, Br, I,
ii) (C_1–C_6)-alkyl,
iii) (C_1–C_6)-alkoxy,
iv) hydroxy-(C_1–C_6)-alkyl,
v) —CF_3,
vi) —$COOR^7$,
vii) —OH,
viii) —NR^7R^{11},
ix) —NH_2,
x) —NO_2,
xi) —$CONR^7R^{11}$,
xii) two adjacent groups may be joined together to form a methylenedioxy group,
(f) aryl(C_1–C_2)alkyl unsubstituted or substituted with one to three substituents selected from the group consisting of:
i) F, Cl, Br, I,
ii) (C_1–C_6)-alkyl,
iii) (C_1–C_6)-alkoxy,
iv) hydroxy-(C_1–C_6)-alkyl,
v) —CF_3,
vi) —$COOR^7$,
vii) —OH,
viii) —NR^7R^{11},
ix) —NH_2,
x) —NO_2,
xi) —$CONR^7R^{11}$m or
xii) two adjacent groups may be joined together to form a methylenedioxy group;

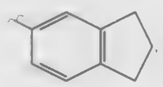
X is:
(a)
(b) —$S(O)_n$—,
(c) —NR^7—,
(d) —CH_2O—,
(e) —$CH_2S(O)_n$—,
(f) —CH_2NR^7—,
(g) —OCH_2—,
(h) —$N(R^7)CH_2$—,
(i) —$S(O)_nCH_2$—,
(j) —single bond, or
(k) —$C(R^9)_2$—;

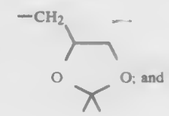
Z is:
(a) —CO_2H,
(b) —CO_2R^{13},
(c) —$CONHSO_2$-phenyl, wherein phenyl is unsubstituted or substituted with one or two substituents selected from the group consisting of:
i) (C_1–C_4)-alkyl,
ii) —O—(C_1–C_4)-alkyl,
iii) —$CONR^7R^{11}$,
iv) F, Cl, Br or I,
v) —$COOR^7$,
vi) (C_1–C_4)-perfluoroalkyl,
vii) (C_3–C_7)-cycloalkyl,
viii) NR^7R^{11},
ix) $SO_2NR^7R^{11}$,
x) hydroxy, or
xi) 2,3-, or 3,4-methylenedioxy;
(d) —$CONHSO_2$—(C_1–C_8)-alkyl, wherein the alkyl group is unsubstituted or substituted as defined in R^4(b),
(e) —$CONHSO_2$—(C_1–C_4)-perfluoroalkyl,
(f) —$CONHSO_2$—(C_3–C_7)-cycloalkyl,
(g) —SO_2NHCO-phenyl, wherein phenyl is as defined in Z(d) above,
(h) —SO_2NHCO—(C_1–C_8)-alkyl, wherein the alkyl group is unsubstituted or substituted as defined in R^4(b),
(i) —SO_2NHCO—(C_1–C_4)-perfluoroalkyl,
(j) —$SO_2NHCON(R^{11})_2$ wherein the R^{11} groups are the same or different,
(k) —$PO(OR^7)_2$, wherein the R^7 groups are the same or different, or
(l) —$PO(R^{11})OR^7$;

R^{13} is:
(a) (C_1–C_4)-alkyl,
(b) CHR^{14}—O—COR^{15},
(c) CH_2CH_2—N[(C_1–C_2)-alkyl]$_2$m
(d) $(CH_2CH_2O)_y$—O—[(C_1–C_4)-alkyl], wherein y is 1 or 2,
(e) phenyl, naphthyl, CH_2-phenyl or CH_2-naphthyl, where phenyl or naphthyl is substituted or unsubstituted with CO_2—(C_1–C_4)-alkyl,


(f)


(g)


(h)


(i)

R^{14} and R^{15} independently are (C_1–C_6)-alkyl or phenyl,
R^{16}, R^{17} and R^{18} are independently:
(a) H,
(b) (C_1–C_6)-alkyl, unsubstituted or substituted with one or two substituents selected from the group consisting of:
i) —OH,
ii) —O—(C_1–C_4)-alkyl,
iii) —NR^7R^{11},
iv) —$COOR^7$,
v) —$CONR^7R^{11}$,
vi) —$SO_2NR^7R^{11}$,
vii) —NH_2,
viii) —NO_2,
(c) (C_3–C_7)-cycloalkyl,
(d) (C_1–C_4)-perfluoroalkyl,
(e) F, Cl, Br, I,
(f) —OH,
(g) (C_1–C_4)-alkoxy,
(h) —$COOR^7$,
(i) —$CONR^7R^{11}$,
(j) —$CONHSO_2$—(C_1–C_6)-alkyl wherein the alkyl group is unsubstituted or substituted as defined in R^4(b),
(k) —$CONHSO_2$-phenyl wherein the phenyl group is unsubstituted or substituted as defined in Z(d),
(l) —NR^7R^{11}m
(m) —NH_2,
(n) —NO_2,
(o) —NR^7COR^{11},
(p) —NR^7COOR^{11},
(q) —$NR^7CONR^7R^{11}$,
(r) two adjacent groups may be joined together to form a methylenedioxy group,
(s) —$SO_2NR^7R^{11}$,
(t) —SO_2NHCO—(C_1–C_6)-alkyl wherein the alkyl group is unsubstituted or substituted as defined in R^4(b),
(u) —SO_2NHCO-phenyl wherein the phenyl group is unsubstituted or substituted as defined in Z(d).

5,391,567

METHOD FOR TREATING HYPERCALCEMIA USING SALTS OF TNCA

Lawrence G. Raisz, Farmington, Conn., and Carlos M. Samour, Newport, R.I., assignors to Macrochem Corporation, Lexington, Mass.

Continuation of Ser. No. 987,994, Dec. 9, 1992, abandoned, which is a continuation of Ser. No. 808,094, Dec. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 739,779, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 86,848, Aug. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 903,385, Sep. 3, 1986, abandoned. This application Sep. 17, 1993, Ser. No. 122,173
Int. Cl.[6] A61K *31/38*
U.S. Cl. 514—443 **7 Claims**

1. A method of preventing or treating hypercalcemia in a tumor-bearing animal which comprises orally administering to the animal a therapeutically effective dose of lysine or arginine salt of thionapthene-2-carboxylic acid.

5,391,568

INHIBITION OF LUNG TUMORIGENESIS BY ADMINISTRATION OF A POLYPHENOL

Fung L. Chung, Yorktown Hts., N.Y., assignor to American Health Foundation, New York, N.Y.

Filed Jul. 10, 1992, Ser. No. 912,157
Int. Cl.[6] A61K *31/35*
U.S. Cl. 514—456 **4 Claims**

1. A method for treating NNK-induced lung tumor formation in a mammal in need thereof comprising administering to said mammal a pharmacologically effective amount of epigallocatechin gallate (EGCG).

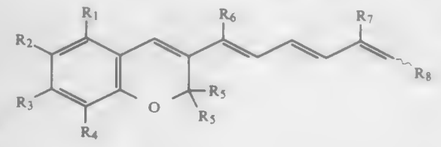
5,391,569

NEW CHROMENE COMPOUNDS HAVING A TRIENE SIDE CHAIN

Jean-Daniel Brion, Saint-Leu-La-Foret; Guillaume Le Baut, Saint-Sebastien-sur-Loire; Guillaume Poissonnet, Villebon S/Yvette; Lucy De Montarby, Courbevoie; Larbi Belachmi, Nantes; Jacqueline Bonnet, Paris; Massimo Sabatini, Garges, and Charles Tordjman, Boulogne, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Sep. 28, 1993, Ser. No. 127,804
Claims priority, application France, Sep. 29, 1992, 92 11592; Sep. 29, 1992, 92 11591
Int. Cl.[6] A61K *31/35, 31/47, 31/445, 31/40*
U.S. Cl. 514—456 **20 Claims**

1. A compound selected from those of formula (I):


(I)

in which:
R_1, R_2, R_3 and R_4, which are the same or different, represent:
hydrogen,
halogen,
phenyl,
adamantyl,
a heterocycle, selected from furyl, pyrrolyl, pyrrolidinyl, thienyl, pyridyl, piperidyl, indolyl and quinolyl,
R′, or
OR′,
R′ being linear or branched alkyl having 1 to 6 carbon atoms inclusive which is optionally substituted by one or more hydroxy and/or by one or more halogens,
R_5, R_6 and R_7, which are the same or different, are selected from hydrogen and linear or branched alkyl having 1 to 6 carbon atoms inclusive,
R_8 is selected from C(O)OR_9, P(O)$(OR_9)_2$ and $CONHR_{10}$ in which R_9 is hydrogen or linear or branched alkyl containing 1 to 6 carbon atoms inclusive, and R_{10} represents hydrogen, linear or branched alkyl having 1 to 6 carbon atoms inclusive, or carbocyclic aryl,
the non-defined bond carrying R_8 being a single bond conferring an E- or Z-configuration on the double bond supporting it,
with the proviso that when one or both R_5 represent hydrogen hydrogen and R_6 and R_7 each represents hydrogen at lower alkyl and R_8 represents C(O)OR_9 as defined above, then at least one of the substituents R_1, R_2, R_3 and R_4 is other than hydrogen, halogen, R′ and OR′, R′ being as defined above,
its stereoisomers and, where appropriate, its addition salts with a pharmaceutically-acceptable acid or base.

5,391,570

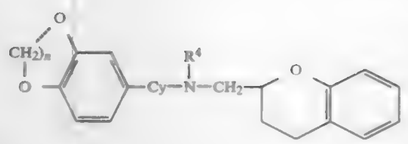
AMINOMETHYL-BENZODIOXANE AND BENZOPYRAN SEROTONERGIC AGENTS

John D. Catt, Southington, and Ronald J. Mattson, Meriden, both of Conn., assignors to Bristol-Myers Squibb, New York, N.Y.

Filed Oct. 14, 1993, Ser. No. 136,521
Int. Cl.[6] A61K *31/35, 31/36;* C07D *319/20, 407/08*
U.S. Cl. 514—456 **8 Claims**

1. The compound of Formula I or a pharmaceutically acceptable salt, amide or hydrate thereof:

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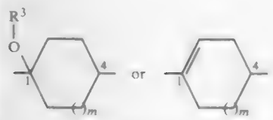


(I)

wherein:

n is 1,2 or 3;

Cy is either



(m=0,1 or 2), with the phenyl substituent at the 1 position of the cycloalkanyl or cycloalkenyl ring and the amino substituent at the 4 position; and

R^3 and R^4 are independently H or C_{1-4} alkyl.

5. A pharmaceutical composition comprising an effective anxiolytic amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

5,391,571

CHOLESTEROL ESTER HYDROLASE INHIBITORS

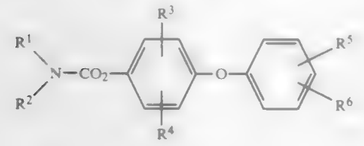
Richard E. Mewshaw, Baltimore, Md.; Thomas J. Commons, Wayne, and Donald P. Strike, St. Davids, both of Pa., assignors to American Home Products Corporation, Madison, N.J.

Continuation of Ser. No. 771,580, Oct. 4, 1991, abandoned, which is a continuation of Ser. No. 594,241, Oct. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 436,841, Nov. 15, 1989, abandoned. This application May 13, 1993, Ser. No. 62,026

Int. Cl.[6] A61K *31/325; C07C 271/02, 271/40*

U.S. Cl. 514—490 **38 Claims**

1. A compound of the formula:



in which

R^1 is branched or straight chain, saturated or unsaturated alkyl of 4 to 20 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, 1-adamantyl, 2-adamantyl, 3-noradamantyl, 3-methyl-1-adamantyl, 1-fluorenyl, 9-fluorenyl, cycloalkylalkyl where the cycloalkyl moiety has 3 to 8 carbon atoms and the alkyl moiety has 1 to 6 carbon atoms, phenyl, substituted phenyl where the substituents are alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halo, nitro, cyano or trifluoromethyl, phenylalkyl of 7 to 26 carbon atoms or substituted phenylalkyl, where the alkyl moiety is 1 to 20 carbon atoms and the substituent on the benzene ring is alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halo, nitro, cyano, trifluoromethyl or phenyl;

R^2 is hydrogen or alkyl of 1 to 6 carbon atoms; and

R^3, R^4, R^5 and R^6 are, independently, hydrogen, branched or straight chain alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halo, nitro, cyano, perhaloalkyl of 1 to 6 carbon atoms, alkoxycarbonyl of 2 to 16 carbon atoms or hydroxycarbonyl.

5,391,572

THERMOPLASTIC MOLDING COMPOSITIONS BASED ON POLYAMIDIC AND THERMOPLASTIC POLYESTER ELASTOMERS

Walter Goetz; Walter Betz, both of Ludwigshafen, and Gunter Pipper, Bad Durkheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 54,872, Apr. 14, 1993, abandoned, which is a division of Ser. No. 801,195, Dec. 2, 1991, Pat. No. 5,254,620. This application May 11, 1994, Ser. No. 241,459

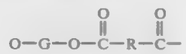
Claims priority, application Germany, Dec. 8, 1990, 4039420

Int. Cl.[6] C08L *77/00*

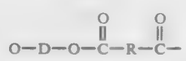
U.S. Cl. 524—538 **2 Claims**

1. A thermoplastic molding composition, obtained by mixing

A) from 0.5 to 5% by weight of a thermoplastic polyester elastomer, obtained from units



and



where

G is a divalent radical which remains on removing the terminal hydroxyl groups of a poly(alkylene oxide) glycol,

D is a divalent radical which remains on removing the terminal hydroxyl groups of a diol, and

R is a divalent radical which remains on removing the carboxyl groups of a dicarboxylic acid,

and

B from 0 to 50% by weight of fibrous or particulate fillers or mixtures thereof into a melt of

C from 40 to 99.5% by weight of a polyamide prepolymer having a viscosity number of from 40 to 80 ml/g and subsequent postcondensation in the solid phase to a viscosity number from 120 to 500 ml/g.

5,391,573

FUNGICIDAL COMPOSITION

Hubert Sauter, Mannheim; Klaus Schelberger, Goennheim; Reinhold Saur, Boehl-Iggelheim; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Heppenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 136,035, Oct. 14, 1993, Pat. No. 5,346,909, which is a division of Ser. No. 25,577, Mar. 3, 1993, Pat. No. 5,286,724, which is a division of Ser. No. 904,654, Jun. 26, 1992, Pat. No. 5,242,920. This application May 11, 1994, Ser. No. 240,897

Claims priority, application Germany, Jul. 22, 1991, 4124255

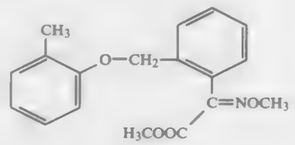
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.

Int. Cl.[6] A01N *37/06*

U.S. Cl. 514—539 **8 Claims**

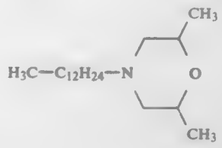
1. A fungicidal composition comprising a synergistically fungicidally effective amount of a composition of

a) methyl α-methoximino-2-[(2-methylphenoxy)-methyl]-phenylacetate of the formula



and

b) N-tridecyl-2,6-dimethyl-morpholine of the formula



in a weight ratio of a:b from 5:1 to 1:5.

5,391,574

OPTICALLY-ACTIVE DERIVATIVES OF (R) 5-PENTYLAMINO-5-OXOPENTANOIC ACID WITH ANTAGONISTIC ACTIVITY TOWARDS CHOLECYSTOKININ AND A METHOD FOR THEIR PREPARATION

Francesco Makovec; Rolando Chisté, both of Monza; Walter Peris, Milan, and Luigi Rovati, Monza, all of Italy, assignors to Rotta Research Laboratorium S.p.A., Monza, Italy

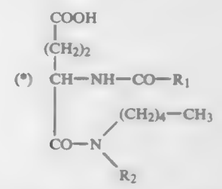
Continuation of Ser. No. 902,561, Jun. 22, 1992, abandoned, which is a continuation of Ser. No. 425,148, Oct. 23, 1989, abandoned, which is a continuation of Ser. No. 152,724, Feb. 5, 1988, abandoned. This application Oct. 4, 1993, Ser. No. 131,573

Claims priority, application Italy, Feb. 5, 1987, 67076 A/87

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—563 **7 Claims**

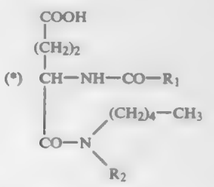
1. Pharmaceutically active derivatives of (R) 5-pentylamino-5-oxopentanoic acid having the formula:



(I)

in which R_1 is 2-naphthyl, and R_2 is selected from the pentyl group, 2-ethoxyethyl group and 3-methoxypropyl group in which the substituents on the central chiral group (marked with an asterisk in formula (I)) have the R (rectus) conformation, and pharmaceutically-acceptable salts thereof.

2. A pharmaceutical preparation including, as the active constituent, an anti-cholecystokinin effective amount of compound selected from pharmaceutically active derivatives of (R) 5-pentylamino-5-oxopentanoic acid having the formula:



(I)

in which R_1 is 2-napthyl, and R_2 is selected from the pentyl group 2-ethoxyethyl group and 3-methoxypropyl group in which the substituents on the central chiral group (marked with an asterisk in formula (I)) have the R (rectus) conformation, and pharmaceutically-acceptable salt thereof, and a pharmaceutically-acceptable carrier.

5,391,575

METHOD FOR TREATING NEUROFIBROMATOSIS

Stanislaw R. Burzynski, 20 W. Rivercrest, Houston, Tex. 77042

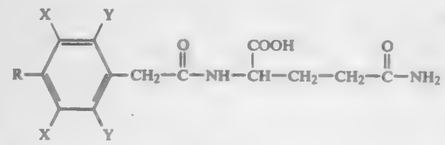
Filed May 4, 1994, Ser. No. 237,772

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—563 **6 Claims**

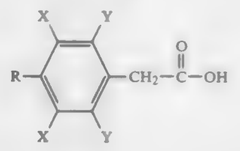
1. A method of treating neurofibromatosis in an afflicted human host comprising:

administering to the host a pharmaceutical composition containing a therapeutically effective amount of a combination of compounds of the formula:



(A)

and



(B)

in a weight ratio ranging from about 1:1 to about 1:10 (A:B);

wherein R is OH, NH_2, OW, or H;

X is H, F, Cl, Br, I, OH, OW, NO_2 or NH_2;

Y is H, F, Cl, Br, or I;

W is



or a C_1 to C_{12} aliphatic group;

Z is an aliphatic or aromatic group of C_1 to C_{12};

X and Y can both vary within the compound; or

pharmaceutically acceptable salts thereof.

5,391,576

METHOD FOR TREATING AND PROTECTING THE CEREBRAL TISSUE AGAINST REPERCUSSIONS OF CEREBRAL ISCHAEMIA AND CEREBRAL INFARCTIONS

Louis Lafon, deceased, late of Paris, France by Andrée Victorine Léonie Marie Lafon, Legal Representative , assignor to Laboratoire L. Lafon, Maisons Alfort, France

Filed Dec. 14, 1992, Ser. No. 988,271

Claims priority, application France, Dec. 13, 1991, 91 15534

Int. Cl.[6] A61K *31/165*

U.S. Cl. 514—618 **5 Claims**

1. A method for protecting the cerebral tissue of a human against the repercussions of ischaemia which comprises administering to a patient in need thereof a therapeutically effective amount of modafinil.

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5,391,577

N-PHENYLALKYL SUBSTITUTED α-AMINO CARBOXAMIDE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Philippe Dostert, Paris, France; Paolo Pevarello, Pavia, Italy; Franco Heidempergher, Parabiago, Italy; Mario Varasi, Milan, Italy; Alberto Bonsignori, Milan, Italy, and Romeo Roncucci, Milan, Italy, assignors to Farmitalia Carlo Erba S r l, Milan, Italy

Division of Ser. No. 646,596, Jan. 25, 1991, Pat. No. 5,236,957. This application May 25, 1993, Ser. No. 65,888

Claims priority, application United Kingdom, May 25, 1989, 8912071; Apr. 4, 1990, 9007567

The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.[6] A61K *31/165*

U.S. Cl. 514—620 **4 Claims**

1. A compound selected from the group consisting of:
2-[4-(3-phenylpropyloxy)benzyl]aminopropionamide;
2-[4-(3-chlorobenzyloxy)benzyl]aminoacetamide;
(4-benzyloxybenzyl)aminoacetamide;
[4-(3-chlorobenzyloxy)-α-methyl-benzyl]aminoacetamide;
2-[4-(3-chlorobenzyloxy)benzyl]amino-3-hydroxypropionamide;
2-[4-(3-chlorobenzyloxy)benzyl]amino-N-methylpropionamide;
2-(4-benzyloxybenzyl)amino-N-methylpropionamide;
2-(4-benzyloxybenzyl)amino-3-hydroxy-N-methylpropionamide;
2-[4-(3-chlorobenzyloxy)benzyl]aminopropionamide;
2-[4-(3-methoxybenzyloxy)benzyl]amino-3-hydroxy-N-methyl propionamide;
2-[4-(4-chlorobenzyloxy)benzyl]amino-3-hydroxy-N-methyl propionamide;
1-[(4-benzyloxybenzyl)amino]cyclopentane-1-N-methylcarboxamide;
2-(4-benzyloxybenzyl)amino-N-methylacetamide;
1-[(4-benzyloxybenzyl)amino]cyclopropane-1-N-methylcarboxamide;
1-[(4-benzyloxybenzyl)amino]cyclopentane-1-carboxamide;
2-(4-benzyloxybenzyl)amino-3-methyl-N-methylbutanamide;
2-(4-benzyloxybenzyl)amino-3-phenyl-N-methylpropionamide;
1-[(4-benzyloxybenzyl)amino]cyclopropane-1-carboxamide;
2-(4-benzyloxybenzyl)aminopropionamide;
2-(4-benzyloxybenzyl)amino-3-hydroxy-N-methyl-butanamide;
2-(4-benzyloxybenzyl)amino-4-methyl-N-methylpentanamide;
2-(4-benzyloxybenzyl)amino-3-hydroxy-propionamide;
2-[4-(2-methylbenzyloxy)benzyl]amino-3-hydroxy-N-methyl propionamide;
2-[4-(3-methylbenzyloxy)benzyl]amino-3-hydroxy-N-methyl propionamide;
2-[4-(3-trifluoromethylbenzyloxy)benzyl]amino-3-hydroxy-N-4-methylpropionamide;
2-[4-(2-trifluoromethylbenzyloxy)benzyl]amino-3-hydroxy-N-methylpropionamide;
2-[4-(2-chlorobenzyloxy)benzyl]amino-N-methylpropionamide;
2-[4-(2-chlorobenzyloxy)benzyl]aminopropionamide;
2-(4-phenyloxybenzyl)aminopropionamide;
2-(4-benzylbenzyl)amino-3-hydroxy-N-methylpropionamide;
2-(4-phenylethyloxybenzyl)aminopropionamide;
2-(4-benzylthiobenzyl)amino-3-hydroxy-N-methylpropionamide;
2-(4-phenylethylbenzyl)amino-3-hydroxy-N-methyl-propionamide;
2-[4-(2-phenylethyloxy)benzyl]amino-3-hydroxy-N-methyl-propionamide;
2-[4-(2-fluorobenzyloxy)benzyl]aminopropionamide;
2-(4-phenyloxymethylbenzyl)amino-3-hydroxy-N-methylpropionamide;
2-(4-benzylaminobenzyl)amino-3-hydroxy-N-methyl-propionamide;
2-(4-benzyloxyphenethyl)aminopropionamide;
2-[4-(2-chlorobenzyloxy)phenethyl]aminopropionamide;
2-[4-(3-chlorobenzyloxy)-α-methyl-benzyl]aminopropionamide;
2-[(4-benzyl)-α-methyl-benzyl]aminopropionamide,
2-(4-benzyloxybenzyl)aminobutanamide;
2-(2-benzyloxybenzyl)aminopropionamide;
2-(3-benzyloxybenzyl)aminopropionamide;
2-(4-cyclohexylmethylaminobenzyl)aminopropionamide;
2-(4-cyclopropylmethylaminobenzyl)aminopropionamide;
2-(4-phenylaminomethylbenzyl)aminopropionamide;
2-[4-(3-furfuryloxy)benzyl]aminopropionamide;
2-[4-(2-furfuryloxy)benzyl]aminopropionamide;
2-[4-(3-pyridyl)methyloxybenzyl]aminopropionamide;
2-[4-(2-pyridyl)methyloxybenzyl]aminopropionamide;
2-[4-(4-pyridyl)methyloxybenzyl]aminopropionamide;
2-[4-(3-thienyloxy)benzyl]aminopropionamide;
2-[4-(2-thienyloxy)benzyl]aminopropionamide;
2-[N-(4-benzyloxybenzyl)-N-methyl]amino-3-hydroxy-N-methyl propionamide;
2-[N-(4-phenyloxymethylbenzyl)-N-methyl]aminopropionamide;
2-[N-(4-benzylethylbenzyl)-N-methyl]aminopropionamide;
2-[N-(4-benzylbenzyl)-N-methyl]amino-3-hydroxy-N-methyl-propionamide;
2-[N-(4-benzylthiobenzyl)-N-methyl]aminopropionamide;
2-[N-(4-benzylaminobenzyl)-N-methyl]aminopropionamide;
2-[N-(4-(2-chlorobenzyloxy)benzyl)-N-methyl]amino-3-hydroxy-N-methylpropionamide;
2-[N-(4-(3-fluorobenzyloxy)benzyl)-N-methyl]amino-3-hydroxy-N-methylpropionamide;
2-[N-(4-(2-fluorobenzyloxy)benzyl-N-methyl]amino-3-hydroxy-N-methylpropionamide;
2-[N-(4-(3-fluorobenzyloxy)benzyl-N-methyl]amino-propionamide;
2-[N-(4-(2-chlorobenzyloxy)benzyl-N-methyl]amino propionamide;
[4-(3-chlorobenzyloxy)phenylethyl]aminoacetamide;
[4-(3-chlorobenzyloxy)-α-methyl-benzyl]aminoacetamide;
2-[(4-benzyl)phenylethyl]aminoacetamide;
2-[2-(4-benzylamino)phenylethyl]aminoacetamide;
2-(4-benzyloxybenzyl)amino-N,N-dimethylacetamide;
2-(4-benzyloxybenzyl)amino-3-hydroxy-N,N-dimethylpropionamide;
2-(4-benzylbenzyl)amino-N,N-dimethylacetamide;
2-(4-benzylaminobenzyl)amino-N,N-dimethylacetamide;
2-[4-(2-chlorobenzyloxy)benzyl]amino-3-hydroxy-N,N-dimethylpropionamide;
2-[4-(3-fluorobenzyloxy)benzyl]amino-3-hydroxy-N,N-dimethylpropionamide;
2-[4-(2-fluorobenzyloxy)benzyl]amino-3-hydroxy-N,N-dimethylpropionamide;
2-[4-(3-fluorobenzyloxy)benzyl]amino-N,N-dimethyl propionamide;
2-[4-(2-chlorobenzyloxy)benzyl]amino-N,N-dimethyl propionamide;
2-[4-(2-chlorobenzyloxy)benzyl]amino-3-hydroxy-N,N-dimethyl propionamide;
2-(4-benzyloxybenzyl)amino-N,N-dimethylpropionamide;
2-[N-(4-benzyloxybenzyl)-N-methyl]amino-N-methyl propionamide, as single (S) or (R) isomers or as a mixture thereof, and the pharmaceutically acceptable salts thereof.

5,391,578

N-LOWER ALKYL NEOALKANAMIDE INSECT REPELLENTS

Robert J. Steltenkamp, Somerset, N.J., assignor to Colgate-Palmolive Co., New York, N.Y.

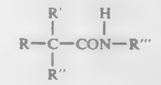
Continuation-in-part of Ser. No. 657,707, Feb. 19, 1991, Pat. No. 5,182,305, and a continuation-in-part of Ser. No. 612,747, Nov. 13, 1990, Pat. No. 5,182,304, which is a continuation of Ser. No. 267,141, Nov. 4, 1988, Pat. No. 5,006,562, which is a continuation-in-part of Ser. No. 894,985, Aug. 8, 1986, abandoned, and a continuation-in-part of Ser. No. 71,305, Jul. 16, 1987, Pat. No. 4,804,683. This application May 15, 1992, Ser. No. 884,496

The portion of the term of this patent subsequent to Feb. 14, 2006, has been disclaimed.

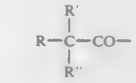
Int. Cl.[6] A01N *37/18;* **C07C** *233/04, 233/05*

U.S. Cl. 514—625 **3 Claims**

1. An isomeric, liquid state, insect repellent which consists of an insect repelling effective amount of a mixture of N-lower alkyl neoalkanamides having the formula



wherein R, R′ and R″ are alkyl groups, R‴ is methyl and the acyl moiety,



of the formula is an isomeric mixture of acyls wherein the number of carbon atoms in R+R′+R″ is 8.

5,391,579

DEUTERATED SEVOFLURANE AS AN INHALATIONAL ANESTHETIC

Max T. Baker, and John H. Tinker, both of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Division of Ser. No. 10,264, Jan. 28, 1993, abandoned. This application Jun. 14, 1993, Ser. No. 76,582

Int. Cl.[6] A61K *31/08*

U.S. Cl. 514—722 **4 Claims**

1. An inhalation pharmaceutical composition for inducing anesthesia in animals said composition comprising:
an anesthesia inducing effective amount of fluorodideutero 1,1,1,3,3,3-hexafluoro-2-propyl ether and a pharmaceutically acceptable anesthetic carrier.

5,391,580

POLY(SULFONE-ALPHA-OLEFIN) COMPOSITE PERMSELECTIVE MEMBRANE ARTICLE FOR USE IN BLOOD OXYGENATION

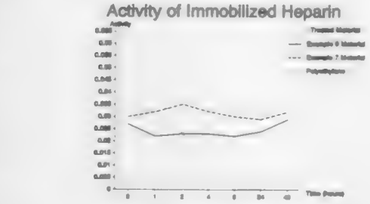
Mary B. Douglas, Holland; Don N. Gray, Sylvania; Barry Watson, and Christopher S. Youngen, both of Toledo, all of Ohio, assignors to Anatrace Inc., Maumee, Ohio

Continuation-in-part of Ser. No. 855,596, Mar. 20, 1992, abandoned. This application May 10, 1993, Ser. No. 59,558

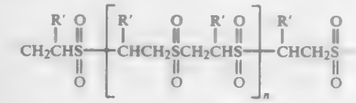
Int. Cl.[6] C08G *75/22;* **C08J** *5/20;* **A61M** *1/14*

U.S. Cl. 521—27 **6 Claims**

1. As a composition of matter, a poly(sulfone-alpha-olefin) derived from sulfur dioxide and a mixture of a series C_8 to C_{18} alpha olefin with from 0.1 to 10 percent of a mono-brominated alpha olefin having from 3 to 28 carbon atoms, a methyl or ethyl ester of an alpha olefin carboxylic acid having from 3 to 28 carbon atoms or an alpha olefin aldehyde having from 3 to 28 carbon atoms, the amount of the mono-brominated olefin, of the carboxylic acid methyl or ethyl ester or of the alpha aldehyde in the poly(sulfone-alpha-olefin) being sufficiently great to increase the heparin activity of the poly(sulfone-alpha-olefin) after incubation in normal saline, said poly(sulfone-alpha olefin) having the structure of Formula 2, below,

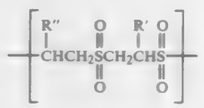


Formula 2



where the R′ groups can be the same or different, most of them are C6 to C16 alkyls, n is an integer of at least 6, and some of the repeating groups have the structure of Formula 3, below:

Formula 3



where R″ is a bromoalkyl group having from 1 to 26 carbons, a methyl or ethyl ester of an alkyl carboxylic acid having from 1 to 26 carbons, or an alkyl aldehyde having from 1 to 26 carbons.

5,391,581

PRODUCTION METHOD OF FOAMED PARTICLES OF UNCROSSLINKED ETHYLENE-BASED RESIN

Hideki Kuwabara; Kazuo Tsurugai; Masaharu Oikawa; Hidehiro Sasaki, and Satoru Shioya, all of Utsunomiya, Japan, assignors to JSP Corporation, Tokyo, Japan

Filed Dec. 17, 1993, Ser. No. 168,214

Claims priority, application Japan, Dec. 24, 1992, 4-357551

Int. Cl.[6] C08J *9/228*

U.S. Cl. 521—60 **14 Claims**

1. A method of producing foamed particles of an uncrosslinked ethylene-based resin by dispersing particles of an uncrosslinked ethylene-based resin, which are obtained using, as a base resin, a linear low density polyethylene which is an ethylene/α-olefin copolymer containing, as a comonomer component, 1.0–10 wt. % of an α-olefin having 4–10 carbon atoms, in a dispersion medium in the presence of a mixed foaming agent containing carbon dioxide and an aliphatic hydrocarbon and/or an alicyclic hydrocarbon in a closed vessel, heating the resultant dispersion to impregnate the resin

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particles with the foaming agent, and then releasing the resin particles into a region of a pressure lower than the internal pressure of the vessel at a foaming temperature not lower than the softening temperature of the resin particles, thereby expanding the resin particles, which comprises using, as the foaming agent, the aliphatic hydrocarbon and/or the alicyclic hydrocarbon and carbon dioxide in amounts simultaneously satisfying the following equations (1) and (2):

$$E/7+0.3 \leqq 3x+2y \leqq E/7+5.4 \quad (1)$$

$$5.4\times10^{-3} \leqq x/(yE) \quad (2)$$

in which:

x represents the number of mols of the aliphatic hydrocarbon and/or the alicyclic hydrocarbon per 1000 g of the resin particles;

y represents the number of mols of carbon dioxide per 1000 g of the resin particles; and

E represents an intended bulk expansion ratio for the foamed particles,

with the proviso that x and y each are greater than 0.

5,391,582

POLY(ETHYLENE TEREPHTHALATE) FOAMS COMPRISING RECYCLED PLASTIC AND METHODS RELATING THERETO

Lawrence C. Muschiatti, Wilmington, Del., and Benjamin A. Smillie, Kingston, Canada, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 19, 1994, Ser. No. 230,029

Int. Cl.[6] C08J 9/12

U.S. Cl. 521—81 **3 Claims**

1. A process for producing a polyester foam comprising the steps of:

(a) melting a branched PET in an amount of at least 25% of the total composition, and having an intrinsic viscosity of about 0.65 to about 1.4 deciliters per gram, whereby the branched PET is derived from a diacid (or ester forming equivalent) and comprises about 1.5 to about 6.0 equivalents of a branching agent per 100 moles of diacid (or ester forming equivalent), the branching agent having a functionality of greater than 2 and a molecular weight of from about 50 to 5000 and a recycle PET resin having been cleaned and substantially free of a minimum of contaminants in an extruder;

(b) incorporating a chain extender or a crosslinking agent to the melt stream either in the initial feed or downstream in the polymeric melt;

(c) injecting a blowing agent into the melt stream; and

(d) extruding the mixture to an area of low pressure, thereby facilitating the development of a stable closed cell foam structure.

5,391,583

FLAME-RETARDANT POLY (POLYISOCYANATE-ORGANIC PHOSPHORUS) PRODUCTS

David H. Blount, 6728 Del Cerro Blvd., San Diego, Calif. 92120

Continuation-in-part of Ser. No. 920,194, Jul. 17, 1992, Pat. No. 5,268,393. This application Oct. 28, 1993, Ser. No. 142,009

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.[6] C08J 9/04

U.S. Cl. 521—85 **17 Claims**

1. A flame retardant product consisting of the reaction product of the following components:

A. an organic compound containing phosphorus selected from the group consisting of halogenated organic phosphites, halogenated organic phosphates, halogenated organic phosphite esters, halogenated organic phosphate esters, halogenated organic phosphite-phosphates, halogenated organic phosphonates, cyclic phosphites, cyclic phosphates, cyclic-alkyl phosphites, cyclic-alkyl phosphates, aryl phosphites, aryl phosphates, aryl-alkyl phosphites, aryl-alkyl phosphates, organic phosphite esters, organic phosphate esters, organic phosphonate esters, and mixtures thereof mixed with another organic compound containing phosphorus selected from the group consisting of dialkyl phosphites, trialkyl phosphites, trialkyl phosphates, dialkyl-alkyl phosphonates, and mixtures thereof;

B. polyisocyanate;

C. a polyisocyanate catalyst; and

D. a foam stabilizer.

5,391,584

MANUFACTURE OF RIGID FOAMS AND COMPOSITIONS THEREFOR

Rik De Vos, Rotselaar, Belgium, assignor to Imperial Chemical Industries PLC, London, England

Continuation-in-part of Ser. No. 974,353, Nov. 10, 1992, Pat. No. 5,238,970, which is a continuation of Ser. No. 852,071, Mar. 16, 1992, abandoned. This application Mar. 8, 1993, Ser. No. 27,533

Claims priority, application United Kingdom, Apr. 3, 1991, 9106967; Jun. 12, 1991, 9112622; Aug. 16, 1991, 9117749; Nov. 1, 1991, 9123205

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[6] C08G 18/14

U.S. Cl. 521—114 **10 Claims**

1. In a method for the preparation of a rigid polyurethane and/or polyisocyanurate foam by reacting a polyisocyanate and a polyol in the presence of a blowing agent, the improvement wherein a fluorinated inert, insolubie, non-blowing liquid is also present during the reaction, said fluorinated inert, insoluble, non-blowing liquid being present in the amount of 0.1–0.5 parts by weight per 100 parts by weight of reaction system and being selected from the group consisting of fluorinated hydrocarbons, fluorinated ethers, fluorinated tertiary amines, fluorinated amino-ethers and fluorinated sulfones.

5,391,585

FOAMABLE POLYVINYL CHLORIDE COMPOSITIONS, FOAMED ARTICLES MADE THEREFROM, AND A PROCESS FOR MAKING VINYL CHLORIDE POLYMERIC FOAMED ARTICLES

Martin Grohman, Marietta, Ohio, assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 146,863, Nov. 3, 1993, Pat. No. 5,324,461. This application Apr. 14, 1994, Ser. No. 227,426

Int. Cl.[6] C08J 9/00

U.S. Cl. 521—139 **10 Claims**

1. A foamable thermoplastic resin composition comprising:

a) a vinyl chloride polymer present at a level of from 50 to 99 percent by weight based on the total weight of the composition,

b) alphamethyl styrene-unsaturated nitrile copolymer present at a level of from 0.5 to 10 weight percent based on the total weight of the composition, said alphamethyl styrene-unsaturated nitrile copolymer being selected from the group consisting of rubber free alphamethyl styrene-unsaturated nitrile copolymers and graft copolymers, said graft copolymers comprising a superstrate grafted onto a substrate, said substrate being a butadiene rubber present at a level of from 5 to 50 percent by weight based on the entire weight of the graft copolymer, said superstrate being a rigid copolymer present at a level of from 50 to 95 percent by weight based on the total weight of the graft copolymer, said superstrate comprising from 30 to 80 percent by weight alphamethyl styrene based on the total weight of the graft copolymer, from 15 to 35 percent by weight unsaturated nitrile based on the entire weight of the graft copolymer, and from 0 to 30 percent by weight unsubstituted styrene based on the total weight of the graft copolymer;

c) a rubber-free alkyl methacrylate-vinyl aromatic-unsaturated nitrile copolymer present at a level of from 0.5 to 10 percent by weight based on the entire weight of the composition, said rubber-free copolymer comprising from 20 to 60 percent by weight alkyl methacrylate, from 10 to 50 percent by weight vinyl aromatic monomer, and from 5 to 35 weight percent unsaturated nitrile monomer based on the total weight of the rubber-free copolymer,

d) a chemical blowing agent present in an amount of from 0.1 to 1 percent by weight based on the total weight of the composition.

5,391,586

PROCESS FOR PREPARING FLEXIBLE POLYURETHANE FOAMS AND FOAMS THUS OBTAINED

A. Leslie Peterson, Coraopolis, and Richard A. Riccitelli, Monaca, both of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Filed Aug. 4, 1992, Ser. No. 925,344

Int. Cl.[6] C08G 18/70

U.S. Cl. 521—160 **8 Claims**

1. A process for the production of flexible polyurethane foams by reacting a polyol consisting essentially of a secondary hydroxyl-terminated polyol with a polyisocyanate in the presence of a blowing agent wherein the polyisocyanate comprises toluene diisocyanate having a 2,4-isomer to 2,6-isomer ratio is greater than 80:20, and wherein the blowing agent is substantially free of an auxiliary blowing agent.

5,391,587

FLUORINATED PHOTOINITIATORS AND THEIR APPLICATION IN UV CURING OF FLUORINATED MONOMERS

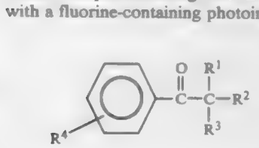
Chengjiu Wu, Morristown, N.J., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 805,156, Dec. 11, 1991, abandoned. This application Apr. 30, 1993, Ser. No. 54,607

Int. Cl.[6] C08F 2/46

U.S. Cl. 522—40 **6 Claims**

1. The method of curing a fluorinated acrylic monomer which comprises mixing said fluorinated acrylic monomer with a fluorine-containing photoinitiator of the formula



wherein at least one of the R^1 through R^4 groups is a terminally fluorinated group of the formula

$$-W-(X)_q-Y-R_f$$

wherein

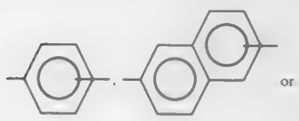
W and Y are independently selected groups of the formula

$$-(CH_2)_p-$$

$$-(CH_2CH_2O)_p-$$

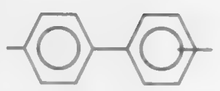
$$-[CH_2CH(OH)CH_2O]_p-$$

wherein p is an integer of from 0 to 10, and —Ar—, wherein Ar is



or

-continued



x is —O—, —OC(O)—, —C(O)O— or —C(O)—;

q is 0 or 1; and

R_f is selected from the group consisting of

$$-(CF_2)_nZ$$

$$-CF(CF_3)[OCF_2CF(CF_3)]_nZ \text{ and}$$

$$-CF_2-(OCF_2CF_2)_n-(OCF_2)_mZ$$

wherein

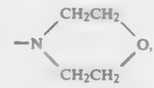
m is an integer of from 0 to 40; and

n is an integer of from 1 to 40; and

Z is H or F;

wherein the remaining R^1 through R^4 groups, if any, are independently selected from the group consisting of

H, —OH, R, —OR, —NR_2 and



wherein R is alkyl, straight chain, branched or cyclic, having from 1 to 20 carbons; phenyl, biphenyl or naphthyl;

with the proviso that no more than 2 of the R^1 through R^4 groups may be H; and subjecting the resultant mixture to actinic radiation.

5,391,588

CURABLE ORGANOPOLYSILOXANE COMPOSITIONS

Takafumi Sakamoto; Masatoshi Arai, both of Annaka, Japan, and Kazutoshi Fujioka, Pittsburgh, Pa., assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 166,077

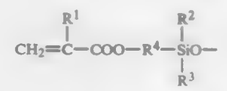
Claims priority, application Japan, Dec. 14, 1992, 4-353582

Int. Cl.[6] C08F 2/46

U.S. Cl. 522—99 **9 Claims**

1. A curable organopolysiloxane composition comprising:

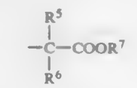
(A) 100 parts by weight of an organopolysiloxane which has at least one group of the following general formula (1):



(1)

wherein R^1 is a hydrogen atom or a methyl group, R^2 and R^3 may be identical or different from each other and are each an unsubstituted or substituted monovalent hydrocarbon group, and R^4 is a divalent organic group, per molecule,

(B) from 0.1 to 10 parts by weight of an organosilicon compound in which a group of the following general formula (2):



(2)

wherein R^5 to R^7 may be identical or different from each other and are each a hydrogen atom or an unsubstituted or substi-

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tuted monovalent hydrocarbon group, is bonded directly to a silicon atom,

(C) from 0.01 to 10 parts by weight of a photoinitiator, and

(D) from 0.01 to 10 parts by weight of a curing catalyst.

5,391,589

CONTACT LENS AND METHOD OF PRODUCING A CONTACT LENS

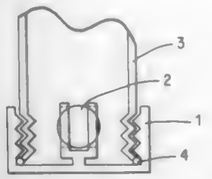
Hiroshi Kiguchi, and Taku Aoyama, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 992,911

Claims priority, application Japan, Dec. 10, 1991, 3-325998; Jan. 7, 1992, 4-001043; Mar. 26, 1992, 4-068335; Apr. 15, 1992, 4-095525; Apr. 15, 1992, 4-095527

Int. Cl.[6] **B05D** *5/06;* **C08F** *259/08, 265/04, 267/06*

U.S. Cl. 523—106 73 Claims



1. A contact lens comprising a contact lens substrate and hydrophilic monomers graft polymerized on a surface of the contact lens substrate, wherein graft polymer chains on the surface of the contact lens substrate are cross-linked and the density of cross-linkages of the graft polymer chains on the surface of the contact lens substrate is uniform, said contact lens being formed by the steps of (a) carrying out a discharging treatment on a surface of a contact lens substrate produced from at least one compound selected from the group consisting of an acrylic ester, a methacrylic ester, a fluorinated cyclic olefin, a copolymer of an acrylic ester, a copolymer of a methacrylic ester and a fumaric ester, and mixtures thereof, (b) immersing the contact lens substrate in a hydrophilic monomer solution containing a cross-linking agent in a concentration ranging from 2% to 10% by weight of said hydrophilic monomer solution, and (c) graft polymerizing the hydrophilic monomers on the contact lens substrate surface while shaking or applying ultrasonic waves having a power output of at least 10 watts and a duration of at least 10 seconds to the hydrophilic monomer solution, so that the density of cross-linkages of graft polymer chains on the surface of the contact lens is uniform.

5,391,590

INJECTABLE INTRAOCULAR LENS COMPOSITIONS AND PRECURSORS THEREOF

John D. Gerace, Laguna Niguel, and F. Richard Christ, Laguna Beach, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Jan. 12, 1993, Ser. No. 3,371

Int. Cl.[6] **A61F** *2/16;* **C08L** *83/05;* **C08K** *3/10*

U.S. Cl. 523—107 15 Claims

1. An intraocular lens optic comprising a polymer mixture which is optically clear and is derived from polymerization of the curable component in a mixture comprising:

a curable component comprising (A) an unsaturation functional polyorganosiloxane component, (B) an organosilicon component including silicon-bonded hydride groups which react with the functional unsaturated groups included in (A) during said polymerization, and (C) an effective amount of a platinum group metal-containing catalyst component; and

a silicone polymer component which is substanitally nonfunctional, provided that the viscosity of said silicone polymer component is greater than about 50,000 centipoise and is greater than the viscosity of said curable component, said silicone polymer component being present in an amount effective to increase the viscosity of said mixture relative to the viscosity of a substantially identical mixture without said silicone polymer component.

5,391,591

OXYGEN PERMEABLE HARD CONTACT LENS MATERIALS COMPRISING A FLUOROALKYL(SILICON-CONTAINING ALKYL) FUMARATE COPOLYMER

Toru Kawaguchi, Gifu; Ichiro Ando, Aichi; Nobuyuki Toyoshima, Nagoya; Yasushi Yamamoto, Takasaki; Hiroshi Yoshioka, Shinagawa, and Toshio Yamazaki, Annaka, all of Japan, assignors to Menicon Co., Ltd., Nagoya and Shin-Etsu Chemical Co., Ltd., Tokyo, both of Japan

Continuation-in-part of Ser. No. 895,836, Jun. 9, 1992, Pat. No. 5,250,583. This application Jun. 15, 1993, Ser. No. 76,905

Claims priority, application Japan, Oct. 31, 1990, 2-296327; Jul. 23, 1991, 3-182267

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[6] **C08F** *222/18, 212/08, 230/08, 220/56*

U.S. Cl. 523—107 3 Claims

1. An ocular lens material comprising a copolymer prepared by polymerizing a monomer mixture comprising, as main components,

(A) 15 to 40% by mole of a fluoroalkyl (silicon-containing alkyl) fumarate,

(B) 10 to 50% by mole of a styrenic monomer,

(C) 5 to 35% by mole of a hydrophilic monomer, and

(D) 0.1 to 20% by mole of a crosslinkable monomer.

5,391,592

CONTACT LENSES COMPRISING LIPOPHILISED CYCLODEXTRINS

Peter Herbrechtsmeier, Königstein; Horst Schäfer, Aschaffenburg; Bernhard Seiferling, Goldbach; Klaus Wenke, Wiesbaden, and Gerhard Wenz, Mainz, all of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 3, 1993, Ser. No. 101,221

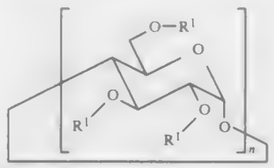
Claims priority, application European Pat. Off., Aug. 5, 1992, 92810599.8

Int. Cl.[6] **C08B** *37/16;* **C08G** *77/38;* **C02B** *1/04*

U.S. Cl. 523—107 11 Claims

1. A contact lens comprising a crosslinked lipophilised cyclodextrin derivative which has repeating sub-units of formula V

(V)



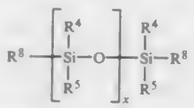
in which

n is an integer from 6 to 15,

the radicals R^1 are each, independently of the others, hydrogen, R^2 or R^7 wherein, of the (3 times n) radicals R^1, at least one radical R^1 has the meaning of R^7 and the remaining radicals R^1 are hydrogen or have the meaning of R^2,

R^2 being unsubstituted or halogen-substituted alkyl or alkyl-substituted aryl and R^7 being a hydrosilylizable moiety of the formula VI

(VI)



in which

x is an integer from 1 to 10,000, and

R^4, R^5, and R^8 are each, independently of the others, hydrogen, alkyl, alkylene, phenyl, or hydroxy, with the proviso that at least two of the radicals R^4, R^5, and R^8 in a moiety of formula VI are unsubstituted or halogen-substituted alkylene or alkenylene,

such that sub-unit of formula V and moiety of formula VI can be combined through hydrosilylation.

5,391,593

SILICONE RUBBER CURING AND ANAEROBIC SILICONE RUBBER COMPOSITION THEREFOR

Yoshio Inoue; Masaharu Takahashi, and Tomiyoshi Tsuchida, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 998,032

Claims priority, application Japan, Jan. 10, 1992, 4-021894; Apr. 15, 1992, 4-121300

Int. Cl.[6] **C09J** *4/00;* **C08L** *83/00*

U.S. Cl. 523—176 20 Claims

1. A method for producing a silicone rubber by curing a silicone rubber composition under anaerobic conditions, said silicone rubber composition comprising

(A) an organopolysiloxane of the general formula (1):

$$R^1{}_aSiO_{(4-a)/2} \quad (1)$$

wherein R^1 is independently selected from substituted or unsubstituted monovalent hydrocarbon radicals, and letter a is a positive number of from 1.90 to 2.05.

(B) an organic peroxide of the general formula (2):

$$R^2—OO—\underset{\underset{O}{\|}}{C}—O—X—O—\underset{\underset{O}{\|}}{C}—OO—R^3 \quad (2)$$

wherein X is a radical of the following formula (3), (4) or (5):

$$—(CH_2)_n— \quad (3)$$

$$—CH_2—\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}—CH_2— \quad (4)$$

$$—(C_2H_4O)_m—C_2H_4— \quad (5)$$

wherein n is an integer of 2 to 8 and m is an integer of 1 to 4,

R^2 and R^3 are each a monovalent hydrocarbon radical having 3 to 10 carbon atoms or a radical of the following formula (6):

$$—SiR^4{}_3 \quad (6)$$

wherein R^4 is an alkyl or aryl radical, and

(C) carbon black.

5,391,594

METHOD FOR IMPARTING FIRE RETARDANCY TO ORGANIC RESINS

David J. Romenesko, and Robert R. Buch, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 29, 1992, Ser. No. 906,165

Int. Cl.[6] **C08L** *101/00, 23/08*

U.S. Cl. 523—212 27 Claims

1. A modified resin composition consisting essentially of:

(A) 100 parts by weight of an organic resin; and

(B) from 0.5 to 25 parts by weight of a silicone polymer powder, said silicone polymer powder having an average particle size of 1 to 1000 microns and comprising

(i) 100 parts by weight of a polydiorganosiloxane polymer, and

(ii) from 10 to 150 parts by weight of a filler selected from the group consisting of silica and treated silica, said powder optionally containing up to 15 parts by weight of an alkoxysilane adhesion promoter for each 100 parts by weight of said silicone polymer powder,

wherein said organic resin (A) is a polymeric system selected from the group consisting of polystyrene, high impact polystyrene, polypropylene, polycarbonate, polysulfone, poly(phenylene sulfide), acrylonitrile-butadiene-styrene copolymer, nylon, acetal, polyethylene, poly(ethylene terephthalate), poly(-butylene terephthalate), acrylic, fluoroplastic, polyester, phenolic, epoxy, urethane, polyimide, melamine formaldehyde and urea.

5,391,595

SYSTEM AND METHOD FOR REMOTELY HEATING A POLYMERIC MATERIAL TO A SELECTED TEMPERATURE

William G. Clark, Jr., Murrysville; Robert E. Shannon, Penn Township, Westmoreland County, and Warren R. Junker, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 42,588, Apr. 5, 1993, Pat. No. 5,317,045, which is a division of Ser. No. 635,987, Dec. 28, 1990, Pat. No. 5,272,216. This application Mar. 3, 1994, Ser. No. 205,114

The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.

Int. Cl.[6] **C08J** *3/28;* **H05B** *6/64;* **B29C** *35/08;* **C08K** *3/22*

U.S. Cl. 523—300 8 Claims

1. A system for heating a polymeric material to a selected temperature to form a structure that is inspectable for internal discontinuities, comprising a particulate ferromagnetic material having diameters between about 50–150 angstroms uniformly dispersed throughout said polymeric material to form a composite, wherein said particulate material forms between about 1% and 5% by weight of the polymeric composite material, and said particulate material has a Curie temperature that corresponds to said selected heating temperature, and a directable source of microwave energy that generates microwaves having a frequency of between about 400–3,000 Mhz for remotely directing microwaves to said polymeric composite material to remotely heat at least a portion of said polymeric material throughout its volume to approximately the Curie temperature of the ferromagnetic material to form said structure.

5,391,596

EMULSIFYING EPOXY RESIN COMPOSITION AND CURABLE COMPOSITION

Kiyoshi Muto, and Hiroshi Suzuki, both of Tokyo, Japan, assignors to Asahi Denka Kogyo K.K. and A.C.R. Co., Ltd., both of Tokyo, Japan

Filed May 13, 1993, Ser. No. 61,623

Claims priority, application Japan, Feb. 2, 1993, 5-015446

Int. Cl.[6] **C08K** *3/20;* **C08L** *63/02*

U.S. Cl. 523—415 14 Claims

1. An emulsifying epoxy resin composition comprising:

(I) an epoxy resin having, on the average, more than one epoxy group having an oxygen atom bonded to adjacent carbon atoms in its molecule,

(II) an emulsifiable epoxy compound which is prepared by reacting an urethane compound (II-1), prepared by the reaction of a polyalkylene polyether polyol compound (II-1-1) having a number average molecular weight of 200 to 12,000 and an ethylene oxide content of 80% by weight or above with an excess amount of a polyisocyanate compound (II-1-2), with an epoxy compound (II-2) having, on the average, at least 0.1 hydroxyl group and at least one epoxy group having an oxygen atom bonded to adjacent carbon atoms and an alkylphenol ethoxylate (II-3) having a number average molecular weight of 300 to 5,000, at a molar ratio of (II-1):(II-2):(II-3) of 1.0:1.0–10.0:0.1–2.0, with the proviso that the equivalent ratio of the total

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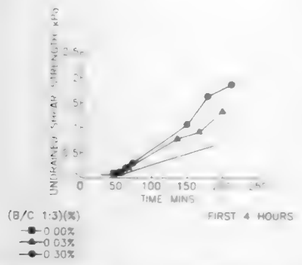
hydroxyl content in (II-2) and (II-3) to the isocyanate content in (II-1) must be 1.0 or above, and
(III) water.

5,391,597

COMPOSITION AND PROCESS FOR INCREASING THE SHEAR STRENGTH OF PROCESSING WASTES USED FOR TIP BUILDING AND UNDERGROUND CONSOLIDATION

Michael C. R. Davies, Cardiff; Keith P. Williams, Caerphilly, both of United Kingdom; Peter J. Strydom, Morristown, N.J., and Alexander S. Lambert, Johannesburg, South Africa, assignors to Cytec Technology Corp., Wilmington, Del.

Filed Oct. 4, 1993, Ser. No. 132,061
Int. Cl.[6] C08K *3/00;* **C09K** *17/00;* **E02D** *3/12*
U.S. Cl. 524—2 **12 Claims**



1. A curable composition for tip building and underground stowing having enhanced initial shear strength, comprising:
(a) process waste comprising an aqueous dispersion comprising 10 to 50 parts by weight of solid particles per 100 parts by weight of said dispersion;
(b) an effective amount of cement; and
(c) an effective amount of a water absorbent polymer comprising a mixture of Mannich acrylamide polymer and a dimethyldiallyl-ammonium halide polymer.

5,391,598

POLYARYLENE SULFIDE SOLUTIONS, PROCESS FOR THE PREPARATION THEREOF AND USE THEREOF

Herbert Zeitler, Grossaitingen, Germany, assignor to Hoechst AG, Frankfurt, Germany

Filed Dec. 18, 1992, Ser. No. 992,593
Claims priority, application Germany, Dec. 20, 1991, 4142306
Int. Cl.[6] C08K *5/3437*
U.S. Cl. 524—87 **7 Claims**

1. A solution containing polyarylene sulfide and, as solvent, quinoline or isoquinoline or a substituted derivative thereof or a mixture thereof, the solvent being liquid at 25° C.

5,391,599

Patent Not Issued For This Number

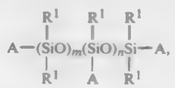
5,391,600

POLYCARBONATE RESIN COMPOSITION

Takashi Umeda; Kazuto Hashimoto; Kouji Satou, and Haruhiko Furukawa, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd. and Dow Corning Toray Silicone Company, Ltd., both of Tokyo, Japan

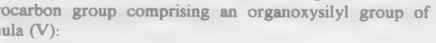
Filed Oct. 18, 1993, Ser. No. 138,757
Claims priority, application Japan, Oct. 26, 1992, 4-286529
Int. Cl.[6] C08J *5/10;* **C08K** *5/54;* **C08L** *69/00*
U.S. Cl. 524—267 **17 Claims**

1. A polycarbonate resin composition comprising
100 weight parts of (a) a thermoplastic resin comprising a polycarbonate resin as the main component thereof,
0.001 to 50 weight parts of (b) at least one inorganic material selected from the group consisting of inorganic fillers and inorganic pigments and
0.001 to 5 weight parts of (c) an organopolysiloxane having an organoxysilyl group which is bonded to a silicon atom through a divalent hydrocarbon group, the organopolysiloxane being of the formula (IV):



$$A-(SiO)_m(SiO)_nSi-A, \quad (IV)$$

wherein R^1 is a monovalent hydrocarbon group, A is a monovalent hydrocarbon group; at least one A being a monovalent hydrocarbon group comprising an organoxysilyl group of formula (V):



$$-R^2SiR^3_x(OR^4)_{(3-x)} \quad (V)$$

R^2 is a divalent hydrocarbon group,
R^3 and R^4 are each a monovalent hydrocarbon group and x is an integer of 0 to 2,
m is an integer of 1 to 300,
n is an integer of 0 to 300 and
m+n is an integer of 1 to 300.

5,391,601

REPULPABLE LAMINATING ADHESIVE CONTAINING AN ELASTOMER, TACKIFIER AND A BLEND OF AN ALKOXYLATED ALCOHOL AND A WAX

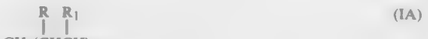
Susan M. Teeters, Sand Springs, Okla.; Charles H. Heroux, Scarborough, Canada; Michael D. Watson, Tulsa; William P. Cottem, Mounds, both of Okla., and Terrance D. Duryee, Charlotte, N.C., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 16, 1993, Ser. No. 18,077
Int. Cl.[6] C08K *5/01, 5/11;* **C08L** *31/04, 33/06*
U.S. Cl. 524—270 **30 Claims**

1. A repulpable laminating adhesive comprising
(a) an elastomer;
(b) a tackifier; and
(c) a 5:95 to 95:5 weight percent blend of
(i) an alkoxylated alcohol of the formula

$$A-B \quad (I)$$

wherein A is the unit



$$CH_3(CHCH)_x- \quad (IA)$$

and B is the unit

$$CH_2O(CH_2CHO)_yH \quad (IB)$$

and further wherein R and R_1 are independently selected from the group consisting of hydrogen and a C_1–C_{10} alkyl group; R_2 is hydrogen or a C_1–C_5 alkyl group; x is between about 1 to about 142; and y is between about 2 to about 817, provided the weight ratio of B/A+B is between 51 and 90 percent; and
(ii) a linear or branched chain saturated aliphatic hydrocarbon wax.

5,391,602

RADIATION-CURED PRESSURE SENSITIVE ADHESIVES

Martin Skoultchi, Somerset, N.J., assignor to National Starch and Chemical Investment Holding Corporation, Bridgewater, N.J.

Filed Nov. 30, 1993, Ser. No. 160,017
Int. Cl.[6] C08G *18/04*
U.S. Cl. 524—392 **8 Claims**

1. A radiation curable composition for providing a pressure-sensitive adhesive comprising a polyurethane backbone capped with an acrylic or methacrylic reactive terminating group and the residue of a mono-ol or polyol non-reactive terminating group, also containing a mercapto compound in an amount from about 0.1 to 2 percent by weight of the curable composition.

5,391,603

IMPACT MODIFIED SYNDIOTACTIC VINYL AROMATIC POLYMERS

Thomas E. Wessel; Bruce P. Thill, and Yi-Bin Huang, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 848,602, Mar. 9, 1992, abandoned. This application Apr. 21, 1993, Ser. No. 50,949
Int. Cl.[6] C08K *5/09;* **C08L** *25/10*
U.S. Cl. 524—396 **18 Claims**

1. A composition of matter comprising:
A) from 25 to 90 parts by weight of a syndiotactic, vinylaromatic thermoplastic resin,
B) from 1 to 50 parts by weight of a rubbery, impact absorbing, domain forming hydrogenated styrene/conjugated diene block copolymer, having a melt flow rate, Condition X (315° C., 5.0 Kg) from 0 to 0.5 g/10 min,
C) from 0.1 to 30 parts by weight of a nucleator for the syndiotactic, vinylaromatic thermoplastic resin,
D) from 0 to 90 parts by weight of an mineral, glass, ceramic, polymeric or carbon reinforcing agent, and
E) from 0 to 90 parts by weight of one or more polyarylene ethers or polar group modified polyarylene ethers.

5,391,604

ADHESIVE PASTE CONTAINING POLYMERIC RESIN

Raymond L. Dietz, Georgetown, and David M. Peck, Danvers, both of Mass., assignors to Diemat, Inc., Topsfield, Mass.

Filed Jul. 30, 1993, Ser. No. 100,052
Int. Cl.[6] C08K *3/08*
U.S. Cl. 524—403 **10 Claims**

1. An adhesive paste consisting essentially of:
(A) about 7–35 volume percent organic polymer resin;
(B) about 20–40 volume percent noble metal filler; and
(C) about 37–67 volume percent fugitive liquid;
wherein each of the resin and the filler is present in particulate form of size sufficiently small to pass through a Number 325 mesh screen, and wherein the liquid and the resin are each substantially insoluble in the other.

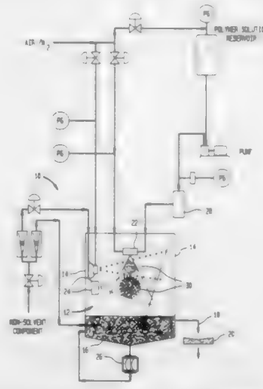
5,391,605

SELF-LUBRICATING COMPOSITION CONTAINING POLYBENZIMIDAZOLE, GRAPHITE AND BORON NITRIDE

Todd Andres; Eduardo Alvarez, both of Houston, Tex.; O. Richard Hughes, Chatham; William Cooper, Clinton, both of N.J., and Chun Wang, Missouri City, Tex., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation of Ser. No. 883,830, May 15, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 121,085
Int. Cl.[6] C08J *5/10;* **C08K** *3/38;* **C08L** *79/08*
U.S. Cl. 524—404 **16 Claims**

1. A polymeric composition containing internal lubricants, said composition being suitable for forming a low friction, shaped article, comprising from about 65 to about 85 weight percent of a polymeric blend and from about 15 to about 35 weight percent of internal lubricants, based on the total weight of the composition, wherein said blend consists essentially of from about 35 to about 100 weight percent of an aromatic polybenzimidazole and from about 0 to about 65 weight percent of poly(aryletherketone), and said lubricants consist essentially of boron nitride powder and graphite in a weight ratio of about 1:10 to about 10:1, respectively, and wherein said lubricants are well dispersed within the polymeric blend.

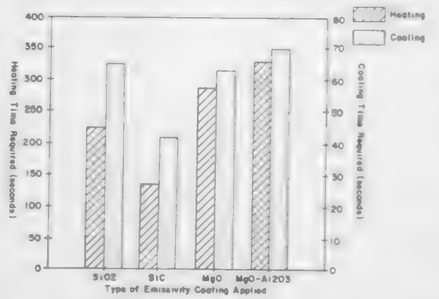


5,391,606

EMISSIVE COATINGS FOR INVESTMENT CASTING MOLDS

Ronald S. Doles, La Grange Park, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 907,687, Jul. 2, 1992, abandoned. This application Oct. 4, 1993, Ser. No. 130,973
Int. Cl.[6] C08J *7/06;* **C08K** *3/18, 3/22;* **C08L** *21/00*
U.S. Cl. 524—430 **13 Claims**



1. A composition for application to an investment casting mold that comprises:
a compound selected from the group consisting of magnesium oxide, magnesium hydroxide, cerium oxide, calcium oxide, and yttrium, oxite in an amount in the range of about 5% to about 75% by weight of the entire composition;
a high temperature glass-forming material in an amount in the range of about 1% to about 10% by weight of the entire composition; and
a solvent in an amount sufficient to produce a slurry.

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5,391,607

THERMOPLASTIC RESIN COMPOSITION

Takeshi Fujii, Chiba, and Masashi Yamamoto, Ichihara, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 661,241, Feb. 27, 1991, abandoned. This application Nov. 15, 1993, Ser. No. 152,100
Int. Cl.[6] C08L *51/06, 23/12*
U.S. Cl. 524—449 10 Claims

1. A thermoplastic resin composition which comprises:

(a) 100 parts by weight of a graft resin composition (J) obtained by graft polymerizing at least one unsaturated carboxylic acid or derivative thereof selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, itaconic acid, maleic anhydride and itaconic anhydride onto a mixture of 20 to 98% by weight of a crystalline polypropylene (C) and a rubbery substance (H) which is styrene-ethylene.butylene-styrene copolymer rubber, the total of (C) and (H) being 100% by weight, the number average molecular weight of the styrene polymer block in the styrene-ethylene,butylene-styrene copolymer rubber being 1,000 to 200,000, the number average molecular weight of the ethylene,butylene copolymer block in the styrene-ethylene.butylene-styrene copolymer rubber being 1,000 to 200,000, and the weight ratio of the styrene polymer block to the ethylene.butylene copolymer block being 10:90 to 40:60,

(b) 0.1–600 parts by weight of at least one saturated polyester resin (F) selected from the group consisting of polyethylene terephthalate and polybutylene terephthalate,

(c) 0.1–300 parts by weight of an epoxy group-containing copolymer (G) selected from the group consisting of a copolymer of ethylene and an unsaturated epoxy compound and a terpolymer of ethylene, an unsaturated epoxy compound and an ethylenic unsaturated compound other than ethylene, the unsaturated epoxy compound being at least one member selected from the group consisting of glycidyl acrylate, glycidyl methacrylate, glycidyl itaconate, allylglycidyl ether, 2-methylglycidyl ether and styrene-p-glycidyl ether, and the ethylenic unsaturated compound other than ethylene being at least one member selected from the group consisting of vinyl acetate, methyl acetate, ethyl acetate, methyl methacrylate, vinyl chloride, vinylidene chloride and isobutyl vinyl ether, the proportion of the unsaturated epoxy compound in the epoxy group-containing copolymer (G) being 0.1 to 50% by weight, and

(d) 0 to 1,900 parts by weight per 100 parts by weight of the graft resin composition (J) of a crystalline polypropylene (C), wherein the amount of graft polypropylene contained in graft resin composition (J) is not less than 5% by weight based on the total amount of the graft polypropylene and the polypropylene (C) contained in the graft resin composition (J),

the content of the saturated polyester resin (F) in the thermoplastic resin composition being 45 to 1% by weight.

5,391,608

WOODWORKING ADHESIVES BASED ON MULTISTAGE EMULSION POLYMER

Paul R. Mudge, Belle Mead, and George Hespe, Neshanic Station, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 840,662, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 563,878, Aug. 7, 1990, abandoned, which is a continuation of Ser. No. 343,780, Apr. 26, 1989, abandoned. This application Sep. 3, 1993, Ser. No. 116,319
The portion of the term of this patent subsequent to Jul. 17, 2007, has been disclaimed.
Int. Cl.[6] C09J *131/04*
U.S. Cl. 524—459 11 Claims

1. A woodworking adhesive composition prepared by a two stage emulsion polymerization procedure wherein the first stage comprises the step of emulsion polymerizing vinyl acetate with 0.1 to 6% by weight of a post-crosslinking monomer in the presence of polyvinyl alcohol to produce a polyvinyl alcohol stabilized copolymer having a Tg within the range of +10° to +40° C. and containing no pre-crosslinking monomers and the second stage comprises the step of emulsion polymerizing methyl methacrylate to produce a methyl methacrylate homo- or copolymer having a Tg within the range of +50° to +120° C., further characterized in that the ratio of the polymer produced in the first stage to the polymer produced in the second stage is within the range of 10:1 to 10:6 and wherein the first stage polymer and second stage monomer mixture are not equilibrated prior to the second stage polymerization.

5,391,609

TRANSPARENT FILMS PROVIDING A BARRIER TO THE TRANSMISSION OF ULTRA-VIOLET LIGHT

Anthony R. Knoerzer, Fairport; Leland W. Reid, Palmyra, both of N.Y., and Edwin M. Wheeler, LaGrange, Ga., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation of Ser. No. 72,305, Jun. 9, 1993, abandoned. This application Jun. 2, 1994, Ser. No. 253,238
Int. Cl.[6] C08K *3/22;* C08L *23/16*
U.S. Cl. 524—497 12 Claims

1. A method for manufacturing a transparent polymeric film providing a barrier to the transmission of ultra-violet light comprising:

adding titanium dioxide having an average particle size less than the wavelength of visible light and greater than the wavelength of ultra-violet light to a copolymer of ethylene and propylene to provide a masterbatch;

mixing said masterbatch with a homopolymer of polypropylene to provide an extrudable resin; and

forming said extrudable resin as a transparent film.

5,391,610

MOISTURE CURED ELASTOMERIC INTERPENETRATING NETWORK SEALANTS

Ahmet Comert, Chaineux; Michel Ladang, Herve, and Dominique Petit, Housse-Blegny, all of Belgium, assignors to Norton Company, Worcester, Mass.

Continuation of Ser. No. 468,408, Jan. 22, 1990, Pat. No. 5,250,607, which is a continuation-in-part of Ser. No. 140,851, Jan. 5, 1988, abandoned. This application Oct. 1, 1993, Ser. No. 131,254
Int. Cl.[6] C08L *75/00*
U.S. Cl. 524—507 14 Claims

1. An extrudable thermoplastic composition of matter consisting essentially of an intimate mixture of:

(a) a first component which is a prepolymer having a number average molecular weight of about 1,000 to about 15,000, a backbone and an average of about 2 terminal isocyanate groups which are reactive with each other in the presence of ambient moisture to form a derivative polymer having a longer average chain than said prepolymer;

(b) a second component which is an elastomer and a plasticizer present in an amount of about 50 to 250 wt % of the weight of the elastomer for said elastomer, wherein said elastomer and plasticizer are chemically non-reactive with each other and with said first component in the substantial absence of moisture,

wherein said composition of matter after extrusion is immediately tack-free, and after cure by exposure to moisture forms an elastomeric interpenetrating network suitable for use as a sealant and gasket.

5,391,611

STYRENIC RESIN COMPOSITION

Michio Funayama; Shinichi Miura, both of Ichihara; Masami Mihara, Sodegaura, and Keiji Takamatsu, Ichihara, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00268, § 371 Date Nov. 4, 1993, § 102(e) Date Nov. 4, 1993, PCT Pub. No. WO93/18087, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 3, 1993, Ser. No. 140,065
Claims priority, application Japan, Mar. 4, 1992, 4-046901
Int. Cl.[6] C08L *25/04, 25/10, 71/12*
U.S. Cl. 524—508 11 Claims

1. A styrenic resin composition which comprises 50 to 98% by weight, based on the total weight of components (A) and (B), of (A) a styrenic polymer having high degree of syndiotactic configuration and 50 to 2% by weight, based on the total weight of components (A) and (B), of (B) a rubbery polymer having a product of weight-average molecular weight and styrenic monomer unit content of at least 30,000.

5,391,612

HALOGEN-FREE RESILIENT FLOORING

Jeffrey Johnson, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 431,384, Nov. 3, 1989, abandoned. This application Jun. 25, 1993, Ser. No. 82,502
Int. Cl.[6] C08L *33/02*
U.S. Cl. 524—556 16 Claims

1. Resilient flooring comprising a halogen-free, filled, thermoplastic polymer composition, said composition comprising an ethylene and (meth)acrylic acid resin, and filler, said composition being halogen-free, the resin of said composition comprising at least 87.5% by weight of the ethylene and (meth)acrylic acid.

5,391,613

UNSATURATED POLYURETHANES, AND THE USE THEREOF AS REACTIVE EMULSIFIERS

Gerhard Brindoepke, Sulzbach, and Joachim Zoeller, Mainz, both of Germany, assignors to Hoechst AG, Germany

Filed Mar. 3, 1994, Ser. No. 205,606
Claims priority, application Germany, Mar. 5, 1993, 4306947
Int. Cl.[6] C08G *18/04*
U.S. Cl. 524—591 8 Claims

1. An unsaturated polyurethane which contains from 20 to 80% by weight of polyethylene glycol units and can be prepared by reacting

a) at least one organic polyisocyanate,

b) an unsaturated fatty alcohol, a polyalkylene glycol ether thereof or an unsaturated acid ester containing one hydroxyl group,

c) one or more diols which additionally contain at least one further hydroxyl group or carboxyl group and

d) a polyethylene glycol having a molecular weight in the range from 750 to 10,000, with maintenance of an NCO-/OH equivalent ratio, based on all the starting components a) to d), of from 0.7:1 to 1.2:1.

5,391,614

LOW VOC, MOISTURE CURABLE, ONE-COMPONENT COATING COMPOSITIONS BASED ON ORGANIC POLYISOCYANATE PREPOLYMERS

Kiran B. Chandalia, Cheshire; Michael J. Morgan, Torrington, both of Conn.; Michael M. Martinez, Fairporte, N.Y.; James M. O'Connor, Branford, and Stephen P. Noe, Fairfield, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 65,005, May 24, 1993. This application Jul. 14, 1994, Ser. No. 274,877
Int. Cl.[6] C08G *18/10*
U.S. Cl. 524—759 23 Claims

1. A low volatile-organics coating composition having a viscosity as measured by ZAHN cup 2 of less than abvout 200 seconds and consisting essentially of at least one polyisocyanate prepolymer which is the reaction product of a polyisocyanate with an active hydrogen-containing compound selected from the group consisting of monoahls, polyols, imines, oxazolidines, and combinations thereof, a solvent in an amount of between 0% and 45% by weight based upon the amount of said polyisocyanate in said composition, and a hydroxyl-containing amine catalyst, said composition being essentially free of any volatile mono- and di-isocyanates, and said composition being moisture curable upon exposure to atmospheric moisture.

5,391,615

ROSIN-DICYCLOPENTADIENE RESINS AND PROCESS FOR THEIR PRODUCTION

Gary B. Womack, Lawrenceville, N.J., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 28, 1992, Ser. No. 967,757
Int. Cl.[6] C08L *93/00*
U.S. Cl. 524—764 21 Claims

1. A rosin/hydrocarbon resin having an acid number between 5 and 25, a Gardner viscosity of from Y to Z10, and prepared by reacting a mixture of phenolic-modified rosin intermediate, with an acid number greater than 90, and dicyclopentadiene at a temperature of from about 200° C. to about 280° C. at superatmospheric pressure for from about 0.5 to about 10 hours wherein the phenolic-modified rosin is the reaction product of a phenol selected from the group consisting of aryl and alkyl para-substituted phenols and a molten tall oil rosin in the presence of an aldehyde selected from the group consisting of formaldehyde and paraformaldehyde at from 120° C. to 130° C. for from about 1–6 hours after which the reaction temperature is raised to about 200° C. for from about 0.5 to about 4 hours.

5,391,616

POLYCARBONATE COMPOSITIONS COMPRISING THERMOPLASTIC OLEFIN COPOLYMERS

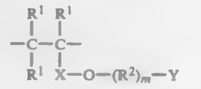
Farid F. Khouri, Clifton Park, and Gregory J. Stoddard, Slingerlands, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1993, Ser. No. 171,574
Int. Cl.[6] C08L *69/00*
U.S. Cl. 525—67 14 Claims

1. A composition comprising

(a) polycarbonate;

(b) blends which contain thermoplastic copolymers wherein said copolymers are prepared by reacting (i) an orthoester or orthocarbonate functionalized polybutadiene or polyacrylate or olefin polymer comprising structural units of the formula

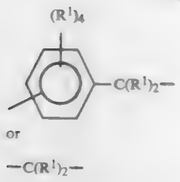


and each R^1 is independently a hydrogen, C_1–C_5 hydrocarbon, substituted or unsubstituted aromatic radical or a halogen and R^2 is —CH_2— or a substituted or unsubstituted divalent aromatic radical and m is any integer greater than or equal to 1 and X has the formulae



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-continued



and Y is selected from the group consisting of moieties of cyclic orthocarbonates and cyclic orthoesters, with (ii) a polymer having acid, acid anhydride or thiol functionality.

5,391,617
SOLID SHEARED POLYMER BLENDS AND PROCESS FOR THEIR PREPARATION

Errol J. Olivier; Robert T. Patterson, and Peter N. Nugara, all of Baton Rouge, La., assignors to DSM Copolymer, Inc., Baton Rouge, La.

Filed Aug. 2, 1993, Ser. No. 100,303
Int. Cl.[6] C08L *23/16, 51/04, 51/06*
U.S. Cl. 525—72 **18 Claims**

1. An ethylene-propylene polymer blend having a number average molecular weight within the range of about 20,000 to about 150,000 and a molecular weight distribution within the range of about 1.5 to about 5 prepared by the process of simultaneously in the absence of solvent blending and shearing:
   (a) an essentially amorphours low ethylene content ethylene-propylene polymer containing an ethylene to propylene mole ratio within the range of 35/65 to 65/35, having a number average molecular weight within the range of about 40,000 to about 250,000 and a molecular weight distribution within the range of about 2 to 7;
   (b) a partially crystalline higher ethylene content ethylene-propylene polymer containing an ethylene to propylene molar ratio within the range of about 65/35 to about 85/15, having a number average molecular weight within the range of about 40,000 to about 250,000 and a molecular weight distribution within the range of about 2 to 7;
whereby the blending and shearing is carried out under conditions of heat and mechanical work sufficient to create high shear conditions for a time sufficient to reduce the molecular weight and molecular weight distribution of the blend of (a) and (b), wherein the weight ratio of low ethylene content ethylene-propylene polymer (a) to the higher ethylene-propylene polymer (b) is within the range of about 80/20 to about 50/50.

5,391,618
PROPYLENE RESIN COMPOSITIONS

Koji Yamamoto; Hajime Ikeno, and Keiko Shichijo, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 135,553
Claims priority, application Japan, Oct. 15, 1992, 4-277407
Int. Cl.[6] C08L *23/20, 23/08, 23/10, 53/00*
U.S. Cl. 525—88 **20 Claims**

1. A propylene resin composition which consists essentially of:
   55 to 93% by weight of a Component (A) which is a propylene polymer selected from the group consisting of a propylene homopolymer and a propylene-ethylene block copolymer having an ethylene content of 1 to 25% by weight,
   said propylene polymer having an MFR of 5 to 200 g/10 min, and a crystalline structure including a crystalline phase (I), an intermediate phase (II), and an amorphous phase (III), such that the weight ratio of crystalline phase (I)/intermediate phase (II) is 1.5 to 4 and the content of amorphous phase (III) is 3 to 30% by weight, said phases being determined by pulse NMR analysis, and
   45 to 7% by weight of a Component (B) which is an ethylene-α-olefin copolymer having an α-olefin content of 10 to 60% by weight, said α-olefin being 1-butene or 1-hexene, said ethylene-α-olefin polymer being obtained by copolymerizing ethylene and said α-olefin by the use of a metallocene catalyst and having the following properties (a) to (c):
   (a): a density of 0.913 g/cm^3 or less,
   (b): an MFR of 0.01 to 20 g/10 min, and
   (c): a flexural rigidity according to ASTM D747 of 2,000 kg/cm^2 or less.

5,391,619
POLY(ETHYLENE TEREPHTHALATE) AND MONOVINYLARENE/CONJUGATED DIENE BLOCK COPOLYMER BLENDS

Mark D. Hanes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 19, 1993, Ser. No. 139,359
Int. Cl.[6] C08L *53/02, 67/02*
U.S. Cl. 525—92 **17 Claims**

1. A composition comprising a poly(ethylene terephthalate), a monovinylarene/conjugated diene copolymer, and an organic peroxide,
   wherein monovinylarene is present in said monovinylarene/conjugated diene copolymer in an amount in the range of from about 60 weight percent to about 95 weight percent based on the weight of the monovinylarene/conjugated diene block copolymer, and
   wherein conjugated diene is present in said monovinylarene/conjugated diene copolymer in an amount in the range of from about 40 weight percent to about 5 weight percent based on the weight of the monovinylarene/conjugated diene block copolymer.

5,391,620
COMPOSITION SUITABLE AS A RHEOLOGY-INFLUENCING AGENT, A METHOD FOR ITS PREPARATION AND ITS USE IN COATING MEDIA

Klaus Bederke, Sprockhövel; Ralf Dahm, Wermelskirchen; Hermann Kerber, Wuppertal; Walter Schubert, Wuppertal; Friedrich Hermann, Wuppertal, and Heinz-Walter Reifferscheidt, Bochum, all of Germany, assignors to Herberts Gesellschaft Mit Beschrankter Haftung, Wuppertal, Germany

Filed Oct. 20, 1993, Ser. No. 139,918
Claims priority, application Germany, Oct. 31, 1992, 4236901
Int. Cl.[6] C08L *75/00*
U.S. Cl. 525—123 **15 Claims**

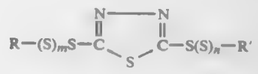
1. A composition suitable as a rheology-influencing agent for coating media, containing a mixture which is obtainable by the preparation of
   A) one or more (meth)acrylic copolymers containing hydroxyl groups and/or one or more polyesters containing hydroxyl groups, with a hydroxyl number of 30–200 mg KOH/g and a carboxyl group content corresponding to an acid number of 0–50 mg KOH/g, and
   B) a hydroxyfunctional microdispersion obtainable by preparing a solution of one or more film-forming polyesters containing hydroxyl and/or carboxyl groups and/or (meth)acrylic copolymers containing hydroxyl and/or carboxyl groups, wherein 0–50% of the polyester and/or (meth)acrylic copolymer molecules are each esterified with one molecule of maleic acid or maleic anhydride, and optionally copolymerizing one or more hydroxyalkyl (meth)acrylate monomers polymerizable by free radicals in the mixture with one or more other unsaturated monomers,
and reaction of the mixture of A) and B) with
   C) one or more diisocyanates and
   D) one or more aliphatic primary monoamines which may be present in the mixture with part of component A) or of the soluble fraction of component B),
wherein the amount of (meth)acrylic copolymers and/or polyesters contained in components A), B) and D) is 57 to 90 weight %, the amount of microparticles contained in B) is 5 to 30 weight %, the amount of diisocyantes C) is 3 to 8 weight %, and the amount of monoamines D) is 2 to 5 weight %, wherein the weight percentages are in each case based on the solids content and add up to 100 weight %, and the composition may in addition contain pigments, extenders, the usual lacquer additives and/or solvents.

5,391,621
1,3,4-THIADIAZOLE CURING SYSTEMS FOR CHLORINE CONTAINING POLYMERS

Robert F. Ohm, Monroe; David M. Hoffman, Norwalk, and Ralph A. Annicelli, Ansonia, all of Conn., assignors to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Oct. 15, 1993, Ser. No. 136,152
Int. Cl.[6] C08K *5/47, 5/46;* **C08L** *15/02, 11/00*
U.S. Cl. 525—160 **10 Claims**

1. A curable composition comprising (1) pclymers consisting of at least one chlorinated polymer selected from the group consisting of chlorinated butyl rubber, homopolymers of epichlorohydrin, copolymers of epichlorohydrin and ethylene oxide or propylene oxide, polychloroprene, chlorinated polyolefins, chlorosulfonated polyolefin and mixtures thereof, and an organopolysulfide derivative of 2,5-dimercapto-1,3,4-thiadiazole or mixtures of such derivatives having the formula:



wherein R and R′ are the same or different organic radicals containing from 2 to about 30 carbon atoms and m and n are numbers of from 1 to about 8, the sum of m and n being at least 2, said organopolysulfide being present in said composition in an amount effective to cure said composition upon the application of heat.

5,391,622
ELECTRICALLY CONDUCTING LIQUID-CRYSTAL POLYMER BLENDS AND PROCESS FOR THE PREPARATION THEREOF

Ko-Shan Ho, and Kalle Levon, both of New York, N.Y., assignors to Neste Oy, Espoo, Finland

Continuation of Ser. No. 886,520, May 20, 1992, abandoned. This application May 3, 1994, Ser. No. 237,330
Int. Cl.[6] C08F *28/06*
U.S. Cl. 525—171 **13 Claims**

1. A conducting polymer blend essentially comprising:
   a matrix polymer; and
   an electrically conducting thermotropic liquid-crystal polymer comprising a rigid main chain containing monomer units having conjugated double bonds, the monomer units of said main chain being linked to side chains which are comprised of alkyl substituents containing at least 9 carbon atoms, said side chains together with the main chain providing the polymer liquid-crystal properties, said conducting polymer having been melt blended with the matrix polymer by being processed at a temperature above the transition temperature which represents a phase change from the crystalline state to the liquid-crystal state of said conducting polymer and having been treated with dopant to render it conducting.

5,391,623
ELASTOMER/ARAMID FIBER DISPERSION

Arnold Frances, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 14, 1993, Ser. No. 45,781
Int. Cl.[6] C08K *3/36*
U.S. Cl. 525—184 **5 Claims**

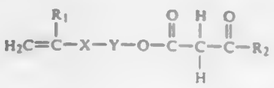
1. A process for preparing a composition consisting essentially of flake-like particles of elastomer with, as a sole particulate component, aramid fibers having an average length of 0.1 to 6 millimeters in an amount from 30 to 300 weight parts of fibers per hundred parts of elastomer homogeneously distributed uniformly throughout, wherein the flake-like particles have a thickness of about 0.05 to 2 millimeters and an aspect ratio of 1 to 30, comprising the steps of:
   a) dispersing aramid fibers in a solution of an elastomer in an organic solvent having 1 to 20 weight parts of solvent for each part of elastomer; and
   b) evaporating the organic solvent from the dispersion of aramid fibers in elastomer under continued agitation forces.

5,391,624
THERMOSETTABLE COMPOSITIONS

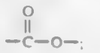
Husam A. A. Rasoul, Caledonia, and James R. Beam, Somers, both of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 833,250, Feb. 10, 1992. This application Mar. 25, 1992, Ser. No. 857,366
Int. Cl.[6] C08L *29/00, 45/00*
U.S. Cl. 525—216 **4 Claims**

1. A polymeric thermosettable composition comprising:
   a first polymeric thermosettable ingredient characterized as having an average of at least three acetoacetoxy functional pendant moieties per polymer molecule formed from an acetoacetoxy group containing monomer represented by the structure



wherein R_1 is either H or is a C_1 to C_{10} alkyl group;
wherein R_2 is a C_1 to C_{10} alkyl group;
wherein X is either non-existent or is



wherein Y is either non-existent or a divalent aromatic group, or is a divalent aliphatic cyclic group, or is $-(CH_2)_j-$ and j is an integer of from 1 to 10, inclusive, or is $-(CH_2-CHR_1-O)_m-CH_2-CHR_1-$ wherein Y is existent when X



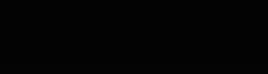
and m is either zero or is an integer of from 1 to 9, inclusive; and
   a second polymeric thermosettable ingredient characterized as having an average of at least three acid-functional pendant moieties per polymer molecule,
   wherein the acid-functional and the acetoacetoxy functional pendant moieties are characterized as reacting to form a thermoset composition through crosslinking at a temperature of at least 180° C.

5,391,625
PROCESS FOR PREPARING ACRYLIC ACID POLYMERS

Kazuhiko Matsumoto, Suita; Yoshiaki Kawano, Ibaraki; Yoshiaki Kobayashi, Suita; Yoshiaki Kawamura, Ibaraki, and Yoshiaki Kawamura, Ibaraki, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Jan. 19, 1994, Ser. No. 183,284
Claims priority, application Japan, Jan. 20, 1993, 5-007,284
Int. Cl.[6] C08F *20/06*
U.S. Cl. 526—317.1 **5 Claims**

1. A process for preparing an acrylic acid polymer, comprising the steps of:
   polymerizing a monomer component containing acrylic acid in an aqueous solution in the presence of a polymerization initiator and a chain transfer agent, and
   neutralizing the resulting polymer with a basic substance,
   wherein said chain transfer agent is a compound represented by the general formula (1):



wherein R^1 is a hydrogen atom or a methyl group, R^2 is a hydrogen atom, a methyl group or a carboxyl group, R^3 is a hydrogen atom, a methyl group or a carboxymethyl group, and M is a hydrogen atom, a monovalent metal, a divalent metal, an ammonium group or an organic amine group.

5,391,626
PROCESS FOR PREPARING ACRYLIC ACID POLYMERS

Kazuhiko Matsumoto, Suita; Yoshiaki Kawano, Ibaraki; Yoshiaki Kobayashi, Suita; Yoshiaki Kawamura, Ibaraki, and Yoshiaki Kawamura, Ibaraki, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Jan. 19, 1994, Ser. No. 183,285
Claims priority, application Japan, Jan. 20, 1993, 5-007,285
Int. Cl.[6] C08F *20/06*
U.S. Cl. 526—317.1 **5 Claims**

1. A process for preparing an acrylic acid polymer, comprising the steps of:
   polymerizing a monomer component containing acrylic acid in an aqueous solution in the presence of a polymerization initiator and a chain transfer agent, and
   neutralizing the resulting polymer with a basic substance,
   wherein said chain transfer agent is a compound represented by the general formula (1):

wherein R^1 is a hydrogen atom or a methyl group, R^2 is a hydrogen atom, a methyl group or a carboxyl group, R^3 is a hydrogen atom, a methyl group or a carboxymethyl group, and M is a hydrogen atom, a monovalent metal, a divalent metal, an ammonium group or an organic amine group.

5,391,625

COMPATIBILIZED ELASTOMER BLENDS CONTAINING COPOLYMERS OF ISOOLEFINS

Palanisamy Arjunan, 16314 Hazey Pine, Houston, Tex. 77059

Filed Mar. 19, 1993, Ser. No. 34,436
Int. Cl.[6] C08L *19/00, 7/00, 9/00, 11/00, 23/16*
U.S. Cl. 525—215 27 Claims

1. A compatibilized rubber blend composition comprising:
(a) an interpolymer rubber of a C_4 to C_7 isoolefin and para-alkylstyrene;
(b) at least one rubber selected from the group consisting of natural rubber, polyisoprene, polybutadiene, copolymers of butadiene with up to 35 wt. % styrene, ethylene/propylene copolymers, ethylene/propylene/non-conjugated diene terpolymers, polychloroprene, nitrile rubber and hydrogenated nitrile rubber; and
(c) about 1 to about 50 parts by weight per hundred parts by weight rubber of a compatibilizer selected from polymers comprising:
(i) ethylene and vinyl acetate;
(ii) ethylene and a C_1 to C_4 alkyl (meth) acrylate; or
(iii) ethylene, a C_1 to C_4 alkyl (meth) acrylate and (meth) acrylic acid.

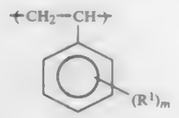
5,391,626

STYRENIC BLOCK COPOLYMER AND PROCESS FOR PRODUCING SAME

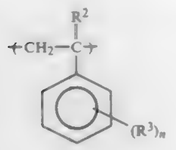
Shuji Machida; Toshinori Tazaki, and Noriyuki Tani, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed May 20, 1993, Ser. No. 63,745
Claims priority, application Japan, May 21, 1992, 4-128596
Int. Cl.[6] C08F *4/76, 297/00;* B32B *27/28, 27/30*
U.S. Cl. 525—242 2 Claims

1. A styrenic block copolymer having a reduced viscosity of 0.01 to 20 dl/g as measured at a concentration of 0.05 g/dl in 1,2,4-trichlorobenzene at 135° C., which comprises at least one (A) structural unit represented by the general formula



R^1 is a hydrogen atom, a halogen atom or a substituent having at least one atom selected from carbon, tin and silicon and may form a condensed ring together with a benzene ring, m is an integer from 1 to 5 and when m is 2 or more, each R^1 may be the same or different, the stereoregularity of the main chain of said structural units being highly syndiotactic; and at least one (B) structural unit represented by the general formula



wherein R^2 is a hydrogen atom, a halogen atom or a hydrocarbon radical having 1 to 8 carbon atoms, R^3 is a heteroatom or a group containing a heteroatom, n is an integer from 1 to 5 and when n is 2 or more, each R^3 may be the same or different, said structural unit (B) being different from the structural unit (A) and contained in an amount of 10^{-4} to 10 mol %.

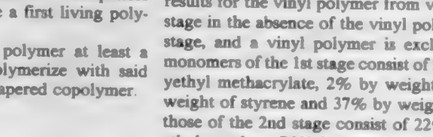
5,391,627

HEAT-RESISTANT, OIL-RESISTANT RUBBER COMPOSITION

Junichi Araki, Niiza; Masayuki Tamura, Tokyo; Takahiro Naka, Fujimi; Nobuhiro Saito, Tokyo; Hiroshi Kitagawa, Kawagoe; Takeyoshi Usui, Honjo, and Shigeru Sato, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo; Yamashita Rubber Co., Ltd, Saitama and Nippon Zeon Co., Ltd., Tokyo, all of Japan

Continuation of Ser. No. 915,886, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 607,211, Nov. 1, 1990, abandoned, which is a continuation of Ser. No. 278,506, Dec. 1, 1988, abandoned. This application Aug. 27, 1993, Ser. No. 113,723
Claims priority, application Japan, Dec. 2, 1987, 62-304719
Int. Cl.[6] C08F *279/02, 265/08, 8/42;* F16G *1/28*
U.S. Cl. 525—274 6 Claims

1. A toothed belt for use as power transmission means, comprising a layer of vulcanized rubber having a plurality of tooth shaped projections on one surface thereof, said vulcanized rubber prepared from a rubber composition consisting essentially of an hydrogenated acrylonitrile-butadiene copolymer having a degree of hydrogenation of approximately 80% to about 99%, and 1 to 100 parts by weight per 100 parts by weight of said copolymer of an unsaturated carboxylic acid metal salt of the formula:



wherein R and R′ are aliphatic or aromatic hydrocarbon groups or a hydrogen atom which may be the same or different from each other, Me is a metal selected from the group consisting of Mg, Ca, Sr, Zn, and Al, and n is an integer of 2 or 3.

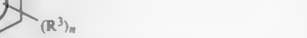
5,391,628

FUNCTIONALIZED MULTIBLOCK MACROMONOMERS AND PROCESS FOR THEIR PRODUCTION

Patrice Gaillard, Souchez; Yves Barbier, Pont Point, both of France; Sunil K. Varshney, Verdun, Canada; Philippe Teyssie, Neuville en Condroz, Belgium; Christian Jacobs, Hognoul, Belgium, and Roger Fayt, Neuville en Condroz, Belgium, assignors to Elf Atochem S.A., Paris, France

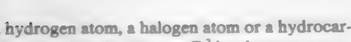
PCT No. PCT/FR91/00110, § 371 Date Sep. 3, 1992, § 102(e) Date Sep. 3, 1992, PCT Pub. No. WO91/12284, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 14, 1991, Ser. No. 916,875
Claims priority, application France, Feb. 14, 1990, 90 01724
Int. Cl.[6] C08F *297/02, 299/00*
U.S. Cl. 525—250 13 Claims

1. Functionalized multiblock macromonomer of the formula:



(I)

or of formula:



(II)

in which formulae:
each of the blocks A, B and C represents a sequence of a monomer selected from the acrylic, and methacrylic monomer classes, on condition that at least one of the blocks A and C is chosen from a different class to that of block B,
m, n and p are integers representing the number of monomer units in the sequence under consideration, such that $3 \leqq n \leqq 1000$, $0 \leqq m \leqq 1000$ and $0 \leqq p \leqq 1000$, on condition that m and p are not 0 at the same time, and
F is a group terminated by O^-.

5,391,629

BLOCK COPOLYMERS FROM IONIC CATALYSTS

Howard W. Turner, Webster; Gregory G. Hlatky, Houston; Henry W.-H. Yang, Kingwood; Avinash C. Gadkari, Webster, and Gary F. Licciardi, Humble, all of Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 477,791, Feb. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 133,052, Dec. 21, 1987, abandoned, and a continuation-in-part of Ser. No. 133,480, Dec. 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 8,800, Jan. 30, 1987, abandoned, said Ser. No. 133,052, is a continuation-in-part of Ser. No. 11,471, Jan. 30, 1987, abandoned. This application Mar. 22, 1993, Ser. No. 35,021
Int. Cl.[6] C08F *4/76, 297/08*
U.S. Cl. 525—268 11 Claims

1. A process for producing block or tapered copolymers having an Mw/Mn of about 3 or less, an Mw between about 100,000 to about 1,000,000, and a blocking efficiency of about 50% or more comprising the steps of:
(i) contacting under polymerization conditions in a polymerization reactor a first olefinic monomer(s) with an activated catalyst complex which is the reaction product of:
(a) a cyclopentadienyl Group IVB metal component, and
(b) a second component of an alumoxane or a compatible non-coordinating anion to produce a first living polymer; and
(ii) sequentially adding to said living polymer at least a second olefinic monomer(s) to copolymerize with said first polymer to produce a block or tapered copolymer.

5,391,630

COATING COMPOSITION CURABLE AT A LOW TEMPERATURE

Hiroshi Miwa, Itami; Yoshitaka Okude, Hirakata; Katsumi Mizuguchi, Suita, and Hidefumi Okuda, Toyonaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 145,628, Jan. 15, 1988, abandoned. This application Aug. 23, 1993, Ser. No. 110,760
Claims priority, application Japan, Jan. 16, 1987, 62-8786; Jan. 16, 1987, 62-8787
Int. Cl.[6] C08F *8/46*
U.S. Cl. 525—285 7 Claims

1. A coating composition curable at a low temperature, comprising:
(A) an acrylpolyol resin;
(B) a metal chelate compound or a metal alcoholate compound selected from the group consisting of aluminum tris(ethylacetoacetate), aluminum tris(acetylacetonate), aluminum-di-n-butoxidemonoethylacetatoacetate, aluminum-di-n-butoxidemonoethylacetatoacetate, aluminum-diisobutoxidemonoethylacetatoacetate, di-isopropoxy-bis-(acetylacetone) titanate, di-n-butoxy-bis(triethanolamine) titanate, dihydroxy-bis(lactic acid) titanate, tetraoctylene glycol titanate, zirconium tetra(acetylacetonate), zirconium acetate, zirconium laurate, cobalt bis(acetylacetonate), cobalt oxalate, zinc salicylate, zinc benzoate, zinc oleate, zinc stearate, nickel bisacetylacetonate, nickel dimethylglyoxium, nickel oxalate, iron tris(acetylacetonate) and iron tris(ethylacetoacetate);
(C) a compound having an acid anhydride group having an acid value of 30 to 500 selected from the group consisting of maleic anhydride, phthalic anhydride, hydrogenated phthalic anhydride, 4-methyl-hydrogenated phthalic anhydride, pyromellitic anhydride, pyromellitic anhydride triglyceride, pyromellitic anhydride ethyleneglycol ester and mixtures thereof; said metal chelate compound or metal alcoholate compound (B) being present in an amount of 0.1 to 3.0 equivalents in terms of metal, based on one equivalent of the hydroxyl group of the acrylopolyol resin (A), and wherein the acid anhydride (C) is present in an amount of 0.1 to 10.0 equivalents in terms of an amount of the acid anhydride group, based on one equivalent of a hydroxyl group of the acrylpolyol resin.

5,391,631

VINYL POLYMERS PRODUCED BY A TWO-STAGE PROCEDURE AND THEIR USE AS SURFACE COATING BINDERS

Bettina Porsch, Eisenberg, and Hans Renz, Meckenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 27, 1993, Ser. No. 67,806
Claims priority, application Germany, Jun. 25, 1992, 4220807
Int. Cl.[6] C08F *265/02, 265/04*
U.S. Cl. 525—303 1 Claim

1. A vinyl polymer obtained by polymerizing vinyl monomers in at least two stages in an organic solvent or in the absence of a solvent, wherein, in the first stage, from 5 to 95% by weight of vinyl monomers are polymerized and, in the second stage, from 5 to 95% by weight of vinyl monomers are polymerized in the presence of the vinyl polymer obtained in the first stage, with the proviso that the polymerization in the second stage is carried out under conditions under which an average molecular weight M_n, which is at least 1000 higher compared with that of the vinyl polymer of the 1st stage, results for the vinyl polymer from vinyl monomers of the 2nd stage in the absence of the vinyl polymer obtained in the first stage, and a vinyl polymer is excluded in which the vinyl monomers of the 1st stage consist of 20% by weight of hydroxyethyl methacrylate, 2% by weight of acrylic acid, 41% by weight of styrene and 37% by weight of n-butyl acrylate and those of the 2nd stage consist of 22% by weight of hydroxyethyl acrylate, 76% by weight of ethyl acrylate and 2% by weight of acrylic acid and the limiting viscosity number (measured in chloroform at 20° C.) of the copolymer prepared in the 1st stage is 9.5 ml/g and that of the total vinyl polymer is 13.4 ml/g, wherein the polymerization of the vinyl monomers in the first stage is carried out at from 130° to 250° C. and the polymerization of the vinyl monomers in the second stage is carried out in the presence of the vinyl polymer of the first stage at from 80° to 200° C. and the temperature in the first stage is at least 25° C. higher than in the second stage.

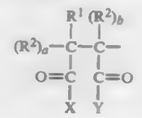
5,391,632

TERPOLYMERS BASED ON α,β-UNSATURATED DICARBOXYLIC ANHYDRIDES, α,β-UNSATURATED COMPOUNDS AND POLYOXYALKYLENE ETHERS OF LOWER UNSATURATED ALCOHOLS

Matthias Krull, Bad Soden/Ts, and Michael Feustel, Kelkheim/Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 6, 1994, Ser. No. 177,906
Claims priority, application Germany, Jan. 6, 1993, 4300128
Int. Cl.[6] C08F *8/32*
U.S. Cl. 525—327.6 16 Claims

1. A copolymer based on α,β-unsaturated dicarboxylic anhydrides, α,β-unsaturated compounds and polyoxyalkylene ethers of lower unsaturated alcohols, which comprises components
a) 20–80 mol % of bivalent structural units A



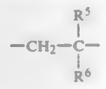
(A)

where
R^1 and R^2 are, independently of one another, hydrogen or methyl,
a and b are zero or one and a+b is one,
X and Y are identical or different and are the —N—HR^3 group,

VOL 1171 ISS 3 FEB 21 1995 UMI

where R^3 is C_6–C_{40}-alkyl, C_5–C_{20}-cycloalkyl or C_6–C_{18}-aryl, the —N—$(R^3)_2$ group,
where R^3 is identical or different and is as defined above, and/or
the —O—R^4 group,
where R^4 is hydrogen, a cation of the formula $H_2N^{\oplus}(R^{-3})_2$ or $H_3N^{\oplus}R^3$, C_6–C_{40}-alkyl, C_5–C_{20}-cycloalkyl or C_6–C_{18}-aryl,

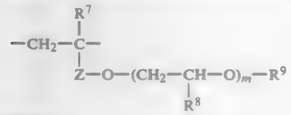
b) 19–80 mol % of bivalent structural units D



(D)

in which
R^5 is hydrogen or C_1–C_4-alkyl and
R^6 is C_6–C_{60}-alkyl or C_6–C_{18}-aryl, and

c) 1–30 mol % of bivalent structural units E



(E)

in which
R^7 is hydrogen or methyl,
R^8 is hydrogen or C_1–C_4-alkyl,
Z is C_1–C_4-alkylene
m is a number from 1 to 100,
R^9 is C_1–C_{24}-alkyl, C_5–C_{20}-cycloalkyl, C_6–C_{18}-aryl or —C(O)—R^{10}, where
R^{10} is C_1–C_{40}-alkyl, C_5–C_{10}-cycloalkyl or C_6–C_{18}-aryl.

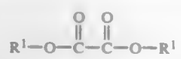
5,391,633

CURABLE RESIN COMPOSITION

Koichiro Saeki; Koji Nagaoka, and Ichimoto Akasaki, all of Yokohama, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Continuation of Ser. No. 883,486, May 15, 1992, abandoned, which is a division of Ser. No. 615,180, Nov. 19, 1990, Pat. No. 5,140,057. This application Dec. 15, 1993, Ser. No. 166,893
Claims priority, application Japan, Nov. 20, 1989, 1-299706; Dec. 22, 1989, 1-331187
Int. Cl.[6] C08F *8/02*
U.S. Cl. 525—328.2 **5 Claims**

1. An adhesive agent resin composition comprising a dialkyl oxalate, and a grafted primary amino group-containing polymer obtained by amino-alkylating a carboxyl group-containing polymer with an ethylene imine or a propylene imine, said oxalate being represented by the formula I:



(I)

wherein R^1 is a lower alkyl group of 1 to 5 carbon atoms.

5,391,634

OPTICALLY-ACTIVE, AMPHIPHILIC, WATER-SOLUBLE FREE-RADICAL ADDITION COPOLYMERS AND THEIR USE IN THE RESOLUTION OF RACEMIC MIXTURES

Mladen Ladika, and Thomas E. Fisk, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 67,776, May 26, 1993, abandoned. This application Jan. 21, 1994, Ser. No. 184,802
Int. Cl.[6] C08F *278/02*
U.S. Cl. 525—328.2 **5 Claims**

1. An optically-active, amphiphilic, water-soluble free-radical addition copolymer of ethylenically unsaturated monomers which comprises:
a) a hydrophobic component having a chiral moiety; and
b) a hydrophilic component having an anionic sulfonate group or a cationic sulfonium group.

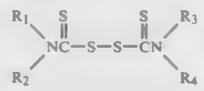
5,391,635

RUBBER COMPOSITION

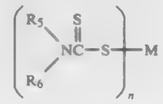
Kazuya Hatakeyama, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,795
Claims priority, application Japan, Mar. 23, 1992, 4-065273
Int. Cl.[6] C08F *8/34;* **C08C** *19/20*
U.S. Cl. 525—352 **6 Claims**

1. A rubber composition which comprises:
(1) 100 parts by weight of a rubber containing 60 parts by weight or more of styrene-butadiene rubber,
(2) 20 to 180 parts by weight of a softening agent,
(3) 0.5 to 5 parts by weight of at least one member selected from the group consisting of a thiuram compound of the following formula:



wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of straight chain alkyl groups and branched chain alkyl groups having 7 to 12 carbon atoms, and a dithiocarbamate compound of the following formula:



wherein R_5 and R_6 are independently selected from the group consisting of straight chain alkyl groups and branched alkyl groups having 7 to 12 carbon atoms, M is a divalent or higher valent metal and n is a number which is the same as the number of the valence of the metal M,
(4) 0.1 to 2.5 parts by weight of a guanidine vulcanization accelerator, and
(5) 0.5 to 5 parts by weight of a benzothiazole vulcanization accelerator, wherein the weight ratio of the benzothiazole vulcanization accelerator to the at least one member selected from the group consisting of the thiuram compound and the dithiocarbamate compound is 0.5:1 to 1.5:1.

5,391,636

POLYAMINE CONDENSATES OF STYRENE-MALEIC ANHYDRIDE COPOLYMERS AS CORROSION INHIBITORS

Peter Schilling, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 15,928, Feb. 10, 1993, abandoned. This application Jul. 14, 1993, Ser. No. 91,862
Int. Cl.[6] C08F *8/30;* **C23F** *11/14*
U.S. Cl. 525—381 **8 Claims**

1. A composition for inhibiting the corrosion of metals in highly acidic environments comprising the polyimidoamine reaction product of:
(a) 1–99 wt. % of styrene reacted in a polymerization reaction with 1–99 wt. % of a maleic anhydride to produce a copolymer; and
(b) 4–79 wt. % of said copolymer, and 1–64 wt. % of a member selected from the group consisting of rosin, C_{23}–C_{24} modified rosins, C_8–C_{20} fatty acids, C_9–C_{22} modified fatty acids, and combinations thereof, reacted in a condensation reaction with 20–80 wt. % of a polyamine to produce said polyimidoamine reaction product.

5,391,637

CAPPING OF ANIONIC POLYMERS WITH OXETANES

Carl L. Willis, Houston; Daniel E. Goodwin, and Robert C. Bening, both of Katy, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 23, 1993, Ser. No. 157,785
Int. Cl.[6] C08F *8/00*
U.S. Cl. 525—385 **10 Claims**

1. A polymer produced by a process comprising the steps of:
anionically polymerizing a living polymer of an unsaturated monomer; and
reacting the living polymer with oxetane or an alkyl substituted oxetane.

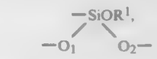
5,391,638

ORGANOSILOXANE COMPOUNDS CONTAINING POLYOXOMETALATE GROUPS

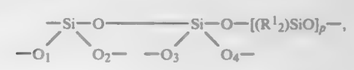
Dimitris E. Katsoulis, Midland, and John R. Keryk, Rhodes, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 27, 1993, Ser. No. 172,787
Int. Cl.[6] C08G *79/14*
U.S. Cl. 525—389 **11 Claims**

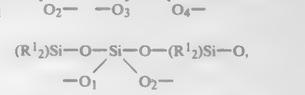
1. An organosiloxane compound comprising terminal units of formula selected from the group consisting of $Y_aR^1{}_{3-a}SiO_{0.5}$ and



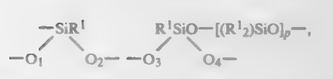
a first repeating unit of the general formula —$[Si(R^1)_2O]$— and a second repeating unit of a formula selected from the group consisting of



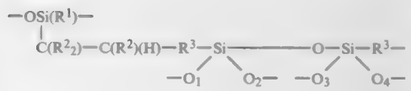
(I)



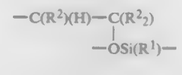
(II)



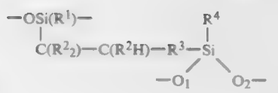
(III)



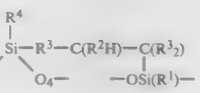
(IV)



and



(V)



where O_1, O_2, O_3 and O_4 are part of one polyoxometalate anion exhibiting a valence of x— and a general formula selected from the group consisting of $XM_{11}O_{39}{}^{x-}$, $X'M_9O_{34}{}^{x-}$ and $X''_2W_{17}O_{61}{}^{x-}$, M is tungsten or molybdenum, W is tungsten, X is selected from the group consisting of Si^{+4}, B^{+3}, Ge^{4+}, P^{+5}, Fe^{+3} and Ge^{+4}, X'' is selected from the group consisting of Si^{+4}, p^{+5} and Ge^{+4}, X'' is selected from the group consisting of p^{+5} and As^{+5}, the cation associated with said polyoxometalate anion is selected from the group consisting of hydrogen alkali metals and $R^5{}_4N^+$, where each R^5 represents a monovalent hydrocarbon radical, each R^1 and R^4 are individually selected from the group consisting of unsubstituted and substituted monovalent hydrocarbon radicals, each R^2 is individually selected from the group consisting of hydrogen and monovalent hydrocarbon radicals, R^3 represents a single bond or an alkylene radical, Y represents a halogen atom or a hydrolyzable group, a is 2 or 3 and p is at least 2.

5,391,639

BLENDS OF POLYPHENYLENE ETHER AND MODIFIED POLYESTERS

John C. Falk, Northbrook, Ill., and Klementina Khait, Parkersburg, W. Va., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 555,117, Jul. 19, 1990, abandoned, which is a division of Ser. No. 263,382, Oct. 27, 1988, Pat. No. 4,956,422. This application May 17, 1994, Ser. No. 243,727
Int. Cl.[6] C08L *25/04, 67/02, 71/12*
U.S. Cl. 525—392 **11 Claims**

1. A process for the preparation of blends of a polyester and a polyphenylene ether, which comprises:
(a) modifying said polyester with a hydroxy- or carboxy-terminated polystyrene, the hydroxy- or carboxy-terminated polystyrene being included in an amount sufficient to improve notched Izod impact, heat distortion temperature or smooth surface appearance; and then
(b) blending the resultant modified polyester with the polyphenylene ether.

5,391,640

MISCIBLE THERMOPLASTIC POLYMERIC BLEND COMPOSITIONS CONTAINING POLYAMIDE/AMORPHOUS POLYAMIDE BLENDS

Murali K. Akkapeddi; Jeffrey H. Glans, both of Morristown, N.J., and Jerome F. Parmer, Mt. Prospect, Ill., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 868,602, Apr. 14, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 169,719
Int. Cl.[6] C08L *77/00*
U.S. Cl. 525—432 **25 Claims**

1. A thermoplastic polymeric blend composition comprising:
(A) a first polyamide which is one or more aliphatic or cycloaliphatic polyamides selected from the group consisting of: polyamides obtained by the polymerization of equimolar proportions of a diamine having two or more carbon atoms between the amine terminal groups with a dicarboxylic acid a polyamide obtained by the polymerization of a monoamino carboxylic acid or an internal lactam thereof with an equimolar proportion of a diamine and a dicarboxylic acid, and a polyamide derived by the condensation of a monoaminocarboxylic acid or an internal lactam thereof having at least two carbon atoms between the amino and the carboxylic acid groups; and
(B) a second amorphous polyamide which is polymerized from
(B_1) a polyamide forming monomer selected from the group consisting of lactams, aminoalkanoic acids and combinations thereof, wherein the monomer is present in a molar proportion of about 0 to 50%,
(B_2) a diamine selected from the group consisting of di(aminoalkyl)benzenes, di(aminoalkyl)halobenzenes, di(amino)alkylbenzenes, di(alkylaminobenzenes), cycloalkylene diamines and combinations thereof, the diamine being present in a molar proportion of about 25 to 60%,
(B_3) at least one aromatic dicarboxylic acid, the aromatic

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dicarboxylic acid being present in a molar proportion of about 25 to 60% wherein (A) and (B) are substantially miscible when formed into a blend composition.

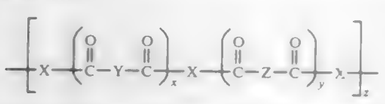
5,391,641

SEGMENTED N-ALKYL POLYURETHANE AMIDES

Herbert Hugi, Bergisch Gladbach; Burkhard Köhler, and Rolf Dhein, both of Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

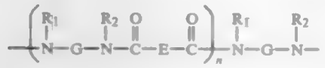
Filed Aug. 12, 1993, Ser. No. 106,185
Claims priority, application Germany, Aug. 21, 1992, 4227750
Int. Cl.[6] C08L 75/04, 77/00
U.S. Cl. 525—433 1 Claim

1. A segmented N-alkyl poly(urethane-amide) amide corresponding to (I)



(I)

in which X represents an oligoamide corresponding to formula (II)



(II)

where

E is a C_{2-12} alkylene radical, a C_{6-8} cycloalkylene radical or a C_{6-14} arylene radical,

G is a C_{2-12} alkylene radical,

R_1 and R_2 may be the same or different and represent C_{1-12} alkyl radicals or are members of a diazaheterocycle with 6 or 7 ring atoms and

n is a natural number of 1 to 30,

Y represents diglycol units with Mn being greater than 400,

Z represents diglycol units with Mn being less than 400 or units of a diphenol corresponding to formula (III)

—O—D—O—

in which D is an aromatic radical, x and y each have a value of 0 or 1, at least one of the two having the value 1,

z is a number which indicates that the Mw of the polymer as a whole assumes values of 5,000 to 250,000.

5,391,642

COPOLYMERS OF POLYASPARTIC ACID

Louis L. Wood, Rockville, Md., assignor to SRCHEM Incorporated, Elkridge, Md.

Division of Ser. No. 195,036, Feb. 14, 1994, Ser. No. 44,900, Apr. 7, 1993, Pat. No. 5,286,810, and Ser. No. 926,242, Aug. 7, 1992, abandoned. This application Jun. 17, 1994, Ser. No. 261,425
Int. Cl.[6] C08G 69/48
U.S. Cl. 525—435 3 Claims

1. A process for the preparation of copolymers of polyaspartic acid comprising reacting aspartic acid and a polyamine at temperatures greater than 120° C. and converting the resultant polymer into a salt by adding a hydroxide.

5,391,643

POLYESTER RESIN POWDER COATING COMPOSITIONS

John Ridland, Durham, and Brian S. Jolly, Cleveland, both of England, assignors to Tioxide Specialties Limited, London, England

Filed May 11, 1994, Ser. No. 240,548
Claims priority, application United Kingdom, May 19, 1993, 9310290
Int. Cl.[6] C08L 67/02
U.S. Cl. 525—437 23 Claims

1. A method of curing a powder coating composition comprising reacting a polyester resin with a curing agent selected from the group consisting of organotitanium derivatives of alkanolamines and organozirconium derivatives of alkanolamines having one of the formulae

(a) $M_3[(OR)_3N]_4$

(b) $O[M(OR)_3N]_2$ or

(c) $R^1[OM(OR)_3N]_x$

in which, in each formula, M is selected from the group consisting of titanium and zirconium, R is a divalent aliphatic radical, x is 1 to 4 and R^1 is selected from the group consisting of saturated hydrocarbyl groups and groups containing at least one ether linkage.

5,391,644

POLYESTER INJECTION-MOLDED ARTICLES

Tetsuo Yasuda, Kawasaki, and Eiichiro Takiyama, Kamakura, both of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 48,196
Claims priority, application Japan, May 8, 1992, 4-116239
Int. Cl.[6] C08F 20/34
U.S. Cl. 525—440 10 Claims

1. Injection-molded articles comprising an aliphatic polyester having a melt viscosity of $6\times10^2-2\times10^4$ poises at a temperature of 190° C. and a shear rate of 1000 sec^{-1}, and having a melting point within the range of 70°–190° C.

wherein said aliphatic polyester is obtained by adding from 0.1 to 5 parts by weight of diisocyanate to 100 parts by weight of a prepolymer in a molten state without adding any secondary amine,

wherein said prepolymer

is obtained from a reaction of components selected from the group consisting of aliphatic glycols, aliphatic dicarboxylic acids, and trifunctional and tetrafunctional polyols, oxycarboxylic acids and polybasic carboxylic acids and acid anhydrides thereof, wherein the reaction includes (a) succinic acid, or its anhydride, reacted with 1,4-butanediol, (b) succinic acid, adipic acid, or their anhydride, reacted with 1,4-butanediol, or (c) succinic acid, or its anhydride, reacted with ethylene glycol, and

has a number-average molecular weight of at least 5,000 and a melting point of at least 60° C.

5,391,645

POLY(ARYLENE THIOETHER-KETONE) COPOLYMER AND PRODUCTION PROCESS THEREOF

Yoshikatsu Satake; Yoshiyuki Inaguma, and Yasuhiro Suzuki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 686,978, Apr. 18, 1991, Pat. No. 5,288,815. This application May 20, 1993, Ser. No. 63,822
Claims priority, application Japan, Apr. 25, 1990, 2-109481; Mar. 8, 1991, 3-067554
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[6] C08K 5/35
U.S. Cl. 525—471 6 Claims

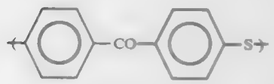
1. A process for the production of a poly(arylene thioether-ketone) copolymer comprising (A) at least one poly(arylene thioether-ketone) segment and (B) at least one poly(arylene thioether) segment, which comprises at least the following three steps:

i) heating in the presence of water an organic amide solvent containing a dihalogenated aromatic compound, which consists principally of a dihalobenzene, and an alkali metal sulfide, whereby a poly(arylene thioether) oligomer having at least 50 wt. % recurring units of the formula



and at least one terminal thiolate group is synthesized,

ii) heating in the presence of water an organic amide solvent containing a dihalogenated aromatic compound, which consists principally of at least one dihalobenzophenone selected from 4,4′-dichlorobenzophenone and 4,4′-dibromobenzophenone, and an alkali metal sulfide, whereby a poly(arylene thioether-ketone) oligomer having at least 50 wt. % recurring units of the formula



wherein the —CO— and —S— are in the para position to each other, and terminal halogen atoms is synthesized, and

iii) mixing and reacting the poly(arylene thioether) oligomer, which has been obtained in the step i), with poly(arylene thioether-ketone) oligomer obtained in the step ii) and optionally, water;

said first through third steps i)–iii) being conducted under the following conditions (a)–(g):

(a) in the first step i), the ratio of the water content to the amount of the charged organic amide solvent being 0.1–15 (mol/kg), the ratio of the amount of the charged dihalogenated aromatic compound to the amount of the charged alkali metal sulfide being 0.3–0.9 (mol/mol), and the polymerization being conducted until the number-average polymerization degree of the poly(arylene thioether) oligomer becomes higher than 1 but lower than 10,

(b) in the second step ii), the ratio of the water content to the amount of the charged organic amide solvent being controlled within a range of 0.1–15 (mol/kg) and the reaction being conducted within a temperature range of 60°–300° C. with the proviso that the reaction time at 210° C. and higher is not longer than 10 hours,

(c) in the third step iii), the ratio of the water content to the amount of the charged organic amide solvent being 0.1–15 (mol/kg),

(d) in the third step iii), the ratio of the total amount of the charged dihalogenated aromatic compound, said total amount being the amount of the whole dihalogenated aromatic compounds including the dihalobenzene and the dihalobenzophenone, to the total amount of the charged alkali metal sulfide, said latter total amount being the total amount of the alkali metal sulfide charged in the first step i) and that charged in the second step ii), being controlled within a range of 0.95–1.2 (mol/mol),

(e) the ratio of the charged amount of the dihalogenated aromatic compound consisting principally of the dihalobenzene in the step i) to the charged amount of the dihalogenated aromatic compound consisting principally of the dihalobenzophenone in the step ii) being controlled within a range of 0.1–10 (mol/mol),

(f) the reaction of the third step iii) being conducted within a temperature range of 150°–300° C. with the proviso that the reaction time at 210° C. and higher is not longer than 10 hours, and

(g) in the third step iii), the reaction being conducted until the melt viscosity of the resulting copolymer becomes 2–100,000 poises as measured at 350° C. and a shear rate of 1,200/sec.

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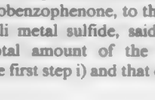
POLY(ARYLENE THIOETHER-KETONE) COPOLYMER AND PRODUCTION PROCESS THEREOF

Yoshikatsu Satake; Yoshiyuki Inaguma, and Yasuhiro Suzuki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 686,978, Apr. 18, 1991, Pat. No. 5,288,815. This application May 20, 1993, Ser. No. 63,823
Claims priority, application Japan, Apr. 25, 1990, 2-109481; Mar. 8, 1991, 3-067554
The portion of the term of this patent subsequent to Dec. 4, 2807, has been disclaimed.
Int. Cl.[6] C08K 5/35
U.S. Cl. 525—471 6 Claims

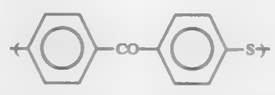
1. A process for the production of a poly(arylene thioether-ketone) copolymer comprising (A) at least one poly(arylene thioether-ketone) segment and (B) at least one poly(arylene thioether) segment, which comprises at least the following two steps:

i) heating in the presence of water an organic amide solvent containing a dihalogenated aromatic compound, which consists principally of a dihalobenzene, and an alkali metal sulfide, whereby a poly(arylene thioether) oligomer having at least 50 wt. % recurring units of the formula



and at least one terminal thiolate group is synthesized, and

ii) mixing the oligomer, which has been obtained in the step i), with a dihalogenated aromatic compound consisting principally of at least one dihalobenzophenone selected from 4,4′-dichlorobenzophenone and 4,4′-dibromobenzophenone, and optionally, an alkali metal sulfide, an organic amide solvent and/or water, and heating the resultant mixture to form a poly(arylene thioether-ketone) segment having at least 50 wt. % recurring units of the formula



wherein the —CO— and —S— are in the para position to each other, thereby forming the copolymer;

said first and second steps i) and ii) being conducted under the following conditions (a)–(f):

(a) in the first step i), the ratio of the water content to the amount of the charged organic amide solvent being 0.1–15 (mol/kg), the ratio of the amount of the charged dihalogenated aromatic compound to the amount of the charged alkali metal sulfide being 0.3–0.9 (mol/mol), and the polymerization being conducted in such a manner that the resulting poly(arylene thioether) oligomer has at least one terminal thiolate group and its number-average polymerization degree becomes higher than 1 but lower than 10,

(b) in the second step ii), the ratio of the water content to the amount of the charged organic amide solvent being controlled within a range of 0.1–15 (mol/kg),

(c) in the second step ii), the ratio of the total amount of the charged dihalogenated aromatic compound, said total amount being the amount of the whole dihalogenated aromatic compounds including the dihalobenzene and the dihalobenzophenone, to the total amount of the charged alkali metal sulfide, said latter total amount being the total amount of the alkali metal sulfide charged in the first step i) and that optionally charged in

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the second step ii), being controlled within a range of 0.95–1.2 (mol/mol),

(d) the ratio of the charged amount of the dihalogenated aromatic compound consisting principally of the dihalobenzene in the step i) to the charged amount of the dihalogenated aromatic compound consisting principally of the dihalobenzophenone in the step ii) being controlled within a range of 0.1–10 (mol/mol),

(e) the reaction of the second step ii) being conducted within a temperature range of 150°–300° C. with the proviso that the reaction time at 210° C. and higher is not longer than 10 hours, and

(f) in the second step ii), the reaction being conducted until the melt viscosity of the resulting copolymer becomes 2–100,000 poises as measured at 350° C. and a shear rate of 1,200/sec.

5,391,647

COMPOSITE COMPOSITION HAVING HIGH TRANSPARENCY AND PROCESS FOR PRODUCING SAME

Naoki Yamamoto; Hiroki Hatakeyama, and Hiroyuki Watanabe, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01782, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO92/12204, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 27, 1991, Ser. No. 920,426

Claims priority, application Japan, Dec. 28, 1990, 2-415510; Mar. 14, 1991, 3-073602; Mar. 14, 1991, 3-073732

Int. Cl.[6] C08L *33/02, 83/10*

U.S. Cl. 525—479 **5 Claims**

1. A process for producing a composite composition which comprises the steps of

providing a silica polycondensate (A) containing silanolic hydroxyl groups and/or alkoxy groups formed by hydrolysis and polycondensation of from 1 to 100 parts by weight of silane compound (A-1) of the general formula

$$Si(OR^3)_4 \quad (II)$$

and 0 to 99 parts by weight of a silane compound (A-2) of the general formula

$$SiR^1{}_aR^2{}_b(OR^3)_d \quad (III)$$

where R^1 and R^2 are hydrocarbon radicals of 1 to 10 carbon atoms which may contain an ether linkage or ester linkage, R^3 is a hydrogen atom or a hydrocarbon radical of 1 to 10 carbon atoms, a and b are whole numbers 0 to 3, and d is equal to (4−a−b) and represents a whole number of 1 to 3;

preparing a mixed solution by dissolving the silica polycondensate (A) in a radical-polymerizable compound (B') consisting essentially of at least one monomer selected from the group consisting of acrylic acid, methacrylic acid, acrylic esters and methacrylic esters, or in a partial polymer thereof;

removing any water and solvent present in said mixed solution;

casting the resulting mixed solution, and

effecting a thermal radical polymerization of the mixed solution from which any water and solvent present has been removed.

5,391,648

POLYORGANOSILOXANE GRAFT COPOLYMERS

Naoki Yamamoto; Akira Nakata, and Atsunori Koshirai, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 728,367, Jul. 11, 1991, abandoned, and a continuation-in-part of Ser. No. 845,704, Mar. 4, 1992, abandoned. This application Feb. 2, 1993, Ser. No. 12,452

Claims priority, application Japan, Jul. 24, 1990, 2-195267; Mar. 6, 1991, 3-039904; Apr. 3, 1991, 3-070948; Apr. 4, 1991, 3-071790

Int. Cl.[6] C08F *283/12*

U.S. Cl. 525—479 **17 Claims**

1. A polyorganosiloxane graft copolymer having wet heat strength which is obtained by graft-polymerizing one or more kinds of monomer which have ethylenically unsaturated bond and contain at least an epoxy group-containing vinyl monomer onto a compound rubber in which a polyorganosiloxane rubber and a polyalkyl (meth)acrylate rubber have been inseparably united with each other, and in which the component derived from the epoxy group-containing vinyl monomer is present in a proportion between about 1 wt. % and about 30 wt. % relative to the whole polyorganosiloxane graft copolymer.

5,391,649

AQUEOUS, AUTOXIDATIVELY-DRYING ALKYD COMPOSITION CONTAINING POLYUNSATURATED ALKANOLAMIDE EMULSIFIER

Krister Holmberg, Mölndal, Sweden, assignor to Berol Nobel AB, Stenungsund, Sweden

Filed May 21, 1993, Ser. No. 66,030

Claims priority, application Sweden, Nov. 23, 1990, 9003731-8

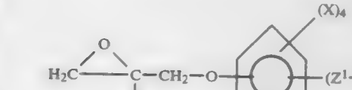
Int. Cl.[6] C09D *167/08;* **B01F** *17/22*

U.S. Cl. 523—501 **10 Claims**

1. An alkyd composition which is one of an aqueous emulsion or an aqueous microemulsion and which is autoxidatively drying, comprising:

an alkyd which is autoxidatively-drying; and

an emulsifier which at least partly consists of an alkoxylate of monoalkanolamide of the general formula:



(I)

wherein R is a polyunsaturated alkyl group having 7–23 carbon atoms, X is an alkyleneoxy group derived from an alkylene oxide having 2–3 carbon atoms, m is 2–4, and n is 2–30.

5,391,650

BISBENZOCYCLOBUTENE THERMOSETTING COMPOUNDS AND PROCESS FOR PREPARING THE SAME

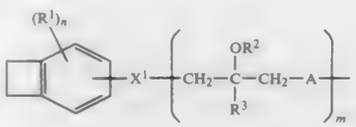
David J. Brennan; Jerry E. White; Daniel M. Scheck; Robert A. Kirchhoff, all of Midland, Mich., and Charles Z. Hotz, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 30, 1992, Ser. No. 998,495

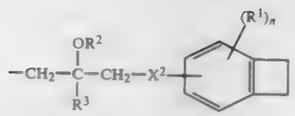
Int. Cl.[6] C08G *59/14, 59/04*

U.S. Cl. 525—523 **33 Claims**

1. A compound of the formula:



-continued



wherein R^1 is halogen, monovalent hydrocarbyl, or substituted hydrocarbyl; each R^2 is independently hydrogen, monovalent hydrocarbyl or substituted hydrocarbyl or acyl; each R^3 is independently hydrogen, monovalent hydrocarbyl or substituted hydrocarbyl, wherein the substituent(s) is a monovalent moiety which is inert in the reactions used in preparing the compound; each of X^1 and X^2 is independently oxygen, sulfur, N-substituted imino, N-substituted sulfonamido, carboxyl, or dioxyarylene; each A is individually a divalent organic moiety; n=0–3; and m=0–1000.

5,391,651

CURABLE MIXTURES OF MESOGENIC EPOXY RESINS AND MESOGENIC POLYAMINES AND CURED COMPOSITIONS

Jimmy D. Earls; Robert E. Hefner, Jr., and Paul M. Puckett, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 906,081, Jun. 29, 1992, Pat. No. 5,218,062, which is a continuation-in-part of Ser. No. 562,182, Aug. 3, 1990, abandoned. This application Dec. 8, 1993, Ser. No. 164,096

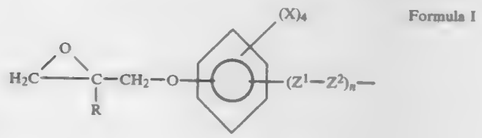
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[6] C08G *59/00, 65/08, 65/14*

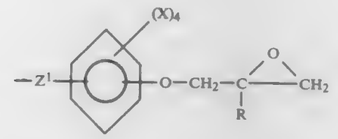
U.S. Cl. 525—526 **12 Claims**

1. A curable composition comprising (I) an advanced epoxy resin prepared by reacting

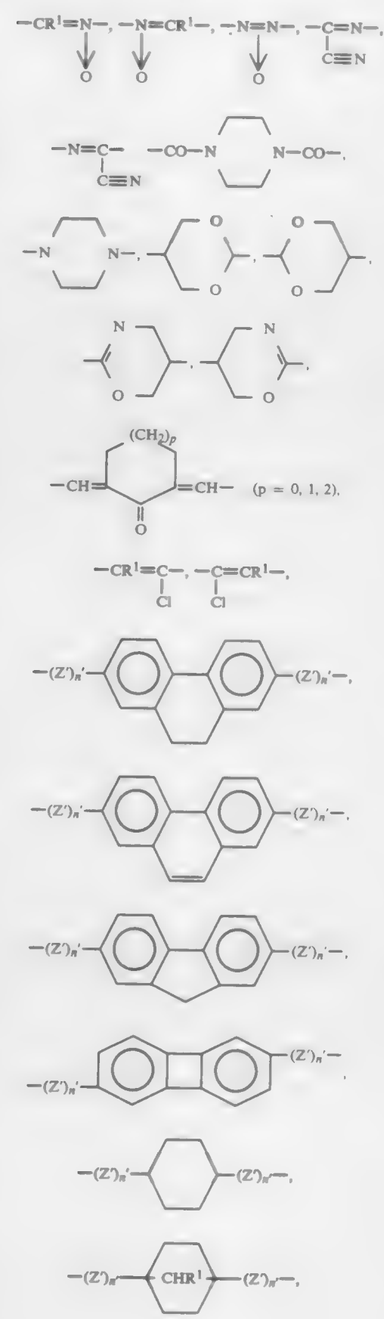
(A) one or more epoxy resins containing one or more rodlike mesogenic moieties, said epoxy resin being those represented by either the following Formula I



Formula I

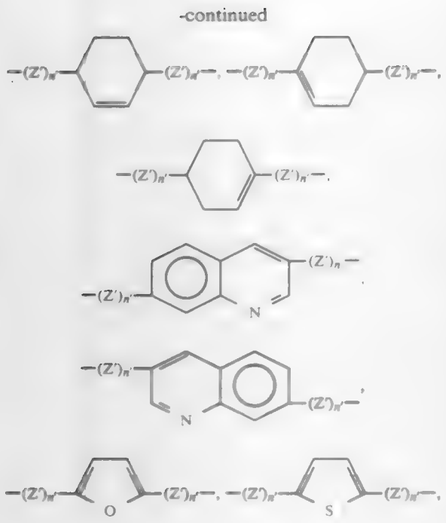


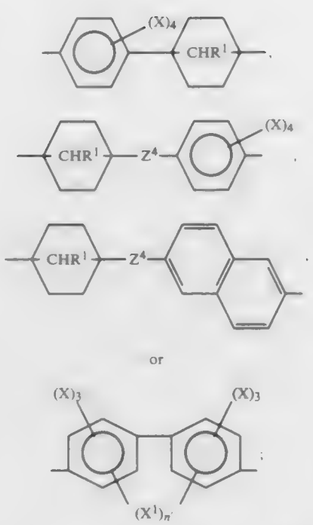
wherein at least about 80 percent of the $-(Z^1-Z^2)_n-Z^1-$ linkages and the glycidyl ether groups are in the para position with respect to each other; each R and R^1 is independently hydrogen or an aliphatic hydrocarbon group having from 1 to about 4 carbon atoms; each X is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 12 carbon atoms, a halogen atom, $-NO_2$, or $-C{\equiv}N$; each Z^1 is independently $-CR^1{=}CR^1-$, $-CR^1{=}CR^1-CR^1{=}CR^1-$, $-CR^1{=}N-N{=}CR^1-$, $-CR^1{=}CR^1-CO-O$ $-CH_2-$, $-CR^1{=}CR^1-CO-O-CH_2-CH_2-$, $-CH_2-O-CO-CR^1{=}CR^1-$, $-CH_2-CH_2-O-CO-CR^1{=}CR^1-$, $-CR^1{=}CR^1-CO-O-$, $-O-CO-CR^1{=}CR^1-$, $-CO-NR^1-$, $-NR^1-CO-$, $-CO-NR^1-NR^1-CO-$, $-C{\equiv}C-$, $-C{\equiv}C-C{\equiv}C-$, $-N{=}N-$, $-CO-S-$, $-S-CO-$, $-CR^1{=}CR^1-O-CO-CH_2-$, $-CH_2-CO-O-CR^1{=}CR^1-$, $-CR^1{=}CR^1O-CO-CH_2-CH_2-$, $-CH_2-CH_2-CO-O-CR^1{=}CR^1-$, $-CH_2-CH_2-CO-O-$, $-O-CO-CH_2-CH_2-$, $-CO-O-CR^1{=}CR^1-$, $-CR^1{=}CR^1-O-CO-$, a direct single bond when n≧1,



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-continued





and Z^4 is —CO—O—, —O—CO—, —NR¹—CO— or —CO—NR¹—; X^1 is a divalent hydrocarbyl group having from 1 to about 10 carbon atoms which can optionally contain one or more heteroatoms selected from N, O or S and may be saturated or unsaturated; or any combination of any two or more epoxy resins represented by the aforementioned Formulas I and II; with

(B) at least one compound having an average of more than one active hydrogen atom per molecule; and

wherein components (A) and (B) are employed in quantities which provide a ratio of active hydrogen atoms per epoxide group of from about 0.01:1 to about 0.95:1; and (II) a curing amount of one or more polyamines containing one or more rodlike mesogenic moieties.

5,391,652

HIGH MOLECULAR WEIGHT EPOXY ESTER RESIN COMPOSITION, PROCESS THEREFOR AND COATING COMPOSITION

David S. Wang; Pong S. Sheih, both of Lake Jackson; Loan A. Ho, Houston, and Charles M. Vetters, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 954,217, Sep. 30, 1992, abandoned. This application Apr. 23, 1993, Ser. No. 52,315

Int. Cl.⁶ C08L *63/00*

U.S. Cl. 525—533 **20 Claims**

1. An esterified epoxy resin having an acid number from zero to about 16, a polydispersity value of less than about 10 which results from reacting at a temperature of from about 170° C. to about 280° C.

(A) an epoxy resin having an epoxide equivalent weight of from 600 to about 15,000 being essentially free of castor oil polyglycidyl ether;

(B) a dimerized fatty acid having from about 10 to about 100 carbon atoms per molecule;

(C) optionally, a trimerized fatty acid having from 20 to about 150 carbon atoms per molecule; and

(D) a monocarboxylic acid; and

wherein components (A), (B), (C) and (D) are employed in amounts which provide a ratio of epoxide equivalents from component (A) to carboxylic acid equivalents from component (B) to carboxylic acid equivalents from component (C) to carboxylic acid equivalents from component (D) of 1:f:g:h,

wherein f is the carboxylic acid equivalents from component (B) and has a value from about 0.1 to about 0.9; g is the carboxylic acid equivalents from component (C) and has a value from zero to about 0.1; and h is the carboxylic acid equivalents from component (D) and has a value of from about 0.05 to about 0.9; the value of f+g+h has a value from about 0.11 to less than 0.99; and 1.05<average acid functionality<1.95, where average acid functionality is ((2f+3g+h)/(f+g+h)).

5,391,653

METHOD FOR PREVENTING POLYMER SCALE DEPOSITION

Toshihide Shimizu, Urayasu, and Mikio Watanabe, Kamisu, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 111,895

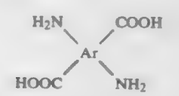
Claims priority, application Japan, Aug. 28, 1992, 4-253836

Int. Cl.⁶ C08F *2/20*

U.S. Cl. 526—62 **2 Claims**

1. A process for producing a polymer of a monomer having an ethylenically unsaturated double bond, which comprises polymerizing the monomer in a polymerization vessel having a polymer scale preventive coating on its inner wall surfaces, whereby polymer scale is prevented from being deposited, wherein said monomer is selected from the group consisting of vinyl esters; vinyl halides; vinylidene halides; acrylic acid, methacrylic acid and their esters and salts; maleic acid, fumaric acid and their esters and anhydrides; diene monomers; styrene; acrylonitrile; α-methylstyrene; and vinyl ethers,

wherein said polymer scale preventive coating has been formed by applying, as polymer scale preventive agent, an alkaline solution containing a condensation product of (A) an aromatic diaminocarboxylic acid compound having the following formula (1):



(1)

wherein Ar is a tetravalent aromatic group of from 6 to 20 carbon atoms, and (B) an organic compound having one of the following formulas (3-1) and (3-2):

XOC—COX (3-1)

wherein X is halogen;

XOC—Y—COX (3-2)

wherein X is the same as defined above, and Y is a divalent organic group of from 1 to 20 carbon atoms, in a solvent of water or a mixed solvent of water and an organic solvent miscible with water in which the organic solvent is contained in an amount of 50% by weight or less, followed by drying.

5,391,654

METHOD FOR HOMO- OR COPOLYMERIZING ETHENE

Antero Ahvenainen; Kari Sarantila, and Henrik Andtsjö, all of Porvoo, Finland, assignors to Neste OY, Finland

PCT No. PCT/FI91/00397, § 371 Date May 25, 1993, § 102(e) Date May 25, 1993, PCT Pub. No. WO92/12181, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 18, 1991, Ser. No. 66,004

Claims priority, application Finland, Dec. 28, 1990, 906427

Int. Cl.⁶ C08F *2/06*

U.S. Cl. 526—64 **8 Claims**

1. Method of polymerizing ethylene in particle form, which comprises polymerizing ethylene in a reaction mixture of ethylene, and ethylene polymerizing catalyst, optional hydrogen and optional comonomer in propane in a loop reactor under supercritical conditions of temperature and pressure, the temperature being higher than the critical temperature and the pressure being higher than the critical pressure of said reaction mixture to form a polyethylene polymer, said temperature being below the melting temperature of the thus formed polyethylene polymer, whereby said polymer is formed in particle form which can be easily separated from the remainder of the reaction mixture.

5,391,655

PREPARATION OF AN AROMATIC VINYL COMPOUND

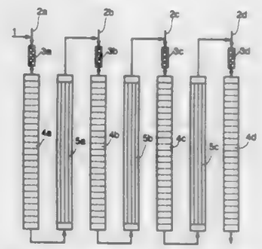
Franz Brandstetter, Neustadt; Hermann Gausepohl, Mutterstadt, and Reiner Thiele, Kaiserslautern, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 19, 1993, Ser. No. 136,931

Claims priority, application Germany, Oct. 24, 1992, 4235980

Int. Cl.⁶ C08F *4/48, 12/08*

U.S. Cl. 526—64 **3 Claims**



1. A process for preparing styrene polymers by continuous anionic polymerization, wherein styrene monomers are polymerized in the presence of an organometallic initiator wherein the monomer or monomers and the organometallic initiator are added in solution to a tubular reactor arrangement operating essentially without backmixing and are left in the reactor arrangement until the monomer has been consumed, wherein the polymerization is carried out in a first reactor and at least one additional successive tubular reactor operating in each case essentially adiabatically, with in each case at least one heat exchanger arranged between the reactors.

5,391,656

RECOVERY OF UNREACTED MONOMERS IN AN OLEFIN POLYMERIZATION PROCESS

David W. Campbell, Luling, La.; Randall L. Force, South Charleston, and Kelli L. Campbell, St. Albans, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Sep. 24, 1993, Ser. No. 127,259

Int. Cl.⁶ C08F *2/34*

U.S. Cl. 526—68 **8 Claims**

1. A method of recovering condensable gases from a gas phase fluid bed olefin polymerization reactor comprising:

a) providing a monomer source under pressure;

b) reducing the pressure of said monomer source thereby reducing the temperature of the monomer source;

c) providing a source of condensable gases consisting essentially of condensable monomers and/or hydrocarbon solvents;

d) condensing at least a portion of said condensable gases to a liquid through indirect heat exchange with the reduced pressure monomer source;

e) separating said liquid from the condensable gases;

f) recovering said liquid; and

g) feeding said monomer source to a gas phase fluid bed olefin reactor.

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5,391,657

METHOD FOR REDUCING SHEETING AND STATIC CHARGES DURING POLYMERIZATION OF ETHYLENE POLYMERS

Gyung-Ho Song, Charleston, W. Va.; Aaron S. Rhee, Belle Mead, N.J., and Gerald R. Lowder, Victoria, Tex., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Sep. 27, 1993, Ser. No. 127,779
Int. Cl.[6] C08F 2/34
U.S. Cl. 526—74 8 Claims

1. A method for reducing sheeting during polymerization of one or more olefin monomers in a fluidized bed reactor which comprises:

1) continuously monitoring electrostatic levels in the reactor and;

2) adding a positive charge generating inorganic chemical additive selected from among MgO, ZnO, Al_2O_3, CuO and mixtures thereof to the reactor, when negative electrostatic levels are detected; or

3) adding a negative charge generating inorganic chemical additive selected from among V_2O_5, SiO_2, TiO_2, Fe_2O_3, and mixtures thereof to the reactor, when positive electrostatic levels are detected

in amounts sufficient to create and maintain essentially neutral static charges in the reactor.

5,391,658

METHOD FOR PREPARING CYCLOOLEFIN COPOLYMERS WITH IMPROVED HEAT STABILITY

Parley C. Lane, Cuyahoga Falls; Linwood P. Tenney, Hudson; George M. Benedikt, Macedonia, and Paul T. Stricharczuk, Mayfield Heights, all of Ohio, assignors to B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 122,849, Nov. 19, 1987, Pat. No. 4,899,005.
This application Jan. 25, 1989, Ser. No. 301,394
Int. Cl.[6] C08F 2/02
U.S. Cl. 526—75 5 Claims

1. A method of producing ring-opened bulk polymerized polymers comprising:

(1) providing a volume of one or more cycloolefin monomers of sufficient purity to provide a degree of conversion greater than 95% upon polymerization with a metathesis catalyst system, wherein the degree of monomer conversion is determined by thermal gravimetric analysis upon heating a polymerized sample up to 400° C., said cycloolefin monomers having at least one norbornene group,

(2) heating said volume of cycloolefin monomers to a temperature sufficiently high to dissociate a portion of said cycloolefin monomers and react the dissociation products with components within said volume of cycloolefin monomers,

(3) forming a reactive liquid mixture from said heated volume of cycloolefin monomers without removal of the unreacted dissociation products formed, by adding a bulk polymerization catalyst and a bulk polymerization co-catalyst to the cycloolefin monomers after heating, wherein said bulk polymerization catalyst comprises an organoammonium catalyst selected from organoammonium tungstates and organoammonium molybdates and said bulk polymerization co-catalyst comprises an organoaluminum compound, and

(4) reacting said reactive liquid mixture at a temperature sufficiently high to thermally initiate ring-opening polymerization.

5,391,659

POLYMERIZATION PROCESS EMPLOYING LANTHANIDE HALIDE CATALYST AND POLYMER PRODUCED

Ted M. Pettijohn, Bartlesville, Okla., and Henry L. Hsieh, Pittsboro, N.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 805,440, Dec. 11, 1991, Pat. No. 5,286,694.
This application May 14, 1993, Ser. No. 62,103
The portion of the term of this patent subsequent to Jun. 21, 2011, has been disclaimed.
Int. Cl.[6] C08F 4/635, 4/631, 10/00
U.S. Cl. 526—114 13 Claims

1. A polymerization process comprising contacting at least one olefin monomer with a catalyst and a cocatalyst under polymerization conditions:

wherein said catalyst is produced by a process comprising:

(1) contacting at least one metal halide selected from the halides of scandium, yttrium, and rare earth metals having atomic numbers in the range of 57 to 71 with at least one alcohol to form a solution;

(2) contacting the solution of (1) with an organometallic compound to form a complex in solution,

wherein the metal in said organometallic compound is selected from Group IA, IIA, IIB, and IIIA metals; and

(3) contacting the complex in solution with a halide ion exchanging source to form said catalyst;

wherein said cocatalyst is an organoaluminum compound represented by the formula AlR'_mY_{3-m}, wherein each R' is a hydrocarbyl radical, each individually selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl, and aralkyl radicals containing 1 to 20 carbon atoms, Y is a monovalent radical selected from hydrogen and the halides and m is a number in the range of 1 to 3.

5,391,660

PROCESS FOR PREPARING POLYOLEFINES

Yosuke Numao, and Yoshio Tajima, both of Yokohama, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Jan. 12, 1993, Ser. No. 3,405
Claims priority, application Japan, Jan. 14, 1992, 4-040046; Jan. 14, 1992, 4-040047
Int. Cl.[6] C08F 4/64
U.S. Cl. 526—128 11 Claims

1. A process for preparing a polyolefin, characterized by polymerizing at least one olefin in the presence of a catalyst comprising the following components a) and b):

a) a catalyst component obtained by mutually contacting:

(1) a compound represented by the general formula $Me^1R^1_nX^1_{4-n}$ wherein R^1 is a hydrocarbon residue having 1 to 24 carbon atoms, X^1 is a halogen atom, Me is Zr, Ti or Hf, and n is in the range of $0 \leqq n \leqq 4$, and

(2) an alkali metal salt of a member selected from the group consisting of cyclopentadienes and indenes, and optionally

(3) a compound represented by the general formula $Me^2R^2_mX^2_{z-m}$ wherein R^2 is a hydrocarbon group having 1 to 24 carbon atoms, X^2 is an alkoxy group having 1 to 12 carbon atoms or a halogen atom, Me^2 is an element from Groups I to III of the Periodic Table, z is the valence of Me^2 and m is in the range of $0 < m \leqq 3$;

b) a modified organoaluminum compound prepared by the reaction of an organoaluminum compound and water and containing Al—O—Al bond(s).

5,391,661

PROCESS FOR PRODUCING A STYRENIC POLYMER AND A CATALYST FOR USE THEREIN

Shoji Naganuma; Masami Watanabe, both of Sodegaura, and Norio Tomotsu, Ichihara, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00736, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993, PCT Pub. No. WO92/22589, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 9, 1992, Ser. No. 965,290
Claims priority, application Japan, Jun. 12, 1991, 3-139955
Int. Cl.[6] C08F 4/16, 12/08, 4/54
U.S. Cl. 526—133 9 Claims

1. A catalyst for producing a styrenic polymer having a high degree of syndiotactic configuration, which comprises (A) a Ti compound selected from the Ti compounds represented by the formula (I)

$$TiR^1_aR^2_bR^3_cR^4_{4-(a+b+c)} \quad (I);$$

formula (II)

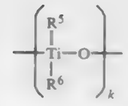
$$TiR^1_dR^2_eR^3_{3-(d+e)} \quad (II);$$

formula (III)

$$TiRXYZ \quad (III);$$

formula (IV)

formula (IV)



(IV)

and formula (V)

$$TiR^7R^8R^9R^{10} \quad (V),$$

wherein R^1, R^2, R^3 and R^4 are each a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an alkoxy group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an alkylaryl group, an arylalkyl group, an acyloxy group having 1 to 20 carbon atoms, a cyclopentadienyl group, a substituted cyclopentadienyl group, an indenyl group or a halogen atom; a, b and c are each an integer of 0 to 4; d and e each is a value from 0 to 3; R is a cyclopentadienyl group, a substituted cyclopentadienyl group, an indenyl group, a substituted indenyl group or a fluorenyl group; X, Y and Z, independently of one another, are each a hydrogen atom, an alkyl group having 1 to 12 carbon atoms, an alkoxy group having 1 to 12 carbon atoms, an aryl group having 6 to 12 carbon atoms, an aryloxy group having 6 to 20 carbon atoms, an arylalkyl group having 6 to 20 carbon atoms or a halogen atom; R^5 and R^6 each represent a halogen atom, an alkoxy group having 1 to 20 carbon atoms or an acyloxy group; k is an integer of 2 to 20; R^7 and R^8 are each a cyclopentadienyl group, substituted cyclopentadienyl group, indenyl group or fluorenyl group, and may be each crosslinked by a hydrocarbon radical having 1 to 5 carbon atoms, alkylsilyl group having 1 to 20 carbon atoms and 1 to 5 silicon atoms or germanium-containing hydrocarbon group having 1 to 20 carbon atoms and 1 to 5 germanium atoms; R^9 and R^{10} are each a hydrogen atom, halogen, hydrocarbon radical having 1 to 20 carbon atoms, alkoxy group having 1 to 20 carbon atoms, amino group or thioalkoxy group having 1 to 20 carbon atoms, and (B) a coordination complex compound comprising an anion in which a plurality of radicals are bonded to a metal and a quaternary ammonium salt, wherein the anion is represented by formula (VI)

$$(M^2X^1X^2 \ldots X^n)^{(n-m)-} \quad (VI)$$

wherein M^2 is a metal selected from the groups 5 to 15 of the Periodic Table; X^1 to X^n are each a hydrogen atom, a dialkyl amino group, an alkoxy group, an aryloxy group, an alkyl group having 1 to 20 carbon atoms, an aryl group, a halosubstituted aryl group, an alkylaryl group, an arylalkyl group, a substituted alkyl group, an organometalloid group or halogen atom; m is the valency of M^2, indicating an integer of 1 to 7, and n is an integer of 2 to 8.

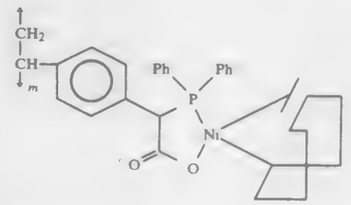
5,391,662

NICKEL CATALYST ACTIVE IN ETHYLENE HOMO AND COPOLYMERIZATION

Giuseppe Braca, Pisa; Anna M. Raspolli Galletti, Titignano Navacchio; Stefano Pinori, Pontedera, and Glauco Sbrana, Pisa, all of Italy, assignors to Enichem S.p.A., Milan, Italy

Division of Ser. No. 22,162, Feb. 25, 1993, Pat. No. 5,328,882.
This application Mar. 24, 1994, Ser. No. 216,855
Claims priority, application Italy, Feb. 26, 1992, MI92 A 000415
Int. Cl.[6] C08F 2/06, 4/80
U.S. Cl. 526—171 20 Claims

1. A process for ethylene homopolymerization or ethylene copolymerization comprising carrying out said homopolymerization or said copolymerization in the presence of a nickel complex catalyst bound to a polystyrene support, said polystyrene support having n unsubstituted styrene monomer units and m substituted styrene monomer units, and m and n are numbers dependent on the molecular weight of the polystyrene, the ratio n/m being between 1/1 and 100/1 the substituted styrene monomer units defined by the formula:



in which Ph is phenyl.

5,391,663

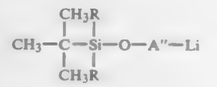
PROTECTED FUNCTIONAL INITIATORS FOR MAKING TERMINALLY FUNCTIONALIZED POLYMERS

Robert C. Bening, Katy, and Carl L. Willis, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 22, 1993, Ser. No. 155,665
Int. Cl.[6] C07F 7/18; C08F 4/46
U.S. Cl. 526—178 12 Claims

1. A process for making functionalized polymers, comprising the steps of:

initiating polymerization of an unsaturated monomer at a temperature from 20° C. to 60° C. with a lithium initiator having the structure



wherein each R is methyl, ethyl, n-propyl, or n-butyl and A″ is an alkyl-substituted or non-substituted propyl bridging group or an alkyl-substituted or non-substituted octyl bridging group; and

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recovering a linear or branched polymer having one or more terminal functional groups.

5,391,664

PROCESS FOR PRODUCING POLYMER

Kazuo Takei; Toshiaki Matsunaga, both of Osaka; Taketo Toba, Hyogo; Hiroyuki Ikeuchi, Osaka, and Fumihide Tamura, Shiga, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Sep. 1, 1993, Ser. No. 115,009

Claims priority, application Japan, Sep. 3, 1992, 4-236205; Feb. 10, 1993, 5-022965

Int. Cl.[6] C08F 2/06

U.S. Cl. 526—210 20 Claims

1. A process for producing a polymer, consisting essentially of polymerizing a vinyl-based monomer (a) in a reactor in the presence of

(i) an alcohol (b) having no addition-polymerizing activity;

(ii) an initiator (c) consisting essentially of a peroxide; and

(iii) a catalyst (d) selected from the group consisting of an organic sulfonic acid having no addition-polymerization reactivity and an inorganic acid;

thereby producing a polymer having a hydroxyl group at both terminals, wherein said reactor does not substantially contain any component other than the (a), (b), (c) and (d).

5,391,665

PROCESS FOR PRODUCING POLYMER HAVING HYDROXYL GROUPS AT BOTH TERMINALS

Toshiaki Matsunaga; Kazuo Takei, both of Osaka; Taketo Toba, Hyogo; Hiroyuki Ikeuchi, Osaka, and Fumihide Tamura, Shiga, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

PCT No. PCT/JP92/00992, § 371 Date Apr. 2, 1993, § 102(e) Date Apr. 2, 1993, PCT Pub. No. WO93/03066, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 4, 1992, Ser. No. 30,368

Claims priority, application Japan, Aug. 5, 1991, 3-195560; Jan. 21, 1992, 4-008767

Int. Cl.[6] C08F 2/38

U.S. Cl. 526—211 6 Claims

1. A process for producing a polymer having hydroxyl groups at both terminals which comprises polymerizing a reaction mixture consisting essentially of a vinyl monomer, a compound of the formula

$$HO—A—(S)_x—B—OH$$

wherein A and B are divalent organic groups and X is an integer of from 2 to 5, and a radical polymerization initiator, said compound being in at least a 50 mole excess with respect to the radical polymerization initiator and in a weight ratio of at least 0.5 with respect to the vinyl monomer in the reaction mixture.

5,391,666

LIGHT-RESPONSIVE PLATE CONTAINING THE METAL SALT OF A PHTHALIC ACID DERIVATIVE

Toshimi Satake; Tomoaki Nagai; Hiroshi Fukui; Miyuki Yokoyama, and Akio Sekine, all of Kita, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Division of Ser. No. 740,005, Aug. 2, 1991. This application Aug. 26, 1993, Ser. No. 113,229

Claims priority, application Japan, Sep. 27, 1989, 1-250863

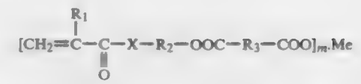
Int. Cl.[6] C08F 30/00

U.S. Cl. 526—241 13 Claims

1. A light responsive plate or film comprised of a transparent polymer and obtained by polymerizing a mixture containing:

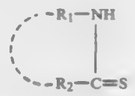
(1) a methacrylate monomer,

(2) a phthalic acid derivative copper salt or lead salt represented by the following Formula (I)



wherein R_1 represents hydrogen or lower alkyl; —X— represents —O— or —NH—; R_2 represents $—(CH_2)_n—$ which may be substituted by at least one of lower alkyl or halogen, or part of $—(CH_2)_n—$ may be interrupted by at least one of phenylene or —CH=CH—; R_3 represents phenylene or cyclohexylene; Me represents copper or lead; m represents 2 or 3; and n represents an integer of from 1 to 5, and at least one of:

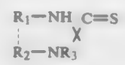
(3) a thioamide derivative represented by the following Formula (III)



(III)

wherein R_1 represents a monovalent group selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, aryl, aralkyl, or a 5- or 6-membered heterocyclic group containing at least one heteroatom selected from the group consisting of N, S and O; wherein R_2 represents a monovalent group selected from the group consisting of hydrogen, alkyl, alkenyl, alkoxy, cycloalkyl, aryl, aralkyl, or a 5- or 6-membered heterocyclic group containing at least one heteroatom selected from the group consisting of N, S and O; wherein R_1 and R_2 may each have at least one substituent; and wherein both R_1 and R_2 may together form a ring with the atoms to which they are attached; or

(4) a thiourea derivative represented by the following Formula (IV)



(IV)

wherein R_1, R_2 and R_3 each represents a monovalent group selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, aryl, aralkyl, and a 5- or 6- membered heterocyclic group containing at least one heteroatom selected from the group consisting of N, S and O; wherein R_1, R_2 and R_3 may each have at least one substituent; and wherein R_1 and R_2 or R_2 and R_3 may together form a ring with the atom to which they are attached.

5,391,667

COPOLYMERS OF N-VINYL-LACTAMS SUITABLE FOR OLIGOMER SOLID PHASE SYNTHESIS

Douglas J. Dellinger, Cardiff by the Sea, Calif., assignor to Isis Pharmaceuticals, Carlsbad, Calif.

Filed Mar. 4, 1993, Ser. No. 26,468

Int. Cl.[6] C08F 226/10, 212/36, 214/02

U.S. Cl. 526—264 20 Claims

1. A solid support for oligomer synthesis having free amine functionalities comprising a polymerized blend of:

from about 10 to about 90 percent by weight of N-vinyl lactam;

from about 10 to about 90 percent by weight of ethylenically unsaturated monomer having at least one amine or amine-displaceable functionality, said ethylenically unsaturated monomer comprising an amino or alkylamino moiety linked to styrene via a C_1–C_{10} alkyl moiety; and

from about 0.01 to about 5 percent by weight of di- or poly-functional crosslinking agent.

5,391,668

COLORLESS, PURIFIED POLYMERIZABLE COMPOSITION USEFUL FOR THE PRODUCTION OF CROSSLINKED POLYVINYLPYRROLIDONE

Susan Y. Tseng, Staten Island, N.Y., and Philip F. Wolf, Bridgewater, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed May 6, 1993, Ser. No. 57,378

The portion of the term of this patent subsequent to Nov. 1, 2011, has been disclaimed.

Int. Cl.[6] C08F 226/10

U.S. Cl. 526—264 7 Claims

1. A process for making a colorless, purified polymerizable composition consisting essentially of about 74–96% by weight of vinylpyrrolidone and about 4–26% by weight of 1-vinyl-3(E)-ethylidene pyrrolidone which comprises:

(a) providing a 2-phase reaction mixture comprising an organic phase which is vinylpyrrolidone monomer in an amount of about 25–90% by weight of the mixture, and an aqueous phase which is a solution containing about 2–50 wt. % of a strong base, under vigorous agitation, in an inert atmosphere,

(b) heating said reaction mixture at about 120°–170° C. for about 0.5–10 hours to form a reaction product which includes organic and aqueous layers,

(c) separating the organic layer from the aqueous layer, and

(d) distilling the organic layer under vacuum.

5,391,669

BALANCED CHARGE POLYMER AND HYDROPHILIC CONTACT LENS MANUFACTURED THEREFROM

Jiri Sulc, Centerport; Zuzana Krcova, East Northport, both of N.Y.; Patrick Chen, Edison, and Qi-Bin Bao, Livingston, both of N.J., assignors to Hydron Limited, Hants, United Kingdom and Ceskoslovenska akademie ved., Prague, Czechoslovakia

Division of Ser. No. 632,467, Dec. 21, 1990, Pat. No. 5,270,415.

This application Nov. 9, 1993, Ser. No. 149,078

Int. Cl.[6] C08F 26/06

U.S. Cl. 526—265 10 Claims

1. A hydrophilic contact lens manufactured from a charge balanced, water swellable crosslinked polymer which comprises the polymerizate derived from the copolymerization of at least one cationic-anionic pair of ethylenically unsaturated monomers and at least one nonionic ethylenically unsaturated monomer.

5,391,670

ALKYLATION RESINS FROM POLYCYCLIC AROMATIC COMPOUNDS

Atanu Biswas, Newark, and Daniel W. Klosiewicz, Wilmington, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Aug. 9, 1993, Ser. No. 103,461

Int. Cl.[6] C08F 36/00, 47/00, 4/06, 4/14

U.S. Cl. 526—284 83 Claims

1. An essentially amorphous alkylation resin comprising the alkylation reaction product of (a) at least one substituted or unsubstituted polycyclic aromatic compound having at least two aromatic rings, and (b) at least one ethylenically unsaturated hydrocarbon monomer having at least two carbon-carbon double bonds that reacts with the polycyclic aromatic compound by alkylation in the presence of an acid catalyst, wherein the ratio of (a) to (b) in the resin is about 1:9 to about 3:1 by weight, the resin having a weight average molecular weight Mw of less than about 10,000 measured by size exclusion chromatography, and a Ring and Ball softening point of about 50° to about 250° C.

5,391,671

STYRENE COPOLYMER AND PROCESS FOR PRODUCTION THEREOF

Toshinori Tazaki, and Masahiko Kuramoto, both of Ichihara, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Division of Ser. No. 598,637, Oct. 19, 1990, Pat. No. 5,262,504.

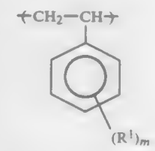
This application Jul. 9, 1993, Ser. No. 88,523

Claims priority, application Japan, Mar. 31, 1989, 1-78167; Mar. 31, 1989, 1-78168; Mar. 31, 1989, 1-78169

Int. Cl.[6] C08F 212/10, 212/14

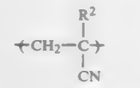
U.S. Cl. 526—347 6 Claims

1. A styrene copolymer which comprises a styrene repeating unit (a) represented by the formula (I):



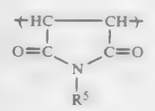
(I)

wherein R^1 is a hydrogen atom, a halogen atom or a hydrocarbon group having not more than 20 carbon atoms, m is an integer of 1 to 3, and when m is plural, R^1s may be the same or different, and an acrylonitrile repeating unit (b) represented by the formula (II-(b)):



(II-(b))

wherein R^2 is a hydrogen atom or a methyl group or a maleimide or N-substituted maleimide repeating unit (d) represented by the formula (II-(d)):



(II-(d))

wherein R^5 is a hydrogen atom, a saturated hydrocarbon group having not more than 20 carbon atoms, a saturated hydrocarbon group having at least one hydroxyl group and not more than 20 carbon atoms, a benzyl group, a substituted benzyl group, a phenyl group or a substituted phenyl group, which contains 0.1 to 50 wt. % of said repeating unit (b) or (d), wherein intrinsic viscosity measured in 1,2,4-trichlorobenzene at 135° C. is 0.07 to 20 dl/g and stereoregularity of the styrene repeating unit (a) chain is a high degree of syndiotactic configuration.

5,391,672

ALPHA-OLEFIN POLYMERS WITH SYNDIOTACTIC STRUCTURE

Enrico Albizzati, Arona; Luigi Resconi, Milan, and Adolfo Zambelli, Portici, all of Italy, assignors to Himont Incorporated

Continuation of Ser. No. 958,591, Oct. 8, 1992, abandoned, which is a continuation of Ser. No. 485,927, Feb. 27, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 70,648

Claims priority, application Italy, Feb. 28, 1989, 19589 A/89

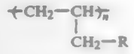
Int. Cl.[6] C08F 210/14, 210/08

U.S. Cl. 526—348.4 7 Claims

1. A crystalline polymer of 1-butene having a ^{13}C NMR chemical shift of 38.5, 32.8, 24.8 and 8.5, 4-methyl-1-pentene having a ^{13}C NMR chemical shift of 40.60, 29.14, 43.63, 23.57 and 21.30 or 4-methyl-1-hexene having an X-ray diffraction

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spectrum having a maxima of diffracted intensity for 2 θ angles of 8.9°, 12.75° and 16.5°, wherein the recurring units represented by:



where R is CH_3,



and n is an integer higher than 10, at least for segments formed of more than 10 monomer units have the syndiotactic structure.

5,391,673

SILICON RESINS AND METHODS FOR THEIR PREPARATION

Robert A. Ekeland, and Leslie E. Carpenter, II, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 30, 1993, Ser. No. 175,830
Int. Cl.[6] C08G 77/06
U.S. Cl. 528—12 **30 Claims**

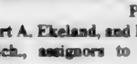
1. A method for making a silicone resin, the method comprising the steps of:

(I) mixing in a continuous manner a silane selected from the group consisting of:

(a) a silane having the formula SiX_4 wherein X is a halogen atom or a group having the formula OR wherein R is a group selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms, aryl groups, and arylalkyl groups;

(b) alcohol treated halogenated silanes; and

(c) alkyl silicates having units of the formula



or a partial hydrolysis condensate thereof, wherein R^1 is a group selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms, aryl groups, and arylalkyl groups, and d has a value of from 1 to 3, with a condensation catalyst;

(II) adding a quenching agent to the reaction mixture of (I), whereby an aqueous layer or condensation catalyst layer and an organic-silicone resin containing layer are formed;

(III) separating the aqueous layer or condensation catalyst layer from the organic-silicone resin containing layer; and

(IV) stripping the organic-silicone resin containing layer; wherein the weight ratio of said silane to said condensation catalyst is constant throughout said method.

5,391,674

PROCESS FOR PRODUCING BRANCHED ORGANOPOLYSILOXANE

Hiroyasu Hara, Annaka; Masayuki Ikeno, Maebashi, and Akihito Tsukumo, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1994, Ser. No. 197,872
Claims priority, application Japan, Feb. 17, 1993, 5-051417
Int. Cl.[6] C08G 77/06
U.S. Cl. 528—14 **9 Claims**

1. A process for producing a branched organopolysiloxane, comprising the steps of:

subjecting a mixture of (A) a trialkoxysilane having the following general formula (1):

$$R^1Si(OR^2)_3 \quad (1)$$

wherein R^1 is an unsubstituted or substituted monovalent hydrocarbon group, and R^2 may be the same or different and are each an unsubstituted or substituted monovalent hydrocarbon group, and (B) an organosiloxane oligomer obtained by hydrolysis-condensation of a silane compound having the following general formula (2):

$$R^3_aSiCl_{4-a} \quad (2)$$

wherein R^3 may be the same or different and are each an unsubstituted or substituted monovalent hydrocarbon group and a is an integer of 2 or 3, to equilibration reaction at a temperature of 50°–250° C. in the presence of an alkaline catalyst, thereby producing an organopolysiloxane, and

adding water, subsequently to or concurrently with the equilibration reaction, to the reaction mixture, in an amount sufficient to hydrolyze all of the Si—OR^2 groups contained in the organopolysiloxane produced above.

5,391,675

PROCESS FOR THE PREPARATION OF ORGANOPOLYSILOXANES

Steven E. Cray, Sully, Wales, and Mubarik M. Chowdhry, London, United Kingdom, assignors to Dow Corning Limited, Barry, Wales

Filed May 31, 1994, Ser. No. 251,495
Claims priority, application United Kingdom, Jun. 3, 1993, 9311509
Int. Cl.[6] C08G 77/08
U.S. Cl. 528—14 **12 Claims**

1. A process for the preparation of organopolysiloxanes having silicon-bonded substituents selected from the group consisting of aminoalkyl and polyaminoalkyl which comprises mixing together and thereafter reacting at a temperature of at least 50° C. (A) a silanol end-blocked organopolysiloxane, (B) an organosilicon compound having at least one silicon-bonded group —OX wherein X is selected from the group consisting of alkyl and alkoxyalkyl and having a monovalent group composed of carbon, hydrogen and nitrogen said monovalent group having at least one —NH_2 group therein and being attached to silicon by way of a silicon to carbon linkage, and (C) a catalyst comprising both (i) at least one compound selected from the group consisting of barium hydroxide and strontium hydroxide and (ii) at least one compound selected from the group consisting of borates and phosphates of sodium.

5,391,676

SYNTHESES OF EPOXYSILICONES

Richard P. Eckberg, Saratoga Springs, and Robert F. Agars, Clifton Park, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 885,095, May 18, 1992, Pat. No. 5,258,480. This application Oct. 29, 1993, Ser. No. 145,451
Int. Cl.[6] C08G 77/08
U.S. Cl. 528—15 **9 Claims**

1. A composition comprising an SiH-containing silane or siloxane, an olefin epoxide, a rhodium or platinum sulfide of the formula $RhX_3(R^1{}_2S)_3$ or $PtX_2(R^1{}_2S)_2$, where X is a halogen other than F^-, and R^1 is an independently substituted or unsubstituted $C_{1\text{-}30}$ alkyl, aryl, alkaryl or aralkyl, and a tertiary amine, wherein said tertiary amine is used at a concentration of from about 10 to about 1000 part per million with respect to the weight of said composition.

5,391,677

ACRYLIC-FUNCTIONAL ORGANOPOLYSILOXANE AND METHOD FOR THE PREPARATION THEREOF

Masatoshi Arai; Takafumi Sakamoto, and Kazutoshi Fujioka, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 917,178, Jul. 23, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 105,164
Claims priority, application Japan, Jul. 23, 1991, 3-206586
Int. Cl.[6] C08G 77/40
U.S. Cl. 528—18 **16 Claims**

1. An acrylic-functional organopolysiloxane which is a compound represented by the general formula

$$(Acr)_{p1}(R^1O)_{q1}(R^2)_{r1}Si—O—(—SiR^3{}_2—O—)_n—Si(R^2)_{r2}(OR^1)_{q2}(Acr)_{p2},$$

in which each of R^1, R^2 and R^3 is, independently from the others, an unsubstituted or substituted monovalent hydrocarbon group, Acr is an ω-(meth) acryloxyalkyl dimethyl siloxy group represented by the general formula

$$CH_2=CR^4—CO—O—(—CH_2—)_b—SiMe_2—O—,$$

R^4 being a hydrogen atom or a methyl group, Me being a methyl group and b being 1, 2 or 3, the subscript n is zero or a positive integer not exceeding 10,000, each of the subscripts p1 and p2 is 1 or 2 and each of the subscripts r1 and r2 is zero or 1 and each of the subscripts q1 and q2 is 1 or 2, with the proviso that p1+q1+r1 is 3 and p2+q2+r2 is 3.

5,391,678

CURABLE AND CURED ORGANOSILICON COMPOSITIONS

John K. Bard; Richard L. Brady; Raymond T. Leibfried, Sr., and Dekai Loo, all of New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Dec. 3, 1992, Ser. No. 983,450
Int. Cl.[6] C08G 77/04
U.S. Cl. 528—25 **61 Claims**

1. A curable composition comprising:

(a) a polyene having at least two hydrosilation reactive carbon-carbon double bonds;

(b) a silicon compound, having at least two hydrosilation reactive ≡SiH groups, and comprising at least one member selected from the group consisting of cyclic polysiloxanes, tetrahedral siloxysilanes, and linear polysiloxanes; wherein at least one of the polyene and the silicon compound has more than two hydrosilation reactive sites; and

(c) an epoxy-functional compound.

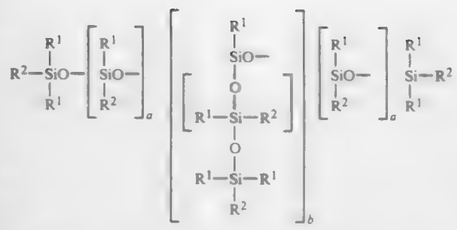
5,391,679

METHOD FOR THE SYNTHESIS OF POLYETHER SILOXANES

Georg Burkhart, Essen; Dietmar Schaefer, Hattingen; Andreas Weier, Essen, and Dietmar Wewers, Bottrop, all of Germany, assignors to Th. Goldschmidt AG, Essen, Germany

Filed May 17, 1993, Ser. No. 62,675
Claims priority, application Germany, Jun. 11, 1992, 4219070
Int. Cl.[6] C08G 77/08
U.S. Cl. 528—27 **10 Claims**

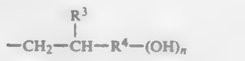
1. A method for synthesis of polyether siloxane containing no free excess polyether and having polyether group linked to a polysiloxane backbone through Si—C bonds, comprising the steps of reacting polysiloxane of a general, average formula



in which

R^1 groups are same or different and represent alkyl groups with 1 to 4 carbon atoms or phenyl groups, with the proviso that at least 90% of the R^1 groups are methyl groups;

R^2 groups can have the same meaning as the R^1 groups, with the proviso that at least one R^2 group is a group of the general formula



in which

R^3 is a hydrogen group or an alkyl group with 1 to 4 carbon atoms;

R^4 is an (n+1)-valent aliphatic hydrocarbon group or ether group; and

n has a value of 1, 2 or 3;

a has a value of 1 to 1000; and

b a value of 0 to 10;

with a compound having at least one epoxide group in an amount, so that there are at least two epoxide groups per OH group, in presence of a Lewis acid at a temperature not exceeding 60° C. or in presence of a complex catalyst capable of accelerating the addition between epoxide and hydroxyl groups at a temperature of up to 140° C., the reaction optionally being carried out in presence of an inert solvent.

5,391,680

ODOR RESISTANT FILM-FORMING COMPOSITION

Teruhito Maruyama, Kanagawa, Japan, assignor to Dow Corning Asia, Ltd., Tokyo, Japan

Filed Dec. 29, 1993, Ser. No. 174,970
Claims priority, application Japan, Jan. 6, 1993, 5-015848
Int. Cl.[6] C08G 77/26
U.S. Cl. 528—38 **5 Claims**

1. An odor-resistant film-forming composition comprising a mixture of silicon compounds of a first type having an amino group and a plurality of hydrolyzable groups in the molecule, and silicon compounds of a second type which are free of amino groups but which have a plurality of hydrolyzable groups in the molecule;

and containing a mixture of silicon compounds containing two hydrolyzable groups and silicon compounds containing three or more hydrolyzable groups;

the proportion of the silicon compounds of either the first or second type of silicon compounds having two hydrolyzable groups being 20–90% by weight of the total of the silicon compounds having three or more hydrolyzable groups in the molecule;

the silicon compounds of the second type being selected from the group consisting of:

(a) a siloxane resin containing an $R^0_{(3-m)}R^1{}_mSiO_{\frac{1}{2}}$ unit, an $R^0_{(2-n)}R^1{}_nSiO_{2/2}$ unit, wherein m represents 1, 2 or 3 and n represents 1 or 2, and an $R^0_{(1-p)}R^1{}_pSiO_{3/2}$ unit wherein p represents 0 or 1, provided that R^0 is a hydrolyzable group, R^1 is a methyl or phenyl group, and the siloxane

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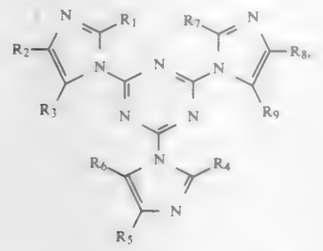
resin has a plurality of hydrolyzable groups in the molecule; and
(b) a silicate.

5,391,681
CURABLE COMPOSITIONS BASED ON EPOXY RESINS OR MIXTURES OF EPOXY RESINS AND POLYISOCYANATES CONTAINING TRISIMIDAZOLYL TRIAZINES

Andreas Mühlebach, Belfaux, and Peter Flury, Himmelried, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 27, 1993, Ser. No. 68,376
Claims priority, application Switzerland, Jun. 5, 1992, 1810/92
Int. Cl.[6] C08G *18/20, 59/00, 59/68;* C08L *63/00, 75/00;* C08K *5/29, 5/3445, 5/3492*
U.S. Cl. 528—45 11 Claims

1. A curable composition based on epoxy resins or a mixture of epoxy resins and polyisocyanates, at least 50% by weight of the total resin component of said mixture being epoxy resins and containing at least one compound of formula 1:



(1)

wherein [R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9] R_1 to R_9 are each independently of one another hydrogen, C_1–C_{10} alkyl which is unsubstituted or substituted by hydroxyl, halogen or C_1–C_4 alkoxy; C_5–C_{10} aryl which is unsubstituted or substituted by halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy; C_5–C_{10}aryl(-C_1–C_4)alkyl; or halogen, and R_2 together with R_3 or R_5 together with R_6 or R_8 together with R_9 optionally also each represent a fused benzene ring with the proviso that tris (benzimidazol-1-yl) triazine is excluded.

5,391,682
THERMOPLASTIC POLYURETHANE ELASTOMER, PROCESS FOR PRODUCING SAME, APPARATUS PRODUCING SAME AND ELASTOMER FIBERS MADE FROM SAME

Yasuhiro Ogawa, Suita; Kenzo Sagawa, Houfu; Takahiro Kitano, Houfu; Michiya Yamashita, Houfu; Tadaaki Yamada, Houfu, and Toshio Yamauchi, Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

PCT No. PCT/JP92/00437, § 371 Date Dec. 30, 1993, § 102(e) Date Dec. 30, 1993, PCT Pub. No. WO93/01222, PCT Pub. Date Jan. 21, 1993
PCT Filed Apr. 8, 1992, Ser. No. 175,359
Claims priority, application Japan, Jul. 3, 1991, 3-190707; Oct. 1, 1991, 3-282151; Feb. 29, 1992, 4-79001
Int. Cl.[6] C08G *18/10*
U.S. Cl. 528—59 12 Claims

1. A thermoplastic polyurethane elastomer, characterized in that

(A) a number-average molecular weight is 160,000 to 200,000, a weight-average molecular weight is 300,000 to 450,000, and a weight-average molecular weight/number-average molecular weight ratio is 1.8 to 2.3, and
(B) the number of polyurethane-based small grains contained in the elastomer is only 500 or less per kilogram of polyurethane, and
(C) the polyurethane elastomer is obtained by a bulk melt polymerization.

5,391,683
PREPARATION OF AROMATIC POLYISOCYANATES

Faouzi Joulak; Denis Revelant, and Pascal Vacus, all of Villeurbanne, France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Oct. 18, 1993, Ser. No. 137,352
Claims priority, application France, Oct. 16, 1992, 92 12436
Int. Cl.[6] C08G *18/70*
U.S. Cl. 528—67 22 Claims

1. A process for the preparation of an aromatic polyisocyanate, comprising reacting in gaseous phase at least one aromatic compound (A) bearing at least two primary amine substituents, with phosgene, and in a reaction zone devoid of mechanical stirring.

5,391,684
Patent Not Issued For This Number

5,391,685
PRINTING INK FOR SLIGHTLY ADHERENT PLASTIC BASE, PRINTED MATTER OF SAID BASE, AND METHOD OF PRINTING THE BASE

Yosuke Hitomi; Mari Murooka, and Fuminori Tokuda, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,953
Claims priority, application Japan, Jul. 4, 1991, 3-189596; Aug. 11, 1991, 3-319647
Int. Cl.[6] C08G *18/04*
U.S. Cl. 528—75 7 Claims

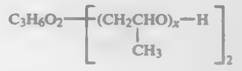
1. In an ultraviolet-curing printing ink for printing slightly adhesive plastic bases selected from the group consisting of polyoxymethylenes and polypropylenes, which ultraviolet-curing ink is selected from a mixture of at least one oligomer selected from the group of epoxy acrylate, epoxidized oil acrylate, urethane acrylate, unsaturated polyester, polyester acrylate, polyether acrylate, polyene/thiol, polybutadiene or and at least one monomer selected from the group of monofunctional acrylate, monofunctional methacrylate, polyfunctional acrylate or polyfunctional methacrylate, the improvement which comprises including in said ultraviolet-curing ink an isocyanate compound not containing an acrylic group.

5,391,686
POLYURETHANE COMPOSITIONS HAVING ENHANCED CORROSION INHIBITING PROPERTIES

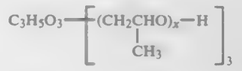
Jalandar Y. Jadhav, Ellicott City, and Cung Vu, Columbia, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Dec. 17, 1992, Ser. No. 991,903
Int. Cl.[6] C08G *18/48, 18/76;* B32B *15/08, 27/40*
U.S. Cl. 528—77 7 Claims

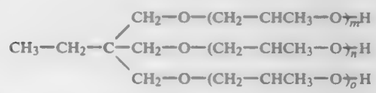
1. A corrosion inhibiting polyurethane coating composition applicable to metallic substrates, wherein said polyurethane coating comprises the reaction product of two Components, (A) and (B); Component (A) comprising, a compounded polyol having a hydroxyl equivalent weight in the range of 200 to 400 prepared by blending (i) a high molecular weight polypropylene oxide adduct of a polyol having an average hydroxyl equivalent weight in the range of from 500 to 2000 having the structure:



when said polyol is a diol compound and



when said polyol is a triol compound wherein x is from 5 to 20, and (ii) a low molecular weight polypropylene oxide adduct of a trimethyolopropane based triol of average hydroxyl equivalent weight of 100 to 200 having the structure:



where m, n, o are independently 1–3 and; Component(B) comprising, a polymeric MDI having an average molecular weight of 290 to 400 and an average functionality of 2.2 to 3.0.

5,391,687
METHOD OF PRODUCING HIGH MOLECULAR WEIGHT EPOXY RESIN USING AN AMIDE SOLVENT

Katsuji Shibata, Shimotsuma; Kazuhito Kobayashi, Yuki; Nozomu Takano, Shimodate; Masami Arai, Shimodate, and Ikuo Hoshi, Shimodate, all of Japan, assignors to Hitachi Chemical Company Ltd., Tokyo, Japan

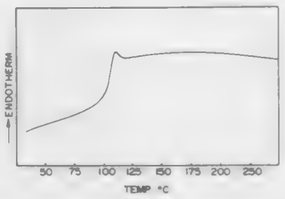
Continuation of Ser. No. 757,314, Sep. 19, 1991, abandoned. This application Oct. 18, 1993, Ser. No. 137,229
Claims priority, application Japan, Sep. 10, 1990, 2-239398; Sep. 10, 1990, 2-239399; Sep. 10, 1990, 2-239400; Sep. 12, 1990, 2-242238; Sep. 12, 1990, 2-242239
Int. Cl.[6] C08G *59/62, 59/56, 59/68*
U.S. Cl. 528—88 13 Claims

1. A method of producing a high molecular weight epoxy resin, comprising polymerizing a difunctional epoxy resin having two epoxy groups per molecule and a dihydric phenol at a reaction temperature of 60° to 150° C. by heating the difunctional epoxy resin and the dihydric phenol which are present in quantities which provide a ratio of phenolic hydroxy groups to epoxy groups of from 1:0.9 to 1:1.1 in an amide solvent, in the presence of an alkali metal compound as a polymerization catalyst, the total of the difunctional epoxy resin and the dihydric phenol being at most 30% by weight based on a total of the difunctional epoxy resin, the dihydric phenol and the amide solvent, the amount of the alkali metal compound being 0.0001 to 0.2 mol per mol of the difunctional epoxy resin, the amide solvent being selected from the group consisting of N,N-dimethylformamide, N-methylacetamide, N,N-dimethylacetamide, N-methylpyrrolidone and a mixture thereof, and the alkali metal compound being selected from the group consisting of sodium hydroxide, sodium methoxide, sodium hydride, sodium borohydride, lithium hydroxide, lithium methoxide, lithium hydride, lithium borohydride and a mixture thereof.

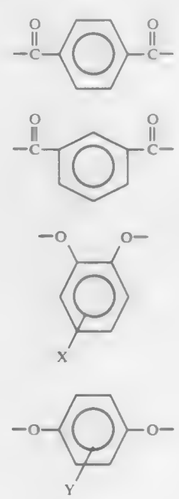
5,391,688
LIQUID CRYSTALLINE POLYESTERS

Hitoshi Mazaki, Kawasaki; Takehiro Toyooka, and Iwane Shiozaki, both of Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Jan. 18, 1994, Ser. No. 182,589
Claims priority, application Japan, Jan. 22, 1993, 5-041662
Int. Cl.[6] C08G *63/18*
U.S. Cl. 528—193 5 Claims



1. A liquid crystalline polyester consisting essentially of repeating units a, b, c and d represented by the following general formulae:



where X and Y are each independently a hydrogen atom, Cl, Br or an alkyl group having 1 to 4 carbon atoms, said repeating units a, b, c and d being in mole ratios wherein (a+b)/(c+d) is approximately 1, a/b is in the range from 98/2 to 50/50 and c/d is in the range of from 70/30 to 10/90.

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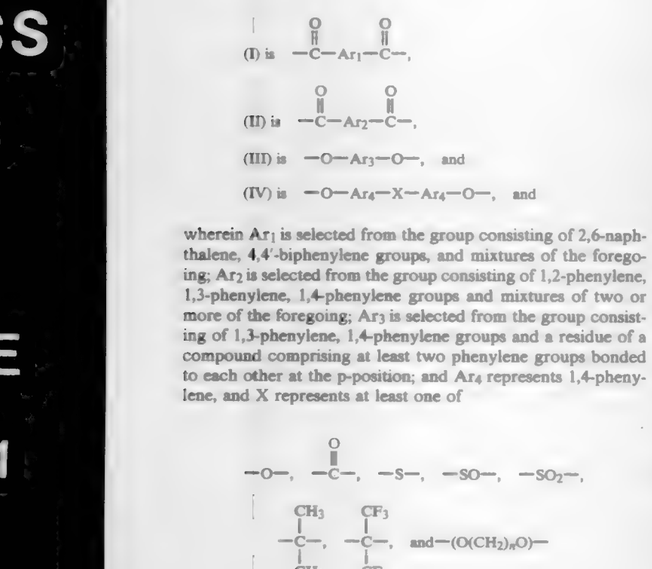
5,391,689

AROMATIC POLYESTER AND POLYESTER RESIN COMPOSITION

Yukihiko Kageyama; Tatsuya Saito; Keiichi Kanaka, and Kenji Hijikata, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Jul. 28, 1993, Ser. No. 98,075
Claims priority, application Japan, Jul. 31, 1992, 4-204992
Int. Cl.[6] C08G 63/02
U.S. Cl. 528—193 23 Claims

1. An aromatic polyester capable of forming an anisotropic melt phase consisting essentially of recurring structural units represented by the following general formulae (I), (II), (III) and (IV), in amounts of 20 to 30, 20 to 30, 25 to 40, and 10 to 25 mole percent, respectively, based on all the structural units present therein wherein:



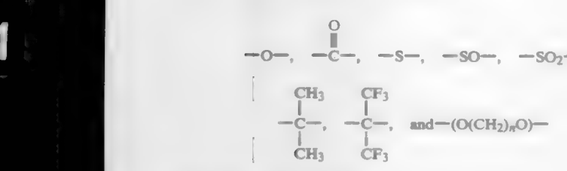
(I) is $-C(=O)-Ar_1-C(=O)-$,

(II) is $-C(=O)-Ar_2-C(=O)-$,

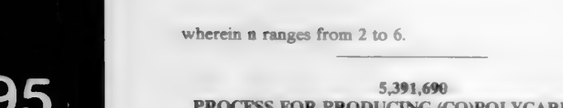
(III) is $-O-Ar_3-O-$, and

(IV) is $-O-Ar_4-X-Ar_4-O-$, and

wherein Ar_1 is selected from the group consisting of 2,6-naphthalene, 4,4'-biphenylene groups, and mixtures of the foregoing; Ar_2 is selected from the group consisting of 1,2-phenylene, 1,3-phenylene, 1,4-phenylene groups and mixtures of two or more of the foregoing; Ar_3 is selected from the group consisting of 1,3-phenylene, 1,4-phenylene groups and a residue of a compound comprising at least two phenylene groups bonded to each other at the p-position; and Ar_4 represents 1,4-phenylene, and X represents at least one of



$-O-$, $-C(=O)-$, $-S-$, $-SO-$, $-SO_2-$,



$-C(CH_3)_2-$, $-C(CF_3)_2-$, and $-(O(CH_2)_nO)-$

wherein n ranges from 2 to 6.

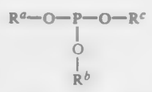
5,391,690

PROCESS FOR PRODUCING (CO)POLYCARBONATE AND (CO)POLYCARBONATE COMPOSITION

Tatsuya Kanno; Tsutomu Yamato; Yasuhiro Oshino; Yutaka Fukuda; Yoshihiro Iguchi; Takaaki Kuwana, and Toshihiro Matsumoto, all of Hyogo, Japan, assignors to Daicel Chemical Industries,Ltd., Osaka, Japan

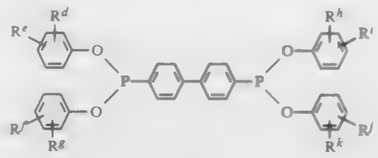
Division of Ser. No. 940,310, Aug. 31, 1992, Pat. No. 5,278,279. This application Jun. 2, 1993, Ser. No. 70,733
Claims priority, application Japan, Mar. 11, 1992, 4-52421
Int. Cl.[6] C08G 64/00
U.S. Cl. 528—198 12 Claims

1. A melt polycondensation process for producing a (co)polycarbonate or a (co)polyestercarbonate by reacting an aromatic dihydroxyl compound with one or more members selected from the group consisting of a diester of carbonic acid and a diester of dicarboxylic acid in the presence of a transesterification catalyst, wherein at least part of the reacting is conducted in the presence of an organic phosphorus compound selected from the group consisting of compounds represented by the following general formulas (1) to (6), or, in the presence of an organic phosphorus compound selected from the group consisting of compounds represented by the following general formulas (1) to (6) and a hindered phenol compound:

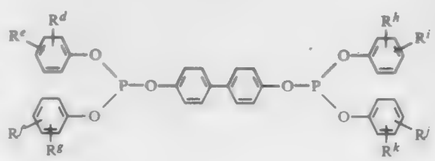


(1)

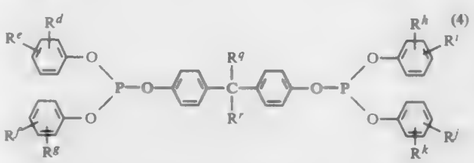
wherein R^a, R^b and R^c each represents a straight-chain or branched alkyl group having 1 to 12 carbon atoms, or a phenyl group which is unsubstituted or substituted;



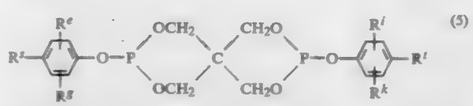
(2)



(3)

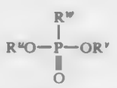


(4)



(5)

wherein R^d, R^e, R^f, R^g, R^h, R^i, R^j and R^k each represents a hydrogen atom or a straight-chain or branched alkyl group having 1 to 12 carbon atoms, R^q and R^r each represents a straight-chain or branched alkyl group having 1 to 12 carbon atoms and R^s and R^t each represents a straight-chain or branched alkyl group having 1 to 12 carbon atoms;



(6)

wherein R^u and R^v each represents a straight-chain or branched alkyl group having 1 to 20 carbon atoms and R^w represents a phenyl or aralkyl group which is substituted or unsubstituted, wherein the organic phosphorus compound and the hindered phenol compound are added after the relative viscosity of the reaction mixture reaches in the range of from 1.01 to 1.15 (polymer content: 0.5 g/dl in methylene chloride, at 20° C.).

5,391,691

PROCESS FOR PRODUCING AROMATIC POLYCARBONATE

Masuzo Yokoyama; Kazuhide Takakura, and Junji Takano, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 139,848
Claims priority, application Japan, Oct. 23, 1992, 4-285974; Nov. 13, 1992, 4-303496
Int. Cl.[6] C08G 64/00
U.S. Cl. 528—198 19 Claims

1. A process for producing an aromatic polycarbonate having a 5% weight loss heating temperature (Td5%) of not lower than 460° C. comprising melt polycondensing an aromatic diol compound and a carbonic acid diester compound in the presence of an interesterification catalyst and in the co-presence of an organosilicon compound.

5,391,692

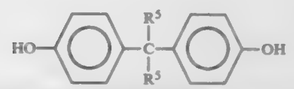
METHOD FOR MAKING AROMATIC POLYCARBONATES

Eugene P. Boden, Scotia; Peter D. Phelps, Schenectady, both of N.Y.; David L. Ramsey, Mt. Vernon, Ind.; Paul D. Sybert; Larry I. Flowers, both of Evansville, Ind., and Roy R. Odle, Mt. Vernon, Ind., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 66,382, May 24, 1993, abandoned. This application Feb. 2, 1994, Ser. No. 190,395
Int. Cl.[6] C08G 64/00
U.S. Cl. 528—199 13 Claims

1. A method for making polycarbonate, comprising,

(A) phosgenating under interfacial reaction conditions at a pH in the range of 9 to 12.5, a phenolic chain-stopper and a bisphenol of the formula,



in the presence of 0.05 to 10% by weight of a polyalkylammonium or polyalkylphosphonium phase transfer catalyst selected from the class consisting of

$(R)_4N^+X$,

$R^1(R)_3Q^+X$, and

$(R^2)_a(R^3)_{3-a}N-(CH_2)_n-N(R^3)_{3-a}(R^2)_a$,

to provide a polycarbonate having a gel phase chromatographic molecular weight in the range of about 25×10^3 to about 180×10^3, and,

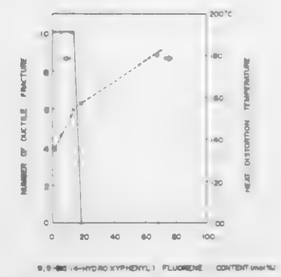
(B) eliminating chloroformate end groups in the resulting mixture of (A) prior to polycarbonate recovery, where R is selected from the same or different $C_{(3-10)}$ alkyl group, R^1 is a $C_{(1-3)}$ alkyl group, R^2 is selected from the same or different $C_{(1-2)}$ alkyl group, R^3 is selected from the same or different $C_{(3-10)}$ alkyl group, Q is a nitrogen or phosphorus atom, X is selected from a halogen atom, or an $-OR^4$ group, R^4 is a member selected from H, $C_{(1-18)}$ alkyl or $C_{(6-18)}$ aryl, R^5 is selected from the same or different $C_{(1-4)}$ alkyl group, and "a" is a whole number equal to 0 or 1.

5,391,693

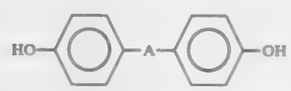
PROCESS FOR PRODUCING A POLYCARBONATE COPOLYMER

Mitsugu Nakae, Ichihara, Japan, assignor to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1993, Ser. No. 130,359
Claims priority, application Japan, Oct. 9, 1992, 4-271711; Nov. 12, 1992, 4-302358
Int. Cl.[6] C08G 64/00
U.S. Cl. 528—201 11 Claims

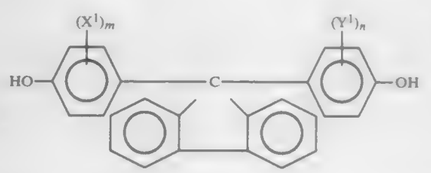


1. A process for producing a polycarbonate copolymer which process comprises interfacial polycondensating a reaction mixture comprising an aromatic diol of the formula (III):



(III)

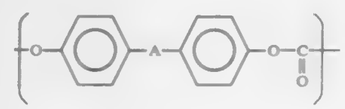
wherein A is selected from the group consisting of an alkylidene group having 1 to 12 carbon atoms, an alkylene group having 1 to 15 carbon atoms, an arylene group having 6 to 15 carbon atoms, an aryalkylene group having 7 to 15 carbon atoms, —O—, —S— and $-SO_2-$ or A is a single bond, and a 9,9-bis(4-hydroxyphenyl)fluorene compound of the formula (IV):



(IV)

wherein X^1 and Y^1 are independently selected from the group consisting of a hydrogen atom, a halogen atom and an organic group having 1 to 8 carbon atoms, m and n are independently an integer of 1 to 4,

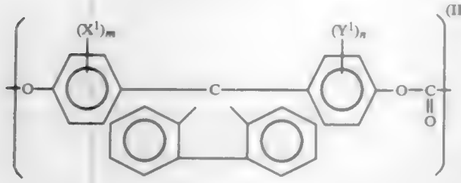
with phosgene or a phosgene derivative in the presence of methylene chloride as an inert organic solvent, said fluorene compound being in the form of an aqueous solution in potassium hydroxide, said polycarbonate copolymer having a main chain comprising a carbonate structural unit of the formula (I):



(I)

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wherein A is as defined for the formula (III), and a carbonate structural unit of the formula (II):



(II)

wherein X^1, Y^1, m and n are as defined for the formula (IV).

5,391,694

SOLID STATE POLYMERIZATION OF POLYESTERS WITH LOW DIFFUSION RESISTANCE PREPOLYMER GRANULES

Ben Duh, and William C. T. Tung, both of Tallmadge, Ohio, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 15, 1993, Ser. No. 137,876
Int. Cl.[6] C21B *7/00*; C08G *63/00*; C08F *6/00*
U.S. Cl. 528—272 **17 Claims**

1. In a process for preparing a polyester polymer by melt polymerization to produce a polyester prepolymer having an intrinsic viscosity of from about 0.25 dl/g to about 0.75 dl/g, followed by solid state polymerization, the improvement comprising extruding the polyester prepolymer through a die designed to form tubular molten strands, quenching the molten strands, and chopping the strands into open-ended pellets of a size and shape suitable for solid state polymerization.

5,391,695

PROCESS FOR PRODUCING BINDER RESIN AND DEVELOPER COMPOSITION FOR ELECTROPHOTOGRAPHY

Kuniyasu Kawabe, Wakayama, and Yoko Matsumoto, Osaka, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 958,772, Oct. 9, 1992, abandoned, which is a division of Ser. No. 770,278, Oct. 3, 1991, abandoned. This application Nov. 10, 1993, Ser. No. 150,285
Claims priority, application Japan, Oct. 3, 1990, 2-267305
Int. Cl.[6] C08G *63/02*
U.S. Cl. 528—272 **3 Claims**

1. A process for producing a binder resin which comprises:
blending in a reactor a raw monomer for a first polymerization system and a raw monomer for a second polymerization system which undergoes polymerization through a reaction path different from a reaction path of the first polymerization system, wherein the raw monomer for the first polymerization system yields a vinyl resin by radical polymerization and the raw monomer for the second polymerization system yields a polyester, a polyester-polyamide or a polyamide;
then conducting the polymerization of the first and second polymerization systems in the same reactor after the addition of from 0.1 to 20 parts by weight per 100 parts by weight of the raw monomer for the first polymerization of a polymerization initiator, wherein said polymerization is conducted at a temperature of from room temperature to 250° C. and the raw monomer for the first polymerization and the raw monomer for the second polymerization are used in amounts to give a ratio of the vinyl resin to the polyester, polyester-polyamide or polyamide resin in the binder resin of 10:90 to 90:10 parts by weight; and
recovering the binder resin.

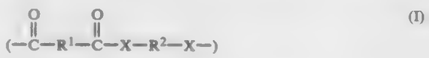
5,391,696

POLYCONDENSATES WHICH CONTAIN TARTARIC ACID DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND USE THEREOF

Volker Krone, Hofheim am Taunus; Michael Magerstädt, Egelsbach; Axel Walch; Günter Ditzinger, both of Frankfurt am Main, and Norbert Lill, Kronberg/Ts., all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 21, 1992, Ser. No. 886,197
Claims priority, application Germany, May 24, 1991, 4116936
Int. Cl.[6] C08G *69/44*
U.S. Cl. 528—288 **14 Claims**

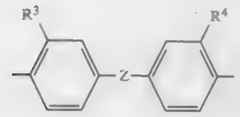
1. A polycondensate compound which contains at least 95 mol % of recurring structural units of the formula I



(I)

where R^1 is
a) straight-chain or branched (C_1–C_{18})-alkyl or straight-chain or branched (C_1–C_{18})-alkenyl which contains one or more double bonds,
b) straight-chain or branched (C_1–C_{18})-alkyl or straight-chain or branched (C_1–C_{18})-alkenyl which contains one or more double bonds, mono- or polysubstituted by
1) (C_5–C_7)-cycloalkyl,
2) (C_5–C_7)-cycloalkenyl, having one or more double bonds,
3) halogen,
4) mercapto,
5) hydroxy,
6) (C_1–C_6)-alkoxy,
7) phenoxy,
8) phenoxy, mono- or polysubstituted by
8.1 halogen,
8.2 (C_1–C_6)-alkyl,
8.3 (C_1–C_6)-alkoxy,
8.4 nitro or
8.5 carbethoxy,
9) naphthyloxy,
10) benzyloxy,
11) benzyloxy, mono- or polysubstituted in the aryl moiety by
11.1 methoxy,
11.2 carboxamid,
11.3 amino,
11.4 halogen,
11.5 nitro or
11.6 methyl,
12) amino,
13) monoalkylamino, having 1 to 7 carbon atoms,
14) monoalkylamino, having 1 to 7 carbon atoms, mono-or polysubstituted in the alkyl moiety by
14.1 hydroxyl,
14.2 carboxyl,
14.3 carboxamide,
14.4 carboethoxy,
14.5 amino,
14.6 (C_1–C_6)-alkylamino,
14.7 di-(C_1–C_6)-alkylamino,
14.8 piperidine or
14.9 morpholine,
15) dialkylamino having 1 to 7 carbon atoms, or
16) dialkylamino having 1 to 7 carbon atoms, substituted as defined in b) 14.1 to 14.9,
c) aryl, having 6 to 14 carbon atoms, optionally mono- or disubstituted by
1.1 (C_1–C_6)-alkyl,
1.2 (C_2–C_6)-alkenyl,
1.3 (C_1–C_6)alkylcarboxy,
1.4 hydroxyl,
1.5 halogen,

1.6 acetoxy,
1.7 (C_1–C_6)-alkylcarboxamide,
1.8 sulfonamide,
1.9 nitro,
1.10 (C_1–C_6)-alkoxy or
1.11 amino,
d) a compound of the formula IV



(IV)

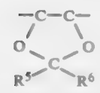
in which R^3 and R^4 independently of one another are
1) hydrogen or
2) an inert radical and
wherein Z is a compound
1) —O—,
2) —S—,
3)



4) $—SO_2—$
5)



6) $—C_nH_{2n}—$, in which n is an integer from 1 to 10 and the carbon chain is straight or branched, or
7) —O-aryl-O, in which aryl is as defined in c),
e) a compound of the formula II,



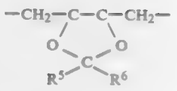
(II)

in which R^5 and R^6 independently of one another are
1) hydrogen,
2) alkyl or alkenyl having 1 to 18 carbon atoms,
3) alkyl or alkenyl having 1 to 18 carbon atoms, mono-or polysubstituted as defined in b) 1 to 16,
4) aryl, having 6 to 14 carbon atoms,
5) aryl, having 6 to 14 carbon atoms, mono- or polysubstituted as defined in c) 1.1 to 1.11, or
f) a compound of the formula V



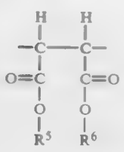
(V)

where X in formula I is
a) —O—,
b) —NH— or
c) —S—,
where R^2 in formula I is
a) a compound of the formula III



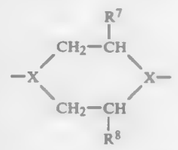
(III)

in which R^5 and R^6 have the above-mentioned meanings,
b) a compound of the formula VI,



(VI)

in which R^5 and R^6 have the above-mentioned meanings,
c) straight-chain or branched alkyl or alkenyl having 1 to 18 carbon atoms,
d) straight-chain or branched alkyl or alkenyl having 1 to 18 carbon atoms, mono- or polysubstituted by a radical wherein said radical is
1) carboxyl,
2) carboxyl in which the hydroxyl group is replaced by a radical wherein said radical is
2.1 —O-(C_1–C_8)-alkyl,
2.2 halogen,
2.3 —O-(C_1–C_4)-alkylcarbonyl,
2.4 (C_1–C_6)-alkylamino,
2.5 (C_1–C_6)-alkylamino, mono- or polysubstituted in the alkyl moiety by a radical wherein said radical is
2.5.1 hydroxyl,
2.5.2 mercapto,
2.5.3. —O-(C_2–C_4)-alkyl,
2.6 L-amino acid or genetically encoded L-amino acid,
2.7 L-amino acid or genetically encoded L-amino acid, either of which is mono- or polysubstituted by
2.7.1 (C_1–C_4)-alkyl
3) hydroxyl,
4) halogen,
5) amino,
6) mercapto or
7) alkyl having 1 to 8 carbon atoms,
e) a cyclic compound of the formula VII



(VII)

in which R^7 and R^8, independently of one another, are
1) hydrogen or
2) (C_1–C_3)-alkyl
and X is N, or
f) aryl, having 5 to 14 carbon atoms, optionally mono- or disubstituted by
1.1 (C_1–C_6)-alkyl,
1.2 (C_2–C_6)-alkenyl,
1.3 (C_1–C_6)-alkylcarboxy,
1.4 hydroxyl,
1.5 halogen,
1.6 acetoxy,
1.7 (C_1–C_6)-alkylcarboxamide,
1.8 sulfonamide,
1.9 nitro,
1.10 (C_1–C_6)-alkoxy or
1.11 amino,

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with the proviso that more than 5 mol % of the radicals R^1 and/or R^2 are present in the polycondensate of the formula I, where R^1 is a compound of the formula II or R^2 is a compound of the formula III, or R^1 is a compound of the formula II and R^2 is a compound of the formula III, or in which more than 5 mol % of the radicals R^1 and R^2 are present in the polycondensate of the formula I, where

a) R^1 is a compound of the formula V and R^2 is a compound of the formula VI, or;

b) R^1 is phenyl 1,2; phenyl 1,3 or phenyl 1,4 and R^2 is a compound of the formula VI

and with the further proviso that when R^1 is a compound of the formula II and both R^5 and R^6 in formula II are hydrogen, X together with R^2 in formula I is not —NH— together with C_6-alkyl or —NH— together with xylylene.

5,391,697

METHOD OF PRODUCING A THERMOSETTING ESTERIMIDE OLIGOMER

Hiroyuki Furutani, Ohtsu, Japan, assignor to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 735,218, Jul. 24, 1991, Pat. No. 5,332,920. This application Mar. 8, 1994, Ser. No. 207,047

Claims priority, application Japan, Jul. 25, 1990, 2-196888; Jul. 25, 1990, 2-196889

Int. Cl.[6] C08G 73/16

U.S. Cl. 528—288 5 Claims

1. A method for producing an esterimide oligomer, which comprises:

keeping a reaction system at room temperature or below in an inert gas atmosphere,

adding trimellitic acid anhydride dissolved in an aprotic polar solvent to a mixed solution containing paratoluenesulfonic acid chloride and pyridine,

adding a diol dissolved in an aprotic polar solvent to cause a reaction to proceed,

adding the necessary quantity of a diamine dissolved in an aprotic polar solvent for obtaining both end acid anhydride groups-terminated telechelic oligoesteramic acid,

adding a primary amine or an acid anhydride dissolved in an aprotic polar solvent to terminate the both ends, and

adding a non-solvent to dehydrate and close rings of the reaction product.

5,391,698

PHOSPHORIC ACID POLYESTERS AND A PROCESS FOR THEIR PREPARATION

Horst Staendeke, Lohmar, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

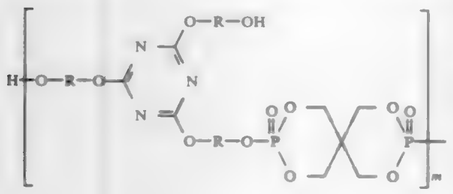
Filed Jan. 25, 1994, Ser. No. 187,406

Claims priority, application Germany, Feb. 9, 1993, 4303654

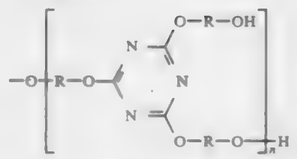
Int. Cl.[6] C08G 63/692

U.S. Cl. 528—287 18 Claims

1. A phosphoric acid polyester according to the formula



-continued



in which R is $=CH_2$, $=C_2H_4$ or $=C_3H_6$ and m is 1 to 10 and n is 1 to 6.

5,391,699

POLYESTER COPOLYMER AND A PROCESS FOR THE PRODUCTION OF THE SAME

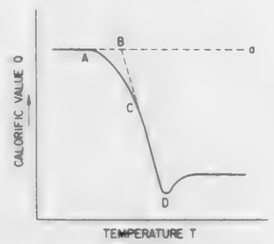
Tomohisa Nishikawa, Tokyo; Takeshi Kinoshita, Saitama, and Toshihiko Yotsumoto, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 3, 1993, Ser. No. 55,386

Claims priority, application Japan, May 1, 1992, 4-112681

Int. Cl.[6] C08G 69/08

U.S. Cl. 528—292 12 Claims



1. A polyester copolymer comprising an aromatic dicarboxylic acid, diol and at least one compound selected from the group consisting of aromatic compounds having an amino group, represented by the following general formula (I),

$$H_2N—X—COOR \quad (I)$$

wherein X is an aromatic ring-containing group and R is a hydrogen atom or a hydrocarbon group selected from the group consisting of C_1–C_4 alkyl groups and cyclohexyl groups, wherein the polyester copolymer comprises at least 85 mol % of ethylene terephthalate.

5,391,700

PROCESS FOR PRODUCING POLYESTER BY RING-OPENING COPOLYMERIZATION

Hiroshi Itoh, Kobe; Takashi Namba, Suita; Hiroya Kobayashi, Minoo, and Masashi Yukitake, Suita, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Apr. 26, 1994, Ser. No. 233,649

Claims priority, application Japan, Apr. 27, 1993, 5-100746; Apr. 27, 1993, 5-100747; Aug. 17, 1993, 5-203071; Aug. 31, 1993, 5-215631; Jan. 26, 1994, 6-006780

Int. Cl.[6] C08G 63/42

U.S. Cl. 528—297 12 Claims

1. A process for producing a polyester, comprising the steps of:

placing a cyclic acid anhydride containing succinic anhydride as a main component in a reaction vessel, said cyclic acid anhydride being in a melting state or solution state; and

introducing successively a cyclic ether containing ethylene oxide as a main component into said reaction vessel, wherein the rate per hour of introducing said cyclic ether is within the range of 3 to 90 parts by weight per 100 parts by weight of said cyclic acid anhydride, and wherein said reaction vessel has an inside pressure within the range of atmospheric pressure to 50 kgf/cm² as a gauge pressure, whereby a ring-opening copolymerization reaction of said cyclic acid anhydride with said cyclic ether carried out to form a polyester.

5,391,701

POLY(ETHYLENE 2,6-NAPHTHALENE DICARBOXYLATE)/HALOGEN COMPOUND COMPOSITIONS HAVING REDUCED FLUORESCENCE

Allan S. Jones, Church Hill; David E. Mills, Kingsport, both of Tenn., and Mitchell A. Winnik, Toronto, Canada, assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Aug. 9, 1993, Ser. No. 103,643

Int. Cl.[6] C08G 63/189

U.S. Cl. 528—298 13 Claims

1. A poly(ethylene 2,6-naphthalene dicarboxylate) composition with reduced fluorescence consisting essentially of repeat units from:

(a) a dicarboxylic acid component which comprises at least 85 mole percent of a dicarboxylic acid selected from the group consisting of naphthalene-2,6-dicarboxylic acid, and naphthalene-2,6-dicarboxylate ester;

(b) a diol component which comprises at least 85 mole percent of ethylene glycol; and

(c) 0.5 to 2 mole percent, based on 100 mole percent dicarboxylic acid and 100 mole percent diol, of a difunctional halogen containing aromatic compound which has at least one halogen group directly attached to the aromatic ring.

5,391,702

PROCESS FOR PREPARING POLY(ETHYLENE 2,6-NAPHTHALENE DICARBOXYLATE) BLENDS HAVING REDUCED FLUORESCENCE

Allan S. Jones, Church Hill, and David E. Mills, Kingsport, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Aug. 9, 1993, Ser. No. 103,646

Int. Cl.[6] C08G 63/189

U.S. Cl. 528—298 10 Claims

1. A process for preparing a poly(ethylene 2,6-naphthalene dicarboxylate) blend which exhibits reduced fluorescence comprising:

(I) melt blending

(A) 95.0 to 99.9 weight percent of a polyester which comprises

(1) a dicarboxylic acid component comprising repeat units from at least 85 mole percent of a dicarboxylic acid selected from the group consisting of naphthalene-2,6-dicarboxylic acid, and naphthalene-2,6-dicarboxylate ester;

(2) a diol component comprising repeat units from at least 85 mole percent ethylene glycol, based on 100 mole percent dicarboxylic acid and 100 mole percent diol; and

(B) 0.1 to 5.0 weight percent of a fluorescence quenching compound selected from the group consisting of an aromatic ketone and a naphthol compound, provided said fluorescence quenching compound contains an aromatic ring having at least one acyl group or hydroxyl group directly attached to the aromatic ring, wherein the combined weights of (A) and (B) total 100 percent; and

(II) forming the blend into an article.

5,391,703

POLYAMIDE PIGMENT DISPERSION

Perry H. Lin, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US91/08387, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO92/08829, PCT Pub. Date May 29, 1992

Continuation-in-part of Ser. No. 616,126, Nov. 20, 1990, Pat. No. 5,223,196. This PCT application Nov. 18, 1991, Ser. No. 50,419

Int. Cl.[6] C08G 69/26

U.S. Cl. 528—339 4 Claims

1. In a process for preparing pigmented drawn polyamide filaments wherein a molten mixture of a polyamide and a pigment dispersed in a polymer matrix is spun into filaments and drawn, the improvement wherein the polymer matrix is a random copolymer of hexamethylene diamine, isophthalic acid and terephthalic acid.

5,391,704

METHODS AND COMPOSITIONS FOR DIAGNOSING CHRONIC IMMUNE THROMBOCYTOPENIC PURPURA

Robert McMillan, Del Mar; Mark H. Ginsberg, San Diego, and Edward F. Plow, San Diego, all of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 620,669, Dec. 3, 1990, Pat. No. 5,177,188. This application Nov. 27, 1991, Ser. No. 803,624

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[6] C07K 7/10

U.S. Cl. 530—324 8 Claims

1. A polypeptide having an amino acid residue sequence selected from the group consisting of:

Tyr-His-Asp-Arg-Lys-Glu-Phe-Ala-Lys-Phe-Glu-Glu-Glu-Arg-Ala-Arg-Ala-Lys-Trp-Asp-Thr-Ala-Asn-Asn (SEQ ID NO 1);

Ala-Asn-Asn-Pro-Leu-Tyr-Lys-Glu-Ala-Thr-Ser-Thr-Phe-Thr-Asn-Ile-Thr-Tyr-Arg-Gly-Thr (SEQ ID NO 2); and

Tyr-His-Asp-Arg-Lys-Glu-Phe-Ala-Lys-Phe-Glu-Glu-Glu-Arg-Ala-Arg-Ala-Lys-Trp-Asp-Thr-Ala-Asn-Asn-Ala-Asn-Asn-Pro-Leu-Tyr-Lys-Glu-Ala-Thr-Thr-Ser-Thr-Phe-Thr-Asn-Ile-Thr-Tyr-Arg-Gly-Thr (SEQ ID NO 3),

wherein said polypeptide is labeled.

5,391,705

POLYFLUORINATED TRIPEPTIDE THROMBIN INHIBITORS

Bernhard Neises, Offenburg-Griesheim, Germany; Axel Ganzborn, Lingolsheim; Céline Tarnus, Strasbourg, both of France, and Robert J. Broersma, Jr., Noblesville, Ind., assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 8,253, Jan. 25, 1993, abandoned, which is a continuation of Ser. No. 848,444, Mar. 9, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 199,039

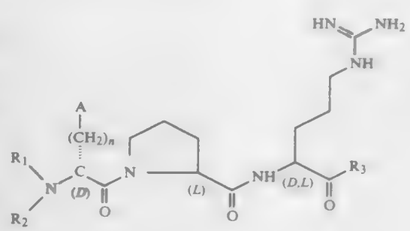
Claims priority, application European Pat. Off., Mar. 15, 1991, 91400713

Int. Cl.[6] A61K 37/02, 37/64; C07K 5/08

U.S. Cl. 530—331 12 Claims

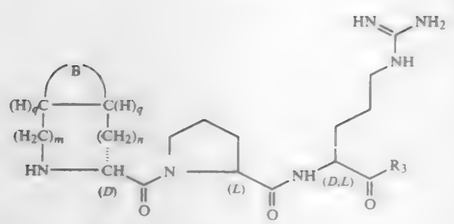
1. A compound of formulae

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their isomers or mixtures thereof, the hydrates or the pharmaceutically acceptable salts thereof, with the proviso that when R_1 and R_2 are both H or when A is phenyl, then R_3 is other than $—CF_3$ or $—CF_2CF_3$, wherein

m is zero, one or two, n is zero or one, with the proviso that the sum of m and n is less than three and greater than zero, q is zero or one with the proviso that the sum of both q's is zero or 2,

$R_1$is H or C_{1-7} alkyl,

$R_2$is H or C_{1-7} alkyl, or R_1 and R_2 taken together with the nitrogen atom to which they are attached form pyrrolidinyl or piperidinyl,

$R_3$is $—CF_3$, $—CF_2CF_3$, $—CF_2(CH_2)_rCH_3$, $—CF_2(CH_2)_t$-COOR—$CF_2(CH_2)_vCONHR_4$, $—CF_2(CH_2)_rCH_2OR_4$ or $—CF_2(CH_2)_vCH=CH_2$, with t being 2, 3 or 4, and v is 1, 2 or 3,

R_4 is H or C_{1-6} alkyl,

A is phenyl or cyclohexyl,

B is $(CH)_4$ or $(CH_2)_4$ which, when taken together with the two carbon atoms to which it is attached, forms a phenyl or cyclohexyl moiety.

5,391,706

PURIFICATION OF GM-CSF

Paul P. Trotta, Rutherford; Gail F. Seelig, Watchung; Robert A. Kosecki, Flemington, and Paul Reichert, Montville, all of N.J., assignors to Schering Plough Corporation, Madison, N.J.

Continuation of Ser. No. 870,153, Apr. 14, 1992, abandoned, which is a continuation of Ser. No. 455,453, Dec. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 74,410, Jul. 16, 1987, abandoned. This application Sep. 21, 1993, Ser. No. 125,356

Int. Cl.[6] C07K *3/20*

U.S. Cl. 530—351 **6 Claims**

1. A method of purifying granulocyte-macrophage colony-stimulating factor (GM-CSF) from GM-CSF-expressing bacteria comprising:

(a) killing and disrupting the GM-CSF-expressing bacteria;

(b) preparing a GM-CSF containing extract from the disrupted GM-CSF-expressing bacteria;

(c) subjecting the GM-CSF containing extract of step (b) to quarternary amino ethyl (QAE) anion exchange column chromatography to separate proteases from the GM-CSF containing extract thereby producing protease-free GM-CSF containing fractions;

(d) subjecting the GM-CSF containing fractions obtained from step (c) to red 120 triazinyl dye-ligand affinity column chromatography to produce GM-CSF containing fractions substantially free of hydrophobic impurities;

(e) subjecting the GM-CSF-containing fractions obtained from step (d) to gel filtration column chromatography to obtain GM-CSF containing fractions substantially free of high and low molecular weight impurities; and

(f) subjecting the GM-CSF-containing fractions from step (e) to reverse-phase column chromatography so as to obtain fractions containing GM-CSF having a purity greater than 95% homogeneity.

5,391,707

PROCESS FOR THE PRODUCTION OF DIOXANONE

Ying Jiang, North Haven, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Dec. 10, 1993, Ser. No. 165,434

Int. Cl.[6] C08G *63/08;* **A61B** *17/00*

U.S. Cl. 528—354 **23 Claims**

1. A method of forming a surgical article comprising:

(a) providing a crude reaction product comprising p-dioxanone;

(b) adding a blocking agent to said crude reaction product to form a mixture;

(c) distilling said mixture to recover p-dioxanone;

(d) polymerizing said p-dioxanone to form a polymer; and

(e) forming said polymer into a surgical article.

5,391,708

POLY(3-HYDROXYALKANOATES)

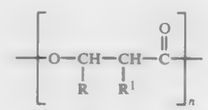
John C. Hubbs; Marti N. Harrison, both of Kingsport, and Charles Buchanan, Bluff City, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 901,306, Jun. 19, 1992, Pat. No. 5,281,641. This application Jan. 21, 1994, Ser. No. 185,097

Int. Cl.[6] C08G *63/08*

U.S. Cl. 528—354 **20 Claims**

1. A composition comprising an atactic poly(3-hydroxyalkanoate) containing stereorandom recurring units of the formula:



(I)

wherein n is an integer from 700 to 12,000 and R and R^1 are each independently selected from the group consisting of saturated and unsaturated C_1 to C_{20} alkyls and substituted alkyls, C_3 to C_{10} aryls and substituted aryls, and C_5 to C_{10} cycloalkyls and substituted cycloalkyls and wherein R^1 is also selected from hydrogen.

5,391,709

PURIFICATION PROCESS OF PTFE USING FIBER BED AND HEATED AIR

Ronald G. Egres, Jr., Dewitt, Mich.; Clay W. Jones, Washington, and John F. Kline, Jr., Parkersburg, both of W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 17, 1993, Ser. No. 154,218

Int. Cl.[6] C08F *6/16*

U.S. Cl. 528—483 **9 Claims**

1. Process for purification of a polytetrafluoroethylene coagulate which contains volatile contaminants comprising water, polymerization initiator, and surfactant, and optionally, wax, comprising applying said coagulate as a shallow bed on the surface of a fabric, exposing the shallow bed to a flow of heated air through the thickness of the fabric in the direction from the top of the bed to its bottom to volatilize said contaminants, said fabric comprising polymer at least at its surface and being thermally and dimensionally stable at the temperature of the heated air, said fabric having openings therein to permit the passage of the heated air and volatilized contaminants, thereby removing said contaminants from said bed to thereby form PTFE fine powder from said coagulate, the openings in said fabric not permitting the passage of said fine powder therethrough, and removing the resultant purified fine powder from said surface.

5,391,710

PRODUCTION OF AMINE FUNCTIONAL POLYMERS HAVING IMPROVED PURITY

Michael E. Ford, Coopersburg, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 25, 1993, Ser. No. 36,752

Int. Cl.[6] C08F *8/12*

U.S. Cl. 528—490 **16 Claims**

1. A process for improving the purity of an amine functional polymer contaminated with formate ions which comprises contacting said polymer in aqueous solution with a supported Group VIII metal hydrogen transfer catalyst at a temperature of at least 80° C. under conditions causing formate decomposition to form carbon dioxide, and removing from the polymer solution at least a portion of said carbon dioxide as a gas.

5,391,711

BIOTINYLATING REAGENT AND PURIFICATION PROCESS FOR SYNTHESIZED PEPTIDE USING THEREOF

Susumu Funakoshi, Otsu, and Hiroyuki Fukuda, Toyonaka, both of Japan, assignors to Nihan Millipore Kabushiki Kaisha, Yamagata, Japan

Filed Mar. 26, 1993, Ser. No. 37,777

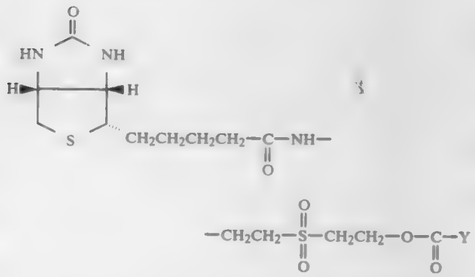
Claims priority, application Japan, Jun. 4, 1992, 4-168218

Int. Cl.[6] A61K *37/02*

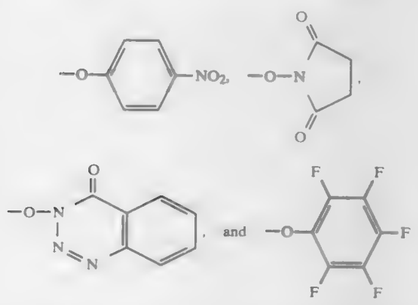
U.S. Cl. 530—344 **6 Claims**

2. A method of separating a mature peptide having an N-terminal amino group from a mixture comprising the mature peptide and one or more end-capped immature peptides, wherein the mature peptide and end-capped peptides are attached to a first solid support, comprising the steps of:

a) adding to said peptide mixture a biotinylating agent having the following structure:



wherein Y is selected from the group consisting of



b) exposing the peptide mixture and the biotinylating reagent to conditions suitable for the biotinylating agent and the N-terminal amino group of the mature peptide to react so that the Y substituent thereon is selectively displaced by the N-terminal amino group of the mature peptide, thereby forming a urethane linkage between the terminal amino group of the mature peptide and the biotin-containing residue from the biotinylating reagent to form a biotinylated mature peptide;

c) cleaving the biotinylated mature peptide and the immature end-capped peptides from the first solid support under acidic conditions;

d) contacting the product of step (c) with a second solid support containing an immobilized avidin moiety, to selectively capture the biotinylated mature peptide by forming a biotin avidin complex;

e) removing unbound immature end-capped peptides from the product of step (d);

f) dissociating the mature biotinylated peptide from the second solid support under acidic conditions;

g) cleaving the biotin-containing residue from the mature peptide to form a mixture comprising mature peptide and biotin-containing residue; and

h) separating the mature peptide from the mixture of step (g).

5,391,712

NON-HEMOLYTIC STREPTOLYSIN O VARIANTS

Craig W. Adams, Corona, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 30, 1991, Ser. No. 752,428

Int. Cl.[6] C07K *13/00, 15/04*

U.S. Cl. 530—350 **1 Claim**

1. A protein variant of Streptolysin O comprising amino acids 1 through 473, inclusive, of the amino acid sequence set forth in FIG. 2 SEQ ID NO:2.

5,391,713

INTERFERON PURIFICATION PROCESS

HÅkan Borg, UmeÅ , Sweden, assignor to Bionative AB, Umea, Sweden

Continuation of Ser. No. 778,804, Dec. 18, 1991, abandoned. This application May 25, 1993, Ser. No. 66,655

Claims priority, application Sweden, Jun. 20, 1989, 8902230

Int. Cl.[6] C07K *15/26, 3/20;* **A61K** *45/02*

U.S. Cl. 530—351 **25 Claims**

1. A process for the purification of a crude human leukocyte interferon comprising the steps:

a) applying a solution of said crude interferon onto an immuno-affinity adsorption column;

b) eluting the adsorbed interferon from said column using a buffer solution of acid pH;

c) concentrating the eluate resulting from step b) with a thiocyanate solution by either precipitation or ion exchange chromatography;

d) precipitating the interferon present in the concentrated eluate resulting from step c) with a thiocyanate solution;

e) reprecipitating the interferon resulting from step d) in aqueous ethanol; and

f) recovering the interferon obtained in step e).

5,391,714

POLYMORPHISM OF HUMAN PLATELET MEMBRANE GLYCOPROTEIN IIIA AND DIAGNOSTIC APPLICATIONS THEREOF

Peter J. Newman, Shorewood, and Richard H. Aster, Milwaukee, both of Wis., assignors to The Blood Center of Southeastern Wisconsin, Milwaukee, Wis.

Division of Ser. No. 343,827, Apr. 27, 1989, Pat. No. 5,091,302. This application Nov. 22, 1991, Ser. No. 797,117

Int. Cl.[6] C07K *15/28*

U.S. Cl. 530—387.9 **2 Claims**

1. A non-human antibody that distinguishes between the PI^{A1} form of GPIIIa, with a leucine at position 33 and the PI^{A2} form of GPIIIa, with a proline at position 33.

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5,391,715

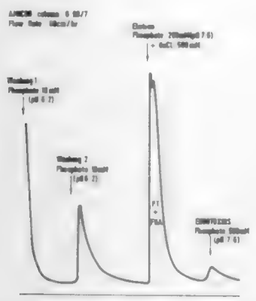
METHOD FOR ISOLATING AND PURIFYING BORDETELLA *PERTUSSIS ANTIGENIC* FACTORS

Carine Capiau, Harveng Mons, and Pierre Desmons, Nivelles, both of Belgium, assignors to SmithKline Beecham Biologicals, Rixensart, Belgium

Continuation of Ser. No. 693,213, Apr. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 431,999, Nov. 6, 1989, abandoned. This application Mar. 24, 1992, Ser. No. 856,817

Int. Cl.[6] **C07K** *3/02, 3/20, 15/04*

U.S. Cl. 530—396 **21 Claims**



1. A method for the purification of pertussis toxin (PT) and/or filamentous hemagglutinin antigen (FHA) from a *B. pertussis* fermentation broth or cell free culture supernatant containing at least one of the said toxin and antigen, which method comprises:

contacting the said broth or supernatant with a hydroxy-apatite containing adsorbent for a time sufficient to adsorb the said toxin and/or antigen at a pH below 7.0 at which both PT and FHA are adsorbed; and eluting a first mixture, containing at least one of the said adsorbed toxin and/or antigen, from the said adsorbent with eluant at pH which both PT and FHA are eluted.

5,391,716

MONOAZO 2-HYDROXY-PYRIDONE-CONTAINING REACTIVE DYESTUFFS

Konrad Bootz, Wetter, and Hermann Henk, Köln, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

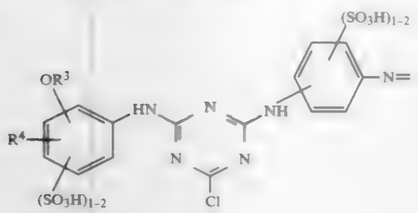
Filed May 4, 1993, Ser. No. 57,228

Claims priority, application Germany, May 8, 1992, 4215207

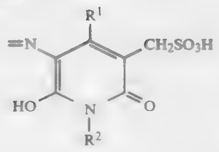
Int. Cl.[6] **C09B** *62/085;* **D06P** *1/382*

U.S. Cl. 534—635 **6 Claims**

1. Monoazo reactive dyestuff which, in the form of the free acid, corresponds to the structure

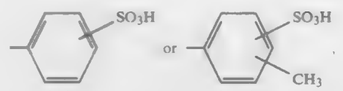


-continued

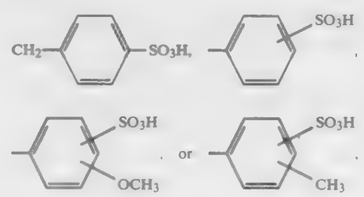


wherein

R^1=H, CH_3, CO_2H, CH_2SO_3H, C_6H_5,



R^2=H, CH_3, C_2H_5, $CH_2CH_2SO_3H$, $CH_2CH_2OSO_3H$,



R^3=C_1–C_6-alkyl or aryl, which are unsubstituted or substituted by OH, C_1–C_4-alkoxy, halogen, carboxyl or sulpho, and

R^4=H, C_1–C_6-alkyl or OR^3.

5,391,717

BISREACTIVE AZO DYES CONTAINING A PYRIDINE COUPLING COMPONENT

Athanassios Tzikas, Prattein, and Rolf Deitz, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

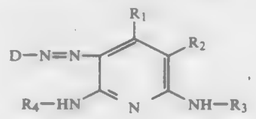
Filed Jul. 19, 1993, Ser. No. 94,645

Claims priority, application Switzerland, Jul. 23, 1992, 2349/92

Int. Cl.[6] **C09B** *62/006, 62/026, 62/08, 62/507, 67/22;* **D06P** *1/38*

U.S. Cl. 534—635 **12 Claims**

1. A reactive dye of the formula



(1)

in which D is the radical of a diazo compound of the benzene or naphthalene series or the radical of a mono- or disazo dye,

R_1 is C_1–C_4alkyl,

R_2 is cyano, carbamoyl or sulfomethyl and

R_3 and R_4 independently of one another are hydrogen or C_1–C_{12}alkyl which is unsubstituted or substituted and, with the exception of methyl, may be interrupted by oxygen,

the reactive dye of the formula (1) containing at least two fibre-reactive radicals, at least one fibre-reactive radical being contained in the radical R_3 or R_4, or the radical D containing a fibre-reactive radical of the halopyrimidine or halotriazine series which is unsubstituted or further substituted,

and the reactive dye of the formula (1) contains at least one permanent sulfo or sulfato group.

5,391,718

FIBER REACTIVE AZODYES HAVING A 2-VINYLSULFONYL-5-SULFOANILINE DIAZO COMPONENT OR A PRECURSOR THEREOF

Athanasssios Tzikas, Prattein, and Claudia Carisch, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

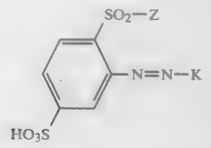
Filed Feb. 26, 1993, Ser. No. 23,985

Claims priority, application Switzerland, Mar. 5, 1992, 691/92

Int. Cl.[6] **C09B** *62/006, 62/08, 62/507;* **D06P** *1/38*

U.S. Cl. 534—637 **13 Claims**

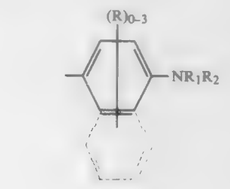
1. A reactive dye of the formula



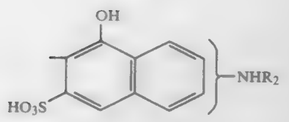
(1)

in which Z is β-sulfatoethyl, β-thiosulfatoethyl, β-phosphatoethyl, β-acyloxyethyl, β-haloethyl or vinyl and K is

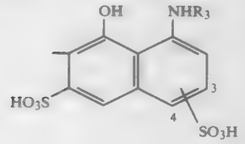
(I) a radical of the formula



(2a)

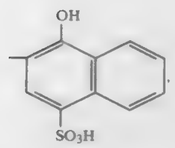


(2b)



(2c)

or



(2d)

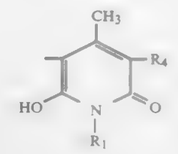
wherein $(R)_{0-3}$ are 0 to 3 substituents R selected from the group consisting of C_{1-2}alkyl, C_{1-2}alkoxy, hydroxy-C_1–C_2alkoxy, halogen, carboxyl, hydroxyl, amino, acetylamino, ureido or sulfo,

R_1 is hydrogen or C_{1-4}alkyl,

R_2 is hydrogen, C_{1-4}alkyl, C_{1-4}alkanoyl or C_{1-4}hydroxyalkyl,

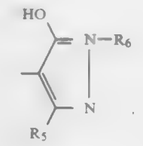
R_3 is hydrogen, C_{1-4}alkyl, C_{1-4}alkanoyl, benzoyl or aminobenzoyl, and the second sulfo group in formula (2c) is either in the 3 or 4 position;

(II) a radical of the formula



(2e)

or



(2f)

wherein

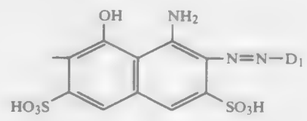
R_1 is hydrogen or C_1–C_4alkyl,

R_4 is —$CONH_2$ or —CH_2SO_3H,

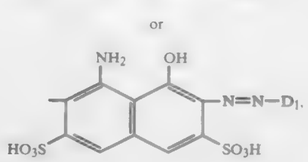
R_5 is C_{1-3}alkyl or carboxyl, and

R_6 is chloro- or sulfo-substituted phenyl or naphthyl;

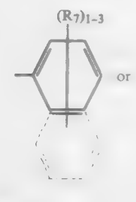
(III) a radical of the formula



or

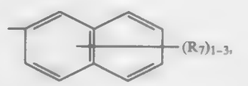


in which D_1 is a radical of the formula



(4a)

or



(4b)

and $(R_7)_{1-3}$ are 1 to 3 substituents selected from the group consisting of C_{1-2}alkyl, C_{1-2}alkoxy, halogen, carboxyl, hydroxyl, amino or sulfo;

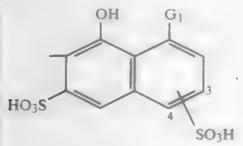
(IV) a radical of the formula

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in which G is bromoacrylamino, dibromopropionylamino or a radical $—SO_2Z$, and $(R)_{0-3}$ and Z are each as defined above;

(V) a radical of the formula

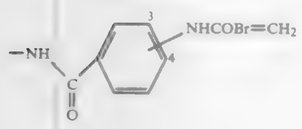


in which the second sulfo group in the naphthalene radical is either in the 3 or 4 position, G_1 is a radical of the formula

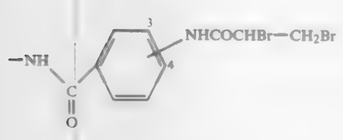
$—NHCOCHBr—CH_2Br$ (8a)

$—NHCOBr=CH_2$ (8b)

$—NHCOCH_2Cl$ (8c)

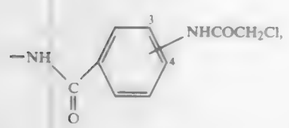


(8d)



(8e)

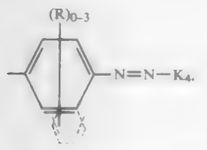
or



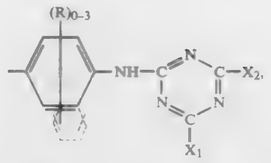
(8f)

the radicals of formulae (8a), (8b) and (8c) in formulae (8d), (8e) and (8f) being in either the 3 or 4 position;

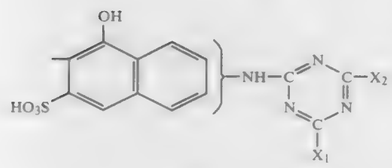
(VI) a radical of the formula



in which K_4 is a radical of the formula

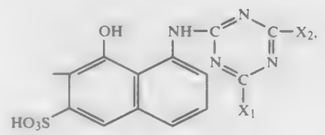


(10a)



(10b)

or



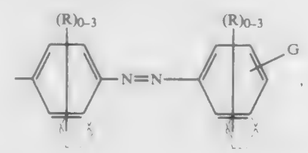
(10c)

X_1 is halogen,

X_2 is halogen, carboxyl, sulfo, hydroxyl, C_1–C_4alkoxy or substituted or unsubstituted amino, and

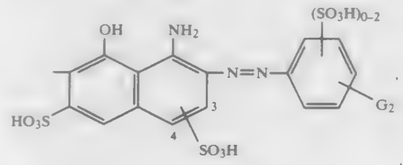
$(R)_{0-3}$ is as defined above;

(VII) a radical of the formula



wherein G is bromoacrylamino, dibromopropionylamino or chloroacetylamino and $(R)_{0-3}$ is as defined above;

(VIII) a radical of the formula



in which the second sulfo group in the naphthalene radical is either in the 3 or 4 position, G_2 is a radical of the formula

$—SO_2—Z$ (12b)

$—SO_2—CH_2CH=CH_2$ (12c)

$—NH—COCBr=CH_2$ (8b)

$—CONH—(CH_2)_2—SO_2—Z$ (12d)

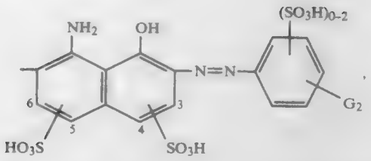
$—CONH—(CH_2)_2—O—(CH_2)_2—SO_2—Z$ (12f)

$—NHCOCH_2Cl$ or (8c)

$—NHCOCHBr—CH_2Br$ and (8a)

Z is as defined above;

(IX) a radical of the formula



in which the two sulfo groups in the naphthalene radical are either in the 3,5 or 3,6 or 4,6 positions, and G_2 is as defined above.

5,391,719

PREPARATION OF AMINOFORMAZANS

Matthias Wiesenfeldt, Mutterstadt; Klaus Pandl, Ludwigshafen, and Manfred Patsch, Wachenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

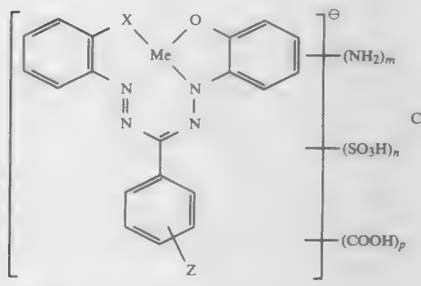
Filed Jun. 23, 1993, Ser. No. 79,926

Claims priority, application Germany, Jul. 1, 1992, 4221543

Int. Cl.[6] C09B *50/00, 50/10, 62/038, 62/018*

U.S. Cl. 534—652 **5 Claims**

1. A process for preparing aminoformazans of the formula I



(I)

where

X is oxygen or a radical of the formula CO—O or SO_2—O,

Me is copper or nickel,

Z is hydrogen, halogen or hydroxyl,

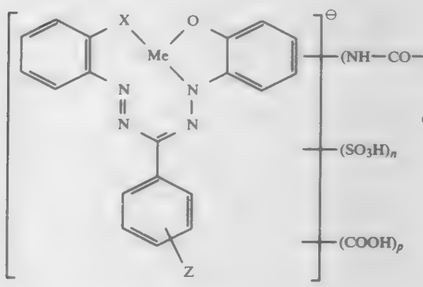
$Cat^{\oplus}$ is the equivalent of a cation,

m is 1 or 2,

n is 1, 2, 3 or 4 and

p is 0, 1 or 2, with the proviso that the sum of n+p is 1 to 4,

by alkaline hydrolysis of acylated aminoformazans of the formula II



(II)

where R is hydrogen or C_1–C_4-alkyl and X, Me, Z, $Cat^{\oplus}$, m, n and p in each case have the abovementioned meanings, in aqueous medium, which comprises carrying out the hydrolysis at from 120° to 170° C. and at elevated pressure of from 3 to 5 bar in the presence of from 1.5 to 3 mol of an alkali metal hydroxide, based on 1 mol of acylated aminoformazan of the formula II.

5,391,720

IMIDAZOLE DYES FORMED BY REACTION OF IMIDAZOLES WITH DIAZONIUM SALTS

Hisashi Mikoshiba, and Tomomi Tateishi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

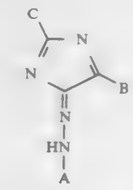
Filed Dec. 3, 1992, Ser. No. 985,255

Claims priority, application Japan, Dec. 4, 1991, 3-347705

Int. Cl.[6] C09B *29/36, 23/00, 23/10*

U.S. Cl. 534—753 **7 Claims**

1. An imidazole azo dye of formula (I):



(I)

wherein A represents aryl, imidazolyl, pyridyl, pyrazolyl, thiazolyl, benzimidazolyl, quinolyl, benzopyrazolyl, benzothiazolyl, isothiazolyl, benzisothiazolyl, pyridoisothiazolyl, or thiadiazolyl;

B represents oxycarbonyl, aminocarbonyl, carbonylamino, oxycarbonylamino, aminocarbonylamino, sulfonyl, acyl, aryl, carbamoyl, alkoxycarbonylamino, aryloxycarbonylamino, sulfonylamino, cyano, imidazolyl, pyridyl, pyrazolyl, thiazolyl, benzimidazolyl, quinolyl, benzopyrazolyl, benzothiazolyl, isothiazolyl, benzisothiazolyl, pyridoisothiazolyl, or thiadiazolyl; and

C represents aryl, cyano, carboxyl, acyl, carbamoyl, alkoxycarbonyl, aryloxycarbonyl, carbonylamino, alkoxycarbonylamino, aryloxycarbonylamino, sulfonylamino, aminocarbonylamino, sulfamoylamino, amino, alkoxy, aryloxy, silyoxy, heteryloxy, arylthio, heterylthio, pyridyl, furyl, thiophenyl, oxazolyl, isothiazolyl, thiazolyl, pyrrolyl, imidazolyl, isoxazolyl, pyrazolyl, furazyl, pyrimidyl, or indolyl.

5,391,721

AQUEOUS FILM FORMING FOAM CONCENTRATES FOR HYDROPHILIC COMBUSTIBLE LIQUIDS AND METHOD FOR MODIFYING VISCOSITY OF SAME

Steven W. Hanen, Green Bay, and Debbie L. Wagner, Marinette, both of Wis., assignors to Wormald U.S., Inc., Marinette, Wis.

Filed Feb. 4, 1993, Ser. No. 13,308

Int. Cl.[6] C08L *5/00;* **A62D** *1/00;* **C08B** *37/04*

U.S. Cl. 536—3 **10 Claims**

1. A composition for-use as an aqueous film forming foam concentrate with a viscosity in the range of 300 to 2700 cps as measured with a Brookfield viscometer, which comprises:

(a) one or more hydrocarbon solvents at a concentration of about 5% by weight to about 7% by weight,

(b) one or more hydrocarbon surfactants at a concentration of about 16% by weight to about 20% by weight,

(c) one or more fluorosurfactants at a concentration of about 5% by weight to about 9% by weight,

(d) one or more thixotropic polysaccharides selected from the group consisting of fermented polysaccharides and polysaccharides derived from plant material and having a

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molecular weight of greater than 300,000 at a concentration of about 0.5% by weight to about 1.8% by weight,

(e) one or more low to medium molecular weight alginates selected from the group consisting of sodium alginate, potassium alginate and propylene glycol alginate at a concentration of about 0.1% by weight to about 0.9% by weight wherein said alginates are present at a concentration in a ratio to the concentration of the high molecular weight polysaccharide from about 1.3 to about 1.1,

(f) one or more sulfonates selected from the group consisting of salts of aryl sulfonates and salts of alkylaryl sulfonates at a concentration of about 0.1% by weight to about 6% by weight, and

(g) water at a concentration of about 55.3% by weight to about 73.3% by weight.

5,391,722

ACID-CATALYZED FABRICATION OF PRECURSORS FOR USE IN MAKING POLYOLS USING DOUBLE METAL CYANIDE CATALYSTS

Kiran B. Chandalia, Cheshire; John W. Reisch, and Michael M. Martinez, both of Guilford, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Mar. 30, 1990, Ser. No. 530,366
Int. Cl.[6] C07H *1/00, 3/00;* **C07C** *43/11, 43/18*
U.S. Cl. 536—18.6 **6 Claims**

1. A process for making a polyol which comprises the steps of:

(a) fabricating a propoxylated polyhydric initiator by reacting propylene oxide with a polyhydric initiator in the presence of a Lewis acid acid catalyst, said reaction being conducted in the absence of a KOH catalyst, to produce a propoxylated polyhydric initiator containing acid catalyst residue(s) and free of KOH catalyst residue, and

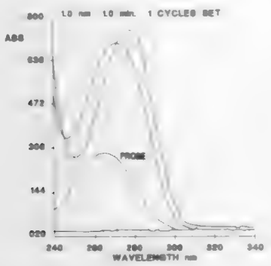
(b) reacting said propoxylated polyhydric initiator containing acid catalyst residue(s) with an alkylene oxide in the presence of a double metal cyanide complex catalyst to produce a polyol.

5,391,723

OLIGONUCLEOTIDE CONJUGATES

John H. Priest, Everett, Wash., assignor to NeoRx Corporation, Seattle, Wash.

Continuation of Ser. No. 825,285, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 359,783, May 31, 1989, abandoned. This application Feb. 16, 1993, Ser. No. 18,482
Int. Cl.[6] C07H *15/12*
U.S. Cl. 536—23.1 **14 Claims**

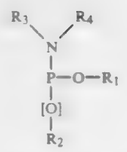


1. An oligonucleotide-protein conjugate comprising:

(1) a single or double stranded oligonucleotide portion;

(2) a protein portion; and

(3) a phosphoramidite ester linker which links said oligonucleotide portion and said protein portion disposed between the oligonucleotide portion and the protein portion, wherein the linker covalently binds to the protein portion and to the oligonucleotide portion, wherein the linker is of the formula:



and wherein R_1 is an organic moiety consisting of a bridging portion not which consists of an active ester which substantial interaction with said protein portion and a functional group capable of covalently binds to said protein portion under conditions sufficient to preserve the biological activity of said protein;

R_2 is selected from cyanoethyl or $C_{1\text{-}10}$—OH;and

R_3 and R_4, taken singly, are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkyl-alkyl moieties containing 1–10 carbon atoms;

R_3 and R_4, taken together, constitute an alkylene chain forming a saturated heterocyclic moiety of up to 5 ring carbon atoms with the nitrogen atom to which they are attached, said alkylene chain being optionally substituted with alkyl groups; or

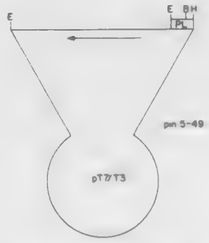
R_3 and R_4, taken together, form a saturated heterocyclic moiety with the nitrogen atom to which they are attached, said heterocyclic moiety containing at least one additional heterocyclic heteroatom selected from the group consisting of nitrogen, oxygen and sulfur, wherein the oligonucleotide and protein conjugate components are ultimately linked by a phosphite tri-ester moiety.

5,391,724

PINOSYLVINE SYNTHASE GENES

Helmut Kindl, Marburg; Rüdiger Hain, Langenfeld; Hans-Jörg Reif, Cologne; Klaus Stenzel, Duesseldorf, and Jürgen Thomzik, Langenfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 8, 1992, Ser. No. 941,469
Claims priority, application Germany, Sep. 18, 1991, 4130986
Int. Cl.[6] C07H *17/00;* **C12N** *15/00*
U.S. Cl. 536—23.2 **3 Claims**



1. Isolated or synthetic DNA having the nucleotide sequence of a pinosylvine synthase cDNA selected from the group consisting of the cDNA contained in plasmid pin **5–49** or the cDNA sequence of SEQ ID NO: 1, or a degenerate variant of said isolated or synthetic DNA.

5,391,725

ORGAN-SPECIFIC PLANT PROMOTER SEQUENCES

Gloria M. Coruzzi, New York, N.Y.; Janice W. Edwards, University City, Mo.; Elsbeth L. Walker, South Hadley, Mass., and Timothy Brears, New York, N.Y., assignors to New York University Medical Center, New York, N.Y.

Continuation-in-part of Ser. No. 448,036, Dec. 8, 1989, abandoned. This application Jun. 13, 1991, Ser. No. 715,751
Int. Cl.[6] C07H *21/04;* **A01H** *5/00;* **C12P** *21/00*
U.S. Cl. 536—24.1 **30 Claims**

1. A substantially pure GS3A glutamine synthetase promoter element which is a pea GS3A promoter element or a portion of the pea GS3A promoter element, that confers vasculature-specific expression in the leaf, stem and root of a mature plant to an operably associated coding sequence.

5,391,726

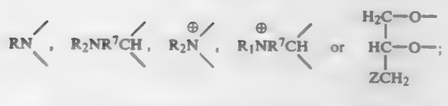
PREPARATION OF GIANT RING COMPOUNDS

Fredric M. Menger, Decatur, Ga., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 30, 1992, Ser. No. 875,952
Int. Cl.[6] C08B *37/00;* **C07D** *321/00*
U.S. Cl. 536—54 **2 Claims**

1. A giant ring compound of the Formula


(I)



each R^1 is independently a $C_{8\text{-}C40}$ backbone alkylene, alkenylene, alkynylene, alkadiynylene, or $(CHR^5CHR^5—O—)_n$;

each Y is independently —C≡C—, —C=C—, or —CH$_2$—CH$_2$—;

each R independently is hydrogen or $C_{1\text{-}C8}$ alkyl;

R^7 is $(CH_2)_q$ where q is an integer from 1 to 4; and

Z is independently —OH, C_1–C_8 alkoxy, O-benzyl O-phosphate, O-glucose-sulfate or ZH═W where W is a phosphatidylethanolamine phosphatidylserine, phosphatidyl choline, phosphatidyl inositol, phosphatidyl ethanol trimethylamine, phosphatidic acid or a sugar moiety.

5,391,727

PHOTOGRAPHIC SILVER HALIDE MATERIAL COMPRISING NOVEL GOLD COMPOUND

Joseph C. Deaton, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 845,897, Mar. 4, 1992, Pat. No. 5,252,455. This application Aug. 13, 1993, Ser. No. 106,460
Int. Cl.[6] C07D *517/00, 343/00, 407/00, 11/00*
U.S. Cl. 540—1 **7 Claims**

1. The gold(I) compound of the formula:

$$[AuL]^+ X^- \text{ or } [AuL]_2^{2+} 2X^-$$

wherein L is represented by the formula:



wherein Q_1 and Q_2 are each independently sulfur or selenium, R′ and R″ are each alkylene groups containing from 2 to about 4 carbon atoms, and n and m are each integers from 1 to about 3, and where X^- is an anion.

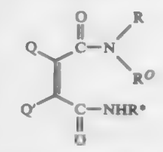
5,391,728

BICYCLIC B-LACTAMS INTERMEDIATES HAVING A NEW AMINO PROTECTING GROUP

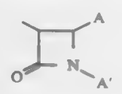
Leland O. Weigel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 25,301, Mar. 2, 1993, Pat. No. 5,283,329, which is a division of Ser. No. 918,916, Jul. 22, 1992, Pat. No. 5,239,069, which is a division of Ser. No. 750,214, Aug. 19, 1991, Pat. No. 5,169,945, which is a continuation of Ser. No. 523,455, May 14, 1990, abandoned. This application Aug. 23, 1993, Ser. No. 110,619
Int. Cl.[6] C07D *463/00*
U.S. Cl. 540—205 **4 Claims**

1. A compound of the formula



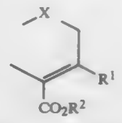
wherein R* is a group of the formula



wherein R and R^0 are individually C_1-C_6 alkyl groups or together form a ring consisting of the nitrogen atom to which they are attached and two to seven carbon atoms, said ring optionally substituted by one or more C_1-C_6 alkyl and/or C_1-C_6 substituted alkyl groups;

Q and Q′ are individually hydrogen, C_1-C_6 alkyl, or when taken together form a divalent radical of the formula —CH=CH—CH=CH—;

A and A′ together form a group of the formula



wherein R^2 is hydrogen or a carboxy-protecting group; X is —CH$_2$—;

R^1 is hydrogen, hydroxy, halo, C_1-C_6 alkoxy, C_1-C_6 alkyl, C_1-C_6 substituted alkyl, C_1-C_6 alkylthio, C_1-C_6 substituted alkylthio, C_7-C_{12} phenylalkyl, C_7-C_{12} substituted phenylalkyl, phenyl or substituted phenyl; a group of the formula

—COR^3

wherein R^3 is hydrogen, C_1-C_6 alkyl, C_1-C_6 substituted alkyl, C_7-C_{12} phenylalkyl, C_7-C_{12} substituted phenylalkul, phenyl, substituted phenyl, amino, (monosubstituted)-amino, or (disubstituted)-amino; a group of the formula

—COOR^4

wherein R^4 is hydrogen, or a carboxy-protecting group.

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5,391,729

CRYSTALLINE DIHYDRATE OF A CEPHALOSPORIN SALT

Elizabeth A. Garofalo, Marcellus; Gary M. F. Lim, Fayetteville, and Murray A. Kaplan, Syracuse, all of N.Y., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 941,591, Sep. 8, 1992, abandoned. This application May 28, 1993, Ser. No. 71,029

Int. Cl.[6] C07D *501/46*

U.S. Cl. 540—222 2 Claims

1. A temperature and moisture stable crystalline [7-[α-(2-aminothiazol-4-yl)-α-(Z)-methoxyiminoacetamido]-3-[(1-methyl-1-pyrrolidinio)methyl]-3-cephem-4-carboxylate dihydrochloride dihydrate.

5,391,730

PHOSPHORYLCARBAMATES OF RAPAMYCIN AND OXIME DERIVATIVES THEREOF

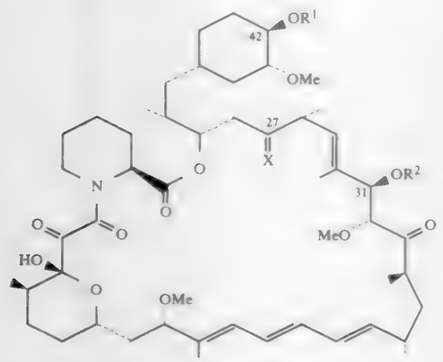
Jerauld S. Skotnicki, Allentown, and Andri L. Smith, Princeton, both of N.J., assignors to American Home Products Corporation, Madison, N.J.

Filed Oct. 8, 1993, Ser. No. 134,428

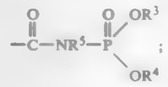
Int. Cl.[6] A61K *31/395*; C07D *491/06*

U.S. Cl. 540—456 9 Claims

1. A compound of the structure



wherein R^1 and R^2 are each, independently, hydrogen, or



R^3 and R^4 are each, independently, hydrogen, Ar, or $-(CR^6R^7)_aY(CR^8R^9)_bZ$, or R^3 and R^4 may be taken together to form a 5–7 membered ring; wherein when R^3 and R^4 are taken together to form a 5–7 membered ring, R^3R^4 are $-(CH_2)_2-$, or $-(CH_2)_3-$, or $-(CH_2)_4-$;

R^5 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, alkoxyalkyl of 2–7 carbon atoms, arylalkyl of 7–10 carbon atoms, cycloalkyl of 3–8 carbon atoms, or Ar;

R^6, R^7, R^8, and R^9, are each, independently, hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthioalkyl of 2–12 carbon atoms, alkylaminoalkyl of 2–12 carbon atoms, dialkylaminoalkyl of 3–12 carbon atoms, arylalkyl of 7–10 carbon atoms, cycloalkyl of 3–8 carbon atoms, $-OR^{10}$, $-SR^{10}$, halogen, $-CN$, $-NO_2$, $-CF_3$, $-COR^{10}$, $-CO_2R^{10}$, $-CONHR^{10}$, $-SO_2R^{10}$, $-SO_3R^{10}$, $-O-SO_3R^{10}$, $-NR^{10}R^{11}$, $-NHCOR^{10}$, $-NHCO_2R^{10}$, $-NHSO_2R^{10}$, $-NHSO_3R^{10}$, or Ar;

X is O or NOR^{12};

Y is —O—, $-CH_2-$, $-NR^{13}-$, —S—, —S(O)—, —S-(O)$_2$—, or —C(O)—;

R^{10}, R^{11}, R^{12}, and R^{13} are each, independently, hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 7–10 carbon atoms;

Z is hydrogen, alkyl of 1–6 carbon atoms, or Ar;

Ar is a phenyl, naphthyl, pyridyl, quinolyl, isoquinolyl, quinoxalyl, thienyl, thionaphthyl, furyl, benzofuryl, benzodioxyl, benzoxazolyl, benzoisoxazolyl, indolyl, thiazolyl, isoxazolyl, pyrimidinyl, pyrazinyl, benzopyranyl, benz[b]thiophenolyl, benzimidazolyl, benzthiazolyl, benzodioxolyl, piperidyl, morpholinyl, piperazinyl, tetrahydrofuranyl, or pyrrolidinyl group which may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–carbon atoms, trifluoromethyl, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, $-SO_3H$, $-PO_3H$, and $-CO_2H$;

wherein the aryl moiety of the arylalkyl group of R^5, R^6, R^7, R^8, R^9 R^{10}, R^{11}, R^{12}, and R^{13} is selected from the group consisting of phenyl naphthyl, pyridyl quinolyl, isoquinolyl, quinoxalyl, thienyl, thionaphthyl, furyl, benzofuryl, benzodioxyl, benzoxazolyl, benzoisoxazolyl, indolyl, thiazolyl, isoxazolyl, pyrimidinyl, pyrazinyl, benzopyranyl, benz[b]thiophenolyl, benzimidazolyl, benzthiazolyl, benzodioxolyl, piperidyl, morpholinyl, piperazinyl, tetrahydrofuranyl, and pyrrolidinyl;

a=1–6 and;

b=0–6;

or a pharmaceutically acceptable salt thereof, with the proviso that R^1 and R^2 are not both hydrogen; and further provided that when a is greater than 1, each of the (CR^6R^7) subunits may be the same or different and when b is greater than 1, each of the (CR^8R^9) may be the same or different.

5,391,731

PYRROLOAZEPINE DERIVATIVES

Akira Mizuno, Kyoto; Hidetsura Cho, Ibaraki; Mikiko Hamaguchi, Kawanishi; Toshio Tatsuoka, Nishinomiya, and Takafumi Ishihara, Takatsuki, all of Japan, assignors to Suntory Limited, Osaka, Japan

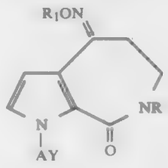
Division of Ser. No. 651,778, Feb. 7, 1991, Pat. No. 5,206,239. This application Dec. 9, 1992, Ser. No. 987,703

Claims priority, application Japan, Feb. 7, 1990, 2-26137; Jan. 30, 1991, 3-027739

Int. Cl.[6] C07D *487/04*

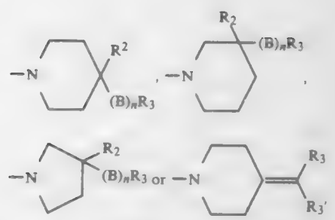
U.S. Cl. 540—521 2 Claims

1. A process for the preparation of a pyrroloazepine derivative represented by the following formula (Ib):



(Ib)

wherein A denotes a linear or branched $C_{2\text{-}10}$ alkylene, alkenylene or alkynylene group, R means a hydrogen atom, a linear or branched $C_{1\text{-}6}$ alkyl group or a $C_{7\text{-}10}$ aralkyl group, R_1 is a hydrogen atom or an alkyl, aryl or aralkyl group, and Y represents a group

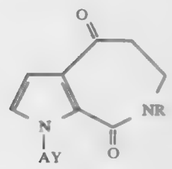


which R_2 means a hydrogen atom or a cyano group, R_3 and R'_3 may be the same or different and individually denote a phenyl group or an aralkyl group, and B is an oxygen atom, sulfur atom, carbonyl group, hydroxymethylene group, sulfinyl group, sulfonyl group, or a cyclic or acyclic acetal group, and n stands for 0 or 1, which comprises:

reacting a hydroxylamine, which is represented by the following formula (IX):

NH_2OR_1 (IX)

wherein R_1 has the same meaning as defined above, with a pyrroloazepine derivative represented by the following formula (Ia):



(Ia)

wherein A, Y and R have the same meanings as defined above.

5,391,732

PROCESS FOR THE PREPARATION OF BIPHENYL-IMIDAZOLE DERIVATIVES

Neerja Bhatnagar, Savigny Sur Orge; Jean Buendia, Le Perreux Sur Marne, and Christine Griffoul, Rosny Sous Bois, all of France, assignors to Roussel-Uclaf, France

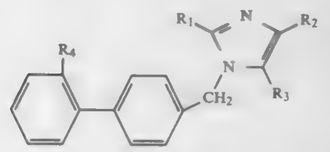
Filed Jan. 4, 1994, Ser. No. 177,158

Claims priority, application France, Sep. 16, 1993, 93 11030

Int. Cl.[6] C07D *403/04, 211/08, 233/58*; C07F *9/28*

U.S. Cl. 540—603 8 Claims

1. A process for the preparation of a compound of the formula



I

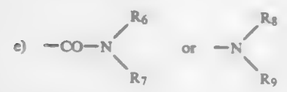
wherein R_1 is selected from the group consisting of alkyl, alkenyl, alkynyl and alkylthio of up to 10 carbon atoms and cycloalkyl of 3 to 7 carbon atoms, all optionally substituted, R_2 and R_3 are individually selected from the group consisting of:

a) hydrogen, halogen, —OH, —SH, acyl of an organic carboxylic acid of 1 to 7 carbon atoms, $—NO_2$, —CN, free, salified or esterified carboxy and $—PO_3(R)_2$,

b) $—(CH_2)_{m1}—S(O)_{m2}—X—R_{10}$,

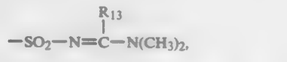
c) alkyl, alkenyl, alkoxy and optionally oxidized alkylthio of up to 6 carbon atoms optionally interrupted by at least one —O—, —S— or nitrogen and optionally substituted,

d) optionally substituted phenyl, benzoyl and optionally oxidized phenylthio,

e) 

f) $—S—S—R_{12}$,

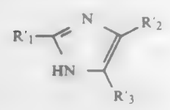
R is hydrogen or optionally substituted alkyl or phenyl, m_1 is an integer from 0 to 4, m_2 is an integer from 0 to 2, X is selected from the group consisting of a single bond, —NH—, —NH-CO—, —NH—COO—, —N=CH—N—R_{13} and —NH-CONH—, R_{10} and R_{13} are individually selected from the group consisting of hydrogen, alkyl and alkenyl of up to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, optionally substituted phenyl and benzyl, pyridyl, nitropyridyl, pyrimidyl, tetrazolyl, diazolyl, piperidinyl, alkylpiperidinyl, thiazolyl, alkylthiazolyl, tetrahydrofuranyl and methyltetrahydrofuranyl; R_6 and R_7 or R_8 and R_9 are individually selected from the group consisting of hydrogen, amino acids, optionally substituted alkyl and alkenyl of up to 6 carbon atoms, optionally substituted phenyl, benzyl and phenethyl and $—(CH_2)-_{m1}—S(O)_{m2}—X—R_{10}$ or R_6 and R_7 or R_8 and R_9 taken together with the nitrogen to which they are attached form a monocyclic ring of 5 to 7 ring members or condensed rings of 8 to 14 ring members, both optionally containing at least one heteratom of the group consisting of —O—, —S— and nitrogen and optionally substituted with at least one member of the group consisting of halogen, —OH, $—NO_2$, alkyl and alkoxy of 1 to 6 carbon atoms, $—NH_2$, mono and dialkylamino of 1 to 6 carbon atoms and phenyl or R_8 and R_9 are individually acyl of an organic carboxylic acid of 1 to 6 carbon atoms or one of R_8 and R_9 is carbamoyl, alkoxylcarbonyl or benzyloxycarbonyl or R_8 and R_9 together with the nitrogen form phthalimido or succinimido, R_{12} has the definitions of R_2 and R_3 except for amino or alkoxy with the proviso at least one of R_2 and R_3 is an optionally substituted alkoxy or $—(CH_2)_{m1}—S(O)_{m2}—X-—R_{10}$, R_4 is selected from the groups consisting of $—(CH_2)-_{m1}—S(O)_{m2}—X—R_{10}$ as defined above, halogen, nitro, $—(CH_2)_{m1}—COOR_{14}$, $—(CH_2)_{m1}—CONHR_{14}$, $—(CH_2)-_{m1}—CN$, in which m1 has the meaning above, $—SO_2—N-H—SO_2—R_{14}$, $—NH—SO_2—R_{14}$, $—PO_3R_{14}$, $—N-H—SO_2—CF_3$ and



$—(CH_2)_{m1}—SO_3R_{14}$, —CO—NH—OR_{14}, —CO—NH—N-H—$SO_2—CF_3$, —CO—NH—$SO_2—R_{14}$, $—CH_2SO_2NH-CO—R_{14}$, $—CH_2CONH—SO_2R_{14}$, $—NHSO_2NHCO—R_{14}$, $—NHCONHSO_2—R_{14}$, $—CONHSO_2NR_{14}R_{15}$, $—SO_2NH-CONR_{14}R_{15}$, $—SO_2N(R_{14})OR_{15}$, $—SO_2NHPO(R_{14})_2$, $—CONHPO(R_{14})_2$, $—SO_2NHCN$, $—SO_2NHCOR_{14}$, $—SO_2NHSO_2NR_{14}R_{15}$, $—SO_2NHSO_2N(CH_2CH_2)_2Y$, —NH-$SO_2NHSO_2R_{14}$, $—NHSO_2NHPO(R_{14})_2$, $—NR_{14}COCO_2H$, $—SO_2NHCO_2R_{14}$, in which R_{13} has the definition above and R_{14} and R_{15} are individually selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, optionally substituted cycloalkyl of 3 to 6 carbon atoms, and Y is oxygen or sulfur, all the alkyl, alkenyl, cycloalkyl, alkylthio, phenylthio, alkoxy, phenyl and benzyl being optionally substituted by at least one member of the group consisting of halogen, hydroxyl, nitro, alkyl, alkenyl and alkoxy of up to 4 carbon atoms, trifluoromethyl, cyano, amino, mono and dialkylamino, free, salified or esterified carboxy, haloalkyl, alkylthio, haloalkylthio, haloalkoxy, phenyl, pyridyl, benzyl, phenethyl, benzoyl, phenoxy, benzyloxy, phenylthio, carbamoyl, acyl, acyloxy and tetrazolyl, the products of formula I being in all possible racemic, enantiomeric and diastereoismoeric isomer forms, as well

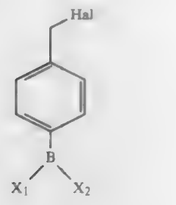
VOL 1171 ISS 3 FE 21 1995 UMI

as the addition salts with mineral and organic acids or with mineral and organic bases of the said products of formula comprising reacting a compound of the formula



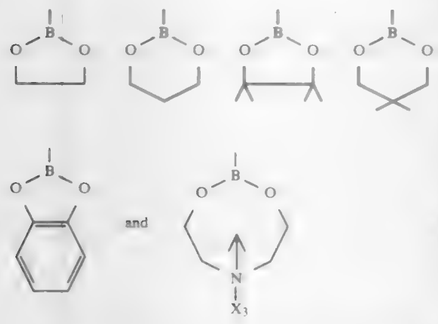
II

in which R', R'_2 and R'_3 have the meanings above for R_1, R_2 and R_3 respectively and in which the optional reactive functions are optionally protected with a compound of the formula:



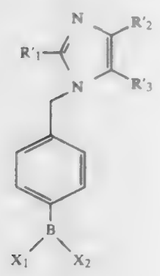
III

in which Hal is halogen, B is boron and X_1 and X_2 are such that: either X_1 and X_2 are individually selected from the group consisting of hydroxyl, alkyl and alkoxy of 1 to 6 carbon atoms, phenyl and phenoxy, or X_1 with X_2 form with the boron atom to which they are linked a ring selected from the group consisting of



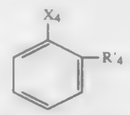
and

X_3 is hydrogen or alkyl of 1 to 4 carbon atoms to obtain a product of the formula



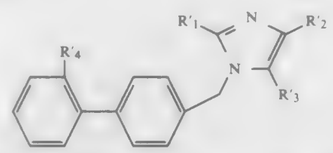
IV

in which R'_1, R'_2, R'_3, X_1, X_2 and B have the meanings above, reacting the latter with a product of the formula



V

in which X_4 is halogen alkoxy triflate or —O—SO_2F and R'_4 has the meaning above for R_4 in which the optional reactive functions are optionally protected to obtain a product of the formula



I'

optionally subjecting the latter to one or more of the following reactions in any order:

a) an elimination reaction of the protective groups which can be carried by the protected reactive functions,
b) a salification reaction with a mineral or organic acid or with a base,
c) an esterification reaction of the acid function,
d) a saponification reaction of the ester function,
e) a conversion reaction of the cyano function into an acid function,
f) a reduction reaction of the carboxy function into an alcohol function,
g) a conversion reaction of the alkoxy function into the hydroxyl function,
h) an oxidation reaction of the group containing a sulfur atom into a corresponding sulfoxide or sulfone function,
i) a conversion reaction of the sulfoxide or sulfone function into a corresponding sulfoximine function,
j) a conversion reaction of the nitrile into tetrazole,
k) a resolution reaction of the racemic forms into resolved products,
l) a conversion reaction of the carboxy into carbamoyl,
m) a conversion reaction of the carbamoyl into nitro,

said products of formula I thus obtained being in all the possible racemic, enantiomeric and diastereoisomeric isomer forms.

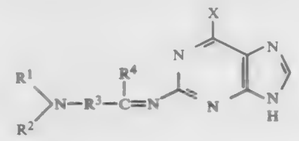
5,391,733

SYNTHESIS INTERMEDIATES FOR 2-AMINO-6-HALOGENOPURINES

Masami Igi, Osaka, and Taketo Hayashi, Yao, both of Japan, assignors to Sumika Fine Chemicals Co., Ltd., Osaka, Japan

Filed Aug. 31, 1992, Ser. No. 937,427
Claims priority, application Japan, Nov. 22, 1991, 3-334053
Int. Cl.[6] C07D *473/32*
U.S. Cl. 544—118 **2 Claims**

1. A compound represented by Formula (1):



(1)

wherein R^1 and R^1 represent, respectively, a hydrogen atom, a methyl group, or an aromatic group, or they may form a ring, which may contain a nitrogen atom, an oxygen atom or a sulfur atom together with the N group; R^4 represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms or an aromatic group; R^3 represents a single bond; and X represents a chlorine atom, a bromine atom, an iodine atom or a fluorine atom.

5,391,734

PREPARATION OF N-(2-HYDROXYPROPYL)-2,6-DIMETHYLMORPHOLINE

Rolf Pinkos, Bad Durkheim; Hans R. Merkle, Ludwigshafen, and Rolf Fischer, Heidelberg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Feb. 25, 1993, Ser. No. 22,342
Claims priority, application Germany, Feb. 28, 1992, 4206171
Int. Cl.[6] C07D *265/30*
U.S. Cl. 544—170 **5 Claims**

1. A process for the preparation of N-(2-hydroxypropyl)-2,6-dimethylmorpholine, wherein tris-(2-hydroxypropyl)amine is cyclized.

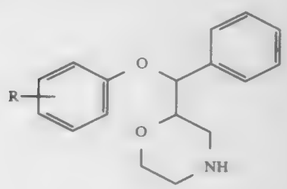
5,391,735

PROCESS FOR THE PREPARATION OF 3-SUBSTITUTED DERIVATIVES OF 1-AMINO-2-HYDROXY-PROPANE

Piero Melloni, Bresso; Arturo D. Torre, Gallarate; Ettore Lazzari, and Giuseppe Mazzini, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

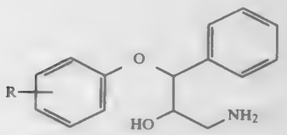
Division of Ser. No. 27,585, Mar. 5, 1993, abandoned, which is a continuation of Ser. No. 921,381, Jul. 30, 1992, abandoned, which is a continuation of Ser. No. 560,499, Jul. 25, 1990, abandoned, which is a continuation of Ser. No. 410,036, Sep. 21, 1989, abandoned, which is a continuation of Ser. No. 139,592, Dec. 30, 1987, abandoned, which is a division of Ser. No. 16,505, Jan. 27, 1987, abandoned, which is a continuation of Ser. No. 751,858, Jul. 5, 1985, abandoned. This application Apr. 12, 1994, Ser. No. 229,566
Claims priority, application United Kingdom, Aug. 2, 1984, 8419683
Int. Cl.[6] C07D *295/108;* **C07C** *217/44, 217/64*
U.S. Cl. 544—174 **2 Claims**

1. In a process for producing (RS,RS) morpholine diasteroisomers of formula (A)



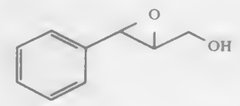
I

wherein
R is C_1-C_6 alkoxy or tri-halomethyl;
wherein a (RS,RS) 3-substituted derivative of 1-amino-2-hydroxy-propane of formula (I)



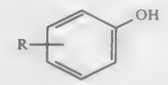
(I)

wherein
R is as defined above, is converted to said (RS,RS) morpholine diastereoisomers of formula (A), the improvement comprising converting a (RS,RS) diastereoisomer of formula (I) to a (RS,RS) morpholine diastereoisomer of formula (A), wherein a (RS,RS) diastereoisomer of formula (I) is produced by the steps of:
(a) epoxidizing trans-cinnamic alcohol to obtain the (RS,RS) compound of formula (II)



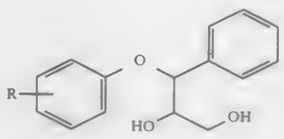
(II)

(b) reacting the (RS,RS) compound of formula (II) with a phenol derivative of formula (III)



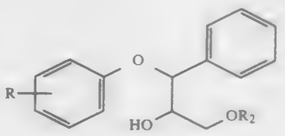
(III)

wherein R is as defined above, to obtain a (RS,SR) 3-substituted-1,2-dihydroxy propane derivative of formula (IV)



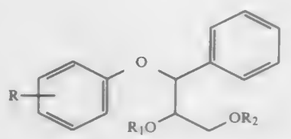
(IV)

wherein R is as defined above; and
(c) esterifying a (RS,SR) compound of formula (IV) with a carboxylic acid, or a reactive derivative thereof, to obtain a (RS,SR) compound of formula (VI)



(VI)

wherein R_2 is the residue of a carboxylic acid and R is as defined above;
(d) esterifying a (RS,SR) compound of formula (VI) with a sulfonic acid, or a reactive derivative thereof, to obtain a (RS,SR) diester of formula (VII)

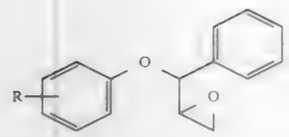


(VII)

wherein R, R_1 and R_2 are as defined above;
(e) making an epoxide from a (RS,SR) compound of formula (VII), to obtain a (RS,RS) compound of formula (VIII)

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(VIII)



wherein R is as defined above, and

then reacting a (RS,RS) compound of formula (VIII) with ammonia, to obtain a (RS,RS) diastereoisomer of formula (I).

5,391,736

PREPARATION OF 2,4,6-TRINITRO-2,4,6-TRIAZA-CYCLOHEXANONE

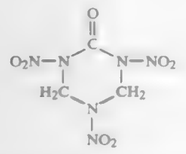
Der-Shing Hunag, Folsom, Calif., assignor to Gencorp Aerojet, Rancho Cordova, Calif.

Filed Jan. 29, 1990, Ser. No. 471,906

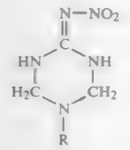
Int. Cl.[6] C07D *251/08*

U.S. Cl. 544—220 **28 Claims**

1. A method for the preparation of a compound having the formula



comprising reacting a starting material having the formula



in which R is a member selected from the group consisting of H.(acid salt) and NO_2, with a reagent mixture comprising a combination of (a) $(CF_3CO)_2O$ and (b) a member selected from the group consisting of HNO_3 and NH_4NO_3.

5,391,737

PROCESS FOR THE PREPARATION OF 6,7-DICHLORO-1,5-DIHYDROIMIDAZO[2,1-B]QUINAZOLIN-2[3H]-ONE

József Reiter; Péter Trinka; Péter Tömpe; Éva Szabó; Péter Slégel; János Brlik; Ágnes Halbauer née Nagy; Ilona Sztruhár; Magdolna Kenyeres née Fehér; Frigyes Görgényi; Margit Csörgo; Szvetlana Zsarnóczai née Kurnyecova; Sarolta Benko née Márkus; Gábor Gigler; Dezso Danyi; Pál Fekete, and Mária Király née Ignácz, all of Budapest, Hungary, assignors to EGIS Gyogyszergyar, Budpest, Hungary

Continuation-in-part of Ser. No. 886,605, May 21, 1992, abandoned. This application Nov. 24, 1993, Ser. No. 156,974

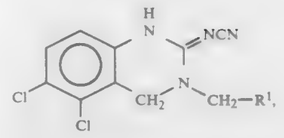
Claims priority, application Hungary, May 22, 1991, 1707/91; May 22, 1991, 1708/91

Int. Cl.[6] C07D *487/04*

U.S. Cl. 544—250 **16 Claims**

1. A process for the preparation of 6,7-dichloro-1,5-dihydroimidazo(2,1-b)quinazolin-2(3H)-one or a pharmaceutically acceptable salt thereof, which comprises subjecting a 2-cyanoiminoquinazoline of the formula

(III)



wherein R' stands for cyano or a group of the formula $COOR^1$, in the latter R^1 representing lower alkyl optionally carrying a phenyl substituent, to thermal cyclization in an acidic medium, said process further comprising carrying out the reaction in a solvent selected from the group consisting of ethylene glycol, diethylene glycol dimethyl ether, diethylene glycol diethyl ether, 2-methoxyethanol, 2-ethoxyethanol, acetonitrile, dioxane, acetic acid, and ethylene glycol dimethyl ether.

5,391,738

PROCESS FOR THE SEPARATION OF FOLINIC ACIDS

Guiseppe Vecchi, Aldesago, Switzerland, assignor to APR Applied Pharma Reserach S.A., Stabio, Switzerland

PCT No. PCT/EP93/00127, § 371 Date Aug. 16, 1993, § 102(e) Date Aug. 16, 1993, PCT Pub. No. WO93/15076, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 20, 1993, Ser. No. 104,129

Claims priority, application Switzerland, Jan. 22, 1992, 00175/92

Int. Cl.[6] C07D *475/04*

U.S. Cl. 544—258 **5 Claims**

1. A process for the separation of folinic acids and the isolation of the calcium salt of the levorotatory folinic acid characterized by the steps of:

a) treatment of racemic calcium folinate with the sodium salt of ethylendiaminotetraacetic acid, in the molar ratio of 0.5 moles of tetrasodium EDTA per each mole of racemic calcium folinate, and salting out of the resulting solution with sodium chloride;

b) separation of the mother liquors from the resulting precipitate and treatment thereof with anhydrous calcium chloride with formation of a precipitate consisting of the desired product.

5,391,739

SELECTIVE ADENOSINE RECEPTOR AGENTS

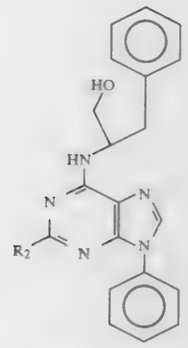
Norton P. Peet, Cincinnati, and Nelsen L. Lentz, West Chester, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 99,023, Jul. 29, 1993, which is a division of Ser. No. 954,178, Sep. 30, 1992, Pat. No. 5,256,650, which is a continuation-in-part of Ser. No. 873,660, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 634.024, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 551,686, Jul. 9, 1990, abandoned, which is a continuation of Ser. No. 329,919, Mar. 29, 1989, abandoned. This application Mar. 8, 1994, Ser. No. 27,338

Int. Cl.[6] A61K *31/52*; C07D *473/34*

U.S. Cl. 544—277 **3 Claims**

1. A compound of the formula:



wherein R_2 is hydrogen or lower alkyl of from 1 to 4 carbon atoms.

5,391,740

FLUORESENCE POLARIZATION IMMUNOASSAY

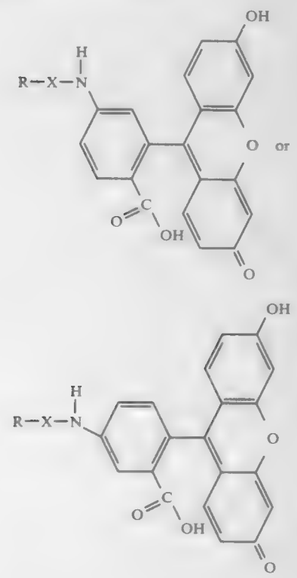
Chao-Huei J. Wang, Gurnee; Stephen D. Stroupe, Libertyville, and Michael E. Jolley, Round Lake, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 465,520, Jan. 17, 1990, abandoned, which is a continuation of Ser. No. 58,638, Jun. 3, 1987, abandoned, which is a continuation of Ser. No. 828,315, Feb. 10, 1986, abandoned, which is a continuation of Ser. No. 577,946, Feb. 8, 1984, Pat. No. 4,585,862, which is a continuation of Ser. No. 329,975, Dec. 11, 1981, abandoned. This application Apr. 8, 1993, Ser. No. 44,927

Int. Cl.[6] C07D *223/24, 239/54*

U.S. Cl. 544—319 **8 Claims**

1. A compound of the formula:

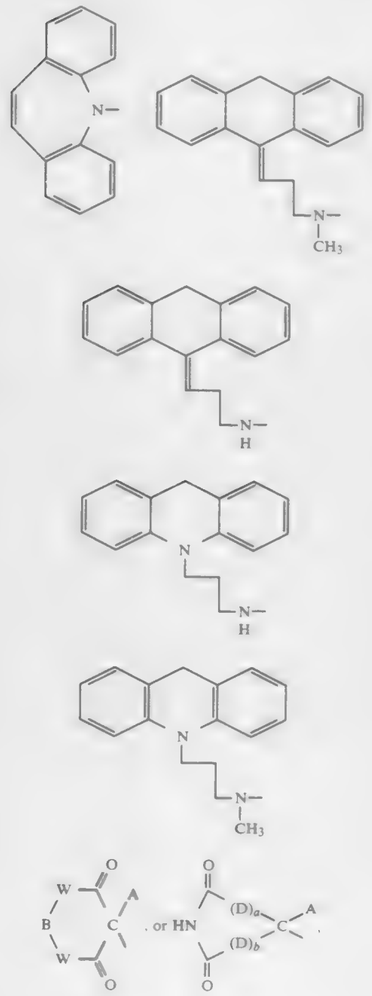


wherein

X is a linker selected from



R is a biologically active ligand-analog selected from



A is $-CH_3$ or $-C_2H_5$;

B is —CO—, $-CH_2-$, or —NH—;

D is $-CH_2-$ or —NH—;

W is —NH— or $-CH_2-$, provided that W and B are not both —NH— or both $-CH_2-$;

a and b are zero or one, provided a and b are not the same; the ligand-analog having at least one common epitope with the ligand so as to be specifically recognizable by a common antibody, and further provided: (a)

when X is $-SO_2-$, R is derived from a corresponding ligand by (i) removal of an aromatic hydrogen, or (ii) the

VOL 1171 ISS 3 FE 21 1995 UMI

formation of a phenyl or substituted phenyl derivative of the ligand, and

(b) when X is —CO—CO—, R is derived from a corresponding ligand by (i) removal of a hydrogen atom bound to a reactive amine, or (ii) the formation of an amino derivative of the ligand wherein an imino group replaces one or more atoms originally present in the ligand; and biologically acceptable salts thereof.

5,391,741

SQUARYLIUM COMPOUND AND OPTICAL INFORMATION RECORDING MEDIUM USING THE SAME

Ikuo Shimizu; Hiroshi Toyoda, both of Yokkaichi; Yukiyoshi Ito, and Tsutomu Sato, both of Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

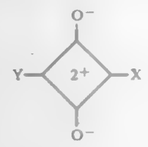
Filed Apr. 23, 1993, Ser. No. 51,411

Claims priority, application Japan, Apr. 24, 1992, 4-106399; Apr. 24, 1992, 4-106400

Int. Cl.[6] **C07D** *471/00, 221/06, 215/00*

U.S. Cl. 544—345 **7 Claims**

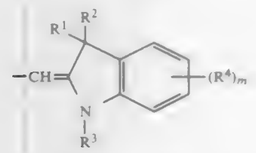
1. A squarylium compound represented by the formula (I):



(I)

wherein

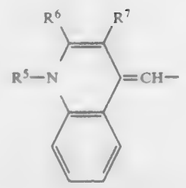
(1) X represents the group (A):



(A)

wherein R^1 and R^2 are the same or different and represent an alkyl group having 1 to 4 carbon atoms, or R^1 and R^2 together with the carbon atom to which they are bonded form a hydrocarbon ring having 4 to 7 carbon atoms, R^3 represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or a phenyl group or naphthyl group, R^4 represents a halogen atom, an alkyl group having 1 to 4 carbon atoms, an aralkyl group having 7 to 10 carbon atoms, a phenyl group or a naphthyl group or an alkoxy group in which the alkyl part has 1 to 4 carbon atoms, m represents an integer of 0 to 4, provided that when m represents 2 to 4, R^4's may be the same or different or two adjacent R^4's may form an aromatic ring which is unsubstituted or substituted by one or more halogen atoms, alkyl groups having 1 to 4 carbon atoms, aralkyl groups having 7 to 10 carbon atoms, phenyl groups or naphthyl groups, and

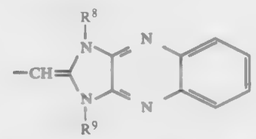
Y represents the group (B):



(B)

wherein R^5 represents an alkyl group having 1 to 4 carbon atoms, R^6 and R^7 are the same or different and represent a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or an aralkyl group having 7 to 10 carbon atoms, or R^6 and R^7 together with the carbon atoms to which they are bonded form an aromatic ring or hydrocarbon ring having 5 to 8 carbon atoms in the ring, said ring being unsubstituted or substituted by one or more halogen atoms, alkyl groups having 1 to 4 carbon atoms, aralkyl groups having 7 to 10 carbon atoms, phenyl groups or naphthyl groups, or

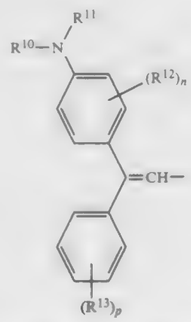
(2) X represents the group (C):



(C)

wherein R^8 and R^9 are the same or different and represent a hydrogen atom, an aralkyl group having 7 to 10 carbon atoms, an alkyl group having 1 to 6 carbon atoms, a cyclic alkyl group having 3 to 8 carbon atoms, a phenyl group or a naphthyl group, and

Y represents the group (D):

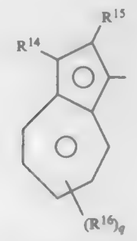


(D)

wherein R^{10} and R^{11} are the same or different and represent a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, a cyclic alkyl group having 3 to 8 carbon atoms, an aralkyl group having 7 to 10 carbon atoms or a phenyl group or a naphthyl group, said aralkyl or phenyl group or naphthyl group being unsubstituted or substituted with one or more halogen atoms, alkyl groups having 1 to 6 carbon atoms, cyclic alkyl groups having 3 to 8 carbon atoms, alkoxy groups in which the alkyl part has 1 to 6 carbon atoms or is a cyclic alkyl group having 3 to 8 carbon atoms, aralkyl groups having 7 to 10 carbon atoms, phenyl groups or naphthyl groups, R^{12} represents a halogen atom, an alkyl group having 1 to 6 carbon atoms, a cyclic alkyl group having 3 to 8 carbon atoms, an alkoxy group in which the alkyl part has 1 to 6 carbon atoms or

is a cyclic alkyl group having 3 to 8 carbon atoms, a nitro group or a hydroxy group, n represents an integer of 0 to 4 provided that when n represents 2 to 4, R^{12}'s are the same or different, R^{13} represents a halogen atom, an alkyl group having 1 to 6 carbon atoms, a cyclic alkyl group having 3 to 8 carbon atoms, an alkoxy group in which the alkyl part has 1 to 6 carbon atoms or is a cyclic alkyl group having 3 to 8 carbon atoms, a hydroxy group, a nitro group, a cyano group, a trifluoromethyl group or $—NQ^1Q^2$ (wherein Q^1 and Q^2 are the same or different and are as defined for R^{10}), p represents an integer of 0 to 5 provided that when p represents 2 to 5, R^{13}'s are the same or different, or

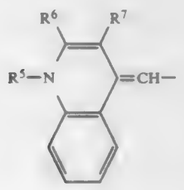
Y represents the group (E):



(E)

wherein R^{14} and R^{15} represent a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, a cyclic alkyl group having 3 to 8 carbon atoms, an aralkyl group having 7 to 10 carbon atoms or a phenyl group or a naphthyl group, or R^{14} and R^{15} together with the carbon atoms to which they are bonded form an aromatic, heterocyclic or hydrocarbon ring having 5 to 8 atoms in the ring, said ring being unsubstituted or substituted by one or more halogen atoms, alkyl groups having 1 to 6 carbon atoms, cyclic alkyl groups having 3 to 8 carbon atoms, alkoxy groups in which the alkyl part has 1 to 6 carbon atoms or is a cyclic alkyl group having 3 to 8 carbon atoms, aralkyl groups having 7 to 10 carbon atoms, or phenyl groups or naphthyl groups, R^{16} represents an alkyl group having 1 to 6 carbon atoms, a cyclic alkyl group having 3 to 8 carbon atoms, an aralkyl group having 7 to 10 carbon atoms or a phenyl group or a naphthyl group, q represents an integer of 0 to 3 provided that when q represents 2 or 3, R^{16}'s are the same or different, or two adjacent R^{16}'s together with the carbon atoms to which they are bonded form an aromatic, heterocyclic or hydrocarbon ring having 5 to 8 atoms in the ring, said ring being unsubstituted or substituted by one or more halogen atoms, alkyl groups having 1 to 6 carbon atoms, cyclic alkyl groups having 3 to 8 carbon atoms, alkoxy groups in which the alkyl part has 1 to 6 carbon atoms or is a cyclic alkyl group having 3 to 8 carbon atoms, or

Y represents the group (B):



(B)

wherein R^5, R^6 and R^7 are the same as defined above.

5,391,742

INTERMEDIATES FOR 2-PIPERIDINO-1-ALKANOLS

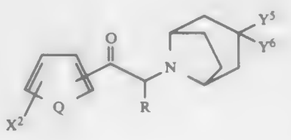
Bertrand L. Chenard, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 96,913, Jul. 23, 1993, Pat. No. 5,338,754, which is a division of Ser. No. 932,844, Aug. 20, 1992, Pat. No. 5,272,160, which is a division of Ser. No. 784,446, Oct. 23, 1991, Pat. No. 5,185,343. This application Apr. 15, 1994, Ser. No. 228,466

Int. Cl.[6] **C07D** *451/06, 491/20, 211/48, 211/52*

U.S. Cl. 546—14 **6 Claims**

1. A compound of the Formula:



wherein

R is hydrogen, $(C_1–C_6)$ alkyl, $(C_2–C_6)$ alkenyl or $(C_2–C_6)$ alkynyl;

Q is S or CH=CH;

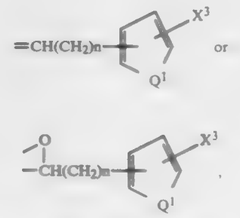
X^2 is hydrogen, $(C_1–C_3)$alkyl, halo, OR^1, OR^2, $OCOR^1$, $COOR^1$, SR^1, SR^2, NHR^1, NR^1R^3, $NHCOR^1$, $CONH_2$ or CN;

R^1, is hydrogen or $(C_1–C_3)$alkyl;

R^2 is a conventional hydroxy or mercaptan protecting group;

R^3 is a conventional amino protecting group;

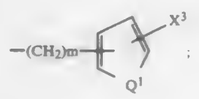
Y^5 and Y^6 are taken together and are:



or

or Y^5 and Y^6 are taken separately and,

Y^5 is hydrogen or OH, and Y^6 is:



n is 0, 1, 2 or 3

m is 0, 1, 2, 3 or 4;

Q^1 is independently a value of Q as defined above; and

X^3 is independently a value of X^2 as defined above.

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5,391,743

QUATERNARY NITROGEN-CONTAINING PHOSPHONATE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS, AND METHODS OF TREATING ABNORMAL CALCIUM AND PHOSPHATE METABOLISM AND METHODS OF TREATING AND PREVENTING DENTAL CALCULUS AND PLAQUE

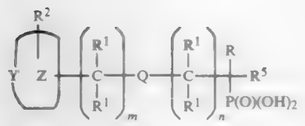
Frank H. Ebetino, Cincinnati, Ohio; Susan M. Kass, Sherburne, N.Y.; Marion D. Francis, Cincinnati, Ohio; Dennis G. A. Nelson, and John M. Janusz, both of West Chester, all of Ohio, assignors to Procter & Gamble Pharmaceuticals, Inc., Norwich, N.Y.

Continuation-in-part of Ser. No. 890,885, May 29, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 52,695

Int. Cl.[6] **C07D** *211/92, 213/72, 213/74, 211/94*

U.S. Cl. 546—22 **22 Claims**

1. A quaternary nitrogen-containing phosphonate and the pharmaceutically-acceptable salts and esters thereof, having the following structure:



wherein m and n are integers from 0 to 10; m+n is from 0 to 10;

(a) Q is a covalent bond or a moiety selected from O, S, or NR^1;

(b) Y is $N^+(R^8)_2$ or $C(R^1)_2$, and when Y is $C(R^1)_2$, at least one R^2 must be $N^+R^8)_3$;

(c) Z is a six-membered saturated, unsaturated, or aromatic, monocyclic heterocycle containing one heteroatom, wherein said heteroatom is nitrogen;

(d) R is PO_3H_2 or $P(O)(OH)R^4$, wherein R^4 is substituted or unsubstituted alkyl of 1–8 carbon atoms;

(e) each R^1 is independently selected from the group consisting of nil; SR^6; R^9SR^6; hydrogen; hydroxy; substituted or unsubstituted C_1–C_8 alkyl; $—OR^3$; $—CO_2R^3$; $—O_2CR^3$; $—NR^3_2$; $—N(R^3)C(O)R^3$ $—C(O)N(R^3)_2$; halogen; $—C(O)R^3$; arylalkyl; nitro; substituted or unsubstituted aryl; and combinations thereof;

(f) R^2 is one or more substituents on the Z moiety independently selected from the group consisting of $N^+(R^8)_3$; SR^6; R^9SR^6; hydrogen; substituted or unsubstituted C_1–C_8 alkyl; $—OR^3$; $—CO_2R^3$; $—O_2CR^3$; $—NR^3_2$; $—N(R^3)C(O)R^3$; $—C(O)N(R^3)_2$; halogen; hydroxy; $—C(O)R^3$; arylalkyl; nitro; and substituted or unsubstituted aryl;

(g) each R^3 is independently selected from the group consisting of hydrogen, substituted or unsubstituted alkyl having from 1–8 carbon atoms, and R^9SR^6;

(h) R^5 is selected from the group consisting of hydrogen; halogen; SR^6; R^9SR^6; amino; hydroxy; and substituted or unsubstituted C_1–C_8 alkyl;

(i) each R^6 is independently selected from the group consisting of H; $—C(O)R^7$; $—C(S)R^7$; $—C(O)NR^7_2$; $—C(S)N(R^7)_2$; $—C(S)OR^7$; and $—C(O)OR^7$; wherein R^7 is hydorgen or substituted or unsubstituted C_1–C_8 alkyl;

(j) each R^8 is independently selected from the group consisting of nil, substituted or unsubstituted alkyl having 1–35 carbon atoms, substituted or unsubstituted phenyl, benzyl, and R^9SR^6; and

(k) R^9 is substituted or unsubstituted C_1–C_8 alkyl.

5,391,744

COCAINE ANALOGS

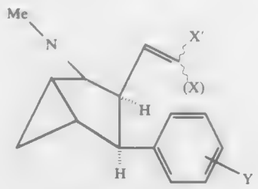
Alan P. Kozikowski, Ponte Vedre Beach, Fla., assignor to Mayo Foundation For Medical Education and Research, Rochester, Minn.

Division of Ser. No. 949,461, Sep. 22, 1992, Pat. No. 5,268,480. This application Sep. 8, 1993, Ser. No. 118,140

Int. Cl.[6] **C07F** *7/02, 9/40;* **C07D** *451/12*

U.S. Cl. 546—23 **11 Claims**

1. A compound of the formula:



wherein X is H, halo, (C_1-C_5)alkyl, (C_1-C_5)alkoxy, (C_1-C_5)perfluoroalkyl, nitro, (C_1-C_5)alkoxycarbonyl, (C_2-C_6)acyl, (C_2-C_6)perfluoroacyl, azido, $Si(R)_3$, SR or $P(O)_2(OR)$, wherein R is H, (C_1-C_5)alkyl or (C_6-C_{12})aryl; Y is H, halo, NO_2, (C_1-C_5) alkoxycarbonyl, carboxy, (C_1-C_5)alkyl, (C_1-C_5)alkoxy or NR_2, wherein each R is as defined above; and X′ is H or (C_1-C_5)alkyl, wherein a waved line indicates a bond that is syn or anti to the C_2—CH= bond; and the pharmaceutically acceptable salts thereof.

5,391,745

METHODS OF PREPARATION OF CAMPTOTHECIN ANALOGS

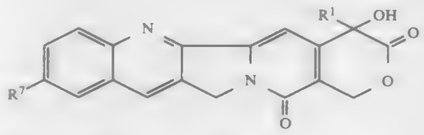
Samuel J. Danishefsky, New Haven, Conn.; William G. Bornmann; Wang Shen, and Craig A. Coburn, all of New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 919,188, Jul. 23, 1992. This application Jan. 11, 1993, Ser. No. 2,996

Int. Cl.[6] **C07D** *491/52, 491/147*

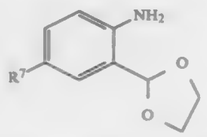
U.S. Cl. 546—48 **11 Claims**

1. A process of synthesizing a compound having the structure:

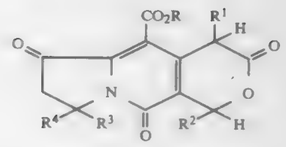


wherein R^1 is ethyl and R^7 is OH, which comprises:

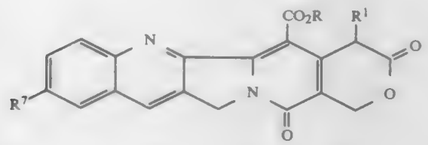
(a) condensing a compound having the structure:



wherein R^7 is OH with a compound having the structure:

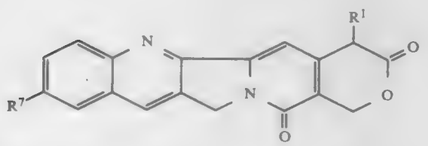


wherein R is H, or a linear or branched chain alkyl, alkylaryl, or hydroxyalkyl group, or an aryl group; R^1 is ethyl; R^2, R^3, and R^4 are H; and, R^7 is OR with a suitable acidic catalyst comprising p-toluenesulfonic acid in toluene to form a compound having the structure:



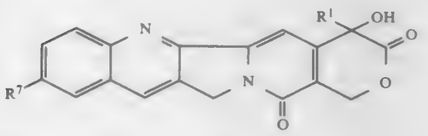
wherein R is H, or a linear or branched chain alkyl, alkylaryl, or hydroxyalkyl group, or an aryl group; R^1 is ethyl; and, R^7 is OR;

(b) hydrolyzing and decarboxylating the compound formed in step (a) with a suitable acid comprising hydrobromic acid to form a compound having the structure:



wherein R^1 is ethyl and R^7 is OR; and,

(c) treating the compound formed in step (b) with a hydroxylating reagent under suitable conditions to form a compound having the structure:



wherein R^1 is ethyl and R^7 is OH.

5,391,746

INTERMEDIATES FOR 3-AMINO AND 3-AZIDO DERIVATIVES OF 1,5-IMINOSUGARS

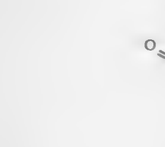
Ish K. Khanna, Vernon Hills; Richard A. Mueller, Glencoe, and Richard M. Weier, Lake Bluff, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Division of Ser. No. 2,380, Jan. 8, 1993, Pat. No. 5,334,717, which is a division of Ser. No. 861,696, Apr. 1, 1992, Pat. No. 5,206,251. This application Dec. 20, 1993, Ser. No. 169,233

Int. Cl.[6] **C07D** *491/056*

U.S. Cl. 546—116 **3 Claims**

1. A compound of the formula



wherein Z=$COOCH_2Ph$.

5,391,747

SUBSTITUTED (QUINOLIN-2-YL-METHOXY)PHENYL-ACYL-SULPHON-AMIDES AND -CYANAMIDES, PROCESSES FOR THEIR PREPARATION AND THEIR USE IN MEDICAMENTS

Siegfried Raddatz, Cologne; Klaus-Helmut Mohrs, Wuppertal; Romanis Fruchtmann, Cologne; Christian Kohlsdorfer, Erftstadt; Pia Theisen-Popp, and Reiner Müller-Peddinghaus, both of Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

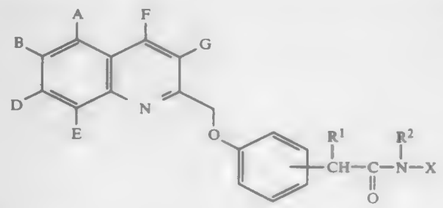
Division of Ser. No. 517,108, May 1, 1990, Pat. No. 5,091,392. This application Sep. 23, 1991, Ser. No. 764,435

Claims priority, application Germany, May 23, 1989, 3916663

Int. Cl.[6] **C07D** *215/48, 215/38, 215/20, 215/18*

U.S. Cl. 546—155 **3 Claims**

1. A process of preparing a (quinolin-2-yl-methoxy)phenylacyl-sulphonamide or -cyanamide of the formula



(I)

in which

A, B, D, E, F and G are identical or different and represent hydrogen, hydroxyl, halogen, carboxyl, nitro, trifluoromethyl, trifluoromethoxy or a group of the formula $—NR^3R^4$,

in which

R^3 and R^4 are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms or aryl having 6 to 10 carbon atoms,

represent straight-chain or branched alkyl, alkoxy or alkoxycarbonyl in each case having up to 12 carbon atoms, and each of which is unsubstituted or substituted by hydroxyl, halogen, nitro, cyano or a group of the formula $—NR^3R^4$,

in which

R^3 and R^4 have the abovementioned meanings,

represent aryl having 6 to 10 carbon atoms, which is unsubstituted or substituted by halogen, hydroxyl, nitro, cyano, straight-chain or branched alkyl, alkoxy or alkoxycarbonyl in each case having up to 8 carbon atoms or by a group of the formula $—NR^3R^4$,

in which

R^3 and R^4 have the abovementioned meanings,

represents cycloalkyl having 3 to 8 carbon atoms, which is unsubstituted or substituted by straight-chain or branched alkyl having up to 8 carbon atoms,

R^2 represents hydrogen or

straight-chain or branched alkyl having up to 10 carbon atoms, which is unsubstituted or substituted by hydroxyl, alkoxy having up to 8 carbon atoms, halogen or by cycloalkyl having 3 to 8 carbon atoms or aryl having 6 to 10

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carbon atoms, which in turn is unsubstituted or substituted by straight-chain or branched alkyl having up to 8 carbon atoms, halogen, nitro, hydroxyl or cyano, or

represents cycloalkyl having 3 to 8 carbon atoms which is unsubstituted or substituted by straight-chain or branched alkyl having up to 8 carbon atoms, or

represents an alkali metal,

X represents a group of the formula $—SO_2—R^5$,

in which

R^5 denotes trifluoromethyl or straight-chain or branched alkyl having up to 10 carbon atoms, which unsubstituted or substituted by hydroxyl, halogen, cyano, alkoxy or alkoxycarbonyl in each case having up to 8 carbon atoms or by aryl having 6 to 10 carbon atoms, which in turn is unsubstituted or substituted by halogen, nitro, cyano or straight-chain or branched alkyl or alkoxy in each case having up to 8 carbon atoms, or

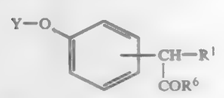
denotes aryl having 6 to 10 carbon atoms, which is unsubstituted or substituted by halogen, nitro, cyano, hydroxyl, straight-chain or branched alkyl, alkoxy or alkoxycarbonyl in each case having up to 8 carbon atoms, trifluoromethyl or trifluoromethoxy, or

X represents cyano

and their physiologically acceptable salts,

said process comprising one of steps (a) or (b) and in either case step (c), wherein steps (a), (b) and (c) are as follows:

(a) etherifying compounds of the general formulae (VI)



(VI)

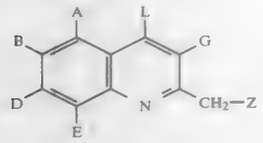
in which

R^1 has the abovementioned meanings,

R^6 represents hydroxyl, C_1-c_6-alkoxy or phenyloxy, and

Y represents a typical hydroxyl protective group,

after removal of the protective group by the customary method, with halomethylquinolones of the general formula (VIII)



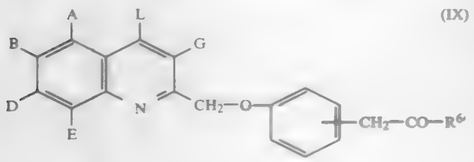
(VIII)

in which

A, B, D, E, L and G are identical or different and have the abovementioned meanings and

Z represents halogen in inert solvents, if appropriate in the presence of a base;

(b) alkylating compounds of the formula (IX)



(IX)

wherein

A, B, D, E, L and G have the abovementioned meanings and

$R^{6'}$ has the abovementioned meaning of R^6 but does not represent hydroxy, directly with compounds of the formula (X)



(X)

wherein

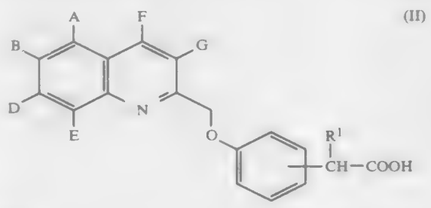
R^1 has the abovementioned meaning and

y represents halogen,

and in the case of the acids hydrolyzing the esters;

followed by:

(c) amidating the product of steps (a) or (b), which is a carboxylic acid of the formula (II)



(II)

in which

A, B, D, E, F, G and R^1 have the abovementioned meanings, with an amide of the formula (III)



(III)

in which

R^2 and X have the abovementioned meanings in an inert solvent.

5,391,748

DIHYDROQUINOLINES

Horst Berneth, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

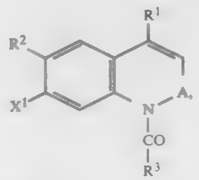
Filed Dec. 3, 1993, Ser. No. 161,837

Claims priority, application Germany, Dec. 10, 1992, 4241621

Int. Cl.[6] C07D *401/04, 401/02*

U.S. Cl. 546—165 6 Claims

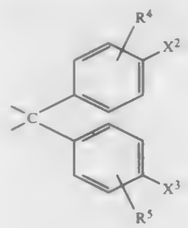
1. Dihydroquinolines of Formula (I),



(I)

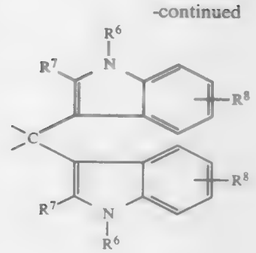
in which

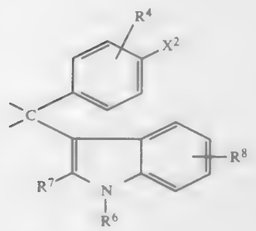
A is one of the bivalent groups of formulae (II) to (V)

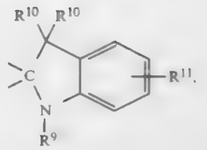


(II)

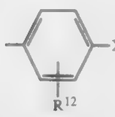
-continued







R^1 is hydrogen, alkyl or a radical of formula (VI)



(VI)

R^2, R^4, R^5, R^8, R^{11} and R^{12} independently of one another are each hydrogen, halogen, alkyl or alkoxy,

R^3 is hydrogen, alkyl, cycloalkyl, aralkyl, aryl or a pyridyl radical,

R^6 and R^9 independently of one another are each hydrogen, alkyl, chloroalkyl or aralkyl,

R^7 is hydrogen, alkyl, cycloalkyl or aryl,

R^{10} is alkyl, and

X^1, X^2, X^3 and X^4 independently of one another are each hydrogen, halogen, alkyl, alkoxy, cycloalkoxy, aryloxy, dialkylamino, N-alkyl-N-arylamino or a pyrrolidino, piperidino or morpholino radical bonded via a nitrogen atom, with the provisos that

in the case where A = a radical of formula (II), (III) or (IV), at most 2 of the radicals X^1 to X^4 are hydrogen, halogen and/or alkyl,

in the case where A = a radical of formula (V), at most one of the radicals X^1 and X^4 is hydrogen, halogen or alkyl,

in the case where the radicals R^1 to R^{12} and X^1 to X^4 are alkyl, they are linear or branched C_1–C_4-alkyl radicals which are unsubstituted or substituted by at most three substituents from the group consisting of chlorine, hydroxyl, methoxy, ethoxy and cyano,

in the case where the radicals R^2, R^4, R^5, R^8, R^{11}, and R^{12} and X^1 to X^4 are halogen, they are fluorine or chlorine,

in the case where the radicals R^2, R^4, R^5, R^8, R^{11}, and R^{12} and X^1 to X^4 are alkoxy, they are linear or branched C_1–C_4-alkoxy radicals which are unsubstituted or substituted by at most three substituents from the group consisting of chlorine, hydroxyl, methoxy, ethoxy and cyano,

(III) in the case where the radicals R^3, R^6, R^7 and R^9 are cycloalkyl, they are C_5–C_7-cycloalkyl radicals which are unsubstituted or substituted by at most two substituents from the group consisting of chlorine, methyl and methoxy,

in the case where the radicals R^3 and R^7 are aryl, they are phenyl which is unsubstituted or substituted by at most 2 substituents from the group consisting of chlorine, methyl and methoxy,

in the case where the radicals X^1 to X^4 are aryloxy, they are phenoxy which is unsubstituted or substituted by at most 2 substituents from the group consisting of chlorine, methyl and methoxy,

(IV) in the case where the radicals X^1 to X^4 are dialkylamino and N-alkyl-N-arylamino, the alkyl groups present are linear or branched C_1–C_4-alkyl groups which are unsubstituted or substituted by a chlorine, hydroxyl, methoxy or cyano group, and

in the case where the radicals X^1 to X^4 are N-alkyl-N-arylamino, the aryl groups present therein are a phenyl radical which is unsubstituted or substituted by at most 2 substituents from the group consisting of chlorine, methyl, methoxy and cyano.

(V) 5,391,749

SUBSTITUTED NAPHTHACENE-5,12-DIONES AND THEIR USE

Walter Fischer, Reinach; Marcus Baumann, Basle, both of Switzerland; Jürgen Finter, Freiburg, Germany; Vratislav Kvita, Reinach; Carl W. Mayer, Riehen, both of Switzerland, and Wolfgang Wernet, Freiburg, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 356,830, May 24, 1989, Pat. No. 5,112,977.

This application Feb. 28, 1992, Ser. No. 843,656

Claims priority, application Switzerland, May 27, 1988,

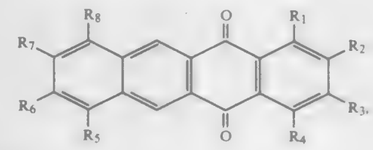
(VI) 2008/88; Jul. 19, 1988, 2757/88

The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.

Int. Cl.[6] C07D *211/06*

U.S. Cl. 546—195 10 Claims

1. A compound of the formula



(I)

wherein

(a) R_5, R_6, R_7 and R_8 are H, and

(a1) R_1 and R_4 are independently of each other selected from the group consisting of H, $—NO_2$, $—CF_3$, —CN, $COOR_9$, $—CONR_9R_{10}$, —COCl, $—Si(C_1$–C_4alkyl)$_3$, $—S(C_mH_{2m}—O—)_nR_{11}$, $—O(C_mH_{2m}—O—)_nR_{11}$, substituted or unsubstituted C_1–C_{20}alkyl-$(X_1—)_p$, C_2–C_{18}alkenyl-$(X_1—)_p$, C_2–C_{18}alkynyl-$(X_1—)_p$, C_3–C_8cycloalkyl-$(X_1—)_p$, (C_1–C_{12}alkyl)C_3–C_8cycloalkyl-$(X_1—)_p$, C_3–C_8-cycloalkylC_rH_{2r}-$(X_1—)_p$, (C_1–C_{12}alkyl)C_3–C_8cycloalkyl C_rH_{2r}—$(X_1—)_p$, phenyl-$(X_1—)_p$,(C_1–C_{12}alkyl)phenyl-$(X_1—)_p$, phenylC_rH_{2r}—$(X—)_p$, (C_1–C_{12}alkyl)phenylC_rH_{2r}—$(X—)_p$, substituted C_1–C_{20}alkylthio and phenyloxy, (C_1–C_{12}alkyl)phenyloxy or C_1–C_{20}alkoxy which is substituted by halogen, —CN, $—NR_9R_{10}$, $—SR_9$, $—OR_9$ or $—COOR_9$, wherein R_1 is additionally selected from the group consisting of unsubstituted C_1–C_{20}alkylthio, phenyloxy, phenylthio, C_1–C_{12}alkylphenyloxy and substituted C_1–C_{12}alkylphenylthio; and

(a2) R_2 and R_3 each are independently selected from the

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group consisting of H, substituted C_5–C_{20}-alkyl, unsubstituted C_8–C_{18}alkoxy, substituted C_3–C_{20}alkoxy, unsubstituted or substituted C_1–C_{20}alkyl-$(X_1—)_p$—, phenyl-$(X)_p$—, (C_1–C_{12}alkyl)phenyl-$(X—)_p$, phenylC_rH_{2r}—$(X—)_p$, (C_1–C_{12}alkyl)phenylC_rH_{2r}—$(X—)_p$, C_2–C_{18}alkenyl-$(X—)_p$, C_2–C_{18}alkynyl-$(X—)_p$, C_3–C_8cycloalkyl-$(X—)_p$, (C_1–C_{12}alkyl)C_3–C_8cycloalkyl-$(X—)_p$, C_3–C_8cycloalkylC_rH_{2r}—$(X—)_p$—, and (C_1–C_{12}alkyl)C_3–C_8cycloalkylC_rH_{2r}—$(X—)_p$, or

(a3) one of R_2 and R_3 or both of R_2 and R_3 are selected from the group consisting of C_1–C_4alkyl which is substituted by halogen, —CN, —NR_9R_{10}, —SR_9, —OR_9 or —$COOR_9$ and C_1–C_2-alkoxy which is substituted by halogen, —CN, —NR_9R_{10}, —SR_9, —OR_9 —$COOR_9$, or

(a4) one of R_2 and R_3 or both of R_2 and R_3 are selected from the group consisting of —SH, —NO_2, —CF_3, —NR_9R_{10}, —$O(C_mH_{2m}—O—)_nR_{11}$, and —$Si(C_1$–C_4alkyl$)_3$, or

(a5) one of R_2 and R_3 is halogen, —$COOR_9$—NR_9R_{10} or COCl and the other of R_2 and R_3 is selected from the group consisting of —NO_2, —CF_3, —CN, —NR_9R_{10}, —SH, —$O(C_mH_{2m}—O—)_nR_{11}$, —$Si(C_1$–C_4alkyl$)_3$, C_1–C_{20}alkyl-$(X—)_p$, C_2–C_{18}alkenyl-$(X—)_p$, C_2–C_{18}alkynyl-$(X—)_p$, C_3–C_8-cycloalkyl-$(X—)_p$, (C_1–C_{12}alkyl)-C_3–C_8cycloalkyl-$(X—)_p$, C_3–C_8cycloalkylC_rH_{2r}—$(X—)_p$, (C_1–C_{12}alkyl)C_3–C_8cycloalkylC_rH_{2r}—$(X—)_p$, phenyl-$(X—)_p$, (C_1–C_{12}alkyl)phenyl-$(X—)_p$, phenylC_rH_{2r}—$(X—)_p$, and (C_1–C_{12}alkyl)phenylC_rH_{2r}—$(X—)_p$, which are unsubstituted or substituted, or the other of R_2 and R_3 is H, if at least one or R_1 and R_4 is not hydrogen, or

(a6) R_2 and R_3 together are —CO—O—CO— or —CO—NR_9—CO— and at least one of R_1 and R_4 is not hydrogen; and wherein

X_1 is —SO— or —SO_2— and X is —O—, —SO— or —SO_2—;

R_9 and R_{10} independently of one another are C_1–C_{12}alkyl, phenyl or (—C_mH_{2m}—O—)$_qR_{11}$, or R_9 and R_{10} together are tetramethylene, pentamethylene, 3-oxapentylene or —$CH_2CH_2NR_9CH_2CH_2$—, R_{11} is H or C_1–C_{12}alkyl, m is a number from 2 to 4, n is a number from 2 to 20, p is 1, q is a number from 1 to 20 and r is 1 or 2; and wherein

substituted R_1, R_2, R_3 and R_4 groups are substituted by halogen, —CN, furfuryl, —NR_9R_{10}, —OR_9, —SR_9 or $COOR_9$ unless otherwise specified;

with the provisos that at least one of R_1, R_2, R_3 or R_4 is other than hydrogen.

5,391,750

PROCESS FOR THE PREPARATION OF 4-HYDROXY-2,2,6,6-TETRAMETHYLPIPERIDINE

Gerhard Thelen, Nottuln; Guthard Mock, and Otto Hallmann, both of Marl, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Nov. 18, 1993, Ser. No. 154,040

Claims priority, application Germany, Nov. 21, 1992, 4239247

Int. Cl.[6] C07D *211/36*

U.S. Cl. 546—242 **14 Claims**

1. A method for the preparation of 4-hydroxy-2,2,6,6-tetramethylpiperidine, comprising:

contacting 4-oxo-2,2,6,6-tetramethylpiperidine with hydrogen gas and a catalyst comprising from 20 to 68% by weight of copper, from 0 to 40% by weight of chromium, from 0 to 60% by weight of zinc, from 0 to 5% by weight of manganese, from 0 to 12% by weight of barium, from 0 to 15% by weight of silicon, and from 0 to 10% by weight of nickel, in each case based on the oxidic catalyst mass, in a melt or solution at a temperature of from 60° C. to 200° C. and a hydrogen pressure of from 10 to 300 bar; and

separating said 4-hydroxy-2,2,6,6-tetramethylpiperidine from said catalyst.

5,391,751

2,2-DIMETHYLCHROMENE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Georges Garcia, 27, rue des Aires; Alain Di Malta, 170, rue de Vigne Belle - St Clement-la-Riviere, both of 34908 Saint-Gely-du-Fesc, and Patrick Gautier, Lieu dit Manavieille, 34660 Cournonterral, all of France

Continuation of Ser. No. 255,605, Oct. 11, 1988, abandoned. This application Aug. 19, 1991, Ser. No. 746,974

Claims priority, application France, Oct. 12, 1987, 87 14067

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[6] C07D *405/04*

U.S. Cl. 514—337 **9 Claims**

1. 6-cyano-4-(1,2-dihydro-2-oxopyrid-1-yl)-2,2-dimethylchromene.

5,391,752

PROCESS FOR THE PREPARATION OF ANTIULCER AGENTS

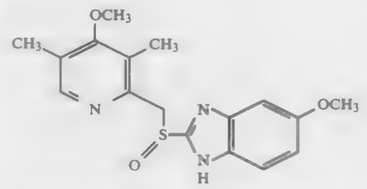
Robert S. Hoerrner, Scotch Plains; Joel J. Friedman, East Brunswick, both of N.J.; Joseph S. Amato, Brooklyn, N.Y.; Thomas M. Liu; Ichiro Shinkai, both of Westfield, N.J., and Leonard M. Weinstock, Hilton Head, S.C., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 777,873, Oct. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 764,564, Sep. 20, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 22,804

Int. Cl.[6] C07D *401/12*

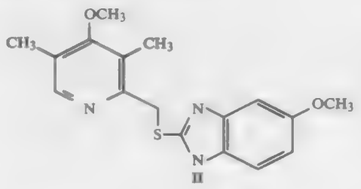
U.S. Cl. 546—271 **8 Claims**

1. A process for the preparation of omeprazole, having the formula Ia:



Ia

which comprises the step of treating the mixture of pyrmetazole, having the formula IIa:



IIa

in a solvent;

cooled to 0° C. or below with magnesium monoperoxyphthalate, in an amount sufficient to convert pyrmetazole to omeprazole.

5,391,753

HETEROARYL SUBSTITUTED PHENYLETHENYL COMPOUNDS HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

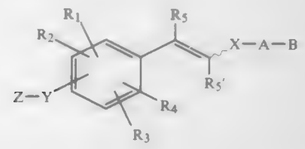
Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Continuation of Ser. No. 833,682, Feb. 11, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 126,627

Int. Cl.[6] C07D *213/63, 213/69, 213/79, 333/38*

U.S. Cl. 546—323 **28 Claims**

1. A compound of the formula



wherein R_1, R_2, R_3 and R_4 independently are hydrogen, lower alkyl of 1 to 6 carbons, halogen or lower alkoxy of 1 to 6 carbons;

R_5 and R_5' independently are hydrogen or lower alkyl of 1 to 6 carbons;

Y is oxygen or sulfur;

Z is n-alkyl having 1 to 10 carbons, cyclo or branch-chained alkyl of 3 to 10 carbons, and straight chain alkenyl having 2 to 10 carbons, or cyclo or branched chained alkenyl of 3 to 10 carbons;

X is a heteroaryl group selected from a group consisting of thienyl, and furyl;

A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3 to 6 carbons, cycloalkyl having 3 to 6 carbons, alkenyl having 2 to 6 carbons and 1 or 2 double bonds, alkynyl having 2 to 6 carbons and 1 or 2 triple bonds;

B is COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, —CH_2OH, CH_2OR_{11}, CH_2O-COR_{11}, $CH(OR_{12})_2$, $CHOR_{13}O$, $CR_7(OR_{12})_2$, or $CR_7OR_{13}O$ where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or phenyl or lower alkylphenyl, R_{11} is alkyl of 1 to 10 carbons, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons.

5,391,754

PROCESS FOR PREPARING 1,2,5,6-TETRAHYDROPYRIDIN-3-CARBOXALDEHYDE OXIME COMPOUNDS

Giulio Galliani; Fernando Barzashi, both of Monza; Alina Butti, Milan; Carla Bonetti, Fontanella, and Emilio Toja, Milan, all of Italy, assignors to Roussel Uclaf, Paris, France

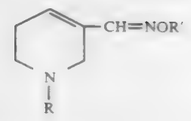
Division of Ser. No. 19,256, Feb. 26, 1987, Pat. No. 5,219,872. This application Mar. 30, 1993, Ser. No. 39,826

Claims priority, application Italy, Feb. 27, 1986, 19565 A/86; Jul. 17, 1986, 21157 A/86

Int. Cl.[6] C07D *211/70*

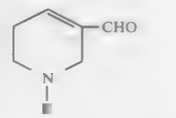
U.S. Cl. 546—334 **2 Claims**

1. Process for the preparation of the compounds with the formula (I)



(I)

in which R represents a hydrogen atom, a linear branched or cyclic alkyl, alkenyl, alkynyl radical, containing up to 8 carbon atoms, unsubstituted or substituted by a free or esterified carboxy or R represents an aralkyl radical containing up to 10 carbon atoms and R′ represents a linear or branched, alkyl, alkenyl or alkynyl radical, containing up to 8 carbon atoms, a radical —$COalk_1$ or a radical —$(CH_2)_2N(alk_2)_2$, alk_1 and alk_2 representing an alkyl radical containing up to 8 carbon atoms, as well as their addition salts with acids, comprising a compound with the formula (II):



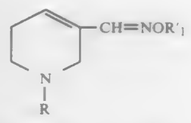
(II)

or one of its salts, in which R is defined as above, is submitted to the action of a compound with the formula (III):

$NH_2OR'_1$ (III)

or one of its salts,

in which R'_1 represents a hydrogen atom or a linear or branched, saturated or unsaturated alkyl radical containing up to 8 carbon atoms in order to obtain the corresponding compound with the formula (I_A):

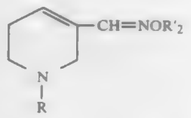


(I_A)

which, if required, is salified, or which is submitted, when R'_1 represents a hydrogen atom, to the action of a compound with the formula (IV):

R'_2Hal (IV)

R'_2 representing a radical $COalk_1$, or a radical —$(CH_2)_2N$—$(alk_2)_2$, alk, and alk_2 being defined as above and Hal representing a halogen atom, in order to obtain the corresponding compound with the formula (I_B)



(I_B)

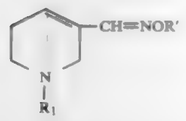
which if required is salified, and which compound with the formula (I_A) in which R'_1 does not represent a hydrogen atom, or compound of the formula (I_B) is submitted, if required, in the case where R represents a hydrogen atom, to the action of a compound with the formula (VI):

R_1Hal (VI)

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in which Hal represents a halogen atom and R_1 represents a linear, branched or cyclic, saturated or unsaturated alkyl radical, containing up to 8 carbon atoms, substituted or unsubstituted by an esterified carboxy radical, or R_1 represents an aralkyl radical containing up to 10 carbon atoms, in order to obtain a compound with the formula (I_C)

(I_C)



in which R_1 and R′ are as defined above, which, if required, is salified, or which, if R_1 represents an alkyl radical substituted by an esterified carboxy radical, is submitted to the action of a hydrolyzing agent in order to obtain the corresponding compound carrying a free carboxy radical, which compound, if required, is salified.

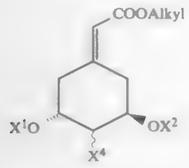
5,391,755

SYNTHESIS OF 19-NOR VITAMIN D COMPOUNDS

Hector F. DeLuca, Deerfield; Heinrich K. Schnoes; Kato L. Perlman, both of Madison, all of Wis., and Rolf E. Swenson, Lake Bluff, Ill., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 979,482, Nov. 20, 1992, Pat. No. 5,281,731, which is a continuation of Ser. No. 705,917, May 28, 1991, abandoned. This application Jan. 13, 1994, Ser. No. 180,702
Int. Cl.[6] C07C *69/75*
U.S. Cl. 548—110 1 Claim

1. A compound of the structure:



where X^1 and X^2, which may be the same or different, represents hydrogen or a hydroxy-protecting group, and where X^4 represents hydrogen, hydroxy or protected hydroxy.

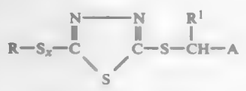
5,391,756

AROMATIC AMINE DERIVATIVES OF 2,5-DIMERCAPTO-1,3,4,-THIADIAZOLES

Thomas J. Karol, Norwalk, and Steven G. Donnelly, New Fairfield, both of Conn., assignors to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Nov. 20, 1992, Ser. No. 979,682
Int. Cl.[6] C07D *285/125*
U.S. Cl. 598—112 3 Claims

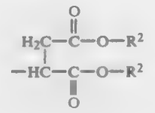
1. A thiadiazole compound selected from the group of compounds having the structural formula



wherein x=1-2, R represents the group



alkyl having up to 100 carbon atoms, cycloalkyl, aralkyl, terpene residue selected from pinene and limonene, and a succinate residue of the formula



R^1 represents hydrogen, C_{1-17}-alkyl, phenyl and phenyl substituted by alkyl groups; A represents aromatic ring structure selected from the group consisting of N′-phenyl-p-phenylenediamine, diphenylamine, naphthylamine, quinoline, hydrated quinoline, phenothiazine, and phenyl-(1 or 2)-naphthylamine and wherein the aromatic ring and amine groups may be substituted by C_{1-18}-alkyl groups provided that A is bonded at a carbon atom of the ring; and R^2 represents hydrogen, C_{1-22}-alkyl and cycloalkyl groups.

5,391,757

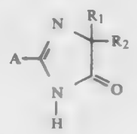
BENZENESULFONYL CARBOXAMIDE COMPOUNDS INTERMEDIATE COMPOUNDS AND METHODS OF PREPARATION THEREOF AND USE OF SAID COMPOUNDS AND INTERMEDIATE COMPOUNDS AS HERBICIDAL AGENTS

Sergio I. Alvarado, Princeton; Alvin D. Crews, Jr., Plainsboro; Peter J. Wepplo, Princeton; Robert F. Doehner, Jr., East Windsor; Thomas E. Brady, Whitehouse Station; David M. Gange, Princeton, and Desiree L. Little, Burlington, all of N.J., assignors to American Cyanamid Company, Wayne, N.J.

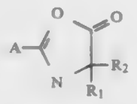
Division of Ser. No. 87,952, Jul. 6, 1993, Pat. No. 5,338,883, which is a division of Ser. No. 856,262, Mar. 23, 1992, Pat. No. 5,252,539, which is a division of Ser. No. 611,626, Nov. 13, 1990, Pat. No. 5,120,854, which is a division of Ser. No. 417,400, Oct. 5, 1989, Pat. No. 4,992,094, which is a division of Ser. No. 214,507, Jul. 7, 1988, Pat. No. 4,883,914, which is a continuation-in-part of Ser. No. 806,416, Aug. 17, 1987, abandoned. This application May 9, 1994, Ser. No. 243,680
Int. Cl.[6] C07D *233/70, 233/72, 263/32*
U.S. Cl. 548—228 3 Claims

1. Intermediates having the structures:

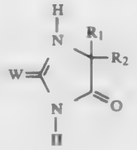
VII



XV

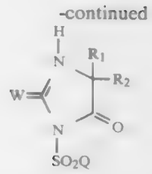


XVII

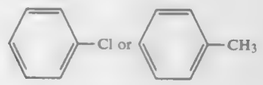


-continued

XVIII



wherein
A is hydrogen or methyl
R_1 is methyl;
R_2 is isopropyl;
W is oxygen or sulfur; and
Q is



5,391,758

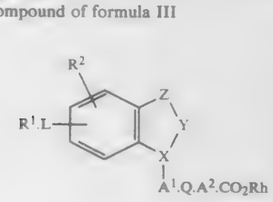
HETEROCYCLIC AMIDE DERIVATIVES

Peter R. Bernstein, Wallingford, Pa.; Frederick J. Brown, Newark; Victor G. Matassa, Wilmington, both of Del., and Ying K. Yee, Kennett Square, Pa., assignors to Zeneca, Inc., Wilmington, Del.

Division of Ser. No. 981,718, Nov. 25, 1992, Pat. No. 5,338,734, which is a division of Ser. No. 711,478, Jun. 6, 1991, Pat. No. 5,179,112, which is a division of Ser. No. 380,059, Jul. 14, 1989, Pat. No. 5,030,643, which is a division of Ser. No. 852,798, Apr. 16, 1986, Pat. No. 4,859,692. This application Jun. 6, 1994, Ser. No. 254,350
Claims priority, application United Kingdom, Apr. 17, 1985, 8509882; Oct. 17, 1985, 8525658
Int. Cl.[6] C07D *209/12, 209/14, 209/20*
U.S. Cl. 548—253 29 Claims

1. A compound of formula III

III



wherein
Rh is selected from the group consisting of (a) (1–6C)alkyl optionally bearing an acetoxy, (1–4C)alkoxy or (1–4C)alkylthio group; (b) phenyl; and (c) benzyl; and wherein
the group >X—Y—Z— is (a) >CRc-CRaRb—NRd— wherein
Ra is hydrogen or (1–4C)alkyl;
Rb and Rc are each hydrogen or, together with the existing carbon to carbon bond, form an unsaturated linkage; and
Rd is hydrogen or (1–10C)alkyl optionally containing one or two double or triple bonds and in which a carbon atom may optionally be replaced by oxygen or sulphur, said (1–10C)alkyl additionally optionally bearing a substituent selected from the group consisting of (1–4C)alkoxy, cyano, carboxy, 1H-tetrazol-5-yl, carbamoyl, N-(1–4C)carbamoyl, N,N-di{(1–4C)alkyl}carbamoyl, and (1–4C)alkoxycarbonyl, or Rd is selected from the group consisting of (3–8C)cycloalkyl, (3–8C)cycloalkyl-(1–4C)alkyl, (2–6C)alkanoyl and phenyl-(1–4C)alkyl, the phenyl moiety of which may optionally bear a substituent selected from the group consisting of cyano, halogeno, (1–4C)alkyl, (1–4C)alkoxy and trifluoromethyl;
the group R^1.L— stands for amidic radicals of the formula: R^1.W.CO.NH— or R^1.W.CS.NH—, in which R^1 is selected from the group consisting of (a) (2–10C)alkyl optionally containing 1 or more fluorine substituents; (b) phenyl-(1–6C)alkyl in which the (1–6C)alkyl moiety may optionally bear a fluoro or (1–4C)alkoxy substituent and in which the phenyl moiety may optionally bear a substituent selected from the group consisting of halogeno, (1–4C)alkyl, (1–4C)alkoxy and trifluoromethyl; and (c) (3–8C)cycloalkyl or (3–8C)cycloalkyl-(1–6C)alkyl, the cyclic moiety of any of which optionally may contain one unsaturated linkage and may optionally bear 1 or 2 (1–4C)alkyl substituents;
W is oxy, thio, imino or a direct link to R^1;
R^2 is hydrogen, halogeno, (1–4C)alkyl or (1–4C)alkoxy;
Q is phenylene optionally bearing 1 or more substituents independently selected from the group consisting of halogeno, hydroxy, (1–4C)alkyl, (1–4C) alkoxy and trifluoromethyl;
A^1 is (1–2C)alkylene or vinylene; and
A^2 is methylene, vinylene or a direct link to the CO_2Rh radical.

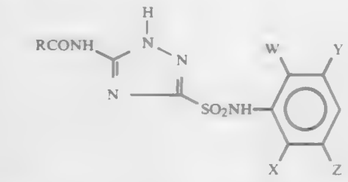
5,391,759

PREPARATION OF 5-ACYLAMINO-1,2,4-TRIAZOLE-3-SULFONAMIDES

Jack C. Little, Lafayette; Mark J. Costales, Concord, both of Calif.; Ravi B. Shankar; R. Garth Pews, both of Midland, Mich.; Kidisti G. Mariam, Pittsburg, and Susan D. Thompson, San Leandro, both of Calif., assignors to DowElanco, Indianapolis, Ind.

Filed Dec. 19, 1988, Ser. No. 287,255
Int. Cl.[6] C07D *249/02*
U.S. Cl. 548—263.8 9 Claims

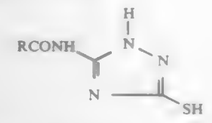
1. A process for preparing a 5-acylamino-1,2,4-triazole-3-sulfonamide compound of the formula



wherein
R represents H, R^1, or phenyl optionally containing up to 3 compatible substituents selected from F, Cl, Br, CH_3, and CF_3;
W represents F, Cl, Br, I, R^1, SR^1, SOR^1, SO_2R^1, CO_2R^2, CN, or NO_2;
X represents H, F, Cl, Br, I, R^1, CH_2OR^1, OR^1, CO_2R^2, NO2, or a phenyl, phenoxy, or 2-pyridinyloxy group each optionally containing up to 3 compatible substituents selected from F, C1, Br, CH3, and CF3;
Y represents H, F, Cl, Br, I, R^1, or CO_2R^2;
Z represents H, F, Cl, Br, I, or R^1;
R^1 represents C_1-C_4 alkyl optionally containing one or more chloro or fluoro substituents; and
R^2 represents H, C_1-C_4 alkyl, C_3-C_4 alkenyl, or C_3-C_4 alkynyl, each optionally containing up to four compatible substituents selected from chloro, fluoro, OR^1, and phenyl
which comprises the consecutive steps of
a) contacting 5-amino-3-mercapto-1,2,4-triazole with a suitable acylating agent selected from a carboxylic acid chloride, a carboxylic acid anhydride, and a carboxylic acid ($RCOCl$, $(RCO)_2O$, or RCO_2H wherein R is as defined hereinabove) in an essentially non-aqueous medium and heating at a temperature of about 50° C. to about 180° C. to obtain the thermodynamically most stable mono-

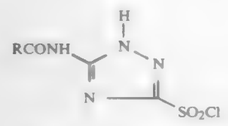
VOL 1171 ISS 3 FE 21 1995 UMI

acylated product, a 5-acylamino-3-mercapto-1,2,4-triazole compound of the formula



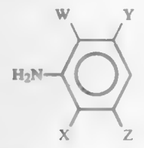
wherein R is as defined hereinbefore;

b) contacting said 5-acylamino-3-mercapto-1,2,4-triazole compound with chlorine in a medium containing an aqueous acid under conditions conducive to the formation of a 5-acylamino-3-chlorosulfonyl-1,2,4-triazole compound of the formula



wherein R is as defined hereinabove; and

c) contacting said 5-acylamino-3-chlorosulfonyl-1,2,4-triazole compound with a substituted aniline compound of the formula



wherein W, X, Y, and Z are as defined hereinabove under conditions conducive to the formation of said 5-acylamino-1,2,4-triazole-3-sulfonamide compound.

5,391,760

PROCESS FOR PRODUCING N-ALKYLPYRAZOLES

Hiroshi Murakami, Narashino; Susumu Yamamoto, Yachiyo; Yoshihiro Iwasawa, Chiba; Fumio Suzuki, Funabashi, and Isao Hashiba, Ichikawa, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 913,194, Jul. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 678,241, Apr. 1, 1991, Pat. No. 5,153,329. This application Sep. 14, 1993, Ser. No. 120,330

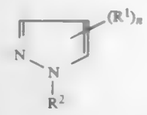
Claims priority, application Japan, Apr. 3, 1990, 2-088491; Apr. 18, 1990, 2-102359

The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.

Int. Cl.[6] **C07D** *231/12*

U.S. Cl. 548—373.1 **18 Claims**

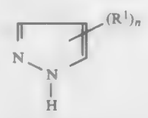
1. A process for producing N-alkylpyrazoles represented by Formula (I):



(1)

wherein R^1 is a C_1–C_4 alkyl group and R^2 is a C_1–C_4 alkyl group and n is an integer of 1 to 3, which comprises:

reacting an alkali metal or an alkali metal-containing base with a N-unsubstituted pyrazole represented by the Formula (2):



(2)

wherein R^1 and n are defined above, thereby forming an alkali metal salt thereof; and, subsequently

reacting the alkali metal pyrazole salt obtained with an alkylating agent in a solvent selected from the group consisting of an alkoxy-substituted aromatic hydrocarbon, and a ketone.

5,391,761

PREPARATION OF NOVEL AMIDO-ALCOHOL DERIVATIVES AND THEIR THERAPEUTIC USES

Henri Laborit, Paris; Robert Zerbib, Issy-Les-Moulineaux, and Philippe Dostert, Paris, all of France, assignors to Centre D'etudes Experimentals et Cliniques de Pharmacologie et D'Eutonologie (CEPBEPE), France

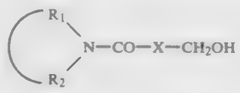
Filed Jul. 8, 1993, Ser. No. 89,114

Claims priority, application France, Jul. 8, 1992, 92 08462

Int. Cl.[6] **A61K** *31/40, 31/47, 31/55;* **C07D** *217/00, 487/08, 209/02*

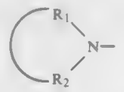
U.S. Cl. 548—452 **6 Claims**

1. A compound having the general formula



(I)

in which the cyclic system



represents nor-tropane, 3-aza-bicyclo[3,2,2]nonane, 6-azabicyclo[3,2,1]octane or tetrahydro-1,2,3,4-isoquinoline, optionally substituted by up to three methyl groups, and

X represents the radical CH_2—CH_2 or CH=CH (trans).

5,391,762

NIR DYES, METHODS OF PREPARING THEM AND THEIR USE

Rudolf Naef, Lupsingen; Beat Schmidhalter, Oberkirch, and Hanspeter Preiswerk, Birsfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

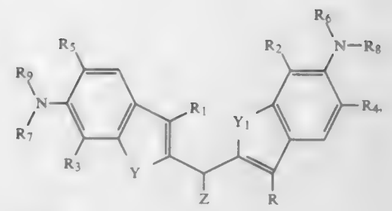
Division of Ser. No. 967,078, Oct. 26, 1992, Pat. No. 5,266,699. This application Sep. 14, 1993, Ser. No. 121,018

Claims priority, application Switzerland, Oct. 30, 1991, 3168/91

Int. Cl.[6] **C07D** *221/18, 221/06*

U.S. Cl. 548—455 **7 Claims**

1. A compound of the formula (III)



(III)

in which

Y and Y_1 are the same substituent selected form the group consisting of NH or N-alkyl, N-cycloalkyl, N-phenyl and N-benzyl,

R and R_1 are each, independently of one another, H, alkyl, cycloalkyl, aralkyl or aryl,

R_2 is H or forms a 5 or 6 membered ring together with R_6 an the N and C atoms linking them,

R_3 is H or forms a 5 or 6 membered ring together with R_7 an the N and C atoms linking them,

R_4 is H or forms a 5 or 6 membered ring together with R_8 an the N and C atoms linking them,

R_5 is H or forms a 5 or 6 membered ring together with R_9 an the N and C atoms linking them,

wherein R_2 and R_3 are the same and R_4 and R_5 are the same,

R_6, R_7, R_8 and R_9 are each, independently of one another, H, alkyl, cycloalkyl, aralkyl or aryl, or R_6 and R_8 and/or R_7 and R_9 form, together with the N atom linking them, a piperidine radical, a morpholine radical or an unsubstituted piperazine radical or a piperazine radical substituted on the N atom by C_1-C_4alkyl, hydroxyl-C_1-C_4alkyl or amino-C_1-C_4alkyl,

Z is H or a substituted or unsubstituted phenyl, naphthyl, pyridyl, furyl, thienyl or pyrrolyl raidcal, and,

the alkyl or cycloalkyl being unsubstituted or substituted by halogen, hydroxyl, C_1-C_4alkoxy, cyano or phenyl, and

the aryl or aralkyl being unsubstituted or substituted by halogen, hydroxyl, NH-alkyl, N(alkyl)$_2$, C_1-C_6alkyl, C_1-C_4alkoxy, carboxyl, alkoxycarbonyl, carbonamido, mono- or dialkylcarbonamido, nitro or CN.

5,391,763

3-AZA-BICYCLO[3.1.0]HEXANES WHICH ARE INTERMEDIATES FOR ANTI-BACTERIAL AZABICYCLO QUINOLONE CARBOXYLIC ACIDS

Katherine E. Brighty, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 12,202, Feb. 2, 1993, Pat. No. 5,266,569, which is a division of Ser. No. 919,477, Jul. 24, 1992, Pat. No. 5,229,396, which is a division of Ser. No. 650,835, Feb. 4, 1991, Pat. No. 5,164,402, which is a continuation-in-part of Ser. No. 551,212, Jul. 11, 1990, abandoned. This application Aug. 26, 1993, Ser. No. 88,999

Int. Cl.[6] **C07D** *209/52*

U.S. Cl. 548—515 **3 Claims**

1. A compound of the formula



wherein Y^2 is hydrogen, benzyl, or benzyloxycarbonyl, and R^{15} is carboxyl, hydroxymethyl, CHO, CH_2 $NR^{11}R^{12}$ or $NR^{11}R^{12}$ wherein R^{11} is hydrogen, methyl, or ethyl, and R^{12} is hydrogen, C_1–C_6 acyl, C_2–C_6 alkoxycarbonyl, optionally substituted benzyloxycarbonyl, aryloxycarbonyl, silyl, trityl, tetrahydropyranyl- vinyloxycarbonyl, O-nitrophenylsulfonyl, diphenylphosphonyl, p-toluenesulfonyl, or benzyl.

5,391,764

POLYASPARTIC ACID MANUFACTURE

Larry P. Koskan, Orland Park; Kim C. Low, Alsip; Abdul Rehman Y. Meah, Justice, and Anne Marie Atencio, Riverdale, all of Ill., assignors to Donlar Corporation, Bedford Park, Ill.

Division of Ser. No. 80,562, Jun. 21, 1993, Pat. No. 5,315,010, which is a continuation-in-part of Ser. No. 660,355, Feb. 22, 1991, Pat. No. 5,221,733. This application Mar. 29, 1994, Ser. No. 219,667

Int. Cl.[6] **C07D** *207/40*

U.S. Cl. 548—520 **7 Claims**

1. A method for producing polysuccinimide, comprising the steps of

(a) heating powdered L-aspartic acid to at least 370° F. to initiate the condensation reaction and produce a reaction mixture, then

(b) raising the reaction mixture temperature to at least 450° F., and

(c) maintaining at least the 450° F. temperature for the reaction mixture until at least 80% conversion has occurred.

5,391,765

CHOLESTEROL LOWERING/ANTIOXIDANT NITROXIDES

Bradley C. Pearce, East Hampton, and John J. Wright, Guilford, both of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Apr. 16, 1993, Ser. No. 48,717

Int. Cl.[6] **C07D** *207/46;* **A61K** *31/40*

U.S. Cl. 548—542 **5 Claims**

1. The compound which is 2,5-dihydro-2,2,5,5-tetramethyl-3-[[(4 ,8,12-trimethyl-3(E) ,7(E) ,11-tridecatrienyl)thio]methyl]-1H-pyrrole N-oxide, or a pharmaceutical salt, solvate, or hydrate thereof.

5,391,766

ALKYL OR ALKOXY SUBSTITUTED S-HETEROCYCLIC RETINOIDS

Michael Klaus, Weil/Rhein, Germany, and Peter Mohr, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutly, N.J.

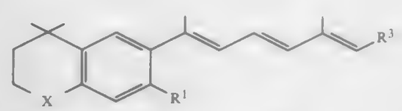
Filed May 5, 1993, Ser. No. 57,949

Claims priority, application Switzerland, May 7, 1992, 1465/92

Int. Cl.[6] **C07D** *335/06;* **A61K** *31/38*

U.S. Cl. 549—23 **15 Claims**

1. A fused bicyclic compound of the formula:



I-A

wherein X is —S—, —SO— or —SO_2—; R^1 is C_{7-10}-alkyl or C_{7-10}-alkoxy; and R^3 is carboxy or lower-alkoxycarbonyl; or salts of said bicyclic compound when R^3 is carboxy.

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5,391,767

PROCESS FOR THE PREPARATION OF ALKYLENE CARBONATES

Franz-Josef Mais, Düsseldorf; Hans-Josef Buysch, Krefeld; Christine Mendoza-Frohn, Erkrath, and Alexander Klausener, Stolberg, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

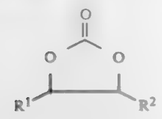
Filed Nov. 16, 1992, Ser. No. 976,877

Claims priority, application Germany, Nov. 22, 1991, 4138438; Apr. 2, 1992, 4210943

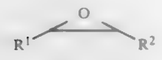
Int. Cl.[6] C07D *317/18*

U.S. Cl. 549—229 19 Claims

1. A process for the preparation of an alkylene carbonate of the formula



by reaction of an alkylene oxide of the formula



wherein, in the formulae,

R^1 and R^2 independently of one another denote hydrogen, substituted or unsubstituted C_1–C_4-alkyl, substituted or unsubstituted C_2–C_4-alkenyl or substituted or unsubstituted C_6–C_{12}-aryl and

R^1 and R^2, together with the two three-membered ring C atoms, can denote a saturated carbocyclic ring having 5–8 ring members,

with carbon dioxide in the presence of catalysts, wherein a catalyst which can be activated of the formula

$$a[MX]/b[ZnY_2]$$

wherein

M denotes an alkali metal,

X and Y independently of one another denote chlorine, bromine or iodine, provided that at least one of X and Y is bromine, and

a and b denote fractions or integers in a range from 0.001 to 2, is employed in an amount of from 0.001–10% by weight, whereby the activation can be carried out by addition of a halogen compound of the formula

wherein

Z represents chlorine, bromine or iodine and

R^3 denotes hydrogen, chlorine, bromine or iodine, the radical of an inorganic or organic acid halide, the radical of a benzyl, benzal or benzotrihalide, C_4–C_8-tert-alkyl, phenacyl, (meth) allyl or —CHR^1—CHR^2—OH wherein R^1 and R^2 have the above meaning, and in the case where Z represents iodine, can also denote Cl_3 or Br_3,

and whereby the reaction is carried out in the particular alkylene carbonate to be prepared, as the reaction medium, and at a temperature of 40° to 250° C. and a molar ratio of alkylene oxide to CO_2 of 1:1–10.

5,391,768

PURIFICATION OF 1,4-DIOXAN-2-ONE BY CRYSTALLIZATION

Ying Jiang, North Haven, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

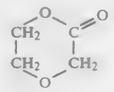
Filed Mar. 25, 1993, Ser. No. 36,922

Int. Cl.[6] C07D *319/12*

U.S. Cl. 549—274 14 Claims

1. A method for purifying 1,4-dioxan-2-one comprising:

(a) forming a solution by dissolving a crude reaction product containing a compound of the formula



in an alkyl acetate;

(b) forming crystals of said compound to form a mixture from the solution; and

(c) filtering the mixture to recover solids containing said compound in crystalline form which is relatively pure compared to said crude reaction product.

5,391,769

METHOD OF PREPARING 3-DPA-LACTONE

Katsuya Matsumoto; Takashi Ebata; Hiroshi Kawakami; Koshi Koseki, and Hajime Matsushita, all of Yokohama, Japan, assignors to Japan Tobacco Incorporated, Tokyo, Japan

PCT No. PCT/JP92/00925, § 371 Date Mar. 10, 1993, § 102(e) Date Mar. 10, 1993, PCT Pub. No. WO93/02070, PCT Pub. Date Feb. 4, 1993

PCT Filed Jul. 21, 1992, Ser. No. 987,277

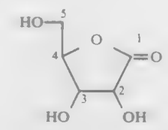
Claims priority, application Japan, Jul. 22, 1991, 3-204601

Int. Cl.[6] C07D *305/12*

U.S. Cl. 549—313 20 Claims

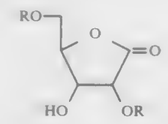
1. A method of preparing 3-DPA-lactone comprising the following steps (a)–(d):

(a) protecting the hydroxyl groups located at the 2- and 5-positions of γ-ribonolactone represented by formula (1),



(1)

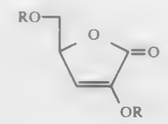
to yield a compound represented by the following formula (2),



(2)

wherein R represents a protecting group for a hydroxyl group,

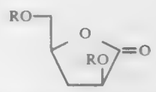
(b) eliminating the hydroxyl group at the 3-position of the compound represented by formula (2) so as to form a double bond between the 2 - and 3 -positions, and thus yielding a compound represented by formula (3),



(3)

wherein R represents a protecting group for a hydroxyl group,

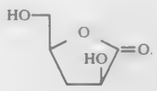
(c) reducing the double bond between the 2- and 3-positions of the compound represented by formula (3) to yield a compound represented by formula (4),



(4)

wherein R represents a protecting group for a hydroxyl group, and

(d) eliminating the protecting groups of the compound represented by formula (4) to yield a compound represented by formula (5),



(5)

5,391,770

PROCESS FOR PREPARING ASCORBIC ACID

Isidore Le Fur, Thiais; Jean-Paul Richard, Corbeil, and Gérard Wolff, Thiais, all of France, assignors to Rhone Poulenc Rorer S.A., France

Continuation of Ser. No. 40,589, Mar. 31, 1993, abandoned, which is a continuation of Ser. No. 796,878, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 536,461, Jun. 12, 1990, abandoned. This application Dec. 23, 1993, Ser. No. 171,988

Claims priority, application France, Jun. 12, 1989, 89 07716

Int. Cl.[6] C07D *307/62*

U.S. Cl. 549—315 6 Claims

1. A process for the preparation of pure ascorbic acid from an alkali metal ascorbate comprising:

a) displacing ascorbic acid from a methanol or an aqueous-methanolic solution of alkali metal ascorbate and forming a methanolic or aqueous methanolic solution of ascorbic acid;

wherein the ascorbic acid is displaced from alkali metal ascorbate by adding a sufficient quantity of a strong acid to the ascorbate/methanol or ascorbate/aqueous methanolic solution to maintain the pH between about 1.5 and about 3.5, and wherein the alkali metal salt of the strong acid formed is only sparingly soluble in the methanol or aqueous-methanolic solution; and further comprising

b) separating the alkali metal salt of the strong acid from the displacement mixture formed in step a);

c) obtaining a methanolic or aqueous-methanolic solution of ascorbic acid;

d) passing the solution of step c) through a sulfonic resin and then a tertiary amine resin in order to remove the residual alkali metal salt of the strong acid, without absorption of the ascorbic acid; and

e) isolating the pure ascorbic acid from the methanolic or aqueous-methanolic solution of step d).

5,391,771

HYDROGENATION OF CITRIC ACID

Hans-Juergen Weyer, Mannheim; Rolf Fischer, Heidelberg, and Christoph Sigwart, Schriesheim, all of Germany, assignors to BASF Aktiengesellschaft

Filed Sep. 30, 1993, Ser. No. 130,003

Claims priority, application Germany, Oct. 5, 1992, 4233431

Int. Cl.[6] C07D *305/12;* C07C *51/36, 27/00*

U.S. Cl. 549—326 14 Claims

1. A process for the preparation of propane-1,2,3-tricarboxylic acid, tetrahydrofurfurylacetic acid and its C_1- to C_{20}-alkyl or C_7- to C_{12}-aralkyl ester derivatives, propane-1,2,3-trimethanol, 3-methyltetrahydrofuran, 3-(2'-hydroxyethyl)tetrahydrofuran, 4-hydroxymethyltetrahydropyran, 2-methyl-γ-butyrolactone and/or 3-methyl-γ-butyrolactone, which comprises:

reacting citric acid or the C_1- to C_{20}-alkyl or C_7- to C_{12}-aralkyl esters thereof on a hydrogenation catalyst in a nonaqueous reaction system which consists essentially of an organic solvent and excludes water as a solvent, at a temperature of from 50° to 400° C. and under a pressure of from 1 to 400 bar.

5,391,772

CONVERTING AN ALCOHOL TO AN AZIDE WITH S_N2 INVERSION USING A PHOSPHORYL AZIDE

Andrew S. Thompson, Mountainside, and Edward J. J. Grabowski, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 8, 1993, Ser. No. 89,315

Int. Cl.[6] C07D *307/02;* C07C *247/00*

U.S. Cl. 549—492 10 Claims

1. A process for converting an alcohol moiety to the corresponding azide with SN_2 inversion comprising the step of:



I II III

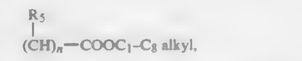
reacting said alcohol (I) with a phosphoryl azide (II) in a dry inert aprotic organic solvent in the presence of a proton acceptor, soluble in said solvent, at a temperature of about −20 to 100 degrees C., for a sufficient time to produce said azide (III), wherein the inverted carbon resulting from said SN_2 inversion is indicated with an asterisk, wherein:

(a) R_1 is selected from the group consisting of C_1–C_8 linear or branched alkyl, 5–10 membered monocyclic or bicyclic fused aromatic or heteroaromatic ring, wherein the hetero ring atoms are independently selected from the group consisting of nitrogen, sulfur and oxygen; wherein said aromatic or heteroaromatic ring can be substituted by 1–3 substituents X, Y or Z said substituents being independently selected from the group consisting of halo, trihalo-C_1 alkyl, C_1–C_8 alkyl, C_1–C_8 alkoxy, NH—CO-C_1–C_8 alkyl, NH—CO-phenyl, NH—CO—OC_1–C_8 alkyl, N(CO-C_1–C_8 alkyl)$_2$, N(CO-phenyl)$_2$, O—CO-phenyl, or X and Y may be 1,2-methylenedioxy, without affecting the value of Z, wherein the C_1–C_8 alkyl or phenyl moieties in said X, Y or Z substituents can in turn be substituted by 1–3 substituents independently selected from the group consisting of halo, C_1–C_8 alkoxy and for phenyl, additionally the substituents can be, C_1–C_8 alkyl;

(b) R_2 is selected from

(i) —$COOC_1$–C_8 alkyl, C_1–C_8 alkyl, C_1–C_8 alkylcarbonyl;

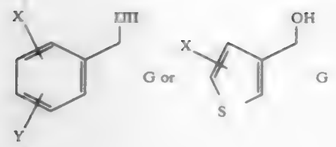
(ii) where R_1 is an aromatic or heteroaromatic ring, R_2 may further be



where n is 1–5, R_5 is hydrogen or C_1–C_8 alkyl,

or R_1 and R_2 are joined, such that together with the atoms to which they are attached there is formed a compound of the formula

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wherein G is C_2–C_4 alkylene, which can be substituted with a C_1–C_3 alkyl and said alkylene chain can contain a $S(O)_n$ ring atom, where n is 0–2;

(c) R_3 and R_4 are independently selected from C_1–C_8 alkyl or phenyl, which can be substituted by 1–3 substituents of C_1–C_8 alkoxy, halo, trihalo- C_1 alkyl, and for phenyl, additionally C_1–C_8 alkyl;

wherein said process is carried out in the absence of dialkylazadicarboxylate.

5,391,773

PROCESS FOR THE SELECTIVE HYDROGENATION OF EPOXYALKENES TO EPOXYALKANES

Thomas A. Puckette, Longview, Tex., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Jun. 17, 1994, Ser. No. 262,122

Int. Cl.[6] C07D *301/00, 303/04, 303/22*

U.S. Cl. 549—540 **7 Claims**

1. Process for the preparation of epoxyalkanes and epoxycycloalkanes by hydrogenating under hydrogenation conditions of temperature and pressure epoxyalkenes and epoxycycloalkenes in a catalyst solution comprising (A) an inert, organic solvent and (B) catalyst components dissolved in said solvent comprising (i) rhodium, (ii) an organophosphorus compound selected from trihydrocarbylphosphines and trihydrocarbylphosphites, and (iii) a poly-unsaturated hydrocarbon selected from alkadienes, cycloalkadienes, alkatrienes and cycloalkatrienes; wherein

the ratio of moles of component (ii) to gram atoms of rhodium is about 3:1 to 50:1; and

the ratio of moles of component (iii) to gram atoms of rhodium is about 2:1 to 150:1.

5,394,884

Patent Not Issued For This Number

5,391,775

PROCESS FOR PRODUCTION OF DIACETYLRHEIN

Alfons Carcasona, Köln; Wolf Grimminger, Bergisch Gladbach, both of Germany; Pentti Heitala, Helsinki, Finland; Klaus Witthohn, and Helga Zaeske, both of Overath, Germany, assignors to Madaus AG, Cologne, Germany

Continuation of Ser. No. 909,228, Jun. 24, 1992, abandoned. This application Apr. 29, 1994, Ser. No. 236,682

Claims priority, application Germany, Jun. 25, 1991, 4120989

Int. Cl.[6] C07C *50/34*

U.S. Cl. 552—262 **9 Claims**

1. The method of isolating substantially pure diacetylrhein, which comprises mixing a diacetylrhein containing aloe-emodin composition with an aqueous solution having a pH of 6.5 to 7.5 and a polar organic solvent which is incompletely miscible with said aqueous solution, subjecting the resulting mixture to liquid-liquid partitioning into a light organic phase and a heavy aqueous phase, and recovering substantially pure diacetylrhein from the heavy aqueous phase.

2. The method of preparing diacetylrhein which is substantially free of aloe-emodin components, which comprises:

a) oxidizing a mixture of rhein-9-anthrone-8-glucoside and aloe-emodin-9-anthrone-8-glucoside to form a mixture of rhein anthraquinone-8-glucoside and aloe-emodin anthraquinone-8-glucoside,

b) treating said anthraquinone-8-glucoside mixture with an acid to remove the glucose in the 8-positions and form a mixture of 1,8-dihydroxy-3-carboxy-anthraquinone and 1,8-dihydroxy-3-hydroxymethyl-anthraquinone,

c) acetylating said mixture of 1,8-dihyroxyanthraquinones to form a mixture of diacetylrhein and 1,8-diacetyl-3-hydroxymethyl-anthraquinone,

d) mixing said mixture of diacetylrhein and 1,8-diacetyl-3-hydroxymethylanthraquinone with an aqueous solution having a pH of 6.5 to 7.5 and with a polar organic solvent which is incompletely miscible with water,

e) subjecting the resulting mixture to liquid-liquid partitioning to form a light organic phase and a heavy aqueous phase, and

f) recovering substantially pure diacetylrhein from the heavy aqueous phase.

5,391,776

STEROID DERIVATIVES

Hiroaki Ueno, San Diego, Calif.; Syuichiro Kadowaki, Kanagawa, Japan; Akihito Kamizono, Tokyo, Japan; Masahiko Morioka, Tokyo, Japan, and Akihisa Mori, Tokyo, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 15,800

Claims priority, application Japan, Feb. 14, 1992, 4-028497

Int. Cl.[6] C07J *51/00*

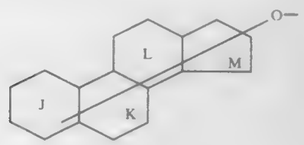
U.S. Cl. 552—507 **10 Claims**

1. Asteroid derivative of the following general formula (I):



(I)

wherein X—O— represents the residue of asteroid compound which is represented by the following formula:



wherein the rings J, K, L and M each independently represent a saturated, partially saturated, or unsaturated ring, and which may be independently substituted by one or more substituents selected from alkyl, alkenyl, alkynyl, halogen, alkoxy ester, acyl, hydroxy and oxo groups, —A— represents

$$—CO]NH(CHR^1)_y—(Y)_p—CO]_mNH—$$

in which y represents an integer of from 1 to 3, p represents 0 or 1, m represents an integer of from 0 to 5, R^1 represents hydrogen atom, optionally substituted C_1–C_4 alkyl group or optionally substituted C_6–C_{14} aryl group, and Y represents —O— or —NH—,

$$—CO—(R^2)_x—(Z)_q—CO—NH—$$

in which x and q each independently represent 0 or 1, R^2 represents optionally substituted vinylene group,

$$—(CH_2)_k—Cyclo—(CH_2)_l—$$

in which k and l each represent an integer of 0–5, and Cycle represents C_3–C_7 cycloalkylene group, optionally substituted phenylene group or optionally substituted C_1–C_7 alkylene group, and Z represents —O— or —NH—, or

$$—CO—(CH_2)_n—$$

in which n represents an integer of from 0 to 10 with proviso that, when X—O— is 17β-(3-hydroxy-1,3,5-estratrieneyloxy) group, n represents 0 or 1, and

R represents hydrogen atom or C_1–C_4 alkyl group, or a pharmaceutically acceptable salt thereof.

5,391,777

ISOLATION OF STEROIDS CONTAINING A 5,7-DIENE FUNCTIONALITY FROM A STEROL MIXTURE

Masato Tanabe, Palo Alto; John G. Johansson, Menlo Park, and Dennis Yasuda, Campbell, all of Calif., assignors to SRI International, Menlo Park, Calif.

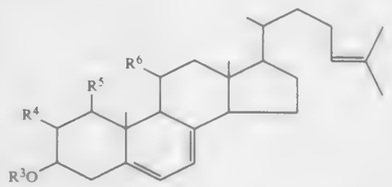
Continuation of Ser. No. 869,574, Apr. 15, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 152,259

Int. Cl.[6] C07J *75/00*

U.S. Cl. 552—545 **24 Claims**

1. A method of isolating a sterol containing a 5,7-diene functionality from a mixture of yeast sterol metabolites comprising squalene, lanosterol, 4,4-dimethylzymosterol, 4-methylzymosterol, zymosterol, cholesta-7,24-diene-3-ol and cholesta-5,7,24-triene-3-ol, comprising the steps of: (a) treating said mixture with (i) a dienophile having the structural formula X—R═R—Y wherein the R's are both N or both C—Q where the Q's are H or together from a third bond, and wherein X and Y are selected from electron-withdrawing groups themselves independently selected from the group consisting of —COOH, —CHO, —NO_2, —CN, —$COOR^1$ and —COR^1 where R^1 is lower alkyl, or wherein X and Y are linked together to form a —(CO)—Z—(CO)— bridge in which Z is lower alkylene, monocyclic arylene of 5 to 7 carbon atoms with up to 4 ring substituents, or —NR^2— wherein R^2 is H, lower alkyl or monocyclic aryl of 5 to 7 carbon atoms and up to 5 ring substituents, wherein the ring substituents are selected from the group consisting of —$(CH_2)_n$—NH_2, —$(CH_2)_n$—COOH, —NO_2, halogen and lower alkyl, where n is an integer in the range of 0 to 6 inclusive, thereby converting the sterol containing the 5,7-diene functionality to a Diels-Alder adduct; (b) optionally conducting further chemical conversion of the Diels-Alder adduct to provide a modified Diels-Alder adduct; and (c) removing the Diels-Alder adduct or the modified Diels-Alder adduct from the mixture,

wherein the 5,7-diene-containing sterol has the structural formula



wherein R^3 is selected from the group consisting of H and R^1CO— wherein R^1 is lower alkyl or monocyclic aryl of 5 to 7 carbon atoms, and R^4, R^5 and R^6 are independently selected from the group consisting of H, hydroxyl and lower alkyl.

5,391,778

2-IODO-3-KETO-Δ^4 STEROIDS, PROCESS FOR THEIR PRODUCTION, AS WELL AS THEIR FURTHER PROCESSING

Jürgen Westermann; Klaus Nickisch; Michael Harre, and Ralph Rohde, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

PCT No. PCT/DE91/00386, § 371 Date Jan. 11, 1993, § 102(e) Date Jan. 11, 1993, PCT Pub. No. WO91/17175, PCT Pub. Date Nov. 14, 1991

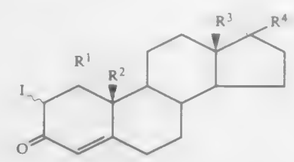
PCT Filed May 8, 1991, Ser. No. 960,385

Claims priority, application Germany, May 9, 1990, 4015247

Int. Cl.[6] C07C *45/65*

U.S. Cl. 552—634 **9 Claims**

1. A process for introducing a Δ^1 double bond in a steroid skeleton compound simultaneously having a Δ^4 double bond and at least one saturated carbonyl group, wherein a compound of formula I



I

in which

R^1 stands for a hydrogen atom or a straight-chain or branched alkyl group with 1 to 4 carbon atoms,

R^2 stands for a hydrogen atom or a methyl group,

R^3 stands for a hydrogen atom,

R^4 stands for an acyloxy group with 1 to 4 carbon atoms in the acyl radical or

R^3 and R^4 together stand for a keto-oxygen atom, is dehydrohalogenated with a base in an amidic solvent at elevated temperature.

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5,391,779

STABLE EXTRACTS FROM NEEM SEEDS

Zev Lidert, Doylestown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 27, 1992, Ser. No. 920,237
Int. Cl.[6] C07C *1/00*
U.S. Cl. 514—453 10 Claims

1. A process for purifying crude neem seed extracts to yield extracts useful as insecticides containing azadirachtin possessing less than 6000 ppm of sulfur and which degrades to an extent of less than 50% after 28 days at 54° C. comprising

a) deoiling ground neem seeds, neem kernels or partially dehulled seeds by stirring with hexane followed by filtration to obtain a deoiled cake or by mechanically extruding the oil and optionally extruding the oil residue with hexane to obtain a deoiled cake,

b) extracting the deoiled cake with methanol followed by filtration,

c) removing the methanol to obtain a dry extract,

d) dissolving about 3 parts of the dry extract in about 7 parts of methanol (w/w),

e) adding water to a final ratio of about 35/65 methanol/water (v/v),

f) separating the aqueous methanolic phase from any solid impurities,

g) diluting the aqueous methanolic mixture with an aqueous salt solution,

h) extracting the dilute solution with a water immiscible solvent,

i) drying the resulting organic solution and, if desired, removing the solvent, and

j) treating the resulting neem seed extract with an oxidizing agent.

5,391,780

AQUEOUS PROCESS FOR PREPARING AMIDO-CARBOXYLIC ACIDS BY REACTING AN AMINOACID WITH A CARBOXYLIC ACID ANHYDRIDE

George C. Zima, Kingsport, and T. Hugh Williams, Fall Branch, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Apr. 15, 1994, Ser. No. 228,613
Int. Cl.[6] C07C *231/02*
U.S. Cl. 554—69 10 Claims

1. A process for preparing amido-carboxylic acids in water, said process comprising the steps of:

(A) reacting at a temperature of 150° C.–300° C. for 2 to 10 hours, a mixture containing

(1) a lactam containing at least 3 carbon atoms per molecule; and

(2) 10 to 50 moles of water per mole of the lactam to form a mixture containing an amino acid;

(B) cooling the reaction mixture formed in Step (A) to a temperature of 25° C.–100° C.;

(C) reacting at a temperature of 25° C.–100° C. for 5 minutes to 1 hour

(3) 1 to 10 moles of a carboxylic acid anhydride having 6 to 26 carbon atoms with the amino acid formed in Step (A) to form a reaction mixture containing an organic layer which contains an amido-carboxylic acid and an aqueous layer; and

(D) separating the amido-carboxylic acid containing organic layer from the aqueous layer.

5,391,781

METHODS FOR DISPERSING SULFUR IN AQUEOUS SYSTEMS

Quincy K. A. Sintim, Houston, and Paul V. Roling, Spring, both of Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Oct. 15, 1993, Ser. No. 137,646
Int. Cl.[6] C07C *381/00*
U.S. Cl. 554—87 9 Claims

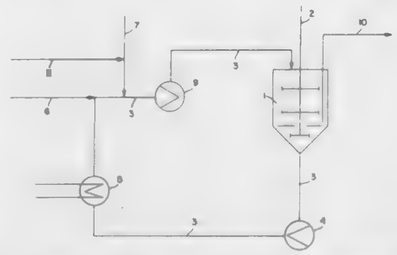
1. A method for dispersing sulfur in an aqueous system comprising adding an effective amount for the purpose to said system an alkylcarboxylic acid or salt thereof wherein said alkylcarboxylic acid has from 8 to 60 carbon atoms.

5,391,782

PROCESS FOR THE PRODUCTION OF HIGLY CONCENTRATED PASTES OF ALPHA-SULFOFATTY ACID ALKYL ESTER ALKALI METAL SALTS

Dietmar Colignon, Erkrath; Erich Dorra, Duesseldorf; Guenter Panthel, Haan; Wolfgang Schmidt, Monheim, and Norbert Wrede, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Germany

PCT No. PCT/EP91/00942, § 371 Date Nov. 23, 1992, § 102(e) Date Nov. 23, 1992, PCT Pub. No. WO91/18873, PCT Pub. Date Dec. 12, 1991
PCT Filed May 21, 1991, Ser. No. 952,617
Claims priority, application Germany, May 30, 1990, 4017463
The portion of the term of this patent subsequent to Jan. 17, 2012, has been disclaimed.
Int. Cl.[6] B07C *303/32*
U.S. Cl. 554—98 19 Claims



1. A process for the production of highly concentrated, readily bleachable paste of an α-sulfofatty acid alkyl ester alkali metal salt which comprises: (1) contacting a fatty acid alkyl ester with gaseous sulfur trioxide, the sulfur trioxide being present in an at least 10% molar excess, to form a partially sulfonated product; (2) maintaining said partially sulfonated product at a temperature of from about 60° C. to about 100° C. for a time to form a sulfonated product having a degree of sulfonation of at least 90%; (3) neutralizing said sulfonated product by introducing the sulfonated product and an aqueous alkali metal hydroxide solution into an aqueous phase comprising from 0 to about 55% by weight washing-active substance while maintaining a pH of from about 2 to about 8 to form a α-sulfofatty acid alkyl ester alkali metal salt paste comprised of from about 60% to about 70% by weight washing-active substance.

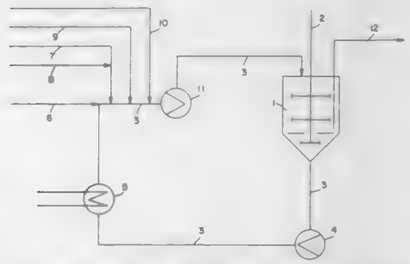
5,391,783

PROCESS FOR THE PRODUCTION OF LIGHT-COLORED PASTES OF α-SULFOFATTY ACID ALKYL ESTER ALKALI METAL SALTS

Dietmar Colignon, Erkrath; Erich Dorra, Duesseldorf; Herbert Lepper, Hilden; Guenter Panthel, Haan; Francois Pierron, Annecy; Wolfgang Schmidt, Monheim, and Norbert Wrede, Dusseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/00941, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO91/18872, PCT Pub. Date Dec. 12, 1991
PCT Filed May 21, 1991, Ser. No. 965,387
Claims priority, application Germany, May 30, 1990, 4017466
Int. Cl.[6] C07C *303/32*
U.S. Cl. 554—98 20 Claims

1. A process for the production of a light colored paste of an α-Sulfofatty acid alkyl ester alkali metal salt which comprises: (1) contacting a fatty acid alkyl ester with gaseous sulfur trioxide to form a partially sulfonated product; (2) maintaining said partially sulfonated product at a temperature of from about 60° C. to about 100° C. for a time to form a sulfonated product having a degree of sulfonation of at least 90%; (3) bleaching



and neutralizing said sulfonated product with an aqueous solution comprised of an alkali metal hydroxide and hydrogen peroxide; and (4) treating the mixture from step (3) at a temperature of from about 60° C. to about 90° C. to form said light colored paste.

5,391,784

LIQUID OR FLOWABLE DERIVATIVES OF NATURAL FATS AND OILS A PROCESS FOR THEIR PRODUCTION AND THEIR USE

Helmut Brehn; Helmut Klimmek, both of Krefeld, and Leonhard Strijbos, Tonisvorst, all of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Germany

Continuation-in-part of Ser. No. 758,407, Aug. 30, 1991, abandoned, which is a continuation of Ser. No. 382,616, Jul. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 53,299, May 22, 1987, Pat. No. 4,897,225. This application Dec. 6, 1993, Ser. No. 162,560
Claims priority, application Germany, Aug. 2, 1988, 3826179
Int. Cl.[6] C11D *1/28*
U.S. Cl. 554—98 15 Claims

1. In the production of derivatives of natural fats and oils that are liquid or flowable, wherein the fat or oil starting material is oxyalkylated at elevated temperatures in the presence of alkaline catalysts with at least one compound containing an epoxide group, and is sulfated, the improvement which comprises employing a starting material comprising at least one C_8–C_{24} fatty acid ester of an aliphatic C_1–C_5 monoalcohol.

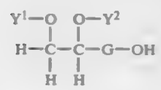
5,391,785

INTERMEDIATES FOR PROVIDING FUNCTIONAL GROUPS ON THE 5' END OF OLIGONUCLEOTIDES

David S. Jones; John P. Hachmann; Michael J. Conrad, all of San Diego; Stephen Coutts, Rancho Santa Fe, and Douglas A. Livingston, San Diego, all of Calif., assignors to La Jolla Pharmaceutial Company, San Diego, Calif.

Continuation-in-part of Ser. No. 731,055, Jul. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 494,118, Mar. 13, 1990, Pat. No. 5,162,515, which is a continuation-in-part of Ser. No. 466,138, Jan. 16, 1990, abandoned. This application Jul. 15, 1992, Ser. No. 915,589
Int. Cl.[6] C07B *39/00*
U.S. Cl. 552—105 6 Claims

1. A partially protected alcohol of the formula:



wherein Y^1 is selected from dimethoxytrityl, monomethoxytrityl, trityl or pixyl, Y^2 is selected from benzoyl, acetyl, isobutyryl, p-bromobenzoyl, t-butyldimethylsilyl, pivaloyl or other base hydrolyzable acyl groups and G is selected from alkyl of 1 to 20 carbon atoms or monocyclic arylene of 6 to 20 carbon atoms.

2. The alcohol of claim 1, wherein Y^1 is dimethoxytrityl, Y^2 is benzoyl and G is butylene.

5,391,786

PROCESS FOR THE PRODUCTION OF LIGHT-COLORED WASHING-ACTIVE α-SULFOFATTY ACID LOWER ALKYL ESTER SALTS

Bernd Fabry, Korschenbroich; Ulrich Kratzel, Kuimbach; Wolfgang Schmidt, Monheim, and Guenter Kreienfeld, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/00644, § 371 Date Oct. 14, 1992, § 102(e) Date Oct. 14, 1992, PCT Pub. No. WO91/16300, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 5, 1991, Ser. No. 937,897
Claims priority, application Germany, Apr. 14, 1990, 4012106
Int. Cl.[6] C07C *51/36*
U.S. Cl. 554—145 20 Claims

1. A process for the production of fatty acid lower alkyl esters for use in the production of light colored washing-active α-sulfofatty acid lower alkyl ester salts comprising the steps of

A) reducing the quantity of oxo compounds in a fatty acid lower alkyl ester to less than about 0.1% by weight by either or both of

a) distilling the fatty acid lower alkyl ester in the presence of an inorganic acid or a partial glycerol ester of said inorganic acid, and/or

b) by adsorption onto an inorganic solid selected from the group consisting of aluminum oxide, titanium dioxide, magnesium oxide, and silica gel; and

B) hydrogenating the fatty acid lower alkyl ester to reduce the content of unsaturated compounds to less than about 0.1% by weight;

wherein steps A) and B) are optionally carried out in reverse order.

5,391,787

PROCESS FOR PRODUCTION OF HIGH PURITY FATTY ACID SALT PRODUCTS

Alfredo Vinci, Dayton, and Ronald L. Forrest, Cranbury, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Apr. 23, 1993, Ser. No. 52,264
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[6] C07C *51/00*
U.S. Cl. 554—156 25 Claims

1. A process for the preparation of a fatty acid salt product which comprises (1) forming a reactive admixture of ingredients comprising (a) C_{14}–C_{22} fatty acid having about 2–40 weight percent of the C_{14}–C_{22} fatty acid content in glyceride form, (b) basic alkali metal or ammonium compound, and (c) aqueous medium, and conducting the reaction for a period sufficient to hydrolyze the glyceride constituent to C_{14}–C_{22} fatty acid and glycerol, and to form an aqueous dispersion of C_{14}–C_{22} fatty acid salt; (2) forming a reactive admixture of ingredients comprising (a) C_{14}–C_{22} fatty acid salt aqueous dispersion from step (1), and (b) between about 0.8–1.4 equivalents of basic alkaline earth metal compound per equivalent of C_{14}–C_{22} fatty acid salt; and (3) recovering C_{14}–C_{22} fatty acid alkaline earth metal salt product after completion of a salt-forming reaction in step (2), wherein the salt product has a content of free C_{14}–C_{22} fatty acid or C_{14}–C_{22} fatty acid glyceride respectively less than about one weight percent, based on the weight of C_{14}–C_{22} fatty acid content.

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5,391,788

PRODUCTION OF HIGH PURITY FATTY ACID SALT PRODUCTS

Alfredo Vinci, Dayton, and Ronald L. Forrest, Cranbury, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 52,264, Apr. 23, 1993. This application Apr. 23, 1993, Ser. No. 52,265

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[6] C07C *51/00*

U.S. Cl. 554—156 12 Claims

1. A process for the preparation of a fatty acid salt product which comprises (1) forming a reactive admixture of ingredients comprising (a) C_{14}–C_{22} fatty acid having about 2–40 weight percent of the C_{14}–C_{22} fatty acid content in glyceride form, (b) basic alkali metal or ammonium compound, and (c) aqueous medium, and conducting the reaction for a period sufficient to hydrolyze the gylceride constituent to C_{14}–C_{22} fatty acid and glycerol, and to form an aqueous dispersion of C_4–C_{22} fatty acid salt; (2) forming a reactive admixture of ingredients comprising (a) C_{14}–C_{22} fatty acid salt aqueous dispersion from step (1), and (b) between about 0.8–1.4 equivalents of water-soluble alkaline earth metal compound per equivalent of C_4–C_{22} fatty acid salt; and (3) recovering C_4–C_{22} fatty acid alkaline earth metal salt product after completion of a salt-forming reaction in step (2), wherein the salt product has a content of free C_{14}–C_{22} fatty acid or C_4–C_{22} fatty acid glyceride respectively less than about one weight percent, based on the weight of C_{14}–C_{22} fatty acid content.

5,391,789

BRIDGED, CHIRAL METALLOCENES, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS CATALYSTS

Jürgen Rohrmann, Kelkeim, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

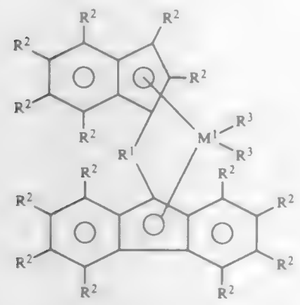
Filed Aug. 5, 1992, Ser. No. 925,985

Claims priority, application Germany, Aug. 8, 1991, 4126234

Int. Cl.[6] C07F *17/00;* C08F *4/44*

U.S. Cl. 556—11 18 Claims

1. A compound of the formula I



(I)

in which M^1 is a metal from the group comprising titanium, zirconium, hafnium, vanadium, niobium and tantalum,

R^1 is



in which M^2 is carbon, silicon, germanium or tin,

R^4 and R^5 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_6–C_{10}-aryl group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group or a C_7–C_{40}-alkylaryl group, or R^4 and R^5, together with the atom joining them, form a ring, and p is 1, 2 or 3,

the radicals R^2 are identical or different and are hydrogen, a C_1–C_{10}-alkyl group, a C_6–C_{10}-aryl group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group or a halogen atom and

the radicals R^3 are identical or different and are a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, hydrogen or a halogen atom.

4. Isopropylidene(9-fluorenyl)(1-indenyl)zirconium dichloride or dimethylsilyl(9-fluorenyl)(1-indenyl)zirconium dichloride.

5,391,790

PROCESS FOR THE PREPARATION OF BRIDGED, CHIRAL METALLOCENE CATALYSTS OF THE BISINDENYL TYPE

Jürgen Rohrmann, Kelkheim, and Frank Küber, Oberursel, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

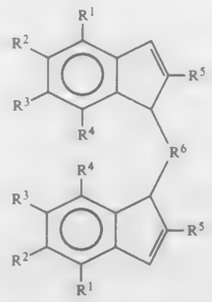
Filed Jun. 15, 1993, Ser. No. 76,991

Claims priority, application European Pat. Off., Jun. 13, 1992, 92109988

Int. Cl.[6] C07F *7/02, 7/22, 7/30*

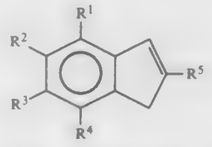
U.S. Cl. 556—28 5 Claims

1. A process for the preparation of a compound of the formula III



(III)

comprising, deprotonating a solution or suspension of an indene of the formula I



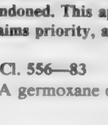
(I)

in a solvent mixture containing a base to give a suspension of a metallated product of the compound of formula I, adding to the suspension of the metallated product a compound of the formula II

$$X—R^6—X \qquad (II)$$

and reacting the suspension of the metallated product and compound of the formula II, whereby for the formulae I–III,

R^1, R^2, R^3, R^4 and R^5 are identical or different and are hydrogen, (C_1–C_{20})alkyl, (C_6–C_{14})aryl, (C_1–C_{10})alkoxy, (C_2–C_{10})alkenyl, (C_7–C_{20})alkyaryl, (C_7–C_{20})alkylaryl, (C_6–C_{10}) aryloxy, (C_1–C_{10})fluoroalkyl, (C_6–C_{10})haloaryl, (C_2–C_{10})alkylnyl, —SiR^7_3 where R^7 is (C_1–C_{10})alkyl, halogen or heteroaromatic radicals having 5 to 6 ring members and optionally one or more hetero atoms, or adjacent radicals R^1–R^4, together with the atoms connecting them, form one or more rings,



where M^2 is carbon, silicon, germanium or tin,

R^8 and R^9 are identical or different and are hydrogen, (C_1–C_{20})alkyl, (C_6–C_{14})aryl, (C_1–C_{10})alkoxy, (C_2–C_{10})alkenyl, (C_7–C_{20})arylakyl, (C_7–C_{20})alkylaryl, (C_6–C_{10})aryloxy, (C_1–C_{10})fluoroalkyl, (C_6–C_{10})haloaryl, (C_2–C_{10})alkynyl, —SiR^7_3, halogen or heteroaromatic radicals having 5 to 6 ring members and optionally one or more hetero atoms, or together with the atoms connecting them, form one or more rings, and p is 1, 2 or 3, and

X is a nucleophilic leaving group.

5,391,791

METHODS OF PRODUCTION OF NOVEL MOLYBDENUM-SULFIDE DIMERS AND REACTIONS OF THE SAME

Mary R. Dubois; Richard D. Noble, both of Boulder, and Carl A. Koval, Lafayette, all of Colo., assignors to The University of Colorado Foundation, Inc., Boulder, Colo.

Filed Aug. 27, 1991, Ser. No. 750,045

Int. Cl.[6] C07F *11/00*

U.S. Cl. 556—60 33 Claims

1. Derivitized molybdenum-sulfide dimer comprised of the formula $[(CpMo)_2(\mu-S)_{4-x}(\mu-SR)_x)]^n$, wherein x =0–3, n is a charge=0, +1 or −1, Cp is selected from the group consisting of: C_5H_5, $C_5H_4CH_3$, $C_5H_4CO_2CH_3$, $C_5H_4CO_2Na$, $C_5H_4CH{=}CH_2$, $C_5(CH_3)_5$, $C_5H_4CONH(CH_2)_xNHR_2+$ or C_5H_4CHO, R is selected from the group consisting of $—C_2H_4$ or —CHR′, wherein R′ is selected from the group consisting of $—CO_2Na$, $—CO_2CH_3$, $—C(CH_3)_2CO_2Et$, $—C(CH_3)_2CO_2Li$ or $—CH(CO_2CH_3)_2$.

5,391,792

GERMANIUM COMPOUNDS AND THEIR USE AS A BIOCOMPATIBLE OIL

Christian Thomas, Paris; Paolo Fossi, Elancourt; Elisabeth Perrier, Maurepas, and Pierre Mazerolles, Castanet, all of France, assignors to Metaleurop S.A., Fontenay-Sous-Bois, France

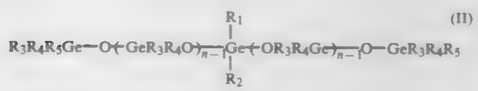
Continuation-in-part of Ser. No. 30,363, Mar. 18, 1993, abandoned. This application Jan. 31, 1994, Ser. No. 189,103

Claims priority, application France, Jul. 19, 1991, 91 09157

Int. Cl.[6] C07F *7/30*

U.S. Cl. 556—83 14 Claims

1. A germoxane of the formula:



(II)

wherein

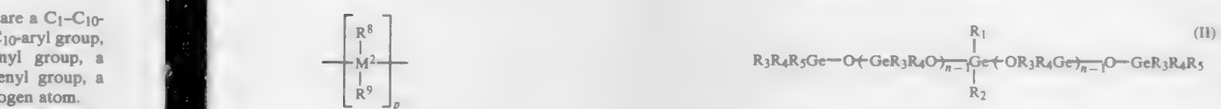
n is an integer between 1 and 50

R_1, R_2 are a methyl radical

R_3, R_4 are chosen among the phenyl optionally substituted by one to five (C_1–C_3) alkyl radicals or together form a divalent chain containing 4 or 5 carbon atoms, optionally one ethylene unsaturation, optionally one to three (C_1–C_3) alkyl substituents,

R_5 is chosen from the radicals (C_1–C_6) alkyl, (C_2–C_6) alkenyl, (C_3–C_6) cycloalkyl which is optionally substituted by one or two (C_1–C_3) alkyl radicals, phenyl which is optionally substituted by one or two (C_1–C_3) alkyl radicals.

7. A germoxane of the formula:



(II)

wherein

n is an integer between 1 and 50,

R_1, R_2 are chosen among the phenyl optionally substituted by one to five (C_1–C_3) alkyl radicals

R_3, R_4, R_5 are chosen among the radicals (C_1–C_{12}) alkyl, (C_2–C_{12}) alkenyl, (C_3–C_6) cycloalkyl which is optionally substituted by one or two (C_1–C_3) alkyl radicals, phenyl which is optionally substituted by one to five (C_1–C_3) alkyl radicals.

14. A germoxane of the formula 2:

$$CH_3—Ge(C_2H_5)_2—O—Ge(Mes)_2—O—Ge(C_2H_5)_2—CH_3$$

wherein Mes is O—, O—, p—, $C_6H_2(CH_3)_3$.

5,391,793

ARYLOXYALUMINOXANES

Tobin J. Marks; Xinmin Yang, both of Evanston, Ill., and Stanley B. Mirviss, Stamford, Conn., assignors to Akzo Nobel N.V., Arnhem, Netherlands and Northwestern University, Evanston, Ill.

Filed Nov. 2, 1992, Ser. No. 969,920

Int. Cl.[6] C07F *5/06*

U.S. Cl. 556—179 3 Claims

1. A process for forming a composition of matter which predominantly comprises aryloxyaluminoxane which comprises reacting an organoaluminum compound containing the aryloxy group with a source of water.

5,391,794

THREE-LEGGED SILANE COUPLING AGENTS AND THEIR PREPARATION METHODS

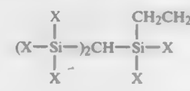
Il N. Jung; Gyu H. Lee; Mi Y. Suk, all of Seoul, and Seung H. Yeon, Kyungki-Do, all of Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jan. 27, 1994, Ser. No. 187,054

Int. Cl.[6] C07F *7/08, 7/10*

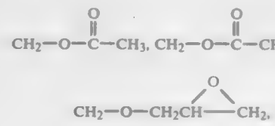
U.S. Cl. 556—435 17 Claims

1. A trissilylalkane represented by formula (X):



(X)

wherein X can be Cl, OR^1(R^1=C_1–C_4 alkyl) or OAc and R^2 can be Ph, CH_2Cl , $C_nH_{2n}CH_3$ (n=0–15), $Si(Me)_mCl_{3-m}$ (m=0–3), CF_3, CN, CH_2CN, $CH{=}CH_2$, $(CH_2)_4CH{=}CH_2$,



VOL 1171 ISS 3 FE 21 1995 UMI

Ph-CH_2Cl or cyclohex-3-enyl group.

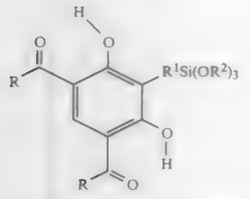
5,391,795

SILYLATED AGENTS USEFUL FOR ABSORBING ULTRAVIOLET LIGHT

James E. Pickett, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 18, 1994, Ser. No. 198,753
Int. Cl.[6] C07F 7/08
U.S. Cl. 556—436 17 Claims

1. A silylated agent useful for absorbing ultraviolet light having the formula



wherein each R is independently a substituted or unsubstituted monocyclic or polycyclic aromatic radical and R^1 is carbon or a linear or branched aliphatic chain having less than about 10 carbons and R^2 is a C_{1-6} alkyl group.

5,391,796

PRODUCTION OF TRIFLUOROVINYL ETHERS

William B. Farnham, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 859,181, Mar. 27, 1992, Pat. No. 5,268,511.
This application Aug. 12, 1993, Ser. No. 103,414
Int. Cl.[6] C07F 7/08, 7/18
U.S. Cl. 556—442 26 Claims

1. A process for the production of silicon compounds, comprising, reacting a compound of the formula $R^1[O(C_2F_4)COF]_z$ or a compound of the formula $R^1[O(C_2F_4)C(O)O(O)C(C_2F_4)O]_zR^1$ to form a silicon compound, and wherein:

R^1 is a hydrocarbyl or substituted hydrocarbyl radical having z free valencies; and

z is 1 or 2.

5,391,797

PROCESS FOR PREPARING ALKOXYSILANE

Toshifumi Hirose; Katsuya Ouchi, both of Kobe, and Hiroshi Awaji, Akashi, all of Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan

Filed Mar. 31, 1994, Ser. No. 220,594
Claims priority, application Japan, Apr. 2, 1993, 5-098408; Sep. 30, 1993, 5-265480
Int. Cl.[6] C07F 7/08, 7/18
U.S. Cl. 556—467 9 Claims

1. A process for preparing an alkoxysilane of the general formula:

$$R^3{}_bSiH_c(OR^2)_{4-(b+c)}$$

wherein R^2 represents a substituted or unsubstituted alkyl group, R^3 represents a monovalent substituted or unsubstituted hydrocarbon group, b is 1, 2 or 3, and c is 0, 1, or 2, comprising the step of:

reacting an alkoxysilane of the general formula:

$$R^1{}_aSi(OR^2)_{4-a}$$

wherein R^1 represents a monovalent substituted or unsubstituted hydrocarbon group, R^2 is the same as defined above, and a is 0, 1, 2 or 3, with a polysiloxane containing monovalent substituted or unsubstituted hydrocarbon groups in the presence of at least one catalyst selected from the group consisting of aluminum alkoxides, or zirconium alkoxides and zirconium chelates to obtain the alkoxysilane.

5,391,798

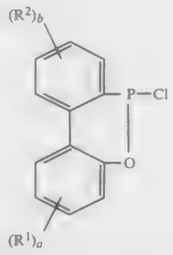
PROCESS FOR PREPARING 6-CHLORO-(6H)-DIBENZ [C,-E][1,2]- OXAPHOSPHORIN

Hans-Jerg Kleiner, Kronberg/Ts, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 9, 1993, Ser. No. 103,969
Claims priority, application Germany, Aug. 11, 1992, 4226554
Int. Cl.[6] C07F 9/6574
U.S. Cl. 558—82 17 Claims

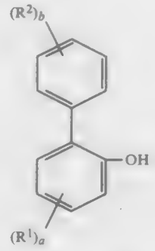
1. A process for preparing 6-chloro-(6H)-dibenz[c,e][1,2]oxaphosphorin of the formula (I),

(I)



in which R^1 and R^2 are identical or different and are halogen; alkyl or alkoxy, each having from 1 to 6 carbon atoms; and a and b are integers from 0 to 3; by reaction of o-phenylphenol of the formula (II),

(II)



in which R^1, R^2, a and b are as defined above, with phosphorus trichloride in the presence of Lewis acids as catalysts with elimination of hydrogen chloride, wherein the phosphorus trichloride is metered into the mixture of compound (II) and Lewis acid at temperatures of 170°–220° C.

5,391,799

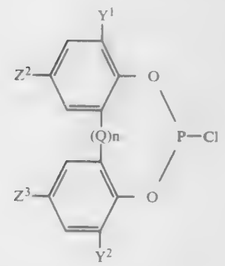
PROCESS FOR THE PREPARATION 6-CHLORO-2,4,8,10-TETRA-BUTYLDIBENZO[D,F][1,3,2-]DIOXAPHOSHEPIN

Stephen D. Pastor, Danbury, Conn., and Sai P. Shum, Pleasantville, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 983,108, Nov. 30, 1992, Pat. No. 5,292,785, which is a continuation of Ser. No. 878,675, May 5, 1992, abandoned. This application Mar. 1, 1994, Ser. No. 220,982
Int. Cl.[6] C07F 9/6574
U.S. Cl. 558—96 14 Claims

1. A process for the preparation of a compound of formula I

I



wherein

n has a value of 0 or 1;

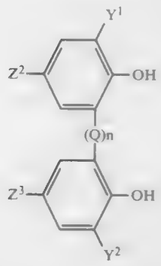
when n is 0, Q is a direct bond,

when n is 1, Q is $—CR^1R^2$ wherein each R^1 and R^2 independently represents hydrogen, straight chain alkyl of 1 to 18 carbon atoms, branched chain alkyl of 1 to 12 carbon atoms, phenyl, tolyl or anisyl;

each Y^1, Y^2, Z^2 and Z^3 independently represents hydrogen, a straight or branched chain alkyl of 1 to 18 carbon atoms, bicycloalkyl of 7 to 10 carbon atoms, phenyl, benzyl, 1-phenylethyl, cyclohexyl, 1-methylcyclohexyl, cyano, halogen, nitro, trifluoromethyl, hydroxy, amino, alkanoyl of 2 to 18 carbon atoms, alkoxy of 1 to 18 carbon atoms or $E^1E^2E^3Si$ where E^1, E^2 and E^3 are independently hydrogen, alkyl of 1 to 4 carbon atoms or phenyl; which process comprises

reacting a bisphenol of formula II

II



with phosphorus trichloride in an organic solvent containing 1-methyl-2-pyrrolidinone, where the molar ratio of bisphenol to phosphorus trichloride is from 1:1 to 1:10, and the amount of 1-methyl-2-pyrrolidinone catalyst is from 1 to 20 mol percent, based on the bisphenol,

maintaining the temperature of the solution from room temperature to about 150° C., while passing a stream of nitrogen through the solution till the evolution of hydrogen chloride essentially stops, and

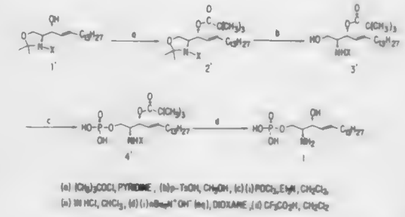
isolating the phosphorochloridite product.

5,391,800

METHOD FOR INHIBITION OF CELL MOTILITY BY SPHINGOSINE-1-PHOSPHATE, ITS DERIVATIVES AND MIMETICS AND METHOD OF SYNTHESIZING SPHINGOSINE-1-PHOSPHATE AND ITS DERIVATIVES

Yasuyuki Igarashi; Fuqiang Ruan; Yoshito Sadahira; Shigeyuki Kawa, and Sen-itiroh Hakomori, all of Seattle, Wash., assignors to The Biomembrane Institute, Seattle, Wash.

Division of Ser. No. 863,179, Apr. 3, 1992, Pat. No. 5,260,288.
This application Aug. 9, 1993, Ser. No. 104,504
Int. Cl.[6] C07F 9/113
U.S. Cl. 558—145 9 Claims



1. A method for preparing sphingosine-1-phosphate essentially free of L-threo isomer comprising

(1) protecting the C1 and C3 hydroxyl groups of sphingosine (SPN);

(2) deprotecting the C1 hydroxyl group of SPN;

(3) phosphorylating the C1 hydroxyl group of SPN; to produce sphingosine-1-phosphate essentially free of L-threo isomer; and

(4) deprotecting the C3 hydroxyl group of SPN.

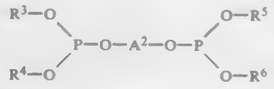
5,391,801

HYDROFORMYLATION PROCESS AND BISPHOSPHITE COMPOUND USED THEREIN

Keiichi Sato, Tokyo; Yuji Kawaragi, Yokohama; Masaki Takai, Tokyo, and Tooru Ookoshi, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Division of Ser. No. 895,676, Jun. 9, 1992, Pat. No. 5,235,113.
This application Apr. 16, 1993, Ser. No. 47,021
Claims priority, application Japan, Jun. 11, 1991, 3-139265; Aug. 13, 1991, 3-202977
Int. Cl.[6] C07F 09/06
U.S. Cl. 558—156 4 Claims

1. A bisphosphite compound having Formula (II):



wherein R^3, R^4, R^5 and R^6 are each a β-naphthyl group substituted at least in the 3-position by a C_1–C_4-alkyl group, which may be the same or different, and A^2 is a divalent hydrocarbon selected from the group consisting of an aliphatic hydrocarbon group, a cycloaliphatic hydrocarbon group and an aromatic hydrocarbon group, each of which may have a substituent selected from the group consisting of a C_1–C_5-alkyl group, methoxy and methoxycarbonyl.

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5,391,802

PROCESS FOR CLEAVING POLYCARBONATES INTO BISPHENOLS AND DIARYL CARBONATES

Hans-Josef Buysch; Norbert Schön, and Steffen Kühling, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 14, 1993, Ser. No. 76,715
Claims priority, application Germany, Jun. 22, 1992, 4220412
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[6] C07C *69/96*
U.S. Cl. 558—265 6 Claims

1. A process for cleaving polycarbonates into bisphenols and diaryl carbonates comprising
(i) reacting a polycarbonate resin with phenol in presence of a catalyst to obtain a-product of transesterification containing bisphenol and a mixture containing phenols and diarylcarbonates,
(ii) isolating by crystallization said bisphenol from said product of transesterification,
(iii) subjecting said mixture to flash distillation to separate said phenol from said diaryl carbonate, and
(iv) recovering said diaryl carbonate.

5,391,803

PRODUCTION OF DIMETHYL CARBONATE USING COPPER ZEOLITE CATALYSTS

Stanley S. T. King; Mark E. Jones, and Michael M. Olken, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 954,771, Sep. 30, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 176,744
Int. Cl.[6] C07C *69/96*
U.S. Cl. 558—277 9 Claims

1. A gas phase process for producing dialkyl carbonates which comprises contacting an alkanol, carbon monoxide, and oxygen with a catalyst to produce dialkyl carbonate, the catalyst having been prepared by heating a solid copper compound in the presence of a zeolite to form a zeolite containing copper.

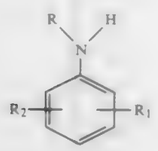
5,391,804

PROCESS FOR THE PREPARATION OF MONO-N-β-CYANOETHYLANILINES

Manfred Blazejak, Düsseldorf; Wilfried Köhler, Bergisch Gladbach, and Karl-Johann Wemmje, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 28, 1994, Ser. No. 189,016
Claims priority, application Germany, Feb. 4, 1993, 4303131
Int. Cl.[6] C07C *253/30*
U.S. Cl. 558—394 7 Claims

1. A process for the preparation of N-β-cyanoethylanilines comprising reacting acrylonitrile with an aniline derivative of the formula:



wherein
R represents hydrogen or optionally hydroxyl-substituted C_{1-10}-alkyl; and
R_1 and R_2 independently represent hydrogen, C_{1-10}-alkyl or C_{1-10}-alkoxy;
said reaction being carried out at a temperature of between 80° and 200° C. in a nonaqueous medium and in the presence of a catalyst, wherein the catalyst is an activated bleaching earth, which contains montmorillonite, has been activated by treatment with an inorganic acid, has a residual water content of less than 10%, and has an acid number of from 10 to 150.

5,391,805

PROCESS FOR PRODUCING URETHANE COMPOUND

Tomoo Tsujimoto, and Takashi Okawa, both of Nigata, Japan, assignors to Mitsubishi Gas Chemical Company Inc., Tokyo, Japan

Filed Jan. 28, 1994, Ser. No. 187,907
Claims priority, application Japan, Feb. 3, 1993, 5-016293
Int. Cl.[6] C07C *269/00, 269/04*
U.S. Cl. 560—25 6 Claims

1. A process for producing an urethane compound, which comprises reacting a formamide compound with dimethyl carbonate in the presence of a basic anion exchange resin.

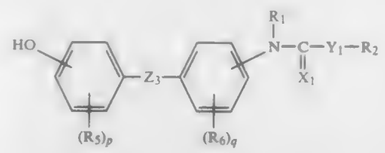
5,391,806

HEAT-SENSITIVE RECORDING MATERIALS AND PHENOL COMPOUNDS

Atsuo Otsuji; Toshihiro Motoshima; Yoshimitsu Tanabe; Kiyoharu Hasegawa; Kazuyoshi Kikkawa; Masakatsu Nakatsuka, and Akihiro Yamaguchi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 901,486, Jun. 22, 1992, Pat. No. 5,270,281.
This application Oct. 5, 1993, Ser. No. 131,549
Claims priority, application Japan, Jun. 21, 1991, 3-150419; Jul. 26, 1991, 3-187399; Jul. 26, 1991, 3-187415; Dec. 11, 1991, 3-327546; Dec. 20, 1991, 3-338416; Dec. 24, 1991, 3-370770; Mar. 2, 1992, 4-044534
Int. Cl.[6] C07C *271/28*
U.S. Cl. 560—27 20 Claims

1. A phenol compound represented by the following formula (3):



wherein R_1 means a hydrogen atom or an alkyl, aralkyl or aryl group, R_2 denotes an alkyl, alkenyl, aralkyl or aryl group, R_5 and R_6 are a hydrogen or halogen atom or an alkyl, alkoxy, aralkyl, aryl or hydroxyl group, p and q stand for an integer of 1–4, R_5 and R_6 may be either the same or different when p and q individually represent an integer of 2, or greater, X_1 and Y_1 individually represent an oxygen or sulfur atom, and $—Z_3-$ means a group containing at least one group selected from the class consisting of —O—, —S—, a phenylene group, —CO—, $—CR_{10}=CR_{11}—$, in which R_{10} and R_{11} are individually a hydrogen atom or an alkyl or aryl group, —SO— and $—SO_2—$ or, when R_1 is a hydrogen atom, $—Z_3—$ may also be $—R_8C-R_9—$, wherein R_8 and R_9 individually represent an alkyl group having 1–4 carbon atoms.

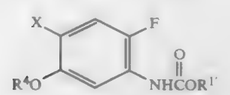
5,391,807

METHODS OF PREPARING FLUOROBENZENE DERIVATIVES AND RELATED COMPOUNDS

Kenji Hirai; Tomoyuki Yano; Mitsuo Yamashita; Emiko Ejiri; Tomoko Tateno, and Kiyomi Aizawa, all of Kanagawa, Japan, assignors to Sagami Chemical Research Center and Kaken Pharmaceutical Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 145,209, Nov. 3, 1993, Pat. No. 5,344,953, which is a division of Ser. No. 823,454, Jan. 21, 1992, Pat. No. 5,281,742. This application May 18, 1994, Ser. No. 245,547
Claims priority, application Japan, Jan. 22, 1991, 3-44589; Jan. 22, 1991, 3-44590
Int. Cl.[6] C07C *271/28, 271/58*
U.S. Cl. 560—27 4 Claims

1. Compounds of a formula (12):



where X represents a halogen atom; $R^{1'}$ represents an alkyl group having from 1 to 8 carbon atoms, a phenyl group, or a benzyl group; R^4 represents a hydrogen atom, a cycloalkyl group having from 3 to 8 carbon atoms, or an alkynyl group having from 3 to 5 carbon atoms, the cycloalkyl group being either substituted or unsubstituted.

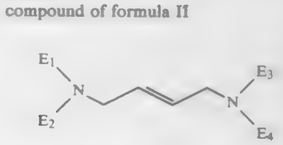
5,391,808

SUBSTITUTED 1,4-DIAMINO-2-BUTENE STABILIZERS

Joseph E. Babiarz, Amawalk, N.Y.; Glen T. Cunkle, Stamford, Conn., and Werner Rutsch, Fribourg, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 701,268, May 16, 1991, Pat. No. 5,283,367, which is a continuation-in-part of Ser. No. 400,649, Aug. 30, 1989, abandoned. This application Nov. 1, 1993, Ser. No. 146,377
Int. Cl.[6] C07C *211/55, 211/09, 229/38*
U.S. Cl. 560—37 3 Claims

1. A compound of formula II



wherein
E_1 is aralkyl of 7 to 15 carbon atoms or said aralkyl substituted on the aryl ring by one to three groups selected from alkyl of 1 to 12 carbon atoms, —CN, $—NO_2$, halogen, $—OR_5$, $—NR_6R_7$, $—SR_8$, $—COOR_9$ or $—CONR_{10}R_{11}$, where R_5, R_6, R_7, R_8 and R_9 are independently alkyl of 1 to 20 carbon atoms or alkenyl of 3 to 18 carbon atoms, and R_{10} and R_{11} are independently hydrogen or the same meaning as R_5; or alkyl of 3 to 18 carbon atoms interrupted by one or more —O—, —S—, —SO—, $—SO_2—$, —CO—, —COO—, —OCO—, $—CONR_{12}—$, $—NR_{12}CO—$ or $—NR_{13}—$ where R_{12} and R_{13} have the same meaning as R_{10};
E_2, E_3 and E_4 are independently a linear or branched alkyl of 1 to 30 carbon atoms; alkyl of 1 to 20 carbon atoms substituted with cycloalkyl of 5 to 12 carbon atoms; or alkyl of 1 to 20 carbon atoms terminated with —CN, $—OR_5$, $—NR_6R_7$, $—SR_8$, $—COOR_9$ or $—CONR_{10}R_{11}$, where R_5, R_6, R_7, R_8 and R_9 are independently alkyl of 1 to 20 carbon atoms or alkenyl of 3 to 18 carbon atoms, and R_{10} R_{11} are independently hydrogen or the same meaning as R_5; or alkyl of 3 to 18 carbon atoms interrupted by one or more —O—, —S—, —SO—, $—SO_2—$, —CO—, —COO—, —OCO—, $—CONR_{12}—$, $—NR_{12}CO—$ or $—NR_{13}—$ where R_{12} and R_{13} have the same meaning as R_{10}; or E_2, E_3 and E_4 are independently cycloalkyl of 5 to 12 carbon atoms, alkenyl of 3 to 20 carbon atoms, aralkyl of 7 to 15 carbon atoms or said aralkyl substituted on the aryl ring by one to three groups selected from alkyl of 1 to 12 carbon atoms, —CN, $—NO_2$, halogen, $—OR_5$, $—NR_6R_7$, $—SR_8$, $—COOR_9$ or $—CONR_{10}R_{11}$, where R_5, R_6, R_7, R_8, R_9, R_{10} and R_{11} are as defined above, or aryl of 6 to 10 carbon atoms or said aryl substituted by one to three substituents selected from the group consisting of alkyl of 1 to 20 carbon atoms, cycloalkyl of 5 to 12 carbon atoms and aralkyl of 7 to 15 carbon atoms; and
with the proviso that E_1, E_2, E_3 and E_4 are not each benzyl at the same time; and
with the further proviso that E_1 is not benzyl when E_2 allyl, and E_3 and E_4 are each ethyl.

5,391,809

METHOD FOR THE PRODUCTION OF α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER HYDROCHLORIDE

Tadashi Takemoto, Kawasaki, and Shinji Fujita, Yokkaichi, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jul. 30, 1993, Ser. No. 99,542
Claims priority, application Japan, Aug. 5, 1992, 4-209153
Int. Cl.[6] C07C *229/18*
U.S. Cl. 560—41 9 Claims

1. A method for producing α-L-aspartyl-L-phenylalanine methyl ester hydrochloride which comprises treating an N-formyl-α-L-aspartyl-L-phenylalanine derivative with a mixed solvent of methanol, hydrochloric acid and water
wherein said treatment is effected under reduced pressure.

5,391,810

METHOD OF CRYSTALLIZING α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER

So Abe; Shinichi Kishimoto; Toshihisa Kato, and Hideo Takeda, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 886,406, May 21, 1992, abandoned. This application Sep. 16, 1993, Ser. No. 121,569
Claims priority, application Japan, May 23, 1991, 3-221336; Apr. 22, 1992, 4-102917
Int. Cl.[6] C07C *101/02*
U.S. Cl. 560—41 19 Claims

1. A method of crystallizing α-L-aspartyl-L-phenylalanine methyl ester from a water solution thereof, comprising:
crystallizing α-L-aspartyl-L-phenylalanine methyl ester in a crystallizer, wherein the pressure in the crystallizer is maintained at not higher than atmospheric pressure to vaporize said water at a rate of 40 kg/m^2·hr or less, and cool said solution by the latent heat of vaporization.

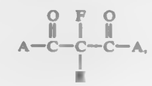
5,391,811

PROCESS FOR THE PREPARATION OF α-FLUORO-β-DICARBONYL COMPOUNDS

Stefan Böhm, Köln, and Albrecht Marhold, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 3, 1993, Ser. No. 147,210
Claims priority, application Germany, Nov. 10, 1992, 4237882
Int. Cl.[6] C07C *229/00*
U.S. Cl. 560—43 9 Claims

1. A process for the preparation of α-fluoro-β-dicarbonyl compounds of formula (I)

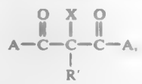


in which

VOL 1171 ISS 3 FEB 21 1995 UMI

the two radicals A are identical or different and each represents alkyl, aryl, alkoxy, aryloxy or an amino group and R represents hydrogen, fluorine, alkyl or aryl,

in which process a dicarbonyl compound of formula (II)



(II)

in which

X represents chlorine, bromine or iodine, A is as defined for in formula (I) and R′ is as defined for R in formula (I) and can additionally represent chlorine, bromine or iodine,

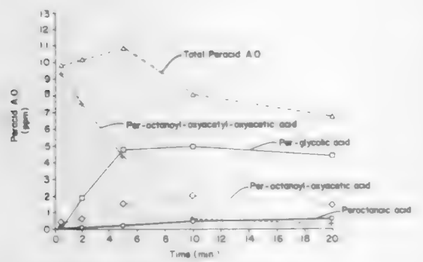
is reacted at temperatures of 20° C. to 100° C. with an addition product of hydrogen fluoride and a trialkylamine.

5,391,812

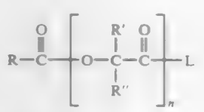
POLYGLYCOLATE PERACID PRECURSORS

Richard R. Rowland, Danville; Ronald A. Fong, Modesto; Richard J. Wiersema, Tracy, and Alfred G. Zielske, Pleasanton, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Division of Ser. No. 329,982, Mar. 29, 1989, Pat. No. 5,182,045.
This application Sep. 25, 1992, Ser. No. 951,238
Int. Cl.[6] C07C *69/00*
U.S. Cl. 560—145 **13 Claims**

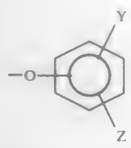


1. A peracid precursor having the structure:



wherein n is an integer from 2 to about 10; R is a linear or branched alkyl having from one to twenty carbon atoms, alkoxylated alkyl, cycloalkyl, aryl, alkylaryl, or substituted aryl; R′ and R″ are independently H, an alkyl having from one to twenty carbon atoms, aryl, an alkylaryl having from one to twenty carbon atoms, substituted aryl, or $NR_3^{\alpha+}$, wherein R^{α} is an alkyl having from one to thirty carbon atoms; and L is selected from the group consisting of:

(i)

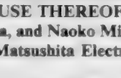


wherein Y and Z are individually H, SO_3M, CO_2M, SO_4M, OH, halo substituent, OR^2, R^3, NR_3^4X, or mixtures thereof, wherein M is an alkali metal or alkaline earth metal counterion, R^2 is an alkyl having from one to twenty carbon atoms, R^3 is an alkyl having from one to six carbon atoms, R^4 is an alkyl having from one to thirty carbon atoms and X is a counterpart ion thereto, and Y and Z can be the same or different;

(ii) halide;

(iii) —ONR^6, wherein R^6 contains at least one carbon which is singly or doubly bonded directly to N;

(iv)



wherein R^{18} is an alkyl having from one to ten carbon atoms; and

(v) mixtures thereof.

5,391,813

PROCESS FOR PRODUCING METHYL α-HYDROXYISOBUTYRATE

Nobuyuki Muro; Takafumi Abe, and Hirofumi Higuchi, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 135,247
Claims priority, application Japan, Nov. 9, 1992, 4-298780
Int. Cl.[6] C07C *69/675*
U.S. Cl. 560—179 **19 Claims**

1. A process for producing methyl α-hydroxyisobutyrate from α-hydroxyisobutyramide and methyl formate which comprises

(a) feeding α-hydroxyisobutyramide and an alkali metal hydroxide, in a continuous distillation column having a top, a bottom and a plurality of trays therebetween, to prepare therein a dehydrated condensate of α-hydroxyisobutyramide, the alkali metal hydroxide acting as a catalyst, the α-hydroxyisobutyramide being fed into the continuous distillation column at a tray positioned between the top and the bottom of said column, the alkali metal hydroxide being fed in said column at a tray between the tray positioned at which the α-hydroxyisobutyramide is fed and the bottom of said column, the α-hydroxyisobutyramide being brought into contact with the alkali metal hydroxide to produce the dehydrated condensate thereof, while distilling away water from the top of the column and drawing out the remaining α-hydroxyisobutyramide and the dehydrated condensate as a bottom product from the bottom of said column, and

(b) reacting said bottom product containing remaining α-hydroxyisobutyramide and said dehydrated condensate, with methyl formate, wherein said dehydrated condensate acts as a catalyst.

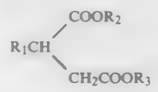
5,391,814

FLUORINE-CONTAINING ALKYLSUCCINIC ACID DIESTER, PROCESS FOR PREPARING THE SAME AND USE THEREOF

Yoshiaki Kai, Neyagawa, and Naoko Mizuno, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 29, 1993, Ser. No. 38,263
Claims priority, application Japan, Mar. 31, 1992, 4-076692
Int. Cl.[6] C07C *69/40*
U.S. Cl. 560—197 **1 Claim**

1. A fluorine-containing alkylsuccinic acid diester of the formula



wherein R_1 is an aliphatic alkyl or alkenyl group each of said

groups having 6 to 30 carbon atoms, one of R_2 and R_3 is a fluoroalkylether group having 5 to 50 carbon atoms and the other is a fluoroalkyl group, a fluoroalkenyl group, a fluorophenyl group, an aliphatic alkyl group or an aliphatic alkenyl group, each of said groups having 30 or less carbon atoms.

5,391,815

METHOD OF SEPARATING VINYLPHOSPHONIC ACID FROM CRUDE MIXTURES

Günter Roscher, Kelkheim, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

PCT No. PCT/EP91/01412, § 371 Date Feb. 3, 1993, § 102(e) Date Feb. 3, 1993, PCT Pub. No. WO92/02524, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 27, 1991, Ser. No. 978,702
Claims priority, application Germany, Aug. 4, 1990, 40 24 528.3
Int. Cl.[6] C07F *9/38*
U.S. Cl. 562—8 **18 Claims**

1. A method for separating vinylphosphonic acid from a crude mixture containing said acid, comprising the step of effecting the separation by extraction with an alcohol extraction agent, a ketone extraction agent, or a mixture of said extraction agents, each said alcohol or ketone extraction agent comprising at least 5 carbon atoms.

5,391,816

FORMATION OF 1-PHENYLVINYL-1-PHOSPHONIC ACID

John Tomko, Dobbs Ferry, N.Y., assignor to Akzo Nobel N.V., Arnhem, Netherlands

Filed Nov. 8, 1993, Ser. No. 148,728
Int. Cl.[6] C07C *62/00*
U.S. Cl. 562—8 **7 Claims**

1. A process for forming 1-phenylvinyl-1-phosphonic acid which comprises reacting a mixture of phosphorus trihalide and acetophenone with water, under conditions in which the water is added to the mixture with cooling, to form a crude reaction mixture which is then sparged, under vacuum, with an aqueous dehydrating acid, removing excess acetophenone, to form a subsequent reaction mixture comprising the 1-phenylvinyl-1-phosphonic acid product.

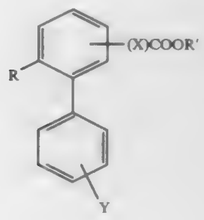
5,391,817

BIARYL PHOSPHOLIPASE A_2 INHIBITORS

Dane Springer, Madison; Bing-Yu Luh, Killingworth, both of Conn.; Katharine M. Greene, Eatontown, N.J.; Joanne J. Bronson, Madison, and Muzammil M. Mansuri, Cheshire, both of Conn., assignors to Bristol-Myers Squibb, New York, N.Y.

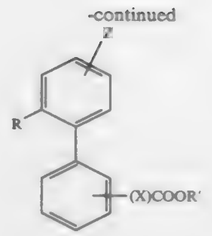
Filed Dec. 21, 1993, Ser. No. 171,038
Int. Cl.[6] C07C *59/40*
U.S. Cl. 562—469 **26 Claims**

1. Compounds of Formulas I and II:



(I)

-continued



(II)

wherein:

Y=COOH, CH_2CO_2H, H, F, Cl, Br, I, COOR′, CH_2CO_2R', $CONH_2$, COR″, CHO, CH_2OH, CH_2OR'', OH, OR″, CF_3, C_{1-6} alkyl, C_{1-6} alkenyl, C_{1-6} haloalkyl, NO_2, P(O)-$(OH)_2$, SO_2H, or SO_3H;

Z=H, F, Cl, Br, I, $CONH_2$, COR″, CHO, CH_2OH, CH_2OR'', OH, OR″, CF_3, C_{1-6} alkyl, C_{1-6} alkenyl, C_{1-6} haloalkyl, NO_2, P(O)$(OH)_2$, SO_2H, or SO_3H;

$X=(CH_2)_n$ n=0, 1, or 2; or a cis or trans CH=CH;

R=substituted or unsubstituted alkyl, aryl, arylalkyl, alkyloxy, arylalkyloxy, alkenyl, or arylalkenyl groups with the proviso that R must have 8 or more carbons;

R′=H, C_{1-6} alkyl, $C(R^1)_2OC(O)R^2$, $CH_2CH_2NR^3R^4$, $CH_2CH_2CH_2NR^3R^4$, or other groups yielding physiologically hydrolyzable esters;

R″=C_{1-6} alkyl;

R^1=H, CH_3, C_2H_5, $CH_2CH_2CH_3$;

R^2=C_{6-12} aryl, C_{1-7} linear, branched or cyclic alkyl, or C_{1-7} linear branched or cyclic alkoxy;

R^3=R^4, or, it may be linked with R^4, to form a C_3–C_6 cycloalkyl or a —$CH_2CH_2OCH_2CH_2$— group; and

R^4=C_{1-3} alkyl; or salts thereof.

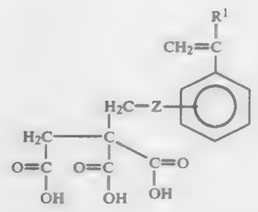
5,391,818

TRICARBOXYLIC ACID-FUNCTIONAL MONOMERS AND POLYMERS PREPARED FROM SAME

Rodney M. Harris, Chicago, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Jan. 3, 1994, Ser. No. 176,605
Int. Cl.[6] C07C *69/76, 55/28, 57/34*
U.S. Cl. 562—489 **6 Claims**

1. An unsaturated acid-functional monomer having the structure:



wherein R^1 is hydrogen or methyl and Z is a direct bond or is a divalent radical having 1 to about 20 carbon atoms.

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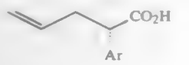
5,391,819

PROCESS OF MAKING CHIRAL 2-ARYL-1,4-BUTANEDIAMINE DERIVATIVES AS USEFUL NEUROKININ-A ANTAGONISTS

Paul E. Finke, Milltown; Jeffrey J. Hale, Westfield; Malcolm Maccoss, Freehold, and Sander G. Mills, Woodbridge, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 30, 1992, Ser. No. 954,215
Int. Cl.[6] C07C *59/40*
U.S. Cl. 562—496 2 Claims

1. An activated ester of the compound of formula 1,



wherein:
Ar is:
aryl wherein the aryl is selected from the group
(1) naphthyl,
(2) phenyl,
(3) pyridyl,
(4) furyl,
(5) thienyl,
(6) thiazolyl,
(7) isothiazolyl,
(8) imidazolyl,
(9) benzimidazolyl,
(10) pyrazinyl,
(11) pyrimidyl,
(12) quinolyl,
(13) isoquinolyl,
(14) benzofuryl,
(15) benzothienyl,
(16) pyrazolyl,
(17) indolyl,
(18) purinyl,
(19) isoxazolyl,
wherein the aryl is substituted with
(1) halogen,
(2) C_{1-3}alkyl,
(3) trifluoromethyl,
(4) C_{1-3}alkoxy,
(5) hydroxy, or
(6) methylenedioxy,
wherein the activated ester is formed by treating said compound of formula 1 with dicyclohexylcarbodiimide and 1-hydroxybenzotriazole or formed by treating said compound of formula 1 with 1-(3-dimethyl-aminopropyl)-3-ethylcarbodiimide hydrochloride.

5,391,820

PREPARATION OF 3-MERCAPTOPROPIONITRILE AND 3-MERCAPTOPROPIONIC ACID

Richard P. Woodbury, Amherst, and F. David Wood, Epsom, both of N.H., assignors to Hampshire Chemical Corp., Lexington, Mass.

Filed Apr. 13, 1994, Ser. No. 227,054
Int. Cl.[6] C07C *148/00*
U.S. Cl. 562—512 10 Claims

1. A process for preparing 3-mercaptopropionic acid, comprising:
a. reacting a molar excess of acrylonitrile with alkaline hydrosulfide to form thiodipropionitrile;
b. reacting said thiodipropionitrile with alkaline hydrosulfide in the presence of base to form 3-mercaptopropionitrile; and
c. acidifying the resultant nitrile with a strong acid.

5,391,821

PROCESS FOR PRODUCING CARBOXYLIC ACIDS

Hiroshi Koyama, and Hidetaka Kojima, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 94,396, Jul. 19, 1993, abandoned, which is a continuation of Ser. No. 13,686, Feb. 4, 1993, abandoned, which is a division of Ser. No. 875,532, Apr. 27, 1992, Pat. No. 5,214,203, which is a continuation of Ser. No. 861,663, May 5, 1986, abandoned, which is a continuation of Ser. No. 643,227, Aug. 21, 1984, abandoned. This application Apr. 20, 1994, Ser. No. 231,592
Claims priority, application Japan, Sep. 2, 1983, 58-161669
Int. Cl.[6] C07C *45/50, 51/12*
U.S. Cl. 562—519 99 Claims

1. A process for producing a carboxylic acid, which comprises:
charging into a reactor an alcohol or reactive derivative thereof and a catalyst system consisting essentially of (1) a rhodium carbonylation catalyst, (2) an alkyl iodide or alkyl bromide and (3) an iodide salt selected from the group consisting of sodium iodide, potassium iodide and lithium iodide, effecting liquid phase carbonylation of said alcohol or reactive derivative thereof by contacting same with carbon monoxide, the amount of said salt being sufficient to continuously maintain from 0.5 mol of iodide ion per liter of the carbonylation reaction solution up to the saturation concentration of said salt in the carbonylation reaction solution during the carbonylation reaction, said iodide salt being effective to reduce the formation of by-products and to increase the carbonylation reaction rate, said carbonylation reaction solution containing from about 1 mol to about 20 mols of water and from about 10^{-2} mol to about 10 mols of said alkyl iodide or alkyl bromide, per liter of the carbonylation reaction solution.

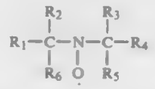
5,391,822

PROCESS FOR THE PREPARATION OF BRANCHED ALKOXYALKANOIC ACIDS

Herbert E. Fried, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 22, 1993, Ser. No. 171,794
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[6] C07C *51/16, 51/235, 51/245, 51/27*
U.S. Cl. 562—538 19 Claims

1. A process for the preparation of a branched alkoxyalkanoic acid of the formula $RO(CH_2CHR'O)_nCH_2CO_2H$ wherein R is a branched alkyl group of from about 4 to about 50 carbon atoms, R' is hydrogen or methyl or mixtures thereof (on the individual molecule) and n is an integer of from about 1 to about 500, which comprises reacting the corresponding branched alkoxyalkanol with a stable free radical nitroxide having the formula:



wherein (1) (a) each of R_1, R_2, R_3 and R_4 is an alkyl, aryl or heteroatom substituted alkyl group having 1 to about 15 carbon atoms, and (b) R_5 and R_6 (i) each is an alkyl group having 1 to about 15 carbon atoms provided that R_1–R_6 are not all alkyl groups, or a substituted alkyl group having 1 to about 15 carbon atoms wherein the substituent is hydrogen, cyano, —$CONH_2$, —OCOCH, $OCOC_2H_5$, carbonyl, alkenyl wherein the double bond is not conjugated with the nitroxide moiety, or —COOR wherein R of the —COOR group is alkyl or aryl, or (ii) together form part of a ring that contains at least 3 carbon atoms and up to two heteroatoms of O or N, (2) the



moiety and the

moiety

individually are aryl, or (3) the



moiety and the

moiety

together form a bicyclic ring with the proviso that the group directly adjacent to the N—O-moiety is a bridgehead C—H or a fully alkylated carbon in the presence of a NO_X-generating compound an oxidant and a solvent, at a temperature in the range of from about 0° C. to about 100° C. and thereafter separating out the branched alkoxyalkanoic acid.

5,391,823

PROCESS FOR THE PREPARATION OF 2,2'-OXYDISUCCINATE

Eddie N. Gutierrez, Ridgefield; Michael I. Hill, Ridgewood; Martina Santoso, North Brunswick; Donna Wu, North Plainfield, and Shang-Ren Wu, Mahwah, all of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 996,334, Dec. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 446,906, Dec. 6, 1989, abandoned. This application Sep. 24, 1993, Ser. No. 198,401
Int. Cl.[6] C07C *59/125*
U.S. Cl. 512—583 8 Claims

1. A process for preparing 2,2'-oxydisuccinic acid comprising:
i dissolving
a) maleic anhydride, maleic acid or mixtures of these; and
b) malic acid selected from the group including d-malic acid, l-malic acid and mixtures of these, in
c) water, in a ratio of 1.2 to 5.0 moles of maleic species to 1.0 moles of malic species to form an acid solution or mixture;
ii mixing the acid solution or mixture with a slurry of alkaline earth metal hydroxide, to form a second mixture, said slurry containing a stoichiometric amount of alkaline earth metal hydroxide to neutralize said acid plus about 10% in excess of said amount but in any case sufficient to maintain the pH of said mixture at about 11.0 to 12.3 when measured at 25° C. and 20% solids, said slurry containing sufficient water so that said second mixture contains at least about 55% by weight water;
iii after forming said second mixture, maintaining the temperature of said second mixture at about 60° C. to 95° C. for about 2 to 8 hours, optionally employing an inert atmosphere.

5,391,824

STABILIZED LITHIUM REAGENTS

W. Novis Smith, 412 S. Perth St., Philadelphia, Pa. 19147

Filed Aug. 19, 1991, Ser. No. 747,285
Int. Cl.[6] C07C *209/90;* C01D *15/00*
U.S. Cl. 564—2 19 Claims

1. An organolithium reagent composition comprising a solution of a lithium alkylamide having an alkyl group with 4 to 20 carbon atoms in a hydrocarbon solvent selected from the group consisting of aliphatic monocyclic aliphatic and monocylic aromatic and lithium alkoxide having 4 to 20 carbon atoms, said lithium alkoxide being present in a sufficient amount to increase the solubility of said lithium alkylamide and to prevent post precipitation thereof.

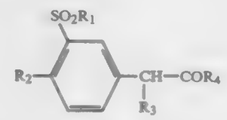
5,391,825

SULFAMOYL SUBSTITUTED PHENETHYLAMINE INTERMEDIATES

Kunihiro Niigata, and Takashi Fujikura, both of Saitama, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 68,595, May 28, 1993, abandoned, which is a continuation of Ser. No. 847,842, Mar. 9, 1992, abandoned, which is a continuation of Ser. No. 658,109, Feb. 20, 1991, abandoned, which is a division of Ser. No. 425,708, Oct. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 294,924, Jan. 5, 1989, abandoned, which is a continuation of Ser. No. 105,459, Oct. 2, 1989, abandoned, which is a continuation of Ser. No. 828,063, Feb. 10, 1986, abandoned, which is a division of Ser. No. 803,204, Nov. 27, 1985, Pat. No. 4,731,478, which is a continuation-in-part of Ser. No. 756,790, Jul. 18, 1985, Pat. No. 4,703,063, which is a continuation of Ser. No. 632,258, Jul. 18, 1984, Pat. No. 4,558,156, which is a continuation of Ser. No. 403,006, Jul. 29, 1982, abandoned, which is a division of Ser. No. 231,421, Feb. 4, 1981, Pat. No. 4,373,106. This application Dec. 28, 1993, Ser. No. 174,608
Claims priority, application Japan, Feb. 8, 1980, 55-14382
Int. Cl.[6] C07C *311/16*
U.S. Cl. 564—88 4 Claims

1. A compound of the formula



wherein R_1 represents an amino group or a mono- or di-lower alkylamino group; R_2 represents a hydroxyl group, a lower alkyl group, or a lower alkoxy group; R_3 represents hydrogen, halogen, a lower alkyl group, a lower alkoxy group, a phenylthio group, or a phenysulfinyl group; R_4 represents hydrogen or a lower alkyl group, and acid addition salts thereof.

5,391,826

AMIDOPOLYAMINES DERIVED FROM AMINO-CARBOXYLIC ACID

George P. Speranza, Austin, and Jiang-Jen Lin, Houston, both of Tex., assignors to Huntsman Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 78,307, Jul. 27, 1987, abandoned. This application May 4, 1990, Ser. No. 519,079
Int. Cl.[6] C07C *231/02;* C08G *69/10*
U.S. Cl. 564—138 14 Claims

1. A method of preparing a polyamidopolyamine which comprises reacting glutamic acid with two moles, per mole of glutamic acid, of a primary diamine or triamine, under reaction conditions including a temperature within the range of about 150° to about 250° C., and a reaction time of about 0.5 to about 12 hours to thereby prepare a reaction product composed principally of an amidoamine formed by coupling each carboxyl group of said glutamic acid, through an amide group with a primary amine group of said primary diamine or triamine, whereby an amidoamine condensation reaction product will be provided containing terminal primary amine groups and, internally, the primary amine group of the glutamic acid, said primary diamine or triamine being selected from the group consisting of:
(a) polyoxypropylenediamines having the formula:



(III)

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wherein x is a positive number having an average value of 1 to about 40,

(b) polyoxyethylenediamines having the formula:

$$H_2N-CH_2-CH_2+OCH_2-CH_2\frac{}{n}NH_2$$

wherein n is a positive integer having a value of 1 to 3,

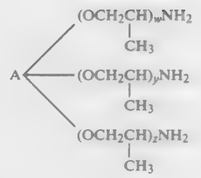
(c) polyoxyethylene/oxypropylenediamines having the formula:



(IV)

wherein a, b and c are positive integers, wherein a+c equals a positive number having an average value of 2 to about 10 and b is a positive number having an average, value of from 1 to about 50 and,

(d) polyoxypropylenetriamines having the formula:



(V)

wherein

A represents a trivalent hydrocarbon group consisting of 3 to 6 carbon atoms, resulting from the propoxylation of a propoxylation susceptible trihydric alcohol containing from 3 to 6 carbon atoms,

w, y and z are positive integers and the average value of the sum of w+y+z is a positive number having an average value of from 4 to about 120,

(e) 1,2-diaminocyclohexane, and

(f) isophorone diamine.

5,391,827

ELECTRONIC MUSICAL INSTRUMENT HAVING A MUSICAL TONE PARAMETER DISPLAY

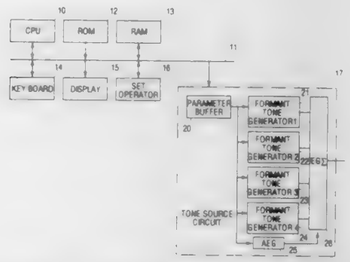
Masahiro Koyama, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Dec. 9, 1992, Ser. No. 988,182

Claims priority, application Japan, Dec. 17, 1991, 3-333552

Int. Cl.[6] G09B *15/04*; G10H *1/00*

U.S. Cl. 84—600 **10 Claims**



1. An electronic musical instrument having a musical tone parameter display function, comprising:

parameter designation means for designating parameters for defining a musical tone to be generated by the electronic musical instrument;

basic pattern shape generation means for generating a basic pattern shape corresponding to at least one specified parameter for defining a musical tone;

pattern shape change means for changing the basic pattern shape according to the parameters designated by the parameter designation means; and

pattern shape display means for displaying the pattern shape changed by the pattern shape change means.

5,391,828

IMAGE DISPLAY, AUTOMATIC PERFORMANCE APPARATUS AND AUTOMATIC ACCOMPANIMENT APPARATUS

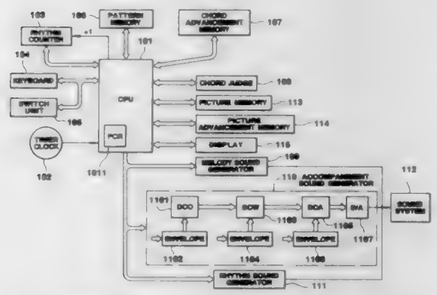
Youichiro Tajima, Kunitachi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 771,408, Oct. 2, 1991. This application Nov. 3, 1992, Ser. No. 971,249

Claims priority, application Japan, Oct. 18, 1990, 2-279923; Nov. 5, 1990, 2-299544; Nov. 5, 1990, 2-299545

Int. Cl.[6] G10G *1/00*

U.S. Cl. 84—601 **14 Claims**



1. An automatic performance apparatus comprising:

musical data storing means for storing a sequence of musical data representing music, said musical data including (i) musical tone data determining musical tone and (ii) timing data controlling a time interval for respective musical tones and being determined as a multiple of a standard time length;

automatic performance means for performing music automatically by reading the musical data from said musical data storing means to generate musical tones;

image data storing means for storing a plurality of image data, each of which represents a corresponding image, the image data storing means capable of accessing the image data in a random order relative to an order of reproduction of the corresponding images;

image data reading means for reading the image data in a sequence from said image data storing means;

sequence data storing means for storing sequence data indicative of the sequence in which the image data are read by said image data reading means and timing data indicative of a time interval for respective image data to be read out, said timing data being determined as a multiple of a standard time length;

variable time control means for variably determining the standard time length;

controlling means for controlling said image data reading means and automatic performance means so as to read:

(i) the image data in accordance with the sequence indicated by the sequence data stored in said sequence data storing means, said time interval for reading out respective image data being thereby varied in response to the determination of said variable time control means, and

(ii) the musical data in accordance with the timing data in said musical data storing means, said time interval for reading out respective musical data being thereby varied in response to the determination of said variable time control means; and

displaying means for displaying an image represented by the image data read by said image data reading means.

5,391,829

ELECTRONIC MUSICAL INSTRUMENT WITH AN AUTOMATED PERFORMANCE FUNCTION

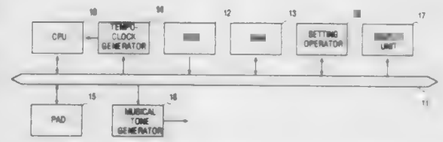
Masahiko Hasebe, and Yaushi Kurakake, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 24, 1992, Ser. No. 996,703

Claims priority, application Japan, Dec. 26, 1991, 3-344917

Int. Cl.[6] G10H *1/06, 1/42, 1/46*

U.S. Cl. 84—622 **16 Claims**



1. An electronic musical instrument with an automatic performance function, comprising:

manual performance means, provided with a plurality of performance manipulators to be performed by a player, for generating a manual performance musical tone having a tone color, in response to the player's performing;

automatic performance means for automatically generating automatic performance musical tones of a plurality of parts respectively corresponding to a plurality of tone colors; and

control means responsive to generation of the manual performance musical tone, for stopping generation of an automatic performance musical tone, from among the automatic performance musical tones, of a part corresponding to the tone color of the manual performance musical tone generated by the manual performance means, and after a predetermined period, for proceeding with the generation of the automatic performance musical tone.

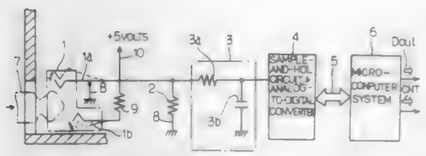
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5,391,830

FOOT PEDAL CONTROL SYSTEM INCORPORATED IN MUSICAL INSTRUMENT AND SHARED BETWEEN ANALOG SIGNAL AND DIGITAL SIGNAL

Toshihiro Nishino; Rei Furukawa, and Takashi Tamaki, all of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed May 25, 1993, Ser. No. 66,885
Claims priority, application Japan, May 28, 1992, 4-162094
Int. Cl.[6] G10H *1/02, 1/18, 1/38*
U.S. Cl. 84—626 6 Claims



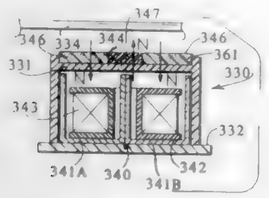
1. A foot pedal controlling system incorporated in a musical instrument, comprising:
a) a foot control pedal unit manipulated by a player for producing either analog or digital signal from a power voltage level;
b) a socket unit coupled with said foot control pedal unit in a detachable manner, and operative to supply said power voltage level to said foot control pedal unit and to receive said either analog or digital signal;
c) a digital signal producing means coupled with said socket unit, and periodically producing a digital input signal indicative of a discrete voltage level of said either analog or digital signal at every sampling timing;
d) a voltage variation monitoring means operative to check said digital input signal to see whether said either analog or digital signal is varied abruptly or gradually, and producing a piece of historical information indicative of either abrupt or gentle variation;
e) a discriminating means operative to decide said foot control pedal unit to be of either analog or digital type on the basis of said piece of historical information; and
f) a determining means operative to decide an instruction of said player represented by said either analog or digital signal for producing a digital output signal.

5,391,831

ELECTROMAGNETIC MUSICAL PICKUP HAVING U-SHAPED FERRMAGNETIC CORE

Melvin A. Lace, Prospect Heights, Ill., assignor to Thomas E. Dorn, Clarendon Hills, Ill., a part interest

Continuation-in-part of Ser. No. 764,346, Sep. 23, 1991, abandoned, and Ser. No. 900,485, Jun. 18, 1992, said Ser. No. 764,346, said Ser. No. 900,485, is a continuation-in-part of Ser. No. 597,899, Oct. 10, 1990, abandoned. This application Jan. 4, 1993, Ser. No. 294
Int. Cl.[6] G10H *3/18*
U.S. Cl. 84—726 26 Claims



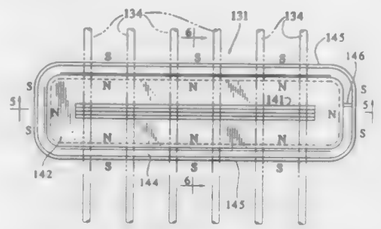
1. An electromagnetic pickup for a musical instrument, such as a guitar, having a plurality of ferromagnetic strings disposed in co-planar spaced relation to each other and extending parallel to each other in a given plane over a predetermined span S, the pickup being adapted to be mounted adjacent the strings in spaced relation thereto, the pickup comprising:
an elongated ferromagnetic core having a length L larger than S and a smaller height, the core extending transversely to the direction of the strings;
the ferromagnetic core including a base and first and second legs interconnected by the base, the first and second legs projecting in the same direction from the base;
an electrical pickup coil disposed in encompassing relation to the first leg of the core;
main permanent magnet means including first and second thin, flat, elongated permanent magnets, the first permanent magnet being aligned with an edge of the first leg of the core and the second permanent magnet being aligned with an edge of the second leg of the core;
the first and second permanent magnets each being transversely magnetized to present a permanent magnet pole facing the associated leg of the core, the first and second permanent magnets being polarized oppositely from each other;
and mounting means for mounting the core and the permanent magnet means on the musical instrument with the legs of the core projecting toward but spaced from the strings.

5,391,832

ELECTROMAGNETIC MUSICAL PICKUP WITH WRAPAROUND PERMANENT MAGNET

Melvin A. Lace, Prospect Heights, Ill., assignor to Thomas E. Dorn, Clarendon Hills, Ill., a part interest

Continuation-in-part of Ser. No. 202, Jan. 4, 1993, which is a continuation-in-part of Ser. No. 764,346, Sep. 23, 1991, abandoned, and Ser. No. 900,485, Jun. 18, 1992, Pat. No. 5,221,805, said Ser. No. 764,346, said Ser. No. 900,485, is a continuation-in-part of Ser. No. 597,899, Oct. 10, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 90,319
Int. Cl.[6] G10H *3/18*
U.S. Cl. 84—726 8 Claims



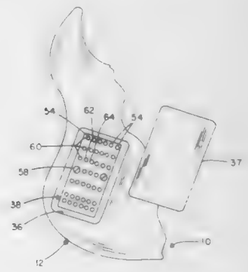
1. An electromagnetic pickup for a musical instrument, such as a guitar, having a plurality of ferromagnetic strings disposed in substantially co-planar spaced relation to each other over a predetermined span S, the pickup comprising:
an elongated ferromagnetic core, having a length L at least about as large as S and a smaller height;
an elongated, annular, electrically conductive pickup coil disposed in encompassing relation to the core;
an elongated, unitary, annular permanent magnet, disposed in closely adjacent encompassing relation to all sides of the pickup coil, magnetized in a transverse direction, for maintaining the core and the coil in a magnetic field of a given constant polarity, with no permanent magnet located immediately above the top or immediately below the bottom of the core;
and housing means, encompassing the core, the coil, and the permanent magnet means, for mounting the pickup on the musical instrument with the core and the coil spanning the ferromagnetic strings in spaced relation thereto and with the strings passing through a magnetic field afforded by the permanent magnet means and the core so that movement of any string or combination of strings generates an electrical signal in the coil.

5,391,833

ELECTRIC STRINGED INSTRUMENT AND PROGRAMMABLE ELECTRICAL CONNECTOR THEREFOR

David C. Clement, 368 Sterling Pl., Brooklyn, N.Y. 11238

Filed Apr. 14, 1993, Ser. No. 46,198
Int. Cl.[6] G10H *3/12, 1/18*
U.S. Cl. 84—742 15 Claims



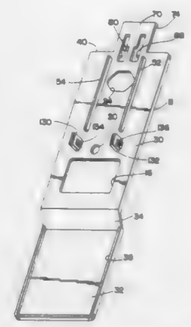
1. An electric stringed instrument comprising:
a body having means for attaching a plurality of harmonic strings, at least one transducer aperture formed in said body at a location for registration with the strings, at least one potentiometer aperture formed in said body and an electronic connections well extending into said body, at least one transducer channel formed in said body and extending from said connections well to the transducer aperture, at least one potentiometer channel form in said body and extending from said connections well to the potentiometer aperture;
at least one magnetic transducer demountably attached to said body in proximity to said transducer aperture, electrical wires attached to said magnetic transducer and extending through said transducer channel to said connections well;
at least one potentiometer mounted to said body in proximity to said potentiometer aperture, electrical wires attached to said potentiometer and extending through said potentiometer channel to said connectors well; and
a programmable connector mounted in said connections well having a base with opposed first and second faces, a plurality of apertures extending through said base from said first face to second face, a plurality of electrically conductive terminals having manually deflectable contact members for resiliently engaging a wire therebetween, said contacts being mounted respectively in said apertures, such that said manually deflectable contact members project outwardly from said first face of said base, said electrical wires of said magnetic transducer and said potentiometer being in releasable electrical engagement between contact members in terminals, and jumper means for providing electrical connection between the selected terminals for electrically connecting the wires of said magnetic transducer with the wires of the potentiometer.

5,391,834

PROTECTIVE COVER FOR ELECTRIC CONTROLS

Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Jan. 3, 1994, Ser. No. 176,845
Int. Cl.[6] H02B *1/14*
U.S. Cl. 174—5 R 13 Claims



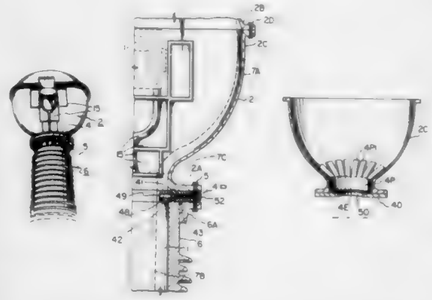
1. A protective cover for electrical controls, said cover having a stepped front surface defined by substantially planar upper and lower portions that are offset from one another at an offset portion that spaces said lower portion outwardly from said upper portion, and an enlarged aperture in said upper portion adjacent said offset portion for providing access to a control adjustment.

5,391,835

EXPLOSION RESISTANT, OIL INSULATED, CURRENT TRANSFORMER

Eugene Y. G. Yao, Toronto, and Arthur K. K. Leung, Oakville, both of Canada, assignors to BBA Canada Limited, Scarborough, Canada

Filed Dec. 11, 1991, Ser. No. 804,921
Int. Cl.[6] H01F *27/02, 27/06, 40/06;* H05K *5/02*
U.S. Cl. 174—18 18 Claims



1. An explosion resistant current transformer comprising:
(a) a metal housing having an internal chamber portion;
(b) a porcelain sleeve insulator having an internal chamber portion;
(c) an insulated electrical active component;
(d) means interconnecting said housing and insulator and having their respective chamber portions in communication with one another, said chamber portions together defining an enclosure, said electrical active component being located in said enclosure with spaces occurring that receive therein a liquid dielectric; and
(e) shock wave absorbing means spaced from said electrical active component and having a compressible portion

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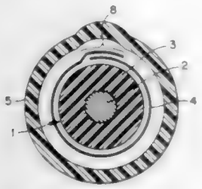
located at least partially in said chamber, said shock wave absorbing means being disposed at a position in proximity of the juncture of said metal housing and said insulator to reduce the force of a shock wave, resulting from an explosion within the metal housing, before arriving at the insulator and means anchoring said shock absorbing means to a rigid structure provided by said metal housing and porcelain sleeve.

5,391,836

ELECTRIC CABLE

Mats O. Bortas, Bjursas; Lars O. G. Efraimsson, and Agne H. Nyberg, both of Falun, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 29, 1993, Ser. No. 10,777
Claims priority, application Sweden, Feb. 6, 1992, 9200344
Int. Cl.[6] H01B *7/34*
U.S. Cl. 174—36 13 Claims



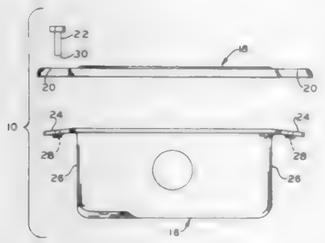
1. An electric cable which includes at least one cable part, at least one shield which surrounds said at least one cable pan, and an insulating cable sheath which surrounds said at least one cable part and said at least one shield, wherein each cable part includes a conductor made of an electrically conductive material, and an insulating layer, and wherein the at least one shield is comprised of at least one prefabricated band and is placed longitudinally around the at least one cable part, the at least one shield band is comprised of longitudinally extending wires and transverse holding wires, a width of the at least one shield band is greater than the perimeter of the at least one cable part so as to form overlapping wires, and the overlapping wires which extend longitudinally along the side edges of the at least one shield band have a smaller diameter than non-overlapping wires.

5,391,837

COVERED CONDUIT BOX HAVING A COVER WHICH CAPTURES SCREWS

Timothy W. Carey, Grabill, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jan. 15, 1993, Ser. No. 4,802
Int. Cl.[6] H02G *3/08*
U.S. Cl. 174—50 11 Claims



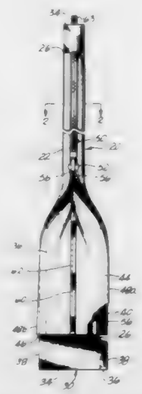
1. A covered conduit box having a housing which incorporates a cover member and a base member engageable to one another by screws, the base member including a pair of flanges which frame two opposite sides of an open surface thereof over which the cover seats, the flanges angling away from cooperating wings provided on the cover to cause screws engaged therebetween to angulate, maintaining engagement between the cover and the base member, a bore for the screws provided in the cover wings being stepped with a narrow bore portion equal in thickness to an unthreaded area adjacent the head of the screw and having a diameter approximately equal to the root diameter of the screw creating a first bore portion and having a wider bore portion formed therebeneath which has a diameter greater than the crest diameter of the screw thread, extruded channels being provided in the flanges of the base member which coact with the bores in the cover wings.

5,391,838

FLEXIBLE DOUBLE ELECTRICAL SHIELDING JACKET

Walter A. Plummer, III, Santa Ana, Calif., assignor to The Zippertubing Co., Los Angeles, Calif.

Filed May 25, 1993, Ser. No. 67,569
Int. Cl.[6] H01B *7/34*
U.S. Cl. 174—36 16 Claims



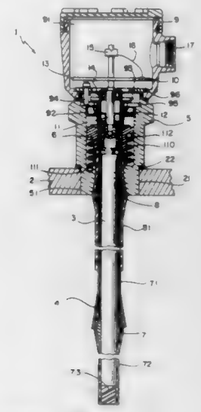
1. A flexible, closeable electrical shielding jacket comprising:
- a flexible elongated casing having inner and outer surfaces, two edges and two ends;
- an outer elongated electrically conductive shield adjacent the inner surface of the casing and having two edges and two ends;
- an inner elongated electrically conductive shield adjacent the first shield and having two edges and two ends; and
- casing closing means extending along each casing edge for joining the two casing edges for forming a tube;
- wherein the inner shield and outer shield optimally shield against different frequency ranges.

5,391,839

DEVICE FOR THE ELECTRICALLY INSULATED ATTACHMENT OF A METALLIC PROBE ELECTRODE IN THE OPENING OF A HOUSING

Hugo Lang, Pfeffingen, Switzerland, and Miroslaw Alznauer, Wies, Germany, assignors to Endress + Hauser GmbH + Co., Maulburg, Germany

PCT No. PCT/DE92/00462, § 371 Date Feb. 4, 1993, § 102(e) Date Feb. 4, 1993, PCT Pub. No. WO92/21943, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 5, 1992, Ser. No. 969,184
Claims priority, application Germany, Jun. 7, 1991, 4118715
Int. Cl.[6] G01F *23/26*
U.S. Cl. 174—65 R 33 Claims



33. A probe apparatus comprising:
- a metallic rod electrode formed to include a conical surface;
- a housing formed to include an interior region and a conical surface defining an opening into the interior region;
- a metallic guard electrode having a first conical surface configured to engage the conical surface of the rod electrode and having a second conical surface configured to engage the conical surface of the housing;
- an insulation layer located between the rod electrode and the guard electrode
- a nut coupled to the rod electrode, the nut being located in the interior region of the housing; and
- a pressure spring located in the interior of the housing for biasing the nut and the rod electrode in a predetermined direction to hold the first conical surface of the guard electrode in engagement with the conical surface of the rod electrode to form a first cone-shaped sealing connection therebetween and to hold the second conical surface of the guard electrode in engagement with the conical surface of the housing to form a second cone-shaped sealing connection therebetween.

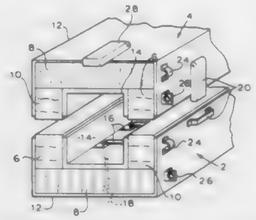
5,391,840

INSULATED DUCT

John T. Hughes, and Michael E. Smith, both of Worcester, United Kingdom, assignors to Zortech International Limited, Worcestershire, United Kingdom

Filed Nov. 19, 1992, Ser. No. 983,087
Claims priority, application United Kingdom, Nov. 28, 1991, 9125323
Int. Cl.[6] H02G *3/04*; F16L *59/02*
U.S. Cl. 174—68.3 21 Claims

1. A duct assembly comprised of a plurality of open-ended insulated ducts, each of said ducts comprising first and second cooperable members forming a duct therebetween, and means to secure the first and second members together such that the first and second members are urged towards each other, wherein:
- each member comprises a base of load-bearing thermal insulation material;
- at least one wall portion of load-bearing thermal insulation material extends from the base of at least one of the first and second members;
- an external skin is provided on the thermal insulation material; and
- an internal lining is provided on the thermal insulation material,
- the thermal insulation material of the first member abutting in direct surface contact against the thermal insulation material of the second member, the external skin of the first member abutting directly against the external skin of the second member, and the internal lining of the first member abutting directly against the internal lining of the



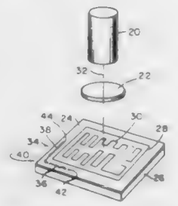
second member, and the thermal insulation material of the first and second members being maintained under compression, said duct thereby comprising substantially continuous layers, extending thereabout, of each of said thermal insulation material, said external skin, and said internal lining; said ducts further including means for securing said ducts together in end-to-end assembly such that the assembled ducts are urged towards each other with an end portion of said insulation material at the open end of one of said ducts in sealing contact with an end portion of said insulation material of another of said ducts, at least one of said first and second members of each of said ducts having locating means externally disposed at each end thereof for facilitating assembly of said ducts, and said assembly being devoid of any element interposed between said contacting end portions of insulation material of said one and another ducts.

5,391,841

LASER PROCESSED COATINGS ON ELECTRONIC CIRCUIT SUBSTRATES

Nathaniel R. Quick, 425 Manhattan Dr., Boulder, Colo. 80303

Filed Dec. 8, 1992, Ser. No. 987,017
Int. Cl.[6] H05K *1/03*
U.S. Cl. 174—258 16 Claims



1. A bilayer substrate as a support and heat-sink for mounting high-power and high density integrating electronics and electrical circuit components and devices adapted for electrical high power electronic applications, said substrate having a surface of high dielectric constant and rapid thermal conduc-

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tivity/dissipation properties as a bilayer substrate component, the combination, comprising:

(a) an electro-conductive support substrate having a planar surface; and

(b) a layer of insulative ceramic of Al_2O_3 material deposited onto said support planar surface as a reflowed and recrystallized layer having enhanced properties of thermal conductivity, density per unit volume, dielectric strength and bond development between said support substrate and layer of ceramic material, said reflowed and recrystallized Al_2O_3 layer of ceramic is an α-alumina structure (hexagonal rhombohedral) of near single crystalline corundum.

5,391,842

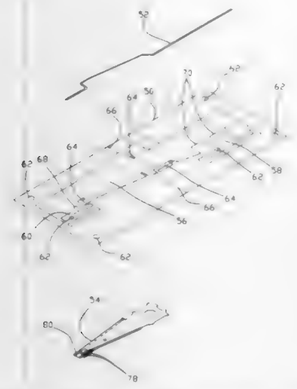
CARRIER STRIP HEAD INTERCONNECT ASSEMBLY

Jeffry S. Bennin, Hutchinson; Kevin D. Bjork, Litchfield; Todd W. Boucher, Stewart; James H. Dettmann, Lester Prairie, and Michael T. Hofflander, Edina, all of Minn., assignors to Hutchinson Technology, Inc., Hutchinson, Minn.

Continuation of Ser. No. 808,406, Dec. 16, 1991, abandoned. This application May 16, 1994, Ser. No. 243,538

Int. Cl.[6] H05K *1/02*

U.S. Cl. 174—260 28 Claims



1. An electrically conductive interconnect extending between a read/write transducer at a distal end of a suspension assembly and signal processing circuitry at a proximal end of the suspension assembly of a disk drive, said interconnect comprised of:

conductive element means fixedly attached to a patterned film carrier strip along an orientation and placement latching a desired routing between the distal transducer end and the proximal circuitry end along the suspension assembly;

said conductive element means adapted and arranged in relationship to one another at both the distal transducer end and the proximal circuitry end of the interconnect to provide multiple bonding pad sites for direct electrical connection of the signal processing circuitry and the transducer thereto;

said carrier strip containing patterned open regions sized and shaped to accommodate the suspension assembly, rigid conductive element support appendages, and tooling reference features; and

appendages of said carrier strip containing conductive element means-to-carrier-strip bond sites, fixedly attached to the suspension assembly with the carrier strip as an intermediary material of contact between the conductive elements and the suspension assembly.

5,391,843

SYSTEM FOR MEASURING CARRYING WEIGHT OF VEHICLE

Hideo Sato, and Takao Nagai, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

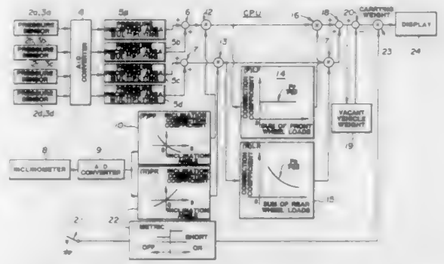
PCT No. PCT/JP91/00606, § 371 Date Nov. 9, 1992, § 102(e) Date Nov. 9, 1992, PCT Pub. No. WO91/17413, PCT Pub. Date Nov. 14, 1991

PCT Filed May 7, 1991, Ser. No. 946,487

Claims priority, application Japan, May 7, 1990, 2-117076

Int. Cl.[6] G01G *19/10, 19/02, 19/40*

U.S. Cl. 177—141 6 Claims



1. A system for measuring carrying weight of a vehicle wherein a first force acting on front-wheel suspension cylinders of the vehicle in a loaded state and a second force acting on rear-wheel suspension cylinders of the vehicle in the loaded state are detected to determine weight of the vehicle in the loaded state based on the detected first and second forces, and carrying weight of the vehicle is determined by subtracting weight of the vehicle in a vacant state from the weight of the vehicle in the loaded state, the system comprising:

correction value calculating means for determining a correlation between the first force and weight of the vehicle on the front wheel side on the basis of data on a front wheel suspension including mounting angles of the front-wheel suspension cylinders to the vehicle and for calculating a first correction value for determining the weight of the vehicle on the front wheel side from the first force, and for determining a correlation between the second force and weight of the vehicle on the rear wheel side on the basis of data on a rear wheel suspension including mounting angles of the rear-wheel suspension cylinders to the vehicle and for calculating a second correction value for determining the weight of the vehicle on the rear wheel side from the second force;

correction value memory means for storing the first correction value calculated by the correction value calculating means in accordance with a magnitude of the first force and for storing the second correction value calculated by the correction value calculating means in accordance with a magnitude of the second force;

front/rear wheel weight calculating means for reading from the correction value memory means the first correction value corresponding to the detected value of the first force and the second correction value corresponding to the detected value of the second force, and correcting the first and second forces with the read first and second correction values so as to calculate the weight of the vehicle on the front wheel side and the weight of the vehicle on the rear wheel side;

weight memory means for storing the weight of the vehicle in the vacant state; and

means for obtaining a sum of the weight of the vehicle on the front wheel side and the weight of the vehicle on the rear wheel side calculated by the front/rear wheel weight calculating means as weight of the vehicle in the loaded state and subtracting the weight of the vehicle in the vacant state stored in the weight memory means from the weight of the vehicle in the loaded state so as to determine the carrying weight of the vehicle.

5,391,844

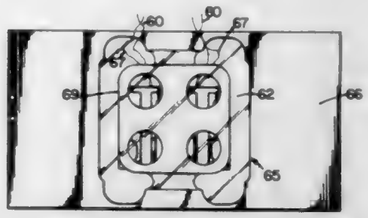
LOAD CELL

Thomas H. Johnson, Winnebago, Minn., and Michael R. Wyatt, Santa Rosa, Calif., assignors to Weigh-Tronix Inc, Fairmont, Minn.

Continuation-in-part of Ser. No. 862,827, Apr. 3, 1992, Pat. No. 5,336,854, and a continuation-in-part of Ser. No. 863,162, Apr. 3, 1992, Pat. No. 5,313,023. This application May 19, 1993, Ser. No. 64,834

Int. Cl.[6] G01G *3/08, 3/14;* G01L *1/10, 1/22*

U.S. Cl. 177—229 20 Claims



1. A force sensing load cell comprising:

(a) a load cell body having an interior opening defined by an upper wall and a lower wall joined by first and second side walls;

(b) a base positioned within said opening and affixed to at least one of said opening walls;

(c) a first cantilever beam affixed to said base;

(d) a second cantilever beam affixed to said base;

(e) a first transducer comprising two parallel tines joined together at their ends, said first transducer affixed between said first cantilever beam and said base;

(f) a second transducer comprising two parallel tines joined together at their ends, said second transducer affixed between said second cantilever beam and said base; and

(g) means for sealing said load cell body interior opening.

5,391,845

INERTIA SENSOR

Lothar Haas, Rosstal, and Hans-Joerg Schmidt, Dietenhofen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE93/00186, § 371 Date Aug. 6, 1993, § 102(e) Date Aug. 6, 1993, PCT Pub. No. WO93/19377, PCT Pub. Date Sep. 30, 1993

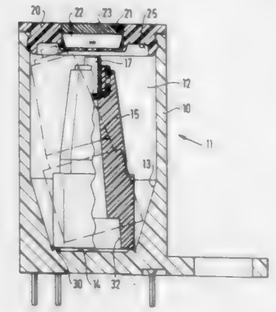
PCT Filed Mar. 3, 1993, Ser. No. 104,031

Claims priority, application Germany, Mar. 21, 1992, 4209272

Int. Cl.[6] H01H *35/14;* G01P *15/08*

U.S. Cl. 200—61.45 R 8 Claims

1. A sensor for automatically triggering safety devices in motor vehicles, the sensor comprising a housing having a housing recess with a base; a tilting body tiltably located in said housing recess and serving as a seismic mass, said tilting body having an end side facing said base of said housing recess; sensing means for sensing a tilting of said tilting body and triggering a control signal when the tilting exceeds a threshold value, said base of said housing recess of said housing being provided with a plurality of knobs, said end side of said tilting body being flat at least in the region of said knobs so as to



provide a contact between said flat end side of said tilting body and said knobs of said housing recess of said base.

5,391,846

ALLOY SUBSTITUTE FOR MERCURY IN SWITCH APPLICATIONS

Larry T. Taylor; James Rancourt, both of Blacksburg, and Carlos Perry, Jr., Manassas, all of Va., assignors to The Center for Innovative Technology, Herndon, Va.

Filed Feb. 25, 1993, Ser. No. 22,118

Int. Cl.[6] H01H *29/06*

U.S. Cl. 200—233 7 Claims

1. A method of preparing a switch, comprising the steps of:

washing an electrically conductive fluid comprised of gallium, indium and tin with an acid wash;

providing a means for preventing the electrically conductive fluid from wetting interior walls of a switch housing; and

depositing said electrically conductive fluid into said switch housing after said steps of washing and providing.

5,391,847

INTERCONNECTING DEVICE BETWEEN CONTACTS IN ELECTRIC SWITCHES AND THE LIKE

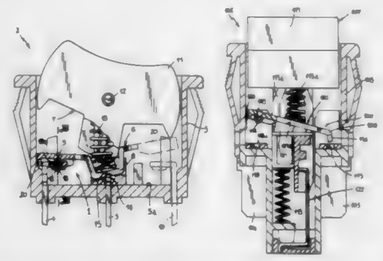
Cesare Gallone, Via Milano 27, 20010 Cornaredo (MI), Italy

Filed Jul. 19, 1993, Ser. No. 93,469

Claims priority, application Italy, Feb. 26, 1993, MI93A000387

Int. Cl.[6] H01H *1/22*

U.S. Cl. 200—244 4 Claims



1. Interconnecting electrical switch structure comprising:

first and second fixed contact portions adapted electrically to be connected to first and second poles of an electric circuit;

a movable contact element having a linking portion arranged to act oscillatably on the first contact portion and

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also having an interconnecting portion faced toward the second fixed contact portion;

control means acting on the movable contact element to move it by angular oscillation about the linking portion between an open position where the interconnecting portion is spaced from the second fixed contact portion and a closed condition where the interconnecting portion contacts the second fixed contact portion to establish electric continuity between the first and second fixed contact portions;

the first contact portion and the linking portion mutually engaging through a sharp edge presented by one of the portions and a seating of rounded outline presented by the other of the portions with the sharp edge bearing against said seating;

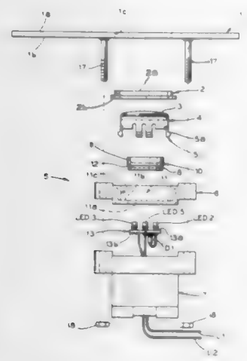
the second fixed contact portion having a coupling opening with a perimetric edge extending thereabout and said interconnecting portion having a projection bounded by a conically sloping side and electric continuity being established by said conically sloping side engaging said perimetric edge.

5,391,848

PUSH BUTTON SWITCH ILLUMINATED BY LIGHT EMITTING DIODES FOR USE WITH ELEVATORS

James L. Murphy, Streamwood, Ill., assignor to Inventio AG, Hergiswil NW, Switzerland

Filed Mar. 12, 1993, Ser. No. 30,585
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—314 **13 Claims**



1. A push button switch for generating a switch actuation acknowledgement signal for an elevator comprising:

a push button;

an adapter for slidably retaining said push button;

a plurality of light emitting diodes mounted on a printed circuit board for lighting said push button to generate a switch actuation acknowledgement signal; and

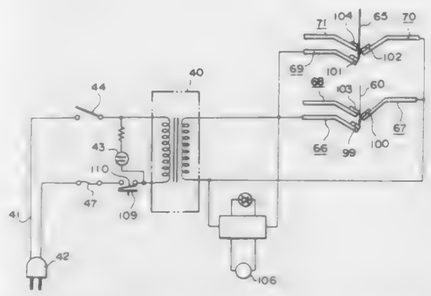
a light reflector for guiding light generated by said light emitting diodes to said push button, said light reflector having means for retaining said printed circuit board, said light reflector including a reflector portion and a base portion, said base portion being smaller than said reflector portion to form a radially extending shoulder between said portions, and said light reflector having means for mounting said light reflector on said adapter, said means for mounting on said adapter including said shoulder, and including a plurality of axially extending apertures formed in said light reflector for guiding light generated by associated ones of said light emitting diodes to said push button.

5,391,849

ELECTRICAL DISPOSAL APPARATUS OF USED INJECTION SYRINGE

Kenichi Furuya, 4-14-28, Eda-higashi, Midori-ku, Yokohama-shi, Kanagawa-ken, and Tuyosi Matuno, 9-5, Mominokidai, Midori-ku, Yokohama-shi, Kanagawa-ken, both of Japan

Filed Dec. 10, 1993, Ser. No. 165,073
Claims priority, application Japan, May 14, 1993, 5-030496[U]
Int. Cl.[6] B23K *11/22*
U.S. Cl. 219—68 **6 Claims**



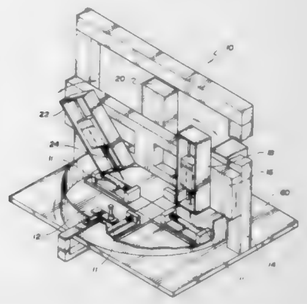
1. A used injection syringe disposal apparatus comprising a power source transformer installed in the apparatus, a housing provided with a ceiling wall, said ceiling wall having a cut-off portion through which a scrap box can slide, and a cartridge electrode plate unit adapted to engage and disengage with said cut-off portion of the ceiling wall of the housing, wherein a pair of electrode plate contact terminals connected to a secondary winding of said power source transformer is placed below edge portions faced to each other of the cut-off portion of the ceiling wall of the housing through fixing plates pending from a botton face of the ceiling wall and insulators, the cartridge electrode plate unit includes a base plate fully closing the cut-off portion of the ceiling wall of the housing, said base plate has an injection syringe insertion hole through which a thin syringe is inserted and an injection syringe pulling-out guide member having a pair of injection syringe pulling-out protrusions, and an injection syringe insertion guide member having a stepped insertion hole through which a thick injection syringe is inserted, respective pairs of electrodes adapted to contact with a tip portion of the thin injection syringe or the thick injection syringe, respectively inserted downwardly and a portion of the syringe a little above the tip are placed on the bottom face of the base plate, respective pairs of electrode plates provided with their terminal portions adapted to electrically contact with said pair of electrode plate contact terminals are provided so as to cross to each other and be separated and electrically insulated from said base plate, and when an injection syringe is bridged between respective pairs of electrode and contacts with each other, short-circuit current between the electrodes melts the injection syringe, and wherein a switch rod adapted to project and be withdrawn through a hole formed in a rear face erected wall of the housing according to sliding motion or taking in and out motion of the scrap box is formed on a rear face side of the scrap box, and a switch for opening and closing a primary winding of said power source transformer connected to said pair of electrode plate contact terminals and said fan, said switch functions in accordance with the operation of said switch rod.

5,391,850

APPARATUS AND METHOD FOR FAST HOLE DRILLING BY ELECTRICAL DISCHARGE MACHINING

Rainer L. Mueller, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 28, 1994, Ser. No. 188,009
Int. Cl.[6] B23H *1/00, 9/14*
U.S. Cl. 219—69.2 **12 Claims**



1. An apparatus for drilling holes in workpieces by electrical discharge machining comprising:

an indexable table having an upwardly extending skirt disposed around a perimeter of said table to contain dielectric fluid and eliminate fluid leakage;

a rigid, vertical frame which straddles the table;

a slide member cooperatively attached to the frame so that it may move in relation thereto, thereby facilitating advancement and retraction of heads to and from a workpiece;

a plurality of advancable and retractable heads associated with the slide member that are adapted for electrical discharge machining, each head being adjustably inclinable in a plane which lies parallel to the slide member so that travel time required by associated electrodes is reduced, thereby increasing machine speed, each head including:

a rotatable, hollow electrode defining an axially extending channel, each said electrode being securable in relation to the associated head; and

means for delivering a dielectric fluid through said channel so that machining debris may be transported away from the workpiece.

5,391,851

MULTI-POINT WELDING METHOD AND CATALYST SUPPORT PRODUCED THEREBY

Kiyotaka Matsuo, Kota; Masao Yokoi, Takahama; Yasuyuki Kawabe, Okazaki; Ichiro Hashimoto, and Keiji Ito, both of Nagoya, all of Japan, assignors to Nippon Soken Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of Japan

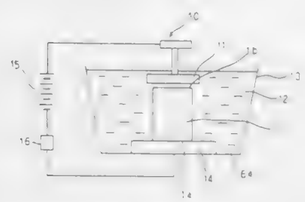
PCT No. PCT/JP91/01543, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO92/08571, PCT Pub. Date May 29, 1992
PCT Filed Nov. 11, 1991, Ser. No. 890,608
Claims priority, application Japan, Nov. 14, 1990, 2-310096
Int. Cl.[6] B23K *11/00*
U.S. Cl. 219—72 **10 Claims**

1. A multi-point welding method comprising the steps of:

bringing points to be welded of an electric conductive first object and points of an electric conductive second object in contact with each other;

mounting an electrode apart from said points to be welded of said first object by a specified interval so that the electrode and the first object are in a non-contacting state and said electrode faces at least said point to be welded of said first object; and

intermittently allowing a current to flow between said electrode and either of said first object and said second object neither of which contact said electrode, thereby intermittently generating electric discharges at least between said electrode and said points to be welded;



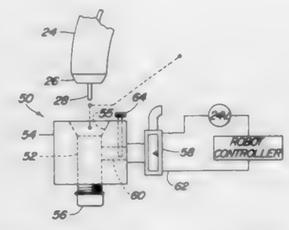
wherein said first object, said second object and said electrode are dipped in a liquid for preventing heat caused by electric discharges between said electrode and said points to be welded.

5,391,852

MONITOR FOR DETERMINING THE FLOW OF SHIELDING GAS

Charles D. Weaver, and Lawrence B. Howell, both of Davenport, Iowa, assignors to Deere & Company, Moline, Ill.

Division of Ser. No. 799,498, Nov. 27, 1991, Pat. No. 5,329,092.
This application Jan. 27, 1994, Ser. No. 188,289
Int. Cl.[6] B23K *9/16*
U.S. Cl. 219—74 **3 Claims**



1. A monitor for determining the flow of shielding gas from a welding robot, the welding robot is provided with a welding torch having shielding gas nozzles mounted thereon, the monitor comprising:

a closed tube into which the shielding gas nozzles can be inserted;

a gas flow gauge in fluid communication with the closed tube for measuring the flow of gas from the shielding gas nozzles; and

means for signalling the robot when the gas flow as measured by the gas flow gauge is insufficient.

5,391,853

PROCESS FOR THE ROLLER SEAM WELDING OF TANKS AND ROLLER SEAM RESISTANCE-WELDING MACHINE FOR CARRYING OUT THE PROCESS

Walter Grau, Dietikon; Tomislav Matievic, Schwerzenbach, and Manfred Schlemmer, Dietikon, all of Switzerland, assignors to Elpatronic AG, Zug, Switzerland

Filed Mar. 10, 1994, Ser. No. 209,745
Claims priority, application Switzerland, Apr. 8, 1993, 01092/93; Feb. 1, 1994, 00290/94
Int. Cl.[6] B23K *11/06*
U.S. Cl. 219—83 **8 Claims**

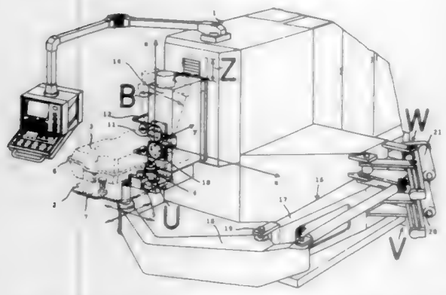
1. Process for the roller seam welding of a container in which the welding flange of the container does not lie in one plane, the process comprising the steps of:

providing a contour-guided table to hold the container;

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providing an arm driven in at least two axes for moving the table and a held container in a movement plane;

moving the table and container in the movement plane by means of the driven arm;



welding the welding flange of the container during the step of moving by means of a pair of welding rollers, each of the welding rollers having an axis of rotation; and

moving the axes of the welding rollers as a unit in a direction perpendicular to the movement plane during welding so that the welding rollers follow the welding flange.

5,391,854

METHOD OF SPOT WELDING ALUMINUM ALLOYS

Keizo Namba, Nagoya; Hiromichi Sano, Chiryu; Masaki Kumagai, and Koichi Maeda, both of Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Japan

Filed Dec. 16, 1993, Ser. No. 167,034

Claims priority, application Japan, Dec. 28, 1992, 4-359723

Int. Cl.[6] B23K *11/18*

U.S. Cl. 219—118 **9 Claims**

1. A method of spot welding aluminum alloy workpieces having an electrical conductivity of 18 to 57% IACS and a Vickers hardness of 26 to 200, wherein a pair of welding electrodes used for spot welding said aluminum alloy workpieces have electrical conductivity of not less than 92% IACS and Vickers hardness of 50 to 130, and wherein differences of the electrical conductivity and Vickers hardness between said welding electrodes and said aluminum alloy workpieces are in a range of 41 to 87% IACS and not larger than a Vickers hardness of 99, respectively.

5,391,855

APPARATUS FOR ATMOSPHERIC PLASMA TREATMENT OF A SHEET-LIKE STRUCTURE

Tatsuzo Tanisaki, Onomichi, Japan, assignor to Komoto Tech, Inc., Cedartown, Ga.

Continuation-in-part of Ser. No. 920,058, Jul. 28, 1992, abandoned. This application Aug. 10, 1993, Ser. No. 103,772

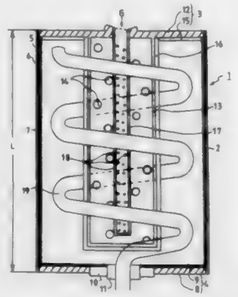
Int. Cl.[6] B23K *10/00*; **C23F** *1/00*

U.S. Cl. 219—121.43 **7 Claims**

1. A cylindrical, continuous plasma-processing apparatus comprising:

a porous hollow cylinder means defining an exterior region and an interior region; and

a plasma generating means, located within the interior region of said hollow cylinder means, for forming an atmospheric pressure glow plasma to alter a sheet material in contact with said hollow cylinder in the exterior region at



atmospheric pressure, through permeation through said porous hollow cylinder.

5,391,856

COOLING DRUM FOR CASTING THIN CAST PIECES AND METHOD AND APPARATUS FOR FORMING DIMPLES IN PERIPHERAL SURFACE OF THE DRUM

Katsuhiro Minamida; Motoi Kido, both of Sagamihara, and Fumihiko Nishizawa, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

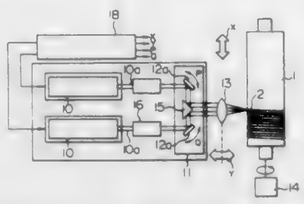
PCT No. PCT/JP92/00006, § 371 Date Sep. 9, 1992, § 102(e) Date Sep. 9, 1992, PCT Pub. No. WO92/11960, PCT Pub. Date Jul. 23, 1992

PCT Filed Jan. 9, 1992, Ser. No. 927,645

Claims priority, application Japan, Jan. 11, 1991, 3-012687; Jun. 3, 1991, 3-157421

Int. Cl.[6] B27K *26/00*

U.S. Cl. 219—121.68 **13 Claims**



1. A method of forming a multiplicity of dimples in a peripheral surface of a cooling drum for casting thin cast strips, comprising the steps of:

rotating the drum about an axis thereof;

irradiating the peripheral surface of the drum with at least one laser beam having a wavelength of 0.30 to 1.07 μm to form dimples in the peripheral surface; and

controlling at least one of the oscillation period of the laser beam, the laser output energy and the beam divergence angle so that each dimple has a depth of no less than 50 μm and a diameter not greater than 500 μm, and so that the distance between the centers of each adjacent pair of the dimples ranges from 1.05 times to 5 times the dimple diameter.

5,391,857

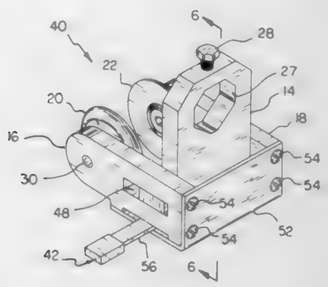
WELDING TIP ROLLER GUIDE

Yvon A. Pompey, 632 Wilson St., Salinas, Calif. 93901

Filed Sep. 22, 1993, Ser. No. 126,959

Int. Cl.[6] B23K *9/12*

U.S. Cl. 219—124.31 **2 Claims**



1. A welding tip roller guide comprising:

a center member releasably attachable to a welding instrument, said center member having both an aperture therethrough operable to receive said welding instrument and a fastener releasably coupled to said center member to selectively secure a position of said welding instrument within said aperture;

at least one arm movably coupled to said center member and projecting away therefrom;

at least one wheel rotatably secured to said at least one arm;

a lever rotatably coupled to said at least one arm and slidably coupled to said center member, whereby said center member may be selectively moved with respect to said at least one arm by a movement of said lever by a user;

at least one guide member coupled to said at least one arm and extending away therefrom;

and;

at least one guide wheel rotatably coupled to said at least one guide member, whereby said at least one guide wheel is substantially aligned with a center of said center member.

5,391,858

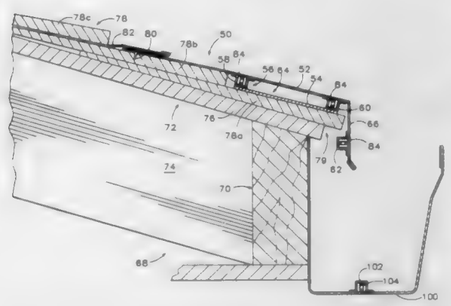
ICE DAM MELTING SYSTEM

Donald R. Tourangeau, Portland, Oreg., and Joseph Csizmazia, Ketchum, Id., assignors to Tourangeau Sprots Incorporated, Beaverton, Oreg.

Filed May 10, 1993, Ser. No. 59,820

Int. Cl.[6] H05B *1/00*

U.S. Cl. 219—213 **15 Claims**



1. A heat cell for a roof comprising:

a lower panel;

a conduit connected to and supported by said lower panel;

an upper panel which is formed of metal and connected to and supported by said conduit; and

a heat-generating mechanism disposed in said conduit.

5,391,859

IRON COMPRISING HUMIDITY RESPONSIVE MOTION DETECTOR AND ELECTROSTATIC CHARGE DETECTOR FOR CONTROLLING THE HEATING ELEMENT

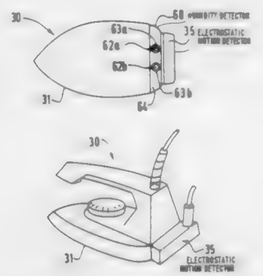
Jean-Pierre Hazan, Sucy En Brie; Rémy Polaert, Villecresnes, and Jean-Louis Nagel, Limeil Brevannes, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 16, 1992, Ser. No. 915,800

Claims priority, application France, Jul. 19, 1991, 91 09133

Int. Cl.[6] D06F *75/26*; **G01D** *5/24*

U.S. Cl. 219—250 **20 Claims**



1. An iron comprising a heating element (**97**), heating-control means (**96**) for the heating element, and a motion detector, wherein the motion detector is an electrostatic detector (**35**) mounted on said iron for movement therewith comprising:

means (**40**, **42**, **43**, **46**) for picking up electrostatic charges produced by a movement of the iron on a fabric, and

means (**41**, **89**), responsive to signals from said means (**40**, **42**, **43**, **46**) for picking up electrostatic charges, for detecting the movement of the iron by measuring a rhythm of an electric signal resulting from variations of the electrostatic charges.

5,391,860

TEMPERATURE-CONTROLLING METHOD, FOR EXAMPLE IN SYSTEMS FOR INJECTION OF PLASTICS MATERIALS, AND RESPECTIVE SYSTEM

Modesto Massano, Mathi Canavese, and Vincenzo Commisso, Volpiano, both of Italy, assignors to Plasthing Elettronica S.n.c. Di Massano Modesto E Commisso Vincenzo, Torino, Italy

Filed Nov. 25, 1992, Ser. No. 981,817

Claims priority, application European Pat. Off., Sep. 15, 1992, 92830486.4

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—497 **33 Claims**

1. A method for controlling the temperature of a material processed in a system comprising means for heating the material, thermometric measuring means for generating a signal which indicates a temperature in at least one predetermined location of the system in heat transmission relationship to said material and processing means connected in use to the thermometric means and to the heating means, in order to control the functioning of the heating means according to the signal generated by the thermometric means, comprising the steps of:

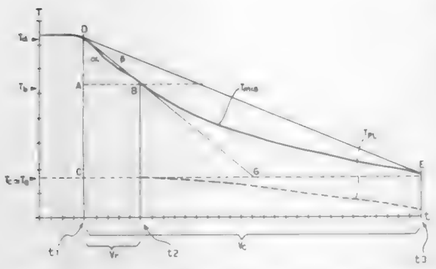
setting a reference temperature for the material on the processing means;

de-activating the heating means intermittently while the system is functioning;

using the thermometric means to measure the temperature in said at least one predetermined location of the system at a

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specific moment after the heating means has been deactivated, the temperature measured at the specific moment being indicative of a corresponding temperature in the material; and

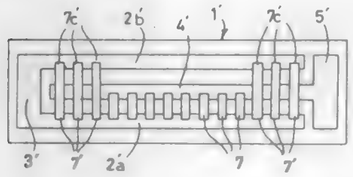


controlling the heating means in order to cancel the difference between the reference temperature and the temperature of the material.

5,391,861
HEATER FOR SHEET MATERIAL

Shingo Ooyama; Shigeo Ota, and Fumiaki Tagashira, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Division of Ser. No. 998,767, Dec. 29, 1992, abandoned, which is a division of Ser. No. 896,593, Jun. 10, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 144,493
Claims priority, application Japan, Jul. 25, 1991, 3-186352
Int. Cl.[6] H05B *3/16*
U.S. Cl. 219—543 **6 Claims**



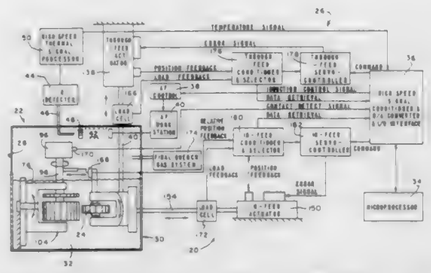
1. A heater comprising an electrically insulating substrate which carries a first conductor strip and a second conductor strip spaced transversely from the first conductor strip, the respective conductor strips being electrically connected to each other by a plurality of heating resistors which are spaced longitudinally of the respective conductor strips and actuated simultaneously for heat generation, the heating resistors including a plurality of intermediate resistors electrically connecting only between the first and second conductor strips, the heating resistors also including a plurality of end resistors located adjacent to both ends of each conductor strip,

wherein the substrate further carries a third conductor strip spaced transversely from the first and second conductor strips, each of the end resistors having an excess portion which connects between the second and third conductor strips.

5,391,862
INDUCTION HEATING SYSTEM FOR A NEAR NET SHAPED GEAR BLANK

Maurice F. Amateau; G. Dwayne Kidwell, and Nagesh Sonti, all of State College, Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Division of Ser. No. 829,187, Jan. 31, 1992, Pat. No. 5,221,513. This application Jan. 21, 1993, Ser. No. 6,901
Int. Cl.[6] H05B *6/08*
U.S. Cl. 219—667 **15 Claims**



1. Apparatus for heating a workpiece in the form of a near net shaped gear blank having carburized gear teeth surfaces above its critical temperature to obtain an austenitic structure throughout its carburized case, said apparatus comprising:

a toroidal shaped induction heater defining a heating zone;

upper support means for rotatably mounting the workpiece proximate to and aligned with the heating zone;

workpiece actuator means for selectively moving the workpiece between a retracted position displaced from said heating zone and an advanced position within the heating zone;

drive means for rotating the workpiece in the heating zone; and

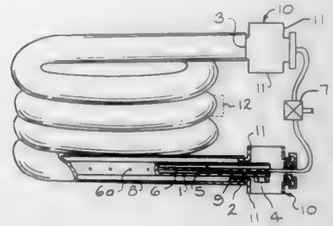
temperature sensing means distant from said toroidal heater and directed at the workpiece for detecting the temperature in rapid sequence of a plurality of locations on the gear teeth surfaces of the workpiece as the workpiece rotates in the heating zone.

5,391,863
INDUCTION HEATING COIL WITH HOLLOW CONDUCTOR COLLABLE TO EXTREMELY LOW TEMPERATURE

Edwin Schmidt, Steingasse 25, 3563 Dautphetal 3, Germany

PCT No. PCT/DE91/00992, § 371 Date Jun. 22, 1993, § 102(e) Date Jun. 22, 1993, PCT Pub. No. WO92/11647, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 18, 1991, Ser. No. 81,275
Claims priority, application Germany, Dec. 22, 1990, 4041603; Mar. 26, 1991, 4109818
Int. Cl.[6] H05B *6/42*
U.S. Cl. 219—677 **14 Claims**

1. An induction heating coil for induction furnaces for heating, keeping hot or melting metallic material, the induction heating coil comprising a hollow electrical conductor coolable to extremely low temperatures, at least one hose element (**5**; **24**) arranged in the hollow conductor (**1**; **19**; **22**; **23**), connected to a gas connection and provided with perforations (**6**) through which the gas can flow between the interior and the exterior of the hose element the external diameter of the hose element (**5**; **24**) being smaller than the internal diameter of the hollow conductor (**1**; **19**; **22**; **23**), the hollow conductor having passages (**6a**) in the wall through which the gas can flow between the interior and the exterior thereof, and a jacket (**8**) which

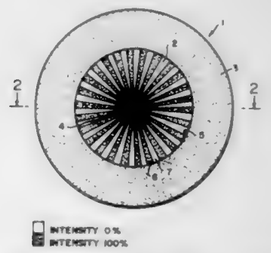


encloses the hollow conductor and gas emerging from the hollow conductor (**1**; **19**; **22**; **23**).

5,391,864
PATTERNED SUSCEPTOR FOR MICROWAVABLE COOKIE DOUGH

Janos Bodor, Rijswijk, Netherlands; Girish Desai, Ellicott City, Md.; Morteza Nematollahi, Tehran, Islamic Rep. of Iran, and Ravinder Reddy, Columbia, Md., assignors to Van den Bergh Foods Company, Division of Conopco, Inc., Lisle, Ill.

Continuation-in-part of Ser. No. 731,838, Jul. 16, 1991, abandoned. This application Dec. 14, 1992, Ser. No. 990,474
Int. Cl.[6] H05B *6/80*
U.S. Cl. 219—730 **21 Claims**



1. A microwave product for cooking an expandable dough by microwave radiation comprising:

(a) a susceptor means having a first surface, a second surface and a film layer of metal deposited on said first surface, the film layer having an inner region and an outer region and the susceptor means is used to absorb a portion of a microwave field energy and convert said portion to thermal heat, the inner region of the film layer being substantially encompassed by the outer region and having an intensity of the deposited metal in a range of from about 25% to about 75%, relative to an intensity of about 100% of the outer region, the intensity of the inner region increasing in a continuous manner from a center point of the inner region to a circumference point of the inner region;

(b) an expandable dough having a surface area in contact with a surface area of the inner region, the dough increasing nonlinearly as cooking time increases so that a portion of the expandable dough surface area is continuously exposed to a portion of the inner region surface area while another portion of the expandable dough surface area is exposed to a different surface area portion of the film layer: and

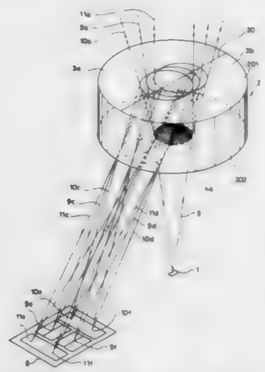
(c) support means adjacent to the second surface of the susceptor means for stabilizing the susceptor means and supporting the expandable dough,

the product cooking the expandable dough by the thermal heat without charring or undercooking.

5,391,865
OPTICAL PICKUP APPARATUS AND OPTICAL GRATING ASSEMBLY THEREFOR

Yukio Kurata, Tenri; Hiroshi Ogata, Higashihiroshima; Hikaru Nishihara, Higashihiroshima; Mitsuharu Tomura, Higashihiroshima, and Shigeki Tsuji, Higashihiroshima, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 235,901, Aug. 24, 1988, abandoned. This application Jan. 22, 1991, Ser. No. 655,231
Claims priority, application Japan, Aug. 24, 1987, 62-209934; Aug. 26, 1987, 62-212603; Aug. 26, 1987, 62-212604; Aug. 26, 1987, 62-212605; Aug. 26, 1987, 62-212606
Int. Cl.[6] G01J *1/20*
U.S. Cl. 250—201.5 **98 Claims**



1. An optical pickup apparatus for reading data pits held in a disc by converging a light beam from a light source into a light spot on said disc and directing light reflected by said disc to a photodetector for producing a tracking error signal, comprising:

first grating means for distributing the light beam from said light source into a main beam for reading said data pits on said disc and a pair of sub-beams for sensing a tracking error of said main beam;

second grating means for orienting a portion of the light reflected by said disc to said photodetector; and

an optical grating assembly having a first surface portion facing said light source with said first grating means provided thereon and a second surface portion facing said disc with said second grating means provided thereon.

5,391,866
POSITION RECOVERY APPARATUS FOR INNER FOCUS LENS

Mitsuo Hoshino, Saitama, and Atsushi Takano, Kanagawa, both of Japan, assignors to Sony Corporation, Japan

Filed Mar. 19, 1993, Ser. No. 34,693
Claims priority, application Japan, Mar. 31, 1992, 4-077973
Int. Cl.[5] G02B *15/00*
U.S. Cl. 250—201.2 **15 Claims**

1. A focus adjustment apparatus having a lens provided so that said lens can be moved along a feed screw coupled to a rotary shaft of a motor wherein a focus is adjusted by the movement of said lens comprising:

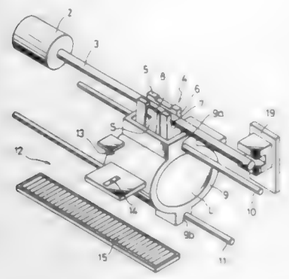
position detecting means for detecting a position of said lens, said position detecting means comprising:

an array of sensor elements which are each responsive to a predetermined energy emission and which are aligned essentially parallel with the feed screw; and

a source of said predetermined energy arranged in a predetermined spaced relationship with said array or sensors, one of said array of sensors and said source being

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operatively connected with said lens for movement therewith and so as to be movable with respect to said array of sensors; and



recovery means for moving said lens by a displacement amount detected by said position detecting means so that said lens can be returned to an original position when said lens is displaced from a properly-focused position by an external shock.

5,391,867

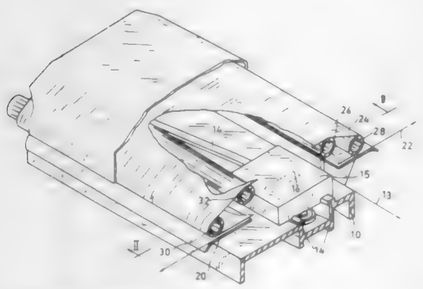
WIDE FORMAT SCANNER HAVING A LINEAR SCANNING ELEMENT WITH A SELECTABLE ORIENTATION

Manfred Grumberg, 64 Dania Street, Haifa 34980, Israel

Filed Feb. 24, 1993, Ser. No. 21,597

Int. Cl.[6] H04N *1/14*

U.S. Cl. 250—208.1 **13 Claims**



1. A scanner comprising:

means for displacing a substrate to be scanned along a first axis and at a first speed;

a scanning head having a linear scanning element operative to scan the substrate;

means for moving said scanning head across the substrate obliquely with respect to the first axis at an angle and at a speed coordinated with the first speed so as to provide a scan trace across the substrate which is perpendicular to the first axis; and

means for selectably orienting the linear scanning element relative to the first axis, thereby determining the scan resolution.

5,391,868

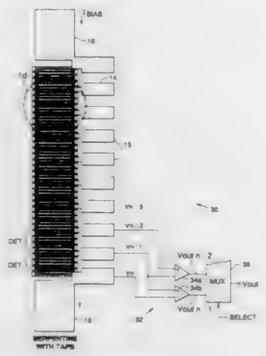
LOW POWER SERIAL BIAS PHOTOCONDUCTIVE DETECTORS

John L. Vampola, Santa Barbara; Christopher A. Hougen, Oxnard, and Kevin L. Pettijohn, Goleta, all of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed Mar. 9, 1993, Ser. No. 28,505

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.1 **13 Claims**



1. An army of photoconductive (PC) radiation detectors, comprising:

a substrate:

a body of PC material disposed upon a first surface of said substrate, said body of PC material having a substantially linear shape;

a first plurality of electrical interconnects that are electrically coupled to said body of PC material for differentiating said body into a plurality of radiation detector sites, individual ones of said plurality of radiation detector sites being disposed in a serial arrangement with one another along a length of said body of PC material;

a bias current input terminal that is electrically coupled to a first end of said body of PC material;

a bias current output terminal that is electrically coupled to a second end of said body of PC material; wherein a bias current that is applied to said bias current input terminal and that is extracted from said bias current output terminal flows through each of said plurality of serially disposed radiation detector sites;

signal processing circuitry having inputs coupled to said first plurality of electrical interconnects, said signal processing circuitry including means for determining a difference in potential between two adjacent ones of said first plurality of electrical interconnects, the difference in potential being a function of an amount of electromagnetic radiation that is absorbed by an intervening portion of said body of PC material.

5,391,869

SINGLE-SIDE GROWTH REFLECTION-BASED WAVEGUIDE-INTEGRATED PHOTODETECTOR

Robert W. Ade, Bolton; Donald E. Bossi, South Windsor; James M. Berak, Sr., East Hartford, and Rocco P. Basilica, Colchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 29, 1993, Ser. No. 39,807

Int. Cl.[6] H01J *5/16*

U.S. Cl. 250—227.24 **16 Claims**

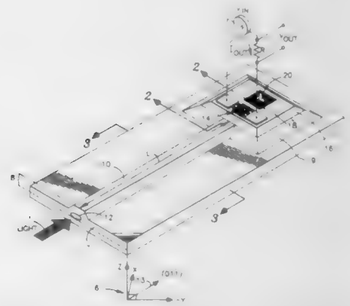
1. A reflection-based waveguide integrated photodetector, comprising:

a substrate;

waveguide means, disposed adjacent to and contiguous with said substrate, for receiving input light at a first end of said waveguide means, and for providing vertical and lateral confinement of said light along said waveguide means;

a detector layer, disposed adjacent to, and on the same side of said substrate as, said waveguide means;

a reflective angled surface, disposed-at a second end of said waveguide means, for reflecting said light onto said detector layer, said reflective surface having a predetermined angle so as to provide total internal reflection;



said detector layer, being made of a material having an energy bandgap smaller than the energy of the input light, thereby allowing said light reflected by said reflective surface to be absorbed by said detector layer and creating electron-hole pairs therein; and

detection means, for detecting said electron-hole pairs created within said detector layer.

5,391,870

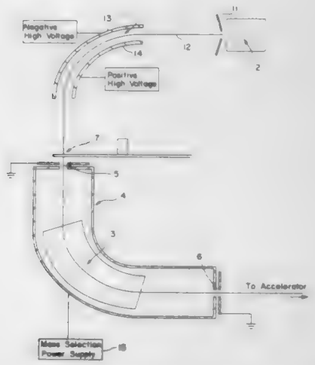
HIGH-SPEED PRECISION MASS SELECTION SYSTEM

Kenneth H. Purser, Lexington, Mass., assignor to High Voltage Engineering Europa B.V., Amersfoort, Netherlands

Filed Sep. 1, 1993, Ser. No. 115,878

Int. Cl.[6] H01S *49/26*

U.S. Cl. 250—298 **15 Claims**



1. That method of selecting particles of a certain mass from a beam of charged particles comprising the following steps:

(1) directing said beam between the pole faces of a deflection magnet,

(2) periodically modifying the energy of said charged particles prior to arrival at the region between said pole faces,

(3) reversing said energy modification after said charged particles leave the region between said pole faces, and

(4) intercepting said beam by a mechanical shutter during the change of parameters required for initiation of said modification and reversal thereat.

5,391,871

SCANNING PROBE MICROSCOPE

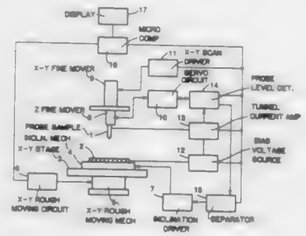
Hiroshi Matsuda, Isehara; Hisaaki Kawade; Ken Eguchi, both of Yokohama; Yoshihiro Yanagisawa, Isehara, and Toshihiko Takeda, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1992, Ser. No. 892,364

Claims priority, application Japan, Jun. 5, 1991, 3-161071

Int. Cl.[6] H01J *37/26*

U.S. Cl. 250—306 **13 Claims**



1. A scanning probe microscope for measuring a surface status of a sample by scanning the sample with a probe, comprising:

a probe;

an inclination means for inclining the sample disposed to face said probe relative to a scanning surface defined by the scanning of said probe;

moving means for performing relative movement between said probe and the sample so as to reciprocally scan the sample with said probe;

detection means for detecting a signal corresponding to surface information of the sample utilizing said probe upon scanning the sample with said probe;

extraction means for extracting a low frequency signal from said detected signal; and

control means for controlling said inclination means on the basis of said low frequency signal so that a level of said low frequency signal extracted by said extraction means becomes lower in order to make an angle defined by said scanning surface of said probe and the surface of the sample smaller.

5,391,872

IMAGE RECORDING APPARATUS USING REPEATEDLY USABLE RECORDING MEDIUM

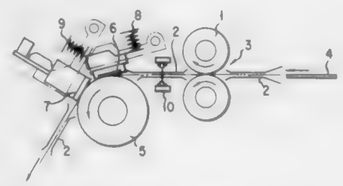
Shinichi Itoh; Tadayoshi Ohno, and Takashi Yamaguchi, all of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 18, 1993, Ser. No. 33,884

Claims priority, application Japan, Mar. 24, 1992, 4-065420

Int. Cl.[6] B41M *5/00*

U.S. Cl. 250—316.1 **4 Claims**



1. An image recording apparatus comprising:

means for conveying a recording medium on which a visible image can be recorded and from which a visible image can be erased, said conveying means including a platen roller

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provided in a mid-portion of said conveying means for supporting said recording medium being conveyed;

pulse signal driven erasing means, positioned opposing said platen roller, for erasing a previously recorded visible image by supplying a second thermal energy to said recording medium being conveyed;

means for determining a number of pulse signals for driving said erasing means;

means for determining a current-supply cycle of said pulse signals;

means for determining a current-supply time period of said pulse signals;

means for driving said erasing means when said determinations are received from each of said determining means; and

recording means, positioned adjacent to said erasing means and opposing said platen roller, for recording a visible image on said recording medium by supplying a first thermal energy to said recording medium after it has been conveyed beyond said erasing means.

5,391,873

IMAGING APPARATUS COMPENSATING FOR NONUNIFORMITY IN DETECTOR OUTPUTS

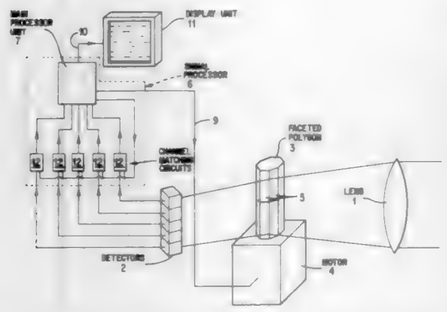
Glenn Cuthbertson, Essex, United Kingdom, assignor to GEC-Marconi Limited, Middlesex, United Kingdom

Filed May 20, 1993, Ser. No. 63,749

Claims priority, application United Kingdom, Jun. 22, 1992, 9213172

Int. Cl.[6] G01J *5/10*

U.S. Cl. 250—334 **14 Claims**



1. Imaging apparatus comprising: an array of detector elements each for providing, in response to received radiation, an output defining a channel; a scanning mechanism for causing a received image to be scanned over the array of detector elements; and signal processing means for receiving each channel and providing an output representative of the received image, the signal processing means having associated with each channel a channel matching means for compensating for non-uniformity in the outputs of the detector elements for a given input, wherein each channel matching means comprises a means for adding a noise source to the channel with which it is associated.

5,391,874

FLEXIBLE LEAD ASSEMBLY FOR MICROCHANNEL PLATE-BASED DETECTOR

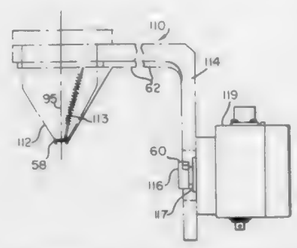
Glenn Ellis, Charlton, Mass., assignor to Galileo Electro-Optics Corporation, Sturbridge, Mass.

Filed Aug. 17, 1993, Ser. No. 106,945

Int. Cl.[6] G01T *1/28*

U.S. Cl. 250—336.1 **22 Claims**

1. An areal detector for both charged and neutral particles and energetic photons comprising: at least one microchannel plate (MCP) having a signal input face and signal output face; a flexible circuit having a detector end, an intermediate electrical lead portion with electrical shielding means and a connector end, and means for supporting said at least one MCP in said detector end of the flexible circuit; said flexible circuit including a pair of electrodes one each coupled to the respective signal input face and signal output face of said at least one MCP and at least one anode for collecting electron current signals from the signal output face of said at least one MCP.



5,391,875

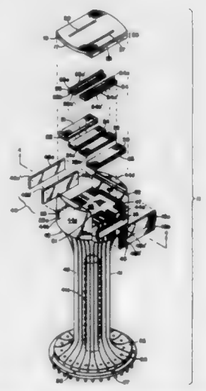
INFRARED SENSOR PACKAGE

Andrew A. Cederberg, North Grafton, and Willard C. Litchfield, Scituate, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 18, 1990, Ser. No. 555,867

Int. Cl.[6] G01J *5/04, 5/08*

U.S. Cl. 250—352 **28 Claims**



1. An electromagnetic radiation sensor package comprising:

a support member having a first flared end, with a cavity disposed in said first end substantially extending through the length of the member, said member further having a second end with a platform adaptable for supporting an electromagnetic radiation sensor and at least one planar side, said at least one planar side being non-coplanar with said platform, and having a pair of sidewall portions extending above said platform, wherein said platform is substantially perpendicular to the length of the support member and wherein each of the pair of sidewall portions has a ledge portion disposed above the platform.

5,391,876

HOLE-TRAP-COMPENSATED SCINTILLATOR MATERIAL AND COMPUTED TOMOGRAPHY MACHINE CONTAINING THE SAME

Veneta G. Tsoukala, Chelsea, England, and Charles D. Greskovich, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 960,203, Oct. 13, 1992, Pat. No. 5,318,722, which is a continuation of Ser. No. 546,824, Jun. 29, 1990, abandoned. This application May 27, 1994, Ser. No. 250,725

The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.[6] G01T *1/202;* **C09K** *11/80*

U.S. Cl. 250—361 R **9 Claims**

1. A crystalline scintillator composition consisting of:

gadolinium gallium garnet having the formula $Gd_3Ga_5O_{12}$;

chromium in a concentration in said garnet equivalent to chromium oxide being between 0.05 and 1.0 weight percent of the overall scintillator composition which is effective to render said scintillator composition luminescent in response to high-energy stimulating radiation consisting of x-rays; and

a hole trapping species, cerium, in a concentration in said garnet of about 0.2 to about 0.255 weight percent of the overall scintillator composition which is effective to reduce the afterglow level relative to the afterglow level of said scintillator composition in the absence of said hole trapping species while allowing the scintillator to withstand said radiation with essentially no damage after receiving an initial dose of said radiation;

said chromium being substituted in said formula for said Ga and said hole trapping species being substituted in said formula for said Gd.

6. In a computed tomography machine of the type having a solid state scintillator, the improvement comprising:

the scintillator being gadolinium gallium garnet having the formula $Gd_3Ga_5O_{12}$, chromium in a concentration in said garnet equivalent to chromium oxide being between 0.05 and 1.0 weight percent of the scintillator which is effective to render said scintillator luminescent in response to high energy stimulating radiation consisting of x-rays produced by said machine, and cerium in a concentration in said garnet of between 0.2 and 0.255 weight percent of the scintillator which is effective to reduce the afterglow level relative to the afterglow level in the absence of cerium and to enable said scintillator to exhibit essentially zero x-ray damage after receiving an initial dose of said x-rays, said chromium being substituted in said formula for said Ga and said cerium being substituted in said formula for said Gd.

5,391,877

COMBINED IMAGING SCANNER

Michael A. Marks, 2334 Morgan La., Dunn Loring, Va. 22027

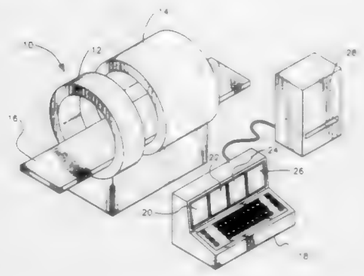
Filed Jan. 26, 1994, Ser. No. 186,631

Int. Cl.[6] G01T *1/166*

U.S. Cl. 250—363.04 **7 Claims**

1. A combined imaging scanner comprising, in combination,

a first separate gantry supported computed tomographic CT scanner adjacently axially aligned with a second separate gantry supported single photon emission computed tomographic SPECT scanner, and



a computer for superimposing radioisotope distribution data from the SPECT scanner onto anatomical data from the CT scanner.

5,391,878

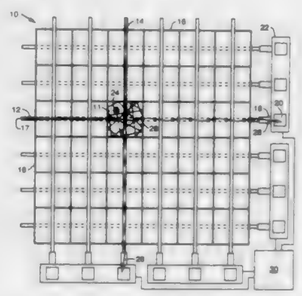
MULTIPLEXED FIBER READOUT OF SCINTILLATOR ARRAYS

Michael D. Petroff, Fullerton, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Nov. 3, 1993, Ser. No. 146,869

Int. Cl.[6] G01T *1/20*

U.S. Cl. 250—367 **18 Claims**



1. A multiplexed optical fiber system for readout of a plurality of scintillators forming an array, comprising:

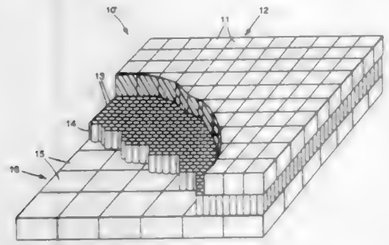
a plurality of fluorescent fibers comprising first index fibers and second index fibers, each of said scintillators coupled to one of said first index fibers and one of said second index fibers;

a plurality of photon counters, each of said photon counters coupled to a corresponding one of said fluorescent fibers for detecting photons in said fiber generated by a radiation event in one of said scintillators coupled to said fiber; and

means connected to said photon counters for detecting coincident photons generated in one of said first index fibers and one of said second index fibers, determining position of said radiation event in said array by identifying said one of said scintillators connected to said first and second index fibers generating said coincident photons, obtaining greater position resolution by measuring a ratio of said coincident photons generated in said one of said first index fibers versus said one of said second index fibers to determine position of said radiation event within said one of said scintillators, and determining energy of said radiation event by measuring total number of said coincident photons.

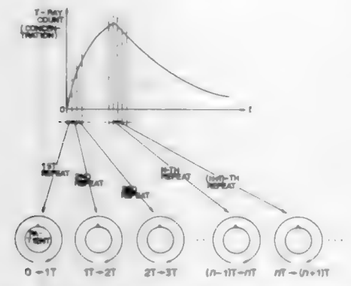
VOL 1171 ISS 3 FE 21 1995 UMI

5,391,879
RADIATION DETECTOR
Nang T. Tran, Lake Elmo, and Luciano W. Morrone, Birchwood Township, County Ramsey, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Nov. 19, 1993, Ser. No. 154,962
Int. Cl.[6] G01T *1/20, 1/24*
U.S. Cl. 250—367 13 Claims



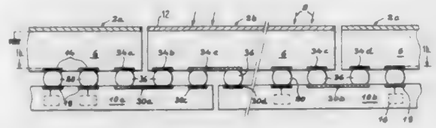
1. An X-ray radiation detector comprising:
(a) a fiber optic network having an X-ray incident side and an other side;
(b) an array of pixelized phosphors on the X-ray incidence side of said fiber optic network; and
(c) an array of pixelized sensors optically coupled to the other side of said fiber optic network, wherein:
(i) the ratio of the surface area of a phosphor pixel to the surface area of a sensor pixel is in the range of about 1:2.19 1:4, and
(ii) the ratio of the surface area of the core of each individual optical fiber of said fiber optic network to the surface area of a phosphor pixel is in the range of about 1:4 to 1:160.

5,391,880
GAMMA CAMERA SYSTEM
Atsushi Habara, Otawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Mar. 9, 1994, Ser. No. 207,660
Claims priority, application Japan, Mar. 9, 1993, 5-048180
Int. Cl.[6] G01T *1/166*
U.S. Cl. 250—369 16 Claims



1. A gamma camera system for obtaining a distribution image of a radioisotope injected into an object being examined by dynamic study on the basis of γ-rays emitted from the radioisotope, the system comprising:
a detector for detecting the γ-rays;
means for repeatedly providing a plurality of relative rotations between the detector and the object;
means for forming image data including data of a reference image and data of the distribution image on the basis of detected signals from the detector;
means for obtaining a change in quantity of the γ-rays every one rotation among the plurality of relative rotations between the detector and the object;
means for specifying one of the plurality of relative rotations in conjunction with the change in the γ-ray quantity; and
means for displaying the reference image using the data of the reference image corresponding to the specified one rotation.

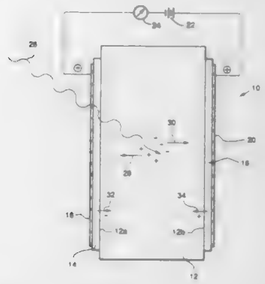
5,391,881
IONIZING RADIATION IMAGING DEVICE
Pierre Jeuch, Seyssins, and Marc Cuzin, Corenc, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Jun. 21, 1993, Ser. No. 79,370
Claims priority, application France, Jun. 30, 1992, 92 08029
Int. Cl.[6] G01T *1/24*
U.S. Cl. 250—370.09 12 Claims



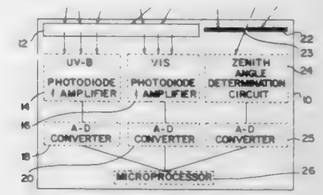
1. A radiation imaging device comprising:
at least one planar detector comprised of a bulk material which transforms, throughout its volume, ionizing radiation into electric charges;
a common electrode formed on an input face of said bulk material through which said ionizing radiation enters said radiation imaging device;
a mosaic of point electrodes and metal bands formed on an output face of said bulk material which is spaced apart from and opposed to said input face;
a plurality of planar integrated circuit chips spaced apart from and facing said output face of said bulk material, said planar integrated circuit chips comprising a mosaic of reading circuits;
an addressing circuit, connected to said reading circuits; and
metal bands for connecting said reading circuits and said addressing circuit to an external power supply circuit, a control circuit, and a processing circuit, wherein each of said reading circuits is hybridized by at least one microsphere to one of said point electrodes, and said metal bands of said planar integrated circuit chips are positioned facing said metal bands of said output face and hybridize thereto by microspheres.

5,391,882
SEMICONDUCTOR GAMMA RAY DETECTOR INCLUDING COMPOSITIONALLY GRADED, LEAKAGE CURRENT BLOCKING POTENTIAL BARRIER LAYERS AND METHOD OF FABRICATING THE DETECTOR
David R. Rhiger, Santa Barbara, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.
Filed Jun. 11, 1993, Ser. No. 75,975
Int. Cl.[6] H01L *31/105, 31/0304, 31/0296*
U.S. Cl. 250—370.13 22 Claims

1. A ray detector, comprising:
a wide bandgap substantially intrinsic semiconductor detector layer;
a P-doped semiconductor layer which is formed on a first surface of the detector layer and has a composition which is graded such that the bandgap of the P-doped layer decreases with distance from said first surface;
a first ohmic contact formed on the P-doped layer;
an N-doped semiconductor layer which is formed on a second surface of the detector layer and has a composition which is graded such that the bandgap of the N-doped layer decreases with distance from said second surface; and
a second ohmic contact formed on the N-doped layer.

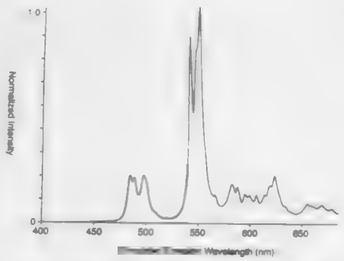


5,391,883
OZONE METER
James H. Kinsey, Baldwin, Md., and Richard J. Harms, Alexandria, Va., assignors to Applied Research Corporation, Landover, Md.
Filed Jan. 6, 1994, Ser. No. 178,178
Int. Cl.[6] G01N *21/33*
U.S. Cl. 250—372 16 Claims



1. An ozone meter for assessing total column ozone in the atmosphere comprising:
a first photodetector amplifier circuit, including a first photodetector, responsive to solar radiation in the UV-B band for producing an output signal proportional to the weighted integral of incident UV-B solar radiation;
a second photodetector amplifier circuit, including a second photodetector, responsive to solar radiation in the visible band for producing a second output signal proportional to the weighted integral of a portion of incident visible solar radiation;
a diffuser for integrating both diffuse and direct irradiance entering said first and second photodetectors;
a short wavelength blocking filter preventing UV-B radiation from entering said second photodetector amplifier circuit;
a horizontally mounted opaque plate having a centrally located pinhole passing therethrough;
a position sensitive detector circuit centrally located beneath said pinhole responsive to a point of sunlight focused through said pinhole onto a horizontal photosensitive surface for producing output currents proportional to the position coordinates of said point of light on said surface;
means for selectively adjusting said ozone meter to obtain horizontal alignment of said opaque plate and said position sensitive detector circuit;
a microprocessor for a) sampling values from said first and second output signals and creating a quotient by dividing said first UV-B signal by said second visible band signal; and b) sampling position coordinate values from said position sensitive detector circuit and calculating the corresponding solar zenith angle;
at least one algorithm stored in said microprocessor for determining total column ozone as a function of said quotient and the calculated solar zenith angle;
means for applying said at least one algorithm to said quotient and solar zenith angle to determine the magnitude of said total column ozone; and
a display for reporting said total column ozone.

5,391,884
BARIUM GADOLINATE PHOSPHOR ACTIVATED BY TERBIUM AND/OR SAMARIUM
Kurt D. Sieber, Rochester; Lisa B. Todd, Livonia, and Byron R. Sever, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 24, 1993, Ser. No. 65,268
Int. Cl.[6] C09K *11/78*
U.S. Cl. 250—484.2 25 Claims



1. A phosphor capable of absorbing X-radiation and emitting longer wavelength radiation comprised of an activated ternary gadolinate host consisting essentially of oxygen and combined elements satisfying the relationship

$$BaGd_2{:}xLn$$

wherein
Ln represents at least one of terbium or samarium activator and x is an amount sufficient to produce a phosphor exhibiting a higher luminescence intensity than said phosphor absent the Ln activator when, after first being exposed to X-radiation, said phosphor is stimulated by light of a wavelength ranging from 600 to 1200 nm.

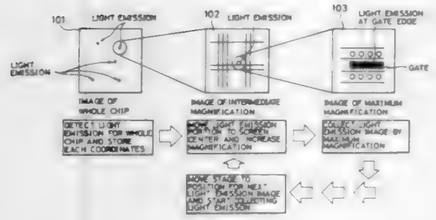
5,391,885
METHOD OF DETECTING AND ANALYZING DEFECTIVE PORTION OF SEMICONDUCTOR ELEMENT AND APPARATUS FOR DETECTING AND ANALYZING THE SAME
Tomoo Imataki, Kita-Katsuragi, and Mamoru Suzuki, Yamato-Koriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 10, 1992, Ser. No. 866,044
Claims priority, application Japan, Apr. 26, 1991, 3-097717
Int. Cl.[6] G01N *21/66*
U.S. Cl. 250—492.2 15 Claims

1. A method of detecting a defective portion of a semiconductor element, comprising the steps of:
setting a semiconductor element on a stage of an emission microscope;
setting a magnification of said emission microscope low and observing a surface of said semiconductor element by said emission microscope while an electric power is supplied to said semiconductor element;
storing a positional information of at least one light emission portion of said semiconductor element observed by said emission microscope;

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moving said stage on the basis of said stored positional information so that one light emission portion is moved to a view center of said emission microscope;

increasing said magnification and collecting a light emission image of said one light emission portion by said emission microscope, said magnification being gradually increased



to such a value as to collect said light emission image with a desirable scale; and

moving said stage on the basis of said stored positional information so that another light emission portion is moved to said view center so as to collect a light emission image of said another light emission portion by said emission microscope.

5,391,886

CHARGED PARTICLE BEAM EXPOSURE SYSTEM AND METHOD OF EXPOSING A PATTERN ON AN OBJECT BY SUCH A CHARGED PARTICLE BEAM EXPOSURE SYSTEM

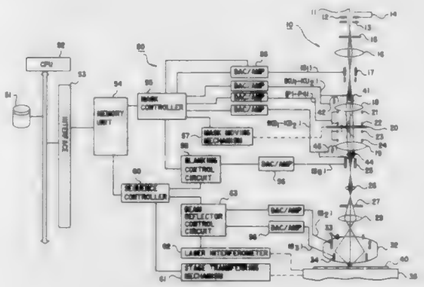
Akio Yamada; Yoshihisa Oae; Satoru Yamazaki; Tomohiko Abe; Katsuhiko Kobayashi; Kiichi Sakamoto, and Junko Hatta, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 897,050, Jun. 11, 1992, Pat. No. 5,304,811. This application Oct. 5, 1993, Ser. No. 131,670

Claims priority, application Japan, Aug. 9, 1991, 3-200479; Nov. 6, 1991, 3-290232; Oct. 7, 1992, 4-268815; Feb. 12, 1993, 5-024224; Jul. 26, 1993, 5-183992

Int. Cl.[6] H01J *37/00*

U.S. Cl. 250—492.22 **18 Claims**



1. A method for exposing a pattern on an object by means of a focused charged particle beam, comprising the steps of:

forming a charged particle beam in a beam source such that said charged particle beam travels toward said object along an optical axis;

focusing said charged particle beam upon said object;

shaping said charged particle beam in a region between said beam source and said object to form a shaped charged particle beam, said step of shaping comprising a step of deflecting said charged particle beam away from said optical axis by energizing deflection means that includes a plurality of deflectors, such that said charged particle beam passes one of a plurality of apertures provided on a beam shaping mask;

deflecting back said shaped charged particle beam again upon said optical axis;

radiating said shaped charged particle beam along said optical axis upon a shielding plate that is formed with a pinhole having a size generally corresponding to a diameter of said charged particle beam, said shielding plate being provided on said optical axis at a location between said beam shaping mask and said object; and

selectively causing a turning off of said charged particle beam on said object by selectively deflecting said charged particle beam that has been radiated upon said shielding plate, away from said pinhole, said plurality of deflectors including first through fourth deflectors wherein said first and second deflectors are disposed at a side close to said beam source with respect to said beam shaping mask and such that said third and fourth deflectors are disposed at a side close to said object;

said method further comprising the steps of:

(a-1) energizing said first deflector forming said deflection means to cause a deflection of said charged particle beam to a plurality of calibration points that are located offset from said optical axis; and energizing, in each of said calibration points, the remaining deflectors forming said deflection means;

(a-2) detecting an intensity of said charged particle beam arriving at said object while energizing said remaining deflectors in said step (a-1), for each of said calibration points; and obtaining optimized energization of said remaining deflectors by optimizing energization of said remaining deflectors such that the charged particle beam, deflected in said step (a-1) and arriving at said object after passing through said pinhole, has a maximum intensity;

(a-3) obtaining a relativistic correction function that describes said optimized energization of said remaining deflectors obtained in said step (a-2) as a function of the energization of said first deflector;

(a-4) energizing said first deflector to cause a deflection of said charged particle beam such that said charged particle beam passes a selected aperture on said beam shaping mask; energizing said remaining deflectors according to said relativistic correction function, simultaneously to said first deflector that is deflecting said charged particle beam to said selected aperture; and obtaining optimized energization of said first deflector such that said charged particle beam, arriving at said object after passing through said pinhole, has a maximum intensity;

(a-5) obtaining an absolute correction function that describes said optimized energization of said first deflector obtained in said step (a-4), as a function of a position of said selected aperture on said beam shaping mask; and

(b) deflecting said charged particle beam by energizing said first deflector according to said absolute correction function and said remaining deflectors according to said relativistic correction function, based upon energization of said first deflector, such that said electron beam hits said selected aperture on said beam shaping mask;

said step (a-2) further comprising the steps of:

(a-2-1) obtaining optimized energization of said second deflector with respect to energization of said first deflector by energizing said first and second deflectors simultaneously, such that said charged particle beam arriving at said object has a maximum intensity; and

(a-2-2) obtaining optimized energization of said third deflector with respect to the energization of said fourth deflector by energizing said third and fourth deflectors simultaneously, such that said charged particle beam arriving at said object has a maximum intensity.

5,391,887

METHOD AND APPARATUS FOR THE MANAGEMENT OF HAZARDOUS WASTE MATERIAL

Holt Murray, Jr., Hopewell, N.J., assignor to Trustees of Princeton University, Princeton, N.J. and British Technology Group USA, Gulph Mills, Pa.

Filed Feb. 10, 1993, Ser. No. 16,990

Int. Cl.[6] G21F *5/00*

U.S. Cl. 250—506.1 **51 Claims**



1. A container system for storing hazardous waste material, comprising:

a cylindrical body consisting of precipitation hardenable material, said body having an open top and a closed bottom;

a lid consisting of precipitation hardenable material;

a channel for receiving weld filler material having a precipitation hardening temperature lower than the temperature where significant aging kinetics are triggered in the material of said body and said lid, said channel being formed between said lid and said body with said lid secured to the top portion of said body, thereby sealing off said container, said channel being circumferential about said container for receiving said weld filler material.

5,391,888

Patent Not Issued For This Number

5,391,889

OPTICAL CHARACTER READING APPARATUS WHICH CAN REDUCE READING ERRORS AS REGARDS A CHARACTER IMAGE IF THE CHARACTER IMAGE IS IN CONTACT WITH AN UNNECESSARY IMAGE.

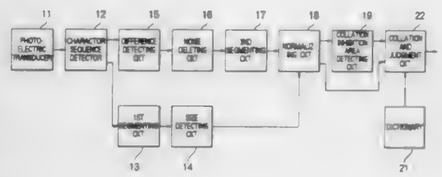
Yasuo Nishijima, and Takeshi Bashomatsu, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Aug. 2, 1993, Ser. No. 100,754

Claims priority, application Japan, Aug. 5, 1992, 4-208664

Int. Cl.[6] G06K *7/10*

U.S. Cl. 250—555 **6 Claims**



1. An optical character reading apparatus for optically reading a character image to produce a character signal representative of said character image, said apparatus including character detecting means for detecting said character image to produce a detected image, image processing means for processing said detected image into a processed image, memory means for memorizing a plurality of predetermined reference images, and comparison carrying out means for carrying out predetermined comparison between said processed image and each of said predetermined reference images to produce said character signal, wherein said image processing means comprises:

reference signal producing means for producing a reference signal;

deleting means connected to said character detecting means for partially deleting said detected image to produce a partially deleted image; and

modifying means connected to said reference signal producing, said deleting, and said comparison carrying out means for modifying said partially deleted image into a modified image by the use of said reference signal to supply said modified image as said processed image to said comparison carrying out means.

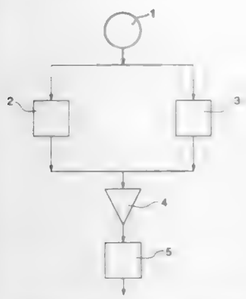
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5,391,890

METHOD OF SENSING VARIATIONS IN A CONSISTENCY OF A FABRIC AND AN APPARATUS FOR CARRYING OUT SUCH METHOD

Pier L. Migliorini, Terranuova Bracciolini, Italy, assignor to Solis S.R.L., Florence, Italy

Filed Apr. 6, 1993, Ser. No. 43,829
Claims priority, application Italy, Apr. 10, 1992, FI92A88
Int. Cl.[6] G01N *21/32*
U.S. Cl. 250—559 **4 Claims**



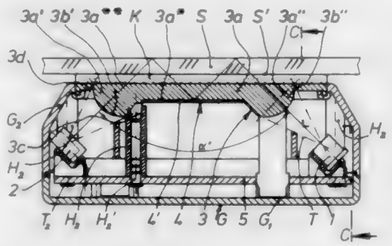
1. A device for sensing variations in a consistency of a fabric, the device comprising:
optical reflecting sensor means for generating a signal proportional to the consistency of the fabric;
means for dividing said signal into a first part and a second part;
means for averaging and delaying said first part of said signal;
differential amplifying means for amplifying a difference between said second part of said signal and said first part of said signal from said means for averaging and delaying;
comparing means for comparing said amplified difference from said differential amplifier with a predetermined value and for generating an output signal when said amplified difference is greater than said predetermined value to indicate a variation in the consistency of the fabric;
a first resistor is connected between an output of said optical reflecting sensor means and ground;
a second resistor is connected between said output of said optical reflecting sensor means and an input of said means for averaging and delaying;
a third resistor is connected between said second resistor and a plus terminal of an operational amplifier of said means a plus terminal of an operational amplifier of said means for averaging and delaying;
a fourth resistor is connected between a voltage source and a minus terminal of said operational amplifier of said means for averaging and delaying;
a fifth resistor is connected between ground and said minus terminal of said operational amplifier of said means for averaging and delaying;
a sixth resistor is connected between said minus terminal and an output terminal of said operational amplifier of said means for averaging and delaying;
a seventh resistor is connected between said output terminal of said operational amplifier of said means for averaging and delaying and a plus terminal of an operational amplifier of said differential amplifier means;
an eighth resistor is connected between ground and said plus terminal of said operational amplifier of said differential amplifier means;
a ninth resistor is connected between said minus terminal and an output terminal of said operational amplifier of said differential amplifier means;
a tenth resistor is connected between said output terminal of said operational amplifier of said differential amplifier means and a plus terminal of an operational amplifier of said comparing means;
an eleventh resistor is connected between said plus terminal and an output terminal of said operational amplifier of said comparing means;
a twelfth resistor is connected at one end to said output terminal of said operational amplifier of said comparing means;
a thirteenth resistor is connected between a voltage source and a minus terminal of said operational amplifier of said comparing means;
a fourteenth resistor is connected between ground and said minus terminal of said operational amplifier of said comparing means;
an operational amplifier buffer receives said second part of said signal from said optical reflecting sensor;
a fifteenth resistor is connected between an output terminal of an operational amplifier of said operational amplifier buffer and said minus terminal of said operational amplifier of said differential amplifier means;
a sixteenth resistor is connected between said output of said optical reflecting sensor means and an input of said operational amplifier buffer;
an seventeenth resistor is connected between a minus terminal and said output terminal of said operational amplifier of said operational amplifier buffer;
an eighteenth resistor is connected between a voltage source and a minus terminal of said operational amplifier of said operational amplifier buffer;
a nineteenth resistor is connected between ground and said minus terminal of said operational amplifier of said operational amplifier buffer;
a first capacitor is connected between ground and said plus terminal of said operational amplifier of said means for averaging and delaying;
a second capacitor is connected between said input of said means for averaging and delaying and said output terminal of said operational amplifier of said means for averaging and delaying;
a third capacitor is connected between said plus terminal and said output terminal of said operational amplifier of said differential amplifier means.

5,391,891

MOISTURE SENSING DEVICE

Gerhard Wiegleb, Neuarnspach; Norbert Bendicks, Hemer, and Berthold Esders, Schalksm, all of Germany, assignors to Leopold Kostal GmbH & Co. KG, Ludenscheid, Germany

Continuation-in-part of Ser. No. 661,556, Feb. 26, 1991, abandoned. This application Nov. 24, 1992, Ser. No. 980,748
Claims priority, application Germany, Feb. 28, 1990, 4006174
Int. Cl.[6] G01N *15/06*
U.S. Cl. 250—574 **20 Claims**



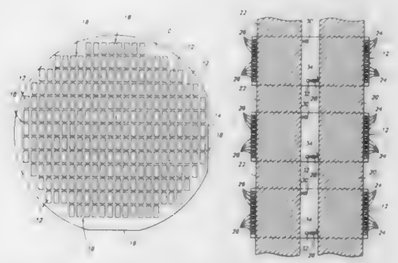
1. A sensor device for detecting the amount of moisture on a transparent screen, comprising:
at least one light conducting element;
means for affixing the at least one light conducting element to the screen on the side thereof which is not exposed to the moisture, each of said at least one light conducting elements having associated therewith
at least one pair of lenses,
a beam emitter, and
a beam receiver, the emitter and receiver being spatially separated from one another in a horizontal plane, each of the at least one pair of lenses comprising a first lens through which an emitted beam passes, the first lens being configured for reducing the dispersion of a divergent beam generated by the beam emitter, and a second lens through which a reflected beam passes, the second lens serving to focus the reflected beam towards the beam receiver; and
a reflective material layer applied directly to said light conducting element, substantially covering the side thereof which is remote from the transparent screen, such coverage and location allowing a wider beam to be effectively used for a given screen thickness, thereby permitting a larger measuring area for detecting the amount of moisture thereon than would be possible if the reflective material layer were applied on a side of the light conducting element which faces the screen;
the emitter and receiver being arranged in such a way that beams issuing from the emitter are reflected from the screen with an intensity which depends on the amount of moisture thereupon and are then reflected between reflective material layer and the screen before passing through an associated second lens to the beam receiver,
said beam receiver issuing a signal which is in inverse proportion to the amount of moisture on said screen.

5,391,892

SEMICONDUCTOR WAFERS HAVING TEST CIRCUITRY FOR INDIVIDUAL DIES

Kevin M. Devereaux; Mark Bunn, and Brian Higgins, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 832,785, Feb. 7, 1992, Pat. No. 5,279,975. This application Oct. 8, 1993, Ser. No. 134,264
Int. Cl.[6] H01L *21/66, 21/60*
U.S. Cl. 257—48 **11 Claims**



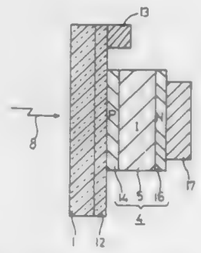
1. A semiconductor wafer comprising:
a plurality of individual dies containing integrated circuits which are substantially isolated from each other;
areas of distinct scribe line area which are separate from the individual dies, the wafer being severable along the scribe lines to physically singulate the dies;
test cycling circuitry for test cycling the individual dies;
a passivation layer;
Vcc and Vss pads associated with the individual dies;
electrical contacts extending through the passivation layer to the Vcc and Vss pads;
a Vcc bus provided atop the passivation layer and atop the dies which electrically connects with a plurality of the Vcc pads and the test cycling circuitry;
a Vss bus provided atop the passivation layer and atop the dies which electrically connects with a plurality of the Vss pads; and
the Vcc And Vss busses each including respective straight-line portions extending fully between individual die circuitry areas, each straight-line portion overlying a plurality of the individual die circuitry areas.

5,391,893

NONSINGLE CRYSTAL SEMICONDUCTOR AND A SEMICONDUCTOR DEVICE USING SUCH SEMICONDUCTOR

Shunpei Yamazaki, Tokyo, Japan; assignor to Semicoductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 860,441, May 7, 1986, Pat. No. 5,043,772, which is a continuation-in-part of Ser. No. 800,694, Nov. 22, 1985, Pat. No. 4,690,717. This application May 1, 1991, Ser. No. 694,406
Claims priority, application Japan, May 7, 1985, 60-96391; May 7, 1985, 60-96392
The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.
Int. Cl.[6] H01L *29/78, 29/04*
U.S. Cl. 257—52 **19 Claims**



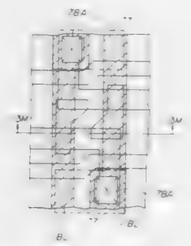
1. A non-single-crystalline semiconductor material comprising silicon of an intrinsic or substantially intrinsic conductivity type, wherein said semiconductor material is added with either or both of a halogen and hydrogen as a dangling bond neutralizer and wherein said material contains/sodium in a concentration of 5×10^{18} atoms/cm^3 or less.

5,391,894

STATIC RANDOM ACCESS MEMORY DEVICE HAVING THIN FILM TRANSISTOR LOADS

Kazuo Itabashi, and Taiji Ema, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 844,223, Mar. 2, 1992, abandoned. This application Jul. 13, 1993, Ser. No. 90,640
Claims priority, application Japan, Mar. 1, 1991, 3-078719; Jun. 18, 1991, 3-145940
Int. Cl.[6] H01L *29/04*
U.S. Cl. 257—67 **16 Claims**



1. A semiconductor memory device comprising: a semiconductor substrate;
a memory cell formed on said semiconductor substrate and including first and second transfer transistors, first and

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second driver transistors and first and second thin film transistor loads; and

first and second word lines extending generally parallel to each other along a predetermined direction and respectively coupled to gate electrodes of the first and second transfer transistors,

each of said first and second thin film transistor loads including first and second impurity regions which sandwich a channel region formed by a semiconductor layer provided on said semiconductor substrate, and a gate electrode formed by conductor layers which sandwich said channel region and being isolated from the channel region,

said first driver transistor including a drain which is coupled to one of the impurity regions of said first thin film transistor load and to a gate electrode of said second driver transistor via a first connection region,

said second driver transistor including a drain which is coupled to one of the impurity regions of said second thin film transistor load and to a gate electrode of said first driver transistor via a second connection region,

said first and second connection regions being independently provided and having the same structure, and

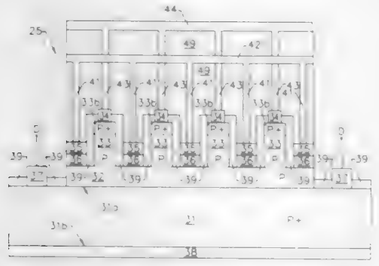
said gate electrode of said first driver transistor and said gate electrode of said second driver transistor extending generally perpendicular to said first and second word lines.

5,391,895

DOUBLE DIAMOND MESA VERTICAL FIELD EFFECT TRANSISTOR

David L. Dreifus, Cary, N.C., assignor to Kobe Steel USA, Inc., Research Triangle Park, N.C.

Filed Sep. 21, 1992, Ser. No. 948,505
Int. Cl.[6] H01L *49/00, 29/80, 29/06*
U.S. Cl. 257—77 **78 Claims**



1. A vertical field effect transistor comprising:

a diamond layer having a face;

a first diamond mesa on said face of said diamond layer;

a second diamond mesa on said first diamond mesa opposite said face of said diamond layer;

a source contact on said second diamond mesa opposite said first diamond mesa;

a drain contact on said face of said diamond layer, said source and drain contacts defining a vertical channel for carrier conduction through said first diamond mesa; and

a gate on said first diamond mesa, opposite said face of said diamond layer;

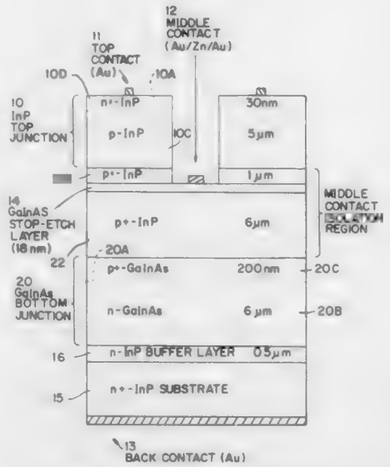
wherein said diamond layer comprises a heavily doped diamond layer of predetermined conductivity type, wherein said first diamond mesa comprises a lightly doped first diamond mesa of said predetermined conductivity type and forms said vertical channel, and wherein said second diamond mesa includes a heavily doped region of said predetermined conductivity type.

5,391,896

MONOLITHIC MULTI-COLOR LIGHT EMISSION/DETECTION DEVICE

Mark W. Wanlass, Golden, Colo., assignor to Midwest Research Institute, Kansas City, Mo.

Filed Sep. 2, 1992, Ser. No. 939,003
Int. Cl.[6] H01L *31/12, 31/16*
U.S. Cl. 257—80 **2 Claims**



1. A monolithic multi-color optical transceiver device comprising:

(a) a single-crystal substrate having upper and lower surfaces;

(b) a first junction comprising:

(1) a first base layer on said upper surface of said substrate; said first base layer comprising GaInAsP lattice-matched to InP;

(2) a first emitter layer over said first base layer; wherein said first emitter layer comprises GaInAsP lattice-matched to InP;

(c) a passivating layer over said first junction; wherein said passivating layer has a band gap energy greater than that of said first emitter layer;

(d) a stop-etch layer over said passivating layer, wherein said stop-etch layer comprises GaInAs:

(e) a second junction comprising:

(1) a second base layer on said passivating layer; wherein said second base layer comprises GaInAsP lattice-matched to InP; wherein the band gap energy of said second base layer is greater than that of said first base layer; wherein said second base layer is of a conductivity type which is the same as that of said first emitter layer;

(2) a second emitter layer over said second base layer; wherein said second emitter layer comprises GaInAsP lattice-matched to InP;

(f) low resistance ohmic electrical contacts in electrical communication with each of said first and second base layers;

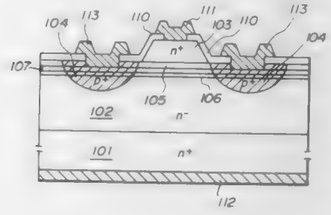
(g) at least one additional junction over said second junction; wherein each said additional junction includes a base layer and an emitter layer; wherein said base layer of each said additional junction has a band gap energy greater than the next lower base layer; and wherein the base layer of each said additional junction is of a conductivity type which is the same as that of the adjacent emitter layer.

5,391,897

STATUS INDUCTION SEMICONDUCTOR DEVICE

Kenichi Nonaka, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1993, Ser. No. 122,103
Claims priority, application Japan, Sep. 16, 1992, 4-272306
Int. Cl.[6] H01L *29/80*
U.S. Cl. 257—136 **12 Claims**



1. A static induction semiconductor device comprising:

a first low-resistance layer of a first semiconductor crystal having a first conductivity type, said first low-resistance layer serving as a drain region;

a high-resistance layer of the first semiconductor crystal having the first conductivity type, said high-resistance layer being disposed on said first low-resistance layer;

a second low-resistance layer of the first semiconductor crystal having the first conductivity type, said second low-resistance layer being spaced from said high-resistance layer, said second low-resistance layer serving as a source region;

a third low-resistance layer of the first semiconductor crystal having a second conductivity type, said third low-resistance layer being disposed in said high-resistance layer in surrounding relationship to said source region and serving as a gate region;

a protective layer disposed on a surface of said gate region and a surface of said source region; and

a hetero layer of a second semiconductor crystal having the first conductivity type, said hetero layer being disposed in an interface between said high-resistance layer and said source region and an interface between said gate region and said protective layer, said hetero layer having a band gap larger than said first semiconductor crystal.

5,391,898

INSULATED GATE BIPOLAR TRANSISTOR HAVING HIGH SHORT-CIRCUIT AND LATCH-UP WITHSTANDABILITY

Hiroyasu Hagino, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 648,973, Jan. 31, 1991, abandoned, which is a division of Ser. No. 401,827, Sep. 1, 1989, Pat. No. 5,023,691. This application Aug. 10, 1992, Ser. No. 926,378
Claims priority, application Japan, May 26, 1989, 1-133202
The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.
Int. Cl.[6] H01L *29/74, 31/111, 23/58, 29/76*
U.S. Cl. 257—139 **6 Claims**

1. An insulated gate bipolar transistor, fabricated by a method comprising the steps of:

preparing a first conductivity type first semiconductor layer having first and second major surfaces;

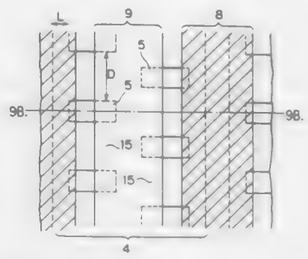
forming a second conductivity type second semiconductor layer on said first major surface of said first semiconductor layer;

forming a first conductivity type first semiconductor region selectively in a surface of said second semiconductor layer;

forming a plurality of second conductivity type second semiconductor regions selectively in a surface of said first semiconductor region,

a portion of said first semiconductor region, in a peripheral portion of said first semiconductor region, near a portion of the surface of said first semiconductor region between ends of surfaces of said first and second semiconductor regions being defined as a channel region,

a distance D between two of said second semiconductor regions formed in a direction perpendicular to a channel length direction and the length L of said channel region which is defined as a distance between the ends of the



surfaces of said first and second semiconductor regions satisfying $D>2L$;

forming an insulation film on said channel region;

forming a control electrode on said insulation film;

forming a first main electrode on said first and second semiconductor regions; and

forming a second main electrode on said second major surface of said first semiconductor layer;

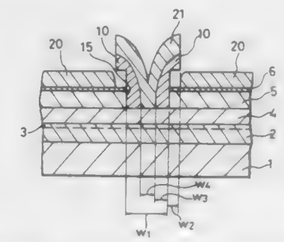
wherein a value E_c per unit area of a calorific energy of said insulated gate bipolar transistor satisfies $E_c<5$ Joules/cm^2.

5,391,899

COMPOUND SEMICONDUCTOR DEVICE WITH A PARTICULAR GATE STRUCTURE

Yasutaka Kohno, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 933,238, Aug. 21, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 164,998
Claims priority, application Japan, Oct. 29, 1991, 3-313739
Int. Cl.[6] H01L *29/78, 29/784, 29/812*
U.S. Cl. 257—192 **4 Claims**



1. A compound semiconductor device comprising:

a semi-insulating compound semiconductor substrate;

a plurality of epitaxial compound semiconductor layers successively disposed on said substrate including an InGaAs layer as the compound semiconductor layer furthest from said substrate;

a groove penetrating through said InGaAs layer and into at least one other of said compound semiconductor layers forming side surfaces on some of said compound semiconductor layers;

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an insulating film disposed on the side surfaces and on part of one of said compound semiconductor layers within the groove, leaving part of the compound semiconductor layer in the groove exposed, said insulating film having opposed internal surfaces generally within the groove and end parts extending beyond the groove generally parallel to and spaced from said compound semiconductor layers;

a gate electrode disposed in the groove, on the internal surfaces of said insulating film, and directly contacting and forming a Schottky barrier with said compound semiconductor layer exposed in the groove; and

source and drain electrodes disposed on said InGaAs layer at opposite sides of the groove respectively self-aligned with the end parts of the insulating film.

5,391,900

INTEGRATED CIRCUIT HAVING POWER TRUNK LINE AND METHOD FOR LAYOUT OF POWER TRUNK LINE

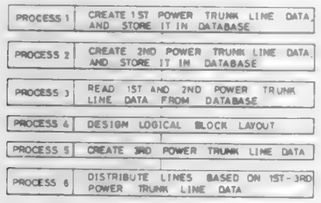
Yuichi Onodera; Toshihiro Okabe; Yasuhiro Matsuura, and Munehiro Sasakawa, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Computer Electronics Co., Ltd., Hadano, both of Japan

Continuation of Ser. No. 647,488, Jan. 29, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 994,056

Claims priority, application Japan, Jan. 30, 1990, 2-20123

Int. Cl.[6] H01L *27/02, 27/10*

U.S. Cl. 257—207 **15 Claims**



1. A layout method for arranging, on a semiconductor chip, power trunk lines for supplying electric power from a power supply point on the semiconductor chip to a logical function portion having a plurality of blocks for performing logical operations, said method comprising steps of:

(a) separating said power trunk lines into

a second-power trunk line disposed along at least a portion outside an area in which said plurality of blocks of said logical function portion are arranged,

a first power trunk line supplying electric power from said power supply point to said second power trunk line, and

a third power trunk line connected to said second power trunk line supplying electric power to said logical function portion:

(b) determining a layout of said first and second power trunk lines;

(c) determining a layout of the plurality of blocks of said logical function portion; and

(d) determining a layout of said third power trunk line based on said determined layout of said second power trunk line and the determined layout of the plurality of blocks of said logical function portion.

5,391,901

SEMICONDUCTOR MEMORY WITH OBLIQUE FOLDED BIT-LINE ARRANGEMENT

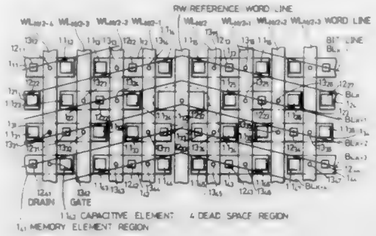
Nobuhiro Tanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 139,718

Claims priority, application Japan, Oct. 30, 1992, 4-316612

Int. Cl.[6] H01L *27/10, 23/48*

U.S. Cl. 257—296 **6 Claims**



1. A semiconductor memory comprising:

a plurality of word lines extending linearly, arranged parallel to each other, and spaced at a first predetermined interval, one of the plurality of word lines being allocated as a reference word line,

a matrix of a plurality of memory elements with arrays of the memory elements aligned in a first direction perpendicular to the word lines and also aligned in a second direction slanted with respect to the direction of the reference word line, any two successive memory elements aligned in the second direction being shifted by a prescribed distance from each other in the first direction so that memory elements on both sides of the reference word line are arranged symmetrically with respect to the reference word line, a memory element being generally a pair of identical memory cells symmetrically formed with respect to a common diffusion-layer electrode with gates individually connected to two neighboring word lines, and

a plurality of bit lines bent at the reference word line and extending linearly across a word line on both sides of the reference word line in a direction slanted relative to the first direction and symmetrical with respect to the reference word line, and arranged parallel to each other at a second predetermined interval, wherein each pair of bit lines spaced at a regular interval are two sections of one folded bit line, the folded bit line being selectively connected to common diffusion-layer electrodes of the memory elements, any two gates of which are not connected to the same word line.

5,391,902

SEMICONDUCTOR DEVICE AND PRODUCTION METHOD THEREOF

Tatsuya Kajita, Inagi, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 524,767, May 17, 1990, abandoned. This application Aug. 24, 1992, Ser. No. 932,728

Claims priority, application Japan, May 20, 1989, 1-127502

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—317 **5 Claims**

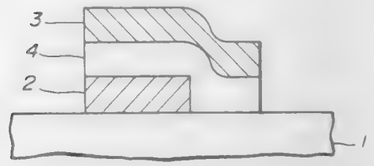
1. A semiconductor device comprising:

a base layer;

a chip region formed on said base layer, said chip region including electrically coupled elements which form part of an electric circuit and interconnection means interconnecting said electrically coupled elements;

a peripheral region which surrounds said chip region on said base layer, said peripheral region being a region other than said chip region and including no elements which form said electric circuit;

a patterned stacked structure formed on said base layer in both said chip region and said peripheral region, said patterned stacked structure including a lower layer which is formed on said base layer, an intermediate layer which is formed on said lower layer and an upper layer formed on said intermediate layer,



said upper layer and said intermediate layer aligned to one side surface of said lower layer in at least a part of said chip region,

said intermediate layer and said upper layer covering another side surface opposite to said one side surface of said lower layer in at least a part of said peripheral region.

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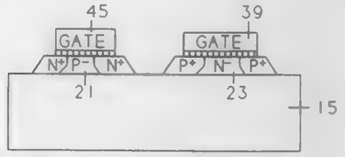
SELECTIVE RECRYSTALLIZATION TO REDUCE P-CHANNEL TRANSISTOR LEAKAGE IN SILICON-ON-SAPPHIRE CMOS RADIATION HARDENED INTEGRATED CIRCUITS

Kurt Strater, Brookside, N.J.; Edward F. Hand, Raleigh, N.C., and William H. Speece, Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 832,694, Feb. 7, 1992. This application Dec. 21, 1993, Ser. No. 171,280

Int. Cl.[6] H01L *27/01, 27/12, 29/04, 29/36*

U.S. Cl. 257—351 **7 Claims**



1. A CMOS integrated circuit device comprising:

an insulating substrate;

a P-channel device formed on a first portion of said insulating substrate, said P-channel device comprising a first, recrystallized N conductivity type silicon well region, that contains a recrystallization-inducing element and has been recrystallized from a highly defective structure, disposed on said first portion of said insulating substrate, said recrystallized N conductivity type silicon well region including P conductivity type source and drain regions formed therein; and

an N-channel device formed on a second portion of said insulating substrate, said N-channel device comprising a highly defective structure crystalline silicon P conductivity type well region disposed on said second portion of said insulating substrate, said highly defective structure crystalline silicon P conductivity type well region having N conductivity type source and drain regions formed therein, and being exclusive of said recrystallization-inducing element.

5,391,904

SEMICONDUCTOR DELAY CIRCUIT DEVICE

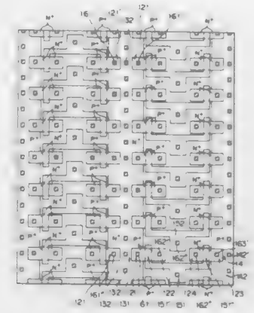
Fumitaka Asami, Kunitachi, and Shinya Udo, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki and Kyushu Fujitsu Electronics Limited, Satsuma, both of Japan

Continuation of Ser. No. 722,353, Jun. 18, 1991, abandoned, which is a continuation of Ser. No. 400,909, Aug. 30, 1989, abandoned. This application Jun. 22, 1993, Ser. No. 80,651

Claims priority, application Japan, Sep. 1, 1988, 63-216387; Sep. 1, 1988, 63-216388; Sep. 1, 1988, 63-216389

Int. Cl.[6] H01L *29/76, 29/94, 31/062, 23/48*

U.S. Cl. 257—369 **19 Claims**



1. A semiconductor integrated circuit device comprising multiple stages of pairs of transistors of the first conduction type, wherein each transistor in each of said pairs of transistors has a separate source region said separate source regions of each of said pairs of transistors receiving a common power supply voltage, said separate source regions of each of said pairs of transistors being arranged adjacent to each other in a channel length direction and facing each other in a channel length direction; and a substrate contact diffusion region having a second conduction type which is opposite to that of said separate source regions, said substrate contact diffusion region extending between said separate source regions of each of said pairs of transistors and between respective separate source regions of said pairs of transistors in adjacent stages, said substrate contact diffusion region extending to separate source regions of said pairs of transistors in adjacent stages and protruding towards channel forming regions of each of said pairs of transistors arranged in multiple stages having separate source regions.

5,391,905

INTEGRATED LOGIC CIRCUIT

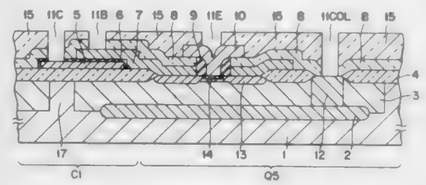
Tohru Yamazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 926,000

Claims priority, application Japan, Aug. 7, 1991, 3-197575

Int. Cl.[6] H01L *27/02*

U.S. Cl. 257—370 **9 Claims**



1. An integrated circuit comprising:

switching transistors for outputting a logic signal responsive

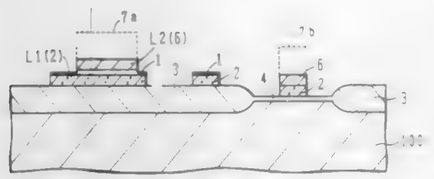
VOL 1171 ISS 3 FE 21 1995 UMI

to an input signal, said switching transistors each having a collector connected to a collector contact electrode,
an output transistor for providing an output signal responsive to said logic signal and operating as an emitter follower,
an active transistor having a base connected to a base contact electrode and serving as an emitter load for said output transistor, and
an active capacitor element for providing said base of said active transistor with a transient current responsive to a transition of said logic signal, said active capacitor element having a first and a second electrodes and a capacitor insulation film disposed between said first and second electrodes,
wherein at least one of said first and second electrodes is formed of a conductive layer in common with one of said collector contact electrode and said base contact electrode.

5,391,906
SEMICONDUCTOR DEVICE PROVIDED WITH CAPACITOR

Kiyoshi Natsume, Shizuoka, Japan, assignor to Yamaha Corporation, Tokyo, Japan

Division of Ser. No. 102,586, Aug. 5, 1993, Pat. No. 5,356,826. This application Jun. 22, 1994, Ser. No. 263,811
Claims priority, application Japan, Aug. 7, 1992, 4-211812
Int. Cl.[6] H01L *27/02, 23/46, 23/48*
U.S. Cl. 257—379 **16 Claims**



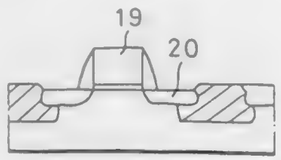
1. A semiconductor integrated circuit comprising:
a thin insulating film and a thick insulating film formed on the surface of a semiconductor substrate;
a gate electrode formed on said thin insulating film, said gate electrode having a laminated structure of a polycrystalline silicon layer and a refractory metal silicide layer;
a capacitor element formed on said thick insulating film, said capacitor element having a laminated structure of said polycrystalline silicon layer, a dielectric film, and said refractory metal silicide layer; and
a resistor element formed on said thick insulating film, said resistor element having a laminated structure of said polycrystalline silicon layer and said dielectric film.

5,391,907
SEMICONDUCTOR DEVICE WITH BURIED INVERSE T-TYPE FIELD REGION

Seong J. Jang, Seoul, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Rep. of Korea

Continuation of Ser. No. 974,978, Nov. 12, 1992, abandoned, which is a division of Ser. No. 856,020, Mar. 23, 1992, Pat. No. 5,182,226. This application Feb. 3, 1994, Ser. No. 193,910
Claims priority, application Rep. of Korea, Apr. 15, 1991, 6019/1991
Int. Cl.[6] H01L *27/02, 27/04, 29/78*
U.S. Cl. 257—396 **2 Claims**

1. A semiconductor device having a nitride field region of the buried inverse T-type comprising:
a semiconductor substrate;
at least one gate electrode having opposite edges formed on the semiconductor substrate;
source and drain regions formed below the opposite edges, respectively, of each gate electrode;
nitride field regions formed adjacent the source and drain regions, wherein a lower part of each field region contacts

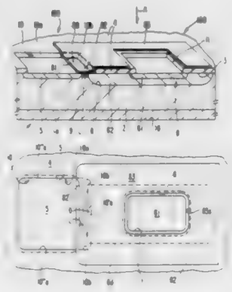


a lower part of the adjacent one of the source and drain regions, and an upper part of each field region contacts a side of the adjacent one of the source and drain regions, such that the lower part of each field region is wider than the upper part of the field region.

5,391,908
LATERAL INSULATED GATE FIELD EFFECT SEMICONDUCTOR

Philip Walker, and David H. Paxman, both of Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 854,188, Mar. 20, 1992, abandoned. This application Oct. 22, 1993, Ser. No. 141,467
Claims priority, application United Kingdom, Mar. 22, 1991, 9106108
Int. Cl.[6] H01L *29/76, 29/94, 31/062, 31/113*
U.S. Cl. 257—409 **8 Claims**



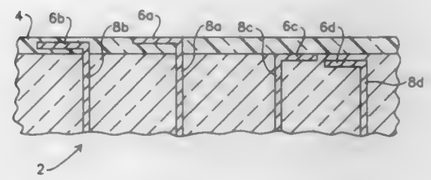
1. A lateral insulated gate field effect semiconductor device, comprising a semiconductor body having a first region of a first conductivity type adjacent one major surface, second and third regions of a second conductivity type opposite to said first conductivity type provided within the first region adjacent the one major surface and an insulated gate structure overlying a conduction channel region between the second and third regions for providing a gateable connection along a length of the conduction channel region between the second and third regions, the insulated gate structure having a gate insulating region and a gate conductive region extending on the gate insulating region and up onto a relatively thick insulating region adjoining the gate insulating region, characterized in that the gate insulating region overlaps with a periphery of a first portion of the third region adjacent the insulated gate structure and, in a channel width direction of the conduction channel region, a portion of the gate conductive region at a corner of a window in said relatively thick insulating region extends from the gate insulating region up onto the relatively thick insulating region only over the first region, and in that the insulated gate structure is provided within said window in the relatively thick insulating region and a width of said first portion of the third region is of smaller width than a width of the

window in the channel width direction of the conduction channel region so that in said channel width direction the third region does not extend beyond the periphery of the window.

5,391,909
DETECTION OF ELECTRON-BEAM SCANNING OF A SUBSTRATE

Faik S. Ozdemir, Thousand Oaks, and Richard B. Cottine, Encinitas, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 13, 1992, Ser. No. 959,833
Int. Cl.[6] G11C *13/00*
U.S. Cl. 257—429 **8 Claims**

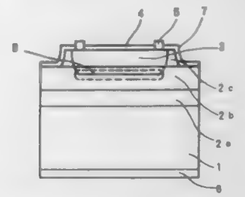


1. An electrical circuit package, comprising:
a substrate with an integrated circuit (IC) thereon,
e-beam scan detecting means comprising at least one conductive member carried by the surface of said substrate for detecting the scanning of the substrate by an electron (e)-beam, said conductive member having a surface for receiving a scanning e-beam, at least one said conductive member being disposed below the surface of said substrate, and
means responsive to the detection of e-beam scanning for indicating that e-beam scanning has occurred.

5,391,910
LIGHT RECEIVING DEVICE

Yasushi Fujimura; Ichiro Tonai, and Hiroshi Okuda, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Dec. 16, 1991, Ser. No. 806,896
Claims priority, application Japan, Dec. 18, 1990, 2-403007
Int. Cl.[6] H01L *27/14, 29/167, 23/48, 29/161*
U.S. Cl. 257—458 **12 Claims**

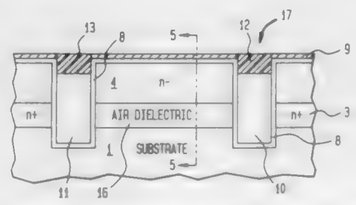


1. A light receiving device comprising:
a semiconductor substrate of a first conductivity type semiconductor, the substrate having a front side and a back side; and
a light detection structure located on the front side of the substrate, the light detection structure including
a light absorbing layer made of a semiconductor of the first conductivity type;
a window layer provided on the light absorbing layer, the window layer having a wider forbidden band than the absorbing layer and being formed of a first conductivity type semiconductor;
a second conductivity type semiconductor region provided in the window layer and extending into the light absorbing layer;
the window layer surrounding the second conductivity type semiconductor region,
a second conductivity type electrode contacting with the second conductivity type semiconductor region; and
a first conductivity type electrode provided on the back side of the first conductivity type substrate;
a device protection film which covers a top surface and a side peripheral portion of the window layer, the device protection film covering over and contacting a top surface of the light absorbing layer, about an outer portion of the window layer.

5,391,911
REACH-THROUGH ISOLATION SILICON-ON-INSULATOR DEVICE

Klaus D. Beyer, Poughkeepsie, and Andrie S. Yapsir, Pleasant Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 37,855, Mar. 29, 1993, Pat. No. 5,306,659. This application Apr. 22, 1994, Ser. No. 231,100
Int. Cl.[6] H01L *21/76, 27/04*
U.S. Cl. 257—522 **8 Claims**



1. A semiconductor chip having isolated islands comprising:
a substrate;
a first heavily doped epitaxial layer on said substrate;
a second lightly doped epitaxial layer on said first layer;
a pair of spaced deep trenches defining one dimension of said islands, said deep trenches extending from the top surface of said second layer, through said first layer and into said substrate, each said deep trench having interior walls comprising sidewalls and a bottom surface, the bottom surface being located within said substrate;
an insulating layer on the interior walls of said deep trenches, said insulating layer extending along the sidewalls of said deep trenches from the top surface of said second layer, through said first layer and into said substrate, said insulating layer further covering the bottom surfaces of said deep trenches; and
a pair of spaced shallow trenches extending fully between said deep trenches and defining a second dimension of said islands, said shallow trenches extending from the top surface of said second layer to said substrate;
said first layer covering said substrate except at the locations of said islands, said deep trenches and said shallow trenches;
said islands being spaced from said substrate by an amount equal to the thickness of said first layer.

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5,391,912

SEMICONDUCTOR DEVICE HAVING POLYCRYSTALLINE SILICON REGION FORMING A LEAD-OUT ELECTRODE REGION AND EXTENDED BENEATH ACTIVE REGION OF TRANSISTOR

Masatada Horiuchi, Koganei, and Kazuo Nakazato, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

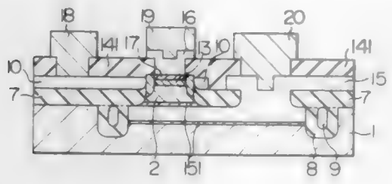
Continuation of Ser. No. 648,309, Jan. 29, 1991, Pat. No. 5,227,660, which is a continuation of Ser. No. 268,738, Nov. 8, 1988, abandoned. This application Oct. 20, 1992, Ser. No. 963,696

Claims priority, application Japan, Nov. 9, 1987, 62-281033; Nov. 20, 1987, 62-292019; Jan. 25, 1988, 63-12518

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

Int. Cl.[6] H01L *29/04, 29/72*

U.S. Cl. 257—588 12 Claims



1. A semiconductor device comprising:
a single crystal semiconductor substrate;
a polycrystalline semiconductor region having a low resistance and disposed to overlie a surface of said semiconductor substrate; and
a single crystal semiconductor region disposed to directly overlie in a stacked relation, perpendicular to the substrate surface, said polycrystalline semiconductor region, said single crystal semiconductor region comprising a first layer of a first conductivity type, a second layer of a second conductivity type and a third layer of said first conductivity type disposed one under another downward from a surface thereof,
wherein the surface of said substrate is a (111) plane.

5,391,913

SEMICONDUCTOR DEVICE

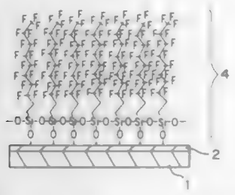
Yoshiko Mino, Settsu; Kazufumi Ogawa, Hirakata, and Norihisa Mino, Settsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 24, 1992, Ser. No. 996,568

Claims priority, application Japan, Dec. 27, 1991, 3-347178

Int. Cl.[6] H01L *29/34*

U.S. Cl. 257—632 18 Claims



1. A solid-state color image sensor, comprising a semiconductor device closely adhered to a color filter and a water- and oil-repellent chemically bonded monomolecular film which has one layer of polysiloxane bonds.

5,391,914

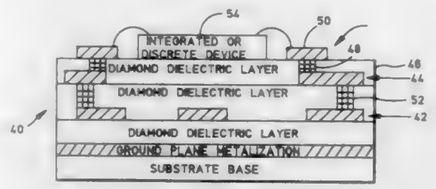
DIAMOND MULTILAYER MULTICHIP MODULE SUBSTRATE

Patrick M. Sullivan, San Diego, and Pat H. Reaves, Escondido, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 16, 1994, Ser. No. 215,799

Int. Cl.[6] H01L *29/34, 39/02*

U.S. Cl. 257—635 18 Claims



11. An apparatus comprising:
a diamond substrate base;
a ground-plane conductive layer disposed on an upper side of said diamond substrate base, said ground-plane conductive layer being compatible with the nucleation and growth of polycrystalline diamond film;
a first polycrystalline diamond dielectric layer disposed on an upper side of said ground-plane conductive layer;
a patterned conductive layer disposed on said first polycrystalline diamond dielectric layer;
a second polycrystalline diamond dielectric layer disposed on an upper side of said first polycrystalline diamond dielectric layer and covering said patterned conductive layer;
conductive bonding pads disposed on an upper surface of said second polycrystalline diamond dielectric layer; and
conductive vias disposed within said second polycrystalline diamond dielectric layer, said conductive vias electrically coupling said patterned conductive layer with at least one of said conductive bonding pads.

5,391,915

INTEGRATED CIRCUIT HAVING REDUCED SOFT ERRORS AND REDUCED PENETRATION OF ALKALI IMPURITIES INTO THE SUBSTRATE

Kiichiro Mukai, Hachioji; Atsushi Saiki, Musashimurayama, and Seiki Harada, Hachioji, all of Japan, assignors to Hatachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 759,003, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 462,882, Jan. 3, 1990, abandoned, which is a continuation of Ser. No. 169,946, Mar. 18, 1988, abandoned, which is a division of Ser. No. 908,782, Sep. 18, 1986, abandoned, which is a continuation-in-part of Ser. No. 750,783, Jul. 1, 1985, abandoned, which is a continuation of Ser. No. 351,665, Feb. 24, 1982, abandoned, which is a continuation of Ser. No. 92,502, Nov. 8, 1979, abandoned. This application Dec. 13, 1993, Ser. No. 165,538

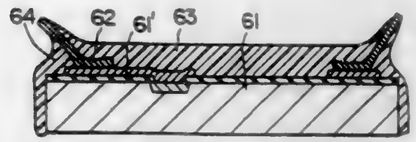
Claims priority, application Japan, Nov. 20, 1978, 53-142375

The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.

Int. Cl.[6] H01L *29/34, 23/02, 23/12*

U.S. Cl. 257—643 7 Claims

1. A monolithic integrated circuit device comprising:
a semiconductor body having at least one memory element formed in an upper surface region thereof;
an insulating organic layer for preventing penetration of alpha particles therethrough provided over at least a region of said body which contains said memory element, said insulating organic layer comprising a resin material selected from the group consisting of a polyimide resin and a polyimide isoindoloquinazolinedione, said insulating organic layer having a thickness sufficient to avoid soft errors in said memory element, said resin material containing alkali impurities; and



an inorganic insulating layer formed between the insulating organic layer and said memory element and being constructed and arranged to prevent the penetration of alkali impurities into said memory element which come from said insulating organic layer.

5,391,916

RESIN SEALED TYPE SEMICONDUCTOR DEVICE

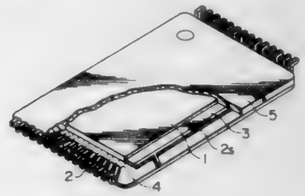
Ryuji Kohno, Ibaraki; Makoto Kitano, Tsuchiura, and Asao Nishimura, Ushiku, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 680,522, Apr. 4, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 75,928

Claims priority, application Japan, Apr. 6, 1990, 2-090332

Int. Cl.[6] H01L *23/48, 29/44*

U.S. Cl. 257—676 40 Claims



1. A resin sealed type semiconductor device, comprising:
a semiconductor element;
a group of leads serving for external electric connection of said semiconductor element;
element suspending members used for determining positions between said semiconductor element and said group of leads, for suspending said semiconductor element via a bonding member;
a sealing resin for sealing at least the said semiconductor element and part of said leads, wherein said element suspending members have respective ends which are present between two planes, each of which includes an upper surface and a lower surface of said semiconductor element respectively, and said group of leads is not present in an area directly underneath said semiconductor element; and
wherein said semiconductor device has a thickness less than 1 mm.

5,391,917

MULTIPROCESSOR MODULE PACKAGING

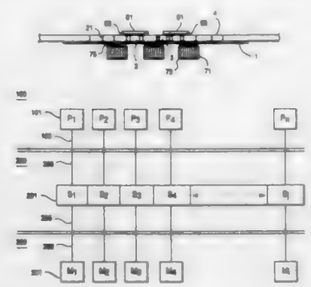
Richard J. Gilmour, Liberty Hill, and Gustav Schrottke, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 10, 1993, Ser. No. 58,892

Int. Cl.[6] H01L *23/525, 23/538*

U.S. Cl. 257—690 2 Claims

1. A functional module for providing processing operations in a computer system, comprising:
a semiconductor substrate having at least one active circuit device with exposed connection points embedded therein;
at least one first circuit device including a central processing unit configured as at least one individual integrated circuit device disposed on a first side of said substrate and interconnected with said at least one embedded circuit device;
at least one second circuit device including at least one memory device disposed on a second side of said substrate, and interconnected to said at least one embedded circuit device and said at least one first circuit device;
a plurality of conductive vias extending through said semiconductor substrate to interconnect said at least one first circuit device and said at least one second circuit device; and



at least one wiring layer flexibly extending from said nodule and including interconnection means for interconnecting said functional module with another functional module and an input/output device, said at least one wiring layer being adjacent said substrate for wiring one of said at least one first circuit device and said at least one second circuit device to said at least one embedded circuit device.

5,391,918

SEMICONDUCTOR DEVICE

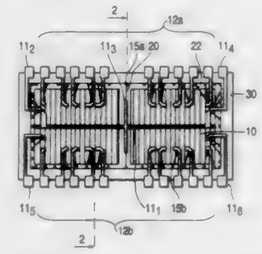
Masaru Koyanagi; Kazuyoshi Muraoka, both of Yokohama, and Minoru Yamada, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 24, 1993, Ser. No. 80,512

Claims priority, application Japan, Jun. 24, 1992, 4-166168

Int. Cl.[6] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—691 12 Claims



1. A lead-on-chip (LOC) structure semiconductor device comprising:
a semiconductor chip having a plurality of bonding pads arranged on the periphery thereof;
a power supply lead extending from an exterior of said semiconductor chip and reaching onto said semiconductor chip by running through a space between two neighboring bonding pads of said bonding pads on at least one side of said semiconductor chip, said power supply lead including a traversing part disposed along one side of said semiconductor chip and fixedly bonded onto the surface of said semiconductor chip;
signal leads extending from the exterior of said semiconductor chip and running through the space between the two

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neighboring bonding pads on at least one side of said semiconductor chip, said signal leads being arranged so that inner ends thereof are positioned on said semiconductor chip without intersecting said power supply lead and fixedly bonded to the surface of said semiconductor chip;

bonding wires for connecting said power supply lead and said signal leads to said bonding pads corresponding thereto without intersecting said power supply lead and said signal leads; and

a resin mold body for resin-sealing said respective elements.

5,391,919

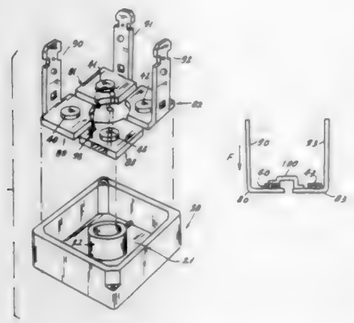
SEMICONDUCTOR POWER MODULE WITH IDENTICAL MOUNTING FRAMES

Aldo Torti, Sancarlo Can, and Emilio Mattiuzzo, Cirie, both of Italy, assignors to International Rectifier Corporation, El Segundo, Calif.

Filed Oct. 22, 1993, Ser. No. 141,402

Int. Cl.[6] H01L *29/91, 25/03, 21/52, 21/60*

U.S. Cl. 257—692 **18 Claims**



1. A semiconductor device module containing a plurality of semiconductor devices, a plurality of respective mounting frames and terminals for each of said semiconductor devices, a rectangular insulation housing for receiving and insulating said semiconductor devices from one another and for positioning said plurality of terminals for external access, a plurality of flexible connector bars for interconnecting said plurality of semiconductor devices and terminals; each of said semiconductor devices comprising a thin flat wafer having terminal electrodes on each surface; each of said mounting frames comprising a thin conductive sheet member having a flat base section and an integral terminal extension extending at a right angle to said base section and from an edge of said base section; each of said mounting frames being identical to one another; each of said base sections receiving an electrode of a respective one of said semiconductor devices on the surface thereof from which its said integral terminal extends; each of said base sections being spaced from one another and being disposed in a common plane and occupying a selected area of a rectangle; each of said flexible connector bars having a first end connected to the top of a respective one of said semiconductor devices and a second end connected to the base of an adjacent base member; said rectangular insulation housing having a generally cup-shaped cross-section; said base section of said mounting frames being disposed toward the bottom of said cup-shaped insulation housing with said terminals extending beyond the open end of said cup-shaped housing; said semiconductor devices and said connection bars being disposed below the top of said cup-shaped housing.

5,391,920

SEMICONDUCTOR DEVICE HAVING PERIPHERAL METAL WIRING

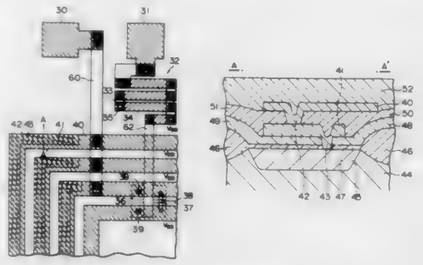
Nobuaki Tsuji, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 8, 1992, Ser. No. 910,624

Claims priority, application Japan, Jul. 9, 1991, 3-168508; Sep. 11, 1991, 3-232016

Int. Cl.[6] H01L *23/485, 29/40*

U.S. Cl. 257—758 **7 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having an active region;

an insulating layer provided on said semiconductor substrate;

a first metal layer provided on said insulating layer and having first predetermined width, wherein said first metal layer has a plurality of first projections toward said active region;

a second metal layer provided above said first metal layer and having second predetermined width, wherein said second metal layer has a plurality of second projections toward said first metal layer, wherein said first and second projections are disposed in said first and second metal layers over a span longer than said first width and said second width and wherein said first and second projections are provided alternately; and

an insulating interlayer provided between said first and second metal layers.

5,391,921

SEMICONDUCTOR DEVICE HAVING MULTI-LEVEL WIRING

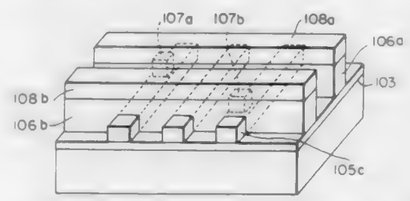
Osamu Kudoh; Kenji Okada; Hiroshi Shiba, and Takuya Katoh, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 511,885, Apr. 20, 1990, abandoned. This application Jun. 29, 1993, Ser. No. 83,322

Claims priority, application Japan, Apr. 21, 1989, 1-102415; Oct. 23, 1989, 1-276828

Int. Cl.[6] H01L *23/48, 29/46, 29/54, 29/62*

U.S. Cl. 257—758 **8 Claims**



1. A semiconductor device having a multilevel wiring structure, comprising a semiconductor substrate, an insulating layer covering said semiconductor substrate, first and second wiring at a lower level selectively formed on said insulating layer

spaced apart from each other, an intermediate insulating film formed to cross each of said first and second wiring and covering only one part of each of said first and second wiring and keeping a remaining part of each of said first and second wiring exposed, said intermediate insulating film not covering a surface portion of said insulating layer between the remaining parts of said first and second wiring exposed, and a third wiring at an upper level formed on said intermediate insulating film along said intermediate insulating film to cross each of said first and second wiring.

5,391,922

SEMICONDUCTOR ELEMENT MODULE

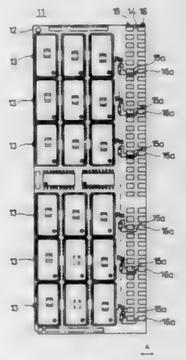
Noriyuki Matsui, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 24, 1994, Ser. No. 265,123

Claims priority, application Japan, Aug. 18, 1993, 5-204036

Int. Cl.[6] H01L *23/48, 29/44, 29/52*

U.S. Cl. 257—773 **8 Claims**



1. A semiconductor element module adapted to be mounted on a main body by insertion in a predetermined direction, said semiconductor element module comprising:

a substrate having first and second surfaces;

one or a plurality of semiconductor elements mounted on at least one of the first and second surfaces of said substrate;

at least a first row of terminals and a second row of terminals provided on at least one of the first and second surfaces of said substrate, said first row of terminals and said second row of terminals being located at different positions along said predetermined direction;

signal lines provided on at least one of the first and second surfaces of said substrate, connecting arbitrary terminals of said semiconductor elements to predetermined ones of said first row of terminals; and

means, coupled to predetermined terminals of at least one of said first row of terminals and said second row of terminals, for adapting signal levels output from said semiconductor element module depending on whether said first row of terminals or said second row of terminals electrically connect to the main body.

5,391,923

TAPE CARRIER INCLUDING LEADS ON BOTH SIDES AND RESIN-ENCAPSULATED SEMICONDUCTOR DEVICE INCORPORATING THE TAPE CARRIER

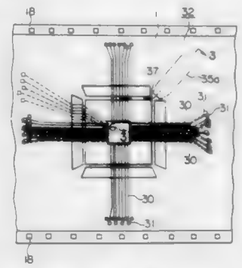
Kouzou Harada, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 135,570

Claims priority, application Japan, Oct. 15, 1992, 4-277443

Int. Cl.[6] H01L *23/28, 23/48, 29/46, 29/62*

U.S. Cl. 257—787 **6 Claims**



1. A tape carrier for resin-molding a semiconductor chip comprising:

an electrically insulating carrier tape having first and second opposed surfaces;

a plurality of leads disposed on each of said first and second surfaces of said carrier tape; and

a surface area on one of said first and second tape surfaces free of leads for mounting a resin injection runner of a mold die directly on said carrier tape.

5,391,924

PLASTIC PACKAGE TYPE SEMICONDUCTOR DEVICE

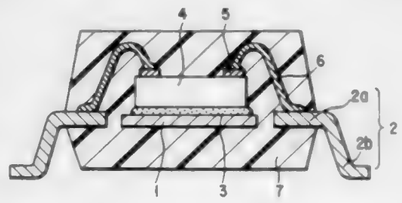
Ken Uchida, Tokyo, and Kiyoaki Suzuki, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 14, 1993, Ser. No. 120,336

Claims priority, application Japan, Sep. 14, 1992, 4-244864

Int. Cl.[6] H01L *23/28*

U.S. Cl. 257—789 **8 Claims**



1. A plastic package type semiconductor device having a semiconductor element encapsulated with an epoxy resin composition, said resin composition containing as indispensable components:

(a) an epoxy resin;

(b) a curing agent;

(c) a curing promotor;

(d) a first inorganic powder having an average diameter of 5 to 40 μm and a smooth outer surface substantially free from edges, ridges and projections; and

(e) a second inorganic powder having an average diameter of 0.1 to 10 μm and a heat conductivity of at least 4.0 W/m·K with the restriction that the average diameter of the second inorganic powder is smaller than the average diameter of the first inorganic powder; and

the mixing amount of the first inorganic powder (d) being 10

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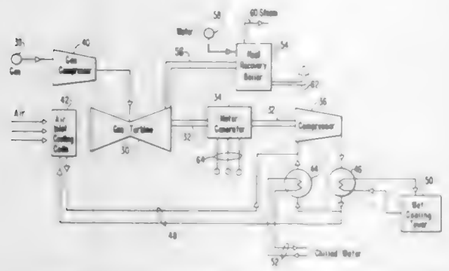
to 50% by volume based on the sum of the first inorganic powder (d) and the second inorganic powder (e).

5,391,925

PRIME MOVER DRIVEN COMPRESSOR/CHILLER WITH MOTOR ON COMMON SHAFT FOR LARGE COOLING SYSTEMS

Thomas Casten, Hartsdale; Goran Mornhed, Croton-on-Hudson, both of N.Y.; Leif Bergquist, Monroe, N.J., and John M. Malahiende, Mamaroneck, N.Y., assignors to Trigen Energy Corporation, White Plains, N.Y.

Filed Sep. 10, 1993, Ser. No. 118,629
Int. Cl.[6] F25B *27/00*; F02C *6/00*
U.S. Cl. 290—1 R **11 Claims**



1. Apparatus for enhancing the efficiency of a large cooling system, comprising:

prime mover means for producing rotary output power at a predetermined, substantially constant, speed at a drive shaft thereof;

compressor means for compressing a gas as a refrigerant and producing cooling for a large cooling system, said compressor means having a drive shaft mechanically coaxially fixedly coupled to said drive shaft of said prime mover means, whereby said rotary output power is transferred to said compressor means to cause said compressor means to operate continuously at said predetermined, substantially constant, speed; and

synchronous electrical motor means electrically connected to an electrical power grid of substantially constant voltage and frequency, said motor means having a drive shaft mechanically coaxially fixedly coupled with said drive shaft of said prime mover means and said drive shaft of said compressor means for operating at said predetermined, substantially constant, speed, whereby when said prime mover means produces rotary power at less than said predetermined speed said motor means draws electrical power from said power grid and causes said compressor means to operate at said predetermined speed and when said prime mover means produces rotary power at more than said predetermined speed said motor means supplies electrical power to said power grid.

5,391,926

WIND TURBINE PARTICULARLY SUITED FOR HIGH-WIND CONDITIONS

Frederick J. Staley, 1403 N. College Ave., #5, and Dillyn M. Elder, 1513 N. College Ave., #18, both of Fort Collins, Colo. 80524

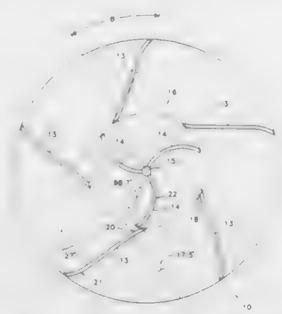
Continuation of Ser. No. 931,872, Aug. 18, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 232,323
Int. Cl.[6] F03D *3/04*
U.S. Cl. 290—55 **41 Claims**

38. A wind turbine comprising:

a. a central vertical shaft;

b. a plurality of vertical rotor blades attached directly to said vertical shaft, wherein said rotor blades are curved, and wherein said blades are responsive to air currents and capable of imparting rotation upon said shaft during periods of sufficient air flow;

c. a plurality of passive vertical stator blades circumferentially arranged about a circle inscribed by the outer edges of said rotor blades, wherein said stator blades are double curved, wherein said stator blades have curved inner and outer surfaces which correspond, and wherein said stator



blades direct air currents toward said rotor blades and simultaneously away from said rotor blades; and

d. an upper horizontal surface mounted above said rotor and stator blades;

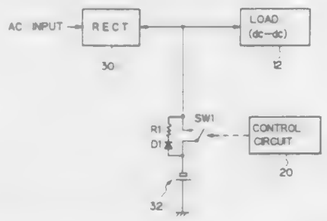
e. a lower horizontal surface mounted below said rotor and stator blades, wherein said upper and said lower surfaces are secured only to said vertical stator blades.

5,391,927

APPARATUS FOR IMPROVING RISE CHARACTERISTICS OF DIRECT CURRENT POWER SUPPLY

Shinzi Kaziwara, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Sep. 10, 1992, Ser. No. 943,399
Claims priority, application Japan, Sep. 13, 1991, 3-234631
Int. Cl.[6] H02J *7/00*
U.S. Cl. 307—66 **4 Claims**



1. An apparatus for improving rise characteristics of a direct current power supply that cannot immediately provide a rated power after starting operating, to thereby supply a load with a direct current having improved rise characteristics, comprising:

a storage battery;

a switch serially connected to said storage battery so that said storage battery is connected to the direct current power supply in parallel while the switch is closed and the direct current power supply to the load is supplemented by said storage battery;

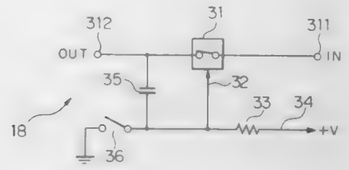
a current limiting circuit connected to the switch in parallel, for limiting an amount and a direction of a current flowing between the direct current power supply and the storage battery so that the load is exclusively supplied by the direct current power supply while the switch is opened.

5,391,928

SWITCHING CIRCUIT HAVING A REDUCED OUTPUT IMPEDANCE

Yutaka Tomiyori, Tokyo, and Hidetoshi Takenaka, Saitama, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 11, 1991, Ser. No. 804,938
Claims priority, application Japan, Dec. 14, 1990, 2-410997
Int. Cl.[6] H01H *3/16*; H04M *1/00*
U.S. Cl. 307—89 **7 Claims**



7. A method of switching an audio circuit of a mobile telephone device, comprising the steps of:

closing a first switch and opening a second switch to supply a speech signal from said audio circuit to a speech transmission line while applying a first level voltage to a control terminal of said first switch to close said first switch through a resistor, said speech transmission line being adjacent to a data line of said device; and

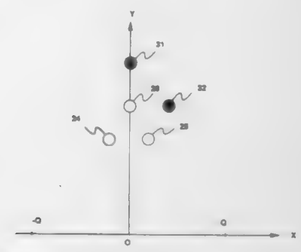
closing said second switch and opening said first switch while applying a second level voltage to said control terminal to open said first switch, to couple said speech transmission line to ground through a capacitor.

5,391,929

ELECTRIC POWER TRANSMISSION SYSTEM AND METHOD OF ASYMMETRIC TRANSMISSION OF POWER TO MITIGATE MAGNETIC FIELDS

Dilhan M. Kalyon, Teaneck; Halit S. Gokturk, Hoboken, and Sudhir B. Railkar, Clifton, all of N.J., assignors to Stevens Institute of Technology, Hoboken, N.J.

Filed May 17, 1993, Ser. No. 62,188
Int. Cl.[6] H02H *7/00*
U.S. Cl. 307—91 **20 Claims**



1. An electric power transmission system comprising

a plurality of sequentially arranged supports disposed along a right of way; and

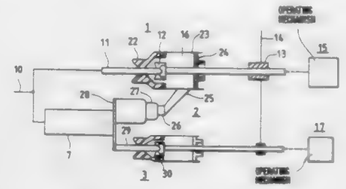
at least two sets of three phase current conductors mounted on and along said supports and disposed longitudinally of said right of way, said conductors of at least one set being disposed in an array asymmetrically of a vertical plane passing through said array and asymmetrically of the other set.

5,391,930

CIRCUIT BREAKER WITH PARALLEL RESISTOR

Youichi Ohshita, Katsuta; Katuichi Kashimura, Takahagi; Akira Hashimoto, Hitachi; Osamu Koyanagi, Hitachi; Yukio Kurosawa, Hitachi, and Isao Nishida, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 26, 1992, Ser. No. 887,937
Claims priority, application Japan, May 23, 1991, 3-146502
Int. Cl.[6] H01H *33/16*
U.S. Cl. 307—98 **8 Claims**



1. A circuit breaker comprising:

a main contact;

a resistance circuit making contact electrically dedicated to circuit making;

a resistance circuit breaking contact electrically dedicated to circuit breaking and being different from said resistance circuit making contact;

a main contact operating mechanism for opening and closing said main contact;

a circuit making operating mechanism for opening and closing said resistance circuit making contact, said circuit making operating mechanism opening said resistance circuit making contact predetermined amounts of time prior to openings of said main contact and said resistance circuit breaking contact during a circuit breaking operation, and closing said resistance circuit making contact predetermined amounts of time prior to closings of said main contact and said resistance circuit breaking contact during a circuit making operation;

a circuit breaking operating mechanism for opening and closing said resistance circuit breaking contact, said circuit breaking operating mechanism opening said resistance circuit breaking contact predetermined amounts of time after openings of said resistance circuit making contact and said main contact during said circuit breaking operation, and closing said resistance circuit breaking contact predetermined amounts of time after a closing of said resistance circuit making contact and said main contact during said circuit making operation; and

a contact making/breaking resistor electrically connected in parallel, and at a first resistor end, with a main contact circuit, and commonly connected at a second resistor end with both said resistance circuit making contact and said resistance circuit breaking contact, such that said contact making/breaking resistor is a contact making resistor for said resistance circuit making contact during said circuit making operation and is a contact breaking resistor for said resistance circuit breaking contact during said circuit breaking operation.

5,391,931

PROTECTION OF INTEGRATED CIRCUIT DEVICES

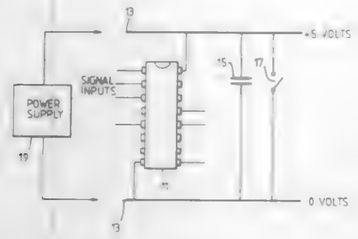
David J. Larner, Lynsted, England, assignor to GEC-Marconi Limited, United Kingdom

Filed Jun. 22, 1992, Ser. No. 901,832
Claims priority, application United Kingdom, Jul. 24, 1991, 9115976
Int. Cl.[6] H03K *19/08*
U.S. Cl. 307—117 **7 Claims**

1. A circuit comprising: at least one integrated circuit device; a pair of power supply lines for said device; a capacitance

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connected across said power supply lines which serves to reduce transients in the power supplied via said lines to said device in normal operation of the circuit; and connected across said capacitance and forming a unit therewith, a switch means whose impedance, when a transient gamma pulse is incident



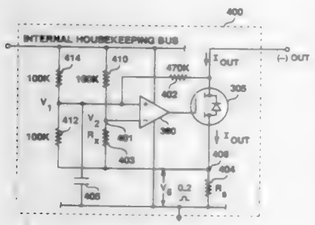
thereon during a nuclear event, is reduced to a low value at a rate such that the energy stored in the capacitance is discharged through the switch means and the voltage applied to the device via the power supply lines is pulled down to such a level and at such a rate as to prevent transient gamma pulse induced latch-up in the device.

5,391,932

SOURCE POWER COUPLER

Kenneth T. Small, Cupertino; G. Michael Hey, Palo Alto, and Donald D. Baumann, San Jose, all of Calif., assignors to Echelon Corporation, Palo Alto, Calif.

Filed Jul. 20, 1993, Ser. No. 94,765
Int. Cl.[6] H04M *11/04*
U.S. Cl. 307—125 **32 Claims**



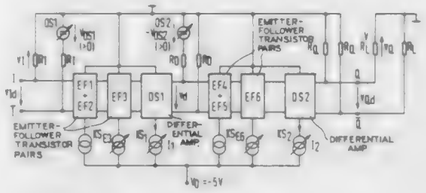
1. A source power coupler for coupling a power source to a first transmission line and a second transmission line, said first and said second transmission lines coupling a first processor to a second processor, wherein power is supplied to said first processor and said second processor by said first and said second transmission lines and data signals are conducted between said first processor and said second processor by said first and said second transmission lines, said source power coupler comprising:
- an operational amplifier having a non-inverting input and an inverting input;
- a transistor having a gate coupled to an output of said operational amplifier, a drain coupled to one of said first and said second transmission lines, and a source coupled to said inverting input of said operational amplifier, wherein a first control loop provides AC impedance between said power source and said one of said transmission lines;
- a capacitor coupling said non-inverting input of said operational amplifier and said power source;
- a resistor coupling said non-inverting input of said operational amplifier and said one of said transmission lines, wherein said capacitor and said resistor provide a second control loop for maintaining an approximately constant DC voltage across said transistor.

5,391,933

DRIVER CIRCUIT FOR GENERATING PULSES

Hans-Martin Rein, Witten, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 9, 1992, Ser. No. 958,703
Claims priority, application Germany, Nov. 25, 1991, 4138661
Int. Cl.[6] H04B *10/04;* **H03F** *3/45;* **H03K** *5/02*
U.S. Cl. 327—108 **9 Claims**



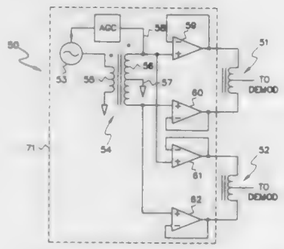
1. An output stage for a driver circuit comprising:
first and second, sequentially connected, limiting differential amplifier stages;
each of said first and second differential amplifier stages having two transistors, each transistor having a turn-on voltage and turn-off voltage, the two transistors in each differential amplifier stage being interconnected to form a differential amplifier transistor pair, and said first and second differential amplifier stages each having two complementary inputs and two complementary outputs;
said first differential amplifier stage, when driven by an input signal, generating a differential signal having a pulse-duty ratio and said second differential amplifier stage being driven by said differential signal to generate an output signal at a first of its two outputs and a complementary output signal at its other output, said first of said two outputs being connectable to a load;
first adjustable offset voltage source means, connected to an input of said first differential amplifier stage, for varying said pulse-duty ratio of said differential signal; and
second adjustable offset voltage source means, connected to an input of said second differential amplifier stage, for decreasing the turn-on voltage of a first of said two transistors in said second differential amplifier stage and for simultaneously increasing the turn-off voltage of said first of said two transistors.

5,391,934

LOAD SENSOR DRIVER APPARATUS

Alan S. Feldman, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 8, 1993, Ser. No. 73,920
Int. Cl.[6] H03K *3/01*
U.S. Cl. 327—110 **28 Claims**



1. A driver apparatus for driving one or more electrical loads, comprising:

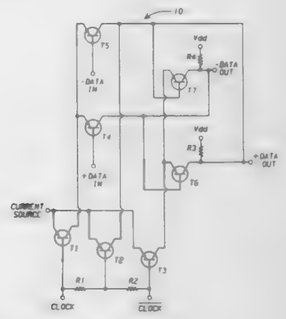
oscillating means for providing an input signal;
an amplifier for amplifying said input signal;
a power transformer having:
- a) a primary winding for receiving said amplified input signal and
- b) at least one secondary winding for providing a drive signal to drive said one or more electrical loads, each of said secondary windings including a center tap to produce a pair of diametrically symmetrical drive signals.

5,391,935

ASSERTIVE LATCHING FLIP-FLOP

John E. Gersbach, Burlington, Vt., and Paul W. Chung, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 22, 1993, Ser. No. 96,102
Int. Cl.[6] H03K *3/29*
U.S. Cl. 327—198 **10 Claims**



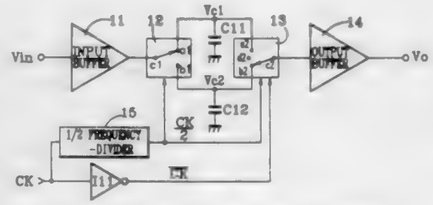
1. A flip-flop circuit, comprising:
a switching portion having at least three inputs and a first data output;
a clock input and a complementary, synchronous inverted clock input coupled to, respectively, first and second at least three inputs of said switching portion;
at least one data input coupled to a third of said at least three inputs of said switching portion, said complementary clock inputs and said at least one data input being switched asynchronously with respect to each other;
a latching portion coupled to said first data output of said switching portion for providing at least a second data output, said latching portion comprising a pair of transistors arranged in cross-coupled configuration such that an input of a first transistor is coupled to said first data output of said switching portion and to an output of a second transistor by a first conductive path and an input of said second transistor is coupled to an output of said first transistor by a second conductive path; and
a third transistor coupled to one of said first or second conductive paths wherein a base of said third transistor is coupled to said clock input by a first resistor and coupled to said inverted clock input by a second resistor, and an emitter of said third transistor is coupled to an external current source, for preventing said first and second data outputs from assuming a metastable state.

5,391,936

WIDE-BAND SAMPLE AND HOLD CIRCUIT

Myung J. Soh, Kyungki-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-Do, Rep. of Korea

Continuation of Ser. No. 776,600, Oct. 11, 1991, abandoned. This application Aug. 17, 1993, Ser. No. 107,465
Claims priority, application Rep. of Korea, Oct. 15, 1990, 16289/1990
Int. Cl.[6] G11C *27/02;* **H03K** *5/159*
U.S. Cl. 327—94 **5 Claims**



1. A wide-band sample and hold circuit comprising:
input buffering means for receiving and buffering an analog input signal and outputting the buffered analog input signal;
frequency dividing means for frequency-dividing a sample and hold clock signal by a predetermined number and outputting the frequency-divided clock signal;
first switching means for switching in turn an output signal from said input buffering means to first and second sample and hold means in accordance with said frequency-divided clock signal from said frequency dividing means;
second Switching means for periodically
- transferring a first sample and hold signal from said first sample and hold means to an output of said second switching means,
- blocking said first sample and hold signal from said output,
- transferring a second sample and hold signal from said second sample and hold means to said output of said second switching means, and
- blocking said second sample and hold signal from said output
- in accordance with said frequency-divided clock signal and sample said sample and hold clock signal; and

output buffering means for buffering an output signal from said output of said second switching means and outputting the buffered signal as an output signal of said sample and hold circuit.

5,391,937

LOW POWER DISSIPATION AUTOZEROED COMPARATOR CIRCUIT

Barbara Baggini, and Giuseppe Palmisano, both of Pavia, Italy, assignors to Italtel Societa Italiana Telecommunicazioni SPA, Milan, Italy

PCT No. PCT/EP91/00920, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992, PCT Pub. No. WO91/19355, PCT Pub. Date Dec. 12, 1991
PCT Filed May 16, 1991, Ser. No. 952,876
Claims priority, application Italy, May 30, 1990, 20485 A/90
Int. Cl.[6] H03K *5/24*
U.S. Cl. 327—78 **36 Claims**

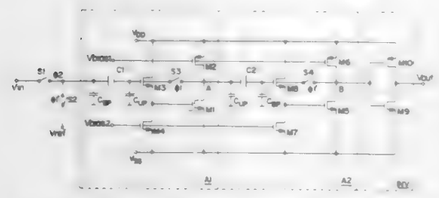
1. A comparator circuit comprising:
a first amplifier stage having an input of an input voltage or a reference voltage;
a second amplifier stage connected to an output of the first amplifier stage; and
a final stage, connected to an output of said second amplifier stage having an output of a rectangular signal, represent-

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ing times during which an input signal is higher than a reference signal;

wherein said first and second amplifier stages are identical, and each include an inverter driven by a follower circuit;

wherein said first amplifier stage includes a first input capacitance having a first plate that is selectively connectable, via at least a first controlled input switch, to said reference voltage and to said input voltage, respectively, and having a second plate connected to a gate of a first transistor of



the follower circuit of the first amplifier stage, a second controlled switch being provided between said second plate and the output of said first amplifier stage;

and said second amplifier stage includes a second input capacitance having a third plate connected to the output of said first amplifier stage, and having a fourth plate connected to a second transistor of the follower circuit of the second amplifier stage, a third controlled switch being provided between said fourth plate and the output of said second amplifier stage.

5,391,938

COMPARATOR USING XNOR AND XOR GATES

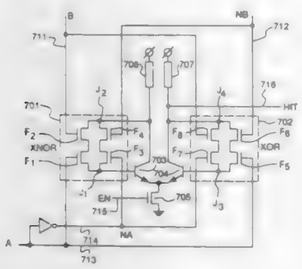
Tsuguyasu Hatsuda, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Division of Ser. No. 951,166, Sep. 25, 1992, Pat. No. 5,289,414. This application Nov. 24, 1993, Ser. No. 157,602

Claims priority, application Japan, Sep. 27, 1991, 3-248842; Mar. 31, 1992, 4-076479

Int. Cl.[6] H03K *5/22, 19/21*

U.S. Cl. 327—71 **5 Claims**



1. A comparator for comparing, in response to an activation signal, voltages of first and second signals in complement with voltages of third and fourth signals in complement, comprising:

an exclusive NOR comprising first, second, third and fourth inputs for receiving said first, third, second and fourth signals, respectively, and first and second outputs, said first and second outputs are connected when said first and third signals are in the same state, and said first and second outputs are disconnected when said first and third signals are in the opposite state;

an exclusive OR comprising fifth, sixth, seventh and eighth inputs for receiving said first, fourth, second and third signals, respectively, and third and fourth outputs, said third and fourth outputs are connected when said first and third signals are in the opposite state, and said third and fourth outputs are disconnected when said first and third signals are in the same state;

a first bipolar transistor having base and collector connected to said first and second outputs, respectively;

a second bipolar transistor having base and collector connected to said third and fourth outputs, respectively;

a switching FET having a drain connected to emitters of said first and second bipolar transistors and a source connected to ground, and being turned on during when said activation signal is in a first state;

a first load resistor means connected to said second output; and

a second load resistor means connected to said fourth output;

whereby when said first and third signals are in the same state and, at the same time, the second and fourth signals are in the same state, said first and second bipolar transistors are turned on and off, respectively, and when said first and third signals are in the opposite state and, at the same time, the second and fourth signals are in the opposite state, said first and second bipolar transistors are turned off and on, respectively.

5,391,939

OUTPUT CIRCUIT OF A SEMICONDUCTOR INTEGRATED CIRCUIT

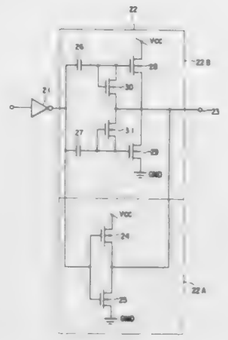
Satoshi Nonaka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 28, 1992, Ser. No. 937,067

Claims priority, application Japan, Aug. 30, 1991, 3-220738

Int. Cl.[6] H03K *17/16*

U.S. Cl. 326—83 **19 Claims**



1. An output circuit of a semiconductor integrated circuit, comprising: a signal output terminal;

a prebuffer circuit for receiving an internal signal of said semiconductor integrated circuit;

a first output buffer circuit connected between said prebuffer circuit and said signal output terminal, and controlled by the output signal of said prebuffer circuit for activation/-deactivation; and

a second output buffer circuit connected in parallel with said first output buffer circuit and between said prebuffer circuit and said signal output terminal, and controlled for activation by the output signal of said prebuffer circuit through a capacitance and for deactivation by a transistor circuit which is connected to said signal output terminal and is made active when a potential of said signal output terminal is within a preset range between high and low signal levels.

5,391,940

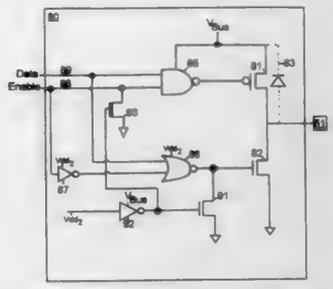
PAD DRIVER CIRCUIT WITH POWERED DOWN DEVICE PROTECTION

Scott A. Linn, Corvallis, Oreg., assignor to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Oct. 20, 1993, Ser. No. 140,347

Int. Cl.[6] H03K *17/16*

U.S. Cl. 326—21 **7 Claims**



1. A pad driver circuit, connected to a pad for connection between a powered-on first device and a powered-off second device over a data line of a communications bus, said first device powered by a first voltage source, said second device powered by a second voltage source, said driver circuit comprising:

a third voltage source isolated from said second voltage source;

a p-channel transistor connected at its drain to said pad and at its source to said third voltage source;

a first component, connected to the gate of said p-channel transistor at its output, receiving data from device specific circuitry powered by said second voltage source at its input, said first component powered by said third voltage source;

a first n-channel transistor connected at its source to said pad and at its drain to ground; and

a second component, connected to the gate of said first n-channel transistor at its output, receiving said data from said device specific circuitry powered by said second voltage source at its input, said first component powered by said second voltage source.

5,391,941

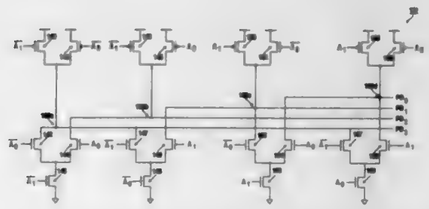
DECODER CIRCUITRY WITH BALANCED PROPAGATION DELAY AND MINIMIZED INPUT CAPACITANCE

Gregory J. Landry, Santa Clara, Calif., assignor to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Sep. 23, 1993, Ser. No. 126,069

Int. Cl.[6] H03K *19/20*

U.S. Cl. 326—106 **22 Claims**



1. A logic circuit implementing a logic NAND function with respect to a first input signal and a second input signal, comprising:

(A) a pull up network coupled to a power supply and an output node;

(B) a first circuit branch having a first transistor and a second transistor, wherein the first transistor has a first end coupled to the output node and a second end coupled to a first end of the second transistor, wherein the second transistor has a second end coupled to ground, wherein the first transistor receives the first input signal at a control input and the second transistor receives the second input signal at a control input;

(C) a second circuit branch having a third transistor and a fourth transistor, wherein the third transistor has a first end coupled to the output node and a second end coupled to a first end of the fourth transistor, wherein the fourth transistor has a second end coupled to ground, wherein the third transistor receives the second input signal at a control input and the fourth transistor receives the first input signal at a control input such that the logic circuit has a balanced propagation delay with respect to the first and second input signals.

5,391,942

CLOCK DISTRIBUTION SCHEME FOR USER-PROGRAMMABLE LOGIC ARRAY ARCHITECTURE

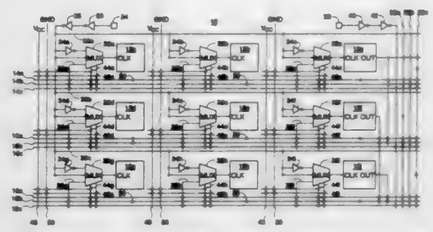
Khaled A. El-Ayat, Cupertino; King W. Chan, Los Altos, and William C. Plants, Santa Clara, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 901,604, Jun. 19, 1992, Pat. No. 5,254,886. This application Jul. 21, 1993, Ser. No. 95,264

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—39 **4 Claims**



1. In an integrated circuit including a user-programmable logic array architecture comprising a plurality of user-programmable sequential elements, each having data inputs and outputs and at least one clock input, said user-programmable sequential elements arranged in an array, and further including a plurality of general interconnect lines which may be connected to one another and to said inputs and outputs of said sequential elements, a clock distribution architecture including:

at least one clock input pin on said integrated circuit;

at least one clock distribution line disposed in said array;

a buffering means, including at least one buffer amplifier having an input connected to said at least one clock input pin and an output connected to said at least one clock distribution line;

a multiplexing means associated with at least one of said sequential elements, each of said multiplexing means having a first input connected to said at least one clock distribution line, and a second input connected to a clock signal line connectable to at least one of said general interconnect line through a user-programmable element, a multiplexer output connected to said at least one clock input of the sequential element with which it is associated, and means for selecting which of said first, and second inputs is connected to said output.

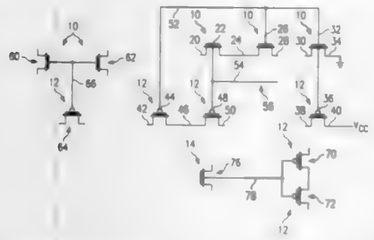
VOL 1171 ISS 3 FEB 21 1995 UMI

5,391,943

GATE ARRAY CELL WITH PREDEFINED CONNECTION PATTERNS

Shivaling S. Mahant-Shetti, 1405 Scottsboro La., Richardson, Tex. 75082, and Robert J. Landers, 3228 Cross Bend, Plano, Tex. 75023

Filed Jan. 10, 1994, Ser. No. 178,712
Int. Cl.[6] H03K *19/017*
U.S. Cl. 326—41 **33 Claims**



1. A CMOS cell for use in a gate array comprising, in combination:

a first plurality of n-channel transistors all of substantially the same physical size;

a first plurality of p-channel transistors all substantially the same physical size as each said n-channel transistor, more than one said p-channel transistor being electrically interconnected with more than one said n-channel transistor to form partially prewired circuits than can later be finally configured utilizing programmable metal layers to meet design needs;

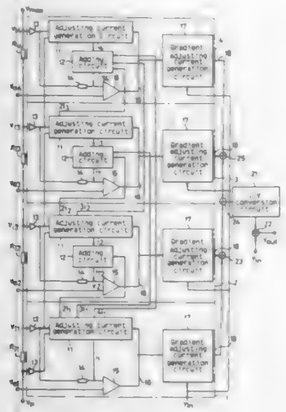
at least one additional n-channel transistor and at least one additional p-channel transistor, each said additional transistor being of a physical size larger than any one of said first plurality of n-channel transistors.

5,391,944

IMAGE-TONE CONTROL CIRCUIT AND GRADIENT ADJUSTING CIRCUIT THEREFOR

Hideaki Sadamatsu, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 10, 1992, Ser. No. 986,049
Claims priority, application Japan, Jan. 22, 1992, 4-008929
Int. Cl.[6] H03K *5/12*
U.S. Cl. 327—65 **10 Claims**



10. A tone control circuit comprising:

a plurality of gradient adjusting circuits each comprising:

(a) an adjusting current generation means for receiving a first input setting voltage and a second input setting voltage;

(b) an adding means for adding an output current of said adjusting current generation means and a predetermined output current supplied from an adjusting current generation means of another gradient adjusting circuit;

(c) a resistive means through which said first input setting voltage flows;

(d) a comparing means for comparing an output of said adding means and said first input setting voltage with a predetermined output setting voltage and for generating a control voltage to said adjusting current generation means to thereby equalize said input voltage with said output setting voltage; and

(e) a gradient adjusting current generation means, connected to said comparing means, for issuing an output current in response to said control voltage; and

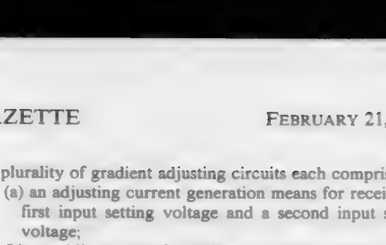
a summation means for summing said gradient adjusting current generation means output current for each of said plurality of gradient adjusting circuits.

5,391,945

CIRCUIT AND METHOD FOR PROVIDING PHASE SYNCHRONIZATION OF ECL AND TTL/CMOS SIGNALS

C. Christopher Hanke, Austin, Tex.; Todd Pearson, Phoenix, and Ray D. Sundstrom, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 24, 1993, Ser. No. 125,729
Int. Cl.[6] H03K *19/088, 19/092, 19/0175*
U.S. Cl. 327—156 **12 Claims**



1. A circuit responsive to a first input logic signal for providing phase synchronization between first and second output logic signals, comprising:

a first phase locked loop (**20**) having a reference input, a feedback input and an output, said reference input of said first phase locked loop coupled to receive the first input logic signal, said output of said first phase locked loop coupled to provide the first output logic signal;

a second phase locked loop (**24**) having a reference input, a feedback input and an output, said reference input of said second phase locked loop coupled to receive the first input logic signal;

a first translation circuit (**14**) having an input and an output, said input of said first translation circuit coupled to said output of said second phase locked loop, said output of said first translation circuit providing the second output logic signal;

a second translation circuit (**26**) having an input and an output, said input of said second translation circuit coupled to said output of said first translation circuit, said output of said second translation circuit coupled to said feedback input of said second phase locked loop; and

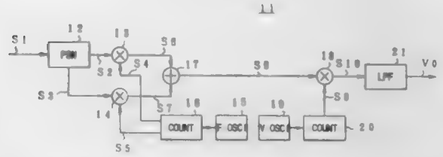
a delay component (**22**) having an input and an output, said input of said delay circuit coupled to receive the first output logic signal, said output of said delay circuit coupled to said feedback input of said second phase locked loop, wherein a delay of said delay circuit is matched to a delay of said second translation circuit.

5,391,946

FREQUENCY CONVERTING CIRCUIT APPARATUS

Daisuke Yamazaki, and Yukihiro Furuya, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,241
Claims priority, application Japan, Apr. 30, 1992, 4-138072
Int. Cl.[6] H03B *19/00*
U.S. Cl. 327—113 **4 Claims**



1. A frequency converting circuit apparatus for converting the frequency of an input signal having a phase component comprising:

phase-shifting means for phase-shifting the phase component of the input signal, and outputting first and second phase-shifted signals having orthogonal phases;

multiplication means for multiplying said first and second phase-shifted signal by first and second oscillating signals at a first frequency having orthogonal phases, and outputting modulated signals of said first and second phase-shifted signals;

side-band signal extraction means for extracting a side-band signal by adding the first and second multiplied outputs from said multiplication means; and

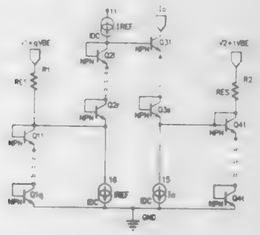
demodulation means for multiplying said side-band signal by a third oscillating signal at a second frequency to produce a third multiplied signal, outputting the third multiplied signal comprising demodulated signal of the input signal.

5,391,947

VOLTAGE RATIO TO CURRENT CIRCUIT

James O. Groves, Jr., Endicott; Jonathan J. Hurd, Vestal, and Stephen F. Newton, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 927,908, Aug. 10, 1992, abandoned.
This application Dec. 17, 1993, Ser. No. 169,568
Int. Cl.[6] G06G *7/00, 7/24, 7/16;* **G06F** *7/556*
U.S. Cl. 327—346 **16 Claims**



1. A circuit for providing an output current proportional to a first voltage raised to a fractional exponential power divided by a second voltage raised to a fractional exponential power comprising:

a first, second, third, and fourth string each of said strings having one or more series connected pn junctions, each of said strings coupled to one another;

means for connecting the first and second voltages in series with said first and fourth strings, respectively; and

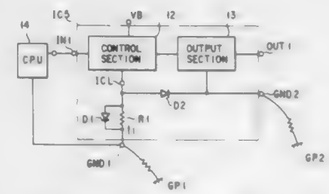
means for providing a reference current to said second string, said third string providing an output current proportional to the first voltage raised to a fractional exponential power divided by the second voltage raised to a fractional exponential power, said number of pn junctions being selected to give the desired fractional exponents of the two voltages.

5,391,948

SURGE-RESISTANT PROTECTION CIRCUIT FOR VEHICLE

Takao Izumita, Singapore, Singapore, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 8, 1993, Ser. No. 117,593
Claims priority, application Japan, Sep. 9, 1992, 4-240570
Int. Cl.[6] H03L *5/00*
U.S. Cl. 327—310 **10 Claims**



10. An integrated circuit having at least a power supply terminal, a ground terminal, an input terminal, an output terminal, and a plurality of points to be connected to the outside, comprising:

internal circuitry of said integrated circuit having a control section for handling control current and an output section for handling an output current higher than said control current;

a ground-side common line associated with said internal circuitry of said integrated circuit;

a first ground terminal to which a grounding path for said control current of said control section is connected through said ground-side common line;

a second ground terminal to which a grounding path for said output current of said output section is connected through said ground-side common line;

a diode for connecting said grounding path for said control current of said control section and said grounding path for said output current of said output section in said ground-side common line;

a current-limiting resistor connected between said first ground terminal and said ground-side common line;

circuit means connected in parallel with said resistor for limiting a surge voltage;

voltage detecting means installed inside said integrated circuit for detecting a potential difference between said first and second ground terminals;

negative voltage generating means responsive to said voltage detecting means for impressing a negative voltage between said first ground terminal and said ground-side common line; and

switching means connected between said first ground terminal and said ground-side common line and between said second ground terminal and said ground-side common line.

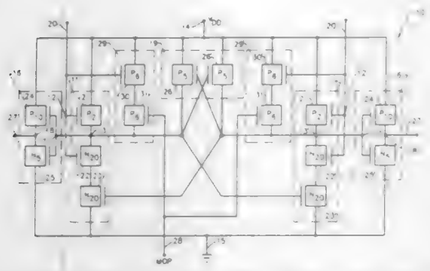
VOL 1171 ISS 3 FE 21 1995 UMI

5,391,949

DIFFERENTIAL LATCHING INVERTER CIRCUIT

Albert W. Vinal, deceased, late of Cary, N.C., assignor to Thunderbird Technologies, Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 202,414, Feb. 25, 1994, abandoned, which is a continuation of Ser. No. 708,459, May 31, 1991, Pat. No. 5,304,874. This application Aug. 9, 1994, Ser. No. 287,713
Int. Cl.[6] G11C *7/00*; H03F *3/45*
U.S. Cl. 327—53 11 Claims



1. A Field Effect Transistor (FET) Differential Latching Inverter (DLI) circuit for sensing signals on first and second bit lines of a memory, comprising:

first and second complementary FET inverters, each of which is connected between first and second reference voltages, and each of which includes a first input, a second input and an output;

each of said first and second complementary inverters producing an inverter transfer function between said first input and said output which is skewed toward one of said first and second reference voltages and which is identical when said first and second inverters turn on and turn off;

the second input of said first inverter being connected to the output of said second inverter, and the second input of said second inverter being connected to the output of said first inverter;

the first bit line being connected to the first input of said first inverter and the second bit line being connected to the first input of said second inverter; and

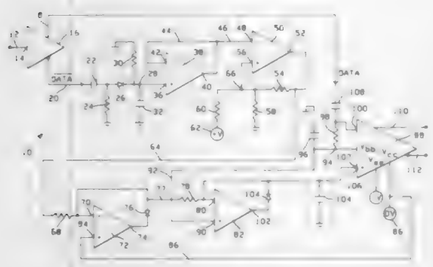
the outputs of said first and second complementary FET inverters producing output signals for said DLI circuit.

5,391,950

CIRCUIT TO ELIMINATE SIGNAL CHATTER IN THE OUTPUT OF A FIBER-OPTIC RECEIVER

John A. Krawczak, Minnetonka, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jun. 24, 1993, Ser. No. 80,545
Int. Cl.[6] H03K *17/14, 17/16*
U.S. Cl. 327—384 2 Claims



1. A signal chatter elimination circuit for the elimination of signal chatter in a data signal comprising:

a peak voltage detector that receives said data signals and is constructed to provide a peak voltage signal that is representative of the peak voltage of said data signal,

a threshold comparator that is coupled to said peak voltage detector for receiving said peak voltage signal that is constructed to provide a control signal that is at a first voltage level when said peak voltage signal has a magnitude that is below a defined threshold voltage magnitude and is at a second voltage level when said peak voltage is above said defined threshold voltage magnitude,

a differential amplifier which is capable of supplying an output signal representative of said data signal which comprises:

(a) a first input terminal coupled to receive said data signal which causes an output of said differential amplifier to be driven in a first polarity direction in response to said data signal,

(b) a second input terminal coupled to receive an applied signal that causes said output to be driven in a second polarity direction in response to said applied signal, and

(c) a variable voltage level source which provides a temperature compensation signal, and

a threshold-level switcher coupled to said threshold-comparator to receive a threshold comparison signal and to said differential amplifier, which is constructed to supply said control signal to said second input terminal,

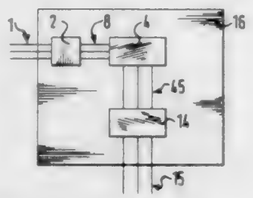
wherein temperature compensation signal is also coupled to said second input terminal so that said applied signal comprises said control signal and said temperature compensation signal and said second voltage level is of a magnitude such that said output signal of said differential amplifier is supplied at a fixed voltage level when said control signal is at said second voltage level.

5,391,951

INTEGRATED CIRCUIT HAVING AN ADJUSTING COMPONENT AND AN ADJUSTABLE THYRISTOR

Uwe Guenther, Nufringen; Ulrich Fleischer, Pliezhausen; Michael Barth, Unterensingen; Jiri Marek; Hans-Juergen Kress, both of Reutlingen, and Joerg Behnke, Berlin, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 3, 1993, Ser. No. 25,492
Claims priority, application Germany, Mar. 7, 1992, 4207225
Int. Cl.[6] H01L *21/66, 29/58*
U.S. Cl. 327—438 17 Claims



1. An integrated circuit comprising:

an adjusting component including a breaker gap and at least one adjusting element, the breaker gap arranged in series with the at least one adjusting element, the breaker gap including a thyristor; and

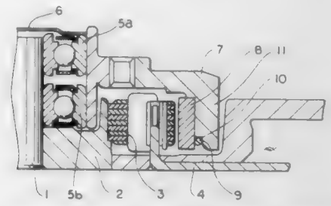
a control unit coupled to the adjusting component for receiving an input signal and for irreversibly switching the adjusting component between a conducting state and an insulating state by switching the breaker gap as a function of the input signal.

5,391,952

BALANCED MINIATURE MOTOR

Kunio Simazu, and Shinji Kinosita, both of Komagane, Japan, assignors to Sankyo Keiki Mfg. Co., Ltd., Nagano, Japan

Filed Sep. 4, 1992, Ser. No. 940,019
Claims priority, application Japan, Sep. 4, 1991, 3-078712[U]
Int. Cl.[6] H02K *7/00*; G01M *1/00*
U.S. Cl. 310—67 R 8 Claims



1. A balanced miniature motor for driving a magnetic disc, comprising:

a hub carrying a driving magnet on its inner circumference and adapted to mount a magnetic disc on its outer circumference;

a stator core having a coil wound thereon to face the driving magnet of said hub;

a frame having a holder for fixing said stator core;

a balance adjusting groove formed in the inner circumference of said hub and adjoining said driving magnet; and

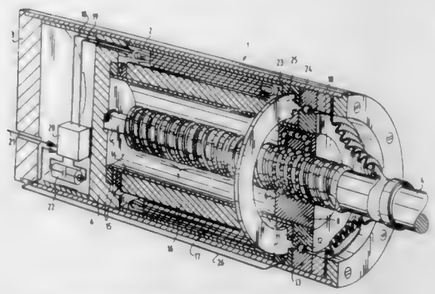
a balance correcting weight mounted in said balance adjusting groove.

5,391,953

ELECTROMECHANICAL TRANSDUCER

Paul G. van de Veen, Enschede, Netherlands, assignor to Otto Bock Orthopadische Industrie Besitz und Verwaltungs Kommanditgesellschaft, Germany

Filed Dec. 18, 1992, Ser. No. 992,933
Claims priority, application Netherlands, Jun. 19, 1990, 90.01394
Int. Cl.[6] H02K *11/00, 7/06, 7/10*; G05B *11/01*
U.S. Cl. 310—80 13 Claims



1. An electromechanical transducer, comprising:

a first element movable in relation to a second element, wherein said first and said second elements perform a translational movement relative to one another;

a transducer element mechanically coupled to said first element and said second element for converting said translational movement into an electrical signal;

a transmission element converting said relative translational movement of said first and second elements into a rotating movement of said transducer element so as to produce said electrical signal;

a feed line to receive said electrical signal from said transducer element;

a rechargeable battery connected to said feed line so as to receive said electrical signal and store electrical energy associated with said electrical signal;

a control unit having control terminals, said control unit coupled to said feed line and connected to said battery for receiving power therefrom; and

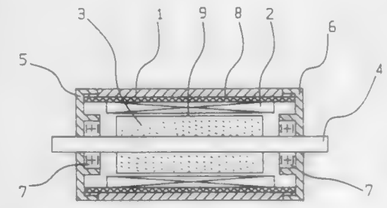
a measuring device for 1) measuring the relative mechanical state of said first element and said second element, such as position, speed, acceleration and 2) generating signals representative of said mechanical state to be fed to said control terminals of said control unit.

5,391,954

DIRECT CURRENT MOTOR

Isamu Takehara, and Masaya Kawamura, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Oct. 15, 1993, Ser. No. 137,482
Int. Cl.[6] H02K *5/02, 1/12*
U.S. Cl. 310—89 16 Claims



1. A direct current motor comprising:

a cylindrical case having an outer layer made of a magnetic material of a high saturation magnetic flux density, and an inner layer fixed to an inner surface of said outer layer and made of a magnetic material of a high magnetic permeability;

a shaft supported by said case;

a magnet secured to said shaft; and

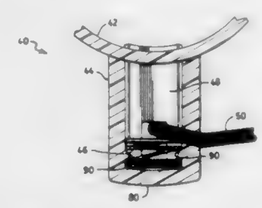
a plurality of coils fixed to an inner surface of said inner layer of said case and spaced from said magnet.

5,391,955

ELECTRIC MOTOR WITH BRUSH SPRING RETENTION MEANS

Michael T. Clarke, Lake Odessa, and Dennis G. Reid, Lansing, both of Mich., assignors to Eaton Stamping Company, Eaton Rapids, Mich.

Filed Oct. 29, 1993, Ser. No. 144,691
Int. Cl.[6] H02K *13/00, 5/14*
U.S. Cl. 310—242 1 Claim



1. A brush tube for an electric motor, said brush tube being configured to slidably retain a brush, and to retain a coil spring for urging said brush into engagement with a commutator of said motor, said brush tube comprising:

an outer end wall sufficiently closed to prevent egress of said spring therethrough,

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side, front and rear walls sufficiently closed to prevent egress of said spring therethrough,

an open inner end through which said brush may protrude to engage said motor commutator, and

first and second opposed barbs disposed, respectively, on opposite of said side, front and rear walls and extending inwardly of said brush tube toward one another to overlie two opposite portions of said coil spring proximate said brush tube outer end wall, said barbs extending substantially across the widths of said walls, said barbs and said outer end wall being adapted to retain therebetween at least one coil of said spring,

said barbs being configured to permit passage of said coil spring toward said brush tube outer end wall, but prevent passage of said coil spring towards said brush tube open end, to prevent egress of said coil spring through said brush tube open end.

5,391,956

ELECTRON EMITTING DEVICE, METHOD FOR PRODUCING THE SAME AND DISPLAY APPARATUS AND ELECTRON BEAM DRAWING APPARATUS UTILIZING THE SAME

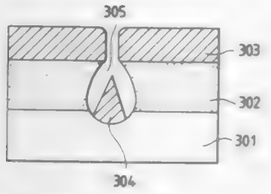
Nobuo Watanabe; Takeo Tsukamoto, both of Atsugi, and Masahiko Okunuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 578,212, Sep. 6, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 994,459

Claims priority, application Japan, Sep. 7, 1989, 1-233937; Sep. 7, 1989, 1-233938; Dec. 11, 1989, 1-320823

Int. Cl.[6] H01J *1/30*

U.S. Cl. 313—309 **22 Claims**



1. An electron emitting device comprising:

a substrate, of crystalline material;

an insulating layer on said substrate having a teardrop-shaped hollow part therein, having an aperture through which a substantially conical electrode disposed in said teardrop-shaped hollow part is electrically connected with a conductive layer for electrically powering the conical electrode wherein an emitter is formed at the concave bottom of said teardrop-shaped hollow part, said teardrop-shaped hollow part being in a predetermined position and of a predetermined size; and

the conductive layer on said insulating layer having an aperture communicating with the aperture of said hollow part.

5,391,957

VIBRATION DAMPING MEANS FOR A STRIP SHADOW MASK

James R. Fendley, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 28, 1992, Ser. No. 998,093

Int. Cl.[6] H01J *29/02*

U.S. Cl. 313—402 **4 Claims**

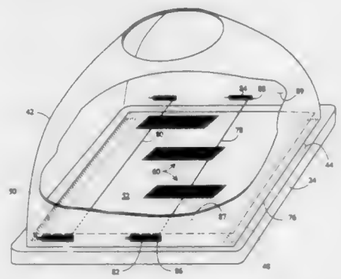
1. A color CRT having a faceplate sealed to a funnel, and including:

a) a tensed shadow mask comprising strips of foil;

b) a magnetic shield internal to the funnel and having walls approximately conforming to the shape of funnel;

c) at least one wire suspended between the walls of the magnetic shield and in contact with the strips;

1) the wire being suspended in tension by spring means,



the spring means attached to at least one wall of the magnetic shield for suspending the wire;

whereby image-distorting vibration of the strips of the shadow mask is damped by the wire.

5,391,958

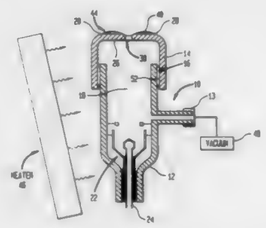
ELECTRON BEAM WINDOW DEVICES AND METHODS OF MAKING SAME

Arnold J. Kelly, Princeton Junction, N.J., assignor to Charged Injection Corporation, Monmouth Junction, N.J.

Filed Apr. 12, 1993, Ser. No. 45,942

Int. Cl.[6] H01J *33/00*

U.S. Cl. 313—420 **33 Claims**



14. A component for an electron beam tube comprising:

(a) a housing part having a front wall, said front wall having an exterior surface, an interior surface and a hole extending inwardly from said exterior surface through the front wall to said interior surface;

(b) an electron-permeable membrane overlying said exterior surface and covering said hole; and

(c) a polymeric material interposed between said membrane and said exterior surface of said front wall, said membrane being bonded to said polymeric material, said polymeric material being bonded to said front wall.

5,391,959

FLUORESCENT LAMPS AND IMPROVED YYTRIUM-CONTAINING PHOSPHORS USEFUL THEREIN

Mohamed E. Labib, Princeton, N.J.; Henry Wielicki, deceased, late of Wyndmoor, Pa. by Edward Wielicki, Joanna Wielicki, executors , and Pamela K. Whitman, Mayfield Village, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 908,598, Jun. 30, 1992, Pat. No. 5,268,614, which is a continuation of Ser. No. 656,655, Feb. 19. 1991, abandoned. This application Apr. 30, 1993, Ser. No. 54,176

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.[6] H01J *1/63;* **C09K** *11/61, 11/70*

U.S. Cl. 313—486 **5 Claims**



1. In a fluorescent lamp comprising an envelope containing two electrodes at each end thereof, a phosphor coating on the interior surface of the envelope and an inert vapor containing a vaporizable metal sealed therein, the improvement which comprises utilizing as the phosphor coating on the interior surface of the envelope yttrium-containing phosphor particles each including a surface containing phosphorus compounds of yttrium and fluoride compounds of yttrium on the surface.

5,391,960

COLD CATHODE TUBE FOR GENERATING LIGHT WITH UNIFORM INTENSITY ALONG THE TUBE

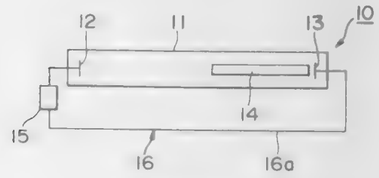
Takashi Moribayashi, and Kouji Tanemura, both of Kanagawa, Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,763

Claims priority, application Japan, Jun. 27, 1991, 3-057088[U]

Int. Cl.[6] H01J *7/44*

U.S. Cl. 313—594 **1 Claim**



1. A cold cathode tube comprising:

a cylindrical tube element having first and second ends;

an auxiliary electrode formed of an electrically conductive material and extending along less than half of said tube element from said first end;

first and second electrodes arranged respectively adjacent to said first and second ends of said tube element;

an electric power source; and

a pair of lead wires extending from said electric power source to said pair of electrodes, wherein a longer one of said pair of lead wires is connected to said first electrode which is arranged adjacent to said first end of said tube element.

5,391,961

GAS-FILLED DISCHARGE TUBE

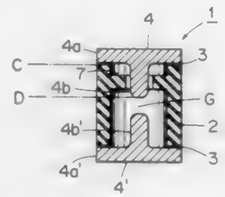
Hiromitsu Tsuchiya; Takahisa Suzuki, and Takashi Sato, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,605

Claims priority, application Japan, Apr. 13, 1992, 4-023262[U]

Int. Cl.[6] H01J *5/06*

U.S. Cl. 313—634 **2 Claims**



1. A gas-filled discharge tube comprising:

an electrically insulating cylindrical member sealed with an inert gas;

a pair of discharge electrodes having flange formations hermetically secured to both open ends of the cylindrical member, said discharge electrodes extending axially of the cylindrical member, the flange formations terminating in tips facing each other; and

an inner surface of the cylindrical member having an electrically insulating, inwardly directed flange at an intermediate axial position between an end surface position of the cylindrical member to which the flange portion of at least one of the discharge electrodes is sealed and the axial position of the tip of the discharge electrode.

5,391,962

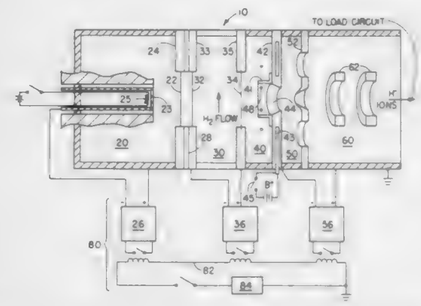
ELECTRON BEAM DRIVEN NEGATIVE ION SOURCE

Thomas G. Roberts; Michael J. Lavan, and Brian R. Strickland, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 13, 1992, Ser. No. 912,477

Int. Cl.[6] H01J *27/02;* **H05H** *1/24*

U.S. Cl. 313—362.1 **4 Claims**



1. In negative ion generation, a method for generating a negative hydrogen ion beam comprising the steps of:

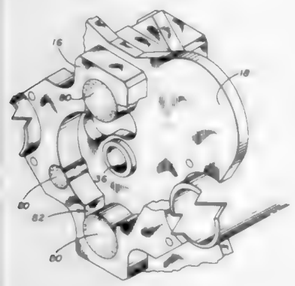
directing an electron beam at low energy along an axial flow path toward a first chamber for interaction with hydrogen gas therein;

accelerating said low enemy electron beam to high energies sufficiently for the beam to pass into said first chamber, ionize gas in the chamber and render the gas conductive;

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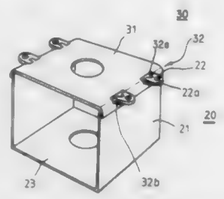
stimulating sustained release of vibrationally excited hydrogen molecules along the axial path;
directing hydrogen gas flow through said first chamber normal to the electron beam flow path for independently controlling conductivity and vibrational excitation of the hydrogen molecules;
guiding said excited hydrogen molecules from said first chamber into an ion production chamber bounded by first and second electrode grids normal to the axial flow path for extracting a hydrogen ion beam therefrom;
providing magnetic filtering in said ion production chamber adjacent to said second electrode to capture extraneous low energy electrons in the region;
providing interaction between said excited hydrogen molecules with low energy electrons within said ion production chamber; and
directing said negative hydrogen ion beam from said ion extraction region through a beam shaping region for injection into a load or an accelerator.

5,391,963
TRAVELING WAVE TUBE WITH THERMALLY-INSENSITIVE LOSS BUTTON STRUCTURE
Curtis G. Allen, Hayward; David H. Perrone, Redwood City, and David M. Rossi, San Francisco, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Oct. 29, 1992, Ser. No. 968,417
Int. Cl.[6] H01J *23/30*
U.S. Cl. 315—3.5 **9 Claims**



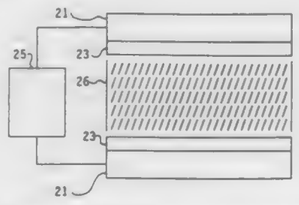
1. A loss button for a traveling wave tube of the type that includes a slow wave structure comprising a plurality of axially-aligned interaction cavities operatively coupled to one another, each of said cavities including a pair of pole pieces for defining front and back walls thereof and at least one metallic spacer disposed between and providing separation between said front and back walls, said at least one spacer including at least one aperture for receiving a loss button therein, said loss button comprising, in combination:
a) a substantially pill-shaped body comprising lossy material;
b) said body having front and rear surfaces;
c) the front and rear surfaces of said body having respective metallizations thereon; and
d) said metallizations being further coated with preselected material for preventing adhesion of said metallizations to braze alloys.

5,391,964
MAGNETRON YOKE JOINT HAVING BENT JOINING LUGS
Jong H. Lim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 10, 1992, Ser. No. 988,526
Claims priority, application Rep. of Korea, Dec. 14, 1991, 91-22287
Int. Cl.[6] H01J *23/10, 25/50*
U.S. Cl. 315—39.71 **3 Claims**



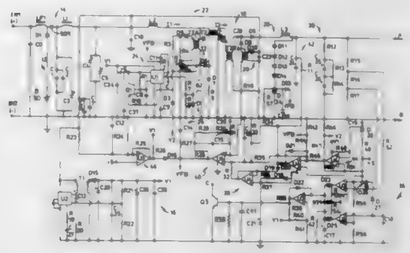
1. Yoke joint for a magnetron which generates microwaves, said yoke joint comprising:
(a) a lower yoke having a horizontal plane part with first and second side walls extending vertically upward, the first and second side walls having respective first and second upper edges, said lower yoke including joining lugs protruding from the first and second upper edges of the first and second side walls, the joining lugs having holes for fixing the yoke joint to a surface; and
(b) an upper yoke positioned above said lower yoke and having pass through holes in positions corresponding to said joining lugs to receive said joining lugs,
wherein said joining lugs are in a bent configuration over said pass through holes and said joining lugs connect the yoke joint to the surface using said holes in said joining lugs.

5,391,965
GAS DISCHARGE IGNITION DEVICE AND METHOD USING HIGH FREQUENCY AND HIGH POWER TO IGNITE A UNIFORM ELECTRODE SURFACE AREA
Gil Teva, 7 Havazelet Street, Jerusalem, Israel
Filed May 5, 1993, Ser. No. 57,097
Int. Cl.[6] H05B *41/16*
U.S. Cl. 315—137 **18 Claims**



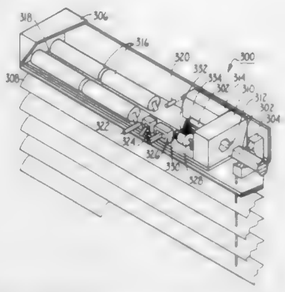
1. A gas discharge device for establishing and maintaining an uniform electric discharge of gas between two or more electrodes facing each other, comprising:
a) a plurality of metallic electrodes having a thickness in the range of about 0.1 to about 1 cm, wherein at least one of said electrodes is coated with a dielectric material coating having a thickness of 10–200 microns, wherein said electrodes are held in substantially parallel relation to each other and wherein each electrode comprises a surface area facing the other electrode;
b) means for providing a gas atmosphere having a gaseous pressure from about 10 to about 10,000 millibars within which said electrodes are contained; and
c) means for supplying said electrodes with a voltage between about 500 and 2000 volts at a frequency of 50,000–1,000,000 hertz and power of at least 1 watt per square centimeter of the electrode area.

5,391,966
STARTING AND OPERATING CIRCUIT FOR ARC DISCHARGE LAMP
Robert L. Garrison, P.O. Box 394, Rte. 114, Henniker, N.H. 03242
Continuation-in-part of Ser. No. 928,553, Aug. 11, 1992, abandoned. This application Sep. 30, 1993, Ser. No. 129,559
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—308 **9 Claims**



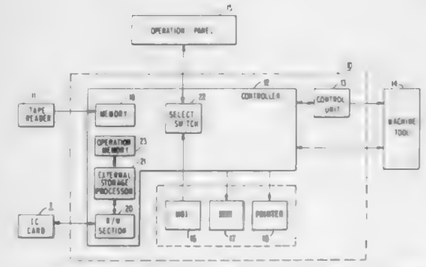
1. A circuit for starting and operating an arc discharge lamp comprising:
first and second direct current input terminals;
dc-to-dc converter coupled to said first and second direct current input terminals and including semiconductor switch means, a first transformer having a primary winding coupled to a first capacitor and a secondary winding coupled to a second capacitor, and a first diode having one end thereof coupled to said second capacitor;
pulse width modulator means including high frequency generating means for developing a signal for driving said semiconductor switch means of said dc-to-dc converter;
reverse recovery means including a second diode, a filter capacitor and a second transformer having a primary winding and a secondary winding, said primary winding of said second transformer being in series with said first diode of said dc-to-dc converter, said secondary winding of said second transformer being coupled to said second diode and said filter capacitor, the output of said reverse recovery means being coupled to the input of said dc-to-dc converter;
a power control summing amplifier coupled to said dc-to-dc converter and having first and second inputs;
voltage and current sensing means for developing a pair of control signals and means for coupling said control signals respectively to said first and second inputs of said power control summing amplifier;
warm-up power control means for operating an arc discharge lamp at an elevated power level for a predetermined period of time during start-up of said lamp, said warm-up power control means including means for tracking the amount of time said lamp is off and means for adjusting the initial lamp power to a hot lamp to a level between a rated lamp wattage and a maximum cold start wattage; and
input current sensing means including a third transformer having a primary winding in series with said semiconductor switch means of said dc-to-dc converter and a fourth transformer having a primary winding in series with said first capacitor of said dc-to-dc converter, said first and second transformers having secondary windings coupled to said warm-up power control means.

5,391,967
HEAD RAIL-MOUNTED MINI-BLIND ACTUATOR
Douglas R. Domel, Chatsworth, and Winston G. Walker, Irvine, both of Calif., assignors to Harmonic Design Inc., Chatsworth, Calif.
Continuation-in-part of Ser. No. 76,556, Jun. 11, 1993. This application Jul. 20, 1993, Ser. No. 94,570
Int. Cl.[6] A02R *7/14*
U.S. Cl. 318—254 **18 Claims**



1. A window blind actuator, comprising:
a window blind having a head rail and a tilt rod rotatably mounted therein;
a sensor for detecting a light signal and generating a control signal in response thereto;
a coupling engaged with the tilt rod such that movement of the coupling causes rotation of the tilt rod;
a reversible electric direct current (dc) motor operably engaged with the coupling to move the coupling;
a dc battery electrically connected to the motor; and
an electronic circuit electrically connected to the light sensor and the battery for processing the control signal from the light sensor to cause the battery to energize the motor.

5,391,968
NUMERICALLY CONTROLLED MACHINE TOOL MANAGEMENT SYSTEM
Tomomitsu Niwa, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 680,180, Apr. 3, 1991, Pat. No. 5,248,924. This application May 19, 1993, Ser. No. 63,298
Claims priority, application Japan, Apr. 5, 1990, 2-90980; Mar. 28, 1991, 3-64939
Int. Cl.[6] G05B *19/00*
U.S. Cl. 318—569 **1 Claim**



1. A numerical control system for controlling a machine tool, comprising:
means for regulating commands corresponding to various operations which can be made through an operation panel of said numerical control system by an operator;
an internal memory for storing said commands;
means for reading said commands from said memory;

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means for analizing said commands read from said memory: and

means for, while said numerical control system is driven on the basis of the contents of said commands read from said internal memory, interrupting the driving of said numerical control system, and initiating the usual operation made through said operation panel, restarting from the interrupted portion the operation made on the basis of said commands

Whereby said numerical control system can be controlled so as to be entirely equivalent to a case where the operator controls the system through the operating panel.

5,391,969

MOTOR SERVO SYSTEM

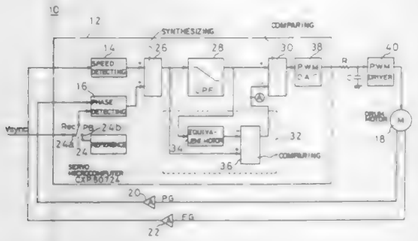
Junichiro Tabuchi, Tondabayashi, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 26, 1993, Ser. No. 37,166

Claims priority, application Japan, Mar. 27, 1992, 4-070890

Int. Cl.[6] G05D *13/62;* **G11B** *15/46*

U.S. Cl. 318—611 **8 Claims**



1. A motor servo system for controlling a motor on the basis of a speed detection signal and a phase detection signal, comprising:

first synthesizing means for synthesizing said speed detection signal and said phase detection signal with each other with a predetermined synthesizing ratio so as to produce a synthesized signal;

equivalent motor means having a transfer function representative of a transfer characteristic of said motor and for producing a detection signal on the basis of said synthesized signal;

first comparing means for comparing said synthesized signal and said detection signal; and

motor control signal generating means for generating a motor control signal by which said motor is to be controlled on the basis of said synthesized signal and an output signal of said first comparing means.

5,391,970

MOTION CONTROLLER WITH REMOTE LINKING AND TIME DISTURBANCE CORRECTION

Mark A. Chaffee, Grafton County, N.H., and David E. Halpert, Windsor County, Vt., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 30, 1993, Ser. No. 129,828

Int. Cl.[6] H02P *5/00*

U.S. Cl. 318—618 **5 Claims**

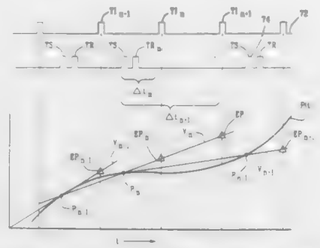
1. A motion controller operating in conjunction with a servo motor unit, the servo motor unit having a shaft and receiving motor commands controlling the motion of the servo motor unit's shaft, a shaft sensor which may provide a position signal indicating the position of the motor shaft, and a link for communicating messages, the motor controller comprising:

a position signal input for receiving the position signals from the shaft sensor;

a link transceiver for receiving messages on the link;

a message decoder communicating with the link transceiver for detecting at a first time a first position message indicating a first position, and at a second time a second position message indicating a second position, both transmitted over the link and having a predetermined axis address;

a time correction means for extrapolating from the first and



second positions and the first and second times a third position at a third time;

a control means responsive to the position signals and the third position to generate the motor commands controlling the motion of the motor shaft at the third time.

5,391,971

CIRCUIT FOR STARTING SINGLE-PHASE AC INDUCTION MOTOR

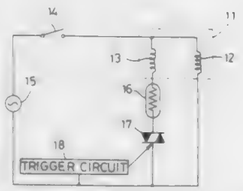
Yoshihiro Yamada; Shigehiro Ichida, and Yuichi Takaoka, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed May 25, 1993, Ser. No. 67,555

Claims priority, application Japan, May 25, 1992, 4-132614

Int. Cl.[6] H02P *1/26*

U.S. Cl. 318—778 **5 Claims**



1. A circuit for starting a single-phase AC induction motor having a main winding and an auxiliary winding, comprising:

a positive temperature coefficient thermistor element connected in series with the auxiliary winding;

a triac having first and second main terminals and a gate terminal, a portion between said first and second main terminals being connected in series with said positive temperature coefficient thermistor element; and

a trigger circuit connected to the gate terminal of said triac and reducing a gate voltage of the triac to turn the triac off after a predetermined time period has elapsed since the single-phase AC induction motor was started.

5,391,972

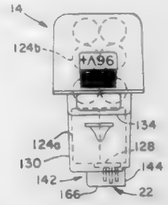
CORDLESS TOOL BATTERY HOUSING AND CHARGING SYSTEM

Billy J. Gardner, Box 175 Melton Rd., Rocky Mount, N.C. 27801, and Ralph A. Secoura, 100 Westdale Ct., Timonium, Md. 21093

Division of Ser. No. 415,456, Sep. 29, 1989, Pat. No. 5,144,217, which is a continuation of Ser. No. 167,063, Mar. 11, 1988, abandoned. This application Jan. 10, 1992, Ser. No. 819,035

Int. Cl.[6] H01M *10/46, 2/10, 45/00*

U.S. Cl. 320—2 **10 Claims**



1. A battery pack for, selectively, connection with a tool as a power source and with a charger for charging, comprising:

a battery pack housing having a nose portion including side walls and a terminal end transverse the side walls;

a first battery cell having a longitudinal axis and a side wall and first and second opposite ends, said ends being of first and second electrical polarities respectively, housed in the nose portion and disposed so that the longitudinal axis extended passes through the terminal end, and so that the first end of the cell is adjacent the terminal end of the housing; and

a terminal block comprising (1) a generally planer support adjacent to the end of the cell, generally perpendicular to the longitudinal axis of the cell, and between the housing terminal end and the first end of the cell, (2) a pair of spaced terminal pins extending perpendicularly from the support and extending away from the end of the cell, (3) a pair of upright spaced guide members carried by the support, extending oppositely to the terminal pins and extending into the battery pack housing for engaging and at least partially determining the position of the cell and (4) connecting means for electrically connecting the terminal block to the cell to form, when the battery pack is connected with a charger, a charging circuit.

5,391,973

METHOD OF CHARGING A MULTIPLICITY OF BATTERIES

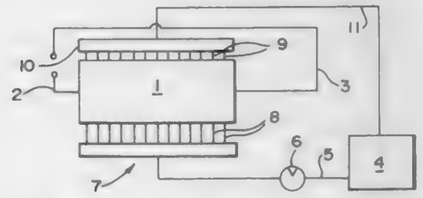
Gerd Tomazic, Murzzuschlag, Austria, assignor to S.E.A. Studiengesellschaft für Energiespeicher und Antriebssysteme Gesellschaft mbH, Steiermark, Austria

Filed May 22, 1992, Ser. No. 887,054

Claims priority, application Austria, May 24, 1991, A1062/91

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—21 **19 Claims**



1. A method of charging a multiplicity of electrochemical storages, comprising the steps of:

at least periodically infeeding and outfeeding in a hydraulic parallel circuit aqueous electrolyte liquids to and from individual anode and cathode spaces of each storage;

charging each storage in order to separate at the cathode a layer of metallic zinc and at the anode bromine which is converted by a complex former dissolved in aqueous electrolyte into a complex which is essentially insoluble in water containing a complex former dissolved in aqueous electrolyte;

determining, during the charging operation, at predetermined time intervals the charging state of each of the electrochemical storages;

upon reaching a predetermined value of the charging state of a given electrochemical storage, interrupting the charging operation thereof; and

decreasing the predetermined time intervals in length as the charging state of each of the electrochemical storages increases.

5,391,974

SECONDARY BATTERY CHARGING CIRCUIT

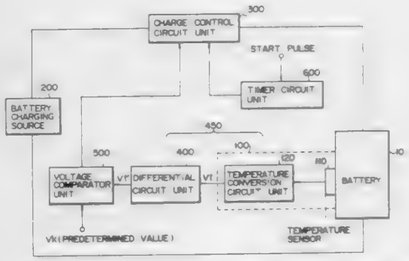
Nobuo Shiojima, and Sadakazu Enomoto, both of Tokyo, Japan, assignors to Toshiba Battery Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1991, Ser. No. 775,755

Claims priority, application Japan, Oct. 15, 1990, 2-273243; Oct. 15, 1990, 2-273244; Jan. 29, 1991, 3-091774; Feb. 12, 1991, 3-018865; May 22, 1991, 3-117484; Jul. 25, 1991, 3-186474

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—35 **1 Claim**



1. A circuit for charging a secondary battery, said circuit comprising:

a charging source for supplying a charging current to said secondary battery;

temperature detection means for generating an output which changes approximately linearly with respect to a change in temperature of said secondary battery during a charging operation;

differential circuit means for obtaining a differential value of said output from said temperature detection means, said differential value indicating a rate of change in temperature of said secondary battery during said charging operation;

comparator means for comparing said differential value obtained during said charging operation with a predetermined setting value, and for generating a first output when said differential value exceeds said predetermined setting value;

timer circuit means, started simultaneously with a start of said charging operating of said secondary battery, for generating a timer output after a lapse of a predetermined period of time; and

charge control means for controlling said charging operation of said secondary battery on the basis of one of said first output from said comparator means and said timer output from said timer circuit means, wherein said temperature detection means includes a temperature sensor for detecting a temperature of said secondary battery and generating a signal corresponding thereto, and a tempera-

VOL 1171 ISS 3 FE 21 1995 UMI

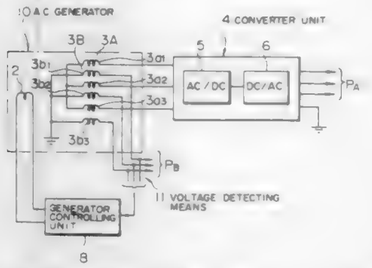
ture conversion circuit for converting said signal from said temperature sensor into one of a voltage approximately proportional to a change in temperature of said secondary battery and a voltage approximately inversely proportional to said change in temperature of said secondary battery.

5,391,975

CONSTANT-FREQUENCY ELECTRIC POWER SOURCE

Kazuo Okubo, Ise, Japan, assignor to Shinko Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 51,309
Claims priority, application Japan, Apr. 28, 1992, 4-134449
Int. Cl.[6] H02P *9/48*
U.S. Cl. 322—28 **12 Claims**



1. A constant-frequency electric power source comprising:
an A.C. generator including a field coil, to be driven by an engine;
a converter unit including a rectifying circuit and an inverter; and
means for controlling said A.C. generator;
wherein said A.C. generator has at least two groups of multi-phase output coils, one group of said at least two groups of multi-phase output coils being connected to said converter unit for providing a first A.C. electric power with a constant-voltage and a constant-frequency to be supplied to a first load, and the remaining groups of said at least two groups of multi-phase output coils being connected to other loads respectively, and further the output coils of said remaining groups being supplied to said A.C. generator controlling means thereby controlling an input of said field coil of said A.C. generator, and said remaining groups of said at least two groups of multi-phase output coils further providing a second A.C. electric power used for said other loads being different from the first A.C. electric power used for said first load.

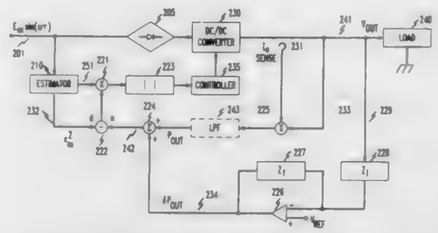
5,391,976

POWER FACTOR CONTROL ARRANGEMENT FOR AN OLS BASED ON QUARTER CYCLE AVERAGED POWER FLOW

Richard W. Farrington, Mesquite; Mark E. Jacobs, Dallas, and William P. Wilkinson, Rockwall, all of Tex., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jul. 28, 1993, Ser. No. 98,183
Int. Cl.[6] G05F *1/70*; H02M *1/14*
U.S. Cl. 323—207 **9 Claims**

9. In a power processing system connected to an AC power line having circuitry for enhancing power factor and reducing signal distortion at an AC input of the power processing system; comprising:
a rectifier connected for receiving an AC voltage at the AC input;
a switching type voltage regulator connected to receive a rectified signal provided by the rectifier and including a power switch for controlling current flow;
an output of the switching type voltage regulator connected to a voltage storage capacitor and a load to be energized;
means for controlling the switching of the power switch, including:
an estimator, connected to the AC input, and operative for generating a E_{rms}^2 estimated substantially ripple-free value of the AC input and including means for reducing ripple of the AC input by modeling the AC input voltage as a two state-variable oscillator;
a current sensor, connected to sense a load current of the load, and operative for generating a substantially ripple-free estimate of output power P_{out}, and including means for suppressing ripple of the load current; by modeling the load current and voltage as a two state-variable oscillator;
summing means for deriving an error signal δP_{out} representative of a difference between a DC voltage of the load versus a reference voltage;



a second summing means for summing the error signal with the substantially ripple free estimate of the power output P_{out} to generate a power estimate with an added increment ($P_{out}+\delta P_{out}$);
division circuitry connected to accept and divide the power estimate with added increment ($P_{out}+\delta P_{out}$) by the E_{rms}^2 estimated value of the AC input to produce a value representative of a conductance of the switching type voltage regulator and a power level of the rectifier;
multiplying circuitry connected to receive and multiply the value representative of a conductance of the switching type voltage regulator and a power level of the rectifier and an output of the rectifier representing a magnitude of the input AC voltage; and
means for utilizing output of the multiplying circuitry for driving the power switch.

5,391,977

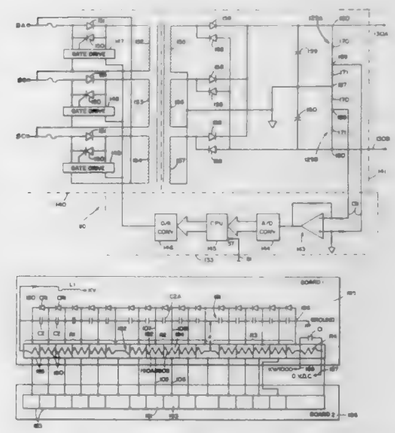
REGULATED X-RAY POWER SUPPLY USING A SHIELDED VOLTAGE SENSING DIVIDER

Robert Beland, Bellefeuille, Canada, assignor to Electromed International, Quebec, Canada

Division of Ser. No. 931,899, Aug. 18, 1992, Pat. No. 5,241,260, which is a continuation of Ser. No. 467,658, Jan. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 447,559, Dec. 7, 1989, Pat. No. 5,023,769, Ser. No. 447,388, Dec. 7, 1989, Pat. No. 5,056,125, and Ser. No. 447,389, Dec. 7, 1989, abandoned. This application Jun. 4, 1993, Ser. No. 72,720
The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.
Int. Cl.[6] H05G *1/32*
U.S. Cl. 323—268 **4 Claims**

1. Apparatus for supplying operating power to an X-ray generating source comprising:
regulating means for receiving an input signal and regulating the duration and/or amplitude of the input signal to produce a high-voltage regulated output signal for operating an X-ray generating source, said regulating means including a plurality of solid-state switching means arranged in series, and feedback control means for controlling each of the switching means to produce the regulated output signal; and

a shielded voltage divider circuit for measuring the regulated output signal and generating a feedback signal that is utilized by the feedback control means for selectively activating the switching means to cause the output voltage to approach a predetermined value, the shielded voltage divider circuit comprising resistor means, and a shield means for preventing electrical noise from interfering with the operation of the voltage divider; and
wherein the resistor means has opposing end terminals and the shield means comprises:
a plurality of paired conductive members disposed along the length of the resistor means and having opposing end terminals, the pairs of conductive members separating the resistor means into separate portions by providing alternating first and second pairs of conductive members along the length of the resistor means;



a capacitor series comprising a plurality of serially-connected capacitor means disposed a predetermined distance from the resistor means and having opposing end terminals, each capacitor means being connected between adjacent first and second pairs of conductive members, the end terminals of the conductive members being connected to the end terminals of the capacitor series, and a dynamic impedance of the capacitor series being less than a dynamic impedance of the resistor means;
wherein when the end terminals of the resistor means are connected between a higher-voltage potential and a lower-voltage potential, and the end terminals of the capacitor series are connected between the higher-voltage potential and ground, electrical noise is coupled to the capacitor series and does not interfere with the resistor means.

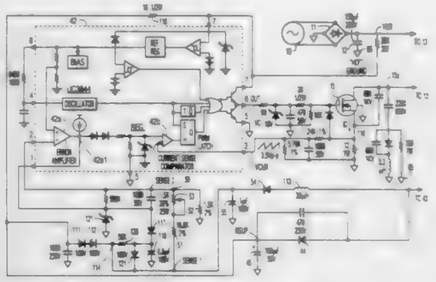
5,391,978

FEEDBACK LOSS PROTECTION ARRANGEMENT IN A POWER SUPPLY

Gautam Nath, Fishers, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Feb. 22, 1994, Ser. No. 200,039
Int. Cl.[6] G05F *1/40*; H02H *7/10*
U.S. Cl. 323—282 **8 Claims**

1. A power supply apparatus, comprising:
an inductance;
a switching regulator coupled to said inductance for generating an alternating current in said inductance that is coupled to a load circuit, said regulator having a control terminal for receiving a control signal at said control terminal to control said inductance current in accordance with a difference between said control signal and a signal at a reference level;
a first rectifier for rectifying a signal that is developed from said current in said inductance to generate a rectified first signal that is coupled to said control terminal of said regulator to form said control signal at said control terminal for controlling an output level of said power supply in a negative feedback manner in normal operation, such that when, as a result of a fault condition, said first signal is decoupled from said control terminal of said regulator, said regulator tends to cause an increase in said output level above a predetermined level;



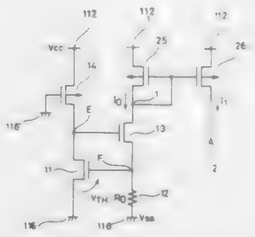
a second rectifier coupled to said inductance for rectifying a signal developed from said current in said inductance to generate a rectified voltage; and
switching means for coupling said rectified voltage to said control terminal to control said inductance current in accordance with a difference between said rectified voltage and said signal at said reference level, said switching means providing for an alternate feedback path for preventing said output level increase when said fault condition occurs and for decoupling said rectified voltage from said control terminal in normal operation.

5,391,979

CONSTANT CURRENT GENERATING CIRCUIT FOR SEMICONDUCTOR DEVICES

Takeshi Kajimoto, and Takayuki Miyamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1993, Ser. No. 135,512
Claims priority, application Japan, Oct. 16, 1992, 4-278575
Int. Cl.[6] G05F *3/16*
U.S. Cl. 323—313 **12 Claims**

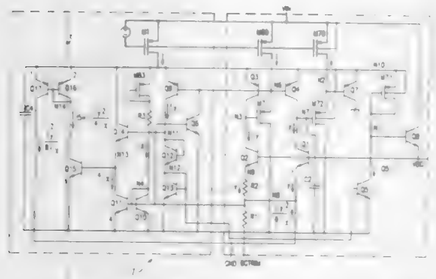


1. A constant current generating circuit, comprising:
a first resistive means having a first end connected to a first power supply and a second end, for supplying a small current flow;
a first insulated gate type field effect transistor having a first conduction terminal connected to said second end of said first resistive means, a second conduction terminal con-

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nected to a second power supply, and a control terminal, capable of supplying a large current flow;
a second resistive element having a first end connected to said control terminal of said first insulated gate type field effect transistor and a second end connected to said second power supply; and
a second insulated gate-type field effect transistor having a control electrode connected to said first conduction terminal of said first insulated gate type field effect transistor, a first conduction terminal connected to said first end of said second resistive element, and a second conduction terminal connected to an output node.

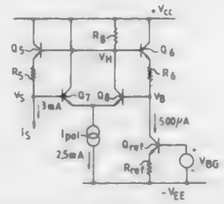
5,391,980
SECOND ORDER LOW TEMPERATURE COEFFICIENT BANDGAP VOLTAGE SUPPLY
Frank L. Thiel, Richardson, and Baoson Nguyen, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jun. 16, 1993, Ser. No. 78,705
Int. Cl.[6] G05F *3/30*
U.S. Cl. 323—314 **3 Claims**



3. A method of cancelling 2nd order temperature dependency in a bandgap reference circuit, comprising the steps of:
providing a bandgap reference circuit, the bandgap reference circuit having 2nd order temperature dependence; and
calculating the 2nd order temperature dependence of the bandgap reference circuit by using a translinear mathematical cell;
generating a current proportional to the calculated 2nd order temperature dependence with the translinear mathematical cell; and
injecting the generated proportional current into the bandgap reference cirucit, the injected current cancelling the 2nd order temperature variance of the bandgap reference circuit.

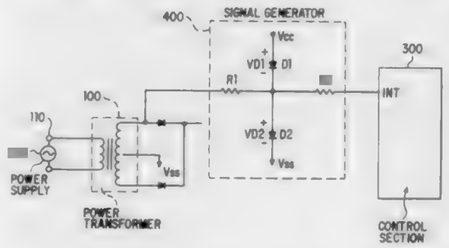
5,391,981
CURRENT SOURCE ADAPTED TO ALLOW FOR RAPID OUTPUT VOLTAGE FLUCTUATIONS
Gilles Masson, Grenoble, France, assignor to Thomson Composants Militaires et Spatiaux, Courbevoie, France
Filed Jun. 12, 1992, Ser. No. 897,819
Claims priority, application France, Jun. 14, 1991, 91 07320
Int. Cl.[6] G05F *3/16*
U.S. Cl. 323—316 **3 Claims**

1. Current source adapted to allow rapid voltage fluctuations on its output, comprising a generating branch of an output current formed by a first transistor in series with a first resistor, wherein the current source includes means for keeping a potential difference across terminals of said first resistor at a constant value, also including a reference branch formed by a reference voltage source in series with a second resistor and with a second transistor, a base region of the first and second transistors being connected and polarized via a resistor connected to a positive voltage source, said means for keeping the potential difference across the terminals of said first resistor constant comprising third and fourth transistor connected to form a differential amplifier, the third transistor having a collector region thereof connected to the positive voltage source



and a base region thereof connected to the output of said current source, a collector region of the fourth transistor is connected to base regions of the first and second transistors and a base region of said fourth transistor is connected between the second resistor and said reference voltage source.

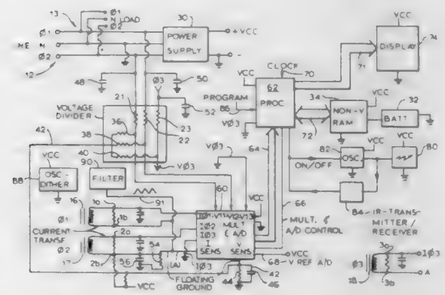
5,391,982
APPARATUS FOR AUTOMATICALLY RECOGNIZING A FREQUENCY OF A POWER SUPPLY AND METHOD THEREOF
Jong R. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Feb. 22, 1993, Ser. No. 20,819
Int. Cl.[6] G01R *23/10*
U.S. Cl. 324—76.39 **7 Claims**



1. An apparatus for recognizing a frequency of an electric power supply including a commercial alternating current power supply supplying power to an electric/electronic device, comprising:
delaying means for delaying the power generated by the commercial alternating current power supply from being supplied to the electric/electronic device;
a power transformer for transforming the power generated by the commercial alternating current power supply to a driving voltage for the electric/electronic device and outputting an output wave form;
period detecting means for shaping the output wave form received from said power transformer producing a shaped wave form having periods and generating a period detecting signal at each of the periods of the shaped wave form;
counting means for counting a number of times said period detecting signal is generated during a predetermined time period, and discriminating the frequency of the electric power supply on the basis of the number of times; and
adjusting means for adjusting a device frequency of the electric/electronic device in accordance with the frequency discriminated by said counting means for operating the electric/electronic device using the frequency;
the period detecting means further including:
a first diode connected with a reference voltage to a positive terminal thereof;

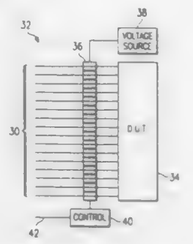
a second diode connected with a standard voltage to a negative terminal thereof; wherein a negative terminal of the first diode and a positive terminal of the second diode being connected in series;
a first resistor connected with a secondary side of said power transformer to one end thereof, and connected to the negative terminal of the first diode and to the positive terminal of the second diode to another end thereof; and
a second resistor connected with an input terminal of said adjusting means to one end thereof, and connected to the negative terminal of the first diode and to the positive terminal of the second diode to another end thereof.

5,391,983
SOLID STATE ELECTRIC POWER USAGE METER AND METHOD FOR DETERMINING POWER USAGE
Bruce B. Lusignan, Stanford, and Behruz Rezvani, Cupertino, both of Calif., assignors to K C Corp., New Rochelle, N.Y.
Filed Oct. 8, 1991, Ser. No. 773,011
Int. Cl.[6] G01R *21/06*
U.S. Cl. 324—142 **43 Claims**



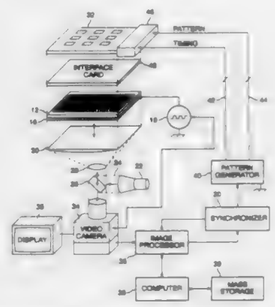
1. An electric power usage meter for determining electric power usage by a load attached to an electric power network, the power network having a network frequency and voltage and current waveforms, the power usage meter comprising:
first means coupled to each phase of the electric power network for sensing current in each phase;
second means coupled to each phase of the electric power network for detecting the voltage level on each phase;
third means coupled to the first and second means receiving signals from the first means related to the current in each phase and signals from the second means related to the voltage on each phase, said means comprising means for periodically sampling said current and voltage related signals at predetermined times at a frequency which is non-synchronous with the network frequency such that samples defining a cycle of each of the current and voltage related signals are taken over a plurality of cycles of the network waveforms and are not made at the same points on a plurality of successive cycles of the network waveforms of the respective current and voltage related signals and for converting said samples to digital signals representing said current and voltage levels at the predetermined times;
processor means for calculating instantaneous values of power at the predetermined times from the digital signals; and
means for accumulating said instantaneous values so as to form a value representative of electrical power usage by the load attached to the network.

5,391,984
METHOD AND APPARATUS FOR TESTING INTEGRATED CIRCUIT DEVICES
James L. Worley, Flower Mound, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Nov. 1, 1991, Ser. No. 786,504
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—158.1 **8 Claims**



1. A system for testing integrated circuit devices, comprising:
a test apparatus containing a plurality of test instruments;
a plurality of test fixtures for connecting to integrated circuit devices to be tested;
a plurality of signal lines connecting said test apparatus and each of said test fixtures;
a local power source, independent of the test apparatus, for each of said test fixtures; and
control means for each test fixture for placing such test fixture in a stress mode or a test mode, wherein said local power source is connected to an integrated circuit device when said fixture is in a stress mode, wherein said local power source is disconnected from the integrated circuit device when said fixture is in a test mode, and wherein said test apparatus is connected to the device in said test fixture when said test fixture is in test mode.

5,391,985
METHOD AND APPARATUS FOR MEASURING HIGH SPEED LOGIC STATES USING VOLTAGE IMAGING WITH BURST CLOCKING
Francois J. Henley, Los Gatos, Calif., assignor to Photon Dynamics, Inc., Milpitas, Calif.
Filed Mar. 6, 1992, Ser. No. 847,556
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—158.1 **5 Claims**



1. An apparatus for testing an electronic device which operates at a normal clock rate and which produces a two-dimensional voltage image, said apparatus comprising:
a voltage image sensing means for capturing said voltage image of the device by an electro-optic interaction, said voltage image sensing means comprising a voltage image

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modulator unit, said voltage image sensing means not being capable of responding at the normal clock rate of the device;

means for setting the device to a first known state in order to initialize the device;

means for operating the device at said normal clock rate for preselected counts of clock cycles and for suspending operation of the device at a first preselected clock cycle count, said operating means comprising a pattern generator coupled to a synchronizer, said synchronizer being coupled to a computer and the computer being coupled to an image processor;

means for capturing a first voltage image from said voltage sensing means at said first preselected clock cycle count at a preselected interval after suspending operation of said device, said capturing means comprising a video camera unit coupled to an image processor; and

output means for presenting at least said first voltage image for examination.

5,391,986

APPARATUS FOR DETERMINING THE PROPORTION OF A SUBSTANCE HAVING PARAMAGNETIC PROPERTIES IN A MIXTURE OF SUBSTANCES

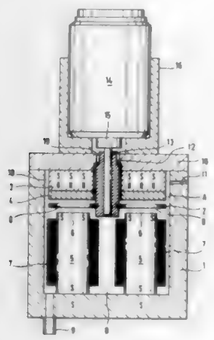
Thomas Sauerbaum, Groos Grönau, Germany, assignor to Drägerwerk Aktiengesellschaft, Lübeck, Germany

Filed May 4, 1993, Ser. No. 56,771

Claims priority, application Germany, May 9, 1992, 4215215

Int. Cl.[6] G01N *27/74*; G01R *33/12*

U.S. Cl. 324—204 **7 Claims**



1. Apparatus for determining the proportion of a substance having paramagnetic properties in a mixture of substances, the apparatus comprising:

a housing having an interior and defining a longitudinal axis and said housing having a first longitudinal end and a second longitudinal end;

a cuvette rotatably mounted in said housing between said ends for rotation about said axis and defining a plane of rotation partitioning said interior of said housing into first and second component regions;

said cuvette having first and second rotating surfaces facing toward said first and second component regions, respectively;

said cuvette having a plurality of cells for receiving the mixture of substances containing the paramagnetic substance;

an even number multiple of magnetic field cores mounted in said first component region of said housing for conducting a magnetic field which penetrates said cells of said cuvette;

a drive unit mounted at said first longitudinal end and having a drive shaft connected to said cuvette for rotating said cuvette past said cores whereby said paramagnetic substance in said cells causes magnetic flux changes;

a plurality of measuring field coils surrounding said cores, respectively, for converting said magnetic flux changes into an electrical signal and said magnetic field cores being aligned in a direction toward said cuvette; and,

magnetic field supply means for supplying said magnetic field and said magnetic field supply means being mounted in said second component region of said interior of said housing

said magnetic field supply means being formed as a permanent magnet and having a first magnetic pole face of a first polarity connected directly to said housing whereby said housing assumes said first polarity;

said magnetic field supply means having a second magnetic pole face of a second polarity facing toward said second rotating surface of said cuvette and said second magnetic pole face defining a pole face surface which is essentially completely coextensive with said second rotating surface;

said magnetic field cores being positioned in said first component region so as to be directed toward said cuvette and having respective first end faces connected directly to said housing so as to cause said magnetic field cores to likewise assume said first polarity; and,

said magnetic field cores having respective second end faces also having said first polarity and said second end faces being adjacent said first rotating surface of said cuvette and opposite said second magnetic pole face of said second polarity.

5,391,987

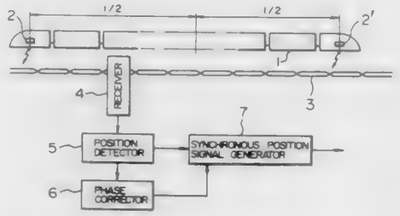
SYNCHRONOUS POSITION CORRECTION SYSTEM FOR A LINEAR SYNCHRONOUS MOTOR TRAIN

Shigeyoshi Koike, and Tetsuro Noguchi, both of Katsuta, Japan, assignors to Hitachi, Ltd. and Hitachi Techno Engineering Co., Ltd., both of Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 903,980

Int. Cl.[6] G01B *7/14*; H01R *33/025*

U.S. Cl. 324—207.12 **10 Claims**



1. A synchronous position correction system for a linear synchronous motor train, formed by a plurality of cars, and having a propulsion winding provided on the ground and a field pole provided on said train, said train having a synchronous position detector for detecting a positional relationship between said propulsion winding and said field pole of said train when running and when said train is stopped, characterized in that said synchronous position correction system includes:

phase correction means for obtaining beforehand a correction amount determined by an average phase of the whole of said train and a phase obtained through said synchronous position detector, from an output of inductive wires, and

synchronous position signal generating means for correcting the phase obtained from the output of said inductive wires by means of an output of said phase correction means to generate the synchronous position signal when said train is running.

5,391,988

METHOD AND APPARATUS FOR DETECTING FLAWS WITHIN A CONDUCTIVE OBJECT WHILE CANCELLING THE EFFECTS OF VARIATION IN DISTANCE BETWEEN THE DETECTION APPARATUS AND THE CONDUCTIVE OBJECT

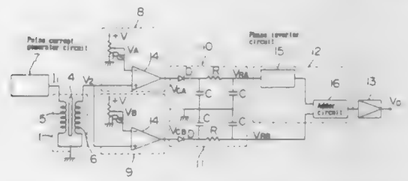
Shigeru Kitagawa, Kurashiki, Japan, assignor to Kabushiki Kaisha Nihon Hihakai Keisoku Kenkyusho, Kurashiki; Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo and MES Testing & Research Center Co., Ltd., Tamano, all of Japan

PCT No. PCT/JP91/01218, § 371 Date Apr. 20, 1993, § 102(e) Date Apr. 20, 1993, PCT Pub. No. WO93/06477, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 13, 1991, Ser. No. 39,234

Int. Cl.[6] G01N *27/90*

U.S. Cl. 324—225 **10 Claims**



1. A method of detecting a flaw within a conductive object to be inspected by eddy current testing, using a ferrite core on which a primary coil and a secondary coil are wound, said method comprising the steps of:

supplying a rectangular-wave current to the primary coil to induce a voltage of a pulse waveform in the secondary coil;

measuring the pulse duration of the induced voltage at two separate time instances corresponding to two different threshold voltages; and

canceling the effect of variations in the distance between the ferrite core and the conductive object, using a comparison of the two measured pulse durations, to correctly detect only the flaw.

5,391,989

MAGNETIC RESONANCE IMAGING METHOD AND APPARATUS FOR IMAGING A FLUID PORTION IN A BODY

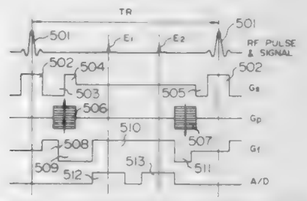
Atsushi Takane, Katsuta; Munetaka Tsuda, Mito, and Hideaki Koizumi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 853,789

Claims priority, application Japan, Mar. 20, 1991, 3-057098

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—306 **34 Claims**



1. A magnetic resonance imaging method comprising the steps of repeatedly applying radio frequency pulses to a sample including a fluid portion positioned in a static magnetic field in the presence of gradient magnetic fields so that spins in said sample are put in a steady-state free precession state so as to generate an FID signal just after a first radio frequency pulse and generate a time-reversed FID signal just before a second radio frequency pulse generated following said first radio frequency pulse, detecting both of said generated signals during a repetition time, and reconstructing an image from both of said detected signals to image said fluid portion.

5,391,990

ITERATIVE SHIMMING METHOD FOR A BASIC FIELD MAGNET OF A NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY APPARATUS

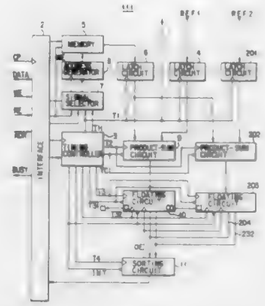
Franz Schmitt, Erlangen, and Fischer, Bamberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 13, 1993, Ser. No. 105,647

Claims priority, application Germany, Aug. 17, 1992, 4227162

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—320 **15 Claims**



1. An iterative method for shimming a basic field magnet in a nuclear magnetic resonance tomography apparatus having at least one shim coil with an adjustable shim current flowing therein and at least one gradient coil, said method consisting of the steps of:

(a) exciting a spins system in the examination space of a nuclear magnetic resonance tomography apparatus with a radio frequency excitation pulse;

(b) generating a plurality of echo signals with a bipolar gradient pulse sequence arising from excitation of said spin system by said radio frequency excitation pulse, and sampling each echo signal to obtain digitized samples for each echo signal and entering said digitized samples per echo signal into respective row of a measured data matrix;

(c) identifying a reference row of said measured data matrix and forming correlation coefficients of the digitized samples of at least a portion of the rows of said measurement matrix with respect to said reference row;

(d) varying said shim current in said at least one shim coil to cause an increase in said correlation coefficients;

(e) repeating step (a) with the varied shim current flowing in said at least one shim coil and repeating steps (b) through (d) to again vary said shim current; and

(f) repeating steps (a) through (e) until a selected basic field homogeneity has been achieved in said examination space.

5,391,991

CABLE SHIELD RESISTANCE TEST SET

John E. B. Tuttle, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 29, 1993, Ser. No. 128,172

Int. Cl.[6] G01R *27/14*

U.S. Cl. 324—529 **1 Claim**

1. A method of measuring resistance in a circuit without disconnecting said circuit comprising the steps of:

inductively applying a repetitive current pulse in a circuit under test;

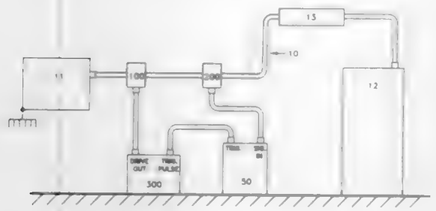
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inductively sampling said repetitive current pulse induced in said circuit under test;

sampling the voltage pulse induced across a portion of said circuit under test as a result of said inductively applied current pulse;

displaying a voltage waveform proportional to said repetitive current pulse induced in said circuit under test on a display means;

displaying a voltage waveform proportional to said sampled voltage across a portion of said circuit under test, wherein said displayed voltage waveform proportional to said sampled voltage across a portion of said circuit under test is representative of the resistance in said portion of said circuit under test and further wherein the total resistance of the circuit under test is computed thusly:



$$R_t = [E_t Z_t / V] - [R_s]$$

where

E_t is the voltage inductively inserted into the circuit under test,

Z_t is the transfer function of the inductive current probe in ohms,

V is the peak amplitude of said inductively sampled waveform proportional to said repetitive current pulse induced in said circuit under test, and

R_s is the equivalent source impedance in ohms associated with the voltage inductively inserted into the circuit under test.

5,391,992

MEASURING DEVICE FOR ABSOLUTE MEASUREMENT OF POSITIONS

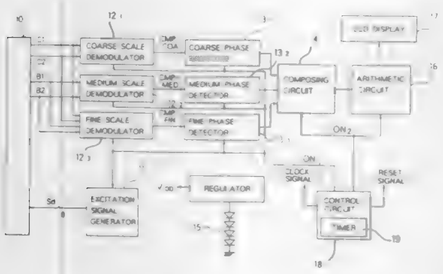
Satoshi Adachi, Kawasaki, Japan, assignor to Mitutoyo Corporation, Tokyo, Japan

Filed Sep. 8, 1993, Ser. No. 117,770

Claims priority, application Japan, Sep. 14, 1992, 4-270912

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—660 **4 Claims**



1. A measuring device for absolute measurement of positions, comprising:

displacement sensing means having a fixed element and a movable element which is relatively movable against said fixed element and being adapted to output a signal corresponding to the relative position of said movable element against said fixed element;

demodulation means for processing the output signal of said displacement sensing means so as to obtain cyclic square signals for detecting at least two types of displacement of coarse scale and fine scale, each edge of the square signals having phase information;

phase detection means for detecting phase information from each square signal obtained by said demodulation means so as to obtain phase data of at least coarse scale and fine scale;

composing means for composing phase data of the coarse scale and fine scale obtained by said phase detection means so as to obtain an absolute displacement of said movable element against said fixed element;

display means for displaying the absolute displacement obtained by said composing means at predetermined refresh cycles; and

control means for limiting the period of the operation of said demodulation means and said phase detection means regardless of whether said phase information is sampled, said control means including timer means for designating the period of said refresh cycles, for activating said demodulating means and said phase detection means for a predetermined period in said refresh cycles, and for successively activating said composing means for a predetermined period.

5,391,993

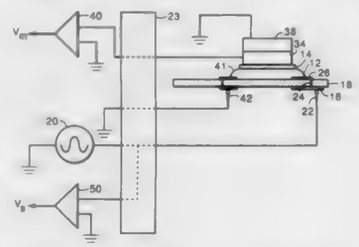
CAPACITIVE OPEN-CIRCUIT TEST EMPLOYING THRESHOLD DETERMINATION

Moses Khazam, Lexington, and Steven M. Blumenau, Royalston, both of Mass., assignors to GenRad, Inc., Concord, Mass.

Filed Jan. 27, 1994, Ser. No. 188,385

Int. Cl.[6] G01R *27/26, 31/04*

U.S. Cl. 324—684 **8 Claims**



1. For testing for the presence, on a circuit board of a given type on which is mounted a subject device that includes a plurality of UUT pins intended to be electrically connected to board nodes respectively associated therewith, of an open circuit between a subject one of the UUT pins and the node associated therewith, a method comprising the steps of:

A) on a known reference board of the given type on which is mounted a reference device corresponding to the subject device and including reference-device pins respectively corresponding to the UUT pins of the subject device, which reference-device pins are properly connected to reference board nodes, taking, for each of a plurality of the UUT pins, including the subject UUT pin, a raw reference measurement of the capacitance between a capacitive-probe plate disposed adjacent the reference device and the node associated with the reference-device pin that corresponds to that UUT pin, thereby assigning a raw pin-capacitance value to that UUT pin;

B) assigning to each of one or more of the UUT pins, including the subject UUT pin, a connection-dependent value that, for a given UUT pin, is the result of replacing the raw pin-capacitance value for that pin with a function of the pin-capacitance values assigned to other UUT pins:

C) assigning to the subject UUT pin a test threshold value that depends not only on the raw pin-capacitance value for that pin but also on the connection-dependent value assigned thereto;

D) taking a test measurement of capacitance between the subject UUT pin's associated node and a capacitive-probe plate disposed adjacent the subject device; and

E) if the test measurement for the subject UUT pin does not exceed the test threshold value assigned thereto, generating a pin-open signal that indicates that an open circuit exists at the subject UUT pin.

5,391,994

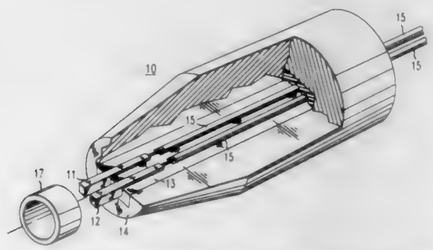
METHOD FOR MEASURING SURFACE RESISTIVITY USING SQUARE ELECTRODES AND MULTIPLYING SURFACE RESISTANCE MEASUREMENTS BY A CORRECTION FACTOR

Matthew B. Baillie, Emmaus, Pa., and Ming-Chung Jon, Princeton Junction, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 31, 1992, Ser. No. 999,079

Int. Cl.[6] G01R *27/14;* **G01N** *27/04*

U.S. Cl. 324—717 **8 Claims**



1. A method of determining surface resistivity of a material for use in ESD-safe tape-and-reel packaging of electronic devices, which comprises

placing a pair of square electrodes of equal size, spaced by a distance equal to the side of the square, in contact with a region of a surface area of a material the surface resistivity (ρ) of which is to be determined,

measuring the surface resistance (R_a) of said area of the material by applying a steady voltage to one of the square electrodes,

converting the surface resistance (R_a) value into the surface resistivity (ρ) value of the area by multiplying the surface resistance value by a correction factor. (K) of less than 2.5, and

using the surface resistivity (ρ) value for determining whether the material is suitable for ESD-safe tape-and-reel packaging of electronic devices.

5,391,995

TWISTING ELECTRICAL TEST PROBE WITH CONTROLLED POINTING ACCURACY

Charles J. Johnston, Walnut, and Mark A. Swart, Upland, both of Calif., assignors to Everett Charles Technologies, Inc., Pomona, Calif.

Filed Feb. 1, 1994, Ser. No. 189,693

Int. Cl.[6] G01R *1/073*

U.S. Cl. 324—761 **4 Claims**

1. A spring biased test probe for testing printed circuit boards, comprising:

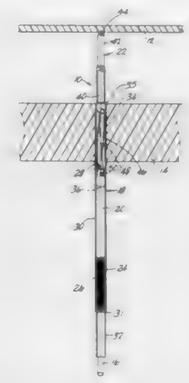
a elongated tubular barrel having an open end and a spring seating end,

a compression spring within the spring seating end of the barrel opposite from its open end,

a plunger inserted in the barrel for reciprocating within the barrel during testing of the printed circuit board, the plunger sliding within the barrel and biased by the spring,

the plunger including a forward end portion outside the barrel, a slidable tail portion that contacts the spring and slides within the barrel, and an intermediate twisted portion between the forward end and the tail portion of the plunger, the forward end of the plunger having a probe tip configured to make frictional pressure contact with the board to be tested, the intermediate portion of the plunger being twisted about its axis to form a spiral with helical grooves contacted by circumferentially spaced apart crimps in the side of the barrel, the plunger rotating about its axis by its contact with the crimps as the plunger travels axially in the barrel, the twisted intermediate section of the plunger and the forward end of the plunger extending outside the barrel, and

an elongated tubular outer receptacle containing the barrel, the receptacle having a fixed forward end portion extending axially beyond the open end of the barrel, the forward end of the plunger including an elongated enlarged diameter guide bearing section between the probe tip and the twisted portion of the plunger, the guide bearing section of the plunger being received for guided travel within the portion of the receptacle extending beyond the open end of the barrel, for guiding axial reciprocating travel of the plunger to produce controlled pointing accuracy and resistance to side loading as the probe twists about its axis.



5,391,996

TECHNIQUES FOR GENERATING TWO HIGH FREQUENCY SIGNALS WITH A CONSTANT PHASE DIFFERENCE OVER A WIDE FREQUENCY BAND

Daniel J. Marz, Richboro, Pa., assignor to General Instrument Corporation of Delaware, Hatboro, Pa.

Filed Nov. 19, 1993, Ser. No. 156,028

Int. Cl.[6] H03L *7/08, 7/22*

U.S. Cl. 327—158 **22 Claims**

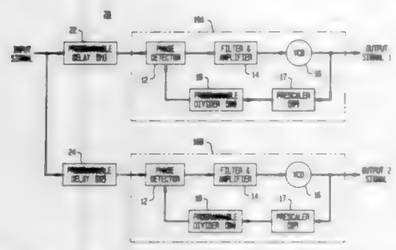
1. Apparatus for providing a first and a second output signal with a predetermined phase difference therebetween from an input reference signal having a predetermined frequency and phase comprising:

splitting means for receiving the input reference signal and providing corresponding first and second split output signals therefrom;

programmed phase delay means for introducing a separate selective predetermined programmed phase delay into at least one of the corresponding first and second split output signals received from the splitting means for generating

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first and second output signals from the programmed phase delay means having a predetermined phase difference therebetween; and



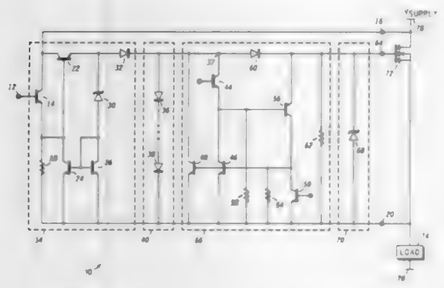
generating means responsive only to the first and second output signals from the programmed phase delay means for generating therefrom the first and second output signals, respectively, from the apparatus having said predetermined phase difference therebetween.

5,391,997

OPTICALLY ISOLATED N-CHANNEL MOSFET DRIVER

Brian D. Meyer, Scottsdale; David M. Heminger, Mesa, and Joseph H. Slaughter, III, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 28, 1993, Ser. No. 141,366
Int. Cl.[6] G02B *27/00*; H03K *19/14*
U.S. Cl. 327—514 **16 Claims**



1. A MOSFET driver having a gate output terminal, a drain output terminal and a source output terminal, comprising:

a photovoltaic array coupled between a first node and the source output terminal and operating in response to an optical input signal for developing a gate voltage at the gate output terminal;

first means responsive to said optical input signal for sourcing current into said first node to increase slew rate of said gate voltage at the gate output terminal, said first mean including,

(a) first optical switching means having first and second conduction terminals and a control terminal, said first conduction terminal being coupled to the drain output terminal, said control terminal receiving said optical input signal,

(b) a first resistor coupled between said second conduction terminal of said first optical switching means and the source output terminal,

(c) a first transistor having a base, an emitter and a collector, said collector being coupled to said first conduction terminal of said first optical switching means,

(d) a current mirror circuit having an input and an output, said output being coupled to said second conduction terminal of said first optical switching means and to said base of said first transistor,

(e) a first diode having cathode coupled to said emitter of said first transistor and having an anode coupled to said input of said current mirror circuit, and

(f) a second diode having an anode coupled to said emitter of said first transistor and having a cathode coupled to said first node; and

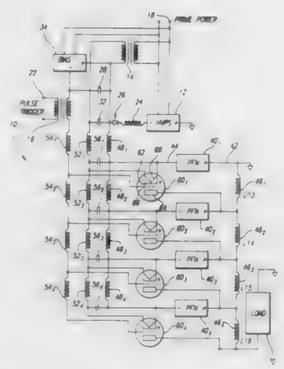
second means responsive to an absence of said optical input signal for discharging said gate voltage at the gate output terminal.

5,391,998

MODULATOR FOR EFFICIENTLY GENERATING SHORT HIGH VOLTAGE REPETITIVE PULSES

Robert S. Symons, Los Altos, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jul. 30, 1993, Ser. No. 100,491
Int. Cl.[6] H03K *3/37*
U.S. Cl. 327—181 **25 Claims**



1. A modulator for producing repetitive short high voltage pulses, comprising:

a high voltage power supply;

a plurality of pulse forming networks;

means for resonant charging said pulse forming networks by connecting said pulse forming networks in parallel with said high voltage power supply; and

means for discharging said pulse forming networks in series into a load.

5,391,999

GLITCHLESS SWITCHED-CAPACITOR BIQUAD LOW PASS FILTER

Adrian B. Early, Buda, and Jeffrey D. Ganger, Austin, both of Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Dec. 2, 1993, Ser. No. 160,136
Int. Cl.[6] H03K *5/00*
U.S. Cl. 327—337 **21 Claims**

1. A switched-capacitor filter, comprising:

a first switching element having a first terminal for receiving a first input signal, and a second terminal;

a first capacitive element having a first plate electrode coupled to the second terminal of the first switching element, and a second plate electrode;

a first amplifier having a first input terminal coupled to the second plate electrode of the first capacitive element, and a first output terminal;

a second switching element having a first terminal coupled to the first output terminal of the first amplifier, and a second terminal coupled to the first input terminal of the first amplifier;

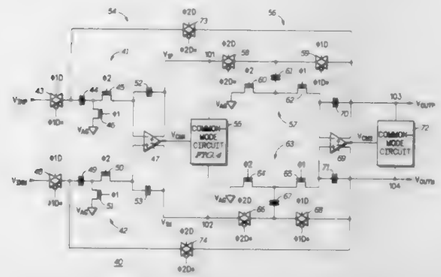
a third switching element having a first terminal coupled to first input terminal of the first amplifier, and a second terminal;

a second capacitive element having a first plate electrode coupled to the second terminal of the third switching element, and a second plate electrode coupled to the first output terminal of the first amplifier;

a fourth switching element having a first terminal coupled to the first output terminal of the first amplifier, and a second terminal;

a third capacitive element having a first plate electrode coupled to the second terminal of the fourth switching element, and a second plate electrode;

a fifth switching element having a first terminal coupled to a reference voltage terminal, and a second terminal coupled to the second plate electrode of the third capacitive element;



a sixth switching element having a first terminal coupled to the second terminal of the fourth switching element, and a second terminal;

a seventh switching element having a first terminal coupled to the second terminal of the fifth switching element, and a second terminal;

a second amplifier having a first input terminal coupled to the second terminal of the seventh switching element, and a first output terminal coupled to the second terminal of-the sixth switching element for providing a first output signal;

a fourth capacitive element having a first plate electrode coupled to the first output terminal of the second amplifier, and a second plate electrode coupled to the first input terminal of the second amplifier; and

an eighth switching element having a first terminal coupled to the first output terminal of the second amplifier, and a second terminal coupled to the second terminal of the first switching element.

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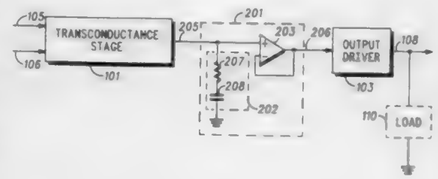
APPARATUS AND METHOD FOR FREQUENCY COMPENSATING AN OPERATIONAL AMPLIFIER

Steven F. Gillig, Roselle, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 9, 1993, Ser. No. 149,683
Int. Cl.[6] H03F *1/34*
U.S. Cl. 330—107 **18 Claims**

1. In an operational amplifier that drives a load having a complex impedance having a value selected from a wide range of values, wherein the operational amplifier has an open loop unity gain frequency, wherein a transconductance stage has at least one input terminal coupled to receive at least one input signal and has at least one output terminal operative to produce at least one amplified signal, wherein an output driver has at least one input terminal coupled to receive at least one buffered amplified signal and has at least one output terminal operative to produce an output signal to drive the load, an apparatus for frequency compensating the operational amplifier comprising:

a transimpedance circuit having at least one input terminal coupled to receive the at least one amplified signal and at least one output terminal operative to produce the at least one buffered amplified signal, wherein the transimpedance circuit has a transfer function represented by the voltage of the at least one buffered amplified signal divided by the



current of the at least one amplified signal, and wherein the transfer function has a zero at a frequency substantially near the open loop unity gain frequency, and wherein the at least one amplified signal is buffered from a complex impedance of the at least one input terminal of the output driver.

5,392,001

CAPACITIVELY-COUPLED AMPLIFIER WITH IMPROVED LOW FREQUENCY RESPONSE

Thomas F. Uhling, Monument; John M. Heumann, Loveland, and Ronald J. Peiffer, Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 28, 1994, Ser. No. 202,329
Int. Cl.[6] H03F *1/38*; G01R *1/30*
U.S. Cl. 330—156 **10 Claims**

1. A capacitively-coupled amplifier circuit comprising:

amplifier means for receiving an input signal via a coupling capacitance and for amplifying said input signal to produce an output signal, said amplifier means having a low frequency pole at a first frequency and a high frequency pole at a second frequency;

bootstrap means for producing a positive feedback signal from said output signal, wherein a transfer function of said bootstrap means exhibits a mid frequency pole at a third frequency between said first frequency and said second frequency; and

bias means for providing a bias signal to an input of said amplifier means, said bias means being responsive to said positive feedback signal to modify said first frequency.

5,392,002

LOW VOLTAGE BIPOLAR NEGATIVE IMPEDANCE CONVERTER

Cary L. Delano, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 28, 1993, Ser. No. 69,219
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—252 **20 Claims**

1. A negative impedance converter circuit having a high

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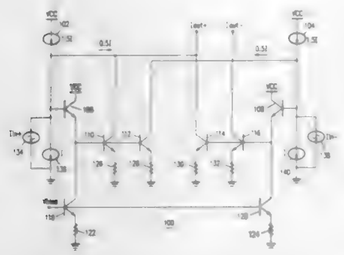
differential output impedance and a low common mode output impedance, the circuit comprising:

a first pair of transistors, each of the transistors including a collector, base and emitter, the bases of both transistors connected in common;

a second pair of transistors, each of the transistors including a collector, base and emitter, the bases of both transistors connected in common;

a first emitter follower transistor connected to provide a first input drive signal to the bases of the first pair of transistors;

a second emitter follower transistor connected to provide a second input drive signal to the bases of the second pair of transistors;



a first output node connected to the collectors of a first transistor of the first pair of transistors and a first transistor of the second pair of transistors and to a base of the first emitter follower transistor; and

a second output node connected to the collectors of a second transistor of the first pair of transistors and a second transistor of the second pair of transistors and to a base of the second emitter follower transistor, whereby differential input signals produce substantially equal and opposite currents through the collectors connected to the first output node, and substantially equal and opposite currents through the collectors connected to the second output node.

5,392,003

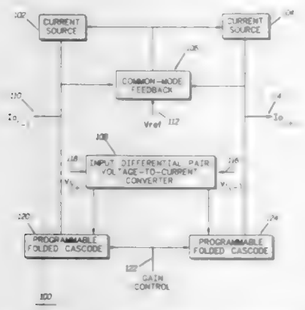
WIDE TUNING RANGE OPERATIONAL TRANSCONDUCTANCE AMPLIFIERS

Manbir Nag, Plantation, and Joseph P. Heck, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 9, 1993, Ser. No. 103,655

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—254 **12 Claims**



1. A wide dynamic range tunable Operational Transconductance Amplifier (OTA) having an output and an operating voltage, comprising:

a differential voltage to current converter, including:

an output; at least one low noise large input swing amplifier; at least one current source coupled to the amplifier;

a pair of programmable folded cascode stages each DC coupled to the output of the converter without utilizing additional coupling amplifiers, the folded cascode stages including:

a common base amplifier:

a programmable amplifier coupled to the common base amplifier for rendering the folded cascode stages programmable;

means for maintaining the output signal substantially and equally centered between rails of the operating voltage; and

a pair of current sources DC coupled to the pair of programmable folded cascode stages to provide variable output sourcing current.

5,392,004

COMBINATION AMPLIFIER/BIAS VOLTAGE GENERATOR

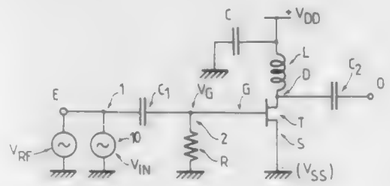
Denis Masliah, Saint-Germain-en-Laye, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 1, 1993, Ser. No. 146,514

Claims priority, application France, Nov. 4, 1992, 92 13244

Int. Cl.[6] H03F *3/16*

U.S. Cl. 330—296 **20 Claims**



1. A circuit for processing an AC signal comprising: a first stage including a first active element biased with a first bias voltage (V_{DD}) applied between its first main electrode and its second main electrode, and biased with a second bias voltage (V_G) applied between its control electrode and its second main electrode, said control electrode also receiving the AC signal, the first active element being of the type in which, when in operation, normally no bias current flows in the control electrode, wherein the second DC bias voltage is generated at the terminals of a resistor coupled to the control electrode and to the second main electrode of the first active element by applying to the control electrode an AC power signal at a level which is sufficient to activate the rectifier properties of the first active element between its control electrode and its second main electrode.

5,392,005

FIELD CALIBRATION OF A DIGITALLY COMPENSATED CRYSTAL OSCILLATOR OVER A TEMPERATURE RANGE

James R. Bortolini, Boulder, and Gary J. Grimes, Thornton, both of Colo., assignors to AT&T Corp., Murray Hill, N.J.

Filed Sep. 30, 1993, Ser. No. 129,539

Int. Cl.[6] H03L *1/00*

U.S. Cl. 331—44 **8 Claims**

1. An apparatus for compensating an oscillator to correct frequency changes of an output signal of the oscillator due to aging of the oscillator with the oscillator having a first set of compensation values to correct the output signal for frequency changes due to temperature changes over a temperature range and the apparatus using an external reference signal, comprising:

means for detecting a difference in frequency between the output signal and the external reference signal;

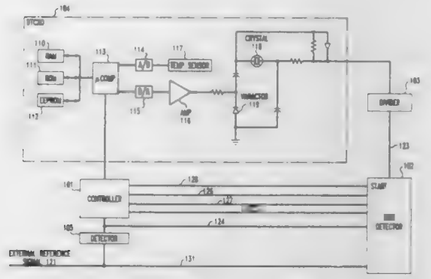
means for determining the temperature of the oscillator;

means for storing the first set of compensation values with each compensation value corresponding to an individual temperature in the temperature range;

means for establishing that the temperature has been stable for a predefined amount of time;

means for establishing the stability of the external reference signal;

means for determining a new compensation value to correct the output signal to have the same frequency as the external reference signal at the determined temperature upon the temperature and external reference signal stable;



means for checking that the absolute difference between the new compensation value and the one of the first set of compensation values at the determined temperature is less than a predefined value; and

means for generating a second set of compensation values upon the absolute difference being less than the predefined value by adding the difference between the new compensation value and the one of the first set of compensation values at the determined temperature to each of the first set of compensation values where the second set of compensation values corrects the oscillator throughout the operating temperature range of the oscillator for change due to aging.

5,392,006

PRESSURE SEAL TYPE PIEZOELECTRIC RESONATOR

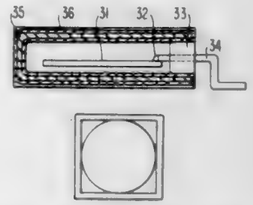
Tatsuo Ikeda; Hiroyuki Ogiso, and Kazushige Ichinose, all of Minowa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 782,771, Oct. 17, 1991, Pat. No. 5,265,316, which is a continuation of Ser. No. 563,879, Aug. 6, 1990, abandoned, which is a continuation of Ser. No. 265,865, Oct. 6, 1988, abandoned. This application Sep. 2, 1993, Ser. No. 114,858

Claims priority, application Japan, Feb. 27, 1987, 62-28640; Sep. 8, 1987, 62-224425; Nov. 20, 1987, 62-293560; Nov. 20, 1987, 62-293562

Int. Cl.[6] H03B *5/32;* **H01L** *41/08*

U.S. Cl. 331—158 **11 Claims**



1. A pressure seal type piezoelectric resonator, comprising:

a cylindrically shaped resonator case having a first wall defining a circular opening;

a stem in a press fit engagement with the case and located within the opening;

a quantity of a high temperature solder which achieves a semi-fluid condition above at least about 260° C. that is substantially free of dissolved gas and including at least about 90% lead (Pb) between the first wall and the stem and sealing the stem to the first wall in the opening;

a quartz crystal vibrator within the case and a lead passing through the stem to the interior of the case to the quartz crystal vibrator, the lead coupled to the quartz crystal vibrator by an additional quantity of said high temperature solder.

5,392,007

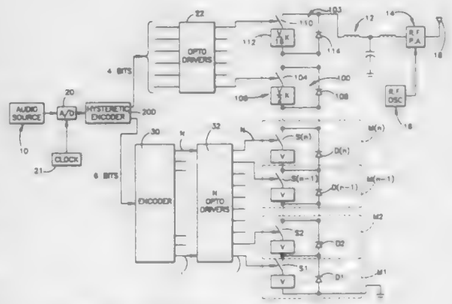
MODULATOR HAVING IMPROVED ENCODING

David W. Cripe, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 12, 1994, Ser. No. 226,565

Int. Cl.[6] H03C *1/00;* **H03F** *3/38*

U.S. Cl. 332—149 **18 Claims**



1. A modulator comprising:

a plurality of N series connected unit modules each including a first signal source and an associated actuatable switching means for, when actuated, turning on said associated module to provide a unit signal;

a plurality of M series connected binary step modules connected together in series with said series connected unit step modules with each binary step module including a fractional signal source having a value which is a fraction of said first signal source and wherein each said binary step module has an associated actuatable switching means for, when actuated, turning on said associated binary step module to provide a binary step signal;

an output circuit connected to said series connected modules for providing an output signal to a load wherein the magnitude of the output signal is equal to the sum of all of the signal sources of said modules that are turned on;

means for receiving an analog input signal and converting same into digital words, each said word including first and second multi-bit digital portions;

means for converting said first portion into N unit step control signals for controlling actuation of said N unit step modules so that the number of said unit step modules that are turned on is dependent upon the magnitude of said analog input signal;

said second multi-bit digital portion including a binary bit pattern that varies with increasing and decreasing values of said input analog signal; and

encoding means having means responsive, while said binary bit pattern is varying in value, to a preselected binary bit pattern for changing the value thereof by a given amount.

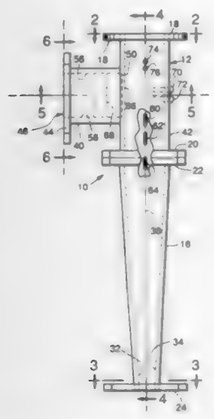
VOL 1171 ISS 3 FE 21 1995 UMI

5,392,008

ORTHOMODE TRANSDUCER WITH SIDE-PORT WINDOW

Mon N. Wong, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 22, 1993, Ser. No. 50,791
Int. Cl.[6] H01P 1/16
U.S. Cl. 333—21 R 15 Claims



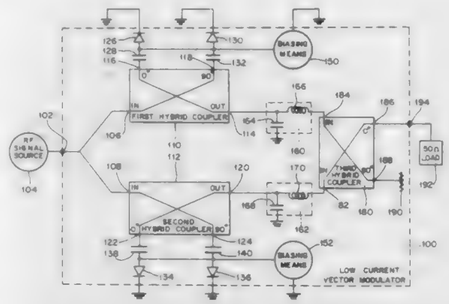
1. A waveguide orthomode transducer comprising:
a first rectangular input port having cross-sectional dimensions of width and height wherein the width is greater than the height;
a second rectangular input port having cross-sectional dimensions of width and height wherein the width is greater than the height;
an output port of circular cross section;
a circular waveguide extending along a central longitudinal axis of the transducer from said output port partway to said first input port;
a tapered transition from rectangular waveguide to circular waveguide connecting said circular waveguide to said first input port;
a rectangular waveguide connecting said second input port with said circular waveguide, a central axis of said rectangular waveguide being perpendicular to said longitudinal axis, said rectangular waveguide comprising a pair of opposed broad walls interconnected by a pair of opposed narrow walls;
wherein said first input port launches a first electromagnetic wave having a first linear polarization into said transition, an electric field of said first electromagnetic wave being parallel to sidewalls of said first input port;
wherein said second input port launches a second electromagnetic wave having a second linear polarization into said circular waveguide, a plane of polarization of said first electromagnetic wave being perpendicular to a plane of polarization of said second electromagnetic wave, an electric field of said second electromagnetic wave being parallel to sidewalls of said second input port;
said orthomode transducer further comprises a window disposed at a junction of said rectangular waveguide with said circular waveguide, said window extending from one of said broad walls to the other of said broad walls of said rectangular waveguide; and
said transducer further comprises first blade means disposed along said longitudinal axis in said circular waveguide, and being perpendicular to the plane of polarization of said first electromagnetic wave.

5,392,009

LOW CURRENT VECTOR MODULATOR

Ashok K. Talwar, Westlake Village, Calif., assignor to American Nucleonics Corporation, Westlake Village, Calif.

Filed Dec. 22, 1993, Ser. No. 171,658
Int. Cl.[6] H01P 1/22
U.S. Cl. 333—81 R 9 Claims



1. A low current vector modulator for modulating the amplitude and polarity of a radio frequency (RF) signal, comprising:
first and second hybrid couplers, each having an input port, an output port, a 0° phase port and a 90° phase port, and each having approximately equal characteristic impedances, where the input ports of the first and second hybrid couplers are each electrically coupled to an RF signal source generating an RF signal to be modulated, the impedance of the RF signal source being approximately equal to half the impedance of the first and second hybrid couplers;
first, second, third and fourth variable resistance terminations, the first, second, third and fourth variable resistance terminations being electrically coupled to the 0° phase port of the first hybrid coupler, the 90° phase port of the first hybrid coupler, the 0° phase port of the second hybrid coupler and the 90° phase port of the second hybrid coupler, respectively;
wherein the first and second hybrid couplers generate first and second output signals on respective output ports, which output signals vary in amplitude and phase with respect to the RF signal in response to changes in resistance of the variable resistance terminations;
a third hybrid coupler, the third hybrid coupler having a first input port, a second input port, a 0° phase output port and a 90° phase output port, the third hybrid coupler being responsive to the first and second output signals and generating a third output signal which varies in phase and amplitude in response to changes in resistance of the first, second, third and fourth variable resistance terminations; and
resistance varying means electrically coupled to the first, second, third and fourth variable resistance terminations for varying the resistance of the terminations.

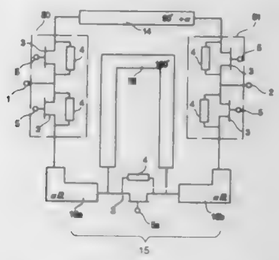
5,392,010

90 DEGREE PHASE SHIFTER

Kazuhiko Nakahara, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1993, Ser. No. 158,772
Claims priority, application Japan, Apr. 21, 1993, 5-093474
Int. Cl.[6] H01P 1/18; H03H 7/18
U.S. Cl. 333—161 5 Claims

1. A 90° phase shifter comprising:
first and second single pole double throw (SPDT) switches, the first SPDT switch receiving an input signal input to an input terminal of said first SPDT switch and outputting the signal to one of first and second output terminals of said first SPDT switch, and the second SPDT switch receiving the signals from said first SPDT switch at one of first and second input terminals of said second SPDT switch and outputting the signal at an output terminal of said second SPDT switch;
a reference transmission line having an electrical length of α connected between said first output terminal and said first input terminal of said first and second SPDT switches, respectively, said reference transmission line being divided into two parts of substantially equal electrical lengths of $\alpha/2$;
a phase difference producing transmission line having an



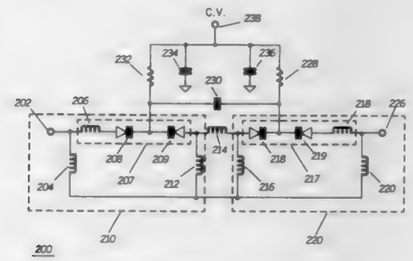
electrical length of $(90°+\alpha)$ at a usage frequency connected between said second output terminal and said second input terminal of said first and said second SPDT switches, respectively; and
a phase inverting circuit connected to and between the two parts of said reference transmission line and including a phase shift selection switch for switching said phase inverting circuit between connection to the two parts of said reference transmission line and disconnection from the two parts of said reference transmission line, said input terminal of said first SPDT switch being an input terminal of said phase shifter and said output terminal of said second SPDT switch being an output terminal of said phase shifter.

5,392,011

TUNABLE FILTER HAVING CAPACITIVELY COUPLED TUNING ELEMENTS

Richard C. Li, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 20, 1992, Ser. No. 979,017
Int. Cl.[6] H03H 7/12
U.S. Cl. 333—174 4 Claims



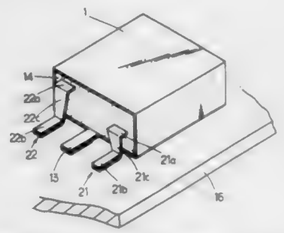
1. A tunable filter, comprising:
a first resonator having a series resonant circuit including a first tuning element and coupled between two shunted inductors;
a second resonator having a second tuning element;
coupling means for coupling the first resonator to the second resonator;
a capacitor for capacitively coupling the first tuning element to the second tuning element.

5,392,012

PIEZOELECTRIC FILTER IN A CASING SEALED BY AN INSULATING FILLER AND HAVING CRANKED CONNECTING LEGS

Tatsuo Iwata; Tatsuo Ogawa, and Yasuhiko Nakagawa, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Sep. 15, 1992, Ser. No. 944,989
Claims priority, application Japan, Sep. 18, 1991, 3-084374[U]; Sep. 21, 1991, 3-084819[U]; Sep. 21, 1991, 3-084820[U]
Int. Cl.[6] H03H 9/10, 9/58
U.S. Cl. 333—189 2 Claims



1. A piezoelectric filter device comprising at least one pair of piezoelectric resonators, a plurality of terminal plates, including input and output terminal plates, which are electrically connected to and mechanically support respective resonators of the at least one pair of resonators at oscillation nodes thereof, the input and output terminal plates being respectively provided with connecting legs having a configuration which is in the shape of a crank and which, in use, provide mounting of the piezoelectric filter device on a surface of a printed circuit board, a casing which houses the piezoelectric resonators and the terminal plates, at least one insulating plate disposed within said casing between one of said terminal plates and said casing, said resonators and terminal plates being connected together in stacked relation so as to define a ladder-type filter circuit, and said casing having an opening through which the connector legs externally project, and an insulating filler closing off the opening of the casing, the opening of the casing being provided with an inner peripheral rough surface which is bonded to the insulating filler, said casing including a lower wall and a connecting extension which extends from said lower wall, said connecting legs each having a free end, and said extension having a free end and being of a length, measured from the free end of said extension to said insulating filler, greater than the perpendicular distances between the free ends of the connecting legs of the terminal plates and the insulating filler.

5,392,013

SURFACE ACOUSTIC WAVE FILTER CAPABLE OF WIDENING A BANDWIDTH

Yasushi Yamamoto, and Ryuuji Kajihara, both of Tokyo, Japan, assignors to Nec Corporation, Tokyo, Japan

Filed Jul. 16, 1993, Ser. No. 92,752
Claims priority, application Japan, Jul. 17, 1992, 4-190552
Int. Cl.[6] H03H 9/63
U.S. Cl. 333—195 2 Claims

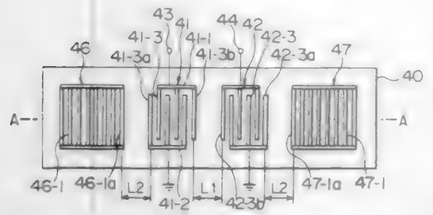
2. A surface acoustic wave filter utilizing at least two longitudinal modes which are different from each other, the wave filter comprising:
a piezoelectric substrate;
an input interdigital transducer being supplied with an input

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electric signal and mounted on said piezoelectric substrate for converting said input electric signal into an input surface acoustic wave as a surface acoustic wave propagated thereon, said input interdigital transducer comprising a plurality of input electrode digits which intersect one another and which are equal to N in number where N represents a positive integer greater than two;

an output interdigital transducer mounted on said piezoelectric substrate and opposed to said input interdigital transducer and comprising a plurality of output electrode digits which are equal to N in number and which intersect one another, said output interdigital transducer receiving said propagated surface acoustic wave as a received surface acoustic wave and converting said received surface acoustic wave into an output electric signal;

a first grating reflector mounted on said piezoelectric substrate and opposed to said input interdigital transducer at an opposite side of said output interdigital transducer; and



a second grating reflector mounted on said piezoelectric substrate and opposed to said output interdigital transducer at an opposite side of said input interdigital transducer;

each of said input and said output electrode digits being made of a metal material having a discontinuous impedance coefficient K related to acoustic impedance, said filter being structured so that a product of said number N and said discontinuous impedance coefficient K is not smaller than 0.55, each of said input and said output interdigital transducers having a predetermined electrode period λ, said output interdigital transducer being spaced apart from said input interdigital transducer by a first distance **L1**, said first distance L1 being substantially defined by an inequality given by:

$$(n/2-1/24)\lambda \leqq L1 \leqq (n/2+6/24)\lambda.$$

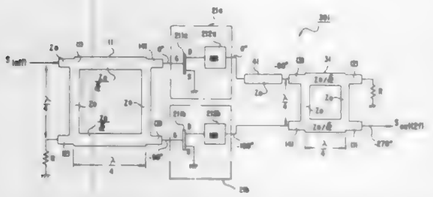
where n represents a positive integer.

5,392,014

FREQUENCY MULTIPLIER

Haruki Nishida; Yoshiaki Nakano, and Shin Watanabe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 1, 1993, Ser. No. 24,295
Claims priority, application Japan, Mar. 2, 1992, 4-44667
Int. Cl.[6] H01P *1/20*
U.S. Cl. 333—218 **12 Claims**



1. A power composed type frequency multiplier comprising:

an out-of-phase type input hybrid coupler for dividing an input signal having input power and specified by an input frequency, into divided signals each having half of the input power and specified by the input frequency respectively and having a predetermined difference in phase;

frequency multipliers connected with said input hybrid coupler, for multiplying the input frequency of the divided signal respectively, by producing frequency multiplied signals specified by a multiplied frequency respectively; and

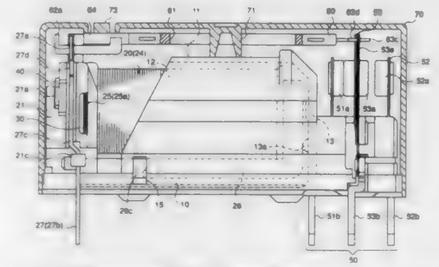
an out-of-phase type output hybrid coupler connected with said frequency multipliers, for composing power of the frequency multiplied signals and producing the same predetermined difference in phase in the frequency multiplied signals as produced by said input hybrid coupler, by producing an output signal having composed power and specified by the multiplied frequency.

5,392,015

ELECTROMAGNETIC RELAY

Kazushige Matsuoka; Masato Kouzaki, and Takashi Noguchi, all of Kyoto, Japan, assignors to Omron Corporation, Kyoto, Japan

Filed May 13, 1993, Ser. No. 60,929
Claims priority, application Japan, May 14, 1992, 4-121790
Int. Cl.[6] H01H *51/22*
U.S. Cl. 335—78 **14 Claims**



1. An electromagnetic relay comprising:

an armature positioned so as to be capable of swinging in response to energization of an electromagnet and disposed on a side of said electromagnet;

a contact mechanism disposed on an opposite side of said electromagnet from said armature;

a card supported slidably with both ends of said card being coupled to a free end portion of said armature and a movable contact piece in said contact mechanism, said armature being swung to slide and return said card in order to drive said contact mechanism; and

a elastic member which contacts of said card with a biasing force to urge said card in a return direction, said elastic member being disposed near said movable contact piece so that a small gap is formed between said movable contact piece and a part the end of said card, when said card is returned.

5,392,016

MOLDED CASE CIRCUIT BREAKER MECHANICAL RATING PLUG

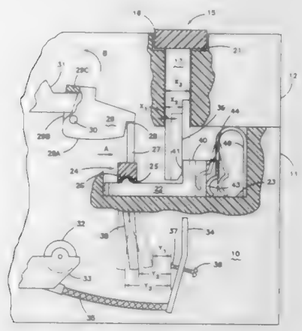
David Arnold, Chester, and Roger N. Castonguay, Terryville, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,240
Int. Cl.[6] H01H *9/00*
U.S. Cl. 335—176 **14 Claims**

1. A rating plug assembly for thermal-magnetic circuit breakers comprising:

a slide plate arranged for translation within a first recess formed within a circuit breaker case;

a post upstanding from one end of said slide plate and arranged for contacting a rating plug spacer-extension on a forward side and for contacting a bias spring on a rear side thereof;



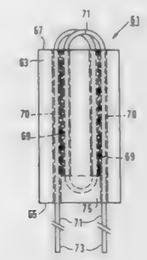
a trip bar within said first recess interacting with a spacer-extension having a predetermined width and length, said trip bar interacting with said slide plate and a circuit breaker latch for articulating the circuit breaker latch when displaced by a circuit breaker bimetal unit under overcurrent circuit conditions.

5,392,017

CHOKE COIL COMPRISING A BEAD OF A SOFT-MAGNETIC MATERIAL

Manuel Oter Muñoz; Pedro M. Cortes Morales, both of Guadalajara; Maria I. Herrero Gonzales, Salamanca, and Jose M. Esteban Pico, Azuqueca De Henares Guadalajara, all of Spain, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 730,312, Jul. 15, 1991, abandoned. This application May 3, 1994, Ser. No. 238,391
Claims priority, application Netherlands, Jul. 30, 1990, 9001717; Jul. 30, 1990, 9001718
Int. Cl.[6] H01F *17/04, 27/24*
U.S. Cl. 336—83 **4 Claims**



1. A choke coil, comprising:

a) a bead of a soft-magnetic material having first and second opposing end faces and a plurality of ducts extending therethrough with mutually parallel axes between said end faces;

b) a single length of uninsulated electrically conductive wire having free ends, said length of wire extending through said ducts and forming a number of turns about said bead, said turns having turn portions which extend adjacent said bead end faces exterior to said ducts, said length of wire extending through said ducts such that at least one of (i) a plurality of exterior turn portions and (ii) an exterior turn portion and a free end of said wire extend adjacent each of said end faces; and

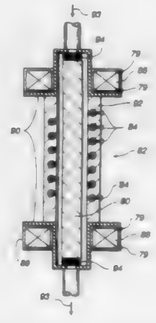
c) shielding means for preventing electrical contact between any of (i) the exterior turn portions from each other and (ii) the exterior turn portion and the free end from each other, said shielding means being formed by a recess in the end faces, and said exterior turn portions extending through the recess which recess has a depth greater than the transverse dimension of the wire.

5,392,018

ELECTRONICALLY TUNED MATCHING NETWORKS USING ADJUSTABLE INDUCTANCE ELEMENTS AND RESONANT TANK CIRCUITS

Kenneth S. Collins; John Trow; Craig A. Roderick; Jay D. Pinson, II, all of San Jose; Douglas A. Buchberger, II, Tracy; Robert P. Hartlage, Sunnyvale, and Viktor Shel, Milpitas, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 825,658, Jan. 23, 1992, Pat. No. 5,187,454, and a continuation-in-part of Ser. No. 722,340, Jan. 27, 1991. This application Nov. 12, 1992, Ser. No. 975,355
Int. Cl.[6] H01F *21/00*
U.S. Cl. 336—155 **7 Claims**



1. A variable inductance element for generating an inductive reactance to a high-frequency electrical signal current flowing between a first and a second signal terminal, comprising

a rod-type core manufactured of a material having a non-linear relationship between magnetic field intensity H and magnetic flux density B,

control means for generating a low-frequency electrical control current,

a first control winding bearing said control current and generating magnetic fields in said core, and

a signal coil coupled between said first and second signal terminals bearing said high-frequency electrical signal current and generating magnetic fields in said core.

5,392,019

INDUCTANCE DEVICE AND MANUFACTURING PROCESS THEREOF

Akira Ohkubo, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,735
Claims priority, application Japan, Nov. 28, 1991, 3-314151
Int. Cl.[6] H01F *5/02*
U.S. Cl. 336—200 **6 Claims**

1. An inductance device comprising:

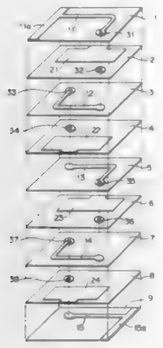
a plurality of rectangular insulating sheets which are made of ceramic;

a plurality of coil conductors which are electrically connected with each other via electrical connecting means provided on the insulating sheets to form a loop coil; and

at least one rectangular guard electrode;

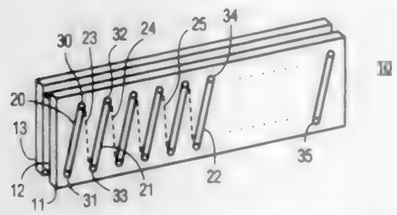
VOL 1171 ISS 3 FE 21 1995 UMI

wherein:
the insulating sheets, the coil conductors and the at least one guard electrode are laminated to form a rectangular laminate in which each of the coil conductors and the guard electrode is between two insulating sheets, and the guard electrode covers parts of two mutually adjacent coil conductors to electrically shield the conductors partly;



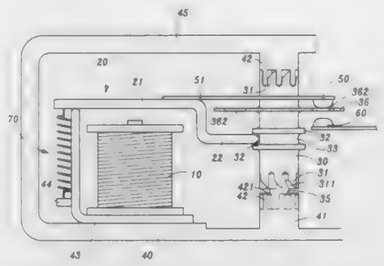
two leading portions of the loop coil being exposed on first and second mutually opposite sides of the rectangular laminate; and
a leading portion of the guard electrode being exposed on a third side of the rectangular laminate.

5,392,020
FLEXIBLE TRANSFORMER APPARATUS PARTICULARLY ADAPTED FOR HIGH VOLTAGE OPERATION
Kern K. N. Chang, 91 Adams Dr., Princeton, N.J. 08540
Filed Dec. 14, 1992, Ser. No. 990,132
Int. Cl.[6] H01F *27/28*
U.S. Cl. 336—200 **21 Claims**



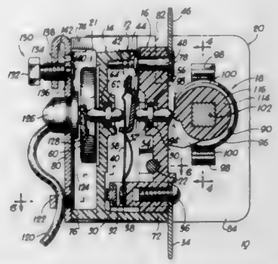
1. A transformer secondary winding comprising:
a flexible laminated member, comprising a first planar sheet member having a first plurality of parallel conductive lines on a surface thereof, a second planar sheet member having a second plurality of parallel conductive lines of a surface thereof, a central planar sheet member fabricated from a magnetizable material interposed between said first and second planar members; and
connecting means for connecting ends of said first and second parallel lines to one another to form a coiled pattern directed about said central member to enable any current flowing in said coiled pattern to magnetize said central planar sheet according to said current flow, said connecting means comprise cap structures adapted to couple to respective sides of said flexible laminated member, whereby said ends of said first and second parallel lines are connected to one another, said first, second and central planar sheet and said connecting means forming a composite flexible member, said composite flexible member being manipulable into various transformer configurations.

5,392,021
ELECTROMAGNETIC MULTI-STAGE SWITCH
Kun-Sheng Liao, 11-6, Hsin - I Rd., Keelong, Taipei Country, Taiwan, Prov. of China
Filed Feb. 14, 1994, Ser. No. 195,396
Int. Cl.[6] H01H *51/34*
U.S. Cl. 337—87 **4 Claims**



1. A multi-stage switch comprising a lower support seat having a first hollow shaft on one side, an upper support seat having a second hollow shaft corresponding to said first hollow shaft section, an L-shaped support lever disposed on the other side of said lower support seat, a spring fixing seat disposed beside said L-shaped support lever, an electromagnetic coil disposed on said support lever for attracting a driving iron plate downward and a restoring spring having a lower end fixed on said spring fixing seat and an upper end connected with said driving iron plate, an upper end of said support lever serving as a fulcrum of said driving iron plate so that said restoring spring is able to exert a restoring force on one end of said driving iron plate to lift the other end thereof, a shaft member being fixedly disposed between said first and second hollow shafts and a rotary shaft made of insulative material being axially movably fitted around said shaft member to axially move between said first and second hollow shafts, an upper end of said first hollow shaft and a lower end of said second hollow shaft being formed with multiple axial cuts defining multiple driving teeth, said rotary shaft having multiple engaging teeth corresponding to said driving teeth, each of said driving teeth being formed with slant surfaces on both sides and each of said engaging teeth being formed with an inclined surface for facilitating engagement between said driving teeth and said engaging teeth, said driving teeth being capable of guiding said engaging teeth and rotating said rotary shaft, several input contacts being fixedly connected with said driving iron plate via transverse levers an end of said driving iron plate being connected with said rotary shaft, said rotary shaft having an outward extending flange-like insulative rotary disk formed with several through holes, whereby when said electromagnetic coil is energized, the same attracts said driving iron plate downward to drive said rotary shaft downward, and when said inclined surfaces of said lower engaging teeth of said rotary shaft contact with said slant surfaces of said driving teeth of said lower support seat, said inclined surfaces are guided and said rotary shaft with said rotary disk is rotated, making said input contact contact with said output contact through said holes of said rotary disk so as to close a circuit, while when said electromagnetic coil is disenergized, said driving iron plate is restored to its original position by said restoring spring and said rotary shaft is lifted to engage with said second hollow shaft of said upper support seat and the circuit become opened, said electromagnetic coil being repeatedly energized and disenergized for obtaining different patterns of output.

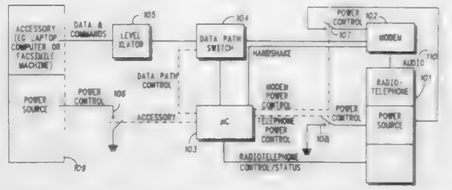
5,392,022
MODULAR ELECTRIC/GAS OVEN THERMOSTAT
Joseph C. Kadlubowski, Willowbrook, and Lyle B. Lund, Geneva, both of Ill., assignors to Harper-Wyman Company, Aurora, Ill.
Continuation-in-part of Ser. No. 50,843, Apr. 21, 1993, Pat. No. 5,311,165. This application Mar. 18, 1994, Ser. No. 210,557
Int. Cl.[6] H01H *37/36*
U.S. Cl. 337—312 **12 Claims**



1. A thermostat for use with an oven of an electric or gas range comprising:
an enclosure;
a first electrical contact;
a second electrical contact; said first and second contacts disposed within said enclosure, and said first and second contacts having terminal blade portions extending outside said enclosure for electrical connections;
a switch spring arm disposed within said enclosure and having a fixed end coupled to said first electrical contact and a free end moved from a contacting position and a noncontacting position with said second electrical contact;
a pair of actuators disposed on opposite sides of said spring arm and being axially aligned for coupling forces to said switch spring arm;
said enclosure having axially aligned channels extending through opposed walls for slidably receiving said actuators;
a frame supporting said enclosure;
a temperature responsive subassembly supported by said frame including means for movement responsive to changes in oven temperature; said temperature responsive movement means being supported in operative position with respect to a first one of said pair of actuators;
a spindle subassembly supported by said frame including means for movement responsive to manual rotation of a spindle; said spindle movement means being supported in operative position with respect to a second one of said pair of actuators; and
said spindle movement means including a cam member mounted on said spindle for rotation with said spindle, said cam member providing a cam surface having a first cam rise equivalent in a first range of rotation of said spindle and a second cam rise equivalent in a second range of rotation of said spindle.

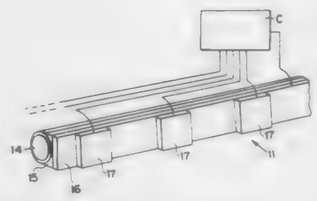
5,392,023
DATA COMMUNICATION SYSTEM WITH AUTOMATIC POWER CONTROL
Robert F. D'Avello, Lake Zurich, and Manohar A. Joglekar, Long Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 6, 1991, Ser. No. 755,932
Int. Cl.[6] H04N *1/46*
U.S. Cl. 358—400 **4 Claims**

1. A power saving communications system comprising:
transceiver means for transmitting and receiving data signals and for generating a first power control signal;
an accessory that generates data signals and a second power control signal;
modulation/demodulation means, coupled to the transceiver means and to the accessory, for demodulating received data signals from the transceiver means and modulating data signals from the accessory; and



processing means, for controlling power to the transceiver means and the modulation/demodulation means in response to the second power control signal, and for controlling power to the accessory in response to the first power control signal.

5,392,024
COLLISION DETECTION SYSTEM
Toru Kiuchi, Mishima; Kenji Ogata, Susono; Masakazu Chiba, Aichi, and Makoto Shiota, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Jun. 12, 1992, Ser. No. 897,750
Claims priority, application Japan, Jun. 14, 1991, 3-169333; Dec. 16, 1991, 3-351710; Dec. 17, 1991, 3-353455
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—436 **19 Claims**



1. A collision detection system for detecting a collision of a vehicle, comprising:
a plurality of primary sensors for outputting primary signals individually when pressed as a result of a collision of said vehicle;
a secondary sensor for outputting a secondary signal after said primary sensors when pressed as a result of said collision, said plurality of primary sensors being more sensitive than said secondary sensor; and
a control unit connected to said plurality of primary sensors and to said secondary sensor for detecting said collision based on said plurality of primary signals and said secondary signal, said control unit actuating a device loaded on said vehicle when said collision is detected.

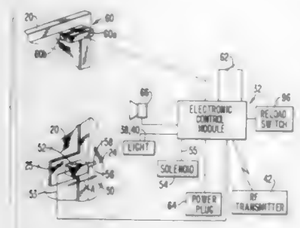
5,392,025
ELECTRONIC SECURITY SYSTEM FOR DISPLAY CABINETS
Jack N. Figh, Guttenberg; Robert V. Cuddihy, Jr., Basking Ridge, both of N.J.; Stanley H. Buchholtz, Manhasset, N.Y., and Tatsuo Rushing, Denville, N.J., assignors to Intermark Corporation, New York, N.Y.
Filed Sep. 24, 1993, Ser. No. 126,509
Int. Cl.[6] G08B *13/08*
U.S. Cl. 340—545 **19 Claims**

1. A cabinet security system suitable for use with a cabinet

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having an interior for containing a plurality of products, the cabinet having at least one door, the door being movable between an open position for allowing access to the interior, and a closed position for allowing access to the interior, and a closed position for denying access to the interior, the system comprising:

a locking mechanism for locking the door in the closed position;



electronic means for releasing said locking mechanism, said electronic means being responsive to sensing wireless transmission from a remote location to release said locking mechanism and to thereby permit said door to be moved to the open position for allowing the access to the interior; and

indication means responsive to the door's being in one of the open and closed positions for making indication while the door is in said one of the open and closed positions, said indication signifying that the door is in said one of the open and closed positions.

5,392,026

DOOR LOCK REINFORCER AND ALARM DEVICE

Victor Marik, 15422 Empanada, Houston, Tex. 77083

Continuation-in-part of Ser. No. 817,323, Jan. 6, 1992, Pat. No. 5,218,341. This application Apr. 8, 1993, Ser. No. 44,165

Int. Cl.[6] G08B *13/08*

U.S. Cl. 340—546 **18 Claims**



1. A door locking device for portable use and ready installation on a door handle comprising:

a shaft portion;

a non-skid end portion adjustably connected to a lower end of said shaft portion;

a door handle engaging bracket affixed to an end of said shaft portion opposite said end portion, said shaft portion having an arcuate shape extending outwardly from said bracket, said shaft portion comprising:

a straight section extending from said arcuate shape; and

an angled section extending vertically downwardly from an end of said straight section opposite said arcuate shape, said end portion received by said angled section; and

an alarm device mounted on said shaft portion, said alarm device responsive to shocks affecting the door handle, said alarm device having an audio output.

5,392,027

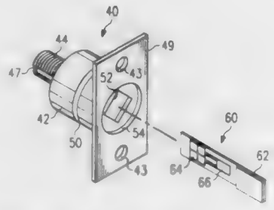
FULL BRIDGE STRAIN GAGE DEFLECTION SENSOR

Frank A. Brunot, Livermore, Calif.; James V. Motsinger, Round Rock, and Michael P. Coppo, Austin, both of Tex., assignors to DeTek Security Systems, Inc., Vestal, N.Y.

Filed Nov. 4, 1991, Ser. No. 787,570

Int. Cl.[6] G08B *13/00*

U.S. Cl. 340—561 **20 Claims**



1. A deflection sensor, comprising:

a flexible housing;

means, connected to one end of said housing, for connecting said housing to a support;

a strain gage, disposed within said housing and comprising:

a circuit board;

first, second, third and fourth strain gage elements disposed on a side of said circuit board and interconnected as a full resistance bridge; and

an amplifier circuit disposed on said circuit board and connected to said bridge, for amplifying a differential voltage from said bridge corresponding to a flexure of said circuit board; and

wherein said first and second strain gage elements have more of their length than that of said third and fourth strain gage elements in a first common direction and are connected in said bridge to oppose one another;

and wherein said third and fourth elements have more of their length than that of said first and second strain gage elements in a second common direction perpendicular to said first common direction and are connected in said bridge to oppose one another; and

means, connected to an opposing end of said housing, for connecting said housing to a taut wire, and wherein said means for connecting said housing to a taut wire comprises:

a threaded bolt extending from said housing and including a slot for receiving said taut wire; and

a nut for engaging said threaded bolt and securing said taut wire thereto.

5,392,028

ANTI-THEFT PROTECTION SYSTEMS RESPONSIVE TO BATH RESONANCE AND MAGNETIZATION

Fritz Pichl, Kilchberg, Switzerland, assignor to Kobe Properties Limited, Switzerland

Filed Dec. 6, 1993, Ser. No. 161,347

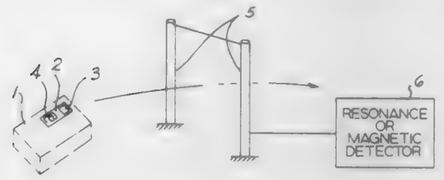
Claims priority, application Switzerland, Dec. 11, 1992, 3796/92

Int. Cl.[6] G08B *13/187*

U.S. Cl. 340—572 **9 Claims**

1. The method of protecting articles against theft by means of detection of security labels affixed to the articles upon unauthorized passing through a passageway to trigger an alarm in response thereto, comprising the step of:

producing an alarm responsive to the presence of either an unauthorized resonant circuit label or unauthorized magnetizable strip material on an article passing through said passageway.



5,392,029

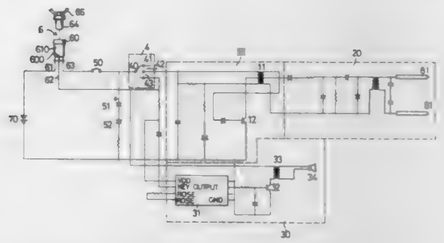
ELECTRICAL SHOCK APPARATUS

Hong-Yih Chang, No. 336, Chengkeng Rd., Fengyuan City, Taichung Hsien, Taiwan, Prov. of China

Filed Apr. 28, 1994, Ser. No. 234,229

Int. Cl.[6] G08B *15/00*

U.S. Cl. 340—574 **5 Claims**



1. An electrical shock apparatus comprising

a power source for generating a DC voltage;

a high voltage generation circuit for generating a very high voltage in response to a connection to said power source;

an alarm device for generating an alarming sound in response to a connection to said power source;

a function selection switch including a first output terminal connected to said high voltage generation circuit, a second output terminal connected to said alarm device, and an input terminal electrically connected to said power source, said input terminal being operative to electrically connect said power source to said high voltage generation circuit or said alarm device;

a socket-pin switch including a socket, a first terminal, a second terminal, a third terminal and a pin removably received in said socket, said first terminal being electrically connected to said power source, said second terminal being electrically connected to said alarm device, said third terminal being electrically connected to said input terminal of said function selection switch, said pin being removably received in said socket thus electrically connecting said third terminal to said first terminal and separating said second terminal from said first terminal, said second terminal being electrically connected to said first terminal and said third terminal being separated from said first terminal when said pin is manually removed from said socket.

5,392,030

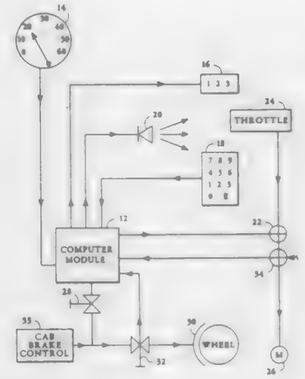
LOCOMOTIVE PERSONAL ALERT SYSTEM

George W. Adams, 3468 Sandpiper Ct., Hayward, Calif. 94542

Filed Mar. 29, 1993, Ser. No. 39,926

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—576 **5 Claims**



1. A safety alertness monitoring system for a vehicle having an operator compartment, including an operator controlled throttle and a braking mechanism comprising:

first means for automatically producing a randomly generated symbol pattern at random intervals, the randomness of the intervals being independent of an operator input;

display means in said vehicle for showing said randomly generated symbol pattern to an operator;

key means for manually inputting a corresponding symbol pattern;

comparator means for determining if the corresponding symbol pattern matches the randomly generated symbol pattern, whereby a match indicates that the corresponding symbol pattern is a correct symbol pattern;

alarm means for producing a signal, discernible proximate said compartment, thereby signaling an expiration of a first predetermined time period following display of the randomly generated symbol pattern indicating that the correct symbol pattern was not entered into said key means before the expiration of said first predetermined time period; and

control means for disabling said throttle and engaging said braking mechanism, if the correct symbol pattern is not entered within a second predetermined time period following said signal.

5,392,031

ELECTRONIC CLINICAL THERMOMETER

Makoto Toriumi, and Makoto Ikeda, both of Fujinomiya, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1993, Ser. No. 30,726

Claims priority, application Japan, Mar. 17, 1992, 4-060287; Mar. 17, 1992, 4-060288; Mar. 17, 1992, 4-060290; Jul. 31, 1992, 4-205462

Int. Cl.[6] G08B *21/00;* **G01K** *3/04, 7/00*

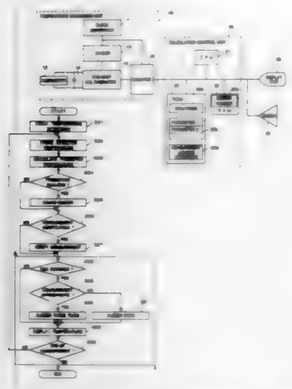
U.S. Cl. 340—588 **14 Claims**

8. An electronic clinical thermometer which detects temperature of a measured portion and calculates an equilibrium temperature as a predicted temperature based on a change of the detected temperature in transition of temperature measurement time, comprising:

selection means for selecting a data group from among a plurality of classified temperature rise data groups based on a change of the detected temperature in an initial transition of temperature measurement time, and then selecting

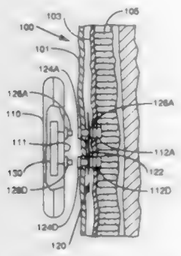
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a prediction equation or a set of prediction parameters in accordance with said selected data group;
means for notifying that reliability of the detected temperature is insufficient; and



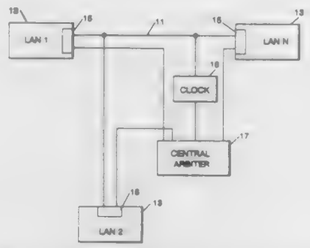
change means for changing the data group selected by said selection means based on a change of the detected temperature in a transition of a predetermined temperature measurement time after the data group has been selected.

5,392,032
APPARATUS FOR SENSING WET DIAPER INCLUDING CIRCUIT BREAKER
Michael J. Kline, Pittsburgh; Paul A. Pottgen, Allison Park, and Neil J. Szuminsky, Pittsburgh, all of Pa., assignors to Little Acorn Ventures, Pittsburgh, Pa.
Filed Nov. 23, 1993, Ser. No. 158,120
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—604 20 Claims



1. A waterproof diaper cover including means for sensing wet conditions in a diaper with which said waterproof diaper cover is in contact, said waterproof diaper cover having fastened thereto a wetness sensing means having a signal means connected thereto, said wetness sensing means electrically connected to a pair of spaced contacts positioned internally with respect to said waterproof diaper cover such that said spaced contacts are in contact with a diaper being worn by a wearer of said waterproof diaper cover, said sensing means and signal means being housed within housing means secured to said waterproof diaper cover, wherein said spaced contacts comprise fastening means for fastening said housing means to said diaper cover, said signal means being powered by battery means, said fastening means including power interrupt means for preventing battery drain when said housing means is unfastened from said diaper cover.

5,392,033
PRIORITY GENERATOR FOR PROVIDING CONTROLLABLE GUARANTEED FAIRNESS IN ACCESSING A SHARED BUS
Price W. Oman, Raleigh, and Andrew J. Rindos, III, Durham, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 5, 1993, Ser. No. 759
Int. Cl.[6] H04Q *1/18*
U.S. Cl. 340—825.5 11 Claims

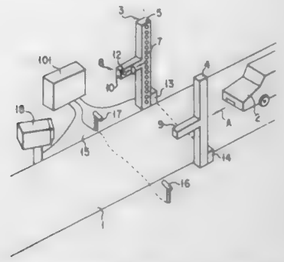


1. A method of generating priorities for plural resources in a data processing system, said plural resources sharing a common device, comprising the steps of:
a) providing for each resource a counter having an input for receiving an input signal representative of a starting value and an output for providing an output signal representative of an incremented value;
b) loading into each of said counters by use of said respective input an input signal representative of a predetermined starting value, said starting value for each of said counters being unique relative to the starting values of said other counters;
c) at predetermined intervals of time, incrementing all of said counters to provide output signals representative of new incremented values and determining the priority of each of said resources from the respective output signals;
d) determining when the output signal of each of said counters becomes representative of a first predetermined value, and upon the determination that the output signal of a respective counter becomes representative of said first predetermined value, then resetting said respective counter so as to produce an output signal representative of a second predetermined value and continuing with incrementing all of said counters at said predetermined intervals of time.

5,392,034
VEHICLE CLASSIFICATION SYSTEM USING PROFILE
Hiroyuki Kuwagaki, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 5, 1993, Ser. No. 14,226
Claims priority, application Japan, Feb. 7, 1992, 4-022920
Int. Cl.[6] G08G *1/01*
U.S. Cl. 340—933 4 Claims

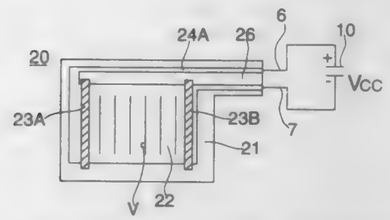
1. A vehicle identification apparatus for identifying a vehicle type, the apparatus comprising:
first detecting means for detecting a passage of a vehicle, the first detecting means having a plurality of first light detecting elements, the first light detecting elements being disposed so as to be substantially parallel to a passage direction of the vehicle, each of said first light detecting elements successively detecting the passage of the vehicle;
second detecting means for detecting a profile of the vehicle, the second detecting means having a plurality of second light detecting elements disposed perpendicular to the passage direction of the vehicle, the second detecting means repeatedly detecting a part of the profile of the vehicle in accordance with the detected passage of the vehicle by the first detecting means;

means for storing a plurality of reference profiles;
means for comparing the profile detected by the second detecting means with at least one of the reference profiles; and



means for identifying the vehicle type based upon the comparison made by the comparing means.

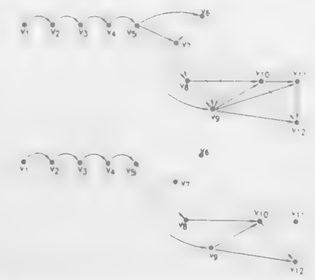
5,392,035
TRANSPARENT COORDINATE DETECTION DEVICE
Osamu Yoshikawa, Tokyo, Japan, assignor to SMK Corporation, Tokyo, Japan
Filed Sep. 3, 1993, Ser. No. 116,397
Claims priority, application Japan, Nov. 30, 1992, 4-088558[U]
Int. Cl.[6] H03M *1/22*
U.S. Cl. 341—5 10 Claims



1. A transparent tablet for a transparent coordinate detection device comprising:
a plate having a transparent resistive film covering a tablet area thereof;
means for connecting said resistive film to a voltage potential;
said means for connecting being contiguous with said resistive film and integrally formed from said resistive film extending outside said tablet area; and
means for establishing a voltage gradient in said resistive film, between said means for connecting, said voltage gradient having a planar configuration with substantially linear equipotential lines on said transparent resistance plate.

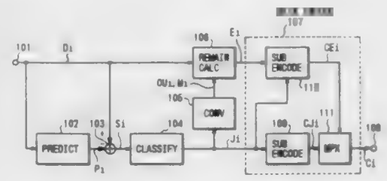
5,392,036
EFFICIENT OPTIMAL DATA RECOPRESSION METHOD AND APPARATUS
Shmuel T. Klein, Rehovot, Israel, assignor to Mitan Software International (1989) Ltd., Ramat Gan, Israel
Filed Oct. 28, 1993, Ser. No. 142,016
Int. Cl.[6] H03M *7/30*
U.S. Cl. 341—51 22 Claims

1. A method for converting an input data character stream into an encoded data stream in a dictionary-based data compression system, comprising:
(a) determining possible parsing options of the input data character stream;
(b) defining a directed labelled graph having vertices and edges, said graph being related to said possible parsing options;
(c) finding the elements of an optimal parsing by determining the shortest path between two given vertices of said



graph, said finding of said elements of said optimal parsing including eliminating from said graph edges which cannot form a part of said shortest path; and
(d) encoding said elements of said optimal parsing.

5,392,037
METHOD AND APPARATUS FOR ENCODING AND DECODING
Shiro Kato, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 20, 1992, Ser. No. 885,940
Claims priority, application Japan, May 21, 1991, 3-116008; Aug. 31, 1991, 3-302847; Feb. 21, 1992, 4-34659
Int. Cl.[6] H03M *13/00*
U.S. Cl. 341—67 26 Claims



1. A method of efficient encoding, comprising the steps of:
generating an estimate of input data;
calculating an estimation error which is equal to a difference between the estimate and the input data;
classifying the estimation error and generating a category index indicative of a category corresponding to the estimation error;
dividing the input data by a divisor and generating a remainder of a result of the dividing the divisor being equal to a given value which is greater than a difference between an upper limit value and a lower limit value defining a range of the category; and
encoding the category index and the remainder into corresponding codes and outputting the codes.

VOL 1171 ISS 3 FE 21 1995 UMI

5,392,038

SERIAL DATA DECODING FOR VARIABLE LENGTH CODE WORDS

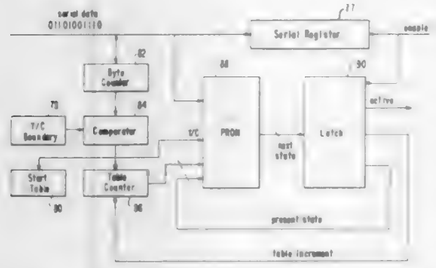
Rajan Bhandari, and Clive H. Gillard, both of Basingstoke, United Kingdom, assignors to Sony United Kingdom Ltd., Staines, United Kingdom

Filed Jun. 3, 1993, Ser. No. 70,877

Claims priority, application United Kingdom, Jul. 13, 1992, 9214825

Int. Cl.[6] H03M 7/40

U.S. Cl. 341—67 17 Claims



1. Apparatus for decoding blocks of serial data each containing variable length code words and control code words, said apparatus comprising:

(i) a primary decoder for decoding said blocks of serial data into blocks of fixed length index values representing said variable length code words and said control code words; and

(ii) a secondary decoder operating under control of the fixed length index values representing control code words of a block for decoding each of said fixed length index values representing the respective variable length code words of said block into a variable length sequence of output data values;

wherein at least some of said control code words of the respective block identify a position within an array of data represented by said variable length code words of said block.

5,392,039

SIGMA-DELTA ANALOG TO DIGITAL CONVERTER

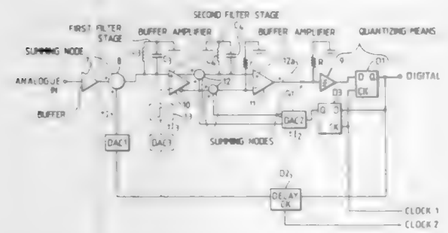
Andrew M. Thurston, Chelmsford, United Kingdom, assignor to GEC-Marconi Lmited, Middlesex, United Kingdom

Filed May 21, 1992, Ser. No. 886,588

Claims priority, application United Kingdom, Jun. 1, 1991, 9111821

Int. Cl.[6] H03M 1/12

U.S. Cl. 341—143 14 Claims



1. An analog-to-digital converter having an input for receiving analog signals, the converter comprising:

quantizing means for producing a digital output of the converter;

first combining means for combining the analog input with a first feedback signal derived from the digital output and producing a first combined signal; and

filter means for filtering the first combined signal, the filter means including:

at least two filter circuit stages each comprising a parallel resonant circuit which is not connected to a respective phase-modifying series resistive means; and

second combining means for combining an output from the filter means after a final filter circuit stage of the filter means with a second feedback signal derived from the digital output,

said filter means producing a signal for input to the quantizing means;

wherein said second combining means comprises a summing node.

5,392,040

BIT COMPRESSION CIRCUIT USED FOR A DELTA SIGMA TYPE DIGITAL-TO-ANALOG CONVERTER

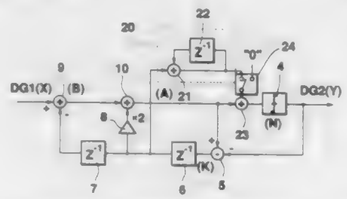
Koji Hayashi, Hashima, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 23, 1993, Ser. No. 21,183

Claims priority, application Japan, Feb. 24, 1992, 4-36441; Feb. 26, 1992, 4-39504

Int. Cl.[6] H03M 3/02

U.S. Cl. 341—143 11 Claims



1. A bit compression circuit for decreasing the number of bits of digital data used for a delta sigma type D/A converter which converts input digital data into analog signals, said bit compression circuit comprising:

a quantization circuit which samples input digital data represented by a predetermined number of bits fed during a digital data input period on a sampling period shorter than the digital data input period and converts the sampled data into quantized digital data having a fewer number of bits than the input digital data;

a first adder for calculating quantization noise data generated during quantization from the difference between the input data and output data of said quantization circuit;

a first delay circuit which delays the quantization noise data output by said first adder for said sampling period for outputting delayed quantization noise data;

a second adder which adds the quantization noise data delayed for said sampling period which is output by said delay circuit and digital data fed into said quantization circuit;

an integrator into which said delayed quantization noise data is fed for integrating the same; and

selective addition means for selectively adding output of said integrator to data fed into said quantization circuit.

5,392,041

Patent Not Issued For This Number

5,392,042

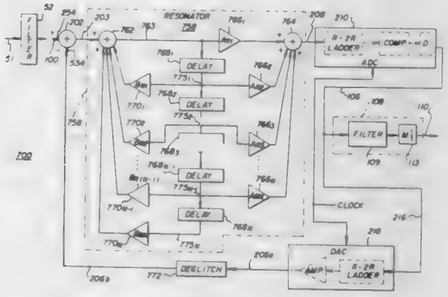
SIGMA-DELTA ANALOG-TO-DIGITAL CONVERTER WITH FILTRATION HAVING CONTROLLED POLE-ZERO LOCATIONS, AND APPARATUS THEREFOR

Leopold E. Pellon, Mt. Holly, N.J., assignor to Martin Marietta Corporation, Moorestown, N.J.

Filed Aug. 5, 1993, Ser. No. 102,362

Int. Cl.[6] H03M 3/04

U.S. Cl. 341—143 14 Claims



1. An analog-to-digital converter for converting band-limited analog signals into time- and amplitude-quantized digital signals, said converter comprising;

analog first summing means (**202**) including a noninverting input port (**254**) adapted for receiving said band-limited analog signals, and for receiving an analog replica of an intermediate digital signals, for subtracting said analog replica from said analog signals to form a difference signals;

N-bit analog-to-digital conversion means (**210**) coupled for receiving resonated signals derived from said difference signals, for generating samples of intermediate digital signals, said analog-to-digital conversion means being subject to quantizing noise;

N-bit digital-to-analog conversion means (**218**) coupled to said analog-to-digital conversion means (**210**), for converting said intermediate digital signals into said analog replica of said intermediate digital signals, and for coupling said analog replica to said first summing means (**202**);

decimating filter means (**108**) coupled to said analog-to-digital conversion means (**210**) for digitally low-pass filtering said intermediate digital signals for suppressing said quantizing noise, and for generating digital output signals representing said band-limited analog signals; and

resonator means (**758**) coupled to said analog-to-digital conversion means (**210**) and also coupled to said first summing means (**202**) for receiving said difference signals therefrom, and for filtering said analog difference signals, whereby a feedback loop is formed which tends to suppress said quantizing noise, said resonator means (**758**) including;

(a) second summing means (**762**) coupled to said first summing means for receiving said difference signals therefrom and for adding to said difference signals at least first and second weighted delayed feedback signals, for generating undelayed first summed signals;

(b) first weighting means (766_1) coupled to an output (**763**) of said second summing means (**762**) for weighting said undelayed first summed signals by a first weight to generate weighted undelayed intermediate signals;

(c) third summing means (**764**) coupled to said first weighting means (766_1) for summing said weighted undelayed intermediate signals with at least first weighted delayed feedforward signals to produce said resonated signals;

(d) a nonintegrating first cascade including the cascade of (d_1) nonintegrating delay means (768_1) and (d_2) second weighting means (770_1), said first cascade being coupled between said output (**763**) of said second summing means (**762**) for delaying and weighting said undelayed first summed signals, said delaying being by a first delay period, and said weighting being with a second weight, for producing said first weighted delayed feedback signals;

(e) a nonintegrating second cascade including the cascade of (e_1) nonintegrating delay means (768_1) and (e_2) third weighting means (766_2), said second cascade being coupled between said output (**763**) of said second summing means (**762**) and an input of said third summing means (**764**) for delaying and weighting said undelayed first summed signals, said delaying being by a second delay period, and said weighting being with a third weight (A_{R2}), for producing said first weighted delayed feedforward signals;

(f) a nonintegrating third cascade including the cascade of (f_1) nonintegrating delay means (768_1, 768_2) and (f_2) fourth weighting means (770_2), said third cascade being coupled between said output (**763**) of said second summing means (**762**) and an input of said second summing means (**762**) for delaying and weighting said undelayed first summed signals, said delaying being by a third delay period, and said weighting being with a fourth weight, for producing said second weighted delayed feedback signals.

5,392,043

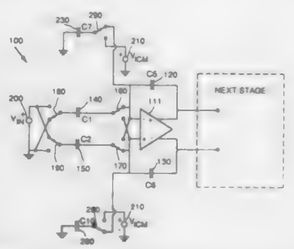
DOUBLE-RATE SAMPLED SIGNAL INTEGRATOR

David B. Ribner, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 4, 1993, Ser. No. 131,537

Int. Cl.[6] H03M 3/02, 1/50

U.S. Cl. 341—143 25 Claims



1. A double-rate sampled signal integrator comprising:

a differential amplifier having a positive input terminal, a negative input terminal, a positive output terminal, and a negative output terminal;

two capacitors, said capacitors coupling said amplifier output terminals to said amplifier input terminals so as to provide a negative feedback electrical signal;

two more capacitors, each of said two more capacitors having a first terminal and a second terminal;

two switches, each of said two switches being adapted to selectively couple the first terminal of a separate one of said two more capacitors between said amplifier input terminals;

two more switches, each of said two more switches being adapted to selectively couple the second terminal of a separate one of said two more capacitors between the terminals of an externally derived voltage source; and

a voltage bias coupled in shunt with each of said amplifier input terminals.

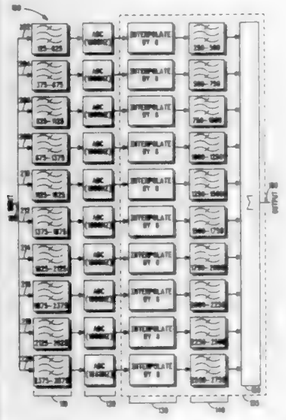
VOL 1171 ISS 3 FE 21 1995 UMI

5,392,044

METHOD AND APPARATUS FOR DIGITIZING A WIDE FREQUENCY BANDWIDTH SIGNAL

Michael D. Kotzin, Buffalo Grove, and Joseph J. Schuler, Roselle, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 8, 1993, Ser. No. 27,306
Int. Cl.[6] H03M *1/12*
U.S. Cl. 341—155 **10 Claims**



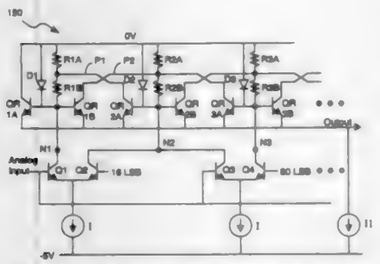
1. A digitizer for digitizing a wide frequency bandwidth signal, comprising:
(a) a plurality of filtering means for separating the wide frequency bandwidth signal into a plurality of narrow frequency bandwidth signals;
(b) a converting means, operatively coupled to each of the filtering means, for generating digitized samples of the narrow frequency bandwidth signals; and
(c) combining means, operatively coupled to the converting means, for combining the digitized samples and outputting a composite digitized signal having substantially the same spectral characteristics in digital form as the wide frequency bandwidth signal.

5,392,045

FOLDER CIRCUIT FOR ANALOG TO DIGITAL CONVERTER

Philip W. Yee, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 6, 1992, Ser. No. 972,746
Int. Cl.[6] H03M *1/14*
U.S. Cl. 341—156 **13 Claims**



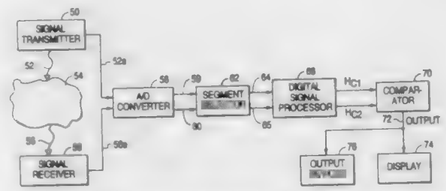
1. A folder circuit for mapping an analog input voltage to an analog output voltage in accordance with a folding function having a first folding point, comprising:
a power supply node;
a first input differential stage having a first input node to which is applied said input voltage, a second input node to which is applied a first reference voltage corresponding to said first folding point, and two differential output nodes;
a resistive network connected between said power supply node and said two differential output nodes;
an output network for generating said analog output voltage on a common output node as a function of voltages on said two differential output nodes, said output network providing cross-coupling between said resistive network and said differential output nodes; and
a clamping circuit coupled to said two differential output nodes for preventing saturation of said differential stage.

5,392,046

ENTROPY BASED SIGNAL, TRANSMISSION, RECEPTION AND SIGNAL ANALYSIS METHOD AND APPARATUS

Michael S. Hughes, Chesterfield, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Aug. 19, 1993, Ser. No. 108,525
Int. Cl.[6] G01S *13/08*; G01V *3/12, 3/38*
U.S. Cl. 342—22 **24 Claims**



1. A method of comparing first and second time dependent signals to each other for deriving information from the differences resulting from the comparison comprising:
digitizing said first and second signals through an analog to digital converter and selecting for analysis time segments of said digitized first and second signals which fall within a selected time interval;
selecting a Green's function for use in analysis of said digitized first and second signal time segments;
programming and operating a digital processor to calculate the density distribution function of each of said digitized signal time segments utilizing in each case the selected Green's function and to calculate the entropy of each of said digitized signal time segments from each of said density distribution functions determined for each of said digitized signal time segments; and
comparing the calculated entropies of said digitized signal time segments to determine the differences in said calculated entropies and to thereby derive information from said differences in the entropies of said digitized signal time segments.

5,392,047

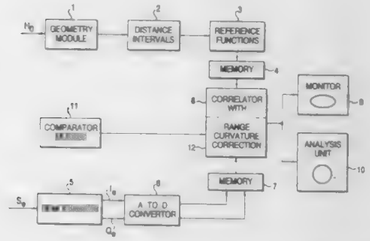
RADAR DEVICE COMPRISING A SYNTHETIC APERTURE ON THE BASIS OF ROTATING ANTENNAS

Helmut Klausing, Bad Aibling, Germany, assignor to Deutsch Aerospace AG, Munich, Germany

Filed Dec. 7, 1993, Ser. No. 162,692
Claims priority, application Germany, Dec. 16, 1992, 4242532.8
The portion of this patent subsequent to Jan. 3, 2012, has been disclaimed.
Int. Cl.[6] G01S *13/90, 7/40*
U.S. Cl. 342—25 **12 Claims**

1. A radar device, comprising:
at least one transmitter;

at least one receiver;
at least one antenna for transmitting and receiving radar pulses, said antenna being operatively arranged on an end of a rotating arm;
a first device demodulating and intermediately storing received signals;
a second device for forming and storing reference functions based on predetermined system parameters;
a processor circuit for subdividing a distance range illuminated by said antenna into individual distance intervals,



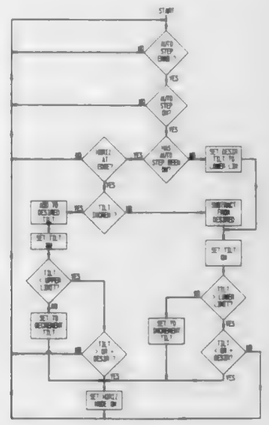
and for determining reference functions in said individual distance intervals;
a correlator for correlating said received signals to said reference functions to provide a correlation result; and
and output device for said correlation result;
wherein said processor circuit comprises a comparator circuit for estimating a distortion error of stored distance intervals caused by movement of said antenna, said comparator circuit accessing a range curvature correction circuit for correcting a range curvature deviation.

5,392,048

WEATHER RADAR SYSTEM INCLUDING AN AUTOMATIC STEP SCAN MODE

Terry K. Michie, Olathe, assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jul. 12, 1993, Ser. No. 89,469
Int. Cl.[6] G01S *13/95*
U.S. Cl. 342—26 **7 Claims**



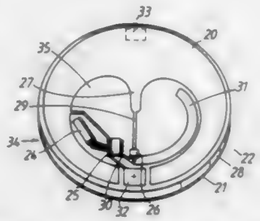
1. A weather radar system operable in an automatic step scan mode, comprising:
means for storing weather data in memory;
means connected to the means for storing weather data in memory for displaying said weather data;
means associated with the means for displaying said weather data and operable by a user for selecting the step scan mode of operation of the weather radar system;
control means connected to an antenna included in the weather radar system for displacing said antenna;
means for storing radar system parameters;
the control means connected to the means associated with the means for displaying said weather data and to the means for storing radar system parameters, and responsive to the selected step scan mode of operation of the weather radar system for setting step scan mode parameters in the means for storing radar system parameters, said radar system parameter storing means applying the set step scan mode parameters to the control means; and
the control means displacing the radar system antenna in accordance with the applied step scan mode parameters which include upper and lower scan angle limits and step scan angle increments, the radar system antenna being displaceable in an elevation axis and in an azimuth axis; and
the control means displacing the radar system antenna to position the antenna beam in one axis of the elevation and azimuth axes between the upper and lower scan angle limits in the step scan angle increments while continuously scanning the other of the azimuth and elevation axes.

5,392,049

DEVICE FOR POSITIONING A FIRST OBJECT RELATIVE TO A SECOND OBJECT

Staffan Gunnarsson, Svärdsliljevägen 62, S-165 77 Hässelby, Sweden

Filed Jan. 21, 1993, Ser. No. 934,663
Claims priority, application Sweden, Jul. 24, 1990, 9002493; Jan. 22, 1991, 9100185
Int. Cl.[6] G01S *13/74*; B67D *5/04*
U.S. Cl. 342—42 **13 Claims**



1. A device for positioning a first object relative to a second object which includes a metal surface, where the first object has a robotic head and the second object is located by a position sensing system comprising: a sensor and a transponder; said sensor comprising a transmitter and receiver unit in the robotic head and said transponder (**50**) is located on the metal surface of said second object; said transponder operates at a frequency in the microwave range and is enabled to reradiate a signal received from said sensor, said transponder thereby operating to enable positioning of said robotic head relative to said second object, said transponder comprising a microstrip antenna element (**20**) , (**60**) , (**70**) , a dielectric material plate (**28**) and a ground plane (**21**), said dielectric material plate having two sides and mounting said microstrip antenna on one of said sides and mounting said ground plane on the other of said sides; said ground plane (**21**) being of similar size as the microstrip antenna element and wherein the transponder is arranged to cooperate with said metal surface of said second object which thereby provides a reflector plane (**22**), located behind the transponder, to obtain an antenna radiating diagram that is directed perpendicular out from the transponder on the opposite side from said reflection plane; said transponder hav-

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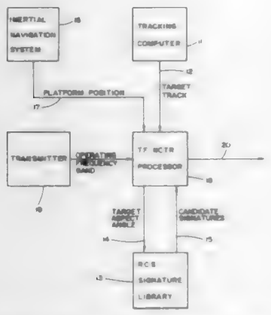
ing a power source (40) and associated electronic elements, placed inside the perimeter of said microstrip antenna element (20), (60), (70) and on one side of the dielectric plate.

5,392,050

METHOD OF RECOGNIZING A RADAR TARGET OBJECT TYPE AND APPARATUS THEREFOR

Joseph R. Guerci, Astoria; Fred Comploler, E. Rockaway, and Alicia Kee, Hemstead, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Aug. 12, 1993, Ser. No. 105,407
Int. Cl.[6] G01S *13/72*
U.S. Cl. 342—90 12 Claims



1. A method of recognizing a radar target object type using non-cooperative target recognition (NCTR), said method comprising the steps of:

determining target range, heading and speed information;

measuring a time verses frequency diagram of a target using said target range, heading and speed information of the target, said time versus frequency diagram being two-dimensional, said two-dimensional time versus frequency diagram enabling a low frequency, non-polarizing, non-imaging radar to perform NCTR;

storing a plurality of predicted time versus frequency diagrams for different targets; and

applying the least Squares method of calculation for the measured time versus frequency diagram and the stored predicted time versus frequency diagrams and indicating the closest match whereby the target object type is determined.

5,392,051

HIGH-FREQUENCY SIGNAL GENERATOR

Hiroshi Uematsu; Nobuyuki Takeuchi; Hiroyuki Ando, and Shigeki Kato, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1993, Ser. No. 120,002
Claims priority, application Japan, Sep. 11, 1992, 4-269627; Jun. 3, 1993, 5-157996.
Int. Cl.[6] H03B *5/18*
U.S. Cl. 342—165 20 Claims

1. A high-frequency signal generator comprising:

upper and lower conductive plates parallel to each other;

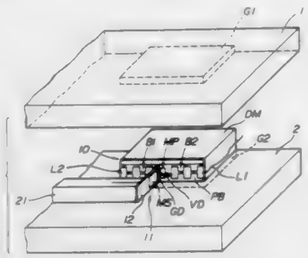
at least one dielectric rod held between said upper and lower conductive plates for transmitting high-frequency signals;

a metal mount sandwiched between said upper and lower conductive plates;

an oscillating element mounted on a side of said mount for generating a high-frequency signal;

a printed-circuit board mounted on said side of the mount and including a bias supply circuit disposed on a surface thereof for supplying a bias voltage to said oscillating element to enable to oscillating element to generate said high-frequency signal; and

positional displacement preventing means on at least one of said upper and lower conductive plates for preventing



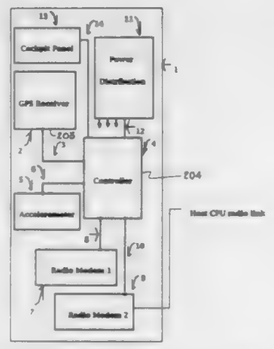
said mount from being positionally displaced with respect to said dielectric rod.

5,392,052

POSITION REPORTING EMERGENCY LOCATION SYSTEM

Mark A. Eberwine, 5714 Oo-Loo-Te-Ka, San Antonio, Tex. 78218

Filed Apr. 28, 1993, Ser. No. 53,222
Int. Cl.[6] H04B *7/185*; G01S *5/02*
U.S. Cl. 342—357 18 Claims



1. A position reporting system for reporting a position of a movable aircraft-relative to the earth's surface where there is a Navstar GPS system in operation comprising:

GPS receiver means in a movable aircraft for determining data parameters of position and time of said aircraft from the Navstar GPS system;

CPU means in said aircraft coupled to said GPS receiver means for continuously storing said data parameters at time spaced intervals in time spaced data packets and for storing aircraft identification indicia;

digital data transmission means coupled to said CPU means for transmitting said time spaced data packets containing the aircraft identification indicia, the position and the time data in a digital format to a remote receiver means;

accelerometer means in said aircraft for responding to an acceleration of the aircraft in excess of a preset acceleration limit for activating said CPU means and said digital transmission means for automatic transmission of said data packets; and

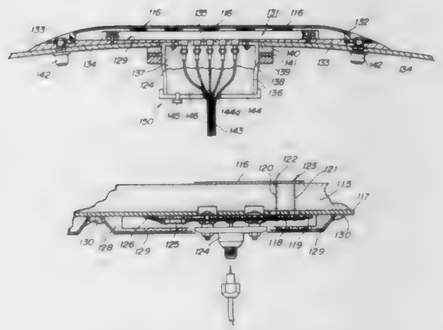
means for limiting the transmission of said data packets to the data packets stored in the CPU means at such time as an acceleration of the aircraft in excess of the preset limit occurs.

5,392,053

ARRAY ANTENNA AND SYSTEM

Toshikiyo Hirata; Toshihide Niihara; Katsuhiko Yoshiki; Yujiro Taguchi, and Tomoyuki Watanabe, all of Kanagawa, Japan, assignors to Toyo Communication Equipment Co., Ltd., Japan

Division of Ser. No. 499,341, Jun. 18, 1990, Pat. No. 5,216,435.
This application Feb. 16, 1993, Ser. No. 17,779
Claims priority, application Japan, Oct. 19, 1988, 63-263198; Jun. 26, 1989, 64-163497; WIPO, Oct. 19, 1989, PCT/JP89/01073
Int. Cl.[6] H01Q *1/27, 21/06*
U.S. Cl. 343—700 MS 5 Claims



1. A microstrip array antenna system provided on a curved wall body, the wall body having an outer surface and a curvature and defining a wall opening, comprising:

a shim having a top surface and fitted over the outer surface of said curved wall body, said shim defining a shim opening at a position corresponding to said wall opening;

a base member disposed on the top surface of said shim and having an outer surface;

a grounding plate fitted over the outer surface of said base member;

a dielectric substrate having a top surface and stacked on said grounding plate;

a plurality of antenna elements provided on said dielectric substrate;

a radome having a top surface and a lower surface and fixed on said shim for covering said base member, grounding plate, dielectric substrate, and antenna elements, the top surface of said radome having the same curvature as the curvature of said wall body for reducing the air resistance;

a hollow cylindrical member provided at a peripheral edge part of said shim opening and extending through the wall opening of said wall body;

a plurality of power supply connectors disposed on said base member at the shim opening, each of said power supply connectors being connected to a corresponding one of said antenna elements;

a plurality of power supply lines disposed in an interior of said cylindrical member, each power supply line being connected to a corresponding one of said power supply connectors; and

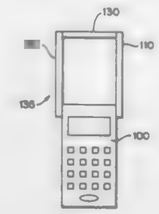
adhesive material disposed in the interior of said cylindrical member around said power supply lines to an inner wall of said cylindrical member for preventing air from passing through the cylindrical member.

5,392,054

DIVERSITY ANTENNA ASSEMBLY FOR PORTABLE RADIOTELEPHONES

Gregory E. Bottomley, Cary, and Edward Smith, Raleigh, both of N.C., assignors to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Filed Jan. 29, 1993, Ser. No. 11,228
Int. Cl.[6] H01Q *1/24*
U.S. Cl. 343—702 35 Claims



1. An adjustable diversity antenna assembly for use with a portable radiotelephone comprising:

a plurality of receive antennas being spaced to reduce the effects of Rayleigh fading and allowing diversity reception, the antennas connected at one end to the portable radiotelephone for receiving radio frequency signals and being movable between a deployed position and a stowed position; and

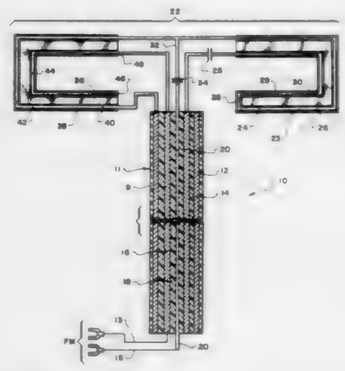
a nonconductive member for interconnecting and maintaining the spacing of the plurality of receive antennas when in the deployed position.

5,392,055

RADIO ANTENNA

Peter A. Madnick, Thousand Oaks, Calif., and Richard J. Kaufman, New York, N.Y., assignors to Recoton Inc., Long Island City, N.Y.

Continuation of Ser. No. 718,296, Jun. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 515,608, Apr. 27, 1990, abandoned. This application Jan. 4, 1993, Ser. No. 2,114
Int. Cl.[6] H01Q *9/30*
U.S. Cl. 343—790 10 Claims



1. An antenna for a radio comprising:

an elongated transmission cable having a first conductor and a second conductor, said cable having an inner end and an outer end, said inner end having leads facilitating connection to a receiver, said first conductor being electrically insulated from said second conductor within said cable, said cable being flexible permitting movement to enable

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said cable to be moved to assume any desirable configuration;

an electrically conductive sheath exteriorly covering substantially the entire length of said first and said second conductors from said inner end to said outer end, said conductive sheath being electrically insulated from said first and second conductors along the said entire length of said first and said second conductors by an insulator which is coaxial with said transmission cable, said electrically conductive sheath being attached to said insulator substantially along the entirety of the outer surface of said insulator, said electrically conductive sheath to function as an electrical conductor for the received radio signal from the air;

said first conductor, said second conductor and said electrically conductive sheath being of substantially the same length and being substantially coextensive and forming a triaxial cable as a substantially unitary assembly such that said first and second conductors, said insulator and said electrically conductive sheath move unitarily as a single unit which form a flexible unit; and

an impedance matching network electrically connected to said first conductor and said second conductor and to said sheath said impedance matching network located remotely from said inner end, said impedance matching network to obtain the best power transfer between said antenna and the receiver.

5,392,056

PROTECTIVE SHEATH FOR BROADCAST ANTENNAS

John S. DeTeso, 1902 First St., LaMarque, Tex. 77568

Filed Sep. 8, 1992, Ser. No. 941,906
Int. Cl.[6] H01Q *1/40*
U.S. Cl. 343—873 16 Claims



1. A protective sheath for removable placement over a broadcast antenna comprising:

a tubular length of a flexible polymeric material having one closed end and one open end, said length having a diameter suitable for extending around the antenna, said length of flexible polymer being liquid-tight; and

sealing means for sealing said open end directly to a surface of the antenna, said sealing means for forming a watertight environment within said tubular length, said sealing means comprising a clamp means extending around an exterior surface inwardly of said open end, said clamp means being tightenable for drawing a surface of said tubular length into liquid-tight juxtaposition between said clamp means and a vertical exterior surface of said antenna.

5,392,057

DISH TYPE ANTENNA

Ming T. Lin, No. 3-1, Tapi Lane, Neihsing Li, Nantou City, Natou Hsien, Taiwan, Prov. of China

Filed Mar. 24, 1993, Ser. No. 36,168
The portion of the term of this patent subsequent to Aug. 30, 2010, has been disclaimed.
Int. Cl.[6] H01Q *1/12*
U.S. Cl. 343—882 1 Claim



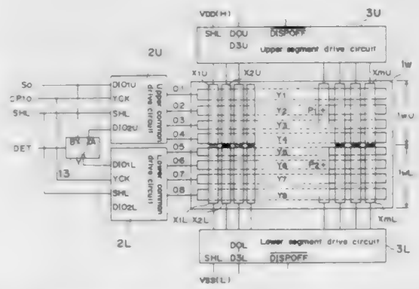
1. A dish type antenna comprising a dish including a back surface, a plurality of ribs extended radially on said back surface of said dish, a plurality of brackets fixed to said ribs of said dish, a board fixed to said brackets and including a pair of first ears formed thereon, a base including a pair of second ears extended upward therefrom, a frame including a lower portion fixed to said base and an upper portion pivotally coupled to said board at a pivot axle, at least one lever coupled between said upper portion of said frame and said second ears of said base, and a cylinder including a lower end pivotally coupled to said second ears of said base and an upper end pivotally coupled to said first ears of said board so as to rotate said dish about said pivot axle.

5,392,058

DISPLAY-INTEGRATED TYPE TABLET DEVICE

Takao Tagawa, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 13, 1992, Ser. No. 883,608
Claims priority, application Japan, May 15, 1991, 3-110597; May 15, 1991, 3-110599; Sep. 24, 1991, 3-243425; Feb. 10, 1992, 4-023617; Mar. 17, 1992, 4-060108; Mar. 25, 1992, 4-066986
Int. Cl.[6] G06F *3/03*
U.S. Cl. 345—104 30 Claims



11. A display-integrated type tablet, comprising: a duty-type display panel, in which a display material is disposed between segment electrodes and common electrodes, the segment electrodes being divided into first segment electrodes and second segment electrodes at approximately center of a display screen;

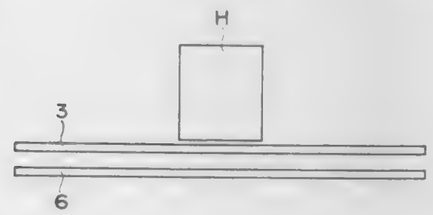
a first segment drive circuit for driving the first segment electrodes, one side terminals of said first segment electrodes being electrically connected to the first segment drive circuit, while the other side terminals of said first segment electrodes being opened; a second segment drive circuit for driving the second segment electrodes, one side terminals of said second segment electrodes being electrically connected to the second segment drive circuit, while the other side terminals of said second segment electrodes being opened; a common drive circuit for driving the common electrodes, one side terminals of said common electrodes being electrically connected to the common drive circuit, while the other side terminals of said common electrodes being opened; a display control circuit for, during a display period, controlling the first segment drive circuit, the second segment drive circuit and the common drive circuit to cause the display panel to simultaneously effect the display of the upper half and the display of the lower half of the display panel; a position detection control circuit for, during a position detection period, controlling the first segment drive circuit to successively apply first segment scan signals to the one side terminals of the first segment electrodes for x-coordinate detection, for controlling the second segment drive circuit to successively apply second segment scan signals to the one side terminals of the second segment electrodes for x-coordinate detection, and for controlling the common drive circuit to successively apply common scan signals to the one side terminals of the common electrodes for y-coordinate detection; a position detection pen to be electrostatically coupled with the first segment electrodes, the second segment electrodes, and the common electrodes; and a coordinate detection circuit for detecting coordinates of a position on the display panel specified by the position detection pen depending on an output signal of the position detection pen.

5,392,059

IMAGE FORMING METHOD USING THERMAL TRANSFER

Takeshi Ueno; Katsuyuki Oshima; Hidetake Takahara; Jitsuhiko Ando, and Mineo Yamauchi, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed May 11, 1992, Ser. No. 880,657
Claims priority, application Japan, May 13, 1991, 3-135236; Jul. 3, 1991, 3-188286; Oct. 9, 1991, 3-289439
Int. Cl.[6] B41J *2/325*
U.S. Cl. 342—188 46 Claims



1. An image forming method using thermal transfer, comprising the steps of:

providing on a print sheet image forming regions each having a trailing edge;

providing dye-receptive layers interruptedly in sequence on an elongated substrate film, said layers having trailing edges, respectively, and a width greater than the respective image forming regions on the print sheet;

transferring said layers to said print sheet in such a manner that trailing edges of said image forming regions will coincide with the trailing edges of said layers transferred to the print sheet; and

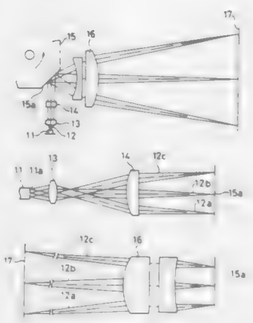
transferring an image to each of said dye-receptive layers from a sublimable dye transfer film so as to form said image in each of said dye-receptive layers.

5,392,060

HALF TONE LASER RECORDING APPARATUS

Susumu Imakawa, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 922,761
Claims priority, application Japan, Aug. 2, 1991, 3-193780
Int. Cl.[6] B41J *2/435*
U.S. Cl. 347—240 15 Claims



1. A laser recording apparatus comprising:

a transporting means for transporting a recording medium in a sub-scanning direction;

M semiconductor lasers arranged along said sub-scanning direction at a slight distance to one another, M being an integral number from two to sixteen;

a converting means for converting an image information into a recording information comprising a plurality of pixel data each having a density data;

a deflector for deflecting M laser beams emitted from said M semiconductor lasers toward said recording medium;

a scanning means for scanning said deflected M laser beams on said recording medium at a predetermined distance between one another simultaneously in a main scanning direction by controlling said deflector; and

an exposing means for exposing said recording information on said recording medium through said scanning means and said transporting means, each of said pixel data in said recording information being represented by a recording pattern of pixel matrix comprising N×L micro pixels, N being an integral number from two to twenty representing the number of micro pixels with respect to said main scanning direction, L being a multiple number of M from one time to sixteen times representing the number of micro pixels with respect to said sub-scanning direction, said exposing means for controlling said emission of each of M semiconductor lasers in order to vary said recording pattern according to said density data to record half-tone, and a distance between each of said micro pixels in said sub-scanning direction being equal to said predetermined distance between each of said deflected M laser beams on said recording medium.

5,392,061

PIXEL RESOLUTION ENHANCEMENT EMPLOYING ENCODED DOT SIZE CONTROL

Gary L. Vondran, Jr., Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 25, 1993, Ser. No. 10,026
Int. Cl.[6] B41J *2/435*
U.S. Cl. 347—252 5 Claims

1. A laser printer for producing raster scan pixel images, including means for modulating edge pixels of an image to improve said image's resolution, said printer comprising:

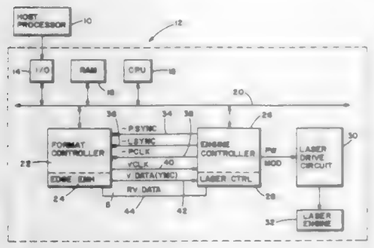
laser means for exposing each pixel area of an electrophotographic surface, during a modulation signal time having a

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start and an end in accordance with applied modulation signals;

controller means for applying a modulation signal during each modulation signal time to said laser means in response to a received binary multi-bit command, said multi-bit command enabling said controller means to apply i) a first modulation signal that gates on said laser means at said start and gates off said laser means at a time intermediate said start and said end, or (ii) a second modulation signal that gates on said laser means at a time intermediate said start and said end and gates off said laser means at said end, or (iii) a third modulation signal that gates on and off said laser means at times intermediate said start and said end; and

edge enhancement means for determining, for an image pixel that resides at an edge of an image, whether said image pixel is to be modified to improve resolution of said edge and if so, generating a said binary multi-bit command to generate either said first modulation signal or said second modulation signal or said third modulation signal to create a desired pixel modification and transmitting said command to said controller means.

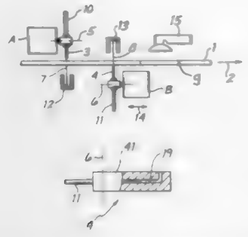


5,392,062

CONTINUOUSLY MARKING ELONGATED STOCK

Gerhard Ziemek, Langenhagen, Germany, assignor to Kabelmetall Electro GmbH, Hanover, Germany

Filed Jan. 17, 1992, Ser. No. 822,625
Claims priority, application Germany, Feb. 9, 1991, 4104039
Int. Cl.[6] B41J 2/02
U.S. Cl. 347—4 6 Claims



1. Apparatus for the continuous marking of elongated stock moving in the direction of extension of the stock and including nozzle means for directing a dye-jet towards the elongated stock, the improvement comprising;

means connected to the nozzle means for causing the nozzle means to oscillate on a plane parallel to the direction of movement of the elongated stock to be marked; and

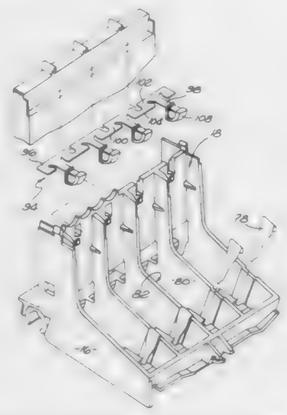
means included in the nozzle means for orienting the jet as produced by and in the nozzle means so that the jet flows in the nozzle means along said plane of oscillation and is redirected to emerge at right angles to the plane of oscillation as provided by said means for oscillating so that the jet impinges upon the stock to be marked at right angles.

5,392,063

SPRING CARTRIDGE CLAMP FOR INKJET PRINTER CARRIAGE

W. Wistar Rhoads, Escondido, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 30, 1993, Ser. No. 56,702
Int. Cl.[6] G01D 15/16; G11B 33/06
U.S. Cl. 347—49 4 Claims



1. A clamp for securing a pen carried by a printer carriage, comprising:

a plurality of latch arms defined in a metallic flat spring, said flat spring defining a generally horizontal spring plane and having a first coefficient of friction, each of the latch arms extending from a forwardly facing latch end to a supporting end; and

a respective cam of a low friction plastic material on said latch end of each of said latch arms, said low friction plastic material having a second coefficient of friction substantially less than said first coefficient, said cam having a sideways oriented cylindrical surface defining a lower tangential plane intersecting the spring plane at an oblique angle,

whereby said cam applies a holding force on a respective pen having a net sideways force component that is tangential to the spring plane and that is greater than a net force which would result from a similarly oriented surface having a coefficient of friction equal to said first coefficient.

5,392,064

LIQUID LEVEL CONTROL STRUCTURE

Babur B. Hadimioglu, Mountain View, and Butrus T. Khuri-Yakub, Palo Alto, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 19, 1991, Ser. No. 810,248
Int. Cl.[6] B41J 2/04
U.S. Cl. 347—46 5 Claims

1. A liquid level control structure comprised of:

a body having a flat surface;

a plate having a top surface and an opposed bottom surface, said bottom surface being coupled to said flat surface, an elongated aperture extending from said bottom surface to said top surface, inwardly sloping lower surfaces extending from said bottom surface, said lower surfaces defining a lower portion of a channel, inwardly sloping upper surfaces extending downward from said top surface and terminating on a portion of said lower surfaces to define an upper portion of said channel, a waist being defined at said termination portion, said lower portion of said channel containing a liquid having a surface tension; and



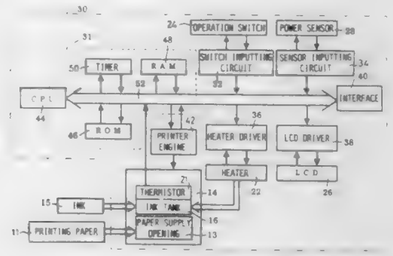
a lip extending from said waist into said aperture, said lip interacting with the surface tension of the liquid to retain the liquid at a predetermined position relative to said top surface.

5,392,065

INK JET PRINTER USING HOT MELT INK

Shogo Suzuki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 15, 1992, Ser. No. 944,930
Claims priority, application Japan, Oct. 15, 1991, 3-266259; Jun. 12, 1992, 4-153587
Int. Cl.[6] G01D 15/16
U.S. Cl. 347—88 18 Claims



1. An ink jet printer for printing an image on a recording medium using an ink jet head and a hot melt ink which is solid at normal temperature and is melted by heat, comprising:

ink storing means for storing the hot melt ink, said ink string means having an opening for introducing unmelted hot melt ink into the ink storing means cover for the opening;

heating means thermally connected to said ink storing means for heating and melting the hot melt ink stored in said ink storing means;

warning means for warning a user that the melt ink stored in the ink storing means is molten;

clock means for timing a predetermined time period from a stoppage of heating of the hot melt ink by said heating means to solidification of the hot melt ink; and

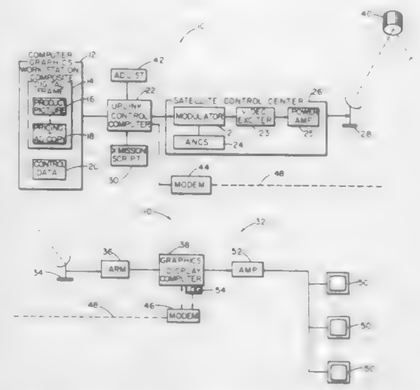
control means for operating said warning means for a period of time while the hot melt ink stored in the ink storing means is molten, wherein said control means ceases operating said warning means when said clock means has timed out the predetermined time period indicating the hot melt ink has resolidified and that movement of the ink jet printer is possible without a potential for spilling ink from the opening.

5,392,066

IN-STORE ADVERTISING SYSTEM

Daniel J. Fisher, Summerfield, and Robert J. King, Temple Terrace, both of Fla., assignors to Parker Communication Systems, Inc., Tampa, Fla.

Filed Nov. 19, 1992, Ser. No. 977,772
Int. Cl.[6] H04N 7/04
U.S. Cl. 348—8 10 Claims



1. An advertising system for advertising products at grouped locations, comprising in combination:

a plurality of digital images including advertising of at least one of the products;

control data associated with said images to identify the group of locations at which each said image is to be displayed;

means for satellite broadcasting said images to the respective grouped locations at which said images are to be displayed; and,

positioned in each location, antenna means for receiving the respective satellite broadcast of the respective said images and display means for displaying said images in said location, said antenna means including means for addressing all of said antenna means in each grouped location to receive the satellite broadcasting of the respective said images intended for that grouped location.

5,392,067

TV SYSTEM FOR ENDOSCOPES

Mitsujiro Konno, Houya; Yoshiharu Takasugi, Iruma; Katsuya Ono, Akishima, and Kimihiko Nishioka, Hachiouji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 962,635
Claims priority, application Japan, Oct. 17, 1991, 3-269410; Sep. 7, 1992, 4-238618
Int. Cl.[6] H04N 7/10, 7/18
U.S. Cl. 348—72 9 Claims

2. A TV system for endoscopes capable of alternatively being connected to a fiber scope including therein an image guide fiber bundle and to a non-flexible endoscope including therein a relay lens system, comprising:

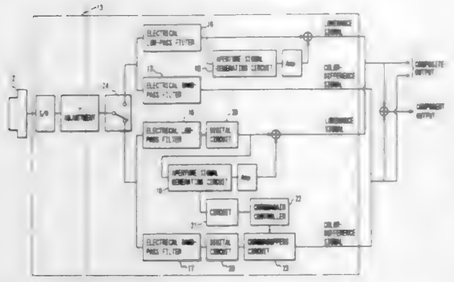
an image forming optical system, forming an endoscopic image obtained by said fiber scope or said non-flexible endoscope on a solid-state image pickup device; and

a camera control unit for converting an electric output signal from said solid-state image pickup device into a television signal to display a picture on a monitoring television screen;

a first optical element having such optical characteristics that a frequency spectrum inherent in said image guide fiber bundle and existing within a first domain of substantially ±0.5 MHz in relation to a color sub-carrier fre-

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quency on a two-dimensional spatial frequency plane is damped to 40% or less within said first domain and having such optical characteristics that a spectrum inherent in said image guide fiber bundle and existing within a second domain of substantially ±0.5 MHz in relation to a sampling frequency of said solid-state image pickup device is damped to 40% or less within said second domain; and



a second optical element having such optical characteristics that a spatial frequency response of said image forming optical system in said sampling frequency of said solid-state image pickup device is damped;

said first and second optical elements being selectively arranged in an optical path used for forming said endoscopic image on said solid-state image pickup device.

5,392,068

IMAGING APPARATUS HAVING START-OF-IMAGING SIGNAL DEPENDENT COLOR TEMPERATURE MEASUREMENT FOR WHITE-BALANCE

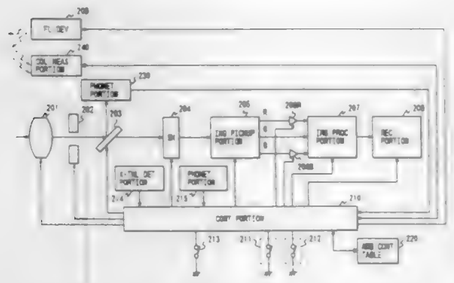
Masahiro Suzuki, Kawasaki; Koichiro Kawamura, Chiba, and Satoshi Ejima, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 113,826

Claims priority, application Japan, Sep. 4, 1992, 4-262852; Sep. 8, 1992, 4-265494

Int. Cl.[6] H04N *9/73*

U.S. Cl. 348—227 **16 Claims**



1. An apparatus for imaging a still-picture, comprising:

a manually operable photography starting switch to output a start-of-imaging signal;

an image pick up device to perform a still-picture image pick up process for picking up an image of a field and outputting an image signal;

a color measuring sensor to measure a color temperature of an area including said field and to output a color temperature signal;

an adjuster electrically connected to said image pick up device to adjust white-balance of said image signal; and

a control circuit electrically connected to said photography starting switch, said image pick up device, said color measuring sensor and said adjuster, said control circuit operating dependent upon said start-of-imaging signal to actuate said image pick up device and said color measuring sensor, and controlling said adjuster based on said color temperature signal.

5,392,069

IMAGE PROCESSING APPARATUS WHICH CAN PROCESS A PLURALITY OF KINDS OF IMAGES HAVING DIFFERENT ASPECT RATIOS

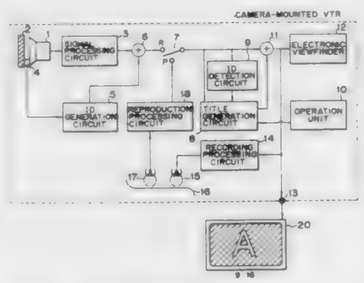
Shinichi Koyama, Tokyo; Hiroyuki Takimoto; Taizou Hori, both of Yokohama; Takashi Kobayashi, Mitaka; Hiroyuki Fukuoka, Hiratsuka; Yoshihiro Nakatani, Yokohama, and Jun Makino, Kunitachi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1993, Ser. No. 73,356

Claims priority, application Japan, Jun. 11, 1992, 4-152236; Jun. 16, 1992, 4-156784; Jun. 24, 1992, 4-166148

Int. Cl.[6] H04N *5/278, 5/262, 5/272*

U.S. Cl. 348—239 **34 Claims**



1. An image processing apparatus comprising:

a. input means for inputting a video signal on which aspect ratio information as to an aspect ratio of said video signal is superimposed;

b. detecting means for detecting the aspect ratio information:

c. image output means for outputting an image having an aspect ratio corresponding to the aspect ratio detected by said detecting means; and

d. synthesizing means for synthesizing the output from said image output means with the video signal.

5,392,070

APPARATUS FOR CORRECTING FAULTY PIXEL SIGNALS BY REPLACING THE FAULTY PIXEL SIGNALS WITH NORMAL PIXEL SIGNALS

Yukio Endo, Yokohama, and Yoshitaka Egawa, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 25, 1992, Ser. No. 981,290

Claims priority, application Japan, Nov. 26, 1991, 3-310785; Sep. 14, 1992, 4-271205

Int. Cl.[6] H04N *5/335*

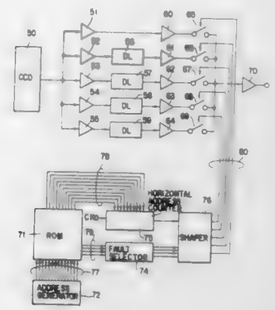
U.S. Cl. 348—247 **27 Claims**

1. An image signal processing apparatus having a function for correcting a signal corresponding to some fault pixels contained in a plurality of pixels which are located in rows and columns to construct an imaging device, said apparatus comprising:

memory means for storing a data code representing a position and a pattern of a fault pixel region, wherein the fault pixel region includes a plurality of fault pixels contained in said imaging device and located continuously in at least one of said rows and columns;

conversion means for converting the data code read from said memory means, into a pixel-fault correction pulse; and

pixel-fault correcting means for replacing fault pixel signals



output by said continuously located fault pixels with a normal pixel signal output by at least one normal pixel located near said continuously located fault pixels, in response to the pixel-fault correction pulse.

5,392,071

APPARATUS AND METHOD FOR PROCESSING IMAGE DATA

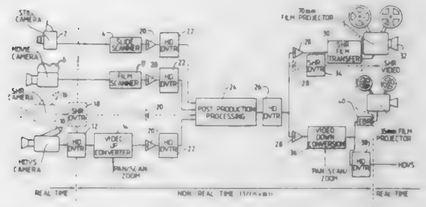
John W. Richards, Chilbolton; Stephen M. Keating, Lower Earley, and Jonathan J. Stone, Mortimer, all of United Kingdom, assignors to Sony United Kingdom Ltd., Staines, United Kingdom

Filed Mar. 16, 1993, Ser. No. 31,902

Claims priority, application United Kingdom, May 13, 1992, 9210261

Int. Cl.[6] H04N *7/12, 11/04*

U.S. Cl. 348—398 **14 Claims**



1. Apparatus for processing image data, said apparatus comprising:

image data source means for generating a source stream of data representing an image;

data splitter means for splitting said source stream of data into a first plurality of split streams of data according to a first technique, each of said first plurality of split streams representing a part of the information content of said source stream of data;

first reformatter means for reformatting said first plurality of split streams of data into a second plurality of split streams of data according to a second technique different than said first technique, said second technique being matched to an image manipulation to be applied to said second plurality of split streams of data;

manipulation means for performing said image manipulation upon said second plurality of split streams of data; and

data combiner means for combining said second plurality of split streams of data, as manipulated, into an output stream of data.

5,392,072

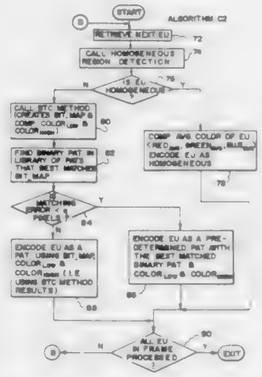
HYBRID VIDEO COMPRESSION SYSTEM AND METHOD CAPABLE OF SOFTWARE-ONLY DECOMPRESSION IN SELECTED MULTIMEDIA SYSTEMS

Arturo A. Rodriguez; Steven M. Hancock, both of Boca Raton, and Mark A. Pietras, Boynton Beach, all of Fla., assignors to International Business Machines Inc., Armonk, N.Y.

Filed Oct. 23, 1992, Ser. No. 965,580

Int. Cl.[6] H04N *7/12, 11/02*

U.S. Cl. 348—405 **12 Claims**



3. A method of detecting image regions for compression and reconstruction of a color image segment, the method comprising the steps performed by a computer system of:

recording the color image segment as a sequence of frames, each of said frames comprising a plurality of pixels organized in an array of pixel locations;

decomposing each of said frames, in the sequence of frames, into non-overlapping contiguous rectangular frame regions wherein each of said frame regions comprises an array of at least 4×4 pixels;

generating a luminance value for each of said frames and each of said frame regions within each of said frames;

generating a standard deviation of the luminance of each of said frames;

selecting a threshold luminance homogeneity value of each of said frames as a function of the standard deviation of the luminance of each of said frames;

generating a standard deviation of the luminance of each of said frame regions as a function of combining pixels into groups and comparing luminance values of each of said groups within each of said frame regions;

comparing the standard deviation of the luminance of each of said frame regions to the threshold luminance homogeneity value and quantizing each of said regions as a function of the standard of deviation of the luminance of each of said frame regions being less than, or homogeneous, or greater than, or non-homogeneous, the selected threshold luminance homogeneity value;

responsive to the step of quantizing further processing any non-homogeneous frame region for compression by creating a binary pattern of said any non-homogeneous frame region;

creating a binary pattern table as a function of said luminance values of each of said frame regions within each of said frames;.

comparing by matching said binary pattern of said any non-homogeneous frame region with said binary pattern table

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to generate a comparison deviation of said any non-homogeneous frame region and quantizing the comparison deviation of said any non-homogeneous frame region with a given threshold of deviation; and

encoding said any non-homogeneous frame region to provide a detection indicator for further processing as a function of value differences between the comparison deviation of said non-homogeneous frame region and a given threshold of deviation.

5,392,073

MOTION ESTIMATING DEVICE FOR VARIABLE LENGTH ENCODED DATA

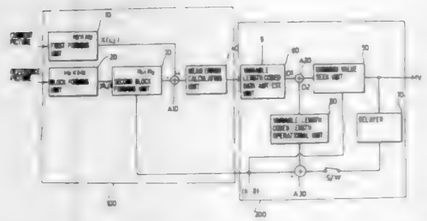
Je-Chang Jeong, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 10, 1993, Ser. No. 58,375

Claims priority, application Rep. of Korea, May 8, 1992, 1992 7757

Int. Cl.[6] H04N *7/137, 7/12, 7/133*

U.S. Cl. 348—413 **4 Claims**



1. A motion estimating device for a variable length encoder which encodes a video signal into variable length encoded data comprising:

a mean error calculating means, responsive to said video signal, for calculating a mean error corresponding to an estimated difference between pixel data of a reference picture and pixel data of a current picture of said video signal; and

a motion vector setting means, coupled to an output of said mean error calculating means, for generating a motion vector corresponding to a minimum horizontal/vertical displacement of said current picture relative to said reference picture based upon a sum of a first data value corresponding to an estimated data amount of said variable length encoded data of said video signal and a second data value corresponding to a coded length of a variable length encoded motion vector when a current horizontal/vertical displacement is selected as said current motion vector.

5,392,074

LEVEL DETECTION CIRCUIT AND ACC CIRCUIT EMPLOYING THE LEVEL DETECTION CIRCUIT

Kazuo Watanabe, Chiba; Hirofumi Todo, Tokyo, and Takaya Hoshino, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 21, 1993, Ser. No. 65,155

Claims priority, application Japan, Jun. 4, 1992, 4-144347

Int. Cl.[6] H04N *9/64*

U.S. Cl. 348—647 **10 Claims**

1. A signal level detection circuit for detecting when a level of an input signal is exceeded by a reference level comprising:

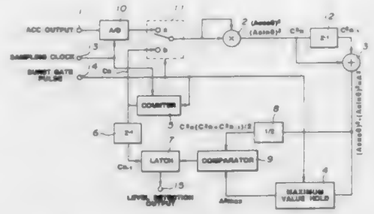
first square value computing means for receiving said input signal and computing a squared value representing the level of said input signal squared;

a counter for counting predetermined clock sampling pulses to produce a count value;

second square value computing means for receiving said count value from said counter and computing a squared value of said count value representing said reference level;

means for providing a burst gate pulse;

switch means, responsive to said burst gate pulse, for selectively supplying said input signal to said first square value



computing means and said count value to said second square value computing means; and

level decision means for producing an output when an output of said second square value computing means exceeds an output of said first square value computing means.

5,392,075

BRIGHTNESS SIGNAL/COLOR SIGNAL SEPARATION

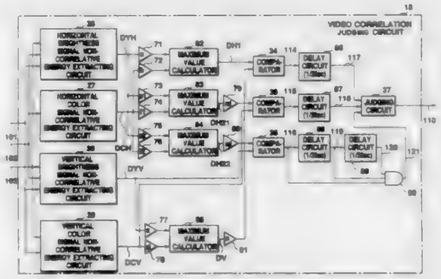
Toshihiro Gai, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 83,872, Jun. 30, 1993, abandoned, which is a continuation of Ser. No. 406, Jan. 4, 1993, abandoned, which is a division of Ser. No. 825,785, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 729,470, Jul. 12, 1991, abandoned. This application Apr. 28, 1994, Ser. No. 249,099

Claims priority, application Japan, Jul. 23, 1990, 2-197481; Jul. 23, 1990, 2-197482

Int. Cl.[6] H04N *9/78*

U.S. Cl. 348—663 **20 Claims**



20. A brightness signal/color signal separating filter comprising:

means for delaying a composite video signal which is sampled at a frequency synchronous with a horizontal scanning frequency by one or two lines and simultaneously extracting sampled values at an object sampling point and a plurality of reference sampling points in the vicinity thereof;

means for extracting frequency components which are respectively corresponding to color subcarrier frequency components in at least two nonparallel directions on the basis of the sampled values at the respective sampling points and for outputting extracted components to form at least two directional frequency components;

selecting means for selecting one of said at least two directional frequency components and for outputting the selected components as a separated color signal;

image correlation judging means for outputting a color

signal selection signal by detecting image correlations in the vertical and horizontal scanning directions, respectively, from the sampled values of the respective sampling points;

said image correlation judging means including;

horizontal brightness signal non-correlative energy detecting means for detecting correlation strength of a brightness signal in the horizontal scanning direction from the sampled values at the respective sampling points to determine a horizontal brightness signal non-correlative energy;

horizontal color signal non-correlative energy detecting means for detecting correlation strength of the color signal in a horizontal scanning direction to determine a horizontal color signal non-correlative energy;

vertical brightness signal non-correlative energy detecting means for detecting correlation strength of the brightness signal in the vertical scanning direction to determine a vertical brightness signal non-correlative energy;

vertical color signal non-correlative energy detecting means for detecting correlation strength of the color signal in the vertical scanning direction to determine a vertical color signal non-correlative energy;

means for generating at least one vertical quasi-comparative signal for judging that vertical non-correlation is at least a predetermined degree greater than horizontal non-correlation from the horizontal brightness signal non-correlative energy, horizontal color signal non-correlative energy, vertical brightness signal non-correlative energy and vertical color signal non-correlative energy, at least one horizontal quasi-comparative signal for judging that the horizontal non-correlation is at least a predetermined degree greater than the vertical non-correlation from said horizontal brightness signal non-correlative energy, horizontal color signal non-correlative energy, vertical brightness signal non-correlative energy and vertical color signal non-correlative energy, and a third quasi-comparative signal indicating that non-correlation exists which is determined from an additional plurality of quasi-comparative signals which are obtained by delaying said at least one vertical and at least one horizontal quasi-comparative signals by a predetermined number of sampling points adjacent said object sampling point, at least one of said adjacent sampling points being a point before said object sampling point with said predetermined number of sampling points taken as one unit and at least one of said adjacent sampling points being a point after said object sampling point with said predetermined number of sampling points taken as one unit;

a comparative signal generating means for comparing the vertical non-correlation with the horizontal non-correlation on the basis of said at least one vertical, at least one horizontal and third quasi-comparative signals and;

color signal extracting means for controlling said selecting means so as to select one of said at least two directional frequency components under control of said comparative signals.

5,392,076

VIDEO SIGNAL PROCESSING DEVICE FOR PRINTING VIDEO DATA WITH HIGHER PICTURE QUALITY IN A DIVISIONAL FRAME PRINTING MODE

Masahiro Fujiwara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 966,700, Oct. 26, 1992, abandoned. This application Jul. 25, 1994, Ser. No. 279,905

Claims priority, application Japan, Oct. 31, 1991, 3-313511

Int. Cl.[6] H04N *5/14*

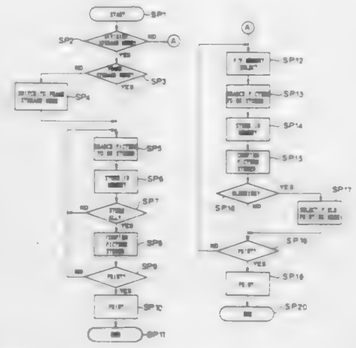
U.S. Cl. 348—719 **10 Claims**

1. A video signal processing device, comprising:

storage means having divided storage areas for storing one frame of picture data as one frame of picture data when a frame storing mode is selected and as separate fields of picture data when a field storing mode is selected;

reading means for reading stored picture data from the storage means as one frame of picture data when a frame reading mode is selected, and as only one field of picture data when a field reading mode is selected;

storage control means for controlling a switching of modes of storing the picture data in the storage means and for causing, when a plurality of frames of picture data are to be stored in the frame storing mode, the plurality of



frames of the picture data to be stored in the divided storage areas, with a separate divided storage area assigned to each one of the plurality of frames;

reading control means for controlling a switching of modes of reading the picture data from the storage means and for causing, when each of the plurality of frames of picture data have been stored in separate divided storage areas assigned to such picture data, the read stored picture data to be output in a frame output mode; and

picture printing means for printing a picture corresponding to the stored picture data read out from the storage means.

5,392,077

PROJECTION TV LIGHT CONTROLLER

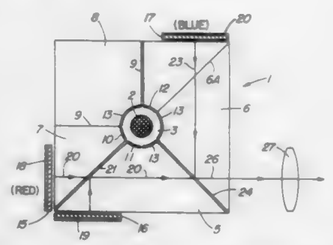
Elmer H. Hara, 44 Cannington Mews, Regina, Saskatchewan, Canada S4S 5Z7

Filed Jun. 7, 1993, Ser. No. 72,409

Claims priority, application Canada, Jun. 11, 1992, 2071055

Int. Cl.[6] H04N *9/31, 5/74*

U.S. Cl. 348—750 **20 Claims**



1. A projection TV light controller comprising a plurality of blocks of material which are transparent to the light of a lamp, adjacent sides of the blocks being cooperatively shaped and being disposed adjacent each other to form a single light controlling element, the element being shaped to surround the lamp which lies within the central axis of the element, means for conducting light from the lamp in each of three primary colours into respective ones of the blocks, means associated with each respective block for creating video display light

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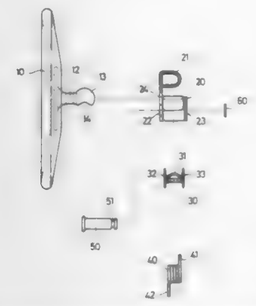
signals relating to a corresponding primary colour, means for combining said video display light signals of all of the primary colours into a single light beam and for conducting said light beam out of said light controlling element.

5,392,078

STRUCTURE FOR NOSE PIECES OF SPECTACLES

Ming-Chieh Chen, 1th, Fl., No. 28, Alley 16, Lane 102, Sec 1, Chung Young S. Rd, Taipei, Taiwan, Prov. of China

Filed Jun. 4, 1993, Ser. No. 72,280
Int. Cl.[6] G02C *5/12*
U.S. Cl. 351—136 1 Claim



1. An improved structure for nose pieces of spectacles comprising:

a nose piece made of soft plastic and having a concave shape, a front face thereof being covered with very soft, absorbent material, said nose piece including a plurality of air-permeable through holes, the nose piece further including a connecting axle integrally connected to said nose piece and protruding from a rear face of said nose piece, said axle including a protruding ball at an end not connected to said nose piece, said ball having a concave lateral surface;

a hollow base, an upper end thereof protruding as a P-shaped head which into a seat on said spectacles for said nose piece, a lower end of said base being provided with two holes respectively through left and right walls thereof, and further including an opening through which said connecting axle passes so that said protruding ball is pivotally seated in said base;

a pressing detent with a pressing arm protruding therefrom to mate with said concave lateral surface of said protruding ball, two holes being provided respectively through left and right walls thereof, said detent being pivotally mounted in said base, said pressing arm and said concave surface of said protruding ball being abutted against each other, with said holes in said pressing detent being aligned with said holes in said base;

a torsional spring being held fixedly in the lower end of said base, two spring legs of said torsional spring being used respectively to brace against said pressing arm and to press against an inner wall of said base to provide a torsional spring force;

a latching axle with an annular groove provided on a first end thereof, a shank of said axle being able to extend through said holes on said pressing detent as well as through an interior of said torsional spring to render said annular groove exposed at an end of said base;

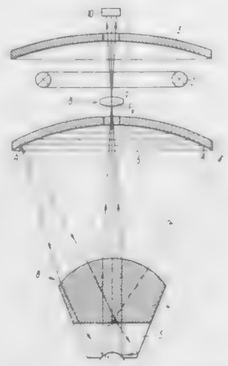
an E-shaped buckle which buckles into said annular groove of said latching axle to fix said latching axle in place.

5,392,079

KERATOMETER

Svyatoslav N. Fedorov, pereulok Dostoevskogo,1/21,kv.32; Daniil T. Puryaev, ulitsa Srednvava Pervomaiskava,27,kv.36, and Alexandr V. Laskin, Izmailovsky prospekt,73/2,kv.58, all of Moscow, U.S.S.R.

Filed Aug. 15, 1990, Ser. No. 567,826
The portion of the term of this patent subsequent to Aug. 21, 2010, has been disclaimed.
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—212 3 Claims



1. A keratometer, comprising: an illumination system made as the following components located before the cornea: a light source, an objective lens, ring-shaped measuring marks interposed between said light source and said objective lens on the focal surface of said illumination system and arranged symmetrically with respect to the optic axis of said objective lens, a conical mirror interposed between said objective lens and said cornea, said conical mirror being shaped as a cone frustum having a reflecting coating on its inner surface, the axis of said cone frustum being aligned with said optic axis of the objective lens; a projection lens; a unit for recording the images of said measuring marks; said projection lens is composed of at least two components of which one is in fact said objective lens of said illumination system, while the other component is located on said optic axis of said objective lens of the illumination system between said objective lens and said unit for recording the images of the measuring marks.

5,392,080

METHOD AND APPARATUS FOR AN INTEGRATING SPHERE LAMPHOUSE

John Galt, and James Pearman, both of Glendale, Calif., assignors to Sony Electronics, Inc., Park Ridge, N.J.

Filed Apr. 28, 1993, Ser. No. 54,558
Int. Cl.[6] G03B *21/00*
U.S. Cl. 353—84 26 Claims

1. An apparatus for illuminating a motion picture film frame comprising:

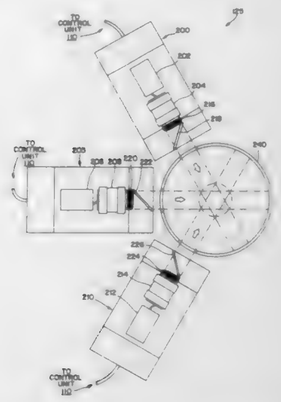
lamp means for generating three collimated light beams;

power supply means coupled to said lamp means for generating power required for operation of said lamp means;

optical means for generating three monochromatic light sources, said optical means comprising filter means and focusing means, said filter means receiving said three light beams and generating three constituent monochromatic light sources, said focusing means receiving said three monochromatic light sources and generating a light cone for each of said three monochromatic light sources;

light valve means for independently attenuating each of said three monochromatic light sources; and

integrating means for generating a diffused polychromatic light source, said integrating means receiving and optically mixing said three monochromatic light sources to generate said diffused polychromatic light source for illuminating said motion picture film.

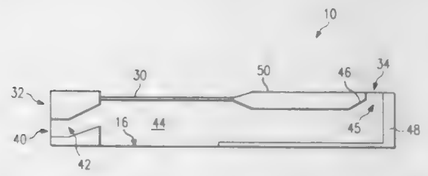


5,392,081

CALCULATOR PROJECTION DISPLAY

Thomas N. Tarnay, Plano, and W. Gerald Wyatt, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 29, 1993, Ser. No. 129,698
Int. Cl.[6] G03B *21/16*
U.S. Cl. 353—119 9 Claims



1. A projection display for an electronic data processing device for use in conjunction with an overhead projector, said projection display comprising:

a display having a light transmitting screen, said display being coupled to the electronic data processing device for receiving display data therefrom; and

a housing for framing said display and supportively positioning said display on the overhead projector, said housing defining a free convection air channel and supporting said display in general alignment with an upper plane thereof; said housing further defining

an air inlet positioned near a first edge of said display and generally at a lower plane below said upper plane,

a cooling zone leading from said air inlet and located directly below the underside of said display,

a generally vertical chimney leading from said cooling zone and directing the free convection air channel upward toward said upper plane, and

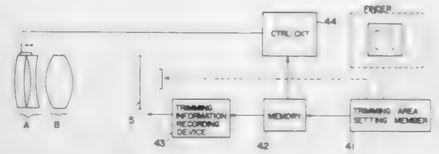
an air outlet of said chimney positioned at said upper plane near a second edge of said display opposed from said first edge.

5,392,082

PHOTOGRAPHING APPARATUS HAVING A TRIMMING PHOTOGRAPHIC MODE

Keiji Ikemori, and Takeshi Koyama, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 744,066, Aug. 12, 1991, abandoned.
This application May 2, 1994, Ser. No. 236,147
Claims priority, application Japan, Apr. 14, 1990, 2-214752; Apr. 14, 1990, 2-214753
Int. Cl.[6] G03B *1/18*
U.S. Cl. 354—195.12 7 Claims



1. An image forming apparatus having at least two modes, comprising:

means for setting a first mode for photographing a first photographing area of an image plane of a photo-taking optical system; and

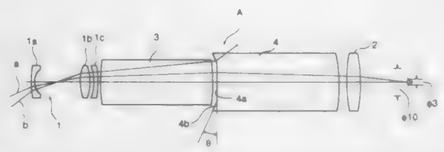
means for setting a trimming mode for photographing a second photographing area of the image plane of the photo-taking optical system, said second photographing area being smaller than said first photographing area, said photo-taking optical system having in succession from the object side a first lens unit and a second unit, said first lens unit comprising a positive lens of positive refractive power and a negative lens of negative refractive power, said second lens unit consisting of a single positive lens, the spacing between said first lens unit and said second lens unit being varied during the changeover between said first mode and said trimming mode.

5,392,083

DISPLAY DEVICE IN VIEW-FINDER

Takemi Miyazaki; Koyoaki Hazama; Kazuhiro Nakanishi, and Kobei Ota, all of Hachioji, Japan, assignors to Konica corporation, Japan

Filed Dec. 20, 1993, Ser. No. 170,149
Claims priority, application Japan, Jan. 25, 1993, 5-005104
Int. Cl.[6] G03B *13/02*
U.S. Cl. 354—219 4 Claims



1. A display device in a real image type viewfinder, comprising:

(a) an objective lens;

(b) an eyepiece;

(c) an optical member provided between the objective lens and the eyepiece, the optical member having an image formation surface, wherein an object image is formed by the objective lens on the image formation surface; and

(d) a display section for displaying a view field frame of the viewfinder, the display section being provided when an inclined surface portion is formed in a direction in which a peripheral portion of the image formation surface is protruded away from the image formation surface.

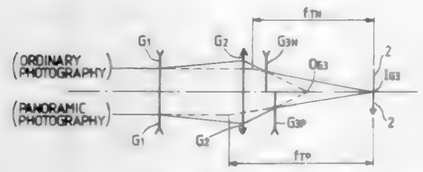
VOL 1171 ISS 3 FE 21 1995 UMI

5,392,084

VARIABLE MAGNIFICATION FINDER OPTICAL SYSTEM

Shigeru Kato, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1993, Ser. No. 88,338
Int. Cl.[6] G03B *13/10, 17/02, 5/00*
U.S. Cl. 354—222 7 Claims



1. A variable magnification finder optical system constructed independent of a photographic optical system, comprising:

an objective optical system including at least one variable magnification lens unit and a first fixed lens unit, and having a positive refracting power as a whole, for forming an intermediate image of an object;

a field frame disposed adjacent to the intermediate image formed by said objective optical system, said field frame having a size defining a first range of observation of said variable magnification finder optical system;

an eyepiece optical system having a positive refracting power, for observing said intermediate image;

a second fixed lens unit having a different focal length from a focal length of said first fixed lens unit and disposed in parallel with said first fixed lens unit;

wherein said variable magnification lens unit moves along an optical axis for a variation of field angle of said variable magnification finder optical system, and for zooming said objective optical system from a wide angle position to a telephoto position, in accordance with a variation of field angle of said photographic optical system; and

means for alternating said first fixed lens unit and said second fixed lens unit in an optical path of said objective optical system to form a structure of making a change in magnification of said variable magnification finder optical system other than said zooming in accordance with a change in size of an image plane of said photographic optical system, and held stationary during said zoom.

5,392,085

FOCAL-PLANE SHUTTER APPARATUS

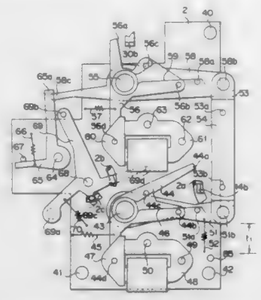
Yoshiaki Tanabe, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed May 21, 1993, Ser. No. 65,257
Claims priority, application Japan, Jun. 2, 1992, 4-166886; Jun. 3, 1992, 4-168585
Int. Cl.[6] G03B *9/40*
U.S. Cl. 354—247 5 Claims

1. A focal-plane shutter apparatus wherein an aperture can be doubly covered with a first vane group and a second vane group and, responsive to release of a shutter, said second vane group withdraws from said aperture and thereafter said first vane group runs across said aperture to start an exposure, comprising:

a balancer member which moves in an opposite direction to the withdrawal direction of said second vane group in synchronism with the withdrawal movement of said second vane group from said aperture; and

a start adjusting member which is adjustable to relatively adjust the starting of the movement of said balancer member and the starting of the withdrawal of said second vane group to occur substantially simultaneously.

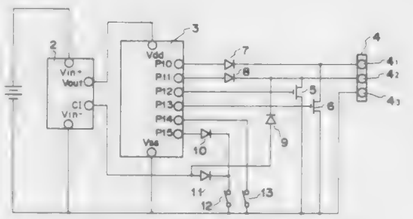


5,392,086

CAMERA HAVING SIGNAL INPUT/OUTPUT DEVICE FOR CONTROL OF OR BY ANOTHER CAMERA

Hidehiro Ogawa, Funabashi, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 783,114, Oct. 25, 1991, abandoned. This application Apr. 20, 1994, Ser. No. 230,869
Claims priority, application Japan, Oct. 30, 1990, 2-290934; Oct. 30, 1990, 2-290935; Oct. 30, 1990, 2-290936
Int. Cl.[6] G03B *17/38*
U.S. Cl. 354—266 15 Claims



1. For use in a system in which a plurality of cameras can be controlled by signal communication between cameras, at least one camera comprising:

a controller portion for controlling the performance of a camera release sequence in said one camera and for transmitting and receiving signals;

a communication portion connected to said controller portion and having a release signal terminal capable of applying to said controller portion a release signal received from another camera and capable of transmitting a release signal from said controller portion to another camera; and a release member;

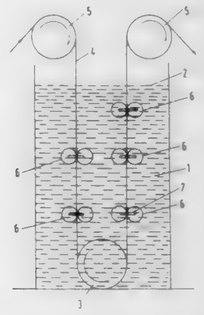
said controller portion being responsive to a release signal received by said release signal terminal for starting a release sequence in said one camera and also being responsive to operation of said release member for starting a release sequence in said one camera, said controller portion applying a release signal to said release signal terminal for transmission to another camera when said release sequence is performed in said one camera in response to operation of said release member, whereby another camera can perform a release sequence concurrently with said one camera.

5,392,087

APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIALS

Ubbo Wernicke, Roesrath-Kleineichen, Germany, assignor to Agfa - Gevaert AG, Leverkusen, Germany

Filed Sep. 15, 1993, Ser. No. 120,799
Claims priority, application Germany, Sep. 23, 1992, 4231775
Int. Cl.[6] G03D *3/08*
U.S. Cl. 354—319 18 Claims



1. Apparatus for processing photographic materials, comprising at least one tank filled with a processing liquid, characterized in that

a) several pairs of rollers are provided below the liquid level of the tank,

b) the rollers of each pair of rollers are arranged with their axes in parallel and

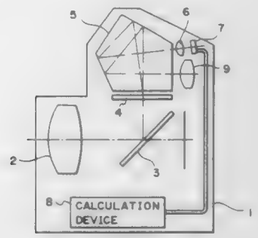
c) the pressure with which the rollers of at least one pair of rollers bear against each other is adjusted to from 50 to 1000 p/cm^2.

5,392,088

TARGET FOLLOW-UP DEVICE AND CAMERA COMPRISING THE SAME

Hiroyuki Abe, and Masaru Muramatsu, both of Kawasaki, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 1, 1993, Ser. No. 114,148
Claims priority, application Japan, Sep. 4, 1992, 4-237390; Sep. 22, 1992, 4-252737; Jun. 24, 1993, 5-153332
Int. Cl.[6] G03B *13/36;* H04N *5/225*
U.S. Cl. 354—402 6 Claims



1. A target follow-up device, having:

an imaging means which outputs input image data;

a memory means which, based upon the output from said imaging means, records as reference data image data of a target to be followed up;

a calculation means which calculates the amount of correlation between said reference image data and said input image data; and

a position detection means which, based upon said amount of correlation, detects the position of said target; comprising

a refreshing means which, each time the detection of the position of said target is performed by said position detection means, samples at least a portion of said input image data according to the position of said target, and refreshes said reference image data for the next iteration using said input image data thus sampled;

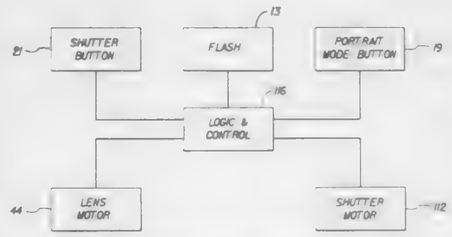
wherein said calculation means calculates said amount of correlation using the reference image data refreshed by said refreshing means.

5,392,089

CAMERA WITH PORTRAIT MODE

Myron E. Fox, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 18, 1993, Ser. No. 155,611
Int. Cl.[6] G03B *7/00*
U.S. Cl. 354—412 7 Claims



1. A camera comprising a taking lens, a variable aperture diaphragm adjustable to provide a relatively large aperture for effecting a relatively shallow depth of field of said taking lens and a smaller aperture for effecting a less shallow depth of field of the taking lens, and manually operated means for selecting a portrait mode when taking a picture of a person, is characterized by:

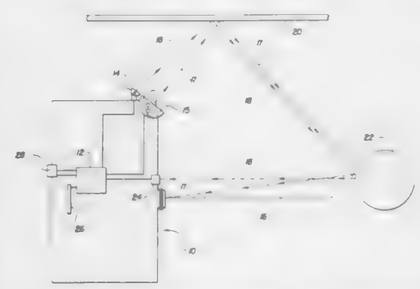
means for adjusting said diaphragm to provide said smaller aperture every time said portrait mode is selected, whereby the less shallow depth of field of said taking lens is always used to take a picture of a person in the portrait mode.

5,392,090

BOUNCE FLASH APPARATUS USABLE WITH A PHOTOGRAPHIC CAMERA

Stanley W. Stephenson, III, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 24, 1993, Ser. No. 126,618
Int. Cl.[6] G03B *15/03*
U.S. Cl. 354—415 9 Claims



1. A bounce flash apparatus usable with a photographic camera, comprising:

a light emitting diode (LED) inclined relative to an optical

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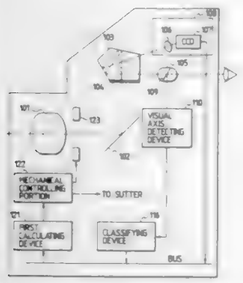
axis of said camera for directing light towards a reflecting surface and thence towards a subject to be photographed;
a sensor for detecting light from said LED which is reflected from said subject;
control means coupled to said sensor for determining whether the intensity of light from said LED which is reflected from said subject is below a predetermined level;
a light source inclined substantially the same as said LED for visibly illuminating said subject by directing visible light towards said reflecting surface and thence towards said subject; and
means, responsive to said control means determining that the intensity of light from said LED which is reflected from said subject is below said predetermined level, for indicating to a camera operator that said light source cannot adequately illuminate said subject.

5,392,091

EXPOSURE CALCULATING APPARATUS

Hiroyuki Iwasaki, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,819
Claims priority, application Japan, Aug. 27, 1991, 3-215180; Aug. 27, 1991, 3-215181; Aug. 27, 1991, 3-215182
Int. Cl.[6] G03B *7/28*
U.S. Cl. 354—432 **8 Claims**



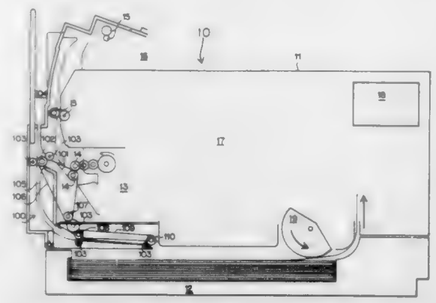
1. An exposure calculating apparatus comprising:
a light-metering device comprising a first predetermined number of light-metering elements corresponding to elementary areas obtained by dividing a field into said first predetermined number, said light-metering elements measuring a light intensity in said field;
a detecting device for detecting a position of an object in said field based on a direction of an eyeball of a photographer and for outputting the position of the object;
a classification processing circuit, into which said position of the object is input, for classifying said light-metering elements of said light-metering device into groups having predetermined numbers of light-metering elements less than said first predetermined number according to said position of the object; and
a calculating circuit for calculating an exposure value by weighting outputs of said light-metering elements of said groups of light-metering elements according to the group to which the light-metering elements belong.

5,392,092

PRINTING DEVICE DUPLEXING MECHANISM AND METHOD THEREFOR

Anthony G. Laidlaw; Peter Gysling, and Bruce Johnson, all of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 14, 1993, Ser. No. 166,417
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—24 **4 Claims**



1. An image forming apparatus for printing on two sides of a page of print media which comprises:
a housing;
print engine means, for affixing an image representing data to the page of print media, being positioned within the housing;
formatter means for supplying data to the print engine means, the formatter means being configured to supply a first set of data representing the first side of the page in a first order and to supply a second set of data representing the second side of the page in a second order which is reverse with respect to the first order;
print media supply means, for supplying pages of print media to the print engine means from a stack of print media pages having leading edges and trailing edges; being attached to the housing;
printed page output means for directing the page from the print engine means out of the housing;
diverter means for diverting a page, having an image on a first side of the page, away from the printed page output means; and
means for placing the diverted page back on the top of the stack of print media pages and reorienting the page in a flipped over state with respect to its original position on the stack having the original trailing edge of the page now being the leading edge.

5,392,093

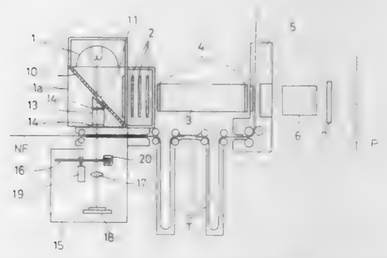
PHOTOGRAPHIC PRINTING APPARATUS

Masayuki Kojima, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Jan. 14, 1994, Ser. No. 181,439
Claims priority, application Japan, Jan. 18, 1993, 5-005726
Int. Cl.[6] G03B *27/80*
U.S. Cl. 355—38 **3 Claims**

1. A photographic printing apparatus comprising a light source, a filter, a mirror tunnel, a diffuser, a lens, a shutter, and a scanner unit, characterized in that said apparatus further comprises a light reflecting member having a light-passing

portion for reflecting part of the light from said light source to pass through said filter, mirror tunnel, diffuser, lens and shut-



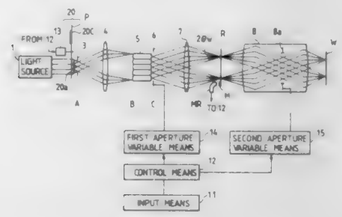
ter, the remaining of the light passing through said light reflecting member toward said scanner unit.

5,392,094

ILLUMINATION OPTICAL SYSTEM AND EXPOSURE APPARATUS INCLUDING THE SAME SYSTEM

Yuji Kudo, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 27, 1993, Ser. No. 97,175
Claims priority, application Japan, Aug. 7, 1992, 4-211220
Int. Cl.[6] G03B *27/54*
U.S. Cl. 355—67 **15 Claims**



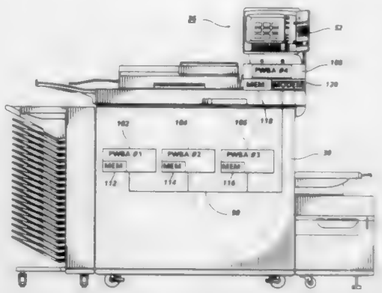
1. An illumination optical system comprising:
a parallel beam supplying means for supplying a parallel beam;
a first optical integrator for forming a first substantially planar light source by the beam from said parallel beam supplying means and generating a plurality of beams;
a first converging optical system for converging said plurality of beams from said first substantially planar light source formed by said first optical integrator;
a second optical integrator for forming a second substantially planar light source by said plurality of beams converged by said first converging optical system and generating multiple beams; and
a second converging optical system for converging said multiple beams from said second substantially planar light source formed by said second optical integrator and illuminating an irradiated surface with the converged beams in superposition,
wherein at least one of said first optical integrator and said first converging optical system includes a plurality of lens systems being interchangeable with each other and having focal lengths different from each other, and one of said plurality of lens systems is inserted in a light path with the result that a size of said second substantially planar light source is made variable while a size of an irradiated area of said surface is maintained constant.

5,392,095

CUSTOMER FEEDBACK DEVICE ON A MACHINE CONSOLE

Robert P. Siegel, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 2, 1993, Ser. No. 160,649
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—200 **12 Claims**



1. In an image forming apparatus having image processing components for forming images on a medium, a controller for directing the operation of the image forming components including an operator interface connected to the controller, the operator interface including a interactive display, the method of enabling an operator to observe the image forming process and the copy sheet output of that process and communicate observations to remote customer support services for response to the operator observation, if required, comprising the steps of:
monitoring the operation of the image forming apparatus relative to forming images on the medium;
subjectively detecting the copy quality of the copy sheet output;
initiating dialog with the remote customer support services through the interactive display in accordance with an operator's threshold dissatisfaction with images on a copy sheet;
selecting at least one option displayed on the interactive display for transmission to the remote customer support services;
determination by the remote customer support services if the condition is one that requires correction; and
initiation of corrective action, if required, by the customer support services either directly to the image forming component of the image forming apparatus through software parameters, by means of the operator, or through a maintenance call to a technical representative.

5,392,096

IMAGE TRANSFER METHOD

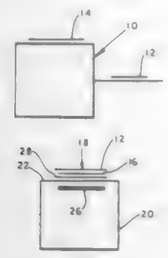
Robert M. Deets, II, Cochranton, Pa., assignor to Morco, Cochranton, Pa.

Filed Dec. 21, 1993, Ser. No. 170,898
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—202 **9 Claims**

1. A printing process comprising providing a color copier machine of the dry toner type;
providing a plain, non-laminated, non-electrically conductive carrier sheet adapted to accept a melted toner image and to withstand temperatures of remelting toner images;
providing an article to be copied;
copying an image of said article onto said plain carrier sheet by a xerographic process using a toner including melting said toner thereby providing said toner image of said article on said plain carrier sheet;

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bringing said toner image on said plain carrier sheet into contact with an entity;



applying both heat and pressure to said plain carrier sheet to remelt said toner image and to force said toner image into contact with said entity; and,

cooling said remelted toner image.

5,392,097

IMAGE PROCESSING APPARATUS

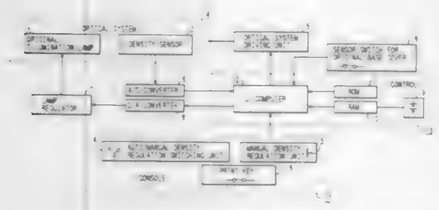
Kazuo Ohtani, Kodaira, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 664,611, Mar. 4, 1991, abandoned. This application Sep. 15, 1992, Ser. No. 946,020

Claims priority, application Japan, Mar. 6, 1990, 2-52649

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—214 **10 Claims**



1. An image processing apparatus comprising:

sensor means for sensing image density of an original;

setting means for manually setting a desired image density;

determining means for determining an image processing condition, said determining means determining, in a first mode, an image processing condition based on a parameter in correspondence to the image density sensed by said sensor means, and determining, in a second mode, an image processing condition, and determining, in a second mode, an image processing condition based on a parameter in correspondence to an image density set by said setting means;

judging means for automatically judging whether the parameter that is used in said first mode for determining the image processing condition should be modified in accordance with a relation among the image density set in said second mode by said setting means, the image density sensed by said sensor means, and the parameter that is used in said first mode; and

modifying means for automatically modifying the parameter that is used in said first mode for determining the image processing condition in accordance with the result of judgment by said judging means.

5,392,098

ELECTROPHOTOGRAPHIC APPARATUS WITH AMORPHOUS SILICON-CARBON PHOTOSENSITIVE MEMBER DRIVEN RELATIVE TO LIGHT SOURCE

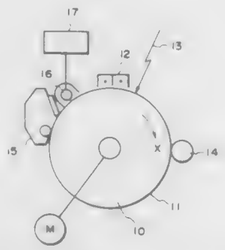
Toshiyuki Ehara; Koji Yamazaki; Shigenori Ueda, and Hitoshi Murayama, all of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1992, Ser. No. 891,176

Claims priority, application Japan, May 30, 1991, 3-153684; May 30, 1991, 3-153733; May 30, 1991, 3-153737; May 30, 1991, 3-153763; May 30, 1991, 3-153780; May 30, 1991, 3-153790

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **6 Claims**



1. An electrophotographic apparatus comprising:

an amorphous silicon electrophotographic photosensitive member having a conductive base, a photoconductive layer thereon and a surface layer thereon, wherein said photoconductive layer contains carbon atoms, a content of which is minimum adjacent a position closest to the surface layer, and the surface layer contains 40–90 atomic % of carbon atoms;

a discharging light source for electric discharge driven through a pulse width modulation using a reference wave having a frequency of not higher than 10 kHz;

charging means for charging said photosensitive member at a position downstream of said light source with respect to a movement direction of said photosensitive member;

means for projecting information light onto said photosensitive member; and at a position downstream of said charging means with respect to the moving direction of said photosensitive member; and

driving means for driving said photosensitive member relative to the light source at such a speed that a peripheral speed of said photosensitive member divided by the frequency of the reference wave is not more than 1 mm.

5,392,099

IMAGE FORMING APPARATUS HAVING CLEANING MEMBER FOR CLEANING CHARGING WIRE

Hiroshi Kusumoto; Daisuke Hayashi; Hideki Ishida; Shoichi Kitagawa, and Mitsugu Miyamoto, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 20, 1993, Ser. No. 124,145

Claims priority, application Japan, Sep. 25, 1992, 4-256738

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—221 **12 Claims**

1. An image forming apparatus comprising:

an image forming unit for forming a copied image on copy paper, the image forming unit including:

a photosensitive body;

a charger for charging the photosensitive body, the charger having a charging wire extending in a lengthwise direction of the photosensitive body:

an optical system for illuminating a document and introducing a reflected light to the photosensitive body to produce a latent image of the document;

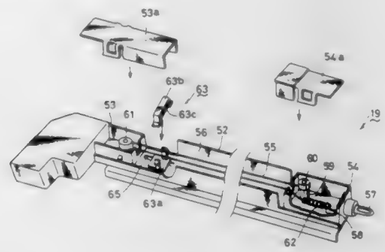
a developer for developing the latent image to a toner image; and

a transfer for transferring the toner image onto the copy paper to form the copied image;

sensor means for detecting a white line on the copied image;

calculator means responsive to the sensor means for calculating a target portion of the charging wire; and

cleaning means for cleaning the target portion, the cleaning means including:



a cleaning member movable along the charging wire for cleaning the charging wire;

driver means for moving the cleaning member along the charging wire;

controller means responsive to the calculator means for controlling the driver means to render the cleaning member to clean the target portion of the charging wire.

5,392,100

IMAGING DEVICE HAVING DUAL SCANNERS

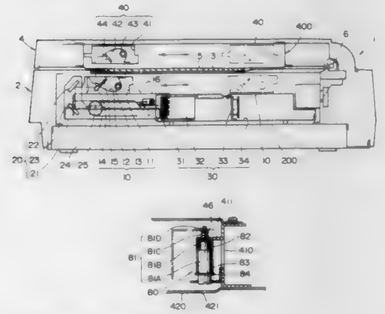
Naoki Yoshida, Tokorozawa, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1992, Ser. No. 977,009

Claims priority, application Japan, Nov. 15, 1991, 3-326922; Nov. 15, 1991, 3-326923; Nov. 15, 1991, 3-326924; Nov. 15, 1991, 3-326925; Nov. 20, 1991, 3-331240; Nov. 20, 1991, 3-331241; Dec. 6, 1991, 3-348954; Dec. 11, 1991, 3-351004; Dec. 11, 1991, 3-351005

Int. Cl.[6] G03G *15/28*; H04N *1/04, 1/10*

U.S. Cl. 355—235 **4 Claims**



1. An imaging device comprising:

a housing;

a transparent document support mounted on said housing for supporting a document thereon;

optical scanning device, movably housed in said housing below said transparent document support, for optically scanning a document placed on said transparent document support;

a cover movably mounted on said housing for covering said transparent document support;

a diffusion plate mounted on said cover in facing relationship to said transparent document support;

a lamp unit housed in said cover for emitting light through said diffusion plate toward said transparent document support to irradiate the document placed thereon, said lamp unit being movable in synchronism with said optical scanning device, said lamp unit having a slider;

a guide member mounted in said cover for guiding said slider to slide therealong; and

locking means mounted in said cover, for engaging said lamp unit to lock said slider against movement along said guide member.

5,392,101

SHADING COMPENSATION DEVICE FOR AN IMAGE FORMING APPARATUS

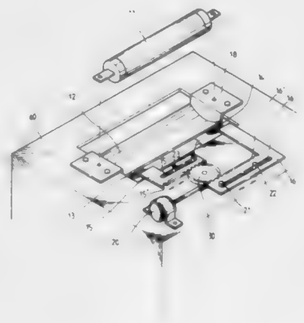
Jong-heul Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 7, 1993, Ser. No. 162,611

Claims priority, application Rep. of Korea, Apr. 28, 1993, 93-6877

Int. Cl.[6] G03G *15/04*

U.S. Cl. 355—243 **3 Claims**



1. A shading compensation device for an image forming apparatus, comprising:

a lamp;

a fixed reflecting mirror positioned to reflect light from said lamp onto a sheet of paper bearing an image;

first and second auxiliary reflecting mirrors placed adjacent to a lateral periphery of said fixed reflecting mirror for further reflecting light of said lamp to the sheet; and

controlling means for reciprocally moving said first and second auxiliary reflecting mirrors so as to control a distance between said first and second auxiliary reflecting mirrors according to a size of the sheet.

5,392,102

DEVELOPING DEVICE HAVING TONER CARTRIDGE DISCRIMINATOR

Yoshihiko Toyoizumi, and Masahiro Yoshino, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 53,594

Claims priority, application Japan, May 26, 1992, 4-158789

Int. Cl.[6] G03G *15/08*

U.S. Cl. 355—245 **7 Claims**

1. An image-forming apparatus for forming a fixed image on a recording sheet by forming an electrostatic image on an image receiving drum from an original image sheet, developing said electrostatic image with a color toner to form a toner image thereon, transferring said toner image to said recording

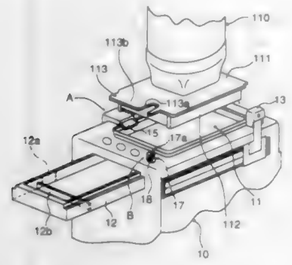
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sheet, and heat fixing said toner image, said apparatus comprising;

a plurality of developer containers containing a plurality of developers for replenishment,

a plurality of developer replenishing gates provided on a main body of said apparatus for receiving replenishing developer from said developer containers and for supplying developer to developing devices, wherein each of said developer containers is provided with a first cover and a first toner color indicator positioned in a position indicative of a color and type of toner contained in said developer container;

each of said developer replenishing gates being provided with a second cover and toner color checker positioned in a position indicative of a color and type of toner to be supplied from said developer container;



said developer replenishing gate being further provided with a mechanical discriminator for mechanically discriminating the color and type of toner contained in said developer container when attached to said developer replenishing gate; wherein

said developer container can be attached to said developer replenishing gate, regardless of whether said developer container contains the type and color of toner corresponding to said developer replenishing gate,

said developer replenishing gate further comprises a control for mechanically locking said first and second covers when positions of said color toner indicator and said toner color checker do not correspond, and

when a position of said toner color indicator and said toner color checker correspond, said control mechanically releases said first and second cover for opening, and toner is fed from said developer container to said developer replenishing gate.

5,392,103

IMAGE FORMING METHOD COMPRISING ELECTROSTATIC TRANSFER OF DEVELOPED IMAGE AND CORRESPONDING IMAGE FORMING APPARATUS

Tsutomu Kukimoto, Tokyo; Hiroshi Yusa, Yokohama; Koichi Tomiyama, Kawasaki; Tsuyoshi Takiguchi, Yokohama; Eiichi Imai, Narashino; Tetsuya Kuribayashi, Tokyo; Hisayuki Ochi, and Hiroyuki Suematsu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 902,808, Jun. 25, 1992, Pat. No. 5,270,770, which is a continuation of Ser. No. 514,314, Apr. 25, 1990, abandoned. This application Nov. 4, 1993, Ser. No. 145,702

Claims priority, application Japan, Apr. 27, 1989, 1-111006; Jul. 19, 1989, 1-184421; Jul. 19, 1989, 1-184422

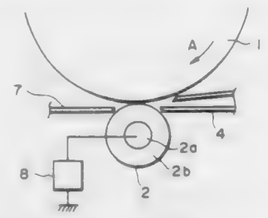
Int. Cl.[6] G03G *15/08*

U.S. Cl. 355—274 **20 Claims**

1. An image forming method comprising:

(a) developing an electrostatic image formed on an electrostatic image-bearing member with a developer to form thereon a developed image, said developer comprising 100 wt. parts of a toner and 0.3 to 1.6 wt. parts of silica fine powder treated with a silicone material selected from the group consisting of an amino-modified silicone oil and an amino-modified silicone varnish; and

(b) electrostatically transferring the developed image on the electrostatic image-bearing member to a transfer material while pressing a transfer means supplied with a bias voltage against the electrostatic image-bearing member with the transfer material disposed between the electrostatic image-bearing member and the transfer means under a line pressure of 3 g/m or higher, wherein the electrostatic image-bearing member has a curvature radius of no greater than 25 mm at the transfer position.



5,392,104

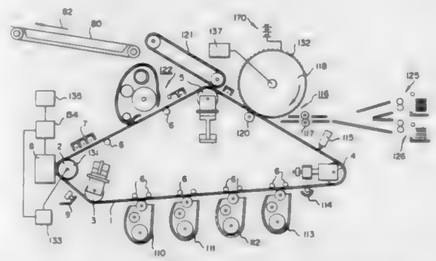
METHOD AND APPARATUS FOR CREATING COLORGRAPHS HAVING A PHOTOGRAPHIC LOOK AND FEEL FROM IMAGES CREATED ELECTROSTATOGRAPHICALLY

Kevin M. Johnson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1993, Ser. No. 11,921

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—278 **19 Claims**



1. A method of forming a color print comprising the steps of:

forming a series of color separation electrostatic latent images on an image member;

applying a different color toner to each latent image to form a series of different color toner images;

forming an electrostatic latent image on the image member of the white and low density areas of an original image;

applying clear toner to this latent image to form a clear toner image on the image member;

feeding a receiver sheet from a supply of receiver sheets to a transfer member;

attaching the receiver sheet to the transfer member;

repeatedly rotating the transfer member to bring the receiver sheet through a nip formed by the imaging member and transfer member to transfer the toner images in registration to the receiver sheet to form a multicolor toner image;

separating the receiver sheet from the transfer member;

fusing the toner image to the receiver sheet;

feeding a single support sheet having a weight not greater than 250 g/m^2 into contact with a side of the receiver sheet not having the toner image; and

adhering the support sheet to the receiver sheet to form a receiver sheet-support sheet combination having the feel of a photographic print.

5,392,105

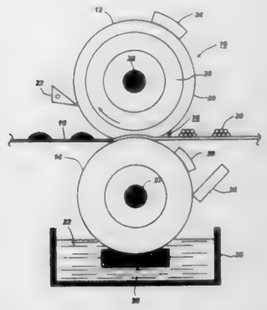
RELEASE AGENT MANAGEMENT SYSTEM FOR APPLYING RELEASE AGENT MATERIAL WHICH IS SOLID AT ROOM TEMPERATURE

Rabin Moser, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1994, Ser. No. 178,157

Int. Cl.[6] G03G *15/20, 21/00*

U.S. Cl. 355—284 **9 Claims**



1. Contact fuser apparatus for fixing toner images to copy substrates, said apparatus comprising:

a fuser roll structure;

means for internally heating said fuser roll structure for elevating the surface temperature thereof to a first predetermined temperature;

a sump;

a quantity of solid release agent material in said sump;

a pressure roll structure supported for pressure contact with said fuser roll structure to form a nip through which copy substrates pass with toner images carried by said substrates contacting the fuser roll structure, said sump being disposed relative to said pressure roll structure whereby contact of said pressure roll structure with said solid release agent material is effected; and

means for elevating said solid release agent material to a second predetermined temperature substantially lower than said first predetermined temperature for causing said solid release agent material to liquefy whereby liquid release agent material can be picked up by said pressure roll structure for conveyance onto said fuser roll structure.

5,392,106

AUTOMATIC SHEET DECURLER APPARATUS

John J. Bigenwald, and Robert A. Bohli, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1993, Ser. No. 84,719

Int. Cl.[6] G03G *21/00, 15/00*

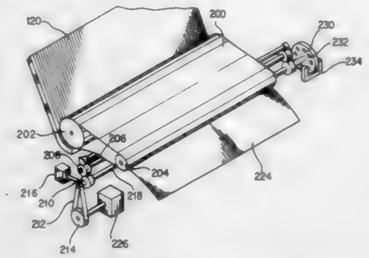
U.S. Cl. 355—309 **19 Claims**

1. A sheet decurler assembly in an electrophotographic device for decurling a substrate, the substrate having a curl after passing through a fuser for affixing a latent image to the substrate, the sheet decurler assembly comprising:

a decurler belt for receiving a curled substrate from the fuser, the decurler belt being supported by at least two belt rollers and wrapped therearound;

a penetration roller disposed adjacent to the decurler belt for penetrating into an outer surface of the decurler belt by a desired degree of penetration to form a nip therebetween, the penetration roller being parallel with the at least two belt rollers, the desired degree of penetration of the penetration roller relative to the belt inducing a corresponding desired reverse curl on the substrate passage through the nip;

a cam shaft having at least two cams contacting the penetration roller such that rotation of the cam shaft to an angular position rotates the cam to position the penetration roller into the decurler belt by the desired degree of penetration; and



a controller for controlling the angular position of the cam shaft in response to the desired reverse curl, the controller comprising an encoder disk with equally spaced holes near the circumferential edge of the encoder disk and attached to the cam shaft, and an infrared sensor cooperating with the encoder disk to detect the number of holes passing the sensor upon rotation of the cam shaft, the number representing the degree of penetration of the penetration roller.

5,392,107

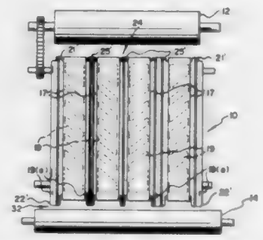
SHIELD FOR A SHEET TRANSPORT SYSTEM

James F. Paxon; George R. Walgrove, III, both of Rochester; Terry N. Morganti, Brockport, and Kenneth T. Pociatek, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 984,824, Dec. 3, 1992. This application Oct. 21, 1993, Ser. No. 140,806

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—312 **7 Claims**



1. A vacuum receiver transport system for conveying a receiver carrying a toned image from a first process station to a second process station, said system comprising:

a plurality of vacuum belts positioned between the first and second process stations and movable through and endless path to transport the receiver between the first and second process stations;

vacuum means across which the plurality of belts traverse for maintaining the receiver in contact with the belts;

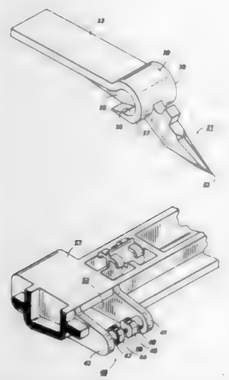
shielding means for minimizing image disrupting electrical fields between the toned image carried on the receiver and the vacuum means; and

upstanding receiver support ribs, located adjacent to said vacuum belts, on said shielding means to inhibit move-

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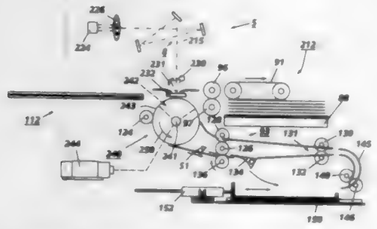
ment of a receiver into the spaces between the belts for preventing wrinkling of the receiver.

5,392,108
STRIPPING DEVICE
Terry L. DeWaters, and John H. Looney, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 22, 1993, Ser. No. 155,339
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—315 19 Claims



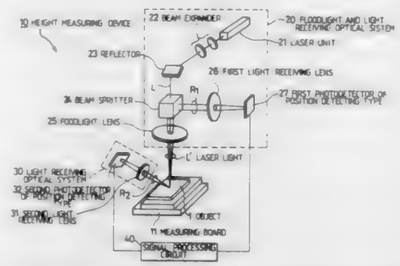
1. A two member stripping device comprising a pivotable stripping finger and a mounting bracket for supporting said pivotable stripping finger in stripping engagement with a photoreceptor, said mounting bracket having two spaced parallel integrally molded support arms with male pivot bearing surfaces for pivotally supporting said stripping finger, said male bearing surfaces being oppositely faced toward each other on the interior of said arms; said stripping finger having integrally molded a stripping tip at one end, a pivoting ballast at the opposite end connected by a web member which has female pivot bearing surfaces between said finger and said ballast in the shape of cups on each side of said web for pivotal engagement with said male bearing surfaces, the exterior of said female bearing surfaces extend axially beyond the operating bearing surfaces as a protective shield for said bearing surfaces.

5,392,109
COMPACT SCANNER
Thomas Acquaviva, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 16, 1993, Ser. No. 167,304
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—320 10 Claims



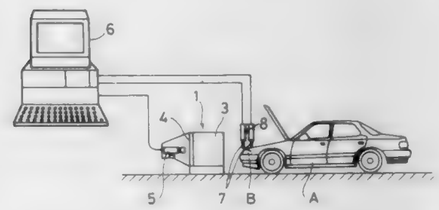
1. A document scanner, comprising:
a document input tray for holding documents in a predetermined sequence;
a document output tray for receiving documents;
an imaging station;
an imaging transport system for moving the documents received from said document input tray through said imaging station;
a scanner positioned to scan a first side of the documents moving through said imaging station;
a first inverter, spaced a predetermined distance from said imaging transport system for moving the documents to said imaging transport system, so that said scanner is scanning a second side of the documents moving through said imaging station, said first inverter being operative during scanning of both sides of the documents and being inoperative during scanning of only side of the documents;
a second inverter, spaced from said first inverter, for moving the document to said output tray; and
a document gate, spaced between said first inverter and said second inverter, adapted to divert the documents to said output tray in response to said first inverter being inoperative and to divert the document to said second inverter in response to said inverter being operative, so that the documents are received by said output tray are in said predetermined sequence.

5,392,110
METHOD AND DEVICE FOR MEASURING HEIGHT OF OBJECT WHOSE SURFACE HAS IRREGULAR REFLECTANCE
Masayuki Yojima, and Masao Kinoshita, both of Tokyo, Japan, assignors to NEC Corporation, Japan
Filed Apr. 16, 1993, Ser. No. 48,998
Claims priority, application Japan, Apr. 22, 1992, 4-102656
Int. Cl.[6] G01C *3/00*; G01B *11/14*; H01J *40/14*
U.S. Cl. 356—1 6 Claims



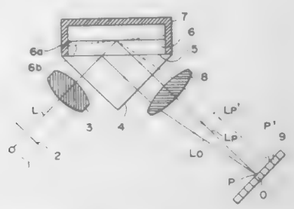
1. A method of measuring a height of a surface of an object having a non-uniform reflectivity, said method comprising:
a first step of projecting a laser beam vertically to the surface,
a second step of calculating a measurement error of the surface height caused by the non-uniform reflectivity of the surface, said measurement error being calculated responsive to a first reflected light of the laser beam reflected vertically from the surface,
a third step of receiving a second reflected light of the laser beam reflected from the surface in a direction which is different from the vertical direction, and calculating a measured value of the surface height responsive to the second reflected light, and
a fourth step of correcting the value measured in step three by compensating the measured value for the measurement error calculated in step two.

5,392,111
METHOD OF MEASURING AND ADJUSTING OPTICAL AXIS OF HEADLIGHT
Nagatoshi Murata; Shinichi Watanabe, and Manabu Ruchida, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 773,008, Oct. 8, 1991, abandoned. This application Mar. 15, 1993, Ser. No. 31,468
Claims priority, application Japan, Oct. 9, 1990, 2-269354; Dec. 28, 1992, 4-347791; Jan. 8, 1993, 5-2031; Jan. 8, 1993, 5-2061
Int. Cl.[6] G01J *1/00*
U.S. Cl. 356—121 8 Claims



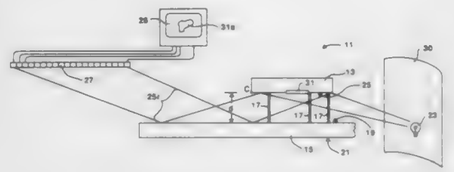
1. A method of measuring an optical axis of a headlight comprising the steps of:
disposing a lattice member in front of the headlight, said lattice member having a plurality of longitudinally elongated lattice holes which are arranged in a form of a matrix; and
measuring an illuminated area and an illuminance of light beams which are transmitted through each said lattice hole at each illuminating region which is divided into the form of the matrix by said lattice holes.

5,392,112
INCLINATION ANGLE METERING APPARATUS
Masahiro Nakamura, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 26,573, Mar. 5, 1993, abandoned. This application May 4, 1994, Ser. No. 237,916
Claims priority, application Japan, Mar. 11, 1992, 4-052286
Int. Cl.[6] G01B *11/26*; G01C *9/06*, *1/10*
U.S. Cl. 356—139.1 18 Claims



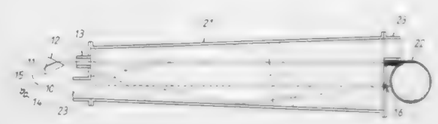
1. An apparatus for metering an inclination angle with respect to a surface of a liquid, comprising:
a container for receiving said liquid;
light projecting means for emitting a light beam;
light receiving means;
means for splitting said light beam from said projecting means into first and second beams, such that said first beam is incident on said light receiving means after being reflected by the surface of said liquid and said second beam is incident on said light receiving means without being reflected by the surface of said liquid; and
means for determining said inclination angle based on an incident position of said first beam on said light receiving means and an incident position of said second beam thereon.

5,392,113
SEMICONDUCTOR WAFER DEFECT MONITORING
Anthony Sayka; Stacy W. Hall, both of San Antonio; Judy U. Galloway, Fairoaks; Pierre Leroux; Bryan D. Schmidt, both of San Antonio; Daniel D. Siems, Boerne; Henry B. Taylor, III, San Antonio, and Edward R. Vokoun, Boerne, all of Tex., assignors to VLSI Technology, Inc., San Jose, Calif.
Filed Sep. 30, 1992, Ser. No. 954,200
Int. Cl.[6] G01N *21/88*
U.S. Cl. 356—237 21 Claims



1. A method for inspecting a surface of a semiconductor wafer for a selected type of defect, the surface of the wafer being initially disposed on a reflecting surface of a support substrate, the method comprising the steps of:
positioning a reflecting surface contiguous to said semiconductor wafer surface, and allowing a visually perceptible portion of said selected type of defect to appear on said reflecting surface, if said defect is present on said semiconductor wafer surface;
moving said semiconductor wafer surface and the reflecting surface away from each other so that the reflecting surface is exposed;
illuminating the reflecting surface with light; and
examining the reflecting image to determine if said selected type of defect is visually perceptible on any portion of the reflecting surface.

5,392,114
FLUID POLLUTION MONITOR
Martin T. Cole, 7 Loxwood Avenue, Keysborough, Vic., 3173, Australia
Continuation-in-part of Ser. No. 842,452, Feb. 27, 1992, abandoned, which is a continuation of Ser. No. 585,099, Sep. 28, 1990, abandoned. This application May 18, 1992, Ser. No. 884,398
Claims priority, application Australia, Mar. 30, 1988, PI7512
Int. Cl.[6] G01N *21/53*; G08B *17/107*
U.S. Cl. 356—338 12 Claims



1. A fluid pollution monitoring apparatus including a fluid sampling means, means for projecting a coherent collimated light beam into said sampling means, means introducing sample air from an area to be monitored into said sample means to be exposed to said light beam, such that any particles present in said sample act to scatter said light beam into a scattered light receiving zone, a light detector cell positioned at a location within the scattered light receiving zone, means for directing scattered light produced by the presence of airborne particles towards said detector, the scattered light pattern being of substantially cone shape in cross-section taken on a plane along the axis of coherent collimated light beam such that said scattered light receiving zone is formed by a conical area having an included angle not exceeding 50°.

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5,392,115

METHOD OF DETECTING INCLINATION OF A SPECIMEN AND A PROJECTION EXPOSURE DEVICE AS WELL AS METHOD OF DETECTING PERIOD OF PERIODICALLY VARYING SIGNAL

Yoshitada Oshida, Fujisawa; Taku Ninomiya, and Toshiei Kurosaki, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

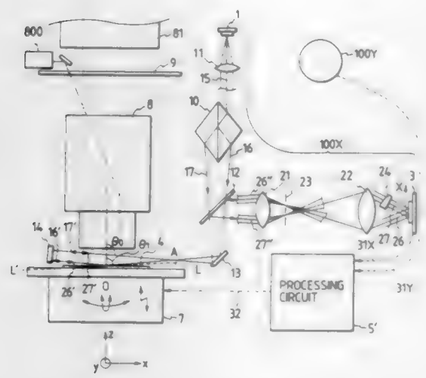
Continuation-in-part of Ser. No. 623,438, Dec. 14, 1990, Pat. No. 5,227,862, and Ser. No. 641,935, Jan. 16, 1991, abandoned. This application Aug. 28, 1992, Ser. No. 936,661

Claims priority, application Japan, Aug. 29, 1991, 3-218259

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—349 **9 Claims**



1. A projection exposure apparatus having an illumination light source for exposure, an illumination optical system for irradiating an exposure light emitted from said light source into a mask or a reticle, and a projection optical system for projecting a light transmitted through the mask or the reticle into an object to be exposed, said apparatus comprising:

a coherent light source for emitting coherent light;

a beam splitter for dividing the coherent light emitted from said coherent light source into first and second lights;

an inclination detecting illumination system for obliquely irradiating the first coherent light separated by said beam splitter to an object to be exposed;

image pickup means for detecting a detection light obtained by the first coherent light reflected by the object to be exposed;

an interference detecting system using the second coherent light separated by said beam splitter as a reference light, said detection light and said reference light overlapping each other on said image pickup means to form interference fringes;

processing circuit means for processing a periodically varying coherent signal obtained by said image pickup means, said processing circuit means including Fourier transformation means for discretely Fourier transforming the detected signal of the interference fringes into spectrum data; means for calculating a true spectrum peak position j_R in accordance with a relationship $j_R = j_0 + \Delta$, where j_0 is a detected spectrum peak position and Δ is a correcting value estimated from the Fourier transformed spectrum data adjacent to j_0, and means for calculating the period P of the signal in accordance with a relationship $P = N/j_R$, where N is the number of sample data points for the Fourier transformation.

5,392,116

INTERFEROMETRIC PHASE MEASUREMENT

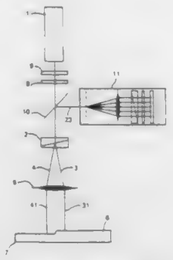
Guenter Makosch, Sindelfingen-Maichingen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1993, Ser. No. 30,941

Claims priority, application European Pat. Off., Mar. 17, 1992, 92104558

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—351 **43 Claims**



1. A method of interferometrically determining the phase differences between differently polarized light beams, comprising the steps of:

a) splitting said differently polarized light beams into at least three pairs of partial beams;

b) phase shifting each of said partial beams in each of said pairs of partial beams, wherein said partial beams are individually phase shifted to create a phase difference between the two differently polarized partial beams of each of said pairs, with the respective phase differences of adjacent pairs of said partial beams differing by a specified amount;

c) passing said phase shifted partial beams through a polarizer to cause said partial beams of each said pair to interfere with each other; and

d) measuring the intensifies of each of said pairs of interfering partial beams.

5,392,117

FABRY-PEROT OPTICAL SENSING DEVICE FOR MEASURING A PHYSICAL PARAMETER

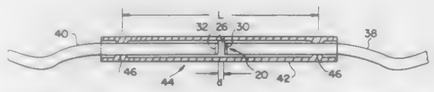
Claude Belleville, Charlesbourg, and Gaétan Duplain, Quebec, both of Canada, assignors to Institut National d'Optique, Sainte-Foy and Ministere des Transports, Quebec, both of Canada

Continuation-in-part of Ser. No. 915,645, Jul. 21, 1992, Pat. No. 5,202,939. This application Apr. 12, 1993, Ser. No. 45,680

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—352 **27 Claims**



1. An optical sensing device for measuring a physical parameter, to be connected to a light source for generating a multiple frequency light signal having predetermined spectral characteristics, said device comprising:

a) a Fabry-Perot interferometer through which the light signal is passed, said Fabry-Perot interferometer including two semi-reflective mirrors substantially parallel to one another and spaced by a given distance so as to define a Fabry-Perot cavity having transmittance or reflectance properties which are affected by said physical parameter and which cause said spectral characteristics of the light signal to vary in response to said physical parameter, said Fabry-Perot interferometer being provided with at least one optical fiber for transmitting the light signal into said Fabry-Perot cavity and for collecting at least a portion of the light signal outgoing thereof;

b) optical focusing means for focusing said at least a portion of the light signal; and

c) a Fizeau interferometer through which said focused light signal is passed, said Fizeau interferometer including optical wedge means forming a wedge-profiled Fizeau cavity from which exits a spatially-spread light signal indicative of said transmittance or reflectance properties of said Fabry-Perot interferometer;

whereby said physical parameter can be determined by means of said spatially-spread light signal.

5,392,118

METHOD FOR MEASURING A TRENCH DEPTH PARAMETER OF A MATERIAL

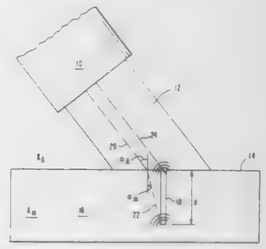
Hemantha K. Wickramasinghe, Chappaqua, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 63,109, May 17, 1993, which is a continuation-in-part of Ser. No. 882,386, May 13, 1992, abandoned. This application Sep. 22, 1993, Ser. No. 125,955

The portion of the term of this patent subsequent to Jan. 24, 2012, has been disclaimed.

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—355 **5 Claims**



5. A method suitable for measuring a trench depth parameter of a material, the method comprising the steps of:

1) propagating source radiation around a trench and through the material;

and

2) analyzing a characteristic variation of an interference signal as a determinant of the trench depth parameter;

said interference signal comprising angle tuning and developing as radiation from a base of the trench interferes with radiation propagated from a top surface of the material.

5,392,119

PLATE CORRECTION OF IMAGING SYSTEMS

Bruce B. McArthur, San Diego; Robert O. Hunter, Jr., Rancho Santa Fe, and Adlai H. Smith, San Diego, all of Calif., assignors to Litel Instruments, San Diego, Calif.

Filed Jul. 13, 1993, Ser. No. 91,669

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—355 **30 Claims**

1. A process of altering and improving the image quality of an imaging system comprising the steps of:

providing a radiation source;

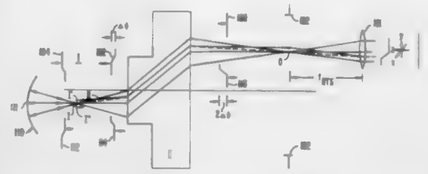
illuminating an object with said radiation source;

projecting an image of said object along a projection axis through said imaging system to an ideal image plane where the position of a diffraction limited ideal image is readily ascertainable relative to an actual image of the object;

measuring at least curvature of field, distortion, and local astigmatism of said imaging system relative to said diffraction limited ideal image to determine an imaging system performance for a matrix of distributed field points through said imaging system;

calculating a set of apparent object points from a set of ideal image points and the measured imaging system performance such that each apparent object point corresponds to an ideal image point for said matrix of distributed field points through said imaging system;

providing at least two spaced apart corrector plate mounting planes substantially normal to the projection axis of the



imaging system for the insertion of a first corrector plate and a second corrector plate within the object to image optical path;

designing a first corrector plate to produce areas of localized beam deflection for said matrix of field points such that a set of light rays emanating from a set of object points will intersect a set of imaginary rays emanating from a set of apparent object points at the second corrector plate;

designing at least a second corrector plate for said matrix of field points such that the direction of the set of light rays emanating from the object are altered so that the actual image and the diffraction limited ideal image coincide; and,

inserting the first corrector plate and the second corrector plate into the corrector plate mounting planes.

5,392,120

DUAL INTERFEROMETER MEASURING SYSTEM INCLUDING A WAVELENGTH CORRECTION RESULTING FROM A VARIATION IN THE REFRACTIVE INDEX

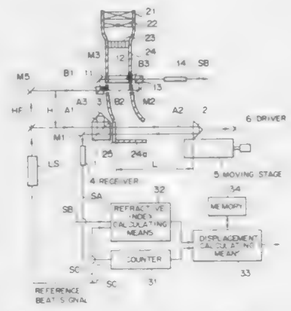
Saburo Kamiya, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 12, 1993, Ser. No. 90,579

Claims priority, application Japan, Jul. 14, 1992, 4-210799

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—358 **4 Claims**



1. An interferometer apparatus, comprising:

first light dividing means for dividing a coherent first light

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beam into a measuring beam travelling in a predetermined measuring direction and a reference beam;
reflecting means for measurement disposed for displacement in said predetermined measuring direction relative to said first light dividing means for reflecting said measuring beam;
reflecting means for reference for reflecting said reference beam;
first photoelectric converting means for photoelectrically converting an interference beam of said measuring beam reflected by said reflecting means for measurement and said reference beam reflected by said reflecting means for reference;
second light dividing means for dividing a coherent second light beam into a main beam and a sub-beam which passes through an area through which flows a temperature-adjusted, same atmospheric gas as atmospheric gas through which said measuring beam passes;
a hermetically sealed container disposed in an area through which said main beam passes and having a hermetically sealed space isolated from the outside, a portion thereof through which said main beam passes having a light-transmitting property;
second photoelectric converting means for photoelectrically converting an interference beam of said main beam after passed through said hermetically sealed container and said sub-beam;
refractive index calculating means for calculating from an output signal of said second photoelectric converting means a value corresponding to a variation in the refractive index of the atmospheric gas in an area through which said measuring beam passes;
a blast duct covering an area through which said sub-beam passes to a portion of the area through which said measuring beam passes which is near to said first light dividing means;
blower means for blowing the temperature-adjusted atmospheric gas through which said measuring beam passes along said predetermined measuring direction through said blast duct toward said reflecting means for measurement; and
displacement calculating means for calculating the relative displacement of said reflecting means for measurement and said reflecting means for reference from an output signal of said first photoelectric converting means, the value calculated by said refractive index calculating means, the wind velocity of said atmospheric gas blown from said blower means and the rough length of the optical path of said measuring beam.

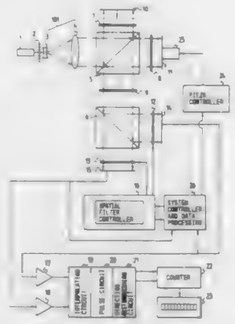
5,392,121

SPECKLE INTEROMETRY SPATIAL FILTERS OR THE LIKE TO ACHIEVE USING PHASE SELECTION

Kotaro Hosaka, Ushiku, and Hiroji Narumi, Kawasaka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1992, Ser. No. 953,045
Claims priority, application Japan, Sep. 30, 1991, 3-278794; Aug. 24, 1992, 4-247248
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—360 25 Claims

1. A speckle interference apparatus comprising:
a light source;
light splitting and synthesizing means, said means splitting light from said light source into a plurality of partial light beams to direct at least one partial light beam to a measuring plane and at least one other partial light beam to a reference surface and synthesizing the partial light beam passed via said measuring plane and the partial light beam passed via said reference surface to produce speckle interference fringe patterns including areas of different phases with each other and areas of same phases with each other; and



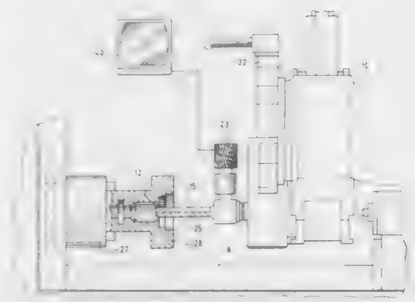
selecting means for selecting areas of same phases among said speckle interference fringe patterns for detection of light from the areas of same phases.

5,392,122

APPARATUS AND METHOD FOR THE DETERMINATION OF GEOMETRICAL DIMENSIONS AND PHYSICAL CHARACTERISTICS OF OBJECTS

Mark Ulanov, 1003 Sussex Dr.; Alexander Zaltz, 3121 Violet La., and Michael Black, 2817 Crabtree La., all of Northbrook, Ill. 60062

Filed Oct. 1, 1990, Ser. No. 590,689
Int. Cl.[6] G01B *11/00;* **G01N** *21/00*
U.S. Cl. 356—372 3 Claims



1. In a machine tool comprising a main frame, said main frame having means for holding a workpiece, the improvement comprising:
means operatively associated with said main frame for measuring at least one dimension of at least a portion of a workpiece held by said means for holding, said means operatively associated with said main frame for measuring at least one dimension comprising:
a rotatable, electro-optical sensor operatively associated with said main frame;
means for positioning said rotatable, electro-optical sensor in operative position with said means for holding in order to measure an internal dimension of a workpiece held by said means for holding;
light-producing means for directing light upon a surface to be measured of the workpiece held by said means for holding, said light-producing means producing light for providing ample illumination on at least a portion of a workpiece the dimension of which is to be measured, in order that said rotatable, electro-optical sensor properly detects the light;

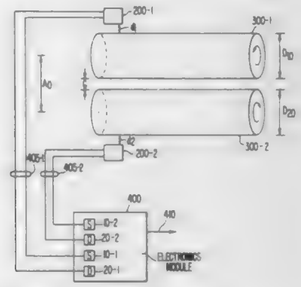
means operatively coupled to said rotatable, electro-optical sensor for receiving information detected thereby;
monitor means operatively coupled to said means operatively coupled to said rotatable, electro-optical sensor for displaying a visual representation of the surface being measured; and
means for producing calibration marks on said monitor means, in order to measure the visual representation of the surface being measured;
said means operatively coupled to said rotatable, electro-optical sensor for receiving information detected thereby comprising a video camera;
and a workpiece held by said means for holding; said workpiece having an interior surface that is to be measured; said rotatable, electro-optical sensor being located in said workpiece in close juxtaposition to said interior surface, said electro-optical sensor being spaced from, and out of contact with, said interior surface.

5,392,123

OPTICAL MONITOR FOR MEASURING A GAP BETWEEN TWO ROLLERS

Michael A. Marcus, Honeoye Falls; Kenneth R. Schafer, Avon, and Diane E. Kestner, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 755,787, Sep. 6, 1991, Pat. No. 5,317,386.
This application Feb. 22, 1994, Ser. No. 199,419
Int. Cl.[6] G01B *11/00;* **B21B** *31/34*
U.S. Cl. 356—381 2 Claims



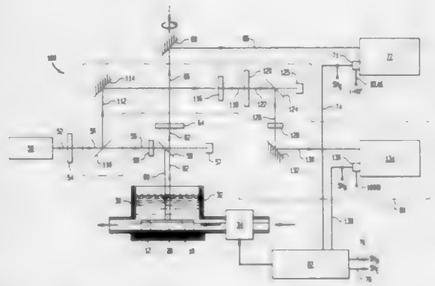
1. A film subbing station, comprising:
(a) a first roller and a second roller, said first roller and said second roller defining a gap therebetween which determines a subbing layer thickness, said gap varying due to thermal dimensional changes of at least one of said first roller and said second roller;
(b) a first optical probe to measure a first distance to said first roller and to generate an optical first-distance signal indicative of said first distance;
(c) a second optical probe to measure a second distance to said second roller and to generate an optical second-distance signal indicative of said second distance;
(d) a constant temperature fixture enclosing said first optical probe, said constant temperature fixture having a heater/-cooler to maintain the temperature within said constant temperature fixture at a relatively constant value;
(e) an electronics module, coupled to said first optical probe and to said second optical probe, to generate a gap-width signal in real time which is indicative of said thermal dimensional changes based on said first-distance signal and said second-distance signal; and
(f) a vibration compensation probe, coupled to said first optical probe and to said electronics module, to generate an optical vibration signal indicative of vibration of said first optical probe, said electronics module compensating said gap-width signal for said vibration using said optical vibration signal.

5,392,124

METHOD AND APPARATUS FOR REAL-TIME, IN-SITU ENDPOINT DETECTION AND CLOSED LOOP ETCH PROCESS CONTROL

Steven G. Barbee, Dover Plains; Tony F. Heinz, Chappaqua, both of N.Y.; Ulrich Höfer, Munich, Germany; Leping Li, Poughkeepsie, and Victor J. Silvestri, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,876
Int. Cl.[6] G01B *11/06*
U.S. Cl. 356—381 40 Claims



1. An apparatus for real-time in-situ detection of an etching endpoint of a film on a substrate during etching of the film, said apparatus comprising:
a) means for providing a first excitation beam of light, the first light beam having a wavelength and furthermore substantially containing only a first harmonic component of light at that wavelength;
b) means for directing the first light beam at a prescribed incident angle to an interface between the film and the substrate, the first light beam being reflected off the interface to thereby provide a second light beam, the second light beam containing the first harmonic component of the first light beam and a generated second harmonic component, the second harmonic component thereof being generated as a result of the reflection of the first light beam off the interface;
c) means for detecting the generated second harmonic component of the first light beam, said detecting means providing a first output signal representative of the detected second harmonic component;
d) means for producing a generated second harmonic component reference of the first light beam, said second harmonic component reference producing means providing a second output signal representative of a generated second harmonic component reference, wherein said second harmonic component reference means comprises i) a beam splitter positioned intermediate said first light beam providing means and said directing means for partially reflecting and partially transmitting the first light beam, the partially reflected portion of the first light beam providing a fourth light beam, wherein the partially transmitted portion of the first light beam is received by said directing means, ii) a third interference filter for filtering the fourth light beam to remove substantially all but a first harmonic component of the fourth light beam, iii) a reference medium for receiving the fourth light beam on a first side thereof and providing a fifth light beam exiting from a second side thereof, the fifth light beam containing the first harmonic component and a generated reference second harmonic component, iv) a specially coated dichroic mirror for efficiently reflecting the generated reference second harmonic component and efficiently transmitting the first harmonic component of the fifth light beam, the reflected portion of the fifth light beam providing a sixth

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light beam, v) a fourth interference filter for further removing any residual first harmonic component light from the sixth light beam to provide a seventh light beam, the seventh light beam containing substantially the generated reference second harmonic component of the fifth light beam, and vi) a second monochrometer equipped with a photomultiplier tube for receiving the seventh light beam, said second monochrometer providing the second output signal representative of the second harmonic component reference; and

e) means responsive to the first and second output signals for normalizing the generated second harmonic component of the first light beam detected by said detection means in real-time, said real-time normalizing means providing a third output signal representative of an occurrence of a prescribed change in the normalized detected second harmonic component of the first light beam, the prescribed change corresponding to an etching end-point of the film on the substrate.

5,392,125

INSTRUMENT FOR DETERMINING VISUAL SURFACE PROPERTIES

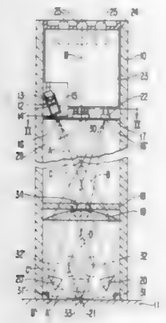
Helmut Reisser, Rosenstrasse 6, D-8026 Ebenhausen, Germany

Filed Nov. 24, 1992, Ser. No. 981,327

Claims priority, application Germany, Nov. 25, 1991, 4138679

Int. Cl.[6] G01N *21/55*

U.S. Cl. 356—445 **7 Claims**



1. An instrument for determining visual properties of a surface, comprising

a source emitting a beam of radiation,

a detector,

a lens objective, and

a first pair of totally reflecting elements disposed between said lens objective and said surface, of which one of said first pair of totally reflecting elements directs the beam emitted by said radiation source at a predetermined angle onto said surface, and the other of said first pair of totally reflecting elements directs the beam remitted from said surface at a predetermined angle onto said detector, and wherein the beam emitted by said radiation source and the beam remitted from said surface transmit the same lens objective.

5,392,126

AIRBORNE THERMAL PRINTER

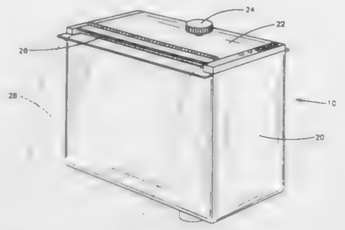
Goeffrey G. Cochrane, Longmont, Colo.; Michael D. Tartamella, Aurora, Ohio; Philip W. McLean, Richfield, Ohio; Samual K. Taylor, Chardon, Ohio, and Christ H. Heipp, Chagrin Falls, Ohio, assignors to Summit World Trade Corporation, Hudson, Ohio

Continuation of Ser. No. 869,415, Apr. 14, 1992, which is a division of Ser. No. 705,517, May 24, 1991, Pat. No. 5,206,660.

This application Dec. 29, 1993, Ser. No. 175,187

Int. Cl.[6] H04N *1/387, 7/00;* **G01D** *9/00;* **G06F** *15/00;* **G01S** *1/16*

U.S. Cl. 358—296 **5 Claims**



1. A method of printing a composite bitmapped image with an airborne printer having a printhead for applying visible marks to paper comprising the steps of:

a) providing a printer memory and storing a first data set in a non-volatile portion of the printer memory and organizing the first data set for access by a printer controller having means to selectively access data within the printer memory;

b) receiving a data packet including a second data set and command data from outside an airplane carrying the printer by means of a communications transceiver and storing the data packet second data set in a region of the printer memory for selective access by said printer controller;

c) causing the printer controller to interpret the data packet command data and based on the command data to select and extract print data from the first data set and combine the print data from the first data set with data selected and extracted from the second data set stored in the printer memory to compose a composite bitmapped data set; and

d) sending control signals from the printer controller to the printhead to cause the composite bitmapped data set to be printed in the form of a composite bitmapped image.

5,392,127

COMB FILTER CIRCUIT ON THE REPRODUCTION SIDE OF THE COLOR CHANNEL OF A VIDEO RECORDER

Gerd Reime, Schömberg, Germany, assignor to Nokia Technology GmbH, Pforzheim, Germany

Filed Oct. 22, 1993, Ser. No. 141,385

Claims priority, application Germany, Oct. 24, 1992, 4236019

Int. Cl.[6] H04N *9/78, 9/79*

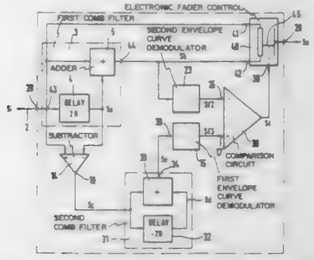
U.S. Cl. 358—329 **4 Claims**

1. A comb filter circuit (**1**) for a chrominance signal playback system of a video recorder, comprising:

a first comb filter (**3**) having a line delay arrangement (**4**) that delays at least one video line of a carrier chrominance signal (Si) to form a delayed chrominance signal (Sa), having a signal adder (**5**) for adding the carrier chrominance signal (Si) and the delayed chrominance signal (Sa) to form an added chrominance signal (Sb), and having a signal subtracter (**14**) for subtracting the delayed chrominance signal (Sa) from the carrier chrominance signal (Si) to form a subtraction signal (Sc),

a comparison circuit (**38**) that compares an amplitude of a signal (Sf2) provided by demodulation of the added chrominance signal (Sb) with an amplitude of a signal (Sf3) provided by demodulation of a cross talk free subtraction signal (Se), and produces a control signal (St),

a voltage controlled mixing means (**40**) that turns off the effect of the first comb filter (**3**), which causes a faulty



color in a parallel color transition line (**11, 12, 13**) of a reproduced video picture, when the control signal (St) indicates that the amplitude of the signal (Sf3) is larger than the amplitude of the signal (Sf2), and

a second comb filter (**31**) located between an output (**19**) of the signal subtracter (**14**) and the comparison circuit (**38**), having a line delay arrangement (**32**), responsive to the Subtraction signal (Sc) for providing said cross talk free subtraction signal (Se).

5,392,128

STILL VIDEO DEVICE THAT RECORDS/REPRODUCES A PLURALITY OF IDENTICAL SIGNALS

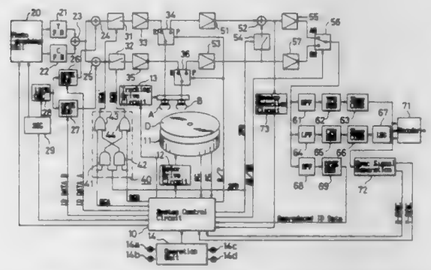
Koichi Sato, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 802,847, Dec. 6, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 46,373

Claims priority, application Japan, Dec. 10, 1990, 2-414128; Dec. 10, 1990, 2-414129; Dec. 10, 1990, 2-414130

Int. Cl.[6] H04N *9/76*

U.S. Cl. 358—335 **6 Claims**



1. A still video device for reproducing an image signal recorded on a recording medium which can be reproduced both in a first mode and in a second mode, said first mode being such that one image signal corresponding to a still image is recorded on one track of said recording medium through one head of at least two heads, said second mode being such that at least two identical image signals corresponding to a single still image are recorded on at least two tracks of said recording medium at substantially the same time through said at least two heads that are separated by a predetermined distance, said still video device comprising:

means for reproducing at least two image signals recorded on said at least two tracks of said recording medium at substantially the same time;

means for adding said at least two image signals reproduced by said reproducing means together to obtain a combined signal; and

means for determining whether said at least two image signals differ based upon an envelope detected output of said combined signal, indicating that said at least two image signals added together to obtain said combined signal are recorded in said first mode, or whether said at least two image signals are identical, indicating that said at least two image signals added together to obtain said combined signal are recorded in said second mode.

5,392,129

DIGITAL VCR SIGNAL PROCESSING APPARATUS FOR CONCEALING UNCORRECTABLE ERRORS

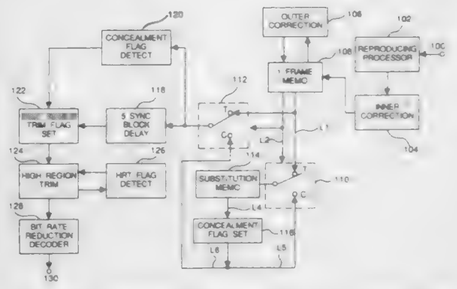
Hideki Ohtaka, Neyagawa, and Tatsuro Juri, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 25, 1993, Ser. No. 83,052

Claims priority, application Japan, Jun. 25, 1992, 4-167200

Int. Cl.[6] H04N *5/94*

U.S. Cl. 358—336 **7 Claims**



1. A signal processing apparatus for use in a digital video signal reproducing apparatus for reproducing a digital signal presented in sync blocks each having a fixed area for storing low frequency data and an N (N is a positive integer) number of subsequent sync blocks defining a sharing group for sharing storing high frequency data, said signal processing apparatus comprising:

error correction means for correcting errors in said sync blocks;

error flag providing means for providing an error flag to a sync block which still has an error remaining after the processing in said error correction means and for selecting an errorless sync block which has no error;

memory means for storing errorless sync blocks of at least one frame;

substitution means for substituting a sync block stored in said memory means for a sync block having an error flag;

substitution detection means for detecting a presence of at least one to (N−1) substitute sync block in said N sync blocks; and

high frequency area trimming means for passing without any change said N sync blocks when no substitute sync block is detected, but for trimming the high frequency data when one to (N−1) substitute sync block is detected by said substitution detection means.

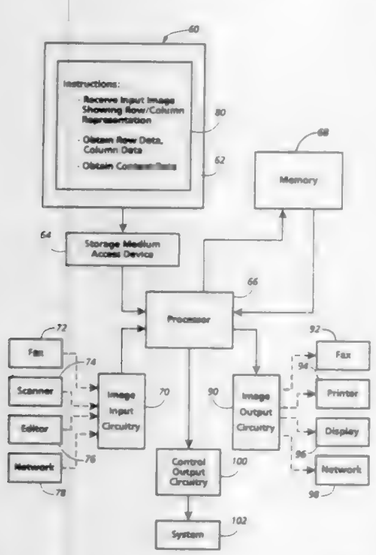
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5,392,130

ANALYZING AN IMAGE SHOWING A ROW/COLUMN REPRESENTATION

James V. Mahoney, San Francisco, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1993, Ser. No. 157,782
Int. Cl.[6] H04M *1/00*
U.S. Cl. 358—400 **20 Claims**



20. An article of manufacture for use in a machine that includes:

image input circuitry for obtaining data defining images as input;

a storage medium access device for accessing a medium that stores data; and

a processor connected for receiving data defining images from the image input circuitry; the processor further being connected for receiving data from the storage medium access device;

the article comprising:

a storage medium that can be accessed by the storage medium access device when the article is used in the system; and

data stored by the storage medium so that the storage medium access device can provide the stored data to the processor when the article is used in the system; the stored data comprising instruction data indicating instructions the processor can execute; the processor, in executing the instructions:

receiving input image data from the image input circuitry, the input image data defining an input image that shows a row/column representation;

using the input image data to obtain row data and column data; the row data indicating parts of the input image within a row of the row/column representation; the column data indicating parts of the input image within a column of the row/column representation; the row-column representation representing information for a combination of the row and the column; and

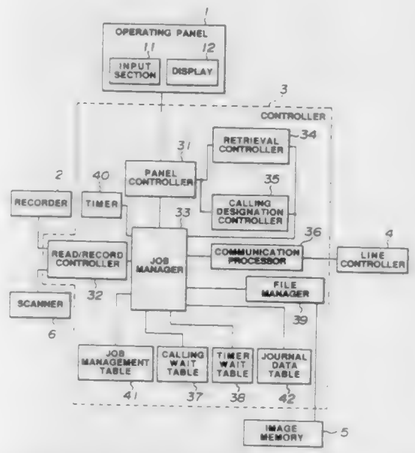
using the row data and the column data to obtain content data indicating information represented by the row/-column representation for the combination of the row and the column.

5,392,131

FACSIMILE MACHINE HAVING FUNCTION OF RETRIEVING STORED DOMUMENTS WAITING FOR TRANSMISSION

Kiyonobu Umeno, Hachioji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 1992, Ser. No. 826,827
Claims priority, application Japan, Jan. 29, 1991, 3-119534
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—403 **4 Claims**



1. A facsimile machine comprising:

an image memory for storing therein documents to be transmitted;

a management table for storing therein, in association with identification data of the documents stored in the image memory, transmission specified times and data on destination parties for transmission of the stored documents;

timer means for generating time data;

memory transmission means, when the time data generated by the timer means reaches a transmission specified time stored in the management table,

for obtaining from the management table the document identification data and the destination party data, both associated with the reached transmission specified time,

for reading out from the image memory the document associated with the document identification data obtained from the management table,

for automatically transmitting the read out document to the destination party designated by the destination party data obtained from the management table, and,

when the designated party does not respond to the automatic transmission,

for periodically reading out from the image memory the document destined for the non-responding designated party, and

for automatically retransmitting the read out document until the non-responding designated party responds;

retrieval means for retrieving from the management table identification data associated with non-transmitted documents; and

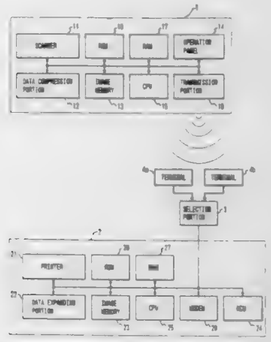
priority transmission means for reading out from the image memory the non-transmitted documents associated with the identification data retrieved by the retrieval means and transmitting the read out documents in preference to the documents to be transmitted by the memory transmission means.

5,392,132

FACSIMILE MACHINE

Taiji Yamamoto; Yoshimi Kamimoto; Toshitaka Nakagawa; Yutaka Uehara, and Ryuji Hosaka, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 925,012
Claims priority, application Japan, Aug. 9, 1991, 3-223546
Int. Cl.[6] H04N *1/00, 1/32*
U.S. Cl. 358—407 **15 Claims**



1. A facsimile machine for facsimile communication with another facsimile machine, comprising:

a host machine including processing means for processing data;

at least one handy-scanner provided separately from said host machine, for scanning an original document, said handy-scanner including read means for reading image data from said original document, and first transmitting means for transmitting the image data read by said read means; and

at least one relay station for relaying data signals between said host machine and said handy-scanner, said relay station including second transmitting means for transmitting the data received from said first transmitting means of said handy-scanner to said host machine, and a buffer memory for temporarily storing the image data before said second transmitting means transmits the image data to said host machine, said host machine processing the image data transmitted by said second transmitting means.

5,392,133

APPARATUS AND METHOD FOR TRANSMITTING IMAGE DATA IN A FORMAT ADAPTED TO A CONDITION OF A DESTINATION

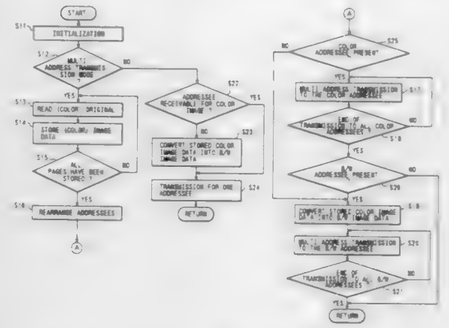
Toshifumi Nakajima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1993, Ser. No. 83,968
Claims priority, application Japan, Jun. 30, 1992, 4-173259
Int. Cl.[6] H04N *1/32*
U.S. Cl. 358—407 **27 Claims**

1. An image communication apparatus comprising:

memory means for storing image data to be transmitted to multiple addresses in accordance with respective functions of the addresses;

rearranging means for rearranging the multiple addresses in accordance with functions thereof in such a way that addresses to which image data is to be transmitted in accordance with a same function are ordered successively; and



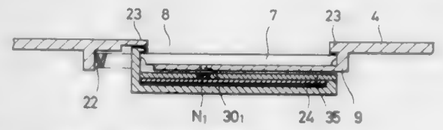
transmission means for sequentially transmitting the image data stored in said memory means to the multiple addresses rearranged by said rearranging means.

5,392,134

FACSIMILE APPARATUS WITH MOUNT FOR RECEIVING DATA MEMORY CARD

Yuji Nakano, Kawasaki; Shingo Isozaki, Yokohama, and Yuji Kurosawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 538,843, Jun. 15, 1990, abandoned.
This application Dec. 21, 1992, Ser. No. 994,461
Claims priority, application Japan, Jun. 16, 1989, 1-154163; Jun. 20, 1989, 1-155599; Jun. 20, 1989, 1-155600; Jun. 20, 1989, 1-155601; Jun. 21, 1989, 1-156749; Jun. 26, 1989, 1-160620; Jun. 28, 1989, 1-163656
Int. Cl.[6] G06F *13/00*
U.S. Cl. 358—442 **2 Claims**



1. A facsimile apparatus including;

a card mounting portion for detachably receiving a data memorandum card having data input keys and light-emitting means for transmitting data, said card mounting portion being formed as a recess to receive the data memorandum card therein and having an opening portion for the card received in the recess to be operated therethrough;

a slide member for receiving the card, the slide member being, disposed in said card mounting portion and having a light transmitting portion which opposes said light emitting means when the card is received in the slide member;

light-receiving means for receiving a light signal from said light-emitting means and through the light transmitting portion, said light-receiving means being arranged in said card mounting portion;

biasing means for biasing the slide member in one direction, the biasing means varying the biased position of the slide member depending on whether the card is received or not, whereby when the card is received the slide member is biased to a position where the light transmitting portion opposes said light-receiving means, and when the card is not received the light transmitting portion is biased to a position where the light transmitting portion does not oppose said light receiving means; and

light-shielding means for shielding said light-receiving

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means, said light-shielding means taking a light-shielding state when the card is not received.

5,392,135

IMAGE READING APPARATUS HAVING DIFFERENT READING SPEEDS

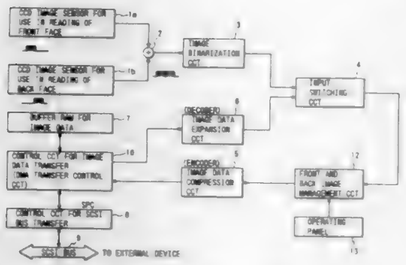
Masami Amemiya, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1991, Ser. No. 766,020

Claims priority, application Japan, Oct. 5, 1990, 2-266455; Mar. 29, 1991, 3-066752

Int. Cl.[6] H04N *1/04*; G03B *27/32*, *27/72*

U.S. Cl. 358—444 13 Claims



1. An image reading apparatus comprising:

carrying means for carrying an original at one of first and second speeds, the first speed being lower than the second speed;

first reading means for reading an image on a front face of the original being carried by said carrying means, and for supplying an image signal representing the image on the front face;

second reading means for reading an image on a back face of the original being carried by said carrying means, and for supplying an image signal representing the image on the back face;

instruction means for instructing one of a first mode in which the images on the front and back faces of the original are read, and a second mode in which the image on one of the front and back faces of the original is read;

control means for controlling said first and second reading means and said carrying means in accordance with the mode instructed by said instruction means so that said first and second reading means simultaneously read the images on the front and back faces of the original being carried at the first speed by said carrying means when the first mode is instructed, and one of said first and second reading means reads the image on one of the front and back faces of the original being carried at the second speed by said carrying means when the second mode is instructed; and

level varying means for varying levels of the image signals corresponding to the front and back faces of the original in accordance with the mode instructed by said instruction means, wherein said level varying means varies a gain used for amplifying the image signals.

5,392,136

FACSIMILE APPARATUS

Hiroshi Nobuta, Yokohama, and Ichiro Kohno, Mitaka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 673,525, Mar. 22, 1991, Pat. No. 5,258,853.

This application Jul. 19, 1993, Ser. No. 92,793

Claims priority, application Japan, Mar. 28, 1990, 2-76735

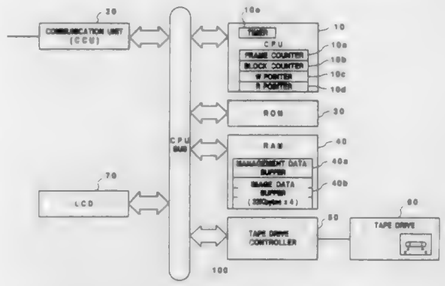
Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—444 24 Claims

1. A facsimile apparatus comprising:

loading means for loading a detachable write-enabled storage medium in which image data is stored;

access means for accessing the write-enabled storage medium loaded by said loading means to write received image data therein or to read image data therefrom;



detecting means for detecting whether the loaded write-enabled storage medium is proper for reading and writing by the facsimile apparatus or not by accessing the loaded write-enabled storage medium by said access means; and

display means for displaying a result of detection by said detecting means.

5,392,137

IMAGE PROCESSING APPARATUS IN WHICH FILTERING IS SELECTED FOR INPUT IMAGE CHARACTERISTICS

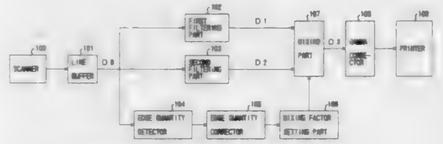
Hiromi Okubo, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 28, 1993, Ser. No. 53,205

Claims priority, application Japan, Apr. 30, 1992, 4-111644

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—462 7 Claims



1. An image processing apparatus comprising:

reading means for providing an input image signal by optically reading an input image from an original document;

first filtering means for outputting a first image signal by processing said input image signal through an edge sharpening filter;

second filtering means for outputting a second image signal by processing said input image signal through a smoothing filter;

detecting means for detecting an edge quantity of said input image signal;

correcting means for outputting a first edge quantity by correcting said edge quantity detected by said detecting means;

mixing means for mixing said input image signal and said second image signal in accordance with a mixing factor, to provide a third image signal;

mixing control means for determining the mixing factor in response to said first edge quantity output from said correcting means, and for supplying said mixing factor to said mixing means;

first region detecting means coupled to said reading means for detecting whether or not a pixel indicated by the input image signal lies in a mesh region, and for outputting a detection signal indicating the result of said detection; and

selecting means coupled to said first region detecting means for selecting one of the first image signal and the third image signal in accordance with said detection signal, and for supplying a selected image signal to the recording unit,

whereby said recording unit reproduces an output image on a copy sheet in accordance with said selected image signal supplied from said selecting means.

5,392,138

FACSIMILE APPARATUS

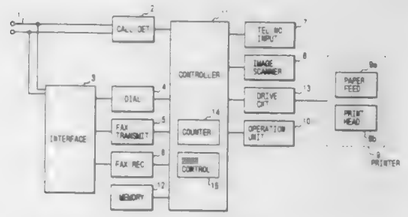
Nobuhiro Ootsuka; Yuji Hirai, both of Fukuoka, and Shigehiko Kaneko, Fukuoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 3, 1992, Ser. No. 940,387

Claims priority, application Japan, Sep. 6, 1991, 3-226258; Nov. 20, 1991, 3-304419; Jun. 12, 1992, 4-153231

Int. Cl.[6] H04N *1/00*

U.S. Cl. 358—498 4 Claims



1. A facsimile apparatus comprising:

signal generation means for generating a signal representing whether or not a recording paper saving operation is required;

printing means for printing an image on the recording paper, wherein said printing means includes a recording-paper feeding means for feeding a recording paper in line area increments and a printing head for printing line segments of an image on said recording paper; and

control means, connected to the signal generation means and the printing means, for controlling the printing means to print one line segment of an image on one line area of the recording paper when the signal generated by the signal generation means represents that the recording paper saving operation is required, and for controlling the printing means to print one line segment of an image twice on two successive line areas of the recording paper when the signal generated by the signal generation means represents that the recording paper saving operation is not required;

wherein the control means controls the recording-paper feeding means to feed a first line area of recording paper, controls the printhead to print the line segment on the first line area, controls the recording-paper feeding means to feed a second line area of recording paper, and controls the printhead to print the line segment on the second line area when the recording paper saving operation is not required.

5,392,139

IMAGE PROCESSING APPARATUS FOR PERFORMING AN EDGE CORRECTION PROCESS AND DIGITAL COPYING MACHINE COMPRISING SAID IMAGE PROCESSING APPARATUS THEREFORE

Kazuyuki Murata, Tsuzuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

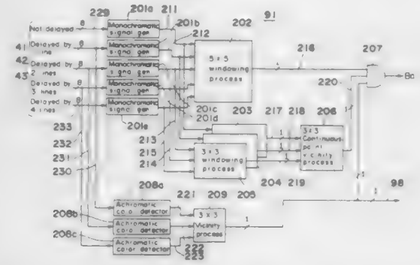
Continuation of Ser. No. 636,918, Dec. 31, 1990, abandoned.

This application May 24, 1994, Ser. No. 248,553

Claims priority, application Japan, Dec. 29, 1989, 1-340666; May 24, 1990, 2-135045; Jun. 5, 1990, 2-148228

Int. Cl.[6] H04N *1/46*

U.S. Cl. 358—529 12 Claims



1. An image processing apparatus comprising:

first area detecting means for detecting a first image area comprising an inner area of black characters other than edges of said black characters, said black characters being included in a color document image and printed in black, in response to inputted plural color signals obtained by reading said color document image;

second area detecting means for detecting a second image area where there are edges of said black characters of said color document image in response to said inputted plural color signals; and

third are detecting means for detecting a third image area where there are color characters other than said black characters in response to said inputted plural color signals.

5,392,140

OPTICAL DEVICE WITH TWO LENS ARRAYS WITH THE SECOND ARRAY PITCH AN INTEGRAL MULTIPLE OF THE FIRST ARRAY PITCH

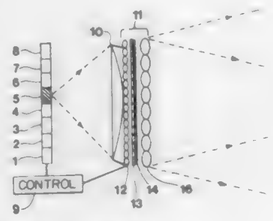
David Ezra, and Graham J. Woodgate, both of Oxfordshire, United Kingdom, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 14, 1993, Ser. No. 61,441

Claims priority, application United Kingdom, May 15, 1992, 9210399

Int. Cl.[6] G02F *1/1335*; G02B *27/10*

U.S. Cl. 359—41 20 Claims



1. An optical device comprising:

a first two-dimensional array of lenses having a number N of groups of lenses, each of which comprises Z lenses where

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Z is an integer than one, the lenses of the first array being disposed with a pitch p in a first dimension; and

a second two-dimensional array of of lenses facing the first array and having a number N of lenses disposed with a pitch P in the first dimension, where P>p and each lens of the second array is associated with a respective group of lenses of the first array, the first array of lenses and the second array of lenses being arranged so that light passes through the lenses of the first array and the lenses of the second array in this order.

5,392,141

MULTI-LAYERED LIQUID CRYSTAL DEVICE HAVING COLUMNS SUPPORTING INSULATING LAYERS THEREBETWEEN AND METHOD OF PRODUCTION

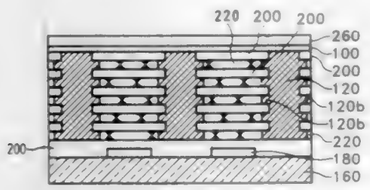
In-sik Jang, Songtan, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 20, 1993, Ser. No. 169,243

Claims priority, application Rep. of Korea, Dec. 26, 1992, 1992-25631

Int. Cl.[6] G02F *1/133, 1/1335, 1/1333*

U.S. Cl. 359—53 **5 Claims**



1. A liquid crystal display device comprising:

at least one substrate;

a plurality of first electrodes arranged on said substrate into a predetermined pattern for constituting a plurality of pixels;

a plurality of second electrodes oppositely arranged across from said first electrode by a predetermined interval therebetween;

liquid crystal layers filling the gap between said first and second electrodes;

a plurality of insulation layers arranged between said liquid crystal layers for separating said liquid crystal layers into a multiple lamination structure;

columns having protrusions extending between the upper and lower insulation layers at each vertical level for securing said insulation layer within said liquid crystal layer; and

protective insulation layers for protecting said first and second electrodes.

5,392,142

DISPLAY APPARATUS WITH CHIRAL SMECTIC AND POLYMER LIQUID CRYSTAL FILMS, EACH HAVING BIREFRINGENT FIRST STATE AND NOT BIREFRINGENT SECOND STATE

Hideaki Mitsutake, Tokyo, and Kazuo Yoshinaga, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 673,070, Mar. 21, 1991, abandoned. This application Jun. 27, 1994, Ser. No. 266,320

Claims priority, application Japan, Mar. 23, 1990, 2-74654

Int. Cl.[6] G02F *1/133, 1/1335, 1/137*

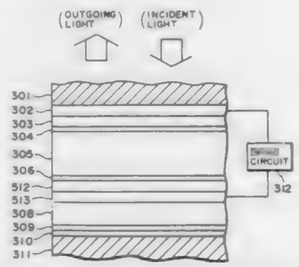
U.S. Cl. 359—53 **15 Claims**

1. An optical modulation device, comprising:

a polarizer;

a first film forming a first state and a second state depending on an electric field applied thereto, the first state causing birefringence and the second state not causing birefringence respectively of polarized light from the polarizer, the first film having a thickness set for functioning as a halfwave plate in its first state;

a second film of a polymer not causing birefringence of light having passed through the second state of the first film but causing birefringence of light having passed through the



first state of the first film, the second film having a thickness set for functioning as a quarter wave plate that is not driver when the first film is set in its first state;

a reflecting means for reflecting light having passed through the second film again to the second film; and

an analyzer.

5,392,143

LIQUID CRYSTAL DISPLAY HAVING DRAIN AND PIXEL ELECTRODES LINKABLE TO A WIRING LINE HAVING A POTENTIAL

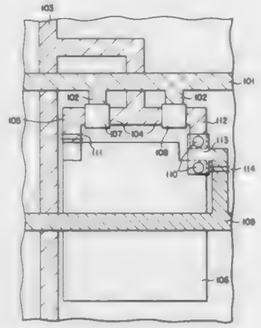
Masahiko Akiyama, and Yutaka Nakai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 596,026, Oct. 11, 1990, abandoned. This application Mar. 16, 1993, Ser. No. 31,872

Claims priority, application Japan, Nov. 30, 1989, 1-309339; Jun. 17, 1992, 4-157624

Int. Cl.[6] G02F *1/1343*

U.S. Cl. 359—59 **1 Claim**



1. A liquid crystal display element, comprising:

a substrate;

a scanning line that is formed on the substrate;

a pixel electrode that is formed on the substrate;

a first thin film transistor that is formed on the substrate, the first thin film transistor having a gate electrode connected to the scanning line, a source that is connected to the pixel electrode, and a drain, said first thin film transistor being switched on and off in accordance with potential that is applied to the scanning line;

a second thin film transistor, said second thin film transistor having a gate electrode that is connected to the scanning line, a source electrode that is for connection to the pixel electrode, and a drain that is connected to the drain of the first thin film transistor, said second thin film transistor having conduction from the source to the gate being switched on and off in accordance with potential that is applied to the scanning line;

a conducting film that overlaps a portion of the source of the second thin film transistor and overlaps a portion of the pixel electrode;

an insulating film that is disposed between the pixel electrode and the conducting film and also between the source electrode of the second thin film transistor and the conducting film and which insulates the conducting film from the pixel electrode and the source electrode;

means for supplying a constant voltage to the conducting film;

wherein the source of the second thin film transistor and the pixel electrode are conductively connectable via the conductive thin film by radiation of a laser beam onto the region of the conductive thin film that overlaps the source electrode and the region of the conductive thin film that overlaps the pixel electrode;

wherein the source of the first thin film transistor may be conductively isolated from the pixel electrode via radiation of a laser beam onto a region that connects the source electrode of the first thin film transistor to the pixel electrode; and

wherein the means for providing a constant voltage may be conductively isolated from the conductive thin film via radiation of a laser beam onto a region that connects the means for supplying a constant voltage to the conductive thin film.

5,392,144

COLOR FILTER SUBSTRATE WITH COLOR FILTER PATTERN AND PROTECTIVE LAYERS CONTAINING PHOTOSENSITIVE POLYAMIDE RESINS

Naoya Nishida, Hadano; Masaaki Suzuki, Yokohama, and Toshifumi Yoshioka, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 148,335, Nov. 8, 1993, Pat. No. 5,329,389, which is a division of Ser. No. 970,784, Nov. 3, 1992, Pat. No. 5,278,683, which is a division of Ser. No. 728,707, Jul. 11, 1991, Pat. No. 5,185,059. This application May 3, 1994, Ser. No. 237,160

Claims priority, application Japan, Jul. 18, 1990, 2-187936

Int. Cl.[6] G02F *1/13;* **C09K** *19/00;* **B44C** *1/22*

U.S. Cl. 359—66 **6 Claims**



1. A color filter substrate, comprising:

(i) a color filter pattern formed from a photosensitive polyamide resin containing a colorant dispersed therein,

(ii) a protective layer formed from a photosensitive polyamide resin, and

(iii) an indium-tin oxide film.

5,392,145

LIQUID CRYSTAL DISPLAY WITH LIGHT SHIELDING MATRIX CONNECTED TO CONDUCTIVE BAND FOR CROSSTALK SHIELDING

Martin J. Edwards, Crawley, United Kingdom, assignor to U.S. Philips Corporation, New York, N.Y.

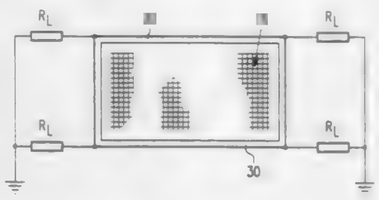
Filed May 9, 1993, Ser. No. 64,181

Claims priority, application United Kingdom, May 28, 1992, 9211282

Int. Cl.[6] G02F *1/13, 1/1335*

U.S. Cl. 359—67 **12 Claims**

1. A liquid crystal display device comprising a row and column array of liquid crystal display elements defined between two plates which respectively carry sets of row and column address conductors, and a light shielding matrix of electrically conductive material in the form of a grid having portions extending between the display elements which is carried on one of the plates and electrically insulated from the set of address conductors on that plate, characterised in that



the light shielding matrix is electrically connected around its periphery to a band of electrically conductive material having a resistance per unit length which is lower than that of the portions of the matrix, and in that the band is electrically connected at a plurality of spaced locations around the band to means for providing a predetermined potential to the matrix.

5,392,146

OPTICAL ROTARY CONTROL DEVICE

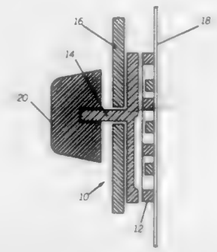
Gregory D. Jackson, Sunrise; David E. Reiff; Mac W. Branan, both of Ft. Lauderdale, and John C. Dzung, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 25, 1993, Ser. No. 8,430

The portion of the term of this patent subsequent to Jan. 5, 2000, has been disclaimed.

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—145 **18 Claims**



15. A radio and an optical rotary control device, comprising:

a radio portion having a rotatable knob for controlling a parameter of said radio;

said optical rotary device comprising;

an opaque radial light isolator having a center aperture with eight radially arranged apertures about said center aperture;

a light source disposed within said center aperture of said isolator;

eight light receptors disposed within said radially arranged apertures of said isolator;

a light director within said knob of said radio and having a shaft portion and a reflector portion wherein a diameter of said reflector portion is larger than a diameter of said shaft portion, said reflector portion being spaced from said isolator so that said reflector directs light from said light source to said receptors.

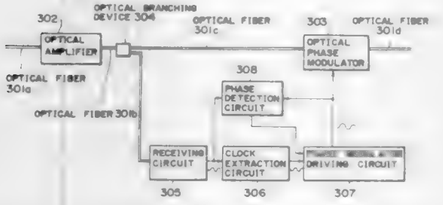
VOL 1171 ISS 3 FEB 21 1995 UMI

5,392,147

OPTICAL TRUNK TRANSMISSION SYSTEM AND AN OPTICAL REPEATER CIRCUIT

Kazuhisa Kaede, and Isamu Takano, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,398
Claims priority, application Japan, Oct. 21, 1991, 3-271615; Oct. 21, 1991, 3-271617; Oct. 21, 1991, 3-271619
Int. Cl.[6] H04B *10/04*
U.S. Cl. 359—181 4 Claims



1. An optical signal transmission method for transmitting an amplitude modulated optical signal through a dispersion medium comprising the steps of:

(a) generating a phase modulation signal having a frequency corresponding to a fundamental frequency of an envelope of amplitude modulation signal of said amplitude modulated optical signal; and

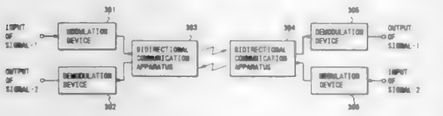
(b) phase modulating said amplitude modulated optical signal by said phase modulation signal and outputting a resultant signal to said dispersion medium.

5,392,148

OPTICAL SPACE COMMUNICATING APPARATUS

Yasuhiro Takahashi, Urawa, and Tetsuo Sakanaka, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1992, Ser. No. 984,530
Claims priority, application Japan, Dec. 2, 1991, 3-318089
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—182 4 Claims



1. An optical space communication apparatus comprising:

distributing means for distributing power to a light transmitting unit and a light receiving unit;

modulating means which modulates a transmission signal and comprises a first power source unit for supplying power to said distributing means;

demodulating means which demodulates a reception signal and comprises a second power source unit for supplying power to the distributing means; and

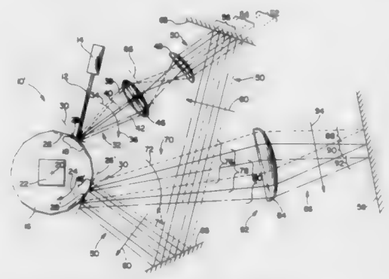
switching means coupled between the distributing means and the first power source unit and the second power source unit for selecting either one of the first and second power source units and for coupling the selected one of the first and second power source units to the distributing means.

5,392,149

POLYGONAL MIRROR OPTICAL SCANNING SYSTEM

John D. Boardman, Garland; James R. Boyd, and Jeffrey P. Welch, both of Plano, all of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Oct. 20, 1992, Ser. No. 963,549
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—216 10 Claims



1. An optical system for scanning a light beam across an object, comprising:

a multi-sided mirror having a plurality of reflective surfaces rotated in a predetermined direction and disposed in the path of the light beam to generate a first reflected light beam swept repetitively by the rotation of the multi-sided mirror through a first predetermined arc;

lens means optically positioned in the path of the first reflected light beam to generate a first scanning light beam, the lens means having an entrance pupil substantially coincident with each of said reflective surfaces of the mirror in said path and having an image plane, the lens means including correction means for producing a correcting field curvature in the image plane to correct any induced field curvature in the image plane caused by a longitudinal shift of the position of the entrance pupil position due to rotation of the mirror; and

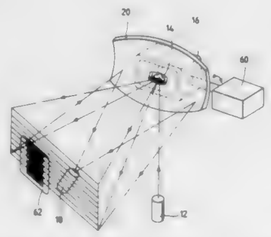
means for reflecting the first scanning light beam back onto the rotating mirror to generate a second reflected light beam swept repetitively by the rotation of the multi-sided mirror through a second predetermined arc for scanning a surface of the object.

5,392,150

OPTICAL INFORMATION READING DEVICE

Masahiro Inagaki, deceased, late of Aichi by Atsuko Inagaki, legal representative , and Kenzo Obata, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 15, 1992, Ser. No. 883,873
Claims priority, application Japan, May 15, 1991, 3-110412; Jul. 16, 1991, 3-175575
Int. Cl.[6] G06K *7/10*
U.S. Cl. 359—221 26 Claims



1. An optical information reading device comprising:

light emitting means for emitting a first light beam;

swinging means angularly movable for reflecting and angularly deflecting said first light beam to produce a scanning light beam to scan optical information;

condensing means for converging a second light beam reflected off said optical information upon application of said scanning light beam to said optical information, said second light beam directly entering said condensing means, said light emitting means and said swinging means being disposed on opposite sides of said condensing means, said swinging means being movable relative to said condensing means; and

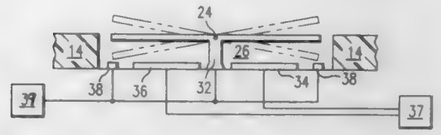
reading means for reading said optical information based on an intensity of said second light beam after being converged by said condensing means.

5,392,151

METHOD AND APPARATUS FOR STEERING LIGHT

William E. Nelson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 812,662, Dec. 23, 1991, abandoned. This application Jun. 28, 1994, Ser. No. 267,321
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—223 19 Claims



9. An apparatus for steering light comprising:

a light source;

a plurality of modulators, each of said modulators having a deflector and a mirror rotatably fixed to at least two support members axially aligned along a length of said mirror, wherein said at least two support members are displaced from all outer edges of said mirror, forming the axis of rotation; and

electronic circuitry for generating a signal characteristic of an angle through which the mirror is to be deflected and for applying the signal to the modulator.

5,392,152

QUASI-OPTIC AMPLIFIER WITH SLOT AND PATCH ANTENNAS

J. Aiden Higgins, Westlake Village, and Emilio A. Sovero, Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Oct. 13, 1993, Ser. No. 137,235
Int. Cl.[6] H01Q *13/26*
U.S. Cl. 359—333 19 Claims

1. A monolithic quasi-optic transmission amplifier, comprising:

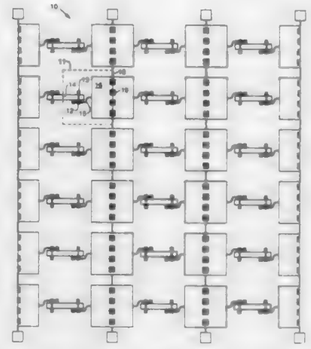
a ground plane;

a semiconductor substrate atop said ground plane;

a slot antenna formed in said ground plane for receiving radiation in the millimeter wave frequency range as an input to the amplifier;

a transistor formed on said semiconductor substrate and connected to said slot antenna for amplifying said input;

a patch antenna formed atop said substrate and connected to said transistor for transmitting said amplified input as



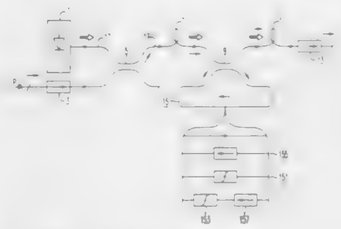
output radiation in the millimeter wave frequency range co-linear with said received radiation.

5,392,153

OPTICAL AMPLIFIER

Jean-Marc P. Delavaux, Wescosville, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Aug. 31, 1993, Ser. No. 114,819
Int. Cl.[6] H01S *3/06*
U.S. Cl. 359—341 15 Claims



1. An optical amplifier comprising;

a pump laser producing a pump signal;

a first multiplexer, said first multiplexer being adapted to combine said pump signal and information signals;

a first fiber amplifier for amplifying signals from said first multiplexer;

a second multiplexer, said multiplexer for demultiplexing and multiplexing said pump signal and said information signals;

a second fiber amplifier, said amplifier receiving said pump signal from said second multiplexer; and

means for taking said input signal from said second multiplexer and inserting said signal into said second multiplexer, said means comprises an interstage isolator.

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5,392,154

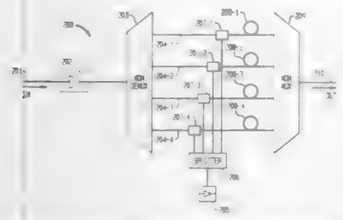
SELF-REGULATING MULTIWAVELENGTH OPTICAL AMPLIFIER MODULE FOR SCALABLE LIGHTWAVE COMMUNICATIONS SYSTEMS

Gee-Kung Chang, Holmdel; Lars E. Eskildsen, Atlantic Highlands; Evan L. Goldstein, Princeton; Muhammed Z. Iqbal, Tinton Falls, and Chinlon Lin, Holmdel, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Mar. 30, 1994, Ser. No. 220,088

Int. Cl.[6] H01S *3/16*

U.S. Cl. 359—341 **12 Claims**



1. A multiwavelength lightwave communications system comprising:

an optical transmission medium;

an optical transmitter for transmitting wave-division-multiplexed (WDM) plural signal channels onto said optical transmission medium;

an optical receiver for receiving WDM plural signal channels from said optical transmission medium; and

a cascade of multiwavelength amplifier modules, said cascade connected along said optical transmission medium between said optical transmitter and said optical receiver, each multiwavelength amplifier module comprising optical demultiplexing means for demultiplexing a WDM signal from the transmission medium into a plurality of separate single-wavelength channels on separate outputs of the demultiplexing means, a plurality of fiber amplifiers operated in gain-saturation each one connected to one of the outputs of said demultiplexing means, said plurality of fiber amplifiers separately amplifying each of the single-wavelength channels at each of the outputs of the demultiplexing means, and optical multiplexing means for multiplexing the plurality of amplified single-wavelength channels into one multiwavelength amplifier module WDM output signal.

5,392,155

DE-DIFFRACTION METHODS

Vladimir F. Tamari, 4-2-8-C26 Komazawa, Setagaya-ku, Tokyo, Japan 154

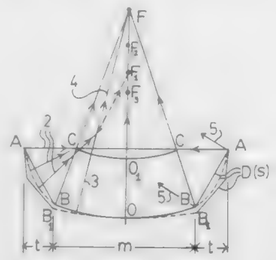
Continuation-in-part of Ser. No. 208,400, Jun. 17, 1988, Pat. No. 5,148,315. This application Sep. 15, 1992, Ser. No. 999,438

The portion of the term of this patent subsequent to Dec. 15, 2006, has been disclaimed.

Int. Cl.[6] G02B *27/42*

U.S. Cl. 359—558 **1 Claim**

1. A method or cancel or minimize diffraction effects for an optical or other electromagnetic wave-field or any other wave-field emitted, transmitted or reflected by or from any device or instrument, where said wave-field suffers from diffraction effects due to its being limited by the size of an emitting, transmitting or reflecting device, pupil or aperture, hereafter to be referred to as the aperture, wherein the path length which an approaching wavefront of said wave-field needs to traverse in order to reach an aperture plane is altered, so that the same wavefront retains its original shape everywhere within said aperture, except in the region of an edge of said aperture whereby the said wavefront is caused to have a raised edge or lip continuous with the said wavefront, so that along any line segment(s) lying in said aperture plane and normal to and measured from the said aperture edge, the path alteration function D(s) measured normal to said aperture plane, is zero at said aperture edge, and increases continuously to form a corner, with a profile being formed by at least one straight or curved segment or a combination of straight or curved segments formed to direct the edge portions of the wavefront inwards, wherein the ratio (t/m) is as minimum as possible and wherein the width of the edge is t and the overall width of the geometrical wavefront is m, said widths measured parallel to the aperture plane and D(s) thereby reaching a maximum value equal to or larger than a wavelength of said wave-field, where said comer joins with said original wavefront's profile, and



retaining the said constant maximum value everywhere in the said aperture except at said corners, whereby the result of said alteration function D(s) in said path length is caused in the case of a lens or reflector by adding a corner to the profile of said lens or reflector, consisting of at least one straight or curved segment or a combination of straight or curved segments, to refocus the said wavefront so that said wave-field will leave said aperture in its geometrical or undiffracted form, thereby increasing the gain or directivity of the said field if it is an unfocused beam, or increasing the resolution beyond the diffraction limits, thereby achieving superresolution in the case of focused fields.

5,392,156

OPTICAL DEVICE

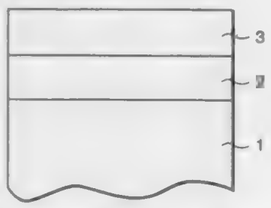
Hiroaki Kumagai; Nagato Osano, both of Kawasaki, and Naoki Kobayashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,063

Claims priority, application Japan, Mar. 31, 1992, 4-077446

Int. Cl.[6] G02B *1/10, 5/28*

U.S. Cl. 359—586 **20 Claims**



1. An optical device comprising: a transparent base plate; a first layer formed of a substance having a refractive index of 1.58 or higher; and a second layer which is farther from said transparent base plate than said first layer is from said transparent base plate and which is formed of an amorphous transparent fluorocarbon resin having a refractive index of 1.35 or lower, said first layer and said second layer constituting a film for preventing reflection.

5,392,157

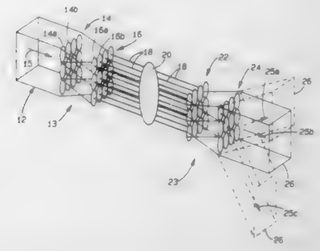
LINE-OF-SIGHT STEERING SYSTEM FOR HIGH POWER LASER BEAMS AND METHOD USING SAME

Chun-Ching Shih, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 18, 1993, Ser. No. 108,489

Int. Cl.[6] G02B *27/10, 26/08*

U.S. Cl. 359—625 **21 Claims**



1. A system for steering a beam of optical radiation which minimizes phase deviations within said beam, said system comprising:

dividing means for receiving and dividing said beam of optical radiation into a plurality of divided beam columns;

beam steering means optically coupled to said dividing means for collectively steering each of the divided beam columns along a second path; and

a compensation lens accepting said plurality of divided beam columns, said compensation lens compensating for phase differences which may be present among said divided beam columns.

17. A method for controllably steering an optical beam while minimizing phase deviations comprising:

receiving an optical beam of radiation directed along a first path;

dividing said optical beam into a plurality of divided beam columns;

transmitting said plurality of divided beam columns through a refractive optical compensation lens so as to provide phase compensation among the plurality of divided beam columns; and

collectively steering each of said divided beams with a microlens steering array so as to redirect each beam along a second path.

5,392,158

HEAD-MOUNTED IMAGE DISPLAY

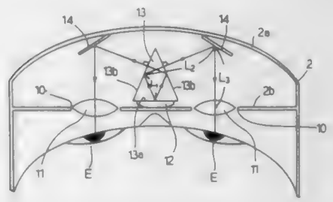
Kenji Tosaki, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 968,855

Claims priority, application Japan, Nov. 1, 1991, 3-315490; Nov. 30, 1991, 3-341866; Dec. 25, 1991, 3-357091

Int. Cl.[6] G02B *27/14;* **H04N** *13/00*

U.S. Cl. 359—633 **11 Claims**



1. A head-mounted image display comprising:

a housing having a configuration of a dimension for covering a user's eye;

means for removably mounting the housing on a head of the user;

means provided at a predetermined position in the housing for emitting image light in a direction away from the user to form an image;

a pair of right and left convex lenses, respectively, provided in a line of sight of the right and left eye of the user in the housing for enlarging the image produced by the image light emitting means; and

optical means provided within the housing for guiding the image formed by the image light emitting means to the pair of right and left convex lenses for observation by the user.

5,392,159

ZOOM LENS DEVICE OF TWO-LENS GROUP STRUCTURE AND DRIVING DEVICE OF VARIFOCAL LENS OF TWO-LENS GROUP STRUCTURE

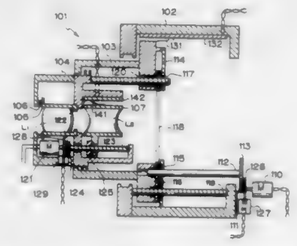
Saburo Sasaki, Tokyo; Ikuya Tsurukawa, Yokohama; Hiroshi Terui, Tokyo, and Takashi Hongo, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 817,369, Jan. 6, 1992, Pat. No. 5,267,085. This application Mar. 20, 1992, Ser. No. 855,512

Claims priority, application Japan, Jan. 18, 1991, 3-004539; Jun. 8, 1991, 3-163559

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—691 **4 Claims**



1. A driving device of a varifocal lens having a two-lens group structure for changing a focal length of the varifocal lens by displacing each of a front lens group and a rear lens group constituting a zooming optical system along a photographing optical axis, said driving device comprising:

a base frame for fixedly holding the front lens group in a front portion thereof;

the base frame being movable forward and backward along the photographing optical axis with respect to a body tube section; and

a rear group holding frame for holding the rear lens group and arranged in a rear portion of said base frame such that the rear group holding frame is moved forward and backward along the photographing optical axis with respect to said base frame;

the driving device being constructed such that said base frame is moved in accordance with a moving line at a zooming time of the front lens group, and said rear group holding frame is moved in accordance with a moving line at a zooming time of the rear lens group in an entire zooming region when said varifocal lens is in a zooming control state;

the driving device being constructed such that, when said varifocal lens is in a focusing control state, said base frame is moved toward a photographing field from a standby position by an amount required to perform a focusing operation at this time in a state in which a relative axial distance between the front and rear lens groups is constantly held in plural zooming steps set on the side of a

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short focal length in a portion of the entire zooming region; and

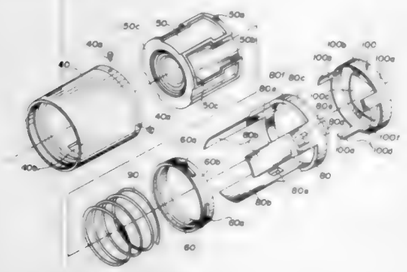
the driving device being constructed such that only the rear group holding frame is moved from a standby position toward a film face by an amount required to perform the focusing operation in a state in which said base frame is stopped in a position provided at a completing time of zooming operation in other plural zooming steps set in the remaining portion of the entire zooming region.

5,392,160

LENS BARREL HAVING A FLARE DIAPHRAGM MECHANISM

Kazuhiro Satoh, Sagamihara, and Shigeo Hayashi, Okaya, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 1,798
Claims priority, application Japan, Jan. 8, 1992, 4-001779
Int. Cl.[6] G02B *13/02*
U.S. Cl. 359—695 **52 Claims**



1. A lens barrel comprising:

a first frame member movable in a direction of an optical axis with respect to a fixed member;

a second frame member movable in a direction of the optical axis with respect to said fixed member and said first frame member;

a flare diaphragm engaging said second frame member and interposed between said first frame member and said fixed member, wherein

said flare diaphragm is selectively engaged by one of said fixed member and said first frame member as a result of the movement of said second frame member in a direction of the optical axis due to said predetermined operation, so that said flare diaphragm is moved in a direction of the optical axis with respect to said second frame member.

5,392,161

ILLUSION ASSEMBLY CREATING A SEE THROUGH EFFECT

Donald E. Weder, Highland, Ill.; James J. Sluss, Jr., Norman, Okla.; Joseph G. Straeter, Highland, Ill.; Charles A. Codding, Oklahoma City, Okla., and David A. Weder, Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

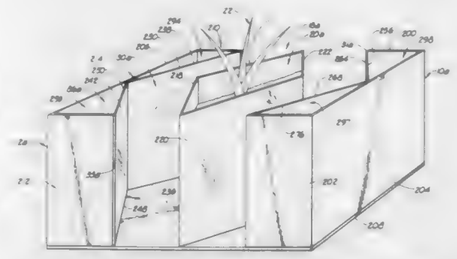
Filed Jan. 5, 1993, Ser. No. 958
Int. Cl.[6] G02B *5/10*
U.S. Cl. 359—861 **226 Claims**

1. An illusion assembly for retaining an item comprising:

a container having a first transparent area, a second transparent area, the container at least partially encompassing a container space with at least a portion of the container space being disposed between the first transparent area and the second transparent area of the container, the container having a retaining space opening formed through a portion of the container;

a retainer assembly defining a retaining space with at least a portion of the retainer assembly being disposed between the first transparent area and the second transparent area, the retaining space opening being positioned to provide access to the retaining space, and at least a portion of the item being disposable in the retaining space via the retaining space opening; and

illusion means for enabling an individual to look through the first transparent area, and through the second transparent area without the individual seeing the portion of the retainer assembly disposed between the first transparent



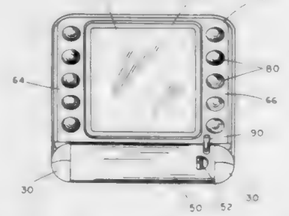
area and the second transparent area, whereby from the point of view of the individual looking through the first transparent area, it would appear as though the individual was looking through the first transparent area and through the second transparent area without the individual seeing any obstructions between the first transparent area and the second transparent area.

5,392,162

ILLUMINATED TRAVEL MAKE-UP MIRROR

Dov Z. Glucksman, 137 Larch Row, Wenhan, Mass. 01984

Filed Oct. 31, 1991, Ser. No. 785,168
Int. Cl.[6] G02B *7/18;* **F21V** *33/00*
U.S. Cl. 359—872 **2 Claims**



1. An illuminated mirror for use in applying make up, comprising,

a mirror mounted within a frame,

a plurality of incandescent light bulbs disposed at the perimeter of the mirror arranged in space opposing rows,

paraboloidal reflectors for each of said incandescent light bulbs which have their filaments located at the focus of their respective reflector with said reflectors and bulbs of each row being inclined toward the other,

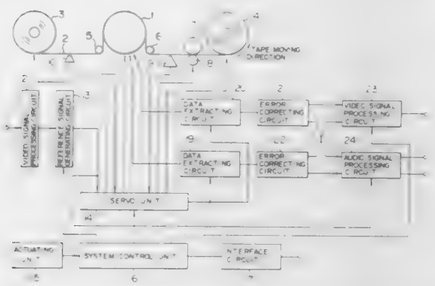
transparent lenses are provided for each reflector and said lenses are molded as one piece, and the reflectors of each row are molded in one piece, said reflector constraining the light rays to travel in restricted paths converging to a locus at a calculated distance from the mirror and said locus lying beyond the face of a user whereby the user's face intercepts said light rays prior to their reaching said locus to maximize illumination of the user's face.

5,392,163

DIGITAL VIDEO SIGNAL REPRODUCING APPARATUS WITH COMPRESSION AND EXPANSION OF PLAYBACK TIME

Shigemitsu Higuchi, Fujisawa; Atsuo Suga, Kamagaya; Yuji Inaba, and Toshiro Aizawa, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 551,012, Jul. 11, 1990, abandoned. This application Dec. 6, 1993, Ser. No. 161,455
Claims priority, application Japan, Jul. 12, 1989, 1-177921
Int. Cl.[6] H04N *5/78*
U.S. Cl. 360—10.1 **14 Claims**



1. A digital video signal reproducing apparatus including a capstan for driving a magnetic tape and a drum having a plurality of magnetic heads for scanning tracks of said magnetic tape, data extracting means for extracting digital data from a reproduced recorded signal through the plurality of magnetic heads, and error correction means for correcting errors in the digital data, said capstan and said drum being driven at a non-standard speed so as to reproduce and store data recorded on said magnetic tape, and to carry out compression and expansion of the recorded data in reproduction, said apparatus comprising:

command signal generating means for generating a command signal in the reproduction so as to instruct one of compression and expansion of the recorded data including at least one of video data and audio data, the command signal including information for instructing at least a tape running speed and a drum rotation speed; and

said data extracting means having at least one variable characteristic for controlling extracting of data in accordance therewith, said data extraction means being responsive to said command signal for varying the at least one variable characteristic so as to reduce increasing error in reproduced recorded data which error normally increases at the non-standard speed.

5,392,164

DUBBING SYSTEM

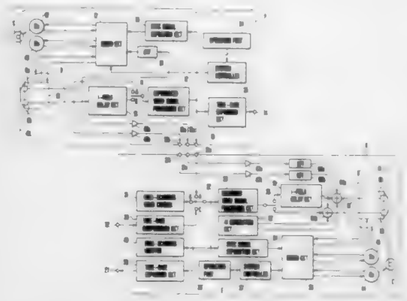
Koji Takahashi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 704,261, May 22, 1991, abandoned. This application Apr. 5, 1994, Ser. No. 223,309
Claims priority, application Japan, May 25, 1990, 2-135580; May 30, 1990, 2-142893; Jun. 4, 1990, 2-146437; Jun. 6, 1990, 2-148972
Int. Cl.[6] C11B *5/86;* **H04N** *5/782*
U.S. Cl. 360—15 **28 Claims**

1. A dubbing system for copying a tape recording medium on which an amount of information signals of a given period of time are recorded in each of many tracks having different azimuth angles between adjacent tracks, comprising:

a reproducing apparatus arranged to cause a first tape recording medium to travel a distance corresponding to N tracks (N: an integer which is at least 2) per said given period of time and to reproduce, during said given period of time, said information signals being recorded in N adjacent tracks on said first tape recording medium by using N rotary heads which are arranged to have different azimuth angles between adjacent heads and are disposed in a closely adjacent state; and

a recording apparatus arranged to cause a second tape recording medium to travel a distance corresponding to N



tracks per said given period of time and which records said information signals onto N adjacent tracks on said second tape recording medium during said given period of time by using N rotary heads which are arranged to have different azimuth angles between adjacent heads and are disposed in a closely adjacent state.

5,392,165

APPARATUS FOR RECORDING AUDIO AND VIDEO SIGNALS

Yukiharu Hosono, and Yukihiko Haikawa, both of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 13, 1992, Ser. No. 834,870
Claims priority, application Japan, Mar. 29, 1991, 3-067159
Int. Cl.[6] G11B *5/02*
U.S. Cl. 360—19.1 **14 Claims**



1. A data recording apparatus for performing four-channel recording for the simultaneous recording of four kinds of data on a recording medium, comprising:

audio data recording means for recording audio signal data on two of four channels preset as audio channels;

video data recording means for recording video signal data on the other two channels preset as video channels; and

control means for, at the time that recording is performed by the audio data recording means, preventing recording of signal data by the video data recording means, and at the time that recording is performed by the video data recording means, preventing recording of signal data by the audio recording means.

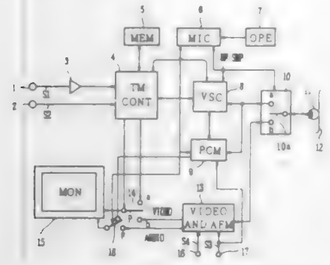
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5,392,166

MAGNETIC RECORDING AND REPRODUCING APPARATUS FOR RECORDING AND REPRODUCING TITLE DATA WITH VIDEO AND AUDIO DATA

Miki Furuya, Saitama; Sakae Okazaki, and Naoki Nagano, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 22, 1993, Ser. No. 20,411
Claims priority, application Japan, Feb. 26, 1992, 4-075146
Int. Cl.[6] G11B *5/02*
U.S. Cl. 360—19.1 **15 Claims**



1. A magnetic recording and reproducing apparatus for recording and reproducing title data with video and audio data on oblique tracks on a recording medium, comprising:

means for recording video and audio data in video and audio regions, respectively, of oblique tracks on said recording medium while leaving vacant predetermined title regions in said oblique tracks in which said video and audio data are recorded, each of said title regions including a search region for storing a respective search code;

means for recording title data having title and title control information in said title regions of the respective oblique tracks;

means for locating an oblique track having said respective search code;

means for reproducing said title, video and audio data from said respective oblique tracks on said recording medium; and

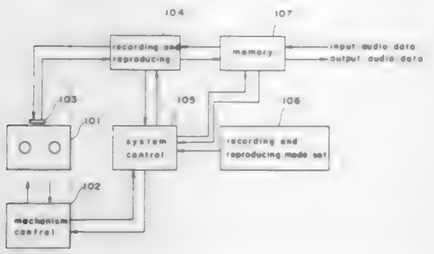
means for combining said title information with said video data in accordance with said title control information to produce a video output signal.

5,392,167

DATA RECORDING METHOD, END SEARCH METHOD AND CONNECTION RECORDING

Tatsuya Adachi, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 626,299, Dec. 12, 1990, abandoned. This application Oct. 18, 1993, Ser. No. 137,215
Claims priority, application Japan, Dec. 12, 1989, 1-322150
Int. Cl.[6] G11B *5/02, 15/52*
U.S. Cl. 360—27 **10 Claims**



3. In a data recording method in which successive frames of main data and successive frames of auxiliary data are recorded on respective adjacent recording tracks of a recording tape, the auxiliary data including control information, the improvement comprising:

a step of recording a main data completion point indication at a location in of the recording track of the auxiliary data prior to a corresponding location in the recording track of the main data at which recording of the main data is completed; and

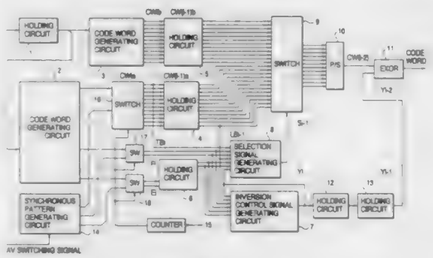
a step of recording a lead out area indication at a location in the recording track of the auxiliary data corresponding to the location in the recording track of the main data at which recording of the main data is completed.

5,392,168

METHOD OF RECORDING DIGITAL VIDEO AND AUDIO DATA

Akira Iketani, Higashiosaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 750,484, Aug. 27, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 112,050
Claims priority, application Japan, Aug. 31, 1990, 2-231703; Sep. 26, 1990, 2-258020
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—40 **6 Claims**



1. A method of recording digital video data and digital audio data on a recording medium, each of the digital video and audio data being composed of a plurality of data words each consisting of a first specific number of bits, said method comprising the steps of:

converting the plurality of data words in each of the digital video and audio data to a plurality of code words each consisting of a second specific number of bits larger than the first specific number of bits, respectively, and concatenating the plurality of code words converted from each of the digital video and audio data so as to obtain a continuous bit sequence satisfying a condition wherein a number of bits having a same binary value and occurring continuously is within a range of from 2 to 10;

adding a first synchronous pattern having a first specific bit pattern, which consists of a third specific number of bits and which fails to occur in said continuous bit sequence, to a beginning end of said continuous bit sequence obtained from the digital video data and a second synchronous pattern having a second specific bit pattern, which consists of the third specific number of bits and which fails to occur in said continuous bit sequence, to a beginning end of said continuous bit sequence obtained from the digital audio data, said first specific bit pattern of said first synchronous pattern being different from said second specific bit pattern of said second synchronous pattern; and

recording each of said continuous bit sequences added to said first synchronous pattern and said continuous bit sequences added to said second synchronous pattern on the recording medium;

wherein said first specific number of bits of each of said data words is 8, and said second specific number of bits of each of said code words is 12.

5,392,169

ELECTRICAL MEANS TO DIMINISH READ-BACK SIGNAL WAVEFORM DISTORTION IN RECORDING HEADS

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Filed Jun. 8, 1993, Ser. No. 73,187
Int. Cl.[6] G11B *5/09;* **H01F** *13/00;* **H01H** *47/00;* **G11C** *19/08*
U.S. Cl. 360—45 **45 Claims**



33. A method for conditioning a magnetic data recording and reading device having a magnetic read/write head, said head being used for storing information in a stored data region on a magnetic medium, comprising the steps of:

selecting a reset polarity, said reset polarity corresponding to a polarity that places the head in a preferred magnetic domain state for reading; and

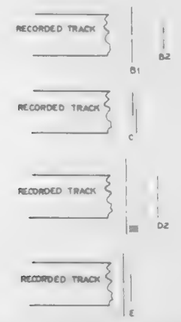
applying at least one reset current pulse having said reset polarity to said magnetic head during one or more time periods in which said head is positioned over a portion of said medium not storing data.

5,392,170

MAGNETIC TAPE STORAGE UNIT WITH IMPROVED ABILITY TO READ DATA BY USING A SET OF MULTIPLE READ ELEMENTS

Erik Solhjell, Oslo, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Sep. 22, 1992, Ser. No. 949,448
Int. Cl.[6] G11B *15/12, 5/09*
U.S. Cl. 360—63 **16 Claims**



3. A read system for a data storage and retrieval system, said data storage and retrieval system having a movable storage medium having a plurality of data blocks arranged thereon in an identifiable sequence in a plurality of tracks each moving along a nominal path, each track having a track width substantially perpendicular to said nominal path, the movement of said storage medium causing said tracks to deviate over a displacement area approximately centered on said nominal path, said displacement area having respective off-center maxima on opposite sides of said nominal path and each block having a length in a direction of said nominal path such that the time needed to read a block is less than the time required for a track to move between said maxima, said read system comprising:

means for non-redundantly writing said blocks in said sequence in said tracks on said storage medium;

a plurality of read elements arranged relative to said storage medium so that so that each of said read elements covers at least a portion of the displacement area of a single track to be read;

a plurality of read channels respective uniquely associated with said read elements;

all of said read elements being simultaneously used to read said blocks in said single track so that all of said read channels contain a data block read by the read element associated with that read channel;

means for monitoring each of said read channels to determine whether the respective block contained therein was correctly read and for selecting a first-arriving, correctly-read block from among said read channels, which is next in said sequence following a previously selected block; and

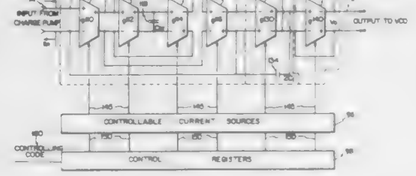
means for storing the selected block at a memory location correlated to its position in said sequence.

5,392,171

FULLY INTEGRATED PROGRAMMABLE FILTERS FOR DISC DRIVE SUBSYSTEMS

Vladimir Kovner; Vadim B. Minubin, both of Oklahoma City, and Srinivasan Surendran, Norman, all of Okla., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Division of Ser. No. 1,346, Jan. 7, 1993. This application Dec. 10, 1993, Ser. No. 165,732
Int. Cl.[6] G11B *5/09;* **H03G** *3/00*
U.S. Cl. 360—65 **18 Claims**



1. An automatic gain control subsystem in a disc drive system having a magnetic disc, the automatic gain control subsystem providing a substantially constant peak amplitude for data read back from the magnetic disc, the automatic gain control subsystem comprising:

a variable-gain amplifier for receiving a data signal indicative of the data and for amplifying the data signal to provide an amplified data signal;

rectifier means coupled to the variable-gain amplifier, for rectifying the amplified data signal to produce a rectified signal; and

filter means coupled to the rectifier means and coupled to the variable-gain amplifier, for filtering the rectified data signal and for providing a feedback signal to the variable-gain amplifier, the filter means including a synthetic integrated circuit capacitor having a synthetic capacitance.

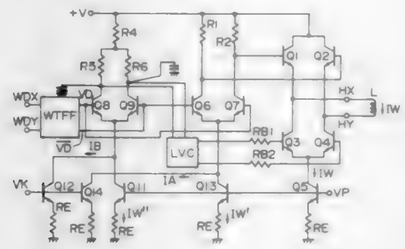
VOL 1171 ISS 3 FEB 21 1995 UMI

5,392,172

MAGNETIC HEAD CIRCUIT HAVING A WRITE CURRENT CHANGEOVER CIRCUIT WITH A CLAMP VOLTAGE DEPENDING ON WRITE CURRENT FOR HIGH-SPEED DATA TRANSFER

Masaki Yoshinaga, Tachikawa; Noriaki Hatanaka, Chigasaki; Tomoaki Hirai, Odawara; Yuji Nagaya; Tsuyoshi Hirose, both of Ome, and Tadao Kaji, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,146
Claims priority, application Japan, Jan. 30, 1992, 4-040131
Int. Cl.[6] G11B *5/02, 5/09*
U.S. Cl. 360—67 25 Claims



1. A magnetic head circuit having a plurality of head circuit sets for a plurality of magnetic heads, each of said head circuit sets comprising:

a first pair of transistors whose emitters are connected to each other for receiving data signals;

first and second resistors each connected between a power source and a collector of a respective one of said first pair of transistors;

a second pair of emitter follower transistors whose bases are connected to the collectors of said first pair of transistors for performing a differential operation;

a third pair of differential transistors connected to said second pair of emitter follower transistors and whose emitters are connected to each other for performing a differential operation;

a first current source connected to the emitters of said first pair of transistors for supplying a current to said first pair of transistors and said resistors connected to the first pair of transistors, said first current source including a first transistor having a first emitter-resistor, a first base and a first collector connected to the emitters of said first pair of transistors and having a predetermined emitter size ratio;

a second current source connected to the emitters of said third pair of differential transistors, said second current source including a second transistor having a second emitter-resistor, a second base and a second collector connected to the emitters of said third pair of transistors and having substantially said predetermined emitter size ratio;

a predetermined control voltage terminal connected to said first and second bases of said first and second current sources for receiving an adjustable control signal corresponding to inner/outer peripheries of a recording track; and

a pair of signal terminals connected respectively to junction points between said second pair of emitter follower transistors and said third pair of transistors for outputting therefrom signals corresponding to said data signals,

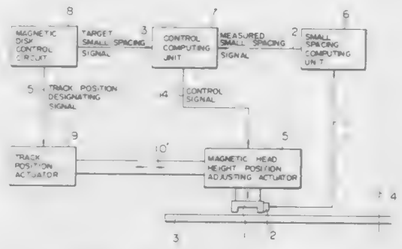
wherein collector voltages of said first pair of transistors are dependent on a current flowing through said first current source in response to said adjustable control signal.

5,392,173

METHOD AND APPARATUS FOR CONTROLLING A SMALL SPACING BETWEEN A MAGNETIC HEAD AND A MAGNETIC RECORDING MEDIUM

Kazuto Kinoshita, Tsukuba; Toshio Akatsu, Ushiku, and Jun Naruse, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 639,201, Jan. 9, 1991, abandoned. This application Jul. 8, 1993, Ser. No. 87,355
Claims priority, application Japan, Jan. 17, 1990, 2-006101
Int. Cl.[6] G11B *21/02, 5/596, 5/56, 5/127*
U.S. Cl. 360—75 18 Claims



1. A small spacing control apparatus for controlling a small spacing between a magnetic head and a magnetic recording medium in a magnetic recording apparatus having a support to support the magnetic head in a manner which permits said magnetic head to randomly access a recording surface of the magnetic recording medium, said small spacing control apparatus comprising:

a measuring element disposed at said support; and

computing means for calculating the small spacing from a functional relation relating to a quantity of a reflected light received from said measuring element;

wherein said measuring element includes a substrate disposed on a side of said support, a reflection plane formed on the substrate and facing said magnetic recording medium, a light emitting portion disposed at said substrate, an incident-side optical waveguide formed in said substrate for making the light from said light emitting portion incident to said reflection surface with an angle greater than a critical angle so as to generate an oozing light as an evanescent wave from said reflection plane, a reflection-side optical waveguide formed in said substrate for guiding said oozing light and a reflected light from said reflection plane to a reflection side, said reflected light having been attenuated due to contact with said magnetic recording medium, a photodetecting portion formed in said substrate for receiving the reflected light guided by said reflection-side optical waveguide and for feeding the reflected light to said computing means.

5,392,174

METHOD AND APPARATUS FOR CONTROLLING THE SPEED OF MOVEMENT OF THE HEAD OF A DISK DRIVE APPARATUS TO A TARGET TRACK

Yasuaki Suzuki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 24, 1991, Ser. No. 705,598
Claims priority, application Japan, May 29, 1990, 2-138688
Int. Cl.[6] G11B *5/596*
U.S. Cl. 360—78.06 4 Claims

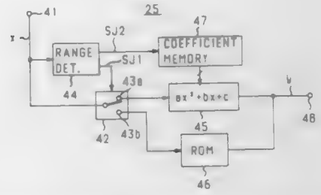
2. A disk drive for moving a head to a target track of a plurality of tracks disposed on a disk shaped recording medium and for recording and reproducing data to and from the target track, comprising:

head position detection means for reproducing a track information signal recorded on said disk shaped recording medium to detect a position of the head;

distance determination means for determining a distance between a position of the target track and the head position determined by said head position detection means to obtain a distance signal;

range detection means for producing a detection signal indicating a respective one of a plurality of predetermined distance ranges in which the distance of the head to the target track obtained by said distance determination means is located;

calculation means for generating a speed profile for the respective distance range indicated by the detection signal produced by said range detection means by calculating



said speed profile in accordance with the distance signal and at least one coefficient to determine said speed profile as an approximation of an ideal speed profile for the respective distance range;

a coefficient memory for storing and holding a plurality of coefficients corresponding with ones of said plurality of ranges and for outputting said at least one coefficient to said calculation means in accordance with the respective distance range indicated by the detection signal produced by said range detection means; and

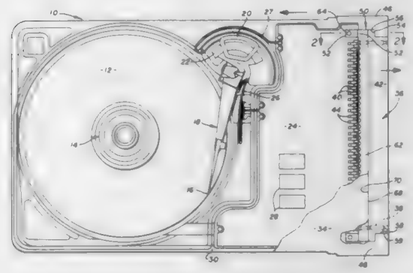
head moving means for moving the head toward the target track in accordance with the speed profile generated by said calculation means.

5,392,175

PCMCIA TYPE HDD CONNECTOR MOUNT

Harold Beecroft, Colorado Springs, Colo., assignor to Maxtor Corporation, San Jose, Calif.

Filed Jun. 9, 1993, Ser. No. 74,291
Int. Cl.[6] G11B *17/00*
U.S. Cl. 360—97.01 10 Claims



1. A hard disk drive assembly, comprising:

a base plate having a pair of first arms at a connector end of said plate, said first arms each having a first ear step;

a cover plate having a pair of second arms at a connector end of said plate, said second arms each having a second ear step;

a magnetic disk enclosed by said cover plate and said base plate;

an actuator arm assembly enclosed by said cover plate and said base plate;

a printed circuit board enclosed by said cover plate and said base plate; and,

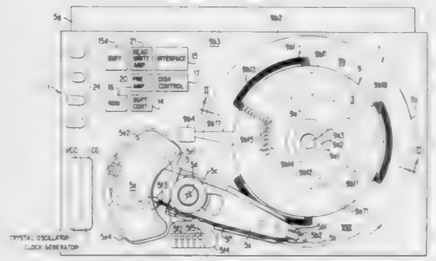
a connector coupled to said printed circuit board, said connector having outer edges that cooperate with said arms of said base plate and said cover plate and prevent movement of said connector in a first direction, said connector also having a pair of ears that cooperate with said first and second ear steps of said arms and prevent movement of said connector in a second direction that is essentially perpendicular to the first direction.

5,392,176

RECORDING/REPRODUCING DEVICE EMPLOYING DEVICE HOUSING AND PRINTED CIRCUIT BOARD AND ELECTRONICS AS STRUCTURAL AND FUNCTIONAL PART OF MEDIA DRIVE MOTOR AND THE MEDIA DRIVE MOTOR

Scott K. Anderson, Meridian, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 26, 1993, Ser. No. 97,812
Int. Cl.[6] G11B *17/02*
U.S. Cl. 360—97.01 18 Claims



1. An axial gap electric motor, comprising:

a. a support;

b. a motor rotor comprising a hub and a pair of axially spaced rotor plates of magnetic material mounted to said hub;

c. means for rotatably mounting said motor rotor to said support;

d. means for producing alternately poled, substantially equally circumferentially spaced and substantially equally radially positioned, axial magnetic fields between said rotor plates, defining a predetermined number of magnetic poles;

e. a printed circuit board comprising a printed circuit stator winding having radial winding sections formed on the circuit board in equally circumferentially distributed positions, at substantially the same radius defining a winding pattern of substantially circular planform, said printed circuit board having an opening therethrouqh substantially centrally of said circular planform of said printed circuit winding;

f. means for mounting said printed circuit board to said support with said radial winding sections of said printed circuit stator winding positioned between said rotor plates in said alternately poled axial magnetic fields, said opening clearing said hub;

g. means for producing an electrical indication of the polarity of an axial magnetic field at at least one predetermined location on said printed circuit stator winding, and

h. means including a commutating circuit mounted to said printed circuit board, responsive to said electrical indication, for commutating electric power to said printed circuit stator winding.

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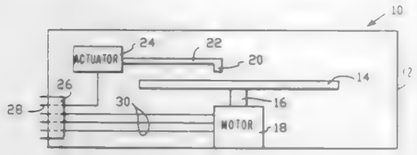
SEALED DASD HAVING HUMIDITY CONTROL AND METHOD OF MAKING SAME

Timothy J. Chainer, Mahopac; Emanuel I. Cooper, Riverdale; Suryanarayan G. Hegde, Hollowville, and Chandrasekhar Narayan, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 771,689, Oct. 4, 1991, abandoned. This application May 24, 1994, Ser. No. 248,137

Int. Cl.[6] G11B *33/14*

U.S. Cl. 360—97.02 **31 Claims**



1. A direct access storage device including means for positioning a head for interaction with a storage medium comprising:

an hermetically scaled housing enclosing the head and the storage medium; and

a quantity of a desiccant contained in said housing, said desiccant containing a predetermined percentage of water, whereby relative humidity within said housing is maintained within a predetermined relative humidity range as temperature is varied over a predetermined temperature range so that the relative humidity is high enough to avoid poor start-stop tribology and low enough to avoid excessive sticking forces.

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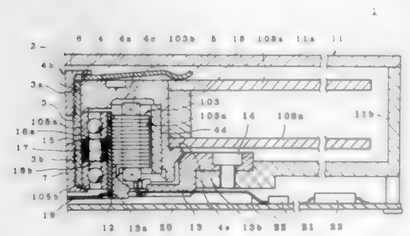
MOTOR FOR A DISC DRIVING DEVICE HAVING A HUB POSITIONED ON INNER RACE OF AN UPPER BEARING

Akira Nishio; Masaru Kumazawa; Kenji Seki, all of Fujieda; Akihiro Mochizuki, Shizuoka, and Takamasa Numakura, Fujieda, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 25, 1993, Ser. No. 37,999

Int. Cl.[6] G11B *17/02;* **H02K** *7/00*

U.S. Cl. 360—99.08 **4 Claims**



1. A motor for a disc driving device having a hub serving as a rotor for rotating at least a magnetic disc mounted on the hub; said hub having a concave portion in which a stator of said motor is assembled, said motor comprising:

a single straight shaft being provided with internal threads at least at both end portions thereof, said single straight shaft being press-fitted to said hub;

a first bearing means having a first inner race and a first outer race, said first inner race being press-fitted to the single straight shaft, said hub being placed on said first inner race of the first bearing means;

a second bearing means having a second inner race and a second outer race, said second inner race being press-fitted to the single straight shaft under said first bearing means;

spacer means interposed between said first and second inner races of the first and second bearing means;

means for clamping the magnetic disc on the hub;

first screw means engaging with one of said internal threads for causing said clamping means to depress the disc against said hub; and

second screw means engaging with the other of the internal threads for preventing the single straight shaft from being driven out of the hub, wherein said hub holding the magnetic disc is secured on the single straight shaft by being interposed and tightened between the first screw means and second screw means in such a manner that said clamping means is disposed under said first screw means, and said first and second inner races of the first and second bearing means with said spacer means being interposed under said hub in alignment with said first and second bearing means.

5,392,179

MAGNETIC READ/WRITE HEAD ASSEMBLY WITH A REDUCED SLIDER SIZE

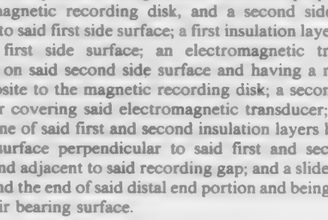
Mitsuru Sendoda, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 26, 1993, Ser. No. 38,673

Claims priority, application Japan, Apr. 23, 1992, 4-104460

Int. Cl.[6] G11B *5/48*

U.S. Cl. 360—104 **6 Claims**



1. A magnetic read/write head assembly for a magnetic disk drive, said assembly comprising: a suspension arm having a distal end portion and an inner portion for carrying said distal end portion in a direction parallel to a magnetic recording disk, said distal end portion having a first side surface perpendicular to the magnetic recording disk, and a second side surface opposed to said first side surface; a first insulation layer formed on said first side surface; an electromagnetic transducer mounted on said second side surface and having a recording gap opposite to the magnetic recording disk; a second insulation layer covering said electromagnetic transducer; wherein at least one of said first and second insulation layers has an air bearing surface perpendicular to said first and second side surface and adjacent to said recording gap; and a slider extending beyond the end of said distal end portion and being covered by said air bearing surface.

5,392,180

MAGNETIC HEAD DRUM FOR VIDEO DATA RECORDING AND READING APPARATUS

Shinichi Hasegawa, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,763

Claims priority, application Japan, May 30, 1991, 3-126432

Int. Cl.[6] G11B *5/52, 15/60*

U.S. Cl. 360—107 **7 Claims**

5. A magnetic head drum for a data record/read apparatus, comprising:

a stationary spindle having a longitudinal axis,

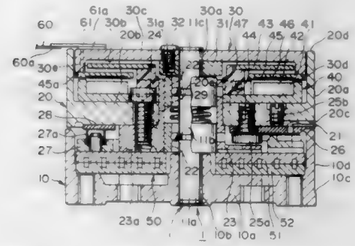
a lower drum mounted fixedly on said stationary spindle,

a rotary drum rotatably supported on said spindle above said lower drum and having an upwardly opening annular recess,

an upper drum mounted fixedly on said spindle and accommodated within said recess of the rotary drum with radial clearance from said rotary drum,

a magnetic head mounted on said rotary drum at an outer periphery of the bottom of said rotary drum,

a motor for rotating said rotary drum around said spindle, said motor including a stator mounted fixedly on said upper drum within said recess of the rotary drum, a rotor mounted within said recess of said rotary drum for rotation with the latter in confronting relation to said stator, and a back yoke supported on said rotor with said stator being interposed between said rotor and said back yoke within said recess of the rotary drum,



a flexible circuit board support member secured to said upper drum and extending radially and outwardly therefrom above said rotary drum,

a flexible circuit board, supported by said flexible circuit board support member, in remote relationship to said rotary drum, and

connecting means extending through said upper drum for electrically connecting said stator with said flexible circuit board support member, said connecting means including

a connector mounted on and extending through said upper drum and having a conductive layer thereon, and

connector pins secured to said stator and said flexible circuit board support member, respectively, and fitted into opposite ends of said connector whereby said connector pins are electrically connected with each other through said conductive layer of said connector.

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MAGNETO-OPTICAL READING HEAD

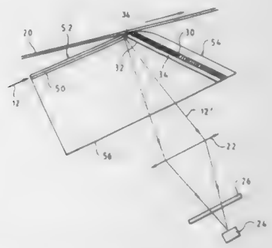
Jean-Claude Lhureau, Saint Genevieve Des Bois, and Christian Maillot, Orsay, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Jul. 31, 1992, Ser. No. 922,876

Claims priority, application France, Aug. 9, 1991, 91 10177

Int. Cl.[6] G11B *11/10*

U.S. Cl. 360—114 **14 Claims**



1. An optical reading system for reading magnetic information elements recorded on a movable magnetic medium, said system comprising:

a light source for generating a light beam;

a reading head comprising:

a substrate;

a magnetic circuit formed on the substrate, said magnetic circuit including an optically active magnetic region for receiving and modulating said light beam and a non-magnetic gap region placed in the immediate vicinity of said optically active magnetic region, said gap region being narrow and elongated in a predetermined direction transverse to a direction of movement of the magnetic medium;

a flat optical waveguide integrally formed in the substrate, for configuring said light beam in a form of a flat light beam and propagating said flat light beam in a direction perpendicular to said predetermined direction, and for impinging said light beam onto said optically active magnetic region, the plane of the flat waveguide being parallel to said predetermined direction.

5,392,182

MODE CHANGING APPARATUS UTILIZING ONE CAM GEAR AND ONE SOLENOID FOR A CASSETTE TAPE RECORDER

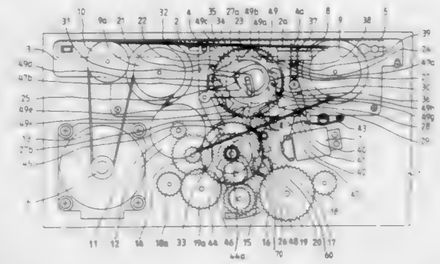
Hae S. Lee, and Sang D. Yu, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 27, 1992, Ser. No. 982,541

Claims priority, application Rep. of Korea, Nov. 29, 1991, 21802/1991; Dec. 6, 1991, 22354/1991

Int. Cl.[6] G11B *15/18*

U.S. Cl. 360—137 **13 Claims**



1. A mode changing apparatus utilizing one cam gear and one solenoid for a cassette tape recorder, comprising:

a main plate;

a drive motor on the main plate for generating drive power;

a stationary plate attached to and spaced apart from the main plate;

a movable plate movably supported between the main plate and the stationary plate;

power transmission means for transmitting the drive power from the drive motor;

a first reel gear for driving a reel of a tape cassette to carry out a play mode and a record mode;

a second reel gear for driving a reel of a tape cassette to carry out a reverse play mode and a reverse record mode;

selection means for selectively supplying the drive power from the transmission means to the first and second reel gears;

movable means for controlling the selection means to cause the selection means to selectively supply the drive power to the first and second reel gears and for moving the movable plate relative to the main plate;

a switch for activating the record mode or the reverse record mode of the tape recorder;

switch actuating means, cooperating with the movable plate, for actuating the switch in response to movement of the movable plate;

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first restriction means for restricting movement of the switch actuating means;

a solenoid attached to the main plate;

mode changing means for changing modes of the tape recorder in response to activation of the solenoid and for controlling the first restriction means to cause the switch actuating means to selectively actuate the switch in combination with the movement of the movable plate to activate the record mode and the reverse record mode of the tape recorder;

a cam assembly for controlling the movable means and the mode changing means to change the mode of the tape recorder, the cam assembly including;

a cam gear having a plurality of racks on the circumferential periphery of the cam gear with intervals therebetween, the cam gear being rotated when the racks engage with the power transmission means;

an outer cam on the cam gear and comprising a plurality of protuberances cooperating with the mode changing means for controlling movement of the mode changing means during rotation of the cam gear;

an inner cam on the cam gear and comprising a noncircular groove cooperating with the movable means for controlling movement of the movable means during rotation of the cam gear; and

a lower cam on the cam gear;

biasing means, cooperating with the lower cam, for causing the cam assembly to initially engage with the power transmission means; and

second restriction means, movable with rotation of the biasing means, for restricting rotation of the selection means to prevent tape from a tape cassette in the tape recorder from overrunning.

5,392,183

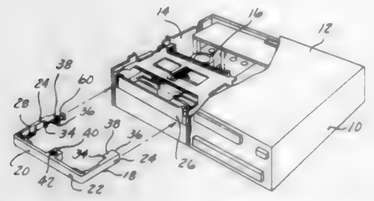
SERVICE CASSETTE EXTENSION FOR VIDEO CASSETTE RECORDER, PLAYER AND CAMERA

Yousif I. Rayis, 1720 Westwood, Maidson Heights, Mich. 48071

Filed Nov. 29, 1993, Ser. No. 159,444

Int. Cl.[6] G11B *23/02*

U.S. Cl. 360—137 **13 Claims**



1. A service cassette for a video cassette recorder, player and camera having a sensor for detecting the presence and absence of opaque magnetic video tape, and having a supply reel and a take-up reel with reel sensors to determine whether the supply reel and the take-up reel are rotating in order to maintain continuous operation of the video cassette recorder, player and camera, and the service cassette simulating the presence of a video tape cassette when inserted into the video cassette recorder, player and camera, for allowing a service technician to operate the video cassette recorder, player and camera in one or more operating modes to observe the operation of mechanisms internal to the video cassette recorder, player and camera that are normally obscured by the presence of a video tape cassette, the service cassette comprising:

a frame structure having at least a common member and two end members that each extend perpendicularly from and are rigidly connected to said common member, and said frame structure having at least one substantially open area between said end members to provide an open area that allows significant access to the tape handling system of the video cassette recorder, player and camera even when said service cassette is in a operating position for a video tape cassette within the video cassette recorder, player and camera;

means for actuating the sensor for detecting the presence and absence of opaque magnetic recording tape in the video cassette recorder, player and camera wherein the sensor is mounted beyond said frame structure of said service cassette so that said frame structure of said service cassette does not actuate the sensor when loaded in the video cassette recorder, player and camera; and

means for movably connecting said actuating means to said frame structure of said service cassette so that said actuating means moves between a retracted position, wherein said actuating means does not actuate the sensor, and an extended position, wherein said actuating means actuates the sensor.

5,392,184

METHOD AND APPARATUS FOR RELIEVING A CAPACITOR OF A CONTROLLED SERIES COMPENSATOR AS A FUNCTION OF THE LOAD ON ITS ARRESTER

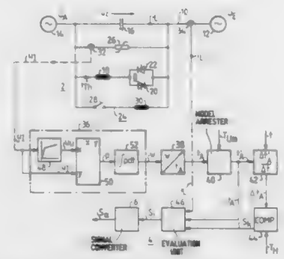
Franz-Josef Unterlass, Adelsdorf, and Stephan Weiss, Bad Mergentheim, both of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Filed May 18, 1993, Ser. No. 63,381

Claims priority, application European Pat. Off., May 20, 1992, 92108539

Int. Cl.[6] H02H *7/16*

U.S. Cl. 361—16 **15 Claims**



6. An apparatus for relieving a capacitor of a controlled series compensator as a function of a load on an arrester of the controlled series compensator when high-current line faults occur, wherein the capacitor and the arrester are in a parallel connection with each other, and wherein the capacitor is serially integrated to a transmission line to compensate for impedance of the transmission line, said apparatus comprising:

a load determining device determining a load on the arrester by determining an actual value of a current through the arrester of the controlled series compensator and determining the load on the arrester in the form of absorbed energy, from the determined actual value of the current through the arrester;

a conversion device converting the value of said absorbed energy into a temperature value for the arrester;

a model arrester correcting said temperature value for the arrester;

a differentiator determining an arrester temperature gradient using the corrected arrester temperature value; and

a comparator and an evaluator generating a control signal for a power converter valve of the controlled series compensator in dependence on a minimum temperature gradient, the corrected arrester temperature value, and an actual value for the line current, whereby the impedance value of the controlled series compensator is changed from a capacitative to an inductive impedance.

5,392,185

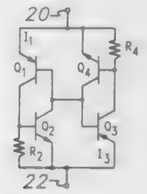
ELECTROSTATIC DISCHARGE PROTECTION DEVICE

Glen R. Haas, Jr., Plano, and Thomas E. Nagle, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 29, 1992, Ser. No. 890,899

Int. Cl.[6] H02H *9/04*

U.S. Cl. 361—56 **29 Claims**



1. A protection circuit comprising:

a first terminal contact;

an NPN heterojunction bipolar transistor;

a PNP bipolar transistor;

a base-emitter shunt resistor;

an emitter of said PNP transistor connected to said first terminal contact;

a base of said PNP transistor connected to a collector of said NPN transistor;

a collector of said PNP transistor connected to a base of said NPN transistor; and

an emitter of said NPN transistor connected to a second terminal contact, with said base-emitter shunt resistor connected between said base of said NPN transistor and an emitter of said NPN transistor.

5,392,186

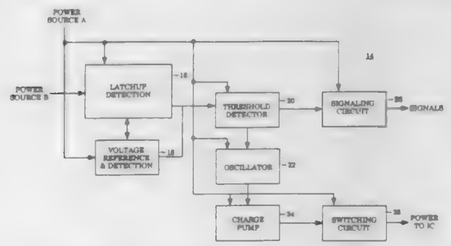
PROVIDING VARIOUS ELECTRICAL PROTECTIONS TO A CMOS INTEGRATED CIRCUIT

James W. Alexander, Hillsboro, and Louis Johnson, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 19, 1992, Ser. No. 962,886

Int. Cl.[6] H02H *3/24*

U.S. Cl. 361—92 **12 Claims**



1. A circuit for protecting a CMOS integrated circuit from latching up as a result of improper application of power to said CMOS integrated circuit, said CMOS integrated circuit receiving power supplies from more than one power source, said circuit comprising:

a) a latchup detection circuit coupled to said power sources of said CMOS integrated circuit for detecting certain predetermined power differential pattern between a first and the remainder of said power sources and sourcing a first output current in response;

b) a threshold detector coupled to said latchup detection circuit and said first power source for receiving said first output current from said latchup detection circuit and power from said first power source, and sourcing a second output current in response;

c) an oscillator coupled to said threshold detector and said first power source for receiving said second output current from said threshold detector and power from said first power source, and alternatingly sourcing a third and a fourth output current in response;

d) a charge pump coupled to said oscillator and said first power source for receiving said third and fourth output current alternatingly from said oscillator and power from said first power source, and providing a steady output voltage larger than said first power source' voltage; and

e) a switching circuit coupled to said charge pump, said first power source, and said CMOS integrated circuit for receiving said steady output voltage from said charge pump and power from said first power source, and closing itself in response, allowing said power from said first power source to be provided to said CMOS integrated circuit.

5,392,187

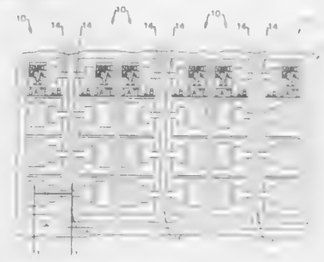
INTEGRATED CIRCUIT POWER DEVICE WITH TRANSIENT RESPONSIVE CURRENT LIMITING MEANS

Bantval J. Baliga, Raleigh, N.C., assignor to North Carolina State University at Raleigh, Raleigh, N.C.

Filed Aug. 12, 1992, Ser. No. 928,893

Int. Cl.[6] H01L *27/02*

U.S. Cl. 361—111 **15 Claims**



8. A power device comprising:

an integrated circuit;

a plurality of cell blocks formed in said integrated circuit and electrically connected in parallel, each of said cell blocks including at least one cell electrically connected in parallel, each cell handling a relatively small current so that said plurality of cell blocks electrically connected in parallel handle a relatively large current, at least one of said cell blocks being a defective cell block; and

a plurality of resistors formed in said integrated circuit, electrically connected to a respective one of said cell blocks, for limiting the leakage current into said cell blocks including said defective cell block without disabling said cell blocks;

whereby the input leakage current into defective cell blocks is limited without disabling said defective cell blocks, to provide an operable integrated circuit power device notwithstanding defective cell blocks therein.

5,392,188

POWER SURGE TRANSIENT VOLTAGE PROTECTION AND FILTERING CIRCUIT HAVING CURRENT CONTROLLING CHARACTERISTICS

Barry M. Epstein, 7523 Cliffbrook, Dallas, Tex. 75240

Continuation-in-part of Ser. No. 655,853, Feb. 15, 1991. This application Jun. 5, 1992, Ser. No. 894,658

Int. Cl.[6] H02H *9/04*

U.S. Cl. 361—118 **25 Claims**

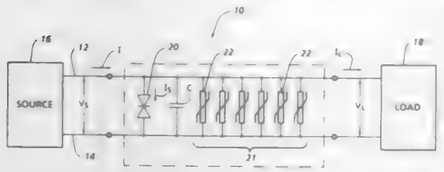
1. A surge protector network comprising:

A) supply conductors leading from a power source to a load;

B) a first voltage suppressor connected across said supply conductors, said first voltage suppressor having a minimum turn-on clamping voltage above which may damage the load;

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C) a voltage suppressor network connected across said supply conductors, said voltage suppressor network being connected to said supply conductors to be in parallel with said first voltage suppressor and including a plurality of voltage dependent varistors, each voltage dependent varistor being connected across said supply conductors in parallel with all other voltage dependent varistors and in parallel with said first voltage suppressor, each voltage dependent varistor having a minimum turn-on clamping voltage that is greater than said first voltage suppressor



turn-on clamping voltage and less than that voltage above which may damage the load; and

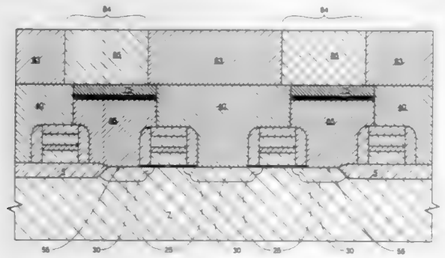
D) a filter element connected across said supply conductors to be in parallel with said first voltage suppressor and with all of said plurality of voltage dependent varistors.

5,392,189

CAPACITOR COMPATIBLE WITH HIGH DIELECTRIC CONSTANT MATERIALS HAVING TWO INDEPENDENT INSULATIVE LAYERS AND THE METHOD FOR FORMING SAME

Pierre C. Fazan, and Gurtej S. Sandhu, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Continuation-in-part of Ser. No. 44,331, Apr. 2, 1993. This application Aug. 10, 1993, Ser. No. 104,524
Int. Cl.[6] H01G *1/01*
U.S. Cl. 361—305 20 Claims



1. A capacitor having a storage node electrode, comprising:

a) a first electrically insulative region overlying a substrate;

b) a plug region having a bottom surface, a top surface, and a sidewall surface, said bottom surface contacting said substrate, said sidewall surface adjacent to said first electrically insulative region, and said top surface recessed from a top surface of said first electrically insulative region;

c) a diffusion barrier region overlying said plug region, said diffusion barrier region having a top surface, said top surface of said diffusion barrier region substantially planar to said top surface of said first electrically insulative region;

d) a second electrically insulative region overlying at least a portion of said first electrically insulative region; and

e) an protective region selected in order to prohibit oxidation of said storage node electrode, said protective region overlying and adjacent to at least a portion of said top surface of said diffusion barrier region, said diffusion barrier region minimizing a diffusion of atoms between said plug region and said protective region, said protective region having an upper sidewall surface and a lower sidewall surface, at least said lower sidewall surface adjacent to said second electrically insulative region and overlying said first electrically insulative region, at least said protective region forming the storage node electrode of the capacitor.

5,392,190

MANUFACTURING PROCESS OF A CAPACITOR WITH DELAYED AGEING AND A CAPACITOR MANUFACTURED ACCORDING TO THIS PROCESS

Alain Sebillotte, Epagny, and Serge Theoleyre, Aix les Bains, both of France, assignors to Merlin Gerin, France

Filed Dec. 8, 1992, Ser. No. 986,766
Claims priority, application France, Dec. 18, 1991, 91 15847
Int. Cl.[6] H01G *4/08*
U.S. Cl. 361—323 18 Claims

1. A process for manufacturing a capacitor having at least one winding having two metal armatures separated by at least one polypropylene film wherein said polypropylene film has an improved resistance to degradation of the dielectric strength of the polypropylene film during use of the capacitor, said process comprising

(a) providing a winding element, two metal armatures, a non-crosslinked polypropylene film, and polypropylene pre-cross-linking elements defined in (c) herein;

(b) forming a capacitor having at least one winding having two metal armatures separated by at least one non-cross linked polypropylene film; and

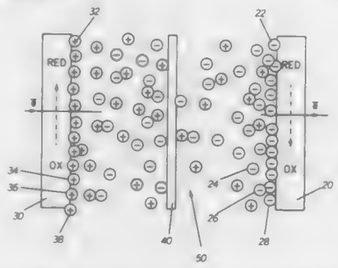
(c) incorporating polypropylene pre-cross-linking elements into said capacitor, said pre-cross-linking elements comprising a polyfunctional monomer having chain functions that, once they have been activated by an electrical field and/or heat during use of the capacitor, make a chemical bond with macromolecular polypropylene chains in the polypropylene film, whereby cross-linking of the polypropylene is generated by the action of an electrical field and/or heat in the course of use of the capacitor, so as to reduce the degradation of the dielectric strength of the polypropylene film, said capacitor having improved resistance to ageing caused by a decrease in dielectric strength, said improved resistance caused by formation of cross-links between said polypropylene pre-cross-linking elements and said polypropylene film during use of the capacitor.

5,392,191

TRANSITION METAL OXIDE ANODES FOR AQUEOUS PSEUDOCAPACITORS

George Thomas; Sathya Prasad, both of Plantation, Fla., and John E. Nerz, Hawthorn Woods, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 4, 1994, Ser. No. 285,677
Int. Cl.[6] H01G *1/005, 9/04*
U.S. Cl. 361—508 6 Claims



1. A multiphase anode material for an aqueous electrochemical capacitor, having at least one amorphous phase and having the formula:

$$TM_aO_bX_c$$

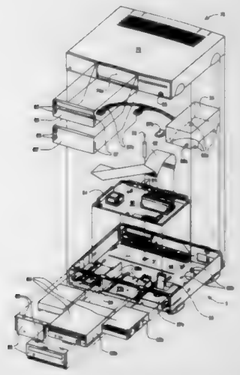
wherein TM is a transition metal selected from the group of Y, Zr, Ti, Hf, Nb, Sc and combinations thereof; O is oxygen; X is a modifier element selected from the group consisting of fluorine, chlorine, bromine, iodine, and combinations thereof; and a is between 0.1 and 3.0, b is between 1.0 and 7.0, and c is between 0.0 and 5.0.

5,392,192

METHODS AND APPARATUS FOR SNAP-TOGETHER COMPUTER CONSTRUCTION

C. Lorenzo Dunn, Los Gatos; John E. Johnston, San Francisco; David H. Titzler, San Jose, and Robert A. Yuan, Belmont, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 22, 1929, Ser. No. 35,007
Int. Cl.[6] H05K *7/14, 9/00;* H01R *13/648*
U.S. Cl. 361—683 18 Claims



1. In a personal computer system including a main processor board intercommunicating with at least one modular, internal peripheral subassembly, a computer enclosure comprising:

a base assembly, further comprising:

a chassis having a floor and first, second, third, and fourth sides, and having an interior region disposed therebetween; and

a subassembly tray mounted to said chassis within said interior region, said subassembly tray comprising a plurality of bays, one of said bays removably receiving said modular, internal peripheral subassembly:

a rear panel assembly detachably mounted to said base assembly, further comprising:

a rear panel having a first arrangement of connector openings; and

a rear EMI shield mounted to said rear panel, said rear EMI shield having a second arrangement of connector openings substantially similar to said first arrangement of connector openings; and,

a topcover assembly detachably mounted to said base assembly, further comprising:

a topcover having an integral front panel; and

a top EMI shield mounted to said topcover.

15. In a personal computer system including a main processor board intercommunicating with at least one modular, internal peripheral subassembly, a method for assembling a computer enclosure comprising the steps of:

providing a base assembly by forming a chassis of an electrically conductive material and functioning as a base EMI shield, said chassis having a floor and first, second, third, and fourth sides and an interior region disposed therebetween, and thereafter mounting a subassembly tray comprising a plurality of bays to said chassis within said interior region, one of said bays removably receiving said modular, internal peripheral subassembly;

detachably mounting a rear panel assembly to said base assembly, said rear panel assembly comprising a rear panel having a first arrangement of connector openings, said rear panel assembly further comprising a rear EMI shield mounted to said rear panel and having a second arrangement of connector openings substantially similar to said first arrangement of connector openings; and

detachably mounting to said base assembly a topcover assembly comprising:

a topcover having an integral front panel, and

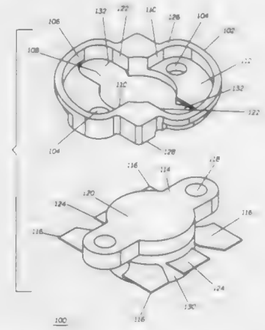
a top EMI shield mounted to said topcover.

5,392,193

TRANSISTOR MOUNTING DEVICE

William H. Robertson, Jr., Plantation; Chot Q. Pham, Coral Springs; Philip C. Warder, Plantation, and James L. Stephens, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 31, 1994, Ser. No. 251,445
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—704 15 Claims



1. A transistor mounting device, comprising:

first and second opposed sides;

a keyed aperture having a defined shape located through the first and second opposed sides;

at least one wall member located on the first side of the transistor mounting device, the wall member located at the edge of the keyed aperture;

at least one mounting pad located on the second side; and the keyed aperture has a set of extended aperture members and the at least one wall member is located at the edge of at least one of the extended aperture members.

5,392,194

CODING DEVICE FOR ASSEMBLING PLUGABLE ELECTRICAL ASSEMBLIES INTO A MODULE

Karl Zell, Niederpoecking; Juergen Seibold, Baierbrunn, and Peter Seidel, Groebenzell, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 18, 1993, Ser. No. 78,108
Claims priority, application Germany, Jun. 29, 1992, 9208701[U]
Int. Cl.[6] H05K *1/04*
U.S. Cl. 361—785 14 Claims

1. A coding device for electrical assemblies that can be inserted parallel to one another into a module frame and that are contacted to a wiring backplane of the module frame via plug devices attached at a back side of the electrical assemblies, comprising:

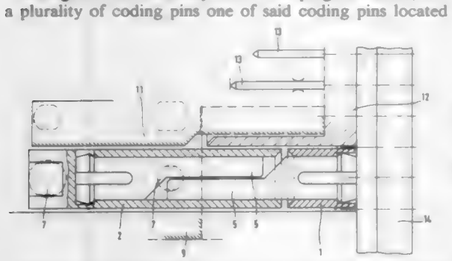
a wiring backplane;

an electrical assembly having a plug connector for connecting said assembly to the wiring backplane;

a coding flange having three quadratic first openings ar-

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ranged in a right angle pattern, the coding flange arranged on the wiring backplane between guard rails;
a coding housing likewise provided with three quadratic second openings arranged in a right angle pattern and arranged on the assembly next to the plug connector; and
a plurality of coding pins one of said coding pins located



within each of said first and second openings and which can be selectively oriented relative to and within the openings by 90° turns, the free ends of said coding pins being fashioned as tongues having a rectangular cross-section, whereby the area of the cross-section of each tongue is approximately equal to half the area of the cross-section of each quadratic first and second opening.

5,392,195

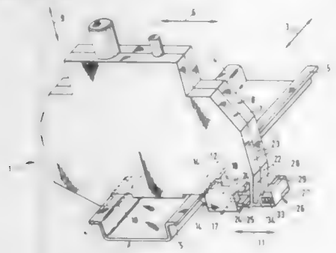
Patent Not Issued For This Number

5,392,196

ELECTRICAL INSTALLATION DEVICE FOR FASTENING TO A CARRIER RAIL

Josep Kinner, Burgthann, Germany, assignor to Ellenberger & Poensgen GmbH, Altdorf, Germany

Filed Dec. 8, 1993, Ser. No. 162,945
Claims priority, application Germany, Dec. 17, 1992, 9217260[U]
Int. Cl.[6] H05K *7/02*
U.S. Cl. 361—809 **15 Claims**



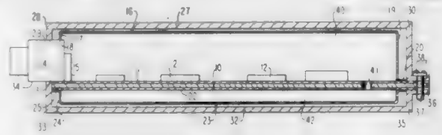
1. An electrical installation device for fastening in an attachment position on a carrier rail, a longitudinal extent of the carrier rail defining a carrier rail direction, with the device being moved in an attachment direction toward the carrier rail during fastening, said device comprising:
an instrument housing made of insulating plastic and having an instrument housing wall and a bottom facing the carrier rail in the attachment position;
a-sliding latch shaped in one piece to said instrument housing wall and being movable in a locking direction outside of the housing bottom transversely to the attachment direction and to the carrier rail direction;
a flexible web being spring elastic in the locking direction and connected between said sliding latch and said instrument housing wall;
a detent lug attached to said sliding latch and, in the locking direction, gripping behind the carrier rail;
an actuating end connected to said flexible web and facing away from said detent lug, said sliding latch being returned against a spring elasticity of said flexible web from a locked position into a release position by actuation of said actuating end; and
a longitudinal guide attached to said instrument housing wall,.wherein said sliding latch is guided in said longitudinal guide between said detent lug and said flexible web.

5,392,197

MOISTURE PROOF OF ELECTRIC DEVICE FOR MOTOR VEHICLES

Harald Cuntz, Crailsheim; Martin Rau, Oberiexingen, and Dieter Karr, Tiefenbronn, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE92/00683, § 371 Date Mar. 18, 1993, § 102(e) Date Mar. 18, 1993, PCT Pub. No. WO93/05635, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 14, 1992, Ser. No. 30,361
Claims priority, application Germany, Sep. 3, 1991, 4129238
Int. Cl.[6] H05K *9/00*
U.S. Cl. 361—818 **12 Claims**



1. Electric device comprising
a housing;
at least one printed circuit board arranged in said housing and carrying an electronic circuit; and
at least one covering means arranged in said housing and formed to protect said printed circuit board from moisture, said covering means being moisture-impermeable but being at least partially gas-permeable.

5,392,198

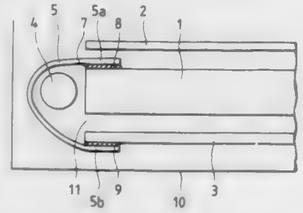
Patent Not Issued For This Number

5,392,199

BACK LIGHTING DEVICE

Keiji Kashima, Ebina-shi; Naoki Yoshida, Kawaski-shi, both of Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed Jun. 4, 1993, Ser. No. 70,916
Claims priority, application Japan, Jun. 4, 1992, 4-168338
Int. Cl.[6] F21V *7/04*
U.S. Cl. 362—31 **8 Claims**



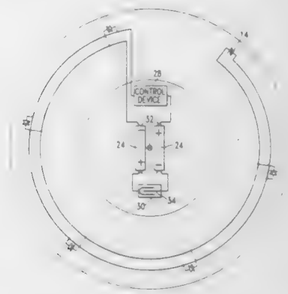
1. A back lighting device for a panel which comprises:
a light conducting plate (**1**) made of a light-transmissive material, said light conducting plate (**1**) having a light emerging surface and having a light diffusing function;
a light diffusing/reflecting plate or film (**3**);
a linear light source (**4**) provided in proximity to an end portion of at least one side of said light conducting plate (**1**);
a specular or light diffusing/reflecting plate or film (**5**) for covering said linear light source (**4**), wherein one end (**5***a*) of said specular or light diffusing/reflecting plate or film (**5**) is bonded to the light emerging surface of the light conducting plate (**1**) at the end portion of said light conducting plate (**1**) in proximity to said linear light source (**4**), and another end (**5***b*) of said specular or light diffusing-/reflecting plate or film (**5**) is disposed on the light diffusing/reflecting plate or film (**3**), wherein the light diffusing/reflecting plate or film (**3**) is provided through an air layer at least on a part of the rear surface of said light conducting plate which corresponds to said end portion thus bonded.

5,392,200

CIRCUIT FOR PROVIDING ILLUMINATION ON A MOTOR VEHICLE WHEEL

Marcus K. Milde, 61-15 251st St., Little Neck, N.Y. 11362-2435

Continuation-in-part of Ser. No. 9,022, Jan. 26, 1993. This application Feb. 25, 1994, Ser. No. 201,561
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 362—78 **18 Claims**



10. Circuit apparatus for providing illumination on a hub cap for a rotatable wheel, said hub cap having a central axis of rotation, said apparatus comprising:
(a) a plurality of electric lights arranged on said hub cap;
(b) an electric battery adapted to be arranged on said hub cap substantially at said central axis;
(c) a single inertial switch connected electrically in series between said battery and said electric lights and arranged on said hub cap in spaced relationship to said central axis and with such orientation as to be closed by centrifugal force upon rotation of said hub cap with said wheel when said hub cap reaches a prescribed minimum rotational speed; and
(d) control means connected electrically in series with the battery for switching the battery power on and off.

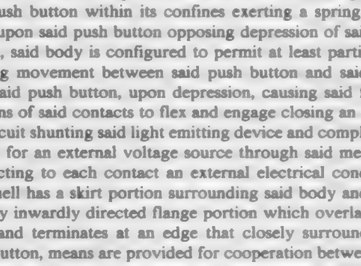
5,392,201

ROLLING MECHANIC'S LAMP

Robert M. Morley, and Mitchell E. Morley, both of 7477 Windgate Ct., Riverdale, Ga. 30274

Filed Jan. 31, 1994, Ser. No. 188,699
Int. Cl.[6] F21V *15/02, 33/00*
U.S. Cl. 362—61 **4 Claims**

1. A rolling mechanic's lamp, comprising:
a rectangular frame member having a centrally located, circular opening and at least one receptacle remote therefrom for article carrying purposes;
a reflector secured to said frame member in said centrally located circular opening for directing light through the top of said centrally located circular opening;
an electric bulb supported by said reflector within said centrally located circular opening for illuminating the area above said frame member;
a cage secured to the top of said frame member and disposed above said electric bulb, said cage further including a ring fitted about the periphery of said opening and a plurality of arches having first and second ends, each of which are joined to said ring in a spaced apart relationship;
a caster secured to each of the four corners of said frame member; and



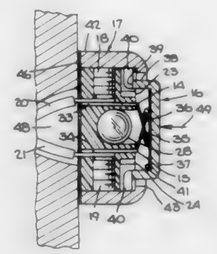
a handle joined to said frame member adapted for grasping by the human hand.

5,392,202

LOW PROFILE ILLUMINATED PUSH BUTTON

William L. Herron, Frederick, Md., assignor to Fred M. Schildwachter & Sons, Inc., Bronx, N.Y.

Filed May 13, 1994, Ser. No. 242,266
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—95 **14 Claims**

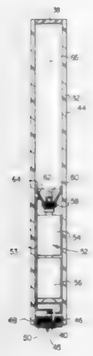


1. An illuminated low profile push button switch assembly comprising in combination a plug-like body, an electrically energizeable light emitting device, a pair of spaced apart electrically conductive spring metal contacts, a push button, a shell for joining said push button to said body, and means for separately connecting to each of said contacts an external electrical conductor, said contacts each having a tang secured within said body in electrical contact with means for establishing an electrical connection to said light emitting device, and a flexible portion extending from each of said tangs and projecting from said body for engagement by said push button, said push button is cup-shape and disposed for movement relative to said body with said flexible portions of said contacts bearing against said push button within its confines exerting a spring return force upon said push button opposing depression of said push button, said body is configured to permit at least partial telescoping movement between said push button and said body with said push button, upon depression, causing said flexible portions of said contacts to flex and engage closing an electrical circuit shunting said light emitting device and completing a circuit for an external voltage source through said means for connecting to each contact an external electrical conductor, said shell has a skirt portion surrounding said body and has a radially inwardly directed flange portion which overlaps said body and terminates at an edge that closely surrounds said push button, means are provided for cooperation between said shell and said button for securing said push button to said body, and light transmissive means are provided for enabling light

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emanating from said light emitting device to escape from said push button assembly.

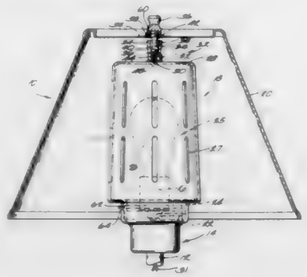
5,392,203
SIGNAL LIGHT ASSEMBLY AND METHOD OF MANUFACTURE
Theodore Harris, Jr., Raleigh, N.C., assignor to American Airlines, Inc., Dallas/Fort Worth Airport, Tex.
Filed Sep. 18, 1992, Ser. No. 947,302
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—186 **16 Claims**



1. A light signalling assembly comprising:
an elongate cylindrical hollow tubular member formed of translucent material for providing illumination therefrom and having a first illumination end and a second oppositely disposed actuation end, said member exhibiting a smooth, continuous outer surface for providing structural integrity and an elongate axis for determining the angular orientation of said member;
a light source disposed entirely within said hollow tubular member and including a lamp and a power source; and
a flush mounted control switch recessed entirely within the actuation end of said tubular member for selectively controlling the electrical connection between said lamp and said power source, said flush mounted control switch includes a generally cylindrical body portion having an elastomeric end responsive to pressure thereupon along said elongate axis for actuation of said flush mounted control switch.

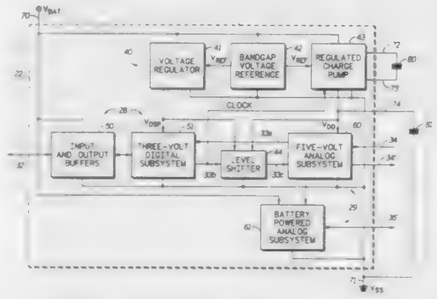
5,392,204
LAMP HAVING A DIFFUSER AND SHADE
Michael J. Schumaker, Milwaukee, Wis., assignor to Adjustable Fixtures Co., Milwaukee, Wis.
Filed Nov. 4, 1993, Ser. No. 147,693
Int. Cl.[6] F21V *1/10*
U.S. Cl. 362—294 **5 Claims**

1. A lamp including a first support which is cup shaped and has an open upper end, a lamp socket mounted in the open upper end of the first support, a diffuser mounted on the first support in surrounding relation to the lamp socket and defining an enclosed space for a lamp bulb, and a lamp shade,
said diffuser having a generally cylindrical sidewall, a top and a lower neck portion, the open upper end of said first support and the neck portion of said diffuser having complimentary threads so that the neck portion may be threaded into said first support to define an enclosed space, vent openings formed in the cylindrical side wall of said diffuser,
a first threaded member mounted on the top of said diffuser, a second threaded member for threadably engaging said first threaded member, said shade including a mounting member received between said first and second threaded members,
first releasable locking means for preventing the removal of



said lamp shade from the upper end of said diffuser and second releasable locking means for engaging threaded portions of said first support and said diffuser to prevent the removal of said diffuser from said first support.

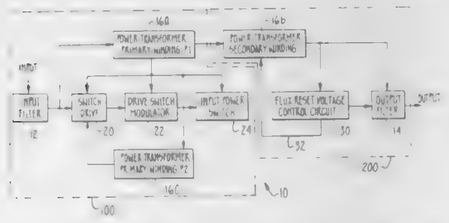
5,392,205
REGULATED CHARGE PUMP AND METHOD THEREFOR
Mauricio A. Zavaleta, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 7, 1991, Ser. No. 789,248
Int. Cl.[6] H02M *3/18*
U.S. Cl. 363—59 **19 Claims**



1. A regulated charge pump comprising:
a charge pump core for boosting a first voltage existing at a first
terminal of a charging capacitor during a first predetermined time period, by an amount equal to a first power supply voltage referenced to a second power supply
voltage during a second predetermined time period, and providing a regulated charge-pumped voltage in response, said charge pump core comprising first and second transistors;
said first transistor having a first current electrode for receiving
said first power supply voltage, a control electrode, and a second current electrode coupled to said first terminal of said charging capacitor;
said second transistor having a first current electrode for receiving said first power supply voltage, a control electrode, and a second current electrode coupled to said first terminal of said charging capacitor;

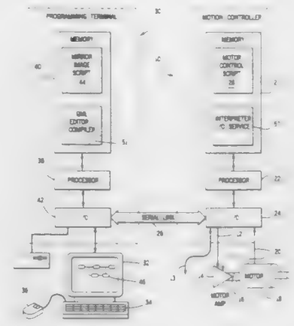
proportional means coupled to said control electrode of said first
transistor, for changing said first voltage proportionately in response to a difference between a reference voltage and a proportional voltage by altering a conductivity of said first transistor, said proportional voltage being a predetermined fraction of said regulated charge-pumped voltage, said predetermined fraction making said proportional voltage equal to said reference voltage when said regulated charge-pumped voltage is equal to a desired value; and
integrating means coupled to said control electrode of said second transistor, for further changing said first voltage proportionately in response to an integration of a difference between said proportional voltage and said reference voltage by altering a conductivity of said second transistor.

5,392,206
CONTROL CIRCUIT FOR A SWITCHING DC-DC POWER CONVERTER INCLUDING A CONTROLLED MAGNETIC CORE FLUX RESETTING TECHNIQUE FOR OUTPUT REGULATION
Allan L. Peterson, Escondido, and Hubert C. Martin, Temecula, both of Calif., assignors to Valor Electronics, Inc., San Diego, Calif.
Filed Feb. 12, 1993, Ser. No. 17,022
Int. Cl.[6] H02M *3/338*
U.S. Cl. 363—19 **40 Claims**



1. A self-oscillating DC-DC power converter comprising:
input means for accepting a DC voltage source;
a power transformer, responsive to the input means, having a first primary winding, a second primary winding, and a first secondary winding, wherein the first primary winding has a first terminal connected to the input means, and wherein the secondary winding has a first terminal connected to an output means;
a switch drive, operatively connected to the input means, the first primary winding and the second primary winding;
a first switch means, responsive to the switch drive, operatively connected to a second terminal of the first primary winding, for alternately and repeatedly applying the input means DC voltage to the first primary winding, the switch means controlling the on and off time of the power transformer corresponding to the on and off time of the switch means;
a regulator, connected to a second terminal of the first secondary winding, for regulating the output voltage of the power converter, wherein the regulator controls the reset voltage produced by the first secondary winding during the off time of the switch means, the regulator controlling the magnetic flux reset time of the power transformer by controlling the off time of the switch means;
output means, responsive to the regulator, for providing a regulated DC voltage at the output of the power converter.

5,392,207
PROGRAMMABLE MOTION CONTROLLER WITH GRAPHICAL PROGRAMMING AID
Gregory S. Wilson, Merrimack County, N.H.; David E. Halpert, Windsor County, Vt., and Mark A. Chaffee, Grafton County, N.H., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.
Filed Aug. 20, 1993, Ser. No. 109,783
Int. Cl.[6] G05B *19/18, 11/01*
U.S. Cl. 364—167.01 **5 Claims**



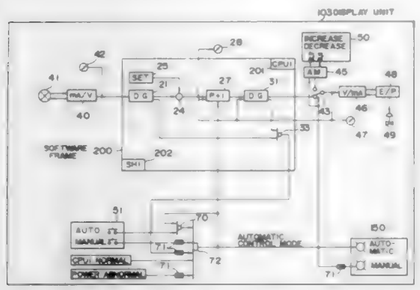
5. A method of programing a motion controller for the control of a motor comprising the steps of:
(a) selecting among a set of graphical icons to be displayed on an electronic display, each icon representing a sequential step in the control of the motor;
(b) interconnecting the selected icons to indicate the sequence of steps in the control of the motor;
(c) converting the selected icons into instructions of a control program following the sequence of interconnections;
(d) identifying portions of the control program into which the selected icons were converted;
(e) running instructions of the control program on the motion controller to control the motor until the portion of the control program associated with a first icon is run on the motion controller;
(f) modifying the appearance of the first icon;
(g) running additional instructions of the control program until no portion of the control program associated with the first icon is running on the motion controller; and
(h) awaiting a restart command before again running the control program.

5,392,208
PLANT CONTROL SYSTEM AND METHOD FOR DISPLAYING CONTROL CIRCUIT THEREOF
Atsushi Takita, Mito; Masato Okano, Hitachi; Haruya Tobita, Hitachi; Shinya Kikuchi, Hitachi; Yataro Suzuki, Ibaraki; Akira Sugano; Yukihiro Oda, both of Katsuta, and Akira Kaji, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering Co., Ltd., Ibaraki, both of Japan
Continuation of Ser. No. 581,457, Sep. 13, 1990, abandoned. This application Nov. 4, 1993, Ser. No. 147,039
Claims priority, application Japan, Sep. 13, 1989, 1-237882
Int. Cl.[6] G06F *15/46*
U.S. Cl. 364—188 **7 Claims**

1. A method for displaying on a display screen a control circuit including software and hardware circuits of a plant controlling system for controlling a plant by a controller using a microcomputer, said method comprising the steps of:
(a) segmenting said display screen into a software region and a hardware region;
(b) displaying said software circuit, which is realized by software being executed by said microcomputer, in said software region in graphics; and

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(c) displaying, at the same time said software circuit is being displayed, in said hardware region in graphics, said hardware circuit, said hardware circuit includes elements representative of parts of said plant and is controlled by



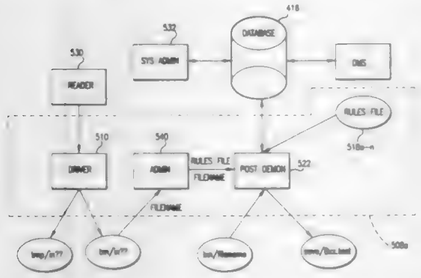
said controller based on said software being executed by said microcomputer, said software and hardware circuits being displayed such that input and output relationships between said software and hardware circuits are indicated.

5,392,209

METHOD AND APPARATUS FOR PROVIDING A DATA INTERFACE BETWEEN A PLURALITY OF TEST INFORMATION SOURCES AND A DATABASE

Reginald Eason, Gurnee, and Keith Forrest, Deerfield, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 18, 1992, Ser. No. 992,550
Int. Cl.[6] G06F *15/403*
U.S. Cl. 364—413.01 **22 Claims**



1. A method of extracting individual items of biological test data from a plurality of data files, each of the data files being received from a corresponding source and having different locations for storing individual items of biological test data therein, comprising the steps of:

receiving one of the data files from the corresponding source using a specified protocol;

generating at least one run file from the received data file;

examining the run file to identify specific locations of individual items of biological test data within the run file;

assigning a rules file to the run file which indicates the identified locations; and

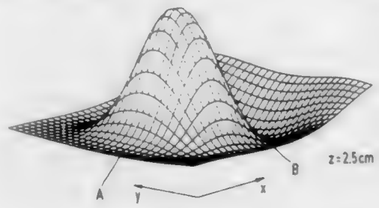
parsing the run file with the assigned rules file to extract the individual items of biological test data within the run file.

5,392,210

METHOD FOR LOCATING THE POSITION OF ELECTROPHYSIOLOGICAL ACTIVITIES

Bernhard Scholz, Forchheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 5, 1992, Ser. No. 924,978
Claims priority, application Germany, Aug. 16, 1991, 4126949
Int. Cl.[6] G06F *15/42*
U.S. Cl. 364—413.01 **11 Claims**



1. A method for identifying the location of endogenous, in vivo electrophysiological activities which generate a measurable magnetic and electrical field outside of an examination volume which can be represented by equivalent current dipoles located inside said examination volume, said method comprising the steps of:

measuring at least one of said magnetic and electrical fields in a first plurality of measurement space points outside said examination volume using a like, first plurality of measuring channels;

calculating locally optimum current dipole combinations respectively situated at a second plurality of different examination space points within said examination volume which generate a magnetic or electrical field at said measurement space points best coinciding with the field measured at said measurement space points;

calculating a least-squares function on the basis of said locally optimum current dipole combinations which compares said field generated by said locally optimum current dipole combinations in said first plurality of measurement space points with said measured field at said measurement space points, said least-squares function being function only of said examination space points within said examination volume;

calculating an exponential probability density function having a negative exponent containing said least-squares function;

calculating an anticipated location value of each current dipole combination on the basis of said probability density function, by forming a sum of said examination space points weighted with the corresponding probability density function and standardized with the overall probability of said examination space points, each anticipated location value corresponding to the location of an equivalent current dipole in said examination region; and

displaying the location of said equivalent current dipole combinations.

5,392,211

IMAGE PROCESSING APPARATUS

Mitsuo Oe, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 27, 1991, Ser. No. 799,281
Claims priority, application Japan, Nov. 30, 1990, 2-340305
Int. Cl.[6] G06F *15/42*
U.S. Cl. 364—413.14 **17 Claims**

1. An image processing apparatus for removing a residual image in an output image signal, receiving an image signal cyclically output from a TV camera, processing the image signal received, and outputting a processed image signal, the apparatus comprising:

means for storing a processed image signal Y_i where i is an integer and Y_i corresponds to an image number which precedes an image signal Y_{i+1} output from the TV camera by one cycle;

means for removing a residual image by multiplying the

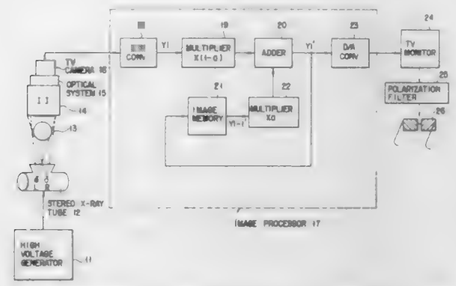


image signal Y_{i+1} output from the TV camera by a first coefficient and the processed image signal Y_i stored in said storing means by a second coefficient and adding the results of the two multiplications together; and

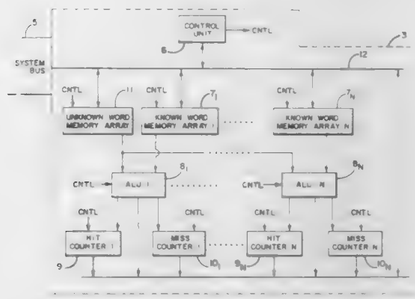
means for displaying an output of said removing means.

5,392,212

APPARATUS FOR IDENTIFYING UNKNOWN WORDS BY COMPARISON TO KNOWN WORDS

Jon C. Geist, Olney, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jul. 7, 1993, Ser. No. 86,982
Int. Cl.[6] G06F *15/21*
U.S. Cl. 364—419.11 **9 Claims**



1. An apparatus for comparing an unknown word to a plurality of known, dictionary words to identify the unknown word comprising:

a first memory area storing data corresponding to an unknown word;

a plurality of second memory areas, each second memory area respectively storing data corresponding to one of a plurality of known, dictionary words;

control means coupled to the first memory area and the second memory areas including an unknown word decoder for decoding each of the unknown words and for forming unknown word digraphs respectively representing the plurality of unknown words, the control means storing the unknown word digraphs in the first memory area and including a dictionary word decoder for decoding each of the plurality of dictionary words for each of the known, dictionary words and for forming a plurality of dictionary word digraphs from the known, dictionary words respectively representing the known, dictionary words, and the control means respectively storing each of the plurality of dictionary word digraphs in the plurality of second memory areas;

an arithmetic logic unit coupled to the first memory area and the second memory areas for comparing the unknown word digraphs to the dictionary word digraphs and generating an output signal indicating a hit when an unknown word digraph corresponds to at least one of the dictionary word digraphs; and

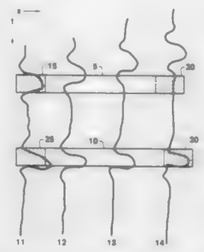
a hit counter for counting and indicating the number of hits.

5,392,213

FILTER FOR REMOVAL OF COHERENT NOISE FROM SEISMIC DATA

Louis M. Houston, and John R. Potter, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Oct. 23, 1992, Ser. No. 965,598
Int. Cl.[6] G01V *1/36*
U.S. Cl. 364—421 **22 Claims**



20. A computer-implemented method for attenuating coherent noise in a set of seismic data traces, said method comprising the steps of:

(a) substantially horizontally aligning said coherent noise;

(b) dividing at least a portion of said data traces into a plurality of time windows containing segments of said data traces;

(c) dividing each time window into a plurality of space-time windows;

(d) selecting a space-time window and comparing characteristics of wavelets on two neighboring data trace segments within said space-time window to determine the degree of similarity of said wavelets;

(e) comparing said degree of similarity to a predetermined threshold and using a smoothing function to alter a wavelet from one data trace segment within said space-time window for the purpose of subtracting said altered wavelet from a corresponding wavelet on a neighboring data trace segment within said space-time window;

(f) repeating steps (d) and (e) for each space-time window;

(g) repeating steps (c) through (f) for each time window; and

(h) removing said horizontal alignment.

5,392,214

CONTROL METHOD AND DEVICE FOR STEERING THE REAR WHEEL OF A VEHICLE

Nobuo Momose, Okazaki; Kiichi Yamada, Nagoya, and Hiroaki Yoshida, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1992, Ser. No. 985,149
Claims priority, application Japan, Dec. 3, 1991, 3-319260
Int. Cl.[6] B62D *5/00*
U.S. Cl. 364—424.05 **26 Claims**

26. A device for controlling the steering of the rear wheels of a vehicle, comprising:

determining means for determining a reference steering amount of the rear wheels in accordance with a steering

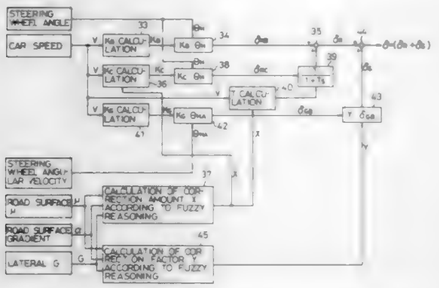
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condition of the front wheels when the vehicle makes a turn;

correcting means for correcting said reference steering amount in accordance with a condition of a road surface on which the vehicle is traveling to determine a rear-wheel steering amount;

steering means for steering the rear wheels according to said rear-wheel steering amount; and

fuzzy reasoning means for establishing in advance a plurality of fuzzy rules, which include a friction coefficient and a gradient of a driving road as fuzzy variables, calculating a



plurality of first and second levels of contribution of a traveling condition, which is represented by detected values of said friction coefficient and said gradient for the surface of the driving road to each of said plurality of fuzzy rules, and determining at least one correction amount based on correction values which are respectively set in said fuzzy rules in a manner that each of said fuzzy rules includes at least one corresponding correction value and said first and second levels of contribution to each of the respective fuzzy rules, said correcting means correcting said reference steering amount in accordance with the at least one correction amount.

5,392,215

AUTOMATIC CRUISING SPEED CONTROLLER FOR AN AUTOMOTIVE VEHICLE

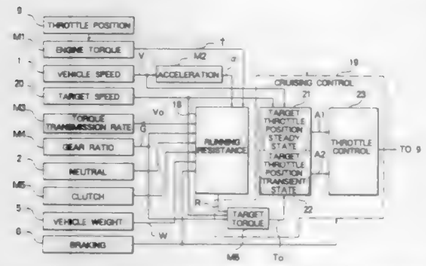
Shigeki Morita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1993, Ser. No. 105,122

Claims priority, application Japan, Aug. 17, 1992, 4-217874; Aug. 18, 1992, 4-219338

Int. Cl.[6] B60K *31/04*

U.S. Cl. 364—426.04 **13 Claims**



1. An automatic cruising speed controller for performing a constant speed cruising control of an automotive vehicle including an engine, an output torque of which is controlled by an adjustment of a throttle position of a throttle valve, said automatic cruising speed controller comprising:

vehicle speed detector means for detecting a current speed of said vehicle;

target vehicle speed set-up means for setting a target vehicle speed;

first target throttle position calculator means, coupled to said vehicle speed detector means and said target vehicle speed set-up means, for determining a first target throttle position for attaining said target vehicle speed during a steady state period, on the basis of said vehicle speed detected by said vehicle speed detector means and said target vehicle speed set by said target vehicle speed set-up means;

running resistance detector means for determining a running resistance of said vehicle;

engine set-up condition detector means for detecting an engine set-up condition including a gear ratio of a transmission inserted between an output shaft of said engine and road wheels of said vehicle;

target torque determination means, coupled to said running resistance detector means and said engine set-up condition detector means, for determining a target torque of said engine necessary for attaining said target vehicle speed during a transient period immediately after said constant speed cruising control of said vehicle is commenced or resumed, on the basis of said running resistance determined by said running resistance detector means and said gear ratio detected by said engine set-up condition detector means;

second target throttle position calculator means, coupled to said target torque determination means, for determining a second target throttle position for attaining said target vehicle speed during said transient period immediately after said constant speed cruising control of said vehicle is commenced or resumed, on the basis of said target torque determined by said target torque determination means; and

throttle control means, coupled to said first and second target throttle position calculator means, for adjusting said throttle position to said second target throttle position during said transient period immediately after .said constant speed cruising control of said vehicle is commenced or resumed, and to said first target throttle position during a steady state after said transient period.

5,392,216

AUTOMATIC SELECTION OF POSTAGE METER PRINT ELEMENT BASED ON MAIL CLASS SELECTION

Roman Bystrianyk, West Haven; Jacqueline Collins, Bridgeport; Terrence M. Doeberl, West Redding, and Kevin D. Hunter, Stratford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 22, 1991, Ser. No. 796,199

Int. Cl.[6] G07B *17/00*

U.S. Cl. 364—464.02 **5 Claims**

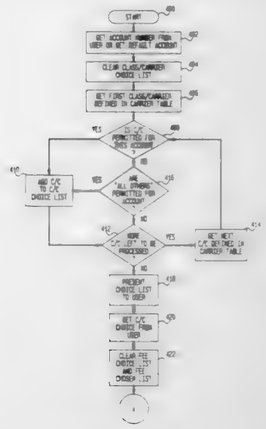
1. An imp,roved mail processing system having a postage meter for dispensing postage under the control of a microcomputer, said postage meter having a printing means for printing postage information on an envelope, a secure funds accounting system for accounting of gross funds expendid and gross funds available for posting, a departmental accounting system for accounting of funds dispensed for each of a plurality of department accounts, and data entry means for providing operator entry of data to said microcomputer, wherein said improvement comprises:

said microcomputer having;

a first memory means for storing possible carrier, carrier class and carrier fee sets;

a second memory means for storing permitted carrier, carrier class and carrier fee sets assigned to each of said department accounts, said permitted sets are a subset of said possible sets; and

said microcomputer being programmed, in response to said operator keying in through said data entry means one of said department accounts, to enable said permitted sets assigned to said keyed in department account and charge



said keyed in department account for funds dispensed for said envelope and subsequent envelopes.

5,392,217

APPARATUS AND METHOD FOR CONTROLLING ACCELERATION AND DECELERATION FOR NUMERICALLY CONTROLLED MACHINE

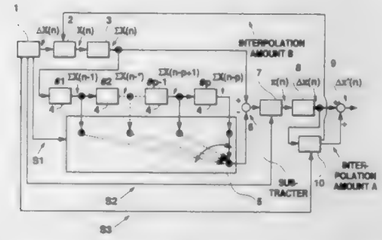
Masayuki Nashiki, and Hisashi Kondo, both of Niwa, Japan, assignors to Okuma Corporation, Niwa, Japan

Filed May 9, 1994, Ser. No. 240,183

Claims priority, application Japan, May 10, 1993, 5-108300

Int. Cl.[6] G05B *11/18*

U.S. Cl. 364—474.3 **4 Claims**



3. A method for controlling acceleration and deceleration of a numerically controlled machine, comprising the steps of:

accumulating positional moving amounts supplied from a host controller at each sampling period to calculate an absolute position;

further accumulating the absolute positions to calculate an accumulated value of the absolute positions;

storing the latest accumulated value of the absolute positions in a buffer register of a first stage among a plurality of serially connected buffer registers and outputting a value stored at the previous sampling time to a buffer register of a next stage;

reading out contents stored in a buffer register of a stage which is determined by a time constant-switching signal supplied from the host controller; subtracting the read out contents of the buffer register from the latest accumulated value of absolute positions;

dividing the subtracted result by a divisor determined by a divisor-switching signal from the host controller;

calculating a difference between the quotient of the current division and that at the previous sampling time; and in response to calculating said difference, producing a control signal to control acceleration and deceleration.

5,392,218

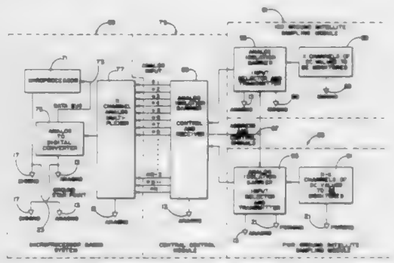
ELECTRICALLY ISOLATED APPROACH TO SENSING DC VOLTAGES REFERENCED TO A FLOATING GROUND

Jeffery Emmerich, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jun. 14, 1993, Ser. No. 75,965

Int. Cl.[6] G01R *33/00, 19/00, 21/133*

U.S. Cl. 364—483 **5 Claims**



1. An analog isolation barrier data acquisition system, comprising:

a plurality of satellite sampling modules each exclusively referenced to one of a plurality of floating grounds for sensing direct current (dc) voltages which are referenced to floating grounds, said satellite sampling modules comprising:

(a) means for selecting a de voltage signal to be monitored;

(b) means electrically connected to said de voltage signal selection means for modulating the selected de voltage signal to produce a modulated waveform; and

(c) barrier coupling means for transferring waveform information contained in said modulated waveform produced by said modulation means from a floating ground reference system to an analog ground reference system; and

a central control module coupled to said satellite sampling modules and referenced to an analog ground system comprising:

(a) means for generating a basis waveform for use by said modulation means of said satellite sampling modules as a carder waveform, said basis waveform generating means having control signal inputs and outputs to receive and transmit control and waveform status information;

(b) means electrically connected to said barrier coupling means for demodulating said modulated waveform information produced by said modulation means of said satellite sampling modules; and

(c) master control means for generating control logic signals referenced to a digital ground for use by said satellite sampling modules and by said demodulation means for controlling proper selection and demodulation of the de voltage signal to be monitored, said control logic signals being responsive to information received from said basis waveform generating means; and

means for isolating said control logic signals referenced to a digital ground system from said satellite sampling modules referenced to a floating ground system.

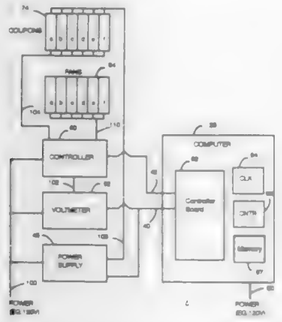
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5,392,219

DETERMINATION OF INTERCONNECT STRESS TEST CURRENT

Stephen M. Birch, Nepean; Gerard M. Gavrel, Alymer, and Zaffar I. Memon, Ottawa, all of Canada, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 6, 1993, Ser. No. 88,237
Int. Cl.[6] G01R *19/00*
U.S. Cl. 364—483 **21 Claims**



11. A method of determining a test current value, CURTEST, which is applied to a printed wiring board coupon during testing, said method comprising the steps of:

computing the resistance value, RESHITEMP, of a coupon which has an electrical circuit, at a predetermined temperature, HITEMP, to which the coupon is raised during testing;

computing an intermediate test current value, CURTEST$_{intx}$, which, when applied to the coupon, will change the resistance value of the coupon to RESHITEMP within a predetermined time, wherein during said computing step a first intermediate test current value CURTEST$_{int1}$ is computed using a first algorithm based on the resistance of the coupon measured at room temperature, RESROOM;

applying CURTEST$_{intx}$ to the coupon; and

modifying CURTEST$_{intx}$ if the measured value of the resistance value of the coupon was not RESHITEMP during the predetermined time to determine the test current value, CURTEST, applied during testing.

5,392,220

METHOD AND SYSTEM FOR ORGANIZING DATA

Peter van den Hamer, and Menno A. Treffers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 151,587, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 683,394, Apr. 10, 1991, abandoned. This application Apr. 25, 1994, Ser. No. 232,856
Claims priority, application European Pat. Off., Apr. 13, 1990, 90200919
Int. Cl.[6] G06F *15/40*
U.S. Cl. 364—488 **11 Claims**

1. A method for organizing and accessing data stored in a data management system, the data being one of generated by or utilized in a plurality of sub-processes of a single process, comprising the steps of:

generating a first set of flow nodes, each flow node representing a corresponding subprocess;

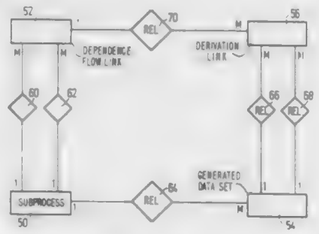
performing a flow node execution corresponding to the sub-process, wherein a portion of the data is one of utilized by the sub-process or generated by the sub-process;

linking the flow nodes to form a data flow model of the process by connecting a source flow node to a destination flow node to form a first directed-acyclic graph, wherein each flow link represents data generated by execution by the source flow node and required by the destination flow node;

generating a set of data nodes, each data node corresponding to one of the flow nodes for representing one execution of the corresponding flow node and the data generated by the corresponding flow node;

linking said data nodes to form a second directed-acyclic graph by connecting a source data node to a destination data node which represents a portion of the data represented by the source data node for generating data represented by the destination data node;

selecting a first subset of data nodes from the set of data nodes by selecting the data nodes which reference a selected flow node;



selecting a predetermined number of auxiliary subsets of data nodes, each auxiliary subset referencing one further flow node that is one of directly and indirectly linked as a source flow node to the further flow node by a flow link in the first directed-acyclic graph;

generating a final subset of data nodes from the first subset of data nodes by selecting data nodes in the first subset of data nodes for which the corresponding sub-process had utilized data corresponding to one of the data nodes in each of the auxiliary subsets of data nodes; and

accessing the data represented by the final subset of data nodes by mapping the data nodes to the data stored in the system.

5,392,221

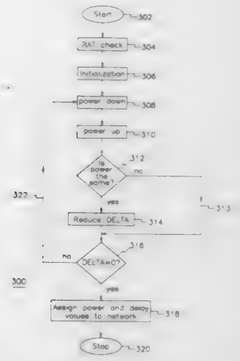
PROCEDURE TO MINIMIZE TOTAL POWER OF A LOGIC NETWORK SUBJECT TO TIMING CONSTRAINTS

Wilm E. Donath, Pleasantville; Wing K. Luk, Yorktown Heights, and Donald T. Tang, Mt. Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 12, 1991, Ser. No. 714,027
Int. Cl.[6] G06F *15/60*
U.S. Cl. 364—489 **21 Claims**

1. A computer-based method for minimizing the total power of a logic network, containing one or more circuit elements, subject to timing constraints, the computer-based method comprising the steps of:

(a) powering down the network such that an overall network delay is increased by DELTA and a total first order power decrease is maximized; and



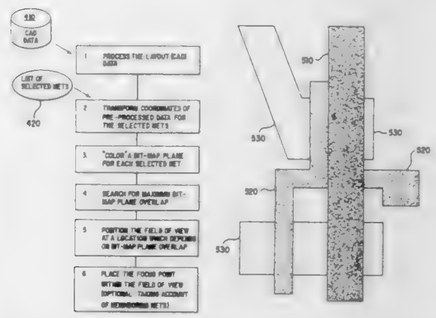
(b) powering up the network such that said overall network delay is decreased by said DELTA and said total first order power increase is minimized.

5,392,222

LOCATING A FIELD OF VIEW IN WHICH SELECTED IC CONDUCTORS ARE UNOBSCURED

Alan C. Noble, Santa Cruz, Calif., assignor to Schlumberger Technologies Inc., San Jose, Calif.

Filed Dec. 30, 1991, Ser. No. 816,639
Int. Cl.[6] G01R *31/28;* **H01J** *37/26*
U.S. Cl. 364—490 **39 Claims**



1. In a system comprising means for supporting an IC device having multiple physical layers and multiple internal nets, and controllable positioning means for positioning a field of view relative to the device, a method of positioning the field of view relative to the device such that multiple, selected nets of the device are-within the field of view, comprising the steps of:

a. preparing a processed data set which (1) describes each physical layer of the device as a plurality of reduced polygons, each reduced polygon having dimensions at least as great as a predetermined minimum feature dimension, and (2) associates each of the reduced polygons with a physical layer of the device and with at least one net of the device;

b. for each selected net, preparing a transformed data set which describes a plurality of dilated polygons associated with the selected net, each dilated polygon defining the periphery of a region encompassed by the field of view when a point within the field of view is traced around the periphery of a reduced polygon;

c. mapping a bit plane for each selected net, each mapped bit plane defining the two-dimensional extent of dilated polygons associated with the selected net;

d. identifying any two-dimensional overlap regions over which a plurality of the dilated polygons defined by the bit planes overlap one another; and

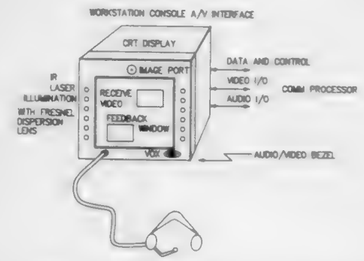
e. if at least one said overlap region is identified, controlling said controllable positioning means to position the field of view relative to said device at a location which corresponds to at least one said overlap region.

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AUDIO/VIDEO COMMUNICATIONS PROCESSOR

Joseph C. Caci, Owego, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 29, 1992, Ser. No. 921,536
Int. Cl.[6] G06K *15/00*
U.S. Cl. 364—514 **20 Claims**



1. An audio video communication processor system for coupling workstation units in a system which transmits audio and video information over a carrier, comprising:

a communication processor having a digital bus for intercoupling elements coupled to the communication processor, said communication processor having a plurality of network interface ports including a port for a network carrier signal and a port for a local loop carrier signal, means for transmitting information carried by the port carrier signals from one network port to another network port and from a coupled workstation to a network port;

a workstation interface, a video processor and an audio processor for processing video and audio information at a workstation level, said workstation interface, said video processor and said audio processor being interconnected to pass digital and analog signals therebetween and for passing digital information via said digital bus to said communications processor;

a channel frame processor connected to said digital bus for controlling communication over said digital bus; and

a statistical audio/video multiplexing processor connected to said digital bus for dynamically changing an allocation of bandwidth bits between audio and video information signals on the digital bus based on changes in an amount of activity of the audio or video signals during a transmission of the audio and video information signals.

5,392,224

MIDI THROUGH PORT HARDWARE EMULATOR

Alejandro R. Badia, Boca Raton, Fla.; David P. Pagnani, Endicott, N.Y., and Edward D. Shockley, Boynton Beach, Fla., assignors to IBM Corporation, Armonk, N.Y.

Filed Jul. 14, 1993, Ser. No. 91,954
Int. Cl.[6] G06F *15/60*
U.S. Cl. 364—514 **2 Claims**

1. A Musical Instrument Digital Interface emulator for testing the THRU port echo of a Musical Instrument Digital Interface device having an IN Port and an OUT Port connected to a host, said Musical Instrument Digital Interface being connected to the host through the IN Port and the OUT

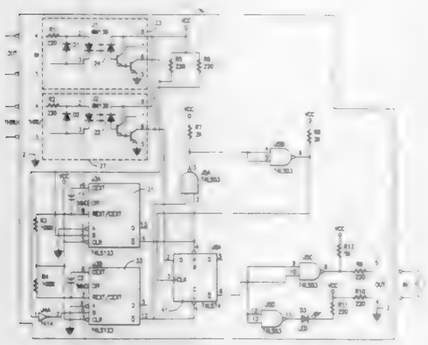
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Port, the IN Port and the Out Port being connected in a crossed mode IN Port to OUT Port and OUT Port to IN Port, said Musical Instrument Digital Interface emulator having circuit means for comparing the THRU port bitstream data to the OUT Port bitstream data and generating a result of the comparison, and comprising:

a. first means for taking bitstream data from and optically coupled to the THRU port of the Musical Instrument Digital Interface device;

b. second means for taking bitstream data from and optically coupled to the OUT port of the Musical Instrument Digital Interface device;

c. first and second monostable vibrator means for providing a pulse signal of the emulator IN port for the bit comparison of the port signals;



d. means for comparing the THRU port bitstream data to the OUT port bitstream data and generating a result of the comparison, said comparison means comprising D flip-flop means having:

i. data "D" connection from the emulator THRU port;

ii. data preset "PR" connection from the emulator IN port;

iii. data clear "CL" connection from the emulator IN port; and

iv. clock "CLK" connection from emulator IN port through pulsing means; and

e. means connected to the emulator OUT port for reporting the result of the comparison.

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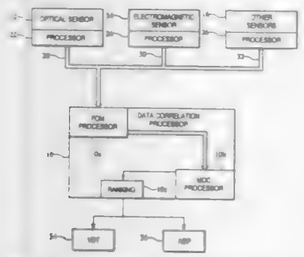
METHOD AND APPARATUS FOR CORRELATING TARGET DATA

Anne Marie D. Ward, Greenville, Tex., assignor to E-Sytems, Inc., Dallas, Tex.

Filed Oct. 20, 1992, Ser. No. 963,550

Int. Cl.[6] G01S *5/06*

U.S. Cl. 364—516 **23 Claims**



1. A method for correlating first target data having at least one dimension generated by an electromagnetic sensor with second target data having at least one corresponding dimension generated by an optical sensor, comprising the steps of:

generating a Figure of merit in each corresponding dimension related to the accuracy of a match between the first and second target data in the corresponding dimension; and

combining the Figures of merit generated from the corresponding dimensions to output a measure of correlation between the first target data and second target data indicative of the likelihood that the target detected by the electromagnetic sensor and the target detected by the optical sensor are the same target.

5,392,226

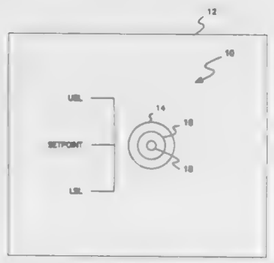
COMPUTER-IMPLEMENTED METHOD AND APPARATUS FOR MONITORING STATISTICAL PROCESS CONTROL DATA

Jeffrey L. Hamilton, Cedarburg, Wis., assignor to Icom, Inc., West Allis, Wis.

Filed Jun. 17, 1993, Ser. No. 78,462

Int. Cl.[6] G05B *17/00*

U.S. Cl. 364—551.01 **28 Claims**



1. A process monitoring apparatus, comprising:

(a) means for collecting measured data values representing one or more characteristics of a process at discrete intervals during its operation;

(b) means for storing the measured data values in a memory; and

(c) means for displaying a target control chart on a monitor, wherein the target control chart comprises a Specification Limits ball graphically depicting specification limits for the process, a Control Limits ball graphically depicting control limits for the process, and a Data Population ball graphically depicting one or more characteristics of a sample comprising at least one of the and wherein the Specification Limits ball, the Control Limits ball and the Data Population ball are displayed on the monitor in a manner to represent an interrelation between the specification limits for the process, the control limits for the process, and the characteristics of the sample, so that an ideal environment is represented by concentrically overlaying the Specification Limits ball, Control Limits ball and Data Population ball.

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SYSTEM AND METHOD FOR GENERATING ELECTRONIC CIRCUIT SIMULATION MODELS HAVING IMPROVED ACCURACY

Jay A. Hiserote, Beaverton, Oreg., assignor to Logic Modeling Corporation, Beaverton, Oreg.

Filed Jul. 24, 1992, Ser. No. 920,118

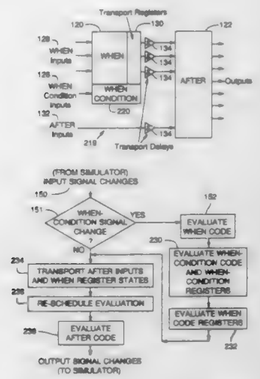
Int. Cl.[6] G06F *15/18*

U.S. Cl. 364—578 **9 Claims**

1. A method of making a simulation model of a logic circuit having synchronous and asynchronous subcircuits, each of the subcircuits including one or more elements, comprising the steps of:

describing the logic circuit with a net-list that lists the elements and associated interconnections among them;

tracing the net-list the logic circuit into AFTER code, WHEN code, and WHEN-CONDITION code partitions to accurately model functional boundaries between the synchronous and asynchronous subcircuits;



inserting a transport delay between the WHEN code and the AFTER code to accurately simulate the synchronous and asynchronous subcircuits; and

compiling the simulation model so that the partitioning is retained in the simulation modeling code, thereby resulting in a correct simulation of the logic circuit.

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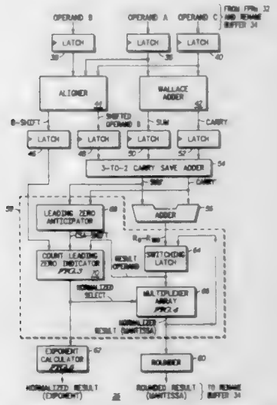
RESULT NORMALIZER AND METHOD OF OPERATION

Bradley G. Burgess; Timothy A. Elliott; Christopher H. Olson, and Terence M. Potter, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 6, 1993, Ser. No. 161,361

Int. Cl.[6] G06F *5/01, 7/50*

U.S. Cl. 364—715.04 **5 Claims**



1. A result normalizer for use with an adder, the adder receiving a first and a second operand, the adder generating a result logically equivalent to the sum of the first and second operand, the normalizer comprising:

first mask circuitry receiving the first and second operand, the first mask circuitry generating a first mask responsive to the first and second operands, the first mask indicating a position of a leading one within the result and a position adjacent to the position of the leading one;

second mask circuitry receiving the first mask and the result, the mask circuitry generating a second mask responsive to the first mask and to the result, the second mask indicating the position of the leading one within the result;

encoding circuitry coupled to the second mask circuitry, the encoding circuitry receiving the second mask, the encoding circuitry generating a first and a second control signal;

a first multiplexer coupled to the encoding circuitry, the first multiplexer receiving the result and the first control signal, the first multiplexer shifting the result a first number of digits responsive to the first control signal, the first multiplexer generating a shifted result; and

a second multiplexer coupled to the encoding circuitry and to the first multiplexer, the second multiplexer receiving the shifted result and the second control signal, the second multiplexer shifting the shifted result a second number of digits responsive to the second control signal, the second multiplexer generating a normalized result.

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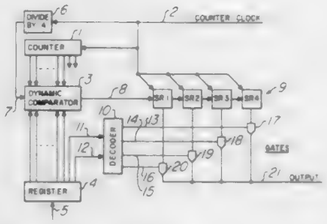
GRAPHICS PROCESSING APPARATUS WITH VIDEO MEMORY FOR STORING GRAPHICS DATA

Iain C. Robertson, Bedford, United Kingdom, assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 387,266, Jul. 28, 1989, Pat. No. 5,060,244. This application Mar. 26, 1991, Ser. No. 675,392

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—715.09 **10 Claims**



1. A video system comprising:

a video display;

a computing apparatus having an output to said video display and including:

a first register operative to hold a first data word;

a counter having a count register operative to hold count data, said counter operative to increment the count data;

a comparator connected to said first register and to said count register operative to compare the count data with the first data word to generate an output signal;

an output register connected to said comparator operative to receive the output signal from said comparator; and

a decoder connected to said first register operative to decode data from the first data word for controlling said output register.

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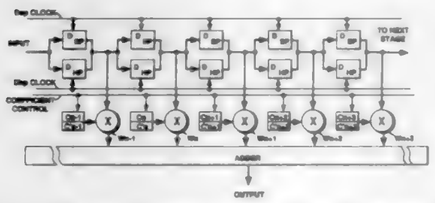
FIR FILTER APPARATUS FOR MULTIPLEXED PROCESSING OF TIME DIVISION MULTIPLEXED SIGNALS

Lauren A. Christopher, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Indianapolis, Ind.

Continuation of Ser. No. 921,790, Jul. 29, 1992, abandoned. This application Jul. 18, 1994, Ser. No. 276,690

Int. Cl.[6] G06F *15/31*

U.S. Cl. 364—724.13 9 Claims



1. A time division multiplexed sampled data FIR filter including delay, weighting and combining means for generating a sampled data filtered signal in which respective samples are a weighted combination of a plurality of relatively delayed samples of an input signal, said sampled data FIR filter comprising:

a source of time division multiplexed sampled data input signal including samples representing at least two signals;

a plurality of weighting circuits;

combining means;

a plurality of delay circuits, each of said delay circuits comprising first and second delay means connected to each other in parallel respective said delay circuits coupled in cascade connection, and including means for inputting samples exclusively to said first or said second delay means and for providing delayed samples exclusively from said first or said second delay means;

means for connecting said plurality of weighting circuits, said combining means and said plurality of delay circuits in an input weighted FIR filter configuration, and coupling such FIR filter to said source; and

means for conditioning said plurality of delay circuits to input samples to- and provide delayed samples from each of said first delay means on the occurrence of samples of a first of said at least two signals at said source, and to input samples to- and provide delayed samples from each of said second delay means on the occurrence of samples of a second of said at least two signals at said source.

5,392,231

WAVEFORM PREDICTION METHOD FOR ACOUSTIC SIGNAL AND CODING/DECODING APPARATUS THEREFOR

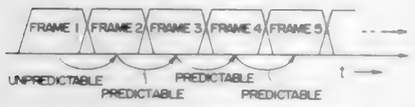
Susumu Takahashi, Tokyo, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 21, 1993, Ser. No. 7,133

Claims priority, application Japan, Jan. 21, 1992, 4-030076

Int. Cl.[6] G06F *7/548*

U.S. Cl. 364—725 6 Claims



1. A waveform prediction system for predicting a phase of an acoustic signal, comprising:

frame extracting means for sequentially extracting frames of the acoustic signal comprising sequential portions of the acoustic signal, each frame having a predetermined time duration, said frame extracting means extracting first and second sequential frames each having a first predetermined time duration at first and second instants of time, respectively;

first detection means connected to said frame extracting means for detecting a signal waveform of a first frame at said first instant of time;

second detection means connected to said frame extracting means for detecting a signal waveform of a second frame at said second instant of time;

orthogonal transform means for orthogonally transforming acoustic signal data in the first and second frames using a same window function for said first and second frames and generating data representative thereof;

conversion means for converting data with respect to a predetermined number of discrete frequencies of the data obtained from said orthogonal transform means into amplitude data and phase data;

determination means for determining for each discrete frequency, quantities of change of the phase data in said first and second frames;

phase prediction means for predicting phase data for each discrete frequency in said third frame such that quantities of phase data for said discrete frequencies are constant with respect to time, said third frame being a frame at a third instant of time which is subsequent to said second instant of time by an integer multiple of the difference between the first and second instants of time;

amplitude conversion means for converting amplitude data predicted on the basis of the amplitude data of said second frame and predicted phase data of said third frame to complex number data for each discrete frequency by coordinate transformation; and

inverse orthogonal transform means for implementing inverse orthogonal transform processing to said complex number data such that the data obtained is signal waveform data of said third frame.

5,392,232

SEMICONDUCTOR MEMORY DEVICE

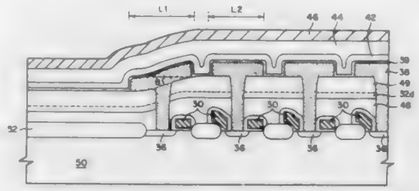
Kyeong T. Kim, and Ji H. Ahn, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Aug. 9, 1993, Ser. No. 103,267

Claims priority, application Rep. of Korea, Aug. 8, 1992, 14243

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—51 6 Claims



1. A semiconductor memory device comprising: a plurality of bit lines; a plurality of word lines intersecting said bit lines, and a memory cell array having a plurality of memory cells connected to said bit lines and word lines, each said memory cell being sequentially covered with an insulating layer and a metal layer, and each said memory cell having a switching transistor and a capacitor, said switching transistor having a gate electrode comprising a respective one of said word lines spaced apart from a channel formed between active regions of a second conductivity type formed in a semiconductor substrate of a first conductivity type by means of a gate insulating layer formed on said channel, said capacitor comprising a storage electrode contacted with a respective one of said active regions, said storage electrode of an outermost memory cell in said memory cell array sloping toward a periphery of said memory cell array to form a predetermined inclination angle with respect to said semiconductor substrate, said metal layer extending over said outermost memory cell.

5,392,233

READ ONLY MEMORY CAPABLE OF REALIZING HIGH-SPEED READ OPERATION

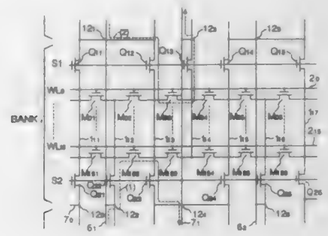
Taira Iwase, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 16, 1992, Ser. No. 991,642

Claims priority, application Japan, Dec. 16, 1991, 3-332071

Int. Cl.[6] G11C *17/00, 11/34*

U.S. Cl. 365—104 9 Claims



1. A read only memory (ROM) provided with a basic storage region forming a basic unit, said basic storage region comprising:

a plural number of bit lines which are repeatedly arranged in single unit groups of four parallel bit lines each;

a plural number of word lines-which are arranged so as to intersect said bit lines;

a memory cell transistor group having intersections of said bit lines and said word lines being made source regions and drain regions of a plurality of memory cell transistors in said memory cell transistor group, and portions between said intersections being made channel regions for said memory cell transistors;

a plural number of main bit lines, with each of said main bit lines connected to one end of a second bit line of a respective one of said single unit groups via a transistor and connected to an end on a forward direction side of a first and third bit lines of each said respective one of the single unit groups via transistors, and said main bit lines being arranged in a direction of said bit lines; and

a plural number of virtual ground lines, with each of said virtual ground lines connected to one end of a fourth bit line of each said respective one of the single unit groups and connected to an end on a reverse direction side of said third bit line of each said respective single unit group, and connected to an end of a reverse direction side of said first bit line of a next unit group via a transistor.

5,392,234

SEMICONDUCTOR MEMORY DEVICE

Hiroshige Hirano, Nara; Tatsumi Sumi, Osaka; Nobuyuki Moriwaki, and George Nakane, both of Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 2, 1993, Ser. No. 161,328

Claims priority, application Japan, Dec. 2, 1992, 4-322983

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—145 24 Claims

1. A semiconductor memory device comprising:

an amplifier,

a first bit line and a second bit line connected to the amplifier,

a first ferroelectric capacitor having a first electrode and a second electrode,

a first word line and a second word line,

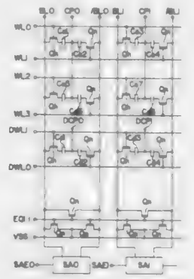
a first MOS transistor having

a gate connected to the first word line,

a source connected to the first electrode of the first ferroelectric capacitor, and

a drain connected to the first bit line,

a first plate electrode connected to the second electrode of the first ferroelectric capacitor,



a second ferroelectric capacitor having a first electrode and a second electrode, and

a second MOS transistor having a gate connected to the second word line,

a source connected to the first electrode of the second ferroelectric capacitor, and

a drain connected to the second bit line,

a second plate electrode connected to the second electrode of the second ferroelectric capacitor,

wherein a logic voltage of the second plate electrode is inverted after turning off the second MOS transistor.

5,392,235

SEMICONDUCTOR MEMORY DEVICE

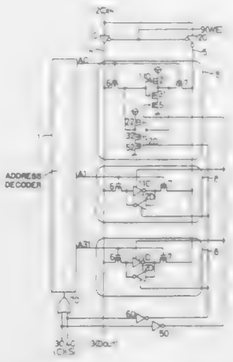
Kazuharu Nishitani, and Masao Takiguchi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,428

Claims priority, application Japan, May 26, 1992, 4-160132

Int. Cl.[6] G11C *11/00*

U.S. Cl. 365—154 5 Claims



1. A semiconductor memory device comprising:

a data line for receiving a voltage and an inverted data line

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having a voltage inverted relative to the voltage received by said data line; and

a plurality of memory elements connected to said data line and said inverted data line, each memory element comprising:

a first selection transistor having an input connected to said data line, a gate connected to an address line of an address decoder, and an output, and a second selection transistor having an input connected to said inverted data line, a gate connected to said gate of said first selection transistor, and an output, said first and second selection transistors selecting said memory element for writing in data and reading out data through said data line and said inverted data line, respectively, in response to an address signal applied to the address line by the address decoder;

first and second inverters, each of said first and second inverters comprising a first p channel transistor having a gate and a first n channel transistor having a gate, said first p channel transistor and said first n channel transistor of each inverter being connected in series, having the respective gates connected together as an input terminal of said inverter, a junction of the series-connected first p channel transistor and first n channel transistor being an output terminal of said inverter wherein said input terminal of said first inverter and said output terminal of said second inverter are connected to said output of said first selection transistor and said output terminal of said first inverter and said input terminal of said second inverter are connected to said output of said second selection transistor; and

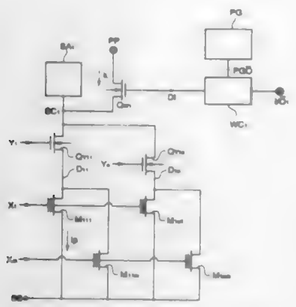
a second p channel transistor connected in series with said first p channel transistor of one of said first and second inverters, said second p channel transistor having a gate connected, for receiving an initialization signal, to an initialization terminal of the address decoder.

5,392,236

SEMICONDUCTOR MEMORY DEVICE

Kiyokazu Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 84,022
Claims priority, application Japan, Jun. 30, 1992, 4-196392
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185 **4 Claims**



1. A semiconductor memory device comprising:

a plurality of digit lines;

a plurality of electrically programmable memory cells arranged in rows and columns, each of said plurality of electrically programmable memory cells arranged in said columns having a drain connected in common to an associated digit line,

a plurality of X-address lines corresponding in number to a number of said rows, a gate of each of said plurality of electrically programmable memory cells in each of said rows being connected to a corresponding one of said plurality of X-address lines,

a plurality of Y-address selection MOSFETs corresponding in number to a number of said columns, each of said Y-address MOSFETs having a source connected to a corresponding one of said digit lines and a gate connected to a corresponding Y-address line,

a sense amplifier connected to a drain of each of said Y-address selection MOSFETs,

a write control MOSFET having a source connected to said drain of each of said Y-address selection MOSFETs and a drain connected to a write voltage supplying terminal,

a data input buffer connected to a data input terminal and having a high voltage receiving terminal so as to supply a high voltage to a gate of said write control MOSFET in accordance with a signal supplied to said data input terminal, and

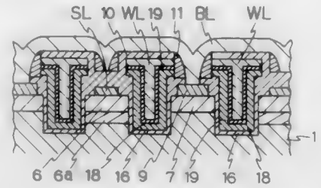
a write voltage setting circuit having an output connected to said high voltage receiving terminal of said data input buffer, wherein said write voltage setting circuit generates an output voltage, which is supplied to said gate of said write control MOSFET via said data input buffer, wherein a level of said output voltage is responsive to temperature changes to supply said plurality of electrically programmable memory cells with a substantially constant write voltage.

5,392,237

SEMICONDUCTOR MEMORY DEVICE WITH EEPROM IN TRENCH WITH POLYSILICON/METAL CONTACTING TO SOURCE AND DRAIN IN VIRTUAL GROUND TYPE ARRAY

Kunio Iida, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 27, 1993, Ser. No. 96,995
Claims priority, application Japan, Sep. 25, 1992, 4-256809
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—185 **3 Claims**



1. A semiconductor memory device comprising:

a plurality of nonvolatile memory elements arranged in a matrix configuration, each of the memory elements having a field effect transistor including a floating gate, an interlayer insulating film and a control gate electrode which are sequentially stacked on an insulating film covering a semiconductor substrate;

a plurality of pairs of source and drain regions respectively formed in the semiconductor substrate on both sides of the gate electrode;

polysilicon lines formed on the substrate, said polysilicon lines electrically connect the source regions; and

polysilicon electrodes formed on the drain regions upon which metal lines are connected,

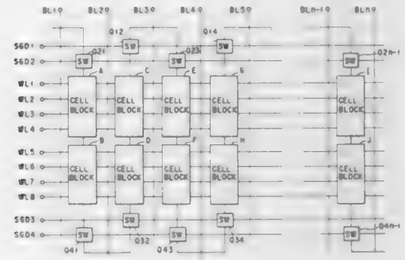
wherein the floating gate, interlayer insulating film and control gate electrode being formed in a recess provided in the semiconductor substrate.

5,392,238

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Ryouhei Kirisawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 11, 1994, Ser. No. 226,474
Claims priority, application Japan, Apr. 12, 1993, 5-084497
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—185 **7 Claims**



1. A semiconductor nonvolatile memory device comprising:

a first cell block having a current path and a plurality of memory cells;

a second cell block having a current path and a plurality of memory cells, said current path of said second cell block having an end connected to a corresponding end of said current path of said first cell block;

a first line electrically connected to the other end of the current path of said first cell block;

a second line electrically connected to the other end of the current path of said second cell block; and

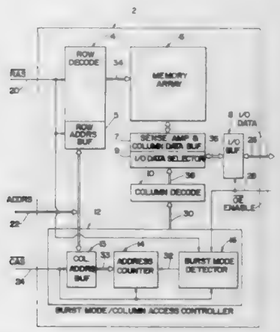
switch means for causing said first and second lines to operate as a bit line and a source line, respectively, depending on which one of said cell blocks is selected for data retrieval.

5,392,239

BURST-MODE DRAM

Neal D. Margulis, Santa Clara, and Takatoshi Ishii, Sunnyvale, both of Calif., assignors to S3, Incorporated, Santa Clara, Calif.

Filed May 6, 1993, Ser. No. 59,029
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.01 **10 Claims**



10. A storage device comprising:

a memory;

first address lines for receiving a row address and a column address;

a controller coupled to the address lines for generating at least one burst address based on the column address, the controller comprising:

a signal detector for concurrently detecting a burst enable signal and a row address strobe signal ($\overline{RAS}$) to define a burst mode; and

means for generating a burst address when a column address strobe $\overline{CAS}$ signal is applied during the burst mode;

second address lines coupled to the controller for receiving the burst address; and

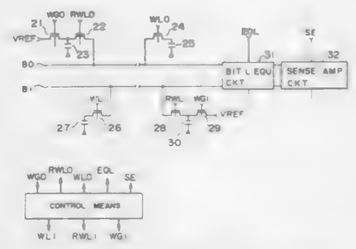
means coupled to the first address and second address lines for accessing the memory according to the row address and the burst address.

5,392,240

SEMICONDUCTOR MEMORY DEVICE

Kazuyoshi Muraoka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 29, 1993, Ser. No. 83,189
Claims priority, application Japan, Jun. 29, 1992, 4-171227
Int. Cl.[6] H01L *27/10*
U.S. Cl. 365—189.01 **20 Claims**



1. A semiconductor memory device, comprising:

a first bit line connected to a memory cell via first switching means;

a second bit line connected to a reference cell via second switching means;

reference potential writing means for writing a reference potential in said reference cell;

equalizing means for equalizing said first and second bit lines in potential;

a sense amplifier for detecting data in said memory cell on the basis of a difference in potential between said first and second bit lines; and

control means fo. reading data in said memory cell and data in the reference cell to said first bit line and said second bit line, respectively, and thereafter for activating said sense amplifier and substantially simultaneously turning off said second switching means.

5,392,241

SEMICONDUCTOR MEMORY CIRCUIT WITH BLOCK OVERWRITE

Edward Butler, Jonesville, Vt.; Ronald A. Sasaki, San Jose, Calif.; Robert Tamlyn, Jericho, and Endre P. Thoma, Colchester, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1993, Ser. No. 165,778
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.01 **20 Claims**

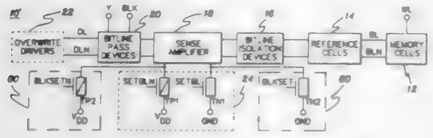
1. A method for block overwriting data onto at least two selected bit line pairs of a plurality of bit line pairs in an array of memory cells while maintaining data appearing on unselected bit line pairs of the plurality of bit line pairs, each bit line pair having an associated sense amplifier for clamping data appearing thereon, each sense amplifier being controlled by a set signal having a strength which dictates how strongly data

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is clamped by the sense amplifier, said block overwriting method comprising the steps of:

(a) decoding a block overwrite request;

(b) reducing the strength of the set signal applied to the sense amplifiers without floating the sense amplifiers such that data appearing thereon are maintained; and



(c) block overwriting data onto at least two selected bit line pairs of the plurality of bit line pairs, whereby reducing the strength of the set signal prior to block overwriting of data onto selected bit line pairs facilitates the block overwriting without compromising data appearing on unselected bit line pairs.

5,392,242

SEMICONDUCTOR MEMORY DEVICE WITH SINGLE DATA LINE PAIR SHARED BETWEEN MEMORY CELL ARRAYS

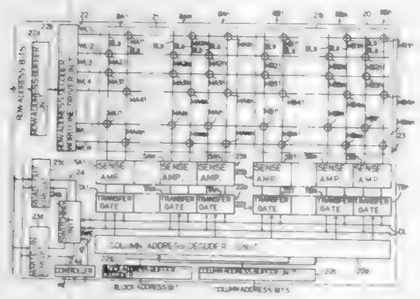
Hiroki Koike, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,669

Claims priority, application Japan, Jun. 4, 1992, 4-143879

Int. Cl.[6] G11C *7/00, 11/34*

U.S. Cl. 365—189.03 **9 Claims**



1. A semiconductor memory device comprising:

a) a plurality of memory cell arrays having respective block addresses, and each having a plurality of addressable memory cells having respective row addresses and respective column addresses, said row addresses and said column addresses being shared between said plurality of memory cell arrays;

b) a row addressing means responsive to first address bits for selecting rows of memory cells from said respective memory cell arrays;

c) a plurality sets of data propagation paths respectively coupled with said plurality of memory cell arrays for propagating data bits;

d) a data line pair shared between said plurality of memory cell arrays;

e) a column address decoder means responsive to second address bits for selecting one of the data propagation paths incorporated in said plurality sets of data propagation paths;

f) a plurality of column selecting means respectively coupled between said plurality sets of data propagation paths and said data line pair, and operative to couple said one of said data propagation paths with said data line pair under the control of said column address decoder means;

g) a read-out circuit for producing an output data signal from one of said data bits;

h) a write-in circuit for producing one of said data bits from an input data signal; and

i) a switching-means operative to couple said data line pair with one of said read-out circuit and said write-in circuit.

5,392,243

SEMICONDUCTOR MEMORY CIRCUIT HAVING LOWER VOLTAGE SUPPLY FOR DATA READING LINES

Kazuyuki Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 7, 1993, Ser. No. 1,657

Claims priority, application Japan, Jan. 16, 1992, 4-005265

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—190 **8 Claims**



1. A memory circuit comprising:

a pair of data reading lines;

a plurality of semiconductor memory cells each connected to said pair of data reading lines;

a first supply bus connected to a high level supply voltage for supplying power to said memory circuit;

a second supply bus;

a single N-channel MISFET having a gate and a drain connected to said first supply bus and having a source connected to said second supply bus, said N-channel MISFET clamping said second supply bus at a second voltage lower than said high level supply voltage;

a first pair of P-channel MISFETs each having a source connected to said second supply bus and each having a drain connected to a corresponding one of said pair of data reading lines, said first pair of P-channel MISFETs providing said second voltage to said pair of data reading lines according to a write enable signal applied to each gate of said first pair of P-channel MISFETs;

a second pair of P-channel MISFETs each having a source connected to a corresponding one of said pair of data reading lines;

a wired OR circuit comprising a pair of emitter follower bipolar transistors each having a base connected to a corresponding one of said pair of data reading lines through a respective one of said second pair of P-channel MISFETs; and

a current mode bipolar sense amplifier connected to each emitter of said pair of emitter follower bipolar transistors.

5,392,244

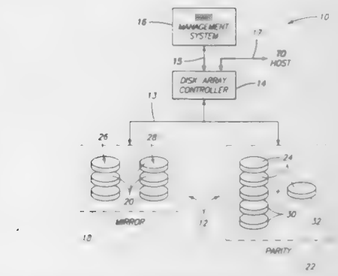
MEMORY SYSTEMS WITH DATA STORAGE REDUNDANCY MANAGEMENT

Michael B. Jacobson; John W. Fordemwalt; Douglas L. Voigt; Marvin D. Nelson, all of Boise, Id.; Hamid Vazire, Palo Alto, and Robert Baird, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 19, 1993, Ser. No. 109,137

Int. Cl.[6] G06F *11/00, 15/02*

U.S. Cl. 365—200 **11 Claims**



1. A method for managing data on a disk array, comprising the following steps:

providing physical storage space on a disk array of plural disks;

mapping the physical storage space into a first virtual storage space having first and second RAID areas, the first RAID area having first allocation blocks for holding data according to a first RAID level and the second RAID area having second allocation blocks for holding data according to a second RAID level;

mapping the first virtual storage space into a second virtual storage space having multiple virtual blocks, the first and second virtual blocks being associated with the first and second allocation blocks in respective RAID areas via a virtual block table;

selecting a first virtual block associated with a first allocation block in a first RAID area;

locating a second allocation block in a second RAID area;

transferring selected data from said first allocation block to said second allocation block so that the selected data once stored according to the first RAID level is now stored according to the second RAID level; and

modifying the virtual block table to reflect the transfer data to the second RAID area.

5,392,245

REDUNDANCY ELEMENTS USING THIN FILM TRANSISTORS (TFTS)

Monte Manning, Kuna, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Aug. 13, 1993, Ser. No. 106,497

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **32 Claims**

1. A method for shifting the threshold voltages of thin film transistors (TFTs) in a redundancy repair circuit fabricated on a supporting substrate, said method comprising:

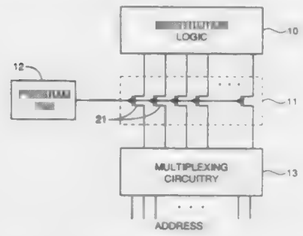
using a programming pad connected serially to the control gates of a plurality of TFTs;

selecting individual TFTs;

shorting one of the output terminals of each selected TFT to a first potential;

shorting one of the output terminals of each remaining (non-selected) TFTs to a second potential, therefore producing an approximate 5 V offset between said first and second potentials; and

applying a programming signal to said programming pad, said programming signal is sufficient to cause the threshold voltage of each selected TFTs to shift by injecting charge into the TFT's gate insulation region while not



affecting the threshold voltage of each individual said non-selected TFT.

5,392,246

SEMICONDUCTOR MEMORY WITH MULTIPLE SETS & REDUNDANT CELLS

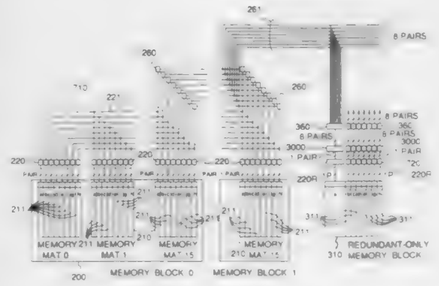
Noboru Akiyama, Katsuta; Kinya Mitsumoto, Tamamuramachi; Takashi Akioka, and Seigoh Yukutake, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,161

Claims priority, application Japan, Mar. 3, 1993, 5-042362; Aug. 20, 1993, 5-206372

Int. Cl.[6] G11L *7/00*

U.S. Cl. 365—200 **31 Claims**



1. A semiconductor memory comprising:

a plurality of memory mats having a plurality of unit arrays of columns for replacing in which a memory cell group connected to a data line and a word line is disposed;

a plurality of memory blocks having a plurality of said memory mats;

first data selection means which transmits a signal supplied from a data line in accordance with a command if a selected unit array of columns for replacing among a group of unit arrays of columns for replacing has no defect in each memory mat and which inhibits signal output from said data line regardless of said command if the same has a defect;

a redundant memory block having a plurality of unit arrays of redundant columns in which redundant memory cell groups each of which is connected to a redundant data line and a redundant word line are disposed to correspond to said unit arrays of columns for replacing;

second data selection means which inhibits signal output from a redundant data line regardless of a command if said unit array of redundant columns among said group of unit arrays of redundant columns in said redundant memory block is not used and which transmits a signal supplied from said redundant data line in accordance with said

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command if a selected unit array of redundant columns is used; and

third data selection means which selects and transmits either of said signal selected by said first data selection means or data selected by said second data selection means.

5,392,247

SEMICONDUCTOR MEMORY DEVICE INCLUDING REDUNDANCY CIRCUIT

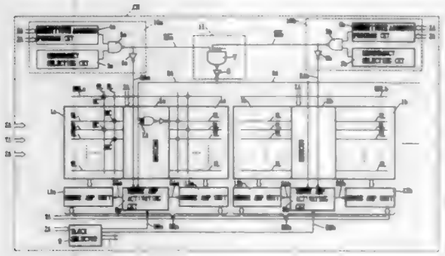
Koreaki Fujita, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 945,179, Sep. 15, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,448

Claims priority, application Japan, Sep. 19, 1991, 3-239718

Int. Cl.[6] G11C *7/00, 8/00;* G06F *11/00*

U.S. Cl. 365—200 **14 Claims**



1. A semiconductor memory device, comprising:

a plurality of memory cell array blocks, each including a plurality of selecting lines and a plurality of memory cells connected to said plurality of selecting lines;

a plurality of first selecting means provided corresponding to said plurality of memory cell array blocks, for each selecting any of the plurality of selecting lines in a corresponding one of said memory cell array blocks;

a plurality of redundant selecting lines provided corresponding to said plurality of memory cell array blocks;

a plurality of redundant memory cells connected to said plurality of redundant selecting lines;

a plurality of redundant circuit means each corresponding to one or a number of said plurality of redundant selecting lines,

each of said plurality of redundant circuit means including setting means in which information as to whether or not the corresponding one or number of said plurality of redundant selecting lines being used is set in advance, program means in which an address of a selecting liner in any of said plurality of memory cell array blocks to be substituted by the corresponding one or number of said plurality of redundant selecting lines can be programmed, and second selecting means responsive to outputs of said setting means and said program means for selecting the corresponding one or number of said plurality of redundant selecting lines; and

inactivating means responsive to outputs of said plurality of redundant circuit means for inactivating said plurality of first selecting means when one or a number said plurality of redundant selecting lines are selected by any of said plurality of redundant circuit means.

5,392,248

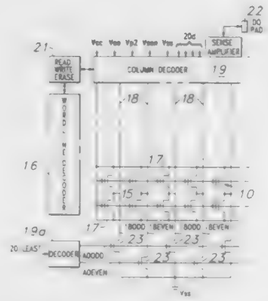
CIRCUIT AND METHOD FOR DETECTING COLUMN-LINE SHORTS IN INTEGRATED-CIRCUIT MEMORIES

Phat C. Truong, Houston; Tim M. Coffman, Sugar Land; Sung-Wei Lin, Houston, all of Tex.; T. Damodar Reddy, Nalgonda, India, and Dennis R. Robinson, Needville, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 26, 1993, Ser. No. 149,242

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—201 **8 Claims**



1. A method for detecting shorts between parallel column lines of a memory array, said parallel column lines including alternate column lines and other alternate column lines, said memory array including wordlines, column address inputs and a reference-potential, said method comprising:

connecting said reference-potential to each of said wordlines;

coupling said alternate column lines to a sensing circuit, coupling said other alternate column lines to said reference-potential; and

with said wordlines at said reference potential and with said alternate column lines and said other alternate column lines coupled to said sensing circuit and to said reference-potential, sensing the resistance to current flow between said alternate column lines and said other alternate column lines.

5,392,249

RANDOM ACCESS MEMORY

Yasuhiro Kan, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1993, Ser. No. 120,739

Claims priority, application Japan, Sep. 21, 1992, 4-251096; Feb. 24, 1993, 5-035054

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—203 **21 Claims**

11. A semiconductor storage device, comprising:

a plurality of memory cells arranged in a matrix each having a first and a second terminals and performing when selected a potential setting operation to set one terminal of said first and second terminals to a first potential and the other terminal to a second potential which is at a level lower than said first potential on the basis of stored data;

a plurality of bit line pairs each having a first bit line and a second bit line and connected in common to said memory cells in the same column, each of said plurality of bit line pairs having said first bit line connected to said first terminal of said memory cell and said second bit line connected to said second terminal of said memory cell;

a plurality of word lines each connected in common to said memory cells in the same row for bringing said memory cells into a selected state in an active state;

row address signal supply means for supplying a row address signal;

column address signal supply means for supplying a column address signal;

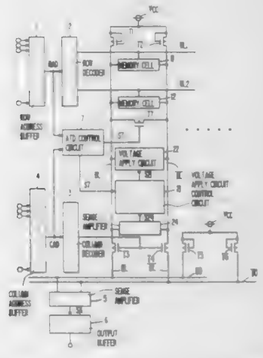
word line selecting means for selectively activating one of said plurality of word lines on the basis of said row address signal;

bit line pair selecting means for selecting one of said plurality of bit line pairs as a selected bit line pair on the basis of said column address signal;

a plurality of bit line pair read data output means provided corresponding to each of said plurality of bit line pairs for detecting a potential difference occurring between said bit line pair and outputting read data between the bit line pair on the basis of the potential difference;

externally outputted read data output means for detecting the potential difference occurring between said selected bit line pair and outputting read data for external output on the basis of the potential difference;

address change detecting means for outputting an address



change detection signal in an active state during a predetermined period on detecting an address change of said row address signal or said column address signal;

a plurality of equalizing means provided corresponding to each of said plurality of bit line pairs for electrically connecting said first bit line and said second bit line of the corresponding bit line pair during the active state period of said address change detection signal; and

a plurality of voltage applying means each provided corresponding to each of said plurality of bit line pairs each for making a recognition as to which of the present potential levels are higher and lower between said first bit line and said second bit line in the corresponding bit line pair on the basis of corresponding said bit line pair read data during the active state period of said address change detection signal and applying a low level voltage to the bit line on a higher potential side and applying a high level voltage to the bit line on a lower potential side in said bit line pair.

5,392,250

SEMICONDUCTOR MEMORY DEVICE

Kinya Mitsumoto; Yoshikazu Iida; Hiroki Miyashita, and Kazunori Onozawa, all of Takasaki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,219

Claims priority, application Japan, Jan. 17, 1992, 4-006211

Int. Cl.[6] G11C *7/00, 11/40*

U.S. Cl. 365—207 **24 Claims**

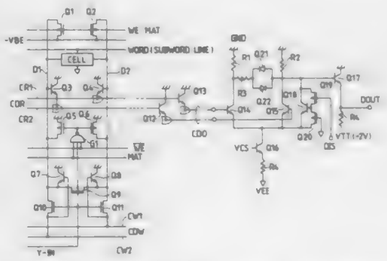
1. A semiconductor memory device comprising:

a word line;

a plurality of complementary data line pairs;

a plurality of memory cells each of which is coupled to said word line and to one of the plurality of complementary data line pairs, each memory cell including a flip-flop circuit for storing information and select MOSFETs, and each of said select MOSFETs having a source-drain path which is directly coupled between a respective input/output node of said flip-flop circuit and one data line of a corresponding complementary data line pair;

common data line pairs selectively coupled to one of the plurality of complementary data line pairs without using a sense amplifier circuit for amplifying a first potential difference which appears between said complementary



data line pairs in accordance with a data readout of a selected memory cell; and

an output buffer including a pair of input terminals coupled to said common data line pairs and means for amplifying a second potential difference which appears between said common data line pairs,

wherein each of said memory cells is provided with a driving capability sufficient for driving said output buffer without using a sense amplifier circuit.

5,392,251

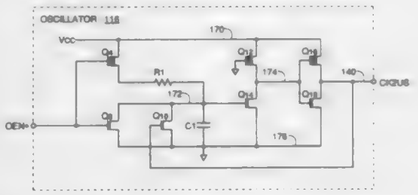
CONTROLLING DYNAMIC MEMORY REFRESH CYCLE TIME

Troy A. Manning, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Jul. 13, 1993, Ser. No. 91,697

Int. Cl.[6] G11C *11/40*

U.S. Cl. 365—222 **50 Claims**



1. A system employing dynamic storage of information, the system comprising:

a. a dynamic memory, powered by a power signal, for retaining and providing the information, the memory characterized by a retention time, the retention time being responsive to the power signal;

b. means for refreshing the memory; and

c. timing means comprising a first device characterized by a resistance responsive to the power signal, the timing means for controlling the means for refreshing, according to a period, in response to a current through the first device, so that the memory is refreshed prior to passage of the retention time, thereby maintaining the information.

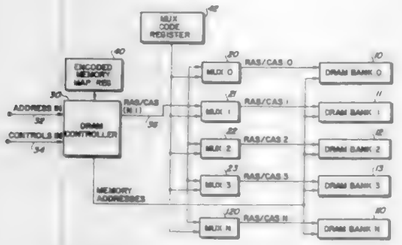
VOL 1171 ISS 3 FE 21 1995 UMI

5,392,252

PROGRAMMABLE MEMORY ADDRESSING

Charles R. Rimpo, Mesa; Walter H. Potts, Tempe; Joe A. Thomsen, Chandler, and Mitch A. Stones, Phoenix, all of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Nov. 13, 1990, Ser. No. 612,293
Int. Cl.[6] G11C 8/00
U.S. Cl. 365—230.02 7 Claims



1. A memory addressing system for a computer memory having a plurality of memory banks of memory devices of different sizes, which may be arranged physically in said memory banks in any desired order, said addressing system including in combination:

means for supplying a plurality of different row and column address signals to said memory banks;

memory map means pre-encoded with a memory map corresponding to the physical arrangement of said memory devices and coupled with said row and column address signal supply means for supplying at least row and column address signals corresponding to logical memory bank outputs;

switching control means comprising a plurality of multiplexers each connected to a different one of said plurality of memory banks for interconnecting said logical memory bank outputs with selected ones of said memory banks to create a valid programmable memory map irrespective of the actual locations of memory devices of different sizes in said memory banks; and

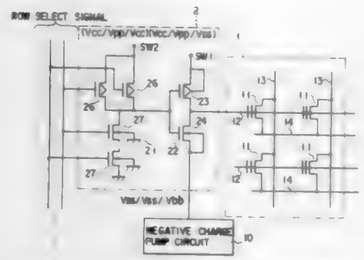
a multiplex code register coupled with said multiplexers for routing said logical memory bank outputs through said multiplexers to said memory banks as determined by said multiplex code register.

5,392,253

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING ROW DECODER SUPPLYING A NEGATIVE POTENTIAL TO WORD LINES DURING ERASE MODE

Shigeru Atsumi, and Sumio Tanaka, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 24, 1992, Ser. No. 918,027
Claims priority, application Japan, Jul. 25, 1991, 3-186439
Int. Cl.[6] G11C 8/00
U.S. Cl. 365—230.06 23 Claims



1. A row decoder circuit, for use with a nonvolatile semiconductor memory device including an array of memory cell transistors arranged in an X-Y matrix of rows and columns, word lines commonly connected to gates of said memory cell transistors arranged in a row direction of said array, and bit lines commonly connected to drains of said memory cell transistors arranged in a column direction of said array, for applying a negative voltage to said word lines during an erase mode, said row decoder circuit comprising:

a logic circuit including input terminals connected to row select signal lines, and a first output node, said logic circuit including a first N-channel transistor: and

a word line driver circuit including a first input terminal connected to said first output node, and a second output node connected to one of said word lines, said word line driver circuit including a second N-channel transistor, wherein

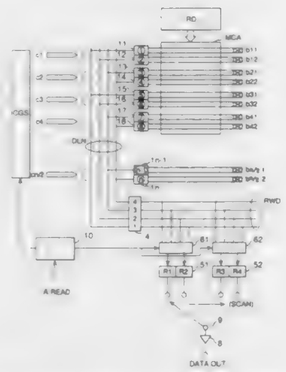
a first substrate potential supplied to said first N-channel transistor is higher than a second substrate potential supplied to said second N-channel transistor during said erase mode.

5,392,254

SEMICONDUCTOR MEMORY DEVICE WITH MULTIPLE REGISTERS ENABLING SERIAL OUTPUT

Haruki Toda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 24, 1993, Ser. No. 111,046
Claims priority, application Japan, Aug. 28, 1992, 4-230583
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—240 17 Claims



1. A semiconductor memory device, comprising:

a memory cell array (MCA) composed of a plurality of memory cells arranged in a matrix pattern having a plurality of columns, 2 "a"-units of the columns being selectable simultaneously;

data register means composed of two "a"-bit registers each having "a"-units of single-bit registers;

control means for selecting 2 "a"-units of the columns once every "a"-cycles of a clock inputted externally, selecting "a"units of data from data of the 2 "a"-units of the columns selected in first "a"-cycles, storing "a"-units of the selected data in a first of the two "a"-bit registers in a sequence of read addresses, selecting "a"-units of data from data of the 2 "a"-units of the columns selected in succeeding "a"-cycles, and storing "a"-units of the selected data in a second of the two "a"-bit registers in the sequence of read addresses; and

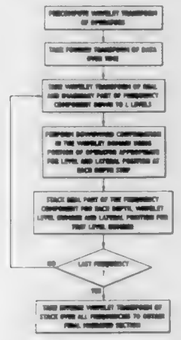
data output means for outputting 2 "a"-units of the data stored in said data register means by scanning the single-bit registers constituting said register means in a constant sequence, irrespective of the sequence of the read addresses.

5,392,255

WAVELET TRANSFORM METHOD FOR DOWNWARD CONTINUATION IN SEISMIC DATA MIGRATION

Ronan J. LeBras, and George R. Mellman, both of Kirkland, Wash., assignors to Western Atlas International, Houston, Tex.

Continuation-in-part of Ser. No. 961,294, Oct. 15, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 75,939
Int. Cl.[6] G01V 1/28
U.S. Cl. 367—50 8 Claims



1. A method of processing seismic data including a collection of time/amplitude trace response functions located at least in one spatial dimension, and a velocity field function in another spatial dimension, to migrate said time/amplitude data into depth/amplitude data, comprising the steps of:

(a) applying a wavelet transform to all frequency components of a velocity field downward continuation operator to define a downward continuation operator in the wavelet domain;

(b) applying a wavelet transform of the spatial dimension to the collection of trace response functions, after the time-/amplitude traces have been transformed through a standard fast Fourier transform method into transformed frequency/amplitude traces;

(c) applying the operator obtained in step (a) for each frequency component to the transformed traces obtained in step, (b) to define a resultant collection of transformed traces in the wavelet domain for all desired depths;

(d) applying the inverse wavelet transform on the spatial dimension, and defining the downward continued field in the spatial domain;

(e) summing all frequency components at all depths to define the resulting depth/amplitude data; and

(f) displaying the amplitude of the resultant depth/amplitude data as a function of depth.

5,392,256

MAGNETO-ACOUSTIC SIGNAL CONDITIONER

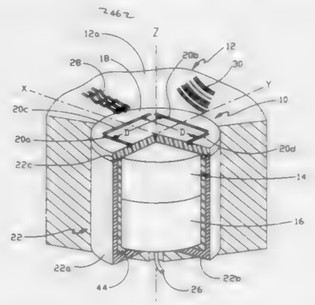
Rolf G. Kasper, Old Lyme, and Anthony B. Bruno, East Lyme, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1993, Ser. No. 130,945
Int. Cl.[6] H04B 11/00, 1/10
U.S. Cl. 367—131 16 Claims

1. An apparatus for enhancing acoustic and electromagnetic signal measurements in the turbulent boundary layer of the flow field of a conductive fluid moving over the surface of said apparatus, comprising:

an electromagnetic turbulent velocimeter means having a surface exposed to said flow field turbulent boundary layer, said electromagnetic turbulent velocimeter means having a magnetic field disposed normal to said surface and extending into said flow field, said electromagnetic turbulent velocimeter means providing first electrical output signals, said first electrical output signals having frequency components proportional to variations in said flow field, said frequency components produced by Lorentz forces resulting from said flow field passing through said magnetic field, said frequency components further resulting from electromagnetic signals carried in said conductive fluid;

a piezoelectric hydrophone means disposed coaxially with said electromagnetic turbulent velocimeter means, the field of view of said piezoelectric hydrophone means being coincident with said electromagnetic turbulent velocimeter means magnetic field, said piezoelectric hydrophone means providing second electrical output signals, said second electrical output signals having frequency components proportional to pressure variations in said piezoelectric hydrophone means field of view, said pressure variations resulting from velocity pressure variations in said flow field, said pressure variations further resulting from acoustic signals carried in said conductive fluid; and



an acoustic signal processing means conductively attached to said electromagnetic turbulent velocimeter means and said piezoelectric hydrophone means for receiving said first and second electrical output signals, said acoustic signal processing means enhancing said frequency components of said first electrical output signal dependent on said electromagnetic signals and enhancing said frequency components of said second output signal dependent on said acoustic signals.

5,392,257

SONAR RECEIVER WITH IMPROVED TIME VARIED GAIN CORRECTION

John E. Gilmour, Richland Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1993, Ser. No. 109,891
Int. Cl.[6] G01S 15/00
U.S. Cl. 367—135 5 Claims

1. Sonar signal processing apparatus comprising:

a) a receiver transducer having a plurality of elements each operable to provide an output signal in response to reflected acoustic energy from a target area sonified by an acoustic transmission;

b) a plurality of preamplifiers connected to respective ones of said elements;

c) a time varied gain circuit connected to said preamplifiers to adjust the gains thereof as a function of time after a said transmission;

d) circuit means responsive to the output signals provided by said preamplifiers to generate at least one beam signal;

e) a display for displaying said beam signal;

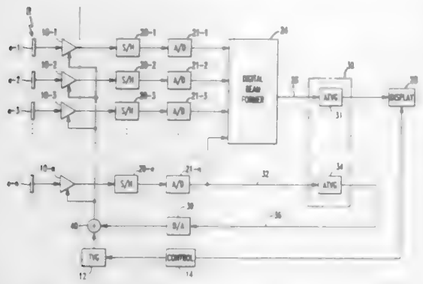
f) an adaptive time varied gain circuit connected to receive said beam signal and operable to adaptively adjust the amplitude thereof for presentation on said display;

g) switching means connected to receive said beam signal

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and at least one of the output signals provided by said preamplifiers;

h) control means operable to control said switching means to apply said at least one preamplifier output signal, resulting from each of a predetermined number of said transmis-



sions, to said adaptive time varied gain circuit to generate an error signal and to apply said error signal to modify the output of said time varied gain circuit;

i) said control means being thereafter operable to control said switching means to apply said beam signal to said adaptive time varied gain circuit.

5,392,258

UNDERWATER ACOUSTIC INTENSITY PROBE

Thomas B. Gabrielson, Warminster; James F. McEachern, Newtown, and Gerald C. Lauchle, Port Matilda, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 12, 1993, Ser. No. 136,637
Int. Cl.[6] G01V *1/38*
U.S. Cl. 367—149 8 Claims

1. An underwater probe for determining true acoustic intensity, comprising:

a moving-coil geophone for sensing acoustic velocity;

a rigid foam cast around said moving-coil geophone, said rigid foam having an outer surface;

a plurality of hydrophones integrated on said outer surface of said rigid foam for measuring acoustic pressure;

wherein said moving-coil geophone, said rigid foam, and said plurality of hydrophones constitute a neutrally buoyant package in water; and

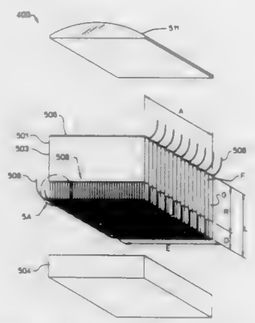
means operatively connecting to said moving-coil geophone and said plurality of hydrophones for computing a time-averaged product of the acoustic velocity and the acoustic pressure.

5,392,259

MICRO-GROOVES FOR THE DESIGN OF WIDEBAND CLINICAL ULTRASONIC TRANSDUCERS

Mir S. S. Bolorforosh, 1704 Oak Creek Dr. #307, Palo Alto, Calif. 94309

Filed Jun. 15, 1993, Ser. No. 77,179
Int. Cl.[6] H01L *41/02, 41/08*
U.S. Cl. 367—152 16 Claims



1. An ultrasonic probe comprising:

an acoustically damping support body having an acoustic impedance;

a piezoelectric ceramic element having a bulk acoustic impedance, a rear face for acoustically coupling signals from the element to the support body, and a front face;

means integral with the piezoelectric ceramic element for substantially providing an acoustic impedance match between the bulk acoustic impedance of the piezoelectric ceramic element and the acoustic impedance of the support body, said means including grooves disposed on the rear face of the piezoelectric ceramic element; and

a pair of electrodes, electrically coupled to the piezoelectric ceramic element, the pair of electrodes including a front electrode coupled to the front face of the piezoelectric element and a rear electrode extending into and contacting the grooves disposed on the rear face of the piezoelectric ceramic element.

5,392,260

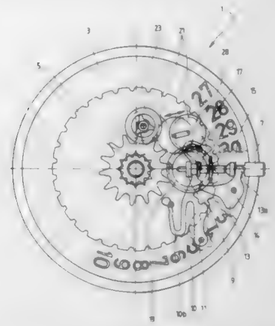
TIMEPIECE

Wolfgang Kroener, Pforzheim, Germany, and Edwin Jakob, Granges, Switzerland, assignors to Eta SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed Jul. 21, 1994, Ser. No. 278,330
Claims priority, application Switzerland, Aug. 31, 1993, 2585/93
Int. Cl.[6] G04B *19/24, 27/04*
U.S. Cl. 368—36 3 Claims

1. A timepiece including at least one indicating organ, in particular for dates, and a correction mechanism for said indicating organ, said correction mechanism comprising at least, on the one hand, a control stem movable between at least two axial positions, and, on the other hand, a sliding pinion and a correction pinion mounted on said stem, said correction pinion being free to rotate and one of its faces being formed so as to be able to cooperate with one of the faces of the sliding pinion and to permit driving of said correction pinion by the sliding pinion when said control stem is in a first one of said axial positions, said face of the sliding pinion having at least one spur arranged at a distance from the rotation axis of said sliding

pinion, said spur being arranged to come into engagement with an opening formed in said face of said correction pinion, so as



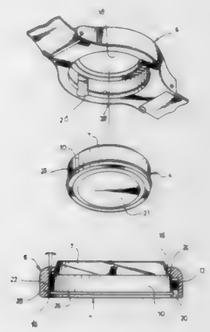
to cooperate with a side of said opening in a manner to drive said correction pinion in rotation.

5,392,261

WATCH ASSEMBLY

Wen-Tung Hsu, No. 3, Lane 18, Syh-Wei Rd., Wuu-Guu, Taipei, Taiwan, Prov. of China

Filed Jan. 26, 1994, Ser. No. 186,637
Int. Cl.[6] G04B *37/00*
U.S. Cl. 368—281 8 Claims



1. A watch assembly comprising a watch sub assembly installable into a replaceable case through a rear aperture thereof, and a groove and flange arrangement to secure said watch sub assembly within said replaceable case,

said watch sub assembly comprises a movement, a truncated cone shaped container for the movement, a face cover and a crown, said truncated cone shaped container having an inwardly sloping exterior wall;

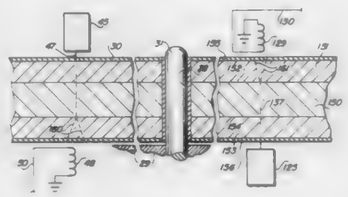
said replaceable case comprises a commensurately shaped interior wall which engages with the inwardly sloping exterior wall of said watch sub assembly, a front aperture defined by a bezel, said front aperture having a diameter equal to a diameter of the face cover and a crown receiving means located in the interior wall of the replaceable case, such that when assembled, the crown is completely disposed within the replaceable case.

5,392,262

TWO-SIDED OPTICAL DISKS HAVING RECORDING LAYERS DISPOSED CLOSE TO OUTER SURFACES AND SPACED AXIALLY APART A GREATER DISTANCE AND DEVICES FOR USING THE DISKS

Blair I. Finkelstein; Andrew A. Gaudet, both of Tucson, Ariz.; Terry W. McDaniel, Morgan Hill, Calif.; Hal A. Rosen, Los Gatos, Calif.; Kurt A. Rubin, Santa Clara, Calif., and Timothy C. Strand, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,751
Int. Cl.[6] G11B *17/32*
U.S. Cl. 369—13 10 Claims



1. An optical disk, comprising:

a transparent substantially-planar annular core having first and second outwardly oppositely facing substrate surfaces and a predetermined axial thickness;

first and second annular translucent magnetooptical recording layers respectively disposed on said first and second substrate surfaces;

each of said recording layers having an axial extent of not greater than about 200 Angstrom units;

first and second annular dielectric translucent coatings respectively covering said first and second magnetooptical recording layers, the axial extent of each of said coatings being an order of magnitude less than the axial extent of said annular core, said first and second annular dielectric transparent coatings respectively having first and second outwardly-facing disk surfaces;

said annular core, said second magnetooptical recording layer and said second dielectric coating being an axial optical path between said first magnetooptical recording layer and said second disk surface;

said annular core., said first magnetooptical recording layer and said first dielectric coating being an axial optical path between said second magnetooptical recording layer and said first disk surface; and

said core, each of said layers and each of said coatings respectively having co-axial hubs.

5,392,263

MAGNETO-OPTICAL DISK SYSTEM WITH SPECIFIED THICKNESS FOR PROTECTIVE LAYER ON THE DISK RELATIVE TO THE NUMERICAL APERTURE OF THE OBJECTIVE LENS

Tetsu Watanabe, and Yoshio Aoki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 761,874, Sep. 11, 1991, abandoned. This application Jul. 19, 1994, Ser. No. 277,357
Claims priority, application Japan, Jan. 31, 1990, 2-21210
Int. Cl.[6] G11B *13/04*
U.S. Cl. 369—13 9 Claims

1. An optical disc system for recording information signals and/or reproducing information signals comprising:

laser beam generating means;

an optical disc including a rigid substrate, a recording layer formed on one side of the substrate and irradiated by a laser beam from said laser beam generating means during recording or reproduction, and a light-transmitting cover layer covering the recording layer and capable of transmitting the laser beam; and

VOL 1171 ISS 3 FEB 21 1995 UMI

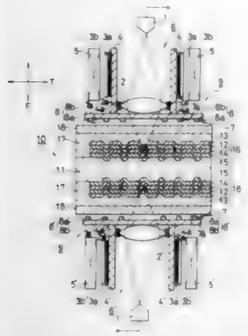
an objective lens for bundling or focusing the laser beam on the recording layer through the light-transmitting cover layer,

wherein said optical disc system is characterized in that the thickness of the light-transmitting cover layer of said optical disc falls within a range of 0.6 to 1.0 mm, and a numerical aperture of said objective lens fails within a range of 0.55 to 0.70.

2. A magneto-optical disc system for recording information signals and/or reproducing information signals comprising:

laser beam generating means for generating a laser beam;

a magneto-optical disc having a rigid substrate, a magneto-optical recording layer formed on the substrate and irradiated by the laser beam from said laser beam generating



means during recording and reproduction, and a light-transmitting cover layer covering the magneto-optical recording layer and capable of transmitting the laser beam;

an objective lens for focusing the laser beam on the magneto-optical recording layer through said light-transmitting cover layer; and

magnetic field applying means for applying a magnetic field to the magneto-optical layer,

wherein said magneto-optical disc system is characterized in that the thickness of the light-transmitting cover layer of said magneto-optical disc falls within a range of 0.6 to 1.0 mm, and a numerical aperture of said objective lens falls within a range of 0.55 to 0.70.

5,392,264

INFORMATION REPRODUCING APPARATUS

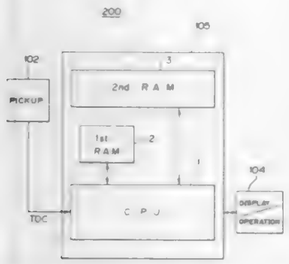
Osamu Hira, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 50,872

Claims priority, application Japan, Apr. 24, 1992, 4-107095

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—32 **12 Claims**



1. An information reproducing apparatus, to which a recording medium having record information and table of contents information of the record information is mounted, for controlling a reproduction operation of the record information on the basis of the table of contents information, said apparatus comprising:

an operation input means by which various command data are inputted;

a first memory for temporarily storing reproduction control information including the table of contents information for performing the reproduction operation;

a reproduction means for reproducing said recording medium according to the inputted command data;

a second memory of non-volatile type for storing the reproduction control information in correspondence with said recording medium; and

a memory control means coupled to said operation input means and said reproduction means, for storing into said second memory the reproduction control information stored in said first memory, when at least one of the inputted command data and an operation condition of said reproduction means indicate a continuous stop condition of the reproduction operation,

said reproduction means to reproduce record information on said recording medium on the basis of the reproduction control information stored in said second memory if the reproduction control information of the recording medium to be reproduced is stored in said second memory, and on the basis of the reproduction control information stored in said first memory if the reproduction control information of the recording medium to be reproduced is not stored in said second memory.

5,392,265

RECORDING AND REPRODUCING APPARATUS WHICH CALCULATES AND DISPLAYS MANAGEMENT INFORMATION OF RECORDED SEGMENTS

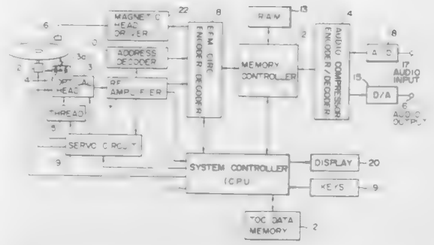
Masayuki Takezawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 17, 1993, Ser. No. 62,934

Claims priority, application Japan, May 20, 1992, 4-151130

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—32 **11 Claims**



1. A reproducing and recording apparatus for reproducing and recording data on a recording medium which has a plurality of recorded and recordable areas The data being recorded as data segments each constituted from a single continuous segment or a plurality of discrete segments and the recording medium has recorded thereon a management table including a plurality of part tables each of which has a start address and an end address of a segment on the recording medium and link information indicative of another segment to be linked and a corresponding table indicating data indicating an absolute position of one of the part tables on the management table, said apparatus comprising:

data read-out means for reading out the management table data on the recording medium;

storage means for storing therein the management table data read out by said read-out means;

calculation means for successively tracing the link information of the management table data stored in said storage means and for calculating the time duration of each recorded segment; and

display means for displaying the time of each recorded segment based on a result of the calculation by said calculation means.

5,392,266

AUTOMATIC DISC EXCHANGE APPARATUS

Takashi Kobayashi, Kanagawa, and Tsurayuki Sugiyama, Tokyo, both of Japan, assignors to NKK Corporation and Kabushiki Kaisha Nikkyo Seisakusho, Japan

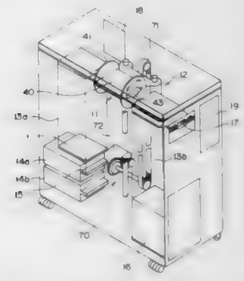
PCT No. PCT/JP90/01689, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1992

Continuation-in-part of Ser. No. 269,475, Nov. 9, 1988, Pat. No. 5,033,038. This PCT application Dec. 25, 1990, Ser. No. 920,462

The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—36 **3 Claims**



1. An automatic disk exchange apparatus comprising:

a disk gripper including a holder for horizontally holding a disk cartridge, a pair of rotational drums each attached to an opposite end of said holder and having a gear formed in an outer peripheral surface thereof and a disk access opening in a central portion thereof, and disk exchange means for selectively introducing onto and removing a disk cartridge in a horizontal position from said holder through either of said disk access openings;

a disk transport device including lifting means for vertically moving said disk gripper to stop at a given position, and rotating means engaged with said gear formed in the outer peripheral surface of one of said rotational drums for rotating said disk gripper about a center of said disk access opening serving as an axis of rotation;

a pair of disk storage devices each arranged on opposite sides of a transport path of said disk gripper and adapted for horizontally storing a plurality of disk cartridges; and

a plurality of drive units arranged at least in a lower part of one of said disk storage devices for recording and reproducing information from disks.

5,392,267

OPTICAL CARD READING AND WRITING METHOD WITH REDUNDANT DIRECTORY STORAGE TO IMPROVE RELIABILITY

Noboru Mikamo, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 998,133

Claims priority, application Japan, Jan. 8, 1992, 4-001589

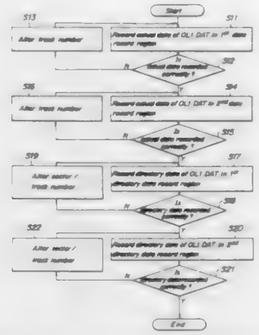
Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—47 **7 Claims**

1. A method of recording and/or reproducing information which includes directory data and an actual data file on an optical record medium having a plurality of directory data record regions and a plurality of actual data record regions, the method comprising the steps of:

(a) recording a copy of the actual data file in each of said plurality of actual data record regions so that plural copies of said actual data file are recorded in said plurality of actual data record regions;

(b) forming a directory data block including position data denoting positions in said plurality of actual data record regions at which said copies of the actual data file have been recorded;



(c) recording a copy of said directory data block in each of said plurality of directory data record regions so that plural copies of said directory data block are recorded in said plurality of directory data record regions;

(d) reading at least one of said copies of the directory data block from at least one of said plurality of directory data record regions; and

(e) reading one of said copies of the actual data file from one of said plurality of actual data record regions under control of the position data included in the directory data block.

5,392,268

OPTICAL RECORDING/REPRODUCING APPARATUS FOR REPRODUCING INFORMATION OF MULTIPLE TRACKS CAPABLE OF CORRECTING UNEVEN ILLUMINATION OF THE MULTIPLE TRACKS

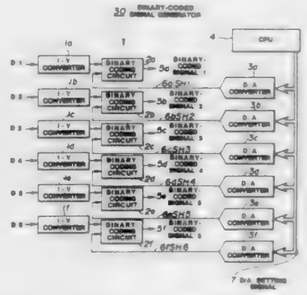
Takao Rokutan, Higashimurayama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 911,104

Claims priority, application Japan, Jul. 18, 1991, 3-178384

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—54 **6 Claims**



1. An optical recording/reproducing apparatus, comprising:

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emitting means for emitting a light beam onto a plurality of tracks for recording information provided on a recording surface of an optical information recording medium;

multiple light receiving means for receiving returned light of said light beam from said recording surface and detecting multiple information from at least a first set of tracks and a second set of tracks of said plurality of tracks onto which said light beam is emitted, said first set of tracks coinciding with at least a central part of said light beam and said second set of tracks coinciding with at least a peripheral part of said light beam;

multiple amplifying means for amplifying the information of said plurality of tracks detected by said light receiving means;

binary-coding means for coding outputs of said amplifying means in binary form; and

comparison level setting means for setting binary-coding comparison levels of said binary-coding means, which receives the output of said amplifying means, corresponding to said second set of tracks coinciding with at least said peripheral part of said light beam depending on an uneven light intensity distribution characteristic of said light beam.

5,392,269

MEDIUM REPLACEABLE RECORDING AND REPRODUCING APPARATUS IN WHICH FULL INITIALIZATION IS NOT NEEDED DEPENDING ON THE INSERTED STATE OF THE MEDIUM

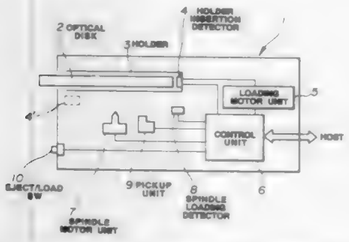
Yuji Horie, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1993, Ser. No. 103,105

Claims priority, application Japan, Aug. 19, 1992, 4-220481

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—54 **12 Claims**



1. A medium replaceable recording and reproducing apparatus comprising:

medium insertion detecting means for detecting that at least a part of a recording medium is inserted into a recording and reproducing apparatus of said recording medium,

drive-means loading detecting means for detecting that said recording medium is loaded onto medium driving means for driving said recording medium, and

medium discriminating means for monitoring an output of said medium insertion detecting means, and discriminating whether a recording medium loaded onto said medium driving means is a new one or a previously loaded recording medium which has remained inserted.

5,392,270

INFORMATION RECORDING REPRODUCING APPARATUS USING DATA CONVERSION TO PROVIDE FOR ACCURATE REPRODUCTION OF HIGH DENSITY RECORDING USING AN OPTICAL RECORDING MEDIUM

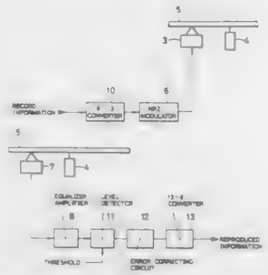
Shinichi Okada, and Kyota Funamoto, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 914,528, Jul. 17, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,433

Claims priority, application Japan, Jan. 21, 1992, 4-008605

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—59 **2 Claims**



1. An information recording apparatus using an optical recording medium comprising:

a data converting means for performing data conversion on record information consisting of a digital signal in accordance with a predetermined data conversion table including a pattern for yielding a converted pattern consisting of one of at least one "0"and an even number of consecutive "I's" and a converted pattern having a section consisting of "01010" and a section consisting of one of at least one "0"and an even number of consecutive "I's";

a data modulating means for inverting an initial output signal when bit information of data after said data conversion is "1"given that an initial output signal is "0", wherein said data conversion is performed on said digital signal before supplying said digital signal to said data modulating means so that an output signal from said data modulating means always includes no more than two consecutive "I's"; and

a recording means for recording said output signal on said optical recording medium.

5,392,271

CONCURRENT RECORDING AND REPRODUCING OPTICAL DISC AND OPTICAL HEAD APPARATUS FOR THE SAME

Tsutomu Matsui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 28, 1993, Ser. No. 83,665

Claims priority, application Japan, Jun. 26, 1992, 4-168091

Int. Cl.[6] G11B *13/04*

U.S. Cl. 369—93 **3 Claims**

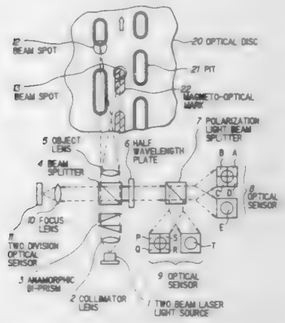
1. A concurrent recording and reproducing optical disc, comprising:

a disc substrate having rows of pits thereon, said rows of pits storing read only memory information; and

a magneto-optical medium film deposited on said disc substrate, said magneto-optical medium film storing programmable and erasable information;

wherein said magneto-optical medium film is arranged by a predetermined interval between each two adjacent rows

of said rows of pits, said predetermined interval being dependent on a diameter of a dark Airy disc circle band of



a light beam spot focused on said magneto-optical medium film.

5,392,272

SINGLE ERASABLE OPTICAL RECORDING LAYER HAVING BOTH RETENTION AND EXPANSION CHARACTERISTICS

Dean B. Parkinson, deceased, late of Redwood City, Calif. by Elfriede Parkinson, executrix , assignor to SRI International, Menlo Park, Calif.

Filed Mar. 29, 1993, Ser. No. 38,246

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—100 **19 Claims**

1. An information recording medium comprising a layer of single erasable recording material that has both retention and expansion characteristics and that is transformable from a crystalline phase to an amorphous phase wherein said material comprises at least two components, each having a different coefficient of thermal expansion, said material effective for forming a bump on its surface of improved distinctness over a double layer bump or a single layer bump of a material containing one component.

5,392,273

OPTICAL STORAGE DRIVE CONTROLLER WITH PREDETERMINED LIGHT SOURCE DRIVE VALUES STORED IN NON-VOLATILE MEMORY

Takashi Masaki; Shigenori Yanagi, and Shigeru Arai, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Feb. 26, 1993, Ser. No. 23,366

Claims priority, application Japan, Feb. 28, 1992, 4-042684; Mar. 4, 1992, 4-047114; Mar. 4, 1992, 4-047115

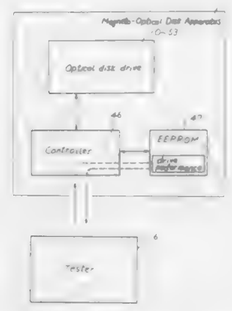
Int. Cl.[6] G11B *7/125*

U.S. Cl. 369—106 **30 Claims**

1. A controller for an optical storage drive including an optical head having a laser light source for applying light to an optical storage medium and a detector for receiving reflected light from said optical storage medium and for converting the received light into an electric signal, and a seek mechanism for positioning said optical head to a target position on said optical storage medium to, at least, read information from said target position on said optical storage medium by said optical head, said controller comprising:

a non-volatile memory stored with a calibration drive current value, said calibration drive current value being stored in said non-volatile memory during a calibration emission adjustment wherein the calibration drive current value for said laser light source is obtained by varying a drive current such that said laser light source substantially provides a predetermined light power output value; and

a control circuit that compares a measured drive current value obtained during an operational emission adjustment made when said drive is operated, with said calibration



drive current value stored in said non-volatile memory, thereby checking the lifetime of said laser light source.

5,392,274

OPTICAL PICKUP DEVICE

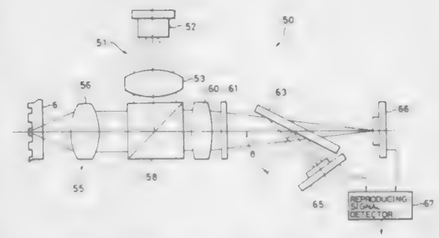
Masaaki Sofue, Hadano, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 990,720

Claims priority, application Japan, Dec. 20, 1991, 3-354973; Jan. 20, 1992, 4-007511; Oct. 23, 1992, 4-286471

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—110 **4 Claims**



1. An optical pickup device for forming a beam spot on a surface of an optical information recording medium by converging a laser beam and making a light beam reflected from the optical information recording medium incident to a polarizing beam splitter as a signal light comprising:

said optical pickup device reproducing a recorded signal by comparing an amount of light transmitted through said polarizing beam splitter with an amount of light reflected by the polarizing beam splitter with respect to said signal light; and

said polarizing beam splitter being constructed by a transparent plane parallel plate including an optical evaporation film arranged on one surface thereof and having polarizing characteristics in which transmittance of a p-polarized light component and reflectivity of an s-polarized light component are respectively equal to approximately one at an incident angle θ set in advance, wherein said polarizing beam splitter constructed by the transparent plane parallel plate is formed in a rectangular shape and the optical pickup device has a reflecting member for reflecting the signal light reflected from said surface of the optical information recording medium such that said optical axis of the signal light is parallel to the surface of the optical information recording medium;

a first angle θ 1 and a second angle θ 2 are respectively set

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by the following formulas in accordance with said incident angle θ of the reflected light of the reflecting member incident to said polarizing beam splitter,

$$\theta 1 = 90^\circ - \tan^{-1}(\tan\theta/\sqrt{2})$$

$$\theta 2 = \sin^{-1}(\sin\theta/\sqrt{2})$$

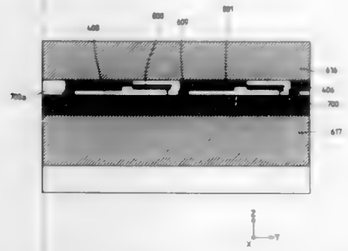
said polarizing beam splitter is arranged such that one side of the rectangular polarizing beam splitter is parallel to said surface of the optical information recording medium and is inclined said first angle θ 1 with respect to said optical axis of the reflected light of said reflecting member, and a parallel plane of the polarizing beam splitter is inclined said second angle θ 2 with respect to a normal line of said surface of the optical information recording medium.

5,392,275

INFORMATION RECORDING UNIT AND METHOD FOR INFORMATION RECORDING/REPRODUCTION

Haruki Kawada, Yokohama; Toshihiko Miyazaki, Hiratsuka; Hideyuki Kawagishi, Ayase, and Akihiko Yamano, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 777,167, Oct. 16, 1991, abandoned.
This application Jan. 3, 1994, Ser. No. 176,516
Claims priority, application Japan, Oct. 19, 1990, 2-280696
Int. Cl.[6] G11B 9/00
U.S. Cl. 369—126 48 Claims



1. A unit for carrying an information recording medium on which at least one of information recording and information reproduction is performed, said unit comprising:

a probe for at least one of recording the information on the information recording medium and reproducing the information from the information recording medium;

a support for supporting said probe so that said probe is positioned to face the information recording medium; and

a slide surface formed on said support and projections formed on said information recording medium in sliding contact with the slide surface to enable a relative movement between said support and the information recording medium while a distance between said support and the information recording medium is maintained constant.

5,392,276

METHOD FOR LINKING A PARTY WITHIN A FULL DUPLEX (DUAL CHANNEL) TDM NETWORK WITH A PARTY EXTERNAL TO THE NETWORK

Long Tran, Milpitas, Calif., assignor to First Pacific Networks, Inc., San Jose, Calif.

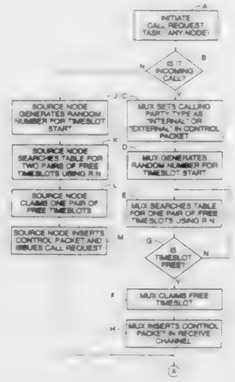
Filed Mar. 7, 1994, Ser. No. 207,320
Int. Cl.[6] H04B 1/56, 7/212; H04L 5/14
U.S. Cl. 370—29 5 Claims

1. In a digital communications system with an internal network having a head end multiplexer and interface for external connection of calls through a trunk, a method for allocating timeslots on a time-division multiplexed medium having a transmit r.f. channel and a receive r.f. channel, said method comprising the steps of:

dynamically differentiating between first call types and second call types, said first call types being calls between nodes within the internal network, and said second call types being calls between an internal node on the internal network and an external node connected through the trunk; and, based on said differentiating for second call types;

a) for outgoing calls:

initiating, at an internal node, a call request to claim a first timeslot position on the transmit r.f. channel and to use a corresponding second timeslot position on the receive r.f. channel, wherein said first timeslot position and said second timeslot constitute a single timeslot pair are free for use;



requesting, via the internal node, a call, via the first free timeslot position on the transmit r.f. channel, to cause said head end multiplexer, on behalf of the outgoing call, to use said corresponding second free timeslot position on said receive r.f. channel, to establish communication from the external node via said receive r.f. channel to said internal node and from said internal node via said transmit r.f. channel to said external node;

b) while for incoming calls:

initiating, at said head end multiplexer, the call request to claim the first free time slot position on the transmit r.f. channel and to use the corresponding second free timeslot position on the receive r.f. channel; and

requesting, via said head end multiplexer, a call via the first free time slot position on the receive r.f. channel to cause a destination node to initiate a claim response task such that any calls between the external node and the internal node occupy only a single timeslot pair.

5,392,277

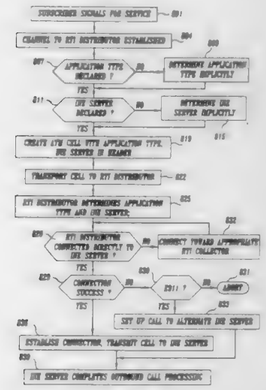
ROUTING TO INTELLIGENCE

Lawrence Bernstein, Short Hills, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Jun. 11, 1993, Ser. No. 75,978
Int. Cl.[6] H04M 7/10; H04Q 3/76, 11/04
U.S. Cl. 370—55 30 Claims

1. A method for use in a telecommunications network which includes a plurality of intelligent network element servers supporting respective telecommunications application types, said method comprising the steps of

receiving, at a point of distribution, and via a single access link, first and second outgoing calls of respective different ones of said application types originating from a particular subscriber location, said respective different ones of said outgoing call application types including two of POTS, ISDN, video and data, and



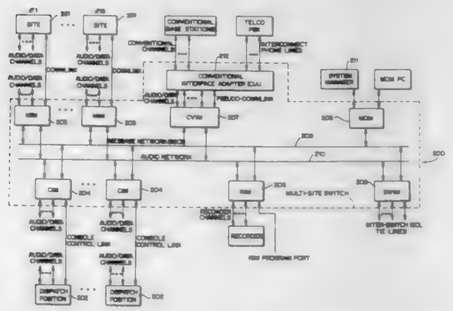
muting each of said outgoing calls from said point of distribution to a particular one of said intelligent network element servers, said particular one of said intelligent network element servers being determined based on the application type of said each outgoing call.

5,392,278

DISTRIBUTED MULTISITE SYSTEM ARCHITECTURE

James L. Teel, Goode; Philip C. Gulliford, Forest; Charles P. Brame, Forest, and Wim A. Imron, Forest, all of Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Continuation-in-part of Ser. No. 573,977, Aug. 28, 1990, abandoned. This application Feb. 22, 1991, Ser. No. 658,844
Int. Cl.[6] H04J 3/16; H04Q 11/08
U.S. Cl. 370—58.3 11 Claims



1. A local area network for a radio frequency multicasting system including a multisite switch comprising:

a first microprocessor controlled node coupled through a first data link and to a first trunked audio link to a first transmitter;

a second microprocessor controlled node coupled through a second data link and to a second trunked audio link to a second transmitter, where said second transmitter is in a separate site than is said first transmitter;

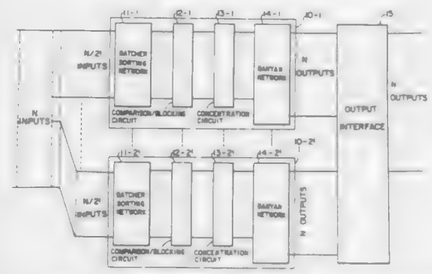
an audio bus including a plurality of slots conveying audio communications between said transmitters, said audio bus being operatively connected to the first and second microprocessor controlled nodes, said nodes controlling slot assignments for said communications.

5,392,279

INTERCONNECTION NETWORK WITH SELF-ROUTING FUNCTION

Kenji Taniguchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 15, 1993, Ser. No. 4,996
Claims priority, application Japan, Jan. 17, 1992, 4-006546
Int. Cl.[6] H04Q 11/04
U.S. Cl. 370—60 11 Claims



1. An interconnection network with a self-routing function which has N input lines and N output lines, N being a natural number equal to 2^n, n being a natural number, and effects autonomous routing of a cell, which is an information communication unit, based on destination address information of the cell, comprising:

2^i $N/2^i$-input N-output Batcher-banyan networks connected in parallel to each other, i being a natural number, each of said $N/2^i$-input N-output Batcher-banyan networks including:

a Batcher sorting network having $N/2^i$inputs and $N/2^i$outputs and including $(n-i)(n+1-i)/2$ stages for sorting input cells, n being equal to $\log_2 N$;

comparison/blocking means having $N/2^i$inputs and $N/2^i$outputs for comparing destination addresses of the cells sorted by said Batcher sorting network and leaving only those cells which have an identical address while blocking the remaining one or ones of the cells;

concentration means having $N/2^i$inputs and $N/2^i$outputs for cutting the cell or cells blocked by said comparison/-blocking means to pack the cells into a list of continuous cells; and

a banyan network coupled to said concentration means and having N inputs and N outputs for outputting the cells outputted from said concentrating means to the corresponding output lines based on the destination address information of the cells, said $N/2^i$ outputs of said concentration means being connected to only a part of successive inputs of said N inputs of said banyan network.

5,392,280

DATA TRANSMISSION SYSTEM AND SCHEDULING PROTOCOL FOR CONNECTION-ORIENTED PACKET OR CELL SWITCHING NETWORKS

Oin Zheng, Belmont, Mass., assignor to Mitsubishi Electric Research Laboratories, Inc., Cambridge, Mass.

Filed Apr. 7, 1994, Ser. No. 224,671
Int. Cl.[6] H04L 12/56
U.S. Cl. 370—60 8 Claims

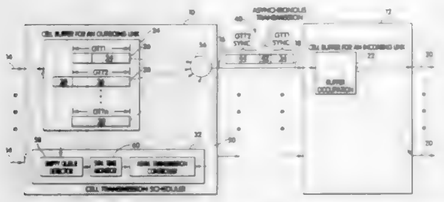
1. A cell-level dynamic slot allocating system for use in a connection-oriented cell switching network having a number of nodes and links between said nodes in which users transmit data cells via establishing connections between nodes through

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said network, said slot allocating system providing asynchronous transmission during either unallocated or unused cell transmission time slots to provide both a guaranteed transmission bandwidth for each user of said network, and bandwidth sharing amongst the users, comprising:

a node and a number of incoming and outgoing links coupled thereto each of said incoming links having at least one of said connections associated therewith;

means for assigning a fixed synchronous time slot for each connection associated with said node to permit the transmission of cells from said node within time frames having alternating fixed synchronous time slots and variable length asynchronous time slots;



means at said node for transmitting cells associated with one of said connections over said network via one outgoing link within a predetermined fixed synchronous time slot; and,

means associated with said one connection for transmitting associated cells over said network via said one outgoing link in an asynchronous time slot, said means for transmitting cells in an asynchronous time slot including means for detecting either unused or unallocated time in synchronous time slot at said one node and for asynchronously transmitting cells over said outgoing link in variable length asynchronous time slot augmented by the time made available by said detected unused or unallocated time.

5,392,281

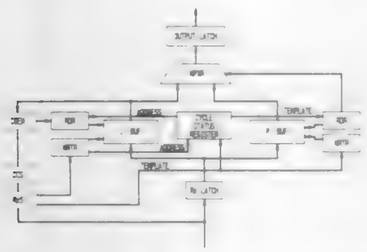
CONTROL OF HYBRID PACKET RINGS

Robert J. Baumert, Allentown, Pa., and Stephen Barilovits, Charlotte, N.C., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 13, 1993, Ser. No. 165,450

Int. Cl.[6] H04J *3/26, 3/06;* **H04L** *12/64*

U.S. Cl. 370—60.1 **4 Claims**



1. A hybrid network including a ring and at least one station on said ring having a hybrid multiplexer for receiving cycles containing packet and isochronous data from, and transmitting cycles containing packet and isochronous data to said ring, said hybrid multiplexer having a latency adjustment buffer (LAB) for providing a variable latency between the receipt of incoming isochronous data and the transmission of outgoing isochronous data comprising:

a packet buffer and an isochronous buffer;

means for entering arriving packet data into both said packet buffer and said isochronous buffer and for tracking the addresses in said isochronous buffer at which said packet data and said isochronous data are stored;

means for entering arriving isochronous data solely into said isochronous buffer;

means respective to each said buffer for reading data therefrom;

means for selectively controlling the address at which said isochronous data is read from said isochronous buffer to adjust the latency thereof; and

means for incrementing the address in said isochronous buffer as packet data is read from said packet buffer.

5,392,282

CIRCUIT ARRANGEMENT IN A MOBILE PHONE FOR A DIGITAL MOBILE TELEPHONE SYSTEM

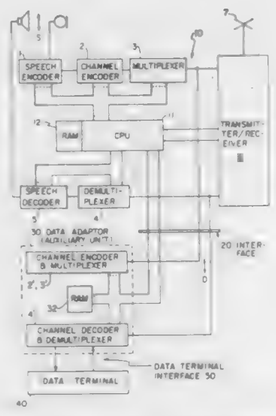
Arto Kiema, Salo, Finland, assignor to Nokia Mobile Phones, Ltd., Salo, Finland

Continuation-in-part of Ser. No. 785,862, Oct. 28, 1991, abandoned, which is a continuation of Ser. No. 501,617, Mar. 26, 1990, abandoned. This application Jan. 7, 1993, Ser. No. 1,281

Claims priority, application Finland, May 17, 1989, 892371

Int. Cl.[6] H04J *3/00*

U.S. Cl. 370—77 **8 Claims**



1. A circuit arrangement for a mobile telephone operating according to a digital mobile telephone system comprising:

a speech only module including:

a transmission function module including speech coding means for converting speech into compressed digital form, channel coding means for generating error correction patterns and combining the error correction patterns with the compressed digitized speech, and multiplexing means for arranging digital bits of the combined error correction patterns and compressed digitized speech into appropriate time slots of a multiplexed signal;

a receiver function module including demultiplexing/-channel decoding means for extracting speech information from the multiplexed signal and performing error correction;

a transmitter/receiver function module including modulating means for modulating the multiplexed signal according to a digital mobile telephone standard;

a memory unit having a first storage capacity no larger than that necessary to accommodate a speech-only call between the mobile telephone and the mobile telephone system; and

a central processing unit for controlling the circuit arrangement and storing information in the memory unit; and

an adaptor unit connected to the speech-only module the adaptor unit having encoding and decoding means for transmission and reception of non-speech data information from the speech-only module and an auxiliary memory unit having a second storage capacity, the combined storage capacity of the memory unit and auxiliary memory unit being at least sufficient to maintain a speech and data call between the mobile telephone and the mobile telephone system.

5,392,283

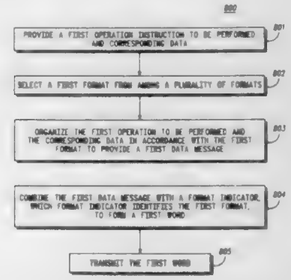
DATA COMMUNICATION PROTOCOL

Paul M. Bocci, Roselle; John M. Gilbert, Schaumburg, and Larry E. Feldman, Buffalo Grove, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 27, 1993, Ser. No. 113,022

Int. Cl.[6] H04B *7/26;* **H04J** *3/16*

U.S. Cl. 370—79 **5 Claims**



3. In a radio communication system comprising a plurality of fixed devices, one of said plurality of fixed devices comprising an initiating device and another of said plurality of fixed devices comprising a receiving device, a method for transferring control information from the initiating device to the receiving device, the method comprising the steps of:

at the initiating device;

(a) providing a first operation instruction to be performed and corresponding data;

(b) selecting a first format from among a plurality of formats;

(c) organizing the first operation instruction to be performed and the corresponding data in accordance with the first format to provide a first data message;

(d) combining the first data message with a format indicator, where the format indicator identifies the first format to form a first word, the first word comprising at least one opcode, at least one operand, and at least one argument, wherein the opcode, the operand, and the argument are hierarchically related, with the opcode indicating a high level function, the operand providing a modifier for the opcode, and the argument providing a specific value for the operand;

(e) transmitting the first word to the receiving device;

(f) providing a second operation instruction to be performed and corresponding data;

(g) selecting a second format from among the plurality of formats;

(h) organizing the second operation instruction to be performed and the corresponding data in accordance with the second format to provide a second data message;

(i) combining the second data message with a second format indicator, where the second format indicator identifies the second format to form a second word, the second word comprising at least one opcode, at least one operand, and at least one argument, wherein the opcode, the operand, and the argument are hierarchically related, with the opcode indicating a high level function, the operand providing a modifier for the opcode, and the argument providing a specific value for the operand;

(j) transmitting the second word to the receiving device.

5,392,284

MULTI-MEDIA COMMUNICATION DEVICE

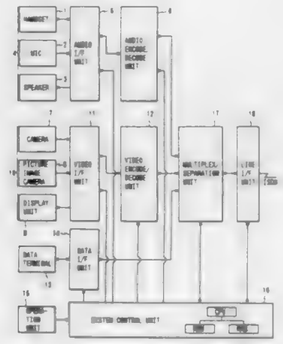
Akira Sugiyama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 763,504, Sep. 20, 1991, abandoned. This application Mar. 3, 1994, Ser. No. 205,823

Claims priority, application Japan, Sep. 20, 1990, 2-251195; Dec. 26, 1990, 2-414513

Int. Cl.[6] H04J *3/22;* **H04M** *1/00*

U.S. Cl. 370—84 **17 Claims**



1. A multi-media communication terminal device comprising:

image information communication means for communicating image information at one of a plurality of image transmission rates to a partner communication terminal device;

audio information communication means for communicating audio information at one of a plurality of audio transmission rates to the partner communication terminal device;

selection means for selecting one of the plurality of image transmission rates; and

control means for selecting from among the plurality of audio transmission rates the optimal audio transmission rate in accordance with the image transmission rate selected by said selection means.

5,392,285

CASCADING TWISTED PAIR ETHERNET HUBS BY DESIGNATING ONE HUB AS A MASTER AND DESIGNATING ALL OTHER HUBS AS SLAVES

Tsvika Kurts, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 31, 1993, Ser. No. 40,504

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—85.2 **11 Claims**

1. A star local area network comprised of: a master hub;

a plurality of master hub stations connected to said master hub;

a slave hub including a slave buffer,

a plurality of slave stations connected to said slave hub;

SREQ link means for connecting said slave hub to said master hub;

MACK link means for connecting said master hub to said slave hub;

slave selection means for selecting a slave local preferred station at said slave hub from among ones of said plurality of slave stations that attempt to transmit a frame simulta-

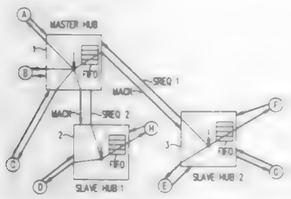
VOL 1171 ISS 3 FE 21 1995 UMI

neously to a destination station, said selecting being done by performing a precedence algorithm at said slave hub, said slave local preferred station having a slave local preferred station ID;

slave transmission means for transmitting from said slave hub to said master hub, a slave local preferred station frame over said SREQ link;

master selection means for selecting a master preferred station at said master hub from among ones of said plurality of master local stations that attempt to transmit a frame simultaneously to said destination station and said slave local preferred station frame, said selecting being done by performing a precedence algorithm at said master hub;

master transmission means for transmitting from said master hub to said slave hub, a master preferred station frame over said MACK link, said master preferred station frame including a source address;



slave decoding means for decoding said source address in said master preferred station frame received at said slave hub to thereby identify a station source ID at which said master preferred station frame originates;

slave comparing means for comparing said station source ID with said slave local preferred station ID;

slave transmission means for transmitting, from said slave station, said master preferred station frame to said slave local stations;

slave storage means for storing said master preferred station frame in said slave buffer upon a condition that said station source ID and said slave local preferred station ID are not identical; and,

SREQ link transmission means for transmitting from said slave station said master preferred station frame to said master hub over said SREQ link upon a condition that said station source ID and said slave local preferred station ID are identical.

5,392,286

DATA TRANSMISSION SYSTEM WITH PACKETS HAVING OCCUPIED, IDLE, RELEASED, AND RESET STATES

Tsutomu Tanaka, Nishinomiya, and Kouji Kubota, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 16, 1993, Ser. No. 107,219

Claims priority, application Japan, Aug. 17, 1992, 4-217990; Nov. 12, 1992, 4-302016; Jan. 12, 1993, 5-003543

Int. Cl.[6] H04J 3/24

U.S. Cl. 370—94.1 49 Claims

1. A data transmission unit for interconnecting with at least one other data transmission unit in a ring network via a transmission path to form a number of units, said number of units transmitting data in the form of packets, each packet having a fixed length, said data transmission unit comprising:

receiving means for receiving packets from the transmission path, each received packet being either occupied, idle, or released, an idle packet being a packet containing no user information;

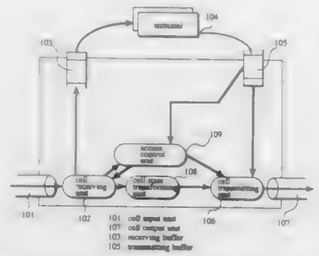
transmitting means for inserting user data into a selected packet to create an occupied packet and transmitting the occupied packet to the transmission path and for generating and transmitting a released packet to the transmission path, a released packet being a packet containing no user information and containing information identifying it as a released packet originating from said unit;

discriminating means for discriminating the state of a received packet to be either occupied, idle, or released;

first judging means for judging whether the number of transmitted occupied packets, which are generated by inserting user data into received idle packets, reaches a first selected window assigned to said data transmission unit;

second judging means for judging whether the number of transmitted occupied packets, which are generated by inserting user data into received released packets, reaches a second selected window assigned to said data transmission unit;

relaying means for relaying packets from said receiving means to said transmitting means;



controlling means for controlling said transmitting means to occupy a received idle packet with user data, if any, and transmitting the occupied packet and continuing to transmit occupied packets until said first selected window is attained and, after said first selected window has been attained, for controlling said transmitting means to transmit the received idle packet from said relaying means; and

said controlling means further controlling said transmitting means to occupy a received released packet bound for another said unit with user data and transmitting the occupied packet and continuing to transmit occupied packets until said second selected window is attained and, after said second selected window has been attained, for controlling said transmitting means to transmit the received released packet from said relaying means.

5,392,287

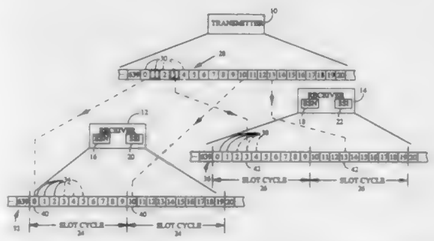
APPARATUS AND METHOD FOR REDUCING POWER CONSUMPTION IN A MOBILE COMMUNICATIONS RECEIVER

Edward G. Tiedemann, Jr.; Lindsay A. Weaver, Jr.; Richard J. Kerr, all of San Diego, and Kenneth M. Gelb, Encinitas, all of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Mar. 5, 1992, Ser. No. 847,149

Int. Cl.[6] H04J 3/04

U.S. Cl. 370—95.1 48 Claims



29. A method for conserving power in a cellular telephone having an average power consumption that is not currently involved in a telephone call by using periodic intervals of time, wherein each interval is comprised of a fixed number of time slots, and by scheduling communication from a base station to said cellular telephone during at least one time slot within each of said periodic intervals, comprising the steps of:

identifying said cellular telephone to said base station;

determining at said base station a set of active time slots within each interval wherein said set of active time slots comprises a quantity of time slots during which said base station may transmit messages to said cellular telephone; and

reducing said average power consumption of said cellular telephone during said fixed number of time slots other than said set of active time slots.

5,392,288

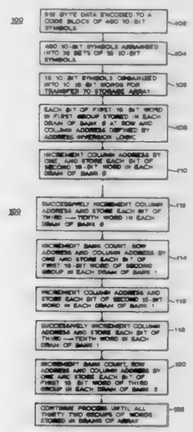
ADDRESSING TECHNIQUE FOR A FAULT TOLERANT BLOCK-STRUCTURED STORAGE DEVICE

Richard A. Rudman, Princeton; Donald W. Smelser, Bolton, and Paul W. Kemp, Northborough, all of Mass., assignors to Quantum Corporation, Milpitas, Calif.

Filed Feb. 8, 1991, Ser. No. 652,870

Int. Cl.[6] H03M 13/00; G06F 11/00

U.S. Cl. 371—2.2 12 Claims



8. Apparatus for storing error correction code symbols in a storage array having a plurality of banks of partially defective memory devices coupled to an error correction code unit, said symbols corresponding to a block of information encoded by said error correction code unit to a code block, said apparatus comprising:

means for apportioning said error correction code symbols into a plurality of defined groups of symbols;

means, coupled to said apportioning means, for converting a first of said defined groups of symbols to a plurality of sets of multiple-bit words;

means, coupled to said converting means, for storing each bit of a first word within a first set of words in each memory device of a first bank at a location defined by a bank count, a row address and a column address; and

means, coupled to said storing means, for successively incrementing said column address and means for storing subsequent to each incremented interval each bit of successive words within said first set in each memory device of said first bank at a location defined by said row address and said successively incremented column address until all of said words within said first set are stored in said array.

5,392,289

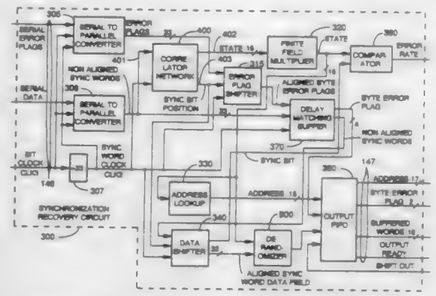
ERROR RATE MEASUREMENT USING A COMPARISION OF RECEIVED AND RECONSTRUCTED PN SEQUENCES

George R. Varian, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Division of Ser. No. 3,896, Jan. 13, 1993, which is a continuation of Ser. No. 974,745, Nov. 13, 1992, abandoned. This application Oct. 13, 1993, Ser. No. 136,075

Int. Cl.[6] G06F 11/00; H04L 12/00, 7/00; H03M 13/00

U.S. Cl. 371—5.4 11 Claims



1. Apparatus for measuring an error rate in a data stream formed of a succession of sync words, comprising:

correlator means for determining a sync bit position in the data stream and a pseudo random (PN) state corresponding to the sync bit position in a PN sequence of sync bits;

delay means receiving the data stream and associated sync bits for introducing a delay thereto which corresponds to the delay introduced by the correlator means;

means receiving the PN state from the correlator means for determining the most significant bit (MSB) of a finite field product of the PN state to compensate for the delay introduced by the delay means; and

comparing means responsive to the delay means and the MSB determining means for measuring any difference value between a sync bit in the delayed data stream and the MSB and for providing the difference value as said error rate.

5,392,290

SYSTEM AND METHOD FOR PREVENTING DIRECT ACCESS DATA STORAGE SYSTEM DATA LOSS FROM MECHANICAL SHOCK DURING WRITE OPERATION

Dana H. Brown; Kevin J. Erickson; Daniel L. Good; Richard Greenberg, all of Rochester; Peter M. Herman, Oronoco, and Hal H. Ottesen, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1992, Ser. No. 922,453

Int. Cl.[6] G06F 11/08, 11/14; G11B 20/18

U.S. Cl. 371—10.1 19 Claims

1. A secondary data storage system for a host computer system comprises:

a disk drive system having a device controller, at least a first magnetic disk and a read/write magnetic transducer-positionable with respect a selected one of a plurality of concentric or spiral tracks on a recording surface of each magnetic disk;

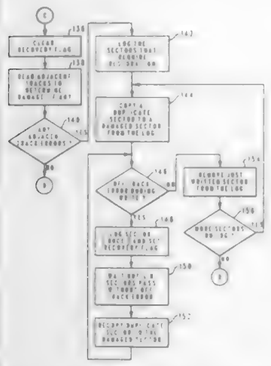
means for generating redundant data for data stored on a magnetic disk of the disk drive system;

means for detecting an off track condition of a magnetic transducer with respect to a target track on the magnetic disk during a write operation;

means responsive to detection of the off track condition for stopping the write operation to the magnetic disk and for determining damage to data stored on tracks adjacent the target track; and

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means responsive to detection of damage to the data stored on tracks adjacent to the target track for utilizing the



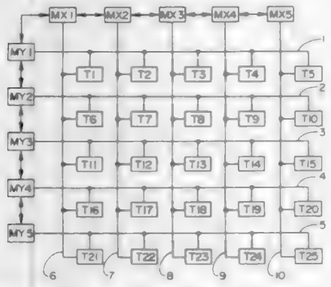
redundant data to repair the data stored on the tracks adjacent the target track.

5,392,291

FAULT-TOLERANT CITO COMMUNICATION SYSTEM

Semyon Berkovich, Rockville; Chris J. Walter, and Henry C. Yee, both of Columbia, all of Md., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed May 20, 1991, Ser. No. 703,025
Int. Cl.[6] G06F *11/00*; **H04J** *3/12, 15/00*
U.S. Cl. 371—10.3 **21 Claims**



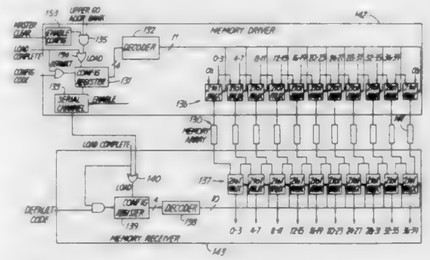
1. A method for communicating data according to a modified CITO protocol, the method comprising the steps of:
providing a plurality of communication lines arranged in a two-dimensional matrix with row communication lines and column communication lines;
providing a plurality of transceivers, each transceiver being connected to one of the row communication lines and to one of the column communication lines;
providing a plurality of mediators, each mediator being connected to one of said communication lines;
the method further includes:
a first step of transmitting from each said transceiver over each of said connected communication lines, a highest order bit of a data word, said bit being one of a logic "1" or a logic "0";
a second step of receiving a data bit on each communication line at a corresponding mediator, and outputting the received data bit back onto the corresponding communication line, the data output by corresponding mediators to the communication line constituting a state of said communication line;
a third step of monitoring the state of each communication line at each connected transceiver;
a fourth step of operating each transceiver in accordance with the state of each connected communication line as monitored in said third step, said fourth step further comprising,
transmitting from each transceiver on connected communication lines the next highest order bit of said data word when said transceiver transmitted a logic "0" in the first step and the state of at least one connected communication line as monitored in said third step equals a logic "0",
transmitting from each transceiver on connected communication lines the next highest order bit of said data word when said transceiver transmitted a logic "1" in the first step and the state of all connected communication lines as monitored in said third step equals a logic "1",
suspending bit transmission from each transceiver when said transceiver transmitted a logic "1" in the first step and the state of at least one connected communication line as monitored in said third step equals a logic "0",
terminating bit transmission from each transceiver when said transceiver transmitted a logic "0" in the first step and the state of said connected communication lines as monitored in said third step equals a logic "1";
a fifth step of transmitting from each active transceiver over each of said connected communication lines a highest order bit of a data word remaining to be sent, said bit being one of a logic "1" or a logic "0";
repeating said second through fifth steps until bit transmission is suspended at all transceivers;
a sixth step of generating a parity check from all transceivers.

5,392,292

CONFIGURABLE SPARE MEMORY CHIPS

Thomas J. Davis; Michael T. Bye; Richard D. Pribnow, and Bricky A. Stephenson, all of Chippewa Falls, Wis., assignors to Cray Research, Inc., Eagan, Minn.

Continuation-in-part of Ser. No. 721,931, Jun. 27, 1991, abandoned. This application Nov. 10, 1993, Ser. No. 149,967
Int. Cl.[6] G06F *11/20*
U.S. Cl. 371—11.1 **5 Claims**



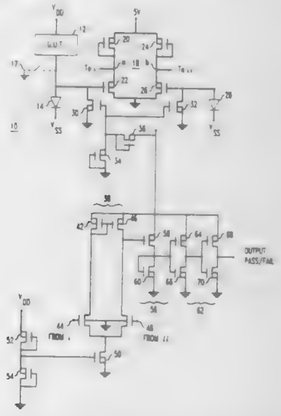
1. A system for reconfiguring a computer memory which includes a memory array comprising a plurality of memory storage elements which include at least one spare memory storage element, the system comprising:
receive means for receiving a configuration code and a data word;
input shift means, coupled to the input means, for shifting the data word in response to the configuration code;
input means for transmitting the shifted data word to the memory array;
output means for receiving the shifted data word from the memory array;
selection means for receiving an enable signal and for selectively transmitting the configuration code to the output means in response to the enable signal; and
output shift means, coupled to the output means, for shifting the shifted data word in response to the configuration code if the selection means transmitted the configuration code to output means in response to the enable signal.

5,392,293

BUILT-IN CURRENT SENSOR FOR I_{DDQ} TESTING

Ching-Wen Hsue, Plainsboro, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Feb. 26, 1993, Ser. No. 23,458
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—15.1 **12 Claims**



1. A method for detecting faults in an integrated circuit powered from a supply voltage V_{DD}, composing the steps of:
sinking current drawn by the integrated circuit during each interval that the circuit undergoes a logic transition;
sensing the current drawn by the integrated circuit during intervals other than when the integrated circuit undergoes a logic transition;
translating the sensed current to a corresponding sensed voltage;
comparing the sensed voltage to a reference voltage representative of a quiescent current expected to be drawn by the integrated circuit during intervals other when the integrated circuit undergoes a logic transition;
generating an indicating voltage in accordance with a difference between the sensed and reference voltages so as to indicate whether the quiescent current of the integrated circuit is above a expected quiescent current; and
stabilizing the indicating voltage against variations in the supply voltage V_{DD}.

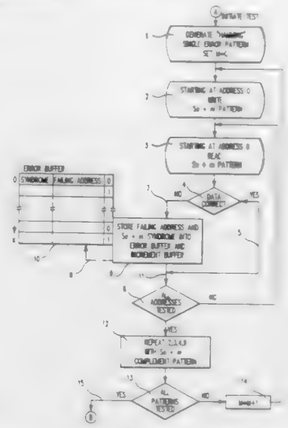
5,392,294

DIAGNOSTIC TOOL AND METHOD FOR LOCATING THE ORIGIN OF PARASITIC BIT FAULTS IN A MEMORY ARRAY

Louis J. Bosch, Hopewell Junction, and Royle K. Smith, LaGrangeville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 8, 1991, Ser. No. 666,824
Int. Cl.[6] G11C *29/00*
U.S. Cl. 371—21.2 **10 Claims**

1. A method for characterizing cell failures in an array of 2n memory cells comprising the steps of:
writing each one of n+1 test patterns to each address of said array, said n+1 test patterns being a Hamming error correction code pattern, whereby each said test pattern is written to each said array address in turn;
reading the contents of each said array address and comparing said read contents with the written one of said n+1 test patterns;



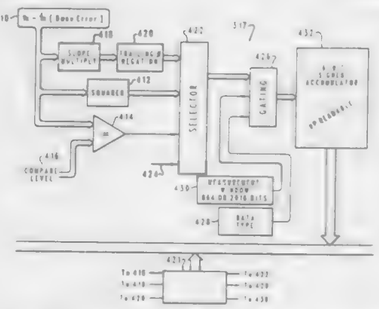
generating from each said comparison a plurality of syndrome bits, said syndrome bits identifying cell failures;
storing said plurality of syndrome bits and said array address for each said identified cell failure;
for each said failed cell array address, ORing said stored syndrome bits.

5,392,295

ERROR MEASUREMENT CIRCUIT

Jonathan D. Coker, and Richard L. Galbraith, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1992, Ser. No. 922,591
Int. Cl.[6] G11C *29/00*
U.S. Cl. 371—21.2 **29 Claims**



1. A circuit for performing test procedures on a data storage and recovery system from data samples obtained from a recovered signal, wherein the data samples are associated with a particular data type, the circuit comprising:
means for generating error samples from the data samples;
a first process path taking the error value samples as inputs of the first process path and including means for generating an output signal comprising a square of each error value sample;
a second process path taking the error value samples and a compare level as inputs of the second process path and including means for comparing the inputs and generating an output signal comprising results of each comparison;
a source of a sample signal at a logical data level;
means for selecting an evaluation signal from the output signals or the sample signal;
means for identifying a particular data type to each error value sample;

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means responsive to coincidence of a data type of the evaluation signals with a desired data type for gating the evaluation signal; and

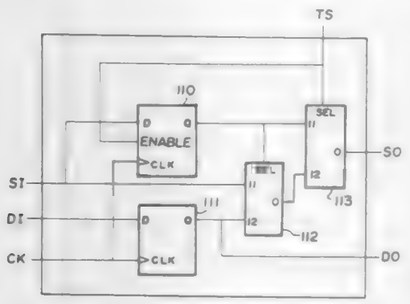
means for accumulating the evaluation signal for a predetermined period.

5,392,296

TESTING CIRCUIT PROVIDED IN DIGITAL LOGIC CIRCUITS

Hiroaki Suzuki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 31, 1992, Ser. No. 937,653
Claims priority, application Japan, Sep. 5, 1991, 3-225554
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 **8 Claims**



1. In a digital logic circuit comprising a combined circuit having a plurality of outputs and scan-pass registers each connected to a respective output of said combined circuit, each of said scan-pass registers comprising:

a data input connected to an output of said combined circuit;

a clock input;

a shift signal input;

a test input;

a data output; and

a shift signal output, wherein said Man-pass registers are serially connected such that said shift signal output of one of said scan-pass registers is connected to the shift signal input of an adjacent one of said scan-pass registers to form a serial circuit having a foremost Scan-pass shift register and are most scan-pass shift register, the shift signal input of the foremost scan-pass register being connected to a main shift-in terminal and the shift signal output of the rearmost scan-pass register being connected to an observation shift-out terminal;

each of said scan-pass registers comprising:

a first holding means connected to said data input for holding one of the outputs of said combined circuit;

a second holding means connected to said shift signal input and responsive to a signal on said test input for holding a signal on said shift-in input when a signal on said test input is active, mid first and second holding means each being responsive to a clock signal on said clock input;

a first selecting means connected to said shift signal input and to receive an output signal of said first holding means for selecting one of the signals on said shift signal input and the output signal from said first holding means in response to an output from said second holding means; and

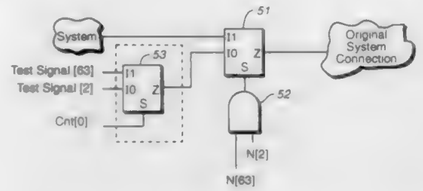
a second selecting means connected to receive output signals from said second holding means and from said first selecting means for selecting between the output signal of said second holding means and the output of said first selecting means in response to the signal on test input.

5,392,297

METHOD FOR AUTOMATIC ISOLATION OF FUNCTIONAL BLOCKS WITHIN INTEGRATED CIRCUITS

Martin J. Bell, Santa Clara, and Muhammad A. Samad, San Jose, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 824,892, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 658,415, Feb. 15, 1991, abandoned, which is a continuation of Ser. No. 340,325, Apr. 18, 1989, abandoned. This application Jun. 5, 1992, Ser. No. 893,629
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.6 **1 Claim**



1. A method of sequentially testing a plurality of functional blocks having data ports within an integrated circuit having external circuit connectors using isolation circuits that are substantially transparent during normal operation of the integrated circuit, comprising the steps of:

a) assigning designations to the functional blocks to be tested;

b) selecting the external circuit connectors of the integrated circuit to which respective ports of each of the functional blocks to be tested are to be connected for testing;

c) for each selected external connector, embedding a first multiplexer in the integrated circuit for multiplexing system signals in the integrated circuit with test signals associated with testing the functional blocks, said first multiplexer having a select port;

d) controlling the select port of the first multiplexer with a signal which identifies whether or not the integrated circuit is in a test mode;

e) for each selected pad and each set of two or more functional blocks that are to be connected to the pad for testing, embedding in the integrated circuit a second multiplexer circuit having a select port and an output port, with the output of the second multiplexer circuit connected to the first multiplexer; and

f) simultaneous with step d), controlling the select port of the second multiplexer circuit with a signal which uniquely identifies the functional block to be tested;

whereby each functional block, when identified as the functional block to be tested, is connected through said first and second multiplexers directly to a selected external circuit connector.

5,392,298

TESTING APPARATUS FOR EXACTLY DISCRIMINATING DEFECTIVE PRODUCT FROM ACCEPTABLE PRODUCT AND TESTING METHOD USED THEREIN

Keisuke Shinjo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

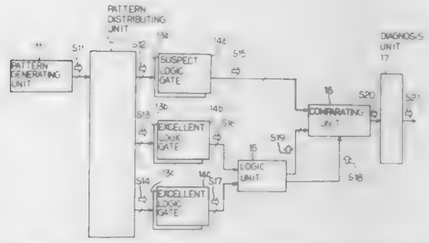
Filed Jul. 13, 1992, Ser. No. 912,758
Claims priority, application Japan, Jul. 11, 1991, 3-170824
Int. Cl.[6] G06F *11/16*
U.S. Cl. 371—25.1 **4 Claims**

1. A testing apparatus used for discriminating a defective integrated circuit from a known good integrated circuit, comprising:

a) a pattern generating unit operative to sequentially produce first random test patterns and at least one second random test pattern having a don't care bit pattern;

b) distributing unit coupled with at least first, second and third test adapters which are coupled to first and second known good integrated circuits and a suspect integrated circuit, respectively, said distributing unit being operative to sequentially transfer said first random test patterns and said at least one second random test pattern to said at least first, second and third test adapters so that said first and second known good integrated circuits and said suspect integrated circuit respectively produce first, second and third output signals;

c) a logic unit coupled to said first and second test adapters, and producing an enable signal indicative of application of each of said first random test patterns to said first and second known good integrated circuits as well as to said



suspect integrated circuit when said first and second output signals are consistent with each other, said logic unit further producing a fourth output signal identical with one of said first and second output signals in the presence of said enable signal;

d) a comparator unit operative to compare said third output signal with said fourth output signal in the presence of said enable signal for producing a fifth output signal indicating whether said third and fourth output signals are consistent with each other depending upon a result of the comparison; and

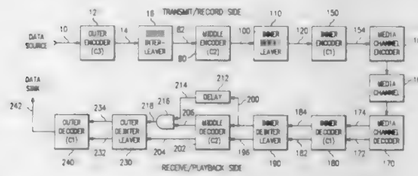
e) a diagnosis unit producing a diagnosis signal indicating that said suspect integrated circuit is an acceptable integrated circuit when all of said first random test patterns result in said fifth output signal indicating that said third ad fourth output signals are consistent with each other.

5,392,299

TRIPLE ORTHOGONALLY INTERLEAAED ERROR CORRECTION SYSTEM

Don S. Rhines, Richardson; William D. McCoy, Wylie, both of Tex., and Kirk H. Handley, Redwood City, Calif., assignors to E-Systems, Inc., Dallas, Tex. and Ampex Corporation, Redwood City, Calif.

Filed Jan. 15, 1992, Ser. No. 820,737
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—37.5 **63 Claims**



20. Apparatus for interleaving and encoding a data stream divided into a sequence of first code groups, comprising:

first encoding means for calculating and appending a first error correction code to each first code group to form a first code word, each first code word combined according to the sequence of first code groups for output as a sequence of first code words;

means for orthogonally interleaving the sequence of first code words including means for sequentially storing the sequence of first code words into a first series of two-dimensional column by row data planes on a column by column basis, the first code words orthogonally interleaved by inter-data plane row shuffling according to a predetermined shuffling sequence to form a second series of two-dimensional column by row data planes, each column of the second series of data planes comprising a second code group for sequential output as a sequence of second code groups;

second encoding means for calculating and appending a second error correction code to each second code group to form a second code word, each second code word combined for output according to the sequence of second code groups as a sequence of second code words;

means for interleaving the sequence of second code words including means for sequentially storing the sequence of second code words into a second code word two dimensional column by row data plane on a row by row basis, each row comprising a third code group, the second code words interleaved by sequentially outputting rows of third code groups as a sequence of third code groups; and

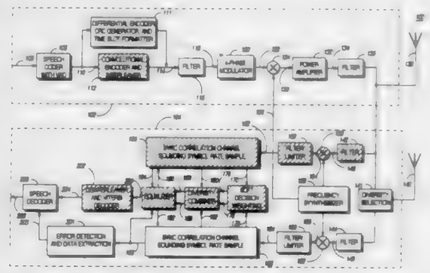
third encoding means for calculating and appending a third error correction code to each third code group to form a third code word, each third code word combined to output a sequence of third code words representing the interleaved and encoded data stream.

5,392,300

DUAL MODE RADIO COMMUNICATION UNIT

David E. Borth, Palatine; John R. Haug, Arlington Heights; Phillip D. Rasky, Buffalo Grove, and Gregory M. Chiasson, Barrington, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 10, 1992, Ser. No. 973,896
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—37.7 **18 Claims**



1. A dual mode radio communication unit for a digital communication system, comprising:

(a) error control means for protecting an input information signal from transmission errors, the error control means comprising transmission protection apparatuses including: (i) an error detection means for encoding the input information signal into an error protected data bit stream and (ii) forward error correction means for encoding the input information signal into an error protected data bit stream; and

(b) mode selection means, operatively coupled to the error control means, for enabling only one of the transmission protection apparatuses-(i) the error detection means and (ii) the forward error correction means for use with a

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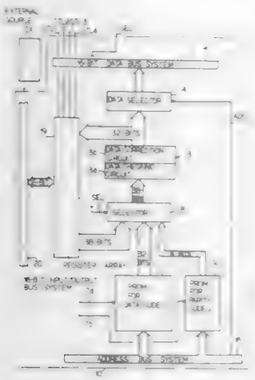
particular mode of operation of the dual mode radio communication unit.

5,392,301

PROGRAMMABLE READ ONLY MEMORY DEVICE HAVING TEST TOOL FOR ERROR CHECKING AND CORRECTION CIRCUIT

Kiyoshi Fukushima, Kumamoto, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,596
Claims priority, application Japan, Mar. 27, 1991, 3-062252
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—40.1 2 Claims



1. A programmable read only memory device selectively entering into a standard mode for serving as a data storage and a test mode for an error checking and correction circuit, comprising:

a) a first programmable read only memory unit having a plurality of addressable memory locations for respectively storing a plurality of data codes;

b) a second programmable read only memory unit having a plurality of addressable memory locations respectively associated with said addressable memory locations of said first programmable read only memory unit for respectively storing a plurality of parity codes respectively produced from said data codes;

c) said error checking and correction circuit having a data checking unit operative to check a data code and an associated parity code to determine whether at least one error bit is incorporated in said data code, and a data correction unit operative to correct said at least one error bit for retrieving said data code, said error checking and correction circuit supplying a data code to a data bus system in said standard mode and through a rewritable data storage to an input and output bus system in said test mode, a data selector being coupled between said error checking and correction circuit and said data bus system, data bits of each data code being larger in number than component signal lines of said data bus system and than component signal lines of said input and output bus system;

d) said rewritable data storage communicable with an external source outside of said programmable read only memory device, and storing a data code used for a diagnosis and a parity code properly or improperly produced on the basis of said associated data code used in the diagnosis; and

e) said selector having first, second and third input ports respectively coupled with said first programmable read only memory unit, said second programmable read only memory unit and said rewritable data storage, and an output port coupled with said data checking unit, said selector being responsive to a selecting signal supplied from the outside of said programmable read only memory device for coupling said first and second input ports with said output port in said standard mode and said third input port with said output port in said test mode,

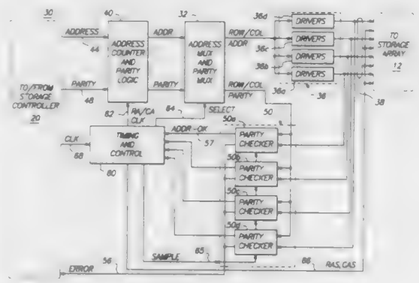
said rewritable data storage comprising a first register sub-array for data bits of said data code coupled through a first transfer gate array with all of the component signal lines of said input and output bus system and through a second transfer gate array with said third input port and an output port of said error checking and correction circuit, a second register sub-array for remaining data bits of said data code coupled through a third transfer gate array with all of the component signal lines of said input and output bus system and through a fourth transfer gate array with said third input port and the output port of said error checking and correction circuit, and a third register sub-array for said proper or improper parity code coupled through a fifth transfer gate array with parts of said component signal lines of said input and output bus system and through a sixth transfer gate array with said third input port, said first, third and fifth transfer gate arrays being selectively gated by first, second and third control signals, said second, fourth and sixth transfer gate arrays being concurrently gated by a fourth control signal.

5,392,302

ADDRESS ERROR DETECTION TECHNIQUE FOR INCREASING THE RELIABILITY OF A STORAGE SUBSYSTEM

Paul W. Kemp, Northborough, and Anh T. Tran, Shrewsbury, both of Mass., assignors to Quantum Corp., Milpitas, Calif.

Continuation of Ser. No. 668,917, Mar. 13, 1991, abandoned.
This application Dec. 6, 1993, Ser. No. 163,397
Int. Cl.[6] G06F *11/10*; H03M *13/00*
U.S. Cl. 371—51.1 8 Claims



1. A method for increasing the reliability of data stored in an array of a storage subsystem, said storage subsystem including a storage controller coupled to said array by way of an address path unit, said storage controller configured to receive a binary address identifying the starting address for accessing words of a block of data during execution of page mode cycle data operations, said method comprising the steps of:

generating initial parity information associated with said starting address at said storage controller;

transmitting said starting address and associated parity information to said address path unit;

generating parity information associated with said transmitted starting address at said input of said array;

checking said parity information of said address received at said input of said array against said initial parity information prior to executing said page mode cycle data operation to verify said starting address;

incrementing said starting address at said address path unit;

generating parity information associated with said incremented addresses;

presenting said incremented addresses to said input of said array;

regenerating parity information associated with said incremented addresses at said input of said array;

comparing said generated parity information with said regenerated parity information at said input of said array;

suppressing said page mode cycle data operation if an error is detected in response to said step of checking and said step of comparing, said step of suppressing including the generation of address error status information at the address path unit: and

transmitting address error status information associated with said starting and incremented addresses from the address path unit to said controller in response to said step of suppressing; and

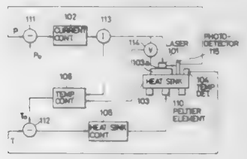
reissuing said page mode cycle data operation at said storage controller in response to said step of transmitting said address error status information.

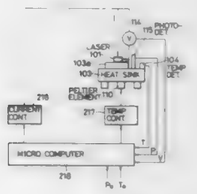
5,392,303

FREQUENCY STABILIZATION METHOD OF SEMICONDUCTOR LASER, FREQUENCY-STABILIZED LIGHT SOURCE AND LASER MODULE

Takahiro Shiozawa; Masayuki Yamaguchi, and Naoya Henmi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 30, 1994, Ser. No. 220,223
Claims priority, application Japan, Mar. 30, 1993, 5-071398; May 31, 1993, 5-128569
Int. Cl.[6] H01S *3/13*
U.S. Cl. 372—32 24 Claims





1. A frequency stabilization method of a semiconductor laser, said method comprising the steps of:

detecting an output light power of a semiconductor laser mounted on a heat sink;

obtaining a consumption power of said laser;

obtaining a relationship between said output light power and said consumption power;

detecting a temperature of said heat sink;

controlling a driving current for the laser so that said output light power is kept constant; and

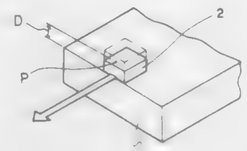
controlling said temperature of said heat sink based on said relationship so that a temperature of an active layer of said laser is maintained.

5,392,304

SEMICONDUCTOR LASER AND MANUFACTURING METHOD THEREFOR

Haruo Tanaka; Masato Mushiage, and Kaoru Kusunoki, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 1, 1993, Ser. No. 69,855
Claims priority, application Japan, Jun. 4, 1992, 4-144225
Int. Cl.[6] H01S *3/04*
U.S. Cl. 372—36 4 Claims



1. A semiconductor laser comprising:

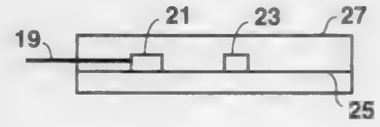
a semiconductor laser chip bonded on a primary plane of a flat submount, the semiconductor laser chip having a face which is both mechanically and chemically treated and said semiconductor laser chip having a thickness of 30 to 80 μm.

5,392,305

PACKAGING OF HIGH POWER SEMICONDUCTOR LASERS

Paul A. Jakobson, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Jul. 14, 1993, Ser. No. 91,657
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—43 11 Claims



1. A packaged high power semiconductor laser comprising:

a semiconductor laser; and,

a hermetically sealed container surrounding said laser and filled with a gaseous medium wherein the oxygen content is greater than 100 ppm.

5,392,306

MULTIPLE QUANTUM WELL STRUCTURE AND SEMICONDUCTOR DEVICE USING THE SAME

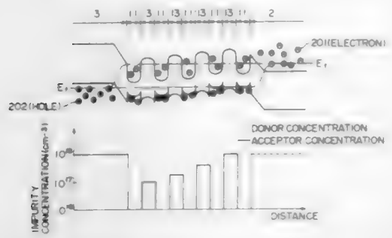
Masashi Usami, Tokyo, and Yuichi Matsushima, Tokorozawa, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1993, Ser. No. 79,618
Claims priority, application Japan, Jun. 29, 1992, 4-192830
Int. Cl.[6] H01S *3/18*; H01L *31/06*
U.S. Cl. 372—45 3 Claims

1. A multiple quantum well structure formed by laminating at least two sets of quantum well layers each having a thickness substantially equal to the de Brogie's wave-length and barrier layer each having an energy gap greater than that of each of the quantum well layers, the multiple quantum well structure having p-type and n-type semiconductor layers disposed to sandwich the multiple quantum well structure therebetween, characterized in that said multiple quantum well structure is doped with at least either one of p-type and n-type impuri-

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ties so that the energy band of said entire multiple quantum well structure slopes upward from the p-type semi-



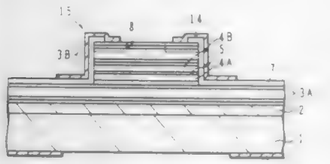
conductor layer to the n-type semiconductor layer, effectively making possible substantially uniform distribution of injected carriers throughout it.

5,392,307

VERTICAL OPTOELECTRONIC SEMICONDUCTOR DEVICE

Yoshihiro Sugiyama, and Yoshiaki Nakata, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 31, 1993, Ser. No. 113,829
Claims priority, application Japan, Mar. 15, 1993, 5-054308
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 **18 Claims**



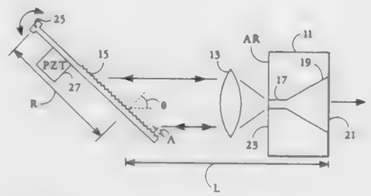
1. An optoelectronic semiconductor device comprising:
an active layer having a first side and a second side;
a first clad layer disposed on the first side of the active layer and a second clad layer disposed on the second side of the active layer to sandwich the active layer therebetween, the first clad layer and the second clad layer each having an effective band gap wider than the effective band gap of the active layer and an effective refractive index lower than the effective refractive index of the active layer; and
a first stack structure disposed on the first clad layer and doped to a first conductivity type, the first stack structure comprising adjacent first and second layers alternating therein to form a laminate of alternating first and second layers, each first layer having a high effective refractive index and each second layer having a low effective refractive index, a respective boundary existing between adjacent first and second layers, a band of the first conductivity type and a band of a second conductivity type existing in the first stack structure where the second conductivity type is opposite the first conductivity type and, at each boundary between adjacent first and second layers, a discontinuity of the band of the first conductivity type being significantly smaller than a discontinuity of the band of the second conductivity type, where the discontinuity of the band of the first conductivity type does not exceed about 3 kT at a room temperature T, where k is Boltzman constant.

5,392,308

SEMICONDUCTOR LASER WITH INTEGRAL SPATIAL MODE FILTER

David F. Welch, Palo Alto; David G. Mehuys, Menlo Park, and Donald R. Scifres, San Jose, all of Calif., assignors to SDL, Inc., San Jose, Calif.

Filed Jan. 7, 1993, Ser. No. 1,735
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—92 **77 Claims**



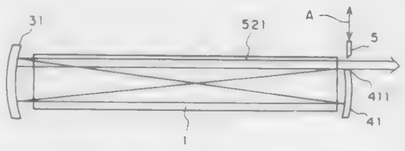
1. A coherent light source comprising
a semiconductor light amplifying chip having an active medium, said active medium including a gain region permitting propagation of light with a diverging phase front therein,
excitation means for pumping said active medium, and
an optical resonator, said active medium being located at least partially within a resonant cavity defined by said resonator and said medium, said resonant cavity having a single-spatial-mode filter therein, at least one reflector of said resonator being an external reflector such that a portion of said resonant cavity lies outside of said chip a second reflector of said resonator positioned such that said light propagating with said diverging phase front is incident thereon, light reflected by said second reflector back toward said single-spatial-mode filter also having a diverging phase front.

5,392,309

LASER APPARATUS INCLUDES AN UNSTABLE RESONATOR AND A SHADING MEANS

Junichi Nishimae; Kenji Yoshizawa, both of Hyogo, and Kenji Kumamoto, Aichi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1993, Ser. No. 120,754
Claims priority, application Japan, Oct. 21, 1992, 4-305896
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—95 **16 Claims**



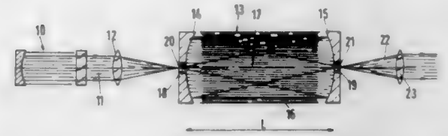
1. A laser apparatus comprising:
a laser medium excited so as to emit an induced emission light;
an unstable resonator including a total reflection mirror opposed to one end of said laser medium to reflect said induced emission light so as to use as a parallel laser light, and a take-out mirror opposed to the other end of said laser medium to have a notch to partially derive said parallel laser light reflected by said total reflection mirror; and
shading means for removing light generated on the outside of said parallel laser light in said unstable resonator due to diffraction of light.

5,392,310

LASER APPARATUS

Jürgen Klein, Aachen, Germany, assignor to Fraunhofer-Gesellschaft zur Förderung der Angewanten Forschung e.V., München, Germany

Continuation of Ser. No. 842,486, Feb. 27, 1992, abandoned. This application Sep. 21, 1993, Ser. No. 124,665
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—95 **25 Claims**



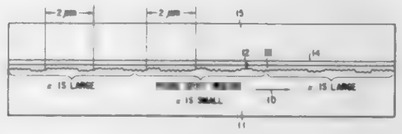
1. A laser apparatus including a laser oscillator and a laser intensifier, including an inlet region in said laser intensifier for a laser beam coming from the laser oscillator and an outlet region in said laser intensifier for the intensified laser beam and said laser intensifier containing a laser medium is provided with a folding mirror which lies opposite to said inlet region for the laser beam, comprising improvement in combination therewith:
said inlet region for the laser beam is an inlet opening means in a further folding mirror which lies opposite to the other folding mirror, said outlet region for the intensified laser beam is an outlet opening means in one of the two folding mirrors tiltable as to each other; that the opening width of said inlet opening means and said outlet opening means is small in relation to the mirror surface of the respective folding mirror; and
a cross section of the laser beam within the laser intensifier being at least partially multiply greater than that in the region of the inlet opening means and outlet opening means;
the folding mirror located opposite said outlet opening focusses the intensified laser beam after the last reflection in the laser intensifier into said outlet opening means;
an optical axis of said two folding mirrors is arranged near an edge of a free aperture of said laser intensifier so that said laser intensifier is precluded from operation as an oscillator; and
the laser beam enters into the laser intensifier as focussed through an opening in one folding mirror under an angle relative to said optical axis between said folding mirrors tiltable as to each other.

5,392,311

LASER ELEMENT

Akio Makuta, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 7, 1994, Ser. No. 224,305
Claims priority, application Japan, May 31, 1993, 5-129420
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—96 **18 Claims**



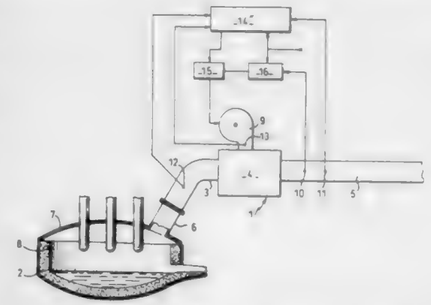
1. A laser element comprising:
a diffraction grating formed on a surface of a substrate, said diffraction grating having first and second periodic structures and including a region in which a phase of the second periodic structure is shifted, the first periodic structure being a structure in which uneven portions are formed periodically;
a waveguide layer formed on the diffraction grating;
a clad layer formed on the active layer.

5,392,312

METHOD AND DEVICE FOR REGULATING THE COMBUSTION AIR FLOW RATE OF A FLUE RATE GAS COLLECTION DEVICE OF A METALLURGICAL REACTOR, CORRESPONDING COLLECTION DEVICE AND METALLURGICAL REACTOR

Thierry Bernet; Hervé Dusser; Sylvain Florelli, and Daniel Pernet, all of Metz, France, assignors to Unimetal Societe Francaise des Aciers Longs, Metz Cedex, France

Filed Mar. 5, 1993, Ser. No. 26,751
Claims priority, application France, Mar. 16, 1992, 92 03108
Int. Cl.[6] F27D *7/00*
U.S. Cl. 373—9 **8 Claims**



6. An apparatus for metallurgical reactions comprising:
a main combustion chamber having an outlet for discharging of gasses;
a monitoring device mounted in said outlet for monitoring the flow of gasses in said outlet and for determining an oxygen content and a CO content thereof;
a secondary combustion chamber for burning said gasses discharging from said main combustion chamber;
a variable supply of combustion gasses into said secondary chamber;
a means for varying said supply of combustion gasses to said secondary chamber based upon the oxygen content and the CO content of gasses being provided from said main combustion chamber.

5,392,313

REMOTE CONTROL SIGNAL REPEATER HAVING A BANDPASS FILTER AND A LEVEL SLICER

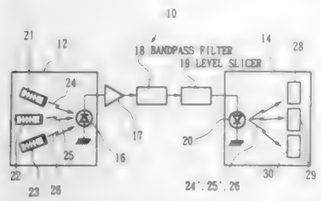
Masao Noro, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Mar. 4, 1992, Ser. No. 846,542
Claims priority, application Japan, Mar. 7, 1991, 3-67866; Mar. 13, 1991, 3-73814
Int. Cl.[6] H04B *3/36*
U.S. Cl. 375—4 **15 Claims**

1. A remote control signal repeater which transmits a remote control signal from a remote controller to a main device, the remote control signal having a carrier frequency within a predetermined frequency range, the remote control signal repeater comprising:
signal receiving means for receiving a remote control signal produced by the remote controller;
bandpass filter means for filtering the received signal and outputting a filtered signal within the predetermined frequency range, the bandpass filter means comprising:
a first parallel resonant circuit having a resonant frequency;
a serial resonant circuit connected to the first parallel reso-

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nant circuit, the serial resonant circuit having substantially the same resonant frequency as the resonant frequency of the first parallel resonant circuit; and



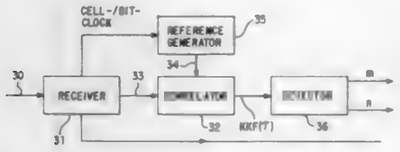
remote control signal output means for transmitting the filtered signal to the main device.

5,392,314

PROCESS FOR DETERMINING THE QUALITY PARAMETERS OF TRANSMISSION LINK FOR DIGITAL DATA STREAMS HAVING A CELLULAR STRUCTURE

Andreas Wolf, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE91/00323, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992
PCT Filed Apr. 18, 1991, Ser. No. 941,090
Claims priority, application Germany, Apr. 19, 1990, 4012850; May 3, 1990, 4014766
Int. Cl.[6] H04B *3/46*
U.S. Cl. 375—10 **11 Claims**



1. A process for determining quality parameters of a transmission link for digital data streams, the digital data streams having a cellular structure, each cell having a useful field able to be freely occupied with data, comprising steps of:

a) providing a sequence of test cells as a test signal, each of said test cells including a useful field, each of said useful fields being partially occupied with a test pattern consisting of a number of binary-coded data,

wherein an auto-correlation function of said test patterns approximates a Dirac pulse;

b) positioning the test pattern within the useful field of each test cell within the sequence of test cells such that the position of the test pattern within the useful field is not repeated within the sequence of test cells;

c) transmitting each cell through the transmission link;

d) after transmitting each cell through the transmission link, correlating each cell of the data stream with a reference pattern selected from a group consisting of a pattern which is identical to the test pattern and a pattern which is the inverse of the test pattern, thereby obtaining a cross-correlation function; and

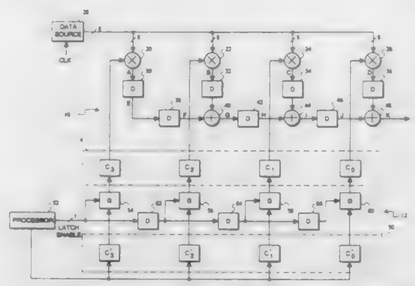
e) evaluating a global maximum of the cross-correlation function with respect to its position in relation to the start of a respective test cell and with respect to its height, thereby obtaining a measure of quality of the transmission link.

5,392,315

FIR FILTER COEFFICIENT UPDATING SYSTEM

Timothy G. Laud, Mundelein, Ill., assignor to Zenith Eletronics Corporation, Glenview, Ill.

Filed Aug. 26, 1992, Ser. No. 936,144
Int. Cl.[6] H03H *7/30, 7/40;* **G06F** *15/31*
U.S. Cl. 375—14 **12 Claims**



1. In a time sampled filter of the type including a plurality of current coefficients establishing a current filter response characteristic, a system for updating the values of said coefficients comprising:

means for storing a plurality of new coefficients each corresponding to a respective one of said current coefficients and collectively representing a new filter response characteristic; and

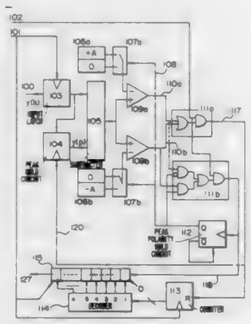
means for successively replacing each of said current coefficients of said filter with the corresponding one of said new coefficients at a rate related to the clock rate of said filter to effect a change in said filter from said current filter response characteristic to said new filter response characteristic.

5,392,316

DECODING METHOD AND APPARATUS WITH MAXIMUM LIKELIHOOD SEQUENCE ESTIMATION

Hideki Sawaguchi; Yasuhide Ouchi, both of Kodaira; Naoki Sato, Kokubunji, and Yosuke Hori, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,390
Claims priority, application Japan, Jan. 28, 1992, 4-012818
Int. Cl.[6] H04L *25/49;* **G11B** *5/02*
U.S. Cl. 375—18 **22 Claims**



12. An apparatus for decoding a sequence most likely to match the original sequence from a timing value sequence of an analog output signal formed from a binary code sequence and supplied from one of a communications channel and recording/reproducing channel having the characteristic of one of Partial Response Classes I and IV, comprising:

means for identifying which one of three-value levels is most likely to match a bit of said timing value sequence supplied from said one of the communications channel and the recording/producing channel, by using a maximum likelihood sequence estimation algorithm;

means for generating a temporarily judged signal for a presently detected timing value if said presently detected timing value is most likely to have one of the maximum and minimum levels of said three-value levels;

means for generating a finally judged signal for a preceding timing value already given said temporarily judged signal if said preceding value is judged, from said timing value sequence up to said presently detected timing value, as having one of said maximum and minimum levels;

a shift register for storing a decoded binary bit sequence and bit-shifting the contents synchronously with an input of each bit of said timing value sequence;

a counter for counting the number of bits of said timing value sequence received during the period from when outputting said temporarily judged signal to when outputting said finally judged signal; and

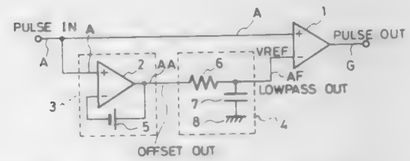
means for changing the content of said shift register at the bit position corresponding to the number of bits counted by said counter, in response to an output of said finally judged signal.

5,392,317

METHOD AND APPARATUS EXTRACTING PULSE SIGNAL

Yoshiki Cho, and Tetsu Tashiro, both of Hyogo, Japan, assignors to Mitsubishi Kenki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1992, Ser. No. 839,524
Claims priority, application Japan, Feb. 22, 1991, 3-060957
Int. Cl.[6] H04L *25/06, 25/10*
U.S. Cl. 375—76 **3 Claims**



1. A pulse signal extracting apparatus comprising:

an amplifier having first and second input terminals, the amplifier for amplifying an input signal having a low-frequency noise component superimposed on an effective signal having a pulse waveform, provided at the first input terminal thereof and a constant DC voltage provided at the second input terminal thereof, amplifying the difference between said input signal and said DC voltage and outputting an amplified signal;

a low-pass filter responsive to the amplified signal from said amplifier for cutting off the high-frequency pulse waveform from the amplified signal to output a pulsating-current voltage whose principal component is the low-frequency noise component; and

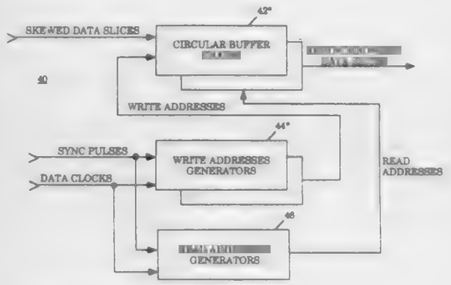
a comparator for comparing said pulsating-current voltage with the input signal to output only said pulse waveform on the basis of the comparison result.

5,392,318

METHOD AND APPARATUS FOR DESKEWING/RESYNCHRONIZING DATA SLICES WITH VARIABLE SKEWS

David Ellis, Hillsboro; Gary Brady, Portland, and Andy Groves, Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 31, 1993, Ser. No. 40,902
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—118 **35 Claims**



1. In a digital system comprising

a plurality of data sending high speed circuits, and

a data receiving high speed circuit,

wherein each of said data sending high speed circuits concurrently generates and sends a stream of data slices and a companion stream of clock pulses to said data receiving high speed circuit, and

said streams of data slices and clock pulses incur varying amount of delays when they travel from said data sending high speed circuits to said data receiving high speed circuit,

an apparatus for deskewing/resynchronizing said streams of data slices, said apparatus comprising:

a) buffer means coupled to said data sending high speed circuits for receiving said streams of data slices, and individually buffering said received streams of data slices for at most a time period t, where t is a function of the maximum amount of skew between any two of said streams of data slices;

b) sync pulse generation means for synchronously generating a plurality of streams of periodic sync pulses corresponding to said streams of data slices and clock pulses, each stream of periodic sync pulses having a predetermined periodicity p, said streams of periodic sync pulses incurring similar amount of delays as their corresponding streams of data slices and clock pulses when they travel to said data receiving high speed circuit;

c) write buffer address generation means coupled to said data sending high speed circuits, said buffer means and said sync pulse generation means, for receiving said streams of clock pulses and periodic sync pulses, and independently generating write buffer addresses for said buffer means using said received clock pulses and periodic sync pulses; and

d) read buffer address generation means coupled to said data sending high speed circuits, said sync pulse generation means, and said buffer means for receiving one of said streams of clock pulses and its corresponding periodic sync pulses, and generating synchronized read buffer addresses for said buffer means using said received stream of clock pulses and periodic sync pulses.

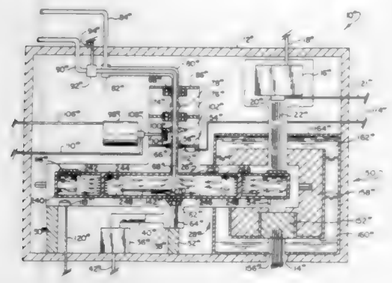
VOL 1171 ISS 3 FEB 21 1995 UMI

5,392,319

ACCELERATOR-BASED NEUTRON IRRADIATION

Philip E. Eggers, Dublin, Ohio, assignor to Eggers & Associates, Inc., Dublin, Ohio

Filed Dec. 22, 1992, Ser. No. 994,942
Int. Cl.[6] G21G *1/10*
U.S. Cl. 376—194 15 Claims



1. Apparatus for generating neutrons, comprising:
a particle source having an output of charged particles directed along a predetermined pathway
a containment chamber for receiving said output of charged particles under subatmospheric pressure;
a target carriage extending to a circular periphery, mounted for rotation about a carriage axis within said containment chamber, having a target support region extending inwardly from said periphery and movable across said pathway and having an internally disposed, confined coolant chamber extending into adjacency with said target support region, said coolant chamber including an annular heat exchanger positioned adjacent to and inwardly from said target support region defining a sealed primary coolant chamber extending beneath said target support region and retaining a deuterium oxide coolant in heat exchange relationship with th radially outwardly disposed surface of said annular heat exchanger, the radially inwardly disposed surface of said annular heat exchanger defining a second coolant chamber;
a circulation conduit assembly having one end in fluid sealed connection with said target carriage secondary coolant chamber and extending outwardly from said containment chamber to a port assembly;
a target assembly retaining neutron deriving target material, located at said target support region and reactive with said charged particles within said pathway to generate neutrons and heat; and
a fluid coolant for circulation to said secondary coolant chamber through said circulation conduit assembly.

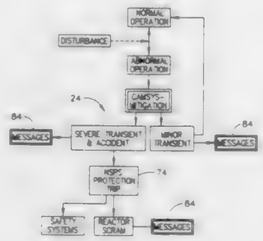
5,392,320

CORE AUTOMATED MONITORING SYSTEM

Fred C. Chao, Saratoga, Calif., assignor to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 909,343, Jul. 6, 1992, Pat. No. 5,309,485. This application Oct. 7, 1993, Ser. No. 132,945
Int. Cl.[6] G21C *7/36*
U.S. Cl. 376—215 20 Claims

1. A system for receiving monitoring parameter input signals from a plurality of monitors monitoring operation of a nuclear reactor said system comprising:
a data base containing predetermined setpoints;
means for identifying abnormal behavior of said nuclear reactor by utilizing said setpoints and said input signals from said monitors;
means for determining a cause of said identified abnormal behavior including predetermined artificial intelligence rules associated with each primary one of said monitoring parameters and based on performance of preselected related secondary ones of said monitoring parameters; and



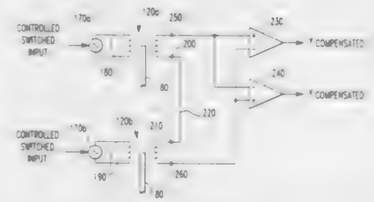
means for determining a control parameter to mitigate said abnormal behavior.

5,392,321

METHOD AND SYSTEM FOR MAGNETIC COUPLING COMPENSATING A ROD POSITION INDICATION SYSTEM

Louis W. Gaussa, Jr., Penn Township, Westmoreland County, and Arun P. Sahasrabudhe, West Mifflin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 24, 1994, Ser. No. 185,356
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—258 10 Claims



1. A method for magnetic coupling compensating a rod position indication system having two rod position indicators each having induced noise comprising the steps of:
a) applying a sinusoidal current to a primary of the first rod position indicator for inducing a voltage on a first secondary of the first rod position indicator;
b) deactivating a sinusoidal current to a second rod position indicator for obtaining a secondary voltage from the second rod position indicator having induced noise;
c) receiving both the first secondary voltage from the first rod position indicator and the second secondary voltage, induced from the noise, of the second rod position indicator; and
d) deriving a difference of the first and second secondary voltage for obtaining the magnetic coupling compensation of the first rod position indicator.

5,392,322

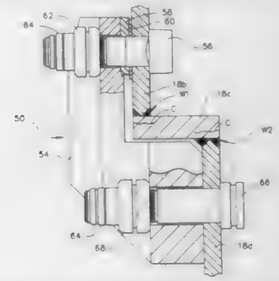
SHROUD REPAIR CLAMP

Robert W. Whitling, Morgan Hill; Barry H. Koepke, San Jose, and James E. Charnley, Nevada City, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Nov. 22, 1993, Ser. No. 155,731
Int. Cl.[6] G21C *19/00*
U.S. Cl. 376—260 7 Claims

1. A method for repairing a reactor core shroud having a circular cylindrical upper shroud wall of first diameter, a circular cylindrical lower shroud wall of second diameter less than said first diameter, and an annular support ring having a radially outer portion welded to said upper shroud wall and a

radially inner portion welded to said lower shroud wall, comprising the steps of clamping said upper shroud wall to said



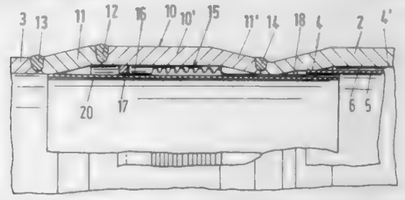
lower shroud wall at a plurality of azimuthal locations distributed about the periphery of said support ring.

5,392,323

REACTOR PRESSURE VESSEL IN A NUCLEAR POWER STATION

Urs Blumer, Winterthur, Switzerland, assignor to Sulzer Thermtec AG, Winterthur, Switzerland

Filed Apr. 21, 1994, Ser. No. 230,669
Claims priority, application European Pat. Off., Jun. 14, 1993, 93810424
Int. Cl.[6] G21C *13/032*
U.S. Cl. 376—291 3 Claims



1. A reactor pressure vessel of a nuclear power station, having at least one pipe socket connected to a feed-water supply line, in which a coaxial protective sleeve (thermal sleeve) expanding with changes in temperature is disposed, which with its outer end slidably abuts the pipe socket and with its inner end is connected to a feed-water distributing ring situated in the vessel, characterised in that a pipe section is inserted between the outer end of the pipe socket and the feed-water supply line,
and in that in the pipe section are disposed bellows, which with one end are tightly connected to the outer end of the expanding protective sleeve and with their other end are tightly connected to the pipe section.

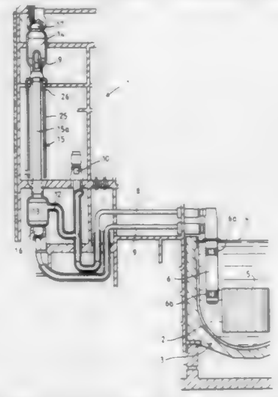
5,392,324

DEVICE FOR AND METHOD OF REMOVING THE RESIDUAL POWER FROM A FAST-NEUTRON NUCLEAR REACTOR AT SHUTDOWN

Christian Mauget, Marcy l'Etoile, and Benoit Giraud, Lyons, both of France, assignors to Framatome, Courbevoie, France

Filed Jul. 1, 1993, Ser. No. 84,313
Claims priority, application France, Jul. 1, 1992, 92 08113
Int. Cl.[6] G21C *15/18*
U.S. Cl. 376—299 2 Claims

1. In a fast-neutron nuclear reactor comprising a vessel containing a reactor fuel core and a system for cooling said core in which a liquid metal circulates and on which is placed at least one steam generator including a substantially cylindrical casing having a vertical axis, in which the liquid metal circulates, water-feed means and means for heat exchange between the liquid metal and the feed water, a device for removing residual power from said reactor at shutdown and/or under accident conditions, including, around said casing of said at least one steam generator, a tubular unit for recovering heat and for guiding a cooling gas including a metal shell covered on the outside by a layer of thermally insulating mate-



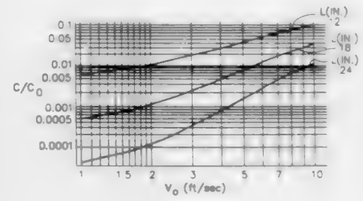
rial and carrying, on its internal surface, a plurality of fins placed longitudinally of the shell and means for causing the cooling gas to flow in an annular space between said tubular unit and said casing of said at least one steam generator constituted by a vertical chimney connected to an upper part of said annular space via a pipe and at least one air inlet port in said annular space, at a lower part of said tubular unit, wherein said tubular unit is connected to a support structure of the steam generator by means of a bellows.

5,392,325

METHOD AND APPARATUS FOR LOCAL PROTECTION OF PIPING SYSTEMS FROM STRESS CORROSION CRACKING

Gerald M. Gordon, Soquel; Beth Ann McAllister; James H. Terhune, both of San Jose, and James E. Charnley, Gilroy, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed May 21, 1993, Ser. No. 66,850
Int. Cl.[6] G21C *9/00*
U.S. Cl. 376—301 14 Claims



1. A catalytic reactor cartridge for installation in a pipe having liquid flowing therethrough, said liquid having first and second reactants dissolved therein, comprising:
first thin sheet means for catalyzing the reaction of said first and second reactants in said liquid, said first thin sheet means having a multiplicity of means for generating turbulence distributed thereon, said turbulence generating means causing repeated diminishment of a boundary layer thickness of liquid flowing along the surfaces of said first thin sheet means, said first thin sheet means having a thickness in the range of 10 to 12 mils; and
means for rigidly supporting said first thin sheet means in a spaced array with said first thin sheet means extending in a predetermined direction.

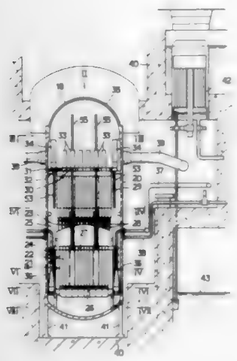
VOL 1171 ISS 3 FE 21 1995 UMI

5,392,326

BOILING WATER REACTOR

Tadashi Narabayashi; Noboru Saito; Takashi Ishitori, all of Yokohama; Kunio Shimano, Kawasaki; Yasuhiko Aida; Kiyoshi Hattori, both of Yokohama; Katsumi Yamada, Fujisawa; Nobuhiko Tanaka; Akira Nakamura, both of Yokohama; Hiroshi Miyano, Kamakura; Shigeaki Tsunoyama, Yamato; Iwao Oshima, Kawasaki; Hideo Komita, Yokohama; Takao Fujii, Ebina; Osamu Ozaki, and Katsuhiko Mawatari, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 19, 1993, Ser. No. 20,321
Claims priority, application Japan, Feb. 20, 1992, 4-033407
Int. Cl.[6] G21C *15/00*
U.S. Cl. 376—371 20 Claims



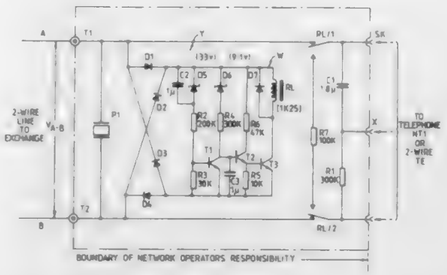
1. A boiling water reactor comprising:
a reactor pressure vessel accommodated in a reactor containment vessel in a vertical fashion;
a core disposed at a low portion in the reactor pressure vessel, said core being composed of a plurality of fuel assemblies arranged with spaces from each other;
a plurality of control rods to be inserted from an upper side of the core into the spaces between the fuel assemblies and withdrawn therefrom upwardly;
a shroud surrounding the fuel assemblies so as to define the core and having an upper end opening;
a shroud head which closes the upper end opening of the shroud and through which said control rods are inserted or withdrawn;
a separator means standing upward from the shroud head to carry out gas-water separation of steam generated from the core;
a fixing pedestal disposed above the separator means and provided with a steam flow hole through which steam separated by the separator means passes;
a control rod driving mechanism located within the reactor pressure vessel mounted on the fixing pedestal and adapted to drive the control rods;
a drier means arranged along an upper inner wall surface of the reactor pressure vessel; and
a jet pump means disposed in a space between an outer surface of the shroud and an inner wall surface of the reactor pressure vessel.

5,392,327

TERMINATION UNIT WITH MAINTENANCE FACILITY

Robert K. P. Galpin, Chippenham, England, assignor to GPT Limited, United Kingdom

Filed Dec. 21, 1992, Ser. No. 993,599
Claims priority, application United Kingdom, Jan. 8, 1992, 9200332
Int. Cl.[6] H04M *1/24, 3/08, 3/22;* H04J *1/16*
U.S. Cl. 379—2 6 Claims



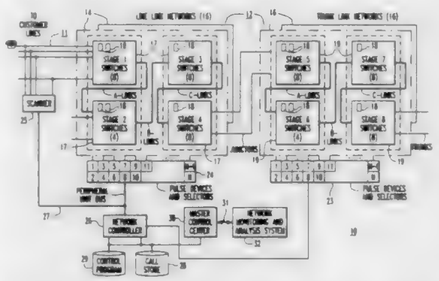
1. Test apparatus for a two-wire telecommunications line between an exchange and a subscriber termination unit and connectable thereto, comprising: voltage sensing means responsive to a DC voltage applied between the wires of the line supplied from the exchange, said DC voltage being less than a normal line feed voltage and within a voltage range not used in normal operation; and switching means controlled by the voltage sensing means for disconnecting the subscriber termination unit from the line and for providing a known linear terminating impedance for the line for the duration of the application of said DC voltage.

5,392,328

SYSTEM AND METHOD FOR AUTOMATICALLY DETECTING ROOT CAUSES OF SWITCHING CONNECTION FAILURES IN A TELEPHONE NETWORK

Barnet M. Schmidt, Oradell, and Lawrence P. Schopperth, Kinnelon, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Feb. 4, 1993, Ser. No. 13,282
Int. Cl.[6] H04M *1/24, 3/22*
U.S. Cl. 379—10 32 Claims



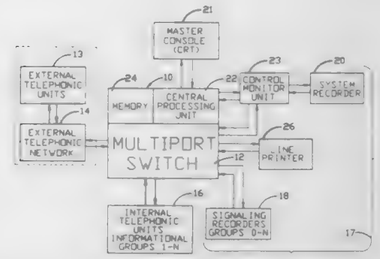
1. A system for operating an analog telephone switching machine having a first plurality of paired line link and trunk link networks, each of the paired networks having a second plurality of sequentially interlinked switch stages, each of the switch stages having multiple grids with input levels and output levels interconnectable at crosspoints by respective relay switches and interconnectable between switch stages by links to form call connection paths, and pulse order objects being provided in a third plurality of pulse paths for energizing the crosspoint relays, the system comprising:
a controller for generating network call connection orders and operating the pulse devices to implement the network orders;
said controller generating a post-connection continuity check and generating an error message if the continuity check indicates that the ordered connection has failed;
means for processing the error messages generated over time to identify the root cause of connection failures;
said processing means having means for identifying failed crosspoints from error messages that represent failed crosspoints; and
said processing means having means for identifying failed pulse path objects from error messages that represent failed pulse paths.

5,392,329

AUTOMATIC CALL DISTRIBUTION SYSTEM WITH EMERGENCY RECORDING SYSTEM AND METHOD

David J. Adams, Warrenville; Brian J. Shapley, Woodridge, both of Ill., and Pramela M. Ittoop, Troy, Mich., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 27, 1992, Ser. No. 966,989
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—49 45 Claims



18. In an automatic call distribution system having a multiport switch for selectively interconnecting a total plurality of internal units of an internal network with a plurality of external units of an external telephonic network, the improvement being an emergency recording system, comprising:
a plurality of recorders for recording incoming calls from external units;
means for selectively interconnecting available ones of the plurality of recorders upon request to selected ones of the plurality of internal units; and
means for storing information concerning the recording of a call in response to the request for recording by the selected ones of the plurality of internal units.

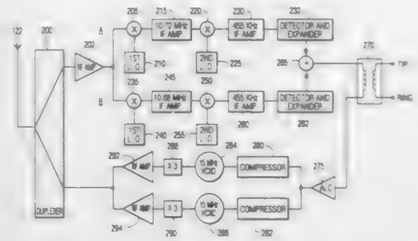
5,392,330

OFFSET DOWN CONVERSION FOR A TWO-HANDSET CORDLESS TELEPHONE SYSTEM

Samuel R. Paniccia, Jr., Liverpool, N.Y., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jan. 8, 1992, Ser. No. 817,932
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—61 4 Claims

1. A cordless telephone set, comprising:
a first handunit for producing a first audio signal;
a second handunit for producing a second audio signal; and
a base unit for receiving signals of said handunits, and coupling said signals of said handunits to a telephone system;
said base unit including means for combining said received signals of said handunits to form a single output signal for transmission via said telephone system;
said handunits and said base unit communicating via a single antenna mounted on said base unit;
said first handunit transmitting said first audio signal on a first frequency and receiving on a second frequency;
said second handunit transmitting said second audio signal on a third frequency and receiving on a fourth frequency; and
in order to provide for a three-way conversation said first audio signal received from said first handunit is transmitted by said base unit to said second handunit, and said second audio signal received from said second handunit is transmitted by said base unit to said first handunit;
said base unit employing a first double conversion intermediate frequency arrangement for processing signals received at said first frequency, and a second double conversion intermediate frequency arrangement for processing signals received at said third frequency;
said first and second double conversion intermediate frequency arrangements having respective first IF frequency portions, said respective first IF frequency portions being tuned away from a nominal frequency value by a substantially equal amount in opposite directions.



5,392,331

METHOD AND APPARATUS FOR PERFORMING A HAND-OFF IN A WIRELESS COMMUNICATION SYSTEM

Stelios J. Patsiokas, Plantation; Craig Wadin, Sunrise; Paul Marko, Ft. Lauderdale, and Prathivadhi B. Krishna, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

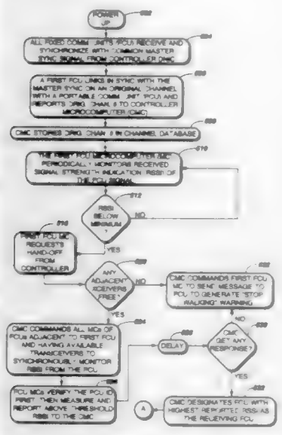
Continuation of Ser. No. 935,494, Aug. 25, 1992, abandoned.
This application May 31, 1994, Ser. No. 252,139
Int. Cl.[6] H04M *11/00;* H04Q *7/00*
U.S. Cl. 379—63 18 Claims

1. A method in a digital wireless communication system for controlling an inter-cell hand-off of a wireless link from a first fixed communication unit to a second fixed communication unit, the system comprising a portable communication unit and a controller coupled to the first and second fixed communication units, the method comprising the steps of:
(a) receiving by the first and second fixed communication units a common master synchronization signal from the controller;
(b) establishing a first wireless link between the first fixed communication unit and the portable communication unit on a first radio frequency,
wherein the first wireless link is synchronized to the common master synchronization signal, and
wherein frame synchronization is obtained between the fixed communication unit and the portable communication unit during establishment of the first wireless link;
(c) maintaining said frame synchronization by maintaining bit synchronization while transmitting user data on the first radio frequency, wherein no frame synchronization

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information is transmitted while transmitting said user data;

(d) establishing, under direction of the controller, a second wireless link between the second fixed communication unit and the portable communication unit, the second wireless link established on the first radio frequency in



response to the first radio frequency having been determined by the system to be usable therebetween, the second wireless link being synchronized to the common master synchronization signal; and

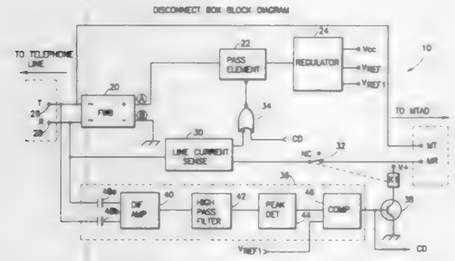
(e) disconnecting the first wireless link, after step (d), under direction of the controller, thereby seamlessly completing the inter-cell hand-off.

5,392,332

SHARED LINE TELEPHONE ANSWERING SYSTEM WITH A TELEPHONE LINE-POWERED DISCONNECT MODULE

Kenneth R. Core, Stanton; Mark J. Karnowski, Garden Grove, and Stephen B. Knuth, Mission Viejo, all of Calif., assignors to PhoneMate, Inc., Torrance, Calif.

Filed May 27, 1992, Ser. No. 890,562
Int. Cl.[6] H04M *1/64, 1/72*
U.S. Cl. 379—67 **14 Claims**



1. A system of multiple telephone answering devices connected to and sharing a single telephone line, comprising:

a main telephone answering device (MTAD) connected to said single telephone line;

at least one extension telephone answering device (ETAD) connected to said single telephone line, said at least one ETAD including an indicator to indicate when it has seized said single telephone line; and

at least one disconnect module, said at least one disconnect module being connected to and between said single telephone line and said MTAD, said disconnect module comprising:

a first sensor which detects an ETAD signal transmitted by said at least one ETAD when said at least one ETAD seizes a connection to said single telephone line, said first sensor generating a first sensor signal in response to receipt of said ETAD signal;

a switch operative responsive to said first sensor signal for disconnecting said MTAD from said single telephone line;

a second sensor for detecting an on or off hook status of said MTAD and for generating a second sensor signal in response to said MTAD going off hook; and

a power supply for deriving original power from the telephone line when switched on, wherein said power supply is activated by at least said second sensor signal.

5,392,333

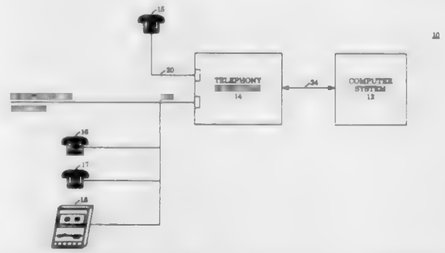
Patent Not Issued For This Number

5,392,334

OFF-HOOK DETECTION AND SOFT LINE SEIZURE FOR TELEPHONE LINE SHARING IN A COMPUTER SYSTEM

Barry O'Mahony, Banks, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 25, 1993, Ser. No. 111,719
Int. Cl.[6] H04M *9/02*
U.S. Cl. 379—67 **20 Claims**



1. A method for processing an incoming call on a telephone line in a computer system, comprising the steps of:

coupling the telephone line to a telephone over a local line, such that a ring signal for the incoming call over the telephone line causes the telephone to ring along with at least one telephone extension coupled to the telephone line in parallel with the telephone;

detecting the incoming call on the telephone line;

detecting a pick-up by an extension device coupled to the telephone line in parallel with the telephone;

if a fax calling tone is detected on the telephone line, then seizing the telephone line according to a hard line seizure to cause the extension device to hang-up, then sending a fax answer tone over the telephone line and generating a fax transfer over the telephone line;

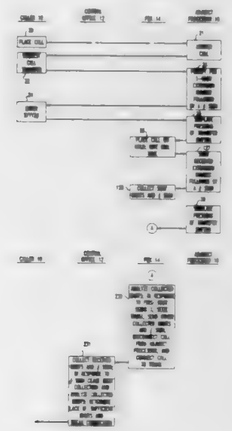
if a fax calling tone is not detected on the telephone line, then seizing the telephone line according to a soft line seizure, the soft line seizure holding a tip to ring voltage of the telephone line to a soft seizure level after the extension device hangs up, then sending an answer tone over the telephone line and generating a data modem or a manual fax transfer over the telephone line.

5,392,335

ARRANGEMENT FOR PREVENTING PERPETRATION OF TOLL FRAUD THROUGH AN ADJUNCT PROCESSOR

Robert D. Reeder, Westminster, Colo., assignor to AT&T Corp., Murray Hill, N.J.

Filed Jan. 13, 1994, Ser. No. 180,595
Int. Cl.[6] H04M *1/66, 3/58*
U.S. Cl. 379—67 **17 Claims**



1. An adjunct processor for use with a switching system, comprising:

means for providing services to a call, including a call-transfer service; and

means responsive to invocation of the call-transfer service, for signalling to the switching system a call-transfer request and an address to which the call is to be transferred, accompanied by an end-of-address indication;

wherein the signalled end-of-address indication prevents a caller of the call from modifying the signalled address at the switching system to effect the transfer of the call to an address different from the signalled address.

5,392,336

DATA MESSAGE STORAGE AND PICK UP SERVICE

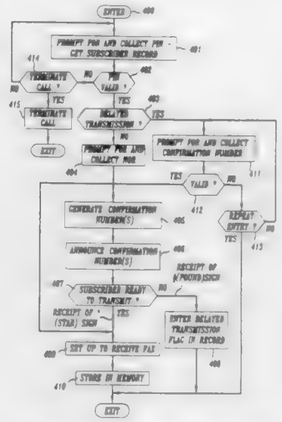
Edward S. Chang; Nadine K. Grasty, both of Warren; Alok K. Gupta, Marlboro; Bruce E. McNair, Holmdel, and Alan I. Schwartz, Bedminster, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed May 27, 1993, Ser. No. 68,359
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—93 **41 Claims**

1. A method of providing a data message delivery service in a telecommunications network comprising the steps of

responsive to receipt of a call from a subscriber of said delivery service and desiring to send a data message to an intended recipient, generating a unique identifier and supplying the identifier to the subscriber, said identifier being other than an address of a memory location,

responsive to receipt of said data message from said subscriber, storing said data message in memory in association with said unique identifier not then stored in memory in association with any other stored message, and



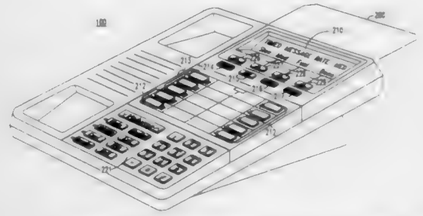
responsive to receipt of said unique identifier entered by a subsequent caller unloading said data message and supplying it to said subsequent caller via said network.

5,392,337

ARRANGEMENT FOR VARYING THE DISPLAY TIME FOR MESSAGES DISPLAYABLE ON A TELEPHONE TERMINAL

Kimberly A. Baals, Matawan; Kathleen J. Chylinski, Bridgewater; Darren A. Kall, Highland Park; Gary C. Smith, Freehold, and Susan L. Tuttle, East Windsor, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jan. 4, 1993, Ser. No. 428
Int. Cl.[6] H04M *1/27;* **G09G** *3/20*
U.S. Cl. 379—96 **16 Claims**



9. An arrangement for displaying screens of information messages in a display device at a telephone terminal connectable to a telecommunication switch, the arrangement comprising;

means for generating a set of information messages in the telephone terminal, the information messages varying in amount of textual contents;

means for a user preselecting at the telephone terminal one of selectable time periods for determining a length of time of display for each of the information messages on a screen of the display device; and

means in the telephone terminal for controlling the user preselected time period for which each of the information messages is displayed on the screen of the display device, said controlling means varying the user preselected time period for displaying each of said information messages for a period of time determined in accordance with the

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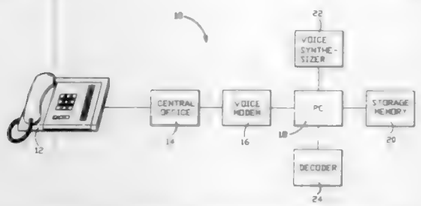
amount of the textual contents of each of the information messages.

5,392,338

ENTRY OF ALPHABETICAL CHARACTERS INTO A TELEPHONE SYSTEM USING A CONVENTIONAL TELEPHONE KEYPAD

Adel Danish, Cairo, Egypt; Sherif Danish, Foster City, and Kris W. Kimbrough, Redwood City, both of Calif., assignors to Danish International, Inc., Foster City, Calif.

Continuation-in-part of Ser. No. 500,370, Mar. 28, 1990, Pat. No. 5,117,455. This application May 12, 1992, Ser. No. 881,849
The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—97 **2 Claims**



1. A system for entering alphanumeric characters into a telephone station, the system comprising:

at least one telephone set having a push-button keypad, the keypad preconfigured so that each alphabetic character occupies a first, second or third site on one of a plurality of push button keys on the keypad, depressing a key, once for the first character in sequence associated with that key, twice for the second character in sequence associated with that key, three times for the third character associated with that key, and N times for the Nth character, if any, associated with that key, generating a dual tone multifrequency signal, the system comprising:

an assigned signal code for each alphanumeric character, each signal code having a maximum time period between the first instance in which a specific key is actuated and subsequent actuations of the same key before a character associated with that key is selected;

a computer responsive to dual tone multifrequency signals and having means for converting said signals into digital signals;

means for storing codes corresponding to the dual tone multifrequency signals; and

means for converting the digital signals into voice signals for announcing alphanumeric characters back to a user.

5,392,339

TELEPHONE TRANSFER APPARATUS USING A SPECIAL SIGNAL FOR TRANSFER IN FACSIMILE COMMUNICATION

Nobukiyo Sakai; Tadashi Ishikawa; Takashi Sakayama; Michiaki Yoshihara, and Takashi Nakajima, all of Iwatsuki, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1991, Ser. No. 772,342
Claims priority, application Japan, Oct. 18, 1990, 2-279692; Oct. 24, 1990, 2-284381
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—100 **12 Claims**

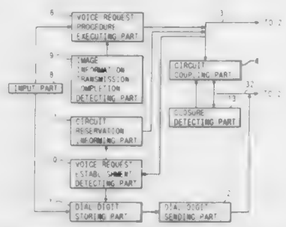
1. A telephone transfer apparatus including a facsimile terminal connected to a private branch exchange and comprising:

a memory means for storing at least one telephone number of an extension telephone connected to said private branch exchange for voice circuit connection, the one telephone number being a number of the extension telephone;

a detecting means at the facsimile terminal for detecting a request for voice circuit connection from a transmitting station and providing a detection signal;

a hooking signal generating means for outputting a hooking signal to said private branch exchange in response to the detection signal; and

means for dialing the one telephone number stored in said memory means to make a voice circuit connection to the



extension telephone through said private branch exchange in response to the hooking signal;

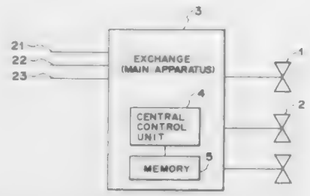
said private branch exchange holding a state of connection to the transmitting station in response to the hooking signal and releasing the held state of connection to complete the voice circuit connection when detecting an off-hook signal from the extension telephone.

5,392,340

TELEPHONE EXCHANGE APPARATUS

Kuniaki Otsuka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 779,824, Oct. 21, 1991, abandoned. This application May 23, 1994, Ser. No. 247,417
Claims priority, application Japan, Oct. 22, 1990, 2-285252
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—201 **22 Claims**



1. A telephone exchange apparatus for exchanging first and second extension telephone units, comprising:

memory means for storing first and second information; and

reading means for reading, in a first mode, the first information from said memory means based on a predetermined operation by the first extension telephone unit and the second information from said memory means based on a predetermined operation by the second extension telephone unit,

wherein said reading means is adapted, in a second mode, to read the second information from said memory means based on the predetermined operation by the first extension telephone unit and the first information from said memory means, based on the predetermined operation by the second extension telephone unit, and

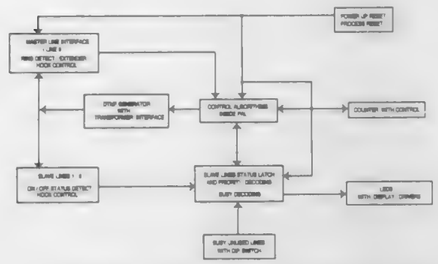
wherein the first and second modes are switched based on an operation by one of the first and second extension telephone units.

5,392,341

AUTOMATIC TELEPHONE LINE MONITORING AND SELECTION APPARATUS AND METHOD

Charles L. Wilkinson, 412 Lee Rd., Cottontown, Tenn. 37048, and Roberto Schipp, 4508 Price Circle Rd., Nashville, Tenn. 37205

Filed Jun. 11, 1992, Ser. No. 898,090
Int. Cl.[6] H04M *3/00*
U.S. Cl. 379—210 **5 Claims**



1. A telephone line hunting and call intercept apparatus comprising:

a. a subscriber master line interface to a master telephone line connecting a telephone company central office to a subscriber location;

b. a subscriber slave line interface to each of a plurality of slave telephone lines at said subscriber location, said subscriber slave line interface responsive to an off-hook signal generated by a telephone set connected to said slave telephone lines at said subscriber location;

c. ring detector means for detecting a ring signal generated at said subscriber location on said master telephone line;

d. a line status signaling unit operatively connected to said subscriber master line interface and to said subscriber slave line interface, said line status signaling unit responsive to signals from said ring detector means and to off-hook signals from said subscriber slave line interface;

e. a logic control unit operatively connected to said subscriber master line interface, to said subscriber slave line interface, and to said line status signaling unit;

f. intercept means, responsive to said logic control unit, to connect an incoming call on said master telephone line to one of said slave telephone lines selected by a user at said subscriber location; and

g. automatic dialing means operatively connected to and responsive to said logic unit for dialing a preprogrammed line intercept code across said slave telephone line selected by said user to a call intercept system at said telephone company central office, whereby, in response to receiving said preprogrammed line intercept code dialed by said automatic dealing means, said call intercept system at said telephone company central office moves said incoming call at said telephone company central office off said master telephone line to said slave telephone line selected by said user, thereby freeing up said master telephone line to receive another call.

5,392,342

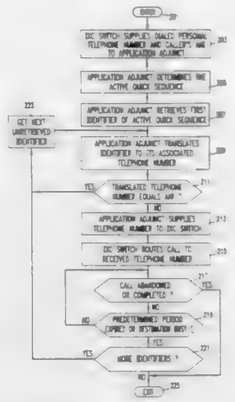
TECHNIQUE FOR USE IN SEQUENTIALLY ROUTING PERSONAL TELEPHONE CALLS

Eugene J. Rosenthal, Highland Park, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Oct. 27, 1993, Ser. No. 144,062
Int. Cl.[6] H04M *3/46*
U.S. Cl. 379—211 **15 Claims**

1. A method for use in a telephone system having a plurality of destinations to which a personal communication service (PCS) call may be routed, said telephone system attempting to complete a PCS call placed from a calling telephone to a subscriber's personal telephone number by routing said call, until said call is answered or abandoned, to each destination indicated in a predetermined sequence of destinations, the method comprising the steps of:

comparing the originating station identification information of the calling telephone with destinations of said sequence; and



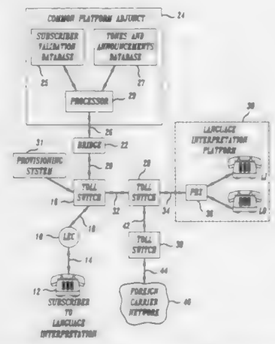
skipping over any destination of said sequence that is the same as the originating station identification information of the calling telephone so that no attempt is made to complete said PCS call to the calling telephone.

5,392,343

ON DEMAND LANGUAGE INTERPRETATION IN A TELECOMMUNICATIONS SYSTEM

Michael Davitt, Berkley Heights; Alan N. Dunn, Randolph; Paula M. Goldstein, Aberdeen; Edgar J. Grijalva, North Bergen; Michael Neal, Lebanon; Christine P. Peterson, Fords, and Christos I. Vaios, Shrewsbury, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Nov. 10, 1992, Ser. No. 973,872
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—212 **23 Claims**



1. A telecommunications apparatus, comprising:

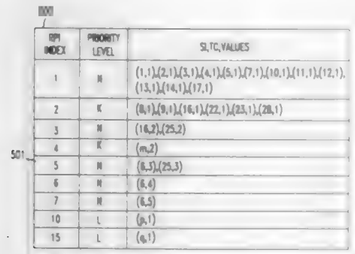
means for receiving signals associated with a telephone call between a caller and called party, the signals comprising at least a telephone number of the caller and a

means for detecting a predetermined characteristic of the caller's telephone number and, and in response to the predetermined characteristic of the caller's telephone

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number, automatically directing the telephone call to a spoken language interpretation service which is capable of providing preselected spoken language interpretation to the caller and called party during the telephone call.

5,392,344
COMMUNICATIONS NETWORK CLASS-OF-SERVICE ROUTING
Gerald R. Ash, West Long Branch; Jin-Shi Chen, Holmdel, both of N.J.; Alan E. Frey, Naperville, Ill., and David F. McGuigan, Franklin Township, Somerset County, N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Oct. 3, 1991, Ser. No. 770,396
Int. Cl.[6] H04M *7/00, 11/00, 15/00, 3/00*
U.S. Cl. 379—221 **17 Claims**



1. An arrangement for processing a telephone call in a telecommunications system comprising a plurality of switches interconnected by individual ones of a plurality of communications paths, said processing being based on a class of service associated with the incoming call, said arrangement comprising at each of said switches

a first translation table formed from a plurality of records each comprising a plurality of fields respectively containing particular parameters characterizing a particular telephone class of service and further containing an associated service identity value indicative of said class of service,

means, responsive to receipt of an incoming call at a respective one of said switches, for deriving from information associated with said incoming call a transport capability value and the parameters characterizing the telephone service that should be associated with the incoming call and for translating said derived parameters into the associated service identity value using said first translation table and

means for deriving a routing index as a function of the transport capability and service identity values derived for said incoming call and for then routing said incoming call to a destination switch in accordance with said routing index.

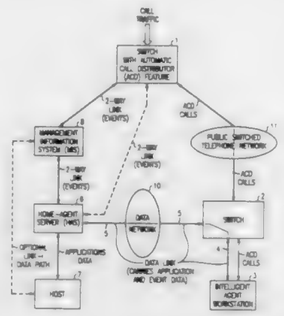
5,392,345
WORK AT HOME ACD AGENT NETWORK
Mary R. Otto, Lisle, Ill., assignor to AT&T Corp., Murray Hill, N.J.
Filed Apr. 30, 1993, Ser. No. 56,232
Int. Cl.[6] H04M *7/00*
U.S. Cl. 379—265 **11 Claims**

1. A method of providing automatic call distributor (ACD) service for an ACD system, said ACD system served by a first switching system, from an agent station connected to a second switching system different from said first switching system, said method comprising the steps of:

establishing a data connection from said agent station to a home agent server (HAS) unit for communicating agent status data to said ACD system;

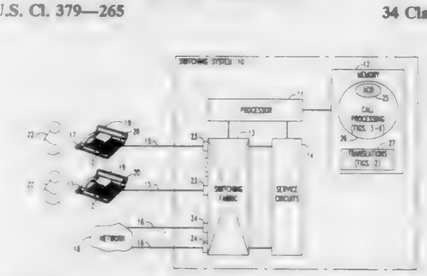
responsive to receipt of an incoming ACD call for said ACD system, determining whether said agent station is available and is an appropriate candidate for serving said incoming call;

responsive to determining that said agent station is available and is an appropriate candidate for serving said incoming



call, establishing an audio path from said incoming call to said agent station via a public switched telephone network connection between said first and said second switching systems, said audio path being separate from and independent of said data connection.

5,392,346
MOBILE LOG-IN CAPABILITY FEATURING FIXED PHYSICAL (TERMINAL-DEPENDENT) TRANSLATIONS AND PORTABLE LOGICAL (USER-DEPENDENT) TRANSLATIONS
Kerry W. Hassler, Boulder; Cynthia C. Jones, Brighton; Joylee E. Kohler, Broomfield, and Robert D. Nalbone, Thornton, all of Colo., assignors to AT&T Corp., Murray Hill, N.J.
Continuation of Ser. No. 841,140, Feb. 25, 1992, abandoned. This application May 26, 1994, Ser. No. 249,646
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—265 **34 Claims**



1. In a telecommunications system that includes a plurality of user terminals and terminal translations that define attributes of the individual terminals, a method of facilitating use of the individual terminals by a plurality of different users, comprising the steps of:

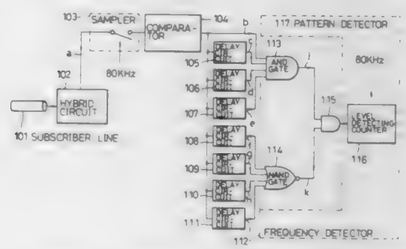
associating physical translations, comprising for each terminal those terminal translations that are independent of users of the terminal, with the corresponding terminals;

associating logical translations, comprising for each terminal those terminal translations that are dependent on the users of the terminal, with the corresponding users, some of the users having different associated logical translations than others of the users;

logging on any one of the users at any one of the terminals; and

in response to the logging on, using the physical translations associated with the one terminal and the logical translations associated with the one logged on user to perform call processing for telecommunications which involve the one terminal.

5,392,347
RINGING TONE SIGNAL DETECTING CIRCUIT
Tomokazu Ito, and Yasunari Shida, Tokyo, both of Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jan. 26, 1993, Ser. No. 9,326
Claims priority, application Japan, Feb. 19, 1992, 4-032201; May 20, 1992, 4-126960
Int. Cl.[6] H03K *9/06*
U.S. Cl. 379—372 **4 Claims**



1. A ringing tone signal detecting circuit for detecting a ringing tone signal from a received signal which is supplied from a digital subscriber line through a hybrid circuit, comprising:

a sampler for sampling the received signal at a predetermined sampling frequency;

a comparator for comparing an output signal from said sampler with a predetermined threshold value to produce a binary digital signal;

first through seventh delay circuits connected in series for delaying the binary digital signal from said comparator, each delay circuit delaying the binary digital signal by a period corresponding to a period of said predetermined sampling frequency; and

a pattern detector for detecting a signal pattern of the ringing tone signal from the binary digital signal comprising

a first AND gate for providing an output signal that is a logical product of the binary digital signal from said comparator and output signals from the first, second and third delay circuits,

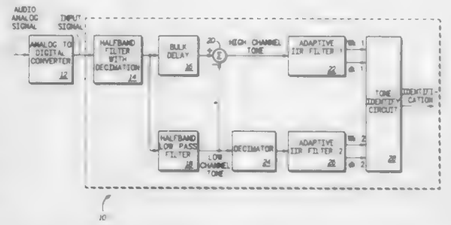
a NOR gate for providing an output signal that is an inverted logical sum of output signals from the fourth, fifth, sixth and seventh delay circuits, and

a second AND gate for providing an output signal of said pattern detector by providing an output signal that is a logical product of the output signal from said first AND gate and the output signal from said NOR gate;

a timer triggerable by the output signal of said pattern detector to generate an output signal for a predetermined time period; and

a counter responsive to the output signal from said timer for counting the output signal of said pattern detector to produce a detecting signal indicating detection of the ringing tone signal when the output signal of said pattern detector indicates a high level a predetermined number of times during said predetermined time period.

5,392,348
DTMF DETECTION HAVING SAMPLE RATE DECIMATION AND ADAPTIVE TONE DETECTION
Sangil Park, and Dion M. Funderburk, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 25, 1991, Ser. No. 797,563
Int. Cl.[6] H04M *1/50*
U.S. Cl. 379—386 **16 Claims**



1. A method of dual-tone multifrequency detection, comprising the steps of:

receiving an input signal having both a first and a second frequency component;

decimating the input signal by a first predetermined integer ratio to provide a decimated signal;

filtering the decimated signal with a half band finite impulse response filter to

remove the first frequency component from the input signal to provide a second frequency component signal;

subtracting the second frequency component signal from the decimated signal to provide a first frequency component signal;

adaptively filtering the first frequency component signal to provide a first frequency parameter and a first gain factor derived from the first frequency component;

decimating the second frequency component signal by a second predetermined integer ratio to provide a decimated second frequency component signal;

adaptively filtering the decimated second frequency component signal to provide a second frequency parameter and a second gain factor derived from the decimated second frequency component signal; and

comparing each of the first and second frequency parameters to a plurality of predetermined frequency parameters, and comparing each of the first and second gain factors to a first and a second predetermined threshold value to determine dual-tone validity.

5,392,349
OVERVOLTAGE PROTECTION SCHEME FOR SUBSCRIBER LOOPS AND METHOD OF PERFORMING SAME
Joseph M. Elder, Jr., Boulder, Colo., assignor to AT&T Corp., Murray Hill, N.J.
Filed May 18, 1992, Ser. No. 885,098
Int. Cl.[6] H04M *7/00*
U.S. Cl. 379—412 **12 Claims**

1. A subscriber line interface circuit (SLIC) for use in a telephone system, having:

first and second pairs of terminals, the first pair of terminals for coupling to a pair of wires, the second pair of terminals coupling to the SLIC;

a first switch, having a control input, for coupling a first terminal of the first pair of terminals to a first terminal in the second pair of terminals;

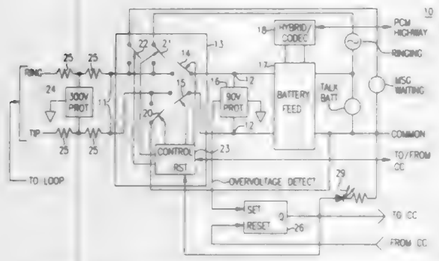
a second switch, having a control input responsive to the means, for coupling a second terminal of the fist pair of terminals to a second terminal of the second pair of terminals;

CHARACTERIZED BY:

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an overvoltage detector coupling to the second pair of terminals; and

a storage element, responsive to the overvoltage detector and having an output coupled to the control inputs of the switches;



wherein the storage element holds the detection of the overvoltage condition to keep the switches open in response thereto.

5,392,350

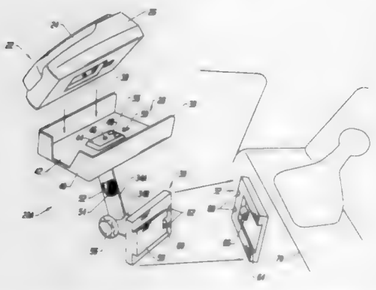
SUPPORT APPARATUS FOR A TRANSPORTABLE TELEPHONE

Paul J. Swanson, P.O. Box 53, Los Altos, Calif. 94023

Filed May 18, 1992, Ser. No. 885,292

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—446 **16 Claims**



1. An electrically interconnecting support apparatus for an electronic device, said apparatus comprising:

a mobile mount with an extended interface surface and a support surface, said mobile mount including a set of mobile mount power contacts;

a stationary mount including a port, said port being configured to engage said extended interface surface and thereby physically support said mobile mount, said stationary mount including a set of stationary mount power contacts coupled to an external power supply and said mobile mount power contacts;

an elongated positionally adjustable support member with a first end and a second end, said first end being coupled to said support surface of said mobile mount, said elongated positionally adjustable support member including means for coupling said mount power contacts from said first end to said second end; and

a crib for receiving an electronic device, said crib being attached to said second end of said elongated positionally adjustable support member, said crib including interface means for interconnecting said coupling means to said electronic device.

5,392,351

ELECTRONIC DATA PROTECTION SYSTEM

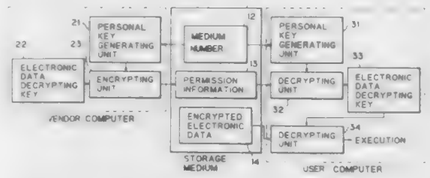
Takayuki Hasebe; Ryota Akiyama, and Makoto Yoshioka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 15, 1993, Ser. No. 31,339

Claims priority, application Japan, Mar. 16, 1992, 4-058048

Int. Cl.[6] H04L *9/32*

U.S. Cl. 380—4 **10 Claims**



1. An electronic data protection system for protecting electronic data from illegal copying by a third party, comprising:

at least one storage medium for storing encrypted electronic data, a medium personal number which is unique for each storage medium and encrypted permission information;

a vendor computer having a personal key generating means for generating a medium key based on the medium personal number, an electronic data decrypting key, and an encrypting means for encrypting the electronic data decrypting key based on the medium key to generate the encrypted permission information; and

a user computer having a personal key generating means for generating a medium key based on the medium personal number, a first decrypting means for decrypting the encrypted permission information based on the medium key to generate the electronic data decrypting key which is the same as the electronic data decrypting key of the vendor computer, and a second decrypting means for decrypting the encrypted electronic data based on the electronic data decrypting key to generate a plain text electronic data wherein the vendor computer writes the medium personal number onto the storage medium in an un-rewritable form which the user computer cannot rewrite.

5,392,352

SCRAMBLE DETECTING CIRCUIT IN A SATELLITE BROADCASTING RECEIVER AND SCRAMBLE DETECTING METHOD

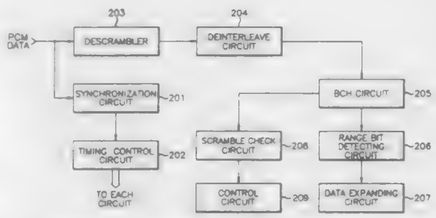
Hong-Soo Han, Ahnyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Apr. 26, 1993, Ser. No. 52,142

Claims priority, application Rep. of Korea, Apr. 24, 1992, 6957/1992

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—10 **16 Claims**



1. A scramble detecting circuit in a satellite broadcast receiver for receiving and decoding frame data having a plurality of channels of pulse code modulation (PCM) audio data, determining the presence of scrambling, and muting an audio signal when scrambled data is detected, comprising:

frame charged flag detecting means for receiving frame data, for sequentially detecting certain charged flags included in the frame data of each of the plurality of channels, for simultaneously gating the detected charged flags at a channel related period and for generating a charged flag data bit for each detected changed flag for each channel for every frame period;

multiframe signal generating means for receiving a clock signal corresponding to a frame period, for counting the received clock signals, and for generating a multiframe signal corresponding to a given multiframe period; and

determining means for receiving the charged flag data bits and the multiframe signal, for accumulating the charged flag data bits during the multiframe period, and for generating an audio mute signal when the number of charged flag data bits attains a predetermined value.

5,392,353

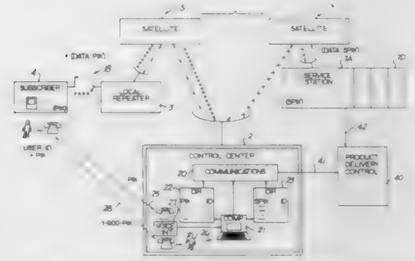
INTERACTIVE SATELLITE BROADCAST NETWORK

Fernando Morales, Reston, Va., assignor to TV Answer, Inc., Reston, Va.

Continuation-in-part of Ser. No. 879,984, May 8, 1992, Continuation-in-part of Ser. No. 674,169, Mar. 25, 1991, which is a continuation-in-part of Ser. No. 390,073, Aug. 7, 1989, Pat. No. 5,101,267. This application Aug. 19, 1992, Ser. No. 932,241

Int. Cl.[6] H04L *9/16*

U.S. Cl. 380—20 **12 Claims**



8. A satellite communication network protection system for protecting privacy of broadcast network communications and the identity of their source from network subscribers, comprising in combination,

a network of interconnectable subscriber stations coupled in said satellite communication network for sending and receiving communications, wherein said stations include means for transmitting the communications to other stations in the network in encrypted format with a unique personal identification key for protecting the privacy of the communications, means for identifying the encrypted format of individual stations by their unique personal identity key, means for entry of the personal identity key in communications sent from said stations, means at the individual stations for decrypting communications in the network directed thereto as a designated target station with a particular personal identification key, and central control means in the network for generally receiving and readdressing the encrypted communications between stations in the network having different unique personal identity keys,

a central processing facility provided with a directory of the personal identity keys and means operable therewith for intercepting, reformatting and relaying incoming encrypted communications with personal identification key sent from said stations in an encrypted format function of the personal identity key for receipt by a designated target station into an encryption format with the personal identification key of the target station, and

means for confining and maintaining a secure personal identity said directory of the keys for the stations at the central processing facility for use in reception and relay of encrypted communications point-to-point in the network to and from the stations.

5,392,354

CORDLESS PHONE SYSTEM CAPABLE OF SCRAMBLING COMMUNICATION SIGNALS

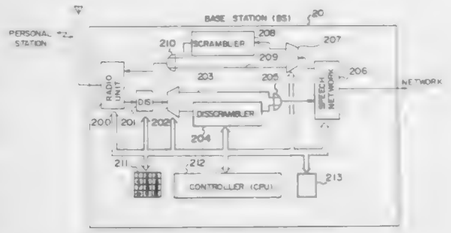
Yuji Takahashi, and Hideo Fukasawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 30, 1992, Ser. No. 968,982

Claims priority, application Japan, Oct. 30, 1991, 3-283379

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—23 **8 Claims**



1. A cordless phone system comprising:

a first cordless phone and a second cordless phone which are coupled to each other by a network, said first cordless phone including a first personal station and a first base station, said second cordless phone including a second personal station and a second base station, said cordless phone system further comprising:

scrambling means, provided in said first personal station, for scrambling communication signals in a predetermined scrambling manner, the communication signals scrambled by said scrambling means being transmitted from said first personal station to said first base station by radio;

first relay means, provided in said first base station, for receiving the communication signals from said first personal station and for transmitting the communication signals, without disscrambling, to said second base station via said network;

second relay means, provided in said second base station, for receiving the communication signals from said first base station and for transmitting the communication signals, without scrambling, to said second personal station by radio; and

disscrambling means, provided in said second personal station, for disscrambling the communication signals transmitted from said second base station by radio in a predetermined disscrambling manner corresponding to the scrambling manner in said first personal station, so that original communication signals originated by said first personal station are restored.

5,392,355

SECURE COMMUNICATION SYSTEM

Subash Khurana, Granada Hills, Calif., and Ronald H. Semler, 31727 Mulholland Hwy., Malibu, Calif. 90265, assignors to Ronald H. Semler, Malibu, Calif.

Filed Oct. 25, 1993, Ser. No. 142,622

Int. Cl.[6] H04L *9/32, 9/00*

U.S. Cl. 380—23 **16 Claims**

14. A process to assure secure communication while employing a wireless link comprising the steps of:

a. Initiating a wireless call between a calling party and a

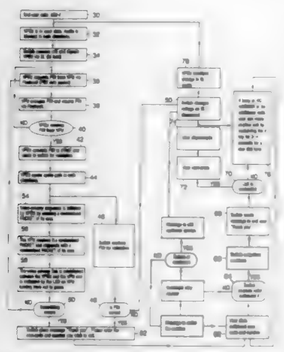
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multiple line input, multiple line output telephone exchange whose audio circuits are disabled;

b. transmitting an inquiry from said exchange to said calling party;

c. transmitting a first randomized signal combination from said exchange to said calling party in response to said inquiry;

d. transmitting a second randomized signal combination from said calling party to said exchange in response to said first randomized signal combination;



e. transmitting an identifying signal combination from said calling party to said exchange for enabling the audio channel for further transmissions over the wireless link in scrambled form;

f. transmitting the telephone number of a party to be called from said calling party to said exchange to cause said exchange to communicate with the called party over a telephone company link, and

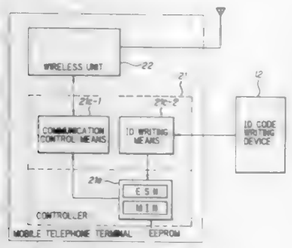
g. scrambling the audio transmission from said calling party to said exchange.

5,392,356

MOBILE TELEPHONE TERMINAL AND METHOD OF PREVENTING UNLAWFUL USE THEREOF

Masahiro Konno, and Tetsuya Hanawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 25, 1993, Ser. No. 111,838
Claims priority, application Japan, Jan. 21, 1993, 5-008169
Int. Cl.[6] H04K *1/00*
U.S. Cl. 380—23 **9 Claims**



1. A method of preventing unlawful use of a mobile telephone terminal in a mobile communication system in which a first ID code for apparatus identification and a second ID code such as a telephone number are stored beforehand in a non-volatile memory of a mobile telephone terminal, the ID codes are transmitted to a network when communication is performed, it is determined on the network side whether the set of first and second ID codes has been registered and communication is allowed if the set of first and second ID codes has been registered, said method comprising the steps of:

encrypting the first ID code and receiving an encrypted first ID code in the mobile telephone terminal;

writing the encrypted first ID code in the non-volatile memory as is by the mobile telephone terminal; and

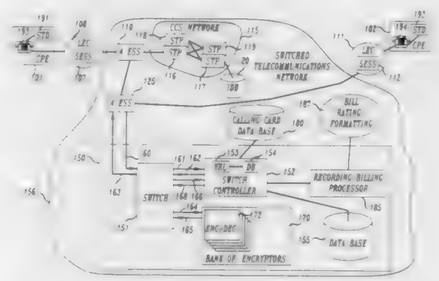
decoding the encrypted first ID code at communication and transmitting the first ID code obtained to the network along with the second ID code.

5,392,357

SECURE TELECOMMUNICATIONS

Andrew F. Bulfer, Mountain Lakes, N.J.; Michael M. Kaplan, Rockport, Mass.; Bruce E. McNair, and Carol A. Wegrzynowicz, both of Holmdel, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 9, 1991, Ser. No. 803,809
Int. Cl.[6] H04M *1/68, 3/42*
U.S. Cl. 380—33 **23 Claims**



1. A system enabling communications between a plurality of calling parties and a plurality of respective called parties via a switched telecommunications network, said system comprising

customer premise equipment connected to said switched telecommunications network for originating calls from said calling parties to said called parties, each of said calls containing encrypted information,

means in said network for routing each of said calls to a multi-user security node disposed in said switched telecommunications network, said node being arranged to process multiple calls simultaneously, and

means in said security node arranged for each of said calls to (a) decrypt said encrypted information received from said customer premise equipment and (b) obtain information needed to route said call through said network, so that said encrypted information is communicated to said respective called parties in non-encrypted form.

5,392,358

ELECTROLYTIC LOUDSPEAKER ASSEMBLY

Michael L. Driver, 12423 Gladstone Ave. #4, Sylmar, Calif. 91342

Filed Apr. 5, 1993, Ser. No. 42,572
Int. Cl.[6] H04R *19/02*
U.S. Cl. 381—191 **7 Claims**

1. An electrolytic loudspeaker assembly comprising:

A. a capacitive transducer consisting of a compound diaphragm, where said compound diaphragm comprises:

a. a center section having an area comprising:

(1) a first metallized film having a metallized surface that faces inwardly and a non-metallized surface that faces outwardly,

(2) a thin flexible barrier having a first surface and a second surface. where the first surface is sized to cover the metallized surface of said first metallized film,

(3) a second metallized film having a metallized surface that faces inwardly and a non-metallized surface that faces outwardly, where the metallized surface is sized to cover and be in intimate contact with the second surface of said thin flexible barrier.

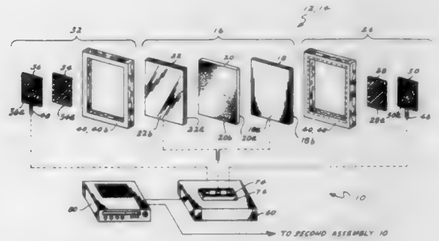
(4) means for making an electrical contact with said center section comprising a center electrode

b. a front section comprising:

(1) a first dielectric spacer having a grid pattern and an area that is less than the area of said center section and where said first dielectric spacer is in intimate contact with the non metallized surface of said first metallized film,

(2) a first metal grid having a multiplicity of perforations, and is sized to cover and be in intimate contact with said first dielectric spacer,

(3) a means for making an electrical contact with said first metal grid comprising a front electrode,



c. a back section comprising:

(1) a second dielectric spacer having a grid pattern and an area that is less than the area of said center section and where said second dielectric spacer is in intimate contact with the non-metallized surface of said second metallized film,

(2) a second metal grid having a multiplicity of perforations, and that is sized to cover and be in intimate contact with said second dielectric spacer,

(3) means for making an electrical contact with said second metal grid comprising a back electrode.

d. a frame assembly having means for suspending said compound diaphragm, and

B. a transducer driver unit having means for:

a. interfacing with said compound diaphragm,

b. supplying a bias voltage to said center electrode, and

c. providing an alternating signal, analogous to an audio signal, across said front and back electrodes to allow said compound diaphragm to be driven in a push-pull relation.

5,392,359

APPARATUS FOR INSPECTING APPEARANCE OF CYLINDRICAL OBJECTS

Tsuyoshi Futamura, Tokyo; Hiroyoshi Suda, Kanagawa; Minoru Fujita, Kanagawa, and Kouzou Ichiba, Kanagawa, all of Japan, assignors to Japan Tobacco, Inc., Tokyo and Toshiba Engineering Corporation, Kanagawa, both of Japan

Filed Dec. 23, 1992, Ser. No. 996,401
Claims priority, application Japan, Dec. 27, 1991, 3-347080
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—8 **11 Claims**

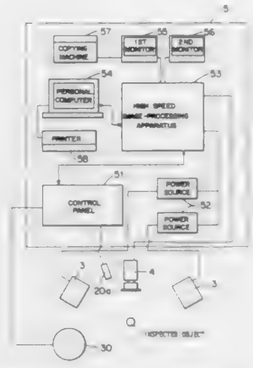
1. An apparatus for inspecting cigarettes comprising:

rotating means for rotating a cigarette about an axis of said cigarette;

pick-up means for picking up images of said cigarette, said images including picture elements, each picture element having a corresponding luminance value;

mask window generating means for generating at least one masking window to mask at least one predetermined portion of at least one image;

image-processing means for generating at least one luminance sum for each image, said luminance sum for each image being a summation of only said luminance values



for a predetermined number of picture elements in unmasked portions of said image;

comparing means for comparing each luminance sum to a predetermined threshold; and

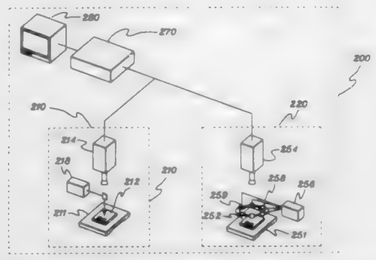
judging means for judging whether said cigarette includes a defect based on a result of each comparison.

5,392,360

METHOD AND APPARATUS FOR INSPECTION OF MATCHED SUBSTRATE HEATSINK AND HAT ASSEMBLIES

Frederick G. Weindelmayer, Manassas, and Michael A. Sipe, McLean, both of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1993, Ser. No. 54,338
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—8 **5 Claims**



1. A method for inspecting two articles to detect mismatches between the topographical features on each of their surfaces, comprising the steps of:

illuminating a surface of a first article of a first type with a light;

illuminating a surface of a second article of a second type with a light, said second type being different from said first type;

capturing a first image of said surface of said first article;

capturing a second image of said surface of said second article;

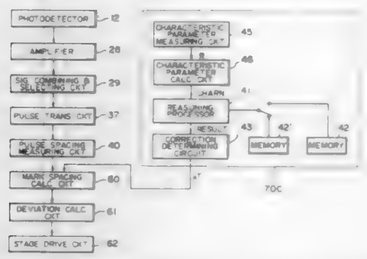
converting said first image to a first array;

converting said second image to a second array;

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comparing said first array to a first expected topography;
comparing said second array to a second expected topography;
identifying mismatches between said first array and said first expected topography and said second array and said second expected topography;
notifying an operator of said identified mismatches.

5,392,361
METHOD AND APPARATUS FOR DETECTING POSITION OF A MARK
Masaaki Imaizumi; Eiji Nishimori, both of Tokyo; Yasuteru Ichida, and Naoki Ayata, both of Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 888,433, May 28, 1992, abandoned, which is a continuation of Ser. No. 310,203, Feb. 14, 1989, abandoned. This application Oct. 19, 1993, Ser. No. 137,804
Claims priority, application Japan, Feb. 15, 1988, 63-033483
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—8 63 Claims



1. A method of detecting a position of a mark comprising the steps of:
storing, in memory means, more than two reasoning rules, wherein the reasoning rules include at least two of a first reasoning rule with respect to a characteristic parameter determined on the basis of a wave form of a mark signal, a second reasoning rule with respect to a characteristic parameter predetermined on the basis of a position of the mark on an object, a third reasoning rule with respect to a characteristic parameter determined on the basis of a plurality of mark signals, and a fourth reasoning rule with respect to a characteristic parameter determined on the basis of an ambience condition of a mark detecting means;
detecting the mark with the mark detecting means to obtain a mark signal;
executing fuzzy reasoning using the mark signal obtained in said detecting step on the basis of at least two reasoning rules stored in said storing step and at least two characteristic parameters corresponding to the at least two reasoning rules and changing the reasoning rules used in said executing step so that fuzzy reasoning is also executed on the basis of the changed fuzzy reasoning rules; and
determining the position of the mark on the basis of the fuzzy reasoning executed in said executing step using at least one of: the at least two reasoning rules and the changed reasoning rules.

5,392,362
IMAGE CODING DEVICE AND DECODING DEVICE
Shunichi Kimura; Yutaka Koshi, and Koh Kamizawa, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Oct. 19, 1993, Ser. No. 137,798
Claims priority, application Japan, Nov. 13, 1992, 4-304095
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—9 9 Claims

1. An image coding device comprising:
means for inputting an image signal;
dividing means for dividing said image signal input by said inputting means into a plurality of image areas;
coding method deciding means for examining pixel values of an image in one of said image areas divided by said dividing means as a target image area and deciding a coding method for said target image area;
binary image coding means for coding said image in said target image area to obtain a binary image code;
nonbinary image coding means for coding said image in said target image area to obtain a nonbinary image code;

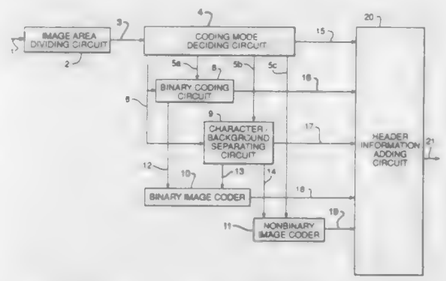
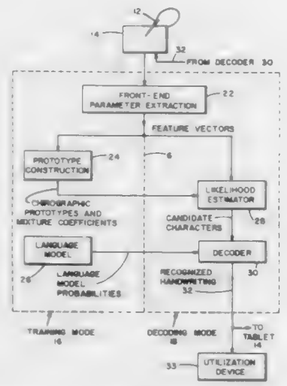


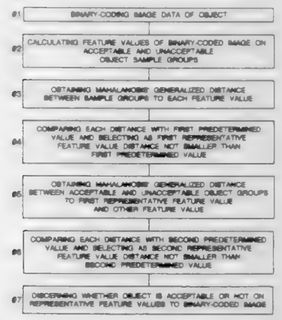
image component separating means for separating said image in said target image area into a binary image component and a nonbinary image component and supplying said binary image component and said nonbinary image component to said binary image coding means and said non-binary image coding means, respectively; and
control means for selectively operating said binary image coding means and said nonbinary image coding means according to a decision result obtained in said coding method deciding means.

5,392,363
ON-LINE CONNECTED HANDWRITTEN WORD RECOGNITION BY A PROBABILISTIC METHOD
Tetsunosuke Fujisaki, Armonk, and Krishna S. Nathan, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 13, 1992, Ser. No. 975,864
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—13 36 Claims



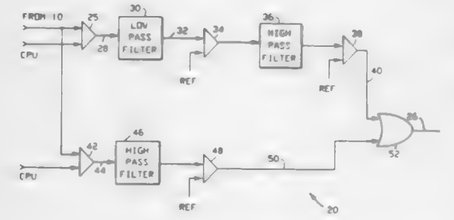
1. Handwriting recognition apparatus, comprising:
handwriting transducer means having an output providing temporally-ordered stroke coordinate information generated by a writer while writing, in a cursive manner, a word that includes at least one letter;
a pre-processor, comprising,
a splicer having an input coupled to said output of said handwriting transducer means for partitioning the temporally ordered stroke coordinate information into a plurality of frames, each frame containing at least a portion of a stroke; and
a frame shape recognizer coupled to an output of said splicer for assigning to each frame a probability that the portion of a stroke that is contained within a frame f_j is a part of a letter belonging to an alphabet a_i;
said handwriting apparatus further comprising a word recognizer having an input coupled to an output of said pre-processor and an output for outputting a most probable word that was written by the writer, said word recognizer comprising,
a vocabulary model stored within said handwriting recognition apparatus and containing a plurality of words, each of the words including at least one character, said vocabulary model being organized as a data structure having a root node, a plurality of intermediate nodes each representing a letter of the alphabet a_i belonging to at least one word, and a plurality of leaf nodes each representing a terminal letter of a word; and
a decoder processor having a first input coupled to an output of said pre-processor and a second input coupled to an output of said vocabulary model, said decoder processor including means for processing, in turn, each of said frames in cooperation with said vocabulary model to determine a most probable letter-frame alignment and for identifying a most probable word written by the writer to be output from said word recognizer.

5,392,364
OBJECT INSPECTION METHOD EMPLOYING SELECTION OF DISCERNING FEATURES USING MAHALANOBIS DISTANCES
Haruhiko Yokoyama, Osaka, and Masaya Nakao, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 20, 1992, Ser. No. 885,837
Claims priority, application Japan, May 23, 1991, 3-118484
Int. Cl.[6] G06K 9/46, 9/68
U.S. Cl. 382—16 8 Claims



1. In an image inspection process in which an object to be recognized is viewed with an image pick-up device, an output of the image pick-up device is converted into binary coded image data, a plurality of shape feature values of the binary coded image data are calculated, and an acceptability of the object is automatically discerned by comparing the plurality of shape feature values with predetermined values, the improvement comprising a preprocessing method for prioritizing the plurality of shape feature values used in the image inspection process so as to minimize a number of the shape feature values which must be processed to discern the acceptability of the object, said preprocessing method comprising:
viewing a predetermined group of sample acceptable objects and a predetermined group of sample unacceptable objects with an image pick-up device to obtain respective image outputs of the sample acceptable objects and the sample unacceptable objects;
converting the image outputs of the image pick-up device into a binary coded image data for each of the sample acceptable objects and sample unacceptable objects;
computing at least three shape feature values of each of the binary coded image data for each of the sample acceptable objects and sample unacceptable objects;
computing a first Mahalanobis' generalized distance between the binary coded image data of the sample acceptable objects and the binary coded image data of the sample unacceptable objects with respect to each of the at least three shape feature values;
designating as a first representative shape feature value a first one of the at least three shape feature values having a first Mahalanobis' generalized distance which is not smaller than a first value;
computing a second Mahalanobis' generalized distance between the binary coded image data of the sample acceptable objects and the binary image data of the sample unacceptable objects with respect to each of the at least three shape feature values, except for the first one of the at least three shape feature values, relative to the first one of the at least three shape feature values; and
designating as a second representative shape feature value a second one of the at least three shape feature values, except for the first one of the at least three shape feature values, having a second Mahalanobis' generalized distance which is not smaller than a second value;
wherein the first and second representative shape feature values are given priority in the image inspection process to discern the acceptability of an object to be inspected.

5,392,365
APPARATUS FOR DETECTING TEXT EDGES IN DIGITAL IMAGE PROCESSING
James J. Steinkirchner, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 23, 1991, Ser. No. 812,666
Int. Cl.[6] G06K 9/48
U.S. Cl. 382—22 14 Claims



1. An edge detector for digital image processing apparatus, said edge detector comprising:
means for inputting a digital signal representative of an original image;
edge blurring means for sequentially low pass filtering the inputted signal to blur and widen any edges in the original image;
means for high pass filtering the low pass filtered signal to produce a first output signal which represents the edges of the blurred original image;
non-edge blurring means for high pass filtering the inputted signal to produce a second output signal which represents the non-blurred edges in the original image; and

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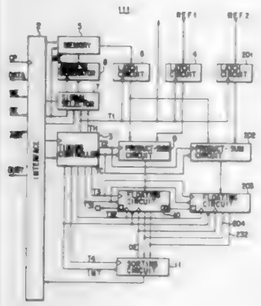
means for combining the first and second output signals to create a text edge control signal that encompasses any edges in the image represented by the inputted digital signal.

5,392,366

PATTERN RECOGNITION APPARATUS

Yoshikatu Nakamura, Yokosuka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 25, 1992, Ser. No. 841,326
Claims priority, application Japan, Feb. 28, 1991, 3-034721; Dec. 17, 1991, 3-333420
Int. Cl.[6] G06K *9/62*
U.S. Cl. 382—30 **6 Claims**



1. A pattern recognition apparatus for recognizing an input pattern with respect to a plurality of reference patterns, comprising:

storage means for storing the input pattern data;

receiving means for receiving the plurality of reference pattern data;

similarity calculating means for calculating similarities between the input pattern data stored in the storing means and each of the reference pattern data received by the receiving means to acquire similarity values, the similarity calculating means including a plurality of product calculating circuits, each for calculating a corresponding product data based upon products of the input pattern data and a corresponding one of the reference pattern data and a plurality of sum calculating circuits, each for calculating a sum of the corresponding product data as a similarity value;

a floating operation circuit to floating-process the similarity values corresponding to the plurality of reference pattern data acquired by the similarity calculating means in an exponent indication; and

sorting means for sorting the similarity values which have been floating-processed by the floating operation circuit in an order of magnitude of the similarity values so as to obtain a candidate pattern, wherein the sorting means comprises:

a first register for storing a selected one of the similarity values which has been floating-processed by the floating operation circuit;

a second register for storing the sorted similarity values, wherein the second register includes a plurality of memories which are capable of performing a data shifting operation;

comparing means for comparing the selected one of the similarity values stored in the first register with the sorted similarity values stored in the second register, and for selecting, based upon the order of similarity values already stored in the second register, one of the memories for storing the selected one of the similarity values stored in the first register; and

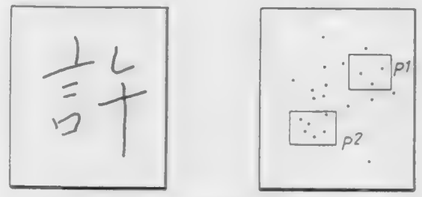
control means for simultaneously shifting at least one of the sorted similarity values stored in the second register in accordance with order of similarity values already stored in the second register, causing the second register to store the similarity value compared by the comparing means in the selected one of the memories, and holding the sorted similarity value stored in the selected one of the memories in accordance with the comparison performed by the comparing means.

5,392,367

AUTOMATIC PLANAR POINT PATTERN MATCHING DEVICE AND THE MATCHING METHOD THEREOF

Wen H. Hsu, 3F No. 66 W. Yuan, Tsing Hua University, Hsinchu, and Chen-Chieh Chien, No. 11 La. 73 Chung Shan 1st Rd., Keelung, both of

Continuation of Ser. No. 676,796, Mar. 28, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 88,579
Int. Cl.[6] G06K *9/68, 9/62*
U.S. Cl. 382—39 **10 Claims**



1. In an automatic planar point pattern matching device, used with a computer system having memories to decide whether a first planar point pattern is similar to a second planar point pattern, the improvement comprising:

a first memory to save planar positional data of points of a first point pattern;

a second memory to save planar positional data of points of a second point pattern;

a third memory to save probability values of each point of said first point pattern to mate with each point of said second point pattern;

a mating probability calculating device which presets all the probability values of each point of said first point pattern to mate with each point of said second point pattern to set values, uses the relaxation method to revise initial probability values and saves the final mating probability values into said third memory;

a fourth memory to save data of best mating point pairs;

a mating point selecting device which uses the sequential forward selection method to select from said first point pattern and said second point pattern the pairs of points with the highest mating probability values, as saved in said third memory, and save the results into said fourth memory;

a similarity value calculating device which utilizes the result obtained with said mating point selecting device and/or said coordinates of the selected points to decide the similarity value between said first point pattern and said second point pattern; and

a registration and comparison device, to register an adjustable threshold value and to compare said threshold value with said similarity value and output the result therefrom;

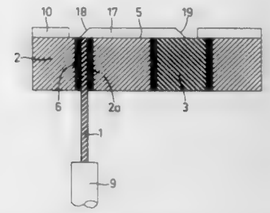
wherein said matching device decides said first and second patterns are similar when said similarity value is greater than said threshold value.

5,392,368

PROCESS FOR MOUNTING AN OPTICAL COUPLING OF AN OPTICAL FIBER ON A SUBSTRATE AND SUBSTRATE EQUIPPED WITH AN OPTICAL FIBER

Andre Schiltz, Saint-Ismier, France, assignor to France Telecom, Paris, France

Filed Dec. 11, 1992, Ser. No. 989,067
Claims priority, application France, Dec. 12, 1991, 91 15445
Int. Cl.[6] G02B *6/42*
U.S. Cl. 385—14 **8 Claims**



1. A process for coupling an optical fiber to an optical component disposed adjacent a first face of a substrate, comprising the steps of:

forming an orifice between a second face of the substrate and the first face;

inserting an end of the optical fiber so that an end face of the optical fiber is disposed in the plane of the first face of the substrate;

forming a layer of material on the first face of the substrate to substantially cover the orifice and to form a waveguide; and

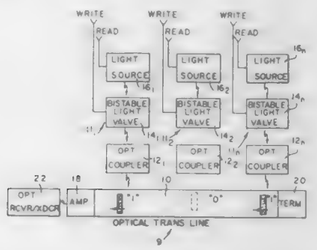
forming a deflecting facet above the orifice and on the waveguide such that an optical wave path is formed from the optical fiber to the optical component.

5,392,369

OPTICAL DIGITAL MEMORY SYSTEM

Seymour Edelman, 9115 Glenridge Rd., Silver Spring, Md. 20910

Continuation-in-part of Ser. No. 986,694, Dec. 8, 1992, Pat. No. 5,321,780, which is a continuation-in-part of Ser. No. 846,082, Mar. 5, 1992, abandoned. This application Jan. 25, 1994, Ser. No. 186,703
Int. Cl.[6] G02B *6/28*
U.S. Cl. 385—15 **19 Claims**



1. A digital memory system including optical fiber elements, comprising:

a plurality of light energy sources being selectively energized during a read interval;

a respective plurality of bistable light valves being programmed in a write mode to enable or inhibit the passage of light energy from said light energy sources;

an optical fiber transmission line;

said plurality of light energy sources being energized in a pulsed mode of operation to generate respective optical pulses which are enabled or inhibited from being coupled to said optical fiber transmission line by said light valves when digitally programmed during said write mode,

said optical fiber transmission line further comprising a cladded optical fiber transmission line including a light propagating inner core and an outer layer of cladding surrounding said core; and

a respective plurality of optical coupling means for angularly coupling optical pulses from said plurality of light valves to said core of said optical fiber transmission line during a read mode for propagating optical pulses in said core in a predetermined direction,

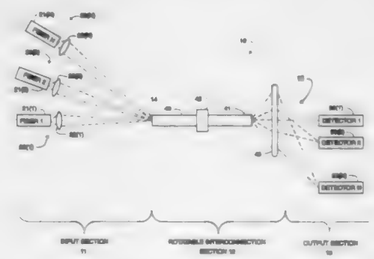
said optical coupling means being at an angle B relative to an axis transverse to a central axis of said core, the angle B being defined by the expression $\sin B = n_1/n_p$ where n_1 is the index of refraction of said core and n_p is the index of refraction of a constituent material of said coupling means during said read mode.

5,392,370

MULTI-CHANNEL FIBER OPTIC ROTATABLE INTERCONNECTION SYSTEM

Thomas J. Gryk, Norwich, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 21, 1994, Ser. No. 230,583
Int. Cl.[6] G02B *6/26*
U.S. Cl. 385—25 **9 Claims**



1. A multi-channel fiber optic rotatable interconnection system for coupling optical signals from a plurality of diverse optical signal sources at a source location to a like plurality of optical signal receivers at a destination location, the source location and the destination location being rotatable relative to each other, the interconnection system comprising:

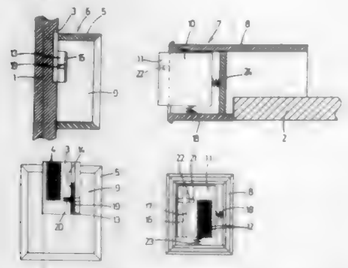
an input fiber and an output fiber both comprising step-index multi-mode optical fibers, the input fiber having an input end for receiving optical signals from said optical signal sources and forming a composite optical signal therefrom, the optical signal sources being positioned at diverse polar angles relative to the input end to provide a plurality of optical transmission modes, the output fiber having an output end;

a rotatable coupler positioned co-axially between the input fiber and the output fiber thereby to allow the input fiber and the output fiber to rotate axially relative to each other, the rotatable coupler coupling the composite optical signal from the input fiber to the output fiber; and

a signal detection arrangement positioned axially at an output end of said output fiber to receive optical signals therefrom and to separate the composite optical signal into its component optical signals for coupling to the receivers.

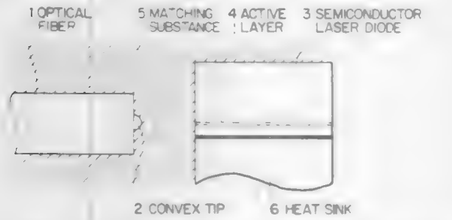
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5,392,371
CONNECTOR ASSEMBLY
Danny Morlion, St. Amandsberg, and Luc Jonckheere, Leuven, both of Belgium, assignors to Framatome Connectors International, Paris, France
Filed May 18, 1993, Ser. No. 63,447
Claims priority, application Netherlands, May 20, 1992, 9200884
Int. Cl.[6] G02B 6/38
U.S. Cl. 385—52 7 Claims



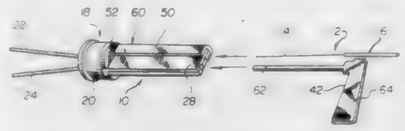
1. A connector assembly for interconnecting optical conductors comprising:
two guiding plates each having guide channels for the optical conductors to be located therein; and
means for positioning the two guiding plates against each other at a precise predetermined relative position, the means for positioning comprising the plates having pairs of co-operating projections and slots, a first one of the pairs having a first projection and a first slot angled relative to a second projection and a second slot of a second one of the pairs, wherein the first and second projections are on the first guiding plate and, are generally straight and perpendicular to each other.

5,392,372
OPTICAL COUPLING EQUIPMENT FOR AN OPTICAL SEMICONDUCTOR AND AN OPTICAL FIBER
Kazuhiko Kurata, and Hiroshi Honmou, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Sep. 27, 1993, Ser. No. 126,769
Claims priority, application Japan, Sep. 25, 1992, 4-256656
Int. Cl.[6] G02B 6/00, 6/36
U.S. Cl. 385—88 11 Claims



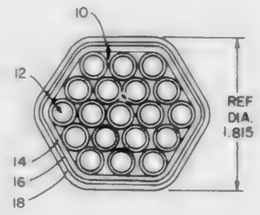
1. Optical coupling device for optically coupling an optical semiconductor and an optical fiber having a convex tip at one end thereof comprising:
a refraction index matching substance situated to fill a space between one end of said optical semiconductor and said one end of said optical fiber facing said end of said optical semiconductor,
said refractive index matching substance having a refraction index greater than 1 and smaller,than that of said optical fiber.

5,392,373
APPARATUS FOR OPTICALLY COUPLING AN OPTICAL FIBER TO AN ELECTRO-OPTIC DEVICE
Robert Essert, Glen Ellyn, Ill., assignor to The Whitaker Corporation, Wilmington, Del.
Filed Nov. 29, 1993, Ser. No. 158,756
Int. Cl.[6] G02B 6/42
U.S. Cl. 385—92 15 Claims



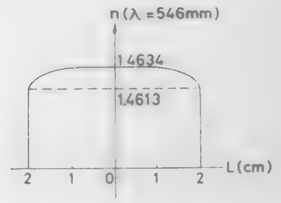
1. Apparatus for producing a re-enterable optical connection between an optical fiber and an optical device other than an optical fiber, said apparatus comprising: a fiber optic connector comprising a pair of elongated connector elements having facing substantially flat surfaces and means defining an elongated groove in at least one of said surfaces for receiving an optical fiber to be retained between said connector elements; resilient clamping means for maintaining said connector elements in engagement with each other so as to retain said optical fiber in said groove; operating means for accommodating a tool for selectively temporarily overcoming the force of said resilient clamping means for parting said connector elements to an extent necessary to permit movement of an optical fiber in said elongated groove so as to provide for placement, removal, or longitudinal positioning of an optical fiber relative to said elongated groove; and coupling means for joining the connector with said optical device in such a manner that an optical fiber retained in said connector is in optical alignment with a predetermined portion of the optical device.

5,392,374
FLAME-RETARDANT CABLE TUBING BUNDLE
James D. Gorian, Hudson, and Eugene D. Bonnes, Mentor, both of Ohio, assignors to Furon Company, Aurora, Ohio
Filed Apr. 28, 1993, Ser. No. 54,599
Int. Cl.[6] G02B 6/44
U.S. Cl. 385—100 18 Claims



1. A flame-retardant cable tubing bundle, which comprises:
(a) a plurality of tubes;
(b) a first thermoplastic layer surrounding the tubes, said first thermoplastic layer comprised of a material having intumescent and charring capabilities; and,
(c) a tape wrapped spirally along the longitudinal axis of the first thermoplastic layer.

5,392,375
GLASS HAVING REFRACTIVE INDEX DISTRIBUTION
Naoyuki Kitamura; Kenichi Kinugawa; Jun Matsuoka; Kohei Fukumi; Isao Kondoh; Saburo Kose, all of Ikeda; Hiroshi Yamashita, Kawanishi, and Makoto Kinoshita, Ikeda, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan
Division of Ser. No. 13,554, Dec. 16, 1992, Pat. No. 5,261,938, which is a continuation of Ser. No. 773,819, Oct. 9, 1991, abandoned. This application Aug. 9, 1993, Ser. No. 103,130
Claims priority, application Japan, Oct. 11, 1990, 2-274223
Int. Cl.[6] G02B 6/18
U.S. Cl. 385—124 2 Claims



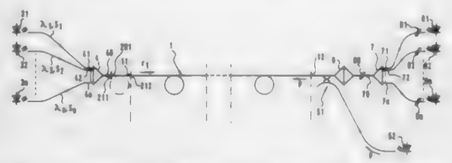
1. A rod glass article having a central portion and an outer portion, wherein said central portion has a higher refractive index than said outer portion, the composition of said rod glass is homogeneous, and the increase in said refractive index is uniform.

5,392,376
GALLIUM SULFIDE GLASSES
Bruce G. Aitken, and Mark A. Newhouse, Corning, both of N.Y., assignors to Corning Incorporated, N.Y.
Filed Apr. 11, 1994, Ser. No. 225,767
Int. Cl.[6] C03C 3/23, 4/10, 13/04
U.S. Cl. 385—144 10 Claims

1. A transparent glass exhibiting excellent transmission far into the infrared region of the electromagnetic radiation spectrum consisting essentially, expressed in terms of mole percent on the sulfide basis, of 40–80% Ga_2S_3, 0–35% RS_x, wherein R is at least one network forming cation selected from the group consisting of aluminum, antimony, arsenic, germanium, and indium, 1–50% Ln_2S_3, wherein Ln is at least one cation selected from the group consisting of a rare earth metal and yttrium, and 1–45% MS_x, wherein M is at least one modifying cation selected from the group consisting of barium, cadmium, calcium, lead, lithium, mercury, potassium, silver, sodium, strontium, thallium, and tin, and 0–10% total chloride and/or fluoride.

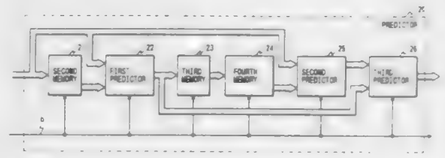
5,392,377
OPTICAL TRANSMISSION SYSTEM FOR TRANSMISSION OF SIGNALS WITH A CONTINUOUS APPLICATION OF THE SIGNALS DURING TRANSMISSION
Franz Auracher, Baierbrunn, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Sep. 15, 1993, Ser. No. 120,809
Claims priority, application Germany, Sep. 30, 1992, 4232877.2
Int. Cl.[6] G02B 6/28
U.S. Cl. 385—24 16 Claims

1. In an optical transmission system for the transmission of optical signals in wavelength-division multiplex on a plurality of neighboring optical carrier wavelengths over a distance of more than 10 km, said system comprising a transmission waveguide for the transmission of the optical signals being coupled into said transmission waveguide and an optical waveguide amplifier for increasing the signal levels of the optical signals transmitted on the transmission waveguide which levels drop off along the transmission waveguide due to attenuation, the improvements comprising the optical waveguide amplifier



being continuously distributed essentially over the entire length of the transmission waveguide.

5,392,378
SPEED CONTROLLING SYSTEM AND A PREDICTOR
Yasuaki Tohyama, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
PCT No. PCT/JP91/01473, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO92/09016, PCT Pub. Date May 29, 1992
PCT Filed Oct. 29, 1991, Ser. No. 170,653
Claims priority, application Japan, Nov. 9, 1990, 2-305115
Int. Cl.[6] H02P 5/00
U.S. Cl. 388—803 6 Claims



1. A speed controlling system comprising:
a speed detecting means for detecting an average speed of a motor in each measuring section by cyclically measuring a speed detecting signal corresponding to a speed of the motor and producing an average speed signal;
a speed error calculating means for calculating an average speed error responsive to the average speed signal received from the speed detecting means and reference cycle data and producing an average speed error signal;
a predicting means for predicting an instantaneous speed error from the average speed error signal received from said speed error calculating means, the instantaneous speed error corresponding to a specific measuring section and a preceding average speed error, and for producing a predicted signal;
an error averaging means for accumulating and adding the predicted signal received from the predicting means and generating average value data;
a memory selecting means for selecting a specific memory storing data;
an error storing means for adding the average value data of the error averaging means and the data of the specific memory selected by the memory selecting means producing an added result and storing the added result in the memory;
a compensating error calculating means multiplying the data of the specific memory by a constant smaller than 1 generating a multiplied result and adding the predicting signal of the predicting means to the multiplied result generating a control signal; and
a driving means for driving the motor on the basis of the control signal received from the compensating error calculating means,
wherein the predicting means, the error averaging means, the error storing means and the compensating error calcu-

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lating means receive data indicating the analog quantity which is sampled, and

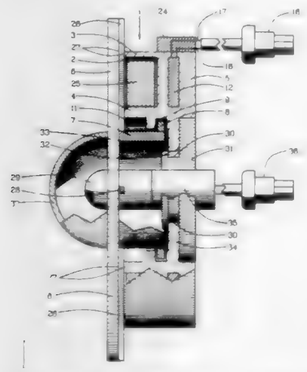
wherein, responsive to the data indicating the analog quantity which is sampled, the predicting means outputs the predicted signal, the error averaging means outputs the average value data, the error storing means outputs the added result and the compensating error calculating means outputs the control signal.

5,392,379

ELECTRICALLY ACTIVATED AROMATIC ORNAMENT

David A. Fussell, St. Augustine, Fla., assignor to Ornamotor, Inc., Duluth, Ga.

Filed Jun. 7, 1994, Ser. No. 255,059
Int. Cl.[6] F24F *6/08*; A61L *9/03*
U.S. Cl. 392—390 **26 Claims**



1. An aroma generator comprising a toroidal fragrance container having a toroidal container channel with a cylindrical inside wall, a cylindrical outside wall positioned a select distance outward radially from the cylindrical inside wall and a channel base extended radially intermediate a bottom of the inside wall and a bottom of the cylindrical outside wall,

a cover plate maintained in a covering position over the toroidal container channel with a cylindrical attachment sleeve extended from a container side of the cover plate,

at least one attachment appendage extended outward radially from an attachment end of the cylindrical attachment sleeve,

at least one arcuate attachment channel on an outside periphery of the cylindrical inside wall has a linear entrance into which the attachment appendage is positioned and then rotated about the axis of the toroidal fragrance container by rotation of the cover plate to position the attachment appendage in the arcuate attachment channel where a wall of the arcuate attachment channel is intermediate the attachment appendage and the cover plate to prevent linear removal of the cover plate without opposite rotation before linear removal,

an electrical-resistance heater in the channel base, and

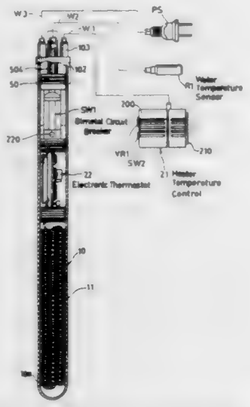
a plurality of spacer ridges positioned radially on an attachment side of the cover plate to provide aroma-discharge passages between the cover plate and top edges of the toroidal channel.

5,392,380

THERMOSTATICALLY CONTROLLED ELECTRIC AQUARIUM HEATER HAVING AN ADJUSTABLE OVERTEMPERATURE SAFETY BIMETALLIC CIRCUIT BREAKER

Hsien-Tang Tsai, P.O. Box 55-1670, Taipei, Taiwan, Prov. of China

Filed Aug. 27, 1993, Ser. No. 112,305
Int. Cl.[6] H05B *3/80*
U.S. Cl. 392—498 **2 Claims**



1. In an aquarium safety heater comprising:

a glass tube immersible in an aquarium filled with water and having a heating coil formed in a lower section of said glass tube;

an electric controller including an electronic thermostat in said tube for activating said heating coil for warming water in the aquarium, an adjusting knob and an on-off switch formed in a casing mountable on the aquarium for adjusting the heating temperature maintained in the aquarium by said thermostat and for switching off or on of a power source for said heating coil, a thermo-sensitive resistor remotely connected to said thermostat for sensing water temperature in the aquarium, and a thermal type over-temperature safety circuit breaker operatively switching off said thermostat when said thermostat is out of order;

the power source being electrically connected to said electric controller through an adapter formed on a cap sealably formed on a top portion of said glass tube for powering said electric controller;

said thermal type circuit breaker being connected between a first pole of said power source and a first terminal of said thermostat, a second terminal of said thermostat being connected to a second pole of said power source, said circuit breaker being thermally biased due to an increasing temperature in the aquarium when the thermostat is out of order to disconnect said first terminal of said thermostat from said first pole of said power source to disconnect said power source from said heating coil for safety purpose;

the improvement which comprises:

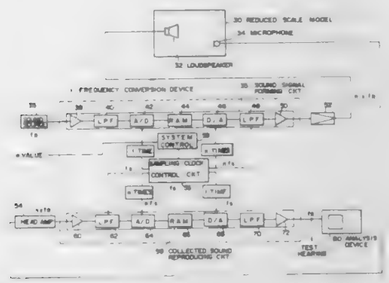
said thermal type circuit breaker normally contacting a spring contactor adjustably depressed by an adjusting screw rotatably held in a screw holder secured to a packing plug inserted in a upper portion of said glass tube under said cap sealing the top portion of said glass tube, said adjusting screw jacketed in sleeve rotatably engageable in said packing plug, said rotatable sleeve protruding upwardly through said cap for rotatable adjustment from outside the glass tube; in which rotataion of the screw adjusts the electrical contact pressure between the thermal circuit breaker and the spring contactor for setting the temperature at which the thermal type safely circuit breaker operates to deenergize the heating coil should the thermostat fail to operate.

5,392,381

ACOUSTIC ANALYSIS DEVICE AND A FREQUENCY CONVERSION DEVICE USED THEREFOR

Hiroshi Furuya; Yasushi Shimizu, and Fukushi Kawakami, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 112,642, Aug. 26, 1993, abandoned, which is a continuation of Ser. No. 918,896, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 469,142, Jan. 24, 1990, abandoned. This application Dec. 17, 1993, Ser. No. 170,678
Claims priority, application Japan, Jan. 27, 1989, 1-008914
Int. Cl.[6] G10L *9/00*
U.S. Cl. 395—2.14 **21 Claims**



1. An acoustic analysis device comprising:

reduced scale model means of a reduced scale of 1/n (n being 1 or over) of an acoustic space to be measured;

sound radiation means for radiating a sound provided in said model means;

sound collecting means for collecting a sound provided in said model means;

sound signal forming means for forming a signal to be radiated by said sound radiation means comprising first digital memory means for storing first digital signal information obtained by converting an analog signal waveform to be measured at a predetermined sampling frequency, digital-to-analog conversion means for reading out the first signal information at a first sampling clock and converting the read out signal information to an analog signal and supplying the converted analog signal to said sound radiation means;

collected sound reproducing means for reproducing a sound collected by said sound collecting means comprising analog-to-digital conversion means for converting an output analog signal waveform from said sound collecting means to second digital signal information at a second sampling clock and second digital memory means for storing the second digital signal information and reading out the stored second signal information at a third sampling clock, wherein said predetermined sampling clock and said third sampling clock are at least twice the maximum audio frequency of said analog signal waveform to be measured;

sampling clock control means for setting a frequency of the first sampling clock at a value which is n times as high as the predetermined sampling frequency and setting a frequency of the second sampling clock at a value which is n times as high as a frequency of the third sampling clock; and

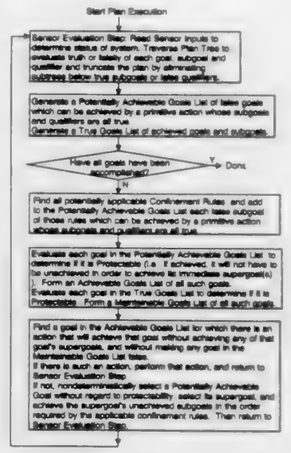
acoustic analysis means for acoustically analyzing the output of said collected sound reproducing means.

5,392,382

AUTOMATED PLAN SYNTHESIZER AND PLAN EXECUTION METHOD

Marcel J. Schoppers, 166 Springdale Way, Redwood City, Calif. 94062

Filed Dec. 1, 1992, Ser. No. 983,836
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—10 **16 Claims**



1. A reactive planning and plan execution method for accomplishing a specified set of goals with a predefined set of actuators in a physical system, the steps of the method comprising:

storing a specified set of primitives that define said physical system, primitive actions that can be performed by said actuators, and changes in the defined physical system effected by said primitive actions; said set of primitives including primitives that specify goals and subgoals with respect to each primitive action that can be performed by said actuators;

generating and storing in said computer memory, based on said stored set of primitives and without regard to said specified set of goals, a set of confinement rules for ordering achievement of combinations of said goals and subgoals, each confinement rule containing both a single first goal (the rule's First-Goal) to be achieved and a set of goals (the rule's Conflict-Goals-Set), such that at least one goal in said Conflict-Goals-Set cannot be kept true when said First-Goal is being achieved; wherein a first plurality of said confinement rules have at least two goals in their respective Conflict-Goals-Sets and constrain order of achievement of at least three goals without constraining order of achievement of any pair of said at least three goals;

generating and storing in a computer memory, based on said set of primitives and said predefined set of goals, a universal plan tree comprising a hierarchy of plans for accomplishing defined goals, said defined goals including said specified set of goals and subgoals thereof, wherein each plan in said hierarchy of plans specifies an action for accomplishing one of said defined goals, preconditions for taking said specified action and a set of subgoals that must be met before performing said specified action;

selecting and performing actions specified in said universal plan tree, said actions being performed using said predefined set of actuators in sequences consistent with said confinement rules, and repeating said selecting and performing steps until said specified set of goals is achieved.

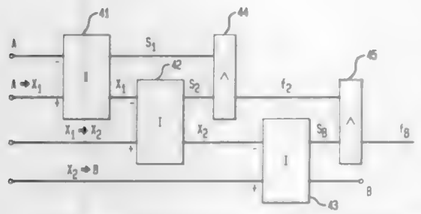
VOL 1171 ISS 3 FE 21 1995 UMI

5,392,383

FUZZY SYLLOGISTIC SYSTEM

Karvel K. Thornber, Mercier Place, N.J., assignor to NEC Research Institute, Inc., Princeton, N.J.

Continuation of Ser. No. 759,489, Sep. 13, 1991, abandoned. This application Dec. 13, 1993, Ser. No. 166,793
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—61 1 Claim



1. A fuzzy syllogistic inference system for processing a chain of implications that includes as the first link in the chain a minor premise that serves as an antecedent to infer a consequent of its major premise, which consequent serves as the antecedent to infer a consequent of the major premise in the next link of the chain, this process continuing through the last link in the chain comprising:

circuit means for each link in the chain for receiving as one input a signal corresponding to the confidence measure of the antecedent of the link and as another input a signal corresponding to the confidence measure of the major premise of the link and for generating a first output as the consequent of the link a signal corresponding to the confidence measure of the major premise of the link and a second output as the fidelity measure of the consequent of the link a signal which is the bounded difference between the confidence measure of the major premise and the complement of the confidence measure of the antecedent of the link,

means for coupling between successive said circuit means for each link the signal that is the first output as the consequent of the link to the one input corresponding to the confidence measure of the major premise of the link as the antecedent of the succeeding link in the chain, and

means for deriving the consequent of the last link in the chain as the consequent of the chain and deriving the lowest fidelity measure of any link in the chain as the fidelity measure of the consequent of the chain.

5,392,384

METHOD OF CALIBRATING AN INDUSTRIAL ROBOT

Shuichi Tounai, and Minoru Yamamoto, both of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki, Fukuoka, Japan

Continuation of Ser. No. 941,116, Oct. 28, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 201,138
Claims priority, application Japan, Apr. 9, 1991, 3-104601
Int. Cl.[6] G05B *19/42*
U.S. Cl. 395—89 2 Claims

1. A method for calibrating a robot using a calibrating device which is different from said robot, said calibrating device having a rear end and a front end and having 6 degrees of freedom including 3 degrees of freedom of position and 3 degrees of freedom of posture, said calibrating device having displacement detector means thereon for each axis of said 6 degrees of freedom, said displacement detector means detecting rotating positions of each of said 6 axes and outputting position data and posture data, said method comprising the steps of:

mounting the rear end of the calibrating device to a reference surface with respect to a base of the robot;

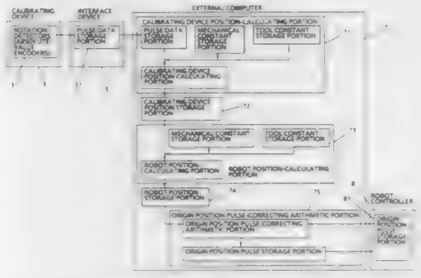
mechanically coupling a front end of the calibrating device to a front end of a wrist of the robot such that absolute coordinates of the front end of the calibrating device and the front end of the wrist of the robot coincide;

outputting a data sampling command from an external computer to each of said displacement detector means of the calibrating device;

outputting position data and posture data of said 6 axes from each of said displacement detector means to said external computer;

converting coordinates of a reference coordinate system of the front end of said calibrating device, which are computed on the basis of said position data and posture data of said 6 axes, to coordinates of a reference coordinate system of the robot using said external computer;

generating pulse data indicating the 6 axes of the robot by using the position of the front end of the robot found in the previous step, data corresponding to dimensions of the robot, data for mechanical constants, and dimensions of a



tool to be held by the robot, each previously stored in the external computer;

issuing an instruction to a robot controller from said external computer for correcting pulse data indicating the position of the origin, such that pulse data about the axes at the position of the origin of the robot and pulse data about the axes of the robot at a present position are transferred from the robot controller to the external computer;

generating differential data about the 6 axes which indicates a difference between pulse data for the axes of the robot calculated by the external computer and the pulse data at the present position of the robot, when said pulse data are transferred from the robot controller;

correcting the origin position pulses about the 6 axes using said differential data;

transferring the obtained origin position pulses to the robot controller; and

modifying the position of the origin of the robot.

5,392,385

PARALLEL RENDERING OF SMOOTHLY SHAPED COLOR TRIANGLES WITH ANTI-ALISED EDGES FOR A THREE DIMENSIONAL COLOR DISPLAY

Carlo J. Evangelisti, Jefferson Valley, N.Y.; Leon Lumelsky, Stamford, Conn., and Mark J. Pavicic, Fargo, N. Dak., assignors to International Business Machines Corporation, Armonk, N.Y.

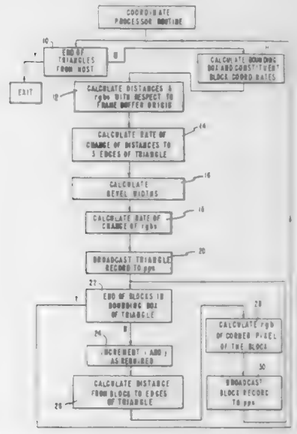
Continuation of Ser. No. 130,930, Dec. 10, 1987. This application May 22, 1992, Ser. No. 888,385
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—131 9 Claims

1. A method for rendering an image in smoothly shaded, anti-aliased, three dimensional triangles into a frame buffer using a plurality of pixel processors organized in a SIMD architecture said method being performed in a video display system including a host processor, a coordinate processor, wherein said frame buffer stores video data for display on a display monitor, said method comprising a parallel procedure operable simultaneously in all of said pixel processors wherein there are M×N processors where M and N are greater than one, rendering M×N contiguous pixels of video data into said frame buffer comprising the steps of:

1) accessing from the coordinate processor data about a triangle being rendered including rate of change of distances in both an x and y direction relative to three sides of the triangle across the display, rate of change of color intensity values across the display and bevel widths for the three sides of the triangle which define regions in which anti-aliasing is to be performed,

2) determining if all constituent blocks in a bounding box have been evaluated and, if not,

3) accessing from the coordinate processor computed distance values to each of three sides of the triangle from an origin of said M×N array and color intensity values at the origin of said M×N array,



4) indexing said distance and color data accessed in Step (3), for a particular pixel in said M×N array being processed by a particular processor,

5) computing anti-aliasing factor (a) for a particular pixel being rendered,

6) computing shaded color values (rr,gg,bb) for said particular pixel being shaded using data indexed in step (4),

7) accessing current color values (ro,go,bo) of said particular pixel from the frame buffer,

8) calculating new color values, (m,gn,bn) for said particular pixel being rendered using the computed anti-aliasing factor (a), the shaded color values (rr,gg,bb) and the current color values (ro,go,bo),

9) storing these new color values (m,gn,bn) in the frame buffer for access by the display monitor,

10) returning to step (2),

11) if it is determined that all constituent blocks in a bounding block have been evaluated returning to step (1).

5,392,386

METHOD AND APPARATUS FOR ADDING FUNCTIONALITY TO COMPUTER PROGRAMS EXECUTING UNDER GRAPHICAL USER INTERFACES

Uwe Chalas, Meinhard, Germany, assignor to Inter Hi-Tec AG, Zurich, Switzerland

Filed Feb. 3, 1994, Ser. No. 191,340
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—155 16 Claims

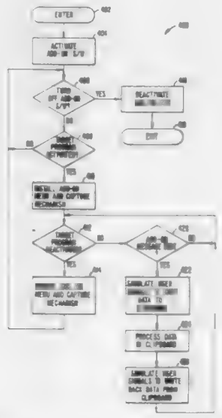
1. A method for adding a new function to an application program executing in a computer system, the computer system including a processor coupled to a user input device and a memory, wherein the memory includes an operating system with a graphical user interface responsive to the user input device, wherein the operating system provides a clipboard area in the memory for storing information, wherein the application program is responsive to user input commands generated by the operating system in response to the user input device, the method comprising the following steps executed by the processor:

detecting that the application program has been activated;

installing capture means in the memory for detecting the communications between the operating system and the application program;

detecting a predetermined first communication between the operating system and the application program;

copying first information from the application program to



the clipboard area by issuing a predetermined second communication to the application program in response to the identifying of the first communication, wherein the second communication includes user input commands that cause the first information to be copied and stored in the clipboard area;

modifying the copied information stored in the clipboard area; and

replacing the first information in the application program by issuing a predetermined third communication to the application program, wherein the third communication includes user input commands that cause the modified information to be stored in place of the first information.

5,392,387

METHOD AND SYSTEM FOR ENHANCED DATA ACCESS EFFICIENCY IN AN ELECTRONIC BOOK

Gregory P. Fitzpatrick, Fort Worth, and Thomas R. Haynes, Euless, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,374
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—156 11 Claims

6. A system for enhanced data access efficiency in an electronic book having a display, at least one displayable index screen which includes multiple selectable textual topics and a listing of a plurality of numbered displayable data pages which include a reference to selected ones of said multiple selectable textual topics, said system comprising:

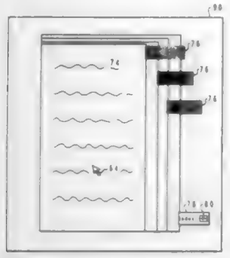
means for designating at least one of said multiple selectable textual topics within said displayable index screen in response to a selection thereof by a user during display of said index screen;

means for displaying an iconic representation of said index screen in the absence of a display of said index screen, said iconic representation including a control element therein;

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means for displaying a list of each designated selectable textual topic within said displayable index screen in response to a selection of said control element by a user;

means for displaying a selectable graphic indication of each numbered displayable data page which includes a reference to a particular designated selectable textual topic in



response to a selection of said particular designated selectable textual topic within said displayed list by a user; and

means for displaying a particular numbered displayable data page in response to a selection of a selectable graphic indication associated therewith by a user wherein said selected displayable data page may be accessed without displaying said index screen.

5,392,388

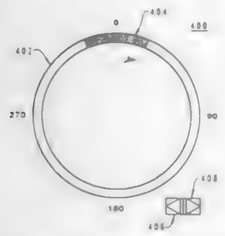
METHOD AND SYSTEM FOR VIEWING GRAPHIC IMAGES IN A DATA PROCESSING SYSTEM

Kevin P. Gibson, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1992, Ser. No. 985,991

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—159 **16 Claims**



1. A method in a data processing system having a display device for efficiently managing the display of a wide-angle image which includes a plurality of segments, wherein only a portion of said plurality of segments may be simultaneously displayed within said display device at a selected resolution, said method comprising the data processing system implemented steps of:

providing a substantially circular icon, having a defined periphery, wherein each portion of said defined periphery corresponds to one or more of said plurality of segments of said wide-angle image;

providing a moveable control element along a selected arc, wherein said moveable control element is moveable along said defined periphery; and

displaying within said display device one or more of said plurality of segments of said wide-angle image corresponding to each portion of said defined periphery within said selected arc, wherein display of said wide-angle image is efficiently managed.

5,392,389

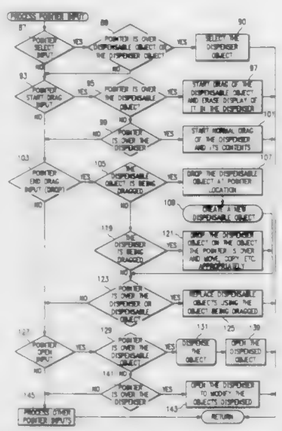
GRAPHICAL METHOD FOR CREATING AN OBJECT

Stephen S. Fleming, Dallas, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 752,791, Aug. 30, 1991, abandoned. This application Jun. 30, 1994, Ser. No. 268,888

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—159 **6 Claims**



1. A graphical method of creating an object in a computer system having a display screen and means for manipulating objects on said display screen, which comprises the steps of:

displaying an object dispenser icon on said screen;

dropping a dispensable object icon representative of a single identified object on said object dispenser icon;

displaying a dispensable object mini-icon on said object dispenser icon;

dragging said dispensable object mini-icon to another location on said display screen;

automatically replacing said dragged dispensable object mini-icon with a dispensable object icon in response to dropping of said dragged dispensable object mini-icon; and

displaying said dispensable object mini-icon on said object dispenser icon in response to dropping of said dragged dispensable mini-icon wherein multiple copies of said dispensable object icon may be graphically created.

5,392,390

METHOD FOR MAPPING, TRANSLATING, AND DYNAMICALLY RECONCILING DATA BETWEEN DISPARATE COMPUTER PLATFORMS

Keith Crozier, Acton, Mass., assignor to IntelliLink Corp., Nashua, N.H.

Filed Apr. 10, 1992, Ser. No. 867,167

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—161 **11 Claims**

MICROFICHE APPENDIX INCLUDED

(4 Microfiche, 330 Pages)

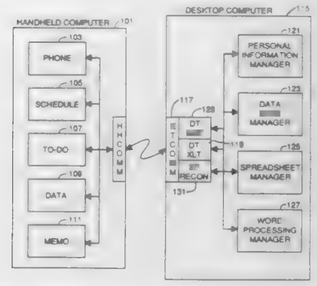
1. A method for an intensive user of a computer to dynamically reconcile the information of a first calendar database file and a second calendar database file, the method comprising the steps of:

choosing a first record from said first file and a corresponding second record from said second file, said choosing comprising comparison of corresponding time range fields of said records,

comparing the information of at least one field of said first record to the information of at least one corresponding field of said second record, and

allowing said user, after a comparison in which a difference between said fields is discovered, to decide based on said comparison from among the steps comprising: adding a record to one of said first and second files, modifying a record of one of said first and second files,

wherein said choosing and comparing steps comprise determining if any of the following conditions exist:



(a) there exists a second record of said second file with a time range inexactly overlapping the time range of a first record of said first file,

(b) there exists a second record of said second file with a time range equal to the time range of a first record of said first file, and the information in at least one other field of said first record differs from corresponding information of said second record.

5,392,391

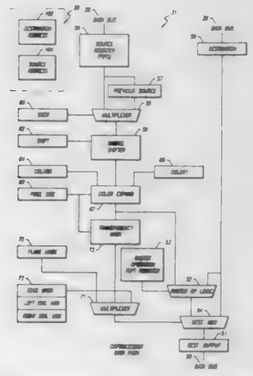
HIGH PERFORMANCE GRAPHICS APPLICATIONS CONTROLLER

Robert L. Caulk, Jr., Pleasantor; Sanjay M. Desai, San Jose, and Jay P. Patel, Union City, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 18, 1991, Ser. No. 780,855

Int. Cl.[6] G06F *3/14, 15/20*

U.S. Cl. 395—162 **3 Claims**



1. A high performance graphics applications controller comprising:

a core processor;

a co-processor sharing a common instruction set with said core processor;

said core processor executing at least one instruction from said common instruction set when at least one other instruction from said common instruction set is received by said co-processor;

said co-processor executing said at least one other instruction using hardware dedicated to the execution thereof;

said co-processor executing said at least one other instruction independently of said core processor;

said co-processor executing said at least one other instruction using a hardware data path, said hardware data path functions including a barrel shifter operation in which said barrel shifter circularly shifts data in order to align the data to correspond to the edge of a video display;

a first color register to determine the background color when an external color monitor is used, a second color register to determine an alternate background color, a color expand function which selectively applies the color specified by said first color register or the color specified by said second color register when an external color monitor is used;

an edge mask register further consisting of a left edge mask and a right edge mask which determines the boundaries of the video data being manipulated;

a raster operation function which selectively performs a logical operation on the video data; and

a destination multiplexer which selectively determines which internal source of data is output on a bit by bit basis.

5,392,392

PARALLEL POLYGON/PIXEL RENDERING ENGINE

Douglas A. Fischer; Jennifer A. Graves, and Thomas D. Snodgrass, all of Albuquerque, N. Mex., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 732,725, Jul. 18, 1991, abandoned, which is a continuation of Ser. No. 419,722, Oct. 11, 1989, abandoned. This application Jan. 12, 1993, Ser. No. 4,476

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—162 **2 Claims**

1. An apparatus for rendering three dimensional objects wherein the three dimensional objects are comprised of a plurality of polygons, wherein the plurality of polygons further comprise at least one complex polygon and wherein each complex polygon includes more than three vertices, the apparatus comprising:

(a) a means for interpreting instructions, the interpreting means having an output for transmitting vertex data, the vertex data includes a list of vertices for at least one complex polygon having more than three vertices and each vertex is further comprised of X and Y coordinates in a cartesian coordinate system having X, Y and Z axes;

(b) means for scanning images, the scanning means having an input;

(c) raster engine means comprising,

i. a raster engine control interface having an input connected to the interpreting means output for receiving

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the vertex data, wherein the raster engine control interface has a raster engine control output for transmitting the vertex data;

ii. means for interpolating edges connected at a data input to the raster engine control output, the edge interpolator means further having a control input, the edge interpolating means is loaded at its data input with the vertex data for a selected complex polygon by the raster engine control interface and interpolates the vertex data across the X axis so as to generate interpolated edge data for the selected complex polygon at an output;

iii. interpolator controller means for synchronizing interpolated edge data transfer, having first and second control signals, wherein the first control signal is coupled to the control input of the edge interpolator means for controlling the output of the interpolated edge data from the edge interpolating means; and

iv. means for interpolating lines connected at a control input to the second control signal of the interpolator controller means wherein the second control signal controls the input of data to the line interpolating means, the line interpolating means being further connected at a data input to the output of the edge interpolator means, wherein the line interpolating means is loaded on its data input with the interpolated edge data for the selected complex polygon, and interpolates the interpolated edge data across the Y axis so as to generate interpolated pixel data for the selected complex polygon on an output; and

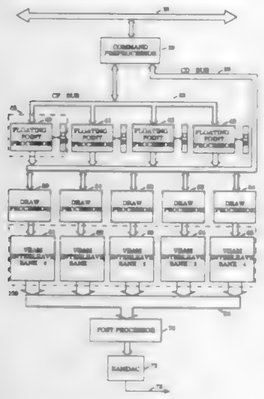
d. means for generating objects, the object generating means connected at a first input to the output of the edge interpolating means and at a second input to the output of the line interpolating means wherein the object generating means stores the interpolated edge data and the interpolated pixel data in an interleaved manner so as to output display data, representing three dimensional objects, the three dimensional objects comprised of a plurality of said polygons comprising at least one complex polygon, on an output connected to the input of the image scanning means.

5,392,393

ARCHITECTURE FOR A HIGH PERFORMANCE THREE DIMENSIONAL GRAPHICS ACCELERATOR

Michael F. Deering, Los Altos, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 4, 1993, Ser. No. 71,699
Int. Cl.[6] G06F *15/20*
U.S. Cl. 395—162 **17 Claims**



1. A graphics accelerator, comprising:

command preprocessor having a 3D geometry pipeline and a direct port pipeline, the command preprocessor accessing input vertex packets and direct port data over the host bus, the 3D geometry pipeline reformatting the input vertex packets into reformatted vertex packets according to predefined vertex format, the 3D geometry pipeline assembling the reformatted vertex packets into an output geometry packet and transferring the output geometry packet over a floating-point bus, the direct port pipeline transferring the direct port data over a draw bus;

at least one floating-point processor coupled to communicate over the floating-point bus, the floating-point processor receiving the output geometry packet over the floating-point bus, generating a draw packet, and transferring the draw packet over the draw bus, the draw packet containing parameters that define a geometry object;

a plurality of draw processors concurrently receiving the draw packet over the draw bus, each draw processor performing edgewalking and scan interpolation functions corresponding to the geometry object, such that each draw processor renders a subset of pixels corresponding to the geometry object;

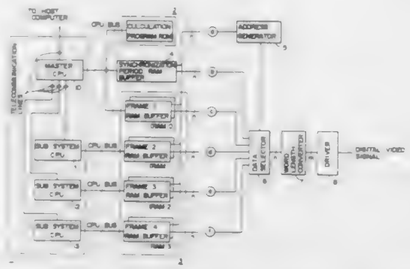
frame buffer comprising a plurality of interleave banks, each interleave bank receiving the subset of pixels from one of the draw processors.

5,392,394

SYSTEM FOR GENERATING DIFFERENT KINDS OF DIGITAL VIDEO SIGNALS

Yuichi Hamana, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 703,824, May 21, 1991, abandoned.
This application Sep. 17, 1993, Ser. No. 122,618
Claims priority, application Japan, May 25, 1990, 2-134165
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—163 **5 Claims**



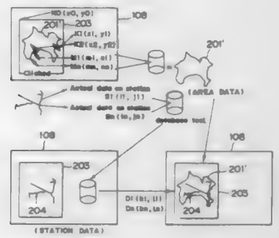
1. A digital video signal generator responsive to an input by a user for generating a plurality of different digital video signals fed to a video device, comprising a central processing unit system including a master central processing unit and a plurality of subsystem central processing units, a read only memory connected to said master central processing unit for storing a plurality of calculation programs in accordance with which different respective digital video signals are calculated by said master and subsystem central processing units, a random access memory system including a plurality of random access memories connected respectively to said master central processing unit and to said subsystem central processing units for storing respectively therein said different respective digital video signals calculated by said master and subsystem central processing units in accordance with respective ones of said plurality of calculation programs fed from said read only memory to said master central processing unit, selector means responsive to the input by the user for selectively reading out stored calculated digital video signals from said plurality of random access memories, and a video device driver receiving said read out signals and for driving said video device based upon said read out signals.

5,392,395

IMAGE EDITING SYSTEM FOR TRANSMISSION NETWORK SUPERVISION

Yasuo Fujii, and Eiji Iida, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Jul. 31, 1992, Ser. No. 924,545
Claims priority, application Japan, Aug. 1, 1991, 3-192845
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—164 **2 Claims**



1. An image editing system for transmission network supervision comprising:

means for creating station data as a data source for graphically displaying a plurality of stations within a specific area;

memory means for storing said station data;

means for creating area data as a data source for graphically displaying a map of said specific area;

means for creating, on the basis of said station data and said area data, map data for graphically displaying an area map including an image map of said specific area reduced to a desired scale, said plurality of stations superimposed on said image map and transmission routes connecting said plurality of stations;

map memory means for storing said map data; and

display means for graphically displaying said area map based on said map data;

wherein said area data creating means creates said area data by first designating two reference points on a map of said specific area; reading said map containing said two reference points through an image scanner attached to said system for conversion to image data; displaying said image map in accordance with said image data on said display means arranged to appear within a window established on said display means; and plotting said two reference points and an outer frame of said image map to obtain coordinate values of said image map;

wherein said map creating means comprises:

means for obtaining an x direction scale value of said image map by dividing an absolute difference between x coordinate values of two display reference points on said image map by an absolute difference between latitude values of said two reference points on the map of said specific area;

means for obtaining a y direction scale value of said image map by dividing the absolute difference between y coordinate values of said two display reference points by an absolute difference between longitude values of said two reference points;

means for obtaining an x coordinate value of a window reference point for providing screen display reference of said window by first dividing the x coordinate value of one of said two display reference points by said x direction scale value, and by subtracting a resulting quotient from a latitude value of one of said two reference points;

means for obtaining a y coordinate value of said window reference point by first dividing the y coordinate value of said one of two display reference points by said y direction scale value, and by subtracting a resulting quotient from a longitude value of said one of two display reference points;

means for obtaining an x coordinate value of station display coordinates for displaying each of said plurality of stations on said image map displayed in said window, said x coordinate value being obtained by first subtracting the x coordinate value of said window reference point from an actual latitude value of each of said plurality of stations, and by multiplying a resulting difference by said x direction scale value; and

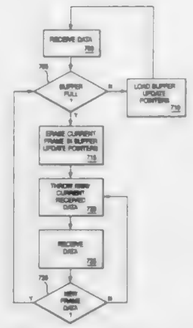
means for obtaining a y coordinate value of station display coordinates for displaying each of said plurality of stations on said image map displayed in said window, said y coordinate value being obtained by first subtracting the y coordinate value of said window reference point from an actual latitude value of each of said plurality of stations, and by multiplying a resulting difference by said x direction scale value.

5,392,396

METHOD AND APPARATUS FOR GRADUALLY DEGRADING VIDEO DATA

Alexander G. MacInnis, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 967,487, Oct. 23, 1992, abandoned.
This application Mar. 28, 1994, Ser. No. 219,226
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—164 **27 Claims**



1. A method of transmitting frames of video data to be displayed comprising the steps of:

a) receiving at least a portion of a frame of video data;

b) determining whether a buffer has sufficient available space to store the received video data;

c) storing the received video data in the buffer if the buffer has been determined to have sufficient available space to store the received video data; and

d) erasing the received video data and any other portions of the frame of video data when other portions of the frame of video data are received if the buffer has been determined to not have sufficient available space to store the received video data such that the frame of video data is not displayed even if buffer space is available for the other portions of the frame of video data.

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5,392,397

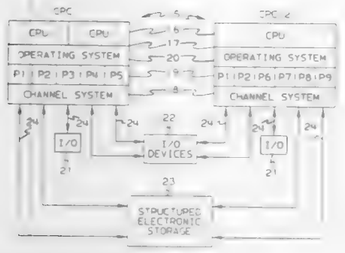
COMMAND EXECUTION SYSTEM FOR USING FIRST AND SECOND COMMANDS TO RESERVE AND STORE SECOND COMMAND RELATED STATUS INFORMATION IN MEMORY PORTION RESPECTIVELY

David A. Elko, Poughkeepsie; Jeffrey A. Frey, Fishkill; Audrey A. Heiffrich, Poughkeepsie; Jeffrey M. Nick, Fishkill, and Michael D. Swanson, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,378

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200 **7 Claims**



1. A data processing system comprising:

a command responder including program controlled command execution means, program sequencing means connected to said command execution means control storage and data storage, said control storage including a command status storage area comprised of a plurality of portions for recording the progress of command execution; and

a command initiator connected to said command responder for communicating commands to said command responder requesting an action to be performed by said command execution means and return of a response resulting from the action

said program sequencing means responding to first commands of a first type sent by said command initiator identifying a portion of said command status storage area for reserving the portion identified by said first command of a first type,

and said program sequencing means responding to a second command of a second type from said command initiator selectively identifying said reserved portion, for selectively storing status information related to said second command in said reserved portion.

5,392,398

SYSTEM AND METHOD FOR DEALLOCATION A FIRST MESSAGE INDEPENDENTLY OF THE DEALLOCATION OF A SECOND MESSAGE IN A BUNDLE OF MESSAGES

Christopher Meyer, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1992, Ser. No. 871,867

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200 **17 Claims**

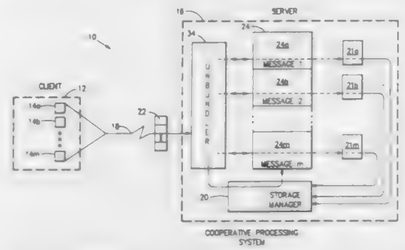
1. In a computerized data processing system including a client system, a server system having a storage deallocation granularity, and means for sending messages in bundles from the client system to the server system, the improvement comprising:

means for padding a first message to an integer multiple of said granularity and padding a second message to an integer multiple of said granularity before sending the messages to the server system;

means for bundling the first and second padded messages together and supplying the bundle to the means for sending so that the bundle is sent to the server system;

means, at the server system for storing the bundle in allocated storage; and

means for deallocating said storage in portions which are



integer multiples of said granularity such that a portion of said storage containing said first message is deallocated separately from another portion of said storage containing said second message.

5,392,399

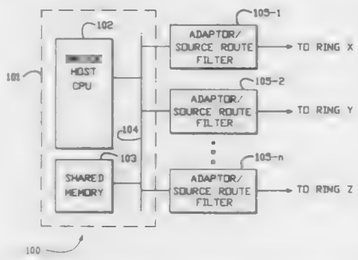
BRIDGE SYSTEM FOR SELECTIVELY ROUTING FRAME WITH ORDERING PARAMETER IDENTIFYING ORDERING OF IDENTIFIERS ONLY BASED UPON ITS SOURCE IDENTIFIER

Sidney A. Gilbrech, Los Altos, Calif., assignor to 3Com Corporation, Santa Clara, Calif.

Filed May 18, 1992, Ser. No. 884,785

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200 **9 Claims**



1. A bridge for connecting a plurality of local area networks (LANs) through which source routed frames are transmitted including data identifying an input LAN, an output LAN and a bridge across which the frame is to be routed from the input LAN to the output LAN, comprising:

a bridge host processor; and

a plurality of bridge ports coupled to the bridge host processor and to respective LANs, wherein at least one bridge port in the plurality of bridge ports includes forwarding resources responsive to the input LAN and bridge identified by data in a source routed frame and independent of the output LAN identified by data in the source routed frame, which forward the source routed frame to the bridge host processor for retransmission to the output LAN if accessible through another of the plurality of bridge ports; wherein the at least one bridge port is adapted for connection to a token ring network LAN; wherein the source routed frames have a format including an input LAN identifier, a bridge identifier, an output LAN identifier, and an ordering parameter, the ordering parameter identifying an order within the source routed frame for the input.

5,392,400

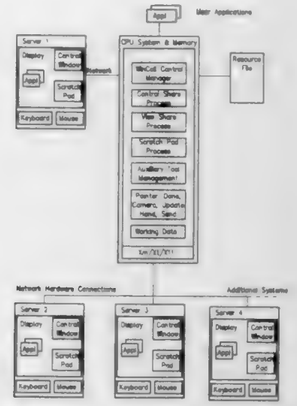
COLLARBORATIVE COMPUTING SYSTEM USING PSEUDO SERVER PROCESS TO ALLOW INPUT FROM DIFFERENT SERVER PROCESSES INDIVIDUALLY AND SEQUENCE NUMBER MAP FOR MAINTAINING RECEIVED DATA SEQUENCE

David B. Berkowitz, Palo Alto; Ming C. Hao, Los Altos; Hung C. Lieu, Santa Clara, and Franklin D. Snow, Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1992, Ser. No. 909,505

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200 **15 Claims**



1. A method for using a plurality of computers for collaborative computing, the computers being connected in a network, and each computer having a processor, a memory, a display, means for inputting data, a network server program, and means for transmitting and receiving data to and from the computers in the network, comprising the steps of:

transmitting data from a selected computer in the network to first and second server programs in first and second computers indicative of the start of a collaborative computing session;

loading a client application program into the memory of the selected computer in the network;

displaying on the first and second computers' displays a first set of output data from the client application program by transmitting the output data to the first and second server programs;

reading user input data from the second server program along with identifying data into the memory of the selected computer;

modifying the identifying data from the second server program in the memory of the selected computer to identify the data as coming from a pseudo-server program;

sending the user input data and the modified identifying data from the preceding step to the client application program as application input data;

displaying on the first and second computers' displays a second set of output data from the client application program by transmitting the second set of output data to the first and second server programs;

reading user input data from the first server program along with identifying data into the memory of the selected computer;

modifying the identifying data from the first server program that is in the memory of the selected computer to identify the data as coming from the pseudo-server program;

sending the user input data and the modified identifying data from the preceding step to the client application program as application input data; and

displaying on the first and second computers' displays a third set of output data from the client application program by transmitting the third set of output data to the first and second server program; storing mapping data in the memory of the selected computer in the network, the mapping data indicative of the sequence of user data received from each of the first and second server programs;

receiving output data from the client application program including a sequence number field, the output data received at the selected computer in the network;

modifying the sequence number field to correspond to a sequence number one higher than the highest sequence number in the mapping data for the first server program;

transmitting the output data containing the modified sequence number to the first server program;

modifying the sequence number field to correspond to a sequence number one higher than the highest sequence number in the mapping data for the second server program; and

transmitting the output data containing the modified sequence number to the second server program;

whereby, first and second computers using server programs provide input to a client application program and display the output from the client application program in a collaboration session.

5,392,401

SWITCHING SYSTEM FOR SIMULTANEOUSLY TRANSFERRING DATA BETWEEN DATA PROCESSING UNITS

Gerard Barucchi, Villeneuve Loubet; Jean Calvignac, La Gaude; Daniel Orsatti, Cagnes Sur Mer, and Andre Tracol, Villeneuve Loubet, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

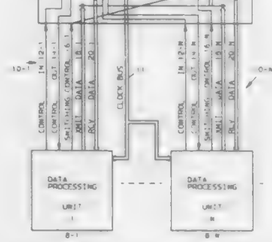
Continuation of Ser. No. 479,139, Feb. 13, 1990, abandoned.

This application Jan. 21, 1993, Ser. No. 5,425

Claims priority, application European Pat. Off., Mar. 14, 1989, 89480047

Int. Cl.[6] G06F *13/00, 13/14*

U.S. Cl. 395—200 **12 Claims**



1. A system for performing transfers of data packets between pairs of data processing units connected by parallel busses in a non-serial communications network comprising an origin unit and a target unit selected among N data processing units (**8**), each data processing unit comprising a set of outbound queues with one outbound queue associated with each one of the data processing units to which it may send data packets, for storing the data packets to be sent by the data processing unit to the data processing unit associated with said one outbound queue, said system characterized in that it comprises:

clocking means (**44**) providing timing signals for defining burst times Ti, of fixed durations;

centralized selecting means (**4**) active during each burst time Ti for selecting different pairs of units as a function of

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transfer requests received from the N data processing units, with each unit being selected as an origin unit and a target unit only once during said each burst time Ti;

said centralized selecting means comprising sending means (**56, 14**) for sending the address of the selected target unit of each pair to the origin unit of the pair;

a receive data bus (**20**) and a transmit data bus (**18**) connected in parallel to each origin unit and each target unit; and

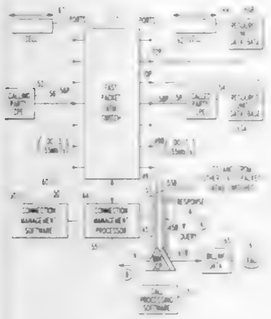
data switching means (**6**) connected to each one of the N data processing units by the receive data bus (**20**) and the transmit data bus (**18**); said data switching means responsive to the addresses of the selected target units received from the selected origin unit to connect, during the next burst time Ti+k, k being an integer number higher than or equal to 1, the transmit data bus of the origin unit to the receive data bus of the target unit of each pair selected during the burst time Ti, whereby data packets are simultaneously transferred from the outbound queues in the selected origin units to the selected target units.

5,392,402

BROADBAND INTELLIGENT TELECOMMUNICATIONS NETWORK AND METHOD EMPLOYING A RESOURCE SYSTEM TO SUPPORT NETWORK SERVICES

Richard B. Robrock, II, Bedminster, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Jun. 29, 1993, Ser. No. 84,386
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200 **32 Claims**



1. A method for operating a broadband intelligent network having customer apparatus coupled to predetermined ports of a fast-packet switch through connections having a broad digital bandwidth; a network service control processor connected to at least one fast-packet switch port; at least one resource unit of a network resource system connected directly to another fast-packet switch port; the steps of the method comprising:

detecting customer signaling cells received by the fast-packet switch from customer apparatus and routing customer signaling cells from the fast-packet switch to the network service control processor through the one switch port;

detecting service request data in each signaling cell received by the network service control processor and requiring support of the one resource unit and generating an output query cell requesting information needed from the one resource unit;

routing the query cell from the network service control processor to the one resource unit through the fast-packet switch;

generating a response cell containing the requested information from the one resource unit; and

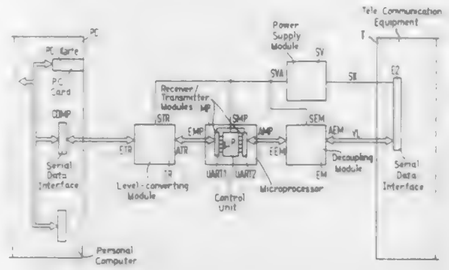
sending the response cell from the one resource unit to the fast-packet switch.

5,392,403

CIRCUIT ARRANGEMENT EMPLOYING A MICROPROCESSOR MODULE FOR DATA CONVERSION IN A DATA TRANSMISSION BETWEEN A PERSONAL COMPUTER AND COMMUNICATION EQUIPMENT

Peter Kaufmann, Gilching, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 23, 1992, Ser. No. 872,368
Claims priority, application Germany, Apr. 29, 1991, 4113987
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—275 **7 Claims**



1. A circuit arrangement for data conversion in a data transmission between a serial data interface of a personal computer and a serial data interface of a communication equipment, comprising:

a microprocessor module arranged between a level converting module and a decoupling module, said microprocessor module comprising a serial-to-parallel converter arranged at an input side thereof, a parallel-to-serial converter arranged at an output side thereof, and a control means for converting data according to a given desired procedure;

said level-converting module having its input side connected to the serial data interface of the personal computer and its output side connected to the serial-to-parallel converter; and

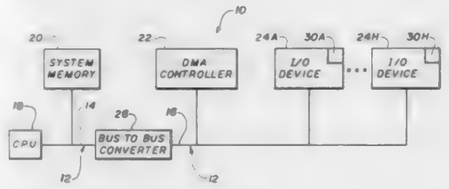
said decoupling module having means for electrical isolation of the communication equipment from the personal computer, and which has its output side connected to the serial data interface of the communication equipment and its input side connected to the parallel-to-serial converter.

5,392,404

BUS CONTROL PREEMPTION LOGIC

Stephen P. Thompson, Delray Beach, Fla., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 22, 1992, Ser. No. 903,059
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—275 **20 Claims**



1. A computer system, comprising:

system memory and a memory controller for controlling access thereto;

a central processing unit;

at least a first and a second input/output device, each having a coprocessor incorporated therein;

a system bus for electrically connecting said system memory, said memory controller, said central processing unit and said at least first and second input/output devices, control of which bus may be requested and thereafter taken by any one of said memory controller, said central processing unit and said input/output devices when communicating over said bus with each other or with system memory;

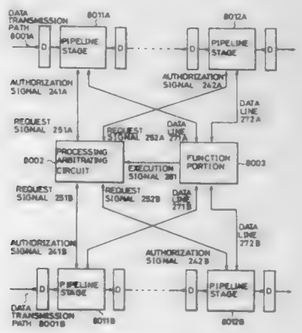
said at least first and second input/output devices having control logic incorporated therein, said control logic incorporated into said first input/output device for (i) determining when said second input/output device requests control of said bus, (ii) outputting a preemption signal in response to said second input/output device request and (iii) relinquishing control of said bus by said first input/output device in response to said preemption signal, said control logic including preventative circuitry which is activated to output a mask signal to prevent a preemption signal from being outputted as a result of a request for control of said bus by said first input/output device, when said first input/output device already maintains control of said bus.

5,392,405

DATA PROCESSOR FOR DETECTING IDENTICAL DATA COEXISTING IN A PLURALITY OF DATA SECTIONS OF DATA TRANSMISSION PATHS

Koji Komatsu; Shinichi Yoshida; Souichi Miyata, and Daisuke Azuma, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 922,746, Jul. 31, 1992, abandoned, which is a division of Ser. No. 779,805, Oct. 21, 1991, Pat. No. 5,317,756, which is a division of Ser. No. 260,061, Oct. 20, 1988, Pat. No. 5,113,339. This application Mar. 9, 1994, Ser. No. 208,032
Claims priority, application Japan, Oct. 20, 1987, 62-265734; Oct. 20, 1987, 62-265735; Oct. 20, 1987, 62-265736; Oct. 20, 1987, 62-265737; Oct. 20, 1987, 62-265741
Int. Cl.[6] G06F *13/38, 13/14*
U.S. Cl. 395—275 **1 Claim**



1. A data processor, comprising:

paired data transmission paths, each of the data transmission paths having at least one data holding mechanism in a plurality of stages controllable by a control circuit according to a handshaking transfer control;

a function portion for processing authorized data from said paired data transmission paths; and

processing arbitrating means for determining authorization and inhibition of processing by said function portion of data from said paired data transmission paths in accordance with an order of generation of a processing request such that there is no memory access contention in response to processing requests generated in parallel, thereby allowing arbitration for a plurality of processing requests generated asynchronously and in parallel such that there is no contention of processing, said processing arbitrating means including,

state storing means for storing and determining sequential generation of processing requests from at least one of two different data holding mechanisms of a same one of said paired data transmission paths and two different data holding mechanisms of different ones of said paired data transmission paths, and

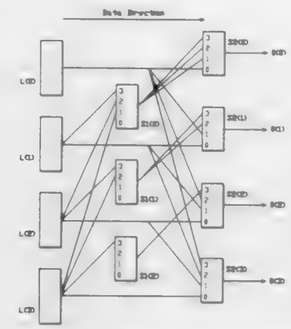
authorization output means for outputting a signal indicating authorization of access of said function portion to each of said data holding mechanisms, sequentially, based upon the sequential determination of processing requests by said state storing means, and for outputting a signal inhibiting access of said function portion to each other of said data holding mechanisms.

5,392,406

DMA DATA PATH ALIGNER AND NETWORK ADAPTOR UTILIZING SAME

Brian Petersen, Los Altos; Lai-Chin Lo, Campbell, and David R. Brown, San Jose, all of Calif., assignors to 3COM Corporation, Santa Clara, Calif.

Filed Sep. 18, 1992, Ser. No. 947,055
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—325 **35 Claims**



1. An apparatus for transferring data from an input data path having N segment lanes L(i), for i equal to 0 through N−1, each segment lane for transferring a segment of data and a segment enable bit, to an output data path having N segment lanes O(i), for i equal to 0 through N−1, each segment lane for transferring a segment of data, comprising:

a control input for a data path offset signal indicating a mapping of data on the input data path to the output data path;

a first stage including N−1 first elements S1(i), for i equal to 0 to N−2, the N−1 first elements S1(i) having respective inputs connected to respective input subsets of a set including a plurality of the N segment lanes, the input subset for first elements S1(i) including segment lanes L(j) for j going from i+1 to N−1, and having respective outputs, each of the N−1 first elements S1(i) supplying a segment of data and a segment enable bit to its output from a segment lane in its respective input subset in response to the data path offset signal; and

a second stage including N second elements S2(i) for i equal to 0 to N−1, the N second elements having respective inputs connected to respective input subsets of a set including the N segment lanes and the outputs of first elements, the input subset for second element S2(i) including segment lanes L(k) for k going from i to zero and, for i less than or equal to N−2, the output of first element S1(i), and having respective outputs, each of the N second ele-

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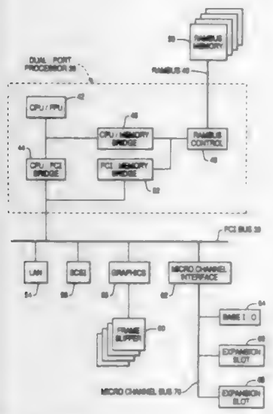
ments S2(i) supplying a segment of data from its respective input subset to its respective output segment lane O(i) in response to the data path offset signal.

5,392,407

MULTI-PORT PROCESSOR WITH PERIPHERAL COMPONENT INTERCONNECT PORT AND RAMBUS PORT

Thomas F. Heil; Craig A. Wairath; Jeff A. Hawkey, all of Easley, and Jim D. Pike, Greenville, all of S.C., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 24, 1992, Ser. No. 996,276
Int. Cl.[6] G06F *13/364*
U.S. Cl. 395—325 **18 Claims**



1. A computer system, comprising:

(a) a processor having first and second ports;

(b) a RAMBUS channel, coupled to the first port of the processor and to a memory, for communicating electrical signals therebetween, wherein the RAMBUS channel is a high speed bus used to attach one or more memory devices to the processor as a memory subsystem;

(c) a bus, coupled to the second port of the processor and to one or more electronic devices, for communicating electrical signals therebetween; and

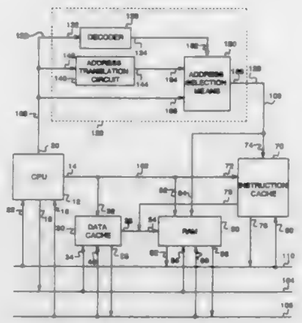
(d) a central arbiter device, coupled to the processor and the electronic devices, for selecting by arbitration a first device coupled to the bus for actively and exclusively driving a specific electrically conductive signal connection of the bus to a logic 1 or 0 value during a first time period, and for selecting by arbitration a second device coupled to the bus for actively and exclusively driving the specific electrically conductive signal connection of the bus to a logic 1 or 0 value during a second time period following the first time period, so that the specific electrical conductive signal connection of the bus is never let floating for an extended period of time, each device that requests exclusive control of the bus having a request signal line and grant signal line connected to the central arbiter device, the request signal line indicating to the central arbiter device that the device desires use of the bus, and the grant signal line indicating to the device that access to the bus has been granted by the central arbiter device, wherein the central arbiter device further comprises arbiter parking means for asserting the grant signal line to a selected device not requesting access to the bus when no other device is requesting access to the bus, thereby effectively designating the selected device as a default owner of the bus, so that the bus will not float.

5,392,408

ADDRESS SELECTIVE EMULATION ROUTINE POINTER ADDRESS MAPPING SYSTEM

Jonathan Fitch, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 20, 1993, Ser. No. 124,302
Int. Cl.[6] G06F *12/10*
U.S. Cl. 395—375 **1 Claim**



1. An address selective address mapping system for a host computer system having a central processing unit (CPU) having data inputs and address outputs, and a memory having address inputs and data outputs, said CPU and said memory coupled to a data bus, the address selective address mapping system for selectively mapping a memory address storing a pointer to an emulation routine to a cache address, the address selective address mapping system comprising:

a cache having address inputs, data inputs, and data outputs, for storing a plurality of pointers, each pointer corresponding to an emulation routine, the data inputs and data outputs of said cache coupled to said data bus;

an instruction mapping circuit having inputs and outputs for receiving and selectively translating the memory address into a corresponding cache address, the inputs of said instruction mapping circuit coupled to the address outputs of said CPU and the outputs of said instruction mapping circuit coupled to the address inputs of said memory and the address inputs of said cache, wherein said instruction mapping circuit further comprises:

a decoder having inputs and an output for controlling whether an address received from said CPU is subject to being translated to a cache address by determining whether the address received corresponds to an address at which a pointer to an emulation routine for a source instruction within a source instruction set is stored, the inputs of said decoder coupled to receive an address signal from said CPU;

an address translation circuit having inputs and outputs for determining whether the address received corresponds to a source instruction that has a corresponding pointer to an emulation routine stored in said cache, the inputs of said address translation circuit coupled to receive the address signal from said CPU, wherein said address translation circuit further comprises:

a programmable logic means having inputs, data outputs, and a control output for recognizing whether the address signal corresponds to a source instruction within the subset of most-frequently used source instructions within a source instruction set, for mapping the address signal to a corresponding cache address and for determining whether the cache address is valid, the inputs of said programmable logic means coupled to receive the address signal from said CPU; and

a bit substitution means having a first set of inputs, a second set of inputs, a control input, and a plurality of outputs, for selectively routing one from the group of the address signal and a mapped address signal, and conjoining a plurality of bits to form the mapped address signal, the first set of inputs coupled to the outputs of said programmable logic means, the second set of inputs coupled to receive the address signal from said CPU, the control input coupled to the control output of said programmable logic means;

and

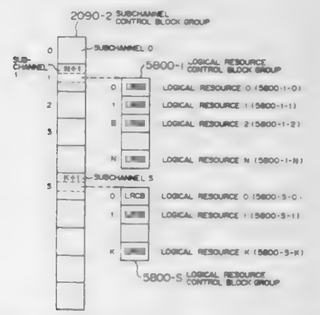
an address selection means having a control input, first data inputs, second data inputs and outputs, said address selection means selectively outputting the signals from the first data inputs and the second data inputs, the control input of said address selection means coupled to the output of said decoder, the first data inputs coupled to the outputs of said address translation circuit, the second data inputs coupled to receive the address signal from said CPU, and the outputs of said address selection means coupled to the address inputs of said cache and the address inputs of said memory.

5,392,409

I/O EXECUTION METHOD FOR A VIRTUAL MACHINE SYSTEM AND SYSTEM THEREFOR

Hidenori Umeno, Kanagawa; Takashige Kubo, Hachioji; Nobutaka Hagiwara, Fujisawa; Hiroaki Sato; Hideo Sawamoto, both of Hadano; Taro Inoue, and Shunji Tanaka, both of Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 369,535, Jun. 21, 1989, Pat. No. 5,109,489, which is a continuation of Ser. No. 691,909, Jan. 16, 1985, Pat. No. 4,885,681. This application Mar. 16, 1992, Ser. No. 851,629
Claims priority, application Japan, Jan. 18, 1984, 59-5587
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—400 **15 Claims**



1. In a computer system having a central processing unit, a main storage and at least one I/O device, wherein a plurality of operating systems can simultaneously run under the control of a control program, a method of executing an I/O instruction using said central processing unit, comprising steps of:

assigning, under control of said control program, a plurality of resident areas of said main storage which do not overlap one another to said plurality of operating systems as main memories therefore, respectively;

responding to an I/O instruction issued by a running one of said plural operating systems to thereby determine an address of said main memory assigned to said running operating system which participates in an I/O operation requested by said I/O instruction without intervention of said control program;

translating said address into an address of said main storage of said computer system without intervention of said control program; and

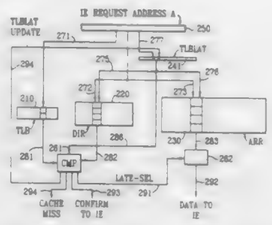
executing said I/O operation by using the address resulting from said address translation.

5,392,410

HISTORY TABLE FOR PREDICTION OF VIRTUAL ADDRESS TRANSLATION FOR CACHE ACCESS

Lishing Liu, Pleasantville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1992, Ser. No. 876,646
Int. Cl.[6] G06F *12/03, 12/10*
U.S. Cl. 395—400 **10 Claims**



1. An apparatus for faster data access in a computer system from a virtual address, comprising:

a cache memory for storing data lines, each of said data lines stored in said cache memory being stored and accessed in accordance with a subset of real address bits from a real address of said each data line, said subset of real address bits including at least one real address bit that is translated when a real address is generated from a corresponding virtual address;

a cache directory for storing a real address corresponding to said each data line stored in said cache memory;

a history table for predicting said at least one real address bit from a virtual address for a desired data line before completion of actual translation of said virtual address for said desired data line to a corresponding real address for said data line;

cache memory accessing control means responsive to said at least one predicted real address bit from said history table for provisionally outputting from said cache memory at least one data line that corresponds to said at least one predicted real address bit;

address translation means for generating a true real address that actually corresponds to said virtual address; and

verification means for comparing said true real address with said stored real address corresponding to each of said at least one data line.

5,392,411

DUAL-ARRAY REGISTER FILE WITH OVERLAPPING WINDOW REGISTERS

Shinji Ozaki, Hyogo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 3, 1993, Ser. No. 13,105
Claims priority, application Japan, Feb. 3, 1992, 4-017353
Int. Cl.[6] G06F *12/02, 13/00;* **G11C** *11/34*
U.S. Cl. 395—400 **6 Claims**

1. In a register file having a plurality of registers which are divided into a plurality of windows L adjacent to each other, each of said plurality of windows containing a plurality of registers K, each of said plurality of windows sharing some of said registers as double-address registers with two adjacent windows, each register in each window being designated by a window number which identifies each window in each of said plurality of windows containing said register, and by a register address which indicates a relative position of said register in said each window, said register file comprising:

a first memory cell array having, as first words, memory

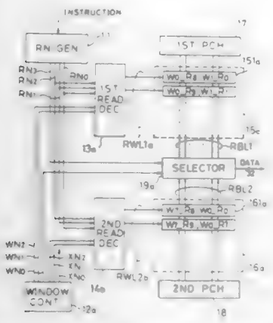
VOL 1171 ISS 3 FE 21 1995 UMI

cells for a half of said double-address registers, said first words sharing first read bit lines with one another;

a second memory cell array having, as second words, memory cells for the remaining half of said double-address registers, said second words sharing, with one another, second read bit lines which are different from said first read bit lines;

a window control circuit for supplying a window number signal to specify said window number of M-bits;

a register address signal generating circuit for generating a



register address signal to specify said register address of N-bits;

first and second read decoding circuits for respectively selecting one of said first words and one of said second words according to said window number signal from said window control circuit and said register address signal from said register address signal generating circuit; and

an output selection circuit for selecting, as an output data, either a data read from said one of said first words to said first read bit lines, or a data read from said one of said second words to said second read bit lines.

5,392,412

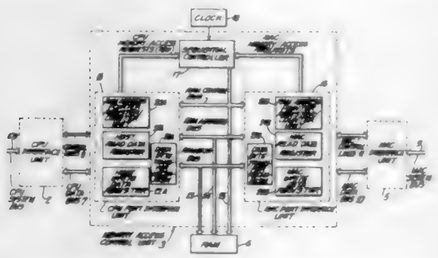
DATA COMMUNICATION CONTROLLER FOR USE WITH A SINGLE-PORT DATA PACKET BUFFER

James L. McKenna, Sayville, N.Y., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Oct. 3, 1991, Ser. No. 770,695

Int. Cl.[6] G06F *12/00, 13/00*; H04J *3/24*

U.S. Cl. 395—425 **3 Claims**



1. A data communication controller fabricated on a semiconductor chip, comprising:

first connection means for connecting said data communication controller to a system bus operably connected to a host processor;

second connection means for connecting said data communication controller to a communication medium;

a medium access control unit, operably connected to said second connection means, for controlling access of said data communication controller to said communication medium;

a memory access control unit providing said host processor and said medium access control unit synchronous access to a single-port common buffer memory having a plurality of data byte storage locations, said memory access control unit including

a first access port including

a first address pointer register for storing an address specifying a storage location in said buffer memory,

a first read data register for storing a data byte readable by said host processor,

a first write data register for storing a data byte written therein by said host processor,

a first request storage means for storing memory read or write cycle requests placed by said host processor, and

first address incrementation means for automatically incrementing an address written into said first address pointer register by said host processor, in automatic response to the execution of each memory read cycle request or each said memory write cycle request, and

a second access port including

a second address pointer register for storing an address specifying a storage location in said buffer memory,

a second read data register for storing a data byte readable by said medium access control unit,

a second write data register for storing a data byte written therein by said medium access control unit,

a second request storage means for storing memory read or write cycle requests placed by said medium access control unit, and

second address incrementation means for automatically incrementing an address written into said second address pointer register by said second medium access control unit, in response to the execution of each memory read cycle request or each memory write cycle request; and

a synchronous controller operably coupled to said first and second access ports and said single-port common buffer memory, and having

means for executing said memory read and write cycle requests,

means for transferring data bytes between said first read data register and said single-port common buffer memory and between said first write data register and said single-port common buffer memory, and

means for transferring data bytes between said second read data register and said single-port common buffer memory and between said second write data register and said single-port common buffer memory, said synchronous controller further including

first means for automatically detecting a memory read cycle request placed in said first request storage means by said host processor, and in response to the detection of a memory read cycle request, automatically reading the data byte storage location of said single-port common buffer memory specified by the address stored in said first address pointer register so as to retrieve a first data byte therefrom, and loading said first data byte into said first read data register,

second means for automatically detecting a memory read cycle request placed in said second request storage means by said medium access control unit, and in response to the detection of said memory read cycle request, automatically reading the data byte storage location of said buffer memory specified by the address stored in said second address pointer register, so as to retrieve a second data byte therefrom, and loading said second data byte into said second read data register,

third means for automatically detecting a memory write cycle request placed in said first request storage means by said host processor, and in response to the detection of a memory write cycle request, automatically accessing said first write data register to access a third data byte stored therein, and writing said third data byte into the data byte storage location in said single-port common buffer memory specified by the address stored in said first address pointer register, and

fourth means for automatically detecting a memory write cycle request placed in said second request storage means by said medium access control unit, and in response to the detection of a memory write cycle request, automatically accessing said second write data register to access a fourth data byte stored therein, and writing said fourth data byte into the data byte storage location in said single-port common buffer memory specified by the address stored in said second address pointer register.

5,392,413

RECORD MEDIUM REPRODUCING DEVICE

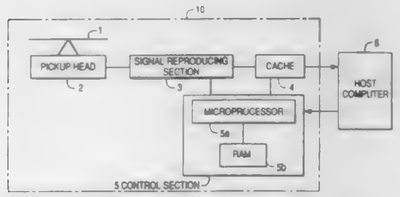
Naomi Nomura; Tadashi Tanase; Shigehiko Takeshita, all of Chigasaki; Hiroyuki Hayashi, Yokohama, and Kazuhiko Ono, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,021

Claims priority, application Japan, Jun. 11, 1991, 3-165201

Int. Cl.[6] G06F *12/14*

U.S. Cl. 395—425 **20 Claims**



1. A recording medium reproducing device for controlling access to data stored on a data storage recording medium in response to a data read instruction from a host computer, comprising:

a signal reproducing section;

a data temporary storage section for temporarily storing data received from said data storage medium for transfer to said host computer; and

a control section, responsive to a data read instruction from the host computer specifying an address of a storage location on said data storage recording medium, for controlling said signal reproducing section to read data at the specified address from said data storage recording medium, for storing the read data temporarily in said data temporary storage section, and for delivering the data from said data temporary storage section to said host computer;

wherein said control section includes means for discriminating at least one address received with higher frequency of access among addresses of storage locations on said data storage recording medium, specified by data read instructions received from said host computer, and for locking data having such address received with higher frequency of access in said data temporary storage section to prevent erasing locked data when new data replaces previously stored data in said temporary storage section, so that when a data read instruction accompanied by an address having a higher frequency of access is received from said host computer, data at that higher frequency of access address is always available to be read out directly from said data temporary storage section and delivered to said host computer.

5,392,414

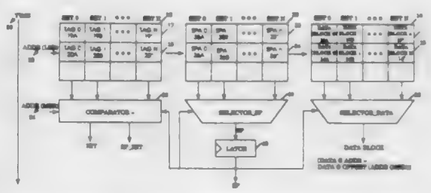
RAPID DATA RETRIEVAL FROM DATA STORAGE STRUCTURES USING PRIOR ACCESS PREDICTIVE ANNOTATIONS

Robert Yung, Fremont, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 30, 1992, Ser. No. 906,699

Int. Cl.[6] G06F *12/12, 12/10*

U.S. Cl. 395—425 **18 Claims**



1. In a computer system comprising a data storage structure, a method for rapidly retrieving data from said data storage structure and for predicting the locality of subsequent data access by recording previous predictive annotations and by determining prediction hits based on said previously recorded predictive annotations, said method comprising the steps of:

a) storing a plurality of data vectors in said data storage structure, each of said data vectors comprising a plurality of data blocks, and retrieving one of said data vectors based on an access key during a current access;

b) storing a plurality of predictive annotation vectors corresponding to said data vectors in a predictive annotation storage structure corresponding to said data storage structure, each of said predictive annotation vectors comprising a plurality of predictive annotations corresponding to said data blocks, and retrieving one of said predictive annotation vectors concurrently with said data vector being retrieved based on said access key during said current access;

c) selecting a data block from said currently retrieved data vector based on a predictive annotation previously recorded during a prior access;

d) selecting a predictive annotation from said currently retrieved predictive annotation vector concurrently with said data block selection based on said previously recorded predictive annotation; and

e) recording said currently selected predictive annotation to facilitate prediction hit determination during subsequent data access;

f) storing a plurality of selection data vectors corresponding to said data vectors in a selection data storage structure corresponding to said data storage structure, each of said selection data vectors comprising a plurality of selection data corresponding to said data blocks, and retrieving one of said selection data vectors concurrently with said data vector being retrieved based on said access key during said current access; and

g) determining whether said current access results in a selection hit and a prediction hit based on said access key, said currently retrieved selection data vector, and said previously recorded predictive annotation.

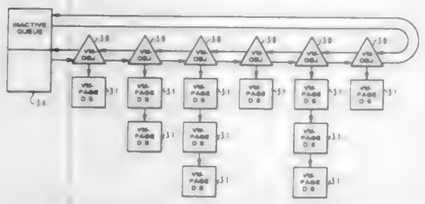
VOL 1171 ISS 3 FE 21 1995 UMI

5,392,415

SYSTEM FOR GROUPING NON-CONTIGUOUS PAGES BELONGING TO A STORAGE OBJECT FOR PAGE OUT

Peter R. Badovinatz, Kingston; Larry Brenner, Stone Ridge; Jeffrey R. Hedglin, Kingston; Barry P. Lubart, Hurley, all of N.Y.; Patrick G'Rourke, Lunenburg, Mass., and Angelo Pruscino, Wappinger Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1992, Ser. No. 991,017
Int. Cl.[6] G06F *12/06, 12/08, 15/40*
U.S. Cl. 395—425 16 Claims



1. A method for assembling swap blocks of virtual pages for a virtual storage system of a data processing system including a plurality of virtual pages and a physical memory, the method comprising the steps of:

dividing all virtual pages resident in physical memory among one of an active list and an inactive list;

organizing virtual pages assigned to the inactive list by groups with a single owning process for each group;

within each group, assigning virtual pages to a swap block where most recent use of each virtual page is correlated in time;

paging out a particular swap block in a single output operation to auxiliary storage;

maintaining a membership list for the particular swap block for page in to physical memory upon reference to any virtual page assigned to the particular swap block;

within each group, identifying virtual pages which are duplicated in the auxiliary storage; and

releasing space in physical memory occupied by the identified virtual pages without assigning the virtual pages to a swap block.

5,392,416

METHOD AND APPARATUS FOR CONTROLLING ONE OR MORE HIERARCHICAL MEMORIES USING A VIRTUAL STORAGE SCHEME AND PHYSICAL TO VIRTUAL ADDRESS TRANSLATION

Toshio Doi, Kokubunji; Takeshi Takemoto, Sagamihara, both of Japan, and Yasuhiro Nakatsuka, Palo Alto, Calif., assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 603,620, Oct. 26, 1990, Pat. No. 5,257,361. This application Aug. 10, 1993, Ser. No. 103,791
Claims priority, application Japan, Oct. 30, 1989, 1-282664
Int. Cl.[6] G06F *12/08, 12/10, 13/00*
U.S. Cl. 395—425 7 Claims

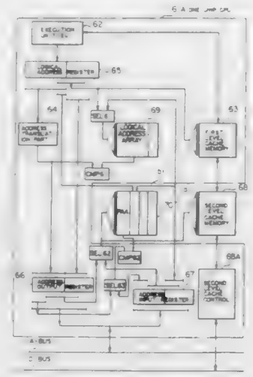
7. An integrated circuit processor having a first level cache memory therein and means connecting a second level cache memory externally formed in an integrated circuit, comprising:

an execution unit operative on a basis of a logical address scheme;

said first level cache memory having entries designated by logical addresses from said execution unit and holding a copy of a subset of said second level cache memory;

a first address array having entries designated by the same logical addresses as said first level cache memory and storing first control information indicating whether each entry of said first level cache memory is valid; and

control means for controlling accessing of said first address array and being responsive to designation of an entry of said second level cache memory by a physical address from said executive unit, said control means receiving from said second level cache memory, partial physical address information indicating a part of a physical address which is not used for designating the entry, logical address translation information for use with said physical address for translation a physical address into a logical address, second control information indicating whether the entry



of said second level cache memory is valid and a copy flag indicating whether a copy of each entry exists in said first level cache memory;

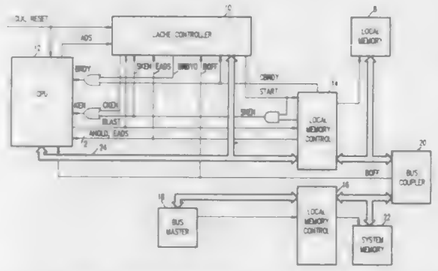
wherein at least said execution unit, said first level cache memory, said first address array and said control means are integrated on a single semiconductor chip.

5,392,417

PROCESSOR CYCLE TRACKING IN A CONTROLLER FOR TWO-WAY SET ASSOCIATIVE CACHE

Sundaravarathan R. Iyengar, and James Nadir, both of San Jose, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 710,742, Jun. 5, 1991, abandoned. This application Mar. 1, 1994, Ser. No. 205,129
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—425 2 Claims



1. In a data processing system-in which a processor (12) communicates over a central processing unit bus (CPU bus) with a main memory (22) by asserting an address strobe (ADS) signal to initiate a memory access and asserts a number of end-of-cycle signals to end a memory access, a cache controller (10) including CPU bus control logic (28) for controlling access to said CPU bus, and a tag random access memory (tag RAM); a cache data-array (8) connected to said cache controller (10) and to said CPU bus; a combination comprising:

an external cycle (EXCYC) signal line:

an internal cycle (INCYC) signal line;

an address strobe wait (ADSWAIT) signal line;

an address strobe cycle (ADSCYC) signal line;

first means in said tag RAM responsive to an external cycle (EXCYC) signal on said external cycle (EXCYC) signal line for asserting an internal cycle (INCYC) signal on said internal cycle (INCYC) signal line during a time when a request to said tag RAM is pending;

second means connected to said first means for ANDing said INCYC signal line and said ADS signal line to generate an address strobe wait (ADSWAIT) signal on said address strobe wait (ADSWAIT) signal line;

third means connected to said second means for ORing said ADSWAIT signal line and said address Strobe (ADS) signal line to generate an address strobe cycle (ADSCYC) signal on said address strobe cycle (ADSCYC) signal line;

fourth means responsive to one of said number of end-of-cycle signals for generating a terminate signal to signify an end of a current cycle; and,

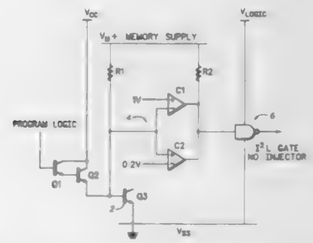
fifth means connected to said first means, to said third means and to said fourth means for asserting said EXCYC signal in response to said ADSCYC signal and for unasserting said EXCYC signal in response to said terminate signal.

5,392,418

PROGRAMMABLE READ ONLY MEMORY WITH OUTPUT INDICATING PROGRAMMING STATE

Michel Burri, Gd Saconnex, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 14, 1992, Ser. No. 837,189
Claims priority, application United Kingdom, Mar. 6, 1991, 9104743
Int. Cl.[6] G11C *17/16*
U.S. Cl. 395—425 9 Claims



1. A non-volatile memory cell including a pn diode having a pn junction which, in its normal state, represents a first logic state and a second logic state is created by fusing the pn junction of the diode to create a short circuit, and means for sensing the logic state of the diode, said means for sensing comprising:

means for developing a sense voltage across the diode;

a first comparator means for comparing the sense voltage with a first reference voltage greater than a normal voltage across the pn junction;

a second comparator means for comparing the sense voltage with a second reference voltage less than the normal voltage across the pn junction but greater than a voltage across the pn junction when it is fused; and

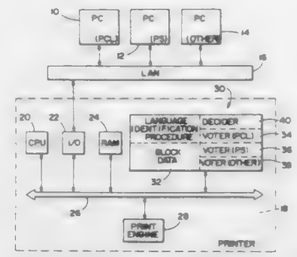
means responsive to outputs of the first and second comparator means to provide an output signal which has a first value if the sense voltage is between the first and second reference voltages and a second value if the sense voltage is not between the first and second reference voltages.

5,392,419

LANGUAGE IDENTIFICATION SYSTEM AND METHOD FOR A PERIPHERAL UNIT

Sean E. Walton, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 24, 1992, Ser. No. 825,479
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—500 21 Claims



1. In a data processing system responsive to a plurality of input languages, each language adhering to a prescribed syntax, the presence of defined data portions ("For" keys) in incoming data indicating a vote for the presence of a language and the presence of other defined data portions ("Against" keys) indicating a vote Against the presence of the language, a method for identifying an input language comprising the steps of:

a) analyzing, for each expected language, a syntax of an incoming block of data to identify For and Against keys in said block of data;

b) providing For and Against tallies for each expected language in response to said analysis, each said tally being a summation of key entries, each key entry comprising an identified key count multiplied by a skew, the value of said skew indicating an importance of said key in said syntax and in the context of said block of data, said For tally summing entries of For keys and said Against tally summing entries of Against keys;

c) comparing said For and Against tallies to determine whether or not they are so close as to signal uncertainty and, based upon a further syntactical characteristic of said block of data, resolving said uncertainty and indicating a value based on one of said tallies, said indication dependent upon whether said further syntactical characteristic indicates For or Against the language;

d) indicating a value derived from the larger of the tallies in the event of no uncertainty between the tallies; and

e) deciding, based upon said indicated value for each said expected language, the identity of a received language.

5,392,420

IN CIRCUIT EMULATOR(ICE) THAT FLAGS EVENTS OCCURING IN SYSTEM MANAGEMENT MODE(SMM)

Mark Balmer, Tigard, and Ron Whitsel, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 30, 1993, Ser. No. 129,683
Int. Cl.[6] G06F *12/10, 1/24, 1/26*
U.S. Cl. 395—500 7 Claims

1. A micro processor emulator operable in conjunction with a target processor, said target processor including means for transmitting to said emulator an enter SMM mode message and a leave SMM mode message, said micro processor emulator comprising:

first means for latching a first state and a second state;

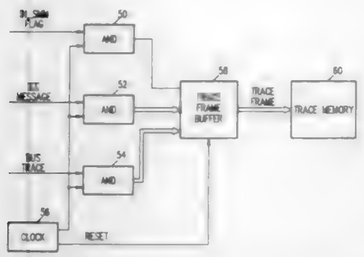
second means connected to said first means and to said target processor for setting said first means to said first state upon a first condition that said enter SMM mode message is received at said second means;

third means connected to said first means and to said target

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processor for setting said first means to said second state upon a second condition that said leave SMM mode message is received at said third means;

fourth means for creating a trace frame, said trace frame including an SMM bit;



fifth means connected to said first means for determining if said first means is in said first state or in said second state; and,

sixth means connected to said fourth and fifth means for setting said SMM bit in said trace frame to a first state (bus trace) upon a third condition that said SMM latch is in said first state.

5,392,421

SYSTEM FOR SYNCHRONIZING CLOCKS BETWEEN COMMUNICATION UNITS BY USING DATA FROM A SYNCHRONIZATION MESSAGE WHICH COMPETES WITH OTHER MESSAGES FOR TRANSFERS OVER A COMMON COMMUNICATION CHANNEL

Kent Lennartsson, Kvaser Consultant AB, Box 4076, S 511 04 Kinna, Sweden

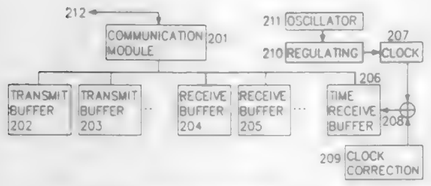
PCT No. PCT/SE90/00264, § 371 Date Oct. 25, 1991, § 102(e) Date Oct. 25, 1991, PCT Pub. No. WO90/13078, PCT Pub. Date Nov. 1, 1990

PCT Filed Apr. 20, 1990, Ser. No. 773,876

Claims priority, application Sweden, Apr. 25, 1989, 8901495-5

Int. Cl.[6] G06F *1/12*

U.S. Cl. 395—550 **18 Claims**



1. A system for synchronizing clocks of a plurality of communication units which are interconnected to a common communications channel for sending and receiving messages having different priorities to each other comprising:

means for transferring over said common communications channel a message of a predetermined priority for synchronizing the clocks which contains a serial bit pattern marking a reference time, and data identifying the reference time, wherein the synchronizing message competes with other messages having said different priorities for being transferred over said common communications channel;

means at each of said communication unit for decoding said received message and detecting said serial bit pattern to identify said synchronization message, and determining from said data within said synchronization message a clock time for a local clock of a respective unit; and,

means for setting said local clock to a time identified by said serial bit pattern and said data.

5,392,422

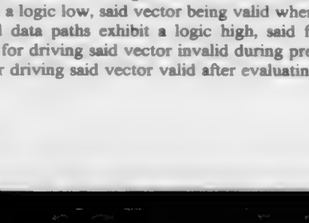
SOURCE SYNCHRONIZED METASTABLE FREE BUS

Jeffrey H. Hoel, Los Altos; Michel Cekleov, and Pradeep S. Sindhu, both of Mountain View, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif. and Xerox Corporation, Stamford, Conn.

Filed Jun. 26, 1992, Ser. No. 905,098

Int. Cl.[6] G06F *13/00, 1/04*

U.S. Cl. 395—550 **20 Claims**



1. In an information processing system comprised of a plurality of information processing agents ("agents") coupled to a bus, a method of transferring data from at least one sending agent to at least one receiving agent over said bus comprising the steps of:

coupling a first clock signal over said bus to said at least one sending agent;

utilizing said first clock signal to accomplish a source synchronized data transfer over said bus from said at least one sending agent to said at least one receiving agent.

5,392,423

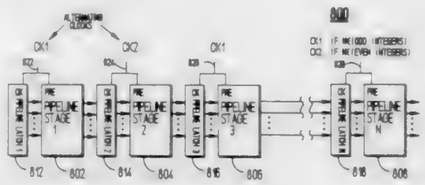
UNIVERSAL PIPELINE LATCH FOR MOUSETRAP LOGIC CIRCUITS

Jeffry D. Yetter, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 684,637, Apr. 12, 1991, abandoned. This application Jun. 13, 1994, Ser. No. 259,270

Int. Cl.[6] G06F *1/12*

U.S. Cl. 395—550 **14 Claims**



10. A system for a pipeline of dynamic logic implementing a self-timed monotonic progression of vector logic, the system for hiding the precharging operation from a forward logic flow, while enabling recovery from clock asymmetry and eliminating the need for a minimum clock frequency, the system comprising:

(a) first and second logic means having self-timed dynamic logic, said first logic means for outputting a self-timed vector, said vector being defined by a plurality of data paths, said vector being invalid when said data paths exhibit a logic low, said vector being valid when a subset of said data paths exhibit a logic high, said first logic means for driving said vector invalid during precharging and for driving said vector valid after evaluating inputs;

(b) first and second clocks for generating first and second clock signals respectively for said first and second logic means respectively, said first and second-clock signals each having approximately a fifty percent duty cycle and alternating so that said first logic means is accorded a precharge period when said second logic means is accorded an evaluation period and so that said first logic block is accorded said evaluation period when said second logic block is accorded said precharge period;

(c) a latch means for receiving said self-timed vector from said first logic means and for transferring said vector to said second logic means, said latch means for receiving said second clock signal, said second clock signal having first and second edges, said first edge for commencing said evaluation period in said second logic means, said second edge for commencing said precharge period in said second logic means, said latch means comprising:

(1) a storage means for storing said vector when valid;

(2) reset means for enabling receipt of said vector by said storage means after said vector is recognized as invalid prior to said first edge of said second clock;

(3) input trigger means for recognizing said vector as valid and for transferring said vector to said storage means when valid;

(4) input trigger disabling means for disabling receipt of said vector by said storage means after receiving said vector from said first logic means; and

(5) output gating means for transferring said vector to said second logic means from said storage means after said first edge.

5,392,424

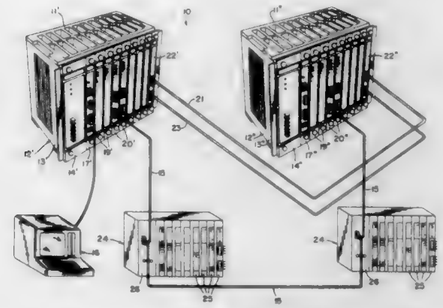
APPARATUS FOR DETECTING PARITY ERRORS AMONG ASYNCHRONOUS DIGITAL SIGNALS

William B. Cook, Northfield Center, Ohio, assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Jun. 11, 1992, Ser. No. 897,183

Int. Cl.[6] G06F *11/06*; H03M *13/00*

U.S. Cl. 395—575 **8 Claims**



1. A communication apparatus for an industrial control system comprising:

means for receiving from an external device a first bit and a plurality of asynchronous digital signals in parallel, the first bit indicating a parity of the digital signals;

means for producing a first control signal when each of the asynchronous digital signals remains at a same logic level for a defined period of time, said means for producing being connected to said means for receiving;

a parity circuit coupled to said means for receiving to compute a second bit which indicates the parity of the logic levels of the digital signals, and emitting a second control signal when the first and second bits are not the same; and

means for generating an error signal in response to the presence of both the first and second control signals.

5,392,425

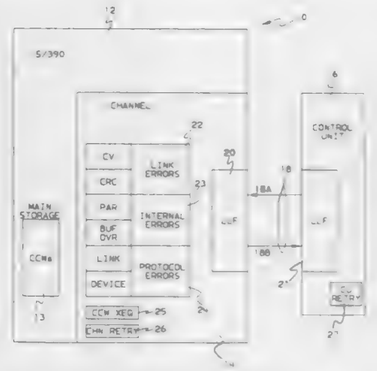
CHANNEL-INITIATED RETRY AND UNIT CHECK FOR PERIPHERAL DEVICES

Joseph C. Elliott, Hopwell Junction; Kenneth R. Lynch, Rhinebeck, both of N.Y.; Martin W. Sachs, Westport, Conn., and John H. Sorg, Jr., Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 753,290, Aug. 30, 1991, abandoned. This application Aug. 15, 1994, Ser. No. 290,449

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—575 **23 Claims**



10. A data processing system comprising:

a storage having a series of input/output channel command words (CCWs) stored in sequential locations therein;

a control unit for controlling at least one I/O device;

a channel connected to said storage and said control unit for transferring commands in command frames, requests in device level control frames and data between said storage and said control unit, said channel having a CCW executing means for executing commands in at least some of said CCWs for performing an input/output operation with said control unit;

error detecting means in said CCW executing means for detecting errors during said input/output operation;

channel retry means in said channel having sending means for sending a request in one of said device level control frames from said channel to said control unit for requesting that the command in the current CCW be retried responsive to the detection of an error by said error detecting means;

receiving means in said control unit for receiving commands in said command frames and requests in said device level control frames sent from said channel to said control unit;

control unit retry means connected to said receiving means for detecting a request sent from the channel to the control unit in one of said device level control frames to retry the current command received by the control unit in a previous command frame;

condition determining means in said control unit retry means for determining if conditions are appropriate to retry the current command;

status sending means connected to said condition determining means for sending a status from said control unit to the channel responsive to said condition determining means, said status requesting that the current command be retried when conditions are appropriate for retry; and

re-executing means in said channel retry means for re-executing the command in the current CCW responsive to said status from said control unit to said channel wherein said status requests the retrying of the command from the current CCW.

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5,392,426

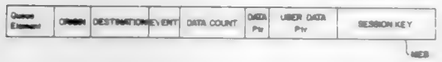
METHOD AND APPARATUS FOR USE IN PROGRAM OPERATION, CONTROL AND CONTROL BLOCK MANAGEMENT AND STORAGE

Artur Urbanski, Westport, Conn., and Douglas Hoople, Somers, N.Y., assignors to Nynex Corporation, Inc., New York, N.Y.

Continuation of Ser. No. 452,065, Dec. 15, 1989, abandoned. This application Jan. 21, 1993, Ser. No. 6,688

Int. Cl.[6] **G06F** *13/00*

U.S. Cl. 395—650 **16 Claims**



1. A computer apparatus for performing procedures in connection with one or more terminals, each of said terminals being capable of communicating with said computer in a session, comprising:

execution means responsive to a communication from a given one of said terminals for initializing and carrying out a given session with the given terminal, said execution means including means for creating a given session identifier for identifying the given session; said execution means further comprising:

first means for creating a given message event block (MEB) for the given session, said given MEB containing the given session identifier for the given session and an event connected with the given terminal; and

second means responsive to said first means for executing one or more procedures contained in one or more layered procedure sets (LPSs) as required by said event in said given MEB, said executing by said second means when requiring messages to be transferred in said given session between LPSs, transferring said messages with said MEB, each LPS including a self contained group of procedures and being identifiable by a LPS identifier, said executing by said second means of a procedure in a given LPS for said given session including establishing a given control block (CB) for the given LPS, said given CB being identifiable by the LPS identifier for the given LPS and the given session identifier for that given session and carrying messages within the given LPS.

5,392,427

SYSTEM FOR UPDATING DATA STORED ON A FLASH-ERASABLE, PROGRAMMABLE, READ-ONLY MEMORY (FEPROM) BASED UPON PREDETERMINED BIT VALUE OF INDICATING POINTERS

Phillip L. Barrett, Redmond; Scott D. Quinn, Kirkland, and Ralph A. Lipe, Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 430,746, Oct. 31, 1989, Pat. No. 5,247,658. This application May 18, 1993, Ser. No. 63,496

The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.

Int. Cl.[6] **G06F** *15/40*

U.S. Cl. 395—600 **36 Claims**

1. A method of updating data stored on a computer storage device with new data, the storage device containing records of data, each record having a primary pointer and an indicator, the records stored as a linked list that is linked by the primary pointers, the method comprising the steps of:

locating a record that contains data to be updated, the record being contained in the storage device comprising a plurality of bits such that once a bit is changed from a predefined bit value to another bit value the changed bit cannot be individually changed back to the predefined bit value, the data including bits that have been changed from the predefined bit value to the other bit value, the indicator of the located record having each bit set to the predefined bit value;

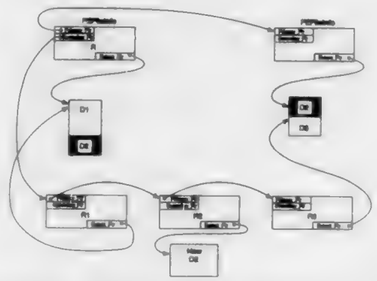
allocating a record to contain the new data, the record being allocated in the storage device, each bit of the allocated record being set to the predefined bit value;

writing the new data to the allocated record; and

setting the indicator in the located record to point to the allocated record and to indicate that the new data in the allocated record is an update of the data in the located record by changing at least one bit of the indicator from the predefined bit value to the other bit value;

wherein the step of locating a record includes the steps of:

selecting a record at which to start a traversal of the linked list; and



repeating, until the selected record contains the data to be updated, the steps of:

determining whether at least one bit of the indicator is not set to the predefined bit value to indicate that the selected record has been superseded;

selecting the record pointed to by the primary pointer of the selected record when each bit of the indicator is set to the predefined bit value indicating that the selected record has not been superseded; and

selecting the record pointed to by the indicator of the selected record when at least one bit of the indicator is not set to the predefined bit value indicating that the selected record has been superseded.

5,392,428

TEXT ANALYSIS SYSTEM

Stanford K. Robins, 1309 Knollwood La., Mendota Heights, Minn. 55118

Continuation of Ser. No. 732,823, Jul. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 722,856, Jun. 28, 1991, abandoned. This application Mar. 23, 1994, Ser. No. 217,136

Int. Cl.[6] **G06F** *15/401*

U.S. Cl. 395—600 **36 Claims**

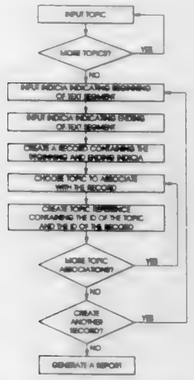
1. A computer-based information analysis system for creating a representation of at least a portion of at least one of first and second predetermined bodies of text, the representation comprising records which correspond to text segments each of which have a length determined by the system user, the system comprising:

a) input means for entering data, the input means comprising topic input means for inputting a set of user-defined topics;

b) organization means for structuring the representation, the organization means comprising:

i) record division means for creating at least one of first and second sets of records, wherein each set of records corresponds to a particular body of text and wherein each record comprises data which characterizes a particular text segment chosen by a system user, the record division means comprising demarcation indicia means for entering demarcation indicia representing the user selected length of each record;

ii) one-to-one association organizing means comprising demarcation indicia association means for establishing a one-to-one association between a predetermined record and the corresponding demarcation indicia for indicating the length of the record; and



iii) one-to-many association organizing means comprising topic organizing means for establishing a user-designated one-to-many association between at least one user-defined topic and at least one of the records; and

c) output means for generating a report.

5,392,429

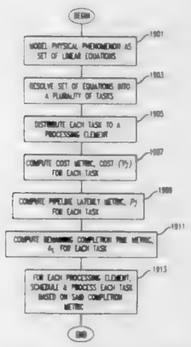
METHOD OF OPERATING A MULTIPROCESSOR COMPUTER TO SOLVE A SET OF SIMULTANEOUS EQUATIONS

Prathima Agrawal, New Providence, N.J.; Ricardo Telichevesky, Cambridge, Mass., and John A. Trotter, Somerville, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Division of Ser. No. 775,170, Oct. 11, 1991, abandoned. This application Jul. 28, 1993, Ser. No. 98,660

Int. Cl.[6] **G06F** *9/44, 9/40*

U.S. Cl. 395—650 **2 Claims**



1. A method of scheduling the processing of a plurality of tasks, v_j, in a multiple instruction stream-multiple data stream computer comprising a plurality of processing elements, said method being performed by at least one of said processing elements and comprising the steps of:

resolving a set of linear equations into said tasks, which are interrelated by a graph R_k^{ij};

distributing each of said tasks to said processing elements;

for each of said tasks, computing a cost metric cost(v_j) indicative of the amount of time that said processing element receiving said task requires to process said task;

for each of said tasks, computing a remaining completion time metric δ_i equal to

$$\delta_i = \max_k \left(\sum_{p=1}^{L} (\text{cost}(v_p)\ \forall v_p \mid v_p \in R_k^{ij} \text{ and } v_p \neq v_j) \right)$$

which is indicative of the amount of time needed by said computer to process all remaining tasks after said task has been completed, and based on said cost metric cost(v_j); and

on each processing element scheduling and processing each of said tasks received by that processing element in an order based on said completion time metric δ_i.

5,392,430

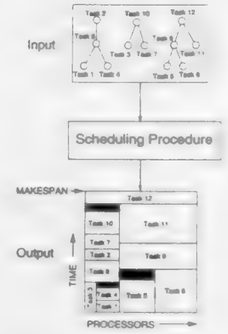
HIERARCHICAL SCHEDULING METHOD FOR PROCESSING TASKS HAVING PRECEDENCE CONSTRAINTS ON A PARALLEL PROCESSING SYSTEM

Ming-Syan Chen, Yorktown Heights; John J. E. Turek, Chappaqua; Joel L. Wolf, Katonah, and Philip S. Yu, Chappaqua, all of N.Y., assignors to International Business Machines, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,717

Int. Cl.[6] **G06F** *9/46*

U.S. Cl. 395—650 **9 Claims**



1. A method of scheduling a multiplicity of tasks having precedence, constraints on a plurality of processors operating in parallel, comprising the steps of:

(a) defining a plurality of jobs, each of said jobs comprising a portion of said tasks and precedence constraints relating pairs of said tasks which are included only within a single job;

(b) for each said job, creating a plurality, of task schedules for said tasks of said job, each of said task schedules corresponding to a different number of said processors which might possibly be allotted to said job and respecting any precedence constraints among said tasks of said job;

(c) determining an estimated job execution time for each of said task schedules;

(d) using said estimated job execution times for each of said jobs and for each different number of processors which might be allocated to each of said jobs, determining an allotment of processors for each of said jobs;

(e) creating a job schedule for said jobs using said determined allotments; and

(f) executing said jobs on said processors using a job schedule created in step (e).

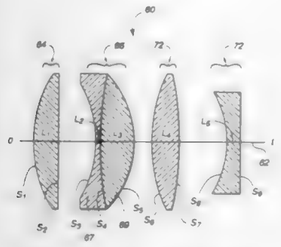
VOL 1171 ISS 3 FE 21 1995 UMI

5,392,431

TV PROJECTION LENS INCLUDING A GRADED INDEX ELEMENT

Richard N. Pfisterer, 12380 E. Horsehead Rd., Tucson, Ariz. 85749

Filed Oct. 5, 1992, Ser. No. 957,256
Int. Cl.[6] G02B *3/00*
U.S. Cl. 359—653 7 Claims



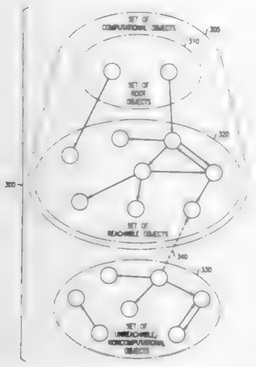
1. A lens, comprising:
first, second, third, and fourth element-groups, said element-groups counted from an object side of the lens, and arranged generally on a common optical axis;
said first and third element-groups each having positive power and each including at least one lens element;
said fourth element-group having negative power and including at least one lens element; and
said second element-group including first and second lens elements counted from the object side of the lens, said first lens element having first and second concave surfaces and having a graded refractive index, said graded refractive index axially graded and decreasing in an axial direction away from the object side of the lens, and said second lens element having positive power.

5,392,432

METHOD FOR AUTOMATIC SYSTEM RESOURCE RECLAMATION FOR OBJECT-ORIENTED SYSTEMS WITH REAL-TIME CONSTRAINTS

Steven L. Engelstad, Lisle; Keith F. Falck, and James E. Vandendorpe, both of Naperville, all of Ill., assignors to AT&T Corp., Murray Hill, N.J.

Continuation-in-part of Ser. No. 750,796, Aug. 27, 1991, abandoned. This application Apr. 28, 1994, Ser. No. 234,497
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—700 11 Claims



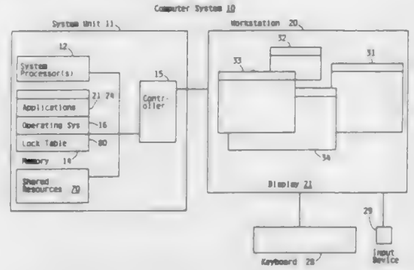
1. A method for automatically effecting recovery of non-memory resources for use by a digital data processing system performing real-time operations, said digital data processing system including a limited amount of memory, wherein said digital data processing system performs said real-time operations by sending ones of a plurality of messages to selected ones of a plurality of objects, each of said plurality of objects being allocated when needed for a specific functionality of said real-time operations and wherein a portion of said limited amount of memory is assigned to each object as said object is allocated, select ones of said plurality of objects protecting non-memory resources, each of said plurality of objects being referenced when at least one other object contains a reference to that object and may send at least one of said plurality of messages to it, said method comprising the steps of:
said system determining which of said plurality of objects are not referenced;
for each of said non-referenced objects said system determining whether said non-referenced object protects non-memory resources;
said system establishing a new reference to each of said non-referenced objects that protect non-memory resources; and
said system automatically effecting recovery of said non-memory resources by sending a predetermined one of said plurality of messages to each of said newly referenced objects that protect non-memory resources so that they may take action to make said non-memory resource available.

5,392,433

METHOD AND APPARATUS FOR INTRAPROCESS LOCKING OF A SHARED RESOURCE IN A COMPUTER SYSTEM

Scott D. Hammersley; Arthur D. Smet, and Peter M. Wottreng, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 25, 1992, Ser. No. 951,482
Int. Cl.[6] G06F *13/00, 12/16*
U.S. Cl. 395—725 12 Claims



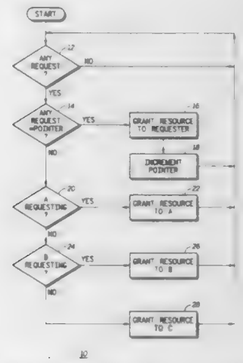
1. A method for locking a resource shared between a first asynchronous program and a second asynchronous program, comprising the steps of:
receiving a request from said first asynchronous program to use said resource, said first asynchronous program executing within a first process, said request being received by an operating system;
checking a lock table to see if said second asynchronous program has acquired a lock for said resource, said second asynchronous program executing within said first process, said lock table being checked by said operating system;
granting said request if said checking step indicates that said second asynchronous program has not acquired a lock for said resource, said request being granted by said operating system; and
denying said request if said checking step indicates that said second asynchronous program has acquired a lock for said resource, said request being denied by said operating system.

5,392,434

ARBITRATION PROTOCOL SYSTEM GRANTING USE OF A SHARED RESOURCE TO ONE OF A PLURALITY OF RESOURCE USERS

Christopher Bryant, and Lawrence J. Merkel, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 3, 1993, Ser. No. 116,191
Int. Cl.[6] G06F *13/36*
U.S. Cl. 395—725 1 Claim



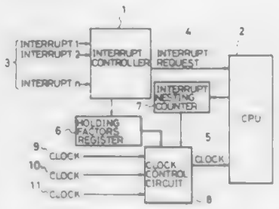
1. An arbitration protocol system for granting use of a shared resource to one of a plurality of resource users, each one of the plurality of resource users asserting an associated one of a plurality of resource request signals when requesting use of the shared resource, a first one of the plurality of resource request signals from a first one of the plurality of resource users, a second one of the plurality of resource request signals from a second one of the plurality of resource users, a third one of the plurality of resource request signals from a third one of the plurality of resource users, the arbitration protocol system comprising:
pointer circuitry specifying one of a plurality of resource users according to a predetermined order, the pointer circuitry sequentially advancing from specifying an Ith one to an (Ith +1) one of the plurality of resource users according to the predetermined order responsive to a grant of the shared resource to the Ith one of the plurality of resource users, where I is an integer index;
first circuitry coupled to the pointer circuitry, the first circuitry generating a first one of a plurality of resource grant signals, the first circuitry asserting the first one of the plurality of resource grant signals if and only if (1) the first one of the plurality of resource request signals is asserted and (2) either (i) the pointer circuitry specifies the first one of the plurality of resource users, or (ii) the second one of the plurality of resource request signals is not asserted and the pointer circuitry specifies the second one of the plurality of resource users, or (iii) the third one of the plurality of resource request signals is not asserted and the pointer circuitry specifies the third one of the plurality of resource users;
second circuitry coupled to the pointer circuitry, the second circuitry generating a second one of the plurality of resource grant signals, the second circuitry asserting the second one of the plurality of resource grant signals if and only if (1) the second one of the plurality of resource request signals is asserted and (2) either (i) the pointer circuitry specifies the second one of the plurality of resource users, or (ii) the first one of the plurality of resource request signals is not asserted and the pointer circuitry specifies the first one of the plurality of resource users, or (iii) the first one of the plurality of resource request signals is not asserted, the third one of the plurality of resource request signals is not asserted and the pointer circuitry specifies the third one of the plurality of resource users; and
third circuitry coupled to the pointer circuitry, the third circuitry generating a third one of the plurality of resource grant signals, the third circuitry asserting the third one of the plurality of resource grant signals if and only if (1) the third one of the plurality of resource request signals is asserted and (2) either (i) the pointer circuitry specifies the third one of the plurality of resource users, or (ii) neither the first one or the second one of the plurality of resource request signals is asserted.

5,392,435

MICROCOMPUTER HAVING A SYSTEM CLOCK FREQUENCY THAT VARIES IN DEPENDENCE ON THE NUMBER OF NESTED AND HELD INTERRUPTS

Norio Masui, and Shigeo Mizugaki, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 813,313, Dec. 23, 1991, abandoned. This application Sep. 29, 1993, Ser. No. 129,008
Claims priority, application Japan, Dec. 25, 1990, 2-413637
Int. Cl.[6] G06F *1/08*
U.S. Cl. 395—725 2 Claims



1. An interrupt processing system including an interrupt controller coupled to a central processing unit (CPU), wherein the interrupt controller is coupled to a plurality of interrupt signals and selects one of the plurality of interrupt signals, wherein the interrupt controller holds the non-selected interrupt signals and outputs the selected interrupt signal to the CPU along with a priority grade for the selected interrupt signal, wherein the CPU processes the selected interrupt according to the priority grade and nests processes with lower priority grades, the system comprising:
a holding factors register means coupled to the interrupt controller for storing a holding number of non-selected interrupt signals which are being held by the interrupt controller;
interrupt nesting counter means coupled to the CPU for storing a nesting number of selected interrupt signals nested in the CPU;
a first clock signal coupled to the CPU when no interrupts are being held or processed, said first clock signal having a first frequency;
a clock control circuit means coupled to the clock signal, the holding factors register means and the interrupt nesting counter means for changing the frequency of the first CPU clock signal in response to the holding number stored in the holding factors register means and the nesting number stored in the interrupt nesting counter means to generate a CPU clock signal which has an increased frequency when the holding number and nesting number have magnitudes of a selected value.

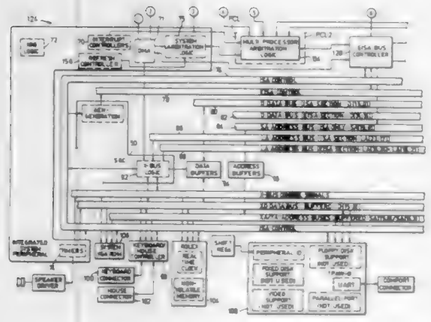
VOL 1171 ISS 3 FE 21 1995 UMI

5,392,436

TWO LEVEL SYSTEM BUS ARBITRATION HAVING LOWER PRIORITY MULTIPROCESSOR ARBITRATION AND HIGHER PRIORITY IN A SINGLE PROCESSOR AND A PLURALITY OF BUS MASTERS ARBITRATION

Kenneth A. Jansen; Montgomery C. McGraw, both of Spring; David A. Miller, Houston, and Paul R. Culley, Cypress, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 993,958, Dec. 18, 1992, abandoned, which is a continuation of Ser. No. 431,746, Nov. 3, 1989, abandoned. This application May 26, 1994, Ser. No. 249,665
Int. Cl.[6] G06F *13/36, 13/18*
U.S. Cl. 395—725 **10 Claims**



1. A computer system which allows arbitration between multiple processors, comprising:

a system bus;

a primary processor coupled to said system bus that can request control of said system bus by use of a bus request signal;

a secondary processor coupled to said system bus that can request control of said system bus by use of a bus request signal;

a plurality of bus masters coupled to said system bus, each bus master requesting control of said system bus by use of a bus request signal;

a higher priority system arbitration apparatus coupled to said system bus that can grant control of the system bus to a device when said device asserts a bus request signal, said higher priority system arbitration apparatus receiving said bus request signals from each of said plurality of bus masters and from only a single processor and providing only a single arbitration slot for a processor; and

a lower priority multiprocessor arbitration apparatus coupled to said primary and secondary processors and to said higher priority system arbitration apparatus, said lower priority multiprocessor arbitration apparatus including:

means for receiving said bus request signals from each of said primary and said secondary processors;

means coupled to said means for receiving said primary and secondary processor bus request signals for arbitrating for control of said system bus between said primary and said secondary processors;

means coupled to said means for arbitrating for control of said system bus between said primary and said secondary processors for generating a processor bus request signal that is provided to said higher priority system arbitration apparatus; and

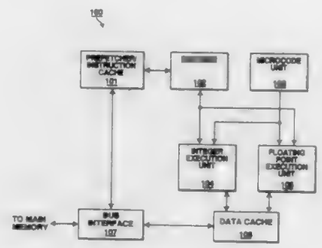
means coupled to said means for arbitrating for control of said system bus between said primary and said secondary processors and said higher priority system arbitration apparatus for granting control of said system bus to either said primary or said secondary processors based on the result of said means for arbitrating for control of said system bus between said primary and said secondary processors when said higher priority system arbitration apparatus responds to said processor bus request signal.

5,392,437

METHOD AND APPARATUS FOR INDEPENDENTLY STOPPING AND RESTARTING FUNCTIONAL UNITS

Eugene P. Matter, Folsom; Yahya S. Sotoudeh, Santa Clara, both of Calif., and Gregory S. Mathews, Boca Raton, Fla., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 6, 1992, Ser. No. 973,077
Int. Cl.[6] G06F *1/32, 1/04*
U.S. Cl. 395—750 **32 Claims**



1. A mechanism for powering down a functional unit on an integrated circuit, wherein the functional unit is clocked by its own independent clock, said mechanism comprising:

means for indicating to the functional unit whether the functional unit is required for use; and

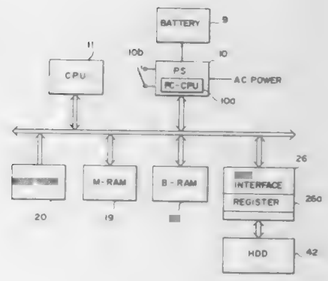
means for powering down the functional unit coupled to said means for indicating, wherein said means for powering down the functional unit comprises stop clock logic in the functional unit that powers down the functional unit transparent to and independent of any other functional units on the integrated circuit when the functional unit is not required for use, wherein the independent clock of the functional unit is stopped by the functional unit when the functional unit is not in use and automatically started by the functional unit when the functional unit is required for use.

5,392,438

COMPUTER SYSTEM WITH CONTROL UNIT FOR CONTROLLING POWER SUPPLY TO STORAGE UNIT

Shizuka Gunji, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 578,275, Sep. 6, 1990, abandoned. This application Mar. 19, 1993, Ser. No. 33,970
Claims priority, application Japan, Sep. 29, 1989, 1-254962
Int. Cl.[6] G06F *12/16*
U.S. Cl. 395—750 **11 Claims**



1. A computer system having registers, a backup memory, a power supply that supplies power to a plurality of units including an I/O unit and a storage unit, and a power switch means for controlling the power supply by turning on and off the power supplied by the power supply to the I/O unit, and the storage unit, said computer system comprising:

mode-setting means for setting an auto power off mode wherein the power switch means turns off the power supplied to the plurality of units if the I/O unit is kept unoperated for a predetermined length of time, and a data save/restore mode wherein contents in the registers which are required for data processing are stored in the backup memory when the power switch means turns off the power from the power supply and wherein the contents stored in the backup memory are restored in the registers when the power switch means turns on the power from the power supply;

mode-executing means for executing the auto power off mode and the data save/restore mode set by the mode-setting means;

command setting/resetting means for setting a command in a control register to stop an operation of the storage unit when the power switch means turns on the power from the power supply and for resetting the command in the control register in response to an access to the storage unit when the auto power off mode and the data save/restore mode are both set by the mode-setting means; and

storage control means for signaling the power switch means to turn off the supply of power to the storage unit when the command is set in the control register, and for signaling the power switch means to supply power to the storage unit when the command is reset in the control register by the command setting/resetting means.

5,392,439

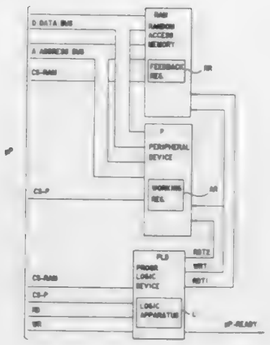
Patent Not Issued For This Number

5,392,440

CIRCUIT ARRANGEMENT FOR OPERATING A COMPUTER HAVING A READBACK DEVICE FOR FEEDING BACK LAST-WRITTEN INFORMATION TO THE COMPUTER

Peter Marten, Heidelberg, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed May 4, 1992, Ser. No. 877,858
Claims priority, application Germany, May 4, 1991, 4114545
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—775 **8 Claims**



1. Circuit arrangement for operating a computer, having at least one working register into which and out of which information, at specific addresses, can be read, and a readback device for providing feedback in a program step, wherein last-written information is fed back to a processor of the computer, the arrangement comprising at least one feedback register to which said working register is assigned, means for writing said information under the same address into the working register and into the feedback register for storage therein, and means for forwarding the information stored in the feedback register to the processor in order to enable the writing of new information into the feedback register.

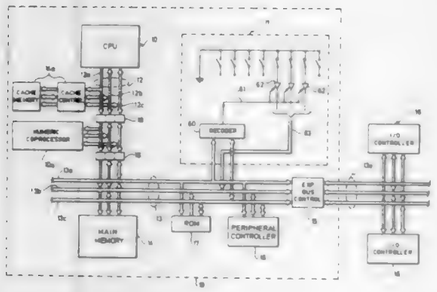
VOL 1171 ISS 3 FE 21 1995 UMI

5,392,441

PUMP BUS TO AVOID INDETERMINACY IN READING VARIABLE BIT FIELD

Gary L. Brasher; James H. Nuckols, and Jeffrey S. Watters, all of Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 789,613, Nov. 8, 1991, abandoned, which is a continuation of Ser. No. 303,543, Jan. 27, 1989, abandoned. This application Oct. 26, 1993, Ser. No. 143,529
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—725 19 Claims



1. A computer system having memory and data locations, comprising:

a) a CPU with means for fetching and executing instructions from the memory and performing operations, the CPU including an address space;

b) system bus means including an address bus and a data bus with capacitive effects, the system bus means being coupled to the memory and said CPU, wherein the data bus is comprised of a first number of data lines;

c) a reference data location within said address space of the CPU and coupled to said system bus means; said reference data location storing a second number of data bit values identifying a configuration parameter of the computer system and driving only said second number of data bit values onto a second number of said first number of data lines of said data bus when said reference data location is read, said second number being less than said first number and said data lines other than said second number of data lines being undriven when said reference data location is read;

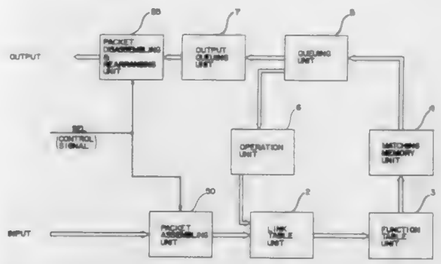
d) and writing and immediately thereafter reading means coupled to said system bus means for writing to said first number of data lines of said data bus preselected data of known value and then immediately thereafter reading a first number of data bit values from said first number of data lines, said data bit values on said second number of data lines being provided by said reference data location and said data bit values on said data lines other than said second number of data lines being provided by said preselected data of known value previously written to said data lines other than said second number of data lines, said preselected data of known value having been retained on said data lines other than said second number of data lines during said reading due to said capacitive effects on said data bus.

5,392,442

DATA-DRIVEN PROCESSOR HAVING AN OUTPUT UNIT FOR PROVIDING ONLY OPERAND DATA IN A PREDETERMINED ORDER

Shinji Komori; Hidehiro Takata; Toshiyuki Tamura; Fumiyasu Asai, all of Itami, and Takeshi Fukuhara, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 471,864, Jan. 26, 1990, Pat. No. 5,117,489. This application Feb. 19, 1992, Ser. No. 837,128
Int. Cl.[6] G06F *9/06*
U.S. Cl. 395—800 9 Claims



1. A data-driven processor that processes a set of input data packets received in a predetermined order, and for outputting a set of output data packets, each output packet comprising a result operand and a unique TAG-ID number, with each Unique TAG-ID number indicating the position of said result operand in an ordered sequence of result operands, with the sequence in a predetermined order necessary for a next stage of processing said driven processor comprising:

a packet rearranging unit, coupled to sequentially receive said set of output data packets and having an ordered plurality of storage locations, for storing only the result operand of each received output data packet in a storage location of said ordered plurality indicated by the unique TAG-ID number of the received output data packet so that result operands are stored in the predetermined order regardless of the order of receipt of the output data packets; and

a packet output unit, coupled to said packet rearranging unit, for sequentially reading only said result operands, stored by said packet rearranging unit, from said ordered plurality of storage locations to provide said result operands in the predetermined order.

5,392,443

VECTOR PROCESSOR WITH A MEMORY ASSIGNED WITH SKEWED ADDRESSES ADAPTED FOR CONCURRENT FETCHING OF A NUMBER OF VECTOR ELEMENTS BELONGING TO THE SAME VECTOR DATA

Tadayuki Sakakibara, Kunitachi; Katsuyoshi Kitai, Hadano; Yasuhiro Inagami, Kodaira; Yoshiko Tamaki, Kunitachi; Teruo Tanaka, Hachioji; Tadaaki Isobe, Hadano; Shigeko Yazawa, Hadano, and Masanao Ito, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 855,056
Claims priority, application Japan, Mar. 19, 1991, 3-054435
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—800 43 Claims

38. A vector processor comprising:

a storage for storing vector data therein, including a plurality (M) of memory modules;

a plurality (N) of requesters for concurrently issuing access requests for a plurality (N) of vector elements belonging to each of a plurality of concurrent element groups obtained by subdividing vector data stored in said storage;

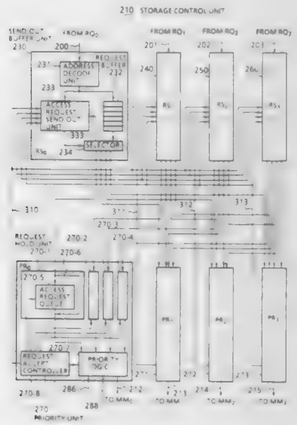
a storage control unit connected to the requesters for transferring a plurality of access requests concurrently supplied from said plural requesters to one or ones of said memory modules to which addresses respectively contained in the access requests belong,

said plural memory modules being sequentially assigned with addresses in such a manner that successive addresses are assigned to different ones of said memory modules, determined according to a first predetermined sequence of memory modules and are assigned, for every first predetermined number of addresses, to one of said memory modules different from one of said memory modules determined according to the sequence of memory modules,

said storage control unit including:

a plurality of priority units each disposed in association with and connected to one of said plural memory modules, each priority unit selecting one of a plurality of access requests supplied to said each priority unit and transmitting the selected access request to a corresponding one of the memory modules; and

a plurality of request send-out units each disposed in association with and connected to one of said requesters belonging to one of said requester groups corresponding to each storage control unit for judging ones of said memory modules to which addresses respectively contained in the



access requests respectively supplied from said requesters associated therewith respectively belong and for transmitting the access requests to said priority units respectively disposed in association with said judged memory modules,

each priority unit including:

a plurality of request queues each disposed in association with and connected to one of said plural request send-out units for temporarily holding access requests transmitted from said request send-out units respectively associated therewith to each priority unit; and

means for selecting one of the plural access requests held in said plural request queues and transferring the access request to a memory module corresponding to each priority unit,

each request send-out unit including:

means for judging a memory module to which an address contained in the access request supplied from said associated requester belongs; and

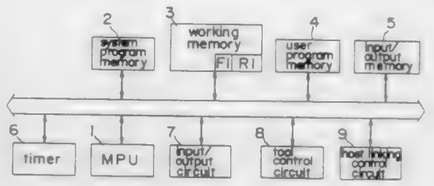
means for controlling, in accordance with whether or not an empty area exists in a request queue disposed in a priority unit related to said judged memory module, whether or not the access request is to be transmitted to said priority unit disposed in association with said judged memory module.

5,392,444

PROGRAMMABLE CONTROLLER FOR COMPLETING THE EXECUTION OF A BLOCK OF USER PROGRAMS WITHIN A SET TIME PERIOD

Tadashi Inoue, Kiyotu, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 205,174, Jun. 10, 1988, abandoned. This application Feb. 26, 1993, Ser. No. 24,865
Claims priority, application Japan, Jun. 6, 1987, 62-146279
Int. Cl.[6] G06F *1/24, 9/06, 9/40, 13/22*
U.S. Cl. 395—800 14 Claims



1. A programmable controller, comprising:

means for setting a cycle time of a cycle for one round of execution of a series of processing routines, said series of processing routines comprising a first predetermined processing routine having a start and termination and a second predetermined processing routine having a start and a termination, said series of processing routines including a block of user programs whose execution is uninterruptedly completed within one cycle, wherein said setting means includes:

means for setting an instruction which specifies said cycle time;

input/output relay means logically linked to said instruction setting means to control the setting of said instruction;

first storage means for storing said cycle time specified by said instruction; and

second storage means for storing a logic state of said input-/output relay means;

means for counting an execution time between the start of the first predetermined processing routine and the termination of the second predetermined processing routine which follows the first predetermined processing routine in said series of processing routines;

means for calculating a time difference between said execution time counted by said counting means and said cycle time; and

means for allocating said time difference to execution of the remainder of said series of processing routines subsequent to said second predetermined processing routine, when said execution time is less than said cycle time;

wherein said setting means further comprises, determining means for determining in response to said state stored by said second storage means whether or not said calculating means calculates said time difference between said execution time counted by said counting means and said cycle time.

5,392,445

DATA STORING SYSTEM AND DATA TRANSFER METHOD WITH A PLURALITY OF DISK UNITS

Ken-ichi Takamoto; Kazuo Nakagoshi, both of Odawara; Naoya Takahashi, Yokohama; Makoto Kogai, and Minoru Yoshida, both of Odawara, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Jul. 7, 1993, Ser. No. 89,144
Claims priority, application Japan, Jul. 9, 1992, 4-182383
Int. Cl.[6] G06F *11/00, 13/00*
U.S. Cl. 395—800 2 Claims

1. In a data transfer method for transferring data between a large volume cache memory provided with a host computer

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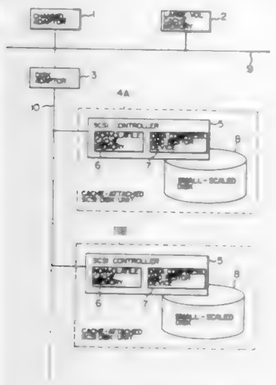
and a plurality of first to n-th disk units being coupled to a bus through a channel adaptor and a disk adaptor, said data transfer method comprising the steps of:

a) outputting a first WRITE instruction for data stored in said large volume cache memory from said host computer to said first disk unit through said channel adaptor and said disk adaptor;

b) transferring data stored in said large volume cache memory to a first cache memory provided in said first disk unit, based on said first WRITE instruction, and notifying termination of transferring to said first cache memory to said disk adaptor;

c) outputting a second WRITE instruction for data stored in said large volume cache memory to said second disk unit through said disk adaptor;

d) transferring data stored in said large volume cache memory to a second cache memory provided in said second disk unit based on said second WRITE instruction, and



notifying termination of transferring to said second cache memory to said disk adaptor;

e) transferring the data stored in said first cache memory to a first data compressing and restoring device to compress the data and generate first management information for the compressed data, transferring the first management information to said first cache memory, and transferring the compressed data with the first management information to a first disk; and

f) transferring the data stored in said second cache memory to a second data compressing and restoring device to compress the data and generate second management information for the compressed data, transferring the second management information to said second cache memory, and transferring the compressed data with the second management information to a second disk independently regardless of transferring the compressed data to the first disk at the step e).

5,392,446

MULTIPLE CLUSTER SIGNAL PROCESSOR ARCHITECTURE

Lee W. Tower; Jeffrey A. Wagner, both of Rancho Palos Verdes, and Douglas M. Benedict, Santa Monica, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 486,982, Feb. 28, 1990, abandoned.
This application Feb. 11, 1993, Ser. No. 17,362
Int. Cl.[6] G06F *12/00, 13/00*
U.S. Cl. 395—800 4 Claims

1. A signal processor architecture comprising:

a data network comprising a plurality of sets of data network ports and a crossbar switch interconnecting each of the data network ports that provides for communication between each of the data network ports;

a first control bus; and

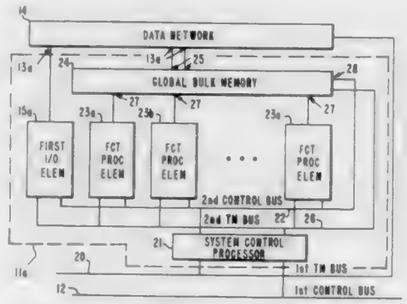
a plurality of signal processing clusters interconnected by means of said first control bus, and connected to said data network by means of a predetermined set of data network ports, each signal processing cluster comprising:

(1) a global bulk memory having a plurality of first global bulk memory ports that are respectively connected to said predetermined set of data network ports on said data network, said global bulk memory comprising:

(a) a sub data flow network having multiple gateways and full crossbar interconnectivity between each of said multiple gateways, wherein said subdata flow network together with said data network provide;

(i) a means whereby data can be transferred via said substrate flow network and said data network between any of said functional processing elements in one said signal processing cluster and any said functional processing elements in another said signal processing cluster, and

(ii) a means whereby data can be transferred via said subdata flow network and said data network between any of said functional processing elements in one of said signal processing cluster and said global bulk memory in another of said signal processing clusters; and



(b) wherein each of said plurality of first global bulk memory ports and said plurality of fourth global bulk memory ports on said global bulk memory are connected to one of said multiple gateways on said sub data flow network so that data can be tranferred via said sub data flow network between any of said functional processing elements and between any functional processing element and said data network ports connected to said plurality of first global bulk memory ports on said global bulk memory;

(2) wherein each signal processing cluster further comprises:

(a) a system control processor connected to said first control bus,

(b) a second control bus connected to said system control processor and to said global bulk memory by means of a third global bulk memory port, and

(c) a plurality of functional processing elements connected to said system control processor by means of said second control bus and connected to a plurality of fourth global bulk memory ports on said global bulk memory;

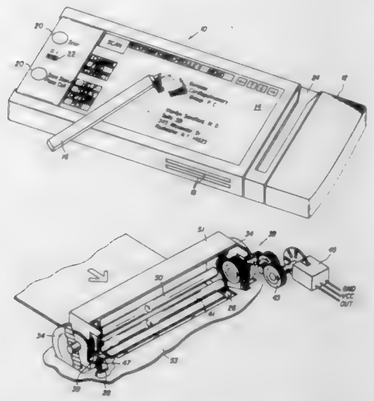
and wherein the data network ports and first global bulk memory ports of one signal processing cluster cooperate with the data network ports and global bulk memory ports of other signal processing clusters to provide simultaneous access to all global bulk memories by all signal processing clusters.

5,392,447

IMAGE-BASED ELECTRONIC POCKET ORGANIZER WITH INTEGRAL SCANNING UNIT

Carl W. Schlack, Rochester; J. Terrence Flynn, Fairport; Jay B. Soper; Kenneth G. Corl, both of Rochester; Roger S. Gaborski, Pittsford, and Robert H. Philbrick, Rochester, all of N.Y., assignors to Eastman Kodak Compay, Rochester, N.Y.

Filed Jan. 10, 1992, Ser. No. 819,390
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—800 15 Claims



4. An electronic organizer comprising:

a main unit including an integral scanning unit, a touch sensitive display unit, a memory unit, and control means, coupled to the integral scanning unit, the touch sensitive display unit and the memory unit, for controlling the processing and storage of text and image data entered into the main unit through the integral scanning unit and the touch sensitive display unit; and

a battery unit, releaseably coupled to the main unit, wherein the battery unit supplies power to the integral scanning unit, the touch sensitive display unit, the memory unit and the control means of the main unit;

wherein the main unit further comprises a small document transport mechanism for transporting documents past the integral scanning unit, said small document transport mechanism comprising transport wheels coupled to a drive axle and a document pinch roller coupled to the drive axle by pinch roller drive gears; and

wherein the transport wheels rotate and cause the drive axle to drive the document pinch roller via the pinch roller drive gears when the transport wheels are placed in contact with a surface and the organizer is moved across the surface.

5,392,448

REAL-TIME OPERATING SYSTEM AND VIRTUAL DIGITAL SIGNAL PROCESSOR FOR THE CONTROL OF A COMPUTER

Robert E. Frankel; David M. Lindsay; David A. Russo, and David Y. Wong, all of Santa Barbara, Calif., assignors to Spectron MicroSystems, Inc., Goleta, Calif.

Continuation of Ser. No. 415,882, Oct. 2, 1989, Pat. No. 5,283,900. This application Dec. 14, 1993, Ser. No. 166,553
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[6] G06F *15/20*
U.S. Cl. 395—800 25 Claims

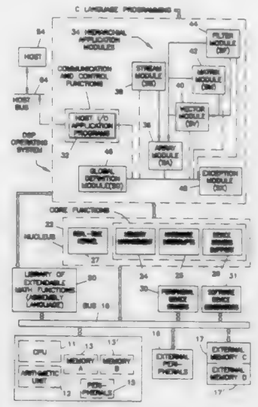
1. An apparatus for managing the operation of a computer, comprising:

(a) a computer; and

(b) virtual DSP machine means, performed by the computer, for insulating computer programs executed by the computer from the computer's specific architecture, wherein functions of the computer are accessed by the computer programs via a high-level programming interface, wherein the virtual DSP machine means comprises a plurality of modules arranged in a hierarchy, comprising:

(1) an array module for creating arrays of data and allocating memory blocks therefor through the memory management means;

(2) a stream module for processing continuous data streams being input and output by the I/O devices coupled to the computer, comprising means for binding



the I/O devices to the computer programs, means for transferring the data between the arrays and the I/O devices, and means for invoking device-dependent control functions for the I/O devices;

(3) a vector module for creating vectors of data that provide a one dimensional view of the arrays, and for performing vector math operations on the vectors;

(4) a matrix module for creating matrices of data that provide a two dimensional view of the arrays, and for performing matrix math functions on the matrices; and

(5) a filter module for creating finite impulse response filters, infinite impulse response filters, and all-pole filters, and for applying the filters to the vectors.

5,392,449

RESOURCE MANAGEMENT BY AN INTELLIGENT REPEATER

Mark L. Shaughnessy, Algonquin; Lynn Monica, Chicago, and Gary W. Grube, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 29, 1992, Ser. No. 906,256
Int. Cl.[6] H04B *1/74, 3/36, 17/02*
U.S. Cl. 455—8 20 Claims

1. A method of managing resources by a plurality of intelligent repeaters at a trunked communication site, comprising the steps of;

receiving, by a resource manager of said trunked communication site, status information from the plurality of intelligent repeaters;

analyzing said status information;

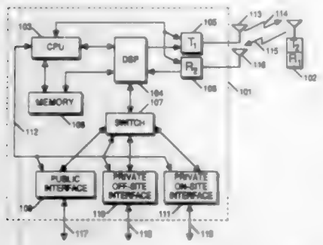
selecting a first of the plurality of intelligent repeaters to perform authorization of access functions, which authorization includes comparing stored IDs that correspond to authorized communication units with IDs of requesting communication units;

selecting a second of the plurality of intelligent repeaters, which second intelligent repeater is different than the first

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intelligent repeater, to perform resource allocation functions, which functions include determining communication resources that are to be used to service a requested communication;

selecting a third of the plurality of intelligent repeaters, which third intelligent repeater is different than both the



first and second intelligent repeater, to perform logging functions;

informing the plurality of intelligent repeaters of said first, said second, and said third of the plurality of intelligent repeaters; and

informing said second of the plurality of intelligent repeaters of said status information.

5,392,450

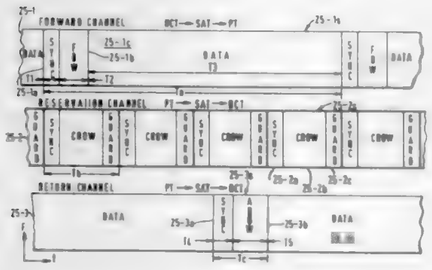
SATELLITE COMMUNICATIONS SYSTEM

Edward J. Nossen, Cherry Hill, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed Jan. 8, 1992, Ser. No. 818,268

Int. Cl.[6] H04B *7/185*

U.S. Cl. 455—12.1 **20 Claims**



1. A satellite communications system, comprising:

a communications satellite having at least one translator;

at least one small-aperture terminal (SAT) capable of sending data transmissions to and receiving data transmissions from said communications satellite; and

a hub network control terminal (NCT) capable of sending data transmissions to and receiving data transmissions from said communications satellite, and adapted to configure transmissions to and from the satellite into at least three data channels, with each of the three data channels being in a separate frequency band from a frequency band occupied by either other channel and with substantially all of the satellite transmission power allocated to the at least one small aperture terminal, and said three data channels comprising a first channel being used by the hub network control terminal to provide for initial contact to any of the at least one small aperture terminals desiring to communicate, a second channel being used by one desirous small aperture terminal to gain the attention of the hub network control terminal, and a third channel being used by the desirous small aperture terminal gaining the attention of the hub network control terminal to thereafter transmit information via the hub network control terminal.

5,392,451

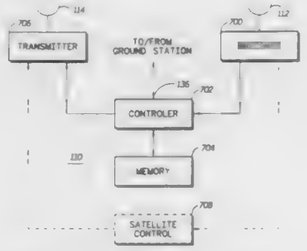
SATELLITE BASED ACKNOWLEDGE-BACK PAGING SYSTEM

Robert J. Schwendeman, Pompano Beach, and Willam J. Kuznicki, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 450,707, Dec. 14, 1989. This application Jun. 17, 1993, Ser. No. 77,257

Int. Cl.[6] H04B *7/185;* **H04Q** *7/02*

U.S. Cl. 455—13.1 **32 Claims**



1. A paging communication system, comprising:

satellite based communication means for communicating paging information to at least one of a plurality of selective call receivers;

the plurality of selective call receivers, wherein the at least one of the plurality of selective call receivers is operated for receiving the paging information from the satellite based communication means, and the at least one of the plurality of selective call receivers includes means for acknowledging receipt of the paging information via the satellite based communication means; and

control means for communicating with the satellite based communication means and for determining where to deliver the paging information and whether to await acknowledgment thereof and for determining operational parameters for delivery of the paging information to the at least one of the plurality of selective call receivers, wherein the control means operates responsive to the acknowledgement of the paging information to re-direct the paging information to another area.

5,392,452

SELECTIVE CALL SIGNALING SYSTEM WITH COMBINED WIDE AREA PAGING AND HIGH DATA RATE TRANSMISSIONS VIA RADIO TELEPHONE TRANSCEIVERS

Walter L. Davis, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 27, 1992, Ser. No. 982,341

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—38.1 **28 Claims**

1. A method for transmitting messages in a paging system comprising the steps of:

(a) receiving message information;

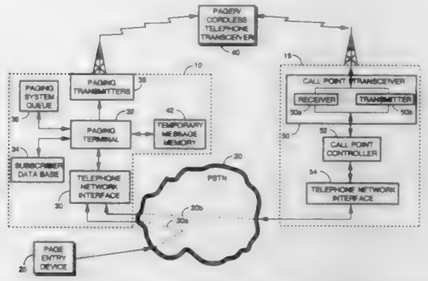
(b) determining whether the message information comprises information greater than a predetermined message length;

(c) storing the message information in a memory device if the message information is greater than the predetermined message length;

(d) transmitting a predetermined message to a pager via a first communication path, the predetermined message indicating that the message information is stored in the memory device;

(e) automatically coupling to the pager via a second, wireless communication path in response to the predetermined message;

(f) retrieving the message information from the memory device; and



(g) transmitting the message information to the pager via the second communication path.

5,392,453

METHOD OF EFFECTING HANDOVER IN A MOBILE MULTILAYER CELLULAR RADIO SYSTEM

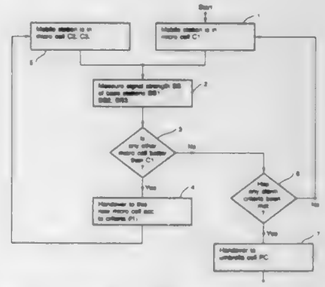
Bjorn O. P. Gudmundson, Sollentuna; Hakan Eriksson, Vallentuna, and Olof E. Grumlund, Kista, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jun. 19, 1992, Ser. No. 901,075

Claims priority, application Sweden, Jun. 20, 1991, 9101910

Int. Cl.[6] H04B *7/00;* **H04Q** *7/02, 9/00*

U.S. Cl. 455—33.2 **3 Claims**



1. A method of effecting handover in a mobile radio system comprising fixed base stations and mobile stations said radio system includes radio cells wherein the cells are divided into a first layer and a second layer where a cell in the first layer covers a plurality of cells in the second layer, wherein a mobile station moves in a first cell in said second layer towards a second, bordering cell in the second layer and is prepared to handover to said second bordering cell in accordance with certain criteria, comprising the steps of:

measuring signal strength of at least two base stations for said first and said second cell in said second layer of the radio cells;

comparing the measured signal strength of said at least two base stations and selecting the base station corresponding to the highest measured signal strength;

handing over the mobile station from said first cell to said second cell in the second layer when said highest measured signal strength exceeds the signal strength from the base station in said first cell;

handing over the mobile station from the first cell in said second layer to the cell in said first layer which covers at least the first and the second cell in the second layer when the highest measured signal strength does not exceed the signal strength from the base station in said first cell in the second layer and an alarm criteria has been met; and

letting the mobile station remain in the first cell in said second layer when said alarm criteria has not been met.

5,392,454

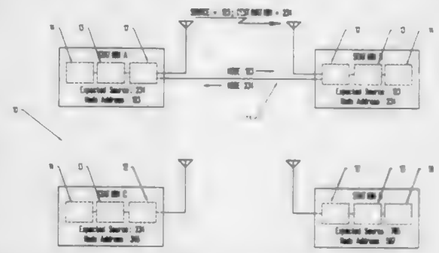
METHOD AND APPARATUS FOR SELECTIVELY ENABLING BI-DIRECTIONAL COMMUNICATION ONLY BETWEEN A DEDICATED PAIR OF TRANSCEIVERS

Henry J. Kowal, West Seneca; Charles A. Miess, Glenwood; Edward J. Szczepanski, Orchard Park; Paula A. McNerney, West Falls, and Michael R. Morgante, Buffalo, all of N.Y., assignors to Moog Inc., East Aurora, N.Y.

Filed Oct. 23, 1992, Ser. No. 965,204

Int. Cl.[6] H04B *7/24*

U.S. Cl. 455—32.1 **7 Claims**



1. A communication system, comprising:

a plurality of transceivers adapted to communicate with one another via a common communication path, each transceiver having a unique individual identity code;

handshake means for temporarily enabling the mutual exchange of identity codes between only two of said transceivers so as to establish a dedicated pair;

each transceiver having memory means for receiving and storing the identity code of the other transceiver of said pair during said mutual exchange and for simultaneously purging any previously-stored identity code;

each transceiver having addressing means for identifying by means of its unique individual identity code all communications transmitted by it as having been originated from it and being addressed to only the other of said pair as identified by the individual identity code of such other; and

each transceiver having acceptance means for accepting transmitted communications only if addressed to it and identified as having originated from the other transceiver of said pair;

whereby one transceiver of a pair will only communicate with the other transceiver of said pair.

5,392,455

TRANSDUCER WITH INTEGRATED SWITCH ELEMENT

William B. Benoist, Lake Worth; Philip Kitching, N. Lauderdale, and Martin D. McCluskie, Pompano Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 16, 1992, Ser. No. 976,820

Int. Cl.[6] H04B *1/08*

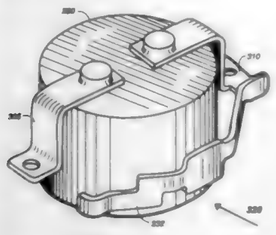
U.S. Cl. 455—382 **13 Claims**

1. A transducer/switch component for generating an audible alert and for providing user activation of one or more functions, the transducer/switch component comprising:

a transducer having leads formed thereon for providing a signal to drive the transducer and thereby generate the audible alert, wherein a first of the leads has contiguously

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formed therefrom a switch element that is activated by user manipulation to provide the activation of the one or



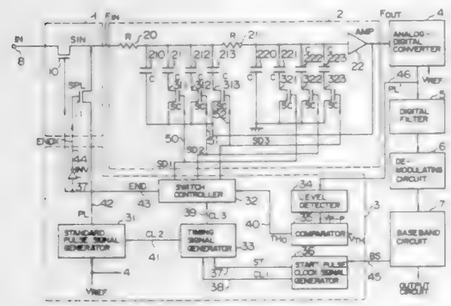
more functions independent of operation of the transducer.

5,392,456

METHOD OF CONTROLLING FILTER TIME CONSTANT AND FILTER CIRCUIT HAVING THE TIME CONSTANT CONTROL FUNCTION BASED ON THE METHOD

Isamu Mitomo, Hachioji; Nobuo Tsukamoto, Tachikawa; Arata Nakagoshi, Kokubunji; Jiroh Sakaguchi, Tama; Kazuo Yamakido, Tokyo; Hiroshi Noguchi, Tokyo, and Atushi Hoshi, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Kokusai Electric Co., Ltd., both of Tokyo, Japan

Filed Oct. 3, 1990, Ser. No. 592,340
Claims priority, application Japan, Oct. 6, 1989, 1-260027
Int. Cl.[6] H04B *1/10*
U.S. Cl. 455—38.3 **17 Claims**



1. A method of controlling the time constant of a filter operable to intermittently filter an input signal to deliver the same, said filter having means for stepwise switching of the time constant of the filter, comprising the steps of:

inputting to said filter a standard signal having a predetermined frequency and a predetermined signal level during a predetermined interval preceding each filtering operation, said filter including n (n being an integer) elements for changing the time constant, the time constant being switchable stepwise 2^n times;

switching the time constant of said filter by a maximum of n times in accordance with an output signal from said filter; and

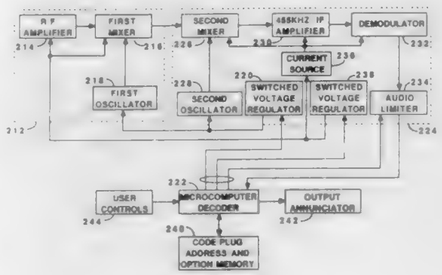
performing filtering of the input signal after completion of switching of the time constant of said filter.

5,392,457

BATTERY SAVING METHOD AND APPARATUS FOR PROVIDING SELECTIVE RECIEVER POWER SWITCHING

Walter L. Davis, Parkland, and James G. Mittel, Lakeworth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 532,844, Jun. 4, 1990, Pat. No. 5,251,325. This application Jul. 26, 1993, Ser. No. 96,397
Int. Cl.[6] H04Q *3/02*; **H04B** *1/16*
U.S. Cl. 455—38.3 **23 Claims**



1. A battery powered communication receiver for receiving a coded message signal which includes at least one transmitted message batch including a synchronization signal, comprising:

a receiver portion for receiving and demodulating the coded message signal, said receiver portion including

a first receiver function requiring power to be supplied thereto at least at a first predetermined time interval prior to the reception of the transmitted message batch, and

at least a second receiver function requiring power to be supplied thereto at least at a second predetermined time interval prior to the reception of the transmitted message batch; and

battery saving means, coupled to said receiver portion, and responsive to the coded message signal, said battery saving means including

timing means, for generating timing signals,

synchronization means, coupled to said timing means and responsive to a demodulated synchronization signal, for synchronizing the generation of the timing signals to enable reception of the message batch,

first means responsive to said synchronization means for selectively supplying power to said first receiver function at least at the first predetermined time interval prior to and continuing therefrom for a time interval sufficient to enable at least the reception of the transmitted synchronization signal within the transmitted message batch, and

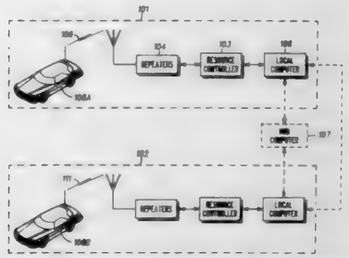
at least a second means responsive to said synchronization means for selectively supplying power to at least said second receiver function at least at the second predetermined time interval prior to and continuing therefrom for a time interval sufficient to enable at least the reception of the transmitted synchronization signal within the transmitted message batch.

5,392,458

TRUNKED COMMUNICATION SYSTEM WITH VARIABLE COMMUNICATION CAPABILITY SUPPORT FOR ROAMERS

Michael D. Sasuta, Mundelein; Richard H. Coe, Arlington Heights, and Sewim F. Ablay, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 585,435, Sep. 20, 1990, abandoned. This application Apr. 28, 1993, Ser. No. 52,845
Int. Cl.[6] H04B *7/26*
U.S. Cl. 455—54.1 **4 Claims**



1. A method for determining communication capabilities of a roaming communication unit, the method comprising the steps of:

a) Roaming, by the roaming communication unit, from a first communication system to a second communication system;

b) Transmitting, by the roaming communication unit, a capabilities request to the second communication system;

c) Receiving, by the second communication system, capability information of the roaming communication unit; and

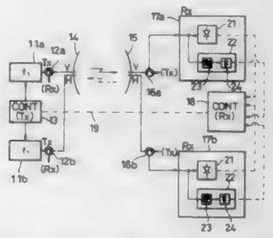
d) Determining by the second communication system, a fifth set of communication capabilities for the roaming communication unit based on a fourth set of communication capabilities of the second communication system and the capability information.

5,392,459

POWER CONTROL IN MICROWAVE TRANSMISSION SYSTEM INCREASING POWER OF BOTH HORIZONTALLY AND VERTICALLY POLARIZED WAVES

Satoshi Baba, and Yoshio Ito, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,306
Claims priority, application Japan, Nov. 27, 1991, 3-335972
Int. Cl.[6] H04B *17/02, 7/005, 15/04, 1/12*
U.S. Cl. 455—69 **14 Claims**



1. An automatic transmit power control method for a communications system wherein a transmission band is divided into a plurality of successive frequency channels and radio communications are effected from a transmission end to a reception end by using two orthogonally polarized waves of the same frequency channel independently of each other, comprising the steps of:

detecting, at said reception end, receive signal levels of the two polarized waves of an object frequency channel for control; and

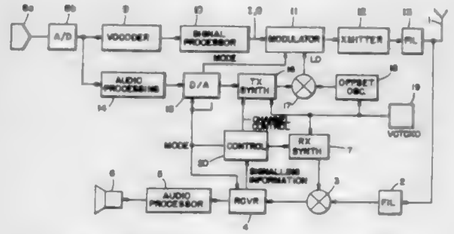
simultaneously raising at said transmitting end, when a drop of the receive signal level of either of the two polarized waves is detected, the transmit powers of the two polarized waves of the object frequency channel.

5,392,460

DUAL MODE RADIOTELEPHONE TERMINAL SELECTIVELY OPERABLE FOR FREQUENCY MODULATED OR PHASE MODULATED OPERATION

Heikki Mattila; Jorma Matero, and Jaakko Hulkko, all of Oulu, Finland, assignors to Nokia Mobile Phones Ltd., Finland

Filed Apr. 23, 1993, Ser. No. 52,335
Int. Cl.[6] H04B *1/52*
U.S. Cl. 455—76 **14 Claims**



1. A mobile radiotelephone, comprising:

control means for generating a first state of a control signal when operating the radiotelephone in a first mode of operation and for generating a second state of the control signal when operating the radiotelephone in a second mode of operation;

means, responsive to said control signal, for generating a first electrical representation of an audio input signal when operating in the first mode of operation and for generating a second electrical representation of the audio input signal when operating in the second mode of operation;

means, responsive to the first electrical representation, for generating a first phase modulation control signal and a second phase modulation control signal;

means, responsive to the second electrical representation, for frequency modulating a transmitter injection frequency signal in accordance therewith; and

modulator means for generating a transmission frequency signal that is modulated, in the first mode of operation, in accordance with said first electrical representation and that is modulated, in the second mode of operation, in accordance with said second electrical representation, said modulator means comprising,

means for receiving said transmitter injection frequency signal and for regenerating the transmitter injection frequency signal to provide at a first output a first injection frequency signal and at a second output a second injection frequency signal, said first injection frequency signal having a non-zero phase shift with respect to said second injection frequency signal;

first mixer means having a first input coupled to said first injection frequency signal and a second input coupled to said first modulation control signal, said first mixer means having an output for providing a first output frequency signal that is phase modulated in accordance with said first modulation control signal;

second mixer means having a first input coupled to said second injection frequency signal and a second input coupled to said second modulation control signal, said

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second mixer means having an output for providing a second output frequency signal that is phase modulated in accordance with said second modulation control signal;

combining means, having a first input coupled to said output of said first mixer means and a second input coupled to said output of said second mixer means, for combining said first and second mixer means outputs into a modulator output signal; and

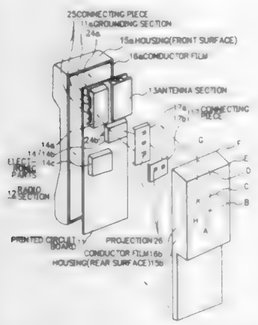
biasing means having a control input for receiving said control signal and an output, said output of said biasing means being coupled to at least said first mixer means for selectively enabling said first mixer means, during the first mode of operation as indicated by the state of said control signal, to output said phase modulated first output frequency signal, said output of said biasing means selectively enabling said first mixer means, during the second mode of operation as indicated by the state of said control signal, to output a frequency signal that is substantially identical to said first injection frequency signal.

5,392,461

PORTABLE RADIO COMMUNICATION APPARATUS UNNECESSITATING SHIELDING CASE

Yokoyama: Yukio, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 911,135
Claims priority, application Japan, Jul. 11, 1991, 3-171124
Int. Cl.[6] H04B *1/38*
U.S. Cl. 455—89 **2 Claims**



1. A portable radio communication apparatus having antenna means and radio means shielded from an external space, comprising:

a printed circuit board having a grounding section at ground potential;

said antenna means being mounted on said printed circuit board, said radio means including electronic parts, each of said parts having a connecting terminal connected to said printed circuit board and having a conductive section formed on an outer surface thereof, said conductive section being conductively connected to said grounding section;

a housing wherein said printed circuit board, said antenna means, and said radio means are mounted, said housing having a conductive film on an inner surface thereof; and

connecting means for conductively connecting the conductive section of each of said electronic parts to the conductive film on the inner surface of said housing;

said antenna means being connected electrically to said radio means via conductors of said printed circuit board;

said antenna means being mounted in a zone of said housing that is clear of said conductive film;

said antenna means having a periphery and said electronic parts being disposed in the vicinity of said periphery;

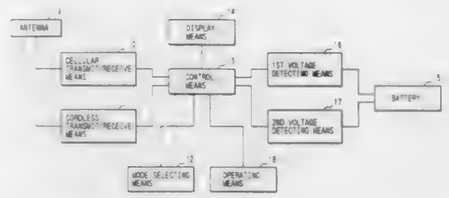
said connecting means including metal pieces and elastic projections formed on said metal pieces, and said projections connecting the conductive sections of said electronic parts to the conductive film.

5,392,462

PORTABLE WIRELESS TELEPHONE APPARATUS WITH USE SPECIFIC POWER MONITORING

Norio Komaki, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 17, 1992, Ser. No. 945,874
Claims priority, application Japan, Sep. 27, 1991, 3-248996
Int. Cl.[6] H04B *1/40;* **H04M** *11/00*
U.S. Cl. 455—89 **7 Claims**



1. A portable wireless telephone comprising:

an antenna;

a cellular transmit/receive means connected to said antenna for transmitting data to or receiving data from a cellular base station;

a cordless transmit/receive means connected to said antenna for transmitting data to or receiving data from a base unit of a cordless telephone;

a mode selecting means for selecting an operation mode of the portable wireless telephone between a cellular mode and a cordless mode;

a battery;

a voltage detecting means connected to said battery for generating a low-voltage signal if a battery voltage is not large enough to operate the portable wireless telephone in the cellular mode;

a display means;

a control means for controlling said display means to generate a low-voltage warning, which indicates that the cellular mode is no longer operative, whenever said voltage detecting means generates the low-voltage signal when the portable wireless telephone is operated in the cellular mode, and for further controlling said mode selecting means to prevent selection of the cellular mode while permitting selection of the cordless mode as long as said battery voltage is large enough to operate the portable wireless telephone in the cordless mode.

5,392,463

POWER AMPLIFIER CAPABLE OF SATURATION AND LINEAR AMPLIFICATION

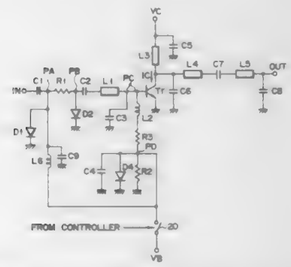
Tatsuya Yamada, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 16, 1991, Ser. No. 777,010
Claims priority, application Japan, Oct. 16, 1990, 2-108047[U]
Int. Cl.[6] H04B *1/04;* **H04L** *27/08;* **H03G** *3/10*
U.S. Cl. 455—93 **11 Claims**

1. A power amplifier used in a mobile radio apparatus operated selectively in an analog mode and a digital mode, comprising:

amplifying circuit means for saturation-amplifying and linear-amplifying an input signal, wherein said amplifying circuit means includes signal attenuating means for attenuating the input signal in accordance with a control signal

indicating the analog mode or the digital mode, and a transistor for receiving the input signal input through said attenuating means; and switching means for switching said



amplifying circuit means to selectively perform a saturation amplification and a linear amplification in accordance with the analog mode and the digital mode, said switching means connected to a base of said transistor.

5,392,464

DIRECTIONAL DETECTOR FOR POWER LEVEL CONTROL

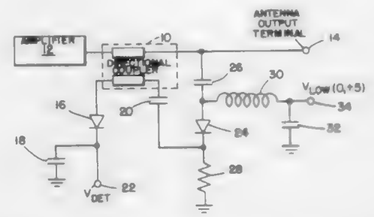
Hannu Pakonen, Tampere, Finland, assignor to Nokia Mobile Phones Ltd.

Filed Aug. 19, 1993, Ser. No. 109,309
Int. Cl.[6] H04B *1/04, 17/00;* **H03G** *3/30*
U.S. Cl. 455—115 **3 Claims**

1. In a data transmission system having a power amplifier means for providing a modulated output signal having a power level to an antenna output terminal, a detecting means connected between said power amplifier means and said antenna output terminal, for providing a voltage proportional to said power amplifier means modulated output signal level;

a coupling means including a directional device connected to the output of said power amplifier means, a rectifier diode connected to said directional device, a grounding capacitor connected to said rectifier diode, and an output terminal connected to said grounding capacitor and said rectifier diode for providing said detected voltage proportional to the power level of said power amplifier means modulated output signal;

a source of bias signal for selectively providing a bias signal embodied in one of two bias level states;



and a switchable active device circuit connected to said antenna output terminal, to said coupling means and to said source of bias signal; wherein said switchable active device circuit includes a PIN diode, a first capacitor connecting one side of said PIN diode to said antenna output terminal, a second capacitor connecting the other side of said PIN diode means to said directional device, a resistor connecting said second capacitor and said other side of said PIN diode to ground potential, and means for connecting said first capacitor and said one said side of said PIN diode to said source of bias signal.

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DESIGN PATENTS

GRANTED FEB. 21, 1995

ERRATA

For CLASS	See PATENT NO.
D6 –515	D 533,567
D9 –305	D 533,593
D9 –339	D 533,595
D9 –415	D 533,600
D10–078	D 533,609
D8 –001	D 533,625
D3 –218	D 533,657
D21–240	D 533,660
D24–110	D 533,691
D23–366	D 533,712
D27–162	D 533,728
D28–007	D 533,729
D32–058	D 533,737
D34–024	D 533,743
D30–160	D 533,746

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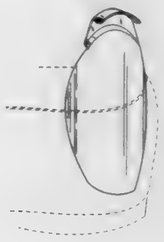
DESIGNS

FEBRUARY 21, 1995

355,521
GLOVE
Pedro R. Galdi, Alameda Casa Branca, 749-Apto. 72, Sao Paulo-SP, Brazil
Filed Sep. 11, 1992, Ser. No. 948,747
Claims priority, application Brazil, Mar. 12, 1992, MU 7200381
Term of patent 14 years
U.S. Cl. D2—610



355,522
FLEXIBLE PLASTIC SHOEHORN
Harold G. Simpson, 2311 Fleetwood Dr., San Bruno, Calif. 94066
Continuation-in-part of Ser. No. 4,992, Feb. 18, 1993, abandoned. This application May 17, 1994, Ser. No. 23,000
Term of patent 14 years
U.S. Cl. D2—642



355,523
VENTILATED BOOT
Losi, II: Raymond, 3137 Casino Dr., Thousand Oaks, Calif. 91362
Filed Jun. 14, 1993, Ser. No. 9,429
Term of patent 14 years
U.S. Cl. D2—904

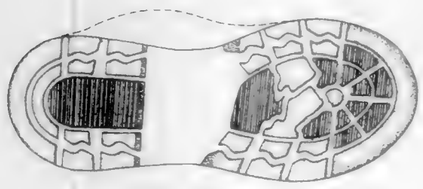


355,524
HIGH HEELED SNEAKER
Pauline Hatfield, 5267 81st. St. N., #5, St. Petersburg, Fla. 33709
Filed Mar. 8, 1993, Ser. No. 5,610
Term of patent 14 years
U.S. Cl. D2—935

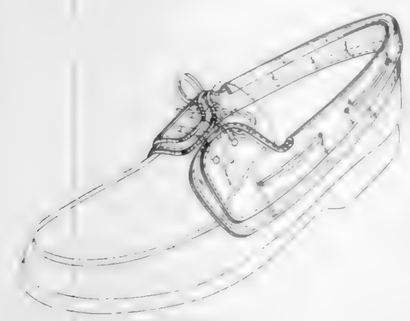


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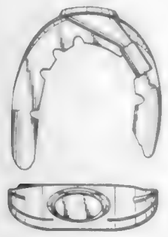
355,525
SHOE SOLE
Amy S. Minkin, Canton, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 18,131, Jan. 31, 1994, Pat. No. Des. 349,806. This application Jul. 8, 1994, Ser. No. 25,700
Term of patent 14 years
U.S. Cl. D2—951



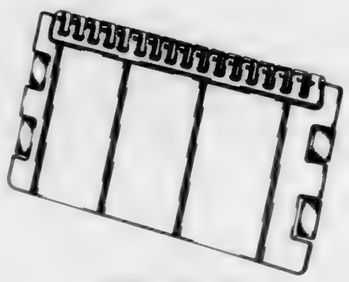
355,526
COLLAR ELEMENT OF A SHOE UPPER
Gary Duclos, Newburyport, Mass., assignor to The Timberland Company, Hampton, N.H.
Filed Jun. 18, 1993, Ser. No. 9,728
Term of patent 14 years
U.S. Cl. D2—973



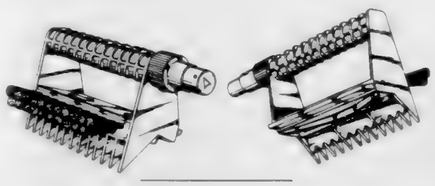
355,527
SHOE HEEL PROTECTOR
Kazumasa Yoshikawa, Osaka, and Katsuhiko Uno, Kobe, both of Japan, assignors to Asics Corporation, Hyogo, Japan
Filed Jun. 25, 1993, Ser. No. 10,861
Claims priority, application Japan, Dec. 28, 1992, 4-38609
Term of patent 14 years
U.S. Cl. D2—977



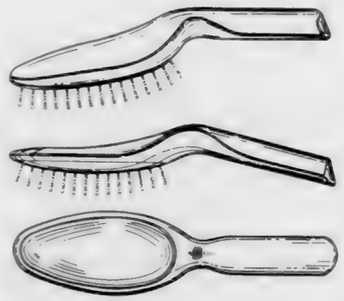
355,528
CARD FOR HOLDING BAIT
William F. Croft; Gregory S. Floyd, and Donald R. Musil, all of Wooster, Ohio, assignors to Rubbermaid Specialty Products Inc., Wooster, Ohio
Filed Jul. 6, 1993, Ser. No. 10,345
Term of patent 14 years
U.S. Cl. D3—260



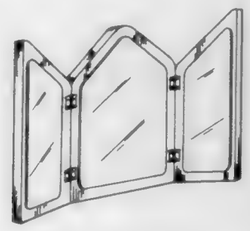
355,529
COMBINED BRUSH ICE SCRAPER, SQUEEGEE, AND FLUID DISPENSER
Cheng-Hsien Tsai, No. 103, Da-Ming 1st Rd., Tien-Tzu Hsiang, Taichung Hsien, Taiwan, Prov. of China
Filed Dec. 2, 1991, Ser. No. 800,967
Term of patent 14 years
U.S. Cl. D4—118



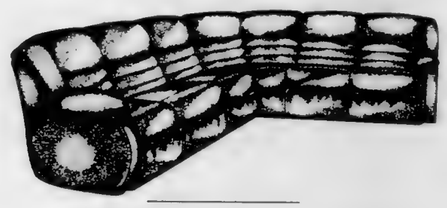
355,530
BRUSH HANDLE
Eric Chan, New York, N.Y., assignor to Goody Products, Inc., Kearny, N.J.
Filed May 4, 1992, Ser. No. 878,885
Term of patent 14 years
U.S. Cl. D4—138



355,531
FOLDING MIRROR
Timothy N. Lynch, Sr., 705 Shirley NE., Albuquerque, N. Mex. 87123
Filed Jun. 25, 1993, Ser. No. 10,026
Term of patent 14 years
U.S. Cl. D6—312



355,532
SECTIONAL SOFA
Herbert B. Goldberg, Northbrook, Ill., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Jul. 21, 1992, Ser. No. 918,387
Term of patent 14 years
U.S. Cl. D6—335



355,533
BABY EXERCISER FOR USE IN A DOORWAY
Paul K. Meeker, Hiram, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Sep. 29, 1993, Ser. No. 13,670
Term of patent 14 years
U.S. Cl. D6—347



355,534
CHAIR
Hiroshi Saotome, Machida, Japan, assignor to Okamura Corporation, Yokohama, Japan
Filed Jan. 11, 1993, Ser. No. 5,010
Term of patent 14 years
U.S. Cl. D6—366



355,535
CHAIR
Marshall B. Ward, High Point, N.C., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Nov. 18, 1992, Ser. No. 1,612
Term of patent 14 years
U.S. Cl. D6—370

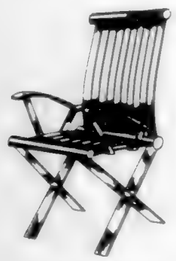


355,536
CHAIR
Fabrice LeDuc, Grenoble, France, assignor to Allibert, Neuilly sur Seine, France
Filed Feb. 4, 1993, Ser. No. 4,399
Claims priority, application WIPO, Aug. 6, 1992, DM/023 597
Term of patent 14 years
U.S. Cl. D6—370

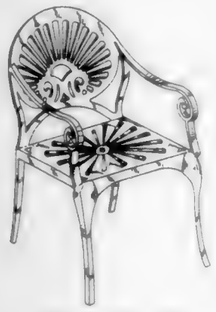


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355,537
ARMCHAIR
James Geier, 1238 S. Ashland Ave., Chicago, Ill. 60608
Filed Nov. 16, 1993, Ser. No. 15,372
Term of patent 14 years
U.S. Cl. D6—370



355,538
PATIO CHAIR
Jeffrey A. Weiss, 222 Hemlock Dr., McMurray, Pa. 15317
Filed Oct. 13, 1992, Ser. No. 370
The portion of the term of this patent subsequent to Nov. 1, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—376



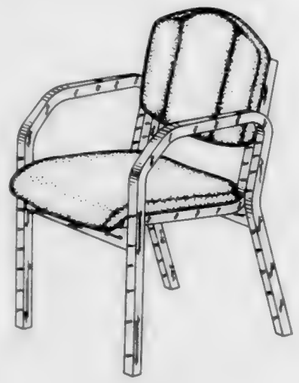
355,539
PATIO LOVESEAT
Jeffrey A. Weiss, 222 Hemlock Dr., McMurray, Pa. 15317
Filed Oct. 13, 1992, Ser. No. 401
The portion of the term of this patent subsequent to Nov. 1, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—376



355,540
CHAIR
James R. Arthur, Jr., Monarch Beach, Calif., assignor to Del Mar Designs Inc., Anaheim, Calif.
Filed Jul. 21, 1993, Ser. No. 10,881
Term of patent 14 years
U.S. Cl. D6—379



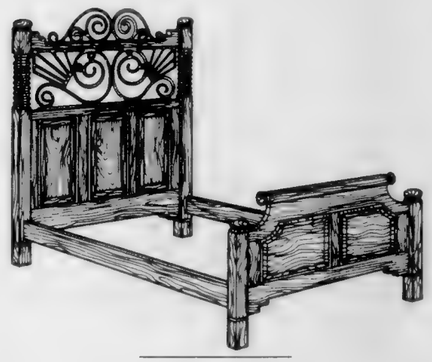
355,541
CHAIR
Virgil Miller, Archbold, Ohio, assignor to Sauder Manufacturing Co., Archbold, Ohio
Filed Oct. 12, 1993, Ser. No. 14,090
Term of patent 14 years
U.S. Cl. D6—379



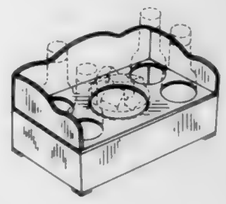
355,542
CHAIR
Giu Jiang, No. 21, Lane 160, Ho Tso St., Feng Yuan City, Taichung Hsien, Taiwan, Prov. of China
Filed Nov. 2, 1993, Ser. No. 14,773
Term of patent 14 years
U.S. Cl. D6—380



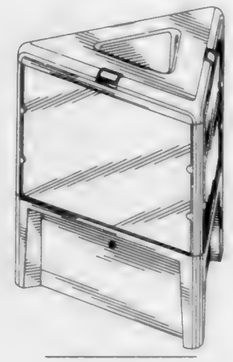
355,543
BED
Richard A. Schroeder, High Point, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Jun. 2, 1993, Ser. No. 9,066
Term of patent 14 years
U.S. Cl. D6—393



355,544
MINIATURE BAR
Earl H. Cartwright, 2005 Taylor Dr., Olathe, Kans. 66062
Filed Oct. 14, 1992, Ser. No. 428
Term of patent 14 years
U.S. Cl. D6—469



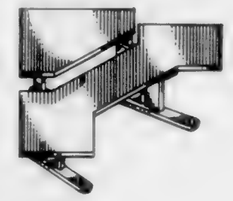
355,545
DISPLAY DEVICE
David Dobson, 366 Greenbrook Drive, Kitchener, Ontario, Canada N2M 4K4
Filed Nov. 23, 1992, Ser. No. 1,719
Claims priority, application Canada, Aug. 14, 1992, 14-08-92-4
Term of patent 14 years
U.S. Cl. D6—470



355,546
MACHINE SUPPORT TABLE
Timothy Hewitt, P.O. Box 839, Royal Oak, Mich. 48068-0839
Filed Apr. 30, 1993, Ser. No. 7,768
Term of patent 14 years
U.S. Cl. D6—480



355,547
ADJUSTABLE COMPUTER WORK STATION
Russell T. Liston, Alpharetta, Ga., assignor to Katherine L. Liston, Alpharetta, Ga.
Filed Dec. 23, 1992, Ser. No. 2,951
Term of patent 14 years
U.S. Cl. D6—480

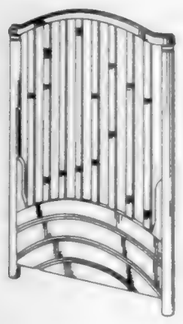


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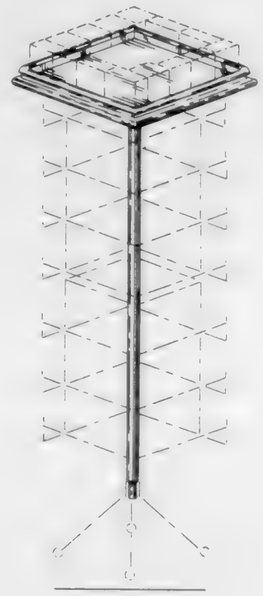
355,548
HEADBOARD
Richard A. Schroeder, High Point, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Jun. 2, 1993, Ser. No. 9,067
Term of patent 14 years
U.S. Cl. D6—505



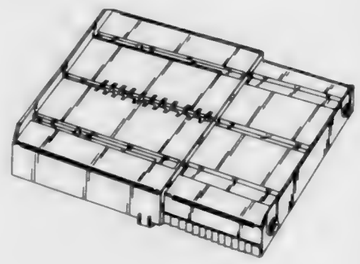
355,549
CRIB HEADBOARD
Louis Shamie, 972 Dean St., Brooklyn, N.Y. 11238
Filed Aug. 23, 1993, Ser. No. 12,089
Term of patent 14 years
U.S. Cl. D6—508



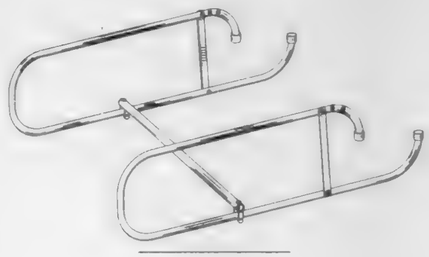
355,550
CEILING FAN PULL DISPLAY RACK WITH SHELF
Alvin E. Todd, Jr., P.O. Box 924, Pigeon Forge, Tenn. 37868-0924
Filed Feb. 25, 1994, Ser. No. 19,222
Term of patent 14 years
U.S. Cl. D6—509



355,551
LEGLESS LOCKER SHELF ASSEMBLY
George E. McNamara, and Craig Hansen, both of Minnetonka, Minn., assignors to Minnesota American, Inc., Minnetonka, Minn.
Filed Jul. 12, 1993, Ser. No. 10,495
Term of patent 14 years
U.S. Cl. D6—511



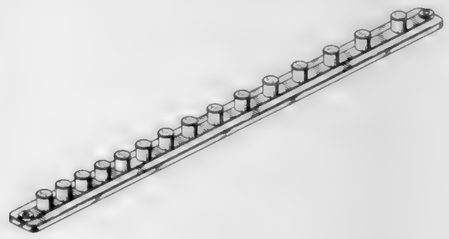
355,552
PORTABLE STORAGE UNIT FOR QUICK AND TEMPORARY ATTACHMENT TO THE EDGE OF A HORIZONTAL SURFACE
Gary L. Whited, Kirkersville, and James R. Stillwagon, West Worthington, both of Ohio, assignors to Table Helper, Inc., Hilliard, Ohio
Filed May 12, 1993, Ser. No. 8,272
Term of patent 14 years
U.S. Cl. D6—513



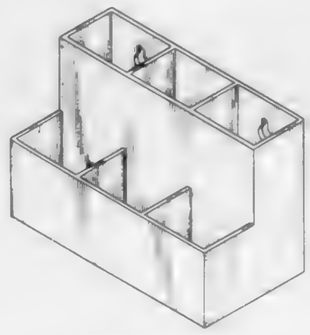
355,553
COMBINATION PORTABLE BATH ORGANIZER AND TRAY INSERT
Paolo Tiramani, 461 Taconic Rd., Greenwich, Conn. 06831
Filed Aug. 2, 1993, Ser. No. 11,332
Term of patent 14 years
U.S. Cl. D6—525



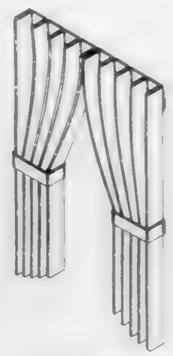
355,554
HOLDER FOR SOCKET WRENCH SOCKETS
Dennis C. Phelps, 2175 Mallul Dr., #165, Anaheim, Calif. 92802
Filed Jun. 11, 1993, Ser. No. 9,371
Term of patent 14 years
U.S. Cl. D6—567



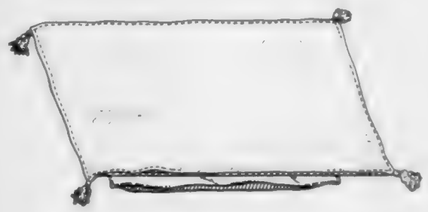
355,555
REMOTE CONTROL HOLDER
Stephen Ryan, 1012 S. Missouri, Sedalia, Mo. 65301
Filed Apr. 2, 1993, Ser. No. 6,622
Term of patent 14 years
U.S. Cl. D6—569



355,556
DRAPERY FOR A WINDOW AND WALL
Marlene B. Graham, 8033 Roll Rd., East Amherst, N.Y. 14051
Filed Oct. 18, 1993, Ser. No. 14,248
Term of patent 14 years
U.S. Cl. D6—578

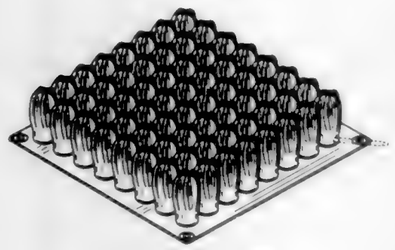


355,557
AIR-CUSHIONED CARPET
Albert W. T. Chan, Unionville, Canada, assignor to Thinkway Trading Corporation, Markham, Canada
Filed Jun. 29, 1993, Ser. No. 10,059
Term of patent 14 years
U.S. Cl. D6—592

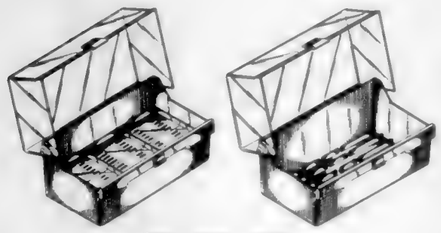


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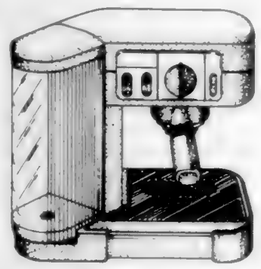
355,558
WHEELCHAIR CELLULAR CUSHION
Robert H. Graebe, 7 Persimmon Ridge Dr., Belleville, Ill. 62223
Filed Nov. 20, 1992, Ser. No. 1,699
Term of patent 14 years
U.S. Cl. D6—604



355,559
COMBINATION MULTIMEDIA STORAGE CASE AND REMOVABLE INSERTS
Malcolm L. Goekler, Laredo, Tex., assignor to Hunt Holdings, Inc., Wilmington, Del.
Filed Oct. 13, 1992, Ser. No. 269
Term of patent 14 years
U.S. Cl. D6—632



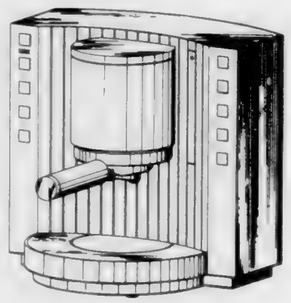
355,560
ESPRESSO MACHINE WITH ANGULAR BODY
Jürgen Assmann, Heimstrasse 14a, 4300 Essen 14, Germany
Filed Nov. 20, 1992, Ser. No. 1,673
Claims priority, application Germany, May 22, 1992, M 92 03 832.8
Term of patent 14 years
U.S. Cl. D7—309



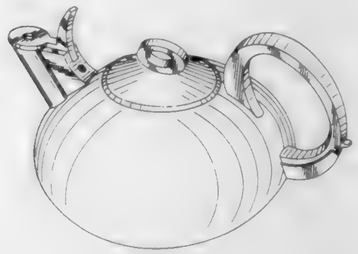
355,561
COFFEE MACHINE
Roland Ullman, Offenbach-Rumpenheim, Germany, assignor to Braun Atkiengesellschaft, Germany
Filed Mar. 2, 1993, Ser. No. 7,201
Claims priority, application Hague Agreement, Sep. 3, 1992, DMA/001892
The portion of the term of this patent subsequent to Dec. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—309



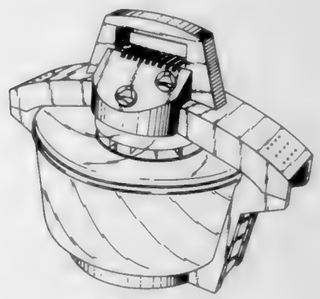
355,562
HOUSEHOLD ESPRESSO COFFEE MAKER MACHINE
Aldo DeFelip, Milano, Italy, assignor to Gaggia S.r.l., Modena, Italy
Filed Aug. 27, 1993, Ser. No. 12,258
Claims priority, application Hague Agreement, Apr. 27, 1993, DMA/002135
Term of patent 14 years
U.S. Cl. D7—309



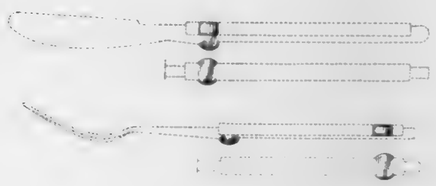
355,563
TEA KETTLE
Sam Lebowitz, New York, N.Y., assignor to Wilton Industries, Inc., Woodridge, Ill.
Filed Nov. 18, 1992, Ser. No. 1,620
Term of patent 14 years
U.S. Cl. D7—322



355,564
CONVECTION OVEN
David A. Dornbush, Prior Lake; Chad S. Erickson, Plymouth; James B. Easley; Richard C. Jackson, both of Minneapolis, and Andrew L. Von Duyke, Greenwood, all of Minn., assignors to American Harvest, Inc., Chaska, Minn.
Filed Mar. 31, 1993, Ser. No. 6,031
Term of patent 14 years
U.S. Cl. D7—350



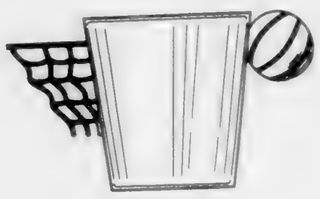
355,565
FLATWARE SUPPORT KNOB AND HANDLE FLANGES
Bruce Burdick, and Susan K. Burdick, Both of San Francisco, Calif., assignors to The Burdick Group, San Francisco, Calif.
Filed Dec. 24, 1992, Ser. No. 3,016
Term of patent 14 years
U.S. Cl. D7—401.2



355,566
COMBINED LEG SUPPORT AND ASH CATCHER FOR OUTDOOR COOKER
James C. Stephen, Arlington Heights, and Erich J. Schlosser, Barrington, both of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Filed Aug. 13, 1992, Ser. No. 930,944
Term of patent 14 years
U.S. Cl. D7—403

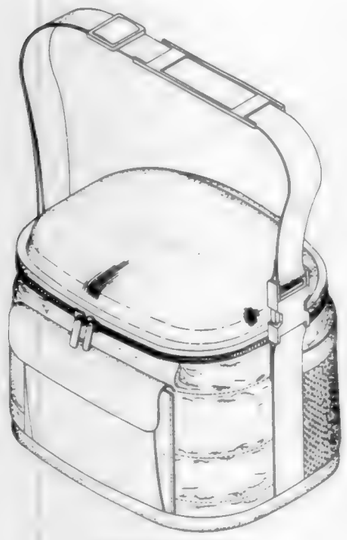


355,567
DRINKING GLASS
Kenneth D. Rigsby, 7911 Dunbarton Ave., Los Angeles, Calif. 90045
Filed Oct. 9, 1992, Ser. No. 393
Term of patent 14 years
U.S. Cl. D7—515

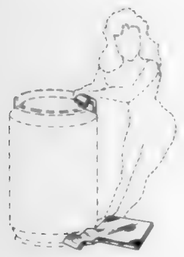


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355,568
COOLER
Donat Paulin, Ajax; Cheryl A. Crosby, Willowdale; Hugh J. McDonald, Toronto, all of Canada; Gregory S. Breiding, Columbus; Keith J. Kresge, Worthington, both of Ohio; Marty Gage, Columbus, and Robert W. Mervar, Westerville, both of Ohio, assignors to Canadian Thermos Products Inc., Scarborough, Ontario, Canada
Filed Aug. 5, 1993, Ser. No. 11,485
Claims priority, application Canada, Feb. 10, 1993, 1002931
Term of patent 14 years
U.S. Cl. D7—607



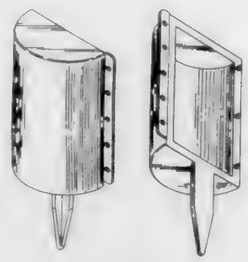
355,569
CAN HOLDER
Robert A. DeMars, Woodland Hills, Calif., assignor to Original Ideas, Inc., Calabasas, Calif.
Filed Apr. 22, 1993, Ser. No. 7,408
Term of patent 14 years
U.S. Cl. D7—622



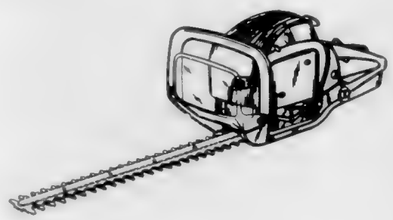
355,570
PLANTING TOOL
Will G. Munnecke, 10537 S. Longwood Dr., Chicago, Ill. 60634
Filed Sep. 27, 1993, Ser. No. 13,482
Term of patent 14 years
U.S. Cl. D8—1



355,571
GARDEN EDGING MODULE
Antonio Messina, 303 Albany Creek Road, Bridgeman Downs, Queensland, 4035, Australia
Filed Mar. 29, 1994, Ser. No. 20,549
Claims priority, application Australia, Oct. 5, 1993, 3169/93
Term of patent 14 years
U.S. Cl. D8—1



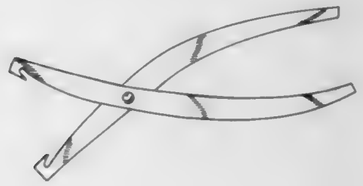
355,572
HEDGE TRIMMER HOUSING
John Griffin, Phoenix, Ariz., assignor to McCulloch Corporation, Tucson, Ariz.
Filed Jul. 22, 1993, Ser. No. 10,993
Term of patent 14 years
U.S. Cl. D8—8



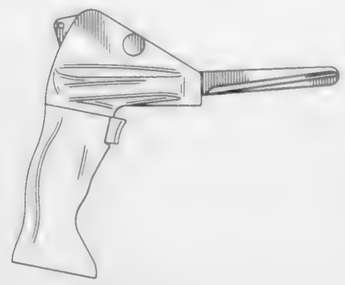
355,573
LIGHT BULB EXTRACTOR
Raymond Ortiz, 212 N. Donar Dr., Columbia, S.C. 29223
Filed Jun. 11, 1993, Ser. No. 9,322
Term of patent 14 years
U.S. Cl. D8—14



355,574
TOOL FOR HANDLING SPRING CLIPS AND PAPER CLIPS
Glen L. Fuller, 8249 Orchid Tree Way, Antelope, Calif. 95843
Filed Oct. 15, 1993, Ser. No. 14,207
Term of patent 14 years
U.S. Cl. D8—52



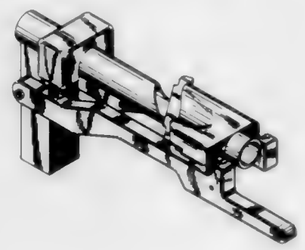
355,575
PNEUMATIC SCISSORS
Robert Brouckson, Columbia, S.C., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Nov. 13, 1992, Ser. No. 1,405
Term of patent 14 years
U.S. Cl. D8—61



355,576
COMBINATION CAULKING TUBE CAP AND APPLICATOR
David E. Groene, Centerville, Ohio, and Earl E. Hoyt, Franklin Lakes, N.J., assignors to DAP Products, Inc., Tipp City, Ohio
Filed Apr. 5, 1993, Ser. No. 6,707
Term of patent 14 years
U.S. Cl. D8—70

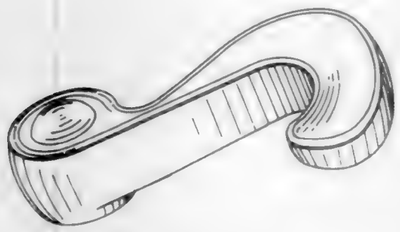


355,577
TOOL FOR REMOVING GOLF CLUB GRIPS
Donald M. Gafner, Mesquite, Tex., and Charles Dusenbury, Wilmington, N.C., assignors to Donald Michael Gafner Trust, Mesquite, Tex.
Filed Nov. 12, 1992, Ser. No. 1,359
Term of patent 14 years
U.S. Cl. D8—98

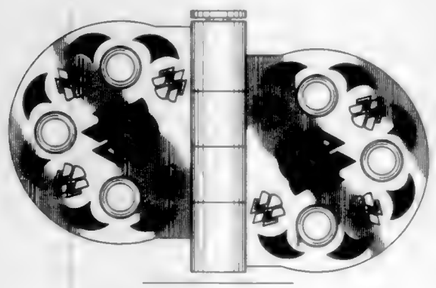


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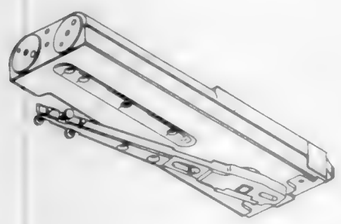
355,578
LEVER HANDLE
Darren M. Mark, Castaic, and Hollis K. Yost, Santa Monica, both of Calif., assignors to Emhart Inc., Newark, Del.
Filed Jan. 29, 1993, Ser. No. 4,252
Term of patent 14 years
U.S. Cl. D8—308



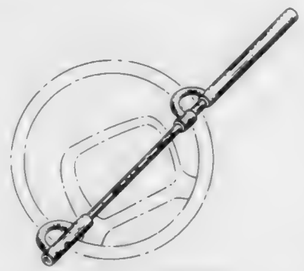
355,579
CIRCULAR HINGE
Brian J. MacDonald, 30 Marley Place, London, Ontario, Canada N6C3T2
Filed Aug. 24, 1992, Ser. No. 933,938
Term of patent 14 years
U.S. Cl. D8—329



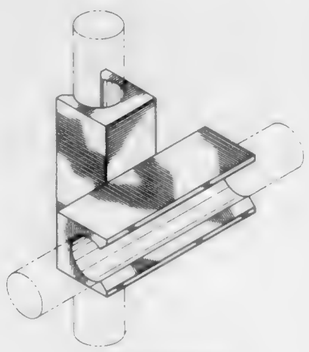
355,580
OVERHEAD DOOR CLOSURE AND TOP ARM ASSEMBLY
Mike Salena, and Michael Salena, both of 5321 Amestoy Ave., Encino, Calif. 91316
Filed Oct. 15, 1993, Ser. No. 14,199
Term of patent 14 years
U.S. Cl. D8—330



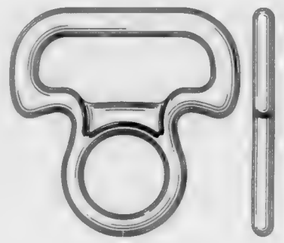
355,581
VEHICLE STEERING LOCK
Michael S. Zane, Brookline, and John D. Fiegener, Boston, both of Mass., assignors to Kryptonite Corporation, Canton, Mass.
Filed Jan. 27, 1993, Ser. No. 4,133
Term of patent 14 years
U.S. Cl. D8—333



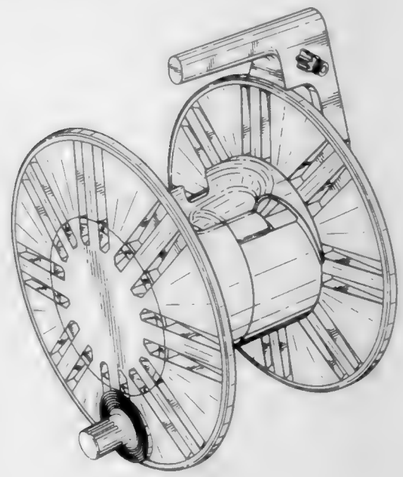
355,582
HORIZONTAL AND VERTICAL ALIGNMENT REBAR CONNECTOR
Frederick S. Sleight, 9920 59th Ave., Court East, Pulyallup, Wash. 98373
Filed Dec. 27, 1993, Ser. No. 16,764
Term of patent 14 years
U.S. Cl. D8—354



355,583
FASTENER FOR LINES
Rollin P. Beauchane, 29600 S. Dryland Rd., Canby, Oreg. 97013
Filed May 4, 1992, Ser. No. 878,024
Term of patent 14 years
U.S. Cl. D8—356



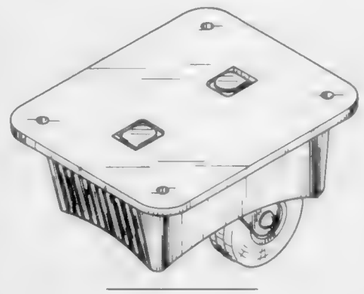
355,584
HOSE REEL
Franco Clivio, Erlenbach, Switzerland, assignor to Gardena Kress + Kastner GmbH, Germany
Filed Jan. 6, 1994, Ser. No. 17,188
Claims priority, application Germany, Jul. 6, 1993, M9305289.8
Term of patent 14 years
U.S. Cl. D8—359



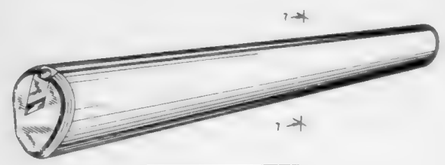
355,585
SWIVEL HOOK
Yasuharu Terada, Uozu; Tsuneo Suzuki, Kurobe; Hideyuki Matsushima, and Yoshiyuki Horita, both of Toyama, all of Japan, assignors to Yoshida Kogyo K.K. Corporation, Tokyo, Japan
Filed Oct. 22, 1993, Ser. No. 14,479
Claims priority, application Japan, Apr. 26, 1993, 5-12382
Term of patent 14 years
U.S. Cl. D8—367



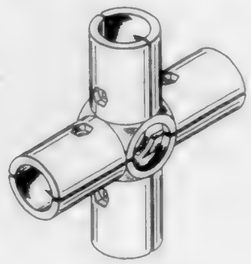
355,586
LUGGAGE WHEEL
Jin-Sheng Wang, No. 569, Ching-Kuo Rd., Ta-Chia Chem, Taichung Hsien, Taiwan, Prov. of China
Filed Dec. 2, 1993, Ser. No. 15,927
Term of patent 14 years
U.S. Cl. D8—375



355,587
AWNING HOUSING
Carlo M. Pozzi, Ruvigliana, Switzerland, assignor to Fiamma S.P.A., Cardano Al Campo, Italy
Filed Mar. 12, 1993, Ser. No. 5,790
Claims priority, application European Pat. Off., Mar. 6, 1992, 92401505
Term of patent 14 years
U.S. Cl. D8—377

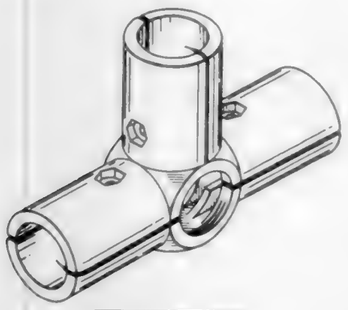


355,588
SHELF JOINT
Yuji Kuwata, Shizuoka, Japan, assignor to Yazaki Industriak Chemical Co Ltd., Shizuoka, Japan
Filed Sep. 30, 1992, Ser. No. 953,235
Term of patent 14 years
U.S. Cl. D8—382

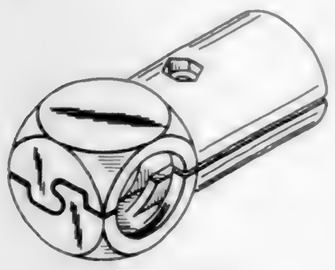


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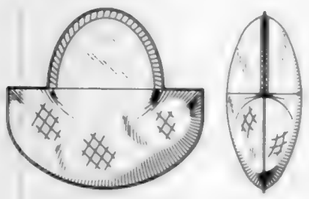
355,589
SHELF JOINT
Yuji Kuwata, Shizuoka, Japan, assignor to Yazaki Industrial Chemical Co Ltd., Shizuoka, Japan
Filed Sep. 30, 1992, Ser. No. 954,068
Term of patent 14 years
U.S. Cl. D8—382



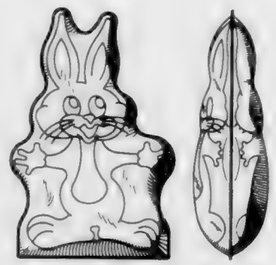
355,590
SHELF JOINT
Yuji Kuwata, Shizuoka, Japan, assignor to Yazaki Industrial Chemical Co. Ltd., Shizuoka, Japan
Filed Sep. 30, 1992, Ser. No. 954,069
Term of patent 14 years
U.S. Cl. D8—382



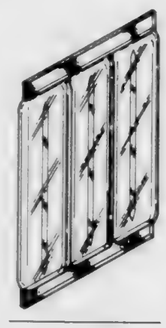
355,591
CONTAINER
Donald E. Weder, Highland; Lisa Straeter, Breese; Ken Barker, Highland, and Sherry Hall, Lebanon, all of Ill., assignors to Highland Manufacturing and Sales, Highland, Ill.
Filed Aug. 17, 1993, Ser. No. 11,876
Term of patent 14 years
U.S. Cl. D9—307



355,592
CONTAINER
Donald E. Weder, Highland; Lisa Straeter, Breese; Ken Barker, Highland, and Sherry Hall, Lebanon, all of Ill., assignors to Highland Manufacturing and Sales, Highland, Ill.
Filed Aug. 17, 1993, Ser. No. 11,875
Term of patent 14 years
U.S. Cl. D9—310



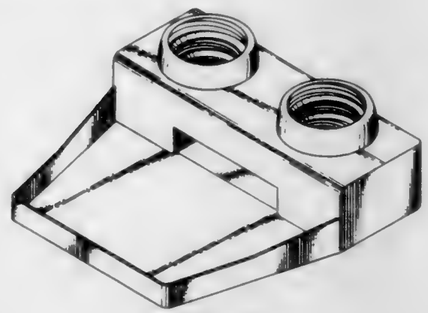
355,593
COMBINED PACKAGE FOR POPCORN AND TOOTHPICK
Lisa E. Bell, 84 Melrose, Covington, Tenn. 38019
Filed Jun. 24, 1993, Ser. No. 9,807
Term of patent 14 years
U.S. Cl. D9—305



355,594
CONTAINER
Donald E. Weder, Highland; Lisa Straeter, Breese; Ken Barker, Highland, and Sherry Hall, Lebanon, all of Ill., assignors to Highland Manufacturing and Sales, Highland, Ill.
Filed Aug. 17, 1993, Ser. No. 11,888
Term of patent 14 years
U.S. Cl. D9—329



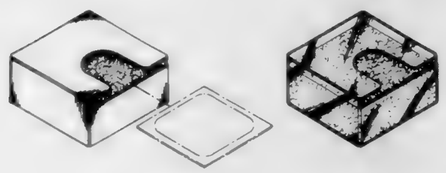
355,595
PILL DISPENSER FOR USE WITH PILL CONTAINERS
Todd E. Moudy, and Sandra K. Moudy, both of 407 W. Wabash Apt 2/P.O.B. 905, Frankfort, Ind. 46041
Filed Jul. 9, 1993, Ser. No. 10,534
Term of patent 14 years
U.S. Cl. D9—339



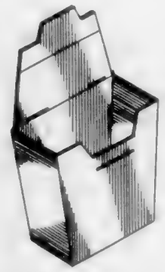
355,596
CONTAINER
Donald E. Weder, Highland; Lisa Straeter, Breese; Ken Barker, Highland, and Sherry Hall, Lebanon, all of Ill., assignors to Highland Manufacturing and Sales, Highland, Ill.
Filed Aug. 17, 1993, Ser. No. 11,895
Term of patent 14 years
U.S. Cl. D9—329



355,597
FOAM-SPRING CONDOM DISPENSING PACKAGE
Patricia K. McIntire, 2308 Mallard La., Apt. 6, Dayton, Ohio 45431; Christine M. Leopard, 1326 Colwick Dr., Dayton, Ohio 45420, and Michael Aveyard, 4978 Northcutt Pl., Dayton, Ohio 45414
Filed May 17, 1993, Ser. No. 8,388
Term of patent 14 years
U.S. Cl. D9—339



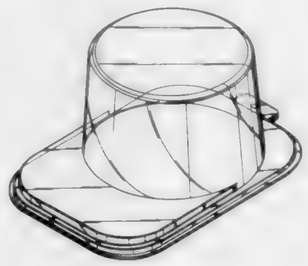
355,598
NON-SPILL FOOD CONTAINER
Greg Aronhalt, 38429 W. 263rd St., Wellsville, Kans. 66092
Filed Aug. 30, 1993, Ser. No. 12,284
Term of patent 14 years
U.S. Cl. D9—415



355,599
MAXI CADDY
Jayne F. Tkaczow, 7062 N. Bergen Rd., Byron, N.Y. 14422
Filed May 7, 1993, Ser. No. 7,971
Term of patent 14 years
U.S. Cl. D9—432

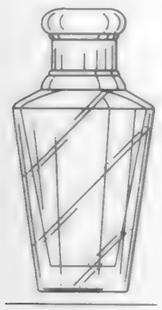


355,600
DISPLAY PACKAGE FOR CAP
Gale W. Ford, 1109 Wembley Dr., Hermitage, Tenn. 37076
Filed Dec. 8, 1993, Ser. No. 16,139
Term of patent 14 years
U.S. Cl. D9—415

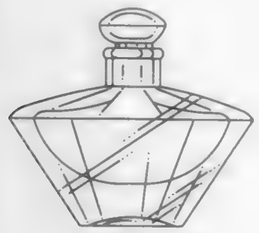


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355,601
COMBINED COLOGNE BOTTLE AND CAP
Carol L. Buettner, Westport, Conn., and Ken Hirst, New York, N.Y., assignors to Aramis, Inc., New York, N.Y.
Filed Dec. 15, 1992, Ser. No. 2,553
Term of patent 14 years
U.S. Cl. D9—503



355,602
COMBINED PERFUME BOTTLE AND STOPPER
Carol L. Buettner, Westport, Conn., and Ken Hirst, New York, N.Y., assignors to Aramis, Inc., New York, N.Y.
Filed Dec. 15, 1992, Ser. No. 2,531
Term of patent 14 years
U.S. Cl. D9—505



355,603
CONTAINER
Morris Braun, Chicago, Ill., assignor to W. Braun Company, Chicago, Ill.
Filed Nov. 17, 1993, Ser. No. 15,461
Term of patent 14 years
U.S. Cl. D9—521



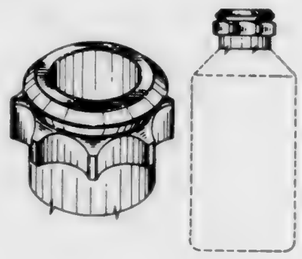
355,604
COMBINED BOTTLE AND STOPPER
Thierry De Baschmakoff, Paris, France, assignor to Partecipazioni Bulgari S.p.A., Rome, Italy
Filed Feb. 1, 1994, Ser. No. 18,186
Claims priority, application Italy, Aug. 5, 1993, RM930/000175
Term of patent 14 years
U.S. Cl. D9—521



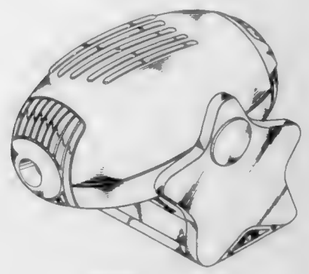
355,605
COMBINED JAR AND CLOSURE
Aoshi Kudo, Tokyo, Japan, and Marc Newson, Paris, France, assignors to Shiseido Company, Ltd., Tokyo, Japan
Filed Feb. 26, 1993, Ser. No. 5,197
Claims priority, application Japan, Sep. 9, 1992, 4-426452
Term of patent 14 years
U.S. Cl. D9—522



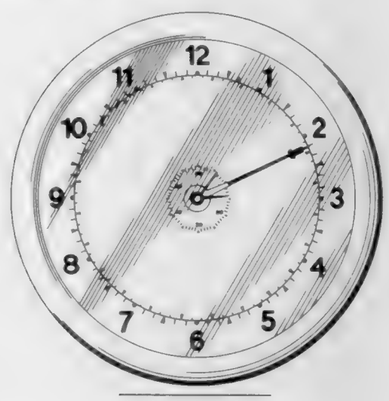
355,606
NECK OF A GLASS VIAL
David A. Manera, Vineland, N.J., assignor to Comar, Inc., Vineland, N.J.
Filed Aug. 10, 1993, Ser. No. 11,583
Term of patent 14 years
U.S. Cl. D9—546



355,607
PROJECTION CLOCK
Chih H. Pan, P.O. Box 82-144, Taipei, Taiwan, Prov. of China
Filed Oct. 13, 1992, Ser. No. 298
Term of patent 14 years
U.S. Cl. D10—1



355,608
TIMEPIECE
Eduardo M. Resende, 14062 SW. 91st Ter., Miami, Fla. 33186
Filed Jun. 14, 1993, Ser. No. 9,469
Term of patent 14 years
U.S. Cl. D10—22



355,609
ELECTRICAL METER HOUSING
Peter B. Lane, Thiensville; Edward K. Apfelbach, Shorewood, and Kristina M. Bludau, Brown Deer, all of Wis., assignors to GB Electrical, Milwaukee, Wis.
Filed Sep. 30, 1993, Ser. No. 13,736
Term of patent 14 years
U.S. Cl. D10—78



355,610
WRIST WATCH WITH ELECTRONIC SPHYGMOMANOMETER
Syoichi Sugita, Wako, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 8, 1993, Ser. No. 10,464
Term of patent 14 years
U.S. Cl. D10—31



355,611
COMBINED WRIST WATCH, CALCULATOR AND TELEPHONE INDEX
Shigeru Hanagata, Kawasaki, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Apr. 19, 1993, Ser. No. 7,337
Term of patent 14 years
U.S. Cl. D10—31



355,612
WRIST WATCH
Shuji Nakamura, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Apr. 19, 1993, Ser. No. 7,336
Claims priority, application Japan, Nov. 27, 1992, 4-34697
Term of patent 14 years
U.S. Cl. D10—38



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355,613
WRIST WATCH
Naomi Takani, Tachikawa, and Shigeru Hanagata, Kawasaki, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1992, Ser. No. 2,906
Term of patent 14 years
U.S. Cl. D10—39



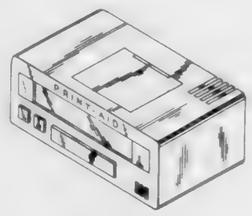
355,614
WRIST WATCH
Tetsunori Sato, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 2,558
Term of patent 14 years
U.S. Cl. D10—39



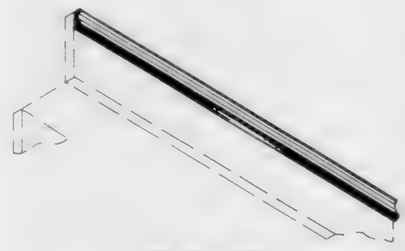
355,615
WRIST WATCH
Takashi Atagi, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1992, Ser. No. 2,899
Term of patent 14 years
U.S. Cl. D10—39



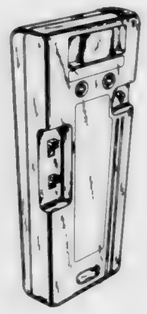
355,616
COMBINED RADAR DETECTOR AND PRINTER FOR MEASURING VEHICLE SPEED
Eugene S. Gregg, III, 20 Sally Port Rd., Hilton Head Island, S.C. 29928, and James A. Mittler, P.O. Box 132, Bluffton, S.C. 29910
Filed Feb. 25, 1994, Ser. No. 19,225
Term of patent 14 years
U.S. Cl. D10—46



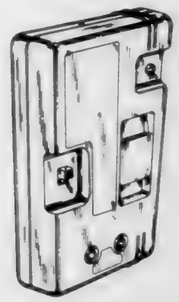
355,617
BULLNOSE TEMPLATE
Robert L. Clark, 2230 W. Ontario St., Philadephia, Pa. 19140
Continuation-in-part of Ser. No. 857,791, Mar. 18, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 15,092
Term of patent 14 years
U.S. Cl. D10—64



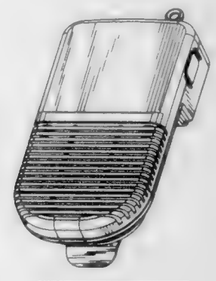
355,618
CIRCUIT TRACER TRANSMITTER
Joseph P. Pecukonis, Englewood, and Austin J. Wright, Jr., Aurora, both of Colo., assignors to Amprobe Instrument, a division of Core Industries, Lynbrook, N.Y.
Filed Oct. 12, 1993, Ser. No. 14,083
Term of patent 14 years
U.S. Cl. D10—78



355,619
CIRCUIT TRACER SIGNAL GENERATOR
Joseph P. Pecukonis, Englewood, and Austin J. Wright, Jr., Aurora, both of Colo., assignors to Amprobe Instrument, a division of Core Industries, Lynbrook, N.Y.
Filed Oct. 12, 1993, Ser. No. 14,082
Term of patent 14 years
U.S. Cl. D10—78



355,620
PERSONAL SECURITY ALARM
Joseph Drimer, Owings Mills, Md., assignor to Global Protection, Inc., Owings Mills, Md.
Filed Feb. 14, 1994, Ser. No. 18,651
Term of patent 14 years
U.S. Cl. D10—106



355,621
BELL
Chung-Shyan Huang, No. 1-1, Chang Mar Street, Hsiu Shui Hsiang, Chang Hua Hsien, Taiwan, Prov. of China
Filed Jun. 9, 1994, Ser. No. 24,146
Term of patent 14 years
U.S. Cl. D10—116



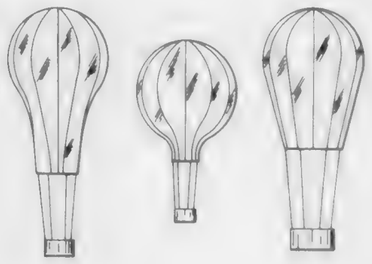
355,622
BELL
Chung-Shyan Huang, No. 1-1, Chang Mar Street, Hsiu Shui Hsiang, Chang Hua Hsien, Taiwan, Prov. of China
Filed May 27, 1994, Ser. No. 23,641
Term of patent 14 years
U.S. Cl. D10—116



355,623
FINGER RING
Carlo Pagani, Grumello Del Monte, Italy, assignor to C.T.P. S.p.A., Italy
Continuation of Ser. No. 814,276, Dec. 26, 1991, abandoned. This application Oct. 4, 1993, Ser. No. 13,839
Claims priority, application Italy, Jun. 26, 1991, MI910000492
Term of patent 14 years
U.S. Cl. D11—26



355,624
HOT AIR BALLOON ORNAMENT
Michael H. Wiegand, 106-1/2 E. First Street, Salida, Colo. 81201
Filed Jul. 1, 1991, Ser. No. 724,329
Term of patent 14 years
U.S. Cl. D11—163



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355,625
ORNAMENTAL TREE FEEDER
Scott M. Blahowski, 656 SW. 8th St., Forest Lake, Minn. 55025
Filed Oct. 30, 1992, Ser. No. 1,010
Term of patent 14 years
U.S. Cl. D8—1



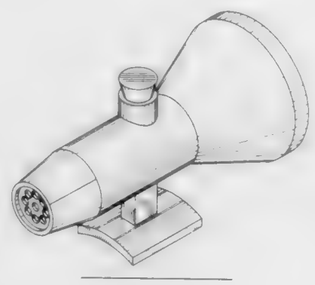
355,626
ORNAMENT DISPLAY BASE
Jack Hou, Taipei, Taiwan, Prov. of China, assignor to Giftec, Ltd., Chantilly, Va.
Filed Feb. 7, 1994, Ser. No. 18,446
Term of patent 14 years
U.S. Cl. D11—164



355,627
BASE FOR ORNAMENT DISPLAY
Jack Hou, Taipei, Taiwan, Prov. of China, assignor to Giftec, Ltd., Chantilly, Va.
Filed Feb. 7, 1994, Ser. No. 18,437
Term of patent 14 years
U.S. Cl. D11—164



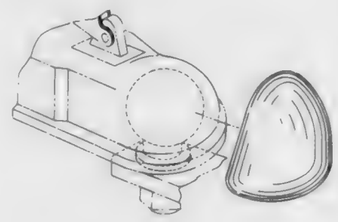
355,628
BUBBLE FOGGER FOR BICYCLES
James Parks, 615 W. Taylor St., Kokomo, Ind. 46901
Filed Dec. 2, 1993, Ser. No. 15,922
Term of patent 14 years
U.S. Cl. D12—114



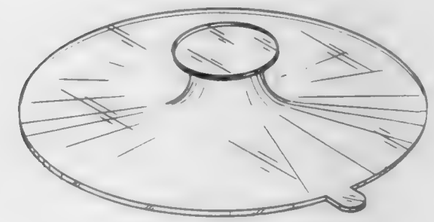
355,629
BABY WALKING AID
Sharon L. Kulesza, P.O. Box 286 Berm La., Upper Black Eddy, Pa. 18972
Filed Jul. 9, 1993, Ser. No. 10,485
Term of patent 14 years
U.S. Cl. D12—130



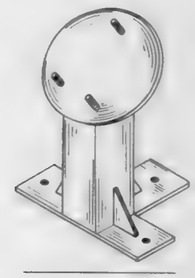
355,630
BUMPER PROTECTING TRAILER HITCH GUARD
David K. Liland, 301 E. Front St., Unit 9, New Bern, N.C. 28560, and Robert L. Liland, 406 Tar Landing, New Bern, N.C. 28562
Filed Nov. 26, 1993, Ser. No. 15,735
Term of patent 14 years
U.S. Cl. D12—162



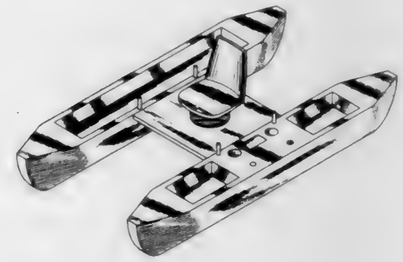
355,631
WINDSHIELD MOUNTED SUN BLOCKER
Clarence M. Lederhos, 7777 Alkire, Arvada, Colo. 80005, and Lela M. Neidig, 3250 Benton St. #106, Denver, Colo. 80212
Filed Nov. 15, 1993, Ser. No. 15,322
Term of patent 14 years
U.S. Cl. D12—191



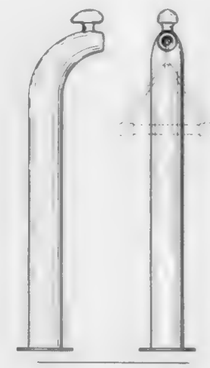
355,632
TIRE RACK
Robert Padgett, 4424 S. Bluff Center Rd., Shelton, Nebr. 68876
Filed Aug. 23, 1993, Ser. No. 12,215
Term of patent 14 years
U.S. Cl. D12—202



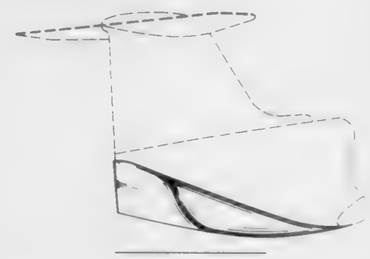
355,633
PERSONAL PONTOON
James M. Whitney, R.R. 1 Box 110, Graettinger, Iowa 51342
Filed Dec. 30, 1993, Ser. No. 16,948
Term of patent 14 years
U.S. Cl. D12—316



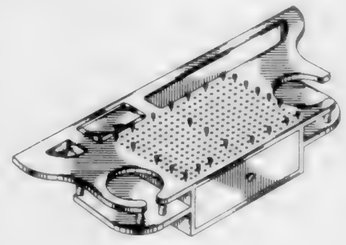
355,634
SKI BOAT PYLON
Robert Ritzenthaler, 1181 Kempton Park, McKinney, Tex. 75069
Filed Nov. 24, 1993, Ser. No. 15,679
Term of patent 14 years
U.S. Cl. D12—317



355,635
AIRCRAFT AFT FUSELAGE STOWAGE LOCKER
James D. Raisbeck, 7536 Seward Park Ave. South, Seattle, Wash. 98118
Filed Mar. 3, 1993, Ser. No. 5,438
Term of patent 14 years
U.S. Cl. D12—345

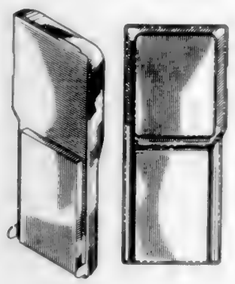


355,636
COMBINED PEGBOARD AND CONSOLE FOR A VAN
Betty J. Dickerson, and Darrell F. Dickerson, both of 740 15th St. NW., Naples, Fla. 33964
Filed Nov. 22, 1993, Ser. No. 15,615
Term of patent 14 years
U.S. Cl. D12—419

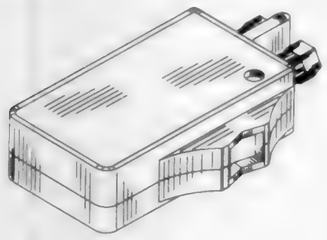


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355,637
BATTERY PACK FOR A PORTABLE TWO-WAY RADIO COMMUNICATIONS DEVICE
James L. Tracy, Margate, Fla., and Phillip E. Lindeman, Roselle, Ill., assignors to Motorola, Schaumburg, Ill.
Filed Aug. 31, 1992, Ser. No. 936,538
Term of patent 14 years
U.S. Cl. D13—103



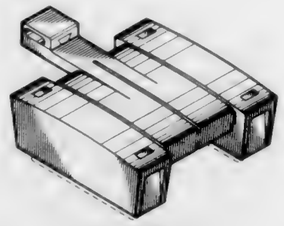
355,638
PORTABLE CAPACITIVE DISCHARGE BLASTING UNIT
Ronald L. Hodge, 1262 Providence Way, Lawrenceville, Ga. 30245; John P. Nodine, 1395 Hearst Ave., NE., Atlanta, Ga. 30319, and Wayne Anderson, Jr., 790 Winnbrook Dr., Dacula, Ga. 30211
Filed May 3, 1993, Ser. No. 7,782
Term of patent 13 years
U.S. Cl. D13—125



355,639
CABLE CONNECTOR
Yu-Feng Cheng, No. 7, Fu Hsing St., Tu Cheng Hsiang, Taipei Hsien, Taiwan, Prov. of China
Filed Oct. 1, 1993, Ser. No. 13,777
Term of patent 14 years
U.S. Cl. D13—133



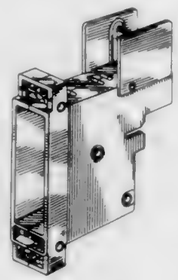
355,640
SCSI CONNECTOR
Thomas M. Shoda, Foster City, Calif., and Naufel C. Naufel, Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 18, 1993, Ser. No. 14,287
Term of patent 14 years
U.S. Cl. D13—133



355,641
CABLE CONNECTOR
William J. Down, Phoenix, Ariz., assignor to Gilbert Engineering Company, Inc., Glendale, Ariz.
Filed Jul. 8, 1991, Ser. No. 726,512
Term of patent 14 years
U.S. Cl. D13—151



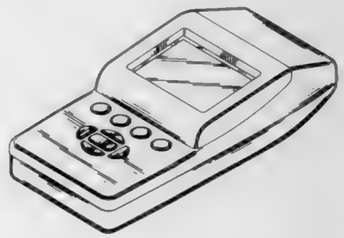
355,642
FUSED ELECTRICAL POWER DISCONNECT
David R. Marach, Marengo; Conrad Alfaro, Chicago, and Lawrence Happ, Mundelein, all of Ill., assignors to Cooper Industries, Inc., Houston, Tex.
Division of Ser. No. 787,975, Nov. 5, 1991. This application Dec. 13, 1993, Ser. No. 16,393
Term of patent 14 years
U.S. Cl. D13—160



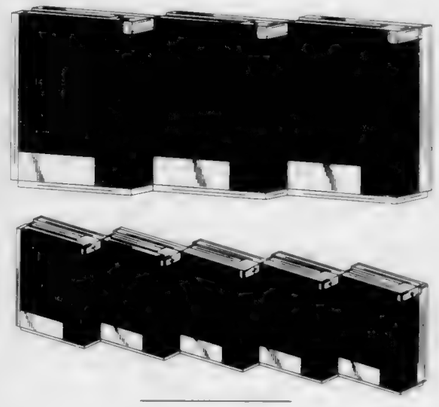
355,643
SWITCH EXTENSION
David A. Warnock, 6690 Holland Rd., Algonac, Mich. 48001, and Jeff Mooney, 4315 E. Allen Rd., Howell, Mich. 48843
Filed Sep. 10, 1993, Ser. No. 12,739
Term of patent 14 years
U.S. Cl. D13—173



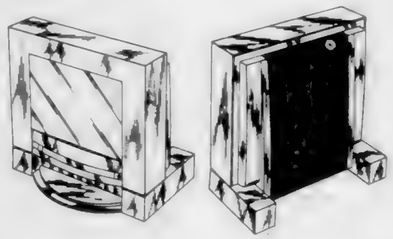
355,644
ELECTRONIC DEVICE ENCLOSURE
John J. Risko, Stayton, Oreg., assignor to II Morrow Inc., Salem, Oreg.
Filed Jul. 22, 1993, Ser. No. 10,996
Term of patent 14 years
U.S. Cl. D14—100



355,645
CABINET FOR ELECTRONIC DATA PROCESSING EQUIPMENT
W. Daniel Hillis, Cambridge; Donald E. Moodie, Marblehead, both of Mass.; Marc Harrison, Portsmouth, R.I., and Maya Lin, New York, N.Y., assignors to Thinking Machines Corporation, Cambridge, Mass.
Filed Oct. 29, 1991, Ser. No. 784,817
Term of patent 14 years
U.S. Cl. D14—102

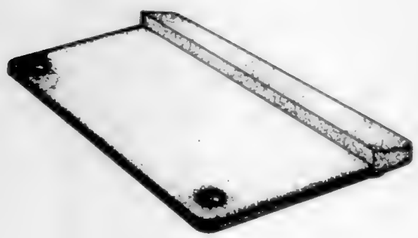


355,646
MONITOR FOR COMPUTER
Hiroshi Yasuno, Osaka; Kazutoshi Masunari, Kanagawa, and Hiroyuki Maeno, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 18, 1993, Ser. No. 11,942
Claims priority, application Japan, Feb. 24, 1993, 5-5418
Term of patent 14 years
U.S. Cl. D14—113

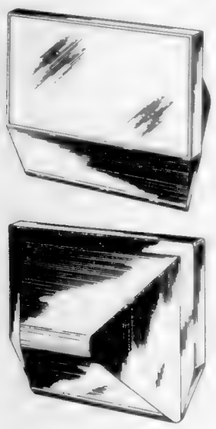


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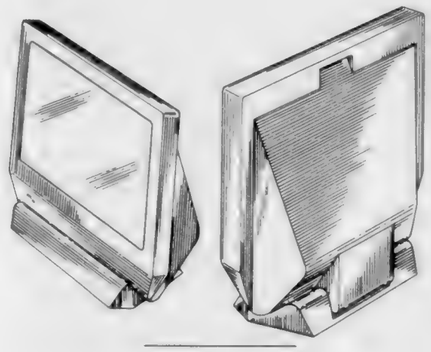
355,647
KEYBOARD TRAY
Gary E. Gresko, P.O. Box 284, U.S. Hwy. 55, Oriental, N.C. 28571
Filed Feb. 8, 1993, Ser. No. 4,547
Term of patent 14 years
U.S. Cl. D14—114



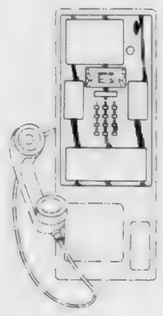
355,648
REAR PROJECTION MONITOR
Ronald Gale, Sharon; Richard McCullough, Wrentham, and Jack P. Salerno, Waban, all of Mass., assignors to Kopin Corporation, Taunton, Mass.
Filed Feb. 10, 1993, Ser. No. 4,638
Term of patent 14 years
U.S. Cl. D14—128



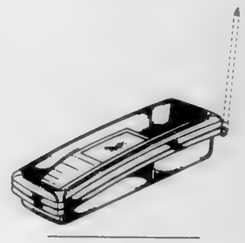
355,649
BASE MOUNTED REAR PROJECTION MONITOR
Ronald Gale, Sharon; Richard McClullough, and Jack P. Salerno, Waban, all of Mass., assignors to Kopin Corporation, Taunton, Mass.
Filed Feb. 10, 1993, Ser. No. 4,636
Term of patent 14 years
U.S. Cl. D14—128



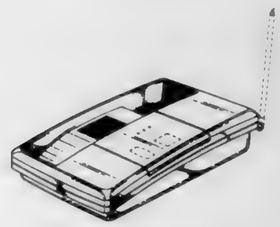
355,650
FACE PANEL FOR A COIN TELEPHONE BOX
James R. DeArkland, 8119 Buena Fortuna, Carpinteria, Calif. 93013
Filed Jun. 21, 1993, Ser. No. 9,713
The portion of the term of this patent subsequent to Jul. 27, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—146



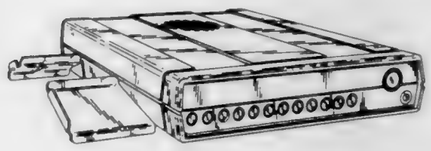
355,651
TELEPHONE STAND
Dennis C. S. Lee; Tommy C. Francis; Sompoppol Jampathom, all of Singapore, Singapore; Paul A. Scheib, New York, N.Y.; Desmond T. C. Hoe, Singapore, Singapore, and Michael P. Zambelli, Livingston, N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Aug. 11, 1993, Ser. No. 11,610
Term of patent 14 years
U.S. Cl. D14—149



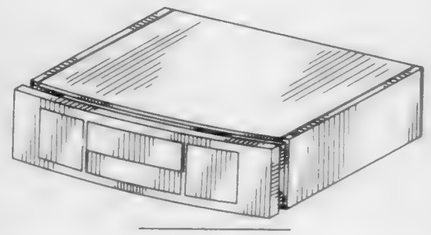
355,652
TELEPHONE STAND
Dennis C. S. Lee; Tommy C. Francis; Sompoppol Jampathom, all of Singapore, Singapore; Paul A. Scheib, New York, N.Y.; Desmond T. C. Hoe, Singapore, Singapore, and Michael P. Zambelli, Livingston, N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Aug. 11, 1993, Ser. No. 11,634
Term of patent 14 years
U.S. Cl. D14—149



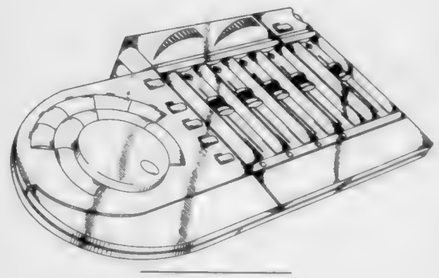
355,653
COMBINED TELEPHONE AND MODEM CASE FOR A COMPUTER-BASED MULTIFUNCTION COMMUNICATIONS SYSTEM
Dean Brandt, Minneapolis, and Greg Johnson, Fridley, both of Minn., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.
Filed Dec. 9, 1992, Ser. No. 2,439
Term of patent 14 years
U.S. Cl. D14—149



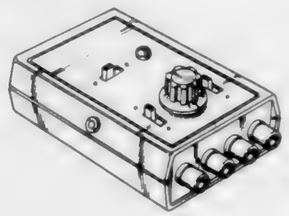
355,654
HOUSING FOR A DIGITAL-TO-ANALOG CONVERTER-PREAMPLIFIER
Michael A. Koulopoulos, Andover, Mass., assignor to Vimak Corporation, Woburn, Mass.
Continuation-in-part of Ser. No. 713,442, May 30, 1991. This application Jan. 6, 1992, Ser. No. 820,941
Term of patent 14 years
U.S. Cl. D14—188



355,655
CONTROL PANEL FOR A VIDEO EDITING SYSTEM
Jonathan Burke, Corte Madera, Calif., assignor to ImMIX, a division of Carlton Int'l. Corp., Grass Valley, Calif.
Filed Jan. 27, 1993, Ser. No. 4,122
Term of patent 14 years
U.S. Cl. D14—217

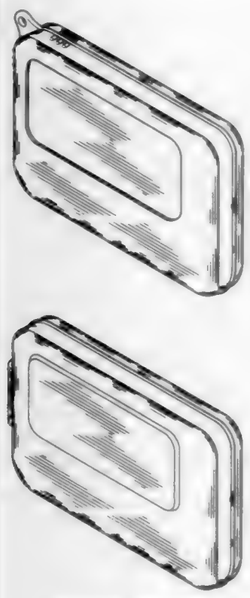


355,656
AUDIO MIXER
R. Scott Coppersmith, Shelby Township, Shelby County, Mich., assignor to The Enco Group, Bloomfield Hills, Mich.
Filed Jul. 1, 1993, Ser. No. 10,186
Term of patent 14 years
U.S. Cl. D14—217

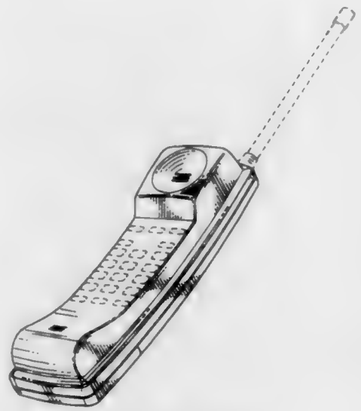


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355,657
COVER FOR A SELECTIVE CALL RECEIVER
William J. Scheid, Coral Springs, and Jeffrey S. King, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 21, 1992, Ser. No. 948,982
The portion of the term of this patent subsequent to Nov. 15, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—218



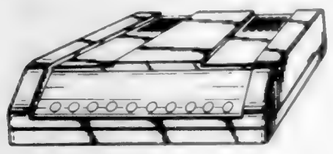
355,659
TELEPHONE HANDSET
Dennis C. S. Lee; Tommy C. Francis; Sompoppol Jampathom, all of Singapore, Singapore; Paul A. Scheib, New York, N.Y.; Desmond T. C. Hoe, Singapore, Singapore, and Michael P. Zambelli, Livingston, N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Aug. 11, 1993, Ser. No. 11,608
Term of patent 14 years
U.S. Cl. D14—248



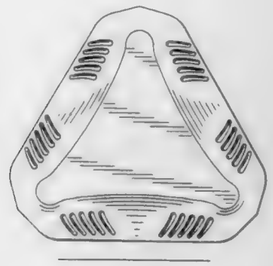
355,660
SUPPORT CONSOLE FOR VIRTUAL REALITY ENVIRONMENTS
Richard Holmes, Nuneaton, United Kingdom, assignor to W Industries Limited, Leicester, United Kingdom
Filed May 13, 1992, Ser. No. 882,633
Claims priority, application United Kingdom, Dec. 20, 1991, 2019734
Term of patent 14 years
U.S. Cl. D21—240



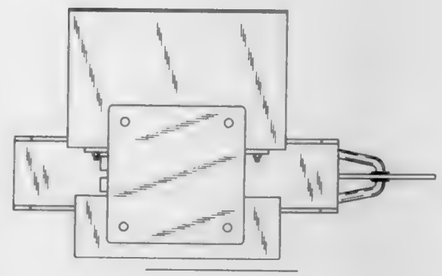
355,658
MODEM APPARATUS
Dean M. Brandt, Minneapolis; Thomas E. Heimerman, Shoreview, and Greg R. Johnson, New Brighton, all of Minn., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.
Filed Feb. 14, 1994, Ser. No. 18,694
Term of patent 14 years
U.S. Cl. D14—242



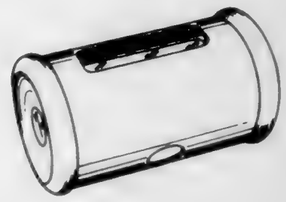
355,661
MILLING CUTTER INSERT
Ingemar Hessman, and Stefan Roman, both of Sandviken, Sweden, assignors to Sandvik AB, Sandviken, Sweden
Filed Nov. 10, 1993, Ser. No. 15,197
Claims priority, application Sweden, May 11, 1993, 931154
Term of patent 14 years
U.S. Cl. D15—139



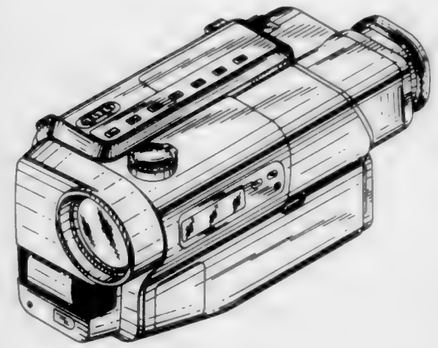
355,662
TIRE REPAIR WORK STATION
Jim C. Crump, Jr., 217 Leandro St., Anaheim Hills, Calif. 92807
Filed Feb. 7, 1994, Ser. No. 18,514
Term of patent 14 years
U.S. Cl. D15—140



355,663
OPTICAL VIEWER
Lawrence E. Van Cort, Conway, Mass., assignor to Van Court Instruments, Inc., Northampton, Mass.
Filed Apr. 16, 1993, Ser. No. 7,265
Term of patent 14 years
U.S. Cl. D16—130



355,664
VIDEO CAMERA WITH RECORDER
Tetsu Katsuoka, Tokyo, Japan, assignor to Sony IP Corporation, Tokyo, Japan
Filed Dec. 22, 1993, Ser. No. 16,694
Claims priority, application Japan, Jul. 28, 1993, 5-23162
Term of patent 14 years
U.S. Cl. D16—202

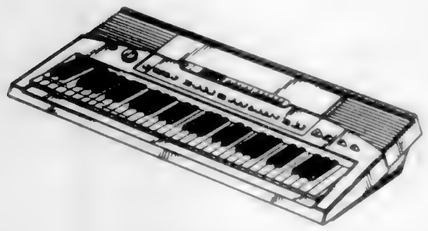


355,665
CAMERA SUPPORT FOR ATTACHMENT TO A MICROSCOPE
Shoichi Omi, Tokyo, Japan, assignor to Lunax Company Limited, Ibaraki, Japan
Filed Dec. 7, 1993, Ser. No. 16,108
Claims priority, application Japan, Jun. 7, 1993, 5-16943
Term of patent 14 years
U.S. Cl. D16—242



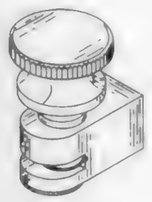
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355,666
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Yukinori Mikage, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Jun. 23, 1993, Ser. No. 9,879
Claims priority, application Japan, Dec. 28, 1992, 4-39068
Term of patent 14 years
U.S. Cl. D17—1

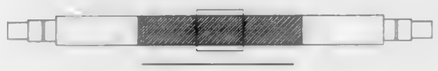


355,667
GUITAR PICK HOLDER
Mark W. Burger, 5352 Elgin La., Chesterton, Ind. 46304
Filed Jul. 29, 1993, Ser. No. 11,205
Term of patent 14 years
U.S. Cl. D17—20

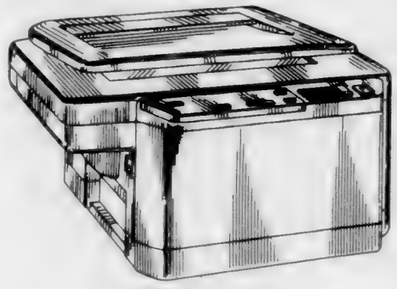
355,668
CAPO FOR THE FIVE STRING BANJO
Gomer M. Reagan, 404 N. Mariposa, Burbank, Calif. 91506
Filed Oct. 4, 1993, Ser. No. 13,800
Term of patent 14 years
U.S. Cl. D17—21



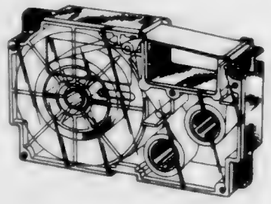
355,669
GRAVURE ROLL
Takashi Iwasaki, and Yoshinari Yasui, both of Ebina, Japan, assignors to Yasui Seiki Co., Ltd., Tokyo, Japan
Filed Jun. 30, 1988, Ser. No. 214,149
Claims priority, application Japan, Jan. 5, 1988, 63-8
Term of patent 14 years
U.S. Cl. D18—18



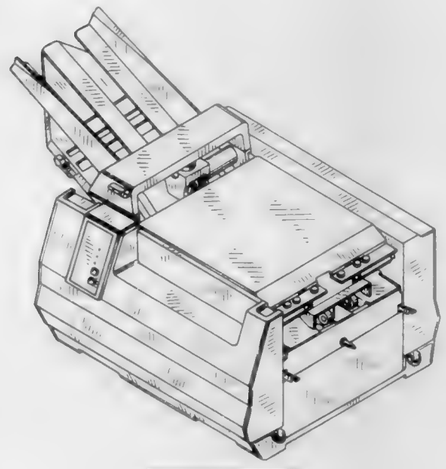
355,670
ELECTRONIC COPYING MACHINE
Takaharu Ando, Ryugasaki, and Hiroshi Onoda, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 25, 1993, Ser. No. 5,478
Claims priority, application Japan, Aug. 26, 1992, 4-25020
Term of patent 14 years
U.S. Cl. D18—39



355,671
TAPE CARTRIDGE FOR ELECTRONIC LABEL PRINTER
Yuichi Onumata, Hachioji, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 13, 1992, Ser. No. 912,833
Term of patent 14 years
U.S. Cl. D18—56



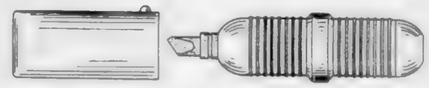
355,672
SHEET FEEDER MODULE
Herbert E. Meister, Jr., Naugatuck, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Aug. 27, 1993, Ser. No. 12,303
Term of patent 14 years
U.S. Cl. D18—99



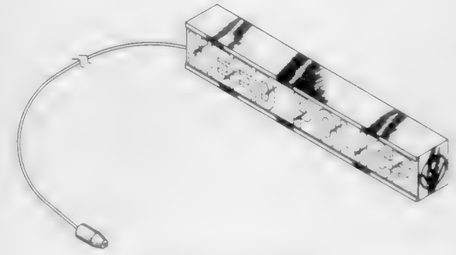
355,673
WRITING INSTRUMENT
Osamu Takahashi, Kawagoe, Japan, assignor to Kotobuki & Co., Ltd., Kyoto, Japan
Filed Sep. 21, 1993, Ser. No. 13,218
Term of patent 14 years
U.S. Cl. D19—48



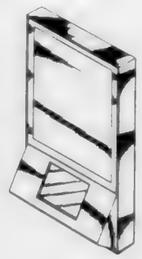
355,674
REFILLABLE INKMARKER
Gerhard Moeck, Kirchenehrenbach, Germany, assignor to Schwan-Stabilo Schwanhaeusser GmbH & Co., Nuremberg, Germany
Filed Nov. 29, 1993, Ser. No. 15,789
Term of patent 14 years
U.S. Cl. D19—48



355,675
ILLUMINABLE EMERGENCY WARNING SIGN FOR AUTOMOBILES
David Craig; Sarah Craig, both of #6 Pendi-Wood Rd., McLoud, Okla. 74851; James Wright, and Betty Wright, both of 5029 Kindling La., Oklahoma City, Okla. 73135
Filed Jan. 10, 1994, Ser. No. 17,313
Term of patent 14 years
U.S. Cl. D20—10

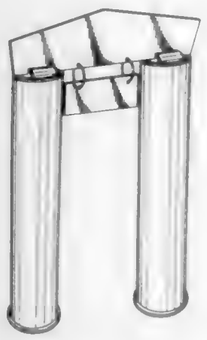


355,676
COMBINED COMPUTERIZED INFORMATION SYSTEM AND POSTER DISPLAY
Donald H. Wilson, Toronto, Canada, assignor to King Products Limited, Mississauga, Canada
Filed Jan. 18, 1994, Ser. No. 17,624
Claims priority, application Canada, Jul. 20, 1993, 20-07-93-4
Term of patent 14 years
U.S. Cl. D20—10



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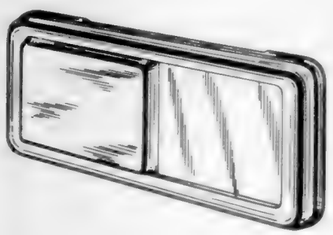
355,677
ADVERTISING DISPLAY
Irene Taylor, 283 Elm Ave., San Bruno, Calif. 94066
Filed Mar. 9, 1994, Ser. No. 19,819
Term of patent 14 years
U.S. Cl. D20—10



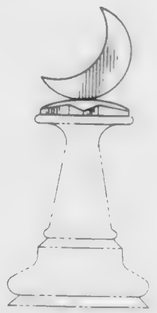
355,678
HEADLIGHT REMINDER INDICATING TAG
Muriel E. Mattox, 436 Church St., West Columbia, S.C. 29172
Filed Nov. 8, 1993, Ser. No. 15,089
Term of patent 14 years
U.S. Cl. D20—22



355,679
DOOR SIGN FOR INDICATING OCCUPANCY
Richard Costa, Piscataway, N.J., assignor to PharmaDesign, Inc., Warren, N.J.
Filed Jan. 11, 1993, Ser. No. 3,590
Term of patent 14 years
U.S. Cl. D20—42



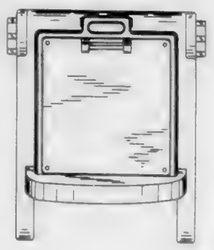
355,680
CHESS PIECE HEAD
Michael Escobar, and Daniel C. MacDonald, both of Toronto, Canada, assignors to Machar Games Inc., Toronto, Canada
Filed Oct. 22, 1993, Ser. No. 14,472
Claims priority, application Canada, Apr. 28, 1993, 28-04-93-3
Term of patent 14 years
U.S. Cl. D21—52



355,681
COMBINED TOY ORIFICED BEAM AND BLOCK
Kenneth P. Glynn, Raritan Township, Hunterdon County, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.
Filed Mar. 22, 1994, Ser. No. 20,228
Term of patent 14 years
U.S. Cl. D21—108



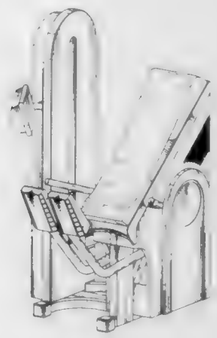
355,682
TOY EASEL
Jay M. Bro, Plano, Tex., and James S. Panzarella, N. Kingstown, R.I., assignors to Today's Kids, Inc., Booneville, Ark.
Filed Feb. 5, 1993, Ser. No. 4,465
Term of patent 14 years
U.S. Cl. D21—109



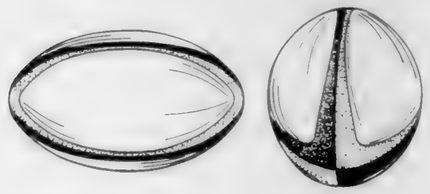
355,683
COMPONENT FOR A FIGURE TOY
Rodger Johnson, Rolling Hills Estates, Calif., assignor to Hung Hing Plastic Factory Limited, Kowloon, Hong Kong
Filed Nov. 15, 1993, Ser. No. 15,409
Term of patent 14 years
U.S. Cl. D21—168



355,684
EXERCISE MACHINE
R. Lee Rawls, Woodinville; James A. Duncan, Renton; Cynthia M. K. Warehime, Bothell, and John Ohrt, Redmond, all of Wash., assignors to Stairmaster Sports/Medical Products, Inc., Kirkland, Wash.
Filed Oct. 1, 1993, Ser. No. 13,798
Term of patent 14 years
U.S. Cl. D21—195



355,685
RUGBY FOOTBALL
David Ross, Rugby, United Kingdom, assignor to James Gilbert (Rugby Footballs) Ltd., Rugby, United Kingdom
Filed Jul. 9, 1993, Ser. No. 10,537
Claims priority, application United Kingdom, Jan. 12, 1993, 2028301
Term of patent 14 years
U.S. Cl. D21—204



355,686
GOLF CLUBHEAD
Edward A. Hlinka, Sheam, Ill., assignor to Wilson Sporting Goods Co., Chicago, Ill.
Filed Jul. 16, 1992, Ser. No. 914,092
Term of patent 14 years
U.S. Cl. D21—214



355,687
GOLF PUTTER HEAD
Jack Morrow, 4536 High Rock Trace, Marietta, Ga. 30066
Filed Jul. 26, 1993, Ser. No. 11,093
Term of patent 14 years
U.S. Cl. D21—219

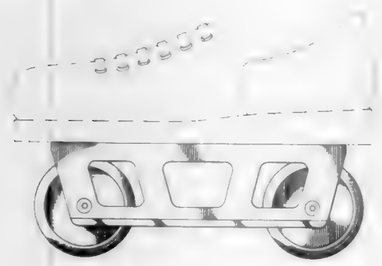


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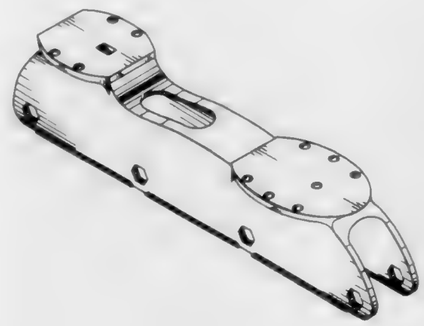
355,688
GOLF CLUB HEAD
Roger Cleveland, Los Angeles, Calif., assignor to Roger Cleveland Golf Company, Inc., Cypress, Calif.
Continuation-in-part of Ser. No. 926,216, Aug. 7, 1992. This application Oct. 16, 1992, Ser. No. 572
Claims priority, application France, Jun. 11, 1992, 92 07309
The portion of the term of this patent subsequent to Jan. 10, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—220



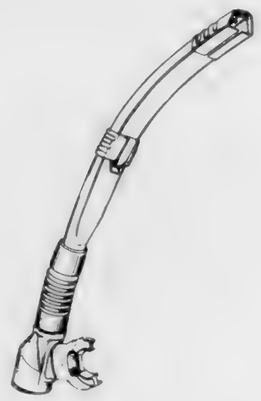
355,689
WHEEL FRAME FOR IN-LINE ROLLER SKATES
Ralph L. Smith, Alta Loma, Calif., assignor to RLS Products, Alta Loma, Calif.
Filed Oct. 12, 1993, Ser. No. 14,043
Term of patent 14 years
U.S. Cl. D21—226



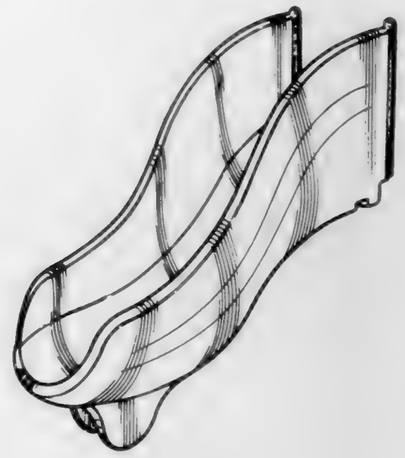
355,690
IN-LINE ROLLER SKATE FRAME
Antonin A. Meibock, Cleveland, Ohio, and John E. Svensson, Seattle, Wash., assignors to K-2 Corporation, Vashon, Wash.
Continuation-in-part of Ser. No. 94,576, Jul. 19, 1993, and a continuation-in-part of Ser. No. 100,745, Aug. 2, 1993, and a continuation-in-part of Ser. No. 120,629, Sep. 13, 1993. This application Jan. 11, 1994, Ser. No. 17,334
Term of patent 14 years
U.S. Cl. D21—226



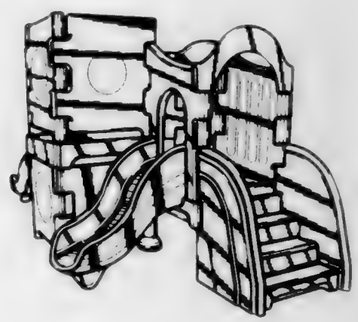
355,691
SNORKEL
Stan Rasocha, Deerfield, Ill., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Dec. 2, 1993, Ser. No. 15,942
Term of patent 14 years
U.S. Cl. D24—110.5



355,692
SLIDE ATTACHMENT FOR PLAYGROUND STRUCTURE
Robert L. Houry, and Keith D. Ratliff, both of Farmington, Mo., assignors to The Little Tikes Company, Hudson, Ohio
Filed Nov. 8, 1993, Ser. No. 15,020
Term of patent 14 years
U.S. Cl. D21—244



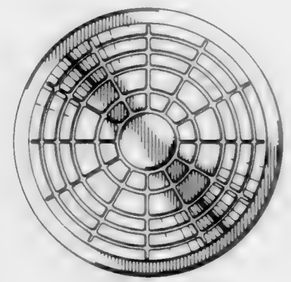
355,693
PLAYGROUND AND ACTIVITY STRUCTURE
Kevin R. Aker, Hudson, Ohio; Robert L. Houry, and Keith D. Ratliff, both of Farmington, Mo., assignors to The Little Tikes Company, Hudson, Ohio
Filed Nov. 8, 1993, Ser. No. 15,110
Term of patent 14 years
U.S. Cl. D21—244



355,694
REST FOR A HUNTING BOW
J. R. Stafford, Jr., 28 Duke Dr., Lawrenceville, Ga. 30245
Filed Mar. 15, 1993, Ser. No. 5,883
Term of patent 14 years
U.S. Cl. D22—107



355,695
CLAY SHOOTING TARGET
Patrick T. Moore, 24204 Dalgo Dr., Santa Clarita, Calif. 91355
Filed Dec. 28, 1993, Ser. No. 16,856
Term of patent 14 years
U.S. Cl. D22—113



355,696
ELECTRONIC INSECT REPELLER
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Mar. 10, 1993, Ser. No. 5,728
Claims priority, application United Kingdom, Sep. 17, 1992, 2025768
Term of patent 14 years
U.S. Cl. D22—123



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355,697
ELECTRONIC INSECT REPELLER
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Mar. 10, 1993, Ser. No. 5,749
Claims priority, application United Kingdom, Sep. 17, 1992, 2 025 767
Term of patent 14 years
U.S. Cl. D22—123



355,698
SPINCAST FISHING REEL
Richard J. Robbins, Derby, Kans., and Lorens G. Hlava, Clinton, Mo., assignors to Zebco Corporation, Tulsa, Okla.
Filed Jan. 21, 1992, Ser. No. 823,549
Term of patent 14 years
U.S. Cl. D22—141



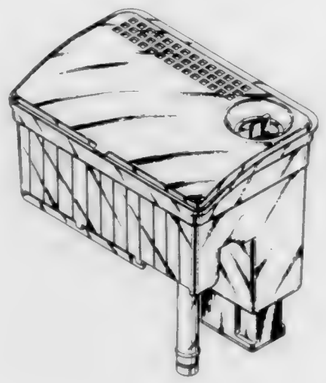
355,699
MINI FISH HOOK REMOVER
D. Thomas Eggler, Gaines, Pa., assignor to Gaines Company, Gaines, Pa.
Filed Apr. 5, 1993, Ser. No. 6,660
Term of patent 14 years
U.S. Cl. D22—149



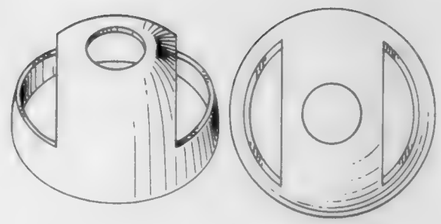
355,700
WATER PURIFIER HOUSING
Dennis J. Kool, Kentwood, Mich., assignor to Amway Corporation, Ada, Mich.
Filed Aug. 17, 1990, Ser. No. 931,288
Term of patent 14 years
U.S. Cl. D23—207



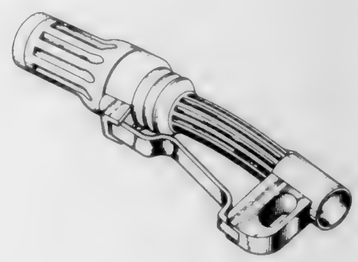
355,701
AQUARIUM FILTER
Allan H. Willinger, Franklin Lakes, N.J., and Sean H. Simmons, Sea Cliff, N.Y., assignors to Willinger Bros., Inc., Oakland, N.J.
Filed Jun. 2, 1992, Ser. No. 893,215
Term of patent 14 years
U.S. Cl. D23—209



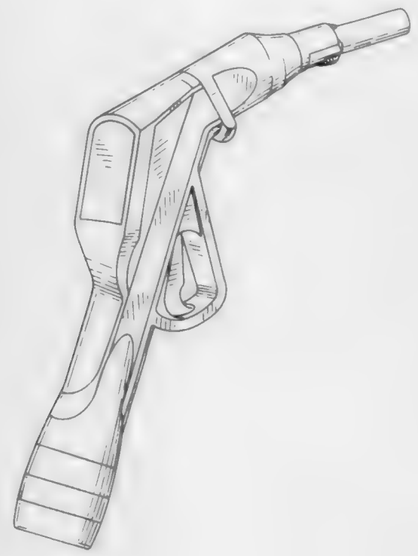
355,702
FILTER FOR ATTACHMENT TO AN IN-EAR HEARING AID TO PREVENT THE MIGRATION OF EAR WAX INTO THE HEARING AID
Ronald D. Johnson, 719 24½ Rd., Grand Junction, Colo. 81505
Continuation-in-part of Ser. No. 708,060, May 30, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 3,114
Term of patent 14 years
U.S. Cl. D23—209



355,703
FLUID NOZZLE
Graham Duell, 58 Smyth Street, Mount Waverley, Victoria 3149, Australia
Filed Feb. 18, 1994, Ser. No. 18,985
Claims priority, application Australia, Aug. 18, 1993, 2550/93
Term of patent 14 years
U.S. Cl. D23—213



355,704
FUEL NOZZLE
W. Dwain Simpson, Wilton, and James H. Pyle, Weston, both of Conn., assignors to Saber Equipment Corp., Stratford, Conn.
Filed Jun. 9, 1992, Ser. No. 895,398
Term of patent 14 years
U.S. Cl. D23—226

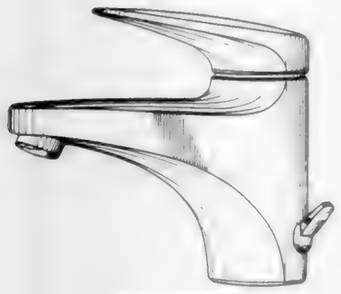


355,705
SHOWER CONTROL VALVE
Hubert J. Moineau, Bolton, Mass.; Alve Erickson, Milford, and John S. Howland, Danville, both of N.H., assignors to Automatic Specialties, Inc., Marlboro, Mass.
Filed May 10, 1994, Ser. No. 22,694
Term of patent 14 years
U.S. Cl. D23—233

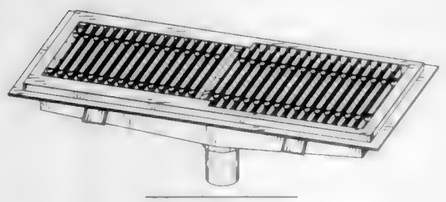


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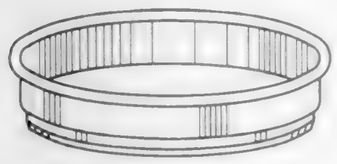
355,706
SANITARY INSTALLATION FOR A WASH BASIN
Philippe Chretien, Dietlikon, Switzerland, assignor to KWC AG, Unterkulm, Switzerland
Filed May 27, 1993, Ser. No. 8,819
Claims priority, application WIPO, Dec. 2, 1992, DM/024 579
Term of patent 14 years
U.S. Cl. D23—238



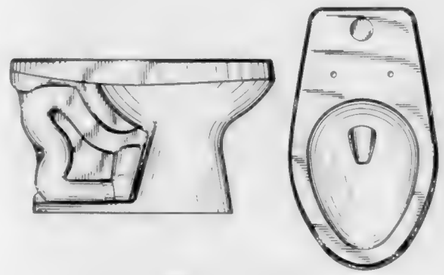
355,707
TROUGH DRAIN
Roy Emanuele, Massapequa, and Myron David, North Massapequa, both of N.Y., assignors to IMC/Teddy Food Service Corp., Copiague, N.Y.
Filed Jun. 11, 1992, Ser. No. 895,408
Term of patent 14 years
U.S. Cl. D23—259



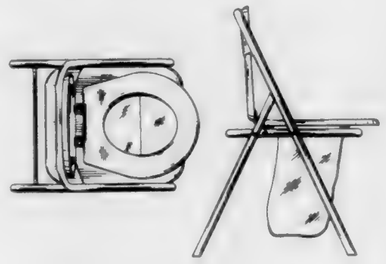
355,708
FLEXIBLE HOSE END CAP
Donald R. Caine, Greensboro, N.C., assignor to Camco Manufacturing, Inc., Greensboro, N.C.
Filed Feb. 23, 1993, Ser. No. 5,094
Term of patent 14 years
U.S. Cl. D23—260



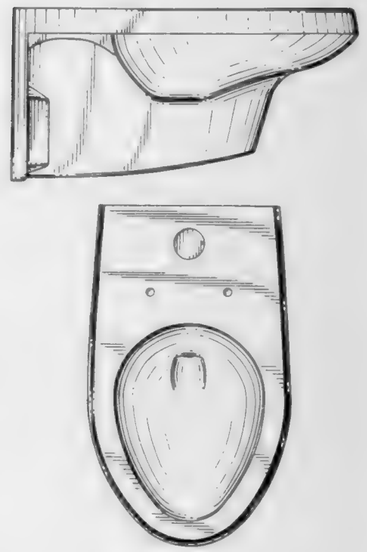
355,709
TOILET BOWL
Rina Osada, Kitakyushu, Japan, assignor to Toto, Ltd., Kitakyushu, Japan
Filed Jun. 29, 1993, Ser. No. 10,177
Claims priority, application Japan, Dec. 30, 1992, 4-38745
Term of patent 14 years
U.S. Cl. D23—295



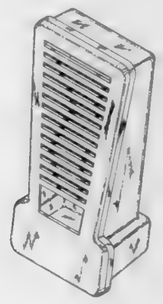
355,710
PORTABLE TOILET
Rickey C. Hostetler, 2671 N. Main No. 74, and Charles Hostetler, 3205 Bonham, both of Paris, Tex. 75460
Filed May 5, 1993, Ser. No. 7,943
Term of patent 14 years
U.S. Cl. D23—299



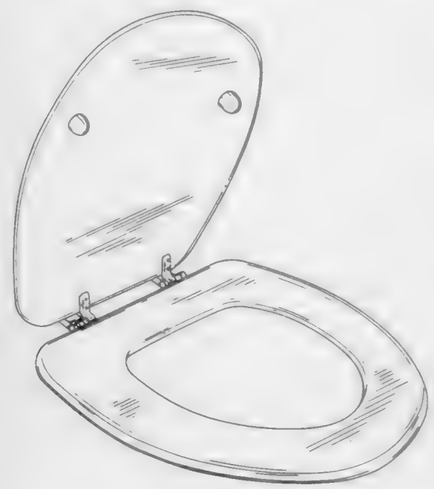
355,711
TOILET BOWL
Kenichi Nagato, Kitakyushu, Japan, assignor to Toto, Ltd., Kitakyushu, Japan
Filed Jun. 29, 1993, Ser. No. 10,176
Claims priority, application Japan, Jan. 29, 1993, 5-2343
Term of patent 14 years
U.S. Cl. D23—300



355,712
AIR FRESHENER CASING
John J. Barlics, North Edison, N.J., assignor to Inman Molding and Manufacturing Co., Inc.
Filed Dec. 15, 1993, Ser. No. 16,447
Term of patent 14 years
U.S. Cl. D23—366



355,713
COMBINED TOILET SEAT AND COVER
Gordon D. Kelly, Elm Grove, Wis., assignor to American Standard Inc., Piscataway, N.J.
Filed Nov. 3, 1993, Ser. No. 14,928
Term of patent 14 years
U.S. Cl. D23—311



355,714
COMBINED FACE MASK AND SHIELD
Vance M. Hubbard, and Welton K. Brunson, both of Bedford, Tex., assignors to TCNL Technologies, Inc., Wilmington, Del.
Continuation-in-part of Ser. No. 846,398, Mar. 4, 1992, abandoned, and a continuation of Ser. No. 886,386, May 19, 1992, which is a continuation of Ser. No. 661,435, Feb. 25, 1991, Pat. No. 5,150,703, which is a continuation of Ser. No. 268,558, Nov. 10, 1988, Pat. No. 5,020,533, which is a continuation-in-part of Ser. No. 104,807, Oct. 2, 1987, Pat. No. 4,920,960. This application Jul. 12, 1993, Ser. No. 10,567
The portion of the term of this patent subsequent to Jun. 16, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—110.2

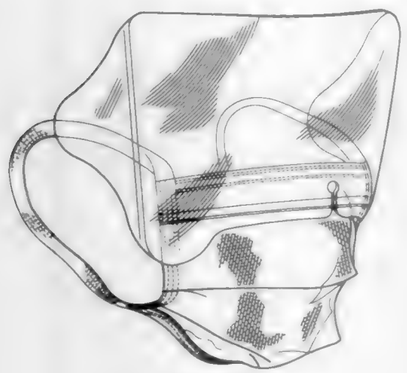


355,715
COMBINED FACE MASK AND SHIELD
Vance M. Hubbard, and Welton K. Brunson, both of Bedford, Tex., assignors to TCNL Technologies, Inc., Wilmington, Del.
Continuation-in-part of Ser. No. 846,398, Mar. 4, 1992, abandoned, and a continuation of Ser. No. 886,386, May 19, 1992, which is a continuation of Ser. No. 661,435, Feb. 25, 1991, Pat. No. 5,150,703, which is a continuation of Ser. No. 268,558, Nov. 10, 1988, Pat. No. 5,020,533, which is a continuation-in-part of Ser. No. 104,807, Oct. 2, 1987, Pat. No. 4,920,960. This application Jul. 12, 1993, Ser. No. 10,568
The portion of the term of this patent subsequent to Jun. 16, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—110.2

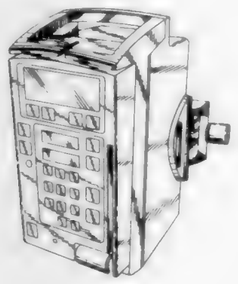
355,716
COMBINED FACE MASK AND SHIELD
Vance M. Hubbard, and Welton K. Brunson, both of Bedford, Tex., assignors to TCNL Technologies, Inc., Wilmington, Del.
Continuation-in-part of Ser. No. 846,398, Mar. 4, 1992, abandoned, and a continuation of Ser. No. 886,386, May 19, 1992, which is a continuation of Ser. No. 661,435, Feb. 25, 1991, Pat. No. 5,150,703, which is a continuation of Ser. No. 268,558, Nov. 10, 1988, Pat. No. 5,020,533, which is a continuation-in-part of Ser. No. 104,807, Oct. 2, 1987, Pat. No. 4,920,960. This application Jul. 12, 1993, Ser. No. 10,569
The portion of the term of this patent subsequent to Jun. 16, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—110.2

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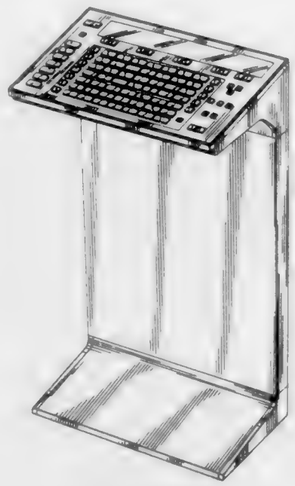
355,715
COMBINED FACE MASK AND SHIELD
Vance M. Hubbard, and Welton K. Brunson, both of Bedford, Tex., assignors to TCNL Technologies, Inc., Wilmington, Del.
Continuation-in-part of Ser. No. 846,396, Mar. 4, 1992, abandoned, and a continuation of Ser. No. 886,386, May 19, 1992, which is a continuation of Ser. No. 661,435, Feb. 25, 1991, Pat. No. 5,150,703, which is a continuation of Ser. No. 268,558, Nov. 8, 1988, Pat. No. 5,020,533, which is a continuation-in-part of Ser. No. 104,807, Oct. 2, 1987, Pat. No. 4,920,960. This application Jul. 12, 1993, Ser. No. 10,606
The portion of the term of this patent subsequent to Jun. 16, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—110.2



355,716
INFUSION PUMP
James E. Nash, St. Paul; Rodney J. Smith, Hastings, and Kent R. Struble, Mahtomedi, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jul. 23, 1992, Ser. No. 917,611
Term of patent 14 years
U.S. Cl. D24—111



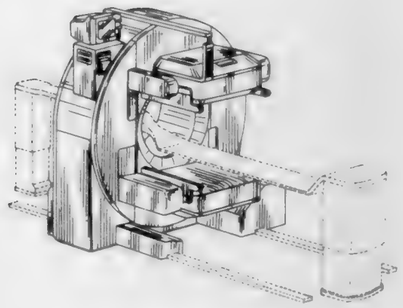
355,717
COMBINED X-RAY CONTROL BOARD AND SUPPORT STRUCTURE FOR MEDICAL TREATMENT
Makoto Murakami, and Takahisa Yoneyama, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 30, 1993, Ser. No. 11,237
Claims priority, application Japan, Apr. 1, 1993, 5-9361
Term of patent 14 years
U.S. Cl. D24—158



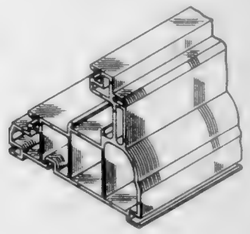
355,718
VIDEO FLUORO IMAGING CHAIR FOR DYSPHAGIA STUDIES
Craig T. McMullen, Colorado Springs, Colo., assignor to Robert E. Giustra, Monument, Colo.
Filed Oct. 25, 1993, Ser. No. 14,611
Term of patent 14 years
U.S. Cl. D24—158



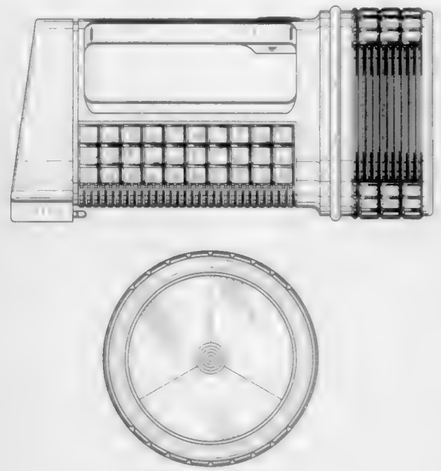
355,719
GAMMA CAMERA
Makoto Murakami, and Takahisa Yoneyama, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 1, 1993, Ser. No. 13,755
Claims priority, application Japan, Apr. 1, 1993, 9366/93
Term of patent 14 years
U.S. Cl. D24—159



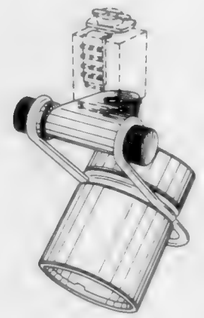
355,720
FRAME ELEMENT
Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Aug. 2, 1993, Ser. No. 11,379
Term of patent 14 years
U.S. Cl. D25—124



355,721
LANTERN
Kevin S. Garrity, Madison, Conn., assignor to Garrity Industries, Inc., Madison, Conn.
Filed Mar. 8, 1993, Ser. No. 5,630
Term of patent 14 years
U.S. Cl. D26—37

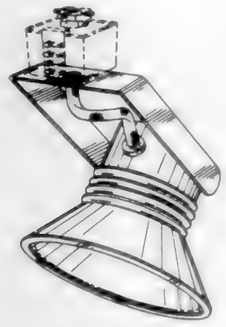


355,722
CYLINDRICAL LAMPHOLDER IN U-SHAPED WIRE HOLDER FOR USE ON TRACK
Scott L. Roos, Glenview, and John J. O'Rourke, Downers Grove, both of Ill., assignors to Juno Lighting, Inc., Des Plaines, Ill.
Filed May 31, 1994, Ser. No. 23,741
Term of patent 14 years
U.S. Cl. D26—63

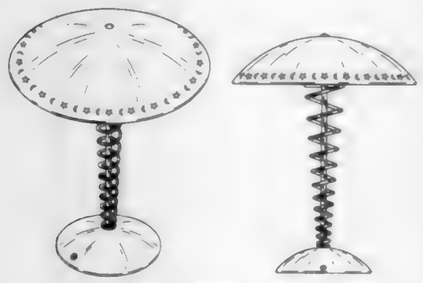


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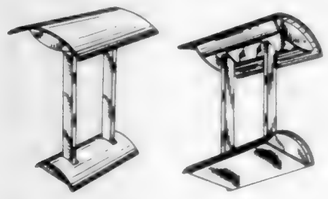
355,723
FLYBACK LAMPHOLDER FOR USE ON TRACK
Scott L. Roos, Glenview, and John J. O'Rourke, Downers Grove, both of Ill., assignors to Juno Lighting, Inc., Des Plaines, Ill.
Filed May 31, 1994, Ser. No. 24,151
Term of patent 14 years
U.S. Cl. D26—63



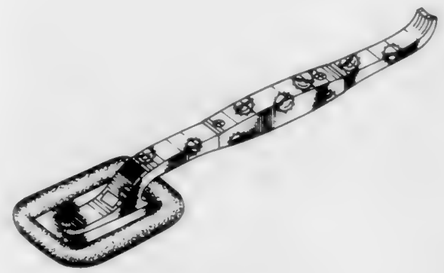
355,724
DESK LAMP
Jackson Liao, P.O. Box 82-144, Taipei, Taiwan, Prov. of China
Filed Jan. 5, 1994, Ser. No. 17,092
Term of patent 14 years
U.S. Cl. D26—103



355,725
DESK LAMP
Rockwood T. Roberts, III, Clifton Park, N.Y., assignor to C. N. Burman Co., Paterson, N.J.
Filed Jun. 14, 1993, Ser. No. 9,485
Term of patent 14 years
U.S. Cl. D26—109



355,726
SUNTAN LOTION APPLICATOR
Frank Delmerico, 320 S. Broadway, Apt. S-1, Tarrytown, N.Y. 10591
Filed Apr. 10, 1990, Ser. No. 506,875
Term of patent 14 years
U.S. Cl. D28—7



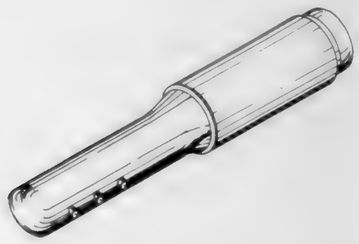
355,727
PACKAGE FOR COSMETIC APPLICATOR
Peter Bertolini, Shelton, and James L. Gentile, Orange, both of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Nov. 7, 1991, Ser. No. 792,042
Term of patent 14 years
U.S. Cl. D28—76



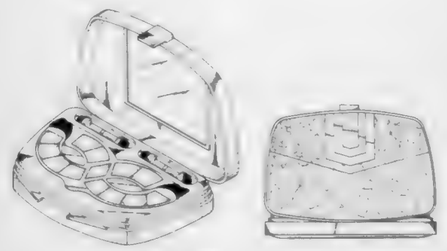
355,728
WATER PIPE
Mark R. Newman, P.O. Box 17009, Tucson,, Ariz. 85731
Filed Oct. 18, 1993, Ser. No. 14,262
Term of patent 14 years
U.S. Cl. D27—162



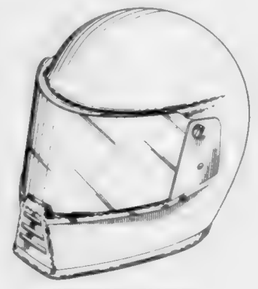
355,729
BODY LOTION APPLICATOR
Nicholas L. Grimshaw, P.O. Box 609, Whangarei, New Zealand
Filed Mar. 8, 1993, Ser. No. 5,644
Term of patent 14 years
U.S. Cl. D28—7



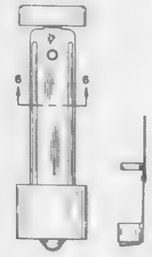
355,730
COSMETIC COMPACT
Jerry Chen, P.O. Box 82-144, Taipei, Taiwan, Prov. of China
Filed Feb. 13, 1992, Ser. No. 837,437
Term of patent 14 years
U.S. Cl. D28—78



355,731
SAFETY HELMET
Fabien Gingras, 114 Rang 18, Villeroy, Quebec, Canada G0S 3K0
Filed Feb. 22, 1993, Ser. No. 5,085
Term of patent 14 years
U.S. Cl. D29—102



355,732
BOTTLE HOLDER
Marvin E. Huff, 2242 Davis Ct., Hayward, Calif. 94545
Filed Nov. 16, 1992, Ser. No. 1,508
Term of patent 14 years
U.S. Cl. D30—133



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355,733
CHEW TOY FOR DOGS
Anthony O'Rourke, and M. William Perel, both of Malibu, Calif., assignors to Booda Products, Inc., Gardena, Calif.
Filed Aug. 20, 1993, Ser. No. 12,016
Term of patent 14 years
U.S. Cl. D30—160



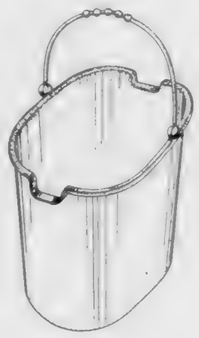
355,734
CLEANER FOR SHOES AND BOOTS
Rowland H. Goble, 145 W. Crystal Lake Ave., Lake Mary, Fla. 32746-2913
Filed Nov. 8, 1993, Ser. No. 15,023
Term of patent 14 years
U.S. Cl. D32—14.1



355,735
COMBINED BUCKET WITH NESTED CONTAINERS AND LID THEREFOR
David G. Shaffer, 307 First St., Woodland, Calif. 95695, and Andrew A. Kephart, 21 Buckeye St., Woodland, Calif. 95965
Filed Sep. 4, 1991, Ser. No. 754,687
Term of patent 14 years
U.S. Cl. D32—53



355,736
PAIL
Yaffa Licari, 875 Ocean Ave., Elberon, N.J. 07740
Filed Feb. 18, 1994, Ser. No. 18,944
Term of patent 14 years
U.S. Cl. D32—53



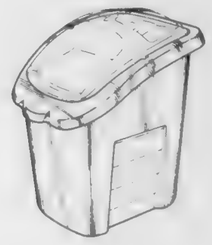
355,737
DRYING RACK SUPPORT FRAME
John D. Breen, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 11, 1994, Ser. No. 17,335
Term of patent 14 years
U.S. Cl. D32—58



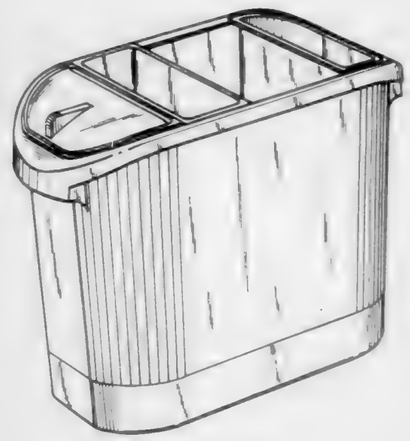
355,738
COMBINED WASH BUCKET AND MOBILE STAND THEREFOR
Soren Samuelsson, P.O. Box 1312, Palm Desert, Calif. 92260
Filed Mar. 4, 1994, Ser. No. 19,539
Term of patent 14 years
U.S. Cl. D32—53



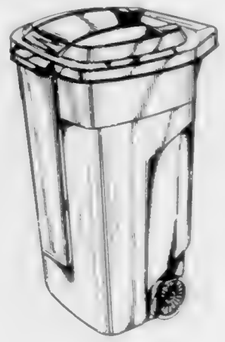
355,739
TRASH CONTAINER
David A. Bird, and Mitchell L. Wilgus, both of Akron, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 13, 1994, Ser. No. 17,429
Term of patent 14 years
U.S. Cl. D34—1



355,740
COMPARTMENTALIZED TRASH RECEPTACLE
Balthasar Kirchner, Eferding, Austria, assignor to Ernst Stadelmann Gesellschaft m.b.H., Eferding, Austria
Filed Jun. 10, 1993, Ser. No. 9,301
Claims priority, application Austria, Dec. 11, 1992, MU3963/92
Term of patent 14 years
U.S. Cl. D34—1



355,741
REFUSE CONTAINER BODY
Charles W. Craft, Apple Creek, and Mitchell L. Wilgus, Akron, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 23, 1993, Ser. No. 10,939
Term of patent 14 years
U.S. Cl. D34—5

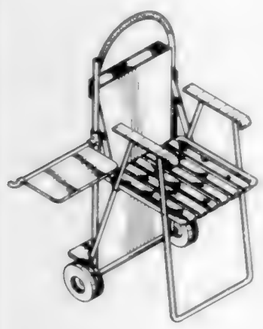


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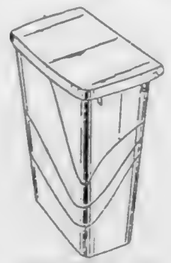
355,742
VENTILATED GARBAGE RECEPTACLE
Robert J. Jackson, 18516 Dalby St., Redford Two, Mich. 48240
Filed Apr. 14, 1994, Ser. No. 21,292
Term of patent 14 years
U.S. Cl. D34—6



355,743
COMBINED CHAIR AND CART
Billy M. Hammack, 5510 W. Bellaire, Santa Fe, Tex. 77510, and Michael A. Collins, 10039 Radio Rd., Houston, Tex. 77075
Filed Sep. 23, 1993, Ser. No. 13,363
Term of patent 14 years
U.S. Cl. D34—24



355,744
LIDDED WASTEBASKET
Yaffa Licari, 875 Ocean Ave., Elberon, N.J. 07740
Filed Feb. 18, 1994, Ser. No. 18,965
Term of patent 14 years
U.S. Cl. D34—7



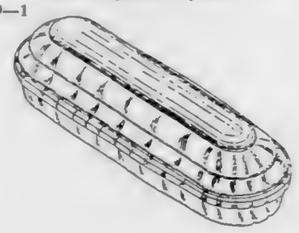
355,745
PATIO CART
Michael W. Greene, Incline Village, Nev., assignor to Resinform, Incline Village, Nev.
Filed Feb. 9, 1994, Ser. No. 18,577
Term of patent 14 years
U.S. Cl. D34—24



355,746
CHEW TOY FOR DOGS
Anthony O'Rourke, Malibu, Calif., assignor to Booda Products, Inc., Gardena, Calif.
Filed Nov. 24, 1992, Ser. No. 1,782
Term of patent 14 years
U.S. Cl. D30—160



355,747
CASKET
Robert A. Tobin, 1842 Turk Hill Rd., Fairport, N.Y. 14450
Filed Dec. 13, 1993, Ser. No. 16,287
Term of patent 14 years
U.S. Cl. D99—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF FEBRUARY, 1995

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.C. Machines Limited: *See—*
Peters, Michael D., 5,391,387, Cl. 426-512.000.
A.C.R. Co., Ltd.: *See—*
Muto, Kiyoshi; and Suzuki, Hiroshi, 5,391,596, Cl. 523-415.000.
A.C.X. Trading, Inc.: *See—*
Gombos, John M.; and Leashno, Moshe, 5,390,783, Cl. -.
A+ Corp.: *See—*
Mayeaux, Donald P., 5,391,322, Cl. 252-394.000.
A.E. Bishop & Associates Pty. Limited: *See—*
Bishop, Arthur E.; Roeske, Klaus J.; Baxter, John; and McLean, Lyle J., 5,390,408, Cl. 29-558.000.
AAB Building System Inc.: *See—*
Mensen, Jan H., 5,390,459, Cl. 52-426.000.
AAR Corp.: *See—*
Herrick, William H.; Vermeulen, Ronald J.; and Plue, Robert S., 5,390,775, Cl. 193-35.00R.
AB Orwak: *See—*
Gustavsson, Kenneth, 5,390,593, Cl. 100-218.000.
Abbott Laboratories: *See—*
Eason, Reginald; and Forrest, Keith, 5,392,209, Cl. 364-413.010
Wang, Chao-Huei J.; Stroupe, Stephen D.; and Jolley, Michael E., 5,391,740, Cl. 544-319.000.
ABCO Engineering Corp.: *See—*
Gage, Paul G., 5,390,777, Cl. 198-306.000.
Abe, Akira: *See—*
Yoshida, Kazuaki; and Abe, Akira, 5,391,467, Cl. 430-434.000.
Abe, Hiroyuki; and Muramatsu, Masaru, to Nikon Corporation. Target follow-up device and camera comprising the same. 5,392,088, Cl. 354-402.000
Abe, So; Kishimoto, Shinichi; Kato, Toshihisa; and Takeda, Hideo, to Ajinomoto Co., Inc. Method of crystallizing α-L-aspartyl-L-phenylalanine methyl ester. 5,391,810, Cl. 560-41.000.
Abe, Takafumi: *See—*
Muro, Nobuyuki; Abe, Takafumi; and Higuchi, Hirofumi, 5,391,813, Cl. 560-179.000.
Abe, Tomohiko: *See—*
Yamada, Akio; Oae, Yoshihisa; Yamazaki, Satoru; Abe, Tomohiko; Kobayashi, Katsuhiko; Sakamoto, Kiichi; and Hatta, Junko, 5,391,886, Cl. 250-492.220.
Ablay, Sewim F.: *See—*
Sasuta, Michael D.; Coe, Richard H.; and Ablay, Sewim F., 5,392,458, Cl. 455-54.100.
Abramson, Richard J.; and Retzl, Rudolf, to Hedman Company, The Sheet feeding system for a sheet folding apparatus. 5,391,138, Cl. 493-421.000
Acquaviva, Thomas, to Xerox Corporation. Compact scanner 5,392,109, Cl. 355-320.000.
Acromed B.V.: *See—*
Sanders, M. M.; Cool, J. C.; Veldhuizen, A. G.; Timmerman, P.; Bazuin, G. J.; and Best, Y. Y. N., 5,391,168, Cl. 606-61.000.
Actel Corporation: *See—*
El-Ayat, Khaled A.; Chan, King W.; and Plants, William C., 5,391,942, Cl. 326-39.000.
Adachi, Satoshi, to Mitutoyo Corporation. Measuring device for absolute measurement of positions. 5,391,992, Cl. 324-660.000.
Adachi, Tatsuya, to Matsushita Electric Industrial Co., Ltd. Data recording method, end search method and connection recording 5,392,167, Cl. 360-27.000
Adams, Craig W., to Beckman Instruments, Inc. Non-hemolytic streptolysin O variants. 5,391,712, Cl. 530-350.000
Adams, David J.; Shapley, Brian J.; and Ittoop, Pramela M., to Rockwell International Corporation. Automatic call distribution system with emergency recording system and method. 5,392,329, Cl. 379-49.000
Adams, George W. Locomotive personal alert system. 5,392,030, Cl 340-576.000.
Adams, Jerome T.: *See—*
Lawton, John A.; and Adams, Jerome T., 5,391,072, Cl 425-174.400.
Adams, Randall E.: *See—*
Bootman, Matthew W.; Brown, Daniel L.; Trebek-Kares, Elaine; and Adams, Randall E., 5,391,420, Cl. 428-195.000.
Adamski, Maximilian, Jr.; Milner, Kenneth C.; LaVelle, Edward R.; and McEwen, John C., to Union Special Corporation; and Sara Lee Corporation. Method and apparatus for automatically attaching a collarette display and label to a garment body by using a two step sewing operation. 5,390,614, Cl. 112-121.110.
Ade, Robert W.; Bossi, Donald E.; Berak, James M., Sr.; and Basilica, Rocco P., to United Technologies Corporation. Single-side growth reflection-based waveguide-integrated photodetector. 5,391,869, Cl. 250-227.240.
Adir et Compagnie: *See—*
Brion, Jean-Daniel; Le Baut, Guillaume; Poissonnet, Guillaume; De Montarby, Lucy; Belachmi, Larbi; Bonnet, Jacqueline; Sabatini, Massimo; and Tordjman, Charles, 5,391,569, Cl. 514-456.000
Masereel, Bernard; Pirotte, Bernard; Schynts, Marc; and Delarge, Jacques, 5,391,559, Cl. 514-347.000
Adjustable Fixtures Co.: *See—*
Schumaker, Michael J., 5,392,204, Cl. 362-294.000.
Advanced Cardiovascular Systems, Inc.: *See—*
Williams, Michael S.; Khosravi, Farhad; and Yambao, August, 5,391,172, Cl. 606-108.000
Advanced Technology Laboratories, Inc.: *See—*
Robinson, Brent S.; Cooley, Clifford R.; Hwang, Juin-Jet; and Entrekin, Robert R., 5,390,674, Cl. 128-660.070.
Aebi, Verle W.; and Costello, Kenneth A., to Intevac, Inc. Method of manufacturing a feedback limited microchannel plate. 5,391,101, Cl. 445-50.000
Affaqui, Thami E. Stirling engine with annular cam. 5,390,496, Cl. 60-525.000.
Afzali-Ardakani, Ali; Brock, Phillip J.; Dawson, Daniel J.; and Gelorme, Jeffrey D., to International Business Machines Corporation. Thioxanthone sensitizer for radiation sensitive polyimides. 5,391,464, Cl. 430-281.000
Agars, Robert F.: *See—*
Eckberg, Richard P.; and Agars, Robert F., 5,391,676, Cl. 528-15.000
Agency of Industrial Science and Technology: *See—*
Kitamura, Naoyuki; Kinugawa, Kenichi; Matsuoka, Jun; Fukumi, Kohei; Kondoh, Isao; Kose, Saburo; Yamashita, Hiroshi; and Kinoshita, Makoto, 5,392,375, Cl. 385-124.000
Agfa - Gevaert AG: *See—*
Wernicke, Ubbo, 5,392,087, Cl. 354-319.000.
AGFA-Gevaert, N.V.: *See—*
Muys, Bavo; Quintens, Dirk; Boeykens, Jozef; Van Thillo, Etienne; and Defieuw, Geert, 5,391,472, Cl. 430-527.000.
Vanmaele, Luc, 5,391,536, Cl. 503-227.000.
AGIP S.p.A.: *See—*
Ghiselli, Claudio, 5,390,529, Cl. 73-23.410.
Agrawal, Prathima; Telichevesky, Ricardo; and Trotter, John A., to AT&T Corp. Method of operating a multiprocessor computer to solve a set of simultaneous equations. 5,392,429, Cl. 395-650.000
Ahn, Ji H.: *See—*
Kim, Kyeong T.; and Ahn, Ji H., 5,392,232, Cl. 365-51.000.
Ahvenainen, Antero; Sarantila, Kari; and Andtsjo, Henrik, to Neste OY. Method for homo- or copolymerizing ethene. 5,391,654, Cl. 526-64.000.
Aida, Yasuhiko: *See—*
Narabayashi, Tadashi; Saito, Noboru; Ishitori, Takashi; Shimano, Kunio; Aida, Yasuhiko; Hattori, Kiyoshi; Yamada, Katsumi; Tanaka, Nobuhiko; Nakamura, Akira; Miyano, Hiroshi; Tsunoyama, Shigeaki; Oshima, Iwao; Komita, Hideo; Fujii, Takao; Ozaki, Osamu; and Mawatari, Katsuhiko, 5,392,326, Cl 376-371.000
Aihara, Norio, to Kabushiki Kaisha Toshiba. Power saving system. 5,392,439, Cl. 395-750.000.
Aihara, Shin: *See—*
Koike, Tadashi; Aihara, Shin; Ueno, Keiji; Murakami, Shinichi; and Hirose, Sumio, 5,391,461, Cl. 430-271.000
Air Products and Chemicals, Inc.: *See—*
Ford, Michael E., 5,391,710, Cl. 528-490.000.
AirBoss Limited: *See—*
Chandler, Graeme A., 5,390,985, Cl. 301-44.200.
Airhart, Durwood. Conductive wedges for interdigitating with adjacent legs of an IC or the like. 5,391,082, Cl. 439-68.000.
Aisin Seiki Kabushiki Kaisha: *See—*
Tozu, Kenji; Asano, Kenji; and Kawai, Hiroaki, 5,390,991, Cl. 303-97.000
Aitken, Bruce G.; and Newhouse, Mark A., to Corning Incorporated. Gallium sulfide glasses. 5,392,376, Cl. 385-144.000
Aizawa, Kiyomi: *See—*
Hirai, Kenji; Yano, Tomoyuki; Yamashita, Mitsuo; Ejiri, Emiko; Tateno, Tomoko; and Aizawa, Kiyomi, 5,391,807, Cl. 560-27.000.
Aizawa, Toshiro: *See—*
Higuchi, Shigemitsu; Suga, Atsuo; Inaba, Yuji; and Aizawa, Toshiro, 5,392,163, Cl. 360-10.100
Ajinomoto Co., Inc.: *See—*
Abe, So; Kishimoto, Shinichi; Kato, Toshihisa; and Takeda, Hideo, 5,391,810, Cl. 560-41.000
Takemoto, Tadashi; and Fujita, Shinji, 5,391,809, Cl. 560-41.000
Akasaki, Ichimoto: *See—*
Saeki, Koichiro; Nagaoka, Koji; and Akasaki, Ichimoto, 5,391,633, Cl. 525-328.200.

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Akatsu, Toshio: *See*—
Kinoshita, Kazuto; Akatsu, Toshio; and Naruse, Jun, 5,392,173, Cl. 360-75.000

Akioka, Takashi: *See*—
Akiyama, Noboru; Mitsumoto, Kinya; Akioka, Takashi; and Yukutake, Seigoh, 5,392,246, Cl. 365-200.000.

Akitomo, Hiroshi; Nozoe, Tsugio; and Shinmi, Hideo, to Dow Corning Toray Silicone Co., Ltd. Method for fabricating foam gaskets. 5,391,336, Cl. 264-46.400.

Akiyama, Eitetsu: *See*—
Maruyama, Shigeru; Shimasaki, Yuichi; Kanehiro, Masaki; Hisaki, Takashi; Baba, Shigeki; Ishioka, Takuji; Takagi, Jiro; and Akiyama, Eitetsu, 5,391,100, Cl. 445-7.000.

Akiyama, Masahiko; and Nakai, Yutaka, to Kabushiki Kaisha Toshiba. Liquid crystal display having drain and pixel electrodes linkable to a wiring line having a potential. 5,392,143, Cl. 359-59.000.

Akiyama, Noboru; Mitsumoto, Kinya; Akioka, Takashi; and Yukutake, Seigoh, to Hitachi, Ltd. Semiconductor memory with multiple sets & redundant cells. 5,392,246, Cl. 365-200.000.

Akiyama, Ryota: *See*—
Hasebe, Takayuki; Akiyama, Ryota; and Yoshioka, Makoto, 5,392,351, Cl. 380-4.000

Akkapeddi, Murali K.; Glans, Jeffrey H.; and Parmer, Jerome F., to AlliedSignal Inc. Miscible thermoplastic polymeric blend compositions containing polyamide/amorphous polyamide blends. 5,391,640, Cl. 525-432.000.

Akron Special Machinery, Inc.: *See*—
Mallison, Frank K., 5,390,540, Cl. 73-146.000.

Akzo Nobel N.V.: *See*—
Marks, Tobin J.; Yang, Xinmin; and Mirviss, Stanley B., 5,391,793, Cl. 556-179.000.
Schutyser, Jan A. J.; Buser, Antonius J. W.; Zuuring, Pieter H.; and Slot, Hendrik J., 5,391,435, Cl. 428-416.000.
Tomko, John, 5,391,816, Cl. 562-8.000.

Albany International Corp.: *See*—
Davenport, Francis L., 5,391,419, Cl. 428-193.000.

Albemarle Corporation: *See*—
Sangokoya, Samuel A., 5,391,529, Cl 502-103.000.
Smith, Kim R.; Borland, James E.; Crutcher, Terry; and Sauer, Joe D., 5,391,326, Cl. 252-559.000

Albemarle Corportion: *See*—
Senaratne, K. Pushpananda A.; Bynum, Patrick S.; and Sabahi, Mahmood, 5,391,312, Cl. 252-56.00R.

Albert-Frankenthal Aktiengesellschaft: *See*—
Melchior, Wolfgang, 5,390,905, Cl. 270-21.100.

Albion Engineering Company: *See*—
Schneider, Mark C., 5,390,831, Cl. 222-391.000.

Albizzati, Enrico; Resconi, Luigi; and Zambelli, Adolfo, to Himont Incorporated. Alpha-olefin polymers with syndiotactic structure. 5,391,672, Cl. 526-348.400.

Albrecht, Melvin J., to Babcock & Wilcox Company, The. Use of single-lead and multi-lead ribbed tubing for sliding pressure once-through boilers. 5,390,631, Cl. 122-235.120.

Albrecht, Rudolf: *See*—
Roebuck, Joseph V.; Centofante, Charles A.; Albrecht, Rudolf; and Jupille, Henry A., 5,391,083, Cl. 439-76.000.

Alchin, Michael, to Dowell Australia Limited. Pushbutton lock for sliding doors. 5,390,516, Cl. 70-100.000.

Alexander, A. Gordon: *See*—
Brewster, Phillip W.; Alexander, A. Gordon; and Brown, Terrance O., 5,391,309, Cl. 252-41.000

Alexander, Dennis R., to University of Nebraska, The Board of Regents of the. Apparatus for forming fine particles. 5,390,864, Cl. 241-39.000.

Alexander, James W.; and Johnson, Louis, to Intel Corporation. Providing various electrical protections to a CMOS integrated circuit. 5,392,186, Cl. 361-92.000.

Algazi, V. Ralph: *See*—
Ferrera, Katherine W.; and Algazi, V. Ralph, 5,390,677, Cl. 128-661.090.

Ali, Hyder; and Nystrom, Tommy, to Tetra Laval Holdings & Finance SA. Method and apparatus for separating paper fiber and plastics from mixed waste materials and products obtained thereby. 5,390,860, Cl. 241-20.000.

Alicia, Kee: *See*—
Guerci, Joseph R.; Comploier, Fred; and Alicia, Kee, 5,392,050, Cl. 342-90.000.

Allain, Charles V. Air intake protector for outboard motor. 5,391,099, Cl. 440-77.000.

Allen-Bradley Company, Inc.: *See*—
Chaffee, Mark A.; and Halpert, David E., 5,391,970, Cl 318-618.000
Cook, William B., 5,392,424, Cl. 395-575.000.
Wilson, Gregory S.; Halpert, David E.; and Chaffee, Mark A., 5,392,207, Cl. 364-167.010.

Allen, Curtis G.; Perrone, David H.; and Rossi, David M., to Litton Systems, Inc. Traveling wave tube with thermally-insensitive loss button structure. 5,391,963, Cl. 315-3.500.

Allergan, Inc.: *See*—
Chandraratna, Roshantha A. S., 5,391,753, Cl. 546-323.000.
Gerace, John D.; and Christ, F. Richard, 5,391,590, Cl. 523-107.000.

AlliedSignal Inc.: *See*—
Akkapeddi, Murali K.; Glans, Jeffrey H.; and Parmer, Jerome F., 5,391,640, Cl. 525-432.000
Berkovich, Semyon; Walter, Chris J.; and Yee, Henry C., 5,392,291, Cl. 371-10.300.
Krutzel, Lawrence, 5,391,434, Cl. 428-412.000.
Michie, Terry K., 5,392,048, Cl. 342-26.000.
Wu, Chengjiu, 5,391,587, Cl. 522-40.000.

Alling, Richard L., to Torrington Company, The. Bearing cage with depressed slot end. 5,391,005, Cl. 384-575.000.

Alliston, Michael G.; Wu, Song; Sinn, Brian T.; and Lato, Kevin, to Tampella Power Corporation. Integral cylindrical cyclone and loopseal. 5,391,211, Cl. 55-269.000.

Alpha Enterprises, Inc.: *See*—
Essick, Gale W., 5,390,515, Cl. 70-63.000.

Aluminum Company of America: *See*—
Fabish, Thomas J.; Benson, Arthur; Levendusky, Thomas L.; Hall, Barbara O.; Davidson, J. Glenn; and Stillwagon, James E., 5,391,430, Cl. 428-328.000.

Alusuisse-Lonza Services Ltd.: *See*—
Berclaz, Georges; Carrupt, Bertrand; and Plata, Miroslaw, 5,390,725, Cl. 164-467.000.

Alvarado, Sergio I.; Crews, Alvin D., Jr.; Wepplo, Peter J.; Doehner, Robert F., Jr.; Brady, Thomas E.; Gange, David M.; and Little, Desiree L., to American Cyanamid Company. Benzenesulfonyl carboxamide compounds intermediate compounds and methods of preparation thereof and use of said compounds and intermediate compounds as herbicidal agents. 5,391,757, Cl. 548-228.000.

Alvarez, Eduardo: *See*—
Andres, Todd; Alvarez, Eduardo; Hughes, O. Richard; Cooper, William; and Wang, Chun, 5,391,605, Cl. 524-404.000.

ALZA Corporation: *See*—
Wong, Patrick S. L.; Theeuwes, Felix; Eckenhoff, James B.; Larsen, Steven D.; and Huynh, Hoa T., 5,391,381, Cl. 424-473.000.

Alznauer, Miroslaw: *See*—
Lang, Hugo; and Alznauer, Miroslaw, 5,391,839, Cl. 174-65.00R.

Amada Metrecs Company, Limited: *See*—
Kawano, Susumu, 5,390,527, Cl. 72-481.000.
Saito, Hiroshi, 5,390,575, Cl. 83-140.000.

Amateau, Maurice F.; Kidwell, G. Dwayne; and Sonti, Nagesh, to Penn State Research Foundation, The. Induction heating system for a near net shaped gear blank. 5,391,862, Cl. 219-667.000.

Amato, Joseph S.: *See*—
Hoerner, Robert S.; Friedman, Joel J.; Amato, Joseph S.; Liu, Thomas M.; Shinkai, Ichiro; and Weinstock, Leonard M., 5,391,752, Cl. 546-271.000.

Amemiya, Masami, to Canon Kabushiki Kaisha. Image reading apparatus having different reading speeds. 5,392,135, Cl. 358-444.000.

Ament, Frank; Singer, David A.; and Brown, David B., to General Motors Corporation. Air injection control for preheated catalysts. 5,390,488, Cl. 60-274.000.

American Airlines, Inc.: *See*—
Harris, Theodore, Jr., 5,392,203, Cl. 362-186.000.

American Cyanamid Company: *See*—
Alvarado, Sergio I.; Crews, Alvin D., Jr.; Wepplo, Peter J.; Doehner, Robert F., Jr.; Brady, Thomas E.; Gange, David M.; and Little, Desiree L., 5,391,757, Cl. 548-228.000.

American Health Foundation: *See*—
Chung, Fung L., 5,391,568, Cl. 514-456.000.

American Home Products Corporation: *See*—
Mewshaw, Richard E.; Commons, Thomas J.; and Strike, Donald P., 5,391,571, Cl. 514-490.000.
Skotnicki, Jerauld S.; and Smith, Andri L., 5,391,730, Cl. 540-456.000.

American Nucleonics Corporation: *See*—
Nations, Alvin R., 5,391,091, Cl. 439-378.000.
Talwar, Ashok K., 5,392,009, Cl. 333-81.00R.

Amidon, Brad W.: *See*—
Levine, Alan R.; and Amidon, Brad W., 5,391,024, Cl. 409-84.000.

Ammermann, Eberhard: *See*—
Sauter, Hubert; Schelberger, Klaus; Saur, Reinhold; Lorenz, Gisela; and Ammermann, Eberhard, 5,391,573, Cl. 514-539.000.

Ampex Corporation: *See*—
Rhines, Don S.; McCoy, William D.; and Handley, Kirk H., 5,392,299, Cl. 371-37.500.
Varian, George R., 5,392,289, Cl. 371-5.400.

AMTX, Inc.: *See*—
Peterson, Thomas H.; Griepenburg, James V.; and Keating, Kevin F., 5,391,533, Cl. 502-262.000.

Anatrace Inc.: *See*—
Douglas, Mary B.; Gray, Don N.; Watson, Barry; and Youngen, Christopher S., 5,391,580, Cl. 521-27.000.

Andcare, Inc.: *See*—
O'Daly, John P.; Henkens, Robert W.; Zhao, Junguo; and Zhang, Honghua, 5,391,272, Cl. 204-153.120.

Anderson, Brett A.: *See*—
Anderson, Dennis C.; Anderson, Brett A.; and Hjermstad, Harold T., II, 5,390,813, Cl. 220-404.000.

Anderson, Dennis C.; Anderson, Brett A.; and Hjermstad, Harold T., II, to National Polymers Inc. Plastic container for recycling household waste. 5,390,813, Cl. 220-404.000.

Anderson, Norman C.: *See*—
Rupert, Robert E.; Anderson, Norman C.; and Weiss, Morris, 5,391,001, Cl. 374-130.000.

Anderson, Randel C.: *See*—
Ta, Cuong M.; and Anderson, Randel C., 5,390,772, Cl. 191-38.000.

Anderson, Scott K., to Hewlett-Packard Company. Recording/reproducing device employing device housing and printed circuit board and electronics as structural and functional part of media drive motor and the media drive motor. 5,392,176, Cl. 360-97.010.

Ando, Hiroyuki: *See*—
Uematsu, Hiroshi; Takeuchi, Nobuyuki; Ando, Hiroyuki; and Kato, Shigeki, 5,392,051, Cl. 342-165.000.

Ando, Ichiro: *See*—
Kawaguchi, Toru; Ando, Ichiro; Toyoshima, Nobuyuki; Yamamoto, Yasushi; Yoshioka, Hiroshi; and Yamazaki, Toshio, 5,391,591, Cl. 523-107.000

Ando, Jitsuhiko: *See*—
Ueno, Takeshi; Oshima, Katsuyuki; Takahara, Hidetake; Ando, Jitsuhiko; and Yamauchi, Mineo, 5,392,059, Cl. 342-188.000

Andres, Todd; Alvarez, Eduardo; Hughes, O. Richard; Cooper, William; and Wang, Chun, to Hoechst Celanese Corp. Self-lubricating composition containing polybenzimidazole, graphite and boron nitride. 5,391,605, Cl. 524-404.000.

Andtsjo, Henrik: *See*—
Ahvenainen, Antero; Sarantila, Kari; and Andtsjo, Henrik, 5,391,654, Cl. 526-64.000

Anfinsen, Christian B.: *See*—
Kelly, Robert M.; Robinson, Anne K. S.; Blumentals, Ilse I.; Brown, Stephen H.; and Anfinsen, Christian B., 5,391,489, Cl. 435-220.000.

Angeion Corporation: *See*—
Kroll, Mark W., 5,391,185, Cl. 607-4.000.
Kroll, Mark W.; and Kroll, Kai C., 5,391,186, Cl. 607-5.000.

Angelos, Arthur C. Golf simulator having system for calculating slice/-hook component of ball trajectory. 5,390,927, Cl. 273-185.00A.

Annicelli, Ralph A.: *See*—
Ohm, Robert F.; Hoffman, David M.; and Annicelli, Ralph A., 5,391,621, Cl. 525-160.000.

Anno, Masahiro: *See*—
Yoshie, Naoki; Machida, Junji; Anno, Masahiro; and Kobayashi, Makoto, 5,391,451, Cl. 430-106.600.

Anthony, James M.: *See*—
Colson, Wendell B.; Swiszcz, Paul G.; and Anthony, James M., 5,390,720, Cl. 160-84.10D.

Anthony, Mark. Test apparatus for a fluid dispensing system. 5,390,532, Cl. 73-40.50R.

Antika, Shlomo; Dietz, Thomas G.; Schlosberg, Richard H.; Turner, David W.; and Weisgerber, George A., to Exxon Research and Engineering Company. Refrigeration working fluid containing complex ester and tetrafluoroethane. 5,391,313, Cl. 252-68.000.

Antolini, Douglas R. System for protecting wood frame buildings from seismic and wind forces. 5,390,455, Cl. 52-299.000.

Antonious, Anthony J. Iron-type gold club head with improved weight distribution at the rear club face and upper sole of the club head 5,390,924, Cl. 273-169.000.

Anzai, Mitsutoshi: *See*—
Mukudai, Osamu; Matsuura, Yuji; Anzai, Mitsutoshi; and Watanabe, Kayoko, 5,391,454, Cl. 430-110.000.

Aoki, Sumihisa: *See*—
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Aoki, Yoshio: *See*—
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Aoyama, Taku: *See*—
Kiguchi, Hiroshi; and Aoyama, Taku, 5,391,589, Cl. 523-106.000.

AP Parts Manufacturing Company: *See*—
Clegg, Michael W., 5,390,494, Cl. 60-299.000.

Apple Computer, Inc.: *See*—
Dunn, C. Lorenzo; Johnston, John E.; Titzler, David H.; and Yuan, Robert A., 5,392,192, Cl. 361-683.000.
Fitch, Jonathan, 5,392,408, Cl. 395-375.000.

Applied Materials, Inc.: *See*—
Collins, Kenneth S.; Trow, John; Roderick, Craig A.; Pinson, Jay D., II; Buchberger, Douglas A., II; Hartlage, Robert P.; and Shel, Viktor, 5,392,018, Cl. 336-155.000.
Krueger, Gordon P., 5,391,035, Cl. 414-217.000.
Mintz, Donald M., 5,391,275, Cl. 204-192.320.

Applied Research Corporation: *See*—
Kinsey, James H.; and Harms, Richard J., 5,391,883, Cl. 250-372.000.

APR Applied Pharma Research S.A.: *See*—
Vecchi, Guiseppe, 5,391,738, Cl. 544-258.000.

Aptargroup, Inc.: *See*—
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Aquaspersions Limited: *See*—
Pickford, Robert J. J., 5,391,545, Cl. 514-58.000

Arai, Masami: *See*—
Shibata, Katsuji; Kobayashi, Kazuhito; Takano, Nozomu; Arai, Masami; and Hoshi, Ikuo, 5,391,687, Cl. 528-88.000

Arai, Masatoshi; Sakamoto, Takafumi; and Fujioka, Kazutoshi, to Shin-Etsu Chemical Co., Ltd. Acrylic-functional organopolysiloxane and method for the preparation thereof. 5,391,677, Cl. 528-18.000.

Arai, Masatoshi: *See*—
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Carbonell, Ramon G.; Velev, Orlin D.; and Kilpatrick, Peter K., to North Carolina State University. Method and apparatus for controlling a process using a trained parallel distributed processing network. 5,392,234, Cl. 364-496.000

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Carbonell, Ramon G.; Velev, Orlin D.; and Kilpatrick, Peter K., to North Carolina State University. Method and apparatus for controlling a process using a trained parallel distributed processing network. 5,392,236, Cl. 364-496.000

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Carbonell, Ramon G.; Velev, Orlin D.; and Kilpatrick, Peter K., to North Carolina State University. Method and apparatus for controlling a process using a trained parallel distributed processing network. 5,392,238, Cl. 364-496.000

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Ho, Ko-Shan; and Levon, Kalle, to Neste Oy. Electrically conducting liquid-crystal polymer blends and process for the preparation thereof. 5,391,622, Cl. 525-171.000.
Ho, Loan A.: *See*—
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Hoechst AG: *See*—
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Jacob, Ingolf; and Geirhos, Josef, 5,390,400, Cl. 28-274.000.
Kleiner, Hans-Jerg, 5,391,798, Cl. 558-82.000.
Krone, Volker; Magerstadt, Michael; Walch, Axel; Ditzinger, Gunter; and Lill, Norbert, 5,391,696, Cl. 528-288.000.
Krull, Matthias; and Feustel, Michael, 5,391,632, Cl. 525-327.600.
Reinhardt, Gerd; Friderichs, Vera; and Rudolf, Ulrike, 5,391,324, Cl. 252-543.000.
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Hoechst CeramTec Aktiengesellschaft: *See*—
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Hoechst-Roussel Pharmaceuticals Inc.: *See*—
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Hoekstra, Paul W., to Thiokol Corporation. Propellant grain machining device. 5,391,025, Cl. 409-137.000.
Hoel, Jeffrey H.; Cekleov, Michel; and Sindhu, Pradeep S., to Sun Microsystems, Inc.; and Xerox Corporation. Source synchronized metastable free bus. 5,392,422, Cl. 395-550.000.
Hoerbiger Ventilwerke Aktiengesellschaft: *See*—
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Hoernaert, Jorgen: *See*—
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Hoerner, Robert S.; Friedman, Joel J.; Amato, Joseph S.; Liu, Thomas M.; Shinkai, Ichiro; and Weinstock, Leonard M., to Merck & Co., Inc. Process for the preparation of antiulcer agents. 5,391,752, Cl 546-271.000.
Hofer, Ulrich: *See*—
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Ricks, Michael; Hofmann, Norbert; John, Friedholm; Krude, Werner; Jost, Dieter; Harz, Peter; and Bensinger, Jorg, 5,391,013, Cl 403-59.000.
Holmberg, Krister, to Berol Nobel AB. Aqueous, autoxidatively-drying alkyd composition containing polyunsaturated alkanolamide emulsifier. 5,391,649, Cl. 523-501.000.
Holmstrom, Nils, to Siemens Aktiengesellschaft. Device for tissue stimulation. 5,391,191, Cl. 607-28.000.
Holsworth, Herbert. Ornamental safety accessory for stirrups. 5,390,478, Cl. 54-49.000.
Holtom, Stephen W., to Matrik Pty. Ltd. Refuse loader arm. 5,391,039, Cl. 414-408.000.
Home, William. Improved gas burner for outdoor barbecuing device. 5,391,076, Cl. 431-354.000.
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Maruyama, Shigeru; Shimasaki, Yuichi; Kanehiro, Masaki; Hisaki, Takashi; Baba, Shigeki; Ishioka, Takuji; Takagi, Jiro; and Akiyama, Etetsu, 5,391,100, Cl. 445-7.000.
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Feldman, Alan S., 5,391,934, Cl. 327-110.000.
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Horiuchi, Masatada; and Nakazato, Kazuo, to Hitachi, Ltd. Semiconductor device having polycrystalline silicon region forming a lead-out electrode region and extended beneath active region of transistor 5,391,912, Cl. 257-588.000.
Horiuchi, Tadanori; and Hanano, Yoshiyuki, to Nippon Sheet Glass Co., Ltd. Method of drawing large-size elongate cable for installation. 5,390,841, Cl. 226-4.000.
Hornby, Michael J.; and Vattelana, Gary D., to Siemens Automotive L.P. Fuel rail assembly. 5,390,638, Cl. 123-456.000.
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Hosaka, Kotaro; and Narumi, Hiroji, to Canon Kabushiki Kaisha. Speckle interometry spatial filters or the like to achieve using phase selection. 5,392,121, Cl. 356-360.000.
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Hosono, Yukiharu; and Haikawa, Yukihiko, to Sharp Kabushiki Kaisha. Apparatus for recording audio and video signals. 5,392,165, Cl 360-19.100.
Hosonuma, Akira; Onodera, Teruyuki; Takahashi, Saburoh; Sakashita, Kunio; and Hiroshige, Yoshinori, to Mitsui Toatsu Chemicals, Inc. Leak detection method for gas, steam or the like based, in part, on the measurement of wind direction and velocity. 5,390,530, Cl. 73-40.000.
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Hotzel, Gerhard, to Robert Bosch GmbH. Arrangement for determining the lambda value of an air/fuel mixture. 5,391,284, Cl. 204-425.000.
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Howell, Richard E.; and Johnson, Weldon M. Apparatus for forming laminates. 5,391,253, Cl. 156-382.000.
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Hsu, Adam C.-T., to Rohm and Haas Company. Halopropargyl compounds, compositions, uses and processes of preparation. 5,391,561, Cl. 514-364.000.
Hsu, Louis L.; Mathad, Gangadhara S.; and Joshi, Rajiv V., to International Business Machines Corporation. Formation of self-aligned metal gate FETs using a benignant removable gate material during high temperature steps. 5,391,510, Cl. 437-44.000.
Hsu, Wen H.; and Chien, Chen-Chieh. Automatic planar point pattern matching device and the matching method thereof. 5,392,367, Cl. 382-39.000.
Hsu, Wen-Tung. Watch assembly. 5,392,261, Cl. 368-281.000.
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Hu, Chih-Chang; and Hu, Cha-Che. Magnetically restored golf practice device. 5,390,930, Cl. 273-197.00R.
Huang, Chin-Chung. Sawing machine. 5,390,577, Cl. 83-784.000.
Huang, Chun-Hung: *See*—
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Huang, Ming T. Detachable front wheel assembly for a stroller. 5,390,394, Cl. 16-30.000.
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Hille, Thomas; Hoffmann, Hans-Rainer; Huber, Hans-Joachim; Knoch, Axel; Schneider, Gerhard; and Stanislaus, Fritz, 5,391,375, Cl. 424-449.000.
Hubrig, Sylvan E.; and Lachowitzer, Donald K. Water-conserving urinal. 5,390,374, Cl. 4-301.000.
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Huebner, Wayne: *See*—
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Ozdemir, Faik S.; and Cottine, Richard B., 5,391,909, Cl. 257-429.000.
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Wong, Mon N., 5,392,008, Cl. 333-21.00R.
Hughes, John T.; and Smith, Michael E., to Zortech International Limited. Insulated duct. 5,391,840, Cl. 174-68.300.
Hughes, Michael S., to Mallinckrodt Medical, Inc. Entropy based signal, transmission, reception and signal analysis method and apparatus. 5,392,046, Cl. 342-22.000.
Hughes, O. Richard: *See*—
Andres, Todd; Alvarez, Eduardo; Hughes, O. Richard; Cooper, William; and Wang, Chun, 5,391,605, Cl. 524-404.000.
Hugl, Herbert; Kohler, Burkhard; and Dhein, Rolf, to Bayer Aktiengesellschaft. Segmented N-alkyl polyurethane amides. 5,391,641, Cl. 525-433.000.
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Hunag, Der-Shing, to Gencorp Aerojet. Preparation of 2,4,6-trinitro-2,4,6-triaza-cyclohexanone. 5,391,736, Cl. 544-220.000.
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Oskam, Herman; and Ploeg, Dirk A., 5,390,721, Cl. 160-168.100.
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Hsu, Wen H.; and Chien, Chen-Chieh. Automatic planar point pattern matching device and the matching method thereof. 5,392,367, Cl. 382-39.000.
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Hsue, Ching-Wen, to AT&T Corp. Built-in current sensor for I_{DDQ} testing. 5,392,293, Cl. 371-15.100.
Hu, Cha-Che: *See*—
Hu, Chih-Chang; and Hu, Cha-Che, 5,390,930, Cl. 273-197.00R.
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Huang, Chin-Chung. Sawing machine. 5,390,577, Cl. 83-784.000.
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Wessel, Thomas E.; Thill, Bruce P.; and Huang, Yi-Bin, 5,391,603, Cl. 524-396.000.
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Huber, Hans-Joachim: *See*—
Hille, Thomas; Hoffmann, Hans-Rainer; Huber, Hans-Joachim; Knoch, Axel; Schneider, Gerhard; and Stanislaus, Fritz, 5,391,375, Cl. 424-449.000.
Hubrig, Sylvan E.; and Lachowitzer, Donald K. Water-conserving urinal. 5,390,374, Cl. 4-301.000.
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Huels Aktiengesellschaft: *See*—
Thelen, Gerhard; Mock, Guthard; and Hallmann, Otto, 5,391,750, Cl. 546-242.000.
Zoche, Guenter, 5,391,217, Cl. 75-724.000.
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Nowitzki, Bernd; Jung, Jurgen; and Kretschmer, Helmut, 5,391,530, Cl. 502-204.000.
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Ludwig, Frank A., 5,391,271, Cl. 204-153.100.
Ozdemir, Faik S.; and Cottine, Richard B., 5,391,909, Cl. 257-429.000.
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Tower, Lee W.; Wagner, Jeffrey A.; and Benedict, Douglas M., 5,392,446, Cl. 395-800.000.
Wong, Mon N., 5,392,008, Cl. 333-21.00R.
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Hugl, Herbert; Kohler, Burkhard; and Dhein, Rolf, to Bayer Aktiengesellschaft. Segmented N-alkyl polyurethane amides. 5,391,641, Cl. 525-433.000.
Hulkko, Jaakko: *See*—
Mattila, Heikki; Matero, Jorma; and Hulkko, Jaakko, 5,392,460, Cl. 455-76.000.
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Hunag, Der-Shing, to Gencorp Aerojet. Preparation of 2,4,6-trinitro-2,4,6-triaza-cyclohexanone. 5,391,736, Cl. 544-220.000.
Hunter Douglas, Inc.: *See*—
Colson, Wendell B.; Swiszcz, Paul G.; and Anthony, James M., 5,390,720, Cl. 160-84.10D.
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Kolzer, Klaus. Lightweight filler and a process for its manufacture. 5,391,424, Cl. 428-220.000.

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Nishikawa, Tomohisa; Kinoshita, Takeshi; and Yotsumoto, Toshihiko, to Bridgestone Corporation. Polyester copolymer and a process for the production of the same. 5,391,699, Cl. 528-292.000.
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Nishio, Akira; Kumazawa, Masaru; Seki, Kenji; Mochizuki, Akihiro; and Numakura, Takamasa, to Victor Company of Japan, Ltd. Motor for a disc driving device having a hub positioned on inner race of an upper bearing. 5,392,178, Cl. 360-99.080.
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Rockenfeller, Uwe; and Sarkisian, Paul, to Rocky Research. Triple effect absorption cycle apparatus. 5,390,509, Cl. 62-476.000.

Rockwell International Corporation: *See—*
Adams, David J.; Shapley, Brian J.; and Ittoop, Pramela M., 5,392,329, Cl. 379-49.000.
Gay, Richard L.; Guon, Jerold; Newcomb, John C.; and Stewart, Albert E., 5,390,901, Cl. 266-216.000.
Higgins, J. Aiden; and Sovero, Emilio A., 5,392,152, Cl. 359-333.000.
Petroff, Michael D., 5,391,878, Cl. 250-367.000.
Sullivan, Gerard J.; Szwed, Mary K.; and Chang, Mau-Chung F., 5,391,257, Cl. 156-630.000.

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Rodel, Inc.: *See—*
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Roderick, Craig A.: *See—*
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Rodriguez, Arturo A.; Hancock, Steven M.; and Pietras, Mark A., to International Business Machines Inc. Hybrid video compression system and method capable of software-only decompression in selected multimedia systems. 5,392,072, Cl. 348-405.000.

Rodriguez, Roberto: *See—*
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Roe, Donald C.; and Polizzotti, David M., to Betz Laboratories, Inc. Gelled peg biocidal treatments. 5,391,369, Cl. 424-78.370.

Roe, Donald C.; and Polizzotti, David M., to Betz Laboratories, Inc. Gelled peg biocidal treatments. 5,391,370, Cl. 424-78.370.

Roebuck, Joseph V.; Centofante, Charles A.; Albrecht, Rudolf; and Jupille, Henry A., to R. A. Tool & Die, Inc. Computer card connector. 5,391,083, Cl. 439-76.000

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Rogers, Wayne A. Suspended holder for supporting a container of paint and brush. 5,390,888, Cl. 248-318.000

Rohde, Ralph: *See—*
Westermann, Jurgen; Nickisch, Klaus; Harre, Michael; and Rohde, Ralph, 5,391,778, Cl. 552-634.000.

Rohm Co., Ltd.: *See—*
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Nakamura, Nobuyuki; and Fuji, Kazunori, 5,391,346, Cl. 264-272.140.
Ooyama, Shingo; Ota, Shigeo; and Tagashira, Fumiaki, 5,391,861, Cl. 219-543.000
Tanaka, Haruo; Mushiage; Masato; and Kusunoki, Kaoru, 5,392,304, Cl. 372-36.000.

Rohm and Haas Company: *See—*
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Hsu, Adam C.-T., 5,391,561, Cl. 514-364.000.
Korte, Donald E.; and Lee, Len F., 5,391,540, Cl. 504-253.000.
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Rohrmann, Jurgen, to Hoechst Aktiengesellschaft. Bridged, chiral metallocenes, processes for their preparation and their use as catalysts. 5,391,789, Cl. 556-11.000.

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Rokutan, Takao, to Olympus Optical Co., Ltd. Optical recording/reproducing apparatus for reproducing information of multiple tracks capable of correcting uneven illumination of the multiple tracks. 5,392,268, Cl. 369-54.000.

Roling, Paul V.: *See—*
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Herrick, Robert F., Jr., 5,390,909, Cl. 271-251.000.

Rolls Royce plc: *See—*
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Pratt, Anthony L., 5,390,413, Cl. 29-889.210.

Romenesko, David J.; and Buch, Robert R., to Dow Corning Corporation. Method for imparting fire retardancy to organic resins 5,391,594, Cl. 523-212.000

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Strongwater, Bruce, to J. Lamb, Inc. Method and apparatus for producing mattress pads and the like. 5,391,418, Cl. 428-171.000.

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Yamaguchi, Akihiro: *See*—
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Yamaguchi, Masayuki: *See*—
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Yamaha Corporation: *See*—
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Hasebe, Masahiko; and Kurakake, Yaushi, 5,391,829, Cl. 84-622.000
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Yamaha Hatsudoki Kabushiki Kaisha: *See*—
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Yamakido, Kazuo: *See*—
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Yamamoto, Hideo: *See*—
Morimoto, Kazuo; Furumoto, Hideaki; Kajihara, Tetsuo; Hayashi, Kanji; Tomizawa, Atsushi; Hori, Kiyotaka; Oi, Toshiya; Yamamoto, Hideo; Matsurra, Masahiro; Kamata, Shunji; and Kaneko, Toru, 5,390,518, Cl. 72-10.000

Yamamoto, Kazutoshi: *See*—
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Yamamoto, Kiwamu: *See*—
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Yamamoto, Koji; Ikeno, Hajime; and Shichijo, Keiko, to Mitsubishi Petrochemical Company Limited. Propylene resin compositions. 5,391,618, Cl. 525-88.000

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Yamamoto, Minoru: *See*—
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Yamamoto, Naoki; Hatakeyama, Hiroki; and Watanabe, Hiroyuki, to Mitsubishi Rayon Co., Ltd. Composite composition having high transparency and process for producing same. 5,391,647, Cl 525-479.000.

Yamamoto, Naoki; Nakata, Akira; and Koshirai, Atsunori, to Mitsubishi Rayon Co., Ltd. Polyorganosiloxane graft copolymers. 5,391,648, Cl 525-479.000

Yamamoto, Shuichi: *See*—
Sawai, Kiyoshi; Sakai, Manabu; Kawahara, Sadao; Ito, Shotaro; Kojima, Yoshinori; Yamamura, Michio; and Yamamoto, Shuichi, 5,391,066, Cl. 418-55.600.

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Yamamoto, Takeshi: *See*—
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Yamamoto, Yasushi; and Kajihara, Ryuuji, to Nec Corporation. Surface acoustic wave filter capable of widening a bandwidth. 5,392,013, Cl 333-195.000

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Yamauchi, Noriyoshi; and Ishida, Hitoshi, to Ryobi Ltd. Low pressure die-casting machine and low pressure die-casting method. 5,390,724, Cl. 164-147.100.

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Yamazaki, Akira; Yoshida, Setsuo; Yoshioka, Tatsuo; Kawaji, Isamu; and Sakakibara, Tadamori, to Tonen Corp.; and Toyota Jidosha Kabushiki Kaisha. Lubricating oil composition. 5,391,307, Cl 252-32.500.

Yamazaki, Daisuke; and Furuya, Yukihiro, to Sony Corporation. Frequency converting circuit apparatus. 5,391,946, Cl. 327-113.000.

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Yamazaki, Shunpei, to Semicoductor Energy Laboratory Co., Ltd. Nonsingle crystal semiconductor and a semiconductor device using such semiconductor. 5,391,893, Cl. 257-52.000

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Yao, Eugene Y. G.; and Leung, Arthur K. K., to BBA Canada Limited. Explosion resistant, oil insulated, current transformer. 5,391,835, Cl. 174-18.000.

Yao, Raymond C.: *See*—
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Yapor, Wesley. Cerebral dilator. 5,391,178, Cl. 606-192.000.

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Yasuda, Tetsuo; and Takiyama, Eiichiro, to Showa Highpolymer Co., Ltd. Polyester injection-molded articles. 5,391,644, Cl. 525-440.000

Yasuda, Tomokazu; Yamanouchi, Junichi; and Tamoto, Koji, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,391,470, Cl. 430-517.000

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Yee, Henry C.: *See*—
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Yee, Philip W., to National Semiconductor Corporation. Folder circuit for analog to digital converter. 5,392,045, Cl. 341-156.000.

Yee, Ying K.: *See*—
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Yeon, Seung H.: *See*—
Jung, Il N.; Lee, Gyu H.; Suk, Mi Y.; and Yeon, Seung H., 5,391,794, Cl. 556-435.000.

Yetter, Jeffry D., to Hewlett-Packard Company. Universal pipeline latch for mousetrap logic circuits. 5,392,423, Cl. 395-550.000

Yojima, Masayuki; and Kinoshita, Masao, to NEC Corporation. Method and device for measuring height of object whose surface has irregular reflectance. 5,392,110, Cl. 356-1.000.

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Yokoyama, Etsuya, to Mitsubishi Denki Kabushiki Kaisha. Constant speed control device. 5,390,756, Cl. 180-178.000

Yokoyama, Haruhiko; and Nakao, Masaya, to Matsushita Electric Industrial Co., Ltd. Object inspection method employing selection of discerning features using mahalanobis distances. 5,392,364, Cl. 382-16.000

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Yokoyama, Masuzo; Takakura, Kazuhide; and Takano, Junji, to Mitsubishi Petrochemical Co., Ltd. Process for producing aromatic polycarbonate. 5,391,691, Cl. 528-198.000.

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Yokoyama, Toshio: *See*—
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Yokoyama: Yukio, to NEC Corporation. Portable radio communication apparatus unnecessitating shielding case. 5,392,461, Cl. 455-89.000.

Yoshida, Hiroaki: *See*—
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Yoshida, Naoki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Imaging device having dual scanners. 5,392,100, Cl. 355-235.000.

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Yoshie, Naoki; Machida, Junji; Anno, Masahiro; and Kobayashi, Makoto, to Minolta Camera Kabushiki Kaisha. Developer compris-

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Yoshikawa, Osamu, to SMK Corporation. Transparent coordinate detection device. 5,392,035, Cl. 341-5.000.

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Youngen, Christopher S.: *See—*
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Yung, Robert, to Sun Microsystems, Inc. Rapid data retrieval from data storage structures using prior access predictive annotations. 5,392,414, Cl. 395-425.000

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Zavaleta, Mauricio A., to Motorola, Inc. Regulated charge pump and method therefor. 5,392,205, Cl. 363-59.000

Zegers, Cornelis M. J., to Machinefabriek Meyn B.V. Method and apparatus for unloading a poultry transport container. 5,391,048, Cl. 414-786.000.

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Zimmer, Joachim; Pohlers, Ralf; Geis, Andreas; and Dietrich, Jan, to Robert Bosch GmbH. Wiping device with variable contact force for windows of motor vehicles. 5,390,391, Cl. 15-250.200.

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ZMD Corporation: *See—*
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Zoppi, Gianni, to Ecochem Aktiengesellschaft. Process for the production of alkali metal hydroxides and elemental sulfur from sulfur-containing alkali-metal salts. 5,391,267, Cl. 204-98.000.

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Zsarnoczai nee Kurnyecova, Szvetlana: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21st DAY OF FEBRUARY, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Adam, Friedhelm; Blumbach, Jurgen; Durckheimer, Walter; Fischer, Gerd; Mencke, Burghard; Isert, Dieter; and Seibert, Gerhard, to Hoechst Aktiengesellschaft. Cephalosporin derivatives. Re. 34,865, Cl. 514-202.000

Batz, Hans-Georg; Hopp, Herbert; and Stellner, Klaus, to Boehringer Mannheim GmbH. Carrier for coating with immunologically-active material. Re. 34,864, Cl. 436-531.000.

Blumbach, Jurgen: *See*—
Adam, Friedhelm; Blumbach, Jurgen; Durckheimer, Walter; Fischer, Gerd; Mencke, Burghard; Isert, Dieter; and Seibert, Gerhard, Re. 34,865, Cl. 514-202.000.

Bochringer Mannheim GmbH: *See*—
Batz, Hans-Georg; Hopp, Herbert; and Stellner, Klaus, Re. 34,864, Cl. 436-531.000.

Clupper, Harold E.: *See*—
Kensey, Kenneth; and Clupper, Harold E., Re. 34,866, Cl. 606-213.000.

Czor, Doug. Electrodeposition process. Re. 34,862, Cl. 205-67.000.

Durckheimer, Walter: *See*—
Adam, Friedhelm; Blumbach, Jurgen; Durckheimer, Walter; Fischer, Gerd; Mencke, Burghard; Isert, Dieter; and Seibert, Gerhard, Re. 34,865, Cl. 514-202.000.

English, Robert C.; Thornber, Geoffrey; and Walker, Christopher M., to Litton Systems, Inc. High impedance circuit for injection locked magnetrons. Re. 34,863, Cl. 331-86.000.

Fischer, Gerd: *See*—
Adam, Friedhelm; Blumbach, Jurgen; Durckheimer, Walter; Fischer, Gerd; Mencke, Burghard; Isert, Dieter; and Seibert, Gerhard, Re. 34,865, Cl. 514-202.000

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Isert, Dieter: *See*—
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Kensey, Kenneth; and Clupper, Harold E., to Kensey Nash Corporation. Device for sealing percutaneous puncture in a vessel. Re. 34,866, Cl. 606-213.000

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Mencke, Burghard: *See*—
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Stellner, Klaus: *See*—
Batz, Hans-Georg; Hopp, Herbert; and Stellner, Klaus, Re. 34,864, Cl. 436-531.000.

Thornber, Geoffrey: *See*—
English, Robert C.; Thornber, Geoffrey; and Walker, Christopher M., Re. 34,863, Cl. 331-86.000.

Walker, Christopher M.: *See*—
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Lyudkovsky, Grigory, to Inland Steel Co. Steel with antimony addition. B1 4,483,723, 2-21-95, Cl. 148-320.000

Membrane Technology and Research, Inc.: *See*—
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Lee, Dennis C. S.; Francis, Tommy C.; Jampathom, Sompoppol; Scheib, Paul A.; Hoe, Desmond T. C.; and Zambelli, Michael P., 355,652, Cl. D14-149.000
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Yazaki Industrial Chemical Co Ltd.: *See*—
Kuwata, Yuji, 355,589, Cl. D8-382.000.
Yazaki Industrial Chemical Co. Ltd.: *See*—
Kuwata, Yuji, 355,590, Cl. D8-382.000.
Yoneyama, Takahisa: *See*—
Murakami, Makoto; and Yoneyama, Takahisa, 355,717, Cl. D24-158.000
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Yoshida Kogyo K.K. Corporation: *See*—
Terada, Yasuharu; Suzuki, Tsuneo; Matsushima, Hideyuki; and Horita, Yoshiyuki, 355,585, Cl. D8-367.000.
Yoshikawa, Kazumasa; and Uno, Katsuhiko, to Asics Corporation. Shoe heel protector. 355,527, 2-21-95, Cl. D2-977.000.
Yost, Hollis K.: *See*—
Mark, Darren M.; and Yost, Hollis K., 355,578, Cl. D8-308.000.
Yuen, Se K., to John Manufacturing Limited. Electronic insect repeller. 355,696, 2-21-95, Cl. D22-123.000.
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Zambelli, Michael P.: *See*—
Lee, Dennis C. S.; Francis, Tommy C.; Jampathom, Sompoppol; Scheib, Paul A.; Hoe, Desmond T. C.; and Zambelli, Michael P., 355,651, Cl. D14-149.000
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Lee, Dennis C. S.; Francis, Tommy C.; Jampathom, Sompoppol; Scheib, Paul A.; Hoe, Desmond T. C.; and Zambelli, Michael P., 355,659, Cl. D14-248.000.
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Zebco Corporation: *See*—
Robbins, Richard J.; and Hlava, Lorens G., 355,698, Cl. D22-141.000.

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CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 21, 1995

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2 5,390,367
5,390,368
12 5,390,369
153 5,390,370
159 5,390,371
161.2 5,390,372
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CLASS 4
301 5,390,374
404 5,390,375
495 5,390,377
578.1 5,390,378

CLASS 5
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84.1 5,390,380
417 5,390,381
424 5,390,382
624 5,390,383
654 5,390,384

CLASS 8
158 5,390,385
408 5,391,206
437 5,391,207

CLASS 14
22 5,390,386

CLASS 15
79.2 5,390,387
98 5,390,388
104.33 5,390,389
228 5,390,390
250.20 5,390,391
339 5,390,392

CLASS 16
21 5,390,393
30 5,390,394

CLASS 24
20 R 5,390,395
436 5,390,396
662 5,390,397

CLASS 26
93 5,390,398

CLASS 28
109 5,390,399
274 5,390,400

CLASS 29
25.35 5,390,401
241 5,390,402
252 5,390,403
259 5,390,404
407 5,390,406
512 5,390,407
558 5,390,408
596 5,390,409
753 5,390,410
848 5,390,412
889.21 5,390,413
890.131 5,390,411
893.34 5,390,414

CLASS 30
41 5,390,415
43.6 5,390,416
148 5,390,417

CLASS 33
27.03 5,390,418
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286 5,390,420
288 5,390,421
412 5,390,422
559 5,390,423
561 5,390,424
764 5,390,425
770 5,390,426
811 5,390,427

CLASS 34
273 5,390,428
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CLASS 36
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CLASS 38
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CLASS 40
299 5,390,434
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661 5,390,437

CLASS 43
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CLASS 47
1.01 5,391,208
59 5,390,442
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CLASS 48
191 5,391,209

CLASS 49
47 5,390,444

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298 5,391,210

CLASS 52
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71 5,390,452
90.1 5,390,453
208 5,390,454
299 5,390,455
311.2 5,390,456
387 5,390,457
417 5,390,458
426 5,390,459
489.1 5,390,460
506.03 5,390,461
506.05 5,390,462
726.2 5,390,463
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CLASS 55
269 5,391,211
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CLASS 56
11.3 5,390,479
320.2 5,390,480

CLASS 57
65 5,390,481
66.5 5,390,482
262 5,390,483
281 5,390,484
328 5,390,485

CLASS 60
39.02 5,390,486
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274 5,390,488
276 5,390,489
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278 5,390,492
284 5,390,493
299 5,390,494
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525 5,390,496
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50.2 5,390,500
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137 5,390,504
173 5,390,505
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200 5,390,507
325 5,390,508
476 5,390,509

CLASS 63
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CLASS 65
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CLASS 66
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CLASS 70
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122 5,390,521
133 5,390,538
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391.6 5,390,524
405 5,390,525
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481 5,390,527

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3 5,390,528
23.41 5,390,529
38 5,390,539
40 5,390,530
5,390,531
40.5 R 5,390,532
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79 5,390,534
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105 5,390,536
117.3 5,390,537
146 5,390,540
204.25 5,390,541
269 5,390,542
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650 5,390,545
715 5,390,546
861.04 5,390,547
861.15 5,390,548
862.331 5,390,549
862.46 5,390,550
863 5,390,551
863.730 5,390,552
864.91 5,390,553

CLASS 74
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38 5,390,556
89.17 5,390,557
124 5,390,558
325 5,390,559
329 5,390,560
331 5,390,561
335 5,390,562
339 5,390,563
502.2 5,390,565
551.1 5,390,564

CLASS 75
623 5,391,215
724 5,391,217

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3.09 5,390,567
57.16 5,390,568
57.38 5,390,569

64 5,390,570
177.85 5,390,571
436 5,390,572
468 5,390,573

CLASS 83
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140 5,390,575
613 5,390,576
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CLASS 84
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601 5,391,828
622 5,391,829
626 5,391,830
726 5,391,831
5,391,832
742 5,391,833

CLASS 86
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CLASS 89
1.812 5,390,581
37.22 5,390,582
47 5,390,583

CLASS 92
12.2 5,390,584
32 5,390,585
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CLASS 95
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CLASS 99
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519 5,390,589
537 5,390,590
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127 5,390,592
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226 5,390,599
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409 5,390,601
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CLASS 102
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336 5,390,605
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CLASS 106
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287.2 5,391,225
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121.12 5,390,615

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98 5,390,617
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243 5,390,619
263 5,390,620
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5,390,622
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288 5,390,624

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62.1 5,390,625

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5,391,231
715 5,391,232
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CLASS 119
14.08 5,390,627
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711 5,390,629

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CLASS 123
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65 V 5,390,633
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193.5 5,390,634
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694 5,390,651

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271.2 R 5,390,660

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203.25 5,390,665
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205.12 5,390,667
205.27 5,390,668
207.14 5,390,669
633 5,390,670
635 5,390,671
653.2 5,390,673
653.5 5,390,672
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661.09 5,390,676
5,390,677
662.06 5,390,678
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842 5,390,681
845 5,390,682

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240 5,390,694
355.27 5,390,695
494 5,390,696
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512.15 5,390,699
5,390,700
513.3 5,390,692
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614.04 5,390,702
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CLASS 138
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CLASS 139
11 5,390,707
383 AA 5,390,708
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CLASS 141
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59 5,390,712
98 5,390,713
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CLASS 144
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175 5,390,716

CLASS 148
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320 B1 4,483,723
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159 5,390,717

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400 5,390,718

CLASS 156
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248 5,391,249
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292 5,391,251
345 5,391,252
382 5,391,253
494 5,391,254
500 5,391,255
630 5,391,256
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662 5,391,244

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147.1 5,390,724
467 5,390,725
478 5,390,726
521 5,390,727

CLASS 165

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47 5,390,729
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153 5,390,732
173 5,390,733
185 5,390,734

CLASS 166

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153 5,390,736
184 5,390,737
187 5,390,738
212 5,390,739
266 5,390,740
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297 5,390,742
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CLASS 169

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CLASS 172

174 5,390,745
371 5,390,746

CLASS 173

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CLASS 174

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50 5,391,837
65 R 5,391,839
68.3 5,391,840
258 5,391,841
260 5,391,842

CLASS 175

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296 5,390,749
406 5,390,750

CLASS 177

141 5,391,843
229 5,391,844

CLASS 180

6.48 5,390,751
9.52 5,390,752
19.1 5,390,753
68.5 5,390,754
146 5,390,755
178 5,390,756
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CLASS 182

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118 5,390,761

CLASS 184

1.5 5,390,762

CLASS 185

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CLASS 186

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CLASS 187

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396 5,390,766

CLASS 188

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CLASS 191

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CLASS 192

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106.1 5,390,774

CLASS 193

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CLASS 198

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456 5,390,778
458 5,390,779
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61.45 R 5,391,845
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244 5,391,847
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124.31 5,391,857
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250 5,391,859
497 5,391,860
543 5,391,861
667 5,391,862
677 5,391,863
730 5,391,864

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86.2 5,390,808
212 5,390,809
281 5,390,810
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403 5,390,812
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465 5,390,814
529 5,390,815
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669 5,390,817
676 5,390,818

CLASS 221

45 5,390,819
52 5,390,820
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CLASS 222

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81 5,390,823
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135 5,390,825
146.6 5,390,826
181 5,390,827
211 5,390,828
321 5,390,829
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391 5,390,831
394 5,390,832
505 5,390,833
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CLASS 224

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148 5,390,838
153 5,390,839
324 5,390,840

CLASS 226

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CLASS 227

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CLASS 228

124.1 5,390,843
180.21 5,390,844
217 5,390,845
219 5,390,846

CLASS 229

23 R 5,390,847
103.2 5,390,848

CLASS 232

45 5,390,849

CLASS 239

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99 5,390,850
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282 5,390,853
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384.6 5,390,874
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CLASS 244

23 D 5,390,877
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CLASS 246

167 R 5,390,880
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CLASS 248

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74.3 5,390,883
156 5,390,884
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224.3 5,390,886
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318 5,390,888
488 5,390,889
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581 5,390,891
619 5,390,892
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227.24 5,391,869
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316.1 5,391,872
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336.1 5,391,874
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370.13 5,391,882
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506.1 5,391,887
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574 5,391,891

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149.6 5,390,898
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CLASS 252

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52 A 5,391,311
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108 5,391,315
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692 5,391,919
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773 5,391,922
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789 5,391,924

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45.9 5,391,335
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51 5,391,337
59 5,391,338
65 5,391,339
112 5,391,340
113 5,391,341
210.2 5,391,342
216 5,391,343
257 5,391,344
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272.14 5,391,346

CLASS 266

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217 5,390,902

CLASS 267

28 5,390,903
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CLASS 270

21.1 5,390,905

CLASS 271

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15 A 5,390,912
26 R 5,390,915
32 B 5,390,916
34 B 5,390,917
79 5,390,918
80.1 5,390,919
5,390,920
81.2 5,390,921
81.6 5,390,922
148 R 5,390,923
169 5,390,924
176 H 5,390,925
178 B 5,390,926
185 A 5,390,927
187.2 5,390,928
5,390,929
197 R 5,390,930
201 5,390,931
220 5,390,932
244 5,390,933
292 5,390,934
298 5,390,935
422 5,390,936
434 5,390,937
5,390,938

CLASS 277

227 5,390,939

CLASS 279

62 5,390,940

CLASS 280

11.19 5,390,941
33.994 5,390,942
47.24 5,390,943
47.35 5,390,944
98 5,390,945
259 5,390,946
286 5,390,947
707 5,390,948
5,390,949
728 B 5,390,950
730 A 5,390,951
730 R 5,390,952
733 5,390,953
736 5,390,954
777 5,390,955
5,390,956
819 5,390,957
[illegible] 5,390,958

CLASS 285

3 5,390,960
38 5,390,969
41 5,390,961
53 5,390,962
86 5,390,963
93 5,390,964
116 5,390,965
137.1 5,390,966
177 5,390,967
179 5,390,968

CLASS 290

1 R 5,391,925
55 5,391,926

CLASS 294

19.1 5,390,970
25 5,390,971
27.1 5,390,972

CLASS 296

97.5 5,390,973
146.9 5,390,974
211 5,390,975

CLASS 297

115 5,390,976
216.13 5,390,977
240 5,390,978
344.12 5,390,979
378.12 5,390,980
5,390,981
410 5,390,982

CLASS 299

10 5,390,983

CLASS 300

21 5,390,984

CLASS 301

44.2 5,390,985

CLASS 303

3 5,390,986
9.62 5,390,987
15 5,390,988
87 5,390,989
93 5,390,990
97 5,390,991
112 5,390,992
113.1 5,390,993
113.2 5,390,994
116.1 5,390,995

CLASS 305

10 5,390,996
11 5,390,997

CLASS 307

66 5,391,927
89 5,391,928
91 5,391,929
98 5,391,930
117 5,391,931
125 5,391,932

CLASS 310

67 R 5,391,952
80 5,391,953
89 5,391,954
242 5,391,955

CLASS 312

117 5,390,998
235.5 5,390,999

CLASS 313

309 5,391,956
362.1 5,391,962
402 5,391,957
420 5,391,958
486 5,391,959
594 5,391,960
634 5,391,961

CLASS 315

3.5 5,391,963
39.71 5,391,964
137 5,391,965
308 5,391,966

CLASS 318

254 5,391,967
569 5,391,968
611 5,391,969
618 5,391,970
778 5,391,971

CLASS 320

2 5,391,972
21 5,391,973

35 5,391,974

CLASS 322

28 5,391,975

CLASS 323

207 5,391,976
[illegible] 5,391,977
282 5,391,978
313 5,391,979
314 5,391,980
316 5,391,981

CLASS 324

76.39 5,391,982
142 5,391,983
158.1 5,391,984
5,391,985
204 5,391,986
207.12 5,391,987
225 5,391,988
306 5,391,989
320 5,391,990
529 5,391,991
[illegible] 5,391,992
[illegible] 5,391,993
717 5,391,994
761 5,391,995

CLASS 326

21 5,391,940
39 5,391,942
41 5,391,943
83 5,391,939
106 5,391,941

CLASS 327

53 5,391,949
65 5,391,944
71 5,391,938
78 5,391,937
94 5,391,936
108 5,391,933
110 5,391,934
113 5,391,946
156 5,391,945
158 5,391,996
181 5,391,998
198 5,391,935
310 5,391,948
337 5,391,999
346 5,391,947
384 5,391,950
438 5,391,951
514 5,391,997

CLASS 330

107 5,392,000
156 5,392,001
252 5,392,002
254 5,392,003
296 5,392,004

CLASS 331

44 5,392,005
86 Re.34,863
158 5,392,006

CLASS 332

149 5,392,007

CLASS 333

21 R 5,392,008
81 R 5,392,009
161 5,392,010
174 5,392,011
189 5,392,012
195 5,392,013
218 5,392,014

CLASS 335

78 5,392,015
176 5,392,016

CLASS 336

83 5,392,017
155 5,392,018
200 5,392,019
5,392,020

CLASS 337

87 5,392,021
312 5,392,022

CLASS 340

436 5,392,024
545 5,392,025
546 5,392,026
561 5,392,027
572 5,392,028
574 5,392,029
576 5,392,030
588 5,392,031
604 5,392,032
825.5 5,392,033
933 5,392,034

CLASS 341

5 5,392,035
51 5,392,036
67 5,392,037
5,392,038
143 5,392,039
5,392,040
5,392,042
5,392,043
155 5,392,044
156 5,392,045

CLASS 342

22 5,392,046
25 5,392,047
26 5,392,048
42 5,392,049
90 5,392,050
165 5,392,051
188 5,392,059
357 5,392,052

CLASS 343

700 MS 5,392,053
702 5,392,054
790 5,392,055
873 5,392,056
882 5,392,057

CLASS 345

104 5,392,058

CLASS 347

4 5,392,062
46 5,392,064
49 5,392,063
88 5,392,065
240 5,392,060
252 5,392,061

CLASS 348

8 5,392,066
72 5,392,067
227 5,392,068
239 5,392,069
247 5,392,070
398 5,392,071
405 5,392,072
413 5,392,073
647 5,392,074
663 5,392,075
719 5,392,076
750 5,392,077

CLASS 351

136 5,392,078
212 5,392,079

CLASS 353

84 5,392,080
119 5,392,081

CLASS 354

195.12 5,392,082
219 5,392,083
222 5,392,084
247 5,392,085
266 5,392,086
319 5,392,087
402 5,392,088
412 5,392,089
415 5,392,090
432 5,392,091

CLASS 355

24 5,392,092
38 5,392,093
67 5,392,094
[illegible] 5,392,095
[illegible] 5,392,096
214 5,392,097
219 5,392,098
221 5,392,099
235 5,392,100
243 5,392,101
245 5,392,102
274 5,392,103
278 5,392,104
284 5,392,105
309 5,392,106
312 5,392,107
315 5,392,108
320 5,392,109

CLASS 356

1 5,392,110
121 5,392,111
139.1 5,392,112
237 5,392,113
338 5,392,114
349 5,392,115
351 5,392,116
352 5,392,117
355 5,392,118
5,392,119
358 5,392,120
360 5,392,121
372 5,392,122
381 5,392,123
5,392,124
445 5,392,125

CLASS 358

296 5,392,126
329 5,392,127
335 5,392,128
336 5,392,129
400 5,392,023
5,392,130
403 5,392,131
407 5,392,132
5,392,133
442 5,392,134
444 5,392,135
5,392,136
462 5,392,137
498 5,392,138
529 5,392,139

CLASS 359

41 5,392,140
53 5,392,141
5,392,142
59 5,392,143
66 5,392,144
67 5,392,145
145 5,392,146
181 5,392,147
182 5,392,148
216 5,392,149
221 5,392,150
223 5,392,151
333 5,392,152
341 5,392,153
5,392,154
558 5,392,155
586 5,392,156
625 5,392,157
633 5,392,158
653 5,392,431
691 5,392,159
695 5,392,160
861 5,392,161
872 5,392,162

CLASS 360

10.1 5,392,163
15 5,392,164
19.1 5,392,165
5,392,166
27 5,392,167
40 5,392,168
45 5,392,169
63 5,392,170
65 5,392,171
67 5,392,172
75 5,392,173
78.06 5,392,174
97.01 5,392,175
5,392,176
97.02 5,392,177
[illegible] 5,392,178
104 5,392,179
107 5,392,180
114 5,392,181
137 5,392,182

CLASS 361

16 5,392,184
56 5,392,185
92 5,392,186
111 5,392,187
118 5,392,188
[illegible] 5,392,189
323 5,392,190
[illegible] 5,392,191
683 5,392,192
704 5,392,193
785 5,392,194
809 5,392,196
818 5,392,197

CLASS 362

31 5,392,199
61 5,392,201
78 5,392,200
95 5,392,202
186 5,392,203
294 5,392,204

CLASS 363

19 5,392,206
59 5,392,205

CLASS 364

167.01 5,392,207
188 5,392,208
413.01 5,392,209
5,392,210
413.14 5,392,211
419.11 5,392,212
421 5,392,213
424.05 5,392,214
426.04 5,392,215
464.02 5,392,216
474.3 5,392,217
483 5,392,218
5,392,219
488 5,392,220
489 5,392,221
490 5,392,222
514 5,392,223
5,392,224
516 5,392,225
551.01 5,392,226
578 5,392,227
715.04 5,392,228
715.09 5,392,229
724.13 5,392,230
725 5,392,231

CLASS 365

51 5,392,232
104 5,392,233
145 5,392,234
154 5,392,235
185 5,392,236
5,392,237
5,392,238
189.01 5,392,239
5,392,240
5,392,241
189.03 5,392,242
190 5,392,243
200 5,392,244
5,392,245
5,392,246
5,392,247
201 5,392,248
203 5,392,249
207 5,392,250
222 5,392,251
230.02 5,392,252
230.06 5,392,253
240 5,392,254

CLASS 366

332 5,391,000

CLASS 367

50 5,392,255
131 5,392,256
135 5,392,257
149 5,392,258
152 5,392,259

CLASS 368

36 5,392,260
281 5,392,261

CLASS 369

13 5,392,262
5,392,263
32 5,392,264
5,392,265
36 5,392,266
47 5,392,267
54 5,392,268
5,392,269
59 5,392,270
93 5,392,271
100 5,392,272
106 5,392,273
110 5,392,274
126 5,392,275

CLASS 370

29 5,392,276
55 5,392,277
58.3 5,392,278
60 5,392,279
5,392,280
60.1 5,392,281
77 5,392,282
79 5,392,283
[illegible] 5,392,284
85.2 5,392,285
94.1 5,392,286
95.1 5,392,287

CLASS 371

2.2 5,392,288
5.4 5,392,289
10.1 5,392,290
10.3 5,392,291
11.1 5,392,292
15.1 5,392,293
21.2 5,392,294
5,392,295
22.3 5,392,296
22.6 5,392,297
25.1 5,392,298
37.5 5,392,299
37.7 5,392,300
40.1 5,392,301
51.1 5,392,302

CLASS 372

32 5,392,303
36 5,392,304
43 5,392,305
45 5,392,306
5,392,307
92 5,392,308
95 5,392,309
5,392,310
96 5,392,311

CLASS 373

9 5,392,312

CLASS 374

130 5,391,001

CLASS 375

4 5,392,313
10 5,392,314
14 5,392,315
18 5,392,316
76 5,392,317
118 5,392,318

CLASS 376

194 5,392,319
215 5,392,320
258 5,392,321
260 5,392,322
291 5,392,323
299 5,392,324
301 5,392,325
371 5,392,326

CLASS 379

2 5,392,327
10 5,392,328
49 5,392,329
61 5,392,330
63 5,392,331
67 5,392,332
5,392,334
5,392,335
93 5,392,336
96 5,392,337
97 5,392,338
100 5,392,339
201 5,392,340
210 5,392,341
211 5,392,342
212 5,392,343
221 5,392,344
265 5,392,345
5,392,346
372 5,392,347
386 5,392,348
412 5,392,349
446 5,392,350

CLASS 380

4 5,392,351
10 5,392,352
20 5,392,353
23 5,392,354
5,392,355
5,392,356
33 5,392,357

CLASS 381

191 5,392,358

CLASS 382

8 5,392,359
5,392,360
5,392,361
9 5,392,362
13 5,392,363
16 5,392,364
22 5,392,365
30 5,392,366
39 5,392,367

CLASS 384

12 5,391,002
44 5,391,003
477 5,391,004
575 5,391,005

CLASS 385

14 5,392,368
15 5,392,369
24 5,392,377
25 5,392,370
52 5,392,371
88 5,392,372
92 5,392,373
100 5,392,374
124 5,392,375
144 5,392,376

CLASS 388

803 5,392,378

CLASS 392

390 5,392,379
498 5,392,380

CLASS 395

2.14 5,392,381
10 5,392,382
61 5,392,383
89 5,392,384
131 5,392,385
155 5,392,386
156 5,392,387
159 5,392,388
5,392,389
161 5,392,390
162 5,392,391
5,392,392
5,392,393
163 5,392,394
164 5,392,395
5,392,396
200 5,392,397
5,392,398
5,392,399
5,392,400
5,392,401
5,392,402
275 5,392,403
5,392,404
5,392,405
325 5,392,406
5,392,407
375 5,392,408
400 5,392,409
5,392,410
5,392,411
425 5,392,412
5,392,413
5,392,414
5,392,415
5,392,416
5,392,417
5,392,418
[illegible] 5,392,419
5,392,420
550 5,392,421
5,392,422
5,392,423
575 5,392,424
5,392,425
600 5,392,427
5,392,428
650 5,392,426
5,392,429
5,392,430
700 5,392,432
725 5,392,433
5,392,434
5,392,435
5,392,436
5,392,441
5,392,437
5,392,438
5,392,439
775 5,392,440
800 5,392,442
5,392,443
5,392,444
5,392,445
5,392,446
5,392,447
5,392,448

CLASS 400

208 5,391,007
488 5,391,006
605 5,391,008
5,391,009

CLASS 401

8 5,391,010
126 5,391,011

CLASS 403

4 5,391,012
59 5,391,013
74 5,391,014

CLASS 404

6 5,391,016
14 5,391,015
90 5,391,017

CLASS 405

128 5,391,018
5,391,019
129 5,391,020

CLASS 408

67 5,391,021
146 5,391,023
233 5,391,022

CLASS 409

[illegible] 5,391,024
137 5,391,025
201 5,391,026
233 5,391,027

CLASS 410

12 5,391,030

CLASS 411

82 5,391,031
214 5,391,032
263 5,391,033
374 5,391,028

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451 5,391,029

CLASS 414

156 5,391,034
217 5,391,035
225 5,391,036
276 5,391,037
392 5,391,038
408 5,391,039
469 5,391,040
537 5,391,041
542 5,391,042
544 5,391,043
563 5,391,044
626 5,391,045
667 5,391,046
751 5,391,047
786 5,391,048
795.3 5,391,049
796 5,391,050
797.2 5,391,051

CLASS 415

115 5,391,052
119 5,391,053
182.1 5,391,054

CLASS 416

157 A 5,391,055
247 R 5,391,056

CLASS 417

27.3 5,391,059
73 5,391,057
223 5,391,058
393 5,391,060
410.1 5,391,061
423.14 5,391,064
423.3 5,391,062
423.7 5,391,063

CLASS 418

55.3 5,391,065
55.6 5,391,066
60 5,391,067
206 5,391,068

CLASS 419

38 5,391,347

CLASS 420

129 5,391,348

CLASS 422

7 5,391,349
26 5,391,350
28 5,391,351
65 5,391,352
103 5,391,353
129 5,391,354
131 5,391,355
143 5,391,356
145 5,391,357
171 5,391,358
292 5,391,360
295 5,391,361

CLASS 423

81 5,391,362
240 R 5,391,363
335 5,391,364
605 5,391,365
658.2 5,391,366

CLASS 424

61 5,391,367
70.13 5,391,368
78.37 5,391,369
5,391,370
94.2 5,391,371
195.1 5,391,372
401 5,391,373
5,391,374
449 5,391,375
450 5,391,376
463 5,391,377
464 5,391,378
473 5,391,381
570 5,391,380
605 5,391,379

CLASS 425

78 5,391,069
135 5,391,070
5,391,071
174.4 5,391,072
377 5,391,073

CLASS 426

96 5,391,382
99 5,391,383
267 5,391,384
417 5,391,385
420 5,391,386
512 5,391,387
618 5,391,388
632 5,391,389
638 5,391,390
658 5,391,391

CLASS 427

81 5,391,392
100 5,391,393
124 5,391,394
129 5,391,395
156 5,391,396
[illegible] 5,391,359
207.1 5,391,397
244 5,391,398
370 5,391,399
389.9 5,391,400
420 5,391,401
437 5,391,402
452 5,391,404
453 5,391,403
515 5,391,405
516 5,391,406
527 5,391,407
542 5,391,408
577 5,391,409
578 5,391,410

CLASS 428

34 5,391,411
43 5,391,412
64 5,391,413
5,391,414
74 5,391,415
102 5,391,425
122 5,391,416
143 5,391,417
171 5,391,418
193 5,391,419
195 5,391,420
209 5,391,421
212 5,391,422
217 5,391,423
220 5,391,424
246 5,391,426
284 5,391,427
297 5,391,428
327 5,391,429
328 5,391,430
336 5,391,431
357 5,391,432
408 5,391,433
412 5,391,434
416 5,391,435
423.1 5,391,436
425.5 5,391,437
523 5,391,438
571 5,391,439

CLASS 429

27 5,391,440

CLASS 430

5 5,391,441
7 5,391,442
21 5,391,443
23 5,391,444
49 5,391,445
58 5,391,446
59 5,391,447
65 5,391,448
[illegible] 5,391,449
99 5,391,450
106.6 5,391,451
5,391,452
110 5,391,453
5,391,454
120 5,391,455
137 5,391,456
204 5,391,457
258 5,391,458
264 5,391,459
269 5,391,460
271 5,391,461
5,391,462
272 5,391,463
281 5,391,464
325 5,391,465
393 5,391,466
434 5,391,467
503 5,391,468
506 5,391,469
517 5,391,470
523 5,391,471
527 5,391,472
538 5,391,473
569 5,391,474
600 5,391,475
637 5,391,476
642 5,391,477

CLASS 431

[illegible] 5,391,074
258 5,391,075
354 5,391,076

CLASS 432

176 5,391,077

CLASS 434

113 5,391,078
254 5,391,080
262 5,391,081

CLASS 435

5 5,391,478
5,391,479
6 5,391,480
7.24 5,391,481
18 5,391,482
28 5,391,483
61 5,391,484
69.5 5,391,485
71.2 5,391,486
91.53 5,391,487
147 5,391,488
220 5,391,489
224 5,391,490
240.2 5,391,491
252.1 5,391,492
253.5 5,391,493
280 5,391,494
5,391,495
286 5,391,496
320.1 5,391,497

CLASS 436

[illegible] 5,391,498
180 5,391,499
531 Re.34,864

CLASS 437

7 5,391,501
8 5,391,502
31 5,391,503
5,391,504
40 5,391,505
41 5,391,506
5,391,507
5,391,508
44 5,391,509
5,391,510
49 5,391,511
56 5,391,512
60 5,391,513
133 5,391,515
174 5,391,516
183 5,391,514
190 5,391,517
5,391,518
5,391,519
200 5,391,520
5,391,521

CLASS 439

68 5,391,082
76 5,391,083
98 5,391,084
137 5,391,085
157 5,391,086
188 5,391,087
216 5,391,088
5,391,089
354 5,391,090
378 5,391,091
470 5,391,092
617 5,391,093
638 5,391,094
676 5,391,095
724 5,391,096
825 5,391,097
830 5,391,098

CLASS 440

77 5,391,099

CLASS 445

5,391,100
50 5,391,101

CLASS 446

23 5,391,102
125 5,391,103
177 5,391,104
219 5,391,105
337 5,391,106
484 5,391,107

CLASS 451

8 5,390,446
45 5,390,431
75 5,390,450
194 5,390,445
478 5,390,448
526 5,390,449

CLASS 452

21 5,391,108
155 5,391,109

CLASS 454

64 5,391,110
70 5,391,111
139 5,391,112

CLASS 455

8 5,392,449
12.1 5,392,450
13.1 5,392,451
32.1 5,392,454
33.2 5,392,453
38.1 5,392,452
38.3 5,392,456
5,392,457
54.1 5,392,458
69 5,392,459
76 5,392,460
89 5,392,461
5,392,462
93 5,392,463
115 5,392,464
382 5,392,455

CLASS 464

91 5,391,113

CLASS 470

38 5,391,114

CLASS 472

80 5,391,115

CLASS 473

73 5,391,116
128 5,391,117

CLASS 474

102 5,391,120
112 5,391,119
138 5,391,118
253 5,391,121

CLASS 475

72 5,391,122
83 5,391,123
198 5,391,124
346 5,391,125

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01 :	5,390,741	5,390,783	5,391,354	5,392,152	5,392,335	5,391,426
	5,390,745	5,390,788	5,391,376	5,392,157	5,392,346	5,391,582
	5,391,169	5,390,791	5,391,381	5,392,192	5,392,349	5,391,623
	5,391,226	5,390,797	5,391,389	5,392,206	5,392,423	5,391,670
	5,391,962	5,390,801	5,391,394	5,392,222	09 : 5,390,435	5,391,678
02 :	5,391,170	5,390,804	5,391,425	5,392,239	5,390,534	5,391,703
04 :	5,390,374	5,390,816	5,391,458	5,392,259	5,390,548	5,391,796
	5,390,375	5,390,826	5,391,460	5,392,272	5,390,588	11 : 5,390,558
	5,390,554	5,390,838	5,391,480	5,392,276	5,390,594	12 : 5,390,379
	5,390,661	5,390,847	5,391,498	5,392,287	5,390,617	5,390,421
	5,390,711	5,390,852	5,391,502	5,392,289	5,390,630	5,390,460
	5,390,932	5,390,854	5,391,505	5,392,297	5,390,722	5,390,541
	5,391,285	5,390,892	5,391,518	5,392,308	5,390,782	5,390,659
	5,391,397	5,390,896	5,391,583	5,392,320	5,390,827	5,390,688
	5,391,934	5,390,897	5,391,590	5,392,322	5,390,909	5,390,713
	5,391,997	5,390,898	5,391,667	5,392,325	5,390,968	5,390,717
	5,392,252	5,390,901	5,391,704	5,392,332	5,391,004	5,390,858
	5,392,262	5,390,917	5,391,712	5,392,350	5,391,005	5,390,916
	5,392,431	5,390,929	5,391,736	5,392,355	5,391,007	5,390,924
05 :	5,391,538	5,390,933	5,391,753	5,392,358	5,391,133	5,391,017
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	5,390,376	5,390,990	5,391,776	5,392,391	5,391,180	5,391,081
	5,390,383	5,391,009	5,391,777	5,392,393	5,391,252	5,391,106
	5,390,385	5,391,020	5,391,785	5,392,399	5,391,548	5,391,145
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	5,390,510	5,391,105	5,391,932	5,392,446	5,391,707	5,391,744
	5,390,521	5,391,146	5,391,941	5,392,448	5,391,722	5,392,003
	5,390,542	5,391,147	5,391,942	5,089,033	5,391,742	5,392,011
	5,390,547	5,391,153	5,391,963	08 : 5,390,384	5,391,745	5,392,066
	5,390,571	5,391,165	5,391,967	5,390,611	5,391,756	5,392,072
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	5,390,675	5,391,274	5,392,027	5,391,372	5,392,256	5,392,452
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	5,390,695	5,391,289	5,392,055	5,391,896	10 : 5,390,431	13 : 5,390,504
	5,390,701	5,391,296	5,392,063	5,391,926	5,390,803	5,390,654
	5,390,753	5,391,320	5,392,064	5,392,001	5,390,824	5,390,714
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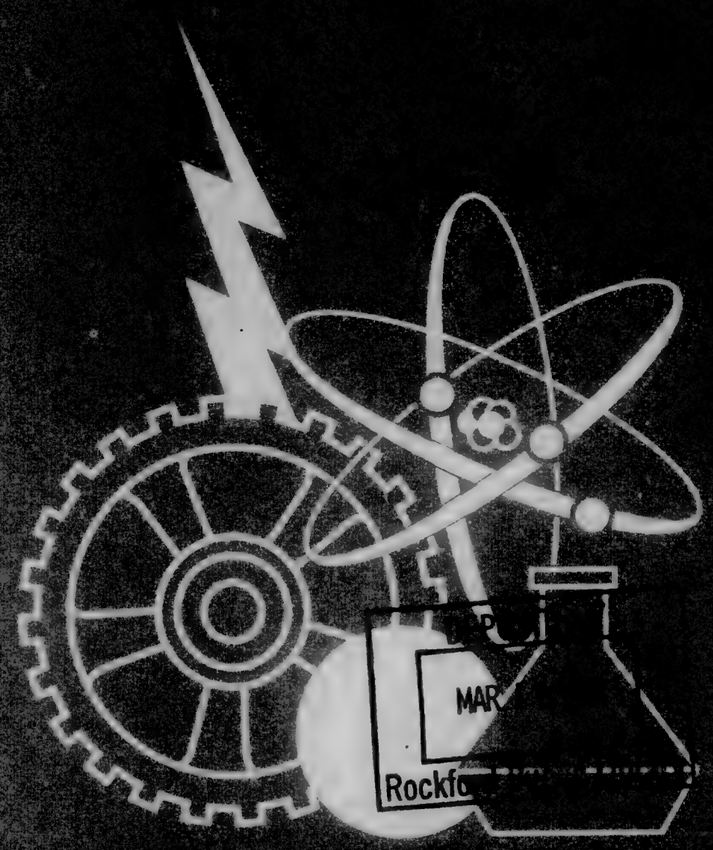
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For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1168 O.G. 100, on Nov. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Jan. 1, 1995, is as follows:

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—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation)	180.00
European Patent Office as ISA	1537.00
International fees	
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Basic Supplemental fee (for each page over 30)	12.00
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—Designation fee	147.00
—Confirmation fee	73.50
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—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 12, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 28, 1992 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,090,053 through 5,091,991
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 23, 1988 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,726,074 through 4,727,601
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 21, 1984 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,432,099 through 4,433,438
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED Decmeber 21, 1995
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,473	06/596,129	08/11/87
(4,365,033)	(06/279,634)	(12/21/82)
Re. 33,270	07/284,472	07/24/90
(4,628,881)	(06/700,692)	(12/16/86)
Re. 33,768	07/516,464	12/17/91
(4,629,435)	(06/777,193)	(12/16/86)
4,364,124	06/250,014	12/21/82
4,364,125	06/247,056	12/21/82
4,364,127	06/308,168	12/21/82
4,364,130	06/337,992	12/21/82
4,364,139	06/261,367	12/21/82
4,364,148	06/219,049	12/21/82
4,364,149	06/226,849	12/21/82
4,364,164	06/260,439	12/21/82
4,364,171	06/255,955	12/21/82
4,364,177	06/266,331	12/21/82
4,364,181	06/246,425	12/21/82
4,364,205	06/220,138	12/21/82
4,364,227	06/248,282	12/21/82
4,364,251	06/224,023	12/21/82
4,364,268	06/260,290	12/21/82
4,364,279	06/221,560	12/21/82
4,364,280	06/223,865	12/21/82
4,364,287	06/253,696	12/21/82
4,364,291	06/263,118	12/21/82
4,364,304	06/314,763	12/21/82
4,364,318	06/303,194	12/21/82
4,364,343	06/261,704	12/21/82
4,364,353	06/219,352	12/21/82
4,364,358	06/223,678	12/21/82
4,364,360	06/225,165	12/21/82
4,364,371	06/222,474	12/21/82
4,364,399	06/236,902	12/21/82
4,364,401	06/240,981	12/21/82
4,364,416	06/305,522	12/21/82
4,364,420	06/246,376	12/21/82
4,364,444	06/225,715	12/21/82
4,364,455	06/342,919	12/21/82
4,364,468	06/241,190	12/21/82
4,364,473	06/222,745	12/21/82
4,364,476	06/337,164	12/21/82
4,364,491	06/222,124	12/21/82
4,364,506	06/228,378	12/21/82
4,364,527	06/264,001	12/21/82
4,364,534	06/259,992	12/21/82
4,364,551	06/234,105	12/21/82
4,364,565	06/287,471	12/21/82
4,364,570	06/248,565	12/21/82
4,364,584	06/254,500	12/21/82
4,364,651	06/251,750	12/21/82
4,364,678	06/228,071	12/21/82
4,364,711	06/224,799	12/21/82
4,364,720	06/218,628	12/21/82
4,364,727	06/249,981	12/21/82
4,364,728	06/265,153	12/21/82
4,364,730	06/313,490	12/21/82
4,364,732	06/251,557	12/21/82
4,364,734	06/252,237	12/21/82
4,364,741	06/247,702	12/21/82
4,364,742	06/250,018	12/21/82
4,364,749	06/310,133	12/21/82
4,364,752	06/243,487	12/21/82
4,364,756	06/281,213	12/21/82
4,364,761	06/273,660	12/21/82
4,364,762	06/308,227	12/21/82
4,364,763	06/228,066	12/21/82
4,364,770	06/237,805	12/21/82
4,364,771	06/224,535	12/21/82
4,364,783	06/300,404	12/21/82
4,364,787	06/295,338	12/21/82
4,364,797	06/287,239	12/21/82
4,364,798	06/221,310	12/21/82
4,364,804	06/283,901	12/21/82
4,364,807	06/233,491	12/21/82
4,364,808	06/216,355	12/21/82
4,364,817	06/237,762	12/21/82
4,364,818	06/282,731	12/21/82
4,364,819	06/257,043	12/21/82
4,364,821	06/301,241	12/21/82
4,364,831	06/216,346	12/21/82
4,364,833	06/242,802	12/21/82
4,364,834	06/320,141	12/21/82
4,364,836	06/300,024	12/21/82
4,364,841	06/221,759	12/21/82
4,364,847	06/266,764	12/21/82
4,364,877	06/228,896	12/21/82
4,364,885	06/272,524	12/21/82
4,364,887	06/295,399	12/21/82
4,364,895	06/288,168	12/21/82
4,364,907	06/381,275	12/21/82
4,364,909	06/244,377	12/21/82
4,364,915	06/265,768	12/21/82
4,364,919	06/347,546	12/21/82
4,364,930	06/245,207	12/21/82
4,364,940	06/237,234	12/21/82
4,364,942	06/248,757	12/21/82
4,364,945	06/255,360	12/21/82
4,364,947	06/261,977	12/21/82
4,364,948	06/306,481	12/21/82
4,364,950	06/317,621	12/21/82
4,364,951	06/317,690	12/21/82
4,364,953	06/285,407	12/21/82
4,364,968	06/249,544	12/21/82
4,364,970	06/276,485	12/21/82
4,364,985	06/268,204	12/21/82
4,364,989	06/245,698	12/21/82
4,364,997	06/265,241	12/21/82
4,365,016	06/279,363	12/21/82
4,365,017	06/279,365	12/21/82
4,365,018	06/262,015	12/21/82
4,365,019	06/290,461	12/21/82
4,365,022	06/317,542	12/21/82
4,365,024	06/282,322	12/21/82
4,365,026	06/250,449	12/21/82
4,365,031	06/240,426	12/21/82
4,365,034	06/304,126	12/21/82
4,365,036	06/330,879	12/21/82
4,365,044	06/288,568	12/21/82
4,365,048	06/263,573	12/21/82
4,365,049	06/246,156	12/21/82
4,365,050	06/283,613	12/21/82
4,365,052	06/254,607	12/21/82
4,365,063	06/297,645	12/21/82
4,365,065	06/299,292	12/21/82
4,365,066	06/253,932	12/21/82
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4,365,079	06/222,477	12/21/82
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4,365,088	06/280,082	12/21/82
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4,365,097	06/244,384	12/21/82
4,365,120	06/253,814	12/21/82
4,365,125	06/360,203	12/21/82
4,365,143	06/219,031	12/21/82
4,365,144	06/242,301	12/21/82
4,365,146	06/309,818	12/21/82
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4,365,230	06/295,886	12/21/82
4,365,241	06/288,869	12/21/82
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4,365,253	06/268,377	12/21/82
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4,365,286	06/239,976	12/21/82
4,365,302	06/224,871	12/21/82
4,365,305	06/222,429	12/21/82
4,365,308	06/279,746	12/21/82
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4,628,545	06/707,214	12/16/86
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4,628,551	06/791,528	12/16/86
4,628,552	06/665,626	12/16/86
4,628,556	06/609,003	12/16/86
4,628,557	06/650,585	12/16/86
4,628,560	06/583,839	12/16/86
4,628,561	06/776,036	12/16/86
4,628,564	06/489,104	12/16/86
4,628,565	06/672,880	12/16/86
4,628,566	06/798,447	12/16/86
4,628,567	06/751,084	12/16/86
4,628,568	06/761,422	12/16/86
4,628,571	06/729,443	12/16/86
4,628,573	06/657,489	12/16/86
4,628,575	06/775,569	12/16/86
4,628,577	06/805,576	12/16/86
4,628,578	06/640,772	12/16/86
4,628,583	06/611,910	12/16/86
4,628,584	06/695,973	12/16/86
4,628,585	06/701,678	12/16/86
4,628,597	06/711,685	12/16/86
4,628,598	06/657,097	12/16/86
4,628,601	06/809,211	12/16/86
4,628,602	06/698,788	12/16/86
4,628,606	06/760,201	12/16/86
4,628,607	06/728,720	12/16/86
4,628,615	06/632,450	12/16/86
4,628,620	06/784,510	12/16/86
4,628,624	06/716,998	12/16/86
4,628,627	06/799,660	12/16/86
4,628,628	06/602,005	12/16/86
4,628,629	06/692,003	12/16/86
4,628,630	06/794,435	12/16/86
4,628,632	06/684,536	12/16/86
4,628,634	06/686,027	12/16/86
4,628,635	06/694,072	12/16/86
4,628,638	06/756,608	12/16/86
4,628,639	06/763,819	12/16/86
4,628,640	06/692,782	12/16/86
4,628,643	06/802,147	12/16/86
4,628,645	06/610,315	12/16/86
4,628,647	06/448,991	12/16/86
4,628,649	06/748,467	12/16/86
4,628,650	06/774,224	12/16/86
4,628,651	06/761,618	12/16/86
4,628,652	06/527,176	12/16/86
4,628,657	06/730,780	12/16/86
4,628,659	06/757,117	12/16/86
4,628,660	06/556,394	12/16/86
4,628,663	06/571,968	12/16/86
4,628,671	06/767,474	12/16/86
4,628,672	06/750,208	12/16/86
4,628,673	06/624,942	12/16/86
4,628,680	06/779,057	12/16/86
4,628,689	06/641,438	12/16/86

Patent Number	Serial Number	Issue Date
4,628,693	06/706,992	12/16/86
4,628,695	06/655,500	12/16/86
4,628,696	06/617,588	12/16/86
4,628,697	06/778,499	12/16/86
4,628,699	06/722,135	12/16/86
4,628,703	06/759,834	12/16/86
4,628,704	06/529,794	12/16/86
4,628,705	06/638,909	12/16/86
4,628,707	06/798,392	12/16/86
4,628,708	06/778,258	12/16/86
4,628,712	06/628,664	12/16/86
4,628,714	06/675,961	12/16/86
4,628,719	06/686,841	12/16/86
4,628,725	06/717,403	12/16/86
4,628,726	06/790,834	12/16/86
4,628,727	06/798,371	12/16/86
4,628,733	06/691,210	12/16/86
4,628,735	06/681,564	12/16/86
4,628,737	06/694,989	12/16/86
4,628,741	06/765,518	12/16/86
4,628,744	06/725,986	12/16/86
4,628,746	06/697,235	12/16/86
4,628,749	06/701,323	12/16/86
4,628,752	06/711,938	12/16/86
4,628,756	06/727,568	12/16/86
4,628,765	06/706,026	12/16/86
4,628,770	06/634,735	12/16/86
4,628,771	06/689,205	12/16/86
4,628,774	06/574,729	12/16/86
4,628,776	06/785,207	12/16/86
4,628,782	06/689,208	12/16/86
4,628,784	06/674,852	12/16/86
4,628,785	06/745,889	12/16/86
4,628,786	06/746,245	12/16/86
4,628,787	06/666,226	12/16/86
4,628,792	06/738,034	12/16/86
4,628,795	06/698,794	12/16/86
4,628,798	06/838,182	12/16/86
4,628,799	06/720,765	12/16/86
4,628,800	06/721,029	12/16/86
4,628,801	06/736,849	12/16/86
4,628,802	06/830,999	12/16/86
4,628,806	06/774,568	12/16/86
4,628,808	06/737,349	12/16/86
4,628,810	06/584,210	12/16/86
4,628,817	06/772,874	12/16/86
4,628,819	06/766,219	12/16/86
4,628,825	06/395,917	12/16/86
4,628,826	06/759,470	12/16/86
4,628,827	06/605,232	12/16/86
4,628,828	06/668,715	12/16/86
4,628,829	06/686,715	12/16/86
4,628,830	06/826,948	12/16/86
4,628,839	06/699,169	12/16/86
4,628,840	06/683,398	12/16/86
4,628,841	06/658,807	12/16/86
4,628,848	06/288,026	12/16/86
4,628,850	06/467,241	12/16/86
4,628,853	06/740,188	12/16/86
4,628,854	06/749,830	12/16/86
4,628,856	06/752,175	12/16/86
4,628,864	06/719,688	12/16/86
4,628,867	06/581,876	12/16/86
4,628,868	06/699,716	12/16/86
4,628,871	06/796,649	12/16/86
4,628,872	06/784,174	12/16/86
4,628,883	06/722,901	12/16/86
4,628,885	06/701,213	12/16/86
4,628,886	06/760,555	12/16/86
4,628,889	06/768,531	12/16/86
4,628,893	06/707,246	12/16/86
4,628,896	06/778,693	12/16/86
4,628,897	06/748,491	12/16/86
4,628,900	06/792,816	12/16/86
4,628,907	06/592,236	12/16/86
4,628,908	06/542,335	12/16/86
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4,628,922	06/781,244	12/16/86
4,628,926	06/676,516	12/16/86
4,628,933	06/758,609	12/16/86
4,628,946	06/269,103	12/16/86
4,628,950	06/580,716	12/16/86
4,628,953	06/700,206	12/16/86
4,628,955	06/798,409	12/16/86
4,628,960	06/649,458	12/16/86
4,628,961	06/777,753	12/16/86
4,628,963	06/757,418	12/16/86
4,628,966	06/696,557	12/16/86
4,628,967	06/764,927	12/16/86
4,628,968	06/741,002	12/16/86
4,628,970	06/670,164	12/16/86
4,628,972	06/735,124	12/16/86
4,628,976	06/746,725	12/16/86
4,628,993	06/757,115	12/16/86
4,628,994	06/734,187	12/16/86
4,628,995	06/764,560	12/16/86
4,628,997	06/623,803	12/16/86
4,628,999	06/692,840	12/16/86
4,629,001	06/737,958	12/16/86
4,629,003	06/761,514	12/16/86
4,629,004	06/700,032	12/16/86
4,629,005	06/619,458	12/16/86
4,629,008	06/617,394	12/16/86
4,629,009	06/648,447	12/16/86
4,629,010	06/737,440	12/16/86
4,629,018	06/730,807	12/16/86
4,629,019	06/784,858	12/16/86
4,629,022	06/611,620	12/16/86
4,629,028	06/405,164	12/16/86
4,629,042	06/712,513	12/16/86
4,629,044	06/796,593	12/16/86
4,629,046	06/617,553	12/16/86
4,629,052	06/773,920	12/16/86
4,629,057	06/668,865	12/16/86
4,629,059	06/664,412	12/16/86
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4,629,073	06/700,006	12/16/86
4,629,074	06/638,019	12/16/86
4,629,078	06/421,015	12/16/86
4,629,080	06/599,303	12/16/86
4,629,081	06/794,515	12/16/86
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4,629,088	06/710,648	12/16/86
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NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
Re. 34,270	07/783,831	06/01/93	10/29/91	01/18/95
(4,899,237	(07/366,366)	(02/06/90)	(06/15/89)	
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4,392,911	06/377,336	07/12/83	05/12/82	01/09/95
4,499,885	06/527,874	02/19/85	08/30/83	01/17/95
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,467,134, Re. S.N. 08/361,574, Dec. 22, 1994, Cl. 136/231, THERMOCOUPLE WITH OUT-OF-LINE ASPIRATION HOLES, Robert Algerd Pustell, Owner of Record: *Amespace, Inc., Wilmimgton, Mass.*, Attorney or Agent: Paul F. Prestia, Ex. Gp.: 2204

4,831,662, Re. S.N. 08/280,340, July 25, 1994, Cl. 359, FIBER OPTIC DIGITAL DATA TRANSMITTING SYSTEM, Loughrey R. Kuhn, Owner of Record: *Optical Communications Corp., Silver Spring, Md.*, Attorney or Agent: Donald E. Stout, Ex. Gp.: 2616

4,956,399, Re. S.N. 08/274,180, July 12, 1994, Cl. 523/223, EMULSIFIED MANNICH ACRYLAMIDE POLYMERS, Joseph J. Kozakiewicz, et. al., Owner of Record: *American Cyanamid Co., Stamford, Conn.*, Attorney or Agent: Allan A. Fanucci, Ex. Gp.: 1511

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4,995,189, Re. S.N. 08/370,564, Jan. 9, 1995, Cl. 43, RATTLING FISH LURE, Michael W. Crihfield, Owner of Record: *Inventor,* Attorney or Agent: Gregory C. Smith, Ex. Gp.: 3205

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5,070,885, Re. S.N. 08/351,563, Dec. 12, 1994, Cl. 128, DISPOSABLE BLOOD COLLECTION DEVICE, Jean M. Bonaldo, Owner of Record: *May Farr, Los Angeles, Calif.,* Attorney or Agent: Robert R. Thorton, Ex. Gp.: 3301

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5,144,358, Re. S.N. 08/299,346, Sept. 1, 1994, Cl. 354/403, AUTOMATIC FOCUSING CAMERA, Hiroyuki Tsuru, et. al., Owner of Record: *Nikon Corp., Tokyo, Japan,* Attorney or Agent: Nelson H. Shapiro, Ex. Gp.: 2101

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5,172,467, Re. S.N. 08/361,427, Dec. 21, 1994, Cl. 29/716, INSTALLATION APPARATUS FOR INSTALLING SELF-ATTACHING FASTENERS, Rudolph R.M. Muller, Owner of Record: *Multifastener Corp., Detroit, Mich.,* Attorney or Agent: William H. Honaker, Ex. Gp.: 3206

5,173,094, Re. S.N. 08/360,391, Dec. 21, 1994, Cl. 55/233, POSITIVE-PRESSURE FILER ARRANGEMENT FOR HAZARDOUS GASES, Timothy S. Brady, Owner of Record: *Inventor,* Attorney or Agent: Marc E. Brown, Ex. Gp.: 1305

5,173,262, Re. S.N. 08/360,899, Dec. 21, 1994, Cl. 422/72, ROTOR ASSEMBLY AND METHOD FOR AUTOMATICALLY PROCESSING LIQUIDS, Carl A. Burtis, et. al., Owner of Record: *Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.,* Attorney or Agent: Edward A. Pennington, Ex. Gp.: 1809

5,174,041, Re. S.N. 08/356,494, Dec. 15, 1994, Cl. 33/706, METHOD FOR MEASURING A LENGTH AND ELECTRONIC SLIDE CALIPER, Marcel Lorenz, Owner of Record: *Pav Praezisions-Aypparatebau Aktiengesellchaft, Vaduz Principality of Liechtenstein,* Attorney or Agent: Dean D. Small, Ex. Gp.: 2406

5,176,015, Re. S.N. 08/368,639, Jan. 4, 1995, Cl. 70/369, RESTRICTED KEY SYSTEM, Stan J. Sussina, Owner of Record: *Medco Security Locks, Inc., Salem, Va.,* Attorney or Agent: G. Franklin Rothwell, Ex. Gp.: 3508

5,176,548, Re. S.N. 08/360,010, Dec. 20, 1994, Cl. 440/47, RIDE PLATE FOR PERSONAL WATERCRAFT, Robert D. Morgan, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 3102

5,176,626, Re. S.N. 08/367,801, Dec. 30, 1994, Cl. 604/8, INDWELLING STENT, Hib Soehendra, Owner of Record: *Wilson-Cook Medical, Inc., Winston-Salem, N.C.,* Attorney or Agent: Vincent O. Wagner, Ex. Gp.: 3308

5,177,344, Re. S.N. 08/368,546, Jan. 4, 1995, Cl. 235/449, METHOD AND APPARATUS FOR ENHANCING A RANDOMLY VARYING SECURITY CHARACTERISTIC, Kevin J. Pease, Owner of Record: *Rand McNally & Co., Skokie, Ill.,* Attorney or Agent: Marshall W. Stuker, Ex. Gp.: 2511

5,178,433, Re. S.N. 08/370,260, Jan. 9, 1995, Cl. 296/35.1, VEHICLE BODY MOUNT, Frank Wagner, Owner of Record: *Inventor,* Attorney or Agent: Alfred L. Patmore, Jr., Ex. Gp.: 3102

5,181,795, Re. S.N. 08/358,869, Dec. 19, 1994, Cl. 405/128, IN-SITU LANDFILL PYROLYSIS, REMEDIATION AND VITRIFICATION, Louis J. Circeo, et. al., Owner of Record: *Inventor,* Attorney or Agent: Michael R. Philips, Ex. Gp.: 3501

5,188,428, Re. S.N. 08/340,721, Nov. 16, 1994, Cl. 301/37, DECORATED SIMULATED WHEEL COVER RETENTION SYSTEM, George A. Carter III, Owner of Record: *Inventor,* Attorney or Agent: Laurie A. Ebling, Ex. Gp.: 3102

5,276,253, Re. S.N. 08/359,039, Dec. 19, 1994, Cl. 588/253, IN-SITU REMEDIATION AND VITRIFICATION OF CONTAMINATED SOILS, DEPOSITS AND BURIED MATERIALS, Louis J. Circeo, Jr., et. al., Owner of Record: *Inventor,* Attorney or Agent: Michael R. Philips, Ex. Gp.: 3501

5,301,588, Re. S.N. 08/354,942, Dec. 13, 1994, Cl. 84/177, GRAND PIANO HAVING A LOWER LID, Daniel Revenaugh, et. al., Owner of Record: *Inventor,* Attorney or Agent: Alfred A. Equitz, Ex. Gp.: 2101

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,678,915, Reexam. No. 90/003,687, Jan. 12, 1995, Cl. 250/358.1, SYSTEM AND PROCESS FOR MEASURING AND CORRECTING THE VALUES OF A PARAMETER OF A SHEET MATERIAL, John Dahlquisti, et. al., Owner of Record: *Mearsuex Corp., Cupertino, Calif.,* Attorney or Agent: Hal Jay Bohner, Pacifica, Calif., Ex. Gp.: 2506, Requester: Owner

4,920,773, Reexam. No. 90/003,688, Jan. 17, 1995, Cl. 070/224, DOOR LOCK HAVING DISENGAGED OUTER LEVER HANDLE WHEN IN THE LOCKED CONDITION AND MEANS TO BIAS THE HANDLE TOWARD HORIZONTAL POSITION, Walter E. Surko, Jr., Owner of Record: *Yale Security, Inc., Monroe, N.C.,* Attorney or Agent: Richard W. Evans, Moore & Van Allen, Durham, N.C., Ex. Gp.: 3508, Requester: Owner

4,940,462, Reexam. No. 90/003,684, Dec. 30, 1994, Cl. 604/387, SANITARY NAPKIN WITH EXPANDABLE FLAPS, Catherine E. Salerno, Owner of Record: *McNeil - PPC, Inc., Milltown, N.J.,* Attorney or Agent: Robert L. Minier, Johnson & Johnson, New Brunswick, N.J., Ex. Gp.: 3308, Requester: Arnold Turk, Sandler, Greenblum & Bernstein, Arlington, Va.

5,183,539, Reexam. No. 90/003,685, Jan. 11, 1995, Cl. 203/038, METHOD OF PURIFYING CRUDE GLYCIDYL (METH)ACRYLATE, Akihiro Honma, et. al., Owner of Record: *Mitsubishi Gas Chemical Co., Tokyo, Japan,* Attorney or Agent: Wenderoth, Lind & Ponack, Washington, D.C., Ex. Gp.: 1308, Requester: NOF Corp., Tokyo, Japan

5,275,174, Reexam. No. 90/003,683, Dec. 29, 1994, Cl. 128/774, REPETITIVE STRAIN INJURY ASSESSMENT, Jonathan A. Cook, Owner of Record: *Inventor,* Attorney or Agent: Jonathan P. Osha, c/o Fish & Richardson, Houston, Tex., Ex. Gp.: 3301, Requester: Mr. John E. Skvarla, III, Isotechnologies, Inc., Hillsborough, N.C.

5,330,405, Reexam. No. 90/003,688, Jan. 11, 1995, Cl. 482/096, EXERCISE MACHINE, Theodore G. Habing, et. al., Owner of Record: *Pacific Fitness Corp., Cypress, Calif.,* Attorney or Agent: George W. Hoover, c/o Blakely Sokoloff Taylor & Zafman, Los Angeles, Calif., Ex. Gp.: 3302, Requester: Allen C. Turner, Salt Lake City, Utah

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Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before April 14, 1995.

Gastineau, Cheryl L., 2381 Rexford Dr., Pittsburgh, Pa. 15241
Goldstein, Herbert, 2000 Cascade Rd., Silver Spring, Md. 20902
Hicks, Andrew R., P.O. Box 0-6, Old Chelsea, Que., J0X 1N0, Canada
Mars, Howard T., 4017 Woodrow Ln., Bowie, Md. 20715
Smith, Gary L., 11814 Triple Crown Rd., Reston, Va. 22091

January 31, 1995 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held October 10, 1990. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before April 14, 1995.

Takano, Toshihiko, 3915 47th St., N.W., Washington, D.C. 20016

January 31, 1995 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Audrey M. Kelley, d.b.a. Rebel Magazine and d.b.a. AMK Productions, Los Angeles, Calif., Registration No. 1,642,759 for the mark "REBEL" (stylized), Cancellation No. 23,076.

JEAN BROWN
Administrator,
Trademark Trial and
Appeal Board,
for Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Certificate of Correction
For Week of February 28, 1995

D. 347,618	5,283,343	5,334,585	5,355,419
D. 348,813	5,286,815	5,334,634	5,355,696
D. 349,137	5,288,941	5,334,670	5,356,086
D. 350,355	5,290,287	5,334,873	5,356,427
D. 352,522	5,292,377	5,335,178	5,356,680
D. 353,394	5,296,326	5,335,347	5,356,861
D. 354,012	5,296,837	5,335,757	5,357,207
4,155,904	5,298,119	5,335,935	5,357,271
4,625,275	5,298,545	5,336,762	5,357,316
4,915,468	5,299,963	5,337,167	5,357,777
4,931,266	5,300,135	5,337,355	5,357,986
4,938,923	5,302,124	5,338,042	5,358,077
4,951,074	5,302,232	5,338,246	5,358,381
4,960,384	5,302,606	5,338,404	5,358,391
4,979,824	5,305,045	5,338,503	5,358,408
4,994,442	5,306,648	5,338,679	5,358,701
5,019,446	5,307,552	5,338,780	5,358,715
5,030,391	5,308,861	5,338,842	5,358,808
5,031,758	5,309,815	5,338,991	5,358,886
5,047,210	5,309,932	5,339,448	5,358,915
5,074,861	5,310,786	5,339,569	5,359,006
5,089,904	5,312,874	5,340,136	5,359,167
5,099,026	5,314,207	5,340,451	5,359,815
5,114,199	5,315,370	5,340,627	5,359,956
5,120,615	5,315,455	5,341,011	5,360,512
5,131,450	5,315,985	5,342,493	5,360,900
5,141,407	5,316,051	5,342,645	5,361,237
5,147,191	5,317,168	5,342,695	5,361,488
5,157,053	5,317,532	5,342,755	5,361,663
5,159,361	5,317,536	5,343,267	5,361,917
5,159,480	5,318,416	5,343,428	5,362,050
5,172,050	5,319,002	5,343,899	5,362,487
5,180,578	5,320,642	5,344,618	5,362,628
5,180,904	5,320,761	5,344,705	5,362,792
5,184,154	5,321,071	5,345,121	5,362,803
5,189,449	5,321,099	5,345,370	5,363,028
5,193,907	5,321,275	5,345,650	5,363,603
5,201,865	5,321,467	5,345,684	5,363,674
5,202,121	5,321,802	5,346,792	5,363,746
5,202,165	5,322,590	5,346,854	5,363,789
5,202,932	5,323,009	5,347,159	5,364,451
5,203,510	5,323,012	5,347,394	5,364,644
5,205,164	5,323,535	5,347,413	5,364,689
5,209,440	5,324,512	5,347,502	5,365,102
5,211,673	5,324,928	5,347,933	5,365,904
5,219,717	5,325,644	5,348,284	5,366,183
5,221,995	5,326,511	5,348,844	5,366,364
5,227,391	5,326,717	5,349,340	5,366,575
5,229,002	5,326,764	5,349,465	5,366,606
5,231,047	5,326,977	5,349,490	5,367,237
5,236,921	5,327,272	5,349,559	5,367,371
5,238,701	5,327,646	5,349,623	5,368,227
5,238,932	5,327,895	5,349,631	5,368,501
5,243,885	5,329,122	5,349,825	5,369,502
5,246,740	5,329,580	5,350,139	5,369,659
5,250,671	5,329,652	5,350,166	5,369,857
5,258,534	5,329,690	5,351,073	5,369,915
5,260,040	5,330,316	5,351,080	5,370,210
5,260,241	5,331,018	5,351,088	5,370,269
5,263,048	5,331,152	5,351,128	5,370,630
5,263,363	5,331,159	5,351,137	5,370,907
5,266,150	5,331,230	5,351,753	5,371,736
5,268,301	5,331,416	5,352,440	5,371,924
5,271,329	5,331,530	5,352,476	5,372,356
5,271,914	5,331,607	5,352,586	5,372,672
5,274,648	5,331,973	5,352,606	5,372,902
5,274,917	5,332,545	5,352,866	5,373,036
5,275,652	5,332,610	5,353,194	5,373,743
5,276,060	5,332,619	5,353,301	5,374,457
5,276,417	5,332,747	5,353,415	5,374,885
5,276,902	5,332,772	5,353,629	5,375,072
5,279,355	5,333,083	5,354,013	5,375,237
5,279,385	5,333,171	5,354,416	5,375,827
5,280,028	5,333,293	5,354,806	5,376,248
5,282,783	5,333,341	5,354,932	5,376,953
5,283,058	5,334,531	5,355,073	5,379,088

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Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
January 2-6, 1995

Date Issued	Type of Case	Proceeding or Appl. No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Gen. Cite/By Examining Attorney	Recommended for Publication
1-4	EX PARTE APPEAL	74/290,897	Roadware Corp.	2(d)	Refusal Reversed		"WISETRACK" [computer software, namely, an automated pavement crack detection program]	"WISETRACK" [pavement crack filler]	No
1-4	EX PARTE APPEAL	74/256,407	Thomas Nelson Inc.	2(d)	Refusal Reversed		"ROGET'S INTERNATIONAL THESAURUS" [a thesaurus]	"ROGET'S INTERNATIONAL THESAURUS" [book of synonyms and antonyms]	No
1-4	OPP	85,920	Universal Mfg. Co. v. Ace Novelty Co., Inc.	2(d)	Opposition Dismissed	"JAR O DO" (and design) [printed tickets for playing a game]	"JAR TAB A TASTE O VEGAS" SPECIALTY MFG CO (and design) [tickets for use in games of chance]		No
1-6	EX PARTE APPEAL	74/295,877	David G. Gaston	2(a) [immoral/scandalous]	Refusal Reversed		"WHITE TRASH" [shirts, t-shirts, sweatshirts, pants, shorts, jeans, jackets, coats, sweaters, underwear, belts, caps, hats, socks and shoes]		No
1-6	OPP	89,783	U-Haul Int'l., Inc. v. Pickett	2(d)	Opposition Sustained with respect to services in Class 39. Opposition Dismissed with respect to services in Class 37	"U HAUL" [rental of trucks and automobile freight trailers]	"U-ALL WE HAUL HAUL IT ALL" (and truck design) [trash collection (in class 37); truck hauling, moving van services (in class 39)]		No

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Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy
J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	01/13/94
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	02/12/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	04/19/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	03/03/94
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMAN, Director	308-0196	09/07/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100– STEWART LEVY, Director	308-1782	04/12/93
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	06/28/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	01/06/94
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—Vacant	308-0771	12/20/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/28/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	07/13/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/06/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	12/27/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	12/07/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	02/03/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	11/18/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	12/06/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during January 1995 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,065,812 to 4,071,911 inclusive
Plant Patents.....4,174 to 4,205

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Jan. 1, 1995

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/26/94	11/14/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/05/94	10/19/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/05/94	09/19/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/01/94	10/12/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/28/94	11/02/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/12/94	09/21/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/19/94	10/18/94
Law Office 10—Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/19/94	09/23/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/28/94	08/25/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/21/94	11/17/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/14/94	11/14/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/09/94	11/01/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/15/94	09/06/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney. (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	07/14/94	—0—
Renewals (All Classes)	11/17/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

FEBRUARY 28, 1995

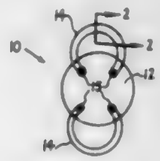
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 31,640 (2490th)

BUOYANCY INTRAOCULAR LENS DEVICE

Jerre M. Freeman, Ste. 501, Crew Wing, 176 S. Bellevue, Memphis, Tenn. 38104

Reexamination Request No. 90/001,235, May 8, 1987.
Reexamination Certificate for Reissue Patent Re. 31,640, issued Aug. 7, 1984, Ser. No. 44,032, May 31, 1979.
Int. Cl.[6] A61F *2/16*
U.S. Cl. 623—6



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–22 are cancelled.

[

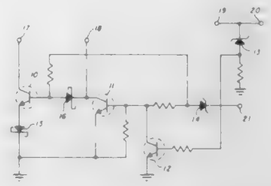
1. An intraocular lens device for implantation into a human eye, said lens device comprising:
   (a) an optical lens suitable for replacing a human crystalline lens having a mean density greater than that of the aqueous humor of said human eye; and
   (b) buoyancy means external of and attached to said optical lens having a mean density less than the density of said aqueous humor for providing a plurality of irido-capsular support points on the posterior surface of the iris of said human eye to hold said optical lens in place when implanted into said human eye and for reducing the overall mean density of said lens device to substantially that of said aqueous humor.]

B1 4,410,987 (2491st)

PRELOAD TEST CIRCUIT FOR PROGRAMMABLE LOGIC ARRAYS

James F. Ptasinski, and Glenn Wheeler, both of Dallas, Tex., assignors to Texas Instruments Incorporated

Reexamination Request No. 90/002,768, Jun. 26, 1992.
Reexamination Certificate for Patent No. 4,410,987, issued Oct. 18, 1983, Ser. No. 282,790, Jul. 13, 1981.
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 4 is cancelled.

Claims 1–3 were not reexamined.

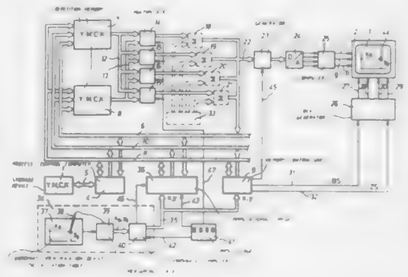
1. A preload circuit providing an enhanced testability for programmable logic array devices comprising a signal input connection, a preload circuit enable connection, and at least one connection for input to a feedback circuit of a programmable logic device, wherein said preload circuit operates to set a data bit signal selected by a test program into said feedback circuit.

B1 4,516,155 (2492nd)

METHOD FOR PARTIALLY SMOOTHING RETOUCH IN ELECTRONIC COLOR REPRODUCTION

Eberhard Hennig, Ascheberg; Jürgen Klie, Toekendorf, and Klaus Wellendorf, Kitzeberg, all of Germany, assignors to Rudolf Hell GmbH, Germany

Reexamination Request No. 90/003,479, Jun. 7, 1994.
Reexamination Certificate for Patent No. 4,516,155, issued May 7, 1985, Ser. No. 358,850, Mar. 17, 1982.
Claims priority, application Germany, Mar. 17, 1981, 3110222
Int. Cl.[6] H04N *1/46*
U.S. Cl. 358—531



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended.

Claims 2–17 dependent on an amended claim, are determined to be patentable.

New claims 18–21 are added and determined to be patentable.

1. A method for partially smoothing retouch of color images in electric color reproduction, in which the color images are scanned opto-electronically and trichromatically, image point by image point, to obtain color signals, and in which the color signals are digitized into data representing color values (F_1; F_n) for each image point, with said data being stored in a storage device, comprising the steps of:
   (a) identifying simultaneously a plurality of image points within a part of the color image to be smoothed, said plurality of image points forming an image point area, said image point area being displaceable over the part of the color image to be smoothed;
   (b) selecting [at least one image point] *a plurality of image points* within said image point [are] *area*, said selected

image [point] *points* forming at least one correction zone within said image point area;

(c) accessing from said storage device the data representing color values of said identified image points; and

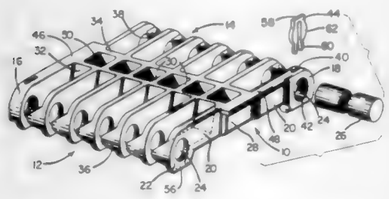
(d) changing the data representing color values of the image points within said correction zone in dependence on the color values of image points within sections lying adjacent to said correction zone within said image point area under visual control.

B1 4,886,158 (2493rd)

MODULAR CENTER DRIVE CONVEYOR BELT

James M. Lapeyre, New Orleans, La., assignor to Laitram Corporation, Harahan, La.

Reexamination Request No. 90/003,366, Mar. 22, 1994.
Reexamination Certificate for Patent No. 4,886,158, issued Dec. 12, 1989, Ser. No. 275,682, Nov. 23, 1988.
Continuation of Ser. No. 844,537, Mar. 26, 1986, abandoned, which is a continuation of Ser. No. 179,523, Aug. 19, 1980, Pat. No. 4,832,187
Int. Cl.[6] B65G *17/06*
U.S. Cl. 198—853



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

1. A conveyor belt comprised of a plurality of modules linked by pivot rods and driven in a selected direction of travel by sprocket teeth of a sprocket wheel, each module comprising:

first and second pluralities of link ends at least some of said first and second pluralities being formed to circumscribe a pivot hole;

said first and second pluralities each having outer link ends on opposing sides of the module and at least one link end intermediate said outer links, said link ends being spaced apart such that the module is suitable for bricklaying in said belt;

an intermediate section between and joining said link ends

and having trasverse elements extending at least partially across the width of the module;

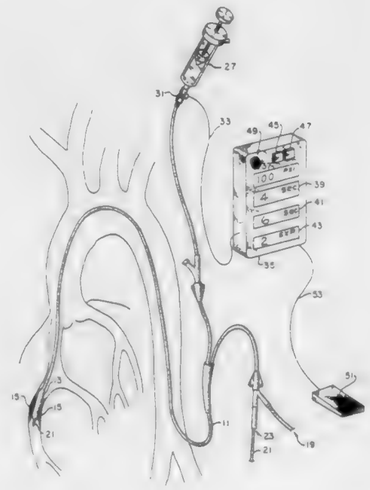
at least two of said transverse elements at various positions across the width of the module having a driving-; surface capable of engagement by said sprocket teeth, said driving surfaces having an upper edge and a lower edge and being angled from said upper edge downward toward said lower edge and in said selected direction of travel to provided sprocket recesses intermediate the pivot axes of the module and adapted to mate with sprocket teeth of said sprocket wheel.

B1 5,004,472 (2494th)

MEDICAL PRESSURE SENSING AND DISPLAY SYSTEM

William D. Wallace, Salt Lake City, Utah, assignor to Utah Medical Products, Inc., Midvale, Utah

Reexamination Request No. 90/003,246, Nov. 5, 1993.
Reexamination Certificate for Patent No. 5,004,472, issued Apr. 2, 1991, Ser. No. 566,046, Aug. 13, 1990.
Continuation of Ser. No. 230,783, Aug. 10, 1988, Pat. No. 5,021,046
Int. Cl.[6] A61M *29/02*
U.S. Cl. 606—194



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2–7** is confirmed.

Claims **1** and **8** are determined to be patentable as amended.

1. A system for measuring fluid pressure in a balloon of a catheter, said balloon being adapted for inflation inside a vessel in a human body, said catheter having an inflation lumen providing a fluid path between the interior of the balloon and an external source of fluid for inflating the balloon, said system comprising:

a pressure transducer in fluid communication with the interior of the balloon, said pressure transducer including means for providing an electrical signal which is a function of the pressure in the interior of the balloon;

electronic digital display means operatively connected to said transducer and responsive to the electrical signal from the pressure transducer for digitally displaying the balloon pressure measured by the pressure transducer; and

means for timing the actual duration of the application of pressure to the interior of the balloon for being responsive to a predetermined initiation signal to initiate timing, *and a predetermined stop signal to stop timing, such that the display means displays said actual duration for a substantial period of time,* said electronic digital display means including means operatively connected to and responsive to the timing means for digitally displaying the actual duration of the application of pressure to the interior of the balloon for each inflation of the balloon.

B1 5,074,979 (2495th)

CATIONIC RESIN CONTAINING BLOCKED ISOCYANATE GROUPS SUITABLE FOR USE IN ELECTRODEPOSITION

Joseph T. Valko, Pittsburgh, and Richard F. Karabin, Ruffs Dale, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Reexamination Request No. 90/003,283, Dec. 20, 1993.
Reexamination Certificate for Patent No. 5,074,979, issued Dec. 24, 1991, Ser. No. 540,991, Jun. 20, 1990.
Int. Cl.[6] C25D *13/00*
U.S. Cl. 204—181.7

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **18–30** is confirmed.

Claims **14** and **15** are cancelled.

Claims **1–13** and **16** are determined to be patentable as amended.

Claim **17**, dependent on an amended claim, is determined to be patentable.

16. A method of electrodepositing an electroconductive substrate which serves as a cathode in an electrical circuit comprising said cathode and an anode immersed in an aqueous [electrocoating composition] *paint* containing *a pigment and a* cationic water-dispersible resin, said method comprising passing electric current between the anode and the cathode to cause the [electrocoating composition] *paint* to deposit on the cathode as a substantially continuous film, heating the electrodeposited film at elevated temperature to form a cured film, characterized in that the cationic water-dispersible resin is non-gelled, is electrodepositable on a cathode, is derived from an epoxy resin *and a polyhydroxyl group-containing material* and [contains] *said cationic water-dispersible resin containing* in the resin molecule cationic salt groups, active hydrogen groups and blocked isocyanate groups, said blocked isocyanate groups being incorporated into the resin molecule by reacting said epoxy resin prior to curing said epoxy resin with a compound selected from the class consisting of mercapto compounds and acid group-containing compounds, wherein said acid group-containing compounds are prepared by reacting a partially [capped] *blocked* polyisocyanate and a hydroxyl group-containing acid, said compounds also containing said blocked isocyanate groups and the aqueous [electrocoating composition] *paint* is free of lead.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,867

AIR CONDITIONER

Shusuke Yamazaki, Hiratuka; Yoshinori Katagami, Yokohama, and Tomoyasu Shinozaki, Abiko, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Original No. 8,319,306, dated Aug. 20, 1991, Ser. No. 541,289, Jun. 20, 1990. Application for reissue Oct. 14, 1993, Ser. No. 14,803

Claims priority, application Japan, Dec. 22, 1989, 1-47121

U.S. Cl. D23—351 1 Claim



Re. 34,868

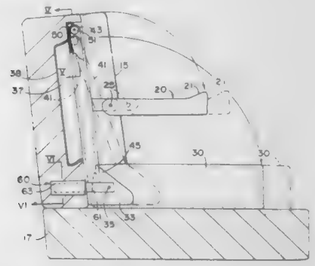
BUILT-IN INFANTS SEAT FOR VEHICLES

Louis M. Vander Stel, and Polly A. Vander Stel, both of 8601 - 60th St., Alto, Mich. 49302

Original No. 5,026,118, dated Jun. 25, 1991, Ser. No. 534,473, Jun. 7, 1990. Application for reissue Mar. 8, 1993, Ser, No. 27,701

Int. Cl.[6] B60N *2/30*

U.S. Cl. 297—238 34 Claims



11. A child seat comprising:

a frame having a frame top and an opposing frame bottom;

a child seat cushion defined by a portion of an adult seat back, separable from the remainder of the adult seat back, and pivotally connected with said frame, near said frame bottom to pivot between a closed position, in which said child seat cushion is positioned generally flush within the adult seat back to provide support for the back of an adult user, and an open position, in which said child seat cushion extends generally horizontally forward from the adult seat back to provide a child seat for a child user;

a child back support connected with said frame and positioned generally within the adult seat back, adjacent said child seat cushion when said child seat cushion is in said closed position;

a pivot connected between said frame, near said frame top, and the adult seat back, so said frame rotates about said pivot; and

a slide connected between said pivot and one of said frame and the adult seat back, so said frame bottom extends generally horizontally away from a bottom of the adult seat back and retracts generally horizontally into the bottom of the adult seat back when said frame rotates about said pivot, whereby said frame and said child back support rotate and slide to selectively incline said child back support between relatively more upright and relatively more inclined positions and to slide said child seat cushion generally horizontally away from and toward the bottom of the adult seat back when said child seat cushion is in said open position.

Re. 34,869

APPARATUS FOR QUICK STARTING TAPE IN VIDEO CASSETTE RECORDERS

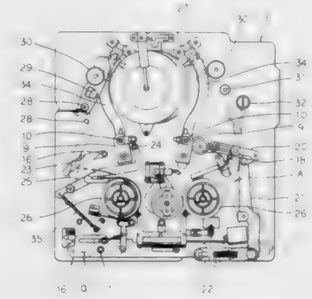
Jin H. Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Original No. 4,695,906, dated Sep. 22, 1987, Ser. No. 813,613, Dec. 26, 1985. Application for reissue Mar. 31, 1993, Ser. No. 41,330

Claims priority, application Rep. of Korea, Dec. 28, 1984, 1984-8495

Int. Cl.[6] G11B *5/027, 15/665*

U.S. Cl. 360—85 3 Claims



2. The apparatus of claim 1, wherein said guide grooves (3,3') are arranged so that as said cam gear rotates from a starting position to a first position, said loading rollers and loading poles are locked against ends of said loading holes (34, 34') via said tension springs (14, 14'), said connecting pins **13'** and said openings **13**, and as said cam gear rotates from said first position to a second position there is no effect on said loading rollers and loading poles.

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PLANT PATENTS

GRANTED FEBRUARY 28, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,062

SHRUB ROSE PLANT NAMED POULSKOV

Mogens Olesen, and Pernille Olesen, both of Fredensborg, Denmark, assignors to Weeks Wholesale Rose Grower, Inc., Upland, Calif.

Filed Feb. 10, 1994, Ser. No. 195,769

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of shrub rose plant substantially as described and illustrated herein.

9,063

MINIATURE ROSE PLANT NAMED POULCLAUS

Mogens Olesen, and Pernille Olesen, both of Fredensborg, Denmark, assignors to Weeks Wholesale Rose Grower, Inc., Upland, Calif.

Filed Jan. 5, 1994, Ser. No. 177,542

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of miniature rose plant substantially as described and illustrated herein.

9,064

HYBRID TEA ROSE PLANT NAMED TANALEPHAR

Hans Evers, Uetersen, Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Jun. 29, 1994, Ser. No. 269,344

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its low petal count; thick, leathery petals; strong, vigorous, upright growth; unusual orange-red flower color, and a very long vase life.

9,065

HYBRID TEA ROSE PLANT NAMED TANILYKS

Hans Evers, Uetersen, Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Jun. 29, 1994, Ser. No. 268,837

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its attractive yellow flower color; long, straight stems; vigorous, upright growth; long vase life; thick, round petals, and moderate fragrance.

9,066

POINSETTIA PLANT 'PJ 3112'

Peter Jacobsen, Skibby, Denmark, assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Feb. 7, 1994, Ser. No. 192,441

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—86.4 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown an described, distinguished by its intense dark green foliage, bright orange-red bracts, self branching and good leaf and bract retention in the consumer environment.

9,067

FERN PLANT NAMED ORLANDO

P. J. Carmi, Apopka, Fla., assignor to Milestone Agriculture Inc., Apopka, Fla.

Filed Jul. 5, 1994, Ser. No. 270,780

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.3 **1 Claim**

1. A new and distinct cultivar of Fern plant named Orlando, as illustrated and described.

PATENTS

GRANTED FEB. 28, 1995

ERRATA

For CLASS	See PATENT NO.
40–159	5,392,548
40–518	5,392,549
42–103	5,392,550
451–005	5,392,566
451–008	5,392,567
451–357	5,392,568
451–523	5,392,569
57–328	5,392,588
73–863	5,392,659
111–185	5,392,707
100–215	5,392,708
137–614	5,392,825
137–800	5,392,826
164–417	5,392,837
164–463	5,392,838
211–013	5,392,923
211–119	5,392,933
280–728	5,393,089
414–409	5,393,180
414–416	5,393,181
411–510	5,393,185
425–145	5,393,210
425–149	5,393,211
425–186	5,393,212
425–205	5,393,213
434–169	5,393,236
454–044	5,393,260
493–116	5,393,291
602–027	5,393,303
204–424	5,393,397
507–211	5,393,439
252–511	5,393,467
422–062	5,393,492
422–292	5,393,504
424–009	5,393,524
424–009	5,393,525
435–007	5,393,527
427–219	5,393,533
430–001	5,393,634
514–360	5,393,783
514–561	5,393,784
524–575	5,393,787
514–616	5,393,788

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ERRATA–CONTINUED

For CLASS	See PATENT NO.
526–074	5,393,857
528–061	5,393,858
528–308	5,393,871
528–310	5,393,872
530–328	5,393,873
548–124	5,393,885
548–356	5,393,886
548–465	5,393,887
548–554	5,393,888
548–445	5,393,894
549–267	5,393,897
552–262	5,393,898
250–310	5,393,976
250–382	5,393,979
250–306	5,393,980
327–525	5,394,019
327–140	5,394,020
327–108	5,394,021
327–176	5,394,022
327–073	5,394,023
327–160	5,394,024
327–530	5,394,025
327–536	5,394,026
327–536	5,394,027
327–544	5,394,028
327–511	5,394,029
326–041	5,394,030
326–038	5,394,031
326–038	5,394,032
326–041	5,394,033
326–039	5,394,034
327–072	5,394,035
327–552	5,394,036
327–051	5,394,037
327–432	5,394,038
327–143	5,394,104
327–531	5,394,105
327–107	5,394,106
327–354	5,394,107
327–335	5,394,108
330–002	5,394,120
342–020	5,394,153
345–213	5,394,171
347–257	5,394,173
346–139	5,394,174
342–116	5,394,175
342–128	5,394,176

ERRATA–CONTINUED

For CLASS	See PATENT NO.
359–059	5,394,258
359–574	5,394,266
360–105	5,394,281
361–737	5,394,300
365–094	5,394,371
372–045	5,394,417
375–202	5,394,436
375–286	5,394,438
379–067	5,394,445

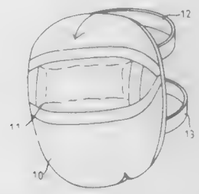
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PATENTS

GRANTED FEBRUARY 28, 1995

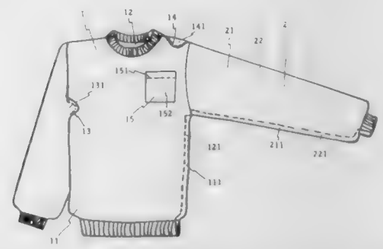
GENERAL AND MECHANICAL

5,392,465
MASK FOR USE IN FIRE ACCIDENTS
Lee W. Shou, P.O. Box 82-144, Taipei, Taiwan, Prov. of China
Filed Jul. 15, 1993, Ser. No. 91,375
Int. Cl.[6] A42B *1/00*
U.S. Cl. 2—7 1 Claim



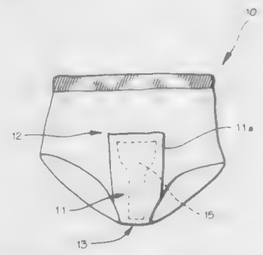
1. A combination of a mask and a bag for use in fire accidents comprising:
a body portion adapted to cover face of an user and provided with a transparent visor in the front side, said body portion being made of a fire proof cloth in which is received a liquid chemical substance for preventing smoke;
an elastic band made of fire proof material and mounted on an upper rear side of said body portion;
a left strap mounted on a lower left side of said body portion and provided with a female fastener; and
a right strap mounted on a lower right side of said body portion and provided with a male fastener adapted to engage the female fastener of said left strap;
said bag being made of aluminum foil and adapted for receiving said mask.

5,392,466
UPPER GARMENT FOR PATIENTS
Chia-Tien Chou, No. 168, Kuang Fu Road, Chang Hwa City, Chang Hwa, and Chao-Mu Chou, 2F, No. 14, Alley 123, Lane 3, Jen Ai Road, Taipei, both of Taiwan, Prov. of China
Filed Apr. 29, 1993, Ser. No. 55,833
Claims priority, application China, May 20, 1992, 92222938
Int. Cl.[6] A41D *13/00*; A41C *1/00*
U.S. Cl. 2—114 1 Claim



1. An upper body garment for an apoplectic or paralytic patient comprising a garment body and two sleeves, said garment body comprising a front half body panel and a back half body panel, wherein said front half body panel has only one lateral side detachably connected to a corresponding side of said back half body panel; at least one of said sleeves comprising a front half sleeve panel and a back half sleeve panel, the front half sleeve panel of said at least one sleeve having only one side detachably connected to a corresponding side of the respective back sleeve panel, and wherein said garment body has a hole at only one armpit shielded with a flap, and a shoulder hole on only one shoulder shielded with a flap, and only one breast pocket with flap to cover an opening through said garment body.

5,392,467
MOISTURE-MANAGEMENT GARMENT AND SUPPORT POUCH GARMENT
Herbert L. Moretz, Davidson, N.C., and Daniel L. Brier, Key Largo, Fla., assignors to Intelpro Corporation, Lincolnton, N.C.
Continuation-in-part of Ser. No. 23,006, Feb. 26, 1993, Pat. No. 5,249,320, which is a continuation-in-part of Ser. No. 3,263, Jan. 12, 1993, Pat. No. 5,269,720, which is a continuation-in-part of Ser. No. 991,761, Dec. 17, 1992, Pat. No. 5,297,296, which is a continuation-in-part of Ser. No. 945,677, Sep. 16, 1992, Pat. No. 5,291,617, which is a continuation-in-part of Ser. No. 842,224, Feb. 26, 1992, Pat. No. 5,210,882, which is a continuation-in-part of Ser. No. 791,066, Nov. 12, 1991, Pat. No. 5,217,782. This application Apr. 15, 1993, Ser. No. 47,841
The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.
Int. Cl.[6] A41B *9/00*
U.S. Cl. 2—400 31 Claims



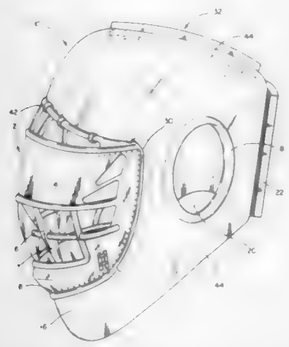
1. In a moisture-management garment constructed of an outer shell fabric, the improvement comprising a moisture-management panel extending generally from an upper crotch area of said garment to a lower crotch area of said garment, said panel comprising:
(a) an inner fabric layer including moisture wicking fibers for residing in skin contact during garment wear;
(b) an intermediate fabric layer comprising a moisture transport insert residing adjacent to said inner fabric layer, said moisture transport insert formed of one or more fabrics for receiving moisture from said inner fabric layer, and transporting said moisture upwardly away from the lower crotch area and outwardly away from the skin of the wearer, the width of said moisture transport insert tapering from the Upper crotch area towards the lower crotch area of the garment for providing greater surface area and moisture absorption capacity in the upper crotch area to promote transport of moisture upwardly from said lower crotch area to said upper crotch area to facilitate moisture dispersal; and
(c) an outer fabric layer residing adjacent said intermediate fabric layer for receiving and dispersing moisture wicked outwardly from said inner and intermediate fabric layers, said outer fabric layer comprising the outer shell fabric of said panel.

5,392,468

PROTECTIVE HEAD GEAR FOR MARTIAL ARTS ACTIVITIES

Robert S. Leddick, III, 377 A Lyman Rd., North Rose, N.Y. 14516

Filed Aug. 19, 1993, Ser. No. 108,294
Int. Cl.[6] A42B 3/00
U.S. Cl. 2—424 6 Claims



1. Protective head gear for martial arts activities comprising:
a. a head mask for protecting the front and sides of a user's face, said head mask comprising
i. a front having an opening therein,
ii. a first side having an opening therein,
iii. a second side having an opening therein, wherein said front is attached to and disposed between said first and said second sides;
b. a transparent face guard having openings therein for protecting the user's eyes, nose and mouth, said face guard being mounted on the opening in the front of the head mask;
c. a neck guard for protecting the nape of the user's neck, said neck guard comprising
i. a first flap which is attached to said first side so as to form an extension thereof,
ii. a second neck flap which is attached to said second side so as to form an extension thereof,
iii. fastening means attached to said first and second flaps for joining said flaps together in a manner such that they fully cover the nape of the user's neck;
d. a cap for protecting the top of the user's head, said cap comprising a piece of protective material having a shape which is conformable to the shape of the top of the user's head and which is attached to, but not in contact with, said first and second sides; and
e. two ear guards each of which comprises an annular rim of protective material positioned on the periphery of the opening in said first and second sides.

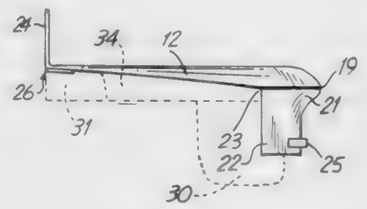
5,392,469

SEAT COVER

James L. Adams, 37 Fremont Dr., Fargo, N. Dak. 58103

Filed Nov. 8, 1993, Ser. No. 148,296
Int. Cl.[6] A47K 13/14
U.S. Cl. 4—245.2 22 Claims

1. A cover for a toilet seat mounted on a toilet bowl, said seat having a front portion, side members joined to a back section and a generally central opening between the side members to accommodate the lower body and legs of a human comprising: sheet means for covering the toilet seat and front of the toilet bowl to protect the person using the toilet seat, said sheet means having side sections for covering the side members of a toilet seat, a rear section joined to the side sections and covering the back section of a toilet seat, a front section joined to the side sections, said side, rear and front sections surrounding an opening, a front panel joined to the front section extended rearwardly below the front section, said front panel having outwardly and rearwardly extending opposite edges joined to outwardly and rearwardly extending opposite edges of the front section forming with the front section and front panel a rearwardly open pocket to accommodate the front portion of the toilet seat, a downwardly extending imperforate transverse



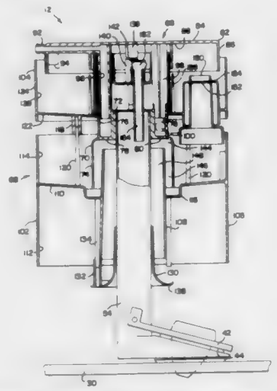
flap joined to the front panel, said flap having a downward length to locate the flap adjacent the front of the toilet bowl to protect a person's legs and clothing from the toilet bowl, and adhesive means secured to the sheet means to releasably retain the sheet means on the toilet seat with the front portion of the toilet seat located within said pocket and the flap extending downwardly adjacent the front of the toilet bowl.

5,392,470

TOILET FLUSH CONTROL ASSEMBLY AND METHODS

Dwight N. Johnson, 6327 Chorlito Dr., Carlsbad, Calif. 92008

Filed Apr. 7, 1994, Ser. No. 224,648
Int. Cl.[6] E03D 1/14
U.S. Cl. 4—325 8 Claims



1. A dual flush assembly for providing relatively small and large flush volumes in a gravity flush toilet system of the type having a toilet fixture with a water seal fixture trap and having a tank supplied with an overflow tube and with a movable flush valve for releasing tank water into the fixture and with a fill valve for replenishing tank water and for providing trap reseal water flow, said assembly comprising:
a buoyant float assembly mounted for vertical movement in said tank and adapted to float upon the tank water;
a flush valve closure member on said float assembly for pushing the flush valve toward its closed position when the float assembly descends to a predetermined level;
a reseal water chamber adapted to receive the trap reseal flow from the fill valve;
means for emptying said reseal chamber into the overflow tube for resealing the fixture trap after a flushing operation;
said float assembly including a bias chamber;
means for emptying said bias chamber to increase the buoyancy of said float assembly for producing a relatively large flush volume; and
means for filling said bias chamber to decrease the buoyancy of said float assembly for producing a relatively small flush volume.

5,392,471

WEIRS

Richard V. Vos, Randburg, South Africa, assignor to Prelude Pool Products C C, Randburg, South Africa

Filed Oct. 6, 1993, Ser. No. 131,688
Claims priority, application South Africa, Oct. 7, 1992, 92/7703; Mar. 10, 1993, 93/1695
Int. Cl.[6] E04H 4/16
U.S. Cl. 4—507 15 Claims



1. A closure device adapted to cover the portal of a swimming pool weir, the closure device having:
a closure plate for covering the weir portal;
a main opening in the closure plate that is controlled by a weir flap;
walls defining a tunnel that is restricted in cross-section as compared to the weir portal and that leads from the main opening into the weir; and
a secondary opening in the closure plate beside the main opening to accommodate flexible piping leading to a pool cleaner, whereby water can be drawn into the weir simultaneously both through the flexible piping and the main opening.

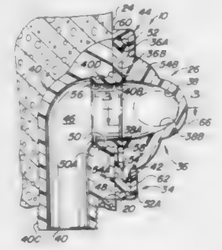
5,392,472

POOL SKIMMER APPARATUS

Bernard R. Maxfield, 10 Eduardo Dr., Granite City, Ill. 62040

Filed Sep. 27, 1993, Ser. No. 127,333
Int. Cl.[6] E04H 4/16
U.S. Cl. 4—512 10 Claims

1. A pool skimmer apparatus for use with a water filtration and recirculation system being disposed between and interconnecting in flow communication an inlet and an outlet in a sidewall of a swimming pool of water, said pool skimmer apparatus comprising:
(a) an outlet nozzle assembly mountable to the inlet in the sidewall of the pool and being operable for directing a flow of the water and debris floating on the surface of the water along an endless peripheral path extending substantially adjacent along the sidewall of the pool of water; and
(b) a scoop assembly mountable to the outlet in the sidewall of the pool to project outwardly from the sidewall for intercepting and deflecting at least a portion of the water and debris carried by the water from the endless annular path of flow and into the outlet of the pool to thereby assist in skimming off portions of the debris floating on the surface of the pool of water;
(c) said outlet nozzle assembly including an annular base portion defining an axial flow passage in a direction normal to said sidewall and mountable to the inlet in the sidewall of the swimming pool, and a swivel head portion rotatably mounted to said annular base portion and defining an outlet nozzle passageway adapted to eject a jet of water in a substantially perpendicular relation to said axial flow passage of said annular base portion and thereby parallel to the sidewall of the pool so as to cause the water on the surface of the pool of water to flow along the endless peripheral path;
(d) said outlet nozzle assembly further including a fitting



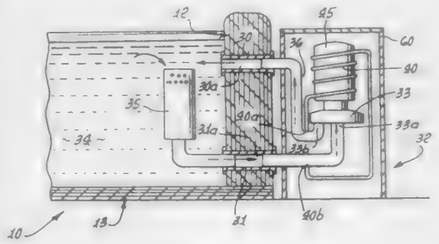
adapted to be mounted to the inlet in the pool sidewall, said fitting having a passageway defined therethrough and an inlet end and outlet end at opposite ends of the passageway, said fitting also having a substantially flat annular surface defined around said outlet end of said passageway, said outlet end of said passageway having an internally-threaded section thereon;
(e) said annular base portion having a pair of inner and outer annular rims each having externally-threaded sections thereon and an annular flange extending between and interconnecting said inner and outer annular rims, said axial flow passage extending through said inner annular rim and said annular flange, said inner annular rim threadably coupled to said outlet of said fitting and said swivel head portion rotatably mounted on said annular flange.

5,392,473

POWER PACKAGE FOR SPA APPARATUS

Carsten H. Idland; John M. Popovich, both of Los Angeles, and Roc V. Fleishman, Venice, all of Calif., assignors to Softub, Inc., Chatsworth, Calif.

Continuation of Ser. No. 927,005, Aug. 10, 1992, Pat. No. 5,283,915. This application Dec. 3, 1993, Ser. No. 160,969
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[6] E03C 1/08
U.S. Cl. 4—541.1 14 Claims



1. Tub apparatus, comprising
a) a tub wall having an inner side and an outer side, the tub

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having an interior to receive liquid, and ports extending through said side wall,

b) a plastic pack having a cavity formed therein,

c) a pump unit received in said cavity and protectively enclosed by said plastic pack, said unit including a motor,

d) and tubular duct means connected with said pump unit and extending from said cavity to communicate with said ports for circulating liquid between the tub interior and said pump unit,

e) said pack associated with said tub wall, and including foamed, resiliently compressible plastic material supporting the motor.

5,392,474

BATHTUB-INSERTABLE LIFTING APPARATUS

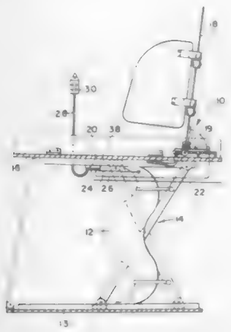
Peter Schmidt, Eisenberg, Germany, assignor to Schmidt ■ Lenhardt GmbH & Co. OHG, Isny, Germany

Filed Feb. 18, 1994, Ser. No. 199,384

Claims priority, application European Pat. Off., Mar. 5, 1993, 93103521

Int. Cl.[6] A47K *3/12*

U.S. Cl. 4—566.1 11 Claims



1. Lifting apparatus (**10**) for insertion in a bathtub for handicapped persons, comprising: a bottom frame (**13**); a lift platform (**16**); a guide frame (**14**) connecting the lift platform (**16**) to the bottom frame (**13**); a hydraulic lifting device (**12**) with valve means (**20**) for activating the lifting device to raise and lower the lift platform by action of the guide frame on the bottom frame; the valve means (**20**) being located completely beneath the lift platform (**16**) and comprising at least two remotely operable working valves; a manual control unit (**30**) connected to the valve means (**20**) via at least three flexible hoses (**36, 38**); the manual control unit (**30**) comprising a first servo valve (**34**) and a second servo valve (**34**), the first and second servo valves being of substantially identical design and being manually operable; a common actuator (**58**) for selectively actuating said first and second servo valves; each of the servo valves (**34**) comprise a valve seat (**86**), means defining a control chamber (**102**) on one side of the valve set and a pressure chamber (**80**) on an opposite side of the valve seat, the control chamber (**102**) of the first servo valve (**34**) being connected to one of the flexible hoses (**36, 38**), the control chamber (**102**) of the second servo valve (**34**) being connected to a second one of the flexible hoses (**36, 38**), and the pressure chamber (**80**) of the first servo valve (**34**) and the pressure chamber (**80**) of the second servo valve (**34**) being commonly connected to a third one (**38**) of the flexible hoses; means for applying a restoring force to close each servo valve; a discharge line (**40**) for discharge from the manual control unit; each one of the servo valves (**34**) being biased into a closed position by the means for applying the restoring force, in which closed position the control chamber (**102**) is connected to the discharge line (**40**) and upon actuation of the actuator (**58**) against the restoring force, the one of the servo valve is moved into an open position, in which the control chamber (**102**) is sealed towards the discharge line (**40**) and connected to the pressure chamber (**80**).

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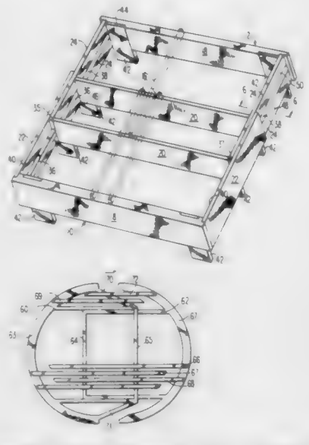
EXTENSIBLE ARTICLE OF FURNITURE

Gene W. McCall, 341 Union Valley Rd., Mahopac, N.Y. 10541, and Pat Jones, 19 Stillman La., Pleasantville, N.Y. 10570

Filed May 7, 1990, Ser. No. 519,730

Int. Cl.[6] A47C *17/13, 17/32*

U.S. Cl. 5—18.1 16 Claims



1. Extensible furniture comprising first and second telescoping interlocking frame members fitted with a multitude of alternating surface slats defining a furniture surface, each frame member having side rails and having a pair of end boards in generally parallel relationship joined to the ends of the side rails to form a rigid structure, the frame members being joined in interlocking relationship with one side rail of each frame located within the structure of the other frame and with end boards forming interlocked pairs at opposite ends of the frames, means for providing sliding telescoping movement of the interlocked end boards, a multitude of slats defining a furniture surface alternately affixed to the side rails of the first and second frame members, lying generally parallel to each other and to the end boards of the extensible furniture and with the slats of each frame being slidably supported by the interior side rail of the other frame, and means providing floor support for each frame.

5,392,476

COLLAPSIBLE HAMMOCK STAND

Richard L. Williams, 7514 SW. 58 Ave., Miami, Fla. 33143

Filed Mar. 30, 1994, Ser. No. 220,381

Int. Cl.[6] A45F *3/24*

U.S. Cl. 5—127 21 Claims

1. A collapsible hammock stand comprising:

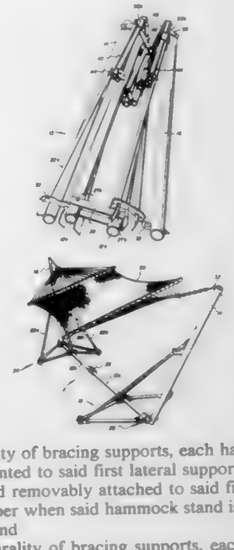
a base member;

a first lateral support member connected to a first end of said base member and moveable from a collapsed position to an extended position;

a second lateral support member connected to a second end of said base member and moveable from a collapsed position to an extended position;

a first substantially upright support member having a first end pivot mounted to said first end of said base member and moveable between a collapsed position and an extended, substantially upright position; said first substantially upright support member supporting a first end of a hammock when said hammock stand is in an extended position;

a second substantially upright support member having a first end pivot mounted to said second end of said base member and moveable between a collapsed position and an extended, substantially upright position; said second substantially upright support member supporting a second end of said hammock when said hammock stand is in an extended position;



a first plurality of bracing supports, each having a first end pivot mounted to said first lateral support member and a second end removably attached to said first upright support member when said hammock stand is in an extended position; and

a second plurality of bracing supports, each having a first end pivot mounted to said second lateral support member and a second end removably attached to said second upright support member when said hammock stand is in an extended position.

5,392,477

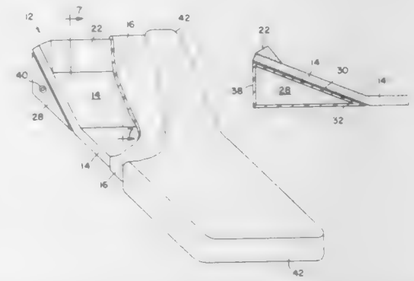
SLEEPING BAG WITH INFLATABLE WEDGE PORTION

Jon Wolter, 857-1/2 Bronson Rd., Fairfield, Conn. 06430, and Patricia Cook, 41 Burr Farm Rd., Westport, Conn. 06880

Filed Dec. 22, 1993, Ser. No. 171,704

Int. Cl.[6] A47G *9/08*

U.S. Cl. 5—413 4 Claims



1. A sleeping bag comprising an elongate pad (**14**) of soft material having a head end and a foot end and being sufficiently long and wide to support a reclining adult figure, a wedge-shaped headrest (**22**) extending across the head end of the pad, an inflatable air bag (**28**) forming part of the pad extending from the head end approximately one-third the length thereof for supporting the head and shoulders of a reclining figure, means (**40**) for inflating the air bag into a wedge-shaped support for the head and shoulders of a reclining figure with the wedge sloping from the head end toward the center of the mat and with the headrest (**22**) superimposed on the inflated wedge (**28**), a waterproof cover (**16**) for the pad including headrest and inflatable bag, a storage extension (**24**) beyond the foot end of the mat having at least one pocket (**26**) for storing personal items, an outer bag (**44**) substantially covering the covered pad, headrest, and inflatable bag, securing means including cooperating fasteners (**46**) affixed the the head edge (**20**) of the outer bag and to one side (**48**) of the outer bag for securing the sleeping bag in roll form.

5,392,478

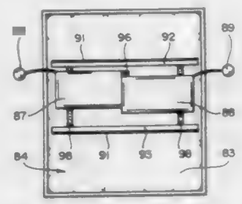
WATERBED WITH SUPPLEMENTAL SUPPORT

John B. Johenning, Beverly Hills, Calif., assignor to Strata Flotation, Inc., Torrance, Calif.

Continuation-in-part of Ser. No. 370,311, Jun. 22, 1989, abandoned. This application Mar. 21, 1991, Ser. No. 672,815

Int. Cl.[6] A47C *27/00, 27/08*

U.S. Cl. 5—462 10 Claims



1. In a waterbed: a water-filled mattress having a horizontally extending upper wall and a chamber containing a body of water for buoyantly supporting persons resting on the upper wall, means forming a pocket on the upper wall, a pair of cushions positioned side-by-side widthwise of the bed within the pocket for providing additional localized support for persons resting on the upper wall so that the persons are supported by a combination of the water and the cushions, and means releasably connecting the cushions together and permitting adjustment of the relative positions of the cushions lengthwise of the bed.

5,392,479

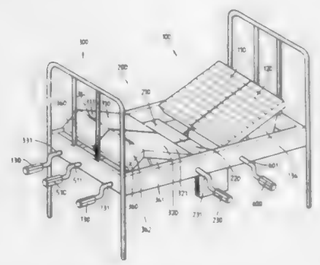
MULTIPURPOSE SICKBED

Yu-Kuen Liao, No. 7, Lane 56, Fu-Shou St., Hsin-Chuang City, Taipei Hsien, Taiwan, Prov. of China

Filed Jan. 28, 1994, Ser. No. 188,549

Int. Cl.[6] A61G *7/05*

U.S. Cl. 5—618 12 Claims



1. A multipurpose sickbed, comprising:

a head section having a top layer consisting of a first left and a first right halves, a middle layer consisting of two first

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movable frame plates for supporting said first left and said first right halves thereon, and a bottom layer consisting of a first frame plate having two rectangular openings in to which said two first movable frame plates are hinged; said first left and said first right halves each including a plurality of alternately disposed first fixed and first movable boards;

a middle section having a top layer consisting of a second left and a second right halves, a middle layer consisting of two second movable frame plates for supporting said second left and said second right halves thereon, and a bottom layer consisting of a second frame plate having two rectangular openings into which said two second movable frame plates are hinged; said second left and said second right halves each including a plurality of alternately disposed second fixed and second movable boards;

a rear section having a top layer consisting of a third left and a third right halves, a middle layer consisting of two third movable frame plates for supporting said third left and said third right halves thereon, and a bottom layer consisting of a third frame plate having two rectangular openings into which said two third movable frame plates are hinged; said third left and said third right halved each including only two third fixed boards;

a first control mechanism consisting of a first main shaft having a first threaded section formed at a predetermined position, a first internally threaded block engaged with said threaded section, and a first trapezoidal member connected at a top end to a bottom side of said first frame plate and at a lower portion to said first internally threaded block such that said first trapezoidal member is driven by said first main shaft and said first internally threaded block to move upward to raise a front end of said first frame plate to form an inclination when said first main shaft is rotated in a first direction, or to move downward to lower down a raised front end of said first frame plate to a level position when said first main shaft is rotated in a reverse second direction;

a second control mechanism consisting of a second main shaft with a first rotary wheel connected to one inner end thereof; said first rotary wheel driving through a chain a second rotary wheel, a universal joint, and a third rotary wheel mounted on a connecting rod to turn with said first rotary wheel synchronously; said universal joint having an expansion rod connected thereto for rotating a fourth and a fifth rotary wheels which further drive a seventh and an eighth rotary wheels attached to said first fixed boards to rotate; said seventh and said eighth rotary wheels being connected to an axle having first gears thereon between said first fixed boards to engage with first racks formed on said first movable boards such that the rotation of said seventh and said eighth rotary wheels cause said first gears to move said firs tracks up and down and thereby raises or lowers said first movable boards; a tenth rotary wheel being driven to rotate by a ninth rotary wheel which is also driven by said third rotary wheel, and said tenth rotary wheel further driving thirteenth rotary wheels attached to said second fixed boards of said middle section so that said second movable boards of said middle section is moved up or down in the same manner as that for moving said first movable boards up and down; said first and said second movable boards, when being lowered, facilitating the air ventilation of said sickbed;

a third control mechanism including a third main shaft having a second threaded section formed at a predetermined position, a second internally threaded block movably engaged with said second threaded section, and a second trapezoidal member connected at a top end to a bottom side of said third frame plate and at a lower portion to said second internally threaded block such that said second trapezoidal member is driven by said third main shaft and said second internally threaded block to raise a rear end of said third frame plate to form an inclination when said third main shaft is rotated in a first direction, or to lower down a raised front end of said third frame plate to a level position when said third main shaft is rotated in a second direction;

a fourth control mechanism having a fourth main shaft on which a fourteenth, a fifteenth, a sixteenth, and a seventeenth rotary wheels are provided to rotate synchronously; said fourteenth and said fifteenth rotary wheels being used to rotate two first threaded rods rotatably fixed to said first frame plate such that a control member on one of said first threaded rods is driven to linearly move leftward or rightward on said first threaded rod and thereby causing one of said two first movable frame plates, and accordingly, said first left or said first right half of said head section to be pivotally raised at an outer edge and form an inward inclination; said sixteenth rotary wheel being used to drive a second threaded rod rotatably fixed to said second frame plate such that said second left or said second right half of said middle section is inwardly inclined in the same manner and at the same time as said first left or said first right half is inwardly inclined; and said seventeenth rotary wheel being used to drive said third left or said third right half of said rear section to inwardly incline in the same manner and at the same time as said first and said second left halves or said first and said second right halves are inwardly inclined; and

a fifth control mechanism having a fifth main shaft extending between and fixed onto two lateral sides of said second frame plate; said fifth main shaft having on each end inside said second frame plate a driving gear to drive a corresponding driven gear to rotate synchronously through a chain wheel and a chain, such that four second racks provided at four bottom corners of said second frame plate engaging with said driving and said driven gears are moved up or down when said fifth main shaft is rotated in a first or in a second reverse direction, causing said middle section to be lowered or elevated; and when said middle section being lowered, a recess being formed to accommodate a bedpan or a urinal therein to facilitate the excretion of the patient.

5,392,480

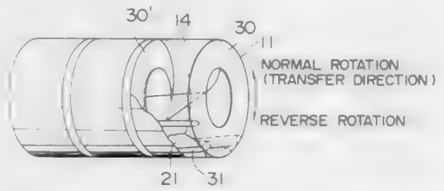
WASHING METHOD BY A CONTINUOUS WASHING MACHINE

Hidetoshi Ishihara; Shoichi Hayashi; Atsushi Ueda; Hiroyuki Asaoka; Haruo Hagiwara, and Toshio Hattori, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 157,331, Nov. 23, 1993, abandoned, which is a continuation of Ser. No. 869,425, Apr. 16, 1992, abandoned. This application Jul. 25, 1994, Ser. No. 279,691
Claims priority, application Japan, Jun. 10, 1991, 3-137875; Jan. 13, 1992, 4-004054; Jan. 13, 1992, 4-004055; Apr. 19, 1992, 4-113682

Int. Cl.[6] D06F *31/00*

U.S. Cl. 8—159 10 Claims



1. A washing method for use with a continuous washing machine, the washing machine having a drum with an input end and a discharge end, partitions for dividing the drum into a plurality of chambers, and means for transferring the laundry from each of said plurality of chambers to an adjacent chamber nearer to said discharge end upon rotating said drum in a transfer direction, the method comprising the steps of:

loading laundry into a first chamber at said input end;

crumple washing the laundry by rotating said drum about an axis of rotation through a first angle in said transfer direction without transferring the laundry;

raise and drop washing the laundry by rotating said drum through a second angle in a direction opposite to said transfer direction without transferring the laundry so that the laundry is lifted above the axis of rotation by said means for transferring the laundry and then dropped to a portion of the drum below the axis after the laundry has passed above the axis of rotation of the drum; and,

transferring the laundry from said first chamber to a second chamber by further rotating said drum through a third angle in said transfer direction.

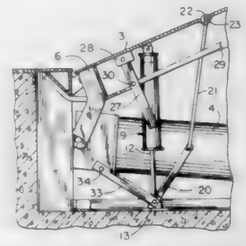
5,392,481

RETURN-TO-DOCK-LEVEL MECHANISM FOR A DOCKBOARD HAVING A HYDRAULIC HOLDDOWN

Martin P. Hageman, Mequon, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.

Filed Jul. 11, 1991, Ser. No. 728,260
Int. Cl.[6] E01D *1/00*

U.S. Cl. 14—71.1 12 Claims



1. A dockboard to be mounted on a loading dock comprising a supporting structure mounted on the dock, a ramp hinged at its rear end to the supporting structure, a lip hinged to the forward edge of the ramp and movable between a downwardly hanging pendant position and an outwardly extending position where the lip forms an extension to the ramp and is adapted to engage the bed of a carrier located adjacent the dock, ramp lifting means operably connected to the ramp for pivoting the ramp upwardly from a horizontal position to an upwardly inclined position, hydraulic holddown means operably interconnecting the ramp and the supporting structure for preventing upward movement of the ramp unless released but permitting free downward movement of the ramp, first manually operable means operably connected to said holddown means for manually releasing said holddown means to permit said ramp to pivot upwardly, second operating means responsive to movement of the lip from the extended position toward the pendant position when the carrier moves away from the dock and the ramp is in a below-dock-level position for releasing said holddown means to permit the ramp to be pivoted upwardly by said lifting means to a second position above dock level, and means operable as a consequence of the ramp being pivoted upwardly to said second position for deactivating said second operating means to thereby re-engage said holddown means and lock the ramp at said second position.

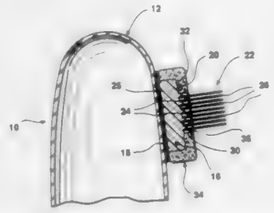
5,392,482

DISPOSABLE TOOTHBRUSH

Dean Drulias, 2901 S. Industrial Rd., Las Vegas, Nev. 89109, and Loretta Davis, 557 E. Sahara, Ste. 111, Las Vegas, Nev. 89104

Filed Nov. 26, 1993, Ser. No. 157,461
Int. Cl.[6] A46B *9/04*, *11/00*

U.S. Cl. 15—104.94 5 Claims



3. A toothbrush comprising: a sheath formed in a size to fit snugly on the finger of a user, a stiff bristle base having an undersurface and an opposite exposed surface with a central region wherein said undersurface is juxtaposed against and firmly secured to said sheath, a plurality of bristles having anchored ends firmly secured to said bristle base and opposite exposed ends that project outwardly from said central region of said bristle base and further comprising an annular protective collar formed of a resilient moisture absorbent material secured to said sheath and disposed about said bristle base so as to surround said central region of said exposed surface thereof.

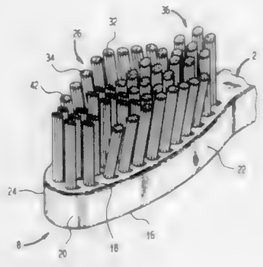
5,392,483

MULTI-LEVEL BRISTLE TUFT TOOTHBRUSH

Bert D. Heinzelman, Tenafly, N.J.; Donald R. Lamond, Long Beach, and John Moldauer, Brooklyn, both of N.Y., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Jul. 7, 1994, Ser. No. 271,697
Int. Cl.[6] A46B *9/04*

U.S. Cl. 15—167.1 11 Claims



1. A toothbrush comprising:

an elongated handle with a first and second end;

an elongated head with front and rear ends positioned along the longitudinal axis of the head, the rear end being connected with the second end of the handle, the head having a lower surface, a flat upper surface opposite the lower surface and side surfaces joining the lower and upper surfaces, the side surfaces being bordered by left and right edges adjacent the flat upper surface; and

a plurality of tufts of bristles each with one end anchored into the upper surface of the head and a free end opposite the anchored end, the tufts of bristles comprising:

one row of outer tufts arranged adjacent the left edge and another row of outer tufts arranged adjacent the right edge, each of the rows of outer tufts being positioned astride the longitudinal axis and slanting outwardly

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toward the respective edges away from one another, each row being fan-shaped wherein a middle tuft of longest height, as measured from free to anchored ends, is flanked on each side by at least three tufts with the tuft heights becoming progressively smaller with distance from the middle tuft; and

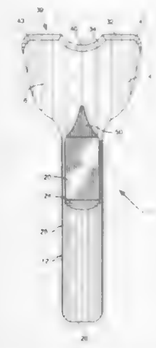
three rows of rear tufts near the rear end of the head, each of the three rows of rear tufts defining a plane transverse to the longitudinal axis, each of the three rows of rear tufts being arranged closer to the rear end than is the smallest tuft of the outer rows adjacent the rear end, and the tufts of each of the three rear tuft rows becoming progressively shorter from the rearmost row toward the front end of the head.

5,392,484

BULLNOSE CORNER CLEANING TOOL

John Stoltzfus, P.O. Box 8077, Mammoth Lakes, Calif. 93546

Filed Dec. 2, 1993, Ser. No. 161,780
Int. Cl.[6] B05C *17/00*
U.S. Cl. 15—235.7 **2 Claims**



1. A tool for cleaning and finishing bullnose joints between adjacent sheets of drywall, comprising:

an elongated handle configured for grasping by a user; and

a head connected to the handle, the head being formed generally as a section of a thin-walled hollow cylinder having a concave side and a convex side, the head having a front edge as the working portion for contacting a drywall joint to be finished, the convex side of the head having a beveled portion adjacent the front edge, the front edge further having a curved recess therein bounded on opposite sides thereof by two substantially straight edges, the edges located in a plane substantially perpendicular to the longitudinal axis of the handle, the curved recess being configured to conform to bullnose corners of selected angles, such that the curved recess in the concave side of the head is configured for finishing a drywall joint of a first selected angle and the convex side is configured for finishing a drywall joint of a second selected angle.

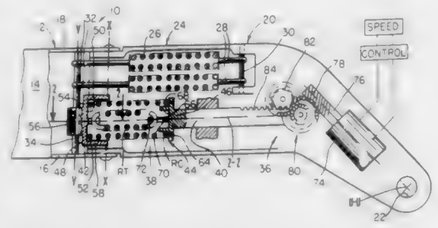
5,392,485

SCREEN WIPER APPARATUS INCLUDING CONTROLLED MEANS FOR VARYING THE WIPING FORCE

Maurice Journee, Le Bois Hédouin, France, assignor to Journee, Paul S.A., Colombes, France

Filed Sep. 24, 1992, Ser. No. 950,824
Claims priority, application France, Sep. 24, 1991, 91 11722
Int. Cl.[6] B60S *1/32*
U.S. Cl. 15—250.20 **9 Claims**

1. Screen wiper apparatus comprising: a drive head having a pivot axis; a wiper arm; means mounting the wiper arm on the drive head for pivoting movement with respect to the drive head about the pivot axis; at least one wiper blade carried by the wiper arm; and torque applying means having a first spring means for applying a substantially constant nominal-wiping, torque to the wiper arm and a second spring means for having a neutral state and for applying a complimentary torque to the wiper arm, said second spring means having a neutral state in which it applies no torque into the wiper arm, the torque applying means being coupled between the drive head and the



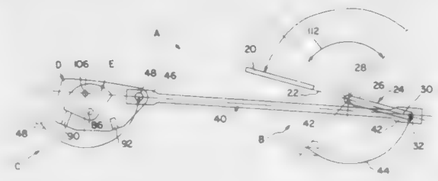
wiper arm for applying a wiping torque to the wiper arm, the second spring means applying a load to the wiper arm in which the algebraic value of the load is adjustable and can be additive and subtractive to the constant nominal torque such that the wiping torque applied to the wiper arm can be increased and can be reduced from the first spring means constant torque in response to vehicle operation, the second spring means neutral state defined by the value of the complementary torque being of zero magnitude.

5,392,486

DEPRESSED PARK MECHANISM FOR A WINDSHIELD WIPER SYSTEM

George Hojnacki, Oakland City, Mich., assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Feb. 22, 1993, Ser. No. 20,776
Int. Cl.[6] B60S *1/06, 1/34*
U.S. Cl. 15—250.16 **20 Claims**



1. A windshield wiper system on a vehicle body including a wiper blade assembly oscillated across a windshield by a drive motor, the windshield wiper system comprising:

a drive shaft adapted to be selectively rotated about an axis of rotation in clockwise and counter-clockwise directions by the drive motor;

an actuator lever engaging the drive shaft for rotation therewith;

a first link connected to the actuator lever by a pivot for a limited range of relative movement thereto between first and second positions, the link including a slot receiving the drive shaft therethrough;

a connecting arm having first and second ends pivotally secured to the first link adjacent the first end and to the wiper blade assembly at the second end, the first position of the link relative to the actuator lever being spaced from the second position to define a wipe position and a park position of the wiper blade assembly; and

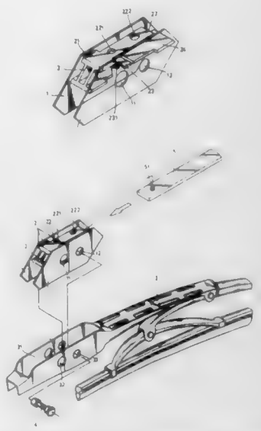
a first stop member adjustably mounted on the first link for relative movement thereto, the first stop member being engageable with the actuator lever and having a member for adjusting its position to thereby alter the extent of movement of the link relative to the actuator lever.

5,392,487

UNIVERSAL WINDSHIELD WIPER AND WIPER ARM CONNECTOR

Ming-Tung Yang, No. 4-3, Lane 97, Lung Chuen Street, Panchiao Taipei Hsien, Taiwan, Prov. of China

Filed Dec. 15, 1993, Ser. No. 166,942
Int. Cl.[6] B60S *1/40*
U.S. Cl. 15—250.32 **2 Claims**



1. A universal connector for connecting a windshield wiper blade framework having a connector channel to a windshield wiper arm comprising:

a) first and second side plates spaced such that they are adapted to fit within the connector channel, each side plate defining a first hole having a first diameter and a second hole having a second diameter such that the second diameter is less than the first diameter, the first and second side plates positioned such that the first holes are coaxially aligned with each other and the second holes are coaxially aligned with each other; and

b) a bridge plate assembly extending between and connected to each of the first and second side plates, the bridge plate assembly having a top and bottom rear edge; and

c) an upper leaf spring having a substantially circular opening and an elongated slot therein, said upper leaf spring is connected to and extends from said top rear edge of said bridge plate assembly;

d) a front lower leaf spring spaced from the upper leaf spring, the front lower leaf spring having a lower surface and at least one protruding conical tab extending from the lower surface, the front lower leaf spring positioned such that at least a portion thereof extends across the first holes said front lower leaf spring is connected to and extends from said bottom rear edge of said bridge plate assembly; and

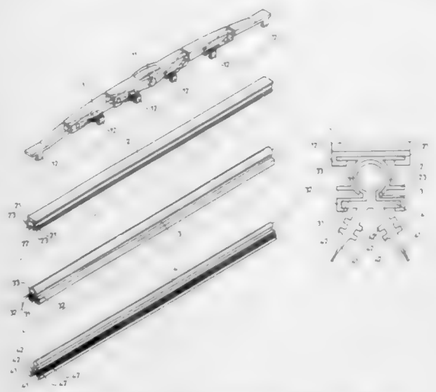
e) a rear lower leaf spring spaced from the upper leaf spring and positioned such that at least a portion thereof extends across the second holes said rear lower leaf spring coupled between and to each of said side plates.

5,392,488

ROTATABLE WINDSHIELD WIPER HAVING A DUAL BLADE ASSEMBLY

Chiu-Chieh Li, No. 108, Jen Ai Rd., Lu Chou Hsiang, Taipei Hsien, Taiwan, Prov. of China

Filed Dec. 10, 1993, Ser. No. 164,748
Int. Cl.[6] B60S *1/28, 1/40*
U.S. Cl. 15—250.41 **8 Claims**



1. A windshield wiper for automobiles comprising:

an elongate arm having a plurality of locating seats, each seat provided with a T-shaped groove receiving an elongate holder;

the elongate holder having a commensurately shaped upper portion which fits into the T-shaped groove of the locating seats and a lengthwise cylindrical groove located below said upper portion engaging with an elongate blade clamp;

the elongate blade clamp having a lengthwise tubular portion rotatably engaging in said lengthwise cylindrical groove of said elongate holder and two shoulders extending horizontally from said tubular portion at each side of the elongate blade clamp defining a second T-shaped groove below said lengthwise tubular portion such that said second T-shaped groove and said lengthwise tubular portion together provide a wiper blade receiving means; and

an elongate wiper blade having an upper cylindrical portion which at least fits into said wiper blade receiving means and two wiping portions extending down from the upper cylindrical portion to contact the surface of a windshield.

5,392,489

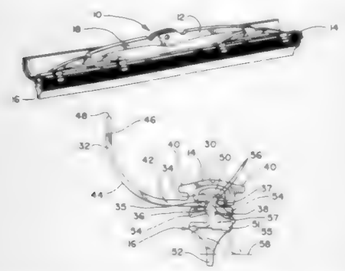
ANTILIFT WIPER BLADE ASSEMBLY WITH INTEGRAL FLEXOR AND AIRFOIL

Michael G. Mohnach, Valparaiso, Ind., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation of Ser. No. 899,037, Jun. 15, 1992, abandoned, which is a continuation of Ser. No. 714,247, Jun. 12, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 38,253
Int. Cl.[6] B60S *1/38, 1/40*
U.S. Cl. 15—250.42 **4 Claims**

4. In an antilift wiper blade assembly for clearing a nonplanar vehicular windshield including a pressure-distributing superstructure and a resilient wiping element, an elongated flexor interconnecting the wiping element and the superstructure, said flexor comprising a channel with an upper portion for engaging with the superstructure and a lower portion for retaining the wiping element, the flexor further comprising an integrally formed airfoil having a first portion laterally extending from and tangential to a bottom wall of the lower portion of the channel, said airfoil having a second portion spaced

outwardly of said upper portion of said channel, said airfoil having a uniformly circular curvature through an angle of 90 degrees for spacing said second portion of the airfoil outwardly of the upper portion of the channel, and said first and second portions of the airfoil having a uniform thickness equal



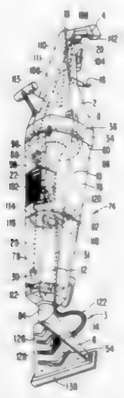
to the thickness of the bottom wall of the channel whereby when an air stream flows toward the windshield and into contact with the blade the airfoil will produce an aerodynamic force to urge the wiping element into engagement with the windshield.

5,392,490

EXTRACTION CLEANER AND DRIER

Clifford L. Monson, Kirkland, Wash., assignor to Danny C. Perry, Honolulu and Henry A. Wilks, Kailua, both of Hi.

Continuation-in-part of Ser. No. 980,206, Nov. 23, 1992, Pat. No. 5,289,610. This application May 14, 1993, Ser. No. 60,840
Int. Cl.[6] A47L *5/24*
U.S. Cl. 15—320 26 Claims



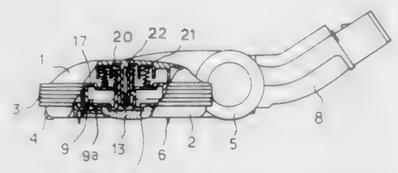
1. An extraction cleaner for cleaning a surface comprising:
a body member for housing internal cleaner components including a handle at a first end thereof, a nozzle head at a second end thereof opposite to and spaced from said first end, said nozzle head including a cleaning fluid discharge means and a vacuum intake means, a vacuum blower chamber formed adjacent to said handle, and a plenum chamber formed adjacent to said vacuum blower chamber, said body member including a fluid chamber seating area between said nozzle head and said plenum chamber;
a fluid receiving chamber removably mounted in said fluid chamber seating area for containing cleaning fluid, said fluid receiving chamber being mounted in communication with said plenum chamber, means connecting said fluid receiving chamber to said cleaning fluid discharge means to provide cleaning fluid from said fluid receiving chamber to said cleaning fluid discharge means;
a vacuum generating means mounted in said vacuum blower chamber and operative to create a vacuum in said plenum chamber and fluid receiving chamber;
a vacuum conduit means connecting said vacuum intake means to said fluid receiving chamber, said vacuum conduit means including a conduit inner end section and an elongated conduit extending from said nozzle head to said conduit inner end section, said conduit inner end section curving inwardly of said plenum chamber and downwardly at an angle into said fluid receiving chamber to direct fluid and air in said vacuum conduit means downwardly into said fluid receiving chamber; and
a return air conduit means spaced above the conduit inner end section and connecting said plenum chamber to said vacuum blower chamber and having a first end opening into said vacuum blower chamber and a second end opening into said plenum chamber, said return air conduct means including a first conduit section extending from said first end downwardly into said plenum chamber toward said fluid receiving chamber and a second conduit section extending laterally frown said first conduit section to said second end to form an enclosed passageway from said first end to said second end.

5,392,491

CLEANER HEAD FOR A VACUUM CLEANER

Cheol Hwang, and Hyo Y. Jeoung, both of Changwon-si, Rep. of Korea, assignors to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 28, 1992, Ser. No. 967,744
Claims priority, application Rep. of Korea, Nov. 1, 1991, 18560/1991
Int. Cl.[6] A47L *9/06*
U.S. Cl. 15—322 8 Claims



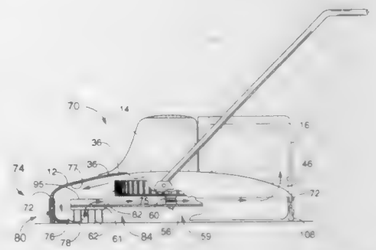
1. A cleaner head for a vacuum cleaner comprising:
an upper cover having at least one guide boss and at least one opening thereon;
a lower cover having a plurality of rollers for permitting the cleaner head to be moved around, said lower cover making up a head body together with said upper cover;
a mop;
mop holding means housed in said head body for holding said mop, said mop holding means being movable in a vertical direction; and
locking means for locking said mop holding means inside said head body by preventing said mop holding means from moving in said vertical direction, such that said mop is held by said mop holding means when said locking means is locked and said mop is released by said mop holding means when said locking means is unlocked.

5,392,492

AIR-FLOATED APPARATUS

Arthur L. Fassauer, 420 Foster La., Canyon, Tex. 79015

Continuation of Ser. No. 564,197, Aug. 8, 1990, abandoned. This application Oct. 21, 1992, Ser. No. 964,562
Int. Cl.[6] A47L *9/00*
U.S. Cl. 15—327.3 17 Claims



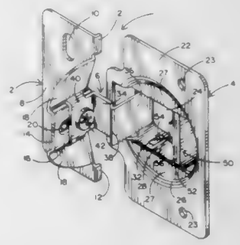
1. An air-floated vacuum cleaner for suctioning material from a support surface, comprising:
a housing having an air inlet opening, an open bottom, and an inner wall;
means for pressurizing the housing with air to float the housing above a support surface;
vacuum means rotatable within the housing for creating a relative vacuum to suction the material upwards from the support surface and for moving the material laterally outwardly against the inner wall as the vacuum means is rotated; and
means communicating with the inner wall of the housing for collecting the material moved laterally thereagainst.

5,392,493

POCKET HINGE ASSEMBLY

Louis L. Youngdale, 802 Crescent Dr., Vista, Calif. 92084

Filed Aug. 26, 1993, Ser. No. 112,106
Int. Cl.[6] E05D *7/04*
U.S. Cl. 16—237 17 Claims



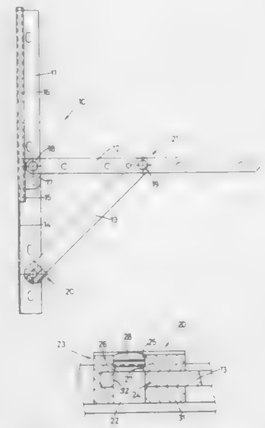
1. A hinge assembly to connect a cabinet door to a cabinet, said hinge assembly comprising:
a cabinet plate to be connected to the cabinet;
a door plate to be connected to the door;
linking means pivotally interconnecting said cabinet plate to said door plate to permit said door plate to rotate relative to said cabinet plate, said linking means having a raised cam surface; and
locking means carried by said door plate and adapted to move into engagement with the raised cam surface of said linking means when said door plate rotates toward said cabinet plate and the cabinet door correspondingly moves to a closed position across the cabinet, said locking means cooperating with said cam surface for preventing said door plate from rotating away from said cabinet plate to thereby retain the cabinet door in said closed position, said locking means comprising a normally relaxed spring that is stressed by the cam surface of said linking means when said door plate rotates toward said cabinet plate and said spring engages said cam surface, said spring moving with said door plate out of engagement with said cam surface at which to return to its normally relaxed configuration and thereby block said door plate from rotating away from said cabinet plate, said spring being formed from a flexible material and having first and second legs, a body extending between said legs, and a catch projecting from said body to receive a pushing force applied thereto by the cam surface of said linking means to cause said normally relaxed spring to be stressed.

5,392,494

WINDOW STAY

Yurek A. Wronski, Cheltenham, United Kingdom, assignor to Cotswold Architectural Products Limited, Cheltenham, United Kingdom

Filed May 3, 1993, Ser. No. 55,302
Claims priority, application United Kingdom, Feb. 19, 1993, 9303328
Int. Cl.[6] E05D *7/12*
U.S. Cl. 16—364 10 Claims



1. A stay having a base defining a channel, slider means mounted in the channel for sliding movement with respect to the base, a window support arm pivotally connected to the slider means and link means pivotally connected at one end to the arm and at the other end, by releasable connecting means, to the base wherein the releasable connecting means comprises a stud like projection on the base and a cap on the link, defining with the link, a passage for receiving the projection, the projection and cap having engageable co-operating snap-fit formations to hold releasably the projection within the passage.

5,392,495

AIRLINE SEED COTTON CLEANER

James L. Horn, P.O. Box 53785, Lubbock, Tex. 79453

Filed Aug. 20, 1993, Ser. No. 110,052
Int. Cl.[6] D01B *1/04*
U.S. Cl. 19—55 R 11 Claims

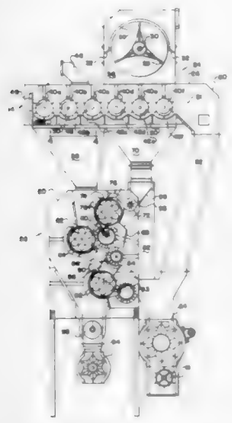
3. In a cotton gin having
a) gin stands for separating seed cotton into lint and cotton seed,
b) a seed cotton cleaner for cleaning trash from seed cotton, and
c) conveyors for moving the seed cotton from the seed cotton cleaner to the gin stands,
d) said seed cotton cleaner having
i) spaced apart cleaner bars,

ii) spike means for wiping the seed cotton across the cleaner bars, whereby trash and some seed cotton falls between the cleaner bars;

wherein the improved structure of a reclamation unit in combination with the above comprises:

e) at least one saw drum positioned below the spaced apart cleaner bars to snag the seed cotton from the trash,

f) grid bars to knock trash from seed cotton snagged on the saw drum, and



g) at least one doffing cylinder for doffing the seed cotton from the saw drums,

h) said seed cotton cleaner has an inlet end and outlet end,

j) said cleaner bars are transverse of a line from the inlet end to the outlet end, and

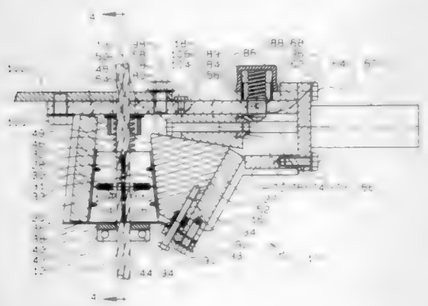
k) said cleaner bars spaced apart a greater distance near the inlet end than the cleaner bars are spaced apart near the outlet end.

5,392,496

CABLE CLAMP

Emeric W. Johnson, Salmon Arm, Canada, assignor to Newnes Machine Ltd., Salmon Arm, Canada

Filed May 13, 1993, Ser. No. 62,432
Int. Cl.[6] A44B 21/00; H02G 7/00
U.S. Cl. 24—136 R 13 Claims



1. A cable clamp (10) having first and second jaws (24, 26) disposed on opposite sides of and for clamping a cable (12), characterized by:

(a) a top plate (18);

(b) first and second backstops (20, 22) fixed to said top plate on opposite sides of said jaws;

(c) a first wedge (52) slidably mounted between said jaws and said second backstop;

(d) a second wedge (56) slidably mounted between said top plate and said first wedge;

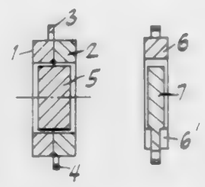
(e) motor means (60) for slidably forcing said second wedge across said first wedge, thereby forcing said first wedge against said jaws to clamp said cable therebetween.

5,392,497

MAGNETIC CLASP

Jesus E. G. Defner, Wiesingerstrasse 3/29, A-1010 Vienna, Austria

PCT No. PCT/AT90/00046, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO91/17675, PCT Pub. Date Nov. 28, 1991
PCT Filed May 16, 1990, Ser. No. 952,904
Int. Cl.[6] A44B 1/04; E05C 17/56
U.S. Cl. 24—303 13 Claims



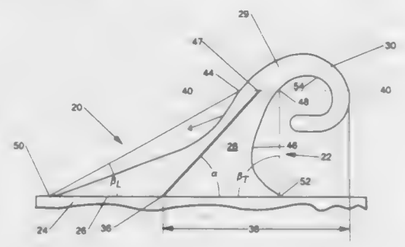
1. A magnetic clasp for securing parts having closed and open positions, comprising two annular disk shaped closure bodies open on both sides arranged substantially parallel to each other in the closed position defining a passage, each said closure body including an outer radial portion with attachment means thereon attachable to one of said parts, a magnetizable body inserted into said passage with radial clearance and at least one of the closure bodies being a permanent magnet.

5,392,498

NON-ABRASIVE SKIN FRIENDLY MECHANICAL FASTENING SYSTEM

David J. K. Goulait, and Dennis A. Thomas, both of Cincinnati, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Dec. 10, 1992, Ser. No. 988,636
Int. Cl.[6] A44B 18/00
U.S. Cl. 24—452 10 Claims



1. A skin friendly hook fastening material for use as a component of a mechanical fastening system, said hook fastening material comprising:

a substrate comprising a compressible material, wherein said substrate is comprised of fluid impervious top layer, a fluid impervious bottom layer joined to said top layer to form at least one pocket, and a compressible fluid positioned within said pocket; and

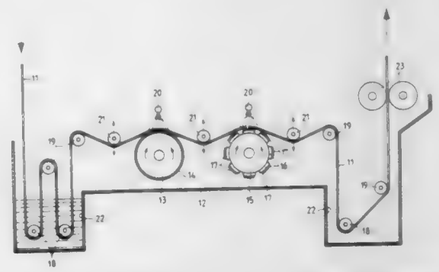
an array of prongs, said array comprising from 1600 to 2500 prongs per square inch, each of said prongs comprising a base joined to said substrate, an engaging means, and a shank comprising a proximal end joined to said base and a distal end joined to said engaging means.

5,392,499

METHOD AND APPARATUS FOR SURFACE TREATMENT OF WET FABRIC WEBS IN A FINISHING MACHINE

Franco Bertoldo, Brogliano, Italy, assignor to Sperotto Rimar S.p.A., Thiene, Italy

Filed Apr. 15, 1993, Ser. No. 46,755
Int. Cl.[6] D06C 11/00
U.S. Cl. 26—28 14 Claims



1. A method for finishing a web of wet fabric, comprising:

(a) passing a web of fabric into an external housing through an inlet of an inlet zone, through an intermediate zone, and out of an outlet of an outlet zone, along a path, while guiding the web of fabric by rolling contact with a succession of guiding rollers located in each of said zones;

(b) wetting successive increments of said web upstream of said intermediate zone;

(c) in said intermediate zone, passing successive increments of said web, while wet, in grinding contact with the radially outer peripheral surface of at least one first type of grinder roller having a radially outer, peripheral surface provided throughout with a coating of diamond abrasive material;

(d) in said intermediate zone, passing successive increments of said web, while wet, in grinding contact with the radially outer peripheral surface of angularly successive ones of the staves of at least one second type of grinder roller having a radially outer peripheral surface provided with a plurality of angularly spaced staves, each aligned with a respective generatrix of the radially outer peripheral surface of the respective said second type of grinder roller and having a radially outer peripheral surface provided with a coating of diamond abrasive material;

steps (c) and (d) being conducted while said grinder rollers of said first and second types are arranged in alternation with one another within said intermediate zone of said external housing for rotation about respective longitudinal axes thereof, said axes being arranged transversally of said path, and while at least three of said guide rollers are functioning as respective mobile rollers, respectively disposed intermediate a respective two adjacent ones of said grinder rollers, upstream of the furthest upstream along said path of said two grinder rollers, and downstream of the furthest downstream along said path of said two grinder rollers and mounted for vertical adjustment; and

(e) vertically adjusting said mobile rollers in such a sense as to cause said fabric web, when passing along said path under and in rolling contact with the furthest upstream of said three mobile rollers, over and in grinding contact with the furthest upstream of said two grinder rollers, under and in rolling contact with the intermediate one of said three mobile rollers, over and in grinding contact with the furthest downstream of said two grinding rollers, and under and in rolling contact with the furthest downstream of said three mobile rollers, to wrap about more and less about the radially outer peripheral surface of said first type grinder roller, and about more and less of the radially outer peripheral surface of said staves of said second type grinder roller, depending on vertical adjustment of position of said mobile rollers relative to said two grinder rollers.

5,392,500

PROCESS FOR THE MANUFACTURE OF A FIBROUS PREFORM FORMED OF REFRACTORY FIBERS FOR PRODUCING A COMPOSITE MATERIAL ARTICLE

Pierre Olry, Bordeaux; Dominique Coupe, Le Haillan, and Philippe DuPont, Le Bouscat, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Continuation-in-part of Ser. No. 801,700, Dec. 2, 1991, Pat. No. 5,228,175. This application Feb. 4, 1993, Ser. No. 13,764
Claims priority, application France, Feb. 5, 1992, 92 01300
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[6] D06H 7/22
U.S. Cl. 28—168 33 Claims

8. A process for the manufacture of a fibrous preform formed of refractory fibers for producing a composite material article, said process comprising the steps of:

providing a yarn comprising discontinuous fibers made of one of a refractory material or a precursor of said refractory material, said discontinuous fibers being disposed parallel to one another without twist, and a covering yarn made of a fugitive material over said discontinuous fibers to provide integrity to said yarn;

forming a two-dimensional fibrous texture by weaving said yarn composed of parallel discontinuous fibers and said covering yarn;

eliminating said covering yarn to allow said discontinuous fibers to loosen within the bulk of said fibrous texture; and

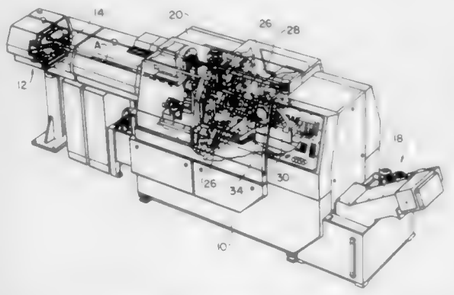
superposing and needling a plurality of plies of said two-dimensional fibrous texture to obtain a preform of a composite material article.

5,392,501

AUTOMATIC LATHE

Werner Sonnek, Lichtenwald, Germany, assignor to Traub Aktiengesellschaft, Germany

Filed Sep. 7, 1993, Ser. No. 118,115
Claims priority, application Germany, May 11, 1993, 9307155
Int. Cl.[6] B23B 7/04, 9/04
U.S. Cl. 29—27 C 18 Claims



1. An automatic lathe, comprising

a headstock spindle adapted to clamp workpiece rod material,

a turret head supported on a cross slide arrangement for longitudinal and transverse movements with respect to the headstock spindle and for rotation with respect to a turret axis,

at least one counter spindle adapted to clamp a workpiece to be severed from the workpiece rod material and subsequently to be processed further,

a plurality of tool holders to hold tools for machining a workpiece still connected to the workpiece rod material,

the counter spindle and at least one of the tool holders being arranged on the turret head in such a manner that either the counter spindle or the tool holder can be moved selectively into a position of alignment with the headstock spindle by rotation of the turret head, and

an additional tool carrier on which a plurality of additional tool holders are disposed parallel to each other at a spacing and adapted to be moved selectively into alignment with the counter spindle when the latter is in a position remote from the headstock spindle, wherein

at least one tool holder mounted on the turret head is a multiple told holder at which a plurality of tool clamping means are arranged parallel to each other at a spacing which corresponds to the spacing between the tool holders on the additional tool carrier, and

the turret head is movable, by transverse movement of the cross slide arrangement, from a first position in which a first one of these tool clamping means is located opposite the headstock spindle, and the counter spindle, simultaneously, is located opposite a first one of the tool holders disposed on the additional tool carrier, into a second position in which a second one of the tool clamping means disposed on the multiple tool holder is located opposite the headstock spindle and the counter spindle, simultaneously, is located opposite a second one of the tool holders mounted on the additional tool carrier.

5,392,502

MICROMACHINING SYSTEM AND METHOD

Edgar P. Freer, 7000 Scarborough Peak Dr., Canoga Park, Calif. 91307

Filed Feb. 5, 1992, Ser. No. 831,488
Int. Cl.[6] B23B *21/00, 25/06;* G05B *19/00*
U.S. Cl. 29—52 29 Claims



1. A system for mounting a plurality of tools, comprising:

guide means including slider surface means along a first longitudinal axis;

carriage means engageable on the slider surface means and both comprising dovetail means for supporting the carriage means along the longitudinal axis in a first plane;

a plurality of tool holders removably mounted on the carriage means in a direction transverse to the longitudinal axis;

a plurality of tools, each mounted on a different one of the holders and each having an operative surface lying along a second plane parallel to the first plane and adjacent a line parallel to the first axis, the tools including end stop surface means adjustable in a direction perpendicular to the first axis on at least one of the tool holders and a turnaround tool for reversing stock on at least a second one of the holders; and

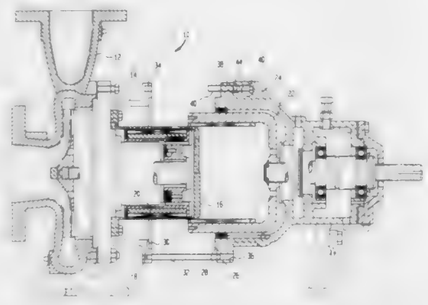
means coupled to the carriage means for incrementally stepping the carriage means along the first axis.

5,392,503

METHOD OF AXIALLY INSTALLING OR REMOVING A MAGNET-CARRIER ASSEMBLY INTO OR FROM A HOUSING

Anthony E. Stavale, Cincinnati, Ohio, assignor to ITT Corporation, New York, N.Y.

Filed Nov. 3, 1993, Ser. No. 147,214
Int. Cl.[6] B23P *19/00;* B23Q *3/00*
U.S. Cl. 29—426.5 3 Claims



1. A method of (a) axially installing one of two mutually magnetically-attractive magnet carrier assemblies into a housing which has the other of said assemblies therein, while (b) inhibiting magnetically-induced, radial displacement thereof, said housing and said one assembly having complementary, confrontable flanges, said flange of said one assembly including a plurality of apertures therethrough, said method comprising the steps of:

fixing elongate guide rails to, and axially projecting from, said housing flange;

aligning said apertures in said one flange with said guide rails such that said guide rails are disposed in said apertures;

threadedly installing stand-offs in said one flange such that one end of each stand-off projects from said one flange and extends toward said housing flange, said stand-offs being adjustably extensible and retractable relative to said housing flange; and

sliding said one assembly along said guide rails to the extent permitted by said stand-offs, and then gradually threadedly retracting said stand-offs relative to said housing flange until said complementary, confrontable flanges are positioned to effect installation.

5,392,504

SPRING CLIP REMOVER AND REMOVAL METHOD

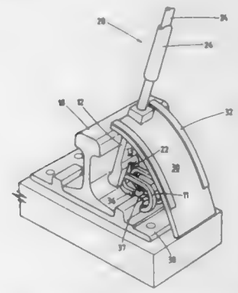
Richard R. Calusinski, Vista, Australia, assignor to Everts & Van Der Weijden Exploitatie Maatschappij Ewen B.V., The Hague, Netherlands

Filed Mar. 4, 1994, Ser. No. 205,998
Int. Cl.[6] B23P *19/00*
U.S. Cl. 29—426.6 11 Claims

1. A tool useful for removing a spring clip retained on a rail track by having outer edges of the clip retained outside of a gate, the tool including:

a body having a recess formed in the front face thereof, the recess serving as clip engaging means, and a bulbous portion extending rearwardly from a lower end of the body, said bulbous portion being adapted to bear against an inner surface of the rail track; and

a handle including an impact hammer, said impact hammer comprising an open ended tube located around the handle and slidable over a longitudinal axis of the handle to thereby deliver an impact to the body, the clip engaging means being adapted to engage and compress outer edges of the clip in response to an impact delivered to the body from the impact hammer so as to permit passage of the outer edges and body of the clip through the gate to thereby release the clip; and



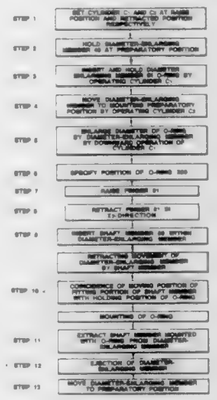
the tool further including a shroud attached to the tool and located so as to pass over the clip and the body to protect the operator of the tool.

5,392,505

METHOD FOR MOUNTING AN ELASTIC ANNULAR MEMBER

Hiromitsu Harada, Ushiku, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 959,125, Oct. 9, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 171,969
Claims priority, application Japan, Oct. 29, 1991, 3-283223
Int. Cl.[6] B23P *11/02;* B23Q *7/10*
U.S. Cl. 29—450 2 Claims



1. A method for fitting an elastic annular ring on an outer circumferential portion of a workpiece, said method comprising the steps of:

partially inserting a hollow diameter-enlarging member into the elastic ring positioned at a supply position, the diameter-enlarging member holding the elastic ring on an outer circumferential portion in a partially enlarged diameter state;

grasping the diameter-enlarging member and ring positioned thereon with a robotic mechanism having a guide shaft insertable into the diameter-enlarging member and a pair of jaws securing an exterior portion of the diameter-enlarging member;

moving the diameter-enlarging member and ring positioned thereon grasped by the robotic mechanism to a fitting position to be received by a receptacle having a guide groove for receiving the elastic ring and a receiving guide for receiving the diameter-enlarging member;

holding the ring at the fitting position and further inserting the diameter-enlarging member by axially displacing the robotic mechanism to further expand the ring to an enlarged diameter state; and

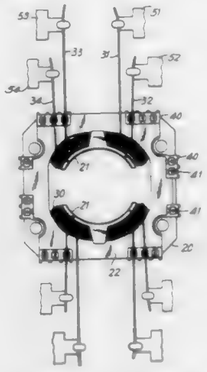
inserting the workpiece, which has a flange portion, into the diameter-enlarging member such that the flange portion of the workpiece contacts an end surface of the diameter-enlarging member and axially displaces the diameter-enlarging member in the receiving guide past the position of the ring while keeping the elastic ring in the guide groove at the fitting position to transfer the elastic ring to the workpiece by a contraction of the elastic ring from the enlarged diameter state to a normal diameter state.

5,392,506

METHODS FOR CONNECTING STATOR COIL LEADS

Sabatino Luciani, and Antonio Lumini, both of Florence, Italy, assignors to Axis U.S.A., Inc., Marlborough, Mass.

Division of Ser. No. 739,291, Aug. 1, 1991, Pat. No. 5,245,748, which is a continuation-in-part of Ser. No. 561,965, Aug. 1, 1990, Pat. No. 5,065,503. This application Aug. 24, 1993, Ser. No. 110,858
Int. Cl.[6] H02K *15/00;* H01R *43/00*
U.S. Cl. 29—596 45 Claims



1. A method of connecting a lead wire extending from a coil portion wound on a pole of a stator core to at least one of a plurality of terminals, said method comprising a series of steps of:

a. providing a wire manipulating device having a longitudinal axis, said wire manipulating device being capable of translational movement in the plane of said plurality of terminals and rotational movement about said longitudinal axis;

b. actuating said wire manipulating device to engage at a point of engagement said lead wire extending from said coil portion;

c. actuating said wire manipulating device to translate and rotate said lead wire about said point of engagement to dispose said lead wire along a complex path, so that said lead wire is aligned with any one of said plurality of terminals; and

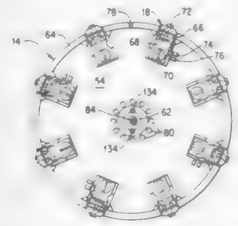
d. engaging said lead wire with said one of said plurality of terminals.

5,392,507

METHOD OF POSITIONING MAGNETIC HEADS ON A TURNTABLE

Richard Juncker, Chaville, and Pierre Abeille, Antony, both of France, assignors to Schlumberger Industries, Inc., Montrouge, France

Division of Ser. No. 897,115, Jun. 11, 1992, Pat. No. 5,287,236.
This application Aug. 20, 1993, Ser. No. 109,547
Claims priority, application France, Jun. 12, 1991, 91 07133
Int. Cl.[6] G11B *5/42*
U.S. Cl. 29—603 8 Claims



1. A method of positioning the rotary magnetic heads of a recorder/reader unit for magnetic tapes, the magnetic heads being fixed at the periphery of a rotary turntable which includes a central surface and a peripheral zone, said turntable being designed to be fixed to a countertable which also includes a central surface and a peripheral zone, the method comprising the following steps:

a/ said turntable is machined so that said central surface is set back relative to a plane containing said peripheral zone and perpendicular to the axis of rotation of the rotary turntable;

b/ the turntable is fixed on a standard countertable in a laboratory and the magnetic heads are positioned on the turntable;

c/ the positioning of the magnetic heads is adjusted and the magnetic heads are fixed to the turntable;

d/ the turntable is dismounted from the countertable; and

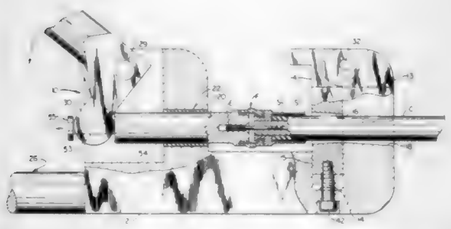
e/ the turntable is mounted on the countertable of the recorder/reader unit by initially pressing said peripheral zones against each other and then pressing said central zones against each other.

5,392,508

AXIAL DEFORMATION CRIMPING TOOL

Randall A. Holliday, Westminster, and Donald Kesinger, Morrison, both of Colo., assignors to Cable Ready, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 992,524, Dec. 17, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 218,624
Int. Cl.[6] H01R *43/042*
U.S. Cl. 29—751 20 Claims



1. A crimping device for connecting a cable fitting having a generally tubular connector sleeve to an end of a coaxial cable wherein said sleeve is composed of a thin-walled deformable material, said device comprising:

a die member defining a tapered cavity having a first diameter at a first end thereof substantially corresponding to an outer diameter of said sleeve and a second diameter axially spaced from said first diameter which substantially corresponds to an outer diameter of said cable end;

carrier means axially spaced from said cavity for supporting said sleeve in facing relation to said first end of said cavity with said cable end extending through said cavity and at least partially inserted into said sleeve; and

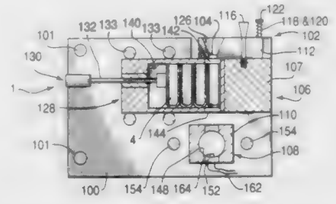
support means mounting said carrier for axial movement toward and away from said die member whereby to force said sleeve axially into said cavity under sufficient force to radially contract said sleeve into a tapered configuration conforming with said tapered cavity of said die to thereby connect said sleeve to said end of said cable.

5,392,509

APPARATUS FOR CAPPING USED OR UNSANITARY NEEDLES

Alfred J. Cheswick, Loch Arbour, N.J., assignor to Krell Technologies, Inc., Loch Arbour, N.J.

Filed Jul. 29, 1993, Ser. No. 98,850
Int. Cl.[6] B23Q *7/10*
U.S. Cl. 29—818 21 Claims



1. A needle-capping apparatus for a safe disposal of a used or otherwise unsanitary needle of a medical device comprising:

a base structure;

needle-alignment means disposed on said base structure, said alignment means comprising two members, each said member having substantially half of an orifice on one end thereof for inserting said needle of said medical device therethrough, each said member being rotatively mounted on a pivot post on the other end of each said member;

positioning means disposed on said base structure and adapted to preposition an isolation cell onto said positioning means, said positioning means being aligned in an operating relationship with said needle-alignment means to allow placement of a tip of said needle inside said isolation cell;

anvil means disposed on said base structure and aligned in an operating relationship with said positioning means to allow placement of a portion of said isolation cell having said tip of said needle therein onto said anvil means; and

crimping means positioned on said base structure and aligned with said anvil means and said positioning means for permanently affixing said isolation cell to said tip of said needle.

5,392,510

METHOD OF MOUNTING CONNECTORS TO CIRCUIT BOARD

James S. Chapman, Lee's Summit, Mo., assignor to AT&T Corp., Murray Hill, N.J.

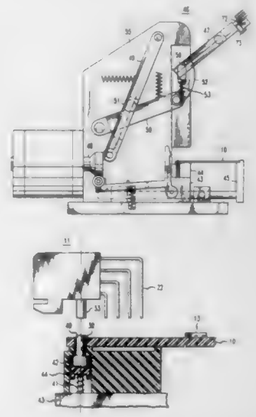
Continuation of Ser. No. 965,697, Nov. 2, 1992, abandoned. This application Dec. 8, 1993, Ser. No. 164,582
Int. Cl.[6] H05K *3/30*
U.S. Cl. 29—837 4 Claims

1. A method of mounting a connector including a housing with a peg extending therefrom and a plurality of terminal leads extending from the housing and spaced from the peg to a printed circuit board including an array of holes for insertion therein of corresponding terminal leads when the connector is mounted to the board comprising the steps of:

aligning only the peg with a spring-loaded pin;

providing the board with at least one mounting hole spaced from the array of holes in accordance with the spacing of the peg from the leads;

placing the board between the spring-loaded pin and the peg



of said connector so that the at least one mounting hole of said board is aligned with said spring-loaded pin and inserting said pin through said at least one mounting hole of said board;

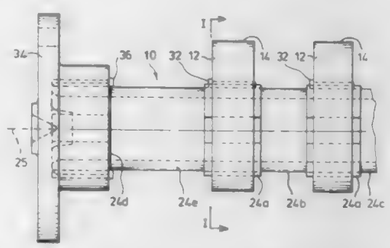
inserting the peg into the at least one mounting hole while displacing the pin therefrom and simultaneously positioning the leads of said connector in relation to corresponding holes in the array of holes and inserting the leads of said connector into said array of holes of said board without the use of spring-loaded pins inserted through the array of holes.

5,392,511

MANUFACTURE OF CAMSHAFTS

Michael M. Copeland, Nr Drybrook, and Roger H. Slee, Warwick, both of England, assignors to T & N Technology Limited, Rugby, England

Filed Oct. 13, 1993, Ser. No. 135,336
Claims priority, application United Kingdom, Apr. 21, 1993, 9308253
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.1 10 Claims



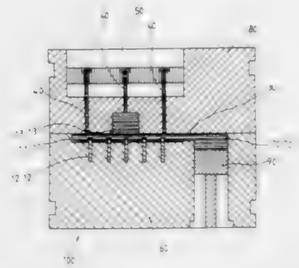
1. A method of manufacturing a camshaft of the type which comprises a plurality of similar cams at different positions along the shaft, the cams being arranged in a plurality of orientations relative to a longitudinal axis of the camshaft, the method comprising forming a plurality of individual chill cast cams each of which has a hole therethrough, assembling said cams on a shaft with the shaft received in said holes, and securing said cams to said shaft at predetermined fixed positions thereon and at predetermined fixed orientations, wherein said cams are each formed with a longitudinally-extending groove in the surface of said hole, said groove being at a predetermined orientation relative to a longitudinal axis of the hole, and said shaft is formed with longitudinally-extending grooves in its outer surface at said predetermined positions, there being at least one of said grooves at each of said predetermined positions at a predetermined orientation relative to a longitudinal axis of the shaft, the method also comprising bringing the groove of each cam into alignment with a groove in the shaft and inserting a wedge member into the aligned grooves to hold them in alignment and hold the respective cams against movement from their fixed predetermined positions and orientations on the shaft.

5,392,512

METHOD FOR FABRICATING TWO-PIECE SCROLL MEMBERS BY DIECASTING

Yuan-Chang Fann; Bee-Yu Wei, both of Hsinchu, and Jeng-Maw Chiou, Kaoshiung Hsien, all of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Nov. 2, 1993, Ser. No. 148,192
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.022 15 Claims



1. A process for fabricating a scroll member for use in a scroll-type fluid displacement device, said scroll member comprising an end plate, an involute wrap on one side thereof and a scroll hub on the other side, said wrap having a pre-determined height and a pre-determined thickness, said process comprising the steps of:

(a) obtaining a scroll mold comprising a mobile scroll mold and a stationary scroll mold, said mobile scroll mold containing a first mold cavity having the shape of said scroll hub, said stationary scroll mold containing an injection port, a second cavity and an involute groove disposed below said second cavity, said second cavity having the shape of said end plate, said involute groove having the shape of the involute wrap, and said injection port is connected to an injectant feeder;

(b) pre-fabricating an involute wrap;

(c) placing said prefabricated involute wrap from step (b) inside said involute groove;

(d) injecting a molten alloy composition from said injectant feeder into said second cavity until it fills said first and second cavities to form said scroll member; and

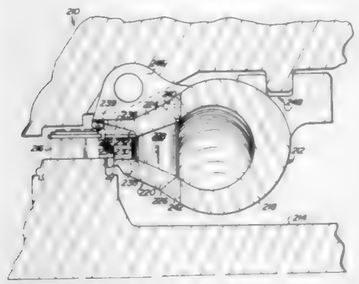
(e) cooling said scroll member and removing it from said scroll mold.

5,392,513

STEAMPATH AND PROCESS OF RETROFITTING A NOZZLE THEREOF

Mario Mazzola, Ballston Lake; Michael T. Hamlin, Delanson; Richard I. Cromer, Johnstown, and John Costantini, Cohoes, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Dec. 21, 1993, Ser. No. 171,032
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—889.1 10 Claims



1. A process for replacing a multi-piece steampath in a nozzle box where, initially, the steampath is secured between upper and lower ring components by means of axially accessible, arcuate welds, comprising the steps of:

a) axially machining said arcuate welds so as to permit removal of said steampath in a direction axially away from said nozzle box;

b) further machining said lower ring component to provide a substantially vertical weld surface; and

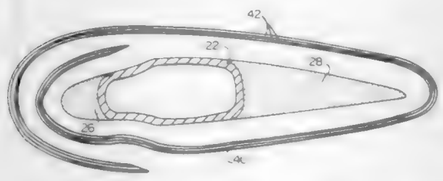
c) securing a one-piece steampath in place by an axially accessible upper weld and a radially accessible lower weld.

5,392,514

METHOD OF MANUFACTURING A COMPOSITE BLADE WITH A REINFORCED LEADING EDGE

James A. Cook, Agawam, and David P. Nagle, Westfield, both of Mass., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 832,119, Feb. 6, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 123,769
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—889.71 5 Claims



1. A method of manufacturing a composite propulsor blade having an axially extending load bearing spar disposed within a fiber reinforced shell defining an airfoil comprising the steps of:

forming a spar assembly that carries the load absorbed by the propulsive blade having a leading edge, a trailing edge, and a pressure side and a suction side extending therebetween;

wrapping one sheet of fabric material of substantially uniform thickness that is precut to a length exceeding the full extent of the airfoil including the pressure side and suction side defining a blanket about said spar assembly whereby said spar assembly is covered by a fabric wrap by wrapping said one sheet about said spar assembly such that said one sheet overlaps itself at the leading edge so that said fabric wrap has a first relatively uniform thickness overlapping the leading edge of said spar assembly and a second uniform thickness overlapping the remainder of said spar assembly, said first thickness being about twice the thickness as said second thickness; and

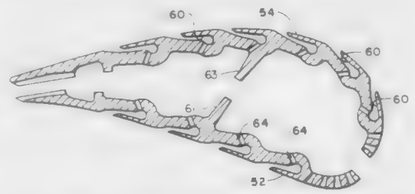
impregnating said one sheet of fabric material with a curable resin material whereby upon subsequent curing of the resin material a fiber reinforced shell having an approximately double thick leading edge portion is formed about the spar assembly.

5,392,515

METHOD OF MANUFACTURING AN AIR COOLED VANE WITH FILM COOLING POCKET CONSTRUCTION

Thomas A. Auxier, Palm Beach Gardens; Hans R. Przirembel, Jupiter, and Friedrich O. Soechting, Tequesta, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 550,008, Jul. 9, 1990. This application Feb. 10, 1992, Ser. No. 842,289
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—889.721 4 Claims



1. The method of manufacturing an air cooled stator vane for a gas turbine engine including the steps of:

casting a first half of an outer shell shaped in an airfoil with an outer curvature defining a leading edge, a trailing edge and a suction surface;

forming in the step of casting the first half a plurality of spaced pockets in the outer shell in rows extending over the suction surface of the shell and forming slots with a slot being located at the end of each pocket and passages in the outer shell with each passage for each pocket extending in the direction of the leading edge from the trailing edge connecting with each of the slots;

forming in the step of casting the first half a mating face at the leading edge and a mating face at the trailing edge;

casting a second half of the outer shell shaped in an airfoil complementing the first half for forming the stator vane with an outer curvature defining a leading edge, a trailing edge and a pressure surface;

forming in the step of casting the second half a plurality of pockets in the outer shell in rows extending over the pressure surface and forming slots with a slot being located at the end of each pocket and passages in the outer shell with each passage for each pocket extending in the direction of the leading edge from the trailing edge connecting with each slot;

forming in the step of casting the second half a mating surface at the leading edge and a mating surface at the trailing edge;

machining apertures through the cast outer shell from the interior of the outer shell so that each aperture is formed in a portion of the outer shell and extends from the interior of the outer shell to the pocket at a point remote from the slot; and

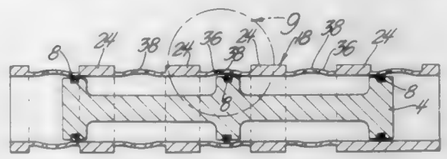
joining said halves of airfoil shaped outer shells at the respective mating surfaces.

5,392,516

METHOD FOR FORMING A SPOOL VALVE SLEEVE

Mohammad S. Mazhar, Macomb County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 19, 1994, Ser. No. 245,794
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—890.13 14 Claims



1. A method to fabricate a valve sleeve, comprising:

providing a tube with a smooth inner peripheral surface;

creating a channel on the tube recessed with respect to an outer peripheral surface of the tube, whereby a channelled region of a tube wall is thinner than other regions of the tube wall;

placing the tube in an exterior sleeve so that the tube's outer peripheral surface at the other regions fits closely with an inner peripheral surface of the sleeve;

pressurizing the tube to plastically deform the channeled region outward, whereby the channelled region forms a concavity in the inner peripheral surface of the tube;

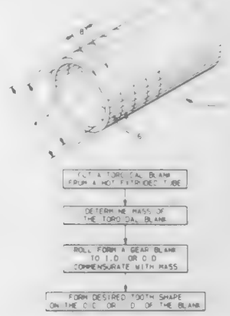
creating an aperture through the concavity.

5,392,517

METHOD OF MAKING A RING GEAR

James W. Lyon, and Henry J. Cameron, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 7, 1994, Ser. No. 178,995
Int. Cl.[6] B21D *53/28*
U.S. Cl. 29—893.36 9 Claims



1. A method of making a ring gear comprising:

(a) providing a hot extruded tube having a cylindrical inner surface and a cylindrical outer surface each having diameters within predetermined ranges;

(b) cutting a toroidal blank from the tube to a width within a predetermined range;

(c) determine the mass of the toroidal blank, and a desired finish diameter of one of the cylindrical surfaces in accordance with the mass;

(d) roll forming the toroidal blank until the one of the cylindrical surfaces has the predetermined diameter commensurate with the mass; and

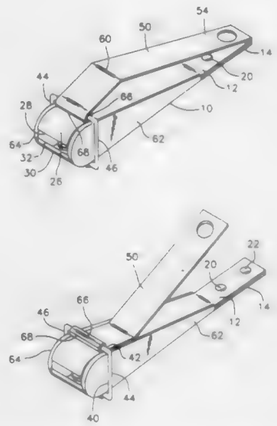
(e) forming a desired complete tooth shape on the other of the cylindrical surface of the roll formed toroidal blank.

5,392,518

NAIL CLIPPER

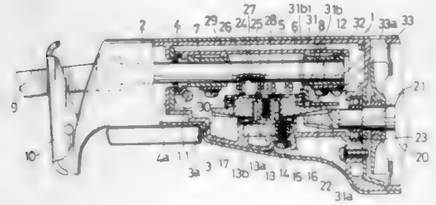
Stephen C. Means, Coffeyville, Kans., assignor to Stephen M. Elder and Donna R. Dixon, both of Coffeyville, Kans., a part interest

Filed Dec. 21, 1993, Ser. No. 171,421
Int. Cl.[6] A45D *29/02*
U.S. Cl. 30—28 8 Claims



1. A nail clipper including elongated upper and lower superposed jaw members having front and rear ends, said jaw members being secured together at said rear ends and flexibly biased apart at said front ends, said front ends terminating forwardly in inwardly curving terminal ends defining opposing cutting edges for cutting a nail therebetween when said edges are moved toward each other, a generally rectangularly bail including upper and lower generally horizontal transverse arms and upstanding opposite side arms extending between and interconnecting corresponding ends of said transverse arms with the longitudinal midportion of said lower arm disposed beneath the front end of said lower jaw member, mounting means pivotally mounting said lower arm from said lower jaw member front end for angular displacement about an upstanding first axis disposed generally normal to said lower jaw member centrally intermediate its opposite sides and also for angular displacement of said bail relative to said mounting means about a second axis at least generally concentric with said lower arm, an elongated cam lever including forward and rearward ends and opposite first and second side faces, said cam lever defining a fulcrum thereon adjacent said forward end and spaced therealong toward said rearward end and facing outwardly of said first side face, said forward end being mounted on said upper arm for angular displacement relative thereto about a third axis at least generally concentric with said upper arm, said cam lever, when disposed over said upper jaw member with said fulcrum opposing said upper jaw member, being operable to force the front end of said upper jaw member downwardly toward the front end of said lower jaw member upon downward displacement of said cam lever rearward end toward said upper jaw member rear end, said bail being swingable about said second axis relative to said mounting means to swing said upper arm forwardly over and downwardly past the front ends of said upper and lower jaw members after which said bail may be rotated 180° about said first axis and thereafter about said second axis to swing said upper arm upwardly past the front ends of said jaw members and rearwardly back over said upper jaw member front end with said fulcrum facing upwardly away from said upper jaw member.

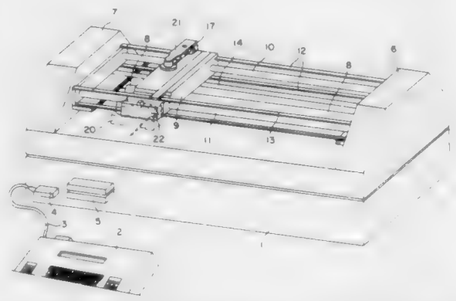
5,392,519
RECIPROCATING SAW
Nobuhiro Inoue, and Shinobu Yamaguchi, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Aug. 31, 1993, Ser. No. 113,757
Claims priority, application Japan, Sep. 2, 1992, 4-258964
Int. Cl.[6] B27B *11/02*
U.S. Cl. 30—393 **6 Claims**



4. A reciprocating saw comprising:
a body;
a slider supported by said body such that said slider is slidably movable in a longitudinal direction of said body and is pivotally movable transversely relative to said longitudinal direction;
a rotary member disposed within said body and rotatably driven by drive means;
a first motion conversion mechanism and a second motion conversion mechanism disposed between said slider and said rotary member, said first motion conversion mechanism operating to convert the rotational movement of said rotary member into a reciprocal movement of said slider in the longitudinal direction of said body, and said second motion conversion mechanism operating to convert the rotational movement of said rotary member into a reciprocal transverse pivotal movement of said slider;
said second motion conversion mechanism including:
an arm having first and second ends, means for pivotally engaging said first end with said slider and for supporting said slider; and
an actuating member rotatable with said rotary member and having an abutting surface, said second end of said arm slidably abutting said abutting surface in an abutting position;
said abutting position of the second end of said arm on said abutting surface being varied as said actuating member is rotated, wherein the transverse position of said first end of said arm is varied relative to said longitudinal direction to transversely pivot said slider, said abutting surface of said actuating member having a generally circular configuration and a central axis displaced from a rotational axis of said rotary member, said actuating member including a disc-like member having said central axis and including an annular bearing fitted on said disc-like member coaxially therewith; said abutting surface being formed by an outer peripheral surface of said bearing.

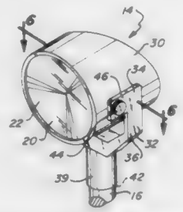
5,392,520
VECTOR BRUSH
Gerold Anderka, Ellerbek, Germany, assignor to Rotring International GmbH & Co. KG, Hamburg, Germany
Filed Mar. 9, 1993, Ser. No. 28,145
Claims priority, application European Pat. Off., Mar. 19, 1992, 92104779
Int. Cl.[6] B43L *13/00;* **B05B** *3/00*
U.S. Cl. 33—18.2 **19 Claims**

1. An apparatus for both drawing upon and cutting a foil material, comprising:
transport means for transporting the foil material along a first axis;
carriage means, movable along a second axis perpendicular to said first axis;
vector brush means, attached to said carriage means, which comprises an air brush and a means for cutting the foil material; and



control means for controlling the motion of said carriage means, the motion of said foil transport means, a drawing by said vector brush means upon the foil material, and a cutting of the foil material by said means for cutting.

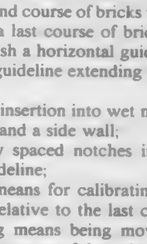
5,392,521
SURVEYOR'S PRISM TARGET
Michael P. Allen, 6795 Lookout Dr., Parker, Colo. 80134
Filed Jun. 10, 1993, Ser. No. 75,038
Int. Cl.[6] G02B *5/122;* **G01C** *15/00*
U.S. Cl. 33—293 **31 Claims**



1. An improved surveyor's target capable of being used by a surveyor for electronic distance measurements and visual alignment for level and plotting functions, the target comprising:
a) a retro-reflective device for use with a surveyor's angle and distance measuring instrument, said device having a front face surface which is viewed by the surveyor's instrument and an opposite rear end;
b) said retro-reflective device having a plurality of angled reflective surfaces, said reflective surfaces intersecting each other along ridge lines and all ridge lines come together at a center apex at the rear end of said device, and
c) a plurality of said reflective surfaces each being coated with a thin stripe whereby the stripes form a visual center target when viewing the retro-reflective device through the front face so as to visually identify the center of the device.

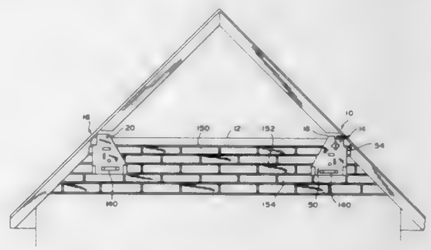
5,392,522
PLUMB BOB AND COOPERATING REEL
Michael J. O'Neil, 3017 Creek Rd., Front Royal, Va. 22630
Filed May 3, 1993, Ser. No. 56,832
Int. Cl.[6] G01C *15/10*
U.S. Cl. 33—393 **2 Claims**

1. A plumb bob in combination with a reel comprising:
a) said plumb bob including:
i) an elongated, central body portion having a top surface, said body portion being symmetric about a longitudinal axis extending centrally therethrough; and
ii) an annularly shaped knobbed portion protruding from said top surface of said body portion and having exterior top and side surfaces, and a pair of diametrically opposed J-shaped grooves formed in said exterior side surface, said longitudinal axis extending centrally through said knobbed portion; and
b) said reel including means for securely housing said knobbed portion therein, said housing means including a plum bob receiving portion integrally attached to said reel, said receiving portion including:



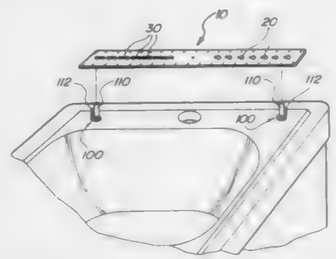
i) an open cavity defined by top and side walls;
ii) said side wall having a pair of diametrically opposed apertures formed therethrough;
iii) means for engaging said J-shaped grooves formed in said knobbed portion; and
iv) a resilient body member having a contiguous sidewall, a longitudinal slit extending through said side wall, a pair of diametrically Opposed spring clips integrally extending from one edge of said side wall, and a pair of diametrically opposed apertures formed through said side wall.

5,392,523
GABLE MASON'S TOOL FOR ESTABLISHING A HORIZONTAL GUIDELINE
Alfred A. Hurt, 116 Harvey Ave., Oak Hill, W. Va. 25901
Filed Sep. 15, 1993, Ser. No. 120,748
Int. Cl.[6] E04G *21/18*
U.S. Cl. 33—408 **17 Claims**



1. A tool suitable for insertion into wet mortar between a first course and a second course of bricks wherein both courses are vertically below a last course of bricks so as to enable a brick mason to establish a horizontal guideline above said last course of bricks, the guideline extending from one side of said tool comprising:
a plate member for insertion into wet mortar having a front wall, a rear wall and a side wall;
a row of vertically spaced notches in said side wall for receiving the guideline;
height calibrating means for calibrating the height of said row of notches relative to the last course of bricks, said height calibrating means being movable in accordance with the level of tautness of the guideline until said height calibrating means is moved into a predetermined position such that the guideline is established at a target height above the last course of bricks, said height calibrating means comprising a first lug and a second lug each attached to said plate member and extending rearwardly therefrom, said first lug being perpendicular to said plate member, said second lug including an angled portion, an upper surface and a lower surface, said second lug located closer to said sidewall than said first lug;
plumb means for ensuring that the guideline is plumb, said plumb means being movable in accordance with the level of tautness of the guideline until said plumb means is moved into a predetermined position such that a plumb guideline is established;
tensioning means for selectively stretching the guideline from being slack to a desired level of tautness; and
reel means rotatable relative to said plate member for selectively winding and unwinding the guideline such that the guideline winds around said reel means as the guideline is being stretched to the desired tautness.

5,392,524
APPARATUS FOR ALIGNING HANDLE VALVES DURING INSTALLATION OF A FAUCET
Loran R. Hill, Indianapolis, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.
Filed Jun. 11, 1993, Ser. No. 76,307
Int. Cl.[6] G01B *5/25*
U.S. Cl. 33—412 **4 Claims**



1. An aligning and holding device for handle stops of faucet valve assemblies comprising an elongated plate containing a plurality of openings at longitudinally spaced, predetermined intervals wherein at least one of said openings is comprised of a central circular shaped section adapted to receive a valve stem and two radially extending fan shaped side sections adapted to receive a handle stop.

5,392,525
DRAWING INSTRUMENT
Tien-Jin Chow, No. 117, San Ting Lane, Shui Li Tsun, Shui Li Hsiang, Nan Tou Hsien, Taiwan, Prov. of China
Continuation-in-part of Ser. No. 893,917, Jun. 4, 1992, abandoned. This application Mar. 22, 1993, Ser. No. 34,259
Int. Cl.[6] B43L *7/10*
U.S. Cl. 33—465 **1 Claim**

1. A drawing instrument comprising a first ruler including a first head portion formed on one end thereof, a second ruler including a second head portion formed on one end thereof, said first head portion including an annular protrusion formed thereon having an outer and a concentric inner surface, said second head portion including an annular recess formed therein having an outer and a concentric inner surface rotatably receiving said annular protrusion of said first head portion, said first head portion and said second head portion forming a circle when said first head portion and said second head portion are engaged with each other, said first head portion and said second head portion each occupying at least three

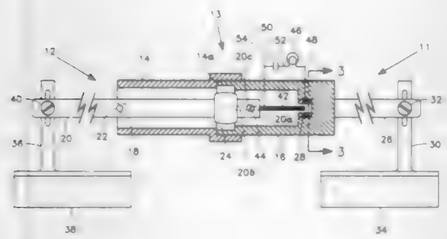
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quarters of said circle, said first head portion including an angular graduation formed thereon, said second head portion including a convex lens formed thereon for enlarging said angular graduation of said first head portion, and said second head portion including a pointer formed thereon for indicating said angular graduation of said first head portion, said annular protrusion outer surface being frusto-conical forming a circumferential rib, said annular recess outer surface being frusto-



conical forming a circumferential depression for rotatable engagement with said circumferential rib of said annular protrusion and for stably coupling said first head portion and said second head portion together, said second head portion annular recess inner surface rotatably receiving said first head portion annular protrusion inner surface whereby said first ruler is rotatable relative to said second ruler by said slidable engagement between said annular protrusion and said annular recess.

5,392,526
ANGULARITY GAUGE FOR CYLINDRICAL SURFACES
Lewis J. Sprague, Irvine, and Jerome A. Fulton, Huntington Beach, both of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Sep. 3, 1993, Ser. No. 116,786
Int. Cl.[6] G01B *7/30*
U.S. Cl. 33—529 **13 Claims**



1. An apparatus for gauging whether a juncture between two longitudinally joined cylindrical surfaces is rectilinear within a predetermined limit on a go/no-go basis, the apparatus comprising:

(a) a fixed locating member including a first means for interfacing the fixed locating member with a first of the two surfaces to be gauged;

(b) a pivotable locating member including a second means for interfacing the pivotable locating member with a second of the two surfaces to be gauged;

(c) means for pivotally connecting the fixed locating member with the pivotable locating member; and,

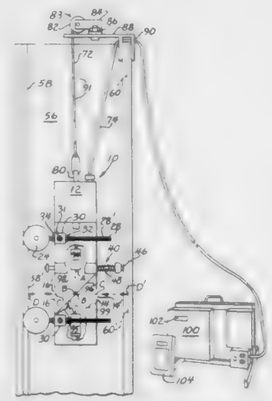
(d) means for signaling a user whenever the two cylindrical surfaces to be gauged form an angle which one of (i) equals, and (ii) exceeds the predetermined limit, thereby providing a go/no-go signal to the user, said means for signaling comprising

a signaling device having first and second electrical connection points,

an annular electrical contact attached to and electrically isolated from the fixed locating member and connected via first electrical signal means to said first electrical connection point, and

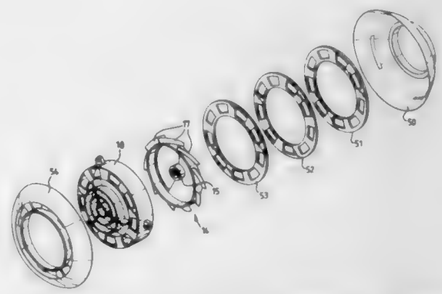
an electrically conductive contact stein adjustably attached to the pivotable locating member such that the stein is extendible and retractable over a full length of an interior of the annular electrical contact and retractable to clear a proximal end of the annual electrical contact, the stem being connected via second electrical signal means to said second electrical connection point.

5,392,527
ANNULUS MEASURING DEVICE
Joseph R. Ziskovsky, and Leslie A. Hassler, both of Shoreview, Minn., assignors to Wheelabrator Engineered Systems, Inc., New Brighton, Minn.
Filed Jul. 12, 1993, Ser. No. 90,302
Int. Cl.[6] G01B *5/14, 17/00*
U.S. Cl. 33—542 **12 Claims**



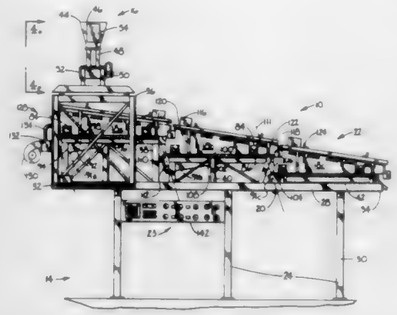
1. A measuring device for measuring, at a plurality of circumferentially spaced locations, the radial thickness of an annulus defined by the curved outer wall surface of a first generally cylindrical, tubular-shaped member which has its axis positioned vertically, and the curved inner wall surface of a second generally cylindrical, tubular-shaped member which is generally concentrically located outside said first tubular-shaped member, said measuring device having an elongated body portion which has means on at least one end thereof which is adapted to be engaged by a flexible lowering and lifting means so that said measuring device may be lowered freely under its own weight or raised within said annulus so as to measure the radial thickness of said annulus at any point along its length or around its circumference, said elongated body portion having at least two axially spaced-apart sets of guide means extending from a first surface thereof which are adapted to guide said body portion for vertical movement relative to one of said curved outer and inner wall surfaces and parallel to the axes of said first and second tubular-shaped members, each of said at least two axially spaced-apart sets of guide means having a pair of transversely spaced contact surfaces shaped and positioned so as to be tangential to the said one of said curved outer and inner wall surfaces, said elongated body portion further having at least one contact portion which extends from a second surface of said body portion which is opposed to said first surface, said at least one contact portion being adapted to engage the other of said outer and inner wall surfaces, means for resiliently biasing apart said at least one contact portion and said at least two axially spaced-apart sets of guide means relative to each other with sufficient force to simultaneously engage both of the curved outer and inner wall surfaces which define the annulus, but with insufficient force to allow the said at least two axially spaced-apart sets of guide means to engage and track the wall surface with which they are in contact so as to cause movement in a non-vertical direction which would overcome the vertical gravitational force produced by the weight of the measuring device, means on said elongated body portion for generating and directing a pair of sensing beams in opposed coaxial directions outwardly relative to said first and second surfaces of said body portion and into contact with said inner and outer wall surfaces in a direction normal thereto, said two axially spaced-apart sets of guide means serving to maintain a predetermined angular position of said measuring device relative to said curved outer and inner wall surfaces and thereby causing said pair of sensing beams to be directed toward said curved outer and inner wall surfaces in a direction normal thereto, and means to sense the time it takes for said pair of sensing beams to contact said outer and inner wall surfaces and to be reflected back to their source whereby the radial thickness of said annulus may be calculated.

5,392,528
HAIR DRYERS
Gregory J. McDougall, Kowloon, Hong Kong, assignor to ISIS International Inc., Hong Kong, Hong Kong
Filed Jun. 14, 1993, Ser. No. 77,551
Int. Cl.[6] A45D *20/00*
U.S. Cl. 34—97 **6 Claims**



1. A pulsator for a hair dryer comprising a rotatably mounted generally circular disc which has an open sector to allow air to pass through the disc, a plurality of blades disposed around a peripheral rim of the disc to cause the disc to rotate when air flows past the blades, a housing with a central bearing for supporting the disc and having a number of apertures disposed around an imaginary circle opposite the blades, and a ring member mounted adjacent the housing with a number of protrusions which fit respectively at least partially over the apertures, in which the protrusions of the ring member are arranged to be movable relative to the apertures about the rotational axis of the disc to control the amount of air passing through the apertures so as to alter the speed of rotation of the disc in use.

5,392,529
VIBRATORY BULK MATERIAL PROCESSOR AND METHOD
Richard G. Bailey, Overland Park, Kans., and Merton R. Leggott, Lincoln, Nebr., assignors to Flakee Mills, Inc., Lincoln, Nebr.
Continuation-in-part of Ser. No. 399,258, Aug. 28, 1989, Pat. No. 5,024,145. This application Jun. 11, 1991, Ser. No. 713,713
Int. Cl.[6] F26B *3/34*
U.S. Cl. 34—266 **21 Claims**



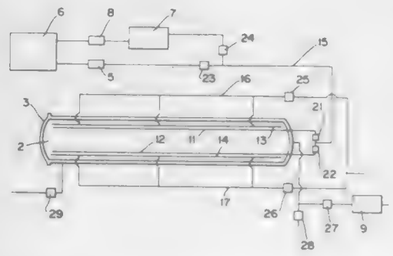
1. A method for processing bulk material in a vibratory bulk material processor including a cabinet with upper and lower compartments, said upper compartment including multiple cascaded levels, each said level having a substantially horizontal floor, the floors of said levels being of progressively lower elevations from a topmost level to a final lowermost level, which includes the steps of:

(a) vibrating each of said levels while irradiating said upper compartment with radiant energy from radiant energy sources outside said cabinet;

(b) receiving said bulk material in said topmost level of said upper compartment;

(c) sequentially conveying said material by cascading it through each of said levels from said topmost level to said lowermost level and then out of said lowermost level due to the vibration of said levels while said material is being irradiated via said energy sources.

5,392,530
METHOD OF SEASONING LUMBER
Hyogo Izumi, Kobe Portvillage No. 3-604, 1-2, Minatojimanakamachi 3-chome, Chuou-ku, Kobe-city, Hyogo 650, Japan
PCT No. PCT/JP92/00258, § 371 Date Nov. 4, 1992, § 102(e) Date Nov. 4, 1992, PCT Pub. No. WO92/15435, PCT Pub. Date Sep. 17, 1992
PCT Filed Mar. 4, 1992, Ser. No. 945,981
Claims priority, application Japan, Mar. 4, 1991, 3-123191
Int. Cl.[6] F26B *5/04*
U.S. Cl. 34—404 **8 Claims**



1. A method of seasoning lumber comprising the steps of;

(a) first, placing the lumber in a pressure vessel, charging and discharging saturated steam into and out of the pressure vessel in order to fluctuate the pressure in the vessel until the inner temperature of the lumber becomes uniform, and thereafter discharging the saturated steam from the pressure vessel, while maintaining the temperature uniform in order to boil and evaporate the water contained in each tissue of the lumber, to form the lumber into a condition which can be seasoned uniformly by additional steps;

(b) second, taking the lumber out of the pressure vessel until free water contained in the lumber evaporates therefrom; and

(c) third, placing the lumber containing no free water back into the pressure vessel to heat the lumber in a pressurized condition by using a flow of superheated steam until the remaining water is evaporated from the lumber.

5,392,531

BED PLATE FOR A FLUIDIZED BED APPARATUS AND A METHOD FOR MAKING THE SAME

Mogens Christensen, Virum; Benny Madsen, Horsens, both of Denmark, and Mikael Bonde, Basel, Switzerland, assignors to Niro Holding A/S, Copenhagen K, Denmark

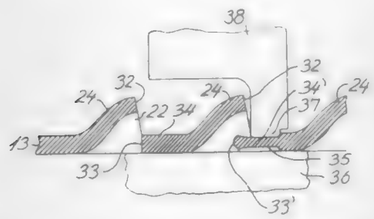
PCT No. PCT/DK92/00102, § 371 Date Feb. 28, 1994, § 102(e) Date Feb. 28, 1994, PCT Pub. No. WO92/17273, PCT Pub. Date Oct. 15, 1992

PCT Filed Apr. 2, 1992, Ser. No. 117,205

Claims priority, application European Pat. Off., Apr. 5, 1991, 91610029

Int. Cl.[6] F26B *17/00*

U.S. Cl. 34—583 **23 Claims**



1. A fluidized bed apparatus comprising

a bed plate (13) which is made from sheet metal, defining a first general side surface and having a plurality of gas distributing openings (22) formed therein, each of said openings being defined between first and second opposite edge portions (24,34), of which at least the first edge portion (24) has been pressed out from said general side surface,

means (12,14) for passing gas upwardly through the openings (22) of the bed plate (13) for fluidizing a powdered or particulate product (P) thereon,

means (16) for supplying powdered or particulate product to the bed plate, and

means (17,19) for removing fluidized product therefrom, characterized in that the thickness of at least part of at least one of said first and second edge portions (24,34) has been reduced so as to increase the extension thereof along said first general side surface, and so as to thereby reduce or eliminate the orthographic projection on said first general side surface of the opening defined between said first and second edge portions.

5,392,532

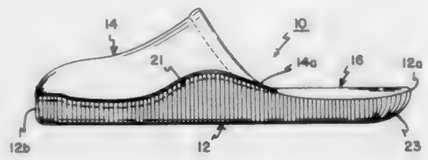
SLIPPER HAVING AN INSOLE ATTACHED TO A PERIPHERAL OUTSOLE WALL

Walter T. Bray, Jr., Reynoldsburg, and Theresa Stewart, Columbus, both of Ohio, assignors to R. G. Barry Corporation, Columbus, Ohio

Filed Oct. 18, 1993, Ser. No. 138,707

Int. Cl.[6] A43B *3/12*

U.S. Cl. 36—11.5 **5 Claims**



1. An article of footwear comprising:

a molded outsole having a bottom surface and a peripheral wall extending upwardly from said bottom surface, said peripheral wall having an interior surface, said peripheral wall further having an exterior surface, said outsole extending from an outsole heel portion to an outsole toe portion and having left and right sides extending therebetween;

a flexible insole having an insole toe portion and an insole heel portion, said insole aligned with said outsole for said insole heel portion and insole toe portion to be positioned adjacent said outsole heel portion and said outsole toe portion, respectively;

said insole having a peripheral edge secured to said peripheral wall;

said insole having a finish surface;

said insole peripheral edge secured to said peripheral wall with said finish surface opposing said exterior surface of said peripheral wall at said heel portion and between a first and second transition location on said right and left sides; and

said insole finish surface opposing said peripheral wall inner surface at said toe portion between said first and second transition locations.

5,392,533

DISPOSABLE SHOE INSOLE AND METHOD FOR MAKING THE SAME

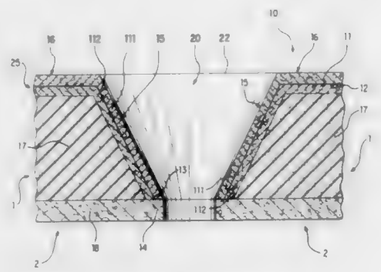
Gerd W. P. Gerhartl, Bichwil, Switzerland, assignor to Flawa Schweitzer Verbandstoff-und Wattefabriken AG, Flawil, Switzerland

Continuation of Ser. No. 559,948, Jul. 31, 1990, abandoned. This application Sep. 15, 1992, Ser. No. 946,032

Claims priority, application Switzerland, Aug. 14, 1989, 2964/89

Int. Cl.[6] A43B *13/38, 9/00*

U.S. Cl. 36—43 **19 Claims**



1. A disposable shoe insole comprising:

a flexible absorbent layer;

a flexible bottom stabilization layer on which the absorbent layer is placed, the thickness of the bottom layer being considerably smaller than the thickness of the absorbent layer, wherein said bottom layer is made from a fibrous material having fibers which run predominantly in the same direction, said direction being substantially parallel to a longitudinal axis of said insole, so as to impart to the insole sufficient stiffness necessary to insert the same into a shoe;

A flexible covering layer disposed on the absorbent layer which is permeable to liquid and which is made from a fibrous material, the thickness of the covering layer being considerably smaller than the thickness of the absorbent layer, wherein the covering layer acts as a membrane to pull liquid through to the absorbent layer; and

wherein holes extend from the flexible covering layer of the insole at least until the bottom layer, said holes having side walls which are formed as continuations of the material of the covering layer, a deepest portion of each hole being perforated and wherein a portion surrounding the deepest portion of each hole is connected to the bottom layer.

5,392,534

VACUUM FORMED CONFORMABLE SHOE

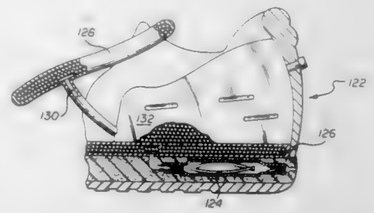
Tracy E. Grim, 3010 W. Boston Ct., Broken Arrow, Okla. 74012

Continuation-in-part of Ser. No. 965,176, Oct. 23, 1992. This application Jan. 29, 1993, Ser. No. 11,345

The portion of the term of this patent subsequent to Jan. 24, 2012, has been disclaimed.

Int. Cl.[6] A43B *7/14*

U.S. Cl. 36—88 **22 Claims**



1. A conformable athletic shoe assembly having a flexible sole and including a vacuum formed configuration, comprising:

a shoe body;

said shoe assembly including an inner sole within said shoe body formed of a sealed bladder, said inner sole containing means for inherently retaining its shape and remaining conformed to its initial shape at the time of evacuation, under partial vacuum conditions, said means including resilient compressible, non-shatterable particulate material;

said inner sole constituting a resilient support for the foot resulting from the resilient compressible particulate material within the sealed bladder;

a vacuum pump in the sole of said shoe assembly coupled to withdraw air from said sealed bladder, said pump being mounted below said inner sole;

means for actuating said pump to withdraw air from said bladder when the user of the shoe assembly walks or runs;

said inner sole constituting a resilient support for the foot resulting from the resilient compressible particulate material within the sealed bladder; and

said shoe assembly including means for permitting removal of the shoe and remounting on a foot while the bladders are partially evacuated with bladders retaining their conformed configuration;

whereby said inner sole conforms to the shape of the user's foot and retains this configuration until the partial vacuum in said inner sole is released.

5,392,535

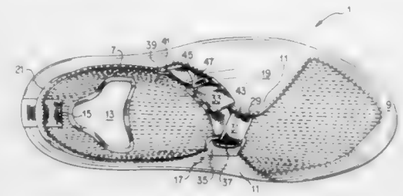
FASTENING SYSTEM FOR AN ARTICLE OF FOOTWEAR

Allen W. Van Noy, Beaverton, and Perry W. Auger, Tigard, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Filed Apr. 20, 1993, Ser. No. 52,033

Int. Cl.[6] A43B *7/14, 11/00*

U.S. Cl. 36—88 **28 Claims**



1. A fastening system for adjustably fitting a user's foot within an article of footwear, said fastening system comprising:

a strap attached to the article of footwear and having an effective length whereby a shorter effective length will result in a tighter fit than a longer effective length and a longer effective length will result in a looser fit than a shorter effective length, said strap having first and second opposite ends;

a strap receiving guide for receiving and guiding said strap along a path across a portion of the article of footwear; and

a buckle for loosening and tightening the fit of the article of footwear, said buckle having a locking member movable between a first unlocked position whereby said buckle is movable along said strap to loosen or tighten the fit of the article of footwear by increasing or decreasing, respectively, the effective length of said strap, and a second locked position whereby said strap is clamped by said buckle to keep the effective length of the strap constant;

said first end of said strap being affixed to the article of footwear at a position spaced from said buckle and said second end of said strap being attached to said buckle.

5,392,536

ALPINE SKI BOOT HAVING A FOOT RETENTION APPARATUS

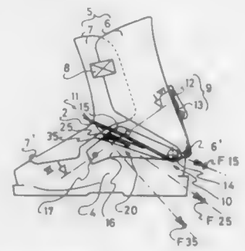
Claude Perrissoud, Saint-Jorioz, and Serge Lagier, Rumilly, both of France, assignors to Salomon S.A., Annecy Cedex, France

Filed Jan. 25, 1991, Ser. No. 645,643

Claims priority, application France, Jan. 26, 1990, 90 01103

Int. Cl.[6] A43B *5/04*

U.S. Cl. 36—119 **23 Claims**



1. A ski boot comprising:

a shell base;

an upper, said upper comprising a rear spoiler journalled on the shell base, and a front cuff;

closure means for the upper;

a foot retention apparatus, said foot retention apparatus

comprising (i) a traction element and (ii) means for tensioning said traction element, said means for tensioning being positioned on the rear spoiler; and

means for enabling adjustment of the foot retention apparatus comprising means for maintaining said traction element in any of a plurality of discrete trajectories, in which said traction element extends between an area of the heel of the foot and an area of the top of the foot, said means for maintaining said traction element in any of a plurality of discrete trajectories comprising at least one guide for guiding a portion of said traction element, said at least one guide being positioned laterally on said shell base, wherein said means for maintaining said traction element in any of a plurality of discrete trajectories comprises a maintenance plate for maintaining said traction element in said at least one guide.

5,392,537

FOOTWEAR WITH TURNTABLE

Jack Goldberg, 15 Maple Grove, Toorak, Victoria 3142, Australia

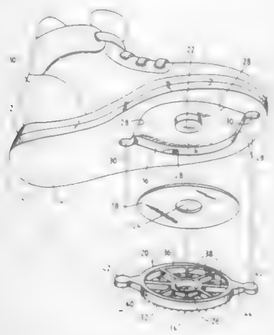
PCT No. PCT/AU91/00590, § 371 Date Jun. 10, 1993, § 102(e) Date Jun. 10, 1993, PCT Pub. No. WO92/10954, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 20, 1991, Ser. No. 75,502

Claims priority, application Australia, Dec. 20, 1990, PK3977

Int. Cl.[6] A43B *5/00;* **A43C** *15/00*

U.S. Cl. 36—134 **17 Claims**



1. An article of footwear having a sole,

(i) said sole having a lower surface;

(ii) a recess in said lower surface; and

(iii) a turntable located in said recess and being mounted onto said sole for rotational movement relative to said sole about a longitudinal axis of said turntable;

(iv) said turntable being connected to said sole by at least one projection of elastomeric material attached to said turntable and to said sole;

(v) said at least one projection being so dimensioned and of sufficient resiliency to limit the degree of angular rotation of said turntable relative to said sole, and to cause said turntable to return to a rest position when no external force is applied to said turntable.

5,392,538

EXTENDABLE DRAG PLOW

Gerald J. Geerligs, 4711 92nd St., Caledonia, Mich. 49316, and Rick A. Geerligs, 2738 Quincy St., Hudsonville, Mich. 49426

Filed Jun. 2, 1993, Ser. No. 70,266

Int. Cl.[6] E01H *5/06*

U.S. Cl. 37—268 **4 Claims**

1. An extendable drag plow, comprising:

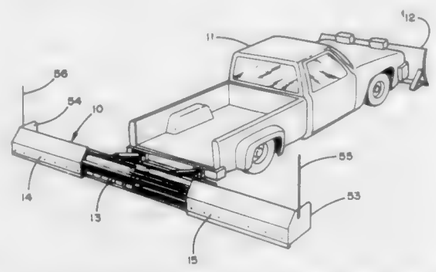
a central plow section having vertically spaced horizontal guideways;

at least one laterally moveable plow section having members engaging said guideways for movement of said moveable plow section from a retracted central position overlapping said central plow section to a laterally extended position;

shifting actuator means adapted to induce said movement;

bracket means adapted for mounting on a vehicle;

laterally-spaced drag arm means pivotally connected to said bracket means;



a laterally-extending beam interconnecting said drag arm means;

diagonal brace means connecting the upper extremity of said central plow section to an intermediate point on said beam; and

lifting actuator means pivotally connected to said bracket means and to said diagonal brace means.

5,392,539

HYDRAULIC DRIVE SYSTEM FOR CONSTRUCTION MACHINE

Toichi Hirata, Ushiku; Genroku Sugiyama, Ibaraki, and Masami Ochiai, Atsugi, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

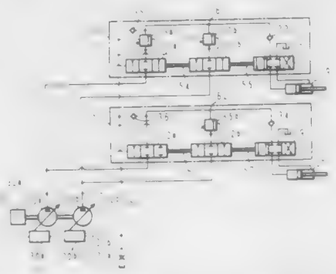
PCT No. PCT/JP92/01676, § 371 Date Jun. 15, 1993, § 102(e) Date Jun. 15, 1993, PCT Pub. No. WO93/13271, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 22, 1992, Ser. No. 75,588

Claims priority, application Japan, Dec. 24, 1991, 3-341367; Dec. 24, 1991, 3-341369

Int. Cl.[6] F16D *31/02;* **G06F** *15/20*

U.S. Cl. 37—348 **6 Claims**



1. A hydraulic drive system for a construction machine comprising at least first and second hydraulic pumps (**25***a*, **25***b*), at least first and second actuators (**19**, **21**) driven by a hydraulic fluid supplied from said first and second hydraulic pumps, first and second valve apparatus (**50**, **51**) respectively disposed between said first and second hydraulic pumps and said first and second actuators for selectively controlling operation of said first and second actuators, and first and second pump control means (**30***a*, **30***b*) for respectively controlling said first and second hydraulic pumps so that pump delivery pressures are held higher than higher one of load pressures of said first and second actuators, said first and second valve apparatus respectively including first and second flow control means (**11***a*, **11***b*, **12***a*, **12***b*), first and second pressure control means (**13***a*, **13***b*, **15***b*), and first and second directional control means arranged in this order, said hydraulic drive system further comprising a pressure signal transmitting line (**52**) for introducing, as a pressure signal, higher one of the load pressures of said first and second actuators to said first and second pressure control means, said first and second pressure control means being operated in response to said pressure signal to respectively control pressures downstream of said first and second flow control means, wherein:

said first flow control means includes first and second flow control valves (**11***a*, **11***b*) and first interlock means (**54**, **55**) for interlocking said first and second flow control valves with said first directional control means (**7**), and said second flow control means includes third and fourth flow control valves (**12***a*, **12***b*) and second interlock mechanism (**56**, **57**) for interlocking said third and fourth flow control valves with said second directional control means (**9**),

said first pressure control means includes at least first pressure control valve (**13***a*) operated in response to said pressure signal in a valve-closing direction, and said second pressure control means includes only second pressure control valve (**15***b*) operated in response to said pressure signal in a valve-closing direction, and

said first hydraulic pump (**25***a*) is connected to said first actuator (**19**) via said first flow control valve (**11***a*), said first pressure control valve (**13***a*) and said first directional control means (**7**), said second hydraulic pump (**25***b*) is connected to said first actuator (**19**) via said second flow control valve (**11***b*) and said first directional control means (**7**), said first hydraulic pump (**25***a*) is also connected to said second actuator (**21**) in parallel to said first actuator (**19**) via said third flow control valve (**12***a*) and said second directional control means (**9**) without passing any pressure control valve, and said second hydraulic pump (**25***b*) is also connected to said second actuator (**21**) in parallel to said first actuator (**19**) via said fourth flow control valve (**12***b*), said second pressure control valve (**15***b*) and said second directional control means (**9**).

5,392,540

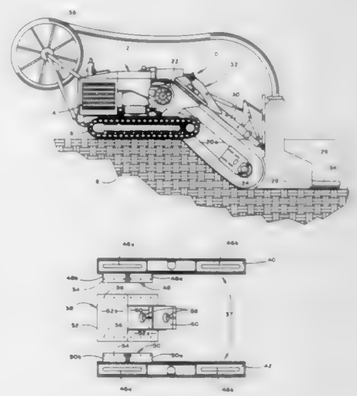
MOUNTING APPARATUS FOR A BRIDGE OF A TRENCHING MACHINE

Mark Cooper, and Keith Roozeboom, both of Pella, Iowa, assignors to Vermeer Manufacturing Company, Pella, Iowa

Filed Jun. 10, 1993, Ser. No. 75,169

Int. Cl.[6] E02F *5/02*

U.S. Cl. 37—349 **12 Claims**



1. Mounting apparatus for a bridge of a trenching machine including a prime mover, comprising:

(a) means for attachment to the bridge;

(b) means for releasable attachment to the prime mover and movable between a first position and a second, reversed position; and

(c) means for releasably securing said bridge attachment means to said prime mover attachment means such that the bridge extends from the prime mover a first distance when said prime mover attachment means is in said first position and a second distance when said prime mover attachment means is in said second position.

5,392,541

VIBRATORY PLOW ASSEMBLY

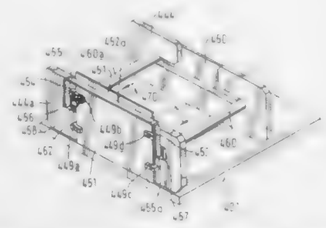
Michael O'Riordan, Mitchelsfort, Watergrasshill, County Cork, Ireland

Division of Ser. No. 869,537, Apr. 15, 1992, Pat. No. 5,281,054. This application Nov. 17, 1993, Ser. No. 154,282

Claims priority, application Ireland, Apr. 18, 1991, 1291/91

Int. Cl.[6] E01H *5/06*

U.S. Cl. 37—468 **5 Claims**



1. A connector assembly usable in attaching an implement to a vehicle, said assembly comprising:

a base adapted to be connected to the implement;

a pair of upstanding, spaced, generally parallel brackets joined to said base, each of said brackets defining a slot having a mouth and at least one portion extending laterally of the mouth, each slot being dimensioned to receive a mounting pin which extends between the brackets, said pin being inserted into the mouth of each slot and moved laterally into the lateral portion of each slot; and

releasable locking means operatively connected to each of said brackets for locking said mounting pins in the slots.

5,392,542

PRESSING IRON SOLEPLATE COATED WITH AN INFRARED HEATER

Kwei T. Chang, No.14, Lane 54, Luong Chuan St., Panchiao City, Taipei Hsien, Taiwan, Prov. of China

Filed Jun. 25, 1993, Ser. No. 81,122

Int. Cl.[6] D06F *75/38*

U.S. Cl. 38—93 **1 Claim**



1. A soleplate of a pressing iron, said soleplate being made from reinforced transparent glass material and having a flat and smooth bottom surface and a waved upper surface, said upper waved surface being coated with an infrared heating

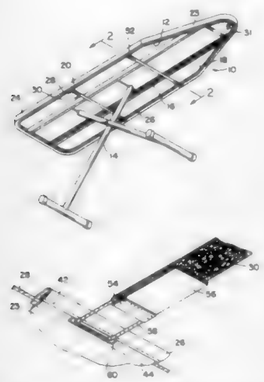
means which provides a quick heat build-up in said infrared heating means when a current is applied directly to said infrared heating means, said infrared heating means heating the soleplate while the soleplate preserves the heat generated by the heating means when power is interrupted and reflects preserved heat from said upper waved surface.

5,392,543

IRONING BOARD COVER WITH DRAWSTRING AND TENSIONING STRAPS

David Lehrman, 207 Barclay Cir., Cheltenham, Pa. 19102

Filed Jan. 13, 1994, Ser. No. 180,727
Int. Cl.[6] D06F *83/00*
U.S. Cl. 38—140 15 Claims



1. An ironing board cover assembly for covering an ironing board table, the table having an ironing surface bounded by a peripheral edge, the assembly comprising:

a fabric layer substantially the same shape as the ironing surface of the ironing board table but having an area somewhat larger than the ironing surface of the table so as to form a peripheral edge portion adapted to wrap around the peripheral edge of the ironing table;

a drawstring confined in a channel, the channel formed by a binding attached to said cover peripheral edge portion by a pair of parallel stitching lines, said drawstring passes between the binding and the fabric layer in the channel, running the length of said peripheral edge portion;

a series of openings in the fabric layer spaced along said channel comprising at least one pair of first and second openings in said channel at opposing edge segments of the cover, said openings exposing segments of said drawstring; and

tensioning means for adjustably spanning the distance between said cover opposing edge segments when the cover is installed on an ironing board table, said tensioning means adjustably and releasably engaging said drawstring segments through said first and second openings to draw the opposing cover edge segments toward each other.

5,392,544

WALL MOUNTED CARD HOLDER

Gordon B. Price, 6 Lambton Court, Brampton, Ontario, Canada L6V 2A9

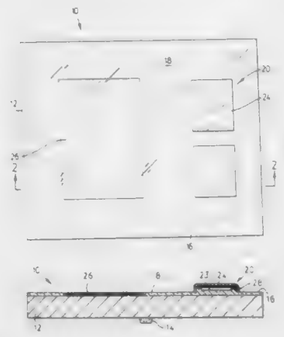
Filed Aug. 27, 1991, Ser. No. 750,277
Int. Cl.[6] A47G *1/16*
U.S. Cl. 40—152 8 Claims

1. A display panel for displaying cards or pictures, comprising:

a) a backing member having a front face;

b) a hard, transparent protective coating covering said backing member; and

c) at least one card or picture receiving means bonded to said coating on the front face of said backing member, said receiving means being smaller than the backing member and comprising a planar backing plate bonded to said coating, said backing plate adapted to extend the height



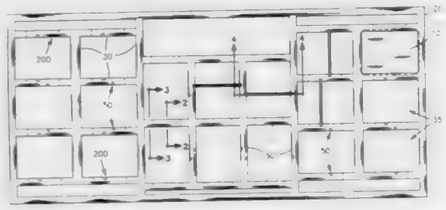
and width of a card or picture to be placed thereon, and a detachable, transparent cover engagably receivable by said backing plate, said receiving means being adapted to receive a card or picture between said backing plate and said transparent cover.

5,392,545

APPARATUS AND METHOD FOR PROCESSING AND STORING X-RAY FILM SHEETS

Gary C. Claman, and Kenneth Claman, both of 26072 Cresta Verde, Mission Viejo, Calif. 92691

Filed Jan. 21, 1993, Ser. No. 7,064
Int. Cl.[6] G09F *1/10*
U.S. Cl. 40—159 9 Claims



1. A system for processing and storing a plurality of x-ray film sheets comprising:

a carrier frame including a plurality of window frames in the carrier frame, each one of said window frames having first holding means for supporting one of the x-ray film sheets in a position coplanar with the window frame and second holding means for supporting the film sheet in a position orthogonal to the window frame;

a mourning-dismounting fixture for use with the carrier frame comprising a plate having on one side of the plate a plurality of first rectangular boss means engaging the window frames, each of the boss means having size and shape approximate each respective window frame, and providing a mounting surface such that with the mounting-dismounting fixture engaged with the carrier frame the mounting surfaces provide a means to limit the depth of insertion of each of the film sheets to assure the engagement of the film sheets with the first holding means, and, on the other side of the plate, a plurality of second rectangular boss means, each having size and shape approximate each respective window frame alternately engaging the windows of the carrier frame, each of the boss means providing a pushing surface such that with the mounting-dismounting fixture engaged with the carrier frame the pushing surfaces dislodge the film sheets from the window flames; and

a film sheet mounting means including a base sheet including an adhesive surface holding the film sheets thereon, and a transparent cover sheet covering the film sheets after said film sheets are mounted onto the base sheet;

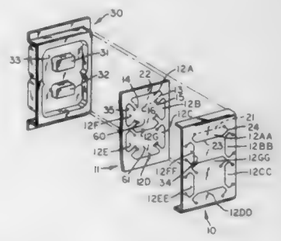
whereby a plurality of film packets are held in the carrier frame, each in a position orthogonal to the window frames for organizing the film packets and for transporting the packets to a light safe environment, and for mounting the film sheets into the frame using the mounting-dismounting fixture to place each one of said film sheets into one of the window frames therein, so that the film sheets may be developed and dried and whereby the film sheets may be dismounted into the mounting means in a position appropriate for each of the film sheet to be viewed diagnostically and for storing the film sheets.

5,392,546

MANUALLY CHANGEABLE DISPLAYS

William M. Bailey, Cedarburg, Wis., assignor to Everbrite, Inc., Greenfeld, Wis.

Filed Dec. 29, 1992, Ser. No. 997,903
Int. Cl.[6] G09F *3/04*
U.S. Cl. 40—450 20 Claims



1. A manually changeable seven-segment digital display, comprising:

a planar first underlying layer and a viewable planar second layer overlaying the first underlying layer, the layers being composed of a material that deflects in response to an applied force and that restores to undeflected condition when the force is removed,

said layers containing flaps configured and arranged in a pattern defining the seven segments of the digital display, a flap constituting a segment in the second layer being superimposed on a corresponding flap constituting the segment in the first layer, the superimposed flaps in the layers comprising one segment of the display, at least the flaps in each layer having contrasting colors,

said flaps each joined to the layer in which it is defined along a bending line and each extending away from its bending line and terminating in an edge, a flap constituting a segment in the first layer extending along its plane away from the bending line oppositely of the direction in which the flap constituting the corresponding flap in the second layer extends from its bending line,

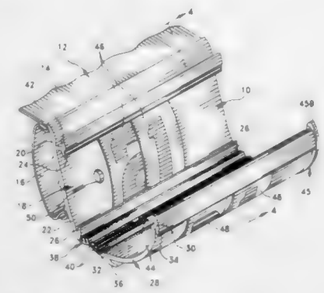
whereby applying a force alternately to the superimposed flaps causing said flaps to deflect for the edge of one flap to pass the edge of the other and whereby removing the force restores the flaps to undeflected condition so that the formerly overlying flap becomes the underlying flap to provide for alternately displaying flaps of segments that respectively contrast in color and do not contrast with the second layer to thereby make the segment visible or not visible, respectively.

5,392,547

SHELF MOLDING FOR DISPLAYING PRICE AND INFORMATION TICKETS

Joseph E. Mason, Huntington, N.Y., assignor to New Dimensions Research Corporation, Melville, N.Y.

Filed Sep. 24, 1993, Ser. No. 125,870
Int. Cl.[6] G09F *3/20*
U.S. Cl. 40—642 7 Claims



1. A shelf molding comprising:

A rear wall having upper and lower edges, a downwardly extending lip at said upper edge and an upwardly extending lip at said lower edge;

a front wall having upper and lower edges, a downwardly extending lip at said upper edge, and an upwardly extending lip at said lower edge;

hinge means connecting the lower edge of said rear wall and the lower edge of said front wall, said front wall being hingeably movable between an open position wherein said rear wall is exposed for viewing and a closed position wherein said front wall overlies said rear wall; and

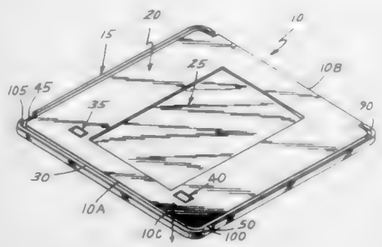
closure means for releasably maintaining said front wall in said closed position, said closure means comprising an upwardly extending lip at said upper edge of said rear wall which interlocks with said downwardly extending lip when said front wall is moved to said closed position.

5,392,548

SLIDE MOUNT WITH PIN LOCK REGISTRATION

James A. Truc, Eden Prairie; Robert D. Brown, Maple Grove, and Edward D. Jansen, Annandale, all of Minn., assignors to Pakon, Inc., Minnetonka, Minn.

Continuation of Ser. No. 738,506, Aug. 1, 1991, abandoned. This application Jan. 6, 1994, Ser. No. 178,447
Int. Cl.[6] G03B *21/64*
U.S. Cl. 40—159.2 19 Claims



1. In a slide mount formed of first and second frame portions connected along an outer border to form a pocket therebetween, the first and second frame portions having rectangular film windows, the film windows of the first and second frame portions defining a central aperture, the slide mount including a slit at the outer border through which a film transparency having sprocket holes along lateral edges thereof can be slid-

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ably introduced into the pocket of the slide mount to prepare a photographic film slide wherein, the improvement comprises:

pin locks located on the first frame portion, the pin locks comprising:

a bottom surface integral with the first frame portion;

a top surface spaced from the bottom surface and dimensioned smaller than the bottom surface;

first, second, third and fourth sloped contact surfaces connecting the bottom surface and the top surface, with the first and the third sloped contact surfaces being positioned in spaced opposed relation and the second and the fourth sloped contact surfaces being positioned in spaced opposed relation, the first, the second, the third and the fourth sloped contact surfaces being positioned to engage edge surfaces of the sprocket holes of the film transparency when the film transparency is slidably introduced into the pocket of the slide mount to fix the position of the film transparency; and

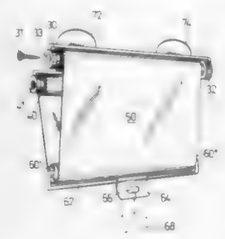
non-contact connecting surfaces joining the first and the second, the second and the third, the third and the fourth, and the fourth and the first sloped contact surfaces, the non-contact connecting surfaces being positioned so as not to engage edge surfaces of the sprocket holes to facilitate placement of the pin locks through the sprocket holes of the film transparency when the film transparency is slidably introduced into the pocket of the slide mount.

5,392,549

MAP DISPLAY AND STORAGE DEVICE

Jose L. Castro, 4165 Porte de Palmas-191, San Diego, Calif. 92122

Division of Ser. No. 987,180, Dec. 8, 1992, which is a continuation of Ser. No. 708,131, May 30, 1991, Pat. No. 5,168,647. This application Dec. 13, 1993, Ser. No. 165,171
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.[6] G09F *11/18*
U.S. Cl. 40—518 10 Claims



1. A combination of a vehicle comprising a structure within hand-reach of a person sitting in said vehicle and a document display apparatus attached to the structure, said document display apparatus including:

a web adapted to carry information applied thereon, said web having first and second ends;

first cylinder means, having a first rotation axis, and holding said web wound thereon from said first end;

second cylinder means, having a second rotation axis, and holding said web wound thereon from said second end;

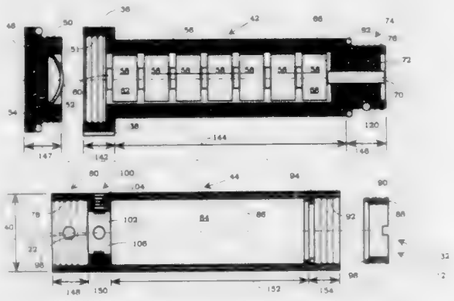
third cylinder means, having a third rotation axis, suspended by said web and so arranged and constructed that said web forms a loop that cooperatively receives said third cylinder means and said third cylinder means urges said loop downwardly when at least one of said first and second cylinder means is unwound, said first, second and third axes being parallel to one another, and said first and second axes being sufficiently horizontally spaced apart to cause said loop to form two planar sections laying in converging oblique planes.

5,392,550

INTERNAL LASER SIGHT FOR WEAPONS

Larry Moore, 1598 Sierra Dr., P.O. Box 1861, Cottonwood, Ariz. 86326, and Keith D. Halsey, 2824 Second St., Santa Monica, Calif. 90405

Filed Jan. 14, 1993, Ser. No. 4,451
Int. Cl.[6] F41G *1/36*
U.S. Cl. 42—103 4 Claims



1. A light beam generation assembly, comprising:

a hollow tube having first and second portions of substantially the same outer diameter which are movable relative to one another;

one or more batteries mounted in the first portion of the hollow tube;

a laser diode mounted in the second portion of the hollow tube;

switch means coupled to the first and second portions of the tube for making or breaking an electrical circuit coupling the batteries to the laser diode when the second portion is moved relative to the first portion; and

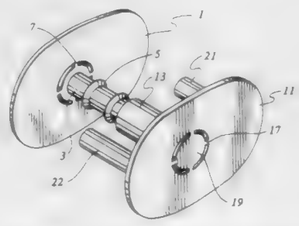
wherein the laser diode is mounted within the tube by means of a mounting permitting angular adjustment of a direction of travel of a light beam emanating from the laser diode relative to a longitudinal axis of the tube.

5,392,551

SINGLE USE FIREARM SAFETY DEVICE

David F. Simpson, P.O. Box 7, Fort Shaw, Mont. 59443-0007

Filed Nov. 3, 1993, Ser. No. 147,667
Int. Cl.[6] F41D *17/54*
U.S. Cl. 42—70.07 14 Claims



1. A firearm safety device, for use with a firearm, said firearm having a trigger, and a trigger guard partially enclosing said trigger and providing a first and second opening to said trigger, said safety device comprising:

(a) a first side guard configured to substantially cover said first opening to said trigger and having a spindle connected thereto by a spindle connection; and

(b) a second side guard configured to substantially cover said second opening to said trigger and having a spindle hub, for receiving and engaging said spindle, connected thereto by a hub connection, said spindle connection or said hub connection or both being fracturable connections,

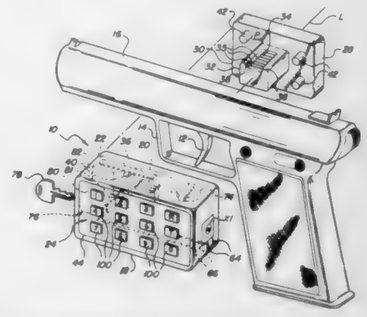
whereby insertion of said spindle through said trigger guard and into said spindle hub causes said first and second side guards to substantially cover said first and second openings to said trigger, thus preventing access to said trigger, and whereby access to said trigger may be regained by fracturing said spindle connection or said hub connection or both.

5,392,552

LIGHTED LOCKS FOR FIREARMS

Joseph McCarthy, 4035 W. Maple, Wixom, Mich. 48393, and Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098

Filed Dec. 7, 1993, Ser. No. 163,348
Int. Cl.[6] F41A *17/54*
U.S. Cl. 42—70.07 13 Claims



1. A firearm locking assembly (**10**) for preventing unauthorized access to a trigger (**12**) located within a trigger guard (**14**) of a firearm (**16**), said firearm locking assembly (**10**) comprising:

a housing (**18**) defining an enclosure having aperture (**20**);

a locking plate (**28**) defining a plane (**P**) and including a locking member (**32**) extendable behind the trigger (**12**), said locking plate (**28**) matingly engageable with said housing (**18**) such that said housing (**18**) and said locking plate (**28**) matingly engage on either side of the trigger (**12**) and the trigger guard (**14**) of the firearm (**16**);

locking means (**22**) for locking said looking plate (**28**) to said housing (**18**);

unlocking means (**24**) for unlocking said locking plate (**28**) from said housing (**18**), said unlocking means (**24**) including input receiving means [(**40**)]**44** for receiving an input code, said firearm locking assembly (**10**) characterized by

illuminating means (**26**) for illuminating said input receiving means (**44**) to input said input code correctly into said input receiving means (**44**).

5,392,553

GUN STOCK ASSEMBLY WITH UNIVERSALLY ADJUSTABLE COMB PIECE

Donald C. Carey, P.O. Box 55, Gresham, On. 97030

Filed Jan. 11, 1994, Ser. No. 179,673
Int. Cl.[6] F41C *23/06, 23/14*
U.S. Cl. 42—73 17 Claims

1. A gun stock assembly comprising:

a) a gun stock having top, forward and rear portions and in the rear portion a recess opening rearwardly to the exterior, forming a casing,

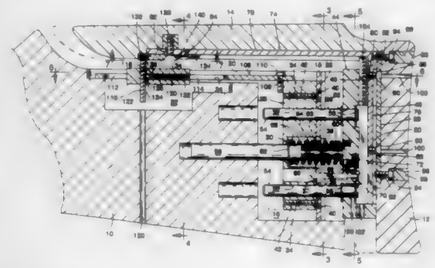
b) support block means mounted in the casing,

c) recoil block means,

d) recoil-damping, telescopic mounting means mounting the recoil block means on the support block means, rearwardly thereof,

e) connecting means releasably connecting the recoil block means to the support block means,

f) angled bar means **74** having first and second segments disposed with the first segment overlying the rear portion of the stock and the second segment overlying the top thereof,



g) mounting means releasably mounting the first segment on the recoil block means,

h) a shoulder pad,

i) first attaching means releasably attaching the shoulder pad to the first segment of the bar means,

j) a comb having forward and rearward portions,

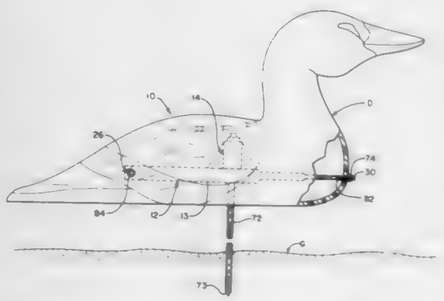
k) second attaching means releasably attaching the comb to the said second segment of the bar means.

5,392,554

MOUNTING ASSEMBLY FOR DECOYS

Virgil L. Farstad, P.O. Box 1842, Minot, N. Dak. 58702, and Malcolm Halvorson, Douglas, N. Dak., assignors to Virgil L. Farstad, Douglas, N. Dak.

Filed Mar. 18, 1993, Ser. No. 33,764
Int. Cl.[6] A01M *31/06*
U.S. Cl. 43—3 33 Claims

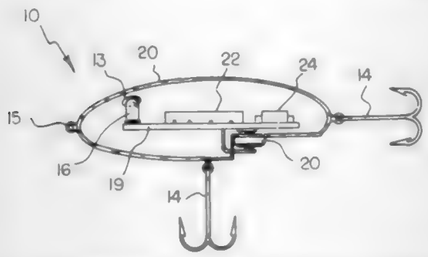


1. Mounting apparatus for mounting a body in a manner that accommodates automatic rotational movement of the body about a stake or other fixed point comprising:

spindle means for providing a pivotal point, said spindle means includes an axial counter bore therein for receiving the stake:

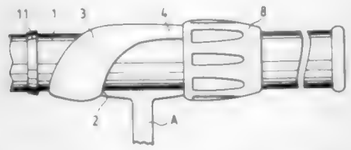
frame means for supporting the body, said frame means including multiple-point mounting means for attachment to the body, and an elongated sleeve means for receiving said spindle means, wherein said sleeve means includes an upper end and a lower end, said lower end having a shoulder extending radially outward from said sleeve.

5,392,555
ILLUMINATED FISHING LURE APPARATUS
Sheldon N. Tingey, 839 Highland Blvd., Brigham, Utah 84302
Filed Jan. 24, 1994, Ser. No. 185,255
Int. Cl.[6] A01K *75/02*
U.S. Cl. 43—17.6 5 Claims



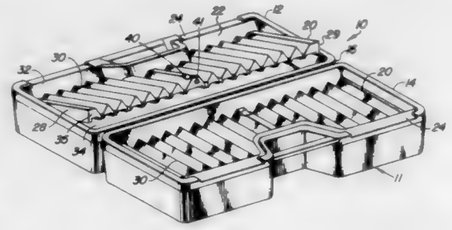
1. A new and improved illuminated fishing lure apparatus, comprising:
a housing assembly which simulates a body of an organism, said housing assembly also including two transparent portions that simulate two eyes of the organism,
a hook assembly attached to said housing assembly,
a pair of selectively colored LED illuminators positioned adjacent to said transparent eye-simulating portions of said housing assembly and adapted to be plugged into and unplugged from a circuit board, said illuminators serving as sources of illumination for said transparent eye-simulating portions of said housing assembly, and
electronic flashing circuitry, contained within said housing assembly and connected to said simulated-eye illuminators, for driving said illuminators at a predetermined flashing rate, wherein said electronic flashing circuitry includes: a battery supply, an electronic flasher module connected to said battery supply, and a flash-rate-change assembly, connected to said electronic flasher module, for changing the predetermined flash rate at which said illuminators flash.

5,392,556
REEL LEG FIXING DEVICE FOR FISHING ROD
Takafumi Ozeki; Masaru Akiba; Shuichi Kimura; Nobuo Nodera, and Tomoyoshi Tsurufuji. all of Higashikurume-Shi, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Apr. 2, 1993, Ser. No. 42,264
Claims priority, application Japan, Apr. 3, 1992, 4-109164; Feb. 2, 1993, 5-036205; Feb. 2, 1993, 5-036206; Feb. 12, 1993, 5-009586; Feb. 12, 1993, 5-047252; Feb. 16, 1993, 5-010354
Int. Cl.[6] A01K *87/06*
U.S. Cl. 43—22 11 Claims



1. A reel leg fixing device for mounting and fixing a reel leg along a longitudinal axis of a fishing rod, comprising:
a first member, loosely fitted onto said rod, having a first axial end and a second axial end, and including:
a tubular main body located at said first axial end and provided with a first reel leg receive portion;
an engaging receive portion, located at said second axial end, only partially circumscribing and loosely fitted onto said rod; and,
a support portion extending along said longitudinal axis between said tubular main body and said engaging receive portion of said rod; and
a second member including:
a fastening tubular member loosely fitted on said rod, said fastening tubular member being provided with a second reel leg receive portion and threadably engaged with said engaging receive portion, said fastening tubular member fastening said reel leg and said engaging receive portion onto said rod.

5,392,557
CRANKBAIT STORAGE APPARATUS
Samuel R. Harmon, 222 - 19th Pl., and Gilbert E. Johnson, 2009 Roosevelt, both of Clinton, Iowa 52732
Filed Dec. 30, 1993, Ser. No. 175,879
Int. Cl.[6] A01K *97/06*
U.S. Cl. 43—57.1 10 Claims

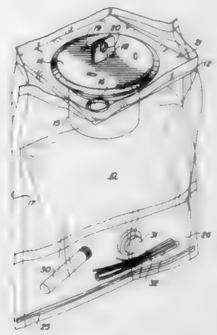


6. A storage apparatus for fishing lures having elongate bodies and a hook carrying shank extending therefrom, comprising:
(a) a storage case having a lower portion with four sides with a bottom and a cover;
(b) a support plate hinged to one side of said storage case; and
(c) a plurality of "V" shaped longitudinal members having a first end and a second end, said longitudinal members residing in a horizontally disposed, side by side relation and attached at said first end to said support plate and extending therefrom within said lower portion of said storage case to create a plurality of lure storage compartments.

5,392,558
INSECT TRAP UTILIZING A FLEXIBLE CONTAINMENT MEANS HAVING AN ATTRACTANT THEREIN
Eric N. Blomquist, Phoenix, Ariz., assignor to Farnam Companies, Phoenix, Ariz.
Filed Dec. 6, 1993, Ser. No. 161,483
Int. Cl.[6] A01M *1/20*
U.S. Cl. 43—107 20 Claims

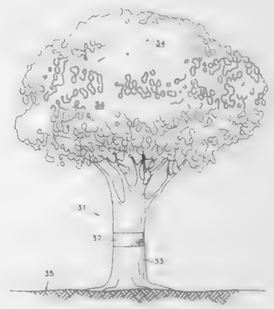
1. An insect trap comprising:
a) an entry element which includes:
i. a platform for supporting a containment bag depending therefrom, said platform containing an opening and a peripheral region;
ii. an access element movably mounted in the opening in said platform between open and closed positions, said element including at least two passageways therein; and
b) a containment bag depending from said entry element which includes:
i. an upper end section attached to the platform, said upper end section containing opposing pleats extending downwardly from the platform;
ii. a transition section affixed to the upper section and provided with opposing edge seams, said seams extending vertically upward to the platform and being affixed to the pleats of the upper end section, said pleats drawing the upper section and the transition section into

conformance with the peripheral region of the platform; and



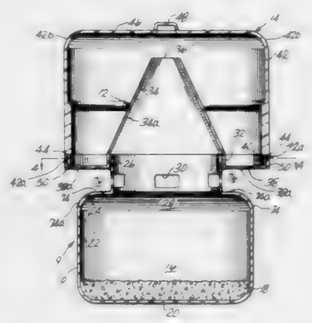
iii. a lower section of the bag for receiving an attractant therein, the conformance of the upper end section of the bag to the peripheral region of the platform being enhanced by the weight of attractant in the bag.

5,392,559
SURFACES COATED WITH FLUOROCARBON RESINS UPON WHICH INSECTS CANNOT CLIMB OR ALIGHT AND METHODS AND MEANS FOR THEIR ESTABLISHMENT
Roger H. Long, Auburn, Pa., assignor to Bend Research, Inc., Bend, Oreg.
Continuation-in-part of Ser. No. 694,689, May 2, 1991. This application Jun. 25, 1993, Ser. No. 81,230
Int. Cl.[6] A01M *1/20*
U.S. Cl. 43—121 9 Claims



1. A method for restricting the movement of insects on a skewed surface comprising the steps of:
forming a dispersion of finely divided particles of a fluorocarbon resin having an average size of less than 0.5 microns and a surfactant;
applying the dispersion to the surface as a wet, continuous, thin coating of substantially uniform thickness; and
evaporating the liquid from the coating to form a continuous film that is free from cracks and discontinuities and which film is adherent to the surface; the improvement comprising:
adjusting the viscosity of the dispersion to less than 15 centipoise.

5,392,560
INSECT TRAP
J. Paul Donahue, Palo Alto, and John Zolkos, Union City, both of Calif., assignors to J. Paul Donahue DBA Donahue International, Mountain View, Calif.
Continuation of Ser. No. 841,033, Feb. 25, 1992, abandoned. This application Apr. 21, 1994, Ser. No. 231,960
Int. Cl.[6] A01M *1/02*
U.S. Cl. 43—122 22 Claims

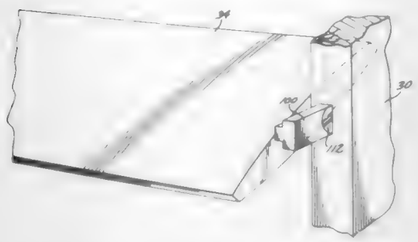


1. An insect trap comprising a bait container and an entrapment chamber, the bait container comprising a hollow body for holding bait, the body including a bottom wall, an upright side wall with an upper edge and a lower edge, the lower edge of the side wall being secured to the bottom wall around the periphery of the bottom wall, a shelf having an outer periphery secured to the upper edge of the sidewall and extending inwardly to terminate at an inner periphery which defines an opening into the body, and an upright neck having an upper periphery and a lower periphery secured to the inner periphery of the shelf, the neck having at least one aperture extending through it;
the entrapment chamber comprising a rim which makes a close fit with the neck, an upwardly and inwardly extending hollow truncated cone having an open apex and a base secured to the rim, an outwardly extending annular flange secured at its inner periphery to the rim, an annular sidewall having lower and upper edges, the lower edge of the sidewall being secured to the outer periphery of the flange, and a top wall secured to the upper edge of the sidewall, the flange being spaced above the shelf to form with the shelf an outwardly opening channel around the exterior of the neck.

5,392,561
SHUTTER ASSEMBLY SYSTEM WITH INDIVIDUALLY REMOVABLE COMPONENTS
John B. Henley, Sr., 3985 Palm Dr., San Bernardino, Calif. 92405
Continuation-in-part of Ser. No. 820,133, Jan. 13, 1992, abandoned. This application Dec. 23, 1992, Ser. No. 994,874
Int. Cl.[6] E05F *17/00*
U.S. Cl. 49—74.1 21 Claims

1. A shutter assembly, comprising:
a pair of substantially parallel side rails;
a pair of substantially parallel spreaders, the spreaders being attached to the side rails, whereby the side rails and spreaders form a substantially rectangular frame, the side rails having a plurality of vertically spaced side rail notches formed in the sides thereof, the side rail notches of one side rail being aligned with the side rail notches of the other side rail;
a plurality of louvers; and
a plurality of individually removable side rail attachment inserts, each side rail attachment insert being individually removable without removal of a side rail, each of the side

rail attachment inserts dimensioned and configured to be complementary with and to fit firmly in one of the side rail notches, each side rail attachment insert further having means for pivotably attaching the side rail attachment



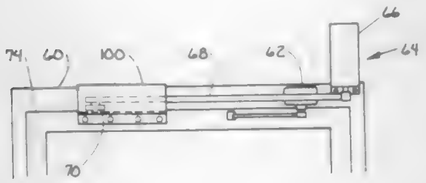
insert to one end of one louver, whereby the louvers are mounted between the pair of parallel side rails with said side rail attachment inserts so as to allow the louvers to be pivoted with respect to the side rails without movement of the side rail inserts.

5,392,562

UNIVERSAL MOUNTING PLATE FOR DOOR OPENER

David E. Carámbula, Kalamazoo, Mich., assignor to International Research and Development Corporation, Mattawan, Mich.

Filed Nov. 9, 1993, Ser. No. 149,639
Int. Cl.[6] E05F *11/24*
U.S. Cl. 49—346 **5 Claims**



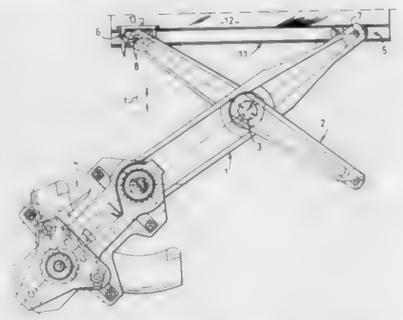
5. A combination of
1: a substantially rectangular mounting plate secured on a door frame, said mounting plate comprising:
a plan portion having top and bottom faces, substantially parallel longitudinally oriented side edges one of which is shorter than the other, and substantially parallel transversely oriented end edges,
a tab oriented substantially perpendicular to said plan portion, said tab being substantially parallel to and substantially equidistant from said longer side edge and a theoretical extension of said shorter side edge, and
a plurality of apertures provided in said plan portion, and an aperture provided in said tab, selected apertures receiving fastening means securing said mounting plate to the door frame and to a door opener which is mounted thereon,
2: an inwardly-opening electrically-operated door opener mounted on said mounting plate, and
3: a Z-bracket having a flattened-Z cross-section mounted transversely on an inside top section of a door mounted in said door frame, near the top edge of said door, with an outer wall of the Z being upstanding,
said door opener (2) having an actuating arm carrying a rotatably-mounted roller and being arranged with said roller in rotating contact with the inside surface of said outer upstanding wall of said Z-shaped bracket (3),
this combination enabling the said door to be opened inwardly by engagement of said roller with the said inside surface of said outer upstanding wall of said Z-shaped bracket.

5,392,563

CLAMPING DEVICE FOR VEHICLE WINDER MECHANISM

Patrice Cardine, Orleans, France, assignor to Rockwell Automotive Body Systems, France

Filed Apr. 15, 1993, Ser. No. 48,335
Claims priority, application France, Apr. 22, 1992, 92 04926
Int. Cl.[6] E05F *11/48*
U.S. Cl. 49—351 **3 Claims**



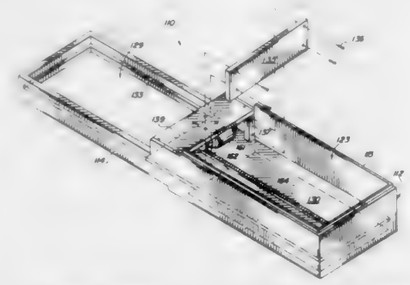
1. Window support device in a vehicle window winder of the type comprising arms arranged in X configuration, said device comprising a shaped rail having first and second walls extending parallel to one another and displaced by an integral portion of said rail inside which there are mounted movable members to which are articulated the ends of the arms, one of the movable members being provided with means for translational blocking in the rail while the other movable member can slide in the latter, characterized in that the means for blocking said movable member comprises an elastic clamp with two branches shaped so as to be able to cap the opposite ends of the movable member, and through-holes for these branches are defined in the walls of the rail so that said branches pass through the rail from one side to the other, elastically clamping the movable member between them by means of engagement between cutouts of said branches and rounded surfaces of the ends of the movable member.

5,392,564

MODULAR SKYLIGHT COVER UNIT

Aaron Fechter, 47 W. Jefferson St., Orlando, Fla. 32801, and David M. Bostick, Sanford, Fla., assignors to Aaron Fechter, Orlando, Fla.

Filed Apr. 1, 1993, Ser. No. 41,450
Int. Cl.[6] E05F *11/00*; E04B *7/18*
U.S. Cl. 49—360 **15 Claims**



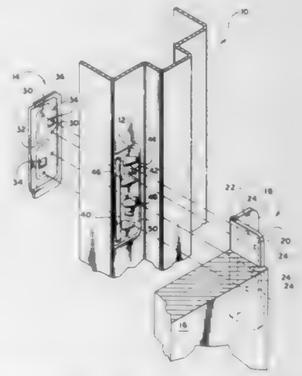
1. A modular skylight cover unit for selectively blocking the transmission of light through a lens opening of a skylight structure, said cover unit comprising:
a rectangular framework including parallel spaced, longitudinally extending left and right side frame members having inwardly facing surfaces and ends; parallel spaced, laterally extending front and rear end frame members joining respective ones of said ends of said side frame members; and a laterally extending central frame member joining parts of said side frame members intermediate said ends; said central frame member having a top surface and dividing said framework into front and rear portions, and said front portion defining a rectangular opening;
a longitudinal track formed on said inwardly facing surfaces of said side frame members;
a rigid rectangular panel having upper and lower surfaces and left and right edges, and being mounted on said framework with said left and right edges supported on said track;
a drive mechanism, mounted on said rear portion of said framework and connecting one surface of said panel, for driving said panel on said track between a retracted cover "open" position wherein said panel is housed in said rear portion, and an advanced cover "closed" position wherein said panel covers said opening; said panel being supported by said central frame member top surface in both said cover "closed" and cover "open" positions; and
means concealing said drive mechanism from view of an observer looking through said opening from below said framework, when said panel is in said cover "open" position.

5,392,565

DOOR FRAME AND GUSSET SYSTEM

William J. Rentschler, Abbeville, Ala., assignor to Dunbarton Corporation, Dothan, Ala.

Filed Mar. 18, 1994, Ser. No. 210,685
Int. Cl.[6] E06B *1/04*
U.S. Cl. 49—504 **4 Claims**



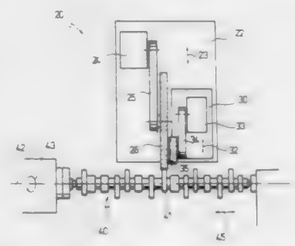
1. A door frame and gusset system for attaching a hinge for supporting a door, the system comprising:
a. a metal door frame;
b. an emboss indentation in the door frame, the emboss indentation for receiving a frame leaf of the door hinge, the frame leaf including a plurality of screw holes of one of a plurality of set patterns for screw holes, the indentation comprising a universal pattern of openings, each of the openings in the emboss indentation being oblong in configuration and extending in a transverse direction on the emboss indentation such that the universal pattern of openings on the emboss indentation may match with any one of the plurality of sets of patterns for the holes for the door hinges; and
c. a gusset for being received within the metal frame behind the emboss indentation, the gusset having a plurality of threaded holes which match the screw holes in the frame leaf of the hinge.

5,392,566

PROCESS AND DEVICE FOR NUMERICALLY CONTROLLED GRINDING OF CAMS OF A CAMSHAFT

Horst J. Wedeniwski, Remshalden, Germany, assignor to Fortuna-Werke Maschinenfabrik GmbH, Germany

Filed Aug. 3, 1992, Ser. No. 925,588
Claims priority, application Germany, Nov. 18, 1991, 4137924
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—5 **3 Claims**



1. A method for numerically controlled grinding of cams of a camshaft, said cams having a convex circular base section and a convex circular tip section, said base and tip sections being interconnected by a transitional mounting section and a transitional descending section, respectively, said transitional sections having a concave shape with a predetermined minimum radius of curvature ($\rho_{k\,min}$), a first cam contour being defined by said cam in a raw condition and a second cam contour being defined by said cam in a ground condition, the method comprising the steps of:
chucking said camshaft in a rotary chuck;
rotating said camshaft about a longitudinal axis thereof;
grinding said cam with a first grinding wheel having a radius (R_{s1}) much bigger than said minimum radius of curvature ($\rho_{k\,min}$), said cam being ground along a third cam contour corresponding to said second cam contour along said convex base and tip sections and being between said first and said second cam contours along said concave transitional sections, thus leaving a zone of unground cam material in said concave transitional sections, as compared with said second cam contour; and
thereafter grinding said cam with a second grinding wheel having a radius (R_{s2}) smaller than said minimum radius of curvature ($\rho_{k\,min}$).

5,392,567

METHOD OF REMOVING AN EXPOSED CORD ON A POWER TRANSMISSION BELT, AN APPARATUS FOR CARRYING OUT THE METHOD, AND A POWER TRANSMISSION BELT MADE BY PRACTICING THE METHOD

Takaji Nagai; Toshiki Sawauchi, both of Kobe, and Mitsuhira Ishihara, Okawa, all of Japan, assignors to Mitsuboshi Belting Ltd., Nagata, Japan

Filed May 21, 1992, Ser. No. 887,345
Claims priority, application Japan, May 31, 1991, 3-157826; Jun. 17, 1991, 3-054407[U]
Int. Cl.[6] B24B *49/00*
U.S. Cl. 51—8 **21 Claims**

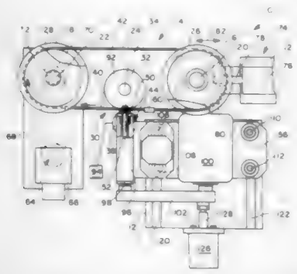
1. In combination:
a) an endless power transmission belt having a length, inside and outside surfaces, and laterally spaced side surfaces, said belt further having a body with a cord embedded therein; and
b) an apparatus for removing a portion of the cord that is

exposed on a surface of the power transmission belt, said apparatus comprising:

a supporting structure on which the endless power transmission belt is trained and run in an endless path;

means for sensing the presence of the cord exposed on the surface of the belt running on the belt supporting structure and for producing a signal indicative of the presence of the cord exposed on the surface of the belt;

means for grinding the surface of the belt running on the belt supporting structure; and



means for selectively a) activating the grinding means in response to the signal from the sensing means sensing the presence of the cord exposed on the side surface of the belt running on the belt supporting structure and b) deactivating the grinding means in response to the sensing means not sensing the presence of the cord exposed on the surface of the belt running on the belt supporting structure and not producing the signal indicative of the presence of the cord exposed on the surface of the belt,

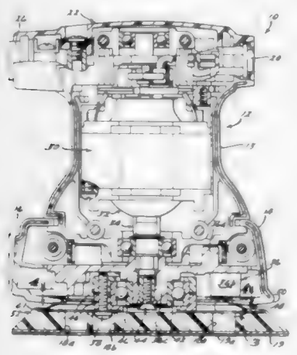
whereby the grinding means can be controlled to grind the belt surface only where an exposed portion of the cord is sensed by the sensing means.

5,392,568

RANDOM ORBIT SANDER HAVING BRAKING MEMBER

Thomas J. Howard, Jr., Whitehall, and David L. Sutton, Forest Hill, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Dec. 22, 1993, Ser. No. 173,644
Int. Cl.[6] B24B *23/00*
U.S. Cl. 451—357 **19 Claims**



1. A random orbit sander having a motor, a platen driven rotationally by said motor and spaced axially apart from a lower surface of a housing of said sander, the improvement comprising:

brake means comprising a flexible annular seal that is secured to the lower surface of the housing and frictionally engaged to an upper surface of said platen for controllably, frictionally braking said platen to maintain the rotational speed of said platen within a predetermined range when said platen is lifted off of a work surface during operation of said sander, and for sealing the axial gap between the lower surface of the housing and said platen;

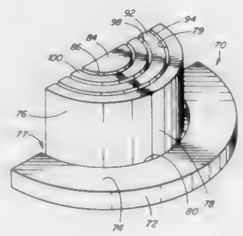
said brake means including a base portion adapted to be secured to said housing, a flexible, flaring wall portion protruding from said base portion, and an outer edge portion having a thickness greater than said wall portion for contacting said upper surface of said platen.

5,392,569

EDGER SANDING TOOL

Dean Stickle, 9820 Berry Road, Richmond, British Columbia, Canada V7A 2M8

Filed Sep. 1, 1993, Ser. No. 114,518
Int. Cl.[6] B24D *15/00*
U.S. Cl. 51—523 **6 Claims**



1. A sanding tool comprising:

a first rigid member having a first planar surface; and

a plurality of nesting members received on the first surface, each said nesting member having sandpaper receiving, partly cylindrical surface extending outwardly from the first surface, at least one outer said nesting member being removable to expose the partly cylindrical surface of another radially inward said nesting member.

5,392,570

SECURITY BAR ASSEMBLY

M. A. Cowan, 2615 E. North Ave., Anderson, S.C. 29625

Filed Feb. 14, 1994, Ser. No. 194,834
Int. Cl.[6] E04H *3/08*
U.S. Cl. 52—106 **12 Claims**

1. A security bar assembly for an entrance of a building to prevent the entrance of intruders while enabling the exit of individuals within the building, said security bar assembly comprising:

a plurality of security bars traversing said entrance for barricading said entrance, and said security bars having a first end and a second end;

a first hollow mounting bracket having a mounting face and a bar receiving face, said bar receiving face having a plurality of first spaced apertures for receiving said first ends of said security bars;

an interlocking member slidably mounted within said hollow interior of said first mounting bracket having a plurality of second spaced apertures corresponding with said first spaced apertures for receiving said first ends of said security bars;

a second mounting bracket having a plurality of third spaced apertures corresponding with said first spaced apertures for receiving said second ends of said security bars;

said interlocking member moveable to a bar receiving position whereby said first and second spaced apertures align and said interlocking member being moveable to a bar locking position so that said first and second spaced apertures are unaligned preventing said first ends from entering said second spaced apertures;



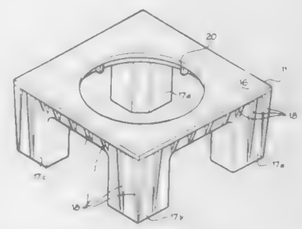
whereby security bars are locked into a position between first and second mounting brackets barricading an entrance.

5,392,571

PEDESTAL MODULE FOR RAISED FLOOR AND RAISED FLOOR

Sherwood S. Greenfield, Charlotte, N.C., assignor to Powerflor, Inc., Charlotte, N.C.

Continuation of Ser. No. 862,519, Apr. 2, 1992, abandoned. This application Dec. 3, 1993, Ser. No. 161,977
Int. Cl.[6] E04B *5/48*
U.S. Cl. 52—126.2 **21 Claims**



1. A floor pedestal module for being assembled together with a multiplicity of other like modules and freely resting in detached relation on a supporting subfloor to form a raised floor providing space beneath the assembled modules and above the subfloor for electrical and/or communications wiring, said module comprising:

(a) a base having an upper surface and opposed lower surface and four integrally-formed supporting legs formed of a high density, heavy duty plastic material;

(b) the lower surface of the base defining a guide recess integrally-formed in the base for accepting a saw guide; and

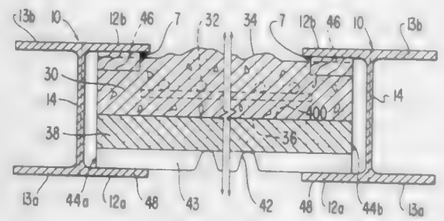
(c) at least two spaced-apart reenforcing ribs formed in said base concentric with said pilot hole and defining therebetween a circular area for being cut out to form an enlarged access hole.

5,392,572

RAPIDLY ERECTABLE, REMOVABLE, REUSABLE AND RAISABLE OUTDOOR ACOUSTICAL WALL SYSTEM AND METHOD

J. Thomas Elmore; Alan Veatch, both of Washington, D.C., and William C. Clements, Reston, Va., assignors to JTE, Inc., Lorton, Va.

Continuation of Ser. No. 935,895, Aug. 28, 1992, Pat. No. 5,274,971. This application Jan. 3, 1994, Ser. No. 176,953
Int. Cl.[6] E04B *1/82*
U.S. Cl. 52—144 **8 Claims**



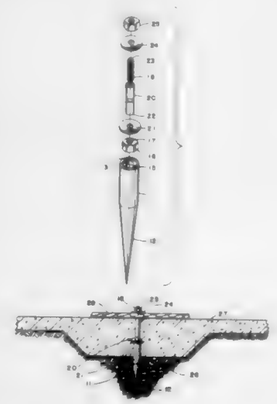
1. A method for rapidly assembling a removable and reusable post and panel acoustical wall from a plurality of wall panels having opposing side edges, and vertically oriented support posts having top ends and pairs of opposing parallel flanges for receiving the side edges of the wall panels, and wedge member retaining means disposed between the side edges of the wall panels and one of said flanges for retaining a wedge member, comprising the steps of slidably inserting the opposing side edges of said wall panels between the opposing parallel flanges of said vertically oriented posts to form a wall structure, inserting wedging members in said wedge member retaining means to forcefully engage said side edges of said panels into acoustically obstructing engagement with one of said flanges of said posts, attaching post extension members on the top ends of said support posts to extend the height of said support posts, and sliding at least one additional wall panel between the heightened support posts.

5,392,573

CONCRETE ANCHORING BOLT

William W. Gould, 2250 Oakhill Dr., Deland, Fla. 32720

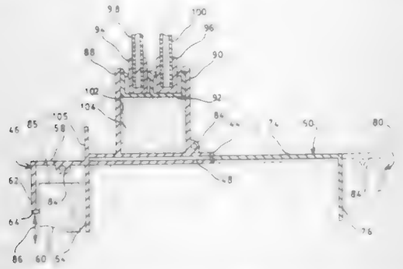
Filed Mar. 14, 1994, Ser. No. 209,907
Int. Cl.[6] E04B *1/38;* **E04C** *5/12*
U.S. Cl. 52—165 **6 Claims**



1. An anchor bolt for anchoring a plate member or the like to a concrete surface comprising:

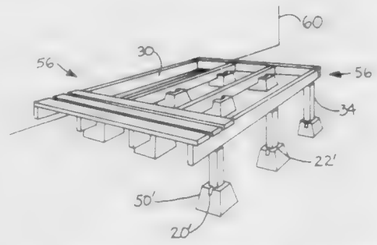
a nut;
a stake member having a nut supporting open end having said nut secured therein;
an embedding sleeve;
a threaded bolt member threadedly attached through said sleeve to said nut secured in said stake member; and
an anchoring nut and washer attached to said threaded bolt member over said embedding sleeve, whereby positioning said stake member in the soil before a concrete pour and pouring the concrete thereover anchors said stake member and sleeve in the concrete so that said anchoring nut and washer can attach a plate member or the like to the surface of the concrete.

5,392,574
WINDOW FRAME FOR MANUFACTURED HOUSING
Leland D. Sayers, Knox County, Tenn., assignor to Sealmaster, Inc., Knoxville, Tenn.
Continuation-in-part of Ser. No. 570,818, Aug. 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 338306, Apr. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 83,225, Aug. 19, 1987, abandoned. This application Aug. 25, 1992, Ser. No. 934,257
Int. Cl.[6] E06B *1/30, 1/36*
U.S. Cl. 52—217 8 Claims



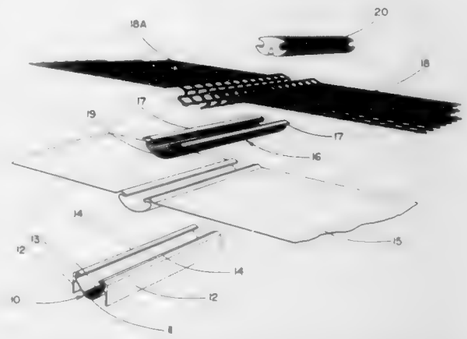
1. A window frame for being fixedly mounted in an opening provided in a wall of a structure, the structure having a frame defining an inner wall and an outer wall, said window frame comprising:
a window frame body member for being received in and circumscribing the opening in the wall and adapted to extend from proximate the outer wall toward the inner wall when received in the opening, said window frame body member for receiving and supporting at least one window, said window frame member having oppositely-disposed jam portions, a header portion overlapping and attached to first ends of each of said jam portions, and a sill portion overlapping and attached to second ends of each of said jam portions; and
a J-rail return member integrally-formed with each of said portions of said window frame body member so as to extend outwardly from said portions of said window frame body when member said window frame body member is received in the opening, said J-rail return member having
a) a flange portion extending radially around the opening for attachment of said window frame to the structure,
b) a projecting portion extending away from said flange portion in a direction perpendicular to said flange portion, and
c) a return portion having one edge connected to said projecting portion, and a distal edge, said return portion being substantially parallel with said flange portion to define a substantially rectangularly-shaped slot between said return portion and said flange portion, said slot having an opening at said distal edge of said return portion for accepting siding to be attached to the outer wall of the structure, said return portion having a width to cover edges of the siding during any contraction of the siding, said distal edge of said return portion being provided with a raised bead on a side toward said flange portion for reducing chaffing of the siding during any movement of the siding within said slot;
whereby said window frame can be installed as a unit within the opening of the structure with minimal labor to receive the at least one window and the siding in a secure manner.

5,392,575
DECK CONSTRUCTION
Paul Hoffman, P.O. Box 156, Alvadore, Oreg. 97409, and Sam H. Bright, P.O. Box 2628, Eugene, Oreg. 97402
Continuation of Ser. No. 745,995, Aug. 9, 1991, abandoned, which is a continuation of Ser. No. 292,742, Jan. 3, 1989, abandoned, and a continuation of Ser. No. 763,870, Sep. 19, 1991, Pat. No. 5,163,967, which is a continuation of Ser. No. 507,002, Apr. 10, 1990, abandoned, which is a continuation of Ser. No. 319,852, Mar. 3, 1989, abandoned, which is a continuation of Ser. No. 101,832, Sep. 28, 1987, Pat. No. 4,839,346, which is a continuation of Ser. No. 926,291, Nov. 3, 1986, Pat. No. 4,724,642. This application Nov. 16, 1992, Ser. No. 976,611
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[6] E02D *27/00*
U.S. Cl. 52—299 1 Claim



1. A deck construction on a building site, comprising:
(a) a plurality of spaced-apart horizontally oriented support members, each of said members having a lower edge and an upper edge;
(b) horizontal decking surface structure fastened to said upper edges of said plurality of horizontally oriented support members;
(c) a plurality of supports, each of said supports including:
a body having an upper construction support portion and a lower portion adapted for supporting engagement with a building site, said upper portion including an open slot formed by side walls spaced apart for receiving the lower edge of one of said horizontally oriented support members;
an enlarged open center socket contiguous with the open slot and formed by the side walls extending at right angles away from each other to corner sections spaced apart substantially further than the width of the open slot; and
(d) wherein each of said plurality of horizontally oriented support members is supported by at least one of said supports,
(e) said deck construction further comprising at least one vertically oriented pillar member, wherein the bottom end of said pillar member is held within the center socket of one of said supports, and said top end of said pillar member supports the lower edge of one of said horizontally oriented support members.

5,392,576
ROOF DECK COVERING SYSTEM SECUREMENT MECHANISM
Robert C. Yeamans, 2777 Northwest, Columbus, Ohio 43221
Filed Feb. 22, 1993, Ser. No. 20,849
Int. Cl.[6] E04B *7/00;* E04D *13/14*
U.S. Cl. 52—408 2 Claims



1. In a roof deck covering system comprising a waterproofing membrane positioned on the surface of said roof deck and an apertured overlay positioned on top of said waterproofing membrane and essentially coextensive therewith,
a securement assembly for said roof deck covering for securely retaining said waterproofing membrane over said roof deck comprising,
a base member capable of being firmly attached to said roof deck and including a curved linear extending portion designed to extend along said roof deck provided with two oppositely positioned edges thereon, said curved linear extending portion of said base member provided with means adapting said base member to be tangentially secured to the surface of said roof deck,
a first element at one edge of said curved linear extending portion extending in a direction toward said other edge of said curved linear extending portion and a second element at the other edge of said curved linear extending portion extending in a direction toward said one edge of said curved linear extending portion and having a length much greater than the distance between said one edge and said other edge of said curved linear extending portion, and
a first resilient means having a thickness approximately that of said waterproofing membrane and of a shape substantially conforming to that portion of said base member between said one edge and said other edge of said curved linear extending portion and having a length much greater than the distance between said one edge and said other edge of said curved linear extending portion and adapted to press said waterproofing membrane securely against said base member between said one edge and said other edge of said curved linear extending portion.

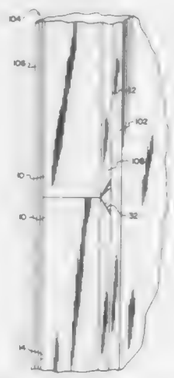
5,392,577
DECORATIVE LOUVERED DOOR AND METHOD
Gennaro A. D'Onofrio, Jr., and Dorothy L. D'Onofrio, both of 5304 Erie Dr., Sebring, Fla. 33872
Filed Dec. 23, 1993, Ser. No. 172,841
Int. Cl.[6] E06B *7/08*
U.S. Cl. 52—473 6 Claims

1. A decorative louvered door comprising:
a frame defining a perimeter of said door;
a plurality of parallel evenly spaced elongated rectangular flat louvers connected in uniformly angled orientation one to another and extending horizontally between opposing spaced upright margins of said frame;



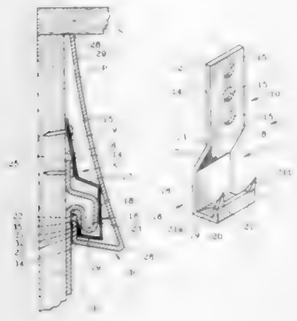
an elongated rectangular mirror adhesively connected onto an outwardly facing surface of each of a first group of adjacent louvers of said plurality of louvers.

5,392,578
INSULATIVE WALL CLADDING HAVING INSULATION BOARDS FITTING TOGETHER TO FORM CHANNELS AND FIRE-RETARDANT PANELS DISPOSED THEREIN
Richard E. Kroll; Vincent Tamburrini, both of West Warwick, R.I., and Frederick M. Hansen, Ontario, Canada, assignors to Dryvit Systems Canada Ltd., Stouffville, Canada
Continuation-in-part of Ser. No. 12,161, Jan. 28, 1993, Pat. No. 5,363,621. This application Mar. 2, 1993, Ser. No. 25,381
The portion of the term of this patent subsequent to Nov. 15, 2011, has been disclaimed.
Int. Cl.[6] E04B *2/00*
U.S. Cl. 52—506.1 42 Claims



1. A wall of a building, said wall comprising:
an outer member;
an inner member; and
insulation cladding disposed between said outer member and said inner member, said outer and inner member substantially covering opposite surfaces of said insulation cladding, said insulation cladding including a plurality of insulation boards providing a plurality of interconnecting air pressure equalization and moisture vent channels.

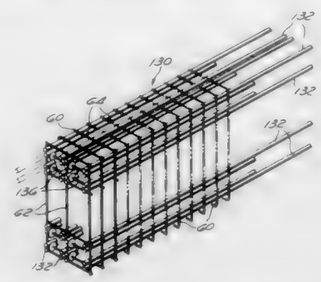
5,392,579
LIPLESS CLIP FOR VINYL SIDING AND METHOD
Charles A. Champagne, 15607 S. Chanpagne Clr., Houston, Tex. 77377
Filed Sep. 13, 1993, Ser. No. 121,023
Int. Cl.[6] E04D *1/34*
U.S. Cl. 52—520 **2 Claims**



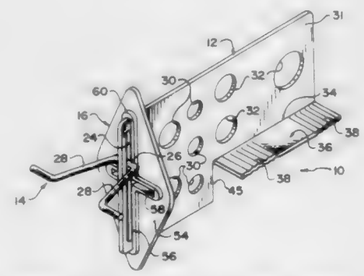
1. A clip for engaging and securing an upwardly extending surface of a building siding top out panel between an uppermost siding panel and a soffit of a building, and wherein the uppermost siding panel has a downwardly facing channel with an inner surface thereon and an upwardly facing channel, said clip comprising:
a strip of material;
said ship of material having an upper portion;
at least one opening in said upper portion of said strip of material;
said strip of material having a lower portion;
said strip of material including an upwardly facing channel with an upwardly facing surface thereon in said lower portion of said strip of material to receive the downwardly facing channel and the upwardly facing channel of the uppermost siding panel therein;
projections on said upwardly facing surface of said upwardly facing channel on said strip of material to engage and secure the top out panel upwardly extending surface between the projections and the inner surface of the downwardly facing channel of the uppermost panel.

5,392,580
MODULAR REINFORCEMENT CAGES FOR DUCTILE CONCRETE FRAME MEMBERS AND METHOD OF FABRICATING AND ERECTING THE SAME
Hanns U. Baumann, 312 Emerald Bay, Laguna Beach, Calif. 92651
Filed May 6, 1992, Ser. No. 879,971
Int. Cl.[6] E04C *5/00*
U.S. Cl. 52—660 **18 Claims**

1. A ductile reinforced concrete construction member comprising:
(a) a plurality of prefabricated grids disposed in generally parallel stacked relationship;
(b) a plurality of rebar members charged through said prefabricated grids; and
(c) concrete generally encapsulating said grids and rebar members;
(d) at least one roller formed upon at least one of said grids such that at least one of said rebar members may be charged through said grid thereover, said roller reducing friction between said rebar member and said grid to enhance the charging process prior to encapsulation of said grids and said rebar members in concrete.



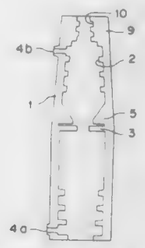
5,392,581
MASONRY CONNECTOR
Michael A. Hatzinikolas, and Robert M. Pacholok, both of Edmonton, Canada, assignors to Fero Holdings Ltd., Edmonton, Canada
Filed Nov. 8, 1993, Ser. No. 148,865
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—712 **7 Claims**



1. A connector for a veneer wall having a masonry back-up wall composed of masonry blocks and mortar and a masonry veneer separated from the back-up wall by a cavity, said connector comprising:
an outer coupling end for connection to a wall tie secured to the veneer; and
an inner anchoring end for securement to the back-up wall, including a vertical plate portion for engagement between two side-by-side blocks of the back-up wall and a laterally extending flange for engagement between two vertically adjacent blocks of the back-up wall and laterally extending corrugations in the flange for keying into mortar between the two vertically adjacent blocks.

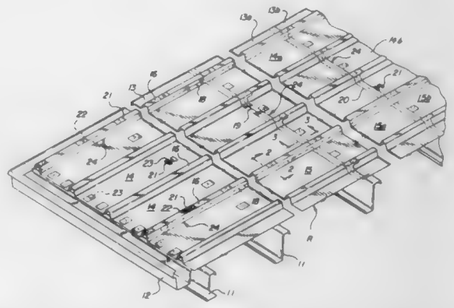
5,392,582
MORTAR GROUTING TYPE CONNECTOR FOR REINFORCING BARS
Masahiro Abukawa, Koshigaya, Japan, assignor to Splice Sleeve Japan, Ltd., Tokyo, Japan
Filed Jun. 17, 1993, Ser. No. 77,627
Int. Cl.[6] E04C *3/30*
U.S. Cl. 52—726.1 **10 Claims**

1. A mortar, grouting connector for reinforcing bars comprising,
a splice sleeve having side wall portions with internal surfaces and open end portions at each end of said splice sleeve,
an inlet grouting port provided in a side wall portion adjacent to one open end portion,
a discharge port provided in a side wall portion adjacent to the other open end portion,
a plurality of longitudinally spaced annular ridges disposed on the internal surfaces of the side wall portions and extending from each open end portion a distance toward the middle portion of the splice sleeve, and



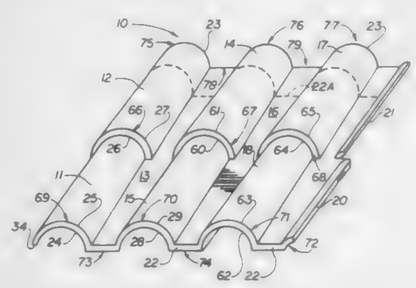
a plurality of opposing longitudinal flanges extending from the internal surfaces of the splice sleeve between the annular ridges to the mid-portion of the splice sleeve, said opposing longitudinal flanges extending toward each other to form a centrally disposed aperture wherein said longitudinal flanges project inwardly with a maximum height of projection being at a point near said middle portion of said splice sleeve and decreasing in height as the longitudinal flanges approach the annular ridges nearest said discharge port.

5,392,583
METHOD OF RESTORING STANDING SEAM AND LIKE LAPPED METAL ROOFS CONSISTING OF SIDE-BY-SIDE PANELS HAVING SIDE EDGES WHICH OVERLAP
David B. Gregory, Kawkawlin, Mich., assignor to Gregory Construction Company, Bay City, Mich.
Filed May 13, 1993, Ser. No. 61,485
Int. Cl.[6] E04D *3/366*
U.S. Cl. 52—741.1 **9 Claims**



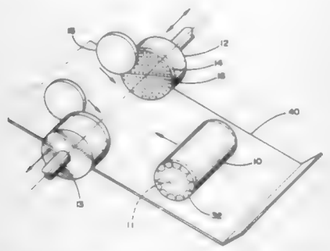
1. A method of restoring degenerated, no longer weathertight or moisture-proof, standing seam and like lapped panel metal roofs incorporating adjacent panels having edges lying in different planes which overlap to form lapped edge joints wherein the terminal edge of one sheet is an exposed edge which extends over and overlies the edge of an adjacent panel to form a joint and wherein fasteners extend through said panels into a roof support structure, and fasteners extend through the lapped edges of said panels to secure them together, comprising the steps of:
(a) replacing any defective fasteners;
(b) applying flexible elongate elastic strips to span and overcover said exposed, lapping edges of the panels along their lengths, and adhering them to said panels forming the joint, the strips being stretchable at least 100% with temperature-induced movement of the panels;
(c) applying covering sealants over certain of said fasteners; and
(d) applying a substantially non-elastic asphaltic coating over said sealants and roof panels which bonds to both said sealants and said roof panels and forms an overall outer cover for said roof, thereby permitting said coating to crack and with stretching of said strips at said joints to produce separated edges in said coating due to temperature induced panel edge movement, and the cracked and separated edges to return with said sealants to abutting or near abutting relation with temperature-induced reverse movement of said edges of the panels.

5,392,584
METHOD AND APPARATUS FOR PRODUCING ROOF TILE
George A. Perez-Wilson, 12622 N. 80th Pl., Scottsdale, Ariz. 85260
Filed May 11, 1993, Ser. No. 59,461
Int. Cl.[6] E04C *2/20;* **E04D** *15/02*
U.S. Cl. 52—747 **2 Claims**



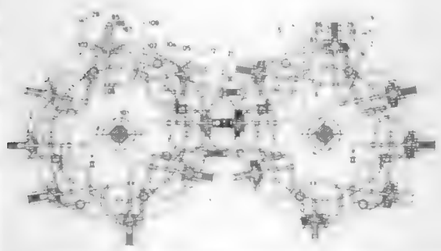
1. A method for manufacturing a panel simulating a plurality of overlapping roof tile, comprising the steps of
(a) manufacturing a mold including a plurality of spaced apart generally parallel rows each replicating the appearance of a plurality of overlapping stepped arcuate roof tile;
(b) preparing a viscous polymer mixture including
(i) from 30% to 75% by weight synthetic polymer resin,
(ii) from 15% to 50% by weight filler,
(iii) from 0.5% to 5.0% by weight catalyst to harden said resin,
(iv) from 1% to 10% by weight pigment composition to color said polymer mixture;
(c) conforming a pliable sheet of fiberglass to said parallel rows;
(d) applying said viscous polymer mixture to said mold to cover said fiberglass sheet and conform to said parallel row to form a layer of said mixture which has generally uniform thickness, covers said fiberglass sheet, conforms to said parallel rows, and defines a series of generally parallel rows each replicating the appearance of a plurality of overlapping stepped arcuate roof tile;
(e) hardening said layer;
(f) removing said hardened layer from said mold.

5,392,585
ROLLED PAPER WRAPPING APPARATUS
Benjamin Wall, 19984 Woodlake Rd., Pierson, Mich. 49339
Filed Jan. 6, 1993, Ser. No. 1,179
Int. Cl.[6] B65B *11/04, 25/24*
U.S. Cl. 53—136.2 8 Claims



4. A header heat plate for a roll paper wrapping apparatus wherein a circular roll header having a heat sensitive adhesive thereon is affixed to each end of a roll of paper by pressing the header against the end of the roll with a heated header plate, the improvement wherein the header heat plate is formed in a plurality of header face plate sections mounted together edge to edge on a backing plate, the sections being individually changeable such that the entire header heat plate need not be replaced when one section becomes damaged or wears out, each header face plate section including interior heating elements, the heating elements in the header face plate sections being heated by a power supply to a sufficient temperature to activate the thermal adhesive, each header face plate section being molded out of metal and the interior heating elements being integrally molded therein, the heating elements having an externally accessible terminal that is connectable to the power supply to heat the section.

5,392,586
ARTICLE TRANSFERRING/WRAPPING APPARATUS
Hiroaki Imai, Tokyo, Japan, assignor to Japan Tobacco, Inc., Tokyo, Japan
Continuation-in-part of Ser. No. 858,687, Mar. 27, 1992, abandoned. This application Mar. 29, 1993, Ser. No. 38,604
Claims priority, application Japan, Mar. 29, 1991, 3-91725
Int. Cl.[6] B65B *11/28*
U.S. Cl. 53—234 2 Claims



1. An article transferring and wrapping apparatus comprising:

at least an article sending-side first rotary wheel having a plurality of first heads;

at least an article receiving-side second rotary wheel having a plurality of second heads, said first and second rotary wheels being provided adjacent to each other and rotated around parallel axes in opposite directions at the same peripheral velocity and transferring an article held by one of said heads of said sending-side first wheel to one of said heads of said receiving-side second wheel while said heads move through a transfer section while said first and second rotary wheels are adjacent to each other; and

a wrapping paper sheet supplying mechanism for supplying wrapping paper sheets into a space between said first and second heads in the transfer section, thereby wrapping the article with the wrapping paper sheet, while the article is being transferred between first and second heads in the transfer section,

each of said first and second heads including:

a pivotal body pivotally provided to a corresponding one of said first and second rotary wheels;

a pivotal mechanism for pivoting said pivotal bodies in response to rotation of the corresponding one of said first and second rotary wheels so that said pivotal bodies of each of said first and second heads are moved opposing each other while passing through said transfer section;

a pair of plates projecting from each of said pivotal bodies, for holding the article therebetween, the plates being openable and closeable so that a space therebetween can be widened or narrowed;

an opening and closing mechanism for opening and closing said pair of plates, said plates of each of said heads of said second rotary wheel being opened in opposing directions by said opening and closing mechanism while passing through said transfer section,

a pair of plates of each of said first heads being closed by said opening and closing mechanism so that the article is held by said heads of said first rotary wheel while each of the first heads is passing through said transfer section, and said first rotary wheel comprising means for inserting said pair of plates of each of said first heads holding the article into an open space between said pair of plates of each of said second heads and thereafter withdrawing said pair of plates of each of said first heads holding the article from the open space, thereby transferring the article held by said pair of plates of each of the first heads to the space between said pair of plates of each of the second heads; and

a cam mechanism having a slider, the sliders of each of said first heads being moved forwardly toward the second rotary wheel so as to push the article held between said pair of plates of each of said first heads, when said pair of plates of each of said first heads is withdrawn from the space between said pair of plates of each of said second heads, thereby transferring the article into the open space between said pair of plates of each of said second heads, and the slider of each of said second heads being moved backwardly, in response to forward movement of the sliders of each of said first heads, to hold the article in cooperation with said forwardly moved slider of each of said first heads.

5,392,587
GRID FINGER ASSEMBLY
G. William Crouch, Colchester, Conn., assignor to B & B Equipment, Inc., Middletown, Conn.
Filed May 20, 1993, Ser. No. 64,943
Int. Cl.[6] B65B *39/02*
U.S. Cl. 53—248 24 Claims

1. A grid finger assembly for a carton filling machine comprising:

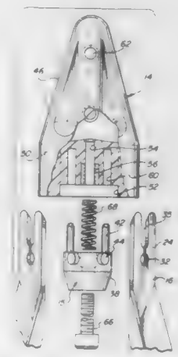
(a) a finger holder with a principal axis and having a body with a slot in one end thereof extending along its principal axis and adapted to seat about an associated grid element, a retainer cavity in its other end, and a multiplicity of finger receiving recesses extending axially into the body of said holder from said cavity and about the periphery thereof, said body also having at least one retainer recess extending inwardly thereinto from said cavity and disposed inwardly of said finger receiving recesses;

(b) fastening means adjacent said one end of said holder for engaging said holder with the associated grid element seated in said slot;

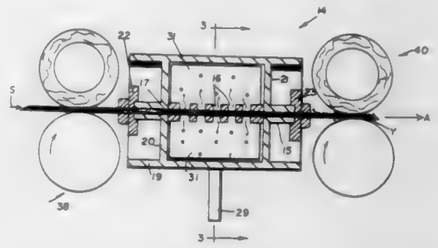
(c) a multiplicity of elongated fingers formed from a flexible, form retaining synthetic resin, said fingers having (i) a bifurcated end portion with spaced arms seated in said finger receiving recesses of said finger holder, (ii) an elongated body portion depending therefrom and inclined outwardly from said axis of said finger holder;

(d) a retainer having its axis parallel to said axis of said holder and having one end dimensioned and configured to seat in said retainer cavity of said finger holder, said retainer having an axial projection on said one end seating in said retainer recess of said finger holder, said retainer also having projections about its periphery extending transversely of said principal axis and through apertures in said bifurcated end portions of said fingers to seat them thereon; and

(e) releasable retainer engaging means securing said retainer in said cavity with said projections on its periphery also being disposed therein to trap said bifurcated end portions of said finger on said projections.



5,392,588
SPINNING WITH HOLLOW ROTATABLE SHAFT AND AIR FLOW
Elbert F. Morrison, Clarksville, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.
Continuation of Ser. No. 263,187, Oct. 27, 1988, abandoned, which is a continuation of Ser. No. 41,835, Apr. 21, 1987, Pat. No. 4,928,464, which is a continuation of Ser. No. 680,510, Dec. 11, 1984, Pat. No. 4,719,744, which is a continuation-in-part of Ser. No. 386,078, Jun. 7, 1982, Pat. No. 4,507,913. This application Dec. 15, 1992, Ser. No. 996,865
Int. Cl.[6] D01H *5/28, 1/12;* D02G *1/00*
U.S. Cl. 57—328 12 Claims



1. A method of spinning yarn utilizing a rotatable hollow shaft having an entrance at one end thereof, and an exit at the other, and rotatable about an axis extending in a direction A, comprising the steps of:

(a) feeding a plurality of free fibers in a linear direction A, in a fiber mass, certain of the fibers having free ends;

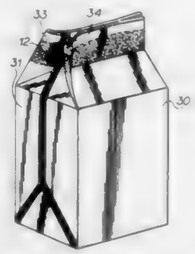
(b) passing the fiber mass into the interior of the hollow rotatable shaft through the entrance thereof;

(c) establishing an air flow about the fiber mass to effect separation of the free ends of the fibers which air flow is initially substantially unidirectionally in direction A, and then is deflected to move at an angle with respect to the direction A away from the shaft;

(d) rotating the shaft at high speed about the axis so that the free ends of the fibers are drawn within the shaft and wrap around other portions of the fiber mass while such other portions remain substantially untwisted to produce a yarn; and

(e) withdrawing the yarn through the exit of the shaft.

5,392,589
METHOD OF CONSTRUCTING A CONTAINER WITH UNITARY SPOUT PULL TAB
Jerry E. Buchanan, Alpharetta, Ga., assignor to Jebco Packaging Systems, Inc., Tucker, Ga.
Filed Sep. 3, 1993, Ser. No. 115,646
Int. Cl.[6] B65D *5/70;* B65B *61/18*
U.S. Cl. 53—412 14 Claims



1. A method of constructing a container with a unitary spout pull tab from a sheet of flexible material that comprises the steps of

(a) folding the sheet to form two opposite side walls joined at a bottom end by a bottom wall and open at a top end opposite the bottom wall,

(b) sealing together elongated portions of the two side walls along their side edges to form two side seals at least one of which includes a tab portion, and

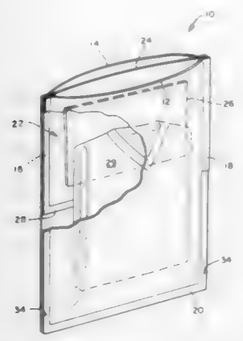
(c) forming two breachably sealed V-folds in the side walls adjacent the top end straddling the tab portion of the one side seal,

whereby upon manually pulling the tab portion of the one side seal the breachable seals of the V-folds straddling the tab portion of the one side seal may be broken and the two V-folds pulled outwardly to collectively form an open spout.

5,392,590
PACKAGING AND METHODS FOR REDUCING ODORS AND STRENGTH LOSS CAUSED BY THE IRRADIATION OF POLYOLEFIN-BASED PRODUCTS
Julia T. Ambrose, Marietta; Charles E. Bolian, II, Buford, both of Ga.; Stephen E. Ellis, Andover, and Jeffery H. Worthington, Saugus, both of Mass., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of Ser. No. 994,792, Dec. 21, 1992, abandoned. This application May 18, 1994, Ser. No. 249,097
Int. Cl.[6] B65B *55/02*
U.S. Cl. 53—425 25 Claims

2. A method for reducing odors associated with the sterilization by irradiation of polyolefin-based products comprising the steps of:

a) inserting a polyolefin-based product into an oxygen impermeable sealable bag;
b) inserting an oxygen scavenger into said bag;



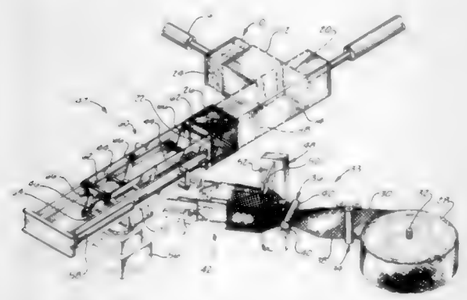
c) sealing said bag to prevent air from either entering or escaping said bag; and
d) sterilizing said sealed bag and its contents with gamma radiation.

5,392,591

HAY RECOMPRESSION AND NETTING MACHINE

Bret A. Simpson, Ellensburg, Wash., assignor to International Packaging Incorporated, Ellensburg, Wash.

Filed Mar. 12, 1993, Ser. No. 30,676
Int. Cl.[6] B65B *25/02, 1/24, 9/15, 9/14*
U.S. Cl. 53—435 **31 Claims**



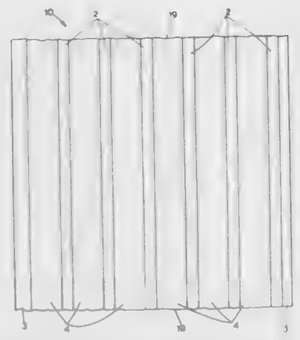
1. An apparatus for inserting at least one compressed bale of a fibrous agricultural product into an elastomeric net, comprising:
a. a holding chamber having an input end and an outlet; a line extending between the input end and the outlet defining a holding chamber axis;
b. means for expanding and positioning a tubular net having two opposing open ends around the holding chamber so that a portion of one of the open ends of the net extends outwardly past an end of the outlet of the holding chamber; and
c. means for advancing said bale through the outlet of the holding chamber so that the end of said bale exiting the outlet expands and contacts the portion of the net that extends outwardly past the end of the outlet and pulls the net off the holding chamber onto said bale as the bale is advanced out of the outlet, thereby containing the bale within the net.

5,392,592

HOT-MELT PRESSURE SENSITIVE ADHESIVE PACKAGING, PREFORM, AND METHOD

Frank Bozich, Clarendon Hills, and Charles J. King, Stickney, both of Ill., assignors to Croda Apex Adhesives, Inc., Itasca, Ill.

Continuation of Ser. No. 949,465, Sep. 22, 1992, Pat. No. 5,333,439. This application Mar. 23, 1994, Ser. No. 216,799
Int. Cl.[6] B65B *63/00*
U.S. Cl. 53—440 **5 Claims**



1. A method for the waste-free packaging of a hot-melt pressure sensitive adhesive composition comprising the steps of:
a. providing a preform for hot-melt adhesive composition comprising a continuous sheet of heat sealable film having two opposing longitudinal edges, namely, a first edge and an opposing edge, that are capable of forming a heat seal with one another, said continuous sheet of heat sealable film having a composition that is compatible with being integrated into the composition of said hot-melt adhesive composition;
b. heat sealing the area along the first edge of the preform to an area along the opposite edge of the preform to form a continuous tubular film capable of receiving an extruded hot-melt pressure sensitive adhesive therein; and
c. extruding a hot-melt pressure sensitive adhesive into said continuous tubular film at a predetermined rate;
d. crimping said continuous tubular film at a predetermined distance such that a predetermined amount of the hot-melt pressure sensitive adhesive is isolated between at least two of the crimps to produce a compatibly packaged hot-melt adhesive composition; and
e. melting said compatibly packaged hot-melt adhesive composition in a glue pot whereby said compatible packaging becomes compatibly integrated into said molten hot-melt adhesive composition.

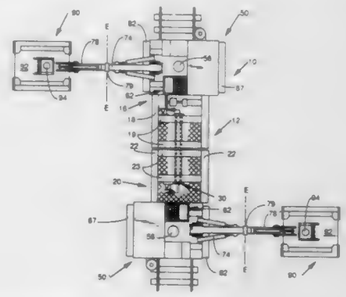
5,392,593

MOBILE APPARATUS FOR CUTTING VEGETATION

Benjamin H. Emery, Pittsburgh, Pa., assignor to Emery Tree Service, Inc., Indianola, Pa.

Filed Apr. 26, 1993, Ser. No. 54,181
Int. Cl.[6] A01D *34/66*
U.S. Cl. 56—15.2 **38 Claims**

29. A mobile vegetation cutting apparatus for cutting vegetation at a plurality of locations and elevations on both sides of a railroad trackway comprising:
a mobile chassis comprising a first mobile chassis portion adapted to ride upon the railroad trackway and a second mobile chassis portion adapted to ride upon the railroad trackway and being pivotally connected to said first mobile chassis portion;
a first drive unit pivotally attached to said first mobile chassis portion, said first drive unit having power means for driving said mobile chassis on the railroad trackway and being selectively pivotable from one lateral side of said mobile chassis to another lateral side of said mobile chassis;
a first boom assembly comprising a first boom member pivotally connected to said first drive unit, means for selectively pivoting said first boom member with respect to said first drive unit, a second boom member pivotally connected to said first boom member and means for selectively pivoting said second boom member with respect to said first boom member;
a first cutting means comprising a housing member pivotally attached to said second boom member, a cutting member rotatably supported within said housing member and means for rotating said cutting member at at least one predetermined speed;
a first operator's cab operatively connected to said first drive unit;
a second drive unit pivotally attached to said second mobile



chassis portion, said second drive unit having secondary power means for driving said mobile chassis on the railroad tracks and being selectively pivotable from one lateral side of mobile chassis to another lateral side of the mobile chassis;
a second boom assembly comprising a primary boom member pivotally connected to said second drive unit, means for selectively pivoting said primary boom member with respect to said first drive unit, a secondary boom member pivotally connected to said primary boom member and means for selectively pivoting said secondary boom member with respect to said primary boom member;
a second cutting means comprising a second housing member pivotally attached to said secondary boom member, a second cutting member rotatably supported within said second housing member and means for rotating said second cutting member at at least one predetermined speed; and
a second operator's cab operatively connected to said second drive unit.

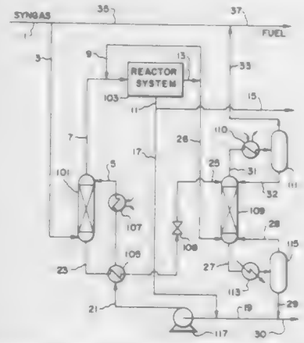
5,392,594

INTEGRATED PRODUCTION OF FUEL GAS AND OXYGENATED ORGANIC COMPOUNDS FROM SYNTHESIS GAS

Robert B. Moore, Allentown; William P. Hegarty, State College; David W. Studer, Wescosville, and Edward J. Tirados, Easton, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 1, 1993, Ser. No. 12,092
Int. Cl.[6] C01B *17/05*
U.S. Cl. 60—39.02 **30 Claims**

1. A method for producing fuel gas and a liquid product containing one or more oxygenated organic compounds from a synthesis gas comprising hydrogen, carbon monoxide, carbon dioxide, and one or more sulfur-containing compounds, said method comprising:
a) contacting a portion of said synthesis gas in an absorber system with an absorber liquid feed comprising one or more of said oxygenated organic compounds, wherein at least a portion of said one or more sulfur-containing compounds and carbon dioxide is physically absorbed by said absorber liquid feed, and withdrawing therefrom a treated synthesis gas having reduced concentrations of said sulfur-containing compounds and carbon dioxide, and an absorber effluent stream containing absorbed sulfur-containing compounds and carbon dioxide;
b) reacting said treated synthesis gas in a catalytic reactor system to yield a reactor system liquid effluent comprising said one or more oxygenated organic compounds and a stream of unreacted synthesis gas, and utilizing a portion of said reactor system liquid effluent in said absorber liquid feed;



c) stripping said absorbed sulfur-containing compounds and carbon dioxide from said absorber effluent stream by contacting the stream with at least a portion of said unreacted synthesis gas in a stripper system, and withdrawing therefrom a regenerated liquid and a stripper offgas comprising unreacted synthesis gas, carbon dioxide, and sulfur-containing compounds;
d) withdrawing at least a portion of said reactor system liquid effluent as said liquid product;
e) combining at least a portion of said regenerated liquid with said portion of reactor system liquid effluent to form the absorber liquid feed prior to said absorber system; and
f) combining said stripper offgas and the remaining portion of said synthesis gas to yield said fuel gas.

5,392,595

ENDOTHERMIC FUEL ENERGY MANAGEMENT SYSTEM

Marvin R. Glickstein, North Palm Beach, Fla., and Leland L. Coons, Marlborough, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 6, 1993, Ser. No. 103,603
Int. Cl.[6] F02C *3/28, 7/224*
U.S. Cl. 60—39.02 **7 Claims**

1. A method of recovering thermal energy from combustion products of a vehicle, said method comprising:
providing at least one gas turbine engine in said vehicle, said engine having in serial flow arrangement
a compressor section having in serial flow arrangement a low pressure compressor and a high pressure compressor, said compressor section for compressing ambient air thereby producing compressed air,
a combustion section for mixing fuel with said compressed air and igniting said fuel and compressed air to produce said combustion products,
a turbine section for expanding said combustion products and driving the compressor section, and
an exhaust section for conveying said combustion products

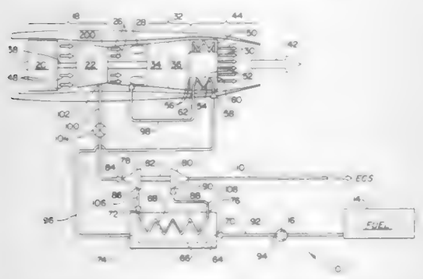
from said turbine section and out of said gas turbine engine;

providing a first heat exchanger located in said exhaust section and exposed to said combustion products, said heat exchanger having first and second flow paths extending therethrough, each flow path having an inlet and an outlet and providing a second heat exchanger having third and fourth flow paths extending therethrough, each flow path having an inlet and an outlet;

providing a combustible fuel source;

flowing said combustion products through the first flow path of said first heat exchanger;

pumping fuel from said source to the combustion section of said engine by flowing said fuel to the inlet of said third flow path, flowing said fuel through the third flow path,



and flowing said fuel out the exit of the third flow path, flowing the fuel through the second flow path of said first heat exchanger, thereby heating said fuel while simultaneously cooling said combustion products;

diverting a portion of said compressed air from said high pressure compressor:

cooling said portion by delivering said portion to the inlet of said fourth flow path, and flowing said portion through said fourth flow path, thereby simultaneously cooling said portion and heating said fuel through the transfer of heat energy from said portion to the fuel flowing through the third flow path, and flowing said portion out the exit of said fourth flow path; and,

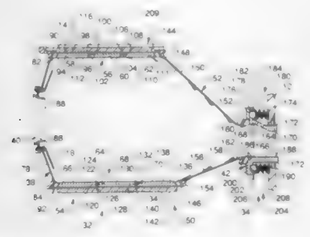
using said portion that has been cooled to cool heat absorbing components of said vehicle.

5,392,596

COMBUSTOR ASSEMBLY CONSTRUCTION

Alan C. Holsapple, Poway, Calif., and James E. Shaffer, Maitland, Fla., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Dec. 21, 1993, Ser. No. 171,049
Int. Cl.[6] F23R *3/42*; F02C *7/20*
U.S. Cl. 60—39.32 **9 Claims**



1. A combustor assembly, comprising:

an inlet end portion, an outlet end portion and an intermediate portion; and

means for applying radially compressive force on the combustor assembly, said means for applying radially compressive force is a ring having a first end portion., a second end portion and an intermediate portion, said ring being positioned around the intermediate portion of the combustor assembly; and

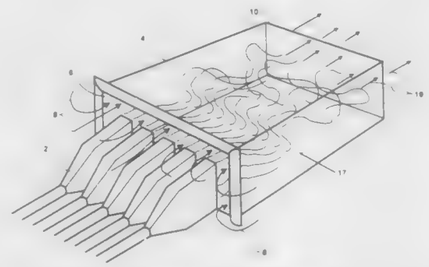
said ring including a first plurality of slots extend from the first end portion toward the second end portion, the first plurality of slots being spaced around the ring.

5,392,597

JET MIXER NOISE SUPPRESSOR USING ACOUSTIC FEEDBACK

Edward J. Rice, Westlake, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 46,256, Apr. 14, 1993, Pat. No. 5,325,661.
This application Feb. 10, 1994, Ser. No. 194,654
Int. Cl.[6] F02C *7/00*
U.S. Cl. 60—204 **6 Claims**



4. A method of suppressing noise using a jet mixer noise suppressor, comprising the steps of:

(a) outputting a first air stream using a first nozzle, generating feedback of a first acoustic wave from downstream of the first nozzle thereby producing a first mixing process;

(b) outputting a second air stream using a second nozzle, synchronous with the first air stream, generating feedback of a second acoustic wave from downstream of the second nozzle, thereby producing a second mixing process;

(c) receiving the first and second air streams from the first and second nozzles through an ejector inlet;

(d) receiving entrained air produced from the first and second air streams through the ejector inlet;

(e) propagating acoustic waves from the first and second mixing processes downstream of the first and second nozzles through an ejector outlet; and

(f) mixing the first and second air streams and the entrained air responsive to the first and second acoustic waves in an ejector shroud,

wherein the first and second nozzles are positioned so that the first and second acoustic waves are out of phase with each other.

5,392,598

INTERNAL COMBUSTION ENGINE AIR/FUEL RATIO REGULATION

Vincent A. White, Northville, and Hossein Javaherian, Rochester Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 7, 1993, Ser. No. 132,944
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—274 **12 Claims**

1. A method for regulating an air/fuel ratio of an internal combustion engine having an exhaust gas treatment means in an engine exhaust gas path through which engine exhaust gas passes, comprising the steps of:

generating an upstream oxygen content signal representing engine exhaust gas oxygen content at a first predetermined position in the exhaust gas path;

generating a downstream oxygen content signal representing engine exhaust gas oxygen content at a second predetermined position in the exhaust gas path;

comparing the downstream oxygen content signal to a predetermined signal range;

adjusting a reference voltage level in direction to drive the downstream oxygen content signal toward the predetermined signal range when the downstream oxygen content signal is not within the predetermined signal range;

determining an oxygen content error signal as a difference between the reference voltage level and the upstream oxygen content signal; and

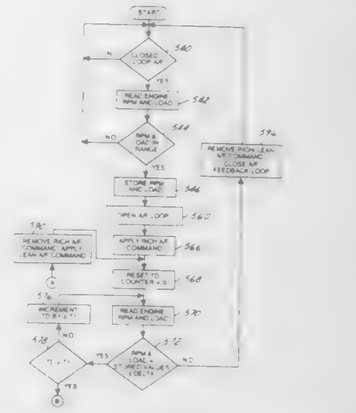
determining a fuel command adjustment as a predetermined function of the oxygen content error signal.

5,392,599

ENGINE AIR/FUEL CONTROL WITH ADAPTIVE CORRECTION OF EGO SENSOR OUTPUT

Douglas R. Hamburg, Bloomfield, and Eleftherios M. Logothetis, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 10, 1994, Ser. No. 179,271
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—274 **16 Claims**



1. An engine air/fuel control method for correcting an output of an exhaust gas oxygen sensor positioned in the engine exhaust in series with a catalytic converter, comprising the steps of:

controlling the engine air/fuel ratio in response to a comparison of the sensor output with a reference value;

forcing engine air/fuel operation sufficiently rich and then sufficiently lean of a preselected air/fuel ratio during a test period to force the sensor output into its respective saturated rich indicating state and saturated lean indicating state; and

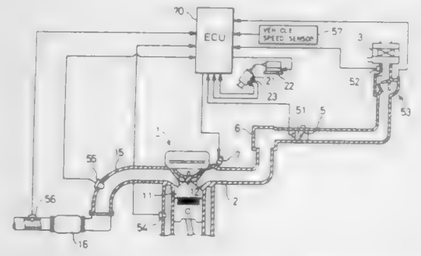
shifting the sensor output to align a midpoint between output amplitude at said saturated rich indicating state and output amplitude at said saturated lean indicating state with said reference value.

5,392,600

SYSTEM FOR CONTROLLING AIR-FUEL RATIO IN INTERNAL COMBUSTION ENGINE AND METHOD OF THE SAME

Toshinari Nagai, Sizuoka, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 28, 1994, Ser. No. 187,554
Claims priority, application Japan, Feb. 3, 1993, 5-040523
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—274 **20 Claims**



11. A method of controlling an air-fuel ration in an internal combustion engine, said method comprising the steps of:

(a) detecting a first concentration of a specific component varying with change in an air-fuel ratio reflected in an exhaust gas at an inlet position of a catalytic converter positioned in an exhaust conduit of said internal combustion engine;

(b) detecting a second concentration of the specific component varying with change in the air-fuel ratio reflected in the exhaust gas at an outlet position of said catalytic converter;

(c) updating a first control amount corresponding to the first concentration of said specific component detected in step (a), updating a second control amount corresponding to the second concentration of said specific component detected in step (b), and controlling the air-fuel ratio of said internal combustion engine to a predetermined target air-fuel ratio according to the first and second control amounts;

(d) previously storing correlation data representing a relationship between an air-fuel ratio at the outlet position for detection in step (b) and an update quantity of said second control amount per unit time, which are correlated with each other in response to purification characteristics of the exhaust gas by said catalytic converter; and

(e) determining, based on said correlation data stored in step (d), the update quantity of said second control amount per unit time corresponding to the second concentration of said specific component detected in step (b), so as to regulate updating of said second control amount executed in step (c) based on said update quantity per unit time.

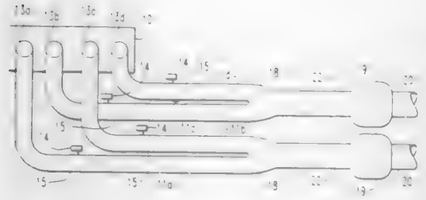
VOL 1171 ISS 4 FE 28 1995 UMI

5,392,601

EXHAUST SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

David A. LeVine, Los Angeles, Calif., assignor to Michael D. Epstein, McClean, Va.; Noah Weinberg, Jerusalem, Israel and Aish Hatorah, Lakewood, N.J.

Filed Feb. 25, 1993, Ser. No. 122,567
Int. Cl.[6] F01N *3/30*
U.S. Cl. 60—293 17 Claims



1. An exhaust system for an internal combustion engine comprising:

a conduit in fluid communication with a combustion chamber for transferring exhaust gases from said combustion chamber, said conduit having a first end adjacent said combustion chamber, a second end distant from said combustion chamber, said exhaust gases within said conduit heating said conduit to a point of maximum temperature disposed along said conduit between said first and second ends, whereby acoustic waves within said conduit reflect off said second end and produce alternating high and low pressure conditions within said conduit; and

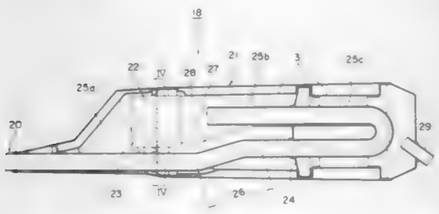
a valve mounted on said conduit substantially at said point, said valve being vented to an ambient atmosphere for admitting supplemental air from said ambient atmosphere into said conduit when the pressure within said conduit at said point is below the pressure of said ambient atmosphere, so that said supplemental air combines with said exhaust gases.

5,392,602

EXHAUST EMISSION CONTROL DEVICE FOR MOTOR BICYCLE

Akio Matsumoto, Hamamatsu, Japan, assignor to Suzuki Kabushiki Kaisha, Japan

Filed Sep. 3, 1993, Ser. No. 116,280
Claims priority, application Japan, May 28, 1993, 5-127260
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—299 15 Claims



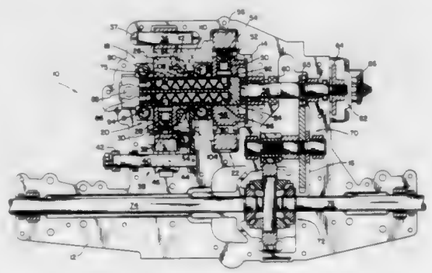
9. An exhaust system for a motor bicycle having an engine which burns fuel and produces exhaust gases, the exhaust system comprising: a muffler having an expansion chamber divided by at least front and rear partition walls into at least front, intermediate and rear axially-spaced sections; an exhaust pipe extending serially through the front section into the intermediate section, through the intermediate section into the rear section, and around the rear section back into the intermediate section where the exhaust pipe terminates in an outlet opening for discharging exhaust gases into the intermediate section; catalyst means disposed in a flow path between the intermediate and front sections for reacting with the exhaust gases during the flow thereof from the intermediate section to the front section; and conduit means for flowing the exhaust gases from the front section to the rear section for discharge from the muffler.

5,392,603

BEVEL GEAR LOAD BALANCE IN A HYDROSTATIC TRANSMISSION

Dale I. Havens, Addison, and Roland L. von Kaler, Tecumseh, both of Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Mar. 1, 1993, Ser. No. 22,664
Int. Cl.[6] F16D *31/00, 39/00*
U.S. Cl. 60—327 18 Claims



1. A method of driving and of counteracting tilting loads exerted against a cylinder block in a hydrostatic transmission having a radial piston type hydraulic pump having a cylinder block rotatably disposed on a conduit and in fluid communication therewith via a conduit port, the method comprising the steps of:

driving the cylinder block on the conduit by means of an input bevel gear;

providing a recessed area in the outer surface of the conduit, said recessed area disposed adjacent to the cylinder block; and

supplying pressurized hydraulic fluid from an interior of the conduit to the recessed area, the hydraulic fluid and the recessed area together forming a hydraulic piston to counteract tilting loads exerted against the cylinder block by the bevel gear such that the cylinder block concentrically rotates about the conduit during operation.

5. A hydrostatic transmission comprising:

a housing defining a cavity;

a conduit disposed in said cavity;

a variable displacement radial piston type hydraulic pump rotatably disposed on said conduit, said hydraulic pump including a cylinder block radially disposed on said conduit and in fluid communication therewith;

a bevel gear being one of integral with and attached to said cylinder block;

an input shaft having an input bevel gear, said input bevel gear enmeshing with and rotatably driving said bevel gear; and

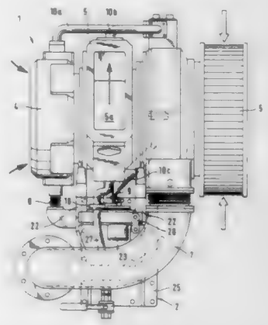
hydrostatic pressure means disposed adjacent said cylinder block for applying a counterbalancing force to said cylinder block in reaction to loads exerted on said cylinder block by said input bevel gear during operation of said hydraulic pump, such that said cylinder block concentrically rotates about said conduit, said hydrostatic pressure means disposed in constant fluid communication with an interior of said conduit.

5,392,604

SUPPORT AND COOLING ARRANGEMENT FOR A TURBOCHARGER

Arto Nikula, Merikaarto, and Sami Koivikko, Vaasa, both of Finland, assignors to Wartsila Diesel International Ltd Oy, Helsinki, Finland

Filed Jan. 18, 1994, Ser. No. 183,045
Claims priority, application Finland, Jan. 27, 1993, 930329
Int. Cl.[6] F02B *37/00*
U.S. Cl. 60—605.3 14 Claims



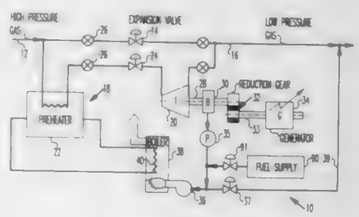
1. A support and cooling arrangement for a turbocharger apparatus (**1**) in diesel engine, comprising a uniform body part (**2**) which is supported to the engine block (**3**) and is provided with a planelike bracket base (**18**) for supporting the turbocharger apparatus (**1**) and includes a first cooling water duct (**11**), through which cooling water is arranged to be fed into the turbocharger apparatus (**1**), and a second cooling water duct (**12**), through which cooling water is arranged to be led away from the turbocharger apparatus (**1**), the planelike bracket base (**18**) including connecting openings (**19**, **20**, **21**) to the said first (**11**) and said second (**12**) cooling water ducts, the arrangement further comprising thermostatic valve means (**13**) arranged in the body part (**2**) in connection with the said second cooling water duct (**12**) and which, on the basis of the temperature of the cooling water coming out (**10**) from the turbocharger apparatus (**1**), is arranged to lead the cooling water on the one hand for recirculation (**14**) and on the other hand for cooling (**15**).

5,392,605

METHOD OF AND APPARATUS FOR REDUCING THE PRESSURE OF A HIGH PRESSURE COMBUSTIBLE GAS

Uri Kaplan, Moshav Galia, Israel, assignor to Ormat Turbines (1965) Ltd., Yavne, Israel

Filed Apr. 16, 1992, Ser. No. 868,867
Int. Cl.[6] F01D *11/00*
U.S. Cl. 60—657 16 Claims



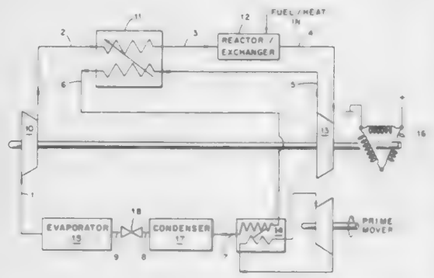
1. A method for reducing the pressure of a high pressure combustible gas to a lower pressure supplied to a low pressure pipeline by applying the high pressure gas to an expander having a rotatable shaft that passes through a seal and is coupled to a generator, said method comprising the steps of withdrawing gas that leaks through said seal and either burning the withdrawn gas to heat the high pressure gas before it is applied to said expander, or supplying the withdrawn gas to said low pressure pipeline.

5,392,606

SELF-CONTAINED SMALL UTILITY SYSTEM

Solomon D. Labinov, and James R. Sand, both of Oak Ridge, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Feb. 22, 1994, Ser. No. 199,117
Int. Cl.[6] F25D *5/00;* F01K *25/06, 23/02*
U.S. Cl. 60—673 12 Claims



6. A system for transforming heat energy to useful work comprising:

vapor compression means, a low energy course through recouperative heat exchange means, influx heat exchange means, turbo prime mover means and a high energy course through said recouperative heat exchanger means, all connected in the foregoing flow sequence by closed fluid conduit means; and

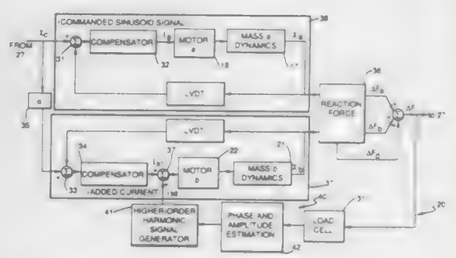
a polyatomic working fluid within said conduit means having the cyclic property of at least partial dissociation from the gaseous state of a first molecular structure to the gaseous state of a second, less complex molecular structure and recombination.

5,392,607

STIRLING-CYCLE CYROGENIC COOLER USING ADAPTIVE FEEDFORWARD VIBRATION CONTROL

Yeong-Wei A. Wu, Rancho Palos Verdes, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 8, 1993, Ser. No. 91,541
Int. Cl.[6] F25B *9/00*
U.S. Cl. 62—6 5 Claims



1. An adaptive feedforward vibration control procedure for use with a Stirling-cycle cryogenic cooler that comprises an expander module comprising an expander piston and a balancer piston that are each driven by respective motor drives, and a compressor module comprising an compressor piston and a balancer piston that are each driven by respective motor drives, and a force sensor coupled to the cooler that is adapted

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to measure higher-order harmonic forces present therein, wherein said control procedure comprises the steps of:

measuring higher-order harmonic forces present in the cooler using the force sensor;

estimating phases and amplitudes of current command signals using the measured higher-order harmonic forces that are adapted to cancel the higher-order harmonic forces present in the cooler; and

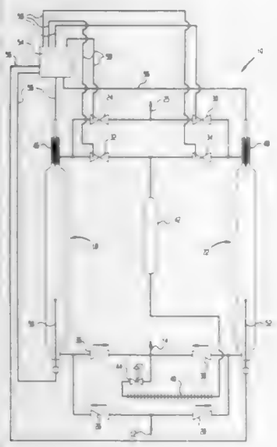
injecting higher-order harmonic current command signals having the estimated phases and amplitudes into a selected motor drive of either the compressor or expander module, which injected current command signals comprise higher-order harmonics having adaptively determined phases and amplitudes that provide for force cancellation in the cooler.

5,392,608

SUBCOOLING METHOD AND APPARATUS

Ron C. Lee, Bloomsbury, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Filed Mar. 26, 1993, Ser. No. 37,201
Int. Cl.[6] F17C *7/02*
U.S. Cl. 62—9 9 Claims



1. A method of convening a volatile fluid into a subcooled liquid for delivering the subcooled liquid:

filling each of two chambers with the volatile fluid;

initially pressurizing each of the two chambers after having been filled to a pressure sufficient to convert the volatile fluid into the subcooled liquid; and

after the initial pressurization, delivering the subcooled liquid from each of the two chambers while maintaining each of the two chambers pressure by continually vaporizing a portion of the subcooled liquid contained within the one and the other of the two chambers during delivery of the subcooled liquid;

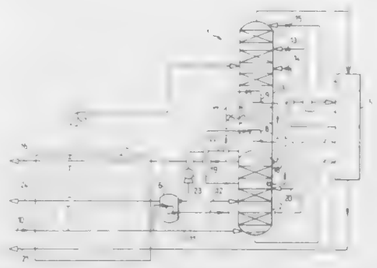
the filling of and delivery from the two chambers being alternated in accordance with a cycle such that one of the two chambers fills with the volatile fluid and is initially pressurized with subcooled liquid vaporized within the other of the two chambers and vice-versa prior to completion of the delivery of the subcooled liquid from the other of the two chambers and vice-versa, and the subcooled liquid is delivered from the other and then the one of the two chambers and vice-versa without interruption.

5,392,609

PROCESS AND APPARATUS FOR THE PRODUCTION OF IMPURE OXYGEN

Jean-Louis Girault, Liege, Belgium; Philippe Mazieres, Montfermeil, and Jean-Pierre Tranier, Villejuif, both of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Dec. 14, 1992, Ser. No. 990,100
Claims priority, application France, Dec. 18, 1991, 91 15705
Int. Cl.[6] F25J *3/02*
U.S. Cl. 62—25 25 Claims



1. Process for the production of impure oxygen by air distillation in a double column comprising a medium pressure column and a low pressure column comprising

- operating the medium pressure column under a pressure higher than 6 bars;
- condensing a first vaporization gas which is less volatile than the nitrogen at the top of the medium pressure column, in the bottom condenser of the low pressure column;
- condensing nitrogen from the top of the medium pressure column, at a level of the low pressure column located above said bottom condenser; and
- introducing the thus-condensed nitrogen as reflux at the top of the medium pressure column;

wherein a second vaporization gas, which is more volatile than said first vaporization gas but is less volatile than the nitrogen at the top of the medium pressure column, is condensed at a level which is intermediate between those of said condensations.

5,392,610

METHOD AND APPARATUS FOR RECOVERING REFRIGERANTS FROM HOME REFRIGERATION SYSTEMS

John A. Nelson, Benton Township, Berrien County; David B. Kirby; Phalguni S. Roy, both of St. Joseph Township, Berrien County; John L. Wuepper; Nihat O. Cur, both of Royalton Township, Berrien County, all of Mich.; Allen C. Schmaltz, Scipio Township, LaPorte County; John L. Deaner, Coolspring Township, LaPorte County, both of Ind., and Terry L. McGath, Kettering, Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation of Ser. No. 661,463, Feb. 26, 1991, Pat. No. 5,293,756, which is a continuation-in-part of Ser. No. 413,823, Sep. 28, 1989, Pat. No. 4,996,848. This application Dec. 2, 1993, Ser. No. 161,334
Int. Cl.[6] F25B *45/00*
U.S. Cl. 62—77 44 Claims

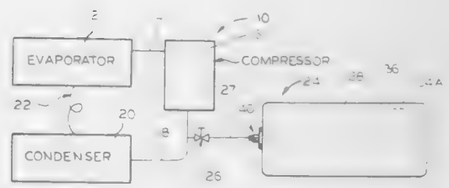
44. A method of capturing refrigerant contained in a sealed, pressurized refrigeration system including a compressor having a high pressure side and a low pressure side, comprising the steps of:

attaching an access valve to the high pressure side of said compressor;

connecting a plastic bag to said access valve, said bag being at atmospheric pressure and of a material inert to the refrigerant and other contents of the sealed system;

opening said valve to permit said refrigerant to escape under pressure from said system to said bag wherein said compressor is operated as a pump to facilitate removal of the refrigerant from said refrigeration system, and subsequently closing said access valve; and

removing said bag from said access valve.

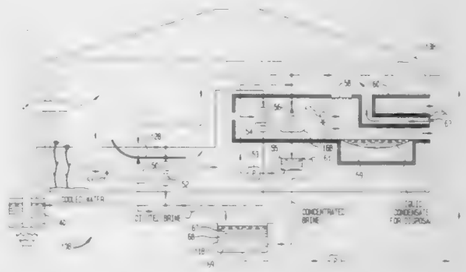


5,392,611

METHOD OF AND APPARATUS FOR REDUCING THE HEAT LOAD ON A GREENHOUSE

Gad Assaf, Rehovot, and Benjamin Doron, Jerusalem, both of Israel, assignors to Geophysical Engineering Company, Seattle, Wash.

Continuation-in-part of Ser. No. 350,449, May 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 309,159, Feb. 13, 1989, Pat. No. 5,050,390, which is a continuation of Ser. No. 600,882, Apr. 19, 1984, Pat. No. 4,803,846. This application Sep. 12, 1990, Ser. No. 581,928
Int. Cl.[6] F25D *17/06*
U.S. Cl. 62—94 93 Claims



40. A method for reducing the heat load on a greenhouse containing growing plants having a canopy during periods of low light levels by reducing the rate of convective heat flow of air through the canopy of the plants during said periods of time.

5,392,612

REFRIGERATION SYSTEM HAVING A SELF ADJUSTING CONTROL RANGE

Richard H. Alsenz, 2402 Creek Meadows, Missouri City, Tex. 77459, assignor to Richard H. Alsenz, Missouri City, Tex.

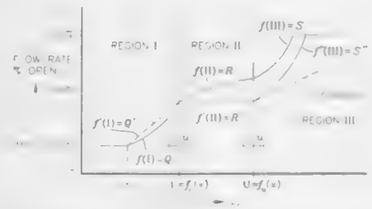
Continuation-in-part of Ser. No. 1,107, Jan. 6, 1993, which is a continuation of Ser. No. 736,688, Jul. 7, 1991, abandoned, which is a continuation of Ser. No. 880,677, Jun. 30, 1986, Pat. No. 5,035,119, which is a continuation-in-part of Ser. No. 639,271, Aug. 8, 1984, Pat. No. 4,651,535. This application Jun. 4, 1993, Ser. No. 72,525
Int. Cl.[6] F25B *41/04*
U.S. Cl. 62—115 13 Claims

1. A method of operating a refrigeration system having an evaporator for evaporating a liquid refrigerant into a gas refrigerant, said method comprising the steps of:

(a) selecting a control parameter;

(b) establishing a dynamic control region for the control parameter as a function of a system parameter of the refrigeration system;

(c) determining the value of the control parameter; and



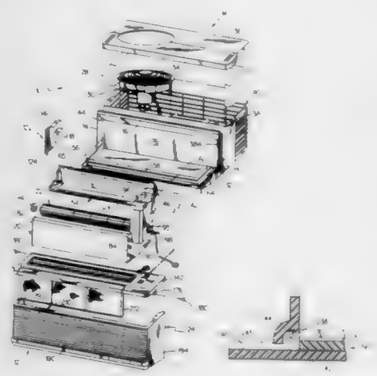
(d) increasing the flow of the liquid refrigerant into the evaporator when the value of the control parameter is above the dynamic control region and decreasing the flow when the value of the control parameter is below the dynamic control region.

5,392,613

AIR CONDITIONER CONDENSATE OUTLET

Theodore S. Bolton, Liverpool, and John H. Michaels, Baldwinsville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 9, 1994, Ser. No. 208,000
Int. Cl.[6] F25D *23/12*
U.S. Cl. 62—262 2 Claims



1. A room air conditioner of the type having an indoor section and an outdoor section which are supported by a basepan and separated by a partition, the indoor section includes an indoor fan and an evaporator, the cold evaporator condenses moisture from the air to be cooled, means are provided to collect the condensate and to conduct it along a path from the indoor section, through an opening in the partition at basepan level to the outdoor section, wherein the improvement comprises;

said opening in said partition from said indoor sections has a given height, and a given width which define an opening sufficient to allow condensate flow;

a hood, adjacent to said opening, on the outdoor side of said partition wall, said hood enclosing the top of said opening and extending downwardly less than said given height of said opening, and, completely enclosing said given width to thereby define a lower edge under which water or air must pass in order to pass through said opening.

5,392,614

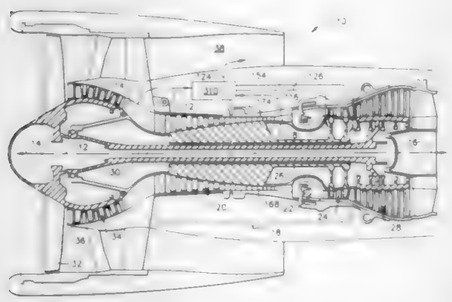
GAS TURBINE ENGINE COOLING SYSTEM

George A. Coffinberry, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 856,318, Mar. 23, 1992, Pat. No. 5,036,768. This application Jan. 21, 1993, Ser. No. 6,417

Int. Cl.[6] F25D *9/00*

U.S. Cl. 62—402 10 Claims



1. A system for cooling first and second portions of a gas turbine engine, said engine having an engine compressor, and said cooling system comprising:

(a) a turbocompressor having a compressor section and a turbine section each with an inlet and an outlet; and

(b) a first heat exchanger having an inlet and an outlet for a first fluid flow providing cooling to said first heat exchanger and having an inlet and an outlet for a second airflow receiving cooling from said first heat exchanger, said first fluid flow inlet of said first heat exchanger in fluid communication with lower temperature fluid, said second airflow inlet of said first heat exchanger in fluid communication with higher temperature air from said engine compressor, said second airflow outlet of said first heat exchanger in fluid communication with said inlet of said compressor section of said turbocompressor, and said outlet of said compressor section of said turbocompressor in fluid communication with said first portion of said engine and said outlet of said turbine section of said turbocompressor in fluid communication with said second portion of said engine for said cooling of said first and second portions of said engine and wherein said higher temperature air has a higher temperature than that of said lower temperature fluid.

5,392,615

AIR CONDUIT SYSTEM IN A REFRIGERATOR

Jae H. Lim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 22, 1993, Ser. No. 124,540

Claims priority, application Rep. of Korea, Sep. 23, 1992, 92-17334

Int. Cl.[6] F25B *29/00*

U.S. Cl. 62—414 8 Claims

1. A refrigerator comprising:

a refrigerating compartment bounded by a wall structure;

a storage compartment separate from said refrigerating compartment and located therebeneath;

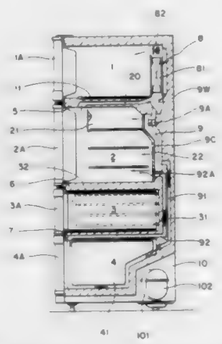
air-cooling means for producing cool air; and

air circulating means communicating with said air-cooling means for circulating the cool air with respect to said refrigerating and storage compartments, said circulating means including:

a first conducting passage for conducting a first cool air flow to said storage compartment,

a second conducting passage for conducting said first cool air flow from said storage compartment to said refrigerating compartment, said second conducting passage extending through said wall structure to communicate with said refrigerating compartment at a first location, and

a third conducting passage for conducting a second cool air flow into said refrigerating compartment at a faster



speed than said first cool air flow, said third conducting passage extending through said wall structure to communicate with said refrigerating component at a second location closely adjacent to said first location to induce said first cool air flow into said refrigerating compartment.

5,392,616

CONNECTION ELEMENT FOR JEWELLERY

Charles Ballenegger, 1172 Bougy-Villars, Switzerland

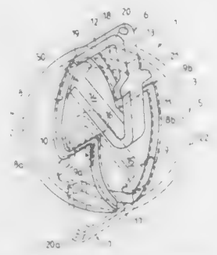
PCT No. PCT/EP92/01495, § 371 Date Mar. 10, 1993, § 102(e) Date Mar. 10, 1993, PCT Pub. No. WO93/02584, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 3, 1992, Ser. No. 30,325

Claims priority, application France, Aug. 1, 1991, 91 09814

Int. Cl.[6] A44C *11/02*

U.S. Cl. 63—2 9 Claims



1. A spherically shaped jewelry connection device having first and second semi-spherical connection elements, each said connection element comprising:

a housing having first and second ends, and first and second cut portions disposed between said first and second ends, said first cut portion being substantially semi-circular, and corresponding in shape to a partial section of a hollow sphere in a plane substantially parallel to an axis of the sphere of the device, and said second cut portion positioned in inclined orientation with respect to said first cut portion, the first and second cut portions of said first connection element are adapted to conformally engage the first and second cut portions of said second connection element;

a pin integral to and extending from said first end of said housing, said pin comprising a strip having a plurality of bends formed therein, and defining a first section, a second section, and a third section, said first section being oriented to project out of the sphere defined by the jewelry connection device, said second section disposed at an angle to said first section, and extending into said sphere, and said third section disposed at an angle to said second section at an area interior of said sphere, said third section forming a contact surface, whereby the contact surface of said first connection element contacts the contact surface of said second connection element; and

a slot formed in the second end of said housing, said slot adapted to engage the pin of the other connection element.

5,392,617

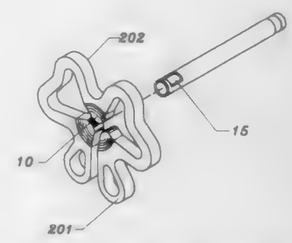
PIERCED EARLOBE SHIELD

Dianne K. Baldwin, 37 Whispering Hills Pl., Chester, N.Y. 10918

Continuation-in-part of Ser. No. 775,595, Oct. 15, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 38,196

Int. Cl.[6] A44C *7/00*

U.S. Cl. 63—12 7 Claims



1. A jewelry article to act as an effective shield against inflammation and irritation of an earlobe or other body part, having a post of an earring post therethrough, said article comprising:

(a) a sleeve, fabricated from an inert material and having a central borehole and two ends, said sleeve having an axis between said ends and adapted to be disposed in a body hole pierced through an earlobe or other body part having two sides, said sleeve comprising a tubular body having said central borehole extending substantially axially therethrough, and having a part-annular groove located near one end of said tubular body portion, said sleeve disposed in said body hole such that said groove end of said sleeve is positioned on a outer-facing side of said earlobe or body part, said sleeve is of sufficient length such that it is longer than the length of the post of the earring post to be used in association with said article to prevent any contact of said post with said earlobe or body part; and

(b) a face piece fabricated from an inert material, having a plurality or inwardly-projecting radially-similar substantially resilient tongue-like elements, all of said elements joined together, two adjacent elements at a time except for one set of two adjacent elements, said face piece having one open entry path between said set of two adjacent elements which are not joined together, said path permitting access to a geometrically radially-central core aperture defined by and surrounded by said tongue-like elements, each of said elements are suitably dimensioned to, upon suitable positioning on said sleeve, permit one of said elements to enter said groove and substantially stay in the groove under a spring action of the other tongue-like elements putting pressure on a portion of the groove end of the sleeve, said portion not occupied by said groove but being substantially in a plane containing said groove, said plane being substantially perpendicular to the axis of said borehole, and wherein, after said face piece is mounted on said sleeve with one of said elements in said groove:

(i) upon suitable temporary tilting and associated pressure to said face piece having entered element in said groove, said tilting at an acute angle to the axis of said central bore hole and away from the plane substantially perpendicular to the axis of said sleeve, the post of the earring post may be easily entered into said central bore hole of said sleeve, and

(ii) upon release of said pressure and return of said face piece to a plane substantially perpendicular to the axis of said sleeve, said earring post will be secured to said sleeve, and

(iii) upon a similar temporary retilting of said piece, said earring post may easily be released.

5,392,618

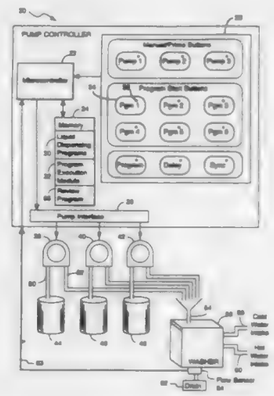
LOW COST LIQUID CHEMICAL DISPENSER FOR LAUNDRY MACHINES

James W. Livingston, Santa Cruz, and Ralph W. Hiesey, Boulder Creek, both of Calif., assignors to Diversey Corporation, Ontario, Canada

Filed Sep. 14, 1993, Ser. No. 121,306

Int. Cl.[6] B08B *3/02*

U.S. Cl. 68—12.02 13 Claims



8. An apparatus for dispensing liquid chemicals into a laundry machine, said apparatus comprising:

a pump interface for receiving pump activation commands, said pump interface being coupled to a plurality of pumps, said pumps responding to said pump activation commands to dispense liquid chemicals from containers into said laundry machine;

a sensor for generating a synchronization signal;

an operator interface including a plurality of programming-/execution buttons;

a memory unit for storing a liquid dispensing program defined by said programming/execution buttons of said operator interface, said liquid dispensing program including chemical volume dispensing information and synchronization instructions;

a microcontroller coupled to said pump interface, said sensor, said operator interface, and said memory unit, said microcontroller including

means for generating said pump activation commands from said chemical volume dispensing information in said stored liquid dispensing program, and

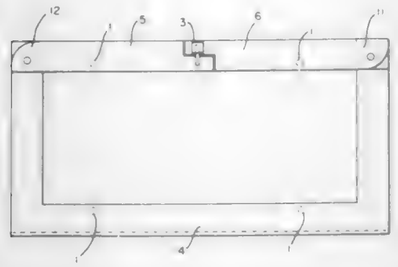
means for responding to said synchronization signal in accordance with said synchronization instructions in said stored liquid dispensing program.

5,392,619

LOCKABLE LICENSE PLATE HOLDER

John G. Dunaway, 1707 Frederick Ave., Baltimore, Md. 21223

Filed Aug. 6, 1993, Ser. No. 101,619
Int. Cl.[6] G09F 7/00; E05B 65/12
U.S. Cl. 70—57 1 Claim



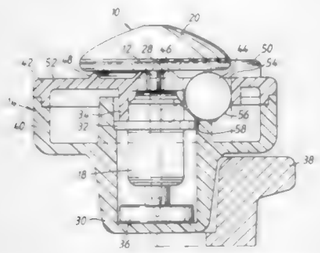
1. A lockable license plate holder, for preventing unauthorized access to a license plate on a vehicle, comprising: a frame member adapted to be mounted to the vehicle body with bolt means and having a top member, a bottom member, and side members with a channel formed in the bottom and side members to receive a license plate therein, the top member of the frame comprises first and second movable arms, the first movable arm is pivotably mounted at one end to one side member with means for upward movement and, the second movable arm is pivotably mounted at one end to the other side member with means for downward movement, whereby the two arms are pivotable away from each other into an open position to allow insertion of the license plate into the frame member and, pivotable toward each into an abutting closed position to enclose the license plate within the frame, and a locking device mounted on the opposite ends of the movable arms to lock the movable arms in the closed position.

5,392,620

THEFT-DETERRENT DEVICE FOR USE WITH THEFT-ATTRACTIVE ARTICLES

Klas Stoltz, and Bo Gustavsson, both of Huddinge, Sweden, assignors to Färgklämman Svenska AB, Huddinge, Sweden

Filed Aug. 31, 1993, Ser. No. 120,860
Claims priority, application Sweden, Sep. 1, 1992, 9202510
Int. Cl.[6] E05B 65/00; A44B 9/00
U.S. Cl. 70—57.1 20 Claims



1. In a theft deterrent for use with theft-attractive articles or goods, comprising a first element (10) having an elongated connecting element (12) which projects from the first element (10) and which is intended to be inserted through an article to be protected, and a second element (14) which can be attached to said connecting element (12) and locked thereon against movement away from said first element (10) so as to hold the deterrent firmly on said article, the improvement wherein the second element (14) includes a casing (16) which houses a fragile marking-substance containing ampule (44) and a locking unit (18), wherein the locking unit (18) is intended to receive and lock the elongated connecting element (12) and to be brought into contact with the ampule when the connecting element is manipulated such as to cause the ampule to fracture and thus release the marking-substance contained therein.

5,392,621

PROTECTIVE SHIELD FOR OUT DRIVE OF A VESSEL

Patrick J. Dunnigan, 10314 SW. 128th Ct., Miami, Fla. 33186

Filed Jun. 30, 1993, Ser. No. 85,552
Int. Cl.[6] F16B 41/00
U.S. Cl. 70—232 6 Claims



1. For use with a vessel having an inboard engine, transmission means operatively connected with the engine and having a portion which extends exteriorly of the vessel, and an out drive having a housing with a propeller rotatably mounted to the housing, said out drive being swingable between an operative lowered position of the propeller and an elevated position wherein a narrow longitudinal through channel is defined between the out drive and said exteriorly extending portion of the transmission, said out drive housing having a mounting flange which registers with a mounting flange on the exteriorly extending portion of the transmission, said out drive being secured to said transmission means by removable fasteners extending through one of said mounting flanges and into the other mounting flange,

a protective shield to deter unauthorized removal of the out drive from the transmission means when the out drive is in an elevated position and effective to block access to said fasteners, said shield comprising,

a pair of spaced side walls and a rear wall spanning the side walls,

said walls being sized, adapted and configured to be disposed in close adjacent embracing relation relative to said fasteners and out drive housing to obstruct access to the fasteners,

said side walls each having an upper edge and a lower edge and said upper edge of each of said side [wall]walls converging downwardly and away from said rear wall to the lower edge,

each of said side walls having a hole therethrough adjacent the juncture of the converging upper edge and lower edge of each side wall and said holes being aligned,

a locking pin configured and dimensioned to extend through said narrow channel, said locking pin being sized to be received in the holes in spanning relation of [the]said side walls, and

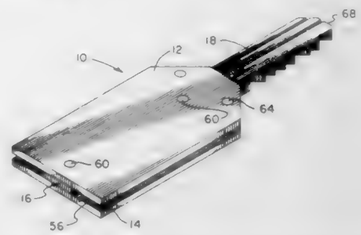
locking means adapted to extend through the locking pin to block removal of the locking pin when said protective shield is positioned about said out drive and fasteners.

5,392,622

COMPOSITE HOLDERS FOR KEYS AND KNIVES

Robert F. O'Donnell, 70 Heritage Ln., Apt. B-5, Leominster, Mass. 01453

Filed Dec. 6, 1993, Ser. No. 162,219
Int. Cl.[6] A47G 29/10
U.S. Cl. 70—456 R 3 Claims



1. A new and improved combination holder device for retaining keys and knives comprising, in combination:

a primary base plate;

a secondary base plate, the primary and secondary base plates being of a similar construction and including a rectangular inboard section having long side edges and one short inboard end edge with a longitudinal axis parallel with the side edges and through the center of the inboard end edge, each plate also having a trapezoid shaped outboard section with a short parallel free edge and a long parallel edge formed integrally with the edge of the rectangular section opposite from the short inboard edge and with tapering side edges therebetween, each of the plates also having a pair of aligned securement holes therethrough spaced along the longitudinal axis, one of which is, adjacent to the inboard end edge, and the other of which is adjacent to the long parallel edge, and a pair of pivot holes located lateral of the longitudinal axis within the trapezoid shaped section;

a spacer plate in a rectangular configuration with parallel side edges spaced from the long side edges of the base plates proximate to the longitudinal axis and with a free edge in alignment with the inboard end edge of the plates and with a pair of holes positionable in alignment with the aligned securement holes of the rectangular section to thereby define storage zones between the rectangular inboard sections and the pivot holes of the trapezoid sections;

a pair of securement pins positioned through the primary base plate and the secondary base plate with the spacer plate therebetween for permanent coupling and a pair of pivot pins extending through the holes of the trapezoid sections;

a key having an operative outboard end and an inboard end with a hole, the hole and the inboard end being positioned between the plates with a pivot pin extending through the plates and the hole of the key therebetween, the key being rotatable between an operative deployed orientation exterior of the plates along the length of the axis and an inoperative stared orientation wherein the key is pivoted into a storage zone;

a knife having an operative outboard end and an inboard end with a hole, the hole and the inboard end being positioned between the plates with a pivot pin extending through the plates and the hole of the knife therebetween, the knife being rotatable between an operative deployed position exterior of the plates along the length of the axis and an inoperative stored orientation wherein the knife is pivoted into a storage zone; and

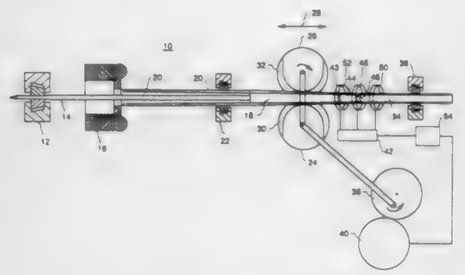
a plurality of primary base plates and secondary base plates in a stacked orientation with a plurality of spacer plates between each of the base plates and with a key and knife secured between the plurality of base plates in the plane of a spacer plate.

5,392,623

SYSTEM FOR MONITORING A PILGER WALL

Michael K. Cueman, Niskayuna; Bahram Keramati, Scotia; George C. Sogoian, Glenville; John J. Kaehler, Scotia, all of N.Y.; Paul B. Tuck; James W. Clark, both of Wilmington, N.C., and Steven R. Hayashi, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1993, Ser. No. 42,187
Int. Cl.[6] B21B 21/00
U.S. Cl. 72—11 25 Claims



1. A system for monitoring a pilger mill including a crankshaft driving rolls with a reciprocating motion to cyclically process a tube over a mandrel, the system comprising:

a sensor, operatively connected to the mandrel, for determining a mandrel position signal;

a sensor, operatively connected to the crankshaft, for determining a crankshaft angle signal; and

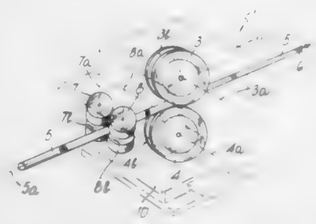
a processors, operatively connected to the mandrel position signal sensor and the crank shaft angle signal sensor, for combining the mandrel position signal and the crankshaft angle signal and for providing an output such that when outputs from at least two cycles of the mill are uniformly displayed, the tube is being processed in a substantially uniform manner to substantially uniform size.

5,392,624

PROCESS AND UNIT FOR ROLLING METAL TO PRODUCE A ROUND BAR OR WIRE ROD FROM A ROUND BAR OR WIRE ROD HAVING A LARGER DIAMETER

Giulio Properzi, Via P. Cossa, 1-20122 Milan, Italy

Filed Nov. 23, 1992, Ser. No. 980,036
Claims priority, application Italy, Dec. 4, 1991, MI91 A 003244
Int. Cl.[6] B21B 13/12, 1/18
U.S. Cl. 72—14 9 Claims



1. In combination, a bar having a bar axis and a standard size diameter and exiting from a conventional rolling mill, and a rolling unit for reducing said diameter of said bar, said rolling unit comprising;

at least two rolling rolls defining a circumferential profile, said circumferential profile delimiting a round passage, said round passage having a diameter smaller than said standard size diameter of said bar;

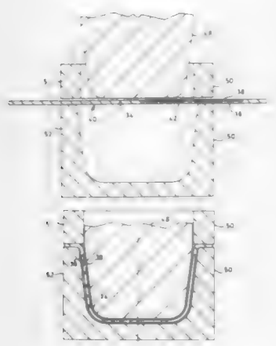
means for rotating said rolling rolls for engaging said bar exiting from said rolling mill and for axially moving said bar along an advancement direction;
at least two free rollers located upstream of said rolling rolls with respect to said advancement direction;
actuation and control means for moving said free rollers substantially perpendicularly towards said bar axis immediately after said bar is engaged by said rolling rolls, and;
a circumferential concavity provided on each of said free rollers for imparting to said bar an intermediate oval cross-section profile;
whereby to produce in output at said rolling rolls, a bar having a diameter smaller than said standard size diameter,
wherein said means for moving said free rollers substantially perpendicularly towards said bar axis comprise actuation and control means, said actuation and control means comprising;
a fixed structure;
first frame means rotatably supporting one of said free rollers and movable with respect to said fixed structure in a first direction extending towards said bar axis;
second frame means rotatably supporting another one of said free rollers and movable with respect to said fixed structure in second direction extending towards said bar axis, and;
means for generating simultaneous relative movement between said first frame means and said second frame means.

5,392,625

METHOD OF MAKING NON-PLANAR ARTICLE FROM ROLL BONDED METAL SHEETS

Anthony J. Cesaroni, Unionville, and Clarence W. Fulton, Oakville, both of Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Apr. 23, 1993, Ser. No. 52,786
Int. Cl.[6] B21D *26/02*
U.S. Cl. 72—57 13 Claims



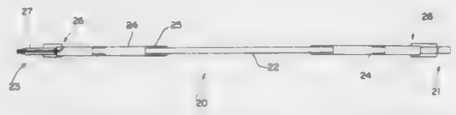
1. A method of forming a concave heat shield comprising the steps of:
superimposing at least two planar metal sheets upon one another and bonding said sheets to one another at selected locations to define a preform;
providing a male tool having a protuberant portion and a female tool defining a recess, said protuberant portion being adapted to align with said recess so as to be accommodated therein and define a concave cavity conforming to the concavity of said heat shield,
crack-inflating said preform by introducing pressurized fluid between the sheets of the preform so as to space them from one another a distance less than that of a finished heat shield;
positioning the crack-inflated preform between the male tool and the the female tool;
deforming the crack-inflated preform by pushing the protuberant portion against a first of said sheets positioned opposite to the male tool to conform said preform to the concavity of said cavity; and
introducing pressurized fluid between the sheets to space said sheets further from one another on unbound portions thereof outside said selected locations.

5,392,626

FLEXIBLE HYDRAULIC EXPANSION MANDREL

Mark Blezard, and Keirouz Diab, both of Cambridge, Canada, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 16, 1994, Ser. No. 214,342
Int. Cl.[6] B21D *26/02*
U.S. Cl. 72—62 6 Claims



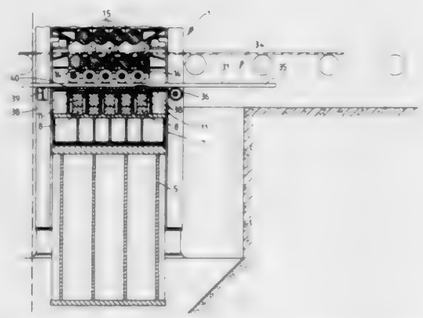
1. A flexible mandrel for expanding a tube in a tubesheet of a steam generator, the mandrel comprising:
a length of flexible wire for being placed within a tube inside a tube sheet of a steam generator;
sealing means at each end of the length of flexible wire for sealing a section of the tube;
a connector at each end of said flexible wire for connecting the sealing means to the length of flexible wire; and
a single fluid inlet at one end of the mandrel for providing fluid into the section of the tube for sealing and expanding the tube within the tube sheet.

5,392,627

LEVELING MACHINE FOR METAL SHEET AND STRIP

Willi Benz, Neus, Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany

Filed Oct. 22, 1993, Ser. No. 141,313
Claims priority, application Germany, Oct. 23, 1992, 4235931.7
Int. Cl.[6] B21D *1/02*; B21B *28/00*
U.S. Cl. 72—163 5 Claims



1. Leveling machine for metal sheet or strip, comprising:
top and bottom leveling rollers offset to one another;
back-up rollers for supporting the leveling rollers;
web plates between which said back-up rollers are arranged;
adjustment wedges for supporting said web plates;
cross ties and roller blocks for supporting said adjustment wedges;

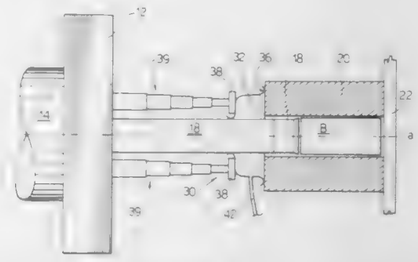
a plurality of discharge rods reciprocating between said web plates in a sheet metal traveling direction, which is transverse to the longitudinal axes of said leveling rollers, for removing ;inter and dirt out of the roller leveling machine, said discharge rods having head end projections extending into a discharge region of the leveling machine.

5,392,628

PRESS ASSEMBLY FOR EXTRUDING A BILLET

Giancarlo Cristiani, Gorizia, Italy, assignor to Techint-Compagnia Tecnica Internazionale S.p.A., Milan, Italy

Filed Dec. 10, 1992, Ser. No. 989,782
Claims priority, application Italy, Dec. 16, 1991, MI91 A 003365
Int. Cl.[6] B21C *23/00*
U.S. Cl. 72—253.1 4 Claims



1. A press assembly (**10**; **100**; **300**) for extruding a billet (B) along a longitudinal axis (a), comprising:
a cross member (**12**; **112**) movable along the longitudinal axis;
a plunger (**18**; **118**) movable with the cross member;
a container (**20**) having a back face (**25**) and an inner chamber (**24**) aligned with the longitudinal axis for receiving the billet to be extruded;
a sealing and suction device (**30**; **230**; **330**) arranged around the plunger, said device including
first means (**34**; **240**; **342**) for sealing a space containing air against the plunger;
second means (**36**; **246**; **336**) for sealing the space against the back face of the container;
an elastic skirt wall means (**32**; **232**, **234**; **332**) for connecting the first sealing means with the second sealing means;
passage means.(**42**; **256**; **346**) for allowing suction of the air from said space; and
elastic means (**39**; **239**; **350**) for pushing the sealing and suction device against the back face of the container;
wherein said elastic pushing means is a thrust spring (**350**) formed by a helical winding of a metal strip surrounding the longitudinal axis.

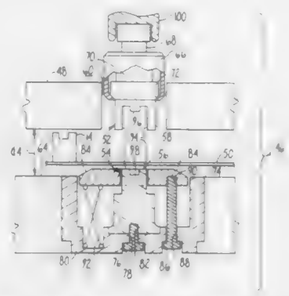
5,392,629

METHOD AND APPARATUS FOR FORMING MULTI-LEVEL FEATURES IN AN OBJECT

Donald C. Goss, Playa del Rey, and Craig A. Rathkamp, Lake View Terrace, both of Calif., assignors to Canoga Industries Inc., San Diego, Calif.

Filed Oct. 26, 1993, Ser. No. 143,083
Int. Cl.[6] B21D *28/10*
U.S. Cl. 72—326 14 Claims

1. A method of forming multi-level features in a device, comprising the steps of:
providing a press for forming features in a device;
inserting a tool into said press to use in forming said features;
positioning a blank defining a plane in said press and adjacent said tool; and
activating said press so as to press said tool against said blank, such that in a single compression stroke of said tool at least one of said features is formed and cut in said blank, wherein said at least one feature comprises at least three levels, and wherein a first of said three levels comprises



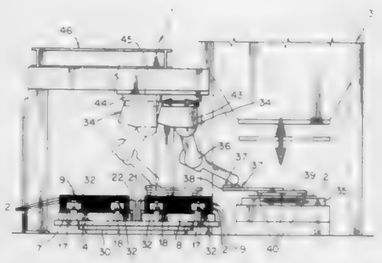
said plane of said blank, and the other two of said three levels are located outwardly from said plane in a common direction.

5,392,630

UNIT AND METHOD FOR FEEDING SEMIFINISHED PARTS ON TO A FORMING MACHINE, PARTICULARLY A PRESS

Giorgio Marinoni, Turin, and Arturo Baroncelli, Caraglio, both of Italy, assignors to Comau S.p.A., Grugliasco, Italy

Filed Sep. 30, 1992, Ser. No. 954,562
Claims priority, application Italy, Oct. 1, 1991, TO91A000740
Int. Cl.[6] B21D *43/11*
U.S. Cl. 721—420 15 Claims



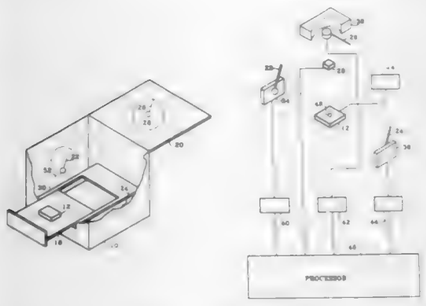
1. A unit for feeding semifinished parts on to a forming machine, said unit comprising:
pickoff means for withdrawing one part at a time off a stack at a pickoff station;
first transfer means for transferring said part from said pickoff station to the forming machine;
means for detecting variation in a position or a geometry of said stack with respect to a stored reference position of said stack itself;
control and processing means for generating a signal for controlling said first transferring means in response to an input signal from said detecting means;
a station for loading said stack of parts;
second transfer means for transferring at least one stack at a time from said loading station to said pickoff station,
wherein said detectinq means are movably fitted to said second transfer means so as to move together with and in relation to said second transfer means between an idle position and an operating position wherein said detecting means are in contact with said stack of said parts.

5,392,631

RANGE TEST CHAMBER

Brian E. Elwell, Brentwood, Calif., assignor to Novitas, Incorporated, Culver City, Calif.

Division of Ser. No. 105,558, Aug. 12, 1993. This application Jun. 21, 1994, Ser. No. 263,116
Int. Cl.[6] G01P *13/00*
U.S. Cl. 73—1 D 10 Claims



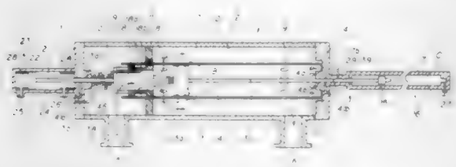
1. A range test chamber for motion detectors, comprising:
a housing having an interior volume scaled with respect to an intended working environment of a motion detector to be tested;
means for mounting said motion detector for detection in the housing;
a motion simulator positioned in the housing, the motion simulator having a size and distance from the motion detector to be tested, said size and distance being scaled to said working environment;
means for controlling the motion simulator for movement in said interior volume to simulate motions to be detected in the working environment; and
means for determining activation of the detector to be tested in response to different movements of the motion simulator.

5,392,632

SMALL VOLUME PROVER

Nobuyoshi Umeda, Tokyo; Toshio Seo, Yokohama; Yuzirou Nagamori, Tokyo; Kenichi Matsuoka, Tokyo, and Shingo Gomi, Tokyo, all of Japan, assignors to Oval Engineering Co.,Ltd., Tokyo, Japan

Filed Aug. 12, 1992, Ser. No. 929,658
Claims priority, application Japan, Oct. 14, 1981, 3-295179
Int. Cl.[6] G01F *25/00*
U.S. Cl. 73—3 12 Claims



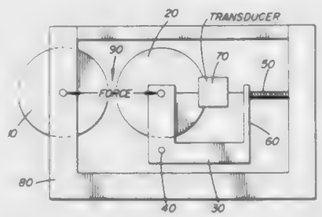
1. A small volume prover, comprising:
a closed cylindrical outer housing having a fluid inlet in a wall near an inlet-side end thereof, and a fluid outlet in said wall near an opposite outlet-side end thereof;
a cylindrical measuring conduit of a constant inside diameter coaxially mounted within the housing, said conduit being open at an inlet-side end thereof and coaxially supported at an outlet end thereof by an inner end wall of the housing and having two axially apart spaced rows of ports radially in a wall of said conduit, one of said rows of ports being inlet-side ports and the other of said rows of ports being outlet-side ports;
an annular wall sealably dividing an annular passage formed between the measuring conduit and the outer housing into two sections, one section including said open conduit inlet-side end and the other section including said inlet-side ports;
a slide valve having a valve rod sealably extending through the inlet-side end of the outer housing and being slidable within the measuring conduit near the open inlet-side end thereof to open and close the inlet-side ports;
a piston having a piston rod sealably extending through the outlet-side end of the housing and being movable within a downstream portion of the measuring conduit rearwardly of the inlet-side ports to displace a base volume of fluid a certain amount between the inlet-side ports and the outlet-side ports, said piston having a thickness;
a valve actuator for driving the valve rod to control the slide valve to close the inlet-side ports only during a proving pass;
a piston actuator for actuating the piston rod to hold the piston at a starting position rearwardly of the inlet-side ports in the measuring conduit during a proving preparation, to render the piston movable during a proving test and to return the piston to the starting position;
a position sensor provided in the piston actuator for detecting that the piston passes a defined portion of the measuring conduit; and
a row of pressure relieving ports, each of which is smaller than the outlet-side ports, and radially arranged in the wall of the measuring conduit at a downstream position apart from the outlet-side ports by a distance corresponding to the piston thickness.

5,392,633

MEASURING THE STRENGTH OF ABRASIVE GRAINS

William G. Morris, Rexford, N.Y., assignor to General Electric Company, Worthington, Ohio

Filed Feb. 12, 1993, Ser. No. 16,638
Int. Cl.[6] G01N *3/56, 19/02;* G01D *1/16*
U.S. Cl. 73—7 7 Claims



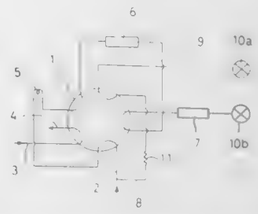
1. Apparatus for measuring the strength of abrasive grains, said apparatus comprising:
a first hard roller;
a second hard roller;
a drive means for counter-rotating said first and second hard rollers;
a compressing means for a exerting compressive force between said first and second hard rollers;
a measuring means for measuring the compressive force exerted between said first and second hard rollers,
said compressing means comprising:
a frame to which said first hard roller is rotatably fixed;
a beam to which said second hard roller is rotatably fixed, said beam comprising a flexible portion and said beam being mounted on said frame.

5,392,634

HYDROCARBON ANALYZER AND METHOD OF ANALYZING HYDROCARBON

Ichiro Asano; Kenji Takeda; Tsutomu Oie, and Hideki Koike, all of Miyanohigashi, Japan, assignors to Horiba, Ltd., Japan

Filed Aug. 24, 1993, Ser. No. 112,422
Claims priority, application Japan, Aug. 27, 1992, 4-066346[U]; Sep. 9, 1992, 4-268216
Int. Cl.[6] G01N *30/40*
U.S. Cl. 73—23.42 18 Claims



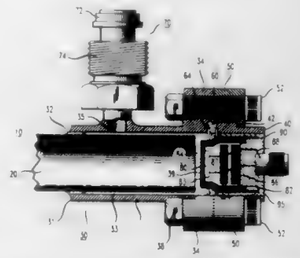
1. A hydrocarbon analyzer for rapidly detecting and measuring hydrocarbon components of a gas sample, said analyzer comprising:
means for separately adsorbing methane and nonmethane hydrocarbon components of said gas sample;
means for introducing said gas sample with a carrier gas from a carrier gas line into said means for separately adsorbing;
a branched line severably connected between said carrier gas line and a first flame ionization detector for measuring said nonmethane hydrocarbon components of said gas sample;
a second flame ionization detector for measuring said methane components of said gas sample, said second flame ionization detector connected to said means for separately adsorbing; and
a change-over valve for switching said means for separately adsorbing, said means for introducing, said branched line, and said first and second flame ionization detectors from a gas sample introducing position to a backflush position

5,392,635

ACOUSTIC ANALYSIS OF GAS MIXTURES

Gardy Cadet, Orange, and Jorge L. Valdes, Bedminster, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 30, 1993, Ser. No. 175,828
Int. Cl.[6] G01N *29/02*
U.S. Cl. 73—24.01 8 Claims



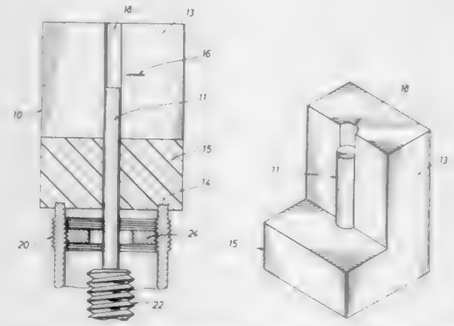
1. An acoustic cell for determining the composition of a gas mixture comprising:
a hollow conduit for containing a gas mixture to be analyzed, said conduit having first and second ends;
a first transducer housing sealingly engaged with said first end of the conduit, said first transducer housing supporting a first transducer, and having an acoustic isolation material positioned at least partially between said first transducer and said first transducer housing to acoustically isolate said first transducer from said first transducer housing;
a second transducer housing sealingly engaged with said second end of the conduit, said second transducer housing supporting a second transducer and having an acoustic isolation material positioned at least partially between said second transducer and said second transducer housing to acoustically isolate said second transducer from said second transducer housing,
a first gas port coupled to said first end of the conduit; and
a second gas port coupled to said second end of the conduit;
wherein said acoustic isolation of said first transducer from said first transducer housing and said acoustic isolation of said second transducer from said second transducer housing produces a signal-to-noise ratio of at least 4 to 1.

5,392,636

APPARATUS AND METHOD FOR LEAK TESTING PRESSURE REGULATED LPG SYSTEMS

Robert S. Blackwell, 8277 Iowa Gulch Rd., Morrison, Colo. 80465

Filed Dec. 30, 1992, Ser. No. 998,804
Int. Cl.[6] G01M *3/02, 3/36*
U.S. Cl. 73—40 11 Claims



1. Apparatus for detecting leaks in gas systems having pressure regulators with removable caps comprising:
a body having a base member and an extension member,
the base member of the body having a hole extending from a bottom surface to a top surface, the hole being disposed within means on the bottom surface for positioning the base member on the regulator with cap removed;
an elongated member adapted to slidably move through the hole in the base member;
the extension member of the body being disposed proximate the elongated member when the elongated member is in a position so as to extend from the top surface of the base member; and
means for applying frictional resistance to the movement of the elongated member through the hole of the base member, the frictional resistance being selected to be large enough to prevent free fall of the elongated member.

5,392,637

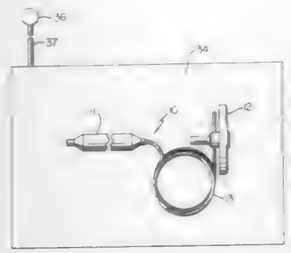
METHOD OF TESTING FOR LEAKS IN A CLOSED FLUID FILLED SYSTEM AND SYSTEM TESTED BY SUCH METHOD

Joseph J. Erdelsky, Jeannette, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 953,477, Sep. 29, 1992, Pat. No. 5,303,576.
This application Feb. 7, 1994, Ser. No. 192,667
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[6] G01M *3/00;* H01H *37/40*
U.S. Cl. 73—40 12 Claims

1. In a method of testing for leaks in a closed fluid filled

system that has a part thereof that expands outwardly from an at rest position that occurs when said system is sensing a temperature at or below an at rest temperature to various certain expanded positions in relation to various certain higher temperatures sensed thereby than said at rest temperature, the improvement comprising the step of disposing said system in a chamber that has a temperature below said at rest temperature, disposing a fluid in said chamber under a pressure that is greater than atmospheric pressure so that if at least one leak path of a certain size or larger exists in said system from the exterior thereof to the interior thereof a certain amount of said fluid of said chamber will be forced through said at least one leak path to change the fluid condition in said closed volume of



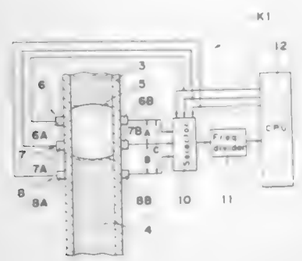
said system, removing said system from said chamber after a certain time period, then subjecting said system to room pressure and temperature so that said part of said system will be in an adverse expanded position beyond its normal position for that said room pressure and temperature if said at least one leak path of at least said certain size existed, and then detecting said adverse expanded position of said part of said system, the step of disposing a fluid in said chamber under a pressure that is greater than atmospheric pressure comprising the step of disposing a fluid in said chamber that is under many atmospheres of pressure, said fluid in said system before testing for said leaks comprising a liquid, said fluid under pressure in said chamber comprising air.

5,392,638

BUBBLE DETECTING APPARATUS FOR MEDICAL INFUSION DEVICE

Masafumi Kawahara, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 29, 1989, Ser. No. 373,226
Claims priority, application Japan, Jul. 4, 1988, 63-166189
Int. Cl.[6] G01N *15/02*
U.S. Cl. 73—61.49 **6 Claims**



1. In a bubble detecting apparatus for an infusion pump, including a set of ultrasonic sensors constituted by an ultrasonic oscillator and a receiver provided, respectively, at opposed locations on an outer face of a liquid transport tube for feeding therethrough liquid such as medicinal liquid by a predetermined pumping operation of a pumping mechanism such that air bubbles produced in or mixed into the liquid in said liquid transport tube are detected by said ultrasonic oscillator and said receiver, the improvement comprising:

at least three sets of said ultrasonic sensors which are arranged along said liquid transport tube at different intervals; and

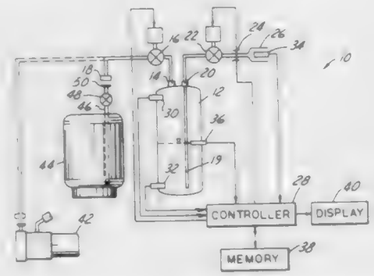
further including a selector connected to said receivers of said ultrasonic sensors, a central processing unit connected to said selector and a frequency divider provided between said selector and said central processing unit.

5,392,639

APPARATUS AND METHOD FOR IDENTIFYING AND DISTINGUISHING DIFFERENT REFRIGERANTS

Kenneth W. Manz, Paulding, Ohio, assignor to SPX Corporation, Muskegon, Mich.

Filed Jun. 17, 1993, Ser. No. 77,279
Int. Cl.[6] F25B *45/00*; **G01N** *29/18*
U.S. Cl. 73—61.76 **23 Claims**



1. A method of determining refrigerant type comprising the steps of:

(a) storing in electronic memory indicia representative of saturation pressure/temperature characteristics of a plurality of differing refrigerant types,

(b) obtaining a liquid refrigerant sample of unknown type,

(c) vaporizing the liquid refrigerant sample under controlled conditions of temperature and pressure,

(d) measuring refrigerant temperature at two different vapor pressures during said step (c), (e) comparing said temperatures measured in said step (d) to said stored indicia, and (f) determining type of refrigerant in said liquid sample as a function of said comparison in said step (e).

5,392,640

VEHICLE PERFORMANCE INSPECTION APPARATUS AND VEHICLE PERFORMANCE INSPECTION METHOD

Yutaka Fukuda, Saitama, and Kouji Minagawa, Chiba, both of Japan, assignors to Anzen Motor Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1992, Ser. No. 991,294
Claims priority, application Japan, May 1, 1992, 4-139764
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117 **3 Claims**

1. A vehicle performance inspection apparatus for evaluating the operational state of an ABS control, said apparatus comprising:

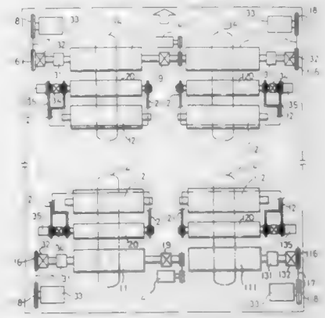
front and rear, left and right pairs of parallel receptive support rollers, one of the receptive support rollers of each pair being a driving receptive support roller and the other being a driven receptive support roller, for receiving and supporting the left and right wheels of the front wheel section and the left and right wheels of the rear wheel section of a vehicle, respectively,

left and right motors for rotatably driving the left and right driving receptive support rollers,

left and right rotation detecting rollers that can be forcibly brought in contact with the left and right vehicle wheels received and supported on said left and right driving

receptive support rollers and said left and right driven receptive support rollers, said rotation detecting rollers being rotated in response to rotation of the vehicle wheels,

left and right rotation frequency detecting means for detecting the rotational frequencies of said left and right wheels through said left and right rotation detecting rollers,



left and right inertial rotating means that are inertially rotated by the rotation of said left and right rotation detecting rollers, and

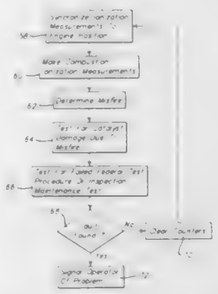
torque detecting means for detecting driving torques respectively between said rotation detecting rollers for the respective left and right wheels and said inertial rotating means for the respective rotation detecting rollers.

5,392,641

IONIZATION MISFIRE DETECTION APPARATUS AND METHOD FOR AN INTERNAL COMBUSTION ENGINE

Jay C. McCombie, Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 8, 1993, Ser. No. 28,106
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.3 **15 Claims**



1. A method of detecting misfire in cylinders of an internal combustion engine in a vehicle, said method comprising the steps of:

synchronizing combustion ionization measurements to an engine synchronous cylinder;

making combustion ionization measurements;

determining if misfire has occurred based on the combustion ionization measurements;

testing for catalyst damage and for at least one failed predetermined test requirement due to misfire occurring; and

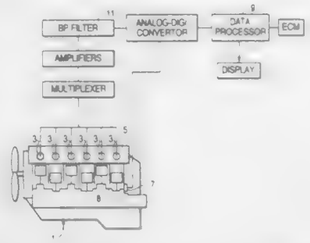
signaling a vehicle operator if a fault has occurred as a result of the testing.

5,392,642

SYSTEM FOR DETECTION OF LOW POWER IN AT LEAST ONE CYLINDER OF A MULTI-CYLINDER ENGINE

Xuefeng T. Tao, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 30, 1993, Ser. No. 84,071
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.3 **19 Claims**



1. System for detection of low power in at least one cylinder of a multi-cylinder engine having a plurality of individual cylinders, comprising:

vibration sensing means for detecting of vibration occurring during combustion in each of the individual cylinders of a multi-cylinder engine and producing output signals corresponding to the amplitude and frequency thereof,

signal conditioning means for limiting the output signals to a predetermined frequency range and from a defined portion of individual engine combustion cycles,

means for detecting the existence of resonant frequency peaks occurring in the individual engine cylinders during each of a prescribed number of consecutive engine cycles,

estimating means for estimating the frequency of any resonant frequency peak detected in said predetermined frequency range during said portion of the individual engine combustion cycles,

averaging means for averaging the frequencies of the resonant frequency peaks found for each individual cylinder for the prescribed number of engine cycles,

classifying means for classifying each of the cylinders as at least low power and normal power cylinders on the basis of the averaged frequencies of the resonant frequency peaks found for each individual cylinder and the distribution thereof over all of the cylinders, and

output means for issuing an identification of cylinders repeatedly classified as low power cylinders.

5,392,643

OXYGEN HEATER SENSOR DIAGNOSTIC ROUTINE

Maura P. O'Kennedy, Livonia; Min Sway-Tin, Troy; Martin G. Yagley, Sterling Heights, and Anson Lee, St. Clair, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 22, 1993, Ser. No. 155,673
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—118.1 **23 Claims**

1. An oxygen sensor heater diagnostic method for diagnosing the condition of an oxygen sensor having a heater and located to intercept the exhaust gases from an engine, comprising the steps of:

shutting off the heater;

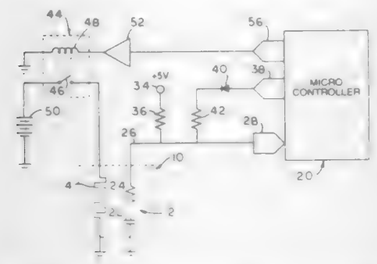
preventing the exhaust gas of the engine from heating the oxygen sensor;

measuring a first output voltage of the sensor at a sensor output as a value V1 when connected to a supply voltage through a large pull-up resistor;

measuring a second output voltage of the sensor at a sensor output as a value V2 when connected to a first predetermined voltage through a small pull-up resistor;

determining an initial delta reference voltage by subtracting V1 from V2;

using said initial delta reference voltage to indicate the sensor internal resistance as of the measurements; and



monitoring the magnitude of the initial delta reference voltage.

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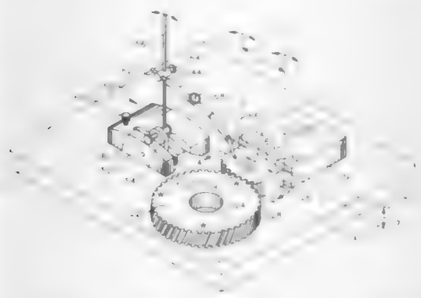
METHOD AND APPARATUS FOR INSPECTION OF GEARS

Charles H. Frazier, P.O. Box 97, Pacific, Wash. 98047

Division of Ser. No. 680,092, Apr. 3, 1991, Pat. No. 5,271,271. This application Dec. 20, 1993, Ser. No. 169,525

Int. Cl.[6] G01H *13/02*

U.S. Cl. 73—162 **13 Claims**



1. A method for measurement of gear error of a measured gear of desired specifications, said method comprising:

(a) positioning said measured gear on a base,

(b) providing a selected master gear segment, said master gear segment having specifications roughly complimentary to said measured gear,

(c) engaging a portion of said measured gear in firm meshing engagement with said selected master gear segment, said engagement effecting said selected master gear segment so as to displace said selected master gear segment toward a final stationary test alignment position without rotary operation between said measured gear and said selected master gear segment,

(d) selecting a datum plane from which to measure said displacement of said selected master gear segment when said master gear segment is in said final alignment position,

(e) measuring said displacement of said selected master gear segment from said selected datum plane,

(f) determining gear error by mathematically deriving said error from said measurement of said displacement of said selected master gear segment

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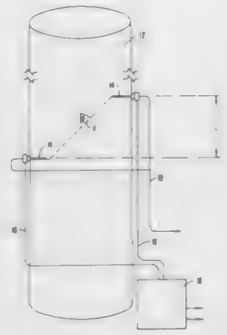
METHOD AND APPARATUS FOR FLOW RATE MEASUREMENT

John A. Kleppe, Reno, Nev., assignor to Scientific Engineering Instruments, Inc., Sparks, Nev.

Filed Nov. 15, 1993, Ser. No. 152,763

Int. Cl.[6] G01F *7/00, 1/66*

U.S. Cl. 73—195 **22 Claims**



1. A method of determining the average volumetric velocity $\overline{U}_m$ of a fluid flowing along a bounded path, said method comprising the steps of:

(a) measuring the flight time t1 of an acoustic noise wave in a first direction between first and second locations along the path;

(b) measuring the flight time t2 of an acoustic noise wave in the opposite direction between the first and second locations along the path;

(c) using the measured values of the flight times t1 and t2 to determine the path average velocity $\overline{U}_p$ of the fluid;

(d) measuring the fluid temperature, velocity head and static fluid pressure at third and fourth locations along the path;

(e) using the measured values of the flight times t1 and t2, the fluid temperature, velocity head and static fluid pressure to determine the fluid velocity at said third and fourth locations; and

(f) using the determined values of the path average velocity $\overline{U}_p$ and the fluid velocity at the third and fourth locations to determine the average volumetric velocity $\overline{U}_m$ of the fluid.

5,392,646

THERMAL TYPE OF FLOW RATE SENSOR

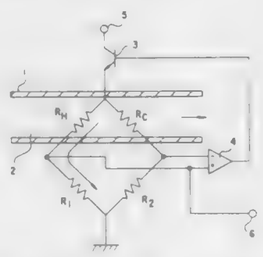
Yasuhito Yajima, Nagoya, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Filed Feb. 19, 1992, Ser. No. 836,884

Claims priority, application Japan, Mar. 13, 1991, 3-074052

Int. Cl.[6] G01F *1/68*

U.S. Cl. 73—204.19 **2 Claims**



1. In a thermal flow rate sensor having a heat-generating resistor and a temperature-compensating resistor both positioned within a fluid passage and used in sensing flow rate of a fluid in the passage, the improvement comprising:

a platinum heat-generating resistor R_H for detecting the flow rate of the fluid within the passage; and

a platinum temperature-compensating resistor R_C coupled to said platinum heat-generating resistor R_H in contact with the fluid in the passage;

wherein the resistance value $r_H(\Omega)$, of said platinum heat-generating resistor R_H is given by the following function of temperature of fluid in the passage, T(°C.):

$$r_H = r_{HO}(1+\alpha_H T+\beta_H T^2),$$

wherein $r_{HO}(\Omega)$ is the resistance value at 0° C. of said platinum heat-generating resistor R_H, β_H is a second-order term coefficient, and α_H is a linear first-order term coefficient of a temperature coefficient of resistance of said platinum heat-generating resistor R_H; and

wherein the resistance value, $r_C(\Omega)$, of said platinum temperature-compensating resistor R_C is given by the following function of temperature of fluid in the passage, T(°C.):

$$r_C = r_{CO}(1+\alpha_C T+\beta_C T^2).$$

wherein $r_{CO}(\Omega)$ is the resistance value at 0° C. of said platinum temperature-compensating resistor R_C, β_C is a second-order term coefficient, and α_C is a value of the linear first-order term coefficient of a temperature coefficient of resistance of said platinum temperature-compensating resistor R_C, and wherein the value of the linear first-order term coefficient, α_C, of the temperature coefficient of resistance of said platinum temperature-compensating resistor R_C is smaller than the linear first-order term coefficient, α_H, of the temperature coefficient of resistance of said platinum heat-generating resistor R_H by 100 ppm/°C. to 250 ppm/°C.

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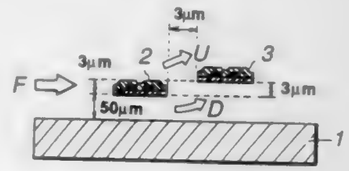
FLOW SENSOR

Junji Manaka, Tokyo, Japan, assignor to Ricoh Seiki Company, Ltd., Tokyo, Japan

Filed Jun. 7, 1993, Ser. No. 72,779

Int. Cl.[6] G01F *1/68*

U.S. Cl. 73—204.26 **6 Claims**



1. A flow sensor comprising a substrate having a cavity therein, a heating layer portion and a heat-sensing layer portion, said portions formed each in the form of a bridge across the cavity and supported at both ends or at one end on the substrate said heater layer portion being upstream from said heat sensing layer portion in the direction of a flow of gas to be measured, characterized in that the sensing portion is disposed at a higher plane and the heating portion is disposed at a lower plane on the substrate, both planes being parallel with the direction of the gas flow to be measured.

5,392,648

DEVICE FOR MEASURING A PRE-DETERMINED VOLUME OF LIQUID FLOWING THERETHROUGH

Paul A. Robertson, Chrishall, Great Britain, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

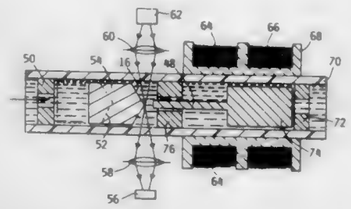
PCT No. PCT/GB91/02251, § 371 Date Oct. 4, 1993, § 102(e) Date Oct. 4, 1993, PCT Pub. No. WO92/11512, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 17, 1991, Ser. No. 75,482

Claims priority, application United Kingdom, Dec. 17, 1990, 9027256

Int. Cl.[6] G01F *11/04;* **222** *59, 159*

U.S. Cl. 73—239 **19 Claims**



1. A gauge for measuring a pre-determined volume of liquid flowing therethrough comprising a conduit for said liquid and a measurement slug positioned within said conduit, the slug having substantially neutral buoyancy in the liquid to be measured and being constructed and arranged such that it will move along the conduit at substantially the same rate as liquid flowing therein and being capable of being moved through the conduit with substantially no net flow of liquid, the conduit comprising a constraint system defining a length of the conduit within which the slug is free to move, the constraint system comprising an upstream stop capable of preventing further movement of the slug, the measurement slug and the upstream stop being configured to block the conduit so as to substantially prevent the flow of liquid therethrough when the slug contacts the upstream stop, the gauge comprising detection means capable of detecting when the slug has moved a predetermined distance within the conduit.

5,392,649

FINGER PRESSURE GAUGE

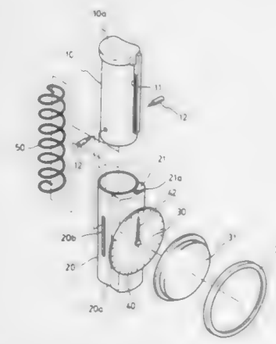
Tae W. Yoo, 807, 1-Dong, Hanyang, Apt. 32-5, Banpo-dong, Seocho-ku, Seoul, Rep. of Korea

Filed Nov. 30, 1993, Ser. No. 159,846

Claims priority, application Rep. of Korea, Mar. 16, 1993, 933827

Int. Cl.[6] A63B *23/00*

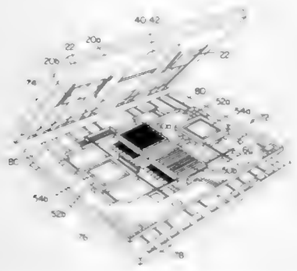
U.S. Cl. 73—379.01 **19 Claims**



1. A finger pressure gauge for checking finger pressure, comprising:

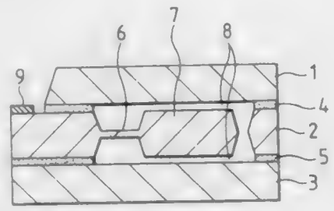
an inner case including:
a guide pin extending therefrom,
and a rack formed on one side thereof, and
an upper surface for receiving a first finger of a person,
an outer case for slidable receiving the inner case therein, said outer case including:
guide groove means for receiving the guide pin for sliding movement therein and for limiting slidable movement of said inner case relative to said outer case,
protruded portion means for slidably receiving said rack therein,
pinion means, rotatably mounted in said protruded portion means, for meshing with said rack, and
a lower surface for receiving a second finger of a person such that said inner and outer cases can be biased toward each other between the first and second fingers when pressure is applied by the first and second fingers on the upper and lower surfaces,
a hand connected with said pinion means for rotation therewith,
spring means for biasing said inner case and said outer case apart, and
dial means mounted to said protruded portion means for displaying a measurement of finger pressure in conjunction with said hand when fingers of a person depress said inner case into said outer case against the force of said spring means.

5,392,650
MICROMACHINED ACCELEROMETER GYROSCOPE
Benedict B. O'Brien, Manhattan Beach; Brent E. Burns, Torrance, both of Calif., and John A. Geen, Wrentham, Mass., assignors to Northrop Grumman Corporation, Los Angeles, Calif.
Continuation-in-part of Ser. No. 640,449, Jan. 11, 1991, Pat. No. 5,205,171. This application Apr. 22, 1993, Ser. No. 52,017
Int. Cl.[6] G01P *15/125*; G01C *19/56*
U.S. Cl. 73—517 A 20 Claims



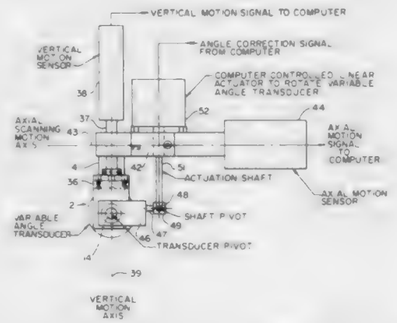
1. A combined angular rate and acceleration sensor comprising a structure formed from a substantially planar, monolithic body of electrically conductive material having first and second major surfaces, said structure having an outer frame portion disposed around first and second inner frame portions, each of said inner frame portions being disposed around an associated proof mass and connected thereto through a plurality of flexures, said structure further comprising a driver mass portion that is interposed between said first and second inner frame portions, said driver mass portion being connected to said first and said second inner frame portions through a plurality of primary flexures, said plurality of primary flexures and said first and said second inner frame portions being connected to said outer frame portion through a plurality of suspensory flexures.

5,392,651
CAPACITANCE TYPE ACCELEROMETER
Seiko Suzuki, Hitachioota; Shigeki Tsuchitani, Mito; Masayuki Miki, Katsuta, and Masahiro Matsumoto, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 757,648, Sep. 11, 1991, abandoned, which is a division of Ser. No. 429,546, Oct. 31, 1989, Pat. No. 5,095,752. This application Dec. 6, 1993, Ser. No. 161,456
Claims priority, application Japan, Nov. 15, 1988, 63-286714
Int. Cl.[6] H01L *21/283*
U.S. Cl. 73—517 R 12 Claims



1. A capacitance type accelerometer, having;
a first silicon plate formed so as to provide a movable electrode part which is moved according to acceleration;
two second silicon plates which are disposed on both sides of the first silicon plate with certain separation distances; and
thermal oxide films which are respectively disposed between the first silicon plate except the movable electrode part and the two second silicon plates so as to respectively provide predetermined gaps between the movable electrode and the second silicon plates, and stick the first silicon plate except the movable electrode part and the two second silicon plates together through said thermal oxide films by heat processing of the silicon plates.

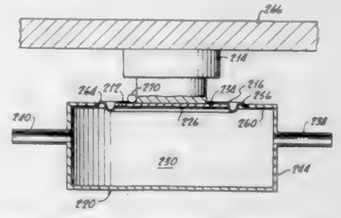
5,392,652
METHOD AND APPARATUS FOR INSPECTION OF METAL OBJECTS UTILIZING VARIABLE ANGLE ULTRASONIC TRANSDUCER
Kevin J. Levesque, Swainsboro, Ga., and David B. Richey, Benton City, Wash., assignors to Lambert, MacGill, Thomas, Inc., Santa Clara, Calif.
Filed Apr. 7, 1992, Ser. No. 864,531
Int. Cl.[6] G01N *29/26*
U.S. Cl. 73—629 21 Claims



1. The process of inspection of metallic objects normally having a surface regularity adhering to a predetermined standard of normalcy and including geometric and surface irregularities varying from said standard of normalcy to discover an abnormality therein and display and/or record the position and nature of the abnormality, comprising the steps of:

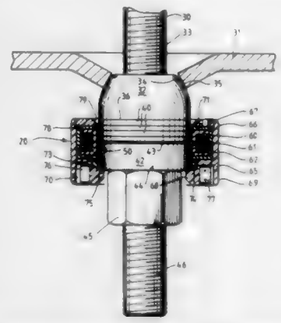
a) generating ultrasonic sound waves in a transducer adapted to impinge on a metallic object;
b) transmitting said ultrasonic sound waves into said metallic object under inspection at a predetermined angle correlated to a surface regularity adhering to said predetermined standard of normalcy;
c) receiving and displaying a reflection of said ultrasonic sound waves propagated within said metallic object to indicate the presence of an abnormality in said metallic object;
d) detecting in a continuous manner the surface irregularities on said metallic object under inspection;
e) measuring in units of length the extent of variation of said detected surface irregularities in relation to said surface regularity adhering to said predetermined standard of normalcy;
f) converting into electrical signals said measured variation of the surface irregularities from said predetermined standard of normalcy thereof;
g) applying said electrical signals to variably control the rotational repositioning of said transducer in relation to the surface of said metallic object being inspected whereby said predetermined angle of propagation of said ultrasonic sound waves within said metallic object are maintained constant despite said surface irregularities whereby abnormalities in said metallic body are reliably and accurately detected and displayed; and
h) wherein said surface irregularities are detected by impingement of the transducer thereagainst and displacement of the transducer thereby.

5,392,653
PRESSURE TRANSDUCER MAGNETICALLY-COUPLED INTERFACE COMPLEMENTING MINIMAL DIAPHRAGM MOVEMENT DURING OPERATION
Frank Zanger, Hayward; Tim Surber, San Leandro, and Donald E. Lehmer, Berkeley, all of Calif., assignors to Allergan, Inc., Irvine, Calif.
Continuation-in-part of Ser. No. 893,331, Jun. 3, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 168,870
Int. Cl.[6] G01L *7/00, 9/04*
U.S. Cl. 73—756 15 Claims



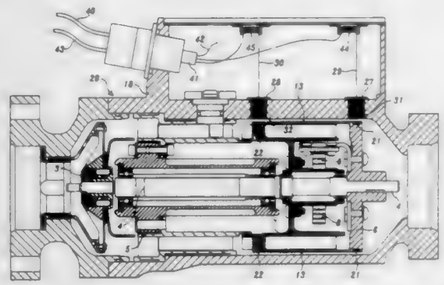
1. A pressure measurement system comprising:
a diaphragm;
means for exposing one side of said diaphragm to a fluid;
force transducer means for measuring force exerted by said fluid on said one side of said diaphragm with minimal movement of diaphragm position; and
means for removably coupling said force transducer means to an opposite side of said diaphragm, the means for removably coupling comprising a ferromagnetic plate attached to said diaphragm and magnet means, attached to said force transducer means, for removably engaging the ferromagnetic plate.

5,392,654
ROCK BOLT LOAD SENSOR
Alan Boyle, Warrandyte, Australia, assignor to Technological Resources Pty, Ltd., Melbourne, Australia
Filed Oct. 13, 1993, Ser. No. 136,328
Int. Cl.[6] F16B *31/02*
U.S. Cl. 73—761 11 Claims



1. A rock bolt load sensor assembly for use to determine the load on a nut screwed onto a bolt embedded in a rock face, the assembly comprising a plurality of spring washers arranged to be mounted on the bolt between the nut and a roof plate, and a sensor comprising an induction coil adapted to be, in use, placed around the washers, the sensor including indicator means coupled to the induction coil whereby in use, the spring washers define an air space which varies in dependence on the load on the bolt and the induction coil provides an electrical indication of variation of the air space and the indicator means provides an indication of variation of the load on the bolt.

5,392,655
OPTICAL PICKUP AND SIGNAL ANALYZING SYSTEM FOR MASS FLOWMETERS
Duane E. Palmer, Stanwood; Bruce E. Johnson; David L. Brodeur, both of Seattle, and William E. Chiles, Kirkland, all of Wash., assignors to ELDEC Corporation, Lynnwood, Wash.
Filed Mar. 23, 1993, Ser. No. 35,445
Int. Cl.[6] G01F *1/82*
U.S. Cl. 73—861.35 9 Claims



1. A flowmeter for measuring the rate of flow of a fluid comprising a casing for conveying the fluid therethrough, a first rotatable member disposed in said casing in the path of the fluid, a second rotatable member disposed in said casing in the path of the fluid, means interconnecting said rotatable members such that the flow rate of fluid is a function of the relative rotations of said rotatable members, each of said rotatable members including an optical target moved in a circular path relative to said casing by rotation of its member, two light transmission lines, one for each of said targets, and each having an end mounted stationarily relative to said casing and exposed

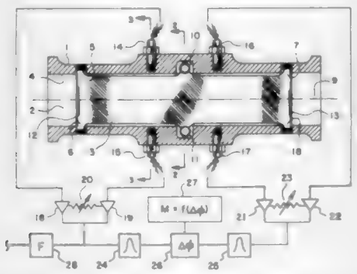
optically to its target during movement of such target through a segment of the circular path of such target, and means for detecting optical exposure of said targets to said ends of said light transmission lines and for generating a signal indicative of the relative rotations of said members, said detecting means including means for transmitting pulses of light through said transmission lines, means for detecting reflections of the pulses by said targets, means for returning the reflected pulses through said transmission lines, means for delaying pulses reflected by one of said targets to a greater degree than pulses reflected by the other of said targets, and means for sampling the returning pulses so as to isolate pulse reflections of one of said targets from pulse reflections of the other of said targets.

5,392,656

NONVIBRATING CONDUIT INERTIA FORCE FLOWMETER

Hyok S. Lew, and Yon S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Filed Sep. 14, 1993, Ser. No. 120,555
Int. Cl.[6] G01F *1/84*
U.S. Cl. 73—861.37 **20 Claims**



1. An apparatus for measuring mass flow rate of media comprising in combination:

a) a body including a flow passage;

b) a planar member with a leading and trailing edge and two opposite side edges disposed within the flow passage parallel to a center line of the flow passage, wherein at least a leading edge portion of the planar member is secured to the body;

c) means for generating a torsional vibratory motion of the planar member about a torsion axis generally parallel to the central axis of the flow passage;

d) means for generating two alternating electrical signals respectively representing the torsional vibratory motion of the planar member at two different cross sections of the flow passage; and

e) means for detecting a difference between the two alternating electrical signals as a measure of mass flow rate of media moving through the flow passage.

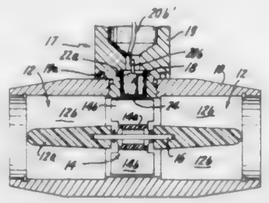
5,392,657

FLOW SENSOR HAVING HIGH IMPEDANCE CIRCUIT WITH CAPACITIVE SENSING ELECTRODE

Murray F. Feller, Citrus County, Fla., assignor to Onicon Incorporated, Clearwater, Fla.

Continuation of Ser. No. 632,520, Feb. 13, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 20,908
Int. Cl.[6] G01F *15/00*
U.S. Cl. 73—861.77 **31 Claims**

1. Flow sensing apparatus including a series circuit having opposite end terminals and having a sensing capacitor and an inductor in series with each other interposed between said opposite end terminals, said sensing capacitor having a capacitive sensing electrode and a companion electrode which, when energized in operation, have a distributed field between them in a passage for fluid whose flow is to be monitored and said sensing capacitor having a flow-actuated device operated by the fluid through a range of positions in relation to the sensing electrode and to said field for developing flow-representing changes in said sensing capacitor, said inductor having first and second inductor terminals, said capacitive sensing electrode being in close proximity to and having a direct connection to said first inductor terminal, said direct connection being connected to the remainder or the apparatus only via said sensing capacitor and said inductor, said companion electrode and said



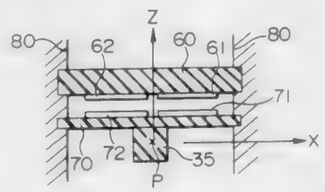
second inductor terminal being connected to said opposite end terminals, respectively, and circuit means connected to and interposed between said opposite end terminals of the series circuit, for deriving flow-representing signals in response to said flow-activated device, said apparatus having excitation means for providing said series circuit with constant-frequency excitation at or close to the series-resonant frequency of the series circuit.

5,392,658

DETECTOR FOR FORCE, ACCELERATION OR MAGNETISM WITH RESPECT TO COMPONENTS IN MULTI-DIMENSIONAL DIRECTIONS

Kazuhiro Okada, 73, Sugaya 4-chome, Ageo-shi, Saitama, 362, Japan

Division of Ser. No. 960,545, Oct. 13, 1992, Pat. No. 5,343,765. This application May 26, 1994, Ser. No. 249,817
Claims priority, application Japan, Oct. 25, 1991, 3-306587
Int. Cl.[6] G01L *5/04*
U.S. Cl. 73—862.043 **6 Claims**



1. A force detector for detecting components in multi-dimensional directions of force in an XYZ three-dimensional coordinate system, comprising:

a fixed substrate having a fixed surface extending along substantially an XY plane,

a displacement substrate having a displacement surface opposite to the fixed surface and extending along substantially the XY plane,

a first capacitance element formed by a pair of electrodes provided so that they are opposite to each other on the fixed surface and the displacement surface in the first quadrant of the XY plane,

a second capacitance element formed by a pair of electrodes provided so that they are opposite to each other on the fixed surface and the displacement surface in the second quadrant of the XY plane,

a third capacitance element formed by a pair of electrodes provided so that they are opposite to each other on the fixed surface and the displacement surface in the third quadrant of the XY plane,

a fourth capacitance element formed by a pair of electrodes provided so that they are opposite to each other on the fixed surface and the displacement surface in the fourth quadrant of the XY plane,

first detection means for detecting a force component in the X-axis direction on the basis of a difference between a sum of a capacitance value of said first capacitance element and a capacitance value of said fourth capacitance element and a sum of a capacitance value of said second capacitance element and a capacitance value of said third capacitance element when the force in the X-axis direction is exerted on a predetermined working point which causes a displacement of said displacement substrate, and

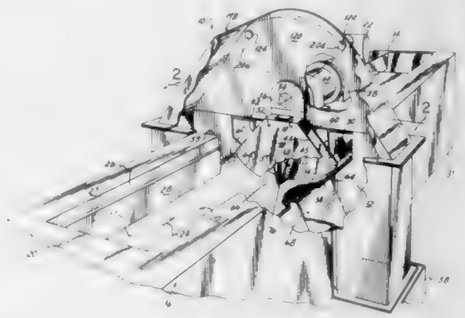
second detection means for detecting a force component in the Y-axis direction on the basis of a difference between a sum of a capacitance value of said first capacitance element and a capacitance value of said second capacitance element and a sum of a capacitance value of said third capacitance element and a capacitance value of said fourth capacitance element when the force in the Y-axis direction is exerted on said working point.

5,392,659

APPARATUS FOR PROVIDING MULTIPLE SAMPLES OF MATERIAL FROM A MOVING CONVEYOR

James J. Ford, Jr., Cincinnati, Ohio; David W. Beitz, Burlington, Ky., and Michael J. Nagle, Jr., Hamilton, Ohio, assignors to Tema Systems, Inc., Cincinnati, Ohio

Filed May 4, 1993, Ser. No. 57,535
Int. Cl.[6] G01N *1/08, 1/12, 1/20*
U.S. Cl. 73—863.53 **19 Claims**



1. A sampling apparatus for removing a sample volume of a material from a conveyor, the apparatus comprising:

a frame located adjacent the conveyor;

drive means mounted on said frame for providing a rotating drive shaft;

a scoop connected to said drive shaft and rotating about an axis of rotation above the conveyor, said scoop being mounted relative to the conveyor such that rotation of said scoop transverse to conveyor motion is effective to remove the sample volume of the material from the conveyor;

control means connected to said drive means for selectively commanding said drive means to move said scoop through a circular path during first and second rotational cycles, said first rotational cycle moving said scoop through said circular path from a starting position through a continuous rotation in a first angular direction and stopping said scoop at said starting position, and said second rotational cycle moving said scoop through said circular path from said starting position through a continuous rotation in a second angular direction opposite to said first angular direction and stopping said scoop at said starting position, said starting position being a position of said scoop above said drive shaft such that said drive means holds said scoop at said starting position; and

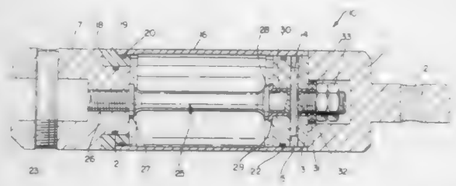
first and second sample collectors located on opposite sides of and below the conveyor to receive the sample volumes of the material during said first and second rotational cycles, respectively.

5,392,660

LOAD MONITOR

Lynton C. Hodson; Graeme J. Winstanley; Grant D. Hodson; Neville G. Barden; Mervyn J. Joyce, and Keith G. Batten, all of Queensland, Australia, assignors to The South East Queensland Electricity Board, Queensland, Australia

Filed Jan. 6, 1993, Ser. No. 1,579
Claims priority, application Australia, Jan. 17, 1992, PL0454
Int. Cl.[6] G01L *5/00*
U.S. Cl. 73—862.393 **13 Claims**



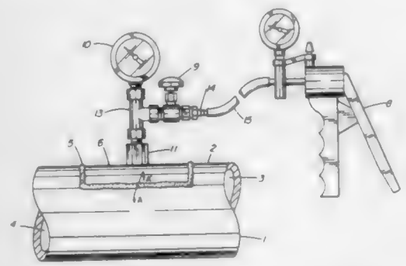
1. A load monitor including spaced attachment portions, said attachment portions being electrically isolated from one another, a transmitter having its output coupled to the attachment portions for transmitting a load indicative signal to a remote location whereby conductive members coupled to said attachment portions act as a dipole antenna for transmitting said signal to the remote location.

5,392,661

HYDROGEN MONITORING APPARATUS

H. Bruce Freeman, No. 9, 1715 27th Avenue, NE., Calgary, Alberta, Canada T2E 7E1

Continuation of Ser. No. 819,871, Jan. 13, 1992, Pat. No. 5,279,169. This application Nov. 18, 1993, Ser. No. 154,870
Claims priority, application Canada, Jan. 28, 1991, 2035105
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[6] G01N *17/00, 33/00*
U.S. Cl. 73—866 **10 Claims**



1. A corrosion monitor for monitoring the corrosion of a non-porous steel body by measuring the diffusion of hydrogen atoms through a selected area of the body from a second surface to an opposite first surface thereof, comprising:

(a) a chamber-defining member;

(b) seal means extending around the marginal perimeter of the chamber-defining member for sealably securing the chamber-defining member to the first surface so as to define with said selected area of the first surface of the

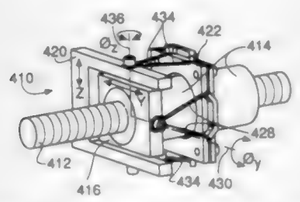
non-porous steel body a sealed chamber which is impervious to the flow of gas or liquid;
(c) said chamber defining member being adapted to closely conform to the surface shape of said selected area and to lie in close proximity thereto, said chamber defining member comprising an element which is sufficiently flexible that it deflects toward, and comes to rest upon, the first surface of the body upon evacuation of the chamber so as to reduce the volume of the chamber and define a fixed interstitial volume of the chamber throughout an optimal vacuum pressure operating range;
(d) means for connecting an evacuating means to the chamber defining member to permit substantial evacuation of the contents of the chamber to establish a partial vacuum therein;
(e) means for isolating the chamber from the evacuation means after the partial vacuum has been established to maintain the partial vacuum in the chamber so that hydrogen atoms that are generated as a result of corrosion of the second surface of the body and which diffuse through the non-porous material of the body and which exit the first surface within the chamber and which combine to form hydrogen molecules, collect in the chamber thus resulting in a decay of the vacuum in the chamber; and
(f) vacuum monitoring means for monitoring the decay of the vacuum in the chamber over time to give an indication of the rate of diffusion of hydrogen atoms through the selected area of the non-porous steel body and hence an indication of the rate of corrosion of said second surface.

5,392,662

LEADSCREW COUPLER

Bradley S. Jadrich, Rochester, and Mark E. Bridges, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 20, 1993, Ser. No. 123,838
Int. Cl.[6] F16H *25/20;* F16D *3/52*
U.S. Cl. 74—89.15 11 Claims



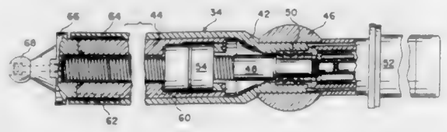
1. A coupling for transferring motion from a leadscrew to a carriage comprising a coupler member arranged to engage said leadscrew, carriage connecting means for connecting said coupling to said carriage wherein said coupling member and said carriage connecting means are substantially coplanar,
an intermediate member connected to said coupler member,
first means for connecting said intermediate member to said carriage connecting means to locate said carriage with respect to said leadscrew along the axis of said leadscrew,
said intermediate member being connected to said carriage connecting means to permit movement of said intermediate member relative to said carriage by rotation about a first pivot axis substantially perpendicular to the axis of said leadscrew, and
second means for connecting said coupling member to said intermediate member to locate said intermediate member with respect to said leadscrew along the axis of said leadscrew and to permit rotation of said intermediate member about a second pivot axis substantially perpendicular to the axis of said leadscrew and substantially perpendicular to said first pivot axis wherein said first and second pivot axes pass through both said coupling member and said carriage connecting means,
said first and second connecting means permitting first and second transverse movement of said carriage connecting means substantially perpendicular to the axis of said leadscrew and parallel to said first and second pivot axes whereby movement of the leadscrew transverse to the axis thereof is not transmitted to said carriage.

5,392,663

OCTAHEDRAL MACHINE TOOL FRAME

Paul A. S. Charles, Larne, Ireland, assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Division of Ser. No. 749,582, Aug. 26, 1991, Pat. No. 5,259,710.
This application Nov. 9, 1993, Ser. No. 150,685
Int. Cl.[6] F16H *27/02*
U.S. Cl. 74—83.15 5 Claims



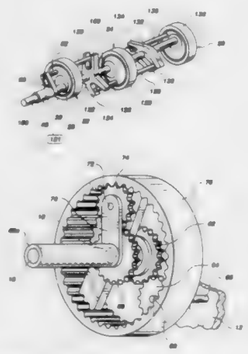
1. An axially extensible and contractible servostrut comprising:
an elongated, outer, tubular member and a slidably interfitted, elongated, inner member;
a first universal joint on one of said members for mounting said servostrut for swinging movement in any direction about said joint, and defining the base end of the strut;
a second universal joint on the other of said members at the distal end of the strut for connecting the same to a body for pivoting movement on any axis relative thereto;
a power driven linear actuator in one of said members engaged with the other end to extend and contract the strut; and
a linear position sensor on one of said members directly responsive to the axial movement of said members relative to one another for generating a feedback signal to a power source representative of the degree of extension of the strut.

5,392,664

CONTINUOUSLY VARIABLE TRANSMISSION

Laird B. Gogins, 123 Second Ave. #1207, Salt Lake City, Utah 84103

Filed Aug. 14, 1992, Ser. No. 930,928
Int. Cl.[6] F16H *29/04*
U.S. Cl. 74—117 20 Claims



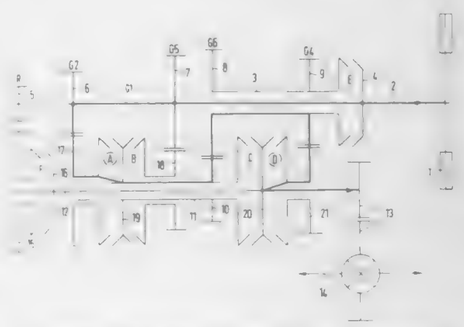
1. A transmission comprising
(a) a housing including an input opening, for permitting a rotatable input shaft from a prime mover to extend into the housing, and an output opening, for permitting a rotatable output shaft to extend out of the housing;
(b) a rotatable input shaft extending through the input opening for providing input to the transmission;
(c) at least one composite variable throw eccentric disposed on the input shaft, each composite eccentric having a pair of eccentrics, an inner one of which is fixed to the input shaft and an outer one of which is rotatably disposed on the inner eccentric and positionable with respect thereto to provide an eccentric throw between zero and a predetermined maximum;
(d) control means for selectively maintaining or varying the throw of the composite eccentric or eccentrics;
(e) a rotatable output shaft for providing a rotatable output;
(f) a plurality of one-way clutches mounted on the output shaft for converting received reciprocating motion to rotational motion in the output shaft; and
(g) connecting links for both coupling the composite eccentrics to the clutches for delivering reciprocating motion to the clutches from motion developed by the composite eccentrics and for reducing ripple from output rotation.

5,392,665

MANUAL TRANSMISSION OF A MOTOR VEHICLE

Robert Müller, Mönsheim, Germany, assignor to Dr. Ing., h.c.f. Porsche AG, Weissach, Germany

Filed Feb. 25, 1993, Ser. No. 22,098
Claims priority, application Germany, Feb. 25, 1992, 4205668
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—330 11 Claims



1. A manual transmission of a motor vehicle, comprising:
transmission gears that include a plurality of forward gears with a progressive gear grading and one reverse gear, the gears being formed by gear wheel pairs;
synchronizer clutches controllably coupled to the gears to thereby shift the gears, with all said transmission gears being shiftable only upon simultaneous closing of two of said synchronizer clutches that are assigned to each gear;
wherein a first pair of gear wheels form at least a part of two adjacent forward gears in a first range shifting, and a second pair of gear wheels form at least a part of two non-adjacent forward gears in a second range shifting.

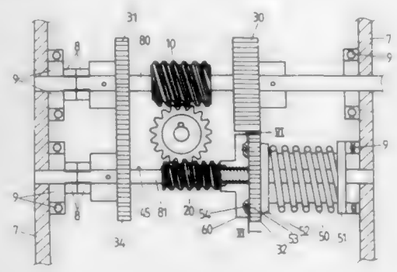
5,392,666

AUTO CORRECTION DEVICE FOR WEARING END PLAY IN WORM GEAR SET

Chion-Dong Lin, No. 12-6, Tien Hsin Lane, Ya Tan Rd., Ta Ya Hsiang, Taichung Hsien, Taiwan, Prov. of China

Filed Jul. 22, 1993, Ser. No. 95,837
Int. Cl.[6] F16H *55/24*
U.S. Cl. 74—427 4 Claims

1. An auto correction device for correcting wearing end play in a worm gear set comprising:
a) a first rotatable shaft having a first worm gear fixedly attached thereto so as to rotate therewith, and at least one linking gear attached to the first shaft so as to rotate therewith;
b) a second rotatable shaft having a second worm gear slidably mounted thereon so as to rotate with the second rotatable shaft, and at least one auxiliary linking gear in engagement with the at least one linking gear, the at least one auxiliary linking gear slidably mounted on the second shaft so as to rotate therewith;
c) a transmission gear engaged with both the first and second worm gears;



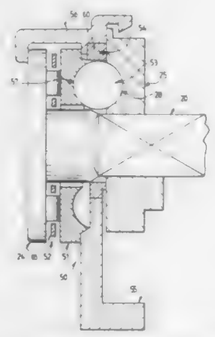
d) a threaded thrust block threaded onto the second shaft in contact with an end of the second worm gear and the at least one auxiliary linking gear;
e) biasing means acting on the at least one auxiliary linking gear so as to urge the at least one auxiliary gear against the threaded thrust block; and,
f) releasable drive means between the at least one auxiliary linking gear and the threaded thrust block for releasably rotating the threaded thrust block, such rotation exerting an axial force on the second worm gear so as to take up wearing end play in the worm gear set.

5,392,667

DEVICE FOR LOCKING IN POSITION AN ADJUSTABLE STEERING COLUMN FOR A MOTOR VEHICLE

Patrick Courvoisier, Sochaux, France, assignor to Ecia-Equipements et Composants pour l'Industrie Automobile, Audincourt, France

Filed Sep. 21, 1993, Ser. No. 123,976
Claims priority, application France, Oct. 6, 1992, 92 11835
Int. Cl.[6] B62D *1/18;* G05G *5/16*
U.S. Cl. 74—493 8 Claims



1. A device for locking in position an adjustable steering column, of the type including a column-support structure connected to the rest of the structure of the vehicle and including two flanges between which the column is arranged, and means for locking the column in position by bringing the flanges together, comprising a tie extending between the

flanges, a first end of which bears on one of the flanges and a second end of which is connected to locking elements comprising a stop member, an intermediate bearing member in contact with the other flange of the support structure and capable of being displaced axially on the tie, and spacing means arranged between the stop member and the intermediate bearing member, said stop member and intermediate bearing member each defining an adjacent member, and said spacing means being connected to manipulating means and are capable of being displaced rotationally in a plane which is perpendicular to the tie between an active position for locking the column and retracted position for unlocking the column wherein the improvement results from the spacing means comprising:

an intermediate bearing washer mounted so that it is free to rotate and move axially about the tie;

rolling-contact bearing means arranged between the facing surfaces of said intermediate bearing washer and of one of the adjacent members;

at least one rolling member arranged between the facing surfaces of said intermediate bearing washer and of the other of the adjacent members; and

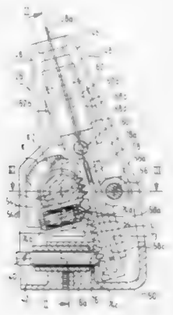
means for displacing said rolling member along an incline provided on one of said facing surfaces of said intermediate bearing washer and of the other of the adjacent members, the displacement means being connected to the manipulating means and being capable of being displaced rotationally about the tie to make the rolling member space apart the facing surfaces of the intermediate bearing washer and the corresponding member, and therefore move the intermediate bearing member away from the stop member in order to bring the flanges closer together and lock the column in position.

5,392,668

ACTUATING MEANS FOR A MULTISPEED CYCLE HUB

Günter Nürnberger, Schweinfurt, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Jun. 25, 1993, Ser. No. 302,460
Claims priority, application Germany, Jul. 2, 1992, 4221728
Int. Cl.[6] F16C *1/10*
U.S. Cl. 74—502.2 23 Claims



1. An actuating mechanism for a multispeed cycle hub having a hub axle with two hub ends defining an axis of rotation, a hub sleeve rotatably mounted on the hub axle, a transmission shiftable among several speeds received in the hub sleeve, at least one drive gear in driving connection with an input element of the transmission, at least one output element of the transmission in driving connection with the hub sleeve, a bore extending axially through the hub axle, two elongated compressionally rigid speed change elements received in the bore of the hub axle parallel to the axis of rotation and having inner ends coupled to the transmission for shifting between speeds and outer ends extending into a region proximate to one of the two hub ends, the actuating mechanism comprising:

a housing adapted to be attached to the one hub end,

a first cam, a second cam, and a pinion having engaging teeth, the first cam, second cam and pinion being connected to each other for conjoint rotation and forming a rotatable unit mounted in the housing for rotation about an axis,

an elongated rack element having a longitudinal axis and mounted in the housing for movement parallel to the longitudinal axis, the rack element being adapted to be coupled to a speed-selection device by a force-transmission member and including a row of teeth in driving engagement with the engaging teeth of the pinion,

a first pivot lever pivotably mounted in the housing in constant contact with the first cam so as to follow a pivoting motion defined by the shape of the first cam and engaging one of the two speed change elements so as to move the first speed change element upon pivotal movement in response to rotation of the first cam, and

a second pivot lever pivotally mounted in the housing in constant contact with the second cam so as to follow a pivoting motion defined by the shape of the second cam and engaging the other of the two speed change elements so as to move the second speed change element upon pivotal movement in response to rotational movement of the second cam.

5,392,669

BRAKE LEVER FOR A HANDLEBAR OF A BICYCLE

Jung-Hua Li, No. 9, Lane 300, Hsiao-Yang Rd., Changhua City, Taiwan, Prov. of China

Filed Aug. 20, 1993, Ser. No. 109,774
Int. Cl.[6] F16C *1/10*; G05G *11/00*
U.S. Cl. 74—502.2 1 Claim



1. A brake lever for a handlebar of a bicycle, said handlebar including a positioning seat fixed detachably thereon, said brake lever comprising:

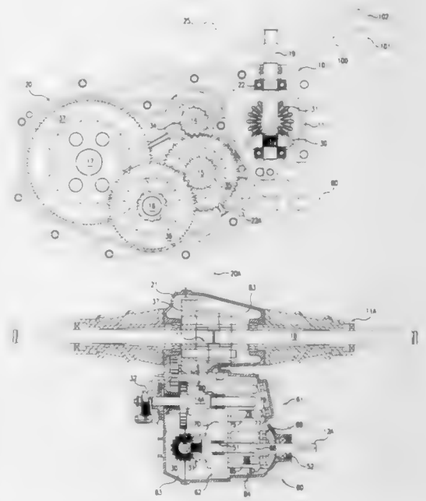
a first section having a first end and a second end, said first end for being connected pivotally to said positioning seat and a second section which is separately formed from said first section, said Second section having a front end connected detachably to said second end of said first section by means of a screw, said second section extending from said second end of said first section and forming an angle in cooperation with said first section at said two connected ends of said first and second sections, a relative position of said second section with respect to said handlebar being adjustable, wherein said second end of said first section is tapered and has a threaded hole formed along a longitudinal length of said first section, and said front end of said second section has a tapered through hole which is formed transverse to a longitudinal length of said second section and which receives said second end of said first section therein.

5,392,670

HEAVY DUTY HYDROSTATIC TRANSAXLE HAVING PARALLEL PUMP MOTOR DUAL-REDUCTION AND DRIVEN-AXLE SHAFTS

Ray Hauser, Decatur, Ill., assignor to Agri-Fab, Inc., Sullivan, Ill.

Continuation of Ser. No. 541,327, Jun. 21, 1990, abandoned.
This application Sep. 30, 1992, Ser. No. 954,602
Int. Cl.[6] F16H *47/00*
U.S. Cl. 74—606 R 6 Claims



1. A hydrostatic transaxle for transferring power from an engine to an output axle, comprising

a) a housing for said transaxle;

b) an input power shaft mounted in said transaxle housing, said input power shaft being drivingly engaged to said engine;

c) a hydrostatic power unit mounted on said transaxle housing and having a separate hydrostatic unit housing, a pump and motor mounted in said hydrostatic unit housing, said pump having a pump shaft having a first end and a second end, said first end extending outside of said hydrostatic unit housing, and said motor having a motor shaft having a first end and a second end, said first end extending outside of said hydrostatic unit housing, and wherein said pump shaft is parallel to said motor shaft;

d) means for driving said pump shaft of said hydrostatic power unit from said input power shaft comprising a first bevel gear fixed to said input power shaft and drivingly engaged to a second bevel gear fixed to said pump shaft at the first end thereof;

e) a first reduction shaft drivingly connected to first end of said motor shaft;

f) a series of reduction gears drivingly engaged to said first reduction shaft and mounted in said transaxle housing;

g) at least a second reduction shaft mounted in said transaxle housing parallel to said pump shaft and said motor shaft;

h) a differential gear mechanism to power said output axle and located in said transaxle housing and being drivingly connected to said first and second reduction shafts;

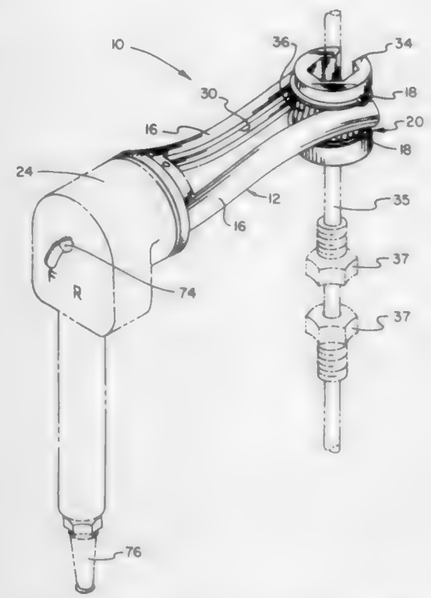
h) wherein said transaxle housing comprises at least a first and second internal chamber, wherein said input power shaft and said pump shaft driving means are mounted in said first internal chamber and said first reduction shaft and said second reduction shaft are mounted in said second internal chamber.

5,392,671

POWER-DRIVEN WRENCH APPARATUS

William M. Hazzard, 633 George St., Norristown, Pa. 19401

Filed Nov. 29, 1993, Ser. No. 158,865
Int. Cl.[6] B25B *17/00*
U.S. Cl. 81—57.13 13 Claims



1. A new and improved power-driven wrench apparatus, comprising:

a housing assembly which includes a gear box portion, a pair of flexible shaft retention portions that extend outwardly from said gear box portion, and respective bearing supports located on said flexible shaft retention portions, wherein said flexible shaft retention portions lie in a first plane,

a wrench head bearing assembly supported by said bearing supports of said housing assembly,

a first gear assembly supported by said gear box portion of said housing assembly, said first gear assembly receiving power from a power source,

a pair of flexible-shaft gear assemblies, each of which includes a respective driven gear which meshes with said first gear assembly, a respective flexible shaft connected to said respective driven gear, and a respective worm gear end connected to said respective flexible shaft, said respective driven gears being housed in said gear box portion of said housing assembly, and said pair of flexible-shafts and said-respective worm gear ends being housed in said flexible shaft retention portions of said housing assembly, and

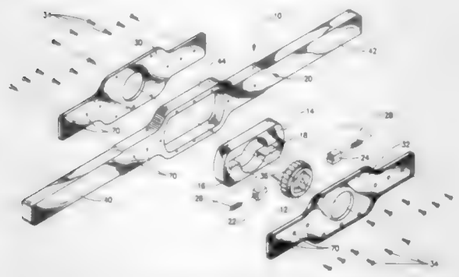
a cylindrical wrench head assembly supported by said wrench head bearing assembly on said flexible shaft retention portions of said housing assembly, said cylindrical wrench head assembly including a circumferential array of gear teeth for meshing with said respective worm gear ends of said flexible-shaft gear assemblies, such that said worm gear ends of said flexible-shaft gear assemblies rotate said cylindrical wrench head assembly around a central longitudinal axis which is perpendicular to said first plane in which said flexible shaft retention portions of said housing assembly lie.

5,392,672

RATCHET WRENCH

Larry R. Larson, 581 Helena Cir., Littleton, Colo. 80124, and Carl E. Campbell, Morrison, Colo., assignors to Larry R. Larson, Littleton, Colo.

Filed Mar. 9, 1993, Ser. No. 28,656
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—60 18 Claims



1. A ratchet wrench adapted to impart rotational movement to a workpiece, comprising:

(a) an annular driver member including a plurality of driver teeth disposed circumferentially around an outer periphery thereof, said annular driver member being adapted to detachably engage the workpiece;

(b) a housing adapted to receive said annular driver member for rotational movement within said housing;

(c) a handle structure secured to and extending from said housing;

(d) an elongated recess having a longitudinal axis and extending into said housing, said recess being positioned with respect to an imaginary line tangent to a selected radius of said annular driver member such that said longitudinal axis is disposed substantially parallel to or coextensive with the selected radius;

(e) a pawl element slideably disposed within said recess and configured to sequentially register with said driver teeth as said annular driver member relatively rotates within said housing, said pawl element including a plurality of shoulder portions, each shoulder portion having a pawl working surface formed at an angle with respect to the longitudinal axis of said recess; and

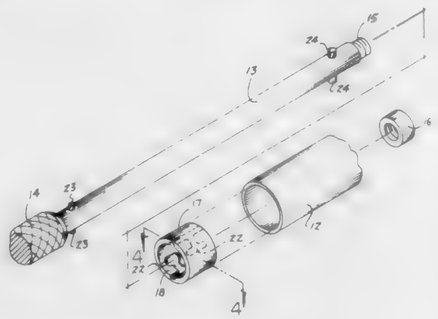
(f) a bias element resiliently urging said pawl element into contact with said annular driver member so that when said annular driver member is detachably engaged with the workpiece and said handle moves angularly about the workpiece in a first direction, sequential ones of said driver teeth are operative to exert a radial force component against said plurality of shoulder portions of said pawl element thereby displacing said pawl element longitudinally into said recess to enable relative rotation between said handle and said annular driver member as said sequential ones of said driver teeth move past said pawl element and, when said handle moves angularly about the workpiece in a second direction opposite said first direction, engaged ones of said driver teeth exert a compression force component against said plurality of shoulder portions of said pawl element perpendicularly with respect to the selected radius of said annular driver member thereby prohibiting relative rotation between said handle and said annular driver member so that rotational movement can be imparted to the workpiece and exert a retention force component against respective ones of said pawl working surfaces of said plurality of shoulder portions of said pawl element in a direction radially inwardly with respect to said annular driver member thereby further urging said pawl element into sequential registration with said annular driver member while rotational movement is imparted to the workpiece.

5,392,673

TOOL HANDLE

Russell K. Scott, P.O. Box 404, Tompkinsville, Ky. 42167

Filed Jul. 9, 1993, Ser. No. 88,370
Int. Cl.[6] B25G *1/04*
U.S. Cl. 81—177.2 4 Claims



1. A tool handle, comprising,

an elongate handle tube, having a handle tube first end spaced from a handle tube second end, with the second end having an entrance opening directed into the handle tube, the handle tube first end having a tool head fixedly mounted thereon, and

a handle shaft reciprocatingly received within the handle tube, the handle shaft having a shaft first end spaced from a shaft second end, and

the shaft first end including a shaft threaded boss, the shaft second end including handle mounting boss, with the shaft threaded boss and the handle mounting boss coaxially aligned relative to one another, the handle tube having an internally threaded collar coaxially aligned relative to the handle tube and to the handle shaft, the internally threaded collar fixedly mounted within the handle tube in adjacency to the tool head to threadedly receive the shaft threaded boss, and

the handle shaft having further lock means cooperative with the handle tube for fixedly securing the handle shaft relative to the handle tube upon release of the shaft threaded boss relative to the internally threaded collar.

5,392,674

TOOL ARRANGEMENT FOR MACHINING RESTRICTED SPACES, E.G. FOR INTERNAL TURNING

Wlajko Mihic, Gävle, Sweden, assignor to Mircona AB, Gävle, Sweden

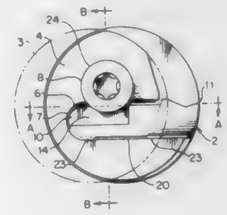
PCT No. PCT/SE92/00286, § 371 Date Oct. 29, 1993, § 102(e) Date Oct. 29, 1993, PCT Pub. No. WO92/19403, PCT Pub. Date Nov. 12, 1992
PCT Filed May 4, 1992, Ser. No. 140,031
Claims priority, application Sweden, May 2, 1991, 9101323
Int. Cl.[6] B23B *27/08, 29/02*
U.S. Cl. 82—158 5 Claims

1. Arrangement for tools for use in a cutting machine operation, in particular, for machining in restricted spaces such as internally in holes and inside hollow workpieces, comprising

(a) a holder shaft having one free end with a free end face;

(b) a cutter holder on said free end of said holder shaft and being provided with both a transverse groove dimensionally sized to receive a cutter insert and a threaded bore for receiving a threaded fastening device, said transverse groove located on said free end face of said holder shaft and being defined at least partially by at least two abutment surfaces, said transverse groove arranged adjacent said threaded bore;

(c) a cutter insert arranged in said transverse groove of said cutter holder, said cutter insert having at least two engagement portions in contact with said abutment surfaces of said cutter holder so as to prevent movement of said cutter insert relative to said cutter holder caused by stresses during the cutting machine operation, each of said engagement portions of said cutter insert includes a long shallow recess separating supporting heels adjacent edges of the respective engagement portion for providing a stable movement-free clamping of said cutter insert towards said abutment surfaces, said cutter insert also being provided with an outwardly facing contact surface



arranged to be engaged by a threaded fastening device located in said threaded bore at said free end of said holder shaft so as to stabilize said cutter insert; and

(d) a threaded fastening device having a threaded shaft portion in said threaded bore of said cutter holder, said threaded fastening device having a cylindrical head and, between said cylindrical head and said threaded shaft portion, a contact surface inclined towards said screw shaft portion, said threaded fastening device moveable between a tightened position with said inclined contact surface of said threaded fastening device engaged with said contact surface of said cutter insert to fix said cutter insert in said transverse groove of said cutter holder and a loosened position in which said cutter insert is freely moveable in said transverse groove.

5,392,675

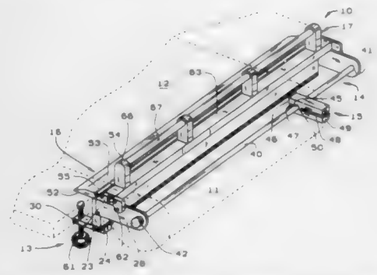
Patent Not Issued For This Number

5,392,676

WALLPAPER TRIMMER

Donald R. Drury, 963 Hackmann Rd., St. Paul, Mo. 63366

Filed Aug. 9, 1993, Ser. No. 54,424
Int. Cl.[6] B26D *7/02*; B65H *35/06*
U.S. Cl. 83—455 8 Claims



1. A device for holding wallpaper while it is cut and which is attachable to a support which has a top and bottom surface comprising:

(a) clamp means including a set of clamp retainers which are movable to vary the distance between said clamp retainers said clamp retainers being engageable with the bottom surface of said support,

(b) a wallpaper roll support means for holding a roll of wallpaper,

(1) body block means connecting the wallpaper roll support means to the clamp means,

(c) a cutting table for engaging the top of said support aligned with the wallpaper roll support, said cutting table cooperating with the clamp retainers to fasten the device to said support, said cutting table having a top surface and a slot in the top surface for accepting an edge of a cutter to define a straight edge cut for the wallpaper,

(1) said body block means further connecting the cutting table to the clamp means, and

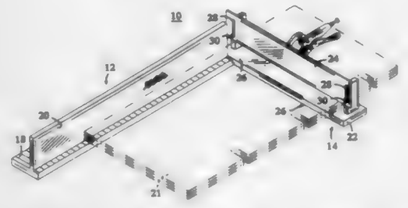
(d) a pivotable retainer means movable between an open position in which the wallpaper is passed over the cutting table and a closed position in which said retainer engages a top surface of the wallpaper adjacent to the cutting table slot and retains the wallpaper against the top surface of the cutting table in position to be cut.

5,392,677

ROOFING SHINGLE ANGLE CUTTER

John D. Sevart, and Thelma L. Sevart, both of Rte. 6, Box 197, Rolla, Mo. 65401

Filed Jul. 6, 1993, Ser. No. 85,908
Int. Cl.[6] B26D *5/12, 5/14*
U.S. Cl. 83—468.3 11 Claims



1. A shingle cutting tool for cutting a shingle having a longitudinal edge, said shingle cutting tool making a cut across the

shingle at a selectable angle transverse to the longitudinal edge thereof, said shingle cutting tool comprising:

a guide member, said guide member having a substantially upright surface for guiding the longitudinal edge of the shingle; and

a cutting assembly;

said cutting assembly being pivotally attached to said guide member and extending outward therefrom;

said cutting assembly comprising:

a cutting base member;

a cutting blade, said cutting blade having a cutting edge, said cutting edge opposing said base member;

a reciprocating guide means for guiding said cutting blade in a reciprocating fashion within a plane extending from a cutting base;

a pressure means for exerting a pressure on said cutting blade to thereby bring said cutting edge into contact with said cutting base member; and

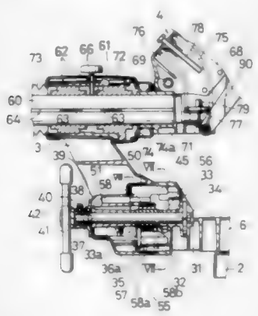
a cutting stroke adjustment member attached to the pressure means and to the cutting blade.

5,392,678

MITER SAW

Katsuhiko Sasaki; Mitsuyoshi Niinomi, and Yoshinori Shibata, all of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan

Filed Aug. 25, 1993, Ser. No. 111,479
Claims priority, application Japan, Aug. 27, 1992, 4-252215
Int. Cl.[6] B27B *5/36*
U.S. Cl. 83—471.3 **13 Claims**



1. A miter saw comprising:

a base on which a work is placed;

a miter saw unit supporting a saw blade and having a motor for rotatably driving said saw blade;

a support mechanism supporting said miter saw unit relative to said base in such a manner that said miter saw unit is laterally leftwardly and rightwardly pivotable in opposed directions from a vertical position and respectively toward left and right predetermined positions; and

biasing means interposed between said miter saw unit and said base and defining a biasing force for biasing said miter saw unit in a direction opposite to at least one of said opposed directions of the lateral pivotal movement of said miter saw unit when said miter saw unit is laterally pivoted in said at least one of said opposed directions;

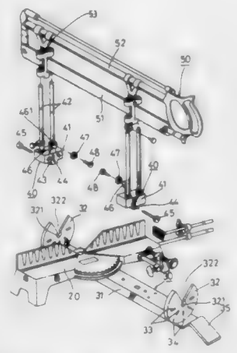
said biasing force of said biasing means being weaker than the gravitational force acting on the miter saw unit permitting a lateral pivotal movement of said miter saw unit, including said motor, toward a corresponding one of said left and right predetermined positions against said biasing force upon pivotal movement of said miter saw unit in said at least one of said opposed directions from said vertical position.

5,392,679

SAW EQUIPMENT

Mary Wang, No. 20, Alley 22, Lane 294, Sec. 3, Chang-Shui Road, Hsi-Hu Chen, Chang-Hua Hsien,

Filed Aug. 3, 1993, Ser. No. 101,898
Int. Cl.[6] B27B *21/00*
U.S. Cl. 83—766 **5 Claims**



1. A saw equipment, comprising:

a working table;

a rotary arm unit, mounted rotatably on the working table, comprising a rotary arm with an intermediate portion connected pivotally to a bottom surface of said intermediate portion of said working table,

two upright positioning plates secured to top surfaces of two end portions of said rotary arm respectively, said two upright positioning plates each having a V-shaped notch formed in an upper portion thereof for allowing a hacksaw to be operated therein, the bottom of each notch has a rounded tip portion, and

a plurality of angularly equidistant engaging slots formed in each of said positioning plate below said notch and circumferenfially aligned with each other;

two adjusting members, each of which has a lock block with an inside wall which abuts against an outside wall of a corresponding one of said positioning plates, each of said adjusting members further having a receiving means disposed on a top surface of said lock block for mounting said hacksaw therein and at least one engaging tongue projected from said inside wall of said lock block for engaging with one of said engaging slots of said corresponding positioning plate, said lock blocks each further having a lock element disposed on a top end of said inside wall thereof, said lock elements each having a rounded edge portion so as to mount on and aligned with said rounded tip portion of said V-shaped notch of the corresponding one of said positioning plates; and

a lock means for adjustably firmly connecting said two lock blocks of said two adjusting elements to said two positioning plates of said rotary arm unit respectively so that said hacksaw can be adjusted to incline at a desired angle by rotating said two lock elements of said two lock blocks about said two rounded tip portions of said positioning plates respectively and locked in position by said lock means.

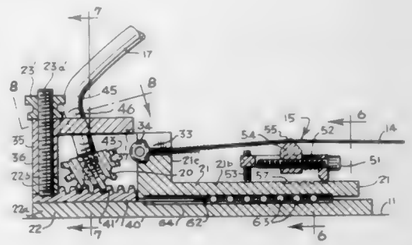
5,392,680

TREMOLO DEVICE FOR STRINGED MUSICAL INSTRUMENT

Eric P. Stets, 50 East & West Rd., West Seneca, N.Y. 14224

Filed Mar. 4, 1994, Ser. No. 206,527
Int. Cl.[6] G10D *3/00*
U.S. Cl. 84—313 **15 Claims**

1. In a stringed musical instrument comprising a head portion, a neck portion, a body portion, a plurality of generally parallel strings attached to said head portion and to said body portion, and a bridge member which engages said strings in a position adjacent to said body portion, the improvement comprising a fixed plate means attached to said body portion, a fixed gear rack means with teeth, said fixed gear rack means being attached to said fixed plate means, a movable plate means



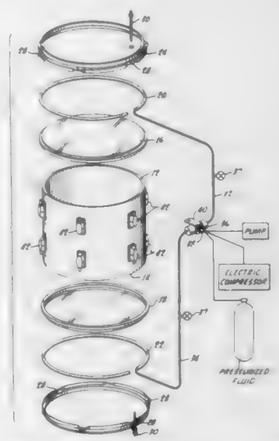
that is slideable with respect to said fixed plate means, wherein said movable plate means has a pinion gear means having teeth around the circumference thereof, said pinion gear means and said bridge member being attached to and movable in unison with said movable plate means, and lever means attached to said pinion gear means for rotating said pinion gear means so as to change the tension on said strings.

5,392,681

DRUM TUNING DEVICE

Walter L. Hall, San Bernardino, Calif., assignor to Airheads, General Partnership, San Bernardino, Calif.

Filed Jun. 22, 1994, Ser. No. 263,805
Int. Cl.[6] G10D *13/02*
U.S. Cl. 84—413 **18 Claims**



1. A drum head tuning apparatus for tuning a drum having a drum head including a lip, a shell with a rim, a hoop, and tensioning members connecting the shell to the hoop, the apparatus comprising:

a distensible bladder for containing pressurized fluid; and

a valve connected to the bladder for controlling the amount of pressurized fluid in the bladder;

wherein the bladder is sized to be disposed over the lip, and the hoop is disposed over the bladder in fixed positional relationship to the shell;

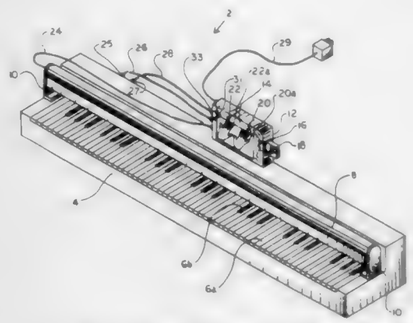
whereby conveying pressurized fluid into the bladder increases the size thereof, which moves the lip away from the hoop and stretches the drum head, and whereby releasing fluid from the bladder decreases the size of the bladder and allows the lip to move toward the hoop and thereby relieves tension on the drum head.

5,392,682

COMPUTERIZED TRAINING DEVICE FOR LEARNING TO PLAY A PIANO

Peter J. McCartney-Hoy, Rietschel Str. 13, 6520 Worms 15, Germany

Filed Mar. 24, 1993, Ser. No. 36,366
Int. Cl.[6] G09B *15/00, 15/08*
U.S. Cl. 84—470 R **2 Claims**



1. A computerized training device for learning to play a piano, comprising:

(a) a keyboard including a plurality of musical keys;

(b) means for selecting a piece of music to be played;

(c) means for selecting the speed at which the music is to be played;

(d) means for selecting a mode from a plurality of different playing modes including a practice mode, a loop mode, a professional mode, a super-professional mode, and a concert-professional mode, the practice mode being a basic mode, the loop mode repeating a particular section of the piece of music being played, the professional mode determining whether a proper key has been struck, the super-professional mode determining whether the proper key has been struck and further has been held down for a proper period of time, the concert-professional mode determining whether the proper key has been struck, whether the key has been held down for a proper period of time, and a velocity at which the key has been struck; and

(e) means for sequentially indicating a key of the musical keys to be struck in playing the musical piece selected by the music-piece selecting means, at the speed selected by the speed-selecting means and in the mode selected by the mode-selecting means; the indicating means being aligned with the keyboard.

5,392,683

METHOD AND APPARATUS FOR THREE DIMENSIONAL BRAIDING

Gary L. Farley, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 29, 1992, Ser. No. 953,562
Int. Cl.[6] D04C *3/00*
U.S. Cl. 87—8 **13 Claims**

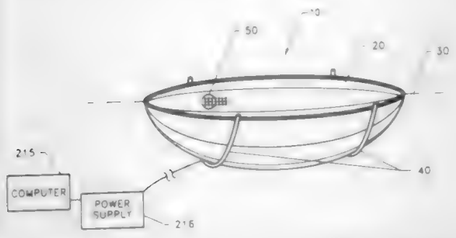
1. An apparatus for forming an article by intertwining a plurality of fiber strands, wherein said fibers intersect in a braiding zone where said article is being formed, comprising:

(a) a braiding surface;

(b) a plurality of pivot discs situated on said braiding surface,

wherein said pivot discs are capable of rotation about an axis perpendicular to said braiding surface;

(c) a plurality of linear shafts, each respectively situated lengthwise on each of said pivot discs for supporting movable carrier members;



(d) a plurality of carrier members movably disposed on said linear shafts, wherein each carrier member dispenses a length of fiber strand extending from said carrier member to the braiding zone of said article being formed; and

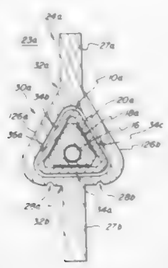
(e) means for rotating said pivot discs such that the longitudinal axes of adjacent linear shafts are aligned to facilitate transfer of carrier members between adjacent pivot discs.

5,392,684

EXPLOSIVE THRUST-PRODUCING COUPLING

Steven L. Renfro, Windsor Locks, and Steven G. Wassell, West Hartford, both of Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.

Filed Jun. 25, 1993, Ser. No. 82,613
Int. Cl.[6] F42B *15/38*
U.S. Cl. 89—1.14 **10 Claims**



1. A separation device for separably joining two structures, comprising:

a frangible joint comprising at least two joinder flanges, there being a joinder flange for each structure to be separably joined and a fracture region connecting the joinder flanges, the fracture region comprising frangible walls comprising fracture grooves, the walls interconnecting the joinder flanges and forming junctions therewith and defining a channel in the fracture region; and

an expansion member disposed in the channel in substantial surface contact with the channel walls, the expansion member comprising a containment tube, a detonation charge, and a charge holder supporting the detonation charge within the containment tube, the expansion member comprising an expansion region proximate to each fracture groove to exert outward pressure on the channel wall upon detonation of the detonation charge to fracture the channel wall;

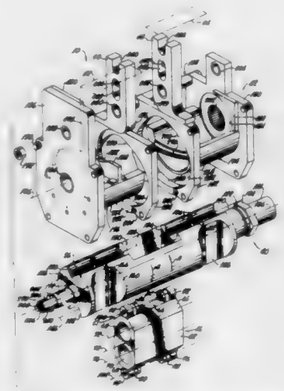
there being an expansion region proximate to a wall junction to provide separation thrust upon detonation of the detonation charge.

5,392,685

AUTOMATIC CANNON WITH CARBIOID-SHAPED SHELL CHAMBER PATH

Eugene M. Stoner, Palm City, Fla., assignor to Ares, Inc., Port Clinton, Ohio

Filed Aug. 18, 1983, Ser. No. 524,387
Int. Cl.[6] F41A *7/00*
U.S. Cl. 89—9 **30 Claims**



1. A rapid firing gun for firing cylindrical, telescoped ammunition, the gun comprising:

(a) a receiver having a shell feeding port and a fired shell casing ejection port, said ports being spaced apart from one another in an axial direction;

(b) means defining a shell firing position between said feeding and ejecting ports;

(c) a gun barrel and means mounting the gun barrel to the receiver with the rearward end of the barrel forwardly adjacent to said shell firing position;

(d) rotor means rotatably mounted in the receiver for causing, in response to rotation thereof, the transporting of shells in a generally axial direction from the shell feeding port to said firing position, the dwelling of said shells in said firing position for a predetermined shell firing dwell time, and the transporting of fired shell casings in the same general axial direction from the firing position to the shell ejection port,

(e) drive means connected to said rotor means for causing, during firing of the gun, rotation of said rotor means, thereby causing transporting of shells from the feeding port to the firing position and transporting of fired shell casings from the firing position to the ejection port; and

(f) firing means timed with rotation of said rotor means, for causing the firing of shells positioned in the firing position

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5,392,686

TELESCOPIC TOTAL BODY PROTECTIVE SHIELD

Wilfred A. Sankar, 111-12 Inwood St., Jamaica, N.Y. 11435

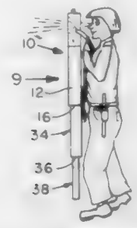
Filed Dec. 27, 1993, Ser. No. 172,906
Int. Cl.[6] F41H *5/08*
U.S. Cl. 89—36.05 **9 Claims**

1. A protective shield, comprising:

a) a frame, the frame having a front panel and a rear panel, the frame having a frame bottom having a frame bottom opening, a frame top, a pair of frame sides, and a pair of frame upper sides between the frame sides and the frame top, the frame sides substantially parallel to one another, the frame top substantially parallel to the frame bottom, the frame further having a viewing window for seeing through the front panel and rear panel; and

b) a first frame extension panel, substantially parallel to the front panel and back panel, the first frame extension panel

movable between a first position where it is between the front panel and back panel and is between the frame bottom and frame top, and a second position, where it extends from the frame bottom opening, the first frame extension panel having a first frame extension bottom.

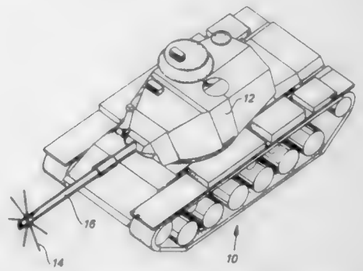


5,392,687

ARMOR APPLIQUE

James E. Shiells, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 248,642, Mar. 27, 1981, abandoned. This application Jun. 23, 1983, Ser. No. 508,641
Int. Cl.[6] F41H *5/007, 7/00*
U.S. Cl. 89—36.17 **8 Claims**



1. An armor applique for attachment to the muzzle end of a gun tube to deflect inert type projectiles which comprises:

a single ring member including first locking means for releaseably securing said ring member to said gun tube; and

a second means which includes:

a female portion of a bayonet connection peripherally disposed in said ring member; and

a plurality of radially spaced explosive filled hollow tubes having free ends mechanically isolated from each other, and bayonet securing means on the other ends for interacting with and releasably retained by said second means; said explosive filled hollow tubes when impacting with said inert projectile cause an explosive detonation which produces an unstabilizing force on said projectile causing it to yaw and to degrade the armor penetrating capability of said projectile.

5,392,688

TRIGGER FOR A FIRING WEAPON

Claude Boutet, and Patrice Pichot, both of Bourges, France, assignors to GIAT Industries, France

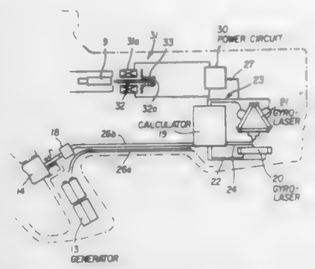
Filed Jun. 1, 1993, Ser. No. 69,721
Claims priority, application France, Jun. 2, 1992, 92 06631
Int. Cl.[6] F41G *3/14*
U.S. Cl. 89—41.09 **12 Claims**

1. A firing system integrated with a weapon for firing the weapon, comprising:

referencing means for locating a target within a plane;

tripper means for activating said referencing means;

calculator means for (i) receiving information from said referencing means, (ii) calculating a mean curve due to movement of the weapon, and a virtual mean point of the target from said mean curve, and (iii) generating a firing signal;



ignition means for firing the weapon upon receiving the firing signal from said calculator means; and

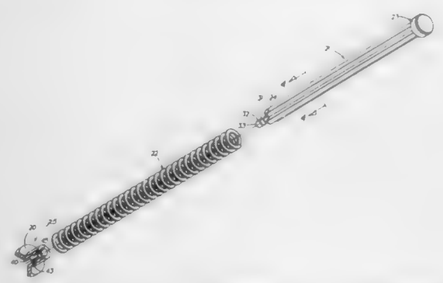
generating means for electrically powering said referencing, calculator and ignition means.

5,392,689

RECOIL MECHANISM FOR HANDGUNS

David J. Buzzeo, Bloomfield, Conn., and Milton W. Erickson, Merrillan, Wis., assignors to Smith & Wesson Corp., Springfield, Mass.

Filed Feb. 25, 1994, Ser. No. 201,665
Int. Cl.[6] F41A *3/86, 3/78*
U.S. Cl. 89—196 **9 Claims**



1. An improved recoil mechanism for a semi-automatic handgun which includes a slide reciprocally movable on a frame and a metallic recoil compression spring is coaxially disposed on a rod with one end thereof engaged with the slide and an other end engaged with the frame so that the spring will be compressed in response to movement of the slide upon recoil of the gun, the improvement comprising an elongated polymeric rod having a longitudinal axis and comprising a first flange disposed in generally perpendicular relation to said axis and being integral with one end thereof and providing a seat for one end of the spring and a second flange fitted onto a shank portion coaxially disposed on the other end of said rod with said second flange being in generally parallel relation to said first flange and serving as a seat for the other end of the spring, said second flange being part of a member comprising a socket coaxial with the second flange and adapted to receive therein said shank portion of said rod for securely coupling together said rod and second flange for ease of assembly of the polymeric rod and said recoil spring and in which the rod member is generally of non-circular cross-section intermediate said first and second flanges and comprising an inner core and a plurality of beam portions extending radially outwardly of said core in circumferentially spaced relation for improved

longitudinal strength to weight ratio of and heat dissipation by said rod.

5,392,690

MARINE POWER STEERING SYSTEM

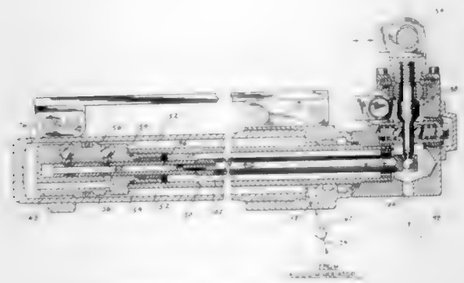
James M. Hundertmark, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 807,057, Dec. 12, 1991, Pat. No. 5,241,894, which is a division of Ser. No. 368,776, Jun. 20, 1989, Pat. No. 5,074,193, which is a continuation-in-part of Ser. No. 274,745, Nov. 15, 1988, abandoned, which is a continuation of Ser. No. 79,097, Jul. 29, 1987, abandoned. This application Sep. 3, 1993, Ser. No. 117,216

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[6] F15B *15/17*

U.S. Cl. 91—417 R 8 Claims



1. A marine propulsion system, comprising:

a steerable marine drive unit pivotably mounted to a boat;

an operator controlled steering input mechanism;

a steering linkage interposed between the steering input mechanism and the marine drive unit; and

a power steering system interconnected with the steering input mechanism and the steering linkage for effecting pivoting movement of the marine drive unit in response to the steering input mechanism, comprising a source of pressurized fluid; a piston and cylinder arrangement including an extendible and retractable rod interconnected with the piston and with the steering linkage, the rod being movable in response to supply of pressurized fluid to the cylinder; a movable valve arrangement comprising an extend valve and a retract valve, each of which is movable between open and closed positions; bias means for biasing the extend and retract valves toward their closed positions; and an actuator mechanism connected to the steering input mechanism for selectively moving the extend and retract valves to their open positions against the force of the bias means to provide movement of the extendible and retractable rod; wherein the bias means functions to prevent the steering input mechanism from experiencing feedback through the actuator member.

5,392,691

STONE SHIELD FOR AIR BRAKE ACTUATOR WITH WELDED YOKE

Thomas O. Schultz, Madison Heights, Mich., assignor to Indian Head Industries, Inc., Charlotte, N.C.

Filed Jul. 6, 1993, Ser. No. 87,659

Int. Cl.[6] F16J *15/18*

U.S. Cl. 92—168 21 Claims

1. A brake actuator comprising:

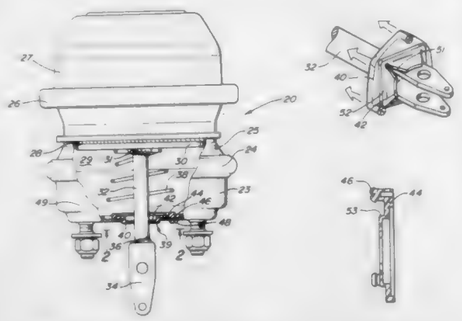
a chamber defined by at least a first housing member including an opening;

a piston received in said chamber, and having a piston rod extending through said opening and out of said chamber;

a yoke connected to said piston rod at a location outwardly of said chamber, said piston rod having a first outer dimension, said yoke having a second outer dimension greater than said first outer dimension; and

a shield received in said opening and having a bore of a diameter slightly greater than said first outer dimension such that said bore closely surrounds said piston rod, and said bore being capable of expanding radially outwardly such that said yoke may pass through said bore.

19. A stone shield for use with a brake actuator comprising:



a shield body having a central bore of a first diameter selected to closely circumscribe the outer diameter of a piston rod in a brake actuator; and

at least one slit extending radially outwardly from said bore and through the thickness of said shield, such that said slit facilitates the radial bending of portions of said shield to allow a member attached to the piston rod which has a larger outer dimension than the piston rod to pass through said bore by expanding the inner diameter of said bore.

5,392,692

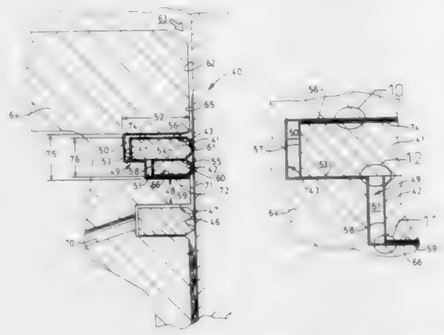
ANTIBLOW-BY PISTON AND SEAL CONSTRUCTION FOR HIGH TEMPERATURE APPLICATIONS

V. Durga N. Rao, Bloomfield Township, Oakland County, and Daniel M. Kabat, Oxford, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 14, 1994, Ser. No. 213,336

Int. Cl.[6] F16J *9/00*

U.S. Cl. 92—246 12 Claims



1. A piston and ring assembly operative within a cylindrical bore wall to retain fluids to one side of said assembly, the piston having a crown with a depending annular side wall for reciprocal movement along the bore wall, comprising:

(a) a piston having at least one annular stepped groove in the side wall, said groove being stepped into upper and lower spaces with the upper space having the greater groove depth;

(b) at least two compression rings in said groove effective to each substantially annularly engage said bore wall, said rings having mating surfaces superimposed one upon another and having split ends out of superimposed alignment, each ring residing essentially in a different one of said spaces with the uppermost of said rings engageable with both said groove step and the next lowermost of said rings; and

(c) a solid lubricant coating essentially all of said groove and constituting substantially the non-mating surfaces of said superimposed rings.

12. A piston and ring assembly operative within a cylinder bore wall of an internal combustion engine, the piston having a crown with an annular side wall for reciprocal movement along the bore wall, and said bore wall being bathed in oil comprising:

(a) at least one annular stepped groove in said side wall having a height of at least 4 mm;

(b) at least two compression rings in said groove effective to exert a resilient circumferential sealing force against said bore wall, said rings being superimposed one upon another to act in unison with their split ends out of superimposed alignment, the lower of said rings having a thickness generally commensurate with the height of the step, said rings being constituted of an aluminum based material having a combined height that is 60 mm or less the same as said groove height;

(c) a solid film lubricant layered on the surfaces of said groove and layered substantially on the non-mating surfaces of said superimposed rings; and

(d) means to vent oil through said piston that has been scraped by said rings.

5,392,693

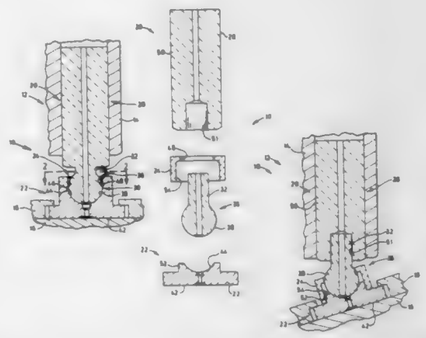
PISTON ASSEMBLY FOR A FLUID TRANSLATING DEVICE

William K. Engel, Peoria; James C. Goade, Morris; Michael H. Haselkorn, Peoria, and Donald H. Sherman, Morton, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 2, 1994, Ser. No. 204,831

Int. Cl.[6] F16J *9/00*

U.S. Cl. 92—248 5 Claims



1. A piston assembly adapted for use in a fluid translating device, comprising:

a ceramic piston having a cylindrical body with a spherical head portion disposed at one end of the cylindrical body;

a ceramic slipper having a substantially flat surface at one end and a spherical cavity defined in the other end, the spherical cavity being of a size sufficient to matingly receive the spherical head portion of the ceramic piston; and

a cylindrical ring fixedly bonded to the ceramic slipper adjacent the spherical cavity and having a retaining surface disposed on the cylindrical ring, the retaining surface being operative to engage a portion of the spherical head portion to retain the spherical head portion in the spherical cavity.

5,392,694

COFFEE MAKER

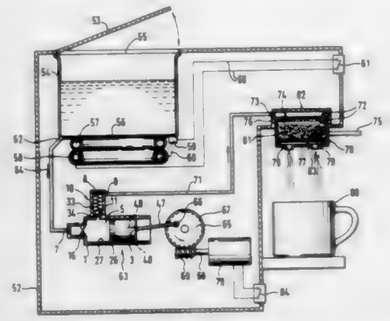
Roland Muller, Dreieich, and Walter Hufnagl, Sulzbach, both of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

Filed Oct. 12, 1993, Ser. No. 135,283

Claims priority, application Germany, Oct. 15, 1992, 4234746.7

Int. Cl.[6] A47J *31/24*

U.S. Cl. 99—295 18 Claims



1. A coffee maker comprising a heating device for heating water to a temperature necessary for producing a coffee drink, a brewing chamber adapted to be filled with coffee grinds, and an electrically powered pump for the delivery of the heated water to the brewing chamber, said pump comprising a working piston and a pump casing having a bore therein in which said working piston reciprocates with a predetermined stroke, its stroke determining a working chamber in said bore, said pump further comprising a suction valve and a discharge valve each comprising a valve closure body spring-loaded in a closing direction, the suction valve being opened by pressure in the working chamber that is below atmospheric and the discharge valve being opened by pressure in the working chamber that is above atmospheric, wherein preparation of the coffee drink is accomplished by the pump drawing hot water that is preheated by the heating device through the suction valve and delivering it under pressure through the discharge valve to the brewing chamber from which it escapes following extraction, and wherein

the suction valve is configured as a poppet valve.

5,392,695

AUTOMATIC BREADMAKING MACHINE

Eric F. Junkel, Mount Prospect, Ill., assignor to Circulair, Inc., Niles, Ill.

Filed Apr. 5, 1994, Ser. No. 223,455

Int. Cl.[6] A21D *8/00*; A47J *27/00*; B28C *1/16*; B29B *1/06*

U.S. Cl. 99—328 12 Claims

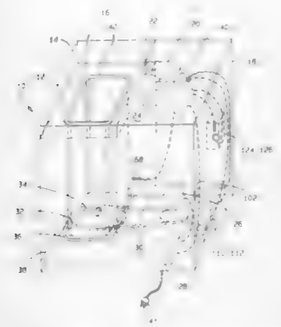
1. An improved automatic breadmaking machine for producing bakery products, the improvement comprising:

means for sensing an atmospheric pressure external from said breadmaking machine;

means for sensing an atmospheric temperature external from said breadmaking machine; and

a controller for reading said atmospheric pressure and said

atmospheric temperature and for modifying the operation of at least one operational parameter of said breadmaking



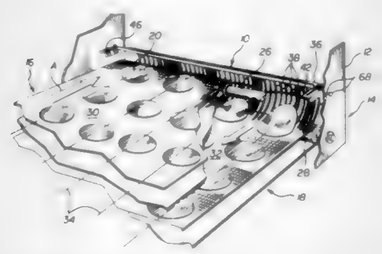
machine in response to said atmospheric pressure and said atmospheric temperature.

5,392,696

TORTILLA TRANSFER GUIDE AND METHOD FOR TRANSFERRING TORTILLAS

Francisco Navarro, Maywood; Manuel Valdez, Huntington Park, and Jose M. Buendia, La Habra, all of Calif., assignors to Machine Masters, Inc., El Monte, Calif.

Filed Feb. 7, 1994, Ser. No. 192,454
Int. Cl.[6] A21B *1/42*
U.S. Cl. 99—339 **13 Claims**



1. A transfer guide for use in an oven or cooling apparatus for heating or cooling tortillas, the apparatus being of the type including a pair of generally horizontal, vertically spaced, endless belt conveyors, each passing around an associated one of two vertically spaced rollers, wherein the tortillas are fed onto the upper conveyor for movement, in alignment with laterally spaced, longitudinal axes to dispose the tortillas in parallel rows along the upper surface of the upper conveyor, the upper surfaces of the upper and lower conveyors travelling relatively toward and away from the transfer guide, respectively, the transfer guide intended to guide the tortillas in each row from the upper conveyor to the upper surface of the lower conveyor in a manner that causes alignment of each tortilla with one of the parallel longitudinal axes associated with the row along which the tortilla is intended to travel on the upper surface of the lower conveyor, the transfer guide comprising,

a vertically and laterally extending curved wall spaced from and facing towards the adjacent ends of the two conveyors, said wall positioned to receive the tortillas from the upper surface of the upper conveyor and guide them down and around in a generally curved path onto the lower conveyor; and

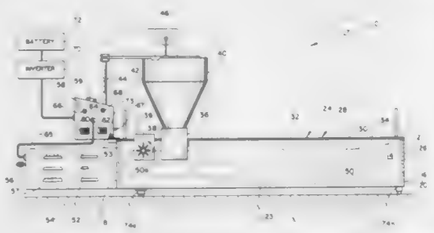
at least one scallop formed by said wall extending laterally therein and dished away from the adjacent conveyors, said scallop having a center of curvature aligned with one of the longitudinal axes along which the tortillas travel in their rows, said scallop, upon contact by a tortilla which is laterally displaced from the center of curvature of said scallop, tending to move the tortilla toward that said scallop's center of curvature as the tortilla passes from the upper conveyor to the lower conveyor thereby fostering alignment of each tortilla with the longitudinal axis of the row along which the tortilla is intended to travel on the upper surface of the lower conveyor.

5,392,697

CONVERTIBLE GAS OR ELECTRIC FIRED DONUT SYSTEM

Edward M. Anderson, Plymouth, and Merritt K. Anderson, Brooklyn Park, both of Minn., assignors to Lil' Orbits, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 740,926, Aug. 6, 1991, Pat. No. 5,230,280. This application Mar. 16, 1993, Ser. No. 33,662
Int. Cl.[6] A47J *37/12*
U.S. Cl. 99—340 **2 Claims**



1. A cooking fluid production frying apparatus configured to be compatible with either electric or gas-fired energy input systems, the apparatus further being configured to readily exchange electric and gas heating systems comprising:

(a) a chassis means carrying a readily detachable and exchangeable fry tank means, said fry tank means designed to accommodate an amount of cooking fluid circulatable therein;

(b) a heating means mounted in said fry tank means, said fry tank means being fabricated to combine with a particular heating means, said heating means being selected from the group consisting of gas-fired immersion tubes and electric immersion heaters;

(c) dough dispensing means coupled to said chassis means for dispensing batter, such as donut batter, into cooking fluid placed in said fry tank;

(d) temperature control means associated with the heating means for controlling the temperature in the cooking fluid; and

(e) wherein said fry tank means in combination with said heating means are adapted to be exchanged as a fabricated combination to convert the production frying apparatus optionally between a gas-fired and electric-heated system

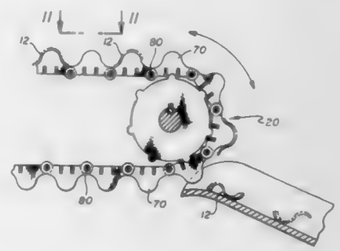
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5,392,698

CONVEYOR BELT FOR CARRYING UNCOOKED PRODUCT SLICES THROUGH A COOKING OPERATION

Peter Sprecher, Santa Barbara, Calif.; John Weidersatz, Louisville, Ky., and David Gaon, San Jose, Calif., assignors to TGTBT/Pasco Holdings, Inc. Gen. Partnership, Santa Barbara, Calif.

Division of Ser. No. 1,312, Jan. 6, 1993, Pat. No. 5,298,707, which is a continuation-in-part of Ser. No. 828,406, Jan. 31, 1992, Pat. No. 5,202,139, which is a continuation-in-part of Ser. No. 712,196, Jun. 7, 1991, Pat. No. 5,180,601. This application Sep. 17, 1993, Ser. No. 123,305
Int. Cl.[6] B65G *15/00*; H05B *6/00*
U.S. Cl. 99—443 C **5 Claims**



1. A conveyor belt for carrying uncooked product slices through a cooking operation, the conveyer belt comprising:

individual links each made from a microwave transparent material having an open lattice structure formed by a plurality of vanes disposed in substantially parallel planes, and a plurality of cross-pieces intersecting the parallel vanes at substantially right angles thereto, each vane including a product slice supporting surface defining a hump, and openings disposed at opposite ends thereof; and

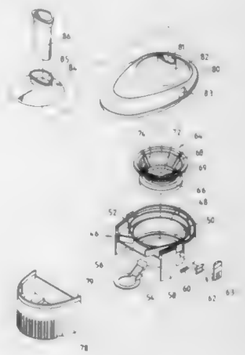
a plurality of pins made from the microwave transparent material pivotally mounted in the openings of the vanes wherein the links are pivotally interconnected by the pins, thereby providing a continuous belt.

5,392,699

VEGETABLE AND FRUIT JUICE PROCESSOR AND SAFETY DEVICE THEREOF

Chun-Ya L. Tai, 9F-3, No. 92, Gin-Chang Rd., Taichung, Taiwan, Prov. of China

Filed Feb. 9, 1994, Ser. No. 194,144
Int. Cl.[6] A23N *1/02*
U.S. Cl. 99—492 **4 Claims**



1. A vegetable and fruit juice processor and a safety device thereof comprising:

a base;

a housing mounted on said base;

a motor mounted in said housing and provided with a transmission shaft extending through a top of said housing;

a switching set for controlling the operation of said motor;

a driving body fastened to a top end of said transmission shaft;

a rotary cutting body comprising a covering portion and a support portion;

a toothed cutter mounted on said covering portion;

a filtration screen surrounding said support portion; and

a cap;

wherein said processor further comprises:

a cover body provided therein a receiving space having a first receiving slot and a second receiving slot, said first receiving slot being provided at the bottom thereof with a slope of a predetermined angle of inclination; and

a channel disposed in an outer wall of said receiving space such that said channel is in communication with a front edge of said first receiving slot;

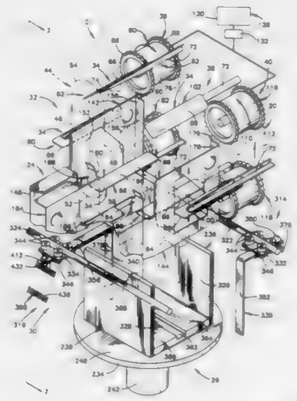
wherein said cover body is detachably mounted on a top fringe of said housing; wherein said rotary cutting body is disposed in said receiving space of said cover body; and wherein said support portion of said rotary cutting body is provided circumferentially at the top fringe thereof with a moving portion that is received in said second receiving slot.

5,392,700

APPARATUS FOR USE IN HANDLING SIGNATURES

Stephen R. Kleinhen, Eaton, Ohio, assignor to AM International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 34,360, Mar. 19, 1993, Pat. No. 5,312,223. This application May 24, 1993, Ser. No. 66,901
Int. Cl.[6] B65B *13/00*
U.S. Cl. 100—7 **61 Claims**



1. An apparatus comprising a platform, means disposed above said platform for receiving a stream of signatures, for sequentially forming a plurality of groups of signatures and for depositing each of the groups of signatures in turn on said platform, and conveyor means for sequentially moving stacks of signatures formed by at least one group of signatures relative to said platform, said conveyor means including a first rail, a first carriage movable along said first rail, a first pusher element connected with said first carriage, said first pusher element being movable between an extended position in which said first pusher element extends outward for a first distance from said first carriage and a retracted position in which said first pusher element extends outward from said first carriage for a second distance which is less than said first distance, first drive means for moving said first pusher element and said first

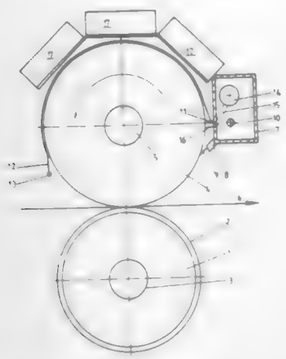
carriage along said first rail in a first direction with said first pusher element in the extended position to move,a first stack of signatures relative to said platform along a stack discharge path, said first drive means being operable to move said first pusher element and said first carriage in a second direction along said first rail with said first pusher element in the retracted position and with at least a portion of said first pusher element disposed between said first rail and the stack discharge path, a second rail extending parallel to said first rail with said stack discharge path disposed between said first and second rails, a second carriage movable along said second rail, a second pusher element connected with said second carriage, said second pusher element being movable between an extended position in which said second pusher element extends outward for a first distance from said second carriage and a retracted position in which said second pusher element extends outward from said second carriage for a second distance which is less than the first distance which said second pusher element extends outward from said second carriage, second drive means for moving said second pusher element and said second carriage along said second rail in the first direction with said second pusher element in the extended position to move a second stack of signatures relative to said platform along the stack discharge path, said second pusher element being spaced from the first stack during movement of the first stack along the stack discharge path, said first pusher element being spaced from the second stack during movement of the second stack along the stack discharge path, said second drive means being operable to move said second pusher element and said second carriage in the second direction along said first rail with said second pusher element in the retracted position and with at least a portion of said second pusher element disposed between said second rail and the stack discharge path.

5,392,701

CALENDER FOR TREATING A MATERIAL WEB PARTICULARLY A PAPER WEB

Christian Schiel, Heidenheim, Germany, assignor to J.M. Voith & GmbH, Heidenheim, Germany

Continuation of Ser. No. 74,020, Jun. 9, 1993, abandoned, which is a continuation of Ser. No. 886,703, May 21, 1992, abandoned. This application Feb. 8, 1994, Ser. No. 193,513
Claims priority, application Germany, May 29, 1991, 4117596
Int. Cl.[6] B30B *15/34*; D21G *1/02*
U.S. Cl. 100—93 RP 9 Claims



1. A calender for treating a material web, comprising:

at least two rolls forming with each other a roll gap for passage of the web, at least one of said rolls having a shell surface;

removable cover means, said removable cover means comprising a flexible foil which is tightened around part of the circumference of at least one of said rolls so as to form a machine-wide gap between the cover means and the shell surface of said roll, said flexible foil having two ends, and wherein said foil, viewed in an axially vertical section, is held at one end by means of a mounting device, the other end being weighted for purposes of tensioning the foil; and

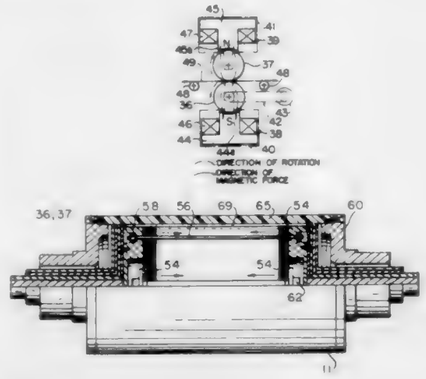
means for heating the material web.

5,392,702

MAGNETIC ROLLING SYSTEM HAVING ROLLERS WITH LAMINATED PLY UNITS DISPOSED THEREIN

Hideo Suzuki, Higashikurume, Japan, assignor to Bellmatic, Ltd., Higashikurume

Continuation-in-part of Ser. No. 723,676, Jun. 27, 1991, abandoned, which is a continuation of Ser. No. 476,611, Feb. 7, 1990, abandoned. This application Nov. 15, 1993, Ser. No. 151,723
Claims priority, application Japan, Feb. 15, 1989, 1-35483
Int. Cl.[6] B30B *3/04*
U.S. Cl. 100—163 R 9 Claims



1. A rolling apparatus comprising:

a frame;

two cylindrical main rollers., an outer shell of at least one of said main rollers being made of magnetic material being adjacently and rotatably mounted to said frame, at least one of said main rollers being movably mounted to said frame so as to allow adjustment of the distance between said two main rollers, said two main rollers further being disposed to facilitate movement of a workpiece therebetween;

at least one ply unit disposed within at least one of said cylindrical main rollers and rotatably mounted on said frame by a support axis;

two electromagnets, each being disposed opposite alternate ones of said two main rollers and said two main rollers being disposed between said two electromagnets, each one of said two electromagnets having a yoke with a coil wound thereon forming a solenoid for magnetizing the respective one of said two yokes by generating magnetic flux perpendicular to the moving direction of the workpiece and along a line through the centers of said two main rollers, one of said two yokes being magnetized as a salient north pole and the other of said two yokes being magnetized as a salient south pole, each of said salient poles being opposite the main roller containing said ply unit;

means for applying electrical current to each one of said two electromagnets in a first direction to magnetize said two main rollers by the magnetic flux generated by said solenoids so as to attract each other, thereby pressing the workpiece between said two main rollers, and for applying electrical current to each one of said two electromagnets in a second direction to magnetize said two main rollers by the magnetic flux generated by said solenoids so as to demagnetize each other, thereby quickly releasing the workpiece from between said two main rollers; and

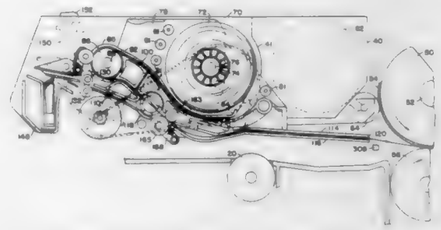
an electric motor for driving at least one of said magnetic rollers.

5,392,703

TAPE FEEDING, CUTTING AND EJECTING APPARATUS FOR A MAILING MACHINE

Irena Makarchuk, Fairfield; John R. Nobile, both of Fairfield, and William A. Salancy, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 11, 1994, Ser. No. 180,161
The portion of the term of this patent subsequent to Feb. 21, 2012, has been disclaimed.
Int. Cl.[6] B41L *47/46*
U.S. Cl. 101—92 16 Claims



1. In a mailing machine having an elongate feed deck, means for feeding envelopes along the feed deck, and a postage meter mounted in the mailing machine and having a printing mechanism disposed in juxtaposition with the feed deck so as to print postage indicia on successive envelopes as they are fed along the feed deck, a tape feeding, cutting and ejecting apparatus mounted in the mailing machine above the feed deck and adjacent to the postage meter on the upstream side thereof with respect to the direction of feed of envelopes along the feed deck for feeding successive finite lengths of tape to the postage meter for printing of postage indicia on a portion thereof and for cutting and ejecting the printed portion of the finite lengths of tape from the mailing machine, said apparatus comprising:

A. means for holding a supply roll of tape of indefinite length adjacent the end of said apparatus proximate to the postage meter of the mailing machine,

B. first guide means defining a generally U-shaped first feed path which extends generally from beneath said tape supply roll toward the end of said apparatus opposite to said end thereof proximate to the postage meter and which then extends in an opposite direction toward said end proximate to the postage meter, said first feed path terminating closely adjacent to the printing mechanism of the postage meter,

C. second guide means defining a generally straight second feed path which extends from a location on said first feed path away therefrom in a direction generally opposite to that in which said first feed path extends toward said end of said apparatus proximate the postage meter;

D. tape feeding means for feeding a finite length of tape from said tape supply roll in a forward direction along said first feed path to feed a portion of said finite length of tape through the printing mechanism of the postage meter for printing of a postage indicia on said portion of said finite length of tape,

E. means for reversing the direction of said tape feeding means to feed said tape in a reverse direction along said first feed path,

F. severing means disposed at the juncture of said first feed path and said second feed path for severing said tape when a trailing edge of the printed portion of said finite length of tape reaches said severing means and for deflecting a leading edge of the severed portion of said tape into said second feed path, and

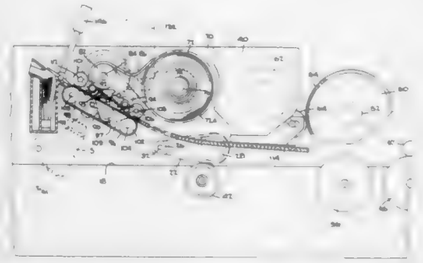
G. means for ejecting said severed printed portion of tape from the mailing machine along said second feed path, whereby said first and second guide means and said tape storing, feeding, severing and ejecting means are all positioned entirely on one side of the postage meter.

5,392,704

MAILING MACHINE

Morton Silverberg, Westport; William A. Salancy, Norwalk, and Steven A. Supron, Prospect, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 11, 1994, Ser. No. 180,163
Int. Cl.[6] B41L *47/46*
U.S. Cl. 101—92 10 Claims



1. In a mailing machine having an elongate feed deck, means for feeding envelopes along the feed deck, and a postage meter mounted in the mailing machine and having a printing mechanism disposed in juxtaposition with the feed deck so as to print postage indicia on successive envelopes as they are fed along the feed deck, a tape feeding and cutting apparatus mounted in the mailing machine above the feed deck and adjacent to the postage meter on the upstream side thereof with respect to the direction of feed of the envelopes along the feed deck for feeding successive lengths of tape to the postage meter for printing of postage indicia on a portion thereof and for cutting and ejecting the printed portion of finite lengths of tape from the mailing machine, said apparatus comprising:

A. means for storing a supply roll of tape of indefinite length,

B. means for defining a first predetermined feed path extending from said tape supply roll to the printing mechanism of the postage meter,

C. means defining a second predetermined feed path extending from a point on said first predetermined feed path away therefrom in a direction generally opposite to that in which said first predetermined feed path extends toward said printing mechanism,

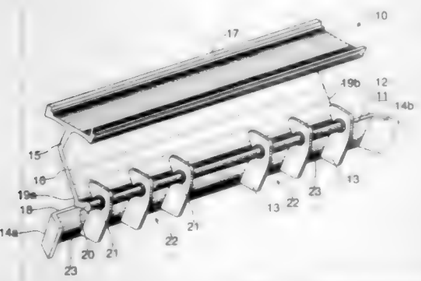
D. means for feeding a finite length of tape from said tape supply roll along said first predetermined feed path to bring a portion of said finite length of tape to the printing mechanism of the postage meter for printing of a postage indicia on said portion of said finite length of tape,

E. means for severing said printed portion of said finite length of tape, and

F. means for ejecting said severed printed portion of said finite length of tape from the mailing machine along said second predetermined feed path,

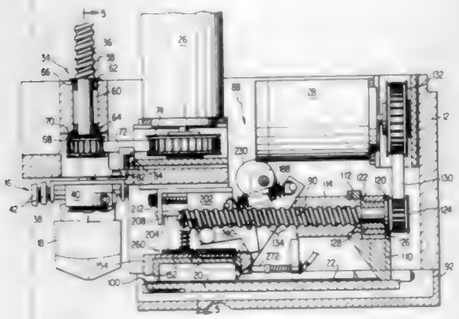
whereby said means for defining said first and second predetermined feed paths and said tape storing, feeding severing and ejecting means are all positioned entirely on one side of the postage meter.

5,392,705
FLOOD BAR AND SQUEEGEE FOR PRINTING APPARATUS
David Jaffa, Franklin Lakes, N.J., assignor to Precision Screen Machines, Inc., Glen Ellyn, Ill.
Filed Mar. 25, 1994, Ser. No. 219,762
Int. Cl.[6] B41F *15/46*
U.S. Cl. 101—123 9 Claims



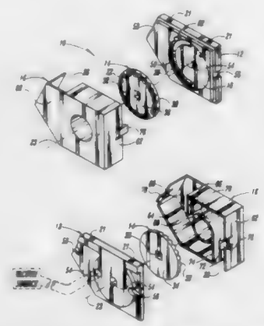
9. A flood bar and squeegee assembly for printing apparatus, which comprises an elongated squeegee member and an elongated flood bar member, each having an ink engaging face with a plurality of fins arranged across the face, the fins of each member being generally parallel to one another and each end of the members being bent toward the ink engaging face so as to inhibit the flow of ink to the sides of a screen during printing operations.

5,392,706
PAD TRANSFER PRINTING METHOD
L. Edward Drew, II, Keene; Mark C. Viklund, East Swanzey; Richard H. Frye, Westmoreland; Charles F. Gibson, Keene, and Barry S. Shonbeck, Westmoreland, all of N.H., assignors to Markem Corporation, Keene, N.H.
Filed Jul. 30, 1992, Ser. No. 921,852
Int. Cl.[6] B41M *1/10*
U.S. Cl. 101—170 20 Claims



1. A method of pad transfer printing, comprising the following steps:
inputting process parameters regarding a desired print cycle to a controller, said process parameters including plate movement parameters and pad movement parameters, said plate movement parameters including independently selected plate extension and retraction velocities;
extending and retracting a gravure printing plate in accordance with said plate movement parameters between an inking position at which ink is applied to said plate and an ink transfer position at which an ink image is transferred from said plate to an ink transfer pad, said extension and retraction of said plate occurring at said independently selected plate extension and retraction velocities, respectively; and
independently driving said ink transfer pad in accordance with said pad movement parameters between an ink receiving position at which said ink image is received from said plate and an ink transfer position at which said ink image is transferred to a surface to be printed.

5,392,707
SEED METERING DEVICE
William W. Romans, 1121 NW. Parkridge Dr., Ankeny, Iowa 50021
Filed Apr. 22, 1993, Ser. No. 51,174
Int. Cl.[6] A01C *7/04*
U.S. Cl. 111—185 6 Claims

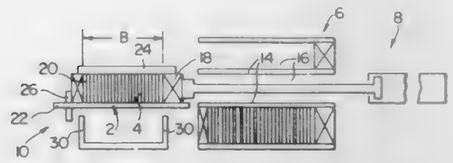


1. A metering device for discharging of agricultural seeds and the like comprising:
(a) a manifold having a vacuum groove;
(b) a housing coupled to said manifold, said housing and said manifold defining a seed collection area and a seed release area;
(c) a seed disk supported for rotation between said housing and said manifold, said seed disk having a first side with a seed conveying element, and having a conducting means for transmitting vacuum between said seed conveying element and said vacuum groove while said seed conveying element is in said seed collection area, said seed disk further comprising a screen means positioned between said seed conveying element and said vacuum groove; and
(d) a connection to connect said seed disk to a rotational power device so that said seed conveying element travels rotatively between said seed collection area and said seed release area.

5,392,708
METHOD AND APPARATUS FOR HANDLING A PACKET OF PIECES CUT FROM A BAND
Michael Dorn, Frick, Switzerland, assignor to Textilma AG, Switzerland
Filed Aug. 26, 1993, Ser. No. 112,596
Claims priority, application Switzerland, Aug. 28, 1992, 02684/92
Int. Cl.[6] B30B *15/30*
U.S. Cl. 100—215 10 Claims

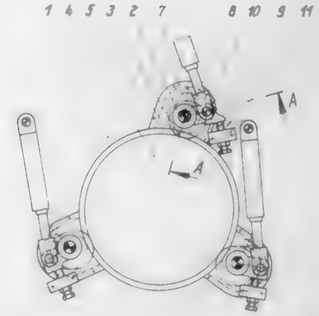
1. An apparatus for transferring a packet of stacked band sections into a mold, wherein the packet is arranged in a magazine compartment between two magazine walls disposed perpendicular to the plane of the band sections, said magazine compartment including a foot ledge forming the base of the magazine compartment and lying parallel to the band sections, characterized by:
said mold having a base, side walls and an internal measurement A between the side walls, which mold is open on its side lying opposite to the base;

a transfer apparatus with a receiving table for receiving the packet from the magazine compartment and for inserting the packet into the mold; and



an ejecting apparatus for ejecting the packet perpendicularly to the foot ledge out of the magazine and into the transfer apparatus.

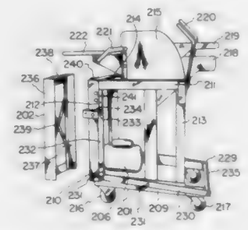
5,392,709
MOUNTING FOR AN IMPRESSION CYLINDER EQUIPPED WITH A TUBE
Ulrich Seyffert, Syrau, and Hermann Döbler, Plauen, both of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Germany
Filed Dec. 8, 1993, Ser. No. 163,821
Claims priority, application Germany, Dec. 10, 1992, 4241566
Int. Cl.[6] B41F *13/28, 27/00*
U.S. Cl. 101—216 31 Claims



1. A mounting for an impression cylinder having a seat on which a tube can be slipped in a rotary press and a peripheral bearing surface outside the seat, comprising: a supporting frame having an opening therein through which the tube can be passed; at least three supporting rolls for supporting the impression cylinder; means for connecting the rolls to the supporting frame so as to support the impression cylinder radially on the peripheral bearing surface, the connecting means including a plurality of eccentric bolts mounted in the supporting frame parallel to the axis of the impression cylinder, each of the supporting rolls being rotatably disposed on one of the eccentric bolts; and means for turning the eccentric bolts so that the rolls shift from a region of the opening in the supporting frame to permit exchange of the tube, and so that the rolls shift with respect to a desired position of the impression cylinder.

5,392,710
MODULAR FEEDER PRINTING SYSTEM
Raymond Li, P.O. Box 13007, St. John's, Newfoundland, Canada A1B 3V8
Filed Jun. 15, 1993, Ser. No. 76,764
Int. Cl.[6] B41F *5/04*
U.S. Cl. 101—219 12 Claims

1. A modular sheetfed printing press comprising:
(a) at least one printing unit;
(b) at least one feeder module;
(c) an alignment means incorporated at an end of each printing unit, said alignment means being adapted to be connected to an associated feeder module;
(d) a complementary alignment means incorporated at an end of each feeder module, said complementary alignment means being adapted to be connected to an associated printing unit, and said complementary alignment means being alignable and engagable with said alignment means;



(e) latch means, cooperatively associated with said alignment means, to secure a selected printing unit to a selected feeder module; and
(f) coupling means to couple and synchronize drive power from the printing unit to the connected feeder module.

5,392,711
METHOD OF MANUFACTURING A PRINTING PLATE
Takashi Kainuma, Nagoya, Japan, assignor to Kaitec Co., Ltd., Nagoya, Japan
Filed Oct. 5, 1993, Ser. No. 131,399
Claims priority, application Japan, Oct. 16, 1992, 4-304805; Oct. 26, 1992, 4-311410; Dec. 1, 1992, 4-349725
Int. Cl.[6] B41N *3/03*
U.S. Cl. 101—401.1 1 Claim



1. The method which comprises the steps of
(1) producing a halftone dot photograph (A) showing shading with the sizes of halftone dots,
(2) cutting out a desired portion (B) of the halftone dot photograph produced according to step (1), to thereby produce a cut out photograph (B),
(3) adhering the cutout desired photograph portion (B) resulting from step (2) to the surface of a transparent film (C),
(4) printing the front side of the product of step (3) on a positive film to thereby produce a halftone positive film (D),
(5) printing the reverse side of the product of step (3) on a negative film to produce a silhouette film (E) in which said cut out desired portion appears as deep-black,
(6) superimposing said halftone positive film (D) resulting from step (4) on a photosensitive resin plate and exposing it to light to produce a photographic resin plate (F) in which the transparent portion of the halftone positive film (D) becomes the raised portion,
(7) turning over said silhouette film (E) and superposing it on the photosensitive resin plate and exposing it to light to thereby produce a silhouette resin plate (G) in which its transparent portion becomes the raised portion,
(8) said photosensitive resin plates being produced in such a way that a photosensitive resin is formed on a metal plate to a desired thickness,
(9) alternately bringing said photographic resin plate (F) and said silhouette resin plate (G) into contact with a continu-

ous foaming resin plate (H) under heated conditions to thereby effect at least partial sealing of those portions of the continuous foaming sheet (H) that do not correspond to said desired portion (B) of the halftone dot photograph and to thereby leave the remaining portion of said continuous foaming resin plate (H) receptive to the permeation of ink.

5,392,712

ELECTRIC DETONATOR AND LEAD CONNECTOR ASSEMBLY

Kevin H. Waldock, Runaway Bay, Australia, assignor to Clipmate Corp., Oklahoma City, Okla.

Filed Feb. 16, 1993, Ser. No. 17,541
Int. Cl.[6] C06C *5/06*
U.S. Cl. 102—275.12 6 Claims



1. A detonator assembly for use with a booster charge having a first end and a second end, a blind bore in the first end, and a throughbore a distance from the blind bore and extending from the first end to the second end, the detonator assembly comprising:

an electrical detonator receivable in the blind bore;

two electrical leads of equal length, each one of the two electrical leads having a first end and a second end, the first end of each one of the two electrical leads being connected to the electrical detonator; and

an electrical connector connected to the second ends of the two electrical leads and characterized as capable of maintaining the second ends of the two electrical leads in non-conductive condition with one another;

wherein the length of the two electrical leads is greater than the distance between the blind bore and the throughbore in the first end of the booster charge and wherein the length of the leads is less than the sum of the distance between the blind bore and the throughbore and the length of the throughbore so that when the booster charge and the detonator are assembled, the electrical connector is contained entirely within the throughbore of the booster charge.

5,392,713

SHOCK INSENSITIVE INITIATING DEVICES

Jerry S. Brown, Woodford, Va., and John A. Conkling, Chestertown, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 14, 1994, Ser. No. 195,250
Int. Cl.[6] F42B *3/00*
U.S. Cl. 102—322 20 Claims

1. A shock insensitive explosive initiating device comprising:

an elongated metal casing having an open end and a closed end;

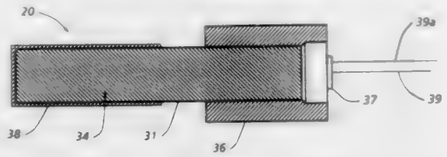
a quantity of a hydrated metal picrate disposed within said elongated metal casing adjacent the closed end thereof;

an inert pressure plug disposed within said elongated metal casing and abutting said quantity of hydrated metal picrate;

a quantity of thermite igniter composition disposed within and adjacent said open end of said elongated metal casing;

said quantity of thermite igniter composition being in abutting relationship with said inert pressure plug and provided with an exposed surface;

an elongated heat generating fuze element having a first end



embedded within said quantity of thermite igniter composition, a second end embedded within said hydrated metal picrate, and an intermediate portion extending through said inert pressure plug; and

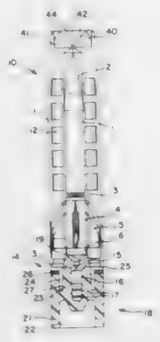
ignition means disposed within said open end of said elongated metal casing and in abutting relationship with said thermite igniter composition.

5,392,714

SUB-CALIBRE PROJECTILE WITH SABOT

Elmar Bilgeri, Steyr, Austria, assignor to Steyr-Daimler-Puch AG, Vienna, Austria

PCT No. PCT/AT92/00097, § 371 Date Jan. 18, 1994, § 102(e) Date Jan. 18, 1994, PCT Pub. No. WO93/02333, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 15, 1992, Ser. No. 182,048
Claims priority, application Austria, Jul. 17, 1991, 1435/91
Int. Cl.[6] F42B *14/06*
U.S. Cl. 102—522 5 Claims



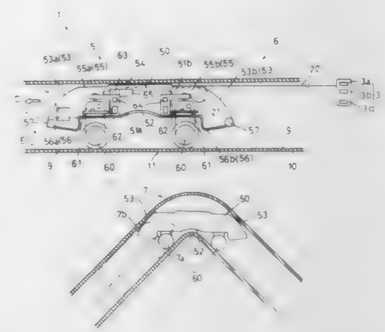
1. Sub-calibre projectile comprising a core projectile, whose rear end is acted on by pusher means, and a discarding cage, the pusher means comprising a pressure plate (**15**) with a rearward projecting alignment spike (**16**) and a pressure piece (**18**) into which is inserted the alignment spike (**16**), characterised in that the cage (**10**) comprises individual segments (**11**) and in that bases (**14**) of the segments (**11**) are secured between pressure plate (**15**) and pressure piece (**18**) and are linked to the segments (**11**) at the level of the pressure plate (**15**) by webs (**13**) which constitute breaking points.

5,392,715

IN-PIPE RUNNING ROBOT AND METHOD OF RUNNING THE ROBOT

Ronald E. Pelrine, Menlo Park, Calif., assignor to Osaka Gas Company, Ltd., Osaka, Japan

Filed Oct. 12, 1993, Ser. No. 135,015
Int. Cl.[6] B61B *13/00*
U.S. Cl. 104—138.2 8 Claims



1. An in-pipe running robot comprising:

a vehicle body movable inside piping along a piping axis;

a pair of running devices disposed in front and rear positions of said vehicle body, each of said running devices including a pair of wheels secured to opposite ends of an axle, with each of said running devices being steerable as a unit about a vertical axis of said vehicle body with centers of steering of said running devices disposed substantially parallel to a fore and aft direction of said vehicle body;

drive control means for individually driving said pair of running devices;

steering control means for individually steering said pair of running devices with respect to said fore and aft direction of said vehicle body;

first detecting means for detecting angular displacement of said fore and aft direction of said vehicle body with respect to said piping axis;

second detecting means for detecting steering amounts of each of said running devices with respect to said fore and aft direction of said vehicle body; and

running posture control means for controlling said drive control means and said steering control means in response to results of detection by said first detecting means and said second detecting means, to place said vehicle body in a position for running in a circumferential direction of said piping, with said fore and aft direction of said vehicle body inclined with respect to said piping axis, and said running devices set to run in said circumferential direction.

5,392,716

LOCOMOTIVE TRACTION MOTOR CONTROL SYSTEM

Edward J. Orschek, North East; Myron L. Smith, Fairview, and Dale C. Walker, Erie, all of Pa., assignors to General Electric Company, Erie, Pa.

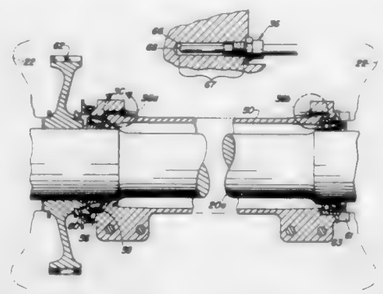
Filed Jul. 28, 1993, Ser. No. 98,695
Int. Cl.[6] B61C *3/00*
U.S. Cl. 105—61 5 Claims

1. A locomotive traction motor control system, comprising:

a traction motor operatively suspended by traction motor suspension bearing means;

sensing means for sensing a temperature of the traction motor suspension bearing means, the sensing means being operatively mounted in a traction motor suspension bearing housing located externally from a traction motor bearing assembly; and

control means, responsive to the sensing means, for generating a visual and audible warning indication based on the temperature sensed by the sensing means, the control means including a controller and a plurality of traction motor suspension bearing temperature detection units operatively coupled via a communication link to the con-



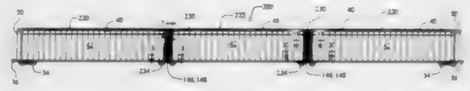
troller, each unit being adapted for sensing the temperature of traction motor suspension bearings on different locomotives wherein the controller generates a visual warning indication whether a suspension bearing overheating condition exists on the locomotive or another locomotive in a consist.

5,392,717

RAILWAY CAR

Harold E. Hesch, St. John, Ind.; Albert A. Beers, Duncanville, and Stephen W. Smith, Dallas, both of Tex., assignors to Trinity Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 944,169, Sep. 11, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 152,915
Int. Cl.[6] B61D *17/00*
U.S. Cl. 105—404 15 Claims



1. An improved articulated railway car having at least a first end unit and a second end unit interconnected with each other by pivotal couplers, each unit having a front, rear and two sides forming a hollow interior for transporting automotive vehicles and comprising:

a pair of spaced tracks for movably supporting each unit on railway tracks;

a center sill having a first end supported by one of said trucks and a second end supported by the other of said trucks;

a plurality of cross-bearers spaced along and disposed generally perpendicular to and connected to said center sill, said cross-bearers having free ends remote from said center sill;

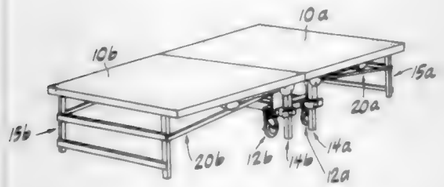
a plurality of side wall support posts extending generally vertically from and mounted on each said cross-bearers;

a plurality of generally vertically disposed hollow wall sections forming side walls connected to said posts, each of said side walls having a lower edge adjacent to said cross-beams, an upper edge, and front and rear edges adjacent the front and rear of each unit, respectively;

each of said hollow wall sections comprising a composite material pultrusion having interior and exterior panels with a plurality of vertical spacers holding said panels in spaced relationship, and wherein each of said pultrusions further comprises first and second ends formed so that the

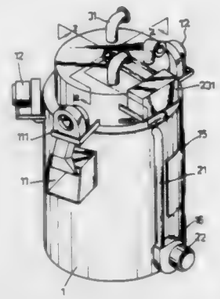
first end of a pultrusion mates with the second end of another pultrusion;
said side wall support posts disposed intermediate selected pairs of said spacers;
a roof extending from the front to the rear of each unit and connected to the upper edges of said side walls;
an end closure located at one end of said first end unit and at one end of the said second end unit and connected to the front and rear edges of said side walls and to said roof;
a plurality of expandable and collapsible bellows substantially spanning and enclosing adjacent ends of said first and second end units, said bellows connected to adjacent ends of each unit;
said bellows further comprising a plurality of flexible, generally U-shaped members having a configuration to match the adjacent ends of each car;
a plurality of elongated channels sized to receive free ends of said U-shaped members;
means for connecting said channel members to said free ends of said U-shaped members; and
each of said U-shaped member including flexible reinforcing metal wire.

5,392,718
WHEEL LIFTING ASSEMBLY FOR MOBILE FOLDING STAGE UNIT
Kenneth V. Stevens, Brooklyn, N.Y., assignor to King Arthur Co., div. of Shelby Williams Industries, Inc., Statesville, N.C.
Filed Nov. 4, 1992, Ser. No. 971,305
Int. Cl.[6] A47B *3/00*
U.S. Cl. 108—167 **15 Claims**



1. A mobile folding stage unit comprising:
a pair of platform sections having inner ends thereof pivotably mounted in side-by-side relation to a frame for pivotally folding the platform sections to vertical positions for storage and opening the platform sections to horizontal positions for staging use;
two sets of roller wheels, wherein each set comprises a pair of roller wheels fixedly mounted to a lower part of the frame on a respective side of the frame to which a corresponding one of the platform sections is mounted;
two sets of pivot brackets, wherein each set comprises a pair of pivot brackets fixedly mounted to a bottom surface at the inner end of a respective one of the platform sections adjacent respective ones of a corresponding set of roller wheels;
two sets of support brackets, wherein each set comprises a pair of support brackets fixedly mounted to the frame adjacent respective ones of a corresponding set of roller wheels, and wherein the respective pivot brackets of the platform sections are pivotably mounted to the corresponding support brackets of the frame;
two sets of pivot legs, wherein each set comprises a pair of pivot legs each of which has an upper end pivotably mounted to an eccentric position on a corresponding one of the pivot brackets and an intermediate length between upper and lower ends thereof; and
two sets of bearing guides, wherein each set comprises a pair of bearing guides each of which is pivotably mounted to a respective support bracket adjacent a corresponding one of the roller wheels and guides a corresponding one of the pivot legs in up and down movement,
wherein each said pivot leg has a selected length such that when the corresponding platform section is pivoted to the vertical position for storage, the upper end of the pivot leg is lifted by its eccentric position on the corresponding pivot bracket so that the lower end of the pivot leg is lifted above the contact point of the corresponding wheel with the ground, and when the corresponding platform section is pivoted to the horizontal position for staging use, the upper end of the pivot leg is lowered by its eccentric position on the corresponding pivot bracket so that the lower end of the pivot leg is lowered below the corresponding wheel so as to make contact with the ground.

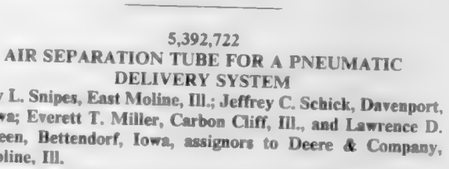
5,392,719
RENOVATED INCINERATOR
Hung L. Wen-Chiang, No. 1, Liu Tsuoh, Liu Tsuoh Li, Chia-Yih City, Taiwan, Prov. of China
Filed Feb. 10, 1994, Ser. No. 194,422
Int. Cl.[6] F23B *7/00*
U.S. Cl. 110—234 **2 Claims**



1. A renovated incinerator including a furnace, a circulating means and an exhausting means and the improvements comprising:
said furnace having a partition located at an inner bottom portion thereof, said partition having through holes for ashes to pass therethrough, a pair of tubes mounted underneath said partition having openings formed therethrough adapted to suck large particles of waste material into said tubes, said tubes having respective opposing ends extending external said furnace;
said circulating means having a pair of conveying pipes extending external said furnace, a fan mounted in top portion of said furnace and a guide plate positioned underneath said fan, each of said conveying pipes having one end connected to said tubes of said furnace through a blast fan and an opposing end of each of said conveying pipes extending internal said furnace between said fan and said guide plate for creating a whirlpool effect to blow said large particles downwardly for further burning.

5,392,720
FLAME RETAINING NOZZLE TIP
Oliver G. Briggs, Jefferson; Donald S. Langille, Worcester, and Francis G. Ouellette, Spencer, all of Mass., assignors to Riley Stoker Corporation, Worcester, Mass.
Filed Jun. 7, 1994, Ser. No. 255,167
Int. Cl.[6] F23D *1/02*
U.S. Cl. 110—264 **20 Claims**

1. A flame retaining nozzle tip for a burner for a pulverized fuel-fired furnace receiving a primary stream of pulverized fuel and air for discharge into a combustion zone of said furnace, comprising:
a hollow, open-ended body having an inlet end of generally rectangular flow cross-section for receiving said stream and an outlet end of generally circular cross-section for discharging said stream having a flow cross-section area less than that of said inlet end;
a cylindrical center element in coaxial alignment with a central axis extending between said inlet end and said outlet end; and



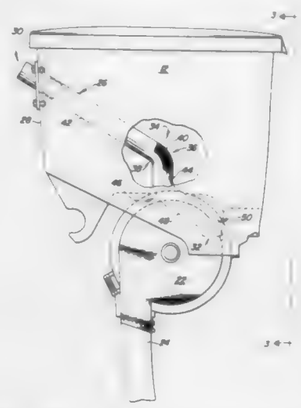
a plurality of swirl vanes around said central axis angularly disposed relative thereto having inner edges spaced equilaterally around and connected to central element and having outer edges connected to an inside surface of said hollow body for causing said stream to rotate rapidly around said central axis passing through said outlet end of said hollow body.

5,392,721
METHOD FOR RECYCLING PAPERMAKING SLUDGE
Wendell Judd, Fairfield, Ohio, assignor to Technology Development Corp., Fairfield, Ohio
Filed May 6, 1994, Ser. No. 238,872
Int. Cl.[6] F23G *5/00*
U.S. Cl. 110—346 **10 Claims**

1. A method for recycling papermaking sludge comprising the steps of;
a) mixing papermaking sludge and aggregate,
b) continuously introducing said mixed sludge and aggregate into a rotating heater,
c) rotating and heating said heater containing said mixed sludge and aggregate until essentially all water contained in said sludge is removed by evaporation and further, until combustible materials contained in said sludge are incinerated, resulting in a substantially dry product,
d) separating said incineration product from said aggregate and removing both from said heater.

5,392,722
AIR SEPARATION TUBE FOR A PNEUMATIC DELIVERY SYSTEM
Terry L. Snipes, East Moline, Ill.; Jeffrey C. Schick, Davenport, Iowa; Everett T. Miller, Carbon Cliff, Ill., and Lawrence D. Green, Bettendorf, Iowa, assignors to Deere & Company, Moline, Ill.
Continuation of Ser. No. 49,890, Apr. 20, 1993, abandoned. This application Apr. 28, 1994, Ser. No. 234,491
Int. Cl.[6] A01C *7/20*
U.S. Cl. 111—174 **2 Claims**

1. An air separation tube for removing seeds from an air stream, the air separation tube comprising:
a hollow tube having an inlet and an outlet, the tube further having a downwardly curving bend located between the inlet and outlet, the downwardly curving bend having an inner curve and an outer curve, the hollow tube between the inlet and the downwardly curving bend slopes downwardly, the hollow tube is provided with a downwardly sloping bend between the downwardly curving bend and the outlet, the hollow tube extends vertically downwardly between the downwardly curving bend and the downwardly sloping bend, the hollow tube between the downwardly sloping bend and the outlet slopes downwardly,



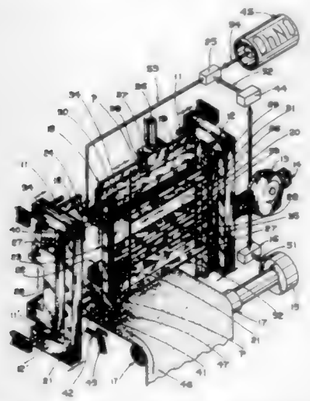
the outlet of the hollow tube is provided with a downwardly curving bend so that the outlet is vertically aligned; and
a screen mounted on the outer curve of the downwardly curving bend in line with the air stream, whereby the air stream may flow through the screen out of the tube but the seeds are prevented from leaving the tube.

5,392,723
TUFTING MACHINE AND METHOD FOR PRODUCING DESIGN IN CARPETING AND THE LIKE
Sadayoshi Kaju, Osaka, Japan, assignor to Ohno Co., Ltd., Sakai, Japan
Continuation of Ser. No. 61,819, May 13, 1993, abandoned, which is a continuation of Ser. No. 983,096, Nov. 27, 1992, abandoned, which is a continuation of Ser. No. 676,208, Mar. 27, 1991, abandoned. This application May 12, 1994, Ser. No. 241,690
Claims priority, application Japan, Apr. 13, 1990, 2-97842
Int. Cl.[6] D05C *15/26*
U.S. Cl. 112—80.23 **4 Claims**

1. A tufting machine for operating on a fabric backing comprising:
a plurality of needles each for carrying a pile yarn aligned laterally relative to one side of said fabric backing with a regular gauge between adjacent needles,
a plurality of loopers aligned laterally relative to the other side of the fabric backing with the same gauge between adjacent loopers as said regular gauge of the needles,
needle select means for selecting certain of said needles at every needle stroke cycle and for inserting said selected needles into the backing fabric,
pattern control means for providing a signal for actuating said needle select means to select the needles to be inserted during each of said needle stroke cycles,
feed means for intermittently and longitudinally feeding said backing fabric in a stop and feed manner wherein said backing fabric remains stationary in the longitudinal direction during a stopping period which is at least one needle stroke cycle in duration and can be fed during a succeeding feeding period, and
shift means for aligning selected ones of said needles each with any one of an associated plurality of said loopers by lateral shifting of said needles relative to both said backing

fabric and said loopers by a distance equal to an integral number n, where n is equal to or greater than 1, of the regular needle gauge for every needle stroke cycle while said backing fabric remains stationary in the longitudinal direction,

said pattern control means providing said needle select means with a signal so that any one of said needles may be



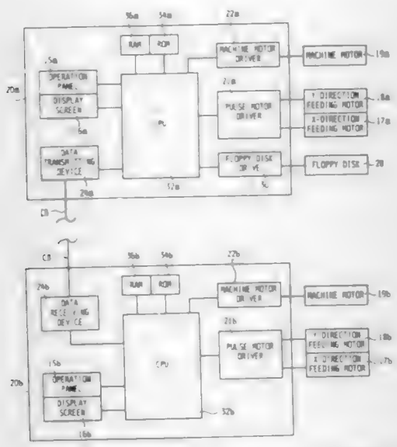
selected, inserted and the pile yarn carried thereby brought into tufting engagement with a corresponding one of the loopers disposed in alignment under said inserted needles to enable said one of the loopers to seize only one loop of pile yarn during at any one needle stroke cycle for each stopping period of a stop and feed motion of said intermittent feed means.

5,392,724

SEWING SYSTEM

Yoshikazu Kurono, Aichi, and Fumiaki Asano, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 18, 1994, Ser. No. 229,407
Claims priority, application Japan, Apr. 23, 1993, 5-120865
Int. Cl.[6] D05B *21/00, 25/00*
U.S. Cl. 112—121.12 20 Claims



1. A sewing system including a first sewing machine and at least one second sewing machine, each of the first and second sewing machines comprising:

a stitch forming means for forming stitches on a workpiece;

a workpiece moving means for moving the workpiece relative to the stitch forming means; and

a sewing control means for controlling the stitch forming means and the workpiece moving means to execute a sewing operation according to stitch data, wherein

the first sewing machine further comprises

a memory means for storing stitch data;

a data processing means for processing the stitch data stored in the memory means and allowing the processed stitch data to be stored in the memory means; and

a data transmitting means for transmitting the stitch data stored in the memory means to the second sewing machine, and wherein

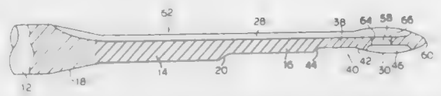
the second sewing machine further comprises a data receiving means for receiving the stitch data transmitted from the data transmitting means, wherein the sewing control means of the second sewing machine controls the stitch forming means and the workpiece moving means of the second sewing machine according to the stitch data received by the data receiving means.

5,392,725

SEWING MACHINE NEEDLE AND METHOD FOR MANUFACTURING SAME

Yoshitsugu Takei, and Tsutomu Kojima, both of Ueda, Japan, assignors to Organ Needle Co., Ltd., Nagano, Japan

PCT No. PCT/JP92/00599, § 371 Date Jan. 7, 1993, § 102(e) Date Jan. 7, 1993, PCT Pub. No. WO92/20851, PCT Pub. Date Nov. 26, 1992
PCT Filed May 11, 1992, Ser. No. 966,145
Claims priority, application Japan, May 10, 1991, 3-135954
Int. Cl.[6] D05B *85/00;* B21G *1/02*
U.S. Cl. 112—222 20 Claims



12. A sewing machine needle including a cylindrical shank of a large diameter, a blade arranged so as to extend from said shank and a sharp needle point formed at a distal end of said blade, in which a continuous long groove of a recessed shape is provided so as to extend from said shank to a portion of said blade in proximity to said needle point, a needle eye portion is formed along said long groove and said blade is formed with a clearance-above-eye;

wherein said blade is divided into a first blade section and a second blade section through a first and second frust-conical portion formed on said blade in a manner to be spaced from each other, said needle eye portion being arranged at said second blade section;

a constriction is arranged contiguous to said second blade section and spaced from the second frust-conical portion and in proximity to said needle eye portion of said second blade section and formed into a sectional area smaller than said second blade section;

a clearance-above-eye is provided on said constriction in a manner to be opposite to said long groove;

said blade has inner side surfaces defining said long groove and outer side surfaces, each being spread at a predetermined angle; and

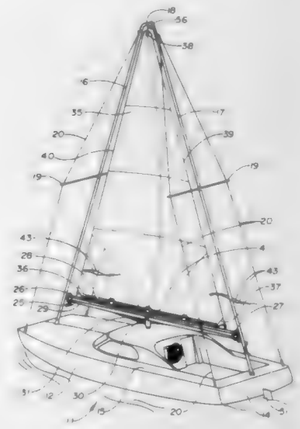
said constriction, clearance-above-eye, inner side surfaces and outer side surfaces are formed by die pressing.

5,392,726

SAILBOAT

Theodore A. Benze, 431 Arch St., Carlisle, Pa. 17013

Continuation-in-part of Ser. No. 881,158, May 11, 1992, Pat. No. 5,231,943. This application Jul. 27, 1993, Ser. No. 97,666
Int. Cl.[6] B63H *9/04*
U.S. Cl. 114—39.1 18 Claims



1. A sailing craft having a center hull, the hull having a deck, a port side, a starboard side, a bow and a stern in a longitudinal plane, an amidships between the bow and the stern, the craft comprising:

an outboard port hull and an outboard starboard hull, said hulls being adjustably connected to the center hull by respective port and starboard bridge beams, means for moving and securing said outboard hulls adjacent to the center hull for storage, transport and power sailing with an outboard motor, wherein said hulls are in a substantially vertical and seaworthy position and means for moving and securing said outboard hulls outwardly from the center hull for sailing;

an inverted substantially U-shaped mast having a port leg and a starboard leg, said legs having a juncture at an arcuate top, and when the port hull and the starboard hull are disposed outwardly for sailing, the port leg being connected to the port hull and the starboard leg being connected to the starboard hull;

a primary boom having a first end, an opposite second end and a midpoint, the midpoint of the primary boom being rotatably mounted approximately above the amidships of the center hull and between the port leg and the starboard leg of the mast, wherein the primary boom may rotate through 360° about a rotary axis in a plane parallel to the longitudinal plane of the center hull;

a pair of secondary articulating booms, one pivotally connected to the first end of the primary boom and the other pivotally connected to the second end of the primary boom;

a sail shape boom having a first end and an opposite second end, the first end of the sail shape boom slidably connected to the one articulating boom and the second end of the sail shape boom slidably connected to the other articulating boom, said sail shape boom being disposed in a longitudinal plane above the longitudinal plane of the primary boom, whereby, when the primary boom rotates through 360°, the sail shape boom also rotates through 360°, the ends of the sail shape boom avoiding contact with the mast;

a sail having at least two edges, a head, a center portion and a foot, the sail being symmetrical about a vertical axis, the head of the sail being releasably attached to the top of the mast, the foot of the sail being connected to the sail shape boom, two wishbone spars being connected about the sail, a lower wishbone spar being disposed in approximately the center portion of the sail and an upper wishbone spar being disposed near the head of the sail, the wishbone spars and the edges of the sail avoiding contact with the mast, a hem formed on each edge of the sail, a respective sail line enclosed within each hem, each respective sail line being attached near the head of the sail and extending downwardly within each hem to near the foot of the sail, each respective sail line exiting from the respective hem and forming two separate support lines, each respective support line passing through a respective pulley, two pulleys being attached to the first end of the sail shape boom and two pulleys being attached to the second end of the sail shape boom, each support line being angled upwardly and inwardly over the sail and being slidably connected to the lower wishbone spar, each support line further being angled upwardly and outwardly and being connected to the upper wishbone spar, whereby the respective sail lines and support lines reduce twisting and produce even tension throughout the sail;

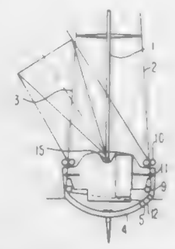
a cam having a base mounted on the hull deck, the cam being above the midpoint of the primary boom, the primary boom rotating around the cam, a first line connected from the cam to the one articulating boom, a second line connected from the cam to the other articulating boom, whereby when the primary boom rotates in a first direction, the first line is tightened and the second line is slackened such that the one articulating boom pivots, and when the primary boom rotates in a second opposite direction, the second line is tightened and the first line is slackened such that the second articulating boom pivots, whereby the luff and leach of the sail are interchangeable when the primary boom rotates through 180° and the sailing craft passes through the wind without stalling the sailing craft by backloading the sail.

5,392,727

BALANCING SYSTEM FOR A SAILING BOAT

Jan A. Christensen, Tjodalyng, and Carl O. Ohrn, Husoysund, both of Norway, assignors to Sailmatic AS, Husoysund, Norway

PCT No. PCT/NO91/00086, § 371 Date Feb. 8, 1993, § 102(e) Date Feb. 8, 1993, PCT Pub. No. WO91/19641, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 17, 1991, Ser. No. 962,787
Claims priority, application Norway, Jun. 15, 1990, 902686
Int. Cl.[6] B63B *15/02*
U.S. Cl. 114—91 9 Claims



1. A balancing system for a sailing boat, said sailing boat having a hull, said hull having a first and a second side, comprising:

a mast pivotally attached to said sailing boat and tiltable transversely with respect to said hull;

a weight within said hull, said weight being slidingly mounted on the bottom of said hull and movable transversely across the bottom thereof;

a first wire and a second wire, each of said wires having a

first and a second end, said first end of each of said wires being attached to said mast;

a first guide block and a second guide block, said first and second guide blocks being on said first and second sides of said hull, respectively, said first and second wires passing around said first and second guide blocks, respectively, and into said hull; and

means within said hull for transmitting a transverse tilt of said mast to said weight, said second ends of said wires being attached to said means, said means being operably connected to said weight, so that a transverse tilt of said mast in one direction may cause a transverse movement of said weight in the opposite direction, whereby said sailing boat may be maintained in a stable condition,

wherein said transmitting means comprises a first and a second transmission block on said first and second sides of said hull, respectively, and a weight wire, each of said first and second transmission blocks having a first and a second wheel, said second ends of said first and second wires being attached to said first wheels of said first and second transmission blocks, respectively; and said weight wire having a first end, a middle and a second end, said first end of said weight wire being attached to said second wheel of said first transmission block, said middle of said weight wire being attached to said weight, and said second end of said weight wire being attached to said second wheel of said second transmission block.

5,392,728

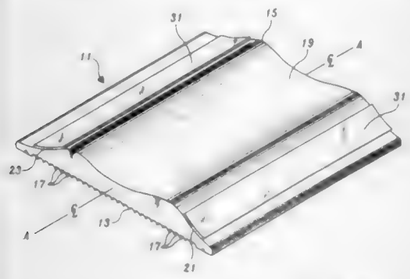
ROADWAY MARKERS WITH CONCAVE CURVED EDGES

Peter A. Speer, Kirkland; Michael W. Sly, Kent, and Harry J. Glutting, Tacoma, all of Wash., assignors to Davidson Plastic Company, Kent, Wash.

Continuation-in-part of Ser. No. 735,321, Jul. 24, 1991, Pat. No. 5,327,850, which is a continuation-in-part of Ser. No. 694,873, May 2, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 92,708

Int. Cl.[6] E01F *9/06*

U.S. Cl. 116—63 R 26 Claims



1. A roadway marker having a base for attachment to a roadway surface and a raised rumble portion, said base having a substantially rectangular shape, said raised rumble portion projecting upwardly from said base, said raised rumble portion defined in part by at least one edge, said at least one edge including a concave curved surface that extends upwardly from said base a substantial distance toward the top of said raised rumble portion, said roadway marker further including a layer of reflective material positioned on said concave curved surface.

5,392,729

METHOD OF PRODUCING SILICON SINGLE CRYSTAL

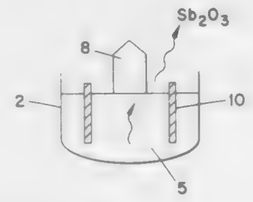
Kaoru Kuramochi; Makoto Ito, and Kiichiro Kitaura, all of Amagasaki, Japan, assignors to Osaka Titanium Co., Ltd., Amagasaki and Kyushu Electronic Metal Co., Ltd., Saga, both of Japan

Filed Sep. 26, 1990, Ser. No. 588,171

Claims priority, application Japan, Sep. 29, 1989, 1-255849

Int. Cl.[6] C30B *15/30*

U.S. Cl. 117—20 18 Claims



1. A method of producing a silicon single crystal, comprising the steps of:

pulling up a silicon single crystal from a molten silicon liquid in a crucible, the silicon single crystal being pulled up at a position located inside a cylindrical partition immersed in the molten silicon liquid, the partition being immovably fixed relative to the crucible so as to provide a set interval through which molten silicon flows from outside to inside the partition, the interval extending between a lower end of said partition and a bottom of said crucible; and

adjusting the interval at a set distance prior to the pulling-up step so as to control an oxygen concentration in the silicon single crystal pulled-up from the melt.

5,392,730

METHOD FOR DEPOSITING COMPOUND SEMICONDUCTOR CRYSTAL

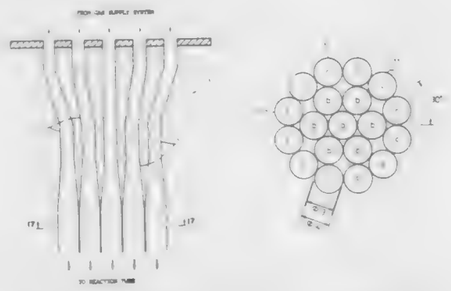
Makoto Kondo, and Hiroshi Sekiguchi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 858,981, May 21, 1992, Pat. No. 5,304,247. This application Sep. 2, 1993, Ser. No. 115,030

Claims priority, application Japan, Sep. 21, 1990, 2-252335

Int. Cl.[6] C30B *23/00*

U.S. Cl. 117—102 15 Claims



1. A method of depositing a crystal of a compound semiconductor on a substrate having a main surface and positioned in a horizontal plane within a reaction chamber, a deposition gas comprising a mixture of at least two material gases being supplied to the reaction chamber and the material gases being pyrolyzed therein, thereby to deposit the compound semiconductor crystal on the substrate main surface, the method comprising:

providing a plurality of jet ports within the reaction chamber;

supplying the deposition gas in a plurality of gas streams;

individually controlling the respective flow rates of the plurality of gas streams;

dividing selected ones of the plurality of gas streams into divided gas streams; and

supplying each non-selected gas stream and each selected and divided gas stream to a respective, individual jet port for forming a corresponding plurality of gas jets within the reaction chamber and which are directed vertically onto, and substantially uniformly cover, the main surface of the substrate on which the crystal is to be deposited.

5,392,731

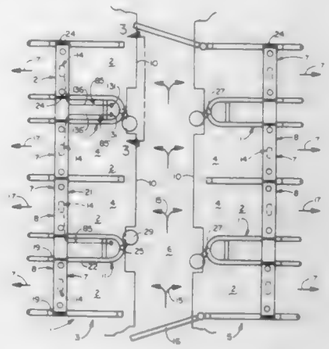
WALK-THOUGH FLAT BARN PARLOR

David P. Hoppman, and Kelvin L. Daleiden, both of Foond du Lac, Wis., assignors to A. F. Klinzing Co., Inc., Fond du Lac, Wis.

Filed Mar. 15, 1994, Ser. No. 213,614

Int. Cl.[6] A01K *1/12, 1/062*

U.S. Cl. 119—14.03 30 Claims



1. A walk-through flat barn parlor comprising:

a. a plurality of elongated frames upstanding from a floor and extending end-to-end along a vertical plane;

b. divider means mounted to adjacent frames for defining workstations;

c. gate means supported by each frame for automatic operation by gravity between a closed mode whereat the gate means constrains the animal by its neck and a ready open mode whereat the gate means can accept the head and neck of an animal walking thereto from an upstream direction, and for forced operation between the closed mode and an exit open mode whereat the gate means releases the animal to walk therefrom in a downstream direction; and

d. control means for selectively controlling the gate means from a workstation remote from the gate means to automatically operate by gravity from the closed mode to the ready open mode and for forced operation from the closed mode to the exit open mode.

5,392,732

SQUIRREL PROOF BIRD FEEDER

George E. Fry, Box 10-A1 Rd. 1, Williamstown, Pa. 17098

Filed Feb. 7, 1994, Ser. No. 192,351

Int. Cl.[6] A01K *5/00*

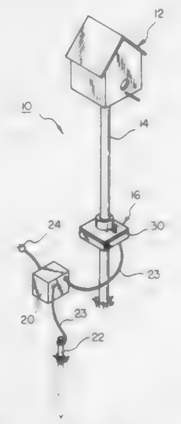
U.S. Cl. 119—57.9 2 Claims

1. A new and improved squirrel proof feeder for denying squirrels access to bird feeding stations comprising:

an electrically conducting support member engaging the earth at one end and a bird feeder at the opposing end,

an insulating member, the insulating member having an insulating collar having a flanged and non-flanged portion circumferentially engaging said electrically conducting support member and, whenever said conducting support member is operationally disposed in a usual and substantially vertical alignment, resting upon a stop member which is affixed to said conducting support member, and furthermore said insulating collar is disposed having said flanges portion engaging said stop member,

a conductive plate member electrically isolated from said



conducting support member by said insulating member and said insulating collar, the conductive plate positioned above said insulating member, and

an electrical power source capable of deterring small animals by electric shock wherein said electrical power source is connected to an earth ground at one output and to said conductive plate at a second output there being a significant difference in electrical potential between the two outputs.

5,392,733

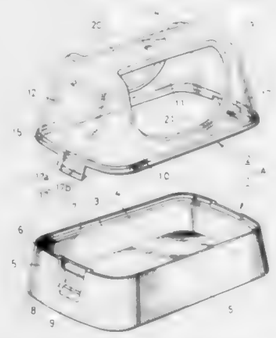
BOX-SHAPED TOILET FOR PET ANIMALS

Kazutoshi Tominaga, Higashiosakashi, Japan, assignor to Kabushiki Kaisha Tominaga Jyushi Kogyosho, Osaka, Japan

Filed Feb. 28, 1994, Ser. No. 202,949

Int. Cl.[6] A01K *1/01*

U.S. Cl. 119—165 11 Claims



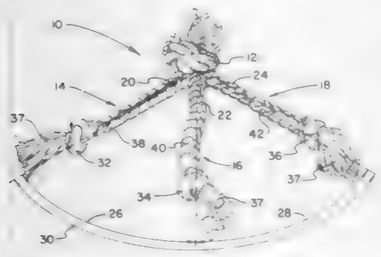
1. A box-shaped toilet for allowing pet animals to excrete therein their body waste, the toilet comprising:

a combination of a base with a cover;

the base being a box-shaped and one-piece molded of a hard plastics, said base having an open top surrounded by an upper rim;

the cover being one-piece molded of a hard plastics, having an open bottom surrounded by a lower rim, and a top;
the cover being of a cubic shape such that a space for accommodation of the animals is defined between the base and the cover, wherein the lower rim closely engages with the upper rim of the base, said cover having a first and second pair of opposite walls connected by said top of said cover;
at least one locking portion possessed by the base;
at least one locking portion possessed by the cover and engageable with and disengageable from the locking portion so that the cover is detachably attached to the base;
openings formed through at least one of said first and second pairs of opposite walls of the cover, so that the animals are allowed to enter and leave the toilet through the openings, wherein each of said openings is surrounded by a bank-shaped rim that protrudes inwardly;
handle means for carrying the box-shaped toilet, said handle means formed in said top of said cover by said openings in said at least one pair of opposite walls of said cover, said handle means comprises a narrow strip extending across said top of said cover between said bank-shaped rims of said openings; and
whereby said openings are hand insertion holes for firmly holding said handle means.

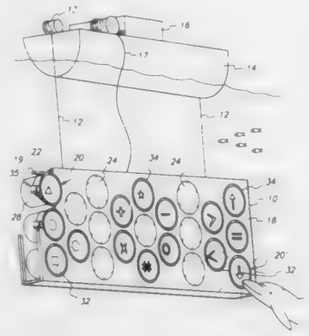
5,392,734
CHEW TOY FOR CATS AND DOGS
Ronald P. Laone, and Beate W. Laone, both of 17 Wilson St., Union City, Conn. 06770
Filed Oct. 12, 1993, Ser. No. 134,628
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—710 **14 Claims**



1. A new and improved chew toy for cats and dogs, comprising:
a rope knot node, and
a first flexible rope arm, a second flexible rope arm, and a third flexible rope arm depending from said rope knot node,
wherein each of said first, second and third flexible rope arms includes an end knot, a braided middle portion extending between said node and said end knot, and an unbraided open-stranded free end extending from said end knot.

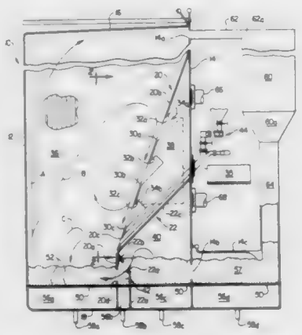
5,392,735
MARINE MAMMAL COMMUNICATION DEVICE
Mark J. Xitco, Jr., Kissimmee; John D. Gory, Orlando, both of Fla.; Kerry M. Perkins, Simi Valley, Calif.; Marshall M. Monroe, Glendale, Calif., and William G. Redmann, Simi Valley, Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Oct. 30, 1992, Ser. No. 968,817
Int. Cl.[6] A01K *15/02*
U.S. Cl. 119—712 **54 Claims**

15. A communication device for communication with marine mammals comprising:
a submersible keyboard having at least one panel in which is disposed a plurality of hollow keys, each key including a non-contactable switch capable of generating a signal when activated, and a unique echolocatable object situated inside the hollow key;
a means for detecting said signal and providing audible feedback to said marine mammal when a key is selected by activating said switch, said feedback representative of a



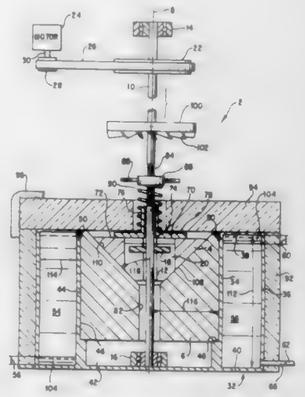
language element associated with the object in said key, whereby said marine mammal will be enabled to learn to communicate language elements by identifying and selecting keys associated with desired language elements and activating the switch in those keys.

5,392,736
FLUDIZED BED COMBUSTION SYSTEM AND PROCESS FOR OPERATING SAME
David H. Dietz, Hampton, and Walter R. Campbell, Union, both of N.J., assignors to Foster Wheeler Energy Corporation, Clinton, N.J.
Filed Dec. 27, 1993, Ser. No. 173,224
Int. Cl.[6] F22B *1/00*
U.S. Cl. 122—4 D **15 Claims**



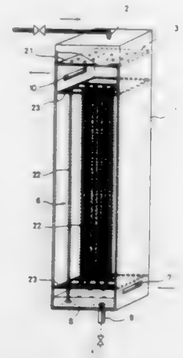
1. A fluidized bed combustion system comprising:
an enclosure;
a partition disposed in said enclosure to define a furnace section and an overfire air plenum section, said partition having a plurality of openings and a corresponding plurality of ducts registering with said openings;
a bed of combustible particulate material formed in said furnace section;
means for passing air into said bed in quantities sufficient to fluidize said material and insufficient to completely combust said material;
means for passing overfire air into said overfire air plenum, through said ducts and into said furnace section in quantities sufficient to completely combust said material; and
a damper associated with at least one of said plurality of ducts for regulating the flow of said overfire air into said furnace section.

5,392,737
FRICTION HEATER
William E. Newman, Sr., Apt. 2D, 206 Midlass Dr., Baltimore, Md. 21220-3733, and Henry W. Clark, Jr., 5801 Deep Water Dr., Oxford, Md. 21654
Filed Jun. 10, 1994, Ser. No. 258,182
Int. Cl.[6] A24C *9/00*
U.S. Cl. 122—26 **18 Claims**



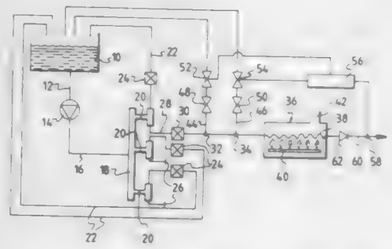
1. A friction heater comprising:
a rotor;
a stator into which said rotor extends, an outer surface of said rotor engaging an inner surface of said stator;
means attached to said rotor for rotating said rotor about a stator axis;
an enclosed reservoir housing having at least one inner wall, and at least one outer wall, which extend from a top wall to a bottom wall, said at least one inner wall enclosing a central area of said enclosed reservoir housing, said stator extending into said central area such that a smooth outer surface of said stator engages a smooth outer surface of said inner wall;
a divider disposed within said enclosed reservoir housing, said divider extending from said outer wall to said inner wall and from said top wall to said bottom wall to prevent the flow of liquid within said enclosed reservoir housing past said divider;
a plurality of baffle plates positioned in said enclosed reservoir housing and extending from said outer wall to said inner wall, alternate baffle plates extending from said top wall to a distance from said bottom wall, and baffle plates adjacent said alternate baffle plates extending from said bottom wall to a distance from said top wall;
an inlet extending through said outer wall into said enclosed reservoir housing adjacent one side of said divider; and
an outlet extending through said outer wall into said enclosed reservoir housing adjacent an opposite side of said divider.

5,392,738
STEAM GENERATOR FOR A STEAM BATH
Hidemi Tsutsumi, Nihonbashi-Muromachi, Japan, assignor to Mitsui Mining Company, Limited, Tokyo, Japan
Division of Ser. No. 36,284, Mar. 24, 1993, Pat. No. 5,333,573, which is a division of Ser. No. 960,233, Oct. 13, 1992, Pat. No. 5,215,043, which is a continuation of Ser. No. 656,943, Feb. 19, 1991, abandoned. This application Apr. 22, 1994, Ser. No. 231,051
Int. Cl.[6] F22B *27/00*
U.S. Cl. 122—39 **16 Claims**



11. A steam generator for a steam bath, comprising:
a closed main part having a hot-water supply port, an air inlet, a hot-water discharge port and a steam outlet, said steam outlet opening into a room comprising the steam bath to create a steam sauna atmosphere therein;
a hot-water distributing member provided in said main part for receiving hot water from said hot-water supply port and distributing the received hot water;
a plurality of vertically aligned finned tubes forming a vertical steam generating member disposed in said main part such that the distributed water flows down along said plurality of finned tubes, said plurality of finned tubes having a large surface area such that steam is generated from the hot water flowing down along said plurality of finned tubes forming said steam generating member and the generated steam is discharged from said steam outlet together with air introduced through said air inlet.

5,392,739
STEAM-RAISING SYSTEM
Howard C. Jones, Heath, England, assignor to Eaton-Williams Group Limited, Edenbridge, England
Filed Jun. 25, 1993, Ser. No. 82,052
Claims priority, application United Kingdom, Jun. 26, 1992, 9213594
Int. Cl.[6] F22D *5/26*
U.S. Cl. 122—451 R **7 Claims**



1. A steam raising system comprising a boiler, a pump con-

nected by a flow passageway to the boiler to pump water thereto, and flow-control means connected to the flow passageway between the pump and the boiler to control the flow of water from the pump to the boiler, wherein the flow-control means comprise at least two flow-redirecting-relief means in parallel with one another, but with their points of connection to the flow passageway between the pump and the boiler spaced apart in series with one another.

5,392,740

GAS FUEL ENGINE

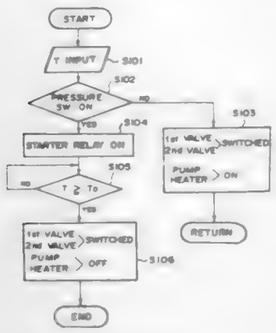
Takafumi Teramoto; Eiji Takano; Hiroyasu Uchida; Kenji Morimoto, and Tsutomu Fukuma, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation-in-part of Ser. No. 128,580, Sep. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 789,278, Nov. 8, 1991, Pat. No. 5,271,359. This application Dec. 20, 1993, Ser. No. 169,128

Claims priority, application Japan, Nov. 20, 1990, 1-316856; Jan. 21, 1991, 3-118989; Mar. 29, 1991, 3-091632; Mar. 29, 1991, 3-091633

Int. Cl.[6] F02B *43/08*

U.S. Cl. 123—3 **7 Claims**



1. A hydrogen engine comprising:
an engine body,
a hydrogen discharging tank containing a hydrogen storage alloy, which is connected to the engine body,
a heating medium passage through which a heating medium for heating said hydrogen storage alloy is caused to flow,
a hydrogen supply passage through which a hydrogen gas discharged from said hydrogen discharging tank is supplied to said engine body as fuel,
a pressure tank provided in said hydrogen supply passage to store said hydrogen gas, and
a control means for limiting starting of the engine until the pressure of the hydrogen gas in the pressure tank reaches a predetermined value.

5,392,741

LOCOMOTIVE ENGINE COOLING SYSTEM

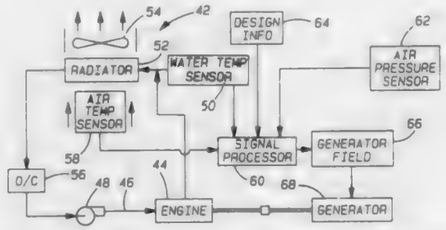
Teoman Uzkan, Indian Head Park, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1993, Ser. No. 168,352

Int. Cl.[6] F01P *7/02*

U.S. Cl. 123—41.13 **22 Claims**

1. A cooling system for cooling a locomotive engine associated with a locomotive, said engine generating power to drive the locomotive, said cooling system comprising:
circulating means for circulating a cooling medium through the locomotive engine;
air sensor means for sensing the temperature of ambient air proximate the locomotive, said air sensor means generating a signal indicative of the ambient air temperature; and
signal processor means for causing the engine power to decrease in relation to an increase in the ambient air temperature once the ambient air temperature reaches a predetermined air temperature value, said signal processor means being responsive to the signal from the air sensor



means and causing the engine to operate at a power level that will maintain the temperature of the cooling medium substantially at a first predetermined cooling medium value.

5,392,742

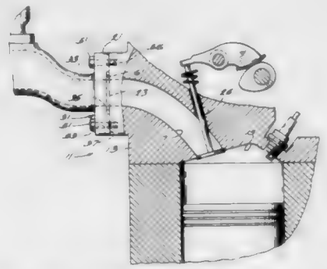
HEATED INTAKE MANIFOLD FOR FOUR STROKE OUTBOARD MOTOR

William B. Rush, 40160 N. Crawford Rd., Wadsworth, Ill. 60083, and Jeffrey F. Wagner, 3924 Woodlawn Dr., Gurnee, Ill. 60031

Filed Aug. 13, 1993, Ser. No. 106,277

Int. Cl.[6] F02B *75/22*

U.S. Cl. 123—184.61 **2 Claims**



1. A four stroke internal combustion engine comprising a cylinder head fabricated of metal and including a planar intake manifold mounting surface, and an intake passage including a port in said intake manifold mounting surface, an intake manifold fabricated of metal and including a planar cylinder head mounting surface, and an intake passage including a port in said cylinder head mounting surface, means for connecting said intake manifold to said cylinder head with said ports in registration and with said cylinder head mounting surface and said intake manifold mounting surface in metallic surface-to-surface contact, an annular groove in surrounding and outwardly spaced relation to said port in one of said planar surfaces and including a bottom surface spaced from said one of said surfaces, and two cylindrical walls in concentric relation to each other and extending between said one planar surface and said bottom surface, and an O-ring located in said groove and sealingly engaged with both said cylinder head and said intake manifold.

5,392,743

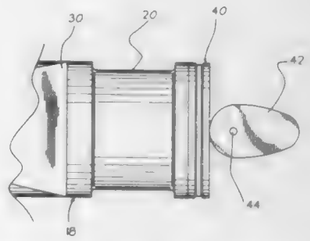
VARIABLE DURATION ROTARY VALVE

Jindrich Dokonal, 914 Mountain View Ave., Apt. 11, Mountain View, Calif. 94040

Filed Mar. 28, 1994, Ser. No. 219,083

Int. Cl.[6] F01L *7/02*

U.S. Cl. 123—190.8 **5 Claims**



1. A variable duration rotary valve comprising:
a valve cylinder having a circular cross-sectional interior with an intake port, an exhaust port, and an engine port in communication with said interior, said cylinder including a pair of spaced, narrow, circumferentially extending journals within said interior;
a rotary valve having a first end and a second end with a first elongated journal extending circumferentially around said valve proximate said first end thereof, and a second elongated journal extending circumferentially around said valve proximate said second end thereof, said rotary valve further having a journaled bore extending longitudinally therethrough and a contoured aperture having an arcuate shape extending from an outer periphery of said valve to a radially extending wall, said rotary valve being positioned within said valve cylinder;
a plurality of ball bearings interposed between said narrow journals and said elongated journals;
a splined shaft extending through said journaled bore for rotating said valve;
an abutment plate mounted within said valve cylinder;
a first thrust bearing positioned in abutting relation to said first end of said rotary valve;
a spring interposed between said abutment plate and said first thrust bearing;
a second thrust bearing positioned in abutting relation to said second end of said rotary valve;
a cam rotatably mounted within said valve cylinder, said cam being engaged against said second thrust bearing and operable to bias said rotary valve against a force of said spring;
and,
means for rotating said cam.

5,392,744

PRECOMBUSTION CHAMBER FOR A DOUBLE OVERHEAD CAMSHAFT INTERNAL COMBUSTION ENGINE

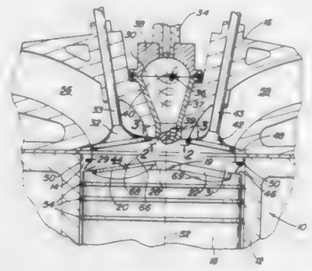
Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 12, 1993, Ser. No. 30,964

Int. Cl.[6] F02B *19/18*

U.S. Cl. 123—262 **17 Claims**

1. In an internal combustion engine having a cylinder and a piston movably disposed in said cylinder for reciprocal motion, a cylinder head secured over said cylinder and piston to form a combustion chamber, at least one intake port extending in said cylinder head and at least two intake valves mounted in said cylinder head for allowing air to be admitted into said combustion chamber, at least one exhaust port extending through said cylinder head and at least two exhaust valves mounted to said cylinder head for allowing exhaust gases to exit said combustion chamber, said set of intake and exhaust valves mounted longitudinally spaced apart along said engine and positioned laterally apart said valves being driven by laterally spaced apart twin overhead camshafts, and a pre-combustion chamber housing an injector and a heating element the improvement characterized by:
said pre-combustion chamber having a plurality of tapered transfer passages communicating with said combustion chamber with a narrow open end of said passages being in proximity to said pre-combustion chamber and a wide open end of said passages being in proximity to said combustion chamber;



said tapered transfer passages being circumferentially spaced about a centerline of said pre-combustion chamber;
said centerline of said pre-combustion chamber being approximately aligned with a centerline of said combustion chamber;
said piston has a plurality of recessed lobes circumferentially spaced about a central axis of said piston;
the longitudinal axis of each passage being inclined with respect to said centerline and at said wide open end being aligned approximately with a center of a respective recessed lobe in said piston and canted with respect to the upper surface of said piston at an acute angle.

5,392,745

EXPANDING CLOUD FUEL INJECTING SYSTEM

Niels J. Beck, Bonita, Calif., assignor to Servojet Electric Systems, Ltd., San Diego, Calif.

Continuation of Ser. No. 5,404, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 613,933, Nov. 13, 1990, abandoned, which is a continuation of Ser. No. 410,031, Sep. 20, 1989, abandoned, which is a continuation of Ser. No. 198,668, May 25, 1988, abandoned, which is a continuation of Ser. No. 16,773, Feb. 20, 1987, abandoned. This application Apr. 18, 1994, Ser. No. 227,868

Int. Cl.[6] F02B *3/08*

U.S. Cl. 123—295 **17 Claims**



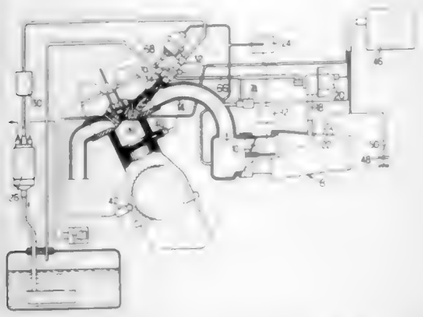
1. A method comprising:
injecting fuel from a fuel injector into a combustion cylinder of a stratified charge-type internal combustion engine at a velocity which falls rapidly and substantially continuously during an injection event after reaching an initial peak velocity, thereby forming an expanding cloud of atomized droplets with high positive separating velocities which expands substantially all along the path of injection.

5,392,746

ELECTRONICALLY CONTROLLED FUEL INJECTION DEVICE WITH AIR ASSISTANCE

Michael Pontoppidan, Rueil-Malmaison, France, assignor to Solex, Nanterre, France

Filed Nov. 16, 1993, Ser. No. 152,497
Claims priority, application France, Nov. 16, 1992, 92 13750
Int. Cl.[6] F02M *51/00*
U.S. Cl. 123—327 6 Claims



1. Fuel injection device for an internal combustion engine, comprising:
an air induction passage opening into a plurality of combustion chambers of the engine,
a plurality of electrically controlled fuel injectors, each opening into said air induction passage upstream of a respective intake valve of one of said combustion chambers, each said injector having an injector body formed with means for securing said body to the induction passage and a nose formed with at least one fuel outlet passage, defining an air-fuel mixture chamber;
electronic means controlling said injectors responsive to operating parameters of the engine;
a throttle valve assembly having an operator controlled throttle valve in said induction passage, said throttle valve assembly being constructed to substantially close said induction passage upstream of said injectors when said throttle valve is in a minimum opening position;
a line connecting said induction passage upstream of said throttle assembly to said mixture chambers and having additional air valve means electrically controlled by said electronic means for air flow adjustment in said line; and
a supplementary electrically controlled valve branched out of said line downstream of said additional air valve means and opening into said induction passage downstream of said throttle valve assembly,
said supplementary electrically controlled valve being controlled by said electronic means for opening during cold start of the engine at low temperature and during operation of the engine as a brake at normal temperature, high speed and with the throttle valve closed.

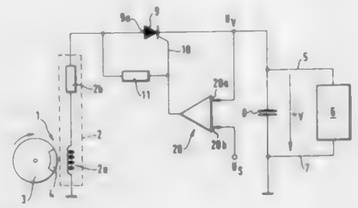
5,392,747

CIRCUIT FOR SUPPLYING VOLTAGE TO A MICROPROCESSOR IN AN IGNITION CIRCUIT FOR AN INTERNAL COMBUSTION ENGINE

Hans Nickel, Cottenweiler, and Thomas Schuster, Waiblingen, both of Germany, assignors to Andreas Stihl, Waiblingen, Germany

Filed Aug. 6, 1993, Ser. No. 102,748
Claims priority, application Germany, Aug. 7, 1992, 4226100.7
Int. Cl.[6] F02P *3/08, 1/02*
U.S. Cl. 123—417 10 Claims

1. A circuit for providing a controlled voltage supply to a microprocessor in an ignition circuit of an internal combustion engine equipped with a spark plug, the circuit comprising:
a generator including an induction coil and magnetic means for generating an alternating voltage in said coil;
a microprocessor for controlling said spark plug;
said microprocessor having first and second connecting terminals;



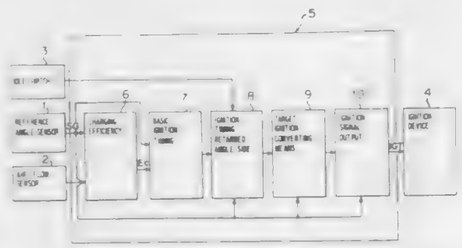
a capacitor connected across said terminals;
a thyristor having a gate electrode and being connected between said induction coil and said capacitor; and,
voltage limiting means connected to said gate electrode.

5,392,748

IGNITION TIMING CONTROLLING DEVICE FOR AN ENGINE

Tadahiro Azuma, and Hajime Kako, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1993, Ser. No. 118,245
Claims priority, application Japan, Sep. 25, 1992, 4-256215
Int. Cl.[6] F02P *5/00*
U.S. Cl. 123—417 1 Claim



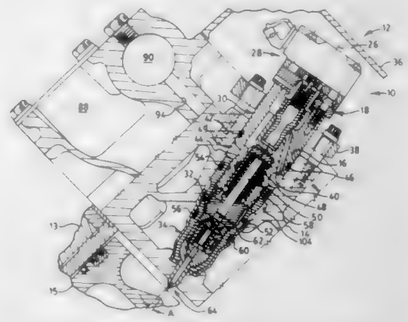
1. A control device for controlling an ignition timing of an internal combustion engine wherein:
a basic ignition timing map is generated based upon said engine's revolution number and intake air quantity, to provide a map of selected basic ignition timing values, and a target ignition timing of said engine is determined based upon an idle status of said engine and a preselected one of said basic ignition timing map's basic ignition timing values, said control device comprises:
(a) an idling state detecting means for detecting that said engine is in an idling state;
(b) an ignition timing limiting means for comparing said preselected one of said basic ignition timing value with a predetermined limited ignition timing when said idling state detecting means detects that said engine is in an idling state;
(c) selecting means to set said predetermined limited ignition timing as a new target ignition timing when said basic ignition timing is retarded with respect to said predetermined limited ignition timing and said engine is in said idle state; and,
(d) adjusting means to adjust said ignition timing in accordance with said selecting of said new target ignition timing.

5,392,749

HYDRAULICALLY-ACTUATED FUEL INJECTOR SYSTEM HAVING SEPARATE INTERNAL ACTUATING FLUID AND FUEL PASSAGES

Alan R. Stockner, Metamora, Ill.; Billy J. Cagle, Indianapolis, Ind.; James J. Grinsteiner, Union, and Martin J. Hower, Elk Grove Village, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 776,516, Oct. 11, 1991, abandoned.
This application Aug. 10, 1993, Ser. No. 104,970
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—470 18 Claims



1. A fuel injection system for an internal combustion engine comprising:
an engine member defining a plurality of injector bores;
a hydraulically-actuated injector positioned in each injector bore, said injector including an actuating fluid inlet passage and a fuel inlet passage;
means for supplying hydraulically actuating fluid to each injector, said hydraulically actuating fluid supplying means including an actuating fluid manifold associated with the engine member, said actuating fluid manifold having a common rail passage communicating with the actuating fluid inlet passage of each injector; and
means for supplying fuel to each injector, said fuel supplying means including a fuel manifold associated with the engine member and communicating with the fuel inlet passage of each injector, said hydraulically actuating fluid supplying means being sealed from fluid communication with the fuel supplying means, wherein each injector and its respective injector bore define an annulus arranged in fluid communication with the actuating fluid inlet passage of the injector, said common rail passage extending through the engine member, said actuating fluid manifold further including a rail branch passage communicating between the common rail passage and the annulus.

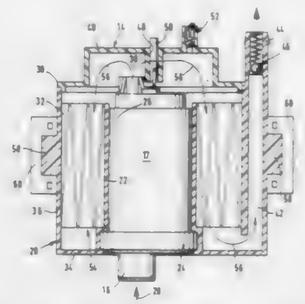
5,392,750

ARRANGEMENT FOR SUPPLYING FUEL FROM SUPPLY TANK TO INTERNAL COMBUSTION ENGINE OF MOTOR VEHICLE

Klaus-Bernhard Laue, Asberg; Karl Mielich, Baldham; Kurt Frank, Schorndorf-Haubersbronn; Werner Schmid, Tamm; Wolfgang Soyer, Wiernsheim; Hans-Joachim Kuppel, München; Hellmut Kegel, Gerlingen, all of Germany; Bernhard Lucas, Alcala de Hanares, and Ulrich Projahn, El Soto, both of Spain, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 30, 1993, Ser. No. 159,441
Claims priority, application Germany, Dec. 15, 1992, 4242242
Int. Cl.[6] F02M *37/14, 37/10, 37/22;* B60K *15/01*
U.S. Cl. 123—509 31 Claims

1. An arrangement for supplying fuel to an internal combustion engine of a motor vehicle, comprising a supply tank; and an aggregate which is located in said supply tank and has a fuel delivery unit for supplying fuel from said supply tank to the internal combustion engine, said aggregate having a plurality of components extending along a delivery path of the fuel, said aggregate which is located in said supply tank being provided



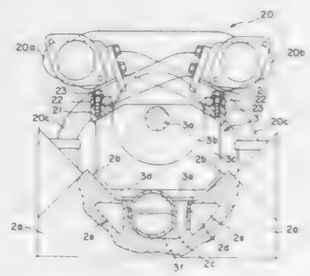
with a single supporting element which is provided with all holding means for holding all said components of said aggregate.

5,392,751

V-TYPE ENGINE WITH SUPERCHARGER MOUNTING

Taiji Matsubara, Higashihiroshima, and Naoyuki Yamagata, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 23, 1993, Ser. No. 125,157
Claims priority, application Japan, Sep. 24, 1992, 4-280709
Int. Cl.[6] F02B *33/38*
U.S. Cl. 123—559.1 4 Claims



1. A V-type engine comprising:
an engine block having two cylinder banks disposed in a Vee relation with a Vee space defined therebetween;
an intake manifold, connected to intake ports in said cylinder banks, disposed in the Vee space between the cylinder banks;
a supercharger, supported by said intake manifold, disposed in the Vee space below the intake manifold and having an exhaust port, formed at a bottom thereof, for exhausting charged air from the supercharger and positioning the supercharger with respect to the engine block at a bottom of the Vee space, the intake manifold having two groups of intake pipes, a first group of the two groups of intake pipes extending from an inside surface of a first cylinder bank of said two cylinder banks to a second cylinder bank of said two cylinder banks and a second group of the two groups of intake pipes extending from an inside surface of the second cylinder bank to the first cylinder bank, the two groups of intake pipes intersecting above the supercharger; and
mounting means for mounting the supercharger to the intake manifold, having two mounting portions positioned on each side of a location at which the two groups of intake pipes intersect, so as to define a space between the location

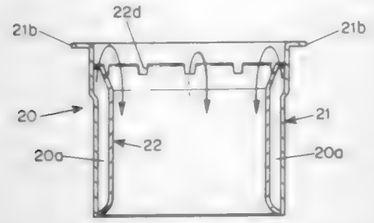
at which the two groups of intake pipes intersect and a top of the supercharger.

5,392,752

FUEL-AIR MIXING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Jack F. Brogan, San Pedro, Calif., and Raymond B. Russell, Clinton, Tenn., assignors to Combustion Efficiency, Inc., New York, N.Y.

Filed Mar. 16, 1994, Ser. No. 213,560
Int. Cl.[6] F02M *33/02*
U.S. Cl. 123—591 **16 Claims**



1. A fuel-air mixing device for receiving a flow of a fuel-air mixture and for delivering the flow of the fuel-air mixture to the inlet of an internal combustion engine, the fuel-air mixture containing droplets of unvaporized fuel, the device comprising:

a hollow outer elongated body portion having oppositely disposed open end portions; and

a hollow inner elongated body portion having oppositely disposed additional open end portions, the inner body portion having a lateral cross-section enabling the inner body portion to be nested within the outer body portion with the exterior surface of the inner body portion forming a cavity with respect to the interior surface of the outer body portion, one end portion of the inner body portion being adapted to receive the fuel-air mixture containing droplets of unvaporized fuel, the other end portion of the inner body portion enabling the fuel-air mixture to be delivered to the inlet of the engine, the other end portion of the inner body portion extending to the outer body portion to close the portion of the cavity adjacent thereto, the portion of the cavity adjacent the one end portion of the inner body portion being open to receive droplets of unvaporized fuel into the cavity, the open portion of the cavity enabling droplets of unvaporized fuel to be accumulated in the cavity from the flow of fuel-air mixture and then to pass from the open portion of the cavity as vaporized fuel and into the fuel-air mixture passing through the inner body portion.

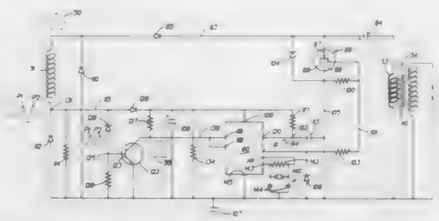
5,392,753

MICROPROCESSOR CONTROLLED CAPACITOR DISCHARGE IGNITION SYSTEM

Bob O. Burson, Vernon, and James A. Herndon, Suffield, both of Conn., assignors to R. E. Phelon Company, Inc., Aiken, S.C.

Filed Nov. 22, 1993, Ser. No. 155,384
Int. Cl.[6] F02P *1/08, 5/15*
U.S. Cl. 123—600 **5 Claims**

1. In a capacitor discharge ignition system having an ignition system for an internal combustion engine which includes a permanent magnet group rotatable with the engine for generating pulses in a charge coil disposed on a leg portion of a ferromagnetic core and also having a primary winding and secondary winding of an ignition coil disposed on the same leg portion of said core and having a microprocessor disposed in close proximity with the ignition coil, the improvement comprising means for energizing the microprocessor by said pulses generated in the charge coil during each revolution of the engine shaft, means for amplifying and squaring the leading edge portions of said pulses and connecting the same to the input port of the microprocessor for determining the elapsed time occurring in the time interval between said leading edges, an output port of the microprocessor being connected to a gate electrode of a silicon controlled rectifier (SCR) for switching the SCR "on" in response to a predetermined spark advance



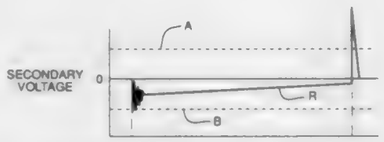
programmed into the microprocessor and said elapsed time indicative of the rotational speed of the engine, and said program including a signal to turn "off" all input ports of the microprocessor for a time at least as long as the spark duration of the ignition system whereby the microprocessor is isolated from any interference caused by the ignition pulse being generated in the secondary winding of the ignition coil.

5,392,754

METHOD OF SUPPRESSING RINGING IN AN IGNITION CIRCUIT

Daniel H. Hopper, Peru; Mark A. Laubenstein, Windfall, and Marc R. Engelhardt, Kokomo, all of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Dec. 16, 1993, Ser. No. 167,293
Int. Cl.[6] F02P *9/00*
U.S. Cl. 123—609 **17 Claims**



1. In an inductive ignition circuit for an internal combustion engine having a primary winding and a transistor switch in series across a supply voltage and a secondary winding connected across a spark plug, wherein the secondary voltage is subject to ringing when the transistor switch is first turned on to prematurely fire the spark plug, a method of operating the ignition circuit and suppressing ringing of the secondary voltage comprising the steps of:

commanding a transistor switch turn on for a brief on time to begin a dwell period, whereby the secondary voltage begins to increase and primary current increases;

dissipating energy in the circuit by commanding a transistor switch turn off after the brief on time to reduce the primary current; and

after a brief off time, turning on the transistor switch to complete the dwell period whereby the secondary voltage increases to a value insufficient to fire the spark plug while the transistor switch is on.

5,392,755

LAUNCHING MECHANISM

Donald G. Sutton, Cromwell, New Zealand, assignor to Lanfield Holdings Limited, Cromwell, New Zealand

Filed Aug. 13, 1993, Ser. No. 105,631
Claims priority, application New Zealand, Nov. 24, 1992, 245234
Int. Cl.[6] F41B *3/00*
U.S. Cl. 124—5 **9 Claims**



1. A launching mechanism for an article, said article having longitudinally spaced leading and trailing ends, said mechanism including:

an elongated cooperating means having a leading end and a trailing end, said cooperating means being mountable on the article with the leading end of said cooperating means spaced from the leading end of the article;

an elongated release means having a leading end and a trailing end, said release means being releasably engageable with said cooperating means such that, when said release means is engaged with said cooperating means the leading end of said release means is located closer to the leading end of said article than the leading end of said cooperating means, said release means is aligned with said cooperating means; and

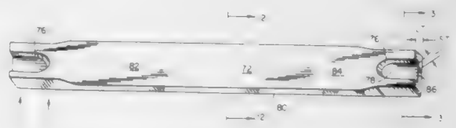
a handle connected to the leading end of said release means wherein, with said cooperating means mounted on the article and engaged with said release means, when said handle is swung forwards along an arcuate path, the centrifugal force acting on the article initiates separation of the leading end of said release means from the leading end of said cooperating means and results in a progressive separation of said release means from said cooperating means until full separation and resultant launch of the article occurs.

5,392,756

IMPROVED MOLDED ARCHERY BOW LIMB

Gary L. Simonds, Gainesville, Fla., assignor to Bear Archery, Inc., Gainesville, Fla.

Continuation of Ser. No. 867,369, Apr. 13, 1991, which is a division of Ser. No. 648,693, Jan. 31, 1991, Pat. No. 5,141,689.
This application Jan. 7, 1994, Ser. No. 178,497
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[6] F41B *5/00, 5/14*
U.S. Cl. 124—23.1 **12 Claims**



3. A fiber glass resin molded archery bow limb paddle having an area defining a partial limb tip slot, said partial limb tip slot area having a depression therein which defines the partial limb tip slot.

11. The method of fabricating an archery bow limb comprising the steps of:

(a) compression molding a bow limb paddle having an area defining a bow limb tip, said area being of reduced thickness;

(b) removing said paddle area of reduced thickness to thereby provide a limb tip fork.

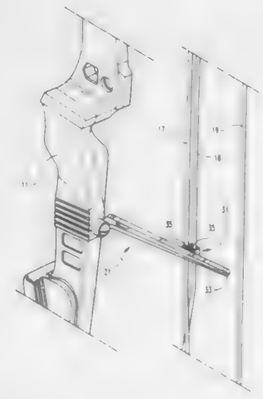
12. An archery compound bow limb prepared in accordance with the method of claim 11.

5,392,757

CABLE GUARD

Paul A. Head; James R. Allshouse, both of Newburgh, and Martin L. Forbes, Evansville, all of Ind., assignors to Indian Industries, Inc., Evansville, Ind.

Filed Nov. 29, 1993, Ser. No. 158,895
Int. Cl.[6] F41B *5/14, 5/10*
U.S. Cl. 124—86 **8 Claims**



1. An improved cable guard for a compound archery bow having a riser, upper and lower bow limbs extending from said riser, pulleys mounted on said limbs, one or more cables trained around said pulleys and spanning said limbs, and a bowstring extending between said limbs, said cable guard comprising:

a one-piece cable guard member having integrally joined mounting and cable guard portions, said mounting portion adapted to mount to said riser with said cable guard portion extending rearwarly from said riser offset relative to a plane defined by said bow limbs and said bowstring, said cable guard portion having a free end, said cable guard portion having a beam height which decreases from said mounting portion towards said free end.

5,392,758

BRACING DEVICE FOR THE BLADES OF A SAW MILL, SAW MILL USING A DEVICE OF THIS TYPE

Maurice Rognon, Morteau, France, assignor to Comadur S.A., Le Locle, France

Filed Feb. 18, 1993, Ser. No. 19,306
Claims priority, application France, Mar. 3, 1992, 92 02686
Int. Cl.[6] B28D *1/04*
U.S. Cl. 125—13.01 **17 Claims**

1. A bracing device, for the blades of a saw mill having at least two saws solid with a drive shaft having an axis, wherein said device comprises a one piece ring having a periphery from which extend a plurality of tongues having an inherent transverse resilience, said ring being configured to be disposed between said two saw blades, said inherent transverse resil-

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ience being such that said tongues easily flex in a plane perpendicular to said axis under action of an initial stress exerted on



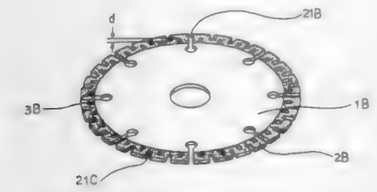
extremities of said tongues, and resume an initial shape as soon as said stress is removed, said device also comprising means for locking said ring to said shaft.

5,392,759

DIAMOND CUTTING TOOL FOR HARD ARTICLES

Kim S. Kwang, Seoul, Rep. of Korea, assignor to EHWA Diamond Ind. Co. Ltd., Kyongki-Do, Rep. of Korea

Division of Ser. No. 953,509, Sep. 29, 1992, Pat. No. 5,316,416.
This application Dec. 6, 1993, Ser. No. 163,904
Int. Cl.[6] B28D *1/12*
U.S. Cl. 125—15 **1 Claim**



1. A diamond cutting tool for hard articles including a disk, a diamond blade portion attached to a circumferential edge of the disk, and a plurality of radial slits which open at a circumferential edge of the diamond blade portion and are extended into the disk at certain depth, said diamond cutting tool comprising:

a plurality of outer cuts formed at the circumferential edge of the diamond blade portion between the slits and spaced from each other at certain intervals which open at the circumferential edge of the diamond blade portion and terminate at a certain depth of the diamond blade portion; and

a plurality of inner slots formed at a lower part of the diamond blade portion and terminating at the circumferential edge of the disk, each of the slots being positioned under and between the upper cuts and higher than the bottom of upper cuts by a certain width.

5,392,760

DIRECT VENT FIREPLACE

Lothar Binzer, 12091-88 Avenue, Surrey, British Columbia, V3W 3J5, Canada

Filed Sep. 30, 1992, Ser. No. 954,788
Int. Cl.[6] F23L *17/00*
U.S. Cl. 126—85 B **10 Claims**

1. A gas fireplace comprising:

a housing located in a building;

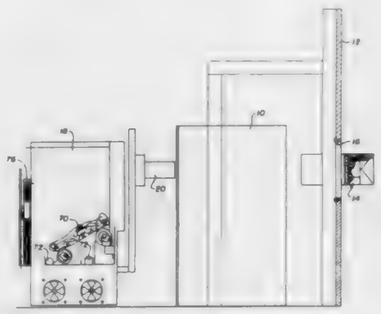
a first conduit extending from outside the building into the housing and comprising a cylinder having first and second groups of longitudinal openings at its outer end;

a fireplace insert received in the housing;

a second conduit in the fireplace insert alignable with and received by the first conduit, the first and second conduits being dimensioned so that the second conduit extends to a point between the two groups of longitudinal openings of the first conduit;

a gasket located between the first conduit and the second conduit and contacting the first conduit between the two groups of longitudinal openings;

a generally conical closure for the first conduit located in the end of the first conduit to seal the end of the first conduit and extending into the first conduit to a point adjacent the end of the second conduit, the gasket and conical enclosure cooperating to define an annular air inlet extending



from the second group of openings in the first conduit between the first and second conduits and an exhaust outlet in the second conduit extending to the first group of openings in the first conduit, the conical closure acting to deflect exhaust gases from the second conduit through the second openings;

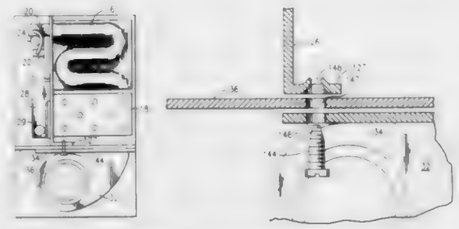
the housing being located independently of the fireplace insert initially and the fireplace insert being inserted subsequently by alignment of the second conduit within the first conduit, the first conduit and the gasket co-operating to guide and control movement of the second conduit thereby guiding insertion of the insert within the housing.

5,392,761

BLOWER MOUNTING ARRANGEMENT FOR FORCED AIR FURNACE

Robert C. Swilik, Jr., and Scott A. Beck, both of Indianapolis, Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 18, 1993, Ser. No. 108,924
Int. Cl.[6] F24H *3/00*
U.S. Cl. 126—99 R **4 Claims**



1. Forced air furnace comprising a cabinet, a heat exchanger within said cabinet having a circulation air intake to receive return air from a comfort space and a circulation air discharge from which heated circulation air flows to be supplied to said comfort space, a horizontal blower support shelf extending beneath said heat exchanger across said cabinet and having a blower opening that serves as said circulation air intake for said heat exchanger; the blower support shelf serving as a partition defining a return air chamber beneath it within said cabinet; a

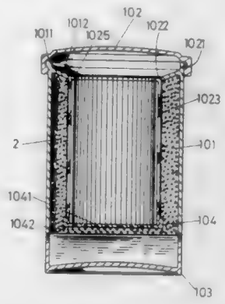
circulation air blower mounted on said blower support shelf within said return air chamber to move said circulation air through said blower opening into said heat exchanger; said blower including a mounting flange with an opening therein to receive a fastener device; a vertical cell panel within said cabinet above said blower support shelf serving as a proximal wall of said heat exchanger, and having a transverse lip at a lower edge that rests upon said blower support shelf; and burner means on said cell panel for discharging heat into said heat exchanger for heating said circulation air therein; wherein said blower mounting flange and said vertical cell panel transverse lip are disposed in registry with each other with said horizontal blower support shelf therebetween, and said fastener device passes through said blower mounting flange and said blower support shelf into said lip so that the blower is supported by said vertical cell panel.

5,392,762

BEVERAGE CAN HEATING DEVICE

Yu T. Hsu, No. 221, Ming Der Rd., Ming Der Tsuen, Tour Woei Shiang, Miau Lih Hsien, Taiwan, Prov. of China

Filed Jan. 24, 1994, Ser. No. 185,621
Int. Cl.[6] F24J *1/00*
U.S. Cl. 126—263 R **7 Claims**



1. A beverage can heating device comprising a container body, said container body having a top sloping wall extended downwardly inwards from a top opening thereof, and a bottom opening covered with a hollow bottom cover, said hollow bottom cover of said container body being filled with water and having a top opening covered with a thin plastic film; an inner cylinder, said inner cylinder comprising a top edge surrounding a top opening thereof and connected to said top sloping wall, and a bottom opening covered with a detachable bottom cap, said bottom cap of said inner cylinder comprising a plurality of pointed teeth at the bottom facing said plastic film; and a chemical material received within the space defined between said container body and said inner cylinder and said bottom cover of said container body, and whereby when a beverage can is inserted into said inner cylinder and pressed against said bottom cap of said inner cylinder, said bottom cap of said inner cylinder is disconnected from said inner cylinder causing said plastic film pierced by said pointed teeth permitting said chemical material to mix with water in producing a chemical reaction and releasing heat to warm up the contents of the beverage can.

5,392,763

GAS BURNER SYSTEM

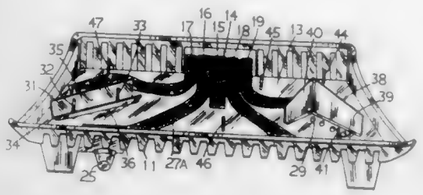
Robert K. Shaw, and McDonald Brian, both of Richmond Hill, Canada, assignors to Majco Building Specialties, L.P., Huntington, Ind.

Filed Sep. 16, 1993, Ser. No. 121,509
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—512 **23 Claims**

1. A gas burner system for fireplaces comprising:

a mounting plate for supporting a plurality of non-combustible fire logs,

a plurality of air supply openings formed at selected locations of said mounting plate and being operative for allowing air to rise therethrough from below said mounting plate to the fire logs,



a gas burner assembly disposed on said mounting plate, said gas burner assembly comprising a plurality of pipes having a plurality of gas outlet ports formed therein,

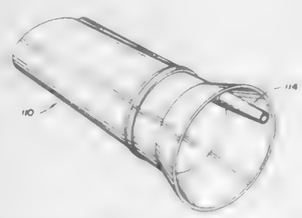
said gas burner pipes having a fanned out pattern on said mounting plate and being operative to supply a combustible gas over a plurality of surface locations of said mounting plate.

5,392,764

GYNECOLOGICAL SPECULUM

Larry S. Swanson, 2166 Sandy Shore Dr. SE., Kentwood, Mich. 49508, and Lawrence J. Burns, 1556 Pontiac Rd., SE, Grand Rapids, Mich. 49506

Filed Jun. 18, 1993, Ser. No. 79,367
Int. Cl.[6] A61B *1/30;* **A61M** *29/00*
U.S. Cl. 128—3 **8 Claims**



1. A gynecological speculum for insertion through a vaginal orifice into a vaginal cavity for medical purposes, the gynecological speculum comprising:

an imperforate tubular section having a tube axis and coaxially aligned and integral segments, the segments comprising a first frusto-conical segment and a second frusto-conical segment;

the first frusto-conical segment having a maximum outside diameter end and a substantially planar open insertion end inclined at an angle other than perpendicular relative to the tube axis to facilitate insertion of the open insertion end, without the need for extra equipment, through the vaginal orifice and into the vaginal cavity to isolate the cervix, and the second frusto-conical section having a minimum outside diameter end equal in diameter to and adjoining the maximum outside diameter end of the first frusto-conical segment; and

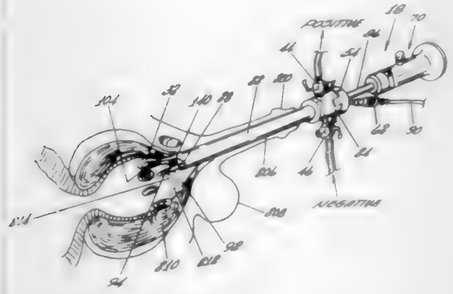
the first frusto-conical segment defining an annular lip near the maximum outside diameter end to engage the vaginal orifice and retain the gynecological speculum within the vaginal cavity after insertion of the first frusto-conical section through the vaginal orifice.

5,392,765

CONTINUOUS FLOW CYSTOSCOPE

Richard P. Muller, Bronx, N.Y., assignor to Circon Corporation, Santa Barbara, Calif.

Filed Feb. 11, 1993, Ser. No. 17,475
Int. Cl.[6] A61B *1/00*; A61N *1/30*
U.S. Cl. 128—4 16 Claims



1. An instrument comprising

an outer sheath having an outer surface and a hollowed-out central area extending along a central axis which extends therethrough, said outer sheath having a proximal section and a distal section, said distal section including means defining an opening and an elongated fenestra extending distally from and operatively coupled to said distal section, said elongated fenestra extending along a path substantially parallel to and spaced from the central axis;

said outer sheath further including a first connecting means located at the proximal section of said outer sheath, said first connecting means including

means defining an inlet channel which communicates with an inlet port for passing fluid from said first connecting means through the inner member to the irrigation inlet;

means defining an outlet channel which communicates with an outlet port for passing fluid from said fluid passageway to the outlet port;

means defining an inner member positioned within said hollowed-out central area and forming a fluid passageway between the outer sheath and inner member, said inner member having a distal end and means defining an irrigation inlet with the distal end and irrigation inlet being positioned within the opening of said outer sheath, said distal end including means defining an elongated lip which cooperates with said elongated fenestra for forming a fenestra channel having an irrigation outlet wherein the fenestra channel communicates with said fluid passageway, said inner member defining means including means for further defining an inner member channel having

a first passageway for receiving a telescope;

a second passageway for passing a working tool; and

an inlet which is operatively coupled to said means defining said inner member channel and to said first passageway and said second passageway;

said fenestra channel being adapted to pass fluid emanating from the irrigation inlet over a flow path with reduced fluid turbulence at the irrigation inlet to the irrigation outlet, through the fenestra channel and to the fluid passageway;

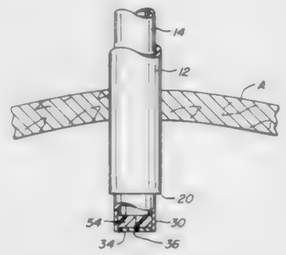
said means defining said inner member further including a second connecting means which is removeably connected to said first connecting means of said outer sheath for coupling said outer sheath to said inner member when said inner member is positioned within the hollowed-out central area of said outer sheath.

5,392,766

SYSTEM AND METHOD FOR CLEANING VIEWING SCOPE LENSES

Steven Masterson, San Francisco, and William R. Dubrul, Redwood City, both of Calif., assignors to Innerdyne Medical, Inc., Mountain View, Calif.

Filed Oct. 6, 1993, Ser. No. 132,544
Int. Cl.[6] A61B *1/00*
U.S. Cl. 128—4 35 Claims



1. A scope cleaning device comprising:

a cannula having a proximal end, a distal end having a distal port, and a lumen therethrough; and

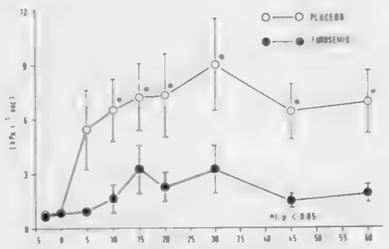
a cleaning element secured to the cannula near the distal end, said cleaning element having a cleaning surface which is disposed across the distal port so that passage of a viewing scope having a distal lens through the lumen will engage and wipe the distal lens against the cleaning surface as the distal lens passes through the port.

5,392,767

USE OF INHALED LOOP DIURETICS FOR TREATING ALLERGEN-INDUCED NASAL REACTIONS

Sebastiano Bianco, Milan, Italy, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 487,895, Mar. 6, 1990, abandoned. This application Nov. 7, 1991, Ser. No. 789,446
Claims priority, application Germany, Mar. 8, 1989, 3907414
Int. Cl.[6] A61M *11/00*
U.S. Cl. 128—200.14 3 Claims



1. Method for treating allergen-induced nasal reactions which comprises nebulizing a solution of furosemide into the nostrils.

5,392,768

METHOD AND APPARATUS FOR RELEASING A CONTROLLED AMOUNT OF AEROSOL MEDICATION OVER A SELECTABLE TIME INTERVAL

Eric T. Johansson, Dublin; Carl Ritson, San Jose, and Reid M. Rubsamen, Berkeley, all of Calif., assignors to Aradigm, Hayward, Calif.

Continuation-in-part of Ser. No. 664,758, Mar. 5, 1991. This application Jan. 29, 1993, Ser. No. 11,351
Int. Cl.[6] A61M *11/00*
U.S. Cl. 128—200.14 3 Claims



1. Apparatus for providing a timed release of an amount of aerosol medication comprising:

a flow sensor for detecting inspiratory flow;

a canister of medication having a body and a valve stem, the valve stem being spring biased closed and depressible relative to the canister body to open and release a dose of aerosol medication;

a housing having a valve stem receptacle for receiving the valve stem and a nozzle for releasing an aerosol into an inhalation flow path, the valve stem receptacle having an inner dimension terminating in the nozzle;

a drive element for depressing the canister body relative to the valve stem receptacle, thereby to release a dose of aerosol medication;

a release actuator for moving the drive element to depress the canister body relative to the valve stem receptacle and maintain the body depressed for a selected period of time so that a controlled dose of medication is released through the valve stem receptacle inner dimension and out the nozzle;

a first compression spring fixed at one end and secured to the drive element and movable from a loaded condition to a released condition for moving the drive element to depress the canister body;

a second spring fixed at one end and secured to the drive element and moveable from a loaded condition to a released condition for allowing the drive element to release the canister body from a depressed condition;

a trigger pin having a first position for maintaining the first and second springs in the loaded condition, a second position for allowing the first spring to release and maintaining the second spring in a loaded condition, and a third position for allowing the second spring to release;

a motor for allowing the pin to move from the first to the second to the third positions; and

means for operating the motor so that the trigger pin is maintained in the second position for the selected period of time.

5,392,769

ONE-WAY VALVE

John H. Siegel, Des Moines, Wash., assignor to Vinatroics Division, Seattle, Wash.

Filed Oct. 6, 1992, Ser. No. 956,740
Int. Cl.[6] A62B *18/10*
U.S. Cl. 128—201.28 8 Claims

1. A one-way air valve adapted for use in clothing, said valve comprising:

a) a substantially cylindrically walled base member having a center an outer end and an inner end and an outer flange member adapted for engaging a clothing surface;

b) said base member further includes a central perforated wall extending substantially perpendicularly to said cylindrical wall and forming an outer face of the air valve;

c) said inner end of said base member having a lower lip extending perpendicularly from said cylindrical wall and toward the center of said base member;

d) an insertable membrane support member for a connection to said base member;



e) said support member being sized for engagement within said inner end of said base member between said perforated wall and said lower lip;

f) said support member having a central retaining portion for engaging a valve membrane and a substantially rigid membrane supporting web for supporting said membrane between said web and said perforated wall; and,

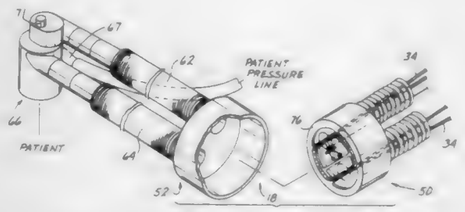
g) whereby said membrane is flexible to allow air to exhaust through said perforated wall while preventing air from entering from said perforated wall by seating against said support member.

5,392,770

TUBING CIRCUIT SYSTEMS FOR HUMIDIFIED RESPIRATORY GAS

Burrell E. Clawson, 2425 Sunset Dr., and James Weigl, 18815 Hermosa St., both of Riverside, Calif. 92506

Filed Jun. 29, 1993, Ser. No. 85,315
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—203.77 20 Claims



1. A tubing circuit system for delivering humidified respiratory gas to a human or an animal comprising:

a first tubing segment defining a first elongate hollow space and having an inlet for receiving humidified respiratory gas for passage through said first elongate hollow space toward the human or animal, and an outlet;

a second tubing segment defining a second elongate hollow space which is external and spaced apart from said first elongate hollow space, said second tubing segment having an inlet for receiving exhaled gas from the human or animal and humidified respiratory gas for passage through said second elongate hollow space away from the human or animal, and an outlet adapted to be joined to a ventila-

tor to provide fluid communication between said second elongate hollow space and the ventilator;

a manifold assembly including a first port coupled to said first tubing segment, and a second port coupled to said second tubing segment; and

a heating element positioned in said first elongate hollow space and said second elongate hollow space, and being adapted to provide heat to the humidified respiratory gas passing through said first elongate hollow space and to the exhaled gas and humidified respiratory gas passing through said second elongate hollow space.

5,392,771

UNDERWATER MONITORING AND COMMUNICATION SYSTEM

Markus Mock, Uster, and Ernst B. Voellm, Kilchberg, both of Switzerland, assignors to Uwatec AG, Hallwil, Switzerland

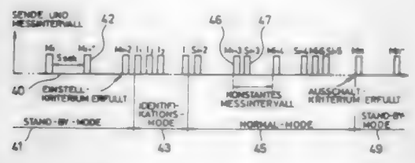
PCT No. PCT/EP91/01982, § 371 Date Aug. 17, 1992, § 102(e) Date Aug. 17, 1992, PCT Pub. No. WO92/06889, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 18, 1991, Ser. No. 861,232

Claims priority, application Germany, Oct. 19, 1990, 4033292.6

Int. Cl.[6] **A62B** *7/00, 9/00;* **B63C** *11/02;* **G08B** *3/00*

U.S. Cl. 128—205.23 **30 Claims**



1. A monitoring device for portable breathing apparatuses having:

a manometer which detects the pressure in one or more air supply pressure containers of the breathing apparatus by means of a pressure sensor and emits an electrical pressure signal which is representative of the pressure;

a transmitter which receives the pressure signal emitted by the manometer and transmits a transmission signal corresponding to the pressure signal;

a receiver which receives the transmission signal emitted by the transmitter;

a display device which is coupled to the receiver and displays data as numbers or symbols which are derived at least partially from the transmission signal received by the receiver, wherein,

the transmitter has a convertor device which encodes the electrical pressure signal to be transmitted by the transmitter in digital form, and a control device which automatically causes the transmission signals to be transmitted at predetermined time intervals,

the transmitter has a signal generating device which generates and stores an identification signal which is characteristic of the transmitter and unambiguously identifies said transmitter,

the control device causes said identification signal to be emitted at least once within each transmission interval,

the receiver has a memory in which an identification comparison signal, which is assigned to that of the transmitter, is stored, and the receiver has a comparison device which tests whether the identification signal emitted by the transmitter matches the identification comparison signal stored in the receiver, and

the transmission signals received by the receiver are only passed on or further processed if the identification signal received from the transmitter and the identification comparison signal stored in the receiver are identical, wherein at least one of (1) the identification signal stored in the transmitter and (2) the identification comparison signal stored in the receiver is variable in order to match the identification signal of the transmitter and the identification comparison signal of the receiver with one another and that modification of the identification signal is always triggered by one of the transmitter and the receiver.

5,392,772

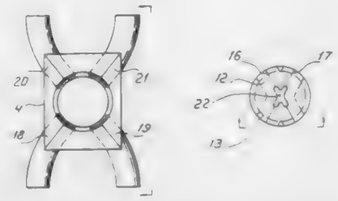
ENDOTRACHEAL TUBE SET FOR ANESTHESIA HAVING A VALVE AND VALVE POSITION INDICATOR FOR SINGLE OR DOUBLE LUNG VENTILATION

Michael Zilbershtein, 3 Trescott Path, Fort Salonga, N.Y. 11768

Filed May 7, 1993, Ser. No. 57,626

Int. Cl.[6] **A62B** *9/02, 9/06;* **A61M** *16/00;* **F16K** *37/00*

U.S. Cl. 128—205.24 **8 Claims**



1. A connector for connecting a double-lumen endotracheal tube to an anesthesia machine and for selectively ventilating one or both lungs of a patient comprising

an outer hollow element having a central axis, a single inner opening and a wall provided with first two passages connectable with a double-lumen endotracheal tube and communicating with said inner opening and second two passages connectable with an anesthesia machine and also communicating with said inner opening; and

a single inner element rotatably positioned in said single inner opening of said outer hollow element and having two intersecting channels formed therein means for rotating said inner element between three angular positions, a first angular position having said channels connect said first two passages with said second two passages wherein ventilating medium can be supplied from the anesthesia machine through the connector to ventilate both lungs, a second angular position having only one of said first passages connected with only one of said second passages wherein the ventilating medium can be supplied through the connector to ventilate only one lung, and a third angular position having the other of said two passages connected with the other of said second passages wherein the ventilating medium can be supplied through the connector to ventilate the other lung, said first passages and said second passages being located diametrically opposite to one another.

5,392,773

RESPIRATORY PARTICULATE FILTER

Archie A. Bertrand, 8319 Kittyhawk Ave., Westchester, Calif. 90045

Filed Apr. 13, 1994, Ser. No. 227,021

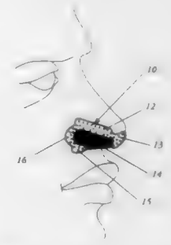
Int. Cl.[6] **A62B** *23/06*

U.S. Cl. 128—206.11 **6 Claims**

1. A filter for removing airborne particulate nasal respiration comprising:

a. a filter section comprising a generally triangular shaped synthetic mesh fabric;

b. an adhesive section surrounding and attached to the peripheral margin of said filter section, said adhesive section comprising a distal tab adapted for attachment to the lower surface of the tip of the nose, a proximal tab adapted for attachment to the lower surface of the base of the nose, and left and right medial tabs joining said distal and proximal tabs, said medial tabs adapted for attachment to the lateral surfaces of the nose, said proximal tab comprising a straight outer margin and an arched inner margin and said distal tab comprising a substantially circular region joined to the distal ends of said medial tabs by an interface defined by inwardly tapered cutout sections; and



c. said adhesive section coated on one side with an adhesive whereby said filter can be removably attached to the skin.

5,392,774

EMERGENCY RESUSCITATION APPARATUS

Toru Sato, Yonago, Japan, assignor to Nissho Corporation, Osaka, Japan, a part interest

Filed Nov. 5, 1993, Ser. No. 148,912

Claims priority, application Japan, Nov. 6, 1992, 4-322521

Int. Cl.[6] **A61M** *16/00*

U.S. Cl. 128—207.15 **15 Claims**



1. An emergency resuscitation endoesophageal airway comprising:

an arch-shaped respiration tube closed at a distal end but opened at a proximal end;

a first inflatable balloon of an elastomeric material capable of being expanded, said first inflatable balloon being attached to the respiration tube at a position close to the distal end thereof for closing an esophagus of a patient;

a second inflatable balloon of a flexible and relatively soft synthetic resin capable of being inflated, said second inflatable balloon being attached to the respiration tube at a position spaced from the proximal end thereof for closing a pharynx of the patient;

first and second inflating tubes for inflating said first and second inflatable balloons, wherein said respiration tube is provided with air holes between the first and second inflatable balloons but rather near the second inflatable balloon, and wherein said second inflatable balloon is so designed as to expand in both longitudinal and radial directions to an extent much greater than the first inflatable balloon.

5,392,775

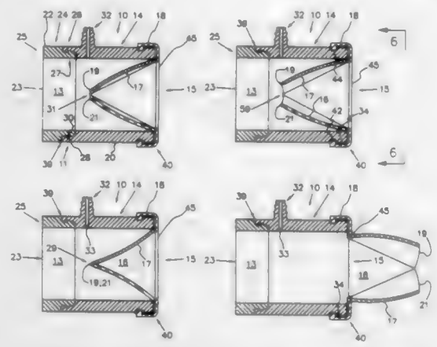
DUCKBILL VALVE FOR A TRACHEOSTOMY TUBE THAT PERMITS SPEECH

Claude N. Adkins, Jr., 3425 Westminster Ave., Monroe, La. 71202, and Blane P. Marie, 137 Liner Dr., Monroe, La. 71203

Filed Mar. 22, 1994, Ser. No. 216,172

Int. Cl.[6] **A61M** *16/20, 16/04;* **A62B** *9/02;* **A61F** *2/20*

U.S. Cl. 128—207.16 **9 Claims**



1. A tracheostomy valve for use in conjunction with a tracheostomy tube, said tracheostomy valve comprising;

a valve housing having an aperture including a forward and a rear opening defined therethrough, said housing having a rear end proximate said rear opening adapted to sealingly connect said rear opening with a tracheostomy tube and a forward end proximate said forward opening;

a one-way valve, mounted to said housing in operational connection between said forward and rear openings of said aperture, said one-way valve comprising a duckbill valve having a flexible portion with a surface area greater than the cross-sectional area of said aperture through said housing, said flexible portion including first and second flexible edges defining an air flow passage through said flexible portion, said first and second flexible edges being biased into sealing contact and closing said air flow passage responsive to exhalation, wherein the air pressure within said rear opening is greater than the air pressure in said forward opening, and biased out of sealing contact and opening said air flow passage responsive to inhalation, wherein the pressure within said rear opening is less than the air pressure within said forward opening, said flexible portion deformably extending through said forward opening responsive to pressure created during a cough.

5,392,776

METHOD AND APPARATUS FOR DETECTING CATARACTOGENESIS

George M. Thurston, Belmont; Douglas L. Hayden, Cambridge; Victor G. Taratuta, Boston; Joyce A. Peetermans, Newton, and George B. Benedek, Belmont, all of Mass., assignors to Oculon Corporation, Cambridge, Mass.

Filed Sep. 21, 1992, Ser. No. 948,273

Int. Cl.[6] **A61B** *3/10*

U.S. Cl. 128—633 **56 Claims**

1. A method for in vivo detection of cataractogenesis in ocular tissue, comprising the steps of:

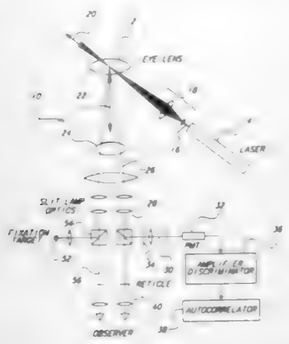
(a) producing a substantially monochromatic, coherent, collimated light;

(b) causing the light to impinge on the ocular tissue;

(c) collecting light that is scattered from the ocular tissue;

(d) performing a correlation analysis on the collected light to determine a signature of cataractogenesis, the signature including a dimensionless parameter F_{mas} and a diffusion decay time parameter (τ_S), where F_{mas} is a measure of the proportion of an intensity of the light scattered by parti-

cles in the ocular tissue that move slowly relative to a diffusion speed of other particles in the ocular tissue and τ_S is a diffusion decay time of the particles that move



slowly relative to the diffusion speed of the other particles in the ocular tissue; and

(e) detecting cataractogenesis from the signature.

5,392,777

OXIMETER SENSOR WITH PERFUSION ENHANCING

David B. Swedlow, Foster City; Paul D. Mannheimer, Belmont, and Jessica A. Warring, Millbrae, all of Calif., assignors to Nellcor, Inc., Pleasanton, Calif.

Continuation of Ser. No. 722,645, Jun. 28, 1991, Pat. No. 5,267,563. This application Dec. 1, 1993, Ser. No. 160,350

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 5 Claims



1. A method for optically measuring a characteristic of a patient's blood comprising the following steps:

applying to a predetermined location on the patient's skin a blood perfused tissue altering substance without the use of iontophoresis;

placing a sensor on the predetermined location of the patient's skin, the sensor comprising a light source and a photodetector;

transmitting light from the light source into the patient's skin at the predetermined location;

detecting light with the photodetector at the predetermined location; and

measuring a characteristic of the patient's blood based on the detected light.

5,392,778

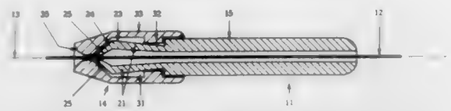
GUIDEWIRE TORQUE DEVICE FOR SINGLE-HAND MANIPULATION

Michael J. Horzewski, San Jose, Calif., assignor to B. Braun Medical, Inc., Bethlehem, Pa.

Filed Aug. 11, 1993, Ser. No. 105,816

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—657 7 Claims



1. A device for gripping a catheter guidewire, said device comprising:

a first tubular member having first and second ends and a central axis and terminating at said first end in at least three resilient prongs arranged at equal intervals around said central axis, said resilient prongs having outer contours which include sloping surfaces which slope away from said central axis in the direction leading to said first end;

a second tubular member for receiving said resilient prongs and axially slidable thereover; and

means for engaging said sloping surfaces of all of said resilient prongs simultaneously, and for compressing said resilient prongs toward each other when said second tubular member is slid relative to said first tubular member such that said means for engaging travels toward said first end.

5,392,779

TESTING IMPLANTS

Neil Meredith, and Peter Cawley, both of London, Great Britain, assignors to Imperial College of Science, Technology & Medicine, London, Great Britain

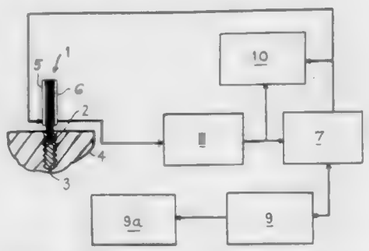
PCT No. PCT/GB92/00663, § 371 Date Oct. 28, 1993, § 102(e) Date Oct. 28, 1993, PCT Pub. No. WO92/18053, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 13, 1992, Ser. No. 129,076

Claims priority, application United Kingdom, Apr. 11, 1991, 9107700

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—660.01 18 Claims



1. A method of testing an implant attached to a bone of a live subject, the method comprising the steps of bringing a member into contact with the implant; detecting at least one resonance frequency of the member when it is in contact with the implant; and interpreting the detected resonance frequency in terms of the degree of attachment of the implant with respect to the bone.

5,392,780

APPARATUS FOR MEASURING BIOLOGICAL SIGNAL

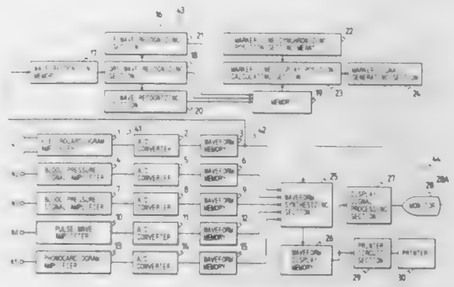
Yoshio Ogino, and Kideki Ito, both of Tokyo, Japan, assignors to Nihon Kogden Corporation, Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 991,754

Claims priority, application Japan, Dec. 19, 1991, 3-336639

Int. Cl.[6] A61B *5/02*

U.S. Cl. 128—670 23 Claims



1. An apparatus for measuring biological signals, comprising:

an input device receiving and amplifying a plurality of biological signal waveforms simultaneously and outputting amplified signals;

a memory device, coupled to said input device, said memory device receiving and storing said amplified signals;

a waveform recognition processor coupled with said memory device and designed to locate at least one predetermined feature of at least one of said biological signal waveforms;

a marker line synchronizing position setting device, coupled to said waveform recognition processor, said marker line synchronizing position setting device setting a marker position based on a selection input selecting a position relative to said predetermined feature of said at least one biological signal waveform, said at least one biological signal waveform corresponding to a reference signal;

a marker line signal generating device, coupled to said marker line synchronizing position setting device, said marker line signal generating device receiving said marker position and generating a marker line signal corresponding to said marker position set by said marker line synchronizing position setting device; and

a display device, coupled to said marker line signal generating device, said display device receiving said amplified signals and said marker line signal, and displaying waveform outputs corresponding to said plurality of biological signal waveforms, and displaying a marker line corresponding to said marker line signal generated by said marker line generating device, whereby said marker line orthogonally intersects a time axis of said plurality of biological signal waveforms.

5,392,781

BLOOD PRESSURE MONITORING IN NOISY ENVIRONMENTS

Patrick G. Phillipps, Lincoln; Paul Epstein, Brookline, and David G. Tweed, Chestnut Hill, all of Mass., assignors to CardioDyne, Incorporated, Brookline, Mass.

Filed Apr. 16, 1991, Ser. No. 686,420

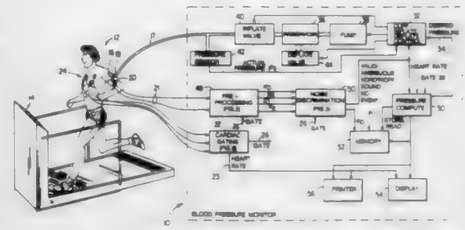
Int. Cl.[6] A61B *5/0225*

U.S. Cl. 128—680 121 Claims

1. A method for use in measuring blood pressure, comprising

detecting a plurality of mixed signals, each of which includes biological signals indicative of blood pressure and signals not indicative of blood pressure,

separating said signals not indicative of blood pressure from said biological signals to develop a threshold, said separating including combining said plurality of mixed signals with each other so as to reinforce said signals not indicative of blood pressure and attenuate said biological signals so that said threshold is based predominantly on a level of



said signals not indicative of blood pressure that have been separated from said biological signals, and

using said threshold to aid in discriminating said signals indicative of blood pressure from said signals not indicative of blood pressure.

5,392,782

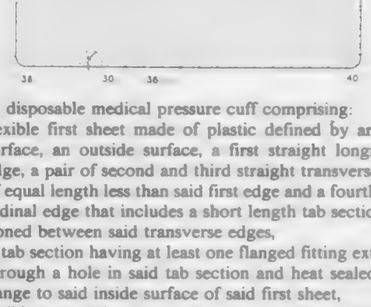
DISPOSABLE MEDICAL PRESSURE CUFFS AND METHOD OF PRODUCTION

John R. Garrett, 37 Pine Arbor #204, Vero Beach, Fla. 32962

Filed Feb. 7, 1994, Ser. No. 192,543

Int. Cl.[6] A61B *5/022*

U.S. Cl. 128—686 7 Claims



1. A disposable medical pressure cuff comprising:

a flexible first sheet made of plastic defined by an inside surface, an outside surface, a first straight longitudinal edge, a pair of second and third straight transverse edges of equal length less than said first edge and a fourth longitudinal edge that includes a short length tab section positioned between said transverse edges,

said tab section having at least one flanged fitting extending through a hole in said tab section and heat sealed by its flange to said inside surface of said first sheet,

a flexible second sheet comprising a woven fabric defined by a fleecy outside surface, an air impervious inside surface, a first straight longitudinal edge, a pair of second and third straight transverse edges of equal length less than said first edge and a fourth longitudinal edge that includes a short length indent section positioned and sized so its peripheral area only overlaps a portion only of said tab section of said first sheet,

the outside surface of said first sheet defined by said portion of said tab section being heat sealed to said inside surface of said second sheet defined by said peripheral area of said indent section, and

said first sheet being heat sealed to said second sheet along said first, second, third and fourth edges thereof forming an inflatable compartment between said first and second sheets.

5,392,783

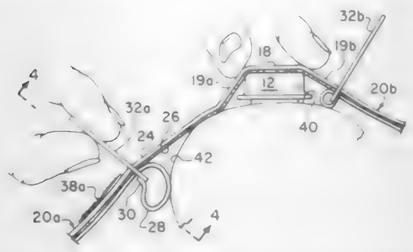
ADHESIVE TAPE STRIP

Thomas J. Fogarty, 5660 Alpine Rd., Portola Valley, Calif. 94028; Thomas A. Howell, Palo Alto, Calif.; Kenneth H. Mollenauer, Santa Clara, Calif., and Michelle Y. Monfort, Los Gatos, Calif., assignors to Thomas J. Fogarty, Palo Alto, Calif.

Continuation of Ser. No. 641,590, Jan. 15, 1991, abandoned. This application Jun. 21, 1993, Ser. No. 80,359

Int. Cl.[6] A61F *13/02*

U.S. Cl. 128—687 2 Claims



1. An adhesive tape strip having a side with adhesive which is substantially concealed and a means for applying said tape strip while exposing said adhesive without touching said adhesive, said adhesive tape strip comprising:

a tape strip having a first side and a second side, wherein said first tape strip side has an adhesive layer which is substantially concealed and has a removable protective film with a first end and a second end; and

remote adhesive exposure means for remotely exposing said adhesive layer from a position remote from said adhesive layer while simultaneously applying said adhesive layer to a contact surface, wherein said remote adhesive exposure means includes a blind side pull tab which is movably disposed generally adjacent to and longitudinally along said second tape strip side and is attached to said first protective film end;

wherein movement of said blind side pull tab along said tape strip toward said second protective film end causes removal of said protective film from said adhesive layer.

5,392,784

VIRTUAL RIGHT LEG DRIVE AND AUGMENTED RIGHT LEG DRIVE CIRCUITS FOR COMMON MODE VOLTAGE REDUCTION IN ECG AND EEG MEASUREMENTS

Algird M. Gudaitis, Stowe, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 20, 1993, Ser. No. 109,880

Int. Cl.[6] A61B *5/0428*

U.S. Cl. 128—696 20 Claims



1. An isolated amplifier for use in a system having an earth ground comprising:

a main amplifier having first and second inputs for receiving signals, said main amplifier including means for receiving at least one power supply voltage and having a circuit ground electrically isolated from said earth ground;

means for sensing a common mode voltage received by said first and second inputs and having an output for providing a compensation voltage representative of said common mode voltage; and

a capacitance to said earth ground for receiving said compensation voltage, said means for sensing and said capacitance causing said at least one power supply voltage to track said common mode voltage.

5,392,785

SUPPORT FOR SIDE-LYING PREMATURE INFANTS

Deborah Donahue, 16 Kenyon St., West Newton, Mass. 02165

Filed Feb. 5, 1992, Ser. No. 831,184

Int. Cl.[6] A61B *19/00*; A61F *5/37*

U.S. Cl. 128—869 7 Claims



1. An infant-care device, the device comprising a toroidal perimeter wall defining a continuous central cavity which is open at the top and bottom and sized and shaped to enclose and support the infant in side-lying position, the wall comprising,

a) a head-support portion sized to support the infant's head and neck;

b) a foot-brace portion spaced from the head-support portion; and

c) a back-support portion connecting the foot-brace portion and the head-support portion, the back-support portion being curved to support the infant's spine, the back-support portion also being sized to maintain a spacing between the head-support portion and the foot-brace portion less than the infant's length, whereby the side-lying infant's feet are supported by the foot-brace portion with hips and knees partially flexed, with spine and neck curved, and with head supported by the head-support portion,

said wall comprising at least one closure element, whereby opening said element facilitates removal of the device from around the infant.

5,392,786

DEVICE AND METHOD FOR CONTAINING BODILY FLUID RESULTING FROM THE OCCURRENCE OF A RUPTURE OR LEAK DURING A MEDICAL PROCEDURE

Edmund J. Lewis, 680 N. Lakeshore Dr., Ste. 724, Chicago, Ill. 60611, and Stephen M. Korbet, 1867 N. Halsted St., Chicago, Ill. 60614

Division of Ser. No. 917,349, Jul. 23, 1992, Pat. No. 5,301,690. This application Dec. 30, 1993, Ser. No. 175,551

Int. Cl.[6] A61F *5/37*; A41D *13/08*; A61B *19/00*; A61M *1/00*

U.S. Cl. 128—877 7 Claims

1. A method of containing bodily fluid resulting from the occurrence of a rupture or leak during a medical procedure, comprising the steps of:

providing a sleeve having an interior and two openings which are positioned adjacent opposite ends of the sleeve;

positioning within the sleeve at least a portion of an extracorporeal medical device through which bodily fluid passes during the medical procedure so that the sleeve surrounds and encloses the at least a portion of the extracorporeal medical device; and



sealing access through said two openings in the sleeve to define a substantially closed environment within the interior of the sleeve so that bodily fluid resulting from the occurrence of a rupture or leak during the medical procedure is contained within the sleeve and is inhibited from escaping from the interior of the sleeve.

5,392,787

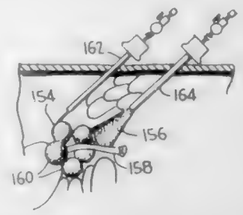
MULTIFUNCTIONAL DEVICES FOR USE IN ENDOSCOPIC SURGICAL PROCEDURES AND METHODS THEREFOR

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 600,775, Oct. 23, 1990, which is a continuation-in-part of Ser. No. 556,081, Jul. 24, 1990, Pat. No. 5,074,840. This application Oct. 1, 1993, Ser. No. 130,491

Int. Cl.[6] A61B *19/00*; A61M *35/00, 31/00*; A61F *13/20*

U.S. Cl. 128—898 8 Claims



1. A method of packing an operative site in the body for an endoscopically performed procedure comprising the steps of

establishing a narrow portal through the skin of the body to provide access to an operative site in the body;

visualizing the operative site endoscopically;

introducing a sponge in a dry state at the operative site through the portal;

positioning the sponge at the operative site to expose anatomical tissue to be treated within the body and to isolate the tissue from surrounding anatomical tissue within the body;

treating the thusly exposed tissue within the body; and

withdrawing the sponge through the portal.

5,392,788

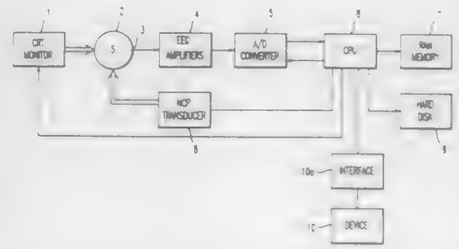
METHOD AND DEVICE FOR INTERPRETING CONCEPTS AND CONCEPTUAL THOUGHT FROM BRAINWAVE DATA AND FOR ASSISTING FOR DIAGNOSIS OF BRAINWAVE DISFUNCTION

William J. Hudspeth, 415B Sanford St., Radford, Va. 24141

Filed Feb. 3, 1993, Ser. No. 13,026

Int. Cl.[6] A61B *5/0476*

U.S. Cl. 128—731 18 Claims



1. A system for acquiring EEG waveforms from a subject and interpreting those waveforms to indicate what the subject is experiencing or thinking, comprising:

means for recording brainwave EEG waveforms from the subject;

means, coupled to said means for recording, for representing a brainwave EEG waveform that has been recorded by the means for recording as a linear combination of a set of basis waveforms, said linear combination consisting of a weighted sum of all members of the set of basis waveforms in which each member of the set of basis waveforms is weighted by a weighting coefficient;

means, coupled to said means for representing, for corresponding thought attributes to members of the set of basis waveforms, a first thought attribute corresponding to a first basis waveform of the set of basis waveforms;

means, coupled to said means for representing, for corresponding each member of a set of thought exemplars for the first thought attribute to a different thought exemplar range of weighting coefficient values for the first basis waveform than any other member of the set of thought exemplars, a first thought exemplar range of weighting coefficients corresponding to a first thought exemplar of the first basis waveform for the first thought attribute;

means, coupled to said means for representing, said means for corresponding thought attributes, and said means for corresponding each member of a set, for determining when the first thought exemplar range includes a weighting coefficient of said linear combination for the first basis waveform;

means, coupled to said means for determining, for generating a thought signal indicating when said weighting coefficient is in the first thought exemplar range;

a device for performing a specified function in response to a thought by the subject;

a controller interface, coupled to said means for generating and to the device, for converting said thought signal into a control signal for controlling the functioning of the device.

5,392,789

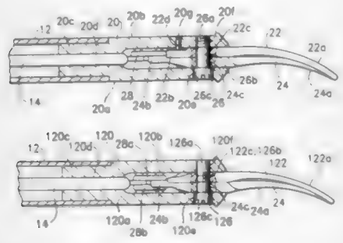
ENDOSCOPIC SCISSORS HAVING SCISSOR ELEMENTS LOOSELY ENGAGED WITH A CLEVIS

Charles R. Slater, Fort Lauderdale; Jurgen A. Kortenbach, Miami Springs, and John Starkey, Pembrooke Pines, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 922,023, Jul. 28, 1992, Pat. No. 5,331,971, which is a continuation of Ser. No. 680,392, Apr. 4, 1991, Pat. No. 5,192,298. This application Oct. 21, 1993, Ser. No. 140,260

Int. Cl.[6] A61B *10/00*

U.S. Cl. 128—751 **17 Claims**



1. An endoscopic scissors, comprising:
a) a hollow tube having a proximal end and a distal end;
b) a push rod extending through said hollow tube, said push rod having a proximal end and a distal end;
c) actuation means coupled to said proximal end of said tube and said proximal end of said push rod for imparting reciprocal axial motion to said push rod within said tube;
d) a clevis coupled to said distal end of said tube, said clevis having a first clevis arm and a second clevis arm, said first clevis arm having a first bore of a first diameter and said second clevis arm having a second bore of a second diameter, said second diameter being smaller than said first diameter, said distal end of said push rod extending into said clevis between said first and second clevis arms;
e) first and second scissor elements, each scissor element having a hole, at least one of said first and second scissor elements being coupled to said push rod; and
f) an axle pin having a smaller diameter portion and a larger diameter portion, said axle pin extending through the holes in said scissor elements with said smaller diameter portion of said axle pin entering said second bore in said second clevis arm and said larger diameter portion of said axle pin entering said first bore in said first clevis arm,
wherein said axle pin is provided with a threaded portion engaging one of said second bore in said second clevis arm and said hole in said second scissor element, said axle pin pressing said scissor elements close to each other without pressing said first and second clevis arms close to each other

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5,392,790

INSTRUMENT FOR OBTAINING BORE TYPE TISSUE SAMPLING

Rowland W. Kanner, and Richard M. Davis, both of Guntersville, Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Apr. 30, 1993, Ser. No. 56,256

Int. Cl.[6] A61B *10/00*

U.S. Cl. 128—753 **24 Claims**



1. A tissue sampling instrument for aspirating sample tissue into a needle structure, said instrument comprising: a suction chamber including at least first and second separately movable chamber walls arranged to enlarge volume of said chamber and reduce pressure therein by movement of at least one of said first and second chamber walls; and a needle structure having a lumen therein arranged in flow communication with said chamber to enable communication of said reduced pressure to said lumen and to promote aspiration of sample tissue into a tissue entry aperture formed in the lumen, during tissue sampling operation of said instrument.

5,392,791

CONTROLLABLE INTRACARDIAL ELECTRODE DEVICE

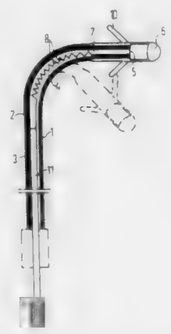
Per Nyman, Djursholm, Sweden, assignor to Siemens Elema AB, Solna, Sweden

Filed Apr. 23, 1993, Ser. No. 52,153

Claims priority, application Sweden, Apr. 24, 1992, 92012954

Int. Cl.[6] A61M *25/01*

U.S. Cl. 128—772 **11 Claims**



1. In a controllable electrode device for intracardial stimulation of the heart having an electrode cable containing an elongate, flexible conductor having an exterior completely covered with a layer of insulation and an interior forming a lumen for receiving a guide for selectively bending said electrode device during introduction of said electrode device through a vein, and an electrode head at the distal end of said conductor for stimulation of cardiac tissue, the improvement of said guide consisting of a single wire extending in said lumen in a longitudinal direction and having at least one groove running substantially perpendicularly to said longitudinal direction and having a shape and depth enabling the wire, and therefore the electrode cable, to bend at said groove when the said wire is subjected to pressure along said longitudinal direction.

5,392,792

REDUCED GAS PHASE CIGARETTE

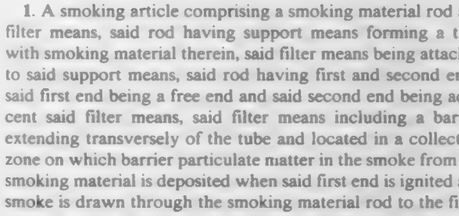
Chandra K. Banerjee, Pfafftown, and Henry T. Ridings, Lewisville, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 13, 1993, Ser. No. 47,661

Int. Cl.[6] A24D *1/00, 3/00*

U.S. Cl. 131—336 **14 Claims**

1. A cigarette comprising a rod of smoking material having upstream and downstream ends, a mouthpiece having upstream and downstream ends and a longitudinal axis, the upstream end of said mouthpiece being attached to the downstream end of said rod and forming an interface at the confronting ends thereof, said mouthpiece being made of a material which is substantially air and smoke impervious between the upstream end to the downstream end of the mouthpiece, at least one axial flow passage extending through said mouthpiece along the longitudinal axis thereof from the upstream end to the downstream end thereof through which unfiltered smoke from said rod flows to the downstream end of said mouthpiece, and air dilution means in said rod of smoking material for admitting ventilating air through said smoking material and along said interface between said rod and said mouthpiece so as to mix with unfiltered smoke in said smoking material and at said interface such that unfiltered, air diluted smoke flows radially inwardly to the longitudinal axis of the mouthpiece



and is delivered through said axial flow passage from the upstream to the downstream end of said mouthpiece, said air dilution means consisting of holes arranged about the cigarette and formed and arranged such that all ventilating air flowing to the downstream end of the mouthpiece is mixed with unfiltered smoke and flows to said interface and through said axial flow passage from the upstream end to the downstream end of the mouthpiece.

5,392,793

SMOKING ARTICLE WITH MEANS TO RAISE TEMPERATURE OF SMOKE

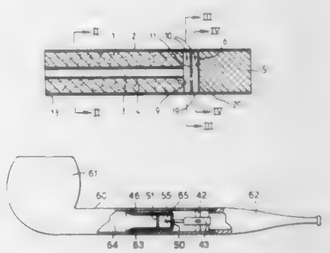
Peter J. Molloy, London, England, assignor to Rothmans International Services Limited, London, Great Britain

Continuation-in-part of Ser. No. 782,953, Oct. 25, 1981, abandoned. This application Nov. 16, 1993, Ser. No. 152,681

Claims priority, application United Kingdom, Oct. 26, 1990, 9023386

Int. Cl.[6] A24D *1/00*

U.S. Cl. 131—339 **32 Claims**



1. A smoking article comprising a smoking material rod and filter means, said rod having support means forming a tube with smoking material therein, said filter means being attached to said support means, said rod having first and second ends, said first end being a free end and said second end being adjacent said filter means, said filter means including a barrier extending transversely of the tube and located in a collection zone on which barrier particulate matter in the smoke from the smoking material is deposited when said first end is ignited and smoke is drawn through the smoking material rod to the filter means, and said rod including a heating means comprising a hollow passage extending longitudinally of said rod from the first end to the second end to feed hot gases from said first end of said rod when ignited to said collection zone for raising the temperature therein above that which would exist in the absence of said passage to cause release of semi-volatile compounds from said deposited particulate matter.

5,392,794

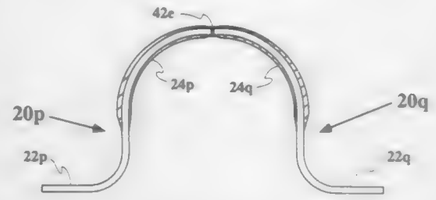
DENTAL FLOSS FOR BRACE WEARERS AND THE LIKE

John S. Striebel, 10319 Yellow Locust La., Spring Valley, Ohio 45370

Filed Nov. 18, 1993, Ser. No. 154,298

Int. Cl.[6] A61C *15/00*

U.S. Cl. 132—324 **19 Claims**



1. A dental floss chain, comprising:
(a) a plurality of interconnected dental floss sections, each adjacent dental floss section including;
(i) a strand having a first end and a second end being formed by a cut severing completely therethrough, a diameter (D), and a length (L) in between said first and second ends,
(ii) a threader which is formed of a semi-rigid material, having a tip on one end and a trailing end on another end, a length (L') in between, said trailing end being integrally attached to, and bonded to, said strand at at least one of said first end and second end, and
(iii) a quick release section formed of said semi-rigid material for interconnecting said each adjacent dental floss section, said quick release section being formed directly adjacent said cut and including a complete separation of said strands,
whereby each said adjacent dental floss section is separated from one another by a user exerting a small force and without a cutting operation.

5,392,795

DENTAL HYGIENE DEVICE

Naresh Gathani, 35 Derwent Gardens, Wembley, Middx. HA9 8SG, United Kingdom

PCT No. PCT/GB91/01701, § 371 Date Dec. 20, 1993, § 102(e) Date Dec. 20, 1993, PCT Pub. No. WO92/05722, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 2, 1991, Ser. No. 30,283

Claims priority, application United Kingdom, Oct. 3, 1990, 9021543

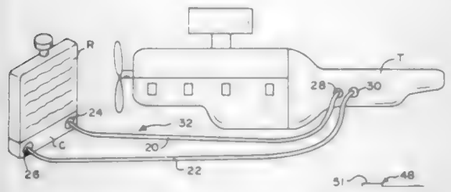
Int. Cl.[6] A61C *15/00*

U.S. Cl. 132—323 **8 Claims**



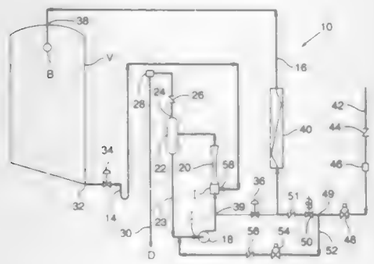
1. A dental hygiene device for interstitial cleaning comprising a handle portion (20) attached to spaced arm portions, and a filament stretched (23) between said arm portions, characterised in that the filament is a hollow monofilament with continuous walls and capable of re-use.

5,392,796
APPARATUS FOR FLUSHING AN AUTOMATIC TRANSMISSION COOLING SYSTEM
Larry E. Coleman, 466 Union Ave., Memphis, Tenn. 38103
Division of Ser. No. 130,779, Oct. 4, 1993. This application Apr. 8, 1994, Ser. No. 224,702
Int. Cl.[6] B08B *3/04*
U.S. Cl. 134—102.2 13 Claims



1. An apparatus for flushing an automatic transmission cooling system having a first port and a second port and including a fine metal weave therein through which hydraulic fluid flows, said apparatus comprising:
(a) a disposable sealed pressurized canister having an outlet and no inlet, said canister having a soap solution therein and being internally pressurized substantially above atmospheric pressure;
(b) coupling means including a hydraulic coupling adapted for sealingly connecting said outlet to the first port of the automatic transmission cooling system; and
(c) valve means for selectively placing said coupling means in communication with the interior of said canister.

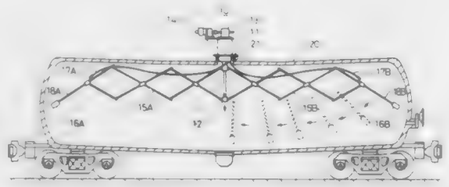
5,392,797
SINGLE MOTIVE PUMP, CLEAN-IN-PLACE SYSTEM, FOR USE WITH PIPING SYSTEMS AND WITH VESSELS
Elmer S. Welch, Silver Lake, Wis., assignor to VQ Corporation, Silver Lake, Wis.
Filed Mar. 10, 1994, Ser. No. 209,447
Int. Cl.[6] B08B *9/08*
U.S. Cl. 134—108 6 Claims



1. A single motive pump, clean-in-place system for use with an associated piping system and with a vessel to be cleaned of contaminating material, the vessel having a discharge outlet at substantially the bottom of the vessel and having an inlet for providing a liquid to the vessel, comprising:
a. a recirculation loop for providing flow communication and including a recirculation pump, an eductor, and a separator, the recirculation pump being a motive pump, being arranged to discharge a liquid through the eductor into the separator, and being supplied with liquid from the separator;
b. a return line for providing flow communication between the discharge outlet of the vessel to be cleaned and the eductor, the recirculation pump causing liquid flowing through the recirculation loop to have a sufficient dynamic head at the eductor to draw liquid from the discharge outlet of the vessel through the return line; and
c. a feed line including a feed line valve for providing flow communication between the recirculation loop and the vessel inlet when the feed line valve is opened, the recirculation pump being arranged to provide a generally continuous flow of liquid through the feed line into the vessel at a generally constant velocity to clean the vessel;

wherein the liquid entering the vessel through the inlet and the liquid discharged from the vessel through the return line are dynamically balanced to minimize pooling of the liquid in the vessel, to suspend contaminating material in the liquid within the vessel, and to carry off the suspended contaminating material from the vessel through the return line.

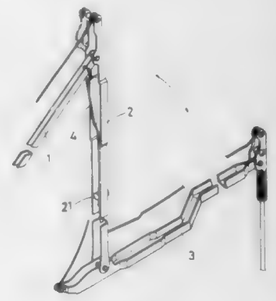
5,392,798
CLEANING APPARATUS FOR INNER SURFACE OF A TANK
Susumi Hirose; Masatoshi Ishizaki; Yoshimitsu Funawatashi, and Yukihiro Funakawa, all of Toyama, Japan, assignors to Kabushiki Kaisha Sugino Machine, Uozu, Japan
Filed Jun. 30, 1993, Ser. No. 83,764
Claims priority, application Japan, Jun. 30, 1992, 4-051356[U]
Int. Cl.[6] B08B *3/02, 9/08*
U.S. Cl. 134—167 R 7 Claims



1. A cleaning apparatus for an inner surface of a tank having an opening, said apparatus comprising:
a support member detachably mounted to the edge of said opening to support said apparatus on said tank;
a pair of expansion links having a lazy tongs structure of the same length and pivotably connected to said support member so as to be respectively expandable in opposite two directions within said tank in synchronism with each other;
a pair of rotary jet nozzle means each thereof being supported on one of said pair of expansion links to spray a cleaning liquid while changing the direction of the sprayed liquid in response to the rotation thereof; and
driving means mounted on said support member for causing said pair of expansion links to make expansion and contraction movements at a supporting location of said pair of expansion links by said support member.

5,392,799
FOUR-SECTION UMBRELLA STRUT SPREADER STRUCTURE
Chen M. Lai, F38, 3rd Floor, No. 5, Hsin Yi Road, Sec. 5, Taipei, Taiwan, Prov. of China
Filed Jul. 29, 1994, Ser. No. 282,000
Int. Cl.[6] A45B *19/00*
U.S. Cl. 135—25.3 2 Claims

1. A four-section umbrella strut spreader structure comprising:
(a) a first main strut member having a U-shaped cross-sectional contour defining an upwardly directed opened section and an end section;
(b) a second main strut member having a U-shaped cross-sectional contour pivotally connected to said end section of said first main strut member, at a first end section of said second main strut member;
(c) a third main strut member having a U-shaped cross-sectional contour pivotally connected to said second main strut member at a second end section of said second main strut member;
(d) a T-shaped guide bolt secured to a base leg of said U-shaped cross-sectionally contoured second main strut member at a central section thereof, said T-shaped guide



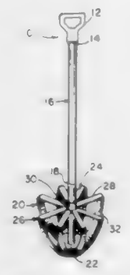
bolt having a head member and a bolt leg extending therefrom, said bolt leg having a horizontally guide opening formed therethrough; and,
(e) a leaf spring strut member extending through said guide opening and pivotally coupled on opposing ends thereof to said end section of said first main strut member and said third main strut member, whereby said T-shaped guide bolt maintains said leaf spring strut member substantially contiguous to said second main strut member at said central section.

5,392,800
MULTI-PURPOSE CANE DEVICE
Michael V. Sergi, P.O. Box 1313, Erie, Pa. 16512
Filed Sep. 9, 1992, Ser. No. 942,583
Int. Cl.[6] A45B *3/00*
U.S. Cl. 135—65 14 Claims



1. A cane device that helps a user stand in an erect posture and that enables the user to manipulate an object positioned on a lower support surface while the user stands erect, the cane device comprising:
(a) an elongated shaft means having a handle means at one end, an opposite support end and an intermediate section along a longitudinal axis of the shaft means between the ends, wherein the support end is provided with a friction means for contacting the support surface in a non-slip engagement and a magnet means for engaging magnetic objects and wherein the shaft means has a length that enables the user to hold the handle means and position the support end having the friction means on the support surface to help the user stand in the erect posture;
(b) a holding means pivotably mounted on the shaft means adjacent to the support end;
(c) a trigger means mounted on the shaft means adjacent to the handle means;
(d) an actuating means controllable having pulley means to provide changing cable direction means by the trigger means and connected to the holding means to provide for moving the holding means with respect to the support end to hold the object between opposed surfaces provided by the holding means and the support end for manipulating the object; and
(e) a righting means supported from the intermediate section of the shaft means adjacent to the support end without interfering with the movement of the holding means so that when the cane device is released from the user's hand and comes to rest in a generally horizontal righting position on the support surface, the righting means is spaced above the support surface with a portion of the friction means opposite the righting means contacting the support surface in the non-slip engagement, wherein the user can place his foot on the righting means to thereby cause the handle means to swing upwardly and into a somewhat vertical position towards the user's hand by pivoting on the friction means which prevents the support end from slipping on the support surface so that the handle means is able to be reached by the user without the user having to stoop out of the erect posture.

5,392,801
SELF RIGHTING WALKING CANE
Mitchell M. Hannoosh, 26 Morrison Rd., Wakefield, Mass. 01880, and James G. Hannoosh, 76 Beverly Dr., Avon, Conn. 06001
Filed Dec. 21, 1993, Ser. No. 171,236
Int. Cl.[6] A45B *1/00*
U.S. Cl. 135—65 9 Claims



1. A self righting walking cane devices having a center of gravity and a center of rotation, wherein said center of gravity is below the center of rotation, said walking cane device comprising:
an elongated lightweight shaft device having an upper end and a bottom end;
a handle device attached to the upper end of the shaft device;
a weighted base device attached to the bottom end of the shaft device, said base device having a flat bottom portion;
a curved device comprising a plurality of frame devices each having an upper horizontal top section attached to a lower portion of the shaft device, and a downwardly and inwardly curved section attached to the weighted base device; and

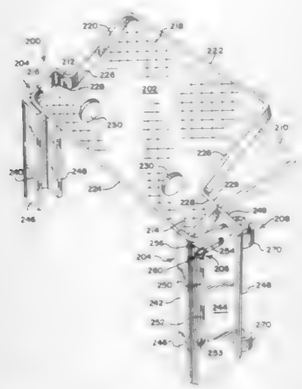
a flat bottom end section attached to the flat bottom section of the weighted base device.

5,392,802

FOLDING TRAY FOR INVALID WALKERS

C. P. Farr, Scarborough, Canada; Nate Ellena, Woodland Hills, and Jim R. Schultz, Thousand Oaks, both of Calif., assignors to Gaurdian Products, Inc., Simi Valley, Calif.

Division of Ser. No. 696,502, May 7, 1991, Pat. No. 5,273,063.
This application Sep. 8, 1993, Ser. No. 118,498
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[6] A45B *3/00*
U.S. Cl. 135—66 5 Claims



1. A tray support for holding articles proximate to an invalid walker, comprising:

tray holding means;

said tray holding means having a pivot means allowing the tray holding means to pivot and move between first and second positions;

guide means including an elongated guide slot that slideably receives the pivot means, one end of the guide slot having a turned portion whereby the pivot means (1) slides along the guide slot as the tray holding means is moved between its first and second positions, and (2) is located in the turned portion in one of the two positions of the tray holding means;

grip means on the tray support for detachably securing the tray holding means and the pivot means to an invalid walker.

5,392,803

APPARATUS AND METHOD FOR INSTALLING VALVES

Douglas A. Bruce, Fresno, Calif., assignor to CMB Industries, Inc., Fresno, Calif.

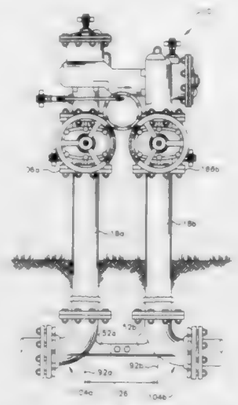
Filed Nov. 19, 1992, Ser. No. 978,575
Int. Cl.[6] F16K *43/00;* F16L *43/02*
U.S. Cl. 137—15 24 Claims

14. A method for connecting a high pressure liquid valve to inlet and outlet lines comprising:

connecting a first elbow joint to said inlet pipe, said first elbow joint having a first alignment arm extending outward therefrom and having an outlet;

connecting a second elbow joint to said outlet pipe, said second elbow joint having a second alignment arm, separate from said first alignment arm, extending outward from said second elbow joint, said second elbow joint having an outlet;

connecting said first alignment arm to said second alignment arm so as to position said outlet of the first elbow joint with respect to said outlet of said second elbow joint such that the center line of said first outlet and the center line of said second outlet are substantially parallel and spaced apart a predetermined distance to accommodate various installations, said first and second alignment arms etch further including a shoulder portion, wherein wait shoulder portions mate firmly and prevent said alignment arm, from moving relative to each other when said apparatus is



subjected to high pressure forces, said forces acting on said alignment arts;

connecting a first pipe to said outlet of said first elbow and a second pipe to said outlet of said outlet of said second elbow; and

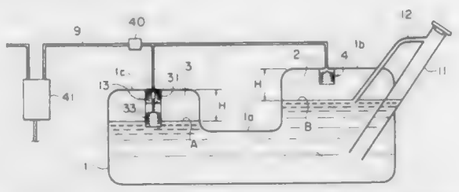
connecting said valve to said first and second pipes.

5,392,804

FUEL TANK STRUCTURE

Seiji Kondo, Chiryu, and Yoshihiro Kato, Seto, both of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Ohbu, Japan

Filed Nov. 18, 1993, Ser. No. 153,952
Claims priority, application Japan, Nov. 24, 1992, 4-313148
Int. Cl.[6] F16K *24/04, 17/36;* F02M *33/02*
U.S. Cl. 137—202 4 Claims



1. A structure of a fuel tank to be installed in an automobile comprising:

a fuel tank having a top wall formed with a centrally located recessed portion thereon and a first air chamber and a second air chamber separated from each other by said recessed portion, said first and second air chambers having a high-level and a low-level top wall, respectively, located at levels in height different from each other;

a fuel tube attached to said tank and equipped with a breather pipe;

a first fuel cutoff valve provided on said high-level top wall of said first chamber, said first fuel cutoff valve having a first casing projecting in an interior of said first air chamber, discharge holes for fuel evaporation gas formed at an upper end of said first casing so as to communicate said first air chamber with an interior of said first casing, a first valve seat opening formed at a central portion on a top wall of said first casing, a first float valve vertically movably provided in said first casing in order to tightly close said first valve seat opening when said first float valve moves upwardly, and a spring for pressing said first float valve toward said first valve seat opening;

a second fuel cutoff valve with a float provided on said low-level top wall of said second air chamber, said second fuel cutoff valve having an upper casing projecting in an interior of said second air chamber, discharge holes for fuel evaporation gas formed at an upper end of said upper casing so as to communicate said second air chamber with an interior of said upper casing, a second valve seat opening formed at a central portion on a top wall of said upper casing, a second float valve vertically movably provided in said upper casing in order to tightly close said second valve seat opening when said second float valve moves upwardly, a spring for pressing said second float valve toward said second valve seat opening, a lower casing provided at a bottom of said upper casing and extending therefrom downwardly, a lower float vertically movably accommodated in said lower casing, and a push rod for lifting said second float valve; and

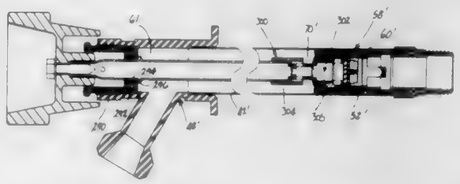
conduit means extending from said first fuel cutoff valve and said second fuel cutoff valve through at least one check valve to at least one canister.

5,392,805

FROST-RESISTANT HYDRANT

Jimmie D. Chrysler, Wyoming, Mich., assignor to Amerikam, Inc., Grand Rapids, Mich.

Filed Jul. 27, 1993, Ser. No. 98,124
Int. Cl.[6] F16K *3/02, 24/02, 35/06*
U.S. Cl. 137—218 62 Claims



1. A hydrant comprising:

a conduit adapted to communicate with a fluid source;

a valve cartridge positioned in the conduit, the valve cartridge including a cartridge body having first and second opposite open ends, a ceramic disk valve mounted in the cartridge body, the valve being movable between an open position allowing fluid flow axially through the valve in a first direction from the second open end through the first open end and a closed position blocking fluid flow, a hollow actuator stem connected with the valve for manipulating the valve between the open position and the closed position, the stem extending away from the cartridge body, and in fluid communication with the first open end of the cartridge body and the conduit thereby defining a fluid passage through the cartridge body, the valve, the stem and the conduit; and

a seal in the fluid passage between the valve cartridge and the conduit to block the fluid from flowing between the valve cartridge and the conduit in a direction opposite the first direction.

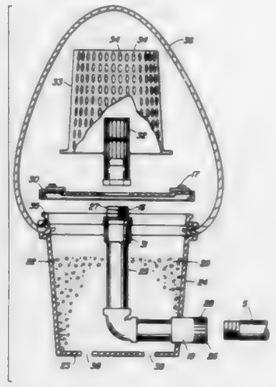
5,392,806

FOOT VALVE ASSEMBLY FOR LAKE AND RIVER WATER INTAKE

Mark Gallant, 24 Purnell Drive, Hamilton, Ontario, Canada L9C 4Y2

Filed Mar. 8, 1994, Ser. No. 207,735
Int. Cl.[6] E03B *3/04*
U.S. Cl. 137—236.1 7 Claims

1. A check valve support assembly comprising a container having a bottom panel, sidewalls and an upper open rim, there being positioned therein an intake conduit having upper and lower ends, the lower end of the intake conduit end being positioned to pass through and be anchored by the sidewall of the container at a location proximate to the bottom panel of the container, said lower end terminating in an external coupling means for connection to a water pump intake pipe, the upper



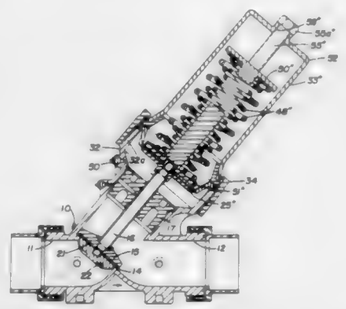
end of the intake conduit being positioned above the bottom panel of the container, at a distance spaced therefrom sufficient to provide for a ballasting mass to be placed within the container, over the container bottom panel and beneath the upper end of the conduit, said upper end terminating in coupling means whereby a one-way check valve may be attached thereto.

5,392,807

FLUID PRESSURE ACTUATED FLOW CONTROL VALVE

Norman E. Caudle, Dakota; Guy A. Jang, Loves Park, and Ronald A. Johnsen, Rockford, all of Ill., assignors to Aqua-Matic, Inc., Rockford, Ill.

Division of Ser. No. 18,506, Feb. 17, 1993. This application Jan. 24, 1994, Ser. No. 185,194
Int. Cl.[6] F16K *51/00;* F01B *29/00, 31/00*
U.S. Cl. 137—316 13 Claims



8. A fluid pressure operated flow control valve comprising, a valve casing defining a flow passage having an inlet and an outlet and a valve seat intermediate the inlet and outlet, a valve member having a valve stem and valve guide means on the valve casing slidably supporting the valve stem, an actuator base including annular base wall means spaced outwardly from the stem and having external threads and a base end face in a plane perpendicular to the stem, an actuator cap including annular cap wall means spaced outwardly from the stem and a

cap end face, annular stationary actuator wall means having outwardly extending flange means disposed between the base end face and the cap end face, annular clamp ring means threadedly engaging the external threads on the base wall means and extending around said annular flange means and having an inwardly extending flange portion engaging said cap for clamping the cap to the base wall means, and movable actuator wall means attached to the valve stem and engaging said stationary actuator wall means, said stationary actuator wall means comprising first and second diaphragm retainer rings each having a frusto-conical wall portion and a flange portion extending outwardly from a major end thereof, said movable actuator wall means comprising a diaphragm having a central portion attached to the valve stem and an outer portion disposed between the major ends of the first and second diaphragm retainer rings.

5,392,808

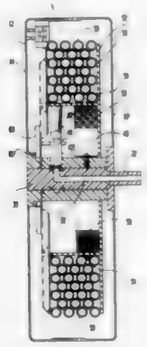
RETRACTABLE TUBING REEL

Elton J. Pierce, 124 Wilmington, Clovis, N. Mex. 88101

Filed Jul. 18, 1994, Ser. No. 276,207

Int. Cl.[6] B65H *75/34*

U.S. Cl. 137—355.23 **18 Claims**



1. A retractable tubing reel device, utilized in conjunction with a stationary gas supply and a patient intake unit such as a nasal catheter, the retractable tubing reel device comprising:

an attachable housing consisting of a attachment casing member and an inlet casing member, the attachment casing member and inlet casing member essentially symmetrical in shape and mated to each other, the attachment casing member having means for attachment to a base unit, the inlet casing member having an inlet aperture, the attachable housing having a conduit aperture;

an inlet flow conduit having a exterior end and an interior end, the inlet flow conduit therethrough said inlet aperture and in flow communication with a stationary gas supply at the exterior end, and the interior end inside said attachable housing, the inlet flow conduit delivering gas from the stationary gas supply to a retractable tubing reel device;

a central swivel shaft enclosed within and at a horizontal axis across said attachable housing, the central swivel shaft essentially cylindrical having a gear end and a spring end opposite each other, the central swivel shaft having a central passageway for flow of gas, in flow communication with said inlet flow conduit at the spring end, the central swivel shaft having a spring catch on a perimeter of the central swivel shaft near the spring end, the central swivel shaft stationary about the horizontal axis of said attachable housing;

an extension unit having a swivel end and a conduit end, attached perpendicular to said central swivel shaft at the swivel end, the extension unit having an extension passageway therethrough, in flow communication with said central passageway;

a flexible flow conduit having an inlet end and an outlet end, attached to said extension unit at the inlet end, and through said conduit aperture of said attachable housing to the patient gas intake unit at the outlet end, the flexible flow conduit in flow communication with said extension passageway and the patient gas intake unit, the flexible flow conduit wound in a coil inside said attachable housing during a coil state, the flexible flow conduit extended beyond said attachable housing during an extension state, the flexible flow conduit being rewound inside said attachable housing during a retraction state, the flexible flow conduit delivering gas flowing through said extension passageway to the patient gas intake unit;

a gear assembly enclosed within said attachable housing, having a gear reel, a gear catch lever, a half gear, and a gear compression spring, the gear reel circular in shape having a central aperture for engagement with said gear end of said central swivel shaft, the gear reel mounted on and rotating about said central swivel shaft and forming a first boundary for said flexible flow conduit, the gear catch lever connected to the gear reel, a half gear mounted to said gear end of said central swivel shaft, the half gear engaging the gear catch lever as said flexible flow conduit is extended from said attachable housing during said extension state, the half gear disengaging the gear catch lever during said retraction state; and

a spring assembly enclosed within said attachable housing, having a spring reel and a tension spring, the spring reel having a flat circular portion and a cylindrical portion perpendicular to the circular portion, the cylindrical portion attached to said gear reel through a plurality of reel couplings, the spring reel having a central cavity, said central swivel shaft extended therethrough and engaged with said spring reel at said spring end of said central swivel shaft, the tension spring, eccentric to said central swivel shaft and enclosed within the cylindrical portion of said spring reel, the tension spring connected to said central swivel shaft through said spring catch and to the cylindrical portion, said flexible flow conduit wound around the cylindrical portion of the spring reel, the flat circular portion of the spring reel forming a second boundary for said flexible flow conduit, said spring reel rotating in a first direction when said flexible flow conduit is being extended and rotating in an opposite direction when said flexible flow conduit is being retracted, said gear reel rotating reciprocally with the spring reel;

whereby a patient, under gas therapy in which a gas must constantly be supplied to the patient, may have the freedom to move about a large area from the stationary gas supply unit, through extending said flexible flow conduit beyond said attachable housing, the flexible flow conduit retractable to prevent tangling and constriction of the flexible flow conduit, gas flowing from the stationary gas supply unit through said inlet flow conduit, through said central passageway to said extension passageway to said flexible flow conduit, to the patient gas intake unit and to the patient.

5,392,809

HYPER-RESET PRESSURE CONTROLLER

Steve Buckner, Homewood, Ill., assignor to Acme Steel Company, Riverdale, Ill.

Filed Nov. 5, 1993, Ser. No. 147,539

Int. Cl.[6] G05D *16/02*

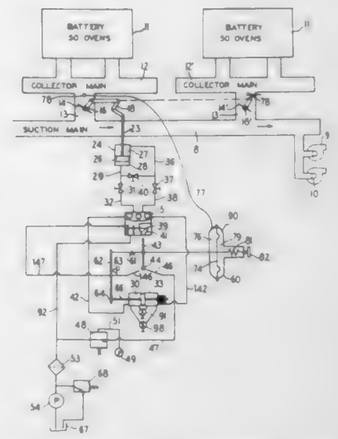
U.S. Cl. 137—488 **6 Claims**

1. A hyper-reset pressure controller for controlling pressure in a main comprising;

a control valve mounted in said main,

a power cylinder with a power piston therein coupled to said control valve, a stabilizer cylinder with a control piston, one side of said power cylinder connected to one side of said stabilizer cylinder, a jet pipe with one end pivotally supported, first and second nozzles mounted adjacent the second end of said jet pipe, said first nozzle connected to the one side of said power cylinder, said second nozzle connected to the other side of said stabilizer cylinder,

a pivoted link with one end connected to said jet pipe and a second end connected to said stabilizer piston, a diaphragm container with a diaphragm mounted therein which is coupled to said jet pipe, one side of said diaphragm connected to atmospheric pressure and the other side connected by a tube to the pressure within said main, a first feedback internal passage connected between the first and second ends of said stabilizer cylinder, and a second feedback tube connected between the first and second ends of said stabilizer cylinder.



5,392,810

PLATES FOR WAFER CHECK VALVES

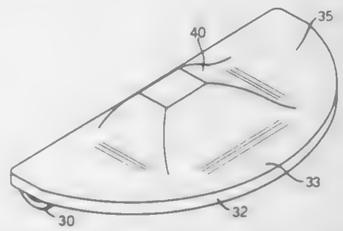
James N. Cooper, Huddersfield, and Nicholas J. Harrop, Rotherham, both of England, assignors to Goodwin International Limited, United Kingdom

Filed Dec. 13, 1993, Ser. No. 166,524

Claims priority, application United Kingdom, Dec. 1, 1993, 9324697

Int. Cl.[6] F16K *15/03*

U.S. Cl. 137—512.1 **11 Claims**



1. A metal plate for a dual plate check valve comprising:

a substantially D-shaped plate member, said D-shaped plate member having a predetermined thickness with a central portion and end portions extending from the central portion, means for pivotally mounting said plate for rotation about an axis parallel to and adjacent a straight edge of the D, said central portion including a reinforcement increasing the thickness of the plate in the central portion, when back pressure acts on said plate, said reinforcement limiting bowing of said D-shaped plate member and said plate distorting which enables the end portions of the plate to maintain sealing contact with a seat.

5,392,811

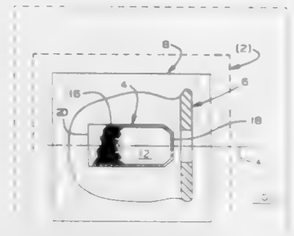
HIGH PRESSURE FUEL SYSTEM VALVE

Dale C. Maley, Fairbury; David M. Olson, Peoria Heights, and Ronald D. Shinogle, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 2, 1993, Ser. No. 144,383

Int. Cl.[6] F16K *15/00*

U.S. Cl. 137—514 **6 Claims**



1. In an internal combustion engine fuel system valve having a metal valve seat and a metal body, said valve body being moveable at relatively high rates of speed between a first open position at which the valve body is spaced from the valve seat and a second closed position at which the valve body is contacting the valve seat, the improvement comprising:

said internal combustion engine valve body having a chamber, said chamber having a volume "X" of preselected magnitude; and

a material having a volume "Y" less than the volume "X" of the valve body chamber, said internal combustion engine material being positioned within the valve body chamber and moveable within the chamber in response to deceleration of the valve body.

5,392,812

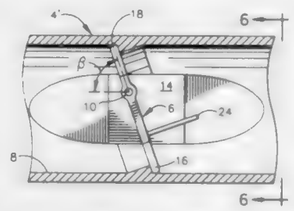
OFFSET HINGE FLAPPER VALVE

William L. Herron, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 4, 1992, Ser. No. 985,718

Int. Cl.[6] F16K *15/03*

U.S. Cl. 137—527.8 **4 Claims**



1. A check valve having a first state for allowing air to flow therethrough generally in a predetermined direction under air delivery conditions and a second state for blocking airflow in a direction opposite to said predetermined direction under backflow conditions, comprising:

a cast housing having a flow channel formed in part by first and second mutually opposing, parallel planar surfaces separated by a predetermined distance, said first and second planar surfaces being substantially parallel to said predetermined direction;

a valve plate having a periphery formed in part by first and second parallel straight edges separated by a width slightly less than said predetermined distance; and

pivot means for rotatably mounting said valve inside said cast housing such that said valve plate has an axis of rotation substantially perpendicular to and intersecting said first and second planar surfaces of said cast housing,

wherein said valve plate has a first part on one side of said axis of rotation and a second part on the other side of said axis of rotation, said first and second parts of said valve plate being substantially co-planar and said first part of said valve plate having an area less than an area of said second part of said valve plate; and said valve plate is freely rotatable about said axis of rotation between a first angular position at which said flow channel is not closed in said first state and a second angular position at which said flow channel is not closed in said second state, said valve plate being disposed at first and second angles relative to said predetermined direction when said valve plate is in said first and second angular positions respectively, said second angle being closer to a right angle than is said first angle;

wherein the angle of rotation of said valve plate from said first angular position to said second angular position is less than a right angle;

wherein said cast housing further comprises first and second seats which respectively abut said valve plate on opposite sides thereof when said valve plate arrives at said second angular position, thereby blocking further rotation of valve paste beyond said second angular position, each of said first and second seats comprising a curved seating surface disposed at said second angle relative to said predetermined direction.

5,392,813

INTEGRAL BLEED SYSTEM FOR VALVE

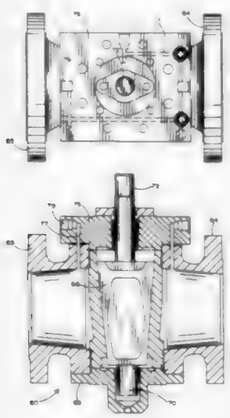
Gordon M. Smith, Brookshire, and Hans M. Van Der Wiel, Fulshear, both of Tex., assignors to Johnston Pump/General Valve Inc., Brookshire, Tex.

Filed Mar. 19, 1991, Ser. No. 672,713

The portion of the term of this patent subsequent to Jan. 13, 2009, has been disclaimed.

Int. Cl.[6] F16K *5/02*

U.S. Cl. 137—599 10 Claims



1. A fluid flow control valve of the type having upstream and downstream throats separated by a central body cavity having a fluid control member connected to a trunnion for selectively opening and closing said valve; the valve comprising:

an integral bleed system manifold connected integrally to said throats and said cavity and having interior flow channels, a plurality of externally accessible ports in fluid communication with respective ones of said flow channels, and at least one flow control device for selectively interconnecting a) said upstream and downstream throats while bypassing said cavity; b) said upstream throat and said cavity; and c) said downstream throat and said cavity; said manifold being configured for receiving said trunnion and for forming an enclosing surface of said cavity.

5,392,814

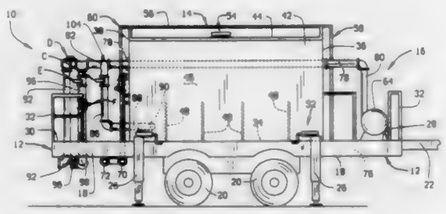
WATER WELL REHABILITATION APPARATUS

Paul Brotcke, Kirkwood, and Joseph Foppe, Fenton, both of Mo., assignors to Brotcke Engineering Company, Inc., Fenton, Mo.

Filed May 27, 1993, Ser. No. 68,211

Int. Cl.[6] A01G *25/09*

U.S. Cl. 137—899 18 Claims



1. A well rehabilitation apparatus comprising:

a wheeled vehicle;

a tank supported on the wheeled vehicle, the tank having an interior volume for containing liquid;

a pump supported on the wheeled vehicle; and,

a network of liquid conducting conduits interconnecting the pump and the tank interior volume, the network comprising means for drawing a liquid from the tank interior volume and circulating the liquid through the pump and back into the tank interior volume, means for drawing a liquid from the tank interior volume and directing the liquid through the pump and into a well separate from the wheeled vehicle, and means for drawing a liquid from the tank interior volume and directing the liquid through the pump and discharging the liquid from the wheeled vehicle and away from the well.

5,392,815

GRADATIONAL TUBE BUNDLE FLOW CONDITIONER FOR PROVIDING A NATURAL FLOW PROFILE TO FACILITATE ACCURATE ORIFICE METERING IN FLUID FILLED CONDUITS

John W. Stuart, Lafayette, Calif., assignor to Pacific Gas and Electric Company, San Francisco, Calif.

Filed Aug. 5, 1993, Ser. No. 102,410

Int. Cl.[6] F15D *1/00*

U.S. Cl. 138—37 7 Claims

1. A flow conditioner for providing a relatively ideal flow profile of a fluid through a cylindrical conduit, comprising:

a bundle of parallel tubes, said bundle including a first central tube forming the center of said bundle having the largest diameter of all said tubes, a first array of intermediate tubes surrounding said central tube each having a diameter smaller than said central tube, and a second array of tubes surrounding said first array consisting of tubes having same diameter as said intermediate tubes, and smaller tubes having a diameter less than said intermediate tubes, and means for holding said tube bundle together so that tubes of said first array are contiguous with said central tube, and tubes of said second array are substantially contiguous with tubes of said first array.



5,392,816

ASSEMBLY OF MOUTHPIECE, STOPPER AND LOCK FOR SHUTTING OFF A PIPE MOUTH

Hendrikus Hagenberg, and Ferdinand Hagenberg, both of Ridderkerk, Netherlands, assignors to Hagenberg Projekten B.V., Ridderkerk, Netherlands

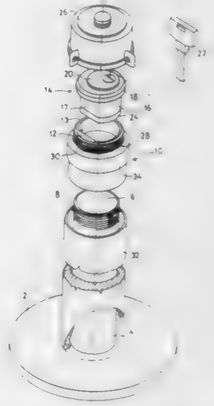
PCT No. PCT/NL92/00076, § 371 Date Nov. 10, 1993, § 102(e) Date Nov. 10, 1993, PCT Pub. No. WO92/18395, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 16, 1992, Ser. No. 137,105

Claims priority, application Netherlands, Apr. 19, 1991, 9100685

Int. Cl.[6] F16L *55/10*

U.S. Cl. 138—89 6 Claims



1. Assembly for shutting off a pipe mouth, comprising:

an essentially tubular mouthpiece (**10**) which is open at both ends, for connection to the pipe mouth;

a stopper (**14**) for shutting off one end of the mouthpiece (**10**), which stopper has an axially projecting part (**16**) which is intended for insertion into the mouthpiece; and

a lock (**20**) which is placed by a key (**22**) in a locked and a released position, in the locked position the stopper (**14**) on the mouthpiece (**10**) being securely connected to the mouthpiece (**10**) and the key (**22**) being freely movable into and out of the lock (**20**), and in the released position the stopper (**14**) being freely movable relative to the mouthpiece (**10**) and the key (**22**) being securely connected to the lack (**20**), the lock (**20**) being integral with the stopper (**14**) of which the projecting part (**16**) comprises:

a first locking element (**24**) whose movement is coupled to that of the key (**22**) and in the locked position of the lock (**20**), when the stopper (**14**) is on the corresponding mouthpiece (**10**), is in engagement with the mouthpiece (**10**) for mechanical locking of the stopper (**14**) on the mouthpiece (**10**); and

a second locking element (**48**, **50**) which in the released position of the lock (**20**) blocks the first locking element (**24**) when the stopper (**14**) is off the mouthpiece (**10**), and releases the first locking element (**24**) when the stopper (**14**) is on the corresponding mouthpiece (**10**), the mouthpiece (**10**) and the stopper (**14**) being provided with interacting control means (**46**, **48**) for the operation of the second locking element (**48**, **50**), characterised in that the control means comprise at least two magnetic elements, at least one of the magnetic elements being a permanently magnetic element, of which magnetic elements the first (**46**) is securely connected to the mouthpiece (**10**), while the second (**48**) is accommodated in the stopper (**14**) so that it is movable against a biasing force under the influence of the force generated by the magnetic field of the or each permanently magnetic element, and is coupled to the second locking element (**48**, **50**) for blocking and releasing the first locking element (**24**).

5,392,817

APPARATUS FOR ALTERING THE LOOP LENGTH OF TERRY CLOTH

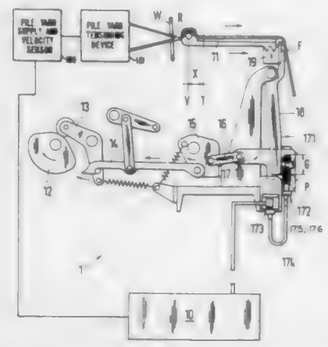
Eberhard Seifert, Rickenbach-Attikon, Switzerland, and Joannes J. H. M. Gorris, Eindhoven, Netherlands, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 13, 1992, Ser. No. 868,059

Claims priority, application Switzerland, Jun. 11, 1991, 01743/91

Int. Cl.[6] D03D *39/22*

U.S. Cl. 139—25 22 Claims



1. In a loom for weaving terry cloth including a fabric table for holding the terry cloth and displaceable over a distance "X" between a starting position and a partial beat-up position, and a device for altering a loop length during weaving of the terry cloth, the device including a lever operatively coupled with the table for moving the table over the distance "X" and means for pivoting the lever about a pivot axis to therewith move the table between said positions, the improvement to the device comprising a drive substantially linearly reciprocable in a general pivoting direction of the lever and over a constant distance; means operatively coupling the drive to the lever at a location spaced from the pivot axis, and adjustment means operable while terry cloth is being woven on the loom for varying said location on the lever relative to the pivot axis to thereby adjust the distance "X".

5,392,818

PIEZOELECTRIC TYPE NEEDLE SELECTOR FOR JACQUARD WEAVING MACHINES

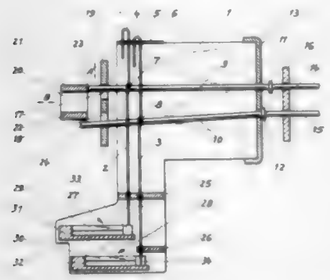
Wolfgang Seiler, Azaleenweg 17, D-41189 Monchengladbach, and Rudolf Erich, Am Stapp 2, D-41844 Wegberg, both of Germany

Filed Mar. 18, 1994, Ser. No. 210,630

Claims priority, application Germany, Apr. 28, 1993, 9306377[U]

Int. Cl.[6] D03C *3/20*

U.S. Cl. 139—59 **6 Claims**



1. A needle selector apparatus for a Jacquard machine, said apparatus comprising drop needles and respective thrust needles supported thereby, for movement both horizontally and vertically, control means for moving said thrust needles, and blocking elements which are operatively associated with a respective drop needle and which are selectively displaceable between a first position for providing support for a respective drop needle and a second position for permitting said respective drop needle to drop down, each blocking element including an adjusting element comprising a respective piezoelectric flexural transducer having a first end at which it is stationarily clamped, the respective piezoelectric flexural transducer being arranged with its longitudinal direction transversely to a longitudinal direction of an associated drop needle, and a free end of each flexural transducer being movable between said first support position lying in the path of movement of a respective drop needle and said second drop-down position lying outside the path of movement of said respective drop needle, in a plane which is transverse to the longitudinal direction of said respective drop needle.

5,392,819

PLANETARY GEAR TYPE SELVAGE FORMING AND CORD CATCHING DEVICE FOR LOOM

Chun-Yen Lin, Tainan, Taiwan, Prov. of China, assignor to Hunshin Enterprise Co., Ltd., Tainan Hsien, Taiwan, Prov. of China

Filed Dec. 10, 1993, Ser. No. 164,538

Int. Cl.[6] D03D *47/40;* **D03C** *7/08*

U.S. Cl. 139—430 **9 Claims**

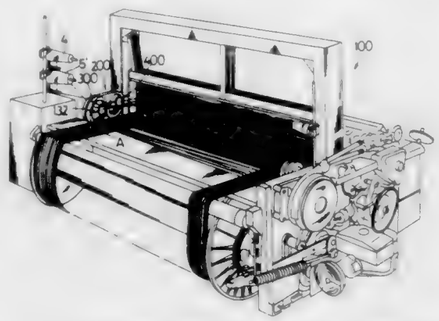
1. A selvage forming and cord catching device for use in a loom in which a fabric having a selvage is woven with warps and wefts, said selvage forming and cord catching device comprising:

a base adapted to be secured on the loom having two gear seats formed thereon;

yarn supply means for supplying yarn to said loom;

a first planetary gear train comprising a sun gear rotatably supported in the first gear seat of the base and adapted to be in driving engagement with a motion transmission system of the loom to be driven thereby, a ring gear fixed on the base and two planetary gears driven by the sun gear and engaging the ring gear to orbit about a central axis of the sun gear by the rotation of the sun gear, each of the planetary gears comprising a concentrically-disposed cylindrical yarn guide member which defines a passage to allow said yarn supplied from said yarn supply means to pass therethrough and an eccentrically-mounted guide arm to which the yarn extending through the cylindrical yarn guide member is escorted to be fed therefrom to the loom so that when the planetary gears are rotated to orbit about the central axis of the sun gear, the yarns supplied from the cylindrical yarn guide members are fed to the loom in an inter-crossing and inter-winding manner by the escort of the eccentric guide arms to wind around each other; and

a second planetary gear train comprising a sun gear rotatably supported in the second gear seat of the base and in driving engagement with the sun gear of the first planetary gear train to be driven thereby, a ring gear fixed on the base and two planetary gears driven by the sun gear and engaging the ring gear to orbit about a central axis



of the sun gear by the rotation of the sun gear, each of the planetary gears comprising a concentrically-disposed cylindrical yarn guide member which defines a passage to allow said yarn supplied from said yarn supply means to pass therethrough and an eccentrically-mounted guide arm to which the yarn extending through the cylindrical yarn guide member is escorted to be fed therefrom to the loom so that when the planetary gears are rotated to orbit about the central axis of the sun gear, the yarn supplied from the cylindrical yarn guide members is fed to the loom in an inter-crossing and inter-winding manner by the escort of the eccentric guide arms to wind around each other for pinching therebetween an excessive length of the wefts to allow the excessive length of the wefts to be cut along the selvage by cutting means and carrying the cut wefts away.

5,392,820

PIEZOELECTRICALLY CONTROLLED LIFT BLADE AND HOOKING FOR A SHED-FORMING DEVICE FOR A LOOM

Wolfgang Seiler, Mönchengladbach, Germany, assignor to Oskar Schleicher, Monchen-Gladbach, Germany

Filed Feb. 22, 1994, Ser. No. 199,826

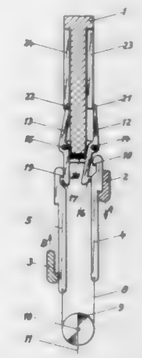
Claims priority, application Germany, Mar. 29, 1993, 4309983

Int. Cl.[6] D03C *3/20*

U.S. Cl. 139—455 **10 Claims**

1. A shed forming arrangement for a loom, comprising: lift elements movable in opposition relationship to each other; hooks adapted to be operatively associated with the lift elements; a connecting member connecting each two adjacent hooks to form a respective pair, each connecting member forming a loop; a roller carried in each loop; means connecting said roller to shedding means of the loom; arresting elements movable between an engagement position with the respective hook and a non-engagement position; and actuating devices adapted to influence the position of the respective arresting elements, each actuating device comprising a piezoelectric

flexural transducer and means for stationarily clamping same at one end thereof to a stationary machine part, each piezoelectric flexural transducer being arranged so that its free end moves transversely to the path of movement of the associated



arresting element between a blocking position of being disposed in the path of movement of the associated arresting element and a non-blocking position of being disposed outside the path of movement of the associated arresting element.

5,392,821

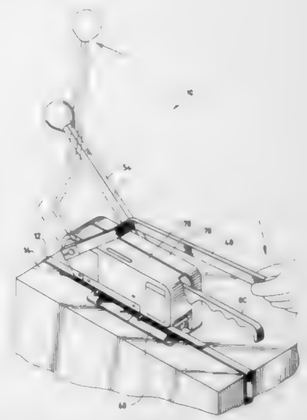
STRAPPING TOOL WITH MECHANISM FOR ADMITTING, RETAINING, AND RELEASING STEEL STRAP

Andrzej M. Chudy, Grayslake, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Oct. 8, 1993, Ser. No. 133,290

Int. Cl.[6] B21P *9/00*

U.S. Cl. 140—93.2 **18 Claims**



1. A strapping tool of the type used to apply a strap in a tensioned loop around a package and to join said strap by means of a series of interlocking joints comprising interlockable shoulders punched into longitudinally extending overlapped ends of said strap, comprising:

a longitudinally extending base having a recess defined therein;

a latch movably mounted upon said longitudinally extending base so as to be selectively movable between a closed position wherein said latch extends into said recess defined within said base so as to retain said longitudinally extending over-lapped ends of said strap between said latch and said base, and an opened position wherein said latch is displaced from said recess of said base and said closed position so as to permit admission of said longitudinally extending overlapped ends of said strap into said tool and to permit release of said longitudinally extending overlapped ends of said strap out from said tool; and

longitudinally movable cam means for moving said latch from said closed position to said opened position and from said opened position to said closed position.

5,392,822

BAND TIGHTENING APPARATUS

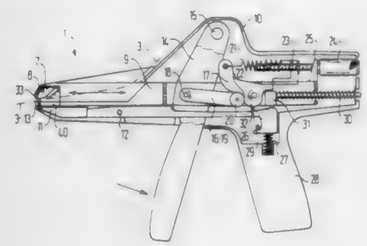
Willibald Kraus, Grunstadt, Germany, assignor to TRW United Carr GmbH & Co. KG, Enkenbach-Alsenborn, Germany

Filed Jul. 21, 1993, Ser. No. 95,274

Claims priority, application Germany, Jul. 27, 1992, 4224826

Int. Cl.[6] B21F *9/02*

U.S. Cl. 140—123.6 **11 Claims**



1. In an apparatus for tightening a profiled band element looped around at least one tube-shaped body in its associated head piece which exhibits within a passage aperture a resilient locking element which interacts with the profiled bank element, the apparatus including a spring-loaded band gripper that is carried by a sliding carriage within a housing, and further including a cutting lever rotatable around a fixed fulcrum to cut the portion of the band element extending beyond the head piece and a trigger lever by means of which the sliding carriage is moved to tension the band element in the head piece, the improvement wherein release means are provided for releasing the tension on the band element immediately prior to actuating the cutting lever to cut the portion of the band element extending beyond the head piece, the release means including a rotatable curve element (**16**) acting against a spring-loaded tripping lever (**17**) carried by the sliding carriage, the rotatable curve element comprising a pivotal disengagement lever (**19**) having a free end that actuates the cutting lever (**11**) after release from the tripping lever (**17**).

5,392,823

DRAIN CLEANER DISPENSER WITH LOCKING FEATURE

Arthur Sternheimer, Spring Valley, N.Y., and Anthony Delia, W. Redding, Conn., assignors to Block Drug Company, Inc., Jersey City, N.J.

Division of Ser. No. 824,160, Jan. 22, 1992, Pat. No. 5,251,559, which is a continuation-in-part of Ser. No. 681,953, Apr. 8, 1991, Pat. No. 5,253,684. This application Aug. 23, 1993, Ser. No. 110,315

Int. Cl.[6] B67D *5/00*

U.S. Cl. 141—1 **5 Claims**

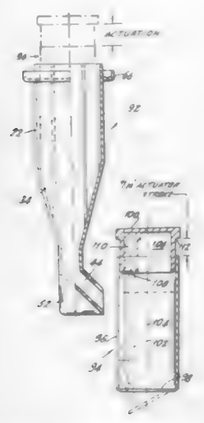
1. A method of cleaning a drain, comprising the steps of:

(A) unlocking a container of drain cleaner by moving the container from a locked position to an unlocked position relative to a dispenser for the drain cleaner to permit a predetermined movement of the container relative to the dispenser;

(B) supporting the dispenser in the vicinity of a drain;

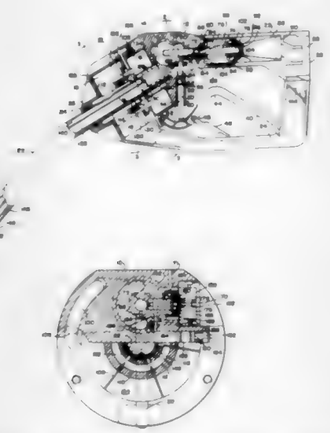
(C) while supporting the dispenser in the vicinity of the

drain, opening the container within the dispenser by causing the predetermined movement between the container and the dispenser;



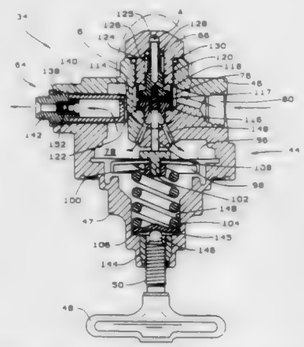
(D) dispensing drain cleaner by gravity from the container, through the dispenser, and into the drain; and
(E) reacting the drain cleaner with water within the drain.

5,392,824
VAPOR RECOVERY NOZZLE WITH AUTOMATIC SHUT-OFF SYSTEM
Joshua E. Rabinovich, 15 Voss Ter., Newton, Mass. 02159
Division of Ser. No. 893,335, Jun. 3, 1992, Pat. No. 5,297,594.
This application Mar. 11, 1994, Ser. No. 208,851
Int. Cl.[6] B65B *31/00*
U.S. Cl. 141—59 7 Claims



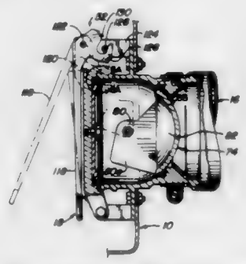
1. An automatic shut off system for a nozzle comprising:
means for generating a vacuum;
a hydraulic fluid containing main cylinder;
a hydraulic fluid containing accumulator cylinder;
a passage means for operatively interconnecting said main cylinder and said accumulator cylinder;
needle means normally closing said passage to prevent the hydraulic fluid from passing into said accumulator cylinder from said main cylinder; and
means for moving said needle means from closing arrangement in said passage upon generation of a vacuum by said vacuum generating means.

5,392,825
PRESSURE REGULATOR WITH A FLASHBACK ARRESTOR
Carl W. Mims, Sanger, and Roger D. Zwicker, Arlington, both of Tex., assignors to Victor Equipment Company, St. Louis, Mo.
Filed Aug. 3, 1993, Ser. No. 101,702
Int. Cl.[6] F16K *31/12*
U.S. Cl. 137—614.2 7 Claims



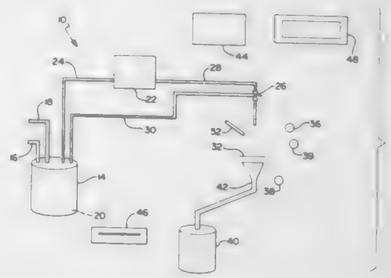
4. A pressure regulator for variably, adjustably reducing the pressure of a gas introduced into the pressure regulator, typically from a pressurized gas cylinder, the pressure regulator comprising:
a housing having a gas inlet and a gas outlet;
a high pressure chamber defined by said housing and in fluid communication with said gas inlet;
a low pressure chamber defined by said housing and in fluid communication with said gas outlet;
an adjustable valve to set the output pressure of the gas, said valve having a valve inlet in fluid communication with said high pressure chamber, and a valve outlet in fluid communication with said low pressure chamber; and
a removable flashback assembly disposed in said gas outlet.

5,392,826
AIRCRAFT WASTE SYSTEM DRAIN VALVE
Eric J. Saville, 9325 Apricot Ave.; Raymond S. Hunt, Jr., 10075 Hillside Rd., both of Alta Loma, Calif. 91701, and William R. Dunn, 266 Van Ness Ave., Upland, Calif. 91786
Division of Ser. No. 715,676, Jun. 14, 1991, Pat. No. 5,197,515.
This application Mar. 25, 1993, Ser. No. 37,024
Int. Cl.[6] F16K *1/20*
U.S. Cl. 137—800 6 Claims



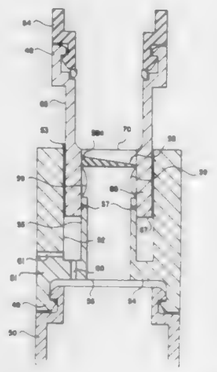
1. A drain valve assembly for sealing an aircraft waste system drain line, comprising:
a valve body to be mounted on the aircraft including a tubular coupling portion having an outer end for releasable coupling engagement with a drain hose coupling into which the valve body coupling portion is inserted, said coupling portion terminating in an annular outer end edge, and said valve body containing a drain passage having an inlet end for receiving waste from said drain line and an opposite outlet end extending axially through and opening through the outer end of said coupling portion, whereby waste flow through said passage occurs in a flow direction toward said passage outlet end, and
sealing means including a valve seat within the outer end of said coupling portion circumferentially surrounding said passage outlet end axially inward of said end edge of the coupling portion, whereby said valve seat is shielded against damage by contact with a drain hose coupling during connection of the hose coupling to and disconnection of the hose coupling from said valve body coupling, a valve cover, seal means on one side of said valve cover, and means pivotally mounting said valve cover on said valve body at one side of said coupling portion for swinging between (a) a closed position wherein said valve cover is located opposite said outer end of said coupling portion with said one side of the cover facing and disposed in close proximity to said outer end and said cover seal means is disposed within the outer end of coupling portion and engages said valve seat in fluid sealing relation to block flow through said passage, and (b) an open position wherein said valve cover is located at said one side of said coupling portion to permit connection of a drain hose to said valve body coupling for drainage flow through said passage into the drain hose.

5,392,827
APPARATUS FOR BULK DISPENSING OF LIQUIDS
Adel K. Yasso, 6106 S. Center Rd., Grand Blanc, Mich. 48439; Phil DeBerry, 1975 Reidsview Dr., White Lake, Mich. 48383, and Paul Lemley, 27515 Shackett Dr., Warren, Mich. 48093
Filed Sep. 27, 1993, Ser. No. 127,635
Int. Cl.[6] B65B *1/30, 3/28*
U.S. Cl. 141—192 7 Claims



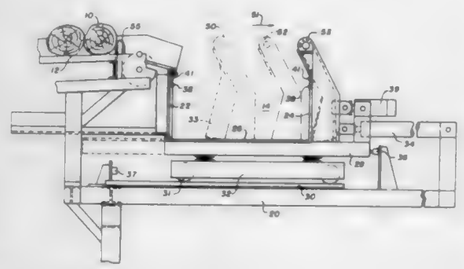
2. An apparatus for bulk dispensing of laundry liquid comprising:
a reservoir for storing a laundry liquid;
a pump connected to said reservoir for pumping laundry liquid from said reservoir;
a solenoid-actuated valve connected to said pump for dispensing the pumped laundry liquid;
a flow meter interconnecting said pump and said solenoid-actuated valve for measuring an amount of laundry liquid being dispensed a controller connected to said pump and said solenoid-actuated valve and said flow meter for controlling said pump and said solenoid-actuated valve and said flow meter; and a fill chamber for receiving a container and a door for opening and closing said fill chamber.

5,392,828
REFILLABLE LIQUID RESERVOIR
Stephen J. Watson, Greenwood; Sam R. Leighton, Nedlands, and Peter W. Czwienczek, Hamersley, all of Australia, assignors to Orbital Engine Company Pty. Limited, Balcatta, Australia
Filed Jun. 23, 1993, Ser. No. 80,235
Claims priority, application Australia, Jun. 23, 1992, PL3094
Int. Cl.[6] B65B *1/04, 3/04*
U.S. Cl. 141—330 21 Claims



1. A reservoir for the storage of liquid having an upwardly open filler passage terminating in an open end to receive a neck portion of a liquid container, a wall spanning said filler passage spaced inwardly from said open end thereof, and a conduit integral with said wall to define a passage therethrough and constructed at the upper end thereof to pierce a closure wall in the neck portion of the container upon the neck portion being inserted into the filler passage, a lateral opening in the wall of the conduit to communicate with the interior of the container after said piercing of the closure wall, said opening being located to inhibit direct axial communication between the filler passage and the interior of the reservoir, said conduit being adapted to inter-engage with the neck portion of the container at a level below the lateral opening in the conduit as the conduit is being received in the neck portion to form a seal herebetween before the closure wall is pierced.

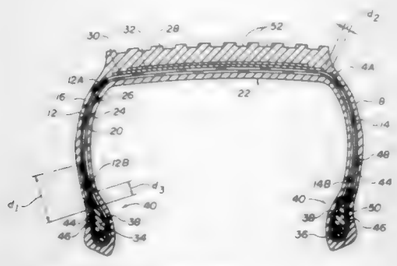
5,392,829
APPARATUS AND METHOD FOR LOADING OF LOGS
Ritchie P. McDonald, Port Moody, Canada, and Douglas C. Beer, Bellingham, Wash., assignors to CAE Machinery, Ltd., Vancouver, Canada
Filed Mar. 3, 1994, Ser. No. 206,056
Int. Cl.[6] B27B *1/00;* B27C *1/12*
U.S. Cl. 144—356 27 Claims



16. A method for organizing elongate objects comprising the steps:

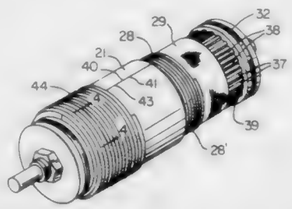
providing a loading region defined by first and second opposed side walls and a lower floor;
delivering objects into the loading region;
increasing the width of the loading region from an initial minimum width sufficiently narrow to prevent misalignment of the elongate objects to a final maximum width while delivering logs to the loading region, the width of the loading region being increased at a rate to create a gap between one side wall and aligned objects suppported by the other side wall, the gap being sufficiently narrow to prevent misalignment of objects introduced into the gap to ensure an aligned and ordered stack of objects within the loading region.

5,392,830
PROTECTIVE BARRIER FOR TIRE SIDEWALL
Thomas A. Janello, Tallmadge; Richard W. Loesch, Akron, and Gary M. Wade, Findlay, all of Ohio, assignors to General Tire, Inc., Akron, Ohio
Filed Mar. 10, 1993, Ser. No. 29,104
Int. Cl.[6] B60C *15/06*
U.S. Cl. 152—543 **9 Claims**



1. A pneumatic tire, comprising:
a substantially toroidal two-ply carcass cord layer comprising a second ply overlying a first ply,
a tread portion surrounding a circumferential portion of said carcass cord layer and having a left side and a right side, said tread portion including at least one reinforcement belt;
a left sidewall portion surrounding a left side of said carcass cord layer and extending from said left side of said tread portion;
a right sidewall portion surrounding a right side of said carcass cord layer and extending from said right side of said tread portion;
left and right bead portions extending, respectively, from said left and right sidewall portions, each of said bead portions including a reinforcing bead, said first and second carcass cord layer plies being wrapped around said reinforcing beads to forms respectively, first ply turn-up portions and second ply turn-up portions, respective ends of said first ply turn-up portions being spaced from ends of said second ply turn-up portions, said first turn-up portions extending further from said reinforcing beads than said Second turn-up portions; and
substantially flexible protective barriers comprised of a composite aramid and nylon material disposed (i) intermediate said left side of said carcass cord layer and said left sidewall portion and (ii) intermediate said right side of said carcass cord layer and said right sidewall portion, said protective barriers each having a first end and a second end, said first ends of said protective barriers each being spaced from said reinforcement belt so as not to be overlapped by said reinforcement belt, said second ends of said protective barriers being located between said respective ends of said first ply turn-up portions and said second ply turn-up portions and at least partially overlying sides of said first ply turn-up portions which face said carcass cord layer.

5,392,831
TOOTHED BELTS FORMED MAINLY OF THERMOPLASTIC MATERIAL AND METHOD OF MAKING
Danny L. Thomas, Forsyth, and Clinton L. Bishop, Springfield, both of Mo., assignors to Dayco Products, Inc., Dayton
Continuation of Ser. No. 844,361, Mar. 2, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 110,177
Int. Cl.[6] F16G *1/00, 1/28, 5/20*
U.S. Cl. 156—138 **10 Claims**



1. In a method of making a belt construction mainly of thermoplastic material and having opposed sides one of which comprises a plurality of teeth and the other of which comprises a backing portion of said belt construction, said thermoplastic material being of the type of material that has only been used to form a toothed belt construction by having been heated to a temperature above its melting temperature so as to be in a molten condition thereof and then been injection molded while in said molten condition thereof to form that toothed belt construction, the improvement comprising the steps of disposing one layer of said thermoplastic material about the outer peripheral surface of a building drum that has said outer peripheral surface thereof defined by alternating teeth and grooves, and then forcing said one layer of thermoplastic material toward said drum while the temperature of said one layer of thermoplastic material is above its softening temperature and below its melting temperature so as to cause part of said one layer of thermoplastic material to exude into said grooves to form at least the major portion of said plurality of teeth and to cause another part of said one layer of thermoplastic material to form at least the major portion of said backing portion of said belt construction.

5,392,832
COVERING ASSEMBLY FOR ARCHITECTURAL OPENINGS
Wendell B. Colson, Boulder; James M. Anthony, Denver; Brad H. Oberg; Brian M. Hoffmann, both of Westminster; Eric N. Williams, Louisville; Paul G. Swiszcz, Boulder, all of Colo., and Cornelis M. Jansen, Woudrichem, Netherlands, assignors to Hunter Douglas Inc., Upper Saddle River, N.J.
Continuation-in-part of Ser. No. 810,331, Dec. 19, 1991, Pat. No. 5,287,908, and a continuation-in-part of Ser. No. 963,359, Oct. 20, 1992, Pat. No. 5,339,883, and a continuation-in-part of Ser. No. 963,318, Oct. 20, 1992. This application Nov. 30, 1992, Ser. No. 977,788
Int. Cl.[6] E06B *3/94*
U.S. Cl. 160—84.07 **39 Claims**

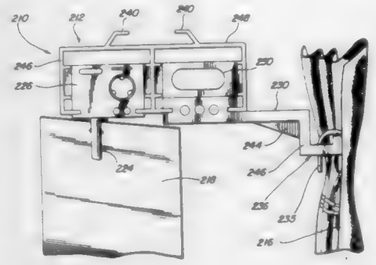
1. A light control covering assembly comprising in combination:
a) a covering comprising:
i) first and second generally parallel spaced apart, longitudinally extending, sheer fabrics, each having a top edge portion and a bottom edge portion;
ii) a plurality of longitudinally spaced, generally parallel, vertically extending vanes, fixedly secured to said first and second sheer fabrics to extend therebetween; and
iii) said fabrics and said vanes defining a series of panels composed of a vane and the associated portions of the fabrics,
b) a track, and
c) carrier means riding in said track between a spread condition and a stacked condition and being connected to said top edge portions of said first and second fabric panels for extending said panels to a vertically planar orientation in which said covering covers an opening when the carrier means are in the spread condition, and in which spread condition the panels can be manipulated to tilt the vanes between a closed position parallel to said fabrics and an open position generally normal to said fabrics to obtain light control, said carrier means comprising plural carriers spaced along said track, each carrier including an actuator member attached to said panels, a rotary drive mechanism



for rotating said actuator member to tilt a respective vane between the open and closed positions and rotational energy storing and release means connected between the drive mechanism and the actuator member for storing rotational energy in the actuator member when the actuator is arrested by encountering resistance created by said fabrics in the closed position, and for releasing said energy effective to provide additional rotation of the actuator member when said resistance is relieved by movement of the carriers from the spread condition to the stacked condition so as to stack the covering in substantially parallel folds, wherein each carrier comprises a carriage mounted for movement along said track, a rotary shaft extending from said carriage and connected to said actuator member, a driven gear in said carriage coaxially and rotatably mounted with respect to said shaft.

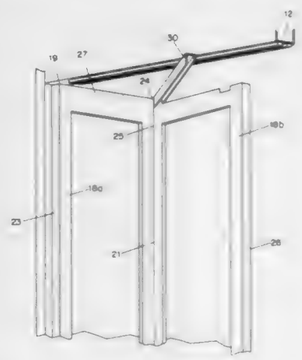
5,392,833
VERTICAL BLINDS WITH CURTAIN ATTACHMENT
Harout O. Ohanesian, 19012 Clymer St., Northridge, Calif. 91326
Filed Oct. 28, 1992, Ser. No. 967,798
Int. Cl.[6] E06B *3/32*
U.S. Cl. 160—89 **10 Claims**

1. A window covering assembly comprising:
a housing having first and second parallel adjacent channels;
a plurality of vertical blind slats;
a set of first carriers mounted within the first channel for lateral movement therein, each first carrier having a stem pivotally supporting one of said plurality of vertical blind slats;
a set of second carriers mounted within the second channel for lateral movement therein;
a curtain;
a plurality of curtain brackets, each curtain bracket attached to a bottom of one of said second carriers, each curtain bracket extending horizontally outwardly away from the first channel to a distal end;
means for attaching the curtain to the distal end of each curtain bracket, the vertical slats mounted to said first carriers pivoting freely between the stem and the distal ends of each curtain bracket beneath the second carriers;



means for moving at least a portion of said curtain by moving the second set of carriers independent of any movement of said vertical slats; and
means for mounting the housing to a surface of an existing structure.

5,392,834
BREAKAWAY BI-FOLDING DOOR ASSEMBLY
Ronald Borgardt, 2316 Tifton St., Kenner, La. 70062
Filed May 24, 1993, Ser. No. 66,786
Int. Cl.[6] E06B *3/48*
U.S. Cl. 160—118 **8 Claims**



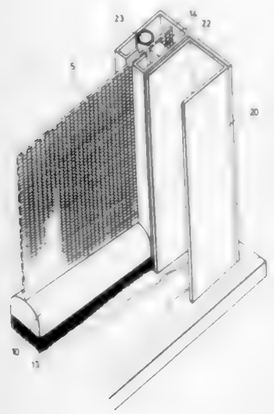
1. A breakaway bi-folding door assembly, comprising:
a) at least one set of two bi-folding door panels, of the type having a first edge of a first door panel hinged to a frame, and a second edge of a second door panel having a guide travelling within a slot in the frame to allow the door panels to fold and unfold between open and closed positions;
b) a pivoting frame member, positioned along the upper portion of said second door panel, having one end hingedly engaged to said second panel; and
c) means for releasably attaching said pivoting frame member to said second door panel, so that when the frame member is attached to said second door panel, it travels with the door panel, said attaching means being disengageable by force thereon, whereby said second door panel is allowed to swing freely to a full open position.

5,392,835

ROLL-TYPE INSECT SCREEN ASSEMBLY

Adolf Wildt, Iffeldorf, Germany, assignor to Irowi-Insektenschutz-Rollgitter GmbH, Germany

Filed Jun. 22, 1993, Ser. No. 80,336
Claims priority, application Germany, Apr. 7, 1993, 4311415.6; Apr. 7, 1993, 4311416.4
Int. Cl.[6] E06B *9/17*
U.S. Cl. 160—269 11 Claims



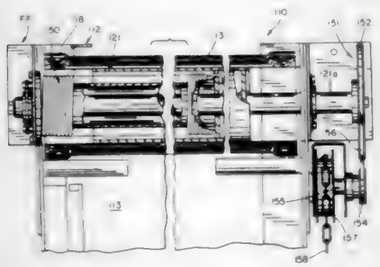
1. A roll-type insect screen assembly, said assembly comprising a pair of lateral guide rails, a screen having lateral edges and first and second sides, said lateral edges being slidably mounted in said guide rails, and clamping means for releasably locking the lateral edges of said screen, said clamping means comprising an elongated flexible pneumatic tube in each of said guide rails adjacent the first side of said screen, a stop in said lateral guide rails adjacent the lateral edges of said screen on the second side thereof, and air supply means connected to said pneumatic tube for releasably supplying compressed air to said pneumatic tubes to releasably clamp the lateral edges of said screen against said stop.

5,392,836

DOOR ASSEMBLY

Floyd D. West, Scales Mound, Ill.; John Olthafer, Dickeyville, Wis.; Mark S. Ungs, and David R. Noon, both of Dubuque, Iowa, assignors to Rite Hite Corporation, Milwaukee, Wis.

Filed Jun. 23, 1992, Ser. No. 902,867
Int. Cl.[6] E06B *9/17*
U.S. Cl. 160—273.1 7 Claims



1. An edge-retention system for use in a door assembly mounted in proximity to a door opening, the door assembly including a stationary frame having a pair of upright side sections for disposition on opposite sides of the door opening, each frame side section including a longitudinally extending interior guideway and a narrow entry gap aligned with the guideway; the door assembly also including a flexible door member mounted within the frame for movement between open and closed modes, said door member having opposed marginal segments which extend through the entry gap and terminate within said guideway; the edge retention system comprising:

a plurality of longitudinally spaced substantially vertically aligned follower elements, a series of said elements being mounted on each marginal segment of the door member and adapted to be slidably disposed within the guideway of the adjacent frame side section each follower element comprising a generally u-shaped clip including a first, flat leg, a second leg and a bail section, the legs being spaced to accommodate the material thickness of the marginal segments and the bail section being adapted to be received in a slit in the marginal segment of the door member, the second leg including a distortable protuberance, such that; when said door member and frame side section are in assembled relation, said follower elements are normally impassable through the entry gap and when an external force of at least a predetermined magnitude is exerted on an exposed area of said door member, said follower elements exert a predetermined wedging force on the entry gap causing the protuberances to deform and thereby allowing the follower elements to pass through the gap and effect at least partial disassembly of said door member from said frame; and

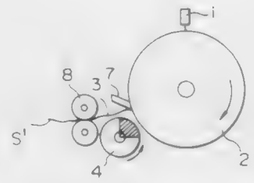
a break-away bar including an elongate bar attached to a bottom edge of the door member and also including a pair of projecting tabs projecting from opposite ends of the elongate bar, and extending into the adjacent gap, each tab being movable to a position wherein the tab slides out of engagement with the gap when the door member is subjected to an external force above a predetermined magnitude.

5,392,837

APPARATUS FOR SEPARATING AND GUIDING A THIN STRIP PRODUCED BY CASTING

Masao Yukumoto; Michiharu Ozawa; Kiyoshi Shibuya; Saburo Moriwaki, and Toru Sato, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Sep. 14, 1993, Ser. No. 121,184
Claims priority, application Japan, Sep. 17, 1992, 247704
Int. Cl.[6] B22D *11/06*
U.S. Cl. 164—417 17 Claims



1. An apparatus for separating from a surface of a cooling roll a thin metal strip formed from a molten metal by casting, and for guiding the separated thin strip thereafter, said apparatus comprising:

an attracting means adjacent to said cooling roll to exert a force on said strip influencing said strip to be separated, tensioned and guided; and

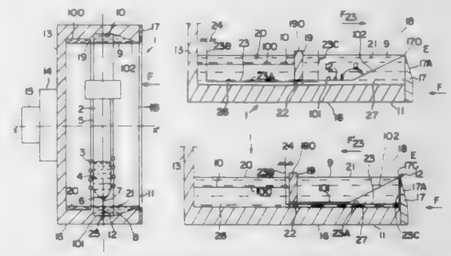
a doctor blade downstream from said attracting means and in contact with said cooling roll and cooperating with said attracting means to effect the separation, tensioning and guiding of said metal strip.

5,392,838

METHOD AND DEVICE FOR THE CONTINUOUS PRODUCTION OF A THREAD BY EXTRUSION INTO A LIQUID

Denis Bijaoui, Aubiere, and Jean Roche, La Roche Blanche, both of France, assignors to Compagnie Generale Des Etablissements Michelin - Michelin & Cie, Clermont-Ferrand Cedex, France

PCT No. PCT/FR92/00076, § 371 Date Aug. 5, 1993, § 102(e) Date Aug. 5, 1993, PCT Pub. No. WO92/13660, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 28, 1992, Ser. No. 98,279
Claims priority, application France, Feb. 8, 1991, 91 01575
Int. Cl.[6] B22D *11/06*
U.S. Cl. 164—463 12 Claims



1. A method for the continuous production of a solid thread by extrusion of a molten material into a cooling liquid applied by centrifuging against the inner wall of a drum comprising:

(a) rotating a drum about an axis, the drum having an inner wall in contact with a centrifuged liquid, the inner wall comprising a lateral surface which progressively approaches the axis of rotation in a direction towards the outside of the drum;

(b) using means to displace the thread along said surface, so that the thread moves away from said surface emerging from the drum under the action of the centrifugal force.

7. A device for the continuous production of a solid thread by extrusion of a molten material into a cooling liquid comprising:

(a) a drum and means for rotating the drum around an axis, the drum having an inner wall, intended to contact a centrifuged cooling liquid, the inner wall having a lateral surface which progressively approaches the axis of rotation in the direction towards the outside of the drum;

(b) means for displacing the thread along said surface, said means being so arranged that the thread then moves away from said surface emerging from the drum under the action of centrifugal force.

5,392,839

MULTI-PURPOSE WINDOW TREATMENT SUPPORT DEVICE

Paul D. Gilley, and Margaret R. Gilley, both of 120 N. First St., Eufaula, Okla. 74432

Continuation-in-part of Ser. No. 964,159, Oct. 20, 1992, Pat. No. 5,238,044. This application May 24, 1993, Ser. No. 67,476
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[6] A47H *13/14*
U.S. Cl. 160—348 7 Claims

1. An area treatment support device comprising:

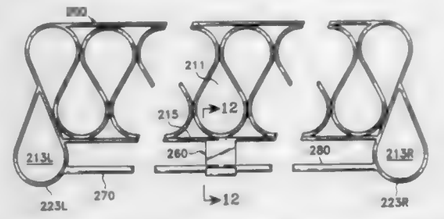
an elongated non-expansible rigid member of a rectangular configuration having at least one flat surface thereon;

said elongated member comprising a central section and further comprising a pair of end sections coplanar with said intermediate section;

said central section having a main row of material-receiving apertures spaced along its length;

each of said end sections having an auxiliary row of material-receiving apertures coplanar with and angularly disposed from said main row of material-receiving apertures;

each of said material-receiving apertures in said main row and in said auxiliary rows extending through said elongated member at substantially right angles to said flat surface; and



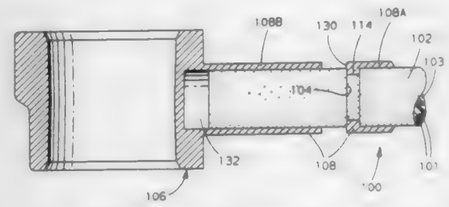
mounting means for positioning and maintaining said rigid member a spaced distance in front of an area to be decorated with the flat surface of said rigid member lying in a vertical plane.

5,392,840

METHOD OF CASTING FAIL-SAFE COMPOSITE METAL STRUCTURE

Mark R. Morgan, Franklin, Tenn., and Harry J. Couch, Tipp City, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 173,027, Dec. 27, 1993, abandoned, which is a division of Ser. No. 2,449, Jan. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 660,202, Feb. 25, 1991, Pat. No. 5,195,571. This application May 17, 1994, Ser. No. 245,306
Int. Cl.[6] B22D *19/02, 19/14*
U.S. Cl. 164—111 2 Claims



1. A method of increasing the ultimate elongation of a cast structural component comprising the steps of:

(a) forming an elongated main body comprised of a matrix of heat resistant reinforcing fibers bound together by a less heat resistant resin;

(b) cutting a groove in an outer surface of the main body at a preselected distance from an end of the main body;

(c) introducing a molten metal to an exposed surface of the groove and to a predetermined portion of the outer surface of the main body adjacent the groove and extending beyond the end of the main body so as to establish a direct contact interface between the metal and the groove and main body; and

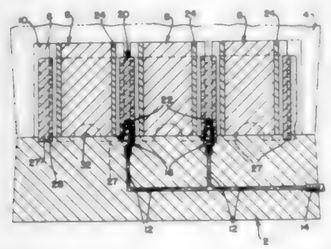
(d) cooling the metal to a sufficient degree and for a sufficient time such that the molten metal solidifies while simultaneously thermally altering sufficient resin at the direct interface to expose a layer of reinforcing fibers around which some molten metal may flow to interlock with the exposed fibers and thereby create a secure interconnection.

5,392,841

MOUNTING EXPENDABLE CORE IN DIE CAST DIE

Stuart W. Anderson, Bedford; Bradley C. Menaugh, Mitchell, and Donnie D. Rhum, Bedford, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 10, 1994, Ser. No. 258,319
Int. Cl.[6] B22C 9/10
U.S. Cl. 164—113 17 Claims



1. A method for positioning an expendable core in a molding cavity defined by a plurality of die segments forming a permanent molding die comprising the steps of:

a. forming an internal passageway in at least one of said segments;

b. anchoring at least one mounting pin on a face of said segment such that said pin projects into said cavity, said pin having a bore extending therethrough in alignment with said passageway;

c. forming a recess in said core conforming substantially to the external shape of said pin and adapted to mate with said pin;

d. positioning said core on said segment such that said pin nests in said recess; and

e. drawing a vacuum in said passageway, bore and recess sufficient to anchor said core securely in place on said pin.

6. In a die casting die comprising a plurality of die segments cooperating in a die-closed position to define a molding cavity for shaping molten metal into a casting having a desired configuration conforming to the shape of said cavity, and an expendable core positioned in said cavity for forming a chamber within said casting following removal of said core from said casting, the improvement comprising:

a. a passageway in one of said die segments for connecting to a source of vacuum;

b. at least one mounting pin projecting from a face of said die segment into said cavity;

c. a recess in said core conforming substantially to the external shape of said pin, said recess receiving said pin in close fitting relation; and

d. a bore extending through said pill and in alignment with said passageway for applying vacuum to the interior surface of said recess to anchor said core to said segment.

5,392,842

CASTING METALS

Constantino M. Volpe, New Fairfield, Conn., assignor to J.F. Jelenko & Co., Armonk, N.Y.

Division of Ser. No. 777,001, Oct. 16, 1991, Pat. No. 5,267,602.
This application Sep. 7, 1993, Ser. No. 118,114
The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.
Int. Cl.[6] B22D 18/06
U.S. Cl. 164—284 2 Claims

1. A method of casting a dental casting which comprises:

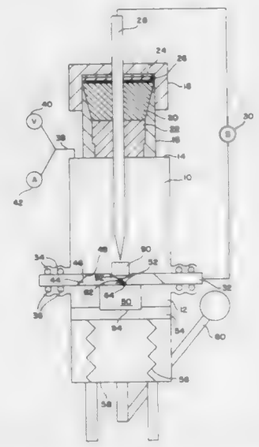
melting a metal in a compartment,

said metal being titanium, and

said compartment being disposed above a copper crucible and containing an arc heating means including an electrode therein,

said crucible including a hole therethrough,

said hole having a diameter to length ratio of greater than one and being of such size that surface tension of said metal prevents gravity's moving said metal through said hole, and



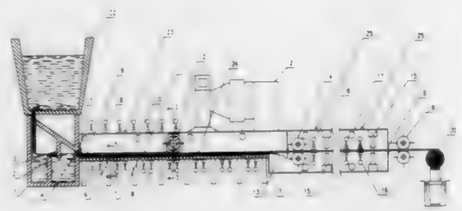
thereafter applying pressure in said compartment to drive said metal through said hole into a dental casting mold.

5,392,843

CONTINUOUS SILVER FLOAT CASTING OF STEEL SHEET OR PLATE

James J. Dolan, 22 Laurel Oak, Amelia Island, Fla. 32034

Filed Mar. 25, 1993, Ser. No. 36,994
Int. Cl.[6] B22D 17/00, 17/32
U.S. Cl. 164—485 16 Claims



1. A method of manufacturing carbon, stainless or electrical steel sheet or plate, completely free of entrained silver, having a high width-to-thickness ratio which comprises the steps of:

a) fabricating a U-shaped silver slab and fitting said slab into a cooled mold within an oxygen purged casting chamber;

b) delivering liquid steel at at least about 1600° C. at a controlled rate onto said silver slab, to create a steel-silver interface in which the silver at the interface is molten and has a temperature of at least about 1600° C., with total immiscibility of the steel and the silver at that interface; and

c) advancing said steel along said slab and cooling said steel by withdrawing heat through said cooled mold and further by recirculating inert gas over the upper surface of said liquid steel, followed by forced cooling by computer controlled top and-bottom mounted water spray and a recirculating, cooled atmosphere.

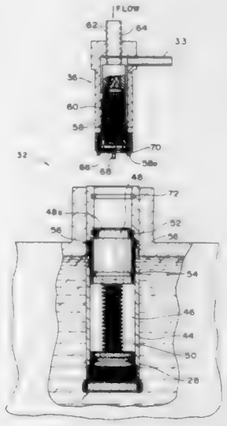
9. An apparatus for the continuous silver float casting of steel in which the steel contains no entrained silver, comprising: a U-shaped mold; a U-shaped solid silver slab supported by said U-shaped mold for allowing a layer of molten steel to float on the surface thereof to create a steel-silver interface in which the silver at the interface is molten and has a temperature of at least about 1600° C. and the remaining portion of the silver slab remains solid; said silver slab including solid edge dams of silver held substantially vertically by said U-shaped mold; a metering gate located at one end of said U-shaped mold for continuously flowing said layer of steel onto the surface of said U-shaped silver slab having molten silver on the surface thereof; and an enclosed casting chamber enclosing at least a part of said U-shaped mold, said chamber having a plurality of walls.

5,392,844

QUICK CONNECT COUPLING

Curtis Lomax, Santa Clara, and Bruce Webbon, Woodside, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 703,649, May 21, 1991, Pat. No. 5,261,482.
This application Aug. 16, 1993, Ser. No. 106,865
Int. Cl.[6] F28D 17/00; F25D 23/12
U.S. Cl. 165—10 6 Claims



1. A quick connect coupling having both liquid and solid phases comprising:

a female portion having a housing with a wall section for engaging a piston, an open end and a closed end, a piston slideable within the housing and biased toward the open end, said piston preventing flow of liquid phase coolant from said open end to said closed end, means for stopping the travel of said piston in said housing, said wall section having, at least one passage that is blocked when said piston is biased against said stopping means.

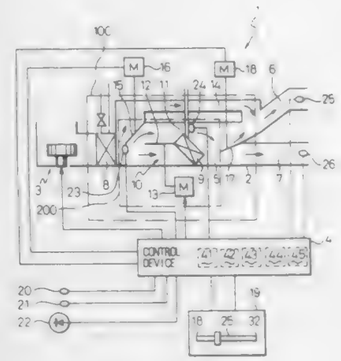
a male portion cooperatively engaging the female portion at the open end of said housing, said male portion having a liquid phase coolant inlet and a liquid phase coolant outlet, means in said male portion for permitting liquid phase coolant to flow in said inlet and out said outlet when said male portion contacts and moves said piston in said female housing when said passage is blocked by solid phase coolant.

5,392,845

AIR-CONDITIONING DEVICE

Yuuji Honda, Okazaki, Japan; Yuichi Kajino, Rancho Palos Yerdes, Calif.; Takayoshi Kawai, Aichi, Japan; Yuji Ito, Ichinomiya, Japan, and Katsuhiko Samukawa, Oobu, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 12, 1994, Ser. No. 180,419
Claims priority, application Japan, Jan. 13, 1993, 5-003810; Nov. 19, 1993, 5-290462
Int. Cl.[6] F25B 29/00
U.S. Cl. 165—12 9 Claims



1. An air-conditioning device comprising:

a main passage through which air flows into a room;

a first passage branched from said main passage;

a second passage branched from said main passage;

a passage opening/closing means which opens or closes said first passage and said second passage;

a first temperature adjusting means which adjusts the temperature of the air passing through said first passage;

a second temperature adjusting means which adjusts the temperature of the air passing through said second passage;

a first temperature sensor which detects the temperature of the air passing through said first passage;

a second temperature sensor which detects the temperature of the air passing through said second passage;

a first blow-out temperature determining means which determines a desired below-out temperature of the air blowing out from said first passage;

a second blow-out temperature determining means which determines a desired blow-out temperature of the air blowing out from said second passage;

a judging means which judges whether either one of said first passage or said second passage is shifted from the closed state to the open state by said passage opening/-closing means;

a first control means which, when it is so judged by said judging means that said either one of the passages is shifted from the closed state to the open state, works to control said temperature adjusting means of said one passage for a predetermined period of time immediately after the judgement based upon a desired blow-out temperature of the other passage of either said first passage or said second passage end upon said desired blow-out temperature of said one passage; and

a second control means which, after the predetermined period of time has passed immediately after said judgement, works to control said temperature adjusting means of said one passage based upon a value detected by said temperature sensor provided in said one passage and upon said desired blow-out temperature of said one passage.

5,392,846

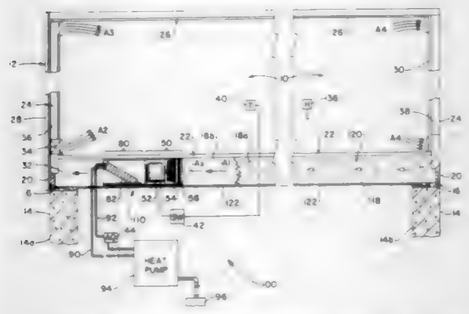
HEAT/COOLING SYSTEM AND APPARATUS

Ernest A. Gardner, 142½ Canal Ave. NW., Canal Fulton, Ohio 44614

Continuation of Ser. No. 973,735, Nov. 9, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 176,514

Int. Cl.[6] F25B *29/00*

U.S. Cl. 165—40 25 Claims



1. A heating/cooling system to supply heated and cooled forced air to a building space having a duct which directs forced air into the space, the system comprising in combination:

a blower unit comprised of an electric motor having an output shaft coupled to an impeller, said shaft and impeller being rotatable about a common axis to generate forced airflow through the unit, said impeller having an axial air intake bore therein and a first duct structure surrounding the unit which defines an upstream input end and a downstream output end of the unit, the axis of the shaft and impeller being aligned longitudinally of the first duct structure and the relative size of the impeller and the first duct structure being such as to define a clearance space between the periphery of the impeller and wall portions of the duct structure surrounding the impeller;

baffle means within the first duct structure in close proximity to the upstream end of the impeller extending transversely of the duct and closing off the clearance space around the periphery of the impeller from the portion of the first duct means which lies upstream from the impeller, said baffle means having a bore therethrough and adjustment means for shifting the bore of the baffle means to a position in substantially axial alignment with the air intake bore of the impeller means;

said impeller being adapted to receive air axially through its intake bore and expel the air radially outwardly around the entire periphery thereof into the clearance space surrounding the impeller where it is forced by the baffle means to flow in a longitudinal direction in the duct away from the baffle means;

a heat exchanger unit comprised of a heat transfer assembly adapted to carry a heat transfer fluid through it, and a second duct structure surrounding the unit which defines an upstream input end and a downstream output end of the unit, the upstream input end of the second duct structure connected to the downstream output end of the first duct structure of the blower unit to define a single continuous duct from the upstream input end of the blower unit to the downstream output end of the heat exchanger unit;

means to provide power to the motor and to control the on/off function of the motor according to the heating and cooling requirements of the building space; and

means to provide a heat transfer fluid to the heat transfer assembly such that forced airflow generated in the blower unit is heated and cooled;

said blower and heat exchanger units having a size and configuration such that they may be positioned and mounted in close proximity to the building space and the downstream output end of the heat exchanger duct may be coupled to the duct which directs forced airflow into the building space.

5,392,847

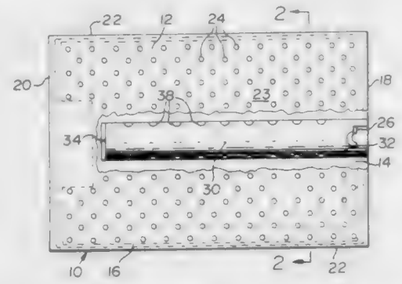
THERMAL MEDICAL BLANKET USING INTERNAL SUBTUBE

James G. Stephenson, Marshall, Mich., assignor to Progressive Dynamics, Inc., Marshall, Mich.

Filed Nov. 29, 1993, Ser. No. 158,572

Int. Cl.[6] A47C *27/08*; A61F *7/00*

U.S. Cl. 165—46 5 Claims



1. In a pneumatic, disposable, temperature control blanket receiving conditioned air through an external air supply connection wherein the blanket comprises an upper elongated flexible sheet and a lower elongated flexible sheet, the sheets being sealed together at their peripheries to define an elongated envelope having a length defined by first and second ends, and having lateral edges and a central region intermediate the lateral edges, a plurality of air flow openings defined within the lower sheet, and an inlet air port defined in the envelope for supplying pressurized air to the envelope, the improvement comprising a plurality of spaced fasteners interconnecting the upper and lower sheets intermediate the envelope ends and lateral edges, an elongated flexible conduit within the envelope of lesser transverse cross sectional area than the envelope disposed lengthwise to the envelope length intermediate said fasteners and in communication with the inlet air port, said conduit having lateral sides, and a plurality of air orifices defined only in said conduit lateral sides along its length whereby air received within said conduit is distributed along the length of the interior of the envelope, said conduit being of lesser transverse cross sectional area than the envelope when pressurized whereby a space exists between the majority of the circumference of said conduit and the envelope upon said conduit and envelope being pressurized whereby said conduit will be substantially surrounded by air of the temperature within the envelope.

5,392,848

HEAT EXCHANGER MODULE

Jürgen Böttcher, Eckental-Eschenau; Rudolf Ganz, Lauf; Jürgen Heinrich, Selb; Otto Heinz, Neu-Isenburg; Rüdiger Herrmann, Münchberg, all of Germany; Heinrich Schelter, deceased, late of Selb, Germany by Sibylle Schelter, néLöffler, heiress , and Matthias Simmerl, Leupoldsgrün, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

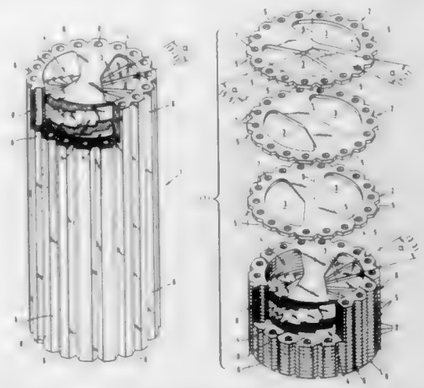
Filed May 20, 1993, Ser. No. 65,179

Claims priority, application Germany, May 23, 1992, 4217193

Int. Cl.[6] F28F *7/02*

U.S. Cl. 165—164 3 Claims

1. A heat exchanger module produced by stacking sheet cards provided with first openings separated symmetrically by a fin and second openings provided along an outer periphery of the sheet card, and further provided with indexing notches along said periphery of the sheet card, and subsequently joining the individual cards of the card stack, wherein each sheet card or group of sheet cards of the stack is rotated about a common axis by an angle α of between 0° and 30° with respect



to the preceding sheet card or group of sheet cards, the first openings forming helical channels and the second openings forming continuous non-helical channels extending longitudinally through the module.

5,392,849

LAYER-BUILT HEAT EXCHANGER

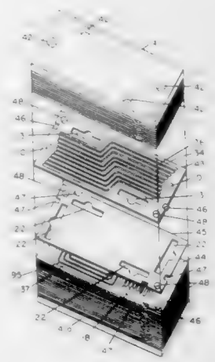
Tsuyoshi Matsunaga, Yasugun; Kenji Fujino, Nara; Takashi Sugahara, and Hiroaki Kan, both of Otsu, all of Japan, assignors to Matsushita Refrigeration Company, Osaka, Japan

Continuation of Ser. No. 859,376, Jun. 24, 1992, abandoned. This application Feb. 23, 1994, Ser. No. 200,365

Claims priority, application Japan, Sep. 28, 1990, 2-260992; Oct. 26, 1990, 2-288725; Apr. 5, 1991, 3-72871

Int. Cl.[6] F28F *3/08*

U.S. Cl. 165—167 16 Claims



1. An arrangement in a layer-built heat exchanger, comprising:

a first plurality of plates each comprising a first flat rectangular panel having a plurality of first channels therein defined and separated by a plurality of first dividers for the flow of a first heat exchange fluid through said first channels, a pair of first holes through said first flat rectangular panel for the flow of the first heat exchange fluid located at opposite ends of said first channels, and a pair of second holes through said first flat rectangular panel for the flow a second heat exchange fluid;

a plurality of second plates each comprising a second flat rectangular panel having a plurality of second channels therein defined and separated by a plurality of second dividers for the flow of a second heat exchange fluid through said second channels, a pair of first holes through said second flat rectangular panel aligned with said first holes of said first plates for the flow of the first heat exchange fluid therethrough, and a pair of second holes through said second flat rectangular panel aligned with said second holes of said first plates for the flow of the second heat exchange fluid therethrough, said second holes of said second plates being located at opposite ends of said second channels, said second holes of said first plates being larger than said second holes of said second plates, and said first holes of said second plates being larger than said first holes of said first plates; and

a plurality of seal plates disposed between said first plates and said second plates, said seal plates having a pair of first holes therethrough aligned with said first holes of said first and second plates for the flow of the first heat exchange fluid, and. a pair of second holes therethrough aligned with said second holes of said first and second plates, said first holes and said second holes of said seal plates having substantially the same configuration as said first holes of said second plates and said second holes of said first plates, respectively, wherein said first plates and said second plates alternate with said seal plates disposed between said first and second plates so as to isolate said first and second plates from each other, wherein said first holes of said seal plates and said first holes of said second plates are located over said first holes of said first plates so as to define first buffer chambers over said first holes of said first plates, and said second holes of said first plates and said second holes of said seal plates are located over said second holes of said second plates to define second buffer chambers over said second holes of said second plates;

wherein said ends of said first channels and said ends of said second channels of said first and second plates substantially define a V-shape about said first and second holes, respectively intruding into said first and second buffer chambers, and are located such that the length of said first and second channels in said first and second buffer chambers increases with an increase in the distance of said channels from the center of their respective said hole.

5,392,850

SYSTEM FOR ISOLATING MULTIPLE GRAVEL PACKED ZONES IN WELLS

H. Mitchell Cornette, Houston, and Richard S. Vaclavik, Missouri City, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 27, 1994, Ser. No. 187,946

Int. Cl.[6] E21B *33/138*, *43/04*, *43/08*

U.S. Cl. 166—51 19 Claims

1. A gravel pack screen assembly for producing fluids from two spaced apart zones in an earth formation, said screen assembly comprising:

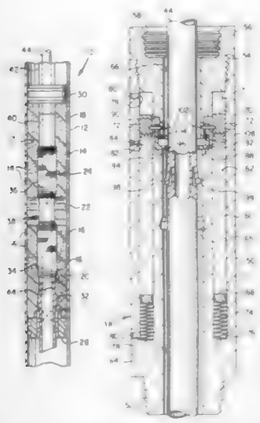
at least two spaced apart gravel pack screens interposed in and adjacent to respective spaced apart layers of gravel packing; and

a sub interposed in said screen assembly between said screens, said sub including a reservoir for holding a quantity of gravel pack permeability reducing material; and

means operable at will to discharge said material into a layer of gravel packing intermediate the gravel packing adjacent said screens to reduce the permeability of said intermediate layer.

11. A reservoir sub adapted to be interposed in a gravel pack screen assembly between two spaced-apart gravel pack screens comprising:

a reservoir portion for holding a quantity of gravel packing permeability reducing material in flowable form; and



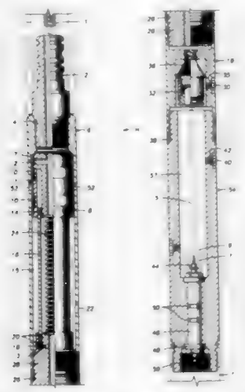
means operable at will to discharge said material from said sub into a layer of gravel packing disposed between said screens to reduce the permeability thereof.

5,392,851

WIRELINE CABLE HEAD FOR USE IN COILED TUBING OPERATIONS

Nicholas J. Arend, Manville, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Jun. 14, 1994, Ser. No. 259,488
Int. Cl.[6] E21B *19/22, 33/072, 23/00, 34/00*
U.S. Cl. 166—65.1 4 Claims



1. An electric wireline cable head, adapted to be conveyed by a coiled tubing having a coaxially inserted cable, into a wellbore penetrating an earth formation, said cable head comprising an apparatus for enabling fluid flow from the interior of said coiled tubing into said wellbore and for preventing fluid flow from said wellbore into the interior of said coiled tubing, said apparatus comprising:

a housing affixed to said cable head, said housing having at least one fluid discharge hole in fluid communication with said wellbore;

a piston, slideably mounted within said housing, said piston at one end in fluid communication with the interior of said coiled tubing and at the other end in fluid communication with said wellbore; and

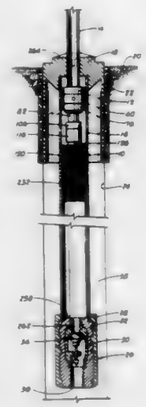
biasing means, for forcing said piston against fluid flow from the interior of said coiled tubing, so that a fluid having a pressure which exceeds the sum of the pressure within said wellbore and the pressure exerted by said biasing means against said piston, pumped into said coiled tubing, causes said piston to move, causing said at least one fluid discharge hole to be in fluid communication with said wellbore, thereby enabling fluid flow from said coiled tubing into said wellbore.

5,392,852

SUB-SURFACE RELEASE PLUG ASSEMBLY WITH PRIMARY AND SECONDARY RELEASE MECHANISMS

David F. Laurel, and Steven N. Rolen, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 16, 1992, Ser. No. 976,110
Int. Cl.[6] E21B *33/16*
U.S. Cl. 166—153 18 Claims



1. A subsurface release apparatus for use in a well casing, said apparatus comprising:

an upper plug means for releasably connecting to a drill string by a first releasing mechanism;

a lower plug means for releasably attaching to said upper plug means; and

said first releasing mechanism comprising a first release means actuatable at a first predetermined pressure in said drill string and a second release means actuatable a second predetermined pressure in said drill string.

5,392,853

PLUGGING SYSTEM FOR BOREHOLES

Donald A. Toon, Burlington, Canada, assignor to Solinst Canada Ltd., Glen Williams, Canada

Filed Nov. 25, 1992, Ser. No. 981,418
Int. Cl.[6] E21B *33/00*
U.S. Cl. 166—187 9 Claims

1. Plugging system for an in-ground borehole, wherein:

the system includes at least one long length of tubular hose, having a length dimension of several meters;

the material of the hose is elastomeric, and is stretchy to a high degree;

the material of the hose is of such nature and dimensions as to be, in substance, floppy and incapable of physically supporting itself;

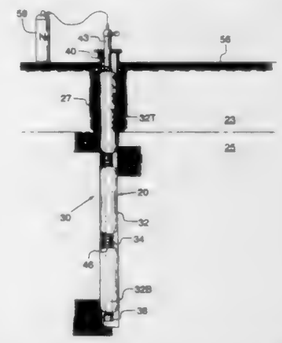
the system includes upper and lower coupling units;

each coupling unit is formed with a respective register which is suitable for receiving the upper and lower ends respectively of the length of hose;

the ends of the length of hose are sealingly attached to the registers;

the system includes a support strut, which has upper and lower ends, connected respectively to the upper and lower coupling units;

the support strut is effective, when the system is installed in



the borehole, to physically support the coupling units with respect to each other, and is effective to hold the coupling units spaced apart at a pre-determined distance from each other;

and the system includes a means for conveying, when the system is installed in the borehole, a fluid from the surface to the interior of the length of hose.

5,392,854

OIL RECOVERY PROCESS

Harold J. Vinegar; Eric P. De Rouffignac; Carlos A. Glandt; Thomas Mikus, and Mark A. Beckemeier, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 896,864, Jun. 12, 1992, Pat. No. 5,297,626. This application Dec. 20, 1993, Ser. No. 169,800
Int. Cl.[6] E21B *43/24, 43/247, 36/02, 43/30*
U.S. Cl. 166—271 20 Claims



1. A process to recover oil from a subterranean diatomite or oil shale formation, the process comprising the steps of:

providing heat injection means extending essentially through the formation, the heat injection means effective to provide heat in at least one plane, the plane being essentially perpendicular to the direction of the minimum principal stress;

providing production wells extending into the formation;

fracturing the formation from the production wells;

injecting heat into the formation from the heat injection means thereby driving hydrocarbons away from the heat injection means and toward the production wells; and

producing from the production wells hydrocarbons that have been driven away from the heat injection means wherein the heat injection means comprise a plurality of heat injection wellbores provided along a plane perpendicular to the minimum formation stress, and the plurality of oil production wells are provided on each side of the plane which contains the heat injection wellbores.

11. An apparatus to recover hydrocarbons from a subterranean diatomite or oil shale formation, the apparatus comprising:

a) a hydraulically fractured production well;

b) a plurality of heat injection wellbores extending from a surface wellhead to within the formation;

c) a gas fired burner within the heat injection wellbores, the fuel gas fired burners capable of heating the formation adjacent to the heat injection wellbores wherein combustion is distributed over the length of the heat injection wellbores within the formation;

d) a means to provide a gas composition for combustion within the gas fired burner that does not form carbon deposits wherein the gas fired burner comprises a conduit within the wellbores for directing a flow of combustion air to a lower portion of the wellbores, a conduit within the wellbores for directing a fuel gas to a plurality of release points where a portion of the fuel gas mixes with combustion gas rising from the lower portion of the wellbores, and a conduit within the wellbores for directing combustion gases from the lower portion of the wellbore to the surface wellhead that is in communication with the combustion air conduit in the lower portion of the wellbores.

5,392,855

METHOD TO PREPARE POLYMER SOLUTIONS FOR DOWN-HOLE APPLICATIONS

Louis A. Bernardi, Jr.; Hon C. Lau, both of Houston, Tex., and David A. Cole, Metairie, La., assignors to Shell Oil Company, Houston, Tex.

Filed May 16, 1994, Ser. No. 245,144
Int. Cl.[6] E21B *43/22, 43/26, 43/27, 43/04*
U.S. Cl. 166—278 17 Claims

1. A method to produce a polymer-thickened solution for injection into a wellbore, the method comprising the steps of:

a) providing an aqueous polymer solution or suspension;

b) disbursing the aqueous polymer solution or suspension into an aqueous stream not containing any of the polymer through nozzles wherein the nozzles have an opening of no larger than a circle of about ¼-inch diameter;

c) passing the aqueous stream containing the polymer solution or suspension through a static mixer having a residence time of at least about 0.5 seconds; and

d) injecting the poller-thickened solution into a wellbore.

5,392,856

SLICKLINE SETTING TOOL AND BAILER BOTTOM FOR PLUGBACK OPERATIONS

Jake W. Broussard, Jr., Lafayette, and Partick Broussard, Baton Rouge, both of La., assignors to Downhole Plugback Systems, Inc., Broussard, La.

Filed Oct. 8, 1993, Ser. No. 134,254
Int. Cl.[6] E21B *33/132*
U.S. Cl. 166—285 9 Claims

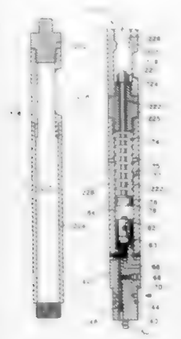
1. A bailer bottom tool for releasing a bridging material into a wellbore for a plugback operation, the bailer bottom tool comprising:

an upper cablehead member for suspending the bailer bottom tool from a flexible line at a selected depth within the wellbore;

a material housing affixed to the cablehead member for housing the bridging material;

a movable plug for plugging a discharge port from the material housing;

an actuating tool housing affixed to the material housing, the actuating tool housing having a cylindrical bore therein, a piston member axially movable within the actuating tool housing while in sealed engagement with the cylindrical bore, the actuating tool housing and the piston member defining a sealed chamber within the bailer bottom tool for receiving a compressed fluid, and a mechanical release device responsive to axial movement of the piston member and movable between a stop position for maintaining the



movable plug in a plugging position and a release position for releasing the bridging material from the material housing;

a battery power source within the actuating tool housing;

an electronically powered actuating device within the actuating tool housing for causing the movable plug to move to a discharge position for releasing the bridging material from the material housing; and

a triggering mechanism within the actuating housing electronically in series between the battery power source and the actuating device for releasing energy from the battery power source to activate the actuating device.

5,392,857

APPARATUS AND METHOD FOR DETERMINING AN OPTIMUM PHASE ANGLE FOR PHASED CHARGES IN A PERFORATING GUN TO MAXIMIZE DISTANCES BETWEEN PERFORATIONS IN A FORMATION

Lawrence A. Behrmann, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Aug. 6, 1993, Ser. No. 103,507
Int. Cl.[6] E21B *43/117*
U.S. Cl. 166—297 **16 Claims**

1. A method of phasing charges in an apparatus adapted to be disposed in a wellbore, comprising the steps of:

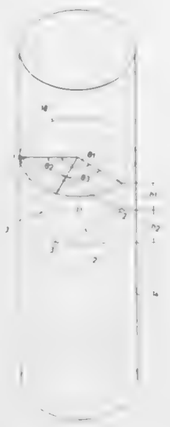
(a) selecting three charges, a first charge, a second charge, and a third charge;

(b) determining a perforation in a formation traversed by the wellbore for each of said three charges thereby producing a first perforation, a second perforation, and a third perforation;

(c) determining three phase angles $theta_1$, $theta_2$, and $theta_3$, where $theta_1$ is an angle between the first perforation and the second perforation, $theta_2$ is an angle between the first perforation and the third perforation, and $theta_3$ is an angle between the second perforation and the third perforation;

(d) incorporating said three phase angles into a mathematical formulation thereby determining a line length l_1, a line length of l_2, and a line length of l_3;

(e) when a first one and a second one of the line lengths are approximately equal to each other and a third one of the line lengths are greater than the first and second one of the line lengths, noting an included phase angle disposed between the first perforation and the second perforation, said included phase angle being an optimum phase angle; and



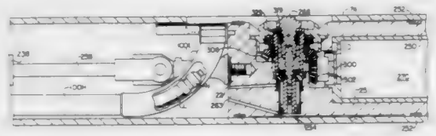
(f) phasing said charges in said apparatus at a particular phase angle where said particular phase angle is equal to said optimum phase angle.

5,392,858

MILLING APPARATUS AND METHOD FOR WELL CASING

Alan D. Peters, Midland; Randolph A. Busch, Sugarland; Robert W. McQueen, Granbury; Thomas A. Huddle, Katy, and Ronald E. Cherry, Kingwood, all of Tex., assignors to Penetrators, Inc., Midland, Tex.

Filed Apr. 15, 1994, Ser. No. 227,885
Int. Cl.[6] E21B *43/112, 7/18*
U.S. Cl. 166—298 **24 Claims**



1. A well penetrator for use in a well having a well casing, said penetrator comprising:

a valve section housing, a mill section housing connected to said valve section housing, and a kickover assembly connected to said mill section housing;

a sequence valve supported in said valve section housing and having control means for actuating said sequence valve to a first open position allowing flow of pressurized hydraulic working fluid therethrough and into a first pressure line, and a second, closed position preventing flow of pressurized hydraulic working fluid therethrough;

an extend valve supported in said valve section housing and having first and second operative positions wherein pressurized hydraulic working fluid from said first pressure line passes through said extend valve in said second position into an extend pressure line, and wherein pressurized hydraulic working fluid is exhausted from said extend pressure line through said extend valve in said first position;

an accumulator having a predetermined set pressure for providing a control pressure to said sequence valve and said extend valve;

a hydraulic motor supported in said mill section housing and being powered by said pressurized hydraulic working fluid when said sequence valve assumes said first open position;

a mill bit supported in said mill section housing for axial movement and rotation and being rotated through angle drive means by said hydraulic motor for cutting a hole through said well casing;

said kickover assembly having means for decentralizing said mill section housing relative to said well casing, thereby moving said mill bit into proximity with said well casing;

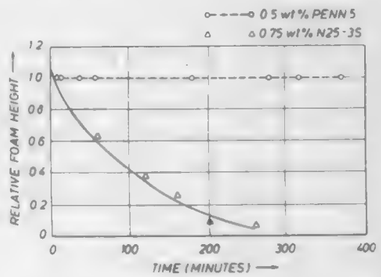
and a lance assembly supported in said valve section housing and said mill section housing and having a high pressure nozzle for movement through and beyond said hole in the casing and for directing high pressure hydraulic working fluid into the surrounding formation.

5,392,859

ACID STIMULATION PROCESS FOR PRODUCTION FROM SUBTERRANEAN FORMATIONS

Gerald C. Adams, Sugar Land; Jimmie B. Lawson, and Lee N. Morgenthaler, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 2, 1993, Ser. No. 160,995
Int. Cl.[6] E21B *43/27*
U.S. Cl. 166—300 **9 Claims**



1. A method for increasing production of formation fluids from a wellbore within the formation, the method comprising the steps of:

injecting into the formation, through the wellbore, a foaming composition comprising sulfate surfactant in an amount effective to maintain a stable foam;

creating a foam from the foaming composition;

injecting into the formation, after the foaming composition is injected and the foam is created from the foaming composition, an acidization composition;

allowing the sulfate surfactant to hydrolyze within the formation resulting in the amount of sulfate surfactant becoming ineffective to maintain a stable foam; and

producing formation fluids from the formation through the wellbore wherein the produced formation fluids do not contain a significant amount of the sulfate surfactant.

5,392,860

HEAT ACTIVATED SAFETY FUSE

Richard J. Ross, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Mar. 15, 1993, Ser. No. 31,648
Int. Cl.[6] E21B *23/04*
U.S. Cl. 166—376 **40 Claims**

1. An apparatus for use in a wellbore to prevent an electrical current from passing between a power supply and an electrically operated downhole well tool until after said apparatus is positioned downhole within said wellbore, said apparatus comprising:

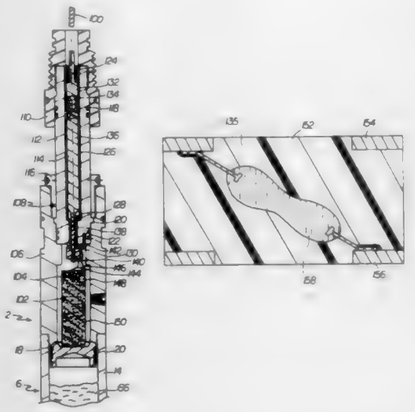
a housing for lowering within said wellbore secured within a tool string;

a plurality of electrically conductive members for providing an electrical circuit between said power supply and said electrically operated downhole well tool, and a portion of which are secured about said housing for lowering within said wellbore;

a plurality of seals for hydraulically sealing at least a portion of said plurality of electrically conductive members from a fluid within said wellbore;

at least one insulator for electrically insulating at least several of said plurality of electrically conductive members from said housing;

a biased member which is secured about said housing for lowering within said wellbore, and which is urged from a first position for preventing said electrical current from



passing between said power supply and said electrically operated downhole well tool to a second position for allowing said electrical current to pass between said power supply and said electrically operated downhole well tool; and

a temperature sensitive member which prevents said biased member from passing from said first position to said second position prior to being heated to an activation temperature, at which said temperature sensitive member softens to allow said biased member to move from said first position to said second position for passing said electrical current through said plurality of electrically conductive members.

5,392,861

RESIDUAL POLLUTION CONTAINMENT DEVICE AND METHOD OF CLEANING A WIRELINE

Paul Champagne, 1464 Dr. Beatrous Rd., Theriot, La. 70397

Filed Mar. 7, 1994, Ser. No. 206,340
Int. Cl.[6] E21B *19/08, 33/08*
U.S. Cl. 166—379 **17 Claims**

1. A wireline wellhead containment enclosure comprising:

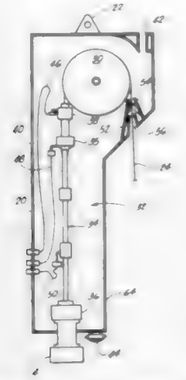
(a) a housing having attachment means secured thereto for supporting said housing above a wireline wellhead, and further having an interior and enclosing a sheave therein, said sheave being constructed and arranged for the passage of a wireline thereover;

(b) one or more wireline drip collector means movable with respect to said housing, positioned within and secured to said housing for the passage of said wireline into and out of said housing;

(c) channel means forming a part of said one or more wireline drip collector means for channelling collected contaminants to said interior of said housing; and,

(d) seal means positioned above said channel means in said housing and secured to said one or more wireline drip

collector means for engaging said wireline as it passes through said wireline drip collector means, whereby con-



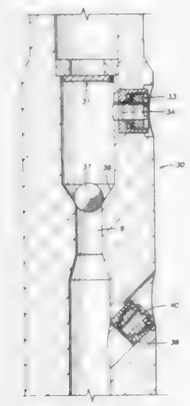
taminants on said wireline are removed from said wireline and directed toward said channel means.

5,392,862

FLOW CONTROL SUB FOR HYDRAULIC EXPANDING DOWNHOLE TOOLS

Bruce D. Swearingen, The Woodlands, Tex., assignor to Smith International, Inc., Houston, Tex.

Filed Feb. 28, 1994, Ser. No. 203,133
Int. Cl.[6] E21B *33/12*
U.S. Cl. 166—386 9 Claims



1. A flow control sub assembly for hydraulically activated tools utilized in downhole operations performed in well boreholes comprising;

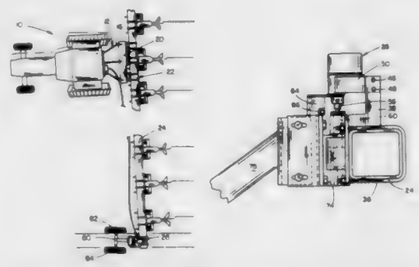
a cylindrical sub assembly housing forming a first upstream end and a second downstream end, said housing being threadably connected between a drill string at its first upstream end and a tool at its downstream end, said housing forming a means partially contained within said housing, intermediate said first and second ends, to stop at least a portion of a hydraulic fluid flow to said tool to inactivate said tool and to divert said fluid within said housing to an annulus formed between said housing and a wall of a borehole thereby providing a high volume of fluid around said inactivated tool to continually remove detritus from said downhole operations and to help prevent said tool and said flow control sub assembly from becoming stuck in the borehole as said drill string is removed from said borehole wherein said means to stop said portion of said flow to said tool and to divert said fluid portion to said annulus surrounding said sub assembly is a plug device positioned above said tool and a burst disc positioned in a wall formed by said housing between said plug device and said first end of said sub assembly housing, said plug device, when activated, stops said portion of the fluid flow to said tool and hydraulic fluid under increased pressure from a pump means bursts said disc at a predetermined pressure drop across said disc thereby diverting said fluid to said annulus.

5,392,863

GUIDANCE SYSTEM FOR AN AGRICULTURAL IMPLEMENT

Richard A. Fixemer, R.R. #1, Box 234, Sutton, Nebr. 68979, assignor to Richard Fixemer; Louis Siebert and Howard Ham, a part interest

Filed Mar. 19, 1993, Ser. No. 34,686
Int. Cl.[6] A01B *63/00*
U.S. Cl. 172—6 10 Claims



1. A guidance system for an implement drawn by a tractor with the implement including a horizontally extending transversely disposed tool bar interconnected to the tractor by a guidance hitch for moving the tool bar and implement with respect to the tractor to maintain the implement in proper alignment with the ridges and furrows of rows, the tool bar having a rearward side, a forward side, and opposite ends, comprising:

a guidance sensor secured to said tool bar adjacent one end thereof and including a vertically disposed, angle sensing shaft vertically rotatably mounted thereon, a support means operatively secured to said angle sensing shaft, for movement therewith about a vertical axis, and extending forwardly therefrom, and a ground engaging means rotatably mounted on said support means for following a row;

said guidance sensor being operatively connected to the guidance hitch means to cause said guidance hitch means to move said implement and tool bar into proper alignment with the rows when said angle sensing shaft senses relative horizontal angular movement between said tool bar and said angle sensing shaft;

said vertically disposed, angle sensing shaft being positioned forwardly of the forward side of said tool bar whereby said support means extends forwardly therefrom at a location forwardly of the tool bar.

5,392,864

BLADE ASSEMBLY FOR A COMPACTING VEHICLE

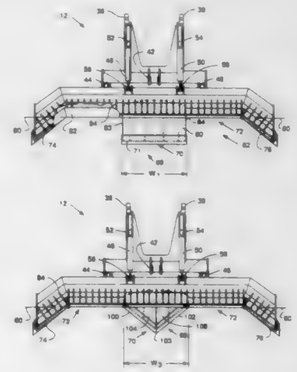
Karl E. Lindenmuth, Wamego, Kans., assignor to Balderson Inc., Wamego, Kans.

Continuation of Ser. No. 877,495, May 1, 1992, abandoned. This application Jul. 6, 1994, Ser. No. 271,387
Int. Cl.[6] E02F *3/76*
U.S. Cl. 172—811 28 Claims

1. A blade assembly adapted for use on a compacting vehicle having a compacting mechanism located on each side of the compacting vehicle in spaced apart relationship, the blade assembly comprising:

a frame adapted for pivotable connection with the compacting vehicle;

a blade pivotally connected to the frame and movable between a first operative position and a second operative position, the blade having a working edge with a vertical plane defined generally therethrough transverse to a travel path of the compacting vehicle, the working edge having a first portion centrally located along the blade and extended forwardly of the vertical plane and a remaining portion located at or behind the vertical plane having



portions thereof located on opposite sides of the first portion, the working edge defines a plane in the first operative position that is substantially parallel with a surface traversed by the compacting mechanisms of the compacting vehicle and the blade being free of other working edges disposed below the substantially parallel plane; and

means for pivoting the blade, when in use, relative to the frame between the first operative position and the second operative position at which the first portion of the working edge is at a level lower, relative to the surface traversed by the compacting mechanisms, than the level of the remaining portion of the working edge.

5,392,865

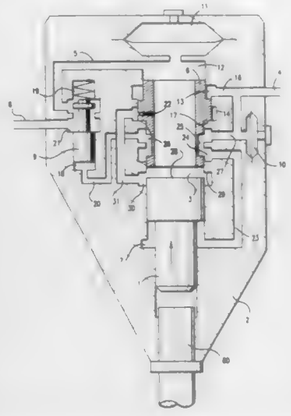
HYDRAULIC PERCUSSION APPARATUS

Bernard Piras, Charly, France, assignor to Etablissements Montabert, Saint-Priest, France

Filed May 28, 1992, Ser. No. 889,189
Claims priority, application France, May 30, 1991, 91 06693
Int. Cl.[6] B23Q *5/00*
U.S. Cl. 173—17 11 Claims

1. A percussion apparatus comprising a striking piston driven hydraulically in a reciprocating fashion by an incompressible fluid inside a cylinder and striking against a tool, wherein the striking piston slides in cylinder having two concentric piston bearing surfaces of different cross sections, of which that situated on the tool side has a cross section smaller than that remote from the tool, the piston and the cylinder delimiting two antagonistic chambers including an annular bottom chamber and a top chamber having a larger cross section than said bottom chamber, wherein:

the interior of the top chamber is permanently at a regulated pressure of a value intermediate between an internal inlet high pressure and an outlet low pressure, and the annular bottom chamber is alternately connected by a distributor to an external high pressure supply circuit



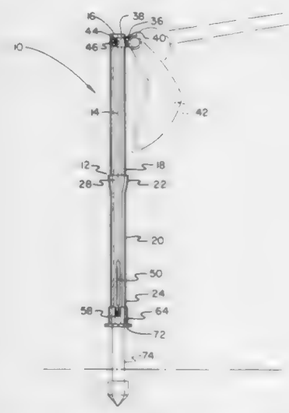
during an upward phase of the piston and to the top chamber during an accelerated downward phase of the piston.

5,392,866

TRACTOR STEEL POST DRIVER

Monte W. White, 9558 Rd. E., Wiggins, Colo. 80654

Filed Jun. 6, 1994, Ser. No. 254,555
Int. Cl.[6] B25D *9/00*
U.S. Cl. 173—90 4 Claims



2. A tractor steel post driver comprising:

an elongated driving assembly having an upper cylindrical pipe with an upper end and a lower end, and a lower pipe with an upper end and a lower end, the upper pipe and lower pipe being coupled to have a common central axis, the upper end of the lower pipe being enlarged with the lower end of the upper pipe fitted within the enlargement, the upper end of the upper pipe being provided with a radial aperture extending therethrough, the lower end of the lower pipe being provided with a lower radial aperture extending therethrough;

a bracket formed of two small parallel plates, each of the plates having a free end, each of plates having an aperture therethrough with a pin positioned through the aperture of the plates and the apertures at the upper end of the upper pipe with the pipe located between the plates;

a pair of collar bolts positioned with their head ends interior

of the lower pipes and extending radially outward through the lower apertures in the lower pipe; and

a collar having a cylindrical upper extent with downwardly extending recesses formed therein adapted to receive the ends of the collar bolts exterior of the tube but interiorly of the nuts with a circular plate at its lower extent having an enlarged diameter to function as a stop when used in driving posts, the collar and plate having an axial aperture for receiving the upper end of a post to be driven by inserting its upper end through the plate and lower half of the collar to the point where contact is made between the upper end of the post and the lower end of the lower pipe.

5,392,867

DEVICE FOR REMOTELY OPERATING AND ASSEMBLY COMPRISING A BEAN/NEEDLE SYSTEM, AND USE THEREOF IN A DRILL STRING

Benoit A. du Chaffaut, Voisins le Bretonneux, and Jean Boulet, Paris, both of France, assignors to Institut Francias du Petrole, Malmaison Cedex, France

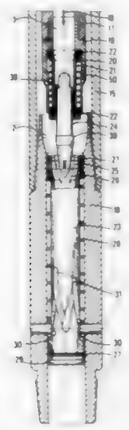
PCT No. PCT/FR91/00976, § 371 Date Oct. 20, 1992, § 102(e) Date Oct. 20, 1992, PCT Pub. No. WO92/11461, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 6, 1991, Ser. No. 920,486

Claims priority, application France, Dec. 21, 1990, 90 16257

Int. Cl.[6] E21B *21/10*

U.S. Cl. 175—38 **11 Claims**



1. A device for remotely operating equipment in a well through variation in a flow of a fluid which comprises coupling means for coupling the device to the equipment to be operated, an assembly comprising at least two elements cooperating with one another to control an opening value of a channel through which said fluid flows and a control assembly for adjusting said opening value to have said value take on one or the other of two particular opening values, wherein the remote operation of the equipment is carried out for predetermined flow conditions when said control assembly is set to one of the two particular opening values of said elements and wherein for the same flow conditions, the remote operation is not obtained when said control assembly is set to the other opening value of said at least two elements.

5,392,868

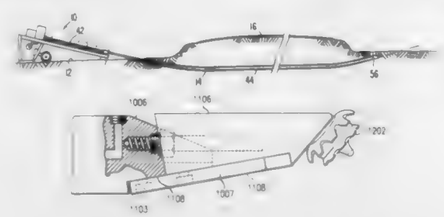
DIRECTIONAL MULTI-BLADE BORING HEAD

Arthur D. Deken, and Cody L. Sewell, both of Perry, Okla., assignors to The Charles Machine Works, Inc., Perry, Okla.

Continuation-in-part of Ser. No. 67,298, May 25, 1993. This application Dec. 9, 1993, Ser. No. 163,756

Int. Cl.[6] E21B *7/00*

U.S. Cl. 175—62 **7 Claims**



1. A directional boring head for a boring machine, the boring machine capable of axially advancing and rotating a drill string about an axis of rotation underground, the drill string ending in the directional boring head, said directional boring head comprising:

a body having a central axis of rotation;

a deflection structure mounted on the body defining a deflecting surface at an oblique angle to the central axis of rotation of the body;

at least one roller cone mounted to said body; and

the deflecting surface deflecting the boring head as the boring machine advances the drill string without rotation and the directional boring head drilling a relatively straight borehole as the boring machine advances the drill string with rotation.

5,392,869

ANCHOR BOLT DRILLING AND SETTING DEVICE

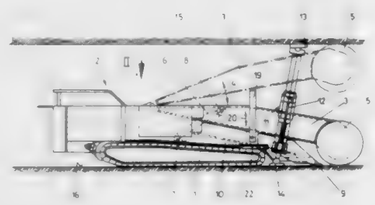
Hermann Fröschl; Ralf Oberdorfer, both of Judenburg, and Alfred Zitz, Zeltweg, all of Austria, assignors to VOEST-ALPINE Bergtechnik Gesellschaft m.b.H., Zeltweg, Austria

Filed Jul. 2, 1993, Ser. No. 84,988

Claims priority, application Austria, Jul. 3, 1992, 1368/92

Int. Cl.[6] E21C *1/10*

U.S. Cl. 175—118 **7 Claims**



1. Anchor bolt drilling and setting apparatus for inserting anchor bolts in interior roof and side-wall surfaces of a tunnel, said apparatus being mounted on driven platform movable along said tunnel, the apparatus comprising:

first anchor bolt drilling and setting devices, mounted on a front region of the movable platform, for inserting anchor bolts in said roof surface of the tunnel; and

second anchor bolt drilling and setting devices, mounted on said front region adjacent the first anchor bolt drilling and setting devices, for inserting anchor bolts in said side-wall surfaces of the tunnel, said second devices being displaceable along a vertical axis extending between the driven platform and the roof surface and further being swivellably displaceable about said vertical axis.

5,392,870

MINERAL CUTTER TOOLING SYSTEM

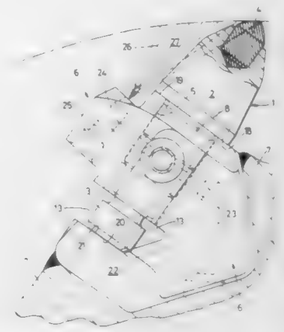
William S. Clapham, and Alan Wood, both of Ecclesfield, England, assignors to Hydra Tools International PLC, Sheffield, England

Filed Nov. 23, 1993, Ser. No. 156,887

Claims priority, application United Kingdom, Dec. 4, 1992, 9225408

Int. Cl.[6] E21B *10/00*; F16L *39/00*; F16B *7/10*

U.S. Cl. 175—427 **10 Claims**



1. A liner sleeve adapted, in use, to be interposed between the external periphery of a round shank of a point attack, mineral cutter pick, and the internal periphery of a circular, shank-receiving bore of a pick box, said sleeve being constituted by a plurality of individual rings stacked end-to-end in abutting relationship about a common longitudinal axis, said rings-together having an axial length approximating to the axial length of said bore.

5,392,871

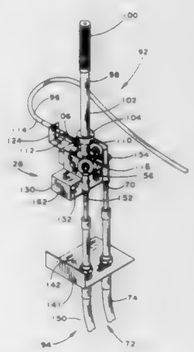
AMPHIBIOUS VEHICLE AND CONTROL

Douglas McFarland, R.R. 1, Box 83, Lamoni, Iowa 50140

Filed Aug. 18, 1993, Ser. No. 108,902

Int. Cl.[6] B62D *11/04*

U.S. Cl. 180—6.48 **3 Claims**



1. A vehicle joystick for controlling a first vehicle control, a second vehicle control, and a third vehicle control simultaneously comprising:

(a) a bracket support;

(b) a bracket pivotally secured to said bracket support about a first axis;

(c) a first ring pivotally secured to said bracket about a second axis perpendicular to said first axis;

(d) a lever provided through said first ring in journaled relationship thereof;

(e) a first pin extending from said first ring substantially perpendicular to said lever, said first pin being operably connected to the first vehicle control;

(f) a second pin extending from said first ring substantially perpendicular to said lever, said second pin being operably connected to the second vehicle control;

(g) a second ring operably secured around said lever; and

(h) a third pin extending from said second ring substantially perpendicular to said lever, said third pin being operably connected to the third vehicle control.

5,392,872

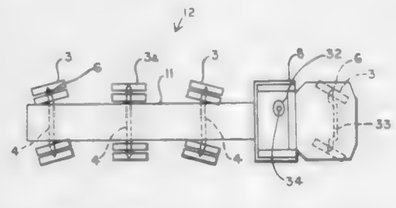
AXLE ASSEMBLY AND CONFIGURATION

Edgar A. Ducote, P.O. Box 45654, Baton Rouge, La. 70895

Continuation-in-part of Ser. No. 807,199, Dec. 16, 1991, Pat. No. 5,305,844, which is a division of Ser. No. 594,716, Oct. 9, 1990, Pat. No. 5,135,064, which is a continuation-in-part of Ser. No. 337,292, Apr. 13, 1989, Pat. No. 5,026,085. This application Oct. 1, 1993, Ser. No. 130,470

Int. Cl.[6] B62D *61/10*

U.S. Cl. 180—24.01 **2 Claims**



1. An extended unitary mobile vehicle, comprising:

(a) a first fixed axle near the front end of the vehicle;

(b) a first pair of steerable wheels pivotally mounted on spindles which are attached to opposite ends of the first axle;

(c) a second fixed axle near the rear end of the vehicle;

(d) second and third pairs of steerable wheels pivotally mounted on spindles which are pivotally attached by king pins to opposite ends of the second axle;

(e) a third fixed axle disposed forward of the second axle;

(f) first and second pairs of fixed wheels mounted on opposite ends of the third axle;

(g) a fourth fixed axle disposed forward of the third axle and aft of the first axle; and

(h) fourth and fifth pairs of steerable wheels pivotally mounted on spindles which are pivotally attached to opposite ends of the fourth axle;

the second, third, and fourth axles being separated from one another by a distance of at least about ten feet.

5,392,873

STRUCTURE FOR SECURING BATTERIES USED IN AN ELECTRIC VEHICLE

Toshio Masuyama; Masami Suzuki, and Hiroyuki Fujimoto, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 7,176

Claims priority, application Japan, Jan. 22, 1992, 4-009516; Jan. 23, 1992, 4-009678

Int. Cl.[6] B60R *16/04*

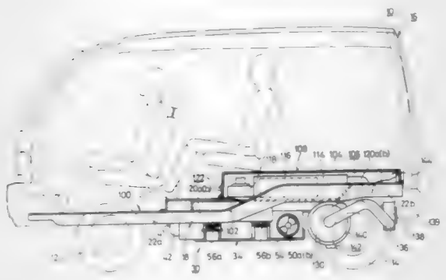
U.S. Cl. 180—68.5 **29 Claims**

1. A structure for securing each battery of a plurality of batteries for driving an electric vehicle in the electric vehicle in a condition in which said plurality of batteries have been compactly disposed and wherein each said battery has a bottom and sides, comprising:

a battery box having a box body,

an inner spacer member in said box body for accommodating said plurality of batteries in said box body of said battery box, wherein said inner spacer member has a lower inner spacer member for placing said bottom of each said battery of said plurality of batteries thereon, said lower inner spacer member having means for defining spaces between said box body and said lower inner spacer member, and

said inner spacer member further including partition members formed as an integral body, said partition members



defining a plurality of spaced compartments for fixedly disposing each said battery of said plurality of batteries in a compartment of said plurality of spaced compartments in a condition in which each said battery is spaced and separated on all said sides of that said battery from all other said batteries of said plurality of batteries, each said compartment of said plurality of spaced compartments receiving only one said battery of said plurality of batteries in said compartment.

5,392,874

POWER ASSISTED STEERING MECHANISM

Kenneth Chandler, Reading, England, assignor to Adwest Engineering Limited, Reading, England

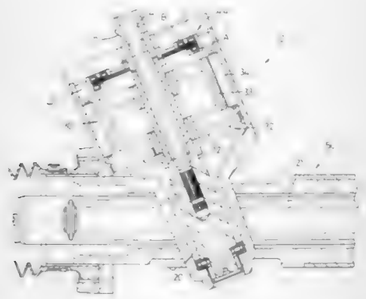
PCT No. PCT/GB92/00064, § 371 Date Dec. 28, 1993, § 102(e) Date Dec. 28, 1993, PCT Pub. No. WO92/12037, PCT Pub. Date Jul. 23, 1992

PCT Filed Jan. 13, 1992, Ser. No. 87,694

Claims priority, application United Kingdom, Jan. 14, 1991, 9100736

Int. Cl.[6] B62D *5/04*

U.S. Cl. 180—79.1 12 Claims



1. A power assisted steering mechanism for a vehicle, the mechanism including electrically powered drive means for driving the steering mechanism, the drive means including a drive shaft having an input shaft portion drivingly connected to an output shaft portion by resilient means such that rotation of the input shaft portion causes relative rotational displacement between the input shaft portion and the output shaft portion in dependence on the load applied to the output shaft portion, sensor means arranged to produce signals in response to the direction and amount of relative displacement between the input and output shaft portions and an electric motor for driving said output shaft in response to the signals produced by the sensor means, the sensor means comprises a magnetic inductance sensor including an annular core formed of a magnetic material which is arranged to be co-axial with the input and output shaft portions, the core having an annular air gap to define opposed sets of poles on opposite sides of the air gap, a magnetic generating coil operable to generate flow of magnetic flux through the core and between the opposed sets of poles, one of the sets of poles including at least two concentric sensor poles having associated inductance coils for sensing flow of magnetic flux through the associated sensor pole, and a pair of groups of radially extending vanes located within said annular air gap, one group of vanes being mounted on the output shaft portion and the other groups of vanes being mounted on the input shaft portion, the vanes being made of a magnetic material and serving to conduct magnetic flux between the opposed sets of poles, the vanes of one group being axially spaced from the vanes of the other group and being arranged such that on movement of the input shaft portion relative to the output shaft portion consequential relative movement of the groups of vanes causes the impedance across the air gap to alter and cause a greater or lesser amount of the magnetic flux to flow through one or other of the sensor poles.

5,392,875

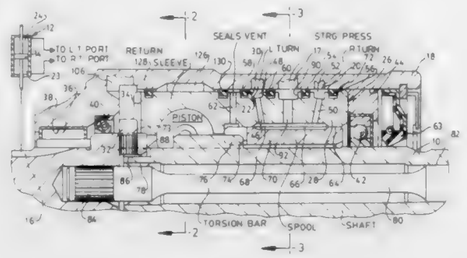
HYDRAULIC REACTION VARIABLE ASSIST POWER STEERING SYSTEM

James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 46,701, Apr. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 811,963, Dec. 23, 1991, abandoned. This application Apr. 20, 1994, Ser. No. 230,193

Int. Cl.[6] B62D *5/08*

U.S. Cl. 180—132 7 Claims



1. A fluid pressure operated power steering gear system for an engine powered vehicle, said steering gear including an engine driven fluid pump, said pump including valve means for maintaining a relatively constant fluid flow delivery regardless of engine speed;

a steering pressure movable part adapted to be connected to a vehicle steering linkage, a drive member connected to said pressure movable part, a driving shaft, a torsion member connecting said driving shaft to said drive member;

relatively displaceable steering valve elements connected respectively to said driving shaft and said drive member, said valve elements defining valve means situated in and partly defining pressure distribution and flow return passages extending between said pump and said pressure movable part for establishing steering pressure differential forces on said pressure movable part as steering torque is applied to said driving shaft;

at least two pressure reaction pistons in one of said valve elements, passage structure providing fluid communication between said pressure distribution passage and said reaction pistons whereby a reaction piston pressure force is applied to said steering valve means to resist relative displacement of said steering valve elements;

at least one steering pressure modulator valve means and a vehicle speed proportional valve means in communication with said pressure distribution passage in series flow relationship with respect to said pump and said reaction pistons for modifying the change in said reaction piston pressure force for a given change in torque applied to said driving member,

the flow output from said modulator valve means being received as a flow input by said proportional valve means,

means for developing a vehicle speed signal indicative of vehicle speed, said speed proportional valve means being responsive to said speed signal to reduce the rate of increase of steering pressure for a given change in said steering torque as vehicle speed increases.

5,392,876

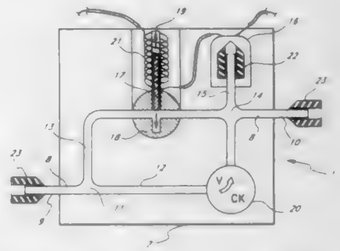
ANTI-THEFT METHOD AND DEVICE FOR AUTOMOTIVE VEHICLES

Francisco J. Linares, P.O. Box 6833, 3741 Saratoga St., Pico Rivera, Calif. 90660

Filed Sep. 1, 1993, Ser. No. 115,979

Int. Cl.[6] B60K *27/00*

U.S. Cl. 180—287 11 Claims



1. An anti-theft device for an automotive vehicle which uses a hydraulic brake system that includes a reservoir of brake fluid in fluid communication with brakes for the vehicle under the control of an operator actuated brake member for engaging the brakes, including

a body,

a passageway through the body having one end in communication with the reservoir and another end in communication with the brakes,

said passageway having between said ends first and second branch lines through which the fluid flows from the reservoir to the brakes,

a one way valve in the first branch line that permits fluid to flow only from the first end to the second end,

a stopper member movable between a first position which allows fluid to flow through said second branch line and a second position which blocks said second branch line to prevent fluid flow through said second branch line,

an electronic actuator for the stopper member which upon being energized moves the stopper member from the first position to the second position, and

a control circuit including a first switch element which is manually closed to enable the electronic actuator to be energized, and a second switch which is actuated when the operator actuates the brake member to complete a circuit which energize the electronic actuator, and thereby maintains said brakes in an engaged condition.

5,392,877

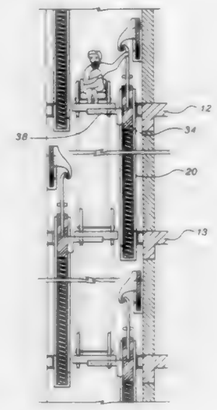
EMERGENCY ESCAPE SYSTEM FOR MULTISTORY BUILDINGS

Abdul A. Shahin, and Mustafa A. Shahin, both of 302 E. Brinkerhoff Ave., Palisades Park, N.J. 07650

Filed Mar. 7, 1994, Ser. No. 206,659

Int. Cl.[6] B66B *9/00*

U.S. Cl. 182—82 2 Claims



1. An emergency escape system for a multi-story building, the system comprising:

(a) a vertical plurality of balconies, each having an open area defining a resulting plurality of said open areas which in turn define a vertical column through said plurality of balconies;

(b) a rigid vertical channel structure within each of said vertical columns, each of said channel structures having vertical guide means;

(c) an escape module having a rigid platform proportioned to substantially fill each of said open areas of each of said balconies, said module including means for slidable engagement with said vertical guide means of each of said vertical channel;

(d) spring means secured within said vertical guide means in compressible non-vibratory abutting relationship with said slidable engagement means of said escape module;

(e) means for selectable release of said slidable engagement means of said module from each of said balconies into compressive contact with said spring means; and

(f) means for limiting the extent and velocity of downward travel between successive balconies of said module.

5,392,878

BULK MATERIAL LOAD VEHICLE ACCESS SYSTEM

Ronald W. Bennett, and Bruce A. Pech, both of Florence, S.C., assignors to Aluminum Ladder Company, Florence, S.C.

Continuation of Ser. No. 32,413, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 750,624, Aug. 27, 1991, abandoned, which is a continuation of Ser. No. 538,765, Jun. 15, 1990, Pat. No. 5,042,612. This application Dec. 6, 1993, Ser. No. 163,584

Int. Cl.[6] E04G *1/00, 3/00*

U.S. Cl. 182—115 12 Claims

1. A bulk material load vehicle access structure, comprising:

a stationary upright framework;

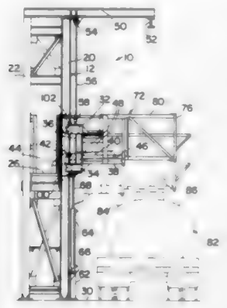
a stationary platform supported by said framework;

a substantially horizontal service platform movable along a vertical axis and with respect to said stationary platform;

means for moving said service platform along a vertical axis and with respect to said framework;

said service platform accessible from said stationary plat-

form regardless of the vertical position of said service platform, said service platform further comprising a fence and configured to allow a person to step off of said service



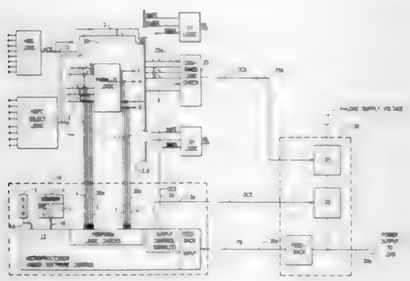
platform and onto a top of a bulk material load vehicle placed under said service platform while still being protected by said fence.

5,392,879

ELECTRONIC FAILURE DETECTION SYSTEM

Robert C. Boyce, Plano, Tex., and Michael A. Spaner, Waterbury, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 16, 1993, Ser. No. 48,442
Int. Cl.[6] B66B *3/00*; G06F *11/16*
U.S. Cl. 187—393 5 Claims



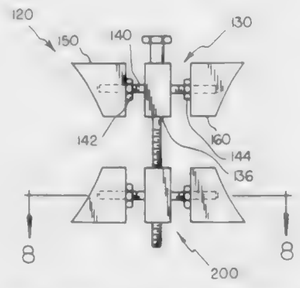
1. A detector, comprising:
an electronic processor having processor inputs and processor outputs;
a non-volatile memory connected to one of said processor inputs;
a logic circuit having logic circuit inputs and logic circuit outputs, said logic circuit inputs and said logic circuit outputs being connected to others of said processor inputs;
an and gate having gate inputs, and a gate output, one of said gate inputs being connected to one of said logic circuit outputs, another of said gate inputs being connected to one of said processor outputs;
an electronic switch having switch inputs and a switch output, one of said switch inputs being connected to said gate output, another of said switch inputs being connected to another of said processor outputs, said switch output being connected to another of said processor inputs; and
instructions, stored within said non-volatile memory, for causing said processor to perform a logic check of said logic circuit and to generate a first signal on said processor outputs if said logic check is true, and to generate a second signal on said processor outputs if said logic check is false, said first signal differing from said second signal.

5,392,880

TIRE CLOCK FOR TANDEM WHEELS

Melvin L. Christian, P.O. Box 247, Ukiah, Oreg. 97880

Filed Jan. 25, 1994, Ser. No. 186,319
Int. Cl.[6] B60T *1/04*
U.S. Cl. 188—32 2 Claims



1. A new and improved tire chock for tandem wheels for preventing unwanted movement of tandem wheel vehicles, the tire chock for tandem wheels comprising:
upper and lower opposing wedges which are sized for wedging engagement with facing tire tread surfaces of the tandem wheels to stop wheel rotation, each wedge having arcuate diverging engagement surfaces generally conforming to the curvature of the tire tread surface;
a threaded bar joining the upper and lower wedges and connected thereto so that rotation of the bar moves the wedges toward and away from each other;
handle means connected to the bar for rotating the bar for moving the wedges toward and away from each other; and
expansion means for the upper and lower wedges for changing the size of the wedges to fit different tire configurations and for engaging tread surfaces of the different tire configurations, the means comprising front and rear spaced opposing movable brake shoes and a threaded bar with opposite threads at its end joining the front and rear shoes and connected thereto so that rotation of the bar moves the shoes toward and away from each other, the expansion means further including locknuts engagable with each shoe to prevent unwanted movement of the shoes, the locknuts being threadedly engaged with the threaded bar.

5,392,881

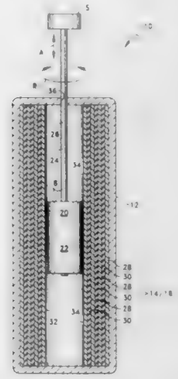
DEVICE FOR DAMPENING VIBRATORY MOTION

Chahee P. Cho, Portsmouth, R.I., and John Y. Hung, Auburn, Ala., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1993, Ser. No. 134,191
Int. Cl.[6] F16F *15/03*
U.S. Cl. 188—267 22 Claims

1. A device for dampening vibratory motion, said device comprising:
a ferromagnetic housing;
non-magnetic, electrically conductive wall means fixed to said housing and upstanding in said housing, said wall means having alternating layers of non-magnetic electrically conductive material and electrically insulative material;

a plunger assembly comprising magnetic body means movable in said housing adjacent said wall means; and



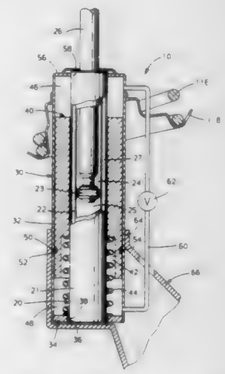
connector means extending from said body means and in communication with a vibratory energy source.

5,392,882

DYNAMIC ABSORBER SUSPENSION STRUT

John M. Mackovjak, Romeo, Mich., and Christopher J. Martone, Orlando, Fla., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 12,867, Feb. 3, 1993, abandoned. This application Jun. 3, 1994, Ser. No. 253,814
Int. Cl.[6] F16F *9/30*
U.S. Cl. 188—268 6 Claims



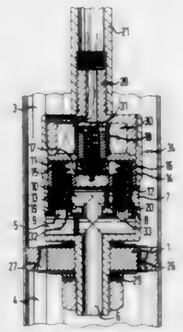
1. A dynamic absorber suspenslon strut comprising:
(a) a sealed hydraulic damper having a piston slidably mounted in a cylinder;
(b) an outer tube within which the cylinder of the hydraulic damper is fixedly mounted;
(c) a support surface at one end of the outer tube, fixed with respect to the outer tube;.
(d) a spring having an end seated on the support surface;
(e) an absorber mass reciprocally mounted inside the outer tube and urged by the spring away from the support surface, wherein the absorber mass hydraulically divides an interior of the outer tube into first and second fluid chambers, wherein the fluid chambers of the outer tube are not in fluid communication with the damper; and
(f) a conduit providing fluid communication between the first and second chambers, wherein the absorber mass and spring are tuned to absorb suspension wheel hop frequency vibrations.

5,392,883

CONTROLLABLE HYDRAULIC VIBRATION DAMPENER

Zhen Huang, Wuppertal, and Klaus Schmidt, Bergisch Gladbach, both of Germany, assignors to August Bilstein GmbH & Co. KG, Ennepetal, Germany

Filed Nov. 19, 1993, Ser. No. 154,815
Claims priority, application Germany, Nov. 21, 1992, 4239160
Int. Cl.[6] B60G *17/08*; F16F *9/46*
U.S. Cl. 188—282 10 Claims



1. A regulable hydraulic dashpot for motor vehicles, comprising: a shock-absorbing piston and a shock-absorbing cylinder, said piston traveling into and out of said cylinder on a rod, said piston dividing said cylinder into two hydraulic compartments accommodating constrictions that incorporate pressure-sensitive valves, and having at least one bypass port; a system of electromagnetically operated and electromagnetically controlled valves rerouting said at least one bypass port in accordance with whether the dashpot is in a suction state or in a compression phase; a slide-valve bolt associated with routing of said bypass during said suction phase and another slide-valve bolt associated with routing during the compression phase; a spring forcing each slide-valve bolt to maintain the bolt closed, the bolts accommodating pilot reservoirs provided with hydraulic fluid through a port in the bolt from whichever hydraulic compartment is pressurized, said pilot reservoirs communicating through a hydraulic-fluid line that can be opened and closed to various extents by an electromagnetically controlled bolt, fluid flowing out of the pilot reservoir in whichever slide-valve bolt is subjected to pressure through the port in whichever slide-valve bolt is not subjected to pressure.

5,392,884

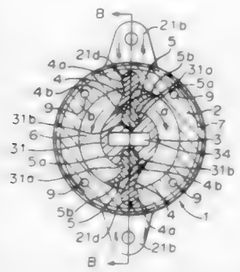
SLOW-ACTING ROTARY DEVICE

Juji Ojima, Aikawa, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed Aug. 25, 1993, Ser. No. 111,839
Claims priority, application Japan, Aug. 26, 1992, 4-250679; Nov. 13, 1992, 4-327639
Int. Cl.[6] F16F *9/12*
U.S. Cl. 188—293 6 Claims

1. Rotary device comprising:
a sealed outer cylindrical member,
a shaft member pivotally mounted for rotation within said cylindrical member and forming an annular space therewith, at least one fin connected to each of said cylindrical member and to said shaft member, each fin being con-

nected at a base end thereof with one of said members and bridging said annular space and having an edge end in



direct contact with the other of said members, and fluid material filled within said outer annular space member.

5,392,885

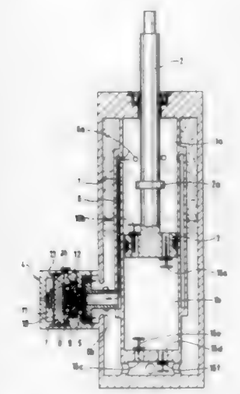
ADJUSTABLE HYDRAULIC VIBRATION DAMPER FOR MOTOR VEHICLES

Andree Patzenhauer, Eltorf-Lindscheid, and Winfried Geilhausen, Windeck-Leuscheid, both of Germany, assignors to Fichtel & Sachs AG, Eltorf, Germany

Continuation of Ser. No. 824,042, Jan. 23, 1992, abandoned. This application May 17, 1993, Ser. No. 63,024

Int. Cl.[6] F16F *9/46*

U.S. Cl. 188—299 **20 Claims**



1. An adjustable vibration damper for motor vehicles, said adjustable vibration damper comprising:

a first cylinder, said first cylinder defining a chamber therein;

first piston means disposed within said chamber of said first cylinder, said first piston means for damping vibrations transmitted to said first cylinder, said first piston means dividing said chamber into a first chamber portion and a second chamber portion;

said first piston means comprising:

first fluid passage means disposed therethrough and fluidly connecting said first chamber portion to said second chamber portion; and

bi-directional valve means disposed within said first fluid passage means for generating a first damping force and allowing fluid flow from each of said first chamber portion and said second chamber portion to the other of said first chamber portion and said second chamber portion through said first fluid passage means;

at least a second fluid passage by-passing said piston means for allowing damping fluid to flow between said first and said second chamber portions around said piston means;

at least one additional valve means for controlling said flow of damping fluid through said second fluid passage, said at least one additional valve means for generating a secondary damping force, and said at least one additional valve means comprising:

valve body means disposed adjacent said second fluid passage, said valve body means having a first end for blocking at least a portion of said second fluid passage to control said flow of damping fluid through said second fluid passage, and a second end opposite said first end;

said damping fluid for applying a first pressure to said first end of said valve body means to open said second fluid passage;

second piston means disposed adjacent said second end of said valve body means;

said second end of said valve body means having a first surface disposed towards said second piston means;

said second piston means having a first surface disposed towards said valve body means;

means for introducing a pressure medium between said first surface of said valve body means and said first surface of said second piston means to apply a second pressure to said first surface of said valve body means and said first surface of said second piston means; and

said second pressure being independent from said first pressure to oppose said first pressure and close said second fluid passage to control said flow of damping fluid through said second fluid passage.

5,392,886

LIQUID COOLED SHOCK ABSORBER

Jameson M. Drummond, 21 Reid Street, Wodonga, Victoria 3690, Australia

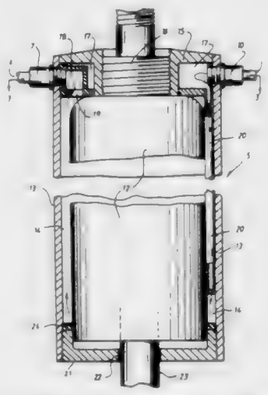
PCT No. PCT/AU91/00461, § 371 Date May 28, 1993, § 102(e) Date May 28, 1993, PCT Pub. No. WO92/09823, PCT Pub. Date Jun. 11, 1992

PCT Filed Oct. 8, 1991, Ser. No. 66,064

Claims priority, application Australia, Nov. 30, 1990, PK3627

Int. Cl.[6] F16F *9/42*

U.S. Cl. 188—322.19 **7 Claims**



1. A shock absorber unit for a vehicle comprising a tubular shock absorber encased in an outer cylinder providing an annular space between an outer surface of the shock absorber and an inner surface of the outer cylinder, a first closure cap mounted on one end of the outer cylinder and secured to an end of the shock absorber, a second closure cap mounted on the other end of the outer cylinder so as to concentrically locate the other end of the shock absorber and a piston rod

cooperating therewith, said first closure cap including an annular liquid distribution chamber adapted to be connected to a source of liquid coolant and having an outlet duct therein separate from a remainder of said annular chamber and open to the annular space, said annular chamber having connected thereto a plurality of coolant delivery tubes, circumferentially spaced apart in the annular space between the shock absorber and said outer cylinder and extending substantially the full length of the annular space, and wherein said coolant delivery tubes engage against the outer surface of the shock absorber and the inner surface of the outer cylinder so as to act as reinforcing strengthening members for said unit.

5,392,887

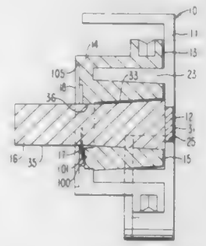
BI-DIRECTIONAL TAPERED ROLLER CLUTCH

Jules Nisenson, Stamford, Conn., assignor to Introl Company, L.P., Wappingers Falls, N.Y.

Filed Dec. 27, 1993, Ser. No. 172,941

Int. Cl.[6] F16D *67/02, 41/10;* **E06B** *9/208*

U.S. Cl. 192—8 R **7 Claims**



1. An improved bi-directional clutch comprising: a relatively fixed body element having a principal axis; a core output element axially aligned for rotation within said body element; a spider element including a generally cylindrical body, motion input means on one end of said body, and a plurality of axially extending fingers projecting from a second end of said body, said fingers forming a plurality of radially arranged frusto-conical recesses; a corresponding plurality of frusto-conically shaped rollers positioned within said recesses for limited axial movement relative thereto, said rollers in engaged condition being wedged between said body element and said core output element to arrest relative rotational movement therebetween; said rollers being axially displaced to release said engaged condition by rotational movement imparted to said spider element; whereby continued movement is transmitted through said spider element and said rollers directly to said core output element.

5,392,888

MODULAR CLUTCH CONSTRUCTION

Koji Kajitani; Hiroshi Takeuchi; Yasunobu Fukatani; Hiroshi Teramae, and Masaaki Asada, all of Neyagawa, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Mar. 19, 1993, Ser. No. 35,116

Claims priority, application Japan, Apr. 2, 1992, 4-019769[U]; Apr. 2, 1992, 4-019770[U]; Apr. 2, 1992, 4-019771[U]; Apr. 24, 1992, 4-015427[U]

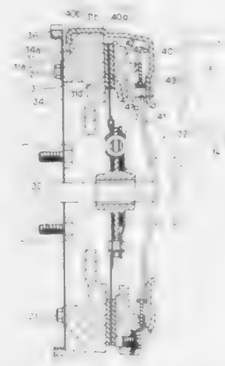
Int. Cl.[6] F16D *13/58*

U.S. Cl. 192—70.16 **10 Claims**

1. A modular clutch construction comprising:

a flywheel, an input end face of which is connectable to a corresponding member of an engine for power input to the clutch, said end face having a circumferentially peripheral bulge protruding axially, said axial protrusion increases along a direction of increasing flywheel radius;

a clutch cover assembly including a clutch cover encompassing said flywheel and axially positioning relative to said flywheel, said clutch cover having a bent rim inwardly bent so as to clamp said peripheral bulge being provided with retaining elements fixed to said input end face, said clutch cover being dish-shaped and having a peripheral wall axially extending over said clutch disc assembly, said input end face having a plurality of circumferentially spaced pedestal portions corresponding to said retaining elements, said retaining elements being formed along said bent rim, each of said retaining elements being bent radially inward flush with a surface of said pedestal portions, said clutch cover assembly further including a



pressure plate coaxial with said flywheel and facing an opposite end face of said flywheel;

a clutch disc assembly coaxial with said pressure plate and said flywheel and disposed therebetween;

fasteners for fixing said clutch cover retaining elements to said pedestal portions; and

a portion of said clutch cover peripheral wall is stepped radially inward, forming an abutment which abuts marginally against said opposite end face of said flywheel.

5,392,889

ELECTROMAGNETIC CLUTCH WITH AN IMPROVED ELECTROMAGNETIC HOUSING

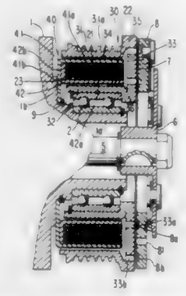
Takatoshi Koitabashi, Richardson, Tex., assignor to Sanden Corporation, Isesaki, Japan

Filed May 21, 1993, Ser. No. 64,433

Claims priority, application Japan, May 21, 1992, 4-033616[U]

Int. Cl.[6] F16D *27/00*

U.S. Cl. 192—84 C **20 Claims**



1. An electromagnetic clutch comprising:

a first rotatable member of magnetic material rotatably supported on a bearing, said bearing mounted on a mount member;

said first rotatable member including an outer annular cylindrical portion, an inner annular cylindrical portion, and an

axial end plate connecting said outer annular cylindrical portion and said inner annular cylindrical portion, said outer and inner annular cylindrical portions and said axial end plate defining an inner hollow space;

an electromagnetic housing fixedly secured to said mount member and extending within said inner hollow space, said electromagnetic housing being formed with a U-shaped cross section whereby an annular hollow space is defined therein;

said electromagnetic housing comprising a first portion and a second portion;

said first portion including a first annular cylindrical region and a first annular region radially extending from one end of said first annular cylindrical region in a first direction;

said second portion including a second annular cylindrical region and a second annular region radially extending from one end of said second annular cylindrical region in a second direction opposite to said first direction;

said first annular region of said first portion and said second annular region of said second portion operatively coupled together;

an annular magnetic coil fixedly disposed within said annular hollow space of said electromagnetic housing;

a second rotatable member;

a hub secured on said second rotatable member; and

a magnetic armature plate supported on said hub, said magnetic armature plate facing said first rotatable member with a predetermined axial air gap therebetween and having limited axial movement, said magnetic armature plate being attracted to said first rotatable member when said annular magnetic coil is energized;

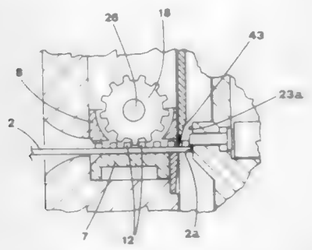
wherein said first annular cylindrical region of said first portion is located at a position which is radially outward of said second annular cylindrical region of said second portion, said first annular region of said first portion is positioned on said second annular region of said second portion, and a terminal end of said first annular region of said first portion contacts an outer peripheral surface of said one end of said second annular cylindrical region.

5,392,890

OBLITERATOR AND RELATIVE CARD

Rigo Fabrizio, Casalecchio Di Reno, Italy, assignor to O.T.R. S.r.l., Predosa, Italy

Filed Mar. 29, 1993, Ser. No. 38,108
Int. Cl.[6] G07F *7/08*
U.S. Cl. 194—209 9 Claims



1. An obliterating machine for a card designed to be inserted with a head within said obliterating machine, said card being made of synthetic plastic material and featuring a plurality of grooves and/or ribs and a toothing made in at least one surface of said card, so as to define a predetermined cross profile for said card, with a first tooth of said toothing being near to said head of said card, said machine comprising:

a front panel featuring an opening for allowing a card to pass therethrough;

a body, protruding from said front panel and featuring a recess made in correspondence with said opening, and a cavity that communicate with said recess;

a pair of plates, upper plate and lower plate respectively, housed within said recess of said body, with counterfacing surfaces of said plates delimiting a seat for receiving said card, said receiving seat having a cross profile complementar to said cross profile of said card;

a first feeler pin and a first micro-switch, said first feeler pin being movable along a path perpendicular to said seat, so as to push onto said micro-switch when a card is inserted into said receiving seat;

a second feeler pin and a second micro-switch, said second feeler pin being movable along a path parallel to said card receiving seat, so as to push onto said second micro-switch when a card is inserted into said card receiving seat and said first tooth of said toothing pushes onto said second feeler pin;

at least one cogwheel rotatably mounted aside of said card receiving seat and arranged with a rotary axis perpendicular to said card receiving seat, said cogwheel being designed to engage said toothing of said card;

a cutting blade slidably guided within said cavity of said body and along a path perpendicular to said card receiving seat;

a rocker pivoted to said body and linking said cutting blade to an electromagnet, so as to cut subsequent strips from the head of said card;

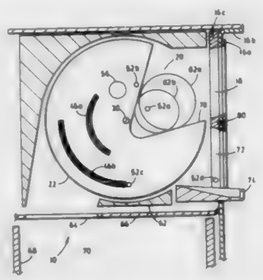
a further micro-switch arranged so as to be operated by said rocker when a strip is cut from said card, in order to activate an electric circuit for controlling the operation of a product or service vending apparatus.

5,392,891

APPARATUS AND METHOD FOR DISCRIMINATING COINS BASED ON METAL CONTENT

Christopher Ferguson, Ashland, Mass., and J. Scott Petty, Cedar Rapids, Iowa, assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 10, 1994, Ser. No. 194,551
Int. Cl.[6] G07D *5/08*
U.S. Cl. 194—317 10 Claims



1. A coin metal content discriminating device comprising:

a metal content sensor;

means for transporting a received coin to a stationary position adjacent to said metal content sensor wherein said transporting means comprises a motor driven rotary disk having a coin receiving notch to carry the coin on a predetermined arcuate path to the position adjacent to the metal sensor; and

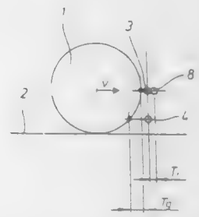
means for activating said metal content sensor to provide an output signal corresponding to the metal content of the coin in the stationary position.

5,392,892

DEVICE FOR THE MEASUREMENT OF THE DIAMETER OF CIRCULAR OBJECTS

Arjen J. Mulder, Manubach, Germany, assignor to NSM Aktiengesellschaft, Bingen, Germany

Filed Apr. 13, 1993, Ser. No. 46,228
Claims priority, application Germany, Apr. 14, 1992, 4212500; Aug. 6, 1992, 4226062
Int. Cl.[6] G07D *5/02*
U.S. Cl. 194—334 11 Claims



1. A device for the measurement of the diameter of circular objects comprising an oblique guide channel along which such object passes at substantially the same velocity at least along a part thereof,

characterized in that

in a lateral wall of the guide channel, two photoelectric detectors are arranged at different heights on a line which is perpendicular to a flat floor of the guide channel, said photoelectric detectors obscured upon passage past the same of such circular object,

a further photoelectric detector is arranged at a distance from one of said two photoelectric detectors at the same height as said one photoelectric detector, and

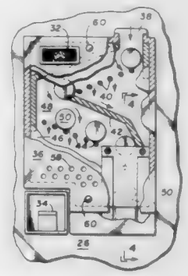
a first one of said photoelectric detectors which is obscured is adapted to start two timers, a first timer which is halted by obscuring of a second one of said photoelectric detectors and a second timer which is halted by obscuring of a third one of said photoelectric detectors.

5,392,893

ADAPTER FOR COIN-OPERATED MACHINE

Ralph A. Murphy, P.O. Box 2434, and David C. Collins, P.O. Box 1276, both of Gulf Shores, Ala. 36547

Filed Dec. 9, 1992, Ser. No. 988,335
Int. Cl.[6] G07F *1/04*
U.S. Cl. 194—348 6 Claims



5. Apparatus for excluding liquids from a coin-operated machine having a region for handling and receiving coins, said apparatus comprising:

(a) inlet slot means for receiving coins;

(b) coin guide means defining a tortuous path for directing coins received from said slot means to said region for receiving coins, said tortuous path comprising a liquid permeable first coin guide portion directing coins in a first direction diagonally downwardly a distance greater than the width of said coins to a second coin guide portion, said first coin guide portion halving at least one liquid passage therethrough, said second coin guide portion directing coins received from said first coin guide portion in a second direction diagonally downwardly beneath said first coin guide portion and including at least one liquid passage therethrough; and

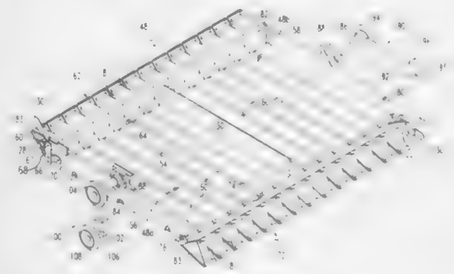
(c) liquid diverter means below said first coin guide portion to divert liquid passing through said first coin guide portion away from said region for receiving coins.

5,392,894

TRANSPORT/STACKER MODULE FOR IMPROVING SORTING THROUGHOUT OF A MAIL PROCESSING SYSTEM

Thomas F. Grapes, Columbia, Md., and Charles M. Miller, Seven Valleys, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 742,753, Aug. 9, 1991, Pat. No. 5,293,983. This application Mar. 3, 1994, Ser. No. 205,868
Int. Cl.[6] B65G *37/00*
U.S. Cl. 198—367 20 Claims



1. A transport/stacker module comprising:

a support frame;

an endless loop conveyor;

a plurality of wheeled members mounted by the frame and supporting the conveyor for driven movement along a serpentine conveyor path including a plurality of vertically spaced, substantially horizontal conveyor runs;

a plurality of carriers attached to the conveyor at spaced intervals, each carrier including a pair of compartments arranged transversely of the conveyor path in substantial side-by-side relation, each compartment for receiving a mailpiece from a mail induction system;

at least one bin positioned at each of a plurality of mail sorting sites distributed along at least some of the horizontal conveyor runs; and

a rake mechanism located at each sorting site, each rake mechanism including a pair of separately actuatable sorting rakes for selectively raking a mailpiece from either or both of the pair of compartments of the carriers into the bins positioned beneath the horizontal conveyor runs as the carriers move through the sorting sites.

5,392,895

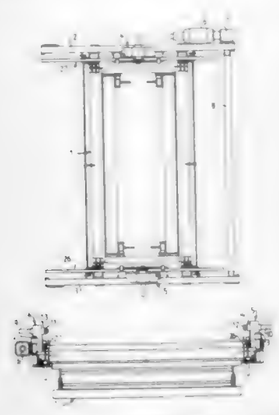
TRANSFER UNIT

Leif Sörensen, Olofström, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Nov. 30, 1993, Ser. No. 150,131
Claims priority, application Sweden, Jun. 5, 1991, 9101714
Int. Cl.[6] B65G *47/252*; B21D *43/10*
U.S. Cl. 198—375 5 Claims

1. Transfer unit for transferring an object from a starting position to an end position, comprising two carriages which are each displaceable along an individual supporting rail in a frame, each of said carriage being provided with a rotatable gripping means arranged to grip and hold the object during

transfer, and a turn-over device constructed and arranged for turning the object over during the transfer, by rotation about an axis joining the gripping means on the two carriages, said turn-over device comprising a turning arm, one end of which is fixedly mounted on a shaft, disposed in the carriage and joined to the gripping means, the other end of said turning arm supporting a follower which cooperates with a guide rail as the carriage moves along the supporting rail, said guide rail having an essentially V-shaped portion, along which the turning arm is guided during rotation, said essentially V-shaped portion of



the guide rail having two arcuate guide rail sections, each arcuate guide rail section extending from an individual straight portion of the guide rail, with free ends of said arcuate guide rail sections terminating equidistant from a point where tangents extending from the free ends intersect, and a switch piece adapted to be pivoted between a first end position and a second end position, in which it forms a continuation of one or the other of the two arcuate guide rail sections, said switch piece being lockable in each of its end positions by blocking means which can be released as the follower is inserted into the switch piece.

5,392,896

METHOD FOR AUTOMATICALLY ADJUSTING A DRAWER CONVEYOR IN ACCORDANCE WITH THE SIZE OF ARTICLES TO BE TRANSPORTED, AND CONVEYOR THAT CARRIES OUT THE METHOD

Guglielmo Martelli, Loddington Northants, United Kingdom, assignor to A.M.R.P. Handels AG, Basel, Switzerland

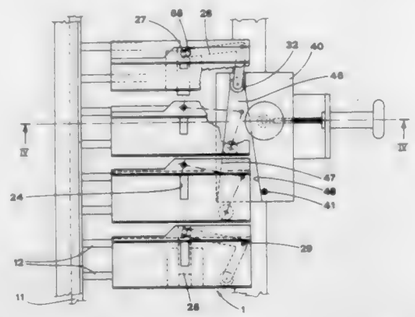
Filed Feb. 18, 1994, Ser. No. 198,483
Claims priority, application Italy, Feb. 22, 1993, B093A000058
Int. Cl.[6] B65G *29/00*
U.S. Cl. 198—473.1 11 Claims

1. A conveyor automatically adjusted in accordance with the size of articles to be transported, said conveyor running along a closed loop path and being equipped with transporting drawers, each drawer comprising a pair of walls, said conveyor including:

conveying means comprising a first stationary wall and a second wall, the second wall being adapted to take one or another of two different configurations, a first configuration in which the second wall is locked, and a second configuration in which the second wall is released and movable with respect to the first stationary wall;

operating means for releasing the second wall of a drawer while the drawer is moving through a first section of the closed loop path, to let the second wall move freely while the drawer is moving through a second section of the closed loop path, and for then locking the wall previously released when the drawer reaches a third section of the closed loop path;

positioning means for locating the second wall at a pre-set distance from the first stationary wall as it moves through the second section of the closed loop path;



guiding means for slidingly guiding said second wall while moving nearer to or farther from said first stationary wall;

translating means designed to impose a translation to said second wall; and,

locking means for locking the second wall with respect to the first stationary wall.

5,392,897

CONVEYOR

Toshio Akesaka, Kanagawa, Japan, assignor to Kabushiki Kaisha Iseki Kaihatsu Koki, Tokyo, Japan

Filed Oct. 26, 1993, Ser. No. 141,014
Claims priority, application Japan, Oct. 27, 1992, 4-310766
Int. Cl.[6] B65G *15/14*
U.S. Cl. 198—604 4 Claims



1. A vertical type conveyor provided with a frame, a plurality of belt pulleys rotatably supported by the frame, and first and second endless conveyor belts traveling around the plurality of belt pulleys and defining an abutment area in which the first and second conveyor belts are in contact with and confront each other, wherein a load to be conveyed is held between both belts so that the load can be conveyed in the vertical direction, said vertical type conveyor comprising:

a lower frame and an upper frame comprise the frame;

a pair of link chains composed of a plurality of links articulated with each other, said pair of link chains being arranged along the abutment area lengthwise;

a tension device for stretching the pair of link chains, wherein the upper ends of the pair of link chains are releaseably connected to an upper frame, while the lower ends of the pair of link chains are connected to the tension device;

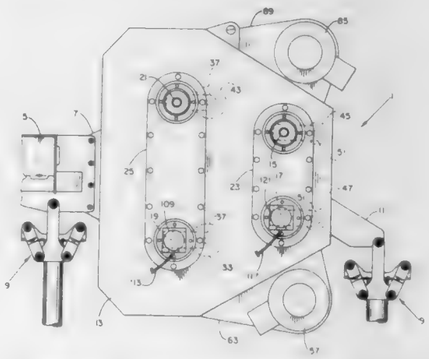
carrier rollers in which the shaft ends are attached in joints between the links, wherein the plurality of carrier rollers are disposed alternately on a first outside and a second outside opposite to the first outside in the cross direction of both the conveyor belts in zigzags so that when the pair of link chains are stretched by the tension device, components of tensile forces of the links act on both the conveyor belts through carrier rollers.

5,392,898

DUAL DRIVE CONVEYOR SYSTEM WITH VIBRATIONAL CONTROL APPARATUS AND METHOD OF DETERMINING OPTIMUM CONVEYANCE SPEED OF A PRODUCT THEREWITH

Ralph D. Burgess; David Martin, both of Plymouth, and Fredrick D. Wucherpfennig, Bloomington, all of Minn., assignors to Food Engineering Corporation, Minneapolis, Minn.

Filed Jun. 6, 1994, Ser. No. 254,320
Int. Cl.[6] B65G *25/00*
U.S. Cl. 198—750 30 Claims



5. A dual drive conveyor system with vibration control for adjusting the application of vibratory force to the material-conveying member without changing the direction of the resultant line of vibratory force generated, comprising:

(a) an elongated material-conveying member having a longitudinal centroidal axis;

(b) a vibration-generating means connected to said material-conveying member for transmitting vibratory forces to said material-conveying member substantially only in a direction parallel with said longitudinal centroidal axis of said material-conveying member;

(c) said vibration-generating means including a first drive motor being drivingly connected to a pair of master shafts which carry opposing eccentrically mounted weights that generate substantially equal opposing forces in a direction normal to said longitudinal centroidal axis of said material-conveying member, and a second drive motor being drivingly connected to a pair of slave shafts which carry opposing eccentrically mounted weights that generate substantially equal opposing forces in a direction normal to said longitudinal centroidal axis of said material-conveying member; and

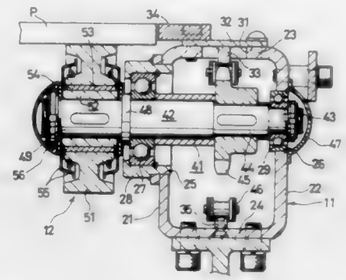
(d) vibration control mechanism being connected to at least said second drive motor, said vibration control mechanism including means for adjusting the speed of said second drive motor to effect a change in angular position of said eccentric weights carried by said pair of slave shafts relative to the angular position of said eccentric weights carried by said pair of master shafts, to thereby controllably vary the application of vibratory force imparted to said material-conveying member by said vibration-generating means without changing the direction of the resultant line of said vibratory force.

5,392,899

DRIVE WHEEL CONVEYOR

Takao Wakabayashi, Osaka, Japan, assignor to Nakanishi Metal Works Co., Ltd., Osaka, Japan

Filed Dec. 10, 1993, Ser. No. 164,706
Int. Cl.[6] B65G *13/02*
U.S. Cl. 198—780 4 Claims



1. A drive wheel conveyor comprising:

a tubular side frame extending in a transport direction and having an integrally formed inner side wall, outer side wall, top wall and bottom wall which extend continuously throughout substantially the entire length of said frame to form an enclosure structure,

a drive shaft supported at axially spaced locations by the inner and outer side walls so as to extend through said enclosure structure of the side frame transversely thereof and having an inward projection extending inward through the inner side wall,

a sprocket fixed to the drive shaft and positioned within said enclosure structure between the inner and outer side walls thereof,

an endless drive chain in engagement with the sprocket and disposed inside the enclosure structure defined by said side frame so as to be movable in circulation,

a transport wheel having a shaft bore with the inward projection fitted therein and drivable by frictional resistance between an inner peripheral surface of the wheel defining the shaft bore and the outer surface of the inward projection, said top wall being formed with a slit extending in the transport direction,

a top cover attached to an upper surface of the top wall to close the slit, and

a chain guide being attached to and depending from a lower surface of the top cover.

5,392,900

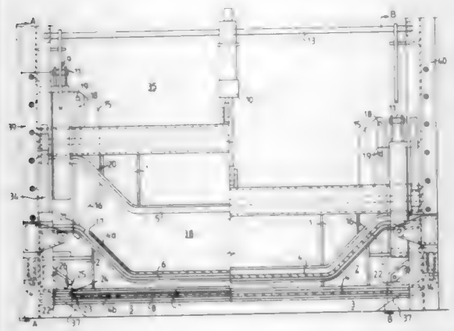
BULKHEAD DOOR ARRANGEMENT

Nils Sandwall, Gustavsberg, Sweden, assignor to Consilium CMH Babcock AB, Enkoping, Sweden

PCT No. PCT/SE92/00522, § 371 Date Dec. 28, 1993, § 102(e) Date Dec. 28, 1993, PCT Pub. No. WO93/01968, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 17, 1992, Ser. No. 170,214
Claims priority, application Sweden, Jul. 18, 1991, 9102195-6
Int. Cl.[6] B65G *21/08*
U.S. Cl. 198—860.4 10 Claims

1. A bulkhead door arrangement for sealingly closing an opening (**38**) which is located between two mutually neighbouring spaces and through which an upper part (**4***a*) and a lower part (**4***b*) of a conveyor belt (**4**) extend, said arrangement including a vertically moveable upper door part (**1**) provided with a sealing strip (**5**) on the side thereof facing the conveyor belt, a moveable lower door part (**2**) which is placed between

the two parts (**4***a*) and (**4***b*) of the conveyor belt (**4**) and separate sealing devices (**15, 22**) abut the side-edge surfaces (**7, 24**) of the conveyor belt in the closed position of said door parts; characterized in that the lower door part (**2**) is vertically move-



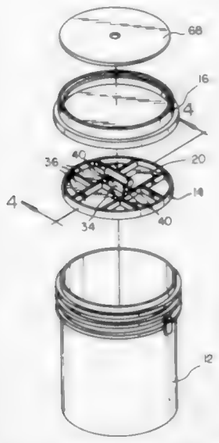
able; and in that the upper door part (**1**) in its closed position presses the conveyor belt (**4**) with a predetermined force against a sealing strip arranged in the bottom of the opening in such a manner that the upper door part (**1**) controls the vertical movement of the lower door part (**2**).

5,392,901

CONTAINER AND TRAY ASSEMBLY

Jeffrey W. Kuray, 1501 Monte Vista La., and Howard E. Craft, P.O. Box 21, 320 Clarkellen Rd., both of Gillette, Wyo. 82716

Filed Nov. 12, 1993, Ser. No. 151,124
Int. Cl.[6] **F42B** *39/00;* **B65D** *85/00*
U.S. Cl. 206—3 **3 Claims**



2. A container for carrying loaded and fired shotgun shells and accessories, the container comprising:

a cylindrical container having an internal surface and an external surface with an internal diameter of between 12 inches and 16 inches the container including an opened top and a closed bottom, three stiffening rings positioned about the periphery of the container adjacent the open top;

two diametrically opposed brackets, each bracket perpendicular to and integral with one of the stiffening rings of the cylindrical container with an aperture formed within each of the brackets;

a circular lip positioned upon the internal surface of the container intermediate the opened top and the closed bottom of the container;

a circular tray having an upper portion and a bottom portion, the tray having a centrally positioned oblong handle portion, the handle portion having a first end and a second end with a first set of apertures positioned at the first end and a second set of apertures positioned at the second end, the circular tray further including eight recesses formed within the upper portion of the tray, each of the recesses being adapted to receive boxes of standard shot gun loads, the bottom portion of the circular tray adapted to be received upon the circular lip;

first and second tray handle elements, each of the tray handle elements having a u-shaped body with a pair of side extension portions, each of the side extension portions being connected to one of the ends of the u-shaped body, the first tray handle element positioned through the first set of apertures of the handle portion, the second tray handle element positioned through the second set of apertures of the handle portion;

a hollow storage lid having an internal surface and an external surface, an opened upper portion and a closed lower portion, the closed lower portion adapted to engage the open top of the cylindrical container, a circular lip positioned upon the internal surface of the storage lid adjacent the open upper portion with a storage lid cover adapted to be positioned upon the circular lip of the storage lid, the lid cover serving to close the opened upper portion of the storage lid; and

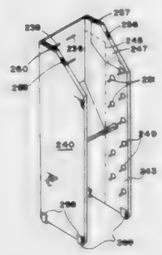
a wire container handle having two ends and a straight intermediate portion, each end of the wire container handle adapted to be positioned within the apertures of the diametrically opposed bracket.

5,392,902

MERCHANDISE DISPLAY DEVICE

Kirk A. Vlastakis, Clemmons, N.C., assignor to Alliance Display and Packaging Company, Winston-Salem, N.C.

Filed Dec. 6, 1993, Ser. No. 161,807
Int. Cl.[6] **B65D** *5/50;* **A47B** *47/06;* **A47F** *5/11*
U.S. Cl. 206—45 **20 Claims**



1. A merchandise display device comprising

a) a vertically disposed rear wall formed from corrugated board and having opposing left and right side edges and opposing top and bottom edges,

b) a pair of opposing, vertically disposed side wall assemblies formed from corrugated board, each side wall assembly having opposing front and rear edges and top and bottom edges with the rear edge of one side wall assembly being foldably connected to the left side edge of said rear wall and the rear edge of the other side wall assembly being foldably connected to the right side edge of said rear wall, each of the side wall assemblies being further characterized as comprising

i) an inner panel facing the display section of the device and having formed therein a plurality of vertically spaced, cooperating openings located adjacent to the front edge of the side wall assembly,

ii) an outer panel foldably connected to the inner panel along the front edge of the side wall assembly, said outer panel having a foldover panel foldably connected to its upper end with the foldover panel being designed for folding inwardly and downwardly so that the fold line between the outer panel and the foldably connected foldover panel forms at least a major portion of the top edge of the side wall assembly, and

iii) a spacer panel positioned between said inner and outer panels along a major portion of the rear edge of the side wall assembly and extending toward the front edge of the side wall assembly to a point that is intermediate the rear edge of the side wall assembly and said plurality of vertically spaced openings formed in the inner panel of the side wall assembly, and

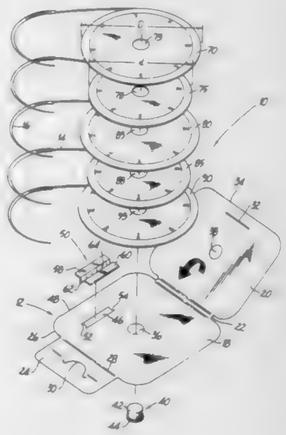
c) a plurality of vertically spaced shelves formed from corrugated board and positioned between the opposing side wall assemblies, each shelf having opposing left and right side edges and opposing front and rear edges with the rear edge of the shelf having foldably connected thereto a shelf attachment panel that is secured to said rear wall of the display device and the front edge of the shelf having foldably connected thereto a shelf support panel that is designed for attachment to a shelf support member, the shelf support member including means for engaging a pair of cooperating openings in the inner panels of the opposing side wall assemblies with said pair of cooperating openings engaged by the shelf support member being located at a lower elevation than the point of attachment for the rear edge of the shelf to impart a predetermined slope to the shelf sufficient to promote gravity feed of of displayed products to the front edge of the shelf and means associated with said shelf support member for retaining displayed products placed on the shelf.

5,392,903

PACKAGE FOR RETAINING SURGICAL SUTURES

Hans-Jurgen F. Sinn, Fairfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Jun. 11, 1992, Ser. No. 897,322
Int. Cl.[6] **A61B** *17/06*
U.S. Cl. 206—63.3 **19 Claims**



1. A package for retaining a plurality of surgical sutures comprising:

a housing;

a plurality of superimposed suture retainer reels disposed in said housing including first through fifth suture retainer reels of substantially equal diameter in stacked, aligned relation from first to fifth, each of said reels having a peripheral channel defined therein configured to accommodate a surgical suture, the peripheral channel in said first, third and fifth retainer reels having a radial depth that is greater than the radial depth of the peripheral channel defined in said second and fourth suture retainer reels; and

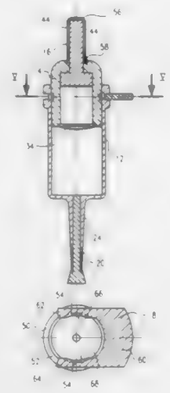
a supporting hub associated with said housing for maintaining said plurality of suture retainer reels in superimposed coaxial relationship.

5,392,904

MIXING CAPSULE FOR DENTAL COMPOSITIONS

Hans-Jörg Frick, Schaan, and Peter Kunkel, Triesen, both of Liechtenstein, assignors to Firma Ivoclar AG, Schaan, Liechtenstein

Filed May 12, 1994, Ser. No. 242,591
Claims priority, application Germany, May 12, 1993, 4315920
Int. Cl.[6] **B65D** *25/08*
U.S. Cl. 206—219 **19 Claims**



1. A capsule for a dental composition, said capsule comprising:

a mixing chamber for mixing a dental composition, said mixing chamber containing a first component of the dental composition and having a bottom with an outlet opening for the dental composition;

a piston positioned in an initial position at an upper end of said mixing chamber;

said piston having at least one recess and an inner chamber containing a second component of the dental composition, said inner chamber having a bottom in the form of a temporary seal;

a plunger positioned in an initial position at an upper end of said inner chamber of said piston, wherein upon depressing said plunger said temporary seal is broken to introduce said second component into the mixing chamber;

a manually removable U-shaped locking member having two legs and a connecting bar connecting said two legs, wherein said connecting bar is elongate in a direction pointing away from said legs to form a grip portion, said locking member engaging with said legs said at least one recess of said piston for locking said piston relative to said mixing chamber; and

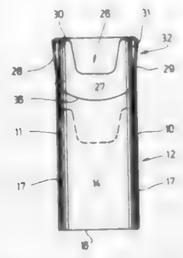
wherein upon removal of said locking member said piston is slidable toward said outlet opening for releasing the dental composition.

5,392,905

HINGE-LID PACK, ESPECIALLY FOR CIGARETTES

Heinz Focke, and Helmut Granz, both of Verden, Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Germany

Division of Ser. No. 854,698, Mar. 20, 1992, Pat. No. 5,307,925.
This application Mar. 15, 1994, Ser. No. 212,851
Claims priority, application Germany, Mar. 23, 1991, 4109702
The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.
Int. Cl.[6] B65D *85/10*
U.S. Cl. 206—266 8 Claims



1. A hinge-lid pack for accommodating a cigarette group, comprising:

a pack part (**12**) and a lid (**13**) which is pivotably attached thereto,

a) wherein the hinge-lid pack is a round-corner pack with rounded upright longitudinal edges (**10, 11**);

b) a collar (**26**) with a collar front panel (**27**) and collar side panels (**28, 29**), which collar (**26**) is arranged in the pack pan (**12**) and has a collar portion (**32**) that projects upwardly from the pack part (**12**),

c) so that said collar portion (**32**) is surrounded by said lid (**13**) when said lid is in a closed position; and

d) closing edges which are formed between said pack part (**12**) and said lid (**13**), which extend in an inclined manner to form an inclination in the region of pack side panels (**17**) and lid side panels (**23**), and which slope towards the pack front side,

e) wherein said lid (**13**) has a single-layer front panel (**20**) with a rounded tongue-like contour in a lower region thereof which faces towards the pack part (**12**), thus forming a rounded free front edge (**37**) of said lid (**13**).

5,392,906

EXPANDABLE STORAGE CONTAINER SYSTEM

Yoshihiko Taniyama, 9380 Old Southwick Pass, Fulton County, Alpharetta, Ga. 30202

Filed Feb. 4, 1993, Ser. No. 13,293
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—311 25 Claims

19. A system for assembling a storage container having multiple compartments, said system comprising: at least two adjacent combined elements, each combined element including a substantially rectangular member including a top planar base surface and a bottom planar cover surface and further comprising:

a base portion including;

side edges, a front edge, and a rear edge bordering said top planar surface,

a rear wall integral with said rear edge of said top base surface, wherein said rear wall extends upward from said rear edge,

first and second base side walls formed on said side edges of said top base surface extending upward and extending forward to front portions of said top base surface front edge, wherein rear portions of said side walls are coupled to opposite ends of said rear wall so as to form corners between said top base surface, said rear wall, and said side walls,

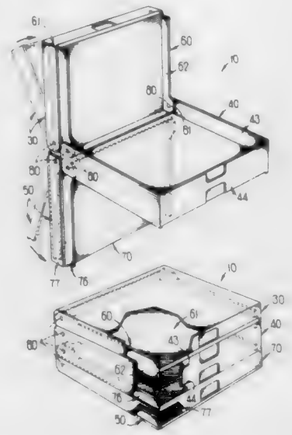
a first pair of hinge elements having a first configuration formed on a rear portion of said base sidewalls above said base surface, and

a cover portion including;

side edges, a front edge, and a rear edge bordering said bottom cover surface,

a front wall formed on said front edge of said bottom cover surface extending downward,

first and second cover side walls disposed on said side edges of said bottom cover surface extending from said front edge of said bottom cover surface to said rear edge of said bottom cover surface and downward,



a second pair of hinge elements having said second configuration formed on a rear portion of said cover sidewalls below said bottom cover surface,

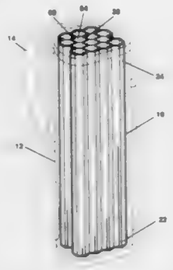
wherein hinge elements of said first and second configurations are complementary and together form a complete hinge such that storage container elements having said first hinge element configuration may be pivotally connected to storage container elements having said second hinge element configuration, and wherein base sidewalls of each storage container element fit within cover sidewalls of adjacent storage containers when said storage container elements are pivotally connected and closed.

5,392,907

GOLF CLUB SEPARATING INSERT

Andrew F. Blanchard, 909 Dimrock, Schertz, Tex. 78154, and Rodney R. Boerm, 301 S. Archer #3A, Beeville, Tex. 78102

Filed Nov. 22, 1993, Ser. No. 156,002
Int. Cl.[6] A63B *55/04*
U.S. Cl. 206—315.6 4 Claims



1. A golf club separator for a golf bag, comprising:

a unitized golf club separating insert for installation into a golf bag for receiving and retaining golf clubs;

said club separating insert comprising a plurality of individual six-sided cells, each of said cells being joined to at least one other cell at exterior surfaces of sides of said cells in face-to-face abutment, thereby forming the unitized club separating insert for accommodating a plurality of golf clubs, one each within said cells;

each of said individual cells having an upper end and a lower end and an aperture for providing access into each cell and that is located proximate said upper end of said cell for receiving a single golf club therein;

vertices located proximate at bottom of said aperture for engaging and limiting the lateral movement of a shaft of the golf club;

said sides of said cell extending continuously between said upper and lower ends of said cells thereby preventing club-to-club contact within said separating insert; and

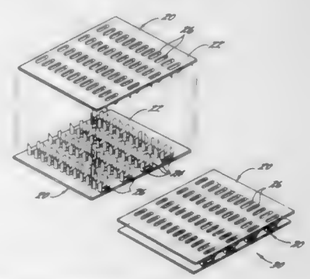
said cells being constructed from a material sufficiently rigid to be self supporting.

5,392,908

PACKAGE FOR SHIPPING, STORING, AND HANDLING TRUSS PLATES AND METHOD FOR FORMING SAME

William H. Black, Jr., Edenton, N.C., assignor to Tee-Lok Corporation, Edenton, N.C.

Filed Apr. 25, 1994, Ser. No. 232,899
Int. Cl.[6] B65D *85/46*
U.S. Cl. 206—321 31 Claims



1. A bundle of truss plates, comprising:

a plurality of truss plates, wherein each truss plate has a generally planar backing member and a plurality of impaling members extending outwardly from one side thereof, said truss plates being arranged in a plurality of cooperating pairs, wherein said backing members of each of said pair are disposed in a parallel overlying relationship, with the impaling members of each truss plate extending toward the backing member of the other truss plate of the pair; and

connecting means cooperating with said plurality of pairs of truss plates for effecting unitization thereof so that the backing member of one of said truss plates of each pair is in contacting parallel relationship with a backing member of another of said plurality of cooperating pairs.

5,392,909

RELEASABLE UNIVERSAL BLISTER PACKAGE FOR ELONGATED SURGICAL DEVICES

Robert C. Hackett, Tampa, Fla., assignor to Linvatec Corporation, Largo, Fla.

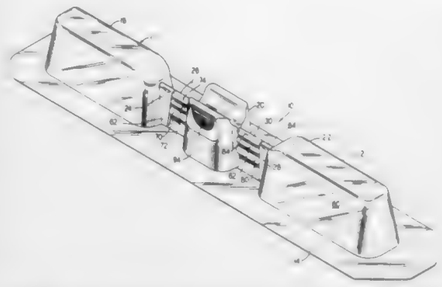
Filed Nov. 3, 1993, Ser. No. 147,184
Int. Cl.[6] B65D *83/00*
U.S. Cl. 206—363 16 Claims

15. A storage container for containing an elongated product having a first end and a second end comprising:

a housing having an elongated cavity provided with an enlarged space along the length of said cavity;

means for enclosing said cavity to seal said enlarged space from the ambient;

locking means integrally formed with said housing for releasably, frictionally and directly engaging a predetermined portion of said elongated product in order to maintain at least one of said first end or said second end cantilevered within said enlarged space;



a trigger means for being selectively actuated to release said locking means to thereby disengage an elongated device engaged by said locking means, said trigger means comprising:

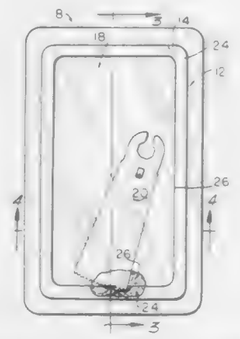
a pair of laterally spaced finger tabs integrally molded with said housing; and interconnecting means for joining said pair of finger tabs and said locking means to enable motion of said pair of tabs to disengage the locking means.

5,392,910

PACKAGE FOR A DEVICE HAVING A SHARP CUTTING EDGE

Bruce M. Bell, Simpsonville, and Steven W. Butler, Spartanburg, both of S.C., assignors to Transidyne General Corporation, Spartanburg, S.C.

Filed Jul. 21, 1994, Ser. No. 278,131
Int. Cl.[6] B65D *81/00*
U.S. Cl. 206—363 20 Claims



1. A package for a device having a sharp cutting edge, said package comprising a tray having a bottom surface, a top surface and side walls connected between said bottom surface and said top surface, said top surface including an upwardly facing central recessed portion for engaging a device having a sharp cutting edge, said tray defining a downwardly facing recessed area adjacent said central portion, protective means disposed within said downwardly facing recessed area and extending above and below said central portion for preventing a device having a sharp cutting edge from engaging said side walls, said protective means being formed of plastic sponge material which is soft, resilient and tear-resistant, support

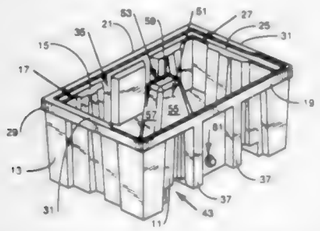
means for supporting a device having a sharp cutting edge, and retaining means secured to said bottom surface for retaining said protective means and support means in operative position.

5,392,911

TWO BARREL HAZARDOUS MATERIAL SPILL SKID

John G. Gillispie, and Donald J. Mitchell, both of Wellsburg, W. Va., assignors to Eagle Manufacturing Company, Wellsburg, W. Va.

Continuation-in-part of Ser. No. 72,268, Jun. 3, 1993, Pat. No. 5,307,931. This application Mar. 10, 1994, Ser. No. 208,942
The portion of the term of this patent subsequent to Dec. 3, 2011, has been disclaimed.
Int. Cl.[6] B65D *19/18*
U.S. Cl. 206—386 **10 Claims**



1. A two barrel hazardous material spill skid comprising:
a rectangular tray comprising a bottom wall, opposed side walls extending upwardly and outwardly from said bottom wall and opposed end walls, of a shorter length than said side walls, extending upwardly and outwardly from said bottom wall, at least a portion of each said side wall and end wall terminating as a horizontally outwardly extending flange having an upper surface, with a vertically upwardly extending rim disposed about the upper ends of said side and end walls;
a side locking lip on one of said side walls extending inwardly from the upper edge of said rim, and an end locking lip on each of said end walls extending inwardly from the upper edge of said rim, each said end locking lip extending from a location adjacent a central portion of the respective end wall to the side locking lip of said side wall;
a hollow center post extending upwardly from said bottom wall, said hollow center post having an upper surface in a horizontal plane formed by said upper surface of said horizontally extending flanges; and
a grate resting on said horizontally outwardly extending flanges of said side walls, on said horizontally outwardly extending flanges of said end walls, and the upper surface of said hollow center post of said bottom wall, to provide a support surface for barrels placed on said grate.

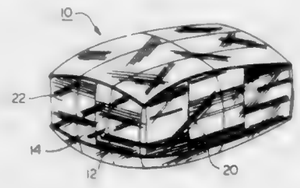
5,392,912

SELF-SUPPORTING TEXTILE PACKAGE

Michael R. Grubbs, King, N.C., assignor to Sara Lee Knit Products, Winston-Salem, N.C.

Filed Dec. 23, 1993, Ser. No. 173,681
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—451 **27 Claims**

1. A self-supporting textile package, said package comprising:
(a) a generally rectangular sheet forming a bottom layer having an upper and lower surface;
(b) a plurality of individual stacks of loose cut fabric pieces placed on the upper surface of said generally rectangular sheet; and
(c) plastic film surrounding both said generally rectangular sheet and said plurality of stacks of loose cut fabric pieces, wherein said plastic film is wrapped about a first horizontal axis parallel to said generally rectangular sheet,



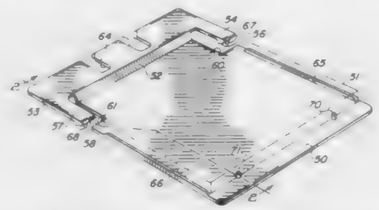
thereby forming a stable, self-supporting package suitable for shipment.

5,392,913

STORAGE HOLDER DEVICE

William Merrick, N606 Wishing Well Rd., Ft. Atkinson, Wis. 53538

Filed Jul. 19, 1993, Ser. No. 89,484
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—454 **16 Claims**



1. A storage holder for storing relatively thin, flat objects including in combination:
a main rigid body member having a generally rectangular configuration with a top, bottom, first and second sides, and front and rear faces, with the distances between the top and bottom and between the first and second sides selected to be greater than the corresponding dimensions of an object to be stored in said storage holder;
first and second resilient spaced-apart object holding fingers attached to said main body member at said first and second sides thereof, respectively, and spaced from the front face of said main body member by a distance which is less than the thickness of an object to be stored in said storage holder, and extending over said front face at said first and second sides only thereof to resiliently engage an object stored in said main body member to press said object against said front face of said body member; said first and second resilient fingers each having guide pins on outer edges thereof aligned with said first and second guide members and extending toward said front face of said main body member for engaging the opposite sides of an object stored in said storage holder;
a projection at the bottom of said main body member extending substantially perpendicularly outwardly from the front face thereof to support an object stored in said storage holder, said projection comprising a shelf extending across the bottom of said main body member between said first and second sides thereof; and
first and second guide members on said first and second sides of said main body member for engaging the corresponding sides of an object stored in said storage holder.

14. A storage holder for storing relatively thin, flat objects including in combination:
a main rigid body member made of plastic having a generally rectangular configuration with a top, bottom, first and second sides, and front and rear faces, with the distances between the top and bottom and between the first and

second sides selected to be greater than the corresponding dimensions of an object to be stored in said storage holder, said main body member having a space adjacent the top thereof located above an object stored therein for facilitating labeling of said storage holder corresponding to a particular object stored therein;
first and second resilient spaced-apart object holding fingers integrally formed with said main body member from a single piece of material and attached to said main body member at said first and second sides thereof, respectively, and spaced from the front face at said first and second sides only thereof to resiliently engage an object stored in said main body member to press said object into engagement with said front face of said body member;
a projection at the bottom of said main body member extending substantially perpendicularly outwardly from the front face thereof to support an object stored in said storage holder;
first and second guide members on said first and second sides of said main body member for engaging the corresponding sides of an object stored in said storage holder; and
mounting means comprising a pivot pin extending outwardly from each side of said main body member and attached adjacent the bottom of said main body portion for pivotally mounting said storage holder in a container.

15. A storage holder for storing relatively thin, flat objects including in combination:
a main rigid body member having a generally rectangular configuration with a top, bottom, first and second sides, and front and rear faces, with the distances between the top and bottom and between the first and second sides selected to be greater than the corresponding dimensions of an object to be stored in said storage holder;
first and second resilient spaced-apart object holding fingers attached to said main body member at said first and second sides thereof, respectively, and spaced from the front face of said main body member by a distance which is less than the thickness of an object to be stored in said storage holder, and extending over said front face at said first and second sides only thereof to resiliently engage an object stored in said main body member to press said object against said front face of said body member;
a projection at the bottom of said main body member extending substantially perpendicularly outwardly from the front face thereof to support an object stored in said storage holder;
first and second guide members on said first and second sides of said main body member for engaging the corresponding sides of an object stored in said storage holder; and
mounting means comprising a pivot pin extending outwardly from each side of said main body member and attached adjacent the bottom of said main body portion for pivotally mounting said storage holder in a container.

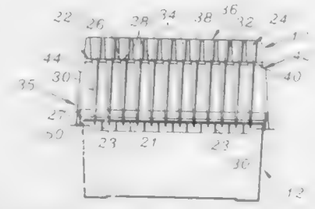
16. A storage holder for storing relatively thin, flat objects including in combination:
a main rigid body member having a generally rectangular configuration with a top, bottom, first and second sides, and front and rear faces, with the distances between the top and bottom and between the first and second sides selected to be greater than the corresponding dimensions of an object to be stored in said storage holder;
first and second resilient spaced-apart object holding fingers attached to said main body member at said first and second sides thereof, respectively, and spaced from the front face of said main body member by a distance which is less than the thickness of an object to be stored in said storage holder, and extending over said front face at said first and second sides only thereof to resiliently engage an object stored in said main body member to press said object against said front face of said body member;
a projection at the bottom of said main body member extending substantially perpendicularly outwardly from the front face thereof to support an object stored in said storage holder;
first and second guide members on said first and second sides of said main body member for engaging the corresponding sides of an object stored in said storage holder; and
a tab projection extending outwardly from said first side of said main body member near the top thereof for facilitating manipulation of said storage holder.

5,392,914

REFILL PACK FOR PIPETTE TIP RACKS

David J. Lemieux, Middleton, Mass.; Paul K. Chadwick, San Francisco, Calif.; Christopher Kelly, Larkspur, Calif.; James S. Petrek, Danville, Calif.; Kenneth Rainin, Piedmont, Calif.; Haakon T. Magnussen, Jr., Orinda, Calif., and William D. Homberg, Oakland, Calif., assignors to Rainin Instrument Co., Inc., Emeryville, Calif.

Filed Sep. 21, 1993, Ser. No. 124,966
Int. Cl.[6] B65D *85/30, 21/00;* **B01L** *3/02*
U.S. Cl. 206—499 **22 Claims**



1. For use with an empty reusable pipette tip rack including side support members extending vertically from a base support surface for the rack and supporting a rigid horizontally extending organizing tray having an array of holes therethrough for vertically receiving and horizontally positioning an array of pipette tips within the rack, a refill pack comprising:
an array of pipette tips with distal end portions and proximal end portions;
hand-gripable and moveable positioning and guide means of light weight, low mass material for receiving and horizontally supporting the array of pipette tips and including a guide having an open bottom for centering the array of pipette tips over and guiding the array of pipette tips into the empty pipette tip rack with the distal end portions of the pipette tips vertically positioned in and through the array of holes in the organizing tray; and
releasable means (i) for releasably securing the array of pipette tips within the positioning and guide means and (ii) for actuation by a user to release the array of pipette tips from the positioning and guide means downward through the open bottom of the guide into the holes in the organizing tray when the positioning and guide means is over and on the empty pipette tip rack to effect a refilling of the empty pipette tip rack.

5,392,915

CRATE APPARATUS WITH ADJUSTABLE LID

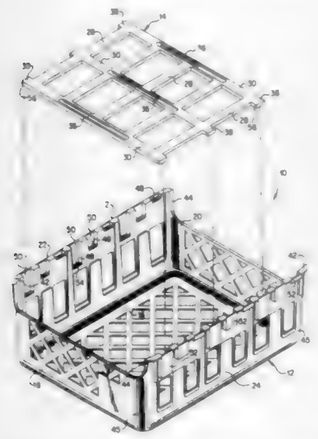
Jonathan Kalin, Manhattan Beach, Calif., assignor to Rehrig-Pacific Company, Inc., Los Angeles, Calif.

Filed Sep. 3, 1993, Ser. No. 115,830
Int. Cl.[6] B65D *21/00*
U.S. Cl. 206—503 **32 Claims**

1. A stackable/nestable crate apparatus, comprising:
a container body including a bottom wall and a plurality of generally rectangularly disposed front, back and side walls extending upwardly from said bottom wall to define an open
means forming a lid operative for stackedly supporting a similarly formed container body thereon adapted to ex-

tend across the open top of said container body in spaced, substantially parallel relation to said bottom wall; and

means for selectively mounting said lid on said container body at a plurality of vertically spaced levels with respect to said container body bottom wall, said mounting means comprising a plurality of sets of seats formed in said upstanding walls, each of said sets of seats being adapted to mount said lid in an attitude substantially parallel to said



bottom wall and each being disposed at a different level with respect thereto;

wherein said lid includes a lid body and means disposed about the periphery of said lid body for selective mounted engagement in the seats of the respective sets; and

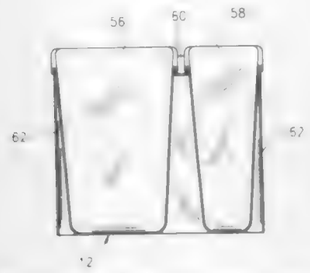
wherein each of said seats is defined by a shoulder disposed on the inwardly facing surface of said upstanding walls and adapted to receive said engagement means.

5,392,916

STACKABLE COMPARTMENTED TRASH RECEPTACLE

James H. Paulison, 9535 Tomahawk Blvd., Omaha, Nebr. 68134

Division of Ser. No. 576,855, Sep. 4, 1990, Pat. No. 5,184,744.
This application Feb. 9, 1993, Ser. No. 15,478
Int. Cl.[6] B65F *1/06*
U.S. Cl. 206—518 **3 Claims**



1. A multi-compartment trash receptacle comprising,

first and second spaced apart material receiving compartments,

each compartment including front, back, and opposite side walls and a bottom connected to said side walls,

each compartment further comprising a trash bag retaining lip extending outwardly and downwardly from said front, back and opposite side walls adjacent a top edge of each compartment,

a peripheral skirt operatively connected to both compartments at a position adjacent said top edges thereof and extended downwardly therefrom substantially to the level of said bottom for connecting said first and second compartments giving a front view appearance of a unitary structure, and

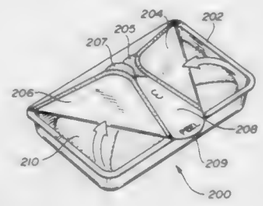
said skirt being spaced from said front, back and opposite walls of said compartments so as to accommodate insertion of an open top of a second similarly configured trash receptacle therebetween, so that a plurality of said trash receptacles can be stacked in nested relation for storage and transport.

5,392,917

EASY OPEN 1-2-3 INSTRUMENTATION PACKAGE

Marvin Alpern, Glen Ridge; Teresa M. Simons, Piscataway, both of N.J.; Robert Cerwin, Pipersville, Pa.; Robert J. Kalinski, Milford, N.J., and Michael D. O'Toole, Suffern, N.Y., assignors to Ethicon, Inc., Somerville, N.J.

Filed Aug. 3, 1993, Ser. No. 101,481
Int. Cl.[6] B65D *1/34*
U.S. Cl. 206—570 **7 Claims**



1. A surgical package comprising:

a tray having at least one surgical instrument containing portion and an opening in said surgical instrument containing portion defining the outer periphery of said tray, said opening generally quadrilateral in shape; and

a unitary triple folded lid adhesively attached to said opening, said lid having three portions and a pair of score lines about which two portions of said lid may be folded onto a third portion of said lid to thereby create a triple fold, and said lid having at least two corner pull tabs located on at least two corners defining a side of said quadrilateral shaped opening in said tray and at least one central pull tab located between said two pull tabs on said defined side and wherein said lid is attached to said opening exclusively on the periphery of said opening.

5,392,918

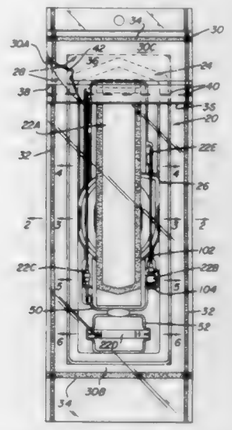
STERILE PACKAGING INCLUDING A TRAY AND A HOLDER FOR A INTRAVASCULAR GUIDE-WIRE AND A VASCULAR PUNCTURE CLOSURE SYSTEM

Howard J. Harrison, West Chester, Pa., assignor to Kensey Nash Corporation, Exton, Pa.

Filed Oct. 4, 1993, Ser. No. 131,846
Int. Cl.[6] B65D *71/00*
U.S. Cl. 206—571 **16 Claims**

1. In combination a sterile holder and an elongated, flexible medical device, said device having a small cross sectional diameter, said holder holding said device therein in a coiled configuration and comprising an upper section and a lower section, each of said sections being generally planar and having an arcuate recess therein, said sections being secured together with the recess of one of said sections being disposed within the recess of the other of said sections to form a continuous annular raceway between said sections, said raceway having arcuate wall portions spaced apart from each other and an access port in communication with the ambient surroundings

and being larger in diameter than the diameter of said device to enable said device to be introduced through said access port



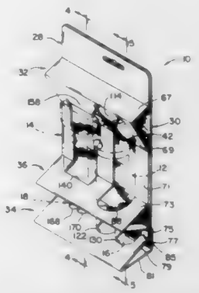
and into said annular raceway, whereupon said arcuate wall portions guide said device to coil up within said raceway.

5,392,919

CAPTURE DISPLAY PACKAGE

Phillip L. Passamoni, Green Bay, Wis., assignor to Green Bay Packaging, Inc., Green Bay, Wis.

Filed Jul. 13, 1993, Ser. No. 91,588
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—576 **6 Claims**



1. A package for an elongated object defining spaced first and second ends, comprising:

a rear panel against which the object is located;

a front panel secured to the rear panel;

a first outwardly extending V-shaped rib formed in the front panel by a pair of walls with a fold line therebetween, the first rib having an opening for receiving the first end of the object;

a second outwardly extending V-shaped rib formed in the front panel by a pair of walls with a fold line therebetween, the second rib having an opening for receiving the second end of the object;

wherein the first and second ribs are arranged such that at least a portion of the object between its first and second ends is exposed therebetween and wherein the openings formed in the first and second ribs are formed in facing walls of the first and second ribs such that the edges of the first and second ribs adjacent each opening engage the object adjacent its first and second ends, respectively;

a third outwardly extending V-shaped rib formed in the front panel, the third V-shaped rib being formed by a pair of walls with a fold line therebetween; and

wherein the rear panel functions to retain the object adjacent its first and second ends in engagement with the first and second ribs respectively.

6. A package for an elongated object defining spaced first and second ends, comprising:

a rear panel against which the object is located;

a front panel secured to the rear panel;

a first outwardly extending rib formed in the front panel and having an opening for receiving the first end of the object, wherein the opening is formed such that at least a portion of the first rib engages the object adjacent its first end;

a second outwardly extending rib formed in the front panel and having an opening for receiving the second end of the object, wherein the opening in the second rib is formed such that at least a portion of the second rib engages the object adjacent its second end;

wherein the first and second ribs are arranged such that at least a portion of the object between its first and second ends is exposed therebetween;

wherein the rear panel functions to retain the object adjacent its first and second ends in engagement with the first and second ribs respectively;

wherein the first and second ribs are V-shaped, with each rib being formed by a pair of walls with a fold line therebetween; and

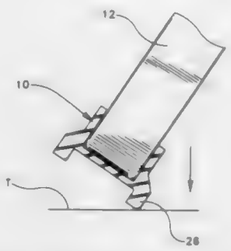
wherein the first rib is defined by an inner wall and an outer wall, and wherein the first end of the object includes a recess, and wherein the opening formed in the first rib comprises an opening formed in the inner wall of the first rib, the opening being formed such that a portion of the inner wall of the first rib defines a cut-out tab, the tab being engaged with the recess in the first end of the object to assist in retaining the object in engagement with the first rib.

5,392,920

IMPACT PROTECTOR FOR FRAGILE ARTICLE

Richard Prete, 3 University Pl., Lake Success, N.Y. 11020

Filed Feb. 10, 1994, Ser. No. 194,718
Int. Cl.[6] B65D *81/08*
U.S. Cl. 206—586 **14 Claims**



1. An impact protector for securement to an edge of a fragile article, comprising:

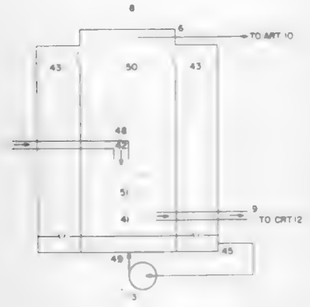
a generally resilient member having a pair of opposing side walls and a bottom wall extending therebetween, said walls defining an article-receiving groove sized to accommodate said edge of said article, said member further including a pair of opposing support legs attached thereto and having support surfaces located thereon which prevent said walls from directly striking a ground plane when said member is dropped thereon.

5,392,921

PROCESS AND APPARATUS FOR PROCESSING RESINS

Alfred Stengel, III, Richmond, Va., assignor to AKS, Incorporated

Division of Ser. No. 864,651, Apr. 7, 1992, Pat. No. 5,297,683.
This application Feb. 23, 1994, Ser. No. 200,425
Int. Cl.[6] B03B *7/00*
U.S. Cl. 209—17 21 Claims



1. An apparatus for separating a mixture of cation and anion exchange resins comprising:

a) a separator column including a resin entry, a carrier fluid entry, an upper region and a lower region;

b) means for introducing said resin mixture at said resin entry into said separator column;

c) an outlet for removing separated cation resin at said lower region of said separator column;

d) an outlet for removing separated anion resin at said upper region of said separator column,

wherein a separation zone is located between the cation resin outlet and the anion resin outlet, and

e) means for providing carrier fluid with at least essentially laminar flow upon entry into the separator column, wherein the separator column is such that said carrier fluid maintains said at least essentially laminar flow in the separation zone between the cation resin outlet and anion resin outlet of said separator column,

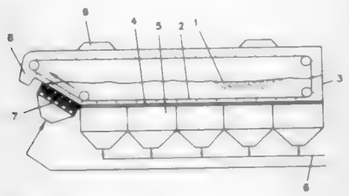
wherein said separation zone does not contain baffles, orifices, or flanges which create turbulence or dead-zones in said separation zone, and serve to destroy said at least essentially laminar flow.

5,392,922

HIGH CAPACITY DRY SEPARATION APPARATUS WITH AIR-HEAVY MEDIUM FLUIDIZED BED

Qingru Chen, Xuzhou, China, assignor to China University of Mining and Technology, Xuzhou, China

Filed Oct. 12, 1993, Ser. No. 134,377
Claims priority, application China, Oct. 16, 1992, 92111310.2
Int. Cl.[6] B03B *4/00*
U.S. Cl. 209—20 6 Claims



1. A high capacity dry separation apparatus with air-heavy medium fluidized bed, the apparatus comprising a separation chamber (3) with fluidized bed, an air distributor (4), an air chamber (5), a pipeline (6), a scraper conveyer (2) in the separation chamber (3), a sink discharge outlet (8) at one lateral side of the separation chamber (3), a dedusting outlet (9) at the top of the separation chamber (3), an up-floating materials discharge outlet (11) and a feed inlet (12), wherein:

(a): the feed inlet (12) and the up-floating materials outlet (11) are arranged on two opposite sides of the separation chamber (3) while a discharge wheel (10) is provided at the up-floating materials discharge outlet (11) in the separation chamber (3);

(b): the scraper conveyer (2) comprises two columns of scrapers moving side by side; the upper part of the scraper conveyer (2) is exposed above the fluidized bed (1) in the separation chamber (3) and the lower part is immersed at its bottom; the scraper conveyer (2) moves in a direction perpendicular to the moving direction of the up-floating materials;

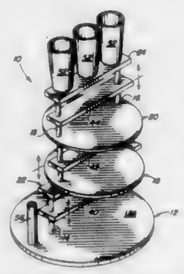
(c): at one lateral side of the separation chamber (3), an inner circulator (7) for heavy medium is provided with a certain inclination, the inner circulator comprises an air inlet tube (13), a cone-shaped buffer chamber (14), a sieve layer (15), a multilayer fabric (16) and a sintered metal plate (17).

5,392,923

DIVERSE MULTIPLE ARTICLE ORGANIZING APPARATUS

Geoffrey J. Hassard, and Irene G. Hassard, both of 74 Pleasant St., Stoneham, Mass. 02180

Filed Jun. 11, 1993, Ser. No. 75,899
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—13 18 Claims



1. A multiple article organizing apparatus, comprising:

(a) a bottom base for resting on a support surface;

(b) a pair of elongated lower support poles secured upright on said bottom base;

(c) a pair of elongated upper support poles;

(d) a pair of lower and upper vertically-spaced shelves secured to said pair of upper support poles;

(e) means secured on upper ends of said lower support poles for supporting said upper support poles and said pair of lower and upper shelves therewith above said lower support poles;

(f) a releasable lower hold-down rail with means slidably mounting said lower hold-down rail to said pair of lower support poles, said lower hold-down rail being disposed between said bottom base and said upper means and adapted to overlie said bottom base and articles resting thereon, said lower hold-down rail being slidably movable in non-rotatable rectilinear fashion along said pair of lower support poles toward and away from said bottom base and said upper means and toward and away from articles resting on said bottom base so as to permit resting of said lower hold-down rail upon the articles with sufficient weight to retain the articles on said bottom base and alternatively to permit lifting of said lower hold-down rail through a sufficient distance upwardly away from the articles and toward said upper means to release and permit removal of the articles from said bottom base; and

(g) a releasable upper hold-down rail with means slidably mounting said upper hold-down rail to said pair of upper support poles, said upper hold-down rail being disposed between said lower shelf and said upper shelf and adapted to overlie said lower shelf and articles resting thereon, said upper hold-down rail being slidably movable in non-rotatable rectilinear fashion along said pair of upper support poles toward and away from said lower and upper shelves and toward and away from articles resting on said lower shelf so as to permit resting of said upper hold-down rail upon the articles with sufficient weight to retain the article on said lower shelf and alternatively to permit lifting of said upper hold-down rail through a sufficient distance upwardly away from the articles and toward said upper shelf to release and permit removal of the articles from said lower shelf.

5,392,924

SAND WASHING

David H. Hume, Parkville, Australia, assignor to Little River Pastoral Co. Pty. Ltd., Victoria, Australia

Filed Jul. 26, 1993, Ser. No. 97,561
Claims priority, application Australia, Jul. 27, 1992, PL3776
Int. Cl.[6] B03D *1/02*
U.S. Cl. 209—161 6 Claims



1. A plant including a vessel having a bottom adapted to hold a column of liquid and sand/gravel and clay material to be washed, means for supplying air and liquid under pressure to the vessel adjacent the bottom of the vessel, the means including distribution means for receiving an air/liquid mixture, the distribution means acting to substantially evenly distribute the air throughout the column of liquid upon entry into the vessel through the distribution means, the distribution means being comprised of a permeable material forming a false floor in the vessel, the permeable material being constructed to allow travel therethrough of air and liquid into the column of liquid and sand/gravel and clay material to form air bubbles therein, the permeability of the permeable material being such that the diameter of the air bubbles in the air liquid mix is kept small thereby resulting in relatively even distribution of the air bubbles in the air/liquid mix as it enters and travels through the vessel.

5,392,925

SHALE SHAKER AND SCREEN

Kenneth W. Seyffert, Houston, Tex., assignor to Environmental Procedures, Inc., Houston, Tex.

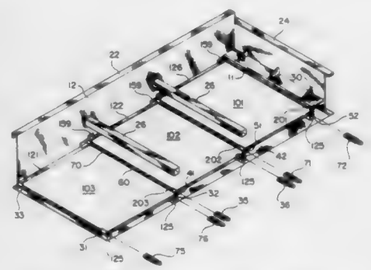
Filed Aug. 12, 1993, Ser. No. 105,696
Int. Cl.[6] B07B *1/49*
U.S. Cl. 209—405 11 Claims

1. An adjustable shale shaker screen support for sealingly forcing a screen against another member, the support comprising

a first wedge member having a top surface, a lower inclined surface and an open trough therein open to the top of the first wedge member,

a second wedge member having a bottom surface and having an upper inclined surface corresponding to and for co-action with the lower inclined surface of the first wedge member,

a bolt extending on one side from the second wedge member and on the other side into the open trough of the first wedge member, the bolt having a bolt body and a bolt end at an angle to the bolt body, the bolt end movably disposed in and held in a bolt end channel in the first wedge member,



a nut threadedly engaging the bolt and rotatable on the bolt, and

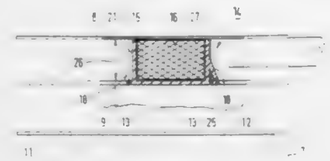
rotation of the nut effecting movement of the lower inclined surface of the first wedge member on and with respect to the upper inclined surface of the second wedge member thereby changing the distance between the top surface of the first wedge member and the bottom surface of the second wedge member, the bolt movable vertically with respect to the open trough as the bolt end rotates in the bolt end channel.

5,392,926

GARBAGE CONTAINER, IN PARTICULAR, A LARGE-VOLUME GARBAGE CONTAINER WITH AN IDENTIFICATION UNIT

Gerhard Schäfer, Neunkirchen-Salchendorf, Germany, assignor to Fritz Schäfer Gesellschaft mit beschränkter Haftüng, Neunkirchen, Germany

Filed Mar. 25, 1993, Ser. No. 36,794
Claims priority, application Germany, Mar. 28, 1992, 9204254[U]
Int. Cl.[6] B07C *5/00*
U.S. Cl. 209—546 11 Claims



1. A garbage container, comprising a collar-like hollow profile secured to said garbage container and having a wall with an aperture formed therein; and an identification unit located in said hollow profile for cooperation with an identification system associated with an emptying device of a garbage collecting truck, said identification unit including a radially expandable case.

5,392,927

SORTING APPARATUS FOR CD, MICRO-CASSETTE AND VIDEO TAPE OR SIMILAR ARTICLE

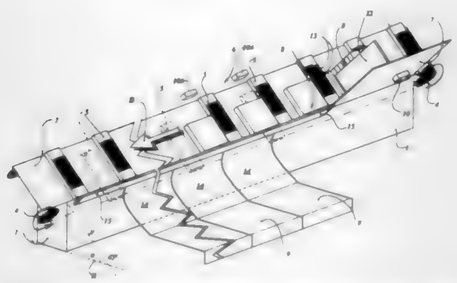
Aris P. Haverkamp Begemann, Heemstede, and Ernestus J. M. van Hattum, Delft, both of Netherlands, assignors to Promech Sorting Systems B.V., Netherlands

Continuation of Ser. No. 992,088, Dec. 17, 1992, abandoned. This application Mar. 11, 1994, Ser. No. 212,659

Claims priority, application Netherlands, Dec. 20, 1991, 9102147

Int. Cl.[6] B07C 5/00; B65G 59/06

U.S. Cl. 209—583 7 Claims



1. A device for selecting and distributing stackable articles from a stock, comprising:

at least one driven endless conveyor communicating with a holder for stocking said articles, said holder including a grid-like bottom comprising a plurality of rods extending in the travelling direction of said conveyor and spaced in the transverse direction;

said conveyor travelling along a path, said path being essentially horizontal and including an incline in a direction transverse to the direction of travel, at least the lower portion of said holder having a position perpendicular to and spaced from said path;

a plurality of discharge stations along said path for receiving said articles;

a plurality of pushing members mounted upon and spaced along said path for taking an article from said holder, advancing said article along said path, and delivering said article to said discharge station, said pushing members being active above said path, each of said pushing members extending transversely to the direction of travel and including a forward face and an upper surface and comprising a plurality of teeth disposed longitudinally along the upper surface thereof passing between said rods, said pushing member contacting said article at the forward face thereof when said teeth are passed between said rods;

a coding means for giving each article a destination code related to one of said discharge stations; and

means for reading said destination code and discharging said article to an appropriate discharge station;

optical scanning means located in said path of travel beyond said holder for the registration of coded information available upon a surface of article taken from the holder and advanced by a pushing member along said path.

5,392,928

INSPECTION AND SORTING OF CONTAINERS

George A. Nickey, Maumee; John K. Moore, Perrysburg, and Mark R. Tipping, Maumee, all of Ohio, assignors to Owens-Illinois Glass Container Inc., Toledo, Ohio

Filed Jul. 22, 1993, Ser. No. 95,459

Int. Cl.[6] B07C 5/00

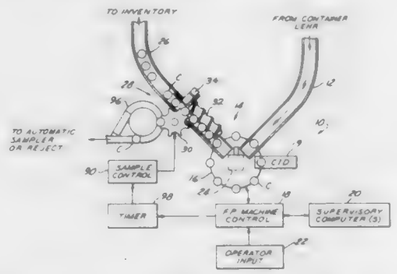
U.S. Cl. 209—643 9 Claims

1. A system for inspecting and sorting containers comprising:

first conveyor means for transporting containers in sequence along a predetermined path,

means for inspecting containers traveling in said path, identifying containers to be sorted from said path and providing an electrical signal indicative thereof,

a starwheel turret having circumferentially spaced pockets sized to receive the containers, means for rotating said turret about a fixed axis adjacent to said path downstream of said inspecting means, a vacuum body rotatable conjointly and coaxially with said starwheel turret, a plurality of resilient vacuum cups mounted in a circumferential array on said vacuum body within said pockets, a plurality of passage means in said vacuum body individually operatively coupled to said cups and opening at one end of said vacuum body, vacuum means coupled to said vacuum body for applying a vacuum to all of said passage means, a plurality of valve spools each disposed in an associated one of said passage means, each of said valve spools having a first enlargement within said passage means for sealingly engaging said passage means and a second enlargement disposed outside of said passage means, and a plurality of stop means carried by said vacuum body each externally adjacent to the open end of an associated one of



said passage means between said first and second enlargements on said spools and cooperating with said first and second enlargements to define a vacuum-blocking position of said valve spool when said first enlargement is in abutment with the associated said stop means for blocking application of vacuum to the associated cup and a vacuum-enabling position of said valve spool when said second enlargement is in abutment with said stop means for applying a vacuum to the associated cup and thereby holding a container within the associated starwheel pocket,

means disposed adjacent to said turret and responsive to an electronic control signal for engaging a valve spool and moving such spool from said vacuum-blocking position to said vacuum-enabling position, and

timing means responsive to said electrical signal from said inspecting means for applying said electronic control signal to said signal-responsive means after a time delay coordinated within distance and velocity of travel of containers along said path between said inspecting means and said turret.

5,392,929

METHOD AND APPARATUS FOR SORTING BY SIZE

John R. Breach, Chittenden Orchard, Staplehurst, Tonbridge, Kent TN12 OEX, England

PCT No. PCT/GB91/01639, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/05883, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 24, 1991, Ser. No. 30,125

Claims priority, application United Kingdom, Oct. 1, 1990, 9021353

Int. Cl.[6] B03B 5/00, 5/62

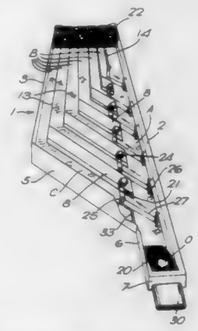
U.S. Cl. 209—659 8 Claims

6. A method of sorting different sizes of buoyant articles by size wherein the articles to be sorted float in the surface of a liquid, the larger articles having portions which are disposed at levels below the surface of the liquid deeper than portions of the smaller articles, all of the articles being made to float in the liquid surface along a main channel having a feed end and a discharge end spaced therefrom, said method including the steps of:

providing in said main channel first and second distinct, individually vertically adjustable, endless belt conveyors, each belt conveyor spaced from the other and oriented to convey a given sized article out of said main channel, said first belt conveyor located upstream in said main channel and being closer to said feed end of the main channel than said second belt conveyor, said first belt conveyor being located at a first predetermined depth in said main channel that is deeper than a second predetermined depth at which said second belt conveyor is located;

feeding the buoyant articles of different sizes into the main channel;

sorting the articles of a larger size by contacting the larger size articles against said upstream first belt conveyor positioned beneath the surface of the liquid at said first predetermined depth;



deflecting the larger size articles by the first belt conveyor to one side of the main channel and into a first secondary channel while still floating in the liquid surface;

floating the articles of a medium size and smaller size that do not encounter the first belt conveyor over the first belt conveyor to continue along the main channel;

sorting the articles of a said medium size by contacting the medium size articles against said second belt conveyor positioned beneath the surface of the liquid at said second predetermined depth which is less than said first predetermined depth;

deflecting the articles of said medium size articles by said belt conveyor into a second secondary channel while still floating in the liquid surface; and

floating the smaller articles which do not encounter the second conveyor over the second conveyor to continue along the main channel.

5,392,930

ADJUSTABLE BAR SCREEN

Richard D. Jones, Gresham, Oreg., assignor to Beloit Technologies, Inc., Wilmington, Del.

Division of Ser. No. 129,845, Sep. 30, 1993. This application May 26, 1994, Ser. No. 249,414

Int. Cl.[6] B07B 1/46

U.S. Cl. 209—674 4 Claims

1. A bar screen for screening particulate matter, comprising:

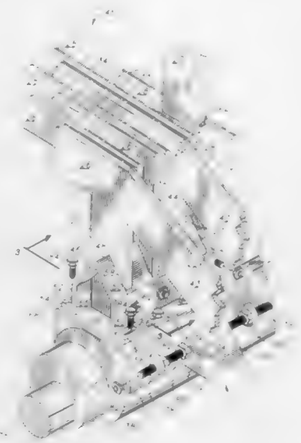
a first set of bars forming a first rack;

a second set of bars forming a second rack, wherein the bars of the first rack interleave with the bars of the second rack, the interleaved bars forming screening gaps. therebetween;

a leg extending downwardly from each bar in the first rack;

a clamping member which engages each leg;

an oscillating beam beneath the clamping member, the oscillating beam driving the first rack to oscillate in at least a vertical plane;



a positioning bracket fixed to the clamping member and adjustably engaged with the oscillating beam for positioning the clamping member with respect to the oscillating beam.

5,392,931

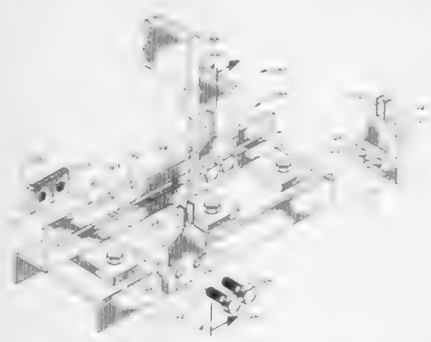
ADJUSTABLE BAR SCREEN

Richard D. Jones, Gresham; Joseph B. Bielagus, Tualatin, both of Oreg., and J. Darrell Lynn, Memphis, Tenn., assignors to Beloit Technologies, Inc., Wilmington, Del.

Division of Ser. No. 129,845, Sep. 30, 1993. This application May 25, 1994, Ser. No. 250,256

Int. Cl.[6] B07B 1/46

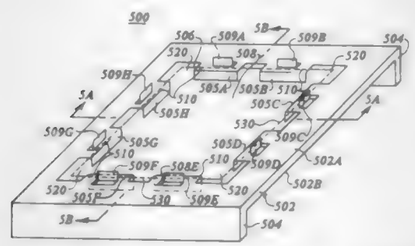
U.S. Cl. 209—674 3 Claims



2. In a screen apparatus for separating a particulate material such as wood chips based on material thickness, wherein the apparatus includes a plurality of parallel bars defining therebetween screen openings, and the bars are mounted for substantial vertical and horizontal movement, with adjacent bars being collectively mounted in first and second racks and moving in opposite directions, the improvement comprising:

a clamping plate having portions defining a keyway extending transverse to the screening bars, wherein the bars have legs, and each leg has a transverse protruding key thereon which engages the plate keyway, the engaged key and keyway portioning the bar and holding it against tilting.

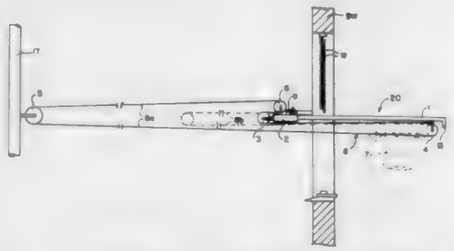
5,392,932
BOAT TRANSPORT FOR SUPORTING SEMICONDUCTOR DEVICE ASSEMBLIES
Sutee Vongfuangfoo, Sunnyvale, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.
Filed Dec. 24, 1992, Ser. No. 996,459
Int. Cl.[6] B65D *85/42*
U.S. Cl. 211—26 5 Claims



1. A boat transport in combination with a semiconductor device assembly having a package body including a surface and a plurality of pins that extend a selected distance in an array from the surface of the package body that has a thickness and a first dimension across the array of pins less than a second dimension across a peripheral portion of the package body, the boat transport comprising:
a planar platform including a top surface for supporting thereon the peripheral portion of the package body of the semiconductor device assembly;
a single cutout through the platform having two pairs of opposed sides for receiving within the cutout between the pairs of opposed sides the plurality of pins that extend in the array from the package body of the semiconductor device assembly;
downward guides formed integrally with the platform as tabs on each of the opposite sides of the cutout and extending downward from the top surface of the platform in substantially planar alignment on each of the opposite sides and at a distance between downward guides on opposed sides of the cutout which is greater than the first dimension and less than the second dimension; and
upward guides integrally formed with the platform as tabs near each of the opposed sides of the cutout extending upward from the top surface of the platform in substantially planar alignment near each of the opposed sides, and in plane parallel orientation with the downward guides on each of the corresponding opposed sides, and at a distance between upward guides on opposed sides of the cutout which is greater than the second dimension.

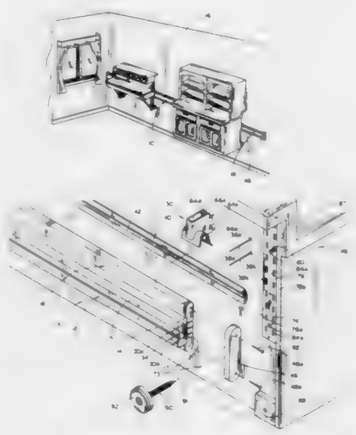
5,392,933
RETRACTABLE CLOTHES LINE
Patrick J. Crosbie, Naspeth Post Office, 69th St., Naspeth, N.Y. 11378
Filed Sep. 13, 1993, Ser. No. 119,752
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—119.05 7 Claims

1. Retractable clothesline device, comprising, in combination with outside anchoring means for the remote end thereof:
crossbar support means fixedly mounted horizontally across and outside the window of a dwelling;
sleeve support means adjustably mounted on said crossbar support means both for lateral positioning thereon as well as for angular positioning thereon, to align the retractable clothesline device with said outside anchoring means;
slide wand means rectangular in cross-section and slidingly retained in said sleeve support means for horizontal linear reciprocating motion thereof, the inner end of said slide wand to be retracted inside said window and to be extended outside said window manually;
multiple pulley means individually mounted for aligned rotation variously near said inner end of said slide wand, on said outside anchor means, on said sleeve support means and on the outer end of said slide wand: and
a continuous endless clothesline rope extending tautly around said multiple pulley means to form an outer primary loop, on which laundry may be hung, and a parallel inner auxiliary loop, said inner loop serving as a reservoir for a predetermined portion of said continuous clothesline, whereby, when said slide wand is retracted by pulling it through said opened window for safe convenient loading



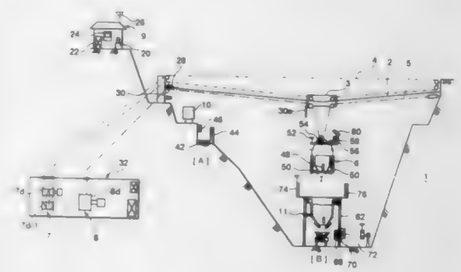
on, or unloading off, said clothesline of laundry, said primary loop being automatically elongated and said auxiliary loop being depleted thereby, whereas, when said slide wand is pushed to its external extended position, the retractable clothesline device is completely outside the window in position for clothes-drying and not-in-use storage, said primary loop is diminished, said predetermined portion thereof having been restored automatically to said auxiliary reservoir loop, said clothesline remaining at substantially the same tension throughout the manipulations of the retractable clothesline device.

5,392,934
APPARATUS AND METHOD FOR ADJUSTABLY SUPPORTING FURNISHINGS ON A WALL SURFACE
Larry G. Fox, 3529 S. 163rd St., Omaha, Nebr. 68130
Filed May 14, 1993, Ser. No. 62,114
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—94 12 Claims



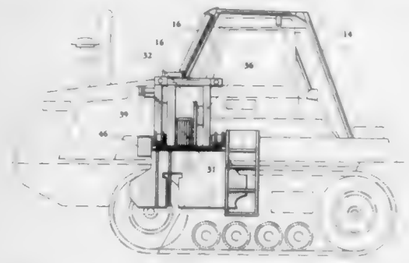
1. An apparatus for height adjustably supporting an object on a wall surface, said apparatus comprising:
a longitudinally extended support rail including a wall mount spacer section comprising a board having a generally rectangular cross-section, a center longitudinal axis, an outer side and an inner side, said inner and outer sides of said wall mount spacer section corresponding to opposite wider sides of said wall mount spacer section, said inner side adapted to be mounted adjacent a wall surface, and an outer support section having an outer side, an upper surface and a center longitudinal axis, said support section and said wall mount spacer section connected together such that said support section is spaced from a wall surface on which said wall mount spacer section is mounted, said center longitudinal axis of said outer support section aligned substantially parallel with said center longitudinal axis of said wall mount spacer section;
said upper surface of said outer support section spaced from said wall mount spacer section whereby a saddle-receiving upper surface is formed;
at least one object-supporting saddle bracket adapted to fit over and be supported by said saddle-receiving upper surface of said support section, said saddle bracket further comprising engagement means for engaging and supporting an object adjacent said outer side of said support section; and
receiving means for receiving and retaining said engagement means, said receiving means adapted to be mounted on an object for enabling an object to be supported by said apparatus, wherein said wall mount spacer section comprises a board having a generally rectangular cross-section and an outer side, said inner and outer sides of said wall mount spacer section corresponding to opposite wider sides of said wall mount spacer section.

5,392,935
CONTROL SYSTEM FOR CABLE CRANE
Keizo Kazama, Hirakata; Kiichiro Tanaka, Tokorozawa; Eiji Takahashi, Ikoma, and Michio Nakao, Yokohama, all of Japan, assignors to Obayashi Corporation, Osaka, Japan
Filed Aug. 13, 1993, Ser. No. 105,979
Claims priority, application Japan, Oct. 6, 1992, 4-267487; Oct. 6, 1992, 4-267488; Oct. 6, 1992, 4-267489; Oct. 6, 1992, 4-267490; Nov. 26, 1992, 4-317315
Int. Cl.[6] B66C *21/00*
U.S. Cl. 212—155 35 Claims



1. In a cable crane system including: a main cable stretched between two points; a transverse trolley traveling along said main cable; a traction cable for driving said trolley; a bucket hung below said trolley via a hanging cable; a transverse winch for driving said traction cable for reciprocally driving said trolley between a transportation start position and a transportation end position; a vertical winch for retracting and extracting said hanging cable for lifting said bucket up and down; and driving means for said transverse and vertical winches, a control system for controlling said cable crane system, said control system comprising:
means for detecting a weight of an object for transportation including said trolley and said bucket;
means for detecting magnitude and speed of transverse travel of said trolley;
means for detecting magnitude and speed of vertical travel of said bucket;
arithmetic means for deriving a predicted value of a magnitude of deflection of said main cable on the basis of a trace of said main cable preliminarily established as a numerical model corresponding to the overall weight loaded on said main cable, detected by said weight detecting means, a coordinate of a starting point and target destination point of said trolley, and magnitude of transverse travel of said trolley and magnitude of vertical travel of said bucket; and
means for controlling said driving means on the basis of results of arithmetic operation of said arithmetic means.

5,392,936
RUBBER TRACK PIPELAYER BOOM
James M. Solomon, Tulsa; Loyd J. Killgore, Council Hill, and George A. Lehman, Beggs, all of Okla., assignors to Sabre International, Inc., Tulsa, Okla.
Filed Jan. 26, 1994, Ser. No. 187,689
Int. Cl.[6] B66C *23/44*
U.S. Cl. 212—258 5 Claims



1. A pipe laying apparatus having:
a tractor having a front and a rear, an engine compartment, and a rubber drive track on each side of the tractor;
a driver's cab having a front left and front right mostly vertical corners;
a support frame having two front corners and mounted on said tractor and extending about said cab, said frame having an essentially vertical fairlead on each of the two front corners of said support frame in the proximity of and to the front of the front left and front right vertical corners of said cab;
a boom supported from said tractor frame by pivots;
a boom winch supported from said tractor, on the side opposite said boom;
a boom line extending from said boom winch in front of and in at least operational contact with said fairleads to said boom for raising and lowering the boom about said pivots;
a load line extending from a load winch supported by said tractor and over a pulley supported by said boom to raise and lower loads.

5,392,937
FLEX AND GRIP PANEL STRUCTURE FOR HOT-FILLABLE BLOW-MOLDED CONTAINER
Roger M. Prevot, Felton, Pa., and Frank E. Semersky, Toledo, Ohio, assignors to Graham Packaging Corporation, York, Pa.
Filed Sep. 3, 1993, Ser. No. 115,652
Int. Cl.[6] B65D *1/02, 23/00, 23/10*
U.S. Cl. 215—1 C 3 Claims

1. In a hot-fillable, blow-molded plastic container for containing a liquid filled initially in a hot state and subsequently sealed, said container including a bottom portion having a substantially circular cross section, a shoulder portion having a cross section corresponding substantially to said cross section of said bottom portion, said bottom and shoulder portions

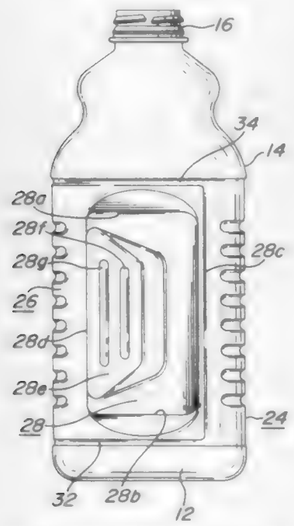
being aligned vertically, a closable neck portion on said shoulder portion permitting filling and discharge of said liquid, and a body portion connecting said bottom portion and said shoulder portion, the improvement wherein said body portion comprises:

an arcuate front label panel extending between said bottom and shoulder portions;

an arcuate rear palm panel located diametrically opposite said front label panel and extending between said bottom and shoulder portions; and

a pair of flex panels set inwardly from and extending between said shoulder and bottom portions on opposite sides of said container, said flex panels extending between said front label and rear palm panels and each having formed therein a rigid grip panel for receiving a person's thumb and fingers on opposite sides of said container when said palm panel is engaged by the person's palm, said grip panels tapering into said container from said rear palm panel, and being formed to resist inverting;

each of said flex panels having a substantially rectangular elevational configuration with its lengthwise dimension being disposed vertically;



each flex panel having adjacent said front label panel and said rear palm panel means forming vertical stiffening ribs extending lengthwise of each flex panel between said bottom and shoulder portions;

each flex panel having upper and lower horizontal chordal stiffening means extending horizontally between said front and rear panels and said vertical stiffening ribs;

said vertical stiffening ribs and said upper and lower horizontal chordal stiffening means defining therewithin the rectangular configuration of each flex panel, and each grip structure being of lesser extent than each flex panel; and

each flex panel, as manufactured, having a slightly outwardly bowed convex configuration in the region within said vertical stiffening ribs and said upper and lower horizontal chordal stiffening means so that, when filled, closed, and cooled, said flex panels can flex inwardly without effecting unwanted distortion of said container;

whereby said container portions, panels, ribs and means cooperate to maintain the structural integrity of the container after being formed, filled, cooled and later opened.

5,392,938

SNAP HINGE CLOSURE WITH SECURITY RING

Werner F. Dubach, Maur, Switzerland, assignor to Createchnic Ag, Switzerland

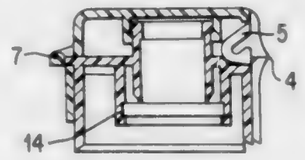
PCT No. PCT/CH92/00113, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO93/00271, PCT Pub. Date Jul. 1, 1993

PCT Filed Jun. 11, 1992, Ser. No. 971,965

Claims priority, application Switzerland, Jun. 21, 1991, 1842/91

Int. Cl.[6] B65D *51/18*

U.S. Cl. 215—254 **9 Claims**



1. In a one-piece plastic snap hinge closure having a lower closure part (**1**) with a jacket wall (**11**) and an upper closure part (**2**) connected to the lower closure part (**1**) with a film hinge (**4**), wherein a security band (**3**) is injection-molded in one piece to the closure, the security band (**3**) having at least one recess (**27**) which is respectively engaged by a protruding bar (**17**) of the closure, so that the lower closure part (**1**) and the upper closure part (**2**) are locked together in a form-fitting manner, the improvement comprising: the security band (**3**) being injection-molded to the upper closure part (**2**) so that in a security position the security band (**3**) at least partially covers the jacket wall (**11**) of the lower closure part (**1**), the protruding bar (**17**) which is in engagement with the security band (**3**) in the security position being injection-molded to the lower closure part (**1**), the upper closure part (**2**) having a tab (**7**) which extends beyond an outer surface of the security band (**3**), and the tab (**7**) having a form of a U-shaped hoop forming a free space (**23**), between an outer wall (**21**) of the upper closure part (**2**) and an inner tab surface of the tab (**7**), of which the protruding bar (**17**) rests in the security position.

5,392,939

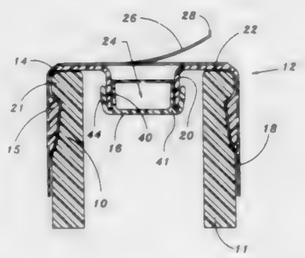
VALVED BOTTLE CAP

Walter E. Hidding, 367A Woodrock Rd.; Douglas J. Hidding, 801 E. Lake Shore Dr., both of Barrington, Ill. 60010, and Robert D. Hidding, 925 Harper Dr., Algonquin, Ill. 60102

Filed Oct. 1, 1992, Ser. No. 955,004

Int. Cl.[6] B65D *51/18*

U.S. Cl. 215—265 **12 Claims**



1. A cap for sealing a container which is part of a dispensing system having a probe, said cap comprising an outer cap and an inner cap, said outer cap comprising a cylindrical skirt with container gripping means on an inside surface of said skirt for engaging a corresponding formation on an outside surface of a neck of said container, a tube generally cylindrical in shape and generally parallel to and concentric with said skirt, said tube and said skirt being joined by an annular base, said annular base surrounding an axial passageway extending through said base and through said tube, said inner cap comprising a guide sleeve and a sealing sleeve, said guide sleeve fitting within said tube, said sealing sleeve fitting over and sealing against an outside surface of said tube, said guide sleeve and said sealing sleeve being generally coaxial cylindrical formations joined by an inner cap base, said sealing sleeve and said outside surface of said tube having cooperating interference means for holding said inner cap on said tube, and said guide sleeve including inner cap retaining means for holding said inner cap in engagement with said probe, said outside surface of said tube and said sealing sleeve having mating sloped surfaces, said sloped surface on the outside surface of said tube providing a camming means for facilitating engagement of said interference means such that the force required to install said inner cap on said tube is substantially less than the force required to remove said inner cap from said tube.

5,392,940

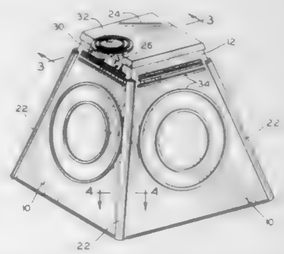
PET WASTE DISPOSAL SYSTEM

Don C. Pierce, Port Clinton, Ohio, assignor to Hueter Toledo, Inc., Bellevue, Ohio

Filed Aug. 23, 1993, Ser. No. 110,393

Int. Cl.[6] B65D *45/32*

U.S. Cl. 220—4.33 **2 Claims**



1. An animal waste disposal chamber for substantial disposition beneath the surface of the ground, said chamber maintainable in an unassembled, generally planar condition prior to assembly and installation in the ground, and comprising:

a) a plurality of planar wall panels, each wall panel provided with angled side edges forming side surfaces for abutting complementary side surfaces on adjacent wall panels when said chamber is assembled, the side edges having a retention rib member with a side surface extending from the planar wall panel;

b) a plurality of elongate connectors, each connector provided with a longitudinal channel for receiving and securing the retention rib member of the abutting side surfaces of adjacent wall panels such that said plurality of planar wall panels are secured by said plurality of connectors to define a waste disposal chamber having a top aperture and a bottom aperture of an area larger than the area of the top aperture; and

c) a cover hingedly secured to said plurality of planar panels about the top aperture, said cover positioned in a normally closed position for enclosing the top aperture, and including a foot pedal integrally formed in said cover for selectively moving said cover to an open position, whereby the planar panels and connectors are formed into a chamber and buried under the ground such that the top aperture and cover extend above the ground to facilitate the disposal of animal waste through the top aperture and into the chamber for decomposition into the ground.

5,392,941

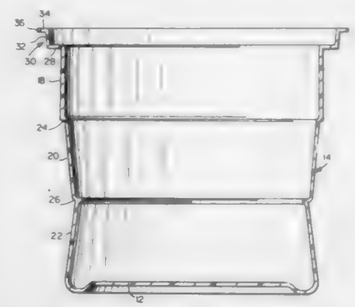
REUSABLE AND RE-COLLAPSIBLE CONTAINER AND ASSOCIATED CAP

Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661

Continuation-in-part of Ser. No. 47,185, Apr. 16, 1993, which is a continuation-in-part of Ser. No. 12,122, Feb. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 789,838, Nov. 12, 1991, Pat. No. 5,226,551. This application Apr. 14, 1994, Ser. No. 227,545

Int. Cl.[6] B65D *6/12*

U.S. Cl. 220—8 **5 Claims**



1. A reusable collapsible container comprising:

a bottom wall and a relatively flexible, peripheral side wall extending upwardly from said bottom wall, said side wall movable between axially extended and collapsed positions and, in the extended position, having lower and upper relatively thicker side wall portions and an intermediate relatively thinner side wall portion; and wherein said intermediate side wall portion is tapered downwardly radially inwardly, and said lower side wall portion is tapered downwardly radially outwardly substantially to said bottom wall, such that in said collapsed position, said lower side wall portion is partially telescoped within said upper side wall portion with said intermediate portion reverse folded therebetween, and with an uppermost edge of said lower side wall portion radially spaced away from said upper side wall portion, and wherein the radial spacing is determined as a function of the thickness of the upper side wall portion.

5,392,942

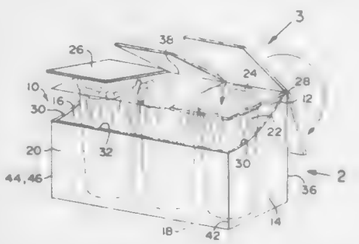
TRASH SEPARATION RECEPTACLE

Jerome S. Hanson, 2212 N. St., San Angelo, Tex. 76901

Filed Nov. 2, 1993, Ser. No. 144,407

Int. Cl.[6] B65F *1/06, 1/08*

U.S. Cl. 220—404 **4 Claims**



1. A trash separation receptacle which comprises:

a) a generally rectangular rear panel;

b) two side panels, each extending from said rear panel;

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c) a generally rectangular bottom panel extending from said rear panel;
d) a generally rectangular front panel shorter in height than said rear panel and extending between said two side panels;
e) a plurality of trash cans, held stationary by the panels, in a side by side relationship and each having a height between a height of the front panel and a height of the rear panel, an upwardly opening mouth and a plastic liner bag therein, so as to retain one type of recyclable trash for disposal; and,
f) a plurality of lids each hinged at one side to a top edge of said rear panel, for pivotal movement between open, raised, and closed, lowered positions, respectively, to expose the mouth of the trash can held in thereby for deposit of trash therein and to engage the trash can mouth in covering relation therewith with the plastic liner bag therein.

5,392,943

CANISTER FOR SPECIMEN HOLDERS

Daniel Delatte, Saint Maur, and Cornelis Klok, Noiseau, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Dec. 15, 1993, Ser. No. 166,841
Claims priority, application France, Dec. 22, 1992, 92 15455
Int. Cl.[6] B65D *25/00;* F25B *19/00*
U.S. Cl. 220—475 12 Claims



1. In a canister assembly for holding specimen holders in a low temperature environment, comprising a canister having an upper end formed with an access opening, a lower perforated end and a handling and supporting rod extending upwardly from a side portion of said upper end, the improvement comprising a support member carried by the rod and a cover hingedly supported on the support member, said cover being displaceable between a first position facing the access opening, and at least a second position freeing the access opening.

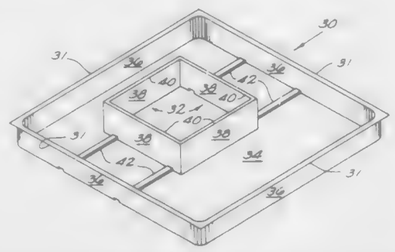
5,392,944

LEAKED WATER COLLECTION PAN FOR EVAPORATIVE COOLER

Ray Jennings, 12582 Calle Tango, Tucson, Ariz. 85749

Filed Sep. 23, 1993, Ser. No. 125,305
Int. Cl.[6] B01D *47/00*
U.S. Cl. 220—571 12 Claims

1. In combination, an evaporative cooler and a collection pan residing under said evaporative cooler for collection of leaked waters from the evaporative cooler, said evaporative cooler of the type defined by a cabinet construction having vertical sides joining a connecting flat horizontal base having a length and a width, said base also having an outlet duct located therein to permit the exit of cooled air, and said collection pan comprising:
a flat base, said base having a perimeter;
an opening situated through said base;
a plurality of sides attached to said base at said perimeter, said perimeter sides perpendicular to said flat base, said base and said perimeter sides forming a pan-shaped depression; and



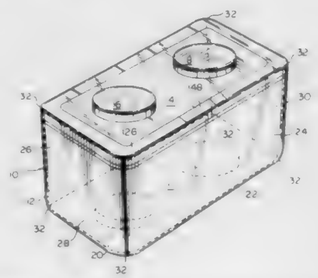
a plurality of sides attached to said base at said opening to form an opening duct, said opening duct sides perpendicular to said base, said collection pan residing underneath the base of said evaporative cooler with said opening duct sides protruding into the evaporative cooler outlet duct, said collection pan to catch and retain water leaked from the evaporative cooler.

5,392,945

STACKABLE CONTAINER FOR PREMOISTENED WIPES

Gerald M. Syrek, Washingtonville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 931,483, Aug. 19, 1992. This application Nov. 23, 1993, Ser. No. 156,986
Int. Cl.[6] B65D *21/02*
U.S. Cl. 220—608 19 Claims



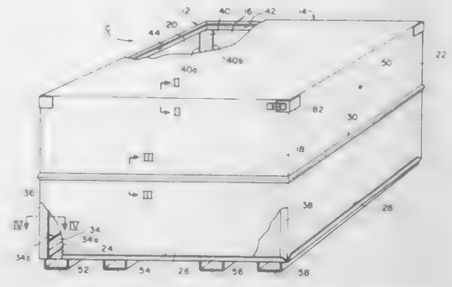
1. A stackable container useful for containing a plurality of premoistened wipes therein and interlockable with adjacent containers of a similar configuration, the container comprising:
a substantially rectangular box portion, the box portion defining a space for containing the premoistened wipes, the box portion having an open top, a substantially rectangular bottom, substantially rectangular ends, and substantially rectangular sides, with the rectangular ends and rectangular sides defining a container having a length double its width, the rectangular bottom having only two cylindrical recesses opening downwardly therefrom;
a lid mounted on and pivoted with respect to the top of the box portion, the lid having only two cylindrical projections extending upwardly therefrom, the cylindrical projections being in alignment with the cylindrical recesses at the bottom of the container when the lid is closed and having a selected diameter which complements that of the cylindrical recesses, whereby the container is interlockable with the containers of a similar configuration, with recesses of adjacent containers of a similar configuration being receivable of at least one of the projections of the container and projections of adjacent containers of a similar configuration being receivable by at least one of the recesses in the container; and
the bottom of the container including a raised floor upon which the stack of moist wipes rests and on which the cylindrical recesses are located, the raised floor having an area less than the area of the bottom of the box portion wherein a gutter is defined between the raised floor and the sides and ends of the box portion, whereby moisture from the moist wipes can accumulate in the gutter to keep the wipes moist by wicking back through wipes in the stack.

5,392,946

LID DESIGN FOR LOW LEVEL WASTE CONTAINER

Richard H. Holbrook, Clinton, and Wendell E. Keener, Lenior City, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed May 28, 1993, Ser. No. 68,023
Int. Cl.[6] B65D *88/14*
U.S. Cl. 220—651 5 Claims



1. A container for low level waste materials comprising:
a rectangular shell having an open top;
a rectangular lid detachably coupled to the shell over the open top, the lid including a planar member having an outer surface and an inner surface, and a frame continuously welded to the inner surface of the planar member along a periphery thereof,
the frame including a rectangular outer section having four corners, a centered longitudinal beam extending between and connected to opposite sides of the rectangular outer section and opposite sides of the longitudinal beam, and four diagonal braces respectively connected to the longitudinal beam and the four corners of the rectangular outer section of the frame, and
a horizontal band continuously welded to an outer surface of the shell, extending completely around the shell, the horizontal band including four sections interconnected at adjacent ends, each section including first and second nested pieces of angle bar welded to the shell along at least two edges of at least an outer one of the two nested pieces of angle bar.

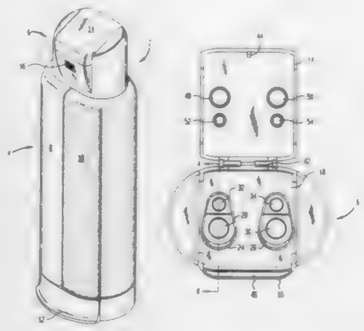
5,392,947

DENTAL MOUTHWASH PRODUCT

James L. Gentile, Orange, Conn., assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Oct. 29, 1993, Ser. No. 146,350
Int. Cl.[6] B65D *1/04*
U.S. Cl. 220—665 14 Claims

1. A dental mouthwash product comprising:
(i) a first liquid component comprising hydrogen peroxide;
(ii) a second liquid component comprising sodium bicarbonate; and
(iii) a dispensing container comprising:
at least two discreet compartments each with an upper outlet end, a first of the at least two discreet compartments being formed completely of opaque material, a second of the at least two discreet compartments having an outer wall being of a clarity sufficient to view a



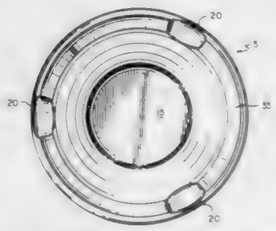
liquid level therein, the first compartment storing the first liquid component that includes hydrogen peroxide, and the second compartment storing the second liquid which includes sodium bicarbonate; and
a closure mechanism for closing the compartments over the outlet ends.

5,392,948

MIXING BOWL

Kathy McEntee, Baldwinville, Mass., assignor to Tucker Housewares, Leominster, Mass.

Filed May 19, 1994, Ser. No. 246,130
Int. Cl.[6] B65D *21/00*
U.S. Cl. 220—669 10 Claims



1. A bowl having a bottom surface and a radiused sidewall, the sidewall extending from the bottom surface to a top bowl rim, the improvement comprising:
the bowl having a downwardly concave first rim flange extending continuously about a perimeter of the top rim, said first rim flange defining a continuous channel extending along said top bowl rim, said channel having a constant width, said first rim flange forming a continuous handle, said rim flange further having three equidistantly spaced pourspouts formed therein.

5,392,949

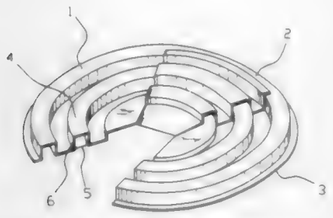
UNIVERSAL BEVERAGE CONTAINER LID

Paul A. McKenna, D4 Millstone River Apt., Lakeview Ter., Princeton, N.J. 08540

Filed Nov. 29, 1993, Ser. No. 158,454
Int. Cl.[6] B65D *41/48;* A47G *19/22*
U.S. Cl. 220—712 14 Claims

1. A lid for a cup, said lid comprises:
a. a disc having a periphery, a first face and a second face,

said disc is corrugated to form a series of concentric, receiving channels, each channel having an opening and walls, the openings alternate between said first face and said second face, said receiving channels are spaced apart



such that both first face and said second face receive cup walls of varying cup diameter, said disc contains perforations along said receiving channels to facilitate the removal of unused portions of said lid.

5,392,950

PLASTIC CONTAINER WITH A COMPLETELY SEALED HANDLE

Kevin A. Foss, Bartlett; Theodore Guss, Crystal Lake; Darin R. Paul, Mount Prospect, and Robert E. Sherwood, Des Plaines, all of Ill., assignors to Continental Plastic Containers, Inc., Norwalk, Conn.

Filed Apr. 20, 1993, Ser. No. 49,812
Int. Cl.[6] B65D *23/00*
U.S. Cl. 220—771 39 Claims



1. In a container composed of a thermoplastic material and including (a) a body with an opening in said body and (b) a neck coupled to said opening, the improvement comprising a hollow handle composed of said thermoplastic material and attached to said body, the exterior of said handle being substantially seamless and smooth, the volume enclosed by said handle being completely enclosed and separated by said thermoplastic material from the interior of said container and the exterior of said container.

5,392,951

DRAWER OPERATING SYSTEM

John F. Gardner, Penfield, N.Y.; Jane F. Laycock, West Chester, Pa.; Eric C. Norlin, Coatesville, Pa.; Shelly I. Slogoff, Chester Springs, Pa.; E. Ford Williams, Bryn Mawr, Pa., and Tobin H. Williams, Radnor, Pa., assignors to Lionville Systems, Inc., Exton, Pa.

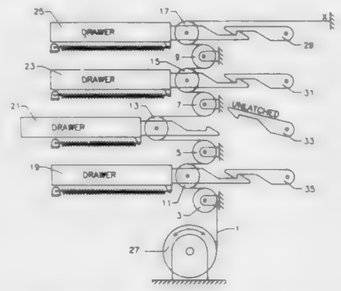
Filed May 20, 1993, Ser. No. 63,662
Int. Cl.[6] G07F *11/18*
U.S. Cl. 221—2 21 Claims

1. A drawer operating system comprising:

a) a plurality of drawers, and a latching means connected to each of said drawers,

b) each of said drawers being connected to a pulley,

c) a cable connected around each pulley of each of said drawers, the cable being wound around a drum,



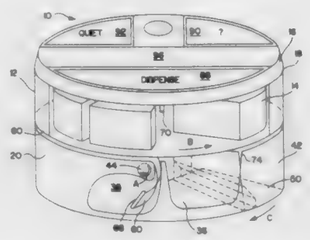
wherein the pulleys and drum comprise means for allowing those drawers whose latching means have been unlatched to open, when the cable is unwound from the drum, and wherein the pulleys and drum also comprise means for closing the drawers when the cable is wound onto the drum.

5,392,952

PILL DISPENSISNG DEVICE PROVIDING OVERDOSAGE PROTECTION

James R. Bowden, 11 Maple Rock Rd., N. Scituate, R.I. 02857

Filed Jan. 10, 1994, Ser. No. 179,523
Int. Cl.[6] B65B *59/00*
U.S. Cl. 221—15 9 Claims



1. A medication dispensing device for providing medication doses within selected periods of time, said device comprising:

housing means defining a first and second opening;

medication containment means including a plurality of individually sealed medication dosage storage areas for containing medication doses, received within said first opening in said housing, wherein each said storage area has an associated time period during which said dosages may be dispensed;

first signal generating means for generating a request signal;

dispensing means for causing medication doses that are requested within their respective time periods to be dispensed from said device through said second opening;

medication collection means for preventing medication doses that are not requested within their respective time periods from being dispensed from said device;

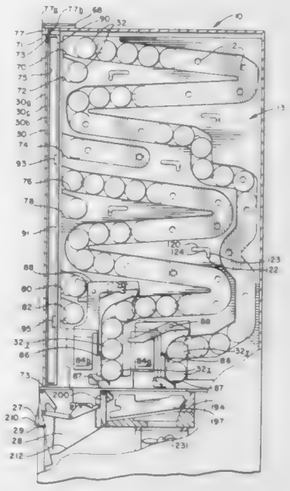
control means for controlling said dispensing means, said medication collection means, responsive to said request signal and said time periods.

5,392,953

COLD DRINK VENDING MACHINE WITH WINDOW FRONT PANEL

Algert J. Maldanis, Heath, Tex.; Robert I. Courts, Caledonia, Mich., and George E. Alcorn, Montville, N.J., assignors to Rowe International, Inc., Rockwall, Tex.

Filed Jun. 3, 1993, Ser. No. 71,712
Int. Cl.[6] G07F *11/34*
U.S. Cl. 221—97 13 Claims



1. A vending machine for selectively vending cold drink containers comprising:

(a) an insulated case having a front, a back, a first side, a second side, a top and a bottom enclosing a refrigerated storage area;

(b) a dispensing opening located in a lower portion of said front of said insulated case;

(c) a plurality of serpentine tracks held side-by-side in said refrigerated storage area vertically arranged for holding cold drink containers to be vended within said refrigerated storage area and for guiding said cold drink containers as they move along said serpentine tracks by the force of gravity;

(d) said front comprising a transparent window panel extending substantially from said first side to said second side and from said top to said lower portion at which said dispensing opening is located so that substantially the entire refrigerated storage area is viewable through said transparent window panel;

(e) a plurality of pre-cooled cold drink container storage racks, each one aligned with a corresponding one of said plurality of serpentine tracks adjacent to said transparent window panel, but not rollingly communicating said precooled cold drink container with said serpentine tracks so that a cold drink container of a type to be vended from said aligned serpentine tracks is visible both when said serpentine tracks hold said cold drink containers and also when said serpentine tracks require refilling and so that said precooled cold drink container is available for partial refilling of a depleted track upon filling said track with additional cold drink containers; and

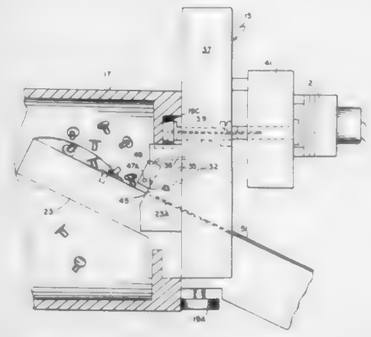
(f) means operatively associated with said insulated case and serpentine tracks therein for selectively vending a cold drink container from one of said serpentine tracks to said dispensing opening so that said selected cold drink container can be retrieved therefrom for consumption.

5,392,954

RIVET SETTING MACHINE

Kaj Gartz, Orange, Conn., assignor to Gartz & White Inc., Milford, Conn.

Filed Nov. 29, 1993, Ser. No. 158,638
Int. Cl.[6] B65H *9/00*
U.S. Cl. 221—165 18 Claims



1. A device for delivery of fasteners having heads with tenons disposed beneath said heads to an insertion tool, said device comprising:

track means having a proximal end and a distal end and comprising two spaced-apart rails each having a fastener receiving surface to receive undersides of the heads of the fasteners falling thereon, said track means disposed in a downwardly inclined slope between its distal and proximal ends whereby fasteners on said track means slide from the proximal end towards the distal end;

means for placing fasteners randomly onto said track means whereby some of the fasteners are correctly aligned with the tenons between the rails and undersides of heads on the rails and some are misaligned;

fastener orienting means disposed adjacent the proximal end of said track means, said fastener orienting means including a plurality of fluid injector ports disposed around said track means, two of said ports facing each other and a third port disposed over said track means; and

means to direct a fluid through said ports sequentially so that misaligned fasteners on said track means are forced into alignment or removed from said track means thereby leaving only properly aligned fasteners to proceed on said slope towards said distal end.

5,392,955

BALL FEEDING DEVICE

Nobuyuki Yasuda, and Masatoshi Yasuda, both of Osaka, Japan, assignors to Kabushiki Kaisha Yutaka, Osaka, Japan

Continuation-in-part of Ser. No. 57,549, May 6, 1993, abandoned. This application Jan. 3, 1994, Ser. No. 176,261
Claims priority, application Japan, May 7, 1992, 4-114747
Int. Cl.[6] G07F *11/02*
U.S. Cl. 221—203 8 Claims

1. A ball feeding device for feeding a plurality of balls one by one, comprising:

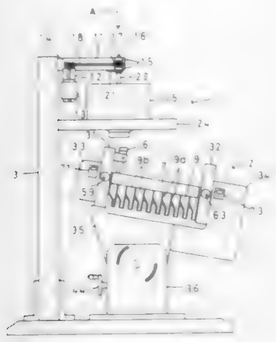
a housing having in the bottom thereof a ball discharging hole, and

a rotary rod having a free end located near said discharging hole in said housing,

said housing accommodating a plurality of balls, said balls being guided into a space between said free end of said rotary rod and said discharging hole of said housing so as to be discharged one by one from said hole while said rotary shaft is in rotation,

wherein said discharging hole in said housing is conically

shaped and said free end of said rotary rod has a diameter that is smaller than a midportion of said rotary rod, said



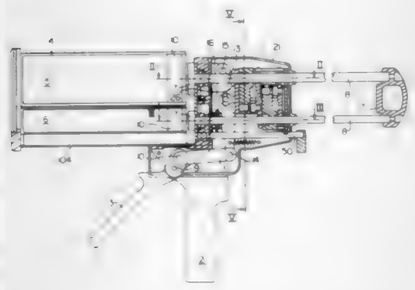
discharging hole of said housing and said free end of said rotary rod being located opposite to each other.

5,392,956

METHOD FOR THE ADVANCE OF A PLURALITY OF RODS, IN PARTICULAR FOR MANUALLY OPERATED DISPENSING APPLIANCES

Wilhelm A. Keller, Obstgartenweg 9, CH-6402 Merlischachen, Switzerland

Filed Sep. 2, 1993, Ser. No. 114,903
Claims priority, application Switzerland, Sep. 2, 1992, 02 758/92-2
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—1 19 Claims



2. A dispensing appliance for manually dispensing multiple component substances which are filled into cartridges, comprising:

a traveller which is movable forward and backward with respect to a dispensing direction;

clamping levers movably mounted in said traveller, said clamping levers each having a bore therein;

thrust rods each passing through a respective bore of one of said clamping levers;

thrust means associated with said traveller for engaging each of said clamping levers, said thrust means being disposed eccentrically with respect to the bore of the clamping lever engaged by the thrust means; and

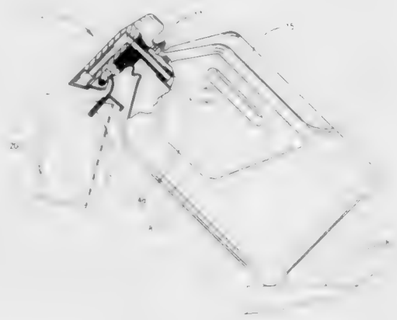
means for canting said clamping levers with respect to the respective thrust rod for clamping and driving the thrust rod along upon forward movement of said traveller.

5,392,957

LIQUID DISPENSING APPARATUS

William Parsons, 10074 Devonshire Dr., Baton Rouge, La. 70809

Filed Feb. 4, 1994, Ser. No. 191,469
Int. Cl.[6] B67B *7/00*
U.S. Cl. 222—1 17 Claims



1. An improved, liquid dispensing apparatus for disposable, plastic bottles comprising:

a) a head portion;

b) a flexible coupling means demountably attached to said head portion having inner and outer sealing means for frictionally connecting to the open neck portion of disposable bottles;

c) cavities located within said head portion for connecting communicative passages in said flexible coupling means with external vent and liquid ports located at the edge of said head portion;

d) a biased closure means adjacent said external vent and liquid ports for operably opening and sealing said ports; and

e) a vent tube inserted in one of said passages located in said flexible coupling.

5,392,958

LIQUID RECEIVING AND DISPENSING APPARATUS INCLUDING FLEXIBLE INNER CONTAINER POSITIONED WITHIN INSULATING CONTAINER

Frithjof Kurtzahn, Weyhe-Leeste, and Lutz Thime, Delmenhorst, both of Germany, assignors to Jacobs Suchard AG, Germany

Continuation of Ser. No. 38,613, Mar. 29, 1993, Pat. No. 5,265,766, which is a continuation of Ser. No. 788,346, Nov. 6, 1991, abandoned. This application Nov. 23, 1993, Ser. No. 155,845
Claims priority, application Germany, Nov. 9, 1990, 4035724
Int. Cl.[6] B65D *35/56*
U.S. Cl. 222—105 5 Claims

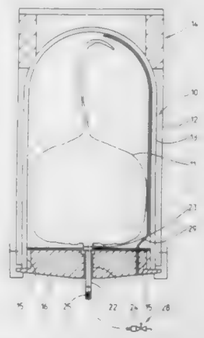
1. An apparatus for receiving and dispensing hot or cold liquid, comprising:

a thermally insulating container having an interior and an open end;

covering means for covering the open end of the insulating container;

a flexible gas-tight inner container positioned within the interior of the thermally insulating container for receiving the liquid and for being collapsed into a flat state as liquid is dispensed from the inner container;

a connecting piece mounted on the inner container and a tube connected to the connecting piece for dispensing liquids from the inner container, said covering means being oriented downwardly during dispensing of the liquid from the inner container;



a channel formed in the covering means and extending between the interior of the insulating container and the exterior of the insulating container, said tube being removably positioned in and extending through said channel;

said insulating container being removably positioned within the interior of the insulating container; and

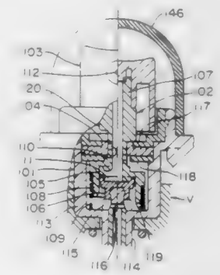
an air pipe extending through the covering means from the interior of the insulating container to the exterior of the insulating container for venting the interior of the insulating container.

5,392,959

SUCKBACK DRAIN VALVE FOR A LIQUID JET BLOWER

Tatsuo Tubaki; Yoshiyuki Kakuta, and Takao Kishi, all of Koto, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 77,394, Jun. 17, 1993, Pat. No. 5,328,062, which is a division of Ser. No. 741,416, Aug. 1, 1991, Pat. No. 5,240,153. This application Apr. 5, 1994, Ser. No. 223,224
Claims priority, application Japan, Dec. 28, 1989, 1-152460; Dec. 28, 1989, 1-152462
Int. Cl.[6] B67D *1/16*
U.S. Cl. 222—109 11 Claims



1. A liquid jet blower having an aerosol type injection valve comprising:

a valve box having a bottom end in communication with a source of pressurized liquid, a top end provided with a circumferential annular gasket, and a table surrounded by an elastic peripheral wall located between the top and the bottom end;

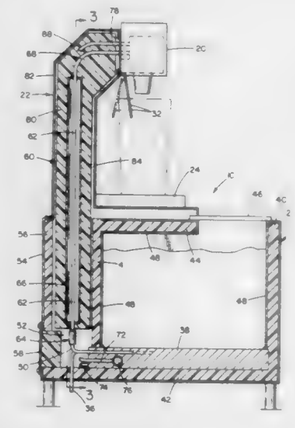
an injection pipe having a first end connected to an injection button, a second end sealingly engageable with the elastic peripheral wall, and a center portion having a communicating hole selectively engageable with the gasket; and a spring for pushing the second end of the injection pipe and the table apart.

5,392,960

POSTMIX BEVERAGE DISPENSER AND A METHOD FOR MAKING A BEVERAGE DISPENSER

Norman L. Kendt, Trumbull, and Robert Bordonaro, Torrington, both of Conn., assignors to Wilshire Partners, Cleveland, Ohio

Filed Nov. 13, 1992, Ser. No. 976,343
Int. Cl.[6] B67D *5/56*
U.S. Cl. 222—129.1 45 Claims



1. An apparatus for dispensing beverages comprising: at least one soda tube receiving carbonated water from a source of carbonated water;

a plurality of syrup tubes receiving syrup from a plurality of sources of syrup;

a cooler in heat exchange relationship with said soda tube and said syrup tubes;

a plurality of dispensing heads each of said heads adapted to receive carbonated water and syrup and dispense beverage when actuated;

a tower supporting said heads; and,

insulation surrounding said conduits comprising at least two spaced apart vacuum insulation panels, each of said panels being surrounded by foam insulation.

5,392,961

SAFETY TAB DEVICE AND THE COMBINATION WITH AN AEROSOL CONTAINER SYSTEM

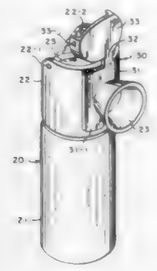
Paul D. Starrett, Jaffrey, N.H., assignor to Casco International, Inc., Fitzwillaim, N.H.

Filed Jun. 18, 1993, Ser. No. 80,214
Int. Cl.[6] B67D *5/33*
U.S. Cl. 222—153 1 Claim

1. An aerosol container system comprising a canister, a cap on said canister, a canister actuator, a flared nozzle guard coupled to said cap, a flip tab and means for locking said flip

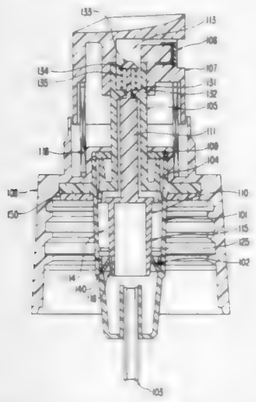
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tab to said cap in position to inhibit said actuator from being depressed, said flip tab coupled to a flexible connecting means



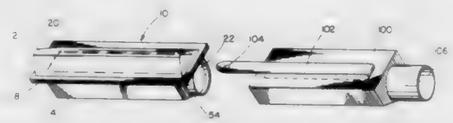
which is coupled to a collar means an said collar means positioned about a portion of said flared nozzle guard.

5,392,962
ATOMIZING PUMP
Philip Meshberg, 2770 S. Ocean Blvd., Apartment 602, Palm Beach, Fla. 33480
Continuation of Ser. No. 999,330, Dec. 31, 1992, abandoned. This application Jul. 8, 1994, Ser. No. 272,446
Int. Cl.[6] B05B *9/043*
U.S. Cl. 222—321 25 Claims



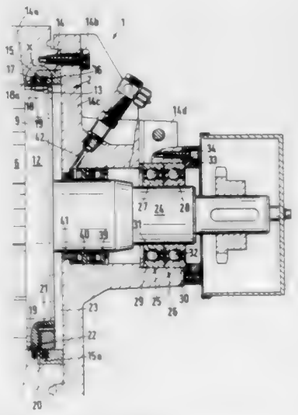
1. A dispenser for dispensing a spray of pressurized fluid comprising:
a pump housing, said pump housing having an inlet opening at its inner end;
a piston stem having a piston mounted thereon for reciprocal motion within said pump housing, said piston stem including an outlet passage therethrough;
a mounting cup into which said pump housing is fastened and through which said piston stem projects;
a valve member mounted for movement within the pump housing, the valve member comprising an inlet valve portion cooperating with said inlet opening and an outlet valve portion cooperating with said outlet passage, wherein inward movement of said inlet valve portion acts to close said inlet opening and inward movement of said outlet valve portion acts to open said outlet passage, said valve member further comprising a pressure area;
a first spring, said first spring biasing said piston outwardly;
a second spring, said second spring biasing said outlet valve portion toward said outlet passage;
wherein inward movement of the piston results in increased fluid pressure within said pump housing, said increased fluid pressure acting on said pressure area against the bias of said second spring so that a predetermined fluid pressure will move said outlet valve portion away from said outlet passage.

5,392,963
REFURBISHED TONER CARTRIDGE
Gar P. Kelly; Brian J. Renstrom, and K. Trent Christensen, all of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 1, 1993, Ser. No. 69,636
Int. Cl.[6] G03G *15/06, 21/00*
U.S. Cl. 222—325 11 Claims



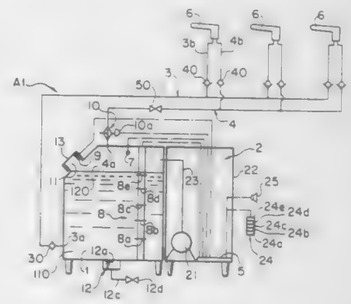
1. A refurbished toner cartridge including a joined cover and bottle which, together, define an interior volume for said toner cartridge, said toner cartridge having an elongated dimension and further comprising:
a flexible bladder positioned within said interior volume and containing toner; and
opening means passing from within said toner cartridge to outside said toner cartridge and cooperating with said flexible bladder and operable by a user from outside said toner cartridge, said opening means movable by said user in a direction of said elongated dimension so as to create an opening in said flexible bladder to enable escape of said toner into said interior volume.

5,392,964
ROTARY FEEDER FOR FLOWABLE MATERIALS
Georg Stapp, Dreieichenhain; Wolfhard Rumpf, Rödermark, and Paul G. Dellmann, Darmstadt, all of Germany, assignors to Dietrich Reimelt KG, Rodermark/Urberach, Germany
Filed May 5, 1993, Ser. No. 57,991
Claims priority, application Germany, May 6, 1992, 4214467
Int. Cl.[6] B65G *29/02, 65/48;* G01F *11/24*
U.S. Cl. 222—368 27 Claims



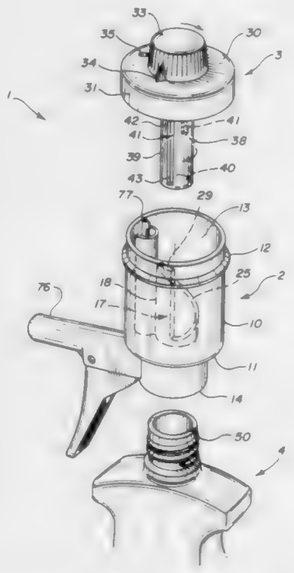
1. A rotary feeder, comprising:
a housing having an inlet, an outlet, and a chamber between said inlet and said outlet;
a rotor installed in said chamber and having a shaft journalled in said housing, two spaced-apart end walls carded by the shaft, flanking said inlet and said outlet and having peripheral surfaces adjacent said housing, and vanes extending from said shaft between said end walls; and
a sealing device between each of said peripheral surfaces and said housing, each of said sealing devices comprising a ring-shaped seal disposed and radially movable in a radial groove of said housing adjacent the respective peripheral surfaces and means for biasing said ring-shaped seal against the respective peripheral surfaces.

5,392,965
LIQUID SOAP SUPPLYING DEVICE HAVING A MIDDLE HEIGHT SUPPLEMENTING PORT
Tsutomu Azuma, and Yojiro Taketomi, both of Kitakyushu, Japan, assignors to Toto, Ltd., Fukuoka, Japan
Continuation of Ser. No. 763,522, Sep. 23, 1991, Pat. No. 5,356,051. This application Sep. 13, 1993, Ser. No. 120,186
Int. Cl.[6] B65D *83/00*
U.S. Cl. 222—396 14 Claims



1. A liquid soap supplying device comprising:
a tank for storing liquid soap having a liquid soap accumulating part being located at an inner lower part of said tank and an air accumulation part being located at an inner upper part of said tank;
a pressurizing device arranged to communicate with said air accumulation part;
a pressure sensor arranged at said air accumulation part;
a control part for controlling operation of said pressurizing device in response to a sensing signal from said pressure sensor and for controlling pressure of said tank to a predetermined pressure;
a liquid soap feeding pipe at a bottom part of said tank;
an air feeding pipe at said air accumulation part;
a discharging nozzle provided with a mixing chamber for mixing liquid soap and air to obtain bubbled soap, and communicating with the liquid soap feeding pipe and the air feeding pipe;
an opening and closing valve for controlling discharge of combined air and liquid soap from said discharging nozzle; and
a liquid soap supplementing port arranged at a middle height in the tank, said middle height being the height of the maximum amount of liquid soap in the tank, whereby sufficient air is always in said air accumulation part to be discharged through said air feeding pipe to be mixed with liquid soap to obtain the bubbled soap.

5,392,966
FLUID DISPENSING DEVICE WITH GRAVITY-FILL CONTINUOUSLY VARIABLE DOSAGE SELECTION
Leonid Bunin, Woodbridge, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
Filed Jan. 18, 1994, Ser. No. 182,269
Int. Cl.[6] G01F *11/26*
U.S. Cl. 222—454 4 Claims



1. A dose measuring device for fluids which comprises a dosage cup in fluid communication with a container, the container having an extension situated within the dosage cup, the extension being constructed to enable fluid to pass into the dosage cup through the extension where the extension is provided with a top surface allowing fluid to pass over said top surface where said top surface rises from a low point to a high point within the dosage cup; and a downwardly projecting column from the cap of the dosage cup in slidable engagement with the extension, said downwardly projecting column provided with a one or more slots allowing fluid to pass therethrough, said slot(s) having a lower end and an upper end wherein the slot(s) is oriented along the downwardly projecting column to connect the lower end with the upper end, with the top surface of the extension and the slot(s) in the downwardly projecting column placed in an angular and intersecting arrangement with each other when the downwardly projecting column and the extension are slidable engaged and the downwardly projecting column is movable between positions for an infinitely variable selection of intersection points of the top surface of the extension and the slot(s) of the downwardly projecting column to expose a continuously varying length of the upper portion of the slot(s) within the dosage cup allowing fluid to pass from the container when the container is inverted and righted, into the dosage cup and return of any excess fluid through the exposed upper portion of the groove and into said downwardly projecting column and valved means, including a valve and valve seat, operated by a trigger to upwardly displace the valve from its valve seat to eject the fluid dose from the dosage cup after righting the container operated by a trigger to upwardly displace the valve from its valve seat.

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PLUG DEVICE FOR SEALING LIQUID CONTAINER

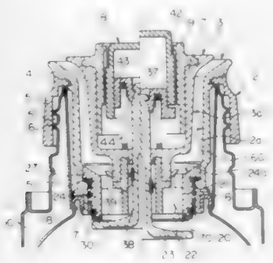
Yasuhiko Satomi; Seiichi Itoh; Isao Watanabe; Toru Goto, and Shoji Sekihara, all of Tokyo, Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan

Filed Aug. 18, 1993, Ser. No. 108,979

Claims priority, application Japan, Aug. 31, 1992, 4-061300[U]; Nov. 10, 1992, 4-077371[U]

Int. Cl.[6] B65D *51/00*

U.S. Cl. 222—509 2 Claims



1. A plug device for providing a liquid-tight sealing for a container body comprising an outer plug member and an inner plug member,

wherein said inner plug member comprises an inner plug top section and an inner plug bottom section, said inner plug bottom section having a plurality of internal liquid passages arranged in a ring-shape which communicate with an interior space of said container body,

wherein a valve member for opening and closing an opening section of the internal liquid passages and a plunger device, operated by a press button means, for moving said valve member so as to open and close said opening section are equipped in the inner plug member, and

wherein an outer surface of the inner plug bottom section is detachably mated with a bottom inside surface of the outer plug member and a space being defined by an outside peripheral surface of the inner plug top section and a top inside peripheral surface of the outer plug member, the space serving as a flow passage for the liquid and providing communication of the internal liquid passages of said inner plug bottom section with the exterior environment thereby dispensing the liquid contained in said container body.

5,392,968

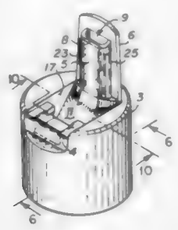
DISPENSING CLOSURE AND METHOD

Richard C. G. Dark, 8553 Red Hill Country Club Dr., Rancho Cucamonga, Calif. 91730

Filed Jun. 14, 1993, Ser. No. 78,006

Int. Cl.[6] B65D *47/06*

U.S. Cl. 222—529 27 Claims



1. In a one piece molded plastic resealable dispensing closure of the type comprising:

a closure base defining a seal surface;

a dispensing spout defining a passage through said base, with said spout being swivelly mounted by a pivot axis to said base for positioning in a dispensing position and, alternatively, in a sealing position;

an invertible flexible diaphragm, said diaphragm having a peripheral portion connected to said base and means connecting another peripheral portion of said invertible diaphragm to said spout, with a portion of said peripheral portion located most distant from said pivot axis and said pivot axis defining a plane, whereby movement of said spout swivels said invertible diaphragm through said plane, responsive to which said invertible diaphragm inverts;

said diaphragm providing an arrangement that pre-loads said spout in the direction of the dispensing position, when said spout is in the dispensing position, and pre-loads said spout in the direction of the sealing position, when said spout is in the sealing position;

the improvement wherein said means connecting said spout to said invertible diaphragm comprises:

a elastic foldable diaphragm means for coupling a force applied to pivot said spout to said invertible diaphragm during movement of said spout to swivel and permit inverting of said invertible diaphragm as said spout is moved to the sealing position, said foldable diaphragm being sufficiently pliant to be pulled by said spout and placed in a position underlying said spout with a bend formed at the juncture of said foldable diaphragm with said spout, when said spout is in said sealing position, said spout initially folding over a portion of said foldable diaphragm in overlying relationship with a remaining portion of said foldable diaphragm to create a bend in said foldable diaphragm, responsive to said spout being moved from said dispensing position toward said sealing position, and then unfolds said diaphragm, responsive to said spout being moved further to said sealing position, whereby the location of said bend moves along said foldable diaphragm to said juncture of said foldable diaphragm with said spout; wherein said foldable diaphragm reduces said pre-load on said spout in the direction of said dispensing position responsive to folding over; and wherein said invertible and foldable diaphragms collectively define a predetermined surface area when said spout is in said dispensing position with each said diaphragm covering a more than insignificant portion of said surface area.

5,392,969

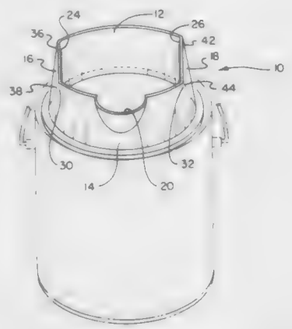
POURING ATTACHMENT FOR A PAINT CAN

Charles E. Usery, 206 Aldergate St., Farmington, Mo. 63640

Filed Feb. 22, 1994, Ser. No. 199,997

Int. Cl.[6] B65D *25/48*

U.S. Cl. 222—570 1 Claim



1. A new and improved pouring attachment for a paint can comprising, in combination:

an arcuate section having an interior surface, an exterior surface, a bottom edge, a top edge, a first side and a second side, the surface of the section being sloped inwardly from the top edge to the bottom edge;

a first planar sidewall in a generally triangular configuration having an interior surface, an exterior surface, a bottom edge, a linear top edge, a first side and a second side, the first side of the first planar sidewall being integral with the first side of the arcuate section;

an arcuate pouring section having an interior surface, an exterior surface, a bottom edge, a top edge, a first side and a second side, the surface of the section being sloped inwardly from the top edge to the bottom edge, a pouring lip positioned intermediate the first and second sides of the section and extending from the top edge to a position intermediate the top and bottom edges, the first side of the pouring arcuate section being integral with the second side of the first planar sidewall;

a second planar sidewall in a generally triangular configuration having an interior surface, an exterior surface, a bottom edge, a linear top edge parallel with the linear top edge of the first planar side wall, a first side and a second side, the first side of the second planar sidewall being integral with the second side of the arcuate section, and the second side of the second planar sidewall being integral with the second side of the pouring arcuate section, the pouring section being located equidistant from the linear top edges of the first and second planar sidewalls with the linear top edges being closer together than the bottom edges;

the bottom edges of the arcuate sections and the bottom edges of the planar sidewalls together forming a sealing surface adapted to be inserted into the groove of a standard paint can.

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DEVICE FOR TURNING HOSIERY ITEMS INSIDE OUT WITH HIGH OPERATING RELIABILITY

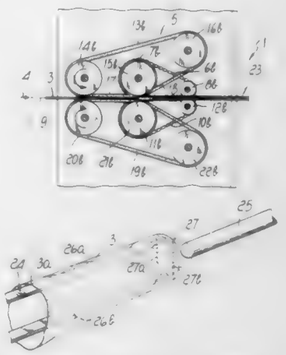
Mario Orosei, Reggio Emilia, Italy, assignor to Conti Complett S.p.A., Milan, Italy

Filed Feb. 23, 1994, Ser. No. 200,331

Claims priority, application Italy, Mar. 30, 1993, MI93A000621

Int. Cl.[6] A41H *43/00*

U.S. Cl: 223—39 8 Claims



1. Device for turning hosiery items inside out, wherein it comprises: means for gripping a hosiery item and moving it along an advancement direction so that the top of the hosiery item is orientated in the advancement direction; opening means that engage the hosiery item and act transversely to said advancement direction to open said top; means for turning the hosiery item inside out that comprise a first component that can be inserted in the hosiery item with one of its ends through said open top until it reaches proximate to the toe and forms, starting from said end, a cavity for the insertion of a second rod-like component which can engage the toe of the hosiery item arranged at said end of the first component and can be inserted in said first component through said end in the direction opposite to the direction of insertion of said first component in the hosiery item, turning said hosiery item inside out along said second component; and means for removing the inside-out hosiery item from said second component.

5,392,971

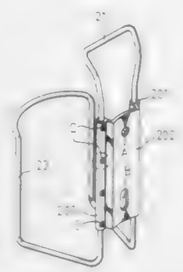
BOTTLE HOLDER FOR A BICYCLE

Jung-Tsan Hsu, 58, Ma Yuan West St., Taichung, Taiwan, Prov. of China

Filed Jun. 4, 1993, Ser. No. 72,278

Int. Cl.[6] B62J *11/00*

U.S. Cl. 224—39 1 Claim



1. The bottle holder for a bicycle comprising a plate including two side edges, a sleeve formed in each of said side edges of said plate, a top frame and a bottom frame each including two legs engaged in said sleeves respectively so as to form a frame body for holding a bottle, and a plurality of dents formed in each of said sleeves and extended inward of said sleeves and engaged with said legs of said top frame and said bottom frame, whereby, said top frame and said bottom frame are solidly secured to said sleeves of said plate.

5,392,972

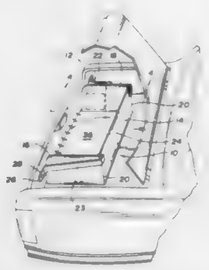
MOTOR VEHICLE TRUNK PARTITION

Paul C. Caruso, Stevensville; Daniel Vandersluis; Anthony J. Blommel, both of St. Joseph; Joseph P. Fannon, Washington, and Daniel J. Pauluk, St. Joseph, all of Mich., assignors to Atlantic Automotive Components, Benton Harbor, Mich.

Filed Jul. 7, 1993, Ser. No. 88,519

Int. Cl.[6] D60R *7/00*

U.S. Cl. 224—42.034 14 Claims



1. A collapsible partition for a motor vehicle trunk wherein the trunk includes a rear wall, outer walls and a bottom, the collapsible partition comprising:

a transverse extending wall member disposed within the trunk;

longitudinal extending side wall members pivotably secured to the transverse wall member;

retaining straps secured to the transverse wall member and adapted for securement to the rear wall of the motor vehicle trunk whereby the collapsible partition is retained within the motor vehicle trunk.

5,392,973

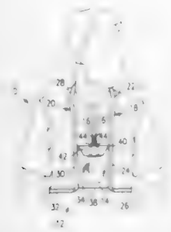
TELEMETRY POUCH

Anthony B. Benson, Arlington, Tex., assignor to Tecnol Medical Products, Inc., Fort Worth, Tex.

Filed Sep. 27, 1993, Ser. No. 127,781

Int. Cl.[6] A45F *3/14*

U.S. Cl. 224—208 **7 Claims**



1. A pouch for maintaining a telemetry unit adjacent to a patient, the pouch comprising:

a transparent front wall;

a back wall, the back wall attached to the front wall along a first portion of the periphery of the front and back walls and a second portion of the periphery forming a top opening for receiving the telemetry unit;

a flap extension coupled to the back wall proximate the top opening, the flap extension having at least one cable opening therein;

a reactivating, resealable adhesive strip provided on the flap extension for releasably attaching the flap to the front wall;

securing means for releasably securing the pouch to the patient; and

wherein the securing means comprises:

a first strap having a first, second, and third portion, the second portion of the first strap attached to a first edge of the front and back walls,

a second strap having a first, second, and third portion, the second portion of the second strap attached to a second edge of the front and back walls,

the first portion of the first strap and the first portion of the second strap sized to pass around the patient's neck and to be secured to each other, and

the third portion of the first strap and the third portion of the second strap sized to pass around the patient's torso and to be secured to each other.

5,392,974

MEDICAL GLOVE HOLDER

Becky L. Johnson-Rabbett, 29680 Glader Blvd., Lindstrom, Minn. 55045

Filed Sep. 27, 1993, Ser. No. 127,173

Int. Cl.[6] A45F *5/00*

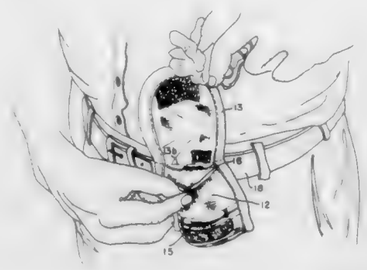
U.S. Cl. 224—253 **3 Claims**

1. A medical glove holder pouch made from flexible sheet material adapted to be mounted for quick access at the waist of a user, said pouch comprising

a rear panel and a front panel, each panel having side and bottom edges joined together at the sides and bottom edges thereof and defining a storage compartment therebetween sized to accommodate a plurality of gloves therein,

the front and back panels defining a loading opening at a top edge of the panels having a dispensing opening disposed below the top edge of the front panel in upwardly spaced relation from the bottom edge of the front panel and communicating with the compartment to afford access to the compartment,

said dispensing opening extending only partially across the front panel and being shorter than the width of the front panel for restricting the passage of the gloves from the storage compartment and thereby facilitate one-at-a-time release of the gloves from the compartment,



belt attachment means located on the rear panel of the pouch for attaching the pouch to a belt of the user, and a closure flap connected at the top edge of the rear panel and adapted to overly the dispensing opening in the front panel to normally enclose the dispensing and loading openings, said flap having releasable connection means for releasable connection to the front panel but being releasable into an open position to permit access to the dispensing and loading openings.

5,392,975

SPRAY CONTAINER CARRIAGE AND RETRIEVAL SYSTEM

William F. Blankenship, Jr., 2165 E. Colton Ave., Mentone, Calif. 92359

Filed Nov. 12, 1993, Ser. No. 151,495

Int. Cl.[6] A45C *11/32*

U.S. Cl. 224—253 **13 Claims**



1. A spray container storage and retrieval system comprising:

a sleeve having an upper open end including at least a section of flange extending laterally outward from said upper open end, a mid section and a lower partially closed end;

a holster having a holder portion with an upper opening of a size sufficient to receive said partially closed end of said sleeve and at least a portion of said mid section of said sleeve, said holster having a flap portion for partially covering said upper open end of said sleeve when said sleeve is fitted within said holster; and

closure means, attached to said flap portion and to said holder portion, for securing said flap portion to said holder portion.

5,392,976

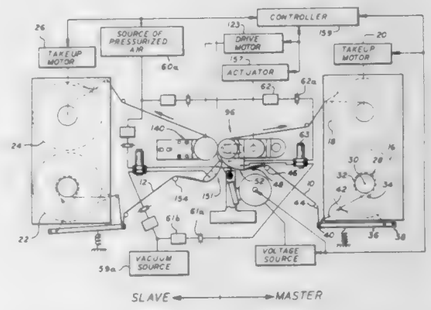
SERVO SYSTEM

Alfred M. Nelson, Redondo Beach, and Robert P. Adams, Santa Monica, both of Calif., assignors to Hightree Media Corporation, El Segundo, Calif.

Filed May 19, 1992, Ser. No. 886,688

Int. Cl.[6] B65H *20/00, 23/18, 23/24*

U.S. Cl. 226—38 **43 Claims**



1. In combination for regulating the tension of a medium having a first surface and having a particular width, a particular thickness and a particular Youngs modulus and having a particular product of the width, thickness and Youngs modulus of the medium,

first means for subjecting the medium to a first force in a direction substantially parallel to the first surface of the medium,

second means for providing a variable force on the first surface of the medium in a direction substantially perpendicular to the first surface of the medium,

third means for providing a retarding force on the medium in a direction opposite to the direction of the first force,

fourth means responsive to the particular product of the width, thickness and Youngs modulus of the medium and responsive to variations in the force on the first surface of the medium in the direction substantially perpendicular to the first surface of the medium for varying the retarding force on the medium to regulate the tension of the medium, and

fifth means for providing a movement of the medium in a particular direction past the position at which the retarding force is varied and the variable force is provided.

5,392,977

COIL MATERIAL SUPPLY APPARATUS FOR AN INTERMITTENT FEED DEVICE

Heizaburo Kato, Shizuoka, Japan, assignor to Sankyo Seisakusho Co., Tokyo, Japan

Filed Nov. 9, 1993, Ser. No. 149,464

Int. Cl.[6] B65H *20/32*

U.S. Cl. 226—118 **2 Claims**

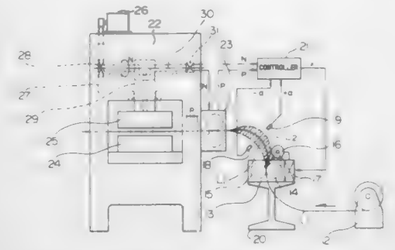
1. An apparatus for supplying a coil material, to a mechanical press, comprising:

an intermittent feed device;

a pair of feed rollers disposed in the vicinity of the intermittent feed device for feeding the coil material upwardly toward the intermittent feed device in such a manner that the coil material has a loop;

a servo motor for rotating said pair of feed rollers;

position sensor means disposed above said pair of feed rollers for detecting the amount of said loop of the coil material



to output a detection signal representative of said loop amount; and

a controller responsive to said detection signal for controlling the operation of said servomotor to control the amount of feed of the coil material by said pair of feed rollers.

5,392,978

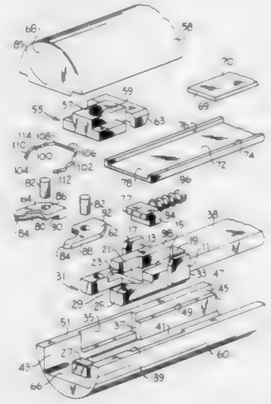
SURGICAL STAPLE AND ENDOSCOPIC STAPLER

Miguel A. Velez, Yorba Linda; Jaime S. Velez, Mission Viejo, and Alvaro Velez, Laguna Niguel, all of Calif., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 929,483, Aug. 12, 1992, abandoned, which is a continuation of Ser. No. 653,029, Feb. 8, 1991, abandoned. This application Oct. 15, 1993, Ser. No. 137,884

Int. Cl.[6] A61B *17/068, 17/064*

U.S. Cl. 227—177 **14 Claims**



14. An endoscopic stapler for stapling body tissue, which comprises:

a) an elongate member which supports at least one staple, said elongate member having camming means having camming portions and formed within said elongate member and proximate a distal end thereof, said elongate member dimensioned to be received by a trocar;

b) in actuating means having a jaw carrier disposed proximate the distal end of said elongate member;

c) a first jaw and a second jaw pivotally mounted on the jaw carrier of said actuating means, said first and second jaws each having a camming projection having a camming surface formed thereon, said first and second jaws being

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adapted to receive said at least one staple from within said elongate member, said first and second jaws being movable within said elongate member such that each said camming surface of each said jaw is urged against said camming portions of said elongate member to pivot each said jaw around said elongate member camming means to move a distal end of each one of said jaws toward a distal end of the other so as to apply and crimp said staple positioned between said jaws to the body tissue; and

d) a biasing mechanism for individually urging said at least one staple toward said first and second jaws and into said jaws.

5,392,979

SURGICAL STAPLER APPARATUS

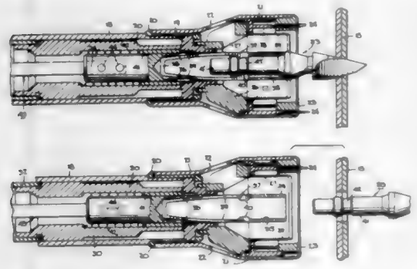
David T. Green, Westport; Henry Bolanos, Norwalk, and Keith Ratcliff, Sandy Hook, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 622,943, Dec. 6, 1990, Pat. No. 5,285,944, which is a continuation of Ser. No. 54,328, May 26, 1987, Pat. No. 5,119,983. This application Nov. 12, 1993, Ser. No. 151,398

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[6] A61B *17/115*

U.S. Cl. 227—179 27 Claims



1. A surgical apparatus for applying fasteners comprising:

a tubular housing having a longitudinal axis and a movable shaft positioned therein;

an anvil assembly removably mounted to said movable shaft, said anvil assembly including an anvil head and an anvil shaft; and

a detent mechanism for removably mounting said anvil shaft to said movable shaft, said detent mechanism including at least one detent positioned for movement between first and second positions, wherein in said first position said at least one detent prevents release of said anvil shaft from said movable shaft and in said second position said at least one detent allows release of said anvil shaft from said movable shaft.

20. A surgical apparatus for applying fasteners comprising:

a tubular housing having a longitudinal axis and a movable shaft;

a fastener pusher assembly positioned at a distal end of said tubular housing and including an annular row of fasteners;

a trocar extending from said movable shaft for penetrating body tissue, said trocar movable between a retracted position wherein said trocar is prevented from penetrating tissue and an extended position wherein said trocar protrudes from said tubular housing to penetrate tissue in a first direction;

an anvil assembly including an anvil head and an anvil shaft extending therefrom, said anvil shaft having a proximal end and a distal end and removably positioned along the longitudinal axis of the tubular housing; and

a trocar tip extending from said distal end of said anvil shaft for penetrating body tissue from a second direction, said second direction being opposite said first direction.

5,392,980

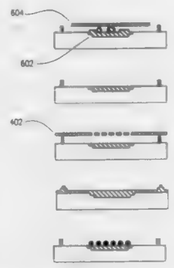
METHOD AND APPARATUS FOR REWORKING BALL GRID ARRAY PACKAGES TO ALLOW REUSE OF FUNCTIONAL DEVICES

Deepak N. Swamy, Austin; Scott Estes, Austin, and James Bell, Cedar Park, all of Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Dec. 29, 1993, Ser. No. 175,030

Int. Cl.[6] H01L *21/60*

U.S. Cl. 228—119 16 Claims



1. A method for reworking a ball grid array package that has been removed for lack of integrity of solder interconnections, comprising:

placing at least one ball grid array package having a solder ball grid into a rework tool;

wicking away residual solder balls from the solder ball grid;

placing a stencil onto the rework tool over the ball grid array package, wherein the stencil includes a pattern of openings corresponding to the solder ball grid on the ball grid array package; and

depositing solder balls onto the ball grid array package via the pattern openings in the stencil, thereby producing a new solder ball grid on the ball grid array package.

5,392,981

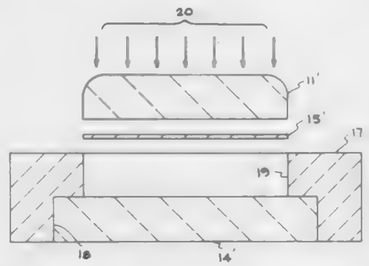
FABRICATION OF BORON SPUTTER TARGETS

Daniel M. Makowiecki, and Mark A. McKernan, both of Livermore, Calif., assignors to Regents Of The University Of California, Oakland, Calif.

Filed Dec. 6, 1993, Ser. No. 161,605

Int. Cl.[6] B23K *31/00, 101/36;* C23C *14/34*

U.S. Cl. 228—122.1 13 Claims



1. A process for fabricating high density boron sputtering targets, comprising:

providing a boron monolith; and

reinforcing the boron monolith by providing aluminum metallization on one side of the boron monolith.

12. A process for fabricating high density boron sputtering targets comprising:

providing a boron monolith; and

reinforcing the boron monolith by:

providing a piece of B_4C;

metallizing mating surfaces of the boron and B_4C; and

brazing the metallized surfaces of the boron and B_4C together to form a reinforced boron sputtering target.

5,392,982

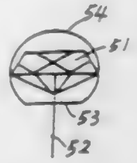
CERAMIC BONDING METHOD

Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576

Continuation-in-part of Ser. No. 804,287, Dec. 9, 1991, and Ser. No. 804,285, Dec. 9, 1991, Pat. No. 5,248,079, and Ser. No. 244,421, Sep. 16, 1988, Pat. No. 5,049,697, said Ser. No. 804,287, and Ser. No. 804,285, each is a continuation-in-part of Ser. No. 499,707, Mar. 27, 1990, Pat. No. 5,161,728, which is a continuation-in-part of Ser. No. 277,672, Dec. 14, 1988, abandoned, and Ser. No. 277,666, Nov. 29, 1988, Pat. No. 4,890,783, said Ser. No. 244,421, is a continuation-in-part of Ser. No. 277,672, Dec. 14, 1988. This application Sep. 20, 1993, Ser. No. 123,877

Int. Cl.[6] B23K *1/19, 31/02*

U.S. Cl. 228—124.5 49 Claims



1. A method of making a bonded ceramic structure comprising a ceramic bonded onto a substrate, comprising;

selecting the substrate having a top surface;

supplying the ceramic having a bottom surface;

positioning the ceramic to have at least a part of its bottom surface in contact with the top surface of the substrate;

furnishing at the contact area between the ceramic and the substrate a bonding substance containing a carbide-forming metal which chemically reacts with the ceramic, above a first temperature of below 1500° C., to form a metal carbide capable of chemically bonding to both the ceramic and the substrate,

said carbide-forming metal being selected from the group consisting of Au, B, Fe, Ir, La, Li, Mn, Mo, Os, Re, Rh, Ru, Si, Th, U, V, W, and mixtures or alloys thereof; and

without applying external pressure in the entire bonding process heating the ceramic in contact with the substrate above the first temperature to cause the chemical reaction to occur thereby forming a first bottom bonding layer microscopically substantially perfectly bonding the top surface of the substrate to the at least a part of the bottom surface of the ceramic;

the first bottom bonding layer being void-free and microcrack-free and from 100 Angstroms to 0.125 mm thick, and comprising essentially of the metal carbide.

5,392,983

REUSABLE GIFT WRAP

Patricia Clarke-Bolling, and Debra Will, both of Englewood, Colo., assignors to It's A Wrap!, Englewood, Colo.

Filed Jul. 30, 1993, Ser. No. 99,698

Int. Cl.[6] B65D *65/14, 65/02*

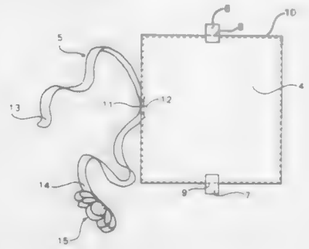
U.S. Cl. 229—87.19 6 Claims

1. A reusable gift wrapping comprising:

a unitary fabric wrap for receiving a gift therein, said fabric wrap having an outer surface and an inner surface, wherein at least one edge of said inner surface has a surface coating of a resealable vinyl acetate polymer adhesive; and

at least two flexible fabric tabs attached to opposite sides of the inner surface of said fabric wrap, wherein said flexible fabric tabs have a surface coating of said resealable adhesive; and

a fabric ribbon attached to said fabric wrap for decorating and securing said gift wrapping, wherein said fabric ribbon comprises a first end and a second end, wherein said second end terminates in a decorative bow selected from the group consisting of longitudinal, multi-looped and hemispherical design bows.



5,392,984

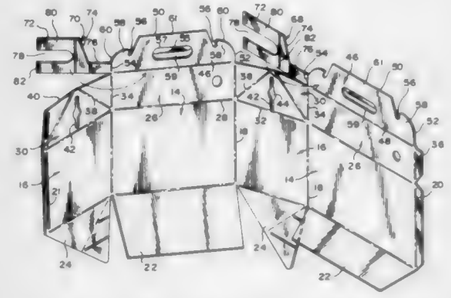
CARTON WITH REINFORCED HANDLE

James A. Yocum, West Chester, Pa., assignor to Dopaco, Inc., Downingtown, Pa.

Filed Feb. 8, 1994, Ser. No. 193,466

Int. Cl.[6] B65D *5/46*

U.S. Cl. 229—117.15 15 Claims



1. In a carton having a bottom and peripheral walls extending upwardly from said bottom and defining an interior, said walls comprising opposed side walls and opposed end walls, each said side wall terminating in a side upper edge, each said end wall terminating in an end upper edge; a folding closure assembly, said closure assembly comprising a pair of side closure panels, one integral with each said side upper edge along a fold line for inward folding to overlie said interior, said side closure panels each having an outer edge, a pair of handle panels one integral with said outer edge of each said side closure panel along a fold line for an outward folding thereof to extend upward from said side closure panels to overlie each other and define a handle upon an inward folding of said side closure panels, each said handle panel having an outer edge and having a hand hole defined through said handle panel between said handle panel outer edge and the corresponding side closure panel, a hand grip portion between said hand hole and said handle panel outer edge of each said handle panel, said handle panels each having opposed ends, a handle reinforcement panel integral with one said end of each said handle panel along a fold line for inward folding to overlie the handle panel integral therewith, each said reinforcement panel upon inward folding, overlying said respective integral handle panel between the respective fold line therebetween and the respective hand hole, and also at least partially along said hand grip portion of said integral handle panel, said reinforcement panels

being folded between and confined between said handle panels upon a folding of said handle panels to define a handle, said reinforcement panels extending toward each other from respective ends of said handle panels, and combining to extend full length of said hand grip portions, each said reinforcement panel having an opening therein conforming to a portion of the hand hole of the handle panel integral with the respective reinforcement panel, and end panels integral with said upper edges of said end walls along fold lines, said reinforcement panels being positioned one immediately outward of each said end panel and foldable independently thereof.

5,392,985

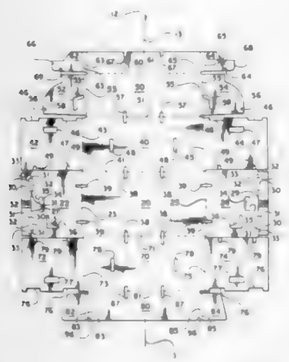
CONTAINER FOR SHIPPING STORING AND DISPLAYING ARTICLES

Ronnie Smith, 1606 W. North St., P.O. Box 1834, Vidalia, Ga. 30474, and A. L. Hartley, 141 Nelson Ave., Lyons, Ga. 30436

Continuation of Ser. No. 93,557, Jul. 19, 1993, abandoned. This application Jun. 16, 1994, Ser. No. 260,681

Int. Cl.[6] B65D *5/66*

U.S. Cl. 229—125 **26 Claims**



1. A blank for forming a container for storing, transporting and displaying articles comprising:

a base panel having a front edge, a rear edge, and opposing side edges;

a pair of opposing base side panels each foldably joined to said base panel at a respective said opposing side edge of said base panel, having a first exterior edge distal said side edge of said base panel;

a rear panel foldably joined to said[base panel at said rear edge of said base panel, having a bottom edge coincident with said rear edge of said base panel, a top edge, and opposing side edges;

a pair of opposing rear side panels each foldably joined to said rear panel at a respective said opposing side edge of said rear panel adjacent a respective said base side panel, having a top edge substantially collinear with said top edge of said rear panel, a bottom edge substantially collinear with said bottom edge of said rear panel, a second exterior edge distal a respective said side edge of said rear panel and a configuration corresponding to a configuration of said base side panel;

wherein a first distance between said top edge of said rear panel and said bottom edge of said rear side panel is generally equal to a second distance between said first exterior edge of said base side panel and said side edge of said base panel; and

wherein said bottom edge of said rear side panel and said top edge of said rear side panel correspond respectively to said side edge of said base panel and said first exterior edge of said base side panel; and

a primary top panel foldably joined to said rear panel at said top edge of said rear panel, having a rear edge coincident with said top edge of said rear panel, a front edge, and opposing side edges;

a pair of opposing tray support flaps foldably joined to said primary top panel at respective said side edges thereof;

a secondary top panel foldably joined to said primary top panel at said front edge of said primary top panel, having a rear edge coincident with said front edge of said primary top panel, a front edge, and opposing side edges;

a pair of locking flaps foldably joined to said secondary top panel at respective said side edges thereof;

a front panel foldably joined to said base panel at said front edge of said base panel, having a bottom edge coincident with said front edge of said base panel, a top edge, and opposing side edges;

a pair of opposing front side panels each foldably joined to said front panel at respective said opposing side edge of said front panel adjacent a respective said base side panel, having a top edge substantially collinear with said top edge of said front panel, a bottom edge substantially collinear with said bottom edge of said front panel, a third exterior edge distal said side edge of said front panel and a having configuration corresponding to a configuration of said respective said base side panel

means for securing respective said base side panels, said rear side panels and said front side panels in face to face relationship when the container is erected;

wherein a third distance between said top edge of said front panel and said bottom edge of said front panel is generally equal to said second distance between said first exterior edge of said base side panel and said side edge of said base panel; and

wherein said bottom edge of said front side panel and said top edge of said front side panel correspond respectively to said side edge of said base panel and said first exterior edge of said base side panel; and

an auxiliary top panel foldably joined to said front panel at said top edge of said front panel, having a front edge coincident with said top edge of said front panel, a rear edge, and opposing side edges;

a pair of opposing canopy support flaps foldably joined to said auxiliary top panel at respective said side edges thereof; means for releasably securing said primary top panel and said secondary top panel in perpendicular relation to one another when folded; and

means for releasably securing said secondary top panel with said auxiliary top panel so as to cover the container when folded.

5,392,986

CUP-LIKE PACKAGE WITH COVER FILM OF PLASTIC

Ekkehard Beer, Bad Schwalbach, and Alfred Schad, Wiesbaden, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 885,674, May 19, 1992, abandoned. This application Mar. 22, 1994, Ser. No. 215,655

Claims priority, application Germany, May 23, 1991, 4116808

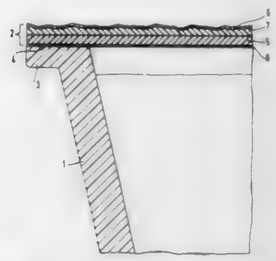
Int. Cl.[6] B65D *1/34, 43/02*

U.S. Cl. 229—125.35 **12 Claims**

1. A cup-like package for substantially flowable products, comprising:

(a) a one-piece receptacle with a top filling and removal opening; and

(b) a peel-off multi-layered polyester plastic cover film sealing the opening, having a surface texture, said multi-layered polyester plastic cover film comprising two outer



polyester. layers, and a third, lower-melting polyester layer embedded therebetween.

5,392,987

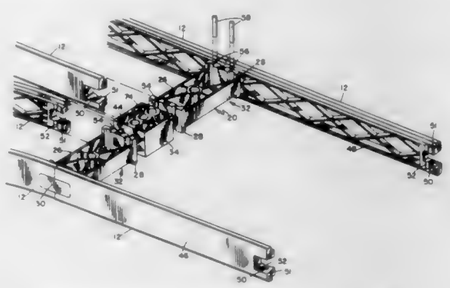
MODULAR MODEL RAILROAD TRACK SUPPORT SYSTEM WITH SNAP-FIT CONNECTIONS

Jan W. Ropers, 1663 Marisma Way, and Victor E. Chang, 703 Genter St., both of La Jolla, Calif. 92037

Filed Oct. 28, 1993, Ser. No. 144,810

Int. Cl.[6] E01B *23/00*

U.S. Cl. 238—10 E **13 Claims**



1. A modular model railroad track support assembly, comprising:

a plurality of elongate side rail members having opposite ends, the side rail members including straight rail members and curved rail members having a range of different curvatures;

a plurality of cross ties for selectively securing the side rail members together to form a model railroad track support following a selected path, the track support having at least two spaced parallel side rails extending along the path and a series of said cross ties extending between the side rails at spaced intervals along the track support to support at least one model railroad track on the cross ties between the spaced side rails, each side rail comprising a plurality of said side rail members secured together end-to-end by the cross ties;

each said cross tie having opposite ends and a first mating formation at each end of the cross tie;

each said side rail member having opposite ends and a second mating formation at each end of the side rail member for releasable mating engagement with the first mating formation at the corresponding ends of respective ones of said cross ties to secure the cross ties and side rail members together in said selected path.

5,392,988

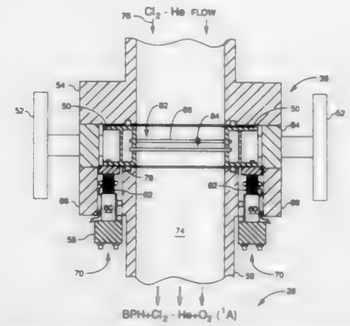
UNIFORM DROPLET GENERATOR

William J. Thayer, III, Kent, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 19, 1994, Ser. No. 186,055

Int. Cl.[6] B05B *1/02*

U.S. Cl. 239—102.2 **5 Claims**



1. A droplet injector assembly, said droplet injector assembly comprising:

an injector array, said injector array comprising:

a plurality of injector tubes, said injector tubes being parallel to one another, said injector tubes having a plurality of nozzles therein for outputting streams of droplets of a fluid, said nozzles being in a single row in each tube, said plurality of injector tubes being located in an upstream group and a downstream group, said injector tubes in said groups alternating in position so as to present a uniform array to a process stream flowing thereby;

a supply manifold, said supply manifold receiving said fluid from a fluid source external to said droplet assembly, said injector tubes connected into said supply manifold;

means for vibrating, said means for vibrating connected to said injector array, said vibrating means causing said streams of said fluid to break into streams of droplets of a predetermined size; and

means for mounting, said means for mounting connected to said means for vibrating and said injector array, said means for mounting being connected into a flow channel having therein a process stream that flows through said injector assembly.

5,392,989

NOZZLE ASSEMBLY FOR DISPENSING LIQUID

Roy E. Hurtig, Saratoga, Calif., assignor to Semiconductor Systems, Inc., Fremont, Calif.

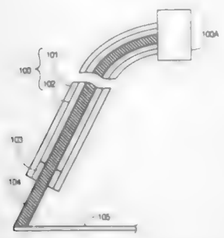
Continuation of Ser. No. 3,708, Jan. 13, 1993, abandoned. This application May 24, 1994, Ser. No. 248,566

Int. Cl.[6] B05B *15/04*

U.S. Cl. 239—119 **9 Claims**

1. A spin coating machine for applying photoresist to a semiconductor wafer, said machine comprising a nozzle assembly for dispensing a stream of solvent and a semiconductor wafer, said nozzle assembly having an expansive cavity at a dispensing end thereof, said nozzle assembly being located over said semiconductor wafer and being positioned such that said stream of solvent is oriented at an oblique angle to a top surface of said wafer, said expansive cavity being adapted to

prevent a drop of said solvent from falling from said nozzle assembly onto said semiconductor wafer following an interruption of flow of said stream of solvent through said nozzle assembly.



5,392,990

FIREFIGHTING DOUBLE-NOZZLE DELUGE GUN AND CONTROL METHOD THEREOF

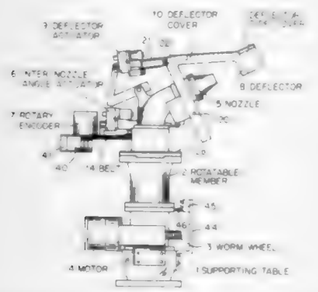
Teruo Iwata, Hachiouji; Toshihide Tsuji, Sagamihara; Shuji Matsumoto, and Katsuaki Tonomura, both of Hachiouji, all of Japan, assignors to Hochiki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 18,887, Feb. 17, 1993, abandoned. This application Apr. 22, 1994, Ser. No. 231,883

Claims priority, application Japan, Feb. 28, 1992, 4-042583

Int. Cl.[6] B05B *3/08*

U.S. Cl. 239—232 **8 Claims**



1. A firefighting double-nozzle deluge gun comprising:

a pair of nozzles arranged side by side pivotally on a rotatable member; said nozzles forming an angle therebetween;

inter-nozzle angle control means for controlling said angle between said nozzles, said angle being measured between two lines obtained by projecting center lines of said nozzles onto a horizontal plane; each of said nozzles having a deflector positioned in front of the nozzle during a short range watering operation; said deflector having a side cover for preventing a water stream having passed through said deflector from spreading excessively sideways; means for adjusting said angle between said nozzles and water-shooting pressure in accordance with desired water-reaching ranges for achieving an optimal watering pattern in any range between a substantially long range and a short range, an optimal watering pattern being achieved for a relatively very short range by controlling said deflector, said water-shooting pressure and said angle between said nozzles, said watering pattern being maintained constant from long range to substantially short range.

5,392,991

THRUST REVERSING DEVICE FOR JET AIRCRAFT ENGINES

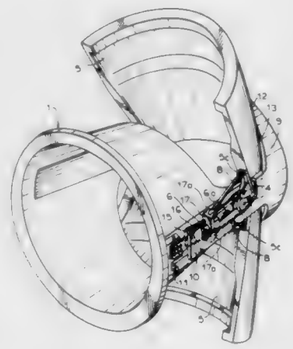
Alfredo Gatti, Valenza, and Luigi Gerbi, Turin, both of Italy, assignors to Finmeccanica S.p.A. - Ramo Aziendale Alenia, Rome, Italy

Filed Jun. 3, 1993, Ser. No. 71,646

Claims priority, application Italy, Jun. 9, 1992, TO92A000490

Int. Cl.[6] F02K *1/60*

U.S. Cl. 239—265.29 **3 Claims**



1. A thrust reversing device for a jet aircraft engine, comprising:

a pair of semi-shells hinged to a wall of a discharge nozzle extending along a nozzle axis and displaceable between retracted and deployed positions, the semi-shells defining a wall of the nozzle deflecting forward a jet output exiting the discharge nozzle in the deployed position and being formed with respective terminal edges;

actuators consisting of two actuating piston and cylinder units mounted externally on opposite sides of the wall of the nozzle for displacing the semi-shells between the retracted and deployed positions, each of the units including a respective cylinder body and a respective piston movable in the body and operatively connected with the respective semi-shell; and

a collar including two longitudinal lugs extending forward and free to slide on the discharge nozzle parallel to said nozzle axis, said lugs being operatively connected with respective ones of the pistons to be movable axially therewith and simultaneously with the semi-shells between fore and aft positions of the collar, the collar being formed with a leading edge lying complementary to the terminal edges of the semi-shells upon simultaneous displacing of the collar into the fore position and the semi-shells into the retracted positions, said collar having a trailing edge defining a termination circular profile of the nozzle in a plane extending substantially perpendicular to the axis of the discharge nozzle.

5,392,992

LOW PRESSURE PAINT SPRAY GUN WITH IMPROVED SPRAY HEAD

Irmgard Farnsteiner, Monaco, Monaco, and Philippe Lafitte, Cagnes Sur Mer, France, assignors to S.I.C.M.O. Societe Industrielle and Commerciale de materiel & d'Outillage, both of Monaco

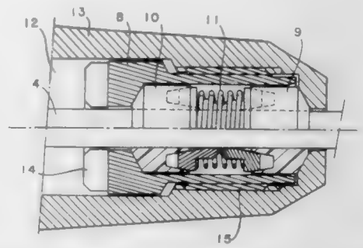
Filed Jan. 11, 1994, Ser. No. 180,057

Claims priority, application France, Jul. 21, 1992, 92 09264

Int. Cl.[6] B05B *1/28, 7/06;* **F16J** *15/00*

U.S. Cl. 239—296 **4 Claims**

1. In a paint spray gun comprising a body having a compressed air supply to atomize paint from a paint source external to the gun, the gun having a needle which is spring urged forwardly and retractable by a trigger to control the opening and closing of a nozzle in a spray head on the gun; the improvement comprising sealing means between the needle and the body of the spray gun, said sealing means surrounding a portion of the needle which is upstream from the paint relative to the direction that the paint flows along the needle and out the nozzle, said sealing means comprising a sealing cartridge having a cylindrical body enclosing two sealing joints surrounding



the needle, and prestressed compression spring means surrounding the needle and disposed between the two joints and urging the two joints away from each other against solid surfaces that deflect the joints into sealing contact with the needle, and a needle support in the form of a circular sleeve through which the needle passes from end to end, one end of said sleeve receiving the sealing cartridge while the other end of the sleeve is open and receives the spray head.

5,392,993

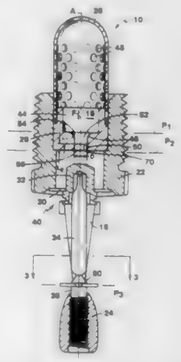
FIRE PROTECTION NOZZLE

Michael Fischer, West Kingston, R.I., assignor to Grinnell Corporation,, Cranston, R.I.

Filed Jan. 21, 1994, Ser. No. 184,871

Int. Cl.[6] B05B *1/26*

U.S. Cl. 239—522 **19 Claims**



1. In a fire protection nozzle of the type comprising a base, an orifice, defined by said base and having a predetermined diameter, through which fire-retardant fluid can flow, an inlet section having an upstream end and defining a conduit for flow of the fire-retardant fluid along a conduit axis and leading to an upstream end of said orifice, a diffuser element positioned downstream of said orifice, and one or more arms extending from said base and supporting said diffuser element in a position, where, when flow of the fire-retardant fluid from said inlet section through said orifice is established, the fire-retardant fluid emerges from said orifice in a stream which impinges on said diffuser element to be deflected in a spray pattern,

the improvement wherein

said inlet section, in the direction of the fire-retardant fluid flow, has a conduit surface defining a cross-sectional shape of an inwardly convex curvilinear arc, said inlet section has a length equal to or greater than the diameter of said orifice, and said conduit surface, at said upstream end of said inlet section, lies substantially tangent to a plane perpendicular to said conduit axis.

5,392,994

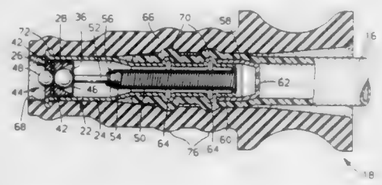
FUEL INJECTION NOZZLE

James Zizelman, Rochester; Corrine A. Volo, Webster; Roland S. Taylor, Honeoye Falls, and Jeffrey A. Rock, West Henrietta, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 1, 1993, Ser. No. 143,595

Int. Cl.[6] F02M *55/02*

U.S. Cl. 239—533.9 **5 Claims**



1. A fuel injection nozzle adapted to receive pulsed pressurized fuel from a source, comprising a valve seat assembly having a valve seat body with a longitudinally extending passage extending from an upstream end to a downstream end, and having a first, upstream seat extending about said passage at said upstream end and a second, downstream seat extending about said passage at said downstream end, wherein said upstream seat is in fluid communication with said downstream seat through said passage, and a bypass extending from upstream of said first seat to a location between said seats, said nozzle further comprising a valve assembly having a first, upstream valve member engageable with said upstream valve seat to regulate fuel flow through said upstream valve seat and to said downstream valve seat through said passage, a second, downstream valve member engageable with said downstream valve seat to regulate the flow of fuel therethrough, means connecting said first and second valve members relative to one another through said passage, and biasing means operable to urge said valve assembly in an upstream direction, against the force of said pressurized fuel source, such that said first valve member is displaced from said first valve seat and said second valve member is biased into engagement with said second valve seat to interrupt fuel flow through said second valve seat and out of said nozzle, said pulsed pressurized fuel operable to establish intermittent pressure differentials across said valve assembly to thereby overcome the force of said biasing means and urge said valve assembly downstream such that said first valve member is biased to engage said first valve seat to interrupt fuel flow therethrough and said second valve member is displaced from said second valve seat to permit fuel flow through said bypass to said location between said valve seats and out of said nozzle through said second, downstream valve seat.

5,392,995

FUEL INJECTOR CALIBRATION THROUGH DIRECTED LEAKAGE FLUX

Brent J. Wahba, Honeoye Falls, N.Y., assignor to General Motors Corporation, Detroit, Mich.

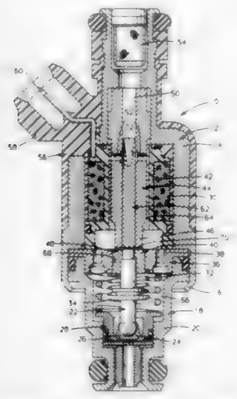
Filed Mar. 7, 1994, Ser. No. 206,582

Int. Cl.[6] B05B *1/30;* **F02M** *51/06*

U.S. Cl. 239—585.4 **1 Claim**

1. An electromagnetic fuel injector having a valve member moveable between opened and closed positions with respect to a valve seat to establish fuel flow through said injector, a valve

actuator comprising a solenoid assembly having a tubular center pole piece, an armature in operable communication with said valve member, said center pole piece and said armature having opposed working surfaces, and an annular outer pole piece circumjacently disposed about said armature, said center pole piece, said armature and said outer pole piece defining a magnetic circuit operable upon energization by an electrical signal, to cause said armature and associated valve member to move to said opened position and upon deenergization to move



to said closed position, said center pole piece comprising a region of high reluctance adjacent to its working surface and a magnetically permeable adjustment rod disposed therein, said adjustment rod having a first end situated for movement within said region of high reluctance to thereby vary the location, relative to the working surface of said armature, at which said high reluctance region begins and operable to control the direction of flux leakage from said magnetic circuit so as to control the element of said magnetic circuit upon which leakage flux exerts a force.

5,392,996

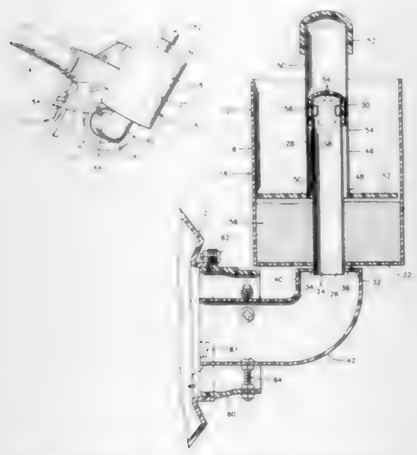
PESTICIDE DUSTER ATTACHMENT FOR PORTABLE BLOWER

Frank G. Ussery, 173 Farr Rd., Kathleen, Ga. 31047

Filed May 2, 1994, Ser. No. 235,928

Int. Cl.[6] A01C *15/04*

U.S. Cl. 239—654 **11 Claims**



8. A duster including an upwardly opening container having a bottom wall provided with a central opening formed therein, an upstanding vacuum tube including a lower outlet end secured to said bottom wall about said opening and an upper inlet end spaced at least appreciably above said bottom wall, transverse plate means disposed in and loosely slidable within said container toward and away from said bottom wall and having a central opening formed therein through which said vacuum tube is loosely slidingly received, a variable volume area of the interior of said container disposed between said transverse plate means and said bottom wall being adapted to receive fine, granular dusting material therein, and communicating means defining a closed passage communicating said central opening in said plate means with the interior of said upper inlet end of said vacuum tube, said lower end of said vacuum tube being adapted to be communicated with the air intake of a blower assembly including a pressurized air outlet through which air having predetermined amounts of dusting material entrained therein may be discharged from said air outlet.

5,392,997

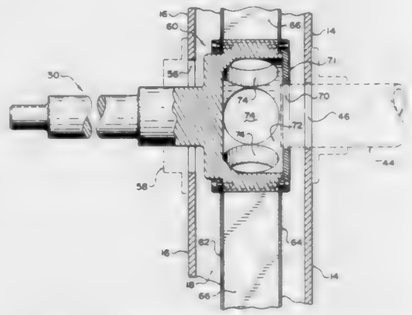
NON-IMPACT PULVERIZER AND METHOD OF USING

Inaco Comensoli, 2985 Lazy-A Street, Coquitlam, B.C., Canada V3C 3N6 , and Mauro Comensoli, 719 Sydney Avenue, Coquitlam, B.C., Canada V3K 3K3

Filed Dec. 8, 1993, Ser. No. 162,935

Int. Cl.[6] B02C *19/06*

U.S. Cl. 241—5 **10 Claims**



1. A method of non-impact pulverizing of material comprising:

i) providing an apparatus for pulverizing material comprising:

a) a housing having a hollow interior and an input conduit and an output conduit communicating with said hollow interior;

b) a cylindrical rotor mounted for rotation in said hollow interior of said housing, and comprising a hollow hub, two circular parallel discs mounted coaxially on said hub, a plurality of flat blades perpendicular to said parallel discs extending radially from said hub to a point adjacent the outer circumference of said circular discs between said discs, said hub having an aperture opening to the hollow interior of said hub and a plurality of openings in said hub between said blades communicating between the interior of said hub and an area between said blades;

c) power driven means for rotating said rotor; wherein said input conduit is adapted to direct said material to be pulverized to said hollow interior of said hub;

ii) rotating said rotor at high angular velocity; and

iii) introducing said material into said hollow interior of said hub;

whereby said material is substantially pulverized prior to any impact with said housing.

5,392,998

SIFTER FOR SIFTING GRANULAR MATERIAL AND GRINDING SYSTEM WITH INSERTION OF SUCH A SIFTER

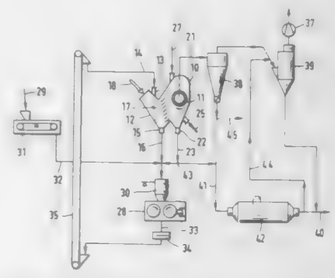
Albert Suessegger, Bergisch Gladbach, and Siegfried Strasser, Much, both of Germany, assignors to Kloeckner-Humboldt-Deutz AG, Cologne, Germany

Filed Jul. 19, 1993, Ser. No. 94,377

Claims priority, application Germany, Jul. 18, 1992, 4223762

Int. Cl.[6] B02C *23/12*

U.S. Cl. 241—79.1 **13 Claims**



1. A circulating grinding system comprising in combination a sifter for sifting granular material and a high pressure roller press, said sifter comprising in combination:

a rotary rod basket having circumferentially spaced axially extending turbo elements for the admission and discharge of airborne coarse and fine materials to be sifted with fine material proceeding axially from the rod basket and a medium grain fraction being discharged downwardly from the rod basket;

a fluidized bed pre-sifting chamber laterally of the rod basket having a top entry for admitting the material to be sifted and a lower discharge for coarse fraction material;

said chamber having opposed porous walls defining a pre-sifting zone between them and transmitting air through the walls across said zone;

and air admission means for directing a flow of air through said walls across said zone toward the rod basket whereby the coarse fraction material is removed in the pre-sifting chamber and does not come into contact with the rod basket; and

said high roller press being capable of interparticle comminution including opposed pressing rollers having a nip pressure in excess of 2 t/cm of roller length.

5,392,999

ROTOR FOR IMPACT CRUSHERS OR HAMMER MILLS

Rolf König, Telgte, and Gerhard Hemesath, Havixbeck, both of Germany, assignors to Noell Service und Maschinentechnik GmbH, Langenhagen, Germany

Filed Feb. 28, 1991, Ser. No. 662,009

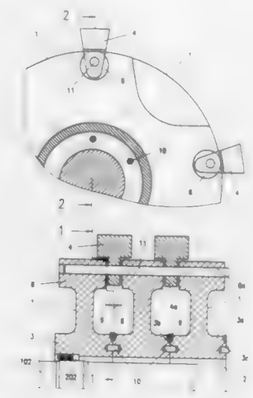
Claims priority, application Germany, Mar. 1, 1990, 4006328.3

The portion of the term of this patent subsequent to Jan. 17, 2012, has been disclaimed.

Int. Cl.[6] B02C *13/04*

U.S. Cl. 241—194 **23 Claims**

1. A rotor body for impact crushers or hammer mills comprising at least two coaxial steel casting discs having hubs with an axial length greater than the thickness of said discs and surpassing the discs at both sides, whereby the hubs of neighboring discs contact each other and are bonded to each other by annular welded seams, the axial length of the hubs is such, that neighboring discs or objects affixed to them before bonding the hubs define an annular clearance between the discs



over the whole circumference which enables a welding implement to roundabout reach said hubs.

5,393,000

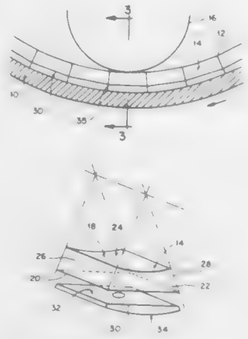
CRUSHER WITH AN ANNULAR ROLLER TRACK

Philippe Lagache, Marcq-en-Baroeul, and Bernard Boussekey, Lille, both of France, assignors to Fratelli BUZZI SpA, Casale Monf.to, Italy and FCB S.A., Montreuil, France

Filed Mar. 21, 1994, Ser. No. 215,359

Int. Cl.[6] B02C *4/28*

U.S. Cl. 241—228 **11 Claims**



1. A crusher comprising

(a) a cylindrical body,

(b) a lining supported by a portion of the cylindrical body and forming an annular track,

(1) the entire supporting cylindrical body portion having a prismatic interior surface, and

(c) at least one roller arranged to roll under pressure on the annular track,

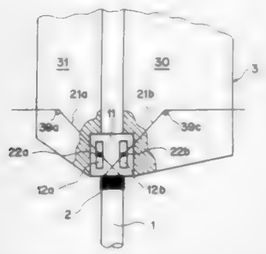
(1) the lining consisting only of plates having a concave interior surface shaped to form a rolling surface of the annular track and a flat exterior surface resting on the prismatic interior surface of the supporting cylindrical body portion.

5,393,001

CORE CHUCK FOR COIL WINDING

Ake Gustafson, Route Champ Thomas, 1618 Chatel-St-Denis, Switzerland

Filed Feb. 10, 1992, Ser. No. 833,370
Claims priority, application Switzerland, Feb. 25, 1991, 552/91
Int. Cl.[6] H01F *41/06*
U.S. Cl. 242—7.14 7 Claims



1. A chuck for holding an elongated head of a winding form, said winding form further including an elongated core having an outer surface adjacent to said head for supporting winding wire, said head having at least one metallic strip having a top and a bottom which is attached laterally to said head, comprising:

two spaced-apart and opposing elongated jaws having proximate surfaces which are complementary to said head for grippingly receiving the same, said jaws each being shaped to receive said head yet avoid blocking access to said top of said metallic strip;

a fixed means for guiding said winding wire, said means for guiding extending from one of said jaws and being in alignment with said metallic strip and said outer surface of said core whereby with rotation of said chuck and said winding wire relative to each other said winding wire is selectively positionable to extend between the outer surface of the core and the means for guiding and thereby over said metallic strip such that said winding wire can be attached to said metallic strip; and

means for releasably biasing said opposing jaws toward engagement with each other in order to grip said head therebetween.

5,393,002

PROCESS AND DEVICE FOR THE CONSTITUTION OF A YARN END RESERVE WINDING ON YARN PACKAGES OF A TEXTILE MACHINE

Dietmar Greis, and Walter Mayer, both of Ingolstadt, Germany, assignors to Schubert & Salzer Maschinenfabrik AG, Germany

Continuation-in-part of Ser. No. 733,101, Jul. 19, 1991, abandoned. This application Jul. 16, 1992, Ser. No. 914,993
Claims priority, application Germany, Jul. 21, 1990, 4023291
Int. Cl.[6] B65H *54/02*
U.S. Cl. 242—18 OEW 6 Claims

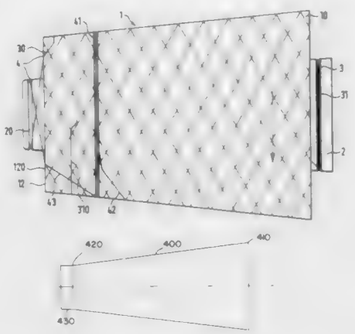
1. A process for producing a yarn end reserve on a cross-wound package which is carried on a conical package former having end portions extending beyond the side of the wound yarn package, the smaller end portion of the conical package former defining a cylindrical portion, the process comprising:

unwinding the package to withdraw a length of yarn from the package;

rotating the package in the normal winding direction;

deflecting the withdrawn yarn onto the cylindrical end portion of the package former as the package is rotated in the normal winding direction causing the yarn to wrap around the surface of the cylindrical end portion; and

deflecting the withdrawn yarn end over the side of the



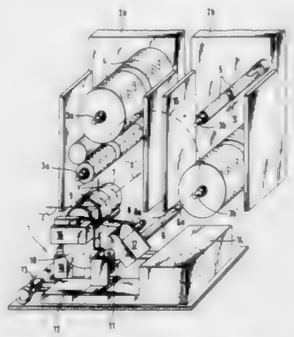
package for laying the withdrawn yarn end on the surface of the package.

5,393,003

APPARATUS FOR THE AUTOMATIC HANDLING OF BOBBIN TUBES AND COMPLETELY WOUND BOBBINS OF SPINNING MACHINES

J. Juergen Watermann, Hohenzollerstrasse 17, 4700 Hamm 1, Germany

Continuation of Ser. No. 859,391, May 22, 1992, abandoned. This application Jan. 10, 1994, Ser. No. 180,754
Claims priority, application Germany, Oct. 2, 1990, 4031076
Int. Cl.[6] B65H *67/04*
U.S. Cl. 242—35.5 A 11 Claims



1. An apparatus for at least partially automatic handling of empty bobbin tubes and completely wound bobbins of a spinning machine, said apparatus comprising:

a common apparatus frame;

a take-over/transfer arm for empty tubes supported on said common frame;

a take-over/transfer arm for wound bobbins, supported on said common frame;

an actuating and swivel mechanism supported on said common frame for swivelling said empty tube take-over/transfer arm and said wound bobbin take-over/transfer arm between a service position of said empty tube take-over/transfer arm and said wound bobbin take-over/transfer arm, in which wound bobbins are slipped onto said wound bobbin take-over/transfer arm and empty tubes are slipped off said empty tube take-over/transfer arm, a transporting position in which the wound bobbin take-over/transfer arm and the empty tube take-over/transfer arm are displaced between a wound bobbin unloading and empty tube loading station and a spinning machine, and wound bobbin unloading and empty tube loading position, in which the wound bobbin is slipped off said wound bobbin take-over/transfer arm and the empty tubes are slipped onto said empty tube take-over/transfer arm;

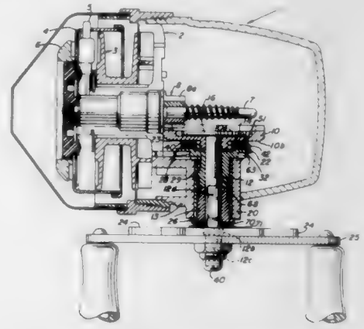
wherein said actuating and swivel mechanism includes swivel means for swivelling said take-over/transfer arms within a space defined by said common frame, about three spatial axes, defining respectively, the service, transporting and wound tube unloading and empty tube loading positions of said take-over/transfer arms.

5,393,004

MULTI-DISC DRAG FOR FISHING REELS

Robert E. Weaver, and Robert L. Carpenter, both of Tulsa, Okla., assignors to Zebco Corporation, Tulsa, Okla.

Filed Jul. 20, 1993, Ser. No. 95,058
Int. Cl.[6] A01K *89/01*
U.S. Cl. 242—268 6 Claims



to be swung to said second position when said spool is rotated in a fishline unwinding direction,

wherein said restriction means includes a spring provided between said swing member and said reel main body and a pin implanted in said reel main body, and wherein said swing member is kept in contact with said pin by said spring so as to disengage said intermediate gear from said drag gear.

5,393,007

CORD REEL MECHANISM

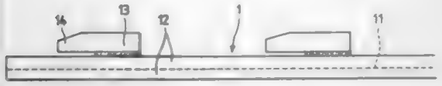
Kenichi Urushibata, Tochigi, Japan, assignor to Sumitomo Electric Industries, Ltd. and Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 18, 1993, Ser. No. 33,761

Claims priority, application Japan, Mar. 19, 1992, 4-014862[U]; Jun. 8, 1992, 4-038659[U]

Int. Cl.[6] H01R *35/02*

U.S. Cl. 242—532 **21 Claims**



1. A cord reel mechanism comprising:

a housing having an inner cylinder and an outer cylinder; and

a flattened cord contained in the housing, the flattened cord being attached at one end to the inner cylinder and vortically wound about the inner cylinder, the flattened cord having a plurality of reinforcing tape segments attached at spaced apart locations along the cord.

5,393,008

REEL-UP WITH SEPARATELY ACTING ACTUATORS FOR INFLUENCING LINEAR PRESSURE

Markku Kyytsönen, Numminen, Finland, and Tord O. S. Svanqvist, Karlstad, Sweden, assignors to Valmet-Karlstad, Karlstad, Sweden

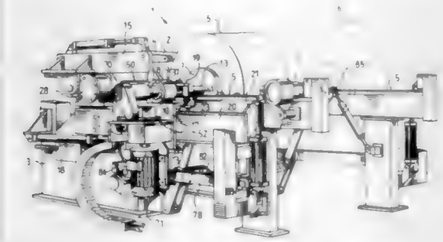
Filed Sep. 16, 1992, Ser. No. 945,850

Claims priority, application Sweden, Sep. 18, 1991, 9102705-2

The portion of the term of this patent subsequent to Dec. 27, 2011, has been disclaimed.

Int. Cl.[6] B65H *18/10, 18/16, 18/26*

U.S. Cl. 242—541.1 **13 Claims**



1. A reel-up in a paper machine in which paper is manufactured in a continuous web and reeled onto reeling drum in the reel-up to produce a paper reel, each end portion of the reeling drum being provided with a bearing housing and a braking drum with a coupling device for optional central driving of said reeling drum, said reel-up comprising a stand; a driven surface winding means rotatably journalled in the stand for advancing the continuous web over said surface winding means in surface-to-surface contact with the paper reel and thereby defining a nip between said surface winding means and the paper reel; two parallel rails mounted in the stand to support the reeling drum at said bearing housings; a secondary system movable linearly along said rails and provided in the vicinity of each rail with a linearly movable secondary body; first actuators mounted on the stand for synchronous movement of the secondary bodies as the diameter of the paper reel increases during Winding; press devices disposed on the secondary bodies; each secondary body comprising a second actuator mounted on a respective press device-and arranged to press said press device against a corresponding bearing housing on the reeling drum to control the linear pressure in the nip between the surface winding means and the paper reel independent of said first actuators.

5,393,009

DEVICE FOR FEEDING REELS INTO A PACKAGING MACHINE

Armando Neri, Bologna, Italy, assignor to G.D. S.p.A., Bologna, Italy

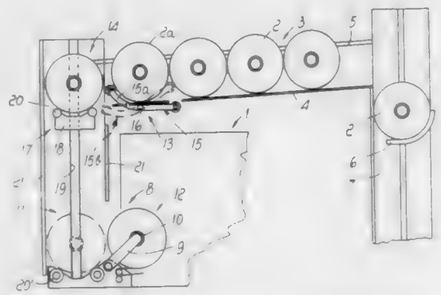
Division of Ser. No. 706,503, May 28, 1991, Pat. No. 5,312,060.

This application Jan. 11, 1994, Ser. No. 180,158

Claims priority, application Italy, Jun. 11, 1990, 3547 A/90

Int. Cl.[6] B65H *19/12*

U.S. Cl. 242—559.3 **15 Claims**



1. Device for feeding reels of tape material into a packaging machine comprising:

a buffer magazine for said reels, defining a support plane thereof along which said reels are advanced after one another;

distribution means for guiding a first one of said reels into a removal position;

transfer means for transferring said reels one after the other from said removal position to an underlying receiving position;

a reel guiding channel for guiding said reels being transferred by said transfer means from said removal position to said receiving position, said reel guiding channel comprising a guide element arranged in front of said buffer magazine;

a device for changing the reel to be unrolled in the packaging machine being arranged at said receiving position;

wherein said distribution means comprises a distribution element having a front portion and a rear portion, said distribution element being movable about a pivot mounted at a position between said front portion and said rear portion, said pivot having an axis which is perpendicular to a vertical plane of said buffer magazine, whereby said distribution element being oscillatable about said pivot between a first position, wherein said front portion thereof retains said first reel, and a second position, wherein said distribution element allows said first reel to descend into said removal position while said rear portion thereof retains a subsequent reel, said front portion being curved so as to form a ledge seating element for gently receiving and retaining said first reel when said distribution element is in said first position, and said rear portion being substantially straight, said front portion and said rear portion being arranged such as to alternatively provide, in cooperation with said support plane of said buffer magazine either a continuous plane surface along which, when said distribution element is in said first position, said first reel is allowed to freely move to, and be received in said curved front portion, or a sloping bridge surface, said first reel being released from said curved front portion and prompted to descend along said bridge surface into said removal position when said distribution element is in said second position.

5,393,010

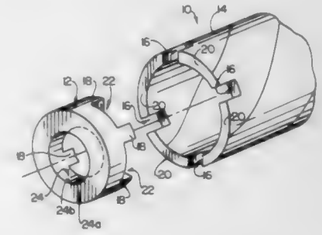
TUBULAR CORE ASSEMBLY FOR WINDING PAPER AND OTHER SHEET MATERIAL HAVING MECHANCIALLY INTERLOCKED END MEMBERS

Lawrence E. Renck, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Apr. 20, 1993, Ser. No. 49,550

Int. Cl.[6] B65H *75/50*

U.S. Cl. 242—613.5 **18 Claims**



1. A tubular core assembly for a roll of paper or other sheet material comprising:

an elongate hollow cylindrical central core body member comprising a bodywall and having opposed ends, a predetermined outside diameter, and a predetermined inside diameter;

inside diameter-reducing annular end members, each having an exterior periphery of which at least a portion defines the same outside diameter as said central core body member and having a predetermined inside diameter less than the inside diameter of said central core body member;

each of said annular end members being secured to an opposed end of said central core body member in coaxial relation therewith;

a plurality of axial grooves integrally formed in said bodywall of said central core body member, said grooves having a depth extending substantially through said bodywall; and

a plurality of axially extending tongue members integrally formed in an end of each of said annular end members received in said grooves of said central core body member in interlocking relationship therewith;

whereby said inside diameter-reducing annular end members are secured to said central core body member in positive circumferential locking relationship.

5,393,011

CONTROL SYSTEMS FOR MOVING BODIES

Albert J. Dunn, Bangor, and Oliver S. Carson, Belfast, both of Northern Ireland, assignors to Shorts Missile Systems Limited, Belfast, Northern Ireland

Filed Dec. 3, 1965, Ser. No. 512,822

Int. Cl.[6] F42B *10/60*

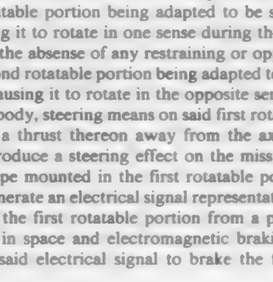
U.S. Cl. 244—3.21 **10 Claims**

1. A moving body comprising:

a rotatable portion arranged for rotation about a predetermined axis relative to another portion of the body,

first and second control members on said rotatable portion for separate actuation by first and second actuator mechanisms movable in response to the energisation of first and second electromagnetic coils forming part of the mechanisms and contained in the said other portion of the body, said coils being mounted in spaced relation in the said other portion along the rotary axis of the said rotatable portion and concentric with respect thereto, with the first coil nearer to the rotatable portion than the second coil,

the first actuator mechanism comprising an axially movable sleeve co-axial with the rotary axis and extending at one end into the rotatable portion and at the other end carrying an armature disc mounted concentrically with respect to the sleeve and in cooperating relation with the first coil



which upon energisation causes the disc and the sleeve to move axially to effect actuation of the first control member, and

the second actuator mechanism comprising an axially movable shaft coaxial with the rotary axis and slidable within the sleeve, said shaft extending beyond said sleeve at each end, one end of the shaft extending into the rotatable portion of the body and the other end carrying a further armature disc concentric with the shaft and arranged in cooperating relation with the second coil which upon energisation causes the further disc and the shaft to move axially to effect the second control member.

5,393,012

CONTROL SYSTEMS FOR MOVING BODIES

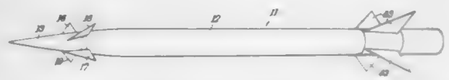
Albert J. Dunn, Bangor, Co. Down, Northern Ireland, assignor to Shorts Missile Systems Limited, Belfast, Northern Ireland

Filed Mar. 15, 1966, Ser. No. 536,188

Claims priority, application United Kingdom, Mar. 25, 1965, 12813

Int. Cl.[6] F42B *10/02, 10/60*

U.S. Cl. 244—3.23 **14 Claims**



1. A missile comprising a first rotatable portion arranged for rotation relative to a second rotatable portion of the missile, the first rotatable portion being adapted to be subjected to a thrust causing it to rotate in one sense during the flight of the body and in the absense of any restraining or opposing forces, and said second rotatable portion being adapted to be subjected to a thrust causing it to rotate in the opposite sense during the flight of the body, steering means on said first rotatable portion for exerting a thrust thereon away from the axis of rotation thereof to produce a steering effect on the missile or body, a free gyroscope mounted in the first rotatable portion and arranged to generate an electrical signal representative of the roll deviation of the first rotatable portion from a predetermined roll attitude in space and electromagnetic braking means responsive to said electrical signal to brake the first rotatable

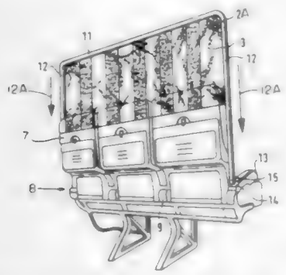
portion against the second rotatable portion to bring said first rotatable portion to said predetermined roll attitude and to hold it in that attitude.

5,393,013

AIRCRAFT CABIN DIVIDING DEVICE

Uwe Schneider, Achim, and Markus Schumacher, Buxtehude, both of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Germany

Filed Nov. 30, 1992, Ser. No. 982,860
Claims priority, application Germany, Dec. 17, 1991, 4141606
Int. Cl.[6] B64D *11/00*
U.S. Cl. 244—118.5 **7 Claims**



1. A combination comprising an aircraft cabin, a plurality of passenger seats arranged in rows to form seat structures in said aircraft cabin, and a cabin dividing device for vertically dividing said aircraft cabin into separate cabin sections, said cabin dividing device comprising a divider curtain extending over an area for forming a cabin divider, a divider frame including a curtain rod for suspending said curtain, first plug-in couplers secured to a lower portion of said divider frame, and second plug-in couplers secured to at least one seat structure of said seat structures for cooperating with said first plug-in couplers for locking said divider frame to said at least one seat structure, said first and second plug-in couplers being shaped and oriented for defining a plug-in connection in which gravity facilitates said locking of said divider frame to said at least one seat structure and said plug-in connection is established without using any tool and an overhead mounting of said frame is avoided to permit position adjustment of said cabin dividing device simultaneously with position adjusting said at least one seat structure.

5,393,014

PNEUMATIC DEICING DISTRIBUTION VALVE AND SYSTEM

Norbert A. Weisend, Jr., Cuyahoga Falls; Alan J. Fahrner, Canton, and Robert N. Hohenshil, Doylestown, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 954,098, Sep. 30, 1992, abandoned. This application May 12, 1994, Ser. No. 241,941
Int. Cl.[6] B64D *15/00*
U.S. Cl. 244—134 A **21 Claims**

1. A valve for transferring a pressurized fluid and pulling a vacuum comprising:

a body having generally cylindrical cavity provided therein;

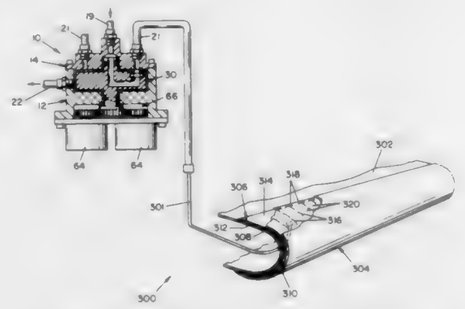
a cap disposed on said body having an input port means and a plurality of output port means;

a rotary member for being rotatably received in said cavity having a duct means provided therein for selectively putting said input port means in fluid communication with a selective one of said plurality of output port means thereby leaving a plurality of nonselected output port means, said rotary member having a diameter less than said cavity;

first sealing means for sealing said input port to said duct means;

second sealing means for sealing the selected one of said plurality of output port means to said duct means;

third sealing means for providing a seal between said rotary member and said cavity; and,



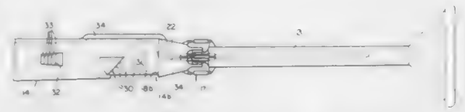
vacuum port means for voiding said cavity to thereby provide a vacuum to the nonselected said plurality of output port means.

5,393,015

ROTARY WING AIRCRAFT IN-FLIGHT REFUELING DEVICE

Frank N. Piasecki, Haverford, Pa., assignor to Piasecki Aircraft Corporation, Essington, Pa.

Filed Jun. 1, 1993, Ser. No. 70,535
Int. Cl.[6] B64D *39/00*
U.S. Cl. 244—135 A **18 Claims**



1. A fuel transfer device for in-flight refueling of a rotary wing aircraft from a rotary wing tanker aircraft comprising:

an elongated, rigid boom having a forward end and a rear end,

said boom forward end being adapted for connection to fuselage structure of said tanker aircraft with said boom projecting exteriorly of said tanker aircraft and supported as a cantilever,

a funnel refueling drogue having an interior configured to receive a fueling probe of said refueling aircraft,

swiveling means connecting a forward portion of said drogue to said boom rear end,

fuel conduit means supported by and extending along said boom between a forward end portion of said conduit means adapted for connection to a fuel system of said tanker aircraft and a rear end portion contained within said drogue coterminous with a female connection for said fueling aircraft probe,

means establishing a gaseous jet discharge directed outwardly from and transversely of said boom adjacent said boom rear end and

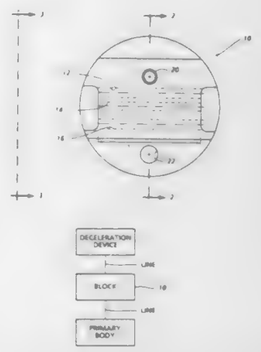
means controlling the volume rate of said gaseous jet discharge, whereby a controllable position stabilizing force is applicable to said cantilever supported boom.

5,393,016

ENERGY ABSORPTION DEVICE FOR SHOCK LOADING

C. Douglas Howard, Edwardsport; Donald E. LaGrange, Washington; David A. Beatty, Worthington, and David C. Littman, Bloomington, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1993, Ser. No. 83,602
Int. Cl.[6] B64D *17/36*
U.S. Cl. 244—138 R **1 Claim**



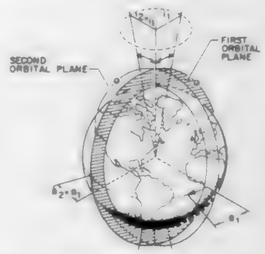
1. An energy absorbing device for use in the deployment into an airstream of an aerodynamic deceleration device attached to a primary body by at least one line connected at its ends to the deceleration device and to the primary body comprising a block mounted intermediate the ends of the line, the block having a plurality of holes passing therethrough, the block portions between the holes and between some of the holes and the surface of the block forming webs of material which are fracturable, the length and thickness of the webs being proportional to the weight of the load, the line being threaded through the holes so that application of shock tension force to the line during deployment of the body into the air stream causes fracture of at least some of the webs to provide absorption of at least a portion of the shock energy generated when the shock tension force is applied during deployment.

5,393,017

TECHNIQUE FOR DISPENSING EARTH SATELLITES INTO MULTI-PLANAR ORBITS

Stanford S. Smith; Gerasimos M. Marinos, both of Boulder Creek, and Emanuel V. Dimicelli, Palo Alto, all of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Jan. 25, 1993, Ser. No. 8,036
Int. Cl.[6] B64G *1/00*
U.S. Cl. 244—158 R **8 Claims**



1. A method of dispensing a first satellite into a designated first orbit in a first orbital plane, and a second satellite into a designated second orbit in a second orbital plane, said first and second satellites being dispensed from a launch vehicle on a single launch, said method comprising the sequential steps of:

a) placing said launch vehicle with said first and second satellites carried thereon in said first orbital plane;

b) releasing said first satellite into said designated first orbit in said first orbital plane;

c) imparting a first acceleration to said launch vehicle so as to change a combination of inclination and ascending nodal longitude of said launch vehicle so that said launch vehicle undergoes a nodal drift from said first orbital plane to said second orbital plane over a specified time interval;

d) imparting a second acceleration to said launch vehicle when said launch vehicle reaches said second orbital plane so as to counteract the change in inclination of said launch vehicle produced by said first acceleration, and such that said second acceleration causes said launch vehicle to remain in said second orbital plane; and

e) releasing said second satellite into said designated second orbit in said second orbital plane.

5,393,018

UNFOLDING AND LOCKING JOINT FOR SPACE ELEMENTS

Martin Roth, Taufkirchen, and Helmut Kiendl, München, both of Germany, assignors to Deutsche Aerospace AG, Germany

Filed Nov. 10, 1993, Ser. No. 149,830
Claims priority, application Germany, Nov. 10, 1992, 4237854
Int. Cl.[6] B64G *1/46*
U.S. Cl. 244—173 **9 Claims**



1. A joint for unfolding and locking of space elements, comprising two joint halves configured to be swivelled about a common axis and connected with one of two respective adjacent space elements, a detent lever configured as a locking element and swivellably disposed on one joint half and acted upon by an elastic force in a direction to the common axis, a guiding contour situated on the other joint half, spaced from the common axis and provided with a depression, and a guiding element resting on the guiding contour, in the folded as well as not completely unfolded condition of the joint, which guiding element is configured as a portion of the detent lever and which, in the unfolded condition, engages in the depression, wherein

a cam having a first surface is situated on the other joint half, a clamping nose configured as a portion of the detent lever and having a second surface is configured such that, after engaging of the guiding element in the depression and shortly before the reaching of the completely unfolded condition, the second surface slides onto the first surface and is there clamped, and

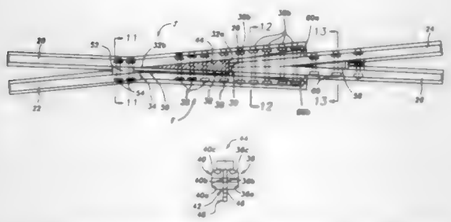
a stop element is movably disposed on one joint half so that, in the completely unfolded condition, the stop element is pressed onto a stop surface situated on the other joint half.

5,393,019

RAILROAD TURNOUT FROG WITH CONTINUOUS RUNNING SURFACE

Arturo A. Ortiz-Rivas, Manuel Ma De Llano, No. 1104-D OTE, Monterrey, N.L., Mexico

Filed May 3, 1994, Ser. No. 237,616
Claims priority, application Mexico, May 4, 1993, 22806
Int. Cl.[6] E01B *7/00*
U.S. Cl. 246—468 11 Claims



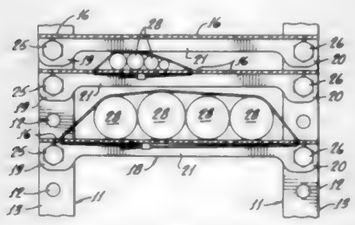
1. In a railroad frog where first and second wings converge toward each other to form a juncture with a long point rail and a short point rail, an improved railroad frog comprising:
said long point rail and said short point rail forming a flat vertical surface at a point of juncture;
a mobile point member abutting said flat vertical surface at the point of juncture between said long point rail and said short point rail and extending therefrom to a throat between said first and second wings, said mobile point member comprising:
a first point filler member mounted extending forwardly from said point of juncture to said throat and having a first side surface dimensioned to be fitted along a web of said first wing;
a second point filler member mounted extending forwardly from said point of juncture to said throat and having a second side surface dimensioned to be fitted along a web of said second wing;
said first and second point filler members each having second side surfaces forming a gap between them along their forward extent and having a flat upper surface formed thereon adjacent said gap; and
an interchangeable insert having a central bar inserted in said gap between said first and second point filler members and mounted on said flat upper surfaces formed thereon.

5,393,020

COMPACT WIREWAY ARRANGEMENT FOR SHIPS

Raymond E. Perrault, 3845 Crest Rd., Rancho Palos Verde, Calif. 90274, and Frederick Perrault, 1727 Date Ave., Torrance, Calif. 90503

Filed Nov. 3, 1993, Ser. No. 147,334
Int. Cl.[6] F16L *3/22*
U.S. Cl. 248—68.1 8 Claims



1. A wireway for accommodating electrical cables in a ship comprising
a member having an elongated central portion, said central portion having a plurality of transverse slots therethrough,
a first flange having a width and projecting in one direction from one longitudinal edge of said central portion and substantially perpendicular thereto,
a second flange having a width and projecting in the same direction from the opposite longitudinal edge of said central portion,
said second flange being opposite from and substantially parallel to said first flange,
said second flange having a central portion of relatively narrow width and having relatively wide end portions thereby to provide a relief intermediate said end portions for the transmission of electrical cables, said end portions being provided with apertures therethrough for receiving fasteners for attaching said member to a pair of downcomers.

5,393,021

CABLE HANGER

James W. Nelson, Cheshire, Conn., assignor to Cablewave Systems, North Haven, Conn.

Filed Mar. 7, 1994, Ser. No. 207,348
Int. Cl.[6] F16B *15/00*
U.S. Cl. 248—71 19 Claims



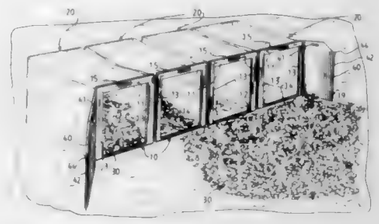
1. A cable hanger comprising:
a hinge section;
a cable retention section; said cable retention section having said hinge section extending therefrom; and
a structure attachment section, said structure attachment section having first and second locking members extending from said cable retention section, each locking member having an outwardly facing concave cross-section and is sized to pass through an attachment opening in a support structure when compressed toward each other such that upon expansion, each said locking member contacts said support structure at no less than two discrete locations.

5,393,022

MULTI-COMPARTMENT DEBRIS AND LEAF BAG HOLDER AND ASSEMBLY

Dominick P. Palumbo, 88 Lyman Ave., N. Patchogue, N.Y. 11772

Filed Mar. 26, 1993, Ser. No. 37,555
Int. Cl.[6] B65B *67/12*
U.S. Cl. 248—95 9 Claims



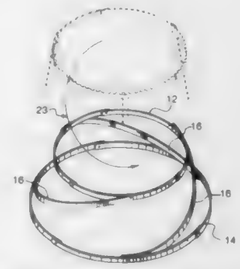
1. A portable, multi-compartment garden debris and leaf bag holder comprising:
a plurality of adjacent, rectangular frame supports each comprising a top member, bottom member and a pair of spaced-apart side members interconnecting said top and bottom members which together define a central opening therethrough, each of said frame supports having means for demountably mounting a flexible bag having peripheral edges defining an open end with its bags open end in communication with said central opening thereof;
means for releasably securing said frame supports in an upright manner on a ground surface; and
means for releasably coupling adjacent frame supports together.

5,393,023

COLLAPSIBLE BAG HOLDER

George Callan, 226 Cranbrook Ave., Toronto, Ontario, M5M 1M7, Canada

Filed Jun. 23, 1993, Ser. No. 80,185
Int. Cl.[6] B65B *67/00*
U.S. Cl. 248—97 25 Claims



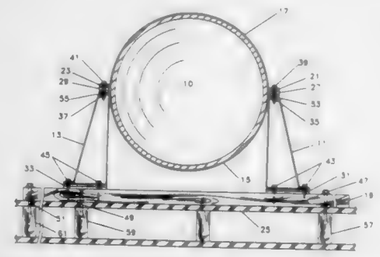
1. A collapsible bag holder for use with a flexible bag comprising:
a lower support member;
an upper support member;
a plurality of resiliently flexible struts having a top end portion, a bottom end portion and side portions, the top end portion of each strut being connected to the upper support member and the bottom end portion of each strut being connected to the lower support member wherein the bag holder has an operative position where the upper support member is vertically spaced from the lower support member and a collapsed position where the lower support member, the upper support member and the plurality of struts are generally in the same plane and the bag holder is moved from the operative position to the stored position by twisting the upper support member relative to the lower support member and pushing the upper support member and the lower support member into the same plane;
means for pivoting the top end portion of each flexible strut in a plane tangential to the upper support member; and
means for pivoting the bottom end portion of each flexible strut in a plane tangential to the lower support member

5,393,024

WATER HEATER TANK SUPPORT

Richard P. Daubenspeck, 23275 Caminito Marcial, Laguna Hills, Calif. 92653

Continuation-in-part of Ser. No. 758,335, Aug. 28, 1991, Pat. No. 5,190,260, which is a continuation of Ser. No. 581,039, Sep. 12, 1990, abandoned. This application Aug. 31, 1992, Ser. No. 937,150
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[6] A47K *17/00*
U.S. Cl. 248—313 13 Claims



1. A water heater tank and lateral support system comprising:
an elongated vertically oriented, water heater tank;
first and second mounting brackets connected to an adjacent vertical wall and disposed on opposite sides of the tank, each of said brackets having a mounting surface disposed proximate a peripheral portion of the tank and spaced from each other a distance about equal to the diameter of the tank, thereby enabling said brackets to be mounted after the tank is in position adjacent to the wall;
and two straps for securing the water heater tank to said mounting brackets, one of said straps extending over the mounting surface of said first bracket and a portion of the water heater tank facing said wall, and also extending over the mounting surface of said second bracket, and the other of said straps extending over the mounting surface of said first bracket and a portion of the water tank facing away from said wall and also extending over the mounting surface of said second bracket, and both of said straps being secured to both of said brackets.

5,393,025

CABINET MOUNTING HARNESS

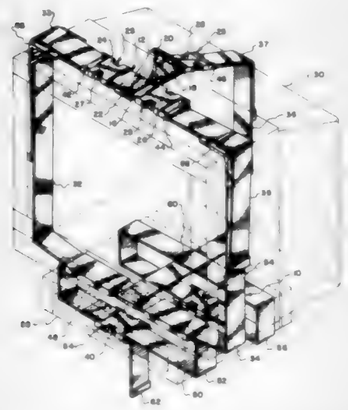
Harry C. Franklin, 1117 Hudspeth Ave., Simi Valley, Calif. 93065

Filed Oct. 21, 1993, Ser. No. 140,293
Int. Cl.[6] A47H *1/10*
U.S. Cl. 248—317 20 Claims

1. A cabinet mounting harness assembly for a television cabinet comprising;
first strap assembly having a plurality of ends constructed to be positioned on the top of said cabinet;
second strap assembly having a plurality of ends constructed to wrap around the sides of said cabinet;
buckle means on the respective ends of said first and second strap assemblies, said buckle means being mounted in said first and second strap means so that they may be joined

and said second strap assembly tightened down securely around said cabinet;

loop means on said first strap assembly;



whereby a cabinet secured in said first and second strap assemblies may be hung by engaging said loop means with a mounting hook.

5,393,026

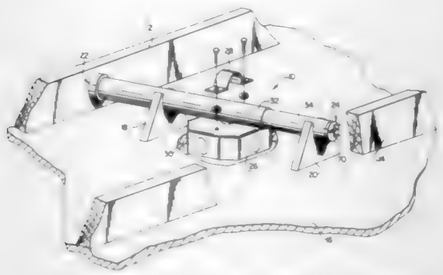
ELECTRICAL FIXTURE HANGER

Bernard F. Deschamps; Henry J. Macuga, both of Ware, Mass., and Stuart S. Cox, Tallahassee, Fla., assignors to Eclipse Manufacturing Inc., Ware, Mass.

Continuation-in-part of Ser. No. 889,921, Jun. 2, 1992, Pat. No. 5,303,894. This application Sep. 27, 1993, Ser. No. 126,856

Int. Cl.[6] B42F *13/00*

U.S. Cl. 248—343 6 Claims



1. An extensible interjoist hanger support for spanning between a pair of spaced-apart, joists having opposed surfaces, said hanger support comprising:

first and second telescopically extensible members moveable in opposing axial directions between a fully collapsed length and a fully extended length, each member having a free end carrying joist-engaging means for engaging said opposing surfaces of said joists;

cooperative means attached to said first and second extensible members, said cooperative means being normally in threaded engagement such that rotation of either extensible member relative to the other results in axial movement between said fully collapsed length and said fully extended length;

an aperture located on the free end of said second telescopically extensible member for achieving relative axial movement between said first and second extensible members in response to power-assisted rotational forces applied to said second extensible member through said aperture to rotate said second extensible member relative to said first extensible member; and

first and second spacers carried by said first and second extensible members, respectively, with said first spacer being slidably moveable to any position on said first extensible member and said second spacer being slidably moveable to any position on said second extensible member.

5,393,027

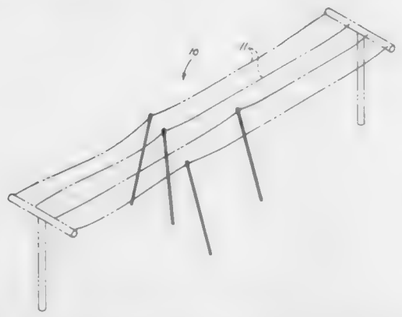
CLOTHESLINE PROP APPARATUS

Samuel Koval, and Jeanette Koval, both of 1731 Canal St. Rear, Northampton, Pa. 18067

Filed Jun. 7, 1993, Ser. No. 72,071

Int. Cl.[6] A47F *5/00*

U.S. Cl. 248—353 4 Claims



1. A clothesline prop apparatus arranged for supporting a clothesline, wherein the apparatus comprises,

a rigid tubular shaft, having a first end spaced from a second end, wherein the shaft is coaxially aligned about an axis, with a first lug arranged for reception within a first end, with the first lug having a first lug flange arranged for abutment with the first end, and

a spike fixedly mounted to the first lug flange projecting beyond the first end, and a second lug arranged for reception within the second end, the second lug having a second lug head, with the second lug head having a head side wall, the head side wall having a slot directed into the side wall, with the slot including a slot portion coaxially aligned along the axis for reception of the clothesline,

a cap arranged for complementarily receiving the second lug head therewithin, the cap having a cap skirt arranged for receiving the second lug head therewithin, the cap skirt having a plurality of diametrically opposed side wall slots, wherein the slots are arranged parallel and coextensive relative to one another for receiving the clothesline when the clothesline is directed through the slot.

5,393,028

POWER-OPERATED SEAT DEVICE FOR VEHICLE

Munetaka Satoh, Kariya; Sadao Ito, Anjo, and Hiroshi Nawa, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 28, 1993, Ser. No. 68,527

Claims priority, application Japan, May 29, 1992, 4-138718

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—429 7 Claims

1. A power-operated seat device comprising:

a pair of laterally spaced lower rails for mounting on a floor of a vehicle body;

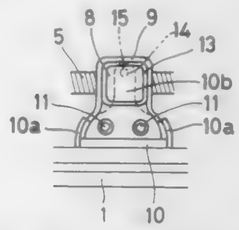
a pair of upper rails slidably mounted to the respective lower rails;

a screw shaft rotatably mounted to each of the upper rails;

a nut member threadably mounted to each screw shaft;

driving means mounted to each of the upper rails and threadably engaged to each screw shaft for moving the upper rails; and

supporting means for mounting each of the nut members to the lower rails, the supporting means including a first



bracket to which the nut member is fixedly mounted, a second bracket secured to the lower rails, and connecting means including a male and female structural configuration of the first bracket and the second bracket connecting the first bracket and the second bracket to one another

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5,393,029

PORTABLE AND RETRACTABLE BOOK-READING STAND

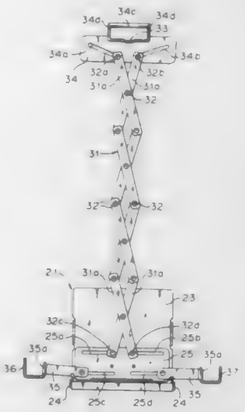
Hajime Senko, Tokyo, Japan, assignor to Project Center Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1992, Ser. No. 987,006

Claims priority, application Japan, Nov. 6, 1992, 4-083154

Int. Cl.[6] A47B *97/04*

U.S. Cl. 248—447 9 Claims



1. A portable and retractable book-reading stand for holding a book or document to be read when said stand is in use, comprising:

a case having a bottom plate, a covering body and a hinge rotatably connecting said covering body to said bottom plate, and said bottom plate being adapted to be positioned on said covering body at a specified inclined angle by rotating said bottom plate around said hinge means until said bottom plate stops;

a plate-like bracket fixed on said bottom plate;

a supporting assembly having an upper portion, and further comprising a plurality of scissor-like links having dual upper and lower ends and fastening means connecting said lower ends to said plate-like bracket, said scissor-like links being expandable along said inclined bottom plate for holding a document to be read in an expanded condition, and being contractible to a size so as to be housed in said case in a retracted condition;

a clip comprising a rod installed on the upper portion of said supporting assembly along with opposite upper ends of said plurality of links, and said clip being adapted for bearing down on the top of a book or document to be held against said plurality of links; and

a pair of hooks provided on said plate-like bracket being rotatable and movable sideways; whereby when said clip and said pair of hooks are folded flat against said supporting assembly, and said supporting assembly is retracted, said stand is capable of being housed in said case as a small compact unit of about the size of a micro floppy disc.

5,393,030

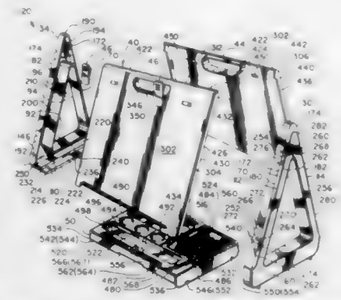
EASEL

Richard A. Tarozzi, Gales Ferry, Conn., assignor to Binney & Smith Inc., Easton, Pa.

Filed Aug. 5, 1992, Ser. No. 926,167

Int. Cl.[6] B65D *71/00*; A47B *97/04*

U.S. Cl. 248—460 27 Claims



1. A children's portable table top device for providing support for drawing media comprising:

a first support member having a bottom and a horizontal opening running generally parallel to and near the bottom;

a second support member having a bottom and a horizontal opening running generally parallel to and near the bottom;

at least one panel, the panel being supported by the first support member and the second support member, the panel having a drawing surface oriented upwardly at an angle to the horizontal; and

a tray for storing drawing supplies slidably fitted between the openings of the first and second support members.

5,393,031

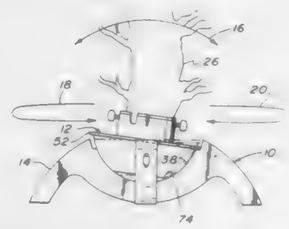
ADJUSTABLE TREE STANDS

Domenic R. Leve, 825 Parkes Run Ln., Villanova, Pa. 19085

Continuation-in-part of Ser. No. 165,135, Dec. 10, 1993, abandoned. This application Apr. 25, 1994, Ser. No. 232,888

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—516 28 Claims



1. An adjustable tree stand, comprising:

a bowl, said bowl adapted to being mounted to a lower end of a tree trunk utilizing fasteners for engaging the side of

the tree trunk a predetermined distance from said lower end of said tree trunk and means mounted to the bottom of the bowl for engaging the cut end of the trunk;

a base shaped substantially to conform to the shape of the bowl and adapted to receive said bowl, said bowl adapted to be pivotally adjustable within said base; and

a stopper member mounted within said base for fictionally engaging said bowl to lock said bowl in a pivotally adjusted position.

5,393,032

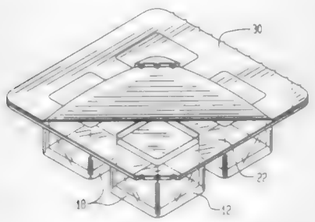
NON-REUSABLE, PEEL OFF COVERED ICE TRAY

Sture C. Cederroth, Fairfield, Iowa, assignor to Arctic Icewater, Inc., Fairfield, Iowa

Continuation-in-part of Ser. No. 930,185, Aug. 17, 1992, abandoned, which is a continuation of Ser. No. 778,286, Oct. 17, 1991, abandoned, which is a continuation of Ser. No. 458,572, Dec. 29, 1989, abandoned, which is a continuation of Ser. No. 188,278, Apr. 29, 1988, Pat. No. 4,899,976. This application Nov. 16, 1992, Ser. No. 977,507

Int. Cl.[6] F25C *1/22*

U.S. Cl. 249—61 5 Claims



1. An ice cube tray for containing a liquid that forms into a plurality of ice cubes, said tray comprising:

a body having a plurality of cavities each for receiving a portion of the liquid, each of said plurality of cavities having a bottom and a plurality of side walls with each side wall having an upper lip, said body being formed of pure polyvinyl chloride plastic;

a cover being adapted to be secured to said body and having a plurality of cover areas, said cover being formed of a laminate of a polyester layer, an adhesive on said polyester layer, a polyamide layer on said adhesive, and a plastic coat on a side of said polyester layer opposite said adhesive, wherein said plastic coat affixes said cover to each lip of each cavity when heated to a sufficient melting point; and

wherein each cavity forms a liquid tight seal that prevents oxygen from entering into an enclosed cavity, and wherein once a formed ice cube is removed from a cavity said cover portion of that cavity can not be reattached to that cavity.

5,393,033

ADJUSTABLE SIDE FORM CONCRETE MOLD

Charles W. Wilson, Red Oak, Iowa, assignor to Wilson Concrete Company, Red Oak, Iowa

Filed Jul. 21, 1993, Ser. No. 95,609

Int. Cl.[6] B28B *7/02, 7/04*

U.S. Cl. 249—155 8 Claims

1. A concrete mold apparatus for forming poured concrete articles comprising:

(a) a casting surface;

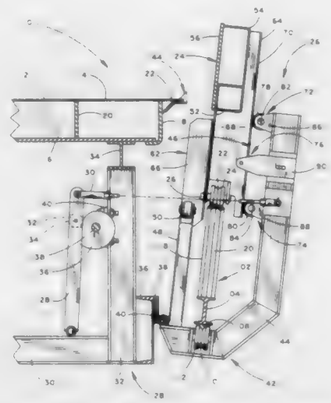
(b) a side form; and

(c) a side form arm assembly comprising:

(i) a side form arm;

(ii) a flange having a first side and a second side extending from said side form, said flange being substantially parallel to said side form arm and extending in a plane substantially parallel to said side form;

(iii) a first roller assembly operably connected to said side form arm, said first roller assembly positioned on and in slidable engagement with said first side of said flange; and



(iv) a second roller assembly operably connected to said side form arm, said second roller assembly positioned on and in slidable engagement with said second side of said flange wherein said flange is in supported engagement between said first roller assembly and said second roller assembly in a manner which allows said side form to slide, while maintaining a substantially parallel orientation relative to said side form arm.

5,393,034

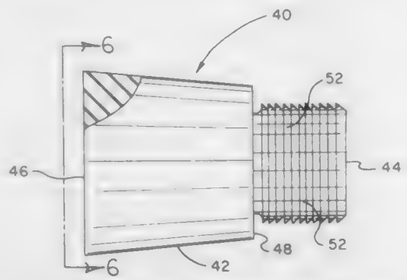
AIR SHUTOFF VALVE FOR A HOPPER GUN

Richard O. Mendez, 1141 E. Renton St., Carson, Calif. 90745

Filed Jun. 27, 1994, Ser. No. 265,756

Int. Cl.[6] F16K *31/44*

U.S. Cl. 251—148 13 Claims



1. A new air shutoff valve for a hopper gun for on/off control of inlet air synchronized to existing on/off control of texture coating and the like in a hopper spray gun having a conventional male quick disconnect air inlet fitting which feeds pressurized air into an inlet end of a longitudinally rearwardly movable trigger actuated air stem for propelling the texture coating mixture and the like onto a surface to be coated, the air shutoff valve for a hopper gun comprising:

a tubular valve stem disposed within the air stem of the hopper gun such that an open first end of the valve stem lies within the male quick disconnect air fitting proximal the inlet aperture of the fitting, the valve stem having at least one air inlet port through a wall thereof proximal the first end thereof, the valve stem also having an open second end; and

a valve control element for controlling airflow into the hopper gun by selectively obstructing the inlet aperture of the male quick disconnect air fitting.

5,393,035

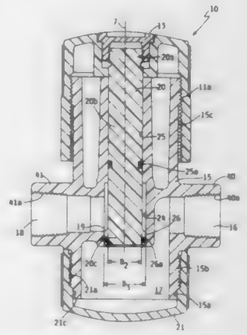
FLOW CONTROL VALVE

James R. Steele, Stillwater, Minn., assignor to Dynamic Air, Inc., St. Paul, Minn.

Filed Feb. 23, 1994, Ser. No. 200,142

Int. Cl.[6] F16K *3/32*

U.S. Cl. 251—205 10 Claims



1. A readily disassembleable fluid control valve for an inline fluid control system comprising:

a housing having a first end and a second end, said housing having a fluid inlet and a fluid outlet, said fluid outlet having a rectangular shaped fluid passage having an area for fluid to flow therethrough, said housing having a first cylindrical passage located therein and a second cylindrical passage located therein with said first cylindrical passage and said second cylindrical passage located in coaxial alignment with each other, said first cylindrical passage having a first diameter and second cylindrical passage having a second diameter with said first diameter larger than said second diameter;

a stepped plunger, said stepped plunger having a first end and a second end, said stepped plunger slidably located in said first cylindrical and said second cylindrical passage, said plunger slidable with respect to said rectangular shaped fluid passage to increase or decrease the area for fluid to flow through said rectangular shaped fluid passage, said stepped plunger having an enlarged portion to prevent said stepped plunger from being accidentally withdrawn from said housing;

a flow control knob having threads for rotationally engaging said first end of said housing and a shoulder for engaging said first end of said stepped plunger so that rotation of said flow control knob on said housing axially displaces said plunger to increase or decrease the area for fluid to flow through said housing to thereby control the flow rate of fluid through said fluid valve in accordance with the rotation of said flow control knob; and

an end cap having threads for removably securing said end cap to said second end of said housing to permit disassembly of said fluid control valve.

5,393,036

CONTINUOUSLY ENGAGED TANGENTIAL DRIVING TOOL

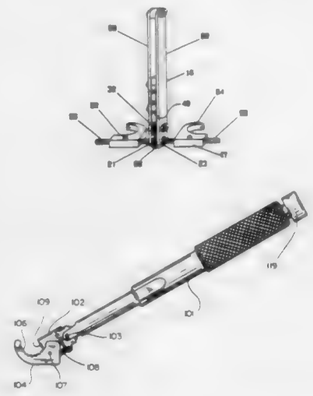
Thomas L. Sheridan, 18161 Daves Ave., Monte Sereno, Calif. 95030

Continuation of Ser. No. 825,985, Jan. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 542,159, Jun. 22, 1990, Pat. No. 5,083,621, which is a continuation-in-part of Ser. No. 297,762, Jan. 17, 1989, abandoned. This application Apr. 30, 1993, Ser. No. 56,582

The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.

Int. Cl.[6] B25B *13/46*

U.S. Cl. 254—100 16 Claims



5. In combination: an axially extending drive screw having a pair of oppositely threaded portions and a peripherally engagable drive portion between the threaded portions, a pair of elements threadedly mounted on the threaded portions for movement toward or away from each other upon rotation of the screw, a wrench handle, a drive element carried by the wrench handle for movement with the handle in a direction perpendicular to the axis to engage the drive portion of the screw from a side, means operatively connecting the wrench handle to the drive element in such manner that movement of the handle produces a tangential driving force at the periphery of the drive element, and means for holding the drive element in peripheral driving engagement with the drive portion of the screw so that the tangential driving force produced by movement of the wrench handle is applied to the drive portion to rotate the screw.

5,393,037

SMELTING UNIT WITH FURNACE ROCKING CRADLE

Joachim Ehle, Lautenbach, and Gerhard Fuchs, Kehl-Boderweier, both of Germany, assignors to Fuchs Technology AG, Zug, Switzerland

PCT No. PCT/EP92/02644, § 371 Date Aug. 23, 1993, § 102(e) Date Aug. 23, 1993, PCT Pub. No. WO93/10413, PCT Pub. Date May 27, 1993

PCT Filed Nov. 17, 1992, Ser. No. 90,015

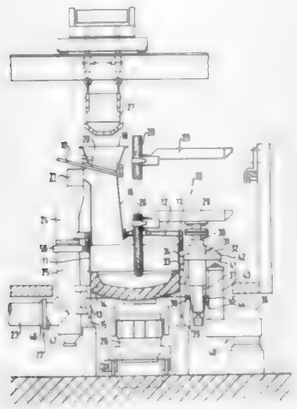
Claims priority, application Germany, Nov. 19, 1991, 4138120

Int. Cl.[6] F27B *3/16*

U.S. Cl. 266—144 13 Claims

1. A smelting unit comprising a furnace vessel (**11**), said furnace vessel being mounted on a furnace rocking cradle (**13**), and a cover (**12**) for closing said furnace vessel, said cover having an electrode passage opening, and at least one bar electrode (**28**) which can be lowered into the furnace vessel (**11**) through said electrode passage opening in said cover (**12**); an electrode support arm (**29**) for gripping said at least one bar electrode; at least one electrode lift device (**30**) which can raise

and lift said electrode support arm (29); a portal assembly (31) for carrying said at least one electrode lift device (30), said portal assembly (31) in a lowered position being releasably connected to the furnace vessel (11) and being tiltable together therewith; a lift post (43) of a stationary lifting/pivoting mech-



anism (40) for pivotting said portal assembly to a side; said furnace vessel in a lowered position being uncoupled from the portal assembly (31), wherein in a lowered position the portal assembly (31) lies on a support holder (33) of a vessel substructure (14) or the furnace rocking cradle (13) respectively.

5,393,038

METHOD FACILITATING THE INTRODUCTION OF A PIERCING ROD INTO A TAPHOLE OF A SHAFT FURNACE AND SPECIAL CLAMP FOR IMPLEMENTING THIS METHOD

Emile Lonardi, Bascharage, Luxembourg, assignor to Paul Wurth S.A., Luxembourg, Luxembourg

Continuation of Ser. No. 67,761, May 26, 1993, abandoned. This application Jul. 7, 1994, Ser. No. 271,935

Claims priority, application Luxembourg, May 27, 1992, 88120

Int. Cl.[6] C21B *7/12*

U.S. Cl. 266—45 11 Claims



1. A method for forming and opening a taphole of a shaft furnace, comprising the steps of:

filling an existing taphole with a taphole clay;

introducing a piercing rod having a longitudinal axis in said existing taphole before said taphole clay is fully hardened, including;

applying an axial pushing force to said piercing rod in the direction of said taphole;

simultaneously rotating or oscillating the piercing rod about its longitudinal axis; and

extracting said piercing rod when the taphole clay is hardened in order to form and open the taphole.

5,393,039

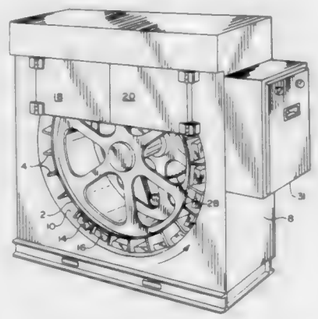
APPARATUS FOR CONVEYING, OPTIONALLY TREATING, AND DISPENSING ARTICLES

Frank B. Smith, Piedmont, Calif., assignor to Dynarad Corporation, San Leandro, Calif.

Continuation of Ser. No. 697,962, May 10, 1991, abandoned. This application Jul. 7, 1992, Ser. No. 908,802

Int. Cl.[6] B22D *11/00*

U.S. Cl. 266—261 6 Claims



5. An apparatus for conveying ingots from a loading region into a heating region and to an ejection location and dispensing them at the ejection location comprising:

a base frame and enclosure structure,

a magazine mounted to rotate relative to said base frame and enclosure structure about a generally horizontal axis,

said magazine being generally in the form of a paddle wheel in that it has a cylinder with vanes fixed to and extending radially outward from the exterior of said cylinder and being spaced from one another around the periphery of the cylinder, each vane of each pair of adjacent vanes forming a boundary surface of a compartment to receive an ingot,

said magazine having a region the vanes in which are inclined at such angles to a horizontal plane that, absent an additional boundary surface, serving as a barrier, for compartments bounded by said last-mentioned vanes, ingots could likely fall out of said magazine from said last-mentioned compartments,

means separate from said magazine for providing a surface spaced outward from the radially outermost tips of the vanes and extending around said entire region of said magazine to constitute an additional boundary surface for compartments in said region serving as a barrier to prevent ingots from falling out of said magazine from said last-mentioned compartments,

said surface provided by said separate means also serving, for ingots in a certain segment of said region of said magazine, as a support against which said last-mentioned ingots bear and along and in contact with which said ingots are caused to slide upon displacement of said vanes by rotation of said magazine,

said certain segment of said region of said magazine comprising those compartments bounded by a vane at the position on a horizontal diametral plane of the magazine to the right, as viewed from the loading region, of a vertical diametral plane and those compartments bounded by a vane at the position on that horizontal diametral plane to the left, as viewed from the loading region, of that vertical diametral plane and also comprising all those other compartments lying between said last-mentioned two vanes and also lying below said horizontal diametral plane,

means for rotating said magazine to move each compartment from a loading region where the compartment is accessible for loading of an ingot into it to an ejection location at which the ingot can be ejected from the compartment,

an oven chamber located so that, upon rotation of said magazine, each compartment passes into said chamber on its path of travel from the loading region toward the ejection location,

means in said oven chamber for heating ingots carried into said chamber in said magazine,

an egress opening in said oven chamber,

means for ejecting ingots, one at a time from compartments of said magazine through said egress opening when each compartment is aligned with said egress opening,

means providing a path for ingots leading from said egress opening toward a destination,

means in said last-mentioned path to stop the motion of an ingot travelling along said path before it reaches the destination, and

means operable, after the ingot has come to a stop and in response to predetermined conditions, for automatically inactivating said stop means, thus enabling said ingot to continue travel to its destination.

5,393,040

HYDRAULIC DAMPING DEVICE

Masato Ueno, and Takashi Maeno, both of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jun. 14, 1993, Ser. No. 76,187

Claims priority, application Japan, Jul. 1, 1992, 4-197530

Int. Cl.[6] F16F *13/00*

U.S. Cl. 267—140.13 16 Claims

1. A hydraulic damping device comprising:

a housing adapted to be secured to a base body;

first surfaces defining at least one first main liquid chamber within said housing, a first member defining at least one of said first surfaces, said first member expanding and contracting upon input of vibrations in a vertical direction;

second surfaces defining at least one second main liquid chamber within said housing, a second member defining at least one of said second surfaces, said second member expanding and contracting upon input of vibrations in a horizontal direction;

third surfaces defining an auxiliary liquid chamber within said housing, a third member defining at least one of said third surfaces, said third member complementarily deforming with expansion and contraction of said first member and said second member, said auxiliary liquid chamber being filled with a damping liquid, said damping liquid being forced to flow one of into and out of said first main liquid chamber and said second main liquid chamber upon vibration input;

means defining a first passageway for connecting said first main liquid chamber and said axillary liquid chamber;

means defining a second passageway for connecting said second main liquid chamber and said auxiliary liquid chamber; and

valve means coupled to said first and second passageways for changing openings of said passageways in response to the vibration input, said first passageway and said second passageway being joined, said valve means being disposed at an intersection of said first passageway and said second passage way.

5,393,041

VIBRATION ISOLATOR WITH A DIAPHRAGM IN A SIDE WALL

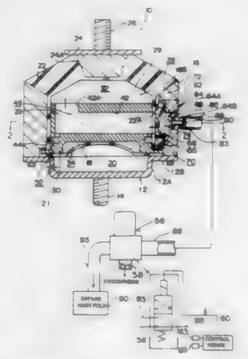
Kazuya Takano, Kamakura; Hiroshi Kojima, Yokohama, and Takao Ushijima, Chigasaki, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 20, 1992, Ser. No. 915,132

Claims priority, application Japan, Jul. 23, 1991, 3-182434; Sep. 3, 1991, 3-223038; Sep. 9, 1991, 3-227799; Sep. 30, 1991, 3-251758; Nov. 6, 1991, 3-290130; Nov. 6, 1991, 3-290131

Int. Cl.[6] F16F *11/00, 9/00*

U.S. Cl. 267—140.14 12 Claims



1. A vibration isolator for absorbing and attenuating vibrations from a vibration-generating portion, comprising:

a mounting member connected to one of said vibration generating portion and a vibration-receiving portion;

a hollow cylindrical member connected to the other one of said vibration-generating portion and said vibration-receiving portion;

a resilient member connected to said mounting member, said resilient member being disposed to close one opening of said hollow cylindrical member and being adapted to be deformed during the occurrence of the vibrations;

a first diaphragm for closing another opening of said hollow cylindrical member;

a partition member disposed at an inner side of said hollow cylindrical member, said partition member partitioning an inner space of said hollow cylindrical member;

an expandable and shrinkable main liquid chamber disposed within said hollow cylindrical member between said resilient member and said partition member;

a first auxiliary liquid chamber disposed within said hollow cylindrical member between said first diaphragm and said partition member;

a first limiting passage provided in said partition member, said first limiting passage connecting said main liquid chamber and said first auxiliary liquid chamber thereby allowing communication with each other;

a first air chamber disposed facing a side of said first diaphragm opposite to a side thereof where said first auxiliary liquid chamber is disposed;

a second auxiliary liquid chamber formed within a side wall of said hollow cylindrical member;

a second diaphragm constituting a part of a partition wall of said second auxiliary liquid chamber;

a second air chamber disposed on a side of said second diaphragm opposite to a side thereof where said second auxiliary liquid chamber is disposed, said second air chamber being arranged such that when an interior thereof is set under negative pressure, said second air chamber causes said second diaphragm to be brought into close contact with an inner wall surface thereof causing said second air chamber to virtually disappear and preventing the movement of said second diaphragm;

negative-pressure means for setting the interior of said second air chamber under negative pressure; and

a second limiting passage provided in said partition member, said second limiting passage connecting said main liquid chamber and said second auxiliary liquid chamber thereby allowing communication with each other.

5,393,042

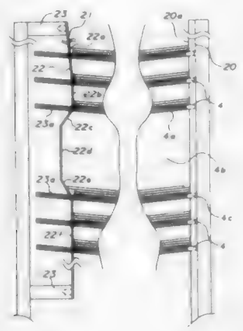
IN-BIN STAPLING SORTER WITH FLEXIBLE ALIGNMENT ARM

Peter M. Coombs, Tustin, and James R. Seay, Dana Point, both of Calif., assignors to Gradco (Japan) Ltd., Tokyo, Japan

Filed Aug. 3, 1993, Ser. No. 100,720

Int. Cl.[6] B31B *1/68;* **B65H** *39/02, 31/36*

U.S. Cl. 270—53 **8 Claims**



1. In an in-bin stapling sorter comprising a plurality of trays in a vertically spaced and movable stack, means for moving said trays vertically relative to a sheet infeed location to receive sets of sheets, stapling means for stapling sets of sheets in said trays, and alignment means for aligning the side edges of said sets of sheets in said trays, the improvement wherein: said alignment means includes a first registration surface extending vertically at one side of said trays and an alignment member at the other side of said trays and having a vertically extended second alignment surface vertically spaced from said sheet infeed location in one direction and parallel with said first registration surface and angularly extended surface extending from an end of said second alignment surface in a direction away from the first registration surface for moving sheets to positions between the first and second surfaces upon movement of said trays vertically in one direction relative to said first and second surfaces.

5,393,043

IMAGE FORMING APPARATUS WITH AUTOMATIC PAPER SUPPLY MECHANISM

Horoshi Nitta, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 2,069

Claims priority, application Japan, Jan. 10, 1992, 4-002513

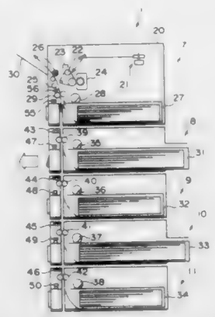
Int. Cl.[6] B65H *3/44*

U.S. Cl. 271—9 **4 Claims**

1. An image forming apparatus coupled to a paper supply mechanism formed of a plurality of paper supply units storing papers, said plurality of paper supply units being arranged in a predetermined order along a paper feed path and papers being ejected, one by one, from each of said plurality of paper supply units to said paper feed path, said plurality of paper supply units including at least two paper supply units storing papers having a same size as each other, the papers being fed to said image forming apparatus so that images are formed on the papers, said image forming apparatus comprising:

means for preferentially selecting a paper supply unit located at an upstream position of said paper feed path from among paper supply units storing papers having a same size as each other, such that papers are supplied to said paper feed path from the paper supply unit selected by said means for preferentially selecting;

jam detecting means for detecting whether or not a paper jam has occurred in said paper feed path while papers are being supplied, one by one, from each of said plurality of paper supply units; and



paper supply control means for, when said jam detecting means detects that a paper jam has occurred, substituting a a paper supply unit positioned at a position downstream from a position at which the paper jam has occurred for paper supply unit that supplied to said paper feed path the paper that jammed, so that papers are continuously supplied from said substitute paper supply unit to said image forming apparatus via said paper feed path.

5,393,044

PAPER FEEDER

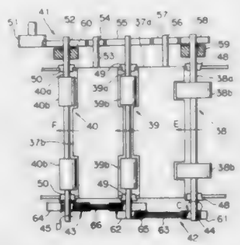
Hideaki Hagihara; Masakiyo Okuda, and Souichi Takata, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 29, 1993, Ser. No. 158,409

Claims priority, application Japan, Dec. 4, 1992, 4-325481; Sep. 20, 1993, 5-233213

Int. Cl.[6] B65H *5/00*

U.S. Cl. 271—10 **3 Claims**



1. A paper feeder having a feed roller, a conveying roller and a registration roller arranged so as to define a sheet-conveying path along which sheets are conveyed from a sheet-storage portion to a photoreceptor, comprising:

a feeding-conveying drive means for driving said conveying roller in synchronization with the rotation of said feed roller as said feed roller rotates; and

a conveying-registration drive means for driving said conveying roller in synchronization with the rotation of said registration roller as said registration roller rotates,

said feeding-conveying drive means having a one-way clutch which will transmit no driving force through said conveying-registration drive means from said registration roller to said feed roller, and

said conveying-registration drive means having a one-way clutch which will transmit no driving force through said feed-conveying drive means from said feed roller to said registration roller.

5,393,045

SHEET MEDIUM DISPENSING APPARATUS HAVING A RECESS TO PERMIT BUCKLING OF A LOWERMOST SHEET

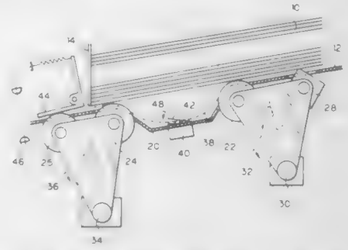
Tadashi Fujimoto, Tokyo, Japan, assignor to Juki Corporation, Tokyo, Japan

Filed Sep. 30, 1993, Ser. No. 130,000

Claims priority, application Japan, Oct. 2, 1992, 4-068932[U]

Int. Cl.[6] B65H *3/30*

U.S. Cl. 271—23 **2 Claims**



1. A sheet medium dispensing apparatus for disposing of, one by one, a stack of media in the form of a lamina stacked on a stack table and for feeding said media downstream thereof, comprising

a stacker table for stacking a stack of said media thereon and having a recess formed in said table;

a dispenser roller disposed upstream of said recess and upwardly and slightly exposed out of the top of said stacker table;

a square rotator of polygonal cross section so located upstream of said dispenser roller as to have a corner of said rotator exposed out of the top of said stacker table;

a motor for driving said dispenser roller and said square rotator synchronously therewith;

a separator roller disposed downwardly of said recess and slightly exposed out of the top of said stacker table;

a further motor for driving said separator roller; and

sensor means within said recess for sensing to what extent said medium is curved to control timing of rotating operation of said motor for driving said dispenser roller **22** and said square rotator **28** and said motor for driving said separator roller **24** whereby the lowermost medium out of said media is introduced by said dispenser roller to said recess and is then fed from said media downwardly of said table.

5,393,046

SHEET-ALIGNING DEVICE

Siegfried Garbe, Stuttgart, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1994, Ser. No. 220,343

Claims priority, application Germany, Apr. 29, 1993, 4314075

Int. Cl.[6] B65H *31/26*

U.S. Cl. 271—220 **7 Claims**

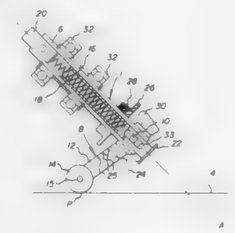
1. Device (**1**) for aligning sheets of a sheet stack (**2**) against two sheet abutments (**3** and **5**) which are disposed perpendicularly to each other, said device comprising:

at least one aligning element (**8**) rotatable about an axis (A—A) inclined with respect to the sheet surface, said aligning element (**8**) including a friction element (**14**);

a sleeve (**6**) mounted for rotation about said axis (A—A), a rod member (**16**) slidably guided in said sleeve, said rod being held by a resilient means (**18**);

said aligning element (**8**) being arranged on said sleeve (**6**) for pivotal movement about a pin (**10**); and

a resilient means (**24**) arranged between the lower end (**22**) of



said rod member (**16**) and said aligning element (**8**) such that the position and the mechanical tension of the aligning element (**8**) can be changed in response to the axial movement of said rod member (**16**) in said sleeve (**6**).

5,393,047

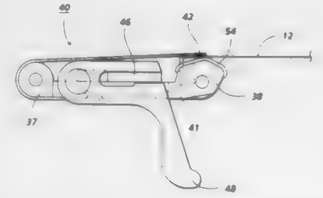
SHEET GRIPPING MECHANISM

David K Ahl, Rochester; Eric A. Merz, Penfield; Timothy G. Struczewski, Rochester; Roger M. Swanson, Fairport, and George F. Rittberg, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 947,596, Sep. 21, 1992, abandoned. This application Jan. 17, 1994, Ser. No. 183,636

Int. Cl.[6] B65H *5/00*

U.S. Cl. 271—277 **5 Claims**



1. An apparatus for gripping the leading edge portion of a sheet, comprising:

a first gripping member substantially spanning the leading edge portion of the sheet;

a spring having a portion thereof defining a second gripping member, said second gripping member substantially spanning the leading edge portion of the sheet, said spring urging the second gripping member towards said first gripping member to grip the edge of the sheet; and

a support moveable in relation to said first gripping member between a first position and a second position, said support contacting said spring to urge said second gripping member away from said first gripping member as said support is moved from the first position to the second position, wherein said support substantially spans the leading edge portion of the sheet.

5,393,048

CHILD'S BASKETBALL GAME

José M. Rodriguez-Ferre, Polig. Industrial Derramador, Albacete s/n - 03440-IBI (Alicante), Spain

Filed Nov. 30, 1993, Ser. No. 158,983

Int. Cl.[6] A63B *63/08*

U.S. Cl. 273—1.5 R **7 Claims**

1. A child's basketball game, comprising:

a base;

a telescopic column adjustable in height attached to said base, said telescopic column being formed by two sections

including an upper section and a lower section attached directly to said base;

a backboard, a ring and a net formed on said ring all supported on the upper section of said telescopic column; and



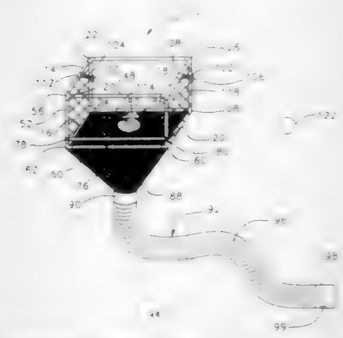
a support for supporting said column and at least one scoreboard.

5,393,049

INDOORS MINIATURE BASKETBALL PRACTICE APPARATUS

George Nelson, 17 Vega St., New Britain, Conn. 06051

Filed Jan. 18, 1994, Ser. No. 183,200
Int. Cl.[6] A63B *69/00*
U.S. Cl. 273—1.5 A 20 Claims



1. A ball shooting practice system, comprising:

a) a backboard made of a substantially rigid material;

b) a tapered guiding member having a wide input port and a narrow output, said tapered guiding member being configured and dimensioned to guide a ball into said narrow output;

c) a self-supporting deflection structure for deflecting balls, which are moving away from the system, and guiding them into said tapered guiding member;

d) a ball target positioned above said narrow output; and

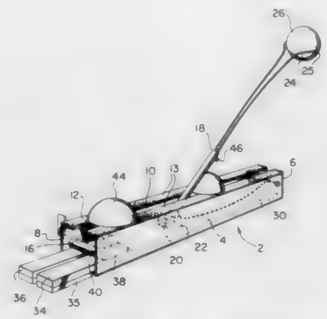
e) a bendable tubular guiding member coupled to said narrow output and configured to receive said ball and guide it toward a player using said ball practice system.

5,393,050

BALL STRIKING PRACTICE DEVICE

Anthony L. Lloyd, #3 7231 Moffatt Road, Richmond, B.C. V6Y 1X9, Canada

Filed Nov. 26, 1993, Ser. No. 157,324
Int. Cl.[6] A63B *61/00*
U.S. Cl. 273—29 A 18 Claims



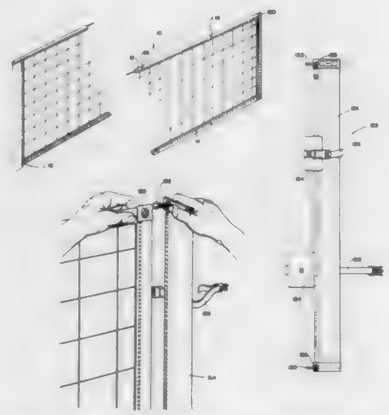
1. In a ball striking practice device comprising an elongated base having an upper surface, a ball-supporting post having one end thereof pivotally secured to the base for pivotal movement in a longitudinal direction with respect to the base between a first, starting position and a second, remote position, a ball attached to for supporting the other end of the post, biasing means mechanically associated with the base and the post yieldably to urge the post towards the starting position, the improvement characterized in that a longitudinal groove is provided in the upper surface, the post is pivotally secured to the base at a location in the groove spaced below the upper surface, and resilient stop means are provided releasably securable on the upper surface in positions across the groove to define the starting and remote positions of the post.

5,393,051

ADJUSTABLE NET

Darrell Merino, Newburyport, Mass., and James Thibault, Portland, Me., assignors to Forster Inc., Portland, Me.

Filed Jun. 30, 1992, Ser. No. 906,923
Int. Cl.[6] A63B *61/00*
U.S. Cl. 273—29 B 8 Claims



1. An adjustable net for attachment to external net posts, said adjustable net comprising:

an elongated net having a fully extended length, a top edge and a bottom edge, a first side edge and a second side edge, at least one securing means at at least one different position along the length of the net between said first side edge and said second side edge, a first attachment element at said first side edge for attachment to an external net support; and

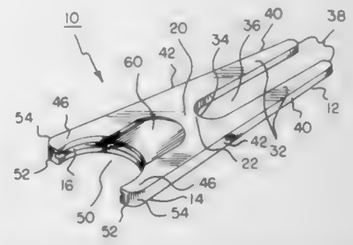
a sleeve selectively attachable at said second side edge and at a selected one of said securing means at different positions along the length of said net, said sleeve being attachable to an external net support.

5,393,052

GOLFING DEVICE FOR DIVOT REPAIR/CLUB HOLDING/BALL MARK RETENTION

Todd E. Kennedy, 5495 S. Stonegate, Springfield, Mo. 65810

Filed Jan. 18, 1994, Ser. No. 181,813
Int. Cl.[6] A63B *57/00*
U.S. Cl. 273—32 B 1 Claim



1. A golfing device for divot repair/club holding/ball mark retention comprising, in combination:

a central body portion, the central body portion having lateral edges and a narrow first end and a wide second end opposite from the first end;

a pair of long legs constituting about half the length of the device and extending from the narrow first end of the main body portion with a long u-shaped recess therebetween, the ends of the long legs having lateral edges with free ends remote from the first end adapted to function as divot repair when held by a user at the main body portion;

a pair of short legs extending from the second end of the main body portion, the short legs having a shallow c-shaped recess between the legs, the short legs having lateral edges, the c-shaped recess adapted to hold the end of a golf club when the long legs are inserted into the ground, the lateral edges of the long legs, main body portion and short legs forming smooth continuous lines in a symmetric tapering configuration being widest at the free ends of the short legs and being narrowest at the free ends of the long legs; and

a flat planar supplemental recess formed in the c-shaped recess extending from the free ends of the short legs in a continuous curve through the entire c-shaped recess, the supplemental recess adapted to receive the periphery of a ball mark for positioning therein and separation therefrom in marking a spot on a putting green from which a ball is lifted.

5,393,053

GOLF PUTTING GREEN BALL EJECTOR

Douglas R. Wiese, 2036 Manion Dr., Warrenton, Oreg. 97146, and Peter A. Norris, 7634 SW. Kelly St., Portland, Oreg. 97219

Filed Apr. 20, 1994, Ser. No. 230,501
Int. Cl.[6] A63B *57/00, 69/36*
U.S. Cl. 273—34 A 21 Claims

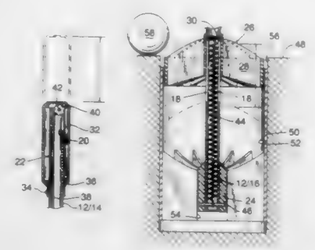
1. A golf ball ejector for use in a golf putting green cup comprising:

an elongate pin sized to fit vertically into the putting green cup;

an ejector mounted on the pin;

an actuator mounted on the pin;

a connector operatively connecting the actuator to the ejector; and



a stop operatively connected to the pin to limit movement of the ejector relative to the pin so that lifting the pin also lifts the ejector;

wherein actuating the actuator ejects any balls that are resting on the ejector and in the cup.

5,393,054

PAINT BALL

Mark Rouffer, Windsor, Canada, assignor to ZAP Paintball Corporation, Windsor, Canada

Filed Mar. 9, 1994, Ser. No. 208,344
Int. Cl.[6] A63B *43/00*
U.S. Cl. 273—58 H 15 Claims

1. A paint ball comprising

a gelatin capsule defining a closed interior chamber,

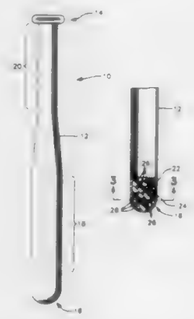
a fill material contained within said interior chamber, said fill material comprising 1%–65% polyethylene glycol, 25%–45% starch, up to 0.5% dye and the balance water.

5,393,055

BALL BAT WITH CONCENTRATED WEIGHT LOAD AND METHOD OF MAKING SAME

Jack W. MacKay, Jr., Rte. 9, Box 185, Mt. Pleasant, Tex. 75455

Filed Aug. 13, 1993, Ser. No. 105,924
Int. Cl.[6] A63B *59/06*
U.S. Cl. 273—72 A 19 Claims



1. A hollow metallic ball bat having a hollow generally cylindrical tapered bat barrel of one-piece construction defined by a peripherally continuous wall having a handle end and a closed ball striking end with a ball striking zone located adjacent the ball striking end and a hand grasp zone of smaller circumference than the ball striking zone located adjacent the handle end, a concentrated weight load incorporated into and

in direct contact with an inner surface of the closed end of the bat barrel immediately adjacent the ball striking end of the barrel, said concentrated weight load having an inner end spaced from the closed end of the bat barrel and spaced axially outwardly of the ball striking zone to preclude the concentrated weight load from interfering with flexing of the wall of the bat barrel when the ball striking zone strikes a ball.

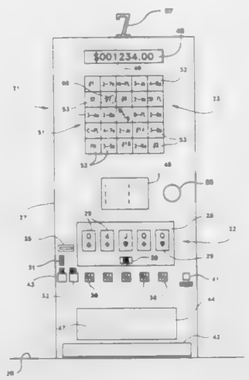
5,393,056
ADJUSTABLE GOLF CLUB
Matthew H. Richardson, 23240 88th Ave. S., #EE-103, Kent, Wash. 98031
Filed Mar. 23, 1994, Ser. No. 216,354
Int. Cl.[6] A63B *53/06*
U.S. Cl. 273—79 3 Claims



1. A new and improved adjustable golf club for incorporating a series of golf club styles in a singular unit comprising:
a shaft member having a longitudinal axis,
a club head attachment member affixed to said shaft member, said club head attachment member being disposed within a first plane orthogonally oriented relative to a second plane containing said longitudinal axis of said shaft member,
a club head member pivoting about an axis orthogonally disposed relative to said second plane containing said longitudinal axis of said shaft member, and
a locking means to establish the club head member at a fixed angular disposition relative to the pivotal axis of rotation, said locking means comprising a plurality of spring energized cylindrical pins engaging holes in the club head attachment member, said holes in the club head attachment member comprising through-extending holes on a cylindrical member arranged as a nine element array having a plurality of array columns and array rows.

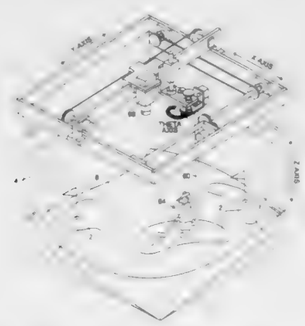
5,393,057
ELECTRONIC GAMING APPARATUS AND METHOD
Anthony A. Marnell, II, 3700 W. Flamingo Rd., Las Vegas, Nev. 89103
Filed Feb. 7, 1992, Ser. No. 832,709
Int. Cl.[6] G07F *17/34*; A63F *9/24*
U.S. Cl. 273—85 CP 33 Claims

1. An electronic gaming apparatus comprising:
an electronic primary gaming device having primary user-actuatable input means for play of a primary game; and
an electronic secondary gaming device for play of a secondary game;
said primary gaming device being coupled to said secondary gaming device and being responsive to the occurrence of at least one predetermined, winning event in the play of



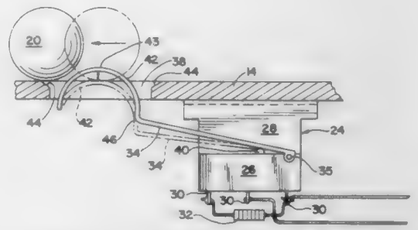
said primary game to communicate an input signal to said secondary gaming device for play of said secondary game.

5,393,058
ROBOT GOLF GAME
Bruce Rowland, 2316 Bruner Ave., Bronx, N.Y. 10469, and Dean Rowland, 56 Temple St., Newburyport, Mass. 01950
Filed May 5, 1993, Ser. No. 58,541
Int. Cl.[6] A63F *7/06*
U.S. Cl. 273—87.4 20 Claims



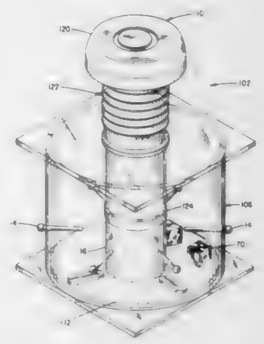
1. A model game, which comprises: a model playing area;
said model playing area including terrain with relief that models real terrain;
at least one model figure;
means for supporting said at least one model figure from overhead;
said means for supporting including means for remotely controlling a plurality of motions of said at least one figure;
said means for remotely controlling including a microcomputer;
said means for remotely controlling including means for modeling a plurality of motions of a real player playing a real game on a real playing area;
said means for modeling including means for positioning said at least one figure to appear to be on said model playing area; and
said means for positioning effective for positioning said at least one model figure in three dimensions.

5,393,059
SWITCH FOR ROLLING BALL AMUSEMENT DEVICE
Eric P. Winston, Hoffman Estates, Ill., assignor to Data East Pinball, Inc., Melrose Park, Ill.
Filed Feb. 1, 1994, Ser. No. 191,014
Int. Cl.[6] A63F *7/22*
U.S. Cl. 273—118 D 4 Claims



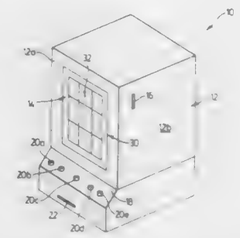
1. A rolling ball amusement device which comprises a frame carrying a playfield, and a ball-actuated switch carried with said playfield, said switch comprising a switch body movably connected with a variable-position actuator to operate said switch in a manner dependent upon the position of said actuator; a slot defined in said playfield; said actuator comprising an arcuate wire section free of angled corners projecting upwardly through said slot, whereby a rolling ball can depress said arcuate wire section to actuate said switch; and spring means urging said actuator upwardly out of depressed position.

5,393,060
GAME PIECE RANDOMIZER
Larry D. Land; Marie A. Land, and Melissa L. Land, all of 1946 Edgerton, St. Paul, Minn. 55117
Continuation of Ser. No. 715,844, Jun. 14, 1991, Pat. No. 5,197,735, which is a continuation-in-part of Ser. No. 477,551, Feb. 9, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 38,603
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[6] A63F *9/04*
U.S. Cl. 273—138 R 17 Claims



11. Game apparatus comprising:
a) a game piece;
b) a table to support said game piece;
c) a stationary housing having a plurality of walls which mount to one another to completely-enclose said table and game piece and provide a cavity where movement of said game piece is restricted;
d) a plurality of obstruction members, wherein ones of said obstruction members extend from external ones of said walls into a play space above said table; and
e) means for rotating said table independent of said housing to centrifugally convey said game piece amongst said obstruction members such that said game piece randomly strikes and deflects from said obstruction members prior to coming to rest on the table to display one of said scoring indicia.

5,393,061
VIDEO GAMING MACHINE
Jon Manship, Moncton; Michel Vinneau, Dieppe; David Ross, Moncton; Nathalie Haché, and Charles Maillet, both of Bouctouche, all of Canada, assignors to SPIELO Manufacturing Incorporated, New Brunswick, Canada
Filed Dec. 16, 1992, Ser. No. 992,962
Int. Cl.[6] G07F *17/34*
U.S. Cl. 273—143 R 50 Claims

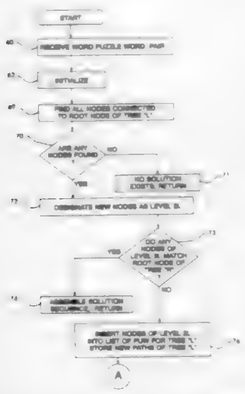


1. A gaming machine having a housing with a display on which an array of generally randomly selected game elements are displayed during a game play, a memory and a processor for selecting generally at random the game elements to be displayed during said game play, wherein predetermined combinations of game elements displayed during a game play result in corresponding pay-outs, said gaming machine comprising:
a plurality of pay-out tables contained in said memory, each of said pay-out tables storing winning combinations of game elements and a pay-out value associated with each of said winning combinations of game elements, wherein the probability of each game element being selected by said processor and displayed during a game play, the pay-out values and the winning combinations of game elements stored in said pay-out tables are such that the expected statistical return of said gaming machine is significant and that the actual return of the gaming machine is at least basically the same as the expected return;
pay-out detection means determining when a combination of game elements displayed during a game play is the same as a winning combination of game elements stored in a pay-out table; and
pay means responsive to said pay-out detection means for paying out to a player when a combination of game elements displayed during a game play is the same as a winning combination of game elements, the pay out being based on the pay-out value associated with the winning combination of game elements.

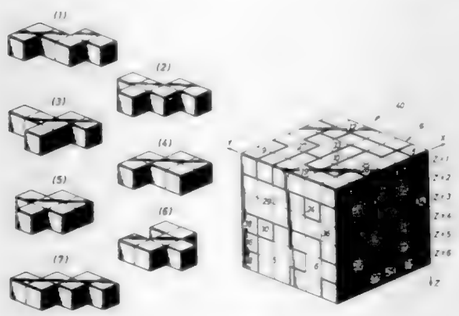
5,393,062
WORD TRANSFORMATION GAME
Richard P. Cember, 1201 Robert E. Lee Rd., Austin, Tex. 78704
Filed Aug. 13, 1993, Ser. No. 105,566
Int. Cl.[6] G06F *15/40*
U.S. Cl. 273—153 R 19 Claims

1. A method of solving word transformation puzzles by transforming a first word into a second word in the shortest possible sequence, the steps comprising:
a) growing a first tree having a plurality of adjacent nodes

with words disposed thereon, the root node of said first tree having said first word disposed thereon;
b) generating one or more words for each of said nodes occurring in the topmost level of said first tree, each of said generated words having a predetermined relationship to the word from which it was generated;
c) growing a second tree having a plurality of adjacent nodes with words disposed thereon, the root node of said second tree having said second word disposed thereon;
d) generating one or more words for each of said nodes occurring in the topmost level of said second tree, each of said generated words having a predetermined relationship to the word from which it was generated;
e) comparing at least one word of said first tree with at least one word of said second tree in order to identify a word common to both of said trees;
f) identifying a sequence of words in each of said trees connecting the respective roots thereof to said common word; and
g) combining said first and second sequences of words into a single sequence connecting the respective roots of said trees to one another via said common word.

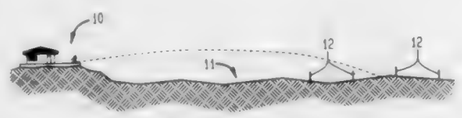


5,393,063
CUBE PUZZLE
Tomonobu Ichimaru, Yokohama, Japan, assignor to Kabushiki Kaisha Kitaharaseisakusho, Kanagawa, Japan
Filed Mar. 31, 1994, Ser. No. 220,891
Claims priority, application Japan, Apr. 2, 1993, 5-022132[U]
Int. Cl.[6] A63F 9/12
U.S. Cl. 273—160 5 Claims



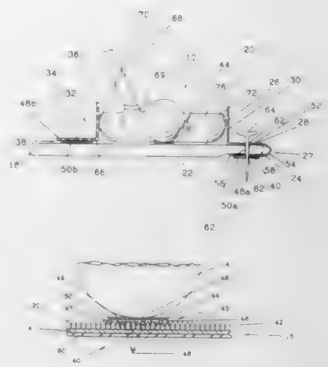
1. A cube puzzle which comprises:
a large number of disconnected cube blocks of different configurations, each of cube blocks being different from each other, and the first group including a plurality of large different cube blocks and the second group including a small number of small different cube blocks, and forming an overall cube when assembled in a final or particular configurations, which is characterized in that the large different cube blocks can be separated again into a number of cube blocks which can be expressed by a formula of $n^3=6^3$, the large different cube blocks including varieties of cube blocks, each cube block having its one face being integrally secured to an adjacent one of the adjacent cube blocks on planes of the number n, the small different cube blocks, each cube block having its one face being integrally secured to an adjacent one of the adjacent cube blocks of the number less than the number n, and the large different cube blocks and the small different cube blocks being capable of either separated or assembled again to restore its original configurations.

5,393,064
APPARATUS AND METHOD FOR DETERMINING PROJECTILE IMPACT LOCATIONS
Bryce P. Beard, III, 1617 Emerald St., Salisbury, N.C. 28144; James W. Kluttz, 709 Arbor Rd., and Edgar P. Roberts, Jr., 761 Westover Ave., both of Winston-Salem, N.C. 27104
Division of Ser. No. 474,363, Feb. 2, 1990, Pat. No. 5,029,888, which is a division of Ser. No. 208,673, Jun. 20, 1988, Pat. No. 4,898,388. This application Apr. 26, 1991, Ser. No. 692,223
Int. Cl.[6] A63B 69/36; F41J 5/00
U.S. Cl. 273—181 R 2 Claims



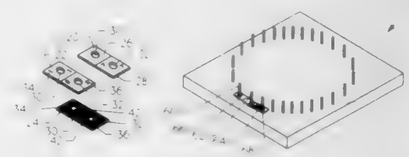
1. An apparatus for detecting the range from an origin and lateral displacement from a predetermined axis of the landing location of a golf ball on a golf driving range comprising:
a) a first sensor located proximate the driving range for generating a first signal indicative of one aspect of the landing location with respect to said first sensor;
b) a second sensor located proximate the driving range for generating a second signal indicative of the same aspect of the landing location with respect to said second sensor;
c) said aspect is time of travel of vibrations caused by landing of the golf ball at a moment of impact;
d) an initiation means for starting a time measurement at a prescribed time with respect to the moment of impact of said golf ball;
e) processor means for said first and second signals to generate a third signal indicative of said range and said lateral displacement
f) said first and second sensors are placed at predetermined points with respect to each other and with respect to said initiation means;
g) said processor measures any time lag between starting said time measurement and the time the first and second sensor senses said impact; and
h) said processor means determines the impact point by triangulation.

5,393,065
PUTTING PRACTICE DEVICE
Brian D. LeQuyea, 29251 Anderson Rd., Wickliffe, Ohio 44092-2337
Filed Apr. 18, 1994, Ser. No. 228,887
Int. Cl.[6] A63B 69/36
U.S. Cl. 273—192 15 Claims



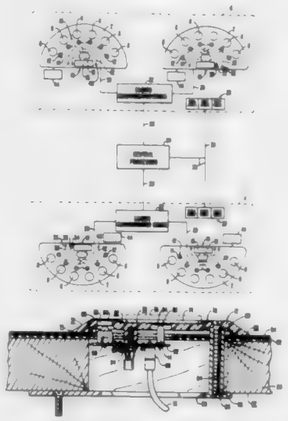
1. A putting practice device for use on a support comprising:
(a) a strip of flexible sheet material forming a putting surface member which can be rolled up for storage, said putting surface member having a putting surface and a bottom surface opposite said putting surface; said putting surface member having an outer edge portion:
(b) an outer guide rail:
(c) means for securing said outer guide rail to said putting surface member along said outer edge portion: said outer guide rail having a putting surface portion positioned adjacent said putting surface of said putting surface member and a guide portion extending upwardly of said putting surface portion:
(d) an inner guide rail having a putting surface portion and a guide portion extending upwardly of said putting surface portion:
(e) means for removably securing said putting surface portion of said inner guide rail adjacent said putting surface of said putting surface member with the guide portion of said inner guide rail substantially parallel to said guide portion of said outer guide rail: and
(f) means for frictionally engaging the support.

5,393,066
BOARD GAME AND METHOD OF PLAY
Margaret L. Reinitz, 801 W. Ladybird La., Burnsville, Minn. 55337
Filed Aug. 24, 1994, Ser. No. 294,977
Int. Cl.[6] A63F 3/00
U.S. Cl. 273—236 22 Claims



1. A board game comprising:
a. a game board having a generally planar upper surface, said upper surface having a plurality of pegs protruding generally perpendicular therefrom, wherein said pegs are arranged in a closed geometric pattern with adjacent pegs spaced generally equidistant from one another; and
b. a plurality of game pieces having a pair of generally planar opposing surfaces with a first hole and a second hole extending therethrough, the spacing between said first hole and said second hole about equal to the spacing between said adjacent pegs, so that said game pieces can be slidably received over any pair of adjacent pegs, said game pieces further including a first and a second means for indicating value, said first means located proximate said first hole and said second means located proximate said second hole.

5,393,067
SYSTEM, METHOD AND APPARATUS FOR GENERATING LARGE JACKPOTS ON LIVE GAME CARD TABLES
Craig A. Paulsen; Logan L. Pease; William K. Bertram; Wes F. Carmean, all of Reno; Joseph R. Hedrick, Sparks, and Ward W. Chilton, Reno, all of Nev., assignors to IGT, Reno, Nev.
Filed Jan. 21, 1993, Ser. No. 6,908
Int. Cl.[6] A63F 1/00, 1/06
U.S. Cl. 273—292 45 Claims



28. A system for playing multiple, independent live blackjack card games at different locations and for accumulating jackpot money and awarding a large jackpot available under the system, the system comprising:
a plurality of live blackjack card playing tables, each table including a table top surface, a plurality of player positions and a dealer position;
a coin acceptor at at least some of the player positions on the tables of the system for enabling players to place a side bet for a chance to win a jackpot, the acceptor being on the table top surface and including means for sensing when a coin has been received by the acceptor, means for generating a corresponding participation signal, and means including a sloping surface contiguous with the table top surface permitting slidable movement of the coin from the table top surface onto the sloping surface and into registration with the means for sensing;
lock-out means at the dealer positions on the tables for preventing generation of a participation signal when a side bet is placed on acceptors of a table once a card game on that table commences and until the card game on that table has concluded;
a computer operatively coupled with the acceptors on all tables for tracking accumulated jackpot money including means for increasing the size of the available jackpot as a function of side bets placed on the acceptors on all tables of the system;

means operatively coupled with the computer for communicating to players and dealers on all tables of the system the size of the currently available jackpot;

payout means at the dealer position of all tables in the system operatively coupled with the computer permitting a dealer to communicate to the computer when a player on that table who placed a side bet on the coin acceptor holds a hand of cards entitled to the jackpot; and

wherein the computer is coupled with the means for communicating for subtracting from the accumulated jackpot money the jackpot won by the player with said hand of cards and for communicating to the players and the dealers at the tables of the system a resulting change in the jackpot that can be won by players.

33. A method of playing live blackjack card games and providing participating players with an opportunity to win a large jackpot when he holds a hand of predetermined cards, the method comprising the steps of:

(a) playing a multiplicity of conventional, live blackjack games on a plurality of separate, live blackjack card game tables;

(b) sliding a side bet coin along a top surface of a table to a predetermined location on the top surface corresponding to a player position for an opportunity to win said jackpot;

(c) at predetermined locations on top surfaces of the tables sensing the placement of side bet coins;

(d) accumulating money available for payout of the jackpot as a function of each side bet coin placed on the tables;

(e) from the available jackpot money determining the size of the jackpot;

(f) playing blackjack on each table with a plurality of complete decks of cards;

(g) selecting said predetermined hand comprising a hand of cards of like denomination and suit;

(h) awarding the jackpot to a player who holds said predetermined hand of cards and has placed a side bet coin at said location;

(i) thereafter subtracting the jackpot won by the player holding said winning hand of cards from the available jackpot money; and

(j) repeating steps (a)–(h) until a next jackpot is won by a player.

5,393,068

BOMBARDIER GAME WITH HOUSING FOR SIGHTING A TARGET AND SUPPORTING RELEASABLE BOMBS

Ronald E. Kane, 11226 Cherryhill Rd. #103, Beltsville, Md. 20705

Filed Mar. 21, 1994, Ser. No. 215,099
Int. Cl.[6] A63B *67/00*
U.S. Cl. 273—351 1 Claim

1. A new and improved bombardier game with housing for sighting a target and supporting releasable bombs comprising, in combination:

a target having a lower surface positionable on the ground and having an upper surface with indicia designating the area to be struck by bombs;

a plurality of bombs having a flat lower extent of a pile type fastener and an upwardly extending rod with radially extending veins for allowing the straight line dropping of the bombs to the target; and

a housing formed in a generally rectangular configuration having a rear end with holes and a curved surface to be held adjacent the eyes of the player and a laterally extending forty-five degree mirror for functioning as a periscope for looking downward to the target therebeneath, the housing also having a remote end with a plurality of apertures for receiving a plurality of bombs to be dropped, the housing also having triggers with springs with the lower ends of the triggers having angled front frictional surfaces in contact with the bombs supported within the apertures to hold the bombs at their sides solely by friction, the triggers having upper exposed ends to be pulled by the player to release an associated bomb with the spring



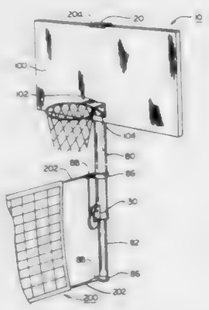
adapted to urge its associated trigger into the locking position against its associated bomb.

5,393,069

RETRACTABLE BACKBOARD SUSPENDED NOT SUPPORT

Stevie E. Taylor, Franklinville, N.C., assignor to Eugene V. Hearl, Summerfield, N.C., a part interest

Filed Feb. 25, 1994, Ser. No. 202,294
Int. Cl.[6] A63B *61/00*
U.S. Cl. 273—411 18 Claims



1. A retractable net support for mounting a net on a backboard, comprising:

a) a frame mountable by mounting means on the backboard, said mounting means including a top mount and a bottom mount configured and arranged to secure said frame to the backboard;

b) a carriage movable mounted in a substantially vertical direction on said frame, said carriage being selectively positionable along said frame;

c) said carriage having a net support post mounted thereon; and

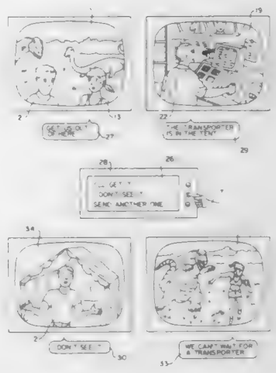
d) a coupling connected to said support post for securing the end of a net.

5,393,070

TALKING VIDEO GAMES WITH PARALLEL MONTAGE

Robert M. Best, 777 108th Ave. N.E., #2460, Bellevue, Wash. 98004

Continuation-in-part of Ser. No. 614,843, Nov. 14, 1990, abandoned, and a continuation-in-part of Ser. No. 756,356, Sep. 9, 1991, abandoned. This application May 5, 1993, Ser. No. 57,945
The portion of the term of this patent subsequent to Oct. 25, 2011, has been disclaimed.
Int. Cl.[6] A63F *9/22*
U.S. Cl. 273—434 6 Claims



1. A method of electronically simulating voice conversations between at least two talking animated characters, the words of one character being selected by a human player, comprising the steps of:

(a) digitally storing a catalog of distinctive voices for at least two talking characters, each in the form of voice sound data representing a plurality of sentences, phrases, word segments or phonemes;

(b) digitally storing a preprogrammed branching dialog between a first animated character and a second animated character, each branch comprising a plurality of alternative verbal expressions;

(c) displaying on a hand-held controller apparatus a first set of alternatively selectable verbal expressions, each corresponding to a branch in said dialog;

(d) receiving from said hand-held controller a manually initiated signal representing a selected verbal expression in said first set of verbal expressions, thereby selecting a branch in the dialog;

(e) digitally reading from said catalog of voices first voice sound data that corresponds to said selected verbal expression for the voice of said first character;

(f) generating a video signal representing an image of said first character for display on a video screen while said second character is off-screen;

(g) generating an audio signal from said first voice sound data representing the voice of said first character speaking said selected verbal expression;

(h) digitally reading from said catalog of voices second voice sound data for the voice of said second character speaking the verbal expression that follows next in the selected branch of the dialog;

(i) generating a video signal representing an image of said second character for display on said video screen while said first character is off-screen;

(j) generating an audio signal from said second voice sound data representing the voice of said second character;

(k) displaying on said hand-held controller apparatus a second set of alternatively selectable verbal expressions that follows next for said first character in the selected branch of the dialog; and

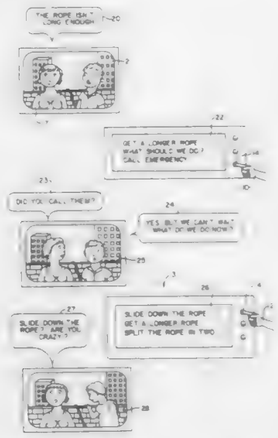
(l) generating a video signal representing an image of said first character for display on said video screen while said second character is off-screen.

5,393,071

TALKING VIDEO GAMES WITH COOPERATIVE ACTION

Robert M. Best, 777 108th Ave. NE., Ste. 2460, Bellevue, Wash. 98004

Continuation-in-part of Ser. No. 614,843, Nov. 14, 1990, abandoned, and Ser. No. 830,379, Jan. 31, 1992, abandoned. This application May 12, 1993, Ser. No. 60,743
The portion of the term of this patent subsequent to Oct. 25, 2011, has been disclaimed.
Int. Cl.[6] A63F *9/22*
U.S. Cl. 273—434 10 Claims



1. A method of electronically simulating voice conversations between at least two talking animated characters, the words of one character being selected by a human player, comprising the steps of:

(a) digitally storing a catalog of distinctive voices for at least two talking characters, each in the form of voice sound data representing a plurality of sentences, phrases, word segments or phonemes;

(b) digitally storing a preprogrammed branching dialog between a first animated character and a second animated character, each branch comprising a plurality of alternative verbal expressions;

(c) generating a video signal representing an image of said first and second characters for display on a video screen;

(d) displaying on a hand-held controller apparatus a first set of alternatively selectable verbal expressions describing preprogrammed actions of an animated character, each expression corresponding to a branch in said dialog;

(e) receiving from said hand-held controller a manually initiated signal representing a selected verbal expression in said first set of verbal expressions, thereby selecting a branch in the dialog and a corresponding selected action of an animated character.

(f) digitally reading from said catalog of voices first voice sound data that corresponds to said selected verbal expression for the voice of said first character;

(g) generating an audio signal from said first voice sound data representing the voice of said first character speaking said selected verbal expression;

(h) generating a video signal representing an image of an animated character performing said selected action in accordance with said selected verbal expression;

(i) digitally reading from said catalog of voices second voice

sound data for the voice of said second character speaking the verbal expression that follows next in the selected branch of the dialog;

(j) generating an audio signal from said second voice sound data representing the voice of said second character; and

(k) displaying on said hand-held controller apparatus a second set of alternatively selectable verbal expressions that follows next for said first character in the selected branch of the dialog.

5,393,072

TALKING VIDEO GAMES WITH VOCAL CONFLICT

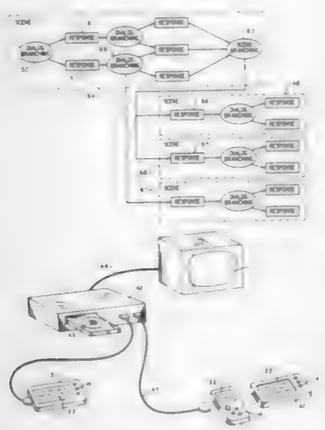
Robert M. Best, 777 108th Ave. NE., Suite 2460, Bellevue, Wash. 98004

Continuation-in-part of Ser. No. 614,843, Nov. 14, 1990, and a continuation-in-part of Ser. No. 864,845, Apr. 7, 1992, abandoned. This application May 19, 1993, Ser. No. 63,858

The portion of the term of this patent subsequent to Oct. 25, 2011, has been disclaimed.

Int. Cl.[6] A63F *9/22*

U.S. Cl. 273—434 7 Claims



1. A method of electronically simulating voice conversations between at least two talking animated characters, the words of one character being selected by a human player, comprising the steps of:

(a) digitally storing a catalog of distinctive voices for at least two talking characters, each in the form of voice sound data representing a plurality of sentences, phrases, word segments or phonemes;

(b) digitally storing a preprogrammed branching dialog between a first animated character and a second animated character, each branch comprising a plurality of alternative verbal expressions;

(c) generating a video signal representing an image of said first and second characters for display on a video screen;

(d) displaying on a hand-held controller apparatus a first set of alternatively selectable verbal expressions, each corresponding to a branch in said dialog;

(e) receiving from said hand-held controller a manually initiated signal representing a selected verbal expression in said first set of verbal expressions, thereby selecting a branch in the dialog;

(f) digitally reading from said catalog of voices first voice sound data that corresponds to said selected verbal expression for the voice of said first character;

(g) generating an audio signal from said first voice sound data representing the voice of said first character speaking said selected verbal expression;

(h) digitally reading from said catalog of voices second voice sound data for the voice of said second character speaking the verbal expression that follows next in the selected branch of the dialog;

(i) generating an audio signal from said second voice sound data representing the voice of said second character;

(j) displaying on said hand-held controller apparatus a second set of alternatively selectable verbal expressions that follows next for said first character in the selected branch of the dialog;

(k) receiving from said hand-held controller a manually initiated signal representing a second selected verbal expression in said second set of verbal expressions, thereby selecting a next branch in the dialog;

(l) digitally reading from said catalog of voices third voice sound data that corresponds to said second selected verbal expression for the voice of said first character expressing words that conflict with the words of said second voice sound data; and

(m) generating an audio signal from said third voice sound data representing the voice of said first character speaking said second selected verbal expression.

5,393,073

TALKING VIDEO GAMES

Robert M. Best, 16016 Ninth Ave. NE., Seattle, Wash. 98155

Continuation-in-part of Ser. No. 614,843, Nov. 14, 1990, abandoned. This application May 25, 1993, Ser. No. 66,204

The portion of the term of this patent subsequent to Oct. 25, 2011, has been disclaimed.

Int. Cl.[6] A63F *9/22*

U.S. Cl. 273—434 4 Claims

1. An electronic system for simulating voice conversions between animated video characters, the system comprising:

(a) means for digitally storing voice sound data representing a plurality of sentences, phrases, word segments or phonemes for two or more talking animated characters;

(b) means for digitally storing a preprogrammed branching dialog between said animated characters, each branch comprising a plurality of alternative verbal expressions;

(c) means for generating a video or RF signal representing images of said animated characters for display on a video screen;

(d) cable means for sending to a hand-held portable game apparatus variable menus of alternatively selectable verbal expressions, each expression corresponding to a branch in said dialog;

(e) cable means for receiving from said hand-held portable game apparatus a manually initiated signal representing a selected verbal expression in a menu of said verbal expressions, thereby selecting a branch in the dialog;

(f) means for digitally reading from said catalog of voices voice sound data that corresponds to said selected verbal expression for the voice of one of said characters;

(g) means for generating an audio signal from said voice sound data representing the voice of a character speaking said selected verbal expression; and

(h) said hand-held portable game apparatus comprising:

(1) two or more manually operatable push buttons;

(2) a liquid crystal display positioned near said push buttons for displaying said variable menu of verbal expressions;

(3) a ROM program cartridge storing a program of instructions for performing the following sequence of steps in said portable game system:

a. reading said variable menu of verbal expressions from said cable;

b. displaying said menu on said liquid crystal display;

c. receiving from one of said push buttons a manually initiated selection signal; and

d. transmitting said manually initiated selection signal on said cable;

thereby selecting from said digital storing means the next branch of the branching dialog and voice sound data corresponding to the manually selected menu expression.

5,393,074

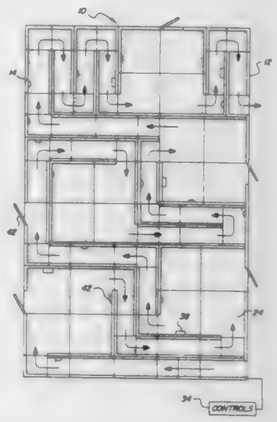
MODULAR ELECTRONIC GAMING SYSTEM

Thomas Bear, 6559 Kolb, and Robert Jordan, 15402 Angelique, both of, Allen Park, Mich. 48101

Continuation-in-part of Ser. No. 116,507, Sep. 7, 1993, Pat. No. 5,320,362. This application Jun. 6, 1994, Ser. No. 254,129

Int. Cl.[6] A63B *71/02*

U.S. Cl. 273—440 12 Claims



1. A modular, interactive amusement system comprising:

a plurality of interconnectable modules, each of said modules including at least one pair of mating first and second connector members disposed at first and second locations thereon such that one of said plurality of modules may be connected to another of said plurality of modules by connecting a first connector member of said one such module with a second connector member on said another module;

a first portion of said plurality of interconnectable modules including a floor and side walls to define a track module including a passageway for game participants to pass therethrough;

a second portion of said interconnectable modules further including a floor to define a room floor fixture;

a third portion of said plurality of interconnectable modules further including a wall and defining a room wall fixture, said room wall fixtures being interconnectable with said room floor fixtures to define a gaming room in which said game participant may engage in various activities;

a plurality of sensors disposed along said passageways and said gaming rooms and operative to generate electrical signals indicative of the positions and activities of said participants in the passages and gaming rooms;

sensory signal generators disposed along said passageways and in said gaming rooms; and

a central computer connected to said sensors so as to receive said electrical signals therefrom and connected to said sensory signal generators so as to control their operation, said computer being programmed to control the operation of the sensor signal generators as a preprogrammed function of the electrical signals generated by said sensors.

5,393,075

MOBILE

Christopher Harber, 10 Kimmons Ct., Kanata, Ontario, Canada K2K 2M4

Filed Jun. 1, 1994, Ser. No. 252,201

Int. Cl.[6] G09F *19/00*

U.S. Cl. 273—459 7 Claims



1. A mobile suspendable from a fixed support, comprising:

at least one planar image support member suspended on a flexible line so as to undergo random motion in the presence of air currents;

an image carried by said support member, said image creating a visual effect that directs the eye of a viewer to a remote point spaced from said support member and having a fixed spatial relationship thereto; and

a three-dimensional object mounted on a stiff wire attached to said support member such that said three-dimensional object is maintained substantially at said remote point having a fixed spatial relationship to said support member.

5,393,076

METAL GASKET WITH BASE PLATE HAVING COATINGS OF DIVERSE THICKNESSES

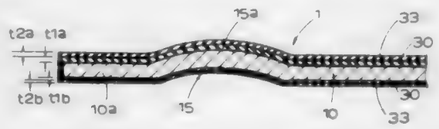
Yoshiyuki Hagiwara, Okazaki; Osamu Jinno, Nagoya; Takeshi Kitamura, Toyota; Akio Kuramoto, Okazaki; Yukio Kawai; Kenichi Yamaguchi, both of Toyota, and Hirotaka Kakuta, Toyoake, all of Japan, assignors to Taiho Kogyo Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of Toyota, Japan

Division of Ser. No. 736,323, Jul. 26, 1991. This application Apr. 7, 1993, Ser. No. 43,559

Claims priority, application Japan, Jul. 26, 1990, 2-198183; Jul. 31, 1990, 2-202999; Aug. 3, 1990, 2-206026

Int. Cl.[6] F16J *15/12*

U.S. Cl. 277—235 A 4 Claims



1. A metal gasket disposed between a cylinder head and a cylinder block of an internal combustion engine, comprising:

a metallic base plate defining a plurality of openings including at least one combustion opening and having a bead formed around said combustion opening; and

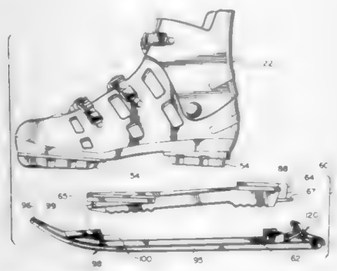
at least one resilient sealing layer deposited on opposite sides of said base plate, said sealing layer having a thickness which is greater at one side of said base plate with said bead protruded therefrom than the thickness at the other side thereof, the portion of said sealing layer on the one side of said base plate with said bead protruded therefrom being uniform in thickness.

5,393,077

ALL SEASON SKATE

Craig C. Wanous, 4001 Overlook Dr., Bloomington, Minn. 55437

Filed Mar. 1, 1993, Ser. No. 25,033
Int. Cl.[6] A63C *17/18*
U.S. Cl. 280—7.13 11 Claims



1. A skate assembly forming a snow skate including a ski carried by a boot, said skate assembly comprising:

front and rear attachment portions having front and rear ends, and opposite side surfaces extending between said front and rear ends, said attachment portions attached respectively to the sole and heel of the boot with the front ends of the attachment portions adjacent the front end of the boot; and

an elongate sub-assembly including a molded polymeric frame having a front end and a rear end, said frame including:

a middle portion extending between said front and rear ends and spaced front and rear portions each having an uppermost surface, a bottom surface opposite to said uppermost surface, opposite spaced side wall portions, and front and rear ends;

means for releasably engaging said rear portion to said rear attachment portion and said front portion to said front attachment portion comprising, for each pair of engaged portions, a pair of grooves extending from an inlet adjacent one of the ends of the front and rear portions toward the other of the ends of the portions, each groove extending along a different one of the side surfaces of said portions; and

said attachment portions having at least one part adapted to extend along said side surfaces of said side wall portions and including a pair of tongues having opposite upper and lower surfaces and distal surfaces extending from one of the ends of the attachment portion toward the other of the ends of the attachment portions, each tongue adapted to enter a different one of said grooves from said inlet to an engaged position with said surfaces of said grooves and tongues in frictional engagement; and

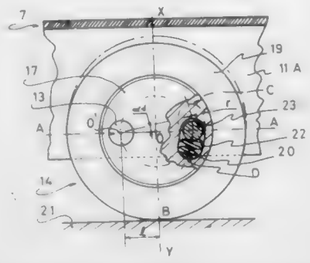
fastening means for fixing said sub-assembly to said boat including a fastening member attached to one of said portions.

5,393,078

SKATE WITH IN-LINE WHEELS

Joël Bourdeau, Saint-Jorioz, France, assignor to Salomon S.A., Metz-Tessy, France

Filed Jun. 2, 1993, Ser. No. 70,166
Claims priority, application France, Jun. 9, 1992, 92 07148
Int. Cl.[6] A63C *17/06, 17/22*
U.S. Cl. 280—11.22 24 Claims



1. A skate having in-line wheels, said skate comprising:

a shoe having a sole;

a chassis including an upper generally horizontally disposed plate and a downwardly extending part having at least one lateral flange;

means for fastening said sole to said chassis;

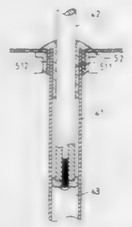
a plurality of wheels, each of said plurality of wheels including a hub, a tire surrounding said hub and a bearing interpolated between said tire and said hub for enabling relative rotation between said tire and said hub in a vertical plane of rotation, a respective transverse axle extending through each said hub for joining a respective one of said plurality of wheels to said lateral flange to thereby constitute a roller train, each said axle extending along an axis horizontally offset relative to a central axis of each said hub, each said hub comprising an arrangement for enabling a predeterminate amount of guided angular deflection of said hub in said vertical plane of rotation with respect to a horizontal plane and each said hub further comprising an elastic recoil device for absorbing vibrations between said tire and said chassis as said hub is angularly deflected.

5,393,079

WHEELED LUGGAGE WITH HANDLE ASSEMBLY

Yuan L. Wang, P. O. Box 82-144, Taipei,

Filed Dec. 6, 1993, Ser. No. 161,571
Int. Cl.[6] B62B *1/04;* A45C *5/14*
U.S. Cl. 280—37 1 Claim



1. A wheeled luggage with handle assembly comprising:

a body portion formed with at least two corners and having two recesses each being located at one of said at least two corners thereof;

a L-shaped member mounted on a bottom of said body portion;

an axle disposed on said L-shaped member and mounted across said two corners;

two wheel protectors each fitted in one of said two recesses of said body portion;

two wheels each pivotally connected with an end of said axle;

two plugs fitted on a top of said body portion and each having a cylindrical portion and a plurality of clamping members enclosing the cylindrical portion and having a distance therefrom, said clamping members having a hook portion at a lower end;

an annular member having an inner diameter which is just equal to an outer diameter of a cylinder formed by said clamping members, said annular member being shorter than said clamping members in height, said annular member fitting over the clamping members of said plug;

two tubular members having a lower end vertically mounted on said L-shaped member and an upper end inserted between the cylindrical portion and the clamping members of said plug; and

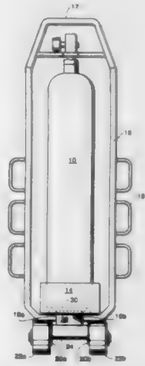
a handle having two pull rods each inserted in one of said tubular members and provided with a guide member at a lower end.

5,393,080

AQUATIC AIR TANK DOLLY

Steve F. Ross, 151 Avenida Navarro, San Clemente, Calif. 92672

Filed Apr. 26, 1993, Ser. No. 52,396
Int. Cl.[6] B62B *1/16*
U.S. Cl. 280—47.26 7 Claims



1. A dolly for transporting an air tank having a circular bottom end and a valve stem end, said dolly comprising

cup means generally in a cylindrical shape adapted for receiving the bottom end of said tank, said cup having a top circular opening for receiving the bottom end of said tank, and having a smaller bottom circular opening defined by an inwardly extending flange,

bottom fastener means attached to said inwardly extending flange of said cup means, said bottom fastener means having a plate disposed between said tank and said inwardly extending flange of said cup means, and having a rail fastener and a guard fastener attached to said plate acting to secure said bottom fastener means to said cup,

wheel means for rolling said tank during movement,

guard means attached to said guard fastener means of said bottom fastener means, said guard means having an outwardly extending edge for sliding said dolly and said tank over movement path obstructions preventing use of said wheels, said guard means also having apertures for attaching said wheel means to said guard means.

rail means attached to said rail fastener means of said bottom fastener means, said rail means extending therefrom towards and attached to the valve stem end of said tank, said rail means functioning as a dolly frame, and

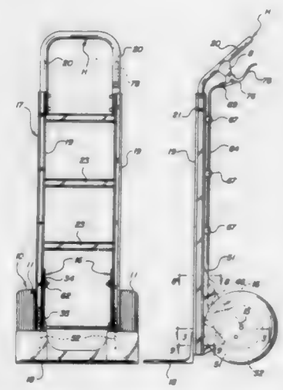
valve stem bracket means for fastening together said valve stem end of said tank and a proximal end of said rail means.

5,393,081

HAND TRUCK ASSEMBLIES AND METHODS OF CONSTRUCTING AND OPERATING THEM

Carl N. Mortenson, Midland, Mich., assignor to Magline, Inc., Pinconning, Mich.

Continuation of Ser. No. 955,509, Oct. 2, 1992, abandoned. This application Mar. 23, 1994, Ser. No. 217,294
Int. Cl.[6] B62B *1/04*
U.S. Cl. 280—47.27 12 Claims



1. An improved hand truck comprising:

a. a pair of horizontally spaced, vertically extending, side rails connected laterally to form a hand truck frame and having a handle surface incorporated with the upper portion thereof;

b. said frame incorporating axle supporting brackets fixed to the lower end of the inner side of each side rail to extend rearwardly therefrom, said side rails comprising channels with channel openings facing respectively laterally inwardly toward one another and said brackets each having integral laterally projecting, vertically extending, elongate rail parts received within and in contact with said side rails; and fastener mechanism for securing said rail parts securely to said side rails;

c. an axle and wheel mechanism on said brackets for supporting the frame, said axle and wheel mechanism including a pair of outboard laterally spaced wheels;

d. a nose plate structure fixed at the lower end of said hand truck frame having a forwardly extending load support platform with a load engaging upper surface;

e. a brake disc having a peripherally disposed braking surface secured to the interior side of each wheel to rotate therewith;

f. brake actuator mechanism mounted on said frame;

g. a slacked flexible cable actuator each having one end secured to said frame, trained in a generally closed loop around each said disc adjacent said braking surface, the opposite end of each actuator being connected to said brake actuator mechanism;

h. said brake actuator mechanism including a movable brake operating mechanism which, when moved to an operating position from neutral position, tightens said cable actuators to tauten said cable actuators on said discs to brake said discs and wheels;

i. guide mechanism on said frame spaced substantially from said return mechanism and in engagement with said cable

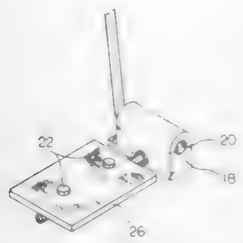
actuators to maintain said cable actuators in substantially closed loops adjacent the brake surfaces but substantially out of engagement therewith when the cable actuators are returned to slacked position.

5,393,082

ADJUSTABLE-TILT FOOTRESTS FOR WHEELCHAIRS

John M. Fenley, 1284 Devonshire Dr., San Diego, Calif. 92107

Filed Mar. 4, 1994, Ser. No. 205,784
Int. Cl.[6] A47C 7/52
U.S. Cl. 280—291 3 Claims



2. A wheelchair with footrest supports having a pair of horizontal, parallel forwardly extending cylindrical rods comprising:

a pair of blocks, each block having an upper bore positioned to receive and support an associated cylindrical rod of the wheelchair, each block having a horizontal lower bore perpendicular to the upper bore;

a pair of foot supporting plates, each plate adjustably supported with respect to the block, each plate also having a pair of holes extending therethrough with bolts extending through the holes, each bolt having a complimentary nut; and

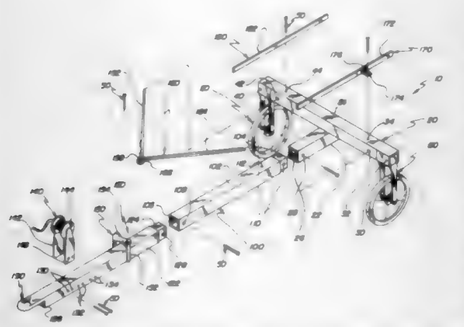
a pair of pivot bolts, each pivot bolt having a threaded end located adjacent to the side of the pivot block remote from the plate with a complimentary abutment surface and wingnut on opposite sides of the block for securing the pivot bolt to the block when positioned through the lower bore, each pivot bolt also having a pair of parallel holes extending therethrough aligned with the holes of the plate for securing the plate with respect to the bolt with a pair of small bolts and associated nuts to effect such coupling.

5,393,083

COLLAPSIBLE BOAT TRAILER

Craig E. Mally, 7025 NE. 62nd Ave., Altoona, Iowa 50009

Filed Mar. 1, 1994, Ser. No. 203,825
Int. Cl.[6] B60P 3/10
U.S. Cl. 280—414.1 7 Claims



2. A new collapsible boat trailer for low speed, short distance vehicle-towed transport, launching, and retrieval of lightweight boats which is quickly disassemblable without tools into small lightweight components for stowage, the collapsible boat trailer comprising a plurality of separable components, the separable components comprising:

a rigid frame comprising a tubular cross member with a forward extending towing bar coupling structure fixedly connected thereto;

a wheel assembly operably extending downwardly from each end of the cross member such that the boat trailer may roll across the ground, the wheel assemblies being pivotally connected to the cross member such that they may be pivoted inwardly upwardly to lie adjacent the cross member for inoperable stowage;

an elongated towing bar operably extending longitudinally from the front of the towing bar coupling structure, the towing bar being separable from the towing bar coupling structure for inoperable stowage, the towing bar also being separable intermediate it's ends into front and rear sections thereof for inoperable stowage;

towing hitch means fixedly connected to a proximal end of the towing bar front section;

winch means operably connected to the towing bar front section near the proximal end thereof whereby facilitating loading a boat onto the boat trailer, the winch means being separable from the towing bar for inoperable stowage;

a boat keel roller assembly fixedly mounted to the towing bar front section intermediate the winch means and a distal end thereof;

brace means operably extending from the tow bar rear section intermediate the ends thereof to the cross member intermediate a center and each end thereof whereby the cross member is held rigid normal the towing bar, the brace means being separable from the towing bar and the cross member for inoperable stowage; and

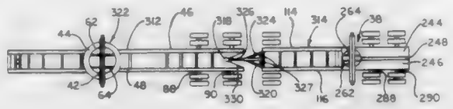
cradle means operably mounted on the cross member whereupon the boat may be supported, the cradle means being separable from the cross member for inoperable stowage.

5,393,084

SWIVEL BUNKED DOUBLE TRAILERS FOR CONTAINERS

Hubert T. Kleysen, 2100 McGillivray Blvd., Winnipeg, MB, Canada R3T 3N5

Filed Jun. 28, 1993, Ser. No. 83,887
Int. Cl.[6] B62D 13/00
U.S. Cl. 280—442 13 Claims



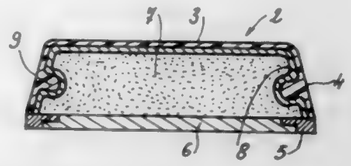
1. A double trailer assembly for transporting elongate load means, comprising lead trailer means articulated to pup trailer means, front fixed swivel bunk means integral to said lead trailer means having front cradle means for supporting one end of said elongate load means, said front cradle means being rotationally mounted about a vertical axis passing through its midpoint, front support means for rotationally mounting said front cradle means, and rear slidable swivel bunk means integral to said pup trailer means having rear cradle means for supporting another end of said elongate load means, said rear cradle means being rotationally mounted about a vertical axis passing through its midpoint, and slidably mounted for movement forwardly and rearwardly of said pup trailer, rear support means for rotationally mounting said rear cradle means, slidably mounted in said pup trailer means, said rear cradle means being slidable from a first forward position to a second rear position abutting the rear end of said pup trailer means

5,393,085

SHAPED SKI HAVING NON-RECTANGULAR CROSS SECTION

Jean-Marc Forneri, Saint Sauveur, France, assignor to Skis Rossignol S.A., Voiron, France

Filed Nov. 23, 1992, Ser. No. 979,916
Claims priority, application France, Nov. 22, 1991, 91 14694
Int. Cl.[6] A63C 5/07
U.S. Cl. 280—602 31 Claims



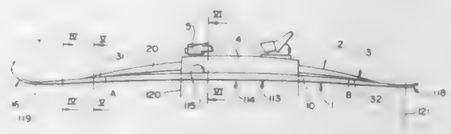
1. A shaped ski having front, central and rear zones and having a non-rectangular cross section defined by an exterior shell forming an upper surface and lateral sides of the ski, a core inside said shell, said core including at least lateral portions made from a synthetic foam, and a lower surface attached to the shell and defined by longitudinal bars located on either side of a sliding base, said ski further comprising at least one longitudinally extending stiffener in contact with an internal surface of at least one of the lateral sides of the shell and located at least in a central zone of the ski, said stiffener extending over only a middle portion of a height of said internal surface of said lateral side.

5,393,086

SKI FOR WINTER SPORTS COMPRISING A BASE, A STIFFENER AND A SUPPORT FOR BINDINGS

Jacques Le Masson, Cran-Gevrier, and Philippe Commier, Annecy, both of France, assignors to Salomon, S.A., Annecy Cedex, France

Continuation of Ser. No. 802,279, Dec. 4, 1991, abandoned. This application Oct. 26, 1993, Ser. No. 144,543
Claims priority, application France, Dec. 14, 1990, 90 16048; Apr. 16, 1991, 91 05012
Int. Cl.[6] A63C 5/07
U.S. Cl. 280—602 44 Claims



1. A ski comprising:

a first lower assembly comprising a base, said base having a front end raised to form a spatula;

a second upper assembly comprising a single stiffener, said stiffener having a front end and a rear end;

a connection for connecting each of said front end and said rear end of said stiffener to said base; and

at least one support connected to said base, said at least one support being adapted to receive the bindings, independent of said stiffener, in a boot support zone, for maintaining the boot on the ski, wherein

said single stiffener extends through said boot support zone; and

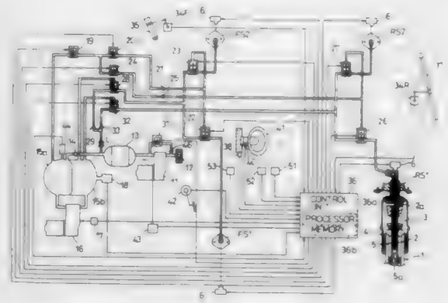
said single stiffener is connected to said base along said predeterminate length of said stiffener only at each of said front end and said rear end of said stiffener.

5,393,087

FLUID ACTIVE SUSPENSION APPARATUS AND OPERATION CONTROL METHOD THEREFOR

Yasutaka Taniguchi, Hoi; Takao Morita, Toyota; Tadao Tanaka, Okazaki; Kenji Hayase, Toyoake, and Masanori Tani, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1993, Ser. No. 122,299
Claims priority, application Japan, Sep. 18, 1992, 4-249786; Sep. 18, 1992, 4-249787; Oct. 27, 1992, 4-288350; Oct. 27, 1992, 4-288351
Int. Cl.[6] B60G 11/26
U.S. Cl. 280—707 21 Claims



1. A method of controlling operation of a fluid active suspension apparatus whose suspending characteristic is actively changed in accordance with supply and discharge of an operating fluid to and from a fluid actuator, comprising the steps of:

(a) presetting a plurality of supply/discharge control patterns;

(b) detecting a parameter related to a sprung vertical motion;

(c) selecting a required supply/discharge control pattern from among said plurality of supply/discharge control patterns in accordance with the magnitude of the detected sprung vertical motion-related parameter; and

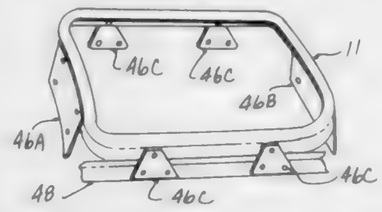
(d) carrying out supply/discharge control of a compressible fluid as said operating fluid, in accordance with the selected supply/discharge control pattern.

5,393,088

INVISIBLE SEAM DEPLOYMENT DOOR INSTALLATION WITH STABILIZED AIR BAG DEPLOYMENT OPENING CONSTRUCTION

David J. Bauer, 7356 Meadowridge Cir., West Bloomfield, Mich. 48322; Kenneth J. Barnes, 50098 Quinton Ct., Site 198A, Shelby Township, Macomb County, Mich. 48315, and Anthony J. DiSalvo, 10821 Reack, Allen Park, Mich. 48101

Filed Oct. 5, 1993, Ser. No. 132,150
Int. Cl.[6] B60R 21/16
U.S. Cl. 280—728 A 6 Claims



1. An air bag installation for the passenger compartment of a vehicle comprising:

an interior trim piece mounted in said passenger compart-

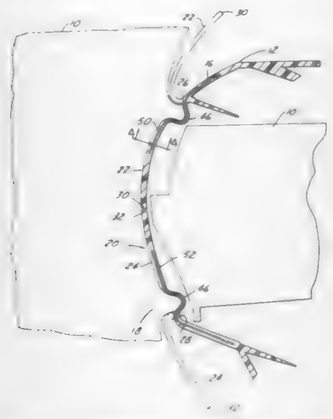
ment and having a substrate panel formed with an opening, said interior trim piece mounted to a fixed structure in said passenger compartment;
an air bag storing canister mounted behind said trim piece substrate panel aligned with said opening therein, said air bag storing canister containing an air bag to be deployed by inflation thereof;
at least one deployment door substrate panel fit into said opening and hinged along one side to a portion of said trim piece substrate panel adjacent said opening;
a covering layer extending uninterruptedly over said trim piece substrate panel and said deployment door substrate panel to conceal said deployment door substrate panel from view, said deployment door substrate panel forced through said covering layer when said air bag is deployed;
a perimeter stiffening frame extending around said opening and fixed relative said trim piece substrate panel;
anchoring elements attached to said perimeter stiffening frame and to said fixed structure in said passenger compartment to thereby stabilize and restrain the perimeter of said opening from outward bulging upon forcing of said deployment door substrate panel to hinge open by inflation of said air bag and penetrating said covering layer.

5,393,089

VEHICLE AIR BAG COVER

Brian R. Pakulsky, Lapeer; Fred Daris, Clarkson; John Rust, Rochester; Randall J. Ryszewski, Grosse Pointe Woods, and Thomas F. Soltys, Metamora, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 1, 1993, Ser. No. 114,407
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728 B **2 Claims**



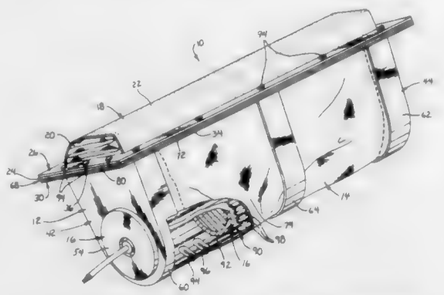
1. A panel for an automotive vehicle comprising:
a wall having an opening,
an integral closure normally closing said opening and concealing a stored air bag before it is deployed through said opening in a crash,
said wall and closure being formed of a relatively stiff, self-supporting, flexible material,
said closure comprising first and second doors each connected to said wall by an integral, flexible hinge,
said hinges being in spaced apart parallel relation and said doors being capable of swinging open on said hinges in response to the force of impact of the air bag thereagainst when the air bag inflates so that the inflating air bag may deploy through the opening,
said hinges each being in the form of an open trough of arcuate cross-section free of sharp bends having a bottom portion formed in a smooth curve and also having smooth curved portions connecting into said wall and into the associated door, respectively,
said hinges being adapted to absorb at least a portion of the force of impact of the inflating air bag and to relieve stress and resist breaking of said doors and separation of said doors from said wall,
said hinges being of less thickness and greater flexibility than the portions of the wall and doors immediately adjacent thereto,
and scrim strips embedded in said hinges to reinforce and strengthen said hinges.

5,393,090

FABRIC HOUSING FOR AIR BAG INFLATOR

Jeffrey A. Shepherd, Troy, and James K. Conlee, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1993, Ser. No. 172,205
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728 A **8 Claims**



2. An air bag module for a motor vehicle, comprising:
a cylindrical inflator having spaced apart end walls and a cylindrical side wall;
a rectangular support frame defining an open mouth for the mounting of an air bag and having spaced apart opposing end walls and spaced part opposing side walls;
an inflator support depending from each of the end walls to support the inflator beneath the support frame and being spaced away from one another;
an air bag mounted on the support frame;
a liner of flexible sheet material for capturing inflation gas from the inflator so that inflation gas exits the module through the open mouth, said liner being independent of the air bag and having a rim portion for attachment to the support frame and having end walls and side walls suspended from the support frame and surrounding the inflator in substantial gas impervious relation.

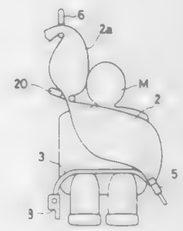
5,393,091

INFLATABLE SEATBELT SYSTEM

Yoshihiko Tanaka, Tokyo, and Tsuneo Chikaraishi, Hikone, both of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Aug. 17, 1993, Ser. No. 107,070
Claims priority, application Japan, Aug. 18, 1992, 4-219469
Int. Cl.[6] B60R *21/18*
U.S. Cl. 280—733 **7 Claims**

1. An inflatable seatbelt system for a vehicle including at least: means for generating a gas when acceleration or deceleration acting on the vehicle exceeds a first set value indicating occurrence of an emergency situation; a webbing having a portion brought into contact with an occupant's body, at least a part of said contact portion being formed as a bag-shaped portion; said webbing being arranged such that when no gas is generated from said gas generating means, said webbing is maintained in the shape of a strap having a predetermined width, and, when a gas is generated from said gas generating means, said bag-shaped portion is inflated by the gas; a retractor operating such that when the deceleration on the vehicle is not higher than a second set value, which is lower than said first set value, said retractor allows said webbing to be freely wound up and unwound, and, when the deceleration on the vehicle exceeds said second set value, said retractor prevents unwinding of said webbing; a tongue connected to said webbing; and a buckle device with which said tongue is disengageably engaged; and



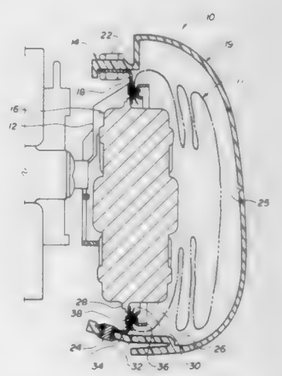
said seatbelt system further including a first guide member and a second guide member, which is disposed below said first guide member, for guiding said bag-shaped portion of said webbing so that a portion of said bag-shaped portion which lies between said first and second guide members is disposed in the vicinity of at least one side of said occupant's body.

5,393,092

AIR BAG FOR A VEHICLE AIR BAG ASSEMBLY AND METHOD OF MAKING THE SAME

Stuart Charns, Gilbert, Ariz., and Bruce R. Hill, Farmington Hills, Mich., assignors to TRW Inc., Lyndhurst, Ohio

Filed Feb. 10, 1992, Ser. No. 833,083
Int. Cl.[6] B60R *22/16*
U.S. Cl. 280—743 R **30 Claims**



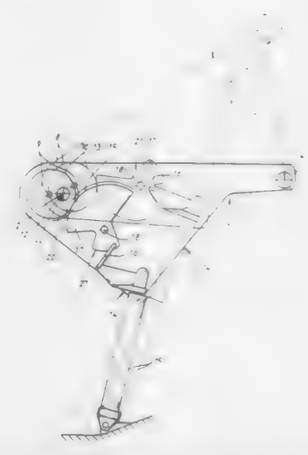
1. A method of making air bags for vehicle air bag assemblies comprising the steps of:
forming a set of air bag panels which includes a first panel with an outer perimetric edge and a second panel with an undulate outer perimetric edge, and
joining the outer perimetric edge of the first panel to the undulate outer perimetric edge of the second panel to form a structure capable of being inflated to a predetermined three-dimensional configuration.

5,393,093

ERECTING MECHANISM FOR A SWIVEL-UP ROLLOVER BAR

Martin Wünsche, Althengsfett; Hans Götz, Böblingen; Wolfgang Schwede, Sindelfingen; Karl-Heinz Baumann, Bondorf, and Guido Hesse, Sindelfingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Feb. 22, 1993, Ser. No. 20,777
Claims priority, application Germany, Feb. 21, 1992, 4205308
Int. Cl.[6] B60R *21/13*
U.S. Cl. 280—756 **9 Claims**



1. Erecting mechanism for a swivel-up rollover bar for vehicles having a bar leg which is supported in a swivel bearing on one vehicle side, said bar leg being swivellable about a transverse axis of the vehicle and having a supporting section remote from its swivelling axis which serves to support the vehicle during a rollover movement, wherein the bar leg is supported by a support assembly such that, during swivelling-up of the rollover bar to a vehicle supporting position, the supporting section of the bar leg describes a curved path which deviates from a circular arc around the swivelled bearing at least over a partial range of its swivelling angle to thereby change the effective length of the bar leg with respect to a vehicle structure in response to its swivel position, and wherein said supporting structure includes a cam driven swivellably about a cam bearing point and serving to displace the bar leg in a longitudinal direction of the bar leg, wherein the cam is formed by an eccentrically swivel-mounted disc.

5,393,094

VEHICLE STEERING COLUMN, PARTIALLY MOVABLE BETWEEN A UTILIZATION POSITION AND A RETRACTED POSITION

Francois Wardavoir, Cellettes, France, assignor to Hobbycar, Thenay, France

Filed Sep. 30, 1993, Ser. No. 128,679
Claims priority, application France, Oct. 5, 1992, 92 11772
Int. Cl.[6] B62D *1/18*; B60N *2/20*
U.S. Cl. 280—775 **4 Claims**

1. A vehicle steering column, part (**1**, **2**, **3**, **4**, **5**, **6**, **7**) of this column, comprising the steering wheel (**1**), being movable between a utilization position and a retracted position in which the steering column occupies a reduced volume of the passenger compartment of the vehicle, wherein the steering column comprises mechanical connection means (**16**, **17**, **19**, **9**, **12**) adapted for kinetically connecting it to the movable part of a seat back, part of which seat back is movable between an upright service position and a forwardly inclined out-of-service position and making it possible to displace the movable

part (1, 2, 3, 4, 5, 6, 7) of the steering column from said utilization position to said retracted position by movement of the



movable part of said seat back from said upright service position to said forwardly inclined out-of-service position.

5,393,095

APPARATUS AND METHOD FOR REPLACEMENT OF A BEARER MEMBER OF A LONGITUDINAL BEARER JOINT IN A MOTOR VEHICLE BODY

Gundolf Kreis, Oberstimm, and Heinrich Timm, Ingolstadt; Viorel Bora, Heilbronn, all of Germany, assignors to Audi AG, Ingolstadt, Germany

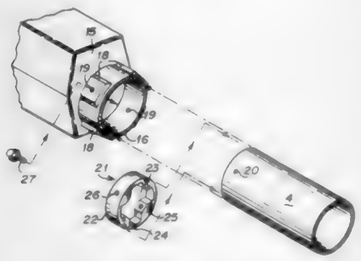
PCT No. PCT/EP91/02114, § 371 Date Jun. 17, 1993, § 102(e) Date Jun. 17, 1993, PCT Pub. No. WO92/11160, PCT Pub. Date Jul. 9, 1992

PCT Filed Nov. 8, 1991, Ser. No. 78,198

Claims priority, application Germany, Dec. 20, 1990, 4041039.0

Int. Cl.[6] B62D *21/00*

U.S. Cl. 280—781 11 Claims



1. Method for replacing a bearer member in a motor vehicle body longitudinal bearer joint which includes a cast light metal connector having a tubular socket sized for receivingly engaging one end of a first, forwardly disposed extruded light metal longitudinal bearer member originally secured in place by a surrounding transverse weld seam joining said first bearer member to a front edge of said socket, said method comprising in operative sequence the steps of:

a) separating the weld seam;

b) removing the first bearer member;

c) providing said socket with a plurality of holes spaced apart along its circumference adjacent said front edge;

d) inserting into the socket a replacement bearer member kit assembly which includes:

i) a replacement hollow-section bearer member having a first end provided with a plurality of holes spaced for coalignment with said holes of said socket;

ii) an insert piece fitted within a hollow interior of said replacement bearer member first end and having a plurality of threaded holes spaced apart for coalignment with said holes of both said replacement bearer member first end and said socket;

e) aligning the respective holes of said socket and said replacement bearer member with the threaded holes of said insert piece; and

f) securing said replacement bearer member and insert piece to said socket with threaded bolt fasteners.

5,393,096

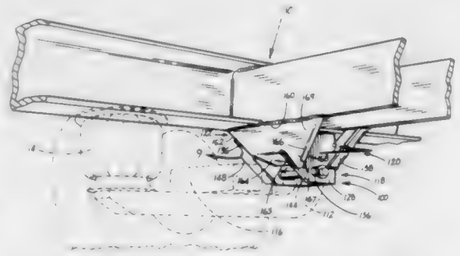
SUSPENSION FRAME BRACKET

William C. Pierce, Muskegon, and Gregory T. Galazin, Montague, both of Mich., assignors to Nai Neway, Inc., Muskegon, Mich.

Filed Mar. 2, 1993, Ser. No. 25,263

Int. Cl.[6] B60G *7/02*; B62D *21/11*

U.S. Cl. 280—788 11 Claims



1. A mounting bracket assembly for mounting a trailing arm to a vehicle frame in a trailing arm suspension system, the mounting bracket assembly comprising:

a side frame having a front plate and two side plates extending substantially parallel to each other from the front plate; and

a one-piece rear gusset having a brace portion and a stiffening portion, the stiffening portion extending obliquely from the brace portion and sized to fit in a space between the side plates and welded thereto, and the brace portion having a laterally extending portion extending laterally of the space between the side plates, said laterally extending portion of said brace portion having an interior edge extending along one of said side plates and being secured thereto, and a top edge adapted to be secured to the vehicle frame wherein said brace portion laterally extending portion extends laterally of said one of said side plates and extends between said one of said side plates and said vehicle frame when the mounting bracket assembly is assembled to the vehicle frame.

5,393,097

AUTOMOBILE ARMREST APPARATUS FOR PRESENTING RESTRAINT SYSTEM

John A. Townsend, 543 Esplanade, Pacifica, Calif. 94044

Continuation-in-part of Ser. No. 912,790, Jul. 13, 1992. This application Apr. 21, 1994, Ser. No. 230,622

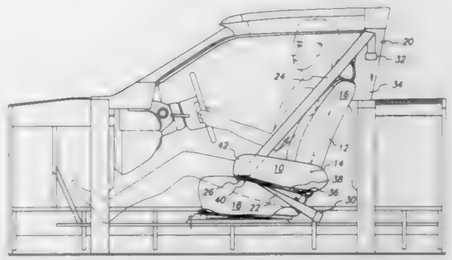
Int. Cl.[6] B60R *22/00*

U.S. Cl. 280—801.1 7 Claims

2. A restraint system presentation apparatus for presenting a portion of a restraint belt to a vehicle occupant, the apparatus comprising:

an armrest retractable to an upright position and lowerable to a working position;

belt retaining means for releasably retaining the belt portion on the armrest in a position conveniently accessible to the occupant when the armrest is in the working position, the retaining means allowing the occupant to release the belt therefrom and operate the restraint system; and



resetting means for automatically replacing the belt portion in the retaining means when the restraint system is not in use and the armrest is retracted in the upright position.

5,393,098

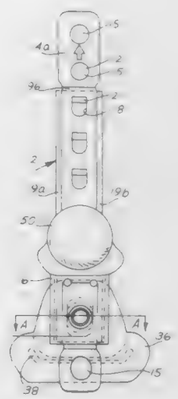
SEAT BELT HEIGHT ADJUSTER

Rudy V. Thomas, Sterling Hts., and Robert C. Pfeifer, Troy, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Dec. 16, 1993, Ser. No. 167,276

Int. Cl.[6] B60R *22/00*

U.S. Cl. 280—801.2 13 Claims



1. A device (10) useful to adjust the height of a safety belt webbing, comprising:

a frame (12) having a plurality of spaced locking formations (18);

a carrier (16) movably mounted upon the frame comprising;

handle assembly means (40) for moving the carrier and for locking the carrier into a designated one of the locking formations (18) comprising:

a locking pin (50) movable into and out from the designated locking formation; and

first means (60,70,90), comprising a center collapsible, variable height cup shaped means (90) with an associated periphery thereof for initiating retraction of the pin from the designated locking formation in response to a squeezing or clamping action, generally oppositely received at arbitrary, locations about the periphery of the spring means, the carrier being movable along the frame with the locking pin (50) disengaged from any locking formation.

5,393,099

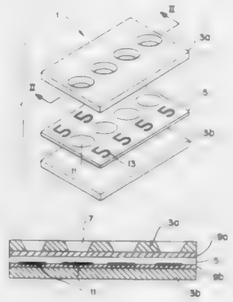
ANTI-COUNTERFEITING LAMINATED CURRENCY AND METHOD OF MAKING THE SAME

Salvatore F. D'Amato, Monmouth Beach, N.J., assignor to American Bank Note Holographics, Inc., Elmsford, N.Y.

Filed May 21, 1993, Ser. No. 65,535

Int. Cl.[6] B42D *15/10*; B32B *23/06*

U.S. Cl. 283—91 25 Claims



1. A method of making an anti-counterfeiting document comprising the steps of:

forming a flexible thin middle substrate having a first and second surface from a material different from and having a durability greater than paper;

forming an optical image on said thin middle substrate;

securing a first outer part to said first surface of said thin middle substrate, said first outer part being paper;

securing a second outer part to said second surface of said thin middle substrate, said second outer part being paper; and

providing at least one aperture in at least one of said first outer part and said second outer part through which said optical image formed on said middle substrate is exposed.

5,393,100

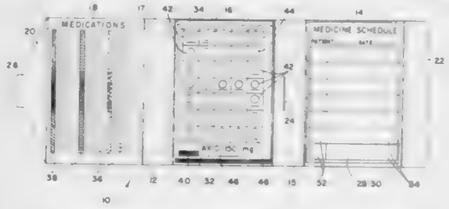
MEDICINE SCHEDULER

Matthew Coe, Cedar Grove, N.J., assignor to PharmaDesign, Inc., Warren, N.J.

Filed Dec. 23, 1993, Ser. No. 174,784

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—115 13 Claims



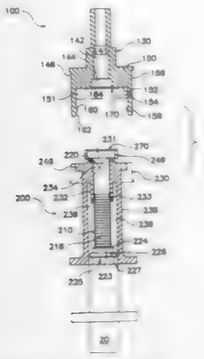
1. A medicine scheduler comprising, in combination:

a plurality of medication display cards, each carrying a multiplicity of separate removable stickers, each sticker having an easily identifiable picture of a medication thereon;

at least one medicine schedule containing a plurality of sticker sites for receiving a separate sticker at each site, and a separate instruction space closely associated with each sticker site for receiving written instructions concerning taking of the medication pictured on a sticker at a respective sticker site; and

a support, said plurality of medicine display cards being movably mounted to the support, and a multiplicity of medicine schedules in a pad attached to the support.

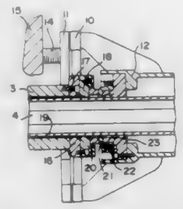
5,393,101
CONNECTOR ASSEMBLY
Vlado I. Matkovich, Glen Cove, N.Y., assignor to Pall Corporation, East Hills, N.Y.
Filed Oct. 2, 1992, Ser. No. 956,854
Int. Cl.[6] A61M 5/00; F16L 47/00, 55/00
U.S. Cl. 285—3 88 Claims



1. A connector assembly comprising:
a first fitting defining a first aperture and including a first membrane assembly sealing the first aperture, the first membrane assembly including at least one first removable portion and a first sealing portion;
a second fitting defining a second aperture and including a second membrane assembly sealing the second aperture, the second membrane assembly having at least one second removable portion and a second sealing portion;
a resilient coupling mechanism positioned between the first and second fittings at the first and second apertures, the resilient coupling mechanism comprising a hub and a smaller diameter neck coupled to the hub;
an interlock mechanism including at least one tongue extending between the first and second fittings and adapted to engage a corresponding surface to interlock the first and second fittings, the first and second fittings being resiliently coupled in biased opposition to urge positive contact between the first and second removable portions of the membrane assemblies; and
a piercing member mounted in the first fitting and axially movable through the sealing portions of the first and second membrane assemblies into the aperture of the second fitting.

5,393,102
FITTING ARRANGEMENT FOR FASTENING OF A STEAM JOINT
Martti E. O. Partio, Kouvola, Finland, assignor to Partio Engineering Ky, Kouvola, Finland
Continuation-in-part of Ser. No. 835,939, Feb. 14, 1992, abandoned. This application Apr. 27, 1993, Ser. No. 53,634
Claims priority, application Finland, Sep. 20, 1989, 894440
Int. Cl.[6] F16L 41/12
U.S. Cl. 285—24 4 Claims

1. An arrangement for insuring proper alignment of a steam joint to a paper machine frame relative to the shaft of a steam cylinder comprising;
the machine frame defining a first set of threaded holes;
an annular rigid assembly plate having a center opening allowing free passage therethrough for parts of the steam joint to be connected with the interior of the steam cylinder, a bell-shaped support for the steam joint;
the assembly plate further being provided with
a pair of first holes positioned diametrically on opposite sides of said center opening,
at least two second holes positioned on opposite sides of the line defined by said first holes,
a plurality of third holes distributed along the periphery of the assembly plate;
a pair of first rigid fastening screws inserted with clearance through said pair of first holes and secured into the threaded holes in the machine frame;



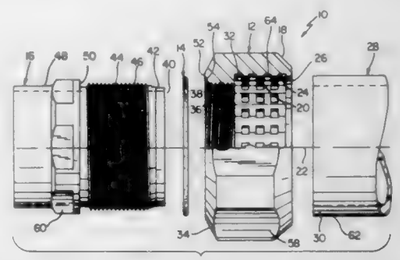
distance means provided on said first screws between the machine frame and the assembly plate;
second screws provided through said second holes of the assembly plate into engagement with the machine frame; and
a plurality of third screws for securing the bell support of the steam joint to the assembly plate with help of said plurality of third holes.

5,393,103
METHOD AND COUPLER FOR JOINING CONDUITS AND A METHOD OF MAKING THE COUPLER
Donald J. Cretzler, 3712 Del Mar Ave., San Diego, Calif. 92106
Filed Oct. 4, 1993, Ser. No. 130,753
Int. Cl.[6] F16L 21/00
U.S. Cl. 285—31 12 Claims



8. A coupler for joining a pair of conduits, comprising:
pliable tubing portion for helping the manipulation of the coupler to help connect the conduits together in fluid communication, said tubing portion having a wall thickness sufficient to permit said tubing portion to be flexed for manipulation of the tubing portion and not readily manually deformable to substantially maintain the cross-sectional area of said tubing portion during its manipulation;
a pair of conduit receiving sleeves connected sealingly to the opposite ends of said tubing portion for attachment to the ends of the conduits;
each one of said sleeves having an end portion including a tubular wall having an internal annular smooth surface for receiving and engaging a conduit in a friction tight manner;
said one of said sleeves having an opposite end portion receiving and securing therein one end of the tubing portion in a high pressure connection manner; and
said opposite end portion including a tubular wall having a tapered annular surface means for securing the received end of the tubing in a radially inwardly compressed manner to seal in a high pressure manner the tubing portion and said opposite end portion together.

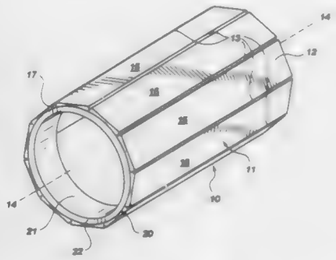
5,393,104
SANITARY HOSE COUPLER
Jeffrey S. Zornow, 9151 Normandy La., Centerville, Ohio 45458
Filed Jan. 21, 1994, Ser. No. 184,644
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[6] F16L 35/00
U.S. Cl. 285—40 11 Claims



1. A coupler for flexible nonmetallic polymer hose which is particularly well suited for sanitary use, comprising:
a female piece having a first end and a second end, said first end having a plurality of generally radially inwardly extending surfaces and a surrounding continuous recessed surface, said inwardly extending surfaces and said recessed surface defining an opening therein to receive an end of said hose, said second end having an inner threaded surface defining an opening adjacent and coaxial with said opening of said first end to form a passageway along a central axis of said female piece allowing communication through said female piece;
a hollow male piece having a first end and a second end, said first end having a portion of an outer surface which is threaded in a complementary manner to said threaded opening of said second end of said female piece to allow receipt of said male piece therein and having a portion of said outer surface of a size diameter greater than an inner surface diameter of said hose to force the hose radially outwardly against said inner surfaces of said first end of said female coupler piece when said coupling is assembled such that a portion of an outer surface of said hose is slightly deformed filling areas adjacent said inner surfaces of said first end of said female piece to prevent both axial and rotational movement of the polymer hose, said male piece further including a shoulder between said first end and said second end of said male piece; and
means for sealing between said shoulder and said second end of said female piece when said male piece is threadedly connected to said female piece wherein said sealing means remains partially visible when connected and wherein said sealing means acts to aid in securing said male piece in place and prevent rotation and axial movement thereof with respect to said female piece while being visible to confirm the integrity of said sealing means.

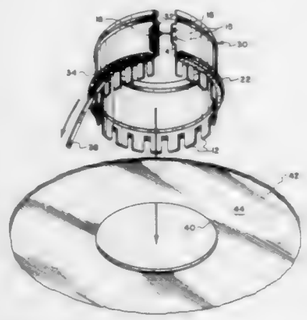
5,393,105
DUCTWORK FOR DELIVERY OF LOW TEMPERATURE AIR
Bart Petterson, #5 Triad Center, Suite 750, Salt Lake City, Utah 84180; James Cherrington, 195 Matterhorn Dr., Park City, Utah 84060; Michael Cherrington, 4770 Ichabod Pl., Salt Lake City, Utah 84117, and Garry Rose, 1753 Vineyard, St. Helens, Calif. 94574
Filed Dec. 24, 1992, Ser. No. 996,654
Int. Cl.[6] F16L 11/12
U.S. Cl. 285—47 19 Claims

1. A duct device for insulated delivery of temperature controlled air flow, said device comprising:
an elongated, tubular member configured as a conduit for deliver of air, said tubular member having a tubular wall fabricated of non-load-bearing insulative material;
said tubular wall having a plurality of longitudinal cuts forming open, elongate gaps extending substantially parallel with a central axis of the tubular wall and projecting into the insulative material from a surface of the tubular wall; and



a rigid binder solidified and bonded within the gap to the insulative material to provide structural stiffness both radially and axially to the duct device;
wherein the tubular member is formed from a sheet of insulative material which is joined at a junction of two opposing sides of the sheet of insulative material to form the tubular wall, said junction including a gap which is filled with the rigid binder to provide structural stiffness into the tubular wall.

5,393,106
SEALED KNOCK-DOWN DUCT COLLAR
Clifford Schroeder, San Fernando, Calif., assignor to CASCO Manufacturing, San Fernando, Calif.
Filed Sep. 15, 1993, Ser. No. 121,937
Int. Cl.[6] F16L 41/02
U.S. Cl. 285—158 5 Claims



1. A completely sealed adaptable duct collar for a connecting a variety of ducts to air intake and return plenums comprising;
a tubular member;
a plurality of bendable tab means formed on one end of said tubular member;
sealed mounting flange means formed in said tubular member circumjacent said plurality of bendable tab means, said sealed mounting flange means being a herringbone flange formed of a plurality of slits in said tubular member bent radially outward with a sealing means compressed therebetween, the length of said tab means and the spacing of said sealed mounting flange means from an inner end of said bendable tab means being preselected to allow said

collar to be mounted on intake and return plenums having a variety of wall thicknesses;

non-drying sealing means on said mounting flange means circumjacent said spacing between the inner end of said bendable tab means and said mounting flange means;

whereby said duct collar is adaptable to secure a duct to a wide variety of intake or return plenums by fitting said tab end of said duct collar in a hole in a plenum and bending said bendable tab means over to compress said non-drying sealing means against the surface of a plenum.

5,393,107

PLUG-IN SPIGOT-AND-SOCKET JOINT

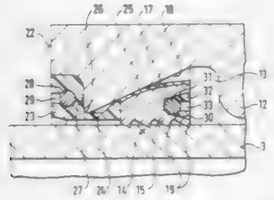
Manfred Vobeck, Laufach, Germany, assignor to Eisenwerke Fried Wilh. Düker GmbH & Co., Karlstadt, Germany

Filed Jan. 24, 1994, Ser. No. 188,423

Claims priority, application Germany, Jan. 27, 1993, 4302215.4

Int. Cl.[6] F16L *21/06*

U.S. Cl. 285—322 **7 Claims**



1. A plug-in spigot-and-socket joint which is secured against sliding, for molded components and for socket pipes produced by the centrifugal casting techniques, in which the spigot end of one pipe is slid, with radial play, into the socket end of another pipe having a sealing ring and a separate clamping ring arranged in the socket end, said clamping ring comprising a plurality of clamping segments spaced in the circumferential direction, having a convex outer surface, are joined in the circumferential direction by a vulcanization bonded intermediate layer and have on an inner surface a tooth system radially pressing against the spigot end as the convex surface cooperates with a distally conically tapering inner surface of said socket pipe when axial forces are present,

wherein an elastomeric support member is applied to a front face of said socket and to said clamping ring, said support member comprising an annular disc-shaped portion bearing against the front face of said socket and an approximately conically tapering connecting portion extending from an inner edge of the front face of said socket to said clamping ring, with the connecting portion being widened together with said clamping ring dependent upon outer dimensions of said spigot end introduced and to be stretched in an axial direction on this occasion, wherein the annular disc-shaped portion which bears against the front face of said socket has increased thickness and flexural strength relative to the remaining portions of said elastomeric support member and wherein the inner edge of the front face of said socket is provided with a recessed region matching a cross section of the annular disc-shaped portion, and whereby said clamping ring with the clamping segments and with the vulcanization-bonded intermediate layer connecting the latter in the circumferential direction is provided with a circumferential recess to accommodating a support ring of increased flexural strength relative to said elastomeric support member on a rear side away from the annular disc-shaped portion.

5,393,108

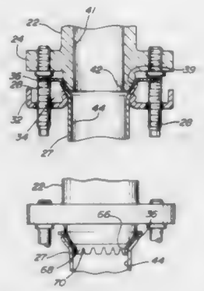
SPHERICAL EXHAUST FLANGE GASKET WITH INTERFERENCE FIT

Michael E. Kerr, Dandridge, Tenn., assignor to Indian Head Industries, Inc., Charlotte, N.C.

Filed Jun. 11, 1993, Ser. No. 75,778

Int. Cl.[6] F16L *23/00, 23/16*

U.S. Cl. 285—368 **12 Claims**



1. A gasket comprising:

a thin body having a sealing portion, said sealing portion having an inner face with an inner generally spherical surface, and an outer face having an outer generally spherical surface;

a bore extending along a central axis and through said thin body member, said inner and outer spherical surfaces being centered on said central axis;

said gasket being constructed to provide a holding structure to secure said body to an exhaust manifold or an exhaust pipe, said holding structure being provided by sizing the gasket to provide an interference fit on structure on either the exhaust manifold or the exhaust pipe; and

a neck portion extending axially from a radially inner portion of said sealing portion, said neck portion being sized to provide an interference fit with the inner periphery of a bore in either an exhaust manifold or an exhaust pipe

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5,393,109

PIPE CONNECTION HAVING A CUTTING RING

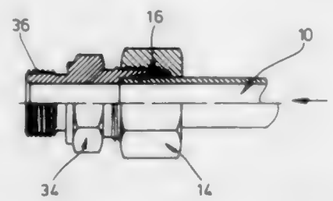
Paul Gumpel, Bodman-Ludwigshafen, Germany, assignor to H. Schwer GmbH Edelstahl-Fittings, Denkingen, Germany

Filed Aug. 16, 1993, Ser. No. 106,613

Claims priority, application Germany, Apr. 6, 1993, 4311278

Int. Cl.[6] F16L *13/14*

U.S. Cl. 285—382.7 **14 Claims**



1. A pipe connection comprising a shaped elongated cutting ring which embraces a wall of a pipe, said cutting ring having at least one cutting edge, means associated with said cutting ring for pressing said at least one cutting edge into the wall of the pipe, said cutting ring comprising a stable austenitic stainless steel CrNiMo alloy compound in cold hardened condition.

5,393,110

COVER OPENING/CLOSING DEVICE

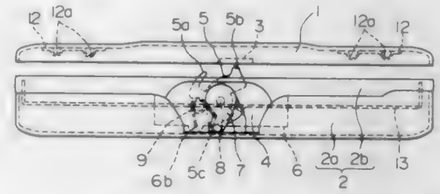
Hiroshi Nakamori, and Kazunori Kono, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 19, 1993, Ser. No. 34,889

Claims priority, application Japan, Mar. 25, 1992, 4-066788

Int. Cl.[6] E05C *3/16*

U.S. Cl. 292—216 **12 Claims**



1. A cover opening/closing device for opening/closing a cover which is rotatably attached by a first rotational shaft to a main body and which has an engaging piece on an open end side, said cover opening/closing device comprising:

a lock cam adapted to be rotatably supported on the main body by a second rotational shaft, said lock cam including (i) an engaging claw for engaging with said engaging piece and (ii) a spring-force application portion;

an operation lever for rotating said lock cam; and

a toggle spring connected to said spring-force application portion and supplying an urging force to said lock cam in one of first and second directions in accordance with a position of said spring-force application portion with respect to an axis of said second rotational shaft;

wherein, when said cover is closed, said engaging claw is in an engaged condition in which said engaging claw is engaged with said engaging piece to hold said cover closed, and said toggle spring supplies said urging force in said first direction to urge said engaging claw into said engaged condition;

wherein, when said operation lever is actuated to open said cover said, operation lever rotates said lock cam from the engaged condition at least to a non-engagement condition in which the engaging claw is not engaged with the engaging piece of the cover; and

wherein, when said lock cam is in said non-enagagement condition, said toggle spring supplies said urging force in said second direction to urge said lock cam into said non-engagement condition.

5,393,111

BUMPER ASSEMBLY FOR A MOTOR VEHICLE

Konrad Eipper, Ammerbuch; Gerd Gutenberger, deceased, late of Pfalzgrafenweiler; Thomas Gutenberger, heir, Nagold, and Georg Partusch, Geltendorf, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Nov. 8, 1993, Ser. No. 148,275

Claims priority, application Germany, Nov. 7, 1992, 4237707

Int. Cl.[6] B60R *19/22*

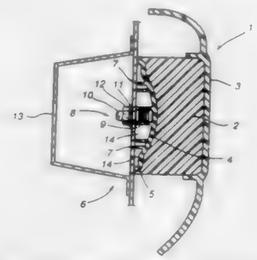
U.S. Cl. 293—109 **7 Claims**

1. Bumper assembly for a motor vehicle comprising:

a supporting element;

a threaded connection projecting from the supporting element serving to accommodate connecting of the supporting element to a fixed vehicle part,

and a foam energy absorber mounted on the supporting element, wherein the supporting element is designed such that it is arched approximately in the form of an umbrella and reaches virtually over the entire height of the energy absorber, wherein the umbrella edge terminates relatively flatly and bears on the fixed vehicle part, and wherein supporting webs which are likewise supported on the part fixed to the vehicle project on the underside of the supporting element at a distance from the umbrella edge, wherein the threaded connection is disposed spaced from



contact surfaces of the umbrella edge bearing on the fixed vehicle part.

5,393,112

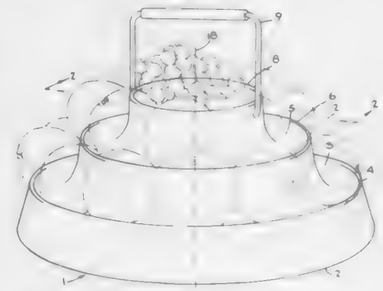
UNITARY MULTI-TIERED DISPLAY DEVICE WITH AXIS ENCIRCLING ARTICLE RECEIVING PORTIONS

Donald L. O'Connell, 114 Wilkins Ave., Port Chester, N.Y. 10573

Filed Oct. 6, 1993, Ser. No. 132,702

Int. Cl.[6] A47F *3/14*

U.S. Cl. 294—143 **26 Claims**



1. A display device for displaying articles such as comestibles, flowers and similar items, said device comprising a unitary body of a plastic material having a predetermined vertical axis, said body comprising:

a plurality of hollow tier portions, encircling said axis and disposed in vertically spaced relation to each other, each vertically higher tier portion having a diameter smaller than the diameter of the next adjacent tier portion vertically therebelow and each of said tier portions having an external horizontal portion which substantially continuously encircles said axis and which in a cross-sectional plane parallel to and intersecting said vertical axis, is downwardly concave and at its radially outward edge being connected to said next adjacent tier portion by a lip which is vertically higher than the vertically lowest portion of the tier portion to retain articles placed on the external horizontal portion, and the radially innermost portion of at least one of said tier portions being spaced from said axis.

5,393,113

HANDLE ATTACHMENT FOR CHEST DRAINAGE UNIT

Robert P. Walsh, St. Peters, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Oct. 15, 1993, Ser. No. 138,529

Int. Cl.[6] A45F *5/00;* **A61G** *12/00*

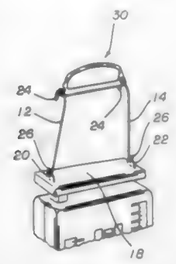
U.S. Cl. 294—170 **1 Claim**

1. A method of transporting a chest drainage unit within a

medical facility by medical personnel using only one hand, the method including the steps of:

providing a chest drainage unit having a substantially hollow body in fluid flow communication with the body of a patient wherein liquid from the patient's body will be collected, the hollow body having a pair of hangers extending above the chest drainage unit for attachment to a support device within the medical facility;

providing a handle having a base support member, an upwardly extending arcuate grasping member and base support member, and a pair of slots at opposite ends of said base support member;



placing a distal end of each chest drainage unit hanger within the confines of a respective handle slot;

placing the fingers of one hand within the open central area and grasping the arcuate grasping member; and

transporting the chest drainage unit within the medical facility in an easy, one-handed fashion while having the other hand free to assist in opening doors and the like.

5,393,114

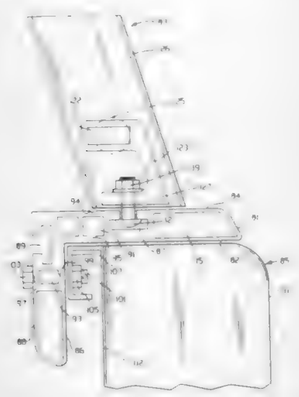
REVERSIBLE UTILITY RAIL AND UTILITY RACK

David Christensen, 11 Moores Mills Rd., Pennington, N.J. 08534

Continuation-in-part of Ser. No. 908,979, Jul. 6, 1992, Pat. No. 5,238,280, which is a continuation-in-part of Ser. No. 762,575, Sep. 19, 1991, Pat. No. 5,137,320. This application May 7, 1993, Ser. No. 64,228

Int. Cl.[6] **B26D** *27/06;* **B60P** *3/00*

U.S. Cl. 296—36 **11 Claims**



1. A reversible mounting rail, for attachment to pickup truck cargo bed structures, which comprises:

an elongated member with an elongated length having a generally L-shaped cross section comprised of two legs, one being a first leg and the other being a second leg, said two legs being 90 degrees opposed, each of said two legs having an inside wall and an outside wall, said two legs each having predetermined widths wherein said first leg is wider than said second leg and wherein said inside wall of said second leg has a predetermined width adapted to fit atop a first width cargo bed wall and said inside wall of said first leg has a predetermined width adapted to fit atop a second width cargo bed wall, wherein said second width cargo bed wall is wider than said first width cargo bed wall;

at least one elongated holding slot running along the outside wall of the first leg and at least one elongated holding slot running along the outside wall of the second leg; first penetration location means located on the outside wall of said first leg for locating areas where said elongated member may be penetrated with a plurality of attachment devices for attaching said rail to a structure, said first penetration location means being a groove running along at least a portion of said elongated length of said elongated member; and,

second penetration location means located on the outside wall of said second leg for locating areas where said elongated member may be penetrated with a plurality of attachment devices for attaching said rail to a structure, said second penetration location means being a groove running along at least a portion of said elongated length of said elongated member;

thereby creating attaching capability for said rail by attachment through said first leg or said second leg or both and thereby creating a rail which may be mounted on a structure with either said first leg or said second leg in the horizontal position.

7. A reversible mounting rail, for attachment to pickup truck cargo bed structures, which comprises:

an elongated member with an elongated length having a generally L-shaped cross section comprised of two legs, one being a first leg and the other being a second leg, said two legs being 90 degrees opposed, each of said two legs having an inside wall and an outside wall, said two legs each having predetermined widths wherein said first leg is wider than said second leg;

at least one elongated holding slot running along the outside wall of the first leg and at least one elongated holding slot running along the outside wall of the second leg wherein said holding slot in the first leg is in a specific position relative to the inside wall of the second leg and said holding slot in the second leg is in a different position relative to the inside wall of the first leg;

first penetration location means located on the outside wall of said first leg for locating areas where said elongated member may be penetrated with a plurality of attachment devices for attaching said rail to a structure, said first penetration location means being a groove running along at least a portion of said elongated length of said elongated member; and,

second penetration location means located on the outside wall of said second leg for locating areas where said elongated member may be penetrated with a plurality of attachment devices for attaching said rail to a structure, said second penetration location means being a groove running along at least a portion of said elongated length of said elongated member;

thereby creating attaching capability for said rail by attachment through said first leg or said second leg or both and thereby creating a rail which may be mounted on a structure with either said inside wall of said first leg or said inside wall of said second leg in the horizontal position.

5,393,115

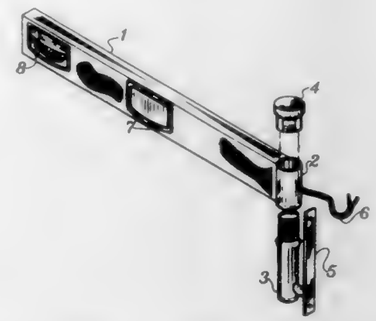
ALTERNATIVE PICKUP TRUCK TAILGATE

Kenneth B. Hamilton, 1408 Granville Rd., Westfield, Mass. 01085

Filed Apr. 26, 1993, Ser. No. 51,752

Int. Cl.[6] **B62D** *33/033*

U.S. Cl. 296—52 **1 Claim**



1. What is claimed is an alternative pickup truck tailgate consisting of a horizontal bar having two ends and a center point, one of said ends having a first cylindrical tube, said first cylindrical tube having a top end a bottom end coextensive with a top and bottom end of the bar, respectively, said top end receiving a cap and said bottom end receiving a pivot hinge consisting of a second cylindrical tube being smaller in diameter than said first cylindrical tube and having a top end of said second cylindrical tube and a bottom end, said top end of said second cylindrical tube being threaded so as to receive said cap and said bottom end being closed and having adjacent thereto a horizontal connection to a bracket consisting of a plate with openings for bolts to be secured to the truckbed, said first cylindrical tube receiving electrical wiring, which electrical wiring passes through said horizontal bar to a central location having a lamp and brake light, said other end of said horizontal bar having a handle and latch which interfaces with hardware connected to said truckbed so as to open and close said horizontal bar.

5,393,116

VAN-TYPE VEHICLE MULTI-POSITIONAL SEAT

James Bolsworth; Kenneth S. Pyszel, both of Sterling Heights; Joseph D. Kondziola, Troy; Terrel L. Scherman, Rochester Hills, and Wilheim R. Braner, East Lansing, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 140,940, Oct. 25, 1993, abandoned. This application Mar. 17, 1994, Ser. No. 214,505

Int. Cl.[6] **B60N** *2/04*

U.S. Cl. 296—65.1 **5 Claims**

1. A releasably mounted seat for a vehicle comprising:

at least one leg latched to a floor of a vehicle, the leg having a latch mechanism biased for engagement with the vehicle floor;

a seat bun frame joined to the leg providing a contact seating surface;

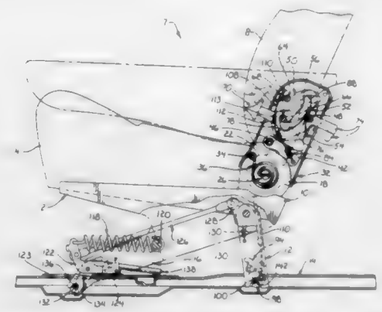
a backing plate pivotally mounted with respect to the bun frame;

a first adjuster mechanism to selectively adjust the position of the backing plate with respect to the bun frame;

a seat back pivotally mounted with respect to the backing frame;

a second adjuster mechanism to selectively position the seat back in a first position generally aligned and extending with the backing plate and a second position wherein the seat back is angled with respect to the backing plate and is folded forward generally adjacent the bun frame; and

a single handle providing control over the first adjuster mechanism to selectively adjust the position of the backing plate with respect to the bun frame and independent control over the second adjuster mechanism to selectively



position the seat back in the first and second positions with respect to the backing plate, and the handle providing independent control over the engagement of the latch mechanism of the leg with the vehicle floor.

5,393,117

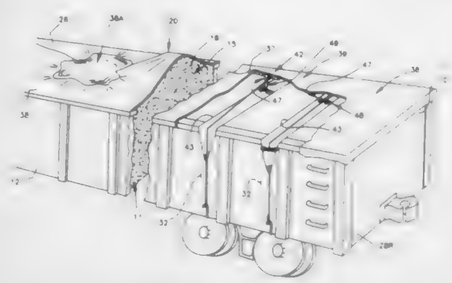
METHOD AND APPARATUS FOR LIFTING A VEHICLE LOAD COVER

Aldon E. Beale, 8282 S. Gaylord Clr., Littleton, Colo. 80122

Filed Aug. 19, 1993, Ser. No. 109,388

Int. Cl.[6] **B60J** *7/00*

U.S. Cl. 296—100 **11 Claims**



1. Apparatus for defining a peak configuration above a horizontal plane defined by the uppermost edges an open top container for a load, said peak configuration having an upper portion above said plane and being locatable at one or more selectable positions along a longitudinal axis of said container, said container having one or more axially spaced axes extending transverse to said longitudinal axis, said apparatus comprising:

flexible means extending along one of said transverse axes across said container uppermost edges of said for spanning said container at one of said positions;

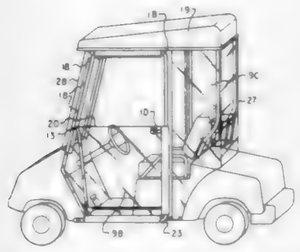
means for tensioning said flexible means to provide a platform at said position;

means for defining a hinge rotatable on said flexible means, said hinge extending parallel to said longitudinal axis;

means for providing said upper portion of said peak configuration, said providing means being connected to said hinge; and

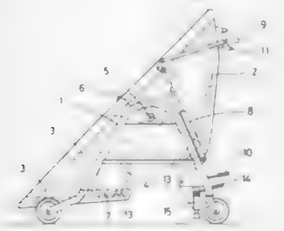
means for rotating said hinge on said platform to move said providing means above said horizontal plane and define said upper portion of said peak configuration.

5,393,118
ALUMINUM FRAMED VINYL CLOSURE FOR GOLF CARTS
Robert B. Welborn, 508 E. Barton St., Granbury, Tex. 76048
Continuation-in-part of Ser. No. 959,388, Oct. 13, 1992, abandoned. This application Mar. 15, 1994, Ser. No. 214,046
Int. Cl.[6] B60J *5/06*
U.S. Cl. 296—147 19 Claims



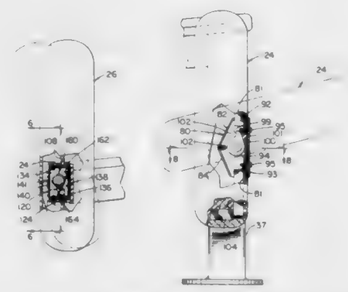
1. A door assembly and golf cart comprising, in combination:
a golf cart including a front, a rear, left and right sides, a passenger seat located between said front and rear and between said sides, and a top located on said cart generally over said seat, said door assembly being located on one side of said cart and including
a generally C-shaped relatively rigid frame having top and bottom ends;
a top hinge connected to said top end and connected to the top of said golf cart at said one side;
a bottom hinge connected to said bottom end and connected to the golf cart relatively below said top end, whereby said frame is pivotal relative to the golf cart for providing access to said seat; and,
a flexible cover connected to said frame forming a covered door.

5,393,119
CHAIR BATH
Baietsu Mukai, Osaka, Japan, assignor to Mitsuru Haruyama, Osaka, Japan
Filed Apr. 26, 1993, Ser. No. 51,642
Claims priority, application Japan, Jun. 22, 1992, 4-205868; Dec. 10, 1992, 4-360713
Int. Cl.[6] A47C *7/62*
U.S. Cl. 297—217 5 Claims



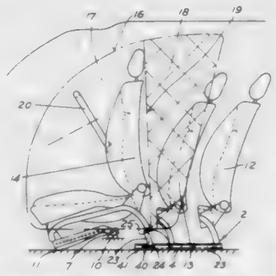
1. A chair bath comprising: a base frame including a framework and wheels mounted to the framework at a bottom portion thereof so that the base frame is rollable along the ground; a bathtub rotatably mounted to said base frame about an axis transverse to said bathtub so that said bathtub is pivotable about said axis relative to said base frame; means for locking said bathtub relative to said base frame; and a seat movably mounted in said bathtub so that it can be pulled out in a horizontal forward direction once the bathtub has been pivoted to an upright position.

5,393,120
AUDITORIUM SEATING SYSTEM
David C. Woods, Quakertown, Pa., and Richard A. Koprowski, Green Bay, Wis., assignors to Krueger International, Inc., Green Bay, Wis.
Filed Oct. 13, 1992, Ser. No. 959,980
Int. Cl.[6] A47C *3/00*
U.S. Cl. 297—306 31 Claims



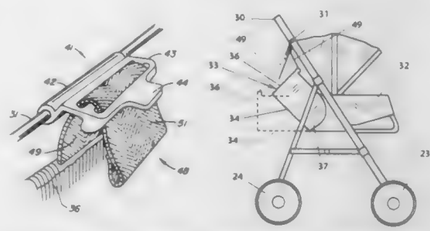
1. In a seating assembly including a pair of spaced frame members and a seat disposed between the frame members, an assembly for pivotably mounting the seat to each frame member and for limiting the range of pivoting movement of the seat, comprising:
a shaft mounted to the frame member;
a bushing fixedly mounted to the shaft, the bushing defining an arcuate spherical outer surface;
a stop member fixedly mounted to the shaft adjacent the bushing;
a socket provided in the seat and including an arcuate spherical surface engaged with the bushing arcuate surface; and
a pin member mounted to the seat adjacent the socket and movable with the seat, wherein the pin member is engageable with the stop member to limit movement of the seat in at least one direction of pivoting movement of the seat.

5,393,121
SWIVEL MOUNTING FOR VEHICLE FRONT SEATS
Thomas Reuss, Bergish-Gladbach; Gerhard Schmale, Huckeswagen; Norbert Sommer, Wermelskirchen, and Martin Lynda, Remscheid DE, all of Germany, assignors to Naue/Johnson Controls Engineering GmbH & Co., KG, Germany
Filed Apr. 9, 1993, Ser. No. 45,569
Claims priority, application Germany, Apr. 15, 1992, 4212589
Int. Cl.[6] B60N *2/12, 2/06, 2/10*
U.S. Cl. 297—329 7 Claims



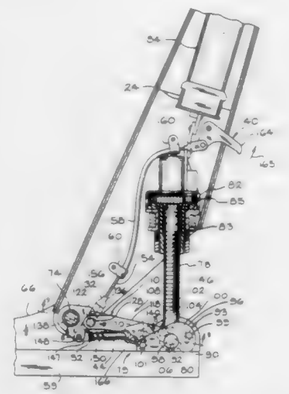
3. A tilt-away system for a front seat of a vehicle for permitting the front seat to be displaced forward axially of the vehicle from a use position to an intermediate position and then to be tilted forwardly from the intermediate position to an access position for providing improved access to a rear seat of the vehicle, wherein the front seat includes a seat frame having a forward end and a rearward end, said tilt-away system comprising: front support means including means for supporting the forward end of the seat frame; mounting means including travellers displaceably mounted in adjusting rails at each side of the front seat for mounting the front seat so as to be displaceable axially of the vehicle from said position of use to said intermediate position, said adjusting rails having a forward end and a rearward end, means for connecting the rearward end of the seat frame to said travellers and including a pivot assembly for each of the travellers, each pivot assembly including a link arm having a front region and a rear region, a pivot axle connecting said front region of said link arm to one of said travellers, pivot means including a pivot member pivotally connecting said rear region of said link arm to said seat frame, said link arm extending generally horizontally with its rear region located rearwardly of its front region when the front seat is in said use position, said travellers being moved to a position near the forward end of said adjusting rails, locating said pivot axis near the forward end of said adjusting rails when said front seat is moved forward axially of the vehicle to said intermediate position; first stop means cooperating with at least one of the travellers when said front seat is moved to said intermediate position to cause said link arm to pivot about a pivot axis defined by said pivot axle to an end position, tilting said front seat forwardly relative to said adjusting rails to said access position; and second stop means cooperating with said link arm for limiting the travel of said link arm in such a way that, at its end position, said pivot member lies forward of a vertical axis which extends through the pivot axis defined by said pivot axle.

5,393,122
ADJUSTABLE STROLLER RECLINING MECHANISM
John J. Andrisin, III, Parma, Ohio, assignor to Century Products Company, Macedonia, Ohio
Filed Aug. 12, 1993, Ser. No. 106,096
Int. Cl.[6] B60N *2/10*
U.S. Cl. 297—354.13 5 Claims



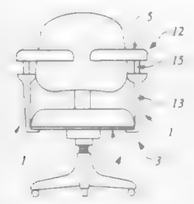
1. An adjustable reclining mechanism for a stroller having an inclinable seat back assembly hinged to a stroller seat and a stroller frame having a structural member extending above the seat back assembly, comprising:
a narrow web member having one end portion joined to the seat back;
means for securing an opposed end portion of said web member to the structural member, whereby the inclination of the seat back is determined by the length of said web member extending between the seat back and the structural member;
wherein said means for securing includes buckle means for engaging said web member, said buckle means being movable from a first position in which said web member passes freely through said buckle means to a second position in which said web member is immobilized in said buckle means;
further including means for securing said buckle means to the structural member in freely .pivoting fashion.

5,393,123
VEHICLE SEAT ASSEMBLY WITH INTEGRAL BELT RESTRAINT AND SEAT BACK DUMP FEATURE
Cynthia L. Hernandez, Plymouth, and David W. Husted, Ann Arbor, both of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.
Filed Aug. 3, 1993, Ser. No. 101,201
Int. Cl.[6] B60N *2/02*
U.S. Cl. 297—378.12 19 Claims



1. A seat assembly for a motor vehicle comprising:
a frame comprising a lower seat frame and a seat back frame with upper and lower ends and extending generally upwardly from said lower seat frame, said seat back frame being mounted to said lower seat frame by a seat back pivot for rotation about a transverse axis adjacent said seat back frame lower end, said seat back frame having an operative position within an angular range of use positions about said transverse axis and said seat back frame being forwardly rotatable from said range of use positions to a forward dump position;
holding means for holding said seat back frame in said operative position, said holding means being of a length extending between said seat back frame and said lower seat frame and being coupled to said lower seat frame and said seat back frame by first and second coupling means respectively, both said first and second coupling means being spaced from said seat back pivot to transmit loads between said seat back frame and said lower frame to resist rotation of said seat back frame about said seat back pivot whereby said seat back frame is held in said operative position, said holding means including recliner means for selectively moving said seat back frame to various operative positions within said angular range of use positions, said recliner means being operable to vary the said length of said holding means between said first and second coupling means whereby the operative position of said seat back frame is changed; and
release means for selectively releasing said first coupling means whereby said seat back frame is free to rotate from said range of use positions to said forward dump position without changing the length of said holding means.

5,393,124
ARMREST ASSEMBLY
Gary K. Neil, 1137 Vicki Lane, Mississauga, Ontario, Canada L5C 2X9
Filed Dec. 9, 1992, Ser. No. 987,790
Int. Cl.[6] A47C 7/54
U.S. Cl. 297—411.35 17 Claims



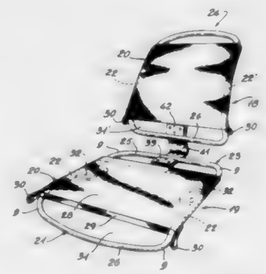
1. An armrest assembly for a chair comprising;
(a) a lower arm;
(b) an upper arm overlying said lower arm;
(c) support means depending from said upper arm, said support means presenting an axis of rotation, for rotational movement of said upper arm about said axis, said support means having:
(i) a series of multiple depressions at one end, and
(ii) multiple recesses at another end of said support means;
(d) a support shaft housing associated with said lower arm for receiving said support means for rotational and axial movement of said upper arm relative said lower arm about said axis, said support shaft housing presenting an aperture at one end thereof and an opening at another end thereof;
(e) a locator ball received by said aperture;
(f) means for urging said locator ball into said depressions for permitting said upper arm to be releasably rotatably locked relative said lower arm;
(g) lever means extending through said opening for releasable engagement with said recesses for axial movement of said upper arm relative said lower arm.

5,393,125
HEIGHT ADJUSTABLE CHAIR ARM ASSEMBLY
Ron K. Watson, Coppell, Tex., and James M. Mancewicz, Wyoming, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed May 28, 1993, Ser. No. 69,289
Int. Cl.[6] A47C 7/54
U.S. Cl. 297—411.36 29 Claims



1. An arm mechanism for a chair, comprising:
an armrest support adapted to be fixed to a chair, said support defining a plurality of vertically spaced lock sockets;
an elongated lock guide tube slideably mounted within said support;
an armrest joined to said guide tube;
a lock rod having a configured lower end, said rod being slideably disposed within said guide tube and movable from a locked position to an unlocked position;
a lock element within said lock guide tube, said lock element being engaged by said lower end of said lock rod and being retained within one of said sockets when said rod is in the locked position and being released from one of the sockets when said rod is in the unlocked position permitting the lock guide tube to be moved vertically with respect to said armrest support;
a spring connected to the lock rod for biasing the lock rod to the locked position; and
an outer tube surrounding the lock guide tube and telescoping with said armrest support.

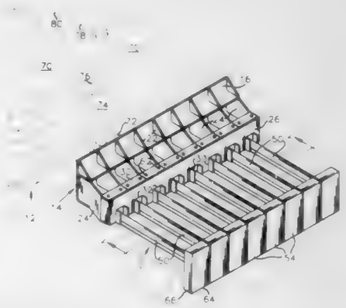
5,393,126
TUBULAR FRAME SEATING STRUCTURE WITH TENSION SLEEVE
Paul Boulva, Piedmont, Canada, assignor to Art Design International Inc., St. Hubert, Canada
Filed Jun. 21, 1993, Ser. No. 79,525
Int. Cl.[6] A47C 7/02
U.S. Cl. 297—452.56 20 Claims



1. A frame composite support structure for the construction of a seat, said support frame structure comprising a rigid continuous rod-like frame formed in a closed loop and having opposed diverging side members lying in a common plane, said side members diverging towards a common end, a first intermediate end member formed integral at one end of said opposed side members, a second intermediate end member formed integral at an opposed end of said opposed diverging side members, at least one of said first and second intermediate end member having an outward arcuate shape to provide a restoring spring force in the frame when said diverging side members are compressed towards one another, and a belt of substantially non-extensible material forming a slightly truncated sleeve slightly smaller than the width of said rod-like frame disposed about said opposed diverging side members and spanning at least a portion of an open area defined inwardly of said frame, said sleeve when in position about said frame applying a compression force against said side members to flex said one of said first and second intermediate end member which is arced to apply a continuous restoring spring force in the frame between said side members to retain said sleeve in position by continuous tension.

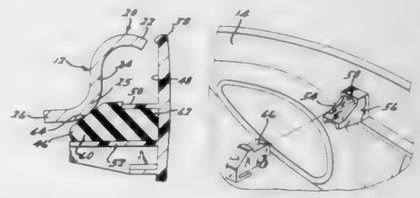
18. A method of constructing a seating structure comprising the steps of:
i) providing a composite support frame structure formed by a rigid continuous rod-like frame
defining
a closed loop and having diverging side members and transverse end members, said frame being a substantially trapezoidal-shaped frame, at least one of said transverse end members having an outward arcuate shape to provide a restoring spring force in said support frame structure when said diverging side members are compressed towards one another, and
ii) positioning a belt of substantially non-extensive material forming a slightly truncated-shaped sleeve about said side members and spanning at least a portion of an open area defined inwardly of said frame, said sleeve being slightly smaller than the width of said support frame structure whereby said side members are placed in compression towards one another by said sleeve when positioned thereabout to flex said one of said first and second intermediate end members which is arced to apply a continuous restoring spring force in the support frame structure between said side members to maintain said sleeve stretched and substantially immovable across said open area by said continuous restoring spring force.

5,393,127
METHOD AND APPARATUS FOR RUBBLIZING AND BREAKING CONCRETE
Richard D. Kimball, II, 6137 Green Rd., Haslett, Mich. 48840
Filed Mar. 22, 1994, Ser. No. 215,611
Int. Cl.[6] E01C 23/12
U.S. Cl. 299—37 9 Claims



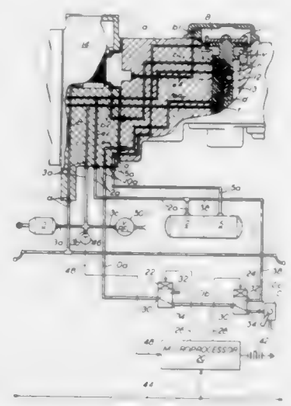
1. The method of mechanically rubblizing concrete wherein the concrete is to be broken into relatively small particles without damage to the supporting substrata, comprising the steps of striking the concrete to be rubblized by a plurality of spring biased hammers, each hammer producing an impact zone wherein concrete breaking forces are produced, each hammer being immediately adjacent to another hammer and all the hammers simultaneously striking the concrete whereby the impact effect and vibrations produced at each hammer's impact zone will also occur within the impact zone of the adjacent hammer to multiply the concrete rubblizing forces produced at each hammer's impact zone.

5,393,128
CUSHIONED WHEEL AND COVER ASSEMBLY
Syed H. Sarmast, Northville; Gerald F. Herbert, Dearborn Heights, and Charles F. Hodge, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 18, 1993, Ser. No. 136,864
Int. Cl.[6] B60B 7/06
U.S. Cl. 301—37.34 11 Claims



1. A wheel and cover assembly for an automotive vehicle comprising:
a road wheel having an annular lateral outer face;
a disc overlying and substantially covering the wheel annular lateral outer face;
means for releasably securing the disc to the wheel;
means defining a plurality of channels on the annular lateral inner face of the disc and extending transversely thereto in juxtaposition with the wheel; and
a plurality of cushion members carried in the channels abuttingly engagable with the wheel.

5,393,129
ELECTRO-PNEUMATIC FREIGHT BRAKE CONTROL SYSTEM
Vincent F. Troiani, New Florence, and Edward W. Gaughan, Irwin, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Mar. 14, 1994, Ser. No. 209,893
Int. Cl.[6] B60T 13/70
U.S. Cl. 303—3 10 Claims



1. An integrated pneumatic/electro-pneumatic brake control system for a railroad car comprising:
a) a brake pipe charged with fluid under pressure;
b) a first reservoir;
c) a brake cylinder device;
d) a pneumatic control valve device having a control port to which said brake pipe is connected, a first supply port to which said first reservoir is connected, a delivery port to which said brake cylinder device is connected, and an exhaust port, said control port being communicated with said first supply port and said delivery port being communicated with said exhaust port in a first position to which said control valve device is operated in response to an increase in said brake pipe fluid pressure;
e) electro-pneumatic valve means between said first reservoir and said exhaust port; and
f) control means for operating said electro-pneumatic valve means such as to establish fluid pressure communication between said first reservoir and said exhaust port when an electro-pneumatic brake application is desired and to vent said exhaust port when a release of said brake application is desired.

5,393,130

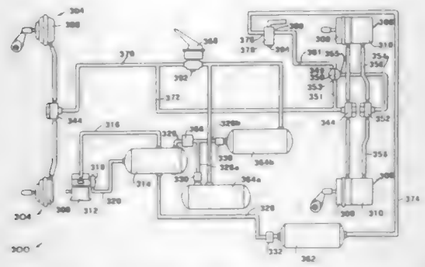
METHOD OF SUPPLYING A HIGHER PRESSURE RESERVE AIR SUPPLY FOR AIR BRAKE SYSTEM

John M. Graham, 930 Peninsula Ave., #205, San Mateo, Calif. 94401

Continuation of Ser. No. 52,598, Apr. 22, 1993, abandoned, which is a division of Ser. No. 916,652, Jul. 20, 1992, Pat. No. 5,255,961, which is a continuation-in-part of Ser. No. 754,775, Sep. 4, 1991, Pat. No. 5,154,491, which is a continuation-in-part of Ser. No. 606,386, Oct. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 497,932, Mar. 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 430,755, Nov. 1, 1989, Pat. No. 4,973,107. This application Jun. 10, 1994, Ser. No. 258,133

Int. Cl.[6] B60T *15/20*

U.S. Cl. 303—57 2 Claims



1. A method of supplying a higher pressure reserve air supply to a multi-chamber combination brake actuator comprising:

connecting a multi-chamber combination brake actuator having a spring brake chamber and a service brake chamber to a pressurized air supply supplying pressurized air to said combination brake, through the steps of:

connecting said multi-chamber combination brake actuator spring brake chamber to a first supply tank of pressurized air, with said spring brake chamber causing decreased braking force by said combination brake when pressurized air is supplied to said spring brake chamber; and,

connecting said multi-chamber combination brake actuator service brake chamber to a second supply tank of pressurized air, with said service brake chamber providing increased braking force by said combination brake when pressurized air is supplied to said service brake chamber;

connecting said first and second supply tanks together to form said pressurized air supply; and,

reducing the pressure in said second supply tank relative to said first tank by connecting a pressure reducing valve between said first and second tanks.

5,393,131

HYDRAULIC BRAKE SYSTEM WITH ENHANCED BRAKING FORCE FOR REAR WHEELS

Yoshihisa Nomura, and Michiharu Nishii, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 1, 1993, Ser. No. 114,171

Claims priority, application Japan, Sep. 4, 1992, 4-262884

Int. Cl.[6] B60T *8/32*

U.S. Cl. 303—100 7 Claims

1. Hydraulic brake system with enhanced braking force for rear wheels, comprising:

a brake pedal for controlling brake pressure;

anti-lock control means for controlling brake pressure to inhibit the rear wheels from locking;

judging means for detecting a malfunction of the anti-lock control means;

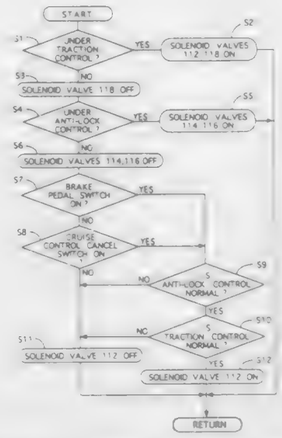
front braking means for braking front wheels;

rear braking means for braking the rear wheels;

large pressure generating means for generating a large pressure in proportion to an operation of the brake pedal;

small pressure generating means for generating a small pressure in proportion to the operation of the brake pedal;

supply means for supplying the large pressure to the rear braking means and for supplying the small pressure to the front braking means; and



switching means for equalizing the brake pressure supplied to the front braking means and the rear braking means by choosing one of the large and small pressures when the judging means detects a malfunction of the anti-lock control means.

5,393,132

BRAKE CONTROL SYSTEM AND RESTRICTION ADJUSTING VALVE FOR VEHICLES

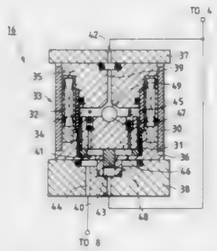
Kazutoshi Yogo, Nagoya; Masuhiro Kondo, Chiryu, and Hideo Wakata, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 721,294, Jun. 26, 1991, abandoned. This application May 17, 1993, Ser. No. 62,166

Claims priority, application Japan, Jun. 29, 1990, 2-173735

Int. Cl.[6] B60T *8/36*

U.S. Cl. 303—116.1 8 Claims



1. A brake control system for a motor vehicle which is equipped with a running state detecting means for detecting a running state of said motor vehicle to adjust a braking pressure in a wheel-braking cylinder of said motor vehicle in accordance with said detected vehicle running state, said brake control system comprising:

a restriction adjusting valve provided between a hydraulic pressure generating source and said wheel-braking cylinder for receiving a braking liquid from said hydraulic pressure generating source and for adjusting an outflow of said received braking liquid to said wheel-braking cylinder, said restriction adjusting valve having a first communication hole through which said received braking liquid flows, an oil chamber, a sliding member slidably received in said oil chamber for variably changing an area of said first communication hole from a maximum to a minimum, position changing means for changing a position of said sliding member in accordance with first control signals, and pressure compensation means, cooperating with said oil chamber and formed in a housing of said restriction adjusting valve, for cancelling a pressure applied to said sliding member by said received braking liquid;

pressure control valve provided between said wheel-braking cylinder and a reservoir for allowing outflow of braking liquid from said wheel-braking cylinder to said reservoir to adjust a braking pressure in said wheel-braking cylinder; and

control means for adjusting braking pressure in said wheel-braking cylinder by outputting said first control signals to said position changing means of said restriction adjusting valve to change said first communication hole area and outputting second control signals to said pressure control valve based on said detected vehicle running state.

5,393,133

BRAKE FLUID PRESSURE CONTROL APPARATUS

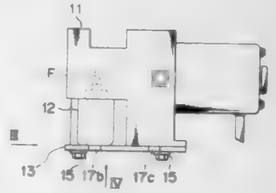
Tsuyoshi Fujimoto, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 4, 1993, Ser. No. 26,035

Claims priority, application Japan, Mar. 5, 1992, 4-011150[U]

Int. Cl.[6] B60T *15/00*

U.S. Cl. 303—119.2 16 Claims



1. A brake fluid pressure control apparatus for use in a vehicle, said apparatus comprising:

a housing;

a magnetic valve for controlling fluid pressure received in said housing and receiving a fluid pressure force directed towards an outside of said housing;

a support plate connected to said housing, for supporting said magnetic valve against said fluid pressure force, said support plate having a plurality of tabs, each of said tabs having a thickness the same as a thickness of said support plate;

a rubber bushing mounted to each of said tabs for securing said housing, magnetic valve, and support plate to the vehicle; and

a mount casing attached to the vehicle for accommodating each of said rubber bushings.

5,393,134

FASTENING PLATE FOR SPROCKET SEGMENTS

Thomas E. Oertley, Dunlap, Ill., assignor to Caterpillar Inc., Peoria, Ill.

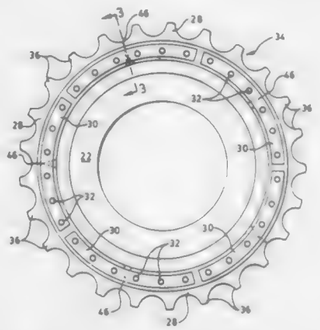
Filed Aug. 26, 1993, Ser. No. 112,030

Int. Cl.[6] B62D *55/12*

U.S. Cl. 305—57 11 Claims

1. A fastening plate for connecting multi-toothed sprocket segments to a support member, comprising:

an elongated arcuate shaped metal bar having a plurality of through holes and a substantially flat planar surface, said planar surface being adapted to contact said sprocket segments in the installed condition of said sprocket segments to said support member, and each of said through



holes being threaded and aligned with a first aperture defined by said support member and a second aperture defined by said segments.

5,393,135

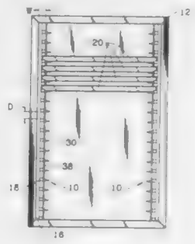
COMPACT DISC STORAGE RACK

Peter M. Tisbo, Palatine, and Cosmo N. Tisbo, Barrington, both of Ill., assignors to Custom Plastics, Inc., Elk Grove Village, Ill.

Filed Jun. 15, 1993, Ser. No. 77,422

Int. Cl.[6] A47B *81/06*

U.S. Cl. 312—9.48 6 Claims



1. A device for storing a plurality of objects such as compact disc storage boxes comprising:

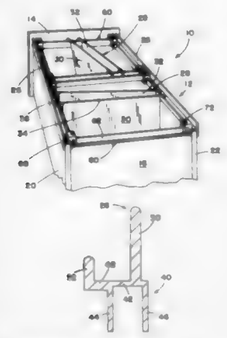
a first side rail structure formed from a single piece of material having a height and a length defined by a mounting surface and a frontal face, a plurality of parallelly spaced apart shelf flanges projecting outwardly from said frontal face to a predetermined width which is substantially less than a corresponding width of an object to be stored, each said shelf flange having an upwardly projecting tab disposed on a front edge formed perpendicular and integral to said shelf flange; at least one elastic band releasably coupled along a distal end of said side rail structure for biasing said object to be stored against said projecting tabs; a means for locking a portion of said elastic band to said side rail; a means for securing said mounting surface to an inner surface of a storage housing; and a second side rail structure forming a mirror image of said first side rail structure; whereby the mounting surfaces of said first and second side rail structure are available for securing to the opposing inner surfaces of a cabinet allowing insertion of an object to be stored onto opposing shelf flanges for biasing against said projecting tabs thus securing said object to be stored in a substantially co-planar position with said shelf flanges wherein removal of a stored object is performed by upwardly urging said object to overcome

said biasing and said projecting tabs allowing removal from said shelf flanges.

5,393,136
DRAWER WITH CONVERTIBLE FILING SUPPORT SYSTEM

Daniel Grabowski, Grand Rapids, and John Van Kammen, Belmont, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed May 25, 1993, Ser. No. 66,761
Int. Cl.[6] A47B *63/02;* **B42F** *15/00*
U.S. Cl. 312—184 **28 Claims**



24. An article of furniture, comprising:

a drawer having a substantially horizontal bottom panel and four substantially vertical side panels arranged to form a drawer compartment having a top opening;

a pair of drawer rails disposed on a respective pair of opposed side panels, each of said drawer rails having an elongated gripping member portion having a generally U-shaped cross section formed by a first side, a top and second side sections, said gripping member portion being adapted to frictionally and reversibly engage a top edge of one of the vertical side panels, each of said drawer rails further having a pair of elongated ribs terminating in respective outer edges, the outer edge of each said rib being adapted to engage and support a hanging file folder;

the first rib of said pair of ribs of each said rails being aligned generally parallel to and at a known distance relative to the first side of said gripping member portion, said alignment being such that, when said rails are placed on said opposed vertical side panels with said first sides facing each other, a first hanging file folder can engage the outer edge of said first ribs and be supported in said drawer; and

the second rib of said pair of ribs of each said rail being aligned generally parallel to and at a known distance relative to the second side of each said gripping member portion, said alignment being such that, when said rails are placed on said opposed vertical side panels with said second sides facing each other, a second hanging file folder can engage the outer edge of said second ribs and be supported in said drawer, said second folder being of a size different than said first folder.

5,393,137
DAMPER ASSEMBLY

Steven L. Bivens, Kankakee, and Martin A. Witt, Tinley Park, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

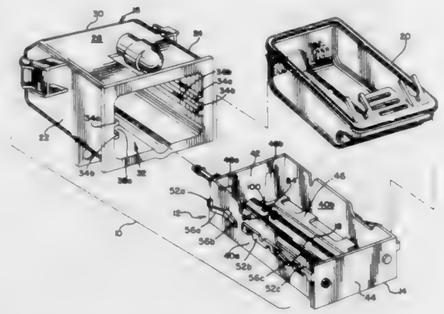
Filed Jun. 11, 1993, Ser. No. 74,968
Int. Cl.[6] A47B *88/12*
U.S. Cl. 312—332 **20 Claims**

1. A damper assembly, comprising:

a stationary housing formed by a pair of side walls, a top wall, a bottom wall, and a rear wall so as to define an interior cavity open at the front end thereof;

a sliding receptacle formed by a pair of side walls, a rear wall, a bottom wall, and a front wall for slidable disposition within said interior cavity of said stationary housing between a first position and a second position; and

anti-rattle tracking means, for eliminating play and rattling between said stationary housing and said receptacle during movement of said receptacle relative to said stationary housing between said first position and said second position, comprising a pair of parallel, spaced-apart rails formed upon each one of said side walls of said stationary housing so as to define first and second channels therebetween; a plurality of spaced and separated track sections

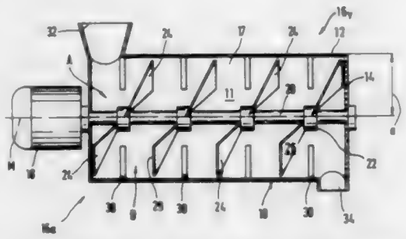


fixedly mounted upon each one of said side walls of said receptacle for disposition within said first and second channels, and for defining, along with said side walls of said receptacle, recesses between said spaced and separated track sections; and flexible finger means, mounted directly upon each one of said side walls of said receptacle and disposed within said recesses defined between adjacent ones of said plurality of spaced and separated track sections, for engaging side wall portions of said stationary housing between said spaced-apart rails in a resiliently biased manner so as to limit side-to-side movement of said receptacle in a horizontal plane with respect to said stationary housing in order to control said play and rattling between said receptacle and said stationary housing.

5,393,138
APPARATUS FOR MIXING FOUNDRY MOULD SUBSTANCES

Bernd Federhen, Zeppeliustr. 12, 59 Siegeu, Germany

Continuation of Ser. No. 656,004, Feb. 15, 1991, abandoned. This application Feb. 9, 1993, Ser. No. 15,453
Claims priority, application Germany, Mar. 5, 1990, 4006846
Int. Cl.[6] B28C *5/08;* **B01F** *7/02, 7/16*
U.S. Cl. 366—64 **13 Claims**



1. An apparatus for mixing foundry mould substances, in particular sand and a binding agent, comprising:

a container having two mixing spaces and a drive shaft extending therethrough;

at least two mixing tools projecting substantially radially from said drive shaft and being rotatable with said drive shaft;

said mixing tool having a free end with a substantially planer first edge;

spaced apart fitment bodies of small lateral extent projecting from a wall of the container;

said fitment bodies lying in a first plane which divides said container into said two mixing spaces, said first plane being substantially parallel to a second plane containing said first edge;

said mixing tools conveying said substances being mixed from a first one of said mixing spaces to a second one of said mixing spaces while said substances are being mixed;

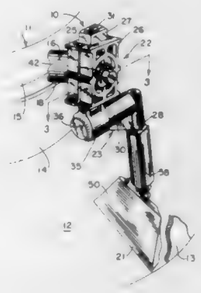
said fitment bodies producing strong shearing and frictional forces which cause rapid and intensive mixing of said substances while keeping the wall of the container free from caked-on deposit and brake rotary movement of the substances being mixed; and

the fitment bodies being provided between said at least two mixing tools which project in adjacent relationship from the drive shaft and each of which rotates in one of said mixing spaces.

5,393,139
MIXING BLADE MOUNTING ASSEMBLY

John L. Thorson, Wauwatosa, and Norman E. Anderson, Pewaukee, both of Wis., assignors to Mixer Systems, Inc., Pewaukee, Wis.

Filed Jul. 26, 1994, Ser. No. 280,352
Int. Cl.[6] B28C *5/16*
U.S. Cl. 366—65 **6 Claims**



1. A mixing paddle mounting assembly for a rotary pan-type mixer comprising:

a paddle mounting arm including a generally vertically disposed arm segment having a free lower end;

a pair of vertically spaced generally horizontal through holes in the lower end of said mounting arm segment;

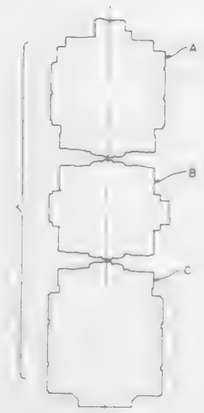
a unitary mixing paddle including a front mixing face and a rear mounting face having a vertically extending groove adapted to receive and enclose therein one face of the lower end of the arm segment, said groove having a pair of threaded blind bores aligned with said through holes; and,

a pair of threaded mounting bolts extending through said holes and into said threaded bores to secure the paddle to the mounting arm.

5,393,140
APPARATUS FOR CONTINUOUSLY PROCESSING VISCOUS LIQUIDS AND MASSES

Josef A. Blach, A-5310 Mondsee, Austria

Filed May 5, 1994, Ser. No. 238,588
Claims priority, application Austria, May 7, 1993, 897/93
Int. Cl.[6] B29B *1/10;* **B01F** *15/02*
U.S. Cl. 366—75 **11 Claims**



1. An apparatus for continuously processing viscous liquids and masses, in particular molten plastic masses and high-molecular polymers, having a number of axially parallel satellite shafts disposed in a ring within a housing and driven in the same direction via associated pinions, said shafts bearing processing means engaging each other on adjacent satellite shafts and spreading the material to be processed in a thin layer in certain areas, a central shaft disposed in the center of the space surrounded by the satellite shafts and driven axially parallel to the satellite shafts, said central shaft bearing at least one driving gear so as to rotate therewith, the satellite shafts being coupled in geared fashion via their pinions with the central driving gear and with the internal toothing of at least one annular gear fixed on the housing in such a way that when the central shaft rotates the satellite shafts perform a common revolving motion about the central shaft, and feeding and removing means for introducing the material to be processed into the range of action of the processing means on the inlet side and removing it therefrom on the outlet side, characterized in that the satellite shafts (**23**) have associated therewith on the inlet side distributing means (**60**) for the material to be processed which communicate with the feeding means and have, in the area of the processing means (**24**) on all Satellite shafts, guiding means (**64**) for the material that open onto the thick-layer side located on the side of the satellite shafts (**23**) facing away from the enveloping housing (**1**).

5,393,141
METHOD FOR OPERATING COOLING MIXER FOR BULK MATERIAL IN POWDER AND GRANULAR FORM

Hans-Joachim Bornemann, Vellmar, Germany, assignor to Thyssen Industrie AG, Essen, Germany

Continuation-in-part of Ser. No. 894,723, Jun. 4, 1992, abandoned. This application Sep. 8, 1993, Ser. No. 119,311
Claims priority, application Germany, Jun. 10, 1991, 4119033
Int. Cl.[6] B01F *15/06, 7/20*
U.S. Cl. 366—149 **8 Claims**

1. A method for operating a cooling mixer for bulk material in powder and granular form, said cooling mixer comprising:

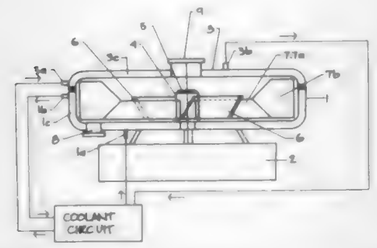
a) a cylindrical container with a bottom portion, a container double wall with an intermediate space between an inner

and an outer wall of said container double wall, at least one outlet opening at said bottom portion, and a cover with at least one feed opening and a cover double wall with an intermediate space within said cover double wall;

b) a rotating mixing device having a hub and mixing paddles fixedly connected to said hub, said mixing device concentrically connected to said container such that a vertical rotating axis of said mixing device coincides with an axis of said container;

c) a coolant circuit containing a coolant that is circulated during operation of said cooling mixer within said intermediate spaces of said container double wall and said cover double wall, said coolant circuit comprising connectors for connecting said coolant circuit to said container double wall and said cover double wall;

said method comprising the steps of:



selecting a diameter to height ratio of 4:1 to 8:1 for said container such that said cover is positioned close to said bottom portion;

arranging said mixing paddles so as to form an obtuse angle with said bottom portion in a direction of rotation of said mixing device;

vertically upwardly deflecting the bulk material to be cooled with said mixing paddles so as to bring the bulk material into contact with said cover, positioned close to said bottom portion, for increasing the cooling effect on the bulk material; and

rotating said mixing device at a low circumferential speed of 1–3 m/sec that generates a low, neglectable centrifugal force within the bulk material and reduces frictional heat within said container and the bulk material to be mixed without reducing the cooling effect of the cooling surfaces on the bulk material to be mixed.

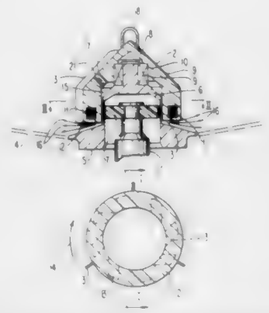
5,393,142

IMPELLER FOR STIRRING STERILE LIQUIDS

Hans P. Meier, Jona, Switzerland, assignor to Mavag Verfahrenstechnik AG, Altendorf, Switzerland

Filed Sep. 30, 1993, Ser. No. 129,582
Claims priority, application Germany, Oct. 1, 1992, 4232936
Int. Cl.[6] B01F *13/08*
U.S. Cl. 366—274 **13 Claims**

1. An impeller for stirring sterile liquids, comprising a plurality of stirring plates; an impeller head supporting said stirring plates and having a substantially vertical rotary axis, an outer surface, a central hollow chamber with an opening, and a conduit connecting said central hollow chamber with said outer surface; means for driving said impeller head about said rotary axis and including a pin received in said opening, said impeller head having a lower region provided with a plurality



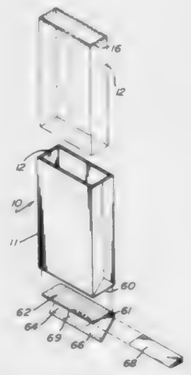
of grooves which during rotation of said impeller head provide an effect of pumping a liquid.

5,393,143

BAG AND METHOD OF MAKING THE SAME

Jeffrey D. Muhs, St. Ames, Iowa, assignor to American Packaging Corporation, Philadelphia, Pa.

Filed Aug. 19, 1992, Ser. No. 931,848
Int. Cl.[6] B65D *33/06*
U.S. Cl. 383—21 **15 Claims**



1. A leakproof bag construction formed from a pair of independent tubes arranged one within the other in intimate contact throughout the opposed surfaces thereof comprising

an outer bag formed from the outer tube of said pair of tubes,

an inner bag formed from the inner tube of said pair of tubes to be contained within said outer bag,

said inner bag made of a leakproof material,

said outer tube having a portion at its one end forming the bottom of said outer bag,

said inner tube having a portion at its one end forming the bottom of said inner bag and located in opposed relation to said outer tube bottom forming portion,

said bottom of said inner bag being formed independently of said bottom of said outer bag,

means forming a leakproof seal closing said bottom forming portion of said inner bag, and

means for securing said inner bag to said outer bag to hold said inner and outer tubes together during the forming of said bottoms of said inner and outer bags and to permit said bags to be easily separated from one another for disposal thereof, and

patch means attached to the bottom surface portions of said bottom of said outer bag to provide a moisture and vapor barrier, said patch means having a pocket-like construction and containing a removable insert.

5,393,144

LINEAR MOTION GUIDE UNIT

Tatsuo Higuchi, Fukuoka, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,587
Claims priority, application Japan, Oct. 14, 1992, 4-077806[U]
Int. Cl.[6] F16C *29/06*
U.S. Cl. 384—45 **1 Claim**



1. A linear motion rolling guide unit equipped with a track rail, comprising: track grooves formed in a lengthwise direction along both sides of said track rail, a slider movable relative to said track rail, said slider having a casing in which grooves are formed, said grooves being in opposition to respective ones of said track grooves, said casing having endcaps at ends thereof and seal members arranged on said endcaps and said slider having a mounting surface provided on at least one end thereof disposed in the direction of slider movement, a mounting portion provided on said mounting surface, and a table, which extends transversely with respect to the direction of slider movement attached to said mounting surface, rolling elements being disposed in said track grooves, said rolling elements circulating through said grooves as said slider moves along said track rail, a flat upper surface of said slider being perpendicular to said mounting surface and parallel to a lower surface of said track rail.

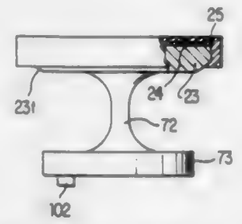
5,393,145

PAD TYPE HYDRODYNAMIC THRUST BEARINGS HAVING A MODULAR CONSTRUCTION

Russell D. Ide, 122 Ridge Dr., Exeter, R.I. 02822

Continuation-in-part of Ser. No. 949,225, Sep. 23, 1992, abandoned, and Ser. No. 685,148, Apr. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, Pat. No. 5,137,373, said Ser. No. 949,225, is a continuation-in-part of Ser. No. 541,131, Jun. 4, 1990, Pat. No. 5,125,754, which is a continuation-in-part of Ser. No. 516,781, Apr. 30, 1990, Pat. No. 5,054,938, and Ser. No. 516,977, Apr. 30, 1990, Pat. No. 5,066,144, which is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, said Ser. No. 516,781, is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, which is a continuation-in-part of Ser. No. 283,529, Oct. 25, 1988, Pat. No. 5,112,143, which is a continuation-in-part of Ser. No. 55,340, May 29, 1987, abandoned. This application Nov. 12, 1993, Ser. No. 151,045
Int. Cl.[6] F16C *17/06*
U.S. Cl. 384—124 **17 Claims**

1. A modular hydrodynamic bearing adapted to support a rotating shaft, the bearing comprising: a carrier member, the carrier member having a plurality of openings formed therein, the openings being spaced about a predetermined axis; a plurality of bearing pads secured in the openings of the carrier, each of the bearing pads comprising a pad portion having a pad surface a supported surface and at least one edge extending between the pad surface and the supported surface; a support portion having an axis which is perpendicular to the plane of the pad surface and the support portion supporting the pad portion at a location on the supported surface which is spaced from any edge of the pad, and a base supporting the support portion; the support portion having a first end attached to the pad portion at said location spaced from any edge of the pad



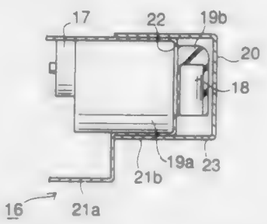
and a second end attached to the base and a central region between the first and second ends wherein the support portion is curved so as to flare outward toward the first and second ends so that the support portion is wider proximate the first and second ends than it is in the central region and the support portion being symmetrical about its axis such that every section of the support portion lying on a plane transverse to the axis has the same shape.

5,393,146

ROLLING BEARING UNIT FOR SENSING ROTATIONAL SPEED

Shuichi Ishikawa, Nakai, and Junshi Sakamoto, Fujisawa, both of Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Nov. 20, 1992, Ser. No. 979,213
Claims priority, application Japan, Nov. 22, 1991, 3-103735
Int. Cl.[6] F16C *35/00*
U.S. Cl. 384—448 **6 Claims**



1. A rolling bearing unit for sensing rotational speed comprising:

a rotating ring,

a stationary ring,

a plurality of rolling bodies provided between the rotating ring and the stationary ring,

a pulser ring mounted to the rotating ring,

a sensor mounted to the stationary ring so as to oppose the pulser ring to detect rotations of the rotating ring,

a synthetic resin connector integrally connected to the sensor to output a signal from the sensor,

a metal cover which supports the sensor and the synthetic resin connector, and

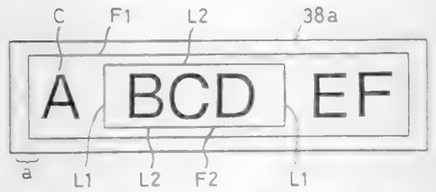
a supplemental metal member for protecting the synthetic resin connector, said supplemental member being connected to the metal cover in a telescopic fitting relationship, said supplemental member extending from the metal cover to substantially enclose the synthetic resin connector.

5,393,147

TAPE PRINTING DEVICE FOR PRINTING CHARACTERS AND FRAMES

Hideo Ueno; Shoji Sakuragi, both of Nagoya, and Akihiko Niwa, Toki, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 18, 1992, Ser. No. 978,437
Claims priority, application Japan, Dec. 26, 1991, 3-358987
Int. Cl.[6] B41J *3/46*
U.S. Cl. 400—65 18 Claims



1. A tape printing device for printing an image on tape medium, comprising:

input means for inputting image data including character data;

memory means for storing the image data;

partial frame selecting means for selecting portions of the image data for framing in a partial enclosed frame and storing data corresponding to the selected portions in said memory means;

overall frame selecting means for selecting an overall enclosed frame for the image that overlaps and encompasses at least part of the selected portions of the image in the partial enclosed frame and storing data corresponding to an overall enclosed frame in said memory means;

display means for displaying image data input from said input means and for displaying the selected portions of the image data for the partial enclosed frame, wherein said display means includes a partial frame display means for displaying which characters are selected to be partially framed and for indicating boundaries of the selected partial frame; and

print means for retrieving data from said memory means and printing the image, the partial enclosed frame and the overall enclosed frame on the tape medium based on the data retrieved.

5,393,148

POSTAGE DISPENSING APPARATUS HAVING A THERMAL PRINTER AND METHOD OF USING THE SAME

William Berson, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 20, 1993, Ser. No. 169,694
Int. Cl.[6] B41J *2/325*
U.S. Cl. 400—120.01 10 Claims

1. A postage dispensing apparatus comprising:

a supply of thermal ribbon having pre-formed images and a ink coating thereon,

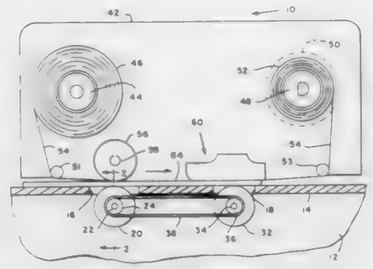
a longitudinally extending deck,

a pair of first laterally extending impression rollers in engagement with one another, said impression rollers being a means to transfer said pre-formed image,

a motor connected with one of said laterally aligned pressure rollers,

a second laterally extending roller located on said deck longitudinally spaced from said pair of first lateral extending rollers,

a thermal printhead spaced relative to said second roller, said thermal printhead being a means to transfer part of said ink coating to form indicia, and



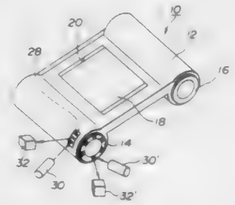
means for conveying a thermal ribbon between said pair of laterally extending pressure rollers and between said printhead and said second roller.

5,393,149

COLOR VIDEO PRINTER AND AN INK RIBBON CARTRIDGE USED THEREIN

Shin Iima, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Apr. 6, 1993, Ser. No. 42,798
Claims priority, application Japan, Apr. 20, 1992, 4-098405
Int. Cl.[6] B41J *35/28*
U.S. Cl. 400—208 6 Claims



1. In a color video printing apparatus in which an ink ribbon cartridge is detachably installed, said ink ribbon cartridge including a spool on which an ink ribbon is wound, said spool having opposed ends and an outer circumferential surface, said spool having first and second mark-carrying portions which are provided respectively with a plurality of first and second information marks, said color video printing apparatus including a printing head, a platen roller, a sheet feeder, driving devices for driving the printing head, the platen roller and the sheet feeder, and a detecting device for identifying the ink ribbon cartridge, said detecting device compromising:

a first sensor for detecting the first information marks on said first mark carrying portion;

means responsive to said first sensor for determining spool rotation and the amount of ink ribbon remaining on said spool;

a second sensor for detecting in sequence the second information marks on said second mark carrying portion of the spool during one rotation cycle of the spool and producing detection signals, said information marks indicating information about the kind of ink ribbon which is wound on said spool;

means for identifying the information about the kind of ink ribbon which is wound on said spool in response to receipt of the detecting signals and producing identification signals, one of said mark carrying portions being one of said opposed ends and the other one of said mark carrying means being one of said circumferential surfaces; and

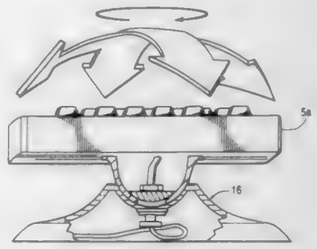
means for controlling the driving devices in response to the identification signals.

5,393,150

BIFURCATED KEYBOARD ARRANGEMENT

Chris Fort, 111 23rd Ave. North, Nashville, Tenn. 37203

Continuation-in-part of Ser. No. 755,563, Sep. 5, 1991, Pat. No. 5,228,791. This application Jul. 8, 1993, Ser. No. 87,364
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[6] B41J *5/10*
U.S. Cl. 400—489 14 Claims



1. A keyboard arrangement of the type having a plurality of keys arranged on a keyboard surface, each key corresponding to a letter, number, symbol, function or other information, said keyboard arrangement being adapted for entry of information into a receiving unit, comprising:

a first keyboard section bearing a first portion of said keys;

a second keyboard section bearing a second portion of said keys;

said first and second keyboard sections being physically detached from and movable with respect to each other; and

first and second supports attached to and supporting said first and second keyboard sections, respectively, by means of a joint, permitting simultaneous rotation of each of the keyboard sections, about at least two mutually perpendicular axes;

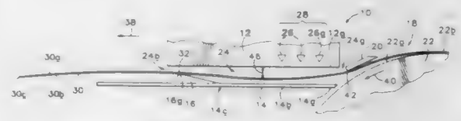
each of said first and second supports comprising a base portion and an upwardly extending portion projecting upward from and fixed relative to said base portion, with said joint being formed at an upper end of said upwardly extending portion and rotatably coupling said keyboard section to said upwardly extending portion about a center of rotation proximate said keyboard section.

5,393,151

PRINT MEDIUM HANDLING SYSTEM INCLUDING COCKLE RIBS TO CONTROL PEN-TO-PRINT MEDIUM SPACING DURING PRINTING

Paul W. Martin, Battle Ground; Cathy A. Rotering, Camas; Mark S. Hickman, and Chris Lesniak, both of Vancouver, all of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 71,417, Jun. 3, 1993, Pat. No. 5,356,229. This application Feb. 28, 1994, Ser. No. 203,152
Int. Cl.[6] B41J *13/14*
U.S. Cl. 400—642 9 Claims



1. A printer mechanism adapted to control pen-to-print medium spacing during printing, the mechanism comprising:

a printhead for printing on a print medium, and

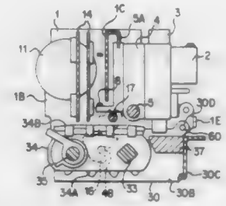
a platen located generally adjacent the printhead such that the platen and the printhead define a print zone therebetween, the platen including a plurality of elongate ribs which project from an upper surface of the platen in spaced relationship and positioned to contact a lower surface of the print medium such that the print medium bends downwardly between the ribs to provide an undulated section of the print medium, thereby reducing uncontrolled bending of the print medium in the print zone.

5,393,152

PRINTING DEVICE HAVING OPENING AND SHUTTING MECHANISM

Yoshiteru Hattori, Bisai; Kazuya Asano, and Susumu Misu, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 19, 1993, Ser. No. 108,531
Claims priority, application Japan, Aug. 26, 1992, 4-227210; Jan. 25, 1993, 5-009874
Int. Cl.[6] B41J *29/02*
U.S. Cl. 400—691 18 Claims



1. A printing device, comprising:

an upper frame having a movable print head;

a lower frame having a platen which confronts said print head and a feeding mechanism which feeds a print medium between said platen and said print head;

a biasing member;

a connecting member which connects said upper frame and said lower frame at one side of said platen, said feeding mechanism and said biasing member on an opposite side of the platen than said connecting member, said connecting member rotatably connecting said upper frame and lower frame around a rotating axis orthogonal to a feeding direction of the print medium, wherein said upper frame has a shut position where said upper frame covers said platen and said feeding mechanism and a fully open position where said upper frame is away from said feeding mechanism and is positioned to said one side of said platen, said upper frame being urged to a first open position by said biasing member when said upper frame is not properly shut.

5,393,153

TOOTHPASTE DISPENSER

Roch-Jean Bouthillier; Cécile Beaudoin, both of Montréal, and Antonio Diaz, La Minerve, all of Canada, assignors to Corporation Roch-Jean Bouthillier et Fils Inc., Montreal, Canada

Filed Dec. 1, 1993, Ser. No. 159,558
Int. Cl.[6] A46B *11/02*
U.S. Cl. 401—146 1 Claim



1. A feed fluid dispenser comprising:

(a) a reservoir member, having an enclosure for containing toothpaste;

(b) an elongated hollow shank member, integrally mounted to said reservoir member and defining an inner end lo-

cated within said enclosure and a free outer end, a through-passage being defined along said hollow shank member with an inner mouth at said inner end thereof and a toothpaste outlet port at said outer end thereof;

(c) a channel member, slidingly extending through the hollow of said shank member and defining an elongated body having opposite inner and outer end portions and a narrowed internal diameter section located intermediate the inner and outer ends thereof, said channel member inner and outer end portions defining opposite end mouths of a through-passage; said channel member being slidable between a first position, in which said channel member outer end portion closes said shank member outlet port, and a second position, in which said channel member outer end portion clears said shank member outlet port and brings said shank member outlet port in fluid communication with said channel member through-passage;

(d) a tubular member defining an elongated body having opposite inner and outer open end portions and a narrowed internal diameter section located intermediate the inner and outer end portions thereof, said tubular member inner end portion being slidingly engaged by said channel member inner end portion and said tubular member outer end portion being freely located within said enclosure and forming a toothpaste intake port;

(e) valve control means, for displacing said channel member body from said first to said second positions thereof for controlling fluid flow between said channel member through-passage passage and said shank member outlet port, and including: a double spring-biased valve assembly, for step feeding volumic loads of the toothpaste to said toothpaste outlet port, said valve assembly including first and second valve members, mounted into said channel member and into said tubular member respectively within a common area forming a suction pumping pressure chamber, and first and second spring-biasing members, each fixedly carried by said channel member and directly and continuously engaging with said first and second valve members respectively and biasing said first and second valve members against first and second shoulders respectively formed by said intermediate narrowed internal diameter sections of said channel member and said tubular member, respectively, whereby both said channel member and said tubular member intermediate narrowed internal diameter sections are normally closed by said first and second valve members respectively, the biasing force of said first and second spring-biasing members being both directed toward said tubular member toothpaste intake port; and

(f) continuously-acting fluid biasing means, for continuously biasing said toothpaste from said reservoir member enclosure toward said toothpaste outlet port;

wherein said first spring-biasing member and associated said first valve member are of a smaller size than that of said second spring-biasing member and associated said second valve member, the biasing force of both of said spring-biasing members being such that each said valve member remains responsive at different fluid pressures developed within said pressure chamber and induced by said fluid biasing means, upon reciprocating motion of said channel member between said first and second positions thereof, against the bias of said spring-biasing members.

5,393,154

HOOK AND BINDER ARRANGEMENT

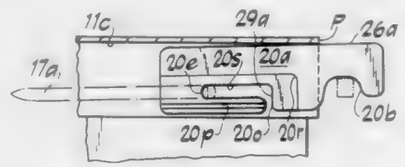
John W. Hubbell, Wheaton, Ill., assignor to Acco USA, Inc., Wheeling, Ill.

Filed Oct. 27, 1992, Ser. No. 966,962

Int. Cl.[6] B42F *13/40*

U.S. Cl. 402—4 **4 Claims**

1. In a pair of detachable hook members for detachable engagement with the posts of a post and rail binder which hook members have longitudinal slots for receiving posts therein for extending and retracting such hook members, the improvement comprising a cross slot in each hook which communicates with the longitudinal slot and projection portion adjacent



such longitudinal and cross slots, each cross slot approximately the width of the post to be received in the longitudinal slot.

5,393,155

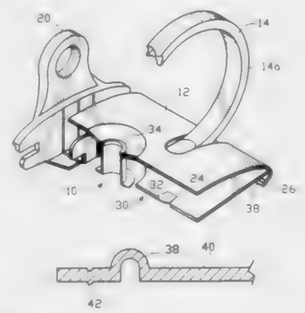
RING BINDER HOUSING

Weng I. Ng, Hong Kong, Hong Kong, assignor to World Wide Stationery Mfg. Co., Ltd., Kwai Chung, Hong Kong

Filed Apr. 30, 1993, Ser. No. 56,300

Int. Cl.[6] B42F *13/20*

U.S. Cl. 402—31 **5 Claims**



1. A housing member for a ring binder comprising:

a generally rectangular body;

two longitudinal sides normal to the body, each of the longitudinal sides having an outer edge; and

at least one rib extending outwardly from the longitudinal sides positioned longitudinally adjacent each of the outer edges.

5,393,156

MOLDED BINDER ASSEMBLY

Howard R. Mullin, Atherton, and Peter D. Doninelli, Morgan Hill, both of Calif., assignors to Duo-Tang, Inc., Paw Paw, Mich.

Filed Feb. 8, 1994, Ser. No. 193,234

Int. Cl.[6] B42F *3/04*

U.S. Cl. 402—36 **12 Claims**

1. A molded snap ring assembly for holding paper, comprising:

an elongated longitudinal base section having a top, a bottom, lateral sides and opposed ends;

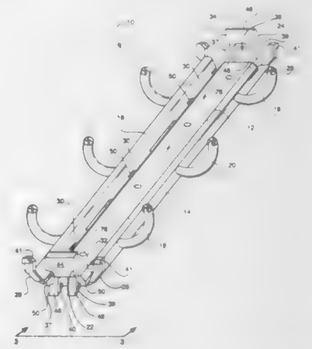
two ring support sections having proximal and distal sides and opposed ends;

hinge means, connected between the proximal side of each ring support section and the corresponding lateral side of the base section, for pivoting the ring support sections to and away from the base section;

a plurality of opposed pairs of spaced apart ring segments for retaining the loose leaf paper, the pairs of segments mounted on the respective ring support sections, the ring segments spaced apart from the ends of the ring support sections, the pairs of ring segments having free ends, the opposed pairs of ring segments substantially aligned and

configured to make contact at the respective free ends to form fully closed rings when the ring support sections are pivoted into a closed position;

at least one engagement member for engaging the ring support sections and the base section, releasably connected between the ring support sections and the base section, for releasably locking the ring support sections to the base section in the closed position, each engagement member including at least one lever connected to the base section,



and the lever including two opposed side members forming the connection to the base section, the side members defining a channel opening therebetween, the channel opening configured to provide latching surfaces for the engagement member, the side members including resilient sections, the resilient sections providing restoring force for pivotal motion of the lever about the end connected to the base section,

whereby the loose leaf sheets retained by the ring segments may be retained, added to or subtracted from as desired.

5,393,157

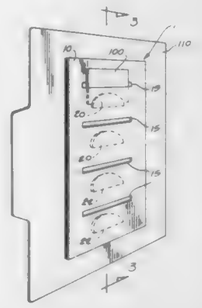
CARD ORGANIZER FOR FILE FOLDERS

George A. Basmajian, 1941 S. 371st, Federal Way, Wash. 98371

Filed Mar. 28, 1994, Ser. No. 218,252

Int. Cl.[6] B42F *13/00*

U.S. Cl. 402—79 **5 Claims**



1. A flat, single page card organizer for attaching to a traditional file folder, the organizer having a pocket for holding a card, such as a business card or a computer disk, comprising

a front sheet with a horizontal rectangular slot sized such that a card of extended depth may pass therethrough,

a back sheet in parallel face to face orientation to the front sheet,

an arched tab on the back sheet with a bottom forming a bend line in connection with the back sheet, the tab bottom being smaller in width than the front sheet slot, with the tab arch attached to the front sheet below the front sheet slot forming a pocket thereby attaching the front sheet to the back sheet.

5,393,158

TRANSPARENT MOUNT FOR PHOTOGRAPH ALBUM

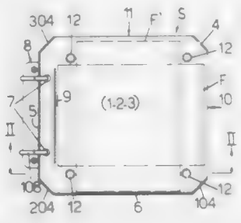
Davide Dall'Arancio, Faenza, Italy, assignor to SEPA S.r.l., Italy

Filed Apr. 5, 1994, Ser. No. 222,864

Claims priority, application Italy, Apr. 9, 1993, B093 U 000079

Int. Cl.[6] B42F *13/00*

U.S. Cl. 402—79 **10 Claims**



1. A transparent mount for a photograph album comprising two sheets of transparent plastic material, superimposed and welded together along part of their perimeter, to form at least one pocket for containing one or two back-to-back photographs which are visible through the transparent walls of the pocket, said pockets having a size in plan view such as to contain a photograph with either a horizontal or a vertical disposition, said pockets being open on two consecutive sides to form two apertures at an angle of 90° to each other through which the photograph can be inserted into the pocket with the correct orientation for its correct viewing.

5,393,159

BASE FOR AERIALS

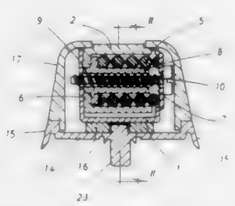
Francisco J. Traspuesto Miguel, Vigo, Spain, assignor to Plasticos Dik, S.A., Vigo, Spain

Continuation of Ser. No. 983,214, Nov. 30, 1992, abandoned. This application Jun. 3, 1994, Ser. No. 253,605

Claims priority, application Spain, Nov. 29, 1991, 91.02677

Int. Cl.[6] H01Q *1/32*

U.S. Cl. 403—91 **10 Claims**



1. A holding device for aerials comprising:

a support formed from conductive material having a pair of side-branches;

a movable component pivotally mounted between said side-branches, said movable component having attachment means for an aerial; and

a compressed spring located inside said movable component, said spring expanding between one of said side-branches against which said spring bears and a rim provided in said movable component, said rim being forced towards the other side-branch by expansion of said spring so as to generate a substantially constant frictional force for constricting rotational movement of the aerial and thus pro-

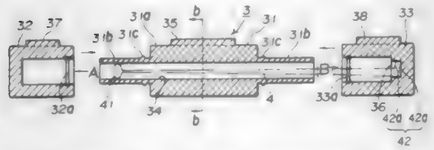
viding retention thereof in any selected position throughout a rotational range of said movable component regardless of how many times the movable component is rotated with respect to the support.

5,393,160

TORSION BAR FOR SLOW-ACTING ROTATION SHAFT DEVICE

Juji Ojima, Aikawa, Japan, assignor to NHK Spring Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 767,790, Oct. 1, 1991, abandoned. This application Aug. 11, 1993, Ser. No. 116,831
Claims priority, application Japan, Oct. 1, 1990, 2-264615
Int. Cl.[6] F16C *11/04*
U.S. Cl. 403—120 **7 Claims**



1. A combination of a case and a torsion bar for a slow-acting rotation shaft device comprising:

a case having a first stationary member including a first elongated hole portion extending therethrough and a second member rotatable about the stationary member having a second elongated hole portion communicating coaxially with said first elongated hole portion at an end thereof; and

a torsion bar comprising a substantially U-shaped wire rod having first and second hook portions respectively extending in the same direction from ends of first and second legs thereof, wherein a U-shaped intermediate portion of the torsion bar is held in said first elongated hole portion in said stationary member and the first and second hook portions of said torsion bar are engaged in said second elongated hole portion;

whereby the torsion bar energizes said second member in an open direction against a viscous resistance of a viscous grease for slow-acting rotation of the second member with respect to the first member and torque is obtained on rotation of the second member relative to the first member.

5,393,161

EXTERNAL FIXATOR

Jacques Mata, Etoy, and Marcel Wagenknecht, Le Lignon, both of Switzerland, assignors to Jaquet Orthopedie S.A., Geneva, Switzerland

Continuation of Ser. No. 803,924, Dec. 9, 1991, abandoned. This application Sep. 28, 1993, Ser. No. 127,963
Claims priority, application Switzerland, Dec. 10, 1990, 3891/90
Int. Cl.[6] F16B *7/00;* **A61B** *19/00, 17/56*
U.S. Cl. 403—133 **14 Claims**

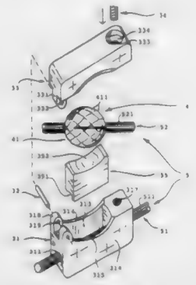
1. A universal joint to be used as part of an external fixation device, said universal joint comprising:

a partially spherical shaped body substantially in the shape of a ball, said ball having an outer surface with facets thereon;

a first part having a first hollow of generally partially spherical shape, said hollow including a flexible elastic layer for engaging said facets on said ball for providing resistance to slipping;

a second part having a longitudinal passage therein and having a clearance facing said first hollow; and

a means for pivotally connecting together said first part and said second part, wherein a locking screw arranged in a bore substantially perpendicular to said longitudinal passage is able to hold securely together simultaneously said



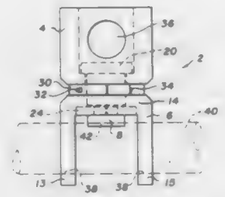
partially spherical body within said first part and said second part and to hold securely a cylindrical piece to be introduced into said longitudinal passage.

5,393,162

PIVOTING JOINT ASSEMBLY

Carl-Erik M. Nissen, 2430 Cardena Crescent, Box 51, Port McNeill, B.C., Canada V0N 2R0

Filed Feb. 24, 1993, Ser. No. 21,971
Int. Cl.[6] F16B *17/00;* **B66C** *1/00*
U.S. Cl. 403—154 **10 Claims**



1. A pivoting joint assembly comprising:

a first portion formed with a first aperture;

a second portion formed with a second aperture, said first and second apertures being alignable;

a recess formed about the second aperture;

a shaft insertable through the first and second apertures;

bearing means formed formed adjacent one end of the shaft;

a retaining member releasably mountable to the other end of the shaft to prevent axial movement of the retaining member alone the shaft;

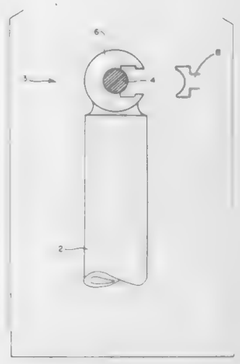
a spacing member comprising an annular split ring having two parts insertable between the first and second portions about the shaft, and locking means to hold the two parts together when in position about the shaft, the spacing member acting to separate the portions to an extent such that the bearing means of the shaft engages and retains the first portion on the shaft and the retaining member mounted to the shaft is positioned within the recess of the second portion to define a second bearing means that engages and retains the second portion on the shaft to releasably and rotatably lock together the first and second portions for rotation with respect to each other about an axis defined by the shaft.

5,393,163

LATTICE COMPRISING RODS AND JOINTS AND THE MANUFACTURE THEREOF

Elmar Wolf, Am Judengarten, D-8706 Hochberg, Germany

Continuation of Ser. No. 533,296, Jun. 5, 1990, abandoned, which is a continuation of Ser. No. 246,420, Sep. 19, 1988, abandoned. This application Oct. 15, 1991, Ser. No. 780,436
Claims priority, application Germany, Sep. 17, 1987, 3731184
Int. Cl.[6] F16S *3/00;* **E04B** *1/00*
U.S. Cl. 403—171 **3 Claims**



1. A lattice, comprising:

a plurality of joints having a polygonal shape, said joints being a hollow body with rounded edges and forming a portion of a plurality of corners of said lattice;

a plurality of rods with each of said rods having at, at least, one end thereof a connecting member for connecting said rod with said joint, said connecting member of said rod having a fork, said fork being capable of gripping at least one of said rounded edges of said joints with a longitudinal axis of said fork extending perpendicularly to the axis of said rod; and,

means for locking said connecting member to secure said rod with said joint wherein said means for locking includes a spring clip at the end of said rod.

5,393,164

ARC WELDED JOINT BETWEEN A CARRIER AND A COMPONENT RIGIDLY CONNECTED TO IT

Wolf Renner, Giessen, and Dieter Mauer, Lollar, both of Germany, assignors to Emhart Inc., Newark, Del.

Continuation of Ser. No. 923,393, Jul. 13, 1992, abandoned. This application Jul. 11, 1994, Ser. No. 272,956
Claims priority, application Germany, Aug. 2, 1991, 4125748; Aug. 20, 1991, 4127527; Sep. 20, 1991, 4131405; Apr. 14, 1992, 4212513
Int. Cl.[6] F16B *5/08*
U.S. Cl. 403—271 **9 Claims**

1. A welded joint comprising

a sheet-like metal carrier;

a sheet-like metal component overlying said carrier, said component having a bore therethrough;

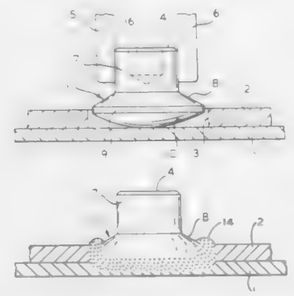
a plug comprising

a shank; and

an enlarged head on one end of said shank, at

least a portion of said head being located within said bore; said head having a surface surrounding said shank and facing away from said carrier; and

a solidified body of weld metal in said bore, said body comprising metal from said carrier, said component and said plug, said body being fused to and joining said carrier, said component and said plug;



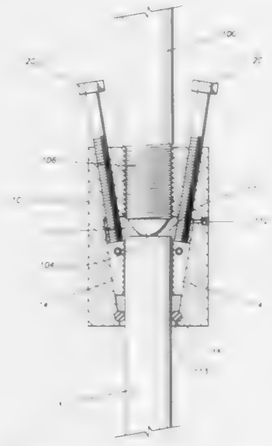
said body further extending beyond the surface of said head on the side opposite said carrier to increase the strength of said joint.

5,393,165

ANCHOR BOLT REPAIR COUPLING WITH PRELOADING JACK AND EPOXY INJECTION

Robert L. Rowan, Jr., 3239 Ella Lee La., Houston, Tex. 77019

Continuation-in-part of Ser. No. 605,241, Oct. 29, 1990, Pat. No. 5,163,775. This application Sep. 10, 1992, Ser. No. 943,290
Int. Cl.[6] F16B *7/04*
U.S. Cl. 403—301 **31 Claims**



1. A repair coupling for repairing a broken anchor bolt, which comprises:

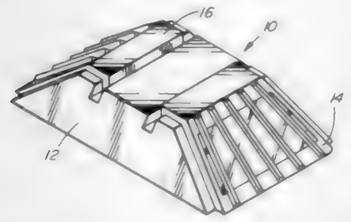
a coupling base having an internal wall defining an internal chamber opened at one end, and having a threaded portion at another end for receiving a threaded member;

a plurality of grips each having a serrated face located in said internal chamber for gripping said broken anchor bolt;

a preloading jack for preloading the repair coupling to a predetermined level, said preloading jack having a jacking surface; and

engaging means for engaging the grips against said broken anchor bolt, at substantially said preloading level.

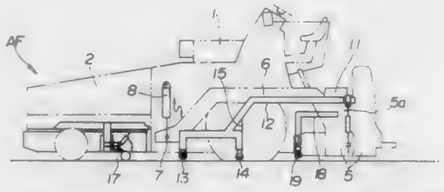
5,393,166
REFLECTIVE MARKER FROM RECYCLABLE MATERIAL
Anthony P. Stock, Nanaimo; Daniel B. O'Brien, Victoria, and James A. Sloan, Yellow Point, all of Canada, assignors to Target Recycling Inc., Chemainus, Canada
Filed May 10, 1993, Ser. No. 58,218
Int. Cl.[6] E01F *9/06*
U.S. Cl. 404—14 7 Claims



1. A reflective marker apparatus for use in a vehicular traffic area, the apparatus comprising:
a) a resilient, elastic body portion formed from at least two portions of a rubber tire laminated together, the body having an attachment surface bondable to a mounting surface, a top surface opposite the attachment surface and first and second oppositely disposed face sides angularly disposed relative to said attachment surface to be convergent toward said top surface; and
b) reflecting means for reflecting light generally directed at the body, the reflecting means including a light: reflecting member and a resilient cover member for covering the light reflecting member; and
c) securing means for removably securing the cover member to at least one of the first and second face sides such that the cover member may be removed from the body potion as desired, the receiving means including:
i) a recessed portion in said attachment surface of said body portion and a groove extending transversely in said top surface of said body portion; and
ii) first and second tabs on the cover member for cooperating with said recessed portion and said groove respectively, to grip the body portion to secure the cover member to the body, the cover member being sufficiently resiliently bendable to permit installation thereof without requiring the removal of the apparatus from the mounting surface.

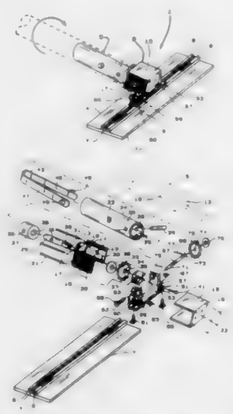
5,393,167
METHOD FOR CONTROLLING THE THICKNESS OF PAVEMENT AND SETTING THE CONDITIONS FOR AUTOMATIC CONTROL OF THE LEVELING MACHINE
Makio Fujita; Fumio Goto; Tetsuo Ogawa; Akio Ishii, all of Gunma; Tomohiro Gocho, Tokyo; Narimasa Yamabe, Tokyo; Ichiro Miyazaki, Tokyo; Masaaki Saito, Yokohama, and Yoshihiro Sasa, Gunma, all of Japan, assignors to Niigata Engineering Co., Ltd. and Nippon Hodo Co., Ltd., both of Tokyo, Japan
Continuation of Ser. No. 838,720, Mar. 16, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 138,828
Claims priority, application Japan, Nov. 14, 1990, 2-307582; Nov. 14, 1990, 2-307588
Int. Cl.[6] E01C *19/00*
U.S. Cl. 404—84.1 5 Claims

1. A pavement thickness control apparatus for controlling pavement thickness for use in a spreading machine comprising:
a traveling tractor unit having means for traveling over an unpaved road surface while supplying asphalt material to said unpaved road surface;
a screed for paving said unpaved road surface by evenly spreading said asphalt material, said screed having a lower edge for defining an upper surface of said pavement;
and a positioning means for determining a position of said lower edge of said screed in order to control said pavement thickness;
wherein said pavement thickness control apparatus comprises:
a plurality of measuring means for measuring vertical distances therefrom to said unpaved road surface, said measuring means disposed spaced apart from each other along said direction of travel of said tractor;



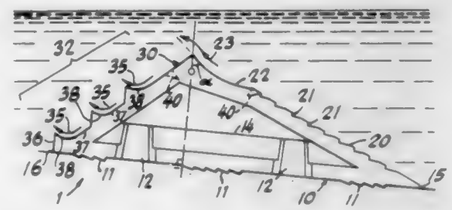
an inclination measuring means for measuring inclination of coordinates fixed to said plurality of measuring means, said inclination being resultant from an unevenness of said unpaved road surface;
wherein said position of said lower edge of said screed is determined, to compensate for said unevenness of said unpaved road surface, by taking into account said inclination of coordinates fixed to said plurality of measuring means.

5,393,168
DEVICE FOR CONNECTING AN ELONGATED HANDLE TO A BULL FLOAT PLATE
Jack D. Jarvis, 3204 Periwinkle, Memphis, Tenn. 38127
Filed Jul. 19, 1993, Ser. No. 95,582
Int. Cl.[6] E01C *19/44*
U.S. Cl. 404—97 6 Claims



1. In an adjustable concrete finishing tool for use in finishing concrete or the like having a plate portion with a handle removably attached thereto, the plate portion having a bottom side for finishing concrete and an upper side for the attachment of the handle thereto, means for attaching the handle to the plate comprising:
a housing having a top wall and opposed side walls and a complementary, removable Shroud having a bottom wall, two opposed side walls, all of said walls when the housing is assembled defining an interior chamber;
a handle connector means for removably securing one end of said handle to said housing and capable of rotation with respect to said top wall and said housing;
a bracket means pivotally attached to said side walls of said housing and disposed to removably attach the plate portion to said housing opposite said handle connector means; and,
a gear means within said interior chamber connecting said handle connector means to said bracket means, said gear means capable of translating rotational movement of said handle attachment means into pivotal movement of said bracket means and thereby to said plate portion.

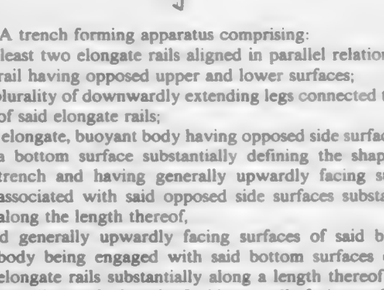
5,393,169
BREAKWATER
Richard E. Creter, 24 Timberwick Dr., Flemington, N.J. 08822, assignor to Richard E. Creter, Flemington, N.J.
Continuation of Ser. No. 796,740, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 501,729, Mar. 30, 1990, Pat. No. 5,102,257. This application Aug. 20, 1993, Ser. No. 110,344
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[6] E02B *3/04*
U.S. Cl. 405—25 1 Claim



1. A module for forming an artificial reef comprising:
a base portion for supporting the module on a seabed, the base portion having a bottom surface;
a substantially planar beachward face extending from the base portion at a first angle; and
a substantially planar seaward face extending from the base portion at a second angle, and with ends of the seaward face and beachward face distal to the base portion being connected and forming a top edge, the seaward face including a transversely extending concave surface adjacent to the top edge for deflecting currents away from the beachward face and the seabed adjacent thereto, with the concave surface being configured such that a line tangent to the uppermost portion of the concave surface, adjacent to the top edge, forms an angle with the vertical of at least 30 degrees.

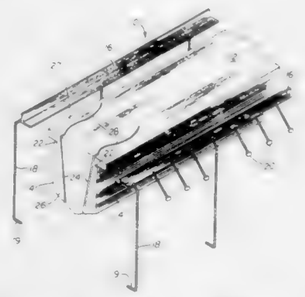
5,393,170
METHOD AND APPARATUS FOR IMPROVING SHEET FLOW WATER RIDES
Thomas J. Lochtefeld, 5508 Pacifica Dr., La Jolla, Calif. 92037
Continuation of Ser. No. 577,741, Sep. 4, 1990, Pat. No. 5,236,280, which is a continuation-in-part of Ser. No. 286,964, Dec. 19, 1988, Pat. No. 4,954,014, which is a continuation-in-part of Ser. No. 54,521, May 27, 1987, Pat. No. 4,792,260. This application Jun. 9, 1993, Ser. No. 74,300
Int. Cl.[6] A63B *69/00*
U.S. Cl. 405—79 32 Claims

1. A water ride facility for amusement parks, water parks and the like, wherein a user rides on a sheet flow of water flowing in a predetermined direction onto said water ride facility, comprising:
a substantially stationary riding surface having a substantially horizontal portion, followed in the direction of said flow of water by a concave upwardly inclined portion, and a substantially upwardly convex ridge portion; and
said sheet flow of water on said riding surface having a predetermined velocity and volume sufficient to cause



said flow to substantially conform to the contours of said riding surface, said flow flowing onto said horizontal portion, and onto said inclined portion, and then onto said convex ridge portion, wherein a user can ride over said portions on said flow of water.

5,393,171
TRENCH FORMING ASSEMBLY AND METHOD
Lannie L. Stegall, Versailles, Ky., assignor to ABT, Inc., Troutman, N.C.
Continuation of Ser. No. 184,911, Jan. 24, 1994, Pat. No. 5,348,421, which is a continuation of Ser. No. 768,610, Sep. 26, 1991, Pat. No. 5,281,051. This application Jul. 12, 1994, Ser. No. 273,884
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.[6] E02B *5/00*
U.S. Cl. 405—119 25 Claims



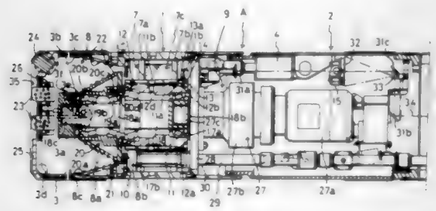
1. A trench forming apparatus comprising:
at least two elongate rails aligned in parallel relation, each rail having opposed upper and lower surfaces;
a plurality of downwardly extending legs connected to each of said elongate rails;
an elongate, buoyant body having opposed side surfaces and a bottom surface substantially defining the shape of a trench and having generally upwardly facing surfaces associated with said opposed side surfaces substantially along the length thereof,
said generally upwardly facing surfaces of said buoyant body being engaged with said bottom surfaces of said elongate rails substantially along a length thereof corresponding to the length of said upwardly facing surfaces of said buoyant body so that said rails and said legs connected thereto cooperate to substantially counterbalance said buoyant body against upward forces applied thereto by a hardenable trench forming composition poured around at least portions of said buoyant body.

5,393,172

SHIELD TUNNELING MACHINE

Toshio Akesaka, Yokohama, Japan, assignor to Kabushiki Kaisha Iseki Kaihatsu Koki, Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,624
Claims priority, application Japan, Jun. 11, 1992, 4-176037
Int. Cl.[6] E21D *9/08*
U.S. Cl. 405—141 4 Claims



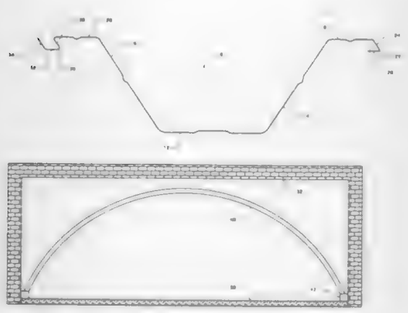
1. A shield tunneling machine comprising:
a shield body having therein a soil chamber and an inside chamber following the soil chamber, said soil chamber having a conical inner surface converging gradually rearward;
a partition wall provided in the rear of the soil chamber in the shield body for dividing the interior of the shield body into the soil chamber and the inside chamber;
a crankshaft having an eccentric portion which is eccentric to the axis of the crankshaft, and having a rear end connected to a drive mechanism and extending forward to a front of the shield body;
a conical rotor rotatably mounted on the eccentric portion of the crankshaft, said conical rotor disposed in the soil chamber;
a cutter disc including a cutter disc rotary plate on which roller bits are mounted, the cutter disc being fixedly secured to the front end of the crankshaft;
at least one opening formed in the cutter disc rotary plate for taking crushed gravel into the soil chamber, said opening have a width of one-third of the diameter of the rotary disc plate; and
means for discharging debris from the soil chamber to a rear area of the machine.

5,393,173

TUNNEL LINER BUILDING METHOD AND BUILDING PANELS THEREFOR

Frederick Morello, Johnston, Pa., assignor to M.I.C. Industries, Inc., Reston, Va.

Filed Jul. 22, 1992, Ser. No. 916,379
Int. Cl.[6] E21D *11/24*
U.S. Cl. 405—151 8 Claims



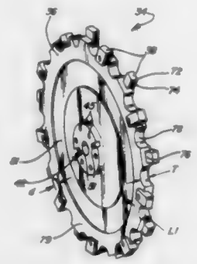
1. A tunnel liner structure comprising:
(a) a plurality of arched continuously curved panels positioned side by side;
(b) each of the panels being constructed of bendable sheet metal material and having a central main portion, a pair of inclined side wall portions, one side wall portion on each end of and connected to the main portion and extending at a angle to the plane of the main portion, a pair of wing portions connected to the inclined side wall portions and extending outwardly therefrom in a plane generally parallel to the main portion, a hook portion extending from the end of one wing portion, and a receptacle portion extending from the end of the other wing portion, the receptacle portion being shaped be complementary to the hook portion to receive the hook portion therein, the receptacle portion also having an edge section at an outer end thereof; and
(c) continuous seams between the plurality of adjacent panels, the seams formed by the edge portion of each panel being bent over the hook portion of an adjacent panel on the inside of the panels when assembled.

5,393,174

SAW MILL APPARATUS FOR CASTINGS AND METHOD

Walter W. Wawrzyniak, 34452 Jefferson, #C-39, Mt. Clemens, Mich. 48045

Division of Ser. No. 733,890, Jul. 22, 1991, Pat. No. 5,284,407.
This application Oct. 19, 1993, Ser. No. 139,190
Int. Cl.[6] B26D *1/12*
U.S. Cl. 407—51 10 Claims



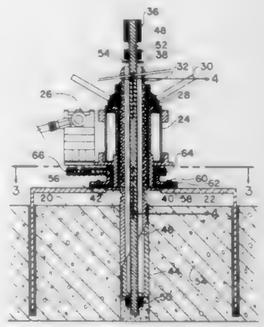
1. A saw mill cutter for machining castings for use as engine blocks, cylinder heads, cam carriers, transmission housings and the like and for removing casting risers from the casting to form a cast body with a finished surface at the plane of removal of the riser, said saw mill cutter simultaneously removing such riser and forming such finished surface comprising:
a cutter body having a generally circular shape,
a plurality of removable cutter inserts located circumferentially about the periphery of said cutter body,
at least some of said cutter inserts having a first cutting edge adapted to extend axially relative to said cutter body for cutting the casting rise from the casting to form a rough cut surface,
at least some of said cutter inserts having a second cutting edge adapted to extend radially relative to said cutter body for milling the rough cut surface to provide a cast body with a finished surface at the plane of removal,
said cutter body having a machined engagement surface on one side for engagement by a plurality of support members, said engagement surface being planar,
said cutter body having a thickness of around 0.4 inch or more,
said cutter body being around thirty inches or more in diameter and adapted to machine a casting having a surface to be cut and milled with a length of up to at least around eighteen inches and a width substantially less than said length whereby the casting can be machined lengthwise while being moved along its width relative to said cutter body.

5,393,175

DIAMOND CORE DRILL

Léo Courville, 5639 De Castille, Montréal-Nord Québec, Canada H1G 3E6

Filed Jun. 18, 1993, Ser. No. 77,921
Int. Cl.[6] B23B *51/04, 51/06*
U.S. Cl. 408—56 14 Claims



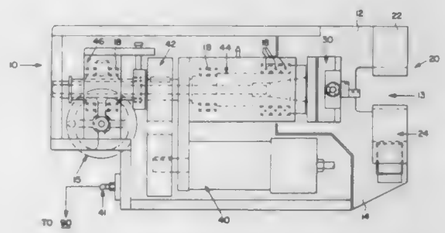
1. A tool for carrotting a concrete surface comprising:
carrotting means, comprising a hollow cylinder with an open and a closed end, said closed end being sealed and adapted to provide means for supporting said carrotting means, and said open end comprising diamond cutting means,
motor means connected to said carrotting means for rotational driving of said closed end,
shaft means for aligning centrally said carrotting means, comprising means for displacing said carrotting means along the axis of said shaft means, independently of the rotational speed of said carrotting means,
housing means for containing said motor means and said shaft means,
means for securing said shaft means in the area to be carrotted,
water feeding means comprising a water connection within said housing, water channeling means from said housing to the interior of said sealed hollow cylinder thereby allowing water passage from exterior to the interior of said carrotting means and to the diamond teeth of said open end.

5,393,176

TUBE BEVELLING MACHINE WITH ADJUSTABLE BEVELLING HEAD

Tom Waring, Cambridge, Canada, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jan. 26, 1994, Ser. No. 188,530
Int. Cl.[6] B23B *41/00, 5./00*
U.S. Cl. 408—105 13 Claims



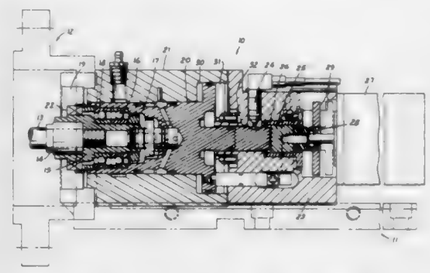
1. A device for bevelling a tube, the device comprising:
a housing having an interior and an upper extended portion and a lower extended portion, the upper extended portion being spaced a distance away from the lower extended portion for defining a space;
clamp means on the upper extended portion and the lower extended portion for clamping a tube;
a rotatable head having at least one cutter adjustably mounted to the head contained within the interior of the housing for bevelling the tube, the rotatable head being extendable through the space between the upper extended portion and the lower extended portion, each cutter having a holder and at least one cutting surface attached to the holder, each cutter being adjustably movable with a lead screw threaded through each holder, and a setting dial for each lead screw; and
motive means for powering the cutting means.

5,393,177

TOOL WEAR COMPENSATION SYSTEM

Kenneth J. Cook, Troy; Thomas C. Roth, Mt. Clemens, both of Mich.; Frank D. Hasse, Sheldon, Iowa, and Gerald W. Mathie, Holly, Mich., assignors to Valenite Inc., Madison Heights, Mich.

Filed Sep. 14, 1992, Ser. No. 949,275
Int. Cl.[6] B23B *39/00*
U.S. Cl. 408—147 9 Claims



1. Tool wear compensating system comprising means for adjusting effective tool position to compensate for wear, and means to monitor extent of tool adjustment with feedback to provide closed loop tool wear compensation system.

5,393,178

ENGRAVING QUILL HOLDERS

Bruno Daraz, 469 High Ridge Rd., Stamford, Conn. 06905

Filed Mar. 8, 1993, Ser. No. 27,393
Int. Cl.[6] B23C *5/12*
U.S. Cl. 409—234 22 Claims

1. In an engraving quill holder for an engraving machine having an axial opening therethrough for engaging an engraving quill, the improvement comprising:
A. a cut in said holder generally perpendicular to said axial

opening through one side of said holder and intersecting said opening; and,



B. means effective to change the dimension of said cut on said one side of said holder to thereby clamp or release an engraving quill in said axial opening.

5,393,179

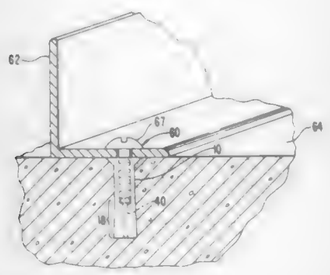
ANCHOR WITH DRIVE PIN AND THREADABLE BOLT

Robert F. Bane, 159 E. 7th St., Hialeah, Fla. 33010

Filed Feb. 22, 1994, Ser. No. 199,456

Int. Cl.[6] F16B *13/06, 37/04*

U.S. Cl. 411—60 **3 Claims**



1. An anchoring system comprising:

a generally cylindrical anchor having an open top end leading to a female threaded interior cylindrical chamber extending through a first longitudinal upper portion of said anchor, said anchor including a radially flared and outwardly extending top lip adjacent to said top end, a lower cylindrical chamber having a smooth bore and having a diameter less than one-half of the diameter of said threaded interior chamber and extending from said first upper portion and through a second lower longitudinal portion of said anchor, said first and second longitudinal portions substantially spanning the length of said anchor, said anchor having a substantially constant outer diameter, and a pair of radial slots extending longitudinally through said second lower longitudinal portion of said anchor said radial slots extending approximately the length of said smooth bore;

an elongated pin having a length which is substantially equivalent to said second lower longitudinal portion of said anchor, and said pin having an outer, cross sectional dimension which is substantially constant along its length and larger than said smooth bore of said lower cylindrical chamber, said pin including a head, said head having a cross-sectional dimension which is substantially equivalent to equal to a cross-sectional dimension of said upper longitudinal chamber, said pin adapted to be driven into said lower cylindrical chamber thereby radially expanding substantially the entire outer cross-sectional dimension of said second lower longitudinal portion of said anchor a substantially uniform radial distance along its entire length; and,

a male threaded screw having a threaded surface which is complementary to said female threaded interior cylindrical chamber of said anchor.

5,393,180

CONTAINER LOADING AND EMPTYING DEVICE FOR A REFUSE VEHICLE AND PICK UP MEMBER FOR THE SAME, AND ALSO GUIDES FOR THE PICK UP MEMBER

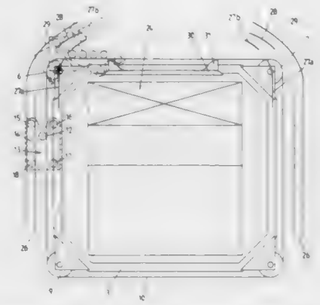
Gerardus F. A. Van Den Aarsen, Benthuizen, Netherlands, assignor to V.D.A. Konstrukties B.V., Netherlands

Filed Sep. 14, 1993, Ser. No. 120,522

Claims priority, application Netherlands, Sep. 17, 1992, 9201611

Int. Cl.[6] B65F *3/08*

U.S. Cl. 414—409 **9 Claims**



1. A container loading and emptying device for a refuse vehicle having an endless carrier, said device comprising:

a substantially rectangular frame;

two chains running in a substantially rectangular path around said frame;

a shaft connected to the two chains;

a pick up member pivotally mounted on one end of the shaft;

rolls mounted on the pick up member at positions above and below said shaft such that at any given position along a vertical axis of said frame, said rolls including an innermost lower roll and an outermost roll positioned on said pickup member such that they are below the shaft when said pickup member is in a upright position, said outermost roll being positioned at a greater distance from said frame than said innermost roll; and

guides located at upper angular points of the frame for cooperating with said rolls to provide a means for tilting said pick up member 180 degrees, said guides comprising innermost and outermost guides, said outermost guide being positioned at a greater distance from said frame than said innermost guide, said innermost guide comprising a first portion for guiding an innermost lower roll until an outermost lower roll abuts said outermost guide and a second portion for guiding the said innermost roll when said outermost roll reaches an end of said outermost guide.

5,393,181

CASSETTE FEED SYSTEM AND METHOD

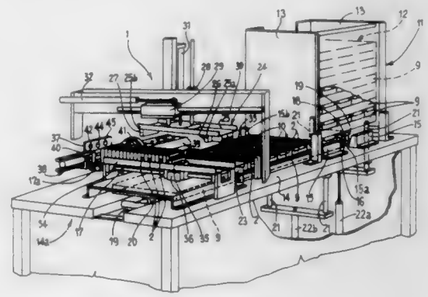
Luciano Perego, Milan, Italy, assignor to Tapematic U.S.A., Inc., Orlando, Fla.

Filed May 6, 1993, Ser. No. 58,486

Claims priority, application Italy, May 8, 1992, MI92 A 001079

Int. Cl.[6] B65G *59/06, 65/38*

U.S. Cl. 414—416 **17 Claims**



1. A tape cassette feed unit comprising:

a linear feeder guiding a row of cassettes disposed consecutively in side-by-side relation;

advance means associated with said linear feeder for moving the cassette row towards an output end of said feeder;

transfer means for picking up one of the cassettes from said row and putting it onto an output conveyor;

a storage station having a base, engaging a plurality of trays stacked one on top of the other, each said tray carrying a plurality of cassette rows disposed parallelly in side-by-side relation;

a slide track extending horizontally from said storage station base towards said linear feeder;

pusher means for moving the individual trays along said slide track, from said storage station to said linear feeder;

stop means for stopping the progress of the individual trays on the slide track when one of said cassette rows reaches a predetermined pick-up position; and

at least one transport arm operatively mounted above said slide track and said linear feeder, said arm moving between a grasp position in which it picks up a cassette row arranged in a pick-up position, to a deposit position in which said arm deposits the picked-up cassette row onto said linear feeder.

5,393,182

SEAL NUT

Imre Berecz, Coto De Caza, Calif., assignor to Microdot Inc., Fullerton, Calif.

Filed Oct. 25, 1993, Ser. No. 141,792

Int. Cl.[6] F16B *33/00*

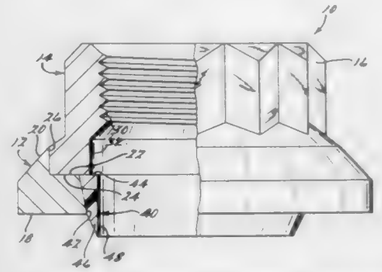
U.S. Cl. 411—369 **2 Claims**

1. A seal nut comprising:

an aluminum base having a planar radially extending workpiece engaging surface and a planar radially extending load transfer surface axially spaced and parallel to said workpiece engaging surface, said base having a truncated conical central bore that is divergent in the direction of the load transfer surface thereon;

an annular titanium torque accepting wrench pad having a planar load transfer face seated on the load transfer surface of said base and having a threaded central bore for the acceptance of a bolt, compression load from the bolt on said wrench pad being transferred by the load transfer face thereon to the load transfer surface on said base; and

an elastomeric seal ring disposed in the central bore of said base and having an end face of a diameter greater than the diameter of the central bore in said wrench pad so as to be engageable by the load transfer face on the wrench pad of said nut whereby compression loads on said wrench pad



are concomitantly transferred directly to said base and to said seal ring.

5,393,183

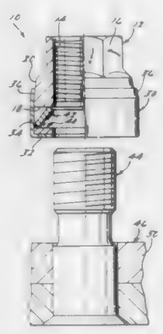
CAPTIVE NUT

Dennis L. Hinton, Yorba Linda, Calif., assignor to Kaynar Technologies, Inc., Fullerton, Calif.

Filed Feb. 17, 1994, Ser. No. 197,736

Int. Cl.[6] F16B *37/08, 43/00*

U.S. Cl. 411—432 **2 Claims**



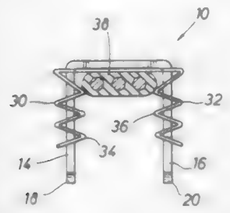
1. A captive nut usable in combination with a bolt having an annular recess between a workpiece retained by the bolt and a threaded portion thereof comprising:

an annular nut body having an internally threaded bore for the acceptance of a bolt, a plurality of wrench pads, a radially extending load transfer surface, and a truncated conical section disposed between the wrench pads and the load transfer surface,

a cup-shaped washer having an annular radially extending workpiece engaging portion and an annular axially extending truncated conical portion telescoped over the truncated conical section on said nut body so as to retain said nut body relative to said washer; and

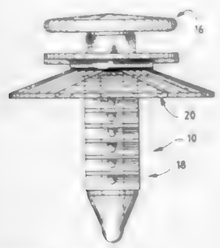
an annular locking element disposed between the load transfer surface of said nut body and the radially extending portion of said washer, said locking element being of normally truncated conical configuration but being permanently deformable to a flat annular radially extending condition upon torquing of said nut body toward a workpiece thereby to move a radially inner edge portion of said locking element into the annular recess in said bolt to preclude disassociation of said nut from said bolt.

5,393,184
SELF RETAINED STAPLED CONSTRUCTION
Reinier Beeuwkes, III, 1360 Monument St., Concord, Mass. 01742
Filed Sep. 20, 1993, Ser. No. 123,678
Int. Cl.[6] F16B *15/00, 15/02*
U.S. Cl. 411—469 17 Claims



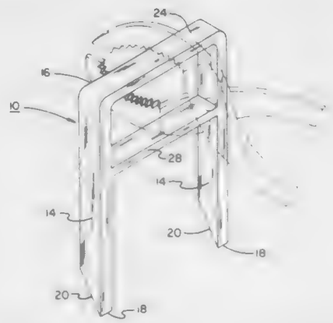
1. A staple construction for securing an object to a structure, comprising:
(a) a retainer bridge;
(b) a pair of spaced staple legs projecting from respective ends of said retainer bridge, each of said spaced staple legs having a pointed extremity for retaining penetration of said structure; and
(c) at least one staple retainer member for retaining said staple construction in assembly with said object prior to forcible retaining penetration of said spaced staple legs into said structure, said at least one staple retainer member being disposed in assembly with said spaced staple legs and having a plurality of ridges and valleys extending along at least a portion of the length of said spaced staple legs, said at least one staple retainer member having opposed yieldable retainer projections defining a space therebetween of less dimension than the dimension of said object and normally defining object retaining positions, said yieldable retainer projections being sufficiently spaced from said retainer bridge to permit movement of said yieldable retainer projections completely past said object upon assembly of said staple construction to said object and returning to said object retaining positions upon movement thereof past said object thus retaining said staple construction in assembly with said object.

5,393,185
PUSH-IN FASTENER HAVING FINS WITH WORK-PIECE ENGAGEMENT RIBS
William J. Duffy, Jr., Midlothian, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Oct. 1, 1993, Ser. No. 130,182
Int. Cl.[6] F16B *19/00*
U.S. Cl. 411—510 11 Claims



1. A push-in fastener, comprising:
a head member;
a shank member integrally formed with a first back side of said head and extending a predetermined distance away from said first back side of said head;
a plurality of resilient fins formed upon a portion of said shank and independently movable with respect to each other for releasably retaining said shank within an aperture of an article, each one of said fins including a first insertion side and a second retention side; and
a plurality of engagement ribs respectively provided upon at least one of said first insertion and second retention sides of each one of said fins for respective in dependent movement with its respective one of said fins with respect to other ones of said fins and ribs for contacting edge portions of said aperture during insertion or removal of said fastener into or out from said aperture and for absorbing any wear or shear caused by said aperture edge portions so that said fins remain substantially intact and insertion and removal forces provided by said fins remain substantially constant even after repeated cycles of insertion and removal of said fastener with respect to said aperture.

5,393,186
STAPLE WITH PARALLEL LEGS AND TWO PARALLEL CROSS PIECES THEREBETWEEN
John G. Holloway, 1500 Magnolia St., Oakdale, Calif. 93361
Filed Jun. 30, 1994, Ser. No. 269,394
Int. Cl.[6] A61B *17/04*
U.S. Cl. 411—475 4 Claims

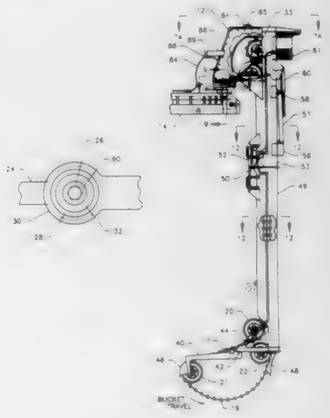


2. A staple with parallel legs and two parallel cross pieces therebetween comprising:
a pair of substantially straight parallel legs, the legs being formed with upper ends and lower ends, the lower edges being bevelled to facilitate movement into the surface to which the staple is to be secured;
a substantially straight upper first cross piece formed as an integral extension of the legs and extending therebetween at the upper end of the legs; and
a substantially straight intermediate second lower cross piece positioned parallel with the first upper cross piece at a location intermediate the upper and lower ends of the legs and being integrally formed to each leg and permanently affixed thereto and extending the entire length therebetween, the entire staple including its legs and its first cross piece and its second cross piece being integrally formed of a rigid material.

5,393,187
CONTINUOUS BULK UNLOADER/RECLAIMER
Timothy H. Seymour, 9544 Moran St., Biloxi, Miss. 39532
Filed Aug. 18, 1992, Ser. No. 931,762
Int. Cl.[6] B65G *67/60*
U.S. Cl. 414—141.1 10 Claims

1. In an improved continuous bulk unloader/reclaimer comprising
a frame,

an endless bucket chain comprising a plurality of adjoining links,
wherein said adjoining links are connected together to form a hinge,
a discharge conveyor,
a plurality of wheels mounted to said frame,
wherein said plurality of wheels supports and circulates said endless bucket chain about said plurality of wheels,
means connected to said frame near the lower end of said frame for deflecting said bucket chain outward and down to form a loop,
said discharge conveyor being connected to said frame, and
wherein said bucket chain contacts the material to be reclaimed while traversing said loop,



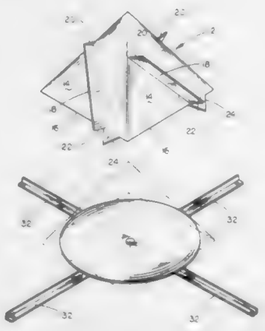
the improvement comprising:
a means for resisting hinging between said adjoining links, the means for resisting comprising:
a pair of elements concentric about an axis, one of said concentric elements being a part of a first of said links and the other of said concentric elements being a part of a second of said links, and
a means for transmitting a restoring torque between said elements located between said elements, the restoring torque exerting a force toward a neutral position of said elements as said elements pivot relative to each other about said axis.

5,393,188
PALLET STORAGE SYSTEM
Todd Scott, 19 Jennifer Crescent, Sharon, Ontario; Tony Evers, 101 Palmer Circle, R.R. #2, Bolton, Ontario, L7E 5R8, and Kevin Minkhorst, 217 Bishop Drive, Barrie, Ontario, L4N 6X5, all of Canada
Filed Dec. 14, 1993, Ser. No. 167,565
Claims priority, application Canada, Jun. 15, 1993, 2,098,433
Int. Cl.[6] A47F *5/00*
U.S. Cl. 414—276 20 Claims



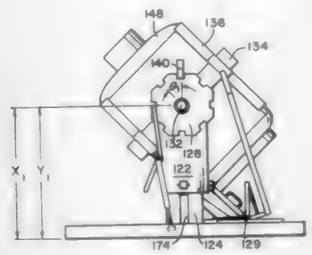
1. In a storage system comprising rows of shelves defining lanes for the storage of cartons, pallet loads, and packages, wherein the shelf lanes having front and back ends are adapted to receive more than one load of inventory positional one behind the other from front to back, a push-back system comprising;
at least one pair of tracks running from front to back in each shelf lane, each track having a substantially flat horizontal top surface for wheels to roll upon, and having inside edges facing a center of said lane and outside edges facing sides of said lane;
a first cart having a rectangular shaped frame and having at least one wheel on each side mounted to said frame and adapted to roll on the top of each said track;
a second cart adapted to move relative to said first cart and having a U-shaped frame open at one end to permit said first cart to nest within said second cart frame, and having at least one wheel on each side adapted to run along the top of each of said tracks respectively;
the wheels of one cart being adapted to run along the inside edges of said tracks and the wheels of the other cart being adapted to roll along the outside edges of said tracks;
the top surface of said tracks being wide enough to permit wheels on the inside and outside edges to pass without colliding.

5,393,189
SPREADER FOR PARTICULATE MATERIAL
Lloyd G. Berquist, 1124 Tibbals St., Holdrege, Nebr. 68959
Filed Jul. 26, 1993, Ser. No. 97,402
Int. Cl.[6] B65G *65/32*
U.S. Cl. 414—301 12 Claims



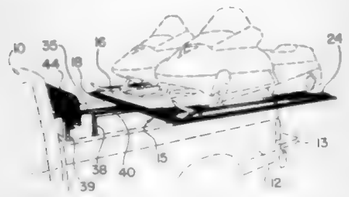
1. A spreader for a material storage bin having an inlet port, means for admitting particulate material through the inlet port, and a storage chamber disposed below the inlet port, the spreader comprising:
a rotatable body portion having at least three triangular side walls, an axis of rotation and including downwardly diverging sidewalls terminating at a base; a plurality of elongated deflector blades attached to and extending out from the sidewalls, the blades being angularly disposed with respect to the base and having an upper end and a lower end;
means for rotatably mounting the body portion within the storage bin such that the axis of rotation is disposed below the inlet port; and
further including a deflector plate attached to the base and disposed to extend outwardly from a portion of the base adjacent the lower end of the deflector blades so as to divide falling grain into separate streams whereby the deflector plate feathers each of said separate streams out from a center of the bin and exposes a larger surface area of grain particles to the ambient air thereby increasing drag on each grain particle so as to act to decrease grain particle velocity such that grain particle fracturing is minimized and the grain is evenly distributed.

5,393,190
APPARATUS FOR LIFTING AND TILTING HEAVY CONTAINERS
Coleman Vickary, R.D. #1, Box 320, Canajoharie, N.Y. 13317
Filed Feb. 14, 1994, Ser. No. 194,830
Int. Cl.[6] B65G *65/24*
U.S. Cl. 414—420 7 Claims



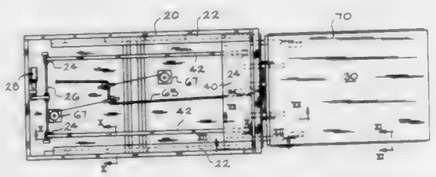
2. A tilting and inverting apparatus for elevating an object and rotating it about its center of gravity comprising;
a base means having a defined front and a back, including a platform fixed proximate the back;
an elevator means comprising a vertical support shrouded by a moveable sleeve, the support fixedly secured to the center of the platform and the moveable sleeve having a defined top with a rotatable shaft journaled therein which is aligned parallel to a centerline which passes through the base means central to said front and back, said elevator means actuable by a mechanical motive means;
indexable rotation means comprising said shaft which further bears, on the back thereof, a fixed index means; and
a cradle means, for securely holding a container, said cradle means comprising an elongate beam fixedly secured at its center and perpendicular to a front of the shaft, at least a pair of crossarms slidably mounted on the beam orthogonally thereto, said crossarms bearing on each a securing means for attaching straps thereto, whereby a centralized securement of an object in the cradle means and elevation thereof by the elevator means allows the object sufficient ground clearance to enable its pivotal inversion about its center of gravity in a plane orthogonal to the centerline axis; and
a turn linkage having a first end connected to said indexable rotation means and a second end connected to said base means.

5,393,191
VEHICLE ATTACHMENT FOR TRANSPORTING SNOWMOBILES
Gordon O. Alexander, Box 252, Shawville, Canada J0X 2Y0
Filed Aug. 13, 1993, Ser. No. 105,638
Int. Cl.[6] B60P *1/43*
U.S. Cl. 414—537 3 Claims



1. A snowmobile transporting attachment for the load compartment of a pick-up truck comprising:
(a) a lower support frame having longitudinal tracks fixed thereto, said lower support frame adapted to be mounted in the load compartment of a pick-up truck,
(b) an upper support frame having wheels mounted thereon, said upper support frame mounted on said lower support frame and adapted for longitudinal backward and forward movement thereon by means of said wheels and said longitudinal tracks said tracks including guide rails fixed above the wheels to prevent tiling of the upper frame on the lower frame,
(c) a snowmobile carrying platform pivotally mounted on said upper support frame, said pivotal mounting comprising a central pivot connecting the platform to the upper support frame, a circular track formed of a square tubular member fixed to the bottom of said platform and a plurality of rollers mounted on said upper support frame and engaging a face of said square tubular circular track and
(d) detachable ramp means for connecting to either a front end or a rear end of said platform,
whereby the upper support frame and platform can be moved forward and backward while mounted in a truck and said platform can also be rotated relative to the upper support frame such that a snowmobile can be both loaded and unloaded via the ramp without moving the snowmobile in reverse.

5,393,192
UNDERFLOOR EXTENDIBLE RAMP FOR VEHICLES
John C. Hall, Hayward, Calif., and Paul F. Risner, Carey, Ohio, assignors to REB Manufacturing Co., Inc., Carey, Ohio
Filed Oct. 1, 1993, Ser. No. 136,655
Int. Cl.[6] B60P *1/00*
U.S. Cl. 414—537 14 Claims

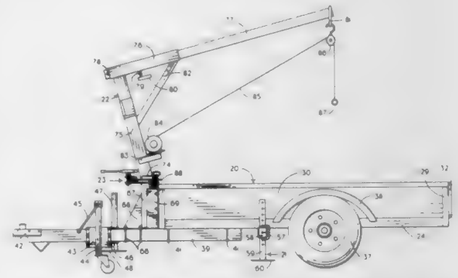


1. In a vehicle having an underfloor extendible ramp, a pair of parallel ramp supporting rails, and a reversible first motor means for moving said ramp, the improvement comprising:
A) a driving panel guided in said rails and having an extension pivotally connected to said ramp,
B) parallel belts driven by said first motor means and connected to said driving panel for extending and retracting said ramp, and
C) a reversible second motor means mounted on said driving panel and connected to said ramp for tilting said ramp when said ramp is fully extended.

5,393,193
VEHICLE FOR TRANSPORT AND PLACEMENT OF GRAVE HEADSTONES
Stuart A. Dagg, 4422 N. "C" St., Spokane, Wash. 99205
Continuation-in-part of Ser. No. 885,145, May 18, 1992, abandoned. This application Oct. 22, 1993, Ser. No. 141,263
Int. Cl.[6] B60P *1/54*
U.S. Cl. 414—540 3 Claims

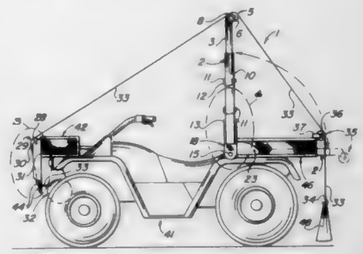
3. In a trailer type vehicle for loading, transporting and placement of heavy objects by a single workman, of the type having a frame supporting a bed with upstanding sides, opposed wheels for locomotion and a tongue structure, the improvement comprising in combination:
an outrigger structure having a support beam carried by the trailer frame to extend laterally therefrom and slidably carry for adjustable extension therefrom an outrigger beam having an adjustably depending foot structure,

a rotatable crane having a mast rotatably journaled in crane mast support structure carried by the trailer and supporting an outwardly extending boom and a hoist with cable operatively depending from the outer end of the boom, and
braking structure communicating between the crane mast and the trailer frame to adjustably regulate torque required to rotate the crane in the crane support structure, said braking structure comprising
an annular brake rotor irrotatably supported on the crane mast supported structure,



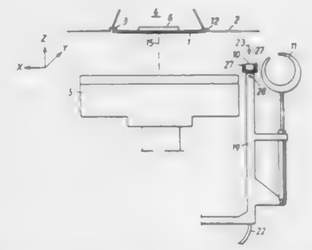
a brake mounting plate irrotatably supported by the trailer structure spacedly beneath the brake rotor, said brake mounting plate having at least one upstanding friction pad extending adjacent the brake rotor,
a brake caliper supported by the brake mounting plate for adjustable vertical positioning spacedly above the brake rotor and having at least one depending brake pad extending adjacent to the brake rotor, and
screw means communicating between the brake mounting plate and brake caliper to adjustably move the brake mounting plate and brake caliper into frictional contact with the brake rotor therebetween.

5,393,194
GAME HANDLING APPARATUS
John E. Smith, 1014 S. Fifth, Monroe, La. 71202
Filed Jun. 10, 1994, Ser. No. 259,913
Int. Cl.[6] B60P *20/13, 1/48*
U.S. Cl. 414—546 20 Claims



1. A game-handling apparatus for handling and loading game into an all-terrain vehicle having an open passenger area, a winch and winch cable, comprising roll bar means carried by the all-terrain vehicle for movement between a first position protecting said passenger area and a second position extending to the rear of said vehicle; and roll bar roller means rotatably carried by said roll bar means and vehicle roller means carried by the all-terrain vehicle, for receiving the winch cable and handling and loading the game responsive to extension of the winch cable around said vehicle roller means and said roll bar roller means, connecting the winch cable to the game and operating the winch.

5,393,195
METHOD AND ARRANGEMENT FOR AUTOMATICALLY REFUELING AUTOMOTIVE VEHICLES
Sten Corfitsen, Krokusvägen 17, S-181 31 Lidingö, Sweden
PCT No. PCT/SE91/00312, § 371 Date Oct. 30, 1992, § 102(e) Date Oct. 30, 1992, PCT Pub. No. WO91/17111, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 30, 1991, Ser. No. 940,862
Claims priority, application Sweden, May 2, 1990, 9001575-1
Int. Cl.[6] B25J *15/06*
U.S. Cl. 414—749 9 Claims



1. An arrangement having first and second opening devices for opening and closing a cover-plate on an automotive vehicle having an outer body panel and a refuelling pipe including a mouth, said plate lying in the line of the vehicle outer body panel and capable of being swung between an open and a closed position about a generally vertical or a generally horizontal hinge axis and covering the space in which the mouth of the vehicle refuelling pipe is located, comprising:
a first opening means positioned to abut and to releasably engage an outer surface of the cover-plate for opening the cover-plate slightly to a limited open position in a first opening stage;
a second opening means for insertion between the cover-plate and the outer body panel with the cover-plate in its limited open position, wherein said second opening means opens the cover-plate completely in a second opening stage by effecting a lateral movement of the cover-plate about its hinge axis with said second opening device in abutment with a rear side of said cover-plate;
positioning means for positioning the first and second opening means adjacent to the cover-plate; and
wherein the second opening means swings the cover-plate from its open to its closed position, by moving said second opening means laterally while in abutment with an outer surface of the cover-plate.

5,393,196
METHOD AND APPARATUS FOR STACKING OF ENVELOPES OR THE LIKE
Martin Bluemle, Horhausen, Germany, assignor to Winkler & Duennebier Maschinenfabrik und Eisengiesserei KG, Neuwied, Germany
PCT No. PCT/EP92/01097, § 371 Date Jan. 19, 1993, § 102(e) Date Jan. 19, 1993, PCT Pub. No. WO92/21599, PCT Pub. Date Dec. 10, 1992
PCT Filed May 19, 1992, Ser. No. 978,684
Claims priority, application Germany, May 28, 1991, 4117434
Int. Cl.[6] B65H *31/06*
U.S. Cl. 414—790.2 10 Claims

1. A method for forming, holding, separating, and transporting stacks (**10**, **10***a*; **11**, **11***a*) of articles (**3**, **3***a*) downstream of a depositing mechanism (**4**, **4***a*) which deposits continuously and individually arriving articles with an article edge (**6**, **6***a*) on a stacking surface (**7**, **7***a*) to form said stacks, said transporting taking place in a transport direction (a) from said depositing mechanism to a packing station (**14**), said stack having several

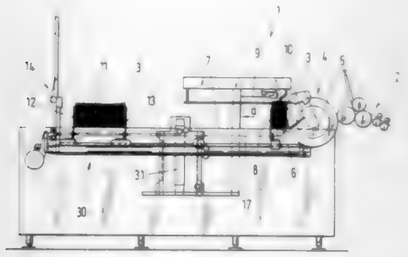
sides extending in parallel to said transport direction, said method comprising the following steps:

(a) first holding articles at the beginning of a stack formation by a first leading stack holder (**8**, **8***a*) which moves in said transport direction in which a stack size increases;

(b) second holding a partly formed stack by a second leading stack holder (**9**, **9***a*) which takes over said partly formed stack from said first leading stack holder (**8**, **8***a*) while said second leading stack holder (**9**, **9***a*) is also moving in said transport direction;

(c) engaging a leading end of a completed stack (**11**, **11***a*) by a third leading stack holder (**12**, **12***a*) and engaging a rear end of said completed stack by a rear fourth stack holder (**13**, **13***a*) for further transporting said completed stack (**11**, **11***a*) in said transport direction (a) toward said packing station (**14**);

(d) simultaneously with said engaging of the completed stack (**11**, **11***a*) by said third leading stack holder (**12**, **12***a*)



and by said rear fourth stack holder (**13**, **13***a*), separating said completed stack (**11**, **11***a*) from a next stack (**10**) being formed, by entering said first leading stack holder (**8**, **8***a*) and said rear fourth stack holder (**13**, **13***a*) between said completed stack (**11**, **11***a*) and said next stack (**10**, **10***a*);

(e) supporting said next stack by said first leading stack holder (**8**, **8***a*) and by said rear fourth stack holder (**13**, **13***a*);

(f) moving any three stack holders (**8**, **8***a*; **12**, **12***a*; **13**, **13***a*) of said four stack holders crosswise to said transport direction (a) from one stack side of said several sides of said stack and also moving said any three stack holders alongside said transport direction for said transporting of a stack; and

(g) moving any one stack holder (**9**, **9***a*) of said four stack holders crosswise to said transport direction from another stack side and also moving said any one stack holder (**9**, **9***a*) temporarily in said transport direction and then opposite said transport direction back to a starting position.

5,393,197

PROPULSIVE THRUST RING SYSTEM

Harold E. Lemont, Seymour, and Andrew I. Lemont, Derby, both of Conn., assignors to Lemont Aircraft Corporation, Ansonia, Conn.

Filed Nov. 9, 1993, Ser. No. 149,456
Int. Cl.[6] **F04D** *19/02, 29/54*
U.S. Cl. 415—68 **27 Claims**

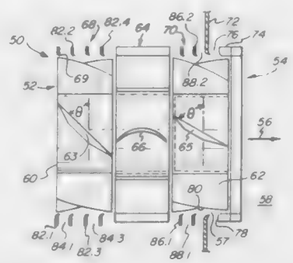
1. An apparatus for moving fluid through an opening in an enclosure, wherein the enclosure has a wall to which the apparatus is mounted, comprising:

a motor;

a propeller mounted in the opening and being coupled to the motor for rotation thereby about an axis to move fluid downstream through the opening in the wall;

a multiple ring cage structure formed of a plurality of rings and placed to surround the propeller within its axial span, said rings being so sized and so spaced from each other and from the propeller as to enable fluid tip vortices from the propeller to be converted to useful fluid flow;

selected rings being mounted to one side of the wall with at least one of said rings being mounted on the other opposite side of the wall around the opening, said one ring being so spaced from the wall so as to redirect upstream directed fluid flow attributable to a back pressure on the other side



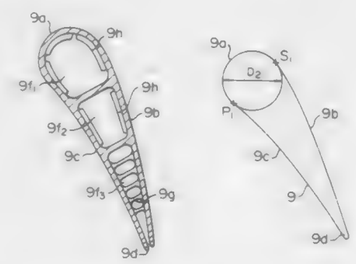
of the wall, into useful fluid flow, whereby a fluid seal effect is obtained between the propeller and the wall to reduce seepage of downstream fluid flow back through the opening.

5,393,198

GAS TURBINE AND GAS TURBINE BLADE

Masami Noda; Takashi Ikeguchi; Shunichi Anzai, all of Hitachi; Kazuhiko Kawaike, Katsuta, and Isao Takehara, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 14, 1993, Ser. No. 120,474
Claims priority, application Japan, Sep. 18, 1992, 4-249933
Int. Cl.[6] **F01D** *5/18, 9/02*
U.S. Cl. 415—115 **9 Claims**



1. A blade for a gas turbine comprising:

a leading edge portion, a suction side portion, a pressure side portion and a trailing edge portion, and having a blade shape defined by outer surfaces of the leading edge, suction side, pressure side and trailing edge portions;

wherein a thickness of said blade first increases progressively from an end of the leading edge portion in the direction of a central portion of said blade, and then decreases progressively in the direction of the trailing edge portion; and said blade further has a cavity portion therein allowing a cooling medium to be passed therethrough to cool said blade from its inside;

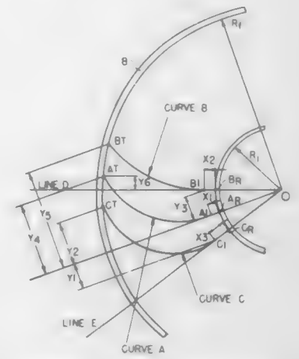
wherein the leading edge portion of said blade has an arc-shaped cross-section having first and second endpoints, and wherein the first endpoint of the arc of the leading edge portion where the arc is connected with the suction side portion is located downstream of a virtual straight line extending, through a center of a circle defining the arc, from the second endpoint of the arc where the arc is connected with the pressure side portion.

5,393,199

FAN HAVING A BLADE STRUCTURE FOR REDUCING NOISE

Ahmad Alizadeh, Indianapolis, Ind., assignor to Valeo Thermique Moteur, Le Mesnil-Saint Denis, France

Filed Jul. 22, 1992, Ser. No. 921,029
Int. Cl.[6] **F04D** *29/38*
U.S. Cl. 416—189 **26 Claims**



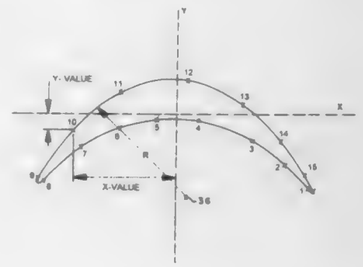
1. A fan comprising a hub rotatable about an axis at the centre of the fan and plurality of blades each having a root region secured to the hub and extending radially outwardly to a tip region, wherein each blade has leading and trailing edges which each include a portion substantially colinear with a respective radius extending from the centre of the fan, wherein each blade has a chord width at the root region, the chord being taken across an arc defined by the radius of the hub and the contact points of the leading and trailing edges with the hub, which is not greater than the chord width at the tip region, the chord at the tip being taken across an arc defined by the radius of the fan and the contact points of the leading and trailing edges with said tip arc.

5,393,200

BUCKET FOR THE LAST STAGE OF TURBINE

Cuong V. Dinh, Schenectady; Stephen G. Ruggles, Scotia, and James H. Vogan, Schenectady, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Apr. 4, 1994, Ser. No. 222,786
Int. Cl.[6] **F01D** *5/12, 5/22*
U.S. Cl. 416—223 A **9 Claims**



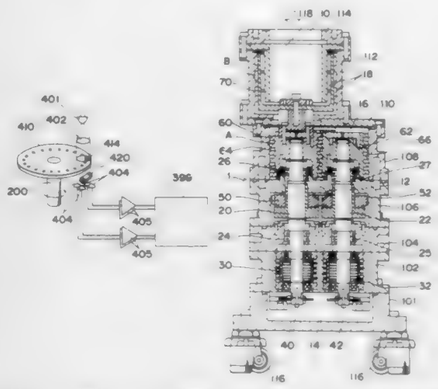
1. A bucket for a steam turbine having a profile in accordance with Charts **2**–**12**, **14**–**22** and **24**, inclusive, as set forth in the specification.

5,393,201

SYNCHRONOUS ROTATING APPARATUS FOR ROTATING A PLURALITY OF SHAFTS

Norio Okutani, Neyagawa, and Teruo Maruyama, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 1, 1993, Ser. No. 11,901
Claims priority, application Japan, Jan. 31, 1992, 4-016045
Int. Cl.[6] **F04D** *19/04;* **F04B** *49/06*
U.S. Cl. 417—16 **10 Claims**



1. A synchronous rotating apparatus for synchronously rotating a plurality of rotary shafts independently driven by corresponding driving devices, comprising:

a mechanical regulating member, arranged on the plurality of rotary shafts, for maintaining relative rotating positions of the plurality of rotary shafts at a predetermined angular difference;

a rotation velocity and phase-detecting member, arranged on each rotary shaft, for detecting rotation velocities of the rotary shafts and phases within a regulated angular difference of the mechanical regulating member; and

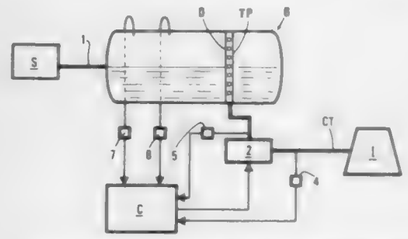
a driving control device for controlling the driving devices of the rotary shafts to synchronously rotate the rotary shafts based on a phase difference detected by the rotation velocity and phase-detecting member.

5,393,202

PROCESS AND DEVICE FOR OPTIMIZING THE TRANSFER BY PUMPING OF MULTIPHASE EFFLUENTS

Emile Levallois, Courbevoie, France, assignor to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Dec. 28, 1992, Ser. No. 998,264
Claims priority, application France, Dec. 27, 1991, 91 16230; May 5, 1992, 92 05617
Int. Cl.[6] **F04B** *49/06*
U.S. Cl. 417—19 **14 Claims**



1. A device for optimizing the transfer of effluents compris-

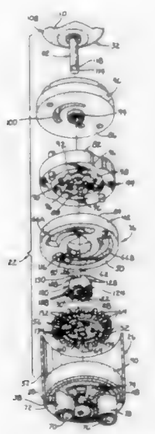
ing at least one gas phase and at least one liquid phase by pumping, which device comprises, in combination, means for determining the volumetric ratio at the suction inlet of the pump (GLRa), means for measuring the inlet pressure (Pa) at the inlet of the multiphase pump, means for measuring the delivery pressure (Pref) of the pump, and a programmed processing unit (C) for storing values of GLRa, Pa and Pref and parameter values determined from the start of the transfer, and calculating a new value of the rotating speed (N) of the pump so as to adapt the flow rate of the pump to the variations of at least one of the following three parameters: the effluents flow rate, the value of the volumetric ratio (GLRa), or pressure drops downstream from the pump.

5,393,203

FUEL PUMP FOR MOTOR VEHICLE

Edward A. Hantle, Caro, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1993, Ser. No. 169,122
Int. Cl.[6] F04B *23/14*
U.S. Cl. 417—203 5 Claims



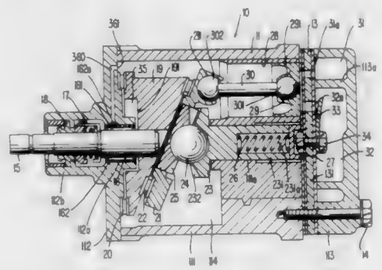
1. In a motor vehicle fuel pump including
a tubular shell
an electric motor in said Shell having an armature shaft rotatable about a centerline of said shell,
a first pump means in said shell at an inlet end thereof having a first rotatable element therein, and
a second pump means in said shell having a second rotatable element therein between said first rotatable element and said electric motor,
the combination comprising:
means defining a driver chamber between said first and said second rotatable elements,
a barrel-shaped driver in said driver chamber having a first edge facing said first rotatable element and a second edge facing said second rotatable element,
means defining a plurality of drive sockets in said first rotatable element each having a side extending generally radially relative to said centerline of said shell,
means defining a plurality of first drive lugs on said first circular edge of said driver extending into corresponding ones of said drive sockets in said first rotatable element,
means defining a plurality of drive sockets in said second rotatable element each having a side extending generally radially relative to said centerline of said shell,
means defining a plurality of second drive lugs on said second circular edge of said driver extending into corresponding ones of said drive sockets in said second rotatable element,
means on each of said first plurality of drive lugs and on said second plurality of drive lugs defining a drive edge parallel to said centerline of said shell and engageable on said side of the corresponding one of said drive sockets when said driver rotates in a first direction about said centerline of said shell, and
means connecting said driver to said armature shaft for rotation as a unit therewith in said first direction about said centerline of said shell.

5,393,204

WOBBLE PLATE TYPE REFRIGERANT COMPRESSOR

Takayuki Kawahara, Saitama, Japan, assignor to Sanden Corporation, Isesaki, Japan

Filed Jan. 29, 1993, Ser. No. 11,150
Claims priority, application Japan, Jan. 29, 1992, 4-002773[U]
Int. Cl.[6] F04B *1/12*
U.S. Cl. 417—269 21 Claims



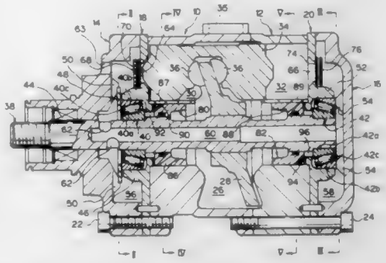
1. A wobble plate type compressor comprising:
a compressor housing including a cylinder block, a front end plate and a cylinder head, said cylinder block having a plurality of cylinders in which a plurality of pistons are slidably disposed, said front end plate having an opening formed therein, said compressor housing forming a suction chamber, a discharge chamber and a crank chamber;
a drive mechanism including a drive shaft and a rotor mounted on said drive shaft for rotation therewith, said drive shaft extending at least partially into said compressor housing through the opening in said front end plate and said rotor rotatably disposed in said crank chamber against said front end plate;
a wobble plate operationally driven by said rotor;
coupling means for operationally coupling said wobble plate to said pistons such that the rotation of said rotor causes said wobble plate to reciprocate said pistons in said cylinders;
bearing means for rotatably supporting said drive shaft in the opening in said front end plate; and
a communication path having at least two ends wherein a first end of said communication path opens directly into said bearing means and a second end of said communication path opens into said crank chamber radially outside said rotor, said first end of said communication path directing substantially all of the lubricating oil exiting therefrom directly to said bearing means.

5,393,205

AXIAL MULTI-PISTON COMPRESSOR HAVING ROTARY SUCTION VALVE

Toshiro Fujii; Hiromi Kitayama, and Kazuaki Iwama, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Aug. 6, 1993, Ser. No. 103,884
Claims priority, application Japan, Aug. 7, 1992, 4-211167
Int. Cl.[6] F04B *1/12*
U.S. Cl. 417—269 6 Claims



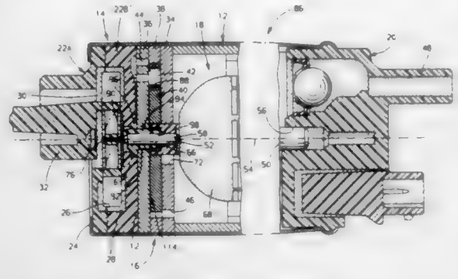
1. An axial multi-piston compressor comprising:
a drive shaft;
a cylinder block having a central axial bore through which said drive shaft is extended, and cylinder bores radially formed therein surrounding said drive shaft;
a plurality of pistons slidably received in the cylinder bores of said cylinder block, respectively;
a conversion means for converting a rotational movement of said drive shaft into a reciprocation of each piston in the corresponding cylinder bore such that a suction stroke and a compression stroke are alternately executed therein, a gas being introduced into each of the cylinder bores during the suction stroke thereof, and then the introduced gas being compressed and discharged from said cylinder bore during the compression stroke thereof;
a rotary suction valve means mounted on said drive shaft and received hermetically in the central axial bore of said cylinder block for allowing the introduction of the gas into each of the cylinder bores during the suction stroke thereof, said rotary suction valve means having a suction passage formed therein and opened on a periphery thereof, each of the cylinder bores having a suction port formed in an inner wall defining the central axial bore of the cylinder block, the suction ports of the cylinder bores being arranged along a circle described by the opening of said suction passage during a rotation of said rotary suction valve means; and
a discharge valve means associated with a discharge port positioned at an end face of each of the cylinder bores for allowing the discharge of the compressed gas from said cylinder bore into a discharge chamber during the compression stroke thereof, each of said suction ports being disposed in the vicinity of the discharge port of the corresponding cylinder bore, the suction passage of said rotary suction valve means being arranged such that the introduction of the fluid into the cylinder bore concerned is carried out just after the suction stroke is initiated therein, and is continued until the suction stroke is finished, whereby an operational performance of the compressor can be enhanced,
wherein said rotary suction valve means has a small passage formed therein, and said small passage is disposed such that a part of the gas compressed in the cylinder bore concerned is discharged from said cylinder bore into said discharge chamber over a part of an ending period of-the compression stroke, whereby said rotary suction valve means can be lubricated.

5,393,206

FUEL PUMP FOR A MOTOR VEHICLE

Robert A. Roth, Grand Blanc, and John G. Fischer, Goodrich, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 29, 1994, Ser. No. 265,252
Int. Cl.[6] F04B *39/00*
U.S. Cl. 417—313 3 Claims



1. A motor vehicle fuel pump comprising:
a tubular housing having a longitudinal centerline;
an electric motor in said tubular housing including an armature shaft having a cylindrical pump end;
a roller vane positive displacement pump in said tubular housing including
a flat inner side plate nearest to said electric motor having an access opening therein surrounding said pump end of said armature shaft,
a flat outer side plate furthest from said electric motor having a plain bore therein surrounding said pump end of said armature shaft and separated therefrom by a first annular clearance, and
a rotor between said inner and said outer side plates having a centerbore therein around said pump end of said armature shaft separated therefrom by a second annular clearance; and
a T-shaped sleeve bearing supporting said pump end of said armature shaft on said outer side plate for rotation about said longitudinal centerline of said tubular housing including
a tubular body having a shaft bore therethrough defining a bearing for said pump end of said armature shaft,
a stepped outer wall on said tubular body including a large diameter part in said first annular clearance force fitted in said plain bore, and
a small diameter part in said second annular clearance spanning the thickness of said rotor so that said rotor is supported on said outer side plate for rotation about said longitudinal centerline of said tubular housing, and
a lip on said tubular body at an end of said large diameter part of said outer wall thereof having a side defining an annular seat in a plane perpendicular to said tubular body engaged flush against an outside surface of said outer side plate.

5,393,207

BLOOD PUMP WITH DISPOSABLE ROTOR ASSEMBLY

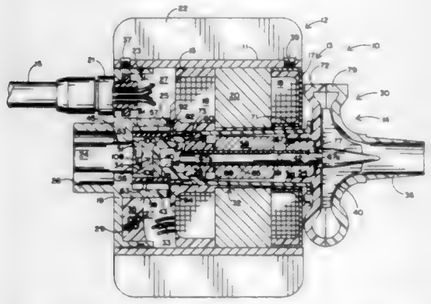
Timothy R. Maher, Orangevale; Pieter W. C. J. le Blanc, Pollock Pines, and Lynn P. Taylor, Camino, all of Calif., assignors to Nimbus, Inc., Rancho Cordova, Calif.

Filed Jan. 21, 1993, Ser. No. 6,735
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—423.7 9 Claims

1. A blood pump, comprising:
a) a reusable motor stator assembly including a motor stator defining a substantially cylindrical cavity;
b) a disposable pump assembly including:

i) a substantially cylindrical barrel adapted to be inserted in and withdrawn from said cavity;

ii) motor rotor means disposed in said barrel for rotation with respect thereto, said motor rotor means being so positioned in said barrel as to cooperate with said motor stator to form an electric motor when said barrel is inserted into said cavity;



iii) a centrifugal blood pump including an impeller, said impeller being directly connected to said motor rotor for rotation therewith; and

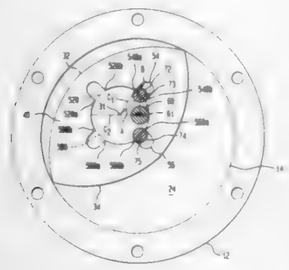
iv) releasable locking means operable to releasably lock said barrel in engagement with said cavity without rotation of said barrel.

5,393,208

TWO-LOBE ROTOR ROTARY MACHINE

Joaseph A. Sbarounis, 3061 Tree Chop Rd., Norfolk, Va. 23513

Filed May 31, 1994, Ser. No. 250,917
Int. Cl.[6] F01C *1/02*
U.S. Cl. 418—54 17 Claims



1. A rotary machine comprising:

a housing with spaced apart end walls for defining a chamber;

a two-lobe lenticular rotor assembly having curved faces meeting at symmetrically opposed apices, said rotor assembly having two parallel end faces extending between said curved faces, each of said parallel end faces facing one of said end walls, said rotor assembly disposed in said chamber for eccentric rotation therein, said rotor assembly having a hole passing through a central portion thereof through said parallel end faces, said rotor assembly further having four slots in one of said parallel end faces arranged symmetrically about a center of said rotor assembly, each of said slots having two edges defining an open end continuous with said hole, each of said slots extending radially outward from said hole;

a rotor guide assembly extending from one of said end walls, said rotor guide assembly including first and second guide posts, each of said first and second guide posts being cylindrical in shape over at least a substantial portion thereof, each of said first and second guide posts having a radius R over said substantial portion, each of said first and second guide posts extending in parallel fashion toward said one of said parallel end faces having said slots, said first and second guide posts engaging said slots during said eccentric rotation of said rotor assembly, each of said first and second guide posts having a center longitudinal axis;

a shaft having a center longitudinal axis, said shaft extending through said hole with said center longitudinal axis of said shaft being offset from said center of said rotor assembly by an offset distance OD, said shaft extending through said chamber and rotatably mounted in each of said end walls, said shaft further being centered between said first and second guide posts, such that said center longitudinal axis of said shaft and each of said center longitudinal axes of said first and second guide posts are in coplanar alignment, and a distance from said center longitudinal axis of said shaft to each of said center longitudinal axes of said first and second guide posts being equal to said offset distance OD, said shaft including at least one eccentric bearing for forming driving contact between said shaft and said rotor assembly; and

said hole being sized so that a distance between said center of said rotor assembly to each of said two edges for each of said open ends of said slots is equal to

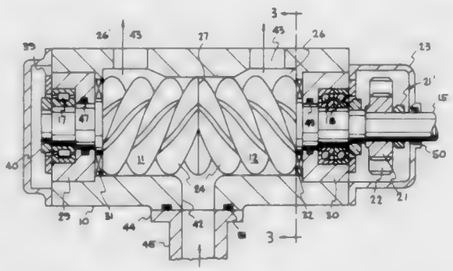
$$\sqrt{2\,(OD)^2 + R^2}\,.$$

5,393,209

DOUBLE-ENDED CERAMIC HELICAL-ROTOR EXPANDER

Peter B. Mohr, and Wendell B. Myers, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 29, 1993, Ser. No. 38,421
Int. Cl.[6] F01C *1/24*
U.S. Cl. 418—202 22 Claims



1. A helical rotor apparatus comprising:

a casing including a body section and end sections, at least entire body section being constructed of reaction bonded silicon nitride;

a first pair of rotors interconnected at inner ends thereof and having helical lobes thereon, said lobes on one of said rotors interconnecting at a point with lobes on another of said rotors, said lobes on each of said rotors extending at an angle from said interconnecting point thereof;

a second pair of rotors interconnected at inner ends thereof and having helical grooves thereon, said grooves on one of said rotors interconnecting at a point with grooves on another of said rotors, said grooves extending at an angle from said interconnecting point thereof;

said lobes of said first pair of rotors being constructed to extend into said grooves of said second pair of rotors;

said first pair of interconnected rotors being secured to a first shaft means;

said second pair of interconnected rotors being secured to a second shaft means;

a first pair of bearing assemblies;

a second pair of bearing assemblies;

said first shaft means being mounted in said end sections of said casing via said first pair of bearing assemblies;

said second shaft means being mounted in said end sections of said casing via said second pair of bearing assemblies;

said bearing assemblies each being located adjacent outer ends of said interconnected rotors;

said first shaft means and said second shaft means being interconnected by gears, and one of said shaft means being adapted to be connected to an associated mechanism; and

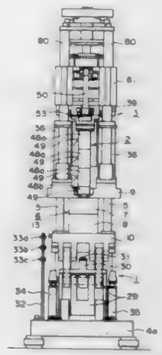
said body section of said casing being provided with at least one intake opening and a plurality of exhaust openings, said intake opening being located in alignment with said inner ends of each pair of interconnected rotors and with said interconnecting points of said lobes and grooves on said rotors defining an intake zone, said exhaust openings being located adjacent said outer ends of said interconnected rotors.

5,393,210

MOTOR-DRIVEN VERTICAL TYPE INJECTION MOLDING APPARATUS

Shozo Kasai, Kawasaki; Yozo Tohbo, Yokohama; Norio Nikaido, Tsuchiura, and Hirofumi Sugawara, Chichibu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 951,756, Sep. 28, 1992, abandoned. This application Jul. 5, 1994, Ser. No. 270,804
Claims priority, application Japan, Sep. 30, 1991, 3-252397
Int. Cl.[6] B29C *45/77*
U.S. Cl. 425—145 6 Claims



1. A vertical injection molding apparatus, comprising:

a heating barrel for heating resin material to be injected, said heating barrel being connected to a fixed platen for supporting a stationary die;

a screw, disposed within said heating barrel, for injecting molten resin material into a mold cavity;

a screw holding member for rotatably holding said screw, said screw holding member and said screw having a combined weight so as to exert back pressure to the resin material in said heating barrel while moving together in a rectilinear direction;

measurement means for measuring the amount of said molten resin material in said heating barrel by operating said screw;

a guide frame for guiding up and down movement of said screw holding member;

means for coupling said measurement means to said screw; and

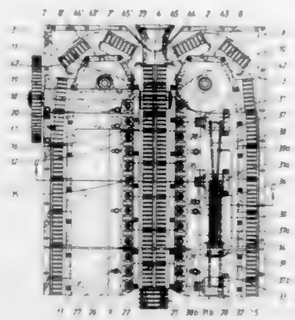
injection means for generating a driving force on said screw, said injection means comprising a motor for injection and means connected to said screw holding member for converting rotation of said motor into rectilinear movement of said screw holding member.

5,393,211

APPARATUS FOR THE MANUFACTURE OF A PLASTIC PIPE HAVING TRANSVERSE PROFILE FEATURES

Ralph-Peter Hegler, Bad Kissingen, and Wilhelm Hegler, Goethestrasse 2, D-8730 Bad Kissingen, both of Germany, assignors to Wilhelm Hegler, Bad Kissingen, Germany

Filed Jul. 22, 1993, Ser. No. 96,474
Claims priority, application Germany, Jul. 24, 1992, 4224514
Int. Cl.[6] B29C *33/24, 53/30;* B29D *23/18*
U.S. Cl. 425—149 5 Claims



1. An apparatus for the molding from a plastic tube (**23***a*), a plastic pipe having transverse profile features, in particular ribs (**22**), comprising

a machine bed (**1**) defining a horizontal plane,

a first guide device (**13**) and a second guide device (**14**) arranged parallel to each other and to the horizontal plane and to a direction (**4**) of production, at least one of said first and said second guide device being displaceably guided in a direction (**28**) of displacement, which direction (**28**) of displacement is perpendicular to said direction (**4**) of production and parallel to the horizontal plane,

pressure devices connected to said at least one of said first and second guide device and acting upon said at least one of said first and second guide device in the direction (**28**) of displacement,

a molding path (**9**) defined between said first and said second guide device (**13**, **14**), said molding path (**9**) having a first end and a second end,

half shells (**2**, **2'**) arranged on the machine bed (**1**) in a first continuous series and a second continuous series, said second continuous series being arranged in mirror symmetry to said first continuous series with respect to the molding path (**9**) and the half shells (**2**, **2'**) arranged in the molding path (**9**) in the form of pairs, each pair consisting of one half shell (**2**) of said first continuous series and one half shell (**2'**) of said second continuous series and several of such pairs arranged one behind another in said molding path (**9**) between said first and said second guide device (**13**, **14**) and defining a molding chamber (**24**) for molding the plastic pipe and said half shells of one pair of half shells being pressed together by said guide devices,

a drive arranged adjacent to said first end of said molding path (**9**) being in driving engagement with one pair of half shells (**2**, **2'**) to push said half shells (**2**, **2'**) from said first end to said second end of said molding path (**9**),

means for guiding the half shells (**2**, **2'**) outside of said molding path (**9**) from said second end to said first end of the molding path (**9**), wherein the pressure devices are hydraulically actuatable piston-cylinder drives (**31**, **31***a*, **31***b*),

connected by hydraulic lines (**37**, **38**, **37***a*, **37***b*, **38***a*) to a control valve (**39**), and

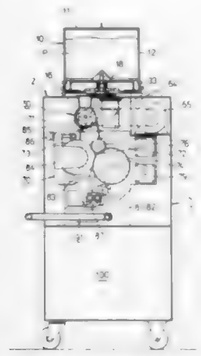
wherein control means are provided which upon overpressure in the molding chamber (**24**) trigger the control valve (**39**) to move said at least one of said guide devices (**14**) in the direction (**28**) of the displacement away from the molding path (**9**).

5,393,212

NOODLE MAKING MACHINE WITH A PLURALITY OF INTERCHANGEABLE FEED UNITS

Kazuhiko Takano, Kounosu, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 26, 1993, Ser. No. 53,151
Claims priority, application Japan, Apr. 30, 1992, 4-137733
Int. Cl.[6] **A21C** *01/06, 03/02, 03/10*
U.S. Cl. 425—186 **6 Claims**



1. A noodle making machine comprising:

a housing,

a quantitative flour feeding unit removably mounted on the housing comprising:

a hopper,

a rotational driving mechanism for stirring the flour stored in the hopper,

a support platform on which said hopper and said rotational driving mechanism are mounted,

position determining means for removably mounting said flour feeding unit on said housing including a V-shaped guide groove formed on said support platform and a locating pin projecting from said housing to fit in said guide groove;

a flour kneading unit including a mixer for preparing a noodle base by kneading the flour fed from said quantitative flour feeding unit with a liquid,

a noodle base rolling unit for rolling the noodle base to prepare a noodle band, and

a noodle band cutting unit including an opposing pair of cutting rollers for cutting the noodle band into a plurality of ribbon-shaped noodles.

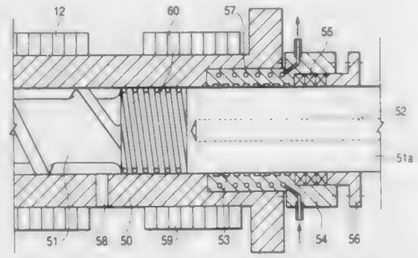
5,393,213

SERIAL TWO-STAGE EXTRUDER

Yoshinori Murata; Yukio Goto; Yukio Tamura, and Ryoji Mouri, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 24,311, Mar. 1, 1993. This application Nov. 1, 1993, Ser. No. 144,041
Claims priority, application Japan, Feb. 28, 1992, 4-75791; Sep. 11, 1992, 4-267781; Feb. 27, 1993, 4-75565
Int. Cl.[6] **B29C** *47/00*
U.S. Cl. 425—205 **2 Claims**

1. A serial two-stage extruder comprising: a first stage extruder having an outlet; and a second stage extruder including a molten resin feed port connected to the outlet of the first stage extruder so as to receive material extruded from the first stage extruder, a screw having a base portion at an upstream end thereof with respect to the direction in which material is extruded by the second stage extruder, a cylinder in which the screw is disposed, a viscoseal sleeve interposed between the base portion of said screw and said cylinder, multiple-start



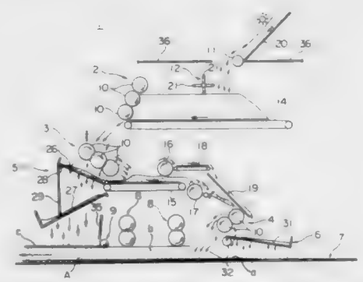
square threads on the inner circumferential surface of said viscoseal sleeve, a cooling jacket defined within the viscoseal sleeve such that the sleeve can be controllably cooled, multiple-start square threads defined on the outer circumferential surface of said screw between said molten resin feed port and the base portion of said screw, and a cooling bore extending in the base portion of said screw.

5,393,214

APPARATUS FOR MANUFACTURING A FIBER REINFORCED INORGANIC HARDENED BODY

Shoichiro Irie; Motonobu Abe, and Norihito Akiyama, all of Yokohama, Japan, assignors to Ask Corporation and Sanshin Thermal Insulation Co., Ltd., both of Yokohama, Japan

Filed Dec. 15, 1992, Ser. No. 990,521
Claims priority, application Japan, Jul. 3, 1992, 4-176828
Int. Cl.[6] **B29C** *39/20*
U.S. Cl. 425—81.1 **8 Claims**



1. An apparatus for manufacturing a fiber reinforced inorganic hardened body, the apparatus comprising:

a plurality of pin-type roll sets disposed in a plurality of stages, each of the pin-type roll sets comprising a plurality of pin-type rolls, the pin-type rolls in any given one of said pin-type roll sets being rotated in the same direction for supplying a raw material consisting of a mixture of reinforcing fiber, water-hardening inorganic binder and water onto a movable flat-shaped forming conveyor to form the raw material into a mat form on said movable flat-shaped forming conveyor;

wherein:

said plurality of pin-type roll sets are disposed in three stages;

a first set of said pin-type roll sets is disposed on an upper stage having a first raw material supply means for uniformly supplying the raw material along a width of the first set of said pin,type roll sets;

a second set of said pin-type roll sets is disposed so that the raw material passed through a lower side of the first set of the pin-type roll sets is supplied directly thereon;

a separating means is provided below the second set of the pin-type roll sets to separate short fine fibers separated from the raw material consisting mainly of fine fiber which has fallen through the second set of the pin-type roll sets to be used for forming an upper layer of fine fiber;

a second raw material supply means for supplying the raw material passed through an upper side of the second set of pin-type roll sets onto a third set of said pin-type roll sets is provided at the opposite side of and in a lower position than the second set of the pin-type roll sets; and

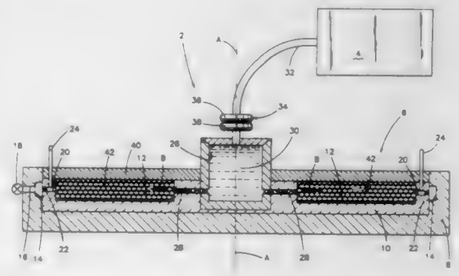
a second separating means is provided below the third set of the pin-type roll sets to separate more of the short fine fiber separated from the raw material consisting mainly of the fine fiber which has fallen through the third set of the pin-type roll sets for forming a lower layer of fine fiber on said movable flat-shaped forming conveyor for receiving the raw material to be formed into a mat form.

5,393,215

CENTRIFUGAL RESIN TRANSFER MOLDING

Thomas P. Donovan, Sr., West Haven, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 30, 1992, Ser. No. 998,095
Int. Cl.[6] **B29C** *45/02, 45/04, 45/14*
U.S. Cl. 425—129.1 **7 Claims**



1. Apparatus for centrifugal resin transfer molding of resin/-fiber composite parts, said apparatus comprising:

a) a centrifugal molding assembly which is rotatable about a vertical axis;

b) a resin plenum disposed centrally on said molding assembly, said resin plenum having an axis of symmetry which conforms to said vertical axis;

c) means forming at least one mold cavity radially outwardly of said resin plenum;

d) at least one radial passage extending from said plenum to said mold cavity, said passage being operable to transfer resin from said plenum to said cavity when said molding assembly is rotated about said vertical axis;

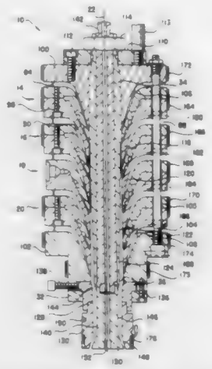
e) means for pressurizing resin in said plenum,, said means for pressurizing comprising a piston mounted in said plenum and closing an upper end thereof; and centrifugally operated pressure-generating means mounted on said plenum and connected to said piston, said pressure-generating means being operable through centrifugal force to drive said piston toward a lower end of said plenum to pressurize resin in said plenum to provide an auxiliary force for transferring resin from said plenum to said cavity; wherein planar fiber preforms are disposed in said cavity and oriented so that resin flowing into said cavity will fill said cavity while flowing in an in-plane direction relative to said fiber preforms.

5,393,216

MODULAR TUBULAR EXTRUSION HEAD AND A PROCESS FOR EXTRUDING TUBULAR ARTICLES

Erich O. Teutsch, Pittsfield, Mass., and Dennis J. Coyle, Clifton Park, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 535,452, Sep. 20, 1990, Pat. No. 5,069,612. This application Nov. 25, 1991, Ser. No. 797,021
The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.
Int. Cl.[6] **B29C** *47/06, 47/12*
U.S. Cl. 425—133.1 **4 Claims**



1. A polymer material extrusion head for extruding containers comprising:

one or more annular extrusion modules disposed along a longitudinal axis of the module or modules;

means for holding the annular extrusion module or modules along the axis, each extrusion module or modules having a pair of mating coaxial annular members, and means securing the pair of mating annular members together;

the pair of mating annular members defining a resin inlet on the periphery of the module, a coaxial bore having an inner cylindrical surface, an annular extrusion outlet opening into the cylindrical surface;

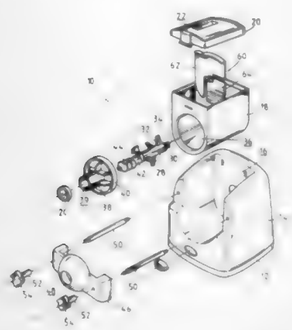
each pair of mating annular members having channel members for receiving and distributing resin from the inlet to the annular extrusion outlet and defining a flow path for the polymer to flow from the inlet to the annular extrusion outlet through which the polymer is extruded in annular form, said channel means extending symmetrically around the longitudinal axis of said extrusion module or modules;

the pair of mating members having inner and outer nested frustoconical portion, respectively, with the annular extrusion outlet defined by an annular frustoconical space between the frustoconical portions; and

the inner frustoconical portion having an outside surface with a greater angle from the axis than the angle of an inside surface of the other frustoconical portion, said angles being selected so as to provide a slightly reduced cross-sectional area at the exit of the annular frustoconical space as compared to the entrance thereto;

the channel means includes one or more spiral paths extending completely around the inner frustoconical portion and gradually opening into the annular frustoconical space between the frustoconical portions to distribute the resin around the inner frustoconical portion and into the annular extrusion outlet.

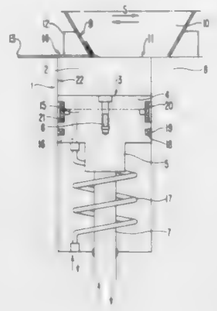
5,393,217
NOODLE FORMING DEVICE
Chun-Pin Cheng, No. 69, Alley 71, Lane 252, Sec. 2, Chieh Shou Road, Pa Te Hsiang, Taoyuan Hsien, Taiwan, Prov. of China
Filed Oct. 25, 1993, Ser. No. 142,804
Int. Cl.[6] A21C *3/04*
U.S. Cl. 425—185 2 Claims



1. A noodle forming device comprising a housing defining a recess into which a mixing chamber is fit for receiving therein dough ingredients to be mixed to form a dough, an extruding chamber being in connection with said mixing chamber to allow the dough to be expelled therein, an extruding die mounted on a front opening of said extruding chamber to allow the dough that enters said extruding chamber to be extruded out of said noodle forming device through a plurality of holes thereof, a mixing shaft being disposed within said mixing chamber to be rotatable about a rotational axis thereof with a front end thereof extending into said extruding chamber, mixing blades being fixed on said mixing shaft so that when said mixing shaft rotates, said blades stir and mix the dough ingredients to form the dough, an extruding screw being formed on the front end of said mixing shaft and extending along the rotational axis to enter said extruding chamber so as to be rotatable in unison with said mixing shaft, a partition plate being removably disposed within said mixing chamber at such a location to separate said mixing chamber from said extruding chamber, a hole being formed on said partition plate to allow said mixing shaft to extend therethrough and rotate therein.

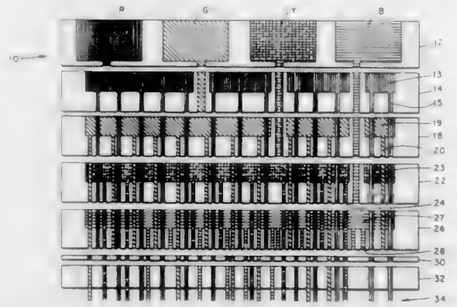
5,393,218
MEASURING DEVICE FOR A DOUGH DIVIDER
Lodewijk C. Rijkaart, Kijftenbeltlaan 29, 3871 BK Hoevelaken, Netherlands
PCT No. PCT/NL91/00199, § 371 Date Jun. 8, 1993, § 102(e) Date Jun. 8, 1993, PCT Pub. No. WO93/02560, PCT Pub. Date Feb. 18, 1993
PCT Filed Oct. 14, 1991, Ser. No. 70,303
Claims priority, application Netherlands, Aug. 8, 1991, 9101360
Int. Cl.[6] A21C *5/02*
U.S. Cl. 425—238 15 Claims

1. Device for measuring dough, comprising:
a) a funnel-shaped container filled with dough and horizontally moveable over a measuring device, the measuring device including:
b) a cylindrical measuring chamber below the container,
c) a piston having an upper part and a lower part movable up and down in the measuring chamber;
d) an annular recess in the sidewall of the piston, the height of the recess extending between the upper part and lower part of an interface thereof;



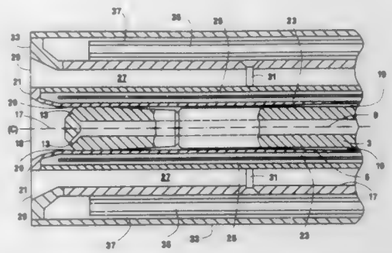
e) a system of channels extending diametrically crosswise from the recess in the upper part and communicating with a bore in the lower part to a lower side of the piston.

5,393,219
APPARATUS FOR SPINNING DIFFERENT COLORED FILAMENTS FROM A SINGLE SPINNERET
Gerry A. Hagen, Anderson, S.C.; Dominick A. Burlone, and Phillip E. Wilson, both of Asheville, N.C., assignors to BASF Corporation, Mt. Olive, N.J.
Division of Ser. No. 860,665, Mar. 30, 1992, Pat. No. 5,234,650.
This application Apr. 30, 1993, Ser. No. 56,286
Int. Cl.[6] D01D *4/06*
U.S. Cl. 425—382.2 11 Claims



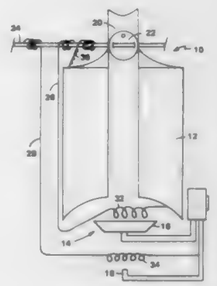
1. A spin pack for spinning mixed filament yarn from at least three components comprising:
means for receiving three or more mutually separated molten polymer streams;
a spinneret having at least one backhole and, and for each backhole, a fiber extrusion orifice in fluid flow communication therewith, at least one of said at least one backhole being an active backhole in fluid flow communication with said receiving means;
upstream of said spinneret, a distribution device in fluid flow communication with said receiving means and having means for distributing said mutually separated molten polymer streams to said spinneret wherein each mutually separated molten polymer stream is accessible at every existing backhole; and
intermediate said spinneret and said distribution device, a selection assembly having means for selecting which one stream from anyone of said mutually separated molten polymer streams flows into which active backhole.

5,393,220
COMBUSTION APPARATUS AND PROCESS
Ludo J. C. Couwels, Oelegem-Ranst, and Eddy J. A. Lauwers, Kalmthout, both of Belgium, assignors to Praxair Technology, Inc., Danbury, Conn.
Filed Dec. 6, 1993, Ser. No. 161,519
Int. Cl.[6] F23M *3/04*
U.S. Cl. 431—10 15 Claims



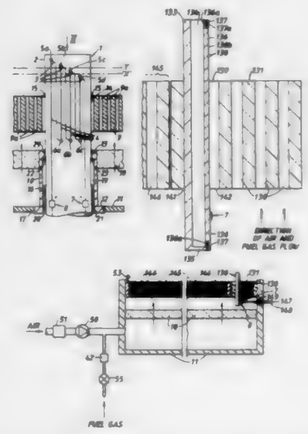
1. A process for controlling the combustion temperature and flame length produced by a burner through combusting fluid fuel in at least two combustion zones, said process comprising:
(a) ejecting at least one fluid fuel stream through at least one first outlet opening;
(b) ejecting a fluid fuel atomizing or dispersing fluid containing oxygen at an angle to the flow direction of said at least one fluid fuel stream through at least one second outlet opening;
(c) atomizing or dispersing said at least one fluid fuel stream with said fluid fuel atomizing or dispersing fluid containing oxygen within a chamber;
(d) partially combusting said fluid fuel stream with said fluid fuel atomizing or dispersing fluid containing oxygen in said chamber;
(e) ejecting at least a stoichiometric amount of oxidant through at least one third opening located at a zone downstream of said chamber; and
(f) combusting the partially combusted fluid fuel with said oxidant in said zone downstream of said chamber.

5,393,221
HEAT-ACTIVATED FLUE DAMPER ACTUATOR
William P. McNally, 37 Walnut St., Newport, R.I. 02840
Filed Dec. 21, 1993, Ser. No. 171,100
Int. Cl.[6] F23N *3/00*
U.S. Cl. 431—20 19 Claims



1. A gas-fired water heater comprising
a water reservoir,
structure defining a heating chamber in heat communication with said water reservoir and an exhaust flue for exhausting heated gases from said chamber,
a gas-fired burner in said heating chamber,
a damper mounted in said exhaust flue for movement between open and closed positions,
a first heat deformable member in said heating chamber that changes shape as a function of whether said burner is fired or not fired, and
a first connector between said first heat deformable member and said damper that tends to move said damper from one position to another as a function of shape of said deformable member.

5,393,222
THERMOELECTRIC SENSOR
David M. Sutton, Camberley, United Kingdom, assignor to British Gas PLC, London, United Kingdom
Filed Oct. 20, 1992, Ser. No. 963,747
Int. Cl.[6] F23N *5/10*; F23D *14/12*
U.S. Cl. 431—80 26 Claims



1. A thermoelectric sensing device for use in a fully premixed air/fuel gas burner apparatus comprising a flamestrip through which premixed air and fuel gas can pass for combustion in the vicinity of a downstream side of the flamestrip relative to the intended direction of flow of the premixture through the strip, the device comprising:
an elongate supporting body;
a plurality of temperature sensors on said supporting body and comprising discrete thermojunctions which define "hot" junctions and which are electrically connected alternately in series with at least one further discrete thermojunction, the at least one further discrete thermojunction serving as a "cold" junction, wherein when the device is located in said gas burner apparatus and in position with respect to the flamestrip, the "hot" junctions are at different predetermined distances downstream of an upstream side of the flamestrip, the individual "hot" junctions being so dimensioned and spaced from each other as to generate an aggregate output voltage which changes in a generally step-like manner as the flamefront of a flame supported by the flamestrip moves over the region occupied by the plurality of the "hot" junctions and successively across the "hot" junctions, with relatively large changes in the voltage output occurring as the flamefront crosses each "hot" junction and with the voltage output remaining at a relatively constant value as the flamefront moves across the region, between successive "hot" junctions, and wherein each of the at least one "cold" junctions is spaced from all of the "hot" junctions in the longitudinal direction of the elongate body and upstream of the flamestrip; and

conducting means via which voltage output signals emanating from the junctions can be sensed.

5,393,223

CUTTING TORCH MACHINE HAVING AN INTERNAL IGNITION DEVICE

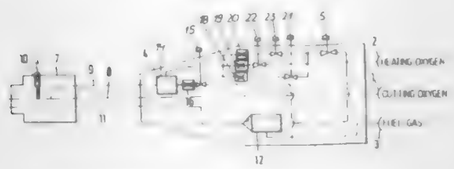
Werner Goerde, Fulda, and Manfred Greifzu, Kuenzell, both of Germany, assignors to GCE-Rhoena Autogengeraete GmbH, Fulda, Germany

Filed Jun. 30, 1993, Ser. No. 83,462

Claims priority, application European Pat. Off., Dec. 28, 1992, 92122076

Int. Cl.[6] F23Q *7/06*

U.S. Cl. 431—258 **7 Claims**



1. A cutting torch machine comprising:
a valve body having a first connecting nipple for fuel gas, a second connecting nipple for heating oxygen, and a third connecting nipple for cutting oxygen;
an internal ignition device on a cutting oxygen channel, the cutting oxygen channel being connected to said third connecting nipple for cutting oxygen;
a mixing means positioned in said valve body for generating an ignition gas and communicating said ignition gas with said cutting oxygen channel;
a controlling heating oxygen pressure reducer and at least one heating oxygen solenoid valve positioned within said valve body and connecting said mixing means to said second connecting nipple for heating oxygen;
a fuel gas solenoid valve positioned within said valve body and connecting said mixing means to said first connecting nipple for fuel gas; and
a fuel gas injector provided within said valve body.

5,393,224

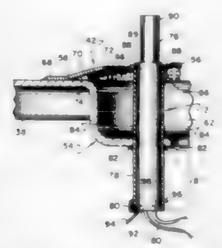
IGNITOR ASSEMBLY FOR POWER BURNER FURNACE

Thomas E. Allen; William G. Hansen, and Edward D. Hildreth, Jr., all of Clarksville, Tenn., assignors to American Standard Inc., Piscataway, N.J.

Filed Dec. 2, 1993, Ser. No. 160,622

Int. Cl.[6] F23Q *3/00*

U.S. Cl. 431—266 **8 Claims**



1. An ignitor assembly for a gas combusting power furnace having a combustion chamber and a burner plate assembly adjacent said combustion chamber for introducing a mixture of fuel and air into the combustion chamber, the burner plate assembly including a burner plate having a first surface facing the combustion chamber and an opposed, second surface facing away from the combustion chamber and structure defining an aperture extending between the first and second burner plate surfaces, comprising:
a generally elongated ignitor element;
a sleeve fixedly received within said aperture for slideably, removably receiving the ignitor element, the sleeve having a first end extending generally beyond the first surface of the burner plate and into said combustion chamber and an opposed second end extending beyond the second surface of the burner plate, said sleeve comprising a generally elongated ignitor element supporting tube for slideably receiving said ignitor element therein;
an ignitor element retainer operably coupled to said sleeve and selectively, removably retaining the ignitor element within the sleeve; and
said burner plate assembly including a burner plate mounting base for mounting said burner plate in communication with said combustion chamber, said mounting base including structure spaced apart from said burner plate defining an ignitor element supporting tube receiving aperture, said ignitor element supporting tube being operably carried by said burner plate and said burner plate mounting base through said apertures oriented generally transverse to said burner plate first surface.

5,393,225

ROTATING TUBE HEAT TREATMENT INSTALLATION, IN PARTICULAR ROTATING TUBULAR KILN, WITH INDIRECT HEAT FEED OR DISSIPATION

Norbert Freiberger; Wolfgang Glaser, both of Graz; Bernd Wolschner, Vöcklabruck, and Stefan Zikeli, Regau, all of Austria, assignors to Austrian Energy & Environment SGP/Waagner Biro GmbH, Vienna and Lenzing Aktiengesellschaft, Lenzing, both of Austria

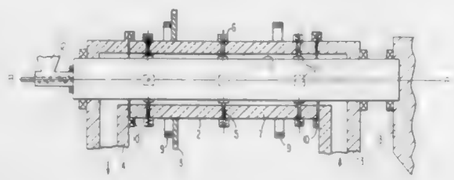
PCT No. PCT/AT91/00133, § 371 Date Jul. 7, 1993, § 102(e) Date Jul. 7, 1993, PCT Pub. No. WO92/12391, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 18, 1991, Ser. No. 87,721

Claims priority, application Austria, Jan. 14, 1991, 55/91

Int. Cl.[6] F27B *7/00*

U.S. Cl. 432—103 **4 Claims**



1. A rotary tubular heat treatment installation, comprising:
an outer rotatably mounted jacket tube;
an inner rotary tube situated within said outer jacket tube substantially coaxial therewith, said inner rotary tube having an outer surface in which grooves are formed, said grooves extending in a longitudinal direction relative to said outer jacket and inlet rotary tubes;
means for connecting said inner rotary and outer jacket tubes to each other for rotation with each other, said connecting means comprising a plurality of pins spaced around the entire circumference of said outer jacket tube, each of said pins being resiliently mounted in a radial direction and extending between said inner rotary and outer jacket tubes, each of said pins engaging said inner rotary tube to radially support said inner rotary tube within said outer jacket tube, an inner engagement portion of each of said pins being receivable in a respective one of said grooves to enable relative displacement between said outer jacket tube and said inner rotary tube in said longitudinal direction;
stationary heat exchange medium inlet and outlet connections fixedly mounted on respective longitudinal ends of said outer jacket tube, said inlet and outlet connections being removable from said outer jacket tube in a longitudinal direction relative to said outer jacket and inner rotary tubes, and
means for rotating said outer jacket tube.

5,393,226

WARE SUPPORT APPARATUS

Bryan Groom, 10 Barwood Avenue, Church Lawton, Stoke-On-Trent, Staffordshire, ST7 3EN, England

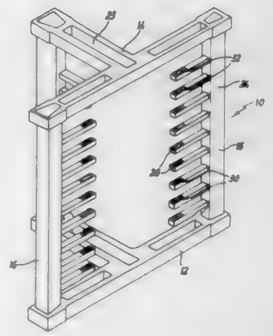
PCT No. PCT/GB91/01739, § 371 Date Apr. 6, 1993, § 102(e) Date Apr. 6, 1993, PCT Pub. No. WO92/06342, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 7, 1991, Ser. No. 39,039

Claims priority, application United Kingdom, Oct. 9, 1990, 9021873

Int. Cl.[6] F27D *5/00*

U.S. Cl. 432—258 **2 Claims**



1. Ware support apparatus, for supporting articles of ware that are of predetermined size and have feet, the apparatus comprising a unitary base having three limbs extending away from a common meeting point, a unitary top cover of a corresponding shape, three uprights mounted between the cover and base and each extending from a one of the limbs, two of the uprights being spaced sufficiently far apart to allow the articles to pass therebetween in horizontal orientation and being spaced farther from each other than from the third upright, a plurality of ware support member mounting arms mounted in cantilever fashion on each upright and spaced apart from each other along the upright, a plurality of ware support members mounted detachably on said ware support member mounting arms respectively for supporting such articles of ware, the ware support members being spaced from the uprights for supporting the articles of ware beneath the feet thereof.

5,393,227

DENTAL IMPRESSION HANDLING TOOL AND METHOD

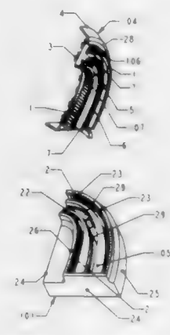
William H. Nooning, Westminster, Colo., assignor to KeyPro Innovations, Inc., Denver, Colo.

Filed Feb. 25, 1994, Ser. No. 201,826

Int. Cl.[6] A61C *19/00*

U.S. Cl. 433—74 **17 Claims**

1. Dental impression handling apparatus, comprising;
a base member having a top surface and a bottom surface that is vertically spaced downward from said top surface,
first and second horizontally spaced, generally non-parallel, and arcuate-shaped walls extending vertically upward from a position that is vertically above said bottom surface to said top surface, said first and second walls defining a first arcuately-shaped trough in said top surface of said base member, said first and second walls having at least one wall surface extending generally vertically upward and generally perpendicular to said top surface,
an interlocking and non-recurring geometric pattern formed in said at least one wall surface of said first and second walls,
an insert member adapted to be mounted to engage said top surface of said base member, said insert member having a top surface adapted to support a dental model and having a bottom surface that is vertically spaced downward from said top surface,
first and second horizontally spaced, generally non-parallel, and arcuate-shaped ribs extending vertically downward from said bottom surface of said insert member, said ribs approximating the arcuate shape of said first and second walls and said first trough in said base member, and said first and second ribs having at least one generally vertical surface that extends downward and generally perpendicular to said bottom surface of said insert member,



said one vertical surface of said first and second ribs having a mating interlocking and non-recurring geometric pattern formed in said at least one vertical surface of said first and second ribs, said mating pattern being adapted to selectively mate with said pattern of said base member when said insert member is mounted to engage said top surface of said base member, so as to provide only one mating position for said insert member on said base member,
a second trough formed in said base member at a location intermediate said first and second walls,
a third rib formed in said insert member at a mating location intermediate said first and second ribs, said mating location of said third rib allowing said third rib to reside in said second trough when said insert member is selectively mated with said base member, and
releasable insert locking means carried by said third rib and said second trough.

5,393,228

DENTAL PROPHYLAXIS AND WATER CONSERVATION DEVICE

Piero A. Policicchio, 933 Butternut Dr., Holland, Mich. 49424

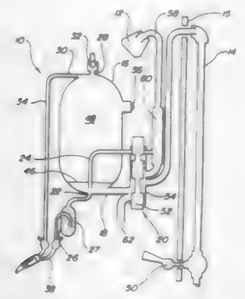
Filed Nov. 18, 1993, Ser. No. 154,033

Int. Cl.[6] A61C *3/02*

U.S. Cl. 433—88 **13 Claims**

1. An abrasive supply apparatus which uses water from a household water supply line, said apparatus comprising:
attaching means for connecting said apparatus to the water supply line;
air supply means for providing a supply of pressurized air, said air supply means including an air outlet;
discharge means for controlling and discharging air from said air supply means, said discharge means including a conduit connected to said air outlet of said air supply means; and

a receptacle adapted to receive an abrasive material therein, said receptacle being in communication with the water supply line so that water can flow into and out of said



receptacle, said abrasive material being carried by the water out of said receptacle, said discharge means also controlling and discharge water carrying said abrasive from said receptacle.

5,393,229

DENTAL CLEANING IMPLEMENT INCLUDING TOOTHPICK, AND METHOD OF CLEANING TEETH THEREWITH

Zeev Ram, 9 Yaacov Street, 76 262 Rehovot, Israel

Filed Jun. 14, 1993, Ser. No. 75,444
Int. Cl.[6] A61C *1/07, 3/03, 3/08, 15/00*
U.S. Cl. 433—118 17 Claims



1. A dental cleaning implement, comprising:
a handpiece graspable at one end by a user;
an electrical oscillating drive within the handpiece for oscillating the handpiece at a frequency of at least 5 Khz;
a head at the opposite end of the handpiece for releasably attaching a toothpick thereto;
and a wooden toothpick removably attached to said head.

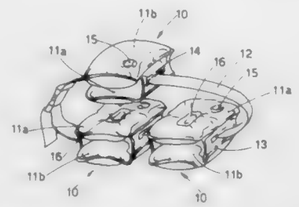
5,393,230

FLOATING ELEMENT TO ASSIST THE TEACHING OF SWIMMING

Beno Vizintin, Gorizia, Italy, and Franci Keber, N.H.M. No. 10, 68290 Sevnica, Slovenia, assignors to Franci Keber, Sevnica, Slovenia

Filed May 17, 1993, Ser. No. 62,178
Claims priority, application Italy, May 25, 1992, UD92 A 000099; Sep. 24, 1992, UD92 A 000144
Int. Cl.[6] A63B *69/12*
U.S. Cl. 434—254 11 Claims

1. Inflatable floating element to assist the teaching of swimming to a wearer, comprising:
a plurality of floating bodies, each floating body comprising an inner inflatable body having opposed first and second major surfaces, and an outer inflatable body having opposed first and second major surfaces, said inner inflatable body and said outer inflatable body being united at sidewall portions such that said first major surface of said inner inflatable body is opposed to and faces said first major surface of said outer inflatable body, said second major surface of said inner inflatable body having points of contact with the wearer distributed substantially symmetrically to ensure stable positioning of the floating body on the wearer; and
a belt, said belt passing through loops in said sidewall portions of each of said plurality of floating bodies in between



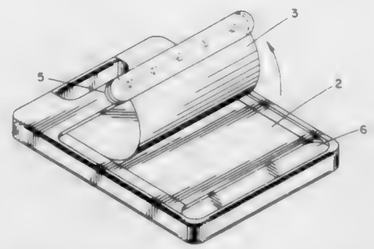
said first major surfaces of said inner and outer floating bodies;
a fastener for fastening said belt around the wearer;
wherein said inner floating body acts as a cushion for expansion of the wearer's chest caused by breathing.

5,393,231

CHILD'S MAGIC DRAWING BOARD

Kai-Shun Mak, Kwai Chung, Hong Kong, assignor to Hop Lee Cheong Industrial Co. Ltd., Hong Kong

Filed Jun. 1, 1992, Ser. No. 891,040
Int. Cl.[6] B43L *1/12*
U.S. Cl. 434—410 1 Claim



1. A magic drawing board comprising a base having an upper surface, an opaque sheet mounted on the upper surface of the base, a flexible transparent sheet having one edge thereof permanently anchored to the base, and a detachable coupling mechanism including a first coupling element comprising a recess in the upper surface of the base and a mating coupling element comprising an elongated plastic molding along an edge of the transparent sheet that is opposite said one edge, which mating element can be coupled to said first coupling element to locate the transparent sheet in superposed position on the opaque sheet and to provide uniform tension between said permanently anchored edge and said opposite edge over the area of superposition and decoupled from said first coupling element so that said transparent sheet is not under tension.

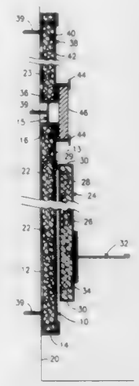
5,393,232

VISUAL AID SYSTEM

William C. Haines, 1267 Greybrooke Pl., Oldsmar, Fla. 34677

Filed Nov. 15, 1993, Ser. No. 153,073
Int. Cl.[6] B43L *1/00*
U.S. Cl. 434—415 4 Claims

1. A visual aid system carried by a supporting wall comprising in combination,
(a) a panel made of fiberboard,
(b) a plurality of vertically extending horizontally spaced magnets with said magnets being embedded in said fiberboard and flush with a surface thereof,
(c) a cover on the front of said fiberboard made of plasticized fabric,
(d) means securing said fiberboard to the supporting wall,
(e) a display panel having a core and front and back surfaces and with said front and back surfaces being made of porcelain enameled steel,



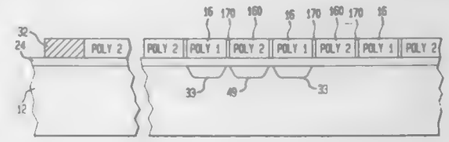
(f) said display panel being magnetically carried by said fiberboard panel.

5,393,233

PROCESS FOR FABRICATING DOUBLE POLY HIGH DENSITY BURIED BIT LINE MASK ROM

Gary Hong; Ming-Tzong Yang, and Chen-Chiu Hsue, all of Hsin-Chu, Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan, Prov. of China

Filed Jul. 14, 1993, Ser. No. 92,190
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—48 2 Claims



2. A method for producing a buried bit line Read Only Memory device comprising the steps of depositing a first layer of polysilicon material on a surface of a semiconductor substrate with buried bit lines and having mask lines and a mark and chemical-mechanical polishing the first layer of polysilicon material using the mask lines and mark as a stop to form a first set of polysilicon word lines oriented orthogonally to said buried bit lines, removing said mask lines, depositing a second layer of polysilicon material and chemical-mechanical polishing the second layer of polysilicon material using the mark as a stop to form a second set of polysilicon word lines in between said first set of polysilicon word lines.

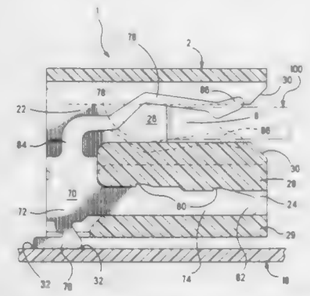
5,393,234

EDGE CONNECTORS AND CONTACTS USED THEREIN

Shoji Yamada, Machida, and Tomoo Yamada, Yokohama, both of Japan, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 27, 1993, Ser. No. 97,701
Claims priority, application Japan, Sep. 28, 1992, 4-073007
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—62 8 Claims

1. An electrical connector comprising an insulative housing having a reception groove for receiving an edge of a circuit card and electrical contacts secured in slots of the housing including contact sections for electrical connection with conducting pads along the circuit card edge, contact portions for electrical connection to a circuit board, and mounting bases of the contacts securing the contacts in the housing, characterized in that the electrical contacts include a main portion, a curved portion of smaller cross-sectional extent than said main portion and extending outwardly from said main portion including a first section normal to said reception groove and a second section extending toward said reception groove, alternate ones of he electrical contacts include a contact arm extending forwardly from said curved portion including upwardly and



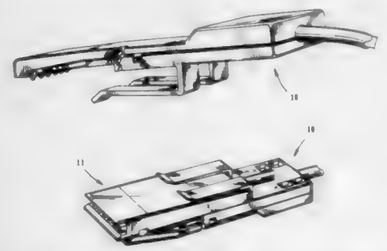
downwardly oblique sections, and a contact member at an outer end of said contact arm for electrical connection with a conducting pad on one surface of the circuit card, other alternating ones of the electrical contacts include another contact arm extending forwardly from said curved portion including downwardly and upwardly oblique sections, and another contact member at another end of said other contact arm for electrical connection with a conducting pad on the other surface of the circuit card, and said mounting bases being an extension of said main portion perpendicular to said first section and extending parallel to said reception groove.

5,393,235

TELECOMMUNICATIONS TEST ADAPTER

David L. Ingalsbe, Hastings, Minn., assignor to Independent Technologies, Inc., Egan, Minn.

Filed Aug. 31, 1993, Ser. No. 114,460
Int. Cl.[6] H05K *1/00*
U.S. Cl. 439—76 13 Claims



1. A telecommunications adapter for use with a 110-type patch cord, comprising:
(a) a printed circuit board;
(b) at least two contact blades for making electrical contact with the 110-type patch cord, said blades having a predetermined configuration and being mounted to said printed circuit board;
(c) electrical connection means connected to said printed circuit board; and
(d) a housing structure having a generally flat, rectilinear configuration with a proximal portion including an interior cavity enclosing a predetermined portion of said

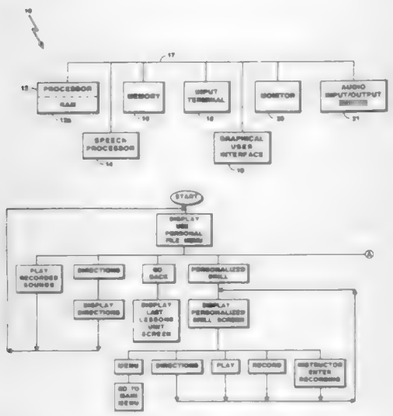
printed circuit board, said housing structure further having a connection end for contact with the 110-type patch cord, said connection end having an aperture through which said printed circuit board extends outwardly, means to stabilize said contact blades and means to engage the 110-type patch cord, said means to stabilize comprising a flat member extending from said connection end, having longitudinally oriented rails, and terminating in a lateral rail having at least one stabilization aperture therein for receiving the outwardly extended end of said contact blades.

5,393,236

INTERACTIVE SPEECH PRONUNCIATION APPARATUS AND METHOD

Elizabeth R. Blackmer, Lexington, Va., and Linda J. Ferrier, Lexington, Mass., assignors to Northeastern University, Boston, Mass.

Filed Sep. 25, 1992, Ser. No. 951,675
Int. Cl.[6] G09B *5/00*
U.S. Cl. 434—169 12 Claims



1. An interactive computer system for teaching pronunciation and accent reduction to a user comprises:

a processor;

a memory, coupled to said processor, said memory having stored therein a set of instructions corresponding to a plurality of presequenced accent reduction lessons for execution in a predetermined order by said processor wherein the predetermined order is determined by the user selecting a first one of:

(a) the native language of the user; and

(b) a subject area, wherein said subject area is selected from the group consisting of an engineering subject area and a physical science subject area;

an input interface, coupled to said processor, for providing a user with control over the sequence in which the accent reduction lessons are executed by said processor;

a monitor, coupled to said processor, for displaying visual indicators to the user, wherein said visual indicators correspond to said instructions;

an audio input/output device, coupled to said processor, for recording sounds spoken by a user and for playing prerecorded sounds stored in said memory; and

a speech processor, coupled to said processor and said audio input/output device, for providing stored signals to said audio input/output device, wherein in response to an instruction displayed on said monitor, a user speaks a sound into said audio input/output device and the sound is stored in said memory and the sound corresponds to a first one of:

(a) a word;

(b) a phrase; and

(c) a sentence; and

wherein said pre-recorded sounds in said memory correspond to stored digitized signals representative of the sound spoken by the user into said audio input/output device.

6. A method for teaching pronunciation and accent reduction to a user, said method comprising the steps of:

displaying a first menu on a monitor, said first menu having a first plurality of user selectable options;

selecting, with a user interface device, a first user selectable option from said first plurality of user selectable options wherein said first user selectable option is selected according to a first one of the following criteria:

a first language corresponding to a native language of a user;

a first subject area wherein said first subject area, is selected from the group consisting of an engineering subject area and a physical science subject area; and a phonetic stress pattern; and

executing in a predetermined order by a processor, a plurality of steps determined by the first user selectable option selected in said selecting step, wherein when said first user selectable option is selected according to a first language, said plurality of steps correspond to a first lesson plan to teach pronunciation and accent reduction to a user, wherein said first lesson plan is organized according to the selected first language and when said first user selectable option is selected according to a second different language, said plurality of steps correspond to a second lesson plan to teach pronunciation and accent reduction to the user, wherein said second lesson plan is organized according to the selected second language and wherein the organization of the first and second lesson plans is different.

9. A method for teaching accent reduction and speech pronunciation to a user comprising the steps of:

performing a diagnostic test on the user;

computing the results of said diagnostic test; and

executing, in a processor, a plurality of lessons stored in a memory to teach pronunciation and accent reduction to the user wherein the order in which said lessons are executed is determined by the results of said diagnostic test computed in said computing step and wherein said diagnostic test comprises the steps of:

recording, with an audio input/output device, at least one word spoken by the user;

grading, by a second user, said at least one word with a predetermined grading criteria;

calculating, in said processor, a value corresponding to the results of the grading step; and

calculating a suggested lesson plan, in said processor, wherein said suggested lesson plan corresponds to a series of lessons having a predetermined order, said series of lessons corresponding to selected lessons from a plurality of lessons stored in a memory, wherein said predetermined order of lessons is determined in response to the calculating a value step.

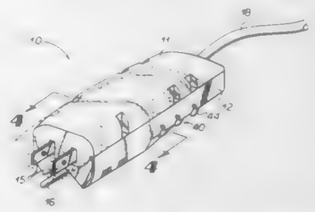
5,393,237

ELECTRIC PLUG LOCKING DEVICE

William J. Roy, 2511 Ridge Brook Trail, Duluth, Ga. 30136, and Michael C. Mayne, Conyers, Ga., assignors to William J. Roy, Duluth, Ga.

Filed Sep. 22, 1993, Ser. No. 125,414
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—134 12 Claims

1. An electric plug locking device having a lower housing member in which an electrical plug is seated, an upper housing member having an opening through which a plug terminal extends in an unshielding position, said upper housing member being mounted to said lower housing member to form a housing completely enclosing the plug and for relative movement of said upper housing member between a position sufficiently shielding the plug terminal as to prevent it from being inserted



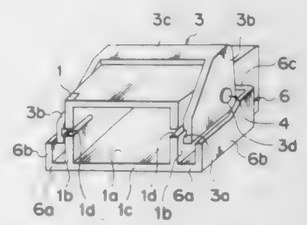
into an electrical socket and the position unshielding the plug terminal sufficient to permit it to be inserted into the socket without removing the plug from said housing, and lock means for locking said upper housing member in its shielding position.

5,393,238

LEVER-ACTUATED CONNECTOR ASSEMBLY

Masashi Saito, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jul. 29, 1993, Ser. No. 98,894
Claims priority, application Japan, Sep. 18, 1992, 4-065230[U]
Int. Cl.[6] H01R *13/629*
U.S. Cl. 439—157 3 Claims



1. A lever-actuated connector assembly comprising:

a first connector having an opening defined therein and also having a pair of first side walls opposite to each other and on respective sides of said opening, said first side walls having respective bearing pins formed integrally therewith so as to protrude outwardly therefrom;

a second connector having a pair of second side walls opposite to each other, said second connector being undersized relative to said first connector thereby to permit said second connector to be selectively received in and removed out from said first connector through said opening in said first connector, said second side walls having respective guide pins integrally formed therewith so as to protrude outwardly therefrom;

a generally U-shaped lever having a pair of spaced arms having respective bearing holes defined therein, and each said bearing hole having a center, each of said spaced arms having a first edge and a second edge, the distance from said first edge to said center being greater than the distance from said second edge to said center, said lever being rotatably mounted on said first connector with said bearing pins engaged in said bearing holes for angular movement between engaged and disengaged positions about a common axis of said bearing pins; and

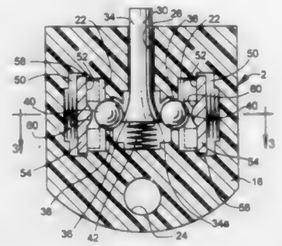
protective wall means on said first connector, said protective wall means being spaced from said first side walls to form associated gaps therebetween, said protective wall means preventing outward disengagement of said arms from said bearing pins during a rotation of said lever between the engaged and disengaged positions, and whereby the arms of said lever are spaced outside of said gaps when said lever is in the disengaged position.

5,393,239

SELF-LOCKING FEMALE ELECTRICAL SOCKET HAVING AUTOMATIC RELEASE MECHANISM

Nels E. Ursich, 6809 W. Brementowne Dr., Apt. 2W, Tinley Park, Ill. 60477, assignor to Nels E. Ursich, Tinley Park, Ill.

Filed Dec. 27, 1993, Ser. No. 172,746
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—180 11 Claims



1. A locking female electrical socket having an automatic release mechanism comprising

a female socket body having a pair of holes for receiving the spaced prongs having punched holes of a male plug for electrically connecting two electrical lines respectively coupled to said female socket body and the male plug,

said female socket body having actuator means being mounted for selective relative movement between a first and second position within said female socket body,

locking means mounted in said female socket in operative relationship to said actuator means to permit insertion and removal of the prongs at a first position of said actuator means in said female socket and said locking means being rigidly urged by said actuator means into locking engagement with the holes of the spaced prongs in a second position of said actuator means in said socket body, and

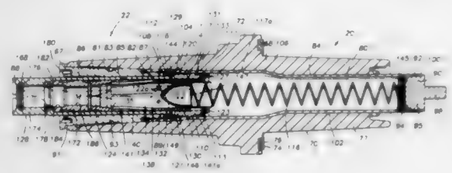
release means in said female socket body for releasing the prongs of the male plug from said female socket in said second position of said actuator means upon application of a predetermined pulling force between the male plug and said female socket, said release means is mounted in said female socket body against to the prongs of the male plug, said release means having at least one deflectable element resiliently biased against a prong.

5,393,240

SEPARABLE LOADBREAK CONNECTOR

John M. Makal, Menomonee Falls, Wis.; Wayne W. Lien, Laurel, Miss., and William J. McNulty, River Forest, Ill., assignors to Cooper Industries, Inc., Houston, Tex.

Filed May 28, 1993, Ser. No. 69,012
Int. Cl.[6] H01R *13/53*
U.S. Cl. 439—187 10 Claims



8. A high voltage connection, comprising:

an elbow connector having a probe therein;

a bushing having a bore therein for receiving said probe;

a contact disposed in said bore, said contact being sized to engage said probe upon insertion of said probe into said bore, said contact including an actuable portion which moves upon engagement of said probe therewith;

said bore having a size sufficiently greater than the size of said contact to permit free movement of said actuable portion, said bore and said actuable portion defining a gap therebetween;

an arc-sensitive insert disposed in said gap.

5,393,241

ELECTRONIC APPARATUS, CARD-TYPE ELECTRONIC COMPONENT USED WITH THE ELECTRONIC APPARATUS, AND ELECTRONIC SYSTEM WITH EXPANDING APPARATUS FOR EXPANDING FUNCTION OF ELECTRONIC APPARATUS

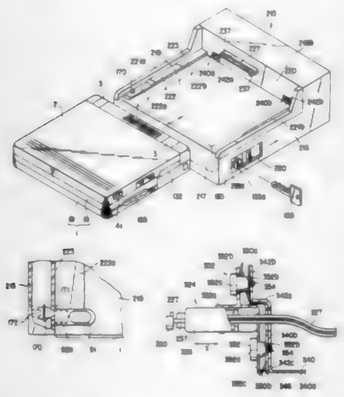
Masami Honda; Kazuaki Kawabata, and Masaaki Takada, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Division of Ser. No. 118,481, Sep. 8, 1993, Pat. No. 5,316,491, which is a continuation of Ser. No. 900,974, Jun. 18, 1992, abandoned. This application Nov. 29, 1993, Ser. No. 159,200

Claims priority, application Japan, Jul. 19, 1991, 3-56489; Jul. 29, 1991, 3-59508; Jul. 29, 1991, 3-187988; Jul. 30, 1991, 3-190207; Sep. 6, 1991, 3-226832; Nov. 28, 1991, 3-314830; Nov. 30, 1991, 3-317177; Jan. 10, 1992, 4-3371; Jun. 11, 1992, 4-152421

Int. Cl.[6] H05K *5/00*

U.S. Cl. 439—248 6 Claims



1. An expanding apparatus for expanding functions of an electronic apparatus comprising:

a main body having a bearing section for bearing the electronic apparatus and expanding means for expanding the functions of the electronic apparatus;

a plug-in type connector provided on the main body and electrically connected to the expanding means, for removably receiving a matching plug-in type connector of the electronic apparatus loaded on the bearing section; and

a support assembly for supporting the connector of the expanding apparatus to be movable between a stand-by position and a pushed in position in a predetermined direction for engaging and disengaging from the connector of the electronic apparatus, the support assembly including a support member to which the connector of the expanding apparatus is attached, the support member having a plurality of guide holes, and

a plurality of guide members extending from the main body in the predetermined direction through the respective guide holes, each of the guide members having an extended end and a stopper provided on the extended end, for abutting the support member in the stand-by position to limit the movement of the connector, the extended end of each of the guide members having a diameter substantially equal to the diameter of the guide holes and each of the guide members being tapered off toward the main body.

5,393,242

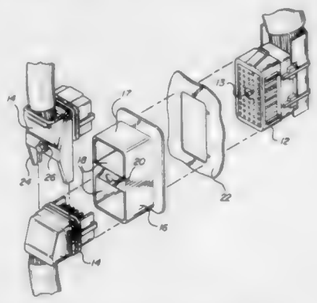
MODULAR CONNECTOR ASSEMBLY

Allen F. VanDerStuyf, Novi, Mich., assignor to Electro-Wire Products Inc., Troy, Mich.

Filed Dec. 17, 1993, Ser. No. 168,130

Int. Cl.[6] H01R *13/627*

U.S. Cl. 439—364 11 Claims



1. A modular connector assembly including:

a single terminal connector member:

a plurality of separate terminal connector members for collective end meeting engagement with said single connector member;

a flange including a housing and a plurality of chambers formed in said housing to receive said plurality of separate connector members therein and retain them in mating orientation with respect to said single connector member;

an H-bar figure to engage and unite said plurality of separate connector members and said flange to form a united assembly; and

means for retaining the united assembly in electrical communication with the single connector member.

5,393,243

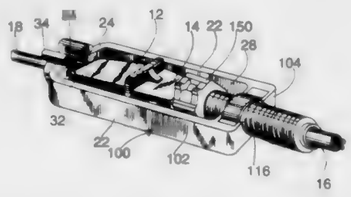
RELEASABLE CORD CONNECTING LOCK

Robert A. Carmo, Placentia, Calif., assignor to Pacific Electricord Company, Gardena, Calif.

Filed Apr. 8, 1994, Ser. No. 224,894

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—369 10 Claims



1. A plug and socket connector clamp for maintaining engagement between an engaged electrical plug and electrical socket connector each terminating an electrical cord, said clamp comprising:

a housing including spaced apart sides and first and second end abutments defining an elongated central space for receiving said engaged plug and socket connector, said sides being adapted to constrain said plug and socket connector against sideway movement in at least one plane, and said first end abutment is adapted to engage said engaged plug and socket connector, said first and second end abutments including a first cord opening and a clamp opening, respectively;

clamping means extending through said clamp opening and including a second cord opening and a clamp portion

longitudinally movable against said engaged plug and socket connector in said central space to hold said engaged plug and socket connector between said first end abutment and said clamp portion and thereby constrain said plug and socket connector against longitudinal separation; and

said second end abutment further comprising a releasable member capable of being moved from a first position partially defining said clamp opening to a second position where said releasable member no longer defines said clamp opening; said clamping means capable of direct insertion into said clamp opening when said releasable member is in said first position and can not be removed from said clamp opening when said releasable member is in its second position.

5,393,244

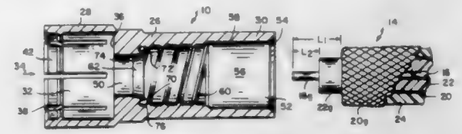
TWIST-ON COAXIAL CABLE END CONNECTOR WITH INTERNAL POST

Andrew Szegda, Canastota, N.Y., assignor to John Mezzalingua Assoc. Inc., Manlius, N.Y.

Filed Jan. 25, 1994, Ser. No. 186,685

Int. Cl.[6] H01R *17/18, 9/05*

U.S. Cl. 439—394 5 Claims



1. An end connector for connecting a prepared end of a coaxial cable to a port, said cable being of the type having an electrical inner conductor surrounded by and spaced radially inwardly from an electrical outer conductor by a dielectric insulator interposed therebetween, with a dielectric jacket surrounding said outer conductor, the prepared end of said cable having an exposed portion of said inner conductor protruding beyond an exposed portion of said dielectric insulator which in turn protrudes beyond an exposed portion of said outer conductor, the exposed portion of said outer conductor having been peeled back to surround an end portion of said dielectric jacket, said end connector comprising:

a tubular body having cylindrical front and rear wall portions joined by an intermediate wall portion, said front and rear wall portions respectively defining front and rear chambers leading respectively from open front and rear ends of said body to front and rear ends of a reduced diameter bore extending through said intermediate wall portion, the rear end of said bore being surrounded by a shoulder having an edge spaced radially inwardly from said rear wall portion and protruding axially into said rear chamber, said shoulder having an outer surface which is inwardly tapered and an inner surface which is outwardly tapered as the shoulder extends from said rear wall portion to said rear chamber, said open front end being configured and dimensioned to axially receive a port into an inserted position in said front chamber, and said open rear end being configured and dimensioned to axially receive the prepared end of a coaxial cable into an inserted position at which the exposed portions of said inner conductor, dielectric insulator and outer conductor are loaded respectively in said front chamber, intermediate bore, and rear chamber;

first attachment means associated with said front wall portion for securing said connector to the thus received port; and

second attachment means associated with said rear wall portion for securing said connector to the thus received prepared end of said cable, said second attachment means including an interiorly threaded segment of said rear wall portion which coacts in threaded engagement with the exposed portion of said outer conductor to urge said cable towards the front end of said connector, thereby causing the edge of said shoulder to penetrate said cable with a resulting radial expansion of the exposed portion of said outer conductor outwardly against the rear wall portion of said conductor.

5,393,245

OVERHEAD ELECTRICAL FIXTURE AND PORTABLE LOWERING TOOL THEREFOR

Richard A. Hinds, Jr., 7 Deer Tract Dr., Littlemountain, S.C. 29075

Division of Ser. No. 902,698, Jul. 27, 1992, Pat. No. 5,299,952. This application Jan. 26, 1994, Ser. No. 187,607

Int. Cl.[6] H01R *13/00*

U.S. Cl. 439—477 32 Claims



1. A combination of an overhead electrical fixture having a lowerable serviceable fixture portion and a portable tool for effecting lowering of said serviceable fixture portion; said overhead electrical fixture comprising a mounting base adapted to be fixedly secured relatively high above ground level, a serviceable fixture portion movable between an operating position in engagement with said mounting base and a servicing position adjacent ground level and below said mounting base, and latching means releasably connected between said mounting base and said serviceable fixture portion for releasably securing said serviceable fixture portion in the operating position, said latching means including a first cable connector; and said portable tool comprising a pole adapted to be grasped at a lower end by a user at ground level and manipulated to position the upper end thereof adjacent said mounting base, a winch mounted on said pole and including a supply of cable stored thereon, and a second cable connector secured to a free end of said cable, said second cable connector being connected to said first cable connector of said serviceable fixture portion to permit lowering of same by operation of said winch by the user.

5,393,246

TRANSMISSION POWER TESTING BAR OF CABLE TELEVISION SYSTEM

Sing-Long Du, No. 257, Sec. 5, Roosevelt Rd., Taipei, Taiwan, Prov. of China

Filed Feb. 10, 1994, Ser. No. 194,527

Int. Cl.[6] H01R *11/18*

U.S. Cl. 439—482 2 Claims

1. A transmission power testing bar of a cable television system comprising:

a test set member including a metal material and provided with an axial hole dimensioned to receive therein an atten-

uation line, said test set member further provided at one end thereof with a nonconductive connection rod coupled thereto, said connection rod having a test point in communication with said attenuation line, said test set member still further provided with at another end thereof with a nonconductive engaging tube having axially a through hole in communication with said attenuation line;

an inner sleeve of a metal material and having circumferentially a first portion and a second portion, said inner sleeve further having axially a through hole dimensioned to receive therein said test set member and provided at one end thereof with an inner threaded portion and at another end thereof with a protruded ring, said first portion being fitted into a spring;

an outer sleeve of a metal material and provided circumferentially with an outer threaded portion and further provided axially with a fitting hole having a flat portion opposite in location to said outer threaded portion, dimensioned to receive said inner sleeve; and



a copper connection head provided axially with a through hole having at an anterior end thereof a protruded portion, said copper connection head further provided at a midsection thereof with a protruded ring located between two outer threaded portions, said copper connection head being inserted through said fitting hole and threadably engaged in said inner threaded portion;

wherein said outer threaded portion of said outer sleeve is engageable with a test hole of a main line distributor of a cable television system; and wherein said test set member is provided with an elastic force by said spring so as to cause a test point of said test set member to urge intimately a center point of said test hole of said main line distributor, thereby enabling a signal gauge fastened to said copper connection head to measure accurately a transmission power value of a coaxial cable of said cable television system.

5,393,247

COMPONENT MOUNTING DEVICE

Joseph S. DiOrazio, Harrisburg, and Douglas R. Sarver, Millerstown, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 23, 1994, Ser. No. 217,045

Int. Cl.[6] H01R *13/73*

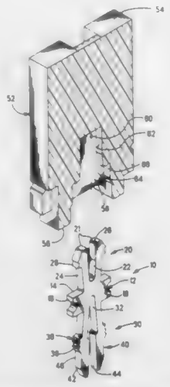
U.S. Cl. 439—567 **5 Claims**

1. A device for holding an electrical connector to a circuit board, said device comprising:

a one-piece essentially planar metal member including a body having opposed lateral and opposed end edges;

a pair of diverging cantilevered first beams extending outwardly in a first direction in said plane from one of said lateral body edges to first free ends, said pair of first beams being deflectable toward one another and being adapted to be received in a cavity within a housing of said electrical connector, said side edges of said first beams proximate said free ends bearing against side wall surfaces of said cavity and thereby being deflectable toward each other and thereafter exert force against said side wall cavity surfaces defining a holding section for said first electrical connector; and

a pair of diverging cantilevered second beams extending outwardly in a second direction in said plane from the other of said lateral body edges to second free ends, each of said pair of second beams including a wall engaging portion at the leading end thereof and a board holding portion intermediate said wall engaging portion and said body, said second beams being deflectable toward one



another and being adapted to be received in a corresponding retention aperture of said circuit board, outer edges of said wall engaging portion of said second beams proximate said second free ends bearing against side wall surfaces of said aperture and thereby being deflectable toward each other and thereafter exert force against said side wall aperture surfaces to hold said connector to said board when said connector has been fully mounted to said board.

5,393,248

CONNECTOR HAVING A TERMINAL ENGAGING LANCE

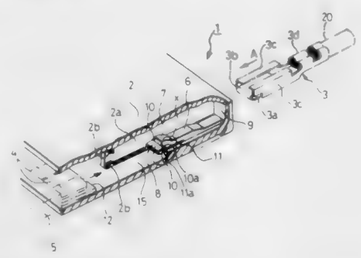
Sakai Yagi, and Keishi Jinno, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 26, 1993, Ser. No. 96,436

Claims priority, application Japan, Jul. 24, 1992, 4-218208

Int. Cl.[6] H01R *13/422*

U.S. Cl. 439—595 **2 Claims**



1. A connector comprising:

a housing lance (**6**), the housing lance (**6**) projecting in a direction in which terminals (**3**), (**4**) are inserted into or extracted from a connector housing (**2**), the terminals (**3**), (**4**) inserted into the connector housing (**2**) being held within the connector housing (**2**) while latched by a holding projection (**7**) of the housing lance (**6**); and

a terminal drop preventing strip (**12**) for preventing said terminals (**3**), (**4**) from being removed, said preventing strip (**12**) being inserted from a front end side of the housing lance (**6**) into a lance flexion gap (**16**) arranged between the housing lance (**6**) and an inner wall of the connector housing (**2**) so as to prevent said housing lance from being deflected toward said inner wall, wherein

a stepped portion (**10**) is formed on a front end of the housing lance (**6**), the stepped portion (**10**) having a holding surface (**10***a*) facing a rear side of the housing lance (**6**);

a projecting wall (**11**) on an inner surface of the connector housing (**2**) is arranged at a position substantially confronting the holding surface (**10***a*) in the connector housing (**2**), the projecting wall (**11**) having a confronting holding surface (**11***a*) abuttable against the holding surface (**10***a*); and

when a front end of the terminal drop preventing strip (**12**) has pushed the front end (**8**) of the housing lance (**6**), the holding surface (**10***a*) abuts against the confronting holding surface (**11***a*) to thereby regulate positioning of the respective front ends of the housing lance and the preventing strip.

5,393,249

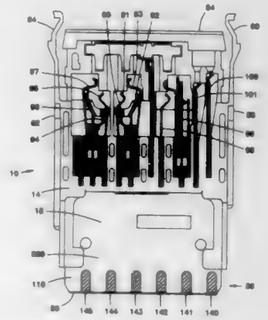
REAR CROSS CONNECT DSX SYSTEM

Todd A. Morgenstern, Bloomington, and James D. Dewey, Plymouth, both of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Jun. 30, 1993, Ser. No. 85,343

Int. Cl.[6] H01R *9/07*

U.S. Cl. 439—668 **3 Claims**



1. A jack assembly comprising:

a) a jack having

i) a circuit board having a first side and a second side separated by a first transverse dimension, said circuit board further having a front end and a rear end;

ii) a dielectric body secured to said front end of said circuit board with said body extending from said circuit board in generally planar alignment, said body having a front face on a side of said body opposite said circuit board, said front face including a port formed therethrough to pass a plug into an interior of said body, a plurality of jack springs disposed within said body and positioned to releasably engage a plug inserted into said port, said jack springs each in electrical contact with individual ones of a plurality of contact points on said circuit board;

iii) a first and a second plurality of electrical contact pads disposed and exposed on said first and said second sides, respectively, of said circuit board, said pads on said first side positioned offset from said pads on said second side with respect to said first transverse dimension, said pads of said first and second sides electrically connected to said plurality of contact points;

b) a mount having a dielectric body with a slot formed therein and sized to receive said rear end of said circuit board, a first and a second plurality of exposed contact springs disposed within said slot witch said first plurality of contact springs disposed on a first side of said slot and with said second plurality of contact springs disposed on a second side of said slot, said first and second plurality of contact springs mutually offset to engage in electrical contact said first and second plurality of contact pads, respectively, when said circuit board is received within said slot so that when said jack is inserted into said mount, each of said contact points is in electrical communication with a discrete contact member of said contact members on said mount.

5,393,250

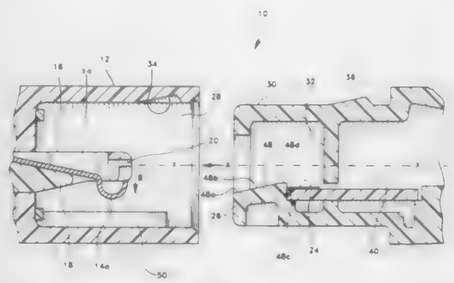
CAM ACTION ELECTRICAL EDGE CONNECTOR

Kim L. Richardson, Herriman, and Gregory D. Quickel, Salt Lake City, both of Utah, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed May 4, 1993, Ser. No. 57,227

Int. Cl.[6] H01R *13/05*

U.S. Cl. 439—825 **3 Claims**



1. An electrical connector comprising:

a first housing and a second housing, the first and second housings being capable of mating by being brought together along an axis, such that when the housings are mated one of the housings lies at least partially within the other housing;

a first conductor mounted in the first housing and having a free end, the first conductor being biased in a first direction substantially transverse to the axis;

a cam mounted in the second housing adjacent a proximal end of the second housing for interacting with the first conductor on mating of the housing, the cam having a ramp with a base and an apex, a camming surface sloping from a minimum height at the base and a maximum height at the apex, and a downward step extending substantially perpendicularly from the apex; and

a second conductor mounted in the second housing on a substrate adjacent to and axially rearward of the downward step, wherein when the first and second housings are brought together to mate along the axis, the first conductor comes into contact with the ramp and the camming surface pushes the first conductor against the bias of the first conductor until, when the first and second housings are fully mated and the first conductor reaches the apex, the bias of the first conductor causes the free end of the first conductor to move in the first direction and thus into contact with the second conductor upon forward axial movement of the first housing.

5,393,251

OUTBOARD MOTOR SUPPORT

Edward A. Gilbert, 3940 Gold St., Omaha, Nebr. 68105

Filed Nov. 18, 1991, Ser. No. 792,271

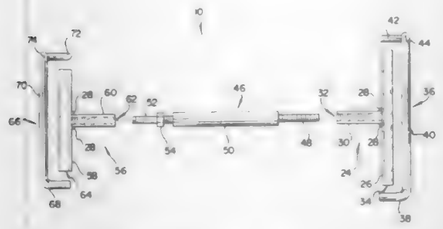
Int. Cl.[6] B63H *5/12*

U.S. Cl. 440—59 **18 Claims**

1. An outboard motor support for supporting a motor

mounted on a transom of a boat by a motor mount, in an elevated position, the motor support comprising:

a first bracket attachable to said motor mount, said first bracket comprises a T-shaped member, said member having a first hollow channel in the base of said T-shaped member and having a first threaded channel perpendicular to said first hollow channel;



a second bracket attachable to said motor;

an adjustable length support arm, said adjustable length support arm has first and second threaded regions at ends of said arm and said first and second brackets have threaded receiving means for receiving threaded regions of said support arm; and

means for securely attaching said adjustable length support arm to said first and second brackets.

5,393,252

FRESH WATER FLUSHING SYSTEM

Douglas Brogdon, 10570 Front Beach Rd., Panama City Beach, Fla. 32407

Filed Apr. 7, 1994, Ser. No. 224,039
Int. Cl.[6] B63H *21/10*
U.S. Cl. 440—88 **17 Claims**



1. A flushing system for a marine engine in a boat for use whether said boat is in or out of a body of water comprising in combination:

a control panel;

said control panel is mounted interiorly on said boat;

said control panel includes a fresh water supply connector;

said fresh water supply connector includes a means for attaching and detaching a pressurized fresh water fluid line in order to allow for a flow of fresh water to enter into said control panel when said pressurized fresh water fluid line is attached to said fresh water supply connector;

a fresh water valve assembly;

said fresh water valve assembly has a housing, a valve plunger and a bias spring;

said housing includes an interior chamber;

said housing includes a top, a bottom, a first wall, a second wall, a third wall, and a fourth wall;

said top is parallel to said bottom;

said first wall is parallel to said second wall;

said third wall is parallel to said fourth wall;

said top includes a first set of discharge ports;

said discharge ports are located above said interior chamber;

a fresh water inlet port for receiving said flow of fresh water is located in said fourth wall;

said valve plunger is located in said interior chamber of said housing;

said valve plunger include a set of metering ports;

said set of metering ports faces said top of said housing;

said valve plunger includes a first end and a second end;

said first end faces said fourth wall of said housing;

said bias spring is located in said interior chamber of said housing and has a first end portion and a second end portion;

said first end portion of said bias spring contacts said third wall of said housing;

said second end portion of said bias spring contacts said second end of said valve plunger;

a fresh water conduit;

said fresh water conduit is adapted for urging said flow of fresh water between said control panel and said fresh water valve assembly;

a set of hoses;

said set of hoses is connected to said set of discharge ports of said fresh water flush valve;

said set of hoses is adapted for urging said flow of fresh water to said variety of areas of said marine engine; and

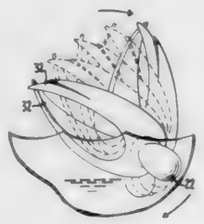
wherein said flow of fresh water enters said first fresh water inlet port and provides for said first valve plunger to linearly move forward and compress said first bias spring, causing said first set of metering ports to align with said first set of discharge ports and allow said fresh water to flow into said first set of hoses.

5,393,253

INTERMENT VESSEL WITH DIRECTIONAL CAPABILITY

David R. Humble, 2696 Emerald Way North, Deerfield Beach, Fla. 33441, and Hans A. Barth, 2600 NE 22nd St., Fort Lauderdale, Fla. 33305

Filed Jan. 21, 1993, Ser. No. 7,118
Int. Cl.[6] B63B *21/00*
U.S. Cl. 441—32 **17 Claims**



1. A floating interment vessel with directional capability comprising:

a floating vessel having top and bottom sides and having receiving means for receiving crematory ashes, said vessel placeable on a body of water having at least one of wind and water current;

sail means rigidly affixed to said top side; and,

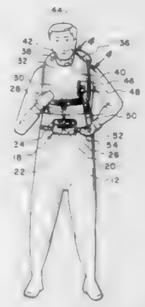
keel means rigidly affixed to said bottom side, the sail means and the keel means being permanently set at a fixed angle relative to one another such that said vessel is propelled in a predetermined direction when subjected to the wind, at least one of said sail or keel means interacting with said at least one of wind and water current to propel said vessel through said body of water in the predetermined direction.

5,393,254

LIFESAVING APPARATUS

Claude A. Ducheshe, 1051 Via Cordova, San Pedro, Calif. 90731

Filed Jul. 5, 1994, Ser. No. 270,474
Int. Cl.[6] B63C *9/08*
U.S. Cl. 441—118 **5 Claims**



1. In combination with a waist pack adapted to be worn about the waist of a human, said waist pack having an interior compartment, a flap connected to said waist pack, said flap being movable between a closed position and an open position, said closed position closing said internal compartment to the ambient, said open position permitting access into said internal compartment, the improvement comprising:

an inflatable vest located in a non-inflated/collapsed configuration within said internal compartment and said flap closed;

a source of pressurized gas connected to said vest;

a valve connected to said source, said valve being normally closed preventing flow of gas from said source into said vest thereby preventing inflating of said vest, a manually engageable handle connected to said valve., upon sufficient movement of said manually engageable handle said valve being open permitting gas to flow from said source into said vest inflating said vest, said handle being located exteriorly of said waist pack when said vest is in said non-inflated/collapsed position and contained within said internal compartment and said flap closed;

a disengageable fastener being operated to maintain said flap in said closed position, upon sufficient movement of said manually engageable handle causing inflation of said vest said fastener being disengaged locating said flap in said open position permitting said vest to be moved exteriorly of said interior compartment;

a strap interconnecting said waist pack and said vest, thereby tethering said vest relative to said waist pack when said vest is located exteriorly of said interior compartment; and

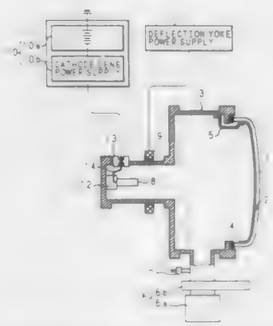
said strap including a buckle, said buckle permitting longitudinal adjustment of said strap.

5,393,255

METHOD OF INSPECTION FOR CATHODE-RAY TUBE COMPONENT MEMBERS AND APPARATUS USED FOR EMBODYING THE SAME

Yasushi Hisaoka; Yoshio Yamane; Hidenobu Murakami; Yoshimi Kinoshita; Hiroaki Tobuse; Kazuo Yoshida, all of Amagasaki; Takashi Ishii, and Hiroshi Koizumi, both of Nagaokakyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1994, Ser. No. 202,773
Claims priority, application Japan, Mar. 1, 1993, 5-039892
Int. Cl.[6] H01J *9/42, 9/20*
U.S. Cl. 445—3 **20 Claims**



1. A method of inspecting a phosphor screen formed on a screen panel used for a cathode-ray tube, comprising the steps of:

preparing an inspection housing which said screen panel is mountable on and demountable from and which is adapted to be enclosed by the mounting of said screen panel thereon, and an electron gun arranged in said inspection housing;

mounting said screen panel on said inspection housing in advance of assembling said cathode-ray tube;

emitting light from said phosphor screen by emitting electron beams from said electron gun; and

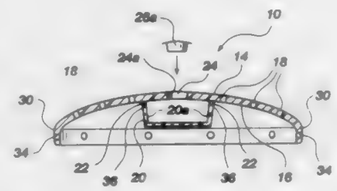
deciding whether said phosphor screen is defective or not defective from the illuminated condition of said phosphor screen.

5,393,256

FLYING BUBBLE-PRODUCING TOY AND METHOD

Richard Mitchell; Lorin Smith, and Robert Hopkins, all of Provo, Utah, assignors to M.R.L. Manufacturing, Inc., Provo, Utah

Filed Feb. 7, 1994, Ser. No. 192,444
Int. Cl.[6] A63H *33/28, 27/00*
U.S. Cl. 446—15 **17 Claims**



1. A rotational glider toy configured for producing bubbles during free flight, said toy comprising:

a plate-like body having opposing upper and lower surfaces and at least one bubble-forming aperture formed to extend completely through said body, said at least one aperture

being configured to hold bubble solution and release said solution in the form of at least one bubble when air passes through said aperture;

reservoir means disposed on the body and including a storage area for storing a supply of bubble solution and further including at least one solution feed hole which is disposed in communication with the storage area while having a dispensing opening positioned at the lower surface of the body at a location inward from the at least one bubble forming aperture thereby distributing said solution across the lower surface of the body and into said at least one bubble-forming aperture to thereby enable said apertures to hold and release said solution in the form of at least one bubble in response to rotation of the toy.

5,393,257

TOY FIGURE AND HEADSET ASSEMBLY

Donald Spector, 380 Mountain Rd., Union City, N.J. 07080

Continuation-in-part of Ser. No. 205,564, Mar. 4, 1994. This application Apr. 25, 1994, Ser. No. 231,663
Int. Cl.[6] A63H *3/28*
U.S. Cl. 446—27 8 Claims



1. A toy figure and headset assembly comprising:

A. a stuffed toy figure having a stuffed torso and a pair of stuffed arms extending from the torso and ending in hands;

B. a portable audio player housed in the torso having a recording therein and an output which yields the signals of the recording reproduced by the player;

C. a headset wearable by a child carrying the figure and provided with left and right earphones; and

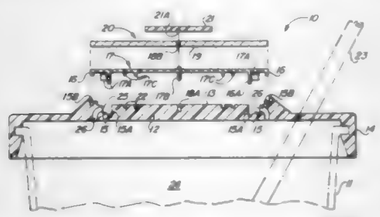
D. a pair of cables extending from the output of the player housed in the torso through the respective arms and hands to the left and right earphones to convey the signal thereto, the cables acting to dangle the figure from the headset and to allow raising of the arms so as to rest the hands on the shoulder of a child.

5,393,258

AIR ACTUATED AMUSEMENT DRINKING DEVICE FOR MOUNTING ON A BEVERAGE CONTAINER

Don S. Karterman, 675 Birch St., Anchorage, Ak. 99501

Filed Aug. 30, 1993, Ser. No. 112,951
Int. Cl.[6] A63H *33/00*
U.S. Cl. 446—71 12 Claims



1. An amusement drinking device for mounting on a beverage container and operable upon withdrawal of the beverage from the container comprising:

a cover for fitting over the open end of a beverage container in an airtight arrangement,

said cover having a port for receiving a straw extending therethrough and into the beverage in an airtight arrangement,

an impeller journalled in said cover for rotation thereof and forming with an exposed surface of said cover a housing therebetween, said impeller being actuated by jets of air drawn into said housing upon withdrawal of beverage from the container through the straw,

said cover defining a circular trough in said exposed surface thereof,

said impeller having at least a series of sequentially arranged parts mounted in a circle for positioning in said trough,

said housing defining an inlet port and an outlet port,

said inlet port being open to atmospheric pressure and formed to direct a series of jets of incoming air against said parts of said impeller in said trough and an outlet port for discharging said air from said housing into the associated beverage container,

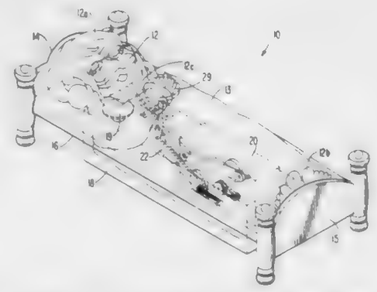
whereby suction created in the associated container upon withdrawal of beverage therefrom through the straw creates a negative pressure in said housing which causes said jets of air to be drawn into said trough in said housing, directed against said parts of said impeller causing rotation of said impeller and into the associated container.

5,393,259

ACTUATED TOY DEVICE OF SANTA CHARACTER SLEEPING IN BED

Stephen Lee, Taiepei, Taiwan, Prov. of China, assignor to Telco Creations, Inc., Hicksville, N.Y.

Filed Aug. 9, 1994, Ser. No. 287,948
Int. Cl.[6] A63H *3/28, 13/00*
U.S. Cl. 446—298 9 Claims



1. An actuated toy device having a recognizable doll character which is reclining and vertically moveable on a bed, the device comprising:

(a) an elongated bed structure having dual end parts connected together by a center support part;

(b) a doll character having head, chest and torso portions reclining in said bed structure and being partially covered by a covering sheet;

(c) a rectangular-shaped housing removably attached to the lower side of said bed structure, said housing containing a gear box unit and a battery enclosure, said gear box unit containing an electric motor rotatably connected to multiple meshing gears and dual driving discs;

(d) a first linkage member provided along one side of said gear box unit and connected to a first said driving disc, and being arranged to provide vertical reciprocating movements to simulate breathing action by said doll character chest portion; and

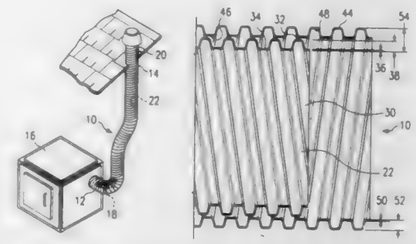
(e) a second linkage member provided along the side opposite said one side of said gear box unit and connected to a second said driving disc, and being arranged to provide angular movement for a second linkage to cause said doll character head and torso portions to raise periodically upwardly and fall back to a reclining position in said bed.

5,393,260

FLEXIBLE DOUBLE WALL VENT PIPE

James T. Barth, Plano, Tex., assignor to Eljer Manufacturing, Inc., Dallas, Tex.

Filed Dec. 10, 1993, Ser. No. 166,238
Int. Cl.[6] F23J *13/02*
U.S. Cl. 454—44 7 Claims



5. A vent pipe adapted for exhausting flue gas, comprising:

a first tubular wall that is helically corrugated to form radially outermost ridges spiraled around the outside of the first tubular wall and corresponding first recesses spiraled between the outermost ridges;

a second tubular wall concentric with the first wall that is helically corrugated to form radially innermost ridges spiraled around the inside of the second tubular wall and corresponding second recesses spiraled between the innermost ridges;

the radially innermost ridges being spiraled in a direction oblique to the orientation of the radially outermost ridges such that a space between the first tubular wall and the second tubular wall will be maintained within the first recesses and the second recesses regardless of any bending of the vent pipe; and

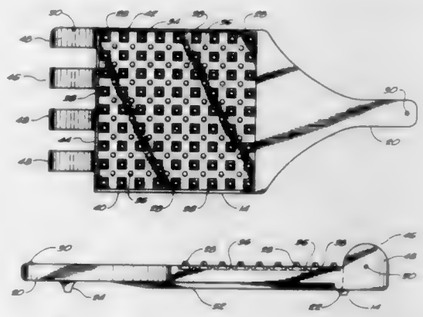
the first tubular wall having a thickness and of a material such that the first tubular wall has a short wel time.

5,393,261

MEAT TENDERIZING DEVICE

Carl D. Winton, 733 Milton, Angleton, Tex. 77515

Filed Feb. 22, 1994, Ser. No. 199,847
Int. Cl.[6] A22C *9/00*
U.S. Cl. 452—144 19 Claims



1. A meat tenderizing device comprising:

a first plate having a surface with a plurality of truncated pyramid projections extending outwardly therefrom, each of said truncated pyramid projections having a hole formed in an area opposite said surface;

a second plate having a plurality of projections extending outwardly therefrom, said plurality of projections of said second plate in a meshing relationship with said projections of said first plate, said second plate being hingedly connected to said first plate;

a first handle means connected to said first plate and extending outwardly therefrom; and

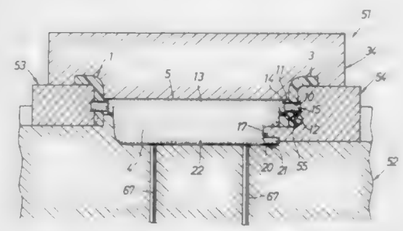
a second handle means connected to said second plate and extending outwardly therefrom, said first and second handle means for moving said first and second plates between a first position and a second position.

5,393,262

AIR-CONDITIONING BLOW-OUT PORT DEVICE AND PROCESS FOR TWO-STAGE INJECTION MOLDING OF THE SAME

Kazuhiro Hashimoto, Kawagoe, and Katsumi Nakagawa, Ise, both of Japan, assignors to Morirokn Kabushiki Kaisha, Tokyo and Ise Kanagata Kogyo Kabushiki Kaisha, Ise, both of Japan

Filed May 18, 1993, Ser. No. 62,837
Claims priority, application Japan, Dec. 1, 1992, 4-321960
Int. Cl.[6] B60H *1/34*
U.S. Cl. 454—155 1 Claim



1. A process for two-stage injection molding of an air-conditioning blow-out port device,

said device comprising:

a housing of synthetic resin;

a plurality of blades of synthetic resin having a blade body disposed within the housing;

pairs of shaft bores provided in a coaxial arrangement in each pair, and being in opposed portions of a peripheral wall of the housing and extending through said opposed wall portions;

a pair of support shafts projectingly provided on opposite ends of the blade body and rotatably fitted in said shaft bores;

a pivotal mounting portion provided on each of said blades;

an interlocking link for interlockingly connecting the pivotal mounting portions of the blades, said pivotal mounting portion being comprised of a pivotal supporting shaft which is projectingly provided in parallel to said support shaft at a rear edge of an end of each blade body to extend through a pivotal supporting bore in said interlocking link, and a slip-off preventing projection raised outwardly from a rear side at a tip end of said pivotal supporting shaft to engage an edge of said pivotal supporting bore;

said process comprising the steps of:

closing a pair of opposed primary opening/closing dies and clamping between the primary opening/closing dies a plurality of first opposed slide dies which include a plurality of shaft bore forming cores, thereby defining a cavity for forming a housing in cooperation with the shaft bore forming cores;

primarily injecting synthetic resin into said cavity to mold said housing:

closing a pair of opposed secondary opening/closing dies and clamping said housing between said secondary opening/closing dies and a second slide die clamped between said secondary opening/closing dies and defining a plurality of blade body-forming cavities, while defining a plurality of pivotal supporting shaft-forming cavities between one of said secondary opening/closing dies and said second slide die, said pivotal supporting shaft-forming cavities communicating with a plurality of slip-off preventing projection-forming cavities provided in said one of the secondary opening/closing dies; and

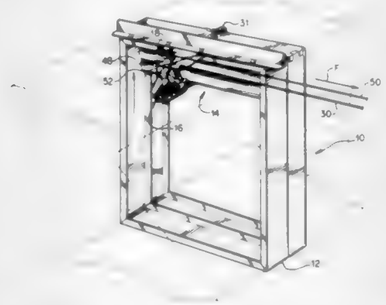
using said shaft bores in said molded housing as support shaft-forming cavities and secondarily injecting synthetic resin into said blade body-forming cavities, the support shaft-forming cavities, the pivotal supporting shaft-forming cavities and the slip-off preventing projection-forming cavities to mold the blades.

5,393,263

ACCESS DOOR ELIMINATOR FOR CURTAIN FIRE DAMPERS

Francis J. McCabe, #6 Bunker Hill Rd., Ottsville, Pa. 18962

Filed Mar. 4, 1994, Ser. No. 206,503
Int. Cl.[6] E05F *15/20*
U.S. Cl. 454—257 4 Claims



1. For use with a curtain-type fire damper, having a plurality of blades movable from a folded, open position to an unfolded, closed position, a cable movable to engage said blades and move them from an unfolded condition to a folded condition or to release said blades from their folded condition so that they can unfold, and a resettable, heat-actuateable link means for retaining the cable and blades in the folded condition and releasing them as aforesaid; a release/reset means, remotely actuateable, comprising:

a) a bracket pivotally mounted in said damper and configured to be engaged with and retained by said link means when the blades are in the folded condition, and released from said engagement so as to be able to pivot in a first direction upon release of said blades as aforesaid;

b) a spring connected to said bracket to urge it to pivot in said first direction;

c) a stop means engaging said cable and positioned to engage said bracket to pivot said bracket in a second direction, opposite to said first direction upon movement of said cable in a third direction, to a position of engagement with said link means as aforesaid; and said stop means further engaging said bracket when said bracket is in the position of retention by said link means, to retain said cable and thereby retain said blades in their folded condition;

d) said bracket being configured and positioned with respect to said stop means to disengage from said stop means when the link means disengages from the bracket to permit it to pivot in said first direction, and thereby release the cable so that the blades can move to the unfolded condition;

e) cable positioning means engaging said cable to facilitate movement of said cable to retract said blades to their folded condition; said cable positioning means being mounted at a location remote from said damper, so that said blades can be reset remotely; and

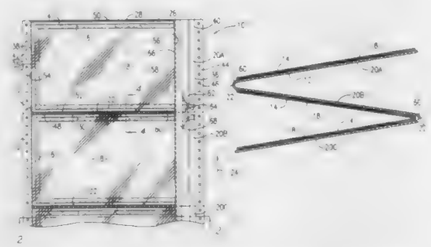
f) link release means juxtaposed to said link means; said link release means having actuating means mounted remotely from said damper, to actuate said link means to cause the release of said blades as aforesaid.

5,393,264

CONTINUOUS BUSINESS FORM HAVING DISCRETE POCKETS

Roger E. Kraft; Merlin F. Mercer, and Roy A. Johnson, all of Fort Scott, Kans., assignors to Ward/Kraft, Inc., Fort Scott, Kans.

Filed Jun. 25, 1993, Ser. No. 82,987
Int. Cl.[6] B41L *1/26*
U.S. Cl. 462—6 11 Claims



1. A continuously produced business form comprising:

at least first, second and third consecutive and interconnected base sheets, at least said second base sheet being separable from said first and third base sheets along a transversely extending line of weakness, each of said base sheets having a first side, a second side, and a circumscribing edge defining therewithin a web-receiving area substantially free of lines of weakening;

a plurality of discrete webs constructed from synthetic resin film and each presenting a surrounding margin; and

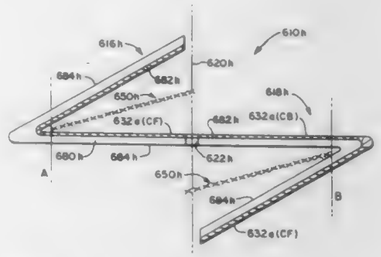
a quantity of adhesive applied to said first side of each of said base sheets for securing a respective one of said discrete webs thereto in substantially coplanar relationship to a corresponding one of said base sheets, with the entire surrounding margin of each web positioned inwardly and in recessed relationship relative to the circumscribing edge of the web-receiving area of the corresponding base sheet to which said web is adhered to present a web-free zone on each corresponding base sheet between each respective surrounding margin and corresponding circumscribing edge to thereby locate the entire surrounding margin of the web adhered to the corresponding base sheet in discrete spaced relationship relative to a web adhered to a sequential, adjacent one of said sheets, said adhesive being applied to secure less than the entire surrounding margin of each respective web to the web-receiving area of the corresponding base sheet to thereby present an opening between a portion of said web and the corresponding base sheet and for thereby defining a pocket between each respective web and the web-receiving area of its corresponding base sheet.

5,393,265

SELF-REPLICATING DUPLEX FORMS

Gerald E. Linden, 2716 S. Chickasaw Ter., Orlando, Fla. 32829, and Keith E. Schubert, 4 Timothy Rd., West Norwalk, Conn. 06850

Division of Ser. No. 908,540, Jun. 29, 1992, Pat. No. 5,224,897, and a continuation-in-part of Ser. No. 808,847, Dec. 16, 1991, Pat. No. 5,248,279, said Ser. No. 908,540, is a continuation of Ser. No. 591,781, Oct. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 497,219, Mar. 22, 1990, Pat. No. 5,154,668, which is a continuation-in-part of Ser. No. 494,565, Mar. 16, 1990, Pat. No. 5,137,494, which is a continuation-in-part of Ser. No. 484,686, Feb. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 436,189, Nov. 13, 1989, Pat. No. 5,197,922, which is a continuation-in-part of Ser. No. 334,183, Apr. 6, 1989, Pat. No. 5,127,879. This application Jun. 15, 1993, Ser. No. 77,290
Int. Cl.[6] B41L *1/22*
U.S. Cl. 462—24 11 Claims



1. Carbonless form for reproducing information entered on both sides of an original panel onto both sides of a copy panel, comprising:

a single sheet of CFB carbonless paper having a one surface and an other opposite surface, coated with carbonless CB on substantially the entire of the one surface, and coated with carbonless CF on substantially the entire of the other surface, and having:

a first portion;

a second portion distinct from and adjacent to the first portion;

a third portion distinct from the first and second portions; and

a fourth portion distinct from the first, second and third portions and adjacent to the third portion;

the first portion is folded over and laminated to the second portion so that approximately half of the CB surface of the CFB sheet is exposed on both sides of an original panel; and

the fourth portion is folded under and laminated to the third portion so that approximately half of the CF surface of the CFB sheet is exposed on both sides of a copy panel.

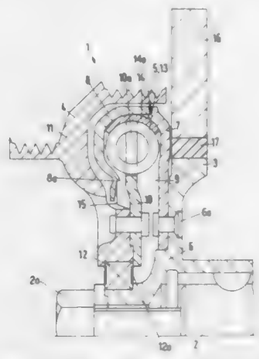
5,393,266

PULLEY WHEEL ELASTIC ASSEMBLY

Helmut Braun, Sinzheim; Dietmar Strauss, Bühl; Peter Klein, Edenkoben, and Stefan Valtwies, Ottersweier, all of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Germany

Filed Aug. 4, 1992, Ser. No. 925,599
Claims priority, application Germany, Aug. 7, 1991, 4126209; Nov. 28, 1991, 4139168; Dec. 3, 1991, 4139730
The portion of the term of this patent subsequent to Oct. 4, 2011, has been disclaimed.
Int. Cl.[6] F16H *55/36;* F16D *3/12;* B60K *25/02*
U.S. Cl. 464—67 38 Claims

1. A sheave comprising a rotary input element connectable to a rotary driving component; an output element coaxial with and rotatable relative to said input element; a rim provided on one of said elements and including at least one profiled portion engageable by at least one flexible member; a housing defining an at least partially sealed annular chamber for a supply of viscous fluid; a friction reducing device disposed between said elements; and a damping unit between said elements, said unit comprising at least two convoluted energy storing members



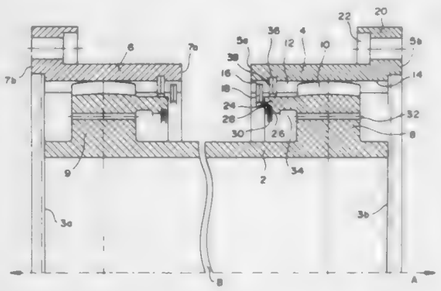
consisting of steel and being disposed in said chamber, first deforming means rotatable with said input element, and second deforming means rotatable with said output element, said deforming means being disposed in said chamber so as to engage and stress said members in response to rotation of said elements relative to each other.

5,393,267

ADJUSTABLE COUPLED DRIVE SHAFT WITH A RESTRAINING RING

Robert E. Munyon, Columbia, Md., assignor to Kop-Flex, Inc., Baltimore, Md.

Continuation of Ser. No. 655,624, Feb. 15, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,702
Int. Cl.[6] F16D *3/18*
U.S. Cl. 464—156 12 Claims



1. A coupling device, for transmission of torque between a drive and driven shaft, comprising:

a first sleeve having a longitudinal axis and having an annular portion including an annular interior provided with teeth distributed about said axis on said interior and extending toward said axis, said teeth each extending along said axis and having spaced ends, said interior including opposite ends;

a second sleeve having a longitudinal axis and an annular portion including an annular exterior provided with teeth distributed about said axis of said second sleeve and spaced apart about said axis of said second sleeve so as to be interengageable with said teeth of said first sleeve;

said sleeves having relative diameters such that said annular exterior of said second sleeve is insertable into said annular

interior of said first sleeve, said teeth of said sleeves each having an axial dimension such that said sleeves are relatively axially shiftable over a selected distance while maintaining said teeth of said sleeves drivingly interengaged;

said first sleeve having, at one end, a first recess means for supporting a first ring, said first recess means extending radially outwardly from said axis into at least the teeth of said first sleeve, said first ring being carried in said first recess means of said first sleeve and extending radially inwardly;

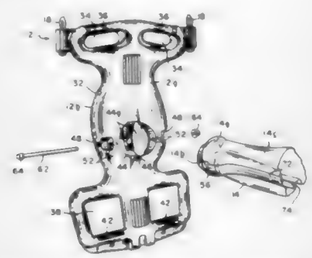
said first sleeve having a second recess means supporting a second ring, said second recess means extending radially outwardly from said axis into at least the teeth of said first sleeve and being located adjacent to said first recess means of said first sleeve and extending radially inward by a greater distance toward said axis than said first ring carried by said first recess means, and said second sleeve having an axially extending support means for contacting said second ring so as to prevent relative axial shifting of said sleeves beyond a selected distance.

5,393,268

TANDEM SWING

Joel C. Cunard, and Robert J. Boudreau, both of Bedford, Pa., assignors to Hedstrom Corporation, Bedford, Pa.

Filed Mar. 12, 1993, Ser. No. 30,667
Int. Cl.[6] A63G *9/00*
U.S. Cl. 472—120 8 Claims



1. A children's swing comprising an elongated rigid beam having opposite ends and means between said ends defining a seating platform for at least two children;

a pair of elongated rigid rockers, each rocker having upper and lower ends, a mid portion between the ends, hand grip means at said upper end and foot support means at said lower end;

first and second hinge means for pivotally connecting the mid portions of said rockers to the opposite ends of the beam so that each rocker can pivot about a pivot axis, the longitudinal axes of the beam and rockers being in a common plane which is perpendicular to said pivot axes;

means for confining the movement of each rocker relative to the beam substantially to movement about the pivot axis of said each rocker;

means for limiting the pivoting motion of each rocker about the corresponding pivot axis so that each rocker can swing between a first position wherein the included angle between the rocker axis and the beam is an acute angle and a second position wherein said included angle is an obtuse angle;

elongated support means spaced above the ground, said support means having a longitudinal axis;

first flexible suspension means having upper and lower ends;

first and second connection means connecting the upper and lower ends of said first suspension means to said support means and one rocker of said pair of rockers, respectively;

second flexible suspension means having upper and lower ends, and

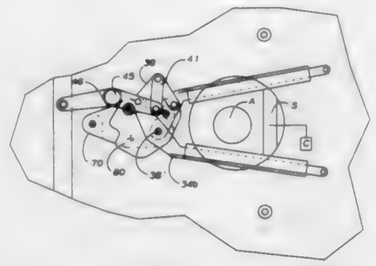
third and fourth connection means connecting the upper and lower ends of said second suspension means to said support means and the other rocker of said pair of rockers, respectively, so that said beam axis is substantially perpendicular to said support means axis, said first and third connection means being spaced apart a distance less than the spacing of said first and second hinge means, so that when said swing is at rest, the rockers and the suspension means converge toward said support means.

5,393,269

BOWLING PIN SETTING MECHANISM AND SCISSOR ARMS

William A. Atkinson, Jr., 1799 Bodwell Rd., Unit 1, Manchester, N.H. 03109

Filed Jan. 12, 1994, Ser. No. 180,570
Int. Cl.[6] A63D *5/08*
U.S. Cl. 473—73 16 Claims



1. In a pin setting apparatus comprising a scissors deck having ten pin openings provided therein with a pair of scissor arms being located adjacent each of the ten pin openings, each said pair of scissor arms having a common pivot located adjacent one of the ten pin openings and said scissor arms being movable over at least a portion of a said adjacent pin opening, a sweeper for sweeping the bowling surface, and a mechanism for controlling various components of said pin setting apparatus, including at least said scissors deck, said scissor arms and said sweeper for resetting bowling pins.

the improvement wherein at least one of said pair of scissor arms has its common pivot supported by said scissors deck so as to be movable relative thereto whereby, during operation of said mechanism for controlling said pin setting apparatus, said common pivot is movable from a first normal operational position, in which said scissor arms are positioned to clamp and raise a said pin located therebetween during a resetting cycle, to a second position in which said mechanism for controlling said pin setting apparatus insufficiently activates said scissor arms so that said scissor arms insufficiently close during the resetting cycle whereby a said pin located therebetween is not clamped and raised by said scissor arms and is swept away by said sweeper, and a selectively mechanism, interacting with said movable common pivot of said at least one of said pair of scissor arms, for one of selectively allowing and preventing said common pivot from moving to the second position during a desired resetting cycle.

5,393,270

TRANSMITTING ROTARY POWER

Johannes R. Grobbelaar, Pretoria, South Africa, assignor to Reunert Mechanical Systems Limited, Alberton, South Africa

Filed Mar. 29, 1993, Ser. No. 38,004
Claims priority, application South Africa, Mar. 30, 1992, 92/2306
Int. Cl.[6] F16D *3/10*
U.S. Cl. 474—5 24 Claims

1. A method of transmitting rotary power, from a source of rotary power to a rotary load, selectively in at least two drive modes, the method including

providing a transmission device which includes

a body,

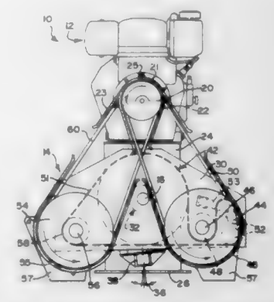
first and second intermediate wheels which are mounted for independent rotation respectively about first and second intermediate axes which are in fixed relation to said body,

source connection means adapted drivingly to connect respectively the first and the second intermediate wheels to the source of rotary power,

load connection means adapted drivingly to connect the rotary load respectively to the first and to the second intermediate wheels;

mounting the transmission device relative to the source of rotary power and the rotary load such that said body including the first and second intermediate wheels is selectively movable between a first operative condition and a second operative condition;

connecting respectively the source of rotary power by means of the source connection means and the rotary load



by means of the load connection means to the transmission device such that:

when the body of the transmission device is in said first operative condition, driving connection in a first drive mode of said at least two drive modes is effected from the source of rotary power via the first intermediate wheel to the rotary load and driving connection from the source of rotary power to the rotary load via the second intermediate wheel is disconnected, and

when the transmission device is in said second operative condition, driving connection in a second drive mode of said at least two drive modes is effected from the source of rotary power via the second intermediate wheel to the rotary load and driving connection from the source of rotary power to the rotary load via the first intermediate wheel is disconnected,

the first drive mode and the second drive mode differing in respect of at least one of direction of rotation and speed ratio; and

appropriately moving said body of the transmission device into a selected one of the first and second operative conditions of the transmission device.

5,393,271

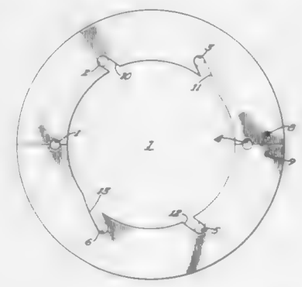
QUICK CHANGE SPROKET

Steven R. Sands, 312 2nd Ave NE. Apt 4, Waseca, Minn. 56093

Filed Feb. 2, 1994, Ser. No. 189,962
Int. Cl.[6] F16H *55/12*
U.S. Cl. 474—96 6 Claims

1. A split sprocket having two mounting apertures bisected by a sprocket split line and additional securing apertures for securing said sprocket to a shaft wherein the improvement comprises;

slotting of the securing apertures in a radial manner from a central bore outward to and including the locations of the securing apertures, the radius of the center line of each of said slots on one sprocket portion being determined by the distance from a center of a first mounting aperture to the respective securing aperture, and the radius of a center



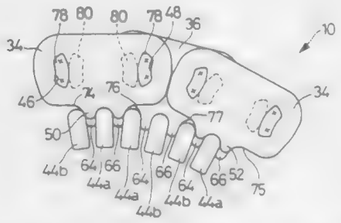
line of each of said slots on a second sprocket portion being determined by the distance from a center of the second mounting aperture to the respective securing aperture on said second sprocket portion.

5,393,272

CHAIN BELT WHEREIN LINK PLATES HOLDING LOAD BLOCK MEMBER ARE SHAPED TO AVOID CONTACT WITH ADJACENT LOAD BLOCK MEMBERS

Shigeru Okuwaki, Shizuoka, and Yukio Tomimura, Mie, both of Japan, assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich. and Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Apr. 8, 1994, Ser. No. 225,189
Claims priority, application Japan, Apr. 9, 1993, 5-107516
Int. Cl.[6] F16G *13/00*
U.S. Cl. 474—213 11 Claims



1. A power transmission chain belt engageable with pulleys each having a V-groove, comprising:

a first chain and a second chain which are arranged in side-by-side parallel relationship with each other, each of said first and second chains including a plurality of sets of parallel links, and pivot members for connecting said sets of parallel links, said first and second chains being offset from each other in a longitudinal direction thereof by a distance equal to a half of a pitch of said sets of parallel links;

each of said plurality of sets of parallel links of said first and second chains including a plurality of link plates each of which has an inner-side end face on an inner side of said first and second chains, said each link plate having a pair of gripping protrusions formed so as to extend from an intermediate portion of said inner-side end face thereof, said inner-side end face including a concave part located between said pair of gripping protrusions;

a plurality of load block members each of which has an outer-side end face on an inner side of said first and second chains, said load block members being arranged in spaced-apart parallel relationship with each other and held alternately by said gripping protrusions of said link plates of

said first and second chains, with said outer-side end faces of said load block members engaging said concave parts of said link plates, said each load block member having a substantially constant height over an entire length thereof and being oriented such that the length of said each load block member is parallel to a direction of width of said first and second chains; and

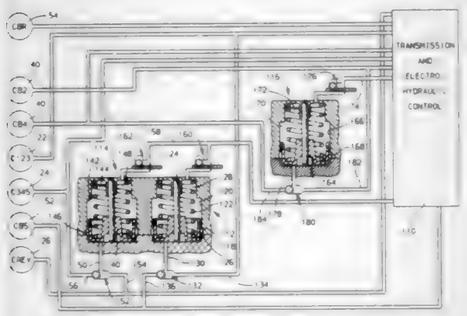
said inner-side end face of said each link plate having surface regions which are spaced from said concave part in a direction opposite to a direction of extension of said gripping protrusions, whereby said surface regions of each of said link plates of one of said first and second chains which link plates are held by one of said load block members are spaced apart from said outer-side end face of the other load block members which are held by the link plates of the other of said first and second chains and which are located adjacent to said one load block member.

5,393,273

POWERTRAIN AND CONTROL HAVING A PLURALITY OF ACCUMULATORS

Raymond J. Haka, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 21, 1993, Ser. No. 80,268
Int. Cl.[6] F16H *61/06*
U.S. Cl. 475—129 **4 Claims**



1. A transmission and control comprising:

forward fluid operated friction drive establishing means;

reverse fluid operated friction drive establishing means;

fluid operated friction drive ratio establishing means for selectively establishing a plurality of forward drive ratios;

a first accumulator and valve means for independently selectively controlling a pressure rise in the forward fluid operated friction drive establishing means to establish a first forward drive ratio and in one of the fluid operated friction drive ratio establishing means to establish one of the forward drive ratios;

a second accumulator and valve means for independently selectively controlling a pressure rise in the reverse fluid operated friction drive establishing means and another of said fluid operated friction drive establishing means to establish another of the forward drive ratios; and

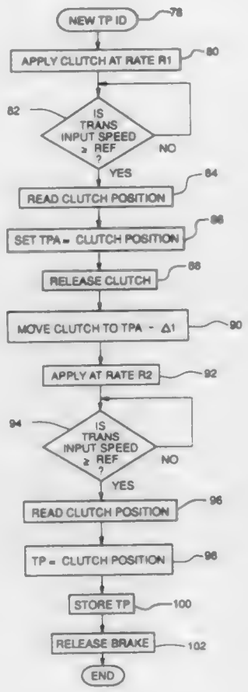
a third accumulator and valve means for independently selectively controlling a pressure rise in one of the fluid operated friction drive ratio establishing means to establish yet another of the forward drive ratios and in one of the fluid operated friction drive ratio establishing means to establish a further of the forward drive ratios.

5,393,274

TOUCH POINT IDENTIFICATION ALGORITHM FOR AUTOMATIC CLUTCH CONTROLLER

Daniel G. Smedley, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 19, 1993, Ser. No. 94,874
Int. Cl.[6] B60K *41/28*; **F16D** *13/75*
U.S. Cl. 477—74 **12 Claims**



1. In a combination including a source of motive power having a predetermined idle speed, a friction clutch for controllably transferring torque from the source of motive power to a transmission input shaft, a multi-speed transmission having an output shaft and including a neutral position, at least one traction wheel connected to the output shaft of the transmission, and an automatic clutch controller for control of the degree of clutch engagement, a method of determining the touch point of the friction clutch comprising the steps of:

operating the source of motive power at the idle speed;

selecting the neutral position of the transmission;

applying a predetermined braking torque to the transmission input shaft;

selecting a reference speed less than the idle speed;

sensing the rotational speed of the transmission input shaft;

applying the friction clutch at a first rate of application;

sensing a first degree of clutch engagement when the transmission input speed attains the reference speed;

releasing the clutch by changing the degree of clutch engagement by a first offset amount from the first degree of clutch engagement;

applying the friction clutch at a second rate of application which is less than the first rate; and

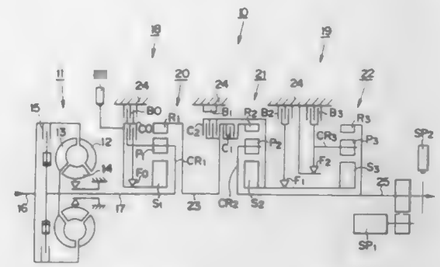
sensing the clutch touch point when the transmission input speed attains the reference speed during application at the second rate.

5,393,275

SHIFT CONTROL SYSTEM FOR MANUALLY SHIFTABLE AUTOMATIC TRANSMISSION

Takayuki Okada, Toyota; Yutaka Taga, Aichi; Yasuo Hojo, Nagoya; Atsushi Tabata, Okazaki; Masato Kaigawa, Toyota; Shuzo Moroto, Nagoya; Takeshi Inuzuka, Anjo; Masashi Hattori, Anjo, and Yoshito Takeshita, Anjo, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aishin AW Co., Ltd., Anjo, both of Japan

Filed Apr. 26, 1993, Ser. No. 51,748
Claims priority, application Japan, Apr. 24, 1992, 4-106635; Jun. 18, 1992, 4-159457; Jun. 19, 1992, 4-161241
Int. Cl.[6] F16H *59/04*
U.S. Cl. 477—81 **12 Claims**



1. A shift control system for an automatic transmission including a plurality of frictional engagement means adapted to be hydraulically engaged for setting a plurality of gear stages, and a shift lever for switching between an automatic mode in which a gear stage is set on the basis of the running state of a vehicle and a manual mode in which a gear stage is switched by manipulating said shift lever, said switching of a gear stage comprising changing a gear ratio between an input shaft and an output shaft of said transmission,

the improvement comprising:

shift detecting means for detecting that a gear stage should be selected for a shift in the manual; and

shift start timing means for accelerating, when the shift in the manual mode is detected, a switching rate of the frictional engagement means which are switched for executing the detected shift.

5,393,276

METHOD AND APPARATUS FOR CONTROL OF ENGINE COMPRESSION BRAKES BEFORE, DURING AND AFTER AN ELECTRONICALLY CONTROLLED GEAR SHIFT

Gregory R. White, Columbus, Ind.; Larry R. Webber, Fredericksburg, Tex.; Dean S. Anderson, Cedar Falls, Iowa, and Jon A. Steeby, Schoolcraft, Mich., assignors to Cummins Electronics Company, Inc., Columbus, Ind.

Filed Oct. 12, 1993, Ser. No. 135,175
Int. Cl.[6] B60K *41/28*
U.S. Cl. 477—91 **9 Claims**

1. A device for controlling activation of an engine compression brake in association with a vehicle drive train including an engine, a throttle control connected to the engine, a manual-/automatic transmission having a plurality of selectable gear reduction ratios, and a manual clutch situated between the engine and the transmission, said device comprising:

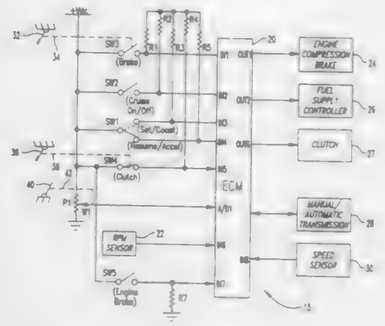
means for determining a valid gear ratio corresponding to one of the gear reduction ratios of the transmission and producing a valid gear ratio signal in response thereto;

means for sensing an automatic shift state of the transmission corresponding to an active shift time period and producing a shift not active signal when said automatic shift state is not active;

means for sensing a closed throttle position for the throttle control and producing a throttle closed signal in response thereto;

means for sensing engagement of said clutch and producing a clutch engaged signal in response thereto;

means for enabling engine compression brake operation and producing a brake enable signal in response thereto; and



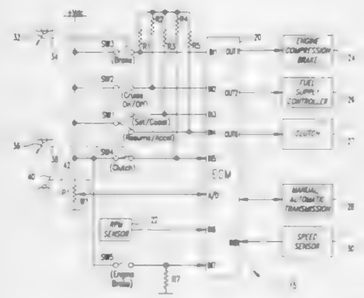
means for activating the compression brake in response to the concurrent presence of said valid gear ratio signal, said throttle closed signal, said clutch engaged signal, said shift not active signal and said brake enable signal.

5,393,277

VARIABLE ELECTRONICALLY CONTROLLED SHIFT POINTS FOR A CRUISE CONTROL SYSTEM

Gregory R. White, Columbus, Ind.; Larry R. Webber, Fredericksburg, Tex.; Dean S. Anderson, Cedar Falls, Iowa; Lloyd E. Flory, Edinburgh, Ind., and Jon A. Steeby, Schoolcraft, Mich., assignors to Cummins Electronics Company, Inc., Columbus, Ind.

Filed Oct. 12, 1993, Ser. No. 134,929
Int. Cl.[6] F16H *61/02*
U.S. Cl. 477—108 **29 Claims**



1. A cruise control system for automatically controlling speed and transmission shifting of an engine powered vehicle in response to receiving a desired speed input from the driver, said cruise control system comprising:

an engine;

a manual/automatic transmission including a plurality of manually engagable gear ratio operation states and a first and a second automatically engagable gear ratio operation states, said first and second gear ratio operation states actuated in response to downshift and upshift signals, respectively, supplied to an input of said transmission;

means for sensing vehicle speed and producing a speed signal corresponding thereto;

means for sensing engine speed and producing an RPM signal corresponding thereto;

means for inputting a desired vehicle speed value from the driver;

means for fueling said engine, said means for fueling responding to said speed signal and adjusting the fueling supply rate for the engine to maintain said speed signal within a predetermined deviation from said desired speed value;

means for producing said downshift signal according to the following downshift equation:

If [(RPM<cruise_dwn_rpm * HS_IDLE_RPM .AND (cruise_set_speed - VSS>cruise_DWN) .OR (RPM<cru_dwn_rpm2 * HS_IDLE_RPM)] then produce said downshift signal; and

means for producing said upshift signal according to the following upshift equation:

If [RPM>cruise_up_rpm * HS_IDLE_RPM) .AND. (cruise_set_speed-VSS<cruise_up) .OR. (RPM>cru_up_rpm2 * HS_IDLE_RPM)] then produce said upshift signal;

wherein the variables of the upshift and downshift equations are defined as follows:

RPM=engine speed;

VSS=vehicle speed;

HS_IDLE_RPM is a rated engine speed value defining a maximum operational engine speed based upon engine design;

cruise_set_speed is a cruise control set speed established by the driver during cruise control operation;

cruise_dwn_rpm is a scaling factor multiplied times HS_IDLE_RPM to produce a first engine speed value below rated engine speed of the engine;

CRU_DWN_RPM2 is a scaling factor multiplied times HS_IDLE_RPM to produce a second engine speed value that is greater than CRUISE_DWN_RPM * HS_IDLE_RPM;

CRUISE_UP_RPM is a scaling factor multiplied times HS_IDLE_RPM to produce a third engine speed value;

CRU_UP_RPM2 is a scaling factor multiplied times HS_IDLE_RPM to produce a fourth engine speed value that is greater than CRUISE_UP_RPM * HS_IDLE_RPM;

CRUISE_DWN is a first vehicle speed offset value; and

CRUISE_UP is a second vehicle speed offset value.

5,393,278

SHIFT CONTROL APPARATUS FOR SHIFTING UP TRANSMISSION UPON RE-ACCELERATION FOLLOWING DECELERATION OF VEHICLE

Tatsuo Kyushima, Okazaki, and Masaharu Tanaka, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 28, 1993, Ser. No. 53,390

Claims priority, application Japan, May 2, 1992, 4-140059; May 2, 1992, 4-140060

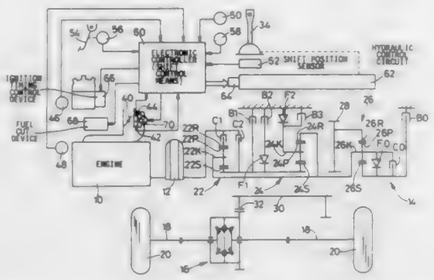
Int. Cl.[6] F16H *59/48*

U.S. Cl. 477—120 12 Claims

1. A shift control apparatus for an automatic transmission of a motor vehicle having an engine, including shift control means for automatically shifting the automatic transmission according to a predetermined shift control pattern, on the basis of a speed of said engine and a currently required output of the engine, the automatic transmission being placed in a selected one of a plurality of gear positions which include a low-speed gear position that is established by a shifting action including engagement of a one-way clutch, and a high-speed gear position that is established by a shifting action including engagement of a frictional coupling device, said low-speed gear position having a larger speed reduction ratio than said high-speed gear position, wherein the improvement comprises:

judging means for determining whether or not a period of time which has elapsed after said low-speed position of the automatic transmission is established during deceleration of the motor vehicle is within a predetermined period;

detector means for detecting a vehicle driver's operation for accelerating the vehicle; and



shift-up means for shifting up the automatic transmission from said low-speed position to said high-speed gear position, when said vehicle driver's operation for accelerating the vehicle is detected by said detector means within said predetermined period.

5,393,279

CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION USING TORQUE CONVERTER SPEED RATIO TO DETERMINE THE ON-TIME FOR A SOLENOID CONTROLLED 3-2 TIMING VALVE

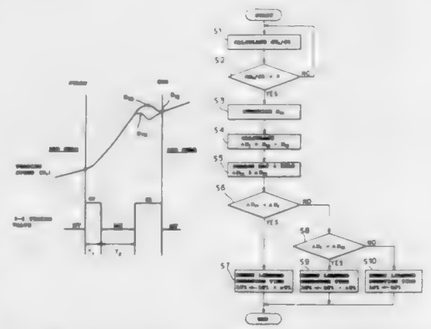
Keiji Bota; Hiroshi Yoshimura, and Kenji Kurisu, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 20, 1992, Ser. No. 931,470

Claims priority, application Japan, Aug. 20, 1991, 3-208237; Oct. 30, 1991, 3-285193; Oct. 30, 1991, 3-285196

Int. Cl.[6] F16H *61/06, 61/08*

U.S. Cl. 477—143 6 Claims



1. A shift control system for controlling a shift operation of an automatic transmission having a torque converter through which a transmission gear mechanism is connected to engine output means, said transmission gear mechanism having a plurality of frictional coupling elements which are selectively locked and unlocked by hydraulic control means to perform an automatic shift operation of said automatic transmission into desired gears, said shift control system comprising:

valve means, included in said hydraulic control means, for connecting and disconnecting a supply of hydraulic pressure to said frictional coupling elements so that said frictional coupling elements are locked and unlocked;

time regulating means for regulating a duration time for which said valve means is kept actuated and, in turn, a speed at which at least one of said frictional coupling elements is locked;

input and output speed detecting means for detecting rotational input speed and rotational output speed of said torque converter; and

control means for calculating a conversion efficiency as a ratio of the rotational input speed of said torque converter relative to the rotational output speed of said torque converter for controlling said time regulating means so as to variably regulate said duration time according to said conversion efficiency.

5,393,280

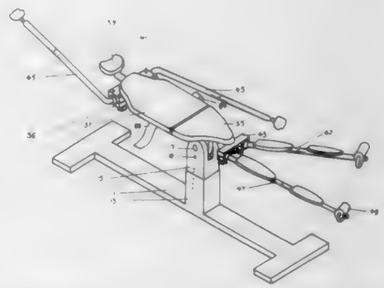
SWIMMING EXERCISE AND TRAINING APPARATUS

Joseph Haviv, 26 Braeswood Sq., Houston, Tex. 77096

Filed Jul. 21, 1993, Ser. No. 94,439

Int. Cl.[6] A63B *69/10*

U.S. Cl. 482—56 9 Claims



1. A swimming exercise and training apparatus comprising:

a base member for supporting the apparatus on a supporting surface;

a horizontal support extending along a longitudinal axis, said horizontal support pivotally secured to said base member in a spaced relationship thereto for pivotal movement about a horizontal axis extending laterally of said longitudinal axis of said horizontal support;

a first support member for supporting the user's chest, said first support member having right and left lateral sides and first and second longitudinal ends and secured to said horizontal support for limited rotation about said longitudinal axis of said horizontal support;

an attachment bar attached to said first end of said first support member, said attachment bar having first and second ends and extending laterally of said horizontal support;

a second support member for supporting the user's waist, said second support member having first and second ends, said first end of said second support member secured to said horizontal support proximate said second end of said first support member for limited rotation about said longitudinal axis of said horizontal support;

a third support member for supporting the user's head, said third support member secured to said attachment bar proximate said first end of said first support member for limited rotation about said attachment bar;

a pair of arm movement members secured respectively to said first end and said second end of said attachment bar proximate respectively to said right side and left side of said first end of said first support member, each said arm movement member secured to said attachment bar for movement in a plurality of vertical planes such that each said arm movement member may move in an arc approximating the movement of the user's arm;

a pair of leg movement members secured to said horizontal support proximate said second end of said second support member, each said leg movement member secured to said horizontal support for movement in a plurality of vertical planes such that each said leg movement member may move in an arc approximating the movement of the user's leg; and

adjustable resistance members attached to each said arm movement member and to each said leg movement member providing adjustable resistance to movement of each said arm movement member and to each said leg movement member.

5,393,281

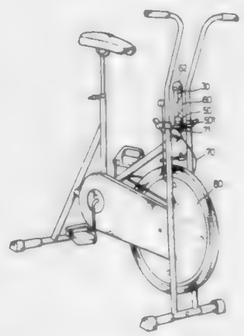
INDICATOR FOR AN EXERCISING APPARATUS WITH A ROTATING MEANS

Paul Chen, No. 3-6, Ching Yang Rd., Liu Pao Village, Ta Ya Hsiang, Taichung Hsien, Taiwan, Prov. of China

Filed Mar. 15, 1994, Ser. No. 213,493

Int. Cl.[6] A63B *23/00;* G01F *1/22*

U.S. Cl. 482—57 13 Claims



1. An indicator for an exercising apparatus with a rotating means comprising:

a base;

a cover being engaged with said base;

a blowing means being disposed on said base;

a transmission means having a first end connected to said rotating means of said exercising apparatus and a second end engaged to said blowing means for actuating said blowing means; and

a float disposed in said cover and above said blowing means, and which can be propelled upwardly when said blowing means is actuated.

5,393,282

SLIDE EXERCISE APPARATUS

Colin R. Maclean, Abingdon, Md., assignor to Improve Human Performance, Inc., Englewood, Colo.

Filed Feb. 23, 1993, Ser. No. 21,088

Int. Cl.[6] A63B *23/04*

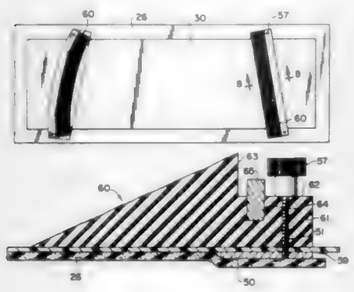
U.S. Cl. 482—70 44 Claims

1. An exercise apparatus comprising:

a smooth sheet having a sliding surface adapted for sliding;

a plurality of bumpers disposed upon the sliding surface, each bumper having a bottom surface which contacts the sliding surface, a back surface, and an inclined surface, said inclined surface being inclined at an angle of about 18 to 22 degrees relative to the bottom surface such that the inclined surface has one edge in common with the bottom surface, at least a substantial portion of each said bumper being formed from a flexible, elastic material whereby,

when a user's foot impacts the bumper, the bumper elastically flexes in a direction of motion of the foot, whereby



the force of impact and associated shock to the foot, leg and joints is decreased.

5,393,283

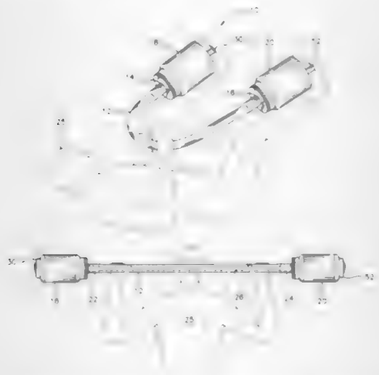
Patent Not Issued For This Number

5,393,284

FLEXIBLE BARBELL EXERCISE APPARATUS

Jerry L. Wesley, 15020 "E" Avenida Montuosa, San Diego, Calif. 92129

Filed Dec. 29, 1993, Ser. No. 174,779
Int. Cl.[6] A63B *11/00*
U.S. Cl. 482—106 **17 Claims**



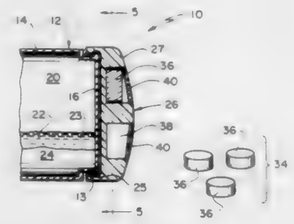
1. A flexible bar bell exercise apparatus, comprising:
an elongate resilient flexible elastomeric tube having first and second opposite ends;
a first weight receiving vessel;
a second weight receiving vessel;
means for connecting the first weight receiving vessel to the first end of the tube;
means for connecting the second weight receiving vessel to the second end of the tube; and an elongate rigid bar having first and second opposite ends and sized to removably fit concentrically within a central bore of the tube to substantially eliminate the flexibility of the tube.

5,393,285

EXERCISE APPARATUS

Kenneth A. Fischer, Sr., Framingham; David L. Landay, Boston; Frederick R. Greer, Abington; Kenneth W. Pratt, and Michael K. Pratt, both of Ware, all of Mass., assignors to Mohawk Sports, Inc., Milford, Mass.

Filed Oct. 30, 1992, Ser. No. 969,094
Int. Cl.[6] A63B *21/075*
U.S. Cl. 482—108 **12 Claims**



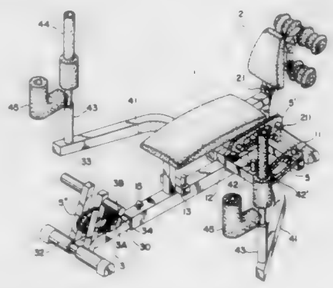
1. An exercise device comprising:
a rigid body defining a first chamber having a first predetermined volume,
a first fluid mass disposed within said first chamber, said first fluid mass having a second predetermined volume, said second predetermined volume being less than said first predetermined volume, and said first fluid mass being adapted to move within said chamber in response to movement of said rigid body during rhythmic exercise,
at least one handle for gripping of said exercise device during exercise, and
a set of one or more weight adjusting elements,
said exercise device defining at least one weight adjusting cavity sized to removably retain one or more weight adjusting elements of said set of weight adjusting elements therein and said exercise device further comprising means for removable attachment of one or more of said weight adjusting elements to said device, whereby said exercise device has a static base weight adjustable by the user by selection of said weight adjusting elements for attachment to said exercise device.

5,393,286

STRUCTURE OF EXERCISING MACHINE

Wen-Liang Cheng, No. 22-35, Chi Tzu Tou, Kuan Shih Village, Shui Shang County, Chia Yi, Taiwan, Prov. of China

Filed Jun. 7, 1994, Ser. No. 255,719
Int. Cl.[6] A63B *21/04*
U.S. Cl. 482—130 **2 Claims**



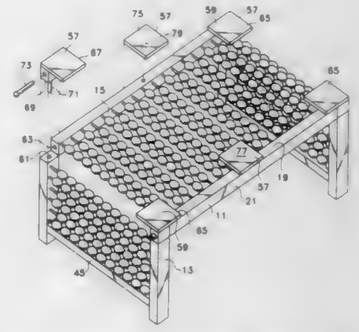
1. An exercising machine comprising:
a base frame having a seat disposed at the top, a pair of first upright rods bilaterally disposed near a rear end thereof, a pair of second upright rods bilaterally disposed near a front end thereof, a bracket transversely disposed between said first upright rods and said second upright rods, a pair of horizontal rods bilaterally disposed between said first upright rods and said bracket;
a scissor grip unit having two pivoted lever arms pivotally connected to said bracket at two opposite sides and two handles respectively connected to said pivoted lever arms, said pivoted lever arms comprising each a first coupling rod and a second coupling rod spaced in the middle at the top, said handles having each a soft hand rest;
a pair of first springy members for connection between said first upright rods of said base frame and said first coupling rods of said pivoted lever arms, or alternatively between said second upright rods of said base frame and said second coupling rods of said pivoted lever arms;
a back rest having a mounting frame pivotally connected to the rear end of said base frame, the mounting frame of said back rest having a pair of horizontal rods disposed at two opposite sides; and
a pair of second springy members connected between the horizontal rods of said base frame and the horizontal rods of said backrest; and
wherein said scissor grip unit produces a resistance only when said pivoted lever arms are turned inwards toward each if said first springy members are connected between said first coupling rods of said pivoted lever arms and said first upright rods of said base frame; said scissor grip unit produces a resistance only when said pivoted lever arms are turned outwards relative to each other if said first springy members are connected between said second coupling rods of said pivoted lever arms and said second upright rods of said base frame.

5,393,287

EXERCISE DEVICE

Dimitrios Papapaschalis, 48 Montgomery St., Saugerties, N.Y. 12477

Filed Oct. 6, 1993, Ser. No. 132,187
Int. Cl.[6] A63B *26/00*
U.S. Cl. 482—142 **5 Claims**



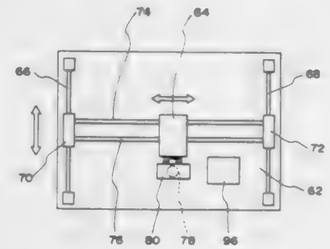
1. An exercise device which can be folded into a compact package and used as a table, said exercise device comprising:
a pair of side rails, generally parallel to one another and in a spaced relationship, each side rail having a rectangular cross section and having an inside surface and an outside surface and further having a central section and two end sections the end sections being located on opposite ends of the central section, each end section being shorter in length than the central section;
hinges affixed to the two end sections and to the central section at opposite ends of the central section;
means for rigidly connecting the pair of side rails to one another; each side rail having a hole therein located generally centrally in the central section of each side rail and another hole at the end of each end section of the side rails most remote from the central section; each end section of each side rail further having an opening extending longitudinally into the end section at the end thereof adjacent the central section having an opening extending longitudinally into the central section at both ends of the central section of the side rails.
a series of roller spindles mounted rotatably generally at right angles between the pair of central side rails and generally equidistant from one another, each roller spindle having a series of rounded crests and valleys adjacent to one another; each rounded crest and each valley being substantially the same in size and shape, each roller spindle having a crest opposite valleys on adjoining roller spindles; and
handles and foot supports removably and interchangeably mounted in the holes in the central section and the end sections.

5,393,288

THREE-DIMENSIONAL PROCESSING MACHINE AND A METHOD OF PROCESSING A WORKPIECE

Toshiaki Miyasaka; Shinya Nozawa, and Takeshi Namiki, all of Tokyo, Japan, assignors to Mutoh Industries Ltd., Tokyo, Japan

Filed Nov. 10, 1992, Ser. No. 974,841
Claims priority, application Japan, Nov. 26, 1991, 3-336174; Jan. 31, 1992, 4-042122; Mar. 5, 1992, 4-083285; Mar. 31, 1992, 4-103856; Mar. 31, 1992, 4-103858
Int. Cl.[6] B23Q *3/155, 15/22*
U.S. Cl. 483—1 **6 Claims**



3. A method for processing a workpiece in a three-dimensional processing machine, comprising the steps of:
moving a spindle head provided with a tool in an XY axis direction with respect to a surface of a table;
lowering the spindle head in the Z axis direction perpendicular to said surface of the table;
measuring the amount of descent of the spindle head from a standard position thereof and applying a predetermined depth processing to the workpiece with the tool;
characterized in that the method further comprises the steps of moving the spindle head above a plurality of measuring points defined on the workpiece surface before processing, lowering the spindle head from said standard position until the lower end of said tool abuts on the workpiece, measuring the amount of descent from said standard position of the spindle head, determining imaginary surface data of the workpiece on the basis of the respective coordinate values of each of the measuring points, said coordinate values being constituted by XY position data, and an amount of descent of the spindle head in the Z direction, utilizing a Bezier curve or a B spline curve analysis, and controlling the movement of the spindle head, with the imaginary surface data as basis on the Z axis, during the predetermined depth processing on the workpiece (96).
4. A method according to claim 3, further comprising the steps of:
lowering the spindle head before the work processing until a

pickup liftably supported on the spindle head and projecting below the lower end of the tool abuts on an object detection sensor;

continuing the lowering step to move the pickup with respect to the tool;

detecting relative movement of the pickup with respect to a basic position of the pickup;

abutting the lower end of the tool on the object detection sensor; and

measuring and memorizing the descending distance of the spindle head between the basic position of the pickup and the abutting position of the tool;

characterized in that for measuring said points on the workpiece surface the method further comprises the steps of lowering the spindle head from the standard position until the basic position of the pickup is reached, calculating said amount of descent on the basis of said memorized descending distance without contacting said tool with said workpiece.

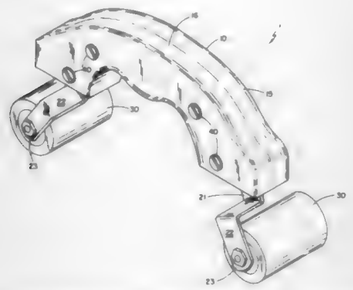
6. A method according to claim 4, further comprising the steps of removing the pickup from the spindle head during the predetermined depth processing on the workpiece.

5,393,289

ROOFING HANDROLLER

Michael P. Green, 31 Sterling Rd., Brockton, Mass. 02401

Filed May 6, 1994, Ser. No. 238,934
Int. Cl.[6] B23B *35/00*
U.S. Cl. 492—13 2 Claims



1. A roofing handroller for application to roofing material surfaces, comprising:

a body defining a handle which extends generally longitudinal in a plane parallel to the roofing material surface to be worked on, said body having a top surface, an under surface, two ends, and two external side surfaces, said handle body being comprised of two halves which are mirror images of each other, the halves having internal facing side surfaces, each internal facing side surface having two notches;

two spaced flange pieces extending from the handle ends, each flange piece having a proximal end attached to said handle and a distal end extending away from the body under surface, at an approximate 45° angle;

wherein each flange piece is comprised of a straight, flat extender section terminating in a transversely oriented L-shaped roller bearing section, said extender sections lying in vertical planes generally parallel to the planes of the handle side surfaces, said roller being rotatably mounted on the distal end of said L-shaped roller bearing section;

wherein each notch has a depth equal to one-half the thickness of a straight, flat extender section, wherein the notches are adapted to form sockets for holding the extender sections when the halves are joined together; and

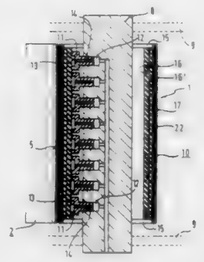
a roller with an internal axle rotatably mounted on the distal end of each said flange piece.

5,393,290

ROLL WITH ADJUSTABLE DEFLECTION

Rolf Lehmann, Rudolfstetten, and Eugen Schnyder, Waltenschwil, both of Switzerland, assignors to Sulzer-Escher Wyss GmbH, Ravensburg, Germany

PCT No. PCT/EP92/00947, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO92/19809, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 30, 1992, Ser. No. 966,161
Claims priority, application Switzerland, May 3, 1991, 01330/91-7; Germany, Aug. 8, 1991, 4126232
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—16 20 Claims



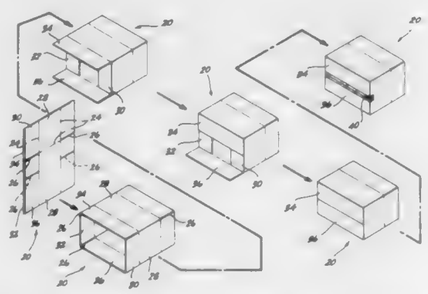
1. A roll comprising a rotationally fixed carrier, a roll jacket which is rotatable about the carrier, at least one support element for the roll jacket exerting a support force in a pressing plane, the roll jacket including a plurality of concentric zones, the zones comprising a supportively formed inner zone of a resiliently deformable material and at least one non-load carrying outer zone formed of at least two layers having a thermal conductivity and a relatively hard, highly polished outer surface, and a thickness of up to approximately 1 mm.

5,393,291

MINI CASE ERECTOR

Conrad C. Wingerter, Yakima, Wash., assignor to Marq Packaging Systems, Inc., Yakima, Wash.

Filed Jul. 8, 1993, Ser. No. 89,224
Int. Cl.[6] B31B *5/80, 5/72, 3/78*
U.S. Cl. 493—116 22 Claims



1. An apparatus for erecting cases from flat blanks having a pair of minor flaps and a pair of major flaps, the apparatus comprising:

(a) a frame having a deck, an input end, and an output end;

(b) a hopper attached to the frame, disposed at the input end of the frame, for holding a plurality of flattened case blanks, the hopper having a loading end and a feed end;

(c) a case puller attached to the frame and disposed near the input end of said frame for pulling flattened cases one at a time from the feed end of the hopper into a tubular configuration with four faces, one of said faces lying on said deck;

(d) a trailing flap folder attached to the frame and disposed on one side of the case puller near the feed end of the hopper;

(e) a leading flap folder attached to the frame and disposed on the same side of the case puller as the trailing flap folder nearer the output end of the frame than the trailing flap folder;

(f) a top flap folder attached to the frame and positioned above the deck near the feed end of the hopper above the leading flap folder;

(g) a bottom flap folder attached to the frame and disposed beneath the deck nearer the output end of the frame than the leading flap folder, said bottom flap folder being arranged and configured to rise partially above the deck to fold the bottom flap of said tubular case lying on said deck; and

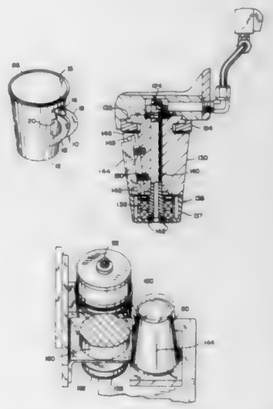
(h) a case advancement mechanism coupled to the frame for advancing cases from the input end to the output end of said frame beyond the leading flap folder.

5,393,292

PAPER CUP HANDLE ATTACHMENT ASSEMBLY

Dale L. Sand, Hubertus, Wis., assignor to Paper Machinery Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 110,557, Aug. 23, 1993. This application May 12, 1994, Ser. No. 241,504
Int. Cl.[6] B31B *1/34, 1/62, 1/86*
U.S. Cl. 493—76 5 Claims



1. A machine for securing a thermoplastic coated butterfly type paper handle onto a paper cup having a seam in the side of the cup, said machine comprising:

a die assembly for forming a paper handle having a backing strip and a wing on each side of said strip,

a mandrel turret having a number of mandrels spaced about the perimeter of the turret, each of said mandrels having a blade assembly projecting outwardly from the surface of the mandrel to engage the seam in the cup,

a cup dispenser for mounting cups on said mandrels,

a wheel assembly for rotating said cup on said mandrel to move the seam on the side of the cup into engagement with the blade assembly, and

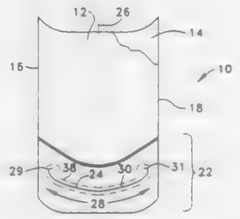
a transfer turret for transferring said handles from said die assembly to said mandrel turret for mounting the handles on said paper cups.

5,393,293

METHOD AND APPARATUS FOR FORMING A SHRINKABLE BAG HAVING AN INTEGRAL HANDLE

Philip F. Cilia, Palos Hills, and Vytautas Kupcikevicius, Oaklawn, both of Ill., assignors to Viskase Corporation, Chicago, Ill.

Division of Ser. No. 95,465, Jul. 23, 1993, Pat. No. 5,332,094. This application Mar. 18, 1994, Ser. No. 214,513
Int. Cl.[6] B31B *21/20, 21/86*
U.S. Cl. 493—341 14 Claims



1. Apparatus for forming a handle opening in a bag composed of a heat shrinkable thermoplastic material comprising:

a) an anvil having a surface for receiving said bag in a lay-flat condition wherein a front and a rear bag panel are superimposed one on another;

b) a knife movable towards said anvil for cold cutting a transverse slit through both of said bag panels; and

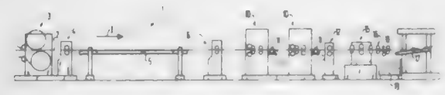
c) means for burning segments through the panels at each end of said cold cut slit thereby extending the length of said cold slit and welding said panels together along said segments.

5,393,294

METHOD AND APPARATUS FOR PRODUCING SHEETS OF CORRUGATED CARDBOARD WITH A VARIABLE FORMAT

Lothar Jobst, Weiherhammer/Opf., Germany, assignor to BHS Corrugated Maschinen- und Anlagenbau GmbH, Germany

Filed Sep. 23, 1992, Ser. No. 950,079
Claims priority, application Germany, Oct. 11, 1991, 4133760
Int. Cl.[6] B31B *1/14*
U.S. Cl. 493—342 9 Claims



1. Method for producing corrugated cardboard sheets having variable formats, said method comprising the steps of,

continuously conveying a corrugated cardboard web from a heating and pulling device at a uniform speed,

processing the web to a predetermined format in at least one longitudinal cutting and grooving device, said web having edge strips cut longitudinally by said longitudinal cutting and grooving device;

cross cutting said web into said sheets by a web cross cutting device so as to conform to said format, said web being conveyed to said web cross cutting device without being severed crosswise,

said edge strips being cut crosswise by at least one edge strip cross cutting device and thereafter being conveyed to waste after processing of the web in said longitudinal cutting and grooving device and prior to said web being severed by said web cross cutting device,

said web having format areas which overlap and said over-

lapping areas being cut by said web cross cutting device to produce waste which is removed to a waste container through a sheet trap, and

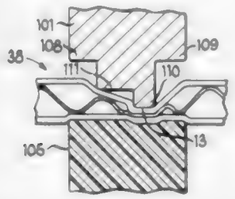
said edge strip cross cutting device having a cutter operating inwardly a predetermined constant distance to cut said edge strips crosswise at each format change along entire length of said web, said predetermined distance being related to the difference between maximum and minimum web widths conveyed.

5,393,295

SCORING APPARATUS

John Knecht, Chicago, Ill., assignor to Stone Container Corporation, Chicago, Ill.

Filed Mar. 1, 1993, Ser. No. 22,684
Int. Cl.[6] B31B *1/25*; B31F *1/10*
U.S. Cl. 493—403 13 Claims



1. A scoring apparatus of the type operably maintained by a supporting structure for use in imparting scores in paper products, such as liner board bonded corrugated medium, to reduce the occurrence of random yielding of said paper products upon folding of same, said scoring apparatus comprising:

scoring means for operably imparting scores in said paper products, said scoring means having a scoring profile and a scoring profile support means for operably supporting said scoring profile;

said scoring profile means including a scoring bead having a first side and a second side opposite said first side, for imparting scores in said paper products to, in turn, create a score line along which said paper product can be folded in a facilitated manner, and integrated shoulder means transversely projecting from said second side of said scoring bead for partially crushing a portion of said paper products on said one side of said score line to, in turn, weaken said portion of said paper products;

said scoring profile means being substantially devoid of a second integrated shoulder means on the first side of said scoring bead, opposite said second side of said scoring bead, leaving substantially uncrushed the portion of said paper products on said first side of said score line;

said first Side extending from said scoring profile support means and said second side extending from said integrated shoulder means, said scoring bead further including an outer tool surface extending between said first and second sides, said outer tool surface co-operating with said first and second sides to operably impart said scores in said paper products to, in turn, create said score line;

said integrated shoulder means having a shoulder side extending from said scoring profile support means, and an outer shoulder surface extending between said second side of said scoring bead and said shoulder side:

scoring means connection means for operably connecting said scoring profile support means to said supporting structure for operably supporting said scoring means;

paper products platform means for removably maintaining said paper products in an operable position between said scoring means and said paper products platform means to facilitate the imparting of said scores in said paper products by said scoring means; and

power means operably associated with said scoring apparatus for forcing at least said scoring means and said paper products into contact with one another, respectively, to impart said score line into said paper products;

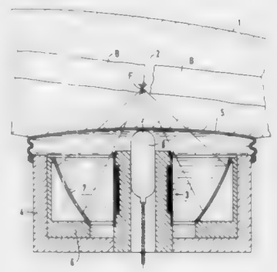
said scoring bead and said integrated shoulder on said one side of said scoring bead imparting said score line to said paper products while substantially weakening said portion of said paper products on said one side of said score line, while substantially maintaining the structural integrity of said paper products on said other side of said score line so as to reduce the random yielding of said paper products sheet, during the folding of said paper products along said score line.

5,393,296

METHOD FOR THE MEDICAL TREATMENT OF PATHOLOGIC BONE

Manfred Rattner, Grossenseebach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 9, 1992, Ser. No. 987,654
Int. Cl.[6] A61B *17/56*
U.S. Cl. 601—2 8 Claims



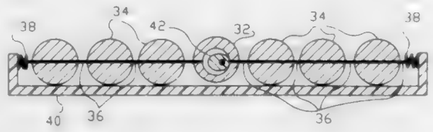
1. A method for stimulating bone growth in a mammal comprising the step of applying acoustic rarefaction pulses to a bone zone where bone growth is to occur, said step of applying generating at said bone zone and producing at least one symptom of the group consisting of haemorrhage, microfissures and at least partially loosened bone chips at the bone zone.

5,393,297

NECK PILLOWS WITH INTERNAL VIBRATIONAL MECHANISMS

Beverly A. Kristoff, 164 Keelridge Dr., Georgetown, Ky. 40324

Filed Mar. 14, 1994, Ser. No. 209,239
Int. Cl.[6] A61H *1/00, 7/00*
U.S. Cl. 601—57 3 Claims



1. A new and improved neck pillow with internal vibrational mechanisms comprising, in combination:

a pillow positionable over a curved indentation at the edge of a shampooing sink, the pillow having a curved central extent to conform with the indentation of the sink and downwardly extending legs positionable interiorly and exteriorly of the sink, the pillow being of a waterproof external material configured to seal an interior of the pillow;

a layer of elastomeric foam disposed in an interior of the pillow in the upper extent of said interior; a plurality of vibrational balls secured together in a planar array beneath the foam, the balls being configured in a plurality of rows with the balls of each row being coupled to springs by laterally extending wires, said springs coupled at a first end to said laterally extending wires and at a second end to the lateral ends of the pillow, the central ball of each row having a hollowed center, each of said hollowed centers containing an eccentric weight, said eccentric weights being coupled to a rotatable rod which extends through said hollowed centers for rotating said eccentric weights;

a motor for rotating the rod and the eccentric weight, thereby vibrating the central balls of the array and moving the laterally extending balls in response to the vibration of the central balls for vibrating the neck of a patron resting on the pillow; and

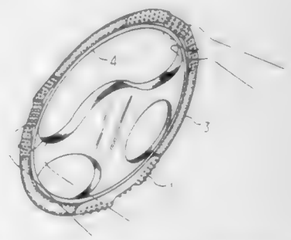
a switch on the exterior surface of the pillow for activating and deactivating the motor.

5,393,298

STEERING WHEEL COVER

Yih-Jong Chang, P.O. Box 82-144, Taipei, Taiwan, Prov. of China

Continuation-in-part of Ser. No. 706,383, Aug. 18, 1992, Pat. No. 5,139,014. This application Mar. 10, 1994, Ser. No. 208,567
Int. Cl.[6] A61H *15/00*
U.S. Cl. 601—134 3 Claims



1. A massage steering wheel cover comprising:

a rubber ring;

a plurality of massage members secured on said rubber ring, each of said massage members having a recess at an intermediate portion and a convex portion at both sides of said recess, said convex portion being formed with a plurality of protuberances and a plurality of perforations and being adhered to said rubber ring to form an air chamber therebetween, said recess being provided with a plurality of round-headed protuberances;

a plurality of leather members secured on said rubber ring;

said massage members and said leather members being alternatively secured on said rubber ring.

5,393,299

EXTREMITY ATTACHED CONTAINMENT APPARATUS FOR LAVAGED FLUIDS

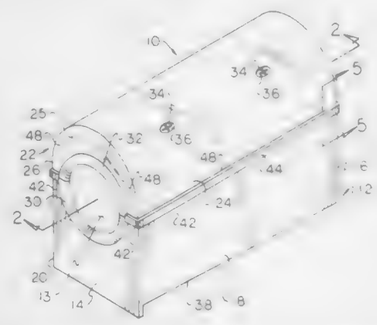
Larry W. Brettin, R.R. 1, Box 101 A, Riverton, Ill. 62561

Filed Sep. 7, 1993, Ser. No. 116,737
Int. Cl.[6] A47K *3/022*
U.S. Cl. 601—166 6 Claims

1. A containment apparatus for layaged fluids, comprising:

an elongate container assembly which includes a first end and a second end respectively positioned along a longitudinal axis and adapted to support and partially encompass an appendage of a patient, said first end and said second end including respective first sealing assemblies for preventing fluids from leaking past the patient's appendage and said respective first end and said second end of said container assembly, said container assembly including a first side and a second side separated from each other by said first end and said second end, and

an elongate transparent lid assembly adapted to be supported by said first side and said second side of said container assembly, said transparent lid assembly and said container assembly defining a lavage chamber, said transparent lid assembly including a first side adapted to be supported by said first side of said container assembly and including a second side adapted to be supported by said second side of said container assembly, said transparent lid assembly also including a first end and a second end positioned along said longitudinal axis and respectively adapted to partially encompass the patient's appendage, said first end and said second end including respective second sealing assemblies



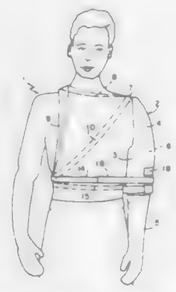
for preventing fluids from leaking past the patient's appendage and said respective first end and said second end of said transparent lid assembly, said transparent lid assembly including a plurality of valved entry ports for permitting a lavage nozzle to pass through said transparent lid assembly into said lavage chamber, wherein edges of said first sealing assembly are placed in registration with corresponding edges of said second sealing assemblies to form a water-tight seal between the patient's appendage and said respective first sealing assemblies and second sealing assemblies.

5,393,300

SHOULDER JOINT BANDAGE

Hans B. Bauerfeind, Kempen, and Rainer Scheuermann, Kiel, both of Germany, assignors to Bauerfeind GmbH & Co., Germany

Filed Jun. 17, 1993, Ser. No. 78,586
Claims priority, application Germany, Jul. 1, 1992, 4221502
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—4 8 Claims



1. A shoulder joint bandage (**2**) with a tubular section (**3**) adapted to envelop the upper arm (**6**), said tubular section having a shoulder top piece (**4**) connected thereto, said top piece having an edge, said edge being disposed on the neck side and having retaining straps (**8**, **10**) fastened thereto, one of which is in the form of a back strap (**10**) adapted to traverse the back diagonally and envelop the hip under the armpit of the

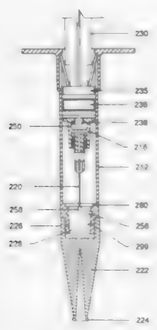
shoulder which is opposite to the shoulder having said top piece (**4**) disposed thereon and the other of which is adapted to be disposed at least partially in the form of a chest strap (**9**) over the side of the chest to said hip where the back strap and chest strap (**9, 10**) cross and continue in their directions, in each case, on the other side of the body into the other hip of the body, characterized by the feature of two continuation belts (**14, 15**) adapted to hold the upper arm (**6**) adjacent said hip, one of said continuation belts extending from said back strap and the other of said continuation belts extending from said chest strap, one of said continuation belts being adapted to encircle said upper arm in one direction and the other of said continuation belts being adapted to encircle the arm in the opposite direction, each of said belts being arranged to connect to itself to secure the upper arm adjacent said hip.

5,393,301

RETRACTABLE SYRINGE

Jerry Goldberg, Houston, Tex., assignor to Retrax, Inc., Houston, Tex.

Filed Oct. 5, 1992, Ser. No. 934,521
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 **1 Claim**



1. A cover for use with a retractable syringe for use with a hypodermic needle cartridge, the syringe having

a barrel having a proximal end and a distal end, said proximal end of said barrel including a mounting collar;

a piston plunger, having sealing means telescopingly received within said proximal end of said barrel;

a needle carrier having a body, said body having a proximal end and a distal end and an exterior wall;

means disposed on said body and engageable in contact with correlatively shaped means disposed on said mounting collar for releasably latching said body in said bore of said mounting collar, said proximal end of said body having means engageable with said sealing means for retracting said body into said barrel; and

wherein there are threads as part of said barrel, comprising:

a cap, said cap having a lower portion and an upper portion separated by a flange;

said flange having a lower surface wider than the proximal end of collar;

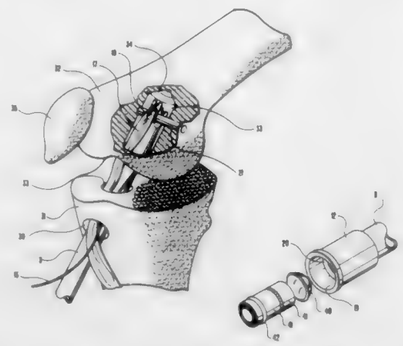
said lower end having dogs sized to insert into said threads, whereby dogs ride said threads to seal said lower surface against the proximal end of collar.

5,393,302

PROCESS FOR ENDOSTEAL LIGAMENT MOUNTING

Ron Clark, 676 S. Bluff, #205, St. George, Utah 84770; Raymond E. Olsen, 190 Summet Dr., Smithfield, Utah 84335, and E. Marlowe Goble, 850 E. 1200 north, Logan, Utah 84321

Division of Ser. No. 956,322, Oct. 5, 1992, Pat. No. 5,266,075.
This application Jun. 11, 1993, Ser. No. 74,542
Int. Cl.[6] A61F *2/08*
U.S. Cl. 623—13 **6 Claims**



1. A surgical method for endosteally mounting a tendon within a closed femoral tunnel section end of a straight ligament tunnel comprising the steps of, forming a tunnel into a patient's bent knee by arthroscopic procedure,

employing a straight tube having a tendon mounting end including a pair of wide longitudinal slots forming aligned tube sections and each said tube section has a means formed on an upper end thereof for receipt of a tendon or a suture attached to a tendon end;

inserting said straight tube into a closed femoral tunnel section and positioning the suture or tendon in each of said notches in said tube sections to form a loop to receive a pin;

directing a pin through the side of the patient's knee so as to pass into said femoral tunnel section through said wide longitudinal slots and said loop;

removing said straight tube out from the straight ligament tunnel leaving said tendon or suture looped over the pin;

pulling one tendon or suture end to slide said tendon across said pin and out from said straight ligament tunnel to align said tendon ends over a mounting point on a tibial cortex adjacent the straight ligament tunnel;

applying a predetermined tensile force to said tendon and mounting said tendon ends to said mounting point on the tibial cortex.

5,393,303

ATTACHMENT FOR LEG AND FOOT JOINT

Katsuaki Shiono, Hatogaya, Japan, assignor to Alcare Co., Ltd., Japan

PCT No. PCT/JP92/00489, § 371 Date Dec. 16, 1992, § 102(e) Date Dec. 16, 1992, PCT Pub. No. WO92/18072, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 17, 1992, Ser. No. 958,328
Claims priority, application Japan, Apr. 17, 1991, 3-035234
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—27 **12 Claims**

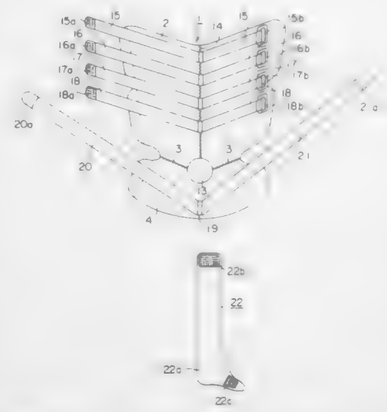
1. An ankle brace for attachment to the leg and foot portion of a user so as to encompass the ankle joint comprising a lower leg covering portion, a foot covering portion, and a pair of L-shaped stay support members of rigid construction,

said lower leg covering portion having inner and outer surface portions and being formed in such a manner so as to be wrappable around the lower leg of the user, said lower leg covering portion including means for holding and securing the same in proper position to the lower leg of the user,

said foot covering portion having inner and outer surface portions and being attached to said lower leg covering portion, said foot covering portion being of a length and width sufficient to cover a portion of the foot extending from the heel to the vicinity of the metatarsus bone and being formed in such a maimer so as to be wrappable about the foot of the user, said foot covering portion further including means for enabling said foot covering portion to be held in proper position about the foot of the user and to be opened and closed on the dorsal surface portion of the foot,

an opening formed in the area where said foot covering portion is attached to said lower leg covering portion, said opening being dimensioned so as to enable the heel portion of the foot of the user to be at least partially inserted therewithin,

each of said L-shaped stay support members having inner and outer surface portions and each including an elongated portion adapted to extend along one side surface portion of the lower leg portion of the user and an extension portion extending outwardly from the elongated portion adapted to extend along the adjoining side surface portion of the foot, one of said stay support members being formed and dimensioned so as to correspond to the shape of the inside surface portion of the lower leg and foot of the user, the other of said stay support members being shaped and dimensioned so as to correspond to the shape of the outer surface portion of the lower leg and foot of the user, each of said stay support members including attachment means on the inner surface portions of the elongated portion and extension portion thereof for attaching said stay support member to both said lower leg covering portion and said foot covering portion so as to prevent relative movement between the lower leg portion and foot portion of the user.



5,393,304

WASHABLE SPUNLACE NON-WOVEN COTTON-BASED CLOTH

André Vuillaume, Biviers, and Jean-Claude Lacazale, Presle, both of France, assignors to Perfojet SA, France

Division of Ser. No. 911,472, Jul. 10, 1992, Pat. No. 5,295,997.
This application Nov. 4, 1993, Ser. No. 145,629
Claims priority, application France, Jul. 25, 1991, 91 09697
Int. Cl.[6] D06M *15/59, 15/55*
U.S. Cl. 8—194 2 Claims

1. A spunlace non-woven cotton-based cloth which can be repetitively laundered without significant deterioration in the mechanical and textile properties thereof, consisting essentially of cotton fibers impregnated with 0.2% to 1.0% by weight, based on the weight of said cotton fibers, of polyamide-amine-epichlorohydrin resin.

5,393,305

TWO-PART AQUEOUS COMPOSITION FOR COLORING HAIR, WHICH FORMS A GEL ON MIXING OF THE TWO PARTS

David Cohen, Milford; Elizabeth Hitchcock, New Canaan, both of Conn., and Stanley Pohl, Scarsdale, N.Y., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Aug. 26, 1993, Ser. No. 112,161
Int. Cl.[6] A61K *7/13*
U.S. Cl. 8—406 15 Claims

1. A two-part aqueous composition for coloring and providing durable conditioning to human hair which forms a gel on mixing of the two parts comprising:

(a) an aqueous lotion first part having a pH of from about 7 to about 11 containing from about 0.005 % by weight to about 5 % by weight of at least one primary intermediate and at least one coupler for the formation of oxidation dyes, from about 0.1% to about 5 % by weight of a cationic polymer, from about 0.5 % to about 15 % by weight of an anionic or amphoteric surfactant or mixture thereof and at least 70% by weight water, wherein the cationic polymer is characterized in that it forms an insoluble precipitate when mixed with said surfactant in water at a pH above 7 and the precipitate does not readily dissolve upon the addition of more of said surfactant; and

(b) an aqueous developer second part having a pH of from about 2 to about 6 containing from about 0.5 % by weight to about 40% by weight of a peroxide oxidizer and from about 0.1% by weight to about 20% by weight of an anionic polymer, wherein the anionic polymer is a polymer of two or more monomers selected from the group consisting of acrylic acid, methacrylic acid and their lower alkyl esters and is insoluble in the developer but dissolves to form said gel when the lotion and developer are mixed.

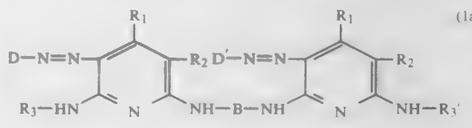
5,393,306

DYE MIXTURES, PROCESSES FOR THEIR PREPARATION AND THEIR USE

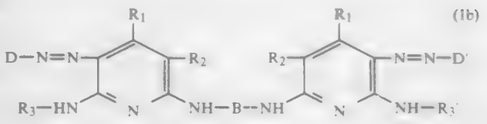
Athanassios Tzikas, Pratteln, and Claudia Carisch, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 19, 1993, Ser. No. 94,644
Int. Cl.[6] C09B *62/00*
U.S. Cl. 8—543 10 Claims

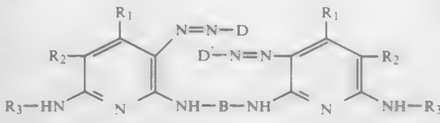
1. A dye mixture which comprises a reactive dye of the formula


(1a)

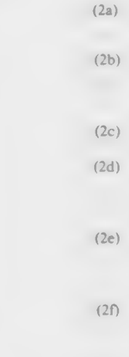
together with at least one reactive dye of the formulae


(1b)

and


(1c)

in which D and D′ independently of one another are the radical of a diazo component of the benzene or naphthalene series or the radical of a mono- or disazo dye, R_1 is C_1–C_4alkyl, R_2 is cyano, carbamoyl or sulfomethyl, R_3 and R_3' independently of one another are hydrogen or C_1–C_{12}alkyl which is unsubstituted or substituted by hydroxyl, sulfo or sulfato and, with the exception of methyl, may be interrupted by oxygen and B is C_2–C_{12}alkylene which is substituted or unsubstituted and may be interrupted by oxygen, and the reactive dyes of the formulae (1a), (1b) and (1c) in each case contain at least one fibre-reactive radical bonded to the group D or, D′, wherein said fibre-reactive radical is a group of the formula


(2a)

(2b)

(2c)

(2d)

(2e)

(2f)

(2g)

in which W is a group of the formula $-SO_2-NR_4-$, $-CONR_4$ or $-NR_4CO-$, R_4 is hydrogen, C_1–C_4alkyl which is unsubstituted or substituted by hydroxyl, sulfo, sulfato, carboxyl or cyano, or a radical of the formula

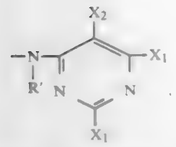
R is hydrogen, hydroxyl, sulfo, sulfato, carboxyl, cyano, halogen, C_1–C_4alkoxycarbonyl, C_1–C_4alkanoyloxy, carbamoyl or the group $-SO_2-Z$, Z is a group of the formula $-CH=CH_2$ or $-CH_2-CH_2-U_1$ and U_1 is a leaving group Z_1 is a group of the formula

and

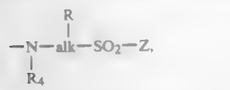
Hal is halogen, E is the radical —O— or $-NR_5-$ and R_5 is hydrogen or C_1–C_4alkyl, alk and alk′ independently of one another are C_1–C_6alkylene and arylene is a phenylene or naphthylene radical which is unsubstituted or substituted by sulfo, carboxyl, C_1–C_4alkyl, C_1–C_4alkoxy or halogen, or a fibre-reactive radical of the formula



or



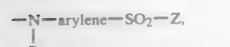
in which R′ is hydrogen or C_1–C_4alkyl which is unsubstituted or substituted by hydroxyl, sulfo, sulfato, carboxyl or cyano, X, X_1 and X_2 are halogen and T is halogen, hydroxyl, sulfo, C_1–C_4alkoxy, C_1–C_4alkylthio, C_1–C_4alkylsulfonyl, phenylsulfonyl, morpholino or substituted or unsubstituted amino, or T is a fibre-reactive radical of the formula



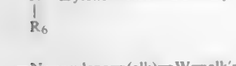
(5a)



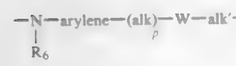
(5b)



(5c)

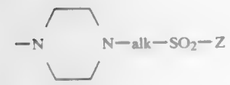


(5d)



(5e)

or



(5f)

in which R, R_4, E, W, Z, Z_1, alk, alk′ and arylene are as defined above, R_6 is hydrogen or C_1–C_4alkyl and p is 0 or 1, and said dyes of the formulae (1a), (1b) and (1c) in each case contain at least one sulfo or sulfato group.

5,393,307

REACTIVE DYESTUFF MIXTURE

Max Schwarz, Leverkusen; Joachim Grütze, Odenthal; Dietrich Hildebrand, Odenthal; Joachim Wolff, Odenthal, and Frank-Michael Stöhr, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 3, 1993, Ser. No. 101,207

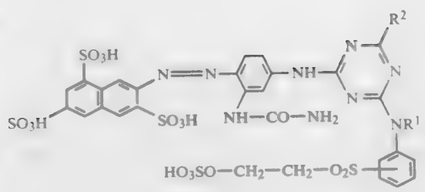
Claims priority, application Germany, Aug. 10, 1992, 4226365.4; Sep. 7, 1992, 4229836.9

Int. Cl.[6] **C09B** *62/00*

U.S. Cl. 8—549 **6 Claims**

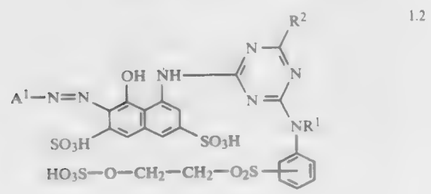
1. A dyestuff mixture of at least two reactive dyestuffs wherein at least one dyestuff 1 selected from the group consisting of the dyestuffs of formulae 1.1, 1.2, 1.4 and 1.5

(3)

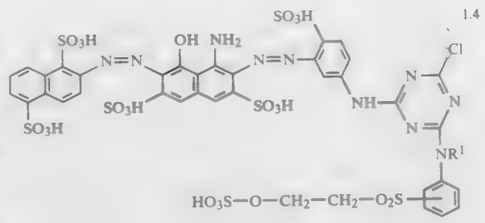


1.1

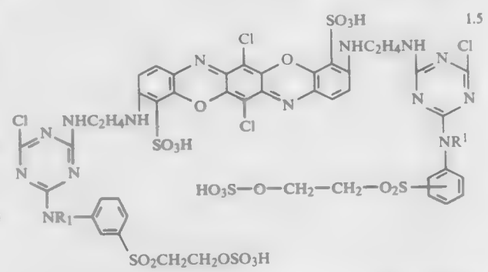
(4)



1.2

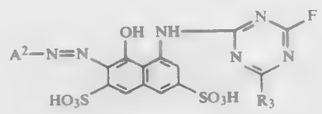


1.4

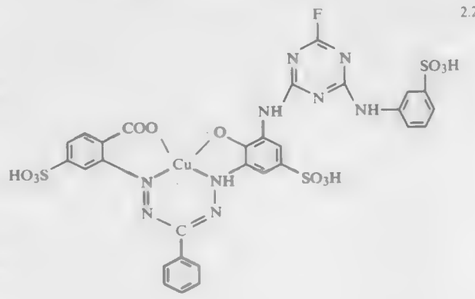


1.5

and at least one dyestuff 2, selected from the group consisting of the dyestuffs of formulae 2.1, 2.2, or dyestuff 3 selected from the group consisting of the dyestuffs of the formulae 3.1 and 3.2

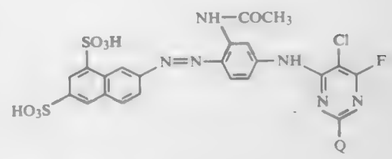


2.1

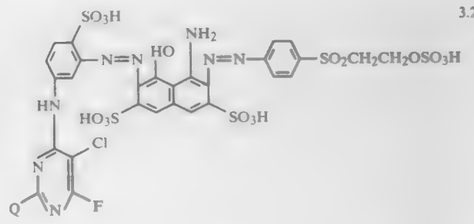


2.2

-continued



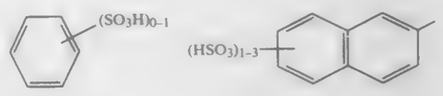
3.1



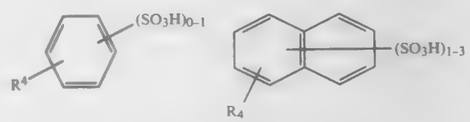
3.2

are contained therein, in which

A^1 denotes

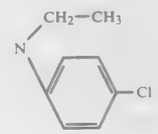


A^2 denotes

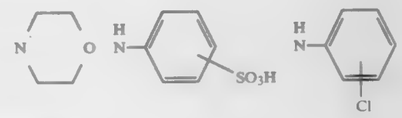


R^1 denotes H, CH_3, $-CH_2-CH_3$, $-(CH_2)_2CH_3$

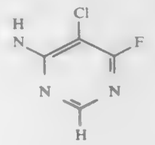
R^2 denotes



R^3 denotes



R^4 denotes



Q denotes H, F.

5,393,308

MIXTURES OF AZO DYES FOR NAVY TO BLACK SHADES

Arno Lange, Bad Durkheim; Volker Bach, Neustadt; Clemens Grund, Mannheim; Helmut Reichelt, Neustadt, and Paul Richter, Friedelsheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 24, 1993, Ser. No. 125,826

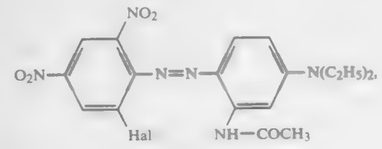
Claims priority, application Germany, Sep. 29, 1992, 4232558

Int. Cl.[6] **C09B** *29/00;* **D06P** *3/54*

U.S. Cl. 8—639 **7 Claims**

1. Dye mixtures containing, in each case based on the total weight of the dyes,

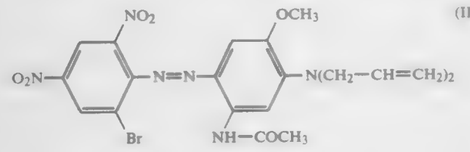
a) from 20 to 45% by weight of at least one azo dye of the formula I



(I)

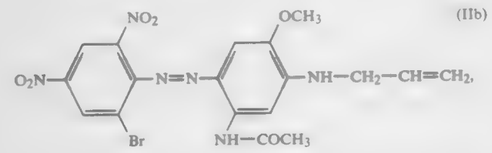
where Hal is chlorine or bromine,

b) from 15 to 70% by weight of the azo dye of the formula IIa



(IIa)

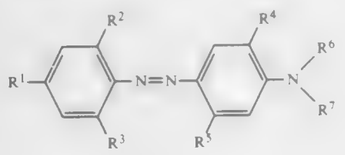
and optionally of the dye of the formula IIb



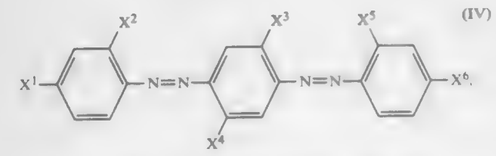
(IIb)

the proportion of dye IIa being from 50 to 100% by weight and the proportion of dye IIb being from 0 to 50% by weight, each percentage being based on the weight of dye IIa or IIb, and

c) from 1 to 55% by weight of at least one azo dye of the formula III or IV



(III)



(IV)

where R^1 is nitro or C_1-C_4-alkylsulfonyl, which may be hydroxyl-substituted, R^2 is bromine, chlorine or hydrogen R^3 is

hydrogen, chlorine or bromine, R^4 is hydrogen, methyl or chlorine, R^5 is hydrogen or chlorine, R^6 and R^7 are independently of one another hydrogen, phenyl or C_1-C_4-alkyl, which may be hydroxyl-, phenoxy-, 2-cyanoethoxy-, acetyloxy-, phenoxyacetyloxy-, benzoyloxy-, methoxycarbonyloxy- or phenylaminocarbonyloxy-substituted, X^1 is hydrogen, hydroxyl, methoxy, acetylamino or nitro, X^2, X^3, X^4 and X^5 are independently of one another hydrogen, methyl or methoxy, and X^6 is hydroxyl, 2-hydroxyethoxy, formyl or methoxy-carbonylamino, with the proviso that the sum of the dyes mentioned under a), b) and c) is 100% by weight.

5,393,309

FUEL ADDITIVE COMPOSITIONS CONTAINING POLYISOBUTENYL SUCCINIMIDES

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

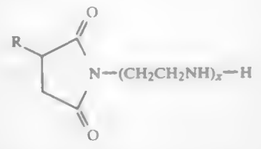
Continuation of Ser. No. 759,320, Sep. 13, 1991, abandoned. This application May 19, 1994, Ser. No. 246,378

Int. Cl.[6] C10L *1/22, 1/18*

U.S. Cl. 44—347 18 Claims

1. A fuel additive consisting essentially of comprising:

(a) a polyisobutenyl succinimide of the formula



wherein R is a polyisobutenyl group having a number average molecular weight in the range of about 1200 to 1500, and x is 1 or 2; and

(b) a nonvolatile paraffinic or naphthenic carrier oil, or a mixture thereof, containing no more than about 10% of aromatic material.

5,393,310

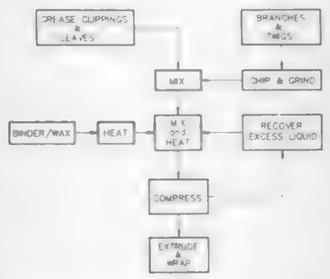
ARTIFICIAL FIREPLACE LOG AND METHOD FOR MAKING THE SAME

Kenneth E. Wollen, 6812 N. 65th Ave., Omaha, Nebr. 68152

Filed Mar. 23, 1994, Ser. No. 216,913

Int. Cl.[6] C10L *5/00*

U.S. Cl. 44—535 6 Claims



1. A method for making artificial fireplace logs, comprising the steps of mixing grass clippings and leaves taken directly from a lawn without further processing and in an amount in a range of 60–80% by weight of the total weight of all materials with wood chips and sawdust in an amount within the range of 10–15% by weight of the total weight to form a mixture; adding a binder selected from the group consisting of resin glues and waxes in liquid

form to said mixture and mixing until the binder coats the mixture; compressing said coated mixture in a mold to form a compacted mass; and removing said compacted mass from said mold after said mass has solidified.

5,393,311

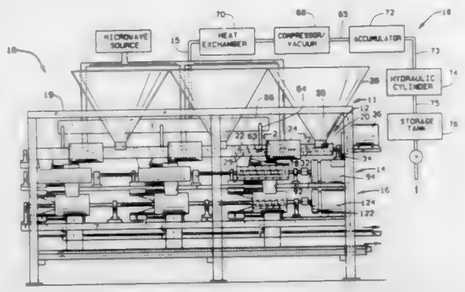
METHOD AND APPARATUS FOR DESULFURIZING COAL

Frank D. Marhanka, 580 Cromwell Way, Lexington, Ky. 40503

Filed Feb. 19, 1993, Ser. No. 20,102

Int. Cl.[6] C10L *9/10;* C10B *57/00*

U.S. Cl. 44—622 15 Claims



1. A method for desulfurizing coal comprising the steps of:

combining sulfur-containing coal with aluminum oxide particles in a vessel with a means for providing a magnetic field around said vessel;

irradiating said coal and aluminum oxide combination with sufficient microwave energy and concentrating the microwave energy being introduced into said vessel within the vicinity of the magnetic field to subject said combination to a temperature of between about 250° F. and about 650° F. for a period of time sufficient to cause the release of sulfur from said coal as a gas;

removing said gas released in said vessel;

admixing said coal and aluminum oxide combination in a manner enabling the adsorption of any remaining gaseous sulfur onto said aluminum oxide particles; and

separating said aluminum oxide particles from said coal.

5,393,312

AGENT FOR PREVENTION OF SALT DAMAGE OF PLANTS AND A METHOD OF PREVENTING SALT DAMAGE OF PLANTS USING THE SAME

Kinya Ogawa, Kawasaki; Kenichi Ito, Joetsu; Yoichi Hirasawa, Higashikurume; Takao Oshima, Nakakubiki, and Seiji Sakai, Tokyo, all of Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed Aug. 3, 1993, Ser. No. 101,312

Claims priority, application Japan, Aug. 7, 1992, 4-233023; Aug. 8, 1992, 4-232890

Int. Cl.[6] A01B *79/00;* A01C *1/00*

U.S. Cl. 47—58 9 Claims

1. A method of preventing salt and metal damage to plants which comprises forming a discrete water-repellent layer above an underground water level and wherein said water-repellant layer is lower than the level of plant roots, said water-repellant layer consisting essentially of hydrophobic particles and being 0.5–500 mm thick.

5,393,313

TRANSPLANTABLE NURSERY STOCK GROWING METHODS

Ralph E. Reiger, 7505 N. Broadway, Oklahoma City, Okla. 73116

Filed Nov. 15, 1993, Ser. No. 151,955

Int. Cl.[6] A01B *79/00;* A01G *23/02, 23/04, 9/02*

U.S. Cl. 47—58 19 Claims



1. An improved method of growing nursery stock for transplantation wherein the root growth of the nursery stock is controlled comprising the steps of:

(a) forming a plurality of spaced holes in the ground;

(b) placing a porous fabric blanket over and into said holes whereby depressions in said blanket conform with said holes, said porous fabric blanket being formed of polymeric plastic fibers and having sufficient strength to constrict penetrating roots whereby root growth below said blanket is restricted and enlarged root nodule formation and root branching are promoted within said depressions above said blanket;

(c) filling said depressions with a growing medium;

(d) discretely planting and growing a plant in each of said depressions; and

(e) subsequently removing said growing plants from said depressions for transplanting.

5,393,314

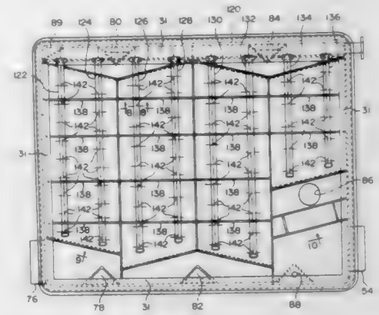
HORIZONTAL PASS, MULTIPLE PACKED-BED GAS SCRUBBER

Clarence Powell, St. Louis; Duane Powell, Alma, both of Mich., and Ralph F. Strigle, Jr., Akron, Ohio, assignors to Powell Fabrication & Manufacturing, Inc., St. Louis, Mich.

Filed May 31, 1994, Ser. No. 251,604

Int. Cl.[6] B01F *3/04*

U.S. Cl. 55—233 37 Claims



1. A horizontal pass multiple packed-bed gas scrubber for removing solute from a gas stream comprising:

an enclosure comprising wall means forming a scrubbing chamber;

a sump for holding a supply of scrubbing liquid;

pump means for pumping scrubbing liquid from said sump to said scrubbing chamber;

drain means for draining scrubbing liquid from said scrubbing chamber to said sump;

said scrubbing chamber comprising means defining a gas flow path which extends between a gas inlet where solute-containing gas enters said enclosure and a gas outlet where scrubbed gas exits said enclosure and to which the gas stream is constrained as it passes through said enclosure;

fan means for causing gas to enter said enclosure through said gas inlet, and the gas stream to move through said gas flow path and exit said enclosure through said gas outlet,

said gas flow path comprising multiple, successively side-by-side, horizontal packed-beds, each containing packing material occupying the bed's length and filling the bed's transverse cross sectional area, and a transition that is unoccupied by packing material for conveying the gas stream horizontally from an immediately preceding bed to an immediately succeeding bed and reversing the direction such that the gas stream travels through said immediately succeeding bed in the opposite direction from the direction through said immediately preceding bed;

said packing material serving, when wetted by scrubbing liquid, to spread out the scrubbing liquid into an expansive interfacial area;

said scrubbing chamber further comprising distribution means for distributing scrubbing liquid pumped from said pump means throughout the packing material in said beds for thoroughly wetting the same to create throughout the packing material an expansive interfacial area for the scrubbing liquid to interface with the gas stream and accomplish efficient mass transfer removal of solute from the gas stream as it passes through said beds and thereafter conveying solute-containing scrubbing liquid to said drain means for draining the same to said sump; and

wherein said transition presents to the gas stream entering it an entrance area that is defined by a lengthwise end of said immediately preceding bed and to the gas stream exiting it an exit area that is defined by a lengthwise beginning of said immediately succeeding bed, and wherein said end of said immediately preceding bed and said beginning of said immediately succeeding bed occupy respective vertical planes that make an obtuse angle with each other.

5,393,315

IMMERSED HEAT EXCHANGER IN AN INTEGRAL CYLINDRICAL CYCLONE AND LOOPSEAL

Michael G. Alliston, Lewisburg, and Brian T. Sinn, Williamsport, both of Pa., assignors to Tampella Power Corporation, Williamsport, Pa.

Filed Jul. 28, 1994, Ser. No. 282,518

Int. Cl.[6] B01D *45/12*

U.S. Cl. 55—269 19 Claims



1. An arrangement for separating solids from a process gas produced in a heat containing, solids-processing device, for

providing a pressure seal for the device and for removing heat from the device, the arrangement comprising:

a main housing having a longitudinal axis;

an inlet communicating with the main housing for receiving a solids-laden process gas in a direction for separating the solids from the gas;

a partition wall in the main housing for separating an outer chamber from an inner chamber near a lower end of and within the main housing;

means for channeling solids falling in the main housing, into the inner chamber;

first passage means for passing solids between the inner and outer chambers;

fluidizing means for providing fluidizing air to the outer and the inner chambers for creating fluidized beds of solids in the outer and the inner chambers;

second passage means for passing solids from the outer chamber, out of the main housing and back to the solids-processing device; and

an immersed heat exchanger in at least the outer chamber for removing heat from at least the fluidized bed of solids in the outer chamber.

5,393,316

GLASS PLATE BEND-SHAPING APPARATUS AND METHOD OF BEND-SHAPING A GLASS PLATE

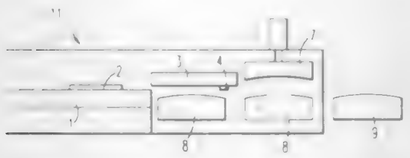
Tatsuo Sugiyama, and Kenji Maeda, both of Aichi, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Oct. 29, 1993, Ser. No. 143,067

Claims priority, application Japan, Oct. 30, 1992, 4-316223

Int. Cl.[6] C03B *23/03*

U.S. Cl. 65—106 6 Claims



1. A method of bend-shaping a glass plate the method comprising the steps of:

transferring a glass plate by means of a transferring means in a heating furnace from a first position in said heating furnace to a second position in said heating furnace which is adjacent to a glass plate sucking and suspending device and is downstream of the transferring means;

sucking and suspending the glass plate by means of said glass plate sucking and suspending device;

moving arm portions of a positioning means disposed at a lower portion of the glass plate sucking and suspending device in a direction substantially parallel to a glass plate suspension surface of the glass plate sucking and suspending device;

sucking and suspending glass plate supporting portions which are each connected to a top end of each of the arm portions by a joint portion so as to be movable with respect to the arm portions and permit a distance between the glass plate supporting portions and the glass plate sucking and suspending device to be kept at a predetermined value;

supporting an edge portion of the glass plate by the glass plate supporting portions, and positioning the glass plate to a predetermined position by advancing and retracting the arm portions in the direction parallel to the suspension surface;

moving the glass plate sucking and suspending device on which the glass plate is sucked and suspended to an upper portion of a bending mold;

placing the glass plate on the bending mold; and

bending the glass plate on the mold.

5,393,317

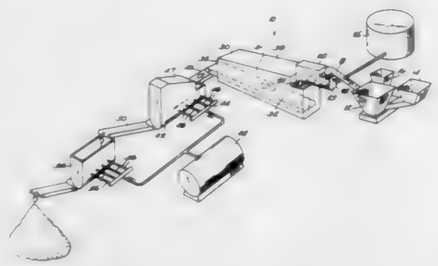
METHOD AND APPARATUS FOR PRODUCING ORGANIC BASED FERTILIZER IN CONTINUOUS PROCESS

Elmo C. Robinson, Paragonah, Utah, assignor to Reland Industries, Inc., Paragonah, Utah

Continuation of Ser. No. 432,565, Nov. 6, 1989, abandoned. This application Aug. 22, 1991, Ser. No. 750,769

Int. Cl.[6] C05F *13/00*

U.S. Cl. 71—12 13 Claims



1. A method for producing an organic based humic acid fertilizer containing a predetermined amount of an available inorganic material selected from the group consisting of nitrogen, phosphate, potash, sulfur, and mixtures thereof and having a desired final pH level in the finished fertilizer product, said method comprising the steps of:

(a) mixing with an organic material selected from the group consisting of livestock and poultry manure, sewage sludge, separated garbage, cotton gin trash, fruit cannery waste, vegetable cannery waste, nut cannery waste, wood and paper pulp waste, spent mushroom compost, methane and alcohol solid wastes, lignite, leonardite, humate, coal and mixtures thereof, a sufficient amount of said inorganic material to provide said predetermined amount of said inorganic material in the fertilizer product;

(b) blending with the mixture produced in step (a) a sufficient amount of acid to substantially reduce the pH thereof and to cause chemical breakdown of said organic material;

(c) allowing the blended mixture to stand for at least 20 minutes;

(d) blending with the mixture produced in step (c) a sufficient amount of a base material to raise the pH thereof to a level which is intermediate to a said final pH level; and

(e) blending with the mixture produced in step (d) additional base material to raise the pH thereof to said final pH level.

5,393,318

METHOD OF PRODUCING ORGANIC FERTILIZER BY USING FISH AS RAW MATERIAL

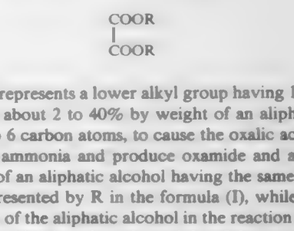
Mitsuo Iizuka, Yaizu, and Shigeki Konishi, Shizuoka, both of Japan, assignors to Yaizu Meal Kyogyo Kumiai, Yaizu, Japan

Filed Apr. 26, 1993, Ser. No. 51,565

Int. Cl.[6] C05F *1/00*

U.S. Cl. 71—16 3 Claims

1. A method of producing an organic fertilizer by using fish, said method comprising the steps of preparing a raw material containing more than 80% of fish heads, boiling the raw material to obtain a stock, removing solids and oil contents from the stock to obtain stock liquid, thereafter treating the stock liquid in a decomposition tank with decomposing enzyme for enzyme decomposition, filtering the enzyme-decomposed stock liquid to produce a clarified liquid organic fertilizer, and condensing



the clarified liquid organic fertilizer to produce a condensed organic fertilizer.

5,393,319

PROCESS FOR PRODUCING OXAMIDE GRANULES

Yukio Inaba; Tomohiko Yamamoto; Genji Koga; Hideki Noguchi, and Joji Funatsu, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Jul. 8, 1993, Ser. No. 88,804

Claims priority, application Japan, Jul. 10, 1992, 4-223148; Aug. 21, 1992, 4-264018

Int. Cl.[6] C07C *102/06, 67/36;* C06G *3/00*

U.S. Cl. 71—27 14 Claims

1. A process for producing oxamide granules comprising the step of:

(A) feed-mixing an ammonia-containing gas to a melt of a starting material comprising 60 to 100% by weight of an oxalic acid diester of the formula (I):

(I)

wherein R represents a lower alkyl group having 1 to 6 carbon atoms, and about 2 to 40% by weight of an aliphatic alcohol having 1 to 6 carbon atoms, to cause the oxalic acid diester to react with ammonia and produce oxamide and a by-product consisting of an aliphatic alcohol having the same alkyl group as that represented by R in the formula (I), while controlling the content of the aliphatic alcohol in the reaction mixture to a level of 5 to 40% based on the weight of the reaction mixture to provide a reaction product in the state of a wetted solid and comprising the resultant oxamide and the aliphatic alcohol;

(B) granulating the wetted reaction product into a plurality of granules, while maintaining the content of the aliphatic alcohol at a level of 5 to 40% based on the weight of the wetted reaction product; and

(C) drying the resultant wetted oxamide granules by heat-evaporating away the aliphatic alcohol therefrom, to provide dry oxamide granules.

5,393,320

LEACHING PROCESS FOR NICKEL COBALT AND MANGANESE ORES

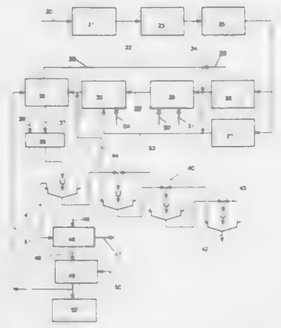
Rodolfo A. Gomez, Urrbrae, Australia, assignor to RMG Services Pty. Ltd., Australia

Filed Mar. 24, 1994, Ser. No. 216,965

Claims priority, application Australia, Mar. 26, 1993, PL8010

Int. Cl.[6] C01G *53/00;* C22B *3/00*

U.S. Cl. 75—10.67 15 Claims



1. A process for the extraction of nickel, cobalt or manganese from ore containing these metals including the steps of leaching a slurry of the ore in an aqueous acid solution while irradiating the slurry and solution with electromagnetic energy.

5,393,321

METHOD AND APPARATUS FOR PRODUCING STRIP PRODUCTS BY A SPRAY FORMING TECHNIQUE

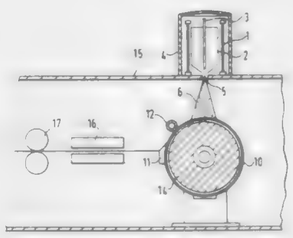
Gordon C. Eadie, Gwent, Wales, assignor to British Steel PLC, London, England

Filed Oct. 28, 1993, Ser. No. 140,158

Claims priority, application United Kingdom, Jul. 27, 1991, 9116242

Int. Cl.[6] B22F *9/08*

U.S. Cl. 75—338 25 Claims



18. A method of producing continuous lengths of metallic strip comprising the steps of:

forming a spray of molten metal particles;

causing the particles to be deposited onto a surface of a hollow receptor roll;

rotating and internally heating the receptor roll to form continuous lengths of metallic strip;

holding the deposited particles in contact with the receptor roll surface by means of a roll positioned immediately upstream of the knife in the direction of rotation of the receptor roll; and

peeling from the receptor roll surface such continuous lengths of metallic strip by means of a knife positioned adjacent to or in contact with the receptor roll surface.

5,393,322

PROCESS FOR RECOVERING NOBLE METALS FROM SOLUTIONS DERIVING FROM THE TREATMENT OF NUCLEAR FUELS

Renato Ugo, Milan, Italy, assignor to C.E.S.E.C. Centro Europeo Studi Economici e Chimici Srl, Milan, Italy

Filed Sep. 4, 1992, Ser. No. 940,917
Int. Cl.[6] C22B *11/00*
U.S. Cl. 75—344 9 Claims

1. A process for sequentially recovering palladium, and a mixture of rhodium and ruthenium from an aqueous nitric acid solution derived from the treatment of exhausted nuclear fuels said process consisting essentially of the essentially of the steps of:

(a) treating said aqueous nitric acid solution at a pH between 2 and 3 with carbon monoxide at a pressure of up to one atmosphere at room temperature, for 6 to 10 hours, and filtering off the precipitated palladium;

(b) adjusting the pH of the filtrate of step (a) to 4 and treating the thus obtained solution with carbon monoxide at a temperature ranging from 45° to 100° C. for a time ranging from 10 to 60 hours and then centrifuging or decanting and then filtering off the precipitated rhodium and ruthenium.

5,393,323

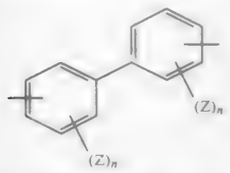
AROMATIC POLYETHERSULFONE GAS SEPARATION MEMBRANES

John W. Simmons, Wilmington, Del., assignor to L'Air Liquide S.A., Paris, France

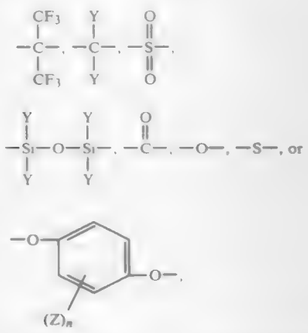
Filed Nov. 5, 1993, Ser. No. 147,596
Int. Cl.[6] B01D *53/22, 71/68*
U.S. Cl. 95—45 6 Claims

1. A gas separation membrane formed from an aromatic polyethersulfone comprising:

(a) at least one unit derived from the following formula:



where Z is independently, alkyl groups having 1 to 10 carbon atoms, or aromatic groups having 6 to 12 carbon atoms; n is independently an integer from 1 to 4 inclusive



and

(b) at least one unit derived from an aromatic dihalogenated sulfone.

6. A process for separating one or more gases from a gaseous mixture comprising bringing said gaseous mixture into contact with the first side of the gas separation membrane of claim 1 in a manner to cause a portion of the mixture to pass through the membrane to a permeate side, the resulting gas mixture on the permeate side being enriched in one or more component over that of the mixture on the first side.

5,393,324

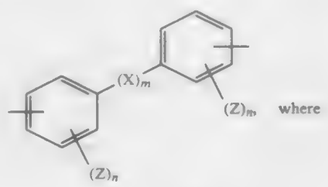
AROMATIC POLYETHERKETONE GAS SEPARATION MEMBRANES

John W. Simmons, Wilmington, Del., assignor to L'Air Liquide S.A., Paris, France

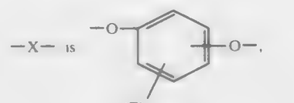
Filed Nov. 5, 1993, Ser. No. 147,597
Int. Cl.[6] B01D *53/22*
U.S. Cl. 95—45 7 Claims

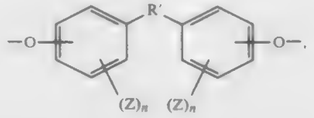
1. A gas separation membrane comprised from:

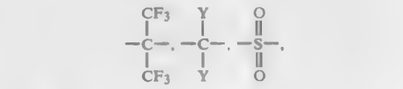
(a) at least one unit derived from the following formula:

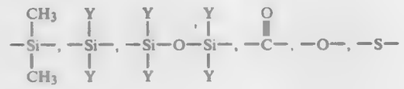


where

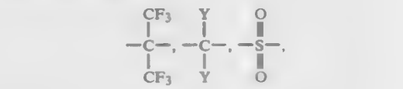


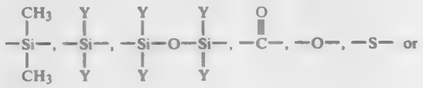




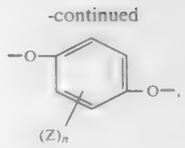


or mixtures thereof; where Z is independently, alkyl groups having 1 to 10 carbon atoms or aromatic groups having 6 to 12 carbon atoms; Y is independently alkyl groups having 2 to 10 carbon atoms; n is independently an integer from 1 to 4 inclusive; m is 0 or 1; and R′ is a carbon-carbon single bond,





-continued



or mixtures thereof; and

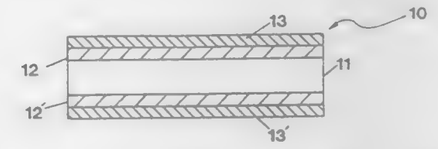
(b) at least one unit derived from an aromatic dihalogenated ketone moiety.

5,393,325

COMPOSITE HYDROGEN SEPARATION METAL MEMBRANE

David J. Edlund, Redmond, Oreg., assignor to Bend Research, Inc., Bend, Oreg.

Continuation-in-part of Ser. No. 986,692, Dec. 7, 1992, Pat. No. 5,259,870, which is a continuation-in-part of Ser. No. 566,092, Aug. 10, 1990, abandoned. This application Nov. 8, 1993, Ser. No. 148,999
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[6] B01D *53/22, 71/02*
U.S. Cl. 95—56 20 Claims



1. A hydrogen separation composite metal membrane which, after fabrication, comprises a nonporous hydrogen-permeable base metal and a nonporous hydrogen-permeable coating metal separated by a hydrogen-permeable intermediate layer, wherein said intermediate layer is not a pure metal or metal alloy, and at a temperature of from about 400° C. to about 1000° C. does not form a thermo-dynamically stable hydrogen-impermeable layer by reaction with hydrogen or by reaction with said base metal or with said coating metal.

19. A method for separating hydrogen from other gases comprising contacting a gaseous feed stream containing hydrogen with the membrane of claim 1 at a hydrogen partial pressure on the feed side of said membrane that is elevated relative to the hydrogen partial pressure on the permeate side of said membrane, allowing the selective permeation of hydrogen through said membrane, and separating hydrogen that permeates through said membrane.

5,393,326

PROCESS FOR THE PRODUCTION OF A GAS WITH A SUBSTANTIAL OXYGEN CONTENT

Yves Engler, Vincennes; Wilfrid Petrie, and Christian Monereau, both of Paris, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

PCT No. PCT/FR92/01094, § 371 Date Jul. 26, 1993, § 102(e) Date Oct. 13, 1993, PCT Pub. No. WO93/10882, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 25, 1992, Ser. No. 94,029
Claims priority, application France, Nov. 26, 1991, 91 14545
Int. Cl.[6] B01D *53/04*
U.S. Cl. 95—103 5 Claims

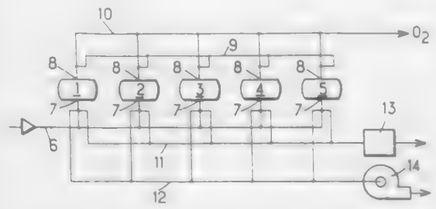
1. In a process for the production of a gas with a substantial oxygen content by adsorption of nitrogen from air, with a plurality "n" of adsorbers, wherein there is successively and cyclically assured according to a period T, in each of said adsorbers, with a time offset of T/n, from one adsorber to the next:

a) a production stage of said gas with a substantial content of oxygen by withdrawal of gas in a direction called co-current at high pressure, with admission of air;

b) a depressurization stage incorporating a counter-current terminal pumping phase under a sub-atmospheric pressure to a minimum pressure of the cycle, of the order of 0.2×10^5 Pa absolute;

c) a repressurization stage incorporating a final counter-current repressurization with a gas enriched in oxygen;

d) the number of adsorbers (n) and the respective durations



of said stages being such that at any moment at least two adsorbers are in the pumping phase of the depressurization stage, at different pressure levels;

the improvement wherein:

e) the pumping phase is subdivided into a plurality of pumping sub-stages, all of the same duration equal to T/n, or to a sub-multiple of T/n, and each pumping sub-stage is associated with pumping means specific to the conditions of flow rate and pressure variation of said sub-stage;

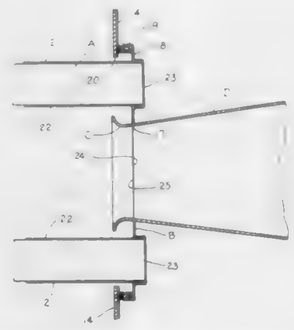
f) each pumping means is immediately switched with an adsorber at the end of the sub-stage associated with said pumping means, to an adsorber at the beginning of said sub-stage.

5,393,327

CARTRIDGE FILTER AND METHOD

John E. Chambers, and David C. Brenner, both of Greenville, S.C., assignors to Thermo-Kinetics Industries, Inc., Greenville, S.C.

Continuation of Ser. No. 53,718, Apr. 27, 1993, abandoned. This application Apr. 22, 1994, Ser. No. 232,342
Int. Cl.[6] B01D *46/00*
U.S. Cl. 95—273 18 Claims



1. An air filter having an exit end positioned opposite an opening in a wall comprising:

a cartridge including an elongated support structure surrounded by filter media wherein air enters laterally through said filter media;

an orifice plate extending across an air exit end of said cartridge having an exit opening for said air;

a bellmouth air entrance member carried within said cartridge on one side of said orifice plate having walls tapering inwardly to an exit end connected to said cartridge adjacent said exit opening in said orifice plate in alignment therewith;

an evase positioned exteriorally of said cartridge on the other side of said orifice plate having walls tapering outwardly from an entrance end connected to said cartridge adjacent said orifice plate in alignment with said exit opening and with said exit end of said bellmouth; and

said exit end of said bellmouth and said entrance end of said evase being aligned and in juxtaposition on respective opposite sides of said orifice plate so that said erase receives air collected by said bellmouth directly from the exit end and discharges same from said cartridge through said evase;

whereby an air pressure drop across said air filter is minimized.

5,393,328

FAST RESPONSE MEMBRANE GENERATOR USING HEAT ACCUMULATION

Christian Barbe, Fontenay aux Roses, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Continuation of Ser. No. 935,165, Aug. 26, 1992, Pat. No. 5,290,341. This application Nov. 1, 1993, Ser. No. 144,014

Int. Cl.[6] B01D *53/22*

U.S. Cl. 96—4 **18 Claims**



1. A membrane gas generator, which comprises:

a) feed stream compressing means having feed stream input means;

b) heat source means downstream of said feed stream compressing means, and in fluid connection therewith;

c) heat accumulator means downstream of said heat source means, and in fluid connection therewith; and

d) at least one membrane with a permeate side and a non-permeate side in fluid connection with said heat accumulator means, wherein said at least one membrane and said heat accumulator means are contained together in an insulated shell.

5,393,329

FUEL-SORBING DEVICE USING LAYERED POROUS SILICA

Shinji Inagaki; Yoshiaki Fukushima; Takashi Ohta, and Akane Okada, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

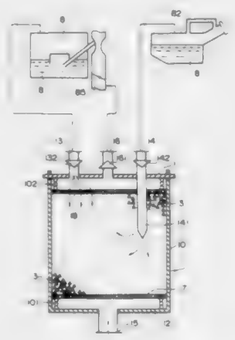
Continuation-in-part of Ser. No. 820,167, Jan. 13, 1992, abandoned. This application Aug. 31, 1992, Ser. No. 937,032

Claims priority, application Japan, Sep. 6, 1991, 3-255723

Int. Cl.[6] B01D *53/14;* **B01J** *20/10*

U.S. Cl. 96—131 **14 Claims**

1. A fuel-sorbing device comprising a sorbent for capturing evaporated fuel and a container having a chamber charged with the sorbent, the chamber having an inlet for receiving the evaporated fuel and transporting it to the sorbent and an outlet in fluid communication with the atmosphere, said sorbent including layered porous silica having a hydrophobic surface and formed of a plurality of layered adjacent silica sheets, the sheets having a repetitively bent surface and portions of adjacent sheets bent towards an adjacent sheet being bonded by a siloxane bond (Si—O—Si) formed from the condensation of silanol groups (SiOH) of adjacent sheets and portions bent away from an adjacent sheet defining pores between the sheets



to form a three-dimensional framework with a honeycomb cross-section.

5,393,330

CATIONIC EMULSIONS OF ALKYLALKOXYSILANES

Ming J. Chen, Garnerville, and Antonio Chaves, White Plains, both of N.Y., assignors to OSi Specialties, Inc., Danbury, Conn.

Filed Jun. 30, 1993, Ser. No. 84,867

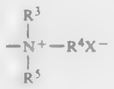
Int. Cl.[6] C09D *5/20*

U.S. Cl. 106—2 **24 Claims**

1. A formulation for preparing an aqueous emulsion comprising:

a. a silane;

b. quaternary ammonium modified polysiloxane emulsifiers of the general formula $Me_2R^1Si(OSiMe_2)_x(OSiMeR^2\text{-}M)_ySiRMe_2$, where x=3–25, y=0–5, R^1 is selected from the group consisting of Me or R^2-M, where R^2 is a bivalent hydrocarbon group having at least four carbon atoms and M is:



where R^3, R^4, and R^5 are alkyl groups with 1 to 3 carbon atoms and X^- is an inorganic or organic anion.

5,393,331

DROP-ON-DEMAND INK COMPOSITION WITH ENVIRONMENTAL ADVANTAGES

Adrian M. Loria, Wilmette, and Bruce A. Lent, Oak Park, both of Ill., assignors to Videojet Systems International, Inc., Wood Dale, Ill.

Filed Sep. 14, 1993, Ser. No. 121,296

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R **2 Claims**

1. An ink composition suitable for drop-on-demand ink jet printing on porous substrates, comprising from about 70% to about 90% water, from about 3% to about 20% of a colorant, from about 2% to about 8% of a non-teratogenic and non-carcinogenic humectant, and from about 2% to about 8% of a solid penetrant, based on the weight of said ink composition, said ink composition having a volatile organic content of lees than 300 grams per liter.

5,393,332

COLOR DEVELOPER FOR PRESSURE-SENSITIVE RECORDING SHEETS

Toranosuke Saito; Takashi Ishibashi; Eiji Kawabata, all of Osaka; Masato Tanaka, and Toshio Kimura, both of Hyogo, all of Japan, assignors to Sanko Kaihatsu Kagaku Kenkyusho, Osaka and Kanzaki Paper Manufacturing Co., Ltd., Tokyo, both of Japan

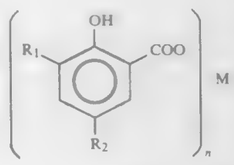
Division of Ser. No. 994,499, Dec. 21, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,483

Claims priority, application Japan, Dec. 27, 1991, 358093

Int. Cl.[6] C09D *11/00;* **C07C** *51/15*

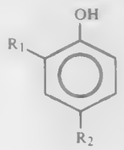
U.S. Cl. 106—21 R **11 Claims**

1. A color developer for pressure-sensitive recording sheets which comprises at least one polyvalent metal salt of a nuclear-substituted salicylic acid represented by the following general formula (1):



(1)

wherein R_1 and R_2 each represents a t-butyl group, a t-amyl group, a t-octyl group, an isononyl group or an isododecyl group, provided that at least one of R_1 and R_2 represents an isononyl group or an isododecyl group; M represents a polyvalent metal atom; and n is the atomic valency of the polyvalent metal atom M, said polyvalent metal salt being prepared by subjecting, to a Kolbe-Schmitt reaction, an alkali metal salt of a nuclear-substituted phenol represented by the following general formula (2):



(2)

wherein R_1 and R_2 have the meanings defined above, in which 100 to 50% of the alkali metal salt is potassium salt and 0 to 50% thereof is sodium salt, in a substantially water-insoluble solvent as a reaction medium, and then converting the resultant product into the polyvalent metal salt having said general formula (1) by multiple decomposition.

5,393,333

FILM-FORMING PRODUCT FOR COATING SOLID FORMS, PROCESS FOR ITS MANUFACTURE AND PRODUCTS COATED WITH THIS FILM-FORMING PRODUCT

Gérard Trouve, Castres, France, assignor to Societe Anonyme Societe D'Exploitation De Produits Pour Les Industries Chimiques S.E.P.P.I.C., Cedex, France

PCT No. PCT/FR91/00232, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO91/14729, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 22, 1991, Ser. No. 927,516

Claims priority, application France, Mar. 27, 1990, 90 03915

Int. Cl.[6] C09D *101/00, 105/00;* **A61K** *9/14, 9/30*

U.S. Cl. 106—149 **24 Claims**

1. In a film-forming product for coating a solid form wherein the product has a dry matter comprising a film-forming non-toxic edible substance, an edible colorant and an edible plasticizer and is dispersible in an aqueous or organic solvent whereupon it can be used to coat said solid form, the improvement wherein the dry matter of the product (a) is free of α-cellulose and comprises said edible, non-toxic film-forming substance in an amount of between 30 and 95% by weight; said edible colorant in an amount up to 50% by weight; and said edible plasticizer in an amount up to 30% by weight, and (b) has the form of homogeneous granular particles such that, when dispersed in said aqueous or organic solvent, the product can be used to coat said solid form with a uniform non-matte film.

5,393,334

PAPERMAKING COMPOSITIONS, PROCESS USING SAME, AND PAPER PRODUCED THEREFROM

Gary S. Hutcheson, Macon, Ga., assignor to Sequa Chemicals, Inc., Chester, S.C.

Continuation-in-part of Ser. No. 748,098, Aug. 21, 1991, Pat. No. 5,296,024. This application Mar. 15, 1994, Ser. No. 213,264

Int. Cl.[6] C09D *7/12, 101/02, 5/00;* **D21H** *17/14*

U.S. Cl. 106—199 **28 Claims**

1. A composition for adding to a pulp slurry of cellulose fibers during a papermaking process for enhancing brightness, opaqueness and sizing in the paper produced therefrom wherein said composition comprises as a brightening, opacifying and sizing agent a cationic softener base selected from the group consisting of the reaction products formed from the reaction of fatty acids selected from the group consisting of hydroxy substituted fatty acid, unsaturated fatty acid, and mixtures thereof and diamines and wherein said composition further includes a surfactant.

5,393,335

STARCH-OIL SIZING FOR GLASS FIBERS

Garry D. Puckett, Salisbury, N.C.; Ernest L. Lawton, Allison Park, and Xiang Wu, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 23, 1993, Ser. No. 52,323

Int. Cl.[6] C09D *103/02*

U.S. Cl. 106—211 **14 Claims**

1. An aqueous sizing composition for glass fibers comprising, in addition to water:

a single low viscosity starch having a post-cook viscosity of 100 centipoise or less at 100° F. at a 6 percent solids level;

a nonionic lubricant which is a mixture of oil and wax wherein the wax is present in an amount of at least twice the amount of the oil on a weight basis;

a cationic lubricant;

a humectant; and

at least one silane coupling agent.

5,393,336

WATER RESISTANT HIGH AMYLOSE CORRUGATING ADHESIVE WITH IMPROVED RUNNABILITY

Michael T. Foran, Somerville; Craig H. Leake, Edison; Michael T. Philbin, Somerville, and Peter T. Trzasko, Plainsboro, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jun. 1, 1993, Ser. No. 69,886

Int. Cl.[6] C09J *103/04, 103/10*

U.S. Cl. 106—213 **18 Claims**

1. In a water resistant alkaline curing corrugating adhesive having improved tack and green bond strength and comprising an aqueous dispersion of a gelatinized carrier and an ungelatinized raw starch component, the improvement comprising using a chemically treated or modified high amylose starch having at least 40% by weight amylose content as the raw starch component.

5,393,337
ROSIN EMULSION SIZING AGENT, PAPER SIZED THEREWITH AND METHOD OF SIZING USING THE SAME

Katsunori Nakamura; Kazuki Nagao, and Masayuki Monobe, all of Ichihara, Japan, assignors to Japan PMC Corporation, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,180
Claims priority, application Japan, Oct. 18, 1991, 3-333830
Int. Cl.[6] C09D *193/04;* D21H *21/16*
U.S. Cl. 106—238 4 Claims

1. A rosin emulsion sizing agent for papermaking comprising a fortified or unfortified rosin-epoxy compound obtained by reacting a rosin and an epoxy compound containing two or more oxirane rings, said rosin-epoxy compound having an equivalent ratio of 0.2–100 equivalents of carboxyl group in the rosin per one equivalent of epoxy group in the epoxy compound, wherein the rosin-epoxy compound is dispersed in water with the aid of a material selected from the group consisting of anionic, nonionic and cationic surfactants and protective colloid materials and mixtures thereof.

5,393,338
CATIONIC COMPOUNDS USEFUL AS DRAINAGE AIDS AND STABILIZERS FOR ROSIN-BASED SIZING AGENTS

Ian A. Pudney, Corringham, United Kingdom; Brian M. Stubbs, Sidcup, England, and Malcolm J. Welch, Barneveld, Netherlands, assignors to Hercules Incorporated, Wilmington, Del.

Filed Dec. 30, 1992, Ser. No. 998,212
Claims priority, application United Kingdom, Dec. 31, 1991, 9127566; Jun. 26, 1992, 9213604
Int. Cl.[6] C08L *93/04;* C09D *193/04*
U.S. Cl. 106—238 24 Claims

1. An aqueous dispersion comprising rosin particles and a cationic resin comprising a cross-linked polyamine having pendant tertiary and/or quaternary amine groups linked to amine groups in said polyamine by a hydrocarbon chain including a hydroxyl group in the β-position with respect to the polyamine chain.

5,393,339
PREPARATION OF PHTHALOCYANINE PIGMENTS

Herman Gerson, New York, N.Y., and Abdul Sattar, Mt. Pleasant, S.C., assignors to Miles Inc., Pittsburgh, Pa.

Filed May 11, 1994, Ser. No. 241,090
Int. Cl.[6] C09B *67/50*
U.S. Cl. 106—410 18 Claims

1. A process for preparing a metal phthalocyanine pigment comprising

(a) heating at a temperature of 150° C. to 200° C. a mixture comprising

(i) a phthalocyanine-forming material based on phthalic acid,

(ii) at least 25 mole percent, relative to the phthalocyanine-forming material (i), of a metal donor,

(iii) at least 100 mole percent, relative to the phthalocyanine-forming material (i), of a nitrogen donor,

(iv) 1 to 20 percent by weight, relative to the phthalocyanine-forming material (i), of a catalyst, and

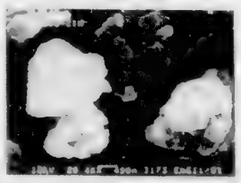
(v) 250 to 400 percent by weight, relative to the phthalocyanine-forming material (i), of a di(C_1–C_3 alkyl) phthalate solvent; and

(b) isolating the metal phthalocyanine pigment.

5,393,340
METAKAOLIN PIGMENT WITH HIGH BRIGHTNESS AND LOW ABRASION AND MANUFACTURE THEREOF FROM SOFT KAOLIN CLAYS

Richard A. Slepetys, Brick, and M. Phillip Jameson, Somerville, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 935,611, Aug. 26, 1992, abandoned.
This application Nov. 9, 1993, Ser. No. 150,335
Int. Cl.[6] C04B *14/10*
U.S. Cl. 106—484 4 Claims

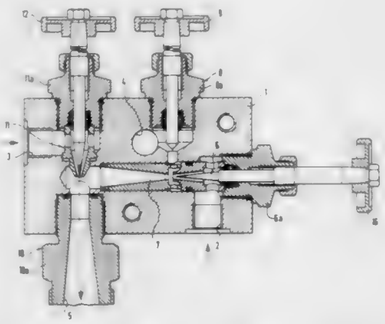


1. A method for producing a low abrasion high brightness calcined kaolin pigment which comprises separating a crude soft kaolin clay into a fraction of coarse, well crystallized kaolin particles and a finer fraction, media milling an aqueous suspension of the coarse crystalline kaolin particles with particles of media having a density of at least 2.4 to grind a majority of said coarse crystalline kaolin particles into particles finer than 2 microns, drying, pulverizing and calcining the milled particles to form metakaolin, said grinding step reducing the crystallization index of said crystalline kaolin.

5,393,341
METHOD AND APPARATUS FOR THE PRODUCTION OF STRUCTURAL FOAM, PARTICULARLY CEMENT FOAM

Dieter Meier, Erlangen, and Heinz Ruppert, Wolframs-Eschenbach, both of Germany, assignors to RUME Maschinenbau GmbH, Nuermberg, Germany

Continuation of Ser. No. 892,843, Jun. 3, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 173,262
Claims priority, application Germany, Jun. 6, 1992, 4118537
Int. Cl.[6] C04B *24/00*
U.S. Cl. 106—605 19 Claims



1. A method for producing structural foam from air, water, a foaming agent and an aggregate, comprising the steps of:

injecting cement slurry under high pressure into a mixing chamber having a substantially unobstructed mixing passageway;

injecting said foaming agent into the mixing passageway;

mixing said injected cement slurry in said mixing passageway with a foaming agent to form a mixture;

effecting said mixing substantially solely by said steps of injecting said cement slurry and said foaming agent into said unobstructed mixing passageway;

immediately thereafter supplying said mixture to an expansion nozzle; and

blowing measured amounts of compressed air into said expansion nozzle to foam up said mixture in the expansion nozzle into a cement foam of low foam weight.

5,393,342
CEMENT COMPOSITION AND METHOD FOR THE PREPARATION THEREOF

Carel W. J. Hooykaas, Rotterdam, Netherlands, assignor to Pelt & Hooykaas B.V., Rotterdam, Netherlands

Continuation of Ser. No. 64,410, May 19, 1993, abandoned. This application Apr. 6, 1994, Ser. No. 224,079
Claims priority, application Netherlands, May 25, 1992, 9200921; Jun. 19, 1992, 9201083
Int. Cl.[6] C04B *7/14*
U.S. Cl. 106—714 14 Claims

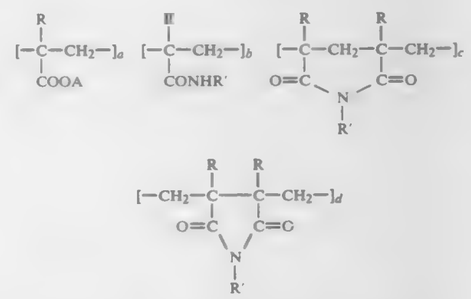
1. A cement composition consisting of ground Portland cement clinker material, ground, granulated blast furnace slags, and comminuted steel slags having a particle size no greater than 0.2 mm.

5,393,343
CEMENT AND CEMENT COMPOSITION HAVING IMPROVED RHEOLOGICAL PROPERTIES

David C. Darwin, Columbia; Ellis M. Gartner, Silver Spring, both of Md.; Byong-Wa Chun; Hideo Koyata, both of Kanagawa, Japan, and Lawrence L. Kuo, Columbus, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Sep. 29, 1993, Ser. No. 128,939
Int. Cl.[6] C04B *24/12*
U.S. Cl. 106—808 12 Claims

1. An improved cement comprising a mixture of a hydraulic cement and from 0.01 to 2 weight percent based on the weight of said hydraulic cement of an imidized acrylic polymer represented by the structure of:

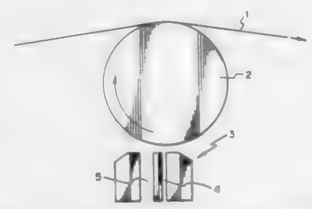


wherein each R independently represents a hydrogen atom or a methyl (CH_3—) group; A represents hydrogen atom, a C_1–C_{10} alkyl group, R′ or an alkali metal cation or a mixture thereof; R′ represents a hydrogen atom or a C_2–C_{10} oxyalkylene group represented by $(BO)_nR''$ in which O represents an oxygen atom, B represents a C_2–C_{10} alkylene group, R″ represents a C_1–C_{10} alkyl and n represents an integer of from 1–200, or mixtures thereof; and a, b, c and d are numerical values representing molar percentage of the polymer's structure such that a is a value of about 50 to 70; the sum of c+d is a value of from about 2 to the numerical value of (100−a); and b is a remainder value of [100−(a+c+d)].

5,393,344
APPARATUS FOR MOLTEN METAL PLATING

Yashichi Oyagi, and Hirofumi Nakano, both of Futtsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 866,866, Apr. 10, 1992, Pat. No. 5,308,659.
This application Feb. 14, 1994, Ser. No. 195,465
Claims priority, application Japan, Apr. 25, 1991, 3-95337; Apr. 25, 1991, 3-95338
Int. Cl.[6] B05C *21/00*
U.S. Cl. 118—244 3 Claims



1. Apparatus for molten metal plating comprising:

a) a revolving roll having a rolling surface coated with an oxide-, carbide-, or nitride-base ceramic material having resistance to erosion by said molten metal;

b) a nozzle having first and second openings, said nozzle being disposed so that said first opening is aligned with a central axis of said revolving roll, said second opening being located downstream and off center of said central axis of said revolving roll;

c) a source of molten metal; and

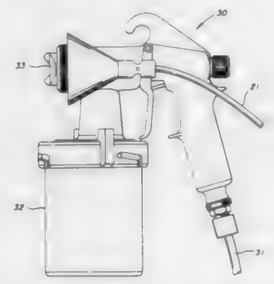
d) means in fluid communication with said nozzle for supplying molten metal on said revolving roll through said first opening;

said second opening ejecting a non-oxidizing gas therethrough toward said revolving roll, said ejected gas acting upon a meniscus of said molten metal applied on said revolving roll to prevent an ambient atmospheric gas dragged by said revolving roll from being engulfed by the molten metal meniscus, to thereby ensure that the molten metal meniscus continuously extends over a strip to be brought into contact with said revolving roll for molten metal plating thereof.

5,393,345
RESPRAY OF OVERSPRAY OF ANY ATOMIZABLE LIQUID WITH JET VENTURI INDUCTION PUMP

William C. Smith, 7701 Whiterim Ter., Potomac, Md. 20854

Filed Nov. 30, 1993, Ser. No. 159,267
Int. Cl.[6] B05B *9/03*
U.S. Cl. 118—312 14 Claims



1. An apparatus for spraying atomizable liquid onto a surface comprising:

an air compressor,

a spray gun having a nozzle and a container for said liquid,

means for providing said spray gun with air from said air compressor, and

means for capturing overspray associated with spraying said liquids onto a surface and respraying the overspray onto the surface at a pressure of no more than 10 psig, wherein the means for capturing overspray comprises;

a jet venturi induction pump,

a respray nozzle having a respray orifice connected to the jet venturi induction pump and located adjacent the spray gun nozzle, said respray being emitted from said respray orifice at a pressure of not more than 10 psig,

means for providing the jet venturi induction pump with air from said compressor, and

means for attaching said jet venturi induction pump to said spray gun.

5,393,346

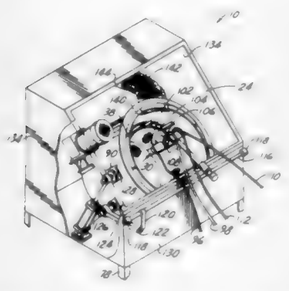
APPARAUTS FOR COATING FASTENERS

Randall B. Cholewa, Birmingham, Mich., assignor to The Magni Group, Inc., Birminham, Mich.

Filed May 25, 1993, Ser. No. 67,288

Int. Cl.[6] B05B *13/04*; B05C *5/00*

U.S. Cl. 118—320 **7 Claims**



1. An apparatus for applying a liquid coating on fasteners with an internal blind recess, comprising, a base, a turntable pivotally carried by said base and constructed and arranged to receive a hollow cage with a generally cylindrical side wall for rotating the cage about the axis of its side wall, a drive operably connected with said turntable for rotating it, an actuator operably connected with said turntable for pivotally moving said turntable to a first position wherein the axis of rotation of a cage carried by said turntable extends generally vertically and to a second position wherein such axis of rotation is inclined at an acute included angle to the vertical in the range of about 25° to 65°, and a spray gun for liquid coating constructed and arranged when in use to spray liquid coating into a cage carried and rotated by the turntable and onto circulating fasteners received therein when the cage and said turntable are disposed in the second position thereof and are being rotated by said drive.

5,393,347

METHOD AND APPARATUS FOR REMOVABLE WEIR OVERFLOW BATH SYSTEM WITH GUTTER

Henry R. Miranda, Milpitas, Calif., assignor to PCT Systems, Inc., Fremont, Calif.

Filed Jul. 23, 1991, Ser. No. 734,643

Int. Cl.[6] B05C *3/00*

U.S. Cl. 118—429 **2 Claims**

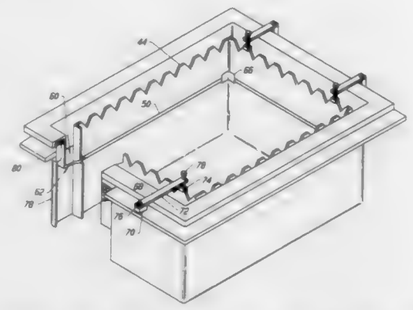
1. A filtered bath system which comprises:

a first container;

a first structure welded to said first container forming a container with gutter, said first structure being L-shaped in cross section, one member of said L-shaped structure being generally parallel to a contacting side of said container with gutter while the other member is generally perpendicular to the contacting side of said container with gutter;

a second structure having four walls, each wall having two ends, each end joined to an end of another wall, said second structure having an open top and bottom, the top edge of said second structure being scalloped;

a resilient material placed between said container with gutter and said second structure, said resilient material forming a seal between said container with gutter and said second structure,



said seal between said container with gutter and said second structure preventing fluid flow between the sides of said container with gutter and said second structure yet allowing fluid flow over said top edge of said second structure into said gutter; and

a heat conducting material adhered to the said sides and bottom of said first container where heating elements are embedded in said heat conducting material.

5,393,348

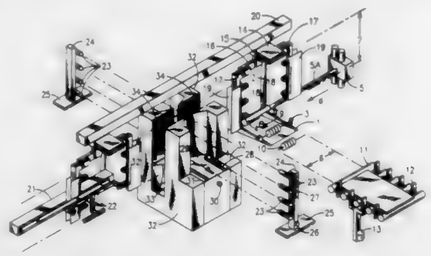
APPARATUS FOR SPRAY COATING

Gilbert V. Morris, Amherst, N.H., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 13,058, Feb. 3, 1993, Pat. No. 5,308,658. This application Feb. 3, 1994, Ser. No. 191,288

Int. Cl.[6] B05C *5/00*

U.S. Cl. 118—668 **15 Claims**



1. An apparatus for spray coating at least one surface of a workpiece having a height H, said apparatus comprising:

a. a plurality of vertically-oriented, linearly-configured spray means of number N for spraying with a liquid material said surface;

b. means for conveying said workpiece in a travel path at a velocity V past said spray means, said spray means producing substantially identical elliptically-shaped spray patterns, each said elliptically-shaped pattern having a major axis height h, said spray means including adjustable means for spacing said spray means so that said patterns overlap each other with an overlap factor F within a range of between 10 and 50 percent of said major axis height;

c. means for determining the position of said workpiece relative to said spray means; and

d. means for activating said spray means to spray only when a workpiece is in a target position in said travel path.

5,393,349

SEMICONDUCTOR WAFER PROCESSING APPARATUS

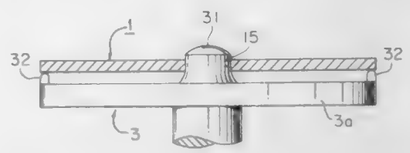
Wataru Ohkase, Sagamihara, Japan, assignor to Tokyo Electron Sagami Kabushiki Kaisha, Japan

Continuation of Ser. No. 928,018, Aug. 11, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 126,755

Claims priority, application Japan, Aug. 16, 1991, 3-229697; Jan. 14, 1992, 4-023402

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—725 **7 Claims**



1. A processing apparatus for movement of a semiconductor wafer which has a through hole at a center portion thereof, said apparatus comprising:

a wafer movement fork;

a shaft; and

a wafer holder centrally mounted on said shaft for receiving semiconductor wafers from said wafer movement fork, said shaft partially protruding through said wafer holder, said wafer holder having a circumferential portion including at least three support protrusions thereon, whereby a semiconductor wafer received from said fork is mounted on said wafer holder and maintained in a horizontal position by inserting said shaft into the through hole of the received wafer until said support protrusions abut an under-surface of the wafer.

5,393,350

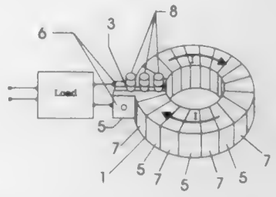
THERMOELECTRIC GENERATOR AND MAGNETIC ENERGY STORAGE UNIT

Jon M. Schroeder, 1430 Bagdad Rd., Leander, Tex. 78641

Filed Oct. 8, 1993, Ser. No. 133,348

Int. Cl.[6] H01L *35/32*

U.S. Cl. 136—205 **4 Claims**



1. A thermoelectric generator and magnetic energy storage unit comprising:

a) a switch means operable in microseconds with integral output leads;

b) multiple copper and multiple nickel segments connected on either side of said switch means; said copper and nickel segments being shaped to fit closely to form a multiplicity of rings;

c) a metallic means between each of said copper and said nickel segments to form metallic junctions between each of said segments of copper and nickel;

d) gasketted insulating type spacer means located between said metallic junctions of said rings to form multiple apertures to allow heating and cooling of said junctions;

e) a heating means and cooling means in said multiple apertures to heat and cool alternate junctions of said metallic junctions; thereby causing current to flow and generate a magnetic field in said unit;

f) a flux pump means with connections to inject additional current into said current flow thereby increasing strength of said magnetic field in said unit and current generated by collapsing of said magnetic field when a load is connected on either side of said switch means and said switch means is instantaneously opened.

5,393,351

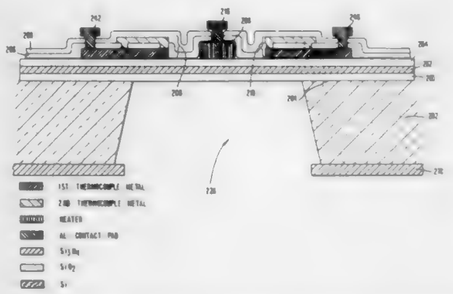
MULTILAYER FILM MULTIJUNCTION THERMAL CONVERTERS

Joseph R. Kinard, Darnestown; De-xiang Huang, Gaithersburg, and Donald B. Novotny, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jan. 13, 1993, Ser. No. 3,905

Int. Cl.[6] H01L *35/04*

U.S. Cl. 136—225 **24 Claims**



1. A multilayer thin-film multijunction thermal converter, comprising:

a substrate formed of a predetermined thickness of a dielectric material, having a front surface and a rear surface with a through aperture of predetermined shape and size formed therebetween;

a first layer of SiO_2, formed on the front surface of the substrate to extend over the through aperture in the substrate;

a first layer of Si_3N_4, formed on the first layer of SiO_2, to also extend over the through aperture in the substrate;

a second layer of SiO_2, formed on the first layer of Si_3N_4 so as to also extend over the through aperture in the substrate and to provide a mounting surface;

a layer of an electrically resistive material provided on the mounting surface to form a thin elongate heater element having two longitudinal parallel sides and first and second ends, the heater element being shaped and sized to be entirely contained within a periphery of the through aperture in the substrate as defined at the front surface of the substrate in the lateral direction and to extend beyond the periphery of this aperture in the longitudinal direction;

a plurality of first serially-connected thin-film thermocouples, formed and disposed to have their respective cold junctions over the substrate and outside of said periphery of the through aperture and their respective hot junctions overlying the through aperture;

a plurality of serially-connected second thin-film thermocouples, formed and disposed to have their respective cold junctions over the substrate and outside of the periphery of the through aperture on an opposite side

thereof with respect to the hot junctions of the first thermocouples, with the respective hot junctions of the second thermocouples overlying the through aperture;

first electrical pads respectively connected to the first and second ends of the heater element and to said return path to enable provision of a controlled electrical current to the heater element; and

second electrical pads connected to extreme ends of each of said pluralities of first and second serially-connected thin-film thermocouples to enable electrical connection thereof to an external circuit;

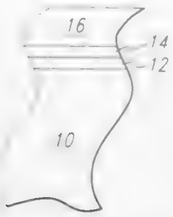
wherein said first electrical pads have an area of $50\times50\ \mu m^2$ to $400\times400\ \mu m^2$.

5,393,352

PB/BI-CONTAINING HIGH-DIELECTRIC CONSTANT OXIDES USING A NON-P/BI-CONTAINING PEROVSKITE AS A BUFFER LAYER

Scott R. Summerfelt, Dallas, Tex., assignor to Texas Instruments Incorporated, DAllas, Tex.

Continuation of Ser. No. 876,930, May 1, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 127,222
Int. Cl.[6] H01L *29/12*
U.S. Cl. 148—33.3 36 Claims



1. A method for fabricating a structure useful in semiconductor circuitry comprising:

growing a germanium layer directly or indirectly on a semiconductor substrate;

growing a perovskite buffer layer of Pb and Bi free, high-dielectric constant oxide on said germanium layer; and

depositing a Pb and/or Bi-containing high-dielectric constant oxide on said buffer layer.

5,393,353

CHROMIUM-FREE BLACK ZINC-NICKEL ALLOY SURFACES

Craig V. Bishop, Lakewood, Ohio, assignor to McGean-Rohco, Inc., Cleveland, Ohio

Filed Sep. 16, 1993, Ser. No. 122,393
Int. Cl.[6] C23C *22/07*
U.S. Cl. 148—253 8 Claims

1. A method of preparing a black zinc-nickel alloy surface wherein the alloy contains at least about 8% by weight of nickel which comprises contacting said zinc-nickel alloy surface with a chromium-free aqueous acidic solution comprising water, from about 1% to about 10% by weight of a phosphorus acid selected from phosphoric acid, phosphorous acid, hypophosphorous acid and mixtures thereof, and from about 0.1% to about 5% by weight of at least one silane characterized by the formula

$$(R^1)_a(RO)_{3-a}SiR^2 \qquad (IA)$$

wherein R and R^1 are each independently alkyl groups containing from 1 to about 5 carbon atoms, R^2 contains from about 1 to about 10 carbon atoms and one or more functional groups selected from the groups consisting of halogen, vinyl, epoxy, acryl, styryl, amino, carboxyl, amide or sulfonyl groups, and a is an integer of from 0 to 3.

5,393,354

IRIDESCENT CHROMIUM COATINGS AND METHOD

Craig V. Bishop, Lakewood, Ohio, assignor to McGean-Rohco, Inc., Cleveland, Ohio

Filed Oct. 7, 1993, Ser. No. 133,640
Int. Cl.[6] C23C *22/08*
U.S. Cl. 148—258 14 Claims

1. A method of producing an iridescent chromium coating on a zinc-nickel alloy surface wherein the alloy contains at least about 8% by weight nickel which comprises

(A) contacting said surface with an aqueous acidic solution maintained at a temperature of from about 38° C. to about 75° C. wherein the solution comprises trivalent chromium as substantially the only chromium ion present, and a phosphorus acid selected from phosphoric acid, phosphorous acid, hypophosphorous acid and mixtures thereof in an amount effective to provide a solution having a pH of from about 1.0 to about 2.5; and

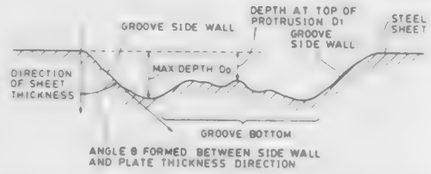
(B) drying the surface.

5,393,355

LOW-IRON LOSS GRAIN ORIENTED ELECTROMAGNETIC STEEL SHEET AND METHOD OF PRODUCING THE SAME

Koh Nakano; Keiji Sato, and Bunjiro Fukuda, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Oct. 21, 1992, Ser. No. 964,367
Claims priority, application Japan, Oct. 24, 1991, 3-277802
Int. Cl.[6] H01F *1/04*
U.S. Cl. 148—306 1 Claim



1. A low-iron loss final finish annealed grain oriented electromagnetic steel sheet having a plurality of linear grooves formed on the surface, said grooves formed with a maximum depth of about 100 μm or less, and extending in the direction substantially perpendicular to the rolling direction of said sheet so as to improve the magnetic characteristics of the steel sheet, wherein said linear grooves have side walls in which the angle of a groove side wall to the thickness direction of the sheet is about 60° or less, and wherein bottom portions of said grooves have projections and wherein the depth at the top of a projection is at least about ½ of the total groove depth.

5,393,356

HIGH TEMPERATURE-RESISTANT MATERIAL BASED ON GAMMA TITANIUM ALUMINIDE

Lorenz Singheiser, Heidelberg, Germany, assignor to ABB Patent GmbH, Mannheim, Germany

Filed Jul. 28, 1993, Ser. No. 98,705
Claims priority, application Germany, Jul. 28, 1992, 4224867
Int. Cl.[6] C22C *14/00*
U.S. Cl. 148—421 7 Claims

1. A high temperature-resistant material with inter-metallic compounds in the titanium/aluminum system, comprising an aluminum content of from 45 to 48 atom %, a niobium content of from 0.5 to 3 atom %, a chromium content of from 0.5 to 3 atom %, a silicon content of from 0.1 to 2 atom %, an oxidation resistance-enhancing element selected from the group consisting of, in atom %, 0.5 to 3 tantalum, 0.5 to 3 molybdenum, 0.5 to 3 tungsten, 0.5 to 3 vanadium, 0.1 to 1 boron, 0.01 to 1 carbon, 0.01 to 1 nitrogen, 0.01 to 1 yttrium, 0.01 to 1 cerium, 0.01 to 1 erbium, and 0.01 to 1 lanthanum, and a remainder of titanium;

said yttrium, cerium, lanthanum and erbium summing to a total of no more than 2 atom %; and

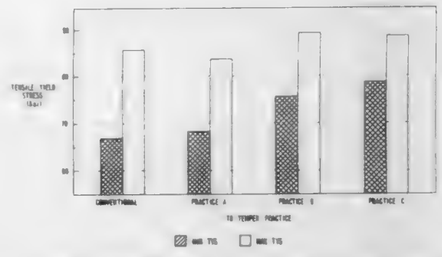
said niobium, chromium, silicon, tantalum, molybdenum, tungsten, vanadium, boron, carbon, and nitrogen summing to a total of no more than 10 atom %.

5,393,357

METHOD OF MINIMIZING STRENGTH ANISOTROPY IN ALUMINUM-LITHIUM ALLOY WROUGHT PRODUCT BY COLD ROLLING, STRETCHING AND AGING

Alex Cho, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Oct. 6, 1992, Ser. No. 957,318
Int. Cl.[6] C22F *1/00*
U.S. Cl. 148—437 20 Claims



1. A rolled aluminum-lithium alloy product having reduced strength anisotropy made by the process comprising the steps of:

a) cold rolling a solution heat treated and quenched aluminum-lithium alloy product in at least one pass in an amount of at least 3% reduction;

b) stretching said cold rolled product an amount between 0.5 and 10%; and

c) aging said cold rolled and stretched product to increase its strength whereby the combined cold rolling and stretching provide a rolled aluminum-lithium alloy product having reduced strength anisotropy

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5,393,358

METHOD FOR PRODUCING ABRASION-RESISTANT STEEL HAVING EXCELLENT SURFACE PROPERTY

Nobuo Shikanai; Tetsuya Sanpei; Kazunori Yako; Kenji Hirabe, and Yasunobu Kunisada, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 23,865, Feb. 26, 1993, Pat. No. 5,284,529, which is a continuation of Ser. No. 847,723, Mar. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 621,587, Dec. 3, 1990, abandoned. This application Jul. 28, 1993, Ser. No. 98,609
Claims priority, application Japan, Mar. 9, 1993, 5-047937
Int. Cl.[6] C21D *8/02*
U.S. Cl. 148—541 29 Claims

1. A method for producing an abrasion-resistant steel having excellent surface property comprising the steps of:

preparing a molten steel consisting essentially of 0.1 to 0.45 wt. % C, 0.1 to 1 wt. % Si, 0.1 to 2 wt. % Mn, 0.04 wt. % or less P, 0.04 wt. % or less S, 0.1 to 1 wt. % Ti, 0.0015 to 0.01 wt. % N, and the balance being Fe and inevitable impurities, said steel having Ti* of 0.05 wt. % or more and less than 0.4 wt. %, said Ti* being specified by equations of;

$$Ti^*=Ti(a)-[Ti],$$

$$Ti(a)=Ti-\{(48/14)N+(48/32)S\},$$

$$\log[Ti][C]=(-10580/T)+4.38,$$

$$[Ti]=4\times[C]+\{Ti(a)-4\times C\},$$

where $\log[Ti][C]=(-10580/T)+4.38$ is an equation designating the temperature dependency of solubility product of TiC, [Ti] designates wt. % of Ti at an equilibrium solubility, [C] designates wt. % of C at an equilibrium solubility, T designates an absolute temperature, and Ti, N, S, and C designate wt. % of a respective element in the steel;

casting continuously said molten steel to produce slab, coarse particles of TiC being precipitated in the slab;

hot-working the slab to produce a hot-rolled steel sheet at 1300° C. or less; and

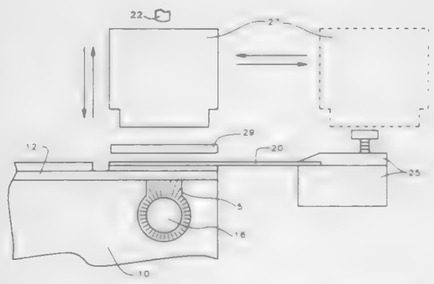
quenching the hot-rolled steel sheet.

5,393,359

METHOD AND APPARATUS FOR BONDING OUTER LEADS OF A LIQUID CRYSTAL DISPLAY TO METAL LEADS OF A BONDING TAPE

San-Wen Chang, Hsinchu; Pao-Yun Tang, Chungli, and Shyuan-Jeng Ho, Hsinchu, all of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Aug. 10, 1993, Ser. No. 104,011
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—64 18 Claims



1. A method of aligning and bonding the closely spaced translucent electrically conductive outer leads of a Liquid Crystal Display panel to closely spaced metal leads of a bonding tape comprising:

mounting the display panel on a movable stage;

providing a light source beneath the outer leads of the display panel to provide back lighting;

applying an anisotropic conductive film adhesive to the outer leads of the display panel;

mounting the metal leads of the bonding tape over the outer leads of the display panel;

observing the back lighted outer leads and the overlapping metal leads from above said light source and aligning the outer leads to precisely underlie the metal leads by adjusting the relative positions of the display panel and the bonding tape; and

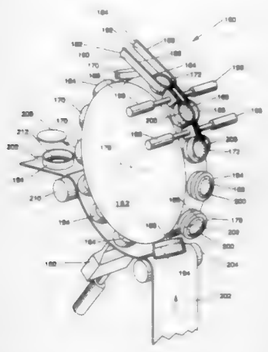
applying heat to the outer leads and the metal leads to bond and form electrical connections therebetween.

5,393,360

METHOD AND APPARATUS FOR COMBINING A TENSIONED ELASTIC GARTER WITH A SUBSTRATE

Russell P. Bridges; James R. Golan; Ronald H. Helton; Stephen J. Lange, all of Cincinnati; Michael J. Madil, Wyoming, and Michael G. Nease, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 6, 1993, Ser. No. 132,730
Int. Cl.[6] A61F *13/15*
U.S. Cl. 156—73.3 5 Claims



1. A method of combining a tensioned garter with a substrate, said method comprising the steps of:

a) wrapping a tensioned garter about a mandrel, said mandrel having a top surface and side walls depending from said top surface, said top surface having a perimeter defining a predetermined shape of said tensioned garter wrapped about said mandrel, said tensioned garter having an upper portion and a lower portion, said upper portion of said tensioned garter being positioned above said top surface of said mandrel, said upper portion of said tensioned garter having sufficient tension to cause said upper portion of said tensioned garter to fold over onto said top, surface of said mandrel to form a garter flange while said lower portion of said tensioned garter clings to said side walls of said mandrel;

b) placing a substrate against said garter flange; and

c) passing said mandrel having said substrate lying again said garter flange under an ultrasonic horn said top surface of said mandrel having a raised outer rim to provide a continuous fusion-seal at said outer rim, said outer rim having a shape against which said ultrasonic horn presses while applying vibration energy to also weaken an edge of said continuous fusion-seal inside said continuous fusion-seal, so that said edge of said continuous fusion-seal which is weakened may later be broken to remove from inside said continuous fusion-seal a portion of said substrate and of said tensioned garter, thereby forming a hole around which a remaining portion of said tensioned garter may contract.

3. An apparatus for combining a tensioned garter with a substrate, said apparatus comprising:

a) a mandrel having a top surface and side walls depending from said top surface;

b) means for wrapping a tensioned garter about said mandrel, said top surface of said mandrel having a perimeter defining a predetermined shape of said tensioned garter, said tensioned garter having an upper portion and a lower portion, said upper portion of said tensioned garter being positioned above said top surface of said mandrel said upper portion of said tensioned garter having sufficient tension to cause said upper portion of said tensioned garter to fold over onto said top surface of said mandrel to form a garter flange while said lower portion of said tensioned garter clings to said side walls of said mandrel;

c) means for placing a substrate against said garter flange;

d) means for passing said top surface of said mandrel under an ultrasonic horn, said top surface of said mandrel acting as a sealing anvil; and

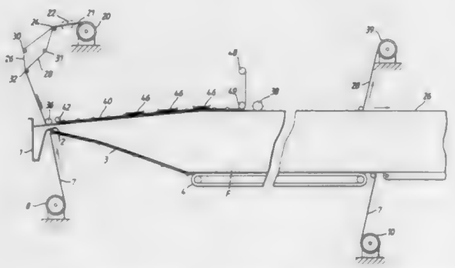
e) an ultrasonic horn which presses against said sealing anvil with said substrate and said garter flange positioned therebetween, said ultrasonic horn applying vibration energy to form a fusion-seal between said substrate and said garter flange.

5,393,361

MANUFACTURE OF POLYMERIC FOAM

Gerd Bareuter, Bamberger, Germany; Carlos Fernandez, Madrid, Spain, and Jack Tetlow, Manchester, Great Britain, assignors to Unifoam A.G., Glarus, Switzerland

PCT No. PCT/EP91/01166, § 371 Date Feb. 11, 1992, § 102(e) Date Feb. 11, 1992, PCT Pub. No. WO92/00184, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 21, 1991, Ser. No. 834,532
Claims priority, application Germany, Jun. 27, 1990, 90143331
Int. Cl.[6] B29C *67/22;* B32B *31/14*
U.S. Cl. 156—78 6 Claims



1. In a process for the production of slabstock polymeric foam product comprising supplying a reactant mixture for forming the slabstock polymeric foam product to a vessel having an overflow outlet, allowing the reactant mixture to begin reacting in said vessel, passing the reacting mixture over said overflow outlet onto a downwardly-inclined surface and into a channel-shaped conveyor, the reacting mixture forming a foam product having an upper skin with a generally flat top surface, the improvement including the step of applying upper and lower sheets to an upper surface of the reacting mixture adjacent said overflow outlet so as to reduce a thickness of the upper skin formed in the foam product, said lower sheet being in contact with the upper surface of the reacting mixture and composed of a flaccid material for conforming to said upper surface, said upper sheet being composed of a relatively stiff foil material, said upper and lower sheets being separate and freely movable relative to one another when applied to the upper surface of the reacting mixture.

5,393,362

METHOD FOR IMPROVING ADHESION TO METAL

Scott R. Culler, Burnsville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 653,616, Feb. 11, 1991, Pat. No. 5,190,795, which is a continuation-in-part of Ser. No. 407,365, Sep. 14, 1989, Pat. No. 5,011,410. This application Dec. 3, 1992, Ser. No. 985,633
The portion of the term of this patent subsequent to Apr. 30, 2008, has been disclaimed.
Int. Cl.[6] B05D *3/12, 5/10;* C23C *18/02*
U.S. Cl. 156—153 14 Claims

1. A method for applying a layer of exogenous inorganic oxide to the surface of a metal article, which method comprises the steps of:

(a) coating at least a portion of the surface of the metal article with an organosilicon compound that is capable on heating of forming silica; and

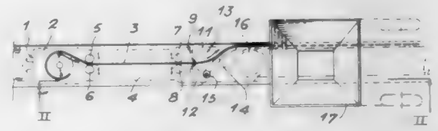
(b) heating the coated surface at a temperature and for a time sufficient to convert the coating to a layer of silica.

5,393,363

DEVICE FOR CONNECTING A DRAINING AND/OR INSULATING SCREEN WITHIN A TRENCH

Christian Fournier, Moissy-Cramayel, France, assignor to Fournier S.A., Limoges-Fourches, France

Filed Apr. 10, 1992, Ser. No. 867,056
Claims priority, application France, Apr. 12, 1991, 91 04480
Int. Cl.[6] H01B *13/06;* H02G *15/08*
U.S. Cl. 156—157 6 Claims



1. In a process of placing a film of insulating or draining material in a trench by using a sliding box comprising a front section for receiving a roll of film and a rear section for delivery of the film into the trench, the method for joining-two ends of film of insulating or draining material comprising the following steps:

a. displacing said film into a connecting chamber by means of a first pair of contrarotating rollers applied against said film for transferring said film under traction up to a second pair of contrarotating rollers located at an extremity of said connecting chamber;

b. unwinding and driving regularly said film by either said first pair of rollers or said second pair of rollers;

c. stopping at least said first pair of rollers upon reaching the end of said film;

d. separating the rollers of said first pair in order to pass the starting end of a new film between the rollers of said first pair and drawing said rollers of said first pair together after the starting end of a new film has passed the rollers of said first pair;

e. gripping and displacing said starting end of a new film to the vicinity of the end portion of the previous film, which is maintained in readiness within said connecting chamber by said second pair of rollers; and

f. inserting vertically a connecting member for connecting the two said ends of film.

5,393,364

METHOD AND DEVICE FOR APPLYING A PLURALITY OF THREADS TO A SUPPORT WITH THE AID OF FLEXIBLE TEETH

Laurent Millier, Sens, France, assignor to Compagnie Generale des Etablissements Michelin - Michelin & Cie, Clermont-Ferrand Cedex, France

PCT No. PCT/FR91/01078, § 371 Date Jul. 1, 1993, § 102(e) Date Jul. 1, 1993, PCT Pub. No. WO92/12001, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 27, 1991, Ser. No. 84,187
Claims priority, application France, Jan. 4, 1991, 91 00098
Int. Cl.[6] B29D *30/38*
U.S. Cl. 156—177 14 Claims

1. A method of applying a plurality of threads to at least one support in such a manner as to obtain at least one ply, imparting a nonrectilinear shape to the threads, comprising:

(a) feeding each of the threads with a controlled speed onto a cylindrical drum rotating around an axis;

(b) imparting the nonrectilinear shape to the threads by means of teeth disposed in rows substantially along generatrices of the drum, some of which rows of teeth are displaced parallel to the axis of rotation with respect to other rows, at least some of these teeth having a flexible free end engageable with a thread;

(c) determining, due to the flexibility of the flexible teeth, the amplitude of displacement of each thread, measured parallel to the axis of rotation, by controlling the ratio between the speed of arrival of said thread and the peripheral speed of the drum;

(d) bringing the support or supports in contact with the drum and applying the threads to the support or supports after the threads have been displaced on the drum; and

(e) removing the ply or plies formed by the support or supports and by the threads in contact with said support from the drum.

8. A device for applying a plurality of threads to at least one support so as to obtain at least one ply, while imparting a nonrectilinear shape to the threads, the device comprising:

(a) a drum with means making it possible to drive the drum in rotation around an axis;



(b) means making it possible to have each of the threads arrive with a controlled speed onto the drum;

(c) teeth disposed in rows substantially along generatrices of the drum and means which make it possible to displace parallel to the axis of rotation at least some of these rows of teeth with respect to other rows, so as to impart the nonrectilinear shape to the threads;

(d) at least some of these teeth having a flexible free end engageable with a thread the amplitude of the displacement of each thread being determined, due to the flexibility of the teeth, by the ratio between the speed of arrival of said thread and the peripheral speed of the drum;

(e) means which make it possible to have the support or supports come into contact with the drum and to apply the threads to the support or supports after said threads have been displaced; and

(f) means making it possible to remove from the drum the ply or plies formed by the support or supports and by the threads in contact with said support.

5,393,365

EMBOSSED GLASS/PLASTIC LAMINATE AND PROCESS FOR PREPARING THE SAME

Charles A. Smith, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 19, 1993, Ser. No. 155,349
Int. Cl.[6] B32B *17/00*
U.S. Cl. 156—219 3 Claims

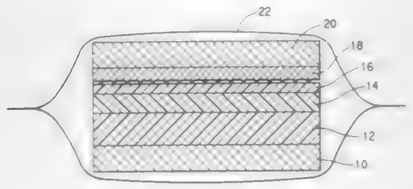
1. A process for producing a glass/plastic laminate having a decorative textured pattern thereon wherein a sandwiched structure is formed from

a) a glass sheet (**10**), and

b) a plastic laminate comprising a plastic film (**14**) sandwiched between an adhesive layer (**12**) and a cured coating of a polysiloxane anti abrasion material (**16**) in which

said adhesive layer is adhered to said glass sheet and said antiabrasion material has one surface adhered to said plastic film and the other surface exposed,

characterized by bonding said glass sheet to said adhesive



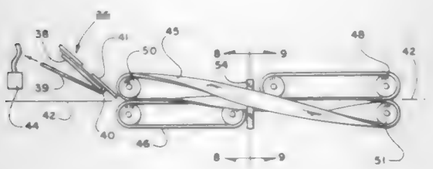
layer and transferring the surface texture of a texturing medium (18) to the exposed surface of said coating by placing said texturing medium on the surface of said coating and applying heat and pressure to said sandwiched structure, and thereafter removing the texturing medium.

5,393,366

ALIGNING AND TABBING METHOD AND APPARATUS

David L. Bell, Oquawka, Ill., assignor to Profold, Inc., Sebastian, Fla.

Filed Dec. 7, 1992, Ser. No. 986,261
Int. Cl.[6] B31F *5/00*
U.S. Cl. 156—443 6 Claims



1. Apparatus for applying a tab to an article for sealing an edge of the article, comprising conveying means for moving the article along a path, tab dispensing means above said path for dispensing a tab onto said article so that said tab extends about half off the surface of said article at said edge, and a warped surface adjacent to said path for resiliently engaging said tab and wrapping said tab around said edge to be sealed as said article moves along said path, wherein said warped surface comprises a continuous belt having a first course and a second course, said first course extending generally along said path and moving at the same speed as the article along said path, and being twisted to constitute said warped surface, said second course crossing said first course at an intersection, and being connected to said first course at each end thereof so that said continuous belt wraps said tab tightly around said edge of the article.

5,393,367

TAPE DISPENSER WITH A PROTECTED CUTTING DEVICE

Hsiu-Man Yu Chen, No.40, Sec.1, Ta-Fu Rd., Tung-Pao Tsun, Tan-Tzu Hsiang, Taichung Hsien, Taiwan, Prov. of China

Filed Mar. 31, 1994, Ser. No. 220,966
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—523 6 Claims

1. A tape dispenser with a cutting device mounted adjacent to a tape dispensing port thereof for cutting a strip of tape from a tape end portion which is pulled out from said tape dispensing port along a tape dispensing route, said tape dispenser being characterized in that said cutting device comprises:

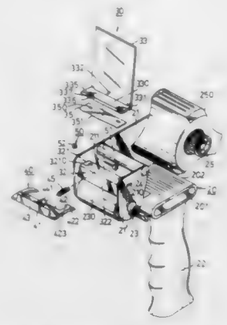
a blade holding seat with a front edge and a rear edge opposite to said front edge, said holding seat being mounted fixedly adjacent to said tape dispensing port such that said front edge is nearby and transverse to said tape dispensing route and said rear edge is spaced from said tape dispensing route;

a blade having a front portion with a cutting edge and a rear portion which extends integrally and rearwardly from said front portion, said blade being mounted on said holding seat such that said cutting edge protrudes out of said front edge of said holding seat so as to extend into said tape dispensing route;

a blade protecting shield with a front edge and a rear edge, said shield being mounted movably above said blade such that said front edge thereof is disposed nearby said cutting edge of said blade;

means for guiding said shield to slide forwardly and rearwardly;

means for biasing said rear edge of said shield to push said front edge of said shield to protrude relative to said cutting edge of said blade;



said blade holding seat having a tape adhesion plate extending integrally from said front edge of said blade holding seat toward said tape dispensing port for guiding a distal end of an unused tape end portion that protrudes from said tape dispensing port;

said cutting device further comprising a smoothing means, said smoothing means having a base plate with a rear periphery, said base plate being mounted above said blade holding seat to sandwich said rear portion of said blade therebetween, said rear periphery of said base plate being disposed adjacent to said rear edge of said blade holding seat, said smoothing means further having a smoothing plate which extends from said rear periphery to a position in said tape dispensing route; and

wherein said smoothing plate has a pair of aligned peripheral slots parallel to said base plate, said shield having a pair of spaced lugs extending integrally from said rear edge thereof and passing through said aligned peripheral slots of said smoothing plate so as to constitute said means for guiding said shield slidably forwardly and rearwardly.

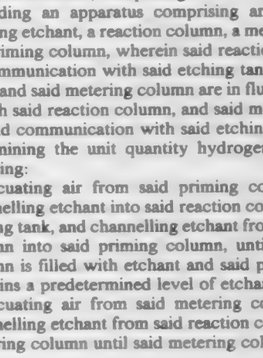
5,393,368

CORRECTION TAPE DISPENSER

Christopher J. Stevens, Reading, England, assignor to The Gillette Company, Boston, Mass.

Filed Feb. 7, 1994, Ser. No. 192,471
Claims priority, application United Kingdom, Feb. 10, 1993, 9302589; May 25, 1993, 9310715
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—577 21 Claims

1. A correction tape dispenser comprising a tape comprising a carrier ribbon with correction composition thereon, supply and take-up spools for the tape, a tip having an edge for pressing the tape against a surface, a portion of the tape between the supply and take-up spools being guided to extend around said edge, wherein the edge is inclined to a feed direction which is the direction of travel of the tape leaving the supply spool, and the tip includes guide means on either side of the edge which



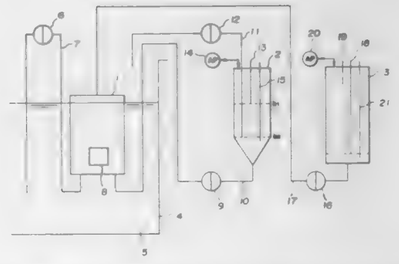
operate in conjunction with the shape of the tip for twisting the tape so that the path of the tape around the edge between the guide means is in a plane substantially perpendicular to said edge and inclined to the feed direction.

5,393,369

ETCHING RATE DETERMINING METHOD AND APPARATUS

Shigeo Hashimoto, and Shogo Kawasaki, both of Hirakata, Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Filed Sep. 2, 1992, Ser. No. 939,711
Claims priority, application Japan, Sep. 5, 1991, 3-254792
Int. Cl.[6] C23F *1/00*
U.S. Cl. 156—626 4 Claims



1. A method for determining the etching rate at which a metal part is etched with an acid or alkali etchant in an etching tank, wherein said metal part generates hydrogen gas when etched with said etchant, comprising:

(A) providing an apparatus comprising an etching tank containing etchant, a reaction column, a metering column, and a priming column, wherein said reaction column is in fluid communication with said etching tank, said priming column and said metering column are in fluid communication with said reaction column, and said metering column is in fluid communication with said etching tank;

(B) determining the unit quantity hydrogen release time, comprising:

(1) evacuating air from said priming column, thereby channelling etchant into said reaction column from said etching tank, and channelling etchant from said reaction column into said priming column, until said reaction column is filled with etchant and said priming column contains a predetermined level of etchant,

(2) evacuating air from said metering column, thereby channelling etchant from said reaction column into said metering column until said metering column contains a predetermined initial level of etchant and said reaction column is full of etchant,

(3) pressurizing said metering column, thereby forcing etchant into said etching tank, until said metering column contains a predetermined final level of etchant which is lower than said predetermined initial level,

(4) etching a specimen of the same material to be etched with the etchant in said reaction column, thereby generating hydrogen gas, pressurizing said reaction column and purging etchant to said metering column, thereby increasing the level of etchant in said metering column,

(5) measuring the time beginning with said etching and ending when the level of etchant in said metering column again reaches said predetermined initial level; and

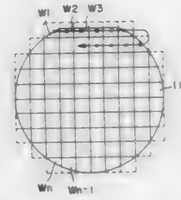
(C) computing the etching rate from said unit quantity hydrogen release time.

5,393,370

METHOD OF MAKING A SOI FILM HAVING A MORE UNIFORM THICKNESS IN A SOI SUBSTRATE

Yutaka Ohta, Annaka; Masatake Katayama, Takasaki, and Isao Moroga, Annaka, all of Japan, assignors to Shin-Etsu Handotai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 139,849
Claims priority, application Japan, Oct. 23, 1992, 4-285784
Int. Cl.[6] B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—626 9 Claims



1. A method of making a SOI film having a more uniform thickness in a SOI substrate characterized by partitioning the SOI substrate into a plurality of sections, measuring the SOI film thickness of each section by means of the visual light spectral interference method using an optical fiber cable, and simultaneously etching the SOI film to a desired thickness with a dry etching device.

5,393,371

INTEGRATED OPTICS CHIPS AND LASER ABLATION METHODS FOR ATTACHMENT OF OPTICAL FIBERS THERETO FOR $LINBO_3$ SUBSTRATES

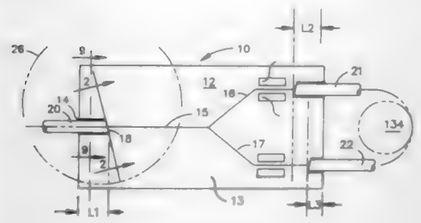
Chin L. Chang, and Ching F. Chen, both of Los Angeles County, Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Continuation of Ser. No. 741,384, Aug. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 451,588, Dec. 18, 1989, Pat. No. 5,046,808. This application Jun. 22, 1993, Ser. No. 80,996
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[6] G02B *6/30*
U.S. Cl. 156—629 22 Claims

1. A method for making an integrated optics device having a crystal substrate formed of an optically active material having a crystal lattice, said crystal substrate having at least one slot formed therein, and at least one optical waveguide delineated within the crystal substrate to guide optical signals along a selected optical axis of propagation, the slot having a distal end wall, the distal end wall of the slot exposing an end surface of the optical waveguide, the optical waveguide having an optical axis, the end surface of the optical waveguide being

formed at an angle with the optical axis of propagation to reduce the amount of light reflected at the end surface of the optical waveguide; said integrated optics device having at least one optical fiber positioned in said slot, said optical fiber having a core, said optical fiber having an end face with the core having an end face exposed on the surface of the optical fiber end face, the method steps comprising:

A. micro machining a slot of predetermined length, depth and width into the surface of the crystal substrate by scanning the surface path of the slot to be micro machined with a focused beam of photons, the wavelength of the



photons and the beam density being selected to ablate molecules from the crystal lattice; the slot terminating at a slot end wall, the slot end wall containing a waveguide end surface;

B. positioning the end portion of the optical fiber into the slot, the slot predetermined length and depth being characterized to coaxially align and abut the end face of the core with the waveguide end surface;

C. fixing the end portion of the optical fiber into the slot with end face of the core substantially abutting the waveguide end surface.

5,393,372

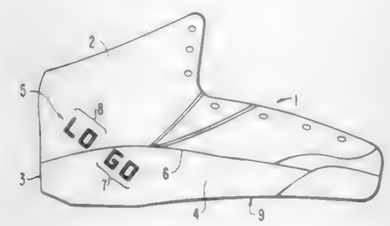
METHOD OF DISPLAYING INDICIA ON FOOTWEAR

Stephen D. Ammon, Newburyport, Mass., assignor to Fila U.S.A., Inc., Hunt Valley, Md.

Filed Nov. 19, 1993, Ser. No. 154,968

Int. Cl.[6] B44C *1/22*

U.S. Cl. 156—629 **20 Claims**



1. A method for displaying indicia on footwear having a sole and an upper portion, wherein the sole has a sidewall, the method comprising:

applying a first segment of the indicia to the upper portion;

applying a second segment of the indicia to the sidewall of the sole; and

aligning the first and second segments to form the indicia during assembly of the upper portion to the sole.

5,393,373

METHOD OF PATTERNING AND MANUFACTURING SEMICONDUCTOR DEVICES

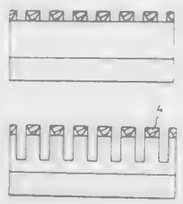
Young K. Jun; Sa K. Ra; Dong W. Kim; Hyun H. Seo, all of Seoul; Sung C. Kim, Kyungki-do, and Jun K. Kim, Seoul, all of Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Division of Ser. No. 911,594, Jul. 10, 1992, Pat. No. 5,256,587. This application Oct. 12, 1993, Ser. No. 135,197

Claims priority, application Rep. of Korea, Jul. 11, 1991, 11803/91; Aug. 21, 1991, 14388/91

Int. Cl.[6] H01L *21/306;* **B44C** *1/22*

U.S. Cl. 156—630 **15 Claims**



1. A patterning method for a semiconductor device comprising the steps of:

(1) forming a hemisphere polysilicon particle layer having hills and valleys on a first layer to be etched; and

(2) etching portions of the first layer beneath the valleys of the hemisphere polysilicon particle layer, wherein the hills of the hemisphere polysilicon particle layer are used as a mask.

5,393,374

METHOD OF ASHING

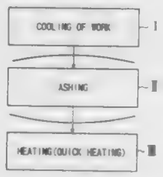
Junichi Sato, Tokyo, and Shingo Kadomura, Kanagawa, both of Japan, assignors to Sony Corporation, Japan

Filed Aug. 26, 1993, Ser. No. 111,919

Claims priority, application Japan, Aug. 31, 1992, 4-255790

Int. Cl.[6] H05H *1/00;* **H01L** *21/00*

U.S. Cl. 156—643 **5 Claims**



1. A method of ashing a photoresist film on a work, comprising the steps of:

cooling the work down to a temperature of about 0° C. or therebelow, and

then heating the work to ash the photo-resist film.

5,393,375

PROCESS FOR FABRICATING SUBMICRON SINGLE CRYSTAL ELECTROMECHANICAL STRUCTURES

Noel C. MacDonald; Zhoying L. Zhang, and Gyorgy A. Porkolab, all of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 829,348, Feb. 3, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 171,965

Int. Cl.[6] B44C *1/22*

U.S. Cl. 156—643 **18 Claims**

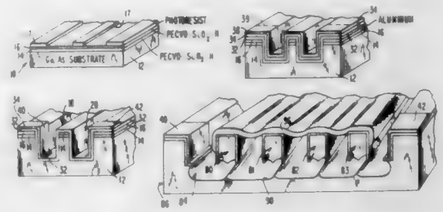
1. A process for fabricating, from a single crystal substrate, a high aspect ratio, released, single-crystal microstructure having any arbitrary structural orientation with respect to the substrate, comprising:

providing a substrate of single-crystal material from which a microstructure is to be fabricated;

depositing by plasma enhanced chemical vapor deposition of silicon nitride a first layer of a dielectric stack on a top surface of said substrate;

depositing by plasma enhanced chemical vapor deposition of silicon dioxide a second layer of said dielectric stack on a top surface of said first layer;

forming in said dielectric stack a pattern of the microstructure to be fabricated;



transferring said pattern to said substrate by ion beam etching to form trenches having bottom walls and vertical side walls in the substrate, the trenches defining mesas having the location, shape and dimensions of the microstructure;

conformally coating said substrate with a dielectric material to form a third layer on said second layer, on said trench bottom walls, and on said vertical side walls;

etching back said third layer from the bottom walls of said trenches; and

releasing said mesas to produce said microstructure from said substrate.

5,393,376

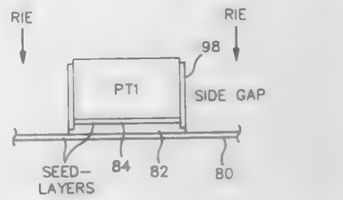
METHOD OF MAKING POLE TIP STRUCTURE FOR THIN FILM MAGNETIC HEADS

Mao-Min Chen; Kochan Ju, both of San Jose; Neil L. Robertson, Campbell, and Po-Kang Wang, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1993, Ser. No. 175,886

Int. Cl.[6] B44C *1/22;* **C03C** *15/00, 25/00*

U.S. Cl. 156—643 **20 Claims**



1. A method of making pole tips PT1 and PT2 for a thin film magnetic head with a sidegap G located between the pole tips PT1 and PT2, the method comprising the steps of:

depositing a bottom seedlayer;

depositing an insulation layer on top of the bottom seedlayer;

depositing a top seedlayer on top of the insulation layer;

frame plating the pole tip PT1 on top of the top seedlayer, the pole tip PT1 having top and bottom film surfaces bounded in part by a pair of spaced apart sidewalls;

removing the top seedlayer with the exception of the top seedlayer below the pole tip PT1;

depositing a gap insulation layer on the insulation layer and on a sidewall of the pole tip PT1, the deposition of the gap insulation layer on the sidewall forming said sidegap G;

removing the gap insulation layer with the exception of the gap insulation layer which is deposited on the sidewall of the pole tip PT1 to form said sidegap;

removing the insulation layer with the exception of the insulation layer below the pole tip PT1 to expose a portion of the bottom seedlayer adjacent to the pole tip PT1 where the pole tip PT2 is to be formed; and

frame plating the pole tip PT2 on top of the exposed portion of the bottom seedlayer adjacent to said sidegap.

5,393,377

METHOD OF ETCHING STONE MATERIALS

Ricardo Pasaran Sayago, and Benigno Pasaran Sayago, both of Palmarola No. 74 Col. Zacahuizco, Mexico City, The Federal District, Mexico

Filed Feb. 3, 1994, Ser. No. 192,221

Int. Cl.[6] B44C *1/22*

U.S. Cl. 156—659.1 **18 Claims**

1. A method of engraving a stone material which comprises the steps of:

a) applying an acid resistant coating to portions of a stone material that are not to be engraved;

b) bathing the coated stone material with a sufficient amount of acid for a sufficient period of time to engrave said stone material;

c) washing the stone material with a sufficient amount of a base to neutralize the acid; and

d) removing the coating to obtain an engraved stone material.

5,393,378

METHOD FOR MEASURING AND CONTROLLING FIBER VARIATIONS IN PAPER SHEET

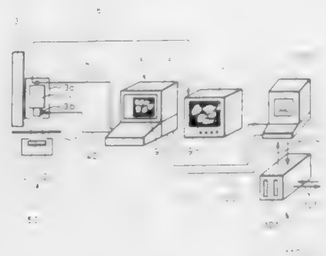
Masahiro Yakabe, Narita; Satoshi Suzuki, Tokyo; Sadao Degawa, Komae; Shigeki Murayama, Yokohama; Koichi Ishibashi, Tokyo; Ikuo Nakashima, Sayama, and Koji Sakai, Kawasaki, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaishi, Tokyo, Japan

Continuation-in-part of Ser. No. 640,409, Jan. 23, 1991, abandoned. This application Mar. 2, 1993, Ser. No. 25,726

Claims priority, application Japan, May 31, 1989, 1-138439; Jul. 7, 1989, 1-176576; Oct. 17, 1989, 1-269906; Oct. 17, 1989, 1-269907

Int. Cl.[6] G01N *21/89;* **D21F** *7/06*

U.S. Cl. 162—61 **10 Claims**



1. A method for generating a paper quality membership function to be used in an apparatus for controlling the degree of fiber variance in paper sheet, comprising the steps of:

(a) picking up an image of transmitted light from a light source on an area of paper by a plurality of cameras with different visual fields, the cameras being arranged so that images of the transmitted light are picked up by the cameras concurrently in comparatively wide and narrow visual fields and are introduced to a display unit of an image processing computing element, there being means

provided for changing the visual field introduced to the display unit;
(b) dividing the image of the transmitted light on the display unit into a predetermined size and number of windows, the windows comprising pixels;
(c) measuring the tone density of each pixel, and the tone density of each window from the tone density of the pixels comprising the window;
(d) calculating values chosen from at least one of the following:
an average value of tone density and a primary variance of tone density of each window from the tone density of each pixel,
an average value of the primary variance of the tone density for all of the windows,
a secondary variance of tone density for all of the windows, and
a variance of average values of tone density of each window; and
(e) using one of or at least two in combination of said values as a formation factor;
(f) changing the visual field transmitted to said display unit by said plurality of cameras;
(g) repeating steps (a)–(e) one or more times to obtain different formation factors;
(h) generating a paper quality membership function from the different formation factors obtained: and
(i) using said paper quality membership function to control the degree of fiber variance in said apparatus.

5,393,379

WET LAID FIBEROUS THERMOPLASTIC MATERIAL AND AQUEOUS DISPERSION FOR PRODUCING SAME

Luciano M. Parrinello, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 622,671, Dec. 5, 1990, abandoned. This application Apr. 22, 1993, Ser. No. 52,296
Int. Cl.[6] D21H *13/40*
U.S. Cl. 162—101 16 Claims

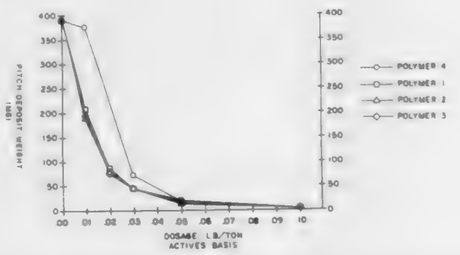
1. A process of forming a wet-laid, non-woven, glass fiber containing thermoplastic polymer web that is moldable as a fiber reinforced thermoplastic laminate, comprising:
A. forming an aqueous dispersion containing:
1. a particulate or particulate powder thermoplastic matrix polymer selected from the group consisting of polyolefins, polyesters, polyamides, polyphenylene oxide and polycarbonate, the matrix polymer constituting from 50 to 99 percent of the wet-laid web and present throughout and on the fibers of the web;
2. glass fibers of noncontinuous lengths treated with a forming size containing a film forming polymer compatible with the matrix polymer, an organo coupling agent and cationic lubricant, wherein the size allows the glass fibers to disperse in the aqueous dispersion from which the wet laid web is formed, the glass fibers constituting from 1 to 50 percent of the wet-laid web;
B. depositing the aqueous dispersion onto a screen and removing water to form a non-woven, sheet-like, fiber containing thermoplastic polymer mat; and
C. applying to the non-woven mat a mat binder having a solids content from around 0.1 to 32 weight percent and consisting essentially of:
1) a chemically modified thermoplastic polymer, constituting from around 0.01 to around 20 weight percent of the wet-laid web, containing chemically reactive moieties for addition, condensation or free radical reaction to allow for coupling of the fibers to the matrix polymer, selected from the group consisting of carboxylic acid modified polyolefins, carboxylic anhydride modified polyolefins, mixtures and blends of these;
2) film forming polymer in a positive amount not exceeding 4 weight percent of the wet-laid web selected from the group consisting of polyurethane, epoxy, epoxy-polyurethane and polyoxyalkylene;
3) from 0 to about 5 weight percent of the wet-laid web of an electron donating organo coupling agent; and
4) from 0 to about 3 weight percent of the wet-laid web of a compound selected from aliphatic or cyclic mono- or polycarboxylic acids and anhydrides thereof;
D. drying the sheet-like web to form the wet-laid, non-woven fiber containing thermoplastic polymer web.

5,393,380

POLYDIALLYL DIMETHYL AMMONIUM CHLORIDE/3-ACRYLAMIDO-3-METHYLBUTANOIC ACID COPOLYMERS AND THEIR USE FOR PITCH CONTROL IN PAPER MILL SYSTEMS

Peter E. Reed, Naperville, and Carol S. Greer, Lisle, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation of Ser. No. 970,427, Nov. 2, 1992, abandoned. This application Jan. 18, 1994, Ser. No. 184,520
Int. Cl.[6] D21H *17/44*
U.S. Cl. 162—168.2 3 Claims



1. A process for controlling the deposition of pitch contained within the fibers of wood pulp in pulp and paper making systems which pitch is the predominant form of pitch in the paper making system which comprises adding to the pulp an effective amount of polydiallyl dimethyl ammonium chloride copolymer which contains from between 1–30 mole percent of 3-acrylamido-3-methylbutanoic acid and has an Intrinsic Viscosity of at least 0.5 dl/g.

5,393,381

PROCESS FOR THE MANUFACTURE OF A PAPER OR A CARDBOARD HAVING IMPROVED RETENTION

René Hund, Villars, and Eric Philibert, Saint Etienne, both of France, assignors to S N F, France

Filed Jun. 2, 1993, Ser. No. 74,026
Claims priority, application France, Jun. 11, 1992, 92 07308
Int. Cl.[6] D21H *17/45*
U.S. Cl. 162—168.3 4 Claims

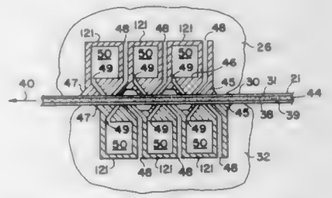
1. An improved process for manufacturing paper or cardboard having improved retention, consisting of adding a polyacrylamide as the sole flocculent and a bentonite to a fibrous suspension of pulp, the steps comprising:
dissolving in water a branched cationic polyacrylamide powder having a cationcity from about 10 to 45 mol percent; wherein said branched polyacrylamide is a cationic copolymer of acrylamide and of an unsaturated cationic ethylenic monomer, chosen from the group consisting of quaternised dimethylaminoethyl acrylate (DMAEA), salified dimethylaminoethyl acrylate (DMAEA), quaternised dimethylaminoethyl methacrylate (DMAEMA), salified dimethylaminoethyl methacrylate (DMAEMA), dimethyldiallyl-ammonium chloride (DADMAC), acrylamidopropyltrimethyl-ammonium chloride (APTAC), and methacrylamido-propyltrimethylammonium (MAPTAC); and wherein said polyacrylamide is branched by a branching agent consisting of a polyfunctional compound having at least two reactive groups chosen from the group consisting of double bonds, aldehyde bonds, and epoxy bonds,
introducing said dissolved branched cationic polyacrylamide into the fibrous suspension at a concentration of 0.03 to 1.0 per thousand (0.03 to 1.0%) by weight of dry weight of the fibrous suspension;
shearing the suspension containing said dissolved branched cationic polyacrylamide; and
adding bentonite thereto at a concentration of 0.1 to 0.5 percent (0.1 to 0.5%) of dry weight of the fibrous suspension while stirring to form a resulting suspension.

5,393,382

METHOD FOR FORMING AND DEWATERING A WEB ON A FOURDRINIER FABRIC

Glauco Corbellini, 33100 Via Carducci 48, Udine, Italy, and Peter A. Rodriguez, 1785 Selva Marina Dr., Atlantic Beach, Fla. 32233

Division of Ser. No. 717,880, Sep. 17, 1991, Pat. No. 5,242,547, which is a continuation of Ser. No. 384,744, Jul. 24, 1989, abandoned. This application Sep. 3, 1993, Ser. No. 116,400
Int. Cl.[6] D21F *1/48*
U.S. Cl. 162—217 12 Claims



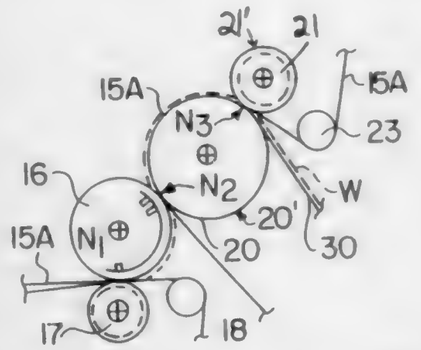
1. A method of removing water from an aqueous fiber dispersion formed into a wet web in contact with an outer surface of a moving Fourdrinier fabric in a paper making process having a wet end portion and a dry end portion which comprises the sequential steps of:
(a) passing the wet web of fibers and the fabric along and in contact with a meniscus tension unit having a plurality of cells located in the dry end portion, each cell extending to and in contact with an inner surface of the fabric;
(b) applying a small vacuum to an internal space of each cell of the meniscus tension unit to extract water from the wet web using the tension meniscus of water while preventing air from passing through the wet web; and
(c) permitting air from the atmosphere only to be applied to the inner surface of the fabric to each cell of the meniscus tension unit and thence into the fabric to replace the water removed from the fabric in step (b) thereby enhancing the removal of water from the web and water from the fabric, the atmospheric air passing along and through the interstices between the inner and outer surfaces of the fabric to the internal space of each cell.

5,393,383

COMPACT PRESS SECTION WITH CLOSED DRAW OF THE WEB IN A PAPER MACHINE

Mikko Karvinen, Vihtavuori; Reima Kerttula, Muurame; Jorma Laapotti, Palokka, and Juhani Pajula, Jyvaskyla, all of Finland, assignors to Valmet Paper Machinery Inc., Helsinki, Finland

Continuation-in-part of Ser. No. 829,989, Feb. 3, 1992, Pat. No. 5,240,563. This application Mar. 2, 1993, Ser. No. 25,190
Claims priority, application Finland, Dec. 19, 1991, 916026
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[6] D21F *3/04*
U.S. Cl. 162—274 12 Claims



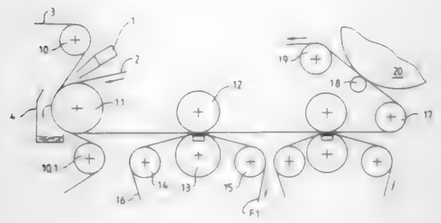
1. A closed press section in a paper machine, comprising
a compact combination of press rolls defining press nips with each other, one of said press rolls being a center roll having a smooth cylindrical mantle,
a plurality of fabrics supporting a web, one of said fabrics comprising a transfer band defining a closed loop around said center roll, said transfer band having an outer face upon which the web is transferred,
a first central press nip being defined between said center roll, and a first one of said press rolls,
a last central press nip in the running direction of the web being defined between said center roll and a second one of said press rolls,
a first fabric, which is also a pick-up fabric which picks up the web from a form section passing through said first press nip and said last press nip, said first fabric having an outer face passing around said center roll,
the web being continuously carried between said outer face of said first fabric and said outer face of said transfer band through said first press nip and around said center roll to said last press nip, and the web being detached from said first fabric after said last press nip,
said transfer band defining a closed draw located after said last press nip in said compact combination of rolls, the web being constantly supported in said closed draw,
said transfer band comprising a fabric which substantially does not receive water such that said transfer band does not rewet the web, said outer face of said transfer band fabric having web-adhesion properties such that, after said last press nip, the web follows the transfer band fabric in a straight run and is transferred in a transfer zone as a fully closed draw onto a drying wire or onto an equivalent fabric that carries the web further into a drying section following said press section, and
conditioning means for conditioning said transfer band loop, said conditioning means structured and arranged to maintain an adequate operation of said transfer band fabric.

5,393,384

PAPER MACHINE FOR THE PRODUCTION OF TISSUE PAPER

Karl Steiner, Herbrechtingen; Albrecht Meinecke, Heidenheim, both of Germany, and Rui Goncalves, Sao Paulo, Brazil, assignors to J. M. Voith GmbH, Heidenheim, Germany

Filed Jul. 27, 1993, Ser. No. 97,568
Claims priority, application Germany, Jul. 27, 1992, 4224730
Int. Cl.[6] D21F *3/04*
U.S. Cl. 162—359.1 3 Claims



1. A paper machine for producing a tissue web, comprising:
at least one headbox;
at least one dewatering unit;
at least one water impermeable belt for carrying the tissue web;
at least one press unit disposed downstream from said at least one dewatering unit, each press unit including a shoe press for drying the tissue web and a press felt carried by and disposed immediately adjacent to said shoe press, each said press unit including means for immediately separating said press felt from the tissue web on the immediate downstream side of said shoe press;
a tissue drying cylinder disposed downstream from said at least one press unit; said water impermeable belt extending through each said press unit to said tissue drying cylinder, each said press unit being structured and arranged for the tissue web to be disposed between and immediately adjacent to said press felt and said water impermeable belt, and wherein an adhesion force between said water impermeable belt and the tissue web is greater than an adhesion force between said press felt and the tissue web.

5,393,385

SEPARATION OF HEXANE FROM VINYL ACETATE AND METHYL ACRYLATE BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, and Randi W. Wytcherley, Bozeman, Mont., assignors to Lloyd Berg, Bozeman, Mont.

Filed Mar. 14, 1994, Ser. No. 212,716
Int. Cl.[6] B01D *3/40;* C07C *7/08*
U.S. Cl. 203—57 1 Claim

1. A method for recovering hexane from a mixture of hexane, vinyl acetate and methyl acrylate which comprises distilling a mixture of hexane, vinyl acetate and methyl acrylate in a rectification column in the presence of about one part of an extractive agent per part of hexane-vinyl acetate-methyl acrylate mixture, recovering the hexane as overhead product and obtaining the vinyl acetate, the methyl acrylate and the extractive agent from the stillpot, wherein said extractive agent consists of one material selected from the group consisting of nitrobenzene, sulfolane, dimethylformamide, dimethylsulfoxide and acetophenone.

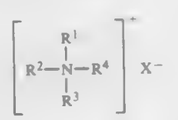
5,393,386

METHOD FOR PREPARING AQUEOUS QUATERNARY AMMONIUM HYDROXIDE SOLUTION

Tetsuo Aoyama; Toshio Kondo; Yasushi Sugawara, and Masahiro Miyake, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 15, 1993, Ser. No. 168,049
Claims priority, application Japan, Dec. 28, 1992, 4-348756; May 21, 1993, 5-120173
Int. Cl.[6] C25B *3/02*
U.S. Cl. 204—78 18 Claims

1. A method for preparing an aqueous quaternary ammonium hydroxide solution which comprises the steps of reacting an aqueous solution of a quaternary ammonium organic acid salt represented by the formula (1)



(1)

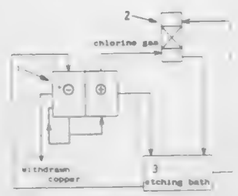
wherein each of R^1 to R^4 is an alkyl group having 1 to 3 carbon atoms, and R^1 to R^4 are mutually identical or different; and X is an organic acid radical, with hydrogen peroxide, oxygen or an oxygen-containing gas in the presence of a platinum group metal catalyst to obtain a quaternary ammonium inorganic acid salt, and then electrolyzing the aqueous solution of the quaternary ammonium inorganic acid salt.

5,393,387

METHOD FOR TREATING ETCHANT

Yasuie Mikami, Tokyo; Masaaki Iosaki, Mitaka, and Masao Shibasaki, Tokyo, all of Japan, assignors to Nittetsu Mining Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,992
Claims priority, application Japan, Oct. 28, 1991, 3-281370; Nov. 8, 1991, 3-293127
Int. Cl.[6] C25C *1/12*
U.S. Cl. 204—106 12 Claims



1. A method for regenerating a waste etchant comprising obtaining a first waste etchant from an etching bath, said first waste etchant including copper (I) chloride; treating said first waste etchant in an electrolytic bath, having a diaphragm between a cathode and an anode, said diaphragm being electrically neutral, non-polar and having a low resistivity for enabling operation of said electrolytic bath at a minimal voltage, said treating including introducing said first waste etchant to the cathode; maintaining a concentration of copper ions of less than 20 g/l at said cathode; withdrawing copper electrolytically deposited on the cathode, thereby reducing an amount of copper in said first waste etchant; supplying said first waste etchant, having a reduced amount of copper, to the anode, thereby regenerating said first waste etchant by oxidizing copper ions and, thereby, generating chlorine gas; supplying said chlorine gas, generated in said anode, to an absorbing tower; introducing a second waste etchant from said etching bath to said absorbing tower, said second waste etchant including copper (I) chloride; regenerating said second waste etchant using said chlorine gas for regenerating said second waste etchant by oxidizing copper ions in said second waste etchant; and supplying said first and second regenerated etchants to said etching bath.

5,393,388

ELECTROLYTIC PROCESS FOR EXTRACTING HIGH PURITY PLATINUM FROM PLATINUM ALLOYS

Sigrid Herrmann, and Uwe Landau, both of Berlin, Germany, assignors to Schott Glaswerke, Mainz, Germany

Filed Dec. 20, 1993, Ser. No. 170,421
Claims priority, application Germany, Dec. 18, 1992, 4243697
Int. Cl.[6] C25C *1/20*
U.S. Cl. 204—109 27 Claims

1. Electrolytic process for obtaining platinum of a high purity from concentrated hydrochloric acid solutions containing a platinum alloy, said process comprising the steps of:
a) providing an electrolysis cell having an anode and a cathode and a cation exchanger membrane subdividing said electrolysis cell;
b) placing in said electrolysis cell a concentrated hydrochloric acid solution containing metal impurities and a platinum alloy selected from the group consisting of Platinum-Rhodium alloys, Platinum-Iridium alloys and Platinum-Palladium alloys;
c) applying a potential across said anode and said cathode of 8 V to 16 V to perform an electrolysis under voltage-controlled conditions at a current density of 12.5 to 37.5 A/dm^2 so as to form a purified platinum-containing solution and at least one platinum alloy metal deposit;
d) recovering said at least one platinum alloy metal deposit; and
e) obtaining the platinum of high purity from said purified platinum-containing solution.

5,393,389

ELECTROLYTIC PROCESS FOR OBTAINING HIGH PURITY PLATINUM FROM CONTAMINATED PLATINUM

Sigrid Herrmann, and Uwe Landau, both of Berlin, Germany, assignors to Schott Glaswerke, Mainz, Germany

Filed Dec. 20, 1993, Ser. No. 170,422
Claims priority, application Germany, Dec. 18, 1992, 4243699
Int. Cl.[6] C25C *1/20*
U.S. Cl. 204—109 16 Claims

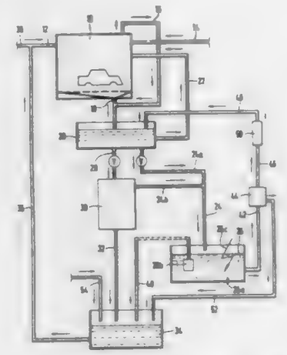
1. Electrolytic process for obtaining platinum having a high purity from a concentrated hydrochloric acid solution of contaminated platinum containing noble and base metal impurities, said process comprising the steps of:
a) providing an electrolysis cell comprising an anode compartment containing an anode and the concentrated hydrochloric acid solution of the contaminated platinum as anolyte and a cathode compartment containing a cathode and a 6 to 8N hydrochloric acid solution as catholyte, said anode compartment being divided from said cathode compartment in said electrolysis cell by a cation exchanger membrane;
b) electrolyzing said hydrochloric acid solution of said contaminated platinum in said electrolysis cell under voltage-controlled conditions by applying a voltage of from 2.5 V to 8 V across said anode and said cathode at a current density of from 0.3 to 12.5 A/dm^2 to form a refined platinum-containing solution and a platinum alloy metal deposit;
c) recovering said platinum alloy metal deposit; and
d) obtaining said platinum of high purity from said refined platinum-containing solution.

5,393,390

TREATMENT AND RECYCLING OF OVERSPRAY FROM THE SPRAY APPLICATION OF WATERBORNE COATINGS

Karl-Heinz Freese, Stuttgart, and Gerhard Günter, Ettlingen, both of Germany, assignors to Akzo Nobel nv, Arnhem, Netherlands

PCT No. PCT/EP92/00996, § 371 Date Dec. 13, 1993, § 102(e) Date Dec. 13, 1993, PCT Pub. No. WO92/19686, PCT Pub. Date Nov. 12, 1992
PCT Filed May 7, 1992, Ser. No. 140,209
Claims priority, application European Pat. Off., May 8, 1991, 91201107
Int. Cl.[6] C25F *5/00*
U.S. Cl. 204—131 14 Claims



1. A process for treating overspray collected from the spray coating of an object with a waterborne coating, which waterborne coating comprises:
(A) water,
(B) a resin part including at least one of a water-insoluble, water-dispersible and water-soluble component, and
(C) optionally, an additive part including at least one of a water insoluble, water dispersible and water-soluble component,
which process results in a recyclable waterborne coating stream of substantially the same composition as the waterborne coating and a recyclable water stream containing substantially none of the resin or additive parts of the waterborne coating, which process comprises the steps of:
(1) collecting at least a portion of the overspray in collection means;
(2) electrophoretically separating the collected over-spray with electrophoretic separating means into
(i) a concentrated fraction comprising
(a) substantially all of the resin part,
(b) substantially all of the water-insoluble and water-dispersible components of the additive part, if present, and
(c) at least a portion of the water-soluble component of the additive part, if present; and
(ii) a water fraction comprising
(a) a substantial portion of the water,
(b) the residue of the resin and additive parts not contained in the concentrated fraction;
(3) separating the water fraction into
(i) the recyclable water stream and
(ii) a concentrated residue stream;
(4) recovering the concentrated fraction of step (2);
(5) recovering the concentrated residue stream of step (3); and
(6) generating the recyclable waterborne coating stream by mixing the recovered concentrated fraction of step (2) and the recovered concentrated residue stream of step (3) in a manner and with other components necessary to result in

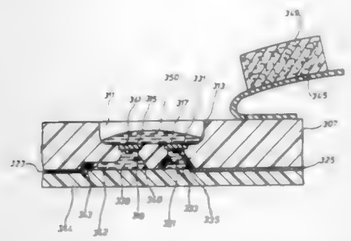
a mixture having substantially the same composition as the waterborne coating of the overspray.

5,393,391

ELECTRODE ARRANGEMENT FOR THE ELECTROCHEMICAL ANALYSIS OF ELECTROLYTIC COMPONENTS OF A LIQUID

Werner Dietze, Tutzing; Hans-Peter Haar, Weilheim; Horst Herrmann, Bernried; Dieter Knoll, Kronberg, and Wolfgang Reiser, Seeshaupt, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 499,227, Mar. 26, 1990, abandoned, which is a continuation of Ser. No. 291,241, Dec. 28, 1988, abandoned, which is a continuation of Ser. No. 591,770, Mar. 21, 1984, abandoned. This application Jul. 8, 1991, Ser. No. 728,768
Claims priority, application Germany, Apr. 11, 1983, 3312923
Int. Cl.[6] G01N *27/30*
U.S. Cl. 204—153.1 20 Claims



1. A method for the electrochemical analysis of a species of ions in a sample liquid comprising providing an electrode arrangement having

a base body made of an insulating material and

a removable closure part which, together with the base body, forms a closed hollow chamber,

a measurement electrode and a reference electrode held on the base body,

said measurement electrode and said reference electrode having wettable surfaces towards said closed hollow chamber,

said reference electrode comprising an electron-conducting lead-off contact element and a reference electrolyte containing a species of ions which makes a reversible electrochemical reaction with the lead-off contact element to provide a reference potential independent of the liquid to be analyzed,

said closed hollow chamber containing a liquid preconditioning electrolyte prepacked by the manufacturer in phase boundary contact with said measurement electrode and said reference electrode and containing the species of ions to be analyzed and the species of ions which makes a reversible electrochemical reaction with the lead-off contact element of the reference electrode,

said phase boundary contact of said reference electrode and said preconditioning electrolyte being such that nonspecific exchange of ions between said reference electrolyte of the reference electrode and said preconditioning electrolyte in said closed hollow chamber is possible,

maintaining said boundary contact of said preconditioning electrolyte with said measurement electrode and said reference electrode from prepacking by the manufacturer to removal of said preconditioning electrolyte before an analytical measurement,

removing said preconditioning electrolyte from said hollow chamber before an analytical measurement,

bringing said sample liquid into phase boundary contact with said measurement electrode and said reference electrode, and

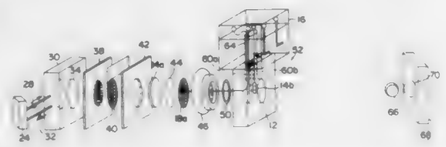
measuring the voltage between said measurement electrode and said reference electrode.

5,393,392

POLAROGRAPHIC PPB OXYGEN GAS SENSOR

Robert J. Masi, Littleton, Mass., assignor to Delta F Corporation, Woburn, Mass.

Filed Apr. 25, 1994, Ser. No. 232,747
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—153.16 32 Claims



1. A method for measuring the amount of oxygen in a gas which includes:

establishing in an electrolyte an electrolytic path between sensing electrodes comprising a cathode and a metal composite anode;

flowing the gaseous stream in contacting relationship with the cathode;

reducing the oxygen at the cathode to form hydroxyl ions;

reacting electrically the hydroxyl ions at the metal composite anode to oxidize the metal anode, the metal anode characterized in that no discrete chemical reaction by-products are formed and its potential remains stable;

establishing a current which current is linear to the rate at which the oxygen is reduced at the cathode; and

measuring said current.

5,393,393

PREPARATION OF HYDROGEN CYANIDE

Jeffrey K. S. Wan, Kingston, Canada, and Theodore A. Koch, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 28, 1993, Ser. No. 10,569
Int. Cl.[6] C01B *21/00*
U.S. Cl. 204—157.43 6 Claims

1. A process for the production of hydrogen cyanide which consists of contacting elemental carbon or elemental carbon containing a catalytic metal with a gas consisting of ammonia vapor, while irradiating the elemental carbon and the ammonia or elemental carbon containing a catalytic metal and the ammonia with microwave frequency radiation.

5,393,394

METHOD AND APPARATUS FOR DECOMPOSING ORGANIC HALOGEN-CONTAINING COMPOUND

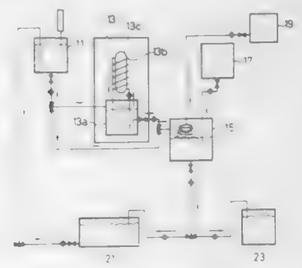
Michio Ikeda; Miho Suzuki; Norio Takeyama, and Terunobu Hayata, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 13, 1993, Ser. No. 105,625
Claims priority, application Japan, Aug. 18, 1992, 4-219115; Apr. 2, 1993, 5-076760
Int. Cl.[6] C07B *63/00*
U.S. Cl. 204—158.20 19 Claims

19. A method of decomposing an organic halogen-containing compound, comprising the steps of:

(a) preparing a liquid containing the organic halogen-containing compound and a solvent containing substantially no alkaline material, and in which the organic halogen-containing compound is dissolved;

(b) exposing the liquid of step (a) to light radiation of an effective wavelength for initiating decomposition of the



organic halogen-containing compound in the substantial absence of an alkaline material; and

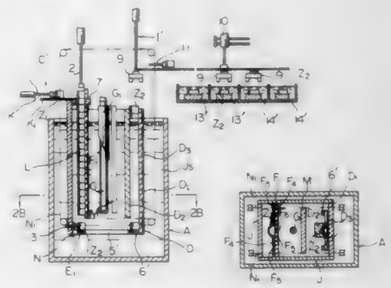
(c) treating the liquid with an alkaline material.

5,393,395

METHOD OF SURFACE-TREATING A HALF SLIDING BEARING AND APPARATUS FOR SAME

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Motomu Wada, Owariasahi; Takayoshi Sasaki, Tajimi, and Masaki Tanimoto, Gifu, all of Japan, assignors to Daido Metal Company, Ltd., Nagoya, Japan

Division of Ser. No. 75,341, Jun. 11, 1993, which is a continuation of Ser. No. 667,905, Mar. 12, 1991, abandoned. This application Mar. 24, 1994, Ser. No. 216,832
Claims priority, application Japan, Mar. 16, 1990, 2-065691
Int. Cl.[6] C25D *17/00*
U.S. Cl. 204—198 19 Claims



1. An apparatus for surface treating a half sliding bearing comprising:

a tank for accommodating a surface-treatment solution;

a surface layer forming device including a slide plate device disposed in said tank and acting for movably arranging a plurality of said half sliding bearings while maintaining a state of contact of said plurality of half sliding bearings and a power supply device which comes in electrical contact with said half sliding bearings of said plurality of half sliding bearings disposed outside said surface-treatment solution, and wherein said slide plate comprises magnetic means for movably holding one or more half slide bearings in a contact state;

a surface-treatment solution stirring pipe disposed away from said surface layer forming device and an elongated through hole formed at a position confronting said surface treatment solution stirring pipe; and

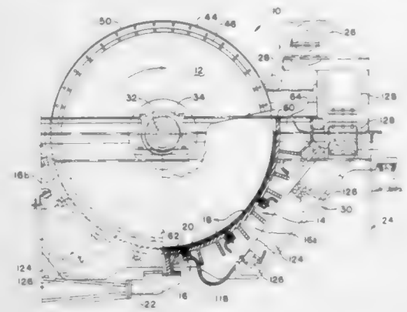
an electrode disposed away from said surface-treatment liquid stirring pipe.

5,393,396

APPARATUS FOR ELECTRODEPOSITING METAL

Robert D. DeWitt, Lyndhurst; Adam G. Bay, Chesterland, and Tibor Paraday, Eastlake, all of Ohio, assignors to Gould Inc., Eastlake, Ohio

Filed Oct. 30, 1990, Ser. No. 605,648
Int. Cl.[6] C25D *7/06, 17/00, 17/10*
U.S. Cl. 204—206 34 Claims



1. An apparatus for producing metal foil comprising:

tank means having a semi-cylindrical inner surface for holding an electrolytic solution;

an electrically non-conductive lining mounted to said inner surface of said tank;

a cathode drum having a plating surface mounted within said tank defining a generally uniform gap between said plating surface of said drum and said lining of said tank;

a plurality of generally rigid yet deformable metallic anode plates having mounting means extending from one side thereof, said anodes mounted on said non-conductive lining of said tank with said mounting means extending through said tank means:

connecting means attached to said mounting means for securing said anodes to said tank wherein said anodes conform to the contour of said lining and form a fluid-tight seal therewith, each of said anodes being spaced apart from an adjacent anode and positioned a uniform distance from said cathode drum;

means for connecting said mounting means to one or more separate sources of power; and

means for introducing electrolytic solution into said gap.

5,393,397

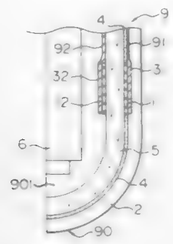
OXYGEN SENSOR

Tomoji Fukaya, Kariya; Masahiro Shibata; Kazunori Suzuki, both of Nagoya; Makoto Nakae, Toyoake; Syuichi Nakano, Kariya, and Masatoshi Suzuki, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 23, 1993, Ser. No. 172,222
Claims priority, application Japan, Dec. 25, 1992, 4-359200
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—424 8 Claims

1. An oxygen sensor which comprises a solid electrolyte and electrodes provided on both surfaces of the solid electrolyte,

wherein a mixed conductor which functions to absorb oxygen molecules and conduct an ionization reaction of absorbed



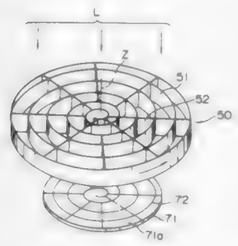
oxygen molecules is provided between the solid electrolyte and each of the electrodes.

5,393,398

MAGNETRON SPUTTERING APPARATUS

Yukiyasu Sugano, Kanagawa, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 896,366, Jun. 10, 1992, abandoned.
This application Jan. 7, 1994, Ser. No. 180,789
Claims priority, application Japan, Jun. 19, 1991, 3-174621
Int. Cl.[6] C23C 14/34
U.S. Cl. 204—298.11 2 Claims



1. A magnetron sputtering apparatus comprising:

a wafer holder for holding a wafer thereon;

a target holder for holding a target opposite to said wafer holder;

an substantially circular particle interceptor for intercepting particles which are ejected from said target, said particle interceptor being disposed between said wafer holder and said target holder, said particle interceptor comprising a single spiral shaped coil and radial plates which each connect with said spiral shaped coil at a plurality of locations and which form a plurality of holes extending from a central portion of said particle interceptor to a peripheral portion of said particle interceptor, the holes in said peripheral portion having a greater cross-sectional area than the holes in said central portion; and

means for rotating said particle interceptor in a plane parallel to the surface of said wafer and about an axis which passes through a center of the substantially circular particle interceptor so that a shadow, formed by orthogonal projections of said particle interceptor on the surface of said wafer, is moved over the surface of said wafer;

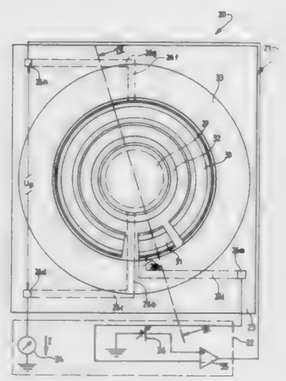
wherein said target has a diameter which is not smaller than that of said wafer and not greater than a value 1.4 times the diameter of said wafer.

5,393,399

AMPEROMETRIC MEASURING DEVICE HAVING AN ELECTROCHEMICAL SENSOR

Albert Van den Berg, Neuchatel; Alain Grisel, Lausanne, both of Switzerland, and Martial Archenault, Lyons, France, assignors to Gie Cylergie, Nanterre, France

Filed Sep. 7, 1993, Ser. No. 117,872
Claims priority, application France, Sep. 7, 1992, 9210740
Int. Cl.[6] G01N 27/26, 27/404
U.S. Cl. 204—412 12 Claims



1. An amperometric sensor device for measuring the content of an oxygen reducible substance in a liquid, having in combination a sensor having a planar structure obtained by photolithograpic techniques and a circuit for measuring the intensity of the electrochemical current generated by said sensor, said structure comprising

an insulating substrate

a set of electrodes composed of at least one working electrode., one counter electrode and one reference electrode, at least said working electrode being disposed on said insulating substrate,

said working electrode having an active surface only defined by a conductive part at the surface of said substrate, said device further comprising a diffusion membrane covering said conductive part of said working electrode While Overlapping the entire periphery of said conductive part, and

connection means to connect said electrodes to said measuring circuit,

said diffusion membrane, said reference electrode and said counter electrode being entirely exposed so that, when said device is functioning, they are in contact over their entire surfaces with the liquid to be analyzed.

5,393,400

COMPONENT SENSOR FOR MOLTEN METALS

Shu Yamaguchi, Nagoya; Norihiko Fukatsu, Tajima, and Hideo Kimura, Kyoto, all of Japan, assignors to Yamari Sangyo Kabushiki Kaisha, Osaka, Japan

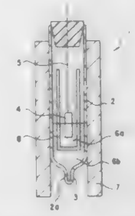
Filed Nov. 8, 1991, Ser. No. 789,489
Claims priority, application Japan, Dec. 29, 1990, 2-416898
Int. Cl.[6] G01N 27/411
U.S. Cl. 204—413 4 Claims

1. A chemical cell component sensor for detecting a particular component contained in a metal melt by measuring an electromotive voltage occurring between said metal melt as a measuring electrode and a standard electrode, the component sensor comprising:

a holder used as the lead for the measuring electrode;

a protecting tube housed within said holder, said protecting tube having a cylindrical bottomed surface, no electron conductivity and a projection provided at a tip portion of the bottomed surface, said projection being removable by snapping;

an active substance in said protecting tube and consisting essentially of a first halide which consists of at least one halide of an alkali metal and at least one halide of an alkaline earth metal, said first halide consisting of both a solid phase and a liquid phase when said sensor is in contact with said metal melt, and a second halide of the



particular component to be detected, said active substance being saturated with said first halide;

a standard electrode which is a pure form of the particular component to be detected or is an alloy containing the particular component to be detected; and

a partition within said protecting tube for enclosing said standard electrode and a portion of said active substance;

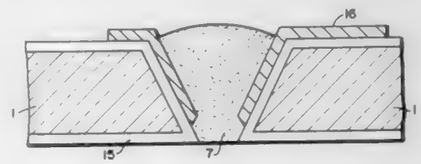
the standard electrode being in contact with the active substance in said protecting tube.

5,393,401

METHOD OF MANUFACTURING MINIATURIZED COMPONENTS OF CHEMICAL AND BIOLOGICAL DETECTION SENSORS THAT EMPLOY ION-SELECTIVE MEMBRANES, AND SUPPORTS FOR SUCH COMPONENTS

Meinhard Knoll, Geschwister-Scholl-Str. 9, 4430 Steinfurt-Burgsteinfurt, Germany

PCT No. PCT/EP92/00990, § 371 Date Jan. 7, 1993, § 102(e) Date Jan. 7, 1993, PCT Pub. No. WO92/21020, PCT Pub. Date Nov. 26, 1992
PCT Filed May 6, 1992, Ser. No. 966,148
Claims priority, application Germany, May 10, 1991, 4115414
Int. Cl.[6] G01N 27/26
U.S. Cl. 204—418 33 Claims



1. In a method of manufacturing supports for miniaturized components of sensors that detect chemicals and biologicals by means of ion-selective membranes, said method comprising the following steps:

(a) producing a thin substrate of a single-crystal silicon having a front side and a back side and having one of a (100) and a (110)-orientation in its plane,

(b) etching said substrate anisotropically from the front side to the back side, thereby forming an opening that tapers from the front side to the back side in the form of a truncated pyramid, when etched in a silicon substrate having a (100)-orientation, and an opening with two parallel as well as perpendicular walls and two sloping walls when etched in a silicon substrate having a (110)-orientation, said opening forming a containment; the improvement wherein

(1) at least one electrode is applied against one of the internal walls of the opening;

(2) a liquid solution is introduced into the containment from the front side, said solution comprising one of a polymer in a solvent which is allowed to evaporate and a solution which is allowed to solidify into an hydrogel; and

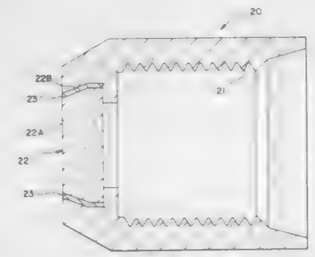
(3) leaving the solidified polymer or hydrogel as ion-selective membrane within the containment and with contact with the electrode.

5,393,402

ELECTRODE WITH CRYSTAL MEMBRANE

Nelson E. Dervaes, and John R. Dunkle, both of Loveland, Colo., assignors to Hach Company, Loveland, Colo.

Filed Feb. 9, 1994, Ser. No. 145,765
Int. Cl.[6] G01N 27/26; B32B 3/26
U.S. Cl. 204—419 8 Claims



1. An electrode cap member comprising a tubular body having first and second ends and a crystal membrane permanently secured therein; wherein said first end is threaded, and wherein said crystal membrane is secured in said second end; wherein said crystal membrane includes a surface which is exposed to the exterior of said cap member and also includes a rear surface; and wherein said cap member includes a portion which extends over said rear surface of said crystal membrane such that said crystal membrane is permanently secured in said cap member.

5,393,403

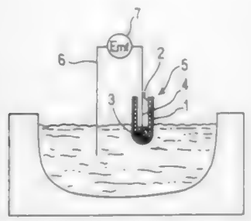
PROBE USING A MIXED SUB-ELECTRODE FOR MEASURING THE ACTIVITY OF CARBON IN MOLTON IRON

Minoru Sasabe, No. 22-20-501, 8-chome, Konakadai, Chiba-shi, Chiba-ken; Yoshihiko Kawai, Tokyo; Yoshiteru Kikuchi, Tokyo; Toshio Takaoka, Tokyo; Hiromi Seno, Osaka; Chikayashi Furuta, Osaka, and Toshio Nagatsuka, Osaka, all of Japan, assignors to NKK Corporation, Tokyo; Minoru Sasabe, Chiba and Osaka Sanso Kogyo Ltd., Osaka, all of Japan

Continuation of Ser. No. 765,544, Sep. 25, 1991, abandoned. This application May 25, 1993, Ser. No. 67,417
Claims priority, application Japan, Sep. 26, 1990, 2-254133
Int. Cl.[6] G01N 27/416
U.S. Cl. 204—422 5 Claims

1. A probe for measuring the activity of carbon in molten iron, comprising a carbon measuring element and a working electrode, said carbon measuring element comprising a solid electrolyte having oxygen ion conductivity, a reference electrode on an inner surface of said solid electrolyte adapted to assist in measuring partial pressure of oxygen, and a coating on an outer surface of said solid electrolyte and adapted to contact said molten iron, said coating consisting essentially of a mix-

ture of a carbide MC_x and of an oxide MO_z of the element M other than carbon of which said carbide is constituted, wherein



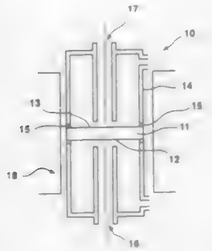
x and z are the stoichiometric ratio of C to M and O to M, respectively, said solid electrolyte containing no carbide.

5,393,404

HUMIDITY SENSOR WITH NASICON-BASED PROTON-CONDUCTING ELECTROLYTE

Martha Greenblatt, Highland Park, N.J., and Shouhua Feng, Changchun, China, assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.

Filed Jun. 17, 1993, Ser. No. 79,237
Int. Cl.[6] G01N *27/26, 27/406*
U.S. Cl. 204—430 14 Claims



1. A galvanic cell humidity sensor comprising a proton conducting solid electrolyte composite of $HZr_2P_3O_{12}$ and ZrP_2O_7.

5,393,405

METHOD OF ELECTROFORMING A GOLD JEWELRY ARTICLE

Steven J. Iacono, and Robert S. Catanzaro, both of East Greenwich, R.I., assignors to Ultralite Technology Incorporated, Attleboro, Mass.

Filed Dec. 1, 1993, Ser. No. 160,416
Int. Cl.[6] C25D *1/02*
U.S. Cl. 205—72 5 Claims

1. A method of forming an electroformed gold jewelry article comprising the steps of:

immersing a conductive mandrel in a first electroforming bath which is effective for depositing a first gold alloy having a Vickers hardness between approximately 100 and 175, and electroforming a layer of said first gold alloy onto said mandrel in a predetermined thickness; and

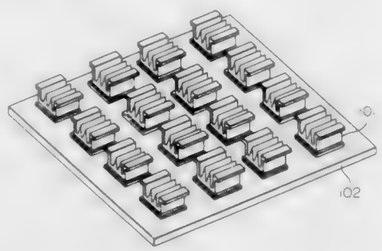
immersing said mandrel in a second electroforming bath which is effective for depositing a second gold alloy having a Vickers hardness between approximately 200 and 275, and electroforming a layer of said second gold alloy onto said mandrel in a predetermined thickness.

5,393,406

METHOD OF PRODUCING A THIN FILM MULTILAYER WIRING BOARD

Hitoshi Yokono, Toride; Hideo Arima, Yokohama; Takashi Inoue, Yokohama, and Naoya Kitamura, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1992, Ser. No. 845,942
Claims priority, application Japan, Mar. 6, 1991, 3-039833
Int. Cl.[6] C25D *5/02*
U.S. Cl. 205—125 2 Claims



1. A thin film multilayer wiring board-producing method comprising the steps of:

(1) forming a first metallic undercoat film on a substrate, then forming a soluble insulating film on said metallic undercoat film, forming grooves in said soluble insulating film so that at least a part of the metallic undercoat film is exposed at the bottom of each of the grooves, and then filling a first conductor in said grooves by electroplating, thereby forming a first layer;

(2) subsequently forming an insoluble insulating film on said first layer or on a patterned metallic undercoat film formed on said first layer, which metallic undercoat film is electrically connected to said conductor provided in the first layer, forming grooves in said insoluble insulating film so that at least a part of the first layer or the metallic undercoat layer formed on said first layer is exposed at the bottom of each of the grooves, and then filling a second conductor in said grooves by the use of electroplating or both electroless plating and electroplating, thereby forming a second layer on said first layer or on the metallic undercoat film formed on said first layer; and

(3) subsequently removing said soluble insulating film and a part of said first metallic undercoat film which is exposed, and then forming an insoluble insulating film at those portions from which said soluble insulating film and said first metallic undercoat film have been removed.

5,393,407

HYDROCARBON CONVERSION UTILIZING A LOW-ALUMINUM BORON BETA ZEOLITE

Stacey I. Zones, San Francisco; Dennis L. Holtermann, Crockett; Lawrence W. Jossens, Albany; Donald S. Santilli, Larkspur, and Andrew Rainis, Walnut Creek, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 594,574, Oct. 9, 1990, Pat. No. 5,166,111.
This application Jun. 26, 1992, Ser. No. 905,720
Int. Cl.[6] C10G *35/06*
U.S. Cl. 208—46 15 Claims

1. A process for converting hydrocarbons comprising contacts a hydrocarbonaceous feed at hydrocarbon converting conditions with a zeolite having a mole ratio of an oxide selected from silicon oxide, germanium oxide, and mixtures thereof to an oxide selected from boron oxide, or mixtures of boron oxide with aluminum oxide, gallium oxide or iron oxide, greater than 10:1 and wherein the amount of aluminum is less than 0.10% by weight and having the X-ray diffraction lines of Table 1(b) or a zeolite having a composition, as synthesized and in the anhydrous state, in terms of mole ratios of oxides as follows: (1.0 to 5)Q_2O:(0.1 to 2.0)M_2O:W_2O_3:(greater than 10)YO_2 wherein M is an alkali metal cation, W is boron, Y is selected from silicon, germanium, and mixtures thereof, Q is a diquaternary ammonium ion and having the X-ray diffraction lines of Table 1(a).

5,393,408

PROCESS FOR THE STABILIZATION OF LUBRICATING OIL BASE STOCKS

James N. Ziemer, Hercules; John M. Rosenbaum, Richmond, and Kristine L. Eiden, Larkspur, all of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Apr. 30, 1992, Ser. No. 877,434
Int. Cl.[6] C10G *65/02, 65/08*
U.S. Cl. 208—57 40 Claims

1. A process for producing a hydrogenated lubricating oil base stock having improved stability comprising the steps of:

(a) contacting the lubricating oil base stock with hydrogen in a first hydrogenation zone under hydrogenation reaction conditions in the presence of a macroporous hydrogenation catalyst comprising a particulate refractory inorganic oxide support component and a hydrogenation component, said macroporous hydrogenation catalyst having

(i) an acid site density of between about 0.015 and about 0.3 milliequivalents per gram of catalyst;

(ii) a total pore volume greater than about 0.45 cm^3/g; and

(iii) at least 10% of the total pore volume being in macropores of diameter greater than about 1000 Angstroms;

(b) contacting at least a portion of the effluent from step (a) with hydrogen in a second hydrogenation zone under hydrogenation reaction conditions in the presence of a mesoporous hydrogenation catalyst comprising a particulate refractory inorganic oxide support component and a hydrogenation component, said mesoporous hydrogenation catalyst having

(i) an acid site density of between about 0.015 and about 0.3 milliequivalents per gram of catalyst;

(ii) a total pore volume greater than about 0.30 cm_3/g; and

(iii) less than 10% of the total pore volume being in macropores of diameter greater than about 1000 Angstroms; and

(c) recovering a hydrogenated lubricating oil base stock having improved stability.

5,393,409

HYDROCRACKING PROCESS USING A CONTROLLED POROSITY CATALYST

Deng-Yang Jan, Elk Grove Village, and Brian Wood, Glenview, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Mar. 8, 1993, Ser. No. 28,062
Int. Cl.[6] C10G *47/10*
U.S. Cl. 208—108 7 Claims

1. A hydrocracking process which comprises the steps of:

(a) passing hydrogen and a feed stream into a hydrocracking reaction zone, with the feed stream having a 10 percent boiling point above about 316° C., with the reaction zone containing a bed of catalyst comprising a zeolite component and a Group VIII metal component, said zeolite component being fixed in a nonzeolitic inorganic oxide support component, with the unfinished catalyst being characterized by a surface area of 300–500 m^2/g, a piece density of from 0.8 to 0.9 g/cc, a total pore volume of 0.4 to 0.7 ml/g, and by a pore volume distribution providing at least about 5% of the total pore volume of the catalyst in pores having an average pore diameter of from 5,000 to 10,000 Å, with the mesopores in the unfinished catalyst having an average pore diameter between 35 and 96 Angstroms providing a total pore volume greater than about 0.44 cc/gm and with less than about 1% of the total pore volume of the catalyst being provided by pores having an average pore diameter more than 10,000 Å, and with the reaction zone being operated at hydrocracking conditions which cause the production of a reaction zone effluent stream comprising hydrogen, hydrocracking product hydrocarbons and unconverted hydrocarbons; and,

(b) recovering a distillate hydrocarbon stream from the reaction zone effluent.

5,393,410

HYDROCARBON CONVERSION PROCESSES AND CATALYSTS USED THEREIN

Mohammad M. Habib, and Arthur J. Dahlberg, both of Benicia, Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Division of Ser. No. 870,011, Apr. 15, 1992, abandoned, and a continuation-in-part of Ser. No. 866,917, Apr. 10, 1992, abandoned. This application Oct. 20, 1993, Ser. No. 139,487
Int. Cl.[6] C10G *47/20*
U.S. Cl. 208—111 12 Claims

1. A process for converting hydrocarbonaceous oils and polynaphthenic components into products of lower average molecular weight and lower average boiling point comprising contacting said hydrocarbonaceous oils and polynaphthenic components under hydrocracking conditions with a catalyst comprising an ultra stable Y zeolite base, wherein said Y zeolite has a unit cell size greater than about 24.55Å and a crystal size less than about 2.8 microns, an amorphous cracking component, a binder, and a catalytic amount of hydrogenation component selected from the group consisting of a Group VI metal, a Group VIII metal, and mixtures thereof.

5,393,411

HYDROCARBON CONVERSION PROCESS USING A FLUORIDED BEIDELLITE CLAY

Jennifer S. Holmgren, Bloomingdale, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 973,456, Nov. 9, 1992, Pat. No. 5,296,427. This application Jan. 25, 1994, Ser. No. 186,073
Int. Cl.[6] C10G *11/04, 47/04;* C07C *2/66*
U.S. Cl. 208—111 10 Claims

1. A hydrocarbon conversion process comprising contacting a hydrocarbon feed under hydrocarbon conversion conditions with a catalyst to give a hydroconverted product, the catalyst comprising a beidellite layered clay composition having the empirical formula

$$A_x(Al_4)(Si_{8-x}Al_x)(O_{20})(OH)_{4-u}F_u$$

where A is a cation and x is the moles of the cation and varies from about 0.1 to about 2.0, and u varies from about 0.1 to about 3.5.

5,393,412

COMBINATION MAGNETIC SEPARATION, CLASSIFICATION AND ATTRITION PROCESS FOR RENEWING AND RECOVERING PARTICULATES

William P. Hettinger, Russell, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed May 3, 1991, Ser. No. 695,188
Int. Cl.[6] C10G *11/05*
U.S. Cl. 208—120 18 Claims

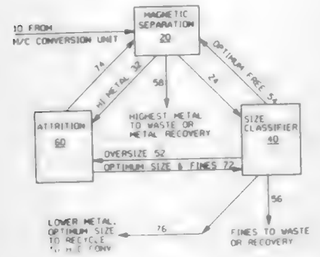
1. A multi-step process for recovering and reconditioning used metal-laden particulate comprising catalyst or sorbent, said process comprising:

(a) passing metal-laden particulate from a hydrocarbon conversion process through magnetic separator means to separate out high metal, low activity particulate by magnetic means; and

(b) passing said metal-laden particulate through a particle size classifier means so as to separate out larger particles, contaminated with metal; and/or

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(c) passing at least a portion of said larger particles to attriting means wherein said larger particles are reduced in size



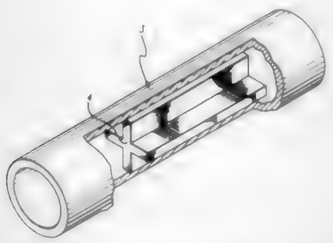
and metal content, cleansed of fines in said classifier means, and returned to the process.

5,393,413

METHOD FOR CATALYTIC LOW TEMPERATURE AND PRESSURE REFORMING OF LIGHT HYDROCARBON FUELS FOR SELECTIVE PRODUCTION OF AROMATICS, OLEFINS AND SATURATES

Anthony J. Arand, Escondido, and John K. Arand, Jr., Rancho Palos Verdes, both of Calif., assignors to Pac Rim Products, Inc., Escondido, Calif.

Filed Sep. 8, 1992, Ser. No. 941,408
Int. Cl.[6] C10G *35/04*
U.S. Cl. 208—134 13 Claims



1. A method for reforming of light hydrocarbon fuels to obtain high quality fuel at a pressure in the range of approximately 10 to 100 psia and a temperature in the range between of approximately −50° and 250° F. comprising the steps of:
a) drawing said light hydrocarbon fuel from a fuel source;
b) passing said fuel into a non-electrical conducting chamber and over a metal catalyst comprising nickel and copper at a Reynolds Number greater than 2×10^3; and
c) recirculating said fuel over said catalyst between 1 and approximately 100 cycles.

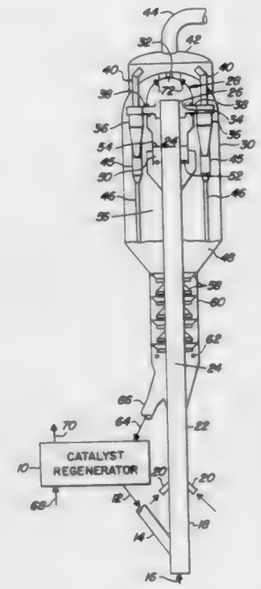
5,393,414

FCC PROCESS WITH ENCLOSED VENTED RISER

David A. Lomas, Barrington; Ismail B. Cetinkaya, Palatine; Steven Niewiedzal, Burbank; John C. Sheckler, Chicago, and Paul A. Sechrist, Des Plaines, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 6, 1991, Ser. No. 804,272
Int. Cl.[6] C10G *11/18*
U.S. Cl. 208—161 15 Claims

1. A process for the fluidized catalytic cracking (FCC) of an FCC feedstock, said process comprising:
(a) passing said FCC feedstock and regenerated catalyst particles to a reactor riser and transporting said catalyst and feedstock upwardly through said riser thereby converting said feedstock to product vapors and producing spent catalyst particles by the deposition of coke on said regenerated catalyst particles;
(b) discharging a first mixture of spent catalyst particles and product vapors from a discharge end of said riser upwardly and confining said first mixture into a dilute phase of substantially closed disengaging zone at least partially contained within a dilute phase of a reactor vessel;
(c) collecting catalyst in said disengaging zone and forming a dense bed of catalyst in said disengaging zone below said discharge end of said riser;
(d) passing a first stripping fluid stream into said disengaging zone and upwardly through said dense bed and stripping hydrocarbons from said catalyst in said dense bed and passing a first stripping effluent fluid upwardly from said dense bed into said dilute phase of the disengaging zone;
(e) maintaining said disengaging zone at a lower pressure than said dilute phase of the reactor vessel to restrict the flow of product vapors out of said disengaging zone and maintaining a gas seal between the disengaging zone and said dilute phase of the reactor vessel;



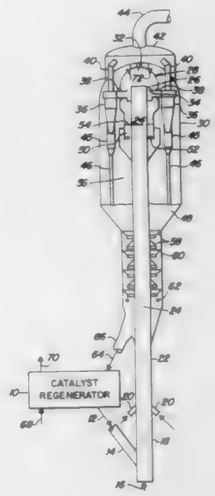
(f) passing catalyst out of said disengaging zone from the top of said dense bed into a conduit having an inlet opening proximate the top of said the dense bed and in communication with said dilute phase and maintaining a downward catalyst flux through said conduit that will at least partially degas product vapors from catalyst passing through said conduit;
(g) passing catalyst out of said conduit into a second dense bed through an outlet located below the top of said second dense bed;
(h) passing catalyst from said second dense bed into a stripping zone and contacting catalyst in said stripping zone with a second stripping fluid stream, passing a second stripping effluent out of said stripping zone and withdrawing a second stripping effluent from said process; and
(i) collecting a product stream comprising product vapors and first stripping effluent from said dilute phase of said disengaging zone and recovering said product stream from said process.

5,393,415

FCC PROCESS WITH ENCLOSED VENTED RISER

Paul A. Sechrist, Des Plaines; David A. Lomas, Barrington, and Edward C. Haun, Glendale Heights, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 6, 1991, Ser. No. 804,311
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[6] C10G *11/18*
U.S. Cl. 208—161 17 Claims



1. A process for the fluidized catalyst cracking (FCC) of an FCC feedstock, said process comprising:
a) passing said FCC feedstock and regenerated catalyst particles to a reactor riser and transporting said catalyst and feedstock upwardly through said riser thereby converting said feedstock to product vapors and producing spent catalyst particles by the deposition of coke on said regenerated catalyst particles;
b) discharging a first mixture of spent catalyst particles and product vapors upwardly from a discharge end of said riser and confining said first mixture into a first dilute phase of a substantially closed disengaging zone at least partially contained with in a reactor vessel that provides a second dilute phase;
c) collecting catalyst in said disengaging zone and forming a dense bed of catalyst in said disengaging zone below said discharge end of said riser;
d) passing a first stripping fluid stream into said disengaging zone and upwardly through said dense bed and stripping hydrocarbons from said catalyst in said dense bed and passing a first stripping effluent fluid upwardly from said dense bed into said second dilute phase;
e) maintaining a vapor seal between said disengaging zone and said second dilute phase to restrict the flow of product vapors out of said disengaging zone.
f) passing catalyst out of said disengaging zone from said dense bed to a stripping zone and contacting catalyst in said stripping zone with a second stripping fluid stream, passing a second stripping effluent out of said stripping zone and withdrawing said second stripping effluent from said process; and,
g) collecting a product stream comprising said product vapors and first stripping effluent from said first dilute phase of said disengaging zone and recovering said product stream from said process.

5,393,416

APPARATUS FOR MAINTAINING A STABLE BATH FOR AN AUTODEPOSITION COMPOSITION BY PERIODICALLY SEPARATING PARTICULAR METAL IONS FROM THE COMPOSITION

William G. Kozak, Hatfield, and Joseph C. Topping, North Wales, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Jan. 26, 1993, Ser. No. 8,956
Int. Cl.[6] B01J *47/02*; B05D *1/18, 7/14*
U.S. Cl. 210—96.1 20 Claims

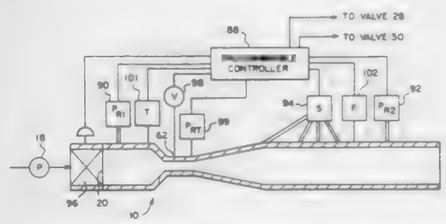
1. A system automated for providing at least periodic removal of metal ions from a metal complex and contaminants from a chemical bath, said chemical bath being a latex solution containing charged latex particles and having an acidic pH to form a coating by autodeposition, said charged latex particles tending to coagulate when subjected to high shear circulation, said system comprising:
a first tank containing said chemical bath;
an ion exchange (IEX) column containing ion exchange material comprising an iminodiacetate ion exchange resin, for removing metal ion contaminants from said chemical bath;
first circulation means responsive to first control signals for drawing chemical bath from said first tank, passing it through said IEX column at a low velocity, and returning treated chemical bath from said IEX column back to said first tank, said first circulation means including means for low shear circulation of said chemical bath to substantially prevent coagulation of said latex particles;
first conductivity measurement means positioned in said chemical bath in said first tank, for providing a first conductivity signal indicative of the conductivity of said chemical bath;
second conductivity measurement means immersed in said chemical bath being returned from treatment in said IEX column to said first tank, for providing a second conductivity signal indicative of the conductivity of treated chemical bath; and
controller means programmed in a first state of operation for automatically initiating the production of said first control signals in a cyclic manner, and during the resultant circulation of said chemical bath, sensing the differential between said first and second conductivity signals reducing to a predetermined minimum value, for terminating said first control signals to turn off said first circulation means.

5,393,417

WATER REMEDIATION AND PURIFICATION SYSTEM AND METHOD

Dale W. Cox, 600 Lairport St., El Segundo, Calif. 90245

Continuation-in-part of Ser. No. 843,389, Mar. 2, 1992, Pat. No. 5,326,389. This application Nov. 15, 1993, Ser. No. 151,870
Int. Cl.[6] C02F *9/00, 1/32*
U.S. Cl. 210—96.1 9 Claims



1. A water remediation and purification system apparatus comprising:
means for pressurizing contaminated water, said means for pressurizing contaminated water being connected to a source of contaminated water having dissolved contaminants therein;

a variable area cavitation nozzle;

a nozzle area controller means, said nozzle area controller means being connected to control the opening of said variable throat and to cause cavitation in the contaminated water, said cavitation nozzle being connected to receive pressurized contaminated water from said source of pressurized contaminated water, said cavitation nozzle having an inlet body, a throat body and an outlet body, said inlet body having a passage therein and being connected to said means for pressurizing contaminated water, said throat body being connected to said inlet body and said throat body having a throat therein of reduced area with respect to said inlet body so that low pressure is produced in said throat body in contaminated water passing at high velocity through said throat, said throat body being connected to said outlet body, said outlet body having a divergent end to form an expansion passageway in which cavitation takes place so that cavitation encourages remediation reactions in contaminants in the water flowing through said nozzle; and

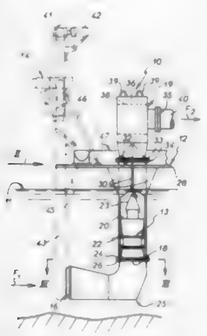
sensor means connected to said cavitation nozzle before and after said throat, said sensor means being connected to said controller means to optimize the cavitation process and maximize the chemical dissociation of the dissolved contaminants in the water stream.

5,393,418

WATER INTAKE, IN PARTICULAR FOR INDUSTRIAL INSTALLATIONS

Philip Jackson, Paris, France, assignor to E. Beaudrey & Cie, Paris, France

Filed Jul. 13, 1992, Ser. No. 912,713
Claims priority, application France, Jul. 24, 1991, 91 09372
Int. Cl.[6] B01D *35/02*
U.S. Cl. 210—159 12 Claims



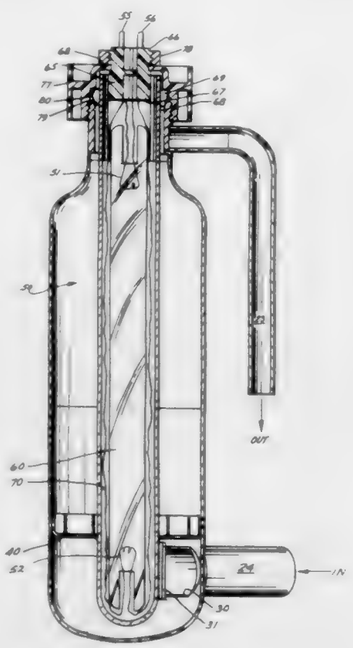
1. A self-contained water intake assembly of unitary construction installable as a unit in a body of flowing water, said water intake assembly comprising a common frame including a substantially vertically hollow shaft, said hollow shaft having an upper and a lower end and defining a water flow conduit, an axial flow immersible pump unit mounted at the lower end of said shaft and housed substantially entirely therein for pumping water from the lower end to the upper end of said shaft, a self-cleaning filter mounted at and fluidly connected to the upper end of said shaft, an intake opening disposed at the lower end of said shaft upstream of said pump unit, a grid fitted within said intake opening, and a trash rake mounted on the common frame and extending parallel to said shaft, said trash rake engaging said grid, and said trash rake providing means for cleaning said grid.

5,393,419

ULTRAVIOLET LAMP ASSEMBLY FOR WATER PURIFICATION

Merlin G. Tiede, Ada; Dennis J. Kool, Kentwood, both of Mich., and Kenneth E. Lew, Saugas, Calif., assignors to Amway Corporation, Ada, Mich.

Filed Feb. 10, 1993, Ser. No. 16,140
Int. Cl.[6] C02F *1/32*
U.S. Cl. 210—192 22 Claims



1. In an apparatus for the treatment of water, an elongated substantially cylindrical pressure vessel having a longitudinal axis comprising:

a distal end and a proximate end;

said proximate end comprising a circumferential mouth across the diameter thereof;

an ultraviolet light coaxially disposed through said circumferential mouth into said vessel and extending substantially the length thereof;

an inlet tube disposed in said distal end;

an outlet tube disposed in said proximate end;

said inlet tube having a larger diameter than said outlet tube;

said inlet tube comprising a discharge end and a side discharge port;

said inlet tube being spaced apart from said outlet tube by a distance at least 2.5 times and no greater than 2.75 times the average diameter of said pressure vessel;

a means for deflecting water disposed adjacent said side discharge port adapted to deflect water radially from said side discharge port in one direction only;

a baffle comprising a horizontal disk, said disk containing a plurality of baffle ports; and

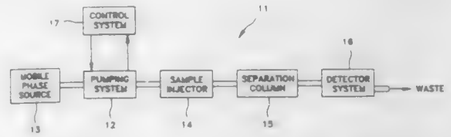
whereby water entering said pressure vessel from said inlet tube flows through said side discharge port and is directed by said deflector means radially in one direction only and said baffle through said baffle ports and continuing in a spiral path around said ultraviolet light and out of said outlet tube.

5,393,420

LIQUID CHROMATOGRAPHY SYSTEM

Burleigh M. Hutchins, Milford; Raymond R. Dunlap, Douglas; Timothy J. Conklin, Lynnfield; Bruce A. Swanson, Mansfield; John Petracca, W. Upton; Louis Abrahams, Worcester, and Ronald A. Kimball, Brookfield, all of Mass., assignors to Zymark Corporation, Hopkinton, Mass.

Division of Ser. No. 2,156, Jan. 11, 1993, abandoned. This application Nov. 23, 1993, Ser. No. 156,499
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—198.2 10 Claims



1. Liquid chromatography apparatus comprising:

a liquid pump having a pumping chamber, an inlet port, an outlet port, and a purge port, all said ports communicating with said pumping chamber;

a separation column;

an outlet valve connected between said outlet port and said separation column and adapted to control liquid flow therebetween;

a source of mobile phase;

an inlet valve connected between said inlet port and said source and adapted to control liquid flow therebetween; and

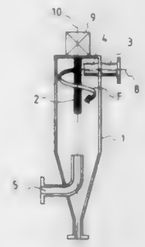
a purge valve connected to said purge port and operable to purge said pumping chamber.

5,393,421

APPARATUS FOR ACTIVATING SILICIC ACID IN WATER

Takeo Ohe, and Norio Kawano, both of Osaka, Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

Filed Feb. 10, 1993, Ser. No. 105,845
Claims priority, application Japan, Feb. 14, 1992, 4-079404
Int. Cl.[6] C02F *1/48*
U.S. Cl. 210—223 13 Claims



1. An apparatus for activating silicic acid contained in water, comprising:

a cylindrical tank having a central axis, a first end and a second end;

a high-frequency power source for generating an output of 150 to 450 MHz;

a helical antenna disposed within the cylindrical tank coaxially along the central axis of the cylindrical tank, for generating an oscillating electromagnetic field using said output of the high-frequency power source of 150 to 450 MHz, the helical antenna has a length 1, ½ or ¼ times as long as that of the wavelength of the high frequency wave generated by the high-frequency power source;

a water inlet pipe provided with a water injection pipe member disposed at a part of a side wall proximate the first end of the cylindrical tank in such a manner that the water injection pipe member is projected into the cylindrical tank with its axis perpendicular to an axis located on the side wall of the cylindrical tank that is parallel to the central axis of the cylindrical tank; and

a water drain pipe disposed at or proximate the second end of the cylindrical tank, wherein an angle θ formed by the axis of said water injection pipe member and a straight line connecting a point along the axis of the water injection pipe member where it intersects the side wall of the cylindrical tank and the central axis satisfies the equation:

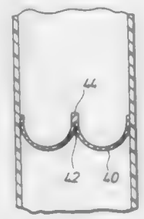
$0° < \theta \leqq 90°$.

5,393,422

DISPOSABLE FILTER HAVING A FLEXIBLE CASING

Leslie J. H. Pummell, Rickmansworth/Herts, Great Britain, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/01882, § 371 Date Apr. 13, 1993, § 102(e) Date Apr. 13, 1993, PCT Pub. No. WO92/06762, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 2, 1991, Ser. No. 39,210
Claims priority, application United Kingdom, Oct. 19, 1990, 9022778
Int. Cl.[6] B01D *27/06*
U.S. Cl. 210—232 4 Claims



1. A disposable filter comprising: a flexible casing having an inlet into which the material to be filtered is introduced, and at least one filter element sealed to the inside of the flexible casing and positioned across the direction of flow of the material to be filtered, each of the filter elements is formed to have a fold which lies downstream in the filter and the flexible casing and filter elements being expandable from a substantially flat form for use and collapsible to a substantially flat form after use for disposal and wherein one or more of the filter elements is formed to have one or more pleats.

5,393,423

FILTER APPARATUS

Mordeki Drori, 89 Zahal Street, Kiron, Israel

Continuation of Ser. No. 838,540, Feb. 19, 1992, Pat. No. 5,213,684, which is a continuation of Ser. No. 150,246, Jan. 29, 1988, Pat. No. 5,098,565. This application May 24, 1993, Ser. No. 66,466
Claims priority, application Israel, Feb. 3, 1987, 81469; May 7, 1987, 82453; Jul. 26, 1987, 83339
The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.
Int. Cl.[6] B01D *29/38*
U.S. Cl. 210—333.01 25 Claims

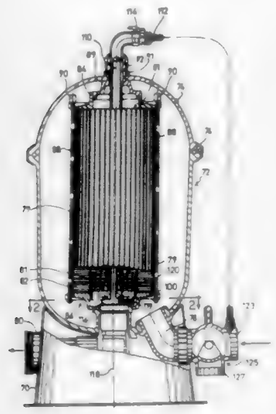
1. A filter comprising

a housing having an inlet and a drain communicating with an upstream side and an outlet communicating with a downstream side,

a filter element having a longitudinal inner volume disposed within said housing generally along the axis of said housing, said longitudinal inner volume being in communication with the downstream side and the exterior of said

filter element being in communication with the upstream side and;

means for impinging pressurized fluid from at least one opening on said filter element from the longitudinal inner volume of said filter element for separating particles from said filter element, said means having at least one opening on one end and arranged to be connected to a pressurized



fluid source on the other end, said means being disposed within said longitudinal inner volume and being arranged to move linearly along said longitudinal inner volume and rotate inside said longitudinal inner volume and being adapted for communication with an energy source for powering said linear movement and rotational movements.

5,393,424

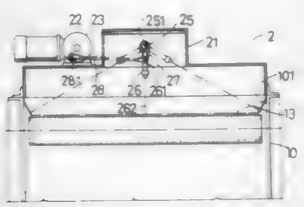
MUD DEHYDRATING SYSTEM

Chih-Hsi Liang, No. 210-3, Shang Lun Tzu, Shang Lun Village, Jen Te Hsiang, Tainan Hsien, Taiwan, Prov. of China

Filed Sep. 2, 1993, Ser. No. 115,106

Int. Cl.[6] B01D *33/04*

U.S. Cl. 210—401 2 Claims



1. A mud dehydrating apparatus for further dehydration of mud supplied from a centrifugal dehydrating cylinder, comprising:

a. an endless upper filter cloth extending between a first pair of longitudinally spaced rollers for receiving and transporting said mud from said centrifugal dehydrating cylinder in a first direction;

b. first means for gravitational dehydration disposed beneath a portion of said endless upper filter cloth;

c. an endless lower filter cloth extending between a second pair of longitudinally spaced rollers and being disposed in spaced vertical relation with respect to said endless upper filter cloth for receiving said mud therefrom, said endless lower filter cloth transporting said mud in a second direction, said second direction being opposite said first direction;

d. second means for gravitational dehydration disposed beneath a portion of said endless lower filter cloth;

e. compressing means for further dehydration of said mud subsequent to passage over said second means for gravitational dehydration, said compressing means including a series of compressing rollers between which said endless upper and lower filter cloths pass in substantially parallel spaced relation for compressing said mud therebetween, a first of said series of compressing rollers having an annular recess formed in a central portion thereof for receiving a portion of said endless upper filter cloth therein and defining an enlarged receiving space between said endless upper and lower filter cloths for said mud from said second means for gravitational dehydration, whereby leakage of said mud from between opposing sides of said spaced endless upper and lower filter cloths is substantially prevented;

f. means for removing dehydrated mud from said endless upper and lower filter cloths subsequent to said mud passing through said compressing means disposed adjacent a respective one of said rollers of each of said first and second pair of rollers;

g. means coupled to a respective one of each of said first and second pairs of rollers for respectively tensioning said endless upper and lower filter cloths; and,

h. washing means disposed adjacent to said dehydrated mud removing means for washing each of said endless upper and lower filter cloths subsequent to removal of said dehydrated mud, said washing means including a pair of spraying means, each of said pair of spraying means being disposed adjacent a respective one of said endless upper and lower filter cloths, each of said spraying means including (1) a longitudinally directed hollow shaft supported by a bearing for pivotal displacement thereof, said hollow shaft having opposing first and second ends, (2) a connecting tube coupled in fluid communication with said hollow shaft and extending transversely from said first end of said hollow shaft, (3) a nozzle coupled to a distal end of said connecting tube and in fluid communication therewith for spraying a respective filter cloth with a water stream, (4) a rotatable fluid connector coupled to said second end of said hollow shaft and in fluid communication therewith for supplying pressurized water thereto, (5) a crank arm coupled to said hollow shaft adjacent said second end thereof, (6) a connecting rod member having first and second ball links disposed on opposing ends thereof, said first ball link being coupled to said crank arm, and (7) means for reciprocatingly displacing said crank arm coupled to said second ball link to cyclically swing said nozzle through a predetermined angular displacement.

2. A mud dehydrating apparatus for further dehydration of mud supplied from a centrifugal dehydrating cylinder, comprising:

a. an endless upper filter cloth extending between a first pair of longitudinally spaced rollers for receiving and transporting said mud from said centrifugal dehydrating cylinder in a first direction;

b. first means for gravitational dehydration disposed beneath a portion of said endless upper filter cloth;

c. an endless lower filter cloth extending between a second pair of longitudinally spaced rollers and being disposed in spaced vertical relation with respect to said endless upper filter cloth for receiving said mud therefrom, said endless lower filter cloth transporting said mud in a second direction, said second direction being opposite said first direction;

d. second means for gravitational dehydration disposed beneath a portion of said endless lower filter cloth;

e. compressing means for further dehydration of said mud subsequent to passage over said second means for gravitational dehydration, said compressing means including a series of compressing rollers between which said endless upper and lower filter cloths pass in substantially parallel

spaced relation for compressing said mud therebetween, a first of said series of compressing rollers having an annular recess formed in a central portion thereof for receiving a portion of said endless upper filter cloth therein and defining an enlarged receiving space between said endless upper and lower filter cloths for said mud from said second means for gravitational dehydration, whereby leakage of said mud from between opposing sides of said spaced endless upper and lower filter cloths is substantially prevented;

f. means for removing dehydrated mud from said endless upper and lower filter cloths subsequent to said mud passing through said compressing means disposed adjacent a respective one of said rollers of each of said first and second pair of rollers;

g. means coupled to a respective one of each of said first and second pairs of rollers for respectively tensioning said endless upper and lower filter cloths, said tensioning means including a pair of means for displacing one roller of a respective one of said first and second pairs of rollers, each of said pair of roller displacing means including (1) a first air cylinder having a first piston and a piston rod extending from one side thereof, said piston rod having a distal end coupled to a respective roller for displacement thereof to tension a respective one of said endless upper and lower filter cloths, (2) a second air cylinder having a displaceable second piston and being devoid of a piston rod, said second air cylinder having an incompressible fluid on one side of said second piston and air on an opposing side thereof, said second piston being displaced in one direction by pressurized air applied to a first end of said second air cylinder, said displacement of said second piston displacing said incompressible fluid from a second end of said second cylinder, (3) a conduit having one end coupled in fluid communication with said second end of said second air cylinder for carrying said displaced incompressible fluid therefrom, and (4) a check valve having an inlet coupled to an opposing end of said conduit and an outlet coupled to one end of said first air cylinder for displacing said piston rod in at least one direction by said displaced incompressible fluid; and,

h. washing means disposed adjacent to said dehydrated mud removing means for washing each of said endless upper and lower filter cloths subsequent to removal of said dehydrated mud.

5,393,425

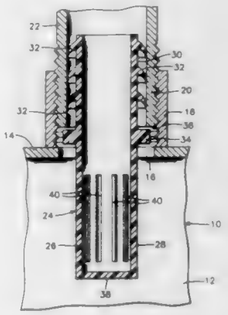
IRRIGATION SYSTEM LATERAL PICKUP PIPE STRAINER

Clois R. Cobb, Jr., P.O. Box 337, Shallowater, Tex. 79363

Filed Nov. 16, 1993, Ser. No. 152,710

Int. Cl.[6] B01D *35/04*

U.S. Cl. 210—461 4 Claims



1. In combination with an irrigation system including a horizontal main supply line and a lateral line including an upstanding inlet end branching upwardly and outwardly of an upper wall portion of said main supply line and defining a downwardly facing end face at said inlet end, a strainer including an upstanding tubular body defining a lower inlet end portion and an upper outlet end portion as well as a diametrically enlarged circumferential shoulder centrally intermediate said upper and lower end portions, said upper end portion, throughout the length thereof, being appreciably smaller in diameter than said shoulder and including tandem circumferentially extending and radially outwardly projecting seal means thereon, said lower end portion including a plurality of circumferentially spaced inlet slots formed therein with each of said slots tapering in width toward the interior of said lower inlet end portion, said outlet end portion being telescoped upwardly into the interior of said lateral line inlet end with said seal means forming a substantially fluid tight seal between the interior of said lateral line inlet end and said upper end portion of said tubular body and said shoulder at least closely opposing said end face to define a limit stop for upward telescoping of said outlet end portion into said inlet end.

5,393,426

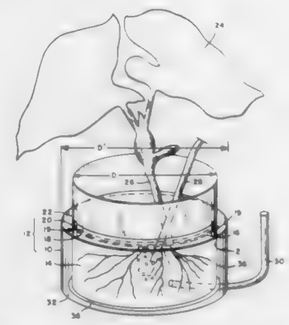
METHOD FOR REMOVING SOLUBLE METALS FROM AN AQUEOUS PHASE

Ilya Raskin, Manalapan; Slavik Douchenkov, East Brunswick, both of N.J.; Yoram Kapulnik, Ness Ziona, Israel, and Nanda P. B. A. Kumar, New Brunswick, N.J., assignors to Phyto-Tech, Inc., Morristown, N.J.

Filed Jun. 4, 1993, Ser. No. 72,493

Int. Cl.[6] C02F *3/32*

U.S. Cl. 210—602 33 Claims



1. A method for reducing an amount of metal in a metal-containing solution, comprising:

contacting the solution with a terrestrial plant having a root biomass, said contacting under conditions sufficient for the root biomass of the terrestrial plant to remove the metal from the solution;

separating the root biomass of the terrestrial plant from remaining parts of the terrestrial plant; and

removing the root biomass from the metal-containing solution.

5,393,427

PROCESS FOR THE BIOLOGICAL TREATMENT OF WASTEWATER

James L. Barnard, 300 - 4170 Still Creek Drive, Burnaby, British Columbia, Canada V5C 6C6

Filed Apr. 8, 1993, Ser. No. 45,495

Claims priority, application South Africa, Apr. 9, 1992, 92/2600

Int. Cl.[6] C02F *3/30*

U.S. Cl. 210—605 10 Claims

1. A process for the biological treatment of wastewater to

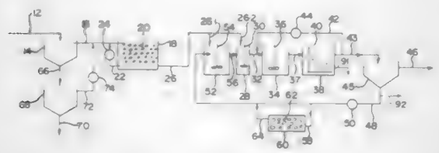
remove organic material, nitrogenous compounds and phosphates comprising the steps of:

directing the wastewater to a first solids separation stage to separate the wastewater into a settled sludge portion and a liquid portion;

directing the liquid portion through an anaerobic acid fermentation stage and fermenting the liquid portion to produce a liquid portion that includes volatile fatty acids;

splitting the resulting liquid portion into at least two streams;

transferring one stream to a contact stage and mixing the liquid with activated sludge that is low in nitrogen oxides and that contains phosphorus removing micro-organisms that are exposed to a limited amount of oxygen, the volatile fatty acids providing a food source for the micro-organisms;



conveying the contact stage effluent to an aerobic stage where sufficient oxygen is provided to allow the phosphorus removing organisms to absorb phosphorus, thereby reducing the amount of phosphorus;

conveying the aerobic stage effluent to a second solids separation stage to separate the aerobic stage effluent into activated sludge and purified liquid;

returning at least a portion of the activated sludge to a holding stage that precedes the contact stage;

transferring the other stream from the fermentation stage to the holding stage and mixing the liquid with the returned activated sludge, the volatile fatty acids providing a favourable food source for denitrifying microorganisms to reduce the levels of nitrogen; and

conveying the low nitrogen oxides activated sludge of the holding stage to the contact stage.

5,393,428

PROCESS FOR TREATING WASTE WATER CONTAINING CHLORINATED ORGANIC COMPOUNDS FROM PRODUCTION OF EPICHLOROHYDRIN

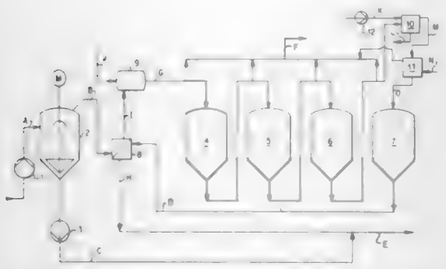
Wolfgang Dilla; Helmut Dillenburg; Erich Ploenissen, all of Rheinberg, and Michael Sell, Peine, all of Germany, assignors to Solvay Deutschland GmbH, Hanover, Germany

Filed Sep. 2, 1993, Ser. No. 114,635

Claims priority, application Germany, Sep. 6, 1992, 4229355; Sep. 6, 1992, 4229356

Int. Cl.[6] C02F *1/02, 1/58*

U.S. Cl. 210—631 **14 Claims**



1. A process for treating a liquid containing more than 10 mg of adsorbable organic halogen compounds (AOX) per liter comprising the steps of

introducing said liquid at a pH of 10 to 14 (measured at room temperature) into a reactor and in a first treatment step maintaining a temperature of at least 75° C., a pressure of at least 1 bar (abs.) and a residence time of at least 0.5 hours in said reactor, thereby partially dechlorinating or dehydrochlorinating chlorinated organic compounds contained in the liquid;

subsequently subjecting said liquid in a second treatment step to a further dechlorination or dehydrochlorination treatment in the presence of a hydrogen-containing gas, a compound which releases hydrogen or a catalytically active substance, and

discharging the treated liquid.

5,393,429

LIQUID-LIQUID CONTACTOR

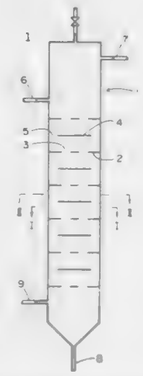
Takashi Nakayama, Handa; Hiroshi Umino, Yokohama; Yasuyuki Sakakura, and Kiyoshi Takahashi, both of Yokkaichi, all of Japan, assignors to JGC Corporation and Mitsubishi Petrochemical Co., Ltd., both of Tokyo, Japan

Filed Nov. 2, 1992, Ser. No. 970,132

Claims priority, application Japan, Nov. 5, 1991, 3-288554; Sep. 22, 1992, 4-253036

Int. Cl.[6] B01D *11/00*

U.S. Cl. 210—634 **12 Claims**



5. A method of liquid-liquid contacting by using a liquid-liquid contactor comprising:

a vertically disposed tower shell;

an inlet for feeding heavy liquid located at lower position of the tower shell;

an inlet for feeding ligh: liquid located a lower position of the tower shell, one of the two liquids forms a dispersed phase, and the other liquid forms a continuous phase in continuous countercurrent flow in the contactor;

an outlet for removing heavy liquid located at a lower portion of the tower shell;

an outlet for removing light liquid located at an upper portion of the tower shell;

splitter plates and baffles mounted alternatively in an axial direction at appropriate intervals inside the tower shell; each splitter plate having apertures of at least one of plural slits and plural holes through which both heavy and light liquids flow; the area of apertures of one baffle being larger than that of the splitter plate underlying the baffle, which extends in a manner of covering the underlying apertures of the splitter plate, and provides flow channels for liquids flowing through the splitter plate; the residence time of the dispersed phase liquid moving under the splitter plate being long enough to form coalesced layers of droplets, comprising carrying out liquid-liquid contacting operation by feeding a heavy liquid and a light liquid through said representative inlets under condition that the total supercritical velocity defined by the sum of the superficial velocities of heavy and light liquids, ranges from 0.2 cm/sec to 2 cm/sec.

5,393,430

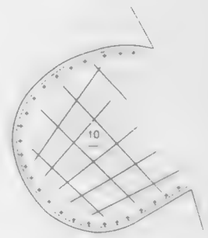
PASSIVATED AND STABILIZED POROUS MINERAL OXIDE SUPPORTS AND METHODS FOR THE PREPARATION AND USE OF SAME

Pierre Girot, Paris, and Eoisto Boschetti, Croissy sur Seine, both of France, assignors to Sepracor, Inc., Marlborough, Mass.

Division of Ser. No. 956,404, Oct. 5, 1992, Pat. No. 5,268,097, which is a continuation-in-part of Ser. No. 901,326, Jun. 19, 1992, abandoned. This application Jul. 28, 1993, Ser. No. 98,095

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—635 **4 Claims**



1. A method of separating a preselected biological molecule from a sample containing same comprising:

(a) loading a column, packed with the passivated porous support comprising (i) a porous mineral oxide having interior and exterior surfaces substantially covered by a thin, protective polymer surface coating having innate hydrophobic groups that render said coating susceptible to undersirable non-specific interaction with one or more biological molecules, (ii) a polymer network derived from a passivation mixture comprising a main monomer which is selected to provide a polymer network that has affinity for a preselected biological molecule, a passivating monomer different from said main monomer, and a crosslinking agent, said mixture having been allowed to come into intimate contact with said surfaces of said coating such that on polymerization of said mixture said innate groups of said coating become deactivated, resulting in the substantial elimination of said undersirable non-specific interaction, with a sample containing a preselected biological molecule to be separated from a mixture;

(b) passing an eluent solution through said loaded column to effect the separation of said biological molecule.

5,393,431

PROCESS FOR EXTRACTING METALS

John Campbell, Bamford; Raymond F. Dalton, Cheadle Hulme, and Peter M. Quan, Rochdale, all of United Kingdom, assignors to Zeneca Limited, London, England

Filed Jun. 4, 1993, Ser. No. 70,951

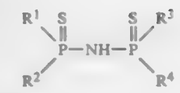
Claims priority, application United Kingdom, Jun. 5, 1992, 9211906; Feb. 5, 1993, 9302332

Int. Cl.[6] B01D *15/04*

U.S. Cl. 210—638 **9 Claims**

1. A process for extracting metal values from aqueous solutions of metal salts which comprises:

(1) contacting the aqueous solution with an organic phase comprising an extractant compound of the formula:



1

wherein each of R^1, R^2, R^3 and R^4, independently, is selected from the group consisting of an alkyl, a substituted alkyl, an alkoxy, a substituted alkoxy, an aryl, a substituted aryl, an aryloxy group, and a substituted aryloxy group, at least one of R^1, R^2, R^3 and R^4 being an alkyl or alkoxy group containing from 1 to 20 carbon atoms, whereby to extract metal values into the organic phase in the form of a complex of the metal with the extractant; and

(2) separating the organic phase containing the metal complex from the extracted aqueous phase.

5,393,432

SEPARATING MEMBRANE OF POLYION COMPLEX

Michio Tsuyumoto; Masahiko Sugimoto, both of Hyogo; Yasushi Maeda, Shizuoka, and Hitoshi Tsugaya, Osaka, all of Japan, assignors to Japan Ministry of International Trade and Industry Director General, Tokyo, Japan

PCT No. PCT/JP92/01547, § 371 Date Dec. 1, 1993, § 102(e) Date Dec. 1, 1993

PCT Filed Nov. 26, 1992, Ser. No. 157,029

Claims priority, application Japan, Apr. 23, 1992, 4-129397

Int. Cl.[6] B01D *61/36*

U.S. Cl. 210—640 **7 Claims**

1. A separating membrane of a polyion complex characterized in that, in the membranous structure, at least, at least part of the primary side surface of the membrane comprises an ionic combination of an anionic polymer having carboxyl groups with a cationic polymer having divalent piperidine rings.

7. A method for separating a mixture of water and an organic substance which comprises reducing the pressure or passing a carrier gas on the secondary side of the separating membrane of a polyion complex according to claim 1 while feeding a mixture of water and an organic substance to the primary side of the separating membrane in pervaporation or vapor permeation.

5,393,433

METHOD USING SEPARATION MEMBRANES TO TREAT A FLUID CONTAINING MATTER IN SUSPENSION AND IN SOLUTION

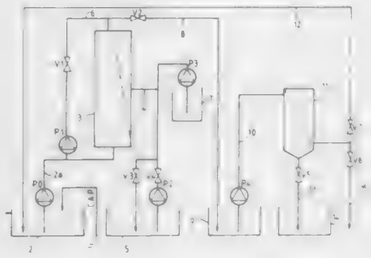
Jean-Michel Espenan, Chateau, and Franck Saux, Ste Foix D'Aigrefeuille, both of France, assignors to AQUASOURCE, societe en nom collectif, Rueil Malmaison, France

Filed Oct. 25, 1993, Ser. No. 142,727

Claims priority, application France, Mar. 11, 1992, 92 13142

Int. Cl.[6] B01D *61/00*

U.S. Cl. 210—650 **4 Claims**



1. A method of treating a fluid containing matter in suspension and/or in solution by using separation membranes, in which method a feed additive for adsorption and/or filtration

purposes is added to the fluid to be treated, and a backwash additive for the purpose of improving backwashing is added to a membrane backwash fluid, comprising the steps of

choosing a backwash additive that is capable of being neutralized by the feed additive,

collecting in a tank as a discharged backwash solution the backwash fluid which contains the backwash additive and has washed-away unused feed additive,

allowing the discharged backwash solution sufficient contact time in said tank to enable neutralization to take place in said discharged backwash solution, and

separating the resulting product into a residual product that is concentrated in solid matter and a fluid that is recycled and added to the fluid to be treated.

5,393,434

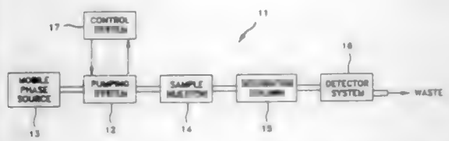
LIQUID CHROMATOGRAPHY METHOD

Burleigh M. Hutchins, Milford; Raymond R. Dunlap, Douglas; Timothy J. Conklin, Lynnfield; Bruce A. Swanson, Mansfield; John Petracca, W. Upton; Louis Abrahams, Worcester, and Ronald A. Kimball, Brookfield, all of Mass., assignors to Zymark Corporation, Hopkinton, Mass.

Division of Ser. No. 2,156, Jan. 11, 1993, abandoned. This application Nov. 22, 1993, Ser. No. 156,121

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—656 19 Claims



6. A method of operating liquid chromatography apparatus including a first liquid pump having a first pumping chamber, a first inlet valve for passing liquid into said first pumping chamber, a first outlet valve for discharging liquid from said first pumping chamber, a first piston for drawing liquid through said first inlet valve during a backstroke and discharging liquid through said first outlet valve during a forward stroke, and a first pressure sensor for sensing the pressure in the first pumping chamber; a second liquid pump having a second pumping chamber, a second inlet valve for passing liquid into said second pumping chamber, a second outlet valve for discharging liquid from said second pumping chamber, a second piston for drawing liquid through said second inlet valve during a backstroke and discharging liquid through said second outlet valve during a forward stroke; the method comprising the steps of:

stopping said first piston in a mid-portion of said forward stroke;

monitoring the pressure in said first pumping chamber with said first piston stopped in said mid-portion of said forward stroke; and

controlling the operation of said first and second pumps in response to said monitoring step.

5,393,435

REMOVAL OF ORGANIC CONTAMINANTS FROM AQUEOUS MEDIA

John R. Deans, Redmond, Wash.; George E. Heinsohn, Elkton, Md., and Bernard A. Link, Wilmington, Del., assignors to Vanson L.P., Redmond, Wash.

Filed Sep. 17, 1993, Ser. No. 121,144

Int. Cl.[6] C02F *1/56*

U.S. Cl. 210—714 6 Claims

1. A process for removing organic contaminants and turbidity from aqueous media, the process comprising

(1) adding to an aqueous medium comprising an organic contaminant and turbidity a flocculating composition comprising, on a dry weight basis, at least about 1 ppm chitosan, at least about 20 ppm soluble ferric compound, and least about 5 ppm of polysilicic acid and/or clay poly aluminosilicate;

the additives being added in an amount sufficient to flocculate the organic contaminant and turbidity and form a flocculate comprising the organic contaminant and turbidity; and

(2) separating the flocculate from the aqueous medium.

5,393,436

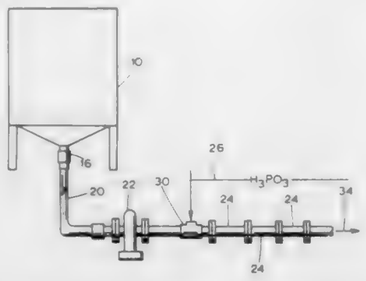
METHOD OF WATER TREATMENT USING POLYACRYLAMIDE-PHOSPHONATE FLOCCULANTS

Leo E. Nagan, Mercer Island, Wash., assignor to Diatec Polymers, Batavia, Ill., a part interest

Division of Ser. No. 14,845, Feb. 8, 1993, Pat. No. 5,342,539. This application Jun. 6, 1994, Ser. No. 254,315

Int. Cl.[6] C02F *1/56*; D21F *1/66, 1/82*; D21C *11/00*

U.S. Cl. 210—727 12 Claims



1. A method of water treatment comprising the step of adding a polymeric composition to an aqueous system having a pH of about 5.6 or above, said composition comprising, in an aqueous medium, an anionically modified acrylamide polymer formed by reacting an acrylamide polymer with phosphorous acid, said modified polymer having at least 5 mole percent phosphonate groups based on the acrylamide content of the acrylamide polymer and having a molecular weight of at least about 40,000, the pH of said composition being adjusted to at least about 7.7.

5,393,437

FIRE EXTINGUISHING MATERIAL

Roger K. Bower, Mansfield, Tex., assignor to Chemguard, Inc., Mansfield, Tex.

Filed May 31, 1994, Ser. No. 250,916

Int. Cl.[6] A62D *1/00*

U.S. Cl. 252—7 5 Claims

1. A fire extinguishing material, comprising: a particulate material to be projected onto a fire having a particle size of no more that 212 microns, a moisture content of no more than 0.50 parts by weight, a hygroscopicity of no more than 3.00 parts by weight, and a bulk density of about 125 milliliters per 100 grams, the particulate material being from about 97.2 to about 82.2 parts by weight of a mixture consisting essentially of monoammonium phosphate, ammonium sulfate and one or more carbonates selected from the group consisting essentially of magnesium carbonate, potassium carbonate and calcium carbonate; from about 0 to 15 parts by weight of barium sulfate; about 2.0 ,parts by weight hydrated aluminum-magnesium silicate; about 0.04 parts by weight of diarylide yellow; and about 0.8 parts by weight of methylhydrogen siloxane.

5,393,438

FIRE EXTINGUISHING COMPOSITION AND PROCESS

Richard E. Fernandez, Bear, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 436,465, Nov. 14, 1989, Pat. No. 5,141,654. This application Jun. 16, 1992, Ser. No. 899,282

Int. Cl.[6] A62C *3/00*; C09K *21/00*

U.S. Cl. 252—8 12 Claims

1. A method of using a fire extinguishing agent comprising:

manually discharging a fire extinguishing agent from a portable fire extinguisher upon a fire to be extinguished, wherein the fire extinguishing agent comprises a halogenated alkane composition selected from the group consisting of 2,2-dichloro-1,1,1-trifluoroethane ($CHCl_2CF_3$), 2-chloro-1,1,1,2-tetrafluoroethane ($CHClFCF_3$), 1,1,1,2-tetrafluoroethane (CH_2FCF_3), and mixtures thereof.

5,393,439

PERIODATE FRACTURING FLUID VISCOSITY BREAKERS

Steve B. Laramay, and Lewis R. Norman, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 27, 1994, Ser. No. 266,291

Int. Cl.[6] E21B *43/26*

U.S. Cl. 507—211 10 Claims

1. A fracturing fluid comprising

water,

a polysaccharide viscosifier,

a crosslinking agent, and

at least one viscosity breaker selected from the group consisting of a salt of a periodate and a salt of a metaperiodate.

5,393,440

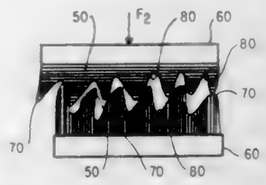
SOLID FILM LUBRICANT

Kent G. Roller, Boulder; Bradley A. Scott, Louisville, and Timothy C. LeBlanc, Niwot, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 18,726, Feb. 17, 1993, Pat. No. 5,342,655. This application Jun. 13, 1994, Ser. No. 259,047

Int. Cl.[6] C10M *103/00*

U.S. Cl. 252—25 12 Claims



10. A solid film lubricant, comprising:

a binder, said binder comprising a chlorotrifluoro-ethylene-vinyl chloride copolymer;

antimony trioxide;

a dichalcogenide; and

silane, wherein said lubricant comprises, on a weight percentage basis, from about 30 parts to about 100 parts said binder, from about 50 parts to about 200 parts said dichalcogenide, from about 50 parts to about 200 parts said antimony trioxide, and about 0.5 parts to about 5.0 parts said silane.

5,393,441

TWO-CYCLE OIL ADDITIVE

Warren A. Thaler, Flemington; Stephen Zushma, and Richard H. Schlosberg, both of Clinton, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Nov. 23, 1993, Ser. No. 156,505

Int. Cl.[6] C10M *133/56*

U.S. Cl. 252—51.5 A 8 Claims

1. A two-cycle oil composition comprising a major portion of a two cycle oil and a minor amount of an additive obtained by reacting an acrylamide with a compound selected from the group consisting of a polyalkylene polyamine, a polyalkylene acid anhydride, and mixtures thereof, wherein the acrylamide has the formula:

$$CH_2{=}CR2{-}\overset{O}{\overset{\|}{C}}{-}\overset{H}{\overset{|}{N}}R1$$

wherein R1 is an alkyl group having from 12 to 24 carbon atoms and R2 is H or a C_1 to C_3 alkyl group.

5,393,442

COMPOSITIONS CONTAINING 1-CHLORO-2,2,2-TRIFLUOROETHYL DEFLUOROMETHYL ETHER

Hans Buchwald, Ronnenberg; Joachim Hellmann, Hannover; Boleslaus Raszkowski, Wiedensahl, all of Germany; Pierre Barth-Elemy, Jodoigne, and Mireille Paulus, Bruxelles, both of Belgium, assignors to Solvay Fluor und Derivate GmbH, Hannover, Germany

Filed Mar. 29, 1993, Ser. No. 38,944

Claims priority, application Germany, Apr. 1, 1992, 4210700

Int. Cl.[6] C10M *129/16*

U.S. Cl. 252—54 31 Claims

1. A liquid composition useful as a coolant lubricant comprising 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether, at least one agent having a lubricant action, and at least one additive selected from the group consisting of evaporation-control agents, solubilizers, corrosion inhibitors and stabilizers.

5,393,443

HARD-COATING, HEAT-ABSORBING COMPOSITION AND HEAT-SHIELDING SUBSTANCE

Toshimi Satake; Tomoaki Nagai, and Miyuki Yokoyama, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 898,288

Claims priority, application Japan, Jun. 19, 1991, 3-146434

Int. Cl.[6] C04B *43/02*

U.S. Cl. 252—62 7 Claims

1. A composition which upon curing provides a transparent, hard-coating, heat-absorbing composition consisting essentially of:

a polymerizable polysiloxane condensation product represented by the following formula $(R_aSiO)_n$ wherein R is a substituted or unsubstituted monovalent hydrocarbon group, a is a number from 1.90 to 2.05 and n has a value such that the polysiloxane is a hard-coating material,

a derivative of thiourea represented by the following formula (1),

$$R_1{-}NH{-}CS{-}NH{-}R_2 \quad (1)$$

wherein R_1 and R_2 independently represent hydrogen, an alkyl group, aryl group, aralkyl group, alkenyl group, or a 5- or 6-membered cyclic residual group, having 1–22 carbon atoms, wherein each group may have one or more substitute groups selected from alkyl, aryl, aralkyl, and alkenyl groups having 1–10 carbon atoms, nitro group, halogen, hydroxyl group, and amino group, and

a copper salt of an organic acid, said derivative of thiourea

and copper salt being present in an amount of from 5 to 50 parts by weight, based on 100 parts by weight of solid polysiloxane, and wherein the mole ratio of copper salt derivative of thiourea is from about 1:3 to 1:5.

5,393,444

PIEZOELECTRIC SEMICONDUCTOR

Yuji Asai, Chita, and Osamu Imai, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Aug. 27, 1993, Ser. No. 112,529

Claims priority, application Japan, Sep. 8, 1992, 4-239651; Sep. 8, 1992, 4-239652; Sep. 8, 1992, 4-239653; Mar. 29, 1993, 5-070416

Int. Cl.[6] H01L *41/18*

U.S. Cl. 252—62.3 ZT **8 Claims**

1. A piezoelectric semiconductor for use as an acoustoelectric element comprising a single crystal composed mainly of ZnO, said single crystal having an electrical conductivity of 10^{-11}~10^{-6} 1/Ω-cm, a carrier mobility of at least 30 $cm^2/V \cdot sec$, and a variation in electrical conductivity in said single crystal of 10^2 1/Ω-cm or smaller.

5,393,445

RARE-EARTH BONDED MAGNET, MATERIAL AND METHOD FOR MANUFACTURING THE SAME

Takashi Furuya, Chita, and Naoki Hayashi, Tohkai, both of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 996,136, Dec. 23, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 176,645

Claims priority, application Japan, Dec. 26, 1991, 3-345039

Int. Cl.[6] H01F *1/053*

U.S. Cl. 252—62.54 **5 Claims**

1. A composition for a rare-earth bonded magnet comprising a rare-earth magnetic powder coated with a heat resisting addition polymerizable thermosetting material consisting essentially of a monomer or polymer of 2,2-bis(cyanatophenyl) propane in an amount of not more than 2 wt % based on the weight of the magnetic powder.

5,393,446

PROCESS FOR PREPARING DETERGENT COMPOSITION CONTAINING SODIUM AND POTASSIUM OXIDES

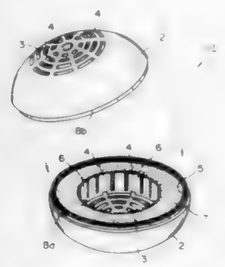
Hidezo Matsumoto, Tokyo, Japan, assignor to ECO Japan Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1993, Ser. No. 167,370

Claims priority, application Japan, Dec. 16, 1992, 4-354540; Oct. 27, 1993, 5-291445

Int. Cl.[6] C11D *17/00, 7/04*

U.S. Cl. 252—90 **2 Claims**



1. A process for the production of a detergent composition, comprising:

adding effective detergent amounts of sodium oxide and potassium oxide to a ceramic material formed primarily of silicon oxide and aluminum oxide, whereby a dry ceramic powder is obtained;

adding water to the dry ceramic powder;

kneading and forming the resulting mixture into a predetermined shape, whereby a green body is obtained;

drying the green body;

firing the thus-dried green body at 500° C. to 700° C.;

impregnating the resulting fired body with an effective detergent amount of an aqueous solution of sodium metaphosphate; and

firing the thus-impregnated body again at a temperature in a range of from 200° C. to 400° C.

5,393,447

COMPOSITION AND PROCESS FOR DESMUTTING AND DEOXIDIZING WITHOUT SMUTTING

Lawrence R. Carlson, Waterford, and Philip M. Johnson, Southfield, both of Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Jul. 9, 1993, Ser. No. 88,998

Int. Cl.[6] C23F *4/00*

U.S. Cl. 252—101 **21 Claims**

1. A liquid desmutting/deoxidizing composition of matter according to claim **1**, said composition consisting essentially of water and:

(A) nitric acid;

(B) ferric ions;

(C) persulfate anions; and

(D) molybdate or condensed molybdate anions; and, optionally, one or more of the following;

(E) fluorine containing anions;

(F) sulfuric acid or sulfate ions;

(G) surfactant; and,

(H) a dye or other colorant.

5,393,448

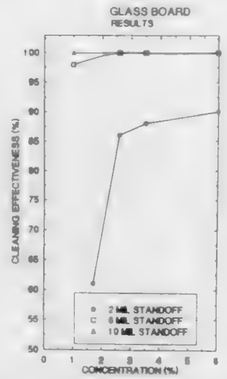
AQUEOUS ELECTRONIC CIRCUIT ASSEMBLY CLEANER AND METHOD

Anthony E. Winston, East Brunswick; Francis R. Cala, Highland Park; Alfredo Vinci, Dayton, and M. Stephen LaJoie, Basking Ridge, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 896,660, Jun. 10, 1992, Pat. No. 5,234,506, which is a continuation-in-part of Ser. No. 731,512, Jul. 17, 1991, abandoned. This application Jun. 9, 1993, Ser. No. 73,486

Int. Cl.[6] C11D *3/08, 3/10, 9/12*

U.S. Cl. 252—109 **16 Claims**



1. A cleaning composition comprising (a) alkali-metal carbonate, or mixtures of alkali metal carbonate and bicarbonate salts, (b) an alkali metal silicate, (c) an antifoam agent, a surfactant or both and (d) sodium octanoate or sodium nonanoate, wherein (a), (b), (c) and (d) are so combined that when in an aqueous cleaning solution at a concentration of from about 0.6 to 15 percent by weight said solution has a pH of from about 10 to 13.

5,393,449

PERSONAL CLEANSING STAMPED SYNBAR CONTAINING ALKYL GLYCERYL ETHER SULFONATE AND ACYL ISETHIONATE

Neil W. Jordan; Wayne E. Eccard, both of Cincinnati, and James R. Schwartz, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 488,926, Mar. 5, 1990, abandoned. This application Feb. 11, 1992, Ser. No. 835,055

Int. Cl.[6] C11D *1/28, 1/04, 13/18, 17/00*

U.S. Cl. 252—121 **10 Claims**

1. A process for making a flaked, plodded and stamped personal cleansing synbars comprising the following steps:

(A) mixing in a crutcher on a dried final bar weight basis from about 30% to about 80% of C_8–C_{22} alkyl glyceryl ether sulfonate (AGS) surfactant; from about 5% to about 30% of C_6–C_{20} acyl isethionate processing aid; said alkyl glyceryl ether sulfonate and processing aid having a weight ratio of from about 1.2:1 to about 10:1; from about 5% to about 25% soap; and

said crutcher mix containing from about 45% to about 65% water;

(B) flash drying said crutcher mix with heat to a moisture content of from about 2% to about 10%; and then cooling; and

(C) flaking said flash dried mix to provide homogeneous dried flakes; and

(D) plodding and forming plugs from said cooled dried flakes and stamping said synbars from said plugs.

5,393,450

WASHING COMPOSITION CONTAINING FATTY ACID ESTERS

May Shana'a, Merseyside, Great Britain, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,444

Claims priority, application United Kingdom, Nov. 9, 1992, 9223439

Int. Cl.[6] C11D *7/50, 1/72*

U.S. Cl. 252—170 **7 Claims**

1. Aqueous shower-gel composition comprising:

a) 10–30% wt. of an anionic surfactant,

b) 5–10% wt. of an oily component which is a 3–6 carbon alcohol ester of a fatty acid having at least 10 carbon atoms, the ratio of said anionic surfactant to said oil being at least 1:1,

c) 1–5% wt. of a fatty acid monoglyceride polyglycol ether, and,

d) 1–5% wt. of at least one nonionic surfactant having a HLB between 5 and 10.

5,393,451

HIGH TEMPERATURE FLASHPOINT, STABLE CLEANING COMPOSITION

A. Richard Koetzle, 32 Lucinda La., Rochester, N.Y. 14626

Continuation of Ser. No. 881,251, May 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 640,219, Jan. 11, 1991, Pat. No. 5,112,516. This application May 17, 1994, Ser. No. 243,734

The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.

Int. Cl.[6] C11D *7/26, 7/50;* **C23G** *5/032*

U.S. Cl. 252—170 **19 Claims**

1. A non-combustible solvent composition comprised of:

a) at least a first solvent other than terpineol having a flashpoint in excess of 200° F; and

b) admixed with said first solvent an effective amount for solvent purposes of terpineol containing no significant amount of alpha and beta pinene wherein the flashpoint of said terpineol is at least about 212° F.

19. A method of removing grease and soluble contaminants from articles, comprising the steps of:

a) providing an article having a contaminant thereon; and

b) removing the contaminant by applying to the contaminant a sufficient quantity of a terpineol which has no significant amount of alpha and beta pinene so that the flashpoint of said terpineol is at least about 212° F.

5,393,452

2 IN 1 SHAMPOO SYSTEM AND CONDITIONER COMPRISING A SILICON-POLYETHER COPOLYMER

William J. Raleigh, Rensselaer; Raymond J. Thimineur, Scotia, and Stanley J. Stoklosa, Clifton Park, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 974,020, Nov. 9, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 120,507

Int. Cl.[6] A61K *7/075;* **C11D** *3/37*

U.S. Cl. 252—174.15 **37 Claims**

1. A 2 in 1 shampoo composition having improved anti static properties comprising:

(a) an anionic surfactant selected from the group consisting of $ROSO_3Mt$ and $RO(C_2H_4O)_zSO_3Mt$ wherein R is alkyl or alkenyl of from about 10 to about 20 carbon atoms, z ranges from 1 to about 10, and Mt is a water soluble monovalent cation selected from the group consisting of alkali metal cations, ammonium cation, substituted ammonium cations or triethanolamine cation;

a nonionic surfactant selected from the group consisting of an alkanolamide and an ethoxylated amides;

an amphoteric surfactant selected from the group consisting of amine oxides and betaine compounds; used either singly in combination with themselves;

or a mixture thereof in an amount ranging up to about 14 weight percent;

(b) a suspending agent selected from the group consisting of the alkanol amides of fatty acids and alkyl dimethyl amine oxides having from about 16 to about 22 carbon atoms, and the cross linked anionic homopolymers or copolymers of vinylsulfonic acid, acrylic or methacrylic acid, acrylic acid, the alkali metal and ammonium salts of acrylic acid, methacrylic acid, the alkali metal and ammonium salts of methacrylic acid, acrylamide, methacrylamide, the N-alkyl substituted amides, the N-aminoalkylamides, the corresponding N-alkylaminoalkyl substituted amides, the aminoalkyl acrylates, the aminoalkyl methacrylamides, and the N-alkyl substituted aminoalkyl esters of either acrylic or methacrylic acids polymerized or copolymerized with monomers selected from the group consisting of ethylene, propylene, isobutylene, styrene, alpha-methylstyrene, vinyl acetate, vinyl formate, alkyl ethers, acrylonitrile, methacrylonitrile, vinyl chloride, vinylidene chloride, alkyl acrylates, alkylmethacrylates, alkyl fumarates, and alkyl maleates at a level of from about 0.2 to about 5.0% by weight;

(c) a high molecular weight, high viscosity silicone-polyether copolymer of the general formula:

$$MD_xD'_yM$$

wherein;

M is an endcapping unit of the formula $R^4{}_3SiO_{\frac{1}{2}}$, wherein each R^4 is the same or different and independently represents hydrogen or a monovalent substituted or unsubstituted hydrocarbon radical of from 1 to 30 carbon atoms;

D represents a difunctional siloxy unit of the formula $R^4{}_2SiO_{2/2}$ wherein each R^4 is as defined above; and D' represents a difunctional siloxy of the formula $R^4R^5SiO_{2/2}$ wherein;

R^4 is as defined above, and

R^5 is a polyalkylene ether of the formula R^6_a—$(OR^7)_n$—OR^8 where

R^6 is a substituted or unsubstituted alkylene group of from 1 to about 20 carbon atoms,

R^7 is selected from the group consisting of —CH_2CH_2—, —$CH_2CH(CH_3)$—, and —$CH_2C(CH_3)_2$—;

R^8 is a hydrogen atom, hydroxyl or hydrocarbon radical selected from the group consisting of ethyl, propyl, butyl, phenyl, alkenyl, and acetyl;

n has a value of from about 5 to about 20, and a is 0 or 1; and x is above about 1 and y is above about 1 and the molecular weight of the silicone ether copolymer ranges from about 30,000 to about 150,000 on a weight average basis in an amount ranging from about 4 to about 44.5 weight percent;

(d) a quaternary ammonium compound selected from the group consisting of distearyldimethylammonium chloride, dicetyldimethylammonium bromide, dimethyldi(hydrogenated tallow)ammonium chloride, dibehenyl dimonium sulfate, hydroxypropyl bis-stearyl-ammonium chloride, tricetyl methyl ammonium chloride, tri-C_{8-10} methyl ammonium chloride, tri(isodecyl)amine, tri-C_{13} amine, and quaternary imidazolinium chlorides in an amount ranging from about 0.75 to about 1.40 weight percent; and

(e) water in an amount ranging from about 20 to about 95 weight percent.

5,393,453

THICKENED COMPOSITION CONTAINING GLYCOLIPID SURFACTANT AND POLYMERIC THICKENER

Myriam Mondin, Seraing, and Guy Broze, Grace-Hollogne, both of Belgium, assignors to Colgate Palmolive Co., Piscataway, N.J.

Filed Feb. 3, 1994, Ser. No. 190,935
Int. Cl.[6] C11D *3/22, 3/37, 1/12*
U.S. Cl. 252—174.18 9 Claims

1. A thickened composition having a complex viscosity at 25° C. and 1.58 Hz of about 0.1 to about 200 Pascal seconds, an elastic modulus G' value of about 0.1 to about 15000 dynes/sq cm over a strain range of 1 to 5% and a viscous modulus G'' value of about 0.1 to about 2000 dynes/sq cm over a strain range of 1 to 5% which comprises approximately by weight:

(a) 0.25 to 25% of a glycolipid surfactant having an HLB of about 0.1 to about 8.0;

(b) 0.1 to 10.0% of a polymeric thickener which is a nonionic polymer wherein said nonionic polymer is the reaction product of an alkylene oxide copolymer having a molar mass of about 5000 to 50,000 and having an OH functionality at each end of the polymer chain and two alkyl chain epoxides, each of which has about 12 to about 25 carbon atoms; (c) 0.1 to 8% of an anionic surfactant; and (d) the balance being water, wherein said polymeric thickener forms lipophilic-lipophilic bridges with said glycolipid surfactant and said anionic surfactant.

5,393,454

THICKENED COMPOSITION CONTAINING POLYMERIC THICKENER AND ALIPHATIC HYDROCARBON

Myriam Mondin, Seraing S/M, and Guy Broze, Grace-Hollogne, both of Belgium, assignors to Colgate Palmolive Co., Piscataway, N.J.

Filed Feb. 3, 1994, Ser. No. 190,934
Int. Cl.[6] C11D *3/37, 3/18, 1/72*
U.S. Cl. 252—174.23 7 Claims

1. A thickened composition having a complex viscosity at 25 C. at 1.58 Hz of about 0.1 to about 200 Pascal seconds, an elastic modulus G' value of about 0.1 to about 1500 dynes/sq cm over a strain range of 1 to 5% and a viscous modulus G'' value of about 0.1 to about 1000 dynes/sq cm over a strain range of 1 to 5% which comprises approximately by weight:

(a) 2 to 25% of a nonionic surfactant having an HLB of about 0.1 to about 8.0;

(b) 0.1 to 10.0% of an associative polymeric thickener which is a polymer which is the reaction product of an alkylene oxide copolymer having a molar mass of about 5000 to 50,000 and having an OH functionality at each end of the polymer chain and two alkyl chain epoxides, each of which has about 12 to about 24 carbon atoms;

(c) 2 to 30% of an aliphatic hydrocarbon having about 6 to about 22 carbon atoms; and

(d) the balance being water.

5,393,455

ZEOLITE-BASED PHOSPHATE-FREE DETERGENT BUILDER COMPOSITION

Joerg Poethkow, Duesseldorf; Horst Upadek, Ratingen, and Eduard Smulders, Hilden, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/01976, § 371 Date Apr. 26, 1993, § 102(e) Date Apr. 26, 1993, PCT Pub. No. WO92/07928, PCT Pub. Date May 14, 1992
PCT Filed Oct. 17, 1991, Ser. No. 39,328
Claims priority, application Germany, Oct. 26, 1990, 4034131
Int. Cl.[6] C11D *3/12, 3/08, 3/37, 7/60*
U.S. Cl. 252—174.25 15 Claims

1. A phosphate-free builder composition consisting essentially of from 60 to 96% by weight of zeolite, from 2 to 16% by weight of polymeric polycarboxylate, and from 2 to 25% by weight of crystalline layer silicate corresponding to formula (I) $NaMSi_xO_{2x+1-y}H_2O$, wherein M is sodium or hydrogen, x is a number of 1.9 to 4 and y is a number of 0 to 20.

15. A phosphate-free detergent composition consisting essentially of from 20 to 40% by weight of zeolite, from 1 to 15% by weight of crystalline layer silicate corresponding to formula (I) $NaMSi_xO_{2X+1-y}H_2O$ wherein M is sodium or hydrogen, x is a number of 1.9 to 4 and y is a number of 0 to 20, from 1 to 9% by weight of polymeric polycarboxylate, and from 2 to 8% by weight of amorphous alkali metal silicate having a Na_2 to SiO_2 ratio of from 1:2.0 to 1:3.3.

5,393,456

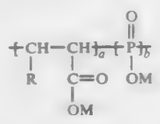
COMPOSITION FOR CONTROLLING SILICA AND WATER SOLUBLE SILICATE DEPOSITION

Libardo A. Perez, Morrisville, Pa.; J. Michael Brown, The Woodlands, and Khac T. Nguyen, Houston, both of Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 884,668, May 18, 1992, Pat. No. 5,256,302. This application Jun. 22, 1993, Ser. No. 80,900
Int. Cl.[6] C08F *5/10*
U.S. Cl. 252—180 3 Claims

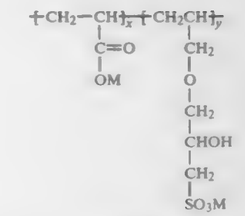
1. A composition for the control of silica or silicate deposits on the internal structural surfaces of a water system comprising

I) a first copolymer, m, having the structure:



wherein R=H or COOM, M is H or a water soluble cation, the molar ratio of repeat units a:b is from about 30:1 to 1:2 and the number average molecular weight is from about 150 to about 200,000 and

II) a second copolymer, n, having the structure:



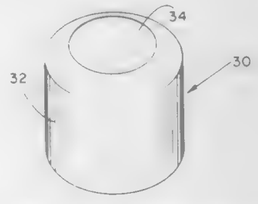
wherein M is H or a water soluble cation, the molar ratio of repeat units x:y is about 3:1 and the number average molecular weight is from about 300 to about 20,000, wherein the ratio of m:n is from about 1:1.5 to 1:4, by weight.

5,393,457

VAPOR PHASE CORROSION INHIBITOR-DESICCANT MATERIAL

Boris A. Miksic, 21 Evergreen Rd., North Oaks, Minn. 55110; Tsi-Zong Tzou, 8826 Summer Wind Cir., Woodbury, Minn. 55125, and Joseph M. Foley, 1959 Whtie Bear Ave., Maplewood, Minn. 55109

Division of Ser. No. 929,621, Aug. 13, 1992, Pat. No. 5,332,525, which is a continuation-in-part of Ser. No. 905,953, Jun. 29, 1992, Pat. No. 5,209,869, which is a continuation-in-part of Ser. No. 594,357, Sep. 27, 1990, Pat. No. 5,139,700, which is a continuation-in-part of Ser. No. 417,238, Oct. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 235,120, Aug. 23, 1988, abandoned. This application Oct. 14, 1993, Ser. No. 136,959
Int. Cl.[6] C23F *11/18*
U.S. Cl. 252—194 13 Claims



1. A vapor phase corrosion inhibitor-desiccant formulation and substrate composite comprising:

(a) a vapor phase corrosion inhibitor component comprising, by weight, from about 22% to about 28% sodium nitrite, from about 4% to about 6% benzotriazole, and an anhydrous molybdate selected from the group consisting of sodium molybdate, ammonium dimolybdate, amine molybdates, and mixtures thereof;

(b) a desiccant component comprising a granular silica gel having a particle size between about 2 μm and about 8 μm and upon whose surface the inhibitor component is deposited to thereby produce a vapor phase corrosion inhibitor-desiccant formulation; and

(c) a substrate wherein the inhibitor-desiccant formulation is retained.

9. A vapor phase corrosion inhibitor-desiccant formulation and substrate composite comprising:

(a) a vapor phase corrosion inhibitor component comprising, by weight, from about 50% to about 97% cyclohexylamine benzoate, from about 1% to about 20% ethylamine benzoate, from about 1% to about 20% dicyclohexylamine nitrate, and from about 1% to about 10% benzotriazole;

(b) a desiccant component comprising a granular silica gel having a particle size between about 2 μm and about 8 μm and upon whose surface the inhibitor component is deposited to thereby produce a vapor phase corrosion inhibitor-desiccant formulation; and

(c) a substrate wherein the inhibitor-desiccant formulation is retained.

5,393,458

AROMATIC ESTERS AND LIQUID CRYSTAL MIXTURES CONTAINING SAME

Stephen Kelly, Möhlin, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 969,619, Oct. 30, 1992, Pat. No. 5,326,498. This application Mar. 29, 1994, Ser. No. 219,573
Claims priority, application Switzerland, Nov. 8, 1991, 3273/91; Jun. 18, 1992, 1927/92
Int. Cl.[6] C09K *19/34, 19/52;* C07D *239/02, 213/62*
U.S. Cl. 252—299.01 6 Claims

4. A liquid crystalline mixture containing at least two components, wherein at least one component is a compound of the formula



wherein

R^1 is alkenyl with 2 to 12 carbon atoms,

R^2 is alkyl or alkenyl with 1 to 7 and, respectively, 2 to 7 carbon atoms,

Z^1 is a single covalent bond,

A^1 is 1,4-phenylene,

A^2 is 1,4-phenylene, which is unsubstituted or substituted with halogen, or pyridine-2,5-diyl or pyrimidine-2,5-diyl;

A^3 represents 1,4-phenylene, which is unsubstituted or substituted with halogen, or pyridine-2,5-diyl, pyrimidine-2,5-diyl or trans-1,4-cyclohexylene;

n is 1;

with the proviso that at least one of rings A^2 or A^3 is either pyridine-2,5-diyl or pyrimidine-2,5-diyl.

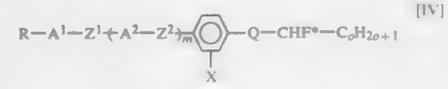
5,393,459

OPTICALLY ACTIVE COMPOUNDS, AND A LIQUID-CRYSTALLINE PHASE

Andreas Wächtler, Griesheim; Thomas Geelhaar, Mainz; Reinhard Hittich, Modautal; Ekkehard Bartmann, Erzhausen; Joachim Krause, Dieburg, and Elke Poetsch, Mühltal, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Continuation of Ser. No. 635,177, Jan. 11, 1991, abandoned. This application Oct. 5, 1992, Ser. No. 956,938
Claims priority, application Germany, May 11, 1989, 3915378; May 13, 1989, 3915698; Jun. 23, 1989, 3920571; Jul. 7, 1989, 3922307; Jul. 7, 1989, 3922308; Jul. 7, 1989, 3922416; Jul. 14, 1989, 3923324
Int. Cl.[6] C09K *19/30, 19/34, 19/12;* G09F *1/13*
U.S. Cl. 252—299.63 3 Claims

1. An optically active compound of the formula



wherein

R is a straight-chain alkyl or alkenyl radical having up to 15 carbon atoms, in which one CH_2 group is optionally replaced by —O—, —CO—, —O—CO—, —CO—O—, or —O—CO—O—;

A^1 and A^2 are each, independently of one another, a 1,4-phenylene radical, a pyridine-2,5-diyl radical, a pyrimidine-2,5-diyl

radical, a pyrazine-2,5-diyl radical, a pyridazine-3,6-diyl radical, a 1,2,4-thiadiazole-3,5-diyl radical or a trans-1,4-cyclohexylene radical, each of which is unsubstituted or substituted by one or two fluorine atoms, and in which, in addition, one or two CH_2 groups are optionally replaced by —O— or —S—, and one CH group is optionally replaced by —C(CN)—, or are a 1,4-cyclohexenylene radical;

Z^1 and Z^2 are each, independently of one another, —O—CO—, —CH_2O—, —OCH_2—, —CH_2CH_2—, —CH=CH—, —C≡C—, or a single bond;

X is H or F;

Q is —OCH_2—, —COOCH_2—, or —CH_2OCH_2—;

o is 1 to 9;

m is 0 or 1,

with the proviso that one of the rings A^1 and A^2 is trans-1,4-cyclohexylene in which one CH group has been replaced by —C(CN)—.

5,393,460

LIQUID CRYSTAL COMPOSITION, AND ELEMENT AND DEVICE USING THE SAME

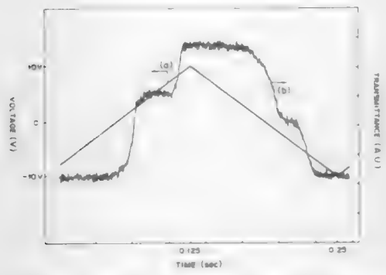
Nobuhiro Okabe; Tadaaki Isozaki, and Yoshiichi Suzuki, all of Tokyo, Japan, assignors to Showa Shell Sekiyu Kabusyiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1993, Ser. No. 102,780

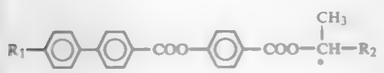
Claims priority, application Japan, Aug. 6, 1992, 4-231430; Aug. 6, 1992, 4-231431; Aug. 6, 1992, 4-231432

Int. Cl.[6] C09K *19/12, 19/20;* G02F *1/13*

U.S. Cl. 252—299.65 13 Claims

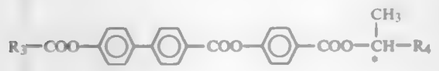


1. The liquid crystal composition having antiferroelectric phases at two temperature ranges comprising not less than 80 parts by weight of a compound represented by the general formula (III):



(III)

wherein R_1 is an alkyl group having from 4 to 18 carbon atoms, R_2 is an alkyl group having from 4 to 18 carbon atoms, and * shows an asymmetric carbon atom, and less than 20 parts by weight of a compound represented by the general formula (IV):



(IV)

wherein R_3 and R_4 are independently selected from the group consisting of alkyl groups having from 4 to 18 carbon atoms, and * shows an asymmetric carbon atom, the compounds of formula (III) and formula (IV) having an optical purity of higher than 80% e.e., respectively; when the compound of the general formula (III) is an R-isomer, the compound of the general formula (IV) is also an R-isomer; and when the compound of the general formula (III) is an S-isomer, the compound of the general formula (IV) is also an S-isomer.

5,393,461

PREPARATION OF STABLE AQUEOUS EMULSIONS OF WATER-INSOLUBLE PARTICLES

Irina V. Fillipova, Bethlehem, Pa., assignor to RTD Corporation, Bethlehem, Pa.

Filed Oct. 4, 1993, Ser. No. 131,448

Int. Cl.[6] B01J *13/00;* C08K *3/04, 3/22*

U.S. Cl. 252—314 7 Claims

1. A process for preparing an emulsion comprising the steps of:

a) preparing a solution of from about 0.01 to 5% w/w of a wetting agent selected from the group consisting of alkyl benzene sulfonate, sodium lauryl sulfate, sodium dilauryl phosphate, lanolin, sodium monoglyceryl lauryl sulfate, sodium methyl oleoyl taurate, sodium octoxynol-2-ethanesulfonate, di-β-naphthylmethane disulfate, sulfated castor oil, sodium secondary alcohol sulfate, sodium alkyl-aryl sulfonate, dialkylsulfosuccinate, dioctyl ester of sodium sulfosuccinate, sodium-7-ethyl-2-methyl-undecyl-4-sulfate, and sodium-3,9-diethyltridecyl-6-sulfate, in an organic solvent selected from the group consisting of ethyl alcohol, methyl alcohol, isopropyl alcohol, chloromethane, dichloromethane, chloroform, carbon tetrachloride, methyl ethyl ketone, methyl isobutyl ketone, ethyl acetate, perchloroethylene, acetone and glycol ethers to obtain a wetting solution;

b) mixing of 1 to about 90% w/w of a finely divided powder having 50 to 100 nm particle size distribution or less with the wetting solution to obtain a dispersion;

c) mixing the dispersion with from about 10 to about 99% w/w of an oily or polymeric substance dissolved in an organic solvent selected from the group consisting of ethyl alcohol, methyl alcohol, isopropyl alcohol, chloromethane, dichloromethane, chloroform, carbon tetrachloride, methyl ethyl ketone, methyl isobutyl ketone, ethyl acetate, perchloroethylene, acetone and glycol ethers to obtain an oily suspension;

d) preparing an aqueous solution by mixing in water of from about 0.1 to about 2% w/w of an emulsifying agent selected from the group consisting of a cationic, nonionic, anionic and zwitterionic surface active agent to obtain an aqueous solution;

e) adding of from about 20 to about 35% w/w of the oily suspension to about 65 to 80% w/w of the aqueous solution to obtain an aqueous suspension; and

f) emulsifying the aqueous suspension.

5,393,462

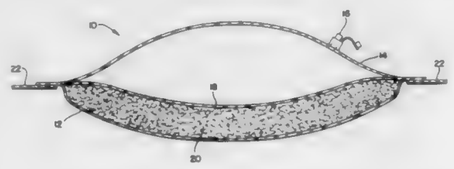
REUSABLE THERMAL PACK AND FLOW RETARDANT GEL FOR USE THEREIN

John R. Avery, Athens, Tenn., assignor to P.I., Inc., Athens, Tenn.

Continuation of Ser. No. 869,541, Apr. 15, 1992, abandoned, which is a division of Ser. No. 794,726, Nov. 15, 1991, abandoned. This application Dec. 15, 1993, Ser. No. 168,916

Int. Cl.[6] C09K *5/00;* B01J *13/00*

U.S. Cl. 252—315.5 9 Claims



1. A non-flowing gel for use in thermal packs for human treatment, said gel comprising a mixture of materials comprising

clay, a liquid and a fibrous or flake material;

the clay being a clay substrate in an amount of from about 15% to 30% by weight;

the liquid including a glycol and water wherein the water is in an amount of from about 0% to 75% by weight; and

the fibrous or flake material being of sufficient concentration to impart a negligible flow rate in said gel and provide uniform contact between the hot or cold pack with the affected area, wherein said sufficient concentration is from about 1% to 10% by weight;

the gel being a semi-rigid, non-flowing, extremely viscous mixture comprising a colloidal dispersion of a solid with a liquid.

5,393,463

USE OF TRIALKANOLAMINE POLYETHERS AS DEMULSIFIERS FOR OIL-IN-WATER EMULSIONS

Rolf Fikentscher; Knut Oppenlaender, both of Ludwigshafen; Johannes P. Dix, Weisenheim; Wilfried Sager, Mutterstadt; Hans-Henning Vogel, Frankenthal; Klaus Barthold, Mannheim, and Guenther Elfers, Birkenau, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 646,679, Jan. 28, 1991, abandoned. This application Sep. 29, 1993, Ser. No. 128,267

Claims priority, application Germany, Feb. 3, 1990, 4003243

Int. Cl.[6] B01D *17/04*

U.S. Cl. 252—344 1 Claim

1. In the process for demusifying oil-in-water emulsions wherein the emulsions are treated with trialkanolamine polyethers obtained by the condensation of one or more trialkanolamines, the improvement wherein the polyethers are prepared by the condensation of triethanolamine in the presence of phosphorous acid and/or hypophosphorous acid;

wherein the phosphorous and/or hypophosphosphourous acid is present, calculated as 100% acid, in an amount of from 0.05 to 2% w/w of the triethanolamine and the condensation is terminated at the point where the viscosity of the resultant triethanolamine polyether has a viscosity of 10,000 to 100,000 mPa.s.

5,393,464

BIODEGRADABLE CORROSION INHIBITORS OF LOW TOXICITY

Richard L. Martin, 1927 St. Clair Ave., St. Louis, Mo. 63144; Jo Ann McMahon, 564 Wren Dr., Arnold, Mo. 63010, and Bernardus A. Oude Alink, 10557 Larkspur Dr., St. Louis, Mo. 63123

Filed Nov. 2, 1993, Ser. No. 146,900

Int. Cl.[6] C23F *11/167*

U.S. Cl. 252—389.23 17 Claims

1. A method for inhibiting corrosion in an aqueous medium containing *Skeletonema costatum*, fish, algae or a combination thereof, the method comprising incorporating into the medium an amount of a water-soluble corrosion inhibitor sufficient to inhibit corrosion, the corrosion inhibitor comprising an N-ethoxy,2-substituted imidazoline, the N-ethoxy substituent having from one to about thirty ethoxy units and the 2-substituent being an unsaturated or polyunsaturated fatty chain of from about six to about thirty carbons, and a phosphate ester derived from a water-soluble oxyethylated, straight chain alcohol of from about two to about thirty carbons.

5,393,465

LIGHT-ABSORBING DIELECTRIC COMPOSITIONS

Lorri P. Drozdyk, Hillsborough, N.C.; Roger H. French, Wilmington, Del.; Kenneth W. Hang, West Chester, Pa., and Arvind Halliyal, Durham, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 790,864, Nov. 14, 1991, abandoned. This application Dec. 13, 1993, Ser. No. 165,244

Int. Cl.[6] H01B *1/00, 1/02, 1/20*

U.S. Cl. 252—518 10 Claims

1. A composition for making fired layers which are especially suitable for laser scribing consisting essentially of finely divided particles of:

(a) 68.0–94.99% wt. dielectric glass;

(b) 5–30% wt. inorganic filler having a particle size between 0.3–3 microns and a refractive index at least 0.07 higher than the refractive index of the dielectric glass; and

(c) 0.01–2.0% wt. cobalt oxide having a particle size less than 5 microns and is selected from CoO, Co_3O_4 and mixtures thereof, all of (a), (b), and (c) being dispersed in;

(d) an organic medium.

5,393,466

FATTY ACID ESTERS OF POLYALKOXYLATED ISETHIONIC ACID

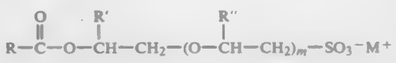
Leonora Ilardi, Valley Cottage, N.Y.; Mark Rerek, Fanwood, N.J.; Michael Massaro, Ridgefield Park, N.J., and Christine Wenzel, Rutherford, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 796,748, Nov. 25, 1991. This application Apr. 12, 1993, Ser. No. 45,951

Int. Cl.[6] C11D *1/12*

U.S. Cl. 252—549 4 Claims

1. A compound or mixture of compounds having the formula



wherein R is a straight chain alkyl group having 8 to 18 carbons, m is an integer from 2 to 4, R′ and R″ are hydrogen or an alkyl group having 1–4 carbons, and M^+ is a monovalent cation.

5,393,467

ELECTRICALLY CONDUCTIVE RUBBER MATERIAL USED FOR ELECTROPHOTOGRAPHIC COPYING APPARATUS

Shunichi Yabushita, Akashi, and Hitoshi Itani, Kobe, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Jun. 2, 1993, Ser. No. 71,018

Claims priority, application Japan, Jun. 4, 1992, 4-143079; Apr. 21, 1993, 5-093489

Int. Cl.[6] H01B *1/00, 1/20, 1/24*

U.S. Cl. 252—511 7 Claims

1. An electrically conductive rubber material for a charging member of an electrophotographic copying apparatus, comprising:

100 parts by weight of total rubber comprising:

synthetic rubber consisting essentially of:

10 to 30 parts by weight, per 100 parts by weight of total rubber, of a diene rubber comprising butadiene,

at least 15 parts by weight, per 100 parts of total rubber, of EPDM rubber which contains no double bond in its principal chain; and

a metallic salt cross linking agent;

5–100 parts by weight of carbon black, per 100 parts by weight of total rubber, sufficient to impart electrical conductivity to said rubber material; and

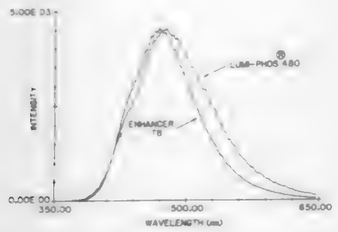
not more than 3 parts by weight of oil, per 100 parts by

weight of total rubber, as measured by solvent extraction by acetone.

5,393,468
HARD SURFACE CLEANER
Rita Erilli, Liege; Regis Lysy, Olne; Patrick Durbut, Verviers, and Guy Broze, Grace-Hollogne, all of Belgium, assignors to Colgate Palmolive Company, Piscataway, N.J.
Filed Jul. 14, 1993, Ser. No. 91,775
Int. Cl.[6] C11D *3/065*
U.S. Cl. 252—550 14 Claims

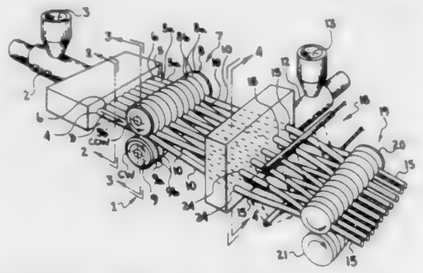
1. A composition comprising approximately by weight:
(a) 6 to 50% of a mixture of two different anionic surfactants, one of said anionic surfactants being a paraffin sulphonate and the other said anionic surfactant being an alkyl ether sulfate, a ratio of said sulphonate to said sulfate being 3.3:1 to 2:7;
(b) 0 to 6% of a nonionic surfactant;
(c) 1 to 20% of at least one of a water insoluble organic compound which has a δp of about 0 to about 6 12 $(MPa)^{\frac{1}{2}}$, a δH of about 0 to about 12 $(MPa)^{\frac{1}{2}}$, and a δd of about 14 to about 19;
(d) 0 to 8% of a solubilizing agent;
(e) 0.15 to 10 % of at least one water soluble hydroxy containing organic compound; and
(f) the balance being water, wherein the composition has a pH of about 1 to about 1 1 and is optically clear having at least 90% light transmission and the interfacial tension between the lipophile droplets of said composition and the aqueous phase being less than about 10^{-2} mN/m.

5,393,469
POLYMERIC PHOSPHONIUM SALTS PROVIDING ENHANCED CHEMILUMINESCENCE FROM 1,2-DIOXETANES
Hashem Akhavan-Tafti, Sterling Heights, Mich., assignor to Lumigen, Inc., Detroit, Mich.
Filed Mar. 20, 1992, Ser. No. 855,537
Int. Cl.[6] C09K *3/00*; C12Q *1/00, 1/70, 1/68*
U.S. Cl. 252—700 31 Claims



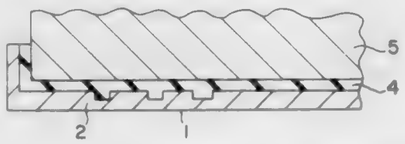
1. A method for providing enhanced chemiluminescence from a stable 1,2-dioxetane which comprises:
(a) providing in a solution or on a surface where the light is to be produced a stable 1,2-dioxetane and a polymeric phosphonium salt with polyvinyLinktriAyl-phosphonium groups wherein Link is a linking group between the polymer and the phosphonium group containing 1 to 20 carbon atoms and A is selected from the group consisting of alkyl containing 1 to 20 carbon atoms and from alkyl and aralkyl groups each containing 1 to 20 carbon atoms; and
(b) triggering the 1,2-dioxetane with an activating agent to provide the enhanced chemiluminescence.

5,393,470
PROCESS FOR MANUFACTURING OPTICAL FIBERS
Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024
Filed May 20, 1993, Ser. No. 63,770
Int. Cl.[6] B29C *47/06*
U.S. Cl. 264—1.29 14 Claims



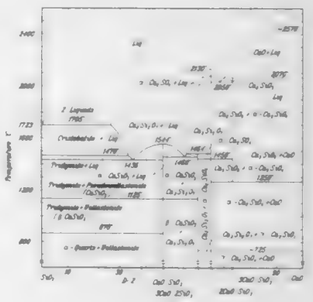
1. A process for manufacturing optical fibers including:
a step of extruding using extrusion die means producing transparent thermoplastic material in the form of a sheet extrusion having first and second surfaces wherein at least one of said surfaces includes a plurality of transversely shaped and spaced parallel grooves extending in the longitudinal direction of the extrusion and forming a planar array of connected fibers having geometrically-shaped cross-sections;
a step of rolling using polished roller means including first and second polished rollers rolling and imparting a polished surface to the extrusion, at least one of said rollers having upstanding circumferential ribs matching the shape and spacing of the grooves in the extrusion, each rib of said first roller contacting the second roller, thereby forming a geometrically-shaped channel imparting a polished surface to the fibers and parting the connected fibers into a plurality of separate elongated fibers having polished and geometrically-shaped cross-sections.

5,393,471
PROCESS FOR PRODUCING A PATTERN IN A GLAZE COMPOSITION AND PREPARATION OF A MOLD THEREFORE
Russell P. Rich, Lutherville, and James E. Whipps, Ellicott City, both of Md., assignors to The Burns & Russell Company, Baltimore, Md.
Filed Feb. 7, 1992, Ser. No. 831,246
Int. Cl.[6] C04B *41/91*; B44D *1/20*
U.S. Cl. 264—60 19 Claims



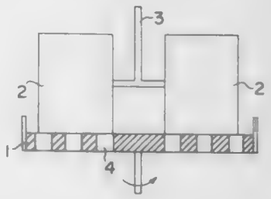
1. A process for producing a pattern in a glaze composition comprises:
providing a substrate of an at least partially cured fusible enameling composition, patterning said enameling composition by removing material therefrom to provide the desired pattern therein; then coating onto said enameling composition an uncured glaze composition in contact with said desired pattern in the enameling composition;
curing said glaze composition; and then separating the cured glaze composition from the enameling composition to thereby provide said pattern in the glaze composition.

5,393,472
METHOD OF PRODUCING WOLLASTONITE & CERAMIC BODIES CONTAINING WOLLASTONITE
John D. Shaw, 9760 Rainier Ave. South, Seattle, Wash. 98118
Filed Jun. 30, 1993, Ser. No. 86,332
Int. Cl.[6] C04B *35/64, 35/02*; C01B *33/24*
U.S. Cl. 264—63 16 Claims



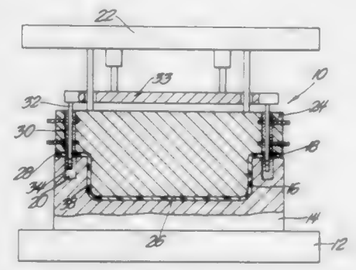
1. A method of preparing a product comprising wollastonite, comprising the steps of:
(a) mixing a dicalcium silicate slag, a silica source, and a fluxing agent to produce a batch mix; and then
(b) firing said batch mix at a sufficient temperature and for a sufficient time such that silica is consumed by dicalcium silicate from the dicalcium silicate slag thereby forming said product comprising wollastonite.

5,393,473
PROCESS FOR PELLETING ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE
Wolfgang Payer, Wesel; Maher Onallan, Oberhausen; Winfried Materne, Wetter, and Andreas Sobbe, Dinslaken, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany
Filed Mar. 29, 1993, Ser. No. 39,939
Claims priority, application Germany, Mar. 30, 1992, 4210351
Int. Cl.[6] B29B *9/00*; B29C *67/02*
U.S. Cl. 264—117 5 Claims



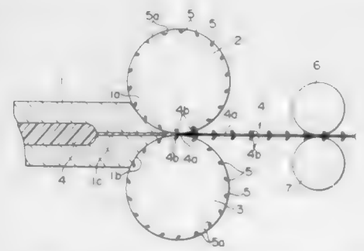
1. A process for pelletizing ultra-high molecular weight polyethylene comprising the steps of compacting a pulverulent material selected from the group consisting of ultra-high molecular weight polyethylene and mixtures thereof with other lower molecular weight polyethylenes by extrusion agglomeration in a die under pressure at temperatures of 100° to 150° C. over average residence times in the die of 2 to 40 seconds and at a compression ratio of 1:5 to 115 to obtain product extrudates, and dividing the product extrudates emerging from the die into pellets of the desired length.

5,393,474
METHOD FOR MOLDING A SHAPED PLASTIC TRIM PANEL
Steven L. Souders, Portsmouth, N.H., assignor to Davidson Textron Inc., Dover, N.H.
Filed Aug. 19, 1993, Ser. No. 108,230
Int. Cl.[6] B29C *43/40*
U.S. Cl. 264—163 3 Claims



1. A method for molding a shaped plastic trim panel in a molding press and trimming the shaped plastic trim panel in one continuous operation comprising the steps of:
molding a shaped plastic trim panel in a press having an upper mold member and a lower mold member in which one mold member has a severing slot outwardly of a molding surface and clamping shoulders on opposite sides of the severing slot and the other mold member has cooperating clamping shoulders that clamp a peripheral margin of the molded plastic trim panel that is shaped in the mold members, and
trimming the molded plastic trim panel while the molded plastic trim panel is still in the mold members with a cutting blade that moves relative to the other mold member from a retracted position to a protracted cutting position penetrating vertically into the severing slot to cut through the clamped peripheral margin of the shaped plastic trim panel between the clamping shoulders on opposite sides of the slot and trim the molded plastic trim panel.

5,393,475
METHOD AND APPARATUS FOR CONTINUOUSLY PRODUCING AN INTEGRALLY MOLDED DOUBLE-SIDED SURFACE FASTENER
Ryuichi Murasaki, and Hissai Nishiyama, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Filed Jun. 17, 1993, Ser. No. 77,431
Claims priority, application Japan, Jun. 17, 1992, 4-158286
Int. Cl.[6] B29C *59/04*
U.S. Cl. 264—167 10 Claims



1. A method for continuously producing an integrally molded double-sided surface fastener having a plate-like base portion with integrally molded engaging elements on a front and back surface thereof, comprising the steps of:

extruding a molten resin from an extrusion nozzle at a predetermined width,

introducing said molten resin extruded from said extrusion nozzle into a predetermined gap between upper and lower die rollers having a plurality of engaging element forming cavities on respective peripheries and cooling means in inner portions thereof and filling said molten resin in said cavities for said engaging elements,

concurrently driving said upper and lower die rollers in opposite rotary directions having tangent velocity directions at said gap in the extrusion direction of said molten resin to mold a plate-like base portion having a plurality of engaging elements integrally on both front and back surfaces thereof continuously and cooling said elements to a predetermined temperature, and

positively removing said engaging elements of said cooled resin molded articles from said cavities in the extrusion direction of said molten resin.

6. An apparatus for continuously producing an integrally molded double-sided surface fastener comprising:

an upper die roller and a lower die roller which are disposed up and down with a predetermined gap therebetween and which are respectively provided with a plurality of engaging element forming cavities on respective peripheries and cooling means located within the upper and lower rollers,

a driving means for concurrently rotating said upper and lower die rollers in opposite rotary directions having tangent velocity directions at said gap in a travelling direction of said surface fastener,

an extrusion nozzle for extruding a molten resin at a predetermined width, which is disposed on the upstream side of said upper and lower die rollers toward said gap, and

upper and lower drawing rollers which are disposed on the downstream side of said upper and lower die rollers and along an extrusion line of the molten resin extruded from said extrusion nozzle.

5,393,476

METHOD FOR PRODUCING CELLULOSE ESTER FILM

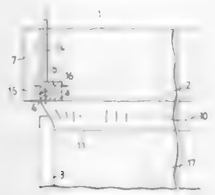
Yuji Suzuki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1992, Ser. No. 953,226

Claims priority, application Japan, Sep. 30, 1991, 3-276402

Int. Cl.[6] B29C *41/28*

U.S. Cl. 264—169 **7 Claims**



1. In a method for producing a film by extruding a solution through the slot of an extrusion die onto a support while dropping a liquid onto opposite edge portions of a flow of a film-forming solution emerging from said slot to prevent slugging of said film-forming solution, the improvement wherein said dropped liquid contains a poor solvent and a goc [illegible] solvent for a film-forming solute contained in said film-forming solution, said poor solvent being present in an amount in a range of 30% to 90% by weight relative to said good solvent, said film-forming solution being prepared by dissolving a cellulose ester, to which is added a small quantity of plasticizer, in an organic solvent containing methylene chloride as a main component, said good solvent being methylene chloride, and said poor solvent being selected from the group consisting of methanol, butanol, and acetone wherein said dropped liquid improves production efficiency by not requiring periodic cleaning of the support.

5,393,477

AIR GAP SPINNING PROCESS FOR ARAMIDS

Steven D. Ittel, and Hsiang Shih, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 1, 1993, Ser. No. 131,255

Int. Cl.[6] D01D *5/06;* **D01F** *6/60*

U.S. Cl. 264—184 **16 Claims**

1. A process for the air gap spinning of an aramid fiber from an aramid solution wherein a solution of an aramid polymer is forced through an orifice, then travels through a layer of gas into a coagulant to form an aramid polymer fiber, wherein the improvement comprises, an aqueous coagulant which contains from 1 ppm to about 1,000 ppm by weight of an organic polymer which acts as a drag reducer, provided that said organic polymer is soluble in said coagulant and has a molecular weight of 200,000 or more.

5,393,478

PROCESS FOR COAGULATION AND WASHING OF POLYBENZAZOLE FIBERS

Ashish Sen, Midland, Mich.; Katsuya Tani, Shiga, and Kazunori Katoh, Ohtsu, both of Japan, assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 20, 1993, Ser. No. 110,149

Int. Cl.[6] D01F *6/00*

U.S. Cl. 264—203 **17 Claims**

1. A process to coagulate and wash a polybenzazole dope fiber, which contains polybenzazole polymer and polyphosphoric acid, comprising the steps of:

(1) contacting the dope fiber with an acidic liquid coagulant,

(2) optionally contacting the fiber with a second liquid having a pH higher than the acidic liquid coagulant, and

(3) contacting the fiber with a hot leaching fluid, that is capable of removing residual phosphorous compounds, at a temperature of at least about 60° C.,

for a combined residence time in steps (1), (2) and (3) of no more than about 10 minutes, wherein the surface of the fiber is not allowed to dry prior to step (3) whereby a polybenzazole fiber containing no more than about 5000 ppm phosphorus is formed.

5,393,479

METHOD FOR SHAPING A TRIM COVER FABRIC FOR A VEHICLE SEAT

Phillip H. Nadeau, Waterford, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed May 27, 1993, Ser. No. 68,475

Int. Cl.[6] B29C *43/52, 43/18*

U.S. Cl. 264—219 **7 Claims**



1. A method for shaping a trim cover fabric for covering an "A" surface of a vehicle seat, comprising the steps of:

providing a forming tool which has a forming surface including a first portion that is complementary to a basic shape to be provided for said surface of said seat and a second portion defining a cavity;

providing a plurality of style line inserts which are individually useable with said forming tool, different ones of said style line inserts having different styling surfaces that are complementary to different desired stylized shapes to be provided for said surface of said seat;

selecting one of said style line inserts;

inserting the selected style line insert into said cavity in said forming surface of said forming tool to provide a forming tool assembly having a contoured upper surface including a portion defined by said forming tool which is complementary to a basic shape for said surface of said seat and an individually stylized portion defined by said selected style line insert which is complementary to a desired stylized shape for said surface of said seat;

positioning said trim cover fabric on said forming tool assembly;

providing a pressing tool which has a lower surface which is formed to be complementary to said forming surface of said forming tool and said styling surfaces of said plurality of style line inserts to enable said pressing tool to be used with a forming tool assembly that includes any style line insert of said plurality of style line inserts;

and pressing said cover fabric onto said forming tool assembly using said pressing tool to provide the desired stylized shape for the trim cover fabric.

5,393,480

CONTROL DEVICE FOR VULCANIZATION CHAMBERS IN VULCANIZATION PRESSES AND PROCESS PUT INTO PRACTICE BY SAID CONTROL DEVICE

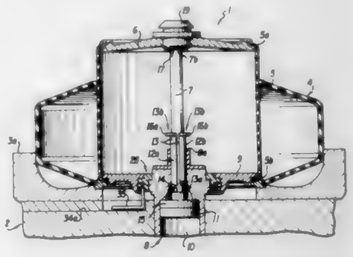
Augusto Pizzorno, Milan, Italy, assignor to Pirelli Coordinamento Pneumatici S.P.A., Milan, Italy

Filed Aug. 25, 1992, Ser. No. 934,392

Claims priority, application Italy, Aug. 30, 1991, MI91A 002323

Int. Cl.[6] B29D *30/06*

U.S. Cl. 264—315 **9 Claims**



1. A control device for extending a flexible substantially sleeve-shaped vulcanization chamber in a tire vulcanization press from an axially-expanded condition to a radially expanded condition and vice versa, comprising:

a fluid-operated actuator housed in a vulcanization press bed;

an elongated drive rod coaxially projecting from said fluid-operated actuator and mounted for movement in the direction of its longitudinal axis;

a lower piston housed in the actuator for moving said drive rod from a minimally drawn-out position to a maximally drawn-out position relative to said actuator;

a movable disc detachably mounted to a distal end of the drive rod and sealingly secured to an upper end edge of said vulcanization chamber;

a fixed disc, detachably mounted to the fluid-operated actuator and sealingly secured to a lower end edge of said vulcanization chamber;

first stop means to limit the positioning of the drive rod to the maximally drawn-out position;

second stop means to limit the positioning of the drive rod to the minimally drawn-out position;

a grasping head carried by said distal end of the drive rod and having first quick coupling means for detachably engaging the movable disc to the rod;

a grasping ring carried by said fluid-operated actuator and having second quick coupling means for detachably engaging said fixed disc;

said first stop means comprising said sleeve-shaped vulcanization chamber, the wall thereof reacting to tensile stress between the movable and fixed sealing discs so as to stop the movement of the drive rod at the maximally drawn-out position;

said second stop means comprising at least two semi-cylindrical elements positioned adjacent the drive rod at opposite sides thereof, so as to define a tubular locating sleeve which is slidably passed through by the drive rod, said locating sleeve having a lower end abutting a locating seat carried by the fluid-operated actuator and an upper end acting as an abutment seat for limiting a drive rod retraction stroke to said minimally drawn-out position.

8. A process for controlling the extension of a flexible substantially sleeve-shaped vulcanization chamber in a tire vulcanization press, said vulcanization chamber having an upper end edge engaged to a movable disc mounted on a drive rod and axially movable upon command of a fluid-operated actuator fastened to a vulcanization press bed, and a lower end edge engaged with a fixed disc which is fixed relative to said fluid-operated actuator, said process comprising the steps of:

moving the movable disc apart from the fixed disc upon action exerted by said fluid-operated actuator on said drive rod, so as to extend the vulcanization chamber to a substantially cylindrical conformation with the extension of the chamber acting as a first stop means;

stopping the movement of the movable disc away from the fixed disc when the longitudinal tensioning of the vulcanization chamber counteracts the thrust transmitted to the movable disc by said fluid-operated actuator;

moving the movable disc close to the fixed disc until in abutment with second stop means and simultaneously introducing a working fluid into the vulcanization chamber to cause the chamber to radially expand within a mold of said press; said second stop means comprising at least two semi-cylindrical elements positioned adjacent the drive rod at opposite sides thereof, so as to define a tubular locating sleeve which is slidably passed through by the drive rod, said locating sleeve having a lower end abutting a locating seat carried by the fluid-operated actuator and an upper end acting as an abutment seat for limiting a drive rod retraction stroke to a minimally drawn-out position.

5,393,481

LINING OF PIPELINES OR PASSAGEWAYS

Eric Wood, Castletown, Isle of Man, assignor to Insituform (Netherlands) BV, Rotterdam, Netherlands

PCT No. PCT/GB91/00628, § 371 Date Sep. 10, 1992, § 102(e) Date Sep. 10, 1992, PCT Pub. No. WO91/16568, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 22, 1991, Ser. No. 934,678

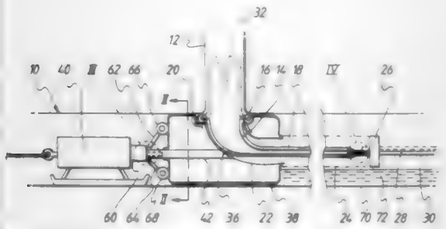
Claims priority, application United Kingdom, Apr. 23, 1990, 9009073

Int. Cl.[6] B29C *63/36*

U.S. Cl. 264—516 **8 Claims**

1. A method of lining a lateral pipe leading into a main pipe, wherein a resin impregnated lining is inserted into the lateral pipe from inside the main pipe using a fluid medium under pressure, and wherein a seal arrangement forms a seal at the location where the lateral meets the main pipe as curing of the resin takes place, and wherein the fluid medium is supplied to insert the lateral lining by means of a pressure pipe, and at least

one additional pressure pipe extends past the seal arrangement so that pressure fluid can be applied to another lateral lining



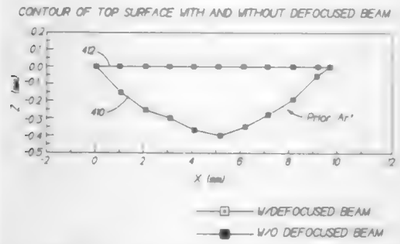
remote from the first mentioned lateral lining while curing of the first mentioned lateral lining is taking place.

5,393,482

METHOD FOR PERFORMING MULTIPLE BEAM LASER SINTERING EMPLOYING FOCUSSED AND DEFOCUSSED LASER BEAMS

John A. Benda, Amston, and Aristotle Parasco, Bolton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 20, 1993, Ser. No. 139,375
Int. Cl.[6] B22F *3/00*; H05B *1/00*
U.S. Cl. 419—1 **5 Claims**



1. A method of laser sintering, comprising the steps of:
directing a sintering laser beam onto a surface of a powder at a sintering location; and
directing at least one defocussed laser beam onto a defocussed region near said sintering location, said defocussed beam providing a predetermined temperature gradient between said sintering location and the surrounding powder.

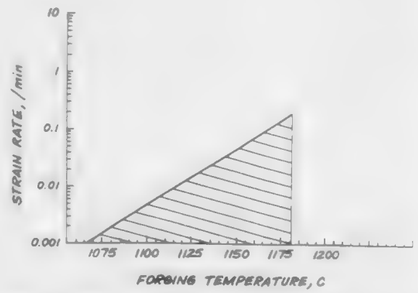
5,393,483

HIGH-TEMPERATURE FATIGUE-RESISTANT NICKEL BASED SUPERALLOY AND THERMOMECHANICAL PROCESS

Keh-Minn Chang, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1990, Ser. No. 502,951
Int. Cl.[6] B22F *3/00*; C22C *19/05*
U.S. Cl. 419—10 **14 Claims**

4. A method of preparing an article from a compact of a powdered nickel base superalloy having a gamma prime strengthening precipitate to increase the resistance to fatigue cracking in the article, comprising:
forming the compact from the powdered superalloy composition consisting essentially of, by weight percent, about 10 to 12 percent chromium, about 17 to 19 percent cobalt, about 1.5 to 3.5 percent molybdenum, about 4.5 to 6.5 percent tungsten, about 3.25 to 4.25 percent aluminum, about 3.25 to 4.25 percent titanium, about 2.5 to 3.5 percent tantalum, about 0.05 zirconium, about 0.05 carbon, about 0.02 boron, and balance essentially nickel;
isothermally forging the compact at a rate of straining and within a range of temperatures shown by the hatched area in FIG. **2**, to produce a permanent deformation of at least about 20 percent;
supersolvus annealing the forged compact at a temperature



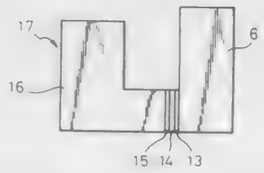
above about 1190° C. but below the incipient melting temperature of the alloy, for a period of time that essentially completely dissolves the gamma prime precipitate; and
slowly cooling the alloy from the supersolvus temperature.

5,393,484

PROCESS FOR PRODUCING SINTERED BODY AND MAGNET BASE

Yoshihiko Seyama, and Yutaka Shimizu, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 16, 1992, Ser. No. 961,857
Claims priority, application Japan, Oct. 18, 1991, 3-269864
Int. Cl.[6] B22F *1/00*
U.S. Cl. 419—37 **7 Claims**



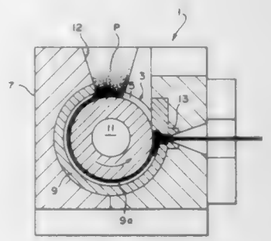
1. A process for producing a sintered body, comprising:
forming a first molded article of a first material;
inserting the first molded article in a mold for injection molding;
injection-molding a second material, comprising a raw material powder and a binder and which is identical to or different from that of the first material in the mold so that the injected material and the first molded article together form corresponding portions of a second molded article;
degreasing the second molded article; and
sintering the degreased article and thereby obtaining a sintered body having a difference in size, resulting from shrinkage, while controlling the amount of the shrinkage during the sintering by regulating the grain size of the raw material powder and the amount of the binder employed for the formation of the second molded article such that the difference in the respective amounts of the shrinkage during the sintering, as between the first molded article and the injection molded portion of the second molded article, is 5% or less.

5,393,485

PROCESS FOR THE PRODUCTION OF FOAMABLE METAL ELEMENTS

Helmut Wörz, Brixlegg, and Hans P. Degischer, Salzburg, both of Germany, assignors to Mepura Metallpulvergesellschaft M.G.H., Ranshofen, Austria

Filed Apr. 23, 1993, Ser. No. 51,397
Int. Cl.[6] B22F *3/00*
U.S. Cl. 419—41 **9 Claims**



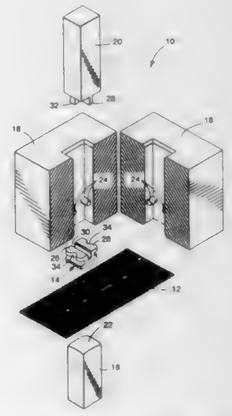
1. Process for the production of foamable metal elements, which may be foamed by decomposition of a foaming agent due to heating, comprising the steps of continuously introducing a powder mixture, of a metal powder with a foaming agent powder, into a channel leading to an extrusion die; bringing the powder mixture to an elevated temperature and precompacting before it is extruded through the die by utilizing a moving channel wall surface component to frictionally transport the powder mixture to the die; and extruding the powder mixture through the die with a degree of deformation of at least 5 to 1; wherein the speed of the moving channel wall surface component is selected so that heating necessary for the precompacting comes from heat generated by the frictional transport step.

5,393,486

METHOD FOR MAKING ORTHODONTIC APPLIANCE HAVING TEXTURED BONDING SURFACE

Robert P. Eckert, Hinckley, Ohio, and Evangelos G. Georgakis, Altaloma, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 9, 1993, Ser. No. 164,159
Int. Cl.[6] B22F *5/00*; B22C *7/02*
U.S. Cl. 419—66 **17 Claims**



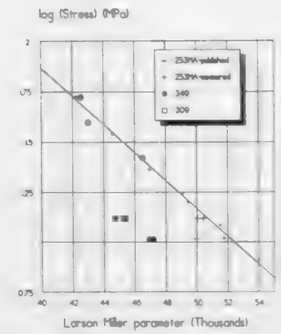
1. A method of making an orthodontic appliance preform comprising the steps of:
moving a web having a textured portion toward a cavity of orthodontic appliance preform forming tooling;
introducing a quantity of molding material into the cavity of the tooling;
forming the preform with the molding material in the cavity while a portion of the molding material is in contact with the textured portion of the web; and
degrading the textured portion of the web to remove the textured portion and thereby impart a textured surface on the preform.

5,393,487

STEEL ALLOY HAVING IMPROVED CREEP STRENGTH

Roy J. Matway; Michael F. McGuire, and Jay Mehta, all of Pittsburgh, Pa., assignors to J & L Specialty Products Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1993, Ser. No. 107,275
Int. Cl.[6] C22C *38/48*
U.S. Cl. 420—43 **5 Claims**



1. An austenitic steel, said austenitic steel having improved creep strength at temperatures below 800° C. and consisting essentially of the following alloying elements:
C:0.10%
Si:more than 1% but not greater than 2%
Mn:not greater than 3%
Cr:15–25%
Ni:10–18%
Cb:more than 0.20%, but not greater than 0.75%
N:more than 0.10%, but not greater than 0.25%
Mo:less than 1%
B:greater than 0.001%, but less than 0.0025%, the amounts of said alloying elements being adjusted to result in an austenitic microstructure, and a balance of iron and other nonessential elements and impurities.

5,393,488

HIGH STRENGTH, HIGH FATIGUE STRUCTURAL STEEL

Mark A. Rhoads, Cincinnati; Edward L. Raymond, Maineville, both of Ohio, and Warren M. Garrison, Jr., Pittsburgh, Pa., assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 6, 1993, Ser. No. 102,923
Int. Cl.[6] C22C *38/52*
U.S. Cl. 420—95 **16 Claims**

1. A high strength, fatigue-resistant steel alloy which is substantially free of titanium nitride and titanium carbonitride precipitates, the steel alloy comprising:
about 10 to about 18 weight percent nickel;
about 8 to about 16 weight percent cobalt;
about 1 to about 5 weight percent molybdenum;
about 0.5 to about 1.3 weight percent aluminum;
about 1 to about 3 weight percent chromium;
up to about 0.3 weight percent carbon;
less than about 0.10 weight percent titanium; and

the balance being essentially iron with trace amounts of ordinarily present elements;

whereby the presence of molybdenum, aluminum, chromium, and carbon within the steel alloy provide duplex strengthening through the formation of a fine dispersion of intermetallic precipitates and carbides so as to enhance the yield strength of the steel alloy, and whereby the fatigue properties of the steel alloy are enhanced by the substantial absence of titanium within the steel alloy which precludes the formation of the titanium nitride and titanium carbonitride precipitates within the steel alloy.

5,393,489

HIGH TEMPERATURE, LEAD-FREE, TIN BASED SOLDER COMPOSITION

Stephen G. Gonya; James K. Lake, both of Endicott, N.Y.; Randy C. Long, Friendsville, Pa., and Roger N. Wild, Owego, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1993, Ser. No. 79,075
Int. Cl.[6] C22C *13/00*

U.S. Cl. 420—561 **1 Claim**

1. A high solidus temperature, high service temperature, high strength multi-component solder alloy consisting of 93.5 to 94.0 weight % Sn, 2.5 to 3.0 weight % Ag, 1.0 to 2.0 weight percent Bi, 1.0 to 2.0 weight percent Sb, and 1.0 weight percent Cu.

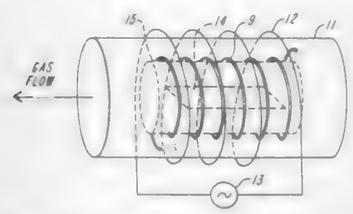
5,393,490

PROCESS FOR DRY STERILIZATION OF MEDICAL DEVICES AND MATERIALS

Adir Jacob, Framingham, Mass., assignor to MDT Corporation, Torrance, Calif.

Division of Ser. No. 42,136, Apr. 2, 1993, Pat. No. 5,302,343, which is a continuation of Ser. No. 762,573, Sep. 19, 1991, Pat. No. 5,200,158, which is a continuation of Ser. No. 562,392, Aug. 3, 1990, Pat. No. 5,171,525, which is a continuation of Ser. No. 331,438, Mar. 31, 1989, Pat. No. 4,976,920, which is a continuation-in-part of Ser. No. 72,899, Jul. 14, 1987, Pat. No. 4,818,488, which is a continuation-in-part of Ser. No. 19,134, Feb. 25, 1987, Pat. No. 4,801,427. This application Jan. 18, 1994, Ser. No. 183,281
The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.
Int. Cl.[6] A61L *2/14*

U.S. Cl. 422—22 **34 Claims**



1. A method for sterilizing a surface of an object, comprising: locating said object within a confined space and providing a plasma within a portion of said confined space, said plasma including both charged and electrically neutral active species;

maintaining a barrier between said object and said plasma within said confined space, said barrier constituting means for substantially isolating said object from said charged species while permitting contact of said surface by a portion of said neutral species; and

maintaining said plasma within said portion of said confined space for a sufficient duration to effect sterilization of said surface at a temperature below that which would be detrimental to said surface.

5,393,491

USE OF AMIDOAMINES IN OPHTHALMIC COMPOSITIONS

Nissanke L. Dassanayake, Arlington; Ronald L. Schlitzer, Forth Worth, and Joonsup Park, Arlington, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Sep. 22, 1993, Ser. No. 125,629
Int. Cl.[6] A01N *33/02;* **A61L** *2/18*

U.S. Cl. 422—28 **18 Claims**

9. A method of disinfecting a contact lens which comprises immersing the lens in an antimicrobial composition for a time sufficient to disinfect the lens, said composition comprising an amount of a compound of the following formula effective to disinfect the lens:

$$R^1-\overset{\overset{O}{\|}}{C}-NH-(CH_2)_n-N-(R^2)_2 \qquad (I)$$

wherein:

R^1 is C_6-C_{18} saturated or unsaturated alkyl, alkylaryl, or alkoxyaryl;

n is 2 to 16; and

R^2 is C_1-C_8 saturated or unsaturated alkyl or alkanol, or a pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable vehicle therefor.

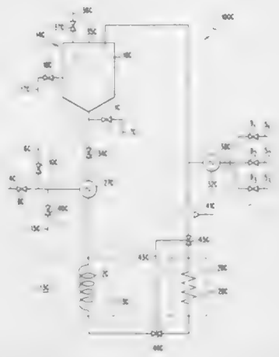
5,393,492

MICROWAVE CHEMICAL REACTOR FOR SAMPLE ANALYSIS

Jean-Louis Di Martino, Briare; Patrick Jacquault, Sevres; Jean-Louis Millet, Thiais, and Jacques Paturat, Briare, all of France, assignors to Societe Prolabo, Paris Cedex, France

Continuation of Ser. No. 735,314, Jul. 24, 1991, abandoned. This application Dec. 20, 1993, Ser. No. 169,540
Claims priority, application France, Jul. 24, 1990, 90 09663
Int. Cl.[6] G01N *22/00;* **B01J** *19/12*

U.S. Cl. 422—62 **4 Claims**



1. Apparatus for carrying out a chemical reaction by a wet method on a succession of samples, said apparatus comprising:

a looped circuit;

a microwave chamber;

a reaction chamber positioned in said microwave chamber and communicating with said circuit;

a sample feed pipe communicating with said circuit upstream of said reaction chamber and connected to a source of samples;

a reactant feed pipe communicating with said circuit upstream of said reaction chamber and connected to a source of reactants;

a rinsing liquid feed pipe communicative with said circuit upstream of said reaction chamber and connected to a source of rinsing liquid;

valves disposed respectively in said sample feed pipe, said reactant feed pipe, and said rinsing liquid feed pipe;

an outflow pipe communicating with said reaction chamber for conducting a product of a reaction occurring in said reaction chamber;

circulation means for inducting a forced circulation through said circuit, said circulation means comprising a pump including first and second barrels each having an inlet and an outlet communicating with said circuit, valve means operably connected to said first and second barrels for alternately connecting each barrel to its inlet and outlet, first and second plungers each having a plunging end and a driven end, each plunging end disposed for reciprocation in a respective barrel for performing retraction and extension strokes while said respective barrel is connected to its inlet and outlet, respectively, a rotationally driven cam having an endless cam surface means, said driven ends of said first and second plungers being arranged to slidably engage said cam surface means at locations thereon for being reciprocated 180 degrees out of phase;

cooling means for cooling the product of reaction, said cooling means including an inlet and an outlet, said inlet communicating with said outflow pipe for receiving the product of reaction to be cooled;

a shunt disposed outside of said cooling means and communicating with said inlet and outlet of said cooling means by valves actuable for enabling the product of reaction to bypass said cooling means;

monitoring means connected to said outlet of said cooling means for monitoring the progress of the reaction; and

an expansion vessel disposed downstream of said monitoring means for receiving the product of reaction and supplying same to said reaction vessel, said expansion vessel including a leakproof lid and a valved vent.

5,393,493

ANALYTICAL ELEMENT FOR WHOLE BLOOD

Yoshihiko Makino; Kaoru Terashima; Toru Kitani, and Naofumi Hora, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 833,807, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 476,955, Feb. 8, 1990, abandoned. This application Dec. 15, 1992, Ser. No. 993,459
Claims priority, application Japan, Feb. 9, 1989, 1-30408; Mar. 30, 1989, 1-80108
Int. Cl.[6] G01N *33/52, 21/78*

U.S. Cl. 422—56 **5 Claims**

1. An integral multilayer analytical element which comprises a first fibrous porous layer, a nonfibrous porous layer of a membrane filter composed of a blushed polymer prepared by a phase separation method, a free side surface of the filter being disposed on the side facing the first fibrous porous layer, a pore size of the filter being the smallest in the vicinity of the free surface, and a second fibrous porous layer superposed in this order onto a water-impermeable light-transmissive support, the second fibrous porous layer and the nonfibrous porous layer acting as a blood cell separating layer which limits a hematocrit value of a blood sample from effecting an analysis thereof, the above three porous layers being integrally laminated to each other substantially closely by an adhesive discontinuously disposed so as to form microspaces continuing through from one layer to the next so as not to interfere with the approximately uniform permeation of liquid, and a reagent composition which produces an optically detectable change in the presence of an analyte being incorporated in at least one of said three porous layers wherein the first fibrous porous layer has a pore size which is larger than the pore size of the nonfibrous porous layer.

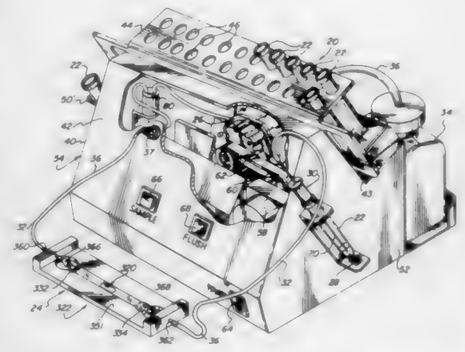
5,393,494

APPARATUS FOR DRAWING FLUID SAMPLE, COMPONENTS THEREOF, AND SLIDE ASSEMBLY FOR USE THEREWITH

Walter Greenfield, Scarsdale, N.Y.; Edward G. Kearns, North Haven, and James E. Kemble, Madison, both of Conn., assignors to DiaSys Corporation, Waterbury, Conn.

Continuation-in-part of Ser. No. 889,630, May 28, 1992, Pat. No. 5,248,480. This application Apr. 14, 1993, Ser. No. 48,905
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[6] B01F *11/00*

U.S. Cl. 422—68/1 **24 Claims**



1. An apparatus for drawing a sample of test fluid inside a container through a slide assembly for analysis with a microscope comprising:

a flushing fluid supply;

pump means for pumping fluid between the container and said flushing fluid supply;

reusable slide means having a viewing chamber for holding a fluid sample for direct viewing of the fluid sample by the microscope; said reusable slide means being removably mountable to the microscope; said reusable slide means including an elongate optical glass enclosure having upper and lower substantially flat walls spaced-apart from each other to form an elongate viewing chamber with the spacing between the substantially flat walls being commensurate with that required for said test fluid to move into the viewing chamber for effective viewing with the microscope for test fluid analysis;

said elongate optical glass enclosure having integral end-located glass ports which are generally in longitudinal alignment with the elongate viewing chamber so as to present smooth passage to the flow of fluid;

flexible tubing means for establishing fluid flow communication between the container and said reusable slide means and between the reusable slide means and said pump means;

means for activating the pump means in one operative direction for a sufficient time so as to draw a sample of test fluid from the container through the viewing chamber of the glass enclosure without passing into the flushing fluid supply;

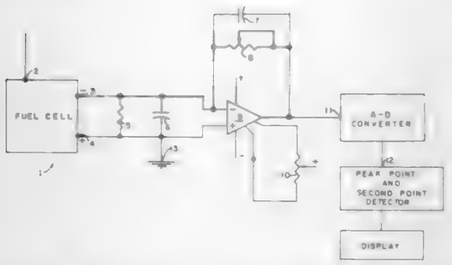
means for activating the pump means in another operative direction for pumping flushing fluid from the flushing fluid supply through the viewing chamber to flush the test fluid sample therefrom into said container.

5,393,495

METHOD AND APPARATUS FOR TESTING GASES, PARTICULARLY BREATH ALCOHOL

Glenn C. Forrester, Oakland, Calif., assignor to Intoximeters, Inc., St. Louis, Mo.

Filed Aug. 17, 1992, Ser. No. 931,069
Int. Cl.[6] G01N *33/497*
U.S. Cl. 422—83 13 Claims



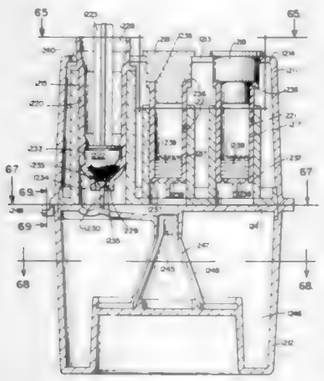
1. In the method of measuring the concentration of a reactant in a gaseous sample in which the sample is introduced to a fuel cell, the reactant is reacted at the fuel cell, and an electrical output from the fuel cell resulting from reaction of the reactant is measured, the output rising to a peak and thereafter falling to a substantially steady minimum base to form a curve, the improvement comprising fitting the electrical output to a log-normal curve, said method including a step of determining said peak of said curve, a step of determining a point on said curve between said peak and said minimum, and a step of calculating the entire area under the curve from the identification of said peak and said point.

5,393,496

SALIVA SAMPLING DEVICE AND SAMPLE ADEQUACY SYSTEM

Eugene H. Seymour, Pacific Palisades, Calif., assignor to Saliva Diagnostic Systems, Inc., Vancouver, Wash.

Continuation-in-part of Ser. No. 838,609, Feb. 19, 1992, Pat. No. 5,268,148, which is a continuation-in-part of Ser. No. 775,195, Oct. 11, 1991, Pat. No. 5,283,038, and Ser. No. 831,776, Feb. 5, 1992, Pat. No. 5,260,031, which is a continuation-in-part of Ser. No. 722,333, Jun. 25, 1991, abandoned, and Ser. No. 629,278, Dec. 18, 1990, abandoned. This application Mar. 24, 1992, Ser. No. 857,574
Int. Cl.[6] G01N *33/48;* C12M *1/30, 1/28*
U.S. Cl. 422—101 2 Claims



1. A saliva sampling device comprising:

a. a first hollow, cylindrical member having a innerly overhanging peripheral circular rim with a curved notch therein;

b. a second hollow, cylindrical member having a top flat member which has a drain with a seal-breaking member disposed therein, said first hollow, cylindrical member being coupled to said second hollow, cylindrical member whereby said curved notch in said innerly overhanging peripheral circular rim is aligned with said seal-breaking member in said drain;

c. a rotatable cylinder, which has a first bore and a plurality of second bores, disposed in and rotatively coupled to said first hollow, cylindrical member whereby each of said first and second bores may selectively aligned with said curved notch in said innerly overhanging peripheral circular rim;

d. a sample container having an open end and a closed end with a breakable seal being disposed at said closed end, said sample container being inserted into said first bore of said rotatable cylinder;

e. a buffering solution contained in said sample container;

f. a saliva collector which selectively receives a sample of saliva, said saliva collector being inserted into said sample container whereby said buffering solution and the sample of saliva mix together and when said curved notch is aligned with said first bore said sample container is pressed downward so that said seal-breaking member breaks said breakable seal in order for said mixture of said buffering solution and the sample of saliva to flow into said drain in said top flat member of said second hollow, cylindrical member;

g. a plurality of reagent containers each of which has an open end, which is closed by a cap, and a closed end with a breakable seal being disposed at said closed end and each of which contains a pre-selected reagent solution and is inserted into one of said second bores of said rotatable cylinder whereby when said curved notch is selectively aligned with each of said second bores so that one of said reagent containers is selectively pressed downward so that said seal-breaking member breaks said breakable seal thereof in order for said pre-selected reagent solution to flow into said drain in said top flat member of said second hollow, cylindrical member and mix together with said mixture of said buffering solution and the sample of saliva.

5,393,497

DEVICE FOR CONTAINING AND OPENING A GLASS AMPULE AND FOR TRANSFERRING LIQUID WITHIN THE AMPULE TO A CONTAINER

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Continuation of Ser. No. 948,290, Sep. 21, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 187,369
Int. Cl.[6] B65D *1/09, 83/00, 83/35, 83/42*
U.S. Cl. 422—103 23 Claims

1. A device for containing and opening a glass ampule containing a liquid, and for transferring a portion of the liquid to the interior of a container, the ampule including a base, a tip and a neck therebetween, the device comprising;

an ampule containing a liquid and having a base, a tip, and a neck therebetween;

a container having an interior containing a pharmaceutical component, the pharmaceutical component being a substrate other than the liquid;

means for increasing the pressure in the region to a pressure above ambient pressure

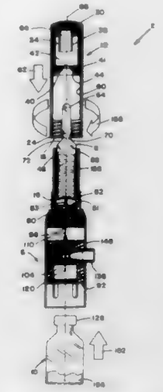
a body to which the container is mountable;

means, coupled to the body, for housing the ampule in a region;

means for breaking the ampule so that the liquid in the ampule flows into the region;

means for fluidly coupling the region to the interior of the container along a flow path so that the liquid in the region flows into the interior of the container; and

a pierceable septum positioned along the fluid path for fluidly accessing the interior of the container, the pierceable septum being exposed so that a syringe may be used to pierce the septum and extract a liquid mixture from the container.

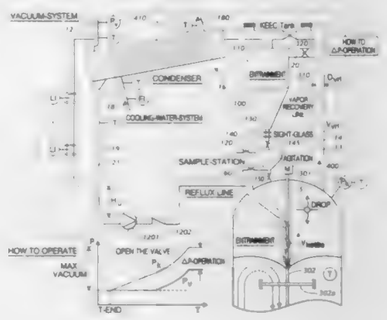


5,393,498

CONDENSER COOLING AND TEMPERATURE CONTROL SYSTEM

Kai Lieberam, 1307 Countryside Pl., Smyrna, Ga. 30080

Continuation of Ser. No. 311,290, Feb. 16, 1989, abandoned. This application Feb. 13, 1990, Ser. No. 479,194
The portion of the term of this patent subsequent to Oct. 13, 2003, has been disclaimed.
Int. Cl.[6] G05D *16/04;* C08F *2/10*
U.S. Cl. 422—112 5 Claims



1. A condenser cooling and temperature control system for condensing the vapor resulting from the processing of a boiling resin batch, comprising:

(a) an enclosed container for cooking and cooling the resin batch, and including a first opening in said container for receiving a vapor recovery line means and a second opening in said container for receiving a reflux line means;

(b) a condenser means for condensing the vapor produced during the processing of a boiling resin batch in the container;

(c) a vapor recovery line means in communication with said first opening and with the condenser means whereby vapor and particles resulting from the processing of the resin batch are permitted to escape from the container and vapor is transported to the condenser means;

(d) a vacuum pump means and a vacuum line located downstream of said condenser means establishing a pressure differential between said condenser means and said vacuum line whereby the vapor and particles from the processing of the batch are drawn from the container through the vapor recovery line means and through the condenser means;

(e) a reflux line means for carrying a condensate from the condenser means to the enclosed container, said reflux line means having a positive pressure;

(f) an entrainment extraction means providing removal of particles from the vapor drawn from the container and introduced into the vapor recover line means, said entrainment extraction means being located upstream of said condenser means;

(g) a means for determining the pressure differential between the container and the vacuum line; and

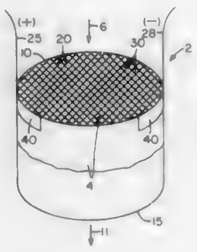
(h) at least one alternative vapor recovery line means for routing vapor and particles resulting from the processing of the batch from said container to said condenser means, and a flow directing means in communication with said alternative vapor recovery line means, wherein said entrainment extraction means is by-passed in response to a reduction of said pressure differential by a predetermined amount.

5,393,499

HEATED CELLULAR SUBSTRATES

Rodney D. Bagley, Big Flats; Gaylord L. Francis, Painted Post, both of N.Y., and Andrew Herczog, Melbourne, Fla., assignors to Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 893,256, Jun. 3, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 161,126
Int. Cl.[6] F01N *3/10*
U.S. Cl. 422—174 23 Claims



1. A resistive heating device comprising:

a cellular substrate having inlet and outlet end faces, and a matrix of cell walls defining a plurality of cells or passageways extending longitudinally and mutually parallel therethrough between the inlet and outlet end faces;

a continuous layer of electrically conductive material formed on the cell walls on the inlet end portion of the substrate such that the layer of conductive material is an integral part of the substrate;

catalyst formed on the substrate; and

an activating device selected from the group consisting of an electrical switch and an electromagnetic energy generator.

5,393,500

APPARATUS FOR TREATING INFECTIOUS MEDICAL WASTES WITH MICROWAVES AND HOT AIR

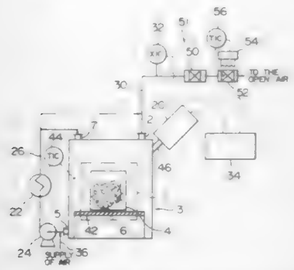
Takashi Kameda; Shigenori Kataoka, and Koichi Noma, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Continuation of Ser. No. 827,620, Jan. 29, 1992, Pat. No. 5,322,603. This application Mar. 8, 1993, Ser. No. 27,797

Claims priority, application Japan, Jul. 11, 1991, 3-197162; Jul. 11, 1991, 3-197163; Jul. 16, 1991, 3-201235; Jul. 18, 1991, 3-203456

Int. Cl.[6] **B01J** *19/02*

U.S. Cl. 422—186 **10 Claims**



1. Apparatus for treating medical wastes comprising:

a sealable heating chamber having an introduction door, a hot air outlet and a hot air inlet;

a waste receiving vessel in said heating chamber, said waste receiving vessel having hot air passage holes;

a microwave generating device connected to said heating chamber;

a hot air circulating portion interconnecting said hot air outlet and said hot air inlet of said heating chamber, said hot air circulating portion having a hot air heater and a hot air circulating blower;

a sealing plate provided at an opening of said waste receiving vessel so as to seal said waste receiving vessel, said sealing plate having a hot air inlet port;

a sealing plate moving device for moving said sealing plate relative to said opening; and

hot air introduction means interconnecting said hot air inlet of said heating chamber and said hot air inlet port of said sealing plate.

5,393,501

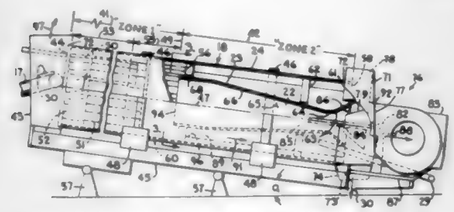
MATERIAL REMEDIATION IN MULTI-FUNCTION HEATING DRUM

Lawrence G. Clawson, Dover, Mass., and Joseph E. Musil, Ely, Iowa, assignors to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Oct. 13, 1993, Ser. No. 135,917

Int. Cl.[6] **A61L** *2/06*

U.S. Cl. 422—187 **14 Claims**



1. Material remediation apparatus comprising:

a material remediation drum assembly including a drum having a material intake end and a material discharge end, a first heating zone disposed within the drum and adjacent to the material intake end and extending from the material intake end inward into the drum, and a second heating zone disposed within the drum and adjacent to the material discharge end, a combustion chamber tube having a gas intake end adjacent to the material discharge end of the drum, a gas outflow end internally of the drum and being disposed concentrically within the drum and within the second heating zone thereof, the length of the second heating zone and the length of the combustion chamber tube within the drum coinciding with each other and extending to the first heating zone, the combustion chamber tube enclosing longitudinally of the drum a centrally disposed combustion chamber and forming with the drum an annular space between the drum and the combustion chamber tube for accommodating gas flow and material moving from the material intake end to the material discharge end of the drum, and means for moving the material from the material intake end through the first heating zone of the drum and then through the annular space in the second heating zone of the drum to the material discharge end;

a burner assembly disposed at the material discharge end of the drum, the burner assembly including means for generating a combustible mixture of gases and for directing the generated combustible mixture of gases from the material discharge end into the material remediation drum assembly to flow into the combustion chamber tube toward the first heating zone of the material remediation drum assembly;

means, communicatively disposed with respect to the generated combustible mixture of gases, for igniting the generated combustible mixture of gases and generating a stream of combustion gases within the combustion chamber tube, the stream of combustion gases extending through the first heating zone in a counterflow direction to the flow of material therethrough; and

means, including the combustion chamber tube, for inducing a gaseous reflow of a portion of the combustion gases to be diverted through the annular space between the drum and the combustion chamber tube in the direction toward the material discharge end of the drum, and through the gas intake end into the combustion chamber tube.

5,393,502

SOLUBILIZING APPARATUS

Steven L. Miller, Shelbyville, and Kerry L. Embry, Louisville, both of Ky., assignors to International Purification Systems, Inc., Louisville, Ky.

Filed Sep. 7, 1993, Ser. No. 117,505

Int. Cl.[6] **B01D** *11/02;* **B05B** *1/34;* **G05D** *11/02*

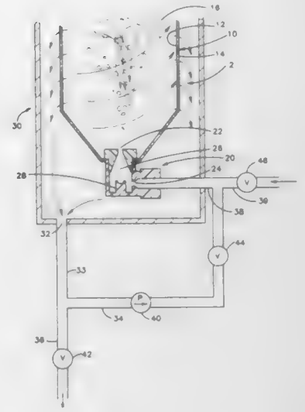
U.S. Cl. 422—261 **5 Claims**

1. A solubilizing apparatus comprising:

a solubilizing container having a fluid permeable sleeve having an inner fluid permeable wall, said permeable sleeve comprising a porous pipe made of sintered polypropolyene beads having a nominal pore diameter of from 100 to 150 microns;

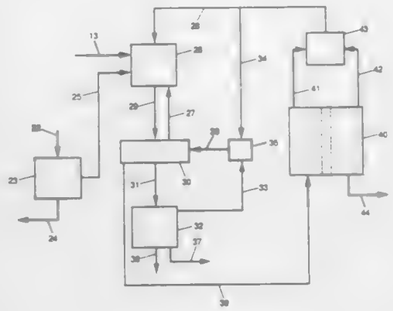
a fluid inlet at a bottom of said container;

a fluid spray means within said container in fluid communication with said fluid inlet connected to a bottom end of said permeable sleeve, said spray means including means for spraying fluid in an upwardly pattern sweeping against the inner wall of the permeable sleeve with a vortex at a center of said pattern, said pattern having a higher flow velocity at an outer extremity and at the center; and



means to add a substance to be solubilized to a top of said permeable sleeve.

(C) reacting said solid sodium sulfate and said solid sodium bisulfate with an aqueous solution of hydrogen chloride to produce sodium chloride, which precipitates, and an aqueous solution of sulfuric acid which contains hydrogen chloride and hexavalent chromium;



(D) separating said sodium chloride precipitate from said aqueous solution of sulfuric acid;

(E) heating said aqueous solution of sulfuric acid to a temperature sufficient to evaporate hydrogen chloride therefrom; and

(F) further heating said aqueous solution of sulfuric acid to evaporate water and precipitate chromic sulfate, $Cr_2(SO_4)_3$.

5,393,503

PROCESS FOR MAKING CHROMIC ACID

Harry F. Buckholtz, Lewiston, and Daniel J. Jaszka, Tonawanda, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Sep. 9, 1991, Ser. No. 756,748

Int. Cl.[6] **C01G** *37/00, 37/14;* **C01B** *7/01, 17/96*

U.S. Cl. 423—55 **15 Claims**

15. In a first process wherein sodium chromate is reacted with aqueous sulfuric acid to produce an aqueous solution of sodium bichromate and solid sodium sulfate contaminated with hexavalent chromium, and said solid sodium sulfate is separated from said solution, and in a second process wherein said sodium bichromate is reacted with aqueous sulfuric acid to produce chromic acid, which precipitates, and an aqueous solution of sodium bisulfate contaminated with hexavalent chromium, the improvement comprising

(A) crystallizing said sodium bisulfate and separating solid sodium bisulfate from said aqueous solution thereof;

(B) returning said aqueous solution from step (A) to said second process;

5,393,504

Patent Not Issued For This Number

5,393,505

PROCESS FOR INCREASING THE ACID GAS ABSORPTION CAPACITY OF CONTAMINATED ALKANOLAMINE SOLUTIONS

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 856,265, Mar. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 802,586, Dec. 5, 1991, Pat. No. 5,292,493, which is a continuation-in-part of Ser. No. 628,310, Dec. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 542,282, Jun. 22, 1990, abandoned, which is a continuation of Ser. No. 288,392, Dec. 22, 1988, abandoned, which is a division of Ser. No. 113,316, Oct. 28, 1987, Pat. No. 4,795,565. This application Jul. 19, 1993, Ser. No. 95,569

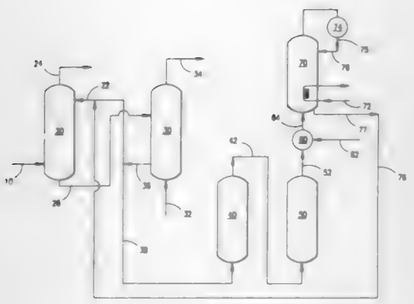
Int. Cl.[6] **C01B** *17/16;* **C08J** *5/20*

U.S. Cl. 423—228 **14 Claims**

1. A process for rejuvenating a spent aqueous alkanolamine solution comprising the steps of:

(a) providing a fresh aqueous alkanolamine solution having alkanolamine concentration sufficient to effectively sorb an acid gas selected from the group consisting of H_2S, CO_2, or both from a gaseous hydrocarbon stream having H_2S, CO_2, or both dissolved therein;

(b) contacting said fresh aqueous alkanolamine solution with said hydrocarbon gas stream of step (a) whereby said fresh aqueous alkanolamine solution is enriched in said acid gas sorbed from said gaseous hydrocarbon stream;



(c) stripping said acid gas from said enriched alkanolamine solution to produce an acid-lean alkanolamine solution;

(d) recycling said acid-lean alkanolamine solution of step (c) to said contacting step (b);

(e) sequentially repeating steps (b), (c), and (d) to evolve a spent alkanolamine solution which, in its acid-lean form, is characterized by reduced acid gas sorption capacity in comparison with said fresh aqueous alkanolamine solution;

(f) removing inorganic ions from said spent alkanolamine solution;

(g) heating said spent alkanolamine solution of step (f) at temperature of from about 220° to about 275° C. for time of from about 0.25 to about 2 hours in the absence of added catalyst;

(h) admixing said heat-treated spent alkanolamine solution of step (g) with an aqueous solution containing from about 0.1 to about 20 weight percent of at least one alkyl-substituted ammonium-containing organic base which evolves no inorganic ionic constitutent upon dissolution in said spent alkanolamine solution and heating said admixture to reflux for time sufficient to produce a rejuvenated alkanolamine solution having at least about 80% of the acid gas sorption capacity of said fresh alkanolamine solution whereby the content of inorganic ionic constituent in said rejuvenated alkanolamine solution is less than when the same process is carried out with a base which forms an inorganic ionic constituent;

(i) charging said rejuvenated alkanolamine solution to said recycling step (d).

5,393,506

METHOD FOR THE MANUFACTURING OF ALKALI MONOFLUOROPHOSPHATE

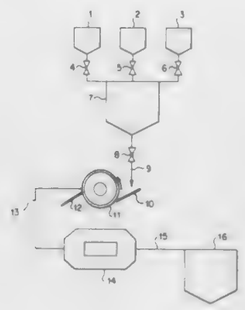
Hans-Walter Swidersky; Werner Rudolph, both of Hanover; Ulrich Hartmann, Witzenhausen; Frank Moewius, Berlin; Veronika Radonz, Blankenfelde, and Manfred Meisel, Berlin, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hanover, Germany

PCT No. PCT/EP90/02304, § 371 Date Oct. 7, 1993, § 102(e) Date Oct. 7, 1993, PCT Pub. No. WO92/11201, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 24, 1990, Ser. No. 81,247

Int. Cl.[6] C01B *25/10*

U.S. Cl. 423—301 **19 Claims**



1. A method of manufacturing an alkali monofluorophosphate corresponding to the formula:

$$M_2PO_3F \quad (I)$$

wherein M represents a cation of a Group I metal, said method comprising:

forming a reaction mixture comprising alkali metal cations M, phosphate P, fluoride F and water wherein the molar ratio of M:P:F is (2±0.1):(1±0.05):(1±0.1), and the molar ratio of water:P is at least 1:1;

heating said reaction mixture to a temperature of from 150° C. to 400° C., whereby said alkali monofluorophosphate of formula (I) is formed as a reaction product while water is evaporated, and

isolating the alkali monofluorophosphate reaction product

5,393,507

SILICATE PRODUCTS

Joseph P. H. Theunissen, Eijsden, and Theo Osinga, An Cadier En Keer, both of Netherlands, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Continuation of Ser. No. 775,931, Dec. 31, 1991, abandoned. This application Mar. 3, 1993, Ser. No. 25,733

Claims priority, application United Kingdom, Mar. 1, 1990, 9004562

Int. Cl.[6] C01B *33/32*

U.S. Cl. 223—332 **6 Claims**

1. A method of treating compacted sodium silicate granules, having a mole ratio SiO_2/Na_2O of from about 1.5 to about 3.3:1 and an average particle size in the range from about 0.3 mm to about 2.0 mm, wherein the granules are heated in the presence of water to a temperature above about 60° C. in an agitated bed whereby the bulk density of the granules is increased and substantially no agglomeration takes place and attrition properties are improved.

5,393,508

VAPORIZATION OF SOLUTIONS OF HYDRAZINE HYDRATE

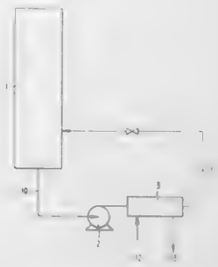
Gerard Krempf, Lyons; Bertrand Collier, La Barthe De Neste; Pierre Tellier, Sainte Foy Les Lyons, and Jean-Pierre Pleuvry, La Barthe De Neste, all of France, assignors to Atochem, Puteaux, France

Continuation of Ser. No. 621,969, Dec. 4, 1990, abandoned. This application Sep. 10, 1993, Ser. No. 118,775

Claims priority, application France, Dec. 4, 1989, 89 15968

Int. Cl.[6] C01B *21/16*

U.S. Cl. 423—407 **16 Claims**



9. A process for the production of a concentrated solution of hydrazine hydrate comprising (a) hydrolyzing an azine or a hydrazone into a solution of hydrazine hydrate in a distillation column, (b) introducing a stream of hydrazine hydrate from said distillation column into an external loop to the distillation column, (c) vaporizing hydrazine hydrate in said external loop, without concomitant decomposition by heating said solution introduced into said loop at a temperature of between 130° C. and 220° C. in the loop while maintaining said hydrazine hydrate in the liquid phase and then decompressing the heated solution to volatilize at least a portion of said heated hydrazine hydrate, (d) recycling the volatilized portion of said heated solution and remaining solution to said distillation column and (e) removing concentrated hydrazine hydrate from said distillation column.

5,393,509

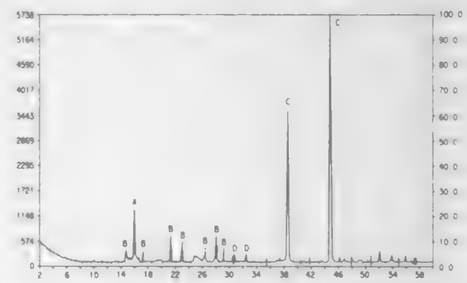
CRYSTALLINE PHASES OF $ALF_k(OH)_{3-k}$ AND $HALF_4$

David R. Corbin, West Chester, Pa.; Norman Herron, Newark, Del., and David L. Thorn, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 978,644, Nov. 19, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 126,276

Int. Cl.[6] C01F *7/50*

U.S. Cl. 423—465 **4 Claims**



1. A compound comprising $AlF_k(OH)_{3-k}$ having space group Fd3m wherein k is 2.2 to about 3 having a unit cell parameter a of from about 9.55 to about 9.75 Å (0.955 to 0.975 nm) at 25° C.

5,393,510

HIGH SOLIDS CONTENT TITANIUM DIOXIDE SUSPENSION

Siegfried Blumel, Ratingen; Achim Hartmann, Pulheim; Hans Thumm, Leverkusen; Hans-Hermann Luginsland, Leverkusen, and Franz Rosendahl, Leverkusen, all of Germany, assignors to Rheox, Inc., Hightstown, N.J.

Filed Jul. 12, 1993, Ser. No. 91,342

Claims priority, application Germany, Jul. 22, 1992, 4224150

Int. Cl.[6] C01G *23/04*; C09C *1/36*

U.S. Cl. 423—610 **4 Claims**

1. A process for preparation of a titanium dioxide aqueous suspension with a titanium dioxide solids content of greater than about 75% by weight of such suspension, comprising the steps of

(a) dispersing titanium dioxide into an aqueous slurry,

(b) dechlorinating the slurry with an and-chloride agent selected from the group consisting of hydrogen peroxide, sodium hydrogen sulfite and a mixture thereof,

(c) subjecting the slurry obtained after step (b) to filtration without addition of a dispersing agent to form a thixotropic filter cake and,

(d) dispersing said filter cake into a titanium dioxide suspension which suspension contains a dispersing agent in a quantity of at least 0.1% to 5% by weight based on the titanium dioxide content of said filter cake selected from the group consisting of an alkali polyphosphate, an aliphatic carboxylic acid and alkali salts thereof, polyacrylic acid and alkali salts thereof, a polyhydroxy alcohol, an amino alcohol and a mixture thereof, thus rendering the filter cake flowable, thereby forming said titanium dioxide aqueous suspension.

5,393,511

SYNTHESIS OF ZEOLITES OF FAUJASITE STRUCTURE

Francois Delprato, Riedisheim; Jean-Louis Guth, Brunstatt; Didier Anglerot, Pau, and Catherine Zivkov, Narosse, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Continuation-in-part of Ser. No. 687,970, Apr. 19, 1991, abandoned, which is a division of Ser. No. 499,272, Jun. 8, 1990, Pat. No. 5,098,686. This application Jul. 27, 1992, Ser. No. 919,855

Int. Cl.[6] C01B *33/34*

U.S. Cl. 423—718 **4 Claims**

2. An aluminosilicate having a Si:Al ratio greater than 1 and consisting of a hexagonal polytype of faujasite having a structure of hexagonal symmetry exhibiting hexagonal unit cell parameters a, b and c such that 1.72 nm<a=b<1.77 nm and 2.80 nm<c<2.89 nm and wherein said aluminosilicate has a coefficient, α, of at least 0.94, wherein

said coefficient being such that $\alpha=1$ for a product consisting solely of a faujasite with a structure of hexagonal symmetry and that $\alpha=0$ for a product consisting solely of a faujasite with a structure of cubic symmetry, said aluminosilicate

showing, after calcination at 600° C. for 4 hours, an x-ray diffraction pattern comparable with that given in Table II Below:

TABLE II

2θ(°)	d_{hkl} (10^{-1} nM)	(hkl)	I/Io
5.88	15.03 ± 0.2	(1 0 0)	VS
6.23	14.2	(0 0 2)	VS
6.66	13.3	(1 0 1)	S
8.40	10.52	(1 0 2)	S
10.19	8.68 ± 0.08	(1 1 0)	S
11.06	7.99	(1 0 3)	mS
11.78	7.51	(2 0 0)	mS
11.95	7.40	(1 1 2)	mS
13.49	6.56	(2 0 2)	vw
15.06	5.88 ± 0.05	(2 0 3)	w
15.58	5.68	(0 0 5)	S
15.89	5.57	(2 1 1)	w

TABLE II-continued

2θ(°)	d_{hkl} (10^{-1} nM)	(hkl)	I/Io
16.73	5.29	(1 0 5)	w
17.18	5.16	(2 0 4)	S
18.22	4.87	(2 1 3)	w
18.79	4.72	(1 1 5)	w
19.67	4.51	(1 0 6)	w
20.45	4.34	(2 2 0)	mS
22.22	4.00	(3 1 2)	w
22.75	3.91	(1 0 7)	w
23.30	3.82	(3 1 3)	w
23.66	3.76	(3 0 5)	S
24.75	3.59	(3 1 4)	w
25.83	3.45	(2 2 5)	w
26.52	3.36	(2 1 5)	w
27.16	3.28	(4 1 0)	w
28.77	3.103 ± 0.008	(3 2 4)	w
30.38	2.942	(4 0 6)	vw
30.89	2.894	(3 3 0)	w
31.20	2.866	(5 0 3)	w
31.56	2.834	(3 3 2)	vw

and wherein the aluminosilicate corresponds to a formula which, reduced to a unit cell of the hexagonal structure, is written

$$(u\ M_1^{q+})\ (r\ M^{n+})\ [(SiO_2)_{96\text{-}y}(AlO_2)_y]^{y-}(t\ H_2O)$$

and in which M_1^{q+} denotes a q-valent cation of a metal selected from the group consisting of a metal of group IA of the Periodic Classication of the Elements (q=1), an alkaline-earth metal selected from Ca, Sr and Ba (q=2) and a monovalent cation containing nitrogen (q=1), M^{n+} represents a cation of a metal M of valency n other than a cation M_1^{s+}, y, u, r and t are numbers such that $15 \leqq y \leqq 48$, $t \geqq o$ and depending on the hydration state of the aluminosilicate (t=o for a completely anhydrous aluminosilicate), $o<u<y/q$ and $o<r<y/n$ with $qu+nr>y$.

5,393,512

STABLE THERAPEUTIC RADIONUCLIDE COMPOSITIONS AND METHODS FOR PREPARATION THEREOF

Jean-Luc Vanderheyden, 2418 W. Lynn, Seattle, Wash. 98199; Alan R. Fritzberg, 16703 74th Place West, Edmonds, Wash. 98020; Joseph E. Bugaj, 13331 28th Ave. SE., Bothell, Wash. 98012; Fu-Min Su, 3245 NE. 100th St., Seattle, Wash. 98125, and Prasanna Venkatesan, 12631 NE. 130th Ct., Apt. D308, Kirkland, Wash. 98034

Continuation of Ser. No. 810,556, Dec. 20, 1991, abandoned, which is a continuation of Ser. No. 441,372, Sep. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 65,011, Jun. 19, 1987, Pat. No. 4,897,255, which is a continuation-in-part of Ser. No. 817,321, Jan. 9, 1986, abandoned, which is a continuation-in-part of Ser. No. 692,000, Jan. 14, 1985, abandoned. This application Sep. 20, 1993, Ser. No. 124,359

Int. Cl.[6] **A61K** *43/00, 49/02*

U.S. Cl. 424—1.53 **12 Claims**

1. A stable purified therapeutic radionuclide preparation suitable for in vivo administration comprising a therapeutic radionuclide selected from the group consisting of ^{186}Re; ^{188}Re; and mixtures thereof linked to a proteinaceous targeting moiety, the therapeutic radionuclide preparation also comprising an effective amount of a stabilizing agent comprising ascorbic acid, wherein the radiochemical purity of the therapeutic radionuclide preparation is maintained at a level of at least about 90% for at least about 4 hours.

5,393,513

STABLE, HIGHLY CONCENTRATED FLUORO CARBON EMULSIONS

David M. Long, Jr., El Cajon, Calif., assignor to Alliance Pharmaceutical Corp., San Diego, Calif.

Continuation of Ser. No. 811,026, Dec. 19, 1991, abandoned, which is a continuation of Ser. No. 387,947, Aug. 24, 1989, Pat. No. 5,080,885, which is a continuation of Ser. No. 818,690, Jan. 14, 1986, Pat. No. 4,865,836. This application Jul. 30, 1993, Ser. No. 100,664

Int. Cl.[6] **A61K** *49/04, 31/56, 31/35;* **A61B** *5/055*

U.S. Cl. 424—5 **14 Claims**

1. A fluorocarbon emulsion, prepared by:

forming a mixture consisting essentially of an aqueous phase, an effective amount of emulsifying agent, and a fluorocarbon, said mixture having from greater than 50% to about 125% weight per volume of said fluorocarbon; and

passing the fluorocarbon-containing mixture through a mechanical emulsification apparatus in which said mixture is subjected to sufficiently high flow rams and pressures to form a stable, heat sterilizable fluorocarbon-in-water emulsion;

wherein said emulsion is biocompatible and exhibits substantial/particle size stability in the non-frozen state following heat sterilization.

5,393,514

FLUORESCENT PH INDICATORS

J. Bruce Pitner, Durham, and Randal A. Hoke, Cary, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

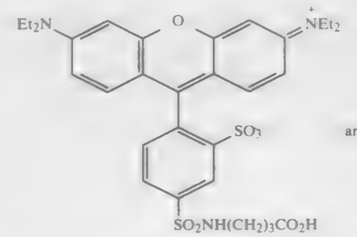
Division of Ser. No. 912,426, Jul. 13, 1992, Pat. No. 5,302,731. This application Dec. 6, 1993, Ser. No. 162,554

Int. Cl.[6] **A61K** *49/00, 31/35*

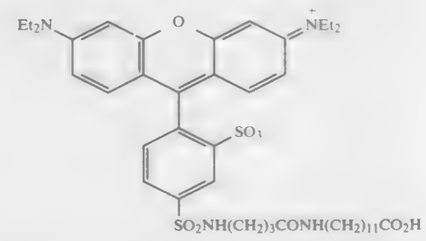
U.S. Cl. 424—7.1 **5 Claims**

1. A method for determining the pH of a medium comprising:

a) contacting the medium with a fluorescent pH indicator compound selected from the group consisting of compounds having the structure



and



b) exposing the fluorescent compound to approximately 544 nm wavelength light to excite the fluorescent compound;

c) measuring the intensity of fluorescence emitted by the excited fluorescent compound, and;

d) determining the pH of the medium from the intensity of fluorescence.

5,393,515

PHOTOSTABLE FILTERING COSMETIC COMPOSITION

Jean F. Grollier, Paris, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 399,836, Aug. 24, 1989, abandoned. This application Mar. 20, 1992, Ser. No. 854,883

Claims priority, application France, Aug. 24, 1988, 88 11178

Int. Cl.[6] **A61K** *7/42, 7/44, 7/48, 9/12*

U.S. Cl. 424—47 **13 Claims**

1. In a photostable filtering cosmetic emulsion composition for protecting the skin from UV radiation of wavelengths between 280 and 380 nm, said aqueous phase consisting essentially of, as a wide absorption band photostable filter, benzene-1,4-[di-(3-methylidene-10-camphosulphonic)] acid, neutralized by an alkali hydroxide, ammonia or an alkanolamine and present, before neutralization, in an amount ranging from 0.1 to 10 percent by weight based on the total weight of said composition, wherein the improvement comprises increasing the protection of the skin against UV rays of wavelengths between 280 and 380 nm comprising adding to the oily phase of said composition, in an effective amount ranging from 0.1 to 15 percent by weight based on the total weight of said composition, a photostable system which filters UV-A rays, said photostable system consisting essentially of an effective amount of at least one of

(i) N-(2-ethylhexyl)-3-[(3'-methoxy-4'-n-butoxy)-benzylidene]-10-camphosulphonamide,

(ii) 4-(1,1-dimethylethyl)-4'-methoxydibenzoylmethane and

(iii) 4-isopropyldibenzoylmethane, said (ii) and (iii) compounds being photochemically stabilized by at least one fat-soluble filter of μ_{max} less than 330 nm selected from the group consisting of

(iv) benzylidene camphor,

(v) p-methylbenzylidene camphor,

(vi) N-(2-ethylhexyl-4-(3'-methylidene camphor) benzene sulphonamide and

(vii) 3-methoxy-4-n-butoxybenzylidene camphor the weight ratio of the at least one of said compounds (iv), (v), (vi), and (vii), to said compound (ii) or compound (iii) being at least 1.

5,393,516

MODIFIED CHLORHEXIDINE ADDUCT

Volker Rheinberger, Vaduz, Liechtenstein; Ulrich Salz, Weissenberg, Germany, and Peter Burtscher, Nützidersi, Austria, assignors to Ivoclar AG, Germany

Filed Jul. 7, 1993, Ser. No. 86,919

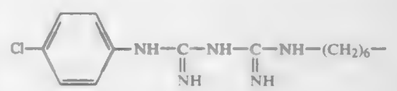
Claims priority, application Germany, Jul. 8, 1992, 4222821

The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.

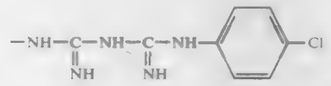
Int. Cl.[6] **C07C** *279/18;* **A61K** *7/18, 7/22, 31/155*

U.S. Cl. 424—52 **10 Claims**

1. Chlorhexidine adduct with the following formula



.3HF.HSnF$_3$



or its hydrates.

5,393,517

SUNSCREENING COMPOSITIONS CONTAINING 1,3,5-TRIAZINE DERIVATIVES

Raspanti Giuseppe, Bergamo, Italy, assignor to 3V Sigma S.p.A., Milan, Italy

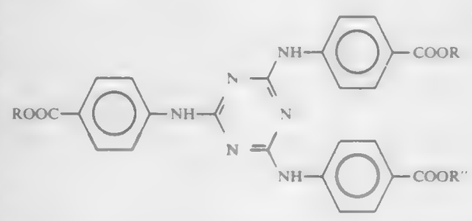
Division of Ser. No. 889,963, May 29, 1992, Pat. No. 5,233,040. This application May 7, 1993, Ser. No. 57,828

Claims priority, application Italy, Jun. 4, 1991, MI91A001519

Int. Cl.[6] **A61K** *7/42, 7/44, 7/48*

U.S. Cl. 424—60 **6 Claims**

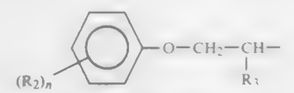
1. An ultraviolet or sunscreening cosmetic composition comprising an effective sunscreening amount of a compound of the formula (I):



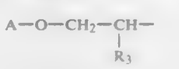
(I)

in which

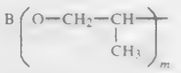
R is C_5–C_{12}cycloalkyl which may be mono- or poly-substituted by C_1–C_4alkyl, or a group of the formula (II), (III) or (IV):



(II)



(III)



(IV)

in which R_2 is C_1–C_9alkyl,

n can be an integer from 0 to 3,

R_3 is hydrogen or methyl,

A is C_5–C_8cycloalkyl or C_4–C_8alkyl,

B is C_1–C_4alkyl,

m can be an integer from 1 to 10, and

R' and R'' which are the same or different, can have the same meaning as R or they are selected from the group consisting of hydrogen, an alkali metal, an ammonium group which may be substituted by alkyl or hydroxyalkyl radicals, and C_1–C_{18}alkyl,

and a cosmetic or dematologically acceptable carrier.

5,393,518

CLEAR ROLL-ON ANTIPERSPIRANT COMPOSITION

Jill A. Kwass, Andover, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 618,704, Nov. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 447,622, Dec. 8, 1989, abandoned. This application Dec. 24, 1992, Ser. No. 997,149

Int. Cl.[6] **A61K** *7/32, 7/34, 7/38, 9/10*

U.S. Cl. 424—66 **6 Claims**

1. A substantially clear antiperspirant composition which is a stable water-in-oil emulsion with a viscosity less than about 1000 cps and an optical clarity better than 100 NTU at room temperature, which composition comprises by weight 28.48 percent cyclomethicone, 8.63 percent cyclomethicone and

dimethicone copolyol, 1.72 percent dimethicone, 32.50 percent water, 4.27 percent propylene glycol, 17.50 percent aluminum chlorohydrate or aluminum zirconium chlorohydrate, 1.00 percent Oleth-5, PPG-10 Butanediol, or mixtures thereof, and 5.90 percent ethanol.

5,393,519

SHAMPOO COMPOSITIONS

Teresa J. Dowell, Downers Grove; Gerald P. Newell, Hoffman Estates, and Eugene Zeffren, Lincolnshire, all of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.

Continuation of Ser. No. 859,128, Mar. 27, 1992, abandoned. This application Oct. 30, 1992, Ser. No. 969,382

Int. Cl.[6] A61K *7/06*; C11D *3/48, 9/50*

U.S. Cl. 424—70.11 24 Claims

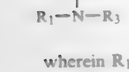
1. A homogeneous shampoo-conditioner composition comprising:

(a) about 3% to about 40% by weight of an anionic cleansing surfactant;

(b) about 0.1% to about 10% by weight of a water-insoluble conditioning agent;

(c) a suspending agent comprising:

(i) from about 1% to about 10% by weight of the composition of an amine having the general structural formula



wherein R_1 is an alkyl group including at least 16 carbon atoms; R_2 is selected from the group consisting of hydrogen, an alkyl group having one to about 22 carbon atoms, benzyl and phenyl; and R_3 is selected from the group consisting of hydrogen, methyl, benzyl and phenyl, wherein said amine has a water solubility of 0.5 grams or less per 100 milliliters of water, and wherein said amine is a solid compound at room temperature; and

(ii) a sufficient amount of an acid such that essentially no solid particles of the amine are present in the composition, said acid selected from the group consisting of an inorganic mineral acid, an aliphatic carboxylic acid including up to about 22 carbon atoms, an aromatic carboxylic acid, and combinations thereof; and

(d) an aqueous carrier.

5,393,520

HAIR TREATMENT METHOD AND COMPOSITION

Peter A. Incando, 7640 Peerless, Orangevale, Calif. 95662

Filed Jun. 11, 1993, Ser. No. 76,558

Int. Cl.[6] A61K *7/075*

U.S. Cl. 424—70.13 15 Claims

1. A hair treatment composition comprised of:

a) between about 0.5% and 2.5% isopropanol;

b) between about 75% and 85% acetone;

c) between about 5% and 15% isobutane;

d) between about 2.5% and 5% 2-propanol-1-methoxyacetate;

e) between about 0.5% and 2.5% ethylene glycol monobutyl ether;

f) between about 0.5% and 2.5% nitrocellulose.

5,393,521

HAIR TREATMENTS UTILIZING POLYMETHYLALKYLSILOXANES

Theodore E. Lance-Gomez, and Husam A. A. Rasoul, both of Racine, Wis., assignors to DEP Corporation, Rancho Dominguez, Calif.

PCT No. PCT/US90/07154, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO91/09586, PCT Pub. Date Jul. 11, 1991

Continuation-in-part of Ser. No. 454,214, Dec. 21, 1989, abandoned. This PCT application Sep. 7, 1990, Ser. No. 859,701

Int. Cl.[6] A61K *7/09*

U.S. Cl. 424—70.12 10 Claims

1. An improved composition for treating the hair comprising a hair conditioning agent dispersed within a cosmetically acceptable carrier medium wherein the improvement comprises inclusion of from about 0.1% to about 10% by weight of a polymethylalkylsiloxane as at least one of the hair conditioning agents, based upon the total weight of the agents and carrier medium, wherein the polymethylalkylsiloxane has the average formula

$$R_2(CH_3)Si(OSi(CH_3)_2)_x(OSiR'CH_3)_yOSi(CH_3)R_2$$

wherein each R is selected from the group consisting of methyl) ethyl and phenyl groups, R′ is an alkyl group of from 8 to about 60 carbon atoms where the total number of R′ groups present has an average of at least 12 carbon atoms, the values of x and y are such that the ratio of x:y is in the range of from 97:3 to 55:45, the sum of x+y is greater than or equal to about 60 and less than or equal to about 1,333 and the polymethylalkylsiloxane has a melting transition, as measured by a differential scanning calorimeter, between about −25° C. to+27° C.

5,393,522

COMPOSITIONS FOR THE CONTROL OF PEPPER WEEVILS

Fred J. Eller, Metamora, and Robert J. Bartelt, East Peoria, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 3, 1993, Ser. No. 12,826

Int. Cl.[6] A01N *31/04, 35/02, 37/06, 31/02*

U.S. Cl. 424—84 17 Claims

1. A composition for attracting pepper weevils comprising mixtures of:

(Z)-3,3-dimethyl-$\Delta^{1,\beta}$-cyclohexane ethanol (PWI);

(E)-3,3-dimethyl-$\Delta^{1,\beta}$-cyclohexane ethanol (PWII);

(Z)-3,3-dimethyl-$\Delta^{1,\alpha}$-cyclohexane-acetaldehyde (PWIII); and

(E)-3,3-dimethyl-$\Delta^{1,\beta}$-cyclohexane-acetaldehyde (PWIV);

and further comprising at least one of the following compounds:

(E)-3,7-dimethyl-2,6-octadienoic acid (PWV); and

(E)-3,7-dimethyl-2,6-octadien-1-ol (PWVI);

in amounts and in proportions that are effective to attract pepper weevils.

5,393,523

PLASMODIUM FALCIPARUM VACCINE COMPRISING A RECOMBINANT HISTIDINE-RICH PROTEIN-HRP-II

Bernard Knapp, Marburg-Schröck; Erika Hundt, Marburg-Wehrshausen; Burkhard Enders, and Hans Kupper, both of Marburg, all of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg/Lahn, Germany

Continuation of Ser. No. 265,442, Nov. 1, 1988, abandoned. This application Aug. 20, 1993, Ser. No. 109,478

Claims priority, application Germany, Nov. 3, 1987, 3737238

Int. Cl.[6] A61K *35/66, 39/015*

U.S. Cl. 424—191.1 2 Claims

1. A method of inducing partial immunological protection against *P. falciparum* blood stage infection in a patient, comprising administering an isolated or purified HRP-II antigen of *P. falciparum* comprising the amino acid sequence as shown in Table 2 in the form of a vaccine in an amount sufficient to reduce the severity of infection by *P. falciparum*.

5,393,524

METHODS FOR SELECTING AND USING GASES AS ULTRASOUND CONTRAST MEDIA

Steven C. Quay, Los Angeles, Calif., assignor to Sonus Pharmaceuticals Inc., Costa Mesa, Calif.

Continuation of Ser. No. 761,311, Sep. 17, 1991, abandoned. This application Jun. 4, 1993, Ser. No. 71,377

Int. Cl.[6] A61K *49/02*

U.S. Cl. 424—9 13 Claims

1. In a method comprising ultrasound imaging, the improvement comprising enhancing the contrast in an ultrasound image by selecting for use as an enhancing agent free gas microbubbles of a biocompatible fluorocarbon containing contrast-enhancing chemical,

said chemical as a gas having a Q coefficient greater than 30, where Q is the ratio of the persistence of microbubbles of said gas in an aqueous solution to the persistence of microbubbles of air in said solution.

5,393,525

CONTRAST MEDIUM COMPRISING SUPERPARAMAGNETIC OR FERROMAGNETIC PARTICLES CAPABLE OF INCREASING VISCOSITY AFTER ADMINISTRATION

Helge G. Gundersen, Oslo, Norway, assignor to Nycomed Imaging AS, Oslo, Norway

Continuation of Ser. No. 820,642, Jan. 21, 1992, abandoned. This application Mar. 21, 1994, Ser. No. 210,738

Claims priority, application United Kingdom, Jul. 21, 1989, 8916780

Int. Cl.[6] A61B *5/055*; A61K *9/16, 33/26*

U.S. Cl. 424—9 12 Claims

1. A contrast medium composition for administration to a patient for MR imaging comprising a pulverulent mixture of superparamagnetic, ferrimagnetic or ferromagnetic particles together with a physiologically tolerable viscosity enhancing agent, such that following dispersion of said composition in a physiologically tolerable carrier fluid it may be administered to said patient with the viscosity of the composition increasing after such administration.

5,393,526

COSMETIC COMPOSITIONS

John R. Castro, Stamford, Conn., assignor to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.

Filed Feb. 7, 1994, Ser. No. 192,928

Int. Cl.[6] A61K *7/00, 35/78*

U.S. Cl. 424—195.1 8 Claims

1. A cosmetic facial foundation composition comprising:

(i) from about 0.01 to about 10% by weight of a C_2–C_{28} α-hydroxy carboxylate compound selected from the group consisting of glycolic acid, lactic acid and their salts and combinations thereof;

(ii) from about 0.05 to about 5% by weight of rosmarrinic acid or salt thereof; and

(iii) from about 1 to about 99.9% by weight of a pharmaceutically acceptable carrier.

5,393,527

STABILIZED MICROSPHERES AND METHODS OF PREPARATION

Adrien Malick, and Hans H. Feindt, Parkton, both of Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jan. 4, 1993, Ser. No. 1,907

Int. Cl.[6] C12Q *1/00*; A61K *37/06*

U.S. Cl. 435—7.1 11 Claims

1. A composition comprising microspherical particles, the particles comprising:

a) a hydrophobic core comprising a liquid silicone or fluorosilicone, and;

b) an amphiphilic compound covalently linked to a ligand, the amphiphilic compound forming a monolayer on the surface of the particles such that the ligand is capable of binding to a receptor for the ligand.

5,393,528

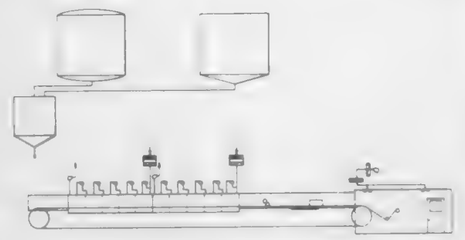
DISSOLVABLE DEVICE FOR CONTRACEPTION OR DELIVERY OF MEDICATION

Robert J. Staab, 73 Franklin Turnpike, Allendale, N.J. 07463

Continuation-in-part of Ser. No. 880,093, May 7, 1992, abandoned. This application Jun. 1, 1993, Ser. No. 68,778

Int. Cl.[6] A61F *9/02, 13/15, 13/20*; A01N *25/08*

U.S. Cl. 424—436 24 Claims



1. A device for delivery of an agent material into a body cavity characterized by improved heat and humidity stability of up to 140° F. and 97% respectively, comprising at least one dissolvable film formed from a member selected from the group consisting of polyvinyl alcohol, polyethylene oxide, hydroxy propyl methyl cellulose and mixtures thereof, at least one of said films having distributed throughout an inert gas, said agent material being incorporated in said dissolvable film, said device dissolving at the temperature of said body cavity in the presence of the moisture naturally present in said body cavity to release said agent material.

5,393,529

ESTROGEN-CONTAINING ACTIVE SUBSTANCE PLASTER

Hans-Rainer Hoffmann; Robert P. Klein; Reinhold Meconi, all of Neuwied; Gunter Cordes, Leichingen, and Hans M. Wolff, Monheim, all of Germany, assignors to LTS Lohmann Therapie-Systeme GmbH & Co. KG, Neuweid and Schwarz Pharma AG, Monheim, both of Germany

Continuation of Ser. No. 591,171, Oct. 1, 1990, abandoned. This application Jun. 8, 1993, Ser. No. 74,698

Claims priority, application Germany, Oct. 6, 1989, 3933460

Int. Cl.[6] A61L *15/00*

U.S. Cl. 424—445 8 Claims

1. In a plaster for the controlled release of an estrogen to the skin and comprising

A) an impermeable backing or covering layer,

B) a reservoir layer adjacent to, and in close contact with said backing or covering layer, said reservoir layer comprising a water-insoluble pressure-sensitive adhesive polymer layer containing the estrogen in a concentration of

about 0.5 to 10 by weight, in combination with at least one water-swellable polymer in 0.01 to 10% wt, and

C) a protective layer covering and adhering to said adhesive polymer layer and removable therefrom for the use of said transdemal drug patch, the improvement wherein the pressure-sensitive adhesive polymer of B is a polymer of acrylic or methacrylic acid or an ester thereof, and contains a 0.1 to 20%-wt of at least one substance delaying or preventing the crystallization of the active substance,

the water-swellable polymer being selected from the group consisting of galactomannans, cellulose products, tragacanth, polyglycosides, polyvinylpyrrolidones, finely pulverized polyamides, water-soluble polyacrylamide, carboxyvinyl polymers, agar, copolymers of methylvinyl ether and maleic acid anhydride, guar gum, hydroxypropyl guar gum or guar flour, gum arabic, dextrin and dextran, polysaccharide gum, hydroxymethylpropyl cellulose, pectin and pectinamide, and

the crystallization delaying or preventing substance being selected from the group consisting of phthalic acid esters, adipic acid esters, monoglycerides, diglycerides, and triglycerides, ester of higher fatty acids, long-chain alcohols, nonylphenol, octylphenol, fatty acids, sorbitol, mannitol, non-ionogenic surfactants, polyoxyethylene alkyl esters, castor oil, sitosterine and polyvinylpyrrolidone.

5,393,530

METHOD FOR MAKING LIPOSOMES OF ENHANCED ENTRAPPING CAPACITY TOWARD FOREIGN SUBSTANCES TO BE ENCAPSULATED

Michel Schneider, Troinex, Switzerland; Hervé Tournier, Valleiry, France; Roland Hyacinthe, Aubonne, France; Christian Guillot, Le Chable-Beaumont, France, and Bernard Lamy, Geneva, Switzerland, assignors to Bracco International B.V., Amsterdam, Netherlands

PCT No. PCT/EP91/00377, § 371 Date Jun. 22, 1992, § 102(e) Date Jun. 22, 1992, PCT Pub. No. WO92/10166, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 9, 1992, Ser. No. 861,889

Claims priority, application European Pat. Off., Dec. 11, 1990, 90810969

Int. Cl.[6] A61K *57/22*

U.S. Cl. 424—450 **13 Claims**

1. A method for loading liposome vesicles with a substance to be encapsulated, said liposome vesicles having a core filled with an aqueous liquid phase surrounded by one or more membranes of film-forming components, said method comprising the steps of:

a) contacting one part by weight of a comminuted mixture of liposme forming lipids, said mixture comprising a component which is ionically charged, with 20 to 1000 parts by weight of an aqueous liquid carrier phase to produce a hydrated and lamellarized form of said lipid, said aqueous liquid carrier phase being maintained at a temperature above the transition temperature T_c of said hydrated form of said lipid;

b) forming liposome vesicles as a suspension in the aqueous liquid carrier phase in the absence of said substance to be encapsulated, the aqueous liquid phase present in said core having an osmolality of not above 200 mOsm/kg;

c) introducing said substance to be encapsulated into said aqueous liquid carrier phase; and

d) incubating said vesicles at a temperature above the membrane lipid transition temperature T_c, whereby said substance to be encapsulated penetrates into said vesicles by trans-membrane permeation.

5,393,531

PROCESS FOR THE PREPARATION OF A PHARMACEUTICAL FORMULATION CONTAINING AT LEAST TWO DIFFERENT ACTIVE SUBSTANCES AND USE OF SUCH A FORMULATION

Gergely Gerhard, Gartengasse 8, A-1053 Vienna, and Tritthart Wolfram, Allgäu 36, A-9400 Wolfsberg, both of Austria

Filed Jul. 1, 1992, Ser. No. 907,481

Claims priority, application Switzerland, Jul. 1, 1991, 1944/91

Int. Cl.[6] A61K *9/96*

U.S. Cl. 424—466 **8 Claims**

1. A process for the administration of an aqueous solution or dispersion of at least two different pharmaceutically active substances comprising

(1) selecting and providing a separate, predetermined dosage amount for each of at least two different and distinct pharmaceutical preparations, each of the pharmaceutical preparations being portioned individually and each being in a separate form selected from the group consisting of soluble tablets, disintegrating tablets, soluble granules and disintegrating granules, each of which preparations contains a pharmaceutically active substance or an active substance combination different from that which each other preparation contains,

(2) dissolving or suspending each of the separate, predetermined dosage amounts of each of the pharmaceutical preparations in one and the same quantity of water, the pharmaceutically active substances being at least briefly compatible with one another in aqueous solution;

(3) orally administering said aqueous solution or dispersion, during the at least brief period of substance compatibility, to a patient in need thereof; and

(4) repeating steps 1–3 at least once with at least one of the separate, predetermined dosage amounts differing from that selected and provided in step 1.

5,393,532

PROCESS FOR PREPARING A PHENYLALANINE-FREE DIETARY PRODUCT IN DRAGEE OR TABLET FORM

Ursula Wachtel, Bad Homburg vd.H.; Friedrich Schweikhardt, Friedrichsdorf/Ts.-2, and Erhard Tesmer, Offenburg/Baden, all of Germany, assignors to Milupa Aktiengesellschaft, Friedrichsdorf/Ts., Germany

PCT No. PCT/EP92/01966, § 371 Date Jun. 25, 1993, § 102(e) Date Jun. 25, 1993, PCT Pub. No. WO93/03633, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 26, 1992, Ser. No. 39,236

Claims priority, application Germany, Aug. 26, 1991, 4128260

Int. Cl.[6] A61K *9/28, 9/30, 9/42, 9/14*

U.S. Cl. 424—476 **22 Claims**

1. A process for preparing a phenylalanine-free dietetic product comprising L-amino acids, and optionally comprising carbohydrates, minerals, trace elements and/or vitamins, for persons afflicted with phenylketonuria, wherein:

(a) a wet batch is prepared by dispersing in water the L-amino acids, some or all of the optional components, and at least one fatty material as an emulsifier;

(b) the wet batch is spray-dried,

(c) the spray-dried wet batch is mixed with additional vitamins and/or carbohydrates and at least one fatty material as a separation agent to produce a mass;

(d) the mass is processed into cores for dragees or tablets; and

(e) the dragee or tablet cores are provided with coatings or dragee covers.

5,393,533

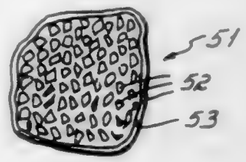
PHARMACEUTICALS MICROENCAPSULATED BY VAPOR DEPOSITED POLYMERS AND METHOD

Ronald J. Versic, Dayton, Ohio, assignor to The Ronald T. Dodge Company, Dayton, Ohio

Continuation of Ser. No. 753,002, Aug. 23, 1991, Pat. No. 5,288,504, which is a continuation of Ser. No. 243,064, Sep. 9, 1988, abandoned. This application Sep. 21, 1993, Ser. No. 124,782

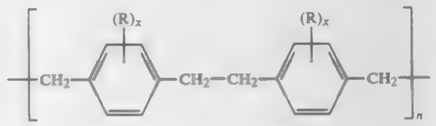
Int. Cl.[6] A61K *9/16*

U.S. Cl. 427—2.19 **2 Claims**



1. A method of forming a pharmaceutical comprising:

coating an inert core material with a vapor deposited polymeric film in combination with minute particles of an active pharmaceutical agent, and subsequently coating said particles of active pharmaceutical agent with a vapor deposited polymeric film, said polymeric film being the solid polymerization product of pyrolyzed vapors of di-p-xylylene, said product having the general repeating units



wherein R is an aromatic nuclear substituent, x is a number from 0 to 3 and n is a number from 10–10000 and said polymeric film having a thickness of from about 0.1 microns to about 10 microns.

5,393,534

LIVER-DERIVED TUMOR CELL GROWTH INHIBITOR

Philip G. Cavanaugh, Houston, and Garth L. Nicolson, Kingwood, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Apr. 9, 1992, Ser. No. 865,549

Int. Cl.[6] A61K *35/407*

U.S. Cl. 424—553 **14 Claims**

1. A purified tumor growth inhibitor having the following properties:

(a) isolatable from liver cells;

(b) a molecular weight of approximately 38 kD to 40 kD, as determined by gel filtration chromatography and SDS/PAGE analyses;

(c) an isoelectric point of approximately 9.1;

(d) possessing heat stability on exposure to temperatures of from ambient to up to and including 65° C. for a period of time of up to and including one hour; and

(e) capable of inhibiting murine RAW117 lymphoma cell growth.

5,393,535

ORALLY ADMINISTERABLE CALCIUM SUPPLEMENT FOR CATTLE

Gunnar Kjems, Peter Hvitfeldts Strade 12, 1173 Copenhagen F Denmark

PCT No. PCT/DK90/00055, § 371 Date Oct. 25, 1991, § 102(e) Date Oct. 25, 1991, PCT Pub. No. WO90/09797, PCT Pub. Date Sep. 7, 1990

PCT Filed Feb. 27, 1990, Ser. No. 761,364

Claims priority, application Denmark, Feb. 27, 1989, 0926/89

Int. Cl.[6] A01N *59/08, 59/06*

U.S. Cl. 424—678 **6 Claims**

1. A method for treating milk fever in cows which comprises orally administering to cows in need thereof an effective amount of a calcium ion containing composition comprising a water in oil emulsion having a dispersed aqueous phase and a continuous oil phase, which composition is orally administerable and palatable to cows, said composition further comprising calcium chloride which is dissolved in the aqueous phase to form a calcium ion containing aqueous phase solution, the calcium in the composition, calculated as free calcium ion, comprising 10 to 20 percent by weight of the composition, said composition further including from 0.5 to 10 percent emulsifier; wherein said composition is orally administered in a plurality of doses within 24 hours before and 24 hours after calving to provide a total of at least 150 g of free Ca^{++} ion.

5,393,536

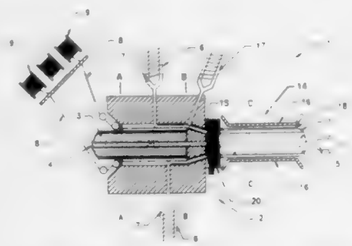
COEXTRUSION APPARATUS

Jeffrey R. Brandt, Reynoldsburg; Edward F. Kowalik, Pataskala, and Bobby D. Riley, Columbus, all of Ohio, assignors to Crane Plastics Company, Columbus, Ohio

Filed Apr. 5, 1993, Ser. No. 43,037

Int. Cl.[6] B29C *47/28, 47/90*

U.S. Cl. 425—112 **7 Claims**



1. A coextrusion apparatus, said apparatus comprising:

(a) an extrusion die adapted to form a hollow profile extrudate said extrusion die having an upstream side and a downstream side;

(b) at least one extruder head disposed on said upstream side of said extrusion die adapted to extrude a thermoplastic material through said extrusion die so as to form a hollow thermoplastic extrudate; and

(c) an insulated injector tube disposed on said upstream side of said extrusion die adapted to coextrude a thermosetting material with said thermoplastic material and into said hollow thermoplastic extrudate.

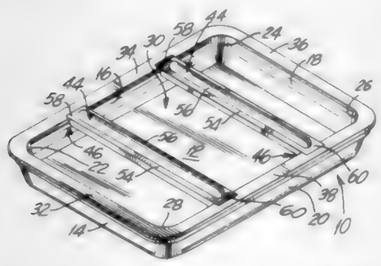
5,393,537
FISH ATTRACTANT AND SCENT MASKING COMPOSITION
Donald W. Rawlins, 224 Highland Dr., SW., Calhoun, Ga. 30701
Continuation-in-part of Ser. No. 878,170, May 4, 1992, Pat. No. 5,277,918. This application Jun. 4, 1993, Ser. No. 73,951
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[6] A01K *85/00*; A23L *1/325*
U.S. Cl. 426—1 32 Claims

1. A composition in, the substantial absence of a polymer, for application to a bait to attract fish or mask a scent on the bait, comprising:
a) a masking or attracting scent present in an amount sufficient to mask a scent on the bait or attract a fish; and
b) a suitable volatile solvent which is capable of dissolving the scent and capable of penetrating the bait thereby causing penetration of the scent into the bait for prolonged release of the scent.

5,393,538
PREPARATION OF CRUMB-FLAVORED MILK CHOCOLATE
Oliver Chmiel; Eric Raetz, both of Lausanne, and Helmut Trailer, Corseaux, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland
Filed Apr. 6, 1993, Ser. No. 43,656
Claims priority, application European Pat. Off., Apr. 25, 1992, 92107095
Int. Cl.[6] A23G *1/00*
U.S. Cl. 426—35 9 Claims

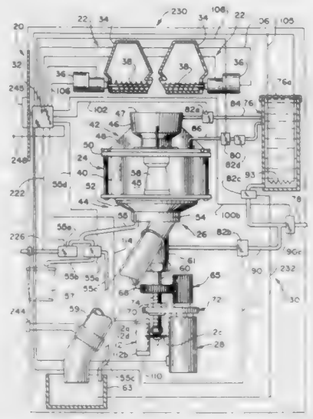
1. A process for preparing a crumb-flavored milk chocolate composition comprising:
adding free fatty acids to a milk powder, wherein the fatty acids are in a solid state when added to the milk powder and are selected from the group consisting of oleic acid, linoleic acid and α-linolenic acid;
mixing the milk powder and added fatty acids at a temperature below the melting point of the fatty acids; and
combining a crumb-flavoring amount of the mixed milk powder and fatty acids with cocoa powder, cocoa butter, sugar and lecithin to obtain a crumb-flavored milk chocolate composition.

5,393,539
MOLDED PLASTIC OVERWRAP TRAY
Daniel W. Reskow, Long Valley, N.J., assignor to Tekni-Plex Inc., Brooklyn, N.Y.
Filed Dec. 13, 1993, Ser. No. 166,706
Int. Cl.[6] B65D *85/00*
U.S. Cl. 426—124 8 Claims



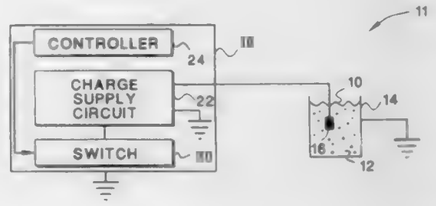
1. A molded plastic overwrap tray comprising:
a base and first and second sets of opposed sidewalls, each of said sidewalls having an upper edge, the upper edges of said sidewalls defining a first plane of said tray;
said base and sidewalls defining a food retaining chamber;
the upper edges of said first set of opposed sidewalls having first and second opposed indentations;
a support bar having first and second ends;
the first and second ends of said support bar sitting respectively in said first and second indentations to resist inward deflection of the upper edges of said sidewalls; and
said support bar having an upper surface defining a second plane substantially parallel to said first plane of said tray;
whereby an overwrap on said tray is supported by the upper surface of said support bar to minimize sagging of the overwrap and prevent the overwrap from coming in contact with food in said food retaining chamber.

5,393,540
AUTOMATIC BEVERAGE BREWING METHOD
Arthur H. Bunn, Springfield; James H. Anson, Auburn, and David F. Ford, Springfield, all of Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.
Division of Ser. No. 1,468, Jan. 7, 1993, Pat. No. 5,303,639, which is a continuation-in-part of Ser. No. 946,960, Sep. 17, 1992, Pat. No. 5,230,278, which is a continuation-in-part of Ser. No. 818,850, Jan. 10, 1992, Pat. No. 5,255,593, which is a continuation-in-part of Ser. No. 683,285, Apr. 10, 1991, Pat. No. 5,134,925. This application Oct. 25, 1993, Ser. No. 142,609
Int. Cl.[6] A23F *5/00*
U.S. Cl. 426—231 8 Claims



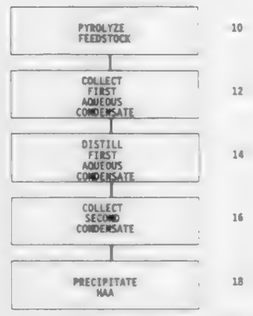
5. A method for selectively combining two or more substances for brewing, flavoring, and mixing a beverage brewing using means for brewing a beverage by infusing at least one beverage brewing substance with heated water, a plurality of controllable substance dispensers operatively associated with said beverage brewing means for controllably dispensing a substance into said beverage brewing means, each of said plurality of controllable dispensers container at least one substance, and means for selectively controlling said plurality of said controllable dispensers, said control means being coupled to each of said plurality of controllable dispensers and selectively dispensing a predetermined quantity of substance from at least two of said controllable dispensers for producing a predetermined selected beverage; said method comprising the following steps of:
dispensing a selected quantity of substance from a first one of said substance dispensers into said beverage brewing means for flavoring and mixing a brewed beverage;
dispensing a selected quantity of substance from at least a second one of said substance dispensers into said beverage brewing means for flavoring and mixing a brewed beverage;
infusing said substances in said beverage brewing means for producing a brewed beverage.

5,393,541
PREVENTION OF ELECTRODE FOULING IN HIGH ELECTRIC FIELD SYSTEMS FOR KILLING MICROORGANISMS IN FOOD PRODUCTS
Andrew H. Bushnell, San Diego; Reginald W. Clark, Del Mar; Joseph E. Dunn, Vista, and Samuel W. Lloyd, La Mesa, all of Calif., assignors to Foodco Corporation, San Diego, Calif.
Filed Jan. 6, 1994, Ser. No. 178,745
Int. Cl.[6] A23L *3/32*
U.S. Cl. 426—237 27 Claims



1. A method for killing microorganisms in a food product, said food product containing a fouling agent that agglomerates on an electrode in response to the passing of a net charge between the electrode and the food product, said agglomeration causing the fouling of the electrode, said method including the steps of:
(a) positioning the electrode in the supply of the food product;
(b) applying a first voltage signal to the electrode for a first prescribed period of time, said first voltage signal causing a first current to flow to the electrode, said first current and said first prescribed period defining a first charge; and
(c) applying a second voltage signal to the electrode for a second prescribed period of time, said second voltage signal causing a second current to flow from the electrode, said second current and said second prescribed period of time defining a second charge, wherein said first charge and said second charge are substantially equal charges;
whereby the net charge transferred to the electrode after the first prescribed period of time and the second prescribed period of time is approximately zero;
whereby the agglomeration of the fouling agent on the electrode is reduced.

5,393,542
PROCESS FOR PRODUCING HYDROXYACETALDEHYDE
John A. Stradal, and Gary L. Underwood, both of Manitowoc, Wis., assignors to Red Arrow Products Company Inc., Manitowoc, Wis.
Division of Ser. No. 866,567, Apr. 10, 1992, Pat. No. 5,252,188, which is a continuation-in-part of Ser. No. 675,145, Mar. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 535,735, Jun. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 498,849, Mar. 26, 1990, abandoned. This application Jul. 16, 1993, Ser. No. 92,475
Int. Cl.[6] A23L *1/27*
U.S. Cl. 426—241 17 Claims



1. A method of browning a foodstuff without imparting a smoke flavor to the foodstuff comprising:
contacting the foodstuff with a nonsmoke flavored aqueous solution containing precipitated hydroxyacetaldehyde.

5,393,543
PROCESS FOR PREPARING LOW FAT POTATO CHIPS AND SHOESTRING POTATOES
Stephen Laufer, 1452 Cerro Gordo St., Los Angeles, Calif. 90026
Continuation-in-part of Ser. No. 30,794, Mar. 12, 1993, Pat. No. 5,292,540, which is a continuation-in-part of Ser. No. 712,943, Jun. 10, 1991, Pat. No. 5,194,277. This application Nov. 18, 1993, Ser. No. 154,253
The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.
Int. Cl.[6] A23L *1/217*
U.S. Cl. 426—242 57 Claims

1. A method for preparing a potato product having a low fat content in which none of the natural foodstuffs of the potato are removed, said method consisting of the following steps: cutting a potato to produce a plurality of potato slices; heating the slices at a temperature and for a time sufficient to remove from 50% to 80% of the moisture from the slices; and microwave heating the heated slices for a period of about 20 seconds to 5 minutes to produce a product having substantially the same flavor, color, crispness and slightly greasy appearance as deep-fried potato chips and having no added fat content.

5,393,544
PROCESS FOR PREPARING FAT FREE FROZEN FRENCH FRY STYLE POTATOES
Scott C. Hannah, 2700 Richards Rd., Bellevue, Wash. 98005, and David J. Yanda, 211 Harvest Ct., Manitowoc, Wis. 54220
Continuation of Ser. No. 882,477, May 13, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 171,341
Int. Cl.[6] A23L *1/217*
U.S. Cl. 426—250 11 Claims

1. A process for producing fat-free frozen french fry style potatoes, comprising:
a) peeling potatoes;
b) preheating the peeled potatoes prior to cutting for a per-

iod of time sufficient to reduce shattering and slivering of the potatoes during cutting;
c) cutting the preheated peeled potatoes into potato pieces;
d) blanching the cut potato pieces in a fat-free medium;
e) introducing an edible coloring agent to the cut potato pieces to impart a fried appearance to the potato pieces upon subsequent fat-free cooking;
f) drying the blanched cut potato pieces, wherein after coloring and drying the potato pieces have a solids content of from 30 to 36 percent by weight;



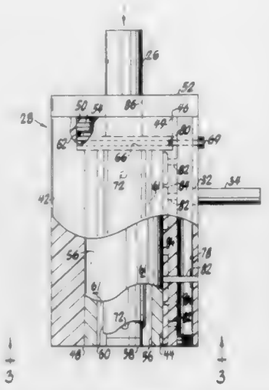
g) freezing the dried potato pieces to produce frozen fat-free potato pieces;
h) mechanically grading the potato pieces, after cutting and prior to packaging, to remove broken bits and slivers that would burn during subsequent fat-free cooking; and
i) packaging the dried, graded, frozen potato pieces, whereby the packaged potatoes are suitable for subsequent fat-free and substantially fat-free cooking to produce french fry style potatoes having an acceptable color and texture.

5,393,545
COMPOSITION ACTIVE AGAINST BOTULISM
Eric A. Johnson, Madison, Wis., and Ernani Dell'Acqua, Milan, Italy, assignors to Solchem Italiana S.p.A., Milan, Italy
Filed Feb. 3, 1993, Ser. No. 13,072
Claims priority, application Italy, Feb. 5, 1992, MI 92A 000217
Int. Cl.[6] A23B *4/00, 7/00*
U.S. Cl. 426—268 **5 Claims**

1. A food composition under anaerobic conditions consisting essentially of: a) food having animal or vegetable origin susceptible to contamination by *Clostridium botulinum* under anaerobic conditions; b) lysozyme or non-toxic salts thereof; and a) a member of the group consisting of alkaline salts of ethylendiaminotetracetic acid, (ethylendioxy)-diethylenedinitriloacetic acid, diethylenetriaminopentacetic acid, trans-1,2-diaminocyclohexanetetracetic acid and tripolyphosphoric acid, wherein b) and c) are present in effective amounts.

5,393,546
METHOD FOR TWO PHASE CONVEYANCE OF A PRODUCT
Hamsa A. P. Thota; Don A. Rebstock, both of St. Simons Island, Ga., and Chandrakant S. Shah, Greenfield, Ind., assignors to Rich-SeaPak Corporation, St. Simons Island, Ga.
Filed Feb. 26, 1993, Ser. No. 23,997
Int. Cl.[6] A23L *1/00;* **A23P** *1/00*
U.S. Cl. 426—276 **3 Claims**

1. A method for continuously forming a product, comprising the steps of:
mixing at least two components to form a mixture;
providing a flow channel having internal surfaces;
introducing the mixture of at least two components into the channel and causing the mixture to move through the channel for flow as a first phase through the channel;
simultaneously applying a film of fluid over the internal surfaces to provide a second phase to surround the first phase and separate the first phase from the internal surfaces during conveyance of the mixture through the channel; and
causing the at least two components to react chemically with one another, resulting in a transition of the mixture from a fluid state to a solid or gel state, the transition occurring substantially after the step of introducing the mixture into the channel so that the solid or gel is surrounded by the film and separated from the internal surfaces, wherein the at least two components of the mixture include an alginate and a source of calcium to form an alginate gel during movement through the flow channel.

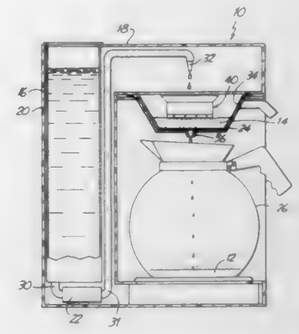


5,393,547
INACTIVATION OF ENZYMES IN FOODS WITH PRESSURIZED CO_2
Murat O. Balaban; Maurice R. Marshall, both of Gainesville, Fla., and Louise Wicker, Comer, Ga., assignors to University of Florida, Gainesville, Fla.
Continuation-in-part of Ser. No. 243,275, Sep. 12, 1988, abandoned. This application Dec. 19, 1989, Ser. No. 452,496
Int. Cl.[6] A23B *4/12;* **A23C** *3/08;* **A23L** *2/18*
U.S. Cl. 426—330 **6 Claims**

1. A method for inactivating at least one undesirable enzyme in a food product containing at least one such undesirable enzyme which is sensitive to inactivation at a lowered pH value and an aqueous phase comprising exposing said food product to an atmosphere having a partial pressure of CO_2 of from about 0.5 atm. to about 1,000 atm. at a temperature of from about 0° C. to about 200° C. for a time sufficient to result in dissolution of sufficient CO_2 in the aqueous phase of said food product to produce a carbonic acid solution having a pH sufficiently low to irreversibly inactivate said enzyme.

5,393,548
METHOD OF MAKING COFFEE USING WATER FILTRATION DEVICE
Randy B. Heiligman, Minnetonka, Minn., assignor to UltraPure Systems, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 67,120, May 26, 1993, Pat. No. 5,318,703, and a continuation-in-part of Ser. No. 107,643, Aug. 17, 1993. This application Dec. 9, 1993, Ser. No. 164,365
Int. Cl.[6] A23F *5/00*
U.S. Cl. 426—433 **22 Claims**

1. A method of making coffee from ground coffee beans and water, the method comprising:
providing an automatic drip coffee maker including a heater means for heating the water wherein the heater means has a hot water drip outlet, a basket for holding the ground coffee beans wherein the basket has an inlet and an outlet and is positioned below the hot water drip outlet such that the hot water drips into the basket and mixes with the ground coffee beans, and a collection vessel for collecting the hot water after the hot water mixes with the ground coffee beans;
positioning a water filtration device for filtering impurities from the hot water between the hot water drip outlet and the ground coffee beans such that impurities in the hot water are filtered out of the hot water as the hot water passes through the filtration device;
heating the water using the heater means; and
passing the heated water through the water filtration device and the ground coffee beans and into the collection vessel.



5,393,549
PREPARATION OF AERATED FAT-CONTAINING FOODS
Ernest Badertscher, Orbe, and Marianne Bruelhart, Stetten, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland
Filed May 21, 1992, Ser. No. 888,238
Claims priority, application European Pat. Off., Jun. 14, 1991, 91109769
Int. Cl.[6] A23P *1/16*
U.S. Cl. 426—564 **22 Claims**

1. A process for preparing an aerated fat-containing food product comprising:
mixing a fat with a fermented base which comprises a mix of a fermented acidified milk-based material and a fermented hydrolyzed amylaceous material in amounts to obtain a fat and fermented base mixture which contains a maximum of 30% by weight fat;
refining the mixture to reduce a size of particles in the mixture to obtain a refined mixture wherein the particles have a maximum size of about 30 μm; and
aerating the refined mixture.

5,393,550
FAT SUBSTITUTE
Bryan D. Tarr, Missoula, and Steven H. Bixby, Lolo, both of Mont., assignors to Nurture, Inc., Missoula, Mont.
Filed Apr. 15, 1993, Ser. No. 47,846
Int. Cl.[6] A23L *1/0522, 1/10*
U.S. Cl. 426—573 **16 Claims**

1. A food composition, comprising:
a microparticulate starch/protein material prepared from cereal grain seeds by a process consisting essentially of milling, physical separation, and solvent extraction of lipids therefrom, wherein said starch/protein material contains at least 60% starch by dry weight and has been gelled by heating with an aqueous material to form a product having organoleptic properties of fat; and
a separate food ingredient of animal or vegetable origin mixed in combination with said gelled starch/protein material.

8. A method for preparing low fat or fat free food, comprising:
providing a fat substitute comprising microparticulate starch/protein material prepared from cereal grain seeds by a process consisting essentially of milling, physical separation, and solvent extraction of lipids therefrom, wherein said starch/protein material contains at least 60% starch by dry weight; and
combining said fat substitute with other food ingredient of animal or vegetable origin to form a finished food product in which said fat substitute provides the organoleptic properties of fat, wherein said fat substitute has been heated with aqueous material to gel said fat substitute.

5,393,551
MODIFIED MILK CONTAINING A BUTTER FAT SUBSTITUTE WHICH INCLUDES PARTIALLY HYDROGENATED SOYBEAN OIL
Pat Arcadipane, Brooklyn, N.Y., assignor to Jersey Farms Corp., Charlotte, N.C.
Filed Sep. 6, 1991, Ser. No. 756,162
Int. Cl.[6] A23C *9/14*
U.S. Cl. 426—585 **14 Claims**

1. A modified milk containing a butter-fat substitute in the place of unmodified milk butterfat while having the taste and feel of unmodified milk with the same amount of butterfat and having substantially greater shelf life than the unmodified milk, said modified milk comprising non-fat dry or fluid milk and a butterfat substitute in an amount sufficient to provide the texture and feel of unmodified milks containing from 1 percent to 4 percent butterfat, said butterfat substitute comprising a mixture of from about 66 to about 98 percent by weight partially hydrogenated soybean oil comprising from about 70 to 80 percent unsaturated fatty acids including linoleic acid in an amount of about 5.8%, and from about 20 to about 30 percent saturated fatty acids, and from about 2 to about 34 percent by weight mono-and diglycerides, said modified milk having an extended shelf like of about 20–30 days.

5,393,552
PROCESS FOR PRODUCING FRENCH FRIES HAVING AN EXTENDED HOLDING QUALITY
William F. Busacker, Moses Lake; John W. Calder, Othello, both of Wash.; Linda J. Erickson, Newhall, Calif., and Richard K. Pinegar, Moses Lake, Wash., assignors to Nestec S.A., Vevey, Switzerland
Continuation-in-part of Ser. No. 89,470, Jul. 12, 1993, Pat. No. 5,302,410. This application Apr. 8, 1994, Ser. No. 225,112
The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.
Int. Cl.[6] A23L *1/217*
U.S. Cl. 426—637 **12 Claims**

1. A process for producing frozen potato strips which remain crisp for an extended time after finish frying which consists essentially of
cutting potatoes to produce elongated potato strips,
blanching the potato strips,
contacting the blanched potato strips with an aqueous solution having a pH in the range of about 5.5 to 8.5 which contains between about 1% to 12% by weight of a hydrolyzed starch product having a DE value of less than 12, and then
freezing the potato strips without the strips having been par-fried, whereby the frozen strips when finish fried have a crisp surface and a mealy internal texture, with the surface of the strips remaining crisp for an extended period of time after finish frying.

5,393,553

POWDERY OYSTER JUICE COMPOSITION, PROCESS FOR THE PRODUCTION OF THE SAME, AND PROCESS FOR RETAINING THE FRESHNESS OF PERISHABLE FOOD WITH THE USE OF POWDERY OYSTER JUICE COMPOSITION

Yoshimi Ando, 3-18, Gokiso-Dori, Showa-ku, Nagoya-shi, Aichi-ken, Japan

Continuation of Ser. No. 665,516, Mar. 5, 1991, Pat. No. 5,271,951. This application Jun. 30, 1993, Ser. No. 83,595
Claims priority, application Japan, Nov. 21, 1990, 2-316460
Int. Cl.[6] A23C *21/08*; A23L *1/327, 2/08, 3/00*
U.S. Cl. 426—655 10 Claims

1. An oyster juice composition, consisting essentially of oyster juice and a milk derivative consisting of lactose.

5,393,554

CREAM COMPOSITION

Urara Mori, Sakai; Satoru Morinaga, Sennan; Tsukasa Kiyama, Kobe; Masaaki Miyabe, and Masayuki Yamaguchi, both of Sennan, all of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 851,787, Mar. 16, 1992, abandoned. This application Dec. 30, 1993, Ser. No. 175,532
Claims priority, application Japan, May 29, 1991, 3-155653
Int. Cl.[6] A23C *13/12*
U.S. Cl. 426—662 1 Claim

1. A cream composition having emulsion break resistance under heating, comprising an O/W type emulsion containing 20 to 80% by weight of an oil, 1 to 10% by weight of solids-not-fat, 20 to 80% by weight of water and an emulsifying agent comprising a combination of 0.05 to 2% by weight of lysolecithin and 0.05 to 2% by weight of polyglycerin fatty acid ester in the composition based on the mixture of raw materials, the amount of polyglycerin fatty acid ester being 0.2 to 4 parts by weight per 1 part by weight of lysolecithin.

5,393,555

Patent Not Issued For This Number

5,393,556

COMPOSITION AND METHOD FOR DETECTING COUNTERFEIT PAPER CURRENCY

Camille Romano, 10964 SW. 71 La., Miami, Fla. 33173

Filed Jul. 13, 1993, Ser. No. 90,977
Int. Cl.[6] G01N *31/22*
U.S. Cl. 427—7 5 Claims

1. A composition for detecting the starch content in paper currency comprising an aqueous-alcohol solution of iodine and phenolthalien.

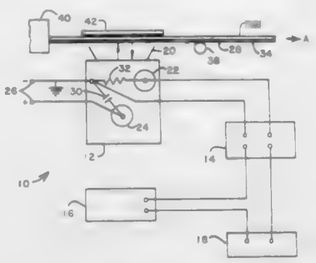
3. The method of detecting the presence of starch in paper currency including applying a quantity of the composition of claim 1 to said paper currency and observing any change in color.

5,393,557

METHOD FOR MEASURING ELECTROMAGNETIC PROPERTIES

Phillip H. Darling, Jr., Buena Park, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Dec. 17, 1992, Ser. No. 992,238
Int. Cl.[6] C23C *16/00*
U.S. Cl. 427—10 39 Claims



1. A method of controlling an apparatus adapted for applying a coating to a member comprising the steps of:

providing a transceiver proximate to a coated region of the member;

transmitting electromagnetic energy from an antenna of the transceiver to an area of the coated region;

receiving reflected electromagnetic energy at the antenna that has been reflected by the area of the coated region back to the antenna;

transmitting a signal, based upon the received reflected electromagnetic energy, from the transceiver to a controller of the apparatus; and,

controlling a manufacturing process parameter of the apparatus in response to the signal,

whereby a property of the coated region of the member is maintained within a selected measurement range.

5,393,558

METHOD OF BONDING A CONDUCTOR COMPOSITION INCLUDING A LITHIUM COMPOUND TO AN ALUMINUM NITRIDE SUBSTRATE

Kevin W. Allison, Goleta; Dana L. Hankey, Santa Barbara, both of Calif.; Edward Stadnicar, Jr., and Gordon J. Roberts, both of Parma,, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Continuation of Ser. No. 823,320, Jan. 21, 1992, abandoned, which is a division of Ser. No. 91,081, Aug. 31, 1987, Pat. No. 5,089,172. This application Jun. 7, 1993, Ser. No. 73,288
Int. Cl.[6] B05D *5/12*; C03C *3/07*
U.S. Cl. 427—126.2 17 Claims

1. A method of adherently depositing a thick film conductor composition on an aluminum nitride substrate comprising:

(a) providing an aluminum nitride substrate;

(b) applying a thick film conductor composition to such aluminum nitride substrate which includes: (i) a sufficient amount of conductive metallic material to render such thick film conductor composition electrically conductive when bonded to such aluminum nitride substrate, (ii) a glass frit binder for such conductive metallic material capable of being bonded to such aluminum nitride substrate, such glass frit binder comprising from about 27.0 to about 56.5 percent silicon dioxide, from 0 to about 47.0 percent barium oxide, from about 4.5 to about 25.0 percent boron oxide, from 0 to about 18.0 percent lead oxide, from 0 to about 15.0 percent zinc oxide, from about 3.0 to about 14.0 percent aluminum oxide, from 0 to about 3.0 percent zirconium oxide, from 0 to about 9.0 percent magnesium oxide, from 0 to about 12.0 percent calcium oxide, from 0 to about 3.0 percent fluorine, from 0 to about 3.0 percent potassium oxide, from 0 to about 3.0 percent sodium oxide, from 0 to about 4.0 percent tungsten oxide, and from 0 to about 4.0 percent lithium oxide, wherein barium oxide plus lead oxide is present in an amount of at least about 15.0 percent, zinc oxide plus calcium oxide plus aluminum oxide is present in an amount of at least about 5.0 percent, calcium oxide plus magnesium oxide plus barium oxide is present in an amount of at least about 7.0 percent, calcium oxide plus magnesium oxide plus zirconium oxide is present in an amount of at least about 1.0 percent, zirconium oxide plus calcium oxide plus barium oxide is present in an amount of at least about 7.0 percent, and potassium oxide plus sodium oxide plus lead oxide or barium oxide is present in an amount of at least about 10.0 percent, (iii) a lithium containing adhesion compound capable of reacting with such aluminum nitride substrate upon heating so as to bond such thick film conductor composition to such aluminum nitride substrate, such lithium containing compound consisting of at least one compound selected from the group consisting of lithium carbonate, lithium hydroxide, =lithium fluoride, lithium metaborate, lithium nitride, lithium peroxide, lithium benzoate, lithium oxalate, lithium amide, lithium methoxide, lithium hydride, lithium oxide and lithium nitrate; and (iv) an organic dispersion medium for such thick film conductor composition; and

(c) heating such so-applied thick film conductor composition to cause such lithium containing adhesion compound to react with such aluminum nitride substrate to promote adhesion between such thick film conductor composition and such aluminum nitride substrate.

5,393,559

PROCESS FOR REINFORCING PAVING

Roy Shoesmith, and Mark O. Kittson, both of Midland,, Canada, assignors to Bay Mills Limited, Canada

Continuation of Ser. No. 852,537, Mar. 17, 1992, Pat. No. 5,246,306, which is a continuation of Ser. No. 745,970, Aug. 12, 1991, Pat. No. 5,110,627, which is a continuation of Ser. No. 558,153, Jul. 26, 1990, abandoned, which is a division of Ser. No. 116,351, Nov. 4, 1987, Pat. No. 4,957,390. This application Jul. 8, 1993, Ser. No. 87,275
Int. Cl.[6] B05C *1/16*
U.S. Cl. 427—136 25 Claims

1. A process for reinforcing paving in which a second layer of paving is placed on top of a first layer of paving, the process comprising:

selecting an open grid reinforcement of multi-filament reinforcing strands in substantially parallel alignment, the grid being in the form of a roll, wherein a resin has been applied to the strands of the grid and an activatable adhesive has been applied to the resin on one side of the grid;

continuously unrolling the grid, adhesive side down, essentially directly, evenly and flatly onto the first layer of paving, while maintaining the respective strands of the grid in substantially parallel alignment;

activating the adhesive by applying one of heat and pressure to adhere the grid in place to the first paving layer and substantially to eliminate bubbles, raised portions or sideways distortion of the strands of the grid before and during application of the second layer; and

applying the second layer of paving on top of the grid and the first layer, the second paving layer passing through openings in the grid so that the grid openings provide for significant and substantially direct contact between the first and second paving layers.

5,393,560

METHOD FOR PREPARING A HEAT-SENSITIVE RECORDING MATERIAL

Kiyomi Okada, Osaka, and Gensuke Matoba, Ibaraki, both of Japan, assignors to Kanzaki Paper Mfg. Co., Ltd., Chuo, Japan

Continuation of Ser. No. 848,422, Mar. 6, 1992, abandoned. This application Jul. 29, 1993, Ser. No. 98,238
Claims priority, application Japan, Mar. 7, 1991, 3-041822
Int. Cl.[6] B41M *5/26*
U.S. Cl. 427—150 8 Claims

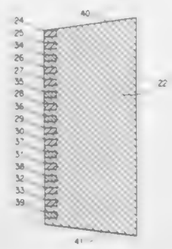
1. A method for preparing a heat-sensitive recording material, which comprises the steps of: (1) forming a heat-sensitive recording layer on a base sheet of a plastic film or synthetic paper, wherein the heat-sensitive recording layer comprises a chromogenic material and a color developer which produces a color by thermally contacting with the chromogenic material and characterized in that the heat-sensitive recording layer is formed by applying an aqueous coating composition comprising the chromogenic material and the color developer together with a binder and a pigment with use of a coater selected from the group consisting of bar coaters, rod coaters and blade coaters to the Bekk smoothness of the heat-sensitive recording layer from 500 to 6000 seconds, and (2) forming a protective layer on the heat-sensitive recording layer, wherein the protective layer is formed by applying an aqueous coating composition on the heat-sensitive recording layer with use of a coater selected from the group consisting of bar coaters, rod coaters and blade coaters.

5,393,561

SEGMENTED WAVEGUIDES HAVING SELECTED BRAGG REFLECTION CHARACTERISTICS

John D. Bierlein; William Bindloss, both of Wilmington, Del.; Fredrik Laurell, Solna, Sweden, and Jerald D. Lee, Mendenhall, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 762,691, Sep. 19, 1991, Pat. No. 5,243,676. This application Mar. 24, 1993, Ser. No. 36,376
Int. Cl.[6] B65D *5/06*
U.S. Cl. 427—163.2 20 Claims



1. A process for preparing a channel waveguide for a wavelength conversion system wherein (1) the z-cut surface of a z-cut substrate of single crystal material having the formula $K_{1-x}Rb_xTiOMO_4$ wherein x is from 0 to 1 and M is P or As is provided with an optically smooth surface, (2) a molten salt containing cations is provided in an amount effective to provide upon exposure to said optically smooth surface sufficient cation replacement to change the index of refraction with respect to the index of refraction of said substrate, (3) a masking material is applied on said substrate to provide a pattern of aligned areas along a portion of said optically smooth surface which are alternately masked with a material resistant to said molten salt and unmasked, (4) said masked substrate is immersed in said molten salt, thereby providing cation replacement in said unmasked areas; and (5) the masking material is removed from said substrate, characterized by:

said molten salt containing cations selected from the group consisting of Rb^+, Cs^+ and Tl^+, with the proviso that

when the channel waveguide is prepared for a wavelength conversion system which uses quasi-phase matching, (a) the molten salt also contains cations selected from the group consisting of Ba^{++}, Sr^{++} and Ca^{++} and when x is greater than 0.8, cations selected from Tl^{+} and Cs^{+}, and (b) the molten salt contains said cations in an amount effective to provide upon said exposure to said unmasked areas of the optically smooth surface, a nonlinear optical coefficient which is changed with respect to the nonliner optical coefficient of the substrate; and

the lengths of said masked and unmasked areas being sized such that after said cation replacement in the unmasked areas, a channel waveguide is provided at said portion of the optically smooth surface which comprises a series of aligned sections of optical materials having a periodic structure suitable to provide wavelength conversion for incident waves at an incident wavelength and a Bragg reflection for said incident wavelength which has a wavelength essentially equal to the wavelength of said incident waves.

5,393,562

METHOD OF PRESERVING AND STORING BOOKS AND OTHER PAPERS

Donald K. Sebera, Bridgeton, N.J., assignor to The United States of America as represented by the Librarian of Congress, Washington, D.C.

Filed Mar. 2, 1993, Ser. No. 80,612
Int. Cl.[6] C23C *16/00*
U.S. Cl. 427—248.1 **20 Claims**

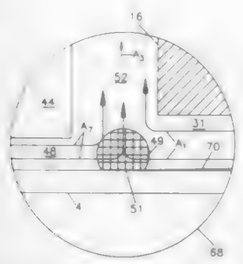
1. Method of operating a long-term book storage and preservation system for books having pages of acidic paper in a room having no noticeable ammonia smell and an environment which is non-toxic to humans comprising placing said books for long-term storage in a closed storage room having a controlled continuously maintained mildly alkaline atmosphere which includes gaseous ammonia in a range from about 0.05 to about 1 volume parts per million, whereby the acidity of said book pages is gradually neutralized or an already neutralized book is maintained in a neutralized condition by storage in said long-term storage room.

5,393,563

FORMATION OF TIN OXIDE FILMS ON GLASS SUBSTRATES

Frank B. Ellis, Jr., 42 Montadale Cir., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 784,578, Oct. 29, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 87,033
Int. Cl.[6] C23C *16/40*; B05D *5/06*; C03C *17/245*
U.S. Cl. 427—248.1 **14 Claims**



1. A method for controlling or varying at a nucleation site, haze in forming a film of metal oxide on a substrate comprising the steps of:

moving the substrate through a deposition system;

bringing reactants for forming the film into contact with an area of the substrate within the deposition system; and

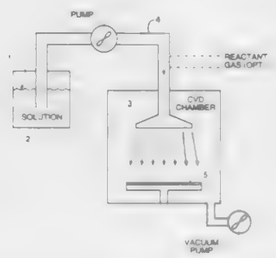
controlling or varying the formation of nascent crystallites in said film as it is being formed at said nucleation site, said crystallites affecting the roughness or haze of the film, by injecting a blocking gas into the region between the nucleation site and the side of the area where the substrate enters the deposition system, to block or prevent ambient air with uncontrolled water vapor from entering the nucleation site, and by controlling the level of concentration of water vapor in the blocking gas to control the total concentration of water vapor at the nucleation site.

5,393,564

HIGH EFFICIENCY METHOD FOR PERFORMING A CHEMICAL VAPOR DEPOSITION UTILIZING A NONVOLATILE PRECURSOR

Donald L. Westmoreland, and Gurtej S. Sandhu, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Continuation-in-part of Ser. No. 62,203, May 14, 1993, abandoned. This application May 2, 1994, Ser. No. 236,946
Int. Cl.[6] C23C *16/00*
U.S. Cl. 427—248.1 **18 Claims**



1. A method for performing a chemical vapor deposition of a film on a surface of a wafer, comprising the following steps:

a) solubilizing a nonvolatile precursor in an inorganic solvent to form a liquid solution;

b) transporting said liquid solution as a continuous liquid stream to a control chamber, said transporting performed at a temperature and a pressure to ensure a state of said nonvolatile precursor remains liquid;

c) evaporating said liquid solution in said control chamber to change said state of said nonvolatile precursor to a vapor;

d) creating a reaction between said vapor of said nonvolatile precursor and a reactant vapor; and

e) depositing the film on the surface of the wafer in response to said reaction.

5,393,565

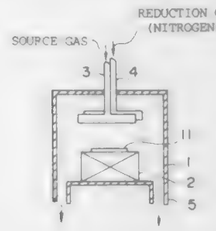
METHOD FOR DEPOSITION OF A REFRACTORY METAL NITRIDE AND METHOD FOR FORMATION OF A CONDUCTIVE FILM CONTAINING A REFRACTORY METAL NITRIDE

Toshiya Suzuki; Takayuki Ohba, both of Kawasaki; Shimpei Jinnouchi, and Seishi Murakami, both of Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 7, 1993, Ser. No. 72,086
Claims priority, application Japan, Jun. 8, 1992, 4-147656
Int. Cl.[6] C23C *16/00*
U.S. Cl. 427—255.2 **14 Claims**

1. A method for deposition of a refractory metal nitride, wherein a refractory metal nitride is deposited in a vapor phase by using a source gas containing a refractory metal and a

reducing and nitrogenizing gas containing at least one of an alkyl amino compound, an alkyl azide compound, hydrazine



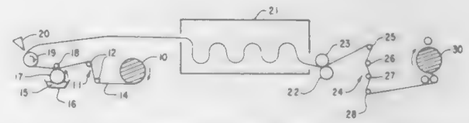
and a hydrazine alkyl compound for reducing and nitrogenizing said source gas.

5,393,566

RECYCLABLE PLASTIC COATED CONTAINERS

Charles Propst, Gettysburg, Pa., assignor to Tim-Bar Coprora-tion, Hanover, Pa.

Filed Oct. 27, 1992, Ser. No. 966,835
Int. Cl.[6] B05D *3/04, 3/12*
U.S. Cl. 427—348 **5 Claims**



1. A process of making a coated paper or kraft stock comprising the steps of:

providing a paper or kraft stock;

applying an aqueous acrylic resin coating composition as a coating to said paper or stock in an amount in excess of the desired amount of coating;

said aqueous acrylic resin including a zinc oxide solution in an amount sufficient to crosslink the acrylic resin;

metering and removing unwanted coating material from said paper or stock coated with said excess amount of coating material by directing a flow of fluid against said coating;

said coating being metered so as to contain 4 to 12 wet pounds of resin per one thousand square feet of coated paper or kraft stock;

solidfying the coating on aid paper or stock; and

obtaining a coated paper or kraft stock.

5,393,567

POWDER MIXTURE FOR MAKING AN UNDERCOATING AGENT FOR STEEL SURFACES

Guido Wekenmann, deceased, late of Ludwigsburg by Dorothee Wekenmann, Dominik Guido Wekenmann and Monika Johanna Wekenmann, heirs ; Siglinde Herzog nee Kress, Kornwestheim, and Axel Petrikat, Ludwigsburg, all of Germany, assignors to Sika Chemie GmbH, Stuttgart, Germany

PCT No. PCT/EP91/02023, § 371 Date Sep. 27, 1993, § 102(e) Date Sep. 27, 1993, PCT Pub. No. WO92/09663, PCT Pub. Date Jun. 11, 1992
PCT Filed Oct. 25, 1991, Ser. No. 70,307
Claims priority, application Germany, Nov. 27, 1990, 4037598
Int. Cl.[6] C09D *5/08, 5/10*
U.S. Cl. 427—372.2 **9 Claims**

1. A powder mixture for making an anticorrosive zinc-containing undercoating agent for steel surfaces, comprising a dry mixture of a water-reemulsifiable powdery dispersion agent and a water-reactive zinc in powder or flake form said dispersion agent being selected from the group consisting of a vinyl acetate copolymer, an acrylate, an ethylene-vinyl laurate-vinyl chloride copolymer and a styrene copolymer.

6. A method for the manufacture and application of an anticorrosive undercoating agents for steel surfaces comprising the steps of mixing the powder mixture according to claim 1 with water to form a viscous coating compound, applying the coating compound immediately thereafter to a steel surface and drying the compound by evaporating the water.

5,393,568

METALIZED COATING PROCESS

Thomas J. Valente, 226 Via Morella, Encinitas, Calif. 92024, and Henri J. A. Charmasson, San Diego, Calif., assignors to Thomas J. Valente

Continuation of Ser. No. 60,162, May 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 843,951, Feb. 28, 1992, abandoned. This application Nov. 30, 1993, Ser. No. 160,428
Int. Cl.[6] B05D *3/10*
U.S. Cl. 427—385.5 **16 Claims**

1. A process for coating a surface with a metal-and-resin composition, said process comprising:

forming at room temperature, a mixture of spreadable paste of up to 91% per weight of an atomized sintering metal powder having particle sizes from 2 to 150 microns with a thermosetting synthetic resin which cures to hardness when heated;

admixing a catalyst;

applying said mixture in an unliquified, malleable state over polished and non-polished areas of said surface;

curing said mixture to hardness at ambient temperature up to 150° C.; and

finishing said applied and hardened mixture.

5,393,569

WATER-PERMEABLE AND FIRE-RESISTANT FILM AND A PREPARING METHOD THEREOF

Shin-Chuan Yao, Tu Cheng; Jong-Fu Wu; Kun-Lin Cheng, both of Taipei; Chiu-Hsiung Tsai, Yun Lin Hsien; Farn-Ping Koong, Taipei; Kun-Lung Chuang, Tao Yuan Hsien; Shu-Lan Yao, Yung Ho, and Chin-Liu Liu, Hsin Chuang, all of Taiwan, Prov. of China, assignors to China Textile Institute, Taipei Hsien, Taiwan, Prov. of China

Filed Feb. 14, 1994, Ser. No. 195,039
Int. Cl.[6] B05D *3/02*
U.S. Cl. 427—387 **6 Claims**

1. A method for preparing water-permeable and fire-resistant film comprising the following steps:

mixing polyurethane resin with a first fire-resistant agent selected from the group consisting of paraffine chlorinated, decabromodiphenyl oxide, hexachloro benzene, hexabromo benzene, pentabromo ethyl benzene, pentabromo diphenyl oxide and octabromo diphenyl ether;

a second fire-resistant agent selected from the group consisting of Sb_2O_3 and Sb_2O_5;

an inorganic fire-resistant agent selected from the group consisting of $Mg(OH)_2$, MoO_3, $Al(OH)_3$, P, $CaCO_3$, $CaOA12O3.6H2O$, $MgCO_3$, CuO and Cu_2O and an additive agent selected from the group consisting of Zn, Mg, ZrO_2, TiO_2, SiO_2, SnO, ZnO and BaB_2O_4 to form a mixture;

grinding said mixture;

formulating said mixture to form a coating solution;

applying said coating solution to a support;

wet-curing said coating solution applied on said support to form a film.

5,393,570

PROCESS FOR THE PRODUCTION OF A MULTICOAT COATING, AQUEOUS COATING COMPOSITIONS, WATER-THINNABLE POLYACRYLATE RESINS AND PROCESS FOR THE PRODUCTION OF WATER-THINNABLE POLYACRYLATE RESINS

Stephan Schwarte, Emsdetten; Manfred Dangschat; Manfred Reimann, both of Drensteinfurt, and Carlos Westermann, Mainhausen, all of Germany, assignors to BASF Lacke+-Farben Aktiengesellschaft, Munster, Germany

PCT No. PCT/EP91/00480, § 371 Date Nov. 24, 1992, § 102(e) Date Nov. 24, 1992, PCT Pub. No. WO91/14711, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 14, 1991, Ser. No. 949,549

Claims priority, application Germany, Mar. 28, 1990, 4009932

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—388.4 11 Claims

1. Process for the production of a multicoat coating on a substrate surface, wherein the process includes the steps of

(1) applying a pigmented basecoat composition to the substrate surface,

(2) forming a polymeric film from the composition applied in stage (1),

(3) applying a transparent aqueous topcoat composition containing a water-thinnable polyacrylate resin as binder and an amino resin as crosslinking agent to the basecoat obtained in this way, and subsequently

(4) baking the basecoat together with the topcoat,

wherein the topcoat composition contains a water-thinnable polyacrylate resin as binder, which resin is obtained by adding, successively,

(I)

(a1) more than 25 to less than 60% by weight of an ethylenically unsaturated monomer which contains at least one carboxyl group per molecule and is copolymerizable with (b1), (b2), (b3) and (a2), or of a mixture of such monomers, together with

(a2) 40–75% by weight of an ethylenically unsaturated monomer which is free from carboxyl groups and is copolymerizable with (b1), (b2), (b3) and (a1), or of a mixture of such monomers, and

a mixture (b), consisting of

(b1) a (meth)acrylic acid ester which is copolymerizable with (b2), (b3), (a1) and (a2) and is essentially free from carboxyl groups, or a mixture of such (meth)acrylic acid esters, and

(b2) an ethylenically unsaturated monomer which is copolymerizable with (b1), (b3), (a1) and (a2), contains at least one hydroxyl group per molecule and is essentially free from carboxyl groups, or a mixture of such monomers, and, if appropriate,

(b3) an ethylenically unsaturated monomer which is copolymerizable with (b1), (b2), (a1) and (a2), is essentially free from carboxyl groups and is different from (b1) and (b2), or a mixture of such monomers,

to an organic solvent or solvent mixture and carrying out a polymerization in the presence of at least one polymerization initiator, the addition of the mixture (b) commencing only when at least 60% by weight of the components (a1) and (a2) have reacted or

by adding the above alternately in part amounts, to an organic solvent or solvent mixture and carrying out the polymerization in the presence of at least one polymerization initiator, the part amounts consisting in each case of at least 10% by weight of the total amount to be used of the component (a1) and (a2) and the mixture (b) and the addition of a part amount commencing only when at least 60% by weight of the preceding part amount has reacted, and

(II)

at the end of the polymerization, neutralizing, at least partially, the resultant polyacrylate resin and dispersing it in water, the sum of the proportions by weight of (a1) and (a2) always being 100% by weight and the type and amount of (b1), (b2), (b3), (a1) and (a2) being chosen so that the polyacrylate resin has a hydroxyl value of 40 to 200, an acid value of 20 to 100, and a glass transition temperature (T_G) of −40° C. to +60° C.

5,393,571

CURTAIN COATING METHOD FOR ELIMINATING SAGGING AT HIGH FLOW RATES

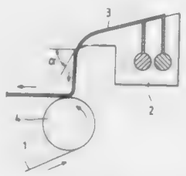
Yasushi Suga; Kenji Nakajima; Kiyoshi Kobayashi, and Kimiaki Miyamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 605,304, Oct. 30, 1990, abandoned. This application Jan. 13, 1993, Ser. No. 3,686

Claims priority, application Japan, Oct. 31, 1989, 1-282030

Int. Cl.[6] B05D *1/30*

U.S. Cl. 427—420 16 Claims



1. A curtain coating method comprising the steps of forming one or more layers of a coating solution on a sliding surface and allowing a free falling curtain of the solution to impinge against a continuously running web, wherein the web has a surface roughness of at least 0.3 μm, a tip of the sliding surface forms an angle in a range of 45° to 120° with respect to the horizontal, a flow quantity of the coating solution is at least 4 $cm^3/cm.sec$, a viscosity of the coating solution is adjusted to at least 90 cps for low shear rate, with an average viscosity for all layers formed being at least 80 cps, and the web is continuously run at a speed exceeding 325 m/min.

5,393,572

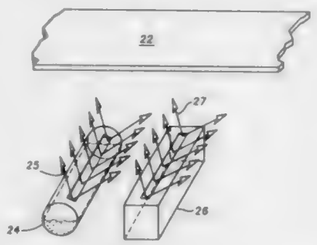
ION BEAM ASSISTED METHOD OF PRODUCING A DIAMOND LIKE CARBON COATING

Geoffrey Dearnaley, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Jul. 11, 1994, Ser. No. 273,492

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—523 20 Claims



1. An ion beam assisted method of producing a diamond-like carbon (DLC) coating comprising the steps of:

(a) directing a vaporized stream of fullerene precursor toward a surface to be coated; and

(b) bombarding the surface to be coated and the fullerene precursor with an ion beam having energies of at least 5 KeV for a sufficient amount of time to rupture a sufficient number of carbon-to-carbon bonds in the precursor to produce an amorphous film comprising randomly disposed carbon atoms in bonded networks.

5,393,573

METHOD OF INHIBITING TIN WHISKER GROWTH

Colin A. MacKay, Austin, Tex., assignor to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Jul. 16, 1991, Ser. No. 730,744

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—528 10 Claims

1. A method for preventing the development and growth of tin whiskers, comprising the steps of:

providing an electrical component having a tin coating; and

inhibiting whisker growth on the tin coating by implanting into the surface of said tin coating an ion selected from the group consisting of Pb, Bi, Sb, Tl, Cu, Ag, Au, Cd, Mo, Cr, W, Ar, He, Ne, and Kr.

5,393,574

METHOD FOR FORMING LIGHT ABSORBING ALUMINUM NITRIDE FILMS BY ION BEAM DEPOSITION

Frank C. Sulzbach, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 937,254, Aug. 28, 1992. This application Nov. 2, 1993, Ser. No. 144,367

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—530 20 Claims

1. A method of fabricating a light absorbing film having an absorptance of about 95% in the 8 to 14 μm region, comprising the steps of:

(a) providing an evacuated chamber;

(b) placing a substrate in said chamber;

(c) providing and depositing on said substrate vaporized elemental aluminum in said chamber; and

(d) bombarding said vaporized elemental aluminum with nitrogen in progressively increasing amounts up to stoichiometry to deposit elemental aluminum on said substrate with aluminum nitride over said elemental aluminum having the formula Al_xN_y, where the atomic ratio of y:x is progressively increased.

5,393,575

METHOD FOR CARRYING OUT SURFACE PROCESSES

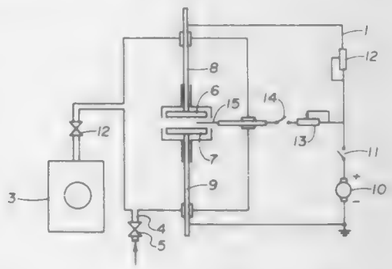
Moisei Esterlis, Bnei Or St., 22/24, Beer-Sheva 84454, Israel

Filed Mar. 1, 1993, Ser. No. 24,624

Claims priority, application Israel, Mar. 3, 1992, 101131; Apr. 16, 1992, 101610

Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—540 17 Claims



1. A method for the surface treatment of a metal workpiece wherein there is generated between a major exposed portion of an anode and successive restricted areas of a first surface of said workpiece acting as a cathode a vacuum arc discharge having an arc current which is not substantially less than 50 amp. and having a positive voltage-current gradient.

5,393,576

Patent Not Issued For This Number

5,393,577

METHOD FOR FORMING A PATTERNED LAYER BY SELECTIVE CHEMICAL VAPOR DEPOSITION

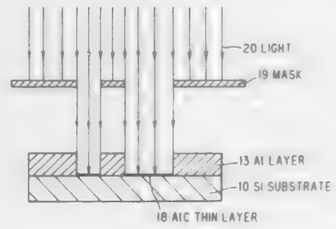
Fumihiko Uesugi, and Shunji Kishida, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 19, 1991, Ser. No. 717,603

Claims priority, application Japan, Jun. 19, 1990, 2-160107; Jul. 13, 1990, 2-186341; Feb. 28, 1991, 3-034756; Mar. 20, 1991, 3-081840

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—586 8 Claims



1. A method for forming a patterned layer by selective CVD, comprising the steps of:

providing a substrate in a CVD chamber;

introducing an organometallic gas into said CVD chamber; and

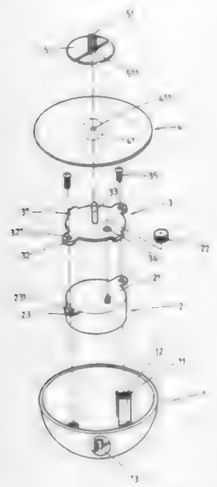
heating said substrate to a temperature at which said organometallic gas is thermally decomposed to produce vapors of a metal and an organic substance, while irradiating light onto areas of a surface of said substrate, a first CVD layer being deposited onto said areas, and wherein a second CVD layer is formed from deposition of said metal from said organometallic gas onto remaining areas of said substrate, said first CVD layer blocking the growth of said second CVD layer on said areas.

5,393,578

CHRISTMAS MOTION ORNAMENT

Steve Yang, 9F-17, No. 3, Tien Mu W. Rd., Taipei, Taiwan, Prov. of China

Filed Mar. 24, 1993, Ser. No. 36,602
Int. Cl.[6] A47G *33/08*
U.S. Cl. 428—7 3 Claims



1. A Christmas motion ornament comprising:

a shell and an electric wire said shell having two spaced mounting posts, each post having a screw hole at the top, and wire hole through the center receiving said electric wire said wire being adapted to be coupled to a source of alternating current;

an AC motor coupled to said wire having two mounting tabs with through holes respectively supported on the mounting posts of said shell and an output shaft extending vertically upwardly at the top thereof;

a motor set cover mounted on said AC motor set at the top thereof, said motor set cover comprising two mounting tabs with through holes respectively connected to the mounting tabs on said AC motor set and the mounting posts on said shell by screws, two hooks aligned at two opposite locations and equiangularly spaced from either mounting tab and hooked on the peripheral edge of said AC motor set to hold said motor in place, a center pin dowel extending vertically upwardly at the top, and an axle hole receiving the output shaft of said AC motor set said dowel and output shaft being mutually spaced and extending upwardly from said cover;

a pinion coupled to the output shaft of said AC motor set and disposed above said motor set cover;

a rotary table supported above said motor set cover, said rotary table comprising an integral driving gear on the lower surface thereof meshed with said pinion, and a center hole through which the center pin dowel passes; and

a table fixed to the center pin dowel of said motor set cover and disposed above said rotary table, said fixed table being relatively smaller in diameter than said rotary table and comprising a cap into which the pin dowel of said motor set cover fits tightly;

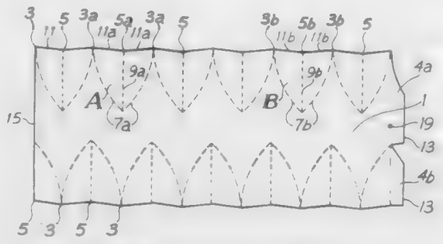
whereby when coupled to a source of alternating current said AC motor set causes its output shaft to drive said pinion and rotate said rotary table relative to said fixed table via said driving gear.

5,393,579

DOME-LIKE FOLDED STRUCTURE

Paul Witte, 157 N. Main St., New Hope, Pa. 18938

Filed May 3, 1993, Ser. No. 55,565
Int. Cl.[6] A47G *33/08*
U.S. Cl. 428—9 9 Claims



1. A blank of foldable material, comprising:

a flat, substantially rectangular, blank of foldable material having top, bottom, left and right side edges;

said top edge having peaks and valleys joined by straight lines forming a saw-tooth configuration;

a plurality of fold lines, comprising a plurality of identical arch-shaped lines and a plurality of straight vertical lines, said arch-shaped fold lines arranged side by side with the sides meeting and terminating at points on the peaks of said top edge, said straight vertical fold lines connecting the apexes of said arched shapes and the valleys along the top edge between the sides of the arches; and

whereby joining the right and left side edges to first form a cylinder and then folding the top edge inward along said fold lines, forms a dome at the top having integrally-formed support ribs which abut end to end and are thus interlocked under co-mutual compression when downward forces are applied to the surfaces of said dome.

5,393,580

ELEMENT CONTAINING LATENT IMAGE SUITED FOR AQUEOUS WASH-OUT DEVELOPMENT

Sheau-Hwa Ma, Chadds Ford, Pa., and Andrew E. Matthews, Leeds, England, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 994,821, Dec. 22, 1992, Pat. No. 5,292,556.
This application Dec. 20, 1993, Ser. No. 170,132
Int. Cl.[6] B05D *3/10*
U.S. Cl. 428—29 9 Claims

1. An aqueous solution developable element containing a latent image, said element comprising a non-photosensitive, aqueous processable layer, said layer comprising:

(a) non-imaged areas comprising a dispersion of solvent-coalesceable particles in a polymer matrix; said polymer matrix being capable of being removed with an aqueous developer; and

(b) imaged areas comprising a latent image in the form of a stable, water-insoluble polymer blend of the particles and the polymer matrix.

5,393,581

READILY APPLIED AND REMOVED SHIELD FOR GRAPHITE SHAFTS

Milton H. Mares, 346 30th Ave., San Francisco, Calif. 94121

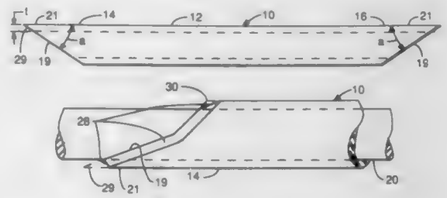
Continuation of Ser. No. 811,263, Dec. 20, 1991, abandoned.
This application Mar. 3, 1994, Ser. No. 206,029
Int. Cl.[6] A63B *53/02*
U.S. Cl. 428—34.1 8 Claims

1. A golf club shaft shield for protecting a golf club shaft, which shield includes an end portion configuration which initiates the ready attachment of the shield to and from the shaft, comprising:

an elongate tubular member terminating in opposing ends and having a centrally extending axis, a generally circular cross section and an overall length;

at least one of said ends being formed into a tapered end means, said tapered end means having a taper formed at a preselected angle relative to said axis to terminate said tapered end means in an extended tip;

wherein an axial line coincident with the extended tip of said tapered end means further defines said overall length;



said elongate tubular member having a shortest length coaxial with and in generally diametrically opposed relation to, the axial line of the member;

said elongate tubular member being split axially along said shortest length; and

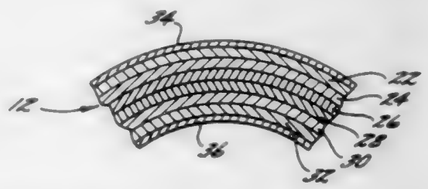
said extended tip of the tapered end means providing for initiating the spreading of the split in the tubular member to facilitate slipping said shortest length thereof over the shaft to provide said ready attachment of the shield to the shaft.

5,393,582

ENHANCED CRUSH STRENGTH CONSTRUCTION MULTI-GRADE PAPERBOARD TUBES

Yiming Wang; Monica McCarthy; Terry D. Gerhardt, all of Madison, Wis., and Charles G. Johnson, Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Jun. 4, 1993, Ser. No. 71,485
Int. Cl.[6] F16L *9/16*
U.S. Cl. 428—34.2 22 Claims



1. A multi-grade paperboard tube of enhanced flat crush strength construction comprising:

a cylindrical bodywall formed from a plurality of structural paperboard plies and being defined in radial cross section by at least one centrally located paperboard ply disposed between at least one radially inwardly located structural paperboard ply and at least one radially outwardly located structural paperboard ply;

wherein the centrally located paperboard ply is formed from a higher density paperboard having a density that is at least about 3% greater than the density of the paperboard forming either of the inwardly and outwardly located structural paperboard plies to thereby enhance the flat crush strength of the multi-grade paperboard tube and wherein between about 15% and 85% of the plies in the paperboard are formed of the higher density paperboard.

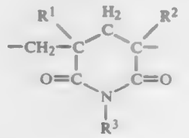
5,393,583

CONNECTOR

Tetsuo Kato, and Masahiro Kanda, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,424
Claims priority, application Japan, May 29, 1992, 4-139030
Int. Cl.[6] C08L *67/02*
U.S. Cl. 428—36.92 4 Claims

1. A connector comprising a housing comprising a resin composition comprising (A) from 30 to 90% by weight of an aromatic polyester, (B) from 5 to 40% by weight of a modified polyolefin, and (C) from 5 to 30% by weight of a polyglutarimide having a repeating unit represented by the following formula (1):



(1)

wherein R^1 and R^2 each represents a hydrogen atom or a lower alkyl group, and R^3 represents a hydrogen atom, an alkyl group, an aryl group, an alkaryl group, or an aralkyl group,

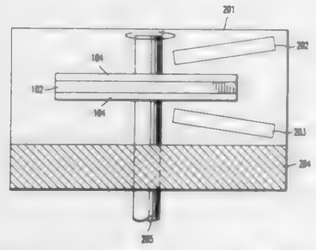
wherein said modified polyolefin (B) is a modified polypropylene having a glycidyl ether group content of from 1 to 10% by weight and an acid anhydride group content of from 0.05 to 1% by weight.

5,393,584

MAGNETIC DISC

Jun-ichi Satoh; Keiji Koga, and Akinori Nishizawa, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Feb. 4, 1993, Ser. No. 13,395
Claims priority, application Japan, Feb. 21, 1992, 4-072584
Int. Cl.[6] G11B *5/00*
U.S. Cl. 428—64 6 Claims



1. A magnetic disc including on a rigid substrate a magnetic layer obtained by forming a film of a coating material containing magnetic particles and a binder and orienting and curing the film, wherein:

said film is formed from a solvent dispersion by spin-coating while a magnetic field is applied thereto during film formation and levelling steps, said magnetic field being larger in strength on the inner side than on the outer side of said rigid substrate and wherein the magnetic layer is larger in thickness on the inner side of said substrate than on the outer side.

5,393,585

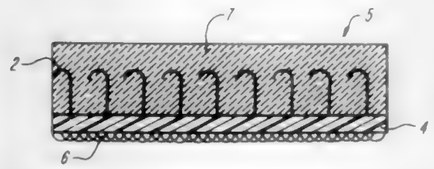
DIE CUT MOLD-IN

Donald L. Banfield, Hudson; Gerald F. Rocha; Martin I. Jacobs, both of Bedford, and Randall B. Kenney, Concord, all of N.H., assignors to Velcro Industries, B.V., Amsterdam, Netherlands

Continuation-in-part of Ser. No. 695,183, May 3, 1991, abandoned, and a continuation-in-part of Ser. No. 976,485, Nov. 16, 1992, abandoned, which is a continuation of Ser. No. 695,183, Nov. 16, 1992. This application Jul. 6, 1993, Ser. No. 87,917

Int. Cl.[6] A44B *21/00*

U.S. Cl. 428—100 32 Claims



1. A hook or loop component of a hook and loop fastener which can be integrally molded into a plastic article by a molding process, said hook or loop component comprising

a fastener element comprising a base member and a plurality of engaging elements upstanding from a surface thereof,

a removable, elastomeric protective encasement having said engaging elements embedded therein, said protective encasement at least partially intimately surrounding said engaging elements so as to protect said engaging elements during said molding process, and

a magnetizable substance carried by said fastener element for enabling said hook or loop component to be held within a mold during said molding process by magnetic attraction to magnets in the mold,

said protective encasement being removable from said engaging elements so as to expose said engaging elements without permanently deforming said engaging elements or substantially destroying fastening performance of said engaging elements.

5,393,586

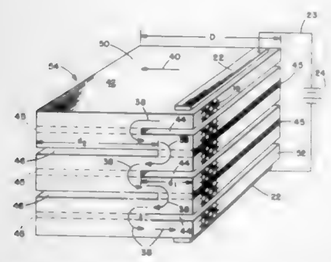
LOCALIZED ELECTRICAL HEATING OF HONEYCOMB STRUCTURES

G. Daniel Lipp, Painted Post, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Oct. 27, 1992, Ser. No. 967,183

Int. Cl.[6] B32B *3/12*

U.S. Cl. 428—116 7 Claims



1. A honeycomb structure comprising:

(a) an electrically conductive honeycomb body having first and second faces and a plurality of cells within the body which extend between the faces;

(b) a first set of electrically non-conductive regions formed in the body and extending from the first face towards the second face; and

(c) a second set of electrically non-conductive regions formed in the body and extending from the second face towards the first face;

wherein the electrically non-conductive regions of the first set extend into the body a shorter distance than the electrically non-conductive regions of the second set and wherein the first and second sets of electrically non-conductive regions are interdigitated.

5,393,587

CURVED HONEYCOMB STRUCTURAL BODIES

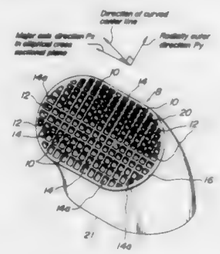
Minoru Machida, Nagoya, and Masaomi Kamiya, Chiryu, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Nov. 10, 1993, Ser. No. 149,728

Claims priority, application Japan, Nov. 20, 1992, 4-312181

Int. Cl.[6] B32B *3/12*

U.S. Cl. 428—116 8 Claims



1. A curved honeycomb structural body having a number of through holes penetrating therethrough along a direction in which the honeycomb structural body is curved, wherein pitches between adjacent interior partition walls defining said through holes are set smaller on a radially outer side of a curved portion than on a radially inner side thereof.

5,393,588

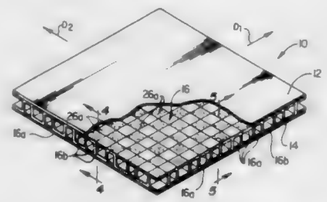
SANDWICHED STRUCTURAL PANEL HAVING A BI-DIRECTIONAL CORE STRUCTURE

Bruce Weddendorf, Decatur, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 8, 1993, Ser. No. 2,002

Int. Cl.[6] B32B *1/00*; E04C *2/36*

U.S. Cl. 428—175 12 Claims



1. A structural panel assembly comprising:

first and second outer side wall members disposed in a spaced apart, parallel and opposing relationship and having facing inner side surfaces;

a bi-directional core structure sandwiched between said first and second outer side wall members and formed from perpendicular, transversely interwoven first and second series of elongated strip members each having a crenelated configuration along its length and a longitudinally alternating series of oppositely facing first and second outer side surface portions, said first and second side surface portions of said strip members combinatively defining first and second parallel, generally planar first and second opposite side surfaces on said core structure; and

attachment means for respectively securing said first and second opposite side surfaces of said core structure to said inner side surfaces of said first and second outer side wall members.

5,393,589

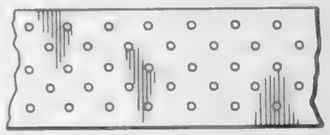
APPARATUS AND METHOD FOR VARIABLY KNURLING EDGES OF WEB AND PRODUCT PRODUCED THEREBY

John J. Zeller; Robert C. Brown, both of Rochester; Zbigniew Hakiel, Webster; Allan T. Hoy, Clarkson, and Arthur M. Stewart, Victor, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1992, Ser. No. 904,103

Int. Cl.[6] B32B *23/02*; B28B *17/00*; B06B *1/02*; B29C *49/00*

U.S. Cl. 428—192 41 Claims



14. An article of manufacture comprising:

a roll of web material having longitudinal sides and edges and an inner end and an outer end in said roll; and

along said longitudinal edges on at least one of said sides, at least one longitudinally extending pattern of regions having a pattern height extended past the surface of the remainder of said web, the compressibility and, hence, the effective height of said regions varying along the length of said web in a controlled, predetermined manner after winding.

5,393,590

HOT STAMPING FOIL

Ruediger Caspari, Ratingen, Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 7, 1993, Ser. No. 88,851

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 19 Claims



1. A hot stamping foil comprising, in order, a carrier, a color layer, and an adherence layer, said adherence layer being between about 1 and about 5 microns thick and comprising a mixture of ethylene copolymer dispersion and acrylic dispersion in a weight ratio between about 10:90 and about 60:40, said ethylene copolymer dispersion comprising at least one of ethylene/acrylic acid copolymer or ethylene/methacrylic acid copolymer.

5,393,591

PROCESS FOR PRODUCING COPPER-CLAD BASE MATERIALS

Helmut Fasbender, Berg.-Gladbach, and Burkhard Voss, Pulheim, both of Germany, assignors to Huls Troisdorf Aktiengesellschaft, Troisdorf, Germany

PCT No. PCT/EP91/02130, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO92/09186, PCT Pub. Date May 29, 1992

PCT Filed Nov. 11, 1991, Ser. No. 64,027

Claims priority, application Germany, Nov. 19, 1990, 4036802

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 16 Claims

1. In a process for producing base materials copper-clad on at least one side, comprising:

(a) winding reinforcing fibers on a winding core carrying a copper foil,

(b) impregnating the resultant wound fibers with a solvent-free resin, and

(c) curing the resin fully, the improvement comprising employing as the resin a solvent-free epoxy-isocyanurate resin having a viscosity at processing temperature of less than 1000 mPa.s and an NCO content of more than 20%.

5,393,592

HEAT-SEALABLE PLASTIC FILM

Helmut Jenne, Schriesheim, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 537,697, Jun. 14, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 3,939

Claims priority, application Germany, Jul. 1, 1989, 3921677

Int. Cl.[6] B32B *27/08, 27/34, 27/36, 31/30*

U.S. Cl. 428—213 3 Claims

1. A heat-sealable plastic film produced by extrusion or lamination, comprising:

a layer A of a heat-sealable mixture of three components A_1, A_2 and A_3, wherein

component A_1 is an impact resistant polystyrene consisting of a styrene polymer resin matrix and a phase which is a graft copolymer of styrene and a rubber selected from the group consisting of polybutadiene; an elastomeric linear styrene-butadiene two-block copolymer and mixtures thereof,

component A_2 is a styrene-butadiene or styrene-isoprene block copolymer, and

component A_3 is a lubricant;

a layer B of an impact resistant polystyrene resin consisting of from 60 to 95% by weight of a polymer selected from the group consisting of polystyrene, homopolymer of substituted styrene, copolymer of styrene and maleic anhydride, and copolymer of styrene and methylmethacrylate and from 5 to 40% by weight of an elastomeric particulate phase of polybutadiene, styrene grafted onto polybutadiene, styrene-butadiene two-block copolymer or styrene grafted onto linear styrene-butadiene two-block copolymer; and

a layer C of a high-melting plastic film selected from the group consisting of polycaprolactam, polyhexamethylene adipamide, copolyamide of caprolactam, hexamethylenediamine and terephthalic acid and polybutylene terephthalate.

5,393,593

DARK GRAY, INFRARED ABSORBING GLASS COMPOSITION AND COATED GLASS FOR PRIVACY GLAZING

Joseph A. Gulotta, New Kensington; John F. Krumwiede, Chesswick; Luke A. Kutilek, Oakmont; Anthony V. Longobardo, Butler, and Robert B. Heithoff, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 70,821, Jun. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 762,516, Sep. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 678,398, Apr. 1, 1991, abandoned, and a continuation-in-part of Ser. No. 644,051, Jan. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 603,599, Oct. 25, 1990, abandoned. This application Oct. 12, 1993, Ser. No. 133,949
Int. Cl.[6] B32B *17/06*
U.S. Cl. 428—220 47 Claims

1. A neutral gray colored glass composition having a base glass portion comprising:

SiO_2	66–75 percent by weight
Na_2O	10–20
CaO	5–15
MgO	0–5
Al_2O_3	0–5
K_2O	0–5

and a colorant portion consisting essentially of:

Fe_2O_3 (total iron)	greater than 1.00 and up to 1.7 percent by weight
FeO	at least 0.27
Se	0.001 up to but less than 0.005
CoO	0.01–0.02

the glass having a luminous transmittance of no more than 32 percent, and a total solar infrared transmittance of less than 15 percent at a thickness of 3.9 millimeters.

5,393,594

ABSORBABLE NON-WOVEN FABRIC

Ilya Koyfman, Orange, and Matthew Hain, New Haven, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 6, 1993, Ser. No. 132,602
Int. Cl.[6] D03D *3/00*
U.S. Cl. 428—224 17 Claims



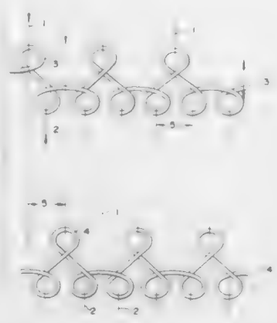
1. A bioabsorbable non-woven fabric including fibers comprising glycolide and lactide, said non-woven fabric having a density of between about 0.05 g/cu.cm and about 0.10 g/cu.cm.

5,393,595

FIREBREAK FABRIC

Joseph Rousset, deceased, late of Paris; Félix G. Rousset, legal representative, Saint Paulien, and Didier Royaerts, 09600 Regat, all of France, assignors to Didier Royaerts, Regat, France

Continuation-in-part of Ser. No. 616,386, Nov. 21, 1990, abandoned. This application Sep. 24, 1991, Ser. No. 812,997
Claims priority, application France, Nov. 22, 1989, 89 15327
Int. Cl.[6] D03D *3/00*
U.S. Cl. 428—225 24 Claims



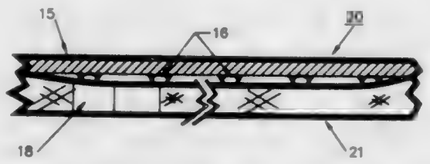
1. A fabric for use as a firebreak, comprising:
a knitted fabric formed by knitting a spun yarn made of first and second synthetic materials;
said first synthetic material comprising aramide fibers formed by cracking an aramide filament to provide said aramide fibers having lengths of from about 60 millimeters to about 200 millimeters in length;
said second synthetic material comprising thermally stabilized synthetic fibers having high reflectivity, said thermally stabilized synthetic fibers being formed by cracking a thermally stabilized synthetic filament to provide said thermally stabilized synthetic fibers having lengths of from about 60 millimeters to about 200 millimeters in length;
said spun yarn formed by mixing a majority of said second synthetic material with a minority of said first synthetic material and spinning the mixture to form said spun yarn.

5,393,596

DECKING SUSPENSION FABRIC AND METHOD

Roger Tornero, 6117 Ballinger Rd., Greensboro, N.C. 27410, and S. David Gray, 1710 Three Meadows Rd., Greensboro, N.C. 27408

Continuation-in-part of Ser. No. 874,020, Apr. 27, 1992, abandoned. This application Mar. 29, 1993, Ser. No. 42,570
Int. Cl.[6] D04B *9/06;* D03D *3/00;* B32B *7/00*
U.S. Cl. 428—229 21 Claims



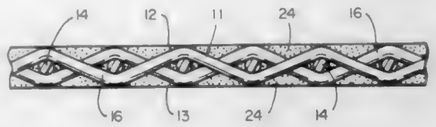
1. A knit decking suspension fabric for decking a furniture frame comprising: a plurality of polymeric yarns, said yarns comprising textured warp and weft knitted yarns and an elastomeric monofilament yarn positioned only in the warp direction of said fabric, said monofilament yarn having a larger gauge than said textured warp and weft knitted bars, said monofilament yarn knitted in and exposed on only one surface of said fabric to form a rib in the warp direction.

5,393,597

OVERVOLTAGE PROTECTION ELEMENT

Richard K. Childers, Redwood City, and John H. Bunch, San Mateo, both of Calif., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 23, 1992, Ser. No. 949,716
The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—242 10 Claims



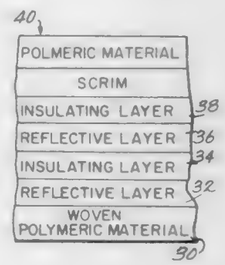
1. An overvoltage protection element comprising
an insulating fabric formed from a plurality of interlaced threads having first and second parallel spaced major surfaces which determine the thickness of the element,
said fabric including a plurality of interstices between said threads, and
a non-linear electrical switching material filling the interstices and extending between the first and second spaced major surfaces of said fabric, said switching material having an on-state resistance providing for electrical conduction between the first and second spaced major surfaces in response to an overvoltage condition and a high off-state resistance in the absence of an overvoltage condition wherein said non-linear electrical switching material comprises a binder and closely spaced conductive particles homogeneously distributed in said binder and spaced to provide conduction by quantum mechanical tunneling.

5,393,598

MULTI-LAYERED INSULATING COMPOSITE FABRIC

Richard A. Schlecker, 702 D Pulaski Hwy., Joppa, Md. 21085

Continuation-in-part of Ser. No. 900,014, Jun. 17, 1992, Pat. No. 5,283,111. This application Sep. 13, 1993, Ser. No. 119,846
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[6] B32B *7/00, 3/26;* D04H *1/00*
U.S. Cl. 428—247 4 Claims



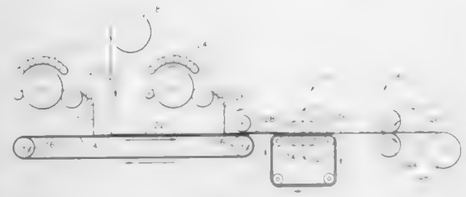
1. A multi-layered insulating composite fabric for use with a livestock containment facility comprising, waterproof inner and outer opposite side layers, said inner side layer comprising a woven fabric formed entirely of flattened translucent plastic tapes coated with a film of material corresponding to the material of the tapes to thereby make the woven fabric waterproof, a reflective layer disposed adjacent to and outwardly of said inner side layer and having a metallized reflective surface of low emissivity, an insulating layer disposed adjacent to and outwardly of said reflective layer, said insulating layer comprising closed cell foam material wherein said material comprises one member selected from the group consisting of polypropylene, polyethylene and polystyrene, said outer side layer being disposed outwardly of said insulating layer, said outer side layer comprising a waterproof synthetic polymeric resin fabric, and securing means for securing said layers of material in operative relationship to one another.

5,393,599

COMPOSITE NONWOVEN FABRICS

Thomas E. Quantrille, Simpsonville, and G. Stanley Zimmerman, Jr., Greenville, both of S.C., assignors to Fiberweb North America, Inc., Simpsonville, S.C.

Continuation-in-part of Ser. No. 825,016, Jan. 24, 1992, Pat. No. 5,334,446. This application Jul. 23, 1993, Ser. No. 96,706
Int. Cl.[6] B32B *5/16, 27/36, 5/22, 31/08*
U.S. Cl. 428—284 28 Claims



1. A process stable composite elastomeric nonwoven fabric of predetermined width and having a length substantially greater than said width, said width defining the cross machine direction of said fabric and said length defining the machine direction of said fabric, said composite fabric comprising:
a fibrous web comprising a plurality of thermally activated binder fibers or filaments oriented substantially in the machine-direction of said fibrous web; and
an elastomeric layer combined with said fibrous layer, wherein said composite elastomeric nonwoven fabric is elastic in the cross-machine direction and exhibits low extensibility in the machine direction.

5,393,600

HIGHLY FLEXIBLE LEATHER-LIKE SHEET MATERIAL AND PROCESS FOR PRODUCING THE SAME

Yutaka Omura, and Kazundo Akamata, both of Okayama, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 18, 1994, Ser. No. 210,289
Claims priority, application Japan, Mar. 25, 1993, 5-066776
Int. Cl.[6] B32B *3/26*
U.S. Cl. 428—284 14 Claims

1. A highly flexible leather-like sheet material, comprising:
a) a base layer formed by wet coagulation of an elastic polymer and a fibrous aggregate; and provided on the surface thereof,
b) a porous intermediate coating layer obtained by wet coagulation of an elastic polymer, said intermediate coating layer being integrated with said base layer and having a thickness of 10 to 40 μm and having continuous pores with a maximum pore diameter of 1 to 30 μm; and provided on the surface thereof,
c) a dry-formed porous surface coating layer having a thickness of 20 to 80 μm and continuous pores obtained by extraction of fine particles from a dry formed layer, said pores having a maximum pore diameter of not substantially more than 20 μm; and
d) a softening agent;
wherein pore diameter is observed on a cross-section taken in the thickness direction of said sheet.

5,393,601

NON-WOVEN SOLIDIFIED BY MEANS OF A MELT BINDER

Karl Heinrich, Grossbaitingen; Hans-Joachim Brüning, Augsburg, and Elke Gebauer, Bobingen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 21, 1992, Ser. No. 823,376

Claims priority, application Germany, Jan. 22, 1991, 4101674

Int. Cl.[6] B32B *27/34, 3/26, 27/08;* D04H *1/58*

U.S. Cl. 428—287 18 Claims

1. A solidified non-woven material formed from a mixture of supporting aramid fibers and thermoplastic aramid binding fibers whose melting point is below the melting or decomposition point of said supporting aramid fibers, wherein the solidification of the non-woven material was effected by melting of the binding fibers.

5,393,602

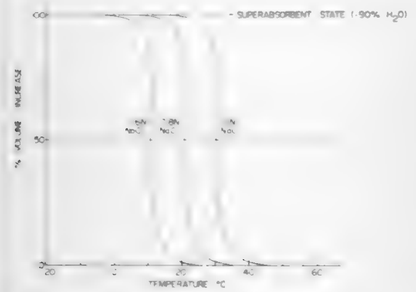
SUPERABSORBENT MATERIALS AND USES THEREOF

Dan W. Urry, Birmingham, Ala., assignor to Bioelastics Research Ltd. and UAB Research Foundation, both of Birmingham, Ala.

Filed Apr. 19, 1991, Ser. No. 688,185

Int. Cl.[6] B32B *27/00*

U.S. Cl. 428—290 28 Claims



1. In an absorbent appliance specifically designed for contacting body surfaces and for absorbing aqueous liquids including bodily fluids, an improvement which comprises:

a polymeric material that undergoes an inverse temperature transition at a preselected temperature, wherein said polymeric material comprises a bioelastic polymer containing elastomeric units selected from the group consisting of bioelastic pentapeptides, tetrapeptides, and nonapeptides, wherein said polymeric material is selected to be in a contracted, less absorbent state at a temperature higher than said pre-selected temperature and in a swollen, more absorbent state when at a temperature lower than said pre-selected temperature.

5,393,603

LAMINATED RESIN SHEET AND PROCESS FOR PRODUCING THE SAME

Takashi Toyoda; Yasuji Hosono; Takashi Funato, all of Ibaraki; Takao Yazaki, Mie; Akihiko Egashira, Mie; Takumi Matuno, Mie, and Tokmi Chiba, Ibaraki, all of Japan, assignors to Oji Yuki Goseishi Co., Ltd., Tokyo, Japan

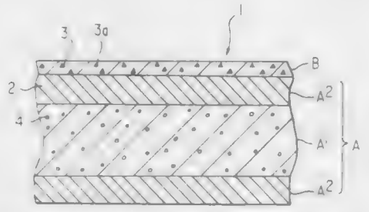
Filed Mar. 3, 1993, Ser. No. 25,879

Claims priority, application Japan, Mar. 4, 1992, 4-047281; Sep. 10, 1992, 4-242185

Int. Cl.[6] B32B *3/26, 5/18*

U.S. Cl. 428—316.6 17 Claims

1. A laminated resin sheet capable of being thermoformed and having a thickness of from 60 to 5,000 μm, comprising (A) a laminated base material having a three layer sandwich structure composed of (A^2) a non-expanded resin layer, (A^1) an expanded resin layer and (A^2) a non-expanded resin layer, said laminated base material (A) being obtained by a process consisting essentially of co-extrusion of (a^1) a thermoplastic resin containing a blowing agent and (a^2) a thermoplastic resin containing from 9 to 80% by weight of a filler through a T die,



said laminated base material (A) having laminated thereon, on at least one side thereof, void-containing synthetic paper (B) comprising a stretched film of a thermoplastic resin containing an inorganic filler.

5,393,604

PRODUCTION OF SILICA "GREEN" TAPE AND CO-FIRED SILICA SUBSTRATES THEREFROM

Lloyd E. Sanchez, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed Jan. 28, 1988, Ser. No. 149,357

Int. Cl.[6] B32B *18/00;* C04B *35/14*

U.S. Cl. 428—325 27 Claims

1. A process for preparing a silica tape which comprises:

providing an essentially amorphous silica powder in the form of substantially spherical particles having a diameter ranging from about 0.1 to about 2 microns,

mixing said silica powder with an aqueous medium containing an organosol, to form a slurry of said silica particles,

casting said slurry on a support, and

drying said slurry to form a silica tape on said support.

5,393,605

ZINCIFEROUS PLATED STEEL SHEET EXCELLENT IN PRESS-FORMABILITY AND CORROSION RESISTANCE

Tatsuya Miyoshi; Toshiyuki Okuma; Masaaki Yamashita; Toyofumi Watanabe, all of Tokyo, and Norio Kosaka, Osaka, all of Japan, assignors to NKK Corporation, Tokyo, Japan

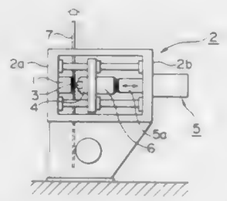
PCT No. PCT/JP92/01618, § 371 Date Jul. 22, 1993, § 102(e) Date Jul. 22, 1993, PCT Pub. No. WO93/11880, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 10, 1992, Ser. No. 94,077

Claims priority, application Japan, Dec. 12, 1991, 3-351632; Dec. 26, 1991, 3-360082

Int. Cl.[6] B32B *15/08*

U.S. Cl. 428—327 6 Claims



1. In a zinciferous plated steel sheet excellent in press-formability and corrosion resistance, which comprises:

a steel sheet;

a zinciferous plating layer formed on at least one surface of said steel sheet;

a chromate film formed on said zinciferous plating layer, said chromate film having a weight within a range of from 5 to 200 mg/m^2 as converted into metallic chromium per surface of said steel sheet; and

a resin film formed on said chromate film by applying a resin onto said chromate film and then curing same, said resin film having a thickness within a range of from 0.3 to 3.0 μm;

the improvement wherein:

said resin film comprises a solvent-base thermosetting resin, a solid internal lubricant and a rust-preventive pigment;

said solvent-base thermosetting resin comprises:

(A) urethane prepolymer containing a hydroxyl group and having the following chemical composition:

(a) at least one polyol selected from the group consisting of polyether polyol, polyester polyol and polyether-polyester polyol;

(b) an isocyanate compound, and

(c) dihydric alcohol, and

(B) at least one of a block polyisocyanate compound and an amino resin as a curing agent;

said solid internal lubricant comprises a polyethylene resin, and the content ratio of said solid internal lubricant is within a range of from 1 to 30 weight parts relative to 100 weight parts of a solid component in said solvent-base thermosetting resin; and

said rust-preventive pigment comprises at least one of a chromate compound or silica, and the content ratio of said rust-preventive pigment is within a range of from 3 to 30 weight parts relative to 100 weight parts of said solid component in said solvent-base thermosetting resin.

5,393,606

CHARGE-TRANSFER COMPLEXES WITH N-AROMATIC COMPOUNDS, THE PREPARATION THEREOF AND THE USE THEREOF

Peter Chetcuti, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 25, 1993, Ser. No. 67,206

Claims priority, application Switzerland, Jun. 3, 1992, 1775/92-8

Int. Cl.[6] B32B *33/00;* C08K *5/34, 5/17;* H01B *1/06*

U.S. Cl. 428—332 24 Claims

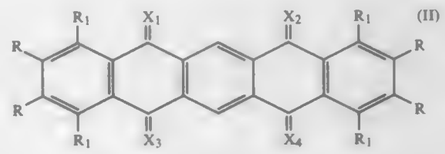
1. An electrically conductive crystal network consisting of needle shaped crystals of a charge-transfer complex of formula I

$$(A^{\ominus})_n B^{n\oplus} \quad (I)$$

wherein

a) n is 1 or 2,

b) A is the radical anion of a compound of formula II or of a mixture of compounds of formula II



wherein the substituents R are the same and are H or C_1–C_4alkyl, or adjacent substituents R together form —$(CH_2)_3$— or —$(CH_2)_4$—;

R_1 is H or C_1–C_4alkyl;

X_1 is =N—CN; and

X_2, X_3 and X_4 are =O or =N—CN, and

c) when n=1, B is the monovalent radical cation, or, when n=2, B is the divalent radical cation of an N-aromatic compound having a total of from 1 to 5 aromatic rings that are unsubstituted or substituted by halogen, C_1–C_4alkyl or by C_1–C_4alkoxy, at least one N-heterocyclic ring containing at least one group —NR_2— or [=N^+R_2—] I^- wherein R_2 is C_1–C_4alkyl or benzyl.

5,393,607

LAMINATED TRANSPARENT PLASTIC MATERIAL AND POLYMERIZABLE MONOMER

Noboru Kawasaki; Katsuyoshi Sasagawa, both of Yokohama; Toshiyuki Suzuki, Kamakura, and Kenichi Fujii, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicias, Inc., Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 1,617

Claims priority, application Japan, Jan. 13, 1992, 4-003876; May 27, 1992, 4-135103

Int. Cl.[6] B32B *27/36;* C08J *7/04*

U.S. Cl. 428—334 29 Claims

1. A laminated transparent plastic material which comprises a transparent resin material having a total visible light transmittance of at least 85% and a high hardness transparent resin layer of at least 0.2 mm thick having a pencil hardness of at least 4H, Rockwell M scale hardness of at least 100, and a total visible light transmittance of at least 85% overlying the surface of the transparent resin material, the laminated transparent plastic material having a bending modulus of elasticity of at least 350 kgf/mm^2.

5,393,608

NON-SILICONE RELEASE POLYMER

Hung Y. Chao, Plainsboro, N.J., assignor to Moore Business Forms, Grand Island, N.Y.

Filed May 25, 1993, Ser. No. 65,914

Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—352 20 Claims

1. A release polymer for use with pressure sensitive adhesives comprising a copolymer of:

(1) about 1 to about 25 percent by weight of an acrylate ester of the formula I:

$$CH_2{=}CH\text{—}COO(CH_2)_xCH_3 \quad (I)$$

wherein x is an integer ranging from 30 to about 50; and

(2) at least one comonomer selected from the group consisting of a vinyl monomer, an acrylate monomer and a methacrylate monomer.

5,393,609

WEATHERABLE POWDER COATINGS

Yeong-Ho Chang, and Robert B. Barbee, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jun. 13, 1994, Ser. No. 258,895

Int. Cl.[6] B32B *19/00;* C08F *20/00*

U.S. Cl. 428—357 21 Claims

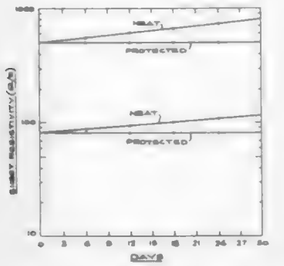
1. A thermosetting powder coating composition which comprises,

(a) a polyester comprised of from about 80 to 100 weight percent of residues of 1,2-cyclohexanedicarboxylic acid and from about 80 to 100 weight percent of residues of 2,2,4,4-tetramethyl-1,3-cyclobutanediol, and having a number average molecular weight of about 1500 to 10,000, and a glass transition temperature of about 45° C. to 100° C.; and

(b) a cross-linking agent reactive with said polyester

wherein said composition, after application to a substrate and curing, provides a coating which possesses a QUV resistance of at least 5000 hours, said resistance determined by the number of hours required to reduce the original gloss of said coating by 50%, wherein said coating is alternately exposed to an illuminated 313 nm fluorescent tube at 45° C. for an 8 hour period followed by a 4 hour period of darkness at 45° C.

5,393,610
STABILIZING SHELF LIFE CONDUCTIVITY OF CONDUCTIVE SUBSTRATE COATINGS
Edward F. Witucki, Van Nuys, Calif.; William P. Moran, Tulsa, Okla.; Patricia H. Cunningham, Thousand Oaks, Calif., and Lyle V. Monney, Bixby, Okla., assignors to Rockwell International Corporation, Seal Beach, Calif.
Division of Ser. No. 693,259, Apr. 29, 1991, Pat. No. 5,198,266.
This application Feb. 5, 1993, Ser. No. 14,439
Int. Cl.[6] B32B *17/06*
U.S. Cl. 428—447 5 Claims

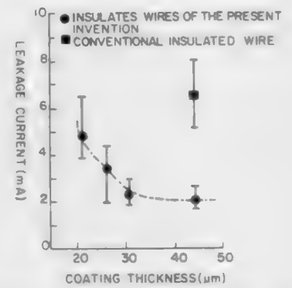


1. A coated substrate comprising
a substrate coated with
a conductive coating, said conductive coating comprising either polypyrrole or nickel sulfide and
either phenol-formaldehyde polymer or polysiloxane.

5,393,611
DIP-COATING METHOD FOR PROTECTING CHROMATIZED OR PASSIVATED ZINC COATINGS ON STEEL OR THE LIKE
Burkhard Flamme, Hagen, Germany, assignor to Ewald Dorken AG, Herdecke, Germany
Division of Ser. No. 981,166, Nov. 19, 1992, Pat. No. 5,324,545.
This application Mar. 4, 1994, Ser. No. 205,992
Claims priority, application Germany, Nov. 21, 1991, 4138218
Int. Cl.[6] B32B *15/08*; C08K *3/10, 5/09*
U.S. Cl. 428—450 6 Claims

1. A steel workpiece having a chromated or passivated zinc or zinc alloy coating having a protective coating thereon formed by
(a) dipping a steel workpiece having a chromated or passivated zinc or zinc-alloy coating in a solution of a binder composition in a solvent system wherein said binder composition and solvent system are selected from the group which consists of:
(1) a binder composition consisting essentially of at least one titanium or zirconium acid ester and at least one organofunctional polysiloxane in an organic solvent system,
(2) a binder composition consisting essentially of at least one titanium or zirconium acid ester, at least one titanium or zirconium chelate and at least one organofunctional polysiloxane in a solvent system selected from the group which consists of at least one alcohol, at least one hydrocarbon, a mixture of at least one alcohol and at least one hydrocarbon and mixtures thereof with water, and
(3) a binder composition consisting essentially of at least one titanium or zirconium chelate and at least one organofunctional polysiloxane in a solvent system selected from the group which consists of water, at least one alcohol, at least one hydrocarbon, and mixtures thereof,
thereby coating said workpiece with an at least partially inorganic protective coating capable of protecting the chromated or passivated zinc or zinc-alloy coating directly against corrosion; and
(b) drying said protective coating on said workpiece.

5,393,612
INSULATED WIRE
Yuki Matsuura; Isao Ueoka, both of Osaka; Koichi Iwata, Kobe; Hiromitsu Kawabe, Kariya, and Yoshitaka Natsume, Nagoya, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippondenso Co., Ltd., Kariya, both of Japan
Filed Dec. 22, 1993, Ser. No. 171,458
Claims priority, application Japan, Dec. 22, 1992, 4-342728
Int. Cl.[6] B32B *15/08*
U.S. Cl. 428—458 26 Claims



1. An insulated wire comprising a conductor and an insulating coating which has a tensile strength of at least 13 kg/mm^2 and a Young's modulus of at least 270 kg/mm^2.

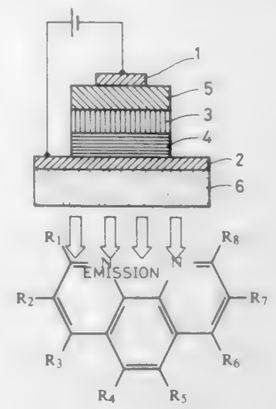
5,393,613
COMPOSITION FOR THREE-DIMENSIONAL METAL FABRICATION USING A LASER
Colin A. MacKay, Austin, Tex., assignor to Microelectronics and Computer Technology Corporation, Austin, Tex.
Division of Ser. No. 813,960, Dec. 24, 1991, Pat. No. 5,314,003.
This application Dec. 3, 1993, Ser. No. 162,490
Int. Cl.[6] B22F *7/00*
U.S. Cl. 428—553 18 Claims

1. A composition for three-dimensional metal fabrication, said composition comprising:
metal powder, whereas said metal powder has a melting point above 400°; and
a temperature equalization and unification vehicle mixed with said metal powder to form a mixture, wherein a thin layer of said mixture may be irradiated to melt the metal powder and form a metal film.

5,393,614
ORGANIC ELECTROLUMINESCENCE DEVICE
Hitoshi Nakada, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Mar. 26, 1993, Ser. No. 37,454
Claims priority, application Japan, Apr. 3, 1992, 4-082197; Nov. 24, 1992, 4-313618
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—690 8 Claims

1. An organic electroluminescence device having a three-layer structure comprising an anode, a hole transport layer of an organic compound, an emitting layer of an organic compound, an electron transport layer of an organic compound and a cathode, which are laminated in sequence, wherein said electron transport layer is made of a 1,10-phenanthroline derivative represented by the following chemical formula

where R_1–R_8 independently represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted amino group, a halogen atom, a nitro group, a cyano group or a hydroxyl group.



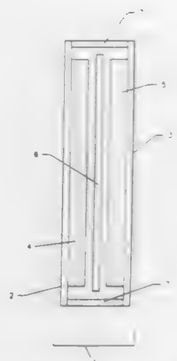
5,393,615
MEDIATORS SUITABLE FOR THE ELECTROCHEMICAL REGENERATION OF NADH, NADPH OR ANALOGS THEREOF
Paul F. Corey, Elkhart, and Matthew K. Musho, Granger, both of Ind., assignors to Miles Inc., Elkhart, Ind.
Filed Feb. 3, 1994, Ser. No. 190,855
Int. Cl.[6] H01M *4/86, 10/44*
U.S. Cl. 429—43 10 Claims

1. An electrode having a surface used for electrochemical regeneration of coenzymes dihydronicotinamide adenine dinucleotide (NADH), dihydronicotinamide adenine dinucleotide phosphate (NADPH) or analogs thereof characterized in that there has been imparted to the electrode surface a mediator function comprising one or more mediator compounds selected from the group consisting of substituted or unsubstituted 9H-acridin-2-ones and 11H-dibenz[b,e][1,4,]oxazepine-2-ones.

5,393,616
METAL HYDRIDE ELECTRODE
Hiroyuki Mori; Keiichi Hasegawa; Masaharu Watada, and Masahiko Oshitani, all of Takatsuki, Japan, assignors to Yuasa Corporation, Japan
PCT No. PCT/JP91/01445, § 371 Date Apr. 28, 1993, § 102(e) Date Apr. 28, 1993, PCT Pub. No. WO92/08251, PCT Pub. Date May 14, 1992
PCT Filed Oct. 22, 1991, Ser. No. 50,025
Claims priority, application Japan, Oct. 29, 1990, 2-292565; Oct. 29, 1990, 2-292566; Oct. 31, 1990, 2-296736; Oct. 31, 1990, 2-296737; Oct. 31, 1990, 2-296738; Nov. 2, 1990, 2-298617; Nov. 6, 1990, 2-301835; Nov. 6, 1990, 2-301836
Int. Cl.[6] H01M *4/32, 4/38*
U.S. Cl. 429—59 10 Claims

1. A metal hydride electrode, in which a powder of cobalt constituent containing material is mixed with a powder of a hydrogen absorbing alloy within a mixing range of 3 to 20 wt %, the hydrogen absorbing alloy being formed by substituting a part of the Ni of a powder of an alloy expressed by the formula $MmNi_5$ with Al and at least one member selected from the group consisting of Fe, Cu, Co and Mn, said mixed powder is loaded in a porous alkaline-proof metal body and subjected to a charge/discharge reaction so as to dissolve and precipitate a cobalt constituent from said cobalt constituent containing material, and a surface layer comprising the cobalt constituent is formed on said powder of hydrogen absorbing alloy.

5,393,617
BIPOLAR ELECTROCHMEICAL BATTERY OF STACKED WAFER CELLS
Martin Klein, Brookfield, Conn., assignor to Electro Energy, Inc., Danbury, Conn.
Filed Oct. 8, 1993, Ser. No. 134,429
Int. Cl.[6] H01M *6/48, 4/36, 10/48*
U.S. Cl. 429—59 29 Claims

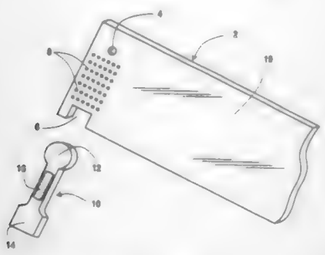


1. A bipolar electrochemical battery comprising:
a stack of at least two electrochemical cells electrically arranged in series wherein the adjacent cells have a positive face of one cell contacting a negative face of the adjacent cell, wherein each of said cells contains
(a) a metal hydride electrode;
(b) a nickel electrode;
(c) a porous separator between said electrodes, wherein said separator contains an electrolyte;
(d) a first electrically conductive outer layer in electrical contact with the outer face of said metal hydride electrode; and
(e) a second electrically conductive outer layer in electrical contact with the outer face of said nickel electrode; wherein said outer layers are sealed peripherally to an electrically non-conductive polymeric material such as to form a sealed enclosure containing said electrodes, said separator and said electrolyte.

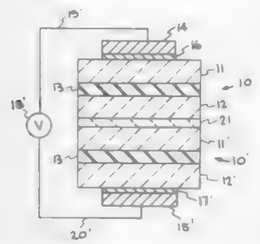
5,393,618
BATTERY WITH TESTER LABEL AND METHOD FOR PRODUCING IT
Victor H. Weiss, Plantation, Fla.; John G. Langbehn, Minnetonka; Dean A. Laird, Shakopee, both of Minn.; Gary R. Tucholski, Parma Hts., and Robert A. Prok, Columbia Station, both of Ohio, assignors to Eveready Battery Company, Inc., St. Louis, Mo.
Filed May 3, 1993, Ser. No. 56,160
Int. Cl.[6] H01M *2/02*
U.S. Cl. 429—90 20 Claims

1. A tester label assembled on a battery having a first terminal and a second terminal of opposite polarity; said tester label consisting essentially of a nonconductive film at least partially encasing the battery and having a top surface and bottom surface and said film defining a first opening exposing a segment of the first terminal, a spaced apart second opening exposing a segment of the second terminal, and a plurality of thermal insulation openings between said first opening and said second opening of a size smaller than said first and second openings; and a conductive circuit layer disposed over the first

opening, the second opening and at least a portion of the plurality of openings so that a first segment of conductive circuit layer can be deflected through the first opening to contact the first terminal, a second segment of the conductive circuit layer can be deflected through the second opening to contact the second terminal with the remaining segment of the conductive circuit layer being unable to contact the terminals of the battery through the plurality of openings; a thermally sensitive material disposed in responsive contact with the conductive circuit layer such that when the first segment and second segment of the conductive circuit layer contact the first terminal and second terminal, respectively, a current will flow through the conductive circuit layer and heat the thermally sensitive material which will indicate the capacity of the battery.



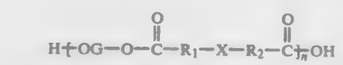
5,393,619
CELL SEPARATOR FOR USE IN BIPOLAR-STACK ENERGY STORAGE DEVICES
Steven T. Mayer, San Leandro; John H. Feikert, Livermore; James L. Kachmitter, Pleasanton, and Richard W. Pekala, Pleasant Hill, all of Calif., assignors to Regents of the University of California, Oakland, Calif.
Division of Ser. No. 90,881, Jul. 8, 1993, Pat. No. 5,336,274.
This application Apr. 18, 1994, Ser. No. 229,239
Int. Cl.[6] H01M *6/46, 2/16;* H01G *9/00*
U.S. Cl. 429—152 19 Claims



1. In an energy storage device having at least two cells, with each cell having at least one carbon electrode, the improvement comprising:
a cell separator composed of an adhesive material located between and secured to opposing surfaces of adjacent carbon electrodes of each adjacent cell, said cell separator providing electrical connectivity, but ionic isolation between the adjacent cells.

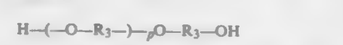
5,393,620
CONDUCTIVE POLYMERS WITH IONIC CONDUCTANCE
Piero Manaresi; Anna M. Mastragostino, both of Bologna; Antonio Chiolle, Ferrara; Maria C. Bignozzi, Bologna; Luca Meneghello, Legnago; Andrea Munari, and Francesco Pilati, both of Bologna, all of Italy, assignors to ECP Enichem Polimeri S.r.l., Milan, Italy
Filed Feb. 17, 1993, Ser. No. 18,763
Claims priority, application Italy, Feb. 17, 1992, MI92A0329
Int. Cl.[6] H07M *10/40*
U.S. Cl. 429—192 19 Claims

1. Solid polymeric electrolyte with ionic conductance including a non-aqueous complex of a polymer with an ionic compound, characterized in that the polymer is a polyester having the general formula:



(I)

wherein:
R_1 and R_2, the same or different, are an alkylene radical, linear or branched, containing from 1 to 6 carbon atoms;
G is a bivalent group which remains after the removal of the chain-end hydroxylic groups from a glycol having the formula



(II)

wherein R_3 is a C_1–C_6 alkylene radical, linear or branched;
p is 0 or an integer between 1 and 10;
X is CH_2, sulphur or oxygen, and
n is an integer between 5 and 100; with the understanding that when X is CH_2, p is between 1 and 10 and R_1 and R_2 may be absent.

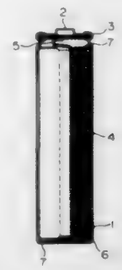
5,393,621
FIRE-RESISTANT SOLID POLYMER ELECTROLYTES
Benjamin Chaloner-Gill, Santa Clara, Calif., assignor to Valence Technology, Inc., San Jose, Calif.
Filed Oct. 20, 1993, Ser. No. 139,229
Int. Cl.[6] H01M *6/18*
U.S. Cl. 429—192 18 Claims

1. A solid polymeric electrolyte comprising a organophosphorus polymer having a molecular weight in the range of from about 1,000 to about 80,000 wherein said organophosphorus polymer is selected from the group consisting of polyphosphoro-amides and polyphosphines.

5,393,622
PROCESS FOR PRODUCTION OF POSITIVE ELECTRODE ACTIVE MATERIAL
Yoshiaki Nitta; Kazunori Haraguchi, both of Osaka; Shigeo Kobayashi, Yawata; Kazuhiro Okamura, Higashiosaka, and Akira Ohta, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 3, 1993, Ser. No. 13,110
Claims priority, application Japan, Feb. 7, 1992, 4-022291; Apr. 10, 1992, 4-090529; Sep. 14, 1992, 4-244390
Int. Cl.[6] H01M *4/52;* C01G *53/00*
U.S. Cl. 429—223 7 Claims

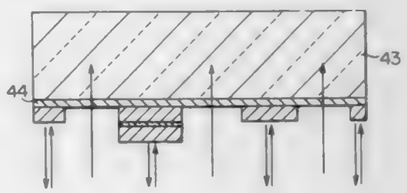
1. A process for producing a powdery active material for use in nonaqueous electrolyte secondary cells, said active material being represented by the formula: $Li_yNi_{1-x}Mn_xO_2$ where the numbers of moles of x and y are $0<x\leqq0.3$ and $1.0\leqq y\leqq1.3$, said process comprising:
(a) employing as starting materials a compound of divalent manganese, a nickel compound, and a lithium compound, said compounds being present in amounts that will result in a final product satisfying $Li_yNi_{1-x}Mn_xO_2$, wherein $0\leqq x\leqq0.3$ and $1.0\leqq y\leqq1.3$, mixing said starting materials;

(b) predrying said starting materials;
(c) subjecting said predried materials to a first heat-treatment for Li-doping;
(d) terminating the Li-doping;
(e) cooling said heat-treated materials to room temperature to produce an intermediate; and



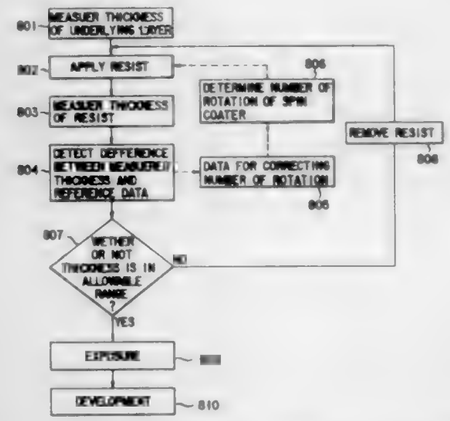
(f) subjecting said intermediate to a second heat-treatment at a different temperature from that in said first heat-treatment;
said heat-treatments being conducted in an oxidizing atmosphere.

5,393,623
EXPOSURE APPARATUS EMPLOYING A PHOTOMASK
Kazuya Kamon, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 27, 1993, Ser. No. 67,953
Claims priority, application Japan, May 28, 1992, 4-136991
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 2 Claims



1. An exposure apparatus comprising:
a light source for emitting light;
a Koehler illumination optical system for irradiating a reflection photomask including a circuit pattern with light emitted from said light source, said Koehler illumination optical system including a fly-eye lens for dividing light emitted from said light source into a plurality of light bundles, a half mirror for reflecting the plurality of light bundles produced by said fly-eye lens, and a lens for irradiating the reflection photomask with the plurality of light bundles reflected from said half mirror; and
a projection optical system for converging the light reflected from the reflection photomask onto a substrate to project the circuit pattern of the reflection photomask onto the substrate.

5,393,624
METHOD AND APPARATUS FOR MANUFACTURING A SEMICONDUCTOR DEVICE
Mitsuru Ushijima, Tama, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan
Continuation-in-part of Ser. No. 386,201, Jul. 28, 1989, abandoned. This application Aug. 3, 1992, Ser. No. 921,598
Claims priority, application Japan, Jul. 29, 1988, 63-190393; Jul. 29, 1988, 63-190394; Jul. 30, 1988, 63-191713
Int. Cl.[6] G03C *5/00;* H01L *21/306;* G01B *11/02;* G01N *21/00*
U.S. Cl. 430—30 6 Claims



1. A method for controlling a thickness of a resist film formed on a semiconductor wafer having an underlying layer previously formed thereon, said method comprising the steps of:
measuring a thickness of said underlying layer formed on the wafer;
storing the underlying layer thickness measurement data into memory means;
storing first data of an optimum resist film thickness determined for the underlying layer thickness, second data for providing a resist film thickness corresponding to a wafer rotation number, third data for a target resist film thickness, and fourth data for an allowable resist film thickness range into the memory means before said underlying layer thickness measuring step;
obtaining a wafer rotation number based on the second data and the third reference data;
rotating the wafer at the obtained rotation number and applying a resist on the underlying layer;
obtaining a thickness of the resist film applied on the underlying layer, based on said underlying layer thickness measurement data and said first data;
storing the thickness film measurement data of the resist film into the memory means;
detecting a difference between the resist film thickness measurement data and said third data;
calculating a correction value for the wafer rotation number, based on the detected difference and said second data;
storing the correction value of the wafer rotation number into the memory means as fifth data;
correcting the wafer rotation number during application of the resist to the wafer, based on the fifth data, and feedback-controlling the wafer rotation number so that a second wafer following said wafer has said target resist thickness.

5,393,625

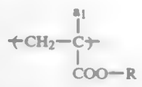
ELECTROPHOTOLITHOGRAPHIC PRINTING PLATE PRECURSOR

Eiichi Kato; Seishi Kasai, and Kazuo Ishii, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 13, 1994, Ser. No. 181,243
Claims priority, application Japan, Jan. 14, 1993, 5-020713
Int. Cl.[6] G03G 5/087, 5/09
U.S. Cl. 430—49 6 Claims

1. An electrophotolithographic plate precursor having on a conductive support at least one photoconductive layer containing at least a photoconductive zinc oxide, a color sensitizing dye and a binder resin, in which the binder resin contains at least one binder resin (P): the binder resin (P) being a random copolymer (i) having a weight average molecular weight of from 5×10^4 to 5×10^5, (ii) comprising (a) a polymer component having repeating units of the following formula (I) in an amount of 50% by weight or more, (b) a polymer component containing at least one polar group selected from the group consisting of $—PO_3H_2$, —COOH, $—SO_3H$, $—SO_2H$ and cyclic acid anhydride-containing groups, in an amount of from 0.1 to 10% by weight, and (c) a polymer component having a Fedors' solution parameter of 9.0 or more and containing at least one aprotic polar group, in an amount of from 0.5 to 10% by weight, and (iii) having at least one polar group selected from the group consisting of $—PO_3H_2$, —COOH, $—SO_3H$, $—SO_2H$ and cyclic acid anhydride-containing groups at one end of the main chain of the copolymer:

(I)



where a_1 represents a hydrogen atom or a methyl group; and R represents an alkyl group having from 1 to 4 carbon atoms or an aromatic group.

5,393,626

INCREASING PHOTOCONDUCTIVITY BY ADJUSTING THE DISCOTIC PHASE

Friedrich Closs, Ludwigshafen; Thomas Frey, Muenster; Dirk Funhoff, Heidelberg; Karl Siemensmeyer, Frankenthal; Helmut Ringsdorf, Mainz-Gonsenheim; Dietrich Haarer, Bayreuth, and Peter Strohriegl, Hummeltal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 924,494, Aug. 4, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 167,066
Claims priority, application Germany, Aug. 10, 1991, 4126496
Int. Cl.[6] G03G 5/06
U.S. Cl. 430—56 5 Claims

1. A method of increasing the photoconductivity in photoconductors with liquid crystal properties, which consists essentially of increasing the photoconductivity by adjusting the discotic phase.

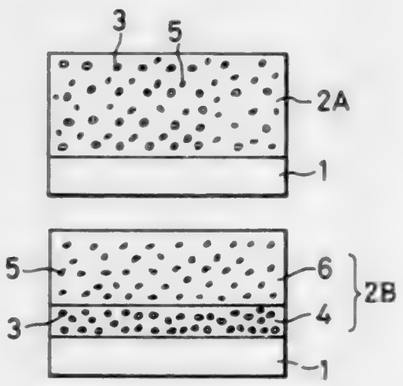
5,393,627

PHOTOCONDUCTOR FOR ELECTROPHOTOGRAPHY

Yoichi Nakamura; Nobuyoshi Mori, and Sumitaka Nogami, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

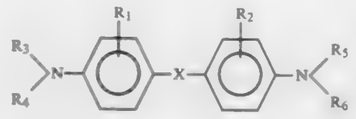
Filed Feb. 1, 1993, Ser. No. 11,797
Claims priority, application Japan, Feb. 12, 1992, 4-024176
Int. Cl.[6] G03G 5/047, 5/09
U.S. Cl. 430—59 8 Claims

5. A photoconductor for electrophotography, comprising:
an electroconductive substrate; and
a photosensitive layer which is a laminate formed on the electroconductive substrate and which includes a charge generating layer containing a charge generating substance, and a charge transporting layer containing a charge transporting substance;



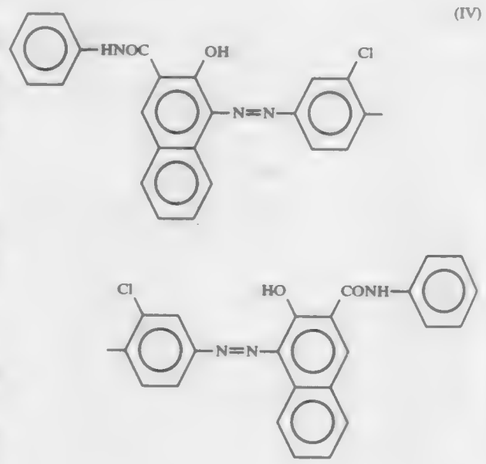
wherein the charge transporting substance consists of a diamine compound represented by a general formula (I)

(I)



where R_1 and R_2, which are the same of different, each represent independently an alkyl group, an alkoxy group, or a halogen atom; where R_3 and R_4, or R_5 and R_6, combine together with a nitrogen atom to which they are bonded and form a monocyclic aromatic ring having a nitrogen atom as a heterto atom and being condensed with one or two benzene rings; where X is an oxygen atom, a sulfur atom, a carbonyl group, or a sulfonyl group; and wherein the charge generating substance is a bisazo pigment represented by a formula (IV) below

(IV)



5,393,628

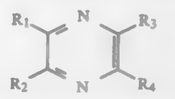
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, AND ELECTROPHOTOGRAPHIC APPARATUS EMPLOYING THE SAME

Tatsuya Ikezue, and Kazushige Nakamura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 79,824
Claims priority, application Japan, Jun. 25, 1992, 4-167733; Jun. 30, 1992, 4-173261
Int. Cl.[6] G03G 5/14, 5/047
U.S. Cl. 430—59 6 Claims

1. An electrophotographic photosensitive member comprising a photosensitive layer which comprises a charge-generating layer laminated to a charge-transporting layer on a support, the charge-transporting layer containing a pyrazine derivative represented by the general formula (1):

Formual (1)



wherein R_1, R_2, R_3, and R_4 are each independently a hydrogen atom, a hydroxyl group, a halogen atom, or an organic group; and at least one of R_1, R_2, R_3, and R_4 is an alkyl group, an allyl group, an aromatic ring group, or a heterocyclic group.

5,393,629

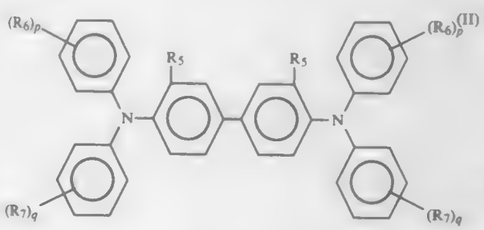
ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Katsumi Nukada; Katsumi Daimon; Yasuo Sakaguchi; Kazuo Yamasaki; Masakazu Iijima; Michiaki Takahashi; Kazuhiro Koseki; Akira Imai; Kiyokazu Mashimo; Toru Ishii; Fumio Ojima; Masayuki Nishikawa, and Ryosaku Igarashi, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 873,026, Apr. 24, 1992, Pat. No. 5,302,479. This application Mar. 12, 1993, Ser. No. 30,773
Claims priority, application Japan, Apr. 26, 1991, 3-122812; Jan. 20, 1992, 4-27450; Mar. 13, 1992, 4-088279; Mar. 26, 1992, 4-098595; Apr. 13, 1992, 4-118524
Int. Cl.[6] G03G 5/06
U.S. Cl. 430—76 20 Claims

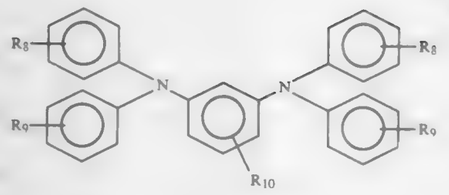
1. An electrophotographic photoreceptor comprising a conductive support having thereon a light-sensitive layer containing hydroxygallium phthalocyanine crystals as a charge generating material and a benzidine compound represented by formula (II):

(II)



wherein R_5 represents a hydrogen atom, an alkyl group, an alkoxy group or a halogen atom; R_6 and R_7 each represent a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom, or a substituted amino group; and p and q each represent 0, 1 or 2, or a tetraaryl-m-phenylenediamine compound represented by formula (III):

(III)



wherein R_8, R_9, and R_{10} each represent a hydrogen atom, an alkyl group, an alkoxy group, a substituted or unsubstituted aryl group or an aralkyl group, as a charge transporting material.

5,393,630

MELT MIXING PROCESSES

Robert D. Bayley, Fairport; Carol A. Fox, Farmington; Thomas R. Hoffend, Webster, all of N.Y.; Hadi K. Mahabadi, and Enno E. Agur, both of Toronto, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 4, 1993, Ser. No. 131,250
Int. Cl.[6] G03G 9/087
U.S. Cl. 430—105 42 Claims

1. A reactive melt mixing process for the preparation of a toner resin comprising:
(a) melt mixing a base resin with a matrix resin containing a crosslinking agent, thereby forming a polymer melt; and
(b) crosslinking said polymer melt under high shear to form a crosslinked toner resin, and wherein said crosslinking agent is a chemical initiator.

5,393,631

TONER CARRIERS FOR ELECTROPHOTOGRAPHIC PRINTERS

Yuzo Horikoshi; Yasuo Yamagishi, and Norio Sawatari, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 14, 1993, Ser. No. 75,725
Claims priority, application Japan, Jun. 25, 1992, 4-166624
Int. Cl.[6] G03G 9/10
U.S. Cl. 430—108 5 Claims

1. Electrophotographic printer toner carriers, said toner carriers being coated with a resin coating comprising a fluorinated polyimide resin containing fluorine atoms in an amount of 5 to 60% by weight based on the total weight of the fluorinated polyimide resin.

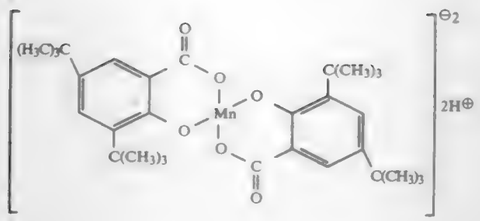
5,393,632

TONER COMPOSITIONS WITH MANGANESE COMPLEX CHARGE ENHANCING ADDITIVES

Roger N. Ciccarelli, Rochester; Thomas R. Pickering, Webster; Denise R. Bayley, Fairport, and Jacques C. Bertrand, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1993, Ser. No. 113,117
Int. Cl.[6] G03G 9/097
U.S. Cl. 430—110 22 Claims

1. A negatively charged toner composition comprised of resin, pigment, and a manganese complex charge enhancing additive of the following formula



5,393,633

LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY

Akira Furukawa, and Nobuko Nakazima, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Aug. 12, 1992, Ser. No. 928,343

Claims priority, application Japan, Aug. 15, 1991, 3-229564; Aug. 15, 1991, 3-229569; Aug. 15, 1991, 3-229570; Jul. 6, 1992, 4-178552

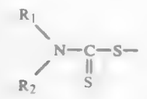
Int. Cl.[6] G03G *9/13*

U.S. Cl. 430—114 15 Claims

1. A process for producing a liquid developer for electrostatic photography which includes a highly insulating hydrocarbon medium and particles of a resin dispersed in said medium, wherein said resin is obtained by the following steps:

polymerizing at least the following monomer (A) in the presence of the following polymer (S) by initiating the polymerization with a polymerization initiator:

polymer (S)—a polymer which is for stably dispersing the resin particles formed by polymerization of monomer (A) in such a state that the polymer bonds to the resin particles and which is soluble in said medium and has a dithiocarbamate group represented by the following formula (1) or a mercapto group at the terminal or on the side chain thereof



(1)

wherein R_1 represents an alkyl group of 1 to 8 carbon atoms, R_2 represents a hydrogen atom or an alkyl group of 1 to 8 carbon atoms, R_1 and R_2 may be identical or different and R_1 and R_2 may link to each other to form an alkylene group of 3 to 8 carbon atoms to form a ring together with N; and

monomer (A)—a monomer which is soluble in said medium and becomes insoluble when polymerized by reaction at the chain transferable group part of the polymer (S) to become resin particles.

5,393,634

CONTINUOUS PHASE AND AMPLITUDE HOLOGRAPHIC ELEMENTS

Paul D. Maker, Arcadia, and Richard E. Muller, Sunland, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 27, 1993, Ser. No. 71,131

Int. Cl.[6] G03C *5/00*; G03H *5/00*

U.S. Cl. 430—1 3 Claims

1. A method for creation of a phase hologram element with n-ary levels of phase delay assigned to pixel areas thereof, where the number of levels is greater than sixteen, using e-beam lithography for creating complex surface relief patterns in a layer of low contrast e-beam resist material on a transparent substrate, comprising the steps of

exposing said pixel areas by a range of low doses of e-beam at n-ary levels in polymer resist material with individual dose correction for proximity effect, and

partially developing said resist material by controlled time of development less than necessary for full development, resulting in partial removal of e-beam exposed resist material in pixel areas in proportion to said n-ary levels of e-beam doses,

wherein exposures to said e-beam of adjacent pixels are each individually assigned a primary dose corrected for proximity effect, said proximity effect being defined as exposure dose contributed by backscattered electrons from said transparent substrate, said proximity effect being of the Gaussian form

$$D_p(r)/Q_o = \frac{\eta}{\pi\alpha^2}\exp(-r^2/\alpha^2),$$

where D_p, which depends strongly on substrate composition and geometry and upon the electron beam voltage, is the proximity dose intensity at distance r from a primary point dose Q_o delivered at r=0, η is the proximity factor, and α is the range of the Gaussian, and

said primary dose assigned to each of said adjacent pixels is corrected by having the total dose arriving at said distance r due to a spatially varying patterned primary dose D_{prim} expressed as a convolution of an effective point spread function, PSF, with that patterned primary dose, as:

$$\begin{aligned} D_{tot}(r) &= \int\int d(r - ro) \times D_{prim}(ro) \times PSF(r - ro) \\ &= D(r)\ \ PSF(r) \end{aligned}$$

where

$$PSF(r) = \delta(r) + \frac{\eta}{\pi\alpha^2}\exp(-r^2/\alpha^2).$$

5,393,635

CHELATING NEGATIVE CHARGE DIRECTOR FOR LIQUID ELECTROGRAPHIC TONER

Dale D. Russell, and James G. Bearss, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 28, 1993, Ser. No. 99,021

Int. Cl.[6] G03G *9/135*

U.S. Cl. 430—115 16 Claims

1. A liquid toner dispersion for electrography comprising:

a non-polar, non-conducting liquid;

a toner particle comprising a pigment component and a resinous carrier, dispersed in said non-polar, non-conducting liquid;

a very weakly associating, negatively charged functional group covalently bonded to said resinous carrier or to said pigment component, said charged functional group resulting in a net negative charge on said toner particle; and

a strongly chelated metal, ammonium, or organic cation also dispersed in said non-polar, non-conducting liquid, said metal, ammonium or organic cation being chelated by a strong chelating agent so that the net charge of said dispersion is neutral.

5,393,636

PROCESS FOR PRODUCING TONER FOR THE DEVELOPMENT OF AN ELECTRIC IMAGE

Jun Sugita, Tenri; Kazushige Morita, Shiki; Satoshi Katayama, Nara; Hiroshi Sugimura, Habikino; Satoshi Nishigaki, and Kazuhiro Emoto, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 992,750, Dec. 18, 1992, abandoned.

This application Jun. 7, 1994, Ser. No. 255,895

Claims priority, application Japan, Jan. 17, 1992, 4-025989

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—137 9 Claims

1. A process for producing a toner for the development of an electrostatic image which comprises the steps of dissolving a high-molecular polymer in a vinyl monomer, mixing the resultant solution with a polymerization initiator and a toner material comprising a colorant and an charge control agent, and then carrying out suspension polymerization.

5,393,637

PHOTOSENSITIVE COMPOSITION FOR OFFSET PRINTING COMPRISING A BINDER, A PHOTOSENSITIVE SUBSTANCE AND A MICROGEL MADE FROM AN ACRYLIC RESIN HAVING CARBOXYL GROUPS AS THE EMULSIFIER

Kazunori Kanda, Yao; Yoshifumi Ichinose, Ikeda; Seiji Arimatsu, Hirakata; Katsuji Konishi, Ibaraki, and Takakazu Hase, Nishinomiya, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Feb. 28, 1992, Ser. No. 843,851

Claims priority, application Japan, Mar. 1, 1991, 3-036029

Int. Cl.[6] G03C *1/72*; G03F *7/021, 7/023, 7/027*

U.S. Cl. 430—138 5 Claims

1. A photosensitive composition for offset printing which comprises an admixture of:

(I) 15 to 99% by weight of a film-forming binder resin,

(II) 1 to 50% by weight of a photosensitive substance, and

(III) 0.1 to 35% by weight of a three-dimensionally cross-linked microgel having a particle size of 0.01 to 2.0 μ prepared by emulsion polymerization using a polymeric emulsifier, based on 100% by weight of the composition, wherein said polymeric emulsifier is acrylic resin containing a carboxyl group as an acidic group, which has an Sp value of 9 to 16, an acid value of 15 to 100 and a hydroxyl group value of 5 to 250.

5,393,638

IMAGE FORMING METHOD

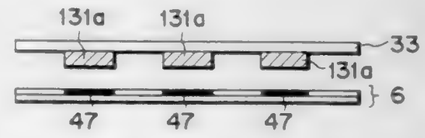
Akihiro Mouri, Atsugi; Masato Katayama, Yokohama; Kazuo Isaka, Tokyo, and Tetsuro Fukui, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1991, Ser. No. 712,556

Claims priority, application Japan, Jun. 12, 1990, 2-151726

Int. Cl.[6] G03C *8/50*

U.S. Cl. 430—201 5 Claims



1. A method of forming an image comprising in sequence the steps of:

(a) securing an image receiving medium to a support member;

(b) superposing onto said image receiving medium an image forming medium containing at least a heat-diffusible coloring matter, a polymerizable polymer precursor, a photopolymerization initiator, a photosensitive silver halide, an organic silver salt and a reducing agent for forming a light absorbing compound after (i) an oxidation-reduction reaction or (ii) upon reaction with a coupler after said oxidation-reduction reaction;

(c) subjecting said image forming medium to imagewise exposure;

(d) heating said image forming medium;

(e) subjecting said image forming medium to polymerization exposure to form a polymerized area and an unpolymerized area in the image forming medium;

(f) separating said polymerized area from said unpolymerized area to such that said unpolymerized area is arranged on said image receiving medium;

(g) transferring said heat-diffusible coloring matter in said unpolymerized area to said image receiving medium; and

(h) removing said unpolymerized area from said image receiving medium.

5,393,639

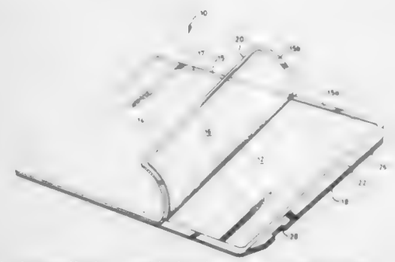
IMAGING LAMINATE

Steven Kourepenis, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 25, 1992, Ser. No. 981,287

Int. Cl.[6] G03C *3/00*

U.S. Cl. 430—254 20 Claims



1. A thermally imageable laminar composite structure comprising:

a frangible layer of an image-forming substance, said layer having first and second opposite surfaces;

a first sheet having an image-forming surface or zone adhered to said first surface at a first strength, abutting areas of said frangible layer being, upon exposure of said composite structure to intense image-forming radiation, adherable to said image-forming surface or zone at a strength greater than said first strength;

a second sheet adhered to said second surface at a predetermined substantially uniform strength, said predetermined substantially uniform strength being greater than said first strength and less than said second strength;

each of said first and second sheets of said composite structure being separable from each other, separation of said sheets after said exposure to said intense image-formation radiation being effective to provide portions of said frangible layer of image-forming substance on each of the separated sheets;

said first and second sheets of said composite structure being prebonded to each other through said layer of image-forming substance about a border region conforming to the periphery of said sheets, at a strength substantially greater than the force required to separate said sheets in the region of said composite structure confined by said border region prior to said exposure of said composite in said region confined by said border region to said intense image-forming radiation;

said image-forming substance upon separation of said first and second sheets being adhered in said border region to one of said sheets, thereby to provide on said one sheet a border in said image-forming substance.

5,393,640

PEEL APART PHOTOSENSITIVE MATERIAL UTILIZING A BARRIER LAYER CONTAINING AN AROMATIC (METH)ACRYLATE CONTAINING COPOLYMER WITH A T_g UNDER 70° C.

Yuichi Wakata, and Chiyomi Niitsu, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 973,651, Nov. 9, 1992, abandoned. This application May 26, 1994, Ser. No. 249,664

Claims priority, application Japan, Nov. 11, 1991, 3-323765

Int. Cl.[6] *G03F 7/105, 7/11*

U.S. Cl. 430—262 **7 Claims**

1. A photosensitive material comprising a support, a peel layer, a barrier layer and a coloring material-containing photosensitive layer or a laminate of a coloring material layer and a photosensitive layer, superposed in this order:

wherein said barrier layer comprises a polymer having a glass transition temperature of not higher than 70° C. and which is selected from the group consisting of copolymers of at least 20 molar % of an acrylate monomer having an aromatic ring and no more than 80 molar % of one or two other copolymerizable monomers, and copolymers of at least 20 molar % of a methacrylate monomer having an aromatic ring and no more than 80 molar % of one or two other copolymerizable monomers.

5,393,641

RADIATION-SENSITIVE RESIN COMPOSITION

Toshio Ito, and Miwa Sakata, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 12,425, Feb. 2, 1993, abandoned. This application Jun. 6, 1994, Ser. No. 254,676

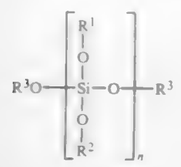
Claims priority, application Japan, Feb. 3, 1992, 4-017588

Int. Cl.[6] **G03F** *7/038*

U.S. Cl. 430—270 **6 Claims**

1. A radiation-sensitive resin composition comprising:

a linear polysiloxane having a C—O—Si bond in each monomer unit, wherein said polysiloxane is a poly(dialkoxysiloxane) or a poly(diaryloxysiloxane) represented by the following formula (1):



(1)

where R^1 and R^2 are primary, secondary or tertiary alkyl groups or aryl groups which are identical to or different from one another, R^3 is hydrogen or trimethylsilyl, and n represents degree of polymerization; and

an acid-producing agent which decomposes to produce acid due to the action of radiation.

5,393,642

IONIC MODIFICATION OF ORGANIC RESINS AND PHOTORESISTS TO PRODUCE PHOTOACTIVE ETCH RESISTANT COMPOSITIONS

Thomas D. DuBois; Farid M. Tranjan, both of Charlotte, and Stephen M. Bobbio, Wake Forest, all of N.C., assignors to The University of North Carolina at Charlotte, Charlotte, N.C.

Filed Dec. 31, 1992, Ser. No. 999,208

Int. Cl.[6] **G03F** *7/09*

U.S. Cl. 430—271 **19 Claims**

1. A photoresist composition comprising:

an admixture of an organic resin that reacts in the presence of an acid; and

a photoactive, etch resistant ionic modifier formed of an anion and a phosphonium cation, said modifier being present in said organic resin in an amount effective to produce substantial photoreactivity and etch resistance in a mixture of said resin and said modifier;

said phosphonium cation being characterized in that it will, upon exposure to electromagnetic radiation, produce a photoreaction species that is weakly basic or neutral; and

said anion being characterized in that it will, upon exposure to electromagnetic radiation, produce an acid precursor that will form a relatively strong acid in an acid-base solvent system;

whereby said relatively strong acid will catalyze the organic resin upon exposure to an appropriate frequency of electromagnetic radiation and said relatively weak base or neutral species formed by said cation will neither substantially neutralize said acid nor interfere with the acid reaction of said organic resin.

5,393,643

WATERBORNE PHOTORESISTS HAVING BINDERS NEUTRALIZED WITH AMINO ACRYLATES

Daniel E. Lundy, Pamona; Robert K. Barr, Laguna Niguel, and Thanh N. Tran, Westminster, all of Calif., assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 199,037, Feb. 18, 1994, which is a continuation-in-part of Ser. No. 186,875, Jan. 25, 1994, abandoned. This application May 4, 1994, Ser. No. 238,133

Int. Cl.[6] **G03C** *1/73*

U.S. Cl. 430—281 **4 Claims**

1. A photoimageable composition capable of being borne as an emulsion in an aqueous medium comprising

A) between about 30 and about 80 wt % of a latex binder polymer having an acid number of between about 40 and about 250,

B) between about 15 and about 50 wt % of alpha,beta-ethylenically unsaturated monomer(s), exclusive of amino acrylates,

C) between about 0.1 and about 25 wt % of a photoinitiator or photoinitiator chemical system which generates free radicals,

D) between about 0.1 and about 20 wt % of an aminoacrylate(s) so as to neutralize between about 1 and about 40 mole percent of the acid functionality of the latex binder polymer; and

E) up to about 40 wt % of an additional neutralizing base and/or polyether polyurethane associate thickener in amounts in conjunction with said aminoacrylate(s) sufficient to stabilize the photoimageable composition as an aqueous emulsion,

the weight percentages being based on total weight of components A–E.

5,393,644

PRODUCTION OF CROSSLINKED POLYMER LAYERS HAVING NONLINEAR OPTICAL PROPERTIES AND THEIR USE

Karl-Heinz Etzbach, Frankenthal; Heike Kilburg, Speyer; Hans-Joachim Lorkowski, and Karl Pfeiffer, both of Berlin, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Dec. 16, 1993, Ser. No. 167,055

Claims priority, application Germany, Dec. 24, 1992, 4244197

Int. Cl.[6] **G03F** *7/027*

U.S. Cl. 430—288 **10 Claims**

1. A process for the production of crosslinked polymer layers having nonlinear optical properties, wherein (A) diallyl esters of aromatic dicarboxylic acids or mixtures thereof with monoallyl monoalkyl esters of aromatic dicarboxylic acids are copolymerized with compounds having nonlinear optical activities and containing polymerizable groups or (B) prepolymers of diallyl esters of aromatic dicarboxylic acids or prepolymers of mixtures of diallyl esters of aromatic dicarboxylic acids and monoallyl monoalkyl esters of aromatic dicarboxylic acids

are mixed with compounds having nonlinear optical activity and with or without polymerizable groups (=guest/host system), applied to a substrate and, after orientation in an electric field above 50° C., crosslinked in a reaction which is initiated thermally or by free radicals.

5,393,645

PRODUCTION OF STRUCTURED POLYMER LAYERS HAVING NONLINEAR OPTICAL PROPERTIES

Karl-Heinz Etzbach, Frankenthal; Heike Kilburg, Speyer; Hans-Joachim Lorkowski, and Karl Pfeiffer, both of Berlin, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Dec. 16, 1993, Ser. No. 167,064

Claims priority, application Germany, Dec. 24, 1992, 4244195

Int. Cl.[6] **G02F** *1/35*

U.S. Cl. 430—288 **8 Claims**

1. A process for the production of structured polymer layers having nonlinear optical properties, wherein either organic compounds containing ethylenically unsaturated groups are subjected to free radical copolymerization (A) with stilbene, azo or azomethine compounds containing ethylenically unsaturated groups and donor and acceptor groups, or organic compounds containing ethylenically unsaturated groups are subjected to free radical polymerization and are mixed (B) with stilbene, azo or azomethine compounds containing ethylenically unsaturated groups and donor and acceptor groups, the copolymers (A) or mixtures (B) thus obtained are exposed imagewise to high-energy radiation, the unexposed parts are removed and the structured polymer layers thus obtained are polarized in an electric field for orientation of the chromophoric structural units in the region of the glass transition temperature of the polymer and crosslinked in an applied electric field.

5,393,646

METHOD FOR SELECTIVE FORMATION OF A DEPOSITED FILM

Takao Yonehara, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 729,894, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 445,943, Dec. 8, 1989, abandoned, which is a continuation of Ser. No. 284,814, Dec. 14, 1988, abandoned, which is a continuation of Ser. No. 914,318, Oct. 2, 1986, abandoned. This application Jan. 19, 1993, Ser. No. 3,693

Claims priority, application Japan, Oct. 7, 1985, 60-223394; Oct. 7, 1985, 60-223395

Int. Cl.[6] **G03F** *7/00*

U.S. Cl. 430—313 **4 Claims**

1. A method for selective formation of a deposited film, which comprises providing on at least the bottom portion of a groove for element separation formed on a semiconductor substrate a material with higher nucleus forming density than the material constituting the surface portion of the periphery of the opening of said groove, thereby selectively depositing the deposited film forming material in said groove for element separation to fill said groove.

5,393,647

METHOD OF MAKING SUPERHARD TIPS FOR MICRO-PROBE MICROSCOPY AND FIELD EMISSION

Armand P. Neukermans, 3510 Arbutus Ave., Palo Alto, Calif. 94303; Timothy G. Slater, San Francisco, Calif.; Linda E. Whittlesey, Redwood City, Calif., and Sean S. Cahill, Cupertino, Calif., assignors to Armand P. Neukermans, Palo Alto, Calif.

Filed Jul. 16, 1993, Ser. No. 92,780

Int. Cl.[6] **H01L** *21/302*

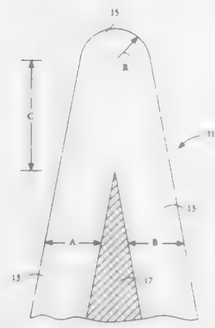
U.S. Cl. 430—320 **20 Claims**

1. A method of making superhard tips for micro-probe microscopy or field emission comprising,

etching a tip of a first material,

thinning the tip to a desired shape and aspect ratio suited to atomic force microscopy, and

reacting the tip at an elevated temperature with an organic or ammonia vapor until at least an outer portion of the tip



is converted to a compound having atoms of the first material and atoms of the vapor while essentially maintaining said shape and aspect ratio, the converted compound having changed physical, chemical and electrical properties with respect to the first material.

5,393,648

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Satoru Toda; Tomokazu Yasuda, and Koji Tamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

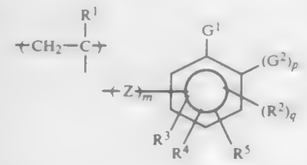
Filed Aug. 11, 1993, Ser. No. 104,626

Claims priority, application Japan, Aug. 17, 1992, 4-238862

Int. Cl.[6] **G03C** *1/06*

U.S. Cl. 430—522 **3 Claims**

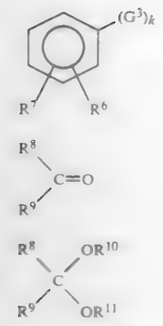
1. A silver halide photographic material containing a dispersion of lipophilic fine particles comprising a hydrophobic compound and a water-insoluble and an organic solvent-soluble polymer selected from the group consisting of (a) a co- or homo-polymer having at least a repeating unit represented by formula (I) and (b) a polymer obtained by subjecting at least one compound represented by formula (II) and at least one compound represented by formula (III) or formula (IV) to a condensation polymerization or by subjecting these compounds and another condensation-polymerizable low molecular weight compound to a condensation polymerization:



(I)

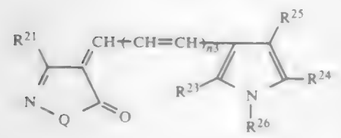
wherein R^1 represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, or a halogen atom; R^2, R^3, R^4 and R^5 may be the same or different and each individually represent a hydrogen atom, a substituent, or a halogen atom; Z represents a divalent linkage group; G^1 and G^2 may be the same or different and each individually represents a hydroxyl group or a group capable of forming a hydroxyl group upon hydrolysis; and

m, p and q each represents an integer of 0 or 1, provided that when p is 1, q is 0 and when p is 0, q is 1;



wherein G^3 represents a hydroxyl group, or a group capable of forming a hydroxyl group upon hydrolysis; k represents an integer of 1 or more; R^6 and R^7 may be the same or different and each individually represents a hydrogen atom, a substituent, or a halogen atom; R^8 and R^9 may be the same or different and each individually represents a hydrogen atom, an alkyl group, an aryl group, an aralkyl group, a heterocyclic group, an acyl group, a carboxyl group, or a formyl group, each of which may be substituted or unsubstituted; R^{10} and R^{11} may be the same or different and each individually represents a substituted or unsubstituted alkyl group; and R^{10} and R^{11} may be combined with each other to form a ring, and

wherein the hydrophobic compound is an oil soluble dye represented by formula (VI):



(VI)

wherein R^{21} represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, $—COOR^{27}$, $—COR^{27}$, $—CONR^{27}R^{28}$, —CN, $—OR^{27}$, $—NR^{27}R^{28}$, or $—N(R^{27})COR^{28}$; Q represents an oxygen atom or $—NR^{22}—$; R^{22} represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group; R^{23}, R^{24} and R^{25} may be the same or different and each individually represents a hydrogen atom, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group; R^{24} and R^{25} may be combined to form a 6-membered ring; R^{26} represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted amino group; R^{27} and R^{28} may be the same or different and each individually represents a hydrogen atom, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group; and n_3 represents an integer of 0 or 1, and

wherein said dispersion of the lipophilic fine particles is prepared by dissolving the hydrophobic compound and the water-insoluble and organic solvent-soluble polymer in an organic solvent and then dispersing the resulting solution into a hydrophilic colloid.

5,393,649

THERMALLY PROCESSABLE IMAGING ELEMENT INCLUDING AN ADHESIVE INTERLAYER COMPRISING A POLYMER HAVING PYRROLIDONE FUNCTIONALITY

(II) **Charles L. Bauer, Webster, and Wayne A. Bowman, Walworth, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

Filed Mar. 16, 1994, Ser. No. 213,784
Int. Cl.[6] G03C *1/76*
U.S. Cl. 430—523 **22 Claims**

(III)

(IV)

1. A thermally processable imaging element, said element comprising:

(1) a support;

(2) a thermographic or photothermographic imaging layer;

(3) an overcoat layer overlying said imaging layer; and

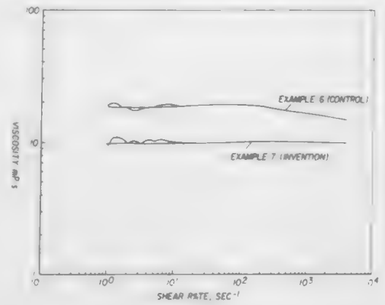
(4) an adhesive interlayer bonding said overcoat layer to said imaging layer; said adhesive interlayer comprising a polymer having pyrrolidone functionality.

5,393,650

PRESSURE SENSITIVITY RELIEF FOR PHOTOGRAPHIC PRODUCTS

Pranab Bagchi, Webster, and Melvin M. Kessner, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 114,535, Aug. 31, 1993. This application Jun. 27, 1994, Ser. No. 265,997
Int. Cl.[6] G03C *1/76*
U.S. Cl. 430—523 **10 Claims**



1. A multilayer photographic element comprising at least one light sensitive silver halide containing layer, an overcoat layer containing colloidal silica and a cushioning layer which comprises composite particles having a polymer core having a mean diameter of from about 10 to 500 nm covalently bonded to a gelatin shell, and a surfactant selected from

A. an amphiphilic surfactant selected from the group consisting of a 6 to 22 carbon atom hydrophobic tail with one or more attached hydrophilic chains comprising at least 8 oxyethylene and/or glycidyl ether groups that may or may not be terminated with a negative charge such as a sulfate group, and

B. a block oligomeric surfactant selected from the group consisting of hydrophobic polyoxypropylene blocks (A) and hydrophilic polyoxyethylene blocks (B) joined in the manner of A—B—A, B—A—B, A—B (A—B)$_n$oGo-(B—A)$_n$, or (B—A)$_n$oGo(A—B)$_n$, where G is a connective organic moiety and n is between 1 and 3, and

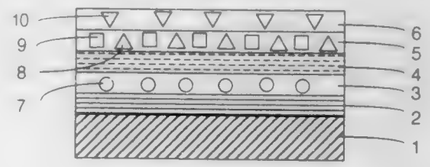
C. a sugar surfactant selected from the group consisting of between one and three 6 to 22 carbon atom hydrophobic tail with one or more attached hydrophioic mono or oligosaccharidic hydrophilic chains that may or may not be termianted by a negatively charged group such as a sulfate group or mixtures thereof.

5,393,651

SILVER HALIDE LIGHT-SENSITIVE MATERIAL COMPRISING POLYMERIZABLE LAYER PROVIDED ON ALUMINUM SUPPORT

Satoshi Hoshi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 8, 1994, Ser. No. 271,916
Claims priority, application Japan, Jul. 12, 1993, 5-195109
Int. Cl.[6] G93C *1/77*
U.S. Cl. 430—526 **14 Claims**



1. A silver halide light-sensitive material which comprises an aluminum support, an anodic oxide layer and a light-sensitive polymerizable layer in that order, said light-sensitive polymerizable layer containing silver halide, a reducing agent and an ethylenically unsaturated polymerizable compound or a cross-linkable polymer, wherein an intervening layer is further provided between the anodic oxide layer and the light-sensitive polymerizable layer, said intervening layer containing a compound having a metal cation or a metal oxide anion, and said metal cation or said metal oxide anion having a standard electrode potential of 0 V or more.

5,393,652

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toshiyuki Marui, Tokyo, Japan, assignor to Konica Corporation, Japan

Filed Apr. 1, 1994, Ser. No. 221,758
Claims priority, application Japan, Apr. 8, 1993, 5-082051
Int. Cl.[6] G03C *1/76*
U.S. Cl. 430—533 **5 Claims**

1. A silver halide photographic light-sensitive material comprising a support having provided thereon a silver halide emulsion layer, and a protective layer provided on said silver halide emulsion layer, wherein said emulsion layer or said protective layer contains a polymer latex comprising a polymer having a repeating unit derived from a monomer having a solubility in water at 25° C. of not greater than 0.025% by weight, in an amount of 50% to 100% by weight, said support comprising polyethylene-2,6-naphthalate and having a thickness of 70 μm to 120 μm.

5,393,653

METHOD FOR PREPARING A SILVER HALIDE EMULSION AND A SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING THE EMULSION

Hiroshi Kawai, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 27, 1992, Ser. No. 935,905
Claims priority, application Japan, Sep. 4, 1991, 3-250307
Int. Cl.[6] G03C *1/015, 1/035, 1/07*
U.S. Cl. 430—569 **26 Claims**

1. A method for preparing a silver halide emulsion, said method comprising supplying bromine and/or bromine ion at a plurality of processing stages to silver halide host grains to form a phase rich in silver bromide in the vicinity of the apexes of the grains, said host grains being substantially of a cube or tetradecahedron and having a silver chloride content of about 95 mole % or more and a silver bromide content of about 0 to about 5 mole %; wherein the bromine and/or bromine ion is supplied at the plurality of stages by adding and mixing in a reaction vessel at least one of (i) a water soluble bromine compound, (ii) silver halide grains having a smaller average grain size and a larger silver bromide content than the silver halide host grains, and (iii) a bromine or bromine ion precursor represented by formula (S):



(S)

wherein Y represents an organic group having a Hammett's σ_p value of 0 or more; R_1 and R_2, which may be the same or different, are selected from hydrogen, alkyl groups, alkenyl groups, aralkyl groups, aryl groups, or an organic group as defined by Y, with the proviso that $R_1$and Y may combine to form a heterocyclic ring; and n is an integer of 1 to 3; and where in at least one stage of said plurality of processing stages the bromine and/or bromine ion is supplied when the formation of the silver bromide-rich phase is at least 80% complete in the previous stage.

5,393,654

PHOTOTHERMOGRAPHIC IMAGING MATERIALS AND SENSITISERS THEREFOR

Ronald W. Burrows, Harlow; David B. Olliff, Bishops Stortford, both of Great Britain, and James B. Philip, Jr., Mahtomed, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 28, 1994, Ser. No. 202,944
Claims priority, application United Kingdom, Mar. 16, 1993, 9305324
Int. Cl.[6] G03C *1/498, 1/20*
U.S. Cl. 430—584 **12 Claims**

1. A photothermographic element having a photosensitive medium comprising silver halide, a reducible silver source and

a reducing agent for silver ion, characterised in that the medium includes as a sensitising dye a heptamethine cyanine dye characterised in that both nitrogen atoms of the cyanine chromophore bear a carboxyalkyl substituent comprising an alkyl chain of at least five carbon atoms.

5,393,655

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING SELENIUM OR TELLURIUM COMPOUND

Hirotomo Sasaki; Hiroyuki Mifune, and Toru Fujimori, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

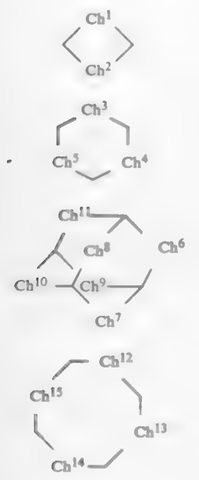
Filed Dec. 3, 1993, Ser. No. 161,275

Claims priority, application Japan, Dec. 10, 1992, 4-330495; Dec. 14, 1992, 4-333030

Int. Cl.[6] G03C *1/09*

U.S. Cl. 430—603 **35 Claims**

1. A silver halide photographic material comprising a silver halide emulsion layer provided on a support, wherein the silver halide emulsion layer contains a heterocyclic selenium or tellurium compound represented by the formula (Ia), (Ib), (Ic) or (Id):



(Ia)

(Ib)

(Ic)

(Id)

in which each of Ch^1, Ch^3, Ch^6 and Ch^{12} independently is Se or Te; each of Ch^2, Ch^4, Ch^5, Ch^7, C^8, Ch^9, Ch^{10}, Ch^{11}, Ch^{13}, Ch^{14} and Ch^{15} independently is O, S, Se or Te; the heterocyclic compound may have one or more substituent groups; and when the compound has two or more substituent groups, any two of the groups may be combined with each other to form a condensed heterocyclic ring.

5,393,656

Patent Not Issued For This Number

5,393,657

DETECTION OF RESIDUAL HOST CELL DNA BY PCR

Bruce W. Letwin, N. Andover, and Melissa A. Jezuit, Winchester, both of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Filed Nov. 30, 1992, Ser. No. 990,300

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **1 Claim**

1. A method for detecting residual DNA from a mammalian host organism in a recombinant protein product, said method comprising:

(a) preparing a recombinant protein product using a mammalian host through standard molecular biological techniques using a mammalian host cell;

(b) if necessary, digesting the recombinant protein product of step (a), which may have a target nucleic acid contaminant to be amplified, leaving target nucleic acid contaminant intact;

(c) denaturing the intact residual DNA of step (b) to reveal single stranded residual DNA;

(d) annealing to the single stranded residual DNA of step (c) one or more oligonucleotide primers, each oligonucleotide primer comprising an oligonucleotide directed to the DNA sequence of SEQ ID NO:1;

(e) extending the oligonucleotide primers of step (d) with a polymerase capable of copying a DNA template;

(f) repeating steps (c) through (e) through multiple rounds sufficient to generate detectable PCR product from the single stranded residual DNA; and

(g) detecting the presence of residual DNA in the recombinant protein product by identifying any PCR product generated in steps (c) through (f), wherein such identification is accomplished by standard molecular biological techniques.

5,393,658

IMMUNOASSAY METHOD FOR THE RAPID IDENTIFICATION OF DETERGENT TREATED ANTIGENS

Duane A. Olsen, Tacoma, Wash., assignor to New Horizons Diagnostics Corporation, Columbia, Md.

Continuation of Ser. No. 742,734, Aug. 6, 1991, abandoned, which is a continuation of Ser. No. 101,417, Sep. 28, 1987, abandoned. This application Apr. 6, 1993, Ser. No. 42,749

Int. Cl.[6] G01N *33/751, 33/53, 33/553*

U.S. Cl. 435—7.36 **19 Claims**

1. A method for detecting the presence of a target antigen in a biological specimen, comprising the steps of:

(a) extracting the antigen from the specimen by contacting the specimen with a first solution comprising a nonionic or zwitterionic detergent to extract the antigen and expose a reactive epitope of the antigen, thereby yielding a second solution;

(b) contacting the second solution with a colloidal gold-labelled antibody that specifically binds to the antigen to form a colloidal gold-labelled antibody-antigen complex in the solution;

(c) adding the solution containing the complex to a porous glass fiber filter membrane thereby immobilizing the complex on the membrane, wherein the pore size of the membrane is larger than the size of the complex; and

(d) visually detecting the presence of the complex on the membrane as an indication of the presence of the antigen in the specimen.

5,393,659

AGENT FOR IMMUNOCHEMICAL TESTS WHICH CONTAINS POLYMERS CONTAINING CARBOXYL GROUPS

Michael Noah, and Rudolf Schmidtberger, both of Marburg, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg/Lahn, Germany

Continuation of Ser. No. 443,312, Nov. 30, 1989, abandoned. This application Dec. 23, 1992, Ser. No. 23,154

Claims priority, application Germany, Dec. 2, 1988, 3840605.5

Int. Cl.[6] G01N *33/545, 33/531*

U.S. Cl. 435—7.94 **8 Claims**

6. A process for the immunochemical determination of an analysis substance contained in a sample of biological material, which comprises the steps of:

(a) applying an aqueous solution containing the analysis substance and a water-soluble polymer containing carboxyl groups selected from the group consisting of polyacrylic acid, polymaleic acid, polymers or telomers of maleic anhydride and methyl vinyl ether or ethylene or propylene or octadecene, the anhydride rings of which are opened by hydrolysis, and polygalacturonic acid, said polymer being present in a concentration of 0.01 to 50 g/L, to an immunochemical reactant present on a solid phase and being capable of reacting with the analysis substance;

(b) separating the solid phase from the liquid phase; and

(c) determining the analysis substance either in the solid phase or in the liquid phase by using an immunochemical reactant carrying a detectable label.

5,393,660

REAGENT FOR DETERMINING α-AMYLASE ACTIVITY AND METHOD FOR DETERMINING α-AMYLASE ACTIVITY

Sumio Kitahata, Osaka; Nobuhiro Kuwahara, Yokohama; Koki Fujita, Yokohama; Koji Hara, Yokohama; Keiichi Majima, Tsuruga; Shin-ichi Teshima, both of Tsuruga, and Yuzo Hayashi, Osaka, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka and Ensuiko Sugar Refining Co., Ltd., Kanagawa, both of Japan

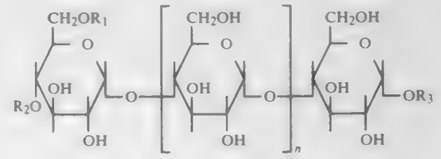
Filed Nov. 4, 1993, Ser. No. 147,717

Claims priority, application Japan, Nov. 10, 1992, 4-300103

Int. Cl.[6] C12Q *1/40;* **C12N** *9/26*

U.S. Cl. 435—22 **15 Claims**

1. A reagent for determining α-amylase activity, comprising a maltooligosaccharide derivative of the following formula



(I)

(wherein either one of R_1 and R_2 is β-galactopyranosyl and the other is hydrogen, R_3 is a group bonded to the reducing terminal glucose via a bond cleavable by α-amylase, which becomes a measurable substance upon cleavage of said bond, and n is an integer of 0–2), which does not comprise adjuvant enzymes.

5,393,661

THREE REAGENT GRAM STAINING METHOD AND KIT

Amy T. Meszaros, Adrian, and Leon F. Strenkoski, Dexter, both of Mich., assignors to Difco Laboratories, Ann Arbor, Mich.

Filed Dec. 22, 1993, Ser. No. 172,416

Int. Cl.[6] C12Q *1/04*

U.S. Cl. 435—34 **42 Claims**

1. A method for Gram staining a specimen containing bacteria by:

a) staining Gram positive bacteria in the specimen;

b) fixing the stain to the Gram positive bacteria and;

c) simultaneously decolorizing and counter-staining Gram negative bacteria in the specimen.

5,393,662

TEST MEDIA FOR IDENTIFYING AND DIFFERENTIATING GENERAL COLIFORMS AND *ESCHERICHIA COLI* BACTERIA

Jonathan N. Roth, Goshen, Ind., and Wilfred J. Ferguson, Lakewood, Ohio, assignors to RCR Scientific, Inc., Goshen, Ind.

Division of Ser. No. 512,188, Apr. 20, 1990, Pat. No. 5,210,022. This application Mar. 1, 1993, Ser. No. 24,212

Int. Cl.[6] C12Q *1/10, 1/04*

U.S. Cl. 435—38 **13 Claims**

6. A test medium for detecting the presence of general coliforms having β-galactosidase but not β-glucuronidase activity, said test medium comprising:

a nutrient base medium, said nutrient base medium being a solid or gel;

a chromogenic β-galactosidase substrate forming an insoluble compound of a first color upon reacting with β-galactosidase, said chromogenic β-galactosidase substrate being selected from the group consisting of 6-chloroindolyl-β-D-galactoside, 4,6-dichloroindolyl-β-D-galactoside, 6,7-dichloroindolyl-β-D-galactoside, 4,6,7-trichloroindolyl-β-D-galactoside and salts thereof; and

a chromogenic β-glucuronidase substrate for forming a second water insoluble compound of a second color upon reacting with β-glucuronidase;

wherein said chromogenic β-glucuronidase substrate is 5-bromo-4-chloro-3-indolyl-β-D-glucuronide or indoxyl-β-D-glucuronide.

5,393,663

STEREOSELECTIVE PREPARATION OF HALOPHENYL ALCOHOLS FROM KETONES

Ramesh N. Patel, Bridgewater; Mark Liu, Edison, both of N.J.; Amit Banerjee, Newtown, Pa., and Laszlo J. Szarka, East Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

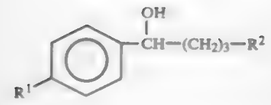
Continuation of Ser. No. 781,628, Oct. 23, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 46,884

Int. Cl.[6] C12P *17/16, 7/22, 17/12*

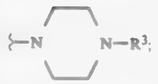
U.S. Cl. 435—118 **9 Claims**

1. A process for selectively preparing an R- or S- isomer of a product of the formula

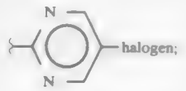
VOL 1171 ISS 4 FE 28 1995 UMI



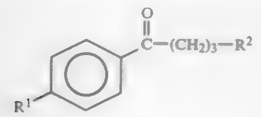
wherein:
R^1 is halogen;
R^2 is



and
R^3 is hydrogen, alkyl, cycloalkyl, aryl, or



and wherein the process comprises:
(a) treating a substrate of the formula



wherein R^1 and R^2 have the same meaning as above with a microorganism selected from a group consisting of:
Hansenula polymorpha ATCC 26012,
Hansenula polymorpha ATCC 86014,
Rhodococcus sp. ATCC 21243,
Nocardia globerula ATCC 21505,
Nocardia petroleophila ATCC 15776,
Arthrobacter simplex ATCC 6949,
Rhodococcus rhodochrous ATCC 29675,
Mycobacterium vacca ATCC 29678,
Hansenula anomala ATCC 36903,
Candida boidini ATCC 32,195,
Saccharomyces cerevisiae ATCC 60731,
Rhodochococcus rhodochrous ATCC 13808,
Pichia methanolica ATCC 56508,
Pullalaria pullulans ATCC 16623,
Trigonopsis variables ATCC 10679, and
Cunninghamella echinalata ATCC 26269,
or an oxidoreductase deriveable therefrom; and
(b) recovering the optically active product therefrom.

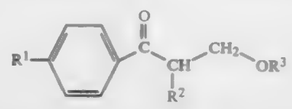
5,393,664

METHOD OF PREPARING (S)-1-PHENYL-1,3-PROPANEDIOL OR DERIVATIVES THEREOF FROM THEIR RESPECTIVE KETONES

Ikuo Kira, Kawasaki; Kazuhiro Watanabe, Tokyo; Eiji Nakanishi, Kawasaki; Hiroshi Ban, Kawasaki; Norimasa Onishi, Kawasaki, and Takayuki Suzuki, Kawasaki, all of Japan, assignors to Ajinomoto Co. Inc., Tokyo, Japan

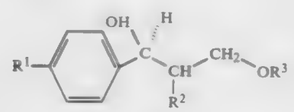
Filed Nov. 16, 1992, Ser. No. 977,007
Claims priority, application Japan, Nov. 14, 1991, 3-299131; Feb. 18, 1992, 4-030782
Int. Cl.[6] C12P *7/22*
U.S. Cl. 435—156 **32 Claims**

1. A method for preparing a (S)-1-phenyl-1,3-propanediol compound of formula (2), comprising contacting a compound of formula (1)



(1)

wherein a R^1 is a hydrogen atom, a halogen atom, or a C_{1-4} alkyl group; R^2 is a hydrogen atom or a C_{1-4}-alkyl group; and R^3 is a hydrogen atom or a C_{1-4} acyl group, with one member selected from the group consisting of:
(a) a culture of a microorganism capable of asymmetrically reducing said compound of formula (1),
(b) cells isolated from a culture of a microorganism capable of asymmetrically reducing said compound of formula (1), and
(c) a cell product obtained from a microorganism capable of asymmetrically reducing said compound of formula (1);
for a time sufficient to produce said (S)-1-phenyl-1,3-propanediol compound of formula (2)



(2)

wherein R^1, R^2 and R^3 are defined as above;
and recovering said compound of formula (2); wherein said microorganism is selected from the group consisting of
Arthrobacter paraffineus,
Aureobacterium testaceum,
Clavibacter michiganense,
Enterobacter cloacae,
Flavobacterium esteraromaticum,
Nocardia asteroides,
Rhodococcus erythropolis,
Serratia marcescens,
Candida cantarellii,
Citeromyces matritensis,
Cryptococcus albidus,
Hansenula mrakii,
Kloeckera javanica,
Aureobasidium pullulans,
Curvularia trifolii,
Gelasinospora longispora,
Monascus araneosus,
Mucor javanicus,
Rhizopus delemar,
Sclerotium bataticola,
Septoria cucurbitacearum and
Westerdykella multispora.

5,393,665

METHODS FOR TRANSFORMING STREPTOMYCES AND OTHER ACTINOMYCETES

Jeffrey T. Fayerman, Indianapolis, and Richard K. Stanzak, Poland, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 229,943, Aug. 8, 1988, abandoned. This application Feb. 10, 1992, Ser. No. 833,596
Int. Cl.[6] C12N *15/64, 1/21, 15/76*
U.S. Cl. 435—172.3 **5 Claims**

1. A method of transforming an intact restricting Streptomyces cell using single stranded DNA vectors, said method comprising the steps of:
(a) producing a DNA phasmid shuttle vector, said vector comprising:
(i) a replicon that is functional in *E. coli,*
(ii) a replicon that is functional in Streptomyces,

(iii) a DNA segment that contains a replication origin and a morphogenetic signal of a filamentous bacteriophage of *E. coli* having F pili, and
(iv) one or more DNA segments that convey resistance to at least one antibiotic when transformed into a sensitive host cell,
(b) preparing single-stranded DNA of said vector, and
(c) transforming a restricting Streptomyces host cell with said single-stranded DNA,
whereby the efficiency of transformation of the restricting Streptomyces host cell with said single stranded vector is approximately equal to or greater than the efficiency of transformation of the same restricting Streptomyces host cell with the double stranded equivalent of said single stranded vector.

5,393,666

METHOD OF ACTIVATING PROTHROMBIN

Yendra Linnau, Vienna, Austria, assignor to Immuno Aktiengesellschaft, Vienna, Austria

Filed Mar. 19, 1993, Ser. No. 34,778
Claims priority, application Austria, Apr. 6, 1992, 713/92
Int. Cl.[6] C12N *11/00, 11/16, 9/00;* **A61K** *37/547*
U.S. Cl. 435—183 **4 Claims**

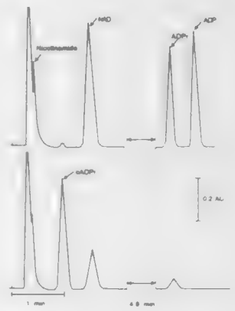
1. A method of activating prothrombin comprising the steps of:
providing a blood or plasma fraction containing prothrombin,
recovering said prothrombin from said fraction containing prothrombin,
contacting said prothrombin with immobilized trypsin to activate said prothrombin, wherein said activation of said prothrombin is carried out at a pH of 5.8 to 7.9, a conductivity of 5 to 25 mS and a temperature of 2° to 45° C. and whereby thrombin is formed, and
separating said immobilized trypsin after the formation of said thrombin.

5,393,667

EUCARYOTIC NAD CYCLASES

Felix Strumwasser, 275 Sippewissett Rd., Falmouth, Mass. 02540, and Mark R. Hellmich, 52 F. R. Lilly, Woods Hole, Mass. 02543

Division of Ser. No. 629,101, Dec. 17, 1990, Pat. No. 5,202,426, which is a continuation-in-part of Ser. No. 404,733, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 266,145, Nov. 2, 1988, abandoned. This application Feb. 22, 1993, Ser. No. 20,485
Int. Cl.[6] C12N *15/56*
U.S. Cl. 435—200 **16 Claims**



1. A composition enriched for the eucaryotic NAD cyclase of the genus Aplysia, wherein said NAD cyclase is enriched by at least 10 fold compared to the NAD cyclase present in a gonad of the genus Aplysia, said NAD cyclase having an apparent molecular weight of 24,000–34,000 daltons after electrophoresis in a sodium dodecyl sulphate polyacrylamide gel under a reducing condition.

5,393,668

CULTIVATION OF MAMMALIAN CELLS IN A PROTEIN-FREE MEDIUM ON A POLYVINYLFORMAL AND/OR POLYVINYL BUTYRAL SURFACE

Jaroslaw Cinatl, Frankfurt am Main, and Jindrich Cinatl, Obertshausen, both of Germany, assignors to Hans-Wilhelm Doerr, Germany

Filed Sep. 10, 1992, Ser. No. 943,238
Claims priority, application European Pat. Off., Sep. 11, 1991, 91115336
Int. Cl.[6] C12N *5/00, 11/08*
U.S. Cl. 435—240.23 **7 Claims**

1. In a process for the cultivation and proliferation of Vero cells in a protein-free medium, wherein said cells are in contact with and cultured on a culture surface, the improvement comprising culturing said cells on a polyvinylformal and/or polyvinylbutyral culture surface.

5,393,669

COMPOSITIONS AND METHODS FOR PROTEIN STRUCTURAL DETERMINATIONS

Jonathan M. Brown, Baltimore, Md., assignor to Martek Biosciences Corp., Columbia, Md.

Filed Feb. 5, 1993, Ser. No. 14,243
Int. Cl.[6] C12Q *1/04;* **C12N** *5/00;* **G01N** *33/00*
U.S. Cl. 435—240.3 **2 Claims**

1. A nutrient medium capable of supporting the growth of a mammalian or insect cell culture, which contains all amino acids that are essential for growth of the cells, an assimilable source of carbohydrate, and essential minerals and growth factors, wherein the amino acids and any other substrate used by the cells for protein synthesis are substantially labeled with both ^{13}C and ^{15}N.

5,393,670

DNA, VECTORS AND TRANSFORMED HOSTS ENCODING *TRICHODERMA REESEI* ENDOGLUCANASE I

Jonathan Knowles, Geneva, Switzerland; Merja Penttilä, Helsinki; Tuula Teeri, Espoo, both of Finland; Helena M. K. Nevalainen, North Epping, Australia, and Päivi Lehtovaara-Helenius, Helsinki, Finland, assignors to Oy Alko AB, Helsinki, Finland

Continuation of Ser. No. 418,154, Oct. 6, 1989, which is a division of Ser. No. 817,942, Jan. 30, 1986, Pat. No. 4,894,338. This application Jul. 23, 1993, Ser. No. 95,253
Claims priority, application Finland, Apr. 13, 1984, 841500
Int. Cl.[6] C12N *1/21, 15/52, 15/70, 15/81*
U.S. Cl. 435—252.33 **16 Claims**

1. A substantially pure DNA molecule comprising DNA encoding a polypeptide comprising the mature endoglucanase I protein amino acid sequence shown in FIG. 6 or FIG. 11.

5,393,671

MUTANT *ESCHERICHIA COLI* CAPABLE OF ENHANCED L-GLUTAMIC ACID PRODUCTION

Nobuharu Tujimoto; Yoshimi Kikuchi; Osamu Kurahashi, and Yoshiko Kawahara, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Division of Ser. No. 925,651, Aug. 7, 1992. This application Jun. 23, 1994, Ser. No. 264,298
Claims priority, application Japan, Aug. 7, 1991, 3-197774
Int. Cl.[6] C12P *13/14;* **C12N** *1/20*
U.S. Cl. 435—252.8 **2 Claims**

1. A mutant which is derived from *Escherichia coli* K-12 strain, wherein said mutant (i) is deficient or low in α-KGDH activity, (ii) is low in glutamic acid decomposition activity, (iii) is able to produce L-glutamic acid and (iv) expresses a malate

synthase, an isocitrate lyase and an isocitrate dehydrogenase kinase/phosphatase.

5,393,672

NON TOXIC COMPOSITIONS AND METHODS USEFUL FOR THE EXTRACTION OF NUCLEIC ACIDS

Jeffrey V. Ness, Bothell, Wash.; B. Melina Cimler, Portland, Oreg.; Rich B. Meyer, Jr., and Nicolaas M. J. Vermeulen, both of Woodinville, Wash., assignors to MicroProbe Corporation, Bothell, Wash.

Continuation of Ser. No. 900,379, Jun. 17, 1992, abandoned, which is a continuation of Ser. No. 649,389, Feb. 1, 1991, Pat. No. 5,130,423, which is a continuation-in-part of Ser. No. 552,745, Jul. 13, 1990, abandoned. This application Nov. 23, 1993, Ser. No. 156,519

Int. Cl.[6] G01N *33/50*

U.S. Cl. 436—94 **25 Claims**

1. An extraction composition for the isolation of released nucleic acids comprising:

at least one organic compound which is a liquid at room temperature and which is selected from the group of compounds having the formula $C_6H_5CH_2OH$ or:



where:

R^1 is $—CH_2OH$, R^2 is a member selected from the group consisting of —H, —F, —C, —Br, —I, —OH, $—S(CH_2)_rCH_3$ in which r is 0 to 3, $—O(CH_2)_qCH_3$ in which q is 0 to 6, $—COOR^6$ in which R^6 is $—(CH_2)_sCH_3$ in which s is 0 to 3, $—C_6H_5$, $—CH_2C_6H_5$, $—OC_6H_5$, $—OCH_2C_6H_5$, $—CH_2OH$, $—CF_3$, and $—(CH_2)_tCH_3$ in which t is 0 to 6 and R^3 and R^4 are both —H; or

R^1 is $—CH_2OH$, R^2 and R^3 are the same member selected from the group consisting of —H, —F, —Cl, —Br, —I, —OH, $—(CH_2)_xCH_3$ in which x is 0 to 3, $—O(CH_2)_vCH_3$ in which v is 0 to 3 and R^4 is —H; or

R^1 is $—CH_2OH$, R^2, R^3 and R^4 are the same member selected from the group consisting of —H, —F, —Cl, —Br, —I, $—(CH_2)_yCH_3$ in which y is 0 to 3, $—O(—CH_2)_wCH_3$ in which w is 0 to 3; or

R^1 is $—CH_2OH$, R^2 is $—C_6H_5$, $—OCH_2C_6H_5$, or $—CH_2C_6H_5$, R^3 is $—CH_3$, —OH, —Cl, —Br, —F, —I, —H, $—OCH_3$ or $—OCH_2CH_3$ and R^4 is —H; and

a clay or a silicate or an admixture of said clay and said silicate;

wherein said clay or said silicate or said admixture is 0.1% to about 5% by weight of said composition.

5,393,673

METHOD FOR PARTICULATE REAGENT SAMPLE TREATMENT

DOuglas T. Gjerde, Saratoga, Calif., assignor to Sarasep, Inc., Santa Clara, Calif. and Cetac Technologies Inc., Omaha, Nebr.

Continuation of Ser. No. 968,799, Oct. 30, 1992, abandoned. This application May 31, 1994, Ser. No. 252,046

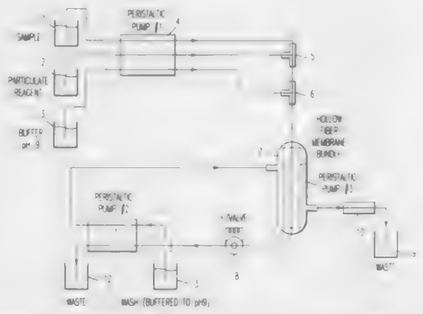
Int. Cl.[6] G01N *21/62*

U.S. Cl. 436—171 **30 Claims**

1. An analytical method for qualitatively or quantitatively determining the presence of an analyte in a sample with an analytical device, comprising the steps of:

mixing the sample with a particulate reagent to form a stable flowable suspension, where the analyte is bound to said particulate reagent to form an amount of insoluble analyte-bound particulate which correlates with the amount of analyte in the sample,

flowing the stable flowable suspension to a detecting site, and



directly detecting the analyte bound to the particulate reagent at said detecting site without detecting the presence of said particulate reagent, wherein the analyte is released from the particulate reagent during said detecting step.

5,393,674

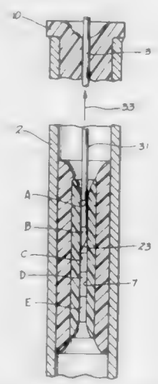
CONSTITUTENT LAYER HARVESTING FROM A CENTRIFUGED SAMPLE IN A TUBE

Robert A. Levine, 31 Pilgrim La., Guilford, Conn. 06437, and Stephen C. Wardlaw, 191 N. Cove Rd., Old Saybrook, Conn. 06475

Continuation-in-part of Ser. No. 636,260, Dec. 31, 1990, abandoned. This application Mar. 8, 1993, Ser. No. 25,343

Int. Cl.[6] G01N *1/18*

U.S. Cl. 436—177 **4 Claims**



1. A method for harvesting target cells from a centrifuged sample of anticoagulated whole blood contained in a tube which also contains a cylindrical float having a through passage for receiving and elongating layers of blood cell components to be harvested from the sample, the float having an axially constant outer diameter which ensures that the float fits snugly in the tube when under static conditions, said method comprising the steps of:

a) drawing a blood sample into the tube;

b) centrifuging the blood, tube and float at sufficient G forces to move the float toward one end of the tube, and concurrently exerting a tidal force on the float during centrifugation to contract the outer diameter of the float sufficiently to allow the float to slide through the tube during the centrifugation step;

c) forcing said blood cell components to settle in said through passage; and

d) removing said blood cells from said through passage and said tube by means of an aspirating cannula inserted into said through passage.

5,393,675

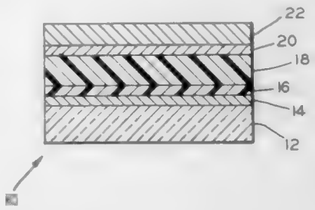
PROCESS FOR RF SPUTTERING OF CADMIUM TELLURIDE PHOTOVOLTAIC CELL

Alvin D. Compaan, Sylvania, Ohio, assignor to The University of Toledo, Toledo, Ohio

Filed May 10, 1993, Ser. No. 59,559

Int. Cl.[6] H01L *31/18, 31/072, 31/075;* **C23C** *14/35*

U.S. Cl. 437—5 **10 Claims**



1. A method for making a photovoltaic cell, said method comprising the steps of:

a) providing a substrate;

b) depositing a conductive layer onto the substrate;

c) positioning said substrate in a pressure chamber and operating a planar magnetron sputtering system for RF sputtering cadmium sulfide onto the conductive layer of the substrate to form a cadmium sulfide film having a thickness of about 0.05 to 0.5 microns;

d) positioning said substrate in a pressure chamber and operating a planar magnetron sputtering system for RF sputtering cadmium telluride onto the cadmium sulfide film to form a cadmium telluride film having a thickness of about 1.0 to 1.5 microns;

e) depositing cadmium chloride onto the cadmium telluride film to treat the cadmium telluride film, said cadmium chloride being deposited using laser-driven physical vapor deposition of a cadmium chloride target;

f) annealing the cell in dry air at a temperature between 300 and 500 degrees Celsius for a period of 30 to 60 minutes, whereby the grain size of the cadmium telluride is increased and the resistivity of the cadmium telluride is decreased; and

g) evaporating a metal on the cadmium telluride film to form a second conductive layer, whereby a photovoltaic cell with an efficiency of at least 10% is formed.

5,393,676

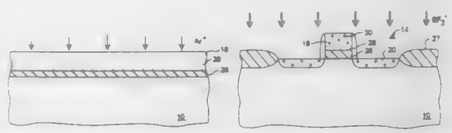
METHOD OF FABRICATING SEMICONDUCTOR GATE ELECTRODE WITH FLUORINE MIGRATION BARRIER

Mohammed Anjum; Ibrahim K. Burki, both of Austin, and Craig W. Christian, Buda, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 22, 1993, Ser. No. 125,421

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—24 **13 Claims**



1. A method for reducing diffusion of fluorine from a semiconductor gate conductor to an underlying gate oxide, the method comprising the steps of:

providing a semiconductor substrate and a gate oxide across one surface of said substrate;

providing a polysilicon material across the gate oxide;

implanting argon into the polysilicon material to form a concentration peak density at a first depth relative to the upper surface of said polysilicon material;

selectively removing a portion of said polysilicon material to present a patterned polysilicon material, a source region and a drain region; and

implanting impurities into said source region, said drain region and said patterned polysilicon material, wherein said patterned polysilicon receives said impurities at a second depth relative to the upper surface of said polysilicon material which is shallower than said first depth.

5,393,677

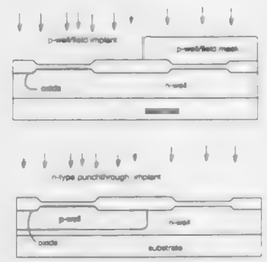
METHOD OF OPTIMIZING WELLS FOR PMOS AND BIPOLAR TO YIELD AN IMPROVED BICMOS PROCESS

Chuen-Der Lien, Mountain View; Kyle W. Terrill, Sunnyvale, and Jeong Y. Choi, Fremont, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Continuation of Ser. No. 835,249, Feb. 13, 1992, abandoned. This application Feb. 19, 1993, Ser. No. 20,234

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—28 **1 Claim**



1. A semiconductor process, comprising the steps of:

oxidizing a surface of a wafer;

implanting a blanket n-well implant in said wafer through said oxidized wafer surface before any field oxidation of said wafer;

diffusing said n-well implant in said wafer;

depositing nitride layers on said wafer surface;

masking said wafer with an island-like pattern of photoresist;

etching said nitride layers into patterned islands of nitride;

stripping any remaining portions of said photoresist on said wafer;

oxidizing said surface of said wafer;

stripping away any remaining portions of said nitride layers;

masking with another photoresist patterened for placing a p-well and a field oxide in said wafer;

implanting said p-well implant in said wafer wherein a retrograded p-well is formed;

field implanting said field oxide in said wafer;

stripping away any remaining portions of said photoresist off said wafer;

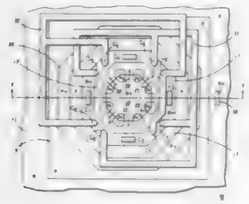
implanting an n-type punch through suppression implant in said wafer.

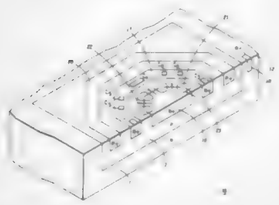
5,393,678

METHOD FOR MAKING COLLECTOR ARRANGEMENT FOR MAGNETOTRANSISTOR

Ljubisa Ristic, Paradise Valley, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 69,802, Jun. 1, 1993, Pat. No. 5,323,050.
This application May 18, 1994, Ser. No. 227,745
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—31 20 Claims





1. A method of forming a semiconductor magnetic field sensor, comprising the steps of:
providing a semiconductor substrate of a first conductivity type, the semiconductor substrate having a principal surface;
forming a base region of a second conductivity type in the semiconductor substrate, the base region extending from the principal surface into the semiconductor substrate;
forming an emitter region of the first conductivity type in the base region, the emitter region extending from the principal surface into the base region;
forming a collector region of the first conductivity type in the base region, the collector region being a continuous structure that is spaced apart from and laterally surrounds the emitter region;
providing an electrical contact to the base region;
providing an electrical contact to the emitter region; and
providing a plurality of collector contacts to the collector region, wherein a current flowing into some of the plurality of collector contacts is changed by a first component of a magnetic flux density, and the current flowing into others of the plurality of collector contacts is changed by a second component of the magnetic flux density.

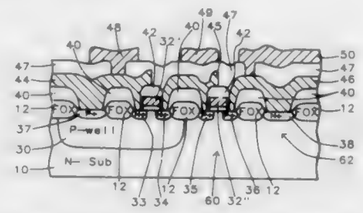
5,393,679

USE OF DOUBLE CHARGE IMPLANT TO IMPROVE RETROGRADE PROCESS PMOS PUNCH THROUGH VOLTAGE

Sheng-Hsing Yang, Hsinchu, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Apr. 5, 1994, Ser. No. 222,940
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—34 10 Claims

1. A method of manufacture of a semiconductor CMOS device on a silicon substrate doped with an N— dopant comprising:
a) forming a P-well mask on said substrate for the NMOS portion of said device,
b) implanting dopant ions to form an NMOS retrograde P-well through said P-well mask,
c) performing an NMOS first V_T implant of ions into said substrate,
d) removing said P-well mask and performing a second V_T implant of ions into said substrate,



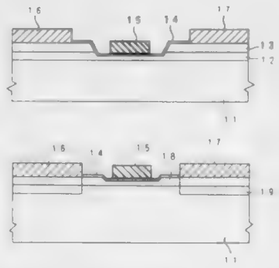
e) performing a PMOS punchthrough voltage implant of ions into said substrate,
f) forming of doped polysilicon gate structures above said substrate, and
g) forming of doped source/drain regions.

5,393,680

MIS ELECTRODE FORMING PROCESS

Shin-ichi Shikata, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 30, 1991, Ser. No. 736,967
Claims priority, application Japan, Aug. 1, 1990, 2-204529; Aug. 1, 1990, 2-204531
Int. Cl.[6] H01L *21/285, 21/336, 21/306*
U.S. Cl. 437—40 4 Claims



1. A process for forming a MIS electrode, comprising:
sulfur-passivating a predetermined area on a surface of a III-V compound semiconductor substrate;
forming an insulation film on said predetermined area by ECR-CVD;
applying an electrode material to said insulation film; and
heat-treating said insulation film at a temperature between 380° C. and 520° C.

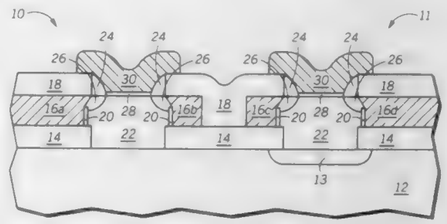
5,393,681

METHOD FOR FORMING A COMPACT TRANSISTOR STRUCTURE

Keith E. Witek; Jon T. Fitch, and Carlos A. Mazuré, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 940,026, Sep. 2, 1992, Pat. No. 5,340,754.
This application Mar. 15, 1994, Ser. No. 215,888
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—40 21 Claims

1. A method for forming a vertically raised metal oxide semiconductor (MOS) transistor comprising the steps of:
providing a semiconductor substrate having a surface;
forming a first dielectric layer overlying the substrate;
forming a doped layer overlying the first dielectric layer, the doped layer being doped with dopant atoms;
forming a second dielectric layer overlying the doped layer;
removing a portion of the first dielectric layer, a portion of the doped layer, and a portion of the second dielectric layer to form an opening which exposes the surface of the substrate and forms a sidewall of the doped layer;
selectively forming a conductive plug region within the opening, the conductive plug region being adjacent the doped layer and connected to the doped layer by a sidewall connection region;
driving dopant atoms out of the doped layer into the conductive plug region to form both a source electrode and a drain electrode of said transistor wherein the source electrode and the drain electrode are separated by a channel region formed within the conductive plug region;
forming a gate dielectric layer overlying a top portion of the channel region; and
forming a gate control electrode overlying the the gate dielectric layer wherein the gate control electrode is used to alter a conductivity of the channel region through the gate dielectric layer.

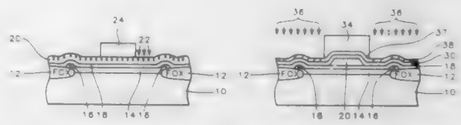


5,393,682

METHOD OF MAKING TAPERED POLY PROFILE FOR TFT DEVICE MANUFACTURING

Chwen-Ming Liu, Hsinchu, Taiwan, Prov. of China, assignor to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan, Prov. of China

Filed Dec. 13, 1993, Ser. No. 165,349
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—41 20 Claims



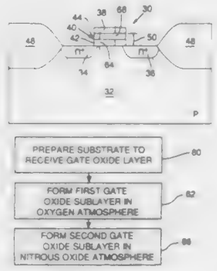
1. The method of forming a thin film transistor integrated circuit with a tapered polysilicon profile comprising:
depositing a layer of polysilicon over the surface of a semiconductor substrate;
implanting ions into said polysilicon layer whereby the upper half of said polysilicon layer is damaged by the presence of said ions within said layer;
anisotropically etching said polysilicon layer;
isotropically etching said damaged portion of said polysilicon layer whereby said polysilicon layer is uniformly tapered;
depositing a layer of gate oxide over the surface of said uniformly tapered polysilicon layer;
forming a thin film transistor body comprising:
depositing a layer of amorphous silicon over the surface of said gate oxide layer;
covering said amorphous silicon layer overlying said uniformly tapered polysilicon layer with a photoresist mask wherein said covered portion of said amorphous silicon layer forms the channel of said thin film transistor body; and
implanting ions into said amorphous silicon layer not covered by said photoresist mask to form source/drain regions within said amorphous silicon layer to complete formation of said thin film transistor body;
depositing an insulating layer over said thin film transistor body and said semiconductor substrate;
opening contacts through said insulating layer to said source/drain regions; and
filling said contact openings with a conductive material to complete said contacts in the formation of said thin film transistor integrated circuit.

5,393,683

METHOD OF MAKING SEMICONDUCTOR DEVICES HAVING TWO-LAYER GATE STRUCTURE

Viju K. Mathews; Charles H. Dennison; Pierre Fazan; Roy Maddox, and Akram Ditali, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed May 26, 1992, Ser. No. 887,785
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—42 19 Claims



1. A method of forming a gate oxide layer on a semiconductor substrate for a MOS semiconductor device, comprising the steps:
forming a first gate oxide sublayer on the semiconductor substrate in a first atmosphere including primarily oxygen; and
forming a second gate oxide sublayer having a thickness of about 0.95 nm to 3 nm, the second gate oxide sublayer being formed on the first oxide sublayer in a second atmosphere including primarily nitrous oxide.

5,393,684

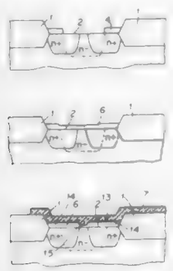
METHOD OF MAKING THIN OXIDE PORTIONS PARTICULARLY IN ELECTRICALLY ERASABLE AND PROGRAMMABLE READ-ONLY MEMORY CELLS

Paolo Ghezzi, Rivolta D'Adda; Federico Pio, Milan, and Carlo Riva, Monza, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Dec. 10, 1992, Ser. No. 988,474
Claims priority, application Italy, Dec. 13, 1991, MI91 A 003355
Int. Cl.[6] H01L *21/266*
U.S. Cl. 437—43 20 Claims

1. A method for producing an EEPROM cell comprising the steps of:
defining an active area on a doped silicon substrate by growing gate oxide regions;
depositing a first layer of radiation-sensitive material on a the active area and gate oxide regions;
masking portions of the first layer of radiation-sensitive material layer;
removing unmasked portions of the first layer of radiation-sensitive material layer, leaving protective portions of the first layer of radiation-sensitive material on the active area and on the gate oxide regions;
heavily doping the active area to form defined heavily doped regions;

removing the protective portions of the first layer of radiation-sensitive material;
diffusing heavily doped drain regions;
growing a first oxide layer on the active area;
depositing a second layer of radiation-sensitive material on the gate oxide regions and first oxide layer;
masking the portions of the second layer of radiation-sensitive material;
removing unmasked portions of the second layer of radiation-sensitive material, leaving an opening in a central portion of the active area defined on either side by protective portions of the second layer of radiation-sensitive material;
lightly doping the active area to form a defined lightly doped region;



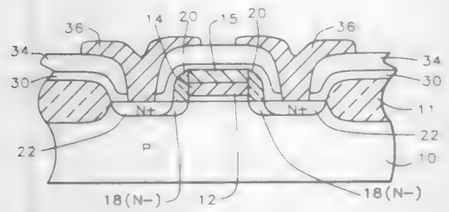
removing a portion of the first oxide layer within the opening;
removing the protective portions of the second layer of radiation-sensitive material;
growing a second oxide layer on the active area, simultaneously yielding gate oxide regions over the defined heavily doped regions and a tunnel oxide region over the defined lightly doped region;
depositing a layer of polysilicon on the second oxide layer and gate oxide regions;
masking portions of the polysilicon layer; and
removing unmasked portions of the polysilicon layer, yielding a floating gate electrode.

5,393,685

PEELING FREE METAL SILICIDE FILMS USING RAPID THERMAL ANNEAL

Chue-San Yoo, Taipei, and Ting-Hwang Lin, Hsin-Chu, both of Taiwan, Prov. of China, assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan, Prov. of China

Filed Aug. 10, 1992, Ser. No. 926,299
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—44 **19 Claims**



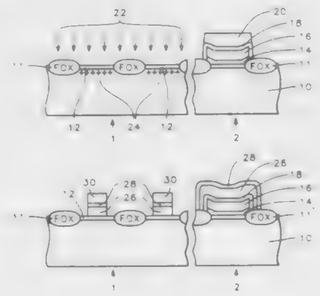
1. The method for fabricating a lightly doped source/drain MOS FET integrated circuit device with a peeling-free metal silicide gate electrode comprising:
forming a pattern of gate electrode structures upon a semiconductor substrate which structures each includes a gate oxide, a polysilicon layer, and metal silicide layer;
annealing said gate oxide, said polysilicon layer and said metal silicide layer using a rapid thermal annealing process at a temperature more than about
1000° C. and for a time of between about 30 to 60 seconds;
forming a pattern of lightly doped regions in said substrate by ion implantation using said structures as the mask;
blanket depositing a dielectric layer over the surfaces of the structure at a temperature of between about 650° to 750° C.;
etching the said blanket layer to form a dielectric spacer structure upon the sidewalls of each of said gate electrode structures and over the adjacent portions of said substrate, and to remove the said dielectric layer from the top surfaces of said metal silicide layer;
driving in said pattern of lightly doped regions by rapid thermal annealing at a temperature of more than about 1000° C. and for a time of between about 30 to 60 seconds with said metal silicide layer having no covering thereover;
forming heavily doped regions in said substrate by ion implantation using the said gate electrode structures with spacer structures as the mask to produce said lightly doped drain under said spacer structure of an MOS FET device; and
forming a passivation layer over the said structures and electrical connecting structures thereover to electrically connect the said gate electrode structures and source/drain elements to form said integrated circuit device.

5,393,686

METHOD OF FORMING GATE OXIDE BY TLC GETTERING CLEAN

Wei-kun Yeh; J. S. Shiao, both of Hsinchu, and A. M. Chiang, Hsin-Chu, all of Taiwan, Prov. of China, assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan, Prov. of China

Filed Aug. 29, 1994, Ser. No. 297,502
Int. Cl.[6] H01L *21/266*
U.S. Cl. 437—45 **4 Claims**



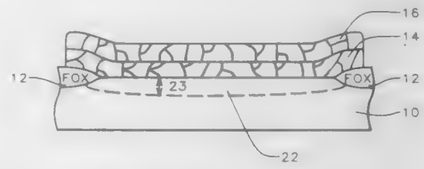
1. The method for forming a gate electrode for an integrated circuit comprising:
forming a gate silicon oxide layer for said gate electrode;
providing a blockout mask for all areas of said integrated circuit not requiring a threshold voltage ion implant;
ion implanting said threshold voltage ion implant through said gate silicon oxide layer into those areas not covered by said blockout mask;
removing said blockout mask;
cleaning said gate silicon oxide layer to improve the electrical breakdown and charge breakdown characteristics to said gate silicon oxide layer condition before said mask and said ion implanting steps by
a) treating said gate silicon oxide layer with ammonia and peroxide fluid in the concentration NH_4OH: H_2O_2: H_2O=(0.4–1):1 : 5.5 for between about 3 to 7 minutes at a temperature of between about 60° to 80° C. and
b) subjecting said gate silicon oxide layer to an atmosphere of $C_2H_2Cl_2$ and excess oxygen at a temperature of between about 775° to 875° C. for a time of between about 5 to 25 minutes; and
depositing a polysilicon layer over said gate silicon oxide layer and patterning said polysilicon layer to form said gate electrode.

5,393,687

METHOD OF MAKING BURIED CONTACT MODULE WITH MULTIPLE POLY SI LAYERS

Mong-Song Liang, Cupertino, Calif., assignor to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan, Prov. of China

Filed Dec. 16, 1993, Ser. No. 167,085
Int. Cl.[6] H01L *21/265, 21/225*
U.S. Cl. 437—46 **31 Claims**



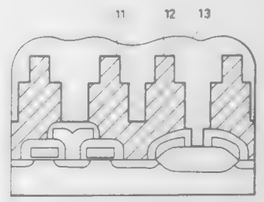
1. The method of forming a buried contact with a shallow junction in a silicon substrate comprising:
depositing a first polysilicon layer over the surface of said silicon substrate;
cooling said silicon substrate after said deposition of said first polysilicon layer to a temperature lower than the deposition temperature;
depositing a second layer of polysilicon on said first layer of polysilicon after said silicon substrate has been cooled wherein the polysilicon grain boundaries of said first and second polysilicon layers will be mismatched;
doping said second polysilicon layer wherein the said grain boundary mismatch will slow the diffusion of the dopant into said silicon substrate; and
driving in said dopant to form said buried contact with a shallow junction.

5,393,688

METHOD OF MANUFACTURING A STACKED CAPACITOR DRAM

Kaoru Motonami, and Yoshinori Okumura, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 851,409, Mar. 13, 1992, Pat. No. 5,280,444. This application Nov. 24, 1993, Ser. No. 156,749
Claims priority, application Japan, Apr. 1, 1991, 3-068638(P)
Int. Cl.[6] H01L *21/70, 27/00*
U.S. Cl. 437—52 **6 Claims**



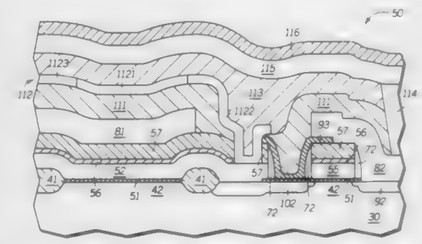
5. A method of manufacturing a DRAM having a stacked capacitor connected to an impurity region formed in a main surface of a semiconductor substrate comprising the steps of:
forming a first insulating layer on a main surface of a semiconductor substrate including impurity regions formed therein to have an opening which directly contacts said impurity region;
forming a first conductive layer on the surface of said first insulating layer and inside said opening;
forming an opening region which reaches said first insulating layer on the periphery of a region of said first conductive layer to be a lower electrode of one stacked capacitor;
after forming the opening region, selectively forming a mask layer for etching on the surface of said first conductive layer surrounded by said opening region;
etching said first conductive layer using said mask layer for etching as a mask to form a concave part in the surface of said first conductive layer uncovered with said mask;
forming a dielectric layer on the surface of said first conductive layer; and
forming a second conductive layer on the surface of said dielectric layer.

5,393,689

PROCESS FOR FORMING A STATIC-RANDOM-ACCESS MEMORY CELL

James R. Pfiester, and James D. Hayden, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1994, Ser. No. 209,170
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—52 **10 Claims**



1. A process for forming a static-random-access memory cell comprising the steps of:
providing a semiconductor substrate having:
a first conductivity type;
a primary surface; and
first, second, third, and fourth regions adjacent to the primary surface,
wherein the first and third regions lie adjacent to each other and
the second and fourth regions lie adjacent to each other;
doping the first region with a first dopant to a first dose, wherein the first
dopant has the first conductivity type; doping the second region with a second dopant to a second dose, wherein:
the second dopant has the first conductivity type; and
the first dose is heavier than the second dose; forming a field isolation region over the first and second regions and adjacent
but not over the third and fourth regions; forming a gate dielectric layer over the third and fourth regions; forming first and second conductive members over the gate dielectric layer,
wherein:
the first conductive member overlies the third region and acts as a gate
electrode for a pass transistor; and
the second conductive member overlies the fourth region and acts as a
gate electrode for a latch transistor; and forming fifth regions to form the pass and latch transistors, wherein:

the fifth regions lie adjacent to the primary surface and sides of the first
and second conductive members;
the fifth regions have a second conductivity type that is opposite the
first conductivity type.

5,393,690

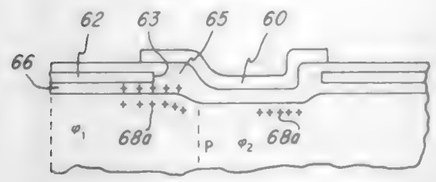
METHOD OF MAKING SEMICONDUCTOR HAVING IMPROVED INTERLEVEL CONDUCTOR INSULATION

Horng-Sen Fu, Sunnyvale, Calif.; Al F. Tasch, Jr., Richardson, and Pallab K. Chatterjee, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 933,606, Aug. 21, 1992, Pat. No. 5,202,574, which is a continuation of Ser. No. 614,546, Dec. 17, 1990, abandoned, which is a continuation of Ser. No. 178,827, Apr. 5, 1988, abandoned, which is a continuation of Ser. No. 928,715, Nov. 10, 1986, abandoned, which is a continuation of Ser. No. 739,751, May 31, 1985, abandoned, which is a continuation of Ser. No. 657,456, Oct. 3, 1984, abandoned, which is a continuation of Ser. No. 276,324, Jun. 22, 1981, abandoned, which is a division of Ser. No. 146,938, May 2, 1980, Pat. No. 4,356,040. This application Jan. 21, 1993, Ser. No. 6,864

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—53 **2 Claims**



1. A method of making a charge coupled device semiconductor structure, comprising:
forming a first conductor of polysilicon over a semiconductor substrate;
forming an insulating layer, less than 1000 Å in thickness, between said first conductor and said semiconductor substrate;
forming a side wall insulator of silicon dioxide on a side wall of said first conductor, said side wall insulator being at least 1000 Å in thickness and thicker than 1.4 times the thickness of said insulating layer;
forming a second conductor of polysilicon laterally adjacent said first conductor and abutting said side wall insulator; and
forming a modified surface potential region in a surface of said semiconductor substrate, said modified surface potential region being essentially uniform, whereby there is no perturbation which will impede transfer of charge in the device.

5,393,691

FABRICATION OF W-POLYCIDE-TO-POLY CAPACITORS WITH HIGH LINEARITY

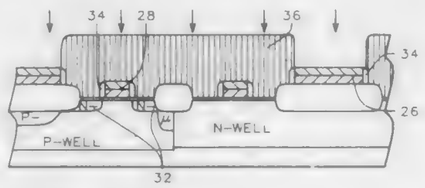
Shung-Liang Hsu, Taipei; Mou-Shiung Lin, and Ming-Dar Lei, both of Hsinchu, all of Taiwan, Prov. of China, assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan, Prov. of China

Filed Jul. 28, 1993, Ser. No. 102,977

Int. Cl.[6] H01L *21/70, 27/00*

U.S. Cl. 437—60 **18 Claims**

1. A method for forming a polycide-to-polysilicon capacitor, in and on a silicon substrate, on an integrated circuit having MOSFET devices which are separated from each other by means of field oxide regions, comprising:
forming a first layer of doped polysilicon on the surface of said substrate and said field oxide regions;
depositing a layer of silicide over said first layer of doped polysilicon;
patterning said layer of silicide and said first layer of doped polysilicon on said field oxide region, to form a polycide bottom plate of said capacitor;
annealing said polycide bottom plate;
forming sidewalls on the sides of said polycide bottom plate;
ion implanting in a vertical direction into said polycide bottom plate;



forming and patterning an interpoly dielectric layer on the surface of said polycide bottom plate to act as a dielectric for said polycide-to-polysilicon capacitor;
densifying said interpoly dielectric layer;
forming a second layer of doped polysilicon on the surface of said dielectric layer and on the surface of said substrate and said field oxide regions; and
patterning said second layer of doped polysilicon to form the top plate of said capacitor.

5,393,692

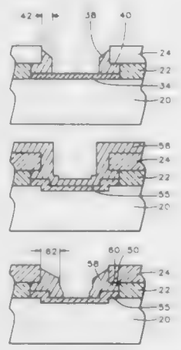
RECESSED SIDE-WALL POLY PLUGGED LOCAL OXIDATION

Lin-June Wu, Hsin-Chu, Taiwan, Prov. of China, assignor to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan, Prov. of China

Filed Jul. 28, 1993, Ser. No. 102,979

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—69 **22 Claims**



1. A method of forming a field oxide isolation region on and in the surface of a silicon substrate, comprising:
forming a first layer of pad oxide on the surface of said silicon substrate;
forming a layer of silicon nitride on the surface of said first pad oxide layer;
patterning said silicon nitride layer and a partial thickness of said first pad oxide layer to form opening for said field oxide isolation region;
removing said first pad oxide layer in the area defined by said opening to expose a portion of said silicon substrate, and simultaneously forming a cavity by removing a portion of said first pad oxide layer under said silicon nitride layer;
forming a second pad oxide layer by oxidizing said exposed portion of said silicon substrate and said first pad oxide layer;
depositing a layer of polysilicon over the surfaces of said second pad oxide layer and said silicon nitride layer, and inside said cavity;
forming a polysilicon spacer adjacent to said silicon nitride layer and a polysilicon plug in said cavity by etching said polysilicon layer;
forming said field oxide isolation region in and on said silicon substrate, by thermal oxidation of said silicon substrate, whereby said polysilicon spacer and said polysilicon plug are consumed;
removing said silicon nitride layer;
removing the remainder of said first pad oxide layer;
forming a sacrificial oxide layer on the surface of said substrate; and
removing said sacrificial oxide layer to complete said field oxide isolation region.

12. A method of isolating semiconductor devices on a silicon substrate, comprising:
forming a first layer of pad oxide on the surface of said silicon substrate;
forming a layer of silicon nitride on the surface of said first pad oxide layer;
patterning said silicon nitride layer and a partial thickness of said first pad oxide layer to form an opening;
removing said first pad oxide layer in the area defined by said opening to expose a portion of said silicon substrate, and simultaneously forming a cavity by removing a portion of said first pad oxide layer under said silicon nitride layer;
forming a second pad oxide layer by oxidizing said exposed portion of said silicon substrate and said first pad oxide layer;
depositing a layer of polysilicon over the surfaces of said second pad oxide layer and said silicon nitride layer, and inside said cavity;
forming a polysilicon spacer adjacent to said silicon nitride layer and a polysilicon plug in said cavity by etching said polysilicon layer;
forming a field oxide isolation region in and on said silicon substrate, by thermal oxidation of said silicon substrate, whereby said polysilicon spacer and said polysilicon plug are consumed, to isolate said semiconductor devices;
removing said silicon nitride layer;
removing the remainder of said first pad oxide layer;
forming a sacrificial oxide layer on the surface of said substrate; and
removing said sacrificial oxide layer to complete said field oxide isolation region.

5,393,693

"BIRD-BEAK-LESS" FIELD ISOLATION METHOD

Joe Ko, Hsinchu, and Chih-Hung Lin, I-Lai, both of Taiwan, Prov. of China, assignors to United MicroElectronics Corporation, Hsinchu, Taiwan, Prov. of China

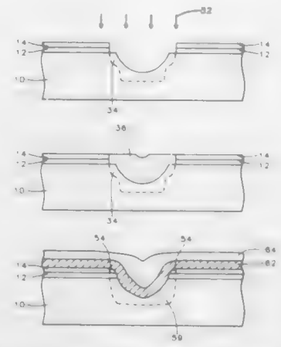
Filed Jun. 6, 1994, Ser. No. 254,533

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—69 **19 Claims**

1. A method of forming a field oxide isolation region, comprising the steps of:
forming a first insulating layer over a silicon substrate;
forming a second insulating layer over said first insulating layer;
forming a first opening in said first and second insulating layers;
forming sidewall spacers on the vertical surfaces of said first and second insulating layers, within said first opening, to define a second, smaller opening;
removing a portion of said silicon substrate in the region defined by said second, smaller opening, to form an etched region of said silicon substrate;
removing said sidewall spacers;
implanting oxygen into said etched region of said silicon substrate and into the regions of said silicon substrate under the former locations of said sidewall spacers;
forming a portion of polycrystalline silicon in and above said etched region of said silicon substrate;
forming said field oxide isolation region by heating the resulting structure in an oxidizing ambient; and
removing the remainder of said first and second insulating layers.

9. A method of forming a field oxide isolation region, comprising the steps of:
forming a first insulating layer over a silicon substrate;
forming a second insulating layer over said first insulating layer;



forming a first opening in said second insulating layer;
forming sidewall spacers on the vertical surfaces of said second insulating layer, within said first opening, to define a second, smaller opening;
removing a portion of said silicon substrate and said first insulating layer in the region defined by said second, smaller opening, to form an etched region of said silicon substrate;
implanting oxygen into said silicon substrate in the region defined by said second, smaller opening;
forming a layer of polycrystalline silicon in and above said etched region of said silicon substrate, over said second insulating layer, and over said sidewall spacers;
forming a third insulating layer over said layer of polycrystalline silicon;
forming said field oxide isolation region by heating the resulting structure in an oxidizing ambient; and
removing the remainder of said first, second and third insulating layers, said sidewall spacers and the remainder of said layer of polycrystalline silicon.

5,393,694

ADVANCED PROCESS FOR RECESSED POLY BUFFERED LOCOS

Viju K. Mathews, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Jun. 13, 1994, Ser. No. 259,825

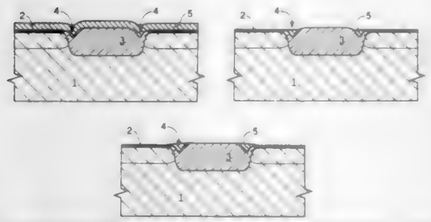
Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—72 **20 Claims**

1. A method for forming an isolation device comprising the following steps of:
providing a semiconductor substrate having a surface;

VOL 1171 ISS 4 FEB 28 1995 UMI

forming a plurality of layers on the surface of said semiconductor substrate;
patterning and etching said layers, thereby exposing a portion of said substrate surface;
etching said exposed portion of said substrate to a level below said surface of said substrate;
growing a field oxide region on said etched portion of said substrate;



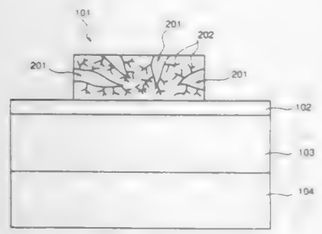
removing said layers, thereby forming an indentation within said field oxide region; and
substantially eliminating said indentation, wherein said indentation is eliminated by:
filling said indentation with a conformal film;
planarizing said conformal film; and
oxidizing said conformal film.

5,393,695

METHOD OF MAKING SOLAR CELL

Nobuyoshi Takehara, Nagahama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 957,150, Oct. 7, 1992, Pat. No. 5,318,638. This application Mar. 18, 1994, Ser. No. 214,547
Claims priority, application Japan, Oct. 18, 1991, 3-271033
Int. Cl.[6] H01L *31/18*
U.S. Cl. 437—180 **5 Claims**



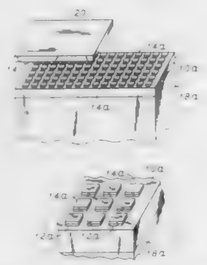
1. A method of fabricating a solar cell comprising a photoelectric conversion semiconductor and an electrode comprising a conductive base substance and a resin binder, said electrode electrically connected to said photoelectric conversion semiconductor, said method comprising the steps of:
forming a conductive paste comprising said conductive base substance and said resin binder in which the amount of solvent contained therein is adjusted so as to be not more than 18 wt % based on the weight of the conductive paste, whereby the volume of voids in said electrode having a diameter of 0.1 μm or greater is 0.04 cc/g or less;
applying said conductive paste to a surface of said photoelectric conversion semiconductor; and
forming said electrode by curing said conductive paste.

5,393,696

METHOD FOR FORMING MULTILAYER INDIUM BUMP CONTACTS

Wei Koh, Irvine, and Wayne D. Kuipers, Mission Viejo, both of Calif., assignors to Grumman Aerosace Corp., Bethpage, N.Y.

Continuation of Ser. No. 23,142, Feb. 24, 1993, abandoned, which is a continuation of Ser. No. 800,213, Nov. 29, 1991, abandoned, which is a division of Ser. No. 620,734, Dec. 3, 1990, Pat. No. 5,149,671. This application Oct. 26, 1993, Ser. No. 144,211
Int. Cl.[6] H01L *4/44*
U.S. Cl. 437—183 **2 Claims**



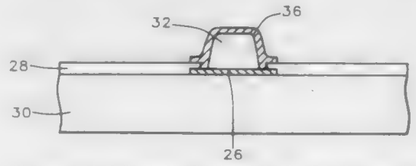
1. A method for fabricating an array of high density, multilayer electrical contacts for interfacing an array of infrared detectors and signal processing modules, the method comprising the steps of:
a) forming a first conductive layer upon a substrate;
b) forming a second conductive layer upon the first conductive layer, said second conductive layer being comprised of indium;
c) mounting the substrate upon a programmable X-Y table; and
d) using a microprocessor controlled laser to scribe the substrate by moving the X-Y table according to a program to selectively remove corresponding portions of said first and second conductive layers such that an array of islands is substantially simultaneously formed upon the substrate, each island being comprised of said first and second conductive layers and defining a bump contact, each contact being separately connectable to a dedicated infrared detector and to a signal processing module.

5,393,697

COMPOSITE BUMP STRUCTURE AND METHODS OF FABRICATION

Shyh-Ming Chang, Hsinchu; Yu-Chi Lee, Taipei Hsien; Hsiu-Mei Yu; Li-Hui Yang, both of Hsinchu Hsien, and Jwo-huei Jou, Hsinchu, all of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed May 6, 1994, Ser. No. 239,424
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—183 **22 Claims**



1. A method of forming composite bumps, comprising:
providing an integrated circuit element or substrate with input/output pads;
forming a polymer layer on the surface of said integrated circuit element or substrate;

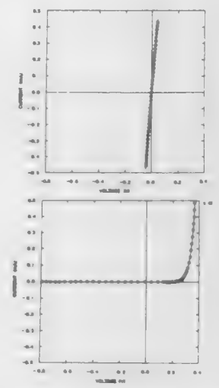
forming a first photoresist mask on said polymer layer directly over said input/output pads;
etching said polymer not protected by said first photoresist mask;
stripping said first photoresist mask;
forming a conductive metal layer over the surface of said integrated circuit element or substrate;
forming a second photoresist mask on said conductive metal layer directly over said input/output pads;
etching said conductive metal not protected by said second photoresist mask; and
stripping said second photoresist mask.

5,393,698

METHOD FOR FABRICATING SEMICONDUCTOR DEVICES

William J. Kaiser, West Covina; Frank J. Grunthaner, Glendale; Michael H. Hecht, Los Angeles, and Lloyd D. Bell, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 1, 1989, Ser. No. 305,378
The portion of the term of this patent subsequent to Dec. 29, 2008, has been disclaimed.
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—184 **13 Claims**



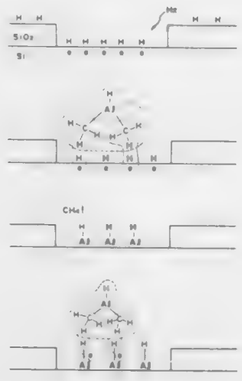
1. A method of forming a Schottky barrier contact on a GaAs substrate; the method comprising the steps of:
a) epitaxially depositing a layer of GaAs on said underlying substrate of GaAs within a chamber in which a substantial vacuum is maintained;
b) epitaxially depositing a unit cell thickness of AlAs on said epitaxial layer of GaAs;
c) depositing a layer of gold on said epitaxial layer of AlAs; and
d) continuously maintaining said substrate under a substantial vacuum while performing steps a), b), and c).

5,393,699

DEPOSITED FILM FORMATION METHOD UTILIZING SELECTIVE DEPOSITION BY USE OF ALKYL ALUMINUM HYDRIDE

Nobuo Mikoshiba; Kazuo Tsubouchi, and Kazuya Masu, all of Sendai, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 587,045, Sep. 24, 1990, Pat. No. 5,180,687. This application Oct. 30, 1992, Ser. No. 969,353
Claims priority, application Japan, Sep. 26, 1989, 1-250021; Feb. 19, 1990, 2-36198
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—187 **21 Claims**



1. A deposited film formation method comprising the steps of:
(a) arranging a substrate having an electron donative surface (A) and an electron non-donative surface (B) in a space for deposited film formation,
(b) introducing a gas of an alkyl aluminum hydride and hydrogen gas into said space for deposited film formation,
(c) maintaining the temperature of said electron donative surface (A) within the range of from the decomposition temperature of said alkyl aluminum hydride to 450° C., thereby forming selectively an aluminum film or a metal film composed mainly of aluminum on said electron donative surface (A), and
(d) modifying the surface of said electron non-donative surface (B), and forming an aluminum film or a metal film composed mainly of aluminum on said surface (B) and on said selectively formed aluminum film or the metal film composed mainly of aluminum employing a gas of an alkyl aluminum hydride, wherein the surface modification of step (d) is performed by forming a nucleus containing free electrons on said surface (B).

5,393,700

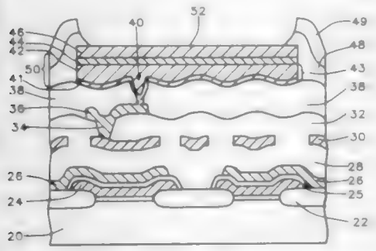
METHODS TO FABRICATE LARGE HIGHLY REFLECTIVE METAL REFLECTOR PLATES FOR APPLICATIONS IN GAME CHIPS OR SIMILAR VIRTUAL IMAGE PROJECTION USE

George Wong, Singapore, Singapore, assignor to Chartered Semiconductor Manufacturing Pte Ltd., Singapore, Singapore

Filed Apr. 22, 1994, Ser. No. 231,503
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—187 **26 Claims**

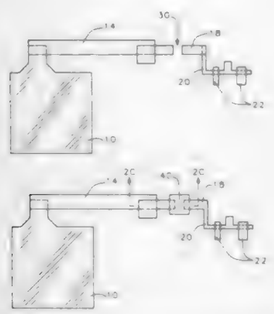
1. A method of manufacturing a highly reflective metal reflector plate on a semiconductor substrate, for virtual image projection, comprising the steps of:
forming above the semiconductor substrate a metal interconnection layer, an intermetal dielectric layer on said metal interconnection layer, and an opening through said inter-

metal dielectric layer to expose a portion of said metal interconnection layer;
forming a first metal layer on said intermetal dielectric layer and connecting to said metal interconnection layer through said opening;
forming a second metal layer on said first metal layer;
forming a third metal layer on said second metal layer;
forming a highly reflective metal layer on said third metal layer;
patterning said first, second, third and highly reflective



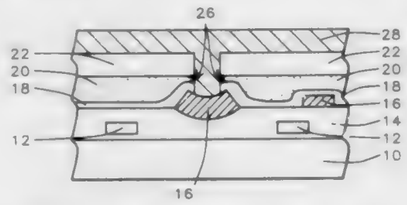
metal layers to form said highly reflective metal reflector plate;
forming a passivation layer over said highly reflective metal reflector plate and exposed surface of said intermetal dielectric layer;
etching said passivation layer above said highly reflective metal reflector plate to leave a portion of said passivation layer over the entire top surface of said highly reflective metal reflector plate; and
removing said portion of said passivation layer with a wet etch, to expose said highly reflective metal reflector plate.

5,393,701
LAYOUT DESIGN TO ELIMINATE PROCESS ANTENNA EFFECT
Joe Ko, and Bill Hsu, both of Hsinchu, Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China
Filed Apr. 8, 1993, Ser. No. 44,931
Int. Cl.[6] H01L *21/443*
U.S. Cl. 437—193 11 Claims



8. A method of subjecting an integrated circuit, having first metal regions on its surfaces which are electrically connected to device structures, to a plasma process comprising:
electrically breaking said electrical connection to said device structures, thereby isolating said first metal regions from said device structures;
placing said integrated circuit in a chamber for accomplishing said plasma process;
subjecting said integrated circuit to said plasma process wherein said electrically breaking said electrical connection prevents damage to said device structures;
removing said integrated circuit from said chamber; and
reconnecting said first metal regions to said structures by means of a second metal layer.

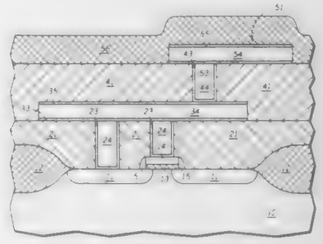
5,393,702
VIA SIDEWALL SOG NITRIDATION FOR VIA FILLING
Ming-Tzung Yang, Hsin Chu; Hong-Tsz Pan, Chang-Hua, and Shih-Chanh Chang, Taichung, all of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China
Filed Jul. 6, 1993, Ser. No. 85,955
Int. Cl.[6] H01L *29/34, 21/44*
U.S. Cl. 437—195 11 Claims



1. The method of forming the intermetal dielectric layer of an integrated circuit while preventing outgassing from said intermetal dielectric layer comprising:
providing a thick insulating layer over semiconductor device structures in and on a semiconductor substrate;
depositing a first metal layer over said thick insulating layer;
etching said first metal layer using photolithography and etching techniques to form the desired metal pattern on the surface of said thick insulating layer;
forming said intermetal dielectric layer comprising:
covering said patterned first metal layer with a first layer of silicon oxide;
covering said first silicon oxide layer with a layer of spin-on-glass material and baking and curing said spin-on-glass layer to form a spin-on-glass silicon oxide layer; and
covering said spin-on-glass layer with a second layer of silicon oxide to complete said intermetal dielectric layer;
forming via openings through said intermetal dielectric layer to underlying said patterned first metal layer which thereby exposes portions of said spin-on-glass silicon oxide layer;
forming a silicon nitride material cap of between about 50 to 200 Angstroms on the said exposed surfaces of said spin-on-glass silicon oxide layer within said via opening by exposing said spin-on-glass layer to nitrogen atoms at a temperature of between about 450° to 600° C. to prevent said outgassing from said intermetal dielectric layer;
depositing a second metal layer overlying said intermetal dielectric layer and within said via openings; and
completing fabrication of said integrated circuit.

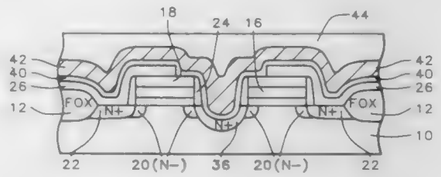
5,393,703
PROCESS FOR FORMING A CONDUCTIVE LAYER FOR SEMICONDUCTOR DEVICES
Johnson O. Olowolafe; Hisao Kawasaki, and Chii-Chang Lee, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 12, 1993, Ser. No. 150,900
Int. Cl.[6] H01L *21/283*
U.S. Cl. 437—197 20 Claims

16. A process for forming a semiconductor device comprising the steps of:
forming a conductor, wherein the conductor is selected from a group consisting of a doped region lying within a semiconductor substrate, a gate electrode overlying the substrate, a silicon-containing electrode overlying the substrate, and a metal-containing member overlying the substrate;
forming an insulating layer over the conductor and including an opening, wherein at least a portion of the conductor is exposed within the opening;
forming a plug within the opening, wherein the plug is selected from a group consisting of a contact plug and a via plug; and
forming an interconnecting member that includes a conductive layer that extends along all of the interconnecting member, wherein:



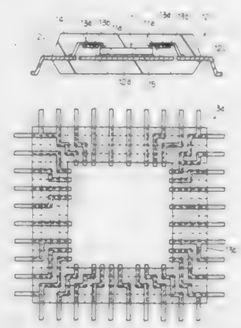
a portion of the interconnecting member is formed over the insulating layer and another portion of the interconnecting member is formed overlying the plug;
the interconnecting member includes a conductive layer that is an alloy that consists of aluminum, nickel, and chromium and has at least 99 weight percent aluminum, 0.1–0.5 weight percent nickel, and 0.02–0.1 weight percent chromium; and
the interconnecting member is formed such that it is electrically connected to the conductor; and
forming a passivation layer over the interconnecting member.

5,393,704
SELF-ALIGNED TRENCHED CONTACT (SATC) PROCESS
Cheng H. Huang, Hsin-Chu, and Water Lur, Taipei, both of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China
Filed Dec. 13, 1993, Ser. No. 165,337
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—203 23 Claims



1. The method of forming a self-aligned trenched contact in the fabrication of an integrated circuit comprising:
forming semiconductor device regions in and on a semiconductor substrate wherein said semiconductor device regions include gate electrodes on the surface of said semiconductor substrate and source/drain regions within said semiconductor substrate;
forming spacers on the sidewalls of said gate electrodes;
depositing a layer of silicon oxide over the surface of said substrate wherein said silicon oxide layer contacts said source/drain regions within said substrate between said gate electrodes;
covering said substrate with a layer of photoresist and patterning said photoresist to provide an opening between said gate electrodes;
etching away said silicon oxide using said patterned photoresist and said sidewall spacers as a mask to provide an opening to said semiconductor substrate where said self-aligned trenched contact will be formed;
etching a trench into said semiconductor substrate within said opening using said sidewall spacers as a mask to form said self-aligned trenched opening wherein the depth of said trench within said semiconductor substrate is greater than about 0.25 microns and preferably greater than 0.5 microns; and
depositing a conducting layer within said trenched opening to complete said contact in the manufacture of said integrated circuit device.

5,393,705
MOLDED SEMICONDUCTOR DEVICE USING INTERMEDIATE LEAD PATTERN ON FILM CARRIER FORMED FROM LATTICE PATTERN COMMONLY AVAILABLE FOR DEVICES AND PROCESS OF FABRICATION THEREOF
Kaoru Sonobe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Division of Ser. No. 985,191, Dec. 3, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,576
Claims priority, application Japan, Dec. 3, 1991, 3-318295
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—217 3 Claims



1. A process of fabricating a molded semiconductor device comprising the steps of:
a) preparing a conductive lattice patterned on a film carrier, a semiconductor chip, and a lead frame having an island portion and external leads;
b) selectively cutting said conductive lattice so as to form intermediate conductive leads on said film carrier;
c) coupling said intermediate conductive leads with terminals of said semiconductor chip mounted on said island portion and with said external leads; and
d) molding said semiconductor chip on said island portion and said intermediate conductive leads on said film carrier in molding material, said external leads partially projecting from said molding material.

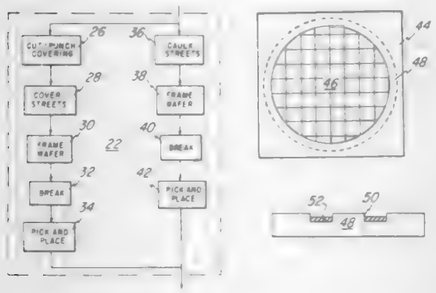
5,393,706
INTEGRATED PARTIAL SAWING PROCESS
Michael A. Mignardi, Dallas, and Rafael C. Alfaro, Carrollton, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 7, 1993, Ser. No. 1,378
Int. Cl.[6] H01L *21/302*
U.S. Cl. 437—226 5 Claims

1. A process for a semiconductor wafer upon which are partially completed micromechanical structures, wherein said

structures have been completed insofar as processing steps specific to said structure comprising:

a. partially sawing streets in the wafer;

b. covering said partially sawn streets with a protective material, such that said partially sawn streets are completely covered, but said protective material does not cover all of said wafer;



c. processing said wafer with said partially sawn streets further as required to complete said micromechanical structures being fabricated, including removal of any sacrificial layers and thin-film processes; and

d. breaking said wafer with said partially sawn streets after said processing step into individual chips.

5,393,707

SEMICONDUCTOR - SLICE CLEAVING

Kevin Canning, Paignton, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 19, 1993, Ser. No. 93,766

Claims priority, application United Kingdom, Jul. 31, 1992, 9216363

Int. Cl.[6] H01L *21/304*

U.S. Cl. 437—226 **6 Claims**

1. A method of cleaving a single semiconductor slice including the steps of providing a fracture initiation zone at an edge of the slice, causing the slice to bend against a planar cleaving blade having a curved cleaving edge positioned to register with said zone and of causing relative movement between the slice and and the curved edge of the blade in a cleavage direction so as to cause cleavage initiated by said bending to propagate from said zone to the opposite edge of the slice.

5,393,708

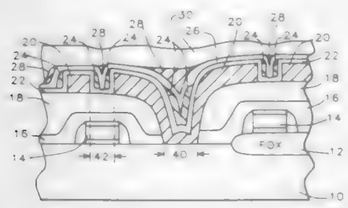
INTER-METAL-DIELECTRIC PLANARIZATION PROCESS

Shaw-Tzeng Hsia, and Kuang-Chao Chen, both of Taipei, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Oct. 8, 1992, Ser. No. 957,801

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—228 **20 Claims**



1. The method of planarizing the dielectric layers in the trenches and holes between conductor layers that are less than about 1.0 micron in width, in submicron integrated circuits comprising:

providing semiconductor device structures in and on a semiconductor substrate;

providing at least one patterned conductive layer for contacting the active elements of said device structures;

the surface of said patterned conductive layer structure is irregular with horizontal and vertical components forming the trenches and holes;

depositing a first layer of an insulator over said irregular structure patterned conductive layer;

covering said insulator with a layer of chemically vapor deposited silicon oxide using the TEOS with ozone pyrolytic process wherein the TEOS with ozone silicon oxide layer will partially fill said horizontal and vertical components of said layer structure not filled by said insulator layer;

anisotropically etching back said TEOS with ozone silicon oxide layer thereby leaving said TEOS with ozone layer only in said horizontal and vertical components of said layer structure and retaining a positive angle;

depositing a second insulating layer over said layer structure with said TEOS with ozone layer;

covering said second insulating layer with at least one spin-on-glass layer to fill the valleys of said irregular structure and curing said spin-on-glass layer;

partially blanket anisotropically etching said spin-on-glass layer through its thickness to the underlying said second insulating layer at its highest points and leaving said spin-on-glass layer portions in said valleys, whereby said second insulating layer prevents etching of said patterned conductive layer; and

depositing a top dielectric layer over said spin-on-glass layer to complete said planarizing.

5,393,709

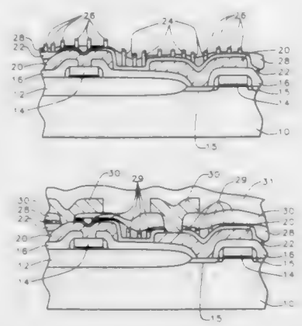
METHOD OF MAKING STRESS RELEASED VLSI STRUCTURE BY THE FORMATION OF POROUS INTERMETAL LAYER

Water Lur, Taipei, and J. Y. Wu, Dou-Lio, both of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Jun. 30, 1993, Ser. No. 83,559

Int. Cl.[6] H01L *21/465*

U.S. Cl. 437—228 **33 Claims**



1. The method of forming stress releasing voids in the inter-metal dielectric of an integrated circuit comprising:

providing at least a first layer of patterned metallization over semiconductor device structures in and on a semiconductor substrate;

depositing a silicon oxide layer overlying said first layer;

depositing a silicon nitride layer over said silicon oxide layer;

depositing a metal layer over said silicon nitride layer which includes silicon;

etching said metal layer to form silicon nodules on the surface of said silicon nitride layer which includes silicon;

etching away said silicon nitride layer to said underlying silicon oxide layer wherein said silicon nitride under said silicon nodules remains in the form of pillars;

coating the surface of said silicon oxide layer with a spin-on-glass material and baking and curing said spin-on-glass layer;

removing said silicon nodules and said silicon nitride pillars leaving holes within said spin-on-glass layer; and

depositing a second layer of silicon oxide overlying said spin-on-glass layer to complete formation of said inter-metal dielectric of said integrated circuit.

5,393,710

METHOD FOR MANUFACTURING A MICRO LIGHT VALVE

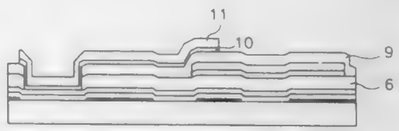
Gyeong-Lyong Park; Sin-Chong Park, and Hyung-Moo Park, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon-shi, Rep. of Korea

Filed Nov. 9, 1993, Ser. No. 149,653

Claims priority, application Rep. of Korea, Nov. 10, 1992, 1992-20984

Int. Cl.[6] H01L *21/00, 21/02, 21/465*

U.S. Cl. 437—228 **16 Claims**



1. A method for manufacturing a micro light valve which is corresponding to each of pixels for display and which passes or shuts a light beam by electrostatic force to display images, comprising the steps of:

preparing a semiconductor substrate with a main surface;

forming a transparent a data electrodes to be used as a data electrode, a selection electrode, and a common electrode on the main surface of said substrate in parallel;

depositing an insulating layer on said substrate formed thus;

forming a first sacrificial layer on said insulating layer;

forming a patterned shifting element layer on said first sacrificial layer;

forming a second sacrificial layer on said substrate which is provided with said shifting element layer, and removing a portion of said laminated sacrificial layers by etching to form a frame contact portion;

forming a patterned frame layer on the frame contact portion and a portion of said second sacrificial layer; and

removing said remaining sacrificial layers to form a frame and a shifting element capable of moving in said frame by electrostatic force applied externally.

5,393,711

PROCESS FOR MANUFACTURING SEMICONDUCTOR COMPONENTS

Vesna Biallas; Herbert Goebel, and Richard Spitz, all of Ruetlingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

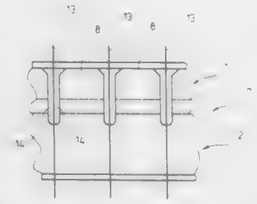
PCT No. PCT/DE92/00792, § 371 Date Apr. 12, 1994, § 102(e) Date Apr. 12, 1994, PCT Pub. No. WO93/08592, PCT Pub. Date Apr. 29, 1993

PCT Filed Sep. 17, 1992, Ser. No. 211,670

Claims priority, application Germany, Oct. 12, 1991, 4133820.0

Int. Cl.[6] H01L *21/469*

U.S. Cl. 437—231 **20 Claims**



1. A process for the production of semiconductor elements, comprising the steps of:

(a) bonding together, using a silicon-fusion bonding process, an upper and a lower semiconductor body of different conducting types and suitable doping, so that a bonded semiconductor assembly is formed with a p-n junction between the bonded semiconductor bodies;

(b) forming grooves, in an upper surface of the bonded semiconductor assembly, with a depth extending at least to the p-n junction, thereby partitioning the bonded semiconductor assembly into a plurality of semiconductor elements, each with an individual p-n junction having sides exposed by the grooves;

(c) over-etching the sides of the individual p-n junctions;

(d) applying passivation to the upper surface of the bonded semiconductor assembly and to the grooves, thereby forming a passivated upper surface and passivated grooves;

(e) mechanically removing the passivated upper surface until the upper surface is again exposed;

(f) metal-coating the upper surface and a lower surface of the bonded semiconductor assembly; and

(g) separating the semiconductor elements from the bonded semiconductor assembly.

5,393,712

PROCESS FOR FORMING LOW DIELECTRIC CONSTANT INSULATION LAYER ON INTEGRATED CIRCUIT STRUCTURE

Michael D. Rostoker, San Jose; Nicholas F. Pasch, Pacific, and Ashok K. Kapoor, Palo Alto, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 28, 1993, Ser. No. 84,829

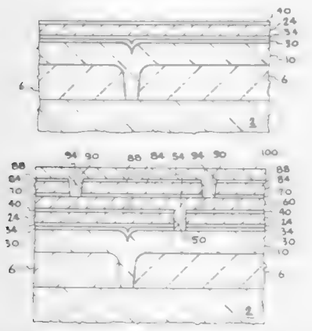
Int. Cl.[6] H01L *21/02*

U.S. Cl. 437—238 **44 Claims**

1. A process for forming a low dielectric constant insulation layer on an integrated circuit structure on a semiconductor wafer which comprises:

a) depositing on said wafer a composite layer comprising one

or more non-extractable insulation materials and one or more extractable materials; and



b) removing said one or more extractable materials using a lyophilizing process leaving a porous structure comprising said one or more non-extractable insulation materials.

5,393,713

BROADCAST RECEIVER CAPABLE OF AUTOMATIC STATION IDENTIFICATION AND FORMAT-SCANNING BASED ON AN INTERNAL DATABASE UPDATABLE OVER THE AIRWAVES WITH AUTOMATIC RECEIVER LOCATION DETERMINATION

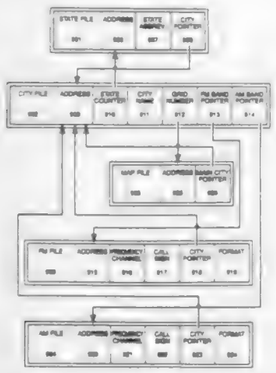
Pierre R. Schwob, New York, N.Y., assignor to PRS Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 540,130, Jun. 19, 1990, Pat. No. 5,152,011, which is a continuation-in-part of Ser. No. 515,629, Apr. 27, 1990, Pat. No. 5,152,012, which is a continuation-in-part of Ser. No. 212,863, Jun. 29, 1988, Pat. No. 4,969,209, which is a continuation-in-part of Ser. No. 78,286, Jul. 27, 1987, abandoned. This application Sep. 25, 1992, Ser. No. 951,085

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[6] H04B *1/08*

U.S. Cl. 455—158.5 **11 Claims**



1. A broadcast receiver system comprising:

a receiver for receiving a plurality of frequencies broadcast from a plurality of geographic regions;

tuning means for tuning said receiver to one of the plurality of broadcast frequencies for reception thereof;

memory means for storing a database of information in one or more band files relating to frequencies broadcast into each of the plurality of geographic regions, said information including data identifying attributes of each frequency broadcast into each geographic region;

input means for inputting a datum representing a desired attribute;

searching means responsive to the inputted datum representing a desired attribute for searching said one or more band files for a frequency broadcast into the geographic region of said broadcast receiver system having the desired attribute;

display means for displaying the frequency and the attribute data for the broadcast frequency identified by said searching means; and

data receiving means for receiving geographic location data defining a particular geographical region out of the plurality of geographical regions and/or updating data to update said database in said memory means.

5,393,714

FREE-FLOWING, CHEMICALLY RESISTANT COLOR GRANULATES, THEIR PREPARATION AND USE

Peter Thometzek, Florano Modenese, and Heinrich Christ, Spilamberto, both of Italy, assignors to Ferro Italia S.r.l., Bologna, Italy

Filed Dec. 29, 1993, Ser. No. 174,305

Claims priority, application Italy, Dec. 30, 1992, MI92A002995

Int. Cl.[6] C03C *1/04, 6/08*

U.S. Cl. 501—29 **5 Claims**

1. Free-flowing chemically resistant color granulates that are heat resistant and color stable in an aggressive media, said color granulates comprising:

20–94.8% by weight of at least one coloring body;

0.03–15% by weight of a silicon material selected from the group consisting of organosilanes, polyorganosiloxanes and mixtures thereof;

5–75% by weight of at least one frit;

0.2–20% by weight of at least one binder selected from the group consisting of an inorganic binder, an organic binder and mixtures thereof;

said frit comprising in weight percent:

$SiO_2+B_2O_3+Al_2O_3$ 20–90 wt. %

Na_2O+Li_2O 0–6 wt. %

K_2O 0–6 wt. %

$CaO+MgO+SrO$ 10–25 wt. %

TiO_2+ZrO_2 0–35 wt. %

$Bi_2O_3+P_2O_5+V_2O_5+MoO_3+WO_3$ 0–40 wt. %

ZnO 0–10 wt. %

said color granulates having an average grain size of from 5 to 25 microns.

5,393,715

ALUMINUM NITRIDE SINTERED BODY AND METHOD OF PREPARING THE SAME

Seiji Nakahata; Takahiro Matsuura; Kouichi Sogabe, and Akira Yamakawa, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 1, 1993, Ser. No. 115,446

Claims priority, application Japan, Sep. 4, 1992, 4-236689; Aug. 24, 1993, 5-209263

Int. Cl.[6] C04B *35/58*

U.S. Cl. 501—98 **6 Claims**

1. An aluminum nitride sintered body comprising aluminum nitride crystal grains and titanium included as a solid solute in said crystal grains in a weight ratio of at least 50 ppm and not more than 1000 ppm, and containing an oxy-nitride of titanium and aluminum therein in a weight ratio of at least 0.1% and not more than 5.0% in terms of TiO_2, wherein an unpaired electron concentration in said sintered body as determined from an absorption spectrum of electron spin resonance is at least 1×10^{13}/g.

5,393,716

PROCESS FOR PRODUCING ANTI-BLOCKING COMPOSITIONS

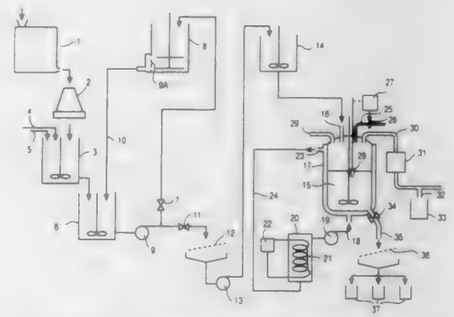
David L. Light, and Christopher D. Paynter, both of Cornwall, United Kingdom, assignors to ECC International Limited, United Kingdom

Filed Sep. 24, 1993, Ser. No. 127,000

Claims priority, application European Pat. Off., Sep. 25, 1992, 92308754

Int. Cl.[6] C04B *33/04, 14/10*

U.S. Cl. 501—141 **14 Claims**



1. A process for preparing a filler composition suitable for incorporation in a polyester film-forming material, which process comprises the following steps:

(a) calcining a crude kaolin clay under conditions such that the calcined product comprises particles consisting of aggregates of fine kaolin platelets;

(b) suspending the calcined clay product from step (a) in water containing a dispersing agent for the calcined clay, so as to form a suspension containing from 40% to 70% by weight of dry calcined clay;

(c) subjecting the suspension formed in step (b) to comminution by attrition grinding with a particulate grinding medium for a time sufficient to reduce the average diameter of the aggregate particles to within the range from 0.3 μm to 0.9 μm, and to ensure that the calcined clay is free of particles having an equivalent spherical diameter larger than 5 μm; and

(d) heating the suspension of comminuted calcined clay formed in step (c) to a temperature in the range from 80° C. to 100° C. to drive off water by evaporation, a liquid glycol being added at the same time as the water is driven off to keep the volume of the suspension constant.

5,393,717

REGENERATION OF NOBLE METAL CONTAINING ZEOLITE CATALYSTS VIA PARTIAL REMOVAL OF CARBONACEOUS DEPOSITS

Minas R. Apelian, Vincentown, N.J.; Anthony S. Fung, Wilmington, Del.; George H. Hatzikos, Mantua, N.J.; Clinton R. Kennedy, West Chester, Pa.; Chung-Hur Lee, Taipei, Taiwan, Prov. of China; Thomas R. Kiliany, West Chester, Pa.; Poh K. Ng, Singapore, Singapore, and David A. Pappal, Haddonfield, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed May 18, 1993, Ser. No. 63,203

Int. Cl.[6] B01J *29/38, 38/14;* **C10G** *35/95, 47/18*

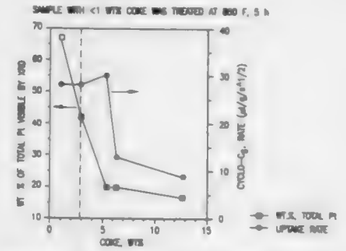
U.S. Cl. 502—52 **25 Claims**

1. A process for regenerating a catalyst which has been deactivated during a hydrocarbon processing step by coke deposition thereon, said catalyst comprising a zeolite and a noble metal, said process also providing a means for selecting oxidation conditions for subsequent regenerations, said process comprising the steps of:

(a) contacting said catalyst with an oxygen containing gas under sufficient oxidation conditions to progressively remove said coke from said catalyst in a controlled manner;

(b) removing samples of said catalyst during the course of the progressive removal of coke achieved in accordance with step (a);

(c) measuring at least one of the following properties for each sample removed in accordance with step (b): (1) the sorption rate of a probe molecule into said sample; or (2) the amount of noble metal agglomeration in the sample;



(d) determining at least one of the following aspects of the process: (1) the point during course of progressive removal of coke in step (a) when the maximum sorption rate of said probe molecule is reached for samples measured as per step (c); or (2) the point during course of progressive removal of coke in step (a) when the rate of noble metal agglomeration increases significantly for samples measured in step (c);

(e) discontinuing the oxidation conditions of step (a); and

(f) recovering said catalyst having coke removed therefrom.

5,393,718

ACTIVATED ZEOLITE BETA AND ITS USE FOR HYDROCARBON CONVERSION

Gary W. Skeels, Brewster, and Edith M. Flanigen, White Plains, both of N.Y., assignors to UOP, Des Plaines, Ill.

Division of Ser. No. 767,457, Sep. 30, 1991, Pat. No. 5,258,570, which is a continuation-in-part of Ser. No. 596,157, Oct. 11, 1990, Pat. No. 5,095,169, which is a continuation-in-part of Ser. No. 366,263, Jun. 12, 1989, abandoned, which is a division of Ser. No. 175,332, Mar. 30, 1988, abandoned. This application Jul. 26, 1993, Ser. No. 96,808

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[6] B01J *29/06, 37/08*

U.S. Cl. 502—66 **9 Claims**

1. An activated zeolite beta catalyst having a concentration of hydroxoaluminum cations corresponding to at least 0.9 milliequivalents of NaOH per gram of zeolite beta and a concentration of hydronium cations corresponding to less than 0.1 milliequivalents of NaOH per gram of zeolite beta.

4. The catalyst of claim 1 further comprising at least one inorganic oxide matrix component.

5,393,719

CATALYSTS FOR OLEFIN POLYMERIZATION

Ted M. Pettijohn, Bartlesville, Okla.; William K. Reagen, Stillwater, Minn., and Shirley J. Martin, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 976,124, Nov. 13, 1992, Pat. No. 5,331,070. This application Feb. 10, 1994, Ser. No. 194,606

Int. Cl.[6] C08F *4/24;* **B01J** *31/00*

U.S. Cl. 502—113 **21 Claims**

1. A catalyst system composition comprising:

(a) chromium oxide supported on an inorganic oxide support;

wherein said chromium supported on an inorganic oxide support has been oxidized at a temperature within a range of

about 300° to about 1000° C. for a time within a range of about 30 minutes to about 50 hours;

(b) a pyrrole-containing compound; and

(c) a non-hydrolyzed metal alkyl.

5,393,720

ALPHA-OLEFIN POLYMERIZATION CATALYSTS COMPRISING SUPPORTED CYCLOPENTADIENYL GROUP 6B METAL OXO, THIO, IMIDO AND PHOSPHIDO COMPOUNDS AND PROCESS FOR POLYMERIZING ALPHA-OLEFINS

Michael J. Carney, and David L. Beach, both of Kingwood, Tex., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation of Ser. No. 973,129, Nov. 6, 1992, Pat. No. 5,320,996. This application Jun. 13, 1994, Ser. No. 259,202

Int. Cl.[6] C08F *4/69*

U.S. Cl. 502—117 **22 Claims**

1. A catalyst system for the homopolymerization or copolymerization of alpha-olefins having 2–8 carbon atoms, said catalyst system comprising a cyclopentadienyl chromium compound having at least one thio, imido or phosphido group bonded directly to the chromium, and at least one organic radical bonded to the chromium through a carbon atom, said chromium compound being supported on an inorganic support.

5,393,721

ANIONIC POLYMERIZATION INITIATORS AND REDUCED HYSTERESIS PRODUCTS THEREFOM

Takashi Kitamura, Akron; David F. Lawson, Uniontown, both of Ohio; Koichi Morita, and Yoichi Ozawa, both of Ogawahigashimachi, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 962,373

The portion of the term of this patent subsequent to Jul. 26, 2011, has been disclaimed.

Int. Cl.[6] C08F *4/48*

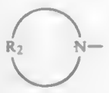
U.S. Cl. 502—154 **18 Claims**

1. A hydrocarbon soluble, anionic polymerization initiator comprising a mixture of:

(i) a lithio amine having the general formula

(A)Li(SOL)y

where y is 0 or from about 0.5 to about 3; SOL is a solubilizing component selected from the group consisting of hydrocarbons, ethers, amines or mixtures thereof; and, A is selected from the group consisting of cyclic amine radicals having the general formula



where R_2 is selected from the group consisting of a divalent alkylene, oxy- or amino-alkylene group having from about 3 to about 12 methylene groups;

(ii) an organic alkali metal compound selected from the group consisting of compounds having the general formula R_3M, R_4OM, $[R_5C(O)OF]$ $R_5C(O)OM$, R_6R_7NM, and R_8SO_3M, where R_3, R_4, R_5, R_6 R7, and R_8 are each selected from the group consisting of alkyls, cycloalkyls, alkenyls, aryls, or phenyls, having from about 1 to about 12 carbon atoms, and where M is selected from the group consisting of Na, K, Rb or Cs; and, optionally,

(iii) a chelating reagent.

5,393,722

HYDROTHERMALLY STABLE METAL OXIDE SOLID SOLUTIONS

Jennifer S. Holmgren, Bloomingdale, Ill., assignor to UOP, Des Plaines, Ill.

Filed Aug. 20, 1993, Ser. No. 109,557

Int. Cl.[6] B01J *21/00, 23/00*

U.S. Cl. 502—327 **6 Claims**

1. A ternary metal oxide solid solution of formula

$$A_a(II)B_b(II)C_c(III)O_{(a+b+c)}(OH)_c$$

where

a, b, and c are atom fractions of A(II), B(II), and C(III), respectively;

C(III) is a trivalent metal cation whose metal is selected from the group consisting of Al, Cr, Ga, Fe, and combinations thereof, and combinations of Al and metals of atomic number 57 through 71;

A(II) and B(II) are divalent metal cations and

i. A is Mg, B is Ni, and $0.05 \leqq a/(a+b) \leqq 0.5$; or

ii. A is Mg, B is Co, and $0.05 \leqq a/(a+b) \leqq 0.75$; or

iii. A is Co, B is Ni, and $0.05 \leqq a/(a+b) \leqq 0.95$; and

$1.5 \leqq (a+b)/c \leqq 5.0$.

2. A ternary metal oxide solid of claim 1 where C is aluminum.

5,393,723

CATALYST FOR IMPROVING THE COMBUSTION AND OPERATIONAL QUALITIES OF HYDROCARBON FUELS

Anthony W. Finkl, 445 E. Royal Flamingo, Sarasota, Fla. 34236

Filed May 11, 1993, Ser. No. 60,390

Int. Cl.[6] B01J *23/02, 23/06*

U.S. Cl. 502—341 **10 Claims**

4. A base metal alloy catalyst for altering the molecular charge structure of hydrocarbon fuels, the catalyst consisting essentially of the following composition in weight percent:

Sb 15–25

Pb 3–7

Hg 10–6

Tl 0.05–1

and the balance consisting essentially of Sn.

5,393,724

PROCESS FOR REMOVING OXIDIZABLE SUBSTANCE OR REDUCIBLE SUBSTANCE, COMPOSITE CONTAINING METAL OXIDE OR HYDROXIDE, AND PROCESS FOR PRODUCTION THEREOF

Kengo Okajima; Hiroyuki Wakamatsu; Tsugio Murakami, and Hiroyuki Saitoh, all of Yamaguchi, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed Apr. 28, 1993, Ser. No. 53,767

Claims priority, application Japan, Apr. 30, 1992, 4-135648

Int. Cl.[6] B01J *20/26, 20/02, 21/04*

U.S. Cl. 502—402 **6 Claims**

1. A composite comprising a fluorine-containing organic cation exchanger and at least one metal oxide or hydroxide, said metal selected from the group consisting of manganese and elements of group 1B and group 8 of the periodic table, and at least 5% by weight of the entire amount of the metal oxide or hydroxide being supported within the fluorine-containing organic cation exchanger, said composite prepared by exchanging counter ions of the organic cation exchanger with a metal ion forming the metal oxide or hydroxide and thereafter contacting the ion-exchanged organic cation exchanger with an alkali or an oxidizing agent or both thereby converting the metal ion to an oxide or hydroxide form.

5,393,725

THERMAL TRANSFER SYSTEM, PRINTING PAPER AND INK RIBBON FOR THE THERMAL TRANSFER SYSTEM

Tetsuya Abe; Toshio Fukuda, and Yoshio Fujiwara, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Nov. 23, 1992, Ser. No. 980,542

Claims priority, application Japan, Nov. 28, 1991, 3-314276

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.[6] B41M *5/035, 5/38*

U.S. Cl. 503—227 **31 Claims**

30. A thermal transfer printing method for transferring an image pattern from an ink ribbon to a printing sheet having an image receiving layer comprising the steps of:

(1) heating an ink layer on said ink ribbon to form an image pattern, said ink including a dye selected from the group consisting of disazo dyes, isothiazole azo dyes and mixtures thereof; and

(2) transferring said dye to said image receiving layer, said image receiving layer comprising a cellulose ester resin.

5,393,726

DYE DIFFUSION THERMAL TRANSFER CARRIER MATERIAL

Jurgen Graumann, Osnabruck, Germany, assignor to Felix Schoeller jr. Papierfabriken GmbH & Co. KG, Osnabruck, Germany

Filed Sep. 28, 1993, Ser. No. 128,485

Claims priority, application Germany, Oct. 1, 1992, 4233018

Int. Cl.[6] B41M *5/035, 5/38*

U.S. Cl. 503—227 **15 Claims**

1. A dye diffusion thermal transfer carrier material for carrying a dye receptor layer, comprising:

a base material; and

a layer on said base material which is adapted to receive the receptor layer thereon and which contains a film forming binder with a minimum film forming temperature of at least 25° C., and a pigment in the form of hollow polymer micropellets in which the micropellets have an interior space with a volume that is between about 10 and 55% of the total volume of the micropellet body, and wherein the amount of said micropellets in said layer is about 4–30 wt %.

5,393,727

IMAGE-RECEIVING SHEET

Noritaka Egashira, Ichikawa; Yoshikazu Ito, Setagaya; Tatsuya Kita, Shinjuku; Masahisa Yamaguchi, Nerima; Masaki Kutsukake, Fujimi, and Kazunobu Imoto, Kita, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 5,804, Jan. 19, 1993, Pat. No. 5,294,591, which is a continuation of Ser. No. 798,354, Nov. 21, 1991, Pat. No. 5,210,068, which is a continuation of Ser. No. 612,994, Nov. 15, 1990, abandoned, which is a continuation of Ser. No. 168,908, Mar. 16, 1988, Pat. No. 5,001,106. This application Nov. 30, 1993, Ser. No. 159,496

Claims priority, application Japan, Mar. 20, 1987, 62-66879; Mar. 20, 1987, 62-66880

The portion of the term of this patent subsequent to Oct. 18, 2005, has been disclaimed.

Int. Cl.[6] B41M *5/035, 5/38*

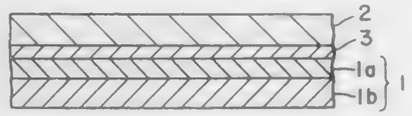
U.S. Cl. 503—227 **29 Claims**

13. A process for forming an image, comprising:

providing an image-receiving sheet comprising: a base sheet having a foamed film formed on at least one surface thereof and a non-foamed film formed on said foamed film, said foamed film being obtainable by stretching a thermoplastic resin film containing at least one of inorganic and organic fine particles; and a dye-receiving layer formed on said non-foamed film;

thermally transfer recording an image on the dye-receiving layer of the image-receiving sheet;

superposing the dye-receiving layer and a material to be transferred;



pressing the thus superposed body to adhere the dye-receiving layer onto the material to be transferred; and

peeling off the foamed film from the superposed body to obtain the material having a thermally transferred image.

5,393,728

BROAD-SPECTRUM BIOHERBICIDE TO CONTROL SEVERAL SPECIES OF PIGWEEDS AND METHODS OF USE

Raghavan Charudattan, Gainesville, Fla.; Yasser A. Shabana, El-Mansoura, Egypt; James T. DeValerio, Starke, and Erin N. Rosskopf, Newberry, both of Fla., assignors to University of Florida, Gainesville, Fla.

Filed Jun. 15, 1993, Ser. No. 77,695

Int. Cl.[6] A01N *63/04*

U.S. Cl. 504—117 **3 Claims**

1. A herbicidal composition comprising an effective mount of a substantially pure isolate of a Phomopsis fungal species and an acceptable agricultural carrier, said Phomopsis isolate having all the identifying characteristics of culture deposit ATCC 74226, wherein said composition is a formulation comprising a psyllium mucilloid hydrophilic gel.

5,393,729

3-ARYL-PYRONE DERIVATIVES

Reiner Fischer, Monheim; Andreas Krebs, Odenthal; Folker Lieb, Leverkusen; Michael Ruther, Monheim; Jörg Stetter, Wuppertal; Christoph Erdelen, Leichlingen; Ulrike Wachendorff-Neumann, Monheim; Klaus Lürssen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

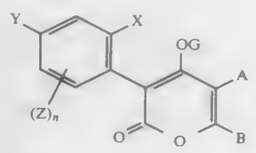
Filed Sep. 3, 1993, Ser. No. 116,790

Claims priority, application Germany, Sep. 10, 1992, 4230267; Mar. 17, 1993, 4308451

Int. Cl.[6] C07D *309/38, 311/74, 493/04;* **A01N** *43/16*

U.S. Cl. 504—128 **10 Claims**

1. A 3-aryl-pyrone of the formula



(I)

in which

A represents hydrogen; halogen; a radical selected from the group consisting of C_1–C_{10}-alkyl, C_3–C_{10}-alkenyl, C_3–C_{10}-alkinyl and C_3–C_{10}-cycloalkyl, each of which is optionally substituted by halogen; a radical selected from the group consisting of phenyl, naphthyl, hetaryl, phenyl-C_1–C_6-alkyl and hetaryl-C_1–C_6-alkyl, each of which is optionally substituted by at least one of halogen, nitro, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_8-alkylthio, C_1–C_8-

halogenoalkyl, C_1–C_8-halogenoalkoxy and CN; or represents the group —COR^1, —CO_2R^1, —CN, —$CONR^1R^2$, —SO_2R^1 or —$P(O)(OR^1)(OR^2)$, in which

R^1 and R^2 independently of one another represent hydrogen; a radical selected from the group consisting of C_1–C_{10}-alkyl and C_3–C_{10}-alkenyl, each of which is optionally substituted by halogen; or represent a radical selected from the group consisting of phenyl, naphthyl, hetaryl, phenyl-C_1–C_6-alkyl and hetaryl-C_1–C_6-alkyl, each of which is optionally substituted by at least one of halogen, nitro, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_8-alkylthio, C_1–C_8-halogenoalkyl, C_1–C_8-halogenoalkoxy and CN; or R^1 and R^2 together represent a C_2–C_7-alkylene group which is optionally interrupted by nitrogen, oxygen or sulphur;

B represents hydrogen; a radical selected from the group consisting of C_1–C_{10}-alkyl, C_3–C_{10}-alkenyl, C_3–C_{10}-alkinyl and C_3–C_{10}-cycloalkyl which are optionally substituted by halogen, CN, C_1–C_6-alkoxy, C_1–C_6-alkylthio, C_1–C_6-alkylcarbonyloxy or phenyl; or represents a radical selected from the group consisting of phenyl, naphthyl, hetaryl, phenyl-C_1–C_6-alkyl and hetaryl-C_1–C_6-alkyl which are optionally substituted by at least one of halogen, CN, nitro, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_8-alkylthio, C_1–C_8-halogenoalkyl and C_1–C_8-halogenoalkoxy, or

A and B together represent a straight chain or branched C_2–C_7-alkylene group which is optionally substituted by at least one of C_1–C_8-alkyl, C_1–C_6-halogenoalkyl, C_1–C_6-halogenoalkyl, C_1–C_6-alkoxy, C_1–C_6-alkylthio and halogen and which is optionally interrupted by nitrogen, sulphur, oxygen or —O—CO—;

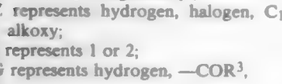
X represents halogen, C_1–C_6-alkyl or C_1–C_6-alkoxy;

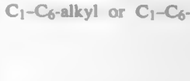
Y represents hydrogen, halogen, C_1–C_6-alkyl, C_1–C_6-alkoxy or C_1–C_6-halogenoalkyl;

Z represents hydrogen, halogen, C_1–C_6-alkyl or C_1–C_6-alkoxy;

n represents 1 or 2;

G represents hydrogen, —COR^3,



—SO_2—R^5,  or —$CONR^8R^9$

R^3 represents a radical selected from the group consisting of C_1–C_{20}-alkyl, C_2–C_{20}-alkenyl, C_1–C_8-alkoxy-C_1–C_8-alkyl, C_1–C_8-alkylthio-C_1–C_8-alkyl, C_1–C_8-polyalkoxy-C_1–C_8-alkyl and C_3–C_8-cycloalkyl which is optionally interrupted by at least one of oxygen and sulphur, each of these radicals optionally being substituted by halogen; phenyl which is optionally substituted by at least one of halogen, nitro, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_6-halogenoalkyl and C_1–C_6-halogenoalkoxy; phenyl-C_1–C_6-alkyl which is optionally substituted by at least one of halogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_6-halogenoalkyl and C_1–C_6-halogenoalkoxy; hetaryl which is optionally substituted by at least one of halogen and C_1–C_6-alkyl; phenoxy-C_1–C_6-alkyl which is optionally substituted by at least one of halogen and C_1–C_6-alkyl; or hetaryloxy-C_1–C_6-alkyl which is optionally substituted by at least one of halogen, amino and C_1–C_6-alkyl;

R^4 represents a radical selected from the group consisting of C_1–C_{20}-alkyl, C_2–C_{20}-alkenyl, C_1–C_8-alkoxy-C_1–C_8-alkyl and C_1–C_8-polyalkoxy-C_1–C_8-alkyl each of which is optionally substituted by halogen; or a radical selected from the group consisting of phenyl and benzyl each of which is optionally substituted by at least one of halogen, nitro, C_1–C_6-alkyl, C_1–C_6-alkoxy and C_1–C_6-halogenoalkyl;

R^5, R^6 and R^7 independently of one another represent a radical selected from the group consisting of C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_8-alkylthio, C_1–C_8-alkylamino, di-(C_1–C_8)-alkylamino, C_2–C_5-alkenylthio, C_2–C_5-alkinylthio and C_3–C_7-cycloalkylthio each of which is optionally substituted by halogen; or represent a radical selected from the group consisting of phenyl, phenyloxy and phenylthio, each of which is optionally substituted by at least one of halogen, nitro, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_1-halogenoalkoxy, C_1–C_4-halogenoalkoxy, C_1–C_4-halogenoalkylthio, C_1–C_4-alkyl and C_1–C_4-halogenoalkyl;

R^8 and R^9 independently of one another represent hydrogen; a radical selected from the group consisting of C_1–C_{20}-alkyl, C_1–C_{20}-alkoxy, C_3–C_{10}-cycloalkyl, C_2–C_8-alkenyl and C_1–C_8-alkoxy-C_1–C_8-alkyl each of which is optionally substituted by halogen; or represent a radical selected from the group consisting of phenyl and benzyl each of which is optionally substituted by at least one of halogen, C_1–C_{20}-alkyl, C_1–C_{20}-halogenoalkyl and C_1–C_{20}-alkoxy; or R^8 and R^9 together form a C_2–C_6-alkylene group which is optionally interrupted by at least one of oxygen and sulphur;

L represents oxygen or sulphur and

M represents oxygen or sulphur,

with the exception of the compound 2,4-pentadienoic acid, 3,5-dihydroxy-2-(o-methoxyphenyl)-5-phenyl-δ-lactone.

5,393,730

NICOTINIC ACID HYDRAZONE COMPOUNDS WHICH HAVE USEFUL HERBICIDAL COMPOSITIONS

Philip H. G. Smith, Essex, England, assignor to Rhone-Poulenc Agriculture Ltd., Essex, England

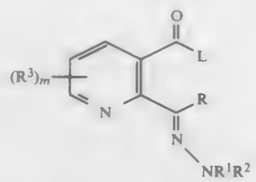
Filed Jan. 12, 1994, Ser. No. 180,309

Claims priority, application United Kingdom, Jan. 12, 1993, 9300480

Int. Cl.[6] **C07D** *213/80;* **A01N** *43/40*

U.S. Cl. 504—130 **17 Claims**

1. A compound of the formula:



(I)

wherein:

R represents:
- hydrogen;
- straight- or branched-chain alkyl, alkenyl or alkynyl having up to six carbon atoms, optionally substituted by one or more halogen;
- Het;
- —$[CR^{41}R^{42}]_n$-Het1; or
- —$[CR^{41}R^{42}]_n$-(phenyl)-$(R^{31})_p$;

R^1 represents:
- hydrogen;
- straight- or branched-chain alkyl, alkenyl or alkynyl having up to six carbon atoms, optionally substituted by one or more halogen;
- Het;
- —$[CR^{41}R^{42}]_n$-Het1; or
- $[CR^{41}R^{42}]_n$-(phenyl)-$(R^{32})_q$;

R^2 represents:
- hydrogen;
- straight- or branched-chain alkyl, alkenyl or alkynyl having up to six carbon atoms, optionally substituted by one or more halogen; or
- phenyl, optionally substituted by from one to five R^{31} groups, which can be the same or different;

R^3 represents:
- halogen;
- straight- or branched-chain alkyl, alkenyl or alkynyl having up to six carbon atoms, optionally substituted by one or more halogen;
- —CN; —CO_2R^4; —$S(O)_rR^4$; —NO_2; —$NR^{41}R^{42}$; —OH; —COR^4; —$S(O)_rR^5$; —CO_2R^5; —OR^5; —$CONR^{41}R^{42}$; —OSO_2R^5; —OSO_2R^6; —OCH_2R^5; —$N(R^{41})COR^6$; —$N(R^{41})SO_2R^5$; —$N(R^{41})SO_2R^6$; —$SO_2NR^{41}R^{42}$; —$Si(R^6)_3$;
- phenyl, optionally substituted by from one to five R^{31} groups, which can be the same or different; or
- straight- or branched-chain alkoxy having up to six carbon atoms, optionally substituted by one or more halogen;

L represents:
- hydroxy;
- straight- or branched-chain alkoxy having up to six carbon atoms; or
- —NR^7R^8;

each of R^{31} and R^{32}, which can be the same or different, represents:
- halogen;
- straight- or branched-chain alkoxy having up to six carbon atoms, optionally substituted by one or more halogen;
- straight- or branched-chain alkyl, alkenyl or alkynyl having up to six carbon atoms, optionally substituted by one or more halogen;
- —OH; —$S(O)_rR^4$; —CO_2R^4; —COR^4; —CN; —NO_2; —$NR^{41}R^{42}$; —$S(O)_rR^5$; —CO_2R^5; —OR^5; —$CONR^{41}R^{42}$; —OSO_2R^5; —OSO_2R^6; —OCH_2R^5; —$N(R^{41})COR^6$; —$N(R^{41})SO_2R^5$; —$N(R^{41})SO_2R^6$; —$SO_2NR^{41}R^{42}$; or —$Si(R^6)_3$;

R^4 represents hydrogen or straight- or branched-chain alkyl having up to six carbon atoms, optionally substituted by one or more halogen;

each of R^{41} and R^{42}, which can be the same or different, represents hydrogen or straight- or branched-chain alkyl having up to four carbon atoms, optionally substituted by one or more halogen;

R^5 represents phenyl, optionally bearing from one to five substituents, which can be the same or different, selected from the group consisting of halogen, nitro, cyano, R^4 and —OR^4;

R^6 represents straight- or branched-chain alkyl having up to six carbon atoms, optionally substituted by one or more halogen;

each of R^7 and R^8, which can be the same or different, represents:
- hydrogen;
- straight- or branched-chain alkyl having up to four carbon atoms, optionally substituted by one or more halogen; or
- phenyl, optionally bearing from one to five substituents, which can be the same or different, selected from the group consisting of halogen, nitro, cyano, R^4 and —OR^4;

Het represents a 5 or 6 membered heterocycle having from 3 to 5 ring carbon atoms and one or more ring heteroatoms selected from the group consisting of nitrogen, oxygen and sulphur, said heterocycle being optionally substituted by one or more R^{31} groups, which can be the same or different;

Het1 represents phenyl or a 5 or 6 membered heterocycle having from 3 to 5 ring carbon atoms and one or more ring heteroatoms selected from the group consisting of nitrogen, oxygen and sulphur, wherein two substituents on adjacent positions of the phenyl or heterocyclic ring, together with the two atoms to which they are attached, form a 5- to 7-membered alicyclic ring which is optionally unsaturated or an aromatic ring, the alicyclic or aromatic ring optionally having one or more ring heteroatoms, the phenyl or heterocyclic ring being optionally substituted by one or more R^{31} groups, the alicyclic or aromatic ring being optionally substituted by one or more R^{51} groups, which can be the same or different;

R^{51} is as defined above for R^{31} or represents =O or =S;

m represents zero or an integer from one to three, provided that when m is greater than one, then the R^3 groups can be the same or different;

n represents zero, one or two, provided that when n is two, then the —$(CR^{41}R^{42})$— groups can be the same or different;

p represents zero or an integer from one to five, provided that when p is greater than one, then the R^{31} groups can be the same or different;

q represents zero or an integer from one to five, provided that when q is greater than one, then the R^{32} groups can be the same or different; and

r represents zero, one or two;

or an agriculturally acceptable salt thereof.

5,393,731

WATER DISPERSIBLE GRANULAR HERBICIDAL COMPOSITIONS COMPRISING DINITROANILINE AND IMIDAZOLINONE HERBICIDES WITH MONTMORILLONITE CARRIERS

Joseph Kimler, Yardville, and Robert Kubisch, Martinsville, both of N.J., assignors to American Cyanamid Company, Wayne, N.J.

Continuation-in-part of Ser. No. 996,412, Dec. 23, 1992, Pat. No. 5,296,450, and Ser. No. 996,221, Dec. 23, 1992, Pat. No. 5,294,594. This application Dec. 8, 1993, Ser. No. 164,169

Int. Cl.[6] **A01N** *25/08, 25/14, 33/18, 43/50*

U.S. Cl. 504—139 **20 Claims**

1. A water dispersible granular composition comprising on a weight to weight basis about 20% to 90% of a dinitroaniline herbicide, in combination with about 1% to 20% of an imidazolinone herbicide; about 5% to 25% of a montmorillonite carrier; about 1.0% to 7.5% of a wetting agent; about 2% to 10% of a suspension agent; and about 0.5 to 20% of a dispersion enhancing agent.

5,393,732

TRIAZOLE PHOSPHORIC ACID DERIVATIVES AND THEIR USE AS HERBICIDES

John M. Cox, Wokingham; Peter Bellini, Purley on Thames; Roger Barrett, Stevenage; Russell M. Ellis, Bracknell, and Timothy R. Hawkes, Priestwood, all of England, assignors to Zeneca Limited, London, England

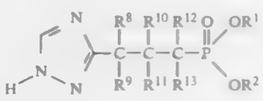
Filed Jan. 21, 1993, Ser. No. 6,567

Claims priority, application United Kingdom, Feb. 10, 1992, 9202779

Int. Cl.[6] **A01N** *57/08;* **C07F** *9/6518*

U.S. Cl. 504—197 **5 Claims**

1. An herbicidal compound of the formula:



or a salt, tautomer or cyclic derivative thereof, wherein:

R^1 and R^2 are hydrogen;

R^8 is fluorine, chlorine, bromine, iodine, 1,2,4-triazol-1-yl, cyano, nitrosyloxy, aminoxy, amino, azido, $SCSOCH_2CH_3$, $SCOCH_3$, mercapto, methylthio, methanesulphonyl or methanesulphinyl;

R^9 is hydrogen or fluorine;

or R^9 together with R^8 forms an oximino group;

R^{10} is hydrogen, hydroxy or amino;

or R^9 and R^{10} together form —O—;

R^{11} is hydrogen; and

R^{12} and R^{13} are each independently hydrogen, hydroxy or fluorine, with the proviso that when one of R^{12} and R^{13} is hydroxy, the other is hydrogen.

5,393,733

HERBICIDAL PYRIDINESULFONYLUREAS

Paul H. Liang, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

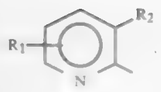
Division of Ser. No. 806,749, Dec. 13, 1991, Pat. No. 5,209,770, which is a division of Ser. No. 507,926, Apr. 12, 1990, Pat. No. 5,102,444, which is a continuation-in-part of Ser. No. 399,485, May 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 39,491, Apr. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 939,428, Dec. 8, 1986, abandoned. This application Apr. 27, 1993, Ser. No. 52,970
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[6] C07D *401/12;* A01N *43/54*
U.S. Cl. 504—215 10 Claims

1. A compound selected from

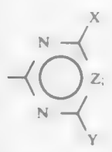


I

wherein
J is

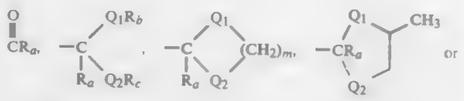


R is H or CH_3;
W is O or S;
R_1 is R_f or R_g;
R_f is H, C_1–C_3 alkyl, C_1–C_3 haloalkyl, halogen, NO_2, C_1–C_3 alkoxy, C_1–C_3 alkylthio or CN;
R_g is C_1–C_3 haloalkyl, cyclopropyl, C_1–C_3 alkyl substituted by C_1–C_3 alkoxy, OH, C_1–C_2 alkylthio or CN, CN, W_2R_{11}, amino, C_1–C_3 alkylamino or C_1–C_3 dialkylamino;
R_2 is C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, C_3–C_5 cycloalkylthio, C_3–C_5 cycloalkylsulfinyl, C_3–C_5 cycloalkylsulfonyl, SO_2NH_2, $SO_2NR_dR_e$, $SO_2NR'_7R_8$, $SO_2NR_7R_8$, OSO_2R_8, SO_2OR_8, N_3, $P(W_1)(OC_1$–C_2 alkyl)$_2$, CN, CO_2R_9, $CO_2R'_9$, CH_2F, CF_2H, CH_2Cl, CCl_2H or C_2–C_4 haloalkyl;
R_7 is H, C_2–C_3 cyanoalkyl, C_3–C_4 alkenyl or C_3–C_4 alkynyl;
R'_7 is C_1–C_4 alkyl;
R_8 is C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, C_2–C_4 alkoxyalkyl or cyclopropyl; or
R_7 and R_8 may be taken together as $—(CH_2)_3—$, $—(CH_2)_4—$, $—(CH_2)_5—$ or $—CH_2CH_2OCH_2CH_2—$;
R_9 is $CH_2CH_2R_{10}$, CH_2CF_3, C_3–C_4 haloalkyl, C_3–C_4 alknyl, C_2–C_4 alkylthioalkyl, C_3–C_5 cycloalkyl or C_4–C_7 cycloalkylalkyl;
R'_9 is C_1–C_4 alkyl, C_3–C_4 alkenyl, CH_2CH_2Cl, CH_2CH_2Br, $CH_2CH_2OCH_3$ or $CH_2CH_2OC_2H_5$;
R_{10} is OH, F, CN, $OSO_2(C_1$–C_3 alkyl) or $OSO_2(C_1$–C_3 haloalkyl);
R_{11} is C_1–C_3 alkyl, C_1–C_3 haloalkyl, C_3–C_4 alkenyl or C_3–C_4 alkynyl;
W_1 is O or S;
W_2 is O or S;
A is



A-1

X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_2–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_2–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino;
Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_2–C_4 haloalkoxy, C_2–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthioalkyl, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkylsulfonylalkyl, C_1–C_4 haloalkyl, C_2–C_4 alkynyl, C_3–C_5 cycloalkyl, azido,



or

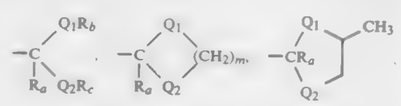
$N(OCH_3)CH_3$;
m is 2 or 3;
Q_1 and Q_2 are independently O or S;
R_a is H or C_1–C_3 alkyl;
R_b and R_c are independently C_1–C_3 alkyl;
R_d is H or C_1–C_2 alkyl;
R_e is C_1–C_2 alkoxy;
Z is CH;

J-1

and their agriculturally suitable salts; provided that
1) when X is halogen, then Y is OCH_3, OC_2H_5, NH_2, $NHCH_3$, $N(CH_3)_2$ or $N(OCH_3)CH_3$;
2) when W is S, then R is H and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH=CH_2$, $OCH_2C\equiv CH$, $OCH_2CH_2OCH_3$,



3) when the total number of carbon atoms of X and Y is greater than four, then the combined number of carbons of R_1 or R_2 is less than or equal to six;
4) when R_2 is C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, $SO_2NR_dR_e$, $SO_2NR'_7R_8$ or $CO_2R'_9$, then Y is other than C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, C_2–C_5 alkylthioalkyl, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkylsulfonylalkyl,



5) when R_2 is $CO_2R'_9$ or $SO_2NR'_7R$, then R_1 is R_g and when R_2 is other than $CO_2R'_9$ or $SO_2NR'_7R_8$, then R_1 is R_f;
6) when J is J-1;
R is H or CH_3;
X is C_1–C_2 alkyl, C_1–C_2 alkoxy, Cl, F, Br, I, CH_2F, CF_3, OCH_2CH_2F, OCH_2CHF_2, OCH_2CF_3, CH_2Cl or CH_2Br;
Y is H, C_1–C_2 alkyl, C_1–C_2 alkoxy, CH_2OCH_3, $CH_2OCH_2CH_3$, $NHCH_3$, $N(OCH_3)CH_3$, $N(CH_3)_2$, CF_3, SCH_3, $OCH_2CH=CH_2$, $OCH_2C\equiv CH$, $OCH_2CH_2OCH_3$, $C(O)R_a$, cyclopropyl, $C\equiv CH$ or $C\equiv CCH_3$;
R_a is H or CH_3;
Z is CH;
W is O;
R_1 is R_f; and
R_f is H, C_1–C_2 alkyl, C_1 haloalkyl, C_1–C_2 alkoxy or C_1–C_2 thioalkyl; then
R_2 is other than C_1–C_4 alkylsulfinyl or C_1–C_4 alkylsulfonyl and

7) when J is J-1;
W is O;
R is H or CH_3;
R_1 is R_f or R_g;
R_f is C_1 haloalkyl, halogen or OCH_3;
R_g is C_1–C_2 haloalkyl or W_2R_{11};
W_2 is O or S;
R_9 is $CH_2CH_2R_{10}$, CH_2CF_3, C_3–C_4 haloalkyl, C_3–C_4 alkynyl, C_2–C_4 alkylthioalkyl, C_3–C_5 cycloalkyl or C_4–C_7 cycloalkylalkyl;
R'_9 is C_1–C_4 alkyl, C_3–C_4 alkenyl, CH_2CH_2Cl, CH_2CH_2Br, $CH_2CH_2OCH_3$ or $CH_2CH_2OC_2H_5$;
R_{10} is OH, F, CN, $OSO_2(C_1$–C_3 alkyl) or $OSO_2(C_1$–C_3 haloalkyl);
R_{11} is C_1–C_3 alkyl or C_1–C_3 haloalkyl;
A is A-1;
X is C_1–C_2 alkyl, C_1–C_2 alkoxy, Cl, F, Br, I, CH_2F, CF_3, OCH_2CH_2F, OCH_2CHF_2, OCH_2CF_3, CH_2Cl or CH_2Br;
Y is H, C_1–C_2 alkyl, C_1–C_2 alkoxy, CH_2OCH_3, $CH_2OCH_2CH_3$, $NHCH_3$, $N(OCH_3)CH_3$, $N(CH_3)_2$, CF_3, SCH_3, $OCH_2CH=CH_2$, $OCH_2C\equiv CH$, $OCH_2CH_2OCH_3$, $C(O)R_a$, cyclopropyl, $C\equiv CH$ or $C\equiv CCH_3$;
R_a is H or CH_3; and
Z is CH; then
R_2 is other than CN, CO_2R_9, $CO_2R'_9$.

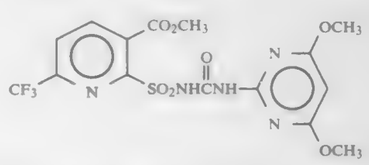
5,393,734

HERBICIDAL PYRIDINE SULFONAMIDE

Tarig A. Andrea, Hockessin, and Paul H. Liang, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US92/01528, § 371 Date Sep. 3, 1993, § 102(e) Date Sep. 3, 1993, PCT Pub. No. WO92/15576, PCT Pub. Date Sep. 17, 1992
Continuation-in-part of Ser. No. 666,109, Mar. 7, 1991, abandoned. This PCT application Mar. 5, 1992, Ser. No. 108,694
Int. Cl.[6] A01N *43/54;* C07D *239/46*
U.S. Cl. 504—215 10 Claims

1. A compound of the formula



I

and its agriculturally suitable salts, hydrates and complexes with C_1–C_4 alcohols.

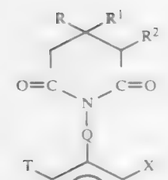
5,393,735

HERBICIDAL GLUTARIMIDES

Barry C. Lange; John W. Ashmore; Jane Wissinger-Cornille, all of Lansdale, and Colin M. Tice, Elkins Park, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 563,780, Aug. 9, 1990, abandoned. This application Sep. 30, 1993, Ser. No. 129,483
Int. Cl.[6] A01N *43/40;* C07D *211/40, 401/10, 413/10*
U.S. Cl. 504—254 15 Claims

1. A herbicidal compound of the formula



I

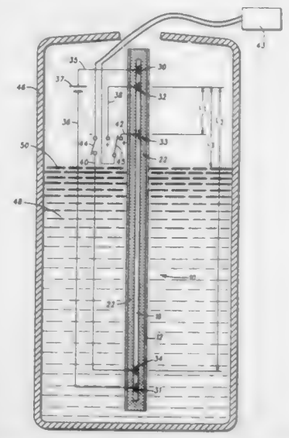
wherein
Q is $(CH_2)_n$, where n is 0 or 1;
R is CH_3, CFH_2, CF_2H or CF_3;
R^1 and R^2 are hydrogen;
X is chloro or fluoro;
Y is hydrogen, Br, F, or Cl;
provided when Y is hydrogen, R is trifluoromethyl, R^1 and R^2 are hydrogen, Z is not hydrogen;
T is hydrogen and
Z is (C_1–C_6)alkoxy, (C_3–C_6)alkenyloxy; (C_3–C_6)alkynyloxy; (C_3–C_6)cycloalkoxy; (C_3–C_6)cycloalkyl(C_1–C_6)alkoxy; (C_1–C_6)alkyloxy(C_1–C_6)alkyloxy; heterocyclyl(C_1–C_6)alkoxy selected from the group consisting of epoxymethoxy, 2-pyridylmethoxy and 2-tetrahydrofuranylmethoxy; or tetrahydrofuranyloxy; or an agronomically acceptable salt thereof.

5,393,736

CRYOGENIC FLUID LEVEL SENSOR

James D. Hodge; Lori J. Klemptner, both of Lincolnwood, Ill., and Justin Whitney, Sandy, Utah, assignors to Illinois Superconductor Corporation, Evanston, Ill.

Filed Nov. 30, 1992, Ser. No. 984,060
Int. Cl.[6] G01F *23/24;* H01L *39/04*
U.S. Cl. 505—160 14 Claims



1. A cryogenic fluid level sensor assembly, comprising:
a length of high temperature ceramic superconductor material including means for operating said high temperature ceramic superconductor material above its level of critical current density providing an indication of a level of cryogenic fluid as determined by the length of fluid in contact with said ceramic superconductor material, said means for operating said high temperature superconductor material

above its level of critical current density producing greater sensitivity of said indication of the level of the cryogenic fluid;

an exterior housing disposed apart from and at least partly around said ceramic superconductor and material for holding said length of ceramic superconductor material;

a support material disposed between said ceramic superconductor material and said exterior housing; and

a resilient retention material disposed opposite said exterior housing and opposite said ceramic superconductor material for holding said superconductor material while allowing expansion and contraction thereof during thermal cycling.

5,393,737

CYTOTOXIC DRUG CONJUGATES FOR TREATMENT OF NEOPLASTIC DISEASES

George L. Mayers, Olcott, N.Y.; Jafar Razeq, Ramallah, Israel, and Mahmoud M. Abu-Hadid, Lakawanna, N.Y., assignors to Health Research, Inc., Buffalo, N.Y.

Filed Aug. 20, 1992, Ser. No. 932,660

Int. Cl.[6] A61K *37/02, 37/36;* C07K *13/00*

U.S. Cl. 514—12 48 Claims

1. A composition of matter comprising a ligand-carbohydrate-cytotoxic drug conjugate wherein the carbohydrate has a molecular weight between 50,000 and 40 million and contains sufficient branching and sufficient adjacent hydroxyl group moieties such that at least 100 cytotoxic drug residues are attached to the carbohydrate.

5,393,738

PHARMACEUTICAL COMPOSITIONS CONTAINING OCTREOTIDE AND EXCIPIENTS FOR ORAL OR RECTAL ADMINISTRATION

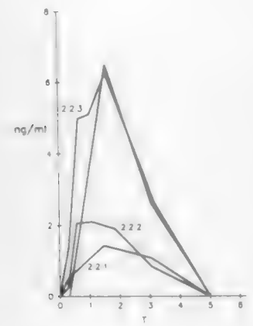
Jacky Vonderscher, Mulhouse; Joachim Franz, Riehen, Switzerland; Michel Steiger, Bern, Switzerland, and Karl Hornung, Weil/Märkt, Switzerland, assignors to Sandoz, Ltd., Basel, Switzerland

Continuation of Ser. No. 619,159, Nov. 28, 1990, abandoned, which is a continuation of Ser. No. 374,507, Jun. 19, 1989, abandoned, which is a continuation of Ser. No. 250,044, Sep. 19, 1988, abandoned, which is a continuation of Ser. No. 53,999, May 26, 1987, abandoned. This application Jan. 25, 1993, Ser. No. 8,383

Claims priority, application Switzerland, May 27, 1986, 2138/86; May 27, 1986, 2144/86

Int. Cl.[6] A61K *37/24*

U.S. Cl. 514—12 27 Claims



1. A pharmaceutical composition comprising octreotide and an excipient selected from the group consisting of a) a, monosaccharide, b) a sugar alcohol, c) a monosaccharide and a polyoxyalkylene ether, and d) a sugar alcohol and a polyoxyalkylene ether, and said composition being adapted for gastrointestinal resorption by oral or rectal administration.

5,393,739

USE OF BONE MORPHOGENETIC PROTEIN IN SYNERGISTIC COMBINATION WITH TGF-β FOR BONE REPAIR

Hanne Bentz, Newark; Andrea Y. Thompson, Mountain View; Rosa Armstrong, Palo Alto, and David M. Rosen, San Jose, all of Calif., assignors to Celtrix Pharmaceuticals, Inc., Santa Clara, Calif.

Continuation of Ser. No. 32,408, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 961,061, Oct. 14, 1992, abandoned, which is a continuation of Ser. No. 620,142, Nov. 30, 1990, abandoned. This application Sep. 15, 1993, Ser. No. 123,464

Int. Cl.[6] C07G *7/00;* A61K *37/02, 35/32, 37/12*

U.S. Cl. 514—12 4 Claims

1. A composition for treating cartilage and/or bone defects consisting essentially of:

bone morphogenetic protein-2 (BMP-2), bone morphogenetic protein-3 (BMP-3), transforming growth factor-β2 (TGF-β2) together in a tissue-growth-inducing amount; and a pharmaceutically acceptable carrier or excipient.

5,393,740

NEUROTENSIN HEXAPEPTIDES

Sakae Amagaya, Ami; Tadami Fujiwara, Tokyo; Masaki Aburada, Tokyo; Michio Nagasawa, Tokyo, and Tsutomu Oyama, Ami, all of Japan, assignors to Tsumura & Co., Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,878

Claims priority, application Japan, Jul. 30. 1991, 3-211416

Int. Cl.[6] A61K *37/00, 37/02;* C07K *5/00, 7/00*

U.S. Cl. 514—17 6 Claims

1. A hexapeptide of the formula (I):

A-B-Pro-C-D-E (I)

where A is an L- or D- form of arginine or lysine, the N-terminal amino group of which is deaminated, B is an L- or D- form of arginine, lysine, or histidine, Pro is an L- or D- form of proline, C is an L- or D- form of tyrosine, tryptophan, or phenylalanine, D is an L- or D- form of valine, isoleucine, or leucine, and E is an L- or D- form of valine, isoleucine, or leucine, one of the hydrogen atoms of the amino group of which may be substituted with a C_1 to C_4 alkyl group, and the C-terminal carboxyl group of which is substituted with —CH_2OR, wherein R is a hydrogen atom or a C_1 to C_4 alkyl group; or a pharmaceutically acceptable salt of the hexapeptide.

5,393,741

ACETAL DERIVATIVES OF AROMATIC ALDEHYDES

Erik O. Pettersen, Oslo; Rolf O. Larsen, Langesund; Bernt Borretzen, Porsgrunn; John M. Dornish, Bekkestua, and Reidar Oftebro, Hvalstad, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Nov. 27, 1991, Ser. No. 799,070

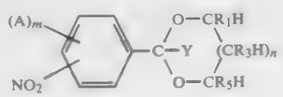
Claims priority, application United Kingdom, Nov. 30, 1990, 9026114

Int. Cl.[6] A61K *31/34, 31/335*

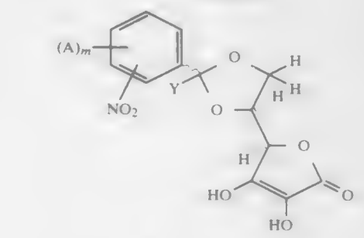
U.S. Cl. 514—23 5 Claims

1. A compound of formula IIIa, IIIaa or IIIab:

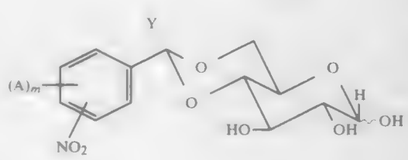
IIIa



-continued



IIIab



wherein:

Y is H or D;

A is H, D, alkyl with 1–4 C-atoms, halogen, nitro, amino, monoalkylamino or dialkylamino wherein the alkyl groups have 1–4 C atoms, or OR wherein R is H or alkyl of 1–4 C-atoms;

n is 0 or 1;

m is an integer of 1–4; and

either R_1 and R_3 together with the C atoms to which they are bound form a sugar molecule and R_5 is H, OH, alkyl with 1–4 carbon atoms which may be unsubstituted or substituted or phenyl which may be unsubstituted or substituted, or R_3 and R_5 together with the C atoms to which they are bound form a sugar molecule and R_1 is H, OH, alkyl with 1–4 carbon atoms Which may be unsubstituted or substituted or phenyl which may be unsubstituted or substituted;

or a pharmaceutically acceptable salt thereof.

5,393,742

PREPARATION FOR TREATING RENAL DISEASE

Takayuki Ishii; Makiko Kasano; Tae Yasunaga; Mariko Ishii; Mamoru Sugimoto; Kenkichi Tomita, all of Tokyo; Takeshi Miyata, Kumamoto, and Makoto Tanaka, Tokyo, all of Japan, assignors to MECT Corporation, Tokyo, Japan

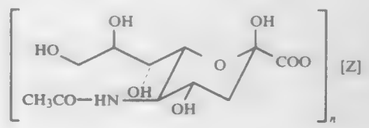
Continuation-in-part of Ser. No. 751,150, Aug. 28, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 109,614

Claims priority, application Japan, Aug. 30, 1990, 2-229315

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—23 7 Claims

1. Method of treating nephrotic syndrome in a subject exhibiting a nephrotic syndrome condition, comprising administering thereto a nephrotic syndrome inhibiting effective amount of an N-acetylneuraminic acid compound of the formula



wherein n is 1 and Z represents sodium.

5,393,743

ERYTHROMYCIN DERIVATIVES

Carla Edwards, Evanston, and Paul A. Lartey, Wadsworth, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

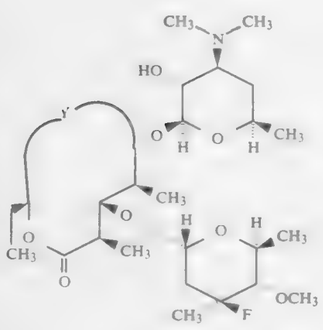
Filed Jul. 6, 1993, Ser. No. 87,547

Int. Cl.[6] A61K *31/70;* C07H *17/04*

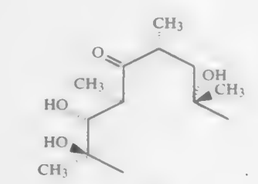
U.S. Cl. 514—29 6 Claims

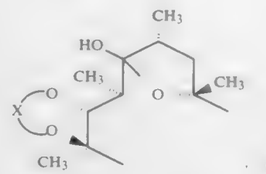
1. A compound having the formula

IIIaa

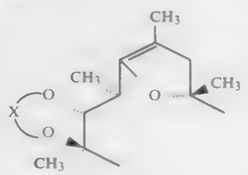


or a pharmaceutically acceptable salt thereof, wherein Y is selected from the group consisting of





and



and X is selected from the group consisting of —C(O)—, —C(S)—, —CH_2—, —CH_2CH_2— and —$C(CH_3)_2$—.

6. A method for treating bacterial infections in a human or lower mammal, comprising administering to a patient in need of such treatment a therapeutically effective amount of a compound according to claim 1 for such time as is necessary to achieve a therapeutic effect.

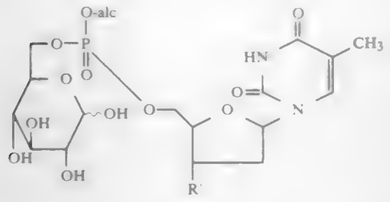
5,393,744

GLUCOSYL PHOSPHOTRIESTERS OF THYMIDINE

Tam Huynh Dinh, Croissy-sur-Seine; Catherine Gouyette, Vanves; Bernadette Dupraz, Maisons-Alfort; Jean Igolen, Le Mesnil-Saint-Denis; Nathalie Savatier, Creteil; Jean-Francois Nicolas, Noisy-le-Roi, and Francoise Barre-Sinoussi, Issy-les-Moulineaux, all of France, assignors to Institut Pasteur, Paris, France

Filed Jan. 29, 1990, Ser. No. 460,959
Claims priority, application France, May 31, 1988, 88 07252
Int. Cl.[6] A61K *31/70;* C07H *19/10*
U.S. Cl. 514—51 10 Claims

1. A compound having the following formula I:



in which:

R′ represents a hydrogen atom or an azido group,

alc represents a saturated or unsaturated hydrocarbon radical of 5 to 30 carbon atoms optionally substituted by an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms or an amine group.

5,393,745

METHOD FOR TREATING APHTHAE USING DIMETHYLPOLYSILOXANE

Alfred Schmidt, Leinpfad 2, 22301 Hamburg, Germany, and Hans-Jürgen Upmeyer, Mauerkircherstr. 197, 81925 München, Germany

Filed Mar. 8, 1994, Ser. No. 207,066
Int. Cl.[6] A61K *31/695, 31/74*
U.S. Cl. 514—63 2 Claims

1. A method for treating aphthae comprising applying an aphthae treating amount of dimethylpolysiloxane in combination with a biologically acceptable carrier to aphthae-afflicted oral mucosa of a human or animal.

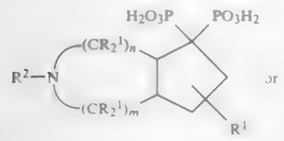
5,393,746

BICYCLIC DIPHOSPHONATE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS, AND METHODS FOR TREATING ABNORMAL CALCIUM AND PHOSPHATE METABOLISM

Frank H. Ebetino; Kent W. Buckingham, and Jocelyn E. McOsker, all of Norwich, N.Y., assignors to P&G Pharmaceuticals, Inc., Norwich, N.Y.

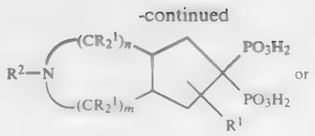
Division of Ser. No. 407,848, Sep. 14, 1989, Pat. No. 5,137,880, which is a division of Ser. No. 945,069, Dec. 19, 1986, Pat. No. 4,868,164. This application Jun. 17, 1992, Ser. No. 899,794
Int. Cl.[6] C07F *9/65;* A61K *31/675*
U.S. Cl. 514—80 16 Claims

1. A nitrogen-containing, saturated bicyclic cyclopentane ring-containing diphosphonic acid, or a pharmaceutically-acceptable salt thereof, having one of the following formulas:

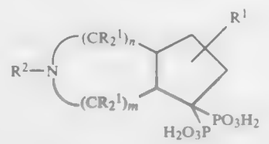


(I)

-continued



(II)



(III)

wherein m and n are integers from 0 to 3; m+n=3; each R^1 is independently selected from the group consisting of hydrogen, alkyl having from 1 to 6 carbon atoms, halogen, hydroxy, and —OR^3; R^2 is $R^3C(O)$—, phenyl or benzyl; and each R^3 is alkyl having from 1 to 3 carbon atoms.

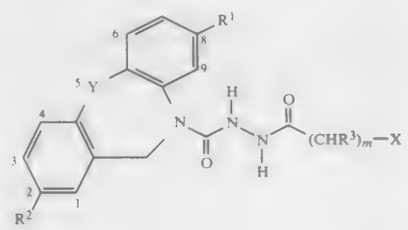
5,393,747

SUBSTITUTED DIBENZOXAZEPINE COMPOUNDS FOR THE TREATMENT OF CONVULSIONS, ISCHEMIA AND OTHER DISEASES RESPONSIVE TO PROSTAGLANDIN-E_2 ANTAGONISTS

E. Ann Hallinan, Evanston; Robert K. Husa, and Karen B. Peterson, both of Vernon Hills, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

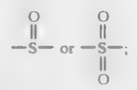
Division of Ser. No. 939,261, Sep. 2, 1992, Pat. No. 5,283,240, which is a division of Ser. No. 695,489, May 3, 1991, Pat. No. 5,182,272. This application Nov. 17, 1993, Ser. No. 154,236
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[6] A61K *31/55*
U.S. Cl. 514—80 6 Claims

1. A method for treating diseases in a mammal which are responsive to prostaglandin-E_2 antagonists comprising administering to said mammal a therapeutically-effective amount of a compound having the formula:



or a pharmaceutically-acceptable salt thereof, wherein:

Y is oxygen, sulfur,



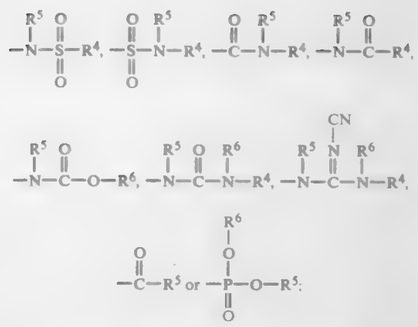
R^1 is hydrogen, halogen or —CF_3;

R^2 is hydrogen, halogen, —OH or —OCH_3;

R^3 is hydrogen, alkyl, aryl, alkyl-substituted aryl or aryl-substituted alkyl;

m is an integer of from 1 to 5;

X is



R^4 is hydrogen, alkyl, aryl, alkyl-substituted aryl, trifluoromethyl-substituted aryl or aryl-substituted alkyl; and

R^5 and R^6 are each independently hydrogen, alkyl, aryl, alkyl-substituted aryl or aryl-substituted alkyl.

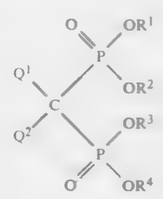
5,393,748

METHYLENEBISPHOSPHONIC ACID DERIVATIVES

Esko Pohjala, Tampere; Marjaana Heikkilä-Hoikka, Vanhalinna; Hannu Nikander, Paattinen, and Hannu Hanhijärvi, Turku, all of Finland, assignors to Leiras Oy, Turku, Finland

PCT No. PCT/FI91/00395, § 371 Date Oct. 20, 1993, § 102(e) Date Oct. 20, 1993, PCT Pub. No. WO92/11269, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 18, 1991, Ser. No. 78,156
Claims priority, application Finland, Dec. 20, 1990, 906295
Int. Cl.[6] A61K *31/675, 31/665;* C07F *9/02, 9/06*
U.S. Cl. 514—89 5 Claims

1. Bisphosphonic acid derivatives having the formula I



(I)

in which formula R^1, R^2, R^3 and R^4 independently are a straight or branched, optionally unsaturated C_1–C_7-alkyl or C_2–C_7-alkenyl or hydrogen, whereby in the formula I at least one of the groups R^1, R^2, R^3 and R^4 is hydrogen and at least one of the groups R^1, R^2, R^3 and R^4 is different from hydrogen,

Q^1 is hydrogen or hydroxyl,

Q^2 is the group

$$Y—X—(CH_2)_n—$$

wherein Y is phenyl, pyridinyl, piperidinyl or pyrimidinyl which is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, hydroalkyl or nitro, X is S or NH, and n=0, or X is a direct bond and n=1, provided that as a ring atom of the ring Y and/or a chain atom of the group X, there is always at least one heteroatom from the group of N and S, including the stereoisomers, or a pharmacologically acceptable salt thereof.

5,393,749

METHOD OF TREATING OSTEOPOROSIS WITH 1 α25-DIHYDROXY-22(E)-DEHYDRO-VITAMIN D_3

Hector F. DeLuca, Deerfield, and Heinrich K. Schnoes, Madison, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 873,389, Apr. 24, 1992, abandoned. This application Oct. 25, 1993, Ser. No. 142,658
Int. Cl.[6] A61K *31/59, 31/595*
U.S. Cl. 514—167 10 Claims

1. A method of treating osteoporosis by stimulating intestinal calcium transport activity with attendant bone formation without significantly increasing bone calcium mobilization activity comprising administering to a patient an effective amount of 1α,25-dihydroxy-22(E)-dehydro-vitamin D_3.

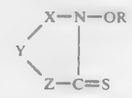
5,393,750

COMPOSITION, PROCESS AND USE

Mark R. James, Rossendale, and Gordon A. Thomson, Ladybridge, both of Great Britain, assignors to Zeneca, Limited, London, England

Division of Ser. No. 555,118, Jul. 19, 1990, Pat. No. 5,120,856. This application Feb. 24, 1992, Ser. No. 462,980
Claims priority, application United Kingdom, Jul. 19, 1989, 8916447
Int. Cl.[6] C07D *207/12, 209/44;* A01N *37/28, 43/38, 59/16*
U.S. Cl. 514—184 14 Claims

8. A method for inhibition of the growth of micro-organisms on, or in, a medium which comprises treating the medium with a compound of the formula I:



(I)

or a salt or complex thereof, or with a biocide composition which contains a compound of the formula I or a salt or complex thereof with a metal of Group VIII, IB or IIB of the Periodic Table,

X is a group —CR^1R^2— or a group —CR^1=;

Y is a group —CR^3R^4— or a group —CR^3=;

Z is a group —CR^5R^6— or a group —CR^5=;

R is a hydrogen or an acyl group; and

R^1 to R^6 are each, independently, a hydrogen atom or a C_{1-6}-hydrocarbyl group, or R^1 and R^2 together with the carbon atom to which they are attached, form a cyclohexane ring, and/or R^3 and R^4, together with the carbon atom to which they are attached, form a cyclohexane ring, and/or R^5 and R^6 together with the carbon atom to which they are attached, form a cyclohexane ring; or R^1 and R^3 together with the carbon atoms to which they are attached, form a benzene ring, or R^3 and R^5, together with the carbon atoms to which they are attached, form a benzene ring.

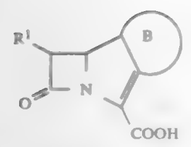
5,393,751

TRICYCLIC CARBAPENEM COMPOUNDS

Michiyuki Sendai, Suita, and Tetsuo Miwa, Kobe, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 10, 1990, Ser. No. 595,287
Claims priority, application Japan, Oct. 11, 1989, 1-264345; Jul. 3, 1990, 2-177118
Int. Cl.[6] C07D *487/00;* A01N *43/00;* A61K *31/395*
U.S. Cl. 514—210 7 Claims

1. A compound of the formula



wherein R^1 is (1) a hydrogen atom or (2) C_{1-6} alkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, C_{3-6} cycloalkyl, C_{7-10} aralkyl or C_{6-10} aryl, the substituent (2) optionally being substituted by 1 to 3 substituents, which may be the same or different, selected from the group consisting of cyano, amino, mono- or di(C_{1-4})alkylamino, hydroxy, (C_{1-4})alkyloxy, carbamoyloxy, (C_{1-4})alkylthio, (C_{1-4})alkylsulfonyl, halogen, sulfamoyl, (C_{1-4})alkoxycarbonyl and sulfoxy; and ring B is five- to seven-membered heterocyclic ring containing one or two hetero atom(s) of S, O and N as the ring constituent atom, and may be substituted by 1 to 3 substituents, which are the same or different, selected from the group consisting of (1) C_{1-6} alkyl which may be substituted by 1 to 3 substituents, which are the same or different, selected from the group consisting of four- to six-membered heterocyclic group having 1 to 4 hetero atoms selected from N, O and S, cyano, amino, mono- or di(C_{1-4})alkylamino, hydroxy, (C_{1-4})alkyloxy, carbamoyloxy, (C_{1-4})alkylthio, (C_{1-4})alkylsulfonyl, halogen, sulfamoyl, (C_{1-4})alkoxycarbonyl, imino, (C_{1-4})alkylimino, carbamoyl and mono- or di(C_{1-4})alkylcarbamoyl, (2) C_{2-6} alkenyl, (3) C_{6-10} aryl, (4) C_{7-12} aralkyl, (5) C_{3-6} cycloalkyl, (6) four- to six-membered heterocyclic group having 1 to 4 hetero atoms selected from N, O and S, (7) cyano, (8) amino, (9) mono- or di(C_{1-4})alkylamino, (10) hydroxy, (11) (C_{1-4})alkyloxy, (12) carbamoyloxy, (13) (C_{1-4}) alkylthio, (14) (C_{1-4})alkylsulfonyl, (15) halogen, (16) sulfamoyl, (17) (C_{1-4})alkoxycarbonyl, (18) imino, (19) (C_{1-4})alkylimino, (20) carbamoyl and (21) mono- or di(C_{1-4})alkylcarbamoyl, or a pharmaceutically acceptable salt or ester thereof.

5,393,752

METHYLPIPERAZINOAZEPINE COMPOUNDS, PREPARATION AND USE THEREOF

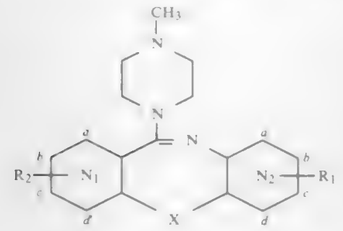
Jean-Francois F. Liegeois, Herstal, and Jacques E. Delarge, Dolembreux, both of Belgium, assignors to Therabel Research S.A./N.V., Brussels, Belgium

Continuation of Ser. No. 888,372, May 26, 1992, abandoned. This application Jun. 14, 1994, Ser. No. 261,237

Int. Cl.[6] C07D *403/04, 413/04, 417/04;* **A61K** *31/55*

U.S. Cl. 514—211 **17 Claims**

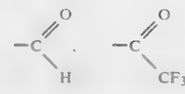
1. A methylpiperazinoazepine compound corresponding to formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein:

X represents an oxygen atom, a sulfur atom, a selenium atom or NH- or NR_3-group wherein R_3 represents a



group or a straight or branched alkyl group of 1 to 4 carbon atoms;

R_1 represents a hydrogen atom, a halogen atom or a straight or branched alkyl group of 1 to 4 carbon atoms;

R_2 represents a hydrogen atom, a halogen atom or a straight or branched alkyl group of 1 to 4 carbon atoms; and

N_1 represents a benzene ring and N_2 a pyridine ring or vice versa, wherein the nitrogen atom of the pyridine ring is in the b, b', d or d' position, and with the proviso that, when R_1 and R_2 represent hydrogen and X represents sulfur, oxygen or an NH-group, N_1 is pyridine and N_2 is benzene and the pyridine nitrogen is excluded from position d', both N_1 and N_2 can be benzene when X represents a selenium atom, and both N_1 and N_2 can be pyridine when X represents a sulfur atom.

5,393,753

SUBSTITUTED IMIDAZOBENZAZEPINES

Richard J. Friary, West Orange, N.J., assignor to Schering Corporation, Kenilworth, N.J.

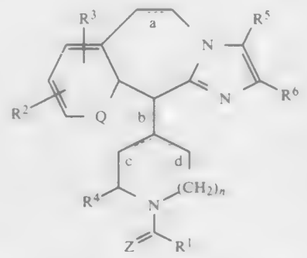
PCT No. PCT/US91/07156, § 371 Date Apr. 6, 1993, § 102(e) Date Apr. 6, 1993, PCT Pub. No. WO92/06981, PCT Pub. Date Apr. 30, 1992

Continuation of Ser. No. 595,331, Oct. 10, 1990, abandoned. This PCT application Oct. 4, 1991, Ser. No. 39,038

Int. Cl.[6] C07D *487/04;* **A61K** *31/55*

U.S. Cl. 514—214 **14 Claims**

1. A compound of the formula



1.0

wherein R^1 is H, C_1–C_7 alkyl, C_3–C_7 cycloalkyl, CF_3, aryl having from 6 to 14 carbon atoms, substituted aryl, heteroaryl having at least one O, S and/or N interrupting a carbocyclic ring structure with the aromatic heterocyclic group having from 2 to 14 carbon atoms, -O-C_1–C_7 alkyl, or -O-C_3–C_7 cycloalkyl; R^2 and R^3 are each independently H, C_1–C_7 alkyl, C_3–C_7 cycloalkyl, CF_3, NO^2, halogen, OR^7, NR^8R^9 or $S(O)_mR^{10}$, wherein m is 0, 1 or 2; R^4 is H, C_1–C_7 alkyl, arylmethyl with the aryl portion having from 6 to 14 carbon atoms, or substituted arylmethyl; R^5 and R^6 are each independently H, C_1–C_7 alkyl, C_3–C_7 cycloalkyl, aryl having from 6 to 14 carbon atoms, substituted aryl, heteroaryl having at least one O, S and/or N interrupting a carbocyclic ring structure with the aromatic heterocyclic group having from 2 to 14 carbon atoms, arylmethyl with the aryl portion having from 6 to 14 carbon atoms, or substituted arylmethyl; R^7, R^8 and R^9 are each independently H, C_1–C_7 alkyl, -C(=O)-(C_1–C_7 alkyl), -C(=O)- aryl having from 6 to 14 carbon atoms, or -(C=O)heteroaryl having at least one O, S and/or N interrupting a carbocyclic ring structure with the aromatic heterocyclic group having from 2 to 14 carbon atoms; R^{10} is C_1–C_7 alkyl, C_3–C_7 cycloalkyl, aryl having

from 6 to 14 carbon atoms, substituted aryl, heteroaryl having at least one O, S and/or N interrupting a carbocyclic ring structure with the aromatic heterocyclic group having from 2 to 14 carbon atoms, substituted heteroaryl, arylmethyl with the aryl portion having from 6 to 14 carbon atoms, or substituted arylmethyl; one and only one of the dotted lines, a, b, c, and d, represents a carbon-carbon bond; n is 0, 1, 2 or 3; Z is O or S, Q is CH or a pharmaceutically acceptable acid addition, salt thereof.

13. A method for treating allergic diseases which comprises administering to a host in need of such treatment an antiallergically effective amount of a compound defined in claim 1.

14. A method for treating inflammation which comprises administering to a host in need of such treatment an effective amount of a compound defined in claim 1.

5,393,754

ORGANOPHOSPHORUS COMPOUNDS, AND INSECTICIDES, ACARICIDES AND NEMATOCIDES CONTAINING SAME

Katsumi Nanjo, Saitama; Akinori Kariya, Tokyo; Shinya Henmi; Hideyo Fujii, both of Saitama, and Syuichi Usui, Tokyo, all of Japan, assignors to Agro-Kanesho Co., Ltd., Tokyo, Japan

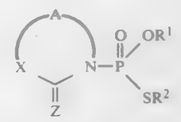
Filed Sep. 9, 1993, Ser. No. 118,305

Claims priority, application Japan, Sep. 16, 1992, 4-246336

Int. Cl.[6] C07D *239/06, 221/00;* **A61K** *31/42, 31/44*

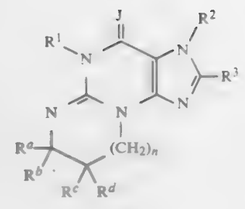
U.S. Cl. 514—227.2 **8 Claims**

1. An organophosphorus compound represented by formula (I):



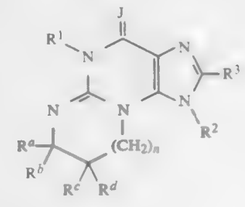
(I)

wherein R^1 and R^2 each represent C_1 to C_4 alkyl; X represents O, S, CH_2, CH—R^3 (wherein R^3 represents C_1 to C_3 alkyl), NH or NR^4 (wherein R^4 represents C_1 to C_4 alkyl, C_1 to C_4 alkyl substituted with at least one group selected from the group consisting of C_1 to C_3 alkoxy and halogen, C_3 to C_5 alkenyl or C_3 to C_5 alkynyl); Z represents C(CN)R^5 (wherein R^5 represents C_1 to C_3 alkylsulfonyl, C_1 to C_3 alkylsulfonyl substituted with halogen, C_1 to C_3 alkylcarbonyl, C_1 to C_3 alkylcarbonyl substituted with halogen, C_1 to C_4 alkoxycarbonyl substituted with halogen, C_3 to C_5 alkenyloxycarbonyl, C_3 to C_5 alkynyloxycarbonyl, C_1 to C_4 alkylthiocarbonyl, C_1 to C_3 monoalkylaminocarbonyl or C_1 to C_3 dialkylaminocarbonyl); and A represents ethylene, ethylene substituted with C_1 to C_3 alkyl, trimethylene, or trimethylene substituted with C_1 to C_3 alkyl.



(I)

or



(I')

wherein

J is oxygen or sulfur,

R^1 is hydrogen, alkyl or alkyl substituted with aryl or hydroxy;

R^2 is hydrogen, aryl, heteroaryl, cycloalkyl, alkyl or alkyl substituted with aryl, heteroaryl, hydroxy, alkoxy, amino, monoalkyl amino or dialkylamino, or —$(CH_2)_mTCOR^{20}$ wherein m is an integer from 1 to 6, T is oxygen or —NH— and R^{20} is hydrogen, aryl, heteroaryl, alkyl or alkyl substituted with aryl or heteroaryl;

R^3 is hydrogen, halo, trifluoromethyl, alkoxy, alkylthio, alkyl, cycloalkyl, aryl, aminosulfonyl, amino, monoalkylamino, dialkylamino, hydroxyalkylamino, aminoalkylamino, carboxy, alkoxycarbonyl or aminocarbonyl or alkyl substituted with aryl, hydroxy, alkoxy, amino, monoalkylamino or dialkylamino;

R^a, R^b, R^c and R^d independently represent hydrogen, alkyl, cycloalkyl or aryl; or (R^a and R^b) or (R^c and R^d) or (R^b and R^c) can complete a saturated ring of 5- to 7-carbon atoms, or (R^a and R^b) taken together and (R^b and R^c) taken together, each complete a saturated ring of 5- to 7-carbon atoms, wherein each ring optionally can contain a sulfur or oxygen atom and whose carbon atoms may be optionally substituted with one or more or the following: alkenyl, alkynyl, hydroxy, carboxy, alkoxycarbonyl, alkyl or alkyl substituted with hydroxy, carboxy or alkoxycarbonyl; or such saturated ring can have two adjacent carbon atoms which are shared with an adjoining aryl ring; and

n is zero or one.

5,393,755

POLYCYCLIC GUANINE DERIVATIVES

Bernard R. Neustadt, West Orange; Neil A. Lindo, New Providence, and Brian A. Mc Kittrick, Bloomfield, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US91/04154, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO91/19717, PCT Pub. Date Dec. 26, 1991

Continuation-in-part of Ser. No. 541,568, Jun. 21, 1990, abandoned. This PCT application Jun. 20, 1991, Ser. No. 949,811

Int. Cl.[6] A61K *31/52;* **C07D** *487/14*

U.S. Cl. 514—233.2 **13 Claims**

1. A compound of the formula:

5,393,756

5H-[1,2]BENZISOTHIAZOLO[2,3-A]QUINOLINE-5-ONES AND ANALOGS AS ANTIINFLAMMATORY AGENTS

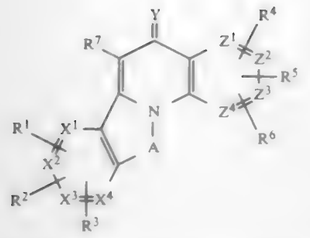
William H. Miller, Glen Mills, Pa., assignor to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Division of Ser. No. 808,712, Dec. 17, 1991, Pat. No. 5,225,418. This application Apr. 22, 1993, Ser. No. 51,611

Int. Cl.[6] A61K *31/44, 31/495;* **C07D** *241/36, 513/14*

U.S. Cl. 514—250 **16 Claims**

1. A compound of Formula I:



I

or a pharmaceutically acceptable salt or prodrug form thereof, wherein:

X^1, X^2, X^3, and X^4 are independently CH or N, provided that 0–1 of X are N with the remaining X groups being CH;

Z^1, Z^2, Z^3, and Z^4 are independently CH or N, provided that 0–1 of Z are N with the remaining Z groups being CH or Z^1 and Z^4 are N and Z^2 and Z^3 are CH;

provided that X^1, X^2, X^3, X^4, Z^1, Z^2, Z^3, and Z^4 are not all CH;

Y is O or S;

A is S or Se;

R^1, R^2, R^3, R^4, R^5, and R^6 are independently selected from the following groups:

hydrogen;

C_1–C_8 alkyl substituted with 0–3 R^{20};

C_2–C_8 alkenyl substituted with 0–3 R^{20};

C_2–C_8 alkynyl substituted with 0–3 R^{20};

C_3–C_8 cycloalkyl substituted with 0–3 R^{20};

C_6–C_{10} bicycloalkyl substituted with 0–3 R^{20};

aryl substituted with 0–3 R^{21};

a C_6–C_{14} carbocyclic residue substituted with 0–3 R^{21};

F; Cl; Br; I; NO_2;

OR^{12}; $OC(=O)R^{12}$; $OC(=O)OR^{12}$; $OC(=O)ON(R^{12})_2$; $N(R^{12})_2$; $NR^{12}C(=O)R^{12}$; $NR^{12}C(O=O)OR^{12}$; $NR^{12}SO_2R^{12}$; $NR^{12}C(=O)N(R^{12})_2$;

SO_3H; SR^{12}; $S(O)R^{12}$; SO_2r^{12}; $SO_2N(R^{12})_2$;

$C(=O)R^{12}$; CO_2R^{12}; $C(=O)N(R^{12})_2$; $CSN(R^{12})_2$; $C(=O)NR^{12}OR^{12}$; and CN;

R^7 is selected from the group consisting of:

hydrogen;

C_1–C_8 alkyl substituted with 0–3 R^{20};

C_2–C_8 alkenyl substituted with 0–3 R^{20};

C_2–C_8 alkynyl substituted with 0–3 R^{20};

C_3–C_8 cycloalkyl substituted with 0–3 R^{20};

C_6–C_{10} bicycloalkyl substituted with 0–3 R^{20};

aryl substituted with 0–3 R^{21};

a C_6–C_{14} carbocyclic residue substituted with 0–3 R^{21};

F; Cl; Br; I; NO_2;

OR^{12}; $OC(=O)R^{12}$; $OC(=O)OR^{12}$; $OC(=O)ON(R^{12})_2$; $N(R^{12})_2$; $NR^{12}C(=O)R^{12}$; $NR^{12}C(=O)OR^{12}$; $NR^{12}SO_2R^{12}$; $NR^{12}C(=O)N(R^{12})_2$;

SO_3H; SR^{12}; $S(O)R^{12}$; SO_2R^{12}; $SO_2N(R^{12})_2$;

$C(=O)R^{12}$; CO_2R^{12}; $C(=O)N(R^{12})_2$; $CSN(R^{12})_2$; $C(=O)NR^{12}OR^{12}$; and CN;

R^{12} is independently selected at each occurence from the group consisting of:

hydrogen;

C_1–C_8 alkyl substituted with 0–3 R^{20};

C_2–C_8 alkenyl substituted with 0–3 R^{20};

C_2–C_8 alkynyl substituted with 0–3 R^{20};

C_3–C_8 cycloalkyl substituted with 0–3 R^{20};

C_6–C_{10} bicycloalkyl substituted with 0–3 R^{20};

aryl substituted with 0–3 R^{21};

a C_6–C_{14} carbocyclic residue substituted with 0–3 R^{21};

R^{20} is independently selected at each occurence from the group consisting of:

C_1–C_5 alkyl; C_2–C_4 alkenyl; C_3–C_{10} cycloalkyl; C_3–C_6 cycloalkylmethyl; C_2–C_6 alkoxyalkyl; $—C(=O)NR^{23}R^{24}$; $—C(=O)NR^{23}OR^{23}$; CN; $—C(=NH)NHR^{23}$; $—CO_2R^{23}$; $—C(=O)R^{23}$; $—CSN(R^{23})_2$;

$—OC(=O)R^{23}$; $—OC(=O)OR^{23}$; $—OR^{23}$; $—OC(=O)NR^{23}R^{24}$; $—NR^{23}R^{24}$; $—NHC(=NH)NHR^{23}$; $—NR^{24}C(=O)R^{23}$; $=NOR^{24}$; $—NR^{24}C(=O)OR^{24}$; $—NR^{23}C(=O)NR^{23}R^{24}$; $—NR^{24}SO_2NR^{23}R^{24}$; $—NR^{24}SO_2R^{23}$;

SO_3H; SR^{23}; $—S(=O)R^{23}$; $—SO_2R^{23}$; $—SO_2NR^{23}R^{24}$ keto; F; Cl; Br; I; NO_2;

a C_5–C_{14} carbocyclic residue substituted with 0–3 R^{23};

aryl substituted with 0–3 R^{21};

R^{21}, when a substituent on carbon, is independently selected at each occurence from the group consisting of:

phenyl, benzyl, phenethyl, phenoxy, benzyloxy, halogen, hydroxy, nitro, cyano, C_1–C_5 alkyl, C_3–C_{10} cycloalkyl, C_3–C_6 cycloalkylmethyl, C_7–C_{10} arylalkyl, C_1–C_4 alkoxy, $—NR^{23}R^{24}$, C_2–C_6 alkoxyalkyl, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, $—SO_2R^{23}$, $—S(=O)R^{23}$, $—SO_2NR^{23}R^{24}$, SO_3H, CF_3, OR^{23}, CHO, CH_2OR^{23}, CO_2R^{23}, $C(=O)R^{23}$, $—NHSO_2R^{24}$, $—OCH_2CO_2H$ or

R^{21} may be a 3- or 4-carbon chain attached to adjacent carbons on the ring to form a fused 5- or 6-membered ring, said 5- or 6-membered ring being optionally substituted on the aliphatic carbons with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, or $—NR^{23}R^{24}$; or, when R^{21} is attached to a saturated carbon atom, it may be carbonyl or thiocarbonyl;

R^{21}, when a substituent on nitrogen, is selected from one or more of the following:

phenyl, benzyl, phenethyl, hydroxy, C_1–C_4 hydroxyalkyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, $—NR^{23}R^{24}$, C_2–C_6 alkoxyalkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl;

R^{23} is H, phenyl, benzyl or C_1–C_6 alkyl;

R^{24} is H, phenyl, benzyl or C_1–C_6 alkyl;

R^{23} and R^{24} can alternatively join to form $—(CH_2)_4—$, $—(CH_2)_5—$, $—CH_2CH_2N(R^{25})CH_2CH_2—$;

R^{25} is H or CH_3.

5,393,757

POLYAMINES AND ANTI-DIARRHEAL AND GASTROINTESTINAL ANTI-SPASMODIC PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT

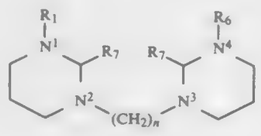
Raymond J. Bergeron, Jr., and Charles A. Sninsky, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 870,441, Oct. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 210,520, Jun. 23, 1988, Pat. No. 5,091,576, which is a continuation-in-part of Ser. No. 66,227, Jun. 25, 1987, abandoned, which is a continuation-in-part of Ser. No. 936,835, Dec. 2, 1986, abandoned. This application May 17, 1993, Ser. No. 61,707

Int. Cl.[6] A61K *31/505;* **C07D** *403/08*

U.S. Cl. 514—256 **8 Claims**

1. An anti-diarrheal or gastrointestinal anti-spasmodic pharmaceutical composition comprising an effective amount of a compound having the formula:



(III)

wherein:

R_1 and R_6 may be the same or different and are H, alkyl or aralkyl having from 1 to 12 carbon atoms;

R_7 is H, alkyl, aryl or aralkyl having from 1 to 12 carbon atoms;

n is an integer from 3 to 6, inclusive; or

(IV) a salt thereof with a pharmaceutically acceptable acid; and a pharmaceutically acceptable carrier therefor.

5,393,758

SUBSTITUTED AZETIDINYLPYRIDONE NAPHTHYRIDINE CARBOXYLIC ACID DERIVATIVES AND THEIR APPLICATION AS MEDICAL PRODUCTS

Augusto C. Pinol; Jordi F. Constansa, and Juan P. Corominas, all of Barcelona, Spain, assignors to Laboratorios Del Dr. Esteve S.A., Barcelona, Spain

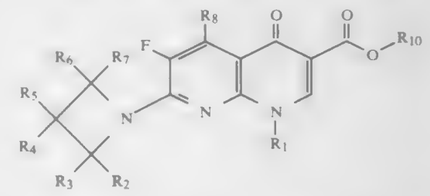
Continuation of Ser. No. 855,215, Mar. 20, 1992, abandoned, which is a division of Ser. No. 762,035, Sep. 11, 1991, abandoned, which is a continuation of Ser. No. 494,222, Mar. 15, 1990, abandoned. This application Feb. 3, 1994, Ser. No. 191,153

Claims priority, application France, Jan. 29, 1989, 89 08695; Mar. 16, 1989, 89 03459; Nov. 20, 1989, 89 15178

Int. Cl.[6] A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—300 **7 Claims**

1. The compounds which correspond to the formula I



in which R_1 represents a lower alkyl radical, a lower haloalkyl radical, an aryl radical or an aryl radical substituted with one or more fluorine atoms(s);

R_4 represents an amino radical;

R_3, R_6 and R_7 each represent a hydrogen atom;

R_2 and R_5 represent a hydrogen atom or a lower alkyl radical, provided that one of R_2 and R_5 represent a hydrogen atom and the other represents a lower alkyl radical;

R_8 represents a hydrogen atom, a nitro radical or an amino radical; and

R_{10} represents a hydrogen atom or a C_1 to C_4 lower alkyl radical;

wherein the azetidine substituents can have, depending on the number, nature and relative position of the substituents, up to three chiral centers, each of them with an "R" or "S" configuration; as well as their physiologically acceptable salts with inorganic acids, or with organic acids.

5,393,759

ISOCHROMANE DERIVATIVES

Michel Combourieu, Cebazat; Jean-Claude Laigle, and Nadine Simbille, both of Riom, all of France, assignors to Akzo N.V., Arnhem, Netherlands

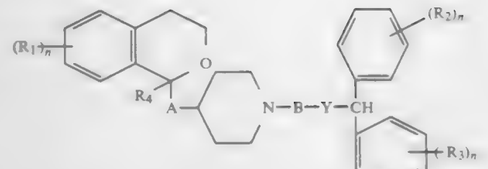
Division of Ser. No. 887,578, May 19, 1992, Pat. No. 5,238,939, which is a continuation of Ser. No. 703,974, May 22, 1991, abandoned. This application May 13, 1993, Ser. No. 61,142

Claims priority, application European Pat. Off., May 25, 1990, 90401407

Int. Cl.[6] A61K *31/445;* **C07D** *405/06*

U.S. Cl. 514—320 **6 Claims**

1. An isochromane compound of the formula



in which n=1–4 and R_1 is one to four substituents independently selected from the group consisting of hydrogen, hydroxy, alkyl (1–4 C), alkoxy (1–4 C), halogen, CF_3, and, when R_1 comprises two adjacent substituents, a methylenedioxy group;

R_2 is one to four substituents independently selected from the group consisting of hydrogen, hydroxy, alkyl (1–4 C), alkoxy (1–4 C), halogen, CF_3, and, when R_2 comprises two adjacent substituents, a methylenedioxy group;

R_3 is one to four substituents independently selected from the group consisting of hydrogen, hydroxy, alkyl (1–4 C), alkoxy (1–4 C), halogen, CF_3, and, when R_3 comprises two adjacent substituents, a methylenedioxy group;

R_4 is selected from hydrogen or alkyl (1–4 C);

A is a bond or an alkylene or alkylidene group with 1–6 carbon atoms;

Y is selected from the group consisting of a bond, O, S, and NR_5;

B is an alkylene or alkylidene group with 1–6 carbon atoms when Y is a bond, or B is an alkylene group with 2–6 carbon atoms when Y is selected from the group consisting of O, S, and NR_5; and

R_5 is selected from hydrogen or alkyl (1–4 C); or a pharmaceutically acceptable salt thereof.

5,393,760

GUANIDINE DERIVATIVES

Jean Ackermann; David Banner, both of Basel, Switzerland; Klaus Gubernator, Freiburg, Germany; Paul Hadvary, Biel-Benken, Switzerland; Kurt Hilpert, Hofstetten, Switzerland; Klaus Müller, Münchenstein, Switzerland; Ludvik Labler, Bottmingen, Switzerland; Gérard Schmid, Kienberg, Switzerland; Thomas B. Tschopp, Ettingen, Switzerland; Hans P. Wessel, Heitersheim, Germany, and Beat Wirz, Reinach, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 719,429, Jun. 24, 1991, Pat. No. 5,260,307. This application Jun. 15, 1993, Ser. No. 77,476

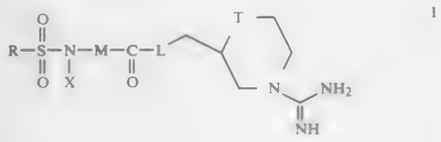
Claims priority, application Switzerland, Jul. 5, 1990, 2250/90; May 2, 1991, 1315/91

The portion of the term of this patent subsequent to Nov. 9, 2011, has been disclaimed.

Int. Cl.[6] A61K *31/445;* **C07D** *211/22, 211/26, 401/12*

U.S. Cl. 514—323 **50 Claims**

1. A compound of the formula



I

wherein

R is aryl, heteroraryl or heterocyclyl,

T is CH_2;

L is NH or O; and $—N(X)—M—$ is a $—N(SO_2—R^o)—CH_2—$ group, wherein

R^o has the same significance as R, or, individually,

X is H, —CH_2COOH, —CH_2COO—C_{1-4}-alkyl, —CH_2CO— (tetra- to heptamethyleneimino) or optionally N-mono- or N-di-C_{1-4}-alkylated —CH_2CONH_2;
M is a R′—$(CH_2)_{1-2}CH$=, R′—$COCH_2CH$=, R″—$COCH_2CH$=, R′—$(CO)_{1-2}NHCH_2CH$= or benzyl-$OCONHCH_2CH$= group,
R′ is aryl, heteroaryl, cycloalkyl or heterocyclyl, and
R″ is tetra- to heptamethyleneimino optionally carrying up to 2 substituents from the group oxo, —COO—C_{1-4}-alkyl, —$(CH_2)_{0-1}OH$, —$(CH_2)_{0-1}OCO$—C_{1-4}-alkyl and optionally mono- or di-C_{1-4}-alkylated carbamoyl,
a hydrate or solvate, or physiologically usable salt thereof.

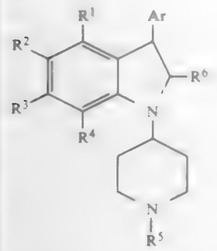
5,393,761

3-ARYLINDOLE COMPOUNDS

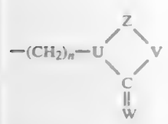
Jens K. Perregaard, Jaegerspris, and Kim Andersen, Copenhagen-V., both of Denmark, assignors to H. Lundbeck A/S, Copenhagen-Valby, Denmark

Continuation of Ser. No. 734,299, Jul. 18, 1991, abandoned. This application Oct. 4, 1993, Ser. No. 131,438
Claims priority, application Denmark, Jul. 30, 1990, 1811/90
Int. Cl.[6] A61K *31/445;* C07D *401/04, 403/04*
U.S. Cl. 514—323 **10 Claims**

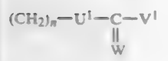
1. A 3-arylindole compound selected from those having the formula:



wherein Ar is phenyl optionally substituted with one or more substituents from halogen, lower alkyl, lower alkoxy, hydroxy, trifluoromethyl, and cyano;
R^1-R^4 are independently selected from hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, nitro, lower alkylthio, lower alkylsulphonyl, lower alkyl- or dialkyl amino, cyano, trifluoromethyl, and trifluoromethylthio;
the dotted lines designate optional double bonds;
R^6 is hydrogen, halogen, trifluoromethyl or lower alkyl;
R^5 is hydrogen, or cycloalkyl wherein the cycloalkyl is C_{3-8}, cycloalkylalkyl wherein the cycloalkyl is C_{3-8} and the alkyl is C_{1-4}, lower alkyl or lower alkenyl, optionally substituted with one or two hydroxy groups, or R^5 is a group taken from structures 1a and 1b:



1a



1b

wherein n is an integer of 2–6, inclusive;
W is oxygen or sulfur;
U is nitrogen or CH;
Z is —$(CH_2)_m$—, m being 2 or 3, or Z is 1,2-phenylene optionally substituted with halogen or trifluoromethyl, or Z is —CH=CH—, —$COCH_2$—, or —$CSCH_2$—;
V is oxygen, sulphur, CH_2, or NR^7, wherein R^7 is hydrogen or lower alkyl or lower alkenyl, cycloalkyl wherein the cycloalkyl is C_{3-8} or cycloalkylalkyl wherein the cycloalkyl is C_{3-8} and the alkyl is C_{1-4}, optionally substituted with one or two hydroxy groups;
U^1 is oxygen, sulphur, CH_2, or a group NR^8, wherein R^8 is hydrogen or lower alkyl or lower alkenyl, cycloalkyl wherein the cycloalkyl is C_{3-8} or cycloalkylalkyl wherein the cycloalkyl is C_{3-8} and the alkyl is C_{1-4}, optionally substituted with one or two hydroxy groups; and
V^1 is NR^9R^{10}, OR^{11}, SR^{12}, or $CR^{13}R^{14}R^{15}$, wherein each of R^9-R^{15} is independently selected from among the R^8 substituents;
provided that R^5 may not be methyl when R^1-R^4 each are hydrogen, and Ar is phenyl;
or a pharmaceutically acceptable acid addition salts or a prodrugs thereof.

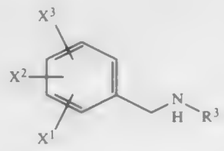
5,393,762

PHARMACEUTICAL AGENTS FOR TREATMENT OF EMESIS

Manoj C. Desai, Mystic; John A. Lowe, III, Stonington, and John W. Watson, Ledyard, all of Conn., assignors to Pfizer Inc., New York, N.Y.

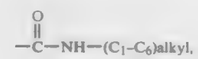
Filed Jun. 4, 1993, Ser. No. 72,629
Int. Cl.[6] A61K *31/445, 31/44, 31/38, 31/535*
U.S. Cl. 514—331 **3 Claims**

1. A method of treating or preventing emesis in a mammal, comprising administering to said mammal an amount of a compound of the formula

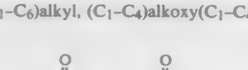


Id

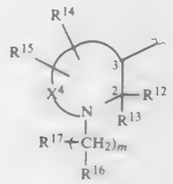
wherein X^1 is hydrogen, (C_1–C_{10})alkoxy optionally substituted with from one to three fluorine atoms or (C_1–C_{10}) alkyl optionally substituted with from one to three fluorine atoms;
X^2 and X^3 are independently selected from hydrogen, halo, nitro, (C_1–C_{10})alkyl optionally substituted with from one to three fluorine atoms, (C_1–C_{10})alkoxy optionally substituted with from one to three fluorine atoms, trifluoromethyl hydroxy, phenyl, cyano, amino, (C_1–C_6)-alkylamino, di-(C_1–C_6)alkylamino,



hydroxy(C_1–C_6)alkyl, (C_1–C_4)alkoxy(C_1–C_4)alkyl,

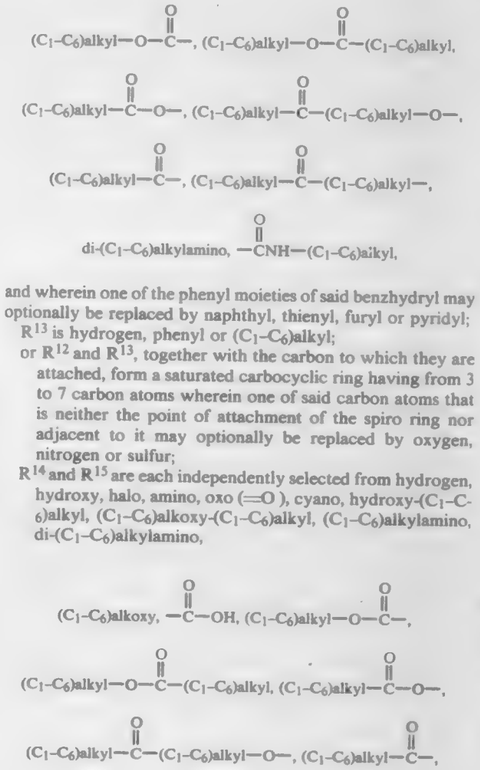


and R^3 is a group of the formula



VII

wherein X^4 is $(CH_2)_q$ wherein q is an integer from 2 to 4;
m is O;
R^{16} is hydrogen;
R^{17} is absent;
R^{12} is a radical selected from hydrogen, (C_1–C_6) straight or branched alkyl, (C_3–C_7)cycloalkyl wherein one of the carbon atoms may optionally be replaced by nitrogen, oxygen or sulfur; aryl selected from biphenyl, phenyl, indanyl and naphthyl; heteroaryl selected from thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl and quinolyl; phenyl-(C_2–C_6)alkyl, benzhydryl and benzyl, wherein the point of attachment on R^{12} is a carbon atom unless R^{12} is hydrogen, and wherein each of said aryl and heteroaryl groups and the phenyl moieties of said benzyl, phenyl-(C_2–C_6)alkyl and benzhydryl may optionally be substituted with one or more substituents independently selected from halo, nitro, (C_1–C_{10})alkyl optionally substituted with from one to three fluorine atoms, (C_1–C_{10})alkoxy optionally substituted with from one to three fluorine atoms, amino, hydroxy-(C_1–C_6)alkyl, (C_1–C_6)alkoxy-(C_1–C_6)alkyl, (C_1–C_6)-alkylamino,



and wherein one of the phenyl moieties of said benzhydryl may optionally be replaced by naphthyl, thienyl, furyl or pyridyl;
R^{13} is hydrogen, phenyl or (C_1–C_6)alkyl;
or R^{12} and R^{13}, together with the carbon to which they are attached, form a saturated carbocyclic ring having from 3 to 7 carbon atoms wherein one of said carbon atoms that is neither the point of attachment of the spiro ring nor adjacent to it may optionally be replaced by oxygen, nitrogen or sulfur;
R^{14} and R^{15} are each independently selected from hydrogen, hydroxy, halo, amino, oxo (=O), cyano, hydroxy-(C_1–C_6)alkyl, (C_1–C_6)alkoxy-(C_1–C_6)alkyl, (C_1–C_6)alkylamino, di-(C_1–C_6)alkylamino,

-continued

and the radicals set forth in the definition of R^{12};
with the proviso that (a) when R^{14} and R^{15} are attached to the same carbon atom, then either each of R^{14} and $R^{15}$is independently selected from hydrogen, fluoro, (C_1–C_6)alkyl, hydroxy-(C_1–C_6)alkyl and (C_1–C_6)alkoxy-(C_1–C_6)alkyl, or R^{14} and R^{15}, together with the carbon to which they are attached, form a (C_3–C_6) saturated carbocyclic ring that forms a spiro compound with the nitrogen-containing ring to which they are attached; (b) R^{12} and R^{13} cannot both be hydrogen; (c) when R^{14} or R^{15} is attached to a carbon atom of X^4 that is adjacent to the ring nitrogen, then R^{14} or R^{15}, respectively, must be a substituent wherein the point of attachment is a carbon atom; and (d) neither R^{14} , R^{15} can form a ring with R^{13};
or a pharmaceutically acceptable salt thereof, effective in treating or preventing such condition.

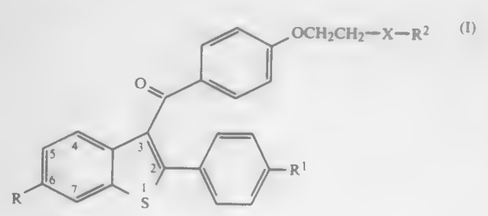
5,393,763

METHODS FOR INHIBITING BONE LOSS

Larry J. Black, Indianapolis, and George J. Cullinan, Trafalgar, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 920,933, Jul. 28, 1992, abandoned. This application Jan. 12, 1994, Ser. No. 180,522
Int. Cl.[6] A61K *31/44, 31/40, 37/06*
U.S. Cl. 514—333 **35 Claims**

1. A method of inhibiting bone loss comprising administering to a human in need of treatment an amount of a compound of Formula I



(I)

wherein
X is a bond, CH_2, or CH_2CH_2;
R and R^1, independently, are hydrogen, hydroxyl, C_1–C_6-alkoxy, C_1–C_6-acyloxy, C_1–C_6-alkoxy-C_2–C_6-acyloxy, R^3-substituted aryloxy, R^3-substituted aroyloxy, R^4-substituted carbonyloxy, chloro, or bromo;
R^2 is a heterocyclic ring selected from the group consisting of pyrrolidino, piperidino, or hexamethyleneimino;
R^3 is C_1–C_3-alkyl, C_1–C_3-alkoxy, hydrogen, or halo; and
R^4 is C_1–C_6-alkoxy or aryloxy; or a pharmaceutically acceptable salt thereof, that is effective to inhibit bone loss in a human.

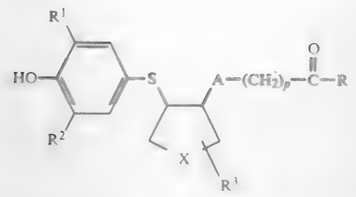
5,393,764

CYCLIC PHENOLIC THIOETHERS

Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

PCT No. PCT/US92/03569, § 371 Date Aug. 25, 1993, § 102(e) Date Aug. 25, 1993, PCT Pub. No. WO92/19608, PCT Pub. Date Nov. 12, 1992
PCT Filed May 5, 1992, Ser. No. 107,821
Int. Cl.[6] A61K *31/34;* C07D *307/20*
U.S. Cl. 514—357 **29 Claims**

1. A compound of the formula:



wherein R^1 and R^2 are the same or different and independently represent tert-alkyl or phenyl; R^3 represents hydrogen or alkyl; X represents $—(CH_2)_w—B—(CH_2)_y—$ wherein B represents CH_2 and w and y can each independently be an integer from 0 to 3 with the proviso that the sum of w+y is equal to or less than 3; A represents O or $S(O)_n$ wherein n is 0, 1, or 2; p is an integer from 0 to 4; and R represents:

(a) alkyl; or

(b) NR^5R^6 wherein R^5 is hydrogen or alkyl, and R^6 is hydrogen, alkyl, heterocycloalkyl, substituted heterocycloalkyl, cycloalkyl, substituted cycloalkyl, phenyl, substituted phenyl, phenylalkyl, or substituted phenylalkyl, or NR^5R^6 together form a heterocyclic ring which may optionally be substituted; or a pharmaceutically acceptable salt thereof.

5,393,765

PHARMACEUTICAL COMPOSITIONS WITH CONSTANT EROSION VOLUME FOR ZERO ORDER CONTROLLED RELEASE

Martin H. Infeld, Upper Montclair; A. Waseem Malick, Edison; Navnit H. Shah, Clifton, and Wantanee Phuapradit, Kearny, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 13, 1993, Ser. No. 166,123

Int. Cl.[6] A61K *31/425, 47/00, 9/20*

U.S. Cl. 514—365 **11 Claims**

1. An erodible pharmaceutical composition, shaped and compressed to a solid unit dosage form, which provides a zero order controlled release of a therapeutically active substance, the erodible composition comprising between about 5% to about 60% w/w of a therapeutically active substance which has a solubility of less than 80 mg/mL and at least about 5% up to about 50% w/w of hydroxypropyl methylcellulose having a viscosity from about 50 to about 100 centipoises and the remainder of the erodible composition consisting of inert carriers.

5,393,766

PESTICIDAL COMPOSITIONS

Adolf Hubele, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

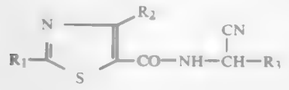
Division of Ser. No. 853,887, Mar. 18, 1992, which is a continuation of Ser. No. 628,772, Dec. 17, 1990. This application Jan. 25, 1993, Ser. No. 8,030

Claims priority, application Switzerland, Dec. 21, 1989, 4580/89; Oct. 26, 1990, 3425/90

Int. Cl.[6] C07D *417/12;* **A01N** *43/78*

U.S. Cl. 514—365 **13 Claims**

1. Thiazolyl-5-carbonamide derivatives of formula I and acid addition salts and metal salt complexes thereof



(I)

wherein

R_3 is 2-furanyl, 2-thienyl, 3-furanyl or 3-thienyl; and wherein

R_1 and R_2 each independently of the other have the following meanings:

a) C_3–C_6cycloalkyl that is unsubstituted or substituted by methyl or methylthio,

b) the group $—CH_2—X—R_4$, and

c) one of the two substituents R_1 and R_2 may also be hydrogen or C_1–C_4alkyl, wherein X is oxygen or sulfur, and

R_4 is C_1–C_4alkyl that may be unsubstituted or substituted by halogen or, in the case of C_2–C_4alkyl, also by C_1–C_3alkoxy, or wherein R_4 is C_3–C_4alkenyl, C_3–C_4alkynyl or a phenyl group or benzyl group of which the aromatic ring is unsubstituted or may be substituted by halogen, C_1–C_2alkyl, C_1–C_2alkoxy, CF_3 or by NO_2.

5,393,767

INSECT CONTROL WITH SUBSTITUTED TRIAZOLE AND TETRAZOLE COMPOUNDS

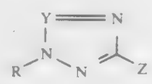
Michael R. Dick, Carmel, Ind., assignor to DowElanco, Indianapolis, Ind.

Filed Aug. 26, 1993, Ser. No. 112,498

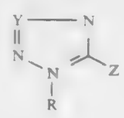
Int. Cl.[6] A01N *43/40, 43/42, 43/64, 43/90*

U.S. Cl. 514—381 **11 Claims**

1. A method of killing or controlling insects or arachnids which comprises contacting said insects or arachnids or the locus thereof with an insecticidal or arachnicidal amount of a compound of Formula I or Formula II:



I



II

wherein

Y represents CH or N;

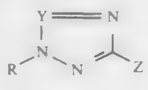
Z represents H, F, Cl, Br, CN, CO_2R^1, $CONH_2$, $CONHR^1$, $CONR^1R^1$, OR^1, SR^1, NH_2, NHR^1, NR^1R^1, $NHOR^1$, cyclopropyl, $CH=CH_2$, $C\equiv CR^2$, or C_1–C_2 alkyl optionally monosubstituted with F, OH, OR^1, SR^1, NH_2, NHR^1, NR^1R^1, CO_2R^1, $CONH_2$, $CONHR^1$, or $CONR^1R^1$;

R^1 is C_1–C_2 alkyl, $CH_2—C\equiv CH$, $CH_2—CH=CH_2$, benzyl, or cyclopropylmethyl;

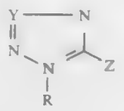
R^2 is H or SiR^3;

R^3 is C_1–C_4 alkyl;

R is an aliphatic nitrogen containing heterocyclic moiety selected from groups R_a through R_k where R_a through R_k are as follows:



I



II

wherein

R^4 represents H or C_1–C_2 alkyl;

R^5 represents F, Cl, Br, OH, CO_2R^1, C_1–C_4 alkyl, or C_1–C_4 alkoxy;

n represents the integer 0, 1, or 2; or an agriculturally acceptable acid addition salt thereof; or otherwise causing an insecticidal or arachnicidal amount of said compound to be present within said insects or arachnids.

5,393,768

LEUKOTRIENE ANTAGONISTS

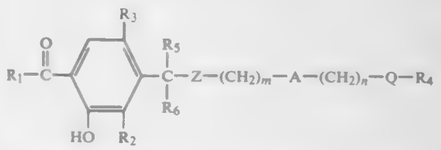
Robert D. Dillard, Zionsville, Ind., assignor to Eli Lilly and Company, Indianpolis, Ind.

Continuation of Ser. No. 761,136, Sep. 17, 1991, abandoned, which is a division of Ser. No. 514,428, Jul. 18, 1983, Pat. No. 5,105,017. This application Jul. 16, 1993, Ser. No. 93,253

Int. Cl.[6] C07D *403/02, 413/02, 257/06;* **A61K** *31/41, 31/47, 31/535, 31/495*

U.S. Cl. 514—381 **18 Claims**

1. A compound of the formula I



(I)

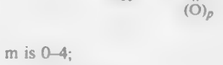
or a pharmaceutically acceptable salt thereof, wherein:

R_1 is hydrogen, C_1–C_6 alkyl, C_3–C_8 cycloalkyl, phenyl-substituted-(C_1–C_3 alkyl), phenyl, or phenyl substituted with halo, C_1–C_4 alkyl, or C_1–C_4 alkoxy;

R_2 is C_1–C_{10} alkyl, C_2–C_6 alkenyl, benzyl, or 2-phenylethyl;

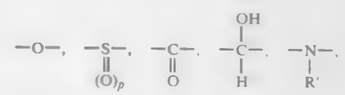
R_3 is hydrogen, bromo, or chloro;

Z is



m is 0–4;

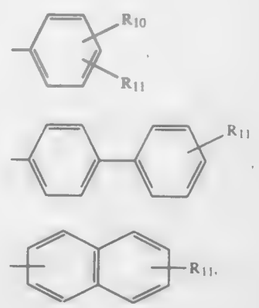
A is a bond,



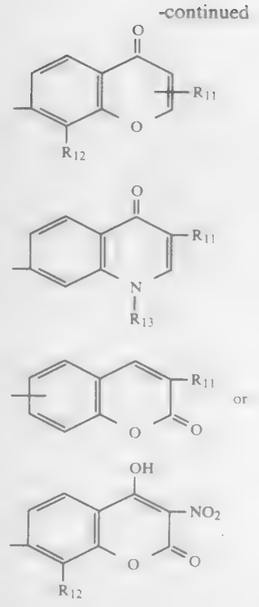
Q is a bond,



and R_4 is



-continued



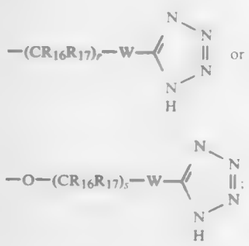
where each of R, R′, and R″ is independently hydrogen or C_1–C_3 alkyl;

each of R_5 and R_6 is independently hydrogen, C_1–C_3; alkyl, phenyl, or benzyl;

R_9 is hydroxy, C_1–C_4 alkoxy, —NHOH, or $—NR_{14}R_{15}$;

R_{10} is hydrogen, hydroxy, C_1–C_4 alkoxy, halo, C_1–C_4 alkyl, amino, mono-or di-(C_1–C_3 alkyl) amino, or (C_1–C_3 alkyl)-CONH—;

R_{11} is



R_{12} is hydrogen or C_1–C_3 alkyl;

R_{13} is hydrogen or methyl;

each of R_{14} and R_{15} is independently hydrogen, C_1–C_3 alkyl, or when taken together with the nitrogen/atom form a morpholine or N-methyl piperazine ring;

R is 0–4;

s is 1–4;

W is a bond, —O—, —NR‴—, or



R‴ is hydrogen or C_1–C_3 alkyl; and

p is 0, 1, or 2;

provided that

(a) when R_4 is —COR_9, hydroxy, $—NR_{11}R_{12}$, or



Q may only be a bond and n may not be 0.
(b) when A is —O—,



—NR'—, or —CHOH—, and Z is —O—,



—NR—, m may not be 0;
(c) when A is —O—,



—NR'—, OR —CHOH—, and Q is —O—,



or —NR''—, n may not be 0;
(d) when Z is —O—,



or —NR—, Q is —O—,



or —NR''—, and A is a bond, m and n may not both be 0; and
(e) if A is



(1) when Z is



m may not be 0,
(2) when Q is



n may not be 0; and
(3) when Z is —O— or —NR— and Q is —O— or —NR''—, m and n may not both be 0.

5,393,769

ANTI-FUNGAL TRIAZOLE DERIVATIVES

Sadao Oida; Takeo Miyaoka; Yawara Tajima; Toshiyuki Konosu; Noriko Takeda, and Hiroshi Yasuda, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 749,562, Aug. 26, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,827
Claims priority, application Japan, Aug. 28, 1990, 2-225762
Int. Cl.[6] A61K *31/41;* **C07D** *249/08*
U.S. Cl. 514—383 **7 Claims**

1. A compound selected from the group consisting of 3-(cyanomethylsulfonyl)-2-(2,4-difluorophenyl)-1-(1H-1,2,4-triazol-1-yl)-2-butanol and pharmaceutically acceptable salts thereof.

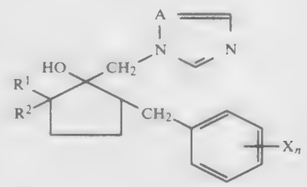
5,393,770

FUNGICIDAL COMPOSITIONS

Basil T. Grayson, Canterbury, England, assignor to Shell Research Limited, London, United Kingdom

Continuation of Ser. No. 922,431, Jul. 30, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 121,401
Claims priority, application United Kingdom, Jul. 31, 1991, 9116557
Int. Cl.[6] A01N *43/50, 43/64*
U.S. Cl. 514—383 **7 Claims**

1. A fungicidal composition which comprises a compound of formula (I)



(I)

or the acid addition salts thereof, wherein R^1 and R^2 each independently represents a C_{1-5} alkyl group or a hydrogen atom; X represents a halogen atom, a C_{1-5} alkyl group or a phenyl group; n is an integer of 0, 1 or 2; and A represents a nitrogen, atom or CH; and an alkoxylate of an aliphatic alcohol said alkoxylate being an ethoxylate or a mixed ethoxylate/-propoxylate comprised of 5 to 25 alkoxy moieties wherein the enhanced weight ratio of the alkoxylate to the compound of Formula I is from about 5:1 to about 20:1.

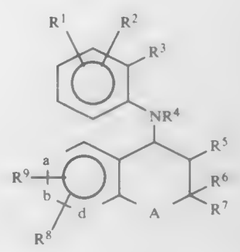
5,393,771

4-SUBSTITUTED BENZOPYRAN AND RELATED COMPOUNDS

Karnail S. Atwal, Newtown, Pa., assignor to Brisol-Myers Squibb Company, Princeton, N.J.

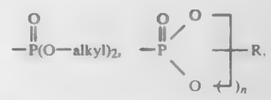
Filed May 12, 1993, Ser. No. 60,848
Int. Cl.[6] A61K *31/35;* **C07D** *311/68, 405/04, 405/12*
U.S. Cl. 514—394 **4 Claims**

1. A method for treating ischemia comprising administering to a mammalian specie in need thereof a therapeutically effective amount of a pharmaceutical composition comprising a compound of the formula



I

or pharmaceutically acceptable salts thereof wherein
a, b and d are all carbon atoms or one of a, b and d is a nitrogen atom or —N(O)— and the others are carbon atoms;
A is a single bond, —CH_2—, —O—, —S— or —N(R)— where R is hydrogen, alkyl, haloalkyl, aryl, arylalkyl, cycloalkyl or (cycloalkyl)alkyl;
R^1 is hydrogen, alkyl, halo, haloalkyl, nitro or cyano:
R^2 is hydrogen, alkyl or halo;
R^3 is —COR, —CO-amino, —CO-substituted amino, —NR-COOR—*, —NRCO-amino or —NRCO-substituted amino (where R—* is the same or different R, as defined above);
R^4 is hydrogen, alkyl, alkenyl, aryl, aryl, alkyl, cycloalkyl or (cycloalkyl)alkyl; or R^3 and R^4together with the carbon and nitrogen atoms to which they are attached, form a fused imidazole ring, unsubstituted or substituted at an available carbon atom of the imidazole portion with one or more substituents selected from hydrogen, alkyl, cyano, —COR, —COOR, —CO-amino, —CO-substituted amino, —NRCOOR—*, —NRCO-amino or —NRCO-substituted amino;
R^5 is hydrogen, hydroxy or —OC(O)R;
R^6 and R^7 are each independently hydrogen, alkyl or arylalkyl, or R^6 and R^7 taken together with the carbon atom to which they are attached form a 5- to 7-membered carbocyclic ring;
R^8 is hydrogen, alkyl, haloalkyl, alkenyl, alkynyl, cycloalkyl, arylalkyl, (cycloalkyl)alkyl, —CN, —NO_2, —COR, —COOR, —CONHR, —CONR[5], —CF_3, S-alkyl, —SOalkyl, —SO_2alkyl,



halogen, amino, substituted amino, —O-alkyl, —OCF_3, —OCH_2CF_3, —OCOalkyl, —OCONRalkyl, —NRCOalkyl, —NRCOOalkyl or-NRCONR[5];
R^9 is hydrogen, alkyl, hydroxy, —O—alkyl, amino, substituted amino, —NHCOR, —CN or —NO_2; and
n is an integer of 1 to 3; provided that when a, b and d are carbon atoms, R^3 is —NRCOOR*-and $R^4$is hydrogen, that one of R^1 or R^2 is other than hydrogen; and a pharmaceutically acceptable carrier.

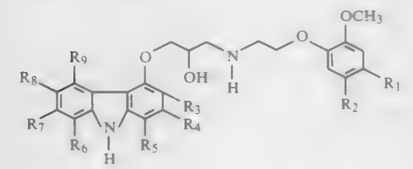
5,393,772

USE OF, AND METHOD OF TREATMENT USING, HYDROXYCARBAZOLE COMPOUNDS FOR INHIBITION OF SMOOTH MUSCLE MIGRATION AND PROLIFERATION

Tian-Li Yue, Havertown; Eliot H. Ohlstein, Glenmoore, and Giora Z. Feuerstein, Wynnewood, all of Pa., assignors to Boehringer Mannheim Pharmaceuticals Corporation and SmithKline Beecham Corporation Limited Prtnrshp No. 1, both of Rockville, Md.

Filed Nov. 24, 1993, Ser. No. 157,588
Int. Cl.[6] A61K *31/40*
U.S. Cl. 514—410 **32 Claims**

1. A method of treatment for inhibition of proliferation and migration of smooth muscle cells in mammals comprising internally administering to a mammal in need thereof an effective amount of a compound of Formula (I):



(I)

wherein:
R_1–R_9 are independently —H or —OH,
with the proviso that at least one of R_1–R_9 is OH,
or a pharmaceutically acceptable salt thereof.

5,393,773

METHOD FOR THE INTRANASAL ADMINISTRATION OF 3-[2-(DIMETHYLAMINO)-ETHYL]-H-METHYL-1H-INDOLE-5-METHANESULPHONAMIDE

Joanne Craig, and David A. Saynor, both of Ware, Great Britain, assignors to Glaxo Group Limited, London, England

PCT No. PCT/EP92/00094, § 371 Date Jul. 12, 1993, § 102(e) Date Jul. 12, 1993, PCT Pub. No. WO92/12712, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 19, 1992, Ser. No. 84,235
Claims priority, application United Kingdom, Jan. 24, 1991, 9102579
Int. Cl.[6] A61K *31/405*
U.S. Cl. 514—415 **16 Claims**

1. A method of treating a human suffering from or susceptible to cephalic pain which comprises intranasal administration of a pharmaceutical composition which comprises an aqueous suspension of 3-[2-(dimethylamino)ethyl]-N-methyl-1H-indole-5-methanesulphonamide in the form of the free base or a suitable physiologically acceptable solvate thereof as active ingredient, wherein the pH of the aqueous suspension is in the range of 9 to 11.

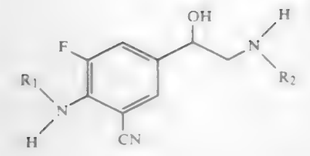
5,393,774

PHENYLETHANOLAMINES, PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS AND PROCESS FOR PREPARING THEM

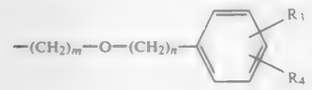
Helmut Pieper, Kapellenweg 5, and Günther Engelhardt, Unterer Bühl 18, both of W-7950 Biberach 1, Germany

Continuation of Ser. No. 855,026, Jul. 14, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 187,671
Claims priority, application Germany, Sep. 7, 1990, 4028398; WIPO, Sep. 3, 1991, PCT/EP91/01658
Int. Cl.[6] A61K *31/275;* **C07C** *28/58, 255/50;* **C07D** *317/54*
U.S. Cl. 514—452 **6 Claims**

1. A phenylethanolamine of formula



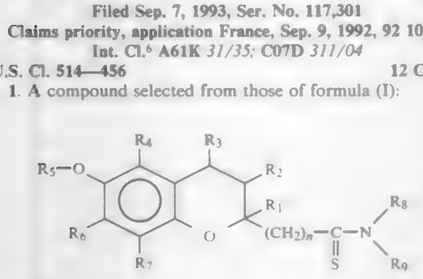
wherein
R_1 is hydrogen, or a carbonyl group substituted by C_1–C_4 alkoxy
R_2 is a group of formula



wherein
m is an integer from 2 to 8,
n is an integer from 1 to 7,
R_3 and R_4, which may be identical or different, are hydrogen, fluoro, chloro, bromo, methyl, ethyl, hydroxy, methoxy or ethoxy or
R_3 and R_4 together are methylenedioxy or ethylenedioxy or a pharmaceutically acceptable acid addition salt thereof.

5,393,775
BENZOPYRAN COMPOUNDS
Guillaume Le Baut, Saint Sebastien Sur Loire; Jean-Paul Babingui; Sylvie Robert-Piessard, both of Nantes; Pierre Renard, Versailles; Daniel-henri Caignard, Paris; jean-Francois Renaud de la Faverie, Le Chesnay, and Gérard Adam, Le Mesnil le Roi, all of France, assignors to Adir et Compagnie, Courbevoie, France
Filed Sep. 7, 1993, Ser. No. 117,301
Claims priority, application France, Sep. 9, 1992, 92 10741
Int. Cl.[6] **A61K** *31/35; C07D 311/04*
U.S. Cl. 514—456 12 Claims

1. A compound selected from those of formula (I):

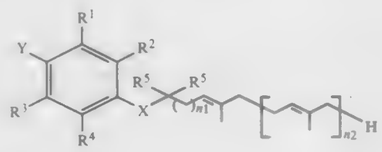


(I)

in which:
n is 0 or 1,
R_1, R_2, R_3, R_6 and R_7, which are identical or different, each represents independently of one another hydrogen or methyl,
R_5 represents:
hydrogen,
lower alkyl R_a-,
lower acyl R_a-CO-,
where R_a is a linear or branched alkyl radical having 1 to 8 carbon atoms, inclusive,
R_8 and R_9, which are identical or different, each represent, independently of one another:
hydrogen,
lower alkyl R_a-,
lower alkenyl, where alkenyl represents a linear or branched unsaturated hydrocarbon having 2 to 8 carbon atoms, inclusive,
where R_a represents linear or branched lower alkyl having 1 to 8 carbon atoms, inclusive,
alkoxycarbonylalkyl of formula R_a-O-CO-R_b- with R_a and R_b, which are identical or different, as defined above for R_a,
phenyl-(CH_2)q- or substituted phenyl-(CH_2)q-, with q equal to 0, 1, 2, or 3,
it being understood that during this description of the general formula (I), the term "substituted" as applied to phenyl-(CH_2)q- means that this group can be substituted by one or a number of identical or different radicals, each of which radicals represents, independently of one another:
lower alkyl R_c-,
lower alkoxy R_c-O-,
lower acyl R_c-CO-,
trifluoromethyl,
carboxyl,
hydroxyl,
oxo,
guanidino,
amidino,
or a halogen atom,
where R_c represents linear or branched alkyl having 1 to 6 carbon atoms, inclusive,
its optical isomers, in the pure form or in the form of mixtures, and addition salts thereof with a pharmaceutically-acceptable acid or base.

5,393,776
TOCOTRIENOL ANALOGS IN THE TREATMENT OF HYPERCHOLESTEROLEMIA AND HYPERLIPIDEMIA
Bradley C. Pearce, East Hampton, Conn., assignor to Bristol-Myers Squibb Company, New York, N.Y.
Continuation of Ser. No. 890,414, May 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 583,618, Sep. 14, 1990, abandoned. This application May 13, 1994, Ser. No. 242,213
Int. Cl.[6] **A61K** *31/015, 31/035, 31/045, 31/05, 31/055, 31/085, 31/10, 31/12, 31/135, 31/165, 31/18, 31/27, 31/63, 31/69*
U.S. Cl. 514—486 29 Claims

1. A method of treating hypercholesterolemia and hyperlipidemia which comprises administering to a patient in need of such treatment an effective amount of a method of the formula (II)



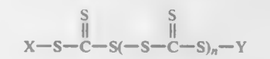
wherein
R^1, R^2, R^3 and R^4 represent hydrogen, C_1–C_5 lower alkyl, halogen, $COCH_3$, CH_2OH,CH_2CH_2OH, OH or OMe;
R^5 represents hydrogen or methyl;
Y represents hydrogen or a hydrogen bond donating group, selected from the group consisting of $NHSO_2Me$, $NHCO_2Me$, NH_2, CH_2OH, $B(OH)_2$, $CONH_2$, SO_2NH_2, or OH, with the proviso that Y is not hydrogen when R^1, R^2, R^3 and R^4 are all hydrogen;
X represents oxygen, sulfur, NH, N (C_1–C_5 lower alkyl), N(acyl), CH_2, CO, SO, SO_2;
n_1 is 1 or 2; and
n_2 is 1 or 2;
or nontoxic pharmaceutically acceptable acid addition salts, hydrate, solvate or metal salts thereof.

5,393,777
DEFERRATION USING ANGUIBACTIN SIDEROPHORE
Jorge H. Crosa, Tualatin, Oreg., assignor to State of Oregon Acting by and through the State Board of Higher Education on behalf of Oregon Health Sciences University, Eugene, Oreg.
Filed Nov. 15, 1990, Ser. No. 614,231
Int. Cl.[6] **A61K** *31/295*
U.S. Cl. 514—502 7 Claims

1. A method for inhibiting the uptake of ferric iron by a population of living eukaryotic animal cells that is in contact with an aqueous medium comprising ferric iron, the method comprising:
adding anguibactin having substantially no bound ferric iron to the aqueous medium in an amount sufficient to chelate at least a portion of the ferric iron in the aqueous medium; and
after adding the anguibactin, incubating the cells contacted by said medium for a time sufficient for the anguibactin to chelate at least a portion of the ferric iron in the aqueous medium, thereby rendering said ferric iron unavailable for uptake by said cells.

5,393,778
OLIGOMERIC THIOCARBONATES
James A. Green, II, Chino, and Donald C. Young, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Division of Ser. No. 458,283, Dec. 28, 1989, Pat. No. 5,288,753. This application Nov. 30, 1993, Ser. No. 160,048
Int. Cl.[6] **A01N** *37/02, 37/36;* **C07C** *329/02, 329/12*
U.S. Cl. 514—512 17 Claims

1. A compound represented by the formula



wherein X and Y independently are selected from organic cations; n is at least 2; the organic cations have the formula $R_1R_2R_3R_4Q^+$; R_1, R_2, R_3, and R_4 are independently selected from the group consisting of hydrogen and C_1–C_{50} organic radicals selected from the group consisting of alkyl, aryl, arylalkyl, and alkylaryl groups, provided that at least one of R_1, R_2, R_3, and R_4 is an organic radical; and Q^+ is selected from the group consisting of ammonium, phosphonium, arsonium, and stibonium.

5,393,779
CHEMICAL COMPOUNDS
Brian R. Holloway, Congleton; Ralph Howe, Macclesfield, and Balbir S. Rao, Holmes Chapel, all of England, assignors to Zeneca Limited, London, England
Filed May 28, 1992, Ser. No. 889,196
Claims priority, application United Kingdom, May 28, 1991, 9111426
Int. Cl.[6] **A61K** *31/24*
U.S. Cl. 514—539 13 Claims

1. A compound of the formula (I):

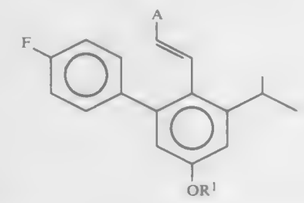


(I)

or a bioprecursor or a pharmaceutically acceptable salt thereof.

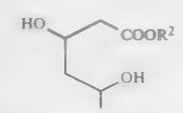
5,393,780
4-FLUOROBIPHENYL DERIVATIVES
Masakatsu Matsumoto, Sagamihara; Nobuko Watanabe, Tokyo; Eiko Mori, Tokyo; Miwa Ishihara, Tokyo; Tetsuaki Yamaura, Tokyo; Misao Aoyama, Tokyo; Hiroshi Ikawa, Tokyo, and Hisako Kobayashi, Tokyo, all of Japan, assignors to Fujirebio Inc., Tokyo, Japan
Filed Mar. 25, 1994, Ser. No. 217,566
Claims priority, application Japan, Mar. 26, 1993, 5-090556
Int. Cl.[6] **A01N** *37/10*
U.S. Cl. 514—543 18 Claims

1. A 4-fluorobiphenyl derivative of formula (I):



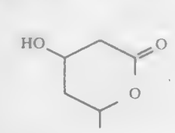
(I)

wherein A is a ω-oxycarbonyldihydroxybutyl group of formula (II):



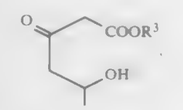
(II)

wherein R^2 is a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, which may have a substituent, an alkaline metal or an alkaline earth metal; a tetrahydropyranyl group of formula (III):



(III)

or a ω-oxycarbonyl-3-oxobutyl group of formula (IV):



(IV)

wherein R^3 is an alkyl group having 1 to 6 carbon atoms, which may have a substituent; R^1 is an alkyl group having 1 to 6 carbon atoms, which may have a substituent selected from the group consisting of a heteroaromatic group, an alkoxyl group having 1 to 6 carbon atoms, and a hydroxyl group.

5,393,781
METHOD FOR CONTROLLING ZEBRA MUSSELS
Alexander M. Vegega, Trenton, N.J., and Claudio E. Manissero, Lincoln University, Pa., assignors to FMC Corporation, Philadelphia, Pa. and The Research Foundation of the State University of New York, Albany, N.Y.
Filed Jul. 8, 1993, Ser. No. 88,935
Int. Cl.[6] **A01N** *37/16*
U.S. Cl. 514—557 10 Claims

1. A method for controlling zebra mussels, which comprises contacting the zebra mussels, or an environment where control is desired, with a biocidally effective amount of peracetic acid.

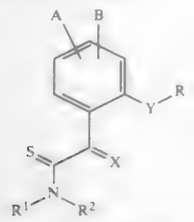
5,393,782

THIOAMIDES AND THEIR USE AS CROP PROTECTION AGENTS

Horst Wingert; Hubert Sauter; Herbert Bayer, all of Mannheim; Klaus Oberdorf, Heidelberg; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Heppenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 29, 1993, Ser. No. 158,390
Claims priority, application Germany, Dec. 14, 1992, 4242081
Int. Cl.[6] A01N *37/18;* C07C *327/40*
U.S. Cl. 514—599 7 Claims

1. A thioamide of the formula I,



I

where A and B are identical or different and each is hydrogen, C_{1-4}-alkyl, C_{1-4}-alkoxy or halogen;
X is =N—OCH_3;
R^1 and R^2 are hydrogen or C_{1-4}-alkyl;
Y is —CH_2—O—; and
R is a phenyl with at least one substituent selected from the group consisting of nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-alkoximino-C_1–C_4-alkyl, aryl, aryloxy, benzyloxy;
with the privoso that at least one substituent is always C_1–C_4-alkoximino-C_1–C_4-alkyl.

5,393,783

Patent Not Issued For This Number

5,393,784

TREATMENT OF TARDIVE DYSKINESIA WITH LEUCINE, ISOLEUCINE, VALINE OR MIXTURES THEREOF

Mary Ann Richardson, New York, N.Y., assignor to New York State Office of Mental Health, Albany, N.Y.

Filed Jul. 21, 1993, Ser. No. 93,955
Int. Cl.[6] A61K *31/195*
U.S. Cl. 514—561 6 Claims

1. A method of treating tardive dyskinesia, which comprises administering to a patient having tardive dyskinesia at least one amino acid, selected from the group consisting of isoleucine, leucine and valine in an amount sufficient for treating said tardive dyskinesia.

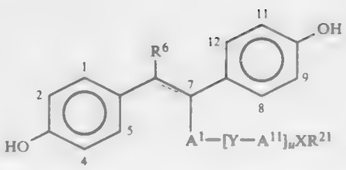
5,393,785

THERAPEUTIC ANTIESTROGENS

Fernand Labrie, and Yves Merand, both of Quebec, Canada, assignors to Endorecherche, Inc., Quebec, Canada

Continuation of Ser. No. 265,150, Oct. 31, 1988, abandoned.
This application Jul. 14, 1992, Ser. No. 913,746
Int. Cl.[6] A61K *31/165, 31/12*
U.S. Cl. 514—622 4 Claims

1. A pharmaceutical composition comprising a pharmaceutically acceptable diluent or carrier and a therapeutically effective amount of an antiestrogen of the formula:



wherein R^6 is methyl or ethyl; where the dotted line represents an optional double bond of configuration;
wherein A^1 and A^{11} are the same or different and are either absent or selected from the group consisting of straight-chain alkylene and branched-chain alkylene, A^1 and A^{11} together having a total of from 3 to 20 carbon atoms;
wherein Y is phenylene;
wherein R_{21} is selected from the group consisting of hydrogen, straight or branched-chain lower alkyl, lower alkenyl, and lower alkynyl,
wherein X is $CONR_{23}$, R_{23} being hydrogen or lower alkyl; and wherein μ is an integer from 0 to 5.

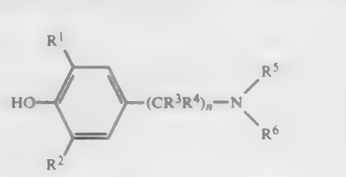
5,393,786

METHOD FOR TREATING INFLAMMATION, ISCHEMIA-INDUCED CELL DAMAGE AND MUSCULAR DYSTROPHY

James A. Clemens, Indianapolis, and Jill A. Panetta, Zionsville, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

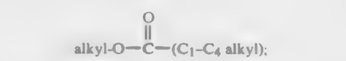
Division of Ser. No. 572,288, Aug. 27, 1990, Pat. No. 5,281,623.
This application Dec. 2, 1993, Ser. No. 161,821
Int. Cl.[6] A61K *31/13, 31/22, 31/135, 31/225*
U.S. Cl. 514—654 18 Claims

1. A method of treating ischemia-induced cell damage in mammals which comprises administering to said mammal an effective amount of a compound, or a pharmaceutically acceptable salt thereof, of formula II

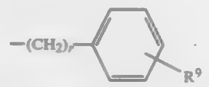


(II)

wherein:
R^1 and R^2 are each independently hydrogen, C_1–C_6 alkyl C_1–C_6 alkoxy or C_1–C_4

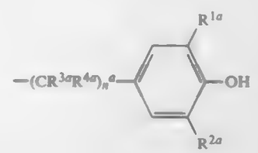


R^3 and R^4 are each independently hydrogen or C_1–C_4 alkyl; n is an integer from 1 to 4, both inclusive; and
R^5 and R^6 are defined to be either:
A) R^5 and R^6 are each independently hydrogen, C_1–C_8 alkyl, C_3–C_8 cycloalkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl, —$(CH_2)_qOR^7$, —$(CH_2)_qN(R^7R^8)$, —$(CH_2)_qSR^7$, —$(CH_2)_r$naphthyl or



where q is an integer from 1 to 6, both inclusive, R^7 and R^8 are

each independently hydrogen or C_1–C_4 alkyl, R^9 is hydrogen, halo, C_1–C_4 alkyl, trifluoromethyl, hydroxy, amino, C_1–C_4 alkylamino, di(C_1–C_4 alkyl)amino, phenylamino or diphenylamino, and r is an integer from 0 to 4, both inclusive; or
B) one of R^5 or R^6 is as defined in (A) above and the other is



wherein n^a, R^{1a}, R^{2a}, R^{3a} and R^{4a} are the same substituent as n, R^1, R^2, R^3 and R^4, respectively.

5,393,787

BLOCK COPOLYMER HAVING MIXED MOLECULAR WEIGHT ENDBLOCKS

Mark K. Nestegard, Woodbury, and Jingjing Ma, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 10,122, Jan. 28, 1993, Pat. No. 5,296,547.
This application Jan. 12, 1994, Ser. No. 180,903
Int. Cl.[6] C09J *153/02;* B32B *23/08, 27/36;* C08F *297/04*
U.S. Cl. 524—575 25 Claims

1. A pressure sensitive adhesive composition comprising:
(a) 100 parts by weight of a polymodal asymmetric elastomeric block copolymer;
(b) about 25 to 400 parts by weight of a tackifying resin;
(c) 0 to about 50 parts by weight of a crosslinking agent; and
(d) 0 to about 200 parts by weight of a plasticizer;
wherein said polymodal asymmetric elastomeric block copolymer has the formula O_nY and comprises from about 4 to about 40 percent by weight of a polymerized monovinyl aromatic compound and from about 96 to about 60 percent by weight of polymerized conjugated diene, wherein:
O represents an individual arm of the block copolymer and has the formula S-B;
n represents the number of arms O in the block copolymer and is a whole number of at least 3; and
Y is the residue of a multifunctional coupling agent; and further wherein:
(a) S is a nonelastomeric polymer segment endblock of a polymerized monovinyl aromatic homopolymer, there being at least two different molecular weight endblocks in the copolymer, a higher molecular weight endblock and a lower molecular weight endblock, wherein:
(i) the number average molecular weight of the higher molecular weight endblock $(Mn)_H$ is in the range of from about 5,000 to about 50,000;
(ii) the number average molecular weight of the lower molecular weight endblock $(Mn)_L$ is in the range of from about 1,000 to about 10,000; and
(iii) the ratio $(Mn)_H/(Mn)_L$ is at least 1.25; and
(b) B is an elastomeric polymer segment midblock which connects each arm to the residue of a multifunctional coupling agent (Y) and comprises a polymerized conjugated diene or combination of conjugated dienes.

9. A tape comprising a backing having first and second major surfaces and pressure sensitive adhesive composition according to claim 1 coated on at least a portion of the first major surface.

5,393,788

PHENYLALKYL OXAMIDES

Paul E. Bender, Cherry Hill, N.J.; Siegfried B. Christensen, IV, Philadelphia, Pa.; Klaus M. Esser, Downingtown, Pa.; Cornelia J. Forster, Bensalem, Pa.; Michael D. Ryan, Pottstown, Pa., and Philip L. Simon, Randolph, N.J., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US91/04795, § 371 Date Mar. 2, 1993, § 102(e) Date Mar. 2, 1993, PCT Pub. No. WO92/00968, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 8, 1991, Ser. No. 961,716
Int. Cl.[6] A61K *31/165;* C07C *233/09*
U.S. Cl. 514—616 3 Claims

1. A compound which is:
N-[2-(3-cyclopentyloxy-4-methoxyphenyl)ethyl]oxamide;
N-[2-(3-cyclopentyloxy-4-methoxyphenyl)propyl]oxamide;
N-[2-(3-cyclopentyloxy-4-methoxyphenyl)-2-methylpropyl-]oxamide;
N-[2-cyano-2-methyl-2-(3-cyclopentyloxy-4-methoxyphenyl)ethyl]oxamide;
N-[2-(3-cyclopentyloxy-4-methoxyphenyl)ethyl]-N-methyloxamide;
N-[2-(3-difluoromethoxy-4-methoxyphenyl)ethyl]oxamide;
N-[2-(3-difluoromethoxy-4-methoxyphenyl)ethyl]oxamide; or
N-[2-(3,4-didifluoromethoxyphenyl)ethyl]oxamide.

5,393,789

AMINE-AND ALCOHOL-BASED DISINFECTANT CONCENTRATE AND DISINFECTANT AND USE THEREOF

Heinz Eggensperger; Löwer Bernd, both of Hamburg; Michael Mohr, Kaltenkirchen; Peter Goroncy-Bermes, Ahrensburg, and Wolfgang Beilfuss, Hamburg, all of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1993, Ser. No. 10,718
Claims priority, application Germany, Jan. 17, 1992, 4201038
Int. Cl.[6] A01N *33/04, 31/14;* C11D *9/50*
U.S. Cl. 514—674 2 Claims

1. A ready for use disinfectant solution consisting essentially of from 0.005 to 5 wt. % of N,N-bis-(3-aminopropyl) lauryl amine and 0.005 to 5 wt. % of an aromatic alcohol selected from the group consisting of phenoxy ethanol, phenoxy propanol and a phenylmonoglycol ether oligoglycol having 4 ethylene oxide units.

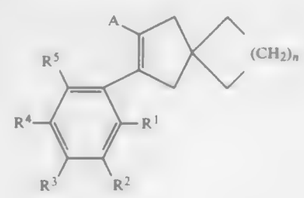
5,393,790

SUBSTITUTED SPIRO COMPOUNDS FOR THE TREATMENT OF INFLAMMATION

David B. Reitz, Chesterfield; Robert E. Manning, St. Louis; Horng-Chi Huang, and Jinglin Li, both of Chesterfield, all of Mo., assignors to G.D. Searle & Co., Chicago, Ill.

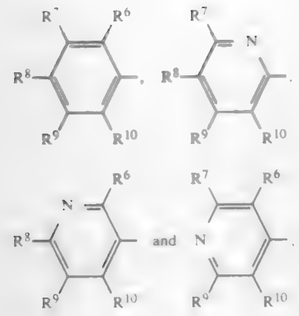
Filed Feb. 10, 1994, Ser. No. 194,762
Int. Cl.[6] C07C *309/32, 317/14;* C07D *211/54;* A61K *31/18*
U.S. Cl. 514—709 41 Claims

1. A compound of Formula I



I

wherein A is selected from



wherein each of R^1 through R^{10} is independently selected from hydrido, halo, alkyl, alkoxy, alkylthio, cyano, haloalkyl, haloalkoxy, hydroxyalkyl, alkoxyalkyl, hydroxyl, mercapto, alkylsulfonyl, haloalkylsulfonyl and sulfamyl; and wherein n is a number selected from 0, 1, 2 and 3; or a pharmaceutically-acceptable salt thereof.

5,393,791

HOMOGENEOUS, ESSENTIALLY NONAQUEOUS ADJUVANT COMPOSITIONS WITH BUFFERING CAPABILITY

Johnnie R. Roberts, Memphis, Tenn., assignor to Helena Chemical Company, Memphis, Tenn.

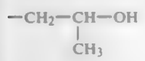
Continuation-in-part of Ser. No. 554,359, Jul. 19, 1990, Pat. No. 5,178,795. This application Oct. 14, 1992, Ser. No. 960,894
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[6] A01N *27/00;* **B01F** *17/44, 17/54;* **B01J** *13/00*
U.S. Cl. 514—762 **20 Claims**

1. A homogeneous, essentially nonaqueous adjuvant composition consisting essentially of a spray oil having a minimum of 85% of unsulfonated residue value, a surfactant blend selected from the group consisting of

(a) fatty alkanolamides of the formula



wherein R is a C_6–C_{25} alkyl group; R and R″are the same or different and are independently selected from the group consisting of hydrogen, —CH_2CH_2OH and

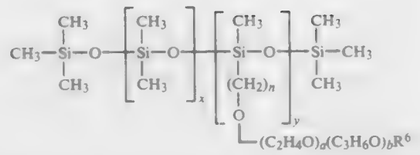


(b) PEG esters of the formula



wherein R^2 is a C_2–C_{25} fatty alkyl, R^3 is a C_2–C_{25} fatty alkyl or hydrogen and m is a number from 1 to 100,

(c) silicone surfactants of the formula



wherein x is a number from 0 to 5, y is a number from 1 to 5, a is a number from 3 to 25, b is a number from 0 to 25, n is a number from 2 to 4 and R^6 is hydrogen, an alkyl group having 1 to 4 carbon atoms or an alkyl ester group having 1 to 4 carbon atoms,

(d) ethoxylated fatty acids



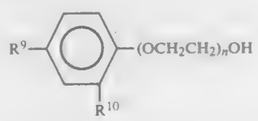
wherein R^7 is a C_6–C_{25} alkyl group, p is a number from 1 to 100,

(e) alkyl ethoxylates

$$R^8O(CH_2CH_2O)_qH$$

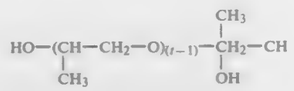
wherein R^8 is alkyl group and q is a number from 1 to 100,

(f) alkylphenol ethoxylates



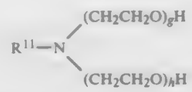
wherein R^9 is hydrogen or C_1–C_{20} alkyl, R^{10} is hydrogen or C_1–C_{20} alkyl and n is a number from 1 to 100,

(g) polypropylene glycols



wherein t is a number from 1 to 100,

(h) amine ethoxylates



wherein g and h are numbers from 1 to 100 and R′is a C_1–C_{25} alkyl and

(i) mixtures of any of the above surfactants (a) through (h), and a buffering agent is in an amount sufficient to reduce the pH to below 7.

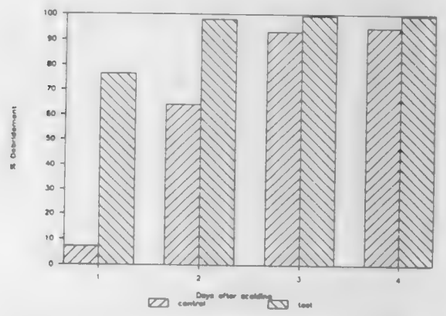
19. A process to control insects comprising spraying the composition as claimed in claim 1.

5,393,792

HIGH DOSAGE TOPICAL FORMS OF COLLAGENASE

Harold Stern, Baldwin Harbor, and David Yee, Oceanside, both of N.Y., assignors to Advance Biofactures of Curacao, N.V., Brievengat, Netherlands Antilles

Continuation-in-part of Ser. No. 795,915, Nov. 20, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 963,995
Int. Cl.[6] A01N *25/12;* **A61K** *47/12, 9/50;* **A61L** *9/06*
U.S. Cl. 514—777 **11 Claims**



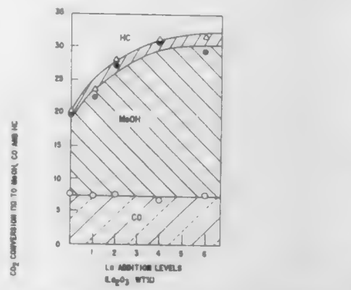
1. A pharmaceutical composition for topical use consisting essentially of an intimate physical admixture of a non-aqueous excipient and at least about 1,500 ABC units of collagenase per gram of excipient.

5,393,793

OXIDE-BASED CATALYST, PRODUCTION THEREOF, AND CATALYTIC HYDROGENATION OF CO_2 USING SAID CATALYST

Tomoyuki Inue, 5-43, Hatoyama 1-chome, Uji-shi, Kyoto 611, Japan

PCT No. PCT/JP92/01039, § 371 Date Apr. 19, 1993, § 102(e) Date Apr. 19, 1993, PCT Pub. No. WO93/03837, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 17, 1992, Ser. No. 39,229
Claims priority, application Japan, Aug. 21, 1991, 3-235439
Int. Cl.[6] C07C *27/06;* **B01J** *23/10*
U.S. Cl. 518—713 **9 Claims**



1. An oxide-based catalyst which comprises a compound oxide having the oxide composition CuO-ZnO-Cr_2O_3-Al_2O_3-$La^*{}_2O_3$ (La^* being La or any other lanthanide), wherein the oxide composition is as follows: CuO 15 to 35% by weight, ZnO 20 to 50% by weight, Cr_2O_3 0.6 to 5% by weight, Al_2O_3 25 to 40% by weight and $La^*{}_2O_3$ 0.5 to 8% by weight, based on the total weight of the composition.

5. A method of catalytically hydrogenating CO_2 which comprises feeding a mixed gas mainly composed of CO_2 and H_2 to a reactor and contacting said gas with an oxide-based catalyst prepared by reductively treating a compound oxide having the oxide composition CuO-ZnO-Cr_2O_3-Al_2O_3-$La^*{}_2O_3$ (La^* being La or any other lanthanide) to thereby cause conversion into a methanol-rich gas, under a reaction pressure of from 20 to 120 atmospheres at a reaction temperature of from 150° to 300° C. wherein the oxide composition is as follows: CuO 15 to 35% by weight, ZnO 20 to 50% by weight, Cr_2O_3 0.6 to 5% by weight, Al_2O_3 25 to 40% by weight and $La^*{}_2O_3$ 0.5 to 8% by weight, based on the total weight of the composition.

5,393,794

INSULATION MATERIAL AND METHOD USING FLY ASH

Henry Sperber, 8 Red Fox La., Englewood, Colo. 80111

Filed Apr. 19, 1993, Ser. No. 49,569
Int. Cl.[6] C08J *9/00*
U.S. Cl. 521—78 **11 Claims**

1. A method for insulating a cavity, comprising:

providing a plurality of fly ash insulating particles;

supplying a binder, said supplying step including creating a foam material of a sufficient thickness and said supplying step including separating said insulating particles using said foam material;

mixing said insulating particles dried to provide sufficiently dry clusters with each of said clusters drying a plurality of insulating particles, said having step including dissipating of said foam material while said insulating particles are located outside of the cavity to be filled with said insulating particles, said drying step being discontinued before said clusters collapse and lose desired separation of said insulating particles;

containing said insulating particles while maintaining said insulating particles joined together in said clusters using said binder after having dried and before being placed in the cavity; and

installing said clusters into the cavity after said foam material has dissipated.

5,393,795

POLYMER BLEND CONTAINING A MODIFIED DENSE STAR POLYMER OR DENDRIMER AND A MATRIX POLYMER

David M. Hedstrand, and Donald A. Tomalia, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 148,440, Nov. 8, 1993, Pat. No. 5,387,617, which is a continuation-in-part of Ser. No. 8,276, Jan. 22, 1993, abandoned. This application Jun. 13, 1994, Ser. No. 259,089
Int. Cl.[6] C08J *9/00;* **C08G** *6/00*
U.S. Cl. 521—134 **17 Claims**

1. A polymer blend comprising a foamable modified dense star polymer or dendrimer, which has a highly branched interior of one monomeric composition and an exterior structure of a different monomeric composition capable of providing a hydrophobic outer shell and which have a particle diameter of from about 5 to about 1,000 nanometers (nm), and a matrix polymer.

5,393,796

METHOD AND APPARATUS FOR EXTRUDING A LOW DENSITY THERMOPLASTIC FOAM

Louis Halberstadt, Andover; Peter E. Mertinooke, Amesbury, both of Mass.; Joseph V. Perry, Chester, N.H., and Dan C. Muessel, Danvers, Mass., assignors to Amesbury Industries, Inc., Amesbury, Mass.

Continuation of Ser. No. 924,405, Aug. 3, 1992, abandoned, which is a continuation of Ser. No. 378,003, Jul. 11, 1989, abandoned, which is a division of Ser. No. 121,805, Nov. 17, 1987, Pat. No. 4,898,760. This application Jun. 7, 1994, Ser. No. 255,324

Int. Cl.[6] C08J *9/00*

U.S. Cl. 521—134 5 Claims

1. A soft, low density elastomeric thermoplastic foam having a density less than 20 lbs/ft^3 and foamed from a thermoplastic elastomer having a Shore A hardness of 64 or less and comprising a blend of a polyolefin resin and a vulcanized monoolefin copolymer rubber.

5,393,797

SMALL CELL FOAMS CONTAINING A MODIFIED DENSE STAR POLYMER OR DENDRIMER AS A NUCLEATING AGENT

David M. Hedstrand, and Donald A. Tomalia, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 148,440, Nov. 8, 1993, which is a continuation-in-part of Ser. No. 8,276, Jan. 22, 1993, abandoned. This application Jun. 13, 1994, Ser. No. 259,205

Int. Cl.[6] C08J *9/00;* C08G *6/00*

U.S. Cl. 521—134 19 Claims

1. A small cell foam comprising a modified dense star polymer or dendrimer, which has a highly branched interior of one monomeric composition and an exterior structure of a different monomeric composition capable of providing a hydrophobic outer shell and which have a particle diameter of from about 5 to about 1,000 nanometers (nm), and a matrix polymer.

5,393,798

HYDROGEL MATERIAL AND METHOD OF PREPARATION

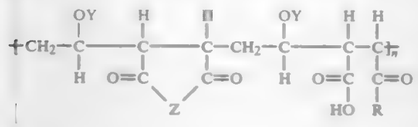
Fredric J. Weber, Waco, Tex., assignor to Spenco Medical Corporation, Waco, Tex.

Filed Jun. 5, 1992, Ser. No. 893,998

Int. Cl.[6] C08F *36/00, 122/06;* A61K *31/765*

U.S. Cl. 521—149 10 Claims

1. A hydrogel material comprising crosslinked copolymer chains of alkyl vinyl ether and maleic anhydride wherein said copolymer chains comprise the repeated structural unit:



wherein n is an integer greater than one representing the number of said structural units in each of said copolymer chains, Y is an alkyl group having one to three carbon atoms, and wherein R is a modifying group selected from the group consisting of $-NH-(CH_2)_{1-5}-CH=CH_2$ and



Z is selected from one bivalent oxygen atom, two hydroxyl groups or one hydroxyl group and one R group, and wherein one of said copolymer chains is crosslinked to another of said copolymer chains via linkage of an R group of one of said copolymer chains with an R group of another of said copolymer chains.

5,393,799

PROCESS FOR RIGID FOAMS

Rik De Vos, Rotselaar; David Thorpe, Erps-Kwerps, and Gonda Van Essche, Leuven, all of Belgium, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 6, 1993, Ser. No. 163,459

Claims priority, application United Kingdom, Dec. 30, 1992, 9227105; Dec. 30, 1992, 9227106; Mar. 24, 1993, 9306065; Mar. 24, 1993, 9306066

Int. Cl.[6] C08G *18/00*

U.S. Cl. 521—157 23 Claims

1. Process for the preparation of a rigid polyurethane or urethane-modified polyisocyanurate foam by reaction of a polyisocyanate composition with a polyfunctional isocyanate-reactive composition under foam-forming conditions, characterized in that the polyisocyanate composition comprises the reaction product of a stoichiometric excess of an organic polyisocyanate and (a) substantially fluorinated isocyanate-reactive compound(s).

5,393,800

TWO-COMPONENT COATING FORMULATION

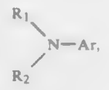
Gary V. Grosclaude, Torrington, and Andrew G. Bachmann, Harwinton, both of Conn., assignors to Dymax Corporation, Torrington, Conn.

Filed Feb. 21, 1992, Ser. No. 839,830

Int. Cl.[6] C08F *4/80, 2/48, 224/00, 220/18*

U.S. Cl. 522—28 10 Claims

1. A two-part, solvent-free liquid formulation that is innately curable to an adhesive solid, comprising a first component that includes an acid ingredient, and a second component that includes an aromatic amine compound having the general formula:



wherein each of "R_1" and "R_2" is selected from the class consisting of hydrogen and an alkyl group, and wherein "Ar" is selected from the class consisting of monocyclic and polycyclic aromatic groups, at least one of said components additionally including a transition metal compound, at least one of said components being comprised predominantly of a polymerizable composition including at least one oxygen-containing ethylenically unsaturated polymerizable ingredient, and at least one of said components including an effective amount of a photoinitiator capable, when activated, of catalyzing polymerization of said polymerizable ingredient, said acid ingredient being substantially soluble in said polymerizable composition and forming a coordination compound with the metal of said metal compound, said formulation containing no more than one part per thousand of the metal ion of said transition metal compound, and being devoid of any free-radical, active-oxygen polymerization catalyst.

5,393,801

ELECTRON BEAM-CROSSLINKABLE PLASTISOL

Eitaro Nakamura, Tokyo, and Kazunori Ueki, Yokohama, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,254

Claims priority, application Japan, Feb. 28, 1991, 3-058323

Int. Cl.[6] C08F *2/46*

U.S. Cl. 522—79 20 Claims

1. An electron beam-crosslinkable plastisol comprising (A) a particulate epoxy group-containing vinyl chloride or methyl methacrylate paste resin for plastisol processing having an epoxy group concentration on the particle surface of 1×10^{-5} to 1×10^{-3} g equivalent/g and an average particle size of 0.05 to 5 μm, (B_1) an ethylenically unsaturated acid having a pKa less than 4, (B2) an amino group-containing ethylenically unsaturated compound or a mixture of (B_1) and (B_2), and (C) a plasticizer.

5,393,802

WEIGHT FOR ADJUSTING BALANCE OF A ROTATING BODY

Fumihiro Horikawa, Hachioji, Japan, assignor to Three Bond Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/01295, § 371 Date Jun. 25, 1993, § 102(e) Date Jun. 25, 1993, PCT Pub. No. WO93/13334, PCT Pub. Date Jul. 8, 1993

PCT Filed Oct. 6, 1992, Ser. No. 78,295

Claims priority, application Japan, Dec. 27, 1991, 3-358272

Int. Cl.[6] C08F *2/46*

U.S. Cl. 522—81 1 Claim

1. A weight for adjusting the balance of a rotating body, comprising:

an ultraviolet curing resin;

a spherical powder constituted of at least one powdered glass selected from the group consisting of silicate glass, boro-silicate glass and phosphate glass, said spherical powder having a specific gravity of 0.2 or more; and

a spherical powder constituted of at least one glass powder selected from the group consisting of TiO_2—BaO—SiO_2, BaO—ZnO—SiO_2 and lead glass.

5,393,803

MALEIMIDE POLYMERS AND CONTACT LENSES FROM SUCH POLYMERS

Teiji Kawano, 16, Takehana Jizoji Minami-cho, Yamashina-ku, Kyoto, 607, and Mitsuru Yokota, 1-24-20-402, Asahigaoka, Otsu-shi, shiga, 520, both of Japan

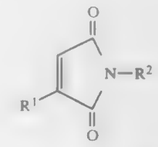
Filed Mar. 12, 1993, Ser. No. 30,609

Claims priority, application Japan, Mar. 12, 1992, 4-053668

Int. Cl.[6] C08J *3/00;* G02C *7/04*

U.S. Cl. 523—107 18 Claims

1. A polymer comprising units derived from a maleimide derivative represented by the formula (I):



(I)

wherein R^1 is selected from the group consisting of a methyl group and a hydrogen atom, and R^2 is selected from the group consisting of an alkyl group, an alkenyl group and an aryl group, and R^2 is substituted by at least one substituent selected from the group consisting of an organosiloxane group and a fluorine atom, wherein the units have a maleimide group only at one end.

5,393,804

BIODEGRADABLE COMPOSITIONS COMPRISING STARCH AND ALKENOL POLYMERS

Eric George, Morris Plains; Eddie Park, Morristown; Paul A. Altieri, Belle Mead, and Charles W. Paul, Madison, all of N.J., assignors to Parke, Davis & Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 980,862, Nov. 24, 1992. This application Jun. 10, 1993, Ser. No. 71,429

Int. Cl.[6] C08L *3/00, 29/04*

U.S. Cl. 523—128 45 Claims

1. A biodegradable composition obtained from a melt comprising converted starch, wherein said converted starch has a 8.8% calcium chloride viscosity within the range of about 5 seconds to about 60 seconds, a plasticizer and a member selected from the group consisting of alkenol hompolymers, alkenol copolymers and combinations thereof, which are combined under conditions sufficient to ensure uniform melt formation, wherein the member is present in the composition at a concentration of from about 10 to about 200 parts per 100 parts of dry converted starch.

5,393,805

EPOXY RESIN COMPOSITION FOR INSULATING A COIL, AND A COIL MOLDED FROM THE COMPOSITION

Toru Koyama; Hirokazu Takasaki; Hiroshi Suzuki, all of Hitachi; Akio Mukoh, Mito; Ikushi Kano, and Toshiyuki Koide, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 19, 1991, Ser. No. 717,642

Claims priority, application Japan, Jun. 23, 1990, 2-165398

Int. Cl.[6] C08L *63/00*

U.S. Cl. 523—400 8 Claims

1. A molded coil for use in contact with concrete comprising an electric conductor, an insulating layer wound around the electric conductor, and a cured resin molded integrally with the electric conductor and the insulating layer,

said cured resin being a cured product of a resin composition which comprises at least one polyfunctional epoxy resin, at least one latent curing catalyst, at least one alkali-resistant filler and at least one surfactant, wherein the composition is substantially free from acid anhydride and the viscosity of the composition is 10 poise or less at 100° C. wherein the cured resin exhibits high alkali resistance in contact with concrete.

5,393,806

EPOXIDE SYSTEM CURING AGENTS

Farah D. Azarnia, Batou Rouge, La., assignor to Albemarle Corporation, Richmond, Va.

Filed Dec. 26, 1991, Ser. No. 813,675

Int. Cl.[6] C08L *63/02*

U.S. Cl. 523—400 5 Claims

1. In a liquid matrix system for producing fibre-reinforced plastic components, said system comprising: (i) a liquid diglycidyl ether of a halogenated bisphenol or a mixture of liquid polyglycidyl ether bisphenols at least one of which being a polyglycidyl ether halogenated bisphenol; and (ii) a curing agent or a mixture of curing agents that are sterically hindered aromatic diamines containing two primary amino groups attached to the carbon atoms in the aromatic nucleus, said carbon atoms not adjacent to each other, and at least one C_1 to C_6 linear or branched alkyl or thioalkyl substituent; the improvement comprising adding to said system a curing accelerator composition containing a mixture of a boron halide and an imidazole unsubstituted or substituted with at least one C_1 to C_6 linear or branched alkyl or C_6 to C_{10} aryl.

5,393,807

LOW RESIN CONTENT POLYMER CONCRETE PRODUCT

Larry J. Farrell, 675 Grove Ter., Elk Grove, Ill. 60007

Continuation of Ser. No. 565,811, Aug. 9, 1990, abandoned, which is a division of Ser. No. 276,266, Nov. 25, 1988, Pat. No. 4,999,396. This application Apr. 6, 1992, Ser. No. 866,098

Int. Cl.[6] C08K *3/34*

U.S. Cl. 523—400 10 Claims

1. A low resin content, polymer concrete product comprising particulate material and a theromsetting polymer resin binder without added styrene diluent added thereto as a viscosity depressant, said binder containing no portland cement and substantially no water, the product having less than 10% by weight resin without added styrene diluent therein and in

which the resin coats substantially all of the particles of the particulate matter with a thin coat of resin by first diluting the resin with a non-reactive, non-polymerizing diluent without styrene therein, then mixing the particulate matter with the resin followed by drawing off the diluent, prior to shaping and curing of the polymer concrete product, thereby to provide a polymer concrete product substantially without added polymerized diluent or added polystyrene therein.

5,393,808

COMPOSITION OF MATTER FOR WEAR SURFACES AND METHOD FOR PRODUCING SAME

Anthony Buonaura, Bluford, Ill., and John W. Moore, Creve Coeur, Mo., assignors to The Swan Corporation, St. Louis, Mo.

Continuation of Ser. No. 150,352, Nov. 10, 1993, abandoned, which is a continuation of Ser. No. 107,979, Feb. 12, 1993, abandoned, which is a continuation of Ser. No. 614,673, Nov. 15, 1990, abandoned, which is a continuation of Ser. No. 405,406, Sep. 11, 1989, abandoned, which is a continuation of Ser. No. 192,222, Oct. 16, 1987, abandoned. This application Jun. 9, 1994, Ser. No. 257,465

Int. Cl.[6] C08L *67/00*

U.S. Cl. 523—514 **11 Claims**

1. A method for producing a moldable composition of matter comprising developing a reinforced matrix under ambient conditions, which matrix consists of a hydrogenated bis-phenol A linear polyester prepolymer, a low profile additive, a catalytic agent, an inhibitor, a mold release agent, a flame retardant, an extender, and a viscosity increasing agent; wherein a predetermined quantity of the hydrogenated bis-phenol A linear polyester prepolymer is charged to a vessel, then subjecting same to agitation and during such agitation to sequentially introduce into the vessel a low profile additive, a catalytic agent, an inhibitor, a mold release agent, a flame retardant, and an extender, continuing the agitation until the ingredients are blended, then adding a viscosity increasing agent, and prior to inter-reaction of the viscosity increasing agent to introduce into the blended material under agitation a predetermined quantity of solid reinforcing elements, then, subsequent to intermixture of the reinforcing elements within the blended material to withdraw the mixture and to store same for a predetermined period of time requisite for permitting the viscosity increasing agent to enhance the viscosity of the mixture, and then while the mixture is in a pliable, leathery-like, dry to the touch state for subjection to ultimate compression.

5,393,809

POLYMERIC SYNTHETIC MATERIAL WHICH HAS AN ANTISEPTIC AND/OR ANTIOXIDANT ACTION AND PROCESS FOR THE MANUFACTURE OF THE SAID MATERIAL

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Jul. 20, 1993, Ser. No. 93,753

Claims priority, application France, Jul. 21, 1992, 92 08975

Int. Cl.[6] C08K *3/10;* **C08L** *1/02*

U.S. Cl. 524—35 **23 Claims**

1. A synthetic polymeric material comprising a mixture of a heat-cured urea-formaldehyde resin and a particulate organic filler selected from the group consisting of wood powder, wood sawdust, cellulose, starch, carragenate gum, an alginate, a xanthan, a scleroglucan and mixtures thereof, said particulate organic filler being impregnated with an antiseptic agent selected from the group consisting of a water-soluble copper salt, a water-soluble zinc salt and a water-soluble silver salt.

5,393,810

METHOD AND COMPOSITION FOR BREAKING CROSSLINKED GELS

Phillip C. Harris, and Stanley J. Heath, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 30, 1993, Ser. No. 176,165

Int. Cl.[6] C08K *5/15, 3/38;* **C08L** *5/00;* **E21B** *43/26*

U.S. Cl. 524—56 **12 Claims**

1. A composition comprising:
a crosslinked gel comprising an aqueous fluid hydrated polymer and a crosslinking agent;
a curable resin coated upon a particulate comprising an at least partially uncured phenolic resin or uncured furan resin;
a crosslinked gel breaker comprising an oxidizing agent; and
a sequestering agent comprising a copolymer of vinylpyrrolidone and acrylic acid.

5,393,811

COMPOSITION AND METHOD FOR IMPROVING THE STORAGE STABILITY OF POLYMER MODIFIED ASPHALTS

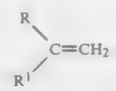
Lyle E. Moran, and Katherine L. Sokol, both of Sarnia, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 708,536, May 31, 1991, abandoned. This application May 10, 1993, Ser. No. 59,695

Int. Cl.[6] C08L *95/00, 23/24*

U.S. Cl. 524—71 **11 Claims**

1. A method for improving the storage stability of an asphalt consisting of asphalt and a thermoplastic polymer selected from the group consisting of polyethylene, ethylene methacrylate, ethylene-propylene elastomer, ethylene-vinyl acetate, nylon, and mixtures thereof, or a thermoset polymer selected from the group consisting of polyimide, polyurethane, vulcanized rubber, cured elastomer and mixtures thereof, wherein said thermoplastic or thermoset polymers have a number average molecular weight of at least 10,000 which consists of adding a storage stability improving amount of a polymerized alpha-olefin prepared from an alpha-olefin of the formula



where R is $_{18}$ to C_{40} alkyl and R^1 is hydroge·., wherein the polymerized alpha-olefin has a number averaged molecular weight of form about 500 to 5,000 and has a congealing and melting point which is essentially no higher than the congealing and melting point of the alpha-olefin from which it is prepared.

5,393,812

FLAME RETARDANT, LIGHT STABLE COMPOSITION

Charla S. Haley, Stone Mountain, and William L. Sanchez, Conyers, both of Ga., assignors to Hercules Incorporated, Wilmington, Del.

Filed Aug. 31, 1993, Ser. No. 114,575

Int. Cl.[6] C08K *5/5337, 5/523, 5/521*

U.S. Cl. 524—91 **68 Claims**

1. A composition comprising:
(a) at least one polyolefin;
(b) at least one flame retardant, comprising a tris(halohydrocarbyl phosphate or phosphonate ester; and
(c) at least one light stabilizer, comprising an alkoxyamine functional hindered amine.

5,393,813

POLYOXYMETHYLENE HAVING IMPROVED ACID STABILITY

Stephanie Schauhoff, Frankfurt; Edwin Nun, Brachtal, and Detlef Arnoldi, Weisenheim am Berg, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Oct. 22, 1993, Ser. No. 140,357

Claims priority, application Germany, Oct. 24, 1992, 4236465.5; Oct. 24, 1992, 9214402.0

Int. Cl.[6] C08J *5/10;* **C08K** *5/34;* **C08L** *59/02*

U.S. Cl. 524—101 **6 Claims**

1. A polyoxymethylene composition which has improved acid stability containing
A at least one polyoxymethylene,
B 0.05–<3 parts, related to 100 parts of A, of melamine cyanurate together with
C up to 5 parts, related to 100 parts of A, of an alkali metal salt of a polybasic carboxylic acid and
D up to 5 parts, related to 100 parts of A, of a polyalkylene glycol,
E up to 100 parts, related to 100 parts of A, of a thermoplastic polyurethane,
F customary additives.

5,393,814

POLYOLEFIN COMPOSITION

Bing-Lin Chen, Germantown, Tenn., assignor to Witco Corporation, Greenwich, Conn.

Filed Nov. 17, 1993, Ser. No. 153,779

Int. Cl.[6] C08K *5/20*

U.S. Cl. 524—219 **9 Claims**

1. A composition of matter comprising a polyolefin and from about 0.1 to about 0.5 weight percent of the polyolefin of at least one alkenyl monoamide of a dicarboxylic acid having the structure:



wherein R is a divalent hydrocarbon group of 2 to 20 carbon atoms and R′ is an alkenyl group of 12 to 24 carbon atoms.

5,393,815

SILAZANE-BASED, HEAT RESISTANT, DIELECTRIC COATING COMPOSITIONS

Yoshihumi Takeda; Toshinobu Ishihara, and Hiromi Ohsaki, all of Jouetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 779,360, Oct. 17, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 95,353

Claims priority, application Japan, Oct. 17, 1990, 2-278483

Int. Cl.[6] C08K *5/24*

U.S. Cl. 524—262 **3 Claims**

1. A coating composition capable of forming a dielectric coating having improved adhesion and heat resistance comprising:
an organic silicon polymer selected from the group consisting of polycarbosilanes having a number average molecular weight of about 600 to 2,000 and polysilazanes having a number average molecular weight of about 500 to about 2,000,
a silazane compound selected from the group consisting of tetramethyldisilazane, hexamethylcyclotrisilazane, octamethylcyclo tetrasilazane and mixtures thereof, and
an inorganic powder having a mean particle size of from about 0.1 to about 30μm,
said composition comprising, based on the total weight of the composition, about 5 to about 50% by weight of the organic silicon polymer about 5 to about 40% by weight of the silazane compound, and about 10 to about 70% by weight of the inorganic powder.

5,393,816

RUBBER COMPOSITION

Hitoshi Kondo; Hirokazu Taniguchi, and Yuzo Sakai, all of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,843

Claims priority, application Japan, Dec. 10, 1991, 3-349749; Mar. 5, 1992, 4-083068; Apr. 2, 1992, 4-108373; Oct. 20, 1992, 4-281457

Int. Cl.[6] C08J *5/10;* **C08K** *5/54;* **C08L** *7/00*

U.S. Cl. 524—267 **27 Claims**

1. A rubber composition for cleaning a metal mold, comprising 100 parts by weight of a rubber selected from the group consisting of natural rubber, synthetic rubber and mixtures thereof, 2–30 parts by weight of an aminoalcohol, 5–30 parts by weight of a glycol, 30–90 parts by weight of an adsorptive, and 0.1–10 parts by weight of an organic silane of the formula,

$$Z^1—Alk^1—S_n—Alk^2—Z^2$$

where Z^1 and Z^2 are independently



in which R^1, R^2 and R^3 may be the same or different and each represents an alkoxy group having 1–4 carbon atoms, Alk^1 and Alk^2 may be the same or different and each represents a divalent hydrocarbon radical having 1–6 carbon atoms and n is 2–6.

5,393,817

MOLDING MATERIALS BASED ON POLYMETHYL METHACRYLATE AND HAVING IMPROVED NOTCHED IMPACT STRENGTH

Andreas Deckers, Ludwigshafen; Norbert Guentherberg, Speyer, and Norbert Niessner, Friedelsheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

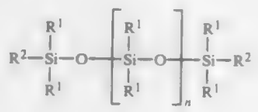
Filed Jan. 11, 1994, Ser. No. 180,068

Claims priority, application Germany, Jan. 13, 1993, 4300596

Int. Cl.[6] C08K *5/24;* **C08L** *31/02;* **C08G** *63/48*

U.S. Cl. 524—269 **4 Claims**

1. A molding material based on polymethyl methacrylate, comprising
A) from 99.99 to 95.0% by weight of a mixture comprising
a_1) from 5 to 95% by weight of polymethyl methacrylate, obtained by polymerizing a mixture comprising
a_{11}) from 80 to 100% by weight of methyl methacrylate and
a_{12}) from 0 to 20% by weight of a C_1–C_{20}-alkyl ester of acrylic acid, and
a_2) from 95 to 5% by weight of a multistage graft copolymer based on a C_1–C_{20}-alkyl ester of acrylic and/or methacrylic acid and
B) from 0.01 to 5.0% by weight of a polysiloxane of the formula I



(I)

where
R^1 is C_1–C_6-alkyl or C_6–C_{10}-aryl,
R^2 is hydroxy-C_1–C_6-alkyl or amino-C_1–C_6-alkyl, and
n is a natural number from 5 to 200.

5,393,818
SOLVENT-FREE LAMINATING ADHESIVE COMPOSITION FROM EPOXIDIZED BLOCK POLYMER

Michael A. Masse, Richmond; Paul A. Mancinelli, Woodlands; James R. Erickson, Katy; Steven H. Dillman, Houston; Robert C. Bening, Katy, and David R. Hansen, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 6, 1993, Ser. No. 43,428
Int. Cl.[6] C08K 5/10; C08L 63/08
U.S. Cl. 524—270 3 Claims

1. A laminating adhesive comprising an adhesive composition which comprises

(a) a hydrogenated epoxidized block copolymer which contains from 0.1 to 3.0 Meq epoxy per gram of polymer and has the formula

$$(A—B—A_p)_n—Y—(A_q—B)_m$$

wherein Y is a coupling agent or coupling monomers, and wherein A and B are polymer blocks which may be homopolymer blocks of conjugated diolefin monomers, copolymer blocks of conjugated diolefin monomers or copolymer blocks of conjugated diolefin monomers and monoalkenyl aromatic hydrocarbon monomers, and wherein the A blocks have a higher number of aliphatic double bonds between a tertiary carbon atom and either a primary, secondary, or tertiary carbon atom per unit of block mass than do the B blocks, and wherein the A blocks have a molecular weight from about 100 to about 3000 and the B blocks have a molecular weight from about 1000 to about 15,000, and wherein p and q are 0 or 1 and $n>0$, r is 0 or 1, $m\geq 0$ and $n+m$ ranges from 1 to 100;

(b) at least a significant amount of a tackifying resin compatible with the polymer of (a) up to 400 phr.

5,393,819
ASPHALT MODIFIER

William E. Peters, Danville, Ind., assignor to Alphaflex Industries, Indianapolis, Ind.

Filed Feb. 25, 1994, Ser. No. 201,765
Int. Cl.[6] C08K 3/10, 3/30; C08L 53/02, 27/12
U.S. Cl. 524—406 24 Claims

1. An asphalt modifier comprising:

a thermoplastic elastomeric block copolymer, and

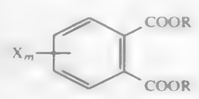
an effective amount of a fibrillated polytetrafluoroethylene and molybdenum disulfide particles.

5,393,820
FLAME RETARDANT COMPOUNDS AND COMPOSITIONS CONTAINING THEM

Paul Ashworth, Holywell, and Michael J. Schneider, Chester, both of Great Britain, assignors to The Associated Octel Company Limited, London, United Kingdom

PCT No. PCT/GB91/00322, § 371 Date Nov. 3, 1992, § 102(e) Date Nov. 3, 1992, PCT Pub. No. WO91/13858, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 4, 1991, Ser. No. 934,432
Claims priority, application United Kingdom, Mar. 5, 1990, 9004857
Int. Cl.[6] C08K 5/03, 3/10; C07C 69/76
U.S. Cl. 524—466 5 Claims

1. A haloneopentyl esters of the formula



wherein X is Br;

m has a value of 4; and

each R is a 2,2-bis(bromomethyl)-3-bromo-n-propyl group.

2. A flame retarded polymer composition, comprising as the flame retardant the ester according to claim 1.

5,393,821
CARBON BLACKS

Chiung-Huei Shieh, Lexington, Mass.; William A. Farr, London, Canada; Thomas E. McElwain, Pampa, Tex.; Roscoe W. Taylor, Abbotsford, Australia; William J. Patterson, North Andover, Mass.; Glenn E. Denstaedt, Wadsworth, Ohio; Robert R. Juengel, Roswell, and Stephen G. Laube, Duluth, both of Ga., assignors to Cabot Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 23,822, Feb. 23, 1993, abandoned. This application Apr. 1, 1993, Ser. No. 41,389
Int. Cl.[6] C08K 3/04
U.S. Cl. 524—495 16 Claims

1. A carbon black having a CTAB of greater than, or equal to, 140 m^2/g; a CDBP of greater than or equal to 115 cc/100 g; a Tint value of greater than or equal to 135%; a $\Delta D50$ of less than or equal to 50 nm; a Dmode less than or equal to 72 nm; and an Occluded Volume Index greater than or equal to 1.30.

5,393,822
CHOPPED CARBON FIBER STRANDS COATED WITH RESIN AND MOLDING OBTAINED THEREFROM

Motoi Marumoto; Eiji Fujisawa, and Hiroaki Shono, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima; Kawasaki Steel Corporation, Kobe and Mitsubishi Gas Chemical Company, Inc., Tokyo, all of Japan

Filed Dec. 7, 1992, Ser. No. 986,338
Claims priority, application Japan, Dec. 16, 1991, 3-332067
Int. Cl.[6] C08J 5/06; C08K 3/04; C08L 75/04
U.S. Cl. 524—496 10 Claims

1. Resin-coated chopped carbon fiber strands for direct injection molding comprising chopped carbon fiber strands coated with 20–50 parts by weight of a thermosetting resin and 0.5–30 parts by weight of a urethane resin based on 100 parts by weight of the chopped carbon fiber strands.

5,393,823
COATING RESIN COMPOSITION

Hidetoshi Konno, Izumi-ohtsu; Masataka Ooka, Nara; Hirofumi Takeda, Yao, and Hiroshi Sakamoto, Ikaruga, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 812,850, Dec. 20, 1991, abandoned, which is a continuation of Ser. No. 489,864, Mar. 5, 1990, abandoned, which is a continuation of Ser. No. 10,542, Feb. 3, 1987, abandoned. This application Oct. 18, 1993, Ser. No. 137,224
Claims priority, application Japan, Feb. 4, 1986, 61-21224; Oct. 31, 1986, 61-260456
Int. Cl.[6] C08F 8/42
U.S. Cl. 524—507 26 Claims

1. A one-can paint coating resin composition which is stable for a period of at least one month in the can comprising

(I) a vinyl polymer obtained by polymerizing (A) 5 to 90% by weight of a vinyl monomer having at least one unsaturated double bond and at least one siloxy group per molecule whereby upon reaction with moisture in the air the siloxy group forms a hydroxyl group and (B) 95 to 10% by weight of a copolymerizable vinyl monomer other than (A) in the presence of a radical generator, and

(II) a curing agent having reactivity with the hydroxyl groups generated upon reaction of the at least one siloxy group from the polymer (I) with moisture in the air,

wherein said copolymerizable vinyl monomer is selected from the group consisting of (meth)acrylic acid esters containing no functional groups, aromatic vinyl monomers, hydroxyl group—containing vinyl monomers, (meth)acrylic acid and mixtures thereof.

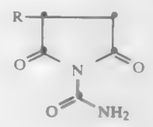
5,393,824
UREA DERIVATIVES OF MALEATED POLYOLEFINS

Thomas D. Roberts, Longview, Tex., assignor to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 203,138, Feb. 28, 1994. This application Jun. 27, 1994, Ser. No. 265,995
Int. Cl.[6] C08F 8/30
U.S. Cl. 524—531 14 Claims

1. An emulsion composition comprising:

(a) about 10 to 30 weight percent of the urea derivative of succinylated polyolefins of the formula;



wherein R is a polyolefin attached at any point along the hydrocarbon chain,

(b) a minor amount up to 15 weight percent of a surfactant, and

(c) about 60 to 90 weight percent water.

5,393,825
FILMS AND EXTRUSIONS OF CURED CROSSLINKED VINYL LACTAM POLYMER AND METHOD OF PREPARATION

Susan Y. Tseng, Staten Island, N.Y.; Philip F. Wolf, Bridgewater, and William J. Burlant, Wayne, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Division of Ser. No. 103,944, Aug. 9, 1993. This application May 13, 1994, Ser. No. 242,756
Int. Cl.[6] B01D 71/06; C08F 26/10, 26/06
U.S. Cl. 524—548 8 Claims

1. The process of preparing a cured, crosslinked polymer membrane or filament having a high glass transition temperature above 150° C. prepared from between about 70 and 100 wt. % N-vinyl lactam monomer having 4 or 6 ring carbon atoms in its heterocyclic structure or a mixture of said N-vinyl lactam monomers and between 0 and about 30 wt. % olefinically unsaturated comonomer which comprises

(1) forming a uniform liquid mixture of

(a) between about 2 and about 30 wt. % of said monomer or monomers;

(b) between about 0.01 and about 10.0 wt. % crosslinking agent and

(c) between about 60 and about 90 wt. % water;

(2) in an inert atmosphere, polymerizing the mixture under agitation in the presence of a free radical polymerization initiator by heating the mixture to between about 50° and about 80° C. for a period of from about 2 to about 5 hours and until a constant viscosity of from about 60 to about 100 K value is obtained;

(3) applying a coating of the resulting soluble polymer as a film to a substrate or extruding the soluble polymer in the form of a filament;

(4) subjecting said film or filament to curing in a closed system in an inert atmosphere at a temperature of from about 100° to about 140° C. for a period of from about 0.5 to about 3 hours to produce a transparent, water insoluble formed product and then

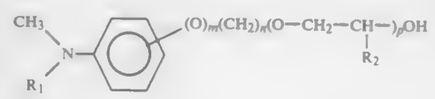
(5) digesting the formed product in water to swell the polymer and extract soluble monomer and linear polymer so as to form a stable hydrogel as a continuous membrane or filament.

5,393,826
ACTIVATOR FOR CYANOACRYLATE ADHESIVES

Thomas Huver, Duesseldorf; Christian Nicolaisen, Ronnenberg, and Susanne Camp, Hannover, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/00787, § 371 Date Oct. 12, 1993, § 102(e) Date Oct. 12, 1993, PCT Pub. No. WO92/18576, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 7, 1992, Ser. No. 133,096
Claims priority, application Germany, Apr. 16, 1991, 4112313.1
Int. Cl.[6] C08K 5/17; C08C 19/22; C08F 8/32
U.S. Cl. 524—722 36 Claims

1. In a method of activating the cure of cyanoacrylate adhesives the improvement comprising using as an activator an N,N-dialkyl aniline derivative having the following general formula



in which

R_1 is a CH_3 or C_2H_5 group,

m=0 or 1,

n=0, 1 or 2; $n\neq 0$ where m=1

R_2 is an H atom or a CH_3 group and

p=0 to 10.

5,393,827
PREPARATION OF HIGH SOLIDS POLYMERIC MICROEMULSIONS

David L. Dauplaise, Stamford, and Michael P. O'Toole, Norwalk, both of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Aug. 17, 1993, Ser. No. 106,955
Int. Cl.[6] C07F 2/32, 2/16
U.S. Cl. 524—801 10 Claims

1. A method of preparing an improved high solids polymer water-in-oil microemulsion at relatively low surfactant levels comprising:

(a) preparing an oil phase comprising:

(i) at least one hydrocarbon; and

(ii) an effective amount of a surfactant or mixture of surfactants to form a microemulsion upon the addition of an aqueous phase;

(b) preparing an aqueous phase comprising:

(i) at least one ethylenically unsaturated monomer in an amount of at least about 27 percent by weight of the total weight of aqueous phase and oil phase;

(c) adding a portion of said aqueous phase (b) to said oil phase (a) to form a microemulsion and polymerizing; and

(d) adding another portion of said aqueous phase (b). to the product of step (c) to form a microemulsion and polymerizing;

wherein the emulsifier to monomer ratio after the final portion addition is below about 0.30 and the microemulsion produced by said method has improved performance over a microemulsion formed from a method comprising a single addition of the same total amount of aqueous phase.

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5,393,828

CHEMICAL DEGRADATION OF CURED AMINO RESINS

Juergen Weiser, Schriesheim; Wolfgang Reuther, and Erwin Hahn, both of Heidelberg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Dec. 9, 1993, Ser. No. 163,715
Claims priority, application Germany, Dec. 14, 1992, 4242046
Int. Cl.[6] C08G *63/91*
U.S. Cl. 525—25 6 Claims

1. A process for chemically degrading cured amino resins, which comprises reacting at least one cured amino resin with at least one amine selected from the group consisting of primary alkylamines, primary arylamines, secondary alkylamines, secondary arylamines; and alkanolamines, alkoxyamines, and polyamines in which at least one amine function has a hydrogen atom at from 40° to 250° C., wherein the amine is in molar excess related to the smallest monomer unit in the cured amino resin.

5,393,829

RESIN COMPOSITION CONTAINING LOW-MOLECULAR WEIGHT COMPOUNDS WHICH FORM A POLYESTER URETHANE HYBRID NETWORK

Ronald L. Verleg, Weesp, and Adrianus J. De Koning, Zwolle, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Continuation of Ser. No. 574,671, Aug. 30, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 169,711
Claims priority, application Netherlands, Jan. 6, 1990, 9000036
Int. Cl.[6] B29C *45/00;* C08L *75/06*
U.S. Cl. 525—28 23 Claims

1. A two-part system containing at least a first, second and third component, wherein

the first part of said system comprises a first component consisting of a condensation product of at least one diol and at least one unsaturated dicarboxylic acid, and a second component consisting of an unsaturated monomer capable of polymerizing with the first component,

and the second part comprises a third component which contains a polyisocyanate, and a catalyst, wherein said second part optionally comprises the rest of the second component,

wherein the first component consists essentially of a diester compound of 2 diol molecules and 1 molecule of a dicarboxylic acid material, said dicarboxylic acid material consisting of at least 75% α-,β-unsaturated dicarboxylic acid, and

wherein when said components are combined, the resulting resin composition is capable of being cured by undergoing a urethane polymerization reaction and a radical polymerization reaction to obtain a polyester urethane hybrid network.

5,393,830

LAMINATING RESINS HAVING LOW ORGANIC EMISSIONS

Thomas W. Smeal, Murrysville Boro, and George L. Brownell, Mt. Lebanon Township, Allegheny County, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 24,022, Mar. 1, 1993, abandoned. This application Jun. 14, 1993, Ser. No. 75,432
Int. Cl.[6] C08L *67/06*
U.S. Cl. 525—44 4 Claims

1. A laminating resin composition consisting essentially of (A) a base resin comprising about 10% to about 50% by weight glycols, about 20% to about 50% by weight unsaturated polycarboxylic acids or derivatives thereof, including up to about 30% saturated dicarboxylic acids, and about 1% to about 60% dicyclopentadiene, (B) alkoxylated bisphenol-A dimethacrylate having at least two alkoxy groups, in a weight ratio of (A) to (B) of about 1.3:1 to about 0.7:1, (C) up to about 30% by weight ethylene glycol dimethacrylate, (D) up to about 20% by weight vinyl toluene, and (E) up to about 40% by weight cyclohexyl methacrylate, said composition emitting no more than about 12 grams of volatiles per square meter when tested according to the Rule 1162 Standard Method for Static Volatile Emissions of the South Coast (California) Air Quality Management District.

5,393,831

SHELF STABLE NONWOVEN FABRICS AND FILMS

Robert L. Hudson, Roswell, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 5, 1993, Ser. No. 57,721
Int. Cl.[6] C08K *5/09, 5/16*
U.S. Cl. 525—55 19 Claims

1. A shelf stable nonwoven fabric or film formed from a polyolefin composition comprising a mixture of:

A. a polyolefin which contains no more than a minor amount of phenolic antioxidant;

B. a water-sensitive compound which imparts high stability to the polyolefin composition under dry conditions of storage, shipping and consumer use but which, upon exposure to conditions of high humidity, interacts with water to form a material providing less stability to the polyolefin, allowing a transition metal organic salt to catalyze the degradation of the polyolefin;

C. a transition metal organic salt; and

D. an oxidizable unsaturated compound.

5,393,832

EVOH/POLYPROPYLENE GAS-IMPERMEABLE POLYMER ALLOYS

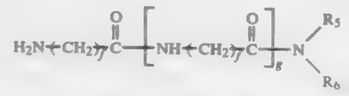
Jean-Claude Moulies, Serquigny; Patrick Borg, Beaumont le Roger, and Pierre Nogues, Bernay, all of France, assignors to Atochem, Puteaux, France

Continuation of Ser. No. 580,650, Sep. 11, 1990, abandoned. This application Nov. 19, 1992, Ser. No. 979,429
Claims priority, application France, Sep. 14, 1989, 89 12041
Int. Cl.[6] C08F *255/02, 267/04;* C08L *29/02*
U.S. Cl. 525—57 7 Claims

1. A gas barrier polymer alloy composition comprising (i) an ethylene-vinyl alcohol copolymer matrix, (ii) a polypropylene disperse phase, and (iii) a phase-compatibilizing amount of an α-monoolefin graft copolymer, said α-monoolefin graft copolymer having the formula:

AaMbXcPd

in which AaMb represents the backbone (co)polymer; XcPd represents the polymers grafted onto the backbone (co)polymer; A is a recurring structural unit derived from an α-monoolefin having from 2 to 8 carbon atoms; M is a recurring structural unit derived from α-monoolefin having from 2 to 8 carbon atoms, a recurring structural unit derived from a plurality of such α-monoolefins, either admixed or randomly or sequentially copolymerized, or a recurring structural unit derived from a monomer polymerizable with such α-monoolefins; with the proviso that the units A and M comprising said backbone (co) polymer are copolymerized randomly or sequentially, or are only admixed; X is a recurring structural unit derived from a monomer which can be grafted onto an α-monoolefin homo- or copolymer and which comprises a functional group reactable with an amine; P is derived from a polyamide oligomer having the formula:



in which f is a number ranging from 3 to 11; g is a number ranging from 3 to 80; R_5 is hydrogen or a linear or branched chain alkyl radical having up to 20 carbon atoms; and R_6 is a linear or branched chain alkyl or alkenyl radical having up to 20 carbon atoms, a saturated or unsaturated cycloaliphatic radical, an aromatic radical, or a combination thereof; a, b, c and d are numbers such that a has a value ranging from 0 to 5,000, the sum a+b ranges from 350 to 45,000, c has a value such that the weight content of the unit grafted onto the backbone (co)polymer relative to the copolymer grafted with X ranges from 500 ppm to 10%, and d is greater than 0 and less than or equal to c.

5,393,833

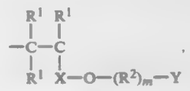
THERMOPLASTIC OLEFIN COPOLYMERS AND BLENDS PREPARED THEREFROM

Farid F. Khouri, Clifton Park, and Gregory J. Stoddard, Slingerlands, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

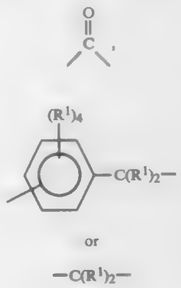
Filed Dec. 2, 1993, Ser. No. 160,133
Int. Cl.[6] C08L *71/12, 23/26*
U.S. Cl. 525—64 6 Claims

1. A blend comprising a thermoplastic olefin copolymer and a polymer suitable for generating the blend wherein the copolymer is prepared by reacting an orthoester or orthocarbonate functionalized olefin polymer with an additional polymer wherein:

(a) the orthoester or orthocarbonate functionalized olefin polymer comprises structural units of the formula



wherein each R^1 is independently a hydrogen, C_1–C_5 hydrocarbon, substituted or unsubstituted aromatic radical or a halogen and R^2 is —CH_2— or a substituted or unsubstituted divalent aromatic radical and m is any integer greater than or equal to 1 and X has the formulae



or

Y is selected from the group consisting of moieties of cyclic orthocarbonates, and cyclic orthoesters; and

(b) the additional polymer has acid, acid anhydride or thiol functionality.

5,393,834

Patent Not Issued For This Number

5,393,835

POLYCARBONATE/ABS MOLDING COMPOUNDS

Thomas Eckel, Dormagen; Dieter Wittmann, Cologne; Gerhard Fennhoff, Willich; Jochen Schoeps, Krefeld; Karl-Heinz Ott, Leverkusen, and Wolfgang Jakob, Moers, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 18, 1993, Ser. No. 63,382
Claims priority, application Germany, May 21, 1992, 4216758
Int. Cl.[6] C08L *69/00*
U.S. Cl. 525—67 7 Claims

1. Thermoplastic molding compounds containing

A. 5 to 95 parts by weight of an aromatic polycarbonate,

B. 1 to 50 parts by weight of a vinyl copolymer of

B.1 50 to 99 parts by weight styrene, α-methyl styrene, nucleus-substituted styrenes, methyl methacrylate or mixtures thereof and

B.2 1 to 50 parts by weight (meth)acrylonitrile, methyl methacrylate, maleic anhydride, N-alkyl- or N-aryl-substituted maleic imide or mixtures thereof

and

C. 5 to 95 parts by weight of one or more graft polymers obtained by graft polymerization of

C.1 5 to 95 parts by weight of a mixture of

C.1.1 50 to 99 parts by weight styrene, α-methyl styrene, nucleus-substituted styrenes, C_{1-8} alkyl methacrylates, C_{1-8} alkyl acrylates or mixtures thereof and

C.1.2 1 to 50 parts by weight acrylonitrile, methacrylonitrile, C_{1-8} alkyl methacrylates, C_{1-8} alkyl acrylates, maleic anhydride, C_{1-4} alkyl- or phenyl-N-substituted maleic imides or mixtures thereof on

C.2 5 to 95 parts by weight of a crosslinked, particulate elastomeric graft base having an average particle diameter (d_{50} value) of 0.05 to 5 μm and a glass transition temperature of <10° C., the sum of the parts by weight of A, B and C being 100 parts by weight,

characterized in that 10 to 100% of component A is replaced by a mixture of two polycarbonates A.1 and A.2 of identical structure,

1) the relative solution viscosity of A.1 being 1.18 to 1.24,

2) the relative solution viscosity of A.2 being 1.24 to 1.34 and

3) the difference between the relative solution viscosities of A.1 and A.2 being greater than or equal to 0.06 relative solution viscosities being measured in CH_2Cl_2 as solvent at 25° C. and at a concentration of 0.5 g polycarbonate/100 ml of solvent.

5,393,836

THERMOPLASTIC MOLDING MATERIALS BASED ON POLYCARBONATES, GRAFT POLYMERS AND STYRENE/ACRYLONITRILE COPOLYMERS

Norbert Niessner, Friedelsheim, and Norbert Guentherberg, Speyer, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Dec. 9, 1993, Ser. No. 163,716
Claims priority, application Germany, Dec. 10, 1992, 4241555
Int. Cl.[6] C08L *25/12, 55/02, 69/00*
U.S. Cl. 525—67 4 Claims

1. Thermoplastic molding material consisting essentially of:

A) from 1 to 30% by weight of a polycarbonate,

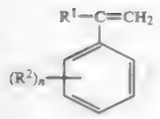
B) from 10 to 50% by weight of a graft polymer consisting essentially of

b_1) from 40 to 80% by weight based on the total weight of B), of a grafting base comprising an elastomeric polymer having a glass transition temperature of less than 10° C. and

b_2) from 20 to 60% by weight based on the total weight of B), of a grafting shell comprising

b_{21}) from 50 to 95% by weight based on the total weight of b_2), of styrene or substituted styrenes of the formula I

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where R^1 is alkyl of 1 to 8 carbon atoms or hydrogen, R^2 is alkyl of 1 to 8 carbon atoms and n is 0, 1, 2 or 3, or methyl acrylate or methyl methacrylate or a mixture thereof and

b_{22}) from 5 to 50% by weight of acrylonitrile, methacrylonitrile, maleic anhydride, maleimides N-substituted by C_1–C_8-alkyl or C_6–C_{20}-aryl, or a mixture thereof,

C) from 5 to 80% by weight of a thermoplastic copolymer comprising

C_1) from 50 to 85% by weight based on the total weight of C), of styrene or substituted styrenes of the general formula I or of a mixture thereof and

C_2) from 15 to 50 % by weight based on the total weight of C), of acrylonitrile or of a mixture thereof and

D) from 10 to 45% by weight of a thermoplastic copolymer which differs from component C) and consists essentially of

d_1) from 50 to 85% by weight based on the total weight of D), of styrene or substituted styrenes of the general formula I or of a mixture thereof and

d_2) from 15 to 50% by weight based on the total weight of D), of acrylonitrile or methacrylonitrile or of a mixture thereof,

with the proviso that the amount by weight, based on the total weight of component D), of component d_2) is at least 5% by weight-lower than the amount by weight, based on the total weight of component C), of component c_2).

5,393,837

POLYESTER COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Satoshi Kinoshita; Hideo Takamatsu; Kazushige Ishiura, all of Kashima; Haruhisa Masuda, and Shunro Taniguchi, both of Kurashiki-city, all of Japan, assignors to Kuraray Company Ltd., Kurashiki-city, Japan

Filed Jan. 7, 1994, Ser. No. 178,656

Claims priority, application Japan, Jan. 21, 1993, 5-026270; Nov. 4, 1993, 5-275812; Nov. 4, 1993, 5-275813

Int. Cl.[6] C08L *67/02, 53/00, 53/02*

U.S. Cl. 525—92 17 Claims

1. A polyester composition comprising the following two components (a) and (b):

(a) a polyester; and

(b) a modified first block copolymer (b-1) having chain-terminating hydroxyl groups, said first block copolymer comprising:

at least one block A selected from the group consisting of a polymer block consisting essentially of an aromatic vinyl compound and a hydrogenated polybutadiene block obtained by hydrogenating a polybutadiene block having not more than 20% of a 1,2-bond and

at least one block B selected from the group consisting of a hydrogenated polyisoprene block, and a hydrogenated isoprene-butadiene random copolymer block; and/or

a modified second block copolymer (b-2) having chain-terminating hydroxyl groups, said second block copolymer comprising:

at least one polymer block C principally comprising an aromatic vinyl compound and

at least one polyisobutylene block D;

the ratio by weight between said component (a) and said component (b) being (a)/(b)=98/2 to 40/60.

5,393,838

CONJUGATED DIENE/MONOVINYLARENE BLOCK COPOLYMERS WITH MULTIPLE TAPERED BLOCKS

George A. Moczygemba; Nathan E. Stacy, both of Bartlesville, and Nancy R. Knight, Ochelata, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 982,938, Nov. 30, 1992, Pat. No. 5,290,875. This application Dec. 6, 1993, Ser. No. 163,785

Int. Cl.[6] C08L *53/02, 25/04;* C08F *297/04*

U.S. Cl. 525—98 5 Claims

1. Blends of polystyrene with polymodal block copolymers in which the block copolymer contains from about 55 to about 95 weight percent of monovinylaromatic monomer based upon total weight of the copolymer and the copolymer is produced in accordance with a method comprising:

(a) charging into a polymerization zone an initiator and a monovinylaromatic monomer in the presence of a randomizer and allowing polymerization to occur until essentially no free monomer is present; thereafter

(b) charging into said polymerization zone a monovinylaromatic monomer and an initiator and allowing polymerization to occur until essentially no free monomer is present; thereafter

(c) charging into said polymerization zone a mixture of monovinylaromatic monomer and conjugated diene monomer and allowing polymerization to occur until essentially no free monomer is present; thereafter

(d) charging into said polymerization zone a mixture of monovinylaromatic monomer and conjugated diene monomer and allowing polymerization to occur until essentially no free monomer is present; thereafter

(e) charging into said polymerization zone a monovinylaromatic monomer and an initiator and allowing polymerization to occur until essentially no free monomer is present; thereafter

(f) charging into said polymerization zone a mixture of monovinylaromatic monomer and conjugated diene monomer and allowing polymerization to occur until essentially no free monomer is present; thereafter

(g) charging into said polymerization zone a mixture of monovinylaromatic monomer and conjugated diene monomer and allowing polymerization to occur until essentially no free monomer is present; thereafter

(h) charging into said polymerization zone a conjugated diene monomer and allowing polymerization to occur until essentially no free monomer is present; and thereafter

(i) charging the reaction mixture with a coupling agent.

5,393,839

CURABLE COMPOSITION CONTAINING POLYEPOXIDE AND POLYCARBODIIMIDE

Norikazu Iwamoto, Kobe, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 885,736, May 19, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 161,448

Claims priority, application Japan, May 20, 1991, 2-114483

Int. Cl.[6] C08G *59/68, 18/22;* C08L *79/04*

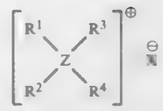
U.S. Cl. 525—111 1 Claim

1. A curable composition comprising:

(a) a polycarbodiimide having at least 2 carbodiimide groups and a number average molecular weight of 250 to 10,000, prepared by polycondensation of an organic polyisocyanate in the presence of a carbodiimide promoting agent;

(b) a polyepoxide having at least 2 epoxy groups and a number average molecular weight of 200 to 50,000; and

(c) as a catalyst, a zinc halide or a mixture of a zinc halide and an onium salt represented by



wherein Z represents a nitrogen atom or a phosphorous atom, R^1 to R^4, which are the same or different, each represent an organic group selected from the group consisting of aliphatic hydrocarbon groups, alicyclic hydrocarbon groups and aromatic hydrocarbon groups, and may form a ring in combination, and X represents a halogen atom

characterized in that, when cured, said carbodiimide groups react with said epoxy groups to form oxazolidineimine groups.

5,393,840

THERMOSETTING COATING COMPOSITIONS

Thauming Kuo, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Nov. 1, 1993, Ser. No. 143,702

The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.

Int. Cl.[6] C08L *33/14, 67/02*

U.S. Cl. 525—159 37 Claims

1. A thermosetting coating-composition comprising

(I) about 5 to about 81 weight percent of a curable polyester having a number average molecular weight of about 800 to about 3500 and a weight average molecular weight of about 3000 to about 70,000, comprising

(a) about 35 to 45 mole percent of diol residues,

(b) about 4 to about 8 mole percent of triol residues,

(c) about 5 to about 18 mole percent of residues of an aliphatic diacid,

(d) about 0 to about 30 mole percent of an aromatic dicarboxylic acid residue other than terephthalic acid,

(e) about 5 to about 35 mole percent of terephthalic acid residues, and

(f) about 12 to about 20 mole percent of aromatic hydroxy acid residues,

wherein all the stated mole percentages are based on the total moles of (a), (b), (c), (d), (e), and (f), with the total being 100 percent; and wherein substantilly all of said aromatic hydroxy acid residues are located at the ends of the polymer chains to which they are attached;

(II) about 5 to about 81 weight percent of an acrylic copolymer of ethylenically unsaturated monomers comprising at least one hydroxyl-functional monomer, said acrylic copolymer having a number average molecular weight of about 800 to about 10,000 and a weight average molecular weight of about 2,000 to 50,000; and

(III) about 10 to about 50 weight percent of an amino crosslinker.

5,393,841

DISSIMILAR ARM ASYMMETRIC RADIAL OR STAR BLOCK COPOLYMERS FOR ADHESIVES AND SEALANTS

Glenn R. Himes; Bridget A. Spence; Ronald J. Hoxmeier, and Steven S. Chin, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 9, 1993, Ser. No. 149,595

Int. Cl.[6] C08F *297/04*

U.S. Cl. 525—314 9 Claims

1. Radial or star asymmetric block copolymers of the formula

$$(A—HD)_x—Y—(UD)_z$$

wherein A is a vinyl aromatic hydrocarbon block having a peak molecular weight as determined by gel permeation chromatoqraphy of from 4000 to 20,000, HD is a hydrogenated conjugated diene block having a peak molecular weight as determined by gel permeation chromatography of from 10,000 to 100,000, Y is a multifunctional coupling agent, UD is an unhydrogenated conjugated diene block having a peak molecular weight as determined by gel permeation chromatography of from 1000 to 80,000, the block copolymer has a vinyl aromatic hydrocarbon content of from 4 to 35 percent by weight, x is an integer from 2 to 20, z is an integer from 1 to 10, and x+z ranges from 3 to 30.

5,393,842

POLY(VINYLAMMONIUM FORMATE)

Michael E. Ford, Coopersburg, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 36,757, Mar. 25, 1993. This application Jun. 28, 1994, Ser. No. 268,148

Int. Cl.[6] C08F *8/12*

U.S. Cl. 525—328.2 1 Claim

1. Poly(vinylammonium formate).

5,393,843

BUTADIENE POLYMERS HAVING TERMINAL FUNCTIONAL GROUPS

Dale L. Handlin, Jr., Houston; Daniel E. Goodwin, Katy; Carl L. Willis, Houston; David J. St. Clair, Houston; John D. Wilkey, Houston; Michael J. Modic, Richmond, and Craig A. Stevens, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 31, 1992, Ser. No. 938,917

Int. Cl.[6] C08F *8/00*

U.S. Cl. 525—332.8 16 Claims

1. A polymer, consisting essentially of:

polymerized 1,3-butadiene having a peak molecular weight between 500 and 20.000, 1,2-addition between 30% and 70%, and hydrogenation of at least 90% of the unsaturation; and

one or more terminal functional groups per molecule.

5,393,844

CHLORINATED POLYETHYLENE RUBBER COMPOSITION CONTAINING A 2,4,6-TRIMERCAPTO-1,3,5-TRIAZINE DICYCLOHEXYLAMINE SALT

Osamu Ozawa, Hiratsuka, and Tetsu Kitami, Hadano, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 697,575, May 9, 1991, abandoned. This application Jun. 21, 1993, Ser. No. 78,860

Claims priority, application Japan, May 10, 1990, 2-120709

Int. Cl.[6] C08F *8/34*

U.S. Cl. 525—333.9 1 Claim



1. A rubber composition comprising:

(a) 100 parts by weight of a rubber selected from the group consisting of a chlorinated polyethylene rubber, a maleic anhydride reformed chlorinated polyethylene rubber or mixtures thereof; and

(b) from 0.2 to 10 parts by weight of a 2,4,6-trimercapto-

1,3,5-triazine dicyclohexylamine salt formed prior to its addition to said rubber.

5,393,845

PROCESS FOR THE PRODUCTION OF LOW MOLECULAR WEIGHT ACRYLONITRILE POLYMERS AND THEIR USE

Siegfried Korte; Heinrich Alberts, both of Odenthal; Branislav Böhmer, Walsrode; Werner Karstens; Wolfgang Koch, both of Bomlitz; Hans-Günter Poersch-Panke, and Klaus Szablikowski, both of Walsrode, all of Germany, assignors to Wolff Walsrode AG, Walsrode, Germany

Filed Dec. 16, 1993, Ser. No. 168,609
Claims priority, application Germany, Dec. 23, 1992, 4243783
Int. Cl.[6] C08F *8/12*
U.S. Cl. 525—369 3 Claims

1. A process for the production of a water-soluble polymer predominantly containing carboxylate groups, which comprises preparing by continuous precipitation polymerization in a water/isopropanol mixture using a persulfate initiator, a polyacrylonitrile or acrylonitrile copolymer containing at least about 80% by weight of acrylonitrile units and having an average molecular weight Mw in the range from about 1,000 to 20,000 g/mol, a molecular non-uniformity of 0.3 to 2.0 and a content of terminal hydroxypropyl groups exceeding 0.5 units per molecule, removing the isopropanol to leave a suspension of the polymer with an average particle size of about 5 to 50 μm obtained after removal of the isopropanol, and subjecting the suspension to continuous hydrolysis in the presence of about 50 to 110 mol-% of an alkali metal hydroxide over an average residence time of about 6 to 180 minutes at a temperature of about 120° to 220° C.

5,393,846

MONOCARBOXYLIC ACID POWDER COATING CURING SYSTEMS

David A. Hammerton, Virginia Beach, Va., and Karlheinz Kromberger, Philadelphia, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 706,816, May 29, 1991, Pat. No. 5,266,657. This application Sep. 10, 1993, Ser. No. 118,847
Int. Cl.[6] C08F *8/30*
U.S. Cl. 525—374 3 Claims

1. A thermosetting powder coating composition having improved appearance properties comprising a carboxylic acid group-containing acrylic resin, a beta-hydroxyalkylamide curing agent, and from about 0.5 to about 15 weight percent based on the weight of the acrylic resin of a monocarboxylic acid group containing material having one carboxylic acid functional group.

5,393,847

CROSSLINKABLE COPOLYMERS OBTAINED BY POLYCONDENSATION AND IONICALLY CONDUCTIVE MATERIAL CONTAINING THE SAME

Fannie Alloin, Grenoble; Michel Armand, Saint-Martin-D'Uriage, and Jean-Yves Sanchez, Saint-Ismier, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France and Hydro-Quebec, Montreal, Canada

Filed Aug. 13, 1993, Ser. No. 105,807
Claims priority, application France, Aug. 14, 1992, 92 10033
Int. Cl.[6] C08L *71/02*
U.S. Cl. 525—403 18 Claims

1. Crosslinkable copolymer consisting of identical or different organic blocks A which cannot be crosslinked by a radical route or by a Diels-Alder reaction, each of which has a valency i such that $1 \leqq i \leqq 6$ and identical or different blocks $Z(CH_2)_j$ in each of which Z denotes an organic radical which has a valency j such that $1 \leqq j \leqq 6$, the radicals Z additionally containing at least one functional group permitting crosslinking by a radical route or by a Diels-Alder reaction;

each block A being joined to at least one block $Z(CH_2)_j$ by a functional group Y and each block $Z(CH_2)_j$ being joined to at least one block A by a functional group Y, the functional group Y being an ether functional group or a secondary or tertiary amine functional group;

the weighted molar mean of i and the weighted molar mean of j each being higher than or equal to 2.

5,393,848

PROCESS FOR FORMING IMPROVED LIQUID CRYSTALLINE POLYMER BLENDS

Larry F. Charbonneau, Mendham; Balaram Gupta, N. Plainfield; H. Clay Linstid, Clinton; Linda C. Sawyer, Chatham, and James P. Shepherd, Springfield, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation of Ser. No. 746,307, Aug. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 464,811, Jan. 16, 1990, abandoned. This application Feb. 12, 1993, Ser. No. 17,948
Int. Cl.[6] C08L *67/03, 67/04, 77/12*
U.S. Cl. 525—425 22 Claims

1. A method for producing a liquid crystalline polymer blend comprising the steps of: (a) mixing a preformed thermotropic liquid crystalline polymer with the reactants necessary to form a second liquid crystalline polymer, wherein said second liquid crystalline polymer is an aromatic polyester, said reactants necessary to form said second liquid crystalline polymer comprising aromatic molecules, each having substituents capable of reacting to from aromatic ester linkages; and (b) heating the mixture of said reactants and said preformed thermotropic liquid crystalline polymer above the melting temperature of said preformed liquid crystalline polymer at a temperature and for a time period sufficient for said reactants to combine to form said second liquid crystalline polymer in a uniform blend with said preformed thermotropic liquid crystalline polymer.

5,393,849

CURABLE POLYESTER/POLYAMINO COMPOSITIONS

Ramji Srinivasan, Conyers; Ted M. McVay, Stone Mountain, and David A. Hutchings, Tucker, all of Ga., assignors to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Filed Oct. 19, 1993, Ser. No. 137,739
Int. Cl.[6] C08F *283/04*
U.S. Cl. 525—425 21 Claims

1. A thermosetting composition comprising a combination of an unsaturated polyester resin and a polyamino compound having a plurality of secondary or primary amino moieties.

5,393,850

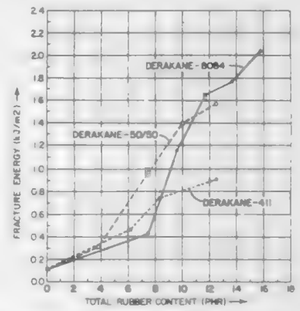
MODIFICATION OF VINYL ESTER RESINS WITH REACTIVE LIQUID POLYMERS

Alan R. Siebert, Orange Village, and C. Dale Gulley, Medina, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 641,703, Jan. 22, 1991, Pat. No. 5,198,510, which is a continuation-in-part of Ser. No. 515,793, Apr. 27, 1990, Pat. No. 5,053,496. This application Jan. 6, 1993, Ser. No. 894
Int. Cl.[6] C08F *283/00*
U.S. Cl. 525—531 9 Claims

1. A corrosion-resistant pipe comprising: a toughened cured vinyl ester resin composition comprising a cured mixture of a prereacted vinyl ester base resin having a first reactive liquid polymer, which is a polyfunctional carboxyl-terminated type polymer having a functionality of from about 0.8 to about 3.5 and which is reacted into its backbone; and an effective amount of an additional reactive liquid polymer additive, selected from the group consisting of polyfunctional carboxyl-terminated butadiene type polymer, a polyfunctional carboxyl-terminated butadiene-acrylonitrile type random copolymer, a statistical difunctional carboxyl-terminated butadiene-acrylonitrile-acrylic acid terpolymer, a polyfunctional epoxy-terminated butadiene-acrylonitrile type copolymer, a statistical difunctional

hydroxyl-terminated epihalohydrin type polymer, and a statistical difunctional vinylidene-terminated butadiene-acrylonitrile type copolymer, to improve the fracture energy of the cured vinyl ester resin composition by an amount greater than about 1.2 times the fracture energy of the base resin.



5,393,851

PROCESS FOR USING METALLOCENE CATALYST IN A CONTINUOUS REACTOR SYSTEM

John A. Ewen, Houston, and Shabbir A. Malbari, Pasadena, both of Tex., assignors to Fina Technology, Inc., Dallas, Tex.

Filed May 26, 1992, Ser. No. 888,192
Int. Cl.[6] C08F *4/64*
U.S. Cl. 526—153 28 Claims

1. In a process for the polymerization of an olefin in a continuous-type reactor system employing a metallocene-alumoxane catalyst system, the improvement comprising:

(a) preparing a concentrate catalyst solution comprising a metallocene catalyst and an alumoxane co-catalyst in an oleaginous solvent;

(b) preparing a secondary solution comprising an aluminum-based co-catalyst selected from the group consisting of an alumone, an aluminum alkyl, and mixtures thereof in an oleaginous solvent;

(c) maintaining said concentrate solution of metallocene and alumoxane under an oxygen-free environment for a period of more than two hours after the preparation of said solution in accordance with step (a);

(d) subsequent to steps (b) and (c), forming a dilute metallocene-alumoxane solution by establishing a dilute metallocene-alumoxane solution within said reactor system by mixing the solutions of step (a) and (b); and

(e) immediately after the formation of said dilute solution, injecting the said dilute solution into said continuous type reactor system concomitantly with the injection of an olefin into said reactor system.

5,393,852

POLYMERS OF HALOPERFLUORO AND PERFLUORO ETHERS

Nobuyuki Ishibe; Charles W. Martin, and Tien K. Tran, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 904,774, Jun. 25, 1992, Pat. No. 5,264,508. This application Nov. 17, 1993, Ser. No. 154,221
Int. Cl.[6] C08F *16/24*
U.S. Cl. 526—247 36 Claims

1. A linear homopolymer or copolymer having pendent unsaturated groups, said homopolymer or copolymer comprising one or more of the ethers described by the formula $CF_2{=}{=}CF{-}CF_2{-}Q{-}O{-}CF{=}{=}CF_2$, where Q is $-G_a-(-O-C_2J_4-)_b-(-O-Z-)_c-$, in which G is a substantially fluorinated C_3–C_7 alkyl radical; a is 0 or 1; each J is independently fluorine, chlorine, bromine, or a C_1–C_4 substantially fluorinated alkyl radical on which not more than one substituent is chlorine, provided that not more than two J's are nonfluorine halogen atoms; b is 0–6 inclusive; Z is a substantially fluorinated C_2–C_{10} alkyl radical; and c is 0 or 1; provided that sum of a+b+c is greater than 0.

5,393,853

HYDROGELS OF HETEROCYCLIC POLYMER, METHOD OF OBTAINING THEM, AND THEIR USE AS INSOLUBLE PH-REGULATING PELLETS

Ma Rosa Gomez Anton; Ines F. de Pierola; Elena Morales Lujan, and Ma Jesus Molina Lorenzo, all of Madrid, Spain, assignors to Universidad Nacional de Educacion A Distancia, Madrid, Spain

PCT No. PCT/ES92/00057, § 371 Date Mar. 29, 1993, § 102(e) Date Mar. 29, 1993, PCT Pub. No. WO93/03077, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 28, 1992, Ser. No. 30,308
Claims priority, application Spain, Aug. 10, 1992, 9101767
Int. Cl.[6] C08F *26/06*
U.S. Cl. 526—263 2 Claims

1. Crosslinked water-insouble pH regulating polyvinylimidazole hydrogel pellets having a swelling index of about 10 grams of water per gram of dry hydrogel, said hydrogel consisting essentially of about 95–98% by weight, based on the total weight of monomers, of N-vinylimidazole and about 2–5% by weight, based on the total weight of monomers, of a water soluble polymerizable divinyl crosslinking comonomer that is copolymerizable with the N-vinylimidazole.

5,393,854

COLORLESS, PURIFIED POLYMERIZABLE COMPOSITION USEFUL FOR THE PRODUCTION OF CROSSLINKED POLYVINYLPYRROLIDONE

Susan Y. Tseng, Staten Island, N.Y., and Philip F. Wolf, Bridgewater, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Division of Ser. No. 57,378, May 6, 1993. This application Apr. 28, 1994, Ser. No. 234,088
Int. Cl.[6] C08F *226/10*
U.S. Cl. 526—264 2 Claims

1. A colorless, purified polymerizable composition consisting essentially of about 74–96% by weight of vinylpyrrolidone and about 4–26% by weight of 1-vinyl-3 (E)-ethylidene pyrrolidone.

5,393,855

THERMOSETTING RESIN COMPOSITION

Goro Iwamura, Sakai; Hiroshi Kinoshita, Suita, and Asako Kometani, Sakai, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 192,582, Feb. 7, 1994, which is a continuation-in-part of Ser. No. 885,544, May 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 798,989, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 589,211, Sep. 28, 1990, abandoned. This application Jun. 23, 1994, Ser. No. 264,699
Claims priority, application Japan, Sep. 29, 1989, 1-254803; Jul. 10, 1990, 4-180604; European Pat. Off., Sep. 27, 1990, 90310562
Int. Cl.[6] C08L *69/00;* C08F *24/00*
U.S. Cl. 526—269 16 Claims

1. An aqueous thermosetting resin composition comprising an aqueous resin (W-1) obtained by neutralizing with a basic compound part or all of the carboxyl groups of a vinyl polymer (A-2) having at least one 2-oxo-1,3-dioxolan-4-yl group and at least one carboxyl group together on the polymer, and then dispersing or dissolving the resulting neutralized polymer in water; and a ring opening curing catalyst (B).

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5,393,856

LIQUID PHASE AND AQUEOUS SOLUTIONS OF POLY(VINYL METHYL ETHER) FROM HIGHLY PURIFIED VINYL METHYL ETHER MONOMER

Matthew A. Kulzick, Warrenville, and Paul A. Koning, Aurora, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Aug. 11, 1993, Ser. No. 105,889
Int. Cl.[6] C08F *2/06, 6/08, 116/18*
U.S. Cl. 526—332 **15 Claims**

1. A process for preparation of liquid phase and aqueous solutions of poly(vinyl methyl ether) polymer from purified vinyl methyl ether monomer containing less than 750 parts per million total of impurities comprising water, methanol, ethanol, acetaldehyde, 1,1-dimethoxyethane, and ethylene glycol, said polymer containing less than 100 parts per million total of said impurities in the absence of water and less than 250 parts per million of a non-aromatic, non-chlorinated hydrocarbon solvent of from 2 to 20 carbon atoms, wherein said polymer is water-white, colorless, has a number average molecular weight M_n above 20,000, a weight average molecular weight M_w above 80,000, a molecular weight distribution M_w/M_n of less than 2.5, wherein said process comprises:

a) purifying impure vinyl methyl ether monomer containing impurities comprising water, methanol, ethanol, acetaldehyde, 1,1-dimethoxyethane and ethylene glycol to levels less than 750 parts per million (ppm) by extracting said impurities from said monomer by a separation technique selected from the group consisting of a vapor-liquid extraction separation, a solid-liquid adsorption separation, and combinations thereof, said separation technique characterized as being at a temperature within the range of from about −20° C. to about +50° C. to about +50° C. and the said extracted monomer characterized as being water white in color;

b) polymerizing said purified monomer in the presence of an alkyl aluminum halide catalyst and a co-catalyst activator to poly(vinyl methyl ether) polymer in a reaction mixture comprising said monomer and a non-aromatic, non-chlorinated hydrocarbon solvent of from 2 to 20 carbon atoms at a temperature within the range of from about −10° C. to about +20° C. at a pressure sufficient to maintain the reaction mixture in predominantly a liquid state, to prepare poly(vinyl methyl ether) polymer in said reaction mixture;

c) extracting said catalyst and said co-catalyst from said poly(vinyl methyl ether) in said reaction mixture by adding to said reaction mixture a stoichiometric amount of base in water, and, alternatively, in a secondary alcohol selected from the group of secondary alcohols consisting of secondary alcohols of from 3 to 20 carbon atoms and adding the resultant reaction mixture into excess water present as a water wash, at a temperature of from about 0° C. to about 90° C. and a pH of not less than 5 in the aqueous phase wherein said temperature and pH are maintained to cause the said catalyst and said co-catalyst to partition into said wash water, and to remove said catalyst and said co-catalyst from said reaction mixture with said wash water in the absence of hydrolysis and polymerization of unreacted vinyl methyl ether and formation of emulsions to prepare solvent/poly(vinyl methyl ether) mixture;

d) preparing an aqueous poly(vinyl methyl ether) solution by contacting said solvent/poly(vinyl methyl ether) mixture with a solvent selected from the group of water and water/organic ether mixtures at a temperature within the range from about 0° C. to about 35° C. under a vacuum within the range from about 0.1 mm Hg to about 600 mm Hg to remove the solvent by vaccum stripping said solvent to form a soluble mixture of water and poly(vinyl methyl ether) wherein said aqueous poly(vinyl methyl ether) solution has a poly(vinyl methyl ether) concentration in the range of from 5 to about 70 wt. %, residual solvent level of less than 250 ppm and total concentration of impurities comprising methanol, ethanol, acetaldehyde, 1,1-dimethoxyethane and ethylene glycol is less than 100 ppm; and, alternatively,

e) preparing a solid poly(vinyl methyl ether) polymer by heating said aqueous poly(vinyl methyl ether) solution to a temperature within the range of from about 40° C. to about 100° C. to precipitate said poly(vinyl methyl ether) as a solid from said solution, separating said solid from said solution by solid/liquid separation technique to recover said solid poly(vinyl methyl ether, and heating said solid poly(vinyl methyl ether) under vacuum from about 0.1 mm Hg to about 600 mm Hg to a temperature of from about 100° C. to about 200° C. to remove residual water and solvent from said solid poly(vinyl methyl ether).

5,393,857

POLYMER SCALE PREVENTIVE AGENT

Toshihide Shimizu, Urayasu, and Mikio Watanabe, Kamisu, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 71,406, Jun. 4, 1993, abandoned. This application Mar. 4, 1994, Ser. No. 205,385
Claims priority, application Japan, Jun. 4, 1992, 4-170097
Int. Cl.[6] C08G *12/00;* **C08F** *2/00, 2/18, 2/22*
U.S. Cl. 526—918 **12 Claims**

1. A polymer scale preventive agent for use in polymerization of a monomer having an ethylenically unsaturated double bond, comprising a condensation product of (A) hydrazine, and (B) a quinone compound, said condensation product having been prepared by reacting the hydrazine (A) and the quinone compound (B) in an amount of 0.01 to 10 parts by weight per part by weight of said hydrazine (A) in a solvent under a total concentration of (A) and (B) of 0.5 to 20% by weight at a temperature of 25°–100° C. for 5 to 100 hours.

5,393,858

POLYURETHANE OR POLYURETHANE-UREA ELASTOMERIC COMPOSITIONS

Gordon F. Meijs, Murrumbeena; Ezio Rizzardo, Wheelers Hills; Arthur Brandwood, Alexandria; Pathiraja Gunatillake, Mulgrave, and Klaus H. Schindhelm, Cherrybrook, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell and Unisearch Limited, Kensington, both of Australia

PCT No. PCT/AU91/00270, § 371 Date Feb. 23, 1993, § 102(e) Date Feb. 23, 1993, PCT Pub. No. WO92/00338, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 26, 1991, Ser. No. 962,799
Claims priority, application Australia, Jun. 26, 1990, PK 0817/90
Int. Cl.[6] C08G *18/30*
U.S. Cl. 528—61 **19 Claims**

1. A degradation resistant material which comprises a polyurethaneor polyurethane-urea elastomeric composition which comprises a reaction product of:

(A) a soft segment macrodiol which is either:

(i) a homopolymer represented by formula I,

$$HO-[(CH_2)_nO]_m-H \qquad I$$

wherein n represents an integer greater than 5 and less than 13, m is a number such that the number average molecular weight of the compound of formula I falls in the range from 218 to 5000 and optionally at least one hydrogen atom represented in formula I is substituted by a C_1 to C_3 alkyl group or a halogen atom;

(ii) a copolymer containing at least 25% by mass of repeating units $-(CH_2)_nO-$ wherein n is as defined in formula I above; or

(iii) a mixture of macrodiols comprising greater than 10% of a macrodiol as defined in formula I above, with the proviso that the mixture of macrodiols does not include polyethylene glycol and/or polypropylene glycol;

(B) an aliphatic or aromatic diisocyanate; and

(C) optionally a chain extender.

5,393,859

ORGANOPOLYSILOXANES CONTAINING SUBSTITUTED 1,3,5-TRIAZINE UNITS

Michael Bernheim, Aystetten; Harald Chrobaczek, Augsburg, and Michael Messner, Diedorf-Hausen, all of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

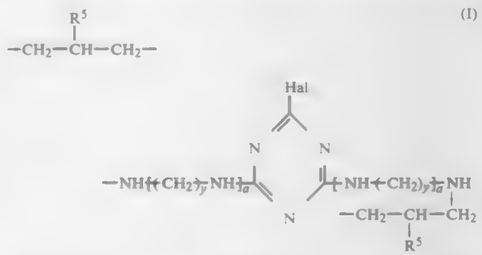
Filed Jun. 2, 1994, Ser. No. 252,728
Claims priority, application Germany, Jun. 7, 1993, 4318794
Int. Cl.[6] C08G *77/40*
U.S. Cl. 528—27 **3 Claims**

1. An organopolysiloxane having the structure

A-E-A

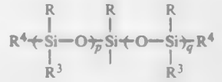
in which

E represents a divalent radical of the general formula (I)



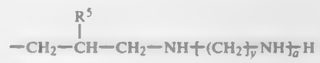
(I)

in which Hal represents Cl or F, y is in each case a number from 2 to 4 and a is in each case 0 or 1, in which the radicals A independently of one another represent a monovalent radical of the general formula (II)

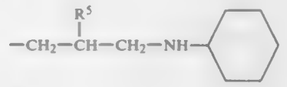


(II)

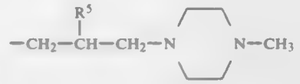
in which p is a number from 0 to 800, q is a number from 0 to 800 and p+q is a number from 15 to 800, in which all the radicals R^3 present independently of one another in each case represent a radical R or -E-A or



or



or



or



in which z is a number from 5 to 25, in which all the radicals R independently of one another represent an alkyl radical having 1 to 4 C atoms or the phenyl radical, R^4 represents $-OSiR_2R^1$ or R, in which R^1 represents R, OR or OH, and in which all the radicals R^5 present independently of one another represent H or CH_3.

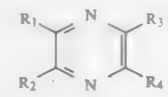
5,393,860

POLYMER COMPOSITIONS CONTAINING SUBSTITUTED PYRAZINES

George Kvakovszky; Richard Vicari; Olan S. Fruchey; Ahmed M. Tafesh, and Charles B. Hilton, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

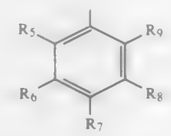
Filed Feb. 4, 1994, Ser. No. 191,682
Int. Cl.[6] C07D *241/12;* **C09K** *19/34*
U.S. Cl. 528—172 **37 Claims**

1. A composition comprising (a) a polymer selected from the group consisting essentially of polycarbonate, polysulfone, polyester, polyarylate, polyetherketone, epoxide, polyimide, polyamide, and polyurethane, (b) having incorporated therein at least one monomer having the formula:



wherein R_1, R_2, R_3, and R_4 are each independently selected from the group consisting of:

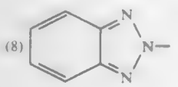
(a)



wherein R_5, R_6, R_7, R_8, and R_9 are each independently selected from the group consisting of:

(1) SO_3NA
(2) SO_3H
(3) Cl
(4) Br
(5) F
(6) OH
(7) H

(8)



(9) $-O-\overset{O}{\overset{\|}{C}}-R_{10}$

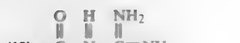
where R_{10} is alkyl C_1 to C_{10}, phenyl, and $-CH_2=CH_2$

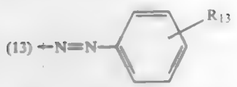
(10) $-O-(CH_2)n-O-\overset{O}{\overset{\|}{C}}-\overset{R_{11}}{\overset{|}{C}}=CH_2$

where n is 1 to 100, R_{11} is alkyl C_1 to C_{10}

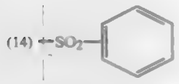
(11) $-\overset{O}{\overset{\|}{C}}-R_{12}$

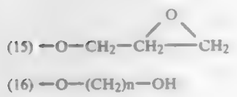
where R_{12} is alkyl C_1 to C_{10} and phenyl



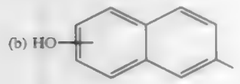


where R_{13} is SO_3Na or NO_2





where n is 1 to 100



(c) alkyl C_1 to C_{10}
(d) H
(e) OH; and
(f) Cl, Br, or F
(g) NH_2

with the proviso that (1) at least one of R_1, R_2, R_3, and R_4 must be (a) or (b) above; (2) when one or two of R_1, R_2, R_3, and R_4 are (a) above and R_5, R_6, R_7, R_8, and R_9 are H, the remaining two or three groups of R_1, R_2, R_3, or R_4 are not OH, Cl, and alkyl C_1 to C_{10}.

5,393,861

POLYSULFIDE POLYETHER AND POLYMER COMPOSITION COMPRISING POLYSULFIDE AND POLYETHER

Kazuhisa Sakae; Kouki Echigoya, and Mitsuhiro Okajima, all of Chiba, Japan, assignors to Toray Thiokol Co., Ltd., Chiba, Japan

Continuation of Ser. No. 599,590, Oct. 18, 1990, abandoned. This application Apr. 11, 1994, Ser. No. 225,918
Claims priority, application Japan, Oct. 18, 1989, 1-271265; Apr. 25, 1990, 2-109461
Int. Cl.[6] C08K *5/15, 5/20*
U.S. Cl. 528—265 4 Claims

1. A polysulfide polyether having in a main chain:
(i) a polyether moiety represented by $—(R_1O)—_n$, wherein R_1 is an alkylene group having 2–4 carbon atoms, and n is an integer of 6–200;
(ii) structural units represented by
$—(C_2H_4O\ CH_2O\ C_2H_4—S_x)—$, and
$—(CH_2CH\ (OH)\ CH_2—S_x)—$,
wherein x is an integer of 1–5;
and at both ends
(iii) a thiol group represented by
$—C_2H_4O\ CH_2O\ C_2H_4—SH$, and/or
$—CH_2CH\ OF\ CH_2—SH$.

5,393,862

NAPHTHALENEDICARBOXYLIC ACID CONTAINING POLYMER COMPOSITIONS HAVING REDUCED FLUORESCENCE

Allan S. Jones, Church Hill; David E. Mills, Kingsport, both of Tenn., and Mitchell A. Winnik, Toronto, Canada, assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation-in-part of Ser. No. 103,645, Aug. 9, 1993, Pat. No. 5,310,857. This application May 5, 1994, Ser. No. 238,557
The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.
Int. Cl.[6] C08G *63/18*
U.S. Cl. 528—298 16 Claims

1. A naphthalenedicarboxylic acid containing polymer composition with reduced fluorescence comprising repeat units from:
(a) a dicarboxylic acid component which comprises 0.1 to less than 85 mole percent of 2,6-naphthalenedicarboxylic acid or 2,6-naphthalenedicarboxylate esters;
(b) a diol or diamine component; and
(c) 0.1 to 5 mole percent, based on 100 mole percent dicarboxylic acid and 100 mole percent diol or diamine, of a nonhalogenated copolymerizable aromatic compound selected from the group consisting of benzene, naphthalene and biphenyl which has at least one acyl group directly attached to the aromatic ring of said aromatic compound.

5,393,863

PRODUCTION OF BRANCHED POLYESTERS

Cheuk C. Yau, and Clinton Cherry, both of Kingsport, Tenn., assignors to Eastman Chemicall Company, Kingsport, Tenn.

Filed Jan. 4, 1993, Ser. No. 315
Int. Cl.[6] C08G *63/16*
U.S. Cl. 528—308.4 14 Claims

1. A process for producing branched polyesters having improved resistance to gel formation comprising
a) producing a precursor polyester having repeat units from at least 60 mol % terephthalic acid and at least 60 mol % ethylene glycol, and an I.V. of about 0.3 to about 1.0, b) forming the precursor polyester into particles, c) further polymerizing said particles in the solid state, and d) contacting said particles while at a temperature of about 140° to about 2° C. below the melting point of the polyester for a time of about 1 to about 100 hours with inert gas having a flow rate of greater than 2×10^{-2} meters per second, said inert gas containing about 300 to about 7000 parts per million by volume of the vapor of water or an organic compound having at least one OH group.

5,393,864

WET-ETCHABLE RANDOM POLYIMIDE COPOLYMER FOR MULTICHIP MODULE APPLICATIONS

John D. Summers, Newton, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 26, 1993, Ser. No. 51,828
Int. Cl.[6] C08G *73/10, 69/26*
U.S. Cl. 528—353 3 Claims

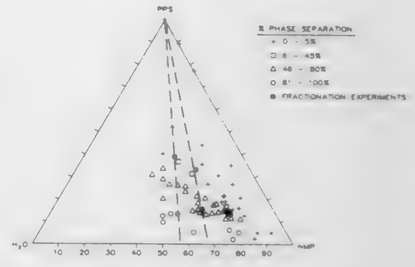
1. A random poly(amic acid) copolymer or partially cured poly(amic acid) copolymer consisting essentially of from 20 to 50 mole % of a rigid aromatic 3,3', 4,4'-biphenyltetracarboxylic dianhydride component, from 5 to 50 mole % of a rigid p-phenylene diamine component, and from 12 to 45 mole %, based on the total molar amounts or aromatic dianhydride and diamine components, of a flexible aromatic 2,2-bis(3,4-dicarboxyphenyl)hexafluoropropane dianhydride component, wherein said poly(amic acid) or partially cured poly(amic acid) has a wet-etch rate of from 0.3 to 1.0 micron per second in 0.26 N aqueous tetramethylammonium hydroxide solution.

5,393,865

POLY(ARYLENE SULFIDE) FIBRID PARTICLES AND PROCESS FOR THEIR PREPARATION

Carlton E. Ash, Sugarland, Tex.; Harold D. Yelton, Bartlesville, Okla.; Owen H. Decker, Reading, Pa., and Jon F. Geibel, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 17, 1993, Ser. No. 123,007
Int. Cl.[6] C08G *75/14*
U.S. Cl. 528—388 25 Claims



1. A process comprising:
flashing in a flash zone a solution which is comprised of a poly(arylene sulfide) in a polar organic compound selected from the group consisting essentially of organic amides, high boiling alcohols, ethers, ketones, sulfones and mixtures thereof and which is essentially free of solids under conditions suitable to separate the solution into a vaporized polar organic compound which is removed from said flash zone and a solidified product comprising poly(arylene sulfide) fibrids.

5,393,866

METHOD FOR THE PRODUCTION OF POLYTETRAMETHYLENE ETHER GLYCOL

Nobuyuki Murai; Masayuki Shirato; Hiroshi Takeo, all of Yokkaichi, and Hidetoshi Tanaka, Suzuka, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Nov. 10, 1993, Ser. No. 149,779
Claims priority, application Japan, Nov. 11, 1992, 4-300921
Int. Cl.[6] C08G *59/68, 65/04;* C07C *43/02*
U.S. Cl. 528—403 5 Claims

1. A method for the production of polytetramethylene ether glycol which comprises adding fuming sulfuric acid to tetrahydrofuran, then adding fluorosulfonic acid thereto, the fluorosulfonic acid being at 0.007–0.3 molar equivalent with respect to the tetrahydrofuran, the fuming sulfuric acid containing free sulfur trioxide at 0.05–1 molar equivalent with respect to the fluorosulfonic acid, whereby the tetrahydrofuran is polymerized, and then hydrolyzing the resultant polymer to yield polytetramethylene ether glycol wherein the number of terminal fluorines is 3 or less per 2,000 termini of said polymer.

5,393,867

POLYETHER POLYMERS DERIVED FROM 3,4-EPXOY-1-BUTENE

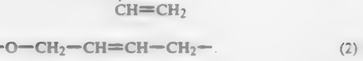
James C. Matayabas, Jr., and Falling: Stephen N., both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jan. 18, 1994, Ser. No. 181,735
Int. Cl.[6] C08G *59/68, 65/28*
U.S. Cl. 528—412 11 Claims

1. A polyether polymer comprising n units of residue (1) and m units of residue (2), wherein the total value of n+m is 2 to 70, m/(n+m) is greater than 0.30 and up to 0.75, and residues (1) and (2) have the structures:



(1)



(2)

5,393,868

PRODUCTION OF POLYSUCCINIMIDE BY THERMAL POLYMERIZATION OF MALEAMIC ACID

Michael B. Freeman, Harleysville, Pa.; Yi H. Paik, Princeton, N.J.; Ethan S. Simon, Ambler, and Graham Swift, Blue Bell, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 13, 1992, Ser. No. 960,070
Int. Cl.[6] C08F *6/00*
U.S. Cl. 528—480 4 Claims

1. A method for producing polysuccinimide comprising:
heating a reaction mixture consisting essentially of maleamic acid and one or more processing aids to a temperature of from about 160° to about 330° C. wherein the one or more processing aids are selected from the group consisting of zeolites, sodium sulfate, sodium silicate, clays, glass beads, silica gel, magnesium stearate, alkylnaphthalenesulfonates, citric acid and polysuccinimide.

5,393,869

PARATHYROID HORMONE DERIVATIVES

Shizue Nakagawa, Osaka; Tsunehiko Fukuda, Kyoto; Masahiro Kawase, Kawanishi, and Iwao Yamazaki, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 25, 1991, Ser. No. 765,373
Claims priority, application Japan, Sep. 28, 1990, 2-257490; Sep. 6, 1991, 3-227232
Int. Cl.[6] A61K *37/00, 37/02;* C07K *5/00, 7/00*
U.S. Cl. 530—324 12 Claims

1. (twice amended) A peptide or salts thereof having the formula

$R_1—Val—Ser—Glu—Ile—Gln—Leu—R_2—His—Asn—R_3—R_4—$

$R_5—His—Leu—Asn—Ser—R_6—R_7—Arg—R_8—Glu—R_9—Leu—$

$R_{10}—R_{11}—R_{12}—Leu—Gln—Asp—Val—His—Asn—R_{13}$

wherein R_1 represents Ser or Aib; R_2 represents Met or a naturally occurring hydrophobic amino acid; R_3 represents Leu, Ser, Lys or an aromatic amino acid; R_4 represents Gly or a D-α-amino acid; R_5 represents Lys or Leu; R_6 represents Met or a naturally occurring hydrophobic amino acid; R_7 represents Glu or a basic amino acid; R_8 represents Val or a basic amino acid; R_9 represents Trp or 2-(1,3-dithiolane-2-yl)Trp; R_{10} represents Arg or His; R_{11} represents Lys or His; R_{12} represents Lys, Gln or Leu; and R_{13} represents Phe or Phe-NH_2;
with the exclusion of:
(1) the peptide or salt thereof wherein R_1 is Ser, R_2 is Met, R_3 is Leu, R_4 is Gly, R_5 is Lys, R_6 is Met, R_7 is Glu, R_8 is Val, R_9 is Trp, R_{10} is Arg, R_{11} is Lys and R_{12} is Lys;
(2) the peptide or salt thereof wherein R_1 is Ser, R_2 is Met, R_3 is Leu, R_4 is D-Ala, R_5 is Lys, R_6 is Met, R_7 is GlU, R_8 is Val, R_9 is Trp, R_{10} is Arg, R_{11} is Lys and R_{12} is Lys; and
(3) the peptide or salt thereof wherein R_1 is Ser, R_2 is Met. R_4 is D-Pro, R_5 is Lys, R_6 is Met, R_7 is Glu, R_8 is Val, R_9 is Trp, R_{10} is Arg, R_{11} is Lys and R_{12} is Lys.

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5,393,870

ANALOGS OF HUMAN GRANULOCYTE-MACROPHAGE COLONY STIMULATING FACTOR

Michael C. Deeley, and Virginia L. Price, both of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation of Ser. No. 254,238, Oct. 6, 1988, Pat. No. 5,229,496, which is a division of Ser. No. 763,130, Aug. 6, 1985. This application May 27, 1993, Ser. No. 67,934
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[6] C07K *13/00*
U.S. Cl. 530—351 8 Claims

1. A polypeptide possessing human granulocyte-macrophage colony stimulating activity and comprising a sequence of amino acids which is identical to that shown as Ala^{1} to Glu^{127} in FIG. 1A but for the deletion or replacement by a non-basic amino acid of at least one of Arg^{23} and Arg^{24}.

5,393,871

PRODUCTION OF POLYESTERS AND POLYESTER ARTICLES HAVING GOOD CLARITY

Cheuk C. Yau, and Clinton Cherry, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jan. 4, 1993, Ser. No. 316
Int. Cl.[6] C08G *63/16*
U.S. Cl. 528—308.4 14 Claims

1. In a process for producing linear polyesters having repeat units from at least 60 mol % terephthalic acid and at least 60 mol % ethylene glycol, and an I.V. of about 0.3 to about 1.0, wherein a precursor polyester is first formed and subsequently the precursor polyester is formed into particles and further polymerized in the solid state, the improvement which comprises contacting said particles while at a temperature of about 140° to about 2° C. below the melting point of the polyester for a time of about 0.1 to about 100 hours with inert gas having a flow rate of greater than 2×10^{-2} meters per second, said inert gas containing about 300 to about 7000 parts per million by volume of the vapor of water or an organic compound having at least one OH group.

5,393,872

SHEETLIKE WHOLLY AROMATIC POLYAMIDE SHAPED ARTICLE AND A METHOD FOR PRODUCING THE SAME

Takanori Shinoki, Hyogo; Akio Nakaishi, and Michio Yamamoto, both of Yamaguchi, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 21, 1993, Ser. No. 170,801
Claims priority, application Japan, Dec. 22, 1992, 4-342405; Mar. 2, 1993, 5-041071
Int. Cl.[6] C08G *73/10;* B32B *27/28, 27/34*
U.S. Cl. 528—310 11 Claims

1. A sheet-like wholly aromatic polyamide shaped article for use as electrical insulating materials produced by wet-shaping from an aqueous dispersion comprising 10 to 90% by weight, based on the total weight of all of the constituent components of the shaped article, of mica particles and 90 to 10% by weight, based on the total weight of all of the constituent components of the shaped article, of a wholly aromatic polyamide stock, which is composed of wholly aromatic polyamide fibrids and wholly aromatic polyamide fibers, and wherein said shaped article contains a nonionic polymer flocculant and has a corona durability of 150 minutes or above under a load voltage of 20 kv/mm at AC frequency of 1,000 hz.

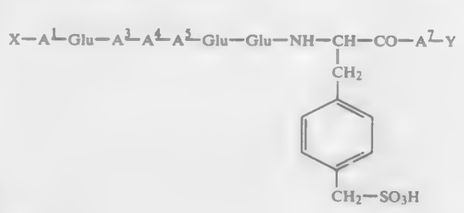
5,393,873

PEPTIDES WITH ANTICOAGULANT ACTIVITY

Bernhard Schmied, Frankenthal; Hans W. Hoeffken; Wilfried Hornberger, both of Ludwigshafen, and Harald Bernard, Bad Duerkheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP91/02191, § 371 Date Jul. 29, 1993, § 102(e) Date Jul. 29, 1993, PCT Pub. No. WO92/13879, PCT Pub. Date Aug. 20, 1992
PCT Filed Nov. 21, 1991, Ser. No. 94,084
Claims priority, application Germany, Feb. 7, 1991, 4103649
Int. Cl.[6] A61K *37/02;* C07K *5/00, 7/00, 15/00*
U.S. Cl. 530—328 1 Claim

1. A peptide of the formula I



where
X is succinyl
A^1 is Phe or Tyr,
A^3 is Glu, Pro or Hyp,
A^4 is Ile or Cha,
A^5 is Pro or Hyp,
A^7 is Leu or Cha, and
Y is Gln-OH or Glu-OH
and the salts thereof with pharmaceutically acceptable bases or acids.

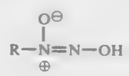
5,393,874

PREPARATION OF N-HYDROXY-N'-DIAZENIUM OXIDES

Klemens Massonne, Westheim, and Martin Fischer, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 14, 1993, Ser. No. 120,338
Claims priority, application Germany, Sep. 18, 1992, 4231296
Int. Cl.[6] C07C *245/04, 245/02*
U.S. Cl. 534—556 6 Claims

1. A process for preparing N-hydroxy-N'-diazenium oxides of the formula I



where R is an C_3–C_{10}-alkyl or C_5–C_{10}-cycloalkyl radical, which comprises reacting a hydroxylamine of formula II



or its salt with nitrosylsulfuric acid in aqueous solution.

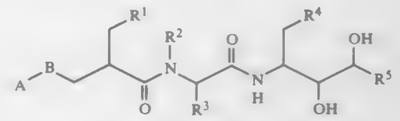
5,393,875

AMINO ACID DERIVATIVES HAVING RENIN INHIBITING ACTIVITY

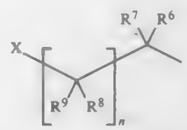
Quirico Branca, Basel, Switzerland; Marie-Paule Heitz; Werner Neidhart, both of Bartenheim, France; Heinz Stadler, Rheinfelden; Eric Vieira, Basel, both of Switzerland, and Wolfgang Wostl, Grenzach-Wyhlen, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 868,054, Apr. 13, 1992, abandoned. This application Aug. 3, 1993, Ser. No. 100,959
Claims priority, application Switzerland, Apr. 17, 1991, 1146/91; Feb. 20, 1992, 523/92
Int. Cl.[6] C07C *317/44;* A61K *37/00, 31/415;* C07D *295/12*
U.S. Cl. 536—17.2 26 Claims

1. Compounds of the formula:



wherein R^1 is cycloalkyl, phenyl, substituted phenyl, naphthyl, thienyl, pyridyl, ,quinolyl, isoquinolyl or benzyl, R^2 is hydrogen or methyl, R^3 is hydrogen, hydroxy, alkyl, alkoxy, alkenyloxy, alkylthio, alkylthioalkyl or alkoxycarbonyl, or imidazol-1-ylmethyl, imidazol-2-ylmethyl or imidazol-4-ylmethyl, each of which can be methylated on a carbon atom and/or nitrogen atom, 2-aminoimidazol-4-ylmethyl, 5-iodoimidazol-4-ylmethyl, pyrazol-1-ylmethyl, pyrazol-3-ylmethyl, thiazol-2-ylmethyl, thiazol-4-ylmethyl, thiazol-5-ylmethyl, 2-aminothiazol-4-ylmethyl, thienylmethyl, furanylmethyl, pyridylmethyl, aminocarbonyl, aminocarbonylalkyl or alkoxycarbonylalkyl, R^4 is cycloalkyl, substituted cycloalkyl, phenyl or halophenyl, R^5 is cycloalkyl, cycloalkylalkyl or alkyl, B is a sulphur atom or a sulfinyl or sulfonyl group and A is the group



in which R^6, R^7 and R^8 each independently are hydrogen or alkyl, R^9 is hydrogen, alkyl, hydroxyalkyl, amino, alkoxycarbonylamino or benzyloxycarbonylamino, n is the integer zero or one and X is the group Y—CO— or, where n is the integer one, also the group Z—O—, wherein Y is cycloalkylamino, sulphoalkylamino or bisalkoxyalkylamino, or pyridylalkylamino or morpholinoalkylamino, each of which can be substituted at the amino group by alkyl; pyrazinylalkylamino, which can be substituted at the nitrogen atom and/or at the amino group by alkyl; 4-piperidinylalkylamino, which can be substituted at the nitrogen atom by alkyl, benzyl, benzyloxycarbonyl, alkoxycarbonyl or hydroxyalkyl and/or at the amino group by alkyl; alkoxycarbonylalkylamino, hydroxyalkoxyalkylamino, hydroxyalkylamino, bishydroxyalkylamino, the group $(R^a)(R^b)N$- in which R^a and R^b each independently are hydrogen or alkyl or together with the nitrogen atom to which they are attached are a saturated 5- or 6-membered heterocyclic ring which can contain an additional nitrogen atom or an oxygen or sulphur atom as a further hetero atom or can carry an oxo group, whereby the sulphur atom can also be present in the form of a sulfinyl or sulfonyl group, or which can be o substituted on one or two carbon atoms by alkyl, hydroxy, hydroxyalkyl or alkoxyalkoxy or on a second nitrogen atom which may be present by alkyl, benzyl, benzyloxycarbonyl, alkoxycarbonyl or hydroxyalkyl, or in which the optionally present second nitrogen atom can carry an oxygen atom, alkoxyalkoxyalkoxy, cycloalkylalkoxy, 1,3-dimethyldioxolan-2-ylalkoxy, the group $(R^a)(R^b)N$-alkoxy, the residue of a natural aminodésoxy sugar or, where R^9 is different from hydrogen or alkyl, also alkoxy and Z is C_5–C_{17}-alkylcarbonyl, benzoyl, alkoxyalkylcarbonyl, cycloalkylcarbonyl, aminoalkylcarbonyl which can be substituted at the nitrogen atom by alkoxycarbonyl or benzyloxycarbonyl, alkylaminocarbonyl, phenylaminocarbonyl or, where R^9 is different from hydrogen or alkyl, also hydrogen, in the form of optically pure diastereomers, mixtures of diastereomers, diastereomeric racemates or mixtures of diastereomeric racemates as well as pharmaceutically usable salts of these compounds.

5,393,876

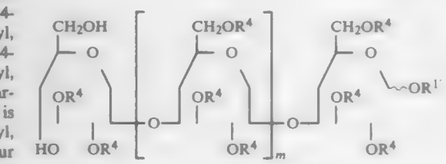
PROCESS FOR PRODUCING MALTOOLIGOSACCHARIDE DERIVATIVES

Atsunori Sano; Satoshi Hashizume, and Hiroyuki Tsurumoto, all of Kawagoe, Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 9, 1993, Ser. No. 44,627
Claims priority, application Japan, Apr. 15, 1992, 4-121303
Int. Cl.[6] C07H *15/00, 15/04*
U.S. Cl. 536—18.5 5 Claims

1. A process for producing a maltooligosaccharide glucoside of the formula

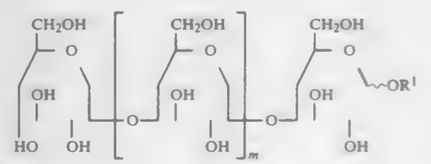
[III]



wherein $R^{1'}$ is an acyl group or an optically measurable group releasable from the maltooligosaccharide glucoside by action of an enzyme and which, after being released, absorbs visible or ultraviolet light, is fluorescent, or forms a dye when coupled to a coupler by action of an oxidase or an oxidizing agent; R^4 is an acyl group and m is an integer of 1 to 5;

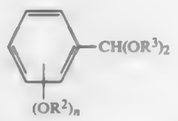
which comprises reacting a glucoside compound of the formula

[I]



wherein R^1 is hydrogen or an optically measurable group which is releasable from the glucoside compound by action of an enzyme and which, after being released, absorbs visible or ultraviolet light, is fluorescent, or forms a dye when coupled to a coupler by action of an oxidase or an oxidizing agent; and m is as defined above; with a compound of the formula

[II]



wherein R^2 is a lower alkyl group, R^3 is a lower alkyl group and n is an integer of 1 to 3, to form a cyclic acetal blocking the

hydroxyl groups at the 4- and 6-positions of non-reducing end of the glucoside compound of formula; acylating the cyclic acetal reaction product and then decomposing the cyclic acetal with a dilute acid.

5,393,877

LINKERS FOR THE SYNTHESIS OF MULTIPLE OLIGONUCLEOTIDES IN SERIATIM FROM A SINGLE SUPPORT ATTACHMENT

Michael J. McLean, Nantwich; David Holland, Macclesfield; Andrew J. Garman, Ashton, and Robert C. Sheppard, Cambridge, all of England, assignors to Zeneca Limited, London, England

Filed Apr. 5, 1993, Ser. No. 41,599

Claims priority, application United Kingdom, Apr. 3, 1992, 9207381

Int. Cl.[6] C07H *21/00*

U.S. Cl. 536—25.3 **17 Claims**

1. A method for the synthesis of a plurality of oligonucleotides comprising the steps of

(i) forming a first oligonucleotide on a first cleavable link attached to a solid support;

(ii) attaching to the first oligonucleotide a cleavable linker moiety;

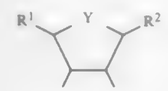
(iii) forming a second oligonucleotide on the cleavable linker moiety; and

(iv) cleaving the first cleavable link and the cleavable linker moiety to give a plurality of oligonucleotides; wherein the cleavable linker moiety is of the Formula (1):



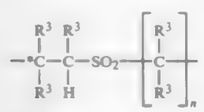
(1)

wherein one or both of A^1 and A^2 is a divalent group of the formula (a):



(a)

R^1 and R^2 are each independently H, optionally substituted alkyl, optionally substituted alkoxy, optionally substituted aryloxy, halogen, cyano, nitro, optionally protected hydroxy, optionally protected oxycarbonyl, optionally protected NH_2 or an electron withdrawing group; Y is CH_2, CH_2CH_2, NH, S or O; E is an organic spacer group; and any remaining group represented by A^1 or A^2 is of the formula (b):



(b)

wherein n has a value of from 1 to 5; the carbon atom marked with an asterisk is attached to an oxygen atom shown in Formula (1); and each R^3 independently represents H or optionally substituted alkyl.

5,393,878

BICYCLIC NUCLEOSIDES, OLIGONUCLEOTIDES, PROCESS FOR THEIR PREPARATION AND INTERMEDIATES

Christian Leumann, Zurich, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

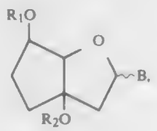
Division of Ser. No. 959,851, Oct. 13, 1992, Pat. No. 5,319,080. This application Mar. 17, 1994, Ser. No. 214,737

Claims priority, application Switzerland, Oct. 17, 1991, 3043/91

Int. Cl.[6] C07H *19/06;* **C07D** *239/02, 239/06, 239/22*

U.S. Cl. 536—28.2 **14 Claims**

1. A compound of the formula I in the form of a racemate or enantiomer thereof,



(I)

in which R_1 and R_2 independently of one another are hydrogen or a protective group, and B is a pyrimidine.

5,393,879

FRUCTOSYL C-GLYCOSIDE NUCLEOSIDE ANALOGS

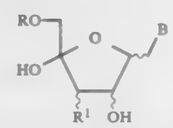
Chi-Huey Wong, Rancho Santa Fe, Calif., and Kun-Chin Liu, New Haven, Conn., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Aug. 17, 1992, Ser. No. 931,014

Int. Cl.[6] C07H *7/00, 7/06*

U.S. Cl. 536—29.2 **5 Claims**

1. A nucleoside analog of the formula



wherein B is purine base attached at the 9-position or pyrimidine base attached at the 1-position,

R is hydrogen or $PO_3{=}M^{+2}$, where M^{+2} is a mono- or divalent cation, and

R^1 is hydrogen or hydroxyl.

5,393,880

CYCLODEXTRIN REFINING PROCESS

Wen Shieh, Crown Point; Timothy Dailey, Portage, and Allan Hedges, Crown Point, all of Ind., assignors to American Maize-Products Company, Stamford, Conn.

Filed Jun. 17, 1993, Ser. No. 78,971

Int. Cl.[6] C08B *37/16*

U.S. Cl. 536—103 **17 Claims**

17. A process for refining cyclodextrin comprising the steps of:

(a) adding a sufficient amount of a base to an aqueous solution containing unrefined cyclodextrin and having a solids concentration of about 10 to about 40% by weight, said unrefined cyclodextrin obtained from a raw digest which resulted from a treatment of a starch or starch hydrolysate having a DE of 10 and below with a CGTase, said unrefined cyclodextrin comprising at least about 50% by weight cyclodextrin and a remainder of non-cyclodextrin materials, said non-cyclodextrin materials being primarily linear saccharides, so that the solution has a pH of about 9 to about 12;

(b) cooling said solution such that crystals of the cyclodextrin start to form; and

(c) recovering the crystallized cyclodextrin which when added to water, provides a substantially haze free solution.

5,393,881

CRYSTALLINE FORMS OF HYDROXYGALLIUM PHTHALOCYANINE

Katsumi Nukada, and Katsumi Daimon, both of Minami Ashigara, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1993, Ser. No. 108,426

Claims priority, application Japan, Aug. 26, 1992, 4-248934; Sep. 14, 1992, 4-269080

Int. Cl.[6] C09B *47/10*

U.S. Cl. 540—141 **1 Claim**

1. A halogen-containing hydroxygallium phthalocyanine crystal showing intense diffraction peaks at Bragg angles ($2\theta\pm0.2°$) of (1) 7.7°, 16.5°, 25.1° and 26.6°; (2) 7.9°, 16.5°, 24.4°, and 27.6°; (3) 7.0°, 7.5°, 10.5°, 11.7°, 12.7°, 17.3°, 18.1°, 24.5°, 26.20°, and 27.1°; 4) 7.5°, 9.9°, 12.5°, 16.3°, 18.6°, 25.1°, and 28.3°; or (5) 6.8°, 12.8°, 15.8°, and 26.0°.

5,393,882

BICYCLIC β-LACTAM ANTIBIOTICS

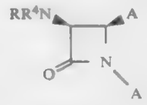
Larry C. Blaszczak; John E. Munroe, both of Indianapolis, and Douglas O. Spry, Mooresville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 871,376, Apr. 20, 1992, Pat. No. 5,239,608, which is a division of Ser. No. 588,381, Sep. 26, 1990, Pat. No. 5,142,039, which is a division of Ser. No. 410,208, Sep. 21, 1989, Pat. No. 4,983,732, which is a division of Ser. No. 80,354, Jul. 31, 1987, abandoned. This application Feb. 24, 1993, Ser. No. 21,820

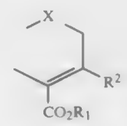
Int. Cl.[6] C07D *487/04*

U.S. Cl. 540—205 **3 Claims**

1. A compound of the formula



wherein R is allyloxycarbonyl, t-butoxycarbonyl, naphthyloxycarbonyl, trichloroethyloxycarbonyl, p-nitro benzyloxycarbonyl, benzhydryloxycarbonyl, p-methoxybenzyl oxycarbonyl, o-nitrobenzyloxycarbonyl or acetoxy; R^4 is phenoxyacetyl, phenylacetyl, C_1 to C_6 alkanoyl or chloroacetyl, and wherein A and A′ are taken together to form a group of the formula



wherein R^1 is a carboxy-protecting group; X is $—CH_2—$ and R^2 is hydrogen, halo, C_1 to C_6 alkyl, C_1 to C_6 alkyl substituted by one or two halogen, hydroxy, protected hydroxy, amino, protected amino, C_1 to C_7 acyloxy, nitro, carboxy, protected carboxy, carbamoyl, carbamoyloxy, cyano, methylsulfonylamino or C_1 to C_4 alkoxy; C_1 to C_6 alkylthio, C_1 to C_6 alkylthio substituted by one or two halogen, hydroxy, protected hydroxy, amino, protected amino, C_1 to C_7 acyloxy, nitro, carboxy, protected carboxy, carbamoyl, carbamoyloxy, cyano, methylsulfonylamino or C_1 to C_4 alkoxy; C_7 to C_{12} arylalkyl, C_7 to C_{12} arylalkyl substituted on the alkyl position with one or two groups chosen from halogen, hydroxy, protected hydroxy, amino, protected amino, C_1 to C_7 acyloxy, nitro, carboxy, protected carboxy, carbamoyl, carbamoyloxy, cyano, C_1 to C_6 alkylthio, methylsulfonylamino or C_1 to C_4 alkoxy; and/or the phenyl group of the arylalkyl being substituted with 1 or 2 groups chosen from halogen, hydroxy, protected hydroxy, nitro, C_1 to C_6 alkyl, C_1 to C_4 alkoxy, carboxy, protected carboxy, carboxymethyl, protected carboxymethyl, hydroxymethyl, protected hydroxymethyl, aminomethyl, protected aminomethyl, or methylsulfonylamino; phenyl or phenyl substituted with one or two moieties chosen from the group consisting of halogen, hydroxy, protected hydroxy, cyano, nitro, C_1 to C_6 alkyl, C_1 to C_4 alkoxy, carboxy, protected carboxy, carboxymethyl, protected carboxymethyl, hydroxymethyl, protected hydroxymethyl, aminomethyl, protected aminomethyl, trifluoromethyl or methylsulfonylamino;

a group of the formula

$$—CY_3$$

wherein Y is fluoro, chloro, bromo or iodo; a group of the formula

$$—COR^6$$

wherein R^6 is hydrogen, C_1 to C_6 alkyl, C_1 to C_6 alkyl substituted by one or two halogen, hydroxy, protected hydroxy, amino, protected amino, C_1 to C_7 acyloxy, nitro, carboxy, protected carboxy, carbamoyl, carbamoyloxy, cyano, methylsulfonylamino or C_1 to C_4 alkoxy; C_7 to C_{12} arylalkyl, C_7 to C_{12} arylalkyl substituted on the alkyl position with one or two groups chosen from halogen, hydroxy, protected hydroxy, amino, protected amino, C_1 to C_7 acyloxy, nitro, carboxy, protected carboxy, carbamoyl, carbamoyloxy, cyano, C_1 to C_6 alkylthio, methylsulfonylamino or C_1–C_4 alkoxy; and/or the phenyl group of the arylalkyl being substituted with 1 or 2 groups chosen from halogen, hydroxy, protected hydroxy, nitro, C_1 to C_6 alkyl, C_1 to C_4 alkoxy, carboxy, protected carboxy, carboxymethyl, protected carboxymethyl, hydroxymethyl, protected hydroxymethyl, aminomethyl, protected aminomethyl, or methylsulfonylamino; phenyl, phenyl substituted with one or two moieties chosen from the group consisting of halogen, hydroxy, protected hydroxy, cyano, nitro, C_1 to C_6 alkyl, C_1 to C_4 alkoxy, carboxy, protected carboxy, carboxymethyl, protected carboxymethyl, hydroxymethyl, protected hydroxymethyl, aminomethyl, protected aminomethyl, trifluoromethyl or methylsulfonylamino; amino, amino substituted once with C_1 to C_6 alkyl, C_7 to C_{12} arylalkyl, phenyl, or phenyl substituted with one or two moieties chosen from the group consisting of halogen, hydroxy, protected hydroxy, cyano, nitro, C_1 to C_6 alkyl, C_1 to C_4 alkoxy, carboxy, protected carboxy, carboxymethyl, protected carboxymethyl, hydroxymethyl, protected hydroxymethyl, aminomethyl, trifluoromethyl or methylsulfonylamino; or amino substituted with two substituents chosen from the group consisting of C_1 to C_6 alkyl, C_7 to C_{12} arylalkyl; phenyl, phenyl substituted with one or two moieties chosen from the group consisting of halogen, hydroxy, protected hydroxy, cyano, nitro, C_1 to C_6 alkyl, C_1 to C_4 alkoxy, carboxy, protected carboxy, carboxymethyl, protected carboxymethyl, hydroxymethyl, protected hydroxymethyl, aminomethyl, protected aminomethyl, trifluoromethyl or methylsulfonylamino;

or R^2 is a group of the formula

$$—COOR^7$$

wherein R^7 is hydrogen, an organic or inorganic cation, C_1 to C_6 alkyl, C_1 to C_6 alkyl substituted by one or two halogen, hydroxy, protected hydroxy, amino, protected amino, C_1 to C_7 acyloxy, nitro, carboxy, protected carboxy, carbamoyl, carbamoyloxy, cyano, methylsulfonylamino or C_1 to C_4 alkoxy; C_7 to C_{12} arylalkyl, C_7 to

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C_{12} arylalkyl substituted on the alkyl position with one or two groups chosen from halogen, hydroxy, protected hydroxy, amino, protected amino, C_1 to C_7 acyloxy, nitro carboxy, protected carboxy, carbamoyl, carbamoyloxy, cyano, C_1 to C_6 alkylthio, methylsulfonylamino or C_1–C_4 alkoxy, and/or the phenyl group of the arylalkyl being substituted with 1 or 2 groups chosen from halogen, hydroxy, protected hydroxy, nitro, C_1 to C_6 alkyl, C_1 to C_4 alkoxy, carboxy, protected carboxy, carboxymethyl, protected carboxymethyl, hydroxymethyl, protected hydroxymethyl, aminomethyl, protected aminomethyl, or methylsulfonylamino; a carboxy-protecting group or a non-toxic metabolically-labile, ester-forming group;

or R_2 is a group of the formula

—CH_2—S—"Heterocyclic";

or R_2 is a group of the formula

—S—"Heterocyclic"

said "heterocyclic" being an optionally substituted 5-membered or 6-membered ring having 1 to 4 heteroatoms selected from oxygen, sulfur, or nitrogen, said heterocyclic optionally fused to an aromatic 5-membered or 6-membered ring;

or R_2 is a group of the formula

—OR^9

wherein R^9 is hydrogen, C_1 to C_6 alkyl, C_1 to C_6 alkyl substituted by one or two halogen, hydroxy, protected hydroxy, amino, protected amino, C_1 to C_7 acyloxy, nitro, carboxy, protected carboxy, carbamoyl, carbamoyloxy, cyano, methylsulfonylamino or C_1 to C_4 alkoxy; C_7 to C_{12} arylalkyl, C_7 to C_{12} arylalkyl substituted on the alkyl position with one or two groups chosen from halogen, hydroxy, protected hydroxy, amino, protected amino, C_1 to C_7 acyloxy, nitro carboxy, protected carboxy, carbamoyl, carbamoyloxy, cyano, C_1 to C_6 alkylthio, methylsulfonylamino; or C_1–C_4 alkoxy; and/or the phenyl group of the arylalkyl being substituted with 1 or 2 groups chosen from halogen, hydroxy, protected hydroxy, nitro, C_1 to C_6 alkyl, C_1 to C_4 alkoxy, carboxy, protected carboxy, carboxymethyl, protected carboxymethyl, hydroxymethyl, protected hydroxymethyl, aminomethyl, protected aminomethyl, or methylsulfonylamino; phenyl, phenyl substituted with one or two moieties chosen from the group consisting of halogen, hydroxy, protected hydroxy, cyano, nitro, C_1 to C_6 alkyl, C_1 to C_4 alkoxy, carboxy, protected carboxy, carboxymethyl, protected carboxymethyl, hydroxymethyl, protected hydroxymethyl, aminomethyl, protected aminomethyl, trifluoromethyl or methylsulfonylamino; or C_1 to C_7 acyl.

5,393,883

ANTIVIRAL COMBINATIONS AND COMPOUNDS THEREFOR

Todd A. Blumenhopf, Chapel Hill; Thomas Spector, Durham; Devron R. Averett; Robert W. Morrison, Jr., both of Raleigh; Eric C. Bigham, Chapel Hill, and Virgil L. Styles, Durham, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 371,482, Jun. 26, 1989, Pat. No. 5,175,165. This application Feb. 7, 1992, Ser. No. 832,228

Claims priority, application United Kingdom, Jun. 27, 1988, 8815241

Int. Cl.[6] **C07D** *413/00*

U.S. Cl. 544—124 **6 Claims**

1. A compound selected from the group consisting of

(a) 2-Acetylpyridine 5-((4-Chloroanilino)Thiocarbonyl) Thiocarbonohydrazone;

(b) 2-Acetylpyridine 5-((2-Methoxy-5-Nitroanilino) Thiocarbonyl)Thiocarbonohydrazone;

(c) 2-Formylpyridine 5-((2-Chloroanilino)Thiocarbonohydrazone;

(d) 2-(3-Methylbutyryl)Pyridine 5-((2-Chloroanilino)Thiocarbonyl)Thiocarbonohydrazone;

(e) 2-Acetylpyridine 5-((3-Chloroanilino)Thiocarbonyl)Thiocarbonohydrazone;

(f) 2-Acetylpyridine 5-((2-Iodoanilino)Thiocarbonyl)Thiocarbonohydrazone;

(g) 2-Acetylpyridine 5-((4- (Trifluromethyl)Anilino) Thiocarbonyl)Thiocarbonohydrazone;

(h) 2-Acetylpyridine 5-((2,3-Dichloroanilino)Thiocarbonyl)Thiocarbonohydrazone;

(i) 2-Acetylpyridine 5-((3-Iodoanilino)Thiocarbonyl)Thiocarbonohydrazone;

(j) 2-Acetylpyridine 5-((4-Chloro-2-Methylanilino)Thiocarbonyl)Thiocarbonohydrazone;

(k) 2-Acetylpyridine 5-((4-Bromoanilino)Thiocarbonyl)Thiocarbonohydrazone

(l) 2-Acetylpyridine 5-((5-Chloro-2-Methoxyanilino)Thiocarbonyl)Thiocarbonohydrazone;

(m) 2-Acetylpyridine 5-((2,5-Dichloroanilino)Thiocarbonyl)Thiocarbonohydrazone;

(n) 2-Acetylpyridine 5-((4-Chloro-3-Nitroanilino)Thiocarbonyl)Thiocarbonohydrazone;

and

(o) 2-Acetylpyridine 5-((2,4,5-Trichloroanilino)Thiocarbonyl)Thiocarbonohydrazone.

5,393,884

FIBER REACTIVE ANTHRAQUINONE DYES

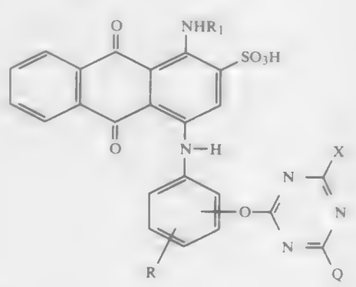
Ronald P. Pedemonte, Coventry, and Walter Helmling, West Warwick, both of R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Jun. 14, 1993, Ser. No. 77,225

Int. Cl.[6] **C07D** *251/40, 251/46, 251/52*

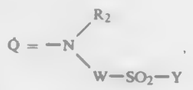
U.S. Cl. 544—189 **8 Claims**

1. A compound of the formula:



(I)

wherein:



W is independently selected from a direct covalent bond, an arylene selected from phenylene and naphthalene, or a C_1 to C_6 alkylene, or arylene-alkylene group wherein the alkylene group may be interrupted by a hetero atom selected from O, S and N;

wherein said arylene moiety may be optionally substituted with Cl, Br, CH_3, C_2H_5, OCH_3, SO_3H, COOH and OC_2H_5

R is independently selected from hydrogen, a C_1 to C_6 alkyl; a C_1 to C_6 alkoxy; sulfo and carboxy;

R_1 is selected from hydrogen, C_1 to C_6 alkyl and phenyl;

R_2 and R_3 are independently selected from hydrogen, a C_1 to C_6 alkyl and —WSO_2Y;

n is an integer of 1 or 2;

X is F, Cl, HNCH, NR_2R_3, OH or Q; and

Y represents a fiber reactive group which is selected from CH═CH_2 and CH_2CH_2—Z wherein Z is selected from the group consisting of Cl, Br, OSO_3H, SSO_3H and OPO_3H_3.

5,393,885

CARBAMIC ACID DERIVATIVES

Friedrich Karrer, Zofingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

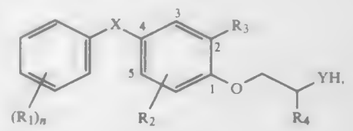
Division of Ser. No. 103,650, Aug. 9, 1993, abandoned. This application Feb. 22, 1994, Ser. No. 199,917

Claims priority, application Switzerland, Aug. 20, 1992, 2590/92

Int. Cl.[6] **C07C** *319/00, 43/00, 33/34;* **C07D** *273/00*

U.S. Cl. 548—124 **1 Claim**

1. A compound of the formula



(II)

in which

R_1 is halogen, C_1–C_3alkyl, halo-C_1–C_3alkyl, C_1–C_3alkoxy, halo-C_1–C_3alkoxy or cyano and/or two substituents R_1 which are bonded to adjacent C atoms of the phenyl ring together are —O—CH_2—)—;

R_2 is hydrogen, halogen or methyl;

R_3 is fluorine, chlorine, bromine or C_1–C_3alkyl;

R4 is hydrogen or C_1–C_3alkyl;

n is 0, 1, 2 or 3 where, if n is 2 or 3, the radicals R_1 can be identical or different;

X is O, S, CH_2, CO or —O—CH_2—; and

Y is O or S;

with the exception of 2-(2-fluoro-4-phenoxyphenoxy)ethanol and with the exception of 2-[2,6-dimethyl-4-(4-methylphenoxy)-phenoxy]ethanethiol, in each case in free form or in salt form.

5,393,886

INTERMEDIATES FOR THE SYNTHESIS OF ANTHRAPYRAZOLONE ANTICANCER AGENTS

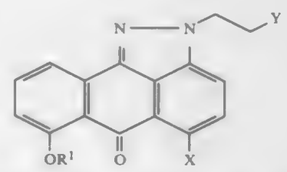
Lin-Hua Zhang, Wilmington, Del., and Joseph Auerbach, Brooklyn, N.Y., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Continuation-in-part of Ser. No. 57,035, May 5, 1993. This application Oct. 25, 1993, Ser. No. 142,635

Int. Cl.[6] **C07D** *231/54*

U.S. Cl. 548—356.5 **8 Claims**

1. A compound of formula (I):



(I)

or a pharmaceutically acceptable salt form thereof, wherein:

R^1 is H or a hydroxyl protecting group;

X is selected from:

(a) F, Cl, Br, I,

(b) methanesulfonyloxy,

(c) toluenesulfonyloxy,

(d) trifluoromethanesulfonyloxy, or

(e) —OH;

Y is selected from:

(a) Cl, Br, I,

(b) —OSO_2R^2, or

(c) —OH;

R^2 is selected from:

(a) C_1–C_4 alkyl,

(b) C_vF_{2v+1} where v is 1 to 4, or

(c) phenyl or phenyl optionally substituted with from 1 to 3 of the groups selected from Cl, F, Br, NO_2, —OR^6, or C_1–C_4 alkyl;

R^6 is selected from: H, C_1–C_8 alkyl, C_2–C_6 alkenyl, C_3–C_8 cycloalkyl, C_4–C_8 cycloalkylmethyl, C_6–C_{10} aryl, or C_7–C_{11} arylalkyl;

with the proviso that when: X is Cl then Y can not be —OH.

5,393,887

BISIMIDE COMPOSITIONS

Christian J. Petit, Chicopee, Mass., assignor to Monsanto Company, St. Louis, Mo.

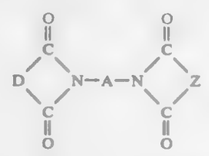
Filed Oct. 4, 1993, Ser. No. 130,946

The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.

Int. Cl.[6] **C07D** *209/02, 209/34, 207/448*

U.S. Cl. 548—465 **2 Claims**

1. A mixed bisimide compound having the formula:



where D is a divalent radical containing a polymerizable carbon-carbon double bond, A is an organic divalent linking group and Z is a halogenated divalent radical containing one or more aromatic or bicyclo groups.

5,393,888

NON-CATALYTIC LIQUID PHASE CONVERSION OF BUTYROLACTONE AND AMMONIA TO 2-PYRROLIDONE PRODUCT IN HIGH YIELD AND SELECTIVITY

Francis B. Minnock, West Orange, N.J., and Paul D. Taylor, Dublin, Ohio, assignors to ISP Investments Inc., Wilmington, Del.

Filed Mar. 2, 1994, Ser. No. 204,577

Int. Cl.[6] **C07D** *201/08*

U.S. Cl. 548—554 **10 Claims**

1. In a liquid phase process for reacting ammonia and γ-butyrolactone at high temperature and high pressure to form 2-pyrrolidone, the improvement which comprises employing a mole ratio of ammonia to butyrolactone between about 0.5:1 and 0.85:1 in the reaction to form a substantially contaminant free 2-pyrrolidone product.

5,393,889

WATER SOLUBLE BIS-DIOXOPIPERAZINE DERIVATIVES

Muneaki Takase, Tokyo; Toshiharu Narita, Higashimurayama, and Toshihiko Komatsu, Kawagoe, all of Japan, assignors to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP91/00894, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO92/00971, PCT Pub. Date Jan. 23, 1992

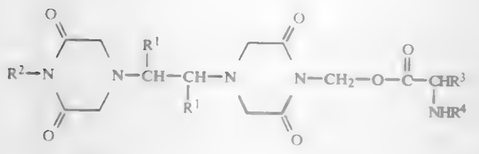
PCT Filed Jul. 3, 1991, Ser. No. 835,927

Claims priority, application Japan, Jul. 4, 1990, 2-176672

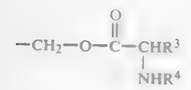
Int. Cl.[6] C07D *241/08, 403/14, 417/14*

U.S. Cl. 544—357 16 Claims

1. A pharmaceutically acceptable acid addition salt of a bis-dioxopiperazine derivative represented by the formula (I):

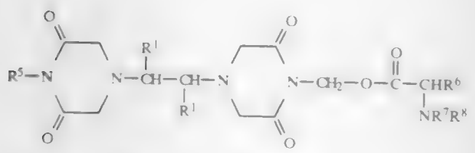


wherein R^1 represents a $C_{1\text{-}6}$ alkyl group,
R^2 represents a hydrogen atom or:

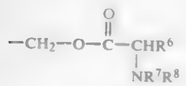


and R^3 is coupled with R^4 into a 5-membered saturated ring, which either contains no additional ring heteroatoms or contains one sulfur atom as an additional ring heteroatom.

9. A synthetic intermediate of a bis-dioxopiperazine derivative, represented by the formula (II):



wherein R^1 represents a $C_{1\text{-}8}$ alkyl group,
R^5 represents a hydrogen atom or:



R^6 is coupled with R^7 into a 5-membered saturated ring, which may contain one sulfur atom as an additional ring heteroatom, and
R^8 represents a protecting group for the amino group.

5,393,890

PIPERIDINE DERIVATIVES AND HYPOTENSIVES CONTAINING THE SAME

Masataka Syoji; Kozo Toyota; Chikahiko Eguchi; Ryoto Yoshimoto; Yoshikatsu Koyama; Hideki Domoto, and Akira Kamimura, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

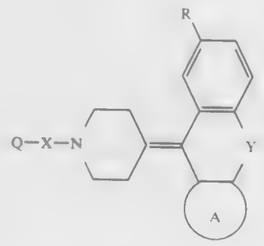
Continuation of Ser. No. 72,458, Jun. 7, 1993, abandoned, which is a continuation of Ser. No. 655,775, Feb. 15, 1991, Pat. No. 5,250,681, which is a continuation of Ser. No. 443,438, Nov. 30, 1989, abandoned, which is a continuation of Ser. No. 354,880, May 22, 1989, Pat. No. 5,231,105, which is a continuation of Ser. No. 201,911, Jun. 2, 1988, abandoned. This application Jul. 1, 1994, Ser. No. 269,628

Claims priority, application Japan, Nov. 30, 1988, 63-303461; Mar. 16, 1989, 1-60459

Int. Cl.[6] C07D *491/052, 513/04, 405/04, 409/04*

U.S. Cl. 546—80 12 Claims

1. A piperidine compound of the formula (I)



wherein:
A is pyridine;
R is —H, —Cl or —OCH_3;
X is $-(CH_2)_n-$, —CO—$(CH_2)_3$, —CONH—$(CH_2)_2$, —NHCO—$(CH_2)_2$, or —CH=CH—$(CH_2)_2$—; and
n is an integer of from 3 to 5;
Y is —CH=CH—, —$(CH_2)_2$, —OCH_2—, —SCH_2—, or —O—; and
Q is —CN, substituted or unsubstituted cyclohexyl, substituted or unsubstituted piperidinyl, substituted or unsubstituted piperazinyl, substituted or unsubstituted phenyl, substituted or unsubstituted furyl, substituted or unsubstituted thienyl, substituted or unsubstituted pyrrolyl, substituted or unsubstituted pyridyl, substituted or unsubstituted morpholinyl, or substituted or unsubstituted thiomorpholinyl, wherein when Q is substituted, the substituent(s) is/are selected from the group consisting of $H\text{-}(CH^2)_n$ wherein n is an integer of 1 to 10, $Cl\text{-}(CH^2)^3$, allyl, formyl, phenyl, isopropyl, hydroxy, methoxy, ethoxy, fluoro, chloro, acetoxy, 2-methoxyacetoxy, ethoxycarboxyl, carboxyl, methoxycarbonyl, ethoxycarbonyl, cyano, imidazolylmethyl, trifluoromethyl, benzoyl, 2-hydroxybenzyl, nitro, amino, acetylamino, propanoylamino, butanoylamino, pivaloylamino, trifluoromethylamino, methoxycarbonylamino, ethoxycarbonylamino, cinnamoylamino, methanesulfonylamino, N,N-bis(methanesulfonyl)amino, aminocarbonyl, aminosulfonyl, hydroxymethyl and acetoxymethyl, and wherein when X and/or Q contain —CH_2— groups, one or more of the —CH_2— groups in X and/or Q may be substituted by $-(CH_2)_4$ or $-(CH_2)_5$, thereby forming a ring structure.

5,393,891

IMMUNOASSAY REAGENTS AND METHODS FOR DETECTING BREQUINAR AND ANALOGS

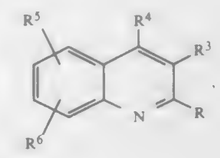
Douglas G. Batt, Wilmington; William Galbraith, Newark, and Paul M. Simon, Wilmington, all of Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed Jun. 8, 1993, Ser. No. 72,641

Int. Cl.[6] C07D *215/16, 215/18, 215/36*

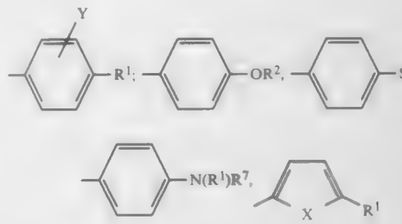
U.S. Cl. 546—170 4 Claims

1. A hapten having the formula:



(I)

wherein:
R is



X is O, S, NR^7 or CH=N;
R^1 is alkyl of 5–12 carbon atoms, alkenyl of 5–12 carbon atoms, cycloalkyl of 3–7 carbon atoms, cycloalkylalkyl of 5–12 carbon atoms, phenyl substituted with 0–3 Y, or benzyl substituted with 0–3 Y;
R^2 is phenyl substituted with 0–3 Y, or benzyl substituted with 0–3 Y;
R^3 is H, alkoxy of 1–3 carbon atoms, alkylthio of 1–3 carbon atoms, or alkyl of 1–2 carbon atoms;
R^4 is COOH;
R^5 is H, F, Cl, Br, I, CH_3, CF_3, $S(O)_nR^8$ or ethyl;
R^6 is $(CR^9R^{10})_pCH_2NH_2$;
R^7, R^8, R^9 and R^{10} are independently H or alkyl of 1–3 carbon atoms;
Y is selected independently at each occurrence from the group consisting of: H, F, Cl, Br, alkyl of 1–5 carbon atoms, NO_2, alkoxy of 1–5 carbon atoms, alkylthio of 1–5 carbon atoms, OH, CF_3 and NH_2;
m and n are independently 0, 1 or 2; and
p is 0–12;
or a suitable salt thereof.

5,393,892

PROCESSES FOR REMOVING, SEPARATING AND CONCENTRATING LEAD, THALLIUM, ALKALI METALS, ALKALINE EARTH METALS FROM CONCENTRATED MATRICES USING MACROCYCLIC POLYETHER CRYPTAND LIGANDS BONDED TO INORGANIC SUPPORTS

Krzysztof E. Krakowiak, Provo; Bryon J. Tarbet, Highland; Haoyun An, Provo; Deborah F. Johnson, and Ronald L. Bruening, both of Salt Lake City, all of Utah, assignors to IBC Advanced Technologies, Inc., Provo, Utah

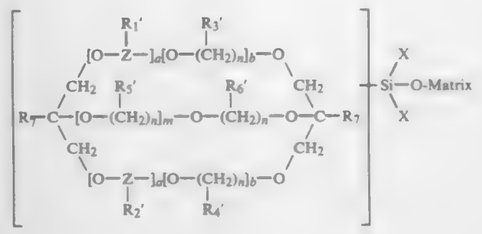
Filed May 7, 1993, Ser. No. 58,437

Int. Cl.[6] C22B *26/10, 26/20;* C07D *323/00, 325/00*

U.S. Cl. 549—214 32 Claims

1. A method for the concentration, removal and separation of desired metals selected from the group consisting of alkali metal, alkaline earth metal Pb and Tl present as cations from a source solution which comprises

(a) bringing said source solution having a first volume into contact with a compound comprising an oxygen donor macrocycle-containing ligand covalently bonded to a solid inorganic support matrix represented by the formula:



wherein,
$R_{3'}$, $R_{4'}$, $R_{5'}$ and $R_{6'}$ is H or a spacer formed from the reaction of a member selected from the group consisting of allyloxymethyl, alkylthio, alkylamino, carboxy, carboxyalkyl and epoxyalkyl with an —Si(X)(X)— moiety used for attachment to —O—Matrix,
R_7 is a member selected from the group consisting of H, or alkyl,
Z is a member selected from the group consisting of o-phenylene and o-naphthylene,
$R_{1'}$ and $R_{2'}$ is H or a spacer formed from the reaction of a member selected from the group consisting of allyl, alkenyl, carboxy, carboxyalkyl, allyloxy, aminoalkyl, hydroxy, thio and alkylthio with an —Si(X)(X)— moiety used for attachment to —O—Matrix,
n is an integer of from 2 to 4,
a is an integer of 0 or 1,
b is an integer of 0 to 3 with the proviso that b must be at least 1 when a is 0,
and m is an integer of 0 to 5,
Matrix is a solid support material selected from the group consisting of sand, silica gel, glass, glass fibers, alumina, nickel oxide, zirconia, titania, and equivalent substances,
X is a member selected from the group consisting of Cl, Br, I, alkyl, alkoxy, substituted alkyl, substituted alkoxy and O—matrix,

with the further proviso that one but not more than two of the $R_{1'}$ through $R_{6'}$ groups must be a spacer reacted with an —Si(X)(X)— moiety used for attachment to —O—Matrix and remaining $R_{1'}$ through $R_{6'}$ groups are H; said ligand portion of said compound having an affinity for said alkali metal, alkaline earth metal, Pb and/or Tl cations to form a complex between the alkali metal, alkaline earth metal, Pb and/or Tl cations and said oxygen donor macrocyclic containing ligand portion of said compound;

(b) removing source solution from contact with said compound to which said desired metal cations have been complexed; and

(c) contacting said compound having said desired metal cations complexed thereto with a smaller volume of an aqueous receiving solution in which said desired metal cations are either soluble or which has greater affinity for such desired metal cations than does the oxygen donor macrocyclic ligand thereby quantitatively stripping such cations from the ligand and recovering said desired metal cations in concentrated form in said receiving solution.

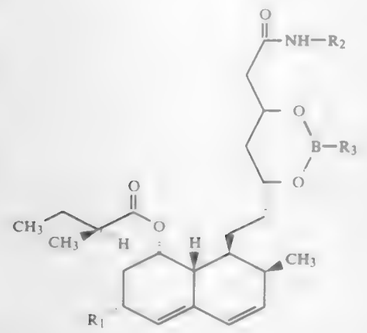
5,393,893

PROCESS FOR PRODUCING SIMVASTATIN AND ANALOGS THEREOF

Rudolf Kubela, Stouffville, and Jayaramaiyer Radhakrishnan, Winnipeg, both of Canada, assignors to Apotex, Inc., Ontario, Canada

Filed Nov. 8, 1993, Ser. No. 148,517
Int. Cl.[6] C07D *309/10*
U.S. Cl. 549—292 17 Claims

1. A process for the preparation of a compound of formula (III):



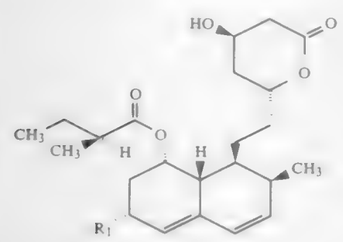
(III)

wherein: R_1 is selected from the group consisting of methyl or hydrogen;

R_2 represents (1) an alkyl group having 3 to 7 carbon atoms, or (2) a 3- to -7 membered cycloalkyl group, or (3) an aralkyl group having 2 to 4 carbon atoms in the alkyl moiety and a phenyl in the aryl moiety which is optionally substituted;

R_3 is selected from the group phenyl which is optionally substituted by one to four substitutents: halogen or lower alkyl in any combination:

-reacting a compound of formula (I)



(I)

with an amine, $R_2—NH_2$,

-followed by hydroxyl protection with a boronic acid. $R_3—B(OH)_2$.

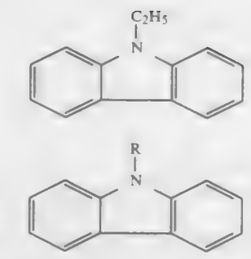
5,393,894

PROCESS FOR THE PREPARATION OF N-ETHYLCARBAZOLE

Johannes Becherer, Maintal, and Peter Koch, Obertshausen, both of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jul. 15, 1994, Ser. No. 275,594
Claims priority, application Germany, Jul. 23, 1993, 4324707
Int. Cl.[6] C07D *209/86*
U.S. Cl. 548—445 18 Claims

1. Process for the preparation of N-ethylcarbazole of file formula I, comprising reacting a carbazole of the general formula II



(I)

(II)

in which R denotes hydrogen or ethoxycarbonyl, with diethyl carbonate.

5,393,895

PROCESS FOR OBTAINING 10-DEACETYLBACCATIN III

Jean-Claude Gaullier, Champs Sur Marne; Bernadette Mandard, Alfortville, and Rodolphe Margraff, Viry Chatillon, all of France, assignors to Rhone-Poulenc Rorer, S.A., Antony Cedex, France

Filed Jan. 27, 1993, Ser. No. 10,083
Claims priority, application France, Oct. 5, 1992, 92 11746
Int. Cl.[6] C07D *305/14*
U.S. Cl. 549—510 23 Claims

1. A process for obtaining 10-deacetylbaccatin III from various parts of yew (Taxus sp.), comprising:

1) treating ground parts of yew with an aliphatic alcohol to obtain an alcoholic extract containing 10-deacetylbaccatin III,

2) diluting the alcoholic extract with water to obtain an hydroalcoholic solution containing 10 to 30% by weight of alcohol and insolubles, wherein the ratio of the weight of the hydroalcoholic solution to the insolubles is between 4 and 8,

3) separating off the insolubles present in the hydroalcoholic solution by filtration, sedimentation or centrifugation,

4) removing virtually all of the alcohol from the hydroalcoholic solution to obtain an aqueous phase,

5) extracting the 10-deacetylbaccatin III present in the aqueous phase with an organic solvent to obtain an organic extract,

6) removing the organic solvent from the organic extract to obtain a residue,

7) selectively crystallizing 10-deacetylbaccatin III from the residue, and purifying 10-deacetylbaccatin III.

5,393,896

PROCESS FOR OBTAINING 10-DEACETYLBACCATIN III

Rodolphe Margraff, Viry Chatillon, France, assignor to Rhone-Poulenc Rorer, S.A., Antony, France

Filed Jan. 27, 1993, Ser. No. 10,084
Claims priority, application France, Oct. 5, 1992, 92 11745
Int. Cl.[6] C07D *305/14*
U.S. Cl. 549—510 32 Claims

1. A process for obtaining 10-deacetylbaccatin III from various parts of yew (Taxus sp.) comprising:

1) treating ground parts of yew with water to obtain an aqueous suspension,

2) separating an aqueous solution containing 10-deacetylbaccatin III from vegetable matter in the aqueous suspension,

3) extracting 10-deacetylbaccatin III from the aqueous solution with an organic solvent,

4) separating an organic extract containing 10-deacetylbaccatin III from the aqueous phase,

5) removing the organic solvent from the organic extract thus separated to obtain a residue,

6) selectively crystallizing 10-deacetylbaccatin III from the residue thus obtained in an organic solvent,

7) isolating 10-deacetylbaccatin III in purified form.

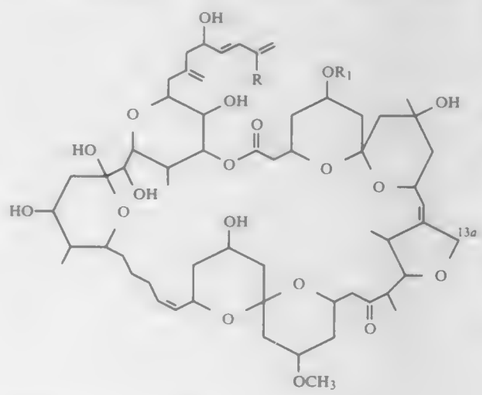
5,393,897

ISOLATION AND STRUCTURE OF SPONGISTATINS 5,7,8 AND 9

George R. Pettit, Paradise Valley; Zbigniew A. Cichacz, and Cherry L. Herald, both of Tempe, all of Ariz., assignors to Arizona Board of Regents acting on behalf of Arizona State University, Tempe, Ariz.

Filed Jul. 2, 1993, Ser. No. 86,664
Int. Cl.[6] C07D *323/00*
U.S. Cl. 549—267 6 Claims

1. A composition of matter having the following structure:



wherein R=Cl or H and R_1=H or $COCH_3$.

5,393,898

METHOD OF PREPARING DIACETYL RHEIN

Alfons Carcasona, Cologne; Wolf Grimminger, Bergisch-Gladbach, both of Germany; Pentti Hietala, Helsinki, Finland; Helga Zaeske, and Klaus Witthohn, both of Overath, Germany, assignors to Madaus AG, Cologne, Germany

Continuation of Ser. No. 969,242, Feb. 19, 1993, abandoned. This application Apr. 28, 1994, Ser. No. 234,583
Claims priority, application Germany, Jun. 25, 1991, 4120990
Int. Cl.[6] C07C *50/34*
U.S. Cl. 552—262 13 Claims

1. The method of preparing diacetylrhein which is substantially free of aloe-emodin components, which comprises:

a) admixing a mixture of rhein-9-anthrone-8-glucoside and aloe-emodin-9-anthrone-8-glucoside with an aqueous solution having a pH of 6.5 to 7.5 and with a polar organic solvent which is incompletely miscible with water,

b) subjecting the resulting mixture to liquid-liquid partitioning to form a light organic phase containing said aloe-emodin-9-anthrone-8-glucoside and a heavy aqueous phase containing said rhein-9-anthrone-8-glucoside,

c) separating said aqueous phase from said organic phase,

d) oxidizing the rhein-9-anthrone-8-glucoside contained in said aqueous phase to rhein-8-glucoside,

e) treating said rhein-8-glucoside with an acid to remove the glucose in the 8-position and form substantially pure rhein,

f) acetylating said rhein to form substantially pure diacetylrhein, and

g) recovering said diacetylrhein.

5,393,899

PROCESS FOR PURIFICATION OF CRUDE 4,4'-DIAMINO-1,1'-DIANTHRAQUINONYL-3,3'-DISULFONIC ACIDS AND SALTS THEREOF

Hiroki Inoue, Osaka; Iwao Sakaguchi, Hyogo; Katsutoshi Numano, Osaka; Toshiaki Kishimoto, Osaka; Yoshiaki Hayashi, Osaka, and Keisuke Ito, Osaka, all of Japan, assignors to Sumimoto Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 818,146, Jan. 8, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 108,850
Claims priority, application Japan, Jan. 29, 1991, 3-009108; Mar. 15, 1991, 3-051129
Int. Cl.[6] C07D *87/46*
U.S. Cl. 552—212 12 Claims

1. A process for preparation of disulfonic acid intermediates of 4,4'-diamino-1,1'-dianthraquinonyl red pigments from a crude 4,4'-diamino-1,1'-dianthraquinonyl-3,3'-disulfonic acid or salt thereof, which comprises mixing an inorganic salt with an aqueous solution containing the crude disulphonic acid or the salt thereof to effect salting-out, the aqueous solution being adjusted to an acidic pH after or before the mixing.

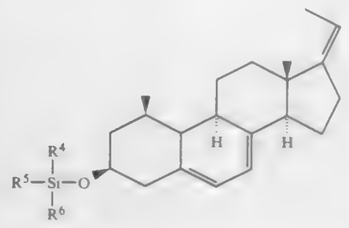
5,393,900

STEROID INTERMEDIATES FOR THE FORMATION OF VITAMIN D_3 ANALOGUES

Thomas I. Doran, West Orange, N.J.; John A. McLane, New Haven, Conn.; Masami Okabe, Nutley, N.J.; Michelangelo Scalone, Birsfelden, Switzerland, and Milan R. Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche inc., Nutley, N.J.

Division of Ser. No. 155,663, Nov. 22, 1993, Pat. No. 5,342,833, which is a continuation of Ser. No. 979,133, Nov. 20, 1992, abandoned. This application Jun. 7, 1994, Ser. No. 255,012
Int. Cl.[6] C07J *9/00*
U.S. Cl. 552—505 10 Claims

1. A compound of the formula



IV

wherein R^4, R^5 and R^6 are independently C_1–C_6 alkyl or phenyl.

5,393,901

AQUEOUS PROCESS FOR PREPARING AMIDO-CARBOXYLIC ACIDS

George C. Zima, Kingsport; T. Hugh Williams, Fall Branch; Gary P. Lutz, Kingsport, all of Tenn., and William C. Dickason, Batesville, Ark., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Apr. 15, 1994, Ser. No. 228,611
Int. Cl.[6] C07C *231/02*
U.S. Cl. 554—69 9 Claims

1. A process for preparing amido-carboxylic acids wherein hydrolysis and amidation reactions are conducted simultaneously in water, said process comprising the steps of:

(A) reacting at a temperature of 150° C.–300° C. for 2 to 10 hours, a mixture containing

(1) a nitrogen containing compound selected from the group consisting of a lactam containing at least 3 carbon atoms per molecule, and an amino acid, provided the amino acid has the formula $NH_2(CRR')_nCOOH$ wherein n is 1–26,

VOL 1171 ISS 4 FE 28 1995 UMI

and R and R' are independently selected from the group consisting of hydrogen, unsubstituted or substituted C_1–C_{20} alkyl, unsubstituted or substituted C_3–C_8 cycloalkyl, C_3–C_8 alkenyl, C_3–C_8 alkynyl, and C_6–C_{14} aryl;

(2) 1 to 10 moles of a carboxylic acid compound per mole of the nitrogen containing compound, said carboxylic acid compound having 6 to 26 carbon atoms selected from the group consisting of a carboxylic acid, a carboxylic acid ester and combinations thereof; and

(3) 10 to 50 moles of water per mole of the nitrogen containing compound, to form a reaction mixture containing an amido-carboxylic acid; and

(B) cooling the reaction mixture formed in Step (A) to a temperature to achieve phase separation of an organic layer containing the amido-carboxylic acid, and an aqueous layer; and

(C) separating the amido-carboxylic acid containing organic layer from the aqueous layer.

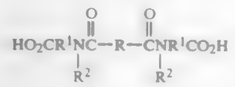
5,393,902

PROCESS FOR THE PREPARATION OF BIS(AMIDOCARBOXYLIC ACIDS)

Janet L. Coope, Hackensack; AnneMarie Brescia, Fairview; Michael I. Hill, Ridgewood; Martina Santoso, North Brunswick, all of N.J., and Stephen A. Madison, New City, N.Y., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Apr. 26, 1994, Ser. No. 233,165
Int. Cl.[6] C07C *231/02, 229/24, 61/08*
U.S. Cl. 554—69 12 Claims

1. A process for the preparation of a bis(amidocarboxylic acid) having the formula:



(I)

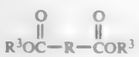
wherein

R and R^1 are each independently a C_1–C_{12} radical selected from the group consisting of alkylene, alkenylene, cycloalkylene, cycloalkenylene, arylene and phenylene radicals; and

R^2 is hydrogen or a C_1–C_{12} radical selected from the group consisting of alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl and phenyl radicals;

the process comprising the steps of:

(i) charging a reactor with a reaction medium that includes a C_1–C_8 mono- or polyhydric alcohol as solvent, an ester and an aminocarboxylate compound, the ester having the formula:



(II)

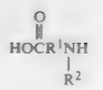
wherein R^3 is a C_1–C_6 radical selected from the group consisting of alkyl, haloalkyl, hydroxyalkyl and phenyl radicals, the aminocarboxylate compound being a salt formed from and selected from the group consisting of lactams having the formula:



(III)

R^1

and aminocarboxylic acids having the formula:



(IV)

the ester and aminocarboxylate compound being present in a respective weight ratio of from about 1:1 to about 1:4;

(ii) reacting the ester with the aminocarboxylate compound; and

(iii) recovering the bis(amidocarboxylic acid) from the reaction medium.

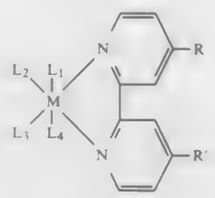
5,393,903

MONO, BIS OR TRIS(SUBSTITUTED 2,2'-BIPYRIDINE) IRON, RUTHENIUM, OSMIUM OR VANADIUM COMPLEXES AND THEIR METHODS OF PREPARATION

Michael Grätzel, St-Sulpice; David Fraser, Vevey; Shaik M. Zakeeruddin, Renens, and Mohammed K. Nazeeruddin, Chavannes, all of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

PCT No. PCT/CH92/00033, § 371 Date Oct. 19, 1992, § 102(e) Date Oct. 19, 1992, PCT Pub. No. WO92/14741, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 19, 1992, Ser. No. 949,485
Claims priority, application France, Feb. 21, 1991, 91 02199
Int. Cl.[6] C07F *15/00, 15/02, 19/00;* C09K *3/00*
U.S. Cl. 556—137 24 Claims

1. A mono, bis or tris (4,4'substituted 2,2'-bipyridine) complex of a metal M having the following formula (I)



(I)

in which M represents iron, ruthenium, osmium or vanadium, R and R' are the same and each is a hydroxy or alkoxy group, or a primary, secondary or tertiary amine group, and L_1, L_2, L_3 and L_4 are ligands forming a coordination complex with the metal M, said ligands being a monodentate or being combined together as a didentate, terdentate or tetradentate.

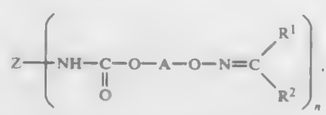
5,393,904

COPOLYMERIZABLE OXIME ETHERS

Kaspar Bott, Mannheim; Gerhard Bauer, Weinheim, and Karl Haeberle, Speyer, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Feb. 25, 1994, Ser. No. 202,215
Claims priority, application Germany, Mar. 22, 1993, 4309193
Int. Cl.[6] C07C *271/64, 271/08*
U.S. Cl. 558—7 2 Claims

1. A copolymerizable oxime ether of the formula



I

where A is a divalent linking member, R^1 and R^2 independently of one another are each C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, C_5–C_{10}-cycloalkyl or C_5–C_{10}-aryl, each of which may further-

more contain 1–3 nonadjacent nitrogen, oxygen or sulfur atoms as heteroatoms in the carbon chain or in the carbon ring and may be substituted by from one to three C_1–C_4-alkyl or C_1–C_4-alkoxy groups, R^1 and R^1 may be hydrogen or R^1 and R^2 together for a bridge of 3 to 14 carbon atoms, where some of the carbon atoms may furthermore be part of an aromatic ring, Z is an n-valent organic radical which contains a copolymerizable ethylenically unsaturated group and n is an integer of from 1 to 3.

5,393,905

PURIFICATION OF AMIDO-CARBOXYLIC ACIDS

George C. Zima, Kingsport; T. Hugh Williams, Fall Branch, and Mark R. Shelton, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Apr. 15, 1994, Ser. No. 228,612
Int. Cl.[6] C07C *231/24*
U.S. Cl. 554—70 7 Claims

1. A process for purifying amido-carboxylic acids by liquid/-liquid extraction from a reaction mixture containing an amido-carboxylic acid, said process comprising the steps of:

(A) distilling impurities at a temperature of 80° C. to 250° C. under vacuum from a reaction mixture containing an amido-carboxylic acid under reduced pressure to form a distillate residue;

(B) mixing the distillate residue from Step (A) with a nonpolar hydrocarbon solvent having 5 to 30 carbon atoms wherein the amount of the nonpolar hydrocarbon solvent is 0.1 to 10 times the weight of the distillate residue and the mixture of the hydrocarbon solvent and the distillate residue is maintained above the freezing point of the distillate residue;

(C) allowing the hydrocarbon solvent and distillate residue to achieve phase separation of an organic phase containing the amido-carboxylic acid and an organic phase containing the nonpolar hydrocarbon solvent; and

(D) separating the organic phase containing the nonpolar hydrocarbon solvent from the organic phase containing the amido-carboxylic acid.

5,393,906

HIGH-STABILITY NON-LAURIC TRIGLYCERIDE OILS

Mark A. Price, Bergen, and Nico Zwikstra, Heemstede, both of Netherlands, assignors to Van Den Bergh Foods Co., Division of Conopco Inc., Lisle, Ill.

Continuation of Ser. No. 849,725, Mar. 10, 1992, abandoned.
This application Feb. 22, 1994, Ser. No. 200,557
Claims priority, application European Pat. Off., Mar. 11, 1991, 91200516
Int. Cl.[6] C07C *55/22*
U.S. Cl. 554—227 15 Claims

1. High-stability oil comprising a vegetable, non-lauric triglyceride composition with a maximum amount of $C_{18:3}$ fatty acids of 1 wt. %, amount of $C_{18:2}$ fatty acids of 10 wt. %, while very small amount of Fe, Cu and Ni are present, which composition contains some amount of natural antioxidants, displays an N-profile (NMR, non-stabilized) of $N_{15}<10$, $N_{10}<5$ and $N_0<15$, and a RIP value of at 120° C. of at least 35 hours while its iodine value is at least 81, said oil being pumpable and sprayable without heating.

5,393,907

COATING SOLUTION FOR FORMING COMPOSITE METAL OXIDE FILM AND PROCESS FOR MAKING SAME

Akira Hashimoto, and Katsuya Tanitsu, both of Kanagawa, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1993, Ser. No. 35,711
Claims priority, application Japan, Mar. 24, 1992, 4-113906; Aug. 27, 1992, 4-269040
Int. Cl.[6] C07F *9/00, 7/00, 5/00*
U.S. Cl. 556—28 8 Claims

1. A process for producing a coating solution for forming a composite metal oxide film comprising the steps of:

reacting component (A) with component (B) and subsequently incorporating component (C) wherein,

component (A) is at least one member selected from the group consisting of a reaction product, a partial hydrolyzate of said reaction product, and a partial acylated product of said reaction product wherein said reaction product is obtained by a reaction between a β-diketone compound and at least one metal compound represented by formula (I):

$$M_1A_n \quad (I)$$

wherein M_1 is Ti, Zr, Nb, Hf or Ta; A is —OR or a halogen atom, R is a saturated or unsaturated hydrocarbon having 1–6 carbon atoms; and n is an integer of 2–5;

component (B) is a polyhydric alcohol compound; and

component (C) is at least one metal compound selected from the group consisting of formulas (II), (III) and (IV); wherein,

formula (II) is a metal carboxylate compound represented by:

$$M_2(OCOR)_m \quad (II)$$

wherein M_2 is Pb, Sr, Ba, Mg, Zn, La, Y or Li; R is a saturated or unsaturated hydrocarbon having 1–6 carbon atoms; and m is an integer of 1–4;

formula (III) is a metal nitrate compound represented by:

$$M_2(NO_3)_m \quad (III)$$

wherein M_2 is Pb, Sr, Ba, Mg, Zn, La, Y or Li; and m is an integer of 1–4; and,

formula (IV) is a metal nitrite compound represented by:

$$M_3(NO_2)l \quad (IV)$$

wherein M_3 is Sr, Ba or Li; and l is an integer of 1 or 2.

5,393,908

SYNTHESIS OF N-FORMYL-3,4-DI-T-BUTOXYCARBONYLOXY-6-(TRIMETHYLSTANNYL)-L-PHENYLALANINE ETHYL ESTER AND ITS REGIOSELECTIVE RADIOFLUORODESTANNYLATION TO 6-[^{18}F]FLUORO-L-DOPA

Nagichettiar Satyamurthy, 1613 Barry Ave. - Apt. #9, Los Angeles, Calif. 90025; Jorge R. Barrio, 5920 Grey Rock Rd., Agoura Hills, Calif. 91301; Allyson J. Bishop, 1661 Selby Ave. - Apt. 5A, Los Angeles, Calif. 90024, and Mohammad Namavari, 3230 Overland Ave. - Apt. 121, Los Angeles, Calif. 90034

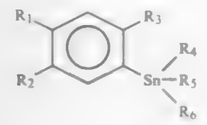
Filed Jun. 25, 1992, Ser. No. 903,915
Int. Cl.[6] C07F *7/22;* C07C *229/00*
U.S. Cl. 556—87 12 Claims

1. N-formyl-3,4-di-t-butoxycarbonyloxy-6-(trimethylstannyl)-L-phenylalanine ethyl ester.

10. The process of forming unlabelled as well as 6-[^{18}F]fluoro-L-dopa comprising:

(a) reacting 3,4-dialkoxy-L-phenylalanine alkyl ester-hydrochloride with a salt of an organic acid,
(b) reacting the product of step a) above with a halogen,
(c) exposing the product of step b) above to trihalogen boride,
(d) reacting the product of step c) above with di-t-alkyl dicarbonate,
(e) reacting the product of step d) above with hexaalkylditin,
(f) bubbling an unlabelled or radiolabeled fluorine compound selected from the group consisting of $[^{18}F]CH_3COOF$, $[^{18}F]F_2$, and $[^{18}F]OF_2$ and combinations thereof through the product of step e) above,
(g) treating the product of step f) above with a halogen acid, and
(h) raising the pH of the product of step g) above to a value ≦7 by the addition of a base.

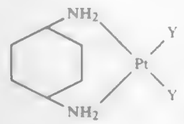
11. A compound having the formula:



Wherein:
R_1 and R_2 are electron withdrawing groups,
R_3 is an amino acid, and
R_4, R_5 and R_6 are alkyl groups.

5,393,909
DIAMINE PLATINUM COMPLEXES AS ANTITUMOR AGENTS
Abdi R. Khokhar, and Zahid H. Siddik, both of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.
Continuation-in-part of Ser. No. 978,788, Nov. 19, 1992, Pat. No. 5,288,887, which is a continuation-in-part of Ser. No. 927,201, Aug. 7, 1992, Pat. No. 5,318,962, which is a continuation-in-part of Ser. No. 624,795, Dec. 7, 1990, abandoned, which is a division of Ser. No. 274,824, Nov. 22, 1988, Pat. No. 5,041,578. This application Feb. 23, 1994, Ser. No. 200,395
Int. Cl.[6] C07F *15/00*; A61K *31/28*
U.S. Cl. 556—137 **11 Claims**

1. A cis-1,4-diaminocyclohexane platinum (II) complex having the formula:



II

or a stereoisomer thereof, wherein Y is cyclobutanedicarboxylato, sulfato, methylmalonato, tartronato, oxalate, malonato or chloride.

5,393,910
PROCESS FOR MAKING ISOCYANATOORGANOSILANES
Jeffrey Y. P. Mui, Bellingham, Mass., and Mark P. Bowman, Marietta, Ohio, assignors to OSi Specialties, Inc., Danbury, Conn.
Filed Oct. 20, 1993, Ser. No. 138,225
Int. Cl.[6] C07F *7/10*
U.S. Cl. 556—414 **9 Claims**

1. A method for preparing an isocyanatoorganosilane comprising vaporizing a carbamatoorganosilane and heating said vaporized carbamatoorganosilane in a reaction zone at an elevated temperature for a time sufficient to form said isocyanatoorganosilane.

5,393,911
CYCLOPENTADIENE TYPE COMPOUNDS AND METHOD FOR MAKING
Konstantinos Patsidis, Bayreuth, Germany; Syriac J. Palackal, Bartlesville, Okla., and Helmut G. Alt, Bayreuth, Germany, assignors to Phillips Petroleum Company, Bartlesville, Okla.
Continuation-in-part of Ser. No. 697,363, May 7, 1991, Pat. No. 5,191,132. This application Nov. 30, 1992, Ser. No. 984,054
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[6] C07F *7/08*; C07C *13/28*
U.S. Cl. 556—489 **34 Claims**

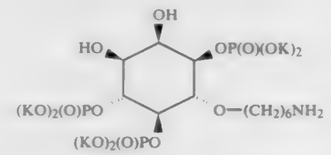
1. A compound of the formula



wherein Z is a substituted or unsubstituted fluorenyl; Z′ is selected from the group consisting of unsubstituted fluorenyl, substituted fluorenyl, unsubstituted cyclopentadienyl, substituted cyclopentadienyl, unsubstituted indenyl, substituted indenyl, tetrahydroindenyl, and halides; and each R′ is individually selected from the group consisting of hydrogen and organo radicals having 1 to 40 carbon atoms further characterized by the fact that if Z′ is a halide and each R′ is alkyl, then Z is a substituted fluorenyl, and if Z′ is not a halide, and both R's are alkyl or phenyl, or one R′ is phenyl and the other is fluorenyl and Z is unsubstituted, then Z′ is selected from the group consisting of substituted fluorenyl, unsubstituted cyclopentadienyl, substituted cyclopentadienyl, unsubstituted indenyl, and tetrahydroindenyl.

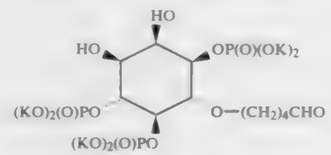
5,393,912
D-MYO-INOSITOL 1,4,5-TRISPHOSPHATE ANALOGUES
Ching-Shih Chen, Wakefield; Da-Ming Gou, Kingston, and Woan-Ru Shieh, Wakefield, all of R.I., assignors to The Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, Providence, R.I.
Filed Jan. 13, 1994, Ser. No. 181,188
Int. Cl.[6] C07F *9/117*
U.S. Cl. 558—161 **2 Claims**

1. A compound of the structural formula:



(-)-1

2. A compound of the structural formula:



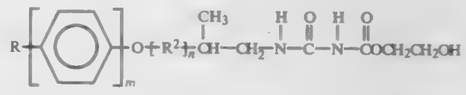
(-)-2

5,393,913
N-FORMYLANILINES
Thierry Aubert, St. Genis Laval, France, assignor to Rhone-Poulenc Inc., Research Triangle Park, N.C.
Filed Mar. 3, 1993, Ser. No. 25,503
Int. Cl.[6] C07C *255/02, 327/06*; C07D *233/04*
U.S. Cl. 558—394 **1 Claim**

1. A compound which is N-cyanomethyl, N-formyl 2,6-dichloro-4-fluoroaniline or 2-[N-formyl-N-(2,6-dichloro-4-fluoro)phenyl] thionoacetamid.

5,393,914
MOTOR FUEL DETERGENT ADDITIVES-HYDROCARBYLOXYPOLYETHER ALLOPHONATE ESTERS OF 2-HYDROXY ETHANE
Sheldon Herbstman, New City, and Cadorette, Constance A., Newburgh, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.
Filed Sep. 1, 1992, Ser. No. 938,808
Int. Cl.[6] C07C *229/00*
U.S. Cl. 560—29 **6 Claims**

1. An allophonate ester comprising a compound of formula



where R is a C_9–C_{25} alkyl group, R^2 is a C_2 to C_4 oxyalkylene group, m is 0 or 1, and n is a number between about 5 and about 30.

5,393,915
METHOD OF PREPARING α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER OR ITS HYDROCHLORIDE SALT
Takehiko Kataoka; Akihiko Yasaki; Shinichi Kishimoto, and Toshihisa Kato, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Continuation of Ser. No. 888,628, May 27, 1992, abandoned. This application Nov. 17, 1993, Ser. No. 153,490
Claims priority, application Japan, May 31, 1991, 3-229827; May 31, 1991, 3-229828; Apr. 14, 1992, 4-094203
Int. Cl.[6] C07C *229/34*
U.S. Cl. 560—41 **15 Claims**

1. A method for isolating α-L-aspartyl-L-phenylalanine methyl ester or its hydrochloride salt from an industrial-scale aqueous suspension of the same, comprising subjecting said aqueous suspension to continuous separation by vacuum filtration.

5,393,916
INHIBITION OF DIOXANE FORMATION DURING RECOVERY OF GLYCOLS FROM POLYESTER RESINS
William J. Gamble, and Walter T. Gurney, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 24, 1994, Ser. No. 265,302
Int. Cl.[6] C07C *67/62*
U.S. Cl. 560—78 **9 Claims**

1. A process for avoiding dioxane formation during the depolymerization of polyester into glycol and ester components by passing superheated methanol through a reaction mixture containing polyester, oligomer and contaminants that under depolymerization conditions are capable of forming acid catalysts for the formation of dioxane, the process comprising the step of adding sufficient base to neutralize acid formed from the contaminants.

5,393,917
ISOLATION AND PURIFICATION OF OXADIMETHACRYLICS
Siegmund Besecke, Hameln; Andreas Deckers, Ludwigshafen, and Harald Lauke, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Continuation of Ser. No. 996,395, Dec. 23, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 167,119
Claims priority, application Germany, Dec. 24, 1991, 4142912
The portion of the term of this patent subsequent to Oct. 11, 2011, has been disclaimed.
Int. Cl.[6] C07C *69/73*
U.S. Cl. 560—181 **5 Claims**

1. A process for preparing oxadimethacrylics of the formula I

I

where A is selected from the group consisting of —$COOR^1$, —COR^1, —$CONR^2R^3$ and —CN and R, R^2 and R^3 are each defined as follows:
R^1 is hydrogen, alkyl, substituted or unsubstituted cycloalkyl or cycloalkylalkyl, hydroxyalkyl, aminoalkyl, N-alkylaminoalkyl, N,N-dialkylaminoalkyl, substituted or unsubstituted aryl or arylalkyl,
R^2 and R^3 are each hydrogen, alkyl, substituted or unsubstituted cycloalkyl or cycloalkylalkyl, substituted or unsubstituted aryl or arylalkyl, comprising the following steps:
(I) reacting an acrylic of the formula II



II

with formaldehyde or a formaldehyde donor in the presence of oxygen, with at least one tertiary amine to form an alcohol of the formula III

III

(II) subsequently converting the alcohol III by heating in the presence of oxygen and at least one tertiary amine to yield a crude mixture; and
(III) adding to the crude mixture obtained in step (II) at least one liquid hydrocarbon having a boiling point of from 20 to 200° C., the weight ratio of hydrocarbon to oxadimethacrylics I being from 1:1 to 100:1, and thereafter separating the crystallized oxadimethacrylics from the reaction mixture.

5,393,918
HIGH YIELD PROCESS FOR THE PRODUCTION OF METHACRYLIC ACID ESTERS
John C. Dobson, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
Filed Dec. 2, 1993, Ser. No. 160,697
Int. Cl.[6] C07C *67/20*
U.S. Cl. 560—215 **9 Claims**

1. A method for producing methacrylic acid esters comprising the steps of;
a. hydrolyzing acetone cyanohydrin with sulfuric acid to produce a hydrolysis mixture comprising 2-methacrylamide, α-sulfatoisobutyramide, α-hydroxyisobutyramide, and methacrylic acid, wherein the sum of the total moles of these components derived from ACH is maximized;
b. esterifying the hydrolysis mixture with a C_1–C_{12} alkyl alcohol to produce an esterification mixture comprising a C_1–C_{12} alkyl methacrylate, a C_1–C_{12} alkyl α-hydroxyisobutyrate, a C_1–C_{12} alkyl β-C_1–C_{12} alkoxyisobutyrate, and a C_1–C_{12} alkyl α-C_1–C_{12} alkoxyisobutyrate;
c. separating the esterification mixture into an aqueous fraction, a first organic fraction comprising the C_1–C_{12} alkyl methacrylate, and a second organic fraction comprising the C_1–C_{12} alkyl α-hydroxyisobutyrate, the C_1–C_{12} alkyl β-C_1–C_{12} alkoxyisobutyrate, and the C_1–C_{12} alkyl α-C_1–C_{12} alkoxyisobutyrate.
d. dehydrating the isobutyrate-containing components of the

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second organic fraction to produce a recycle mixture comprising a C_1–C_{12} alkyl methacrylate, methacrylic acid, a C_1–C_{12} alkyl alcohol, and water;

e. combining the recycle mixture with either the hydrolysis mixture or the esterification mixture.

5,393,919

PROCESS FOR PRODUCING ACETIC ACID OR METHYL ACETATE AND CATALYST THEREFOR

Sumio Shinoda, Tokyo, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP93/01283, § 371 Date Mar. 9, 1994, § 102(e) Date Mar. 9, 1994, PCT Pub. No. WO94/05421, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 9, 1993, Ser. No. 204,343

Claims priority, application Japan, Sep. 10, 1992, 4-269736

Int. Cl.[6] C07C *53/08, 51/16;* B01J *31/16, 20/26*

U.S. Cl. 560—239 21 Claims

9. A process for producing acetic acid and/or methyl acetate characterized by effecting dehydrogenation of methanol in a gas phase in the presence of a solid catalyst.

5,393,920

PREPARATION OF O-IMINOOXYMETHYLBENZOIC ACID

Remy Benoit, Ludwigshafen, and Hubert Sauter, Mannheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

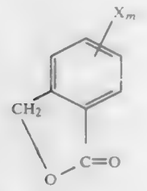
Filed Apr. 2, 1993, Ser. No. 41,848

Claims priority, application Germany, Apr. 4, 1992, 4211350

Int. Cl.[6] C07C *249/00*

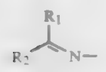
U.S. Cl. 562—440 5 Claims

1. A process for preparing o-iminooxymethylbenzoic acid of the formula I

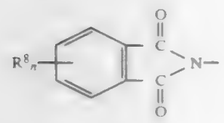


I

where Z is



or

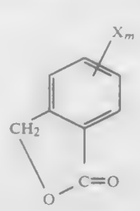


m is an integer from 0 to 3; X is unbranched or branched C_1–C_4-alkyl, unbranched or branched C_1–C_4-alkoxy, nitro, cyano or halogen; R^1 and R^2 are identical or different and each is hydrogen, cyano, hydroxyl, unbranched or branched C_1–C_{10}-alkyl, C_1–C_4-haloalkyl, C_3–C_6-cycloalkyl, C_3–C_6-halocycloalkyl, C_3–C_6-cycloalkyl-C_1–C_4-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_4-alkylthio-C_1–C_4-alkyl, arylthio-C_1–C_4-alkyl, C_2–C_6-alkenyl, C_2–C_5-haloalkenyl, C_3–C_6-cycloalkenyl, C_3–C_6-halocycloalkenyl, C_2–C_6-alkynyl, C_1–C_6-alkoxy, C_1–C_6-haloalkoxy, C_1–C_4-alkylthio, benzylthio, benzylamino, C_1–C_4-alkylcarbonyl, unsubstituted or substituted phenylcarbonyl, unsubstituted or substituted benzylcarbonyl, C_1–C_4-alkoxycarbonyl, unsubstituted or substituted phenoxycarbonyl, unsubstituted or substituted benzyloxycarbonyl, unsubstituted or substituted aryl, unsubstituted or substituted aryloxy, unsubstituted or substituted arylthio, unsubstituted or substituted aryl-C_1–C_4-alkyl, unsubstituted or substituted aryl-C_2–C_4-alkenyl, unsubstituted or substituted aryloxy-C_1–C_4-alkyl, unsubstituted or substituted arylthio-C_1–C_4-alkyl, unsubstituted or substituted hetaryl, unsubstituted or substituted hetaryloxy, unsubstituted or substituted hetarylthio, unsubstituted or substituted hetoaryl-C_1–C_4-alkyl, unsubstituted or substituted hetaryl-C_2–C_4-alkenyl, unsubstituted or substituted hetaryloxy-C_1–C_4-alkyl, hetarylthio-C_1–C_4-alkyl, unsubstituted or substituted heterocyclyl, unsubstituted or substituted heterocyclyloxy, $N(R^6)_2$, —CO—$N(R_7)_2$, halogen, or R^1 and R^2, together with the C atom whose substituents they are, form a substituted or unsubstituted, carbocyclic or heterocyclic, ring; the two R^6 radicals are identical or different and are H, C_1–C_6-alkyl, or unsubstituted or substituted phenyl; the two R^7 radicals are identical or different and are H, C_1–C_4-alkyl, or unsubstituted or substituted phenyl; n is an integers from 1 to 4; the radicals R^8 are identical or different and each is H, halogen, cyano, nitro, unsubstituted or substituted C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, aryl, aryloxy, benzyloxy, hetaryl or hetaryloxy; wherein substituents are selected from the group consisting of hydrogen, halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_1–C_{10}-alkoximino-C_1–C_2-alkyl, aryl, aryloxy, benzyloxy, hetaryl, hetaryloxy, C_3–C_6-cycloalkyl, heterocyclyl and heterocyclyloxy, which comprises reacting an oxime of the formula II



II

with a lactone of the formula III



III

the presence of a basic substance.

5,393,921

PROCESS FOR SYNTHESIZING O-SUBSTITUTED OXIME COMPOUNDS AND CONVERSION TO THE CORRESPONDING O-SUBSTITUTED HYDROXYLAMINE

Harvey A. Lazar, Silver Spring, Md., assignor to The Gillette Company, Boston, Mass.

Filed Jul. 7, 1993, Ser. No. 86,859

Int. Cl.[6] C07C *53/00*

U.S. Cl. 562—512 14 Claims

1. A process which comprises:

(a) reacting an alkali metal or alkaline earth metal hydroxide compound and a solution of an oxime compound to form a first mixture comprising the alkali metal or alkaline earth metal salt of said oxime compound and water;

(b) adding an organohalide compound while stirring to said first mixture to form a second mixture comprising an O-substituted oxime compound, the alkali metal or alkaline earth metal salt of said oxime compound, water, unreacted organohalide compound and excess oxime compound; and

(c) heating said second mixture in the presence of an amount of water sufficient to react hydroxide with said unreacted organohalide to obtain an O-substituted oxime compound free of unreacted organohalide compound; wherein said process is conducted at a temperature between about 5° C. and about 60° C.

5,393,922

CATALYTIC DIRECT OXIDATION OF HYDROCARBONS TO ACIDS

Ayusman Sen, and Minren Lin, both of State College, Pa., assignors to Gas Research Institute, Chicago, Ill.

Filed Jul. 22, 1993, Ser. No. 95,945

Int. Cl.[6] C07C *51/16*

U.S. Cl. 562—542 26 Claims

1. A process for catalytic oxidation of a hydrocarbon selected from the group consisting of an alkane having 1 to about 6 carbon atoms and a single ring aromatic compound to acid comprising contacting said hydrocarbon with hydrogen peroxide in the presence of a metallic catalyst selected from the group consisting of Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag and Au and their salts at a temperature about 70° to about 200° C. to principally produce the corresponding acid in the case of said alkane and formic acid in the case of said single ring aromatic compound.

5,393,923

3,5-DI-T-BUTYL-4-HYDROXYPHENYLMETHYLHYDROXYLAMINES AND THEIR DERIVATIVES, PHARMACEUTICAL COMPOSITIONS, AND METHODS OF USE THEREFOR

Thomas Capiris, Plymouth; David T. Connor, and Jagadish C. Sircar, both of Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

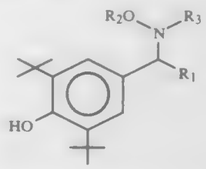
Division of Ser. No. 821,103, Jan. 15, 1992, Pat. No. 5,288,896. This application Oct. 12, 1993, Ser. No. 135,213

The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.

Int. Cl.[6] C07C *335/00*

U.S. Cl. 564—28 18 Claims

1. A compound of the Formula (I)



I

or a pharmaceutically acceptable salt thereof; wherein

R_1 is

1) hydrogen;
2) methyl;
3) phenyl optionally substituted by from one to three of i) hydrogen, ii) halogen, iii) trifluoromethyl, iv) lower alkyl, v) lower alkoxy, and vi) hydroxy;
4) 2- or 3-thienyl;
5) 2 - or 3-furanyl;
6) isoxazolyl;
7) 5- or 6-heterocycle wherein the heterocycle is a saturated ring having one to three heteroatoms selected from nitrogen, sulfur and oxygen;

R_2 is

1) hydrogen;
2) alkanoyl of from two to four carbon atoms; or
3) lower alkyl;

R_3 is

1) hydrogen;
2) lower alkyl;
3) alkanoyl of from two to four carbon atoms;
4) CXR_4 wherein X is i) oxygen or ii) sulfur and R_4 is NR_5R_6 wherein R_5 is hydrogen and R_6 is hydrogen, lower alkyl, or $COOR_7$ wherein R_7 is lower alkyl; or
5) COR_7 or $COOR_7$ wherein R_7 is as defined above.

5,393,924

METHOD FOR THE PREPARATION OF ARYLALKANOLAMINEACYLATES

Ahmed M. Tafesh, Corpus Christi, Tex.; Olan S. Fruchey, Bad Soden/T.S., Germany, and Charles B. Hilton, Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

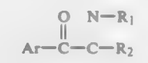
Division of Ser. No. 913,124, Oct. 2, 1992, Pat. No. 5,338,884. This application Apr. 29, 1994, Ser. No. 235,582

Int. Cl.[6] C07C *231/00*

U.S. Cl. 564—138 18 Claims

1. A method of preparing the amine acylate salt of an arylalkanolamine, which comprises the steps of:

a) providing a compound of the formula



wherein,

R_1=an hydroxyl alkyl, or alkyloxy radical

R_2=hydrogen or a C_1-C_8 alkyl or cycloalkyl radical, and

Ar=an unsubstituted phenyl radical, or a phenyl radical substituted at the ortho position, the para position, or both the ortho and para positions, or an unsubstituted naphthyl radical, or a naphthyl radical substituted at one or more of the 1, 3, 6, and 7 positions, wherein the substituents are selected from the group consisting of hydroxyl, alkoxy, alkyl, phenyl, and benzyl radicals, wherein the alkyl component is a branched or unbranched C_1-C_8 alkyl radical, wherein any of said alkyl, phenyl, and benzyl radicals are optionally substituted with one or more substituents selected from amino, hydroxyl, sulfonic acid, and sulfinic acid radicals, and wherein said phenyl and benzyl substituents are optionally substituted with a C_1-C_8 alkyl or C_1-C_8 alkoxy radical, or both; and

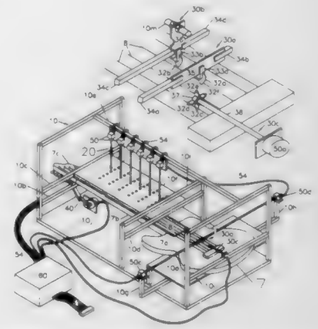
b) reacting said compound with hydrogen in a reaction medium comprising an acyl donor selected from carboxylic acids having a melting point below 100° C. and a hydrogenation catalyst comprising a transition metal catalyst on an inert support, to form a carboxylic acid salt of an arylalkanolamine.

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5,393,925
APPARATUS FOR PLAYING A STRINGED INSTRUMENT

Gary D. Wilson, 88 Columbia Pl. NW, Calgary, Alberta, Canada T2L 0R5

Filed Sep. 27, 1993, Ser. No. 126,895
Claims priority, application Canada, Mar. 18, 1993, 2089962
Int. Cl.[6] G10F *1/20*
U.S. Cl. 84—9 13 Claims

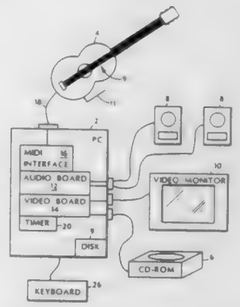


1. An apparatus for playing an instrument having a plurality of strings arranged for being picked, said apparatus comprises holding means operable for holding said instrument to be played; a plurality of poker means, each operable for applying pressure at a predetermined position on one of the strings in response to a first electronic signal; picker means including a pick and operable for drawing the pick across at least one string in response to a second electronic signal; and a computer means operable for being programmed for producing a plurality of electronic signals including the first and second electronic signals for controlling the poker means and the picker means, respectively; whereby the instrument can be played.

5,393,926
VIRTUAL MUSIC SYSTEM

Charles L. Johnson, Cambridge, Mass., assignor to Ahead, Inc., Newton, Mass.

Filed Jun. 7, 1993, Ser. No. 73,128
Int. Cl.[6] G10H *1/36*
U.S. Cl. 84—610 16 Claims



1. A virtual musical instrument comprising: a multi-element actuator which generates a plurality of signals in response to being played by a user; an audio synthesizer which generates audio tones in response to control signals; a memory storing a musical score for said multi-element actuator, said stored musical score comprising a sequence of lead notes and an associated sequence of harmony note arrays, each harmony note array of said sequence corresponding to a different one of said lead notes and containing zero, one or more harmony notes;

a digital processing means receiving said plurality of signals from said multi-element actuator and generating a first set of control signals therefrom,

said digital processing means programmed to identify from among said sequence of lead notes in the stored musical score a lead note which corresponds to a first one of said plurality of signals,

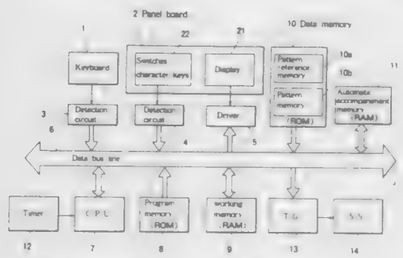
said digital processing means programmed to map a set of the remainder of said plurality of signals to whatever harmony notes are associated with said selected lead note, if any, wherein each signal of said set is mapped to a different one of whatever harmony notes are associated with said selected lead note;

said digital processing means programmed to produce the first set of control signals from the identified lead note and the harmony notes to which the signals of said plurality of signals are mapped, said first set of control signals causing said synthesizer to generate sounds representing the identified lead note and the mapped harmony notes.

5,393,927
AUTOMATIC ACCOMPANIMENT APPARATUS WITH INDEXED PATTERN SEARCHING

Eiichiro Aoki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 23, 1993, Ser. No. 35,683
Claims priority, application Japan, Mar. 24, 1992, 4-097022
Int. Cl.[6] G10H *1/02, 1/36*
U.S. Cl. 84—631 14 Claims



9. A method of selecting an automatic accompaniment pattern to be played on an automatic accompaniment apparatus, the method comprising the steps of:

storing a plurality of accompaniment patterns;

storing a plurality of characteristic references corresponding to respective accompaniment patterns, each of the plurality of characteristic references being representative of a characteristic feature of each corresponding accompaniment pattern;

inputting a search condition representative of a desired characteristic feature;

searching the plurality of stored characteristic references according to the inputted search condition to select a particular accompaniment pattern having the desired characteristic feature specified by the search condition from the stored accompaniment patterns.

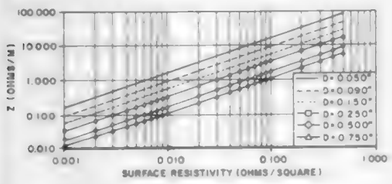
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5,393,928

SHIELDED CABLE ASSEMBLIES

Richard M. Cribb, Florissant; Arthur R. Henn, St. Louis, and Martin H. Wohl, Chesterfield, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 19, 1993, Ser. No. 21,504
Int. Cl.[6] H01B *7/34;* **D03D** *3/00;* **D04H** *1/00*
U.S. Cl. 174—36 **34 Claims**



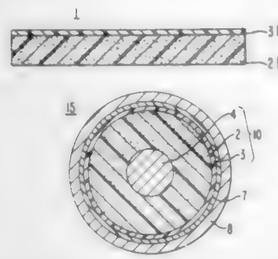
1. An elongated shielded cable assembly comprising a core of at least one insulated conductor element overwrapped with more than one layer of metallized fabric, wherein said fabric has a surface resistivity less than 100 milliohms/square.

5,393,929

ELECTRICAL INSULATION AND ARTICLES THEREOF

Hideo Yagihashi, Saitama, Japan, assignor to Junkosha Co. Ltd., Tokyo, Japan

Filed Nov. 23, 1993, Ser. No. 156,599
Int. Cl.[6] H01B *7/02, 11/18;* **B32B** *27/32*
U.S. Cl. 174—36 **10 Claims**



1. An electrical insulation laminate comprising a layer of porous polytetrafluoroethylene and at least one layer of polyetheretherketone, the latter being melt-bonded to one or both surfaces of the former.

8. A coaxial cable comprising, from inside to outside:
(a) at least one metal inner conductor,
(b) at least one layer of porous expanded polytetrafluoroethylene,
(c) at least one layer of polyetheretherketone; and
(d) at least one outer electrically-conductive layer;
said layers of porous expanded polytetrafluoroethylene and polyetheretherketone being in film form wrapped on said inner conductor, and
said layer of polyetheretherketone melt-bonded to said layer of porous expanded polytetrafluoroethylene.

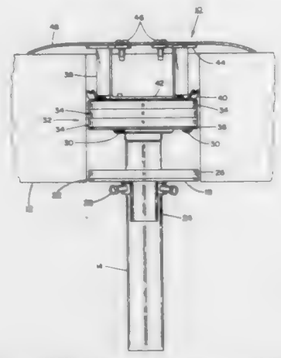
5,393,930

SELF-ANCHORING POKE-THROUGH WIRING DEVICE

Emil S. Wuertz, Madison, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed Mar. 15, 1993, Ser. No. 31,349
Int. Cl.[6] H02G *3/22*
U.S. Cl. 174—48 **11 Claims**

1. A self-anchoring poke-through wiring device for insertion into a passage extending through a concrete floor aperture of a building structure to facilitate transmission of electrical power and telecommunication signals between a service head and a junction box located at opposite sides of the floor; said wiring device comprising a cover plate structure positionable above the upper face of said floor so as to cover the floor aperture; channel means extending through said floor aperture for conducting insulated wires and telecommunication signals through said floor aperture between said junction box and said service head; fire retarding structure being fixedly connected to at least the upper end of said channel means for sealing the aperture in response to encountered heat and fire to form a fire barrier in said floor aperture; a floor cup for the receipt of electrical connectors extending between said fire retarding structure and said cover plate structure, said floor cup having a disc-shaped base fastened to said fire retarding structure and upstanding leg portions extending from said base having free distal ends fastenable to said cover plate structure; and generally rigid non-resilient metallic retainer clip means being interposed between said floor cup and said fire retarding structure, said retainer clip means including diametrically opposite end portions frictionally engageable with the wall surface of said floor aperture for securely anchoring said wiring device in said floor aperture against rotational movement and upward displacement while enabling downwardly displacement of the fitting, outer end portions of the retainer clip means having prongs formed thereon for engaging the wall surface of the floor aperture in frictional contact, said outer end portions of the retainer clip means each being bent upwardly at an angle of between about 40° to 50° relative to the plane of a flat center portion of said clip means, said retainer clip means being constituted of a corrosion-resistant annealed stainless steel having cold-worked portions in at least the bent portions of said retainer clip means.



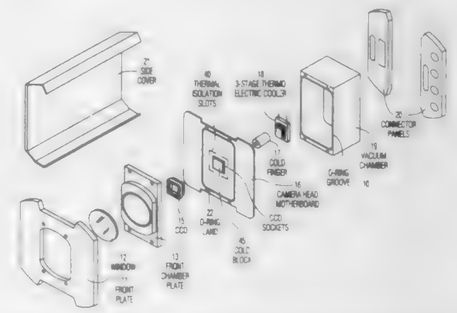
5,393,931

ELECTRICAL ACCESS TO A HERMETICALLY SEALED CHAMBER USING A PRINTED CIRCUIT BOARD

Derek P. Guenther, Tucson, Ariz., assignor to Photmetrics, Ltd., Tucson, Ariz.

Filed Mar. 4, 1993, Ser. No. 27,297
Int. Cl.[6] H05K *5/06*
U.S. Cl. 174—52.3 **7 Claims**

1. Apparatus including a printed circuit board having a first and second surface and a plurality of layers therein, said board including at least one subterranean conductive trace, said layers including metallized through connections for contacting said traces electrically at specified positions in a central area, said traces terminating in a plurality of positions at the edge of said board for permitting electrical connection thereto, said board including on each of said first and second surfaces thereof a closed seat encompassing said central area for mating with a housing for forming a sealed chamber, said apparatus also including a housing mounted on each of said closed seats for forming a sealed chamber, said chamber including a CCD array imaging device, said device having a pin arrangement for mating with said metallized through connections.

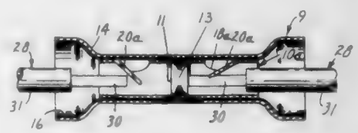


5,393,932

WIRE CONNECTOR

John S. Young, Leander; Robert B. Ericson, and Gary S. Natwig, both of Austin, all of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 17,852, Apr. 20, 1993, which is a continuation-in-part of Ser. No. 835,803, Feb. 14, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 145,372
Int. Cl.[6] H01R *4/02, 43/02*
U.S. Cl. 174—84 R **10 Claims**



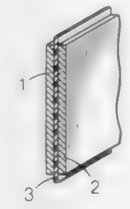
1. A wire connector for making an electrical connection between a plurality of wires and forming an insulated connection comprises:
a hollow tubular conductive member of electrically conductive metal having self actuated wire retaining means formed from the material of the tubular conductive member, positioned adjacent the ends of the tubular conductive member and extending into the tubular member for affording wire retention for wires inserted into the tubular conductive member,
means defining a slot in the periphery of said tubular conductive member and extending about the periphery at a location between said retaining means,
a disc formed of solder material disposed in said slot and said tubular conductive member against which said inserted wires can abut, and
a shrinkable sleeve positioned about said tubular conductive member with the tubular conductive member positioned generally midway between the ends thereof and with the inner diameter of the shrinkable sleeve fitted to the outside surface of the tubular member to enclose the tubular member and provide an insulative cover.

5,393,933

CHARACTERISTIC IMPEDANCE CORRECTED AUDIO SIGNAL CABLE

Ole S. Goertz, Engbakken 17, DK 2830 Virum, Denmark

Filed Mar. 15, 1993, Ser. No. 31,687
Int. Cl.[6] H01B *7/08*
U.S. Cl. 174—117 R **3 Claims**



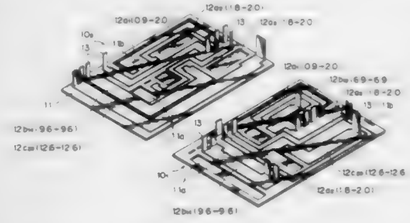
1. A ribbon shaped cable, for interconnecting a power source and a load, e.g. a power amplifier and a loudspeaker, comprising: two conductors and a dielectric strip or layer disposed between and separating the conductors, the conductors and the dielectric together being substantially rectilinear in cross section, wherein the conductors of the cable are parallel and the geometry of the conductors and the dielectric has been adapted to raise the capacitance and lower the inductance of the cable, therewith lowering its characteristic impedance to the same order as that of a load, typically 2–10 ohms.

5,393,934

BUSBAR CONDUCTOR

Akio Mori; Akiyoshi Sato; Masahiro Suguro, and Makoto Nakayama, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 121,222, Sep. 14, 1993, abandoned, which is a continuation of Ser. No. 841,378, Feb. 25, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,515
Claims priority, application Japan, Feb. 28, 1991, 3-55545
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—257 **6 Claims**



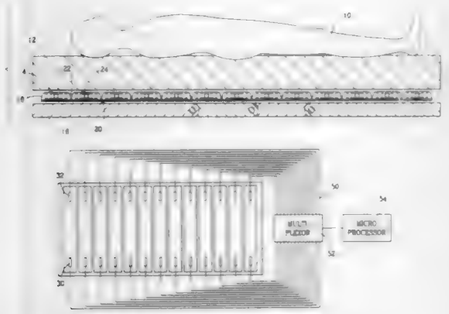
1. A busbar conductor board comprising:
an insulating substrate;
a plurality of electrically separated busbars carried by the substrate, each busbar comprising a metallic strip of a respective material of a given conductivity; and
the material of at least one of the busbars having a conductivity different from the material of the other busbars.

5,393,935

PORTABLE SCALE

Byron E. Hasty, Flower Mound, and John A. Carbona, Dallas, both of Tex., assignors to CH Administration, Inc., Dallas, Tex.

Filed Jul. 9, 1993, Ser. No. 89,237
Int. Cl.[6] G01G *23/18, 21/00, 19/52*
U.S. Cl. 177—45 10 Claims



1. A portable scale for a patient bed, comprising:
(a) a flexible carrier of size generally corresponding to the bed, and being adapted to removable placement on the bed;
(b) a plurality of weighing slats positioned in the carrier in parallel array extending transversely of the carrier, each weighing slat having an upper beam and a lower beam movably spaced apart by at least two load cells, the load cells being located toward opposite ends from the center of the slat to measure loading forces causing deflection of the upper beam with respect to the lower beam when a vertical load is applied to the slat; and
(c) means for receiving signals from the load cells, and for calculating the magnitude of a load placed on the scale.

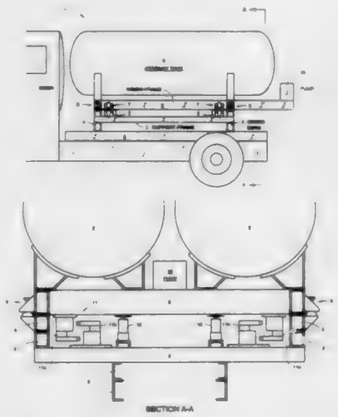
5,393,936

ON BOARD WEIGHING SYSTEM FOR A VEHICLE

Gary Tyby; Gordon Pizey, and Jean-Paul Simbandumwe, all of Winnipeg, Canada, assignors to Rancan Fertilizer Systems, Inc., Winnipeg, Canada

Filed Sep. 18, 1992, Ser. No. 946,918
Claims priority, application Canada, Feb. 12, 1992, 2061071
Int. Cl.[6] G01G *19/12, 19/00*
U.S. Cl. 177—138 27 Claims

1. An on-board weigh scale for a vehicle, said weigh scale having a transport configuration wherein the weigh scale is substantially protected from damage during transport, and a weighing configuration wherein the weigh scale is in an operative condition for measuring the weight of a material, said weigh scale comprising:
a support-frame capable of being mounted on a frame of a vehicle;
a weigh-frame operatively disposed above said support-frame, and capable of supporting a quantity of a material;
support means disposed on said support-frame and capable of securely supporting said weigh-frame in the transport configuration;
lifting means capable of lifting said weigh-frame off of said support means when said weigh scale is in transition between the transport and the weighing configurations;
a plurality of load cells, each load cell being capable of supporting a load and generating a signal proportional to the magnitude of said load;
respective load transfer means for transferring a portion of the weight of said weigh-frame onto each said load cell when said weigh scale is in the weighing configuration, said load transfer means being removable in the transport configuration;
angle sensing means capable of detecting an angle of orientation of said weigh scale, and generating a signal proportional to the detected angle; and



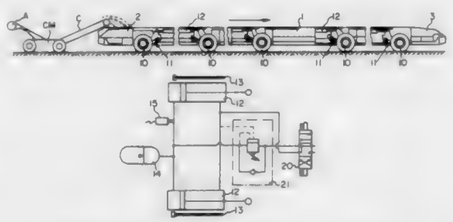
processing means capable of determining the weight of a material on said weigh-frame on the basis of signals received from each said load cell, and said angle sensing means.

5,393,937

VEHICLE CONTROL SYSTEM

Michael Etherington, Abingdon, and Michael R. Walker, Bristol, both of Va., assignors to Dosco Overseas Engineering Ltd., England

Filed Aug. 2, 1993, Ser. No. 101,425
Int. Cl.[6] G01G *19/10*
U.S. Cl. 177—141 22 Claims



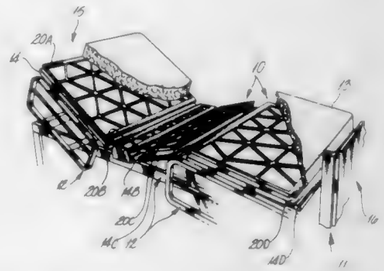
1. A control system for controlling the operation of a bi-directional shuttlecar having a plurality of connected sections including at least a loading section having wheels and a discharge section having wheels, a conveyor extending from said loading section of said shuttlecar to said discharge section of said shuttlecar, an electric control circuit including pressure sensing means located at said loading section of said shuttlecar and independent pressure sensing means located at said discharge section of said shuttlecar, a conveyor drive motor to move said conveyor along said shuttlecar between said loading section and said discharge section, a programmable logic controller connected in said electric control circuit with said conveyor drive motor, said pressure sensing means located at said loading section of said shuttlecar and said pressure sensing means located at said discharge section of said shuttlecar and a motor controller connected in said electric control circuit, whereby mined material is loaded onto said conveyor at said loading section of said shuttlecar to increase the force sensed by said pressure sensing means located at said loading section until the force exceeds a preset amount to create a signal for transmission to said programmable logic controller in said electric control circuit to activate said motor controller for said conveyor drive motor to initiate movement of said conveyor from said loading section of said shuttlecar toward said discharge section of said shuttlecar and said pressure sensing means located at said discharge section of said shuttlecar continuously senses the force at said discharge section of said shuttlecar until the force at said discharge section exceeds a predetermined amount wherein said pressure sensing means located at said discharge section creates a signal for transmission to said programmable logic controller and to said motor controller for said conveyor drive motor to stop the operation of said conveyor drive motor and stop the movement of said conveyor.

5,393,938

IN-BED PATIENT SCALE

Timothy R. Bumbalough, Yorba Linda, Calif., assignor to Bio Clinic Corporation, Ontario, Calif.

PCT No. PCT/US93/04306, § 371 Date Jul. 26, 1993, § 102(e) Date Jul. 26, 1993
PCT Filed May 6, 1993, Ser. No. 98,294
Int. Cl.[6] G01G *19/52*
U.S. Cl. 177—144 21 Claims



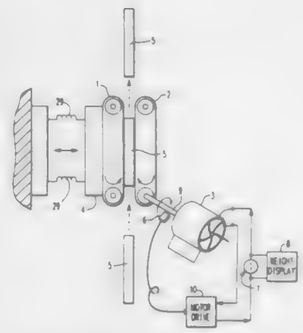
1. A scale system for measuring the weight of a person supported on a bed frame which can have plural articulatable sections, the scale system comprising:
(a) a load assembly mountable on a bed frame and having length and width dimensions related to length and width dimensions of the frame, the load assembly comprising plural planar and substantially rigid load receivers which are sized for accommodation of bed frame articulation, the load assembly having a height dimension which is small relative to its width and length dimensions whereby the presence of the load assembly in association with a mattress on the bed frame does not appreciably raise the mattress above the frame,
(b) a plurality of load sensors disposed at selected locations in the load assembly each having an output signal representative of the load carried by the assembly in the vicinity of the sensor, and
(c) a system output device operable for receiving the several sensor output signals and for producing a system output signal which is representative of the total load carried by the load assembly.

5,393,939

APPARATUS AND METHOD FOR WEIGHING MOVING OBJECTS

Anthony T. Nasuta, Jr., Timonium, and Dale H. Brown, Glen Burnie, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 20, 1992, Ser. No. 980,410
Int. Cl.[6] G01G *19/00, 3/14*
U.S. Cl. 177—145 12 Claims



1. An apparatus for weighing an object in transit from a first position to a second position comprising:
(a) a conveyor operable to transport said object in contact with said conveyor from said first position to said second position;
(b) an electric motor operatively connected to said conveyor, continuously driving said conveyor so that said object travels through said first position to said second position;
(c) control means connected to said electric motor for operatively controlling said motor so that said object is generally transported by said conveyor at a preselected velocity during a portion of travel from said first position to said second position;
(d) sensing means for sensing a motor drive current of said electric motor; and
(e) processing means operatively connected to said sensing means for calculating a weight of said object based on said motor drive current.

5,393,940

APPARATUS AND METHOD FOR REDUCING ACOUSTIC OR ELECTROMAGNETIC ENERGY IN THE VICINITY OF A SOURCE

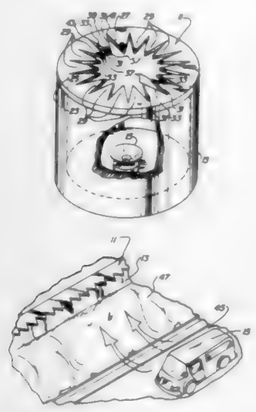
Alfred J. Bedard, Jr.; James H. Churnside, and Randall T. Nishiyama, all of Boulder, Colo., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Nov. 29, 1991, Ser. No. 800,237
Int. Cl.[6] G10K *11/00*
U.S. Cl. 181—210 17 Claims

1. An apparatus positionable on a support structure for reducing one of acoustic and electromagnetic energy in a vicinity opposite said apparatus from a source thereof by directly intercepting energy launched from the source at selected launch angles which would otherwise be more likely to be redirected to the vicinity by atmospheric conditions, said apparatus being affixable to the support structure adjacent to an uppermost edge of the structure, said apparatus having a patterned edge, said patterned edge defined by a plurality of jutting portions each including first and second edge portions extending in a direction having a component toward the source and away from the support structure from a position adjacent to the uppermost edge of the support structure and converging at a position spaced from said uppermost edge in said direction,

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said converging position of each said jutting portion being spaced from said converging position of any other said jutting portion; wherein each of said jutting portions have a substantially planar surface between said edge portions; and wherein the support structure has a surface facing the source, said



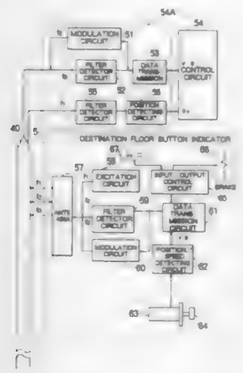
planar surface of said jutting portions and the surface of the support structure being substantially normal relative to each other and wherein no substantial part of the support structure extends above said apparatus when engaged with the support structure.

5,393,941

CONTROLLER FOR ROPELESS ELEVATOR

Masamoto Mizuno, and Toshiaki Ishii, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 80,621
Claims priority, application Japan, Jun. 23, 1992, 4-164745
Int. Cl.[6] B66B *1/06, 3/02*
U.S. Cl. 187—293 7 Claims



1. A ropeless elevator controller for a ropeless elevator wherein a plurality of primary windings are arranged in an elevator hoistway on a building side of the hoistway and wherein a magnetic field generating device is provided on an elevator car side, the car being caused to ascend or descend by generating a shifting magnetic field in the primary windings through an inverter, said ropeless elevator controller comprising:

a cross induction line cable arranged along the elevator hoistway on the building side;

excitation means which is provided on the car side for generating sinusoidal waves for positional detection in said cross induction line cable;

movement amount detecting means which is provided on the car side for detecting an amount of movement of the car;

data calculating means which is provided on the car for calculating data on car speed and on a magnetic pole phase of the magnetic field generating device on the basis of the amount of movement detected by said movement amount detecting means;

data transmission means which is provided on the car and which utilizes said cross induction line cable for transmitting the data calculated by said data calculating means to the building side;

an induction radio circuit which is provided on the building side and which receives the data transmitted from said data transmission means by utilizing said cross induction line cable and calculates an initial phase of the magnetic field generating device provided on the car from the sinusoidal waves generated in said cross induction line cable; and

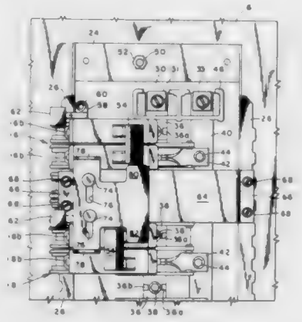
an inverter control circuit which is provided on the building side and which interpolates the initial phase calculated by said induction radio circuit on the basis of the magnetic pole phase received by said induction radio circuit and controls the inverter on the basis of the interpolated phase and the data on car speed received by said induction radio circuit.

5,393,942

PANELBOARD HAVING PANEL-MOUNTED INTERLOCK FOR TWO MAIN CIRCUIT BREAKERS

Richard A. Reiner, Colgate, Wash., and Loy A. Hicks, Jr., Germantown, Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 23, 1994, Ser. No. 216,736
Int. Cl.[6] H01H *9/26*
U.S. Cl. 200—50 C 9 Claims



1. An electrical panelboard adapted to be supplied from primary and alternative electrical supply sources, said panelboard comprising:

a panel;

a pair of transversely spaced, longitudinally extending mounting rails on said panel;

insulators mounted on said panel;

a plurality of bus bars supported on said insulators;

first plug-in connector means on said bus bars being sequentially disposed at longitudinally spaced intervals along said panel intermediate said mounting rails, said insulators and said first plug-in connector means together defining a plurality of pole spaces on said panel;

first and second multi-pole main circuit breakers mounted to said panel, said main circuit breakers each comprising second plug-in connector means and a wire-receiving terminal for each pole thereof, one end of respective said main circuit breakers being attached to one of said mounting rails and respective said second plug-in connector means being engaged with respective said first plug-in connector means, said main circuit breakers each comprising an operator handle movable to operate the respective main circuit breaker between ON and OFF conditions, said wire-receiving terminals of one of said first and second main circuit breakers being connectable to a primary electrical supply source and said wire-receiving terminals of another of said first and second main circuit breakers being connectable to an alternative electrical supply source, said first and second main circuit breakers being operable in ON conditions thereof for connecting said bus bars with a respective said primary or alternative electrical supply source; and

interlock means between said first and second main circuit breakers preventing both main circuit breakers from being contemporaneously operated to the ON condition, said interlock means comprising:

a bracket mounted transversely of said panel between said first and second main breakers, said bracket being attached to said mounting rails and comprising a forward portion disposed in substantial coincidental alignment with forward portions of said first and second main circuit breakers; and

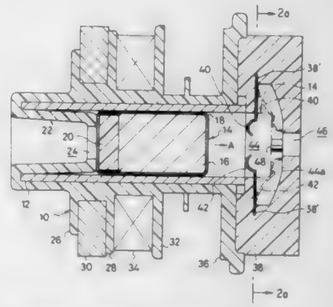
an interlock member movably mounted on said bracket forward portion, said interlock member being engagable with said operator handles of said first and second main circuit breakers, blocking movement of one of said operator handles from an OFF position when the other of said operator handles is in an ON condition.

5,393,943

ACCELERATION SENSOR

Koichi Furukawa, and Kazuo Yoshimura, both of Kanagawa, Japan, assignors to Takata Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 98,928, Jul. 29, 1993, abandoned. This application Apr. 12, 1994, Ser. No. 226,385
Claims priority, application Japan, Aug. 25, 1992, 4-225684
Int. Cl.[6] H01H *35/14*
U.S. Cl. 200—61.45 M 5 Claims



1. An acceleration sensor, comprising:

a housing;

an inertia member mounted inside of said housing so as to be freely movable in a longitudinal direction of said housing;

a conductor provided on at least an end surface of said inertia member in the longitudinal direction of said housing;

a pair of electrodes disposed at one end side of the longitudinal direction of said housing, and being electrically connected together through said conductor when said conductor of said inertia member engages said electrodes;

an attractor disposed at the other end side of the longitudinal direction of said housing and magnetically attracting said inertia member; and

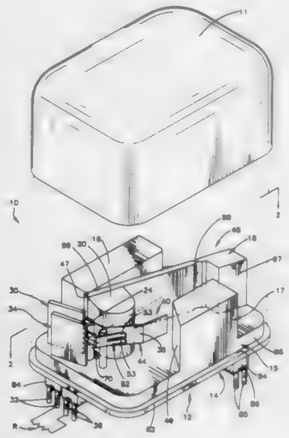
a stopper disposed at a side opposite to said inertia member with respect to said electrodes to abut against a tip surface of said inertia member when said inertia member moves forwardly, said stopper being disposed at a position deviated from an axial center line of said housing so that the inertia member inclines relative to the housing and frictionally engages the housing when the inertia member hits the stopper.

5,393,944

DECELERATION SWITCH WITH A SWITCH BASE SUPPORTING A FLEXIBLE OSCILLATING ONE PIECE PLASTIC MASS UNIT

Saroj Manandhar, Chino Hills, and Long T. Su, West Covina, both of Calif., assignors to TRW Technar Inc., Irwindale, Calif.

Filed May 16, 1994, Ser. No. 243,253
Int. Cl.[6] H01H *35/14*
U.S. Cl. 200—61.45 R 15 Claims



1. A deceleration sensor switch comprising:

a base;

a mass;

support means for supporting said mass on said base such that said mass can pivot from an unactuated position to an actuated position when said mass is subjected to deceleration of at least a predetermined magnitude, said support means comprising a single continuous piece of plastic molded material having a first rigid end portion fixedly attached to said base and a second rigid end portion to which said mass is fixedly attached, said single continuous piece of plastic molded material having a resilient central portion located between said first and second rigid end portions and acting as a hinge about which said mass is pivotable from said unactuated position to said actuated position, said first and second rigid end portions being inflexible relative to said resilient central portion; and

means for sensing when said mass is in said actuated position.

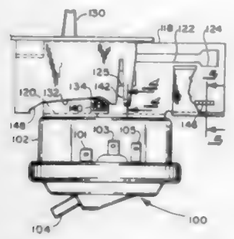
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5,393,945

ADJUSTMENT MECHANISM FOR PRESSURE SWITCH

Ronald S. Joyce, Elk Grove Village, and George Obermann, Niles, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 825,890, Jan. 27, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 263,112
Int. Cl.[6] H01H *35/24*
U.S. Cl. 200—81 R 4 Claims



1. In a pressure switch having an adjustment member movable externally with respect to the pressure switch housing for adjusting actuation settings the improvement comprising:

(a) bracket means attached to said pressure switch housing, said bracket means defining a pair of spaced parallel guide ways and detent means thereon;

(b) slider means disposed for sliding movement on said ways, said slider means defining an adjustment cam surface operable to contact said adjustment member, and defining integrally therewith (i) lug means engaging each of said ways and slidably retaining said slider means on said bracket means, (ii) spring means operable to maintain desired minimum friction forces resisting said movement of said slider means and said bracket means, said spring means further operable to engage said detent means at a predetermined position of said slider means for releasing said friction forces.

5,393,946

WALL SWITCH PLATE ADAPTOR

Herman H. DeLaHoz, 2 Kent Pl., Sewell, N.J. 08080

Filed Aug. 12, 1993, Ser. No. 105,384
Int. Cl.[6] H01H *3/20*
U.S. Cl. 200—331 13 Claims



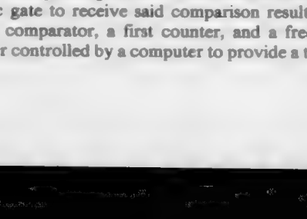
1. A wall switch plate adaptor device for assisting an unabled person to have normal use of a toggle switch comprising a modified wall switch plate attachable to an existing toggle switch, said modified wall switch plate having an opening of a shape and size slightly larger than a cross section of the toggle switch and raised areas on opposite sides of the opening and an elongated member comprising an extended rod element projecting a desired distance below the bottom edge of the switch plate when assembled to the switch plate and a protruding end section of a length approximately one-half a length of the raised areas of the switch plate, said end section having a box channel shaped cross-section with a width equal to a width of the opening in the switch plate and flared edges forming wing-like projections, said end section also having an opening of a shape and size slightly larger than the cross-section of the toggle switch, whereby the toggle switch fits through the opening and is exposed for activation in a conventional manner and the wing-like projections fit behind the raised areas of the switch plate and move vertically within the space formed beneath the raised areas as the toggle switch moves up and down.

5,393,947

METHOD AND DEVICE FOR CONTROLLING A WIRE CUT ELECTRIC DISCHARGING MACHINE

Re-Fang Liang; Yu-Chin Wang, and Hsin-Jung Chuang, all of Hsinchu, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Nov. 26, 1993, Ser. No. 157,997
Int. Cl.[6] B23H *1/02, 7/04*
U.S. Cl. 219—69.18 2 Claims



1. A control device for controlling an electric discharge of a wire cut electric discharging machine comprising:

(a) a first power source to provide a discharge energy between a wire electrode and a workpiece to be processed, said first power source having a negative terminal connected to said wire electrode of said wire cut EDM, and a positive terminal;

(b) a first switching means having a first end connected to the positive terminal of said first power source and a second end connected to said workpiece to be processed;

(c) a second power source to provide a testing voltage between said wire electrode and said workpiece, said second power source having a negative terminal connected to said wire electrode, and a positive terminal;

(d) a diode having a positive terminal connected to said positive terminal of said second power source, and a negative terminal;

(e) a resistor having a first end connected to the negative terminal of said diode, and a second end;

(f) a second switching means having a first end connected to said second end of said resistor and a second end connected to said workpiece; and

(g) a control unit connected between said first switch and said second switch to compare the voltage between said wire electrode and said workpiece with a reference voltage to obtain a comparison result, and to control an operation of said first switching means and said second switching means according to said comparison result;

(h) wherein said control unit comprises:

a first comparator connected to said first power source to compare said testing voltage between said wire electrode and said workpiece supplied by said second power source with said reference voltage;

said comparator causing said first power source to induce a normal discharge when said testing voltage is higher than said reference voltage, or an arc discharge when said testing voltage is lower than said reference voltage;

a logic gate to receive said comparison result from said first comparator, a first counter, and a frequency divider controlled by a computer to provide a timed pulse to said first counter, said logic gate being driven by said first counter to provide an output in accordance with said comparison result received from said first comparator when said first counter has reached a predetermined count value; and

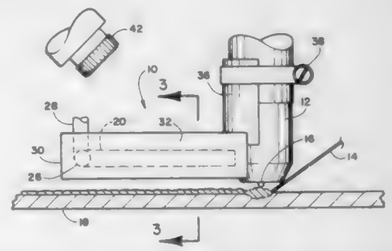
a second counter, said second counter counting one each time said voltage supplied from said first power source induces an arc discharge between said wire electrode and said workpiece, said second counter providing an output to the logic gate for a determination of said normal discharge or said arc discharge, when a total count of said second counter reaches a preset value, said second counter being adapted to be reset to zero and start counting from zero when a normal discharge is detected during the counting.

5,393,948

OPEN FACED TRAILING WELDING SHIELD

Gerald W. Bjorkman, Jr., Madison, Ala., assignor to Martin Marietta, Denver, Colo.

Filed Apr. 11, 1994, Ser. No. 225,863
Int. Cl.[6] B23K *9/167*
U.S. Cl. 219—74 9 Claims



1. An open faced trailing weld shield system for directing an inert gas onto a weld puddle and solidifying weld bead adjacent to the puddle while permitting direct observation of the solidifying weld bead which comprises:

a U-shaped, closed end, hollow tube having two spaced leg portions;

means for directing an inert gas into said tube;

a U-shaped frame member closely enclosing said tube and having an open space between the legs of said U-shape providing an opening through the frame member adjacent to a solidifying weld bead;

a continuous opening on a first side of said frame member;

a plurality of apertures in said tube oriented in the direction of said first side of said frame member;

means for securing said frame member to a welding torch;

whereby in use said frame member lies generally parallel to and spaced from a solidifying weld bead being formed by said welding torch so that inert gas may be directed through said apertures to envelope said solidifying weld bead in inert gas while permitting viewing of said solidifying weld bead through said open space.

5,393,949

GAS SHIELDING APPARATUS FOR WELDING

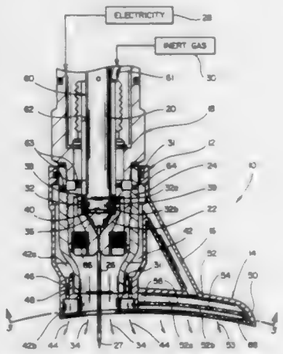
Gary A. Stricklen, San Mateo County, Calif., assignor to Precision Welding Technologies, Inc., San Mateo, Calif.

Filed Jan. 21, 1994, Ser. No. 184,701
Int. Cl.[6] B23K *9/167*
U.S. Cl. 219—74 19 Claims

1. A gas shielding apparatus for use with an electrode of a welding torch assembly having a torch body supporting said electrode with a tip of said electrode projecting from said torch body, said torch body having a primary shield plenum defined therein for producing a primary shield stream, and first delivery means for delivering a gaseous substance to said primary shield plenum, said gas shielding apparatus comprising:

a shroud body mountable to said torch body, said shroud body substantially surrounding said torch body and having a secondary shield plenum defined therein for producing a secondary shield stream substantially surrounding said primary shield stream;

a trailer shield portion extending laterally from said shroud body, said trailer shield portion having a trailer shield plenum defined therein for producing a trailer shield stream; and



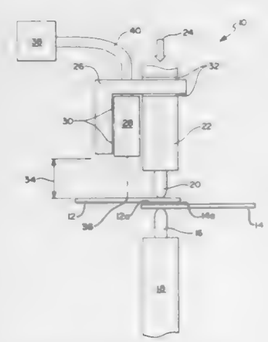
second delivery means for delivering measured amounts of said gaseous substance from said first delivery means to said secondary shield plenum and said trailer shield plenum, said second delivery means being coupled to said first delivery means upstream from said primary shield plenum when said shroud body is mounted to said torch body, said gas second delivery means including at least one perforated metering plate configured and positioned to meter the flow of said gaseous substance from said first delivery means and deliver a first predetermined amount of said gaseous substance to said secondary shield plenum and a second predetermined amount of said gaseous substance to said trailer shield plenum.

5,393,950

ELECTRODE DISPLACEMENT MONITORING AND CONTROL

Michael L. Killian, Troy, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 8, 1994, Ser. No. 224,899
Int. Cl.[6] B23K *11/24*
U.S. Cl. 219—110 16 Claims



1. In a resistance welding system wherein a workpiece is

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positioned with respect to an electrode which is movable axially toward and away from a given point which remains substantially fixed in position during a weld cycle, wherein an electronic weld controller controls the application of electrical current thereto, a method of adaptively controlling the application of electrical current comprising the steps of:

positioning a sensor with respect to said welding system, said sensor being adapted to provide a series of discrete output signals each indicative of the instantaneous displacement of said movable electrode with respect to a point on said workpiece;

electrically connecting a processor means between said sensor and said weld controller, said processor means being adapted to process said output signals from said sensor to produce a control signal to be applied to said weld controller;

allocating a predetermined time for application of weld current by said controller for at least one of an expansion phase, a reversal phase and an indentation phase;

identifying a reversal wherein said displacement signals cease increasing in magnitude and begin to decrease; and

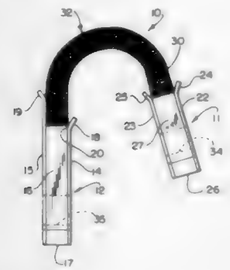
controlling the application of weld current in accordance with said control signal such that said displacement is controlled according to said predetermined time allocation.

5,393,951

FLEXIBLE JUMPER AND METHOD OF MAKING

James J. Kasper, Sheffield Village, Ohio, assignor to Watteredge-Uniflex, Inc., Avon Lake, Ohio

Filed Feb. 1, 1993, Ser. No. 12,253
Int. Cl.[6] B60B *9/00*
U.S. Cl. 219—117.1 13 Claims



1. A method of making a flexible electrical laminated jumper comprising the steps of:

forming a stack of tempered conductive metal sheets,

press welding an end of said stack while the balance of the stack is maintained sufficiently cool whereby the temper of the sheets of the stack is unaffected by such press welding,

cooling the welded end,

forming the stack to the desired configuration, and,

press welding the opposite end while the balance of the stack is maintained sufficiently cool whereby the temper of the sheets of the stack is unaffected by such press welding,

cooling the weld, and then

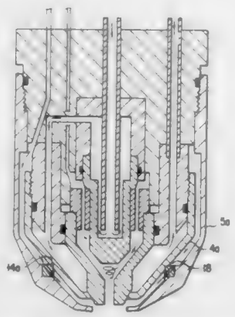
forming terminations at each press welded end.

5,393,952

PLASMA TORCH FOR CUTTING USE WITH NOZZLE PROTECTION CAP HAVING ANNULAR SECONDARY GPS PASSAGE AND INSULATOR DISPOSED IN THE SECONDARY GAS PASSAGE

Yoshihiro Yamaguchi; Hitoshi Satoh, and Toshiya Shintani, all of Hiratsuka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP92/00239, § 371 Date Aug. 18, 1993, § 102(e) Date Aug. 18, 1993, PCT Pub. No. WO92/15421, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 28, 1992, Ser. No. 107,815
Claims priority, application Japan, Feb. 28, 1991, 3-017154; Apr. 12, 1991, 3-033399
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.5 13 Claims



2. A plasma torch for cutting use comprising:

a torch body having an axis;

an electrode arranged in the torch body, said electrode having a cooling water chamber therein;

nozzle means arranged outside the electrode for covering the electrode, with a plasma gas passage formed therebetween, said nozzle means being provided with a nozzle orifice;

a nozzle cap for covering the nozzle means;

a nozzle protection cap having a front end side with an opening opposing the orifice of the nozzle means, said nozzle protection cap being disposed outside the nozzle cap with an annular secondary gas passage therebetween communicating with the opening, said nozzle protection cap being electrically insulated from the electrode and the nozzle means, said nozzle protection cap having a base end portion with a double wall structure defining a space formed as an annular cooling water chamber which is in communication with the cooling water chamber formed inside the electrode; and

an insulator disposed in the secondary gas passage and formed of an electrically insulating material, said insulator having a rectifying passage for rectifying a gas flow passing through the secondary gas passage;

a plasma gas passage; and

a plasma gas flow-in passage, formed around the electrode in an inclined manner with respect to said axis of the torch body, said plasma gas flow-in passage being arranged for introducing plasma gas into said plasma gas passage and for imparting a gyrating flow to the introduced plasma gas;

wherein said rectifying passage of the insulator is formed to provide a spiral shape for imparting a gyrating flow, in the same direction as the gyrating flow of the plasma gas, to the secondary gas passing through the rectifying passage; and

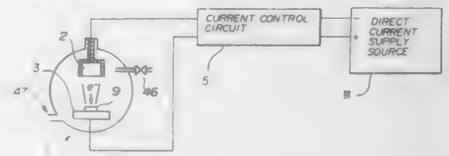
wherein a relationship between the orifice length L and the orifice diameter Φ_1 is satisfied by $L/\Phi_2 \leqq 2$.

5,393,953

ELECTRON-BEAM HEATING APPARATUS AND HEATING METHOD THEREOF

Kazunori Itoh, and Masafumi Kumano, both of Sendai, Japan, assignors to Ricoh Company, Ltd., Tokyo and Ricoh Research Institute of General Electronics, Co., Ltd., Natori, both of Japan

Filed Jan. 15, 1993, Ser. No. 6,075
Claims priority, application Japan, Jan. 20, 1992, 4-028961
Int. Cl.[6] B23K *15/00*
U.S. Cl. 219—121.34 13 Claims



1. An electron-beam heating apparatus comprising:

a heating unit having two electrodes comprising a cathode and an anode, a heating of a material being performed by using an electron-beam generated by glow discharge in a space between said two electrodes; and

an electric power source supplying an electric current to said electrodes so as to generate said glow discharge in a space between said two electrodes;

a current controlling circuit for controlling said current flowing to said cathode so as to control a discharge in a space between said two electrodes,

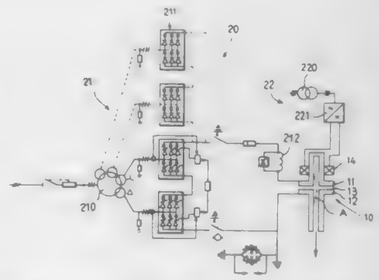
wherein said current controlling circuit comprises a constant-current control unit for controlling said current flowing to said cathode by means of a negative feedback control so that an intensity of said current is controlled so as to be constant.

5,393,954

PLASMA TORCH WITH POWER SUPPLY FOR EQUALIZING WEAR TO PROLONG THE LIFESPAN OF AN ELECTRODE OF THE TORCH

Pierre Pasquini, Fontainebleau, and Jacques Nuns, Ecuelles, both of France, assignors to Service National Ealectricite de France, Paris, France

Division of Ser. No. 998,924, Dec. 30, 1992. This application Apr. 25, 1994, Ser. No. 231,838
Claims priority, application France, Dec. 31, 1991, 91 16414
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.52 9 Claims



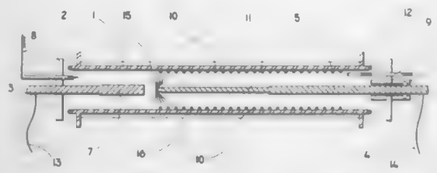
1. Plasma torch (**10**) comprising two coaxial tubular electrodes (**11**, **12**) between which an arc is established, a chamber (**13**) which separates said electrodes (**11**, **12**) and into which a plasma-generating gas is injected, at least one magnetic field coil (**14**) which locally surrounds an electrode, preferably the upstream electrode (**11**) identified with respect to the direction of outflow of the plasma, an electrical power supply (**20**) for supplying energy to the arc and to the coil, and means (**30**) for controlling the displacement of the foot of the arc on the electrode in such a way as to make the foot described an alternating longitudinal course in order to equalise the wear, and to prolong the life span, of the electrode, characterised in that the electrical power supply (**20**) comprises an arc circuit (**21**) and a coil circuit (**22**), in that this arc circuit (**21**) and this coil circuit (**22**) are mounted in series, and in that these means (**30**) comprise, connected in parallel with the coil (**14**), at least one chopper consisting of at least one capacitor (**31**) and of at least one electronic power switch (**32**) placed distant from the coil.

5,393,955

PREPARATION OF FULLERENES AND APPARATUS THEREFOR

Walter N. Simmons, 451 Scrabble Rd., Martinsburg, W. Va. 25401

Filed Jan. 14, 1993, Ser. No. 4,694
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.59 11 Claims



1. Apparatus for producing C_{60} and C_{70} allotropic forms of carbon (fullerenes) by the evaporation of graphitic carbon in an electric arc, said apparatus consisting essentially of:

(i) a tubular evaporator (tube) capable of sustaining reduced pressure and having, at each end, an endplate through which a cylindrical electrode is inserted, at least one of said endplates being an electrical insulator, each of said electrodes being aligned substantially along the axis of said tube and having attached to its intra-tube end a solid cylindrical electrically conductive carbon rod aligned substantially along the axis of said tube, at least one of said electrodes being moveable along the axis of said tube such that said carbon rods may be brought into electrically conducting contact with one another;

(ii) ports located substantially at opposite ends of said tube for admitting and withdrawing inert gas, respectively, such that inert gas flow occurs along the axis of said tube;

(iii) cooling means to prevent melting of said tube and associated components during sustained operation of an electric arc within said tube;

(iv) means for supplying electrical power to said electrodes sufficient to sustain an electric arc between said electrodes.

5,393,956

METHOD FOR BUTT WELDING AT LEAST TWO METAL SHEETS

Jérôme Guth, and Nathalie Philbois, both of Dunkerque, France, assignors to Sollac, Puteaux, France

Filed Jnl. 29, 1993, Ser. No. 98,932
Claims priority, application France, Aug. 4, 1992, 92 09671
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.64 8 Claims

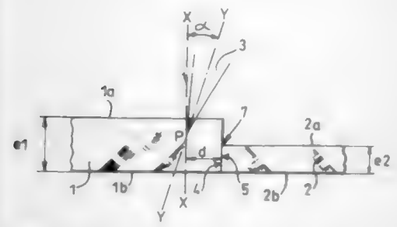
1. A method for butt welding first and second metal sheets together at the lateral faces thereof, said first metal sheet having a thickness greater than that of said second metal sheet, comprising the steps of:

moving said first and second metal sheets into contact with each other at said lateral faces thereof;

irradiating a laser beam at said first metal sheet such that the

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axis of said laser beam intersects an axis parallel to said lateral faces and which passes through the focal point of said laser beam, the point of intersection being within said first metal sheet at a given distance from a joint plane formed by said contact of said lateral faces and below the



surface of the first metal sheet upon which the laser beam is incident at a distance approximately one-third the thickness of the first metal sheet; and

locally melting said first and second metal sheets using said laser beam so as to form a welded joint at said joint plane between said first and second metal sheets.

5,393,957

LASER MICROPROCESSING AND THE DEVICE THEREFOR

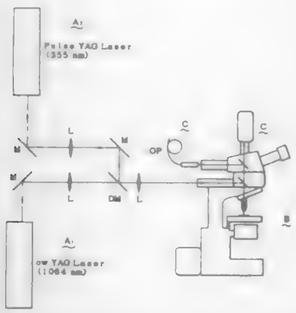
Hiroaki Misawa; Keiji Sasaki, Kyoto; Masanori Koshioka, Leopalesu 3-201, 1-66 Sagano Arisugawa, Ukyo-Ku, Kyoto-shi, Kyoto; Noboru Kitamura, Kyoto, and Hiroshi Masuhara, Osaka, all of Japan, assignors to Research Development Corporation of Japan and Masanori Koshioka, Japan

Division of Ser. No. 623,615, Dec. 7, 1990. This application Dec. 9, 1992, Ser. No. 987,594

Claims priority, application Japan, Dec. 7, 1989, 1-318258; Dec. 7, 1989, 1-318259; Mar. 27, 1990, 2-78421

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—171.85 4 Claims



1. A process for making fine modifications in particles which comprises subjecting said particles to a multiphoton reaction with a laser.

5,393,958

HEATER WITH A PRETENSIONED HEATING ELEMENT

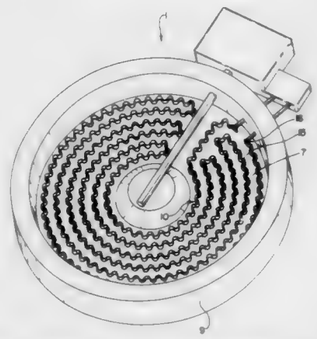
Martin Gross, Kämpfelbach, and Eugen Wilde, Knittlingen, both of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Germany

Filed Sep. 2, 1993, Ser. No. 116,145

Claims priority, application Germany, Sep. 3, 1992, 4229373

Int. Cl.[6] H05B *3/68*

U.S. Cl. 219—464 29 Claims



1. A heater defining a heating field (**20**) and a heating plane (**21**) and comprising:

a plurality of assembling members (**2**, **10**) defining an assembled state for heating operation and a non-assembled state, said assembling members (**2**, **10**) including a base (**2**) including at least one counter face (**19**) in the vicinity of said heating field (**20**),

at least one structural member (**10**), and

a supporting structure (**17**) including at least one individual support leg (**18**) having remote side faces (**12**, **13**), lateral edge faces and a vertex end (**14**), said edge faces of said individual support leg (**18**) defining lateral edge planes and median leg planes being defined between said side faces (**12**, **13**), in the assembled state, said vertex end (**14**) being provided at an end of an overall linear longitudinal leg extension of said support leg (**18**) defining a longitudinal leg direction,

at least one of said structural member (**10**), said supporting structure (**17**) and said support leg (**18**) defining first length sections repeatedly followed by second length sections,

at least one of said structural member (**10**), said supporting structure (**17**), said support leg (**18**), said first length section and said second length section defining a length extension transverse to said longitudinal leg direction,

cross-sections being defined including at least one longitudinal cross-section parallel to said longitudinal leg direction and at least one transverse cross-section transverse to said longitudinal leg direction, in at least one of said cross-sections, at least one of said support leg (**18**) and said structural member (**10**) defining a material thickness (**29**) between said side faces (**12**, **13**),

at least one of said side faces (**12**, **13**) including a support flank (**12**, **13**) for supporting said support leg (**18**) against said counterface (**19**) in a supporting area provided at a distance from said vertex end (**14**) of at least said material thickness, and

wherein in the non-assembled state of said support leg a premanufactured profile provides at least one of said support flank (**12**, **13**), said profile extending along said longitudinal leg extension and substantially between said lateral edge planes of said individual support leg (**18**), said profile including profile sections, in at least one of said transverse cross-section of said individual support leg (**18**), at least one of said profile sections extending transverse to at least one of said median leg planes, in one of said transverse cross-sections of said individual support leg (**18**), at least one of said support flank (**12**, **13**) being uninterrupted over said support leg (**18**), said individual support leg being curved substantially parallel to said heating plane (**21**), thereby within said support leg (**18**) said profile being at least partly an inherently stiff precurved profile having at least one profile arc (**23**) and at least one profile leg (**24**) connecting to said at least one profile arc (**23**) in one part, said at least one profile leg (**24**) supportingly engaging said at least one counterface (**19**).

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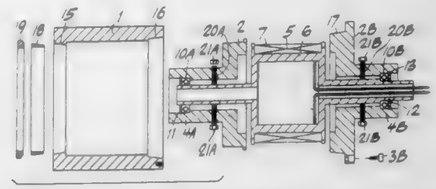
INDUCTION HEATING ROLLER APPARATUS

Yoshio Kitano, and Kozo Okamoto, both of Kyoto, Japan, assignors to Tokuden Co., Ltd., Kyoto, Japan

Filed Jan. 6, 1994, Ser. No. 178,049

Int. Cl.[6] H05B *6/14*

U.S. Cl. 219—619 3 Claims



1. An induction heating roller apparatus comprising:

a cylindrical roller in the form of a hollow cylindrical body of both-end open type having opposite end openings, further having magnetic permeability and electric conductivity, said openings having inner peripheral portions forming axially outwardly enlarged inner peripheral taper surfaces;

a pair of flanges having magnetic permeability and electric conductivity each including a flange body, a driving shaft projecting from said flange body along a central axis thereof in one axial direction and an axial through-hole extending through said flange body and said driving shaft, one of said flanges having a peripheral taper surface which can be fitted into one of said inner peripheral taper surfaces of said roller, with said driving shaft of said flange being positioned outside said cylindrical roller, and other one of said flanges having a peripheral surface which can be snugly held in said other inner peripheral taper surface of said roller through an annular wedgelike sleeve, with driving shaft of said flange being positioned outside said cylindrical roller;

screw means fastening one of said flanges to said roller at one end thereof;

nut means for threadedly engaging an edge portion of the peripheral surface of said other flange exposed from said annular wedgelike sleeve to force said sleeve toward one of said flanges resulting in press-fitting said sleeve between said peripheral surface of said other flange and said other inner peripheral taper surface of said roller;

an induction heating winding structure coaxially received with a surrounding clearance in a hollow space surrounded by said roller and said pair of flanges fitted to or held by said roller, said structure including a cylindrical bobbinlike iron core, a winding wound thereon and a pair of support rods extending from opposite ends of said iron core through said axial through-holes of said driving shafts for relative rotation, each of support rods having a longitudinal through-hole;

lead wires for said winding extending through at least one of said longitudinal through-holes to be led outside said space surrounded by said roller and said flanges; and

fastening means for temporarily holding together said pair of support rods of said structure and said driving shafts of corresponding said flanges when said roller and said pair of flanges are released from each other, said fastening means including a threaded radial through-hole formed on each said driving shaft and a screw member therethrough to press against corresponding said rod.

5,393,960

DEVICE FOR THE TRANSPORT AND DISTRIBUTION OF MEAL TRAYS, INCLUDING INTEGRAL MICROWAVE OVEN FOR RE-HEATING THE LATTER

Michel Beizermann, Voiron, France, assignor to Socamel S.A., France

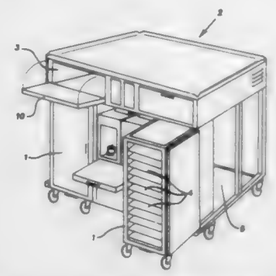
PCT No. PCT/FR92/00807, § 371 Date Oct. 12, 1993, § 102(e) Date Oct. 12, 1993, PCT Pub. No. WO93/03659, PCT Pub. Date Mar. 4, 1992

PCT Filed Aug. 20, 1992, Ser. No. 133,099

Claims priority, application France, Aug. 23, 1991, 91 10755

Int. Cl.[6] H05B *6/80*

U.S. Cl. 219—729 3 Claims



1. A device for the transport and distribution of food trays intended for the distribution of individual meals comprising the combination of a first isothermic mobile trolley for transporting food trays and a second trolley or unit, to which multiple mobile trolleys can be coupled for movement therewith, thereby forming a mobile distribution unit, and at least one microwave oven installed in an upper part of the second trolley unit having a cavity including a stationary downwardly projecting metal shield arranged to cooperate with a food tray to divide the cavity into a hot sector and a cold sector.

5,393,961

AIR COOLING FAN ARRANGEMENT IN A MICROWAVE HEATING DEVICE

Yasuhiro Umekage, Kurita; Shinichi Sakai, Nara; Yoshiaki Watanabe, Yamatokooriyama; Hisashi Morikawa, Kitakatsuragi, and Makoto Mihara, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 1, 1993, Ser. No. 69,519

Claims priority, application Japan, Jun. 1, 1992, 4-139563; Jun. 1, 1992, 4-139568; Jul. 2, 1992, 4-175192

Int. Cl.[6] H05B *6/64*

U.S. Cl. 219—757 5 Claims

1. A microwave heating device, comprising:

a heating chamber having a side wall;

a mechanical chamber adjacent to said side wall of said heating chamber, said mechanical chamber having a bottom wall with an air suction port therein at a lower part thereof;

a magnetron provided in said mechanical chamber for radiating microwave energy to material to be heated in said heating chamber;

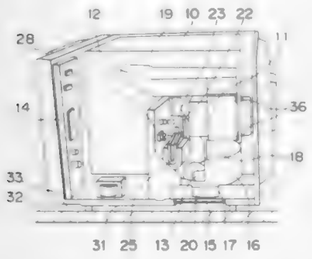
a high frequency power supply adapted to supply microwave electric power to said magnetron, said high frequency power supply being positioned in proximity to and parallel with said magnetron and positioned perpendicular to said side wall of said heating chamber in said mechanical chamber, and said high frequency power supply com-

prising a power control semiconductor device and a high voltage transformer;

an air feeding device provided in the lower part of said mechanical chamber adapted to form a cooling air flow through said air suction port for cooling said magnetron and said high frequency power supply, said air feeding device comprising a propeller fan driven by a motor, and said propeller fan having a vertical axis of rotation and a direction of rotation;

a control adapted to control said magnetron and said high frequency power supply;

wherein said power control semiconductor device and said high-voltage transformer are disposed in proximity to said air feeding device in the cooling air flow, said power control semiconductor device being positioned first, before said high-voltage transformer, in the direction of rotation of said propeller;



a first frame in said mechanical chamber having a casing member in which said air feeding device is securely fixed and a first guide wall;

a second frame on which said high frequency power supply is disposed and having a second guide wall;

wherein said first and second frames are connected together at a connecting portion and fixed in an approximate L shape, and wherein said first and second guide walls define an airflow path for the cooling air flow for cooling said high frequency power supply; and

at least one communicating hole in said first frame in proximity to said connecting portion for generating an air flow circulating therethrough for cooling parts of said high frequency power supply disposed in proximity to said connecting portion.

5,393,962

IMAGE STORING METHOD AND APPARATUS INCLUDING DETECTING INDEX INFORMATION INCLUDED IN IMAGE INFORMATION READ OUT FROM A RECORDING MEDIUM

Motofumi Konishi, Yokohama; Shigeru Sugita, Tokyo; Takashi Naba, Kawasaki, and Masami Amemiya, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Division of Ser. No. 702,006, May 17, 1991, Pat. No. 5,237,156. This application Apr. 28, 1993, Ser. No. 53,563

Claims priority, application Japan, May 17, 1990, 2-127623; May 17, 1990, 2-127624; May 16, 1991, 3-111760

Int. Cl.[6] G06F *15/20*

U.S. Cl. 235—375 **20 Claims**

1. An image registering method of recording an image in a recording medium, said method comprising steps of:

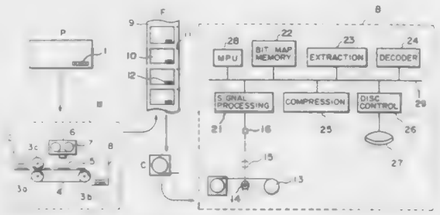
reading an image of an original to which a bar code is added;

storing the read image of the original in a memory;

rotating the image stored in the memory by 90 degrees;

detecting the bar code from the image, which has been rotated, and decoding detected bar code information; and

forming an index file indicating a relationship between the decoded bar code information and a recording address of



the image of the original, which is recorded in the recording medium.

5,393,963

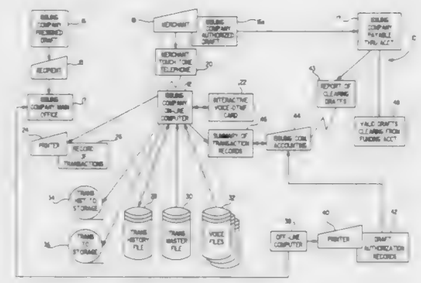
CHECK AUTHORIZATION SYSTEM AND PROCESS

Harvey P. Thomas; Audrey C. Thomas, both of Knapp, and Daniel A. Carr, Menomonie, all of Wis., assignors to Company Chex, Inc., Knapp, Wis.

Filed Mar. 17, 1992, Ser. No. 852,656

Int. Cl.[6] G06F *15/30*

U.S. Cl. 235—379 **19 Claims**



1. A process for a check authorization system allowing issuing company control of check authorization comprising the steps of:

a. issuing a transaction authorization;

b. transacting an approval code;

c. directing bank reconciliation; and,

d. tracking recipient location by telephone number.

5,393,964

TELECOMMUNICATIONS BOOTH AND METHOD OF USE

Robert H. Hamilton, Edina; Thomas J. Doyle, Minneapolis, and Phillip R. Brooks, Eagan, all of Minn., assignors to TPI, Inc., Minneapolis, Minn.

Continuation of Ser. No. 779,114, Oct. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 596,761, Oct. 12, 1990, abandoned. This application May 16, 1994, Ser. No. 243,533

Int. Cl.[6] G06F *7/08;* **H04M** *11/00*

U.S. Cl. 235—381 **10 Claims**

1. A telecommunications booth responsive to a user with a planar card having data disposed thereon, comprising:

a housing;

a card reader supported by said housing for reading the data on said card;

a preprogrammed computer system supported by said housing and including program means for interacting with said user;

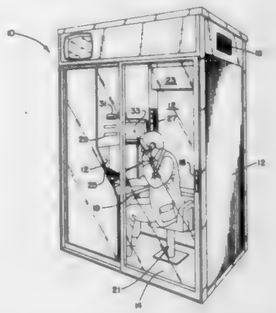
a telephone coupled to said computer system and supported by said housing;

a facsimile module coupled to said computer system and supported by said housing;

a modem coupled to said computer system;

a public telecommunications channel; and

means for selectively providing communication between said public telecommunications channel and one of said telephone, said facsimile module, and said modem;



said communication providing means including means for switching connection with said public telecommunications channel to one of said telephone, said facsimile module, and said modem;

said communication providing means further including means for controlling said switching means through said computer system based on interaction between said user and said program means.

5,393,965

FLEXIBLE MERCHANDISE CHECKOUT AND INVENTORY MANAGEMENT SYSTEM

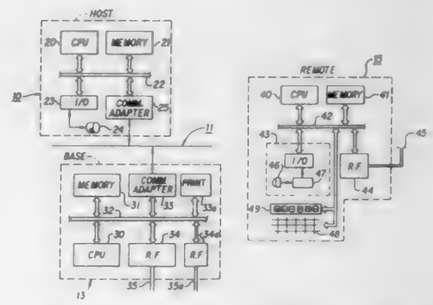
Richard Bravman, Smithtown, and Ynjiun P. Wang, Stony Brook, both of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation-in-part of Ser. No. 612,664, Nov. 13, 1990, abandoned, and a continuation-in-part of Ser. No. 642,775, Jan. 18, 1991, Pat. No. 5,159,635. This application Aug. 3, 1992, Ser. No. 923,766

The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.

Int. Cl.[6] G06K *15/00, 7/10*

U.S. Cl. 235—383 **16 Claims**



3. A point-of-sale (POS) system for checking out items each having a two-dimensional bar code symbol applied thereto, the POS system comprising:

(a) a checkout computer;

(b) an auxiliary checkout terminal system coupled to the checkout computer and including

(1) an auxiliary bar code reader operable to read two-dimensional bar code symbol data from selected ones of said items, the bar code symbol includes plurality of ordered, adjacent rows of codewords of bar-coded information from a set of codewords, the set of codewords being partitioned into at least three mutually exclusive clusters, each row in the symbol having at least one row indicator codeword and containing only codewords from a cluster different from the codewords in an adjacent row,

(2) auxiliary decoding means, coupled to the auxiliary bar code reader, for generating item-related information signals derived from said read two-dimensional bar code symbol data,

(3) an auxiliary data entry device manually operable to generate item-related information signals, and

(4) an auxiliary transmitter, coupled to the auxiliary decoding means and to the auxiliary data entry terminal for broadcasting said item-related information signals;

(c) a primary checkout terminal system located at a distance from said checkout computer and including:

(1) a primary bar code reader operable to read two-dimensional bar code symbol data from selected ones of said items,

(2) primary decoding means, coupled to the primary bar code reader, for generating item-related information signals derived from said read bar code data, the auxiliary and primary decoding means each includes:

means for scanning the two-dimensional bar code symbol to produce scan lines of data representing the bar-coded information in the codewords of the symbol,

means for decoding a scan line of data into a vector of codeword values corresponding to the codewords that were scanned, at least one of the codeword values being for a row indicator codeword,

means for assigning a row number to each of the codeword values in the vector based on the value of the row indicator codeword and the cluster of the codeword, and

means for filling in a codeword matrix with the codeword values in the vector according to their assigned row numbers,

(3) a primary data entry device manually operable to generate item-related information signals,

(4) a receiver receiving item-related information signals from said auxiliary checkout terminal system, and

(5) a primary communications link coupled to the primary decoding means, the primary data entry device, and the receiver, and operable to transmit signals including said item-related information to said checkout computer.

5,393,966

DEVICE FOR READING THICKNESS CARRIERS BEARING MAGNETIC CODES AND OPTICAL CODES

Jean-Marie Gatto, and Dominique Bertrand, both of Paris, France, assignors to Internationale Des Jeux, Boulogne, France

Filed Sep. 8, 1993, Ser. No. 117,810

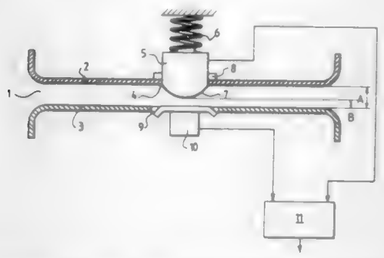
Claims priority, application France, Sep. 8, 1992, 92 10709

Int. Cl.[6] G06K *19/08, 7/00*

U.S. Cl. 235—440 **8 Claims**

1. Device for reading magnetic codes borne by carriers such as cards of a specified thickness and optical codes printed on carriers of smaller thickness, characterized in that it includes, mounted in opposite walls (**2,3**) of a common slot with a width slightly greater than the thickness of a magnetic card, a magnetic reading head (**5**) associated with elastic means (**6**;**14**) for applying the magnetic head (**5**) against the magnetic tracks of the card, and an optical reading head (**10**), means (**11**;**14**) for limiting, in the absence of a magnetic card, the engagement of the magnetic reading head into the slot (**1**) over a part of the width of the latter so as to leave between the magnetic head

and the wall of the slot opposite the latter, a gap (B) sufficient for the passage of a carrier of optical codes, and means (11) for



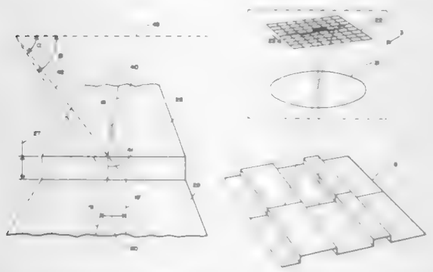
recognizing the output signals from the magnetic reading head (5) or from the optical reading head (10).

5,393,967

METHOD AND APPARATUS FOR NON-CONTACT READING OF A RELIEF PATTERN

David A. Rice, Syracuse, N.Y.; Jacobus M. Oschmann, Tucson, Ariz.; Edward M. Valovage, Memphis, and Marc J. Viggiano, Manlius, both of N.Y., assignors to Sensis Corporation, Dewitt, N.Y.

Filed Jul. 21, 1993, Ser. No. 95,727
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—454 15 Claims



1. An non-contact apparatus for reading a surface that has information encoded in a relief pattern thereon, the relief pattern having relatively raised and recessed portions and transitions therebetween, the recessed portions having bottom surfaces and aligned in a lengthwise direction, comprising:

optical transmitter means for projecting a line of light onto the bottom surfaces of the recessed portions of the relief pattern at a first angle to a normal of the surface;

optical receiver means viewing said projected line of light on the relief pattern at a second angle to the normal of the surface for producing a signal that is representative of an image of a reflection whereby said image includes a parallactic displacement of said projected line at a transition between a raised portion and the bottom surface of a recessed portion of the relief pattern therealong; and

means coupled to said optical receiver means for detecting a characteristic of said signal that indicates a parallactic displacement in said image, and having an output responsive to said parallactic displacement;

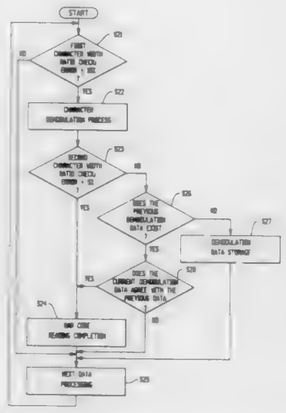
whereby said output of said means for detecting is responsive to the transitions in the relief pattern.

5,393,968

METHOD AND DEVICE FOR READING BAR CODE

Mitsuo Watanabe; Shinichi Sato; Hiroaki Kawai, and Ichiro Shinoda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Aug. 27, 1993, Ser. No. 113,596
Claims priority, application Japan, Mar. 19, 1993, 5-060733
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 24 Claims



1. A bar code reading method wherein a beam light is irradiated and scanned to a bar code and data of the bar code is extracted and demodulated based on the light amount of a reflection light of said beam light, comprising the steps of:

measuring a reading distortion amount of said bar code;

judging data extracted and demodulated from said bar code as valid data when said reading distortion amount measured is within a predetermined allowance range, whereby said bar code reading is completed; and

judging data extracted and demodulated from said bar code as valid data if said data from said bar code is extracted and demodulated continuously and at least twice when said reading distortion amount measured is not within said predetermined allowance range, whereby said bar code reading is completed.

5,393,969

DEVICE FOR DETECTING FOCUS AT DIFFERENT AREAS OF AN IMAGE FIELD

Keiji Ohsawa, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 5,144, Jan. 15, 1993, abandoned. This application Jun. 27, 1994, Ser. No. 266,315
Claims priority, application Japan, Jan. 22, 1992, 4-031600; Nov. 13, 1992, 4-328656
Int. Cl.[6] G01J 1/20
U.S. Cl. 250—201.8 33 Claims

1. A focus state detecting device provided with:

plural re-imaging means positioned at the image plane side of an objective lens and adapted to form different images of an object, respectively utilizing lights reaching different areas in the image field; and

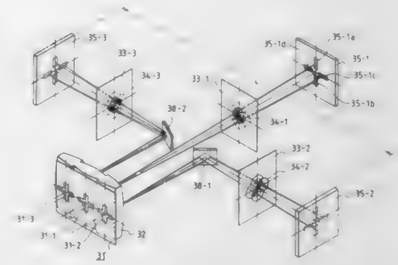
plural photosensor means for respectively receiving plural lights coming from the object and transmitted by said plural re-imaging means; and

adapted to detect the focus state of said objective lens based on signals from said photosensor means, comprising:

plural condenser lens means positioned respectively corresponding to said different areas in the image field;

wherein said plural condenser lens means are integrally constructed as a single unit;

said plural re-imaging means are integrally constructed as a single unit; and



among said plural photosensor means, at least one is constructed as an independent unit separate from other photosensor means.

5,393,970

OPTICAL LOCATION TRACKING DEVICES

Jeng-Ge Shau, Taipei, Taiwan; Jeng-Jye Shau 991 Amarillo Ave., Palo Alto, CA. 94303, assignors to Jeng-Jye Shau, Palo Alto, Calif.

Filed Sep. 13, 1993, Ser. No. 119,537
Int. Cl.[6] G01J 1/20; G01S 3/784
U.S. Cl. 250—206.2 6 Claims



1. An optical location tracking device comprises one or more light sources and two or more light detectors; said light detector comprises a light receiving plane and a light sensor; the output of said light sensor is dependent on the incident angle of the light beams reaching said light receiving plane; the location of said light sources are determined by the outputs of said light sensors from said angular dependence of said light detector.

5,393,971

RADIATION DETECTOR AND CHARGE TRANSPORT DEVICE FOR USE IN SIGNAL PROCESSING SYSTEMS HAVING A STEPPED POTENTIAL GRADIENT MEANS

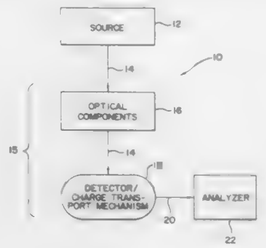
Wayne W. Frame, Longmont, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Jun. 14, 1993, Ser. No. 77,175
Int. Cl.[6] H01J 40/14
U.S. Cl. 250—208.2 45 Claims

1. An apparatus for use in a signal information system, comprising:

detector means for receiving a radiation signal and generating an electrical charge in response to said radiation signal, said detector means includes a readout port and extends over a defined area; and

stepped potential gradient means for producing a stepped potential gradient to convey charge from said detector means to said readout port, said stepped potential gradient



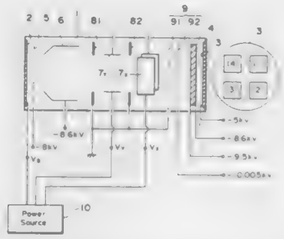
having a first potential at a first portion of said detector means, a second potential that is different than said first potential at a second portion of said detector means, and a potential discontinuity between said first potential and said second potential.

5,393,972

IMAGING DEVICE WITH HIGH SPEED SHUTTERING

Motohiro Suyama, and Katsuyuki Kinoshita, both of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Apr. 29, 1993, Ser. No. 54,027
Claims priority, application Japan, Apr. 30, 1992, 4-111410; Mar. 1, 1993, 5-039860
Int. Cl.[6] H01J 31/50
U.S. Cl. 250—214 VT 9 Claims



1. An imaging device for forming an image of an object to be imaged at a predetermined shutter timing comprising:

a photocathode for emitting photoelectrons in accordance with incident light for said object to be imaged;

an acceleration electrode, of an electron-transmitting type, opposed to said photocathode and having a positive potential with respect to said photocathode;

power source means for changing a photocathode potential in a set range from a constant level in synchronization with said shutter timing;

an energy filter, disposed on the opposite side of the photocathode and across from said acceleration electrode, for blocking photoelectrons from said photocathode at said constant level, and for passing photoelectrons emitted from said photoelectrode when said photocathode potential is changed by a required value within said set range; and

an output plate for said photoelectrons which have passed through said energy filter to be incident upon.

5,393,973

OPTICAL SENSING ARRAYS EMPLOYING MISALIGNED SQUINTED OPTICAL AXES COMPARED TO ALIGNED AXES

David Blau, Cupertino, Calif., assignor to Scientific Technologies Incorporated, Hayward, Calif.

Filed Dec. 16, 1993, Ser. No. 168,717
Int. Cl.[6] G01V *9/04*; G06M *7/00*; H01J *40/14*
U.S. Cl. 250—221 24 Claims



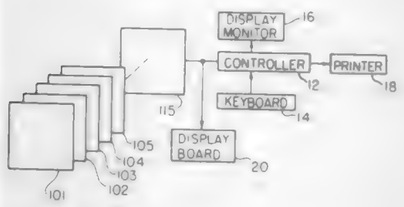
1. A method of operating an optical sensing array for controlling the acceptance angle of light beams which are iteratively strobed in cycles from a plurality of light transmitters in side-by-side channels toward a plurality of light receivers which are associated with respective channels and are adapted to sense the light beams for producing signals, the method comprising the steps of directing the light beam in a first one of the channels along a first axis which is squinted relative to a second axis along which the light beam in at least a second one of the channels is strobed, producing a signal V_1 responsive to light being sensed by the light receiver associated with the first channel, producing a signal V_2 responsive to light being sensed by the light receiver associated with the second channel, establishing a predetermined high amplitude value V_H, establishing a predetermined low amplitude value V_L which is below V_H, comparing the ratio V_1/V_2 to a ratio V_H/V_L, and producing an output signal responsive to $V_1/V_2 > V_H/V_L$.

5,393,974

METHOD AND APPARATUS FOR DETECTING THE MOTION VARIATION OF A PROJECTILE

Sung N. Jee, 235-1, Kaehwa-dong Kangso-gu, Seoul, Rep. of Korea

Filed Apr. 14, 1993, Ser. No. 46,330
Claims priority, application Rep. of Korea, Mar. 6, 1993, 93-3399
Int. Cl.[6] G01P *3/66*; G01V *9/04*
U.S. Cl. 250—222.1 10 Claims



1. A method for detecting the motion variation of a projectile, the method comprising the steps of:

dividing an imaginary straight line between a first position corresponding to a pitcher of the projectile and a second position corresponding to a catcher of the projectile into designated intervals, and setting up a plurality of two-dimensional coordinate systems at right angles to said straight line, one of said coordinate systems being disposed at each of the plurality of divided positions;

calculating section intervals between a plurality of said divided positions;

outputting two-dimensional coordinate values corresponding to the position of the projectile passing through each of said coordinate systems; and

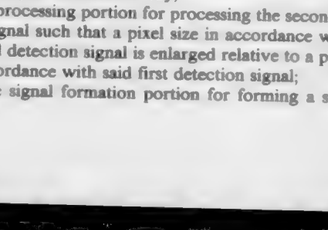
detecting a quantity of motion variation of the projectile using said section intervals and two-dimensional coordinate values.

5,393,975

ELECTROSPRAY ION SOURCE AND INTERFACE APPARATUS AND METHOD

Mark E. Hail, Alameda County, and Iain C. Mylchreest, Santa Clara County, both of Calif., assignors to Finnigan Corporation, San Jose, Calif. and Analytica of Branford, Inc., Branford, Conn.

Continuation of Ser. No. 814,063, Dec. 20, 1991, Pat. No. 5,170,053, which is a continuation of Ser. No. 575,183, Aug. 30, 1990, abandoned. This application Sep. 15, 1992, Ser. No. 945,993
Int. Cl.[6] B01D *59/44*; H01J *49/00*
U.S. Cl. 250—288 23 Claims



1. An electrospray interface apparatus for supplying and ionizing a sample bearing fluid comprising

an ionization chamber,

an inner hollow electrically conductive needle for conveying the sample fluid having its exit end extending into said ionization chamber,

a first conductive tube surrounding and spaced from said needle to define a first cylindrical annular space and having the exit end extending into the ionization chamber beyond the exit end of the needle to define a mixing volume between the inner surface of said first tube and the exit end of said needle, said first cylindrical annular space serving to convey a sheath liquid to said mixing volume for mixing with said sample bearing fluid,

means for applying a high voltage between said ionization chamber and said inner hollow needle and first tube to form an electrospray, and

a second tube surrounding and spaced from said first tube to define therebetween a second cylindrical annular space for conveying a focusing gas to the exit end of said first tube to sheath said electrospray.

5,393,976

APPARATUS FOR DISPLAYING A SAMPLE IMAGE

Hirotami Koike, Tokyo, Japan, assignor to Kabushiki Kaisha TOPCON, Tokyo, Japan

Filed Nov. 24, 1993, Ser. No. 156,626
Claims priority, application Japan, Nov. 26, 1992, 4-317445
Int. Cl.[6] H01J *37/256*
U.S. Cl. 250—310 6 Claims

1. An apparatus for displaying a sample image comprising:

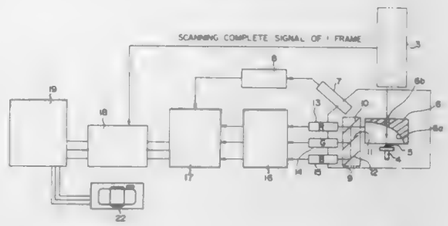
a scanning illumination system for scanning a sample by an irradiation ray being relatively moved;

a first detection portion for detecting a first detection signal obtained from a continuous area of said sample by the irradiation ray;

a second detection portion for detecting a faint second detection signal obtained from a micro-discrete area of said sample by the irradiation ray;

a signal processing portion for processing the second detection signal such that a pixel size in accordance with said second detection signal is enlarged relative to a pixel size in accordance with said first detection signal;

an image signal formation portion for forming a superimposed image signal by superimposing the second detection signal processed by said signal processing portion upon said first detection signal; and



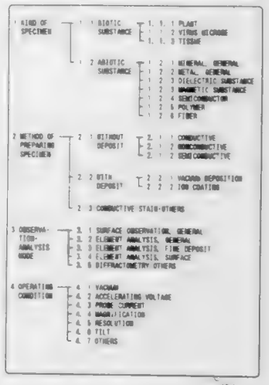
an image display portion for displaying an image of said sample in accordance with said superimposed image signal.

5,393,977

CHARGED PARTICLE BEAM APPARATUS AND IT'S OPERATING METHOD

Akimitsu Okura; Mitsugu Sato; Osamu Yamada; Yasushi Nakaizumi, all of Katsuta, and Eiichi Hazaki, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,573
Claims priority, application Japan, Jun. 3, 1992, 4-166720
Int. Cl.[6] H01J *37/26*
U.S. Cl. 250—306 19 Claims



1. A charged particle beam apparatus, comprising:

(1) means for generating a charged particle beam and irradiating a specimen with the same;

(2) means for storing operating conditions of the charged particle beam apparatus which are associated with identification information for specifying the specimen;

(3) means for designating the identification information to thereby read out at least one operating condition corresponding to the designated identification information from the storing means; and

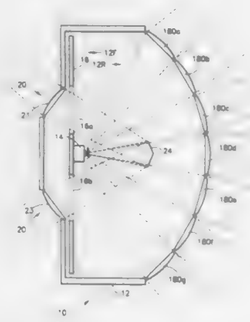
(4) means for automatically setting the read out operating condition so as to operate the charged particle beam apparatus under the set operating condition.

5,393,978

INFRARED DETECTORS HAVING FRONT AND REAR FIELDS OF VIEW

Frank Schwarz, 156 Thunderhill Dr., Stamford, Conn. 06902

Continuation-in-part of Ser. No. 12,432, Feb. 4, 1993. This application Sep. 30, 1993, Ser. No. 129,741
Int. Cl.[6] G08B *13/191*, *13/193*; G01J *5/08*
U.S. Cl. 250—353 27 Claims



1. An infrared detector, comprising:

a) a housing having a front portion and a rear portion;

b) an infrared sensor mounted within said housing and facing said front portion of said housing;

c) a forward looking optical means mounted in said front portion of said housing for directing infrared energy onto said infrared sensor from a source of infrared energy located forward said housing, said forward looking optical means facing in a first direction;

d) a rearward looking optical means mounted in said rear portion of said housing for permitting infrared energy to enter said housing from a source of infrared energy located rearward said housing, said rearward looking optical means facing in a second direction which is substantially more than ninety degrees from said first direction; and

e) reflective means mounted inside said housing directly between said infrared sensor and said forward looking optical means for reflecting infrared energy entering said housing through said rearward looking optical means onto said infrared sensor.

5,393,979

PHOTO-IONIZATION DETECTOR FOR DETECTING VOLATILE ORGANIC GASES

Peter C. Hsi, Alameda County, Calif., assignor to RAE Systems, Inc., Sunnyvale, Calif.

Filed May 12, 1993, Ser. No. 61,418
Int. Cl.[6] G01N *27/66*
U.S. Cl. 250—382 14 Claims

1. A photo-ionization detector for detecting volatile gases comprising

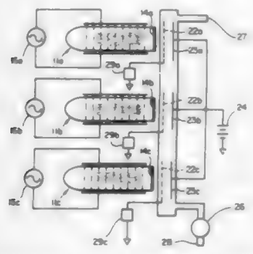
a flat, elongated ionization chamber including spaced major surfaces, at least one of said major surfaces being transparent to photons,

a plurality of pairs of spaced, flat electrodes adjacent said major surfaces along the length of the ionization chamber, the electrodes adjacent said at least one transparent major surface having an open configuration to allow photons to travel into the space between electrodes,

a plurality of UV light sources adjacent said at least one transparent major surface along the length of the ionization chamber adjacent said electrodes having an open

configuration, said light sources selected to emit photons of different energies,

means for applying a voltage between said electrodes, and



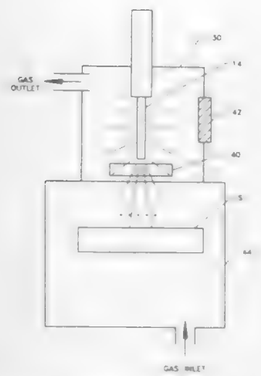
means for measuring the current flow between pairs of electrodes resulting from ionization of gases flowing therebetween.

5,393,980

QUALITY MONITOR AND MONITORING TECHNIQUE EMPLOYING OPTICALLY STIMULATED ELECTRON EMMISSION

William T. Yost, Newport News; Christopher S. Welch, Gloucester; Edmond J. Joe, Newport News, and Bill B. Hefner, Jr., Hampton, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 11, 1993, Ser. No. 60,617
Int. Cl.[6] G01N *23/227*
U.S. Cl. 250—305 13 Claims



1. An apparatus for performing quality inspections on a test surface based on optically stimulated emission of electrons comprising:

(a) a light source for directing ultraviolet light onto the test surface;

(b) means for detecting a current of photoelectrons emitted from the test surface and generating a signal indicative of the photoelectron current, said means for detecting including a collector for collecting the photoelectron current and means for positively biasing said collector with respect to the test surface;

(c) means for indicating a condition of quality based on the generated signal indicative of photoelectron current; and

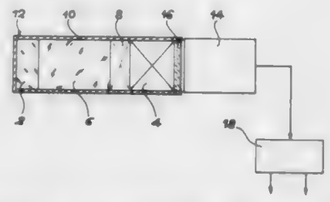
(d) means for negatively biasing said collector with respect to the test surface to replace charges removed as photoelectron current from the test surface by the previously positively biased collector.

5,393,981

APPARATUS FOR THE SIMULTANEOUS SELECTIVE DETECTION OF NEUTRONS AND X OR GAMMA PHOTONS AND DETECTION SYSTEM USING SAID APPARATUS

Jean-Louis Szabo, Bagnolet, and Georges Daniel, Palaiseau, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 4, 1994, Ser. No. 177,301
Claims priority, application France, Jan. 6, 1993, 93 00055
Int. Cl.[6] G01T *1/20, 3/06*
U.S. Cl. 250—367 7 Claims



1. Apparatus for the simultaneous selective detection of neutrons and X or gamma photons said apparatus comprising a detector incorporating: a first scintillator (**2**) which is sensitive to neutrons and which does not produce X or gamma photons by interaction with said neutrons and a second scintillator (**4**) sensitive to X or gamma photons, said detector being associated with a photomultiplier means (**14**), characterized in that the second scintillator (**4**) is organic and monocrystalline, in that the detector includes a guidance and attenuation means (**6**) for guiding to the photomultiplier means (**14**) the scintillations which are produced by the first scintillator (**2**) under the impact of neutrons and for reducing the intensity of the radiation constituted by said scintillations, said guidance and attenuation means thus lowering the energy of the amplitude spectrum of the scintillations due to the neutrons, said amplitude spectrum being supplied by the photomultiplier means and in that the first scintillator (**2**), the second scintillator (**4**) and the guidance and attenuation means (**6**) are chosen such that the peak of the scintillations due to the neutrons and the photoelectric peak of the scintillations due to the X or gamma photons are in energy bands clearly separated from one another and from the electronic background noise of the photomultiplier means.

5,393,982

HIGHLY SENSITIVE NUCLEAR SPECTROMETER APPARATUS AND METHOD

Richard B. Mott, Ringoes, N.J.; Charles G. Waldman, Allston, Mass., and Daniel E. Ungar, Blauvelt, N.Y., assignors to Princeton Gamma Tech, Inc., Princeton, N.J.

Continuation of Ser. No. 64,859, May 20, 1993. This application May 20, 1994, Ser. No. 246,695
Int. Cl.[6] G01T *1/36*
U.S. Cl. 250—370.06 4 Claims

1. A pulse pile-up detection apparatus for detecting the close coincidence of step pulses in a stream of data containing noise, said apparatus comprising:

a storage means to receive said stream of data;

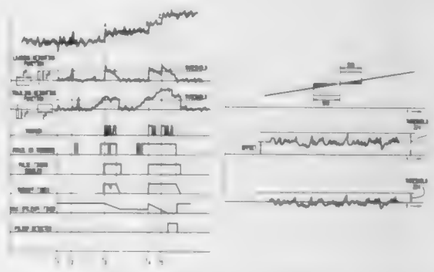
a leading weighting means for comparing a first short period of said data stream in said storage means with a first longer period of said data stream, said first longer period preceding said first short period;

a trailing weighting means for comparing a second short period of said data stream in said storage means, said second short period preceding said first short period by at least the rise time of said step pulses, with a second longer period of said data stream, said second longer period following said second short period and extending beyond said first short period;

trigger means for generating a trigger pulse when both the value of said data stream during said first short period differs from the value of said data stream during said first longer period by an amount greater than a threshold, and the value of said data stream during said second short period differs from the value of said data stream during said second longer period, by an amount greater than said threshold;

timing means for measuring the interval between the start of said trigger pulse and the next time when said value of said data stream during said second short period no longer differs from the value of said data stream during said second longer period by said threshold;

pile-up detected output means for generating a pile-up detected signal when said interval exceeds a maximum time



determined by the amount by which said second short period precedes said first short period, and by said rise time of said step pulses.

3. A noisy-pulse rejection apparatus for rejecting step pulses in a stream of data also containing noise, such apparatus comprising:

a storage means to receive said stream of data;

noise estimating means for estimating the magnitude of the noise in said data stream in the vicinity of said step pulse;

comparator means connected to said noise estimating means for comparing said estimated noise magnitude to a noise limit;

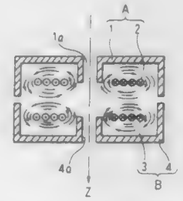
pulse rejection output means connected to said comparator means for generating a pulse-reject signal if said estimated noise magnitude exceeds said noise limit.

5,393,983

MAGNETIC ELECTRON LENS AND ELCTRON MICROSCOPE USING THE SAME

Shigeyuki Hosoki, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP92/01076, § 371 Date Apr. 28, 1993, § 102(e) Date Apr. 28, 1993, PCT Pub. No. WO93/05529, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 26, 1992, Ser. No. 50,044
Claims priority, application Japan, Aug. 30, 1991, 3-220093
Int. Cl.[6] H01J *37/141*
U.S. Cl. 250—396 ML 13 Claims



1. A magnetic electron lens comprising:

a first and a second magnetic field generating coil made of a paramagnetic material each and located one on top of the other in the propagating direction of a charged particle beam; and

a first and a second magnetic shielding plate made of a paramagnetic material each and furnished so as to enclose said first and said second magnetic field generating coils, said first magnetic shielding plate being located above said first magnetic field generating coil, said second magnetic shielding plate being positioned under said second magnetic field generating coil;

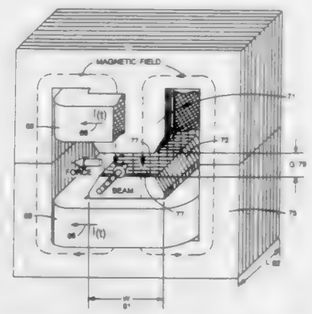
wherein said second magnetic shielding plate shields the magnetic field generated under said second magnetic field generating coil.

5,393,984

MAGNETIC DEFLECTION SYSTEM FOR ION BEAM IMPLANTERS

Hilton F. Glavish, Incline Village, Nev., assignor to Nissin Electric Co., Inc., Japan

Division of Ser. No. 843,391, Feb. 28, 1992, Pat. No. 5,311,028, which is a continuation-in-part of Ser. No. 575,498, Aug. 29, 1990, Pat. No. 5,132,544. This application Aug. 12, 1993, Ser. No. 106,351
Int. Cl.[6] H01J *37/147*
U.S. Cl. 250—396 ML 40 Claims



1. A magnetic deflection apparatus for producing a strong oscillating magnetic field capable of deflecting a high perveance beam of heavy atomic or molecular ions to irradiate a selected surface with said heavy ions, said apparatus comprising

a magnetic structure having pole faces defining a deflecting gap through which said ion beam passes and a magnetic circuit connecting said pole faces, said magnetic structure being sized and constructed to deflect said beam of heavy ions over said selected surface,

an excitation coil and

an associated excitation circuit adapted to apply to said coil an excitation current having a fundamental frequency of the order of 20 Hz or greater together with substantially higher order harmonics, the fundamental frequency and wave form of said current selected to produce a magnetic field in said magnetic structure having said fundamental frequency and higher order harmonic components to establish the frequency of oscillation and the velocity profile of the deflection of said beam of heavy ions,

said magnetic circuit comprising, at least in part, a plurality of laminations of high magnetic permeability material each having a thickness in the range between about 0.2 and 1 millimeter,

said laminations being separated by relatively thin electrically insulating layers,

said laminations providing a low reluctance magnetically permeable path for said fundamental frequency and higher order harmonic components of said strong magnetic field, the laminations serving to confine induced eddy currents to limited values in local paths in respective laminations,

said magnetic structure, said excitation coil and said associated excitation circuit being cooperatively related to enable the deflection of said high perveance beam of heavy ions at said frequency, over said selected surface, without detrimental saturation of the magnetic path.

5,393,985

APPARATUS FOR FOCUSING AN ION BEAM

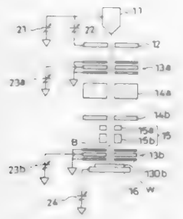
Yasuhiro Yamakage, Kyoto, and Shinji Nagamachi, Osaka, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Nov. 19, 1993, Ser. No. 154,424

Claims priority, application Japan, Nov. 26, 1992, 4-317323; Nov. 30, 1992, 4-319921

Int. Cl.[6] H01J *37/317, 37/26*

U.S. Cl. 250—398 **9 Claims**



1. A focused ion beam apparatus which comprises an ion source, an extraction electrode for extracting an ion beam from the ion source, a condenser lens for focusing the ion beam, a mass spectrometer for separating a desired ion species from the extracted ion beam, a target stage adapted to support a target, deflection electrodes for deflecting the ion beam taken from the mass spectrometer, and guiding same to the target on the stage, and an objective lens located immediately before the target stage, and comprising a decelerating field circuit for forming a decelerating field between the target stage and an outermost electrode of the objective lens, the deflection electrodes having a two-stage structure consisting of a first and second group of deflection electrodes in the advancing direction of the ion beam, wherein the ion beam deflected by the deflection electrodes is caused to pass through the center of the objective lens irrespective of the amount of beam deflection.

5,393,986

ION IMPLANTATION APPARATUS

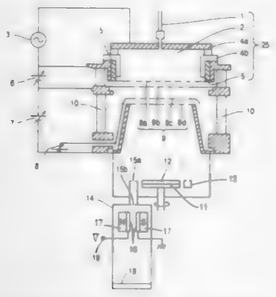
Atsushi Yoshinouchi, Kashiba; Tatsuo Morita, Kyoto, and Shuhei Tsuchimoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 9, 1992, Ser. No. 942,663

Claims priority, application Japan, Sep. 9, 1991, 3-227971

Int. Cl.[6] H01J *37/317*

U.S. Cl. 250—492.21 **5 Claims**



1. An ion implantation apparatus comprising:

a plasma source for generating ions;

an ion accelerator for accelerating the ions;

a substrate holder provided on a position which the accelerated ions irradiate; and

an energy analyzing means, disposed adjacently to the substrate holder so that some of the accelerated ions enter the energy analyzing means, for separating a desired kind of ions from the entering ions and measuring a number of the desired kind of the ions.

5,393,987

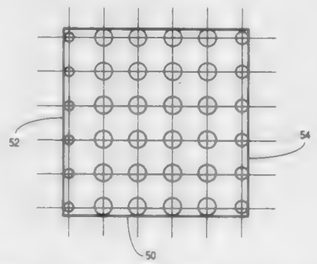
DOSE MODULATION AND PIXEL DEFLECTION FOR RASTER SCAN LITHOGRAPHY

Frank E. Abboud, Hayward; Andrew J. Muray, Fremont, both of Calif., and C. Neil Berglund, Oregon City, Oreg., assignors to ETEC Systems, Inc., Hayward, Calif.

Filed May 28, 1993, Ser. No. 69,222

Int. Cl.[6] H01J *37/302*

U.S. Cl. 250—492.22 **33 Claims**



1. A method of exposing a medium which is sensitive to exposure from a beam in a raster scan lithography apparatus, comprising the steps of:

scanning the beam across a surface of the medium in a raster pattern, thereby exposing a plurality of pixels of the raster pattern on the medium to form at least one exposed feature on the surface of the medium, the feature including the plurality of the pixels and having at least one edge; and

modulating a duration of the exposure of at least some of the pixels at the edge of the feature by reducing a duration of the exposure of the pixels at the edge compared to the pixels at other portions of the feature, thereby defining the edge of the feature as a line lying off a grid defined by locations of the pixels of the raster pattern.

5,393,988

MASK AND CHARGED PARTICLE BEAM EXPOSURE METHOD USING THE MASK

Kiichi Sakamoto, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 40,380, Feb. 26, 1993, abandoned, which is a continuation of Ser. No. 883,901, May 12, 1992, abandoned, which is a continuation of Ser. No. 763,498, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 429,498, Oct. 31, 1989, abandoned. This application Apr. 14, 1994, Ser. No. 227,696

Claims priority, application Japan, Nov. 4, 1988, 63-279605

Int. Cl.[6] H01J *37/00*

U.S. Cl. 250—492.22 **23 Claims**

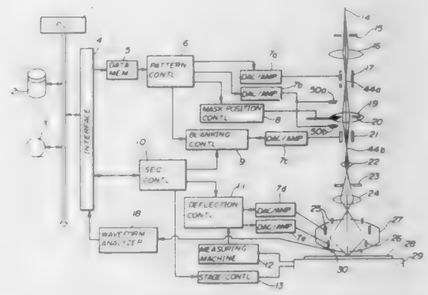
1. A charged particle beam exposure method for exposing a desired exposure pattern on a substrate by a charged particle beam of a beam source and deflection system, said charged particle beam exposure method comprising:

providing a mask having formed therein a plurality of exposure patterns, defining desired patterns to be selectively exposed on the substrate and arranged in pattern groups, and a plurality of position matching patterns, each of said position matching patterns having a predetermined, fixed positional relationship to at least an adjacent pattern group in the mask;

in a first step, exposing a first one of the plurality of position matching patterns in the mask at a predetermined position on the substrate by directing the charged particle beam through the selected position matching pattern in the mask and onto the predetermined position on the substrate;

in a second step, detecting the irradiating position of the charged particle beam on the substrate, as directed through said first position matching pattern;

in a third step, exposing a second one of the position matching patterns in the mask at the predetermined position on the substrate by directing the charged particle beam through the second position matching pattern in the mask and onto the predetermined position on the substrate;



in a fourth step, detecting the irradiating position of the charged particle beam on the substrate, as directed through said second position matching pattern;

in a fifth step, calculating an error between the irradiating positions of the charged particle beam which is irradiated on the substrate through said first and second position matching patterns;

in a sixth step, calculating a correction amount for controlling the deflection system thereby to reduce said calculated error to approximately zero; and

in a seventh step, determining a correction amount for the desired exposure pattern in the mask, based on the correction amount calculated for the first and second position matching patterns.

5,393,989

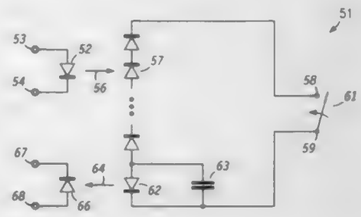
SELF BIASED ELECTRICALLY ISOLATED REMOTE SWITCH POWERED BY AN OPTICAL OR ACOUSTIC COUPLING

Horst A. Gempe, and John E. Salina, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1993, Ser. No. 100,397

Int. Cl.[6] G02B *27/00*

U.S. Cl. 250—551 **20 Claims**



1. A self biased isolated remote switch having a primary side electrically decoupled from a secondary side, the self biased isolated remote switch comprising:

a first circuit on the secondary side including first terminal and a second terminal, said first circuit being non-electrically coupled to a second circuit and a third circuit on the primary side of the self biased isolated remote switch, said first circuit providing a signal to said third circuit;

said second circuit responsive to a bias voltage for providing energy to power said first circuit; and

said third circuit for converting said signal provided by said first circuit to an electrical signal.

5,393,990

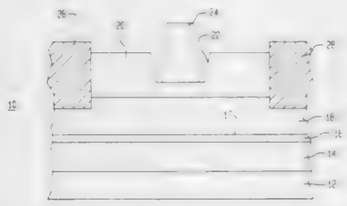
HEMT STRUCTURE

Erhard Kohn, Titusville, N.J., assignor to Siemens Corporate Research, Inc., Princeton, N.J.

Continuation of Ser. No. 333,207, Apr. 4, 1989, abandoned. This application Nov. 24, 1992, Ser. No. 980,870

Int. Cl.[6] H01L *31/072*

U.S. Cl. 257—12 **10 Claims**



1. A high electron mobility transistor, including a first layer of substantially undoped gallium arsenide, a doped second layer of aluminum gallium arsenide, representable as $Al_xGa_{1-x}As$, formed over said first layer at a first interface for forming a two-dimensional electron gas therein, and a gate electrode formed over said second layer at a second interface, wherein said doped second layer comprises:

at said second interface, an aluminum content of less than a first value, such that DX-centers occur below a conduction-band edge of said first layer;

said aluminum content remaining substantially at said first value across a first portion of a thickness dimension of said second layer, thence increasing monotonically in a generally parabolic manner to a second value over a second portion of said thickness dimension, said second portion being relatively thin compared with said first portion, thence remaining substantially at said second value over a third portion of said thickness dimension, said third portion being relatively thin compared with said first portion, and thence dropping step-wise to a negligibly small value at said first interface;

a high doping concentration spike when compared to the doping in said first and second portions, is substantially contained within said third portion of said thickness dimension; and

a constant doping concentration over said first and second portion of said thickness dimension.

5,393,991

HYBRID INTEGRATED CIRCUIT DEVICE HAVING BURN-IN TESTING MEANS

Takayoshi Kawakami, Itami, Japan, assignor to Mitsubishi Denki Kubushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 135,556

Claims priority, application Japan, Oct. 14, 1992, 4-276269

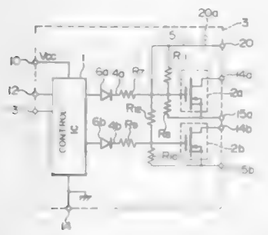
Int. Cl.[6] H01L *21/66, 23/16, 39/02, 29/78*

U.S. Cl. 257—48 **3 Claims**

1. A hybrid integrated circuit device comprising:

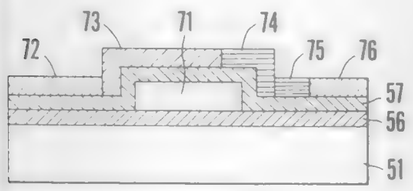
a plurality of power MOS-FETs in a bare chip state, each of

said power MOS-FETs having a gate terminal, a drain terminal, and a source terminal;
a control IC for supplying a control voltage to said gate terminals of each of said power MOS-FETs to control said power MOS-FETs;
control voltage supply lines for conducting the control voltage supplied by said control IC to said gate terminals of said power MOS-FETs;
burn-in test means connected to said gate terminals of each of said power MOS-FETs;



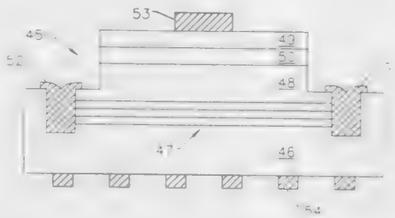
a plurality of resistors having a predetermined resistance, each resistor respectively connecting said burn-in test means to a gate terminal of one of said power MOS-FETs to prevent interference of said burn-in test means with normal operation of said hybrid integrated circuit device after a burn-in test and for supplying a burn-in test voltage to said gate terminals, the resistors electrically isolating the gate terminals of each power MOS-FET from one another; and
a circuit substrate on which said power MOS-FETs, control IC, control voltage supply line, burn-in test means, and resistors are mounted.

5,393,992
SEMICONDUCTOR THIN FILM TRANSISTOR WITH GATE CONTROLLED OFFSET PORTION
Yoshiyuki Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Dec. 28, 1992, Ser. No. 997,678
Claims priority, application Japan, Dec. 28, 1991, 3-360583
Int. Cl.[6] H01L *29/78*
U.S. Cl. 257—69 **34 Claims**



1. A lower gate type semiconductor device comprising:
a substrate;
an insulating layer formed on said substrate;
a gate electrode disposed on said substrate via said insulating layer;
a gate insulating layer formed on said gate electrode;
a channel region as an active region disposed above and in contact with said gate insulating layer and to overlap said gate electrode;
a source region disposed on one side of said channel region;
a drain region disposed on the other side of said channel region;
said gate electrode serving to control conduction of said channel region located between said source region and said drain region by being supplied with voltage;
a gate-controlled offset portion composed of a semiconductor material formed at the end of said drain region in said channel region and being controlled by said gate electrode in an electric field effect manner, said portion serving to increase an effective gate length;
said channel region and said gate-controlled offset portion having different effective concentration of impurities so that said gate-controlled offset portion weakens the electric field effect established in an area between said channel region and said drain region at the time of non-conduction of the device and decreases resistance of said area at the time of conduction of the device.

5,393,993
BUFFER STRUCTURE BETWEEN SILICON CARBIDE AND GALLIUM NITRIDE AND RESULTING SEMICONDUCTOR DEVICES
John A. Edmond, Apex; Vladimir Dmitriev, Fuquay-Varina, and Kenneth Irvine, Cary, all of N.C., assignors to Cree Research, Inc., Durham, N.C.
Filed Dec. 13, 1993, Ser. No. 166,229
Int. Cl.[6] H01L *33/00*
U.S. Cl. 257—77 **27 Claims**

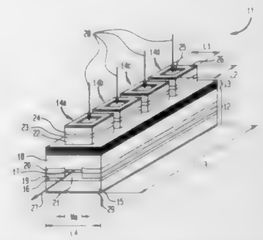


1. A transition crystal structure for providing a good lattice and thermal match between single crystal silicon carbide and a layer of single crystal gallium nitride, said transition structure comprising:
a buffer formed of
a first layer of gallium nitride and aluminum nitride; and
a second layer of gallium nitride and aluminum nitride adjacent to said first layer, and in which the mole percentage of aluminum nitride in said second layer is substantially different from the mole percentage of aluminum nitride in said first layer; and
a layer of single crystal gallium nitride upon said second layer of gallium nitride and aluminum nitride.

5,393,994
OPTICAL SEMICONDUCTOR DEVICE FOR NEURAL NETWORK
Yasuhiro Kobayashi, Osaka, and Kenichi Matsuda, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 7, 1994, Ser. No. 192,552
Claims priority, application Japan, Feb. 8, 1993, 5-019845
Int. Cl.[6] H01L *31/12*
U.S. Cl. 257—84 **17 Claims**

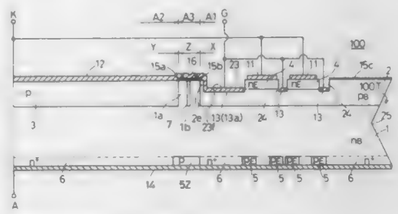
1. An optical semiconductor device comprising:
a semiconductor laser having at least an active layer;
reflecting means formed on the semiconductor laser for reflecting internal feedback light generated from the semiconductor laser; and

at least two phototransistors formed on the reflecting means for detecting light having a wavelength substantially



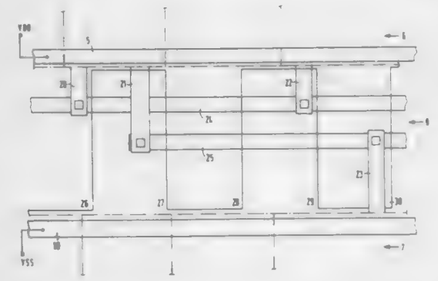
identical to that of laser light oscillated from the active layer.

5,393,995
SEMICONDUCTOR THYRISTOR DEVICE WITH RECESS
Tsutomu Nakagawa; Futoshi Tokunoh, and Kouji Niinobu, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 28, 1993, Ser. No. 68,162
Claims priority, application Japan, Jun. 4, 1992, 4-143904
Int. Cl.[6] H01L *29/74*
U.S. Cl. 257—147 **9 Claims**



1. A semiconductor device comprising:
(a) a first semiconductor layer of a first conductivity type having first and second major surfaces, said first major surface being divided into first, second and third areas, said first and second areas being specified with said third area sandwiched therebetween;
(b) a second semiconductor layer of a second conductivity type formed in said first area;
(c) a third semiconductor layer of the second conductivity type formed in said second area;
(d) at least one fourth semiconductor layer of the second conductivity type selectively formed in said third area and located between said second and third semiconductor layers such that parts of said first semiconductor layer lie between said fourth semiconductor layer and said second and third semiconductor layers, respectively;
(e) a first electrode layer formed on said second semiconductor layer;
(f) a second electrode layer formed on said third semiconductor layer;
(g) a third electrode layer connected electrically to said second major surface,
wherein exposed surfaces of said third semiconductor layer, said fourth semiconductor layer, and said parts of said first semiconductor layer lie in substantially the same plane at said first major surface;
wherein said first electrode layer includes a plurality of first electrode layers selectively formed on said first area,
said semiconductor device further comprising:
(h) fifth semiconductor layers of the first conductivity type formed alternately with said electrode layers on said first area; and
(i) fourth electrode layers formed on said fifth semiconductor layers and connected electrically to said second electrode layer;
wherein said first area defines a recess having a bottom surface that is lower than surfaces of said second and third areas,
said first electrode layers are formed in a first portion of said recess, and
said fifth semiconductor layers are formed in a second portion of said recess that is adjacent said first portion of said recess.

5,393,996
INTEGRATED SEMICONDUCTOR CONFIGURATION
Alfred Lang, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 21, 1994, Ser. No. 230,637
Claims priority, application Germany, Apr. 21, 1993, 4313053
Int. Cl.[6] H01L *27/02, 27/10, 27/15*
U.S. Cl. 257—210 **3 Claims**



1. An integrated semiconductor configuration comprising:
a semiconductor substrate of a first conductivity type being connected to a first supply potential, having a first region in which switching stages with signal terminals are disposed, and having at least a second region in which at least one connecting line is disposed for connecting said signal terminals of said switching stages;
a multiplicity of doping zones being disposed in said second region and having a second conductivity type complementary to the first conductivity type, said doping zones being connected to a second supply potential, said doping zones having a total surface area, and at least a portion of said total surface area being located under said at least one connecting line;
said first and second regions being strip-shaped;
said first and second regions having long sides bordering one another;
said second region having a width and each of said doping zones of said second region extending over the width of said second region; and
said semiconductor substrate having a segment of the first conductivity type being located between each two of said doping zones.

5,393,997
CCD HAVING TRANSFER ELECTRODES OF 3 LAYERS
Takashi Fukusho; Isao Hirota, and Motoyuki Koike, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 19,843, Feb. 19, 1993, abandoned. This application Jun. 22, 1994, Ser. No. 264,257
Claims priority, application Japan, Feb. 21, 1992, 4-035322
Int. Cl.[6] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—232 **4 Claims**

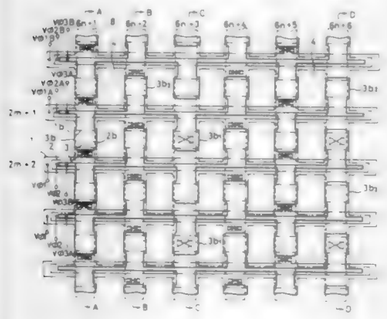
1. A solid state imaging device comprising:
a plurality of pixels arranged in rows and columns, each of

said pixels consisting of a light sensing element and a vertical transfer portion adjacent to said light sensing element;

said vertical transfer portion having three gate portions comprising first, second and third gate portions which are insulated from each other, said third gate portion located over said first and second gate portions;

a plurality of rows of base portions mounted on a light sensing portion and extending parallel to each other in a first direction and first base portions connecting first gate portions, second base portions connecting second gate portions and third base portions connecting third gate portions;

a plurality of first conducting bridge portions which connect said third base portions and said third gate portions;



said first conducting bridge portions lying over the first gate in a first column of pixels and lying over the second gate portions in a second column of pixels;

vertical wiring means disposed over said gate portions through an insulating layer, which running in the vertical direction, said vertical wiring means including;

a first wiring film connecting the first gate portions;

a second wiring film connecting the second gate portions;

a third wiring film connecting the third gate portions which is connected to odd rows of said plurality of third base portions;

a fourth wiring film connecting the third gate portions which is connected to even rows of said plurality of third base portions;

read out pulse means which supply read out voltage pulses to said third and fourth wiring films at a first time; and

transfer pulse means which respectively supply first, second and third transfer voltage pulses to said first, second and third gate portions at a second time.

5,393,998

SEMICONDUCTOR MEMORY DEVICE CONTAINING JUNCTION FIELD EFFECT TRANSISTOR

Tatsuya Ishii, and Tatsuo Shinohara, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1993, Ser. No. 65,334

Claims priority, application Japan, Jul. 17, 1992, 4-190898

Int. Cl.[6] H01L *29/80, 31/112, 27/108;* **G11C** *11/24*

U.S. Cl. 257—256 **8 Claims**

1. A semiconductor memory device including a junction field effect transistor and a capacitor, comprising:

a semiconductor substrate having a main surface;

an impurity region of a first conductivity type formed in the main surface of said semiconductor substrate; and

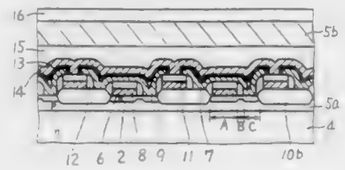
an impurity region of a second conductivity type formed on the main surface of said semiconductor substrate so as to contact said impurity region of the first conductivity type;

said junction field effect transistor including said impurity region of the first conductivity type and said impurity region of the second conductivity type;

said impurity region of the first conductivity type constituting a gate region;

said impurity region of the second conductivity type including a channel region, a first region and a second region, said channel region being interposed between said first and second regions with a predetermined distance;

wherein a junction depth of said channel region relative to said impurity region of the first conductivity type is less than a junction depth of each of said first and second



regions relative to the impurity region of the first conductivity type; and

said capacitor comprises a first electrode in contact with said first region, a dielectric film formed on said first electrode, and a second electrode formed on said dielectric film, wherein said first electrode is formed above said channel region and above an insulating sidewall spacer, a bottom of said sidewall spacer which is in contact with the channel region having a horizontal thickness, and the length of the channel region is equal to said horizontal thickness of said insulating sidewall spacer.

5,393,999

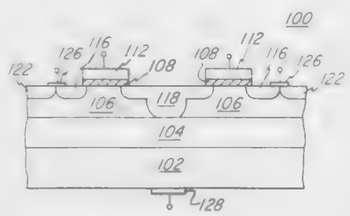
SIC POWER MOSFET DEVICE STRUCTURE

Satwinder Malhi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 21,006, Feb. 22, 1993, abandoned. This application Jun. 9, 1994, Ser. No. 257,500

Int. Cl.[6] H01L *29/10, 29/78, 29/161, 29/20*

U.S. Cl. 257—289 **13 Claims**



1. A semiconductor device comprising:

a. a substrate of a first conductivity type comprising silicon carbide;

b. a first epitaxial layer of a second conductivity type located on a top side of said substrate with a lateral channel in a portion of said first epitaxial layer;

c. a gate electrode located above said first epitaxial layer, said gate electrode having a first side and a second side;

d. a drift region of said first conductivity type located within said first epitaxial layer on said first side of said gate electrode, said drift region having an extension which extends through said first epitaxial layer;

e. a source region located within said first epitaxial layer on said second side of said gate electrode, wherein said source region is of said first conductivity type; and

f. a drain electrode located on bottom side of said substrate.

5,394,000

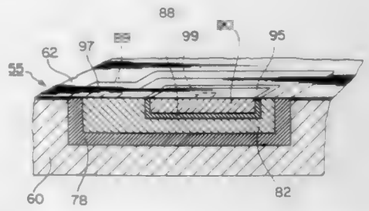
TRENCH CAPACITOR STRUCTURE

Joseph P. Ellul, Nepean; John M. Boyd, and Michael B. Rowlandson, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 921,667, Jul. 30, 1992, Pat. No. 5,275,974. This application Oct. 7, 1993, Ser. No. 137,453

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—301 **9 Claims**



1. A trench capacitor structure for an integrated circuit, comprising:

a substrate having a planar surface and defining therein a trench region, the trench region having sidewalls and a bottom, and sidewalls of the trench region defining therebetween a first portion and a narrower portion of smaller lateral dimension, the trench region being filled with a plurality of conformal layers comprising:

a conformal first dielectric layer extending over the sidewalls and bottom of the trench,

a conformal first conductive layer overlying the first conformal dielectric layer, said layer filling the narrower portion of the trench region, lining and partially filling the first portion of the trench region to define a cavity therein,

and, at least an other conformal dielectric layer overlying the first conductive layer and an other overlying conformal conductive layer filling said cavity in the first portion of the trench;

each of the conductive layers and the dielectric layers having planarized surface areas substantially coplanar with the substrate surface, the planarized surface area of each of the conductive layers providing for formation thereon of an electrical contact, each of the conductive layers thereby forming electrodes isolated from one another within the trench region by a dielectric layer therebetween.

5,394,001

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING REDUCED RESISTANCE VALUE FOR THE COMMON SOURCE WIRING REGION

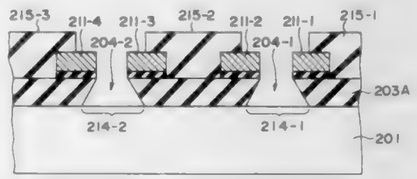
Yoshiko Yamaguchi, Tokyo, and Yoichi Ohshima, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 25, 1993, Ser. No. 65,898

Claims priority, application Japan, May 26, 1992, 4-132973

Int. Cl.[6] H01L *29/788;* **G11C** *11/34*

U.S. Cl. 257—315 **18 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

a plurality of striped field oxide films formed on a main surface of said semiconductor substrate, said field oxide films being spaced from each other along a first direction;

a plurality of gate insulating films, each of said gate insulating films formed on the main surface of said semiconductor substrate between said field oxide films;

a plurality of striped conductive layers formed on said field oxide films and said gate insulating films, said conductive layers being spaced from each other along a second direction crossing said first direction;

a plurality of grooves, each of said grooves formed in a region of each of said gate insulating films and in a region of each of said field oxide films sandwiched between said conductive layers, each of said grooves having a depth reaching the main surface of the semiconductor substrate, an opening width of said groove in each of said field oxide films being equal to the space between said conductive layers, and a bottom width of said groove in each of said field oxide films being wider than the space between said conductive layers; and

a common source region of a second conductivity type formed in said semiconductor substrate under said grooves.

5,394,002

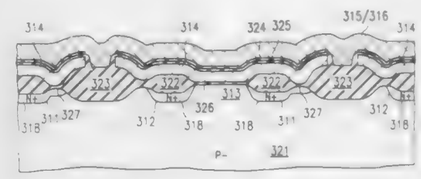
ERASABLE PROGRAMMABLE MEMORY

James L. Peterson, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 697,536, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 531,987, Jun. 1, 1990, abandoned. This application Nov. 5, 1993, Ser. No. 149,148

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—321 **23 Claims**



1. An electrically-erasable, electrically-programmable read-only memory cell formed at a face of a semiconductor layer of a first conductivity type, comprising:

a first doped region of a second conductivity type opposite that of said first conductivity type, formed at said face;

a second doped region of said second conductivity type formed at said face and spaced from said first doped region by a channel region;

a first insulator region overlying said first doped region;

a thick insulator region overlying and abutting said semiconductor layer of said first conductivity type, said thick insulator region spaced from said channel region by said first insulator region, a relatively thin transition insulator region disposed between said first insulator region and said thick insulator region;

a tunneling oxide window formed in said transition insulator region;

a floating gate conductor formed insulatively overlying at least a portion of said channel region between said first and second doped regions, and adjoining said tunneling oxide window; and

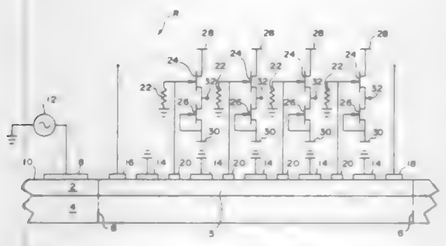
a control gate conductor insulatively overlying said floating gate conductor.

5,394,003

ACOUSTIC CHARGE TRANSPORT DEVICE BUFFERED ARCHITECTURE

James E. Bales, Urbana, and Michael J. Hoskins, Mahomet, both of Ill., assignors to Electronic Decisions Inc., Urbana, Ill.

Filed May 20, 1993, Ser. No. 64,253
Int. Cl.[6] H01L *29/78*
U.S. Cl. 257—416 23 Claims



1. An acoustic charge transport device, comprising:
a) a substrate;
b) a layer disposed on said substrate;
c) a channel disposed within said layer for providing a propagation path for a surface acoustic wave, said channel having first and second ends;
d) an input contact operably connected and disposed at said first end of said channel for injecting an electronic signal into said channel;
e) an output contact operably connected and disposed at said second end of said channel for extracting the electronic signal after it has traversed through said channel;
f) a transducer disposed at said first end for generating and propagating the surface acoustic wave through said channel from said first end to said second end for thereby transporting the electronic signal through said channel;
g) a plurality of sensing electrodes operably associated with said channel and disposed along the propagation path of the surface acoustic wave for non-destructively sensing the electronic signal;
h) a plurality of active buffer circuits each having an input operably connected to respective sensing electrode and an output operably connected to an output circuit.
i) a plurality of guard electrodes;
j) each of said sensing electrodes being associated with it a pair of said guard electrodes, each of which is disposed on each side of the respective sensing electrode in the propagation path of the surface acoustic wave; and
k) said pair of guard electrodes being connected to the output of respective buffer circuit.

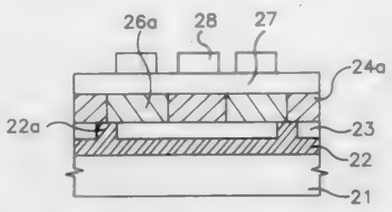
5,394,004

MULTICOLORED ELECTRIC FIELD LIGHT EMITTING DEVICE WITH PROTRUDED ELECTRODE

Jae S. Jeong, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 7, 1993, Ser. No. 71,983
Claims priority, application Rep. of Korea, Jun. 9, 1992, 9969/1992
Int. Cl.[6] H01L *27/14, 31/00, 31/0224, 31/18*
U.S. Cl. 257—431 7 Claims

1. A semiconductor device comprising:
(a) a transparent substrate;
(b) a lower transparent electrode which has a plurality of protrusions at its edge portion each protrusion having a top surface;
(c) a first insulation layer on the lower transparent electrode between the protrusions;
(d) a plurality of first color light emitting layer which are formed on the top surfaces of the protrusions and the first insulation layer and spaced from each other with a constant interval;
(e) a plurality of second light emitting layer formed between the plurality of first color light emitting layers;



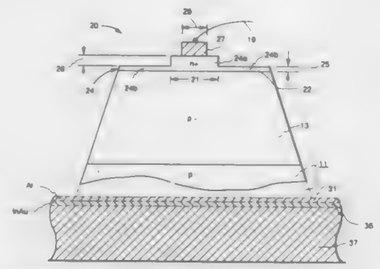
(f) a second insulation layer formed on the first color light emitting layers and the second color light emitting layers; and
(g) an upper electrode formed with a pattern on the second insulation.

5,394,005

SILICON CARBIDE PHOTODIODE WITH IMPROVED SHORT WAVELENGTH RESPONSE AND VERY LOW LEAKAGE CURRENT

Dale M. Brown, Schenectady, N.Y., and John A. Edmond, Apex, N.C., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 878,937, May 5, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 198,679
Int. Cl.[6] H01L *27/14, 31/00*
U.S. Cl. 257—461 20 Claims



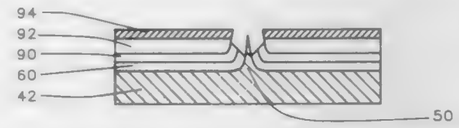
1. A semiconductor photodiode comprising:
a crystalline body of silicon carbide;
a lower metallic layer in contact with said body;
a first crystalline layer comprising silicon carbide of a first conductivity type epitaxially grown on the body;
a second crystalline layer of silicon carbide uniformly doped to a second conductivity type, opposite from the first type, and situated on the first layer, thereby forming a junction between the first and second layers;
an upper metallic contact layer situated on a predetermined surface region of said second layer oppositely situated from the junction;
the second layer having predetermined uniform minimum thickness everywhere except for a predetermined greater thickness beneath said surface region; and
wherein the predetermined greater thickness of the second layer is greater than or equal to 2000 Angstroms and the predetermined uniform minimum thickness thereof is equal to or less than 1000 Angstroms.

5,394,006

NARROW GATE OPENING MANUFACTURING OF GATED FLUID EMITTERS

David N.-C. Liu, Fong-Yuan, Taiwan, Prov. of China, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Jan. 4, 1994, Ser. No. 177,521
Int. Cl.[6] B44C *1/22;* C23F *1/02;* H01L *31/00*
U.S. Cl. 257—506 27 Claims



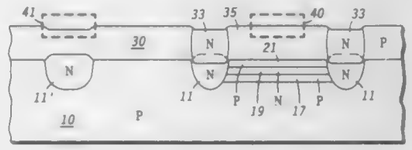
20. A self-aligned gated field emitter structure, comprising:
a field emitter having a sharp tip on a substrate;
a thin insulating layer over said substrate and over a portion of said field emitter;
a conductive layer with an opening through which said tip of said field emitter is exposed;
a thick dielectric layer, formed of a different material than said thin insulating layer, between said thin insulating layer and said conductive layer; and
a layer of aluminum oxide between said conductive layer and said substrate, wherein said layer of aluminum oxide is formed of a different material than said thin insulating layer or said thick dielectric layer.

5,394,007

ISOLATED WELL AND METHOD OF MAKING

Robert H. Reuss, Scottsdale; David J. Monk, Gilbert, and Christopher P. Dragon, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 964,700, Oct. 22, 1992, Pat. No. 5,268,312. This application Sep. 13, 1993, Ser. No. 119,636
Int. Cl.[6] H01L *27/02, 27/04, 27/2*
U.S. Cl. 257—544 7 Claims



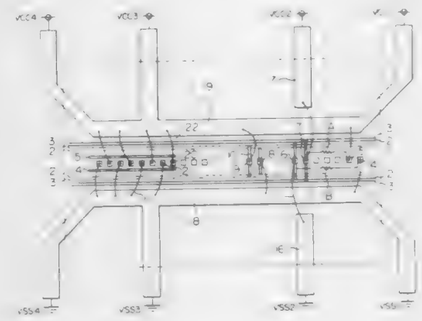
1. An isolated well, comprising:
a semiconductor material of a first conductivity type;
a doped annular region of a second conductivity type formed in the semiconductor material;
a first doped region of the first conductivity type positioned inside the doped annular region, a second doped region of the second conductivity type positioned inside the doped annular region, and a third doped region of the first conductivity type positioned inside the doped annular region, wherein the second doped region is positioned between the first doped region and the third doped region, the third doped region is positioned above the second doped region, and the first doped region and is more heavily doped than the semiconductor material;
a semiconductor layer on the semiconductor material;
an annular isolation region of the second conductivity formed in the semiconductor layer and above the doped annular region; and
a fourth doped region of the first conductivity type formed in the semiconductor layer above the third doped region and extending from the annular isolation region, from a surface of the semiconductor layer and down into a portion of the semiconductor layer, wherein the third doped region is more heavily doped than the fourth doped region.

5,394,008

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Yutaka Ito; Toshiyuki Sakuta, both of Ome, and Takumi Nasu, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan and Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 30, 1993, Ser. No. 84,520
Claims priority, application Japan, Jun. 30, 1992, 4-196604
Int. Cl.[6] H01L *23/48, 29/44, 25/52, 29/60*
U.S. Cl. 257—666 30 Claims



1. A device comprising:
a semiconductor chip;
a first lead frame to be connected to a power supply wiring for supplying a source voltage or a ground potential to an input circuit formed in said semiconductor chip; and
a second lead frame isolated from said first lead frame for supplying a source voltage or a ground potential to circuits formed in said semiconductor chip other than the input circuit,
wherein each of said first and second lead frames includes an external terminal for supplying the source voltage or the ground potential to said input circuit and said other circuits;
impedance means formed on said semiconductor chip for connecting said first and second lead frames to each other and providing a noise filter and a surge buffer;
wherein said impedance means includes a power wiring conductor for said input circuit and a metal wiring formed integrally with the power wiring conductor for said other circuits.

5,394,009

TAB SEMICONDUCTOR PACKAGE WITH CUSHIONED LAND GRID ARRAY OUTER LEAD BUMPS

Mike C. Loo, San Jose, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

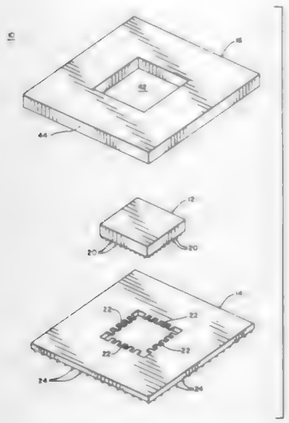
Filed Jul. 30, 1993, Ser. No. 99,617
Int. Cl.[6] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—666 11 Claims

8. A semiconductor package comprising:
a) a VLSI die having a first thickness, a first set of outer dimensions, a first plurality of outer edges, an active side and a plurality of periphery bumps disposed along said first plurality of outer edges on said active side;
b) a tape having a second set of outer dimensions, a plurality of inner leads and a plurality of LGA outer lead bumps, said LGA outer lead bumps having inter-bump pitches less than 1.2 mm and differences in bump heights within a predetermined range, said periphery bumps of said VLSI die being bonded to said inner leads of said tape;
each of said LGA outer lead bumps having an outside

diameter between 0.25 and 0.35 mm, said inter-bump pitches being between 0.8 to 0.5 mm, said predetermined range of heights between said LGA outer lead bumps being between 0.1 and 0.05 mm;

c) a layer of encapsulant encapsulating said active side of said VLSI die;

d) a stiffener plate having a third set of outer dimensions, a second thickness, a second plurality of outer edges, an underside, a center, a cavity disposed at said center having a fourth set of outer dimensions, and a plurality of slots disposed along said second plurality of outer edges on said underside, said fourth set of outer dimensions being larger than said first set of outer dimensions, said second and third set of outer dimensions being substantially the same, said second thickness being slightly thicker than said first thickness;



e) a film of elastomeric material for laminating said tape to said stiffener plate, said VLSI die being accommodated by said cavity of said stiffener plate forming a gap between said VLSI die and said stiffener plate, excess of said elastomeric material being stored in said slots and said gap, said elastomeric material for simultaneously maintaining good electrical contact between said outer lead bumps and a plurality of contacting LGA pads and for accommodating said predetermined range of differences in heights of said LGA outer lead bumps, said elastomeric material being coupled to said VLSI die, tape and stiffener plate;

said film of elastomeric material applied to said stiffener plate being 0.25 and 0.13 mm thick, and said film of elastomeric material being precured first at 50 to 80 C. for 15 to 30 minutes, and then final cured at 120 to 170 C. for 30 to 60 minutes; and

f) a ring of soft material filling said gap between said VLSI die and said stiffener plate.

5,394,010

SEMICONDUCTOR ASSEMBLY HAVING LAMINATED SEMICONDUCTOR DEVICES

Hiroshi Tazawa, Tokyo; Chiaki Takubo; Yoshiharu Tsuboi, both of Yokohama, and Mamoru Sasaki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 12, 1992, Ser. No. 849,630

Claims priority, application Japan, Mar. 13, 1991, 3-048418

Int. Cl.[6] H01L *23/02, 23/12*

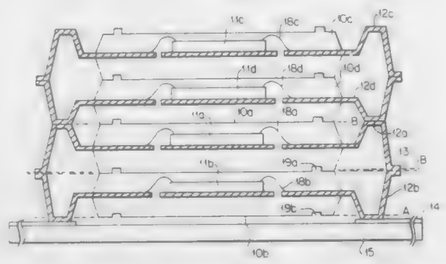
U.S. Cl. 257—686 **13 Claims**

1. A semiconductor assembly comprising:

a first semiconductor device having a first container for containing a semiconductor chip and a first external lead extending from inside of said first container to outside thereof; and

a second semiconductor device having a second container for containing another semiconductor chip and a second external lead extending from inside of said second container to outside thereof,

wherein said first and second containers are stacked one over another, and wherein said first and second external leads extend outward to respective upward and downward bent portions joining with first flat interconnection



portions further extending outward to respective downward and upward bent portions joining with second flat interconnection portions, one of said interconnection portions being disposed over an upper surface level of an associated container, another of said interconnection portions being disposed below a lower surface level of said associated container so that at least one of said first and second flat interconnection portions on said first external lead and a corresponding one of the first and second flat interconnection portions on the second external lead are maintained in mutual contact.

5,394,011

PACKAGE STRUCTURE FOR SEMICONDUCTOR DEVICES AND METHOD OF MANUFACTURING THE SAME

Hiroyasu Yamamoto; Takayuki Konuma; Akira Shika; Hiroyoshi Suzuki; Masanori Katouno, and Kaori Sato, all of Iwaki, Japan, assignors to Iwaki Electronics Co. Ltd. and Fuji Electrochemical Co., Ltd., both of Tokyo, Japan

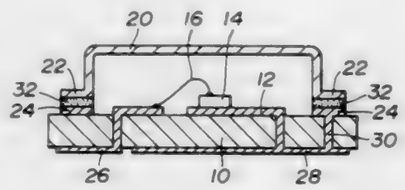
PCT No. PCT/JP92/00745, § 371 Date Jul. 6, 1993, § 102(e) Date Jul. 6, 1993, PCT Pub. No. WO93/00705, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 11, 1992, Ser. No. 972,459

Claims priority, application Japan, Jun. 20, 1991, 3-176184; May 8, 1992, 4-143558

Int. Cl.[6] H01L *39/02, 23/02, 23/12*

U.S. Cl. 257—693 **6 Claims**



1. A package structure for a semiconductor device having a lead electrode comprising:

an electrically conductive cap having a flange at a circumference thereof,

a circuit substrate having a ceramic substrate member, a first surface covered with said conductive cap and sealed air-tightly, a second surface having electrically conductive patterns for providing thereon external electrodes, and projections of high-temperature solder having a melting point of approximately 240°–330° C. are formed on said conductive patterns,

wherein said circuit substrate comprises:

a first electrically conductive layer on said first surface of said circuit substrate extending along an outer circumference of said circuit substrate,

a second electrically conductive layer covering said second surface of said circuit substrate, said second conductive layer being formed substantially entirely over said second surface of said circuit substrate except having a portion for said lead electrode of said semiconductor device,

a plurality of electrically conductive through-holes, disposed uniformly in said circuit substrate directly below said first conductive layer and said flange, for connecting said first conductive layer with said second conductive layer, and

electrically conductive sealing means for sealing contact surfaces of said flange of the conductive cap to said first conductive layer.

5,394,012

SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD OF THE SAME

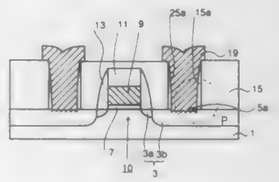
Hiroshi Kimura, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 136,064

Claims priority, application Japan, Oct. 22, 1992, 4-284581; Jul. 26, 1993, 5-184038

Int. Cl.[6] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—739 **16 Claims**



1. An interconnection structure of a semiconductor device, comprising:

a semiconductor substrate having a main surface having a first surface roughness;

a conductive region formed in the main surface of said semiconductor substrate and having a surface portion which has a second surface roughness larger than said first surface roughness;

an insulating layer formed on said conductive region and having an opening reaching said surface portion having the second surface roughness;

a conductive layer formed on a sidewall of said opening of said insulating layer; and

an interconnection layer formed to be in contact with said surface portion of said conductive region having the second surface roughness, and formed of a material different from the material of said conductive layer.

5,394,013

SEMICONDUCTOR DEVICE WITH AN ELEVATED BONDING PAD

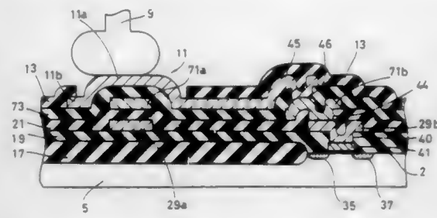
Kazutoshi Oku, and Masahiro Hirosue, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 795,854, Nov. 21, 1991, abandoned. This application Sep. 22, 1993, Ser. No. 124,846

Claims priority, application Japan, Nov. 28, 1990, 2-332170

Int. Cl.[6] H01L *23/48, 23/485, 29/54*

U.S. Cl. 257—786 **2 Claims**



1. A semiconductor device comprising a substrate and an active element formed at a surface of said substrate, said semiconductor device comprising:

a bonding pad including a central film and a peripheral film around said central film, said peripheral film including a film being formed at the same time as said central film and continuous with said central film, said bonding pad being formed over the surface of said substrate, and being electrically connected to said active element;

central film raising means for raising said central film and making a level of said central film higher than a level of said peripheral film by being placed below said central film, said central film raising means including a first layer formed over the surface of said substrate and a second layer covering said first layer, said first and second layers being separated from each other and formed of the same material; and

a protective film covering said bonding pad so as to expose said central film and to cover said active element for protecting said device from environmental influences, at least part of the protective film covering said peripheral film;

wherein the level of said central film is not lower than the level of said protective film covering said peripheral film, and said first and second layers for raising the central film are formed of the same material as the bonding pad.

5,394,014

SEMICONDUCTOR DEVICE IMPROVED IN LIGHT SHIELDING PROPERTY AND LIGHT SHIELDING PACKAGE

Masahiko Ishikawa; Kohji Hayano; Shinichi Mori; Masayuki Yamashita; Osamu Ueda, and Namiki Moriga, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 792,872, Nov. 19, 1991, Pat. No. 5,317,195. This application Nov. 10, 1993, Ser. No. 149,893

Claims priority, application Japan, Nov. 28, 1990, 2-127935; Nov. 28, 1990, 3-335398; Oct. 31, 1991, 3-286350

Int. Cl.[6] H01L *23/28*

U.S. Cl. 257—790 **8 Claims**

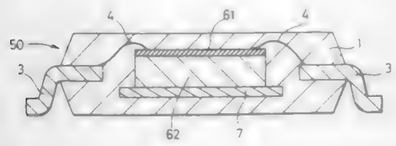
1. A semiconductor device, comprising:

a semiconductor chip; and

a resin mold having a light shielding property in which said semiconductor chip is housed; wherein

said semiconductor chip has its surface covered with a layer

of polyimide mixed with a black material, said layer being discrete from said resin mold; and



wherein the thickness of said resin mold deposited on the semiconductor is less than 200 microns.

5,394,015

METHOD OF PRODUCING SINTERED SILICON NITRIDES

Yasushi Tsuzuki; Tomoyuki Awazu, and Akira Yamakawa, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 14, 1993, Ser. No. 91,192

Claims priority, application Japan, Jul. 17, 1992, 4-213386; Apr. 6, 1993, 5-103662

Int. Cl.[6] C04B *35/58*

U.S. Cl. 264—65 **6 Claims**

1. A method of producing a sintered silicon nitride which comprises preparing a sintering aid by blending yttrium oxide, spinel, and aluminum oxide and/or aluminum nitride together in such proportions in terms of molar ratios of metal elements that Y/(Al+Mg) is 0.23 to 0.85:1 and Al/Mg is 2.1 to 5.2:1 mixing 5.0 to 13.0% by weight of the sintering aid with 87.0 to 95.0% by weight of a silicon nitride powder having an a crystallinity of not less than 60%, and, after the resulting powder mixture is molded into a molded piece, sintering the molded piece at temperatures of 1400 to 1650° C. in a nitrogen gas atmosphere or in an inert gas atmosphere containing nitrogen gas.

5,394,016

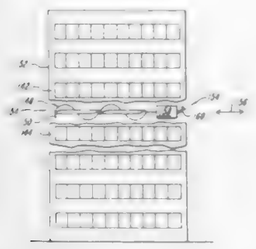
SOLAR AND WIND ENERGY GENERATING SYSTEM FOR A HIGH RISE BUILDING

John J. Hickey, 27 Bowdoin St., Apt. 4A, Boston, Mass. 02114

Continuation-in-part of Ser. No. 52,123, Apr. 22, 1993, Pat. No. 5,313,103. This application May 12, 1994, Ser. No. 241,769

Int. Cl.[6] F03D *9/00;* **F05D** *11/00;* **H02N** *6/00*

U.S. Cl. 290—55 **31 Claims**



1. A solar and wind energy generating system for mounting to a building, comprising:

at least one wind energy generating apparatus including:

at least one auger shaped fluid medium engaging member, for effecting rotational movement in an electrical generator by intercepting the flow of a fluid medium, said auger shaped fluid medium engaging member mounted to a building;

said at least one auger shaped fluid medium engaging member including a helically shaped outer region disposed about a longitudinal axis which passes through a central region of said at least one auger shaped fluid medium engaging member, said helically shaped outer region establishing at least one helically shaped fluid medium engaging surface, said at least one auger shaped fluid medium engaging member adapted for rotational movement about said longitudinal axis, said flow of a fluid medium effecting said rotational movement of said at least one auger shaped fluid medium engaging member upon striking said at least one helically shaped fluid medium engaging surface, for effecting rotational movement of said at least one auger shaped fluid medium engaging member; and

an electrical generator, coupled to said at least one auger shaped fluid medium engaging member and responsive to said rotational movement, for generating electrical energy upon rotation of said electrical generator caused by said rotational movement of said at least one auger shaped fluid medium engaging member; and

a solar energy generating apparatus including a plurality of solar energy collectors, responsive to light energy striking said plurality of solar energy collectors, for transforming light energy into electrical energy.

5,394,017

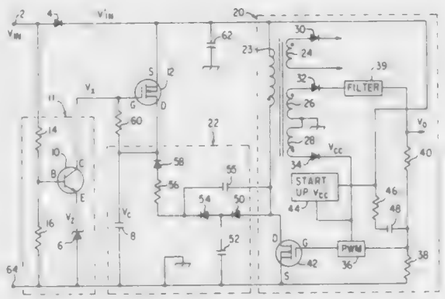
CIRCUIT FOR SUSTAINING OUTPUT POWER DURING INPUT POWER INTERRUPTION

Albert J. Catano, Sunrise, and Richard Alaburda, Boca Raton, both of Fla., assignors to AlliedSignal Inc., Morristownship, Morris County, N.J.

Continuation-in-part of Ser. No. 942,472, Sep. 9, 1992, which is a continuation of Ser. No. 788,400, Nov. 5, 1991. This application Dec. 2, 1992, Ser. No. 984,811

Int. Cl.[6] H02M *3/335*

U.S. Cl. 307—66 **10 Claims**



1. A circuit for sustaining output power during input power interruption, comprising:

an input terminal for receiving an input voltage;

first current flow control means connected to the input terminal for providing a voltage at a level lower than the input voltage, said first current flow control means including a blocking diode, with the voltage provided by the blocking diode being at a level lower than the input voltage by the forward voltage drop across the blocking diode;

first means for sensing the input voltage and including a voltage divider connected to the input terminal and second current flow control means connected to the voltage divider and maintained in an "on" state;

third current flow control means connected to the first current flow control means and to the second current flow control means so as to be rendered in an "off" state;

second means connected to the third current flow control means and including energy storage means, said energy storage means being a capacitor, with the energy stored in the capacitor being equal to one-half of the capacitance of the capacitor times the square of the voltage across said capacitor, and the size of said capacitor being directly proportional to said capacitance times a DC voltage rating product, whereby the energy stored in the capacitor is maximized and the size of said capacitor is minimized, and the voltage across the capacitor is maximized;

third means connected to the first current flow control means and including fourth current flow control means connected to the second means, whereby the energy storage means in the second means stores a peak voltage for application to the third means during an interruption of the input voltage, said third means providing a primary regulated output voltage;

a return terminal;

the voltage divider in the first means including a first resistor connected to the input terminal and a second resistor connected to the first resistor and to the return terminal;

the second current flow control means connected between the first and second resistors;

a fifth current flow control means connected to the second current flow control means and to the return terminal, said fifth current flow control means being a zener diode and the voltage provided by the first current flow control means being larger than the avalanche voltage across said zener diode;

the second current flow control means being an NPN bipolar transistor having base, collector and emitter elements;

the base element is connected between the first and second resistors, the collector element is connected to the third current flow control means and the emitter element is connected to the zener diode;

the collector element being at a voltage which is the difference between the avalanche voltage across the zener diode and the collector element to emitter element voltage across the NPN bipolar transistor, whereby the NPN bipolar transistor is maintained in the "on" state;

the third current flow control means is an N channel enhancement MOSFET having source, gate and drain elements;

the source element is connected to the blocking diode, the gate element is connected to the collector element of the NPN bipolar transistor and the second means is connected to the drain element;

the gate element is at the NPN transistor collector voltage, the source element is at the voltage provided by the blocking diode, and the gate to source voltage is equal to the NPN transistor collector voltage minus the blocking diode voltage;

said gate to source voltage being in a negative sense, since the blocking diode voltage is larger than the NPN transistor collector voltage, whereby said N channel enhancement MOSFET is in the "off" state; and

means connected to the blocking diode, to the energy storage capacitor and to the N channel enhancement MOSFET for minimizing power dissipation when said N channel enhancement MOSFET is conducting.

5,394,018

MICROPROCESSOR BASED ELECTRICAL APPARATRUS WITH FALSE AC INPUT REJECTION

Robert T. Elms, Monroeville Boro, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 31, 1992, Ser. No. 999,326

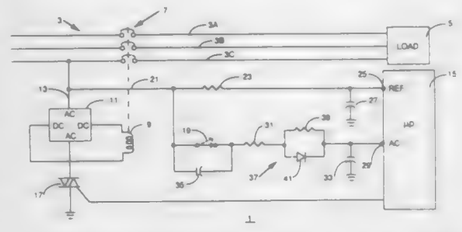
Int. Cl.[6] H01H *47/00*

U.S. Cl. 307—134 **12 Claims**

1. An electrical apparatus for controlling an electrical load in response to an ac voltage signal switched by a switch shunted by a noise suppression capacitor which produces, when said switch is open, a false signal leading by a predetermined interval a true ac switched signal produced when said switch is closed, said apparatus comprising:

a microprocessor having an input filter and an input terminal to which said ac voltage switched by said switch is applied, and means periodically reading said ac voltage switched by said switch applied to said input terminal; and

discriminating means connected between said switch and



said input terminal increasing said interval by which said false signal leads said true ac switched signal, said means periodically reading said ac voltage reading ac voltage applied to said input terminal during said interval.

5,394,019

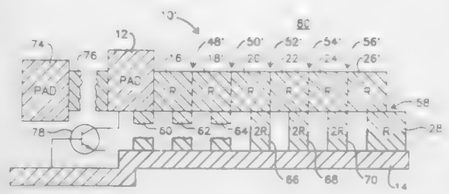
ELECTRICALLY TRIMMABLE RESISTOR LADDER

Jonathan M. Audy, Campbell, Calif., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Aug. 9, 1993, Ser. No. 104,430

Int. Cl.[6] H02H *7/20;* **H03K** *3/26*

U.S. Cl. 327—525 **18 Claims**



1. An electrically trimmable resistor ladder, comprising:

a plurality of series resistors which are connected in series with each other to constitute a string having a first end and a second end; and

a plurality of shunt resistors which are connected between respective junctions of adjacent series resistors and said second end of said string;

the series resistors and the shunt resistors being configured such that the shunt resistors successively blow open from said first end toward said second end of said string, while the series resistors do not blow open, in response to a progressively increasing electrical voltage applied between said first and second ends of said string.

5,394,020

VERTICAL RAMP AUTOMATIC AMPLITUDE CONTROL

David K. Nienaber, Rolling Meadows, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 30, 1992, Ser. No. 998,282

Int. Cl.[6] H03K *4/06*

U.S. Cl. 327—140 **7 Claims**

1. A method of producing a constant amplitude deflection ramp voltage over a range of deflection frequencies comprising:

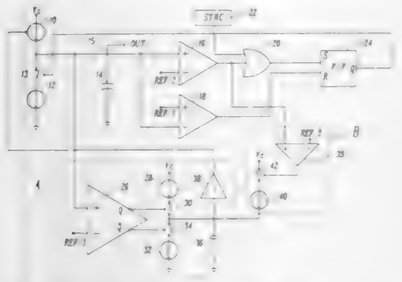
producing a ramp voltage by charging a ramp capacitor from a current source;

a first controllable current source for charging said ramp capacitor and a second switched current source for discharging said ramp capacitor;

controlling the frequency of said ramp voltage with an injected sync signal;

generating a correction signal based upon deviation of the amplitude of said ramp voltage from a reference;

coupling said correction signal to said current source for compensating said deviation; and



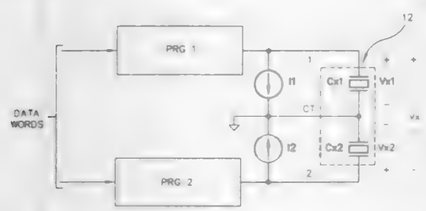
comparing the voltage on said ramp capacitor to first and second reference potentials, said ramp capacitor being coupled between the junction of said first and second current sources and ground and operating said second current source responsive to the results of said comparison and to said injected sync signal.

5,394,021

PIEZOELECTRIC TRANSDUCER DRIVE

Andrew J. Karpinski, 1715 Manchester Dr., Clearwater, Fla. 34616

Filed Dec. 18, 1992, Ser. No. 993,149
Int. Cl.[6] H03K *17/56, 5/12*
U.S. Cl. 327—108 18 Claims



1. Apparatus for applying a drive voltage to a piezoelectric transducer in a control system, said transducer having a first terminal and a second terminal, with said transducer drive voltage being the difference in a first voltage applied to said first terminal and a second voltage applied to said second terminal, comprising:

first pulse rate means for applying a first charge to said first terminal at a first rate;

means for removing said first charge from said first terminal at a second rate, with said transducer drive voltage increasing when an average of said first rate exceeds an average of said second rate;

second pulse rate means for applying a second charge to said second terminal at a third rate;

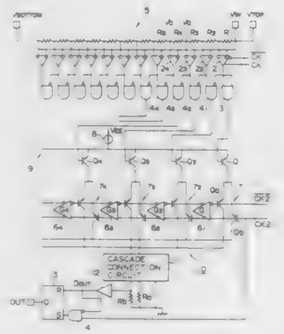
means for removing said second charge from said second terminal at a fourth rate, with said transducer drive voltage decreasing when an average of said third rate exceeds an average of said fourth rate.

5,394,022

PULSE WIDTH MODULATION CIRCUIT APPARATUS

Daisuke Murakami, and Hideki Yoshida, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Dec. 30, 1992, Ser. No. 998,687
Claims priority, application Japan, Jan. 8, 1992, 4-020540
Int. Cl.[6] H03K *5/159, 5/04, 5/13*
U.S. Cl. 327—176 10 Claims



1. A pulse width modulation circuit apparatus comprising:

an analog-to-dialog converter for converting an input analog signal to an input digital signal;

a plurality of delay gates connected in cascade fashion, each of the delay gates delaying an input clock signal by a same delay time;

a respective plurality of delay circuits provided interposingly between said plurality of delay gates, one of the delay circuits producing as a common output thereof a delayed clock signal from its corresponding delay gate;

a respective plurality of signal output circuits connected to said plurality of delay circuits;

a switch circuit for selecting one of said signal output circuits in accordance with the digital input signal from said analog-to-digital converter and for selecting said one delay circuit;

a pulse generation circuit for generating a pulse signal of which the pulse width corresponds to a period from when said input clock signal is supplied to said delay gates until said delayed clock signal is produced by said one delay circuit;

logic operation means for logically operating on said input clock signal in accordance with the output signal from said plurality of delay gates; and

control means for controlling the amount of delay of said plurality of delay gates by integrating the output signal from said logic operation means.

5,394,023

CIRCUIT ARRANGEMENT FOR GENRATING SQUARE-SHAPED SIGNALS

Günter Gleim; Friedrich Heizmann, and Hermann Link, all of Villingen-Schwenningen, Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

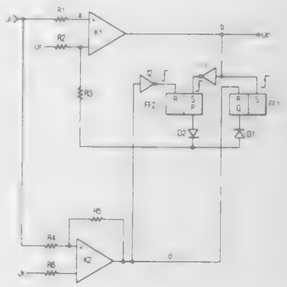
Filed May 14, 1993, Ser. No. 61,359
Claims priority, application Germany, May 15, 1992, 4215811; May 18, 1992, 4216022
Int. Cl.[6] H03K *5/01, 5/153*
U.S. Cl. 327—73 9 Claims

1. A circuit for generating square-shaped signals, comprising:

a source of a first input signal having successive zero amplitude crossings;

a first comparator for generating a first bilevel output signal responsive to said first input signal, said first comparator having a hysteresis characteristic which can be switched on and off, said hysteresis being switched on at each said zero crossing of said first input signal and being switched off prior to each occurrence of the next following zero crossing;

a source of a second input signal having successive zero



amplitude crossings and displaced in phase relative to said first input signal; and,

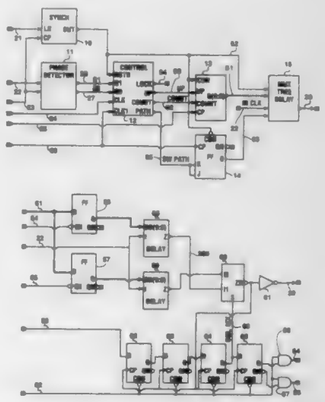
a second comparator for generating a second bilevel output signal responsive to said second input signal, said hysteresis characteristic being switched on by level transitions of said first bilevel output signal and being switched off by level transitions of said second bilevel output signal.

5,394,024

CIRCUIT FOR ELIMINATING OFF-CHIP TO ON-CHIP CLOCK SKEW

Karl C. Buckenmaier, Somerville, and Richard M. Strong, Pittsburgh, both of Mass., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 17, 1992, Ser. No. 991,769
Int. Cl.[6] H03K *5/13, 5/14*
U.S. Cl. 327—160 14 Claims



1. A circuit on an integrated circuit for eliminating clock skew between an off-chip clock signal originating off the integrated circuit and an on-chip clock signal produced on the integrated circuit, the circuit comprising:

phase delay means for receiving the off-chip clock signal and phase delaying the off-chip-clock signal an amount to produce the on-chip clock signal, the phase delay means including

a first delay path for phase delaying the off-chip clock signal the amount of phase delay, phase delay through the first delay path being adjustable,

a second delay path for phase delaying the off-chip clock signal the amount of phase delay, phase delay through the second delay path being adjustable, the off-chip clock signal being phased delayed an identical amount at an output of the first delay path as at an output of the second delay path, except when phase delay through the first delay path or through the second delay path is being adjusted, and

selection means, coupled to the first delay path and the second delay path for selecting one of the first delay path and the second delay path to produce the on-chip clock signal; and,

phase detector means, coupled to the phase delay means, for receiving the off-chip clock signal and the on-chip clock signal and generating control signals which indicate, based on phase difference between the off-chip clock signal and the on-chip clock signal, whether and how to adjust the amount of phase delay by which the first delay path and the second delay path delays the off-chip clock signal to produce the on-chip clock signal;

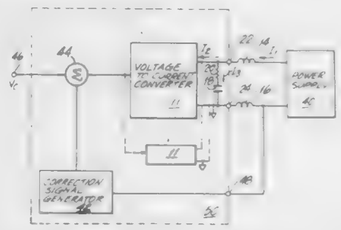
wherein when phase delay through the first delay path is adjusted, the selection means selects the second delay path and when phase delay through the second delay path is adjusted the selection means selects the first delay path.

5,394,025

STABILIZATION OF MOS-FET TYPE VOLTAGE TO CURRENT CONVERTERS

Joseph V. Pierson, Tucson, Ariz., assignor to Lambda Electronics, Inc., Tucson, Ariz.

Filed May 28, 1993, Ser. No. 69,228
Int. Cl.[6] H03K *3/01, 5/153;* G06G *7/12, 7/00*
U.S. Cl. 327—530 14 Claims



1. A power dissipation system for testing a power supply having first and second output terminals using test conductors having inductive properties, said power dissipation system comprising:

(1) a closed loop voltage to current converter with first and second load terminals for connection via said test conductors to said tested power supply;

(2) a circuit having a capacitance connected across said first and second load terminals;

(3) a correction signal generator responsive to said power supply, said correction signal generator providing an output signal as a function of voltage generated across one of said first or second inductances; and

(4) a summing circuit responsive to said output signal of said correction signal generator and further responsive to a command signal, the output of said summing circuit controlling the current flow of said voltage to current converter.

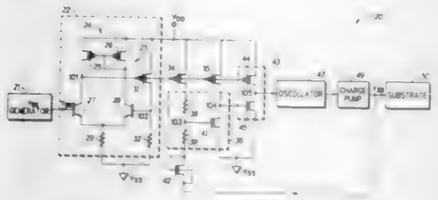
VOL 1171 ISS 4 FE 28 1995 UMI

5,394,026

SUBSTRATE BIAS GENERATING CIRCUIT

Ruey I. Yu, and Mark D. Bader, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Feb. 2, 1993, Ser. No. 12,496
Int. Cl.[6] H03K *3/01*
U.S. Cl. 327—536 15 Claims



1. A substrate bias generating circuit for providing a substrate bias voltage, comprising:

a voltage-to-current converter circuit having an input terminal for receiving a bandgap generated reference voltage, and in response, generating a reference current proportional to said bandgap generated reference voltage;

a first current source having a first terminal coupled to a first power supply voltage terminal, and a second terminal, said first current source for providing a first current proportional to said reference current;

a second current source having a first terminal coupled to said first power supply voltage terminal, and a second terminal, said second current source for providing a second current proportional to said reference current;

a voltage level sensing circuit, comprising:

a first resistor having a first terminal coupled to said second terminal of said first current source, and a second terminal;

a second resistor having a first terminal coupled to said second terminal of said first resistor, and a second terminal;

a first N-channel transistor having a first current electrode coupled to said second terminal of said second current source, a control electrode coupled to said second terminal of said first resistor, and a second current electrode coupled to a second power supply voltage terminal; and

a second N-channel transistor having a first current electrode coupled to said second terminal of said second resistor, a control electrode coupled to said second terminal of said second resistor, and a second current electrode for receiving said substrate bias voltage said second N-channel transistor for compensating for temperature and process variations of said first N-channel transistor;

an oscillator having an input terminal coupled to said voltage level sensing circuit, and an output terminal for producing a series of pulses at a predetermined frequency; and

a charge pump having an input terminal coupled said output terminal of said oscillator, for receiving said series of pulses, and for providing said substrate bias voltage.

5,394,027

HIGH VOLTAGE CHARGE PUMP AND RELATED CIRCUITRY

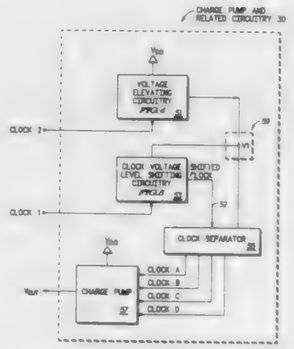
David K. Park, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 1, 1993, Ser. No. 144,361
Int. Cl.[6] G05F *3/16*
U.S. Cl. 327—536 20 Claims

1. A circuit for generating an output voltage, comprising:

voltage elevating means (51) for receiving an input voltage having a first predetermined voltage level and for providing an intermediate voltage having a second predetermined voltage level, wherein the second predetermined voltage level is higher potential than the first predetermined voltage level;

clock voltage level shifting means (53) for receiving a first input clock signal having a maximum voltage level substantially equal to the first predetermined voltage level, for receiving the intermediate voltage, and for providing a shifted clock signal having a maximum voltage level substantially equal to the second predetermined voltage level, said clock voltage level shifting means being coupled to said voltage elevating means;



clock separating means (55) for receiving the shifted clock signal, for receiving the intermediate voltage, and for providing at least one output clock signal, said clock separating means being coupled to said voltage elevating means and to said clock voltage level shifting means; and

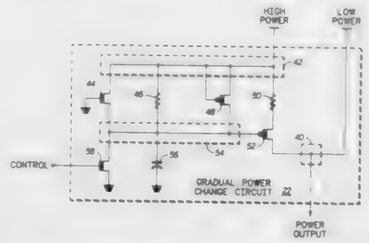
charge pump circuitry (57) for receiving the at least one output clock signal and for providing the output voltage having a third predetermined voltage level, wherein the third predetermined voltage level is higher potential than the second predetermined voltage level, said charge pump circuitry being coupled to said clock separating means.

5,394,028

APPARATUS FOR TRANSITIONING BETWEEN POWER SUPPLY LEVELS

James R. Feddeler, and Kenneth R. Burch, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 26, 1992, Ser. No. 904,430
Int. Cl.[6] G05F *3/16*
U.S. Cl. 327—544 19 Claims



1. A circuit for transitioning between power supply levels, comprising:

a first input power supply terminal for receiving a first power supply level;

a second input power supply terminal for receiving a second power supply level;

a third input power supply terminal for receiving a third power supply level;

an output power supply terminal for providing primary power to operate a target circuit;

a control signal;

a control means for receiving said control signal and for determining, based upon said control signal, which one of said first and second input power supply levels to provide at said output power supply terminal; and

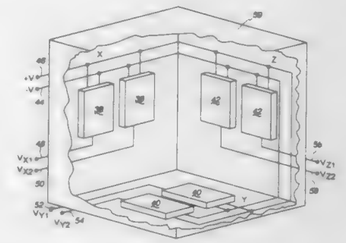
a circuit means for smoothly and gradually transitioning from providing said first input power supply level to providing said second input power supply level at said output power supply terminal, said circuit means transitioning in response to said control means, said circuit means being coupled to said first input power supply terminal, said second input power supply terminal, said third input power supply terminal, said output power supply terminal, and said control means.

5,394,029

GEOMAGNETIC ORIENTATION SENSOR, MEANS, AND SYSTEM

John C. Gay, 232 Galispi Rd., Monroe, La. 71202, and Billy R. Smith, 1713 Filhoil, Apt. B, Monroe, La. 71203

Filed Feb. 17, 1993, Ser. No. 18,872
Int. Cl.[6] G01C *21/00;* H03K *17/90*
U.S. Cl. 327—511 15 Claims



1. A geomagnetic orientation sensor apparatus for generating three sets of voltage differentials representing the angular displacement of the geomagnetic flux with respect to said sensor apparatus comprising:

(a) a plurality of Hall voltage generating means arranged in three groups such that each of said groups is mutually orthogonal.

(b) a set of electrical connections to each of said groups by which a plurality of opposing currents may flow in opposite directions through each of said groups.

(c) electrical connections to each of said groups such that three sets of voltage differentials may be detected by an electronic amplifying means.

5,394,030

PROGRAMMABLE LOGIC DEVICE

Earle W. Jennings, III, Richardson, Tex., and George H. Landers, Mountain View, Calif., assignors to Infinite Technology Corporation, Richardson, Tex.

Filed Nov. 10, 1992, Ser. No. 972,993
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—41 26 Claims

1. A programmable logic device including a plurality of groups of AND logic function gates, each AND logic function gate having a plurality of inputs, the AND logic function gates in each group having respective outputs coupled to inputs of a logic OR function output gate associated with that AND logic function gate group;

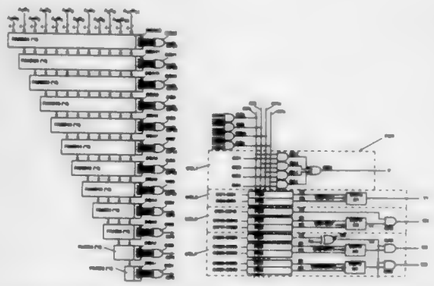
each of said plurality of said AND logic function gate groups including individual output AND logic function gates having inputs that are programmable by respective programmable logic function generators (PLFG) of a set of PLFGs operatively associated with that output AND logic function gate;

each PLFG having one or more sets of logic input groups and including means for generating from each logic input group, an output logic signal comprising any logic function of that logic input group according to programmable control inputs applied to said first PLFG,

each set of PLFGs coupled to supply PLFG outputs to the output AND logic function gate associated with that set of PLFGs;

wherein the PLFGs in any set of PLFGs receive the same sets of logic input groups; and

an output stage coupled to generate an output under control of outputs from said logic OR function gates, said output stage including a Boolean function generator (BLFG) comprising:



means for generating an output signal representing any logic function of a plurality of first logic inputs according to second inputs to said BLFG; a plurality of logic cells having outputs coupled to said BLFG to supply said second inputs according to logic inputs to said logic cells; and

a plurality of programmable OR logic function generators each having:

an output coupled to supply one of said first logic inputs to said BLFG, a plurality of inputs coupled to respective outputs of a plurality of said logic OR function output gates, and control inputs to receive signals to programmably couple signals from said logic OR function output gates to said logic OR function generator output.

5,394,031

APPARATUS AND METHOD TO IMPROVE PROGRAMMING SPEED OF FIELD PROGRAMMABLE GATE ARRAYS

Barry K. Britton, Schnecksville, and Wai-Bor Leung, Wescosville, both of Pa., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 8, 1993, Ser. No. 163,952
Int. Cl.[6] H03K *19/173*
U.S. Cl. 326—38 9 Claims

1. In a Field Programmable Gate Array, a shift register for transferring data bits in a configuration bitstream to a programmable switching array, the shift register able to shift more than one bit per clock cycle, the shift register comprising:

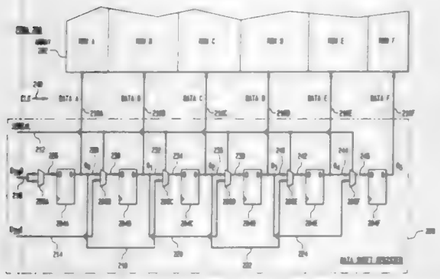
M flip-flops connected in series, where M is an integer greater than two; and

data flow means, coupled to said flip-flops, having a first operation mode and a second operation mode, for:

(A) serially receiving one bit of the configuration bitstream and for transferring said configuration bitstream one bit at a time through said M flip-flops while in said first operation mode, and

(B) receiving N bits of the configuration bitstream and for

transferring each bit of the configuration bitstream through said M flip-flops N bits at a time while in said



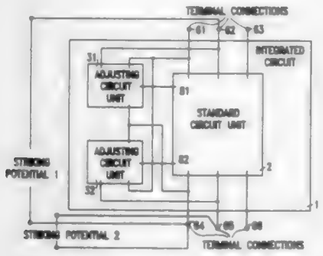
second operation mode, where N is an integer greater than one and less than M.

5,394,032

PROGRAMMING DETAILS OF A PROGRAMMABLE CIRCUIT

Gerhard Conzelmann, Leinfelden-Oberaichen; Gerhard Fiedler, Neckartailfingen, and Ulrich Fleischer, Pliezhausen, all of Germany, assignors to Robert Bosch GmbH

Filed Feb. 10, 1993, Ser. No. 15,747
Claims priority, application Germany, Mar. 7, 1992, 4207226
Int. Cl.[6] H01L *25/00*
U.S. Cl. 326—38 14 Claims



1. An integrated circuit comprising:
at least one adjusting circuit unit with at least one circuit element;
at least one standard circuit unit;
at least two terminal connections coupled to the at least one adjusting circuit unit and the standard circuit unit; and
the adjusting circuit unit including means for short-circuiting the at least one circuit element to adjust at least one of a characteristic value and a function of the standard circuit unit in response to a striking potential applied to the terminal connections.

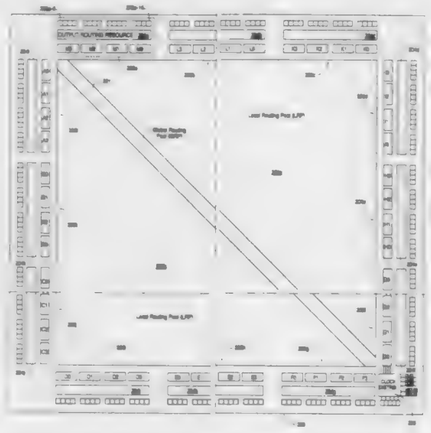
5,394,033

STRUCTURE AND METHOD FOR IMPLEMENTING HIERARCHICAL ROUTING POOLS IN A PROGRAMMABLE LOGIC CIRCUIT

Cyrus Y. Tsui, Los Altos; Ju Shen, Saratoga; Chanchi J. Cheng, San Jose, and Ming C. Hsu, San Ramon, all of Calif., assignors to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Filed Sep. 1, 1993, Ser. No. 115,723
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—41 12 Claims

1. In a complex PLD, a programmable interconnection system for interconnecting programmable logic blocks comprising:
a first programmable interconnection circuit for interconnecting a first group of programmable logic blocks, said first programmable interconnection circuit providing substantially the same delay between any two programmable logic blocks within said first group;
a second programmable interconnection circuit for interconnecting a second group of programmable logic blocks,



said second group of programmable logic blocks being separate and distinct from said first group of programmable logic blocks, said second programmable interconnection circuit providing substantially the same delay between any two programmable logic blocks within said second group; and
a third programmable interconnection circuit for interconnecting said first and second programmable interconnection circuits.

5,394,034

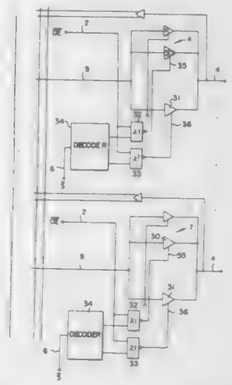
PROGRAMMABLE LOGIC ARRAY HAVING PROGRAMMABLE OUTPUT DRIVER DRIVE CAPACITY

Steffen Becker, Zorneding; Doris Schmitt-Landsiedel, Ottobrunn, and Doris Keitel-Schulz, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 27, 1993, Ser. No. 98,229
Claims priority, application Germany, Jul. 27, 1992, 4224804
Int. Cl.[6] H03K *19/092, 19/173*
U.S. Cl. 326—39 8 Claims

1. A programmable logic array comprising:
configurable logic cells disposed in lines and columns,
each of said logic cells having signal inputs, control inputs, at least one signal output, and an output driver circuit connected upstream of the at least one signal output,
said output driver circuit having a terminal for a first and a second supply potential and being connected to at least one of the control inputs, and
said output driver circuit being controllable for setting its driver capacity to a level other than zero, corresponding to a signal value, by means of a digital signal applied to the at least one control input; and
conductor tracks and switching elements for interconnecting said conductor tracks,

said switching elements and said conductor tracks connecting the at least one signal output of each of said



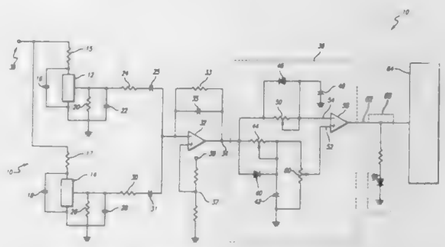
logic cells to at least one of the signal inputs of at least another one of said logic cells.

5,394,035

RATE OF CHANGE COMPARATOR

Brian E. Elwell, Brentwood, Calif., assignor to Novitas, Incorporated, Culver City, Calif.

Filed Aug. 25, 1993, Ser. No. 112,085
Int. Cl.[6] H03F *3/45;* H03K *5/22*
U.S. Cl. 327—72 24 Claims



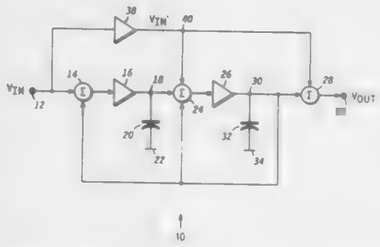
1. A comparator, comprising:
a fast charging circuit to produce a fast charging circuit voltage in response to an applied voltage signal having a variable rate of change, said fast charging circuit voltage increasing at a relatively fast charging rate when the applied voltage signal has a first polarity with respect to a reference voltage and decreasing at a relatively slower charging rate when the applied voltage signal has a second polarity with respect to the reference voltage;
a fast discharging circuit to produce a fast discharging circuit voltage in response to the applied voltage signal, said fast discharging circuit voltage increasing at a relatively slow discharging rate when the applied voltage signal has the first polarity and decreasing at a relatively faster discharging rate when the applied voltage signal has the second polarity; and
comparator means for comparing a first portion of said fast charging circuit voltage to a second portion of said fast discharging circuit voltage to produce an output signal when a change of the applied voltage signal exceeds a predetermined level.

5,394,036

CIRCUIT AND METHOD OF ZERO GENERATION IN A REAL-TIME FILTER

John E. Hanna, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 3, 1994, Ser. No. 176,971
Int. Cl.[6] H04B *1/10*
U.S. Cl. 327—552 13 Claims



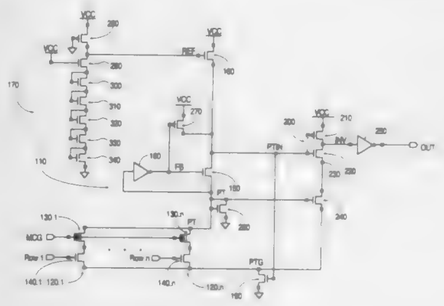
1. A filter circuit responsive to an input signal for providing an output signal, comprising:
first means for summing the input signal and a feedback signal for providing a first summation signal;
second means coupled for receiving said first summation signal for converting said first summation signal to a first current;
third means coupled for receiving said first current for integrating said first current and providing a first integrated voltage;
fourth means coupled for summing said first integrated voltage and an amplified input signal and said feedback signal for providing a second summation signal;
fifth means coupled for receiving said second summation signal for converting said second summation signal to a second current;
sixth means coupled for receiving said second current for integrating said second current and providing a second integrated voltage as said feedback signal; and
seventh means coupled for receiving said second integrated voltage for summing said second integrated voltage and said amplified input signal for providing the output signal of the filter circuit.

5,394,037

SENSE AMPLIFIERS AND SENSING METHODS

Gregg R. Josephson, Aloha, Oreg., and Mark E. Bauer, Cameron Park, Calif., assignors to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Filed Apr. 5, 1993, Ser. No. 42,533
Int. Cl.[6] H03F *1/08*
U.S. Cl. 327—51 38 Claims



1. A sense amplifier for sensing an impedance between a first

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terminal of an electrical circuitry and a second terminal Of the electrical circuitry, said sense amplifier comprising:

means for connecting said first terminal to a voltage V1;

a node for having a voltage indicative of said impedance between said first and second terminals;

means for connecting said node to said second terminal and for thereby connecting said node voltage V1 through said circuitry and through said means for connecting said first terminal to the voltage V1, so that the voltage on said node depends on said impedance between said first and second terminals;

means M1 for providing a conductive path C1 between said node and a voltage V2 different from V1; and

feedback means M2 connected to said node and said means M1, for controlling a current through said conductive path C1 so that, when said impedance between said first and second terminals decreases to cause the voltage on said node to move away from V2 towards V1, said means M2 increases an impedance of said conductive path C1 to reduce power consumption in said sense amplifier.

5,394,038

OUTPUT CIRCUIT COMPRISING BIPOLAR TRANSISTORS FOR DRIVING CMOS CIRCUIT TO REDUCE POWER CONSUMPTION OF THE OUTPUT CIRCUIT AND AVOID ERRONEOUS OPERATION OF THE CMOS CIRCUIT

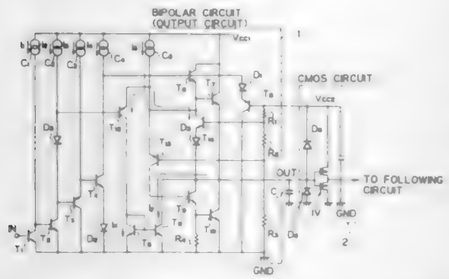
Mamoru Sobue, and Katsuya Shimizu, both of Kasugai, Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of Japan

Continuation of Ser. No. 93,655, Jul. 20, 1993, abandoned, which is a continuation of Ser. No. 850,825, Mar. 13, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 259,155

Claims priority, application Japan, Mar. 16, 1991, 3-051761

Int. Cl.[6] **H03K** *17/60, 5/00, 19/0175*

U.S. Cl. 327—432 **7 Claims**



1. An output circuit having a plurality of bipolar transistors for driving a CMIS circuit, wherein said output circuit comprises;

a high-potential power supply line;

a low-potential power supply line;

an output terminal for outputting a signal to said CMIS circuit;

output transistors connected in series, at a series connection node common to said output terminal, between said high-potential power supply line and said low-potential power supply line; and

an output level maintaining transistor connected between said output terminal of said output circuit and said low-potential power supply line, said output level maintaining transistor maintaining a level of said output terminal at a specific high potential by transmitting a current from said output terminal to said low-potential power supply line while said output circuit is outputting a high-level signal to said output terminal, and said output level maintaining transistor being cut OFF while said output circuit is outputting a low level signal to said output terminal.

5,394,039

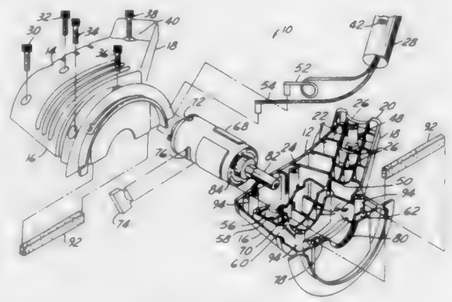
ELECTRIC MOTOR MOUNT HAVING VIBRATION DAMPING

Lakhbir S. Suchdev; Rory B. Bringhurst, both of Phoenix, and Michael Baker, Chandler, all of Ariz., assignors to Ryobi Outdoor Products Inc., Chandler, Ariz.

Filed Jan. 19, 1993, Ser. No. 5,641

Int. Cl.[6] **H02K** *5/24;* **B25D** *17/24*

U.S. Cl. 310—51 **24 Claims**



1. A mount for an electric motor comprising:

an external housing;

at least two motor support ribs integral with said housing for fixedly supporting the electric motor;

a damper chamber provided in said external housing circumscribing one end of the electric motor;

a resilient vibration damper disposed in said damper chamber resiliently engaging the electric motor adjacent to said one end to damp the vibration thereof.

5,394,040

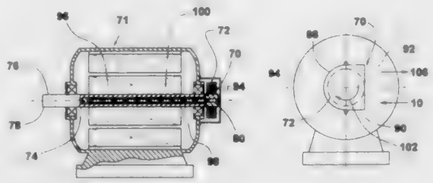
ELECTRIC MOTOR HAVING INTERNAL HEAT DISSIPATOR

Dinh Khanh, Gainsville, Fla., assignor to Heat Pipe Technology, Inc., Alachua, Fla.

Filed Sep. 7, 1993, Ser. No. 118,471

Int. Cl.[6] **H02K** *1/32, 9/06*

U.S. Cl. 310—64 **14 Claims**



1. A heat dissipator for an electric motor, said heat dissipator comprising:

A. a rotary shaft which is driven by said motor and which has a first portion in thermal communication with the interior of said motor and a second portion in thermal communication with a cooling fluid;

B. a rotor which is mounted on said second portion of said shaft to form an impeller, said impeller including

(1) a plurality of flat annular disks which are fixedly mounted on said shaft and which entrain said cooling fluid by friction upon rotation of said shaft and propel said cooling fluid generally transversely through said rotor, and

(2) a volute which encases said rotor and which has a radial inlet and a radial outlet, wherein said volute presents a gap which is formed adjacent an outer radial surface of said rotor, said gap

(A) extending less than the full circumferential length of said volute,

(B) having a radial distance which is less than the radial distances between the rotor and the remainder of said volute, and

(C) having a minimum width occurring generally along a single axial plane of said volute, wherein, when said shaft is rotated, cooling fluid flow through said gap forms a sub-ambient pressure zone the reduced fluid pressure of which draws said cooling fluid generally towards said gap, thereby enhancing operation of said rotor; and

C. a heat transfer mechanism, provided on said shaft, for dissipating heat from said motor to said cooling fluid under the control of said impeller.

5,394,041

ELECTRONICALLY COMMUTATED MOTOR FOR DUST EXHAUSTERS, VACUUM CLEANERS AND SIMILAR DEVICES

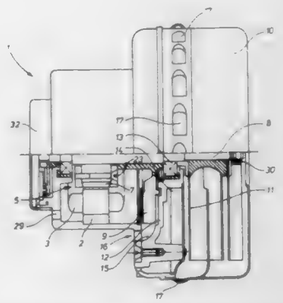
Rainer Oberdorfer-Bögel, Kirchberg, Germany, assignor to WAP Reinigungssysteme GmbH & Co., Germany

Continuation of Ser. No. 917,732, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 551,985, Jul. 12, 1990, abandoned. This application Apr. 4, 1994, Ser. No. 222,504

Claims priority, application Germany, Jul. 14, 1989, 3923267

Int. Cl.[6] **H02K** *5/18, 11/00, 21/12, 9/06*

U.S. Cl. 310—64 **12 Claims**



1. An electronically commutated motor, comprising:

a housing;

a shaft;

a main bearing supporting said shaft;

a bearing plate for removing heat from said main bearing and for dividing said housing into a rotor chamber and a turbine chamber;

rotor means mounted on said shaft in said rotor chamber;

stator means mounted in said rotor chamber surrounding said rotor means for causing rotation of said shaft and rotor means;

fan rotor means mounted on said shaft in said rotor chamber for drawing gas through a rotor chamber intake aperture past said bearing plate for heat transfer therefrom and for exhausting said gas through one or more rotor chamber exhaust apertures;

turbine means mounted on said shaft in said turbine chamber for drawing gas through a turbine chamber intake aperture past said bearing plate for heat transfer therefrom and for exhausting said gas through one or more turbine chamber exhaust apertures;

wherein said bearing plate is formed in one piece, separating said fan means from said turbine means, and has indentations and cutouts in a radially outward direction, into which gases from said fan means and said turbine means engage from their respective sides, thus cooling said bearing plate from both sides; and

wherein both said rotor chamber and turbine chamber exhaust apertures are positioned close to one another in connection with said bearing plate, thus allowing said bearing plate to be advantageously cooled.

5,394,042

ANGULAR POSITION HOMOPOLAR RELUCTANCE SENSOR

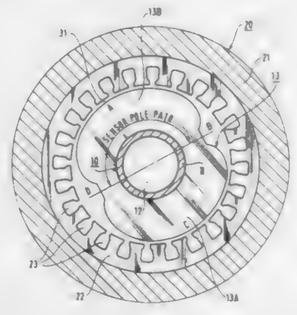
Jean-Francois Maestre, Dijon, France, assignor to GEC Alsthom SA, Paris, France

Filed Aug. 7, 1992, Ser. No. 925,632

Claims priority, application France, Aug. 9, 1991, 91 10174

Int. Cl.[6] **H02K** *11/00, 16/02*

U.S. Cl. 310—68 B **6 Claims**



1. In a homopolar reluctant sensor having a number of sensor pole pairs, and comprising:

a magnetic material rotor (**10**) having an axis (XX) of rotation and comprising a cylindrical body (**11**) having, at a first end, a coaxial laminated part (**13**) with a number of lobes (**13A**, **13B**) equal to said number of sensor pole pairs, and, at an opposite second end, a coaxial rotor ring (**14**); and

a coaxial magnetic material stator (**20**) comprising a cylindrical portion provided with an excitation coil (**35**) energized by an alternating current supply,

a first coaxial stator ring (**22**) having stator notches (**23**) and defining with said laminated part a first airgap (**31**), and

a coaxial smooth second ring (**24**) defining with said rotor ring (**14**) a second airgap (**32**),

wherein said stator notches (**23**) are provided with a stator winding (**41**, **42**) wound in such a manner that the voltage induced therein is sinusoidal and free of harmonics, and that the envelope of said voltage represents, apart from a phase-shift, an angular position of said rotor (**10**) relative to said stator (**20**).

5,394,043

HIGH SPEED BRUSHLESS MOTOR

Song-Ling Hsia, Carlsbad, Calif., assignor to American Precision Industries Inc., Buffalo, N.Y.

Filed Jun. 29, 1993, Ser. No. 84,569

Int. Cl.[6] **H02K** *7/08*

U.S. Cl. 310—90 **12 Claims**

1. A brushless d.c. motor comprising:

a) a housing;

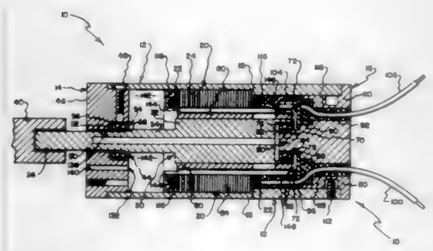
b) an annular stator coil structure within said housing;

c) a rotor concentric with said stator and comprising a one-piece body having a periphery and having an integral

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output shaft portion extending from one end thereof for connection to a mechanical load for driving the same and permanent magnet means on the periphery of said body operatively associated with said stator coil structure;

d) means for rotatably supporting said shaft portion in said housing;



e) a recess in the opposite end of said rotor body;

f) bearing means in said recess for rotatably supporting said rotor body; and

g) means for supporting said bearing means in said housing;

h) so that a rigid and vibration free structure is provided for operation of said motor at high speed.

5,394,044

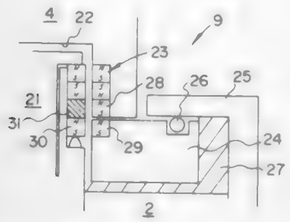
MAGNETIC BEARING DEVICE

Akira Yamamura, Tokyo, Japan, assignor to Nippon Ferrofluidics Corporation, Tokyo, Japan

Continuation of Ser. No. 780,565, Oct. 21, 1991, abandoned, which is a continuation of Ser. No. 461,220, Jan. 5, 1990, abandoned. This application Sep. 13, 1993, Ser. No. 119,528

Int. Cl.[6] H02K *7/09*

U.S. Cl. 310—90.5 **4 Claims**



1. A magnetic bearing device comprising:

an intermediate member oscillatably supported on a supporting member through a damping member;

magnetic coupling means for magnetically coupling said intermediate member and said supporting member; and

a rotary member rotatably supported on said intermediate member through a magnetic bearing having a portion imbedded within said rotary member and another portion imbedded within said intermediate member.

5,394,045

BRUSHLESS MOTOR

Isamu Takehara, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Jul. 22, 1993, Ser. No. 95,955

Claims priority, application Japan, Aug. 5, 1992, 4-209009

Int. Cl.[6] H02K *3/00*

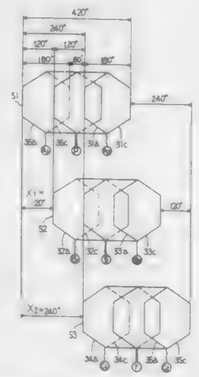
U.S. Cl. 310—184 **12 Claims**

1. A brushless motor comprising:

an armature coil unit comprising a plurality of coil blocks integrated with a casing; and

a rotor magnet integrated with an output shaft for rotatably supporting the rotor magnet and having an even number of poles;

wherein the armature coil unit comprises n number coil blocks superposed with one another, each coil block sharing a center angle of X_2+360/P degrees, respective coil blocks having displacement angles of $X_M=360\times M/n$ degrees relative to a reference one of the coil blocks



where M denotes a positive integer having a value within the range "1" to "n−1", n denotes a positive integer having a value of "3" or more, X_2 denotes a value of X_M when M=2 and P denotes a number of poles of the rotor magnet, and wherein the coil blocks are connected in series so as to form respective phases of the coil blocks such that the coil blocks of each phase can pass an electric current in a same direction.

5,394,046

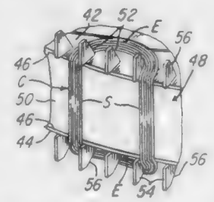
STATOR AND STATOR WINDING METHOD AND APPARATUS

Patrick A. Dolgas, Clermont County, Ohio, assignor to Globe Products Inc., Huber Heights, Ohio

Continuation-in-part of Ser. No. 950,262, Sep. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 948,399, Sep. 21, 1992, abandoned. This application Feb. 12, 1993, Ser. No. 17,111

Int. Cl.[6] H02K *1/12*

U.S. Cl. 310—254 **4 Claims**



1. A stator assembly for a permanent magnet motor comprising:

a stator core having a circular first end face and a circular second end face, said end faces having outer margins spaced by and joined to a cylindrical outer wall, said cylindrical outer wall having a center axis, said end faces being centered on a common axis which is coincident with the center axis of said cylindrical outer wall;

a first set of axially-outwardly projecting coil-retaining members mounted in mutually-spaced relation on the outer margin of said first end face;

a second set of axially-outwardly projecting coil-retaining members mounted on the outer margin of said second end face, with individual ones of said coil-retaining members of said second set being aligned with individual ones of said coil-retaining members of said first set; and

wound poles on said stator core formed from individual coils each having sides extending along said outer wall, a first end extending over said first end face and a second end extending over said second end face, and corners joining said sides and said first and second ends, said corners formed around aligned pairs of said first and said second set of coil-retaining members.

5,394,047

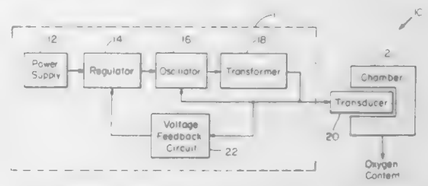
ULTRASONIC TRANSDUCER CONTROL SYSTEM

Ronald S. Scharlack, Brookline, and Wayne E. Marshall, Medway, both of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Feb. 12, 1993, Ser. No. 16,625

Int. Cl.[6] H01L *41/08;* **G03B** *27/76*

U.S. Cl. 310—316 **8 Claims**



1. A hemolyzer transducer control system, for providing a drive voltage to a transformer primary winding wherein the transformer secondary winding is coupled to an ultrasonic transducer having a transducer tip disposed in a hemolyzing chamber, said control system comprising:

a signal source for providing a drive signal;

a switch circuit, coupled to said signal source for alternately coupling first and second terminals of the transformer primary winding to a first reference potential in response to the drive signal;

a voltage regulator circuit having a first port coupled to the transformer primary winding; and

a feedback circuit, having a first terminal coupled between the transformer secondary winding and said voltage regulator circuit, for providing a control signal to provide the transducer tip having a predetermined tip motion amplitude.

5,394,048

HIGH-VOLTAGE GENERATOR

Tetsuji Yamashita, and Hitoshi Kawabata, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 23, 1993, Ser. No. 95,911

Claims priority, application Japan, Jul. 27, 1992, 4-199833

Int. Cl.[6] H01L *41/08*

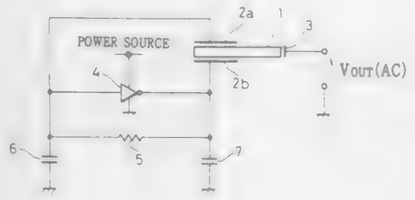
U.S. Cl. 310—316 **5 Claims**

1. A high-voltage generator employing a piezoelectric transformer, comprising:

a CMOS-IC inverter having input and output terminals connected to input terminals of the piezoelectric transformer, respectively;

a feedback resistor connected to the input terminals of the piezoelectric transformer in parallel with said CMOS-IC inverter;

first and second capacitors, said first capacitor being connected between the input terminal of said inverter and a ground, said second capacitor being connected between the output terminal of said inverter and the ground; and



a power source connected to said CMOS-IC inverter, so that said CMOS-IC inverter, feedback resistor, and first and second capacitors form a self oscillation circuit.

5,394,049

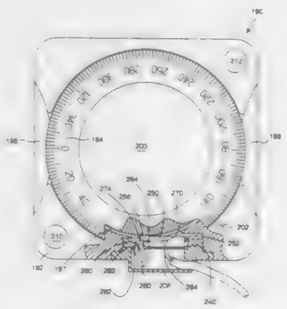
PIEZOELECTRIC ACTUATOR FOR OPTICAL ALIGNMENT SCREWS CROSS REFERENCES TO CO-PENDING APPLICATIONS

Francis S. Luecke, San Jose, Calif., assignor to New Focus, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 43,263, Apr. 6, 1993. This application Feb. 3, 1994, Ser. No. 191,089

Int. Cl.[6] H01L *41/09*

U.S. Cl. 310—328 **19 Claims**



1. A piezoelectric actuator for bi-directional movement of a movable stage comprising:

a. a fixed frame element having first and second opposing faces;

b. an elongate piezoelectric element having a first and second end portions;

c. said first face bearing against said first end portion of said piezoelectric element;

d. a drive pad affixed to said second end portion;

e. said drive pad having a retention means portion;

f. said drive pad additionally having a drive portion for frictional engagement with said movable stage; and,

g. spring bias means positioned between said second face and said drive pad retention means portion to urge said drive pad against said movable stage and to bias and retain said piezoelectric actuator in position against said first face.

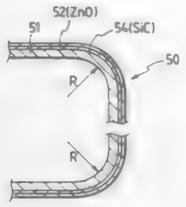
VOL 1171 ISS 4 FEB 28 1995 UMI

5,394,050

ELECTRIC DISCHARGE LAMP APPARATUS FOR LIGHT SOURCE OF AUTOMOTIVE LIGHTING DEVICE

Tomonori Aoyama, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,765
Claims priority, application Japan, Jul. 8, 1992, 4-180688
Int. Cl.[6] H01J *61/40*
U.S. Cl. 313—112 6 Claims



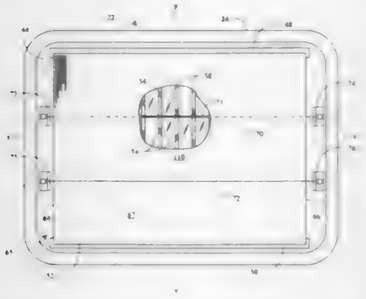
1. In an electric discharge lamp apparatus for use as a light source of an automotive lighting instrument in which an arc tube forming a light source body and mounted on an insulating base is at least partially surrounded by an ultraviolet-ray shielding globe in which a ZnO film is formed on the surface of a glass body of said globe, the improvement wherein an SiC film is formed on said ZnO film.

5,394,051

VIBRATION-DAMPING CONFIGURATION IN A STRIP SHADOW MASK

Martin L. Lerner, River Forest, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 28, 1992, Ser. No. 997,409
Int. Cl.[6] H01J *29/81*
U.S. Cl. 313—403 10 Claims



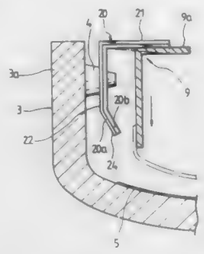
1. A tension shadow mask CRT front assembly, comprising:
a) a flat faceplate having a substantially striped imaging screen on its inner surface energized by an electron gun, with the long axis of the stripes in parallel with the y-axis of the faceplate;
b) a flat strip shadow mask having a screen side and an electron gun side;
c) a first wire and a second wire in parallel with the x-axis of the faceplate and in contact with the strips of the mask;
1) the first wire located on an electron gun side of the mask; and
2) the second wire located on a screen side of the mask;
whereby the two wires effectively dampen image-distorting strip vibration.

5,394,052

SHADOW MASK FRAME ASSEMBLY

Tae-Sik Oh, Buk, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed Jun. 8, 1992, Ser. No. 894,911
Claims priority, application Rep. of Korea, Jun. 8, 1991, 91-8415
Int. Cl.[6] H01J *29/07*
U.S. Cl. 313—405 14 Claims



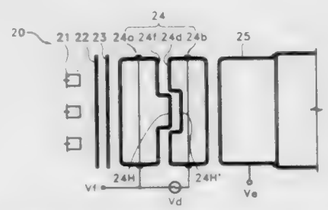
1. A shadow mask frame assembly comprising:
a shadow mask,
a frame fixed to said shadow mask,
a panel enclosing said shadow mask and said frame, said panel having an inner surface facing said shadow mask and said frame, and an outer surface;
a plurality of stud pins disposed on said panel; and
a plurality of hook springs fixed to said frame, each of said hook springs being coupled with a stud pin on an inner surface of said panel,
wherein said hook springs define a plate-like bimetal member having a high-expansion outer side and a low-expansion inner side, said hook spring being fixed on said frame in the direction of an electron beam axis, and said hook spring being nearly L-shaped, having a first portion defined as a fixing portion welded to said frame and a second portion defined as a fitting portion having a fitting hole into which a stud pin disposed on the inner surface of said panel is fitted.

5,394,053

ELECTRON GUN FOR A COLOR CATHODE RAY TUBE

Neung-yong Yun, Seoul, Rep. of Korea, assignor to Samsung Electron Devices, Kyungki, Rep. of Korea

Filed Dec. 17, 1992, Ser. No. 992,872
Claims priority, application Rep. of Korea, Dec. 17, 1991, 91-23271
Int. Cl.[6] H01J *29/51*
U.S. Cl. 313—414 7 Claims



1. An electron gun for a color cathode ray tube comprising:
a cathode emitting red, green and blue electron beams, a control electrode, a screen electrode, a focus electrode and a final accelerating electrode, each of said screen, control and focus electrode having three in-line electron beam passing holes, [are sequentially arranged at predetermined distances by a supporting means, said electron gun

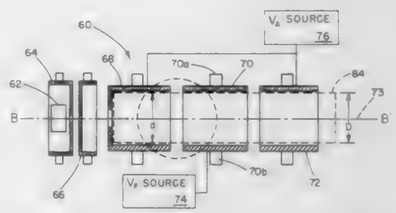
said focus electrode including a first member having an electron beam inlet plane including three in-line electron beam passing holes and said focus electrode including a second member having an electron beam outlet plane including three in-line electron beam passing holes, wherein the electron beam inlet plane of the first member includes a central housing portion having a central electron beam passing hole, the central portion of the first member being convex with respect to outer portions of the first member and the electron beam outlet plane of the second member including a central housing portion having a central electron beam passing hole, the central portion of the second member being concave with respect to outer portions of the second member.

5,394,054

ELECTRON GUN WITH ELECTROSTATIC SHIELDING AND METHOD OF ASSEMBLY THEREFOR

Hsing-Yao Chen, Barrington, Ill., and Sen-Su Tsai, Taoyuan, Taiwan, Prov. of China, assignors to Chunghwa Picture Tubes, Ltd., Yangmei, Taiwan, Prov. of China

Filed Jul. 19, 1993, Ser. No. 92,961
Int. Cl.[6] H01J *29/51*
U.S. Cl. 313—414 16 Claims



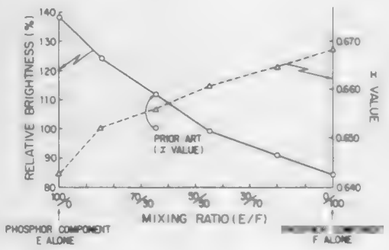
1. For use in a cathode ray tube (CRT) wherein a beam of energetic electrons is directed onto phosphor elements disposed on an inner surface of a faceplate for forming a video image on said faceplate, a main lens for focusing said electron beam on said faceplate, said main lens comprising:
first and second cylindrical hollow grids disposed in a spaced manner along the electron beam and having respective longitudinal axes coincident with an axis of the electron beam, wherein said first and second grids are charged to an accelerating voltage V_A and wherein said first and second grids each include facing end portions respectively having a same thickness T; and
a third cylindrical hollow grid disposed intermediate said first and a second grids and having a longitudinal axis coincident with the axis of the electron beam, wherein said third grid is charged to a focusing voltage V_F, where $V_A > V_F$, and wherein said third grid includes first and second end portions respectively disposed adjacent to said facing end portions of said first and second grids and having said thickness T, and wherein said first and second end portions of said third grid are disposed a distance L along said electron beam axis from the facing end portions of said first and second grids, respectively, wherein said first, second and third grids have a same diameter D wherein $3.0 \geqq T/L \geqq 0.75$.

5,394,055

COLOR PICTURE TUBE WITH THE FLUORESCENT FILM OF THE RED EMISSION COMPONENT HAVING A MIXTURE OF EUROPIUM ACTIVATED RARE EARTH OXIDE PHOSPHORS

Hideo Tono, Odawara, and Masaru Naito, Isehara, both of Japan, assignors to Kasei Optonix, Tokyo, Japan

PCT No. PCT/JP92/00309, § 371 Date Nov. 16, 1992, § 102(e) Date Nov. 16, 1992, PCT Pub. No. WO92/16598, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 13, 1992, Ser. No. 946,453
Claims priority, application Japan, Mar. 14, 1991, 3-049683
Int. Cl.[6] H01J *29/20*; C09K *11/08*
U.S. Cl. 313—467 14 Claims



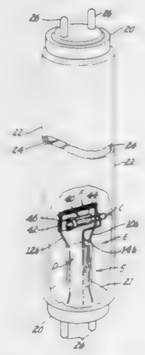
1. A color picture tube comprising a face plate on which dot-shaped or stripe-shaped fluorescent films of blue, green and red emission components are respectively formed, characterized in that the fluorescent film of the red emission component is formed of a red emission composition comprising a mixture of an europium activated rare earth, oxide phosphor having an x value of 0.630 to 0.652 in CIE Chromaticity Representation and an europium activated rare earth oxysulfide phosphor having an x value of 0.652 to 0.674 in CIE Chromaticity Representation, said red emission composition having an x value of 0.647 to 0.662 in CIE Chromaticity Representation.

5,394,056

OPENING OF CAPSULE INSIDE SEALED LAMP

Roger A. Forman, Macedonia, Ohio, and Eric G. Thaler, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 7, 1993, Ser. No. 43,919
Int. Cl.[6] H01J *61/24*
U.S. Cl. 313—547 14 Claims



1. An apparatus for releasing a predetermined amount of a substance in a sealed arc discharge lamp having first and second electrical lead wires for supplying current from a location

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outside the lamp into a sealed housing thereof, the apparatus comprising:

a capsule having a chamber defined therein;

a predetermined amount of a substance originally disposed in said capsule chamber for subsequent release into the housing;

a cutting means adjacent said capsule for melting and opening said capsule in response to current selectively supplied thereto to release said substance in said capsule chamber into the housing; and

a temperature sensitive means connected to the capsule for urging said capsule and said cutting means apart in response to an elevated temperature.

5,394,057

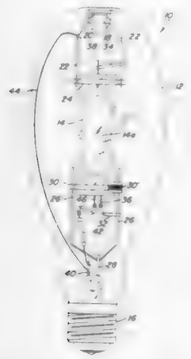
PROTECTIVE METAL SILICATE COATING FOR A METAL HALIDE ARC DISCHARGE LAMP

Timothy D. Russell, Cleveland Heights; Curtis E. Scott, Mentor; Charles N. Stewart, Chagrin Falls; Ranajit K. Datta, Cleveland; Mary S. Kaliszewski, Cleveland Heights, and Paul G. Mathews, Chesterland, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 7, 1992, Ser. No. 927,105

Int. Cl.[6] H01J *61/35, 17/16*

U.S. Cl. 313—635 3 Claims



1. A metal halide arc discharge lamp assembly, comprising:

an arc tube of fused silica for containing a plasma arc discharge, having a scandium silicate coating fused to the inner surface of the arc tube, the scandium silicate coating being vitreous and light-transmissive;

a scandium iodide fill disposed in the arc tube and including a sodium halide, at least one additional metal halide, and an inert starting gas;

and means for starting and sustaining an arc discharge.

5,394,058

GAS DISCHARGE LAMP HAVING A WATER VAPOR ENRICHED FILL

Andrezej M. Rolski, Kriftel, and Michael Zöchbauer, Oberursel, both of Germany, assignors to Hartmann & Braun, Hanover, Germany

Filed Nov. 16, 1992, Ser. No. 976,473

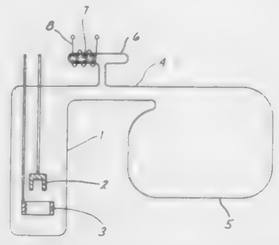
Claims priority, application Germany, Nov. 22, 1991, 4138425

Int. Cl.[6] H01J *17/00, 61/10*

U.S. Cl. 313—637 8 Claims

1. A sealed gas discharge lamp having a cathode and an anode in an enclosure that is filled with a low pressure nitrogen oxygen mixture, the improvement comprising:

the nitrogen oxygen mixture being enriched with water vapor;



a storage medium included in the lamp for storing water vapor and releasing the water vapor as the pressure in the enclosure of the lamp drops.

5,394,059

METALLIC VAPOR DISCHARGE LAMP AND A METHOD FOR CURING PAINTS AND INKS THEREWITH

Masachika Ohyama, Himeji; Tetsuo Fuse, Kurashiki; Motohiro Sakai, and Kazuyuki Mori, both of Himeji, all of Japan, assignors to Oshiodenki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1992, Ser. No. 978,565

Claims priority, application Japan, Nov. 21, 1991, 3-331610

Int. Cl.[6] H01J *61/18, 61/20*

U.S. Cl. 313—639 4 Claims



1. A metal vapor discharge lamp comprising an arc tube in which mercury, iron, at least one halogen and rare gas are sealed, wherein the sealed arc tube further contains at least one metal selected from a group consisting of tin (Sn), magnesium (Mg), bismuth (Bi), thallium (Tl), cadmium (Cd) and manganese (Mn), and the at least one halogen comprises bromine (Br) in an amount of at least 0.26 percent by weight of the total at least one halogen.

5,394,060

INCLINED GETTER STRUCTURE FOR A MAGNETRON

Yong G. Yoon, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 10, 1992, Ser. No. 988,527

Claims priority, application Rep. of Korea, Dec. 17, 1991, 91-22620

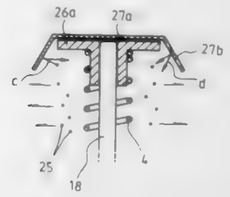
Int. Cl.[6] H01J *23/05, 25/50*

U.S. Cl. 315—39.51 5 Claims

4. A getter-end shield combination supporting a cathode, said getter-end shield combination comprising:

an upper end shield having a "T" shape cross-sectional area and having an upper flat portion with first and second shield edges; and

a getter disposed on the upper flat portion of said upper end shield, said getter having a getter flat portion with first and second end edges respectively corresponding to the first and second shield edges of the upper flat portion of said upper end shield, and said getter having inclined portions extending diagonally downward from the first and second end edges of the getter flat portion defining an



acute angle with respect to the upper flat portion of said upper end shield.

5,394,061

HIGH FREQUENCY PLASMA POWER SOURCE AND IMPEDANCE MATCHING DEVICE FOR SUPPLYING POWER TO A SEMICONDUCTOR PROCESSING APPARATUS

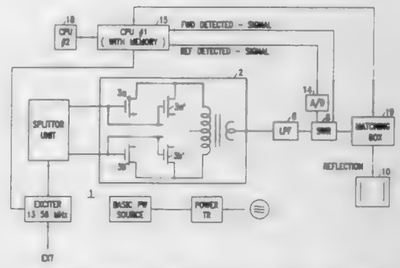
Syuitsu Fujii, Hiroshima, Japan, assignor to Adtec Co., Ltd., Hiroshima, Japan

Filed May 5, 1993, Ser. No. 57,675

Claims priority, application Japan, Jan. 14, 1993, 5-021734

Int. Cl.[6] H01J *7/24*

U.S. Cl. 315—111.21 3 Claims



1. In a high frequency plasma power supply consisting of a final stage push-pull amplifier with each phase having a parallel combination of at least two FETs, an output transformer having the Connection of the phase outputs of said push-pull amplifier to the opposite terminals of a primary winding with a neutral tap, and a low pass filter allowing passage of substantially the fundamental frequency component from the secondary winging output of said output transformer, the high frequency power passing through said low pass filter being supplied between the electrodes of a plasma chamber through an impedance matching circuit having an impedance adjusting mechanism,

a high frequency plasma power supply and impedance matching device characterized in that the dc voltage Vds to be applied between the drain and source of each FET of each phase of said push-pull amplifier is adjusted to not more than about 30% of a dc rated voltage and the turn ratio of said output transformer is greater than the turn ratio which was adopted when said Vds was about 50% of the dc absolute rated value, so as to generate the same high frequency voltage on the secondary side as when said Vds was about 50%, thereby supplying the power necessary for plasma reaction, and

in that an arithmetic section comprising a CPU and a storage device is installed to compute the plasma ignition level of high frequency power supplied between the electrodes of said plasma chamber by using parameters set according to the kind, flow rate and temperature of raw gas to be fed to said plasma chamber or material to be plasma-processed, thereby making it possible to compute and set the operation start position of said impedance adjusting mechanism in such a manner that in order to ensure that the high frequency power to be supplied between the electrodes of said plasma chamber is gradually elevated from the ignition level to the set power ignition level without providing the dark current sweep period extending from the zero level to the ignition level via the dark current level, the power output impedance including said impedance matching circuit is equal to the impedance of the plasma chamber at said ignition level.

5,394,062

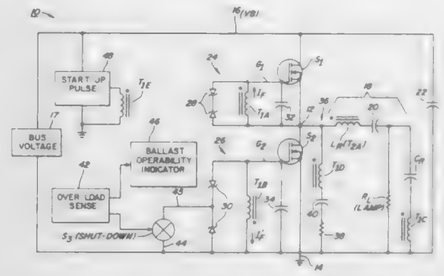
LAMP BALLAST CIRCUIT WITH OVERLOAD DETECTION AND BALLAST OPERABILITY INDICATION FEATURES

Michael M. Minarczyk; Louis R. Nerone, both of Brecksville; Joseph C. Oberle, Chagrin Falls; Brian M. Ronald, Hudson; Clarence J. Harsa, Broadview Heights, and Edward J. Thomas, Streetsboro, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 15, 1993, Ser. No. 167,749

Int. Cl.[6] H01J *1/60*

U.S. Cl. 315—129 19 Claims



1. A gas discharge lamp ballast circuit with an indicator of operability of the ballast circuit, said ballast circuit comprising:

(a) means for providing a d.c. bus voltage on a bus conductor with respect to a ground;

(b) a resonant load circuit including lamp terminals for connecting to a removable gas discharge lamp, a resonant inductor, and a resonant capacitor; said a resonant inductor, and a resonant capacitor; said resonant inductor and resonant capacitor being selected to set a magnitude, and resonant frequency, of a bidirectional current in the lamp;

(c) converter means including first and second serially connected switches coupled between said bus conductor and said ground, and providing to said resonant load circuit, at a node coupled between said first and second switches, a voltage that alternates between first and second voltage levels;

(d) means for generating first and second switch-control signals for alternately switching into conduction said first and second switches, including means responsive to a feedback signal representing a current in said resonant load circuit;

(e) overload detection means for detecting if voltage applied to said lamp terminals exceeds an overload level;

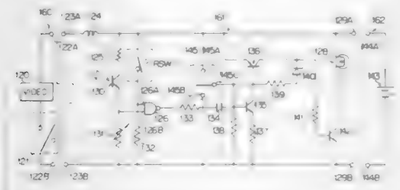
(f) means for indicating, in response to an overload condition being detected by said overload detection means, operability of the ballast circuit;

(g) wherein said overload detection circuit detects if any of the positive and negative excursions of voltage applied to said lamp terminals exceeds an overload level; and

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(h) wherein said overload detection circuit includes a first transformer winding coupled to detect current through said resonant load circuit, a second transformer winding, mutualiy coupled to said first transformer winding, and having an intermediate tap connected to said ground, and a full-wave rectifier coupled across respective ends of said second transformer winding.

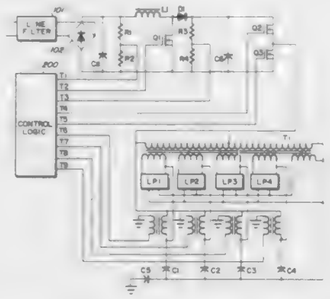
5,394,063
VIDEO LIGHT APPARATUS
Ryoji Nakazawa, Kanagawa, Japan, assignor to Sony Corporation, Japan
Continuation of Ser. No. 850,966, Mar. 11, 1992, abandoned. This application Nov. 5, 1993, Ser. No. 147,427
Claims priority, application Japan, Mar. 20, 1991, 3-081947; Mar. 22, 1991, 3-083299
Int. Cl.[6] H05B 39/02; G03B 15/00
U.S. Cl. 315—159 22 Claims



1. A video light apparatus comprising:
a light for lighting an object to be photographed by a video camera, said light being supplied with electric power from a battery which supplies electric power to the video camera;
a current detecting circuit for detecting a current consumption state of the video camera, the supply of the electric power to said light being controlled on the basis of an output signal of said current detecting circuit; and
an outer light amount detecting circuit including a variable threshold level circuit for establishing a variable threshold level and for detecting an outer light amount at the time of photographing by the video camera, said electric power to said light being controlled so as to be provided when said outer light amount is less than said variable threshold level.

5,394,064
ELECTRONIC BALLAST CIRCUIT FOR FLUORESCENT LAMPS
Krishnappa Ranganath, and Alexander Kurnia, both of Milwaukee, Wis., assignors to Micro-Technology Inc.-Wisconsin, Menomonee Falls, Wis.
Filed Oct. 15, 1993, Ser. No. 136,705
Int. Cl.[6] H05B 37/02
U.S. Cl. 315—209 R 11 Claims

1. An electronic ballast circuit for operation of a plurality of fluorescent lamps comprising:
rectifier means connected to a source of alternating current, operated to produce direct current;
a voltage boost converter connected to the output of said rectifier operated to provide a regulated voltage to an inverter circuit;
said inverter circuit operated to generate a square wave output to a plurality of resonant circuits through direct connection or by means of transformer isolation;
each of said resonant circuits connected to a fluorescent lamp to provide operating power to the connected lamp;
and a control circuit connected to the output of said rectifier and said boost converter, said control circuit operated in response to said converter and an error circuit including a driver having a pair of output circuit connections to said inverter further including an input connected to each of said resonant circuits, to control the amount of voltage to



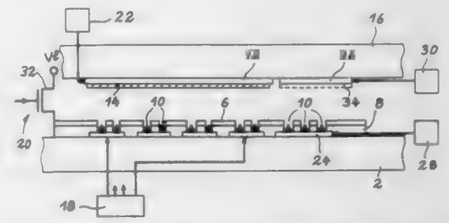
said inverter and to control the frequency of operation of said inverter.

5,394,065
CIRCUIT FOR SUPPLYING CURRENT TO A DISCHARGE TUBE
Phillip J. Rimmer, Walthamstow, Great Britain, assignor to Tunewell Technology Limited, London, England
Filed Nov. 9, 1992, Ser. No. 973,381
Int. Cl.[6] H05B 41/16
U.S. Cl. 315—277 22 Claims



1. An electrical arrangement, said arrangement comprising a circuit adapted to supply current to a discharge tube, the arrangement comprising a source of relatively low voltage alternating current, two transformers, each having a coupling factor in excess of 0.98, the transformers each being located adjacent an electrode of the discharge tube and being connected thereto, the source of low voltage alternating current being connected to said transformers so that said transformers provide an alternating high voltage current to the discharge tube, wherein the primary windings of the two transformers are connected in series.

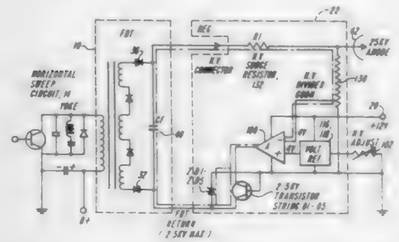
5,394,066
CATHODOLUMINESCENT SCREEN INCLUDING A MATRIX SOURCE OF ELECTRONS
Thierry Leroux, Ifs, France, assignor to Commissariat a l'Energie Atomique, France
Filed Feb. 19, 1993, Ser. No. 19,702
Claims priority, application France, Feb. 21, 1992, 92 02043
Int. Cl.[6] H01J 29/70, 29/72
U.S. Cl. 315—366 6 Claims



1. A cathodoluminescent screen including an electron matrix source and an opposing cathodoluminescent anode, the electron matrix source including:
first parallel electrodes defining columns which form cathodic conductors associated with microtips for emitting electrons,
second parallel electrodes defining rows which form grids that are electrically insulated from the columns and that are at an angle with the latter, wherein areas in which the rows and the columns cross form a first set of crossing zones, and
row control means for making the potential of the rows evolve up to a positive value Vl, wherein the screen further includes:
at least one additional electrode defining a zeroizing column parallel to the other columns and crossing all of the rows, the areas in which the rows and the zeroizing column Cross forming a second set of crossing zones, the zeroizing column also forming a cathodic conductor associated with microtips for emitting electrons,
means for controlling the zeroizing column and for bringing said zeroizing column to a negative potential so that, regardless of the potential of the rows crossed by this zeroizing column, electrons may be emitted in the second set of crossing zones of the zeroizing column and rows,
at least one additional anode defining a control anode located opposite the zeroizing column, and
means for polarizing the control anode and for raising the latter to a potential Vac that is lower than Vl, and
wherein the row control means includes a single corresponding output transistor for each row which is provided to raise each row to the potential Vl when its corresponding transistor is activated and to disconnect each row from the potential source Vl when its corresponding transistor is deactivated.

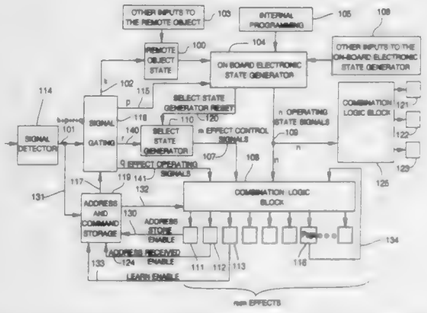
5,394,067
REGULATED HIGH DC VOLTAGE SUPPLY
William F. Santelmann, Jr., Lexington, Mass., assignor to Discom Inc., Westford, Mass.
Filed Mar. 27, 1992, Ser. No. 858,891
Int. Cl.[6] H01J 29/70
U.S. Cl. 315—411 4 Claims

1. A regulator for generating a regulated DC voltage output and adapted for use with a flyback transformer circuit, said regulator including a casing made of an electrically conductive material having a resistance of between about 10^3 and 10^7 ohm-cm so as to drain excess currents accumulating in said



material and prevent corona discharge from the accumulation of voltage in said material.

5,394,068
AUTOMATIC INITIALIZATION IN A MODEL RAILROAD MOTOR CONTROL SYSTEM
Frederick E. Severson, 945 SW. Perfecta Ave., Beaverton, Oreg. 97005, and Patrick A. Quinn, 20195 SW. Imperial Dr., Aloha, Oreg. 9700
Division of Ser. No. 480,078, Feb. 14, 1990, Pat. No. 5,184,048, which is a division of Ser. No. 37,721, Apr. 13, 1987, Pat. No. 4,914,431, which is a continuation-in-part of Ser. No. 672,397, Nov. 16, 1984, abandoned. This application Feb. 2, 1993, Ser. No. 12,364
Int. Cl.[6] H02P 3/00
U.S. Cl. 318—280 20 Claims



1. A reversing motor control circuit for driving a motor in a remote object on a track, the circuit comprising:
input means for receiving a track power signal from the track;
state means for indicating a present state that is one of a predetermined series of states including a forward state, a neutral state and a reverse state, the state means having a clock input for clocking the state means to indicate the next one of the series of states as the present state;
power control means coupled to the input means for controllably coupling the track power signal to the motor so as to control the motor according to the present state of the state means;
a reset timing means for resetting the state means to a selected one of the series of states upon completion of a predetermined reset period; and
a clocking timing means for clocking the state means to the next state upon completion of a predetermined clocking period;
the reset timing means and the clocking timing means each coupled to the input means to begin the reset period and begin the clocking period responsive to an interruption in

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the track power signal, whereby operation of the state means is controlled by interrupting the track power signal.

5,394,069

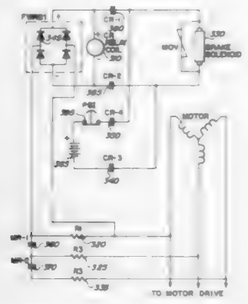
MECHANICAL BRAKE HOLD CIRCUIT FOR AN ELECTRIC MOTOR

Craig T. Danielson, Tucson; Gregory T. Kishi, Oro Valley; Michael P. McIntosh, Tucson; Hector E. Mery, Tucson, and Scott M. Rockwell, Tucson, all of Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 8, 1993, Ser. No. 28,066

Int. Cl.[6] H02P *3/16, 3/26*

U.S. Cl. 318—371 **8 Claims**



1. A dynamic braking circuit for an electric motor comprising:

a mechanical brake power supply having first and second terminals;

a first relay having first, second, third and fourth movable contacts and a coil, said coil having first and second terminals;

a brake solenoid having first and second terminals;

said first movable contact of said first relay being connected between said first terminal of said coil of said first relay and said first terminal of said brake solenoid;

said second movable contact of said first relay being connected between said second terminal of said coil of said first relay and said second terminal of said brake solenoid;

said third movable contact of said first relay being connected between said second terminal of said brake solenoid and said first terminal of said brake power supply;

said fourth movable contact of said first relay being connected between said first terminal of said brake solenoid and said second terminal of said brake power supply;

a first resistor having a first and second terminal and being connected to a conversion means and being further connected to said electric motor, and said conversion means being connected to said first relay.

5,394,070

SLIDING CONTACT MECHANICAL/ELECTRICAL DISPLACEMENT TRANSDUCER

Stephen C. Jacobsen; Michael G. Mladejovsky, and John E. Wood, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Division of Ser. No. 478,266, Feb. 12, 1990, Pat. No. 5,198,740, and a continuation-in-part of Ser. No. 417,181, Oct. 4, 1989, abandoned. This application Mar. 24, 1993, Ser. No. 990,369

Int. Cl.[6] G01R *29/12;* **H04R** *19/00*

U.S. Cl. 318—568.16 **21 Claims**

1. Displacement measuring apparatus comprising

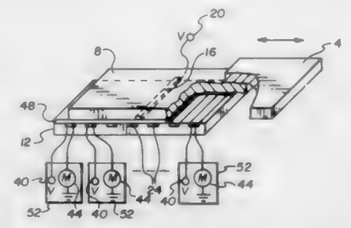
an object whose displacement is to be measured,

sensor means formed with at least one surface area and including means for producing an electrical output signal whose value varies with variations in proximity of a field producing element to said surface area,

a carrying member including the field-producing element, said carrying member facing said surface area and being configured to slide thereover when the object is moved to thereby change the proximity of the field-producing element to the surface area and thus vary the value of the output signal of said sensor means, and

insulative means disposed between the sensor means and the carrying member,

wherein said sensor means comprises a substrate having a



first surface area, and a generally circular array of detecting elements disposed at the first surface area for producing signals when the field-producing element is within a certain proximity of said detecting elements, and wherein said carrying member comprises a disk means disposed to rotate in sliding contact with the insulative coating as the object is moved to thereby carry the field-producing element in a path which traverses the array of detecting elements.

5,394,071

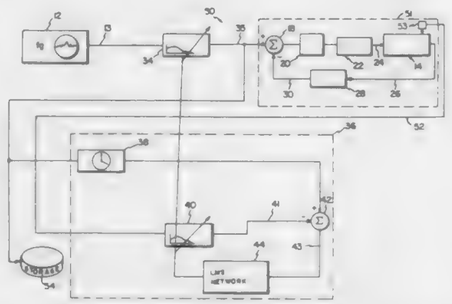
CONTROL NETWORK WITH ON-LINE ITERATION AND ADAPTIVE FILTER

Bradford K. Thoen, Eden Prairie, Minn., assignor to MTS Systems Corportion, Minneapolis, Minn.

Continuation-in-part of Ser. No. 20,060, Feb. 19, 1993, abandoned. This application Jan. 27, 1994, Ser. No. 187,410

Int. Cl.[6] G11B *33/00*

U.S. Cl. 318—610 **22 Claims**



1. A feedback control system for modifying a drive signal to a plant which provides an achieved response signal in response to the drive signal, the control system comprising:

a signal source providing a desired response signal;

switch means operable to a first mode and to a second mode;

difference means operable in response to the second mode of the switch means to provide a response error signal representing the difference between the desired response signal and the achieved response signal;

an adaptive filter operable in response to the first mode of the switch means to adjust the desired response signal in accordance with a dynamic behavior of the adaptive filter to provide the drive signal and operable in response to the second mode of the switch means to adjust the response error signal in accordance with the dynamic behavior to provide a drive correction signal;

compensation means for adjusting the dynamic behavior of the adaptive filter in response to the drive signal and the achieved response signal;

summing means operable in response to the second mode of the switch means to provide a corrected drive signal representing the sum of the drive signal and the drive correction signal;

storage means operable in response to the first mode of the switch means to delay the drive signal and operable in response to the second mode of the switch means to delay the corrected drive signal; and

conversion means for generating the drive signal as a function of the signal delayed by the storage means from a previous iteration.

5,394,072

Patent Not Issued For This Number

5,394,073

CHARGING DEVICE

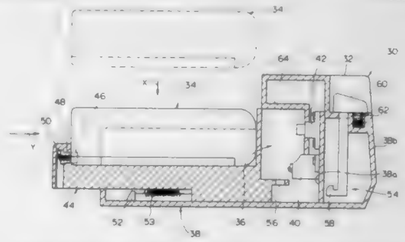
Michio Nagai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 859,659, Mar. 30, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 168,922

Claims priority, application Japan, Mar. 29, 1991, 3-091125

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—2 **8 Claims**



1. A charging unit for charging a power source incorporated in a portable radio apparatus, comprising:

a body having a base plate;

a tray for supporting the apparatus, said tray being slidably disposed on said base plate;

a charging section attached to said body, said tray being slidable on said base plate between a mounting position wherein the apparatus can be mounted on said tray, and a connecting position wherein an apparatus mounted on said tray is engaged only with said charging section and said tray for charging said power source, said charging section including a signal connector and an antenna connector, wherein when the tray is in said connecting position the apparatus is engaged only with the charging section and said tray so as to protect the apparatus from damage due to contact with other parts of the charging unit, and terminals of the apparatus mate with said signal and antenna connectors; and

a locking section for releasably locking said tray in said connecting position.

5,394,074

CONTINUOUS CELL CHARGER

Katsumi Orii, Machida, Japan, assignor to Temtech Kabushikigaisha, Tokyo, Japan

Filed Feb. 22, 1994, Ser. No. 199,497

Claims priority, application Japan, Mar. 8, 1993, 5-070792; Sep. 28, 1993, 5-263054

Int. Cl.[6] H01M *10/44*

U.S. Cl. 320—15 **6 Claims**

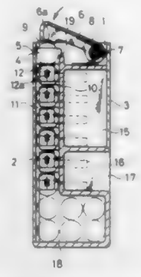
1. A continuous cell charger including:

a cell insertion chamber into which discharged cells are inserted from the exterior;

a charging chamber whose inlet side is in communication with said cell insertion chamber and which has a space extending in a predetermined direction;

plural pairs of plus and minus electrodes, said plus electrodes and said minus electrodes being each arranged in a row in said predetermined direction within said charging chamber at intervals equal to the diameter of each of said cells and also functioning to guide the cells movably;

a charging circuit for supplying a charging voltage to said electrodes;



a lever for pushing one of said cells which has been inserted into said cell insertion chamber, thereby allowing the cell to move to a position between a first pair of plus and minus electrodes in said charging chamber, and for moving cells already received between the plus and minus electrodes in the charging chamber also in said predetermined direction by a distance corresponding to one cell; and

a charged cell accommodating chamber which is in communication with an outlet side of said charging chamber and which receives therein the cells transferred from the charging chamber.

5,394,075

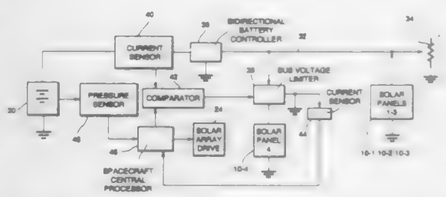
SPACECRAFT BUS REGULATION USING SOLAR PANEL POSITION

Allan F. Ahrens, Sylmar, and Harold A. Rosen, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 4, 1992, Ser. No. 987,901

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—39 **23 Claims**



1. In a spacecraft having a bus for carrying electrical power, an apparatus for controlling the electrical power carried on the bus comprising:

a battery for receiving and storing the electrical power from the bus and for supplying the electrical power from storage to the bus;

a battery controller for regulating the flow of the electrical power from and to the bus into and out of the battery;

a solar array having a plurality of solar cells for receiving radiation from the sun, generating electrical power therefrom and supplying the generated electrical power to the bus, the rate of the electrical power generation being

affected by the orientation of the solar array with respect to the sun;

a solar array drive for changing the orientation of the solar array with respect to the sun;

a battery condition sensor for measuring the charge state of the battery; and

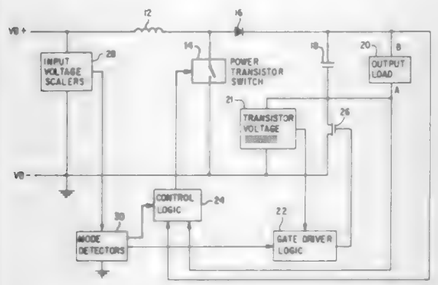
a processor in communication with the battery condition sensor for controlling the solar array drive so as to affect the rate of electrical power generation of the solar array and thereby cause the solar array to supply the electrical power sufficient to maintain a desired battery condition.

5,394,076

PULSE WIDTH MODULATED POWER SUPPLY OPERATIVE OVER AN EXTENDED INPUT POWER RANGE WITHOUT OUTPUT POWER DROPOUT

Richard B. Huykman, Montville, N.J., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Aug. 25, 1993, Ser. No. 111,674
Int. Cl.[6] G05F *1/613*
U.S. Cl. 323—222 10 Claims



1. A pulse width modulated power supply, comprising:

circuit means including inductor means connected to an input voltage, diode means connected to the inductor means, and capacitor means connected to the diode means and to a load, said circuit means providing an output voltage across the load;

control logic means connected across the load;

switching means connected between the inductor means and the diode means and connected to the control logic means, and controlled by said control logic means;

input voltage scaling means;

mode detector means connected to the input voltage scaling means and to the control logic means and responsive to an input from the input voltage scaling means for applying an output to the control logic means for controlling said control logic means;

transistor means connected to the capacitor means;

transistor voltage scaling means connected across the transistor means;

gate driver logic means connected to the mode detector means, the transistor voltage scaling means and the transistor means and responsive to an other output from the mode detector means and an output from the transistor voltage scaling means for controlling said transistor means; and

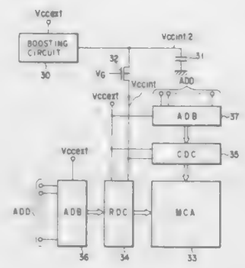
the output voltage across the load being provided without a dropout of the input voltage and without an adverse effect on said load.

5,394,077

INTERNAL POWER SUPPLY CIRCUIT FOR USE IN A SEMICONDUCTOR DEVICE

Shigeru Atsumi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 17, 1994, Ser. No. 214,105
Claims priority, application Japan, Apr. 30, 1993, 5-103415
Int. Cl.[6] G05F *1/613*
U.S. Cl. 323—223 14 Claims



1. An internal power supply circuit for use in a semiconductor device, comprising:

boosting means for boosting an external voltage to a second internal voltage of a higher level than that of a first internal voltage used in the semiconductor device, said first internal voltage being higher than the external voltage;

retaining means connected to an output end of the boosting means, for retaining the second internal voltage outputted from the boosting means; and

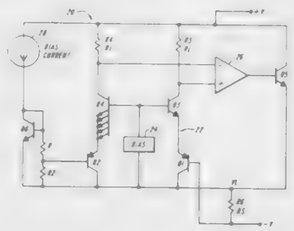
generating means connected to the output end of the boosting means, for generating the first internal voltage from the second internal voltage, said first internal voltage being supplied therefrom to the semiconductor device, and said second internal voltage retained in the retaining means being discharged by the generating means when the first internal voltage is decreased while an address signal of the semiconductor device is being changed.

5,394,078

TWO TERMINAL TEMPERATURE TRANSDUCER HAVING CIRCUITRY WHICH CONTROLS THE ENTIRE OPERATING CURRENT TO BE LINEARLY PROPORTIONAL WITH TEMPERATURE

A. Paul Brokaw, Burlington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Oct. 26, 1993, Ser. No. 142,768
Int. Cl.[6] G05F *3/30*
U.S. Cl. 323—313 21 Claims



10. A two terminal temperature transducer including circuitry which produces an output which is the entire operating current that varies linearly with temperature, said circuitry comprising:

a differential input stage including first and second transistors having differing operational current densities;

current supplying means for supplying current through said first and second transistors to operate said first and second transistors at different current densities and to produce a difference between the respective base-to-emitter voltages, said difference in base-to-emitter voltages corresponding to a first reference voltage which is proportional to absolute temperature;

a third transistor having a base-to-emitter voltage corresponding to a second reference voltage which is complementary to absolute temperature, said third transistor being coupled to said differential input stage so that a portion of said base to emitter voltage of said third transistor equals said difference in base to emitter voltages of said first and second transistors at a predetermined temperature;

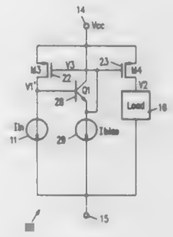
converting means for converting the difference between said first reference voltage and said second reference voltage into said entire operating current which is provided to the two terminals as said output.

5,394,079

CURRENT MIRROR WITH IMPROVED INPUT VOLTAGE HEADROOM

William D. Llewellyn, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 27, 1993, Ser. No. 53,627
Int. Cl.[6] G05F *3/16, 3/20*
U.S. Cl. 323—315 25 Claims



18. A current mirror comprising:

a first power supply terminal for receiving a first supply voltage;

a second power supply terminal for receiving a second supply voltage;

a first mirror transistor having a first current handling terminal coupled to a first one of said power supply terminals, a second current handling terminal serving as an input terminal for receiving an input current to be mirrored, and a control terminal;

a second mirror transistor having a first current handling terminal coupled to said first one of said power supply terminals, a second current handling terminal serving as an output terminal for providing a mirrored output current as a function of said input current to be mirrored, and a control terminal coupled to said control terminal of said first mirror transistor; and

a level shift device comprising a level shift transistor having a first current handling terminal coupled to said first power supply terminal, a second current handling terminal coupled to said commonly coupled control terminals of said first and second mirror transistors, a control terminal coupled to said input terminal, and a bulk region connected to a bias voltage between said first and second supply voltages.

22. A method for mirroring current comprising the steps of:

providing a first supply voltage;

providing a second supply voltage;

providing a current which is to be mirrored through a first mirror transistor;

providing an output current from a second mirror transistor as a function of said current to be mirrored; and

providing a voltage level shift between a control terminal of said first mirror transistor and a current handling terminal of said first mirror transistor for receiving said current to be mirrored, wherein said step of providing a voltage level shift comprises the step of:

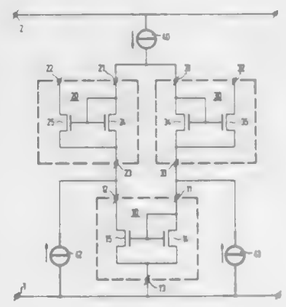
applying a bipolar transistor base-emitter voltage drop between said current handling terminal of said first mirror transistor for receiving said current to be mirrored and said control terminal of said first mirror transistor and without causing emitter-collector current of said bipolar transistor to flow through said control terminal of said first mirror transistor.

5,394,080

UNIVERSAL SIGNAL CONVERTER USING MULTIPLE CURRENT MIRRORS

Johannes J. F. Rijns, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 15, 1993, Ser. No. 152,767
Claims priority, application European Pat. Off., Dec. 21, 1992, 92204037
Int. Cl.[6] G05F *3/20*
U.S. Cl. 323—315 11 Claims



6. A universal signal converter having a linear conversion characteristic comprising:

first and second reference voltage terminals,

first, second and third current mirrors each having an input current path and an output current path coupled to a common terminal thereof,

a bias current source,

first means coupling the output current path of the first current mirror, the input current path of the second current mirror, and the bias current source in a first series circuit between said first and second reference voltage terminals,

second means coupling the input current path of the first current mirror, the input current path of the third current mirror, and the bias current source in a second series circuit between said first and second reference voltage terminals,

a signal input terminal coupled to a node between the input current paths of the first and third current mirrors, and

a first signal output terminal coupled to the output current path of one of said second and third current mirrors.

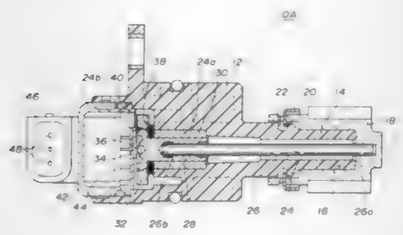
VOL 1171 ISS 4 FE 28 1995 UMI

5,394,081

ROTARY PULSE GENERATOR

Akira Ogawa, and Takahiro Kawakami, both of Omiya, Japan, assignors to Kansei Corporation, Omiya, Japan

Filed Jan. 14, 1992, Ser. No. 820,129
Int. Cl.[6] G01P *3/48, 3/54;* G01B *7/14*
U.S. Cl. 324—174 17 Claims



1. A rotary pulse generator comprising:
a housing having a longitudinally extending bore formed therethrough;
a rotation shaft extending in and along the bore of said housing, said rotation shaft not contacting a wall of said bore, said shaft having first and second ends;
a pinion gear rotatably held by one end of said housing and connected to said first end of said rotation shaft to rotate therewith;
a cylindrical supporter rotatably disposed in said bore, said cylindrical supporter having therein a blind bore for receiving said second end of said rotation shaft such that said cylindrical supporter and said rotation shaft rotate in unison and are relatively axially displaceable;
a bearing sleeve operatively disposed between the wall of said bore and said cylindrical supporter;
a wall member fitted in said bore in a manner to face an axial end of said cylindrical supporter;
a single bearing member interposed between said axial end and said wall member, said single bearing member being rotatably held by a center portion of said axial end and contacting said wall member in a point-contact manner;
an annular magnet unit coaxially disposed on said cylindrical supporter;
a magnet detecting device fixed to said wall member to produce, upon rotation of said magnet unit with said rotation shaft, an information signal which represents the rotation speed of said pinion gear; and
a coil spring disposed in the blind bore of said cylindrical supporter and compressed between said rotation shaft and said cylindrical supporter so that said cylindrical supporter is biased against said wall member through said single bearing member.

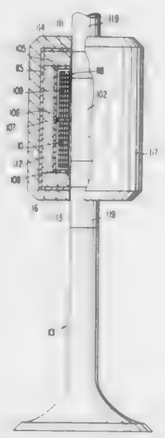
5,394,082

MAGNETIC LAUER COMPOSITIONS FOR USE IN A DEVICE FOR DETERMINING THE POSITION OF AN AXIALLY MOVABLE BODY

Edmund Schiessle, Schorndorf; Khaldoun Alasafi, Schwäbisch-Gmünd, and Ralf Gutöhrlein, Fellbach-Schmiden, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jan. 29, 1993, Ser. No. 10,857
Claims priority, application Germany, Jan. 30, 1992, 4202535
Int. Cl.[6] G01B *7/14*
U.S. Cl. 324—207.22 15 Claims

1. A device for determining a position of an axially movable body, comprising:
a coil arrangement coaxially arranged around said body, said coil arrangement having an inductance from which said position of the body is deduced;
a layer having magnetic properties which modify the inductance of the coil arrangement, said layer being deposited on said body by atomic growth in a region electrically interacting with said coil arrangement as said body moves;
wherein an axial movement of said body, to which said layer is joined, modifies a magnetic flux in said coil arrangement comprising at least one coil, and the resulting change in the inductance therefrom is measured in order to allow for the determination of the position of the body; and



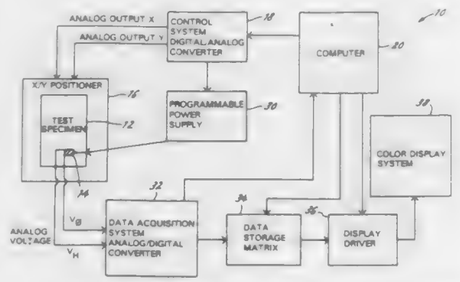
wherein said magnetic properties of said layer are obtained by a layer composition comprising less than 8% by weight of phosphorous, up to 2% by weight of an element from one of main groups IV and V of the Periodic Table, and up to 5% by weight of a transition metal element, the percentages by weight resulting from the sum being increased up to 100% with nickel.

5,394,083

MAGNETIC IMAGING SYSTEM FOR DISPLAY OF LOCAL VARIATIONS OF MAGNETIC PROPERTIES IN MAGNETIC MATERIAL

David C. Jiles, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Aug. 20, 1992, Ser. No. 932,896
Int. Cl.[6] G01R *33/12, 33/14;* G01N *27/72*
U.S. Cl. 324—223 19 Claims



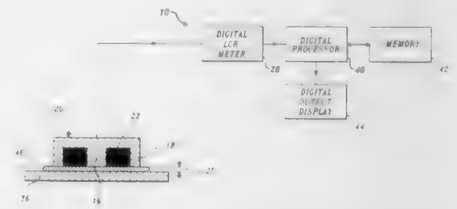
1. A multiparameter magnetic imaging system for deriving and displaying a multidimensional color representation of intrinsic magnetic properties of a material derived from a plurality of hysteresis measurements, the system comprising in combination:
means including an inspection probe for subjecting localized areas of a specimen of the material to a magnetic field and measuring the localized response of the specimen,
control means associated with the inspection probe for controllably varying the strength of the magnetic field to produce and store localized hysteresis measurements;
means for scanning said probe over the surface of the specimen for taking a sequence of localized hysteresis measurements at each of a plurality of locations across the specimen surface;
means for correlating said localized hysteresis measurements to the locations on said specimen surface at which the measurements were taken;
means for deriving values for at least one intrinsic magnetic property for the respective locations of the specimen from said localized hysteresis measurements; and
means for displaying a false color image of the surface of the specimen in which the color displayed for the surface at each respective location is related to the value of the derived intrinsic magnetic property at the respective locations, to produce a color map of the specimen surface displaying the variation of the derived intrinsic magnetic property across said specimen surface.

5,394,084

METHOD AND APPARATUS FOR REDUCING ERRORS IN EDDY-CURRENT CONDUCTIVITY MEASUREMENTS DUE TO LIFT-OFF BY INTERPOLATING BETWEEN A PLURALITY OF REFERENCE CONDUCTIVITY MEASUREMENTS

Patrick J. Snyder, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 814,363, Dec. 23, 1991, abandoned.
This application Apr. 14, 1993, Ser. No. 47,163
Int. Cl.[6] G01N *27/02, 27/90;* G01R *33/12, 35/00*
U.S. Cl. 324—225 12 Claims



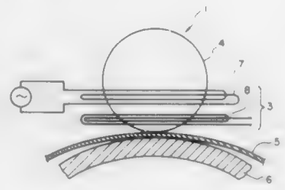
6. An eddy-current apparatus for measuring the conductivity of the conductive test material and for reducing the influence of probe lift-off on conductivity measurements, the apparatus comprising:
(a) probe means for inducing an eddy-current in a conductive material;
(b) detecting means for making a conductivity measurement for a conductive material by utilizing the probe means to induce an eddy-current in the conductive material and detecting the resulting impedance of the probe means; and
(c) digital processing means comprising:
(i) calibration means for producing calibration data by making at least two conductivity measurements for each of a plurality of reference materials using the probe means and the detecting means, wherein each reference material has a different value of conductivity and, the two conductivity measurements made on each reference material are made at different amounts of lift-off; and
(ii) measurement means for making a conductivity measurement for a test material using the probe means and detecting means, and for adjusting the conductivity measurement for the test material by digitally interpolating between the calibration data to take into account a nonlinear relationship among a measured probe impedance, a material conductivity and said probe lift-off, to produce a conductivity value for the test material having a reduced dependence on the lift-off of the probe means when the conductivity of the test material was measured.

5,394,085

ROLLING PROBE FOR THE CONTINUOUS MEASURING OF THE THICKNESS OF LAYERS OR STRIPS

Hans F. Nix, Cologne, and Wolfgang Hausmann, Hennef, both of Germany, assignors to Elektro-Physik Hans Nix & Dr.-Ing. E. Steingroever GmbH & Co. Kommanditgesellschaft, Cologne, Germany

Filed Aug. 24, 1992, Ser. No. 933,687
Claims priority, application Germany, Aug. 30, 1991, 4128882
Int. Cl.[6] G01B *7/10*
U.S. Cl. 324—231 14 Claims



1. An apparatus for the continuous measuring of the thickness of at least one layer or strip of electrically conducting or insulating or magnetic or non-magnetic material, said at least one layer or strip being on an elongated surface of a base during said continuous measuring, said at least one layer or strip having a material property which differs from said base, said apparatus comprising a rolling sensor system adapted to operate in conjunction with said base to effect said continuous measuring of the thickness of said at least one layer or strip, said rolling sensor system comprising, in combination:
(i) a rotating, rotationally symmetrical measuring pole composed of a ferro-magnetic material, the rotating, rotationally symmetrical measuring pole being adapted to contact said at least one layer or strip which is on said elongated surface of said base, there being an electromagnetic or magnetic effect in conjunction with said rotating ferromagnetic pole which varies according to the thickness of said at least one layer or strip on said elongated surface of said base, and
(ii) a stationary, sensor system adapted to sense the electromagnetic or magnetic effect in the ferromagnetic material of said probe which changes according to the thickness of said at least one layer or strip on said elongated surface of said base.

5,394,086

FEED CABLE SYSTEM FOR COILS IN HIGH MAGNETIC FIELDS

John L. Patrick, Chagrin Falls; Paul T. Orlando, Mentor, and Nicholas J. Mastandrea, Bedford Heights, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

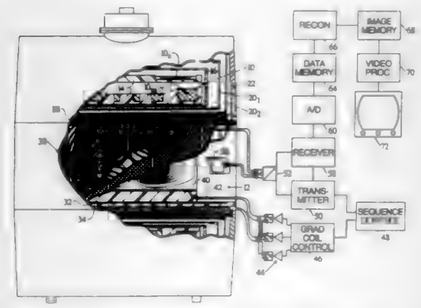
Filed Aug. 9, 1993, Ser. No. 104,362
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—318 13 Claims

1. In a magnetic resonance imaging apparatus in which an insertable gradient coil is inserted in a central bore through which a temporally constant magnetic field is generated, the insertable gradient coil being connected by a flexible cable with a source of current pulses for providing current pulses to the insertable gradient coil for generating magnetic field gradients, THE IMPROVEMENT COMPRISING:
the cable including a plurality of conductors for conducting

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feed and return current pulses, the number and placement of the conductors being described by:

$$E\bar{R}_i \times (\bar{I}_i \times \bar{B}_{ext}) = 0$$



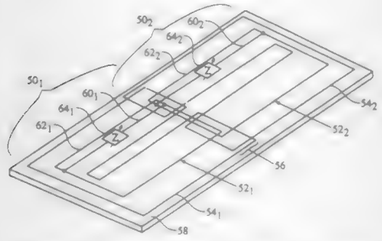
where $\bar{B}_{ext}$ is the temporally constant magnetic field, $\bar{I}_i$ is a current carried by the i-th conductor and $\bar{R}_i$ is a vector from a common axis of the conductors to the i-th conductor, whereby a summation of torques generated by the feed and return current pulses through the plurality of feed and return conductors is zero.

5,394,087

MULTIPLE QUADRATURE SURFACE COIL SYSTEM FOR SIMULTANEOUS IMAGING IN MAGNETIC RESONANCE SYSTEMS

David A. Molyneaux, Willowick, Ohio, assignor to Picker International, Inc., Highland Hts., Ohio

Filed Aug. 11, 1993, Ser. No. 104,786
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—318 23 Claims



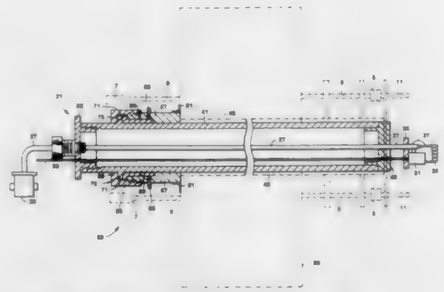
1. A magnetic resonance imaging system comprising:
a main magnetic field means for generating a temporally constant magnetic field through an examination region;
a gradient field means for selectively causing gradient magnetic fields across the examination region;
a resonance excitation means for transmitting radio frequency signals into the examination region to excite selected dipoles within the examination region to resonate;
a quadrature multiple coil array disposed within the examination region for simultaneously receiving radio frequency resonance signals in quadrature, from the resonating dipoles, the quadrature multiple coil array including:
a first quadrature coil pair including a first perpendicular component sensitive coil sensitive to resonance signal components perpendicular to the first quadrature coil pair from a first subregion of the examination region and a first parallel component sensitive coil sensitive to resonance signal components parallel to the first quadrature coil pair from said first subregion of the examination region;
a second quadrature coil pair including a second perpendicular component sensitive coil sensitive to resonance signal components perpendicular to the second coil pair from a second subregion of the examination region and a second parallel component sensitive coil sensitive to resonance signal components from said second subregion which are parallel to the second coil pair, the first and second subregions being partially overlapping;
at least two receiver means connected with the first and second quadrature coil pairs for demodulating magnetic resonance signals therefrom;
an image reconstruction means for constructing signals from the first receiver means into an image representation;
a display means for converting the image representations into human readable displays.

5,394,088

NMR PROBE FOR IMAGING SMALL SAMPLES

David G. Cory, Boston, Mass., assignor to Bruker Instruments, Inc., Billerica, Mass.

Continuation of Ser. No. 760,599, Sep. 16, 1991, abandoned. This application Feb. 8, 1994, Ser. No. 194,112
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—322 19 Claims



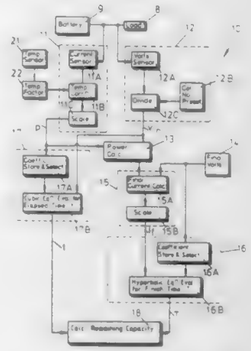
1. An NMR imaging apparatus comprising:
a conventional NMR probe having a cylindrical probe body with an outer end and an inner end and a means for generating NMR images connected to the probe body inner end, the probe body having a hollow dewar channel extending longitudinally therethrough;
the means for generating NMR images including a first variable capacitor for forming a first resonant circuit with a sample imaging coil;
a small-sample imaging apparatus having an elongate, cylindrical insert body having a first end and a second end;
the insert body further having a diameter which allows the insert body to slide through the dewar channel so that the first end extends to the probe body inner end;
means for attaching the insert body's second end to the probe body outer end when the insert body is positioned within the probe body;
a small-sample imaging coil;
means for mounting the small-sample imaging coil at a predetermined distance from the first end;
a second variable capacitor physically mounted substantially adjacent to the small-sample imaging coil and electrically connected to the coil to form a resonant circuit so that substantially all inductance in the resonant circuit arises from the small-sample imaging coil and substantially all the capacitance in the resonant circuit arises from the second variable capacitor; and
means for applying radio frequency energy to the second resonant circuit.

5,394,089

BATTERY MONITOR WHICH INDICATES REMAINING CAPACITY BY CONTINUOUSLY MONITORING INSTANTANEOUS POWER CONSUMPTION RELATIVE TO EXPECTED HYPERBOLIC DISCHARGE RATES

Andrew S. Clegg, Chippenham, England, assignor to Opalport Electronics Limited, Wiltshire, England

PCT No. PCT/GB89/01428, § 371 Date May 29, 1992, § 102(e) Date May 29, 1992, PCT Pub. No. WO91/08494, PCT Pub. Date Jun. 13, 1991
Continuation of Ser. No. 852,193, May 29, 1992, abandoned. This PCT application Nov. 29, 1989, Ser. No. 150,278
Int. Cl.[6] G01R *31/36*
U.S. Cl. 324—427 3 Claims



1. A battery monitoring system comprising:
current measuring means for evaluating the level of instantaneous current drawn from a battery when supplying a load;
voltage measuring means for evaluating the level of instantaneous battery voltage when the battery is supplying the load;
means for selecting a final battery voltage level at which the capacity of the battery is to be considered exhausted; and
arithmetic means for continuously receiving measurement values outputted from said means and for computing continuously on a rapid sampling basis a measure of remaining battery life;
wherein said arithmetic means comprises:
a first arithmetic unit (**13–16**) for computing the instantaneous power level delivered by the battery and for evaluating continuously on a rapid sampling basis according to a first predetermined algorithm the total discharge duration (T) available from the battery when continuing to supply power at the measured instantaneous power level based upon the selected final battery voltage level;
a second arithmetic unit (**17**) for evaluating continuously on a rapid sampling basis according to a second predetermined algorithm a measure of elapsed discharge time (t) from the measured instantaneous battery voltage and battery current;
a third arithmetic unit (**18**) for evaluating continuously on a rapid sampling basis the remaining life of the battery if it continues to supply power at the measured instantaneous power level, by subtracting the measure evaluated by the second arithmetic unit (**17**) from that evaluated by the first arithmetic unit (**13–16**); and wherein
(i) said first predetermined algorithm comprises the hyperbolic equation

$$T = a + b(i_p)^{-1} + c(i_p)^{-2}$$

where a,b,c are co-efficients which are a function of the final battery voltage level and which are held in sets in a storage table to be outputted according to the selected final battery voltage level; and
(i) said second predetermined algorithm comprises the cubic equation

$$V = A + Bt + Ct^2 + Dt^3$$

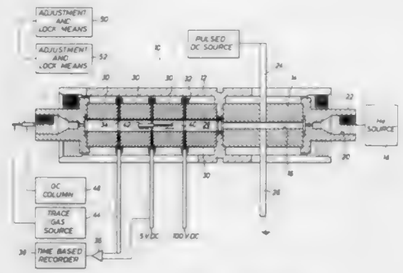
where A,B,C,D are co-efficients which are a function of instanteneous battery current (i_p), and which are held in sets in a storage table to be outputted according to the measured value of instantaneous battery current (i_p), and V is the measured value of instantaneous battery voltage.

5,394,090

IMPROVED SYSTEM FOR DETECTING COMPOUNDS IN A GASEOUS SAMPLE USING INDUCED PHOTOIONIZATIONS AND ELECTRON CAPTURE DETECTION

Wayne E. Wentworth, Chemistry Dept., University of Houston, Houston, Tex. 77204-5641, and Stanley D. Sterns, 1201 Archley Dr., Houston, Tex. 77055

Continuation-in-part of Ser. No. 956,632, Oct. 5, 1992, Pat. No. 5,317,271, which is a continuation-in-part of Ser. No. 662,149, Feb. 28, 1991, Pat. No. 5,133,519. This application Feb. 25, 1994, Ser. No. 201,467
Int. Cl.[6] G01N *27/62, 27/68*
U.S. Cl. 324—464 16 Claims



1. An electron capture detector comprising:
(a) a closed chamber having a helium flow inlet and spaced helium flow outlet to enable helium flow therethrough;
(b) spaced electrodes cooperating with a DC current source thereby permitting an electrical arc to be formed between said spaced electrodes defining a spark thereacross, said spaced electrodes being positioned in said chamber to form a spark gap across said helium flow through said chamber;
(c) a dopant gas source connected to said chamber to provide a controlled dopant flow at continuously adjustable locations within said chamber thereby forming a base current within said chamber where said base current is initiated by said spark across said spark gap;
(d) a sample gas source connected to said chamber to provide sample gas containing eluted compounds of unknown concentration;
(e) current detector electrode means spaced along the axis of said chamber for collection of current formed as a result of said spark across said spark gap wherein said helium flow moves toward said current detector electrodes to enable currents to be formed and measured indicative of one or more said eluted sample compound concentrations in said chamber and dependent on the dopant gas in said helium; and
(f) wherein said current detector electrode means measures the eluted sample concentrations in said chamber by changes in said current flow.

5,394,091

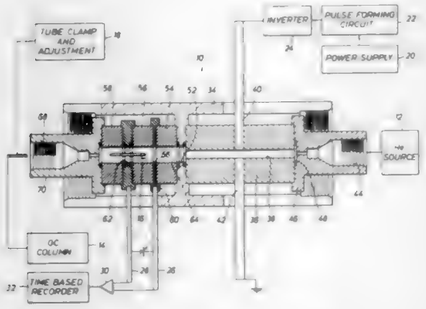
SYSTEM FOR DETECTING COMPOUNDS IN A GASEOUS SAMPLE BY MEASURING PHOTOIONIZATION AND ELECTRON CAPTURE INDUCED BY SPARK EXCITATION OF HELIUM

Wayne E. Wentworth, Chemistry Dept., University of Houston, Houston, Tex. 77204-5641, and Stanley D. Stearns, 1201 Archley Dr., Houston, Tex. 77055

Continuation-in-part of Ser. No. 956,632, Oct. 5, 1992, Pat. No. 5,317,271, which is a continuation-in-part of Ser. No. 662,149, Feb. 28, 1991, Pat. No. 5,153,519. This application Feb. 25, 1994, Ser. No. 201,469

Int. Cl.[6] G01N *27/62, 27/68*

U.S. Cl. 324—464 11 Claims



1. A charged particle detector comprising:

(a) a closed chamber having an inert gas flow inlet and spaced outlet to enable gas flow therethrough;

(b) spark forming electrodes cooperating with a pulsed DC current source thereby forming a spark sufficient to enable an electrical arc to be formed between said electrodes defining the spark thereacross, said electrodes being positioned in said chamber to form a spark gap across inert gas flow through said chamber;

(c) spaced detector means downstream in said chamber for collection of current formed as a result of the spark across the gap wherein the inert gas flow moves toward said detector means and a current is formed indicative of eluted sample concentration introduced, from an external source, into said chamber downstream from said spark forming electrodes;

(d) a voltage source connected to said detector means to provide a controlled voltage thereto for enabling said detector means for current detection; and

(e) wherein the detector means quantifies the eluted sample in said chamber by measuring said detected current.

5,394,092

SYSTEM FOR IDENTIFYING AND QUANTIFYING SELECTED CONSTITUENTS OF GAS SAMPLES USING SELECTIVE PHOTOIONIZATION

Wayne E. Wentworth, Pearland, and Stanley D. Stearns, Houston, both of Tex., assignors to Valco Instruments Co., Inc.

Continuation-in-part of Ser. No. 662,149, Feb. 28, 1991, Pat. No. 5,153,519, and a continuation-in-part of Ser. No. 956,632, Oct. 5, 1992, Pat. No. 5,317,271. This application Jan. 3, 1994, Ser. No. 176,968

Int. Cl.[6] G01N *27/62, 27/68*

U.S. Cl. 324—464 28 Claims

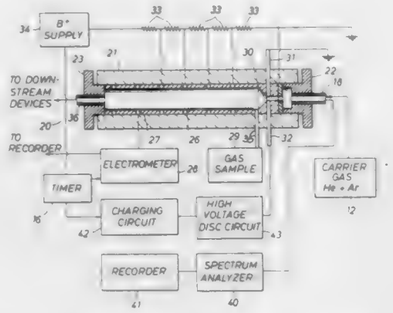
1. A method for analyzing a sample compound in a carrier gas comprising the steps of:

(a) through a first inlet, flowing said carrier gas through a chamber for exposure to pulsed DC current across the chamber;

(b) energizing at least one component of said carrier gas to an excited state as a result to exposure to said pulsed DC current;

(c) flowing a gaseous sample compound into said chamber through a second inlet downstream from said first inlet and downstream from said pulsed DC current thereby commingling said gaseous sample compound with said carrier gas;

(d) forming charged particles in the gaseous sample as a



result of ionizing radiation emitted in the decay of said excited component of said carrier gas wherein the charged particles are formed from said gaseous sample;

(e) measuring said charged particles wherein said measurement occurs in timed relationship with respect to said pulsed DC current; and

(f) selectively determining types and concentrations of compounds contained in said gaseous sample by utilizing said measurements.

5,394,093

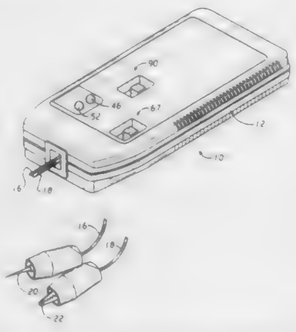
METHOD AND APPARATUS FOR TESTING VEHICLE ENGINE SENSORS

Robert A. Cervas, Highland Heights, Ohio, assignor to Actron Manufacturing Company, Cleveland, Ohio

Filed Apr. 30, 1993, Ser. No. 56,063

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—556 9 Claims



1. A multi-test, integral, hand-held instrument for testing both manifold absolute pressure and mass air flow sensors, comprising:

a housing enclosing a battery and an electrical circuit, said electrical circuit including a first circuit means for testing manifold absolute pressure and mass air flow sensors having a frequency output signal and for converting the frequency output signal to a corresponding voltage output signal, and a second circuit means for testing mass air flow and manifold absolute pressure sensors having a dc voltage output signal, said electrical circuit also including a pair of light indicators for visually displaying an indication of sensor operativeness, the intensity of illumination of said pair of light indicators varying when the sensor being tested provides a varying output signal,

at least one switch device for selecting said first or second circuit means, and

lead means for electrically connecting said electrical circuit to the sensor being tested.

5,394,094

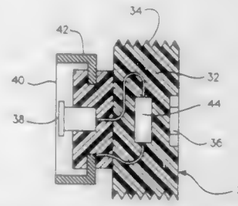
PORTABLE GAS SENSOR UTILIZING FAULT PROTECTIVE BATTERY CAP

David D. Wagner, Sutersville, Pa., assignor to Industrial Scientific Corporation, Oakdale, Pa.

Filed May 13, 1993, Ser. No. 61,620

Int. Cl.[6] G01R *27/00;* H02H *5/04*

U.S. Cl. 324—556 11 Claims



1. An improved portable gas sensing device of the type for monitoring atmospheric levels of selected gases in a combustible environment, the portable gas sensing device having electronic gas sensing circuitry powered by a battery contained within a battery compartment and maintained by a removable battery cap, the battery cap having current path means for contacting a terminal of the battery and establishing a current path for electrical current between the battery terminal and the electronic gas sensing circuitry, wherein the improvement comprises:

the removable battery cap containing a fuse electrically connected interposing said current path means for interrupting continuity of the current path if electrical current conducted through the current path exceeds a preselected level, the fuse being configured to prevent contact of gases in the combustible environment with the fuse.

5,394,095

SENSOR FOR STRIP OF CONDUCTIVE MATERIAL

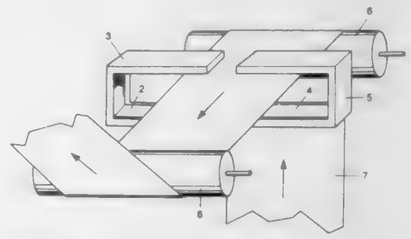
Peter Kespohl, Konigstein, Germany, assignor to FIFE GmbH, Frankfurt, Germany

Continuation of Ser. No. 676,163, Mar. 26, 1991, abandoned. This application Jul. 22, 1993, Ser. No. 96,648

Claims priority, application Germany, Mar. 27, 1990, 4009697

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—674 4 Claims



1. A sensor device, comprising:

a grounded strip of conductive material where the strip has opposite sides and opposite edges;

a transmitter electrode disposed on one side of the strip and having portions extending beyond the respective opposite edges of the strip;

two detector electrodes, each detector electrode being disposed on the side of the strip, opposing the transmitter electrode, the transmitter electrode being capacitively coupled to the strip;

two shielding electrodes, each shielding electrode being associated with one of the detector electrodes;

amplifier means having a unity gain factor connected to said shielding electrodes such that the potential on each shielding electrode follows the potential on each respective detector electrode; and

means connected to each of the detector electrodes for outputting a signal indicating the position of the strip of material relative to the position of the detector electrodes and the transmitting electrode.

5,394,096

CAPACITIVE POSITION SENSOR INCLUDING A SCALE WITH INTEGRAL TOPOGRAPHICAL FEATURES WHICH EFFECT THE MUTUAL CAPACITANCE BETWEEN CURSOR ELECTRODES

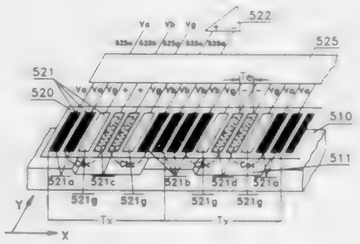
Hans U. Meyer, 42, rue de Lausanne, 1110 Morges, Switzerland

Division of Ser. No. 941,223, Sep. 4, 1992, Pat. No. 5,304,937. This application Nov. 16, 1993, Ser. No. 152,150

Claims priority, application Switzerland, Nov. 15, 1991, 03017/91-2

Int. Cl.[6] G01B *7/22;* G08C *19/10*

U.S. Cl. 324—686 24 Claims



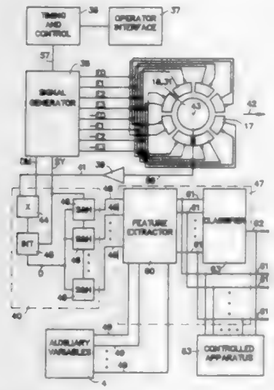
1. In a capacitive position sensor comprising a cursor (**20**) and a scale (**10**) separated from each other by a predetermined distance (H) and displaceable relative to each other along at least one measuring path (x), the cursor comprising at least two transmitting electrodes (**21***a*, **21***b*) and at least one receiving electrode (**21***c*), a first means (**629**) for generating electrical signals to be applied to the transmitting electrodes, second means (**623**, **624**) for evaluating the signal picked up by the receiving electrodes so as to determine the relative position of the cursor (**20**) relative to the scale (**10**); the improvement wherein the scale (**10**) comprises at least one raised or hollow topographical feature (**11**), each of said topographical features being an integral part of said scale, said second means processing the signals coupled from the transmitting electrodes (**21***a*, **21***b*) on the cursor (**20**) to the receiving electrode (**21***c*) on the cursor (**20**), the topographical feature (**11**) on the scale (**10**) being conformed so as to influence said signals coupled from the transmitting electrodes on the cursor to the receiving electrode on the cursor by modifying mutual capacitances (Cac, Cbc) between said receiving electrode on said cursor (**20**) and said transmitting electrodes on said cursor (**20**) when said cursor (**20**) and said scale (**10**) are displaced relative to each other along the measuring path (x), said mutual capacitances (Cac, Cbc) being indicative of a position of said cursor (**20**) relative to said scale (**10**).

5,394,097

DIELECTRIC SENSOR

Friend K. Bechtel, 1523 Borah, Moscow, Id. 83843; James R. Allen, NE. 1165 Lybecker Rd., and Daniel A. Uskoski, NW. 750 Fisk, both of Pullman, Wash. 99163

Filed Nov. 24, 1992, Ser. No. 982,079
Int. Cl.[6] G01R *27/26*
U.S. Cl. 324—687 20 Claims



1. A method for obtaining a measure of the amount of anisotropy of an electrical property in a dielectric material specimen about a selected test point in a surface of the specimen, the electrical property being considered over directions in a measurement plane substantially parallel to the specimen surface at the test point, the method comprising the following steps:

applying a time-varying electric field in at least two directions in a neighborhood of the test point;

obtaining, during a first measurement time interval, a first signal proportional to the cosine of twice the angle in the measurement plane from a selected reference direction to the direction of electrical property maximum, the selected reference direction being any direction in the measurement plane;

obtaining, during a second measurement time interval, a second signal proportional to the sine of twice the angle in the measurement plane from the selected reference direction to the direction of electrical property maximum; and

processing the first and second signals to obtain the measure of the amount of anisotropy, the measure being independent of the selected reference direction.

5,394,098

APPARATUS INCLUDING ELECTRO-OPTICAL MATERIAL FOR USE IN TESTING A CIRCUIT HAVING VOLTAGE-BEARING ELEMENTS PROXIMATE A SURFACE OF A BODY

Paul Meyrueix, Paris; Gerard Temblay, Loudin, both of France, and Jean P. Vernhes, San Jose, Calif., assignors to Schlumberger Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 630,421, Dec. 18, 1990, Pat. No. 5,272,434, which is a continuation of Ser. No. 226,127, Jul. 29, 1988, abandoned. This application Sep. 1, 1993, Ser. No. 115,489
Claims priority, application France, Jul. 31, 1987, 87 10870; Jun. 20, 1988, 88 08230; European Pat. Off., Jul. 22, 1988, 88401901.9
The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.
Int. Cl.[6] G01R *31/22*
U.S. Cl. 324—750 30 Claims

1. An apparatus for testing a circuit having voltage-bearing elements disposed proximate a surface of a body which includes the circuit, comprising:

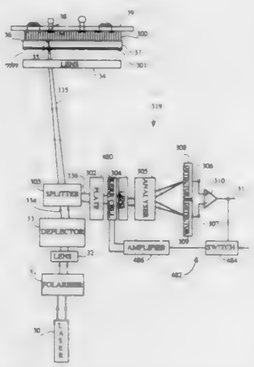
sensor means comprising:

a layer of electro-optical material having parallel first and second opposing surfaces;

an electrode disposed on the second surface of the electro-optical material; and

means for conforming to the body surface so that voltages on the voltage-bearing elements are imposed on the first surface of the electro-optical material;

means for applying test signals to the circuit;



means for establishing an electric field which traverses the layer of electro-optical material by applying a potential to the electrode with the conforming means in contact with the body surface so that an optical property of the electro-optical material varies in substantial synchronism with voltages occurring on the voltage-bearing elements in response to the test signals;

means for measuring the varying optical property in regions of the electro-optical material; and

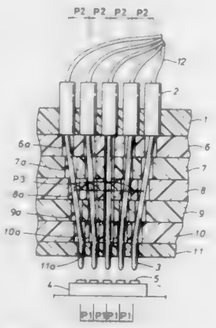
means responsive to the measuring means for determining a test parameter.

5,394,099

ELECTROCONDUCTIVE CONTACT PROBE WITH INTERMEDIATELY SUPPORTED, SPRING URGED CONVERGING NEEDLES HAVING PARALLEL FREE ENDS

Toshio Kazama, Nagano, Japan, assignor to NHK Spring Co., Ltd., Japan

Filed Feb. 4, 1993, Ser. No. 13,465
Claims priority, application Japan, Feb. 4, 1992, 4-047833
Int. Cl.[6] G01R *1/00*
U.S. Cl. 324—754 5 Claims



1. A contact probe unit, comprising:

a receptacle holder member;

a plurality of contact probes fixedly secured to said receptacle holder member in mutually substantially parallel relationship, each of said contact probes comprising a tubular receptacle having a free end and a base end, a needle member slidably received in each receptacle, and spring means urging each needle member so as to project a free end of each needle member from said free end of each receptacle, each of said tubular receptacles being parallel to each other;

a free end guide member fixedly secured to said receptacle holder member in a spaced relationship relative to said receptacle holder member, and provided with a plurality of guide holes in mutually substantially parallel relationship for slidably receiving said needle members, the density of said guide holes of said free end guide member being higher than the density with which said contact probes are secured to said receptacle holder member and wherein said needle free ends extend in parallelism through said guide holes;

intermediate guide members disposed between said free end guide member and said receptacle holder member so as to allow an axial movement to said needle members and provide a lateral support to said needle members; and

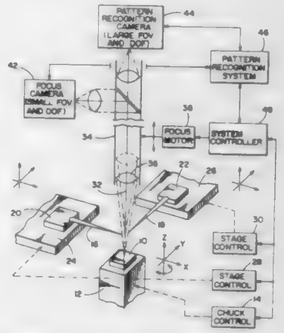
wherein the free ends of said needle members are in mutually substantially parallel relationships with each other.

5,394,100

PROBE SYSTEM WITH AUTOMATIC CONTROL OF CONTACT PRESSURE AND PROBE ALIGNMENT

Walter Bohler, Stowe; Robert H. Macklin, Richmond; Thomas M. Price, Jericho; Seth A. Wright, Essex Jct., all of Vt., and Ralf Suss, Munich, Germany, assignors to Karl Suss America, Incorporated, Waterbury Center, Vt.

Filed May 6, 1993, Ser. No. 58,573
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—758 8 Claims



1. A probe system for probing a device under test (DUT) comprising:

DUT support means;

a plurality of probe needles, each said probe needle movable with respect to said DUT support means, said probe needles positioned adjacent a surface of a said DUT and along a Z-dimension axis that extends orthogonally from said surface;

motor means for providing relative movement at least along said Z axis between each said probe needle and said DUT support means;

variable focus imaging means positioned along said Z axis; and

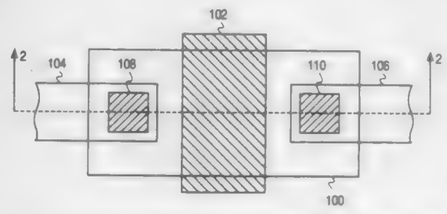
control means for causing said variable focus imaging means to provide images of both said surface of said DUT and at least a said probe needle, said control means responsive to a determined distance between focal planes of said images to cause said motor means to move said probe needle and said DUT surface into physical engagement, said motor means controlled to provide a distance of relative movement between said probe needle and said DUT surface that is greater than said determined distance between focal planes of said images, thereby creating a predetermined contact pressure between said probe needle and said DUT surface.

5,394,101

METHOD FOR DETECTING MOBILE IONS IN A SEMICONDUCTOR DEVICE

Jozef C. Mitros, Austin, Tex., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 15, 1993, Ser. No. 4,028
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—769 11 Claims



8. A method for detecting the presence of positive mobile ions in a region of a semiconductor device incorporating an MOS transistor having a drain terminal, a floating gate, an oxide underlying the floating gate, and a source terminal, comprising the steps of:

applying a first voltage to the drain terminal of the MOS transistor, the first voltage being of sufficient magnitude to cause electron injection into the oxide and a subsequent trapping of the electrons on the floating gate, resulting in a negative charge accumulation on the floating gate;

applying a second voltage subsequent to the first voltage applying step, of lower magnitude than the first voltage, to the drain terminal of the MOS transistor while measuring a first current therethrough;

providing for the semiconductor device, subsequent to the second voltage applying and first current measuring step, an environment for a period of time to allow the movement of positive mobile ions to the floating gate, the positive mobile ions neutralizing a first portion of the negative charge accumulation thereupon and resulting in a remaining portion of the negative charge accumulation thereupon; and

applying the second voltage to the drain terminal of the MOS transistor, subsequent to the providing step, while measuring a second current therethrough corresponding to the remaining portion of the negative charge accumulation on the floating gate, the second current differing from the first current in accordance with the first portion of the negative charge accumulation on the floating gate neutralized by the positive mobile ions thereby detected.

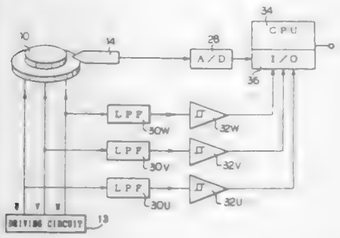
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5,394,102

NON-REPEATABLE RUN-OUT MEASURING INSTRUMENT USING ENCODER SIGNALS BASED UPON THE BACK EMF OF A MOTOR AS TRIGGER SIGNALS

Shigeyoshi Mori, and Ryuji Mizuguchi, both of Fujieda, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 8, 1993, Ser. No. 44,398
Claims priority, application Japan, Apr. 10, 1992, 4-118231
Int. Cl.[6] G01R 1/04
U.S. Cl. 324—772 7 Claims



1. An NRR (Non-Repeatable Run-out) measuring instrument for measuring an NRR of a motor having driving coils and a rotor by using displacement data obtained by measuring displacement values produced due to run-out of the rotor of the motor, comprising:

displacement value detecting means for detecting the displacement values due to the run-out of the rotor of the motor and generating displacement data due to the run-out of the rotor;

encoder signal generating means for generating encoder signals based on the back-electromagnetic forces developed across the driving coils of the motor; with said encoder signals having edges of digital waveforms of the back-electromotive forces;

sampling means responsive to the edges of said digital waveforms for generating sampling data signals in timed correspondence with said edges;

data storage means for storing said sampling data signals; and arithmetic means for calculating a value of the NRR from said displacement data in proportion to the number of sampled data signals stored in the data storage means.

5,394,103

FIELD PROGRAMMABLE GATE ARRAY

Laurence H. Cooke, San Jose, and David Marple, Palo Alto, both of Calif., assignors to Crosspoint Solutions, Inc., Santa Clara, Calif.

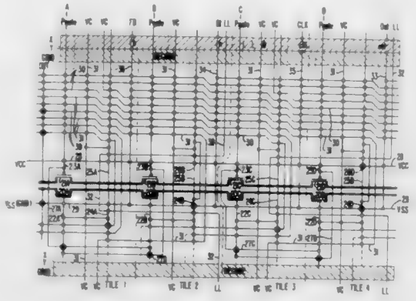
Division of Ser. No. 783,659, Oct. 28, 1991, Pat. No. 5,313,119, which is a continuation-in-part of Ser. No. 671,222, Mar. 18, 1991, abandoned. This application Feb. 24, 1994, Ser. No. 201,448
Int. Cl.[6] H03K 19/173, 19/177
U.S. Cl. 326—38 86 Claims

1. A field programmable gate array integrated circuit in a semiconductor substrate, comprising

a plurality of conducting line segments, said conducting line segments intersecting each other and having antifuses at said intersections, said conducting line segments connectable to each other at said intersections by the programming of antifuses connected therebetween;

an array of MOS transistors, each transistor having first and second source/drain region in said substrate and a gate separating said first and second source/drain regions, each of said first and second source/drain regions and each of said gates connected to one of said line segments, said transistors connected in series with a first source/drain region of one transistor merging into a second source/drain region of another transistor; and

an array of circuit blocks, said array having a plurality of conducting lines in a first direction and a plurality of conducting lines in a second direction, each of said conducting lines connected to each circuit block in said array, each of said circuit blocks further connected to said con-



ducting line segments, the operations of each of said circuit blocks defined into logic and latch functions by selectively interconnecting said conducting line segments through programmed antifuses;

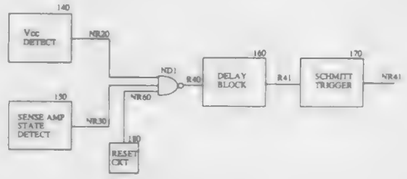
whereby said MOS transistors and said circuit blocks are configurable into a desired circuit by programming selected antifuses.

5,394,104

POWER-ON RESET CIRCUIT INCLUDING DUAL SENSE AMPLIFIERS

Napoleon W. Lee, Fremont, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Continuation of Ser. No. 904,417, Jun. 25, 1992, abandoned. This application Aug. 22, 1994, Ser. No. 293,782
Int. Cl.[6] H03K 17/22; H03L 7/00
U.S. Cl. 327—143 16 Claims



8. A power on reset circuit for an integrated circuit, said power on reset circuit comprising:

means for providing a first detect signal if a supply voltage exceeds a specified value;

means for providing a second detect signal; and

a first logic gate for receiving said first and second detect signals and providing an output signal,

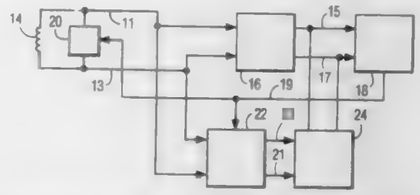
wherein said means for providing a second detect signal comprises two sense amplifiers manufactured by the same process and with the same component sizes as sense amplifiers elsewhere in said integrated circuit, said sense amplifiers providing said second detect signal only if said supply voltage reaches a predetermined level.

5,394,105

DEVICE FOR CONTACTLESS ENERGY AND DATA TRANSMISSION

Klaus Axer, Lübeck, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1993, Ser. No. 40,055
Claims priority, application Germany, May 26, 1992, 4217382
Int. Cl.[6] H03L 1/00, 5/00
U.S. Cl. 327—531 18 Claims



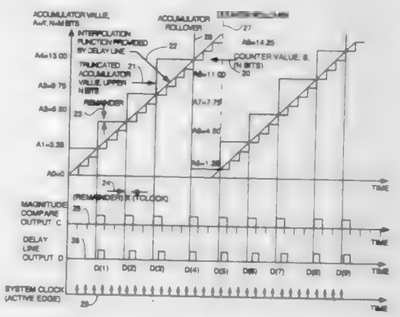
1. A device for contactless energy and data transmission, comprising: a storage circuit having an output lead for the output of stored data, a coil for receiving a magnetic alternating field and for generating an alternating voltage, a circuit arrangement for generating a supply voltage for the storage circuit, the circuit arrangement comprising a rectifier circuit which is connected to the coil in order to generate the supply voltage from the alternating voltage, and a load device for generating an increased load of the coil which is dependent on the output data on the output lead, wherein, parallel to the rectifier circuit a voltage increase circuit is connected to the coil, which voltage increase circuit comprises a control input which is connected to the output lead of the storage circuit and serves to generate a direct voltage which is higher relative to the amplitude of the alternating voltage on a voltage output and which serves as a supply voltage for the storage circuit for the duration of the increased load.

5,394,106

APPARATUS AND METHOD FOR SYNTHESIS OF SIGNALS WITH PROGRAMMABLE PERIODS

Alistair D. Black, Los Gatos, and Thomas M. Tobin, Santa Cruz, both of Calif., assignors to Gadzoox Microsystems, Los Gates

Filed Aug. 31, 1993, Ser. No. 114,958
Int. Cl.[6] H03L 7/18
U.S. Cl. 327—107 13 Claims



1. A digital synthesizer for synthesizing a signal having one or more user programmable periods, comprising:

a system clock;

a magnitude comparator circuit having first and second compare inputs for receiving digital values to be compared, and having an output at which appears a strobe signal indicating when the values at said first and second compare inputs are equal, said strobe signal being the output of said digital synthesizer;

a memory having a data input, and address input and a data output, for storing a plurality of digital input words, each said digital input word defining one said user programmable period for said synthesized signal, said address input for receiving an address signal which controls which of said digital input words appears at said data output;

a hold register having a clock input coupled to receive clock signals from said system clock and having a data output, and having a data input coupled to said data output of said memory to receive the selected digital input word and store said input word temporarily while simultaneously presenting said selected digital input word on said data output, said hold register also having a strobe input coupled to receive said strobe signal from said magnitude comparator circuit, said hold register for transferring whatever digital input word exists at said data input to said data output of said hold register upon receiving said the next clock signal after activation of said strobe signal;

an accumulator circuit having a data input coupled to said data output of said hold register, and having a data output, and having a clock input coupled to said system clock for receiving clock signals, said data input for receiving a selected digital input word U from said hold register, and for adding said selected digital input word to the contents of said accumulator and presenting the result at said data output of said accumulator as the present value of said accumulator, said present value serving as a target word for said magnitude comparator circuit, said data output coupled to said first compare input of said magnitude comparator, said accumulator also having a strobe input coupled to receive said strobe signal from said magnitude comparator circuit, said strobe signal for causing said accumulator circuit to add said input data word, U, to the present value at said accumulator data output upon the arrival of the next clock signal;

a synchronous counter circuit having an output at which appears the current value of said counter, said output coupled to said second compare input of said magnitude comparator circuit, and having a clock input coupled to receive clock signals from said system clock which cause the current value of said counter to increment; and

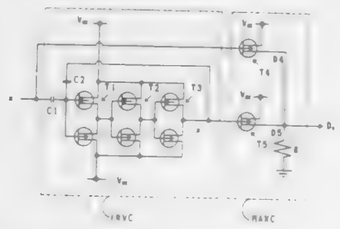
an input coupled to said data input of said memory for receiving said selected digital input words for storage in memory locations of said memory designated by address signals received at said address input.

5,394,107

ABSOLUTE VALUE CIRCUIT

Guoliang Shou; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 111,870
Claims priority, application Japan, Aug. 27, 1992, 4-252196
Int. Cl.[6] H03K 5/00
U.S. Cl. 327—354 4 Claims



1. An absolute value circuit comprising:

i) an inverter circuit to which an input voltage is applied;

ii) a first nMOS transistor having a gate to which an output

of said inverter circuit is applied, a drain connected to a power supply and a source forming a source follower output;

iii) a second nMOS transistor having a gate to which said input voltage is applied a drain connected to a power supply and a source forming a source follower output; and

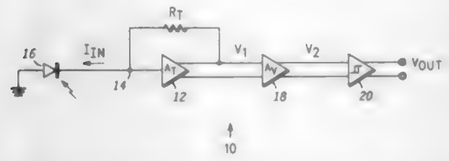
iv) a common output to which said source follower outputs of said first and second nMOS transistors are connected.

5,394,108

NON-LINEAR BURST MODE DATA RECEIVER

Christopher K. Y. Chun, Mesa, and Ray D. Sundstrom, Chandler, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Aug. 31, 1992, Ser. No. 937,034
Int. Cl.[6] G06G *7/18*
U.S. Cl. 327—335 **13 Claims**



1. A non-linear burst mode data receiver comprising:

an input stage having an input terminal for receiving a non-linear input signal having front and rear edges and an output terminal supplying a pair of output pulses indicative of the front and rear edges of the received non-linear input signal, the input stage including a differentiating circuit connected to receive the non-linear input signal and to differentiate rising and falling edges to provide the pair of output pulses;

an amplifier coupled to receive the output pulses from the input stage and provide amplified output pulses at an output terminal thereof; and

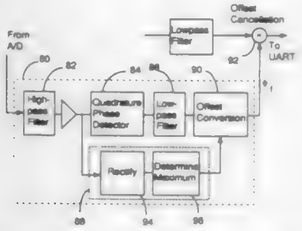
a hysteresis stage coupled to receive the amplified output pulses from the output terminal of the amplifier and regenerate an amplified replica of the non-linear input signals.

5,394,109

DIGITAL FSK DEMODULATOR WITH OFFSET CANCELLATION

Frédéric J. M. A. Simard, Hull, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 17, 1994, Ser. No. 197,912
Int. Cl.[6] H04L *27/14*
U.S. Cl. 329—300 **5 Claims**



1. A digital FSK demodulator for an FSK signal which consists of a series of mark and space tones and is composed of a message signal and an alert signal, the alert signal consisting of a substantial number of continuous bits of mark tone and preceding the message signal, comprising:

a quadrature demodulator for digitally detecting the FSK signal to generate a detected FSK signal;

an offset estimate means including a rectification means and a maximum detector for measuring the amplitude of the alert signal, and an offset conversion means for converting the amplitude by preset factors to generate an offset signal indicative of the offset in the detected FSK signal; and

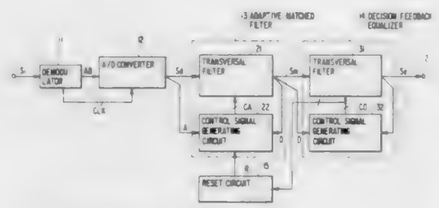
means for applying the offset signal to the quadrature demodulator to compensate the offset in the detected FSK signal.

5,394,110

DEMODULATION SYSTEM HAVING ADAPTIVE MATCHED FILTER AND DECISION FEEDBACK EQUALIZER

Shoichi Mizoguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 2, 1994, Ser. No. 190,453
Claims priority, application Japan, Feb. 2, 1993, 5-015416
Int. Cl.[6] H03H *7/30*
U.S. Cl. 329—304 **4 Claims**



1. A demodulation system comprising:

a demodulator for demodulating to an analog-baseband signal an intermediate frequency band modulated signal having intersymbol interference due to fading in propagation paths;

an analog-digital converter for sampling-quantizing said analog-baseband signal and outputting it as a digital-baseband signal;

an adaptive matched filter that includes a transversal filter for inputting said digital-baseband signal and a control signal generating circuit for supplying tap coefficients to the transversal filter, and which, according to control over the transversal filter by the control signal generating circuit using tap coefficients generated through correlation and time-average processing of a polarity signal indicating polarity of the digital-baseband signal and a polarity signal indicating polarity of the output signal of the transversal filter, makes symmetric an asymmetric impulse response within said inputted digital-baseband signal due to said fading in said propagation paths and outputs a matched signal;

a decision feedback equalizer that includes a decision feedback transversal filter for inputting said matched signal from the adaptive matched filter and a control signal generating circuit for supplying tap coefficients to the decision feedback transversal filter, and which, according to control over the decision feedback transversal filter by the control signal generating circuit using tap coefficients generated through correlation and time-average processing of a polarity signal included in the inputted matched signal and an error signal within the signal outputted after equalizing, eliminates from the inputted signal intersymbol interference due to said fading and outputs a signal after equalizing; and

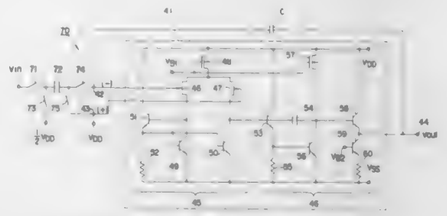
a reset circuit for fixing to predetermined values said tap coefficients of the adaptive matched filter when fading is judged to occur in the range $0<\rho<1$(ρ being the ratio of the amplitude of a reflected wave to the amplitude of a principal wave) based on the tap coefficients of the decision feedback equalizer.

5,394,111

OPERATIONAL AMPLIFIER WITH JUNCTION FIELD EFFECT TRANSISTORS AS INPUT TRANSISTOR PAIR

Kazuhiro Tsuji, Yokohama, and Masayuki Sahoda, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 23, 1992, Ser. No. 995,012
Claims priority, application Japan, Dec. 24, 1991, 3-340558
Int. Cl.[6] H03F *1/02*
U.S. Cl. 330—9 **16 Claims**



2. A switched capacitor integrator comprising:

an operational amplifier circuit having an inverting input terminal, a non-inverting input terminal, an output terminal, and an input transistor pair which have gates connected to said inverting input terminal and said non-inverting input terminal, respectively, and which are constituted by junction FETs;

a capacitor element, arranged between said output terminal and said inverting input terminal, for feeding back an output signal voltage to said inverting input terminal and setting an input operating potential and an output operating potential at different potentials; and

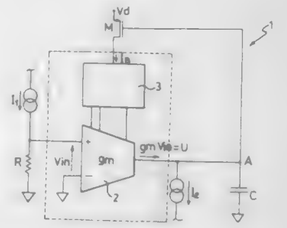
a switched capacitor circuit connected between said inverting input terminal and said non-inverting input terminal.

5,394,112

DIFFERENTIAL TRANSCONDUCTOR WITH REDUCED TEMPERATURE DEPENDENCE

Roberto Alini, Stradella; Francesco Rezzi, Vascovato; Gianfranco Vai, Pavia, and Marco Gregori, Milan, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Mar. 22, 1993, Ser. No. 35,329
Claims priority, application European Pat. Off., Mar. 20, 1992, 92830140
Int. Cl.[6] G05F *1/00, 5/00*
U.S. Cl. 330—256 **24 Claims**



1. An integrated circuit, comprising:

a differential transconductor stage, operatively connected to receive an input voltage, and at least one bias current, and configured to source an output current which is linearly dependent on variations in said input voltage, and which is also dependent on said bias current;

a polarization circuit operatively connected to source said bias current to said transconductor stage;

a programmable current source, comprising an external precision resistor which is substantially temperature-independent, operatively connected to provide an additional current component, at said current output of said transconductor stage, which is generally proportional to said input voltage divided by the value of said precision resistor;

a capacitor operatively connected between ground and said current output of said transconductor stage; and

a P-channel field-effect transistor connected to source current to said polarization circuit, and connected to be controlled by the voltage of said current output of said transconductor stage;

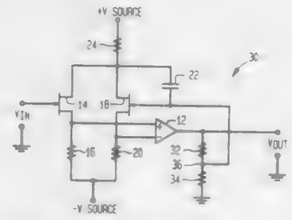
whereby temperature-dependent current variations in said current output of said transconductor stage are compensated by variations in the current passed by said P-channel field-effect transistor.

5,394,113

HIGH IMPEDANCE LOW-DISTORTION LINEAR AMPLIFIER

Donald K. Belcher, W. Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 28, 1992, Ser. No. 937,543
Int. Cl.[6] H03F *3/05*
U.S. Cl. 330—260 **12 Claims**



1. An amplifier circuit, comprising:

a differential amplifier, having first and second differential inputs, and having an output for providing an output signal which varies according to a difference between magnitudes of input signals provided at said first and second inputs;

a high impedance front end, coupled to the first input of said differential amplifier, for accepting an input voltage;

a voltage divider, coupled between said output of said differential amplifier and ground potential; and

a feedback circuit, coupled between said second input of said differential amplifier and said voltage divider, wherein error characteristics of said feedback circuit are substantially similar to error characteristics of said front end, whereby signal errors introduced by said high impedance front end are canceled by signal errors provided by said feedback circuit.

5,394,114

ONE NANOSECOND RESOLUTION PROGRAMMABLE WAVEFORM GENERATOR

Craig M. Davis, Puyallup, Wash., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 993,447, Dec. 16, 1992, abandoned, which is a continuation of Ser. No. 876,188, Apr. 30, 1992, abandoned. This application Jun. 23, 1993, Ser. No. 81,955
Int. Cl.[6] H03K *3/01;* H03L *7/06*
U.S. Cl. 331—1 A **46 Claims**

1. A circuit for generating a high-resolution periodic waveform, comprising:

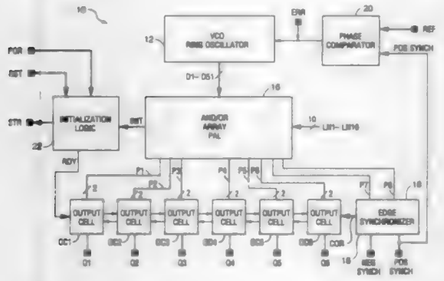
oscillator means for generating a plurality of delayed oscillator signals in response to an error signal;

a plurality of ANDing means for generating a plurality of clock signals so that each ANDing means generates one clock signal, each ANDing means comprising:

receiving means for receiving the plurality of delayed oscillator signals, and

generating means for generating a clock signal from the delayed oscillator signals received by the receiving means by passing a single delayed oscillator signal, and by performing a logical AND operation on two or more delayed oscillator signals;

a plurality of driver means for generating a plurality of clock driver output signals so that each driver means generates



one clock driver output signal, each driver means comprising:

means for receiving one clock signal, and

means for generating a clock driver output signal in response to said one clock signal;

feedback means for feeding back one of the clock driver output signals as a feedback signal; and

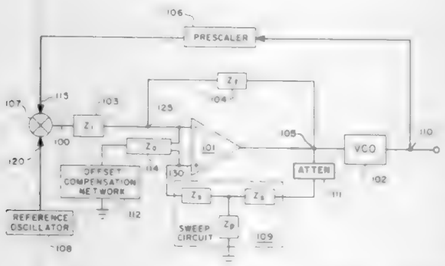
comparison means for generating the error signal by comparing the feedback signal and a reference signal.

5,394,115

AUTOMATIC SWEEP ACQUISITION CIRCUIT FOR A PHASE-LOCKED-LOOP

Geoffrey A. Lampel, Burlington, Iowa, assignor to Conifer Corporation, Burlington, Iowa

Filed Apr. 1, 1994, Ser. No. 221,487
Int. Cl.[6] H03L *7/12*
U.S. Cl. 331—4 **11 Claims**



1. A phase-lock loop circuit having a voltage controlled oscillator, a phase detector, and a sweep acquisition circuit, the phase-lock loop comprising:

an operational amplifier having an inverting input, a non-inverting input, and an output for providing a drive signal to the voltage controlled oscillator;

a negative feedback network coupled between the output and the inverting input of the operational amplifier;

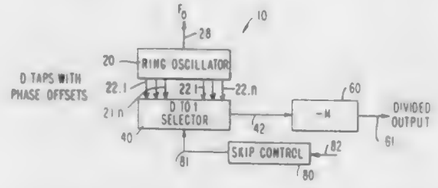
a positive feedback network coupled to the non-inverting input of the operational amplifier, and the output of the operational amplifier, wherein the positive feedback network includes means for phase-shifting the attenuated drive signal by an odd multiple of 180 degrees at a predetermined sweep frequency f_{SW}.

5,394,116

FRACTIONAL PHASE SHIFT RING OSCILLATOR ARRANGEMENT

Sanjay Kasturia, Middletown, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 29, 1993, Ser. No. 175,073
Int. Cl.[6] H03B *5/02, 27/00;* **H03L** *7/099, 7/18*
U.S. Cl. 331—34 **10 Claims**



1. A variable output oscillator arrangement, comprising:

a ring oscillator having a plurality of oscillator outputs and including means for generating an oscillating signal of a given frequency and repetition period, and means for presenting said oscillating signal to said oscillator outputs with a phase shift of a predetermined fraction of said repetition period from any one of said oscillator outputs to a sequentially next one of said oscillator outputs in a predetermined repetitive sequence;

a selector having a plurality of selector inputs each connected to a corresponding one of said plural oscillator outputs, a selector output, and a multiplicity of individually actuatable selector switches interposed between said selector inputs and said selector output;

means for actuating said selector switches so as to establish a connection between said selector output and only a single selected one of said selector inputs at any time;

means for operating said actuating means in response to a control signal in one of two modes, in one of which modes said selector switches maintain said connection and in the other of which modes said selector switches intermittently index said connection in said predetermined repetitive sequence among said plural selector inputs; and

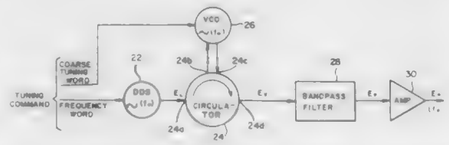
means for furnishing said control signal to said operating means to select one of said two modes in which said actuating means is then to operate.

5,394,117

DIRECT DIGITAL SYNTHESIZER-BASED INJECTION LOCKED OSCILLATOR

Leonard D. Cohen, Brooklyn, N.Y., assignor to AIL Systems, Inc., Deer Park, N.Y.

Filed May 28, 1993, Ser. No. 69,556
Int. Cl.[6] H03B *28/00*
U.S. Cl. 331—47 **22 Claims**



1. A method of tuning an analog oscillator to cause the analog oscillator to generate an oscillator output signal substantially free from spectral impurities, the analog oscillator

including a direct digital synthesizer and an analog oscillator circuit, the method comprising the steps of:

tuning the analog oscillator circuit to cause the analog oscillator circuit to generate an analog signal at a frequency f_1, the analog oscillator circuit having a predetermined locking bandwidth over which the analog oscillator circuit can be injection locked to a desired frequency within the locking bandwidth;

tuning the direct digital synthesizer to cause the direct digital synthesizer to generate a digitally synthesized signal at a frequency f_0, the frequency f_0 being within the locking bandwidth of the analog oscillator circuit; and

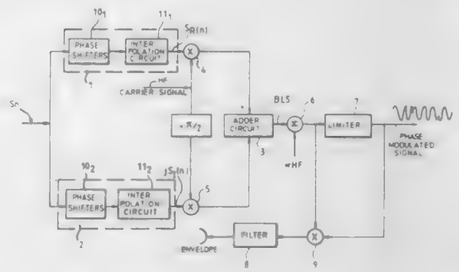
injection locking the frequency of the analog signal to the frequency of the digitally synthesized signal, the analog oscillator circuit being responsive to the digitally synthesized signal so that the frequency f_1 of the analog signal equals N times the frequency f_0 of the digitally synthesized signal, where N is an integer greater than 0, the analog oscillator being responsive to the analog signal injection locked at the frequency f_0 so that the oscillator output signal corresponds in frequency to the analog signal.

5,394,118

DIGITAL CIRCUIT FOR THE EXTRACTION OF THE PHASE AND ENVELOPE SIGNALS OF A SINGLE SIDEBAND SIGNAL

Bernard Darges, St Leu la Foret; Jean-Francois Helm, deceased, late of Troarn by Francois-Louis Helm, Nicole Lelouvier wife Helm, legal representatives , and by Véronique Helm wife Gauthier, legal representative, Vanves, all of France, assignors to Thomson-CSF, Paris, France

Filed Nov. 16, 1993, Ser. No. 152,720
Claims priority, application France, Nov. 20, 1992, 92 13968
Int. Cl.[6] H03C *1/60*
U.S. Cl. 332—170 **5 Claims**



1. A digital circuit for the extraction of the phase and envelope signals from a single sideband (SSB) signal obtained from a sampled low-frequency signal comprising first means to convert the low-frequency signal into a sampled single sideband signal coupled to second means to separate the sampled SSB signal into its two components, the phase and envelope components.

5,394,119

RADIO FREQUENCY CONNECTOR FOR A PATCH COUPLED APERTURE ARRAY ANTENNA

Joseph S. Pleva, Londonderry, N.H.; Conant: James B., Brighton; Norbert Sa, Burlington, both of Mass.; Steven A. Upson, Amherst, N.H.; Joseph Simoneau, Tyngsboro, and Eugene Gelshteyn, Marblehead, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Aug. 24, 1993, Ser. No. 111,089
Int. Cl.[6] H01P *5/08*
U.S. Cl. 333—35 **11 Claims**

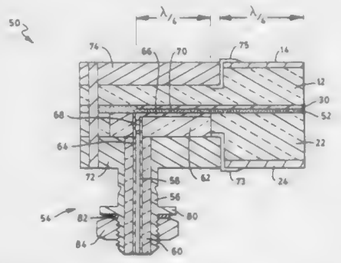
1. A radio frequency connector comprising:

(a) a coaxial connector having an outer shield and an inner conductive member having an end with a dielectric material disposed between the outer shield and a portion of the inner conductive member;

(b) a dielectric substrate having a-first and a second surface with an opening extending from the first surface of the dielectric substrate to the second surface of the dielectric substrate, the inner conductive member extending through at least a portion of the opening of the dielectric substrate;

(c) a coupling conductive member having a protruding pin, the protruding pin connected to the end of the inner conductive member;

(d) a sheet of dielectric material having opposing surfaces, the sheet of dielectric material disposed juxtapositional with the dielectric substrate and covering the coupling conductive member;



(e) a second dielectric substrate having a first and second surface with a strip conductor disposed on the first surface of the second dielectric substrate, the coupling conductive member and a portion of the strip conductor disposed adjacent to respective opposing surfaces of the sheet of dielectric material;

(f) means for impedance matching the coaxial connector with the strip conductor disposed on the first surface of the second dielectric substrate;

(g) a flange extending from the outer shield of the coaxial connector;

(h) a backing plate; and

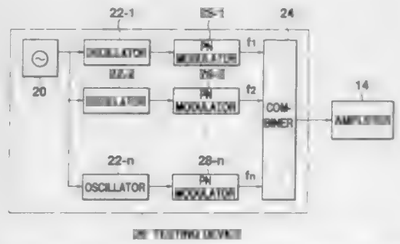
(i) at least one screw extending from the backing plate to the flange.

5,394,120

DEVICE FOR TESTING AN AMPLIFIER

Hironori Sakamoto; Akira Ito; Masaaki Fujiwara, all of Mitaka, and Toshio Nojima, Yokosuka, all of Japan, assignors to Japan Radio Co., Ltd. and NTT Mobile Communications Network, Inc., both of Tokyo, Japan

Filed Mar. 25, 1994, Ser. No. 217,878
Claims priority, application Japan, Apr. 13, 1993, 5-086216
Int. Cl.[6] G01R *19/00*
U.S. Cl. 330—2 **17 Claims**



10. A method of testing or evaluating an amplifier comprising the steps of:

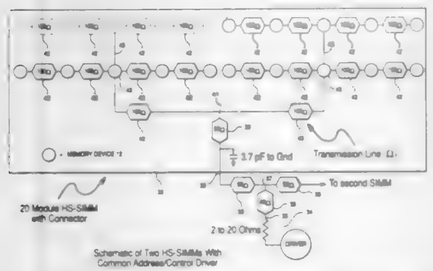
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generating a reference signal of a predetermined frequency;
generating test carriers having different frequencies by using the reference signal as a phase reference;
combining the test carriers and supplying a resulting signal to the amplifier to be tested; and
differently fluctuating each phase of the test carriers.

5,394,121
WIRING TOPOLOGY FOR TRANSFER OF ELECTRICAL SIGNALS

Thomas M. Cipolla, Katonah; Paul W. Coteus, Yorktown, both of N.Y., and William R. Hardell, Jr., Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1993, Ser. No. 137,529
Int. Cl.[6] H01P *5/12*
U.S. Cl. 333—124 **7 Claims**



Schematic of Two HS-SIMMs With Common Address/Control Driver

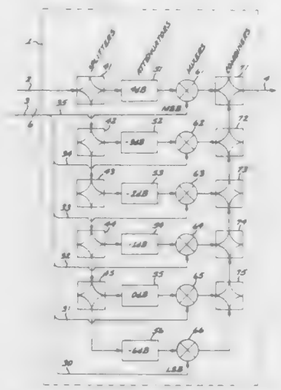
1. A wiring topology having a hierarchy of transmission line impedances for interconnecting devices, said wiring topology comprising:
an input impedance network having a first impedance;
a first branch network, connected to said input impedence network, comprising two portions, each of said two portions having an impedance greater than said input network; and
a second branch network which attaches to said devices, and is connected to at least one of said portions of said first branch network, comprising four portions, each of said four portions having an impedance greater than each of said two portions.

5,394,122
RF DIGITAL-TO-ANALOG CONVERTER

Patrick H. Conway, and David U. L. Yu, both of Rancho Palos Verdes, Calif., assignors to Duly Research Incorporated, Rancho Palos Verdes, Calif.

Filed Sep. 28, 1992, Ser. No. 952,065
Int. Cl.[6] H03H *7/20*
U.S. Cl. 333—156 **5 Claims**

1. A digital-to-analog converter which produces an RF output signal proportional to a digital input word of N bits or from an RF reference input, N being an integer and greater or equal to 2, comprising:
A set of N-1 power splitters having first and second outputs, the input of the first power splitter being connected to said RF reference input, the first output thereof being connected to the input of the second power splitter and so on, the output of the N-2th power splitter being connected to the input of the N-1th power splitter, the second output of said first power splitter being less by X db then the input power of said RF reference input, the output of said second power splitter being at least X db less than the power in the input applied thereto and so on;
N devices having first and second inputs, the first output of said first power splitter being coupled to the first input of said first device and the first bit of said digital input word being coupled to the second input of said first device, the first output of said second power splitter being coupled to the first input of said second device and the second bit of said digital input word being coupled to the second input of said second device and so on, the first and second outputs of the N-1th power splitter being coupled to the first input of said N-1th and Nth devices, respectively, the devices operating on the associated power splitter outputs in accordance with the value of the digital bit applied thereto; and

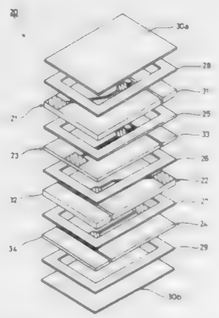


N-1 power combiners having first and second inputs, the output of said first device being connected to the first input of the first power combiner, the output of said second power combiner being connected to the second input of said first power combiner, and so on, the output of the Nth device being connected to the second input of said N-1 power combiner, the output of said first power combiner corresponding to said RF output signal.

5,394,123
LADDER TYPE FILTER COMPRISED OF STACKED TUNING FORK TYPE RESONATORS

Jiro Inoue, and Hiroaki Kaida, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

PCT No. PCT/JP92/00300, § 371 Date Oct. 9, 1992, § 102(e) Date Oct. 9, 1992, PCT Pub. No. WO92/16997, PCT Pub. Date Jan. 10, 1992
PCT Filed Mar. 12, 1992, Ser. No. 941,081
Claims priority, application Japan, Mar. 13, 1991, 3-048251
Int. Cl.[6] H03H *9/10, 9/21*
U.S. Cl. 333—189 **14 Claims**



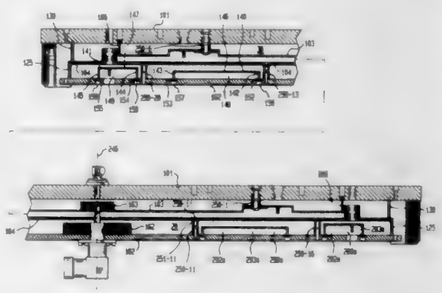
1. A ladder type filter, comprising a plurality of tuning fork

type piezoelectric resonators including at least two serial tuning fork type resonators and at least one parallel tuning fork type resonator, the serial resonators being connected in series between input and output electrodes and the parallel resonator being connected in parallel to a connection between the serial resonators,
each tuning fork type piezoelectric resonator having at least two sides and comprising a piezoelectric substrate provided with first, second and third slits extending inward from a first edge thereof, said first slit being interposed in between said second and third slits thereby defining a tuning fork-shaped vibrating portion between said second and third slits, and electrodes operatively connected to said tuning fork-shaped vibrating portion for vibrating said tuning fork-shaped vibrating portion of said piezoelectric substrate;
a plurality of layers each having a cavity provided therein, respective layers of said plurality being interposed between said plurality of tuning fork type piezoelectric resonators such that a cavity of said respective layers is provided at each of said two sides of said each tuning fork type piezoelectric resonator so as to allow vibration of the corresponding tuning fork-shaped vibrating portion,
wherein said plurality of tuning fork type piezoelectric resonators are laminated with said plurality of layers interposed therebetween so as to comprise a laminated body, which further comprises spacers each disposed beside a corresponding one of said plurality of tuning fork type piezoelectric resonators so as to be spaced a predetermined distance away from said first edge of the corresponding piezoelectric substrate, and having a thickness, said thickness of each of said spacers being substantially equal to a corresponding thickness of the corresponding one of said plurality of tuning fork type piezoelectric resonators, said spacers being respectively fixed to said plurality of layers interposed therebetween.

5,394,124
DIELECTRIC SPACING MEANS FOR MICROWAVE SHEET METAL CAVITIES

Paul L. Bartley, West Newbury, Mass.; Ron A. Francis, Bronx, N.Y., and Claire T. Kerr, Morris Plains, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Oct. 29, 1993, Ser. No. 145,457
Int. Cl.[6] H01P *7/06;* **H03F** *3/68*
U.S. Cl. 333—227 **6 Claims**

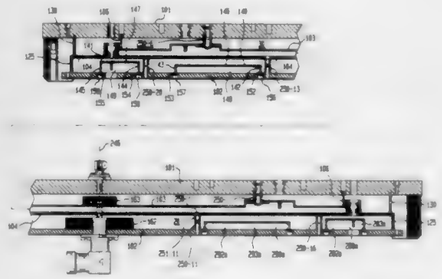


1. The improvement in microwave cavity closure means comprising: first and second vertically spaced horizontally extending metallic wall means bounding vertically opposite sides of a microwave cavity having a central vertical axis and extending horizontally between said two wall means radially from said axis outward to a periphery of said cavity, first and second wall means comprising, respectively, a metallic plate and a sheet metal dish which are rigid and flexible, respectively, a raised central boss disposed in a radially central region of said cavity on one side thereof to provide a metallic surface portion bounding said cavity on that one side along with surface portions of the one of said two wall means on that one side, and cavity tuning means radially disposed in said central region and adjustable to effect flexing relative to said plate of a central portion of said dish to thereby tune said cavity, and said improvement comprising: dielectric spacing means disposed in said cavity radially intermediate said raised boss and said cavity periphery and disposed angularly around said axis, said spacing means extending between said plate and dish to maintain said dish and plate vertically spaced apart radially outward of said boss by a distance determined by said spacing means while permitting concurrent flexing of said central portion of said dish by said cavity tuning means.

5,394,125
DIMENSIONAL STABILIZATION OF MICROWAVE SHEET METAL BOUNDED CAVITIES

Paul L. Bartley, West Newbury, Mass., and Claire T. Kerr, Morris Plains, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Oct. 29, 1993, Ser. No. 146,836
Int. Cl.[6] H01P *7/06;* **H03F** *3/68*
U.S. Cl. 333—227 **7 Claims**



1. The improvement in microwave cavity closure means comprising: lower and upper vertically spaced horizontally extending metallic wall means bounding vertically opposite sides of a microwave cavity having a central vertical axis and extending horizontally between such two wall means radially from said axis outward to a periphery of said cavity, said lower and upper wall means comprising, respectively, a metallic plate and a sheet metal dish which are rigid and flexible, respectively, relative to each other; said plate having a side towards said cavity, at least one annular ring disposed coaxially with said axis on said side of said plate towards said cavity, said ring comprising sheet metal having a central annular top portion spaced downward from said upper wall means and inflected at the radially opposite margins of said ring to provide therefor a pair of annular flanges downstanding from said top portion and having lower ends received in annular grooves extending into said plate from said side thereof by downward movement of said flanges into said grooves, said ring forming on said plate a raised hollow annular boss having a dead space therein between said top portion of said ring and an underlying portion of said plate disposed radially within said grooves; said improvement comprising: ring spacing means disposed in said dead space and extending angularly around the inside of said boss, said ring spacing means having top and bottom contact portions which are in contact with, respectively, said top portion of said ring and said underlying portion of said plate to vertically space them apart by a distance determined by said spacing means.

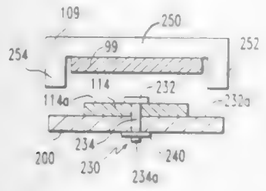
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5,394,126

CIRCUIT BREAKER WITH IMPROVED MAGNETIC TRIP ASSEMBLY

Kurt A. Grunert, and William E. Beatty, both of Beaver, Pa., assignors to Eaton Corporatiion, Cleveland, Ohio

Filed Apr. 18, 1994, Ser. No. 229,039
Int. Cl.[6] H01H *75/10*
U.S. Cl. 335—42 **9 Claims**



1. A circuit breaker for responding to abnormal currents in a conductor in an electrical system, said circuit breaker comprising:

electrical contacts operable between a closed position in which a circuit is completed through said conductor and an open position in which said circuit through said conductor is interrupted;

a latchable operating mechanism operable to open said electrical contacts when unlatched;

a trip bar rotatable from a biased position to a trip position to unlatch said operating mechanism; and

a magnetic trip assembly comprising:

a stationary magnetic structure;

a movable armature which is attracted to said stationary magnetic structure by an abnormal current through said conductor to rotate said trip bar to said trip position; and

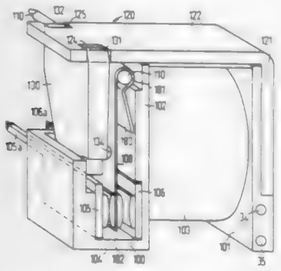
plate means mounted to said movable armature and disposed between said movable armature and said stationary magnetic structure to adjust the amount of said abnormal current required to attract said movable armature to said stationary magnetic structure and in turn rotate said trip bar to said trip position.

5,394,127

ELECTROMAGNETIC RELAY

Hendel Horst, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE92/00519, § 371 Date Jan. 10, 1994, § 102(e) Date Jan. 10, 1994, PCT Pub. No. WO93/01608, PCT Pub. Date Jan. 21, 1993
PCT Filed Jun. 23, 1992, Ser. No. 182,205
Claims priority, application Germany, Jul. 9, 1991, 4122704
Int. Cl.[6] H01H *51/22*
U.S. Cl. 335—78 **7 Claims**



1. An electromagnetic relay, comprising:

a base body having a wall,

an armature;

a terminal pin having an axis;

at least one carrier pin anchored in said wall of said base body and extending perpendicularly from said wall, and

at least one contact spring which comprises a strip material, which is partly wrapped around said at least one carrier pin and secured on said at least one carrier pin by a securing section, and has a contacting spring shank which can be switched over by said armature about the axis of said terminal post between a position of rest and a working position,

a coil former to which said base body is firmly joined in front of one end face of which said armature of flat design is arranged,

said carrier pin being arranged with said at least one contact spring between said armature and said coil former,

said securing section of said at least one contact spring being a clamp sleeve which is plugged onto said at least one carrier pin in a force-closed fashion, and

a prestressing shank extending beyond said clamp sleeve as a continuation which is supported on said coil former and prestresses said spring shank into said position of rest via said at least one carrier pin as a lever axis.

5,394,128

DC VACUUM RELAY DEVICE

G. Stephen Perreira; Bernard V. Bush, both of Santa Barbara; Richard L. Kutin, Camarillo, and Patrick A. Mack, Carpenteria, all of Calif., assignors to Kilovac Corporation, Carpinteria, Calif.

Continuation of Ser. No. 10,496, Jan. 28, 1993, abandoned, which is a continuation of Ser. No. 900,553, Jun. 18, 1992, abandoned, which is a continuation of Ser. No. 676,974, Mar. 28, 1991, abandoned. This application Oct. 20, 1993, Ser. No. 140,275
Int. Cl.[6] H01H *67/02*
U.S. Cl. 335—126 **12 Claims**

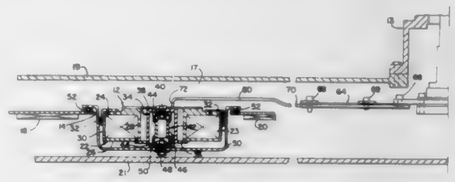
1. A relay device, comprising a chamber; an electromagnetically driven armature assembly including a movable armature shaft extending into the chamber and having a terminal end portion; movable contact means within the chamber comprising a disc surrounding and rotatable about the armature shaft adjacent its terminal end portion; stationary contacts mounted in the chamber to be bridged by the movable contact means; means permitting the terminal end portion of the armature shaft to continue motion beyond the movable contact means after the motion of the movable contact means ceases upon making of the stationary contacts by the movable contact means; impact break means for accelerating the armature shaft and its terminal end portion from rest prior to breaking the stationary contacts to thereafter drive the movable contact means away from the stationary contacts upon break, said impact break means comprising the movable contact means being resiliently mounted on the armature shaft by a spring which surrounds the armature shaft and is captured between the movable contact means and a stop on the armature shaft, said spring having at least one unattached free floating end and said spring being compressed when the armature shaft and its terminal end portion extend beyond the movable contact means following making of the stationary contacts by the movable contact means; and, means for varying the portion of contact between the movable contact means and the stationary contacts during a plurality of making operations, including the said spring providing means to rotate the disc during making and breaking of the stationary contacts to vary the portion of contact between the movable contact means and the stationary contacts during the plurality of making operations.

5,394,129

SUPERCONDUCTING SWITCH THERMAL INTERFACE FOR A CRYOGENLESS SUPERCONDUCTING MAGNET

Kemakolam M. Obasih, Florence, and James R. Briske, Hartsville, both of S.C., assignors to General Electric Company, Milwaukee, Wis.

Filed Sep. 3, 1992, Ser. No. 940,114
Int. Cl.[6] H01F *1/00*
U.S. Cl. 335—216 **8 Claims**



1. A superconducting magnet, comprising:

a superconducting magnet coil for producing a magnetic field along a magnet axis;

a structure supporting said coil to be substantially coaxial with said magnet axis;

a refrigerated cold sink for cooling said magnet coil below a transition temperature at which said coil becomes superconducting;

a superconducting switch for completing a closed superconducting electrical circuit including said coil;

means supporting said superconducting switch on said structure, said supporting means including means for thermally insulating said switch from said structure; and

a thermal bus bar connecting said switch and said cold sink, said thermal bus bar providing thermally conductive communication directly between said cold sink and said switch;

wherein the thermal conductivity of the bus bar decreases as the temperature of the bus bar increases, thereby maintaining the rate of heat flow through the bus bar below a predetermined threshold during ramping of said coil and recovery of said switch to the persistent state according to Fourier's heat conduction equation.

5,394,130

PERSISTENT SUPERCONDUCTING SWITCH FOR CONDUCTION-COOLED SUPERCONDUCTING MAGNET

Bu-Xin Xu, Florence, S.C.; Raghavan Jayakumar, Arlington, Tex., and John J. Wollan, Golden, Colo., assignors to General Electric Company, Milwaukee, Wis.

Filed Jan. 7, 1993, Ser. No. 1,692
Int. Cl.[6] H01F *1/00, 7/06;* **H01H** *47/00*
U.S. Cl. 335—216 **16 Claims**

1. A superconducting switch stabilized against flux-jumping in a conduction-cooled superconducting magnet assembly including main magnet coils, said superconducting switch comprising;

a coil form;

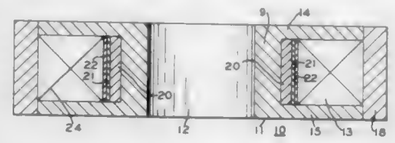
a superconducting tape wound in layers on said coil form;

said coil form positioned adjacent to said main magnet coils of said superconducting magnet assembly;

said superconducting tape including Nb_3Sn conductor with metallic stabilizing layers on opposite sides of said Nb_3Sn conductor;

the provision of conduction cooling to said superconducting magnet assembly and said superconducting switch for superconducting operation;

wherein said metallic layers are selected from the group consisting of bronze or brass and copper



whereby the selection of bronze or brass is utilized to provide a superconducting switch with a higher resistance and higher inductance than the selection of copper and whereby said superconducting switch resists flux jumping; and

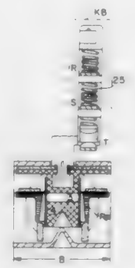
wherein partial layers of an electrically conducting material without electrical closure separate groups of layers of said superconductor tape.

5,394,131

MAGNETIC DRIVE WITH A PERMANENT-MAGNET ARMATURE

Cornelius Lungu, Rossbuhlstrasse 11, D-7582, Buhlertal, Germany

PCT No. PCT/EP90/02276, § 371 Date Jun. 22, 1992, § 102(e) Date Jun. 22, 1992, PCT Pub. No. WO91/10242, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 21, 1990, Ser. No. 862,767
Claims priority, application Germany, Dec. 22, 1989, 3942542
Int. Cl.[6] H01F *7/00*
U.S. Cl. 335—229 **43 Claims**

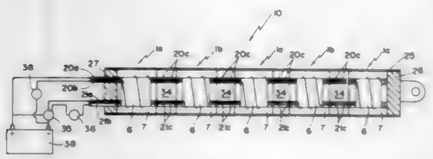


1. A solenoid-operated mechanism comprising at least one lifting armature (3, 4, 4') magnetized in a direction corresponding to a path of movement of said lifting armature, said lifting armature (3, 4, 4') including one permanent magnet (3) and two soft magnetized pole pieces (4, 4'), said lifting armature (3, 4, 4') path of movement being coincident to a common axis between two spaced electromagnetic external poles (5, 5'), said electromagnetic external poles (5, 5') being of the same magnetic polarity, another electro-magnetic pole (1, 2, Rp) having a winding (1) wound on a magnetic core (2) and a ring pole (Rp) having an opening in which moves said permanent magnet (3) along said path of movement, wherein the axis of said winding, around which said winding is wound, is substantially perpendicular to said path of movement of said lifting armature, said permanent magnet (3) of said lifting armature (3, 4, 4') being constructed of a material having a minimum remanent induction Br of 0.7 T and an energy product BHmax reaching a minimum of 100 kJ/m^3, said permanent magnet (3) being substantially disc-shaped having a diameter, and an axis substantially coincident to said common axis, and said permanent

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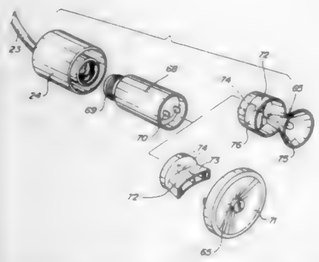
magnet (3) having a maximum height measured in the direction of its axis which corresponds at most to substantially one-half of said diameter.

5,394,132
MAGNETIC MOTION PRODUCING DEVICE
James E. Poil, Box 474, Coronach, Saskatchewan, Canada S0H 0Z0
Filed Jul. 20, 1993, Ser. No. 93,669
Int. Cl.[6] H01F 7/08
U.S. Cl. 335—232 16 Claims



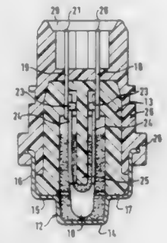
16. A motion producing device utilizing magnetic lines of force comprising in combination, a series of alternately spaced fixed and polarity reversible magnets, electrically insulating material surrounding each magnet of said series of magnets, elastic electrically insulating material mounted between each adjacent fixed and polarity reversible magnets, a power source, current conducting means for carrying current to at least said polarity reversible magnets from said power source, a polarity reversing means in said current conducting means that reverses the polarity of said current conducting means to said at least polarity reversible magnets, and guide means to control expansion or contraction movement of said series as said power source is applied.

5,394,133
TRANSFORMER HOUSING SYSTEM
Ronald P. Harwood, 31110 Applewood, Farmington Hills, Mich. 48331
Division of Ser. No. 905,786, Jun. 29, 1992. This application Aug. 12, 1993, Ser. No. 106,121
Int. Cl.[6] H01F 27/04
U.S. Cl. 336—107 7 Claims



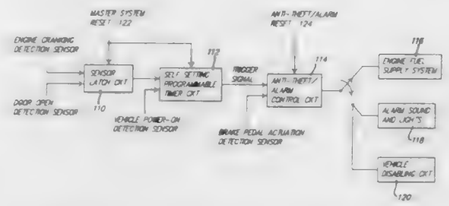
1. A transformer housing which can receive a transformer including:
(a) a threaded connector portion connectible to a lamp socket;
(b) a transformer contained by said housing and electrically connected to said threaded connector portion of said transformer housing for varging the voltage received through the connector portion from a source of line current;
(c) a power cord electrically connected to said transformer and connectible to a lamp; and
(d) a mounting portion separate and distinct from said threaded connector portion for mounting said transformer housing to an axially extending beam member.

5,394,134
ELECTRIC SWITCHGEAR
Manfred Kurz, Ditzingen, Germany, assignor to Behr-Thomson-Dehnstoffregler GmbH Co., Germany
Filed Nov. 8, 1993, Ser. No. 156,921
Claims priority, application Germany, Nov. 6, 1992, 4237546
Int. Cl.[6] H01H 37/04
U.S. Cl. 337—398 20 Claims



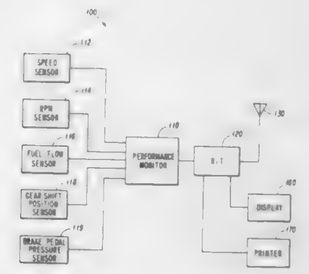
1. An electric switchgear comprising:
at least one switching element which is a semiconductor with a temperature-dependent resistance and which has contact tabs; and
a liquid-tight housing, the switching element being arranged in the housing such that the contact tabs project out of the housing, the housing including: a metal cap and a plastic closing element that are joined together, the metal cap having inner and outer surfaces, the closing element having recesses, the contact tabs being inserted into the recesses of the closing element; and a plastic joining element cast on the outside of the metal cap and the closing element, the plastic joining element connecting the metal cap and the closing element with one another and completely surrounding the edge of the metal cap such that the plastic joining element extends over the inner and outer surfaces of the metal cap and at least partially surrounding the closing element.

5,394,135
AUTOMATICALLY ARMED VEHICLE ANTI-THEFT SYSTEM
David M. Stadler, 15940 Lauderdale, Birmingham, Mich. 48025
Continuation-in-part of Ser. No. 801,701, Dec. 2, 1991, Pat. No. 5,172,094. This application Dec. 15, 1992, Ser. No. 990,418
Int. Cl.[6] B60R 25/10
U.S. Cl. 340—426 12 Claims



1. An automatically armed motorized vehicle anti-theft system comprising:
a sensor latch means for providing an output signal in response to detection of either an attempt to start the vehicle motor or the opening of a vehicle door;
an electrical power detection means for providing an output signal in response to activation of vehicle electrical power;
a timer means having a timer cycle, said timer means automatically starting the timer cycle in response to said sensor latch means output signal and said electrical power detection means output signal, wherein when the timer cycle is complete, said timer means outputs a trigger signal;
means for generating a first reset signal to reset said sensor latch means and said timer means; and
a vehicle disabling means which is responsive to said trigger signal and a signal indicative of a vehicle brake actuation for only permitting the vehicle engine to operate properly near an engine idling speed in response to detection of a vehicle brake actuation after the receipt of said trigger signal.

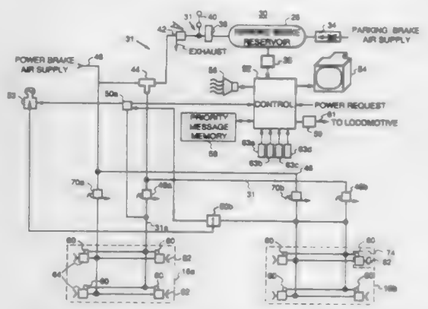
5,394,136
SATELLITE COMMUNICATION AND TRUCK DRIVER BONUS NOTIFICATION AND AWARDS SYSTEM
David G. Lammers, Marion, and Guy M. Gooch, Alburnett, both of Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.
Filed Aug. 30, 1993, Ser. No. 114,254
Int. Cl.[6] B60Q 1/00
U.S. Cl. 340—439 3 Claims



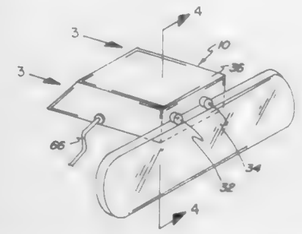
1. A system for controlling the operation of a vehicle from a fixed location comprising:
a receiver/transmitter on board the vehicle for communicating information between said vehicle and the fixed location;
a speed sensor for generating electric speed signals representative of the speed of the vehicle;
a performance monitor, coupled to the speed sensor, for receiving the electric speed signals and comparing said electric speed signals with a predetermined range of acceptable signal levels and generating an excessive speed report when said electric speed signals exceeds said predetermined range;
the performance monitor coupled to said receiver/transmitter providing the reports to the fixed location for determining whether a driver bonus will be initiated by generating a bonus signal; and
an input/output unit coupled with said receiver/transmitter for providing a visual notification of said driver bonus in response to the bonus signal and further for providing a choice of receiving locations for receiving said bonus.

5,394,137
VEHICLE PARKING BRAKE DETECTION AND WARNING SYSTEM
Edward J. Orschek, North East, Pa., assignor to General Electric Company, Erie, Pa.
Filed May 10, 1993, Ser. No. 59,694
Int. Cl.[6] B60Q 1/00
U.S. Cl. 340—453 16 Claims

1. A vehicle parking brake detection and warning system comprising:
means for detecting that a parking brake has been activated;
means, operatively coupled to the detecting means, for waiting a predetermined period of time after detecting that the parking brake has been activated;
means for determining a speed of the vehicle;
means, responsive to the speed determining means and to the parking brake detecting means, for determining a first parking brake warning level based upon detecting the activation of the parking brake, detecting a power request by an operator and based upon the speed of the vehicle; and
means for activating alarm means in response to determining the first parking brake warning level.



5,394,138
VEHICLE WARNING SYSTEM
Douglas R. Stephens, 2015 E. University Dr., Unit 10, Tempe, Ariz. 85281
Filed Dec. 20, 1993, Ser. No. 169,408
Int. Cl.[6] B60Q 1/22
U.S. Cl. 340—463 2 Claims



1. A new and improved vehicle warning system for warning on-coming motorists of an important road condition and the approximate distance to the road condition, by use of a visual signalling device attached inside the windshield of the signaller's vehicle, the vehicle warning system comprising:
an electrical circuit assembly having a plurality of front-facing different colored daylight-visible annunciator lamps thereon, the circuit assembly also having timer means for controlling the sequence and duration of the periods of lamp illumination whereby through selective periods of illuminating the different colored annunciator lamps an approximate distance to the important road condition being warned of may be ascertained by the oncoming motorist, the circuit assembly additionally having rear facing switch means for actuating and disabling the timer means;
enclosure means for housing the circuit assembly, the enclosure means comprising:
a cabinet having a top, sides, and a bottom, the cabinet being hollow, the cabinet having an angled open front approximately coplanar with a motor vehicle windshield whereby a hood is formed to shield annunciator lamp glare when

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the cabinet is mounted in a level position facing the inside of the windshield, the cabinet additionally having an open back, the cabinet further having means for mounting the circuit assembly; a front panel having a plurality of openings therethrough wherethrough the annunciator lamps are visible to the oncoming motorist, a rear panel having openings therethrough whereby the switch means may be activated;

clamp means for removedly securely attaching the enclosure means to a vehicle's inside rear-view mirror so the angled cabinet front is in close proximity to and approximately coplanar with the inside surface of the vehicle's windshield; and

an electrical power cable being operably connected from the electrical circuit assembly to a source of electrical power.

5,394,139

SMOKE SCREEN INTRUDER DETERRENT SYSTEM

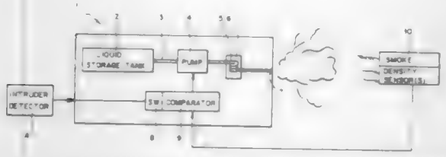
Paul A. Dards, 10 Cochrane Close, Crownhill, Milton Keynes MK8 0AJ, United Kingdom

Continuation of Ser. No. 983,801, Nov. 30, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 235,123

Claims priority, application United Kingdom, Sep. 12, 1992, 92 19365

Int. Cl.[6] G08B *15/02*

U.S. Cl. 340—541 6 Claims



1. An intruder deterrent system of the type which generates a smoke screen and which comprises: intruder detection means; smoke screen generating means; activating means operatively linked to the intruder detection means and the smoke screen generating means to activate the smoke screen generating means when the intruder detection means triggered; and smoke screen density regulating means having a smoke screen density sensor to sense the density of the smoke screen and control means responsive to the sensed density to adjust the output of the smoke screen generating means to maintain the smoke screen density at a desired level.

5,394,140

METHOD AND APPARATUS FOR PRE-PROGRAMMED CALL-BACK-NUMBER-DETERMINED ALERT

Poh-T'in Wong, Boynton Beach; Allen J. Weidler, Lake Worth, and William J. Burke, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 23, 1992, Ser. No. 980,047

Int. Cl.[6] G08B *5/22*

U.S. Cl. 340—825.44 20 Claims

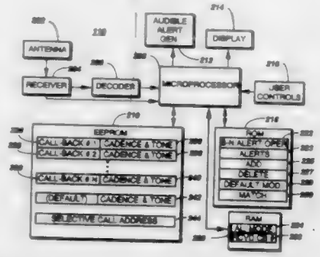
1. A communication receiver comprising:

receiver means for receiving a message comprising at least a received call-back number;

storage means for storing at least one user-programmed call-back number along with data defining at least one corresponding user-programmed special audible alert, and further for storing data defining a user-programmed default audible alert;

processor means coupled to the receiver means for processing the message to derive the received call-back number and coupled to the storage means for comparing the received call-back number with the at least one user-programmed call-back number; and

audible alert generation means coupled to the processor means for generating, in response to the received call-back number being found equal to a call-back number included in the at least one user-programmed call-back number, the corresponding user-programmed special audible alert in accordance with the data defining said alert,



wherein the processor means comprises a first processor element for controlling the audible alert generation means to generate the user-programmed default audible alert in response to the received call-back number being found not equal to any call-back number included in the at least one user-programmed call back number.

5,394,141

METHOD AND APPARATUS FOR TRANSMITTING INFORMATION BETWEEN EQUIPMENT AT THE BOTTOM OF A DRILLING OR PRODUCTION OPERATION AND THE SURFACE

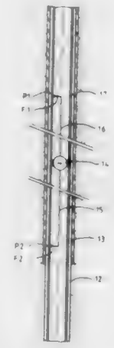
Louis Soulier, Sannois, France, assignor to Geoservices, Le Blanc Mesnil, France

Filed Jul. 9, 1992, Ser. No. 911,095

Claims priority, application France, Sep. 12, 1991, 91 11279

Int. Cl.[6] G01V *1/00*

U.S. Cl. 340—854.4 38 Claims



1. A method of transmitting information between equipment at the bottom of an operation and the surface, comprising:

providing a transmitter at the equipment at the bottom of the operation and a transceiver at the surface connected to both the ground, spaced from the operation, and to metal pipework of the operation; and

applying electric signals with the transmitter between two points on the metal pipework, the two points being separated a substantial distance along the metal pipework such that the resistance of the metal of the metal pipework between the two points where the electric signal is applied is greater than zero resistance and a sufficient resistance to enable the electrical signals applied with the transmitter to be transmitted and thereby received by the transceiver at the surface.

5,394,142

SHOCK DETECTOR AND DISTRESS BEACON FOR AN AIRCRAFT INCORPORATING SUCH A DETECTOR

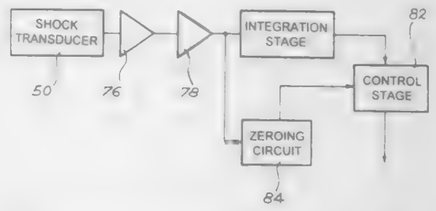
Gérard Dusart, Borderes/Echez, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed Aug. 27, 1993, Ser. No. 113,595

Claims priority, application France, Sep. 8, 1992, 92 10702

Int. Cl.[6] B64D *47/06*

U.S. Cl. 340—981 17 Claims



1. Shock detector which can be carried on a vehicle for automatically triggering, in the case of a shock or impact, at least one safety system, said detector comprising a shock transducer able to emit, in the case of a shock, a pulse signal having an amplitude and a duration respectively proportional to the amplitude and duration of the shock, integration means, sensitive to said pulse signal, for supplying an integrated signal having an amplitude which increases with the amplitude and duration of the shock and detection and control means sensitive to said integrated signal for triggering the safety system when the amplitude of said integrated signal exceeds a predetermined threshold;

said shock detector further comprising amplification means and shaping means for the pulse signal, interposed between the shock transducer and the integration means; and

wherein the pulse signal shaping means incorporate a nonlinear amplifier and inverted clipping diodes having calibrated thresholds.

5,394,143

RUN-LENGTH COMPRESSION OF INDEX KEYS

James C. Murray, Nashua, and Gennady Antoshenkov, Amherst, both of N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 30, 1993, Ser. No. 85,535

Int. Cl.[6] H03M *7/46*

U.S. Cl. 341—63 5 Claims

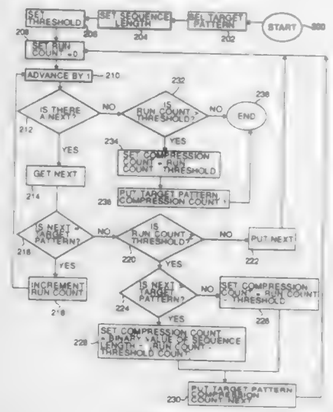
1. In a computer system comprising a data processing means, a memory means, and a data storage device containing data records,

a method of operating the data processing means for compactly storing data while maintaining its natural collating sequence, comprising the steps of:

selecting a target pattern for compression and a threshold count beyond which repetitions of the target pattern are to be compressed,

reading a stream of data characters in sequence,

comparing the characters with the target pattern and recording a run count of sequential repetitions of the target pattern, determining whether the run count exceeds the threshold count, and whenever it does, first determining whether the data pattern immediately following the run of target patterns in the data stream is greater than or less than the target pattern, and then replacing all repetitions of the target pattern in excess of the run count with a character string which includes a numerical code chosen to be the difference between the and the threshold count if the following pattern is less than the target pattern or if there is no following pattern, and to be a preselected



ENCODING PROCEDURE

number less the difference between the run count and the threshold count if the following pattern is greater than the target pattern.

5,394,144

VARIABLE LENGTH CODE DECODING APPARATUS

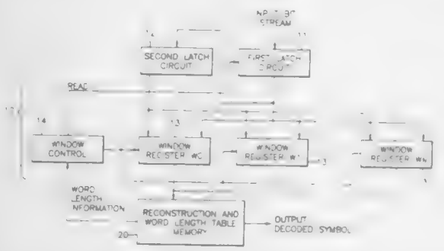
Gyu-Seok, Kim: Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 8, 1993, Ser. No. 73,745

Claims priority, application Rep. of Korea, Jun. 9, 1992, 1992-9946

Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—67 2 Claims



1. A variable length code decoding apparatus having an interface means for parallelly extracting an objective bit stream from input bit streams which includes variable length codewords and a table-lookup memory means, which is connected to the interface means, for decoding the objective bit stream and outputting a decoded symbol and word length information which indicates the length of decoded codeword corresponding to the decoded symbol, wherein said interface means comprises:

a first latch means for receiving and holding a first 2^n-bit input bit stream;

a second latch means for receiving and holding the first 2^n-bit input bit stream held in the first latch means when a second 2^n-bit input bit stream is fed to the first latch means;

a plurality of window registers, hardwiredly coupled to the first and the second latch means and the table-lookup memory means, for receiving and holding the first and the

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second 2^n-bit input bit streams outputted from the first and the second latch means, each of the window registers having 2^n-bit storage locations for storing a 2^n-bit bit stream shifted by 1 bit from that stored in adjacent window register; and

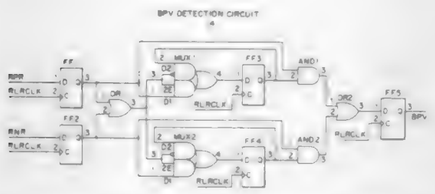
a control means responsive to word length information outputted from the table-lookup memory means for producing a window selection signal to directly select a window register holding a 2^n-bit stream correctly shifted according to the word length information so as to extract the objective bit stream.

5,394,145

PERFORMANCE MONITORING FOR LOOPS

Dev V. Gupta, Flemington, and Kyung-Yeop Hong, Belle Mead, both of N.J., assignors to Integrated Network Corporation, Bridgewater, N.J.

Filed Mar. 11, 1993, Ser. No. 29,876
Int. Cl.[6] H03M *5/12*
U.S. Cl. 341—73 **20 Claims**



1. Apparatus for coupling to a communication channel of a local loop circuit in which information is transmitted as a stream of digital bits comprising:

a) an LCV circuit for determining the occurrence of loop code violations, in which a loop code violation comprises the occurrence of an unintentional bipolar violation as distinguished from an intentional bipolar violation; and an intentional bipolar violation is signalled by an XOV bipolar violation sequence in which a violation bit V, having the same polarity as a previous bit, is intentionally inserted into the bit stream preceded by intentional insertion of an X bit two bits prior to the violation which may comprise a bit having a polarity or no polarity such that successive violations alternate in polarity and intentional insertion of a zero value bit between the X and V bits; and

b) disabling means for disabling the communication channel when the frequency of occurrence of loop code violations exceeds a predetermined rate.

5,394,146

DIGITAL TO ANALOG CONVERTER

Masao Arimoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1993, Ser. No. 69,109
Claims priority, application Japan, Jun. 23, 1992, 4-164828
Int. Cl.[6] H03M *1/06*
U.S. Cl. 341—118 **7 Claims**

1. A D-A converter comprising:

digital data dividing means, having first and second outputs and receiving an N bit digital signal, for outputting from the first output partial digital data which is (N-1) bit digital data obtained by eliminating the most significant bit from said digital signal, and outputting from the second output fixed digital data;

first D-A converting means connected to said first output of said digital data dividing means for D-A converting said digital data received from said first output to output a first analog voltage;

second D-A converting means connected to said second output of said digital data dividing means for D-A converting said digital data received from said second output to output a second analog voltage;

first voltage to current converting means receiving said first analog voltage for voltage to current converting said first analog voltage to output a first analog current;

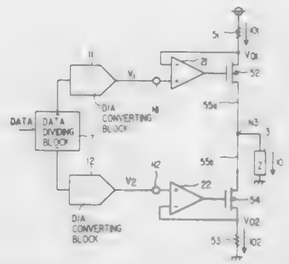
second voltage to current converting means receiving said second analog voltage for voltage to current converting said second analog voltage to output a second analog current; and

current synthesizing means for synthesizing said first analog current and said second analog current to output synthetic analog current;

wherein said first voltage to current converting means includes:

a first operation amplifier for receiving said first analog voltage on its positive input,

a first resistance having its first terminal connected to a negative input of said first operational amplifier and its second terminal connected to first supply voltage, and



a first transistor having its first electrode connected to said first terminal of said first resistance and its control electrode connected to the output of said first operational amplifier; and

wherein said second voltage to current converting means includes:

a second operational amplifier for receiving said second analog voltage on its positive input,

a second resistance having its first terminal connected to a negative input of said second operational amplifier and its second terminal connected to a second supply voltage, and

a second transistor having its first electrode connected to said first terminal of said second resistance and its control electrode connected to the output of said second operational amplifier; and

the current synthesizing means is wiring for connecting the second electrode of said first transistor and the second electrode of said second transistor.

5,394,147

SEQUENTIAL CONVERSION-TYPE ADC USING PREDETERMINED BITS

Takashi Miyake, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

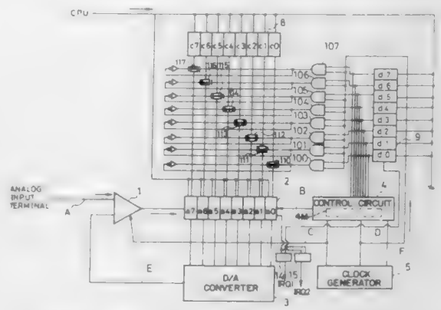
Filed Mar. 18, 1993, Ser. No. 33,215
Claims priority, application Japan, Jun. 10, 1992, 4-176071
Int. Cl.[6] H03M *1/42*
U.S. Cl. 341—161 **8 Claims**

1. A sequential conversion-type A/D converter having a control circuit for sequentially converting a set of bits, each having a logical value, representing a digital value held in a sequential conversion register, with said conversion proceeding from a leading high-order bit in the set of bits to low-order bits in the set of bits with each bit sequentially set to a converted value according to the result of comparison between an analog value converted from the digital value of said sequential conversion register and an analog input signal with a comparator, characterized in that

the converter comprises:

a fixing bit identifying register, holding a set of fixing bits corresponding to the set of bits held in the sequential conversion register, with a group of high-order fixing bits having a first logical value identifying a corresponding group of high-order bits in said sequential conversion register which will have fixed logical values during sequential conversion,

a fixed value register, holding a set of fixed value bits corresponding to the set of bits held in the sequential conversion register, with a group of high-order fixed value bits for setting the fixed logical values of the group of high-order bits in said sequential conversion register,



a bit fixing circuit, coupled to said fixing bit identifying register, said fixed value register, and the sequential conversion register, for setting the logical values of the group of high-order bits in said sequential conversion register, identified by the group of high-order fixing bits, equal to the logical values of the group of high-order fixed value bits;

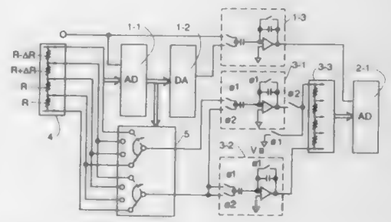
a conversion start position setting circuit, coupled to said fixing bit identifying register and said sequential conversion register, for initiating sequential conversion beginning at a first bit of a lower order of bits not included in a group of high-order fixed bits of said sequential conversion register.

5,394,148

AD CONVERTER

Tatsuji Matsuura; Imaizumi Eiki, both of Tokyo; Kunihiko Usui, Asaka, and Takanobu Anbo, Fuchu, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 26,038
Claims priority, application Japan, Mar. 4, 1992, 4-046539
Int. Cl.[6] H03M *1/42*
U.S. Cl. 341—162 **21 Claims**



1. An AD converter in the form of a serial-parallel or pipelined AD converter for low-voltage application to convert a beginning analog signal to a final digital signal, comprising:

a plurality of function blocks, each operating as a stage of AD conversion;

each of said blocks comprising a sub AD converter having a reference voltage, an analog signal input and a digital output;

each of said blocks further comprising a DA converter inputting the digital output and outputting an analog signal output, and an error amplifier comparing the analog signal input and the analog signal output to produce an amplified analog differential residue signal;

said blocks being connected as means for AD conversion of the beginning analog signal input to said sub AD converter of a first stage of the stages of AD conversion for providing the digital output of each of said blocks as at least one bit of the final digital signal, and providing the amplified analog differential residue signal of each of said blocks having a next block of the stage of AD conversion as the analog signal input of the next block;

said sub AD converter in each block at a second and following ones of the stages of AD conversion having a voltage divider, a full scale adjusting amplifier means for generating and adjusting a reference voltage to be substantially equal in full scale to a full output range of said error amplifier of a preceding stage of AD conversion and for supplying the reference voltage across said voltage divider; and

said full scale adjusting amplifier means having an amplifier that is identical in circuit construction type to said error amplifier and inputs one voltage step of the voltage divider in the block at a preceding one of the stages of AD conversion.

5,394,149

METHOD OF ABSORBING ELECTROMAGNETIC WAVES

Junichi Fujita, Yamatokouriyama; Hiroyuki Okazaki, Daito; Mitsuo Kiura, Yamatotakada, and Yoshiaki Yoshida, Ikoma, all of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

PCT No. PCT/JP91/01544, § 371 Date Jan. 26, 1993, § 102(e) Date Jan. 26, 1993, PCT Pub. No. WO92/22193, PCT Pub. Date Dec. 10, 1992
PCT Filed Nov. 12, 1991, Ser. No. 965,265
Claims priority, application Japan, May 28, 1991, 3-153984
Int. Cl.[6] H01Q *17/00*
U.S. Cl. 342—1 **3 Claims**



1. A method of absorbing electromagnetic waves by absorbing the waves with an oriented carbon fiber-containing composition with the longitudinal axis of its carbon fibers being aligned with the direction of the electric field of the waves to be absorbed, wherein said carbon fiber-containing composition has a degree of carbon fiber orientation A defined as $\epsilon'max-\epsilon'min$ and a degree of carbon fiber orientation B defined as $\epsilon''max-\epsilon''min$, the degree of carbon fiber orientation A being not less than 25 and/or the degree of carbon fiber orientation B being not less than 5, wherein ϵ' and ϵ'' are the real part and imaginary part, respectively, of the complex relative dielectric constant to dielectric constant in vacuo of said carbon fiber-containing composition when the waves to be absorbed are

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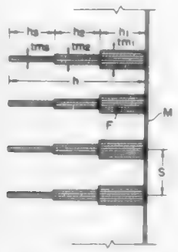
incident on the composition in an optional direction and ϵ'max, ϵ'min and ϵ''max and ϵ''min are the maximum and minimum values thereof.

5,394,150

BROAD-BAND RADIO WAVE ABSORBER

Yoshiyuki Naito, 9-29, Tsukimino 8-chome, Yamato-shi, Kanagawa-ken, and Michiharu Takahashi, 390-190, Takatsu, Yachiyo-shi, Chiba-ken, both of Japan

Filed Nov. 13, 1992, Ser. No. 976,373
Int. Cl.[6] H01Q *17/00*
U.S. Cl. 342—4 6 Claims



1. A broad-band radio wave absorber comprising a plurality of pieces of a ferrite magnetic member disposed in either of a parallel manner to each other or in a crosswise manner on a reflecting plate, each of said pieces of said ferrite magnetic member comprising a plurality of portions superimposed in turn in a stepwise manner;

wherein each of said pieces of said ferrite magnetic member is configured such that a thickness of each portion thereof becomes smaller from the bottom of each of said pieces towards the top of the respective piece and the total height of each of said pieces of said ferrite magnetic member is equal to or longer than the thickness of the lowest portion of the respective piece of said ferrite magnetic member;

wherein each of said pieces of said ferrite magnetic member is disposed separately from an adjacent piece of said ferrite magnetic member pieces at such a distance being longer than the thickness of the lowest portion of the respective piece of said ferrite magnetic member; and

wherein all of the portions of the piece of the ferrite magnetic member are composed of sintered ferrite material.

5,394,151

APPARATUS AND METHOD FOR PRODUCING THREE-DIMENSIONAL IMAGES

Kenneth K. Knaell, Kensington, Md., and Glen R. Heidbreder, Reston, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1993, Ser. No. 129,499
Int. Cl.[6] G01S *13/90*
U.S. Cl. 342—25 3 Claims

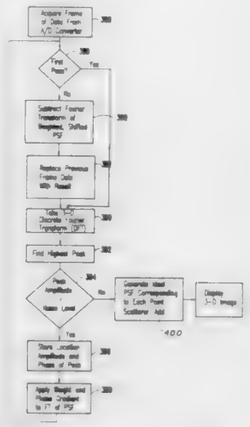
1. A system for generating three-dimensional radar image data from radar target return signals generated by aperture elements of a synthetic aperture radar on a vehicle moving along a path that is curvilinear with respect to said target, which system discriminates against spurious responses associated with the sparseness of the synthetic array, comprising in combination;

means for generating line of sight angle values from said curvilinear path to said target;

processor means for:

a) generating phase and amplitude values of scattering points from said radar return signals by Fourier transforming said radar return signals from said target to generate three-dimensional image data and identifying a highest peak of said three-dimensional image data as a scattering point of said target;

b) subtracting a Fourier transform of a weighted, shifted point spread function based on said line of sight angle values and element weights from said radar returned digital data to yield, as a result of said subtraction process, modified digital data; and



c) iteratively identifying highest peaks of three-dimensional image data as scattering points of said target; and

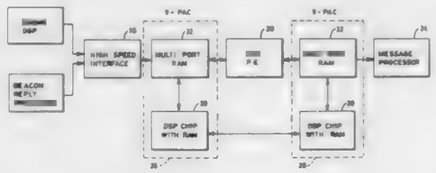
d) subtracting a Fourier transform of a weighted, shifted point spread function from said modified digital data to yield estimated scattering element positions and strengths from target scattering points in three dimensions.

5,394,152

RADAR PROCESSING APPARATUS AND METHOD

James V. Pieronek, Acton, and Jeffrey L. Gertz, Marblehead, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 2, 1993, Ser. No. 100,773
Int. Cl.[6] G01S *13/80*
U.S. Cl. 342—40 6 Claims



1. A radar processor, comprising:

a first multi-port memory device having memory which can be accessed by at least three ports, the device including

a first port for receiving input radar data from a data providing means,

a second port coupled to the input of an array signal processor which performs radar processing,

a third port coupled to a first digital signal processor which performs radar processing, and

an arbiter for coordinating and determining when each of the three ports can access the memory of the first multi-port memory device,

wherein the array signal processor and the first digital signal processor communicating with each other via the first multi-port memory device,

a second multi-port memory device having memory which can be accessed by at least three ports, the device including

a first port coupled to the output of the array signal processor,

a second port coupled to the input of a message interface processor which formats radar target and weather reports from processed radar data,

a third port coupled to a second digital signal processor which performs radar processing, and

an arbiter for coordinating and determining when each of the three ports can access the memory of the second multi-port memory device,

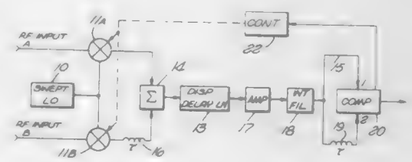
wherein the array signal processor and the second digital signal processor communicate with each other via the second multi-port memory device, and the first and second digital signal processors communicate with each other via a separate interface between the first and second digital signal processors.

5,394,153

COMPRESSIVE RECEIVER HAVING A PLURALITY OF RF INPUTS

Robert P. Borofka, Granada Hills, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,782
Int. Cl.[6] G01S *7/40*
U.S. Cl. 342—20 14 Claims



1. A compressive receiver comprising:

a. at least two radio frequency inputs;

b. a swept local oscillator;

c. at least two mixers, one of said at least two mixers being responsive to the output of said local oscillator and one of said at least two radio frequency inputs, the other of said at least two mixers being responsive to the output of said local oscillator and to another of said radio frequency inputs;

d. a dispersive delay line;

e. means for coupling the outputs of said at least two mixers to an input of said dispersive delay line;

f. a comparator circuit having at least two inputs; and

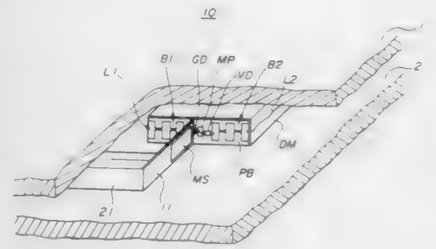
g. means for coupling the output of said delay line to the inputs of said comparator circuit and for delaying the output of said dispersive delay line before coupling to at least one of the inputs of said comparator circuit.

5,394,154

HIGH-FREQUENCY SIGNAL GENERATOR AND RADAR MODULE

Hiroshi Uematsu; Hiroyuki Ando, both of Saitama; Tsutomu Yoneyama, Miyagi; Nobuyoshi Takeuchi, and Shigeki Kato, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1993, Ser. No. 120,024
Claims priority, application Japan, Sep. 11, 1992, 4-269626; Dec. 1, 1992, 4-345409; Dec. 1, 1992, 4-345410
Int. Cl.[6] H03B *7/14*
U.S. Cl. 342—165 44 Claims



1. A high-frequency signal generator comprising:

a conductive plate;

at least one dielectric rod mounted on said conductive plate;

a mount;

a high-frequency generating oscillating element mounted on a side of said mount;

a printed-circuit board mounted on said side of the mount and including a bias supply circuit disposed on a surface thereof for supplying a bias voltage to said oscillating element; and

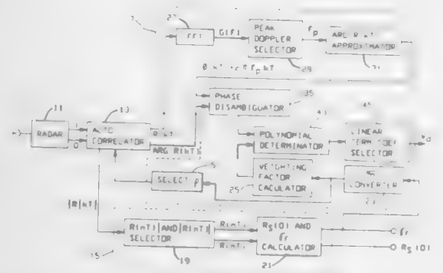
a metal pattern disposed on the surface of said printed-circuit board and dimensionally adjustable for adjusting the oscillation frequency of said oscillating element.

5,394,155

APPARATUS AND METHOD FOR ESTIMATING WEATHER SPECTRAL MOMENTS

William L. Rubin, Whitestone, and John W. Davidsen, Massapequa, both of N.Y., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Aug. 16, 1993, Ser. No. 65,971
Int. Cl.[6] G01S *13/95*
U.S. Cl. 342—192 11 Claims



1. An apparatus for estimating spectral moments of a received radar signal comprising:

an autocorrelator having input means for receiving signals representative of the received radar signal, said autocorrelator providing signals representative of complex autocorrelation function values for said received radar signal,

signals representative of phase angles of said complex autocorrelation function values, and signals representative of magnitudes of said complex autocorrelation function values;

first processor means coupled to receive said signals representative of magnitudes of said autocorrelation function values for providing signals representative of autocorrelation function values at lag zero with noise components removed therefrom and signals representative of Doppler frequency shift spectral width of said received signals; and

second processor means coupled to receive said signals representative of said complex autocorrelation function values, said signals representative of said phase angles, and said signals representative of said Doppler frequency shift spectral width of said received signals for providing a signal representative of mean Doppler frequency shift of said received radar signal.

5,394,156

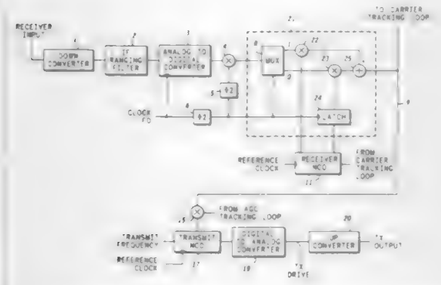
DIGITAL RANGE TURN-AROUND FOR TRACKING, TELEMETRY AND CONTROL TRANSPONDER

Lansing M. Carson, and Dean J. Boman, both of Chandler, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 26, 1993, Ser. No. 157,547

Int. Cl.[6] H04B 7/185

U.S. Cl. 342—353 20 Claims



1. A digital ranging arrangement for a tracking, telemetry and control transponder comprising:

analog/digital converter means for converting a received ranging signal in analog form to a digital ranging signal;

demodulator means for digitally converting said digital ranging signal to a digital baseband signal, said demodulator means coupled to said analog/digital converter means;

modulator means for digitally converting said digital baseband signal to a re-modulated ranging signal in digital form, said modulator means coupled to said demodulator means; and

digital/analog converter means for converting said re-modulated ranging signal in digital form to analog form, said digital/analog converter means coupled to said modulator means.

5,394,157

METHOD OF IDENTIFYING ANTENNA-MODE SCATTERING CENTERS IN ARRAYS FROM PLANAR NEAR FIELD MEASUREMENTS

Dayel R. Garneski, Long Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 22, 1993, Ser. No. 155,320

Int. Cl.[6] H01Q 3/00

U.S. Cl. 342—360 6 Claims

1. A method of identifying antenna-mode scattering centers in an aperture device comprising a feed coupled to an array of antenna elements, which scattering centers are derived from planar near field measurements, which method is employed with a scanning probe that is coupled to a receiver and which is disposed adjacent to the aperture device for making the near field measurements, and a transmitter feed horn coupled to a signal source for illuminating the aperture device, said method comprising the steps of:

disposing the aperture device at a predetermined angle with respect to a scan plane of the scanning probe such that both the normal to the scan plane and the normal to an aperture of the feed horn are at a predetermined nonextreme angle with respect to a boresight of the aperture device;

illuminating the aperture device with signals derived from the signal source using the transmitting horn;

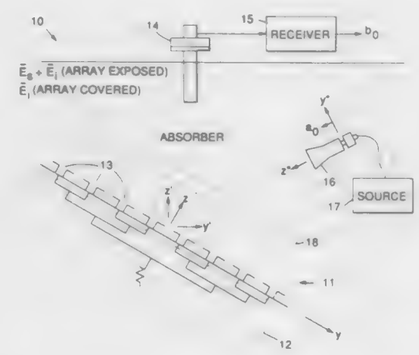
disposing an absorber between the aperture device and the probe;

collecting a first set of data over a planar surface in a near field region of the aperture device using the scanning probe;

illuminating the aperture device with signals derived from the signal source using the transmitting horn;

collecting a second set of data over the planar surface in the near field region of the radiating aperture device using the scanning probe;

determining the difference between the first and second sets of data, to provide data indicative of the near field response of the probe to the near field scattered from the aperture device;



computing data indicative of the scattered far field from the aperture device due to illumination from the horn using a planar near-to-far-field transform;

converting the computed far field data from probe coordinates to aperture device coordinates;

equating the converted far field data to data corresponding to the far field of an array device whose excitation weights are a product of a reflection coefficient looking into the corporate feed at a junction between an element and the corporate feed, and a horn-element coupling factor between the feed horn and antenna element that is proportional to power received by an individual antenna element from the feed horn;

dividing a copolarized component of the far field by a copolarized component of an embedded element pattern to produce a scalar array pattern;

determining the excitation weights using an inverse fast Fourier transform (FFF) of the scalar array pattern;

determining the reflection coefficients by dividing the excitation weights by the horn-element coupling factor; and

computing the antenna-mode scattered far field for an arbitrary incident plane wave having a predetermined angle of arrival and polarization at the predetermined frequency, which antenna-mode scattered far field is indicative of the antenna-mode scattering centers in the aperture device.

5,394,158

LOCATION DETERMINATION AND HANDOVER IN MOBILE RADIO SYSTEMS

Si T. S. Chia, Ipswich, England, assignor to British Telecommunications public limited company, London, England

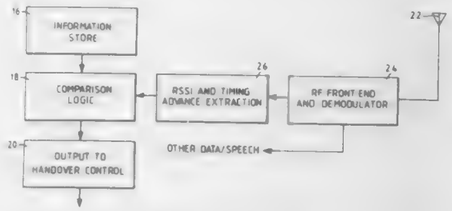
PCT No. PCT/GB91/01242, § 371 Date Mar. 22, 1993, § 102(e) Date Mar. 22, 1993, PCT Pub. No. WO92/02105, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 25, 1991, Ser. No. 30,204

Claims priority, application United Kingdom, Jul. 25, 1990, 9016277

Int. Cl.[6] H04Q 7/04

U.S. Cl. 342—457 20 Claims



1. A system for determining the location of a mobile unit in a micro-cellular radio network having a plurality of base stations each providing radio coverage over a respective microcell and able to communicate with mobile units within the respective micro-cell, the system comprising:

means for storing with respect to each of one or more locations a corresponding order pair of measured distance and measured signal characteristic associated with that location;

means for forming a current order pair for a mobile unit including means for determining a current distance of a mobile unit from a base station and means for measuring a current characteristic of a radio signal transmitted between a mobile unit and a base station; and

means for comparing a stored order pair with a current order pair for the mobile unit to determine the current location of the mobile unit.

5,394,159

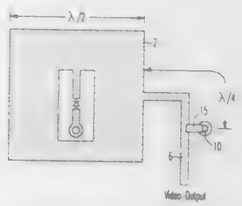
MICROSTRIP PATCH ANTENNA WITH EMBEDDED DETECTOR

Martin V. Schneider, Holmdel; Ralph F. Trambarulo, Red Bank, and Cuong Tran, Howell, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Nov. 2, 1993, Ser. No. 146,250

Int. Cl.[6] H01Q 1/38

U.S. Cl. 343—700 MS 8 Claims



1. In an antenna comprising a resonant conductive patch proximate to but insulated from a conductive ground plane:

a detector comprising a diode having a first electrode connected to the ground plane and having a second electrode connected to the patch: and

signal conducting means for conducting signal to or from the patch,

the antenna being intended for use at a particular wavelength;

said signal conducting means having a length substantially greater than one-quarter of the particular wavelength; and

a first capacitor having two terminals has a first terminal connected to the signal conducting means at a point one-quarter of the particular wavelength from the patch and a second terminal connected to the ground plane;

whereby radio-frequency energy of wavelengths other than said particular wavelength is conducted to ground.

5,394,160

PORTABLE RADIO WITH COPLANAR GROUND AND ATENNA CONDUCTIVE FILMS FORMED ON THE INNER SURFACE OF THE CASE

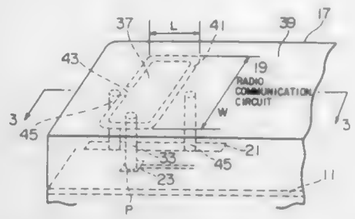
Hiroyuki Iwasaki, and Yukio Yokoyama, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 940,453

Claims priority, application Japan, Sep. 4, 1991, 3-253148

Int. Cl.[6] H01Q 1/24, 1/38

U.S. Cl. 343—702 4 Claims



1. A portable radio communication apparatus, comprising:

an antenna,

an insulating case, and

a printed board having first and second opposed surfaces and a radio communication circuit including a ground pattern and a feeding point, said printed board disposed in said insulating case, and said insulating case having an inner surface opposed to and separated from one of said first and second opposed surfaces of said printed board to define a space therebetween,

wherein said antenna is a conductive film coated on first predetermined region of said inner surface of said insulating case;

a conductive ground film coated on a second region of the inner surface of said insulating case, other than said first predetermined region but coplanar with said first region, said conductive ground film surrounding said antenna conductive film such that a C-shaped slot having a constant width is formed and defined between said antenna conductive film and said conductive ground film;

a first conductive member connecting said antenna conductive film with said conductive ground film;

a plurality of second conductive members extending within said space and connecting said conductive ground film with said ground pattern of said radio communication circuit; and

a feeding member extending within said space and connecting said antenna conductive film with said feeding point of said radio communication circuit.

5,394,161

PATH FINDER/TRACKER SYSTEM

Richard Ubaldo, 243 Hills Beach Rd., Biddeford, Me. 04005, and John Ubaldo, c/o D. H. Blair, 44 Wall St., 11th Floor, New York, N.Y. 10005

Filed Nov. 29, 1993, Ser. No. 158,208

Int. Cl.[6] H01Q 1/24; G06F 15/50

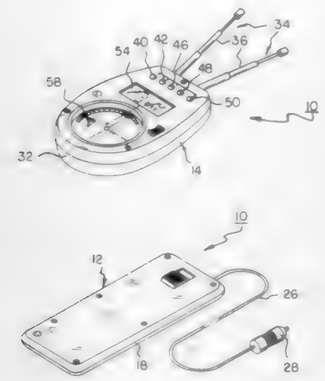
U.S. Cl. 343—702 6 Claims

1. A path finder/tracker system for assisting an outdoors

person in finding the way back to a home base comprising, in combination:

a transmitter having a housing with electronic components therein, the electronic components including emitter means to emit a signal of a predetermined magnitude and frequency in the citizen band range, the transmitter also couplable a power source with an on/off switch to activate and inactivate the emitter means by coupling and uncoupling the power thereto from the power source, the power source including an electrical line having an outboard terminal couplable to the opening of a cigarette lighter in a vehicle in which the transmitter is located, the transmitter when coupled to a source of power constituting the home base; and

a receiver having a housing with electrical components therein including means to receive the signal of the predetermined magnitude and frequency in the citizen band range tuned to that frequency being emitted by the transmitter, a dipole antenna adapted to be retracted to a storage position within the receiver housing and extendable from the front edge thereof in a V-shaped configuration in a horizontal plane, when the receiver is held in a horizontal plane, the receiver also including an array of lights adjacent to the front edge thereof and adapted to sequentially light as a function of the strength of the signal received by the dipole antenna whereby when the dipole antenna is pointing directly at the transmitter, the central light will be illuminated but when not pointed directly at the transmitter, another light will be illuminated, a panel to display an output indicative of the distance of the receiver from the transmitter as a function of the strength of the received signal and a compass to determine the magnetic direction of the transmitter with respect to the receiver after the dipole antenna is directly facing the transmitter whereby a user may determine the location and distance from the transmitter.



5,394,162

LOW-LOSS RF COUPLER FOR TESTING A CELLULAR TELEPHONE

Danny N. Korovesis, Dearborn Heights; James D. Brake, Canton, and Andrew Adrian, Ypsilanti, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 18, 1993, Ser. No. 33,727

Int. Cl.[6] H01Q *1/00*

U.S. Cl. 343—703 **6 Claims**

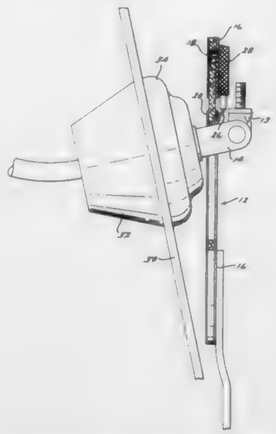
1. A low-loss RF coupling device for coupling testing equipment to a conductive antenna mount comprising:

a base having a first planar surface and a beyond planar surface, said base having a hole extending through both said first planar surface and said second planar surface, said hole having an interior surface for receiving said conductive antenna mount, and said hole having an elongated shape with a top portion and a bottom portion, said top portion having a width less than said bottom portion;

a first conductive ground plane extending over said first planar surface;

a contact disposed within said top portion and on said interior surface for electrically connecting to said conductive antenna mount, said contact being electrically isolated from said ground plane; and

a pair of transmission lines, one transmission line being electrically connected from said contact to said test equipment and the other transmission line electrically connected from said first ground plane to said test equipment.



5,394,163

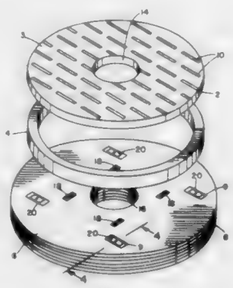
ANNULAR SLOT PATCH EXCITED ARRAY

William E. Bullen, Chino; Henry T. Killackey, Covina, and Dean W. Collins, Claremont, all of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Aug. 26, 1992, Ser. No. 935,323

Int. Cl.[6] H01Q *13/10*

U.S. Cl. 343—771 **7 Claims**



1. Antenna for transmitting or receiving a plurality of wavelengths of electromagnetic radiation comprising:

a ground plane;

a plurality of arrays of radiating/receiving elements disposed in said ground plane, each array of said plurality being adapted to radiate/receive a selected wavelength of electromagnetic radiation;

a dielectric spacer abutting said ground plane; and

an image plate abutting said dielectric spacer comprising a first dielectric core having a first thickness and a first patterned reflective surface on a bottom of said first dielectric core, and a second patterned reflective surface on a top of said first dielectric core, said bottom positioned by said dielectric spacer at a distance of one-half of a first selected wavelength of electromagnetic radiation above said ground plane, said first thickness adapted so that said top is one-half of a second wavelength of electromagnetic radiation above said ground plane, wherein each of said first patterned reflective surface and said second patterned reflective surface comprises a plurality of conductive elements having a length, a width and a spacing corresponding to said first selected wavelength and said second selected wavelength, respectively.

5,394,164

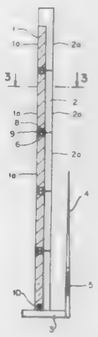
HUMAN-EQUIVALENT ANTENNA FOR ELECTROMAGNETIC FIELDS

Om P. Gandhi, Salt Lake City, Utah, and Edward E. Aslan, Plainview, N.Y., assignors to The Narda Microwave Corp., Hauppauge, N.Y.

Filed Jul. 16, 1992, Ser. No. 915,095

Int. Cl.[6] H01Q *9/30*

U.S. Cl. 343—831 **8 Claims**



1. A human-equivalent antenna for use in measuring electromagnetic field induced current which flows through a human body to ground, which comprises:

an electrically conductive base; and

at least one elongated resistive strip having a first end, said first end being electrically coupled to the base, said resistive strip having a predetermined length and resistivity such that the strip approximates the impedance of a human body exposed to electromagnetic fields, the at least one resistive strip having a current induced therein when the resistive strip is exposed to an electromagnetic field, the induced current approximating the current induced in and flowing through a human body to ground when the human body is exposed to the electromagnetic field.

5,394,165

INDICATION DEVICE

Masami Sugiura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 5, 1993, Ser. No. 27,256

Claims priority, application Japan, Mar. 13, 1992, 4-055768

Int. Cl.[6] G09G *3/32*

U.S. Cl. 345—82 **5 Claims**

1. An indication device comprising:

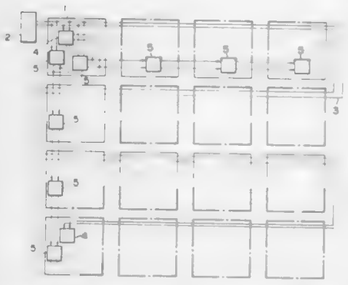
a plurality of indicators;

a control section in each of said indicators for controlling an indication;

a logic section in each of said indicators; and

a gate circuit and data selector in each of said logic section; wherein

said logic section adds a preset number to a digital signal input therein and outputs a resulting signal to said control section and to an adjacent logic section when a switch of said data selector is turned on, and



said logic section subtracts a present number from a digital signal input therein and outputs a resulting signal to said control section and to an adjacent logic section when a switch of said data selector is turned off.

5,394,166

ELECTRONIC DEVICE

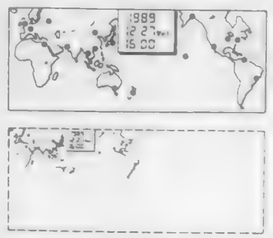
Kazutoshi Shimada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 755,330, Sep. 5, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 92,938

Claims priority, application Japan, Sep. 6, 1990, 2-234429; Dec. 20, 1990, 2-404332

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—98 **22 Claims**



1. An electronic device having an image display unit, comprising:

partial display means for activating only a part of a display screen and displaying an image on the activated portion of the display screen; and

control means for controlling switching between a partial display by said partial display means and a normal display with a full display screen.

5,394,167

DISPLAY DEVICE

Philippe Migny, Fondettes, France, assignor to Securite et Signalisation, Tours, France

Continuation of Ser. No. 22,364, Feb. 25, 1993, abandoned. This application Jul. 20, 1994, Ser. No. 277,773

Claims priority, application France, Feb. 27, 1992, 92 02311

Int. Cl.[6] G09G *3/20*

U.S. Cl. 345—147 **8 Claims**

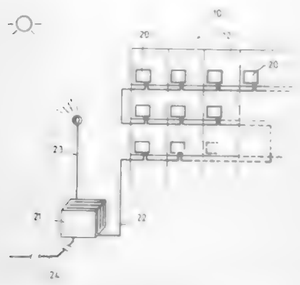
1. In a luminous display device for displaying a message on a panel, the panel comprising n juxtaposed display subassemblies, each for the display of 1/n of the message by means of bundles of optical fibers, each subassembly including at least one light source, the improvement comprising:

VOL 1171 ISS 4 FE 28 1995 UMI

a main control circuit for generating a plurality of different light intensity references;

means for selecting one of said intensity references for transmission to all of the subassemblies; and

n secondary control circuits, each associated with a respective one of the n display subassemblies, each secondary control circuit including means for receiving the selected reference and means for monitoring the light source of the associated subassembly so that each emitted light intensity corresponds to said reference light intensity;



the monitoring means of each secondary control circuit comprising means for directly detecting each light intensity emitted by the associated light source, means for comparing each light intensity with the selected reference, and means for controlling the power supply to the associated light source as a function of the result of the comparison; and

the means for direct detection of each light intensity comprising at least one fiber of the bundle of optical fibers connected to a photoelectrical converter device.

5,394,168

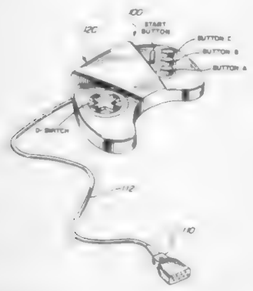
DUAL-MODE HAND-HELD GAME CONTROLLER

Jay Smith, III, Los Angeles, and Kenneth J. Curran, Thousand Oaks, both of Calif., assignors to Smith Engineering, Culver City, Calif.

Filed Jan. 6, 1993, Ser. No. 1,057

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—156 **4 Claims**



1. A hand-held video game controller for a game on which a primary game object and a secondary game object are displayed, comprising:

a housing member which may be movably held by an operator in first and second hands with a front side of the housing member facing a display screen;

an optical input means on the front side of the housing member for detecting a particular pointed position on the display screen at which the operator is pointing the front side of the housing and for producing an optical position control signal, said control signal controlling the secondary game object lo based on the particular pointed position;

a manually operable direction input member for controlling the primary game object located on a top side and at a first end of the housing member to provide a manual direction control signal, said direction input member being positioned tc be manually operable by a thumb of the first hand of the operator while the operator holds the housing member in the first hand;

means for allowing said optical input means and said direction input member to simultaneously control both the primary and secondary game objects; and

a set of manually operable button controls on the top side and at a second end of the housing member to provide a manual button control signal, said button controls being positioned to be manually operable by a thumb of the second hand of the operator while the operator holds the housing member in the second hand,

whereby the operator can individually use the thumbs of the first and second hands to respectively operate said direction input member and said button controls to respectively provide the manual direction control signal and the manual button control signal, while simultaneously using both hands to move the entire housing member relative to the display screen to provide the optical position control signal.

5,394,169

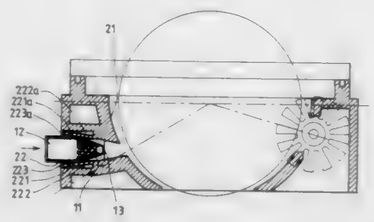
TRACKBALL SUPPORTING DEVICE

Dennis Tseng, Taipei, Taiwan, Prov. of China, assignor to Silitek Corporation, Taipei, Taiwan, Prov. of China

Filed Oct. 1, 1993, Ser. No. 130,447

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—167 **5 Claims**



1. A trackball supporting device comprising a trackball, a base, and a plurality of trackball supports respectively fastened to said base to support said trackball on said base, wherein said base comprises a trackball seat, a plurality of mounting holes spaced around the periphery in communication with said trackball seat, and pairs of symmetrical hook members respectively disposed in either mounting hole; said trackball supports are respectively inserted in said mounting holes, each trackball support comprising a front socket, a rolling ball revolvably retained in the respective front socket to support said trackball in said trackball seat, and a lubricating device to lubricate the respective rolling ball.

5,394,170

APPARATUS AND METHOD FOR CONTROLLING STORAGE OF DISPLAY INFORMATION IN A COMPUTER SYSTEM

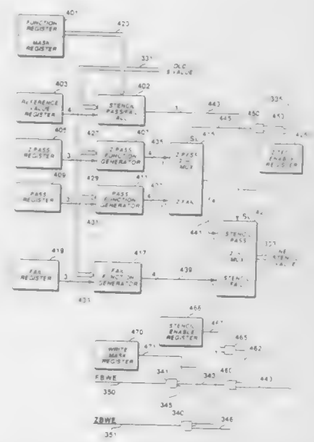
Kurt Akeley, Union city, and James Foran, Milpitas, both of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Continuation of Ser. No. 657,086, Feb. 15, 1991, Pat. No. 5,266,941. This application Dec. 15, 1992, Ser. No. 990,750

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Int. Cl.[6] G09G *1/16*

U.S. Cl. 345—189 **18 Claims**



1. In a computer controlled graphics display system having a display device and a frame buffer for storing digital display information, said frame buffer having a first plurality of locations each corresponding to and mapped to a pixel on said display device, a method for controlling the storage of display information in said frame buffer, said method comprising:

obtaining a first value from a first memory, said first memory having a plurality of locations each corresponding to one of the locations in said first plurality of locations;

selecting a first function;

providing a first signal based upon said first function and said first value;

selecting a second function;

determining a second value from said second function and said first value;

selecting a third function;

determining a third value from said third function and said first value;

selecting between said second value and said third value according to said first signal;

storing said selected value in said first memory; and

determining whether to store information for the pixel location corresponding to said first value in said frame buffer based upon said first signal.

5,394,171

SYNCHRONIZING SIGNAL FRONT END PROCESSOR FOR VIDEO MONITOR

Khosro M. Rabii, Arlington Heights, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.

Filed Nov. 2, 1992, Ser. No. 969,908

Int. Cl.[6] H04N *5/04*

U.S. Cl. 345—213 **22 Claims**

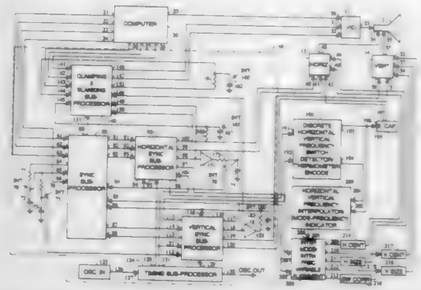
7. For use in a display system responsive to display scan synchronizing signals having polarity and frequency encoded information, a scan synchronizing signal processor comprising:

means for receiving scan synchronizing signals;

means for detecting edge portions within said scan synchronizing signal;

means for producing a plurality of successive numeric counts representing the successive portions of said scan synchronizing signal between successive edge portions;

means for comparing one of said numeric counts to its directly preceding numeric count to determine scan synchronizing signal polarity; and



means for combining a successive pair of said numeric counts to determine scan synchronizing signal frequency,

said means for detecting including:

means for generating a rising edge signal each time a rising edge portion is detected; and

means for generating an edge signal each time either a rising or falling edge portion is detected.

5,394,172

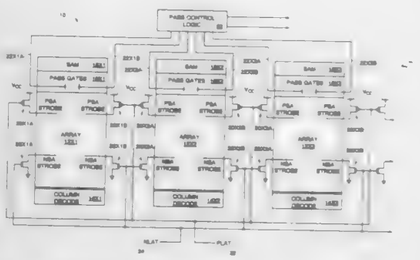
VRAM HAVING ISOLATED ARRAY SECTIONS FOR PROVIDING WRITE FUNCTIONS THAT WILL NOT AFFECT OTHER ARRAY SECTIONS

Loren L. McLaury, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Mar. 11, 1993, Ser. No. 29,816

Int. Cl.[6] G09G *5/36*

U.S. Cl. 345—200 **7 Claims**



4. A memory device, comprising:

a) a dynamic memory array for storing dynamic data, said dynamic memory array having a first memory array portion and a second memory array portion;

b) a serial memory for storing serial data capable of transfer to said dynamic memory array for storage therein;

c) a first coupling circuit for coupling said first memory array portion and said serial memory to one another;

d) a second coupling circuit for coupling said second memory array portion and said serial memory to one another;

e) a first sensing circuit in said first memory array portion for sensing data stored and written in said first memory array portion, said first sensing circuit having a first P-sense amplifier and a first N-sense amplifier;

f) a second sensing circuit in said second memory array

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portion for sensing data stored and written in said second memory array portion, said second sensing circuit having a second P-sense amplifier and a second N-sense amplifier;

g) a first switching circuit comprising a first P-channel device in electrical communication with said first P-sense amplifier and comprising a first N-channel device in electrical communication with said first N-sense amplifier, an output of said first switching circuit in electrical communication with said first sensing circuit, said first sensing circuit responding to an output signal of said first switching circuit to sense the data stored and written in said first memory array portion; and

h) a second switching circuit comprising a second P-channel device in electrical communication with said second P-sense amplifier and comprising a second N-channel device in electrical communication with said second N-sense amplifier, an output of said second switching circuit in electrical communication with said second sensing circuit, said second sensing circuit responding to an output signal of said second switching circuit to sense the data stored and written in said second memory array portion, said outputs of said first and said second switching circuits isolated from one another in order to isolate a voltage disturbance on the output of one of said first and said second switching circuits from the other of said first and said second switching circuits during a deactivation of said first and said second switching circuits;

i) an N latch node connected to a control input of said first N-channel device and a control input of said second N-channel device, said N latch node accepting an N latch signal to control an activation said first and second N-channel devices to determine when the data in said first and said second memory array portions can be sensed: and

j) a P latch node connected to a control input of said first P-channel device and a control input of said second P-channel device, said P latch node accepting a P latch signal to control an activation of said first and said second P-channel devices to determine when the data in said first and said second memory array portions can be sensed.

5,394,173

CIRCUIT SUBSTRATE-MOUNTED SCANNING OPTICAL SYSTEM

Takeshi Kubota, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

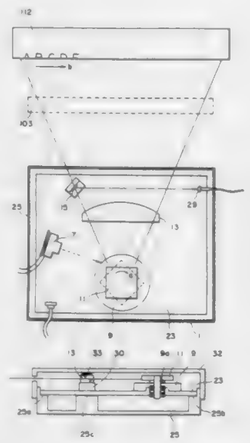
Continuation of Ser. No. 645,455, Jan. 24, 1991, abandoned. This application Mar. 9, 1993, Ser. No. 29,947
Claims priority, application Japan, Jan. 31, 1990, 2-21429
Int. Cl.[6] B41J *27/435*
U.S. Cl. 347—257 90 Claims

1. A scanning optical system comprising:

a light source;

a deflector for deflecting a light beam emitted from said light source;

a circuit substrate including drive means for rotating said deflector; and optical means for focusing the light beam deflected by said deflector to a predetermined plane and



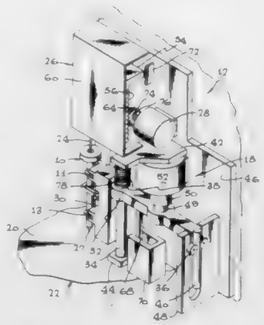
mounted directly on the circuit substrate of said drive means.

5,394,174

ACTUATOR MECHANISM FOR A PENCIL CARRIAGE

Patrick Nguyen, Walnut, Calif., assignor to CalComp Inc., Anaheim, Calif.

Filed Feb. 14, 1992, Ser. No. 835,509
Int. Cl.[6] G01D *15/24*
U.S. Cl. 346—139 R 16 Claims



1. Actuator mechanism for a pencil carriage comprising:

a lead holder;

first means coupled to said lead holder for moving said lead holder toward and away from a drawing media surface, whereby said lead holder is able to assume one or more selected positions relative to said drawing media surface;

second means for moving a lead carried by and internal of said lead holder toward said drawing media surface during a plotting cycle independently of the movement of said lead holder, whereby said lead is able to assume one or more selected positions relative to said drawing media surface and said positions of said lead holder; and

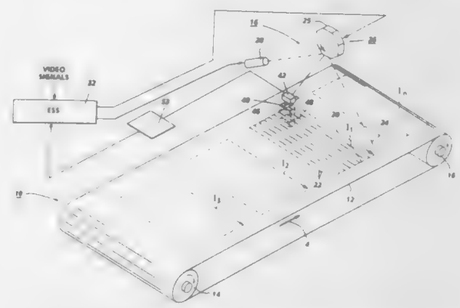
synchronizing means coupled to said first and said second means for synchronizing said first and said second means during said plotting cycle to control during said plotting cycle said positions of said lead relative to said positions of said lead holder and said drawing media surface.

5,394,175

TRANSVERSE IMAGE REGISTRATION FOR A DIGITAL COLOR PRINTER

Edward A. Powers, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 995,650, Dec. 18, 1992. This application May 9, 1994, Ser. No. 240,195
Int. Cl.[6] G01D *15/06*
U.S. Cl. 347—116 5 Claims



1. A color printer for forming a composite image by successive exposures of image exposure frames on a photoconductive member moving in a process direction, the printer including:

a photoreceptor belt having at least a narrow rectangular slit with a length in a process direction and a width in a transverse direction, said slit formed in an opaque area of the belt outside of the image exposure frames, said belt having two opposed surfaces,

detecting means associated with said slit for detecting changes in the transverse position of said slit said detecting means including a light source fixedly positioned adjacent one surface of the belt and a linear position sensor positioned adjacent an opposed surface of the belt, having a pair of electrodes on a top surface thereof, said light source and sensor aligned along a common optical axis and wherein said light source produces an image of said slit which is incident on said sensor when said slit passes between said light source and said sensor, and

registration circuit means for generating signals for adjusting transverse location of said exposure frames in relation to the detected transverse position of said slit.

5,394,176

ELECTROSTATIC PRINTING APPARATUS

Masahiko Itaya; Hiroyuki Nakagoshi, and Tsutomu Sasaki, all of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 36,211
Claims priority, application Japan, Mar. 24, 1992, 4-097011; Mar. 24, 1992, 4-097012
Int. Cl.[6] G01D *15/06*; G03G *15/01, 15/04*
U.S. Cl. 347—128 11 Claims

1. An electrostatic printing apparatus comprising:

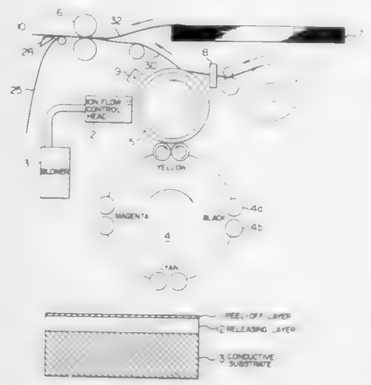
rotary means driven for rotation;

a cut sheet of image supporting medium having a predetermined length, wound onto said rotary means to be rotated therewith, said image supporting medium including an insulating releasing layer and a resin thin film successively formed on an electrical conductive substrate;

means for generating an electrostatic image on said cut sheet of image supporting medium wound on said rotary means as driven;

means for generating a toner image on said resin thin film of said cut sheet of image supporting medium wound on said rotary means by developing said electrostatic latent image with a toner solution; and

means for transferring said toner image together with said resin thin film to a recording medium by superimposing said recording medium on said resin thin film of said cut sheet of image supporting medium, said cut sheet being



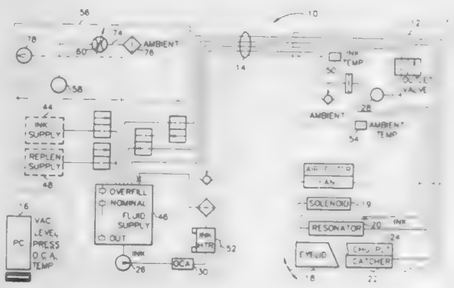
separated from said rotary means after development, and by applying a pressure thereto while heating at a temperature higher than a glass transition temperature of said resin thin film.

5,394,177

FOUR INCH FLUID SYSTEM

James D. McCann, Waynesville; Russell L. Bartley, Urbana; Randy D. Vandagriff, Dayton, and Randal L. Mullins, Jamestown, all of Ohio, assignors to Scitex Digital Printing, Inc., Dayton, Ohio

Filed May 29, 1992, Ser. No. 891,358
Int. Cl.[6] B41J *2/17*
U.S. Cl. 347—7 8 Claims



1. A fluid system for a four inch print head of a continuous ink jet printer having an ink pump, comprising:

a. means for controlling pressure at the print head;

b. ink concentration sensor means;

c. a vacuum control means for measuring a vacuum level of the fluid system; and

d. ink temperature control means.

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5,394,178

PRINTHEAD SERVICING APPARATUS WITH PIVOTAL SERVICING LEVER

Jeffrey J. Grange, Brush Prairie, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 21, 1992, Ser. No. 994,250
Int. Cl.[6] G01D *15/18*
U.S. Cl. 347—32 12 Claims



1. An apparatus for use in servicing a printer with a printhead, said apparatus comprising:

a carriage mounted for movement relative to a chassis of the printer, said carriage including a cam surface having a ramp region; and

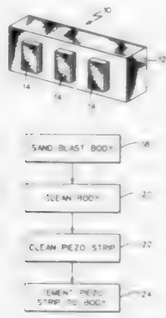
a lever pivotally coupled with the chassis, said lever mounting a printhead-servicing member and including a follower configured to traverse the cam surface of the carriage, said carriage selectively engaging said lever to pivot said lever between a free orientation and a printhead-servicing orientation.

5,394,179

STIMULATOR FOR CONTINOUS INK PRINT HEAD

Randy D. Vandagriff, Dayton; David J. Stephens, Springboro, and Frank L. Reynolds, New Carlisle, all of Ohio, assignors to Scitex Digital Printing, Inc., Dayton, Ohio

Filed Mar. 20, 1992, Ser. No. 855,191
Int. Cl.[6] G01D *15/18*
U.S. Cl. 347—70 6 Claims



1. A stimulator for an ink jet print head, comprising:

(a) a body of high acoustic Q material having a surface finish in the range of 100 to 200 microinches RMS; and

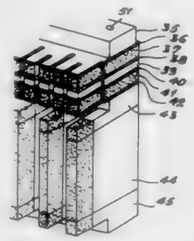
(b) a plurality piezoelectric strips attached to said body by an acrylic cement-having an uncured viscosity of between 2 and 100 centipois.

5,394,180

MODULAR MULTIJET DEFLECTION HEAD AND MANUFACTURING METHOD

Arthur Soucemarianadin, St. Peray, and Thierry Colombat, La Voulte, both of France, assignors to Imaje S.A., Bourg les Valence, France

Filed Apr. 29, 1992, Ser. No. 875,696
Claims priority, application France, May 3, 1991, 91 05475
Int. Cl.[6] G01D *15/18*
U.S. Cl. 347—77 16 Claims



1. A modular multijet deflection head for a printing device with m parallel ink jets comprising, per ink jet, a pair of charge electrodes, a pair of phase detection electrodes and a pair of deflection electrodes, said deflection head comprising:

a first plurality of elements, each comprising m electrodes,

a second plurality of elements for the separation of the elements of the first plurality, that are interposed between certain elements of the first plurality to separate these elements electrically from one another;

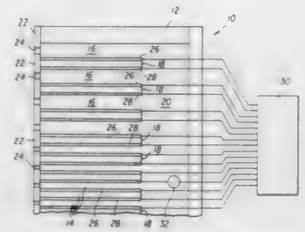
the elements of the first plurality and of the second plurality being aligned and stacked to form a compact assembly.

5,394,181

AIR BUBBLE REMOVAL IN A DROP ON DEMAND INK JET PRINT HEAD

Hilarion Braun, Beaver Creek, Ohio, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 29, 1992, Ser. No. 921,874
Int. Cl.[6] B41J *2/19*
U.S. Cl. 347—92 6 Claims



1. A drop on demand ink jet printing apparatus adapted to emit ink, comprising:

a. an ink jet print channel through which ink may flow in a predetermined direction, said ink jet print channel having a first cross sectional area in a plane normal to the predetermined direction of ink flow;

b. a bubble exhaust channel through which ink may flow and air bubbles may pass in an exhaust direction, said bubble exhaust channel having a second cross sectional area in a plane normal to the exhaust direction of ink flow which is larger than said first cross sectional area; and

c. an ink manifold in fluid communication with said ink jet print channel and said bubble exhaust channel, said channels exhibit respective resonant frequencies;

d. means for actuating said ink jet print channel at the resonant frequency of said ink jet print channel to eject ink drops therefrom for printing; and

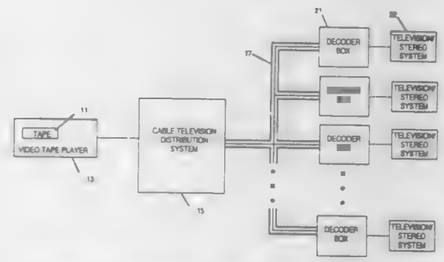
e. means for actuating said bubble exhaust channel at the resonant frequency of said bubble exhaust channel to purge bubbles from said ink manifold.

5,394,182

SYSTEM FOR DELIVERING DIGITAL SOUND, GRAPHICS, REAL TIME FILES AND DATA VIA CABLE

Walter R. Klappert, Topanga, and Michael L. La Jole, Venice, both of Calif., assignors to Time Warner Interactive Group, Inc., Burbank, Calif.

Filed Mar. 22, 1993, Ser. No. 34,307
Int. Cl.[6] H04N *7/10*
U.S. Cl. 348—10 13 Claims



1. A system for delivering digital data encoded in a video signal comprising:

a) recording means for recording digital data as a digitally encoded video signal;

b) distribution means for coupling to said recording means for distributing the recorded digitally encoded video signal to end users as one of a plurality of channels;

c) video signal decoding means for coupling to said distribution means for decoding the distributed recorded, digitally encoded video signal to produce an output signal representing a single user selected channel, said single user seletected channel being the one channel of said plurality of channels;

d) output signal decoding means coupled to said video signal decoding means for decoding the output signal to convert the decoded, distributed and recorded, digitally encoded video signal to the digital data.

5,394,183

METHOD AND APPARATUS FOR ENTERING COORDINATES INTO A COMPUTER

David M. Hyslop, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed May 5, 1992, Ser. No. 878,565
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—88 16 Claims

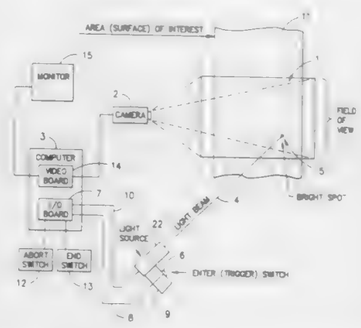
1. A system for measuring x and y coordinates of a surface comprising:

(a) a means for assigning numerical brightness attributes for at least one pixel in a field of view of a video camera;

(b) a memory for storing a plurality of sets of said numerical brightness attributes for said at least one pixel in said field of view of said video camera, one of said sets obtained with a light source present in said field of view, and the other of said sets obtained without said light source present in said field of view;

(c) a means for comparing said plurality of sets of said numerical brightness attributes for said at least one pixel in said field of view of said video camera, one of said sets obtained with a light source present in said field of view, and the other of said sets obtained without said light source present in said field of view, to form a difference in said numerical brightness attributes with a one-to-one correspondence of said at least one pixel in each of said sets; and

(d) a means for determining minimum and maximum x and y coordinate values of pixels having the highest value of



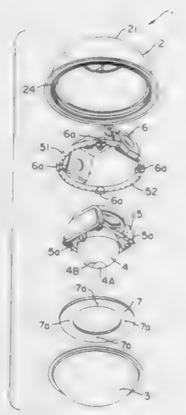
said difference in numerical brightness attributes to determine the location of said at least one pixel, further comprising a means for calculating a search area in said field of view to be utilized by said means for comparing.

5,394,184

SURVEILLANCE ASSEMBLY HAVING CIRCUMFERENTIAL DELIVERY OF FORCED AIR TO VIEWING BUBBLE

Luis Anderson, Boca Raton, and Norbert M. Stiepel, Palm Beach Gardens, both of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Aug. 30, 1993, Ser. No. 114,016
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—151 25 Claims



1. A surveillance assembly for use in combination with a camera and lens assembly comprising:

a support housing;

a cover member supported by said support housing and extending about a periphery of said support housing to define an enclosed area for receiving said camera and lens assembly, said cover member permitting viewing by said camera and lens assembly outward of said cover member when said camera and lens assembly is received within said enclosed area;

and a forced air delivery assembly situated adjacent to said

cover member for delivering forced air to said cover member from points distributed around substantially the entire circumference of said cover member, said forced air delivery assembly comprising: a ring-shaped tube having an air intake opening and apertures distributed about the circumference of said ring-shaped tube; a heating element disposed in said ring-shaped tube; and a blower for delivering forced air into said air intake opening of said ring-shaped tube.

5,394,185

IN-SERVICE CATV HUM MEASUREMENT TECHNIQUE

Kyle L. Bernard, Tigard, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Jan. 8, 1993, Ser. No. 1,951
Int. Cl.[6] H04N *17/00*
U.S. Cl. 348—192 **3 Claims**



1. A method of measuring hum and low frequency distortion for an in-service channel of a cable television system having a carrier frequency modulated by a video signal comprising the steps of:

acquiring a data record for the in-service channel representing peak values for horizontal sync pulses of the video signal; and

performing a fast Fourier transform on the data record to obtain peak-to-peak percentage values of the hum and low frequency distortion relative to a magnitude of the carrier frequency at a fundamental and first harmonic frequency of a powerline providing power to the cable television system.

5,394,186

DEVICE FOR THE PROCESSING OF DIGITAL SIGNALS COMING FROM OPTICAL SENSORS

Jacques Antoine, Montigny le Bretonneux; Jean-Marc Clairgironnet, Paris, and Patrick Vejus, Fontenay le Fleury, all of France, assignors to Thomson-CSF, Puteaux, France

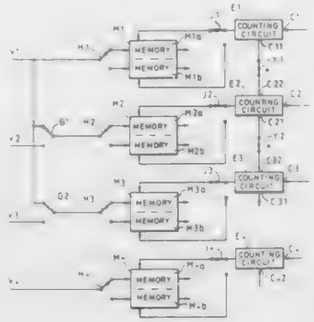
Filed Apr. 22, 1993, Ser. No. 50,629
Claims priority, application France, Apr. 24, 1992, 92 05053
Int. Cl.[6] H04N *3/14*
U.S. Cl. 348—262 **8 Claims**

1. A configurable device for processing signals from sensors, comprising:

n inputs, n being a whole number greater than 1, connected to outputs of said sensors;

n memories, corresponding to said n inputs, for storing signals corresponding to signals which are output by said sensors;

a connecting means, arranged between said n inputs and said n memories, for connecting, during a writing of information from said sensors to said n memories, said n inputs to said n memories in a plurality of configurations using at least one switch, a first of said configurations connecting a first one of said n inputs to a first one of said n memories and connecting, using said at least one switch, a second one of said n inputs to a second one of said n memories, and a second of said plurality of configurations connecting said first one of said n inputs to said second one of said n memories, using said at least one switch, wherein one of said plurality of configurations is selected depending on a number of said sensors;



addressing means, connected to said n memories, for controlling addressing during a reading of and said writing to said n memories; and

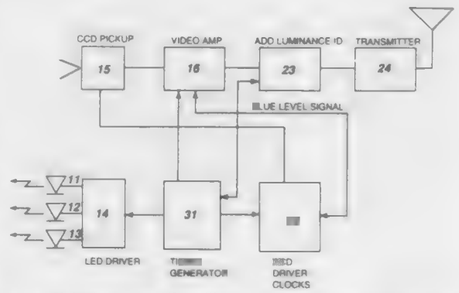
combination means, connected to said n memories, for combining, during said reading, said signals stored in said n memories and outputting a result of said combining.

5,394,187

VIDEO IMAGING SYSTEMS AND METHOD USING A SINGLE INTERLINE PROGRESSIVE SCANNING SENSOR AND SEQUENTIAL COLOR OBJECT ILLUMINATION

John I. Shipp, Tullahoma, Tenn., assignor to Apollo Camera, L.L.C., Tullahoma, Tenn.

Continuation-in-part of Ser. No. 905,278, Jun. 26, 1992, Pat. No. 5,264,925. This application Nov. 22, 1993, Ser. No. 156,377
Int. Cl.[6] H04N *9/04*
U.S. Cl. 348—269 **10 Claims**



1. A sequential color video imaging system for viewing an object, said system comprising:

a. an interline video sensor having an image array of horizontal and vertical photosensitive elements and a corresponding storage array of video data storage elements, said photosensitive elements responsive to levels of light reflection from the object;

b. object illumination means to illuminate the object, said object illumination means including separately operable red, green, and blue light sources;

c. timing and driver means operably connected to said object illumination means to activate said red, green, and blue light sources in a pre-determined repeating sequence of red and green, red, red and green, and blue light illumination periods;

d. sensor driver means operably connected to said sensor to shift the video data responsive to the level of light reflected from the object during each of said illumination periods from said image array to said storage array; and

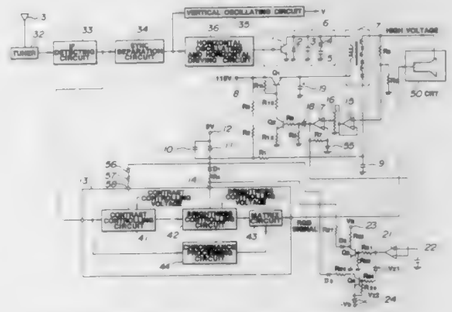
e. processor means operably connected to said storage array of said sensor, to read and transform the video data shifted to said storage array into a corresponding sequence of chrominance and luminance video signals representing the object viewed by said imaging system.

5,394,188

HIGH VOLTAGE STABILIZING CIRCUIT FOR USE IN COLOR TELEVISION RECEIVERS

Yoshifumi Ohira, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 10, 1993, Ser. No. 74,758
Claims priority, application Japan, Jun. 15, 1992, 4-154926
Int. Cl.[6] H04N *3/185*
U.S. Cl. 348—327 **10 Claims**



1. A high voltage stabilizing circuit comprising:

video signal processing means, having an input terminal, a control terminal and an output terminal, for amplifying a video signal fed to the input terminal and for outputting the amplified video signal to the output terminal;

a picture tube, having an anode, for receiving the amplified video signal from the video signal processing means;

high voltage generating means for feeding a high voltage to the anode;

high voltage stabilizing means for detecting a fluctuation of the high voltage and for controlling, in accordance with the detected fluctuation, the high voltage generating means so as to stabilize the high voltage;

luminance controlling means for generating an operating voltage which varies in response to an anode current of the picture tube when the anode current exceeds a predetermined value, and for feeding the operating voltage to the control terminal so as to allow the control terminal to control a luminance level of the amplified video signal;

detecting means for detecting when the high voltage has varied over a predetermined controlled range of the high voltage stabilizing means, said detecting means including:

comparing means for comparing the high voltage with a predetermined reference direct current voltage; and

luminance forcing means for forcibly feeding a voltage, which is used by the control terminal for controlling the luminance level, to the control terminal when the detecting means detects that the high voltage has exceeded the predetermined controlled range of the high voltage stabilizing means, said luminance forcing means including:

a transistor having a collector connected to a voltage source, an emitter connected to a reference potential point and a base connected to the comparing means so as to receive a comparison result which is indicative of the comparison of the high voltage with the predetermined reference direct current voltage, the transistor operating in response to the comparison result; and

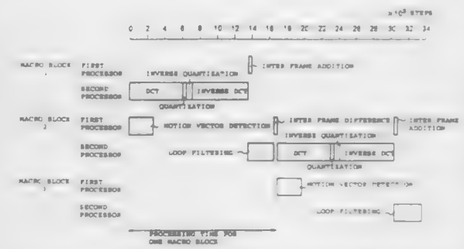
a single direction conducting element between the control terminal and the collector, the single direction conducting element conducting when the transistor operates.

5,394,189

MOTION PICTURE CODER AND SYSTEM FOR CONTROLLING THE SAME

Masato Motomura, and Tadayoshi Enomoto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,623
Claims priority, application Japan, Jan. 30, 1992, 4-014401
Int. Cl.[6] H04N *7/133, 7/137*
U.S. Cl. 348—402 **5 Claims**



1. A motion picture coder having multi-pipeline stages for coding a plurality of macro blocks of motion picture data based upon a predetermined standardizing system, said coder comprising:

a first pipe-lined processor for executing a motion vector detection process for a second macro block, an inter-frame addition process for a first macro block and an inter-frame difference process for said second macro block; and

a second pipe-lined processor for executing a discrete cosine transform process for said first macro block, a quantization process for said first macro block, an inverse quantization process for said first macro block, an inverse discrete cosine transform process for said first macro block and a loop filtering process for said first macro block, said second pipe-lined processor being separated from said first pipe-lined processor so as to perform a parallel operation of said first and second pipe-lined processors.

5,394,190

VIDEO SIGNAL ENCODING APPARATUS

Masazumi Yamada, Moriguchi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 14, 1993, Ser. No. 76,425
Claims priority, application Japan, Aug. 4, 1992, 4-207758
Int. Cl.[6] H04N *7/133, 7/137*
U.S. Cl. 348—411 **6 Claims**

1. A video signal encoding apparatus for bit rate reduction encoding an interpolated scanned video signal comprising:

a block former, said block former dividing data on a field to be encoded into blocks, each block being composed of a specified number of pixel data;

a first memory, said first memory storing decoded data of m-th and n-th preceding fields counted from the field to be encoded, where m is an even number and n is an odd number;

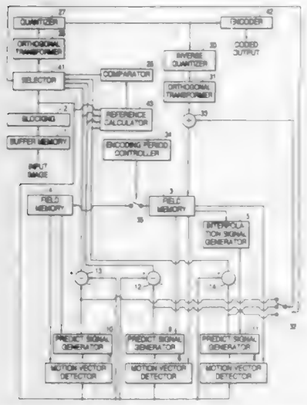
a scanning line interpolator, said interpolator interpolating a given number of scanning lines by using the data of the n-th preceding field to produce data of an interpolated field;

a second memory, said second memory storing the data of the interpolated field;

a motion detector, said motion detector detecting motions of

a block to be coded with respect to corresponding blocks in the m-th preceding field, the n-th preceding field and the interpolated field, and for producing first through third motion vectors indicating the respective detected motions;

a predicted data extractor, said extractor extracting first through third predicted data from the data of the m-th preceding field, the n-th preceding field and the interpolated field based on the first through third motion vectors respectively;



a difference calculator, said calculator calculating a difference of the data of the block to be coded from the first through third predicted data to obtain first through third difference signals indicating the respective calculated differences; and

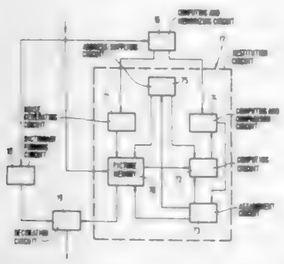
a selective encoder, said selective encoder selectively encoding one of the data of the block to be coded and the first through third difference signals to obtain an output coded data so that the output coded data satisfies a predetermined condition.

5,394,191

METHODS FOR SYNTHESIS OF TEXTURE SIGNALS AND FOR TRANSMISSION AND/OR STORAGE OF SAID SIGNALS, AND DEVICES AND SYSTEMS FOR PERFORMING SAID METHODS

Jacques A. Sirat, Limeil Brevannes, and Christophe O. Oddou, Ablon, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 30, 1992, Ser. No. 983,021
Claims priority, application France, Dec. 4, 1991, 91 14999
Int. Cl.[6] H04N *5/14, 1/41*
U.S. Cl. 348—571 20 Claims



1. A method for texture synthesis based on digital video signals which are associated with sample blocks of pixels constituting a reference sample, said method comprising the steps of:

a) ascertaining and storing a plurality of sample values representing structural characteristics of, or associated with, said reference sample;

b) forming an approximate synthesis picture by progressive growth based upon said sample values and said reference sample;

c) subdividing said approximate synthesis picture into a plurality of approximate pixel blocks each having an identical size;

d) creating a dictionary for storing those sample blocks of said reference sample which have the same size as said approximate pixel blocks; and

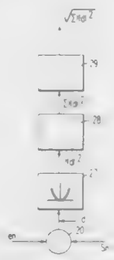
e) forming a definitive synthesis picture by substituting, as a function of a predetermined criterion, each of said approximate pixel blocks for a sample block stored in said dictionary.

5,394,192

METHOD OF MEASURING THE NOISE IN AN ACTIVE VIDEO IMAGE AND DEVICE FOR IMPLEMENTING THE METHOD

Andrew Hackett, Goxwiller, France, assignor to Thomson Consumer Electronics, Courbevoie, France

PCT No. PCT/FR91/00756, § 371 Date Mar. 29, 1993, § 102(e) Date Mar. 29, 1993, PCT Pub. No. WO92/06558, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 27, 1991, Ser. No. 30,173
Claims priority, application France, Sep. 28, 1990, 90 11986
Int. Cl.[6] H04N *5/21, 5/213*
U.S. Cl. 348—619 11 Claims



1. Method of adjusting a noise-reduction coefficient K in an active video image, characterised by the following steps:

during a given processing period, detecting movement and measuring noise in the video image in parallel, a measurement of the noise being obtained for each pixel of the video image considered to be stationary, using a movement detector processing successive images, by calculating a difference f_d between an unprocessed video signal corresponding to this pixel, and a video signal processed with a noise-reduction coefficient K corresponding to the pixel at a same spatial position in a preceding video image;

calculating the square of the absolute value of the difference so as to obtain a value $|f_d|^2$;

adding the value $|f_d|^2$ to other values $|f_d|^2$ already obtained for the pixels defined as stationary, so as to form a sum value $\Sigma|f_d|^2$;

recommencing the above operations until a number of pixels processed is equal to a first threshold value N_0, or until the end of the processing period;

at the end of the above operations, when the number of pixels processed is at least equal to the first threshold value, using the sum value $\Sigma|f_d|^2$ to determine a value of a reference point corresponding to the movement as a function of the noise, this value giving as a function of a transfer curve in which the noise-reduction coefficient is a function of the values at the output of the movement detector, a new value for the noise-reduction coefficient K, otherwise a former value of the noise-reduction coefficient K is kept; and

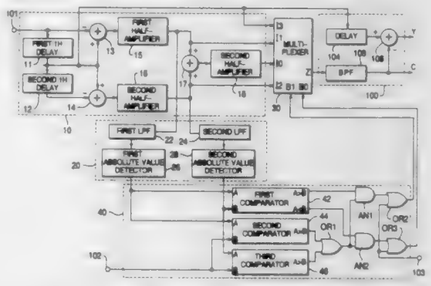
using the value determined as the noise-reduction coefficient K to reduce noise in the unprocessed video image to produce a noise-reduced video image.

5,394,193

PATTERN-ADAPTIVE DIGITAL COMB FILTER FOR SEPARATION OF A LUMINANCE AND A COLOR SIGNAL

Jung H. Kim, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 20, 1991, Ser. No. 718,385
Claims priority, application Rep. of Korea, Jun. 29, 1990, 90-9721
Int. Cl.[6] H04N *9/78*
U.S. Cl. 348—668 29 Claims



1. A pattern-adaptive digital comb filter, comprising:

comb filter means for providing first 1 H comb data and second 1 H comb data by comb-filtering input video signals of three successive horizontal scanning lines, and for providing 2 H comb data by comb-filtering said input video signals of three horizontal scanning lines;

correlation data generation means, connected to said comb filter means, for providing first correlation data and second correlation data by detecting low band transitions of luminance signals produced from horizontal line pairs through low pass filtering and absolute value detection of said first 1 H comb data and said second 1 H comb data;

multiplexer means, connected to said comb filter means, for selecting and providing one of said first 1H comb data, said second 1 H comb data, and said 2 H comb data according to selection data; and

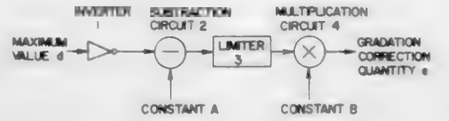
comb-filtering controller means, connected to said correlation data generator means and said multiplexer means, for generating said selection data to select said 2 H comb data when both said first correlation data and said second correlation data are smaller than reference data applied through a reference data terminal, and to select a more highly correlated one of said first 1 H comb data and said second 1 H comb data by comparing magnitudes of said first correlation data to magnitudes of said second correlation data when either said first correlation data or said second correlation data is not smaller than said reference data.

5,394,194

GAIN CONTROL CIRCUIT AND GRADATION CORRECTING APPARATUS

Yosuke Izawa, and Naoji Okumura, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 27, 1993, Ser. No. 9,878
Claims priority, application Japan, Feb. 7, 1992, 4-021529
Int. Cl.[6] H04N *5/52, 5/20*
U.S. Cl. 384—672 2 Claims



1. A gradation control circuit for processing an input image signal having a distribution histogram of brightness level, said gradation control circuit comprising:

a gain control circuit comprising:

(a) an inverter for inverting a gain control input signal to generate an inverted signal, said gain control input signal is a maximum value of the distribution histogram of brightness level,

(b) means for subtracting a signal representative of a first constant from said inverted signal to generate a subtracted signal,

(c) limiter means for generating (1) an output signal of zero value when said subtracted signal is less than zero, and (2) an output signal equal in value to said subtracted signal when said subtracted signal is not less than zero,

(d) a multiplication circuit for multiplying said output signal by a second constant,

means for generating a gradation correction signal by multiplying (1) a value determined from the distribution histogram of brightness level and (2) the output of the multiplication circuit, and

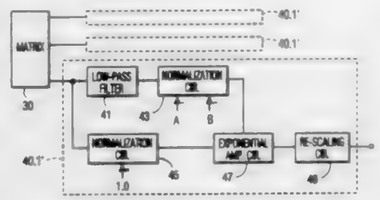
means for adding said gradation correction signal to the input image signal.

5,394,195

METHOD AND APPARATUS FOR PERFORMING DYNAMIC GAMMA CONTRAST CONTROL

Stephen Herman, Monsey, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Jun. 14, 1993, Ser. No. 76,565
Int. Cl.[6] H04N *9/69*
U.S. Cl. 348—675 10 Claims



1. A method of providing dynamic gamma contrast control of an input video signal in a television receiver, said input video signal forming, on display, image frames, each of which exhibits varying brightness in differing areas of the respective image frame, comprising the steps:

low-pass filtering the input video signal so that processing only occurs on the low frequency components therein;

normalizing, pixel-by-pixel, the low-pass filtered video signal so that the value thereof extends from 0 to a predeter-

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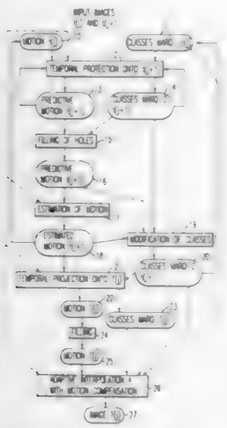
mined maximum value A, thereby forming a normalized signal;
adding a predetermined parameter B to the normalized signal thereby forming a gamma exponent;
normalizing the input video signal so that the values thereof lie between 0 and 1.0;
raising the normalized video signal, pixel-by-pixel, to an exponent equal to the gamma exponent forming a corrected normalized video signal; and
rescaling the corrected normalized video signal to the full dynamic range of the input video signal, whereby dark portions of the image frames formed when said corrected normalized video signal is displayed are more visible than in the image frames of said input video signal.

5,394,196

METHOD OF CLASSIFYING THE PIXELS OF AN IMAGE BELONGING TO A SEQUENCE OF MOVING IMAGES AND METHOD OF TEMPORAL INTERPOLATION OF IMAGES USING THE SAID CLASSIFICATION

Philippe Robert, Rennes, France, assignor to Thomson-CSF, Puteaux, France

PCT No. PCT/FR92/00278, § 371 Date Nov. 19, 1992, § 102(e) Date Nov. 19, 1992, PCT Pub. No. WO92/17983, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 27, 1992, Ser. No. 946,371
Claims priority, application France, Apr. 5, 1991, 91 04164
Int. Cl.[6] H04N *7/137*
U.S. Cl. 348—699 **15 Claims**



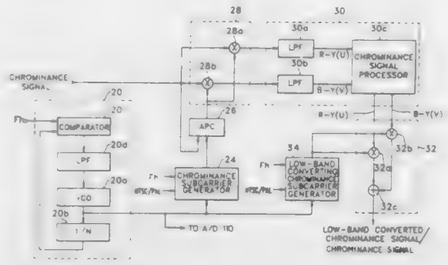
1. Method for classifying the pixels of a current image t(j+1) obtained by temporal projection of the field of motion of a preceding image t(j) belonging to a sequence of moving images, the pixels of the preceding image being defined by a motion vector and by a tag, the tag belonging to a class defined from at least three classes termed "normal", "occluding" or "appearing", the said method comprising the steps of:
before projection, all the pixels of the current image t(j) are tagged "appearing";
carrying out temporal projection of t(j);
modify tagging during temporal projection by taking into account the tagging of the pixels of the image t(j) in such a way that:
if a pixel tagged "appearing" receives a motion vector, change its tag to "normal";
if a pixel is tagged "normal" receives a motion vector, change its tag to "occluding" and assign it the motion vector with minimum |DFD| (for displaced frame difference);
if a pixel tagged "occluding" receives a motion vector, leave its tag as occluding and assign it the motion vector with minimum |DFD| and;
if a pixel tagged "appearing" receives no motion vector, leave the tag as "appearing".

5,394,197

LOW-BAND CONVERSION CHROMINANCE SIGNAL PROCESSING APPARATUS AND METHOD THEREFOR

Yong-je Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 29, 1993, Ser. No. 158,826
Claims priority, application Rep. of Korea, Nov. 27, 1992, 92-22571
Int. Cl.[6] H04N *9/64*
U.S. Cl. 348—708 **30 Claims**



1. A low-band converting chrominance signal processing apparatus which receives a chrominance signal modulated by a chrominance subcarrier to produce a chrominance signal modulated by a low-band converting chrominance subcarrier, comprising:
an automatic frequency control circuit for generating an oscillating signal having a predetermined frequency;
a chrominance subcarrier generator for receiving said oscillating signal to thereby produce said chrominance subcarrier;
a chrominance demodulator for demodulating the chrominance signal modulated by said chrominance subcarrier, using said chrominance subcarrier;
a chrominance processor for processing the demodulated chrominance signal from said chrominance demodulator;
a low-band converting chrominance subcarrier generator for receiving said oscillating signal to thereby produce said low-band converting chrominance subcarrier; and
a chrominance modulator for receiving the chrominance signal processed by said chrominance processor and said low-band converting chrominance subcarrier to thereby produce the chrominance signal modulated by said low-band converting chrominance subcarrier.

5,394,198

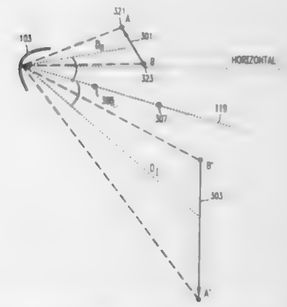
LARGE-SCREEN DISPLAY SYSTEM

Richard H. Janow, South Orange, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 22, 1992, Ser. No. 995,425
Int. Cl.[6] H04N *7/14*
U.S. Cl. 348—744 **22 Claims**

1. A video projection system comprising:
a video image source producing a video image;
a concave mirror having an optic axis and a principal focal surface intersecting said optic axis at a focal point; and
means for positioning said video image source at a position located off of said optic axis and within a volume defined by said principal focal surface and a corresponding surface

intersecting said optic axis at a second point that is twice the distance from said concave mirror as is said focal point, so as to produce a real, inverted magnified image of said video image off of said optic axis.



5,394,199

METHODS AND APPARATUS FOR IMPROVED VISUALIZATION OF CHOROIDAL BLOOD FLOW AND ABERRANT VASCULAR STRUCTURES IN THE EYE USING FLUORESCENT DYE ANGIOGRAPHY

Robert W. Flower, Hunt Valley, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed May 17, 1993, Ser. No. 63,343
Int. Cl.[6] A61B *3/12, 3/14, 5/02*
U.S. Cl. 351—206 **30 Claims**



1. A method for visualizing a first layer of blood vessels from a second layer of blood vessels, the first layer being coextensive with the second layer, in a sequence of angiographic images, wherein the rate of change of fluorescence emitted from the first layer is greater than the rate of change of fluorescence emitted from the second layer, the method comprising the steps of:
injecting intravenously a fluorescent dye, the dye filling the first and second layers of blood vessels;
exciting the dye thereby causing a fluorescence to be emitted from the first and second layers of blood vessels;
taking a sequence of angiographic images of the emitted fluorescence; and
subtracting an image in the sequence of angiographic images from a succeeding image thereby forming a resultant image, the resultant image showing the fluorescence emitted from the first layer of blood vessels.

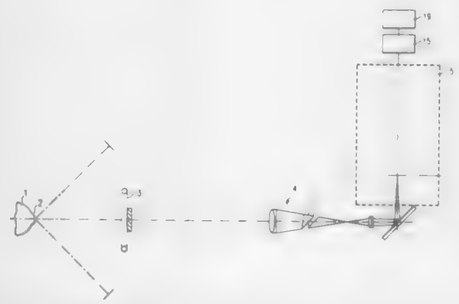
5,394,200

AUTOMATIC KERATOMETRIC MEASURING METHOD AND DEVICE FOR IMPLEMENTING SAID METHOD

Jean-Pierre Lormois, Barjouville, and Patrick Lafond, Nozay, both of France, assignors to Luneau, S.A., France

Continuation-in-part of Ser. No. 606,995, Oct. 31, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 6,280
Claims priority, application France, Oct. 31, 1989, 89 14257
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—212 **6 Claims**

4. An automatic keratometric measuring device including a circular crown-shaped luminous source, a matrix camera allowing a measure to be performed, about a hundred points, a lens forming the image of the luminous source given by the cornea of the eye to be examined, an electronic card connected to the output of the matrix camera and supplying, from the video signal formed by a plurality of video lines and supplied by the matrix camera, a plurality of numerical values describing the elliptical image, and a microprocessor element receiving and processing said plurality of the numerical values so as to extract information concerning the value of the large and small bending radii and the angular position of the principal axis of the cornea.

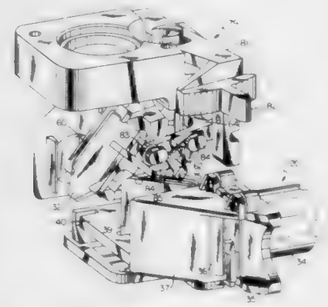


5,394,201

BINOCULAR OPHTHALMOSCOPE WITH MIRROR ADJUSTMENT

Ronald A. Hauptli, Warners, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Aug. 19, 1993, Ser. No. 109,078
Int. Cl.[6] A61B *3/10*; G02B *27/02*
U.S. Cl. 351—221 **12 Claims**



1. A binocular ophthalmoscope for viewing objects inside the eye that includes
a frame for supporting a pair of opposed eyepieces arranged for viewing along a common horizontal axis,
a light source for directing a beam of light along a first light path onto an illumination mirror,
a movable table that supports said illumination mirror in said frame for redirecting a beam of light along a first light path onto an illumination mirror,
a movable table that supports said illumination mirror in said frame for redirecting the beam of illumination along a second light path for illuminating a target inside the eye,
a carriage mounted in said frame for reciprocation along a path of travel toward and away from the target,
a pair of image reflecting surfaces mounted on said carriage for directing images of said target travelling along separate image paths back to each eyepiece so that the distance separating the axes of the image paths move closer together as the carriage is moved toward said target and

move further apart as the carriage is moved away from said target and

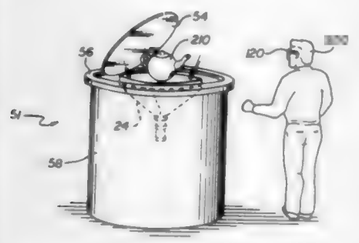
control means for angularly adjusting the position of said movable table in response to the movement of said carriage so that the vertical distance separating the axis of the beam of light and the axes of the two image paths decreases as the image paths move closer together and increase as the image paths move further apart.

5,394,202

METHOD AND APPARATUS FOR GENERATING HIGH RESOLUTION 3D IMAGES IN A HEAD TRACKED STEREO DISPLAY SYSTEM

Michael F. Deering, Los Altos, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jan. 14, 1993, Ser. No. 4,706
Int. Cl.[6] G03B *21/28*; H04N *13/00*
U.S. Cl. 353—7 20 Claims



1. An apparatus for generating an accurate stereo three dimensional image, comprising:

display device comprising a stereo CRT having a display surface for generating stereo images rendered by a computer means;

reflector means coupled to rotate around the display surface of the display device and reflect the stereo images, such that the reflector means transmits the stereo images to a viewer;

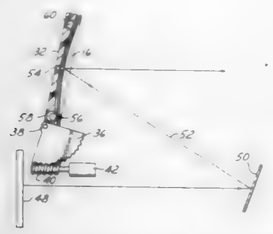
means for positioning the reflector means under control of the computer means, such that the reflector means tracks movement of the viewer, thereby continuously transmitting the stereo images to the viewer, wherein the reflector means comprises a mirror, the mirror positioned to form a substantially forty five degree angle in relation to the display surface of the display device as the mirror rotates around the display surface.

5,394,203

RETRACTING HEAD UP DISPLAY WITH IMAGE POSITION ADJUSTMENT

Morgan D. Murphy, and Doyle J. Groves, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jun. 6, 1994, Ser. No. 254,715
Int. Cl.[6] G03B *21/28*
U.S. Cl. 353—13 9 Claims



1. In a motor vehicle having a dash pad, an adjustable head up display mounted in the dash pad and having a reflecting element for movement between a stored position beneath the dash pad and an operating position above the dash pad adjacent the line of sight of an operator, comprising:

a hinged support bearing the reflecting element;

means coupled to the support for moving the support and the reflecting element between stored and operating positions;

means beneath the dash pad for projecting a display to the reflecting element when in operating position, thereby presenting an image at a position viewable by the operator; and

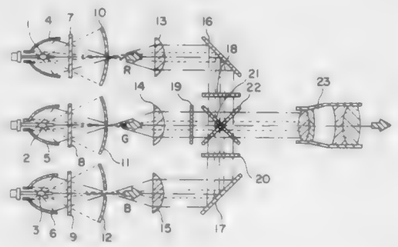
adjustable means mounting the reflecting element on the support for fine adjustment of the image position.

5,394,204

PROJECTION TYPE IMAGE DISPLAY DEVICE

Teruaki Shigeta, Neyagawa, and Takeshi Nishiura, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 23, 1993, Ser. No. 110,551
Claims priority, application Japan, Aug. 21, 1992, 4-222448
Int. Cl.[6] G03B *21/00*
U.S. Cl. 353—31 8 Claims



1. A projection type image display device comprising:

a plurality of light sources including metal halide lamps for projecting a red color light, a green color light, and a blue color light,

optical converging means for converging the light projected by said plurality of light sources,

a liquid crystal display element for red color, a liquid crystal display element for green color, and a liquid crystal display element for blue color, each display element for controlling the transmission of collimated light from the converging means,

a color synthesizing optical system which synthesizes light from each of said liquid crystal display element to form an optical image having a chromaticity level,

an optical projection system which projects the optical image formed by said liquid crystal elements onto a screen, and

means for individually adjusting the strength of each of said green color light, said red color light, and said blue color light to adjust said chromaticity level of the optical image;

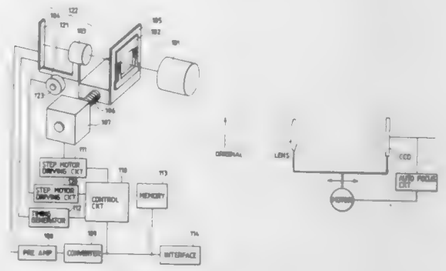
wherein each one of said plurality of light sources emits light of a specified spectral band which is different from the specified spectral band of each other one of said plurality of light sources.

5,394,205

IMAGE READING APPARATUS

Toru Ochiai, Tokyo; Masahiro Mochizuki, Kawasaki; Soichi Ikeda, Yaita, and Katsuhiro Sato, Kuroiso, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 796,598, Nov. 22, 1991, abandoned. This application Mar. 30, 1994, Ser. No. 222,724
Claims priority, application Japan, Nov. 29, 1990, 2-325695; Dec. 25, 1990, 2-414524
Int. Cl.[6] G03B *3/10*
U.S. Cl. 353—101 6 Claims



5. An image reading apparatus comprising:

a light source for emitting light;

an original which is illuminated with said light;

an image taking optical system including a projection lens for projecting light from the original and an image pickup element for receiving the light projected by said projection lens; and

a focus adjuster for relatively moving said image taking optical system and said original on an optical axis of said image taking optical system so as to perform a focus adjustment of the image taking optical system with respect to the original;

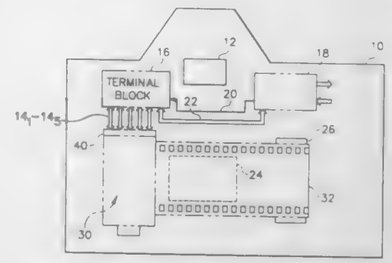
wherein relative positional relationship between said projection lens and said image pickup element of said image taking optical system is kept unchanged during the focus adjustment.

5,394,206

ORIENTATION INDEPENDENT, DETACHABLE FILM CARTRIDGE, MEMORY MODULE

J. David Cocca, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 4, 1993, Ser. No. 71,084
Int. Cl.[6] G03B *7/00*
U.S. Cl. 354—21 23 Claims



1. A memory module for a film cartridge in which information related to the exposure of film image frames may be recorded in memory for subsequent read-out, the memory module having a module housing having an upper and a lower surface, an integrated circuit chip, including a memory, attached within the module housing and having a plurality of input and output terminals, and means for attaching the module housing to the film cartridge so that the upper surface is exposed for making electrical contact with data recording and read out terminal pins of camera and film processing equipment arranged in a fixed pin array with respect to a receptacle for receiving the attached module housing and film cartridge oriented toward said data recording and read out terminal pins, said memory module further characterized by:

a substrate having a plurality of conductive contact surfaces spaced apart and electrically isolated from one another and formed in a predetermined pattern, said plurality of conductive contact surfaces being less in number than the number of data recording and read out terminal pins;

means for making electrical connections between the plurality of input and output terminals of the integrated circuit chip memory and the plurality of conductive contact surfaces; and

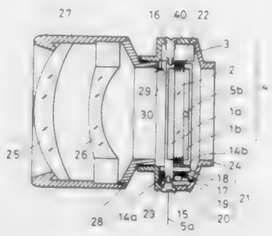
means for positioning the substrate so that said plurality of conductive contact surfaces face toward the upper surface of the module housing and may all be contacted by said data recording and read out terminal pins when the memory module is positioned in respect thereto, wherein said positioning means allows the common contact of at least two of the data recording and read out terminal pins with a single one of said plurality of contact surfaces in at least one position of the substrate.

5,394,207

DEVICE FOR STABILIZING IMAGES

Tatsuo Fujisaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 46,939, Apr. 13, 1993, abandoned, which is a continuation of Ser. No. 944,752, Sep. 14, 1992, abandoned, which is a continuation of Ser. No. 690,271, Apr. 24, 1991, abandoned. This application Sep. 14, 1993, Ser. No. 120,229
Claims priority, application Japan, May 16, 1990, 2-127888
Int. Cl.[6] G03B *5/00*, *17/00*
U.S. Cl. 354—70 13 Claims



1. A photographic system for stabilizing a photographically formed image, comprising:

a photographic lens means for forming said image;

a light refraction means for causing light refraction in order to stabilize the image;

a conversion lens means for converting the focal length of said photographic lens means; and

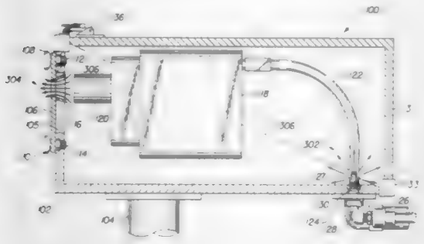
a means for varying the light refraction amount of said light refraction means in accordance with whether said conversion lens means is attached.

5,394,208

ENVIRONMENTAL ENCLOSURE FOR A CAMERA

Dean B. Campbell, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 22, 1993, Ser. No. 141,340
Int. Cl.[6] G03B *29/00, 17/07*
U.S. Cl. 354—75 20 Claims



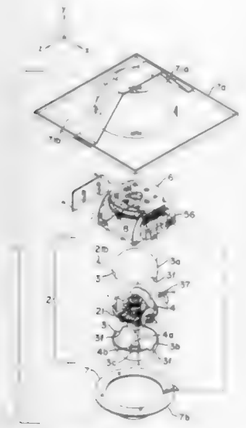
1. An environmental enclosure device for maintaining the optical integrity of a field of view of an enclosed camera, said environment enclosure device comprising:
a box which provides protection from an external environment and ease in accessibility to said enclosed camera;
an air diffuser coupled to said box, wherein said air diffuser provides an inflow of air which creates a positive air pressure internal to said box; and
a vortex aperture provided in said box through which a positive flow of air from said air diffuser exits said box, thereby providing a surfaceless barrier which prevents the entrance of external contaminants through said aperture into said box, said vortex aperture having a tapered shade with the large end of the taper arranged towards the inside of said enclosure.

5,394,209

SURVEILLANCE DEVICE WITH EYEBALL ASSEMBLY AND PIVOTABLY MOUNTABLE CARRIAGE ASSEMBLY

Norbert M. Stiepel, Coral Springs; Luis Anderson, Boca Raton, and Edwin S. Thompson, Loxahatchee, all of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Continuation of Ser. No. 761,331, Sep. 17, 1991, abandoned. This application Jan. 27, 1994, Ser. No. 187,811
Int. Cl.[6] G03B *29/00*
U.S. Cl. 354—81 82 Claims



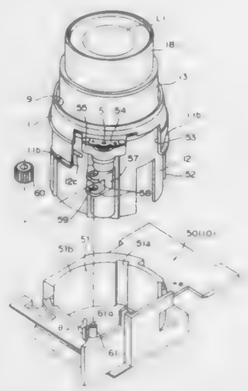
1. A surveillance assembly comprising:
an eyeball assembly including: a camera and lens assembly having a viewing axis and a viewing cone; a shroud substantially totally surrounding said camera and lens assembly and having a light-transmissive area aligned with the viewing axis of said camera and lens assembly and sufficient to pass said viewing cone, whereby said camera and lens assembly can view outward of said shroud;
said eyeball assembly being adapted to be rotatable about first and second axes so as to enable rotation of said camera and lens assembly and said shroud about said first and second axes, while said viewing axis and viewing cone of said camera and lens assembly remain aligned with said light transmissive area of said shroud;
and a housing for housing said eyeball assembly so as to permit said rotation of said eyeball assembly about said first and second axes and including a light transmissive section for passing said viewing cone of said camera and lens assembly during rotation of said eyeball assembly.

5,394,210

LINEAR GUIDING MECHANISM OF A ZOOM LENS BARREL OF A PHOTOGRAPHING OPTICAL SYSTEM

Hiroshi Nomura, and Kazuyoshi Azegami, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1993, Ser. No. 167,038
Claims priority, application Japan, Dec. 25, 1992, 4-089035[U]; Dec. 25, 1992, 4-089036[U]
Int. Cl.[6] G02B *7/00*
U.S. Cl. 354—195.12 18 Claims



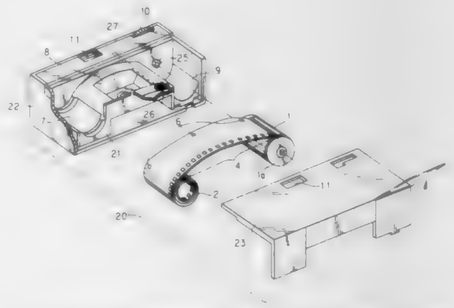
1. A linear guiding mechanism of a zoom lens barrel of a photographing optical system, comprising:
a stationary block connected to a camera body;
a barrel slidable with respect to said stationary block and precluded from rotation with respect to said stationary block;
a cam ring threadedly engaged with said barrel on an inside of said barrel;
a linear guiding plate for linearly guiding the photographing optical system in an optical axis direction, wherein said linear guiding plate is movable together with said cam ring in said optical axis direction, and wherein said cam ring is rotatable with respect to said linear guiding plate; and
a linear guiding portion formed on said barrel, a part of said linear guiding portion on an inner peripheral surface of said barrel comprising means for guiding said linear guiding plate in said optical axis direction, a part of said linear guiding portion on an outer peripheral surface of said barrel comprising means for precluding rotation of said barrel with respect to said stationary block, wherein a section of said linear guiding portion is formed as an elongated hole, and wherein a remaining section of said linear guiding portion is formed as a blind-end groove on said inner peripheral surface of said barrel.

5,394,211

LENS-FITTED PHOTOGRAPHIC FILM PACKAGE

Kazuo Kamata, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 12, 1993, Ser. No. 134,549
Claims priority, application Japan, Oct. 12, 1992, 4-272988; Oct. 15, 1992, 4-277467
Int. Cl.[6] G03B *17/36, 17/42, 17/26*
U.S. Cl. 354—217 20 Claims



1. A lens-fitted photographic film package having a taking lens, a shutter mechanism and an exposure frame and containing a roll of unexposed photographic film and a cartridge for winding up said photographic film therein after each exposure, said lens-fitted photographic film package further comprising:
a film roll chamber holding said roll of said unexposed photographic film therein;
a cartridge chamber disposed on one horizontal side of said exposure frame opposite said film roll chamber and holding said cartridge therein;
a film winding device rotatably mounted on said cartridge chamber and engaging a first end of a spool of said cartridge so as to permit rotation of said spool in a first direction to wind up said photographic film thereon; and
a sprocket disposed below said exposure frame so as to engage perforations of said photographic film formed along a first longitudinal side edge thereof passing below said exposure frame, said sprocket being rotated by movement of said photographic film, rotation of said sprocket causing said shutter mechanism to be cocked; wherein the film has plural perforations per frame along said first longitudinal side edge, and only one perforation per frame along a second longitudinal side edge opposite said first longitudinal side edge and above said exposure frame.

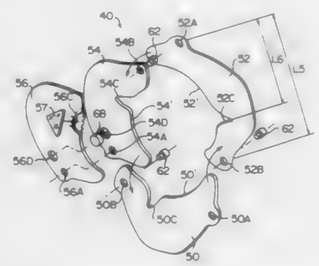
5,394,212

DIAPHRAGM WITH LIGHT BLOCKING ELEMENT

Masaaki Morizumi, Tokyo, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Jul. 23, 1993, Ser. No. 95,443
Claims priority, application Japan, Jul. 23, 1992, 4-196989
Int. Cl.[6] G03B *9/06*
U.S. Cl. 354—271.1 6 Claims

1. In an iris diaphragm configured by a plurality of diaphragm blades, partially overlapped, having substantially circular arcuate inner edges with which a variable diaphragm aperture is defined and formed with generally wedge-shaped notches, extending from said substantially circular arcuate inner edges, respectively, with which a variable diaphragm aperture is defined, a stationary support ring for pivotally supporting said diaphragm blades, at first ends of said diaphragm blades, at regular angular separations, and a diaphragm adjusting ring, rotatable relative to said stationary support ring and engaged for sliding movement with each of said diaphragm blades at second ends of said diaphragm blades remote from said first ends, said sliding movement causing pivotal movement of said diaphragm blades to vary said diaphragm aperture from a full diaphragm aperture to a smallest diaphragm aperture with an increase in relative rotation between said stationary support ring and said diaphragm adjusting ring, each of said notches being located between one of said first ends and one of said second ends, the improvement comprising:



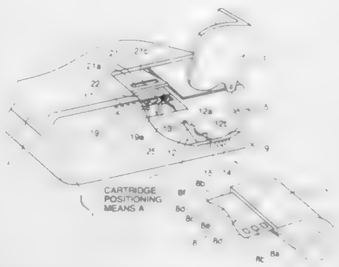
a supplemental diaphragm blade coupled to any one of said diaphragm blades, said supplemental diaphragm blade having a supplemental notch which is similar in shape to but shallower than the generally wedge-shaped notch of said one of said diaphragm blades so as to block up and close off said smallest diaphragm aperture defined by said generally wedge-shaped notches of said diaphragm blades.

5,394,213

EASY-FILM-LOADING CAMERA

Kiyoaki Hazama; Takemi Miyazaki, and Noriyuki Kaedeoka, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 19, 1994, Ser. No. 183,421
Claims priority, application Japan, Jan. 25, 1993, 5-005106[U]
Int. Cl.[6] G03B *17/02*
U.S. Cl. 354—288 4 Claims



1. A camera for accommodating a film cartridge having an axis wherein a film is rolled on the axis in a lightproof condition, comprising:
a cartridge chamber means for receiving said film cartridge in a direction of said axis of said film cartridge;
an ejecting means for ejecting said film cartridge which is placed in said cartridge chamber means; and
a positioning means for positioning said film cartridge at a predetermined position in said cartridge chamber means;
wherein said positioning means includes an engaging member which is interchangeable between a first condition that said engaging member is movable by a pressing force of said film cartridge while said film cartridge is inserted into

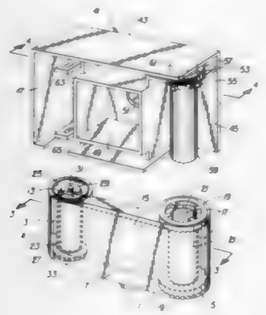
said cartridge chamber means, and a second condition, after insertion of said film cartridge into said cartridge chamber means is completed, that said engaging member is pushed by a spring member so that said engaging member engages with a side end of said film cartridge.

5,394,214

COMPACT CAMERA WITH FILM MAGAZINE

Dwight J. Petruchik, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 24, 1994, Ser. No. 200,983
Int. Cl.[6] G03B *17/02*
U.S. Cl. 354—288 6 Claims



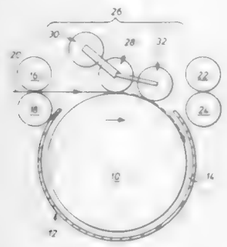
1. A camera intended to be used with a film magazine which contains a film take-up spool having an exposed end at the magazine exterior and a coaxial bore opening to the exposed end, said camera comprising:
- rotatable film rewinding means for engaging the exposed end of the take-up spool at the magazine exterior to rotate the take-up spool; and
- flash capacitor means projecting longitudinally from said rewinding means to be received in the coaxial bore of the take-up spool to guide the film magazine for engagement of the exposed end of the take-up spool with said rewinding means.

5,394,215

PHOTOGRAPHIC PROCESSING APPARATUS

Edward C. Glover, London, England, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP92/01316, § 371 Date Dec. 16, 1993, § 102(e) Date Dec. 16, 1993, PCT Pub. No. WO92/22853, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 12, 1992, Ser. No. 167,886
Claims priority, application United Kingdom, Jun. 18, 1991, 9113120
Int. Cl.[6] G03D *3/08*
U.S. Cl. 354—319 12 Claims



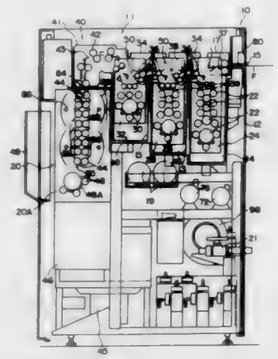
1. Photographic processing apparatus for processing photographic material, the apparatus comprising:
- a rotating drum,
- a guide surrounding the drum and defining a processing tank therebetween, and
- transport means for transporting the photographic material around the drum;
- characterized in that the transport means includes a first movable roller which is movable from a first position adjacent the surface of the drum where the material is constrained and transported around the drum, and a second position away from the surface of the drum where the material is free to leave the surface of the drum.

5,394,216

AUTOMATIC PROCESSING APPARATUS

Motoj Suzuki, and Yuji Inoue, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 31, 1993, Ser. No. 40,971
Claims priority, application Japan, Apr. 3, 1992, 4-082097
Int. Cl.[6] G03D *3/02*
U.S. Cl. 354—324 21 Claims



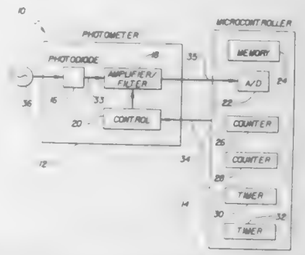
1. An automatic processing apparatus for processing photosensitive material by sequentially conveying and dipping said photosensitive material in a plurality of processing solution tanks which store processing solution, said automatic processing apparatus comprising:
- a roller unit provided between two adjacent tanks of said plurality of processing solution tanks, for conveying said photosensitive material to a downstream processing solution tank of said two adjacent tanks;
- replenishing solution supply means for supplying replenishing solution into an upstream processing solution tank of two adjacent tanks of said plurality of processing solution tanks; and
- diluting water supply means provided in the vicinity of said roller unit, for supplying diluting water into said upstream processing solution tank by supplying said diluting water directly to said roller unit for diluting said replenishing solution to a predetermined concentration, said roller unit being washed by said diluting water which is supplied to said upstream processing solution tank without being supplied into said downstream processing solution tank, thereby to avoid a mixing of processing solutions of said two adjacent tanks.

5,394,217

METHOD AND APPARATUS FOR DETERMINING LINE FREQUENCY AND DETECTING VARIABLE FREQUENCY LIGHT SOURCES

Michael J. Gaboury, Spencerport, and J. David Cocca, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 27, 1993, Ser. No. 127,933
Int. Cl.[6] G03B *7/08*
U.S. Cl. 354—430 29 Claims



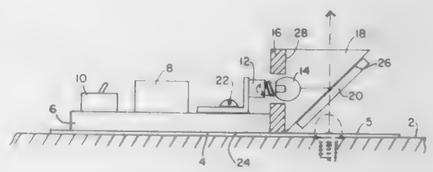
11. A method for camera automatic exposure setting, said method comprising the steps of:
- camera automatic sampling of ambient light for determining whether the presence of one, more than one or no line frequency from a group of possible line frequencies is indicated;
- camera automatic sampling of said ambient light for determining ambient light level at a sampling rate directly related to said one determined line frequency if a presence of said one line frequency is indicated, said sampling rate being a predetermined default sampling rate if a presence of said more than one line frequency or said no line frequency is indicated; and
- camera automatic setting of said exposure based on said determined ambient light level.

5,394,218

FOCUSING AID FOR COPYING CAMERAS

Gladys Rabinow, and Jacob Rabinow, both of 6920 Selkirk Dr., Bethesda, Md. 20817

Filed Sep. 14, 1993, Ser. No. 120,554
Int. Cl.[6] G03B *27/52*
U.S. Cl. 355—55 6 Claims



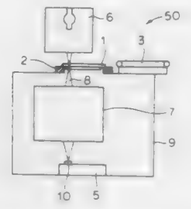
1. A device to aid in focusing an optical device onto a first surface, comprising:
- means for producing a brightly illuminated image, said device having a second surface for contacting said first surface, and reflecting means to make the reflection of this said image to appear to be in the said first surface.

5,394,219

EXPOSURE APPARATUS AND METHOD OF EXPOSURE USING THE SAME

Miyuki Hirosue, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 55,002
Claims priority, application Japan, May 15, 1992, 4-123746
Int. Cl.[6] G03B *27/32*
U.S. Cl. 355—77 3 Claims



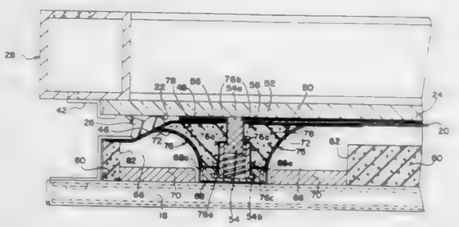
1. An exposure apparatus, comprising:
- exposing means having an exposure light source emitting exposure luminous flux;
- a photomask having a predetermined pattern provided on a substrate and having an anti-particle film in a predetermined portion on the substrate;
- a first window portion provided in a predetermined portion on said substrate where said anti-particle of said photomask is not provided;
- a second window portion provided in a predetermined portion on said substrate where said anti-particle film of said photomask is provided; and
- means for measuring each amount of exposure of exposure luminous flux transmitting said first window portion and said second window portion, individually.

5,394,220

VACUUM BLANKET FOR PIN REGISTRATION

Charles J. Leonhart, Schaumburg, and William R. Walters, Union, both of Ill., assignors to nuArc Company, Inc., Niles, Ill.

Filed Oct. 28, 1993, Ser. No. 144,679
Int. Cl.[6] G03B *27/20*
U.S. Cl. 355—92 20 Claims



1. A vacuum blanket apparatus for maintaining precise registration between a light sensitive sheet and an image forming sheet placed in covering relation thereon for controlled light exposure for reproducing said image, comprising:
- a vacuum blanket assembly including a blanket of thin flexible sheet material for biasing said sheets toward a planar surface and having an elongated slot therein;
- a light transmitting, rigid panel defining said planar surface for transmitting light to said image forming sheet in contact therewith for reproducing said image on said light sensitive sheet;
- rigid platen means in spaced parallel relation with said panel for supporting said vacuum blanket thereon during reproduction of said image;

registration means in said elongated slot for registering said sheets; and

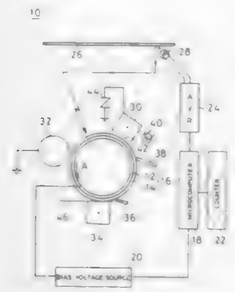
bladder means in said slot deformable under pressure for biasing said sheets toward said panel.

5,394,221

IMAGE FORMING APPARATUS

Yasuhiro Kishimoto; Naoyuki Hashimoto, and Hitoshi Hattori, all of Gifu, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jun. 14, 1993, Ser. No. 76,398
Claims priority, application Japan, Jun. 16, 1992, 4-156476
Int. Cl.[6] G03G *21/00, 15/02*
U.S. Cl. 355—208 11 Claims



1. An image forming apparatus, comprising:

a photosensitive member including a conductive substrate;

means for repetitively exposing said photosensitive member to light and an original for repetitive image forming operations;

means for detecting the number of image forming operations of said photosensitive member; and

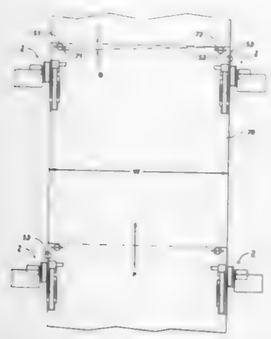
means for changing an electric potential of said conductive substrate in response to an output of said detecting means corresponding to the detected number of image forming operations of said photosensitive member.

5,394,222

CORRECTION OF MISALIGNMENT IN A MULTICOLOR IMAGING APPARATUS UTILIZING A CONFORMABLE FRICTION DRIVE SYSTEM

Frank C. Genovese, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1993, Ser. No. 169,690
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—208 18 Claims



1. A system for transporting a belt having first and second marginal edges along a predetermined path in a process direction of travel while maintaining lateral and skew alignment thereof, comprising:

selectively controllable drive means including a conformable friction drive apparatus, comprising:

drive source means; and

friction drive means, including an endless tape loop having a nonelastic support layer and a frictional contact layer, being placed in friction contact with the belt for inducing transport motion of the belt;

sensing means for detecting lateral and skew misalignment of the belt; and

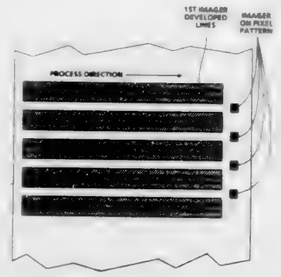
control means, responsive to said sensing means, for selectively operating said drive means to induce differential transport motion between the first and second marginal edges of the belt so as to compensate for detected lateral or skew misalignment thereof.

5,394,223

APPARATUS FOR IMAGE REGISTRATION

Steven C. Hart, Webster; Fred F. Hubble, III, Rochester; Thomas J. Hammond, Penfield; Jeffrey J. Folkins, and James P. Martin, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 17, 1992, Ser. No. 930,642
Int. Cl.[6] G03G *5/00*
U.S. Cl. 355—212 7 Claims



1. A printing device having an imageable surface adapted to move along a preselected path, wherein the improvement includes:

a first image processing station adapted to record a first latent image and a target latent image on the imageable surface;

means for developing at least the target latent image on the imageable surface to form a developed target image;

a second image processing station adapted to record a second latent image on the imageable surface, said second image processing station illuminating the developed target image to form an illuminated image;

means for sensing an intensity of the illuminated image to indicate deviations of the imageable surface from the preselected path; and

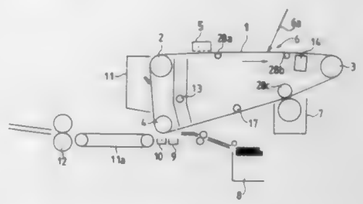
means, responsive to said sensing means, for adjusting said image processing station to compensate for deviations of the imageable surface from the preselected path.

5,394,224

IMAGE FORMING APPARATUS HAVING AN ELECTRICALLY CONDUCTIVE MEMBER FOR WIPING A LIGHT TRANSMITTING BELT-LIKE PHOTOSENSITIVE BODY

Kou Irobe, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1993, Ser. No. 84,980
Claims priority, application Japan, Jul. 3, 1992, 4-176448
Int. Cl.[6] G03G *15/02*
U.S. Cl. 355—219 8 Claims



1. An image forming apparatus having a charging unit for charging a front surface of a photosensitive unit on which a latent image may be formed by irradiation after charging once a transferrable toner image may thereafter be developed, and further having a discharging unit for discharging the photosensitive unit and another unit for erasing unnecessary images and/or forming screen patterns for photographic reproduction by irradiating a beam from a back surface of the photosensitive body,

a light-transmitting endless belt-like photosensitive body forming the photosensitive unit having charging and irradiation performed on a front surface thereof; and the apparatus comprising:

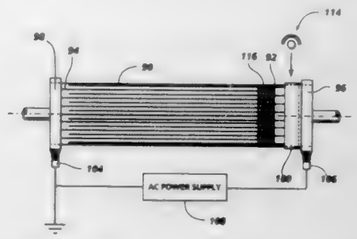
an electrically conductive wiping member arranged inside the photosensitive body so that the wiping member comes in frictional contact with the back surface of the photosensitive body.

5,394,225

OPTICAL SWITCHING SCHEME FOR SCD DONOR ROLL BIAS

Delmer G. Prker, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1993, Ser. No. 156,501
Int. Cl.[6] G03G *15/06*
U.S. Cl. 355—259 16 Claims



1. A donor structure for developing latent electrostatic images on a charge retentive surface with toner particles, said structure comprising:

two sets of interdigitated electrodes carried by said donor structure;

a source of electrical power;

means for effecting movement of said structure in an endless path such that a surface thereof passes through a development zone intermediate said charge retentive surface and said donor structure;

means for electrically connecting said source of power to one set of said electrodes;

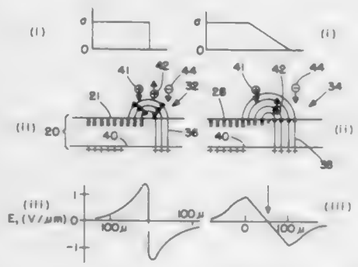
means carried by the surface of said donor structure and a member supported stationarily adjacent said donor structure for electrically connecting said source of power to the other set of electrodes whereby said source of electrical power can be selectively applied to said other set of electrodes whereby electrical power is applied to both sets of electrodes simultaneously.

5,394,226

METHOD FOR REDUCING HIGH QUALITY ELECTROPHOTOGRAPHIC IMAGES

Gary S. Beardsley, Morgan Hill, and Lawrence B. Schein, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 778,436, Oct. 16, 1991, abandoned.
This application Nov. 25, 1992, Ser. No. 982,236
Int. Cl.[6] G03G *15/14*
U.S. Cl. 355—277 13 Claims



1. A method of producing electrophotographic characters on a receiving surface with minimal edge raggedness, the method comprising the steps of:

(a) producing a latent image on an image-receiving substrate;

(b) providing toner and charging the toner tribo-electrically;

(c) applying the tribo-electrically charged toner to the latent image on the image-receiving substrate and thereby developing the latent electrostatic image on the image-bearing substrate to create a developed image;

(d) transferring the developed image by other than electrostatic means to a receiving surface composed of a semiconductive material having a resistivity of approximately 10^{10} ohm-cm or lower; and

(e) selecting the toner so as to minimize the inclusion of wrong sign toner in the development system.

5,394,227

COMPLIANT HARD FUSING PRESSURE ROLLER FOR REDUCING MEDIA CURL AND WAVE IN ELECTROPHOTOGRAPHIC PRINTERS

John W. Huffman, Meridian, and Paul K. Mui, Boise, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

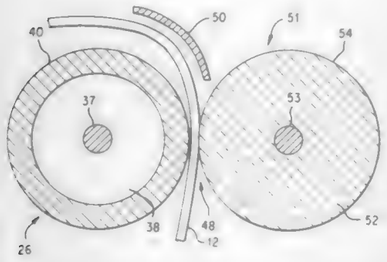
Filed Oct. 12, 1993, Ser. No. 135,231
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—285 4 Claims

1. An apparatus operative within an electrophotographic printer for reducing deformation in electrophotographically printed media, said apparatus comprising of:

a heated fuser roller on a first side of a media transport path, said heated fuser roller being rotated about an axis of rotation longitudinally along an axis of said heated fuser roller;

a pressure roller on a second side of said media transport path and positioned adjacent to said heated fuser roller, said pressure roller comprised of a central rotation shaft, a cylindrical deformable material formed around said central rotation shaft, a cylindrical brass outer shell with

thickness ranging from about 0.3 to about 0.5 mm formed around said deformable material, said pressure roller being rotated about an axis of rotation longitudinally along an



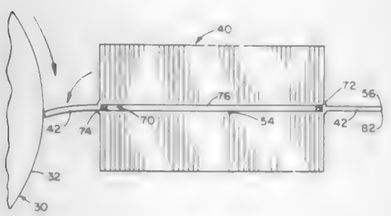
axis of central rotation shaft, said printed media being compressed between said pressure roller and said heated fuser roller thereby transporting said printed media within said printer.

5,394,228

CLEANING BLADE SYSTEM FOR PHOTOCOPY MACHINE

Ronald E. Godlove, Bergen, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 15, 1993, Ser. No. 92,145
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—299 20 Claims



1. A cleaning system for a photoreceptor device, comprising:
- a plurality of cleaning blades, each having a cleaning edge for contact with a surface of a photoreceptor device;
- a connecting means, which comprises an endless loop, for connecting said plurality of cleaning blades so that they move in unison; and,
- a mechanism for advancing said plurality of cleaning blades into contact with said photoreceptor device, wherein only a single blade contacts said photoreceptor device at any given time, wherein said mechanism comprises a pair of rotatable shafts which selectively propel said endless loop.

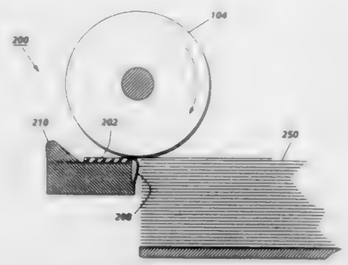
5,394,229

RETARD FEED APPARATUS WITH NOISE SUPPRESSION DEVICE

Richard Palmatier, Springwater, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 29, 1993, Ser. No. 83,225
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—309 12 Claims

1. An apparatus for feeding individual sheets while reducing the noise associated therewith, comprising:
- a frictional retard pad feeder to advance sheets in a first direction; and
- a raised member for corrugating the individual sheets in a direction parallel to the sheet direction, located downstream of said retard pad feeder in the first direction, said raised member being adapted to reduce sheet flutter and the noise associated therewith, wherein said raised member comprises a ramped section integral to said retard pad feeder, said ramped section being formed of a material having a low coefficient of friction.



5,394,230

METHOD AND APPARATUS FOR FORMING A COMPOSITE DRY TONER IMAGE

Joseph Y. Kaukeinen; Eric C. Stelter, both of Rochester, and Joseph E. Guth, Holley, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 20, 1993, Ser. No. 64,625
Int. Cl.[6] G03G *15/01*
U.S. Cl. 355—326 R 1 Claim

1. Image forming apparatus for forming at least a two color toner image comprising:
- means for uniformly charging the surface of a first side of an image member having a photoconductive layer associated with the surface to a charge of a first polarity,
- means for imagewise exposing the photoconductive layer to form an electrostatic image of the first polarity on the surface by imagewise discharge of the surface through the photoconductive layer,
- means for applying a first toner of a first color and the first polarity to the first electrostatic image to form a first toner image of the first color corresponding to exposed portions of the first electrostatic image,
- means for uniformly exposing the image member from the second side opposite the first side to reduce any portion of the first electrostatic image remaining between the image member and the first toner image,
- means for applying a uniform charge of a first polarity to the first side of the image member including the first toner image,
- means for imagewise exposing the image member to create a second electrostatic image of a first polarity, and
- means for applying toner of a second color and the first polarity to the second electrostatic image to form a toner image of the second color and, with the first toner image, a two color image on the image member.

5,394,231

IMAGE FORMING APPARATUS CAPABLE OF FORMING AN ERASABLE IMAGE

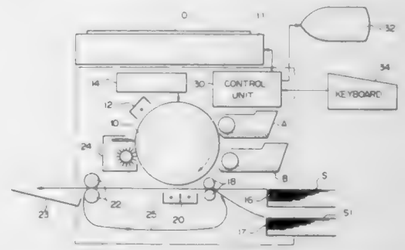
Kazuhisa Sudo, Kawasaki; Mitsuo Tanaka; Chikara Imai, both of Tokyo; Koji Suzuki, Yokohama; Norimasn Sohmiya, Souka, and Sadao Takahashi, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 30, 1993, Ser. No. 99,553
Claims priority, application Japan, Jul. 31, 1992, 4-205663; Nov. 9, 1992, 4-298613
Int. Cl.[6] G03G *15/01*
U.S. Cl. 355—326 R 10 Claims

1. An image forming apparatus capable of forming an erasable image, comprising:

a photoconductive element for electrostatically forming a latent image representative of image data; and

a developing device for developing latent image formed on said photoconductive element by an ordinary undecolorizable toner and a decolorizable toner, wherein a density



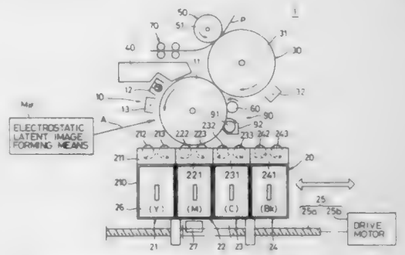
of said decolorizable toner formed on said photoconductive element is less than a density of said undecolorizable toner formed on said photoconductive element, said decolorizable toner defined by a toner which has a visible color when said latent image is formed and transparent when treated.

5,394,232

ELECTROPHOTOGRAPHIC COLOR PRINTING METHOD

Yoshihiro Tamura, Tokyo; Hara Hidetoshi; Yuichi Nakao, both of Otsu, and Kazuo Ishiwari, Ichikawa, all of Japan, assignors to Tokyo Industries, Inc., Osaka, Japan

Filed Mar. 22, 1993, Ser. No. 35,273
Claims priority, application Japan, Mar. 25, 1992, 4-066719
Int. Cl.[6] G03G *15/16*
U.S. Cl. 355—327 2 Claims



1. An electrophotographic printing method for forming an electrostatic latent image on a photosensitive medium based on print information, developing the electrostatic latent image with a developing bias voltage applied thereto, and transferring and fixing a developed toner image on a recording medium, thereby forming a color print, said electrophotographic printing method comprising the steps of:

(a) a latent image forming step of successively forming electrostatic latent images on the photosensitive medium based on color separation of the print information and corresponding respective different colors;

(b) a wet developing step including a substep of successively developing the electrostatic latent images formed on the photosensitive medium into toner images of different colors and a substep of squeezing surplus liquid toners on the photosensitive medium, said two substeps being repeated a number of times corresponding to the number of colors to be printed in a plane tangent to the photosensitive medium;

(c) an intermediate transfer step of successively transferring and depositing in layers the toner images of individual colors, developed on the photosensitive medium, on an intermediate transfer medium to form a multicolor toner image thereon; and

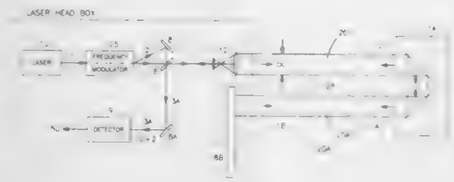
(d) a transfer-fixing step of transferring and fixing the multicolor toner image, obtained in said intermediate transfer step, on a recording medium to form a color print, said transfer-fixing step being started when transfer of a last toner image to the intermediate transfer medium is started in said intermediate transfer step; said wet developing step including successively developing the electrostatic latent images for the respective colors by means of a plurality of developing units and increasing the developing bias voltage of the developing unit which has finished developing to a voltage closer to the print area surface potential than the white ground surface potential when changing the developing units.

5,394,233

APPARATUS FOR MEASURING HIGH FREQUENCY VIBRATION, MOTION, OR DISPLACEMENT

Charles P. Wang, 28509 Seamont Dr., Rancho Palos Verdes, Calif. 90274

Filed Apr. 6, 1993, Ser. No. 43,367
Int. Cl.[6] G01C *3/00, 3/08;* G01B *9/02*
U.S. Cl. 356—5.01 5 Claims



1. Apparatus for detecting the motion or displacement of a specularly reflective corner cube target comprising:
- a stationery laser for producing a highly collimated source light beam, the corner cube being set approximately in line therewith, the beam having a source frequency and a source phase angle, the source beam striking the moving specularly reflective target and returning as a low noise reflected beam having a new frequency and a new phase angle differing from the source phase angle, the difference between said phase angle correspondingly related to the position of the target;
- A means for producing a reference beam, refracted from the source beam and having a reference frequency, said reference frequency being shifted by a known amount, relative to the source frequency, said reference beam projected to cross the reflected beam, said means for producing a reference beam additionally acting to block the reflected beam from entering the laser thereby preventing laser instability;
- a means for combining the reflected and reference beams at said crossing to produce a combined beam having a phase angle related to the position of the target;
- a photodetector positioned in the path of the combined beam for sensing the modulation frequency of the combination for detecting phase shifts due to the change in position of the reflective target and for producing a related electrical signal output:
- and further including a planar specularly reflective reflector mounted opposite the corner cube and having a fixed angular relationship with the laser, the planar reflector positioned to receive, the source beam as reflected from the corner cube, thereby generating a twice reflected beam projected back along the path of the reflected beam, so that the total path length of the source and reflected

beams is approximately doubled and the resolution of measurement is thereby doubled, and phase information is maintained in the reflected beam, whereby rotational and lateral motions of the target have little effect on the position of the reflected beam.

5,394,234

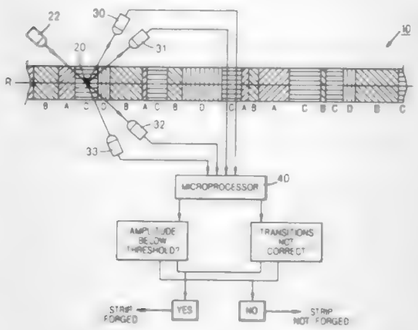
METHOD AND APPARATUS FOR DETECTING FORGED DIFFRACTION GRATINGS ON IDENTIFICATION MEANS

James S. Bianco, Enfield, Conn., and David J. Horan, Westfield, Mass., assignors to Control Module Inc., Enfield, Conn.

Continuation-in-part of Ser. No. 921,460, Jul. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 857,729, Mar. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 810,483, Dec. 19, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 42,651

Int. Cl.[6] G06K *7/10*

U.S. Cl. 356—71 **1 Claim**



1. A method of determining if a compound diffraction grating has been forged, said compound diffraction grating strip including a plurality of diffraction grating elements of different types, said compound diffraction grating strip being read by serially detecting light diffracted by said diffraction grating elements, said method comprising:

(a) measuring the number of transitions between diffraction grating elements across said strip; and

(b) comparing said number with a pre-recorded number of said transitions and determining that said diffraction grating strip has been forged if said numbers are not the same.

5,394,235

APPARATUS FOR MEASURING DISTORTION POSITION OF OPTICAL FIBER

Nobunari Takeuchi; Tekken Lee, both of Tokyo; Kaoru Shimizu, and Tsuneo Horiguchi, both of Mito, all of Japan, assignors to Ando Electric Co., Ltd. and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Mar. 16, 1994, Ser. No. 214,136

Claims priority, application Japan, Mar. 17, 1993, 5-057494

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—73.1 **1 Claim**

1. An apparatus for measuring a distortion position of an optical fiber comprising:

a light source for generating continuous light with frequency f_0, which is connected to a far-end of an optical fiber to be measured;

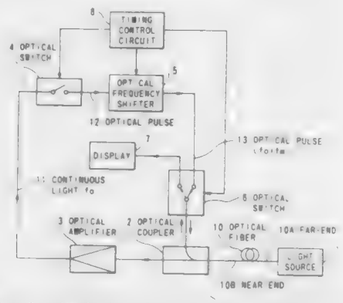
an optical coupler for dividing outgoing continuous light from a near-end of said optical fiber;

an optical amplifier for amplifying the continuous light divided by said optical coupler;

a first optical switch for generating a first optical pulse by switching the output continuous light from said optical amplifier;

an optical frequency shifter for generating a second optical pulse having frequency components (f_0+f_m) based on said first optical pulse;

a second optical switch for injecting said second optical pulse into said near-end of said optical fiber;



a display for displaying the outgoing continuous light with frequency f_0 from said near-end of said optical fiber via said optical coupler and said second optical switch; and

a timing control circuit for controlling the operation timing of said first and second switches and said optical frequency shifter.

5,394,236

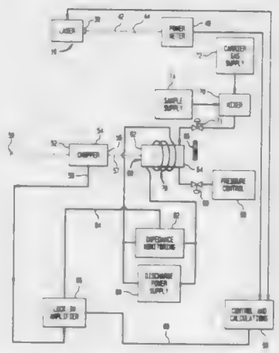
METHODS AND APPARATUS FOR ISOTOPIC ANALYSIS

Daniel E. Murnick, Bernardsville, N.J., assignor to Rutgers, The State University, Piscataway, N.J.

Filed Feb. 3, 1992, Ser. No. 829,416

Int. Cl.[6] G01J *3/30*

U.S. Cl. 356—311 **16 Claims**



1. A method of determining the isotopic composition of an analyte including isotope-bearing species incorporating a plurality of isotopes comprising the steps of:

(a) providing said analyte in a condition such that said isotope-bearing species are present in excited states, whereby excited isotope-bearing species incorporating different isotopes will have different transition energies;

(b) applying radiation to said analyte at plural wavelengths corresponding to said different transition energies, whereby applied radiation at each of said wavelengths will interact selectively with excited isotope-bearing species in said analyte incorporating different ones of said isotopes; and

(c) monitoring response of said analyte to said applied radiation so as to determine a magnitude of said response for each of said wavelengths, said isotope-bearing species being multiatomic moieties.

5,394,237

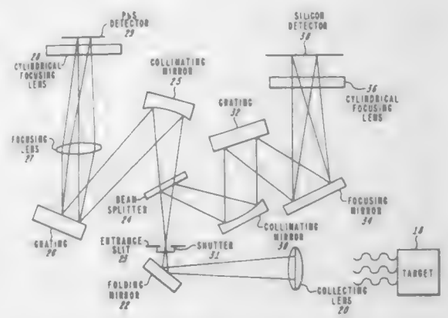
PORTABLE MULTIBAND IMAGING SPECTROMETER

Sheng-Huei Chang, Millbrook; Mark J. Westfield, Hopewell Junction, and Dennis P. Witz, New Paltz, all of N.Y., assignors to Geophysical & Enviromental Research Corp., Millbrook, N.Y.

Filed Nov. 10, 1992, Ser. No. 974,152

Int. Cl.[6] G01J *3/36*

U.S. Cl. 356—328 **11 Claims**



1. Portable spectroradiometer apparatus for acquiring infrared, visible and ultraviolet emission data comprising:

optical means comprising at least one spectrometer for processing at least infrared emissions or ultraviolet to visible light emissions, said emissions being independent of an applied artificial light source during data acquisition, including diffraction means disposed at a predetermined fixed angle with respect to a linear detector array, for spatially dispersing said emissions in accordance with predetermined spectral wavelengths, and having an entrance slit aperture defining a projected image,

at least one said linear detector array disposed for receiving said projected image in the form of said spatially dispersed emissions and having sensing elements disposed in accordance with a predetermined wavelength resolution, said sensing elements having an aspect ratio substantially corresponding to the aspect ratio of said entrance slit aperture and being selectively photoresponsive in accordance with predetermined emission wavelengths, and for generating electrical signals in accordance with the amplitude of said spatially dispersed emissions,

circuit means for processing said electrical signals, comprising means for converting the amplitude of said signals in analog form to digital signals, and means for converting said digital signals from a first digital word to a first sequential plurality of digital words, said plurality of digital words comprising a total number of digital bits corresponding to the number of digital bits in said first digital word, and

means for sequentially applying said plurality of digital words to a parallel port of a digital computer, each digital word being transmitted in parallel binary digit form.

5,394,238

LOOK-AHEAD WINDSHEAR DETECTOR BY FILTERED RAYLEIGH AND/OR AEROSOL SCATTERED LIGHT

Hans W. Mocker, Minneapolis; Scott A. Nelson, Eagen; John F. Ready, Edina, and Thomas J. Wagener, Eden Prairie, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 9, 1992, Ser. No. 973,482

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—342 **17 Claims**

16. A detection system, for detecting windshear or turbulence in air or atmosphere external to said detection system, comprising:

a ring laser for transmitting an emitted pulsed laser;

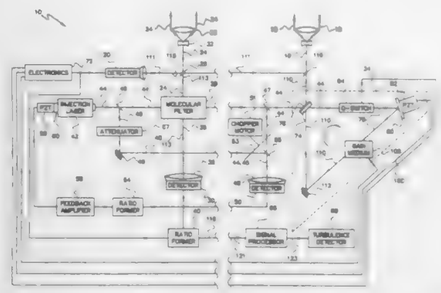
an injection laser for injecting a continuous wave laser into said ring laser;

a filter for receiving reflections of the pulsed laser and having a first filter output, and for receiving the continuous wave laser and having a second filter output;

a first detector for receiving backscattered return of the emitted pulsed laser that has passed through said filter and receiving the emitted pulsed laser;

a second detector for receiving the continuous wave laser from said injection laser and receiving the continuous wave laser that has passed through said filter;

a third detector for receiving the backscattered return of the pulsed laser and receiving the emitted pulsed laser;



a first ratio former, connected to said second detector and to said injection laser for forming a signal that indicates an amount of difference between a frequency of the continuous wave laser and a frequency of the second filter output;

a second ratio former, connected to said first detector and to said third detector, for forming signals that indicate an amount of difference between a frequency of the emitted pulsed laser and a frequency of the first filter output;

a processor and indicator connected to said second ratio former for processing signals from said second ratio former and indicating turbulence or windshear if the signals from said second ratio former represent such conditions impinged by the emitted pulsed laser; and

electronics means, connected to said third detector and to said ring laser, for controlling said ring laser.

5,394,239

SPINAL SENSOR WITH INTEGRATED OPTICS TO DETECT CHEMICAL SUBSTANCES

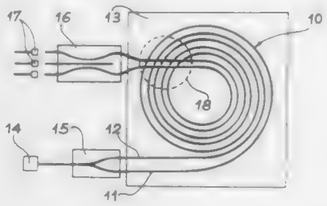
Serge Valette, Grenoble, France, assignor to Commissariat A l'Energie Atomique, France

Filed Jul. 29, 1993, Ser. No. 99,221

Claims priority, application France, Aug. 10, 1992, 92 09869

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 **14 Claims**



1. Sensor with integrated optics to detect chemical substances, which includes a double spiral interlaced with two wave guides and integrated on a substrate wherein a first of the two wave guides is a reference guide isolated from the influence of the substance to be measured, a second wave guide

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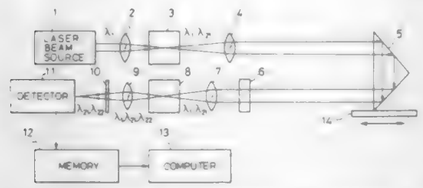
being a measuring guide affected by the substance to be measured, said sensor receives a signal from a light source through a first optical component enabling the light intensity emitted by the source to be separated into two portions and sends outgoing signals onto at least one detector through a second optical component.

5,394,240

HIGH-ACCURACY AIR REFRACTOMETER UTILIZING TWO NONLINEAR OPTICAL CRYSTAL PRODUCING 1ST AND 2ND SECOND-HARMONIC-WAVES

Hirokazu Matsumoto, Tsukuba, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jan. 28, 1994, Ser. No. 187,483
Claims priority, application Japan, Feb. 2, 1993, 5-037529
Int. Cl.[6] G01B *11/02*
U.S. Cl. 356—349 3 Claims



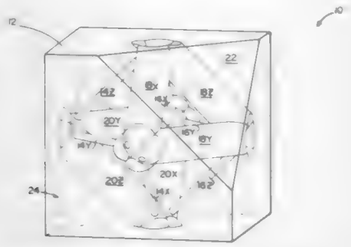
1. A high-accuracy air interferometer comprising a laser beam source for emitting a laser beam, a first nonlinear optical crystal for receiving the laser beam from the laser beam source and converting a part thereof into a first second-harmonic wave, a reflecting mirror for reflecting the laser beam and the first second-harmonic wave, a conveyance means for conveying the reflecting mirror, a second nonlinear optical crystal for receiving the laser beam and the first second-harmonic wave reflected by the reflecting mirror and converting a part of the laser beam into a second second-harmonic wave, means for producing interference fringes by interference between the first second-harmonic wave produced by the first nonlinear optical crystal and the second second-harmonic wave produced by the second nonlinear optical crystal, and means for counting the interference fringes and dividing the number of interference fringes counted by a distance moved by the reflecting mirror.

5,394,241

MULTIPLE AXIS RING LASER GYROSCOPE WITH LONGITUDINAL EXCITATION

John A. Geen, Wrentham, Mass., assignor to British Aerospace Public Limited Company, London, England

Filed Dec. 12, 1988, Ser. No. 283,434
Claims priority, application United Kingdom, Dec. 10, 1987, 8728829
Int. Cl.[6] G01B *9/02*; H01S *3/083*
U.S. Cl. 356—350 9 Claims



1. A multiple axis ring laser gyroscope comprising:

a body made of dielectric material and having portions defining a series of passages through said body;

a plurality of reflective members fixed to said body, said plurality of reflective members and said passages comprising means for defining a plurality of like closed polygonal paths for respective laser beams to pass therearound;

a gas located within said passages in which an electrical discharge may be induced to excite said laser beams;

at least two electrodes fixed to said body at opposite sides of said body; and

radio-frequency signal generating means, coupled to said electrodes, for inducing said discharge capacitively through said body;

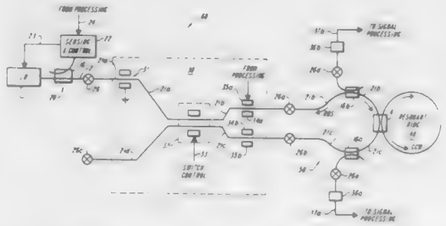
said polygonal paths including respective limbs which all extend symmetrically and generally in the same direction between said two electrodes, said polygonal paths, said at least two electrodes and said radio frequency signal generating means comprising a means for inducing longitudinal excitation of said gas in said passages.

5,394,242

FIBER OPTIC RESONANT RING SENSOR AND SOURCE

Bruce Porter, Sudbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Dec. 15, 1989, Ser. No. 451,503
Int. Cl.[6] G01B *9/02*; H01S *3/083*
U.S. Cl. 356—350 17 Claims



1. In a resonant fiber optic gyro of the type wherein laser beams derived from a laser source are launched into a fiber ring to develop signals indicative of a frequency shift induced by a component of rotation of the inertial frame of the ring, and including feedback means operative on a said beam to maintain its frequency in a resonant mode of the fiber, the improvement wherein the laser source includes a laser diode which emits said beam as an output beam, and means for coupling said beam into the fiber ring such that only Rayleigh backscattered light from the ring returns to the laser diode and narrows the line width thereof.

5,394,243

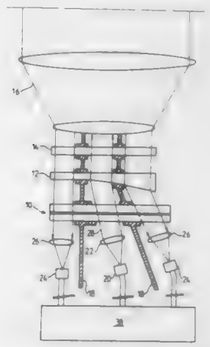
AXIAL SPEED-MEASURING DEVICE INCLUDING A FABRY-PEROT INTERFEROMETER

Christian de Mollerat du Jeu, Aix en Provence, France, assignor to Societe Europeenne de Systemes Optiques (S.E.S.O.), Plaisir, France

Filed Mar. 15, 1993, Ser. No. 31,663
Claims priority, application France, Mar. 16, 1992, 92 03089
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—352 14 Claims

1. An axial speed-measuring device comprising a light source associated with collimating optics for emitting a beam of parallel rays in a given direction, at least one photodetector associated with focusing optics to receive backscattered light flux and to deliver a signal corresponding to the intensity of the received light flux, and the same optical system used both for emitting the above-specified beam and for receiving the backscattered light flux, said optical system comprising a Fabry-

Perot interferometer transforming the spectrum of the emitted beam into a line spectrum, and spectrum offset optical means



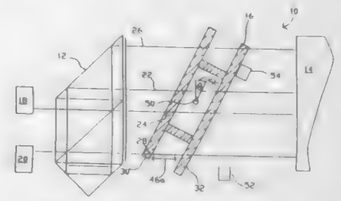
for providing a spectrum offset between the emitted light beam and the backscattered light flux.

5,394,244

AMBIENT AIR REFRACTURE INDEX MEASURING DEVICE

John C. Tsai, Saratoga, Calif., assignor to Excel Precision Inc., Santa Clara, Calif.

Filed Oct. 6, 1992, Ser. No. 957,597
Int. Cl.[6] G01N *21/45*
U.S. Cl. 356—361 19 Claims



1. An improved refractometer comprising:

a laser emitting device for emitting a first laser beam and a second laser beam;

an object mirror;

an interference fringe detector for detecting interference fringes caused by changes in the optical path of the first laser beam as compared to the optical path of the second laser beam;

an interferometer optical component for separating the first laser beam from the second laser beam, and further for directing both of the laser beams toward said object mirror, and further for directing the laser beams from said object mirror into said interference fringe detector; and

an etalon inserted in the path of the laser beams between said interferometer optical component and said object mirror such that the first laser beam passes through an enclosed evacuated passage in said etalon and the second laser beam passes through said etalon and outside the enclosed evacuated passage; wherein

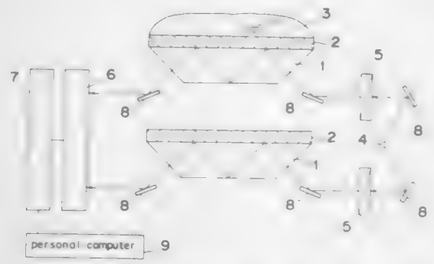
said etalon is movably mounted in relation to the laser beams such that the length of the path through the enclosed evacuated passage is variable according to the position of said etalon.

5,394,245

PROCESS AND APPARATUS FOR MEASURING PRETILT ANGLE OF LIQUID CRYSTALS

Shigehiro Sato, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 3, 1993, Ser. No. 115,702
Claims priority, application Japan, Sep. 4, 1992, 4-236794
Int. Cl.[6] G01N *21/21*
U.S. Cl. 356—369 11 Claims



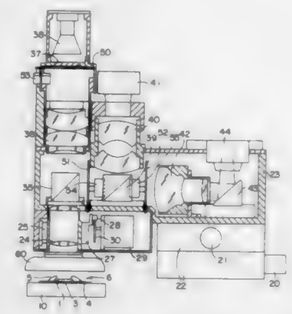
1. A process for measuring a pretilt angle in which an alignment layer and a liquid-crystal layer each of which has a refractive index smaller than that of a substrate are laminated on the substrate, a polarized light is emitted into the substrate and made to be reflected on an interface between the substrate and the alignment layer, a reflectance, which is given by dividing a reflected-light strength with a liquid crystal layer by that without a liquid crystal layer, is measured, and a ratio of logarithm of reflectances of linear polarized lights crossing each other is calculated.

5,394,246

BONDING WIRE INSPECTION APPARATUS AND METHOD

Kenji Sugawara, Tokyo, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Continuation of Ser. No. 983,649, Dec. 1, 1992, abandoned. This application Jul. 7, 1994, Ser. No. 271,554
Claims priority, application Japan, Dec. 2, 1991, 3-341831
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—394 4 Claims



1. A bonding wire inspection apparatus that inspects wires bonded between the pads of a semiconductor chip and the leads of a lead frame comprising:

a ring-form illumination means made up of plural LED's arranged in a ring shape so as to illuminate an object of inspection at inclined angles to provide dark field illumination;

a vertical illuminator for illuminating said object to provide bright field illumination;

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an optical means that receives light reflected by said object and images said object; and

cameras that photograph the image taken in by said optical means; and wherein

said optical means further comprises a diaphragm means provided only in an optical path of said cameras, said diaphragm means having variable opening diameter to provide a wide opening for shallow optical depth of focus or a small opening to provide a large optical depth of field of focus.

5,394,247

MEASUREMENT OF PAPER CURL TENDENCY USING SPECULAR AND DIFFUSE LIGHT REFLECTION

David W. Vahey, Central Valley, N.Y., and James F. Suska, West Milford, N.J., assignors to International Paper Company, Purchase, N.Y.

Filed Mar. 9, 1993, Ser. No. 28,471
Int. Cl.[6] G01N *21/84*; G01B *11/30*
U.S. Cl. 356—429 5 Claims



1. A method for determining the tendency of a nonwoven web to curl, wherein said web has a machine direction, MD, a cross-machine direction, CD, and said web includes a wire side and a felt side, said method comprising:

determining a wire ratio, $(M/C)_w$, which is the ratio of the number of fibers oriented in the MD to the number of fibers oriented in the CD, wherein said fibers are associated with the wire side of said web;

determining a felt ratio, $(M/C)_f$, which is the ratio of the number of fibers oriented in the MD to the number of fibers oriented in the CD, wherein said fibers are associated with the felt side of said web; and

determining a wire to felt ratio, $(M/C)_w/(M/C)_f$, which is the ratio of the wire ratio to the felt ratio, whereby the wire to felt ratio is a measure of the tendency of said web to curl.

5,394,248

MAGNETIC RECORDING APPARATUS AND MAGNETIC REPRODUCTS APPARATUS WITH GENERATOR FOR DISTINGUISHABLE SIGNAL MADE DISCRIMINATIONS INFORMATIONS WORDS

Yoshihiko Ohta, Yokosuka, and Tetsuro Izumi, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

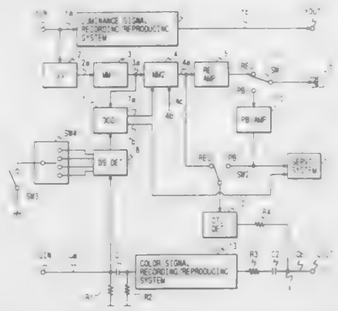
Filed Dec. 22, 1992, Ser. No. 995,095
Claims priority, application Japan, Dec. 27, 1991, 3-360621
Int. Cl.[6] H04N *5/782*
U.S. Cl. 358—335 9 Claims

1. A magnetic recording/reproducing apparatus, comprising:

means for recording and reproducing a plurality of first discrimination information signals and a plurality of second discrimination information signals on a magnetic recording medium by utilizing a control signal which can take first to fourth duty ratios in synchronism with a video signal, said first and second duty ratios corresponding to "1" and said third and fourth duty ratios corresponding to "0", so as to record and reproduce said plurality of first discrimination information signals with combinations of "1" and "0" and said first and third duty ratios corresponding to "L", and said second and fourth duty ratios corresponding to "S", so as to record and reproduce discrimination information word signals representing discrimination information words with combinations of "L" and "S", and

generating means for generating said plurality of second discrimination information signals corresponding to said discrimination information words by:

removing first words, each of which is undistinguishable from other words when being continuously arranged,



from a set of $2^{(2N-2)}$ words each of which comprises 2N bits (N is a natural number equal to or more than 2) whose first bit is fixed to "L" or "S" and last bit is fixed to "S" or "L", respectively; and

further by removing from said $2^{(2N-2)}$ words second words which have a bit at an intermediate odd bit position and a bit at an immediately following bit position identical to the last bit and the first bit thereof, respectively and by

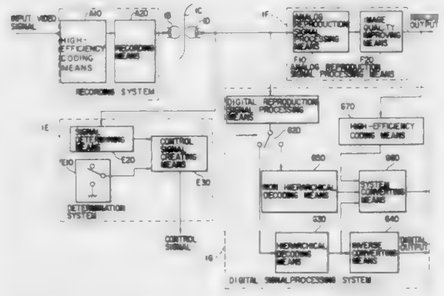
generating said plurality of second discrimination information signals only for the words remaining in said set of words.

5,394,249

MULTISYSTEM ADAPTABLE TYPE SIGNAL PROCESSING AND RECORDING/REPRODUCING APPARATUS

Kenji Shimoda, Yokohama; Hideo Tsurufusa, Tokyo; Shinji Yoda, and Kazuyoshi Fuse, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 12, 1993, Ser. No. 89,565
Claims priority, application Japan, Nov. 18, 1992, 4-308986
Int. Cl.[6] H04N *5/76, 5/92*
U.S. Cl. 358—335 1 Claim



1. A multisystem signal processing apparatus comprising:

low bit rate coding means for hierarchical coding different types of input video signals in a hierarchical structure and

setting different hierarchical levels for said different types of input video signals;

recording means for recording an output of said low bit rate coding means on tracks set for the respective hierarchical levels;

pick-up means for picking up a signal on one of the tracks;

determining means for determining the contents of the hierarchical level of an output signal from said pick-up means;

analog reproducing signal processing means for processing an output signal of said pick-up means in an analog fashion;

digital reproducing signal processing means for processing an output signal of said pick-up means in a digital fashion;

hierarchical decoding means for decoding a hierarchical coded signal in response to a determination signal from said determining means when an output of said digital reproducing signal processing means is coded in a hierarchical structure;

inverse transforming means for inversely transforming an output of said hierarchical decoding means to restore the same to an original video signal;

non-hierarchical decoding means for decoding a non-hierarchical coded signal in response to a determination signal from said determining means when an output of said digital reproducing signal processing means is coded in a non-hierarchical structure; and

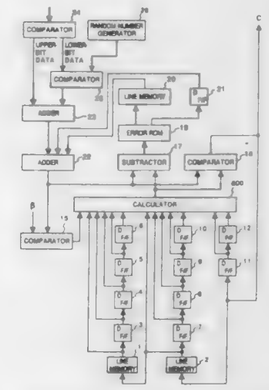
system conversion means for selectively receiving an output signal obtained by low-bit-rate coding an output of said analog reproducing signal processing means, an output of said hierarchical decoding means or an output of said non-hierarchical decoding means.

5,394,250

IMAGE PROCESSING CAPABLE OF HANDLING MULTI-LEVEL IMAGE DATA WITHOUT DETERIORATION OF IMAGE QUALITY IN HIGHLIGHT AREAS

Seita Shono, Warabi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,265
Claims priority, application Japan, Mar. 10, 1991, 3-256187; Jun. 1, 1992, 4-000119; Jun. 1, 1992, 4-000120; Jun. 1, 1992, 4-000121
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—455 31 Claims



1. An image processing apparatus for quantizing multi-value image data to binary data, comprising:

average value calculation means for calculating a plurality of weighted average values of a plurality of pixels near a pixel of interest on the basis of binary data of pixels which have already been binary-converted before the pixel of interest;

random number generation means for generating a random number;

lower-bit binary-conversion means for binary-converting lower-bit data of an image signal of the pixel of interest on the basis of the random number value generated by said random number generation means;

adder means for adding the lower-bit data binary-converted by said lower-bit binary-conversion means to upper-bit data of the image signal of the pixel of interest; and

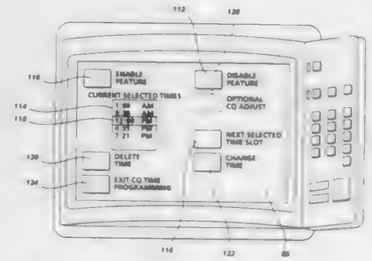
upper-bit binary-conversion means for binary-converting the upper-bit data of the image signal of the pixel of interest on the basis of a plurality of weighted average values calculated by said average value calculation means.

5,394,251

CUSTOMER SCHEDULABLE MACHINE QUALITY ADJUST

Andrew J. Aikens, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 21, 1993, Ser. No. 64,475
Int. Cl.[6] G03G *13/00*; H04N *1/46*
U.S. Cl. 358—500 2 Claims



1. In an image processing apparatus having image processing components for forming images on a medium, a controller for directing the operation of the image processing components including a user interface with display screen and an image quality monitoring element for checking the operation of the machine in relation to image quality standards, the method of presetting time for the initiation of the checking of the machine in relation to image quality standards by the image quality monitoring element comprising the steps of:

providing a frame on the display screen having a window for displaying a plurality of time slots,

scrolling through said time slots and highlighting selected time slots,

entering a time indicator into selected time slots to set the checking of the machine by the image quality monitoring element,

storing said time indicators for the checking of the machine by the image quality monitoring element in the controller, and

responding to said time indicators to activate the image quality monitoring element to initiate the checking of the machine in relation to image quality standards.

5,394,252

HYBRID QUANTIZATION METHOD FOR COLOR DOCUMENT REPRODUCTION

Thomas M. Holladay, and Reiner Eschbach, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 2, 1994, Ser. No. 204,921
Int. Cl.[6] H04N *1/40, 1/46*
U.S. Cl. 358—533 15 Claims

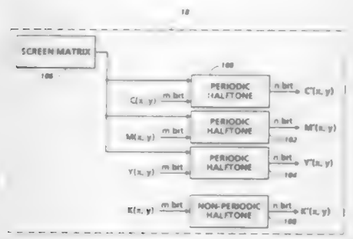
1. A color printing system, including a processor preparing color documents for printing, said color documents each in-

cluding a plurality of separations, each separation defined with a set of image signals describing optical density with m density levels, while a destination printer is capable of rendering density with n density levels, comprising:

a printer, adapted to print a plurality of color separations, so that when the separations are superposed on a final substrate, a selected color is defined;

a source of image signals describing a color document with a like plurality of color separations, each image signal representing optical density with one of m levels for a discrete area of a separation;

a first halftone processor operatively connected to said source of image signals and reducing the number of levels



m representing optical density in a non-zero, predetermined subset of the separations to a number of levels n representing optical density, said means generating a periodic pattern thereby;

a second halftone processor operatively connected to said source of image signals for reducing the number of levels m representing optical density in at least one remaining separation to a number of levels n representing optical density, said means generating a non-periodic pattern thereby;

an image processor directing signals processed at each halftone processor to said printer to print said processed color image.

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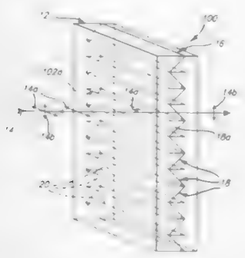
FLAT POLARIZING NONABSORBING BEAM SPLITTER

Shawn L. Kelly, 6423 Hollyhock Trail, Brighton, Mich. 48116

Filed Apr. 6, 1993, Ser. No. 43,354

Int. Cl.[6] G02B *5/30, 5/32*

U.S. Cl. 359—15 **10 Claims**



1. A nonabsorbing optical polarizing beam splitter comprising:

a transparent substrate located in a light beam path;

a plurality of adjacent flat channels supported by said substrate, each of said plurality of flat channels abutting respective adjacent channels at approximately a 90° angle to form a contiguous alternating orientation relative to the light beam path, wherein each of said plurality of adjacent flat channels comprises a means for splitting a light beam which reflects a first polarization component of the light beam oriented parallel to said plurality of channels, while allowing a second polarization component of the light beam to pass through said plurality of adjacent flat channels; and

a plurality of parallel flat reflecting layers supported by the substrate, each of said plurality of flat reflecting layers abutting a respective pair of said plurality of adjacent flat channels at a 45° angle, each of said plurality of reflecting layers reflecting the first polarization component back to the original reflecting one of said plurality of adjacent flat channels, which in turn reflects the first polarization component back in the direction of the light beam path.

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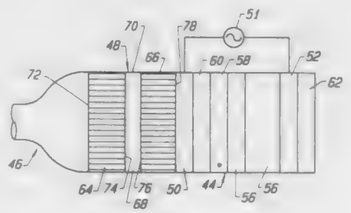
LIGHT VALVE PROJECTOR ASSEMBLY INCLUDING FIBER OPTIC PLATE WITH FIBER BUNDLE PERIMETER LESS THAN TWICE AS REFLECTIVE AS ELSEWHERE

Liang T. Cheng, Portland, Oreg., assignor to Greyhawk Systems, Inc., Mountain View, Calif.

Continuation of Ser. No. 73,959, Jun. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 786,562, Nov. 1, 1991, abandoned. This application Jan. 3, 1994, Ser. No. 176,882

Int. Cl.[6] G02F *1/1335, 1/135*

U.S. Cl. 359—42 **18 Claims**



8. In a liquid crystal light valve projector assembly including a multi-layered liquid crystal light valve having a light-writing side and a light-projecting side, light writing means for producing modulated writing light representative of a given image, which light when written onto the light-writing side of said light valve causes the latter to modulate in a corresponding manner, and light projecting means cooperating with the light-projecting side of said light valve for projecting a correspondingly modulated projection light beam onto a projection plane for visually displaying said given image, the improvement comprising:

means for coupling said light-writing means to the light-writing side of said light valve for causing said write light to write onto said light-writing side, said coupling means including a fiber optic plate arrangement which itself includes:

(a) a first fiber optic plate of lengthwise adjacent optical fibers for receiving write light from said light-writing means, said lengthwise adjacent optical fibers being grouped into a plurality of optical fiber bundles;

(b) a second fiber optic plate of lengthwise adjacent optical fibers for directing write light from said first fiber optic plate onto the light-writing side of said valve, said lengthwise adjacent optical fibers being grouped into a plurality of optical fiber bundles;

(c) optical coupling means disposed between and optically joining said first and second fiber optic plates; and

(d) each of said first and second fiber optic plates having opposing end faces, each of said end faces including a smooth surface wherein the reflectance at the outer perimeter of said optical fiber bundles is less than twice the reflectance at any other position within a corresponding optical fiber bundle, said smooth surface preventing said modulated writing light from projecting

onto said projection plane any visually observable regular boundary patterns corresponding to said optical fiber bundles.

5,394,255

LIQUID CRYSTAL DISPLAY USING A PLURALITY OF LIGHT ADJUSTING SHEETS ANGLED AT 5 DEGREES OR MORE

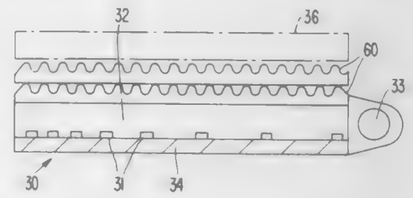
Tomohiro Yokota, Aichi; Fumio Nishitani, Chita; Hiroshi Ogawara, Otsu; Akihito Kubo, and Makoto Fujigami, both of Tsukuba, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 26, 1993, Ser. No. 8,995

Claims priority, application Japan, Jan. 27, 1992, 4-011864; May 7, 1992, 4-114781; Jul. 27, 1992, 4-199576

Int. Cl.[6] G02F *1/1335;* **F21V** *7/04*

U.S. Cl. 359—49 **8 Claims**



4. A liquid crystal display comprising:

a light adjusting sheet having a plurality of convex regions and concave regions on one surface, each of said convex regions having a cross section of a convex arc and each of said concave regions having a cross section of a concave arc, each convex region and each concave region being arranged alternately and approximately parallel to each other;

a light guiding plate having a dot pattern on a back surface placed in back of said light adjusting sheet;

a linear light source placed on at least one side of said light guiding plate;

a reflector plate being placed in back of said light guiding plate;

a liquid crystal display element being forward of said light guiding plate;

wherein peak lines of said convex regions and bottom lines of said concave regions of said light adjusting sheet being arranged to make a predetermined angle with an axis of said linear light source;

said light adjusting sheet comprising a plurality of single sheets each having a plurality of convex regions and concave regions arranged alternately and approximately parallel to each other on one surface, stacked together in such a way that peak lines of said convex regions and bottom lines of said concave regions of one single sheet make an angle of 5° or greater with peak lines of said convex regions and bottom lines of said concave regions of at least one other single sheet.

5,394,256

ENCAPSULATED LIQUID CRYSTAL IN LIQUID CRYSTAL MATERIAL WHERE ONE LIQUID CRYSTAL HAS POSITIVE BIREFRINGENCE AND DIELECTRIC ANISOTROPY, THE OTHER HAS ONLY ONE POSITIVE OF BIREFRINGENCE AND DIELECTRIC ANISOTROPY

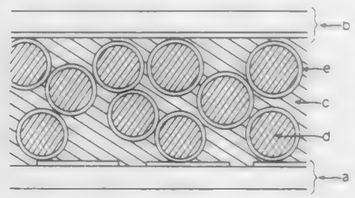
Nobuaki Yamada, Higashiosaka; Toshiyuki Hirai, Tenri; Noriaki Onishi, Osaka, and Shuichi Koozaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 30, 1992, Ser. No. 968,978

Claims priority, application Japan, Oct. 30, 1991, 3-285001

Int. Cl.[6] G02F *1/13, 1/137*

U.S. Cl. 359—51 **5 Claims**



1. A liquid crystal display comprising:

transparent electrodes formed on opposite surfaces of a pair of transparent substrates and a liquid crystal layer filled between said transparent substrate; in which the liquid crystal layer is formed of at least two kinds of liquid crystals which are separated from each other and provided in the form of a layer in the direction horizontal to the substrate, a first kind of liquid crystal includes at least one kind of liquid crystal (liquid crystal I) showing dielectric constant anisotropy $\Delta\epsilon > 0$ and refractive index anisotropy $\Delta n > 0$ and a second kind of liquid crystal includes at least one kind of liquid crystal (liquid crystal II) showing the dielectric constant anisotropy $\Delta\epsilon < 0$ and the refractive index anisotropy $\Delta n > 0$ or liquid crystal (liquid crystal III) showing the dielectric constant anisotropy $\Delta\epsilon > 0$ and the refractive index anisotropy $\Delta n < 0$, wherein one kind of liquid crystal is encapsulated in a micro-capsule, the micro-capsule being disposed in the other liquid crystal.

5,394,257

OPTICAL NEURAL NETWORK SYSTEM

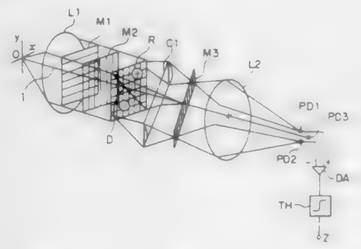
Paul Horan, Dublin, Ireland, and Akira Arimoto, Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 823,322, Jan. 21, 1992, Pat. No. 5,220,644, which is a division of Ser. No. 615,081, Nov. 19, 1990, Pat. No. 5,113,485. This application Jan. 27, 1993, Ser. No. 9,714

Claims priority, application Japan, Nov. 22, 1989, 1-302129

Int. Cl.[6] G06E *1/00*

U.S. Cl. 359—107 **9 Claims**



1. An optical system comprising a first modulation means including a pair of modulation arrays arranged in a direction perpendicular to each other for modulating a light source in

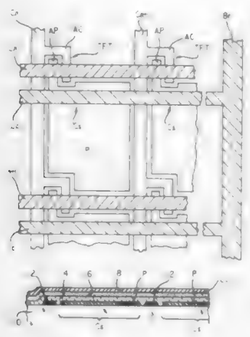
accordance with an input signal thereby to produce an auto-correlation matrix of the input signal, a second modulation means for dividing the auto-correlation matrix into two matrices about a main diagonal of the auto-correlation matrix for simultaneous modulation thereof with positive and negative weights, respectively, and detection means, for converting the light source modulated with the positive and negative weights into electrical signals, respectively.

5,394,258

ACTIVE MATRIX DISPLAY SCREEN WITH STORAGE CAPACITORS FORMED OF CONDUCTIVE BLOCKS, SEMICONDUCTIVE MATERIAL, NONCONDUCTIVE MATERIAL, AND CAPACITIVE LINES

François Morin, and Michel le Contellec, both of Lannion, France, assignors to France Telecom Etablissement Autonome de Droit Public (Centre National d'Etudes des Telecommunications), Issy les Moulineaux, France

Continuation of Ser. No. 70,213, Jun. 2, 1993, abandoned, which is a division of Ser. No. 699,600, May 14, 1991, Pat. No. 5,238,861. This application Jun. 22, 1994, Ser. No. 264,199
Claims priority, application France, May 15, 1990, 90 06042
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 359—59 14 Claims



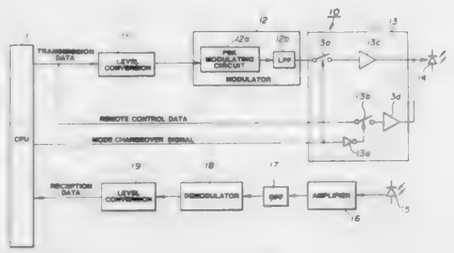
7. A display screen comprising:
a substrate;
a plurality of conductive addressing columns formed on the substrate;
a plurality of conductive blocks formed on the substrate, each including a first block lengthening piece;
a layer of semiconductive material formed on the plurality of conductive addressing columns and the plurality of conductive blocks;
a layer of nonconductive material formed on the layer of semiconductive material;
a plurality of conductive addressing lines formed on the layer of nonconductive material and each overlapping a first block lengthening piece, the plurality of conductive addressing columns, the first block lengthening pieces and the plurality of conductive addressing lines forming addressing transistors;
a plurality of capacitive lines formed on the layer of nonconductive material and overlapping the plurality of conductive blocks, the plurality of conductive blocks, the layer of semiconductive material, the layer of nonconductive material and the plurality of capacitive lines forming storage capacitors.

5,394,259

MODULATION/DEMODULATION APPARATUS AND INFORMATION PROCESSING APPARATUS

Hideki Takahara, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Feb. 24, 1993, Ser. No. 22,737
Claims priority, application Japan, Feb. 25, 1992, 4-073262; Nov. 18, 1992, 4-309099
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—142 21 Claims



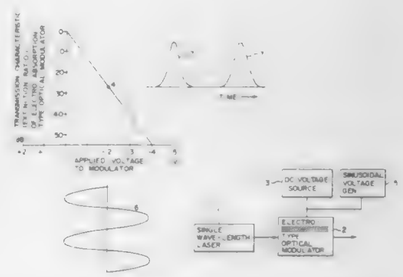
19. An information processing apparatus comprising:
a) central processing means having a data communication mode and a remote control operating mode and adapted for generating transmission data for data communication and transmission data for remote control
b) modulation means for modulating said transmission data for data communication supplied from said central processing means wherein said modulation means comprises a frequency shift keying modulating circuit,
c) changeover means for selecting and outputting one of the modulated transmission signals outputted from said modulation means and said transmission data for remote control supplied from said central processing means, and
d) infrared light emitting means for outputting to an external device the infrared light corresponding to the transmission data for data communication or transmission data for remote control-as selected by said modulation means,
e) said central processing means controlling said changeover means for selecting the transmission data for data communication from said modulating means and said transmission data for remote control in said data communication mode and in said second operating mode, respectively,
wherein the information processing apparatus further comprises,a display means for displaying an operational guide for indicating an operating sequence for said first operating mode and an operational guide for indicating an operating sequence for said second operating mode, said central processing means having its operating mode determined in accordance with the operating mode designated by said input means, said central processing means controlling the contents of an operating display on said display means, and
wherein said input means comprises a tablet for coordinate entry having plural transparent electrodes in both the horizontal and vertical directions, said tablet being arrayed in superimposition on said display means.

5,394,260

OPTICAL PULSE GENERATOR

Masatoshi Suzuki, Saitama; Hideaki Tanaka, Koganei, and Yuichi Matsushima, Tokorozawa, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,550
Claims priority, application Japan, Feb. 3, 1992, 4-046390; Apr. 23, 1992, 4-129353
Int. Cl.[6] H04B *10/04, 10/00*
U.S. Cl. 359—158 14 Claims



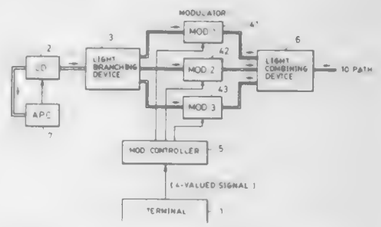
1. An optical pulse generator for optical soliton communications comprising;
a semiconductor laser for continuously oscillating an output light at a single wavelength,
a sinusoidal voltage generator for generating a sinusoidal voltage,
a semiconductor electro-absorption type optical modulator for modulating the intensity of the output light from said semiconductor laser by the sinusoidal voltage to provide optical short pulses, and
a DC voltage source for applying a reverse DC voltage to said semiconductor electro-absorption type optical modulator so that the output light from said semiconductor laser is sufficiently extinguished.

5,394,261

OPTICAL COMMUNICATION SYSTEM AND TRANSMITTING APPARATUS FOR USE THEREIN

Kenji Nakamura, Hadano, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 765,011, Sep. 24, 1991, abandoned. This application Nov. 19, 1993, Ser. No. 155,160
Claims priority, application Japan, Sep. 25, 1990, 2-254695
Int. Cl.[6] H04J *14/00;* H04B *10/04*
U.S. Cl. 359—180 9 Claims



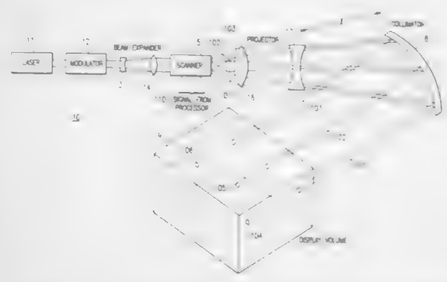
1. An optical communication system comprising:
an optical transmission path;
a terminal for outputting a multi-valued digital signal; and
a transmitter, said transmitter including a light source for emitting a light, branching means for branching the light emitted from the light source into a plurality of branched lights having common wavelength components, a generating means for generating a plurality of binary digital signals according to said multi-valued digital signal output from said terminal, a plurality of external light modulators for respectively intensity modulating the plurality of branched lights output from said branching means according to said plurality of binary digital signals generated by said generating means, combining means for combining the intensity modulated lights output from the light modulators into a single light, and transmitting means for transmitting the single light to the optical transmission path.

5,394,262

VOLUME DISPLAY OPTICAL SYSTEM AND METHOD

Douglas W. Anderson, Richardson, Tex., assignor to Texas Instruments Incorporated

Division of Ser. No. 850,191, Mar. 11, 1992, Pat. No. 5,231,538, which is a division of Ser. No. 742,563, Aug. 7, 1991, Pat. No. 5,220,452, which is a continuation of Ser. No. 563,370, Aug. 6, 1990, abandoned. This application Jun. 18, 1993, Ser. No. 77,901
Int. Cl.[6] G02B *26/10, 27/22, 27/20*
U.S. Cl. 359—196 31 Claims



1. A system for projecting coherent light into a three-dimensional volume comprising:
(a) a light source producing coherent light beams;
(b) a modulator for controlling the intensity of said light beams;
(c) an expander for increasing the diameters of said light beams;
(d) a scanner for transmitting said light beams from said expander under control of signals applied to said scanner;
(e) a projector for converging the waists of said light beams transmitted from said scanner and for subsequently diverging said refracted light beams relative to each other while maintaining said converged waists; and
(f) a collimator for abating the divergence of said light beams and directing said light beams to a display region after abating the divergence of said light beams.

5,394,263

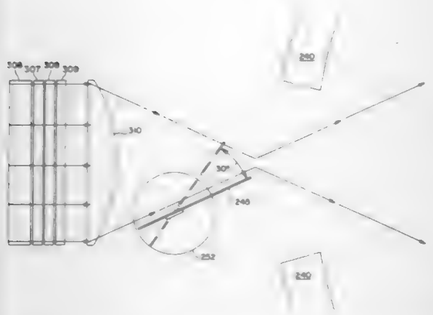
METHOD AND APPARATUS FOR ATTENUATING A LIGHT BEAM

John Galt, and James Pearman, both of Glendale, Calif., assignors to Sony Electronics, Inc., Park Ridge, N.J.

Filed Apr. 28, 1993, Ser. No. 54,557
Int. Cl.[6] G02B *26/02*
U.S. Cl. 359—227 15 Claims

1. An apparatus for attenuating a light beam comprising:
focusing means for generating a cone shaped light beam from said light beam, said focusing means comprising a diameter and a focal length wherein outer perimeters of said cone shaped light beam are configured in accordance with said diameter and said focal length;
light vane means for deflecting at least a portion of said cone shaped light beam, said light vane means comprising a face having a height and a width, said height being at least equal to said diameter of said focusing means; and

positioning means coupled to said light vane means for positioning said light vane means within the cone shaped light beam to attenuate said cone shaped light beam, said positioning means placing said light vane means in at least one position ranging from a zero stop position to a full stop position, said face of said light vane means being



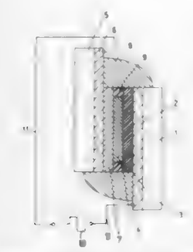
parallel to an edge of said cone shaped light beam and said width of said face extending to a focal point of said cone shaped light beam for said zero stop position and said face of said light vane being 30 degrees into said cone shaped light beam relative to said face in said zero stop position for said full stop position.

5,394,264

ELECTROCHROMIC WINDOW, BASED ON A POLYMERIC POLYEPOXY ELECTROLYTE

Luca Marchese, Milan; Stefano Passerini, Rome; Maria Andrei, Berceto; Bruno Scrosati, Rome, and Arnaldo Roggero, San Donato Milanese, all of Italy, assignors to Eniricerche S.p.A., Milan, Italy

Continuation of Ser. No. 696,211, May 6, 1991, abandoned. This application Nov. 8, 1993, Ser. No. 149,138
Claims priority, application Italy, Jun. 13, 1990, 20632 A/90
Int. Cl.[6] G02F *1/53*
U.S. Cl. 359—270 **8 Claims**

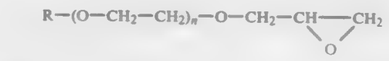


1. An electrochromic window, comprising:

a. an electrode comprising a first transparent conductive glass sheet having an inner face, wherein said inner face has a first layer of conductive material comprising tin oxide or tin and indium oxides thereon and a second layer comprising tungsten oxide (WO_3) on said first layer;

b. a counter-electrode comprising a second transparent conductive glass sheet having an inner face, wherein said second glass sheet is adapted for activation by the electrochemical intercalation of lithium, and wherein said inner face of said second glass sheet has a first layer of conductive material comprising tin oxide or tin and indium oxides thereon, and a second layer comprising nickel oxides (NiO_z), wherein z comprises the range of from about 1 to about 1.66; and

c. a solid polymeric electrolyte interposed between said electrode and said counter-electrode, wherein said solid polymeric electrolyte comprises a solid solution, wherein said solid solution includes an ionic lithium compound in a solid crosslinked polyepoxide; wherein said polyepoxide is formed by copolymerizing a monoepoxide having the formula

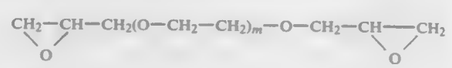


wherein:

R is a methyl or ethyl radical; and

n is an integer from 1 to 6;

with a diepoxide having the formula:



wherein:

m is an integer from 1 to 6;

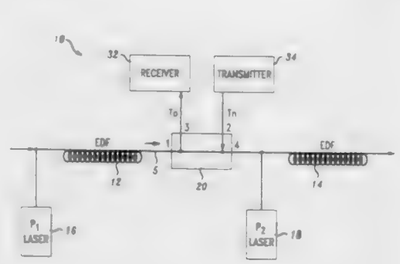
wherein said diepoxy and said monoepoxy have a molar ratio within the range of from about 1:100 to about 10:100; wherein said solid crosslinked polyepoxide has a weight average molecular weight within the range of from 10,000 to 100,000 and a glass transition temperature (Tg) within the range of from about—60° C. to about −80° C.; and wherein the atomic ratio of oxygen in said polyepoxide to lithium in said ionic lithium compound is within the range from 6:1 to 24:1.

5,394,265

IN-LINE TWO-STAGE ERBIUM DOPED FIBER AMPLIFIER SYSTEM WITH IN-BAND TELEMETRY CHANNEL

Jonathan A. Nagel, Freehold, and Samia M. Bahsoun, Bradley Beach, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Oct. 25, 1993, Ser. No. 142,754
Int. Cl.[6] H01S *3/17, 3/06;* **H04B** *10/00*
U.S. Cl. 359—341 **12 Claims**



1. A two-stage doped fiber amplifier system for use in optical fiber communication systems, comprising:

an optical fiber for carrying a signal comprising a first telemetry signal and a data signal, wherein the first telemetry signal has a predetermined carrier wavelength;

a first doped fiber amplifier having an input and an output, said first amplifier operatively generating an inherent spontaneous emission noise signal having a noise peak occurring at said predetermined carrier wavelength and being disposed in-line with said optical fiber for amplifying the signal;

a filter disposed at the output of said first amplifier for filtering out said predetermined carrier wavelength so as to remove from the signal the first telemetry signal and at least said noise peak of the spontaneous emission noise signal while passing the data signal through the filter;

means for adding a second telemetry signal having said predetermined carder wavelength to the passed - through data signal for forming a second signal carried by said optical fiber;

a second doped fiber amplifier, having an input and an output, said second amplifier being disposed in-line with said optical fiber carrying the second signal for amplifying the second signal; and

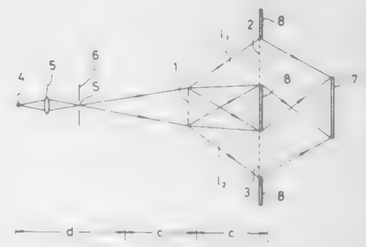
means for supplying optical power to said first and second amplifiers.

5,394,266

METHOD OF FABRICATING DIFFRACTION GRATING USING HYPERBOLIC GRATINGS AND AN APPARATUS FOR CARRYING OUT THE METHOD

Kenichi Hibino, Tsukuba, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Sep. 17, 1993, Ser. No. 123,069
Claims priority, application Japan, Sep. 18, 1992, 4-274976
Int. Cl.[6] G02B *5/18*
U.S. Cl. 359—574 **4 Claims**



3. An apparatus for fabricating a diffraction grating comprising a point light source, a first hyperbolic grating having a spatial frequency of f/2 (lines/mm) disposed on the optical axis of the point light source, a photographic plate disposed behind the first grating, a second hyperbolic grating having a spatial frequency of f (lines/mm) disposed between the first grating and the photographic plate at a position to be illuminated by a +1st order diffracted ray from the first hyperbolic grating, a third hyperbolic grating having a spatial frequency of f (lines/mm) disposed between the first grating and the photographic plate at a position to be illuminated by a −1st order diffracted ray from the first hyperbolic grating, the point light source, the first, second and third diffraction gratings, and the photographic plate being disposed to satisfy the relationship

$$c/d = (1 - 1/4\,(f\lambda)^2)\,\frac{\sqrt{1-\frac{1}{16}(f\lambda)^2} - \sqrt{1-\frac{1}{4}(f\lambda)^2}}{1 - \sqrt{\left(1-\frac{1}{16}(f\lambda)^2\right)\left(1-\frac{1}{4}(f\lambda)^2\right)}}$$

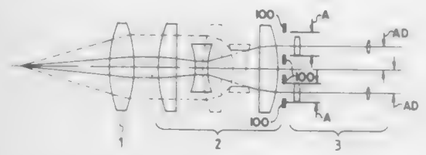
where d is the distance between the point light source and the first diffraction grating and c is the distance between the first diffraction grating and each of the second and third diffraction gratings and also the distance between each of the second and third diffraction gratings and the photographic plate and λ is the center wavelength of a quasi-monochromatic light.

5,394,267

STEREOMICROSCOPE

Toyoharu Hanzawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1993, Ser. No. 83,275
Int. Cl.[6] G02B *21/22*
U.S. Cl. 359—376 **7 Claims**



1. A stereomicroscope comprising:

an objective lens having an objective lens optical axis disposed to have a front focal point nearly coincident with an object point;

an afocal vari-focal optical system having an afocal varifocal optical axis coincident to said objective lens optical axis;

a pair of imaging optical systems each for imaging a parallel radiation bundle emerging from said afocal varifocal optical system, each of said pair of imaging optical systems having an imaging optical axis non-coincident with said afocal vari-focal optical axis; and

a pair of eyepiece lens systems for respectively magnifying an image formed by each of said pair of imaging optical systems, each of said pair of eyepiece lens systems having an eyepiece optical axis non-coincident with said afocal vari-focal optical axis;

said stereomicroscope satisfying the following condition (1):

$$0.005 \leqq AD \cdot \beta / f_0 \leqq 0.131 \quad (1)$$

wherein

said reference symbol β represents an afocal magnification of said afocal vari-focal optical system,

said reference symbol AD designates a distance between each of said eyepiece optical axes and said afocal vari-focal optical axis, and

said reference symbol f_0 denotes a focal length of said objective lens.

5,394,268

FIELD SYNTHESIS AND OPTICAL SUBSECTIONING FOR STANDING WAVE MICROSCOPY

Frederick Lanni; D. Lansing Taylor, and Brent Bailey, all of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

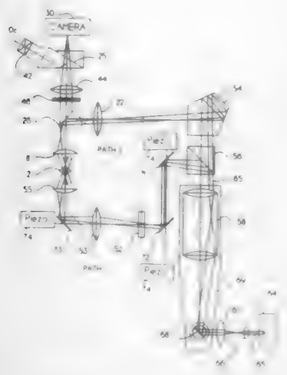
Filed Feb. 5, 1993, Ser. No. 14,328
Int. Cl.[6] G02B *21/06*
U.S. Cl. 359—386 **30 Claims**

1. An improved optical microscope for observing a luminescent specimen placed on a stage, such optical microscope being of the type having a light source, a lens which defines a focal plane which is a fixed distance from the lens, a stage for holding the specimen in the focal plane and means for producing a standing wave field through the specimen to excite fluorescence or phosphorescence in the specimen wherein the improvement comprises:

a) a means for exciting the specimen by a time-multiplexed series of standing wave fields that together sum to form one of a non-periodic excitation field that is peaked at an in-focus plane in the specimen and a non-periodic excita-

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tion field that is hulled at an in-focus plane in the specimen; and



b) means for recording an image of the specimen when the specimen is so excited.

5,394,269

REFLECTANCE REDUCING FILM AND METHOD OF FORMING SAME ON GLASS SUBSTRATE

Atsushi Takamatsu; Osamu Takahashi, and Hiroaki Arai, all of Matsusaka, Japan, assignors to Central Glass Company, Ltd., Ube, Japan

Filed Nov. 12, 1993, Ser. No. 150,895
Claims priority, application Japan, Nov. 13, 1992, 4-303711
Int. Cl.[6] C03C *17/25;* **B05D** *3/02, 5/06*
U.S. Cl. 359—580 **14 Claims**

1. A method of forming on a glass substrate a silicon dioxide film having a thickness of about 60 to 160 nm and a refractive index of 1.21 to 1.40 and being minutely rough such that the film has micro-pits and/or microscopic land regions, at least one of each micro-pit and each land region having a diameter of 50 to 200 nm, the method comprising the steps of:
(a) preparing at least two sols respectively from at least one compound so as to disperse in said at least two sols at least two polymers of said at least one compound, said at least one compound being selected from the group consisting of silicon alkoxides and silicon acetylacetonates, said at least two polymers having different average molecular weights;
(b) mixing said at least two sols together with a solvent so as to prepare a coating solution;
(c) applying the coating solution to the glass substrate so as to form a sol film on the glass substrate; and
(d) heating the glass substrate and the sol film so as to transform the sol film into a gel film which has a minutely rough surface having micro-pits and/or microscopic and regions.

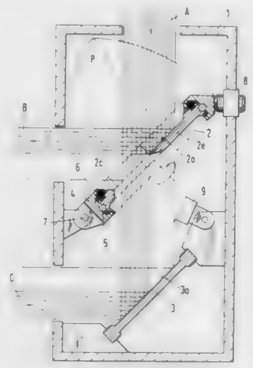
5,394,270

OPTICAL BEAM DIVIDER FOR A LASER BEAM

Joseph Sturm, Duisburg, Germany, assignor to Thyssen Stahl Aktiengesellschaft, Duisburg, Germany

Filed Oct. 13, 1993, Ser. No. 135,905
Claims priority, application Germany, Oct. 19, 1992, 4235165
Int. Cl.[6] G02B *26/02, 26/08, 27/14*
U.S. Cl. 359—636 **6 Claims**

1. An optical beam divider for a laser beam comprising:
a deflecting mirror in the form of a diaphragm disposed in the path of said beam, said mirror being rotatable around an axis lying perpendicular to a mirror plane of said deflecting mirror for sweeping a cross-section of said beam,
wherein a cross-section of said deflecting mirror corresponds to said cross-section of said beam,
wherein an axis of said beam intersects said axis of said deflecting mirror at the surface of said deflecting mirror,
wherein said deflecting mirror comprises at least one window corresponding to only a segment of said cross-section of said beam,



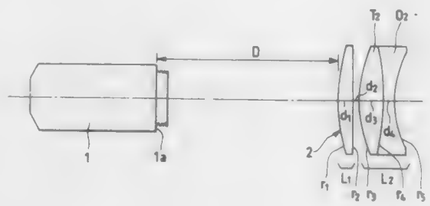
wherein said at least one window extends to said axis of said deflecting mirror,
wherein said deflecting mirror further comprises means for bearing and driving said deflecting mirror disposed at an outer edge of said deflecting mirror, and
wherein said rotation of said deflecting mirror sweeps each segment of said beam in succession.

5,394,271

OPTICAL SYSTEM FOR MICROSCOPES

Takaaki Tanaka; Toshinobu Suzuki, and Chikara Nagano, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 964,910
Claims priority, application Japan, Oct. 22, 1991, 3-274158
Int. Cl.[6] G02B *21/02*
U.S. Cl. 359—656 **2 Claims**



2. An optical system for microscopes comprising:
an objective lens for converting light from an object into substantially parallel beams; and
an imaging lens equipped with a first lens component having a positive refractive power and a second lens component including a negative cemented doublet configured by cementing a positive lens to a negative lens, said imaging lens for focusing the beams from said objective lens to form a magnified image of the object at a predetermined position,
wherein a distance from a contact surface of said objective lens to a surface closest to said objective lens, of said imaging lens, is variable and said optical system satisfies conditions:

$0.5f \leqq W < 1.1f$

$0.75f < f_1 < 0.9f$

$0.77 < |fO_2/fT_2| < 1.0$

$0.14f < ED_1 < 0.19f$

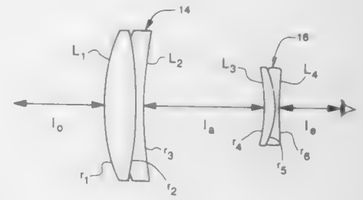
where W is the amount of change of the distance from the contact surface of the objective lens to the surface closest to the objective lens, of the imaging lens, f is the focal length of the imaging lens, f_1 is the focal length of the first lens component, fT_2 is the focal length of the positive lens of the second lens component, fO_2 is the focal length of the negative lens of the second lens component, and ED_1 is the effective diameter of the first lens component.

5,394,272

HIGH-MAGNIFICATION WIDE-FIELD-OF-VIEW TELEMICROSCOPIC LENS CONFIGURATION

Damon F. Kvamme, and Richard C. Kim, both of Ann Arbor, Mich., assignors to General Scientific Corporation, Ann Arbor, Mich.

Filed Jul. 19, 1993, Ser. No. 93,839
Int. Cl.[6] G02B *13/00*
U.S. Cl. 359—744 **7 Claims**



1. A telemicroscopic lens configuration, comprising:
a doublet objective lens including a positive-power double-convex high-refractive-index crown glass lens having a refractive index $n_1 = 1.713$, and a dispersion value $v_1 = 53.8$ cemented to a negative-power double-concave high-refractive-index flint lens having a refractive index $n_2 = 1.785$ and a dispersion value $v_2 = 25.8$; and
a doublet eyepiece lens including a positive-power meniscus flint lens having a refractive index $n_3 = 1.575$ and a dispersion value $v_4 = 41.5$ cemented to a negative-power high-refractive-index crown glass lens having a refractive index $n = 1.713$ and a dispersion value $v_4 = 53.8$.

5,394,273

Patent Not Issued For This Number

5,394,274

ANTI-COPY SYSTEM UTILIZING AUDIBLE AND INAUDIBLE PROTECTION SIGNALS

Leonard R. Kahn, 137 E. 36th St., New York, N.Y. 10016

Continuation-in-part of Ser. No. 393,300, Aug. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 147,141, Jan. 22, 1988, abandoned. This application Apr. 13, 1993, Ser. No. 46,196
Int. Cl.[6] G11B *5/02, 15/04, 19/04, 23/28*
U.S. Cl. 360—27 **33 Claims**



1. Apparatus for protecting pre-recorded material from unauthorized copying, comprising:
(a) a source of program material,
(b) means for causing audible artifacts to appear along with the desired program material,
(c) means for causing an inaudible protected material identification signal to also appear along with the program material,
(d) means for recording and making copies of a wave representing the source material, the audible artifacts and the inaudible identification signal.

5,394,275

APPARATUS FOR SELECTIVELY RECORDING AND REPRODUCING TWO VIDEO SIGNALS HAVING DIFFERENT AMOUNTS OF DATA IN EACH FRAME

Akira Iketani, Higashiosaka; Chiyoko Matsumi, Suita, and Tatsuro Juri, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

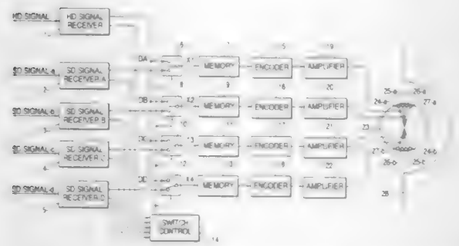
Filed Jun. 26, 1991, Ser. No. 722,549
Claims priority, application Japan, Jun. 27, 1990, 2-168711; Aug. 16, 1990, 2-216881
Int. Cl.[6] H04N *5/78*
U.S. Cl. 360—35.1 **2 Claims**

1. An apparatus for selectively recording and reproducing a first video signal and a second video signal, the first video signal having a larger amount of data in each frame than the second video signal, said apparatus comprising:
a first receiving means for receiving the first video signal;
a second receiving means for receiving a plurality of channels of signals of the second video signal in parallel;
a selection means for selecting one of output signals of the

first and second receiving means and for outputting a selected signal said selection means having a plurality of output ports for outputting the plurality of channels of signals of the second video signal in parallel at the same time from the plurality of output ports when selecting the second video signal outputted from the second receiving means and for dividing the first video signal into a plurality of segments of signals and time-divisionally distributing the plurality of segments of signals of the first signal to respectively output the plurality of segments of signals of the first signal from the plurality of output ports when selecting the first video signal outputted from the first receiving means;

a plurality of encoding means respectively coupled to the plurality of output ports of the selection means for encoding output signals of the plurality of output ports;

a plurality of recording means respectively coupled to the plurality of encoding means for recording output signals



of the plurality of encoding means onto a recording medium to form a plurality of record tracks on the recording medium;

a plurality of reproducing means for respectively reproducing the recorded signals from the plurality of recorded tracks;

a plurality of decoding means coupled to the plurality of reproducing means for respectively decoding the reproduced signals from the plurality of reproducing means to obtain a plurality of reproduced video signals; and

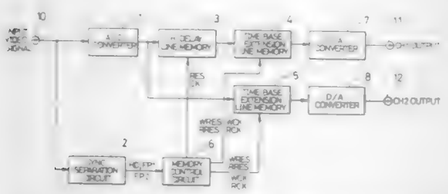
a selective output means for outputting the plurality of reproduced video signals in parallel at a plurality of output ports when the reproduced video signals are the plurality of channels of signals of the second video signal and for outputting the plurality of reproduced video signals time-divisionally at a single output port when the reproduced video signals are the plurality of segments of signals of the first video signal.

5,394,276

METHOD AND APPARATUS FOR TWO-CHANNEL RECORDING OF VIDEO SIGNALS

Makoto Adachi, Nikko, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 704,385, May 23, 1991, Pat. No. 5,295,024. This application Apr. 20, 1993, Ser. No. 49,589
Claims priority, application Japan, Nov. 21, 1990, 2-319374
Int. Cl.[6] H04N 5/78
U.S. Cl. 360—36.2 13 Claims



1. A method of recording a video signal comprised of a plurality of frames on a recording medium, each frame having a predetermined number of scanning lines, the method comprising the steps of:

storing odd lines and even lines of a given frame in different line memories such that the odd lines and the even lines of subsequent frames are alternatively recorded in the same line memory;

transmitting only odd scanning lines of a first frame through a first channel and transmitting only even scanning lines of said first frame through a second channel during a first frame interval;

transmitting only even scanning lines of a second frame through the first channel and transmitting only odd scanning lines of said second frame through the second channel during a second frame interval immediately following the first frame interval; and

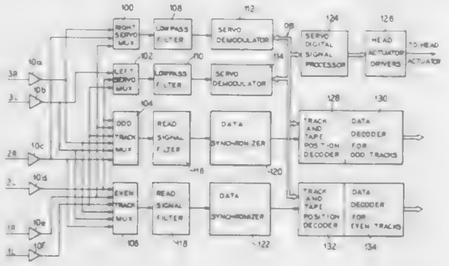
repeating said transmitting steps to arrange the frame intervals to be transmitted through the first and second channels such that frame intervals of odd scanning lines are adjacent in time to frame intervals of even scanning lines, the predetermined number of scanning lines of the video signal being recorded on the recording medium through the first and second channels.

5,394,277

METHOD FOR DETERMINING SERVO TRACK PAIR POSITION AND LONGITUDINAL TAPE POSITION FOR A TAPE USING DEDICATED SERVO FORMAT

Per O. Pahr, Lier; Steinar J. Strand, Langhus, and Erik Solhjell, Oslo, all of Norway, assignors to Tandberg Data A/S, Oslo, Norway

Filed Oct. 2, 1992, Ser. No. 955,411
Claims priority, application European Pat. Off., May 13, 1992, 92108079
Int. Cl.[6] G11B 5/09, 21/04, 5/584
U.S. Cl. 360—53 9 Claims



1. A method for determining servo track pair position and longitudinal tape position for a tape using a dedicated servo format, said tape including at least one set of data tracks and a plurality of dedicated servo tracks wherein adjacent servo tracks are defined by longitudinal lines through edges of erased or non-recorded tape portions, the method comprising the steps of:

recording information about servo track pair numbers and/or servo sample numbers on the erased or non-recorded portions of said tape at said plurality of dedicated servo tracks;

retrieving said information;

decoding said information; and

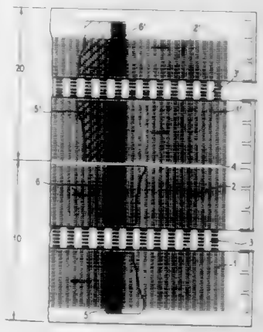
reading back said information together with signals from one of said plurality of servo tracks wherein said information is recorded digitally by using a digital block format of data blocks requiring fewer bytes per block than a data block provided on said at least one set of data tracks.

5,394,278

METHOD AND APPARATUS FOR ERASING INFORMATION FROM A MAGNETIC TAPE

Per O. Pahr, Lier, and Ladislav Rubas, Tranby, both of Norway, assignors to Tandberg Data A/S, Oslo, Norway

Filed Feb. 26, 1993, Ser. No. 23,590
Claims priority, application European Pat. Off., Feb. 26, 1992, 92103289.2
Int. Cl.[6] G11B 5/09, 5/03
U.S. Cl. 360—66 5 Claims



1. A method for erasing information from a magnetic tape with an erase head divided into a plurality of physical partitions, said tape being divided into at least two physical partitions wherein each of the at least two physical partitions include a plurality of data tracks carrying recorded data and at least one set of servo tracks carrying position information and dedicated to an area between the plurality of data tracks and further wherein the physical partitions of the erase head match the data tracks of the tape, the method comprising the steps of:

erasing at least a first one of said physical partitions during movement of said tape in a forward or backward direction; and

erasing at least a second one of said physical partitions during movement of said tape either in a backward direction or in the forward direction wherein at least two of the plurality of data tracks are simultaneously erased.

5,394,279

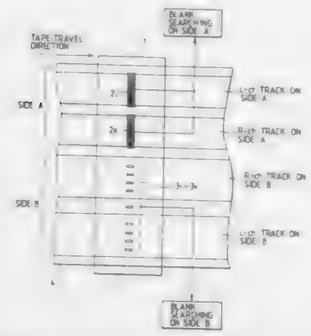
METHOD AND APPARATUS FOR SIMULTANEOULSY SEARCHING TWO SIDES OF A TAPE FOR LOCATIONS OF BLANKS BETWEEN RECORDED SIGNALS

Yoshiki Furuta, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 892,770, Jun. 3, 1992, abandoned. This application Jun. 7, 1994, Ser. No. 255,803
Claims priority, application Japan, Sep. 30, 1991, 3-252077
Int. Cl.[6] G11B 5/02
U.S. Cl. 360—72.1 13 Claims

1. An apparatus for searching for blanks on a recorded tape having first and second sides in a tape player, the first side moving in a first direction during playback of signals recorded on the first side, and the second side moving in a second direction during playback of signals recorded on the second side, the apparatus comprising:

a reversible fixed head component having a head surface divided into first and second heads, the first head having a plurality of analog playback head sections, and the second head having a plurality of digital playback head sections, wherein the plurality of analog playback head sections and at least two of the plurality of digital playback head sections simultaneously generate signals representing magnitude of the recorded signals on both sides of the recorded tape; and



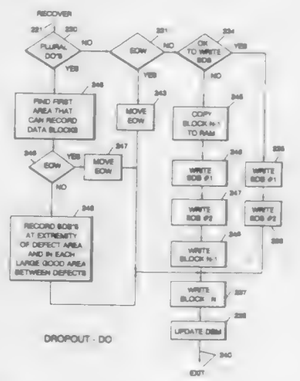
blank detection means for detecting blanks in the recorded signals in accordance with the generated signals.

5,394,280

DETECTING A SERVO ERROR ON A MAGNETIC TAPE AND IDENTIFYING EXTENT AND LOCATION OF THE DETECTED SERVO ERROR BY LINKED CONTROL MARKS

Alex Chliwnyj; David C. Graves; Scott M. Fry; Pamela R. Nylander-Hill; Habib M. Torab, and Will A. Wright, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 75,622
Int. Cl.[6] G11B 5/584, 5/09, 5/596
U.S. Cl. 360—77.12 12 Claims



1. A method of recording data onto a record member in a predetermined number of elongated parallel longitudinally-extending data tracks using a recording/reading head means, including the steps:

intermittently relatively moving longitudinally said head means and said record member for causing said head means to longitudinally scan predetermined ones of said data tracks;

while said head means is longitudinally scanning said predetermined ones of said data tracks, recording data in a plurality of addressable blocks of said data in said predetermined ones of said data tracks;

indicating that a change in said recording is to occur in limited longitudinal portion of all of said predetermined ones of data tracks:

aborting said recording;
indicating first and second longitudinal data track locations along each of said predetermined ones of said data tracks as first and second longitudinal track locations or defining said limited longitudinal portion;
relatively moving longitudinally said record member and head means to said first longitudinal data track location;
recording into all of said predetermined ones of said data tracks at said first longitudinal data track location a first control mark for identifying, by said longitudinal location of the first control mark in said data tracks, an onset of said limited longitudinal portion, and inserting into said first control mark an indication of said second longitudinal rack location;
then continuing recording data unto said predetermined ones of said data tracks outside of said limited longitudinal portion:
after recording said first control mark at said first longitudinal data track location in said predetermined ones of said data tracks, relatively moving longitudinally said record member and said head means to said second longitudinal data track location;
recording unto said predetermined ones of said data tracks at said second longitudinal track location a second control mark for indicating an end of said limited longitudinal and inserting into said second control mark an indication of said first longitudinal track location;
providing said record member with machine-sensible servo indications disposed in a longitudinally-extending servo track on said record medium that is parallel to and laterally separate from all of said longitudinal extending data tracks for indicating a relative position of said record member and said head means laterally of said predetermined number of said data tracks; while recording said data in said data tracks, sensing said servo indications for servoing the head means and record member laterally of said data tracks to said indicated relative position;
while recording said data in said predetermined ones of said data tracks, sensing said servo indications for detecting and indicating that a predetermined lateral position servo error has occurred;
responding to said indicated position servo error to perform said indicating and aborting steps including in said indicating step:
generating said indication of said first longitudinal track location;
continuing relatively moving longitudinally said head means and record member for detecting cessation of said predetermined servo error; and
responding to said cessation of said predetermined servo error to generate said indication of said second longitudinal track location;
whereby said limited longitudinal portion is laterally aligned with said predetermined servo error.

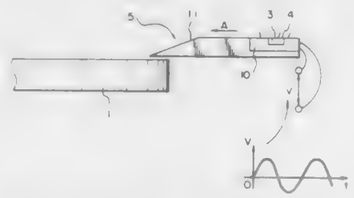
5,394,281

MAGNETIC HEAD LOADING/UNLOADING MECHANISM WITH A RAMP HAVING AN OSCILLATING FUNCTION

Hiroshi Kajitani, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 983,157
Claims priority, application Japan, Nov. 29, 1991, 3-315867
Int. Cl.[6] G11B *5/54, 21/22*
U.S. Cl. 360—105 **1 Claim**

1. A loading/unloading mechanism for loading and unloading a magnetic head of a magnetic disk drive, said mechanism comprising:
a magnetic recording medium affixed to a spindle;
a positioner actuator;
a suspension mechanism affixed to the positioner actuator;
a floating head slider supported by the suspension mechanism; and
a ramp mechanism, wherein, when said magnetic disk drive on which said loading/unloading mechanism is mounted is not being operated, said ramp mechanism supports said suspension mechanism and maintains said floating head slider in a position moved away from said magnetic recording medium and wherein at start-up of said magnetic disk drive, said positioner actuator loads said floating head slider onto said magnetic recording medium at a predetermined speed after the medium has reached a predetermined rotation speed, and when the operation of said magnetic disk drive has stopped, said positioner actuator unloads said floating head slider from said magnetic recording medium after said magnetic recording medium has reached said predetermined speed, wherein said ramp mechanism comprises a piezoelectric element and a cam, and wherein, when said magnetic disk drive is not being



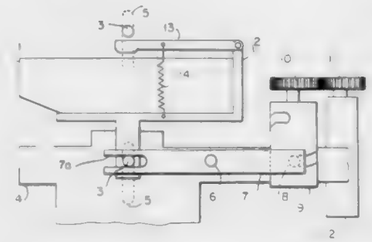
operated, said suspension mechanism is supported on said piezoelectric element which forms part of said ramp mechanism, maintaining said floating head slider spaced apart from said magnetic recording medium, and wherein at the beginning of a loading operation, a sinusoidal high frequency voltage is applied to said piezoelectric element causing said piezoelectric element to oscillate at a frequency which is higher than the resonance frequencies of said suspension mechanism and said positioner actuator, and at an instant when a static frictional force ascribable to the contacts of said suspension mechanism and said ramp mechanism is replaced with a dynamic frictional force, said positioner actuator moves said floating head slider such that said floating head slider is loaded onto said magnetic recording medium.

5,394,282

CARTRIDGE HOLDING MECHANISM FOR MAGNETIC TAPE CARTRIDGE APPARATUS

Satoshi Wada, Yamagata, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 18, 1993, Ser. No. 153,962
Claims priority, application Japan, Nov. 18, 1992, 4-308388
Int. Cl.[6] G11B *5/008*
U.S. Cl. 360—96.5 **6 Claims**



1. A cartridge holding mechanism for a magnetic tape cartridge apparatus, comprising:
a cartridge holder having guide rollers rotatably supported thereby for holding a magnetic tape cartridge housing a magnetic tape;

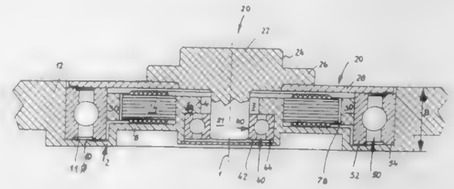
a base plate having guide grooves for guiding said guide rollers to move said cartridge holder vertically;
a bottom lever supported rotatably by said base plate and having first ends formed with grooves which are engaged with said guide rollers, and an opposite end rotatably supporting a cam roller;
a cam drum rotatably supported by said base plate and having, on a surface thereof, a cam groove engaged with said cam roller and, on an upper portion thereof, a drum gear; and
a load motor having a motor gear meshed with said drum gear for driving said cartridge holder by rotating said cam drum through said motor gear and said drum gear.

5,394,283

DISK STORAGE DRIVE HAVING A ROTOR MOUNTED WITH A PLURALITY OF BEARING

Helmut Hans, and Jurgen Oelsch, both of St. Georgen, Germany, assignors to Papst Licensing GmbH, Spaichingen, Germany

Filed Nov. 12, 1992, Ser. No. 974,419
Claims priority, application Germany, Nov. 11, 1991, 4136996
Int. Cl.[6] G11B *17/08;* **F16C** *19/00;* **H02K** *5/16*
U.S. Cl. 360—98.07 **17 Claims**



1. Disk-memory-drive having a stator, a rotor with a centered hub, and one or more hard disks being attachable to the outer surface of the hub, and with two bearings between the rotor and stator mounting the rotor for rotation about an axis of rotation characterized in that,
the first bearing mounts the rotor at a first radial distance from the axis of rotation and the second bearing mounts the rotor at a second radial distance from said axis, said second radial distance being greater than said first radial distance, and said first bearing being disposed at least partially within a cylindrical surface defined by said second bearing.

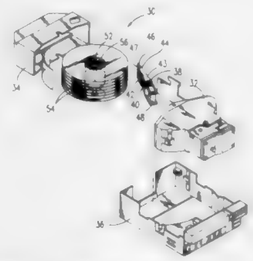
5,394,284

DIRECT ACCESS STORAGE DEVICE HAVING A STABLE BALL BEARING CAGE DESIGN

Glenn A. Benson, Rochester; Peter M. Herman, Oronoco, and Richard W. Luoma, Rochester, all of Minn., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 9, 1992, Ser. No. 959,007
Int. Cl.[6] G11B *17/02, 23/00;* **F16C** *33/38*
U.S. Cl. 360—99.08 **14 Claims**

10. A direct access storage device for storing and/or retrieving information at information sites on rotating disks by altering the physical characteristics of said disks, comprising;
an electrical motor having a rotational member and a stationary member;
a frame supporting said stationary member of said motor;
at least a storage disk drivingly supported by said rotational member or said motor;
an access assembly mounted on said frame for movement relative to said motor, for accessing said information sites on said disk;
said rotational member of said motor supported on and rotatable relative to said stationary member of said motor by at least a ball bearing assembly;
said ball bearing assembly further comprising at least an inner race;
an outer race circumscribing said inner race and forming an annular region between said inner and outer races;
a plurality of balls of substantially identical diameters disposed within said annular region intermediate said inner and outer races in a single row circumscribing said inner race;
a cage circumscribing said inner race and intermediate said inner and outer races, said cage comprising a plurality of circular holes extending radially through said cage forming a plurality of pockets, one said pocket for each of said balls;



said plurality of said holes comprising a first plurality and a second plurality of holes, said first plurality of said holes each having a diametral dimension to form a tight running fit with one of said balls, said hole and said ball forming a clearance therebetween;
said second plurality of said holes each having a diametral dimension creating a clearance at least twice said clearance in said first plurality of holes, whereby said cage is controlled in movement by said balls in said first plurality of said holes.

5,394,285

MULTI-TRACK LONGITUDINAL, METAL-IN-GAP HEAD

Richard H. Dee; Ramesh Sundaram, and Mahadavan Ramesh, all of Louisville, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Jul. 21, 1993, Ser. No. 94,322
Int. Cl.[6] G11B *5/29*
U.S. Cl. 360—121 **20 Claims**



1. A multi-track, longitudinal magnetic tape head for writing information to high-coercivity magnetic tapes, comprising:
a plurality of write poles, each having a first gap surface and

a top surface, wherein said top surface is adjacent to said first gap surface and at an angle to said first gap surface;

a substrate comprising a block of magnetic material having a second gap surface;

wherein said write poles are positioned such that said first gap surface of each said write pole is substantially parallel to said second gap surface of said substrate, and said first and second gap surfaces are separated so as to form a write gap therebetween;

a plurality of coils, wherein each coil is positioned in proximity to a corresponding one of said write poles and said substrate such that each coil produces a gap field across each said write gap in response to a write current provided to said coil;

insulating material interposed between said write poles; and

a thin layer of high B_s provided on each said write pole at said first gap surface such that said gap surfaces of said plurality of write poles form a single contiguous planar surface.

5,394,286

METHOD FOR THE ADDRESSING OF ELEMENTARY HEADS OF A MULTIPACK HEAD FOR RECORDING ON A MAGNETIC MEDIUM, AND MAGNETIC HEAD IMPLEMENTING SAID METHOD

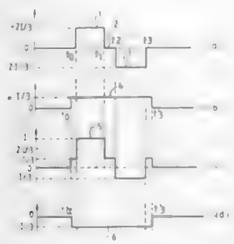
Helmut Burklin, and Mario De Vito, both of Strasbourg, France, assignors to Thomson Consumer Electronics, Courbevoie, France

Continuation of Ser. No. 772,675, Oct. 7, 1991, abandoned. This application Feb. 14, 1994, Ser. No. 195,834

Claims priority, application France, Oct. 19, 1990, 90 12956

Int. Cl.[6] G11B *5/265, 5/29, 5/23, 15/12*

U.S. Cl. 360—121 **4 Claims**



1. A method for the enabling of writing of selected ones of addressable elementary heads arranged in a matrix format with lines and columns of a plurality of said elementary heads, said elementary heads each having an elementary magnetic circuit each corresponding to an intersection between one of said lines of elementary heads and one of said columns of elementary heads, said elementary heads, working in a substantially linear mode, of a multitrack head used for recording on a magnetic medium, said method provided for said selection of particular ones of said magnetic heads to define a magnetic state to be recorded and thus a writing operation by said selected heads, said method comprising the steps of:

providing a column selection bipolar pulse signal having maximum amplitude with an absolute value of 2I/3,

providing line selections signals that overlap the column selection bipolar pulse signal and said line selection signals having maximum amplitude with an absolute value of I/3, and,

providing on non-selected lines, a non-selecting bipolar pulse sent to each line of elementary heads not to be selected, said non-selecting bipolar pulse including pulses which overlap the column selection bipolar pulse, a changeover of said non-selecting bipolar pulse from a first polar state to a second polar state occurring the change in polarity between pulses of the column selection bipolar pulse signal, the polarities of the pulses of said non-selecting pulse being opposite the polarities of the pulses of the column selection bipolar pulse signal and the absolute value of the amplitudes of the pulses of said non-selecting pulse being I/3, I being the maximum value of the excitation current of the magnetic circuits of the elementary heads.

5,394,287

OVERCURRENT PROTECTIVE DEVICE FOR POWER DEVICE

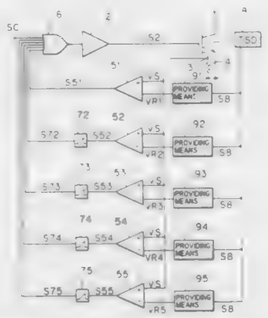
Hiroshi Sakata, and Masanori Fukunaga, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,756

Claims priority, application Japan, Apr. 13, 1992, 4-092617

Int. Cl.[6] H02H *3/027, 5/04*

U.S. Cl. 361—18 **7 Claims**



1. An overcurrent protective device for a power device, comprising:

current detecting means for detecting an amount of current flowing in said power device;

temperature detecting means for detecting a temperature of said power device; and

overcurrent protective means for establishing an allowable duration as a function of said amount of current and said temperature of said power device to interrupt current supply to said power device when said amount of current is detected continuously for a period of time that is not shorter than said allowable duration;

wherein said current detecting means detects said amount of current flowing in said power device to output a current detection signal based on said amount of current;

wherein said temperature detecting means detects said temperature of said power device to output a temperature detection signal based on said temperature;

wherein said overcurrent protective means includes:

comparison signal providing means receiving said temperature detection signal in common for providing first to n-th comparison signals as a function of said temperature detection signal,

first to n-th comparing means including respective first comparative input portions receiving said first to n-th comparison signals and respective second comparative input portions receiving said current detection signal for comparing said first to n-th comparison signals with said current detection signal to output H-level first to n-th comparison result signals when said current detection signal is higher in level than said first to n-th comparison signals and to output L-level first to n-th comparison result signals when said first to n-th comparison signals are higher in level than said current detection signal, respectively, and

current supply interruption control means receiving said first to n-th comparison result signals and having first to n-th allowable durations corresponding to said first to n-th comparison result signals for interrupting current supply to said power device when an i-th ($1 \leqq i \leqq n$) comparison result signal that is at least one of said first to n-th comparison result signals is at the H level for a period of time that is not shorter than an i-th allowable duration;

wherein said current supply interruption control means includes:

second to n-th duration judging means provided in corresponding relation to said second to n-th comparison result signals and 2having said second to n-th allowable durations, respectively, each of said second to n-th duration judging means outputting a judgment comparison signal, said judgment comparison signal being normally at the L level and turning to the H level when the corresponding comparison result signal at the H level is inputted for a period of time that is not shorter than the corresponding allowable duration, and

current supply interruption drive means receiving said first comparison result signal and said second to n-th judgment comparison signals for interrupting current supply to said power device when at least one of said first comparison result signal and said second to n-th judgment comparison signals is at the H level;

wherein the levels of said first to n-th comparison signals are established in descending order of voltage level and said first to n-th allowable durations are established in ascending order of length; and

wherein said comparison signal providing means establishes said first to n-th comparison signals whose level is decreased as the level of said temperature detection signal increases.

5,394,288

ACTUATOR

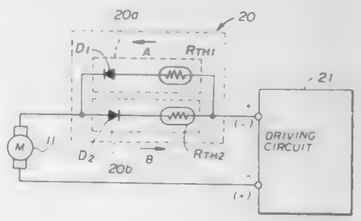
Toru Nishida, Kumagaya, and Naoki Kobayashi, Gyoda, both of Japan, assignors to Jeco Company Limited, Japan

Filed Dec. 10, 1992, Ser. No. 989,043

Claims priority, application Japan, Dec. 20, 1991, 3-105548[U]; Jan. 16, 1992, 4-001153[U]; Feb. 19, 1992, 4-006847[U]

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—31 **10 Claims**



9. A protection circuit electrically connected to a reversible electric motor which is used for a power source of an actuator, said protection circuit comprising:

a first serial circuit including a first rectifier allowing a current passing in a normal direction to said motor and a first protecting element whose resistance increases in response to an increase of the current flowing to said motor, said first rectifier and said first protecting element being connected in series; and

a second serial circuit including a second rectifier allowing a current passing in a reverse direction to said motor and a second protecting element whose resistance increases in response to an increase of the current flowing to said motor, said second rectifier and said second protecting element being connected in series, said first serial circuit and said second serial circuit being connected in parallel.

5,394,289

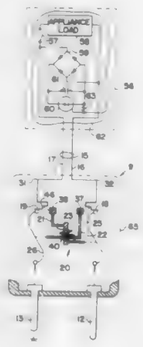
FUSE OPENING LINKAGE APPARATUS FOR IMMERSION DETECTION CIRCUIT INTERRUPTER

Kelvin K. W. Yao, Edison, N.J., and Wan Y. Keung, N.T. Hong Kong, China, assignors to ROCOM Electric Co. Ltd., Hong Kong

Filed May 2, 1994, Ser. No. 235,902

Int. Cl.[6] H02H *3/16*

U.S. Cl. 361—42 **20 Claims**



1. An interrupting apparatus for a power circuit including at least two conductors for conducting electrical power from a line source to an appliance circuit, within a housing, and having an electrical shock protection device, including a sensor, within said housing, and having automatic means connected to said conductors to initiate an overcurrent in response to an immersion of the appliance circuit in water or other conductive liquid, said apparatus including an interrupting means for opening said at least two conductors, said interrupting means having at least a pair of wire fuses, respectively in said at least two conductors, and force means for assuring the immediate opening of both of said fuses to disconnect the appliance circuit from the line source, the improvement wherein said force means includes a primary force means and a secondary force means, said secondary force means being operatively associated directly with said pair of fuses, said force means including latching means for maintaining said primary force means inoperative and clear of contact with said pair of fuses, one said fuse being opened by an overcurrent, releasing said latching means of said primary force means adjacent to another said fuse link so that said primary force means forcibly completes the opening of said another fuse.

5,394,290

ACTIVE TUNED MAGNETIC FLUX RATE FEEDBACK SENSING ARRANGEMENT

Randall K. Ushiyama, Torrance, Calif.; Michael K. Scruggs, Pompton Plains, N.J.; Eric C. Mathisen, Brooklyn, N.Y., and Eric Hahn, Woodcliff Lake, N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jul. 6, 1993, Ser. No. 85,785

The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.

Int. Cl.[6] G01R *33/02*

U.S. Cl. 361—146 **6 Claims**

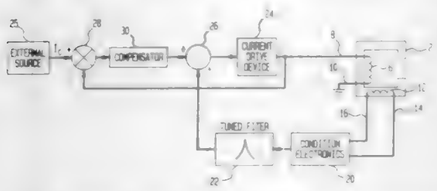
1. An active tuned magnetic flux rate feedback sensing arrangement, comprising:

a magnetic circuit including a rotor and a stator, the stator carrying a drive coil and a sensor coil;

the rotor and the stator cooperatively arranged so that a signal is induced in the sensor coil and the sensor coil provides a signal proportional to the rate of change of flux in the magnetic circuit;

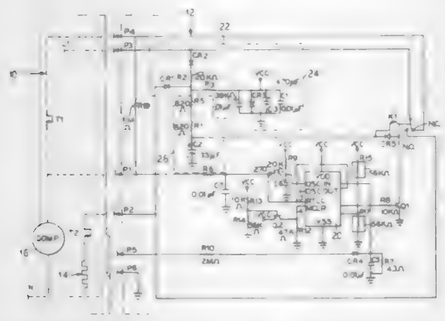
means connected to the sensor coil for processing the flux

rate of change signal therefrom and for providing a processed flux rate of change signal;
means for providing a command signal;
means for providing a signal for energizing the drive coil;
means for combining the command signal and the signal for energizing the drive coil and for providing a first combined signal;
means connected to the means for providing the first combined signal for applying current compensation to said



first combined signal and for providing a compensated signal;
means for combining the compensated signal and the processed flux rate of change signal and for providing a second combined signal; and
the means for providing a signal for energizing the drive coil connected to the means for providing the second combined signal and responsive to said second combined signal for providing said signal for energizing the drive coil.

5,394,291
RELAY ENERGIZING CIRCUIT
Donald E. Janke, Benton Township, Berrien County, Mich.; Joseph M. Szynal, Laporte, Ind.; Ronald W. Guess, Scott Township, Vanderburgh County, Ind.; Greg A. Bradley, Evansville, Ind., and Randall L. Carnal, Center Township, Vanderburgh County, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Division of Ser. No. 978,275, Nov. 18, 1992, Pat. No. 5,363,669.
This application Dec. 27, 1993, Ser. No. 172,931
Int. Cl.[6] H01H *47/10*
U.S. Cl. 361—155 11 Claims



1. A method for energizing a relay, comprising the steps of:
generating a first supply current;
storing a relay energization charge;
coupling the relay to the first supply current and the relay energization charge to energize the relay, in combination the first supply current and the charge being provided at a voltage in excess of a rated voltage of the relay, the charge decaying over a predetermined time period; and
immediately thereafter decoupling the relay from the first supply current and instead coupling the relay to a second supply current via a normally open contact of the relay, the second supply current being provided at a voltage less than the rated voltage of the relay.

5,394,292
ELECTRONIC CAR BUMPER
Tatekazu Hayashida, Kanagawa, Japan, assignor to Tsuden Kabushiki Kaisha, Kanagawa, Japan
Filed Apr. 23, 1992, Ser. No. 872,909
Claims priority, application Japan, Apr. 30, 1991, 3-126858; Jun. 20, 1991, 3-176170
Int. Cl.[6] B60K *28/10*
U.S. Cl. 361—179 14 Claims

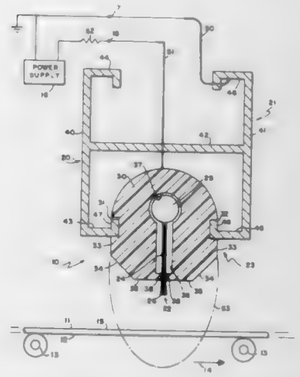


1. An electronic car bumper comprising:
a plurality of sensors, provided in a car bumper, each including sensor plates, a first loading coil coupled to one of said sensor plates, and a first divided capacitor coupled to said loading coil;
a reference resonance circuit including a reference capacitor, a second loading coil coupled to said reference capacitor and a second divided capacitor coupled to said second loading coil;
an oscillator which selectively drives any one of said sensors and said reference resonance circuit through a switch device;
a detector for detecting an output of said oscillating portion;
a discriminator for discriminating an output of said detector and providing a corresponding discriminating signal as a first output associated with said sensors and a second output associated with said reference resonance circuit;
a synchronous means for switching said switch device and said first and second outputs of said discriminator in synchronization;
a direct current amplifier for amplifying the first output of said discriminator associated with said sensors, in which an output of the amplifier is adjusted to a point at zero as a reference voltage according to the second output of said discriminator portion associated with said reference resonance circuit; and
a comparator which compares an output of said direct current amplifier with a threshold reference which is adjusted according to said reference voltage.

5,394,293
ELECTRONIC STATIC NEUTRALIZER DEVICE
Boris Grarovsky, Kharkov, Ukraine, assignor to Julie Associates, Inc., Billerica, Mass.
Filed Feb. 8, 1993, Ser. No. 14,772
Int. Cl.[6] H05F *3/06*
U.S. Cl. 361—221 22 Claims

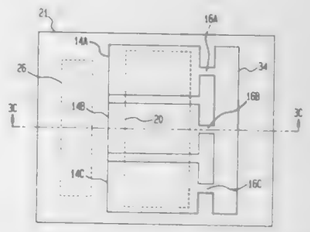
1. A gas ionizing generator that connects to a power supply with first and second terminals for ionizing a gas comprising:
A. conductive frame means for location in the gas and having connection means for attachment to the first terminal,
B. electrode means including a plurality of parallel conductive wires having corresponding free ends thereof formed

with sharp edges and being connectible to the second terminal, and
C. elongated electrical isolating means supported along its length by said frame means intermediate said frame means and said electrode means for supporting said electrode means in electrical isolation with respect to said frame



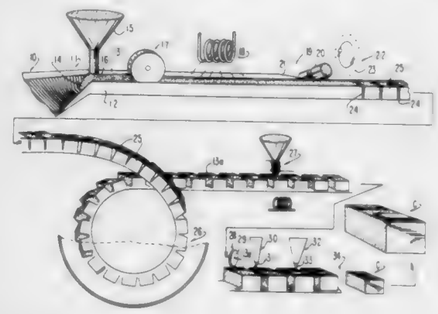
means and with said free ends being spaced from said frame means whereby the application of a voltage across said frame means and electrode means initiates ionization of the gas proximate said free ends with a current path extending from said frame means through the gas to said free ends.

5,394,294
SELF PROTECTIVE DECOUPLING CAPACITOR STRUCTURE
Shaw-Ning Mei; Dominic J. Schepis, both of Wappingers Falls, and Andrie S. Yapsir, Pleasant Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 17, 1992, Ser. No. 992,19[illegible]
Int. Cl.[6] H01G *1/11*
U.S. Cl. 361—275.3 7 Claims



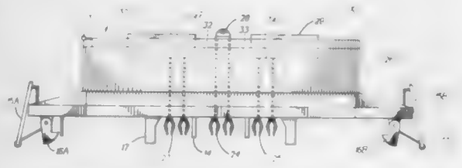
1. A decoupling capacitor formed in a semiconductor substrate to protect a logic circuit formed in said semiconductor substrate from rapid changes in power supply voltage connected to said logic circuit, said decoupling capacitor comprising in combination:
an isolated, heavily doped region formed in said substrate, said heavily doped region extending to a top surface of said semiconductor substrate;
a thin insulating layer formed on the top surface of said semiconductor substrate overlying said heavily doped region;
a resistive layer formed on said thin insulating layer, said resistive layer patterned into a plurality of discrete capacitor plates each with an integral narrow fuse link formed of said resistive layer for coupling each of said plurality discrete capacitor plates to said power supply voltage.

5,394,295
MANUFACTURING METHOD FOR SOLID STATE CAPACITOR AND RESULTING CAPACITOR
John Galvagni, Surfside Beach; Sonja Brown, Myrtle Beach; Kevin Christian, Myrtle Beach, and Yong-Jian Qui, Myrtle Beach, all of S.C., assignors to AVX Corporation, Del.
Filed May 28, 1993, Ser. No. 68,150
Int. Cl.[6] H01G *1/005*
U.S. Cl. 361—303 18 Claims



15. As a new article of manufacture, a preform comprised of a plurality of interconnected solid state capacitors formed by providing an elongate band of solid state metal foil, bending said band parallel to the longitudinal axis of said band to form said band into a trough configuration having a base, introducing into said trough a quantity of solid state metal powder, heating said band and powder for a time and to a temperature sufficient to sinter said powder into a porous mass bonded to said band at the interface of said band and powder, forming a multiplicity of spaced transverse cuts through said mass and portions of said band, said cuts being formed to a depth at least proximate to but not fully penetrating said base to thereby form a series of discrete units linked by portions of said base, anodizing said linked units to provide a dielectric coating, applying a conductive counterelectrode over said coating and applying an anode and a cathode termination to portions of said band and counterelectrode respectively of said units.

5,394,296
MODULAR POWER SOURCE MONITORING AND CONTROL SYSTEM
Irvin B. Erickson, Jr., Wake Forest, and Richard D. Werner, Mebane, both of N.C., assignors to General Electric Company, New York, N.Y.
Filed Oct. 29, 1993, Ser. No. 143,226
Int. Cl.[6] H02B *1/00*
U.S. Cl. 361—659 8 Claims



1. A modular electric power monitoring and control system comprising:
An electric switch and circuit breaker enclosure **43** having a plurality of electric bus bars **38** arranged intermediate bus bar support rails **37** within said enclosure, said bus bars

arranged for electric connection with an electrical distribution power system;

a plurality of electric switches or circuit breakers **44** mounted within said enclosure and electrically connected with said bus bars; and

an electric meter assembly **22** mounted within said enclosure, said electric meter assembly including a housing **26** having a top part **30** receiving an electric meter, **27**, **29** a bottom part **23**, **24**, **25** electrically connecting said meter with said bus bars, and a support **17** with releasable means **16A**, **16B** on opposite sides of said support for releasably mounting said support and said housing to said bus bar support rails.

5,394,297

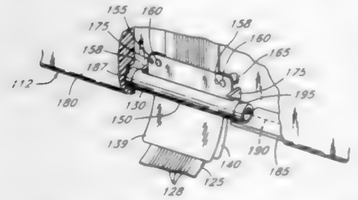
APPARATUS AND METHOD FOR REDUCING BENDING STRESS ON AN ELECTRICAL CABLE USING A FREELY ROTATABLE BUSHING

Peter K. Toedter, Trabuco Canyon, Calif., assignor to AST Research, Inc., Irvine, Calif.

Continuation of Ser. No. 947,279, Sep. 18, 1992. This application Jul. 7, 1994, Ser. No. 271,508

Int. Cl.[6] **H05K** *7/02;* **E05D** *5/14;* **H01R** *3/00;* **H01B** *7/24*

U.S. Cl. 361—683 **23 Claims**



1. An electrical device having a suitcase type construction comprising:

a base;

a cover joined to said base by a hinge so that said cover and said base have a common axis of rotation;

a flexible cable connecting electrical components in said base and cover; and

a bushing, having a longitudinal axis of rotation, said bushing rotatably mounted in said hinge so that said longitudinal axis of rotation is substantially collinear with said common axis or rotation of said base and said cover, the bushing having a slot through which said cable extends, said slot extending diametrically through said bushing, said bushing being freely rotatable with respect to said hinge to allow the bushing to rotate as urged by said cable during opening and closing movement of said cover with respect to said base to thereby minimize flexing of said cable during such movement.

23. A hinge construction comprising first and second members joined together by a hinge having a hinging axis, a bushing rotatably mounted in the hinge on the hinge axis so that said bushing is not directly attached to either said first member or said second member, said bushing having a diametrically extending slot formed therein, spaced from ends of the bushing, and a flexible cable joined to components in said members and extending through said slot,

wherein said cable has sufficient stiffness such that is applies a force causing rotation of said bushing when said hinge construction is moved from a closed to an open position.

5,394,298

SEMICONDUCTOR DEVICES

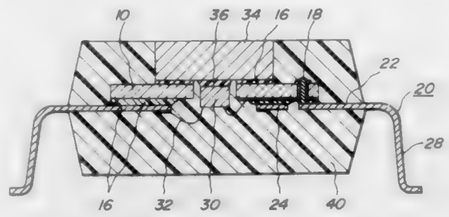
Katsumi Sagisaka, Ohgaki, Japan, assignor to Ibiden Co., Ltd., Japan

Filed Feb. 2, 1994, Ser. No. 190,523

Claims priority, application Japan, Mar. 26, 1993, 5-090573

Int. Cl.[6] **H05K** *7/20;* **H01L** *23/28*

U.S. Cl. 361—704 **4 Claims**



1. A semiconductor device comprising a semiconductor chip carrier and a semiconductor chip packaged in the semiconductor chip carrier with a resin; said semiconductor chip carrier comprising a printed wiring substrate provided at at least both surfaces with conductor patterns, a first layer of an adhesive formed on at least an outer peripheral portion of a front surface of the substrate, a second layer of an adhesive formed on each of said conduction patterns of the substrate, a lead frame joined to the substrate through the adhesive layers and comprised of plural leads for external connection, and said each of said conduction patterns being electrically connected to a part of inner leads of the lead frame.

5,394,299

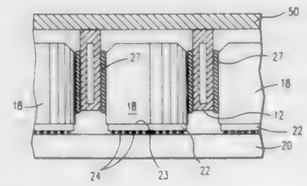
TOPOLOGY MATCHED CONDUCTION COOLING MODULE

Richard C. Chu; Michael J. Ellsworth, Jr.; Robert E. Simons, all of Poughkeepsie, and David T. Vader, New Paltz, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 994,389, Dec. 21, 1992, abandoned. This application May 13, 1994, Ser. No. 242,658

Int. Cl.[6] **H05K** *7/20*

U.S. Cl. 361—705 **13 Claims**



1. A thermal conduction cooling module for cooling at least one electronic chip having an exposed face, said cooling module comprising:

a frame with at least one cavity having cavity walls extending from at least one surface of said frame into said frame;

at least one rigid piston, said piston having at least one planar face and positioned in said cavity with said planar face exposed and in direct face-to-face contact with said electronic chip;

said frame further including thermal conduction and transportation means for conducting heat from said piston and for transporting said heat so conducted away from said frame;

said rigid piston being oriented in said cavity with said planar face disposed parallel to and in direct face-to-face contact with said exposed face of said electronic chip, and

said piston and said cavity wall being rigidly joined by solidified metal alloy which is disposed between said piston and said cavity walls but which is absent from said planar piston face.

5,394,300

THIN MULTILAYERED IC MEMORY CARD

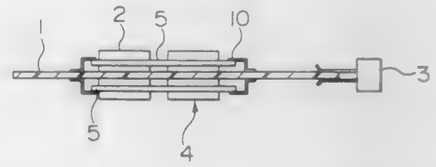
Yoshimasa Yoshimura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1993, Ser. No. 2,807

Claims priority, application Japan, Sep. 4, 1992, 4-237185

Int. Cl.[6] **H05K** *1/14*

U.S. Cl. 361—737 **11 Claims**



1. An IC memory card comprising:

two sub-modules, each sub-module including a sub-substrate having two opposed surfaces and a plurality of memory ICs mounted on the two opposed surfaces of the sub-substrate;

a substrate having two opposed surfaces on which the sub-modules are mounted wherein all memory ICs mounted on surfaces of sub-substrates facing the substrate contact the substrate; and

a connector mounted at an end of the substrate and electrically connected to said memory ICs for exchanging signals with an external device.

5,394,301

ARRANGEMENT FOR DISSIPATING HEAT FROM POWER COMPONENTS ASSEMBLED ON A PRINTED-CIRCUIT BOARD

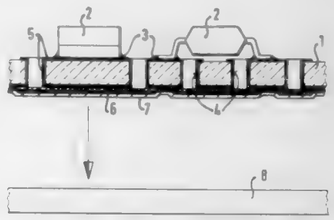
Reinhard Fassel, Oberasbach; Herbert Klinger, Nuernberg, and Hartmut Zoebl, Fuerth, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 28, 1994, Ser. No. 189,009

Claims priority, application Germany, Feb. 3, 1993, 4302917

Int. Cl.[6] **H05K** *7/20*

U.S. Cl. 361—720 **16 Claims**



1. An arrangement for dissipating heat from power components assembled on a printed-circuit board, comprising:

a) a printed-circuit board having a plurality of heat transfer bore holes distributed therethrough, the bore holes defining inner walls, and the printed-circuit board having a first side for assembling power components thereon and a second side facing away from the power components;

b) a heat-conducting material applied on the first side of the printed circuit board in the area of the power components, on the inner walls of the bore holes, and on the second side of the printed-circuit board;

c) an insulating enamel coating applied on the heat-conducting material on the second side of the printed-circuit board; and

d) a flexible heat-conducting enamel layer applied to the insulating enamel coating.

5,394,302

IGNITION COIL FOR INTERNAL COMBUSTION ENGINES

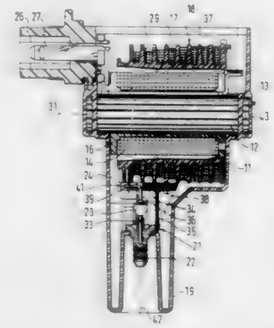
Karl-Heinz Trautwein, Sulzberg; Reinhold Herrmann, Stuttgart, and Karl-Heinz Nuebel, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 21, 1994, Ser. No. 230,717

Claims priority, application Germany, Jun. 1, 1993, 4318130

Int. Cl.[6] **H05K** *7/00;* **H01F** *27/04*

U.S. Cl. 361—728 **6 Claims**



1. An ignition coil for an internal combustion engine, comprising a housing composed of an insulating material and having an insertion opening; at least one ring-shaped core composed of a soft magnetic material and having a portion insertable in said housing; a primary coil body and a secondary coil body; a primary coil and a secondary coil wound on said primary coil body and said secondary coil body and arranged coaxially to one another on said portion of said core, said housing being provided with a high voltage dome extending substantially perpendicularly to a central axis of said coil bodies; a connecting pin insertable along a longitudinal axis of said high voltage dome and connected via a diode with a high voltage winding end of said secondary coil, said connecting pin, said diode and said coil bodies with said coils together forming an operationally premounted assembly insertable through said insertion opening in said housing; and á spacer connected with one of said coil bodies, said housing completely surrounding said core, said connecting pin and said diode being received in said spacer, said diode being arranged coaxially to said longitudinal axis of said high voltage dome.

5,394,303

SEMICONDUCTOR DEVICE

Yasuhiro Yamaji, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 9, 1993, Ser. No. 118,731

Claims priority, application Japan, Sep. 11, 1992, 4-243742

Int. Cl.[6] **H05K** *1/00;* **H01L** *23/02*

U.S. Cl. 361—749 **8 Claims**

1. A semiconductor device comprising:

semiconductor chip having first and second opposite major surfaces;

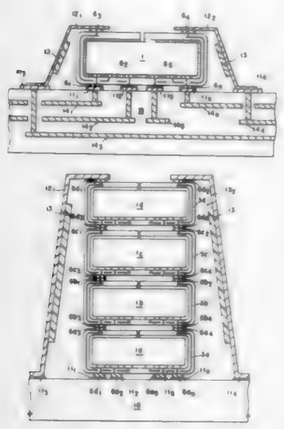
a plurality of chip electrode pads on the first major surface of the semiconductor chip, wherein the distances between

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adjacent chip electrode pads are approximately equal and define a chip electrode pitch;

a flexible insulating film wrapping the chip;

a wiring layer within the insulating film, and electrically connected to the chip electrode pads by means of via-holes; and



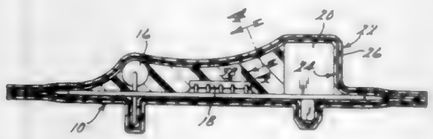
external electrode pads electrically connected to the chip electrode pads by means of the wiring layer and the via-holes, and functioning as external terminals of the chip electrode pads, wherein the average of the distances between adjacent external electrode pads, measured along the insulating film, is greater than the chip electrode pitch.

5,394,304

SHIELDED SELF-MOLDING PACKAGE FOR AN ELECTRONIC COMPONENT

Allen M. Jones, Novi, Mich., assignor to Williams International Corporation, Walled Lake, Mich.

Division of Ser. No. 957,596, Oct. 6, 1992. This application Jul. 6, 1993, Ser. No. 87,661
Int. Cl.[6] H05K *1/16*
U.S. Cl. 361—765 **1 Claim**



1. An electromagnetically shielded package for an electronic component comprising:

a first thermoplastic heat shrinkable bag disposed about said electronic component;

a second thermoplastic heat shrinkable bag disposed about said first bag;

an electrically conductive coating on one of said bags and disposed between said bags; and

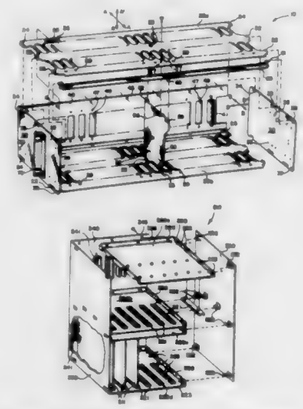
a polymerizable resin completely filling the space between said electronic component and the interior of said first bag.

5,394,305

CARD CAGES FOR ELECTRONIC MODULES

Leonardo D. Moral, Chicago; Horace C. Rodriguez, Schaumburg; Ronald M. Samson, Carol Stream, and Walter T. Harwood, Streamwood, all of Ill., assignors to Charles Industries, Ltd., Rolling Meadows, Ill.

Filed Dec. 23, 1993, Ser. No. 173,565
Int. Cl.[6] H05K *7/14*
U.S. Cl. 361—776 **15 Claims**



1. A card cage for mounting an array of electronic modules, the card cage comprising:

a plurality of generally rectangular shaped panels assembled into a generally right rectangular prism shaped frame having a closed back and an open front and defining at least one mounting areas;

the panels including a top panel, a bottom panel, a back panel, and two side panels, the top, bottom, and side panels being interlocked and each being fabricated from a single sheet of metal; and

guides adapted to slidably receive at least one electronic modules having electrical connectors, the guides being provided on at least one panel defining each mounting area;

the back panel having electrical connectors adapted to engage the electrical connectors of the electronic modules;

the interlocked panels having a plurality of integral interlocking members;

the interlocking members collectively constituting a plurality of associated pairs of tongues and openings, the openings being interlocked with their associated tongues; and

the interlocking members being interlocked by translating the interlocked panels in a first direction relative to each other such that the tongues are inserted through their associated openings and by subsequently translating the interlocked panels in a second direction relative to each other such that the tongues and openings cooperate to preclude translation of the interlocked panels in the first relative direction, the interlocking members thereby supporting the panels relative to each other.

5,394,306

SHOCK ABSORBENT PACKAGING APPARATUS

Steven E. Koenck, and Darald R. Schultz, both of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Filed Sep. 7, 1993, Ser. No. 116,886
Int. Cl.[6] H02B *1/10*
U.S. Cl. 361—809 **1 Claim**

1. A shock absorbent package, comprising:

(a) a shock sensitive component;

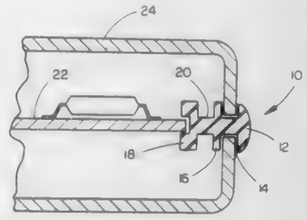
(b) a protective housing with a wall having exterior and interior sides, said housing having

(1) an interior space protectively housing said shock sensitive component, and

(2) at least two openings providing accesses to said shock sensitive component; and

(c) at least two shock absorbent mounts, each extending through one of said openings and protectively mounting said shock sensitive component within said interior space of said protective housing, said mounts each having

(1) a bumper portion extending outside said protective housing and fabricated from an elastically deformable polymer for dissipating shock energy to said housing,



(2) an outer seal and an inner seal, said outer seal abutting against the exterior of the wall of said protective housing and said inner seal abutting against the interior of the wall of said protective housing, said seals fabricated from an elastically deformable polymer and elastically deformably connected to said bumper portion for sealing said interior space of said housing,

(3) a mounting portion fabricated from an elastically deformable polymer and elastically deformably connected to said outer and inner seals and said bumper portion for securing said mount to said shock sensitive component, and

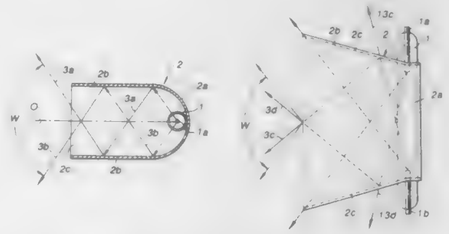
(4) an elastically deformable portion between said bumper portion and said mounting portion for dissipating shock energy to said shock sensitive component.

5,394,307

PHOTOGRAPHIC FLASH DEVICE

Keisuke Matsuura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 27, 1993, Ser. No. 68,624
Claims priority, application Japan, Jun. 8, 1992, 4-147569
Int. Cl.[6] G03B *15/02*
U.S. Cl. 362—16 **21 Claims**



1. A photographic flash device having a straight-type flash discharge tube comprising:

a hollow reflector having a reflective surface whose center portion is a curved surface and whose side surfaces are flat surfaces substantially parallel to one another and integral with and extending forwardly from said curved surface, the curved surface and side surfaces collectively forming a U-shaped configuration;

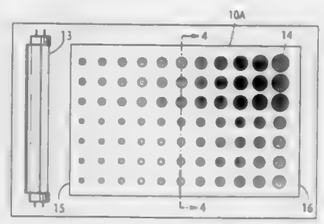
end surfaces closing opposite ends of said reflector to form a hollow, substantially rectangular-shaped interior, forward edges of said side surfaces and said end surfaces lying in a common plane and defining a front open portion thereof for emitting light and having a rectangular-shaped perimeter, the forward edges of the side surfaces being longer in length than the forward edges of said end surfaces, said curved surface being substantially semi-elliptical in shape, said front open portion emitting light from said flash discharge tube which is disposed parallel to and near a focal position of said curved surface located inside of the hollow reflector and is substantially parallel to said side surfaces, said reflector side surfaces having a length measured in a direction parallel to a longitudinal axis of said flash tube, and adjacent said flash tube, which is less than a length of said reflector measured along free edges of said reflector side surfaces and parallel to said flash tube longitudinal axis, the end surfaces being closer to one another at said curved surface and gradually increasing in separation distance in moving from said curved surface to the perimeter of said reflector.

5,394,308

LIGHTING APPARATUS HAVING ASYMMETRIC LIGHT INTENSITY DISTRIBUTION OF COMPENSATING FOR LOW CONTRAST RATIOS OF LCD PANEL

Takahiko Watanabe, and Osamu Sukegawa, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,100
Claims priority, application Japan, Mar. 3, 1993, 5-041641
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—31 **4 Claims**



1. A lighting apparatus for illuminating a liquid crystal display panel from behind, wherein said liquid crystal display panel, when illuminated uniformly, exhibits asymmetric contrast ratios as viewed in a vertical direction, comprising:

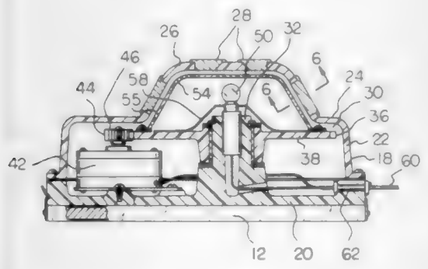
a light guide panel having a first surface adjacent said liquid crystal display panel, a second surface being opposite to the first surface and remote from said liquid crystal display panel, and a multitude of light reflecting dots arranged on said second surface; and

a light source for injecting light into said light guide panel in a horizontal direction through a first edge of the light guide panel, so that the light propagates through said light guide panel toward a second, opposite edge of the panel and irregularly reflects off said dots toward said liquid crystal display panel through the first surface of the light guide panel,

wherein the light reflecting dots in a lower portion of the second surface of the light guide panel have a density decreasing as a function of distance from an upper portion of the second surface, and the light reflecting dots in each of said lower and upper portions have a density increasing as a function of distance from said first edge of the light guide panel to said second edge thereof so that said liquid crystal display panel has equal brightness at upper and lower portions thereof when the upper and lower portions

of the liquid crystal display panel are viewed respectively at an angle substantially equal to 90° and an angle smaller than 90°.

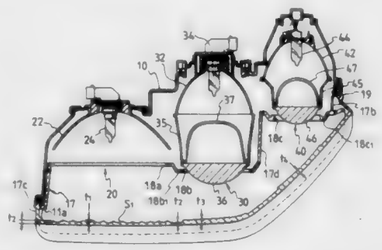
5,394,309
SUBMERSIBLE DEVICE FOR CHANGING COLORS IN AN AQUARIUM
Joseph R. Brown, 10410 Moody Ave., Apt. B.N., Chicago Ridge, Ill. 60415
Filed May 9, 1994, Ser. No. 239,571
Int. Cl.[6] F21Y *9/10*
U.S. Cl. 362—35 4 Claims



1. A submersible device for changing colors in an aquarium comprising:
a base member of a rigid construction and heavy weighted material to allow placement in a bottom of an aquarium;
a housing having a lower surface coupled to the base with upstanding sidewalls and a cover piece with a dome-like top having a central axis and formed with clear transparent windows therethrough to define a chamber therewithin, the chamber including an upwardly extending post at a central extent thereof coaxial with the axis of the top;
a driven gear having a circular extent in a horizontal plane within the chamber and having teeth around a periphery thereof, the gear being mounted on the post for rotation with respect thereto;
a submersible motor mounted within the chamber having a drive gear rotatable about a vertical axis with teeth in contact with the teeth of the driven gear for rotating and imparting rotation to the driven gear;
a fixed light source mounted within the chamber above the post; and
a domed member mounted above and to the driven gear for rotation therewith at a location above the light source, the domed member being provided with a plurality of transparent plates of varying colors.

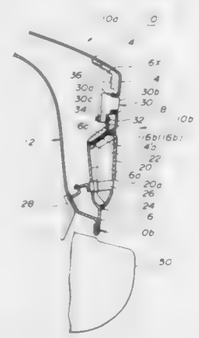
5,394,310
VEHICULAR HEADLAMP HAVING UNIFORM APPEARANCE
Masahito Iwasaki, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Mar. 25, 1994, Ser. No. 217,702
Claims priority, application Japan, Mar. 26, 1993, 5-068053
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—61 6 Claims

1. A vehicular headlamp comprising: a lamp body, a first lamp of a reflection type comprising a light source and a parabolic reflector and circular in shape when seen from the front of the headlamp, and second and third lamps of projection type, each of said second and third lamps comprising a light source, a substantially elliptic reflector, and a projection lens circular in shape when viewed from the front of the headlamp, said first, second and third lamps being horizontally arrayed within said lamp body, a transparent front cover disposed over a front opening in said lamp body, first, second and third profile lines, circular when viewed from the front, being formed on said front cover at positions corresponding respectively to said first, second and third lamps and respectively matching in configuration circumferential profiles of said reflector said



projection lenses of said second and third lamps, whereby a horizontal array of said three profile lines appears on said front cover.

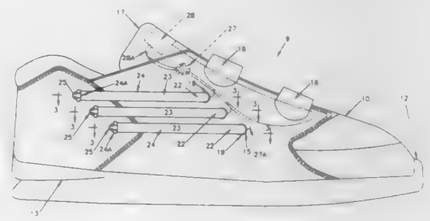
5,394,311
AUTOMOTIVE TRUNK LID WITH STOP LAMP
Keiichi Asano, Hadano, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Mar. 7, 1994, Ser. No. 206,947
Claims priority, application Japan, Mar. 18, 1993, 5-057587
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 362—80 7 Claims



1. A lamp-mounted trunk lid for a motor vehicle, comprising:
an inner panel;
a larger outer panel incorporated with said inner panel to constitute an upper portion of the trunk lid, said larger outer panel having a slot formed therethrough and having a lower end portion;
a smaller outer panel incorporated with said inner panel to constitute a lower portion of the trunk lid, said smaller outer panel having an upper end portion secured to said lower end portion of said larger outer panel; and
a stop lamp assembly supported exclusively by said smaller outer panel and exposed to the open air through said slot of the larger outer panel.

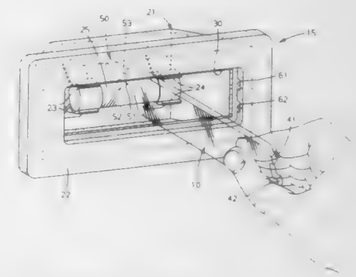
5,394,312
LUMINAIRE-PROVIDED FOOTWEAR
Todd A. Bland, 4301 Abbott Rd., Lincoln, Nebr. 68516
Continuation-in-part of Ser. No. 38,894, Mar. 29, 1993, Pat. No. 5,329,432. This application Jul. 5, 1994, Ser. No. 270,471
Int. Cl.[6] A43B *23/24*
U.S. Cl. 362—103 11 Claims

1. For footwear conventionally comprises: a generally horizontal underlying outersole extending directionally longitudinally between a frontal and directionally transverse upright toe and a rearward upright heel; and a hollow vamp attached to and extending upwardly from said outersole and including a pair of directionally longitudinally extending upright and directionally separated upright vampwalls; the improvement of luminaire provided footwear comprising:
(a) at least one of said vampwalls being provided with at least one vampwall-opening therethrough;



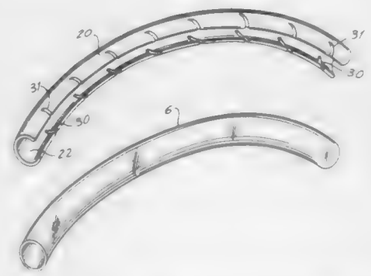
(b) at least one generally horizontal tube each having an annular fore-end attached to said vampwall in surrounding relationship to a corresponding one of said at least one vampwall-opening, each said tube firstly extending directionally transversely rigidly outwardly from each said vampwall-opening and tube fore-end and thence secondly extending directionally longitudinally rearwardly to terminate as an tube annular rear-end; and
(c) at least one electrically energizeable luminaire attached to each said tube immediately adjacent the tube rear-end.

5,394,313
LAMP ASSEMBLY WITH INTEGRAL BULB REPLACEMENT TOOL
Denise M. Dezelan, Royal Oak, and Edward L. Monroe, Shelby Township, Macomb County, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 1, 1993, Ser. No. 130,332
Int. Cl.[6] B25B *33/00*
U.S. Cl. 362—119 5 Claims



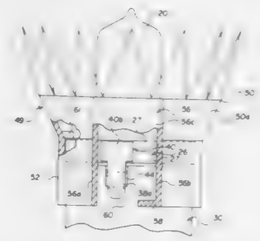
1. A lamp assembly comprising:
a lamp housing having an opening;
a lamp socket within the lamp housing; and
a removable transparent lens enclosing the opening in the lamp housing, the lens having a bulb replacement tool member extending from the periphery of the lens wherein the bulb replacement tool member and the lens are substantially flat and co-planar.

5,394,314
COLD CATHODE LAMP WITH SNAP FITTED SPECULAR REFLECTOR
Jim Evanisko, Hasbrouck Heights, N.J., assignor to National Cathode Corp., New York, N.Y.
Continuation-in-part of Ser. No. 918,578, Jul. 22, 1992, abandoned. This application Oct. 20, 1993, Ser. No. 139,941
Int. Cl.[6] F21V *7/14, 7/16*
U.S. Cl. 362—216 9 Claims



1. A reflector for use with a cold cathode lamp, said lamp including an elongated transparent glass tube having an internal fluorescent coating thereon which emits light radially through the tube along its length, said reflector comprising:
an elongated thermoplastic reflector support of C-shaped cross-section having internal and external surfaces, said reflector being notched by spaced opposed radial cuts, so as to be bendable said support being dimensioned for snap fitting in intimate contact with the tube and bending and rotating along the tube length with the internal support surface facing the peripheral surface of the tube such that only a portion of the peripheral surface of the tube along the tube length is exposed to the ambient atmosphere; and
a specular layer adhered to the support on said internal surface to provide a relatively highly reflective surface over the region of said support facing said tube.

5,394,315
PLUG-IN TYPE LAMP ASSEMBLY WITH LOCKED-ON LAMP BASE AND REFLECTOR
Joseph M. Ahroni, 2701 W. Manor Pl., #204, Seattle, Wash. 98199
Continuation-in-part of Ser. No. 725,586, Jul. 3, 1991, Pat. No. 5,154,508, which is a continuation-in-part of Ser. No. 637,477, Jan. 4, 1991, Pat. No. 5,121,310. This application Jun. 1, 1992, Ser. No. 891,825
Int. Cl.[6] H01R *33/00*
U.S. Cl. 362—226 11 Claims



1. A light and reflector assembly comprising:
a plastic lamp holder unit presenting a socket;
a plastic plug-in lamp base unit in said socket and having a bulb mounted therein;
a first locking element integral with a first of said units;

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a complementing second locking element integral with the second of said units;

said first locking element being in locking relationship with the second locking element to lock said units together, and being adapted to be moved out of said unit locking relationship when it is desired to remove said lamp base unit from said socket to replace said bulb;

a reflector unit around said bulb and detachably interfitting with said socket unit; and

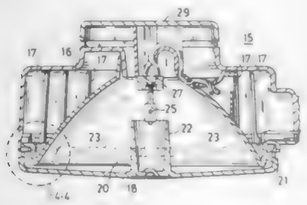
a third locking element integral with said reflector unit and in reflector locking relationship with said first locking element to lock said reflector unit on said lamp socket unit, said third locking element being adapted to be moved out of said reflector locking relationship when it is desired to remove said reflector and lamp base unit to replace said bulb.

5,394,316

LOCKING LAMP ASSEMBLY FOR EXAMINATION LIGHT

Marcia J. Holbrook; Robb D. Bonilla, both of Auburn, and Robert G. Tiller, Syracuse, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Apr. 12, 1993, Ser. No. 44,801
Int. Cl.[6] F21V *17/00*
U.S. Cl. 362—294 **11 Claims**



1. A lamp assembly comprising:

housing means for receiving a lamp and lamp socket therein, the housing means being open on one side;

means for supporting the lamp and lamp socket;

cover means for closing the open side of the housing means;

reflecting means for directing light from said housing means through said cover means, said reflecting means including a light reflecting member having an upper and a lower opening, said upper opening for receiving the lamp and lamp socket, and a flange portion formed at said lower opening;

locking means including a plurality of lugs and posts, each lug mounted on the distal end of a corresponding post, said posts being spaced at intervals about the edge of said cover means;

capture means being positioned proximate the open side of said housing means for receiving and retaining said lugs;

ramp means formed on said housing means over which said lugs pass as said housing means and said cover means move relative to each other at assembly, the relative movement causing said housing means and said posts to deflect slightly to allow said lugs to enter said capture means;

stop means for preventing escape of said lugs from said capture means after assembly; and

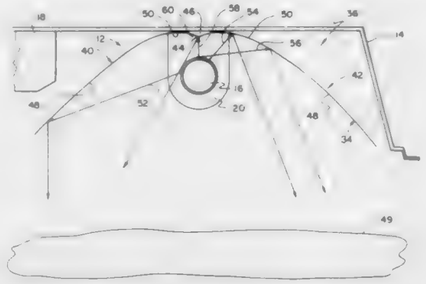
a plurality of rib members formed in said housing means, said rib members having end portions which terminate within said capture means.

5,394,317

LAMP REFLECTOR

John J. Grenga, 9 Fairview Dr., Greenville, R.I. 02828, and Richard P. Eannarino, 91 Mann Rd., Smithfield, R.I. 02917

Filed Nov. 3, 1992, Ser. No. 970,623
Int. Cl.[6] F21V *7/09*
U.S. Cl. 362—347 **10 Claims**



1. A lamp reflector for directing light emitted from a lamp towards an area desired to be illuminated, said lamp being elongated along a longitudinal axis that is generally parallel to the area of illumination, said lamp reflector comprising at least one continuously curved member that is disposed along said longitudinal axis, said member including:

a first curved portion having a first end disposed in a region behind said lamp with respect to said area desired to be illuminated, said first curved portion extending transversely about said longitudinal axis and toward the area of illumination to a second end disposed in a side region of said lamp, said first curved portion having a shape that is expressed by a first function that describes a nephroid curve, and

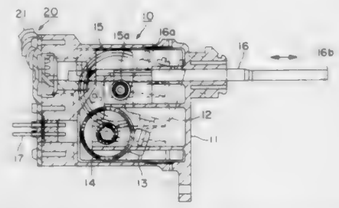
a second curved portion having a first end disposed adjacent to said second end of said first curved portion, said second curved portion extending transversely about said longitudinal axis and from the first end thereof toward said area desired to be illuminated, said second curved portion having a shape that is expressed by a second function different from said first function.

5,394,318

DEVICE FOR ADJUSTING AND CONTROLLING THE OPTICAL AXIS OF A HEADLAMP

Hiroshi Komachi, Tokyo, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 40,769
Int. Cl.[6] B60Q *1/06*
U.S. Cl. 362—420 **3 Claims**



1. A device for adjusting and controlling an optical axis of a headlamp, said device comprising:

a casing for said device;

a motor controlled so as to rotate in forward and reverse directions;

an aiming shaft which advances and retracts in an axial direction of said aiming shaft by rotational force of said motor which is transmitted via a driving gear to control an optical axis of a headlamp at an end of said aiming shaft; and

an optical axis initial setting mechanism which initially sets an angle of said optical axis of said headlamp by rotating said aiming shaft about its own axis; and

wherein said initial setting mechanism includes a manual operating section which consists of:

a pair of operation bolts which are symmetrically mounted to said casing of said device on both left and right sides, each bolt having at one end a head portion which is exposed to outside of said casing so that said bolts are operated manually from the outside of said casing;

an operation gear provided on an other end of each of said pair of operation bolts; and

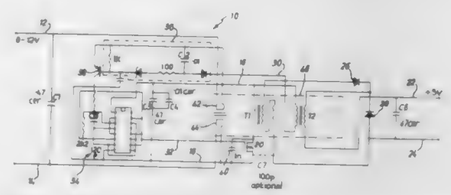
a position-adjustment member comprising a gear portion at one end which engages with respective ones of said operation gears of said operation bolts and an engagement portion at another end which engages with said aiming shaft so that said engagement portion can slide in an axial direction of said aiming shaft but cannot rotate in a circumferential direction of said aiming shaft.

5,394,319

NON-COUPLED INTEGRATED MAGNETIC STRUCTURE

Brian E. Attwood, 3 Peel House Bartellot Rd., Horsham, West Sussex RH12 1DQ, United Kingdom, and Michael J. Finazzo, 2042 Valley Rd., Oceanside, Calif. 92056

Continuation of Ser. No. 743,749, Aug. 12, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,621
Claims priority, application United Kingdom, Oct. 18, 1990, 902269
Int. Cl.[6] H02M *3/28*
U.S. Cl. 363—20 **13 Claims**



1. A dc-to-dc converter having resonant reset and comprising:

an input,

an output,

a first transformer having a primary winding and a secondary winding wound on a common integrated magnetic structure,

a switching element and capacitance means arranged to switch the input across the primary winding of the first transformer and cause said resonant reset of said common integrated magnetic structure,

oscillator means connected to control said switching element,

the secondary winding of the first transformer being connected to the output via a path including a diode pair and a primary winding of a second transformer,

the second transformer having a secondary winding connected to provide a feedback signal controlling operation of said oscillator means, said primary and secondary windings of said second transformer wound on said common integrated magnetic structure;

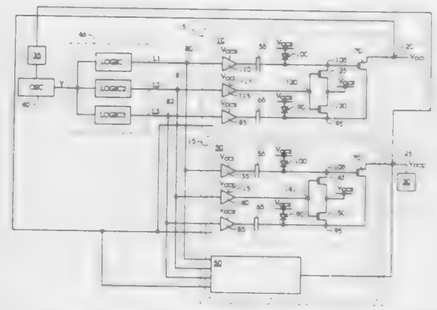
and in which said common integrated magnetic structure comprises a body of ferrite material formed with a plurality of passages through which said windings pass, and each said passage traversing an integral mass of ferrite such that each said passage is entirely encircled by a continuous ferrite periphery, and wherein certain of said passages and said first and second transformer windings are so spaced on said integrated magnetic structure that said first and second transformers have separate non-coupled independent magnetic functions.

5,394,320

LOW VOLTAGE CHARGE PUMP CIRCUIT AND METHOD FOR PUMPING A NODE TO AN ELECTRICAL POTENTIAL

Greg A. Blodgett, Eagle, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Oct. 15, 1993, Ser. No. 137,565
Int. Cl.[6] H02M *7/25*
U.S. Cl. 363—60 **18 Claims**



1. A voltage pump for increasing a value of an input supply potential, comprising:

a) an input supply node connectable to the input supply potential;

b) a first stage circuit in electrical communication with the input supply node, said first stage circuit generating an intermediate pumped potential greater than the input supply potential, wherein said first stage circuit comprises:

i) a first switching device having a control input and a first and a second terminal, said first switching device having a threshold voltage;

ii) a first buffer circuit in electrical communication with said input supply node;

iii) a first capacitor electrically interposed between said first buffer circuit and said control input, said first capacitor passing said input supply potential from said first buffer circuit to said control input thereby increasing a value of a potential at said control input, said potential of said control input reaching a first actuation potential having a value capable of actuating said first switching device, wherein said first actuation potential is at least equal to said intermediate potential plus said threshold voltage;

iv) a second buffer circuit in electrical communication with said input supply node;

v) a second capacitor electrically interposed between said second buffer circuit and said second terminal, said second capacitor passing said input supply potential from said second buffer circuit to said second terminal thereby increasing a value of a potential on said second terminal, said potential on said second terminal passed to said first terminal with a loss equal to said threshold voltage when said first switching device is actuated by said first actuation potential, said potential on said first terminal being said intermediate potential; and

c) a second stage circuit in electrical communication with the input supply node, said second stage circuit generating an output potential greater than said intermediate pumped potential, said first and said second stage circuits in electrical communication with each other, wherein said second stage circuit comprises:

i) a second switching device having a control input and a

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first and a second terminal, said second switching device having a threshold voltage;

ii) a third buffer circuit in electrical communication with said first terminal of said first switching device and in electrical communication with said control input of said second switching device;

iii) a third capacitor electrically interposed between said third buffer circuit and said control input of said second switching device, said third capacitor passing said intermediate potential from said third buffer circuit to said control input of said second switching device thereby increasing a value of a potential at said control input, said potential of said control input of said second switching device reaching a second actuation potential having a value capable of actuating said second switching device, wherein said second actuation potential is at least equal to said output potential plus said threshold voltage of said second switching device;

iv) a fourth buffer circuit in electrical communication with said input supply node; and

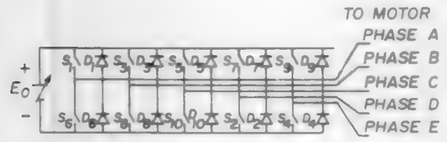
v) a fourth capacitor electrically interposed between said fourth buffer circuit and said second terminal of said second switching device, said fourth capacitor passing said input supply potential from said fourth buffer circuit to said second terminal of said second switching device thereby increasing a value of a potential on said second terminal of said second switching device, said potential on said second terminal of said second switching device passed to said first terminal of said second switching device without loss through said second switching device when said second switching device is actuated by said second actuation potential, said potential on said first terminal of said second switching device being said output potential.

5,394,321

QUASI SQUARE-WAVE BACK-EMF PERMANENT MAGNET AC MACHINES WITH FIVE OR MORE PHASES

Patrick J. McCleer, Jackson, Mich.; J. Milton Bailey, and Jack S. Lawler, both of Knoxville, Tenn., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 2, 1992, Ser. No. 939,123
Int. Cl.[6] H02M *7/5387*
U.S. Cl. 363—131 **27 Claims**



1. A permanent magnet synchronous drive system comprising:

a permanent magnet back emf radial air gap quasi square-wave motor, said motor further comprising,

a rotor having a cylindrical rotor core, and a plurality of permanent magnets spaced at equal angular intervals around the periphery of said rotor core, a pitch of each of said permanent magnets defining one rotor pole, and

a stator for exciting said rotor to move, said stator including a stator core and a plurality of stator windings forming N stator phases, N being an odd number ≥ 5, said stator windings each being wound around said stator core to define a plurality of stator poles each having a pitch substantially equal to a pitch of said rotor permanent magnets; and

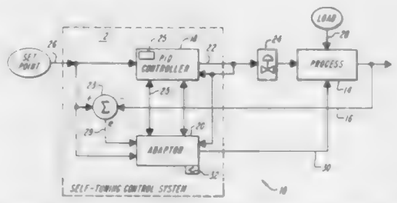
a switched voltage source inverter drive circuit for commutating said phases of said stator according to a predetermined commutation sequence, said drive circuit further comprising 2N gated switch devices arranged in N parallely-connected switch legs for connection to an input voltage source, each switch leg having an upper switch device coupled to one of said motor phase windings for driving said phase winding according to a first polarity, and a lower switch device coupled to the one motor phase winding for driving said phase winding according to a second polarity.

5,394,322

SELF-TUNING CONTROLLER THAT EXTRACTS PROCESS MODEL CHARACTERISTICS

Peter D. Hansen, Wellesley Hills, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation-in-part of Ser. No. 553,915, Jul. 16, 1990. This application Jul. 22, 1993, Ser. No. 96,600
Int. Cl.[6] G05B *13/04*
U.S. Cl. 364—148 **24 Claims**



1. Process control apparatus for attaining a selected closed-loop response of a control system, said apparatus comprising

an outer-control loop having

monitoring means, coupled to a controlled variable signal representative of a first characteristic of a process having an open-loop response, and to an operation control signal representative of a preselected value for said first characteristic of said process, said monitoring means for generating a difference signal representative of the difference between a signal characteristic of said controlled variable signal and said operation control signal, and

an outer-control element coupled to said monitoring means and having means for storing at least one control parameter being representative of a control parameter of said process control apparatus, and having means for generating an outer control signal as a function of said control parameter and of said difference signal, for manipulating said first characteristic of said process toward said preselected value,

an inner-control loop having

an inner-control element coupled to said controlled variable signal and having means for storing one or more control parameters representative of control parameters of said process control apparatus and having means for generating an inner control signal as a function of a said control parameter and of said controlled variable signal, for manipulating said first characteristic of said process toward said preselected value, and

summation means, coupled to said outer-control element and to said inner control element, for summing said inner-control signal and said outer-control signal to generate a manipulated variable signal for manipulating said first characteristic of said process toward said preselected value, and

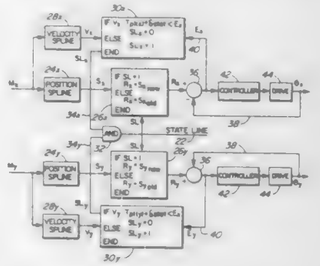
automatic tuning means for modifying said control parameters, said tuning means having means for storing at least one preselected closed-loop transfer function of said outer-control loop, and having means for storing at least one preselected closed-loop transfer function for said inner-control loop, and having means for storing at least one process model representative of a said open-loop process response, and having means for generating said control parameters as a function of said process model, and said preselected transfer functions, for tuning said inner-control loop and said outer-control to achieve substantially said selected closed-loop response.

5,394,323

PATH ERROR CONTROL SYSTEM

Ian Yellowley, West Vancouver, and Rudolf J. Seethaler, Vancouver, both of Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Mar. 29, 1994, Ser. No. 219,566
Int. Cl.[6] G05B *19/25, 19/18;* **G06F** *15/46*
U.S. Cl. 364—167.01 **12 Claims**



1. An axis interpolation and control system comprising, dividing a desired path of an axis into a series of time spaced position increments, defining a series of planned values v of velocity for said axis over time by interpolation of said position increments, determining the actual position of said axis along said path, comparing said determined actual position with a then current position increment of said desired path to define an actual position error E, determining an allowable error $e_{allowable}$ as a function of a then current planned velocity value v and planned steady state phase lag T_{p1}, comparing said position error E with said allowable error $e_{allowable}$ and triggering a status signal to prevent upgrading said control system to the next time spaced position increment in said series when said position error E is larger than said allowable error $e_{allowable}$.

5,394,324

AUCTION-BASED CONTROL SYSTEM FOR ENERGY RESOURCE MANAGEMENT IN A BUILDING

Scott H. Clearwater, Woodside, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 8, 1993, Ser. No. 163,061
Int. Cl.[6] G06F *15/20*
U.S. Cl. 364—402 **24 Claims**

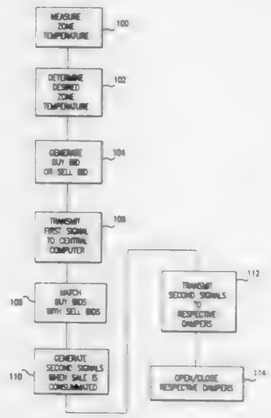
18. A heating, ventilating and air conditioning apparatus for supplying temperature conditioned air among a plurality of zones, each zone receiving a fraction of a total amount of temperature conditioned air, the apparatus comprising:

a duct network located throughout the plurality of zones for distributing the temperature conditioned air, the temperature conditioned air passing through the duct network;

a plurality of dampers, each damper controlling the fraction of temperature conditioned air for a corresponding zone, the plurality of dampers located throughout the duct network;

a plurality of thermostats, one thermostat located in each corresponding zone, each thermostat measuring an actual temperature of the corresponding zone and indicating a desired temperature of the corresponding zone, wherein each thermostat transmits a first signal representative of a relationship between the measured temperature of the corresponding zone and the desired temperature of the corresponding zone, the first signal being transmitted to a centralized computer and indicating one of a buy bid and a sell bid; and

the centralized computer comprising means for receiving the first signal from the thermostat of each of the zones and for consummating a sale by comparing an auction price with at least one of the buy bid and the sell bid for each zone, the centralized computer generating second signals when the sale is consummated, the second signals indicating new fractions of the total amount of the temperature conditioned air for the respective zones making the buy bids and the sell bids in the consummated sale, wherein the dampers of the respective zones control the new fractions of temperature conditioned air based on the second signals generated by the centralized computer.

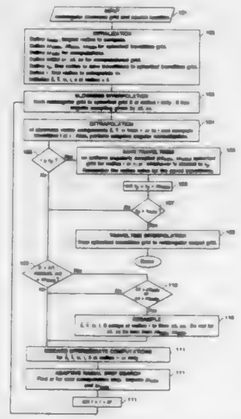


5,394,325

ROBUST, EFFICIENT THREE-DIMENSIONAL FINITE-DIFFERENCE TRAVELTIME CALCULATIONS

William A. Schneider, Jr., Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 44,352, Apr. 7, 1993, abandoned. This application Apr. 11, 1994, Ser. No. 226,420
Int. Cl.[6] G06F *15/20*
U.S. Cl. 364—421 **17 Claims**



1. A method of seismic exploration using the eikonal equation, which method comprises the steps of:

a) recording seismic signals from said subsurface;

b) estimating subsurface velocities or slownesses at a plurality of locations within said subsurface volume;

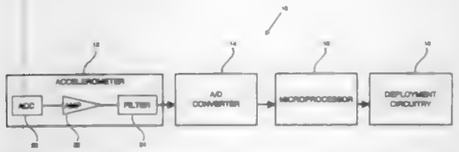
c) arranging said velocities or slownesses into a three dimensional grid of velocities, which constitutes an input grid;
d) applying to said input grid a finite difference solution of the eikonal equation in spherical coordinates, which solution contains unitless amplitude factors and which solution is performed using an adaptive radial step process to generate a three dimensional grid of traveltimes; and
e) using said three dimensional grid of traveltimes to migrate said seismic signals.

5,394,326

AIR BAG DEPLOYMENT CONTROL SYSTEM AND METHOD

Jiyao Liu, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Jan. 24, 1994, Ser. No. 185,342
Int. Cl.[6] B60R 21/16, 21/32
U.S. Cl. 364—424.05 6 Claims



5. A method for controlling deployment of an air bag in a vehicle, the method comprising the steps of:
(a) sensing vehicle deceleration due to a collision and generating a deceleration signal;
(b) calculating a velocity signal and a signal energy signal from said deceleration signal, wherein said signal energy signal is calculated by accumulating the absolute difference of successive deceleration signal values taken to a predetermined power greater than two;
(c) comparing said velocity signal to a predetermined discrete velocity threshold and comparing said energy signal to a predetermined discrete energy threshold; and
(d) generating a deployment signal when both said velocity signal exceeds said velocity threshold and signal energy signal exceeds said energy threshold.

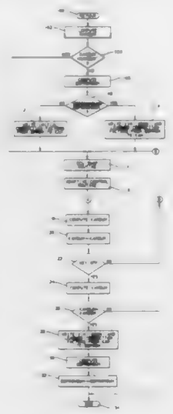
5,394,327

TRANSFERABLE ELECTRONIC CONTROL UNIT FOR ADAPTIVELY CONTROLLING THE OPERATION OF A MOTOR VEHICLE

Robert C. Simon, Jr., Novi; Joseph M. Tolkacz, Warren; Steven J. Swantick, Livonia, all of Mich.; Dennis D. Thompson, Atlanta, and Douglas J. Tackitt, Kokomo, both of Ind., assignors to General Motors Corp., Detroit, Mich. and Delco Electronics Corp., Kokomo, Ind.

Filed Oct. 27, 1992, Ser. No. 967,871
Int. Cl.[6] G06F 15/20
U.S. Cl. 364—424.01 8 Claims

2. A transferable electronic control unit for adaptively controlling the operation of motor vehicles, wherein the electronic control unit includes means for controlling vehicle operation based upon the values of control parameters that are adjusted according to learned correction factors, the learned correction factors having values that are adaptively updated during vehicle operation to optimize vehicle performance; the electronic control unit comprising:
means for receiving an identification signal having a value that identifies the vehicle in which the electronic control unit is currently operating;
a random access memory for storing values of the identification signal and the learned correction factors that acre updated during vehicle operation;
a first non-volatile memory containing predetermined initial values for the learned correction factors;
a second non-volatile memory;
means for writing the values of the identification signal and the learned correction factors stored in the random access memory tc the second non-volatile memory as saved values for the identification signal and said learned correction factors when vehicle operation ends;
means for determining whether the electronic control unit has been transferred between vehicles based upon the value of the received identification signal and the saved value of the identification signal;
means for ensuring that the values of the identification signal



and the learned correction factors stored, in the random access memory are equivalent to the saved values for the identification signal and the learned correction factors stored in the second non-volatile memory, when vehicle operation begins and the electronic control unit is determined not to have been transferred between vehicles; and
means for writing the initial values for the learned correction factors stored in the first non-volatile memory to the random access memory to replace the values of the learned correction factors stored therein when vehicle operation begins and said electronic control unit is determined to have been transferred between vehicles.

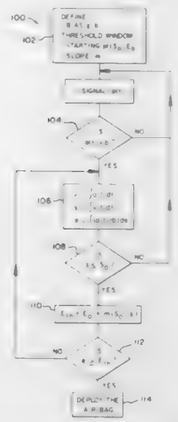
5,394,328

METHOD FOR ACTIVATING AN OCCUPANCT RESTRAINT IN A VEHICLE

Matthew Huang, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 25, 1994, Ser. No. 202,297
Int. Cl.[6] B60R 21/16, 21/32
U.S. Cl. 364—669 14 Claims

1. A method for activating an impact responsive device in a vehicle comprising the steps of:
defining a deceleration bias value;
defining an activation threshold line identifying when said device is to be activated comprises the steps of:
selecting an initial displacement value;
selecting an initial energy density value, said initial displacement value and said initial energy density value defining an origin of said activation threshold window; and
selecting a slope for a line extending from said origin to define said activation threshold line;
sensing deceleration of said vehicle;
comparing sensed deceleration and said deceleration bias value to determine whether said sensed deceleration is greater than said deceleration bias value;
determining displacement of said vehicle based on said sensed deceleration when said sensed deceleration is greater than said deceleration bias value;
subtracting said deceleration bias value from said sensed deceleration to produce a threshold deceleration;



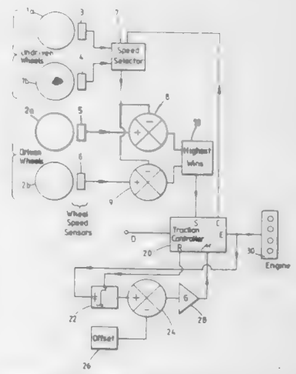
integrating said threshold deceleration with respect to said displacement of said vehicle to determine residual energy density; and
activating said device based on said residual energy density and said activation threshold line.

5,394,329

METHOD OF AND APPARATUS FOR ESTIMATING SURFACE FRICTION

Barry J. Bridgens, West Midlands, England, assignor to Lucas Industries public limited company, Solihull, England

Filed Apr. 27, 1993, Ser. No. 53,590
Claims priority, application United Kingdom, Apr. 28, 1992, 9209137
Int. Cl.[6] B60K 31/00; B60T 8/32
U.S. Cl. 364—426.01 5 Claims



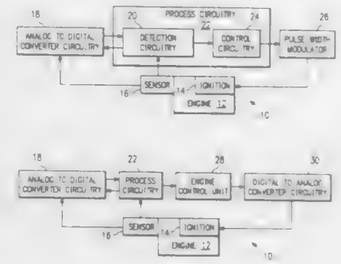
1. An apparatus for estimating surface friction during operation of a wheeled vehicle having an engine, said apparatus comprising:
detecting means for detecting excessive wheel spin;
drive reducing means for reducing engine output in response to detection of excessive wheel spin;
comparing means arranged to form a difference between the reduced engine output and a predetermined value; and
updating means for updating a surface friction estimate by adding to the surface friction estimate a value corresponding to the difference between the reduced engine output and the predetermined value.

5,394,330

SYSTEM AND METHOD FOR MONITORING AN OPERATING STATE OF AN ENGINE

Thomas G. Horner, Rockwall, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 12, 1992, Ser. No. 974,657
Int. Cl.[6] F02P 5/15, 17/00
U.S. Cl. 364—431.03 14 Claims



1. A method of monitoring an operating state of an engine, comprising the steps of:
measuring data from a cylinder of the engine during the cylinder's ignition cycle by sampling data during equal time periods of a predefined time window of the cylinder's ignition cycle, said data being indicative of the operating state of the engine;
processing said data according to a distributed discrete Fourier transform that transforms only preselected frequencies during the cylinder's ignition cycle so that the transform is completed prior to the ignition cycle of another cylinder of the engine; and
monitoring the operating state of the engine by processing said discrete Fourier transform.

5,394,331

MOTOR VEHICLE ENGINE CONTROL METHOD

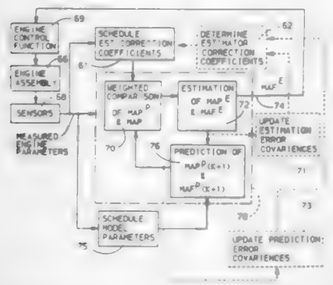
Kenneth P. Dudek, Rochester Hills, and Vincent A. White, Northville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 804,857, Dec. 6, 1991, Pat. No. 5,293,553, which is a continuation-in-part of Ser. No. 653,931, Feb. 12, 1991, Pat. No. 5,270,935, which is a continuation-in-part of Ser. No. 618,122, Nov. 26, 1990, abandoned. This application Sep. 20, 1993, Ser. No. 122,992
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.
Int. Cl.[6] G06F 15/48
U.S. Cl. 364—431.05 2 Claims

1. A method for controlling an engine, comprising the steps of, iteratively:
(a) measuring a plurality of engine parameters at a present state of the engine;
(b) scheduling, from a plurality of sets of correction coefficients stored in a memory, a select set of correction coefficients responsive to at least two of the measured engine parameters;
(c) estimating, responsive to the select set of correction coefficients and the measured engine parameters, an estimated value of a select engine parameter at the present state of the engine wherein the select engine parameter is a measured parameter;
(d) scheduling, from a plurality of sets of prediction parameters stored in the memory, a select set of prediction param-

eters responsive to at least two of the measured engine parameters;

(e) predicting, responsive to the select set of prediction parameters, the estimated value and the measured engine parameters, a predicted value of the select engine parameter at one of the present state of the engine and a future state of the engine, wherein



said estimating step is responsive to a difference between the measured value of the select engine parameter and the predicted value of the select engine parameter; and

(f) determining an engine control command responsive to the estimated value; and

(g) applying the engine control command to the engine, wherein the engine is controlled responsive to the estimated value.

5,394,332

ON-BOARD NAVIGATION SYSTEM HAVING AUDIBLE TONE INDICATING REMAINING DISTANCE OR TIME IN A TRIP

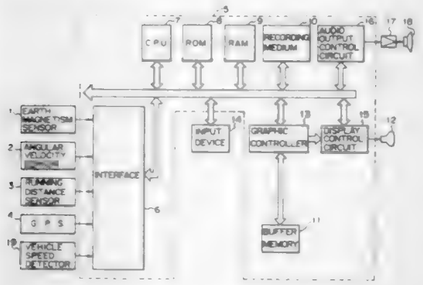
Shingo Kuwahara; Morio Araki, and Takeharu Arakawa, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 841,798

Claims priority, application Japan, Mar. 18, 1991, 3-052545; Mar. 18, 1991, 3-052546

Int. Cl.[6] G06G 7/78

U.S. Cl. 364—449 10 Claims



1. An on-board navigation system comprising:

vehicle position information generating means for generating vehicle position information;

destination setting means for setting position information of a destination;

predictive running distance calculating means for calculating a predictive running distance from a current location to said destination on the basis of said vehicle position information and said position information of said destination; and

information sound generating means for generating an information sound which changes in accordance with said predictive running distance, when said calculated predictive running distance becomes lower than a predetermined value.

5,394,333

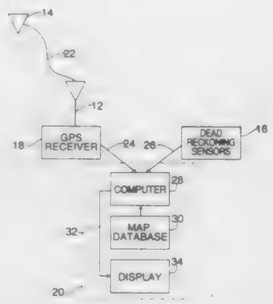
CORRECTING GPS POSITION IN A HYBRID NAVIATION SYSTEM

Wei-Wen Kao, Fremont, Calif., assignor to Zexel USA Corp., Fort Worth, Tex.

Continuation of Ser. No. 811,742, Dec. 23, 1991, abandoned. This application Dec. 20, 1993, Ser. No. 170,405

Int. Cl.[6] G06F 15/50

U.S. Cl. 364—450 7 Claims



7. A hybrid vehicle navigation system comprising:

means for determining a sensed position of said vehicle from a Global Positioning System;

means for determining a calculated position of said vehicle by means of a dead reckoning sensor system;

a first comparison means for comparing said calculated position with a map database containing pre-stored locations obtained from an external system and for choosing therefrom a map-matched position of said vehicle;

a second comparison means for comparing said calculated position and said sensed position with said chosen map-matched position and for producing a plurality of correction factors for each of said calculated position and said sensed position;

means for averaging said plurality to produce a smoothed correction factor effective for producing a zero difference between said chosen map-matched position and said sensed position; and

means for correcting said vehicle position based on said smoothed correction factor.

5,394,334

MULTISTATION TEXTILE MACHINE, AND PROCESS FOR PREPARING FOR OPERATION OF THE TEXTILE MACHINE

Karsten Simon, Mönchengladbach, Germany, assignor to W. Schlafhorst AG & CO., Möenchengladbach, Germany

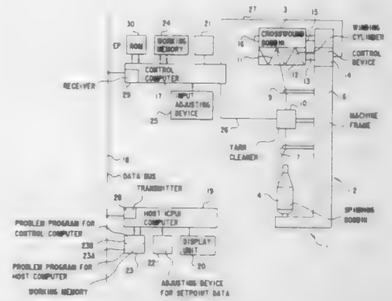
Continuation of Ser. No. 73,281, Jun. 7, 1993, abandoned, which is a continuation of Ser. No. 576,079, Aug. 31, 1990, abandoned. This application May 10, 1994, Ser. No. 241,386

Claims priority, application Germany, Aug. 31, 1989, 3928831

Int. Cl.[6] G06F 15/46

U.S. Cl. 364—470 13 Claims

11. Process for preparing for operation of a multistation cross-wound bobbin producing machine with a control and information processing system, including a plurality of cross-wound bobbin producing stations each having at least one control device, a plurality of control computers each being assigned to a respective one of the cross-wound bobbin producing stations and connected to the at least one control device of the cross-wound bobbin producing station to which it is assigned, a data bus connected to the control computers a host computer being connected to the data bus and having an adjusting device for entering set-point operating data to be transmitted over the data bus to the control computers; the method which comprises the steps of selectively inputting, selecting or replacing a problem correcting program in the host computer,



then transmitting a problem correcting program for the control computer from the host computer over the data bus to the control computer, and transmitting the set-point operating data or the change in the set-point operating data of the cross-wound bobbin producing station to the control computer.

5,394,335

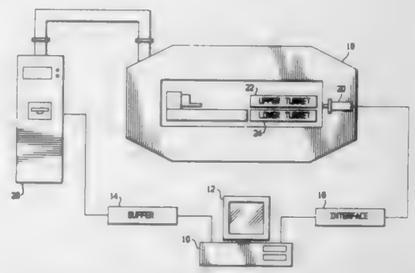
RETROFIT AUTO-INDEXING SYSTEM

James D. Rush, Fontana, Calif., assignor to Amada Engineering & Service Co., Inc., La Mirada, Calif.

Filed Mar. 31, 1993, Ser. No. 40,593

Int. Cl.[6] G06F 15/46

U.S. Cl. 364—474.21 11 Claims



1. A method for operating a turret punch press of the type having rotatable upper and lower tool carrying turrets, each of those turrets carrying at least one auto-indexing tool changer, comprising the steps of:

storing in a first computer a set of programmed instructions for operating said turret punch press;

sequentially determining whether each instruction of said set of programmed instructions contains a command for said at least one auto-indexing tool changer;

transmitting each instruction which is determined not to contain an auto-indexing tool changer command to a second computer for execution of that instruction; and

executing each instruction that is determined to contain an auto-indexing tool changer command such that said at least one auto-indexing tool changer is indexed.

5,394,336

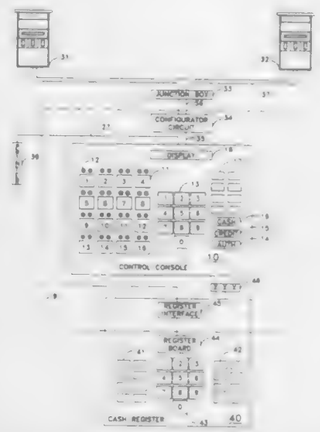
FUEL DISPENSER-CASH REGISTER CONTROL CONSOLE

Walter E. Warn, Knightdale, and Fred K. Carr, Chapel Hill, both of N.C., assignors to Progressive International Electronics, Raleigh, N.C.

Filed Dec. 22, 1993, Ser. No. 171,411

Int. Cl.[6] G06F 15/20

U.S. Cl. 364—479 6 Claims



1. A fuel dispenser-cash register control system for controlling the dispensing process in at least one fuel dispenser, for controlling at least one department input key switch on a cash register keyboard for transferring information on each dispensing transaction to a cash register at the end of the sale, and for storing in memory totals on the amount of fuel dispensed from said dispenser, comprising:

(a) a control console means having a first programmable data processor coupled with a first read-only-memory device and a first read-and-write-memory device, and a series of console input key switches, for

(1) controlling said dispenser from said console input key switches causing said first data processor to retrieve dispenser control commands from said first read-only-memory device in a predetermined sequence and output said commands to said fuel dispenser causing said dispenser to dispense fuel;

(2) receiving dispenser responses from said dispenser during the fueling process and storing said responses in said first read-and-write-memory device;

(3) transferring to said cash register sales information on each dispensing transaction at the completion of the transaction;

(b) a cash register interface means, with serial connection to said first microprocessor in said control console means, having a second microprocessor coupled with a second read-only-memory device and a second read-and-write memory device, for

(1) receiving from said first microprocessor said sales information on each dispensing transaction at completion of the transaction; and

(2) controlling said department input key switch on said cash register keyboard such as to post the fueling transaction as a sale in said cash register;

(c) a configuration means with serial connection to said control console means and said fuel dispenser; for

(1) configuring said dispenser control commands into a communication protocol readable by said fuel dispenser, and

(2) configuring said dispenser responses into a communication protocol readable by said control console means.

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5,394,337

METHOD FOR WIRE ROUTING OF A SEMICONDUCTOR INTEGRATED CIRCUIT AND APPARATUS FOR IMPLEMENTING THE SAME

Keisuke Shinjo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 967,671
Claims priority, application Japan, Oct. 25, 1991, 3-305687
Int. Cl.[6] G06F *15/60;* **H01L** *21/80*
U.S. Cl. 364—490 **7 Claims**



1. Method for wire routing of a semiconductor integrated circuit having functional blocks disposed on a chip, four or more wiring layers, and terminals of said blocks lying on said wiring layers, the method comprising the steps of:

(a) providing in said integrated circuit a plurality of sets of adjacent wiring layers;

(b) providing at least one computer; and

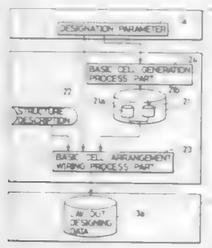
(c) carrying out the wire routing between the terminals of the blocks for a plurality of said sets concurrently by said computer.

5,394,338

MODULE CELL GENERATING DEVICE FOR A SEMICONDUCTOR INTEGRATED CIRCUIT

Hirofumi Shinohara, and Hiroyuki Amishiro, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1991, Ser. No. 805,139
Claims priority, application Japan, Dec. 17, 1990, 2-402947
Int. Cl.[6] G06F *15/60*
U.S. Cl. 364—491 **4 Claims**



1. A module cell generating device for a semiconductor integrated circuit automatically carrying out arrangement of cells and wiring between the cells of a module circuit included in the semiconductor integrated circuit, comprising:

parameters input means for applying designation parameters which define the structure of a module cell;

basic cell generating means for creating one or more custom first basic cells and for generating various forms of said one or more first basic cells in accordance with said designation parameters applied from said parameter input means;

basic cell holding means for holding said custom first basic cells and existing second basic cells having pre-established forms;

structure description means having a structure description which defines arrangement method and wiring method of said first basic cell and said second basic cell in accordance with said designation parameter;

basic cell arranging and wiring means for arranging said first basic cell and said second basic cell fetched out from said basic cell holding means to a prescribed pattern in accordance with said designation parameter and said structure description, and for generating the module cell by forming a wiring pattern; and

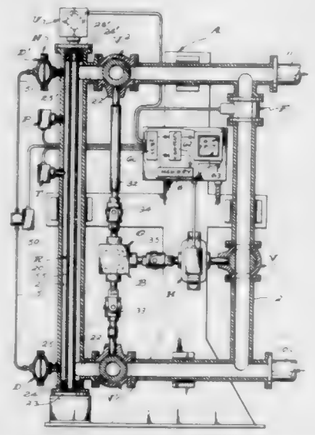
layout designing data output means for providing layout designing data of the module cell generated by said basic cell arranging and wiring means.

5,394,339

APPARATUS FOR ANALYZING OIL WELL PRODUCTION FLUID

Ray L. Jones, Placentia, Calif., assignor to Paul-Munroe Hydraulics Inc., Orange, Calif.

Filed Mar. 30, 1992, Ser. No. 860,550
Int. Cl.[6] G01N *9/26, 9/36;* **G01F** *15/08;* **F17D** *3/10*
U.S. Cl. 364—510 **1 Claim**



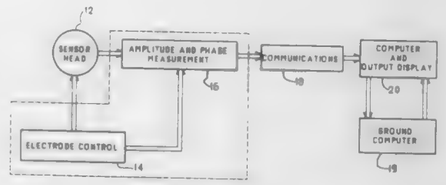
1. An apparatus for the acquisition of data for use in calculating the net content of gas, oil and water in oil well production fluid flowing through a pipeline and compromising; an elongate, cylindrical, vertical test pipe defining a chamber of uniform cylindrical cross-section and of predetermined volumetric and vertical extent and connected with related upstream and downstream sections of the pipeline, an elongate flow pipe connected with and between upstream and downstream sections of the pipeline, valve means normally directing production fluid flowing through the pipeline through the flow pipe and selectively operated to intermittently redirect the flow of fluid through the test pipe and to releasably capture and statically hold fluid samples in the chamber, a flow rate indicating device connected with the flow pipe to acquire flow rate data of the fluid flowing therethrough, a temperature sensing device communicating with the chamber to acquire temperature data of fluid samples therein, a pressure sensing device communicating with the chamber to acquire pressure data of fluid samples therein, a density measuring means communicating with the chamber to measure and compare the pressures on fluid samples in the chamber at vertical spaced positions within the chamber and to acquire the density data of the samples, and, capacitance measuring means to measure the capacitance of fluid samples in the chamber and to acquire capacitance data; said capacitance measuring means includes an elongate electrode rod concentric with the test pipe and extending longitudinally through the chamber and fluid samples therein and in uniform spaced relationship from the test pipe; a jacket of dielectric insulating material about the rod; and, a comparator circuit connected with and between the electrode rod and the test pipe to measure a current conducted therebetween into and flowing through fluid samples in the chamber; said valve means includes a normally open flow valve in the flow pipe, a normally close inlet valve at an upstream end of the test pipe and connected with an upstream section of the pipeline and a normally closed outlet valve at a downstream end of the test pipe and connected with a downstream section of the pipeline; and valve actuating means to simultaneously close the flow valve and open the inlet and outlet valves to redirect fluid flowing through the flow pipe through the test pipe to fill the test pipe with the fluid flowing through the pipeline and to simultaneously reopen the flow valve and reclose the inlet and outlet valves to capture and statically hold a fluid sample in the chamber defined by the test pipe; said valves have rotating operating stems and said actuating means includes a motor and gear box with rotating shafts drivingly coupled with the valve stems, the inlet and outlet valves are arranged with their stems in axially aligned opposing spaced relationship from each other and the stem of the flow valve is spaced radially from and on an axis normal to the axis on which the stems of the inlet and outlet valves occur, the gear box has an output shaft with opposite ends aligned and drivingly connected with the stems of the inlet and outlet valves and an input shaft aligned with and in spaced relationship with the stem of the flow valves, said motor is positioned between and is drivingly connected with the input shaft of the gear box and the stem of the flow valve.

5,394,340

DEVICE AND METHOD FOR IDENTIFYING AND QUANTIFYING LAYERED SUBSTANCES

Stuart Inkpen, St. Phillips; John Hall; Chris Marshall, both of St. John's; Chris Brobeck, Pouch Cove, and Chris Nolan, St. John's, all of Canada, assignors to Instrumar Limited, St. John's, Canada

Filed Nov. 17, 1992, Ser. No. 977,833
Claims priority, application Canada, Oct. 7, 1992, 2080067
Int. Cl.[6] G01R *27/02*
U.S. Cl. 364—550 **31 Claims**



1. An apparatus for identifying and quantifying in real time substances overlying a surface, the apparatus comprising:

a plurality of electrodes underlying a surface,

an electrode control means, connected to the plurality of electrodes, for applying a voltage pattern to the electrodes to define an electric field at the surface of a type which induces a plurality of currents in the electrodes which currents vary according to a substance overlying the the surface,

an amplitude and phase measurement means connected to the plurality of electrodes and to the electrode control means for sensing a plurality of currents responsive to the electric field and converting the sensed currents to a measurement set, and

computer means having a memory for storing a map means of probable substances which could be overlying the surface, said map means being a partition of a vector space of predetermined characteristics of said probable substances into regions of profiles corresponding to an identity and quantity of said substances, said computer means having a processor for correlating the measurement set with the partition of vector space in the map means thereby identifying and quantifying the substances overlying the surface and for generating an output signal corresponding to the identity and quantity of substances overlying the surface, and

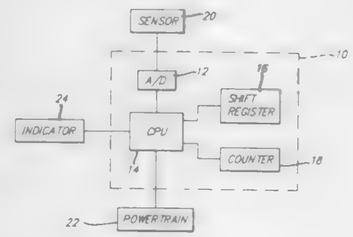
display means responsive to the output signal for displaying the identity and quantity of substances overlying the surface.

5,394,341

APPARATUS FOR DETECTING THE FAILURE OF A SENSOR

Charles M. Kepner, Walled Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 25, 1993, Ser. No. 37,157
Int. Cl.[6] G06F *15/20, 15/46*
U.S. Cl. 364—551.01 **3 Claims**



1. An apparatus for detecting the degradation of a sensor comprising:

a memory;

sampling means for obtaining a first, second and third value from said sensor at regular intervals and storing them in said memory;

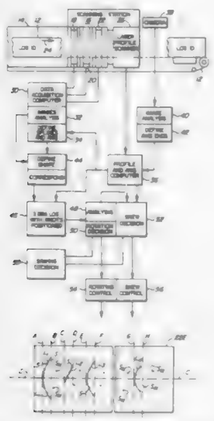
differential means for calculating a first difference between said second value and said first value to obtain a first slope and a second difference between said third value and said second value to obtain a second slope;

comparison means for comparing said first difference and said second difference each with a positive and negative predetermined value to detect a noise spike, said predetermined value corresponding to a slope of a noise spike;

counter means for incrementing a count in response to each detected noise spike during a predetermined number of comparisons; and

indicator means for indicating sensor degradation if the count exceeds a predetermined value.

5,394,342
LOG SCANNING
Joseph K. Poon, Burnaby, Canada, assignor to MacMillan Bloedel Limited, Vancouver
Filed Feb. 26, 1993, Ser. No. 23,433
Int. Cl.[6] H04N 7/18
U.S. Cl. 364—558 20 Claims



1. A system for analyzing a body to determine the position of elements of different density within said body comprising means to relatively move said body and a density scanning means in a direction along path of travel, said density scanning means including at least one source of electromagnetic energy located adjacent to said path positioned to pass electromagnetic energy through said body in a direction traversing said path as said body and said scanning means are relatively moved and sensor means for said source for sensing the amount of electromagnetic energy passing through said body from said source and generate a scan, said sensor means being composed of a plurality of discrete detectors arranged in circumferential side-by-side relationship relative to said path, each said detector being adapted to detect the amount of radiation received from its respective said source thereby to provide scan line of discrete values indicating density as defined by the degree of attenuation of electromagnetic energy between each said discrete detector and its respective said source and define said scan line formed by a row of pixels extending in a direction representing the direction relative movement of said body and said detector, each said pixel providing a signal depicting density sensed by its respective said detector, said circumferential side by side said detectors in said sensor means forming columns of said pixels in its said scan whereby said scan generated by said sensor means is composed of lines and columns of pixels, filter means for filtering said density signals along each said scan line to provide cleaned signals, characterized by means to define positive peaks in said cleaned signal along said scan lines, and means for plotting said peaks to form an image, means for joining for joining said peaks in adjacent of said scan lines and columns to form a spine image depicting spines of high density areas in said scan.

5,394,343
ELECTRONIC TIRE GAUGE
Kuey Y. Tsao, Palatine, Ill., assignor to Integrated Sensor Technologies Inc., Palatine, Ill.
Filed Apr. 19, 1993, Ser. No. 49,505
Int. Cl.[6] G01N 7/00
U.S. Cl. 364—558 17 Claims

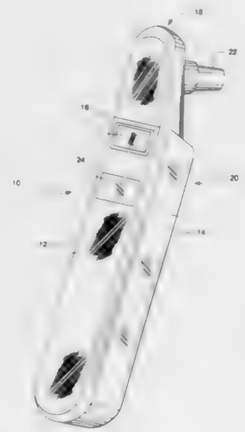
1. A digital tire gauge for measuring the pressure in a tire, said digital tire gauge having electronic circuitry for generating a signal indicative of the measured pressure, a digital display for displaying the signal indicative of the measured pressure and a power source for powering said electronic circuitry and said digital display, said digital tire gauge comprising:

valve stem fitting means for receiving the valve stem of a tire;

pressure transducer means coupled to said valve stem fitting means for generating a pressure signal representing pressure sensed by said pressure transducer means;

oscillator means for generating an oscillating signal comprising a periodic sequence of cycles;

comparator means responsive to said pressure signal and said oscillating signal for generating comparison signals resulting from the comparison of said oscillating signal to said pressure signal, said comparison signals comprising first

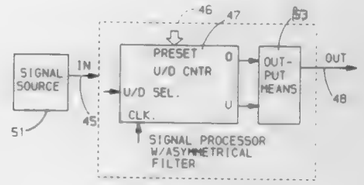


portions and second portions, each of said first portions having a time duration equal to the time the pressure signal is greater than the oscillating signal and each of said second portions having a time duration equal to the time the pressure signal is less than the oscillating signal;

controller means disposed to measure the time durations of said first portions of said comparison signals for generating display signals indicative of pressure sensed by said transducer means for display on the digital display, said controller means generating said display signal after a plurality of cycles of said oscillating signal have been compared to said pressure signal by said comparator means.

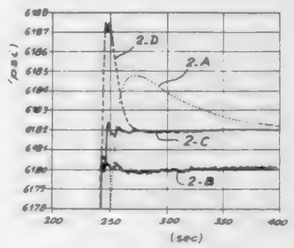
5,394,344
SLEW RATE LIMITER WITH ASYMMETRICAL OPERATION
Raymond Lippmann, Ann Arbor; James E. Nelson, Waterford; Michael J. Schnars, Clarkston; James R. Chintyan, Davison; Mark C. Hansen, Ann Arbor, all of Mich.; James M. Aralis, Mission Viejo, and Frank J. Bohac, Jr., Laguna Hills, both of Calif., assignors to Delco Electronics Corporation, Kokomo, Ind.
Filed Sep. 11, 1992, Ser. No. 944,158
Int. Cl.[6] G01C 25/00
U.S. Cl. 364—571.02 43 Claims

1. An apparatus for processing a data signal, comprising:
means for providing a data signal;
an up/down counter including an overflow output providing an overflow signal, an underflow output providing an underflow signal, and a reset that has a variable preset value determined in response to a control signal, the up/-down counter (1) counting either up or down in response to the data signal, (2) outputting the overflow signal when the counter overflows, (3) outputting the underflow signal when the counter underflows, and (4) resetting to the determined variable preset value in response to the overflow signal or the underflow signal; and



means for providing an output signal in response to the overflow and underflow signals, whereby the apparatus provides asymmetrical filtering of the data signal.

5,394,345
METHOD AND APPARATUS FOR CORRECTING A PRESSURE MEASUREMENT FOR THE INFLUENCE OF TEMPERATURE
Michel V. Berard, Palaiseau; Pierre Eisenmann, Paris, both of France; Yoshinobu Jinzaki, Tokyo, Japan, and Isabelle M. Dubourg, Malakoff, France, assignors to Schlumberger Technology Corporation, Houston, Tex.
Continuation of Ser. No. 918,187, Jul. 23, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 259,282
Claims priority, application France, Jul. 26, 1991, 91 09481
Int. Cl.[6] G01L 27/00
U.S. Cl. 364—571.03 45 Claims



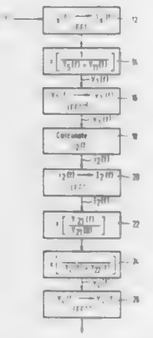
1. A system for sensing a first pressure under the influence of a temperature and generating a corrected output signal representative of said first pressure corrected for said influence of said temperature, comprising:

sensing means for sensing said first pressure under said influence of said temperature, said sensing means generating a first output signal representative of said first pressure and a second output signal representative of said temperature; and

correction means responsive to said first output signal and said second output signal from said sensing means for determining a temperature correction in response to said temperature of said second output signal and applying said temperature correction to said first pressure of said first output signal,

said correction means determining a second pressure representing said first pressure corrected for said influence of said temperature when said temperature correction is applied to said first pressure of said first output signal and generating said corrected output signal representative of said second pressure.

5,394,346
SIMULATION OF AN ELECTRONIC SYSTEM INCLUDING ANALOG AND DIGITAL CIRCUITRY USING HIGH LEVEL MACRO MODELS
Robert F. Milsom, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 18, 1993, Ser. No. 18,998
Claims priority, application United Kingdom, Feb. 19, 1992, 9203507
Int. Cl.[6] G06G 7/48; G06F 15/20
U.S. Cl. 364—578 15 Claims



1. A method of simulating an electronic system comprising interconnected functional blocks, said method comprising the steps of:

a)—inputting data into a digital computer which data concerns a low level description of each of said functional blocks;

b)—extracting parameters from said low level description by using a central processing unit accessible to said digital computer which parameters define at least in part a dependence of said low level description on signal frequency and signal level;

c)—storing said extracted parameters in a memory device accessible to said digital computer;

d)—creating, by using said central processing unit, a high level macro model of each of said functional blocks from said extracted parameters;

e)—interconnecting said high level macro models using said central processing unit;

f)—applying an input signal to said interconnected high level macro models;

g)—computing, by using said central processing unit, output signals of said interconnected high level macro models in response to the input signal, including computing the effect of the interaction of each high level macro model with its neighboring high level macro model;

h)—monitoring the output signals of said interconnected high level macro models;

i)—comparing the monitored output signals with predetermined values indicative of an expected performance of the electronic system; and

j)—performing the following steps if the monitored output signals do not closely match said predetermined values

i) extracting, by using said central processing unit, said stored parameters from said memory device;

ii) modifying said low level description such that a closer match between said predetermined values and the monitored output signals is achieved;

iii) extracting, by using said central processing unit, modified parameters from said low level description and replacing said stored parameters with said modified parameters;

iv) creating high level macro models from said modified

stored parameters by using said central processing unit; and

v) repeating steps e through j until the monitored output signals closely match said predetermined values.

5,394,347

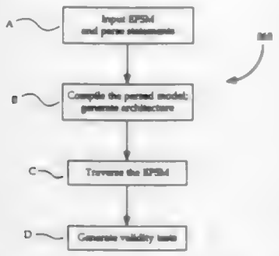
METHOD AND APPARATUS FOR GENERATING TESTS FOR STRUCTURES EXPRESSED AS EXTENDED FINITE STATE MACHINES

Ronald A. Kita, Hollis; Sylvia C. Tremblay, Nashua, and Thomas M. Lynch, Hudson, all of N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 29, 1993, Ser. No. 100,002

Int. Cl.[6] G06F *15/60*

U.S. Cl. 364—578 **5 Claims**



1. A method for automatically generating at least one test program in a predetermined computer language for testing an implementation of a specification for a predefined system, the specification being expressed as an extended finite state machine (EFSM), the EFSM comprising a root model having a plurality of vertices including a root model start state, a root model exit state, and at least one root model intermediate vertex, the EFSM further having a plurality of transitions, each transition connecting two said vertices and each vertex being connected to at least one other vertex by at least one said transition, the transitions representing functions of the system as defined in the specification, each said transition having zero or more correlated annotations thereto, the annotations including predicates, actions and events defined by the specification and constraints on execution defined by a user, said at least one intermediate vertex including at least one vertex comprising a submodel which itself includes a plurality of vertices including a submodel start state, a first submodel exit state and at least one submodel intermediate vertex, the method comprising traversing the EFSM through at least one path, to generate a path file as a basis for said test program, the method including the steps of:

(1) generating a model stack for tracking, at any given point in the path, the current model for the traversal, the model stack including a model frame index pointing to a current model at any given time in the traversal;

(2) generating a path stack for tracking transitions taken in said path, the path stack including a plurality of frames, each frame having a plurality of fields including at least a field storing a current vertex, a field storing a current transition, and a field storing a link count for determining the number of times a transition has been taken from the current vertex, and a field storing a flag indicating whether any variables values were changed in reaching the current vertex, the path stack further having an index for pointing to a current model stack frame;

(3) generating a variables stack for tracking assignments and value changes for variables used in the specification, the variables stack including a plurality of frames, each frame for storing in a plurality of fields each value taken by each variable in the traversal of the path;

(4) initializing the traversal, including:

pushing the root model onto a first frame of the model stack;

initializing any model parameters and variables defined in model declaration statements of said EFSM;

setting the root model start state as a current state of the traversal; and

saving current values of variables at a first frame of the variables stack;

(5) determining whether the link count for the current path stack frame is less than the number of transitions originating from the current state, and if not, proceeding to step 9;

(6) selecting a next transition from the current state;

(7) determining whether the vertex at a terminus of the current transition is a submodel, and if so, proceeding to step 8, and if not, processing the current transition, including executing any predicates, constraints and actions, updating the path stack with a new frame relating to a new transition if the current transition is taken, updating the variables stack with any changes in values of the variables, and returning to step 5;

(8) processing a submodel invocation, including executing any predicates, constraints and actions, limiting the invocation according to any recursion restraint on the current transition, and updating the model stack with the invoked submodel if the current transition is taken, updating the path stack with a new frame if the current transition is taken, and updating the variables stack if any variable values have changed, and returning to step 5;

(9) if the current state is a submodel exit and all transitions of the current state have been taken and loops from the current state have been completed, generating and taking submodel outbound transition to the calling model, restoring the model frame index to the calling model, restoring the variable values to those of the calling model, setting the current state to the vertex from which this submodel was called, and returning to step 5;

(10) if the current state is the root model exit state, proceeding to step 12;

(11) backing up one state in the path generated so far, including:

popping the most recent frame off the path stack, while maintaining the popped vertex and transition as current;

if an outbound transition from a submodel was popped, popping the path stack again, while maintaining the popped vertex and transition as current, and restoring any changed variables;

if an inbound transition to a submodel was popped, restoring the current model stack index, popping the model stack and restoring any changed variables;

for any other transition, restoring any changed variables; and returning to step 5; and

(12) processing the path to completion, including generating a test program based upon the path taken in said traversal, the test program being in said predetermined computer language and including an interface with said predefined system.

5,394,348

CONTROL SYSTEM FOR SEMICONDUCTOR CIRCUIT TESTING SYSTEM

Nobuaki Abe, Yamagata, Japan, assignor to NEC Corporation, Japan

Filed May 18, 1992, Ser. No. 885,151

Claims priority, application Japan, May 31, 1991, 3-155322

Int. Cl.[6] G06F *15/20*

U.S. Cl. 364—580 **1 Claim**

1. A semiconductor circuit testing system comprising:

a semiconductor testing device for measuring the functions and electrical characteristics of semiconductor circuits made on a wafer;

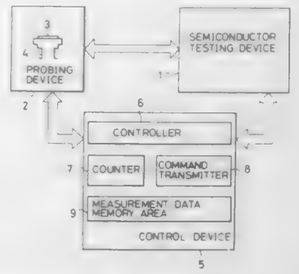
a probing device with means for calculating a yield for each wafer based on measurement data provided by said semiconductor testing device;

comparison means for comparing a yield of each wafer provided by said probing device, with an acceptable standard yield;

a counter for counting a number of defective wafers having a yield less than said acceptable standard yield in response to the results obtained from said comparison means;

judgment means responsive to said counter for detecting whether said number of defective wafers has reached a specified standard number;

a command transmitter for requesting said semiconductor testing device to output the measurement data in response



to said judgment means detecting that said number of defective wafers has reached said specified standard number;

a measurement data memory area for storing therein the measurement data received from said semiconductor testing device so that the measurement data for each wafer can be differentiated from each other; and

means for stopping said probing device when the measurement data stored in said measurement data memory area indicates that a number of said defective wafers has reached another specified number.

5,394,349

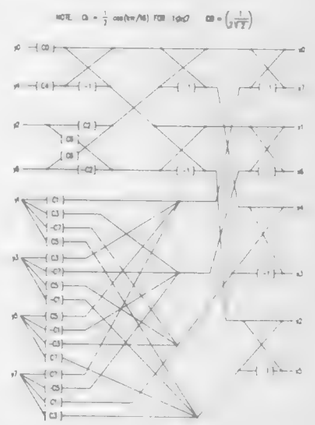
FAST INVERSE DISCRETE TRANSFORM USING SUBWORDS FOR DECOMPRESSION OF INFORMATION

Christopher R. Eddy, Arroyo Grande, Calif., assignor to Xing Technology Corporation, Arroyo Grande, Calif.

Filed Jul. 10, 1992, Ser. No. 911,824

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—725 **27 Claims**



1. A signal processing method comprising the steps of:

receiving a first signal representing information in compressed form to a processor, the processor having a plurality of registers, the information being compressed using a discrete transform technique;

processing whole words of the first signal according to bit length;

partitioning at least one of the whole words into a plurality of subwords;

inverse discrete transforming each of the plurality of subwords in accordance with decomposition control of the processor for determination of all discrete values associated with the plurality of subwords for the one of the whole words prior to passing another of the whole words to the processor for processing; and

concatenating the plurality of subwords using the discrete values for forming the one of the whole words for providing a second signal representing the information in decompressed form.

5,394,350

SQUARE COMPUTATION CIRCUIT

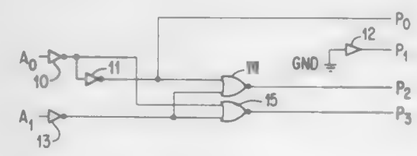
Jun-jin Gong, Seongnam; Hyun-woo Park, Suwon, and Hyun-gi Baek, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 13, 1993, Ser. No. 165,322

Claims priority, application Rep. of Korea, Dec. 31, 1992, 1992-27557

Int. Cl.[6] G06F *7/552*

U.S. Cl. 364—753 **5 Claims**



1. A square computation circuit for squaring 2-bit input data A_1A_0, comprising:

first and second inverters for outputting an output bit P_0 by buffering input bit A_0;

a buffer for outputting an output bit P_1 by buffering a low level signal;

a third inverter for inverting input bit A_1;

a first NOR gate for outputting an output bit P_2 by performing a NOR operation of the output signals of said second and third inverters; and

a second NOR gate for outputting an output bit P_3 by performing a NOR operation of the output signals of said first and third inverters.

5,394,351

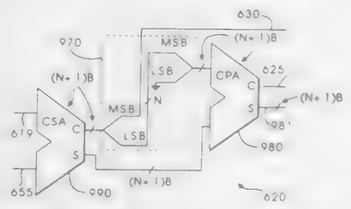
OPTIMIZED BINARY ADDER AND COMPARATOR HAVING AN IMPLICIT CONSTANT FOR AN INPUT

Larry Widigen, Salinas, and Elliot A. Sowadsky, Santa Clara, both of Calif., assignors to NexGen, Inc., Milpitas, Calif.

Filed Mar. 11, 1994, Ser. No. 212,516

Int. Cl.[6] G06F *7/50, 7/02*

U.S. Cl. 364—786 **3 Claims**



1. A binary arithmetic circuit for evaluating two binary

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variables (A and B) and a binary constant, said circuit comprising:

a carry-save adder having sum and carry outputs, said carry-save adder including

a constant-adder bit-cell, said constant-adder bit-cell having

inputs A and B,

a sum output, wherein the expanded sum-of-products form of said sum output is given by $S(A,B)=\Sigma 0,3$, and

a carry output, wherein the expanded sum-of-products form of said carry output is given by $C(A,B)=\Sigma 1,2,3$,

wherein said constant-adder bit-cell's sum and said carry output are included within said carry-save adder's sum and carry outputs, respectively, and

wherein said constant-adder bit-cell is used in a bit position of said carry-save adder that corresponds to a bit value one in said binary constant; and

a carry-propagation circuit having

inputs coupled to at least some of said sum and carry outputs of said carry-save adder, and

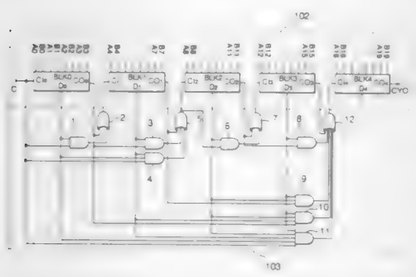
a carry output from the most significant bit of said carry-propagation circuit.

5,394,352

CARRY LOOKAHEAD CIRCUIT FOR SEMICONDUCTOR INTEGRATED CIRCUIT

Masako Nakano, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 18, 1993, Ser. No. 19,060
Claims priority, application Japan, Feb. 18, 1992, 4-029845
Int. Cl.[6] G06F *7/50*
U.S. Cl. 364—787 3 Claims



1. A carry lookahead circuit for performing carry lookahead for every group of a plurality of bits of an operation circuit having m arithmetic units, m being a natural number equal to or greater than 4, the circuit comprising:

first carry signal generating means connected to and generating for each of a first arithmetic unit to a (m−2)-th arithmetic unit and a m-th arithmetic unit, a lookahead carry signal to be inputted to said each arithmetic unit, from a carry signal input at a 0-th bit, carry condition output signals and carry output signals, said carry condition output signals and said carry output signals being outputted from arithmetic units preceding said each arithmetic unit, respectively; and

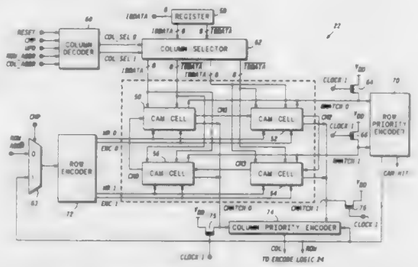
second carry signal generating means connected to and generating a lookahead carry signal to be inputted to a (m−1)-th arithmetic unit, from a lookahead carry signal to be inputted to said (m−2)-th arithmetic unit, a carry output signal of said (m−2)-th arithmetic unit and a carry condition output signal of said (m−2)-th arithmetic unit.

5,394,353

FLIPFLOP AND CONTROL CIRCUIT IN A CONTENT ADDRESSABLE MEMORY

Eugene B. Nusinov, Sharon, and James A. Pasco-Anderson, Needham, both of Mass., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 20, 1993, Ser. No. 123,548
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—49 17 Claims



1. A circuit, comprising:

a first flipflop having a data input, a read input, a load input and an output, said data input being coupled for receiving a first data signal, said read input being coupled for receiving a read control signal, said load input being coupled for receiving a load control signal, said output latching said first data signal upon receiving said load control signal followed by said read control signal; and

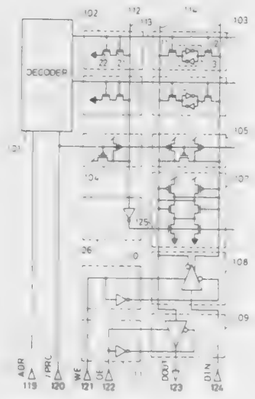
a control circuit having first and second outputs for respectively providing said read control signal and said load control in a mutually exclusive and non-overlapping manner.

5,394,354

SEMICONDUCTOR MEMORY AND ITS LAYOUT DESIGN

Akihiro Watabe, Nara, and Hisashi Kodama, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 21, 1993, Ser. No. 170,788
Claims priority, application Japan, Dec. 21, 1992, 4-340031
Int. Cl.[6] G11C *11/21*
U.S. Cl. 365—51 8 Claims



1. A semiconductor memory comprising:

a plurality of word lines,

a bit line,

a single word line transition detection signal line,

a plurality of memory cells respectively associated with said word lines, each of said memory cells producing an electric potential on said bit line according to stored data when an associated word line is selected from said word lines,

a plurality of word line transition detection circuits, respectively associated with said word lines, each of said word line transition detection circuits driving said word line transition detection signal line when an associated word line is selected from said word lines,

a sense enable signal generation circuit for generating a sense enable signal when said word line transition detection signal line is driven, and

a sense amplifier for amplifying an electric potential on said bit line when said sense enable signal generation circuit generates a sense enable signal,

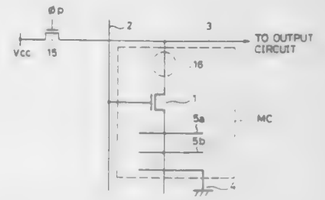
wherein said bit line and said word line transition detection signal line have the same parasitic capacitance.

5,394,355

READ ONLY MEMORY FOR STORING MULTI-DATA

Shinichi Uramoto; Tetsuya Matsumura; Masahiko Yoshimoto; Kazuya Ishihara, and Hiroshi Segawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 744,098, Aug. 13, 1991, Pat. No. 5,298,406. This application Aug. 20, 1993, Ser. No. 109,509
Claims priority, application Japan, Aug. 28, 1990, 2-227060; Dec. 1, 1990, 2-400081
Int. Cl.[6] G11C *17/00*
U.S. Cl. 365—104 12 Claims



1. A read only memory device comprising:

at least one bit line for transmitting internal data;

a plurality of word lines to which row driving signals are transmitted, respectively;

at least three reference potential transmission lines each for transmitting a potential;

potential setting means responsive to a potential designating signal for selectively establishing a potential of each of at least two of said at least three reference potential transmission lines; and

a plurality of memory cells disposed at respective intersections between said at least one bit line and respective said word lines for respectively storing data, each memory cell including a transistor element for connecting or disconnecting one of said at least three reference potential transmission lines to and from an associated bit line in response to said row driving signal on an associated word line, wherein

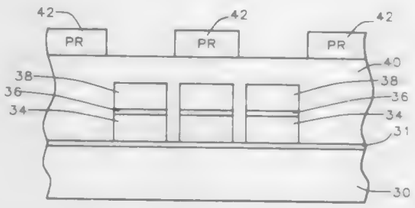
each memory cell can store multi-data of different addresses.

5,394,356

PROCESS FOR FORMING AN FET READ ONLY MEMORY DEVICE

Ming-Tzong Yang, Hsin Chu, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Division of Ser. No. 35,182, Mar. 22, 1993, Pat. No. 5,306,657. This application Feb. 14, 1994, Ser. No. 194,738
Int. Cl.[6] H01L *21/265*
U.S. Cl. 365—177 10 Claims



1. A Read Only Memory device comprising:

a semiconductor substrate embodying a second type background impurity dopant;

a plurality of closely spaced line regions substrate adjacent the top surface of the substrate embodying a first opposite type impurity dopant that constitute the bit lines;

a thin insulating gate layer on the surface of the substrate;

a plurality of closely spaced conductive word lines, arranged orthogonally relative to said bit lines, on said substrate;

a pattern of code implant regions of a first type impurity dopant in said substrate selectively located between said bit lines and underlying portions of said word lines;

said word lines comprised of a lower layer of polysilicon, an intermediate etch stop layer of a material that is etch resistant to an etch for polysilicon, and an overlying upper layer of polysilicon, said word line portions over said code implant regions having only a lower polysilicon layer and a etch stop layer, and

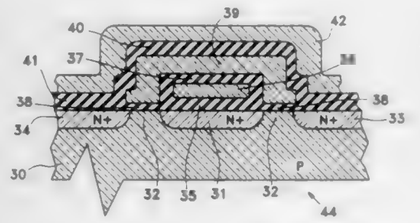
a thick insulating layer over said bit lines.

5,394,357

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

Shih-Chiang Yu, 10451 Davison Ave., Culpertine, Calif. 95014

Filed Mar. 1, 1993, Ser. No. 24,258
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—182 7 Claims



1. A non-volatile memory cell comprising:

a semiconductor substrate of a first conductivity type;

a source formed in said semiconductor substrate;

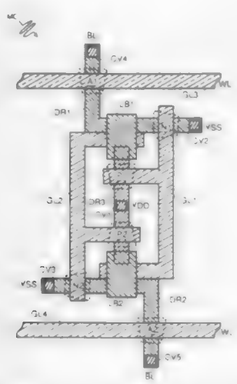
a drain formed is said semiconductor substrate and spaced from said source;

a diffusion region of a second conductivity type formed in said semiconductor substrate and between said source and said drain;

channels formed between said diffusion region and said drain, and between said diffusion region and said source;

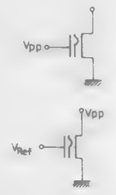
a first control gate dielectrically disposed atop said diffusion region;
a floating gate dielectrically disposed atop said first control gate and said channels; and
a second control gate dielectrically disposed atop said floating gate;
wherein when said first and second control gates are substantially simultaneously energized to a first set of potential values, electrical charges are couplingly induced into said floating gate from said channels by the Fowler-Norheim tunneling effect allowing said floating gate to couplingly vary the conductivity of said channels after the de-energization of said control gates, thereby enabling the non-volatile memory cell to be programmable, and wherein when said first and second control gates are substantially simultaneously energized to a second set of potential values, electrical charges are coupling induced out of said floating gate to said channel by the Fowler-Nordheim tunneling effect allowing said floating gate to couplingly vary the conductivity of said channels after the de-energization of said control gates, thereby enabling the nonvolatile memory cell to be deprogrammable.

5,394,358
SRAM MEMORY CELL WITH TRI-LEVEL LOCAL INTERCONNECT
Tiao-Yuan Huang, Cupertino, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.
Filed Mar. 28, 1994, Ser. No. 219,693
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—182 **4 Claims**



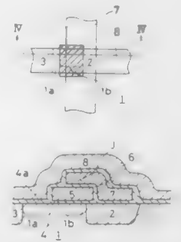
1. In a six-transistor static random access memory cell comprising first and second access transistors, first and second pull-down transistors, and first and second pull-up transistors, each of said transistors having a gate and two source/drain regions, said memory cell further comprising at least 4 interconnect layers including a diffusion layer, a gate layer, an inter-level interconnect layer, and a metal remote interconnect structure, the improvement wherein:
said diffusion layer defines the source/drain regions for all six of said transistors, said diffusion layer including
a first diffusion region defining and electrically connecting a source/drain region of said first access transistor with a source/drain region of a transistor of a first set consisting of said first pull-up transistor and said first pull-down transistor, and
a second diffusion region defining and electrically connecting a source/drain region of said second access transistor with a source/drain region of a transistor of a second set consisting of said second pull-up transistor and said second pull-down transistor;
said gate layer defines the gates for all six of said transistors, said gate layer including
a first inter-gate conductor electrically connecting the gate of said first pull-up transistor and the gate of said first pull-down transistor, and
a second inter-gate conductor electrically connecting the gate of said second pull-up transistor and the gate of said second pull-down transistor; and
said inter-level interconnect layer includes
a first inter-level interconnect electrically connecting said second inter-gate conductor with said first diffusion region and with a source/drain region of the transistor of said first set not defined by said first diffusion region, and
a second inter-level interconnect electrically connecting said first inter-gate conductor with said second diffusion region and with a source/drain region of the transistor of said second set not defined by said second diffusion region.

5,394,359
MOS INTEGRATED CIRCUIT WITH ADJUSTABLE THRESHOLD VOLTAGE
Jacek Kowalski, Trets, France, assignor to Gemplus Card International, Gemenos, France
Continuation of Ser. No. 784,971, Oct. 30, 1991, abandoned, which is a continuation of Ser. No. 551,946, Jul. 11, 1990, abandoned. This application Sep. 14, 1992, Ser. No. 944,811
Claims priority, application France, Jul. 20, 1989, 89 09780
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—185 **8 Claims**



3. Process for producing an adjustable threshold voltage, comprising the following steps: a cell of the memory type is selected in an integrated circuit, this cell of the memory type being of the type having a floating gate transistor which is programmable and erasable electrically by the storage of charges through the tunnel effect in the floating gate of said transistor, under the effect of an intense field, a memory cell of this type being readable by exposing one of the terminals of this cell to a reading potential, the read state being deduced from whether or not this floating gate transistor is rendered conductive, the integrated circuit being permanently connected on the one hand to a supply voltage and on the other hand to earth potential; wherein the source of this floating gate transistor is brought to an earth potential, the control gate of this floating gate transistor is brought to a reference voltage used to determine a desired threshold voltage, and the drain of this floating gate transistor is brought to a high programming voltage; the threshold voltage being then adjusted in a calibration phase by the storage of a predefined quantity of charges under the floating gate, in which phase the programming voltage increases until the moment when the tunnel effect is set up, the charges then accumulating under the floating gate, the transistor then commencing to conduct and the current which occurs on the drain causing a fall in the programming voltage, which ceases to increase, the threshold voltage being obtained in this manner.

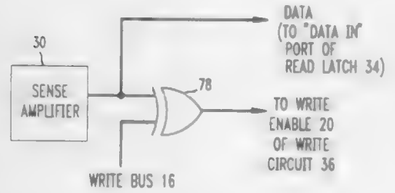
5,394,360
NON-VOLATILE LARGE CAPACITY HIGH SPEED MEMORY WITH ELECTRON INJECTION FROM A SOURCE INTO A FLOATING GATE
Takahiro Fukumoto, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 725,456, Jul. 3, 1991, abandoned. This application Jun. 18, 1993, Ser. No. 77,953
Claims priority, application Japan, Jul. 6, 1990, 2-180092
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—185 **2 Claims**



1. A non-volatile semiconductor memory where information is written in the memory by injecting electrons into a floating gate from a source, comprising:
a semiconductor substrate;
drain and source regions provided on a surface of the semiconductor substrate having a conductivity type different from another conductivity type of the semiconductor substrate;
a channel region formed between the drain and source regions divided into first and second portions;
the floating gate covering the second portion of the channel region and aligned with the drain region, the source region being offset by the first portion of the channel region from the floating gate and the drain and source regions being asymmetrically located with respect to the floating gate;
a control gate electrode for substantially controlling surface potentials under and in the vicinity of the floating gate, wherein the control gate electrode is directly capacitively-coupled with at least a portion of the floating gate electrode; and
a selection gate electrode for directly controlling surface potentials of the first portion of the channel region, wherein the selection gate electrode is transverse to the control gate electrode and is formed (1) over an entire width of the control gate electrode, (2) over a substantial portion of the floating gate electrode, (3) over the entire channel region, and (4) over at least a portion of the drain and source regions;
wherein the control gate electrode overlaps said at least a portion of the floating gate electrode, and the selection gate electrode overlaps and is directly capacitively-coupled with another portion of the floating gate electrode and with the first portion of the channel region and is partially indirectly capacitively-coupled with the floating gate electrode through the control gate electrode.

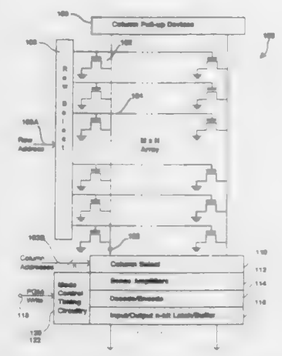
5,394,361
READ/WRITE MEMORY
Alexander G. Dickinson, Highlands, N.J., assignor to AT&T Corp., Murray Hill, N.J.
Filed Oct. 22, 1992, Ser. No. 965,138
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.04 **5 Claims**

1. Apparatus comprising:
a random access memory Capable of reading from and writing to a memory cell of said memory in a single memory access cycle;
means for comparing the value of a bit stored at said memory cell with the value of an input bit to be written to said memory cell; and



means responsive to the comparing means for writing the input bit value to said memory cell only if the input bit value differs from the value of the bit stored at said memory cell.

5,394,362
ELECTRICALLY ALTERABLE NON-VOLTATILE MEMORY WITH N-BITS PER MEMORY CELL
Gerald J. Banks, 200 Pawnee Pl., Fremont, Calif. 94539
Continuation of Ser. No. 652,878, Feb. 8, 1991, Pat. No. 5,218,569. This application Jun. 4, 1993, Ser. No. 71,816
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—189.01 **3 Claims**



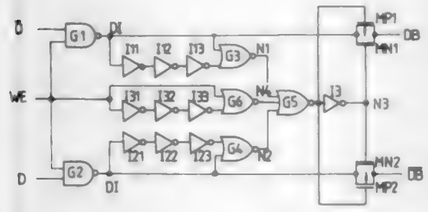
2. An electrically alterable non-volatile multi-level memory device, comprising:
a multi-level memory cell including a floating gate FET having a channel region connected between an output terminal and a terminal for a first reference voltage, said FET having a floating gate for storing electrons which modify the voltage threshold of said FET and which controls the conductivity of the channel region of the FET;
means for storing electrons on the floating gate so that the conductivity state of the channel region of the FET is within one of K^n pre-determined conductivity ranges where K is the base of the numbering system being used and n is the number of bits per cell and the result of K^n is greater than two; and
comparator means for comparing a representation of the conductivity state of the channel region of said memory cell with a representation of an n-bit input signal to be stored in the memory cell;
wherein said floating gate of said memory cell has an applied voltage which is set to one of a plurality of voltage levels by said electron storing means corresponding to input information.

5,394,363

PULSE WRITE DRIVER CIRCUIT

Gwang M. Han, Bubaleub, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Dec. 29, 1993, Ser. No. 174,799
Claims priority, application Rep. of Korea, Dec. 31, 1992, 1992-27338
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—189.01 1 Claim



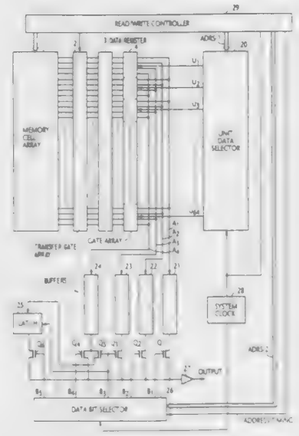
1. A pulse write driver circuit comprising:
first NANDing means having a first input terminal for inputting a write enable signal and a second input terminal for inputting a data input transfer negative signal;
second NANDing means having a first input terminal for inputting the write enable signal and a second input terminal for inputting a data input transfer positive signal;
an odd number of first inversion means for sequentially inverting an output signal from said first NANDing means;
first NORing means having a first input terminal for inputting the output signal from said first NANDing means and a second input terminal for inputting an output signal from said first inversion means;
an odd number of second inversion means for sequentially inverting an output signal from said second NANDing means;
second NORing means having a first input terminal for inputting the output signal from said second NANDing means and a second input terminal for inputting an output signal from said second inversion means;
an odd number of third inversion means for sequentially inverting the write enable signal;
third NORing means having a first input terminal for inputting the write enable signal and a second input terminal for inputting an output signal from said third inversion means;
fourth NORing means having a first input terminal for inputting an output signal from said first NORing means, a second input terminal for inputting an output signal from said second NORing means and a third input terminal for inputting an output signal from said third NORing means;
fourth inversion means for inverting an output signal from said fourth NORing means;
a first NMOS transistor having a gate connected to an output terminal of said fourth inversion means, a drain connected to an output terminal of said first NANDing means and a source connected to a positive data bus line;
a second NMOS transistor having a gate connected to the output terminal of said fourth inversion means, a drain connected to an output terminal of said second NANDing means and a source connected to a negative data bus line;
a first PMOS transistor having a gate connected to an output terminal of the fourth NORing means, a drain connected to the output terminal of said first NANDing means, and a source connected to said positive data bus line; and
a second PMOS transistor having a gate connected to the output terminal of the fourth NORing means, a drain connected to the output terminal of said second NANDing means, and a source connected to said negative data bus line.

5,394,364

HIGH-SPEED MEMORY READOUT CIRCUIT USING A SINGLE SET OF DATA BUFFERS

Takafumi Masuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 31, 1994, Ser. No. 220,979
Claims priority, application Japan, Apr. 1, 1993, 5-075979
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—189.01 3 Claims



1. A circuit arrangement for reading data bits from a memory cell array, comprising:
a data register for storing the data bits from the memory cell array;
a transfer gate array connected to said data register, said transfer gate array being equally divided into groups of first to k-th transfer gates;
first to k-th data buffers connected respectively to the first to k-th transfer gates of different groups;
first readout means for selecting one of said groups of transfer gates and causing the transfer gates of the selected group to transfer first to k-th data bits of unit data from said data register to said first to k-th data buffers, respectively;
a latch circuit; and
second readout means for selecting i-th to k-th data bits stored in the i-th to the k-th data buffers (where i is in a range from 1 to k), and if i is not equal to k, sequentially reading the i-th to (k−1)th data bits from said data buffers to an output terminal of the circuit arrangement, storing the k-th data bit from the k-th data buffer into said latch circuit when said (k−1)th data bit is read and reading the k-th data bit from said latch circuit to said output terminal when data bits of subsequent unit data are transferred to said data buffers, and if i is equal to k, reading the k-th data bit from said k-th data buffer to said output terminal when data bits of subsequent unit data are transferred to said data buffers.

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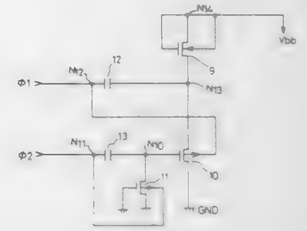
CHARGE PUMP CIRCUIT HAVING AN IMPROVED CHARGE PUMPING EFFICIENCY

Yasuhiko Tsukikawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1993, Ser. No. 45,069
Claims priority, application Japan, Apr. 16, 1992, 4-122594
Int. Cl.[6] G11C 5/14
U.S. Cl. 365—189.09 20 Claims

1. A charge pump circuit for generating a predetermined voltage, comprising:

a first transistor element responsive to a first clock signal applied through first capacitance means for transferring a first reference voltage to a first node, said first node receiving a second clock signal through capacitive coupling of second capacitance means; and



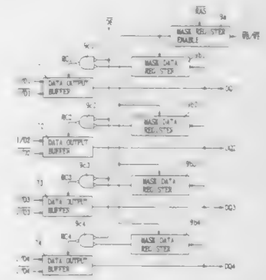
a rectifying element connected between the first node and a second node such that electric charges required for generating said predetermined voltage are unidirectionally transferred, said rectifying element comprising a diode-connected transistor element different in conductivity type from said first transistor element.

5,394,366

ENABLING DATA ACCESS OF A UNIT OF ARBITRARY NUMBER OF BITS OF DATA IN A SEMICONDUCTOR MEMORY

Takayuki Miyamoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 925,152
Claims priority, application Japan, Aug. 9, 1991, 3-200278
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—195 13 Claims



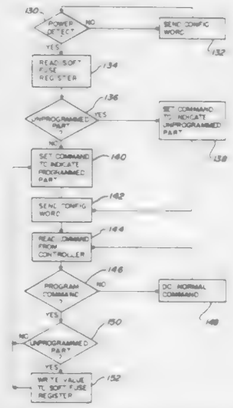
1. A dynamic semiconductor memory device including a memory cell array having a plurality of memory cells each for storing one-bit data, said semiconductor memory device enabling data to be read on a unit of a plurality of bits comprising:
a) means for receiving an external address signal;
b) means for receiving an external row address strobe signal;
c) means for receiving an external column address strobe signal;
d) decoder means responsive to said row address strobe signal and said column address strobe signal for decoding said address signal to simultaneously select memory cells of said plurality of bits out of the plurality of memory cells included in said memory cell array;
e) writing means responsive to an externally generated write control signal for writing externally applied data into said selected memory cells;
f) means for receiving an external signal for designating an operation mode for inhibiting read of a specific bit out of said plurality of bits;
g) means responsive to said received operation mode designating signal for receiving an external bit designating signal for designating a bit of which a read operation is to be inhibited out of said plurality of bits and;
h) read control means for selectively inhibiting read of data of a specified bit responsive to the bit designating signal received by said bit designating signal receiving means and reading a non-inhibited bit of said plurality of bits.

5,394,367

SYSTEM AND METHOD FOR WRITE-PROTECTING PREDETERMINED PORTIONS OF A MEMORY ARRAY

Jeffery E. Downs, and Michael W. Yeager, both of Colorado Springs, Colo., assignors to Ramtron International Corporation, Colorado Springs, Colo.

Filed Mar. 18, 1994, Ser. No. 210,699
Int. Cl.[6] G11C 7/00, 11/22
U.S. Cl. 365—195 21 Claims



1. A method for write-protecting predetermined portions of a memory array utilizing a number of lock bits settable for controlling subsequent writes to selected ones of said predetermined portions of said memory array, said method comprising the steps of:
defining a first memory location for containing a known value forming a soft fuse value and a second memory location for containing said lock bits;
reading the contents of said first memory location to determine a read-out contents thereof;
comparing said read-out contents of said first memory location to said soft fuse value;
allowing setting and resetting of individual ones of said lock bits if said read-out contents do not correspond to said soft fuse value; and
allowing setting and disallowing resetting of individual ones of said lock bits if said read-out contents correspond to said soft fuse value.

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SEMICONDUCTOR MEMORY DEVICE

Sampei Miyamoto, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01142, § 371 Date Jun. 21, 1993, § 102(e) Date Jun. 21, 1993, PCT Pub. No. WO93/05512, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 28, 1991, Ser. No. 50,231
Int. Cl.[6] G11C 11/407, 29/00
U.S. Cl. 365—200 106 Claims

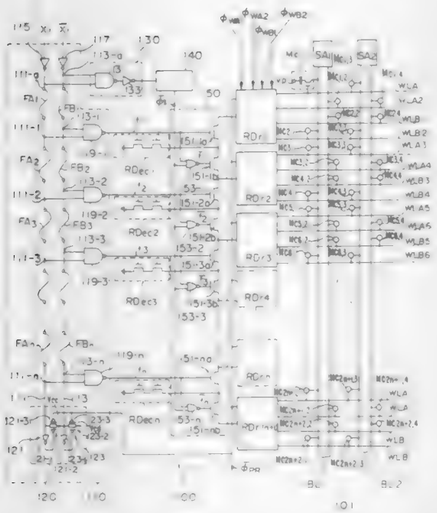
1. A semiconductor memory device comprising:
a main select line group having first and second select lines;
a redundancy select line group having third and fourth select lines;

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a first select line activation circuit for activating one of the select lines in the main select line group in response to first and second control signals, the first select line activation circuit activating the first select line when the first control signal is at a first potential level and activating the second select line when the first control signal is at a second potential level;

a second select line activation circuit for activating one of the select lines of the redundancy select line group in response to the first and second control signals, the second select line activation circuit activating the third select line when the first control signal is at the first potential level and activating the fourth select line when the first control signal is at the second potential level;

a first conductive. line having a first terminal to receive one of the first control signal and a supply signal having substantially the same potential level as the first control signal, a first node coupled to the first terminal and a first conductive portion connected between the first terminal and the first node;



a first potential supply circuit for causing the first node to be at substantially the same potential level as that of one of the first and second potential levels when the first conductive portion is blown;

a second conductive line having a second terminal to receive a third control signal, complementary to the first control signal, a second node coupled to the second terminal and a second conductive portion connected between the second terminal and the second node;

a second potential supply circuit for causing the second node to be at substantially the same potential level as that of one of the first and second potential levels when the second conductive portion is blown; and

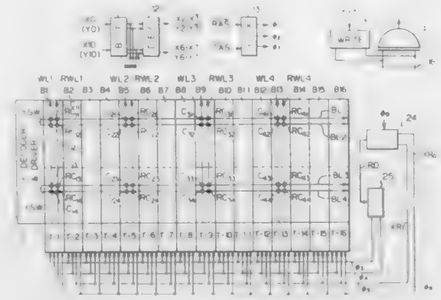
a control signal generating circuit for outputting the second control signal to the second select line activation circuit when the potential level at the first node and the potential level at the second node have a given relation with respect to each other, and outputting the second control signal to the first select line activation circuit when said given relation does not exist.

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SEMICONDUCTOR MEMORY DEVICE INCORPORATING REDUNDANCY MEMORY CELLS HAVING PARALLEL TEST FUNCTION

Akihiko Kagami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,194
Claims priority, application Japan, Jan. 30, 1992, 4-040329
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—200 **2 Claims**



1. A semiconductor memory device comprising:

a plurality of memory blocks each incorporating a plurality of memory cells and a plurality of redundancy memory cells;

said memory blocks being divided into a plurality of test groups;

said memory cells being located at intersections between a plurality of word lines and a plurality of bit lines;

said redundancy memory cells being located at intersections between a plurality of redundancy word lines and said bit lines;

normal decoder means for accessing one of said memory cells by a first address having a first address space;

said normal decoder means being separately provided for each of said memory blocks, comprising:

a plurality of series of normal word decoders incorporating drivers,

each series provided for one of said memory blocks, for activating one of said word lines thereof;

a parallel test means for simultaneously testing a predetermined number of said memory cells by a degenerate address showing degeneracies of predetermined values of said first address;

redundancy decoder means for accessing said redundancy memory cells by a second address having a second address space;

said redundancy decoder means being commonly provided for each of said test groups, comprising:

a plurality of redundancy driving circuits each provided for one of said memory blocks, for activating one of said redundancy word lines thereof; and

a single redundancy word decoder, provided commonly for all of said test groups, for activating said redundancy driving circuits thereof; and

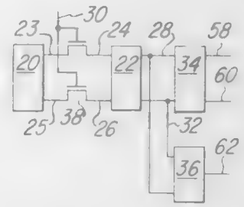
said degenerate address having a degenerate address space being written as said second address into only one location of said redundancy decoder means to replace at least one defective memory cell with its corresponding redundancy memory cell when at least one of said predetermined number of said memory cells tested by said degenerate address is determined to be defective.

5,394,370

HIGH SPEED PARALLEL TEST ARCHITECTURE

Robert N. Rountree, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 673,905, Mar. 22, 1991, Pat. No. 5,305,266.
This application Jan. 13, 1994, Ser. No. 180,634
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—201 **10 Claims**



1. A memory device comprising:

a. a plurality of memory cells;

b. a plurality of bit line pairs, each pair of which consists of first and second bit lines, for extracting data signals from said plurality of memory cells;

c. a first sense amplifier, coupled to a selected pair of bit lines, for amplifying selected data signals;

d. a pair of data input/output lines, consisting of first and second data input/output lines, for extracting said selected data signals from said selected pair of bit lines;

e. a second sense amplifier, comprising first and second driver MOS transistors, each having a gate electrode coupled to one bit line of said selected pair of bit lines, responsive to said selected data signals from said first sense amplifier, for amplifying said selected data signals;

f. an amplifier, having inputs coupled to receive said selected data signals from said second sense amplifier, for amplifying said selected data signals in a data reading operation;

g. first and second column selecting transistors, having gate electrodes connected to a column selecting line, for selectively coupling said selected pair of bit lines to said amplifier;

h. a first write transistor, having a current path coupling said first bit line to one output terminal of said second sense amplifier, said first write transistor being turned on in a data writing operation; and

i. a second write transistor, having a current path coupling said second bit line to the other output terminal of said second sense amplifier, said second write transistor being turned on in a data writing operation.

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SEMICONDUCTOR MEMORY DEVICE WITH SHARED SENSE AMPLIFIERS

Yasuhiro Hotta, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Japan

Continuation of Ser. No. 832,086, Feb. 6, 1992, abandoned. This application Dec. 7, 1993, Ser. No. 163,399
Claims priority, application Japan, Jul. 2, 1991, 3-161859
Int. Cl.[6] G11C *17/00*
U.S. Cl. 365—94 **8 Claims**

1. A semiconductor memory device comprising:

a sense amplifier;

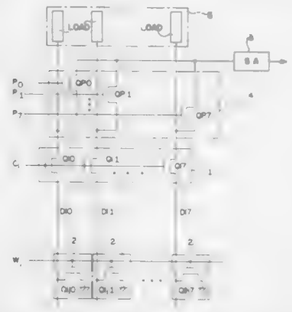
a plurality of memory cells each for storing information;

a plurality of loads;

a plurality of data lines each having a first portion and a second portion, each of said plurality of memory cells being connected to a corresponding one of said first portions, and each of said plurality of loads being connected to a corresponding one of said second portions;

first switching means for selectively connecting any one of said plurality of second portions to an input of said amplifier; and

second switching means for simultaneously connecting said second portions to said respective first portions of said



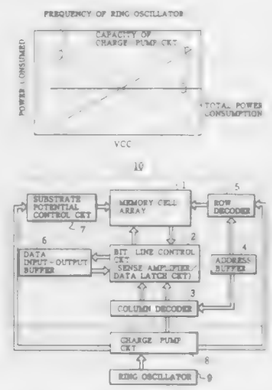
plurality of data lines to establish in cooperation with a corresponding one of said plurality of loads valid data on each of said second portions before said first switching means selectively connects any one of said plurality to second portions of said input of said amplifier.

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SEMICONDUCTOR MEMORY DEVICE HAVING CHARGE-PUMP SYSTEM WITH IMPROVED OSCILLATION MEANS

Tomoharu Tanaka, and Riichiro Shirota, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 26, 1993, Ser. No. 37,585
Claims priority, application Japan, May 19, 1992, 4-426002
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—226 **13 Claims**



1. An electrically programmable non-volatile semiconductor memory device operated by a power supply voltage, said memory device comprising:

a memory system equipped with memory means having a non-volatile memory function;

an oscillating circuit for generating a signal having a frequency which is continuously increased in response to a decrease of said power supply voltage; and

a charge-pump circuit for generating a voltage required to write data into or erase data from said memory means by charge-pumping said power supply voltage in accordance with said signal generated by said oscillating circuit.

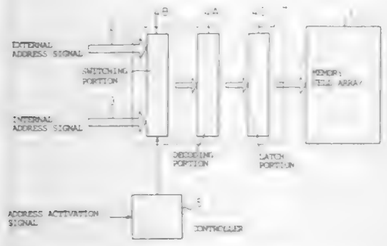
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SEMICONDUCTOR MEMORY HAVING A HIGH-SPEED ADDRESS DECODER

Satoru Kawamoto, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP91/01563, § 371 Date Jul. 7, 1992, § 102(e) Date Jul. 7, 1992, PCT Pub. No. WO92/09084, PCT Pub. Date May 29, 1992
PCT Filed Nov. 15, 1991, Ser. No. 854,642
Claims priority, application Japan, Nov. 16, 1990, 2-310566
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.06 11 Claims



9. A semiconductor memory comprising:

a memory cell array having at least one memory cell;

at least one address bus for transmitting a respective address signal;

an address decoder for receiving said at least one respective address signal; and

a controller for providing a control signal,

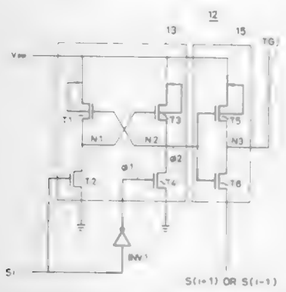
wherein said address decoder, has a decoding portion for decoding said at least one respective address signal, and a latch portion for latching said decoded address signal, said decoding portion carrying out a decoding operation in response to the control signal and said latching portion carrying out a latching operation in response to the same control signal, for selecting one of said at least one memory cell of said memory cell array.

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SEMICONDUCTOR MEMORY WITH IMPROVED TRANSFER GATE DRIVERS

Tamihiro Ishimura, and Sampei Miyamoto, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,677
Claims priority, application Japan, Mar. 13, 1992, 4-054702
Int. Cl.[6] H03K *19/017, 17/06*
U.S. Cl. 365—230.06 17 Claims



1. A semiconductor memory using electrical potentials Vss, Vcc, and Vpp, being intermediate between Vss and Vpp, comprising:

a sense amplifier array;

a first memory cell array coupled to said sense amplifier array through transistors controlled by a first transfer gate signal;

a second memory cell array coupled to said sense amplifier array through transistors controlled by a second transfer gate signal;

a first decoder for generating a first selection signal for selecting said first memory cell array, said first selection signal taking values of Vss when active and Vcc when inactive;

a second decoder for generating a second selection signal for selecting said second memory cell array, said second selection signal also taking values of Vss when active and Vcc when inactive;

a first transfer gate driver coupled to said first decoder and said second decoder, for outputting said second selection signal as said first transfer gate signal when said first selection signal is inactive, and outputting a signal having Vpp level as said first transfer gate signal irrespective of said second selection signal when said first selection signal is active, said first transfer gate driver including a first level shifter for shifting said first selection signal to generate a first control signal having a value of Vss when said first selection signal is active and Vpp when said first selection signal is inactive, and an output circuit having a first transistor with a source voltage of Vpp and a second transistor with a source voltage equal to said second selection signal, said first control signal being applied to gates of said first transistor and said second transistor, and said first transfer gate signal being taken from drains of said first transistor and said second transistor, both of the drains of said first and second transistors connected to each other; and;

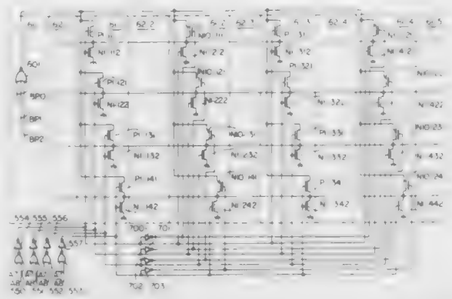
a second transfer gate driver coupled to said first decoder and said second decoder, for outputting said first selection signal as said second transfer gate signal when said second selection signal is inactive, and outputting a signal transfer gate signal having Vpp level as said second transfer gate signal irrespective of said first selection signal when said second selection signal is active.

5,394,375

ROW DECODER FOR DRIVING WORD LINE AT A PLURALITY OF POINTS THEREOF

Shinichi Iwashita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 8, 1993, Ser. No. 44,052
Claims priority, application Japan, Apr. 8, 1992, 4-115420
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.06 4 Claims



1. A semiconductor memory device comprising a plurality of word lines and a row decoder for selecting one of said word lines, said row decoder including a plurality of decoding circuits provided correspondingly to each of said word lines, each of said decoding circuits driving a corresponding word line to one of energizing and non-energizing levels in response to first and second control signals and including a first node supplied with said first control signal, a second node supplied with said second control signal, a first transistor connected between said first node and said corresponding word line and having a gate connected to said second node, a second transistor connected between said corresponding word line and a reference potential terminal and having a gate connected to said second node, a third transistor connected between said first node and said corresponding word line in parallel to said first transistor and having a channel type opposite to the channel type of said first transistor, said third transistor receiving at a gate thereof an inverted signal of said second control signal, said first and third transistors being turned ON when said second control signal takes an active level and said second transistor being turned ON when said second control signal takes an inactive level,

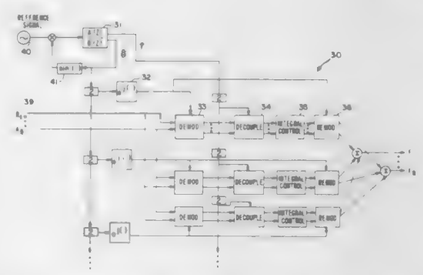
wherein each of said decoding circuits further includes a fourth transistor connected between said corresponding word line and said reference potential terminal in parallel to said second transistor and having a gate connected to said second node, said fourth transistor being turned ON when said second control signal takes said inactive level.

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METHOD AND APPARATUS FOR ACOUSTIC ATTENUATION

Laurence R. Riddle, Severna Park; John M. Sewell, Cockeysville, and Paul H. Kurtz, Bel Air, all of Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Dec. 17, 1993, Ser. No. 168,318
Int. Cl.[6] G10K *11/16*
U.S. Cl. 367—1 2 Claims



1. An apparatus for reducing acoustic radiation from an enclosure containing a fluid, said apparatus comprising:

(A) one or more sensors for detecting a vibration in a surface of said enclosure, said one or more sensors being adapted to generate signals in response to detected vibration;

(B) a radiation filter coupled to said one or more sensors, said radiation filter including a signal processor, for assigning weight values to said signals from said one or more sensors, and for generating summation signals therefrom;

(C) a control unit coupled to said radiation filter, said control unit including a digital processor adapted to perform a cancellation algorithm on the summation signal and a reference signal for calculating cancellation waveforms corresponding to said summation signals, said cancellation algorithm comprising

(a) means for calculating an estimated phase angle and an estimated frequency from said reference signal;

(b) means for generating a complex-valued analytic signal representing a first harmonic of the reference signal;

(c) a demodulating function adapted for performing a complex heterodyning of the analytic signal to generate a demodulated signal;

(d) a decoupling module adapted for recoupling the demodulated signal by performing a complex vector matrix multiplication with a vector of all degrees of freedom for the demodulated signal and a matrix representing a multi-channel inverse transfer function at the estimated frequency;

(e) means for converting an output of the complex vector matrix multiplication to a disturbance rejection signal by subjecting the output to an integral control law; and

(f) a remodulating function for converting the disturbance rejection signal back to the estimated frequency; and

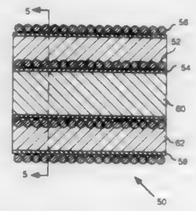
(D) a fluid displacement unit in communication with said fluid, and coupled to said control unit for receiving said cancellation waveforms, said fluid displacement unit being capable of imparting, to said fluid, a pressure oscillation corresponding to said cancellation waveforms, to thereby reduce acoustic radiation, said fluid displacement unit comprising a solid state actuator element surrounded by an electroconductive coil, said coil being capable of generating a magnetic field around said actuator element upon application of an electric current, said actuator element being capable of undergoing magnetostriction in response to said magnetic field.

5,394,377

POLARIZATION INSENSITIVE HYDROPHONE

Karlheinz vonBieren, Camarillo, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jun. 1, 1993, Ser. No. 69,726
Int. Cl.[6] G01B *9/02*
U.S. Cl. 367—149 5 Claims



1. A polarization-insensitive hydrophone that comprises first and second optical fibers coupled together to form a fiber optic interferometric sensor for sensing an acoustic signal comprising:

a first thin-walled hollow cylinder;

a portion of the first optical fiber wrapped around the first thin-walled hollow to form a reference leg of the fiber optic interferometric sensor;

a second thin-walled hollow cylinder, the first and second thin-walled hollow cylinders being arranged to be concentric with the first thin-walled hollow cylinder inside the second thin-walled hollow cylinder;

a portion of the second optical fiber wrapped around the second thin-walled hollow to form a sensing leg of the fiber optic interferometric sensor, the sensing leg being configured for exposure to acoustic wave signals and to static acoustic pressure; and

means for transmitting static acoustic pressure to the reference leg while absorbing acoustic wave signals to isolate the reference leg from acoustic wave signals incident upon the signal leg of the fiber optic interferometric sensor.

5,394,378

HYDROPHONE TRANSDUCTION MECHANISM

Anthony Dandridge, Burke; Aileen M. Yurek, Alexandria, both of Va., and Alan B. Tveten, Fort Washington, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 21, 1993, Ser. No. 78,887
Int. Cl.[6] H04R *23/00;* G01B *9/02*
U.S. Cl. 367—149 21 Claims

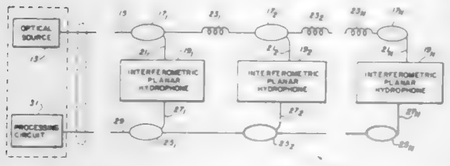
1. In an interferometric planar hydrophone having a plane, a

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sensing portion of the interferometric planar hydrophone comprising:

a support assembly comprised of first and second substantially parallel support members substantially parallel to the plane of the planar hydrophone and adaptable to be mounted on a surface;

a plurality of hollow compliant mandrels, each of said hollow compliant mandrels having a longitudinal axis and being mounted between said first and second support members of said support assembly such that their longitudinal axes are substantially parallel to each other and to the plane of the planar hydrophone in a fixed relationship with respect to each other to form a planar configuration;



a sensing optical fiber sequentially wound around each of said plurality of mandrels to form a single, serial, optical sensing path between an input position on a first one of said plurality of mandrels and an output position on a last one of said plurality of mandrels; and

an acoustically transparent material encapsulating said plurality of fiber-wound mandrels mounted to said support assembly to form a sealed compliant unit.

5,394,379

HYDROPHONE

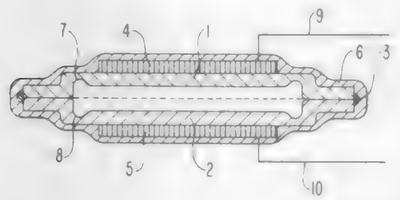
Helmut Weichart, Hanover, and Manfred Technau, Laatzen, both of Germany, assignors to Prakla-Seismos GmbH, Hanover, Germany

Filed Aug. 4, 1993, Ser. No. 101,975

Claims priority, application Germany, Aug. 11, 1992, 4226485

Int. Cl.[6] H04R *17/00*

U.S. Cl. 367—163 **19 Claims**



1. A hydrophone for a marine seismic streamer comprising the combination of

a pressure sensor including two steel disks (1, 2), each said disk having a central membrane portion and a peripheral attachment portion, said membrane portion lying in a plane parallel to and offset from a plane containing said attachment portion thereby forming a recess at one side of said disk, said membrane portion being flexible relative to said attachment portion and having an inner surface facing said recess and an outer surface, said disks being joined with said attachment portions contiguously abutting and said recesses facing each other to form a cavity between inner surfaces of said membrane portions;

means for fixedly gas-tight sealing said attachment portions together;

first and second piezoelectric sensors, one of said sensors being attached to an outer surface of each of said membrane portions, said inner surfaces of said membrane portions being free of sensors;

means defining an annular recess forming a partial reduction of said membrane thickness around the periphery of said membrane portion;

a protective layer of electrically non-conductive material entirely covering said sensor; and

means for supporting said sensor.

5,394,380

MAGNETO-OPTIC RECORDING APPARATUS AND METHOD THEREFOR

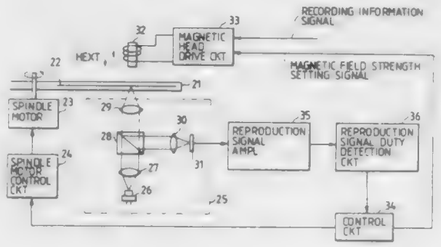
Koyo Hasegawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1993, Ser. No. 79,371

Claims priority, application Japan, Jun. 23, 1992, 4-187348; Jun. 10, 1993, 5-163875

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—13 **11 Claims**



1. A magneto-optic recording apparatus comprising:

an optical head for irradiating a magneto-optic recording medium with a light beam;

a magnetic head for applying a modulated magnetic field to the recording medium to record a signal on the recording medium;

a drive circuit for supplying a drive signal to said magnetic head;

reference signal generating means for causing said drive circuit to generate a reference signal having a predetermined duty;.

reproducing means for reproducing the signal recorded on the recording medium;

a detection circuit for detecting a duty of a reproduced signal; and

a control circuit for controlling the drive signal such that the duty of the signal recorded on the basis of the reference signal and detected by said detection circuit becomes close to the predetermined duty.

5,394,381

OPTICAL PICKUP APPARATUS AND MAGNETO-OPTICAL REPRODUCING SYSTEM

Atsushi Fukumoto, and Michio Oka, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 720,830, filed as PCT/JP90/01492, Nov. 15, 1990, published as WO 91/07749, May 30, 1991, abandoned. This application Jun. 13, 1994, Ser. No. 259934.

Claims priority, application Japan, Nov. 16, 1989, 1-298615

Int. Cl.[6] G11B *13/04*

U.S. Cl. 369—13 **4 Claims**

1. An optical pickup apparatus, comprising:

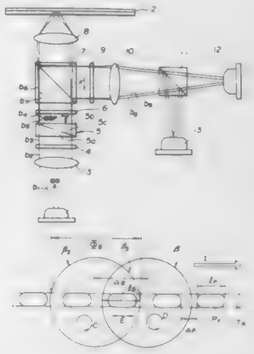
a light source for emitting a single light beam having a predetermined wavelength;

light beam splitting means for splitting said single light beam into two different light beams each having said predetermined wavelength and being linearly polarized in polarization directions intersecting each other at a normal angle;

a phase converting element upon which the two light beams split by said light splitting means are impinged for converting the phase of linearly polarized light waves of each of the two light beams incident thereon and producing two light beams that are circularly polarized in opposite rotational directions; and

means for irradiating a recording medium with the two light beams that are circularly polarized in opposite rotational directions, so that the two light beams are partially superimposed with each other on the recording medium and an overlapping area of the two partially superimposed light beams is linearly polarized.

2. A magneto-optical reproducing system, comprising:



an optical pickup apparatus for reading information recorded on a magneto-optical recording medium; said optical pickup comprising:

means for producing two light beams that are polarized in opposite rotational directions and for irradiating said recording medium with said two light beams;

means for partially superimposing said two light beams polarized in opposite directions with each other on said recording medium;

photodetecting means for detecting a light beam returning from a partially superimposed area resulting from said partially superimposing said two light beams.

5,394,382

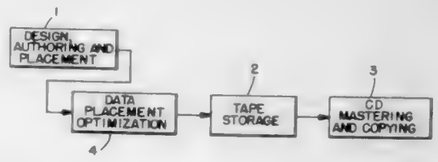
METHOD FOR THE ORGANIZATION OF DATA ON A CD-ROM

Limin Hu, Mount Kisco, N.Y., and Shauchi Ong, Mountain View, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 11, 1993, Ser. No. 16,379

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—32 **6 Claims**



1. A method for placing data on a compact disk of the type wherein data is stored on the disk surface in concentric tracks of equal capacity comprising the steps of:

Step 1) compiling in a first storage means a quantity of data in the form of data files arranged in directories including path data and data specifying the allocation of the files within the directories,

Step 2) transferring said compiled data from said first storage means to a data placement optimization stage,

Step 3) determining, in said data optimization stage, placement assignments of said data on said concentric tracks of said compact disk based on directory frequency statistics including the frequency at which said directories of said data are user accessed and rearranging said data in accordance with said placement assignments,

assigning a quantity of most frequently accessed directory data, path data and file allocation data to the track locations at the center of said compact disk substantially midway in distance between the first and last track locations on said compact disk, said track locations at said center of said compact disk being referred to herein as the hot spot,

assigning a selected amount of the next most frequently user accessed data to track locations proximate to one side of said hot spot tracks and the step of assigning a selected amount of the still next most frequently accessed data to track locations on the other side of said hot spot tracks,

Step 4) transferring said data rearranged in accordance with said placement assignments from said data optimization stage to a second storage means,

Step 5) and transferring said rearranged data from said second storage means to a compact disk mastering and copying means for placing said data on said compact disk in accordance with said placement assignments.

5,394,383

METHOD OF CONTROLLING REPRODUCTION FINISH OF OPTICAL DISC REPRODUCING APPARATUS AND THE OPTICAL DISC REPRODUCING APPARATUS

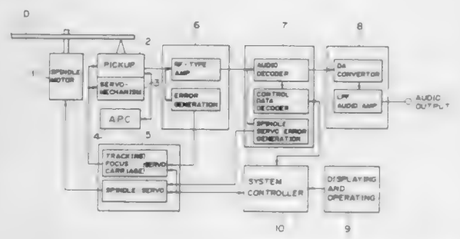
Osamu Hira, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 50,535

Claims priority, application Japan, Apr. 24, 1992, 4-107093

Int. Cl.[6] G11B *7/085*

U.S. Cl. 369—32 **13 Claims**



7. An optical disc reproducing apparatus for reproducing an optical disc having a program area, in which information is recorded one after another in a radial direction from an inner circumference of said program area toward an outer circumference thereof, said information including recording position information arranged at a predetermined interval in the radial direction, said apparatus comprising:

means for reading the recording position information one after another at the time of an information reproduction of the program area;

means for continually comparing a presently read recording position information with a previously read recording position information, which has been read immediately before the presently read recording position information;

means for moving a reading position by a predetermined number M of tracks toward the outer circumference, when the previously read recording position information indicates a more outer circumferential side than the presently read recording position information according to a result of comparing;

means for distinguishing whether the reading position after

moving is in an information unrecorded area where the information reproduction cannot be normally performed or in an information recorded area where the information reproduction can be normally performed; and

means for moving the reading position by a predetermined number N of tracks, which is greater than said number M, toward the inner circumference, when the reading position after moving is in the information unrecorded area according to a result of distinguishing, and finishing the information reproduction by stopping rotating the optical disc.

5,394,384

REPRODUCING METHOD FOR EXCLUDING UNDESIRABLE TUNES BY OPERATING A SINGLE MANIPULATOR

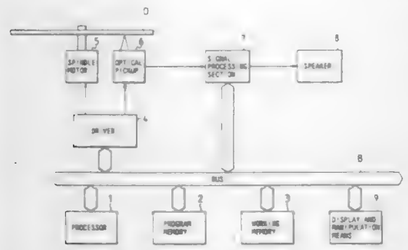
Yoshio Aoyagi, and Hiroyuki Abe, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 444,902, Dec. 4, 1989, abandoned. This application Mar. 18, 1994, Ser. No. 210,659

Claims priority, application Japan, Dec. 5, 1988, 63-306161

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369--32 **11 Claims**



1. In a recorded information reproduction method in which optional pieces of program information are selected in advance from among a plurality of pieces of program information recorded in a recording medium, and the optional pieces of program information are excluded in a reproduction operation, the improvement comprising the step of:

selecting each of said optional pieces of program information by operating, during reproduction thereof, a single manipulator which functions, upon operation thereof, to stop reproduction of a current piece of program information, to store information corresponding to excluded program information and to start reproduction of a next piece.

5,394,385

OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS FOR PERFORMING POSITIONING OF RECORDING/REPRODUCING SPOT BY SELECTION OF PAIRS OF PHOTO DETECTING ELEMENTS

Takefumi Sakurada, Akishima; Naoaki Tani; Takumi Sugaya, both of Hachioji; Takao Rokutan, Higashimurayama; Mitsuo Oshiba, Hachioji, and Akira Shirai, Hino, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1993, Ser. No. 115,707

Claims priority, application Japan, Sep. 7, 1992, 4-238409; Oct. 27, 1992, 4-288918

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.23 **31 Claims**

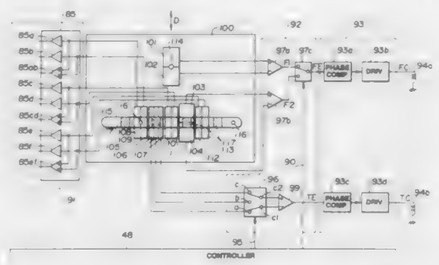
1. A beam-spot control unit comprising:

a light source for generating a light beam;

a beam irradiating optical system for irradiating said light beam to an optical recording medium having a plurality of tracks onto which information is recordable, to form at least one beam spot on said tracks;

photo detecting means arranged in a corresponding direction corresponding to a track transverse direction transversing said tracks, and having photo detecting elements for receiving returning light from said at least one beam spot at a plurality of positions equal to or more than three different from each other;

positioning-signal generating means for generating a positioning signal for performing positioning to a plurality of reference positions in said track transverse direction



within each of said tracks, on the basis of an output from said photo detecting means; and

position setting means for controlling said beam irradiating optical system by said positioning signal to set beam spot positions formed on said tracks through said beam irradiating optical system, to an optional position of said plurality of reference positions.

5,394,386

OPTICAL DISK HIGH-SPEED SEARCH CONTROL DEVICE

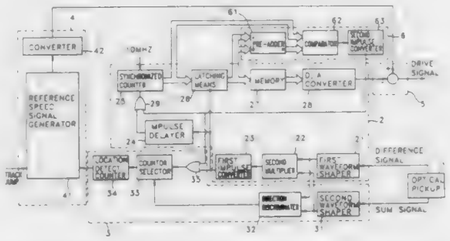
Jeong-il Park, Suwon, and Cheol-won Lee, Euiwang, both of Rep. of Korea, assignors to Samsung Eectronics Co., Ltd., Kyungki, Rep. of Korea

Filed Oct. 6, 1993, Ser. No. 132,312

Claims priority, application Rep. of Korea, Jan. 29, 1993, 93-1183

Int. Cl.[6] G11B *7/085*

U.S. Cl. 369—44.28 **5 Claims**



1. An optical disk high-speed search control device which directly counts the number of tracks of an optical disk and searches for a target track at high speed, said device comprising:

a speed detector for counting pulses of a track traverse signal detected by an optical pickup and generating a speed detecting signal indicative of optical pickup movement speed, said speed detector including:

(i) a first waveform shaper for shaping the signal detected by said optical pickup;

(ii) a doubler for doubling the frequency of the signal shaped by said first waveform shaper;

(iii) a first impulse converter for converting the signal output from said doubler into an impulse signal;

(iv) an impulse delayer for delaying the impulse signal

output from said first impulse converter by one cycle of the impulse signal;

(v) first OR means for performing a logical sum operation on the delayed impulse signal and an error correction signal;

(vi) a synchronized counter for counting a clock signal during a half cycle of the impulse signal;

(vii) a latch for latching the value calculated by counting the clock signal during a half cycle of the impulse signal;

(viii) a memory for storing speed reduction/acceleration data corresponding to a jump speed for moving the optical pickup; and

(ix) a digital-to-analog converter receiving the speed reduction data from said memory for converting the acceleration data into an analog speed signal;

a track number counter for counting the pulses of the detected track traverse signal in accordance with an intended transfer direction;

a speed controller for converting the pulses counted by said track number counter into a reference speed signal in accordance with a track jump command; and

a drive speed generator responding to the reference speed signal and speed detecting signal to generate a drive speed signal for the optical pickup.

5,394,387

INFORMATION RECORDING/REPRODUCING METHOD

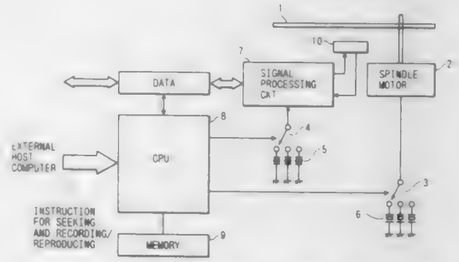
Yoshihiko Watanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 921,640

Claims priority, application Japan, Aug. 2, 1991, 3-194112

Int. Cl.[6] H04N *5/76*

U.S. Cl. 369—111 **17 Claims**



1. An information recording and/or reproducing method in which a recording area is divided into a plurality of zones in the radial direction of a disk so that the lengths of recording pits become the same in the entire recording area of the disk and the recording and/or reproduction of information is effected with a number of revolutions of the disk changed in each zone from an inner peripheral zone toward an outer peripheral zone, including the step of:

effecting the recording or reproduction of the information without changing the number of revolutions if the amount of information to be recorded or reproduced is smaller than a predetermined amount after a recording and/or reproducing head performs a seeking operation from a zone in which the recording and/or reproducing head is in a standby state to a different zone to effect the recording or reproduction operation.

5,394,388

MULTIPLE MICROPROBE ARRAYS FOR RECORDING AND REPRODUCING ENCODED INFORMATION

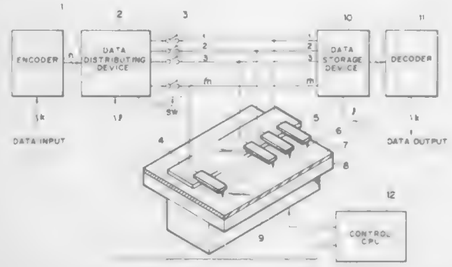
Katsunori Hatanaka, Yokohama; Kunihiro Sakai, Isehara; Takahiro Oguchi, Ebina; Akihiko Yamano, Sagamihara, and Shunichi Shido, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 889,404, May 28, 1992, abandoned. This application May 16, 1994, Ser. No. 243,524

Claims priority, application Japan, Jun. 5, 1991, 3-134211

Int. Cl.[6] G11B *9/00*

U.S. Cl. 369—126 **14 Claims**



1. An information recording apparatus for recording information on a recording medium using probe electrodes, said apparatus comprising:

a recording medium;

a plurality of probe electrodes opposing said recording medium;

means for encoding information to be recorded;

means for distributing the encoded information to said plurality of probe electrodes; and

means for driving said plurality of probe electrodes on the basis of the distributed information so as to record the information on said recording medium.

5,394,389

RING INTERWORKING BETWEEN BIDIRECTIONAL LINE-SWITCHED RING TRANSMISSION SYSTEMS AND PATH-SWITCHED RING TRANSMISSION SYSTEMS

Wilhelm Kremer, Andover, Mass., assignor to AT&T Corp., Murray Hill, N.J.

Filed Oct. 22, 1993, Ser. No. 141,141

Int. Cl.[6] H04L *1/20, 1/22*

U.S. Cl. 370—16.1 **15 Claims**

1. A communications system comprising:

a bidirectional line-switched ring transmission system including first and second communications paths for transporting communications circuits in opposite directions around the ring;

a path-switched ring transmission system including first and second communications paths for transporting communications circuits in opposite directions around the ring;

each communications circuit having a first bit rate and including a plurality of digital signals each having a lower bit rate than the first bit rate;

a first interworking node having a first ring node in each of the bidirectional line-switched ring transmission system and the path-switched ring transmission system and a first inter-ring grooming apparatus interposed between the first ring nodes for arranging the lower bit rate digital signals into primary communications circuits at the first bit rate;

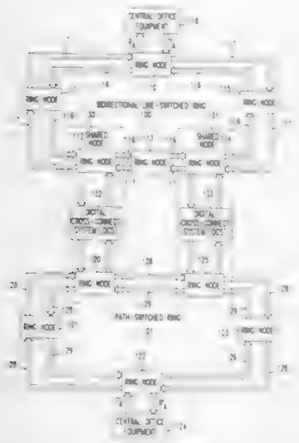
a second interworking node having a second ring node in each of the bidirectional line-switched ring transmission system and the path-switched ring transmission system and a second inter-ring grooming apparatus interposed between the second ring nodes for arranging the lower bit

rate digital signals into primary communications circuits at the first bit rate, said second ring node in the bidirectional line-switched ring transmission system being provisioned to supply at least one secondary inter-ring groomed communications circuit to the first ring node in the bidirectional line-switched ring transmission system, the secondary communications circuit corresponding to a primary inter-ring groomed communications circuit being supplied from the first inter-ring grooming apparatus to the first ring node in the bidirectional line-switched ring transmission system, one of said interworking nodes being a primary interworking node and the other of said interworking nodes being a secondary interworking node;

means associated with the first ring node in the bidirectional line-switched ring transmission system including

means for demultiplexing the at least one secondary communications circuit to obtain the plurality of lower bit rate digital signals,

means for evaluating in accordance with prescribed criteria the lower bit rate digital signals from the secondary communications circuit on a pair-wise basis with corresponding lower bit rate digital signals of the corresponding primary communications circuit to determine the lower bit rate signal in each pair which is least corrupted,



means responsive to the results of the evaluating for selecting the the least corrupted one of the lower bit rate digital signals in the pairs,

means for combining the selected lower bit rate digital signals into a new primary communications circuit and

first means for normally inserting the new primary communications circuit into a communications path in the bidirectional line-switched ring transmission system,

wherein the evaluation and selection of the lower bit rate digital signals is only performed in the primary one of the interworking ring nodes in the bidirectional line-switched ring transmission system, said second ring node in the path-switched ring transmission system being provisioned to supply at least one secondary inter-ring groomed communications circuit to a first ring node in the path-switched ring transmission system, the secondary communications circuit corresponding to a primary inter-ring groomed communications circuit being supplied from the first inter-ring grooming apparatus;

means associated with the first ring node in the path-switched ring transmission system including

means for demultiplexing the at least one secondary communications circuit to obtain the plurality of lower bit rate digital signals,

means for evaluating in accordance with prescribed criteria the lower bit rate digital signals from the secondary communications circuit on a pair-wise basis with corresponding lower bit rate digital signals of the corresponding primary communications circuit, to determine the lower bit rate signal in each pair which is least corrupted,

means responsive to the results of the evaluating for selecting the least corrupted one of the lower bit rate digital signals in the pairs,

means for combining the selected lower bit rate digital signals into a new primary communications circuit and

second means for inserting the new primary communications circuit into the first and second communications paths in the path-switched ring transmission system; and

first means in the second ring node in the path-switched ring transmission system for normally selecting the new primary communications circuit from the first ring node to be passed through it on a communications path,

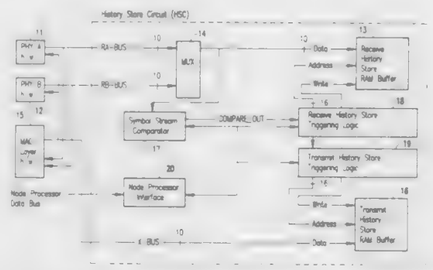
wherein the evaluation and selection of the lower bit rate digital signals is only performed in the primary one of the interworking ring nodes in the path-switched ring transmission system.

5,394,390

FDDI NETWORK TEST ADAPTER HISTORY STORE CIRCUIT (HSC)

David R. Stauffer, League City; Rebecca S. McMahon, Houston, both of Tex., and Thomas J. Eckenrode, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1993, Ser. No. 144,989
Int. Cl.[6] H04J *1/16*
U.S. Cl. 370—17 **10 Claims**



1. A history store circuit that provides an interface between a physical (PHY) layer hardware and a memory system to record symbol stream segments received from a fiber optic distributed data interface (FDDI) network, comprising:

a symbol stream comparator (**17**) connected to receive an incoming symbol stream from said physical layer hardware for comparing said incoming symbol stream with a symbol trigger sequence received from said FDDI network and for generating a compare output if a match occurs;

history store triggering logic (**18**, **19**) responsive to said compare output from said symbol stream comparator to control symbol stream data storage in said memory system, said history store triggering logic having a plurality of modes of operation; and

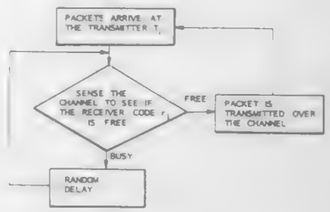
a node processor interface (**20**) connected to said symbol stream comparator and said history store triggering logic for functioning as a control and status interface for a node processor, said node processor for controlling the modes of operation of said history store triggering logic and for reading conditions of said symbol stream comparator, said memory system and said history store triggering logic.

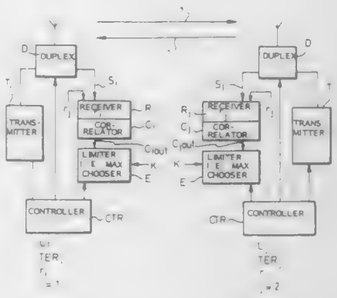
5,394,391

METHOD OF CONTROLLING THE OPERATION OF A PACKET SWITCHED CDMA TELECOMMUNICATION NETWORK

Xiao H. Chen, and Juhani Oksman, both of Oulu, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

PCT No. PCT/FI92/00098, § 371 Date Sep. 27, 1993, § 102(e) Date Sep. 27, 1993, PCT Pub. No. WO92/17964, PCT Pub. Date Oct. 15, 1992
PCT Filed Apr. 3, 1992, Ser. No. 119,225
Claims priority, application Finland, Apr. 5, 1991, 911648
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[6] H04B *7/216;* **H04J** *11/00, 13/00*
U.S. Cl. 370—18 **3 Claims**





1. A method of controlling the operation of a packet switched CDMA telecommunication network, wherein N network users ($U_{i,j}$) are connected to the network by a respective terminal (TER_i, TER_j, i, j=1→N), and each terminal (TER_i) communicates by means of a transmitter (T_i, i=1→N) and a receiver R_i, i=1→N) with a receiver (R_j) and a transmitter (T_j) of another terminal (TER_j, j=1→N) via a CDMA channel (**1**) forming the transmission path, and wherein a substantially orthogonal receiver code (r_i, r_j, i, j=1→N) is assigned to the terminal (TER_i, TER_j) of each user, which code is used by the other terminals of the network for addressing and encoding packets to the particular terminal, comprising:

sensing by a network terminal (TER_i, i=1→N) wanting to transmit the channel (**1**) forming the transmission path for the presence of the receiver code (r_j) of the receiving terminal (TER_j) of the other communicating party, in signals (S_i) transmitted by the other terminals, said receiving terminal (TER_j) being the terminal to which the sensing terminal (TER_i) wants to transmit data in packet format, and

if the receiver code (r_j) is not detected in the channel, initiating by said terminal (TER_i) wanting to transmit the transmission of packet-format data encoded by said receiver code (r_j) to the receiver (R_j) of the receiving terminal (TER_j), whereas

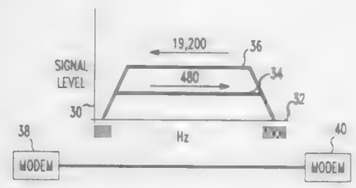
if the receiver code (r_j) is detected in the channel, remaining waiting of said terminal (TER_i) wanting to transmit so as to repeat the sensing step after a period of time.

5,394,392

METHOD FOR TRANSFERRING INFORMATION USING MODEMS

Robert E. Scott, Indian Rocks Beach, Fla., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 14, 1992, Ser. No. 990,159
Int. Cl.[6] H04B *1/38*
U.S. Cl. 370—24 **8 Claims**



1. A method for transferring information between communication devices, over a communication channel having a near end and a far end, said method, comprising the steps of:

transmitting a first plurality of symbols from the near end of the communication channel to the far end of the communication channel with a first average signal level at the near end of the communication channel;

receiving a second plurality of symbols at the near end of the communication channel that are transmitted from the far end of the communication channel with a second average signal level at the far end of the communication channel, said second average signal level being substantially higher than said first average signal level;

using overlapping portions of the communications channel's bandwidth for transmitting and receiving symbols; and

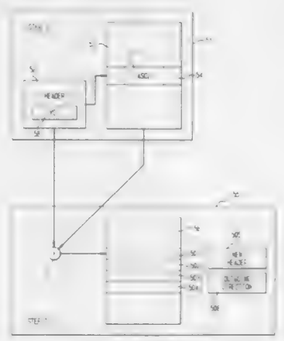
at least one of said communication devices monitoring a backlog of information to be transmitted and changing said first and second average signal levels when said backlog crosses a threshold.

5,394,393

METHOD FOR THE ROUTING OF A PACKET OF DATA IN A DIGITAL TRANSMISSION NETWORK

Jacques Brisson; Jean Caillemer, both of Paris, and Thierry Grenot, Clamart, all of France, assignors to Thomson-CSF, Courbevoie, France

Filed Aug. 18, 1992, Ser. No. 931,708
Claims priority, application France, Sep. 6, 1991, 91 11051
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—60 **6 Claims**



1. A method for the routing of a packet of data in a digital transmission network comprising a plurality of nodes which each have a memory, said packet, in transit through virtual channels that are themselves contained in virtual paths, being

formed by a header containing at least the identification numbers of the virtual paths and of the virtual channels that it takes, and by a part containing information elements to be conveyed wherein, at one of said nodes of the network and for said packet coming into said one node, said method comprises,

in a first step, in designating a word of a first part of said memory containing at least one portion of an address of a second part of said memory, wherein an address of said designated word contains at least an identification number of a path in which said packet of data entering said one node is in transit;

in a second step, in designating at least one zone of said second part of said memory containing at least one new header and information indicating a direction taken by said packet going out of said one node, wherein an address of said designated zone of said second part is a sum of an identification number of a channel taken by said packet coming into said one node and of said at least one portion of said address of said second part of said memory; and

switching said packet from said one node to a second node of said network depending on said information indicating a direction contained in said designated zone of said second part of said memory.

5,394,394

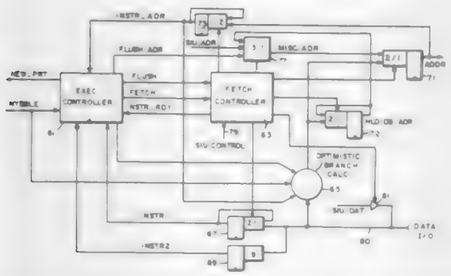
MESSAGE HEADER CLASSIFIER

William R. Crowther, Lincoln; Stanley A. Lackey, Jr., Groton; C. Philip Levin, Malden, and Daniel C. Tappan, Boxboro, all of Mass., assignors to Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed Jun. 24, 1993, Ser. No. 81,646

Int. Cl.[6] H04Q *11/04*; H04J *3/24*

U.S. Cl. 370—60 **20 Claims**



1. In a device for directing selected messages to a selected one of a plurality of output paths in accordance with the contents of a message header which comprises a sequence of bit groups presented successively, apparatus for quickly classifying headers; said apparatus comprising:

a memory;

stored in said memory, at a multiplicity of addresses, node instructions which comprise opcodes in association with respective next address characterizing data and terminator instructions which comprise identifying data for different header types;

means for reading a selected one of said bit groups from the header of a message being received; and

logic means responsive to a node instruction read from memory for initiating a memory read at a next address determinable from the current node instruction just read from memory and a header bit group obtained by said reading means, said logic means being responsive to a terminator instruction read from said memory for outputting respective header identifying data

whereby, for each header type to be classified, a corresponding pattern of node instructions and a terminator instruction can be written into said memory, thereby enabling said apparatus to identify the respective header.

5,394,395

CELL DELAY ADDITION CIRCUIT

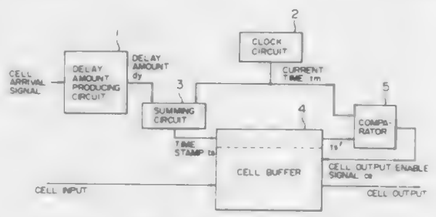
Tetsuya Nagai, Yokohama, and Katsuyuki Yamazaki, Tsurugashima, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Kokusai Denshin Denwa Co., Ltd., Tokyo, both of Japan

Filed Jul. 2, 1993, Ser. No. 84,958

Claims priority, application Japan, Jul. 10, 1992, 4-183985

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60 **8 Claims**



1. A cell delay addition circuit for receiving a series of cells and sequentially outputting the cells in a delayed fashion, said circuit comprising:

delay amount producing means, responsive to reception of said cells, for producing delay amount data representing delay amounts to be added to individual ones of said cells, said delay amounts being varied for different ones of said individual cells;

means for generating current time data representing a current time;

summing means for calculating individual sums of said delay amount data and said current time data for said individual ones of said cells and outputting the individual sums as individual time stamp data for said individual ones of said cells;

a cell buffer responsive to reception of said cells, for (i) storing the individual ones of said cells and said individual time stamp data corresponding to said individual ones of said cells, (ii) outputting an individual one of said stored cells when said cell buffer receives an enable signal, and (iii) outputting stored individual time stamp data corresponding to a stored cell to be output after said individual one of said stored cells; and

comparison means for (i) comparing said current time data with any stored individual time stamp data output from said cell buffer, and (ii) outputting said enable signal to said cell buffer when a value represented by said current time data is equal to or greater than a value represented by said any stored individual time stamp data output from said cell buffer.

5,394,396

SUPERVISION CONTROL SYSTEM

Shuji Yoshimura; Satoshi Kakuma; Naoki Aihara; Yasuhiro Aso, and Masami Murayama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 780,121, Oct. 19, 1991, abandoned.

This application Jun. 17, 1994, Ser. No. 261,890

Claims priority, application Japan, Oct. 19, 1990, 2-279153

Int. Cl.[6] H04J *3/14*

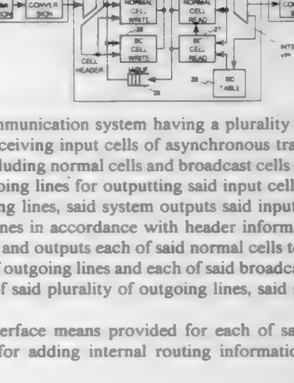
U.S. Cl. 370—60 **8 Claims**

6. A supervision control apparatus for a cell switching system comprising:

a cell counter including a memory to store a count value at an address uniquely accessed with a particular virtual channel identifier and a particular virtual path identifier, for counting cells having said particular virtual channel identifier and said particular virtual path identifier transmitted from a subscriber in a predetermined duration unit;

a judge circuit for attaching a sign to the cells when the count value incremented by said cell counter exceeds a first predetermined value;

a selector for discarding the excess cells over a second predetermined value when the count value incremented by said cell counter exceeds the second predetermined value; and



a multiplexer for discarding the excess cells over the first predetermined value, to which said sign is attached by said judge circuit, when a buffer does not have enough capacity to multiplex the cells.

5,394,397

SHARED BUFFER MEMORY TYPE ATM COMMUNICATION SYSTEM AND METHOD WITH A BROADCAST FACILITY

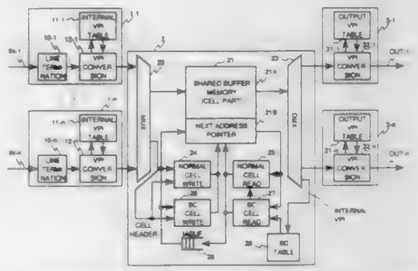
Junichirou Yanagi, Kodaira; Yoshihiro Ashi, Yokohama; Takahiko Kozaki, Koganei; Akihiko Takase, Tokyo, and Takashi Nakashima, Yokosuka, all of Japan, assignors to Hitachi, Ltd. and Nippon Telegraph and Telephone, both of Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,615

Claims priority, application Japan, Mar. 27, 1992, 4-070594

Int. Cl.[6] H04L *12/56, 12/48*; H04J *3/26*

U.S. Cl. 370—60.1 **13 Claims**



1. A communication system having a plurality of incoming lines for receiving input cells of asynchronous transfer modes (ATM) including normal cells and broadcast cells and a plurality of outgoing lines for outputting said input cells input from the incoming lines, said system outputs said input cells to the outgoing lines in accordance with header information of said input cells, and outputs each of said normal cells to one of said plurality of outgoing lines and each of said broadcast cells to at least two of said plurality of outgoing lines, said system comprising:

input interface means provided for each of said incoming lines, for adding internal routing information, which is uniquely set in the inside of said communication system, to a header part of each of said input cells;

buffer memory means for storing temporarily said input cells;

writing control means for storing said input cells in said buffer memory means so as to form a plurality of list structures corresponding to the respective internal routing information, said list structures including one broadcast cell list structure for chaining said broadcast cells together, each of said broadcast cells in said one broadcast cell list structure has a pointer which indicates a cell to be output next, and a plurality of normal cell list structures for chaining said normal cells other than said broadcast cells together, said normal cell list structures corresponding to said outgoing lines;

reading control means for reading out said normal and broadcast cells from said plurality of list structures formed in said buffer memory means to distribute said normal and broadcast cells thus read to said outgoing lines; and

output interface means provided for each of said outgoing line, for converting the header part of a cell read out from said buffer memory means by said reading control means into a header format which is used in a network connected to said outgoing lines of said communication system,

said reading control means comprises:

table means for storing a bit pattern for specifying the outgoing lines, through which broadcast cell of interest is to be output, in correspondence to the internal routing information of the broadcast cell, and

broadcast control means for reading out broadcast destination specifying information corresponding to the internal routing information of the broadcast cell located at a head part of said one broadcast cell list structure, selecting, on the basis of said broadcast destination specifying bit pattern thus read out, one of said plurality of list structures every outgoing line, and reading out the normal cell or the broadcast cell located at a head part of said list structure thus selected,

said broadcast control means serving to read out the same broadcast cell repeatedly from said one broadcast cell list structure to the associated outgoing lines for a period of time until a next broadcast destination specifying bit pattern is read out from said table means.

5,394,398

METHOD AND CIRCUIT ARRANGEMENT FOR THE TRANSMISSION OF MESSAGE CELLS WITHIN AN ATM NETWORK

Peter Rau, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 24, 1993, Ser. No. 111,000

Claims priority, application European Pat. Off., Aug. 28, 1992, 92114798

Int. Cl.[6] H04J *3/26*; H04L *12/56*

U.S. Cl. 370—60.1 **9 Claims**

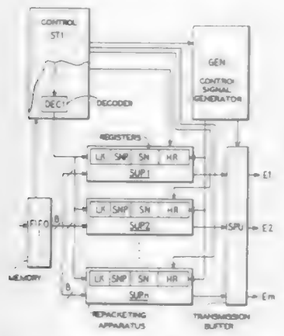
1. A method for transmitting message cells which are respectively formed of a cell header having an identifier for a virtual connection and of an information part and which appear during the course of at least one virtual connection with a first transmission bit rate via an ATM network that operates according to an asynchronous transfer mode (ATM), the ATM network having a plurality of internal inputs and a plurality of internal outputs, whereby the internal inputs and internal outputs are respectively designed for input and output, respectively, of message cells with a second transmission bit rate, the second transmission bit rate being less than the first transmission bit rate, comprising the steps of:

subdividing first message signals contained in the message cells with the first transmission bit rate into successive signal sections, each of the signal sections having a first bit plurality that is uniformly defined such that the first bit plurality plus a defined plurality of information bits corresponds to a plurality of bits transmittable in the informa-

tion part of a message cell with the second transmission bit rate as a useful signal;

successively inserting the signal sections into the information parts of the message cells with the second transmission bit rate and entering a continuously changing signal section sequence number into the information parts as information bits;

successively distributing the message cells with the second transmission bit rate onto a plurality of inputs of the ATM network that corresponds in number to a number of a bit rate ratio of the first transmission bit rate to the second transmission bit rate, the message cells with the second transmission bit rate being transmitted via the appertaining inputs to outputs of the ATM network allocated to these inputs of the ATM network;



removing a respective signal section respectively contained in the message cells with the second transmission bit rate appearing at the appertaining outputs as well as a respective signal section sequence number appertaining thereto from the message cells with the second transmission bit rate appearing at the appertaining outputs of the ATM network;

forming second message signals whose bit plurality is defined such that this bit plurality respectively corresponds to the plurality of bits transmittable in the information part of a message cell with the first transmission bit rate as useful signals from the sequence of the signal sections for the respective virtual connection; and

subsequently successively inserting the second message signals into message cells that are associated with the respective virtual connection and that are forwarded with the first transmission bit rate.

5,394,399

COMMUNICATION CONTROL SYSTEM

Keiko Kawasaki, Tokyo; Kazuo Sumitani; Yoso Igi, both of Kawasaki; Fumiaki Tahira, Sagamihara, and Kenji Fujisono, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 743,886, Aug. 12, 1991, abandoned. This application Dec. 8, 1993, Ser. No. 162,908

Claims priority, application Japan, Aug. 10, 1990, 2-210396

Int. Cl.[6] H04J *3/22*

U.S. Cl. 370—84 **8 Claims**

1. A communication control system transmitting data between two systems including system A transmitting at a first transmission speed and system B transmitting at a second transmission speed, said communication control system comprising:

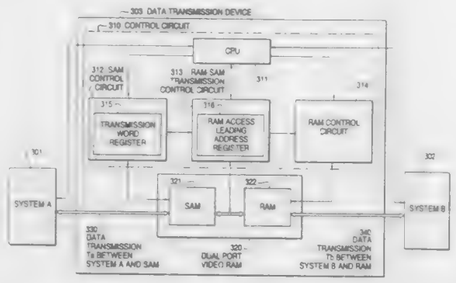
transmission and speed converting means for converting between the first and second transmission speeds when transmitting the data between the system A and the system B, wherein said transmission speed converting means comprises a dual port video RAM including:

a first port connected to the system A, receiving the data from the system A and transmitting the data to the system A at the first transmission speed;

a serial access memory, connected to said first port, for storing data;

a random access memory, connected to said serial access memory, for storing the data; and

a second port connected to said random access memory and the system B, receiving the data from the system B and transmitting the data to the system B at the second transmission speed; and



control means for controlling the transmission of the data between said random access memory and said serial access memory, wherein said control means includes:

a RAM leading address setting register having a leading address for setting the leading address at which the data accumulates in said random access memory; and

a transmission data capacity setting register indicating a data capacity of the data stored in said serial access memory.

5,394,400

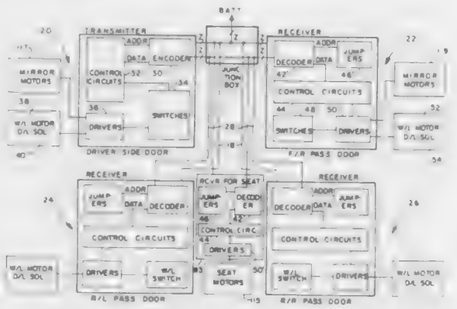
MULTIADDRESS REMOTE CONTROL OF VEHICULAR ACCESSORIES WITHOUT MICROPROCESSORS

Chamroeun Phoy, Glendale Hts., Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 21, 1993, Ser. No. 80,164

Int. Cl.[6] H04L *12/40*

U.S. Cl. 370—85.1 **3 Claims**



1. A multiaddress control system for one-way communication within a vehicle from a transmitter station to at least two receiver stations for remote control of power accessories, comprising:

an electrical power source in said vehicle for powering said power accessories;

a two-conductor power main system connected from said power source to each of said transmitter and receiver stations for powering said transmitter and receiver stations and their respective accessories;

a two-wire control communication bus for interconnecting said transmitter station with each of said receiver stations;

a plurality of switch means (**34, 32**) at said transmitter station for producing switch signals intended for controlling respective designated accessories at first and second ones of said at-least-two receiver stations;

an encoder at said transmitter station, for receiving said switch signals from said switch means and encoding said switch signals to provide signals for transmission via said communication bus to said first and second receiver stations, said encoder and said switch means being the only transmission apparatus at said transmitter station for remote control of said designated accessories;

a first decoder at said first receiver station for receiving said signals of said communication bus, said first decoder being the only receiving apparatus at said first receiver station for remote control by said transmitter of respective accessories at said first receiver station;

a second decoder at said second receiver station for simultaneously receiving said signals of said communication bus, said second decoder being the only receiving apparatus at said second receiver station for remote control by said transmitter of respective accessories at said second receiver station;

said encoder comprising means for encoding to provide said signals for transmission to said first and second receiver stations in the form of receiver-station addresses and designated-accessory commands, one receiver-station address and one designated-accessory command at a time, one of said decoders recognizing its address and executing the corresponding designated-accessory command;

communication means connecting said first and second decoders to corresponding power accessories at said first and second receiver stations respectively, for carrying signals from the decoders to the respective designated accessories for executing said corresponding designated-accessory commands;

said first and second decoders comprising means for utilizing power from said power main system to drive the designated accessory in response to said corresponding designated-accessory command;

said designated accessories comprising a first power window and first power door lock at said first receiver station and a second power window and second power door lock at said second receiver station, and

said encoder and said first and second decoders operating in accordance with a protocol for remote control of said power windows and power door locks.

5,394,401

ARRANGEMENT FOR A TOKEN RING COMMUNICATIONS NETWORK

Michael W. Patrick, Assonet, and James A. Daly, Chelsea, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 14, 1993, Ser. No. 48,170

Int. Cl.[6] H04L *12/42*

U.S. Cl. 370—85.5 **9 Claims**

1. An arrangement for a token ring communications network having nodes for transmitting and receiving data signals, comprising:

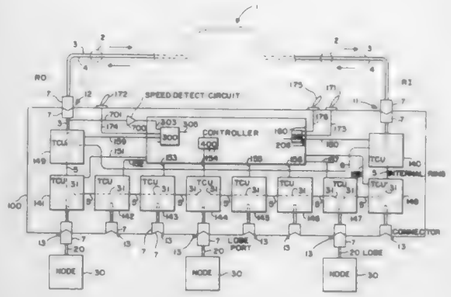
a trunk circuit for transporting the data signals, said trunk circuit having a plurality of trunk segments, each of said plurality of said trunk segments having an input end and an output end;

a plurality of lobe circuits for connecting the nodes to said trunk circuit;

a plurality of wiring concentrator, each wiring concentrator having a plurality of ports including an input port connected to an input end of one of said plurality of trunk segments, an output port connected to an output end of one of said plurality of trunk segments, and a lobe port connected to one of said plurality of lobe circuits, said plurality of trunk segments and said plurality of wiring concentrators connected to one and another as a ring;

each one of said plurality of wiring concentrator having an internal trunk for connecting to said input port, said output port, and said plurality of lobe ports;

each wiring concentrator having a plurality of switches including an input switch for connecting said input port to said internal trunk, an output switch for connecting said output port to said internal trunk, and a plurality of lobe switches for connecting said plurality of lobe ports to said internal trunk; and



each of said wiring concentrators having first means for sensing if the data signals at a particular one of said plurality of ports are within a voltage range, and second means for sensing if the data signals at said particular port are within a first frequency range, and means responsive the data signals being within said voltage range and the data signals being within said first frequency range for connecting said particular port to said internal trunk while a voltage and a frequency of the data signal are within said voltage range and said first frequency range, respectively.

5,394,402

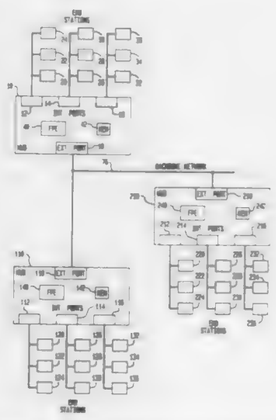
HUB FOR SEGMENTED VIRTUAL LOCAL AREA NETWORK WITH SHARED MEDIA ACCESS

Floyd E. Ross, Warrington, Pa., assignor to Ascom Timeplex Trading AG, Bern, Switzerland

Continuation of Ser. No. 79,099, Jun. 17, 1993, abandoned. This application Jun. 10, 1994, Ser. No. 258,524

Int. Cl.[6] H04J *3/26*

U.S. Cl. 370—94.1 **17 Claims**



1. A digital data communications network hub for controlling the transmission of messages to internal ports and to any

end stations connected to said internal ports, said hub comprising:

n internal ports for receiving and transmitting messages within said hub, where n is an integer greater than zero;

memory means for storing virtual local area network, VLAN, designations for at least some of said internal ports, for storing media access control, MAC, addresses of said internal ports, and for storing MAC addresses of end stations including end stations connected to any of said internal ports;

means for assigning a VLAN designation to at least one of said internal ports and storing the assigned VLAN designation in said memory means;

means for determining the MAC address of each end station connected to any of said internal ports and storing the MAC addresses thus determined in said memory means;

means for associating the stored VLAN designation with messages transmitted from any of said internal ports to which said stored VLAN designation has been assigned;

means for identifying VLAN designations associated with and destination addresses carried by messages received within said hub; and

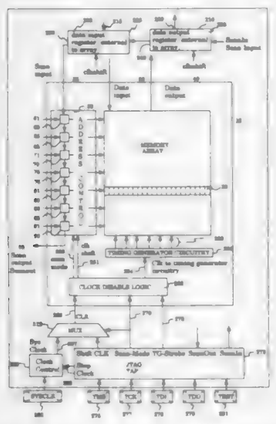
means for transmitting to each of said internal ports only received messages which have an associated VLAN designation which matches the stored VLAN designation assigned to that particular port and carry a destination address which matches the stored MAC address of that port or the stored MAC address of one of the end stations connected to that same port.

5,394,403

FULLY TESTABLE CHIP HAVING SELF-TIMED MEMORY ARRAYS

Michael F. Klein, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 12, 1992, Ser. No. 897,801
Int. Cl.[6] G11C *29/00*
U.S. Cl. 371—21.1 **17 Claims**



1. A self-timed memory array comprising at least one memory cell, said memory array comprising control registers and control lines coupled to the control registers to control operations on the array of the memory cell, address registers and address lines coupled to the address registers to identify the address of the memory cell at which an operation is to be performed, data lines for supplying data to and reading data from the memory cell, and timing generator circuitry for receiving an external clock pulse from an external clock and providing self-timed clock inputs for performing operations on cells in the array, said memory array further comprising an apparatus for providing for testing of the array, said apparatus comprising:

shift means for chaining the control registers and address registers such that information can be serially shifted into and out of the control and address registers, said shift means being enabled during a shift mode;

means for disabling memory array operations while information is serially shifted into and out of the control and address registers;

a test clocking means for providing a test clock pulse to the memory array to be tested to cause an operation dictated by the information shifted into the control registers to be performed at the address identified in the address registers;

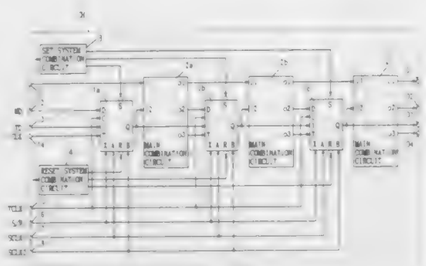
wherein a test operation is performed on a memory cell without affecting other memory cells of the array and maintaining a common temporal state with the address and control registers.

5,394,404

FLIP-FLOP CIRCUIT HAVING DIAGNOSTIC FUNCTION

Wataru Uchida, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 968,884
Claims priority, application Japan, May 19, 1992, 4-125963
Int. Cl.[6] G01K *31/29*
U.S. Cl. 371—22.5 **16 Claims**



1. A flip-flop circuit comprising:

a first data terminal for receiving main data in normal operation and diagnostic operation;

a second data terminal for receiving diagnosis data in shift operation;

first and second latch means connected serialiy, and having a set/reset function:

a first clock terminal for receiving a main clock signal in normal operation;

a second clock terminal for receiving a diagnosis clock signal in diagnostic operation;

a set/reset terminal for receiving a set/reset signal;

a third clock terminal for receiving a first shift operation clock signal in shift operation;

a fourth clock terminal for receiving a second shift operation clock signal in shift operation; and

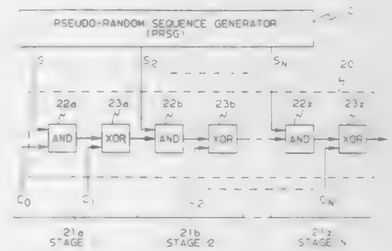
control means for controlling said first and second latch means so that, in normal operation, said first and second latch means respond to said main clock signal to sequentially hold and provide said main data, or respond to said set/reset signal to be set/reset; that in diagnostic operation, said first latch means responds to said diagnosis clock signal to hold and provide said main data, or responds to said set/reset signal to be set/reset, and said second latch means maintains data holding state; and that in shift operation, said first latch means responds to said first shift operation clock signal to hold and provide said diagnosis data, and said second latch means responds to said second shift operation clock signal to hold and provide an output signal of said first latch means.

5,394,405

UNIVERSAL WEIGHT GENERATOR

Jacob Savir, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 24, 1992, Ser. No. 873,131
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—27 **1 Claim**



1. A circuit for generating a controllably weighted binary sequence, said circuit comprising:

means for generating a first plurality, said first plurality being N, of pseudo-random binary signal sequences; and

a second plurality, said second plurality also being N, of logic circuit stages, wherein each of said stages receives one of said binary sequences from said generating means, and wherein each of said stages also receives a specifiable weighting control signal, said stages being cascaded so that the output of each stage is supplied as input to its subsequent stage; and

wherein each stage includes conjunctive circuit means having as input said preceding stage output and one of said pseudo-random binary signal sequences, with the output of said conjunctive circuit means being supplied to conditional inverter circuit means which also has an input said specifiable weighing control signal and whose output is supplied to the conjunctive circuit means in said subsequent stage.

5,394,406

DATA COMMUNICATION APPARATUS

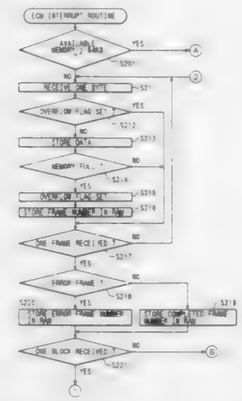
Takashi Ono, Yokosuka, and Yasuhide Ueno, Fuchu, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,550
Claims priority, application Japan, May 14, 1991, 3-109228
Int. Cl.[6] G08C *25/02;* **H04L** *1/18*
U.S. Cl. 371—32 **46 Claims**

1. A data communication apparatus having an error correction communication mode, comprising:

a memory for storing data to be transmitted in the error correction communication mode; and

means for, when said memory has an available capacity less than a data amount required in the error correction communication mode, transmitting dummy data in addition to transmission data stored in said memory so as to assure that an amount of data transmitted in the error correction communication mode is no less than the required data



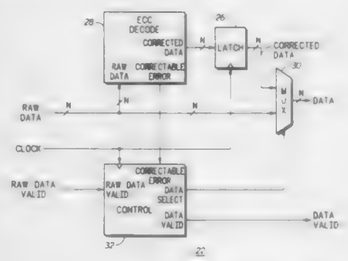
amount, the transmitted data amount being not less than the available capacity of said memory.

5,394,407

METHOD OF TRANSFERRING ERROR CORRECTING CODE AND CIRCUIT THEREFOR

John D. Coddington, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1993, Ser. No. 84,118
Int. Cl.[6] G06F *11/10;* **H03M** *13/00;* **H04L** *1/18*
U.S. Cl. 371—37.1 **3 Claims**



1. A circuit for use with a data processing system comprising:

error correcting code circuitry receiving a first data stream from a first agent, the error correcting code circuitry generating a second data stream and a correctable error signal, the second data stream generated responsive to the first data stream and to an error correcting code protocol, the error correcting code circuitry asserting the correctable error signal responsive to an error in the first data stream;

control circuitry receiving the correctable error signal from the error correcting code circuitry and a raw data valid signal from the first agent, the control circuitry generating a data valid signal output to a second agent and a select signal, the control circuitry asserting the data valid signal responsive to the assertion of the raw data valid signal and to a de-assertion of the correctable error signal, the control circuitry asserting the select signal responsive to a first assertion of the correctable error signal and the assertion of the raw data valid signal, the control circuitry

de-asserting the select signal responsive to a first de-assertion of the raw data valid signal; and

switching circuitry receiving the select signal, the first data stream and the second data stream, the switching circuitry outputting the first data stream to the second agent responsive to the de-assertion of the select signal, the switching circuitry outputting the second data stream to the second agent responsive to the assertion of the select signal.

5,394,408

POLICING CONTROL APPARATUS

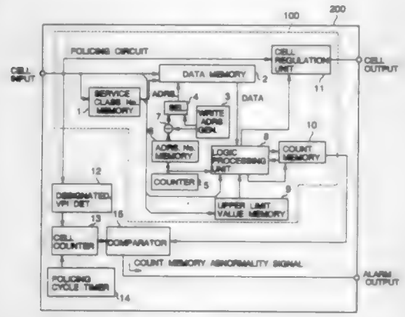
Motoo Nishihara; Takatoshi Kurano; Naoaki Yamanaka, all of Tokyo, and Youichi Sato, Kanagawa, all of Japan, assignors to NEC Corporation and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Feb. 8, 1993, Ser. No. 15,343

Claims priority, application Japan, Feb. 10, 1992, 4-024016

Int. Cl.[6] G06F *11/00;* **H03M** *13/00*

U.S. Cl. 371—57.2 **4 Claims**



1. A policing control apparatus comprising:

a cell input terminal for receiving asynchronous transmission communication network cells;

a policing circuit coupled to said input terminal for policing transmission of cells from said cell input terminal according to policing information;

a cell output terminal provided as an output of said policing circuit for outputting cells policed in said policing circuit;

a count memory in said policing circuit for storing a count value of the cells supplied to said policing circuit and for supplying said count value as said policing information; and

a self-diagnosing circuit for monitoring problems in said count memory and abnormalities of stored contents in said count memory and outputting an alarm upon detection of a problem or abnormality;

said self-diagnosing circuit including a first circuit for detecting a designated specific virtual path identifier (VPI), a timer for determining a policing cycle time for a service class identified by said designated specific VPI, a second circuit coupled to said first circuit for counting arriving cells identified by said designated specific VPI, and a third circuit coupled to an output of said second circuit for comparing contents of the count memory in said policing circuit and the output of said second circuit and for generating said alarm upon failure of identity of the output of the second circuit and the contents of the count memory.

5,394,409

METHOD OF DETECTING AND LOCALIZING ERRORS IN REDUNDANT PRIMARY DETECTORS OF AN AUTOMATION SYSTEM

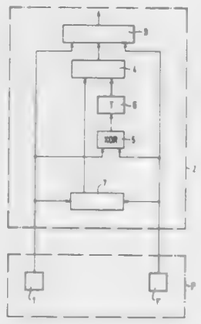
Herbert Barthel, Herzogenaurach, and Jochen Höhn, Leopoldshafen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 21, 1992, Ser. No. 918,336

Claims priority, application European Pat. Off., Jul. 22, 1991, 91112257

Int. Cl.[6] G06F *11/30*

U.S. Cl. 371—62 **19 Claims**



1. A method of detecting and localizing errors in two redundant primary detectors, each of which provides a detection signal to an automation system, comprising the steps of:

a) determining the values of the detection signals of the respective detectors;

b) comparing the determined values of the detection signals;

c) initiating the accrual of a waiting time incrementor when the determined values of the detection signals supplied by the detectors differ by more than a predetermined amount;

d) outputting an error signal when the determined values of the signals supplied by the detectors differ by more than said predetermined amount after the waiting time incrementor has reached a predetermined limit;

e) if an error signal is output, determining which of the detectors did not have the value of its detection signal changed;

f) registering the detector determined in step (e) as provisionally defective; and

g) definitively registering the detector registered as provisionally defective in step (f) as defective when the value of the detection signal of the other detector changes once again before the value of the detection signal of the detector registered as provisionally defective changes.

5,394,410

DIFFERENTIALLY CODED AND GUARD PULSE POSITION MODULATION FOR COMMUNICATION NETWORKS

Kwang-Cheng Chen, Menlo Park, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,726

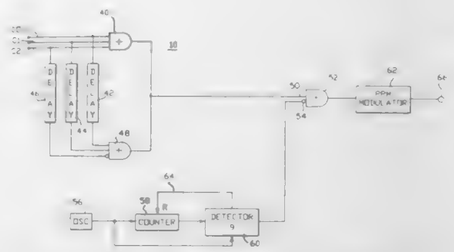
Int. Cl.[6] G06F *11/08*

U.S. Cl. 371—70 **22 Claims**

1. A method of pulse position encoding data for transmission over a communications link along which bit errors may be introduced into said pulse position encoded data due to multipath effects or inaccurate timing, said method avoiding decoding errors caused by said bit errors, said method comprising the steps of:

dividing a pulse position encoding period into a plurality of slots, a pair of adjacent slots corresponding to each pulse position in said period; and

encoding pulse position data in each said pair of adjacent slots by inserting a sequence of data bits and a check bit in



one of said pair of adjacent slots and inserting said sequence of data bits and the complement of said check bit in the other one of said pair of adjacent slots.

5,394,411

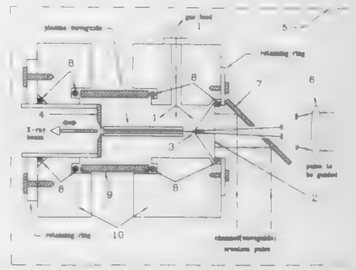
METHOD FOR PRODUCING HIGH INTENSITY OPTICAL THROUGH X-RAY WAVEGUIDE AND APPLICATIONS

Howard Milchberg, Bethesda, Md., and Charles Durfee, III, Arlington, Va., assignors to University of Maryland, College Park, College Park, Md.

Filed Feb. 16, 1994, Ser. No. 197,786

Int. Cl.[6] H01S *3/30*

U.S. Cl. 372—5 **42 Claims**



1. A method of guiding intense electromagnetic (EM) radiation pulses over a distance of more than one Rayleigh length for a device requiring high intensity laser induced processes in a plasma produced in a first medium surrounded by a second medium in at least a first chamber, the method comprising the steps of:

supplying at least one first laser pulse to the first medium by a first laser source means whereby the at least one first laser pulse produces a plasma in the first medium generating a pressure gradient between the plasma and the second medium;

generating a shock wave which in turn induces a refractive index profile channel greater than one Rayleigh length in the plasma; and

supplying at least a single second EM pulse with an appropriate delay from the at least one first laser pulse by a second EM source means along the axis of the refractive index profile channel of the plasma for transmission through the plasma whereby the channel performs as a plasma EM waveguide.

5,394,412

POWER LASER WITH DEFLECTION

Jean-Pierre Huignard, Paris; Jean-Luc Ayrai, Antony, and Claude Puech, Ballainviluers, all of France, assignors to Thomson-CSF, Puteaux, France

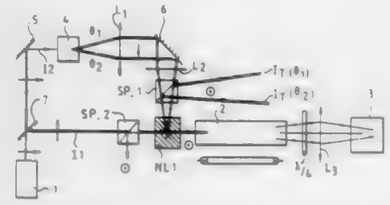
PCT No. PCT/FR92/00878, § 371 Date May 12, 1993, § 102(e) Date May 12, 1993, PCT Pub. No. WO93/06644, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 22, 1992, Ser. No. 50,256

Claims priority, application France, Sep. 27, 1991, 91 11912

Int. Cl.[6] H01S *3/10, 3/14*

U.S. Cl. 372—9 **17 Claims**



1. A power laser with deflection characterized in that it comprises at least:

a medium made of a non-linear material (NL1) illuminated by a first beam (I1) of fixed direction and a second beam (I2) of variable direction;

an amplifying medium (2) placed along the direction of the first beam (I1) receiving as an output from the medium made of a non-linear material, an output beam consisting of at least part of the first and second beams that is propagating along the direction of the first beam, amplifying the output beam by light amplification by stimulated emission of radiation, and retransmitting an amplified beam (Ic) back towards the medium made of non-linear material (NL1) which reflects the amplified beam (IC) back along the direction of the second beam (I2); and

a first beam splitting device (SP1) placed in the path of the amplified beam (Ic).

5,394,413

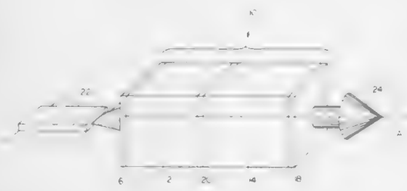
PASSIVELY Q-SWITCHED PICOSECOND MICROLASER

John J. Zayhowski, Pepperell, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 193,781, Feb. 8, 1994, abandoned. This application Mar. 4, 1994, Ser. No. 206,124

Int. Cl.[6] H01S *3/11*

U.S. Cl. 372—10 **43 Claims**



1. A passively Q-switched laser comprising:

a) a resonant cavity formed between a first mirror and a second mirror;

b) a gain medium disposed within said resonant cavity for producing laser gain;

c) a pump source for energizing said gain medium; and

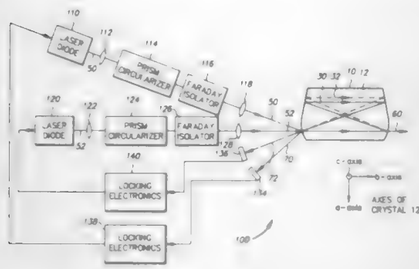
d) a saturable absorber disposed within said resonant cavity; said saturable absorber, said second mirror, and said laser gain being selected so that output pulses having a duration of less than about 1 nanosecond are generated.

5,394,414

LASER SYSTEM AND METHOD HAVING A NONLINEAR CRYSTAL RESONATOR

William J. Kozlovsky, Sunnyvale, and William P. Risk, Mountain View, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1993, Ser. No. 69,312
Int. Cl.[6] H01S *3/091*
U.S. Cl. 372—22 41 Claims



1. A laser system comprising:

a nonlinear crystal for receiving a first and a second polarization radiation beams and producing second harmonic radiation; and

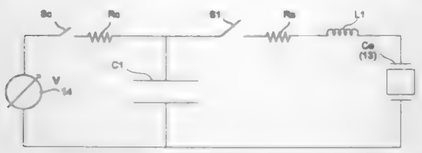
a ring resonator integral to the nonlinear crystal for resonating the first and second polarization radiation beams, the resonator having a plurality of reflecting surfaces which form a first beam path for the first polarization radiation beam and a second beam path for the second polarization radiation beam, wherein a portion of the first and second beam paths overlap along an overlap segment, the beams in the overlap segment having a direction of propagation which is parallel to a crystalographic axis of the nonlinear crystal.

5,394,415

METHOD AND APPARATUS FOR MODULATING OPTICAL ENERGY USING LIGHT ACTIVATED SEMICONDUCTOR SWITCHES

Oved S. F. Zucker, DelMar; Iain A. McIntyre, Vista; Paul J. Solone, Cardiff-by-the-Sea, and David Giorgi, Encintas, all of Calif., assignors to Energy Compression Research Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 985,144, Dec. 3, 1992. This application Jan. 21, 1994, Ser. No. 184,010
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—26 163 Claims



1. An optical-to-optical modulator having an optical input control signal for controlling the modulation of an optical output , said optical-to-optical modulator comprising:

a source of optical energy:

modulating means, comprising a capacitive electro-optic material which is responsive to an applied control voltage for modulating optical energy passing therethrough to thereby generate a modulated optical output;

changing means comprising at least one light activated switch optically connected to an input optical control signal, and a charge transfer circuit controlled by said at least one light activated, switch for changing the applied control voltage to said modulating means; and

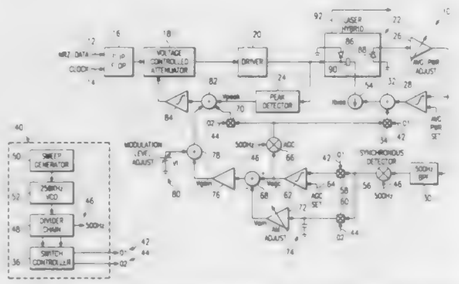
said modulating means being connected to said charge transfer circuit through said light activated switch wherein said optical input control signal controls said changing means by selectively varying the applied control voltage to said modulating means.

5,394,416

LASER MODULATION CONTROLLER USING ADDITIVE AND AMPLITUDE MODULATION CONTROL TONES

Gordon W. Ries, Plano, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed May 11, 1994, Ser. No. 241,178
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—26 11 Claims



1. A method for modulating the laser output signals of a laser circuit, comprising the steps of:

controlling the peak voltage input into the laser circuit;

additive modulating NRZ (non-return to zero) data signals to produce an additive modulated control voltage into the laser circuit when laser output signals exceed a threshold value that exists when the level of NRZ data signals of the additive modulated control equals the peak voltage input at a stable operating point;

amplitude modulating the NRZ data signals to produce an amplitude modulated control voltage;

subtractively combining the additive modulated control voltage and the amplitude modulated control voltage when laser output signals exceed the threshold value to produce a combined voltage value; and

directing the combined voltage value to the laser circuit when the laser output signals exceed the threshold value to operate the laser circuit in a stable and constant input voltage level for all NRZ data signal levels.

5,394,417

SEMICONDUCTOR LASER PRODUCING VISIBLE LIGHT

Masayoshi Takemi; Norio Hayafuji, both of Itami, and Wataru Susaki, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

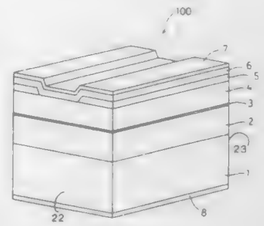
Filed Nov. 12, 1993, Ser. No. 150,884
Claims priority, application Japan, Nov. 19, 1992, 4-335006
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 12 Claims

1. A semiconductor laser for producing visible light comprising:

a first conductivity type semiconductor substrate;

a first conductivity type semiconductor first cladding layer, a semiconductor active layer of $GaAs_{1-y}P_y$ ($y \leqq 0.45$), and a second conductivity type second cladding layer, the first cladding layer, the active layer, and the second cladding layer being successively disposed on the semiconductor substrate, the first and second cladding layers having

substantially the same composition and a different composition from the active layer, thereby forming heterojunctions with the active layer, and having a lattice constant different from the lattice constant of the active layer and introducing stress into the active layer without producing dislocations in the active layer;



first and second opposed facets transverse to the first cladding, active, and second cladding layers defining, witch the heterojunctions, an optical resonator; and

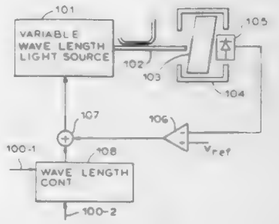
first and second electrodes electrically connected to the substrate and the second cladding layer, respectively.

5,394,418

WAVELENGTH SWITCHING LIGHT SOURCE

Takahiro Shiozawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 4, 1993, Ser. No. 147,643
Claims priority, application Japan, Nov. 4, 1992, 4-295036
Int. Cl.[6] H01S *3/00*
U.S. Cl. 372—38 7 Claims



1. A wavelength switching light source for varying the wavelength of output light in response to a wavelength designating signal and a wavelength switching signal, comprising:

a variable-wavelength light source whose oscillating wavelength varies in response to a wavelength control signal;

an optical resonator;

a light brancher for branching the output light of said variable-length light source into two beams, of which one is supplied as an output light and the other of said beams is provided to be incident on the optical resonator;

said optical resonator having a periodic wavelength transmitting characteristic and producing output light;

an optical detector for detecting power of the output light of said optical resonator and outputting an output value corresponding to said power;

means for outputting a first wavelength control signal comprising a signal proportional to balance of substraction of said optical detector output value from a fixed value;

wavelength control means for outputting a second wavelength control signal required for causing said variable wavelength light source to oscillate at a designated wavelength in response to a wavelength designation signal and a wavelength switching signal; and

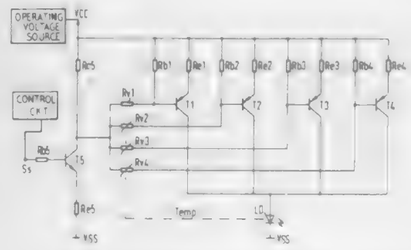
adder means for adding said first wavelength control signal and said second wavelength control signal to output said wavelength control signal.

5,394,419

CIRCUIT ARRANGEMENT FOR LIMITING THE POWER OF THE OPTICAL SIGNAL EMITTED BY A LASER DIODE

Klaus Neuhaus, München; Klaus Panzer, Regensburg, and Michael Stockmann, Bruckmühl, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/EP92/01435, § 371 Date Jan. 21, 1994, § 102(e) Date Jan. 21, 1994, PCT Pub. No. WO93/02493, PCT Pub. Date Feb. 4, 1993
PCT Filed May 25, 1992, Ser. No. 185,797
Claims priority, application Germany, Jul. 24, 1991, 91112451
Int. Cl.[6] H01S *3/00*
U.S. Cl. 372—38 7 Claims



1. A circuit arrangement for limiting power of an optical signal emitted by a laser diode, comprising:

an operating voltage source;

a laser diode;

a parallel connection of a plurality of series circuits each of a resistor with main electrodes of a transistor connected to form a circuit with said operating voltage source and said laser diode, and

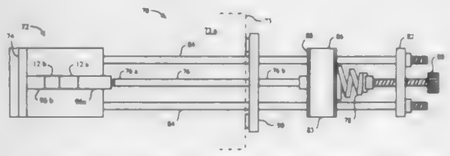
drive means for applying a drive signal at least indirectly to control electrodes of all said transistors of said series circuits, said drive means including means for varying said drive signal to a predominant number of said transistors in accordance with changes in temperature of said laser diode and for applying said drive signal directly at their control electrodes, and so that a higher current is supplied through said laser diode for higher temperature values of the laser diode.

5,394,420

MULTIFORM CRYSTAL AND APPARATUS FOR FABRICATION

Robert H. Senn, Anaheim, and Loren E. Record, Redondo Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jan. 27, 1994, Ser. No. 190,347
Int. Cl.[6] H01S *3/14*
U.S. Cl. 372—39 42 Claims



1. A process for joining single crystal segments to form a multiform crystal suitable for laser applications, the process comprising the steps of:

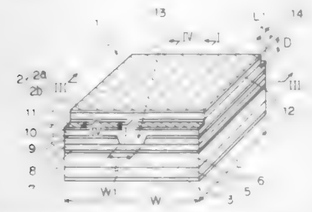
(a) polishing two single crystal segments to form at least one optically flat face on each of the crystal segments, the optically flat face having a roughness of less than $\frac{1}{4}$ the wavelength of the light propagated through the crystal;
(b) cleaning the optically flat face of the crystal segments;
(c) contacting the optically flat face of the crystal segments to one another to form a joint between the crystal segments; and
(d) maintaining the joint at a sufficiently high pressure and temperature to fuse the crystal segments together at the joint to form a joint that is substantially optically transparent.

5,394,421

SEMICONDUCTOR LASER DEVICE INCLUDING A STEP ELECTRODE IN A FORM OF EAVES

Katsuhiko Ikawa; Yukio Shakuda, and Hiroshi Matagi, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 6, 1993, Ser. No. 161,425
Claims priority, application Japan, Jan. 11, 1993, 5-002738; Jul. 9, 1993, 5-170251; Jul. 14, 1993, 5-174474
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 **11 Claims**



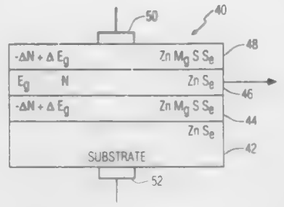
1. A semiconductor laser device comprising:
a first electrode provided on a first electrode-forming-surface;
a second electrode provided on a second-electrode-forming surface; and
a plurality of semiconductor layers provided between the first and second electrodes, the plurality of semiconductor layers including at least
a) an active layer;
b) a lower clad layer provided between the first electrode and the active layer and formed of a semiconductor of a first conductivity type, the semiconductor having a refractive index smaller than that of the active layer and a forbidden band width larger than that of the active layer;
c) an upper clad layer provided between the second electrode and the active layer and formed of a semiconductor of a second conductivity type, the semiconductor of the second conductivity type having a refractive index smaller than that of the active layer and a forbidden band width larger than that of the active layer; and
d) a contact layer provided between the upper clad layer and the second electrode and formed of a semiconductor having a refractive index larger than that of the active layer and a forbidden band width smaller than that of the active layer,
wherein the second-electrode-forming surface is partially provided with a step which separates the second electrode wherein said step has an undercut portion in an under part to define an upper portion in a form of eaves.

5,394,422

MATERIALS FOR II-VI LASERS

Brian J. Fitzpatrick, Ossining, N.Y., assignor to North America Philips Corporation, New York, N.Y.

Continuation of Ser. No. 815,686, Dec. 31, 1991, Pat. No. 5,260,958. This application Sep. 14, 1993, Ser. No. 121,654
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 **21 Claims**



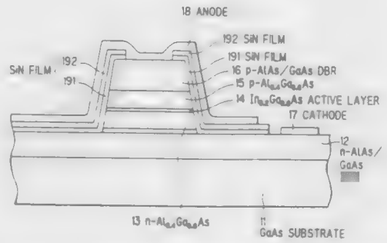
1. A light emitting device comprising at least one layer of ZnSe and at least one layer of $Mg_y\,Zn_{1-y}\,S_x\,Se_{1-x}$ wherein y=0.07–0.14"and wherein the ratio of y to x is 26/19.

5,394,423

SURFACE EMITTING SEMICONDUCTOR LASER

Kenichi Kasahara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 26, 1994, Ser. No. 186,649
Claims priority, application Japan, Jan. 26, 1993, 5-10577
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 **4 Claims**



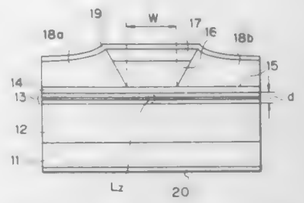
1. A surface emitting semiconductor laser, comprising:
a mesa structure provided on a semiconductor substrate, said mesa structure comprising a first cladding layer of a first conductivity type, an active layer of said first conductivity type, and a second cladding layer of a second conductivity type;
means for applying an electric field across said mesa to emit an output light in a direction orthogonal to said semiconductor substrate;
a first insulation film provided on x axis side surfaces of said mesa, said first insulation film being formed at a first temperature; and
a second insulation film provided on y axis side surfaces of said mesa, said y axis being orthogonal to said x axis, and said second insulation film being formed at a second temperature different from said first temperature.

5,394,424

SEMICONDUCTOR LASER DEVICE

Tetsuro Ijichi; Michinori Irikawa, both of Yokohama, Japan; Ranjit S. Mand, San Jose, Calif., and Jingming Xu, Ontario, Canada, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 91,719
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—46 **4 Claims**



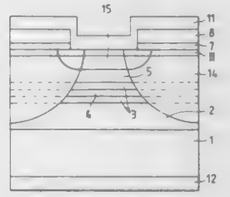
1. In a semiconductor laser device comprising an active layer arranged on a semiconductor substrate and covered by lower and upper clad layers, the improvement comprising that said upper clad layer is partly left on said active layer to a thickness between 0.25 and 0.5 μm for oscillation of a basic transverse mode during laser excitation and a rib-shaped clad layer having a bottom width between 2.0 μm and 3.5 μm and projecting from the upper surface of said upper clad layer is juxtaposed with the light emitting region of said active layer.

5,394,425

METHOD OF MANUFACTURING A SEMICONDUCTOR LASER DEVICE

Hideki Fukunaga; Nobuaki Ueki; Hiromi Otoma, and Hideo Nakayama, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1994, Ser. No. 201,342
Claims priority, application Japan, Feb. 25, 1993, 5-037013
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—46 **8 Claims**



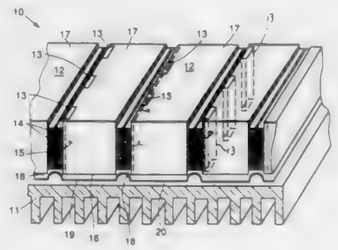
8. A semiconductor laser device, comprising:
a first electrode;
a GaAs system substrate put on top of said first electrode;
an Al—Ga—AS system first clad layer put on top of said substrate;
an Al—Ga—AS system first optical waveguide layer put on top of said first clad layer;
a GaAs system active layer put on top of said first optical waveguide layer;
an Al—Ga—AS system second optical waveguide layer put on top of said active layer;
a second clad layer put on top of said second optical waveguide layer;
a GaAs system contact layer put on said second clad layer;
a plurality of Si layers formed divisionally on top of said contact layer;
an insulation film formed of a Si_3N_4 film and put on top of said Si layers; and,
a second electrodes formed on top of said insulation film, wherein said Al—Ga—AS system first clad layer, said Al—Ga—AS system first optical waveguide layer, said GaAs active layer, said Al—Ga—AS system second optical waveguide layer, and said GaAs system contact layer respectively include therein a light confining area alloy by Si atoms diffused from said plurality of Si layers, and said GaAs system contact layer and said second clad layer respectively include therein a current confining area which is connected in a pn junction manner.

5,394,426

DIODE LASER BAR ASSEMBLY

David E. Joslin, Valley Village, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 13, 1992, Ser. No. 976,072
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—50 **9 Claims**



1. A laser apparatus comprising:
a substrate comprising a heat sink;
a diode laser bar assembly comprising:
a plurality of laser diode bars having a plurality of lasing sections formed along a lateral edge thereof;
first and second metal contacts disposed on respective adjacent lateral edges of adjacent diode bars, which metal contacts are separated by a thin layer of metal alloy, and wherein one contact forms a positive electrical contact for one laser bar, and the other metal contact forms a negative contact for the adjacent laser bar;
a dielectric mirror disposed on a bottom surface of each of the laser diode bars; and
an antireflection coating disposed on a top surface of each of the laser diode bars;
a layer of insulating material disposed adjacent the bottom surfaces of the laser bars and the first and second metal contacts and layer of metal alloy;
a metallization layer disposed on the layer of insulating material; and
an interconnection layer 20 disposed between the metallization layer and the substrate that is adapted to secure the diode laser bar assembly to the substrate.

5,394,427

HOUSING FOR A SLAB LASER PUMPED BY A CLOSE-COUPLED LIGHT SOURCE

Ted S. McMinn, St. Peters; Dana A. Marshall, and Danny D. Meyer, both of St. Louis, all of Mo., assignors to Cutting Edge Optronics, Inc., St. Louis, Mo.

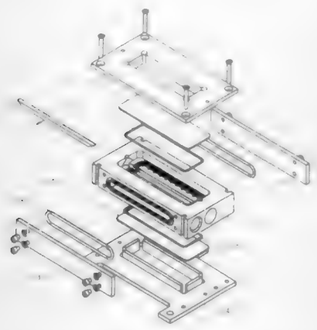
Filed Apr. 29, 1994, Ser. No. 235,689
Int. Cl.[6] H01S *3/04, 3/044*
U.S. Cl. 372—70 **13 Claims**

1. A slab and holder for use in a face pumped slab laser comprising
a slab of solid state laser host material having a substantially rectangular cross section with top and bottom surfaces, opposing side surfaces, and opposing end faces,
a housing body with two opposing ends, further including means for the distribution of a coolant to uniformly flow

over said slab top and bottom surfaces, and means for the return of said coolant,

two tabs at both of said ends said tabs being integral with said housing body of said housing body and with substantially the same top to bottom thickness as said slab for the purpose of bonding said slab side surfaces to said housing body and simultaneously having said slab top surface to be substantially aligned with the top surfaces of said tabs and said slab bottom surface substantially aligned with the bottom surfaces of said tabs,

two seals which surround the means for coolant distribution and with a portion of one of said seals lying on the surface



formed by said slab top surface and the tab top surfaces, and a portion of one of said seals lying on the surface formed by said slab bottom surface and the tab bottom surfaces,

two windows, one of which lies on each of said seals to form a cavity on top of said slab and to form a cavity on the bottom of said slab for the confinement of a thin layer of said coolant to flow over said slab top and bottom surfaces,

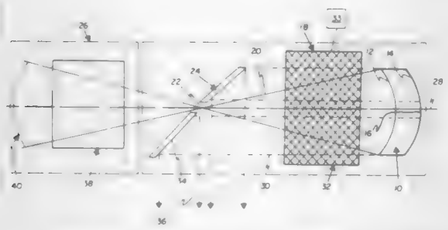
and means for sealing to prevent leakage of said coolant from said cavity on top of said slab and from said cavity on bottom of said slab.

5,394,428

CONTROLLED, HIGH-POWER LASER OSCILLATOR

Edward J. McLellan, 422 Connie Ave., Los Alamos, N. Mex. 87544

Filed Mar. 8, 1993, Ser. No. 27,417
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—95 **7 Claims**



1. A controlled, high-power laser oscillator comprising in combination:

a. a laser gain medium for generating and amplifying laser oscillations;

b. means for exciting said laser gain medium;

c. at least one reflecting optical element located near one end of said gain medium, for returning laser oscillations thereto;

d. a separator element located at the other end of said gain medium from said reflecting optical element, said reflecting optical element and said separator element defining a laser oscillator axis, which includes said gain medium, for dividing the laser energy generated in said gain medium into a laser energy output portion and a laser control output portion; and

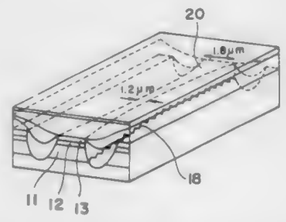
e. at least one control element for receiving the control portion of the laser energy, for controlling chosen characteristics of the control portion of the laser energy, and for returning the controlled laser energy to said gain medium through said separator element, said at least one reflecting element and said at least one control element defining a laser control axis.

5,394,429

DISTRIBUTED-FEEDBACK LASER WITH IMPROVED ANALOG MODULATION DISTORTION CHARACTERISTICS AND METHOD FOR FABRICATING THE SAME

Hirohito Yamada; Tetsuro Okuda, and Toshitaka Torikai, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 1, 1993, Ser. No. 144,038
Claims priority, application Japan, Oct. 30, 1992, 4-292851; Oct. 30, 1992, 4-292852
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—96 **8 Claims**



1. A distributed-feedback laser with improved analog modulation distortion characteristics and improved current versus optical output linearity characteristics, comprising:

a diffraction grating;

an optical waveguide layer formed on said diffraction grating; and

an active region formed on said optical waveguide layer,

said optical waveguide layer having equivalent refractive indexes larger towards cavity end facets and smaller towards a device center portion along the cavity to improve the linearity of current versus optical output characteristics.

5,394,430

LASER MODULE

Chaochi Huang, Taipei Hsien, Taiwan, Prov. of China, assignor to Quarton Inc., Taipei Hsien, Taiwan, Prov. of China

Filed May 3, 1994, Ser. No. 237,132
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—107 **7 Claims**

1. A laser module comprising:

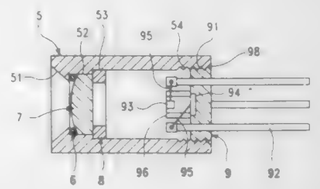
a hollow, cylindrical casing having a tapered laser beam emitting hole at one end made gradual bigger toward the outside, an inner thread at an opposite end, a lens coupling portion and a locating ring coupling portion disposed off the inside between said tapered laser beam emitting hole and said inner thread;

a cushion ring mounted in said lens coupling portion;

a locating ring mounted in said locating ring coupling portion;

a lens mounted in said lens coupling portion and retained between said cushion ring and said locating ring; and

a base having an outer thread threaded into the inner thread on said casing, said base comprising a laser diode chip and a photo detector at an inner side and contact pins at an



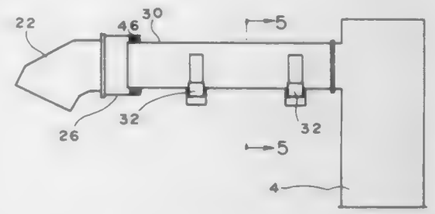
outer side respectively connected to a control circuit board, said laser diode chip being controlled by said control circuit board to emit a laser beam out of said tapered laser beam emitting hole via said lens.

5,394,431

APPARATUS FOR PREVENTING DUST ACCUMULATION IN EXHAUST DUCT OF AN ELECTRIC FURNACE

Yoriyuki Kuwahara; Hideki Terashima; Yoshiyasu Hikosaka; Yoshihiro Hanai, and Mitsuyoshi Kishita, all of Toyohashi, Japan, assignors to Topy Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1993, Ser. No. 145,163
Claims priority, application Japan, Nov. 4, 1992, 4-295343; May 27, 1993, 5-126035
Int. Cl.[6] F27D *17/00*
U.S. Cl. 373—8 **17 Claims**



1. An apparatus for preventing dust accumulation in an exhaust duct between an electric furnace and a combustion tower, comprising:

a rotatable smoke suction duct extending between a hollow elbow portion fixed to the electric furnace and the combustion tower of the electric furnace;

a turning device for rotating the smoke suction duct about an axis of the smoke suction duct, including a duct support for supporting the smoke suction duct rotatably about the axis of the smoke suction duct and a drive device for rotating the smoke suction duct; and

a seal for establishing a sealed connection between the smoke suction duct and the combustion tower, the seal comprising:

a first member fixed to the combustion tower;

at least one second member fixedly coupled to the first member;

a packing coupled to the at least one second member to cover a clearance between an outer surface of the smoke suction duct and the at least one second member; and

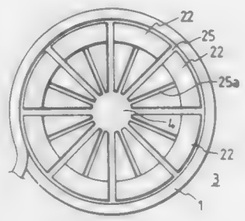
a flexible sealing cloth coupled to the at least one second member together with the packing and having a portion slidably contacting an outer surface of the smoke suction duct.

5,394,432

LEVITATING AND FUSING DEVICE

Akira Fukuzawa; Kazuyuki Sakuraya; Toshiaki Watanabe, all of Tokyo; Motoo Yamazaki, Hamamatsu; Tadashi Morita, Kawasaki; Tatsuo Take, Kawasaki, and Michiru Fujita, Kawasaki, all of Japan, assignors to National Research Institute for Metals, Tokyo; Chubu Electric Power Company, Inc., Aichi and Fuji Electric Co., Ltd., Kanagawa, all of Japan

Filed Dec. 17, 1992, Ser. No. 992,943
Claims priority, application Japan, Dec. 20, 1991, 3-337325
Int. Cl.[6] H05B *6/22*
U.S. Cl. 373—156 **10 Claims**



1. A levitating and fusing device, comprising:

an induction coil;

a power source for exciting said induction coil; and

a crucible disposed inside said induction coil and formed of a conductive material in a cylindrical shape with a bottom, the crucible holding a material to be charged for levitating and fusing, said crucible being formed of a plurality of segments respectively divided in a circumferential direction thereof by slits, each of said plurality of segments having a cylindrical portion and a bottom portion and including a leading end at the bottom portion thereof, said plurality of leading ends defining an axial hole in a central portion of said crucible,

said slits formed in bottom portions of said segments being wider than slits formed in cylindrical portions of said segments.

5,394,433

FREQUENCY HOPPING PATTERN ASSIGNMENT AND CONTROL IN MULTIPLE AUTONOMOUS COLLOCATED RADIO NETWORKS

David F. Bantz, Chappaqua, N.Y.; Frederick J. Bauchot, La-Tourraque Saint-Jeannet, France; Chia-Chi Huang, Hsinchu, , assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 22, 1993, Ser. No. 52,329
Int. Cl.[6] H04L *1/04*
U.S. Cl. 375—202 **22 Claims**

7. A method of dynamically managing interference in a wireless communication network comprising a controller, a plurality of base stations, a local area network interconnecting said base stations with said controller, and a plurality of mobile stations, each said mobile station and base station including a transceiver for wireless bidirectional communication therebetween when in sufficient proximity to each other, said method comprising the steps of:

(a) requesting by a given base station a frequency hopping pattern assignment from said controller;

(b) selecting by said controller a frequency hopping pattern from a predetermined set of frequency hopping patterns;

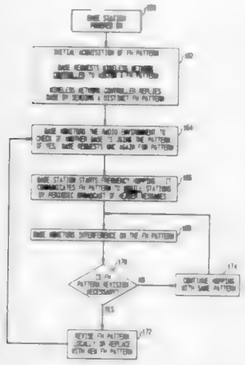
(c) determining by said controller if the selected frequency hopping pattern has been previously assigned to another one of said plurality of base stations;

(d) returning to step (b) by said controller if the selected frequency hopping pattern has previously been assigned;

(e) communicating the selected frequency hopping pattern to said given base station;

(f) locking, by said given base station, into the frequency

hopping pattern of another base station to learn its frequency hopping pattern;
(g) comparing the frequency hopping patterns;
(h) requesting a new frequency hopping pattern by said given base station if the frequency hopping patterns compare within predetermined limits;
(i) beginning frequency hopping by said given base station;



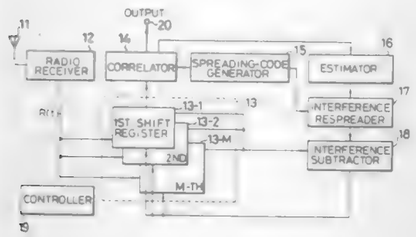
(j) monitoring by said given base station interference relative to the assigned frequency hopping pattern;
(k) determining by said given base station if frequency hopping pattern revision is necessary as the result of the monitoring of interferences; and
(l) returning to step (h) if revision is necessary, and if revision is not necessary, continuing to hop with the same frequency hopping pattern.

5,394,434

CODE-DIVISION MULTIPLE-ACCESS DEMODULATOR WITH IMPROVED INTERFERENCE CANCELATION

Manabu Kawabe; Takuro Sato; Toshio Kato; Akiyoshi Kawahashi, and Atsushi Fukasawa, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1993, Ser. No. 141,665
Claims priority, application Japan, Jan. 11, 1993, 5-002660
Int. Cl.[6] H04K *1/00*
U.S. Cl. 375—205 **13 Claims**



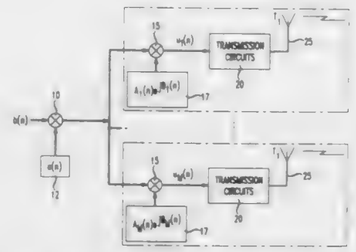
1. A demodulator for code-division multiple-access spread-spectrum communications, comprising:
a memory (**13**) divided into separate memory areas for different transmitting stations, each memory area storing received chip data and updated chip data for a plurality of symbols including at least a newest symbol and an oldest symbol;
a spreading-code generator (**15**) for generating spreading codes used by respective transmitting stations;
a correlator (**16**) coupled to correlate all data in a designated memory area among said memory areas with a corresponding spreading code generated by said spreading-code generator (**15**), thereby generating correlated values for a plurality of symbols;
an estimator (**16**) coupled to receive said correlated values, calculate therefrom a plurality of estimated symbol values, and temporarily store said estimated symbol values;
a respreader (**17**) coupled to calculate differences between said estimated symbol values and previously stored estimated symbol values, and multiply said differences by said corresponding spreading code to create remaining interference values;
an interference subtractor (**18**) coupled to update all data stored in said memory (**13**), except data stored in said designated memory area, by subtracting said remaining interference values;
a controller (**19**) for recognizing symbol boundaries and designating a memory area in said memory whenever its corresponding transmitting station completes transmission of a symbol; and
an output port (**20**) coupled to output, for the oldest symbol stored in said designated memory area, a demodulated value that has at least been correlated by said correlator (**14**).

5,394,435

DIVERSITY FOR DIRECT-SEQUENCE SPREAD SPECTRUM SYSTEMS

Vijitha Weerackody, Springfield, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 998,229, Dec. 29, 1992, Pat. No. 5,289,499. This application Feb. 22, 1994, Ser. No. 200,090
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[6] H04B *7/216, 7/06*
U.S. Cl. 375—206 **12 Claims**



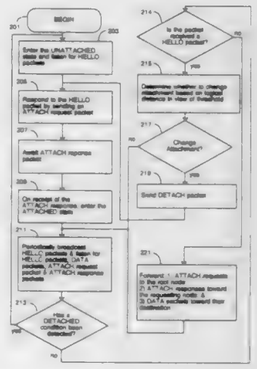
1. A method of operating a direct-sequence spread spectrum transmitter for communicating a first signal to a receiver, said transmitter including a plurality of antennas, said first signal including one or more signal segments, the method comprising the steps of:
forming a plurality of second signals, each of the second signals formed based on two or more sub-segments of a given segment of the first signal and two or more corresponding weighting signals, wherein a sequence of weighting signals used in forming one of said second signals is distinct from one or more other sequences of weighting signals used in forming one or more other of said second signals; and
transmitting a plurality of signals each with a distinct antenna, wherein at least two of said plurality of transmitted signals represent second signals which are formed with use of distinct sequences of weighting signals.

5,394,436

RADIO FREQUENCY LOCAL AREA NETWORK

Robert C. Meier, Cedar Rapids; Ronald E. Luse, Marion, and Ronald L. Mahany, Cedar Rapids, all of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 970,411, Nov. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 968,990, Oct. 30, 1992, which is a continuation-in-part of Ser. No. 769,425, Oct. 1, 1991. This application Jun. 8, 1994, Ser. No. 255,848
Int. Cl.[6] H04L *27/10;* **H04Q** *11/04*
U.S. Cl. 375—202 **21 Claims**



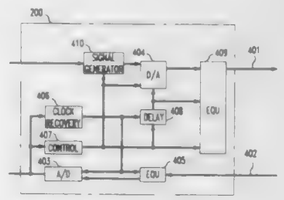
1. An RF multi-hop data communication network comprising:
a plurality of mobile terminal nodes;
a plurality of bridging nodes which dynamically create and revise communication pathways between any two nodes in the network;
each of the bridging nodes independently storing and maintaining local information that specifies how communication packets received should flow through that bridging node toward a destination node;
said plurality of bridging nodes, together, forming a spanning tree which specifies the communication pathways in the RF multi-hop communication network; and
each bridging node adding to each communication packet received the identity of a next node in a communication pathway to the destination node.

5,394,437

HIGH-SPEED MODEM SYNCHRONIZED TO A REMOTE CODEC

Ender Ayanoglu, Atlantic Highlands; Nuri R. Dagdeviren, Red Bank; James E. Mazo, Fair Haven, and Burton R. Saltzberg, Middletown, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Oct. 20, 1992, Ser. No. 963,539
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—222 **16 Claims**



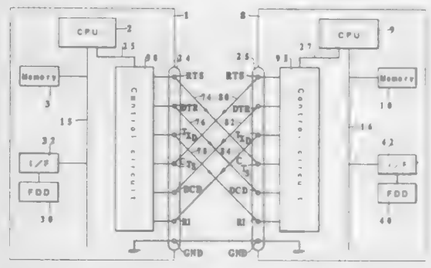
12. Apparatus comprising:
an A/D converter operating under control of a first clock, for receiving signals from a D/A converter having a second clock,
control means for deriving information from the signal received by the A/D converter,
means, responsive to said control means, for synchronizing the first clock to the second clock, and
means, responsive to said control means, for adjusting the slicing levels of the A/D converter.

5,394,438

DATA TRANSMITTING METHOD

Mamoru Takai, Osaka, Japan, assignor to Megasoft, Inc., Suita, Japan

Filed Oct. 10, 1991, Ser. No. 774,499
Claims priority, application Japan, May 27, 1991, 3-120932
The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.
Int. Cl.[6] H04L *25/34, 25/49*
U.S. Cl. 375—286 **12 Claims**



1. A method of communicating data between a sending device and a receiving device via a plurality of m parallel data paths which have K kinds of electric state, said method comprising the steps of:
a) encoding each value of original data into a string of numeric code figure, wherein each figure has a value ranging from one to $K^m - 1$;
b) changing an existing electric state of m parallel data paths on the basis of information of each figure in each string of numeric code figure and said existing electric state of m parallel data paths;
c) acknowledging change in electric state of m parallel data path whereby restoring each figure in each string of numeric code figure on the basis of said existing electric state and changed electric state;
d) recovering each value of the original data by means for decoding said restored numeric code figure string.

5,394,439

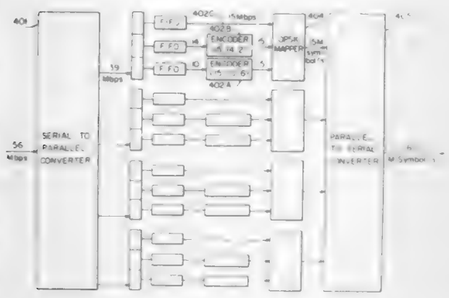
BISON COMPATIBLE MODEM CODEC FOR DIGITAL INFORMATION COMMUNICATION SYSTEM

Farhad Hemmati, Darnstown, Md., assignor to Comsat Corporation, Bethesda, Md.

Filed Nov. 12, 1991, Ser. No. 791,057
Int. Cl.[6] H04B *14/04*
U.S. Cl. 375—242 **3 Claims**

3. A digital information transmission apparatus comprising:
first conversion means for converting a serial input data stream of bit rate 156 Mbps into four parallel data streams of 39 Mbps each;
encoder means for separately encoding each of the four parallel data streams;

means for combining outputs from said encoder means for generating channel symbols; and



second conversion means for converting said channel symbols into a single channel symbol serial data stream having a rate of 60 Msymbol/s for transmission to a receiver.

5,394,440

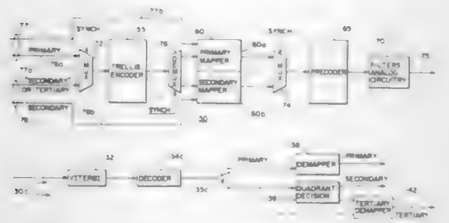
HIGH SPEED MODEM SYSTEMS INCORPORATING DISTRIBUTION PRESERVING TOMLINSON ENCODING AND DECODING FOR SECONDARY CHANNELS

Yuri Goldstein, Southbury, and Paul D. Cole, Fairfield, both of Conn., assignors to General DataComm, Inc., Middlebury, Conn.

Continuation-in-part of Ser. No. 651,563, Feb. 6, 1991, Pat. No. 5,260,971, which is a continuation-in-part of Ser. No. 820,098, Jan. 13, 1992, Pat. No. 5,291,520. This application Feb. 18, 1992, Ser. No. 837,490

Int. Cl.[6] H04L *5/12*

U.S. Cl. 375—265 **10 Claims**



10. A receiver in a modem which receives at least primary channel data and secondary channel data according to a predetermined schedule, said primary and secondary channel data having been encoded by a modem transmitter having

a trellis encoding means for receiving at least one first primary channel data bit from a primary channel, and for receiving at least one dummy or tertiary channel data bit from means for providing said dummy or tertiary channel data bit which is coupled to the trellis encoding means, in a time sequential order based on the predetermined schedule, and providing therefrom a coded sequence of values relating to at least the primary channel data and to said at least one dummy or tertiary channel data bit,

a mapper means having a primary mapper means coupled to the trellis encoding means, the primary mapper means for receiving a first portion of the coded sequence of values relating to the primary channel data, and the primary mapper means for receiving at least one second primary channel data bit from the primary channel, and a secondary mapper means coupled to the trellis encoder means for receiving a second portion of the coded sequence of values relating to the dummy or tertiary channel data bits, and the secondary mapper means for receiving a plurality of secondary channel data bits from the secondary channel, the primary and secondary mapper means for providing first and second outputs which when multiplexed together according to the predetermined schedule provide a valid coded sequence of values $\{r_k\}$ including values for the primary channel data, values for the secondary channel data, and values for the dummy or tertiary channel data, said receiver comprising:

a) Viterbi decoding means for receiving a second sequence of values related to said valid coded sequence of values and for providing therefrom a third sequence of values;

b) decoder means coupled to said Viterbi decoding means for receiving said third sequence of values and providing therefrom a fourth sequence of values including values relating to said primary channel data, wherein said decoder means receives each and every value of said third sequence of values from said Viterbi decoding means;

c) demultiplexing means coupled to said decoder means for taking only said values relating to said primary channel data from said fourth sequence of values;

d) demapping means coupled to said demultiplexing means for demapping said values relating to said primary channel data taken by said demultiplexing means; and

e) quadrant decision means for obtaining from said second sequence of values those values relating to said secondary channel data and for determining therefrom said secondary channel data.

5,394,441

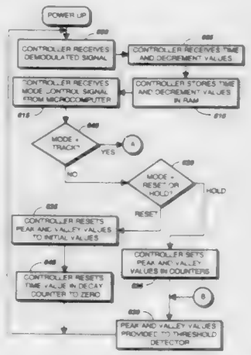
METHOD AND APPARATUS FOR DIGITALLY TRACKING HIGHS AND LOWS OF A SIGNAL RECEIVED BY A RADIO COMMUNICATION DEVICE

Daniel A. Morera, Boynton Beach, and David R. Petreye, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 5, 1993, Ser. No. 13,855

Int. Cl.[6] H04L *25/06, 25/10*

U.S. Cl. 375—327 **11 Claims**



9. A radio communication device for receiving and digitally tracking a signal, the radio communication device comprising:

a receiver for receiving and demodulating the signal;

a threshold detector coupled to the receiver for determining a center threshold of the signal;

an edge detector coupled to the receiver and the threshold detector for determining a number of center transitions of the signal within a predetermined time period;

decay control circuitry for generating timing signals the decay control circuitry comprising a decay counter for counting a number of timing signals; and

tracking circuitry coupled to the decay control circuitry and the receiver for acquiring signal peak and valley values, the tracking circuitry comprising:

a peak counter coupled to the threshold detector for storing a peak value corresponding to a signal peak;

a valley counter coupled to the threshold detector for storing a valley value corresponding to a signal valley;

a memory coupled to the peak and valley counters for storing a time value;

a controller coupled to and controlling the peak and valley counters and coupled to the decay control circuitry for automatically decrementing the peak and valley values in response to determining that the number of timing signals indicated by the decay counter is equivalent to the time value stored in the memory, wherein the peak and valley values are decremented by a selected one of first and second decrement values, and the selected one of the first and second decrement values is selected by the controller in accordance with the number of center transitions.

5,394,442

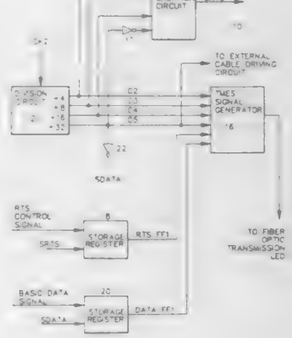
OPTICAL COMMUNICATIONS TRANSMITTER AND RECEIVER

Thomas M. Lill, Port Huron, Mich., assignor to Optical Communications Corporation, Silver Spring, Md.

Continuation of Ser. No. 639,239, Jan. 9, 1991, Pat. No. 5,163,072, which is a continuation of Ser. No. 383,537, Jul. 24, 1989, Pat. No. 5,025,459, which is a continuation of Ser. No. 888,203, Jul. 23, 1986, Pat. No. 4,852,128. This application Nov. 10, 1992, Ser. No. 974,167

Int. Cl.[6] H04L *25/38*

U.S. Cl. 375—369 **14 Claims**



1. A method of transmitting a data signal comprised of a plurality of units of data per frame of a predetermined duration comprising:

providing the data signal to be transmitted having a series of positions having a plurality of levels;

providing a train of pulses comprising a start pulse which marks the beginning of a frame, and a midpoint pulse which marks the midpoint of the frame; and

combining the data signal with the train of pulses to form the frame of the data signal, the frame having an even number of positions within the frame for transmitting the data signal in the form of units of data, each of the units of data which occur at the positions and the midpoint pulse having a duration which is different from the duration of the start pulse.

5,394,443

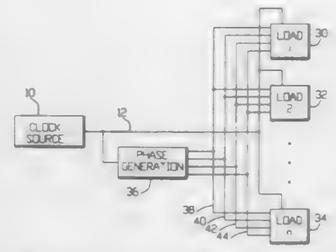
MULTIPLE INTERVAL SINGLE PHASE CLOCK

Larry L. Byers, Apple Valley, and Randy L. DeGarmo, Oakdale, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 23, 1993, Ser. No. 173,733

Int. Cl.[6] H04L *7/04*

U.S. Cl. 375—371 **25 Claims**



1. A multiple phase clock distribution system for use in a system having a synchronization signal occurring on every n-th pulse of a digital clock signal where n is a whole number, and for enabling circuit loads to be clocked on specified phases of the digital clock signal, comprising:

clock sourcing circuitry for generating the digital clock signal and the synchronization signal;

phase enabling generation circuitry coupled to said clock sourcing circuit for receiving the synchronization signal, and for generating a plurality of enable signals; and

a plurality of circuit loads, each coupled to said clock sourcing circuitry and to said phase enabling generation circuitry, and comprising a clock signal input for receiving the digital clock signal, and further comprising one or more enable signal inputs for receiving an equivalent number of said enable signals for enabling said circuit loads to be clocked by the digital clock signal upon receipt of a predetermined logic level ono said enable signals.

5,394,444

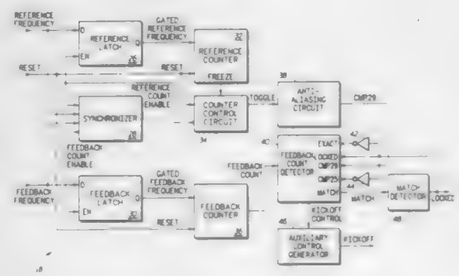
LOCK DETECT CIRCUIT FOR DETECTING A LOCK CONDITION IN A PHASE LOCKED LOOP AND METHOD THEREFOR

John M. Silvey, and J Christopher Smallwood, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 12, 1993, Ser. No. 88,951

Int. Cl.[6] H04L *7/00;* **H03D** *3/24*

U.S. Cl. 375—374 **19 Claims**



1. A lock detect circuit, comprising:

first input means for receiving a reference frequency;

second input means for receiving a feedback frequency;

a reference counter coupled to the first input means for receiving the reference frequency, the reference counter counting to a reference count value during a first period of time, the reference counter providing a freeze signal to

indicate the reference counter has reached the reference count value;

a feedback counter coupled to the second input means for receiving the feedback frequency, the feedback counter counting for the first period of time to generate a feedback count value;

comparison means for comparing the feedback count value to the reference count value, the comparison means asserting a first match signal when the feedback count value is one of a range of lock values determined by the reference count value and a locked signal is asserted to indicate the first match signal is asserted for a second and a third period of time, the third period of time successively following the second period of time, the comparison means being coupled to the feedback counter for receiving the feedback count value; and

a match detector coupled to the comparison means for providing the locked signal, the match detector asserting the locked signal when the comparison means asserts the first match signal for both the second period of time and the third period of time.

5,394,445

TELEPHONE CALL SCREENING AND ANSWERING DEVICE

Randel H. Ball, 1128-D Heritage, Waldorf, Md. 20602, and Stephen E. Hall, 8508 Trumps Hill Rd., Upper Marlboro, Md. 20772

Filed Jun. 25, 1993, Ser. No. 82,759
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—67 **18 Claims**



1. A telephone call screening device comprising:

a. telephone line attachment means for receiving calls in a network delivering calling numbers to called lines,

b. audio input means for receiving spoken messages,

c. audio output means for reproducing said spoken messages,

d. storage means for retaining a plurality of said delivered calling numbers and said spoken messages associated as pairs,

e. search means for indicating equivalence or nonequivalence between each newly delivered calling number and any among said plurality of delivered calling numbers then retained by said storage means,

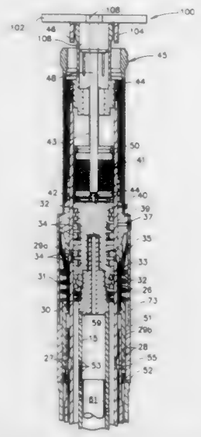
f. recording/playing means for automatically prompting for spoken messages and transferring from said audio input means to said storage means as pairs, said spoken messages thus prompted and said delivered calling numbers following calls for which said search means indicates nonequivalence with any said calling number then retained, and playback means for automatically retrieving from said storage means and presenting to said audio output means said spoken messages associated with said delivered calling numbers then retained upon receipt of calls for which said search means indicates equivalence, whereby the identities of parties associated with said delivered calling numbers are announced by said spoken messages before calls are answered.

5,394,446

UNCOUPLING ROD CENTERING GAUGE

Thomas W. White; Edward W. Saxon, and Robert S. Tsukida, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 12, 1993, Ser. No. 135,811
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—245 **13 Claims**



1. A gauge for checking that an uncoupling rod of a control rod drive is inserted in a center hole of a spud, comprising a platelike cross handle having a central portion and a plurality of arms extending radially outwardly therefrom, and a first cylindrical ring having one end connected to a bottom surface of said central portion of said cross handle and extending axially downward, said first cylindrical ring having a first axial cylindrical hole of predetermined diameter and said central portion of said cross handle having a second axial cylindrical hole of said predetermined diameter, said first circular cylindrical ring being positioned so that said first and second cylindrical holes have collinear axes.

5,394,447

CRITICAL FUNCTION AND SUCCESS PATH SUMMARY DISPLAY

Kenneth Scarola; David S. Jamison, both of Windsor; Richard M. Manazir, North Canton; Robert L. Rescorl, Vernon, and Daryl L. Harmon, Enfield, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 927,057, Aug. 6, 1992, Pat. No. 5,287,390, which is a division of Ser. No. 430,792, Nov. 2, 1989, Pat. No. 5,267,277. This application Dec. 29, 1993, Ser. No. 175,315
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—259 **16 Claims**

1. In a nuclear power plant having a nuclear steam supply system including a multiplicity of components which operate together to perform plant functions including critical safety functions, which must be accomplished to keep the plant in a safe, stable condition whereby the health and safety of the public is preserved; means for measuring plant operating variables and for generating operating parameter signals from said measured variables; a control room including data processing means responsive to the operating parameter signals for displaying monitoring information including parameter values and parameter alarms to the operator; the improvement in the means for displaying monitoring information about the critical safety functions comprising:

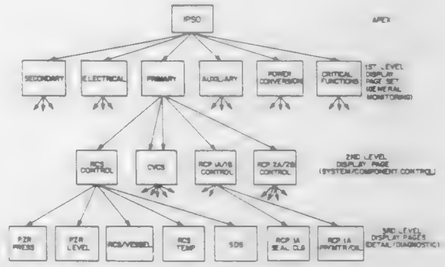
means for displaying on a large screen situated for visibility throughout the control room,

a descriptor for each critical safety function,

a critical function success path descriptor associated with each critical function, wherein each success path descriptor represents at least the preferred configuration of plant components that is capable of performing the associated critical function,

a key parameter value representing each critical function,

a status indicator of the preferred success path for each critical function, including the operating state of the



preferred success path configuration (on/off or active/inactive) and the controllability (whereby the state can be changed),

a parameter alarm at the key parameter value when an alarm signal associated with the key parameter is generated; and

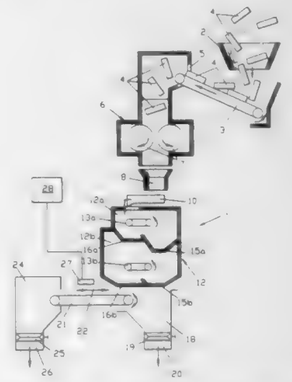
a success path unavailability alarm when a success path cannot be actuated to achieve minimum acceptable performance.

5,394,448

METHOD AND DEVICE FOR PROCESSING ELEMENTS ACTIVATED BY IRRADIATION WITH A VIEW TO THEIR REMOVAL

Jean J. Guiroy, La Varenne Saint-Hilaire, and Remi Thouvenot, Sens, both of France, assignors to Framatome, Courbevoie, France

Filed Nov. 29, 1993, Ser. No. 158,858
Claims priority, application France, Nov. 27, 1992, 92 14341
Int. Cl.[6] G21C *19/34;* **G21F** *9/28*
U.S. Cl. 376—260 **9 Claims**



1. A method for processing elements activated by irradiation with a view to their removal, the activated elements comprising two constituents having different magnetic characteristics, a first one of said constituents having a high activity and a second one of said constituents having a substantially lower activity, said method comprising the steps of:

(a) grinding the activated elements to obtain unit fragments, comprising first fragments consisting mainly of said first constituent and second fragments consisting mainly of said second constituent;

(b) separating said first fragments consisting mainly of said first constituent and sending said first fragments by magnetic means to a first discharge and storage station, and separating second fragments consisting mainly of said second constituent and sending said second fragments by magnetic means to a continuous handling means;

(c) continuously detecting by radioactivity measurement whether first fragments consisting mainly of said first constituent are present among said second fragments on said continuous handling means; and

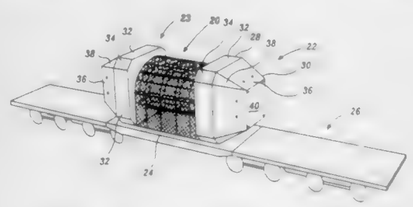
(d) sending said second fragments deposited on said continuous handling means to a second discharge and storage station if no first fragment of said first constituent is detected on said continuous handling means, and to said first discharge and storage station if at least one fragment of said first constituent is detected on said continuous handling means.

5,394,449

IMPACT LIMITER FOR SPENT NUCLEAR FUEL TRANSPORTATION CASK

Robert A. Johnson, Puyallup, Wash.; Ian D. McInnes, San Jose; Robert D. Quinn, Morgan Hill, both of Calif., and Charles J. Temus, Puyallup, Wash., assignors to Pacific Nuclear Systems, Inc., Federal Way, Wash.

Filed Oct. 8, 1993, Ser. No. 131,972
Int. Cl.[6] G21F *5/008*
U.S. Cl. 376—272 **17 Claims**



1. An impact limiter for a nuclear fuel transportation cask comprising:

an annular body having an inner periphery defined by an inner shell that mates with the transportation cask and an outer periphery defined by an outer shell that is non-circular, the annular body including an impact absorbing material between the inner shell and the outer shell; and

a tapered cap projecting from the annular body, said tapered cap having an outer periphery defined by an outer shell that is non-circular, the tapered cap including an impact absorbing material within the outer shell.

5,394,450

CIRCUIT FOR PERFORMING ARITHMETIC OPERATIONS

John Pasternak, Fremont, Calif., assignor to Waferscale Integration, Inc., Fremont, Calif.

Filed Apr. 13, 1993, Ser. No. 46,156
Int. Cl.[6] H03K *21/40*
U.S. Cl. 377—49 **19 Claims**

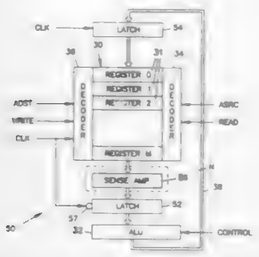
1. A circuit for performing arithmetic operations within one clock cycle comprising:

a register file array having at least one individually addressable register having a datapoint stored therein;

an arithmetic logic unit (ALU) for receiving said datapoint from said register file array, for processing said datapoint

and for providing said processed datapoint to said register file array; and

means, located between the register file array and the ALU, for holding only one of said datapoint and said processed



datapoint at a time during a clock cycle thereby to enable said processed datapoint to be written into said individually addressable register within the same clock cycle that said datapoint is provided to said ALU without affecting an original value of said datapoint.

5,394,451

OPTICAL ARRANGEMENT FOR EXPOSURE APPARATUS

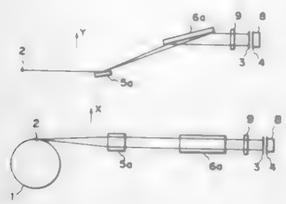
Akira Miyake, and Yutaka Watanabe, both of Isehara, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 955,433

Claims priority, application Japan, Oct. 8, 1991, 3-289285; Jul. 29, 1992, 4-202528

Int. Cl.[6] G21K *5/04*

U.S. Cl. 378—34 **10 Claims**



3. An optical arrangement comprising:

an optical system including a first mirror of toroidal shape and a second mirror of cylindrical shape, for transforming synchrotron radiation light emitted from an emission point of a synchrotron ring into a substantially parallel beam, with respect to a first direction, which is parallel to an orbit plane of the synchrotron ring and with respect to a second direction, which is perpendicular to the orbit plane,

wherein an absolute value of a focal length of said optical system in the first direction is smaller than that in the second direction.

5,394,452

VERIFICATION SYSTEM FOR RADIATION THERAPY

Stuart Swerdloff; Thomas R. Mackie, and Timothy Holmes, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

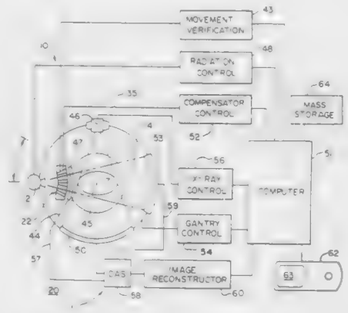
Continuation-in-part of Ser. No. 854,521, Mar. 19, 1992. This application Jun. 9, 1993, Ser. No. 74,185

Int. Cl.[6] A61N *5/10*

U.S. Cl. 378—65 **15 Claims**

12. In a radiation therapy machine having a radiation source for producing a radiation beam directed toward a patient at a gantry angle, the beam including a plurality of adjacent rays, the machine having an attenuating means disposed between the radiation source and the patient for independently controlling the fluence of each ray of the beam, a verification system comprising:

a pre-patient monitor generally disposed between the attenuating means and the patient for determining separately a pre-patient fluence of each ray of the beam prior to entering the patient; and



a post-patient monitor generally disposed opposite the pre-patient monitor with respect to the patient and within the fan beam for determining a post-patient fluence of each ray of the beam exiting the patient.

5,394,453

DEVICE FOR MEASURING THE PULSE TRANSFER SPECTRUM OF ELASTICALLY SCATTERED X-RAY QUANTA

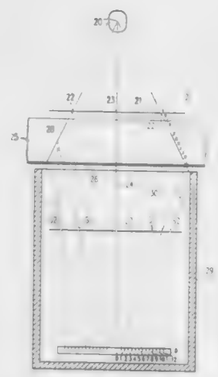
Geoffrey Harding, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 5, 1993, Ser. No. 15,096

Claims priority, application Germany, Feb. 6, 1992, 4203354; Jul. 7, 1992, 4222227

Int. Cl.[6] G01N *23/201*

U.S. Cl. 378—86 **12 Claims**



1. A device for measuring the pulse transfer spectrum of X-ray quanta elastically scattered from an examination zone, comprising:

a polychromatic X-ray source,

a primary diaphragm device which is arranged between the X-ray source and the examination zone and which serves to form a primary beam irradiating the examination zone along a surface of a cone,

a detector device comprising a plurality of adjoining detector elements which are arranged for detecting X-ray quanta scattered from a corresponding plurality of associated adjoining segments of the primary beam within the examination zone at different distances from the X-ray source, said plurality of adjoining segments being grouped into a plurality of parts of the examination zone intercepted by the primary beam and said detector elements being grouped into a plurality of groups of adjoining detector elements equal to the number of said parts of the examination zone, and

a secondary diaphragm device which is arranged between the examination zone and the detector device and which comprises a plurality of imaging slits, equal to both the number of groups of detector elements and the number of parts of the examination zone, each imaging slit being an arc of circle about a system axis extending from the X-ray source to the detector device,

wherein the detector elements of the detector device are situated at different respective distances from the system axis and the imaging slits are arranged in the secondary diaphragm device so that via each imaging slit the quanta scattered from a different associated part of the examination zone can reach a different associated group of detector elements, the quanta scattered from a part of the examination zone which is situated nearer to the X-ray source being detected by a group of detector elements situated at smaller distances from the system axis than a group of detector elements detecting quanta scattered from a part of the examination zone which is situated farther from the X-ray source and that the quanta scattered from a segment farther from the X-ray source in a part of the examination zone is detected on a detector element of the associated group that is situated at smaller distance from the system axis than a detector element of the associated group detecting quanta scattered from a segment of the part of the examination zone which is situated nearer to the X-ray source.

5,394,454

FILTER METHOD FOR AN X-RAY SYSTEM, AND DEVICE FOR CARRYING OUT SUCH A FILTER METHOD

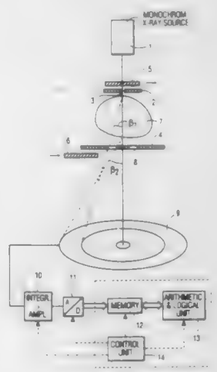
Geoffrey Harding, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1993, Ser. No. 60,174

Claims priority, application Germany, May 9, 1992, 4215343

Int. Cl.[6] G01N *23/203*

U.S. Cl. 378—86 **10 Claims**



1. A filter method for an X-ray system, comprising an X-ray source for emitting X-ray quanta and a detector device which supplies at least one measurement signal in order to detect the X-ray quanta having interacted with an object in an examination zone, which method comprises the following steps:

a) a measurement during which a filter is arranged in the beam path between the X-ray source and the examination zone,

b) a measurement during which a filter consisting of the same material as the filter used during the other measurement is arranged in the beam path between the examination zone and the detector device,

c) subtractive combination of the measurement signals obtained from the two measurements.

5,394,455

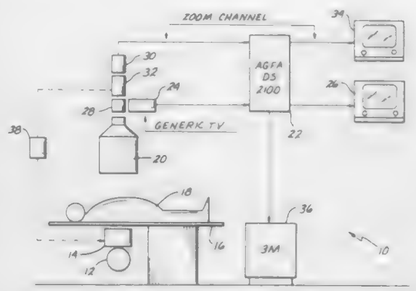
DIGITALLY AIDED MICROFLUOROSCOPY AND FLUOROSPOT SYSTEM AND METHOD OF USING THE SAME

Werner W. Roeck, Irvine; Orhan Nalcioglu, Laguna Beach, and John T. Martin, Riverside, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 30, 1993, Ser. No. 56,266

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98.3 **15 Claims**



1. An improvement in a system for X-ray fluoroscopic video imaging having an image intensifier for generating a dynamic radiographic image of an X-ray pattern and a monitor system for displaying said dynamic radiographic image, said improvement comprising:

an X-ray source;

an X-ray collimator coupled to said X-ray source, said X-ray collimator having variable collimation; and

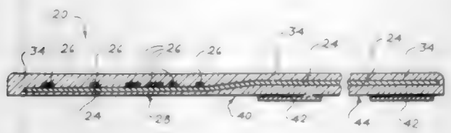
a variable magnifying lens for optically magnifying a selected smallest area of interest of said dynamic radiographic image of said image intensifier;

a sensitive video camera optically coupled to said magnifying lens for generating a video signal to be sent to said monitor system, wherein said monitor system displays an image of said X-ray pattern provided by said sensitive video camera;

means for selectively varying collimation of X-rays by said X-ray collimator in coordination With the degree of magnification provided by said magnifying lens to maintain total X-ray dosage below a predetermined maximum.,

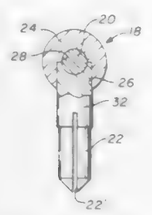
whereby magnified images of said X-ray pattern are provided in video signal format with submillimeter resolution and at a display format on said monitor system large enough to present an enlarged dynamic, real-time presentation to a user while allowing said user to operate within a sterile field while a minimum x-ray exposure is always provided for said selected smallest area of interest.

5,394,456
IDENTIFICATION SYSTEM FOR X-RAY SENSITIVE FILM
Troy W. Livingston, Northbrook, Ill., assignor to Livingston Products, Inc., Wheeling, Ill.
Filed May 27, 1993, Ser. No. 68,217
Int. Cl.[6] G03B *17/26*
U.S. Cl. 378—162 8 Claims



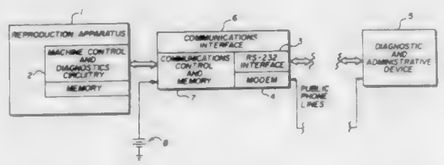
1. A marker for use with X-ray sensitive film and disposable between an X-ray source and the X-ray sensitive film to provide predetermined identifying indicia on the X-ray sensitive film when the film is exposed to any of a predetermined range of X-ray intensities from said X-ray source, the marker comprising:
- a first layer of material having predetermined X-ray absorbing characteristics for absorbing a substantial portion of X-rays;
- a second layer of material having predetermined X-ray absorbing characteristics for absorbing a substantial portion of X-rays, said second layer of material overlapping said first layer of material in a predetermined pattern corresponding to the predetermined identifying indicia to be formed on the film;
- said overlapping layers absorbing a sufficient portion of the X-rays at both upper and lower ends of the predetermined range of X-ray intensities to form identifying indicia on the X-ray sensitive film, the first layer of material being aluminum and the second layer of material being steel.

5,394,457
DEVICE FOR MARKING BODY SITES FOR MEDICAL EXAMINATIONS
Karl Leibinger, Tuttlingen; Franz Leibinger, Mülheim-Stetten, both of Germany; Stephan Felber, Aldrans, and Clemens Plangger, Telfs, both of Austria, assignors to Leibinger GmbH, Germany
Filed Oct. 7, 1993, Ser. No. 133,675
Claims priority, application Germany, Oct. 8, 1992, 4233978
Int. Cl.[6] A61B *19/00*
U.S. Cl. 378—162 22 Claims



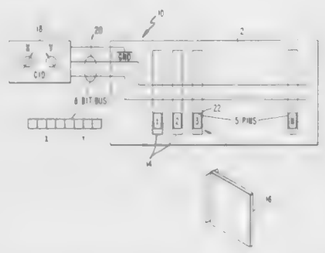
1. A device for marking body sites for imaging medical examination procedures comprising:
- fixtures made of a material that does not disturb the imaging with at least two different imaging examination procedures and adapted to be fastened either to the body or to a stereotaxic means;
- markers releasably fastened to the fixtures and including a substance which is contrasty in imaging; and
- at least two different markers to be attached to a fixture, each in a predetermined position and each having a contrasty substance for different imaging examination procedures.

5,394,458
SYSTEM FOR THE REMOTE MONITORING OF A REPRODUCTION APPARATUS
James D. Allen, Rochester; Tomas Roztocil; Peter R. Connelie, both of Caledonia, and Thomas K. Sciurba, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 18, 1991, Ser. No. 643,592
Int. Cl.[6] H04M *1/24, 3/08, 3/22, 11/00*
U.S. Cl. 379—1 16 Claims



1. A system for the remote monitoring of an electrographic copier/duplicator reproduction apparatus having an internal memory, said apparatus comprising:
- a communication interface in said reproduction apparatus including means for collecting data regarding operation of said reproduction apparatus and for permitting said data to be output from said apparatus, said data comprises reproduction apparatus usage, utilization of features of such reproduction apparatus and billing data storage in said internal memory, said communication interface further including modem means for transmitting said data from said communication interface to a non-dedicated telephone line; and
- a diagnostic and administrative device including data reception means for receiving said data from said telephone line or directly from said communication interface.

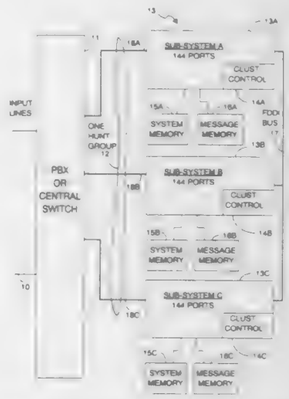
5,394,459
CABINET AND POSITION ALLOCATION
Hakan O. Djuphammar, Stockholm, Sweden; Sven E. Nilsson, Dallas, Tex., and Ulf Hagstrom, Taby, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden and Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.
Filed Apr. 1, 1993, Ser. No. 41,169
Int. Cl.[6] H04M *3/08, 11/00*
U.S. Cl. 379—15 36 Claims



1. A malfunction position detection system for a modular station in a telecommunication system, said station constructed out of a plurality of cabinets, comprising:
- a switch means for each cabinet for setting the position of each cabinet in a station rack;
- a bus for transfering said position to a plurality of electronic units connected to each cabinet;

- memory means on at least one of said electronic units for storing said cabinet position; and
- means for detecting a fault in said station, wherein said cabinet position is sent to a telecommunication switching center when a fault is detected.

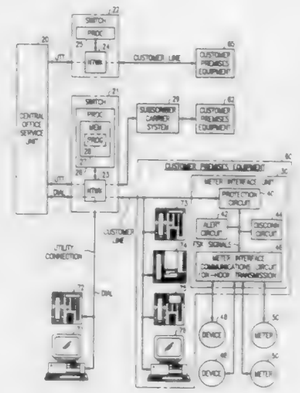
5,394,460
VOICE PROCESSING SYSTEMS CONNECTED IN A CLUSTER
Peter D. Olson, Los Gatos, and Burton N. Kendall, Saratoga, both of Calif., assignors to Octel Communications Corporation, Milpitas, Calif.
Continuation of Ser. No. 831,464, Feb. 5, 1992, Pat. No. 5,301,226. This application Jan. 18, 1994, Ser. No. 183,122
The portion of the term of this patent subsequent to Apr. 5, 2011, has been disclaimed.
Int. Cl.[6] H04M *3/50*
U.S. Cl. 379—67 9 Claims



3. An information server system comprising in combination,
- a plurality of information server modules for providing electronic mailbox facilities for a plurality of users,
- a plurality of input lines, said input lines being distributed among said information server modules,
- a profile for each of said users, said profiles being distributed among said modules,
- a bus means connecting said information server modules into a cluster and,
- profile obtaining means in each of said modules operable in response to an incoming call directed to a particular user, for obtaining the profile of said particular user irrespective of where said profile is stored,
- whereby any of said information server modules can handle a call directed to any user.

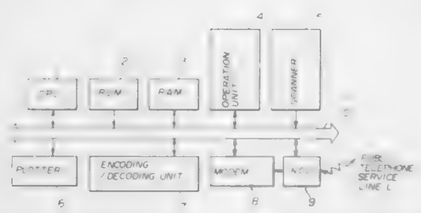
5,394,461
TELEMETRY FEATURE PROTOCOL EXPANSION
Stuart M. Garland, Morton Grove, Ill., assignor to AT&T Corp., Murray Hill, N.J.
Filed May 11, 1993, Ser. No. 60,322
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—106 15 Claims

1. A control method for use by a telephone switching system, said system being in an arrangement where an accessing device is connected by at least one trunk (UTT) to a switching network internal to said switching system, and where said network is connected via customer lines to a plurality of destinations, said method comprising
- said switching system receiving trunk signaling including a function identifier from said data accessing device on said at least one trunk, said function identifier comprises: customer premises equipment (CPE) alert codes, switch function codes, and control data,
- in response to said received signaling, said switching system



implements control activities including controlling connections between said accessing device and at least one of said destinations via said network and in accordance with said function identifier.

5,394,462
COMMUNICATION APPARATUS HAVING A REDIAL FUNCTION AND A SIMPLIFIED-DIAL-NUMBER REGISTRATION FUNCTION
Koichiro Maemura, Isehara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Feb. 3, 1993, Ser. No. 12,755
Claims priority, application Japan, Feb. 5, 1992, 4-019601
Int. Cl.[6] H04M *15/00, 1/56, 3/42, 1/00*
U.S. Cl. 379—142 11 Claims



1. A communication apparatus performing communication with a remote terminal by establishing a communication channel by calling the dial-number of said remote terminal, which communication apparatus comprising:
- a redialing means for dialing a previously dialed dial-number by operating a redial key, said dial-number having been stored in a redial memory;
- a registered dial-number dialing means for dialing a registered dial-number by operating a predetermined key, said registered dial-number having been stored in a registration memory;
- a registration means for registering a dial-number to be used by said registered dial-number dialing means by directly transferring said dial-number from said redial memory to said registration memory; and
- means for storing capability information including protocol data of said called terminal to said redial memory, said capability information being transferred to said registration memory by said registration means together with the corresponding dial-number so that a regular transmission protocol procedure is simplified by using said capability

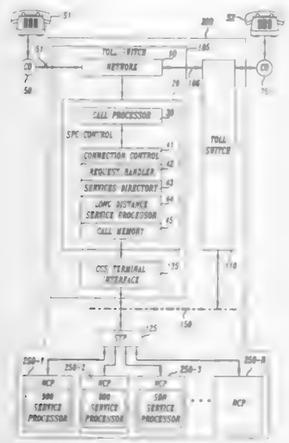
information stored in said registration memory when a transmission to a remote terminal is performed by said registered dial-number dialing means.

5,394,463

TELEPHONE CALL PROCESSING ARRANGEMENT BASED ON CALLING AND CALLED PARTY TELEPHONE SERVICES

Sarah T. Fischell, Fair Haven; Roberto S. Freire, Eatontown; Warren R. Moe, Atlantic Highlands; Gary A. Munson, Little Silver, and Teresa L. Russell, Atlantic Highlands, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 31, 1992, Ser. No. 999,427
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—201 **9 Claims**



1. A method of processing a call between calling and called parties in a communications network formed from a plurality of network switches and providing a plurality of different communications services and associated features, said calling and called parties respectively subscribing to first and second ones of said communications services, said method comprising the steps of

at an originating one of said toll switches, receiving said call and associated calling information, and

identifying, as a function of said calling information, first and second network service processors operative for respectively implementing said first and second services in said network and passing said calling information to said first and second processors, such that said first and second processors cooperate with one another to respectively implement said first and second services and their associated features in said network on behalf of said calling and called parties, and

selecting as a function of said calling information one of said first and second processors to control the processing of said call.

5,394,464

PROGRESSIVE AUTOMATIC ACTIVATION AND AUTOMATIC RESETTING OF CALL COVERAGE

Thomas C. Hanson, Boulder, and Richard P. Moleres, Lewisville, both of Colo., assignors to AT&T Corp., Murray Hill, N.J.

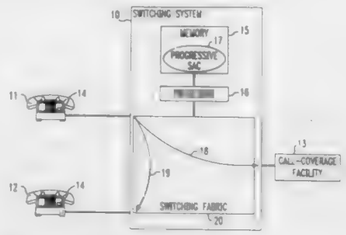
Filed Mar. 1, 1994, Ser. No. 204,029
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—201 **29 Claims**

8. A method of providing call coverage in a telecommunications arrangement, comprising the steps of:

in response to a call directed to a destination facility going unanswered at the destination facility for a first period of time,

automatically redirecting the call to an alternative facility, and

automatically setting a second period of time shorter than the first period as a period of time for which a next call directed to the destination facility will be allowed to go unanswered at the destination facility before being automatically redirected to the alternative facility; and



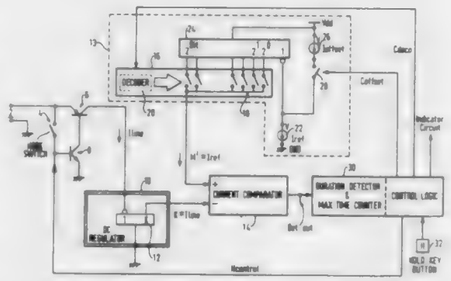
in response to detection of an event at the destination facility suggesting that a next call directed to the destination facility may be answered at the destination facility, automatically setting a maximum predetermined period of time as a period of time for which the next call directed to the destination facility will be allowed to go unanswered at the destination facility before being automatically redirected to the alternative facility.

5,394,465

PARALLEL PHONE DETECTION CIRCUIT

Sung J. Jo, Singapore, Singapore, assignor to SGS-Thomson Microelectronics, Pte Ltd., Singapore

Filed Jan. 28, 1993, Ser. No. 10,361
Claims priority, application European Pat. Off., Dec. 21, 1992, 92311665
Int. Cl.[6] H04M *3/58*
U.S. Cl. 379—377 **17 Claims**



1. A line current detection circuit for use in a telephone set comprising:

means for deriving a comparison current from the line current of a telephone line;

generating means for producing sequentially different values of reference currents;

means for determining when the value of a reference current generated by the generating means corresponds to the value of the comparison current;

means for storing the value of said reference current corresponding to said comparison current so that said reference current is used as a basis for subsequent comparison with said comparison current; and

means for subsequently comparing said stored reference current or a current based thereon with said comparison

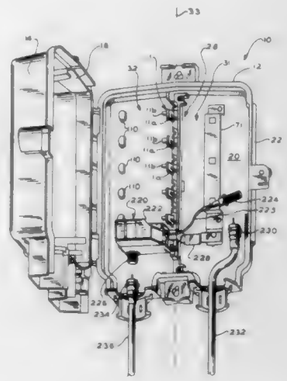
current and for producing an output signal for controlling disconnection of the telephone set to the telephone line in response thereto.

5,394,466

COMBINATION TELEPHONE NETWORK INTERFACE AND CABLE TELEVISION APPARATUS AND CABLE TELEVISION MODULE

Pina Schneider, Holmdel; Eric J. Hermsen, Howell, and Frank S. Siano, Spotswood, all of N.J., assignors to Keptel, Inc., Tinton Falls, N.J.

Filed Feb. 16, 1993, Ser. No. 18,327
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—399 **23 Claims**



1. Apparatus for connecting incoming cable television signals to a television set, comprising:

cable television module for being mounted to telephone network interface apparatus through which at least one incoming telephone line may be connected to at least one telephone customer's telephone, the telephone network interface apparatus including a ground buss for being connected to earth ground, said module including a housing and first and second cable television connectors interconnected to carry said cable television signals from said first connector to said second connector, said first connector for receiving said incoming television signals and said second connector for carrying said incoming cable television signals to said television set; and

ground connecting means for connecting said cable television module to said ground buss.

5,394,467

MULTI-PURPOSE TELEPHONE STRAIN RELIEF

Walter R. Kepley, III, Gaithersburg; Dana J. Greer, Frederick, both of Md., and Richard A. Shields, Jr., Bellevue, Wash., assignors to Claircom Communications Group, L.P., Seattle, Wash.

Filed Mar. 26, 1993, Ser. No. 40,178
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—438 **4 Claims**

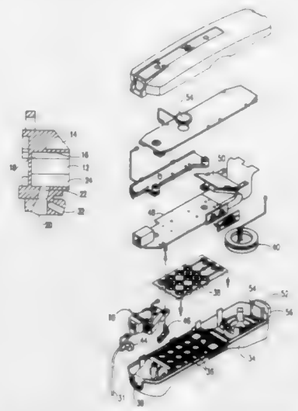
1. A multi-purpose, one-piece block subassembly for a telephone handset, comprising in combination:

a one-piece block housing with a near-field audio input port at one end of said housing, an interior opening in said housing coupling said near-field audio input port to a near-field acoustic chamber in said housing;

a far-field audio input port at another end of said housing, an interior passage in said housing coupling said far-field audio input port to a far-field acoustic chamber is said housing;

a microphone chamber in said housing disposed between said near-field acoustic chamber and said far-field acoustic chamber; and

a passage in said housing for a handset telephone cord, said passage having an inlet adjacent said far-field audio input port and following a path wherein portions of the passage



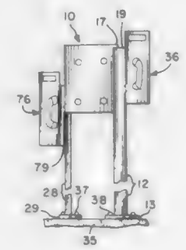
thereof lie in three mutually orthogonal directions through said housing, to an exit from said housing so that said housing absorbs a strain on said handset telephone cord and thereby reduces the transmission of said strain beyond said subassembly.

5,394,468

ADAPTER FOR TELEPHONE POSTS

William L. Wood, 57 N. Boxwood St., Hampton, Va. 23669

Filed Mar. 29, 1993, Ser. No. 38,885
Int. Cl.[6] H04M *1/00*; **E04F** *19/00*
U.S. Cl. 379—453 **10 Claims**



1. An adapter unit for telephone posts to permit installation of additional telephone units on an existing single rectangular phone post designed for only one or two telephone units, comprising:

a hollow rectangular housing having four side surfaces and provided with a closed top end and an interior accessible bottom end;

a top mounting bracket integrally extending horizontally from said closed top end adjacent to a first of said four side surfaces and serving to facilitate attachment of said hollow housing to the top surface of an existing rectangular phone post;

said first side surface of said hollow rectangular housing being in contact and flush with a side surface of the existing phone post while leaving the remaining three side surfaces of said hollow rectangular housing exposed;

a bottom mounting bracket integrally extending from said first housing side surface to facilitate attachment of said

hollow rectangular housing to the side surface of the existing phone post;

an elongated support leg having a first end extending from said accessible bottom end of said hollow rectangular housing and a second end extending through said accessible bottom end into said hollow rectangular housing;

leg height adjustment means provided within said hollow rectangular housing for receiving said second end of said support leg; and

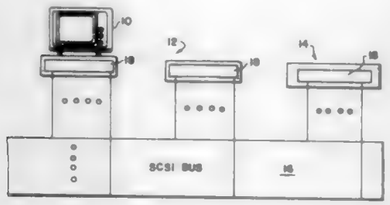
attachment means disposed on each of the three exposed surfaces of said hollow rectangular housing and selectively arranged to provide attachment of a phone unit on each of said three exposed surfaces.

5,394,469

METHOD AND APPARATUS FOR RETRIEVING SECURE INFORMATION FROM MASS STORAGE MEDIA

Robert Nagel, and Thomas H. Lipscomb, both of New York, N.Y., assignors to Infosafe Systems, Inc., New York, N.Y.

Filed Feb. 18, 1994, Ser. No. 198,733
Int. Cl.[6] H04L *9/00, 9/06*
U.S. Cl. 380—4 3 Claims



1. Apparatus for retrieving information packets from a mass storage device, at least some of which information packets are stored in said mass storage device in encrypted form, said apparatus comprising, in combination:

(a) a digital bus that transmits address information, control information and data from a call initiating unit, connected to said bus, to one or more call receiving units, connected to said bus, wherein each unit connected to said bus has an associated bus address;

(b) a host computer connected to said bus and having a first address;

(c) a mass storage device connected to said bus and having a second address; and

(d) a decryption controller connected to said bus and having a third address, said decryption controller including:

(1) a control unit for controlling the operation of said decryption controller;

(2) a memory; and

(3) means for decrypting encrypted information;

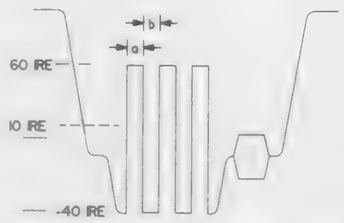
wherein the host computer has stored therein said third address as the address of said mass storage device and sends information requests via said bus to said decryption controller in lieu of said mass storage device; and wherein said decryption controller by means of said control unit receives information requests from said host computer and executes said information requests by sending information requests via said bus to said mass storage device, storing in said memory information packets received from said mass storage device in response to said information requests, decrypting encrypted portions of said information packets, if any, by said decryption means and transmitting said information packets, in decrypted form, to said host computer.

5,394,470

HORIZONTAL PULSE AUGMENTATION OF A VIDEO SIGNAL

William J. Buynak, Bayville; Eugene Leonard, Sands Point, both of N.Y.; Graham S. Stubbs, Poway, Calif., and Karoly Budai, Danbury, Conn., assignors to Eidak Corporation, Hyannis, Mass.

Continuation-in-part of Ser. No. 934,777, Aug. 24, 1992, abandoned. This application Apr. 20, 1993, Ser. No. 50,563
Int. Cl.[6] H04N *7/167*
U.S. Cl. 380—5 48 Claims



1. A method for copy protecting a video signal comprising the steps of:

providing a video signal including field intervals of video information and horizontal synchronizing intervals each having a horizontal sync pulse therein with a predetermined magnitude, and

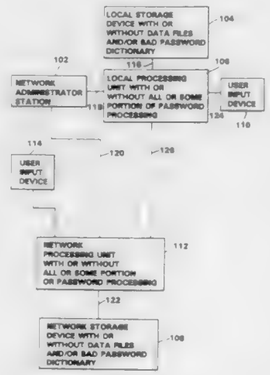
adding a plurality of augmenting pulses having a magnitude substantially greater than said predetermined magnitude to at least one of the horizontal sync pulses in each of said field intervals to produce a modified video signal which can be displayed with an absence of distortion that would otherwise be caused by the presence of said augmenting pulses.

5,394,471

METHOD AND SYSTEM FOR PROACTIVE PASSWORD VALIDATION

Ravi Ganesan, Laurel, and Christopher I. Davies, Columbia, both of Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Sep. 17, 1993, Ser. No. 121,852
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—23 32 Claims



16. An improved password validation system comprising:

(a) means for accessing a data base of bad passwords, wherein each said bad password is comprised of one or more characters;

(b) means for computing a frequency of occurrence of said bad password characters;

(c) means for computing a probability of occurrence T, within said bad passwords, of the bad password characters using the computed frequency of occurrence;

(d) means for inputting a validation password to the system, wherein said validation password is comprised of one or more characters; and

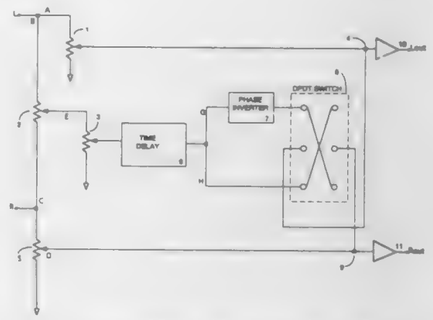
(e) comparitor means for comparing said validation password characters with the probability of occurrence T of the bad password characters.

5,394,472

MONAURAL TO STEREO SOUND TRANSLATION PROCESS AND APPARATUS

Richard G. Broadie, P.O. Box 615, Palm Springs, Calif. 92263, assignor to Richard G. Broadie and Sharon A. Broadie, both of Palm Springs, Calif.

Filed Aug. 9, 1993, Ser. No. 103,538
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—1 24 Claims



1. A device for producing improved spatial imaging from a two-channel audio input source whereby a first stereophonic input signal L input into a first terminal of the device and a second stereophonic input signal R is input into a second terminal of the device comprising:

means for dividing said first stereophonic input signal L into signals A and B;

means for dividing said second stereophonic input signal R into signals C and D;

means for providing gain control to said signal A;

means for providing gain control to said signal D;

means for mixing said signal C with said signal B so as to form an output signal E;

means for providing gain control to said output signal E;

means for imparting time delay to said gain controlled signal E;

means for dividing said gain controlled, time delayed signal E into two signals G and H;

means for inverting said signal G by approximately 180 degrees with respect to said signal H;

means for switching said phase inverted signal G and said signal H, said switching means mixing said phase inverted signal G with said signal A to produce a first channel output signal and said signal H with said signal D to produce a second channel output signal if a first position of said switching means is selected and said switching means mixing said phase inverted signal G with said signal D to produce said first channel output signal and said signal H with said signal A to produce said second channel output signal if a second position of said switching means is selected.

4. A device for imparting time differentials to an independent audio input signal M in conjunction with multi-track audio input signals L and R, said device comprising:

means for providing gain control to said signal M;

means for imparting time delay to said signal M;

means for dividing gain controlled, time delayed signal M into a signal C and a signal D;

means for providing gain control to said signal L;

means for providing gain control to said signal R;

means for imparting time delay to signal L;

means for imparting time delay to signal R;

means for mixing said signal C with gain controlled, time delayed signal L so as to provide a first channel output signal; and

means for mixing said signal D with gain controlled, time delayed signal R so as to provide a second channel output signal;

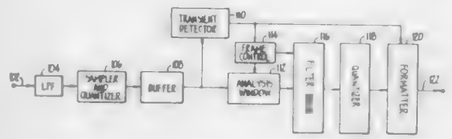
whereby said independent audio input signal M may be made to lead or lag, in time, with respect to audio input signals L and R, which are synchronized, with respect to time.

5,394,473

ADAPTIVE-BLOCK-LENGTH, ADAPTIVE-TRANSFORN, AND ADAPTIVE-WINDOW TRANSFORM CODER, DECODER, AND ENCODER/DECODER FOR HIGH-QUALITY AUDIO

Grant A. Davidson, Oakland, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

PCT No. PCT/US91/02512, § 371 Date Dec. 11, 1991, § 102(e) Date Dec. 11, 1991, PCT Pub. No. WO91/16769, PCT Pub. Date Oct. 31, 1991
Continuation-in-part of Ser. No. 508,809, Apr. 12, 1990, abandoned. This PCT application Apr. 12, 1991, Ser. No. 781,262
Int. Cl.[6] G10L *5/00*
U.S. Cl. 381—36 65 Claims



1. An encoder for the encoding of samples representing a discrete time signal and particularly a music signal, comprising

control means responsive to one or more characteristics of said discrete time signal for adapting at least one of a sample block length, one or more analysis-window functions, and one or more discrete transforms, and for grouping said samples into sample blocks having a length equal to said sample block length, wherein said control means adapts said sample block length for any sample block such that it is different from the length of a previous sample block.

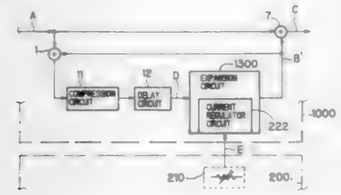
analysis-window means responsive to said control means for generating analysis-window weighted blocks by weighting said sample blocks with said one or more analysis-window functions, and

transform means responsive to said analysis-window means and optionally responsive to said control means for generating spectral information by applying said one or more discrete transforms to said analysis-window weighted blocks.

5,394,474
ECHO ATTACHING CIRCUIT AND AUDIO DEVICE USING THE SAME

Jun Hirai, and Kaoru Izawa, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 13, 1993, Ser. No. 165,410
Claims priority, application Japan, Dec. 15, 1992, 4-354326
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—63 9 Claims



1. An echo attaching circuit for producing an echo signal by delaying an audio signal and outputting the audio signal together with the echo signal by attaching the echo signal to the audio signal by use of a volume controller, comprising:

a compression circuit for compressing one of the audio signal and a mixture signal including the audio signal and the echo signal according to a compression conversion function;

a delay circuit for delaying an output signal of said compression circuit;

an expansion circuit for expanding an output signal of said delay circuit according a reverse conversion function to the compression conversion function to form the echo signal, said expansion circuit having conversion rate of expansion conversion controlled by an externally supplied DC voltage; and

said volume controller adapted to generate the DC voltage having a value set by a manual regulation.

5,394,475
METHOD FOR SHIFTING THE FREQUENCY OF SIGNALS

Zlatan Ribic, Kirshstetterngasse 13, A-1160 Vienna, Austria

Filed Nov. 2, 1992, Ser. No. 970,143
Claims priority, application Austria, Nov. 13, 1991, 2246/91
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—68.2 20 Claims



1. A method for shifting the frequency of an input signal $v_i(t)$ comprising the steps of:

(a) generating an analytical signal including two Hilbert signals $h_1(t)$ and $h_2(t)$, each Hilbert signal having an energy spectrum equivalent to an energy spectrum of the input signal $v_i(t)$;

(b) differentiating each Hilbert signal to generate differentiated Hilbert signals $d_1(t)$ and $d_2(t)$;

(c) generating a signal $wA(t)$ by taking the square root of the sum of the squares of the differentiated Hilbert signals $d_1(t)$ and $d_2(t)$;

(d) generating a momentary amplitude signal A(t) by taking the square root of the sum of the squares of the Hilbert signals $h_1(t)$ and $h_2(t)$;

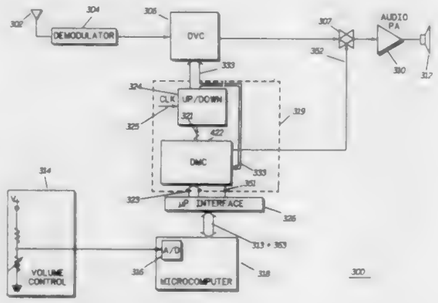
(e) dividing the signal $wA(t)$ by the momentary amplitude signal A(t) to generate a momentary frequency signal w(t); and

(f) generating an output signal $v_o(t)$ with a momentary frequency equivalent to the momentary frequency signal w(t).

5,394,476
VOLUME CONTROL DEVICE

Norman T. Rollins, Sunrise, and King F. Lee, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 17, 1992, Ser. No. 992,356
Int. Cl.[6] H03G *3/00*; H04B *1/10*
U.S. Cl. 381—104 2 Claims



1. A receiver comprising:

an audio stage;

a digital volume control having a variable attenuation;

a mute control gate connectable between the audio stage and the digital volume control, the gate having a gate control input, a mute disconnected state, and an unmute connected state;

an up/down counter for counting, the counter having a counter input and a counter output, the counter output providing an incrementing word for controlling the variable attenuation of the digital volume control;

microprocessing means for controlling the receiver, the microprocessing means having a microprocessor volume level output for providing a reference word and a mute output for switching the state of the mute control gate; and

a digital magnitude comparator having logic means for controlling volume level and muting, a reference input for receiving the reference word, the comparator having a comparison input connected to the counter output for comparing the incremental word against the reference word, and a comparator output connected to the counter input for providing a count signal if the words do not match and for providing a non-count signal if the words match;

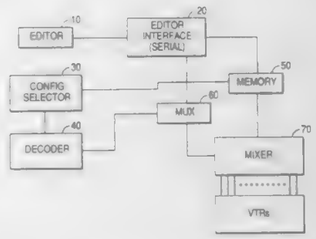
the logic means intercepting the mute output for disabling switching of the mute control gate until the words match; and

the up/down counter, responsive to the count signal, counts from the incremental word, in a direction approaching the second word by an incremental change to form a new incremental word, for controlling the incremental attenuation of the digital volume control.

5,394,477
MICROPROCESSOR CONTROLLED MULTIPLE CHANNEL VTR CONFIGURATION OF AN AUDIO FOLLOW VIDEO MIXER

Michael A. Zampini, and Alan Flum, both of Boca Raton, Fla., assignors to Sony Electronics Inc., Park Ridge, N.J.

Filed Apr. 9, 1993, Ser. No. 45,605
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[6] H04B *1/00, 3/00*; H02B *1/00*
U.S. Cl. 381—119 15 Claims



1. An audio mixer system comprising:

means for processing audio signals from a plurality of devices according to one of a plurality of functions;

an editor operatively connected with said processing means for supplying editor control signals indicating which of said audio signals are to be processed, and the function according to which said audio signals are to be processed by said processing means;

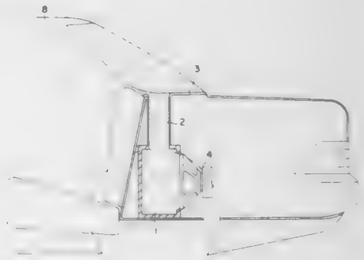
configuration selection means for enabling selection of a desired configuration of said plurality of devices and for producing configuration selection signals corresponding to a selected configuration; and

microprocessor control means for controlling said processing of the audio signals from the selected plurality of devices according to control signals obtained from said editor control signals and said configuration selection signals.

5,394,478
LOW FREQUENCY SOUND GENERATION SYSTEM FOR USE IN VEHICULAR PASSENGER COMPARTMENTS

Dana B. Hathaway, Amesbury, and Lawrence B. Nile, Newburyport, both of Mass., assignors to Advanced Composite Audio, Inc., Hampton Falls, N.H.

Filed Nov. 18, 1992, Ser. No. 977,677
Int. Cl.[6] H04R *25/00, 7/00*
U.S. Cl. 381—154 4 Claims



1. A system for low frequency sound production in a vehicular passenger compartment, comprising:

electrodynamic driver means, having a first acoustic mass means and a first acoustic compliance; and

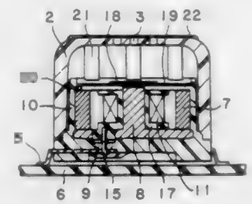
Helmholtz resonator means, affixed to only one radiating side of said electrodynamic driver means and having a second acoustic mass means and a second acoustic compliance means, said second acoustic mass means being affixed to a baffle facing said passenger compartment, said second acoustic mass means providing the sole acoustic output into said passenger compartment,

wherein said first and second acoustic mass means have substantially similar magnitudes, and said Helmholtz resonator means and said electrodynamic driver means being substantially tuned to the highest and lowest frequencies of a desired passband, respectively, thus providing a spaced pole pair with a transition region that yields a substantially flat pressure vs. frequency characteristic in said passenger compartment, in response to one eighth of the radiated wavelengths exceeding the dimensions of said passenger compartment.

5,394,479
SOUNDING APPARATUS WITH SURFACE MOUNTING TERMINALS

Shoji Ishigaya, and Isao Fushimi, both of Shizuoka, Japan, assignors to Star Micronics Co., Ltd., Shizuoka, Japan

Continuation of Ser. No. 927,544, Aug. 5, 1992, abandoned, which is a continuation of Ser. No. 750,433, Aug. 20, 1991, abandoned, which is a continuation of Ser. No. 383,414, Jul. 20, 1989, abandoned. This application Oct. 25, 1993, Ser. No. 142,840
Claims priority, application Japan, Jul. 25, 1988, 63-185061
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—188 6 Claims



1. A sounding apparatus having surface-mounting terminals, terminal surfaces of said surface-mounting terminals being in contact with a conductive pattern surface of a printed circuit board, said terminal surfaces being fixed on said conductive pattern surface by a solder to provide electrical connection, said sounding apparatus comprising:

a pole piece including a flat plate portion having first openings formed thereon, and a projection extending from the center of said flat plate portion;

a bobbin to be fitted around the projection of the pole piece, including magnet wire wound between flanges of said bobbin, protrusions formed on one of said flanges to be inserted into said first openings, and bobbin terminals extending through said protrusions and thereby being electrically connected with terminations of said magnet wire;

said surface-mounting terminals having holes through which each of said bobbin terminals extends, said holes being arranged so as to align with said first openings of said pole piece;

a molded plastic housing with said surface-mounting terminals laterally passing therethrough and partially extending from the side surfaces thereof, and said pole piece fixed inside thereof by plastic molding, said molded plastic housing firmly holding the flat plate portion of said pole piece on a top surface of a base thereof, fixedly supporting said surface-mounting terminals, having second openings formed thereon at positions corresponding to said first openings of said pole piece and said hole of said surface-mounting terminals, and having a recess on a rear surface

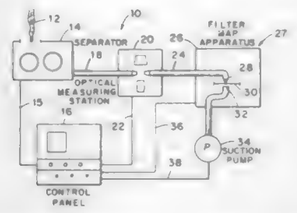
of said base, wherein a portion of said surface mounting terminals including said hole and its surroundings is exposed in said second openings and said recess so that said bobbin terminals and said surface-mounting terminals are electrically connected in said recess.

5,394,480

TOPOLOGICAL MAP MAKER

Frederick M. Shofner; Joseph C. Baldwin; Benjamin M. Kacenas, and Youe-T. Chu, all of Knoxville, Tenn., assignors to Zellweger Uster, Inc., Knoxville, Tenn.

Filed Sep. 19, 1991, Ser. No. 762,613
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—1 **15 Claims**



1. An apparatus for moving and presenting physical textile entities for measurement or viewing in connection with a previously quantized correlation parameter for mapping the locations of the entities comprising:

a media having a surface, and

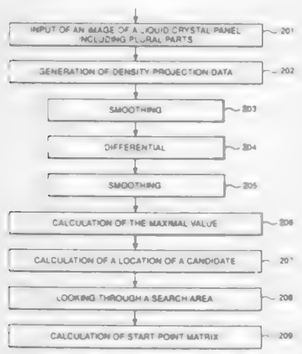
a map of the physical textile entities deposited on the surface in a pattern that is a function of the correlation parameter, said map including a plurality of discrete map positions, each of said map positions being uniquely associated with the parameter.

5,394,481

LIQUID CRYSTAL PANEL INSPECTION METHOD

Ryohei Kumagai; Kaoru Hiiro; Harumi Shimizu; Manabu Oosaka, and Tooru Takahashi, all of Tokyo, Japan, assignors to Ezel Inc, Tokyo, Japan

Filed Jan. 15, 1992, Ser. No. 820,925
Claims priority, application Japan, Jan. 16, 1991, 3-015878; Jan. 24, 1991, 3-023935
Int. Cl.[6] G06K *9/00, 9/48, 9/20*
U.S. Cl. 382—8 **7 Claims**



6. A method of inspecting a liquid crystal panel for defects, comprising the steps of:

i) inputting an image of a liquid crystal panel, wherein said liquid crystal panel contains parts;

ii) selecting a defectless one of said liquid crystal panel parts as a reference part and determining a vectorization starting point on said reference part, wherein said determination of said vectorization starting point includes the following steps:

ii$_a$) generating density projection data for said image of said liquid crystal panel;

ii$_b$) differentiating said density projection data;

ii$_c$) selecting a minimum value from said differentiated density projection data;

ii$_d$) using said minimal value to define a vectorization starting point corresponding to a reference part.

iii) generating a contour of said reference part using said vectorization starting point; and

iv) examining all other parts in said liquid crystal panel, which are to be inspected, by making a comparison with said reference part based on said contour.

5,394,482

METHOD AND APPARATUS FOR THE DETECTION OF DOT-MATRIX PRINTED TEXT SO AS TO IMPROVE OPTICAL CHARACTER RECOGNITION

George A. Hadgis, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 786,474, Nov. 1, 1991, abandoned. This application Jan. 4, 1994, Ser. No. 177,294
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—9 **4 Claims**

1. A method of detecting the presence of dot-matrix printed text from other types of printed text in an image by processing bi-level pixel video data of text characters, comprising the steps of:

locating a kernel of M rows by N columns of pixels to a location in said image;

moving said kernel to the next adjacent pixel position and examining the image data contained in the kernel and labeling those pixel positions with a flag when the bit pattern at the current location matches one or more of the following bit patterns:

(a) where there are one or more adjoining black pixels in a column forming a group of three vertical groups of black pixels in the same column are separated from adjacent groups by at least one white pixel in the column;

(b) where there are one or more adjoining black pixels in a row forming a group and three horizontal groups of black pixels in the same row are separated from adjacent groups by at least one white pixel in the row;

(c) where there are one or more adjoining black pixels in a given left-diagonal forming a group and three groups of black pixels along said given left-diagonal are separated from adjacent groups by at least one white pixel along the same left diagonal;

(d) where there are one or more adjoining black pixels in a given right-diagonal forming a group and three groups of black pixels along said given right-diagonal are separated from adjacent groups by at least one white pixel along the same right-diagonal; and

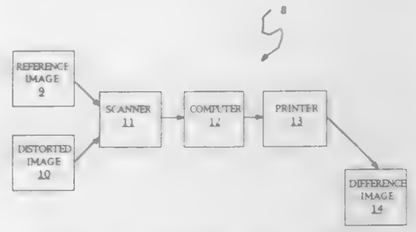
when any of the above patterns are found, creating and outputting a filter mask of M rows by N columns that is indicative of the location of dot matrix text in the image.

5,394,483

METHOD AND APPARATUS FOR DETERMINING VISUALLY PERCEPTIBLE DIFFERENCES BETWEEN IMAGES

Scott J. Daly, 1758 Scottsville-Mumford Rd., Scottsville, N.Y. 14546

Filed Jun. 30, 1992, Ser. No. 906,603
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—34 **9 Claims**



1. Apparatus for determining visual differences, to the human visual system of an observer, between a first image signal representative of a first image and having a first luminance level and a second image signal representative of a second image and having a second luminance level, comprising:

an amplitude non-linearity unit, which is operative to adjust said first and second luminance levels of the first and second image signals, respectively;

a contrast sensitivity unit, which is coupled to the output of said amplitude non-linearity unit, and is operative to determine variations in visual sensitivity of said first and second images as a function of frequency;

a cortex unit, which is coupled to the output of said contrast sensitivity unit, and is operative to subdivide each of said first and second image signals into a plurality of cortex-filtered image signals which vary according to visual orientation of said first and second images relative to said human visual system of said observer and frequency content of image information;

a contrast difference unit, which is coupled to the output of said cortex unit, and is operative to provide image signals indicative of the difference between said cortex-filtered first and second image signals at a plurality of visual orientation and frequency band combinations of said cortex filters;

a first threshold elevation unit, which is coupled to receive a plurality of cortex-filtered first image signals from said cortext unit, and is operative to determine the visual sensitivity of first cortex-filtered images according to the frequency and orientation of information in the first image signal;

a second threshold elevation unit, which is coupled to receive a plurality of cortex-filtered second image signals from said cortext unit, and is operative to determine the visual sensitivity of second cortex-filtered images according to the frequency and orientation of information in the second image signal;

a threshold elevation comparison unit, which is coupled to the outputs of said first and second threshold elevation units, and is operative to determine an overall threshold according to first threshold elevations associated with said first plurality of cortex-filtered images and second threshold elevations associated with said second plurality of cortex-filtered images; and

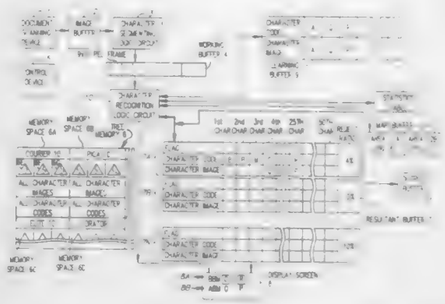
a probability generator unit, which is coupled to the output of aid contrast unit and the output of said threshold elevation comparison unit, and is operative to determine the probability that a user will visually perceive a difference between the first image and the second image.

5,394,484

IMAGE RECOGNITION APPARATUS

Richard G. Casey, Morgan Hill, Calif.; Yohji Nakamura, and Kazuharu Toyokawa, both of Yamato, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 342,403, Apr. 24, 1989, abandoned. This application Dec. 23, 1991, Ser. No. 813,239
Claims priority, application Japan, Apr. 28, 1988, 63-104469
Int. Cl.[6] G06K *9/62*
U.S. Cl. 382—37 **21 Claims**



1. An apparatus for recognizing a pattern image having multiple picture elements, comprising:

a first memory for storing a pattern image;

pattern recognition means connected to said first memory for recognizing patterns in said pattern image according to a tree-based pattern recognition procedure including plural recognition steps;

said pattern recognition means including a decision tree having a root node and a plurality of branch and leaf nodes arranged in a root-to-leaf node configuration, wherein the root and branch nodes correspond to selected picture elements of the pattern image and the leaf nodes correspond to pattern codes, and further wherein a pattern code is determined to correspond to an input pattern image by following said decision tree in a root-to-leaf node direction in accordance with the color of each picture element associated with each node encountered in the decision tree;

a second memory connected to said pattern recognition means for storing a pattern image erroneously recognized by said pattern recognition procedure;

means for generating a first probability map including plural storage positions, each of which stores a value representing a probability of black appearing in a picture element of said erroneously recognized pattern image;

means for supplying said values as input data to said pattern recognition procedure and detecting one or more leaf nodes of said decision tree having a predetermined minimum probability of being assigned to the input pattern image during said pattern recognition procedure;

means for generating a second probability map including plural storage positions, each of which stores a value representing a probability of black appearing in a picture element of a pattern image corresponding to a pattern code assigned to one of said detected leaf nodes; and

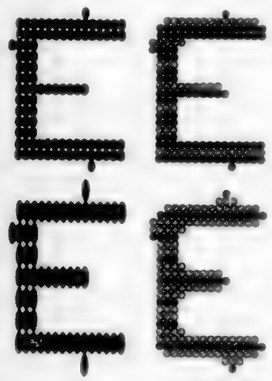
means for extending said decision tree from at lease one of said detected leaf nodes by comparing said first and second probability maps, identifying a picture element wherein the probability values of each probability map have a maximum difference, assigning that picture element to said detected leaf node, and extending said detected leaf node to a new pair of leaf nodes representing, respectively, a pattern code correctly corresponding to said erroneously recognized pattern image and the pattern code previously assigned to said detected leaf node.

5,394,485

METHOD AND APPARATUS FOR SMOOTHED SCALING OF FACSIMILE IMAGES

David J. Lowe; Trudy L. Benjamin, both of Vancouver, and William S. Eaton, Ridgefield, all of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 17, 1993, Ser. No. 32,222
Int. Cl.[6] G06K *9/42, 9/40*
U.S. Cl. 382—47 10 Claims



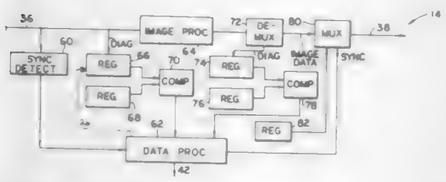
1. A method of scaling lower resolution received image data for printing on a higher resolution output device, comprising:
receiving image data containing, along a given print axis, disparate on-pixel counts of adjacent received pixel rows adding one or more output pixel rows between received pixel rows of the received image data; and
in connection with such received image data, selectively turning on pixels in the added output pixel rows to produce modified output image data for printing, wherein the on-pixel count of each of said added output pixel rows is intermediate the on-pixel counts of such received pixel rows and is graduated in a predetermined manner between such disparate on-pixel counts.

5,394,486

METHOD AND APPARATUS FOR MONITORING IMAGE PROCESSING OPERATIONS

Christoph Eisenbarth, El Granada; Ira Finkelstein, San Jose; Dennis McGhie, Portola Valley, and Edward Panofsky, Woodside, all of Calif., assignors to De La Rue Giori S.A., Lausanne, Switzerland

Continuation of Ser. No. 926,771, Aug. 6, 1992, abandoned. This application Jun. 29, 1994, Ser. No. 268,657
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—57 1 Claim



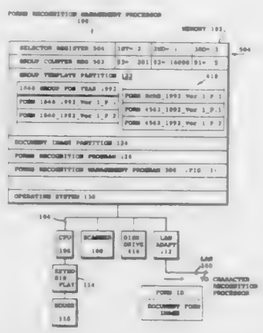
1. An image processing system comprising:
(a) an image acquisition module including
(i) a source of video image data, said image data being separated into image blocks separated by blanking periods, which image data defines a two dimensional video,
(ii) an input source of fixed input diagnostic data, and
(iii) input interleaving means for interleaving diagnostic data between said video image blocks to provide composite input data having an input image component and an input diagnostic component with said input diagnostic component being transmitted during said blanking periods;
(b) channel means for transmitting said composite input data;
(c) an image processing module receiving said composite input data from said channel means, and including
(i) image processing means for processing said composite input data to generate composite processed data having a processed image component and a processed diagnostic component, said composite processed data being defined by processed data blocks separated by said blanking periods to form a two dimensional processed image, with said processed diagnostic component being positioned in said blanking periods,
(ii) reference source means for generating a first, a second, and a third reference, said first reference corresponding to said fixed diagnostic data, said second reference corresponding to said processed diagnostic component, and said third reference corresponding to diagnostic data for subsequent processing;
(iii) input comparing means for comparing said first reference to said input diagnostic component and for generating a corresponding first comparator signal;
(iv) processed comparing means for comparing said processed diagnostic component and said second reference to generate a second comparator signal,
(v) analyzing means for analyzing said first comparator and said second comparator signals to determine if said image processing means and said channel means are functioning properly, and
(vi) output interleaving means for interleaving said third reference and said processed data component to generate an output composite signal.

5,394,487

FORMS RECOGNITION MANAGEMENT SYSTEM AND METHOD

Mark E. Burger, Germantown, and Hsiao H. Sun, Potomac, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1993, Ser. No. 141,734
Int. Cl.[6] G06K *9/20*
U.S. Cl. 382—61 5 Claims



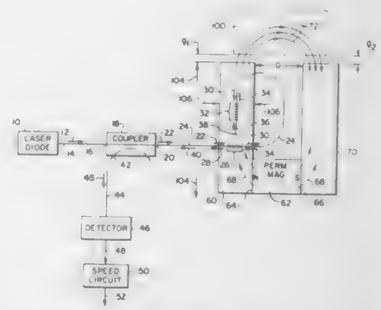
1. In a data processing system, a method of aggregated submitted forms recognition where an aggregated submission includes a plurality of mutually related forms included with each submission, comprising the steps of:
providing form templates for recognizing forms in the aggregated submission; grouping all form templates into groups of related form templates;
counting the number of times the first submitted form of each aggregated submission is matched to a particular group of related form templates during submitted forms processing;
arranging the order of search of groups of related form templates from groups most frequently having a match with the first submitted form of each aggregated submission to those least frequently having a match with the first submitted form of each aggregated submission;
scanning in a plurality of submitted forms in an aggregated submission;
starting a submitted forms recognition process for a first submitted form in the aggregated submission;
searching for a form template to match the first submitted form, starting with the group of related form templates most frequently having a match, and continuing the searching with the other groups of related form templates in the arranged order until a match between the first submitted form and a form template is found;
starting a submitted forms recognition process for a next submitted form in the aggregated submission, after a match has been found in one of said form template groups for the first submitted form; searching for a form template to match the next submitted form, starting with the group of related form templates where the previous match was found, if a match is not found in the group of related form templates where the previous match was found, the next group of related form templates in the arranged order is searched until a match is found; and
continuing the submitted forms recognition process for the remaining submitted forms in the aggregated submission, as set forth in the previous step.

5,394,488

OPTICAL FIBER GRATING BASED SENSOR

Mark R. Fernald, Enfield, and Bruce D. Hockaday, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 30, 1993, Ser. No. 159,876
Int. Cl.[6] G02F *1/09*
U.S. Cl. 385—13 28 Claims



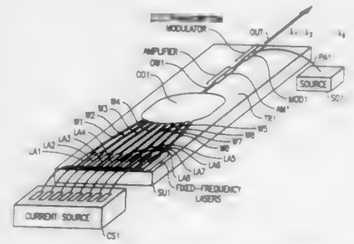
1. An optical sensor, comprising:
a magnetostrictive material which expands and contracts based on the strength of magnetic fields therein;
magnetic field means connected to a portion of said magnetostrictive material, for providing said magnetic fields within said magnetostrictive material;
an optical waveguide that guides light;
first reflection means, disposed along said waveguide in the path of a source light, for providing a first reflected light having a first reflection wavelength, and for providing a first transmitted light;
second reflection means, disposed along said waveguide in the path of said first transmitted light from said first reflection means, for providing a second reflected light at a second reflection wavelength and for providing a second transmitted light;
light from said first and said second reflection means making up an output light signal;
said first and said second reflection means being mechanically connected to said magnetostrictive material and being oriented non-parallel to each other;
said magnetostrictive material and said magnetic field means being oriented so as to cause the strength of the magnetic field in said magnetostrictive material to increase while a metallic object is nearby, thereby causing a dimension of said magnetostrictive material to increase and causing one of said reflection means to be stretched; and
said first and said second reflection wavelength being substantially equal to each other while said metallic object is not nearby and being unequal while said metallic object is nearby, thereby causing the magnitude of said output light signal to change while said metallic object is nearby.

5,394,489

WAVELENGTH DIVISION MULTIPLEXED OPTICAL COMMUNICATION TRANSMITTERS

Thomas L. Koch, Holmdel, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Jul. 27, 1993, Ser. No. 97,692
Int. Cl.[6] G02B *6/12;* H04J *14/00;* H01S *3/19*
U.S. Cl. 385—14 18 Claims



1. A wavelength-division multiplexed transmitter, comprising:
a substrate;
a plurality of individually actuable lasers integral with said substrate;
an optical modulator integral with said substrate; and
an optical combiner integral with said substrate and connecting each of said lasers with said modulator;
said lasers each defining a different frequency exclusive of said combiner.

5,394,490

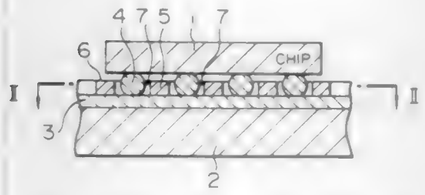
SEMICONDUCTOR DEVICE HAVING AN OPTICAL WAVEGUIDE INTERPOSED IN THE SPACE BETWEEN ELECTRODE MEMBERS

Takeshi Kato, Kokubunji; Yuuji Fujita, Koganei; Kenichi Mizuishi, Hachioji; Atumi Kawata, Urawa, and Hiroyuki Itoh, Akigawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1993, Ser. No. 104,582
Claims priority, application Japan, Aug. 11, 1992, 4-213954; Sep. 3, 1992, 4-236169
Int. Cl.[6] H05K *1/00;* G06F *1/10*
U.S. Cl. 385—14 25 Claims

1. A semiconductor device with a semiconductor chip connected to a wiring substrate in flip-chip fashion, comprising:
a plurality of electrode members arranged two-dimension-

ally for connecting said semiconductor chip and said wiring substrate; and



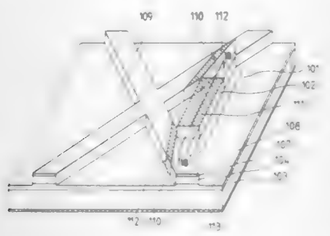
an optical waveguide formed in a space between said electrode members.

5,394,491

SEMICONDUCTOR OPTICAL SWITCH AND ARRAY OF THE SAME

Hiroaki Inoue, Saitama; Kazuhisa Uomi, Hachioji, and Koji Ishida, Musashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 96,997, Jul. 27, 1993, abandoned, which is a continuation of Ser. No. 892,782, Jun. 3, 1992, Pat. No. 5,247,592, which is a continuation of Ser. No. 684,378, Apr. 12, 1991, Pat. No. 5,146,513, which is a continuation of Ser. No. 464,192, Jan. 12, 1990, Pat. No. 5,044,745. This application Apr. 25, 1994, Ser. No. 232,403
Claims priority, application Japan, Jan. 30, 1989, 1-17604
Int. Cl.[6] G02B *6/26*
U.S. Cl. 385—16 **8 Claims**



1. An X-crossing optical waveguide including a pair of optical waveguides intersecting one another at a crossing point to form an X shape structure having first, second, third and fourth optical waveguide legs, comprising:
- a first bypass waveguide coupled between the first and second optical waveguide legs, including an optical amplification portion having a multi-quantum well structure;
- a first carrier injection region located between the crossing point of the X-crossing waveguide and a coupling point of the first optical waveguide leg and the first bypass waveguide; and
- a second carrier injection region located between the crossing point of the X-crossing waveguide and a coupling point of the second optical waveguide leg and the first bypass waveguide.

5,394,492

HIGH POWER SEMICONDUCTOR LASER SYSTEM

Cherng J. Hwang, Watchung, N.J., assignor to Applied Optronics Corporation, South Plainfield, N.J.

Filed Nov. 19, 1993, Ser. No. 156,024
Int. Cl.[6] G02B *6/32*
U.S. Cl. 385—33 **19 Claims**

1. An optical system for generating an output light beam usable in medical laser intervention comprising:
- a plurality of light sources, each light source operating independently of the other light sources and adapted to emit a separate beam of light from a surface thereof, at least one of the plurality of light sources selectively generating a light beam having a wavelength within a visible light spectrum for use in visibly aiming the output light beam of the optical system, and the remaining light sources of the plurality of light sources selectively generating light beams having wavelengths within a predetermined range of wavelengths which are useful in medical laser intervention;
- a plurality of first optical fibers, each of said first optical fibers having one end coupled to the surface of a separate one of the plurality of light sources so as to receive the



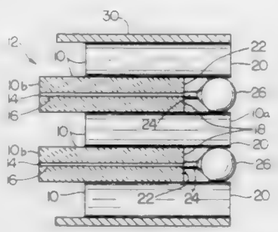
beam of light emitted therefrom, the other ends of the first optical fibers being bundled together in close relation so as to effectively emit a single beam of light which is a combination of the beams from all of the first optical fibers;
- a second optical fiber having an end positioned relative to the other ends of the first optical fibers to receive the beam of light emitted from the bundle of the first optical fibers and deliver the beam of light as the output light beam of the optical system without further processing;
- means for directing the beam of light from the bundled other ends of the first optical fibers into the second optical fiber; and
- the first optical fibers having a numerical aperture less than that of the second optical fiber.

5,394,493

FIBER-OPTIC BUNDLE AND COLLIMATOR ASSEMBLY

Gregory H. Ames, Gales Ferry, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 8, 1994, Ser. No. 287,029
Int. Cl.[6] G02B *6/26*
U.S. Cl. 385—35 **5 Claims**



1. A fiber-optic bundle and collimator assembly comprising:
- a plurality of bodies of substantially cylindrical configuration and of equal diameter arranged side by side in a hexagonal close-packed fashion;
- a retainer for retaining said bodies in said close-packed configuration;

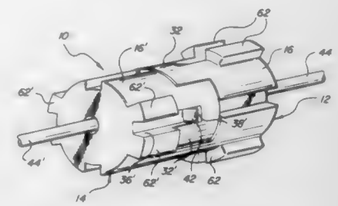
potting material in said retainer for locking said bodies in position;
- a plurality of said bodies being fiber-optic ferrules, each of said ferrules having therein and extending centrally therethrough a single optical fiber;
- a remainder of said bodies being non optical fiber bearing ferrules in alignment width-wise of said assembly to form a collimator assembly face;
- said fiber-optic ferrules being each recessed from said assembly face by an equal distance each to form a pocket in said assembly face;
- a spacer in each of said pockets and abutting one of said fiber-optic ferrules; and
- a spherical optical lens in each of said pockets and abutting one of said spacers, each of said lenses being of the same diameter as its associated fiber-optic ferrule and having its axis aligned with the axis of said associated fiber-optic ferrule optical fiber.

5,394,494

FIBER OPTIC INLINE CONNECTOR WITH HERMAPHRODITIC ALIGNMENT AND LOCK MEANS

Kurt L. Jennings, Warren; James R. Cirillo, Youngstown, and James M. Cardinal, Columbus, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 27, 1994, Ser. No. 186,941
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—58 **14 Claims**



1. A fiber optic inline connector comprising:
- a connector body having a centerline, a connector end and a cable end,
- the connector body including a concentric protrusion at the connector end and a concentric cable passage that extends through the connector body from the connector end to the cable end;
- hermaphroditic alignment means for aligning the concentric cable passage with a concentric cable passage of a mating connector having like alignment means, and hermaphroditic lock means for locking the connector body to a mating connector body having like lock means.

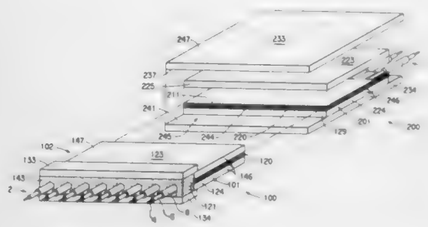
5,394,495

OPTICAL WAVEGUIDE CONNECTORS AND METHODS OF MAKING SAME

Bruce L. Booth, West Chester, Pa., and Robert J. Furmanak, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 22, 1994, Ser. No. 200,056
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—59 **31 Claims**

24. An optical waveguide connector assembly, comprising:
- a first optical waveguide connector comprising:
  - a first optical waveguide device including:
    - a first photohardened layer having a first edge, a second edge, a first side and a second side, non-waveguide regions, and a first plurality of optical waveguides extending from the first edge to the second edge and from the first side to the second side, the waveguides having optical axes and for channeling and transmitting light between the first and second edges,
    - a first photohardened element having a first edge, a second edge, a first side and a second side, the first side of the first element laminated on the first side of the first layer; and
    - a second photohardened element having a first edge, a second edge, a first side and a second side, the first side of the second element laminated on the second side of the first layer, the non-waveguide regions and the first and second elements enclosing the waveguides except at the first and second edges;
  - a first housing including:
    - a first wall having a first edge, a second edge, a first side and a second side, the first side of the first wall adhered to the second side of the first element,
    - a second wall having a first edge, a second edge, a first side and a second side, the first side of the second wall adhered to the second side of the second element,
    - a third wall having a first edge, a second edge, a first side and a second side, a portion of the first side of the third wall adhered to the second side of the first wall, and
    - a fourth wall having a first edge, a second edge, a first side and a second side, the first side of the fourth wall adhered to the second side of the second wall; and
  - wherein the first optical waveguide device and the first housing further comprise:
    - first means for mechanically coupling and optically aligning first ends of the first waveguides to corresponding ends of second waveguides in a second optical waveguide device of a second optical connector; and



- second means for mechanically coupling and optically aligning second ends of the first waveguides (i) to corresponding ends of third waveguides in a third optical waveguide device or (ii) to corresponding optical fibers; and
- a second optical waveguide connector comprising:
  - a second optical waveguide device including:
    - a first photohardened layer having a first edge, a second edge, a first side and a second side, non-waveguide regions, and a first plurality of optical waveguides extending from the first edge to the second edge and from the first side to the second side, the waveguides having optical axes and for channeling and transmitting light between the first and second edges,
    - a first photohardened element having a first edge, a second edge, a first side and a second side, the first side of the first element laminated on the first side of the first layer; and
    - a second photohardened element having a first edge, a second edge, a first side and a second side, the first side of the second element laminated on the second side of the first layer, the non-waveguide regions and the first and second elements enclosing the waveguides except at the first and second edges;
  - a second housing including:
    - a first wall having a first edge, a second edge, a first side and a second side, the first side of the first wall adhered to the second side of the first element, and
    - a second wall having a first edge, a second edge, a first

side and a second side, the first side of the second wall adhered to the second side of the second element; and

wherein the second optical waveguide device and the second housing further comprise:

first means for mechanically coupling and optically aligning first ends of the first waveguides in the second device to corresponding ends of the first waveguides in the first device; and

second means for mechanically coupling and optically aligning second ends of the first waveguides in the second device (i) to corresponding ends of fourth waveguides in a fourth optical waveguide device or (ii) to corresponding optical fibers.

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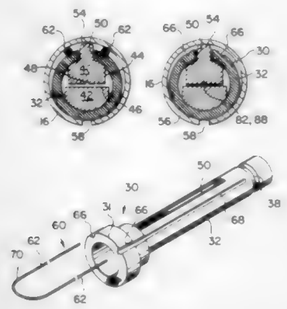
OPTICAL FIBER MECHANICAL SPLICE

Kevin G. Caldwell, Calgary; Guy Castonguay, and Russel M. Modien, both of Saskatoon, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 9, 1993, Ser. No. 163,642

Int. Cl.[6] G02B *6/255, 6/38*

U.S. Cl. 385—70 **8 Claims**



1. An optical fiber mechanical splice comprising:

optical fiber gripping and alignment means comprising a plurality of optical fiber gripping and alignment members extending along a longitudinal axis of the splice, the gripping and alignment means disposed in a condition for insertion therebetween of two optical fibers to be axially aligned and mechanically spliced together;

biasing means for closing the gripping and alignment means into a gripping state so as to grip and align the two optical fibers when inserted therebetween;

and closure prevention means disposed in a cocked position for holding the biasing means in a pre-loaded state and for preventing the biasing means from closing the gripping and alignment means into the gripping state, the closure prevention means movable out of the cocked position to allow the biasing means to close the gripping and alignment means.

5,394,497

CAPTIVATED FIBER OPTIC CONNECTOR

David D. Erdman, Hummelstown; Kevin T. Monroe, Harrisburg; Bryan T. Edwards, Camp Hill, and Joseph L. McKee, Elizabethtown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Feb. 22, 1994, Ser. No. 200,085

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—78 **6 Claims**

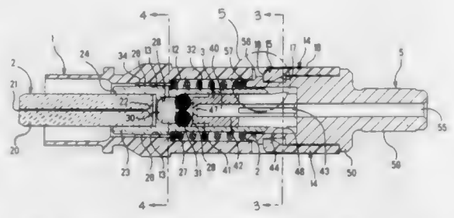
1. A preassembled fiber optic connector comprising:

(a) a hollow plug body (**1**) having at least two inwardly biased latch members (**14**), a mating end (**11**), and a non-mating end (**10**),

(b) a fiber alignment ferrule (**2**) within said plug body,

(c) an axial biasing element (**4**) within said plug body urging said ferrule toward said mating end, and

(d) an internal body (**5**) rearward of said axial biasing element and said ferrule, said internal body captivating said ferrule and said axial biasing element within said plug



body, said internal body having a recess (**51**) bounded by walls (**52**), wherein said recess receives said latch members and said walls of said recess interfere with said latch members to retain said internal body within said plug body.

5,394,498

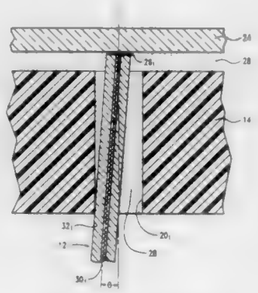
OPTICAL FIBER ARRAY AND PROCESS OF MANUFACTURE

Stephen J. Hinterlong, Elburn; Robert A. Novotny, and Jose M. Sasian-Alvarado, both of Naperville, all of Ill., assignors to AT&T Corp., Murray Hill, N.J.

Filed Nov. 5, 1993, Ser. No. 148,039

Int. Cl.[6] G02B *6/04*

U.S. Cl. 385—115 **16 Claims**



1. An array of optical fibers comprising:

a plurality of optical fibers;

each of said plurality of optical fibers having a respective core,

a first substrate having a plurality of holes therein, said plurality of holes having a first pattern;

an adhesive filling each of said holes;

a transparent substrate having a plurality of targets on a surface thereof, each of said plurality of targets having a dark outer portion surrounding a transparent inner portion;

said transparent substrate adjoining said first substrate and occluding one end of each of said plurality of holes;

each of said plurality of targets has a smaller inside diameter than each of said plurality of holes and said plurality of targets has a pattern that registers with said first pattern such that each of said plurality of holes has a respective target of said plurality of targets at the occluded end thereof; and

each of said plurality of optical fibers is inserted into a respective hole of said plurality of holes, adjusted such that it abuts its respective target with its core circumscribed by an inner portion of its respective target and held in this abutting position until said adhesive is cured to permanently locate each said core within the inner portion of its respective target.

5,394,499

OBSERVATION SYSTEM WITH AN ENDOSCOPE

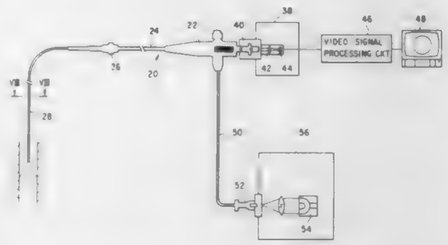
Katsuya Ono, and Masaru Shiraiwa, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1993, Ser. No. 167,333

Claims priority, application Japan, Dec. 28, 1992, 4-349449; May 11, 1993, 5-109150

Int. Cl.[6] G02B *6/06; A61B 1/06*

U.S. Cl. 385—119 **13 Claims**



1. An observation system for an endoscope having a very small-diameter image guide fiber, comprising:

an image guide fiber including a plurality of cores and a common cladding to allow an image to be transmitted, the image guide fiber having an entrance end face upon which an image is incident and an exit end face from which the image exits;

an object optical system arranged in front of the entrance end face of the image guide fiber; and

a reproduction optical system arranged at a back side of the exit end face of the image guide fiber,

wherein a maximal exit numerical aperture of the object optical system is greater than a maximal entrance numerical aperture of the reproduction optical system.

5,394,500

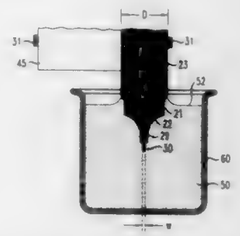
FIBER PROBE DEVICE HAVING MULTIPLE DIAMETERS

Herschel M. Marchman, New Providence, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 22, 1993, Ser. No. 173,285

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—123 **12 Claims**



1. A probe device comprising:

a fiber segment having a relatively thick upper region terminating at its lower extremity in a first tapered region that terminates in a cylindrical intermediate region, the cylindrical intermediate region terminating at its lower extremity in a second tapered region that terminates in a lowest cylindrical region;

the upper region, the cylindrical intermediate region, and the lowest cylindrical region having respective maximum widths that are monotonically decreasing;

the lowest cylindrical region having a maximum width in the approximate range of 0.01 μm to 150 μm and terminating at its lower extremity in an essentially planar end surface oriented perpendicular to the axis of the lowest cylindrical region; and

the intermediate cylindrical region having a height and a maximum width in a ratio in the approximate rate of 1 to 100.

5,394,501

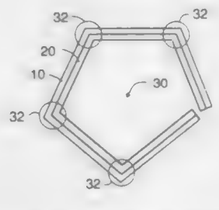
OPTICAL COATING FOR REFLECTING VISIBLE AND LONGER WAVELENGTH RADIATION HAVING GRAZING INCIDENCE ANGLE

Philip Baumeister; Dennis Fischer, both of Auburn, and David Trost, San Francisco, all of Calif., assignors to Coherent, Inc., Santa Clara, Calif.

Division of Ser. No. 959,699, Oct. 13, 1992, Pat. No. 5,333,090. This application Oct. 13, 1993, Ser. No. 136,307

Int. Cl.[6] G02B *6/20*

U.S. Cl. 385—125 **3 Claims**



1. A method of forming a hollow waveguide, through which radiation can propagate along a longitudinal axis, including the steps of:

(a) forming a coated substrate by depositing an optical coating on a substantially flat substrate having a left face and a right face; and

(b) forming a folded, coated substrate having a polygonal cross-section in a plane perpendicular to the longitudinal axis, by folding the coated substrate to cause the left face to meet the right face, so that the folded, coated substrate encloses a volume extending along the longitudinal axis, wherein the folded, coated substrate is highly reflective of electromagnetic radiation having grazing incidence, wherein the substantially flat substrate is a metal substrate, and the optical coating is a multi-layer dielectric coating on the metal substrate.

5,394,502

FIBER OPTIC CABLE HARNESS BREAK-OUT FITTING

Ronald J. Caron, Newtown, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1993, Ser. No. 171,073

Int. Cl.[6] G02B *6/44; H02G 3/02*

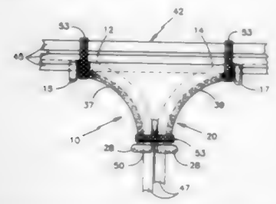
U.S. Cl. 385—134 **12 Claims**

1. A fiber optic cable harness break-out fitting for use at a fiber optic cable break-out location on a fiber optic cable harness containing a plurality of fiber optic cables, said fitting comprising:

a pair of support legs for supporting contact with said harness;

a take-off tube having a throat, said take-off tube being positioned between said support legs, said fitting being positioned with respect to said harness such that break-out fibers which exit said harness at said break-out location are received through said throat; and

a pair of support surfaces between each of said legs and said take-off tube, said support surfaces having a controlled



radius for controlling the degree of bend in said break-out fibers.

5,394,503

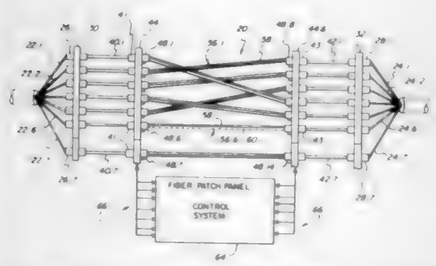
OPTICAL FIBER CONNECTION MONITORING APPARATUS, PATCH PANEL CONTROL SYSTEM AND METHOD OF USING SAME

Frederick Dietz, Jr., Trumbull; Neil Unger, Newtown, and James Bateman, New Milford, all of Conn., assignors to Data Switch Corporation, Shelton, Conn.

Continuation-in-part of Ser. No. 134,073, Oct. 8, 1993, abandoned. This application Feb. 15, 1994, Ser. No. 196,959

Int. Cl.[6] **G02B** *6/36, 6/38*

U.S. Cl. 385—135 **43 Claims**



1. An optical fiber connection control system, comprising:

panel means having a plurality of optical fiber ports for receiving connecting optical cables, said fiber ports being formed of an optical fiber coupling and a control coupling;

a plurality of optical cables, said optical cables having optical fibers terminating at fiber connectors selected to operatively engage optical fiber couplings in fiber ports of the panel means; said optical cables further having at ends thereof control connectors associated therewith and positioned to engage control couplings when optical fiber connectors are connected to optical fiber couplings at fiber ports; and

means coupled to said control couplings and operative through said control connectors for deriving signals representative of which fiber couplings in fiber ports are connected to optical fiber connectors of optical cables.

33. A method for controlling optical fiber connections, comprising the steps of:

connecting optical fiber cables to ports in a panel;

transmitting signals to the panel to derive indications from the ports to which optical fiber cables are connected; and

deriving, from the indications, a connection map of the optical fiber cables and the ports.

5,394,504

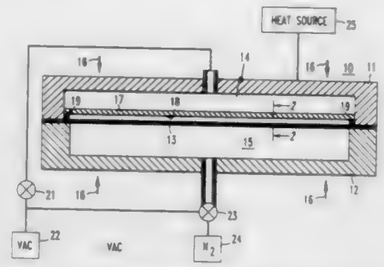
OPTICAL FIBER ENCAPSULATION TECHNIQUES

John J. Burack, Toms River, N.J.; William R. Holland, Ambler, Pa., and Frederick Simchock, Trenton, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Feb. 24, 1994, Ser. No. 201,966

Int. Cl.[6] **G02B** *6/44;* **B29C** *65/18*

U.S. Cl. 385—139 **17 Claims**



1. A method for encapsulating optical fibers comprising the steps of:

bonding optical fiber to a first surface of a flat member having first and second opposite major surfaces;

placing the flat member in a substantially air-tight chamber;

locating a sheet of plastic material in the air-tight chamber such that it is adjacent the first surface of the flat member, the sheet having first and second major surfaces, the first major surface of the sheet facing the first major surface of the flat member;

making the air pressure on the second major surface of the flat member to be significantly lower than the air pressure on the second surface of the sheet, thereby to cause the sheet to press against the flat member;

and heating the plastic sheet sufficiently to cause it to adhere to the first surface of the flat member, thereby to encapsulate said optical fibers.

5,394,505

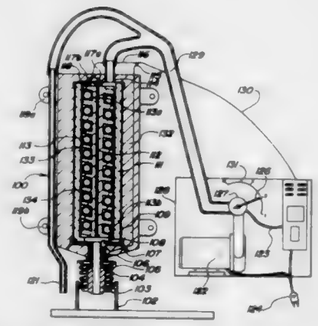
THERMAL JET GLASS CUTTER

Srinivas R. Bidare, Ann Arbor, Mich., assignor to Aeromover Systems Corporation, Dexter, Mich.

Filed Dec. 23, 1992, Ser. No. 996,030

Int. Cl.[6] **C03B** *33/02;* **F24H** *3/00*

U.S. Cl. 392—379 **10 Claims**



1. A device for cutting a material by inducing thermal stress along a desired line of fracture comprising:

heating means for producing a heated fluid,

first nozzle means for applying a stream of said heated fluid against said material,

a source of an unheated fluid having a temperature less than said heated fluid,

second nozzle means for applying a stream of said unheated fluid against said material, and

housing means for positioning said first and second nozzle means relative to said material such that as said housing means is moved relative to said material, said material is first heated by the application of said heated fluid and thereafter cooled by the application of said unheated fluid to produce said desired line of fracture.

5,394,506

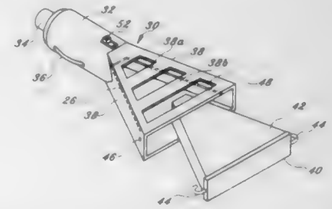
FRAGRANCE DISPENSER FOR AN AUTOMOBILE

Robert D. Stein, and Sherry B. Gunsberger, both of 515 N. Highlands Dr., Hollywood, Fla. 33021

Filed May 3, 1993, Ser. No. 57,121

Int. Cl.[6] **F24F** *6/10;* **F22B** *1/28*

U.S. Cl. 392—395 **5 Claims**



1. A fragrance dispensing device for use in an automobile or other similar type vehicle for dispensing fragrance through the use of the automobile cigarette lighter socket which is electrically connected to the automobile electrical power source battery, said fragrance dispensing device comprising:

a first cylindrical housing sized and shaped to be received into a conventional automobile lighter socket;

circuit means connected to and in said cylindrical housing and adapted to cooperate with circuit elements in the lighter socket for providing current;

heating element means connected to said circuit means for providing heat;

a second housing which includes a pair of diverging walls, each wall having a lower lip portion, said walls supporting a trapezoidal-shaped body;

a volatile fragrance dispensing material shaped in a trapezoidal shaped body and sized to fit into and between said diverging walls; and

means for retaining said volatile fragrance dispensing material body between said diverging walls, whereby said diverging walls define a space with a totally open top for dispensing said fragrance while said heating elements means is activated and allowing for visual observation of the remaining amount of material.

5,394,507

HEATED TUBE WITH A BRAIDED ELECTRIC HEATER

Hiromu Okamoto, Izumisano, Japan, assignor to Tokyo Kogyo Boyeki Shokai, Ltd., Tokyo, Japan

Division of Ser. No. 752,860, Aug. 30, 1991, Pat. No. 5,245,161. This application May 20, 1993, Ser. No. 64,278

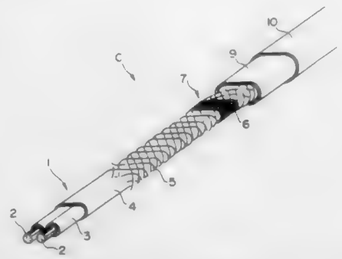
Claims priority, application Japan, Aug. 31, 1990, 2-228058; Aug. 31, 1990, 2-228059

Int. Cl.[6] **H05B** *3/56*

U.S. Cl. 392—480 **3 Claims**

1. A heated tube comprising:

an electrically insulative tube through which a fluid may flow; an electrical feeder line having a plurality of electrically conductive cores which are arranged along the longitudinal direction of said tube, insulation means covering each of said cores and having exposed portion for exposing each core along the length thereof at regular spaced apart intervals and in such an arrangement that said exposed portions along any one core are longitudinally offset from the exposed portions of other cores; an electric heater constructed of bare strands having an electric resistance braided directly on said tube into a tubular braid structure arranged along the longitudinal direction of said tube with said braid structure being connected to



said cores of the feeder line through said exposed portions to form resistance circuits between adjacent exposed portions and adapted to generate a Joule heat during a current flowing through the cores of said feeder line in order to heat the fluid to be heated; and an insulator covering said feeder line and said electric heater around said tube.

5,394,508

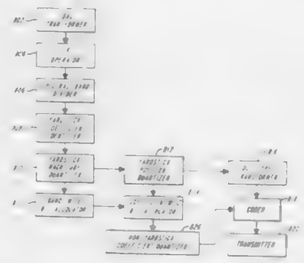
METHOD AND APPARATUS FOR ENCODING DECODING AND COMPRESSION OF AUDIO-TYPE DATA

Jae S. Lim, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 17, 1992, Ser. No. 822,247

Int. Cl.[6] **G10L** *3/02, 7/06*

U.S. Cl. 395—2.38 **14 Claims**



1. A method for encoding a selected signal element of a signal that is defined by signal elements that are discrete in at least one dimension, said method comprising the steps of:

a. dividing the signal into a plurality of bands, at least one band having a plurality of adjacent signal elements, one of said bands including said selected signal element;

b. in each band, identifying a signal element having the greatest magnitude of any signal element in said band, and designating said signal element as a "yardstick" signal element for said band;

c. quantizing the magnitude of each yardstick signal element only one time;

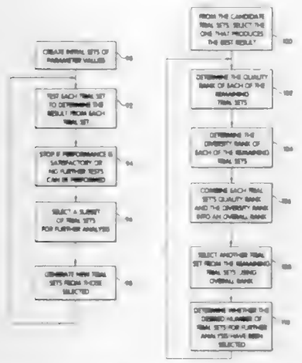
d. allocating to said selected signal element a signal element bit allocation that is a function of the quantized magnitudes of said yardstick signal elements.

5,394,509

DATA PROCESSING SYSTEM AND METHOD FOR SEARCHING FOR IMPROVED RESULTS FROM A PROCESS

Patrick H. Winston, 88 Monument St., Concord, Mass. 01742

Filed Mar. 31, 1992, Ser. No. 861,068
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—13 54 Claims



1. A method for searching for improved results from a process, which process is performed according to a set of parameters, comprising the steps of:

a. providing at least one trial set of parameters for the process;

b. performing the process to obtain a result for each trial set for which a result has not been obtained;

c. selecting at least one trial set from the provided trial sets on the basis of an overall ranking of the trial sets based on a selected criterion, wherein the selected criterion is both quality and diversity; and

d. perturbing at least one of the selected trial sets to obtain an additional trial set for the process;

e. repeating step b providing the selected trial sets and the additional trial sets for further analysis.

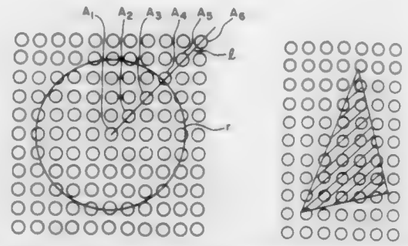
5,394,510

NEURAL NETWORK-TYPE DATA PROCESSING SYSTEM RECOGNIZING A PREDETERMINED SHAPE USING INHIBITORY CONNECTIONS

Sunao Takatori; Ryohei Kumagai; Koji Matsumoto, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, Japan

Continuation of Ser. No. 884,227, May 11, 1992, Pat. No. 5,259,065, which is a continuation of Ser. No. 610,113, Nov. 7, 1990, abandoned. This application Jun. 17, 1993, Ser. No. 77,393
Claims priority, application Japan, Nov. 16, 1989, 1-297951
The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—22 12 Claims

1. A data processing system of a neural network type, comprising a plurality of neural layers including a plurality of neurons in each said neural layer, said neural layers interconnected with a non-inhibitory connection between closer layers that monotonically decreases its inhibitory effects as the layers get closer, and with an inhibitory connection between more distant layers that monotonically increases its inhibitory effect as the distance increases, said layers connected such that a



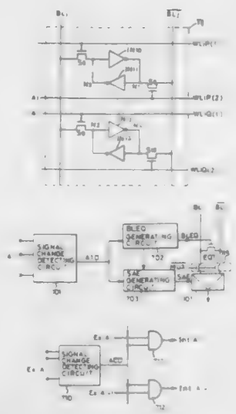
neuron firing in an inhibitory area thereof makes it less likely for a neuron in a non-inhibitory area to fire.

5,394,511

COUPLING ELEMENT FOR SEMICONDUCTOR NEURAL NETWORK DEVICE

Koichiro Mashiko, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 605,708, Oct. 30, 1990, Pat. No. 5,274,746. This application Oct. 5, 1993, Ser. No. 131,581
Claims priority, application Japan, Dec. 26, 1989, 1-341421
Int. Cl.[6] G06G *7/12*; G06F *7/00*
U.S. Cl. 395—27 17 Claims



13. A neural network device including:

a plurality of internal data input lines each for receiving an input data signal to be processed;

a plurality of internal data output lines arranged in a direction intersecting said internal data input lines, each for transmitting data for output; and

a plurality of coupling elements provided at the connections of said internal data input lines and said internal data output lines for coupling with specific coupling strengths which can be programmed in advance said internal data input lines to said corresponding internal data output lines and transmitting data signal potentials between said internal data input lines and said corresponding internal data output lines, wherein

each of said internal data output lines has first and second internal data output lines, comprising:

change point detecting means for detecting a change of input data which becomes said input data signal to be processed; and

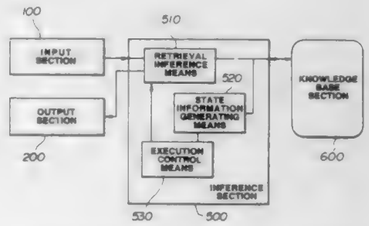
equalizing means provided corresponding to each pair of said first and second internal data output lines and responsive to a detection signal from said change point detecting means for equalizing potentials on the corresponding pair of first and second internal data output lines for a predetermined period.

5,394,512

KNOWLEDGE-BASE COMPUTER SYSTEM WITH STATE INFORMATION INDICATIVE OF AMBIGUOUS APPLIED CONDITIONS

Norimasa Kishi, Yokohama, and Masaki Watanabe, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 21, 1992, Ser. No. 947,815
Claims priority, application Japan, Sep. 21, 1991, 3-270260
Int. Cl.[6] G06F *9/00, 15/60, 15/74*
U.S. Cl. 395—51 6 Claims



6. A knowledge-base computer system comprising:

an input section for inputting data and requesting information relative to outputted information;

a knowledge base section for storing frame knowledge which includes a plurality of knowledge groups and execution control method information;

an inference section including:

retrieval inference means for retrieving a frame knowledge for the output information from said knowledge base section, on the basis of the requested information from said input section, and calculating a value of output information corresponding to information selected from the knowledge base section;

state information generating means for executing a calculation of a value of output information corresponding to every relationship for every applied condition and generating state information indicative of a state of a result of the executed calculation in turn when the retrieval inference means searches information including a plurality of applied conditions;

execution control means for determining an execution of a next applied condition for solution in response to the state information on the basis of the execution control method information;

an output section for outputting the result of the executed calculation in said inference section, wherein the state information generating means comprises means for generating state information indicative of ambiguous applied conditions in a frame,

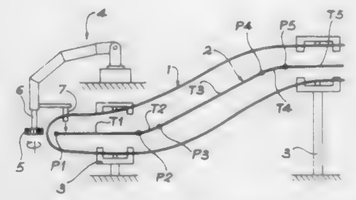
said execution control means responsive to said information of ambiguous applied conditions by continuing a further calculation in a next frame for input information capable of further calculation.

5,394,513

PROCESS FOR GENERATING A TRAJECTORY FOR A ROBOTIZED SYSTEM

Frédéric Sgarbi, Paris, and Riadh Cammoun, Antony, both of France, assignors to Commissariat A l'Energie Atomique, Paris, France

Filed Oct. 28, 1992, Ser. No. 967,855
Claims priority, application France, Oct. 28, 1991, 91 13250
Int. Cl.[6] G05B *19/42*
U.S. Cl. 395—80 6 Claims



1. A process for generating a trajectory for a robotized system having at least one mobile member and moving the robotized system according to the trajectory, the trajectory consisting of a superimposition of movements by the one mobile member and being defined by a succession of sections joined by passage points defined by coordinates, where the system is at a given state, comprising the steps of:

selecting a main movement and a dependent movement;

reading the coordinates, when each of the sections is reached by the robotized system to become a current section, of a first passage point at which the current section begins, a second passage point at which the current section ends and a next section begins, and a third passage point at which the next section ends;

determining a target velocity of said main movement at said second passage point, said target velocity allowing the robotized system to reach said third passage point at a nil speed according to a maximal possible deceleration imposed on the robotized system between said second passage point and said third passage point;

determining a main velocity of said main movement between a previous passage point and a next passage point according to a first velocity at said previous passage point, said target velocity, and a maximal possible acceleration;

determining a dependent velocity of said dependent movement according to said main velocity so that the robotized system travels over the current section with respect to said dependent movements substantially at the same velocity with respect to said main movement; and

controlling the robotized system to move the robotized system through each of the sections so that, for each section, the robotized system travels at said target velocity at a second passage point of each section, travels at said main velocity during at least a portion of the main movement, and travels at said dependent velocity during at least a portion of said dependent movement.

5,394,514

IMAGE FORMING APPARATUS HAVING DETACHABLY INSTALLED BIT IMAGE FORMING UNIT

Toshio Matsubara, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 710,372, May 29, 1991. This application Jul. 9, 1993, Ser. No. 87,896
Claims priority, application Japan, May 31, 1990, 2-139581
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—115 8 Claims

1. An image forming apparatus comprising:

a main body for performing an image forming operation; and

a unit detachably installed in the main body,

the main body including:

(i) means for receiving data to be formed from a host apparatus;

(ii) printing apparatus for printing on a recording medium bit image data supplied from the unit; and

(iii) first processing means for controlling an operation enabling the receiving means to receive character data and supply the character data to the unit, receiving the bit image data based on the character data from the unit, supplying the bit image data to the printing means, and controlling the printing of the printing means based on the bit image data,

the unit including:

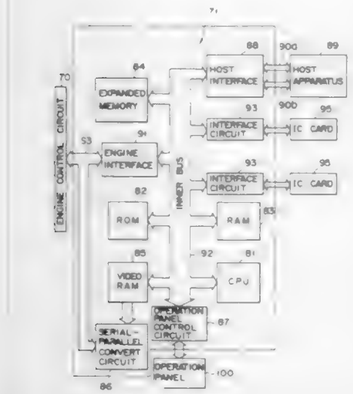
(i) a receiving portion for receiving data from the main body;

(ii) first storing means for storing the character data formed of a plurality of character patterns;

(iii) means connected to said receiving portion of said first storing means for forming the bit image data from the data received by the receiving portion using the character patterns stored by the first storing means,

(iv) second storing means for storing the bit image data formed by said forming means;

(v) means for supplying the bit image data stored by said second storing means to the main body;



(vi) a third storing means for storing the bit image data stored by said second storing means at an operation speed which is higher than that of the second storing means; and

(vi) second processing means for controlling an operation enabling the unit to retrieve the bit image data based on the character data from the first storing means, and supply the bit image data to the first processing means, when the receiving portion receives data from the printing apparatus;

whereas, when bit image data are present in the third storing means, the second processing means enables the supplying means to supply the bit image data stored by the third storing means to the printing apparatus; and

when bit image data is absent from the third storing means, the second processing means enables the forming means to form bit image data from the data received by the receiving portion using the character patterns stored by the first storing means, enabling the second storing means to store the bit image data, enabling the supplying means to supply the bit image data stored by the second storing means to the printing apparatus, and enabling the third storing means to store the bit image data stored by the second storing means.

5,394,515

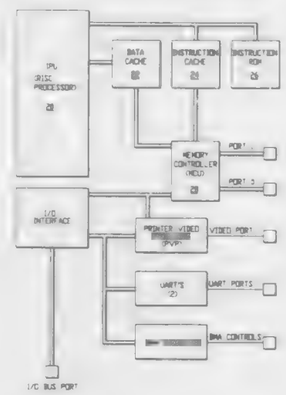
PAGE PRINTER CONTROLLER INCLUDING A SINGLE CHIP SUPERSCALAR MICROPROCESSOR WITH GRAPHICS FUNCTIONAL UNITS

Derek J. Lentz, Los Gatos; Johannes Wang, San Mateo; Trevor Deosaran, Sunnyvale; Linley M. Young, La Jolla; Kian-Chin Yap, San Jose; Le Trong Nguyen, Monte Sereno, all of Calif.; Makoto Matsubayashi, Suwa, Japan, and Te-Li Lau, Palo Alto, Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 817,813, Jan. 8, 1992, which is a continuation of Ser. No. 726,929, Jul. 8, 1991, abandoned. This application Jun. 28, 1994, Ser. No. 267,646

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—115 **12 Claims**



1. A printer controller comprising:

a single chip superscalar microprocessor, having a bidirectional data bus interface, a bidirectional Input/Output (I/O) bus interface, and an address bus interface, said superscalar microprocessor comprising,

1) an instruction processor having an instruction scheduler for issuing instructions to a plurality of functional units, said scheduler coupled to said plurality of functional units and operable to issue instructions in parallel to said plurality of functional units, and said plurality of functional units includes an orthogonal rotator unit, a bit/byte mirror unit, and a pixel modification unit;

2) a printer video processor for generating a plurality of control signals for a printer engine, for generating memory addresses of data to be fetched, and for serializing fetched data and providing serialized data to said printer engine, said printer video processor having an adder, a constants ROM, a register file, a command register, a mode register, a status register and a video port;

3) a data cache and an instruction cache, each of said caches coupled to said instruction processor;

4) an I/O controller, coupled to said I/O bus interface, and said I/O bus interface coupled to an I/O bus external to said superscalar microprocessor;

5) a memory controller for receiving memory transaction requests from said I/O controller, said printer video processor, said data cache, and said instruction cache, said memory controller coupled to said printer video processor, said data cache, said instruction cache, said data bus interface, said address bus interface and said I/O bus interface;

wherein said instruction processor accesses printer video processor register file through said memory controller and sad I/O controller having write access to said data bus interface through said memory controller.

5,394,516

GENERATING AN IMAGE

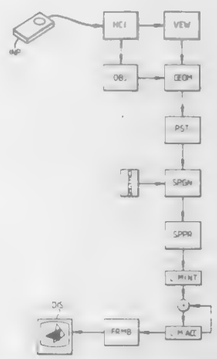
Paul A. Winser, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 28, 1991, Ser. No. 724,576

Claims priority, application United Kingdom, Jun. 29, 1990, 9014555; Jan. 9, 1991, 9100452

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—119 **13 Claims**



1. Apparatus for generating an image of objects in a three dimensional space for display on a two dimensional regular pixel array comprising a series of pixel rows, the apparatus comprising:

rendering means for generating and storing a plurality of primitives representing surfaces to form, for a first one of the pixel rows and then sequentially for a series of new pixel rows in turn, a plurality of renditions of one-dimensional intermediate pixel arrays which contain pixel values at sample points having an offset with respect to said primitives,

means for identifying a subset of the primitives as being potentially active for each new row in the series,

means for imposing for each such rendition a different predetermined offset between the primitives and sample points, the different offsets for the plurality of renditions corresponding to an oversampling pattern,

means for identifying a further subset of the primitives as being potentially active in the new row depending on the said offset, and

means for combining the plurality of intermediate pixel arrays, for a first one of the pixel rows and then sequentially for the series of new pixel rows in turn, to generate and store a filtered pixel array representing an image which has been oversampled and filtered.

5,394,517

INTEGRATED REAL AND VIRTUAL ENVIRONMENT DISPLAY SYSTEM

Roy S. Kalawsky, Brough, England, assignor to British Aerospace plc, Hampshire, England

Filed Oct. 14, 1992, Ser. No. 959,919

Claims priority, application United Kingdom, Oct. 12, 1991, 9121707

Int. Cl.[6] G06F *15/20*

U.S. Cl. 395—129 **11 Claims**

1. A display system for presenting a composite image to a user's eyes, said image comprised of a real portion provided by a video camera means and a complementary computer-generated synthetic portion said system including stored reference data indicative of the real portion and the synthetic portion, said user having a field of view in a direction, the system comprising:

visual display means for presenting the composite image;

direction sensor means for producing a direction signal indicative of the direction of the user's field of view;

video camera means for producing a sequence of video signals which in combination are representative of a field of view thereof;

camera mounting means for mounting said video camera means such that the field of view of the video camera means is substantially coincident with and follows movement of the field of view of the user;

image generating means responsive to said direction signal for producing synthetic signals representing a computer-generated portion of the composite image; and,

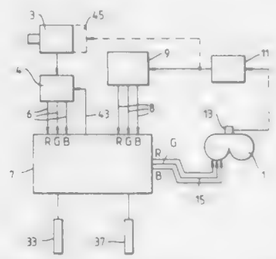


image selecting and combining means, responsive to said video camera means, to said image generating means and to said direction sensor means and providing an output to said visual display means, for analyzing each of said video signals and determining, by comparison with said stored reference data, whether each video signal is indicative of an area of the field of view of the video camera means which said computer-generated portion is to occupy and for correspondingly selecting one of said video signals and said synthetic signals, and for combining said video and synthetic signals to form a composite video signal representing the composite image and for applying said composite video to said visual display means for presentation of the composite image.

5,394,518

LUMINANCE SENSITIVE PALETTE

Steven J. Friedman, Bellevue; Gillian Furse, Seattle; Karen A. Hargrove; Joseph M. Joy, both of Redmond; Nathan P. Myhrvold, Bellevue; Sunita Shrivastava, Redmond, and Gideon A. Yuval, Mercer Island, all of Wash., assignors to Microsoft Corporation, Redmond, Va.

Continuation of Ser. No. 995,848, Dec. 23, 1992. This application May 27, 1993, Ser. No. 69,173

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—131 **27 Claims**

1. Apparatus for rendering a high color resolution image at a lower color resolution, comprising:

means for storing a high color resolution image as a number of bits representing the color of each pixel of the image;

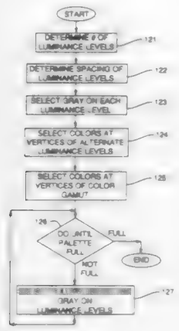
means for reducing the number of bits per pixel in the high color resolution image;

a color palette comprising:

a plurality of gray colors located on a plurality of luminance levels within a color gamut, each luminance level consisting of colors of uniform luminance; and

a plurality of highly saturated colors located on the luminance levels; and

means for communicating the reduced bits for pixels in the high resolution color image to the color palette to select



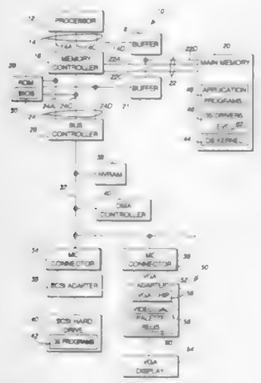
therefrom a color for a pixel and thereby render the high color resolution image at a lower color resolution.

5,394,519

DATA PROCESSING APPARATUS FOR HIGH RESOLUTION DISPLAY IN MULTIPLE VIRTUAL DOS APPLICATIONS

William K. Bodin, Boca Raton, Fla., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 3, 1994, Ser. No. 176,589
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—131 **9 Claims**



1. Data processing apparatus comprising:

a color video system comprising

a color monitor having a plurality of pixels for displaying images,

a video memory for storing digital data defining pixel colors from a pallet of colors,

a video controller for selectively activating said pixels in accordance with the analog input signals, and

a digital-to-analog converter (DAC) for converting digital data from said video memory into said analog input signals;

said DAC comprising a plurality of registers including a palette data register (PDR) having a plurality of indexed locations for storing triplet digital signals representing red, green, and blue (RGB) components for each color of said palette, said DAC further comprising two palette address registers (PARs) for storing indexes for respectively reading and writing information from and into said PDR, each of said PARs being automatically incremented to increment an index therein after accessing a triplet of said RGB signals;

first memory means for storing an operating system and an application program;

first processing means for running said application program under said operating system and switching said application between a foreground mode and a second mode, said application program being operative to present a full screen display on said monitor when running in said foreground mode;

second memory means used by said operating system for storing DAC state data associated with said application program, said second memory means comprising a DAC palette data register, a triplet pointer register, and a DAC index register; and

second processing means for saving DAC state data in said second memory means in response to said operating system switching said application program from said foreground mode to said second mode, said second processing means comprising

first means for writing palette data from said PDR into said DAC palette data register of said second memory means,

second means for writing an index from one of said PARs into said DAC index register of said second memory means, and

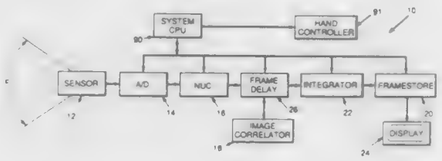
third means for generating and storing in said triplet pointer register a triplet pointer indicative of which triplet was being accessed in said PDR when said application was switched from said foreground mode.

5,394,520

IMAGING APPARATUS FOR PROVIDING A COMPOSITE DIGITAL REPRESENTATION OF A SCENE WITHIN A FIELD OF REGARD

John T. Hall, Northridge, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 26, 1991, Ser. No. 765,788
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—135 **15 Claims**



1. An imaging apparatus for providing a composite digital representation of a scene over a field of regard, said apparatus comprising:

sensor means for generating first and second digital representations of first and second framed regions within said field of regard, said sensor means including a sensor having a field of view substantially less than said field of regard and means for scanning said sensor over said field of regard to generate said first and second digital representations of first and second framed regions, wherein said sensor means further includes a first array of sensor memory locations for storing said first digital representation and a second array of sensor memory locations for storing said second digital representation;

means for correlating said first and second digital representations to generate offset parameters indicative of relative locations of said first and second framed regions within said field of regard, wherein said means for correlating further includes image editor means for mapping said first and second arrays of sensory memory locations into memory locations within said wide field of regard memory in accordance with said offset parameters thereby registering said first and second digital representations in said frame store memory; and

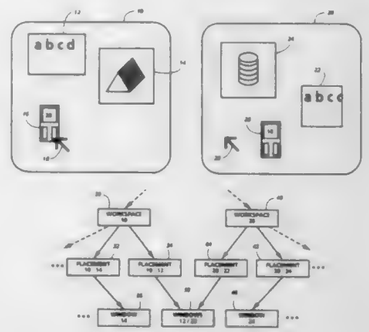
means responsive to said offset parameters for combining said first and second digital representations to synthesize said composite digital representation of said scene, wherein said means for combining said first and second representations includes a frame store memory having an array of memory locations.

5,394,521

USER INTERFACE WITH MULTIPLE WORKSPACES FOR SHARING DISPLAY SYSTEM OBJECTS

D. Austin Henderson, Jr., Palo Alto; Stuart K. Card, Los Altos Hills, and John T. Maxwell, III, Sunnyvale, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 805,343, Dec. 9, 1991, Pat. No. 5,233,687. This application May 6, 1993, Ser. No. 58,360
The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.
Int. Cl.[6] G06F *15/20*
U.S. Cl. 395—158 **27 Claims**



1. An article of manufacture for use in a system that includes a display; a processor for controlling the display; and display object data the processor can use to generate first and second display objects the processor can present on the display; the article comprising:

memory that can be accessed by the processor; and

data stored in the memory; the data comprising:

first and second workspace data structures relating respectively to first and second workspaces that the processor can present on the display; each of the first and second workspaces including a respective set of display objects; each of the display objects being perceptible as a distinct, coherent set of display features; the display objects of each respective set being perceptible as having spatial positions relative to each other when the respective workspace is presented on the display; and

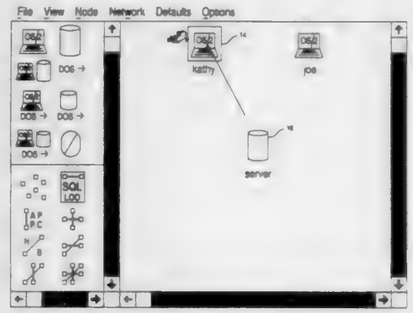
first and second linking data structures; the first linking data structure linking the first workspace data structure and the display object data so that the processor presents the first display object in the first workspace's set of display objects; the second linking data structure linking the second workspace data structure and the display object data so that the processor presents the second display object in the second workspace's set of display objects; the first and second display objects being perceptible as the same tool.

5,394,522

SELECTING AND LOCATING GRAPHICAL ICON OBJECTS TO DEFINE AND CONFIGURE THE WORKSTATIONS IN DATA PROCESSING NETWORKS

Alejandra Sanchez-Frank, and Martin J. Sirkin, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 625,249, Dec. 10, 1990, abandoned. This application Sep. 13, 1993, Ser. No. 120,313
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—159 **4 Claims**



1. A method by which a configuration workstation is used to generate configuration parameters for a network of workstations, comprising the steps of:

generating and positioning by drag-drop manipulation icons for each of three or more first network objects on a graphical video display of the configuration workstation;

generating graphical representations of paths and protocols connecting the first network objects on the video display;

generating parameters for configuring devices in a physical network responsive to a network defined by a first combination of network objects and connections; and

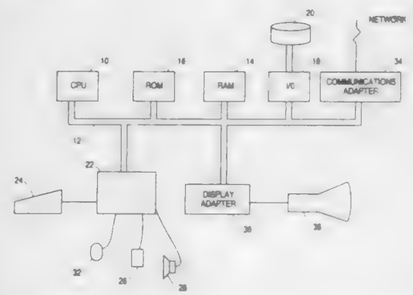
distributing the configuration parameters from the configuration workstation to corresponding devices in the physical network.

5,394,523

POLYMORPHIC GRAPHIC DEVICE

Jerry G. Harris, Sunnyvale, Calif., assignor to Taligent, Inc., Cupertino, Calif.

Filed Jan. 22, 1993, Ser. No. 7,992
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—162 **30 Claims**



1. An apparatus for polymorphically managing pixel data comprising:

an object-oriented operating system for interfacing with a user;

a data processor controlled by the operating system;

display device controlled by the data processor for display-

ing a plurality of pixels to form a graphic image, each of the plurality of pixels having pixel data for controlling the display device to display an appearance for each of the plurality of pixels;

storage means with a plurality of locations for storing the pixel data;

an array having cells representing a plurality of pixels which display in a contiguous region on the display device;

a reference to selected ones of the plurality of locations, the selected ones corresponding to pixels represented by the array;

an attribute stored in the storage means and specifying an encoding format for display on the display device and applicable to each of the pixels represented by the array; and

means responsive to the stored attribute for creating a painter object which modifies pixel data in the selected ones of the plurality of locations in order to change the appearance of the plurality of pixels in a predetermined manner based on the stored attribute.

5,394,524

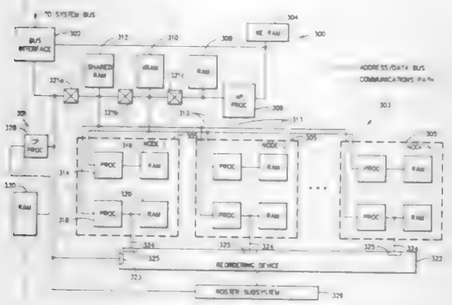
METHOD AND APPARATUS FOR PROCESSING TWO GRAPHICS DATA STREAMS IN PARALLEL

Paul D. DiNicola, Hurley; Joseph C. Kantz, Saugerties; Omar M. Rahim, Kingston; David A. Rice, New Paltz, and Edward M. Ruddick, Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 926,724, Aug. 7, 1992, Pat. No. 5,315,701. This application Nov. 30, 1992, Ser. No. 983,455

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—163 **16 Claims**



1. Apparatus for concurrently processing first and second graphics data streams, comprising:

first processing means for processing said first data stream to generate a processed first data stream, said first processing means having an output for providing said processed first data stream;

second processing means for processing said second data stream to generate a processed second data stream, said second processing means having an output for providing said processed second data stream;

third processing means for further processing said processed first and second data streams to generate a displayable image; and

means for alternatingly coupling the outputs of said first and second processing means to said third processing means so that said processed first data stream is sent to said third processing means without having to wait for completion of processing of said second data stream by said second processing means,

wherein said first data stream comprises two-dimensional (2D) graphics Primitives while said second data stream comprises three-dimensional (3D) graphics primitives.

5,394,525

IMAGE MEMORIZING DEVICE UTILIZING THE SIGNIFICANCE OF UNAVAILABLE DATA

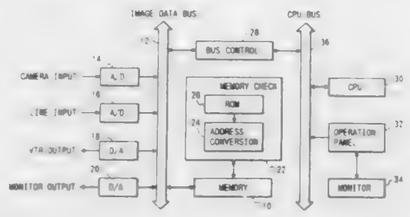
Ichiro Kuwana, Musashino; Koichi Ueda, Yokohama, and Hirofumi Nakajima, Kamakura, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,878

Claims priority, application Japan, Jul. 16, 1991, 3-175601; Jul. 16, 1991, 3-175603; Jul. 16, 1991, 3-175604

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—164 **31 Claims**



1. An image storing device comprising:

(a) memory means for storing image data;

(b) detecting means for detecting whether image data to be written into said memory means coincides with image data read out from said memory means or not on the unit basis of predetermined data amount to generate detection data;

(c) evaluating means for evaluating weight of said detection data generated by said detecting means in accordance with weight of the corresponding image data in an image to generate evaluation data; and

(d) control means for controlling an access to the corresponding portion of the memory means in accordance with said evaluation data.

5,394,526

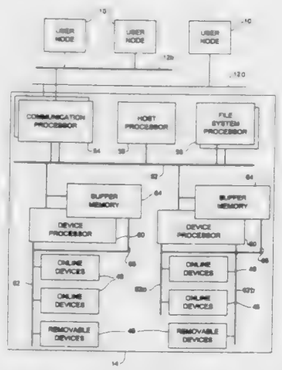
DATA SERVER FOR TRANSFERRING SELECTED BLOCKS OF REMOTE FILE TO A DISTRIBUTED COMPUTER NETWORK INVOLVING ONLY SINGLE DATA TRANSFER OPERATION

Donald D. Crouse, Murphy, Tex., and Kenneth M. Partyka, Blaine, Minn., assignors to LSC, Inc., Minneapolis, Minn.

Filed Feb. 1, 1993, Ser. No. 11,966

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200 **2 Claims**



1. An integrated data server for use with a distributed computer network and a plurality of secondary storage devices, comprising:

at least one communication processor means operably connected to the computer network for receiving commands from a plurality of user nodes on the computer network to access and store one or more remote files using the integrated data server;

at least one device processor means operably connected to the plurality of secondary storage devices for controlling access to and storage of the remote files on the secondary storage devices, each device processor means including a globally accessible buffer memory to store selected blocks of the remote files as the remote files are transferred between the globally accessible buffer memory and the secondary storage devices via a DMA transfer path in the device processor means;

file processor means for decoding the commands and managing a plurality of pointers to the globally accessible buffer memory in each device processor means to control the transfer of the remote files within the integrated data server; and

a common bus connected to all of the communication processor means, the device processor means and the file processor means and providing global direct access to the globally accessible buffer memory in each device processor means such that the selected blocks of a remote file are transferred directly from the buffer memory to the computer network in response to the file processor means as a single data transfer operation involving only one transfer across the common bus means for each of the selected blocks of the remote files.

5,394,527

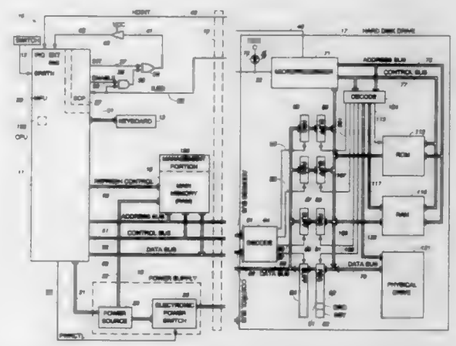
METHOD AND APPARATUS FACILITATING USE OF A HARD DISK DRIVE IN A COMPUTER SYSTEM HAVING SUSPEND/RESUME CAPABILITY

Saifuddin T. Fakhruddin, St. Joseph; Mark J. Foster, Lincoln Township, Berrien County; Scott A. Hovey, St. Joseph; James L. Walker, Benton Harbor, and Randy J. Vanderheyden, St. Joseph Township, Berrien County, all of Mich., assignors to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Division of Ser. No. 703,026, May 17, 1991. This application Oct. 26, 1993, Ser. No. 143,457

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—275 **7 Claims**



1. An apparatus comprising: a processor having an interrupt input; a disk drive having means for outputting a light element control signal which can have first and second states respectively indicating that said disk drive is active and inactive; and selectively actuable means for respectively effecting and preventing application of said light element control signal from said disk drive to said interrupt input of said processor when said selectively actuable means is respectively actuated and deactuated, said processor including means for selectively actuating and deactuating said selectively actuable means.

5,394,528

DATA PROCESSOR WITH BUS-SIZING FUNCTION

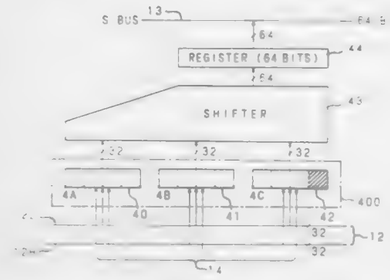
Souichi Kobayashi, and Yuichi Saito, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,257

Claims priority, application Japan, Nov. 5, 1991, 3-288394

Int. Cl.[6] G06F *13/40*

U.S. Cl. 395—325 **13 Claims**



1. A data processor comprising a microprocessor, an external data bus having a variable n-byte width, wherein n is an even integer and an external memory which is connected with said microprocessor through said external data bus and whose memory area is composed of a plurality of memory boundaries defined by n-bytes as one unit, wherein said microprocessor is provided with:

bus-size switching means for switching between a first case of using said external data bus in n-bytes width and a second case of using said external data bus in n/2 byte width when accessing said external memory;

accessing means for, in said first case, successively accessing m memory boundaries, wherein m is an even integer, including a memory boundary where an address to be accessed exists by wrapping around from said memory boundary where an address to be accessed exists, and in said second case, successively accessing m/2 memory boundaries including a memory boundary where an address to be accessed exists by wrapping around from said memory boundary where an address to be accessed exists;

address generating means for generating a head address of said memory boundary of n-byte units, said n-byte units including said address to be accessed; and

a bus interface circuit for accessing successively the inside of said memory area in an order from the head address of addresses generated by said address generating means.

5,394,529

BRANCH PREDICTION UNIT FOR HIGH-PERFORMANCE PROCESSOR

John F. Brown, III; Shawn Persels, both of Northboro, and Jeanne Meyer, Watertown, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 547,804, Jun. 29, 1990, abandoned. This application Jul. 1, 1993, Ser. No. 86,355

Int. Cl.[6] G06F *9/26*

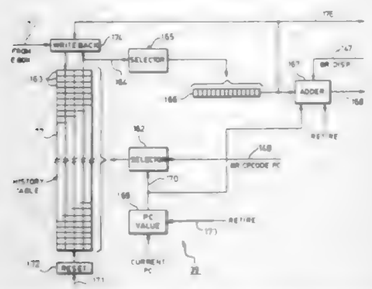
U.S. Cl. 395—375 **24 Claims**

1. A method of branch prediction, comprising the steps of:

a) storing a record of whether a conditional branch executed by a processor is taken or not taken for each conditional branch instruction executed by a processor, said storing being by memory address for each conditional branch instruction, said record including a plurality of occurrences of either a taken indicator or a not-taken indicator or both for each conditional branch instruction at each said memory address;

b) when a conditional branch instruction is executed using one said memory address, predicting whether or not the

branch will be taken in response to said record accessed using said one memory address and based upon a multi-bit prediction pattern, using said taken and not-taken indicators in said record; said prediction pattern being a multi-bit value in a register, said register being writable by said



processor for dynamically changing the prediction pattern during operation of said processor, said record for said one memory address being used for selection within said multi-bit value;

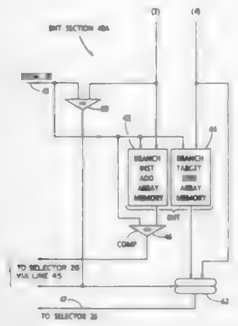
c) fetching instruction in an instruction stream in response to said prediction.

5,394,530

ARRANGEMENT FOR PREDICTING A BRANCH TARGET ADDRESS IN THE SECOND ITERATION OF A SHORT LOOP

Mayumi Kitta, Yamanashi, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 852,063, Mar. 16, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 199,970
Claims priority, application Japan, Mar. 15, 1991, 3-74433
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—375 **6 Claims**



1. A device for predicting a branch target address, comprising:

a prefetch unit operative to prefetch instruction addresses of a given instruction sequence;

a memory for storing a branch history table, said memory having a first memory section for storing a plurality of branch instruction addresses and a second memory section for storing a plurality of branch target addresses, each of said branch target addresses corresponding to one of said branch instruction address on a one to one basis, said branch history table receiving prefetched branch instruction addresses from said prefetch unit;

an execution unit executing instructions under pipeline control, said executing unit supplying a new branch instruction address and a corresponding new branch target address to said branch history table when a prediction of a branch target address fails upon execution of a branch instruction corresponding to said branch target address in said execution unit;

a first comparator coupled to said prefetch unit and said branch history table, said first comparator comparing a prefetched branch instruction address from said prefetch unit with a branch instruction address from said first memory section and outputting a first control signal when said prefetched branch instruction address from said prefetch unit matches said branch instruction address from said first memory section;

a second comparator coupled to said prefetch unit and said executing unit, said second comparator comparing a branch instruction address from said prefetch unit with said new branch instruction address being supplied to said branch history table and being used to update said branch history table and outputting a second control signal when said branch instruction address from said prefetch unit matches said new branch instruction address being supplied to said branch history table and being used to update said branch history table; and

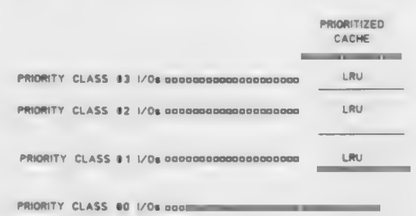
a selector receiving a branch target address from said second memory section and said new branch target address being supplied to said branch history table from said execution unit for outputting one of said branch target address from said second memory section and said new branch target address being supplied to said branch history table from said execution unit in response to said second control signal, wherein said prefetch unit selects said output from said selector in response to said first control signal.

5,394,531

DYNAMIC STORAGE ALLOCATION SYSTEM FOR A PRIORITIZED CACHE

Kevin F. Smith, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 332,870, Apr. 3, 1989, abandoned. This application Nov. 18, 1991, Ser. No. 793,763
Int. Cl.[6] G06F *12/08, 12/22*
U.S. Cl. 395—425 **12 Claims**



1. A computer-implemented method for managing a Least Recently Used (LRU) cache having storage space occupied by data contents defined over a priority class range 1 . . . N, said cache being located in a predetermined echelon of a CPU-coupled, multi-echelon, staged data storage system, data in said cache being referenced by read and write operations in a cycle, the time rate of said read and write references to said cache data being termed the hit rate, said method comprising the steps of:

initially partitioning said cache into a plurality of cache partitions and assigning a hit rate estimate and a data storage space allocation to each said cache partition; and

during each cycle of a plurality of consecutive cycles, performing the steps of:

ascertaining a hit rate slope for each said cache partition, said hit rate slope corresponding to the ratio of a change in the hit rate in said each partition to a corresponding change in cache data storage space allocated to said each partition, and

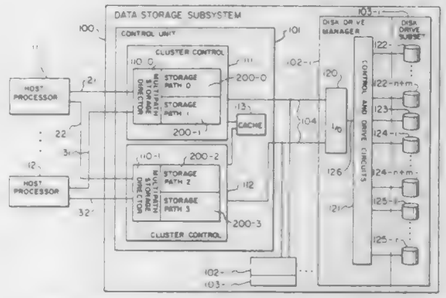
adjusting said cache data storage space allocation assigned to each said cache partition to render the respective hit rate slopes substantially equal among all said cache partitions.

5,394,532

DISK DRIVE ARRAY MEMORY SYSTEM HAVING INSTANT FORMAT CAPABILITY

Jay S. Belsan, Nederland, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Apr. 15, 1992, Ser. No. 869,251
Int. Cl.[6] G06F *12/06*
U.S. Cl. 395—425 **20 Claims**



1. A disk memory system for storing data records for at least one associated data processor comprising:

a plurality of disk drives formatted in a native disk format to store data records, a subset of said plurality of disk drives being configured into at least two redundancy groups, each redundancy group consisting of at least two disk drives;

means, responsive to a receipt of disk formatting data from said associated data processor, for storing said disk formatting data in a cache memory which is part of said disk memory system; p1 means, responsive to a receipt of a stream of data records, formatted as defined by said stored formatting data, from said associated data processor, for selecting available memory space in one of said redundancy groups to store said received stream of data records thereon; and

means for writing said received stream of data records, redundancy data associated with said received stream of data records and said stored formatting data in said selected available memory space in said selected redundancy group in said native disk format.

5,394,533

CACHE SYSTEM HAVING ONLY ENTRIES NEAR BLOCK BOUNDARIES

Toshio Doi, and Shigeo Mizugaki, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

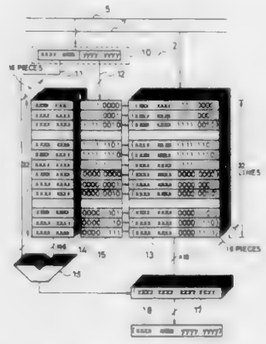
Filed Apr. 16, 1992, Ser. No. 869,699
Claims priority, application Japan, May 2, 1991, 3-130624
Int. Cl.[6] G06F *12/00, 12/08, 12/14*
U.S. Cl. 395—425 **3 Claims**

1. In a microcomputer including a microcomputer core, an internal cache memory, a bus control unit, internal address and data buses for coupling said core, said bus control unit and said internal cache, and external address and data buses for coupling said bus control unit and an external storage device having a capacity much greater than said internal cache, with the address space of said external storage device including a set of tag addresses identifying blocks of storage locations and a set of a first predetermined number of select addresses identifying the location of storage locations in said block, with a selected storage location in said external storage device addressed by a complete address comprising a tag address part identifying a block of storage locations including the selected storage location and a select address part being a selected one of said set of select addresses identifying the location of said selected storage location within said block, said internal cache comprising:

a cache data store having storage locations for storing data registered in the cache;

a cache tag store having tag store storage locations for storing the tag part of a complete address;

a set select decoder, having an input coupled to receive the select address part of said complete address provided by said microcomputer core, for decoding only a first subset



of said set of select addresses including a second predetermined number, being smaller than said first predetermined number, of select addresses which identify sub-blocks of storage locations adjacent to an upper and lower block boundary of each block of storage locations, and for accessing storage locations in said cache data store and said cache tag store for each select address in said first subset decoded by said set select decoder so that storage locations adjacent to block boundaries are registered to the cache to avoid driving the external bus when signal values comprising said select address change between all high (logic 1) and all low (logic 0) at the boundary of a block.

5,394,534

DATA COMPRESSION/DECOMPRESSION AND STORAGE OF COMPRESSED AND UNCOMPRESSED DATA ON A SAME REMOVABLE DATA STORAGE MEDIUM

John E. Kulakowski, and Rodney J. Means, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 11, 1992, Ser. No. 943,613
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—425 **14 Claims**

9. In a machine-effected method of compressing and recording data blocks onto a data storage medium having a plurality of addressable data storage areas, including machine-executed steps of:

first selecting a plurality of data blocks of a file to be compressed and recorded on the data storage medium;

second selecting a plurality of submultiples of said selected data blocks respectively as a plurality of data transfer units;

estimating a maximum number of said addressable data storage areas to be allocated for storing said selected plurality of data blocks after compression in said data storage medium:

allocating said maximum number of said addressable data storage areas to receive and store said selected plurality of data blocks in a compressed form and indicating the allocation of said addressable data storage areas;

compressing and recording each of said data transfer units as respective compressed blocks including recording each of said compressed blocks as a separately recorded record; and

creating and maintaining a separate file directory indicating the address and size of each of said recorded compressed block for enabling random access to each said recorded



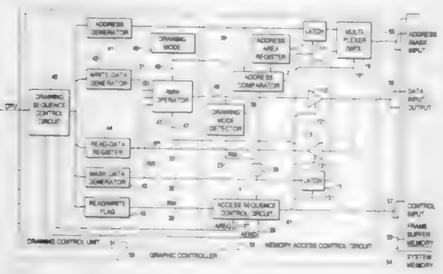
compressed block such that less than an entirety of said file of data blocks are retrieved from said data storage medium for accessing only predetermined ones of said recorded blocks less than all of said recorded compressed blocks and modifying said indicated allocation to indicate a number of said addressable data storage areas storing said compressed block.

5,394,535

MEMORY ACCESS CONTROL CIRCUIT WITH AUTOMATIC ACCESS MODE DETERMINATION CIRCUITRY WITH READ-MODIFY-WRITE AND WRITE-PER-BIT OPERATIONS

Mitsurou Obuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 512,996, Apr. 23, 1990, abandoned. This application May 27, 1993, Ser. No. 68,578
Claims priority, application Japan, Apr. 21, 1989, 1-102458
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—425 **4 Claims**



1. A memory access control circuit inserted between a data processing unit and a memory having a plurality of storage areas, said memory access control circuit comprising:

receiving means operatively coupled to said data processing unit for receiving an access request from said data processing unit, said access request including (1) access information containing a memory address which selects one of said storage areas of said memory and (2) access mode designation information which specifies a first memory access operation to be performed on said one of said storage areas of said memory to perform a predetermined data processing operation on said one of said storage areas of said memory,

storing means for temporarily storing address information which corresponds to a part of said storage areas of said memory, each storage area contained in said part of said storage areas of said memory being accessible by said first memory access operation and further by a second memory access operation which performs a data processing operation equivalent to said predetermined data processing operation performed by said first memory access operation and at a faster speed than said first memory access operation.

generation means operatively coupled to said receiving means and said storing means for generating, in response to said memory address and said address information, an access change command signal taking a first state when said one of said storage areas of said memory selected by said memory address is outside of said part of said storage areas selected by said memory address and a second state when said one of said storage areas selected by said memory address is within said part of said storage areas of said memory, said second memory access operation initiated by said second stage of said access change command signal,

access sequence control means operatively coupled to said memory and said generation means for performing said first memory access operation on said one of said storage areas of said memory when said access change command signal is in said first state and for performing, in place of said first memory access operation, said second memory access operation on said one of said storage areas of said memory when said access change command signal is in said second state, and

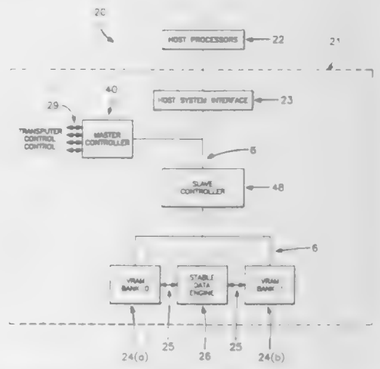
each of said storage areas including a plurality of bits and said access request further including (1) mask data which specifies one or more bits of said plurality of bits of said one of said storage areas of said memory and (2) modifying data by which bit data of one or more bits specified by said mask data are replaced; said first memory access operation being a read-modify-write operation in which data is read out from said one of said storage areas of said memory, said data is modified by use of said modifying data to produce modified data and said modified data is written back to said one of said storage areas of said memory; each storage area of said part of said storage areas of said memory having a write-per-bit access mode in which, in response to mask information and replacement information supplied thereto, bit data of one or more bits specified by mask information are replaced by said replacement information; and said access sequence control means performing said second memory access operation to supply said mask data and said modifying data to said memory as said mask information and said replacement information when said access change command signal is in said second state.

5,394,536

STABLE MEMORY CIRCUIT USING DUAL PORTED VRAM WITH SHIFT REGISTERS IN A MULTIPLE MEMORY BANK SETUP FOR HIGH SPEED DATA-TRANSFER

Brian A. Coghlan, Malahide, and Jeremy O. Jones, Clontarf, both of Ireland, assignors to The Provost, Fellows and Scholars of Trinity College Dublin, Dublin; Brian A. Coghlan, Malahide and Jeremy O. Jones, Clontarf, all of Ireland, a part interest

Continuation of Ser. No. 580,573, Sep. 11, 1990, abandoned. This application Sep. 9, 1993, Ser. No. 118,355
Claims priority, application Ireland, Sep. 11, 1989, 2223/89
Int. Cl.[6] G06F *12/06, 12/16, 13/00*
U.S. Cl. 395—425 **5 Claims**



1. A stable memory circuit comprising:

at least two physically separate and independent memory banks, each bank comprising a set of solid state memory devices, the memory devices being constructed from mutually physically separate pieces of semiconductor material so as to be physically separate;

a stable memory bus connected directly between the memory banks, the stable memory bus comprising a set of parallel electrical conductors;

a host processor interface;

a processor bus comprising a set of parallel electrical conductors connected between the memory banks and the host processor interface;

a normal power supply means for providing a power supply to all of the memory devices via electrical conductors of the stable memory circuit under normal operating conditions;

a standby power supply means for providing a standby power supply to all of the memory devices via electrical conductors of the stable memory circuit in the event of a fault in the normal power supply means;

a plurality of dual-ported video random access memory devices in each of said at least two memory banks, each video random access memory device comprising an external processor data port and a physically separate external stable memory port, each external processor port being connected to a conductor of the processor bus and each external stable memory port being connected to a conductor of the stable memory bus; and

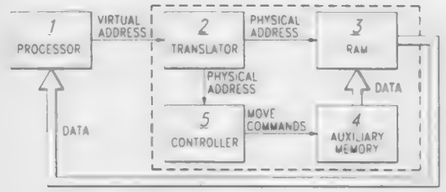
a transfer means connected to the stable memory bus and comprising means for directing stable memory data transfer between external stable memory ports of the video random access memory devices in different memory banks concurrently with random accesses of a host processor to the memory devices via the external processor ports and the processor bus.

5,394,537

ADAPTIVE PAGE PLACEMENT MEMORY MANAGEMENT SYSTEM

Howard R. Courts, and Donald W. Oxley, both of Austin, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 988,396, Dec. 9, 1992, abandoned, which is a continuation of Ser. No. 450,201, Dec. 13, 1989, abandoned. This application Oct. 1, 1993, Ser. No. 131,107
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—425 **7 Claims**



1. A memory system, comprising:

a central processor;

an address translator coupled to said central processor;

a main memory coupled to said translator;

an auxiliary memory coupled to said translator; and

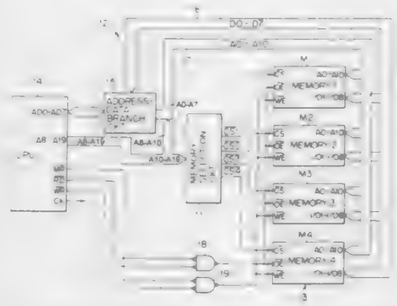
a memory manager for selecting pages of data on the basis of frequent reference by said processor, independent of page location on a virtual address space, and transferring said selected pages in groups from said main memory to contiguous regions of said auxiliary memory.

5,394,538

MEMORY SELECTION CIRCUIT FOR SELECTING ONE OF VARIOUS MEMORY AREAS IN A MEMORY UNIT BASED ON THE CAPACITY AND THE STARTING ADDRESS OF EACH AREA

Masahiko Wada, Tenri, and Shigeki Imai, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 672,667, Mar. 21, 1991, abandoned. This application Mar. 23, 1994, Ser. No. 216,519
Claims priority, application Japan, Mar. 29, 1990, 2-83460
Int. Cl.[6] G06F *12/00, 13/00*
U.S. Cl. 395—425 **12 Claims**



1. A memory selection circuit of a computer provided with a central processing unit and a memory unit divided into a plurality of memory areas of an equal capacity to be accessed by common lower bits of an address sent from the central processing unit, comprising:

memory capacity storing means for storing capacity data corresponding to said equal capacity of each of said plurality of memory areas, said capacity data being rewritable by signals from the central processing unit;

decoder means for decoding said stored capacity data to generate bit selecting signals;

start address storing means for storing upper bits of a predetermined start address assigned to a beginning of said memory unit, said upper bits being rewritable by signals from central processing unit;

means for comparing bit by bit, upper bits of an address output from said central processing unit and the stored upper bits of said predetermined start address and generating a comparison signal representing a result of each comparison; and

means for generating a selection signal for selecting one of said plurality of memory areas on the basis of the stored capacity data and said comparison signal, said generating means including:

bit selecting means for selecting which address bits to decode based on said bit selection signals,

logic gate means connected to receive said comparison signal and said bit selecting signals for generating a signal representing that the address sent from the central processing unit is in a valid address range starting with said predetermined start address, and

decoding gate means connected to receive said selected address bits and said signal from said logic gate means for decoding said selected address bits to generate said selection signal if the address is in said valid address range.

5,394,539

METHOD AND APPARATUS FOR RAPID DATA COPYING USING REASSIGNED BACKING PAGES

Deborah E. Neuhard, Poughkeepsie; Jeffrey M. Nick, Fishkill, and Danny R. Sutherland, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 754,816, Sep. 4, 1991, abandoned. This application Jul. 15, 1994, Ser. No. 276,512

Int. Cl.[6] G06F *12/00, 13/00*

U.S. Cl. 395—425 **20 Claims**



1. In a data processing system comprising an auxiliary storage, a processor storage having a central storage and an expanded storage with a portion of said processor storage defining a real storage, a virtual storage operating system having a real storage manager system service for managing said real storage, and a network of control blocks identifying the physical location of virtual data pages in a virtual storage comprised of said auxiliary storage and said real storage portion of said processor storage, a method of copying a source range of data pages, comprising one or more source data pages located in said virtual storage, to a target range of data pages, comprising one or more target data pages located in said virtual storage, said method comprising the steps of: determining the location and status of said one or more source data pages and reassigning a backing page, backing one of said one or more source data pages, from said source range of data pages to said target range of data pages, wherein said steps of determining and reassigning are performed by said real storage manager system service, said real storage manager system service managing the backing of data through said network of control blocks.

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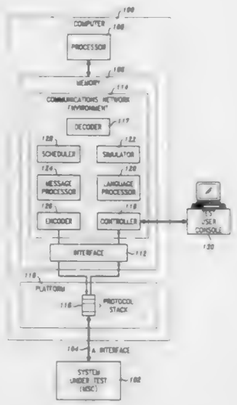
SYSTEM FOR TESTING A NETWORK COMPONENT BY SELECTIVELY MODIFYING MESSAGES RECEIVED FROM THE COMPONENT AND RETURNING TO A SIMULATOR

Terrence K. Barrington, Naperville; Sandra L. Carrico, Lisle; Joseph W. Davison, Wheaton; Randolph W. Johnson, Lisle; Scott A. Mardis, Wheaton, and Steven D. Raiman, Woodridge, all of Ill., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 941,473, Sep. 8, 1992, abandoned. This application Sep. 16, 1993, Ser. No. 123,571

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—500 **10 Claims**



6. In a system for testing a communication network component connected to a computer system, said network component and said computer system each being connected to a data link, said network component and said computer system communicating by messages on said data link, said computer system comprising a decoder, a simulator which simulates said communication network component's network environment, a message processor and an encoder, said decoder, simulator, message processor and encoder sharing a plurality of message templates and notifying each other to take action by sending events, a method for testing said communications network component comprising:

responsive to receipt of a first message from said network component at said decoder, said decoder transforming said message into two portions, a first selected event and a first selected message template, said decoder filling in said selected message template responsive to said first message;

following said decoder sending said first selected event to said message processor, said message processor examining said first selected message template;

following said message processor sending said first selected event to said simulator, said simulator producing a response including a second selected event as a response event and a second selected message template as a response message template, said simulator filling in said responsive template according to a preprogrammed specification;

following said simulator sending said response event to said message processor, said message processor examining said response message template to determine if it is a predefined template type; and

following said message processor sending said response event to an encoder, said encoder transforming said response message template into a second message and sending said message to said network component when said response message template is said predefined template type.

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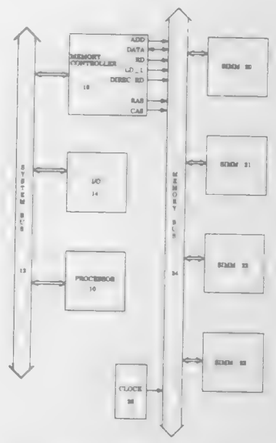
PROGRAMMABLE MEMORY TIMING METHOD AND APPARATUS FOR PROGRAMMABLY GENERATING GENERIC AND THEN TYPE SPECIFIC MEMORY TIMING SIGNALS

Gilman Chesley, Santa Cruz; Jean A. Gastinel, and Fred Cerauskis, both of Mountain View, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif. and Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 554,283, Jul. 17, 1990, Pat. No. 5,283,877. This application Dec. 20, 1991, Ser. No. 811,825

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—550 **19 Claims**



1. A method of programming memory timing of a data processing system, said data processing system including a processor, a memory for storing and retrieving data in accordance with timing signals, and a memory controller for providing said timing signals to said memory, said memory controller including a programmable memory timing generator for generating said timing signals from timing data, said timing data comprising generic timing data representing generic timing signals suitable for use with a plurality of types of predetermined memory types and a plurality of memory type specific timing data, each said memory type specific timing data representing memory type specific timing signals suitable for use with a corresponding memory type of said plurality of types of predetermined memories, said data processing system further including a look-up table, said look-up table being accessible to said processor and storing said timing data, said method comprising the steps of:

loading said generic timing data into said programmable memory timing generator;

generating generic timing signals from said generic timing data and providing generic timing signals to said memory;

using said generic timing signals to access said memory to identify a specific type of memory of said memories of said processing system;

reading from said look-up table corresponding type specific timing data for said identified specific type of memory;

writing said corresponding type specific timing data for said identified specific type of memory into said programmable memory timing generator and thereby programming said identified specific timing data into said programmable memory timing generator; and

generating type specific timing signals from said identified specific timing data and providing said type specific timing signals to said memory.

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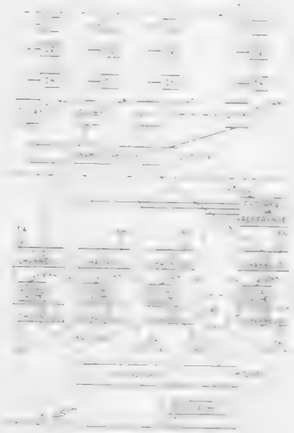
CLEARING DATA OBJECTS USED TO MAINTAIN STATE INFORMATION FOR SHARED DATA AT A LOCAL COMPLEX WHEN AT LEAST ONE MESSAGE PATH TO THE LOCAL COMPLEX CANNOT BE RECOVERED

Jeffrey A. Frey; Jeffrey M. Nick, both of Fishkill, and Michael D. Swanson, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,647

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—575 **22 Claims**



1. A data processing system comprising:

a central processor for executing instructions arranged in programs for processing data;

a main storage connected to said central processor for storing said programs and data including state information for shared data;

a structured external storage (SES) facility for storing data including representations of shared resources and state information of said shared resources;

multiple message paths connected between said main storage and said SES facility, each of said message paths for passing data, messages and responses between said main storage and said SES facility, each message path having an available state and an unavailable state;

multiple message path status means, each message path status means for a respective one of said multiple message paths, each of said message path status means having a first state when the respective message path is available and a second state when the respective message path is unavailable;

message path testing means for testing the state of the message path status means of a specified message path for determining whether the message path status means of said specified message path is in the first state or the second state;

message path availability means for determining if at least one of said multiple message paths is available at all times between said main memory and said SES facility;

message path recovery means having instructions for execution by said central processor for changing the message path status means of said specified message path from the

second state to the first state when the message path is determined to be available by said message path testing means;

vector means in said main storage for containing vectors which indicate said state information of said shared resources represented at said SES facility, said vectors considered to remain current as long as at least one of said multiple message paths is available at all times between said main memory and said SES facility as determined by said message path availsoility means; and

vector clearing means responsive to said message path availability means, said vector clearing means having instructions for execution by said central processor for clearing vectors in said vector means when at least one of said multiple message paths has not been available at all times between said main memory and said SES facility as determined by said message path availability means.

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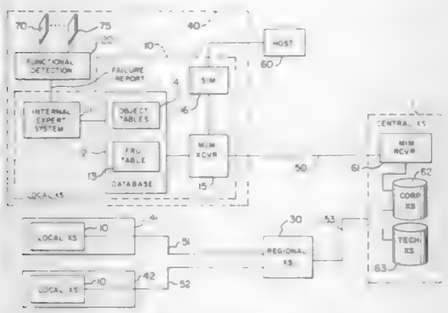
KNOWLEDGE BASED MACHINE INITIATED MAINTENANCE SYSTEM

Fletcher L. Hill; Nancy R. Jurestovsky, both of Golden, and David G. Beal, Longmont, all of Colo., assignors to Storage Technology Corporation, Luoisville, Colo.

Continuation of Ser. No. 650,932, Feb. 5, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 40,166

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—575 **19 Claims**



1. A machine initiated maintenance apparatus connected to and colocated with a customer system for identifying failed field replaceable units in said customer system, which customer system includes a plurality of field replaceable units, each of which contains at least one operational element thereon, comprising:

means for detecting the presence of a failure in said customer system;

means for generating a failure report which contains data relevant to said detected failure, including an identification of the failure mode and all operational elements on all field replaceable units that were cooperatively operative during said detected failure;

means for storing said failure report;

means for maintaining a failure analysis history containing data identifying each of said field replaceable units and associated composite failure data representative of known field replaceable unit failures;

means for comparing, substantially contemporaneously with occurrence of said failure, said stored failure report with said failure analysis history;

means for identifying at least one failed field replaceable unit based on said comparison.

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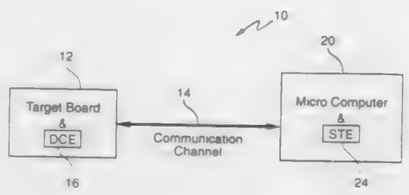
SOFTWARE SYSTEM DEBUGGER WITH DISTINCT INTERRUPT VECTOR MAPS FOR DEBUGGING AND APPLICATION PROGRAMS

Tetsuro Motoyama; Banky Mor, both of San Jose; Gregorio Rodriquez, Union City, and Chan Kim, Fremont, all of Calif., assignors to Ricoh Co., Ltd., San Jose, Calif. and Ricoh Corporation, San Jose, Calif.

Continuation of Ser. No. 668,806, Mar. 7, 1991, abandoned, which is a continuation of Ser. No. 390,610, Aug. 7, 1989, abandoned. This application Jul. 26, 1993, Ser. No. 98,214

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—575 **13 Claims**



1. A system for debugging an application program, said system comprising a host processor unit and a debugging execution unit operated under an operating-system-free environment, said debugging execution unit including:

a target processor unit for executing said application program and for executing a first debugging program to debug said application program being executed by said target processor unit;

a communication channel for transmitting communications between said host processor unit and said target processor unit;

communication port circuitry that generates interrupt signals during execution of said application program and during execution of said first debugging program, said communication port circuitry coupled to said communication channel and said target processor unit;

said first debugging program including a first set of input-/output procedures for execution by said target processor unit for handling debugging communications over said communication channel;

said application program including a second set of input-/output procedures for execution by said target processor unit for handling communications over said communica tion channel, said communications comprising communications associated with execution of said application program; and

interrupt vector mapping means including:

(a) a first interrupt vector map having a first set of interrupt vector entries for mapping said interrupt signals to a first set of destination addresses; said first set of destination addresses including addresses corresponding to said first set of input/output procedures;

(b) a second interrupt vector map having a second set of interrupt vector entries for mapping said interrupt signals to a second set of destination addresses; said second set of destination addresses including addresses corresponding to said second set of input/output procedures; and

(c) control means for controlling mapping of interrupt signals using said first and second interrupt vector maps such that

i) said interrupt vector mapping means maps said interrupt signals via said first interrupt vector map during execution of said first debugging program; and

ii) said interrupt vector mapping means maps said interrupt signals via said second interrupt vector map during execution of said application program.

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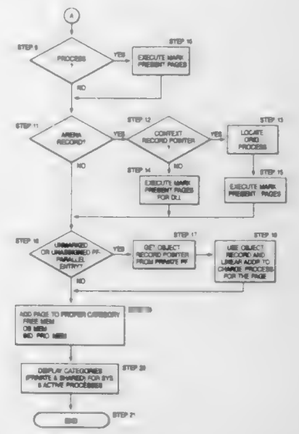
SYSTEM FOR DETERMINATION AND DISPLAY OF MEMORY USED, DEDICATED, AND SHARED BY A PROCESS AT A PARTICULAR TIME

Samuel L. Emrick, Austin; Jimmie E. DeWitt, Georgetown, and James H. Summers, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 7, 1992, Ser. No. 927,083

Int. Cl.[6] G06F *15/40*

U.S. Cl. 395—600 **14 Claims**



1. A computer implemented method for determining usage, at a particular time period, of a memory device included within a data processing system by a selected one of a plurality of processes running on said data processing system, said computer implemented method comprising the steps of:

checking said memory device to determine a first number of memory locations used by said selected process during the particular time period that said selected process is interacting with an operating system running on said data processing system;

checking said memory device to determine a second number of memory locations dedicated solely to said selected process;

checking said memory device to determine a third number of memory locations shared by said selected process with at least one other of said plurality of processes and allocated to said selected process;

wherein said memory device is checked independent of any particular address contained therein; and

displaying said first, second and third numbers on a display device.

5,394,546

DATABASE MANAGEMENT SYSTEM AND METHOD OF EXTENDING SYSTEM FUNCTIONS

Mitsuhiro Hanatsuka, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1991, Ser. No. 782,075

Claims priority, application Japan, Nov. 7, 1990, 2-299694

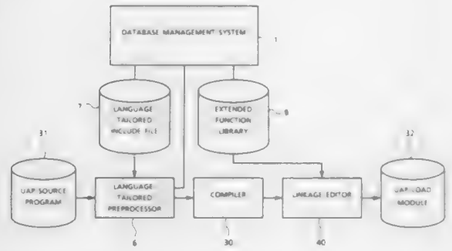
Int. Cl.[6] G06F *7/00*

U.S. Cl. 395—600 **9 Claims**

8. A method for preparing an executable load module from a source program for operating a database by using a data type and a data processing procedure, said method comprising the steps of:

providing a file for storing a correspondence between a user defined extended data type and a standard data type, and a library for storing a data processing load module corresponding to a user defined extended data processing procedure;

converting the extended data type in said source program into the standard data type based on the correspondence stored in said file;



compiling the source program after the conversion by using a compiler;

combining an output of said compiler with the data processing load module of said library; and,

generating the executable load module based on the combining.

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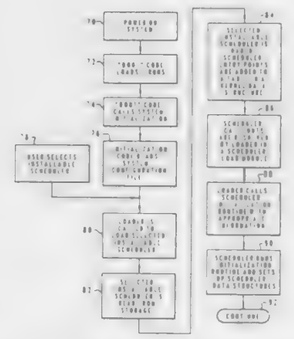
DATA PROCESSING SYSTEM AND METHOD HAVING SELECTABLE SCHEDULER

Joseph A. Correnti, Boca Raton; Ralph M. Pipitone, Boynton Beach, both of Fla., and Michael W. Thomas, Bellevue, Wash., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1991, Ser. No. 815,104

Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—650 **10 Claims**



1. A method in a data processing system for permitting high concurrency of access to designated data stored within a storage subsystem comprising a plurality of storage devices which are coupled to said data processing system via a storage device control unit having subsystem memory therein, wherein data within each of said plurality of storage devices may be accessed from said data processing system utilizing one of a plurality of unique control blocks which each identify a selected storage device and permit only one application to access said selected storage device concurrently and an associated data retrieval command sequence which identifies data to be accessed within said selected storage device, said method comprising the steps of:

copying at least a portion of said designated data from a first

storage device to said subsystem memory within said storage device control unit;

selecting a unique control block which identifies a second storage device; and

associating a selected data retrieval command sequence with said selected unique control block which identifies said portion of said designated data as located within said subsystem memory wherein alternate data within said first storage device may be concurrently accessed utilizing a unique control block which identifies said first storage device.

5,394,548

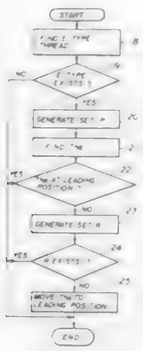
MULTI-MEDIA SCHEDULING SYSTEM

Jun Nakajima, and Masatomo Yazaki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 9, 1992, Ser. No. 958,741

Int. Cl.[6] G06F *9/06*

U.S. Cl. 395—650 **8 Claims**



1. A multi-media scheduling system for scheduling multi-media applications which include media having predetermined priority information being dictated by time restrictions for processing the media, said multi-media scheduling system comprising:

managing means for managing requests of the multi-media applications for processing the media;

sorting means, coupled to said managing means, for rearranging the requests in a sequence starting from a request having the most restrictive time restriction; and

preemptive scheduler means, coupled to said managing means, for scheduling the rearranged requests for processing by reducing priority of at least one request in which said predetermined priority information is lower than a predetermined value if the time restriction of the media prevents desired scheduling of replay,

said predetermined priority information being selected from a group of information consisting of a quality which indicates a tolerance of a delay from a request time for processing of each request and an importance which indicates an importance of each request.

5,394,549

TASK SPAWNING RESPONSIVE TO RELATIONAL DATABASE CONDITIONS AND OPERATIONS

Bruce Stringfellow, Irving, and Mike Mitchell, Southlake, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1992, Ser. No. 991,894

Int. Cl.[6] G06F *9/40*

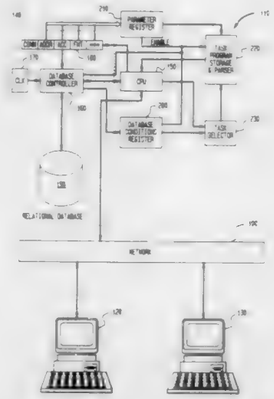
U.S. Cl. 395—650 **17 Claims**

1. A data processing system including, in combination, a relational database,

means for detecting at least one of an in said relational database or a condition in said relational database,

means for storing at least a first command corresponding to each of a plurality of tasks,

means responsive to said means for detecting at least one of



an event or a condition in said relational database for selecting said first command corresponding to one of said plurality of tasks, and

means for outputting said first command to a portion of said data processing system for execution of said first command.

5,394,550

SYSTEM FOR AFFECTING RECOMPILATION OF SOURCE CODE

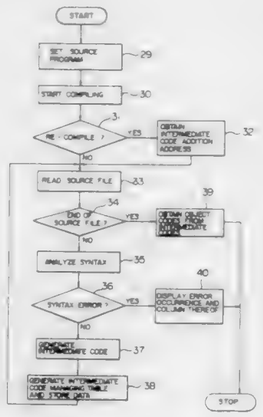
Daisuke Sasaki, and Shuji Koseki, both of Hadano, Japan, assignors to Hitachi Ltd. and Hitachi Electronics Services Co. Ltd., both of Tokyo, Japan

Filed Jan. 14, 1993, Ser. No. 4,533

Claims priority, application Japan, Jan. 20, 1992, 4-007672

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—700 **7 Claims**



1. A method of compiling a source program into an object program comprising the steps of:

converting said source program on a predetermined unit basis into an intermediate code;

correlating said converted intermediate codes with said

source program to be compiled and managing information representing the correlation;

intercepting a compiling operation when an error is detected;

if the compiling operation is again executed after said error is corrected, determining the range of said source program correctly compiled, in accordance with said information;

resuming the compiling operation of said source program immediately after said range of said source program correctly compiled; and

converting said generated intermediate code to the object program.

5,394,551

SEMAPHORE MECHANISM FOR A DATA PROCESSING SYSTEM

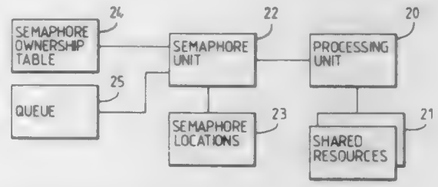
Nicholas P. Holt, Cheshire; Michael Fields, Lancashire; Mark N. Fullerton, Derbyshire, and Andrew J. Knowles, Cheshire, all of United Kingdom, assignors to International Computers Limited, London, United Kingdom

Filed Sep. 30, 1992, Ser. No. 954,575

Claims priority, application United Kingdom, Nov. 1, 1991, 9123264

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—725 **7 Claims**



1. A data processing system comprising:

(a) a plurality of processing nodes,

(b) a communications network interconnecting the nodes to allow the nodes to send messages over said communications network, the messages being delivered to all the nodes in the same chronological sequence,

(c) a plurality of shared resources, shared by all the nodes,

(d) a plurality of semaphores for controlling access to respective shared resources, each node having a local copy of all the semaphores,

(e) each node including a semaphore ownership table for defining ownership states for the semaphores whereby each semaphore may be unowned (i.e. not owned by any node), or owned by a particular node,

(f) means in each node, responsive to a request for a semaphore operation on an unowned semaphore, for sending a semaphore message over said communications network instructing all the nodes to perform the semaphore operation on their local copies of the semaphore, and for then suspending the semaphore operation in this node until the semaphore message has been returned from said communications network,

(g) means in each node, responsive to a request for a semaphore operation on a semaphore owned by this node, for sending a semaphore message over said communications network instructing all the nodes to perform the semaphore operation on their local copies of the semaphore, and for then permitting this node to proceed with the semaphore operation without waiting for the semaphore message to be returned from said communications network and

(h) means in each node, responsive to a request for a semaphore operation on a semaphore owned by another node, for sending a semaphore message over said communications network instructing all the nodes to perform the semaphore operation on their local copies of the semaphore, and for then suspending the semaphore operation until permission to proceed is received from that other node.

5,394,552

DOCKING SYSTEM FOR ENHANCING COMPUTER FUNCTIONALITY

Hironao Shirota, Suwa, Japan, assignor to Seiko Epson Corp., Tokyo, Japan

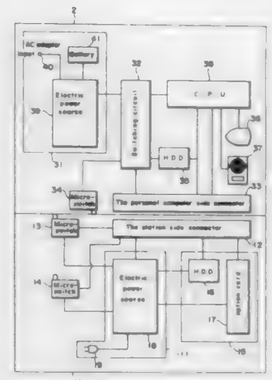
PCT No. PCT/JP91/01589, § 371 Date Jul. 17, 1992, § 102(e) Date Jul. 17, 1992, PCT Pub. No. WO92/09026, PCT Pub. Date May 29, 1992

PCT Filed Nov. 19, 1991, Ser. No. 910,275

Claims priority, application Japan, Nov. 19, 1990, 2-313158; Nov. 19, 1990, 2-313159

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—750 **16 Claims**



1. A docking system having a personal computer provided with a personal computer side connector and a personal computer side electric power source portion and a station provided with a station side connector and a station side electric power source portion, comprising:

(a) a first detecting means for detecting combination states of said personal computer and said station;

(b) a second detecting means for detecting separating operation of said personal computer from said station;

(c) a combination holding means for holding a combination state of said personal computer side connector and said station side connector;

(d) a switching means for switching said personal computer side electric power source portion to said station side electric power source portion;

(e) a third detecting means for detecting a state of placement of said personal computer on said station; and

(f) a control unit, coupled to the first, second and third detecting means, the combination holding means, and to the switching means, which;

(1) cuts said personal computer side electric power source after performing backup processing of an execution program when said personal computer side electric power source portion is in a conductive state when said third detecting means detects a state of placement;

(2) supplies electric power from said station side electric power source portion to said personal computer by means of said switching means when said first detecting means detects a state of said station side connector being combined with said personal computer side connector; and

(3) cuts the electric power source after performing backup processing of an execution program when said personal computer is in an actuation state when said second

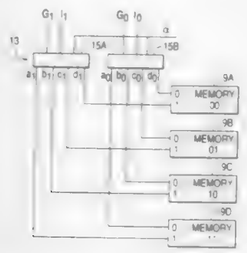
detecting means detects separating operation of said personal computer.

5,394,553

HIGH PERFORMANCE ARRAY PROCESSOR WITH NONLINEAR SKEWING OF ELEMENTS

De-Lei Lee, Richmond Hill, Canada, assignor to Lee Research, Inc., Ontario, Canada

Filed Jun. 12, 1991, Ser. No. 713,863
Int. Cl.[6] G06F *7/64, 9/22, 9/46, 13/378*
U.S. Cl. 395—800 **7 Claims**



1. An array processor, comprising:
N processing elements;
N memory modules;
an interconnection network interconnecting said processing elements and said memory modules, for effecting parallel access and alignment of rows, columns, diagonals, contiguous blocks and distributed blocks of an N×N array denoted as A, where for an integer i, where $O \leq i < N$, i_m denotes bit m in a binary representation of said integer, and where $i_{j:m}$ $i_{p:q}$ denotes a further integer derived by concatenating $i_{p:q}$ at rightward of $i_{j:m}$, by performing a nonlinear skewing scheme for mapping each element A [i,j] of an N-vector in $\Gamma_G{}^j \cup \Delta_G{}^j$ to a distinct one of said memory modules denoted as F(i,j), for avoiding memory conflicts, where $F(i,j)=\omega(i) \oplus j$ for $O \leq i, j < N$, and $\omega(i_{n-1:h}\ i_{h-1:0})=i_{h-1:0}\ (i_{n-1:h} \oplus i_{h-1:0})$, and where $h=n/2$; and
O (log N) logic gates are provided for said N memory modules for:
a) accessing any N-vector in $\Gamma_G{}^j$ by addressing memory location $l \oplus Gk$ of memory module k for all $O \leq k < N$, where G is any fixed integer and $\Gamma_G{}^j=\{A[\omega^{-1}(l \oplus Gk), l \oplus Gk] | 0 \leq k < N\}$, where $0 \leq G,l < N$ defines a partition of A into N-Vectors; and
b) accessing any N-vector in $\Delta_G{}^j$ by addressing memory location $l \oplus G\omega(k)$ of memory module k for all $0 \leq k < N$, where $\Delta_G{}^j=\{A[\omega^{-1}(l \oplus G\omega(k) \oplus k), l \oplus G\omega(k)] | 0 \leq k < N\}$, for $0 \leq G,l < N$.

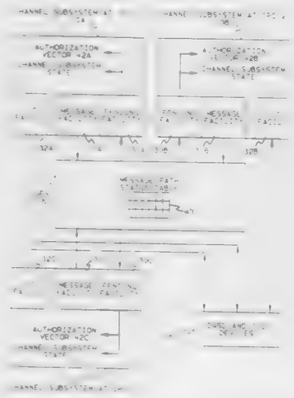
5,394,554

INTERDICTING I/O AND MESSAGING OPERATIONS FROM SENDING CENTRAL PROCESSING COMPLEX TO OTHER CENTRAL PROCESSING COMPLEXES AND TO I/O DEVICE IN MULTI-SYSTEM COMPLEX

David A. Elko; John F. Isenberg, Jr.; Allan S. Meritt; Brian B. Moore, all of Poughkeepsie; Jeffrey M. Nick, Fishkill; William C. Shepard, Hyde Park; David H. Surman, Milton, and Michael D. Swanson, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,489
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 **25 Claims**

1. A data processing system comprising:
one or more central processing complexes (CPCs) each CPC comprising;
a main memory divided into one or more partitions, each partition including an operating system, each operating system supporting program means initiating interdiction operations by sending fencing commands, and one or more subsystems initiating I/O and message operations;
a central processor,
a channel subsystem having one or more facilities for conducting I/O and message operations,
a fencing facility in said channel subsystem for interdicting I/O and message operations responsive to fencing commands sent thereto, said fencing facility comprising;
reporting means for reporting to said CPC which of the I/O and message operations have been interdicted by said fencing facility,
monitoring means for indicating the completion or incompletion of a previously initiated interdiction operation to the operating system which sent the fencing command to said fencing facility,



authorization vector means for regulating access to said I/O and message operations, said authorization vector means having multiple logical vector entries, each logical vector entry having a parameter and addressed by an authorization index, said authorization vector means including means for assigning an authorization index and parameter for each I/O and message operation to be initiated by said subsystems, and
means for allowing said interdiction operations of said I/O and message operations only for those fencing commands having a parameter operand matching the parameter of the logical vector entry which is addressed by the authorization index of the I/O and message operation to be interdicted.

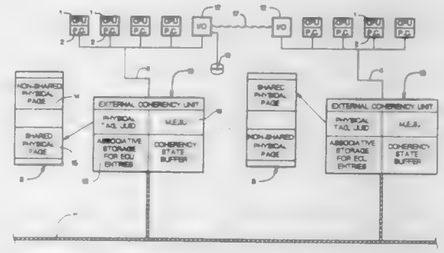
5,394,555

MULTI-NODE CLUSTER COMPUTER SYSTEM INCORPORATING AN EXTERNAL COHERENCY UNIT AT EACH NODE TO INSURE INTEGRITY OF INFORMATION STORED IN A SHARED, DISTRIBUTED MEMORY

John C. Hunter, and John A. Wertz, both of Phoenix, Ariz., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Dec. 23, 1992, Ser. No. 993,884
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—800 **3 Claims**

1. A computer cluster architecture comprising:
A) a plurality of nodes;
B) at least one central processing unit resident at each said node, at least one of said central processing units including at least one primary cache, each said central processing unit having a property of coherency;
C) a node-local communications means resident at each said node; each said node-local communications means coupling all said primary caches resident in the same node with said node-local communications means;
D) a local main memory resident at each said node, each said local main memory having physical space assignable as shared physical space and non-shared physical space;
E) an external coherency unit resident at each said node, each said external coherency unit being coupled to the node-local communications means and to the local main memory resident in the same node with said external coherency unit;
F) inter-node communication means coupling all said external coherency units;
G) each said external coherency unit comprising:
1) monitoring means adapted to monitor both said inter-node communication means and said node-local communications means resident in the same node with said external coherency unit; and
2) coherency means adapted to:
a) respond to said monitoring means sensing a cache-line request appearing on said node-local communications means in the same node with said external coherency unit and determining that such cache-line request is non-shared by directing said non-shared cache-line request to said non-shared physical space of said local main memory; and
b) respond to said monitoring means sensing a cache-line request appearing on said node-local communications means in the same node with said external co-



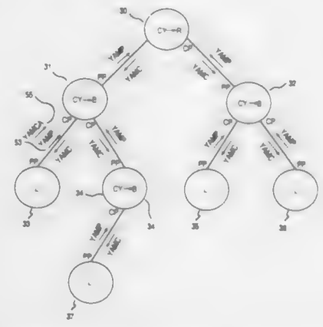
herency unit and determining that such cache-line request is shared by examining its coherence state to further determine if inter-node action is required to service the request and, if such inter-node action is required, transmitting a unique identifier and a coherency command over said inter-node communication means to all other said external coherency units;
(H) each said external coherency unit assigning a coherency state to each unit of information stored in the shared memory spaces of said cluster, said coherency states comprising:
1) exclusive indicating that a copy of the requested information present in the shared memory space of said local main memory resident in the same node as said external coherency unit is unique in the cluster;
2) modified indicating that a copy of the requested information present in said local main memory resident in the same node as said external coherency unit has been updated by a central processing unit in said same node;
3) invalid indicating that a copy of the requested information present in said local main memory resident in the same node as said external coherency unit either does not exist or is known to be out-of-date; and
4) shared indicating that a copy of the requested information present in said local main memory resident in the same node as said external coherency unit is one of a plurality of current copies of the requested information in a plurality of nodes; and
I) each said coherency means in each said external coherency unit responding to a local cache-line request associated with a block of shared information as follows:
1) if the requested cache-line state is exclusive or modified, the requested block is retrieved directly from the local main memory resident in the requesting node with no remote action taken because no current copies exist elsewhere in the cluster;
2) if the requested cache-line state is invalid, a read-with-intent-to-write command is transmitted over said communications means to all other said nodes, and a remote node that contains the requested cache-line information in the exclusive or modified state responds thereto by siphoning the requested cache-line information over said communications means to the requesting node; and
3) if the requested cache-line state is shared, an invalidating command is sent to all other nodes such that the requested cache-line state is set to invalid in such all other nodes; whereby, the most recent instantiation of the requested data available in the shared physical spaces among all said local memories in the cluster are provided to the one of said external coherency units requesting the same.

5,394,556

METHOD AND APPARATUS FOR UNIQUE ADDRESS ASSIGNMENT, NODE SELF-IDENTIFICATION AND TOPOLOGY MAPPING FOR A DIRECTED ACYCLIC GRAPH

Florin Oprescu, Sunnyvale, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 21, 1992, Ser. No. 994,402
Int. Cl.[6] G06F *3/00, 9/00, 13/00*
U.S. Cl. 395—800 **7 Claims**



1. In a computer system having a bus, said computer system comprising a plurality of components interconnected by a plurality of communications links, said plurality of components each having a plurality of communications nodes wherein said nodes have at least one of a plurality of ports and interface with their associated components through a communications link which connects one port of one node with another port of another node, each port of each node having a predetermined selection criterion established for adjacent nodes that are coupled to that node, said nodes and communications links as interfaced together comprising an acyclic directed graph wherein one node is designated a root node, all nodes coupled to only one adjacent node are designated leaf nodes, all other nodes in the acyclic directed graph being designated branch nodes, all nodes initially having a status of being unidentified nodes, said acyclic directed graph having established hierarchical parent-child relationships between all adjacent nodes proceeding from the root node down to any leaf nodes wherein a leaf node has only one parent node and all nodes adjacent to the root node are child nodes with respect to the root node but parent nodes with respect to other adjacent nodes, the root

node being defined as having no parent node, a method of assigning unique addresses to the nodes of the acyclic directed graph comprising the steps of:

each unidentified leaf node initially transmitting a "Bus Request" (BR) signal onto the bus;

each branch node waiting until all adjacent child nodes either propagate or forward a BR signal or are identified, then propagating the BR signal to a parent node;

the root node waiting until all adjacent nodes either propagate a BR signal or are identified then propagating a "Bus Grant" (BG) signal to one of the adjacent unidentified nodes based on said predetermined selection criterion for selecting adjacent nodes, said BG signal being propagated down through the acyclic directed graph through intervening nodes based on said predetermined selection criterion for selecting adjacent nodes until a node that initiated a BR signal receives the BG signal;

the node receiving the BG signal then broadcasting an address announcement to all nodes on the bus;

each node on the bus counting, as a number, how many address announcements are broadcast by other nodes;

each node setting a unique address, said unique address being a function of the number of address announcements broadcast by other nodes until the node receives a BG signal and subsequently broadcasts an address announcement, said node then attaining the status of being identified; and

repeating the above steps until all nodes are identified,

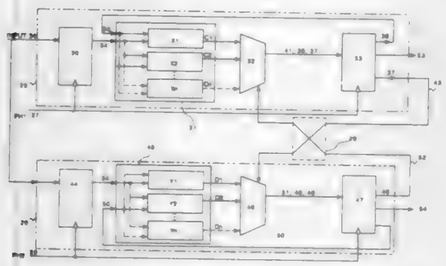
whereby each node will have counted a different number of address announcements broadcast by other nodes prior to setting the unique address identifying the node thus ensuring that each node acquires a unique address assignment.

5,394,557

STATE MACHINE OPERATING IN MULTIPLE PARALLEL PHASE AND METHOD THEREOF

David Ellis, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 30, 1992, Ser. No. 998,795
Int. Cl.[6] G06F *1/08, 1/24, 11/34, 13/42*
U.S. Cl. 395—800 **31 Claims**



1. A state machine circuit for sequentially processing an input signal to control a device, said circuit comprising:

a plurality of phased circuits individually clocked by a corresponding phased clock for sequencing and processing said input signal propagating into each of said plurality of phased circuits through a common signal line in order to control said device, each of said plurality of phased circuits generating an output signal dependent on a present state of said state machine circuit, wherein each of said phased circuits includes

input register means for Sequencing and storing said input signal, wherein said input register means is clocked by said corresponding phased clock,

combinatorial logic means for producing a plurality of output control signals based on a present state signal of said phased circuit and said input signal, each of said output control signals including a next state signal and a jump index signal, wherein said combinatorial logic means is electrically coupled to said input register means, an output register means, and a selector means,

said selector means for selecting one of said plurality of output control signals inputted into said selector means from said combinatorial logic means, wherein said selected output control signal is inputted into said output register means, and

said output register means being clocked by said corresponding unique phased clock, for registering said selected output control signal so that said next state signal of said selected output control signal is fed back into said combinatorial logic means for use as said present state signal, said jump index signal is output to a selector means of different a phased circuit;

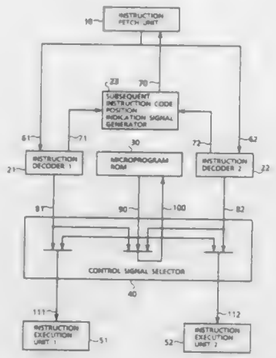
connecting means for electrically coupling said plurality of phased circuits.

5,394,558

DATA PROCESSOR HAVING AN EXECUTION UNIT CONTROLLED BY AN INSTRUCTION DECODER AND A MICROPROGRAM ROM

Fumio Arakawa, Tokyo; Susumu Narita, Kokubunji, and Kunio Uchiyama, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 17,498, Feb. 12, 1993, abandoned. This application Jul. 1, 1994, Ser. No. 266,900
Claims priority, application Japan, Feb. 20, 1992, 4-033156
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—800 **2 Claims**



1. A data processor comprising:

an instruction fetch unit;

first and second instruction decoders each for decoding an instruction supplied from said instruction fetch unit;

a microprogram ROM for storing a microinstruction;

a signal selector to which an output of said first instruction decoder, an output of said second instruction decoder, and an output of said microprogram ROM are input;

a first instruction execution unit controlled by a first output of said signal selector; and

a second instruction execution unit controlled by a second output of said signal selector,

wherein a primitive instruction is executed by using both of said first and second instruction execution units one time, and when two primitive instructions are decoded by said first and second instruction decoders in parallel, said signal selector selects and outputs said outputs of said first and second instruction decoders to said first and second outputs, respectively, and said first and second instruction execution units execute said two primitive instructions in accordance with said outputs of said first and second instruction decoders transferred to said first and second outputs of said signal selector, and

wherein a high performance instruction is executed by using said first instruction execution unit at least two times, and when said high performance instruction is decoded by said first instruction decoder, at a first step processing of said high performance instruction, said signal selector selects and outputs said output of said first instruction decoder to said first output and invalidates the output of said second instruction decoder and said first instruction execution unit executes said first step processing in accordance with said output of said first instruction decoder transferred to said first output of said signal selector, and

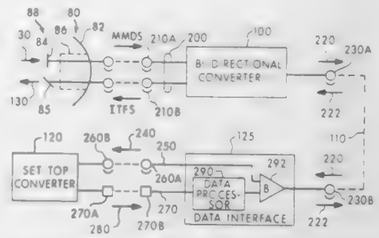
at a second step processing of said high performance instruction, said signal selector selects and outputs a microinstruction of said output of said microprogram ROM to said first output and said first instruction execution unit executes said second step processing in accordance with said microinstruction of said microprogram ROM transferred to said first output of said signal selector.

5,394,559

MMDS/ITFS BI-DIRECTIONAL OVER-THE-AIR TRANSMISSION SYSTEM AND METHOD THEREFOR

Dale L. Hemmie, Burlington, Iowa, and Charles L. Brown, Knoxville, Ill., assignors to Conifer Corporation, Burlington, Iowa

Continuation-in-part of Ser. No. 48,985, Apr. 16, 1993. This application Jun. 15, 1993, Ser. No. 77,292
Int. Cl.[6] H04H *1/00*
U.S. Cl. 455—5.1 **21 Claims**



1. A bi-directional communications system for receiving programming in a first range of microwave frequencies and for transmitting data in a second range of microwave frequencies, said system comprising:

an antenna, said antenna receiving said programming in said first range of microwave frequencies, said antenna transmitting said data in said second range of microwave frequencies, said antenna comprising:

(a) a reflector,

(b) a first feed for receiving said programming in said first range of microwave frequencies,

(c) a second feed for transmitting said data in said second range of microwave frequencies, said first and second feeds orthogonally positioned to each other and electrically isolated so as to minimize interference, said first and second feeds mounted in the focal area of said reflector;

a bi-directional converter connected to said first feed of said antenna for down converting said received programming into programming signals in a first predetermined communication frequency range;

a receiver;

a communications link;

means connected to said hi-directional converter for delivering said programming signals in said first predetermined communication frequency range over said communications link to said receiver;

means for generating data signals in a second predetermined communication frequency range:

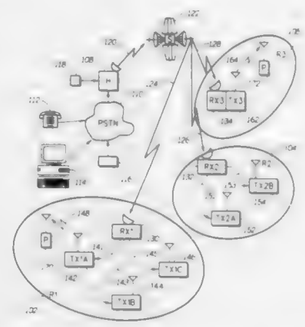
said bi-directional converter receptive to said data signals in said second predetermined communication frequency range from said generating means for up converting said data signals into said data in said second range of microwave frequencies, said second feed of said antenna receptive to said data in said second range of microwave frequencies from said bi-directional converter for transmitting said data in said second range of microwave frequencies having a polarity 90° from the polarity of said received programming.

5,394,560

NATIONWIDE SATELLITE MESSAGE DELIVERY SYSTEM

John R. Kane, Wellington, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 30, 1992, Ser. No. 954,634
Int. Cl.[6] H04B *7/185*
U.S. Cl. 455—12.1 **5 Claims**



1. A communication system for delivering messages to portable selective call receivers, the communication system comprising:

a paging terminal for receiving page requests from at least one originating device, processing the page requests, and outputting messages through a plurality of output sections in response to the processed page requests, the messages comprising data bits being outputted at a first predefined data bit rate;

a multiplexing module comprising a plurality of inputs coupled to the plurality of output sections of the paging terminal, respectively, for multiplexing the data bits of the messages being outputted from the output sections into one multiplexed signal comprising the data bits of the messages organized into a plurality of data pipes with each one of the plurality of data pipes corresponding to the data bits of the messages being outputted from each one of the plurality of output sections, respectively, and the multiplexed signal being transmitted from an output of the multiplexing module at a second data bit rate;

a satellite transmitting station having an input coupled to the output of the multiplexing module for receiving the multiplexed signal therefrom, and for transmitting a first satellite transmission including the multiplexed signal over a first satellite communication channel;

a satellite transceiver located over a geographic area for receiving the first satellite transmission including the multiplexed signal over the first satellite communication channel, and transmitting a second satellite transmission including the multiplexed signal over a second satellite communication channel, the satellite transceiver being oriented to cover at least a portion of the geographic area with the second satellite transmission over the second satellite communication channel;

at least one satellite receiving station located in at least one coverage region, within the geographic area, each of the at least one satellite receiving station operating to receive

the second satellite transmission including the multiplexed signal over the second satellite communication channel and to provide the multiplexed signal at an output of each of the at least one satellite receiving station;

at least one demultiplexing module corresponding to the at least one satellite receiving station, respectively, each of the at least one demultiplexing module comprising an input coupled to the output of a corresponding one of the at least one satellite receiving station, respectively, for receiving the multiplexed signal at the input, and for selectively demultiplexing a predetermined one of the plurality of data pipes from the multiplexed signal for providing at an output of the at least one demultiplexing module the data bits of the messages organized into the predetermined one of the plurality of data pipes, the data bits being transmitted at the output of the at least one demultiplexing module at the first data bit rate; and

at least one paging transmitting base station comprising an input coupled to the output of the at least one demultiplexing module, respectively, for receiving the data bits being transmitted at the output of the at least one demultiplexing module and then transmitting the messages represented by the data bits over a paging communication channel covering at least one coverage region within the geographic area, the paging communication channel providing the messages for reception by at least one selective call receiver located within the at least one coverage region.

5,394,561

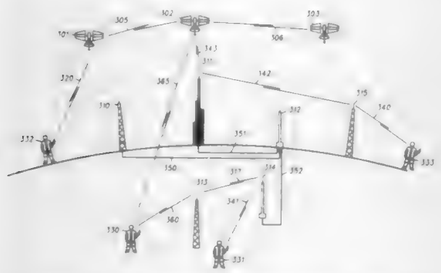
NETWORKED SATELLITE AND TERRESTRIAL CELLULAR RADIOTELEPHONE SYSTEMS

Thomas A. Freeburg, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 761,203, Sep. 17, 1991, abandoned, which is a division of Ser. No. 488,912, Mar. 6, 1990, abandoned. This application Jul. 22, 1993, Ser. No. 95,811

Int. Cl.[6] H04B *7/185*

U.S. Cl. 455—13.1 **7 Claims**



1. A method of networking a satellite network and a terrestrial network comprising the steps of:

communicating information with a subscriber over a terrestrial network:

communicating a first portion of the information between a communications device of the terrestrial network and a first orbiting satellite of the satellite network over a first communication path; and

handing-off the information such that a second portion of the information is communicated between the communications device and a second orbiting satellite of the satellite network over a second communication path.

5,394,562

POWER SUPPLY CIRCUIT FOR A TWO-MODE VEHICULAR RADIO RECEIVER

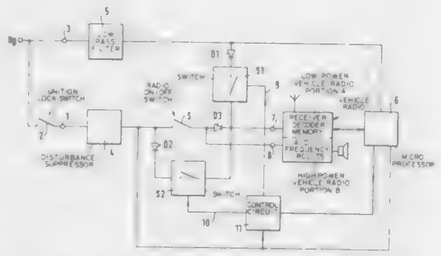
Michael Spelter, Hildesheim, and Thomas Menzel, Holle, both of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Aug. 11, 1993, Ser. No. 105,519

Claims priority, application Germany, Aug. 25, 1992, 4228116

Int. Cl.[6] H04B *1/16;* **F02P** *9/00*

U.S. Cl. 455—186.1 **10 Claims**



1. A vehicular radio receiver having a plurality of stages, for receiving at least audio frequency broadcast signals, said vehicular radio receiver comprising:

a first power input terminal for connection of power to all stages of said vehicular radio receiver through both an ignition lock switch of a vehicle in which said vehicular radio receiver is located and an ON/OFF switch of said vehicular radio receiver;

a second power input terminal directly connected to a permanently energized side of said ignition lock switch;

decoder and memory means for receiving and storing traffic announcements which are separately transmitted by a separate transmitter on a same carrier wave as an audio frequency broadcast signal, which traffic announcements are receivable by said vehicular radio receiver;

reception means coupled to said decoder and memory means for receiving, recognizing and storing traffic announcements when said ON/OFF switch of said vehicular radio receiver is in an OFF position and no operating voltage is present at said first power input terminal; and

an energy-saving circuit means for continuously supplying power from said second power input terminal only to said decoder and memory means and to said reception means of said vehicular radio receiver for providing announcements to said decoder and memory means;

said energy saving circuit means being connected to both said first and second power input terminals of said radio receiver, and said energy saving circuit means comprising:

a first electrically controllable switch means (**S1**) for connecting said second power input terminal (**3**) only to said decoder and memory means and to said reception means;

a second electrically controllable switch means (S2), connected for responding to a turning ON of said ignition lock switch (**2**) and consequent opening of said first electrically controllable switch means (**S1**), for supplying power through said second electrically controllable switch means (S2) from said first power input terminal (**1**) to only said decoder and memory means and to said reception means which recognizes and causes storing of traffic announcements;

semiconductor elements (D1, D2, D3) connected for automatically blocking respective outputs of said first and second electrically controllable switch means (S1, S2) when all stages of said vehicular radio receiver are activated by a turn-on of said ON/OFF switch of said vehicular radio receiver; and

control circuit means (**11**) for operating said first and second electrically controllable switch means (S1, S2) in response to, at least, a voltage present at said first power input terminal (**1**).

DESIGN PATENTS

GRANTED FEB. 28, 1995

ERRATA

For CLASS	See PATENT NO.
D2 –626	D 355,748
D8 –374	D 355,833
D9 –448	D 355,845
D9 –449	D 355,846
D11–121	D 355,865
D12–147	D 355,877
D14–240	D 355,895
D19–065	D 355,931
D23–277	D 355,963
D24–158	D 355,964
D24–195	D 355,965
D24–195	D 355,966
D24–195	D 355,967

VOL
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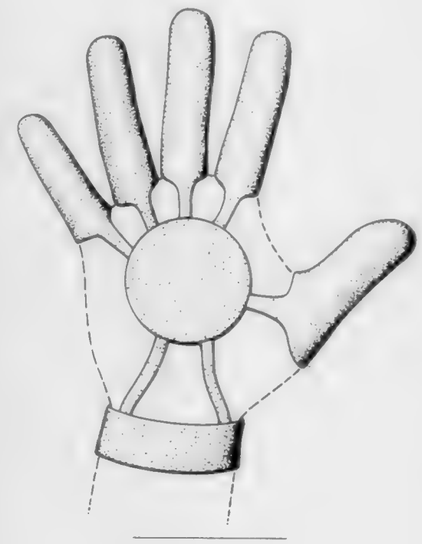
355,748
COMBINED SUSPENDERS AND BACK SUPPORT
Michael Dancyger, 811 W. 58th St., Los Angeles, Calif. 90037
Filed Aug. 9, 1991, Ser. No. 742,949
The portion of the term of this patent subsequent to May 26, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—626



355,749
CLOTH WARM-UP SLEEVE FOR USE BY ATHLETES
Edmond M. Spera, 1246 9th St., Los Osos, Calif. 93402
Filed Aug. 3, 1993, Ser. No. 11,356
Term of patent 14 years
U.S. Cl. D2—160



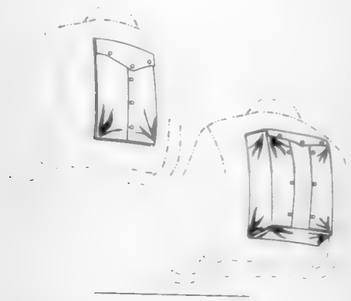
355,750
NOVELTY GLOVE
Armand J. D. Fouillard, P.O. Box 28, St. Lazae, Manitoba, Canada R0M 1Y0
Filed Sep. 20, 1993, Ser. No. 13,152
Term of patent 14 years
U.S. Cl. D2—616



355,751
VIDEO GAME ACCESSORY VEST
Gideon Dagan, Venice, Calif., assignor to Aura Systems, Inc., El Segundo, Calif.
Filed Jan. 6, 1994, Ser. No. 17,192
Term of patent 14 years
U.S. Cl. D2—830



355,752
EXPANDABLE BACK POCKET FOR ATTACHMENT TO A JACKET
Michael Abbott, Rte. 3, Box 615, Grand Saline, Tex. 75140
Filed Mar. 12, 1993, Ser. No. 5,895
Term of patent 14 years
U.S. Cl. D2—857



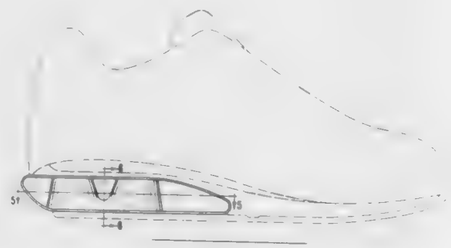
355,753
HEADBAND WITH EAR AND NECK SHIELD
Charles R. Barrett, Jr., Matthews, N.C., assignor to Gary O'Hare and Howard Ross, both of Charlotte, N.C., a part interest
Filed Oct. 26, 1992, Ser. No. 807
Term of patent 14 years
U.S. Cl. D2—866



355,754
SHOE SOLE
Harlan Brandon, Montclair, N.J., assignor to Fila U.S.A., Inc., Hunt Valley, Md.
Filed Nov. 19, 1993, Ser. No. 15,571
Term of patent 14 years
U.S. Cl. D2—951



355,755
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,934, Nov. 1, 1991, Pat. No. Des. 344,962. This application Jan. 19, 1994, Ser. No. 17,639
Term of patent 14 years
U.S. Cl. D2—964



355,756
SHOE UPPER
Ricardo Vestuti, Kingston, Mass., assignor to Reebox International Ltd., Stoughton, Mass.
Filed Jun. 9, 1994, Ser. No. 24,181
Term of patent 14 years
U.S. Cl. D2—969



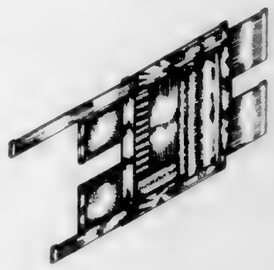
355,757
BACKPACK
Peggy L. Pollack, Los Angeles, Calif., assignor to Angel-Etts of California, Los Angeles, Calif.
Filed Aug. 31, 1992, Ser. No. 938,448
Term of patent 14 years
U.S. Cl. D3—217



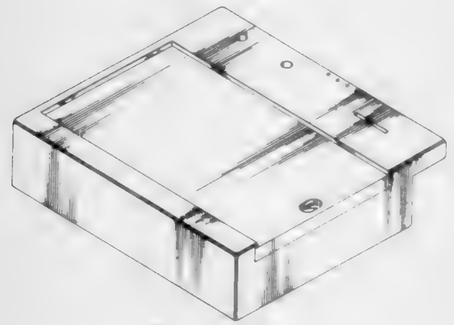
355,758
TENNIS BACKPACK
Ernest J. Poire, Laconia, N.H., assignor to Cormier Corporation, Laconia, N.H.
Filed Jan. 14, 1993, Ser. No. 3,690
Term of patent 14 years
U.S. Cl. D3—217



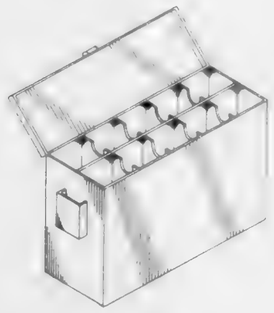
355,759
TOOL-HOLDING ARMBAND
Glen W. Koch, P.O. Box 31058, Seattle, Wash. 98103
Filed Jun. 30, 1993, Ser. No. 10,234
Term of patent 14 years
U.S. Cl. D3—228



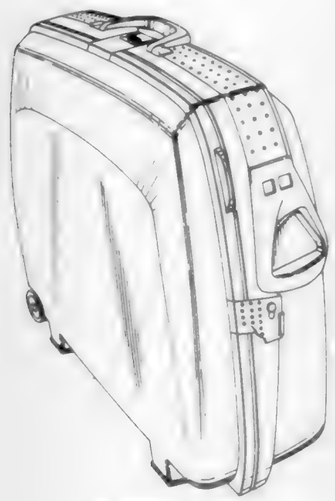
355,760
COMBINATION FISHING TOOL AND BAIT BOX CONTAINER
Robert M. Sanfilippo, 3424 Alice St., Los Angeles, Calif. 90065
Filed Mar. 26, 1993, Ser. No. 6,354
Term of patent 14 years
U.S. Cl. D3—260



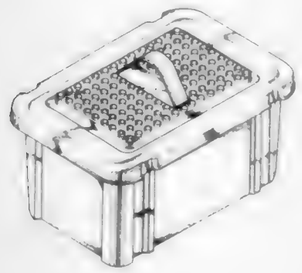
355,761
FISHING LURE BOX
August Campana, 1941 Kenneth Ave., Arnold, Pa. 15068, and Gilbert Rosa, 399 Prospect Cir., Lower Burrell, Pa. 15068
Filed Dec. 16, 1993, Ser. No. 16,378
Term of patent 14 years
U.S. Cl. D3—273



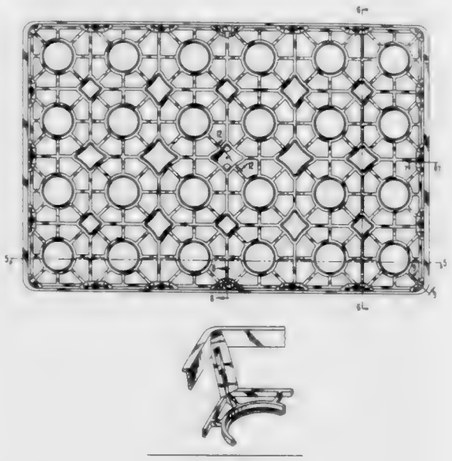
355,762
SUITCASE
P. Srinivasa Rao, Maharashtra, India, assignor to VIP Industries Limited, Maharashtra, India
Filed Jul. 7, 1993, Ser. No. 10,504
Claims priority, application United Kingdom, Jan. 8, 1993, 2028241
Term of patent 14 years
U.S. Cl. D3—276



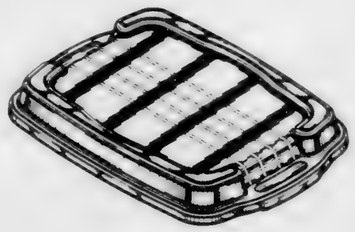
355,763
TOY BOX
Jin Ran Sun, No. 64, Lane 55, Chung Yi Road, Tu Cheng Hsiang, Taipei Hsien, Taiwan, Prov. of China, assignor to Youfo Kou Chao Industrial Co., Ltd., Taipei Hsien, Taiwan, Prov. of China
Filed Nov. 1, 1993, Ser. No. 14,872
Term of patent 14 years
U.S. Cl. D3—291



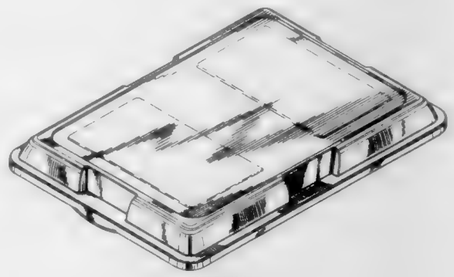
355,764
NESTABLE TRAY
William P. Apps, Anaheim, Calif., assignor to Rehrig Pacific Company, Inc., Los Angeles, Calif.
Filed Mar. 18, 1993, Ser. No. 7,195
Term of patent 14 years
U.S. Cl. D3—304



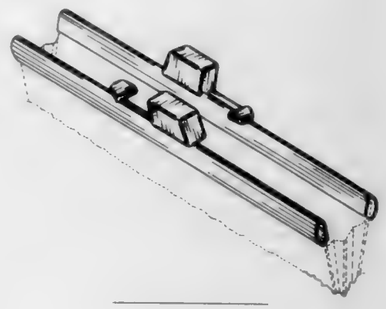
355,765
STORAGE CONTAINER TOP
D. Scott Miller, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 29, 1993, Ser. No. 16,927
Term of patent 14 years
U.S. Cl. D3—318



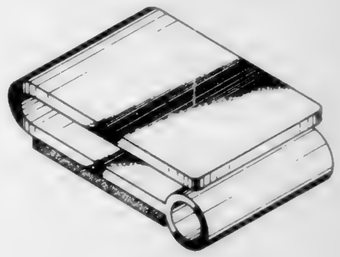
355,766
DOMED STORAGE CONTAINER LID
D. Scott Miller, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Aug. 16, 1993, Ser. No. 11,841
Term of patent 14 years
U.S. Cl. D3—319



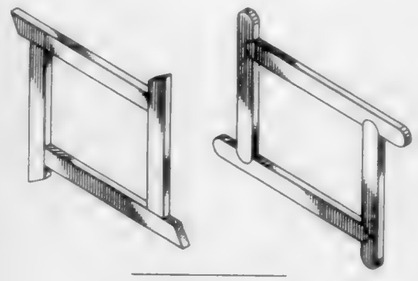
355,767
POCKETBOOK FASTENER
Mikel D. Cobb, Milwaukee, Wis., assignor to Amity Leather Products, West Bend, Wis.
Filed Feb. 26, 1993, Ser. No. 5,208
Term of patent 14 years
U.S. Cl. D3—324



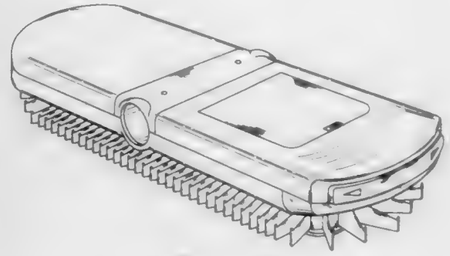
355,768
PURSE SHOULDER STRAP ANCHOR
Marjory Cook, 1861 Post Dr., Belmont, Mich. 49306
Filed Apr. 2, 1993, Ser. No. 6,640
Term of patent 14 years
U.S. Cl. D3—327



355,769
PICTURE FRAME
Clemmon Miles, 2317 N. Seventh Ave., Phoenix, Ariz. 85007
Filed Mar. 30, 1992, Ser. No. 860,692
Term of patent 14 years
U.S. Cl. D6—300



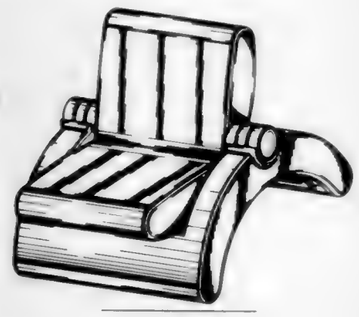
355,770
RACK FOR TIES
Charles E. Taylor, San Rafael, and Rene C. Pinchuk, Kensington, both of Calif., assignors to Sharper Image Corporation, San Francisco, Calif.
Filed Sep. 29, 1993, Ser. No. 13,668
Term of patent 14 years
U.S. Cl. D6—315



355,771
FOLDABLE HANGER
Michael E. Adams, 2009 Walters Ave., Northbrook, Ill. 60062
Filed Apr. 28, 1993, Ser. No. 7,686
Term of patent 14 years
U.S. Cl. D6—318



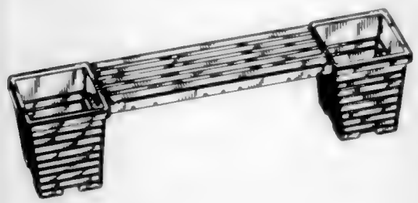
355,772
CHILD'S CHAIR
Henry Y. Chin; Robert Dillon, both of Portland, Oreg., and Stacy L. Wolff, Akron, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 13, 1994, Ser. No. 17,428
Term of patent 14 years
U.S. Cl. D6—333



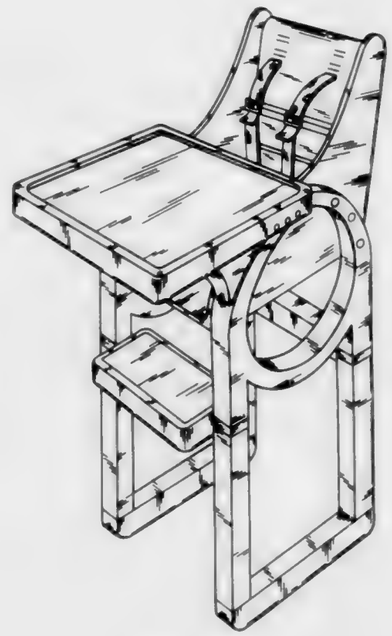
355,773
COMBINED STOOL AND STRINGED INSTRUMENT SUPPORT
Michael B. MacOwan, Rural P. O. Box 152, Cromwell, Ind. 46732
Filed Feb. 4, 1993, Ser. No. 4,438
Term of patent 14 years
U.S. Cl. D6—335



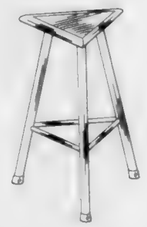
355,774
COMBINED BENCH AND PLANTER UNIT
Carlo Proserpio, Como, Italy, assignor to I.P.A.E. Societa Per Azioni, Como, Italy
Filed Aug. 12, 1993, Ser. No. 11,689
Term of patent 14 years
U.S. Cl. D6—336



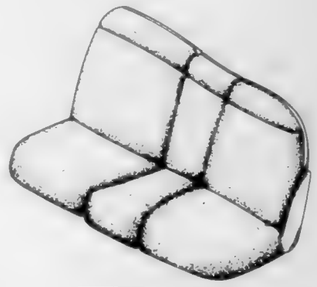
355,775
HIGH CHAIR
Sharon A. Burstein, 10 Thurlow Ter., Albany, N.Y. 12203
Filed Dec. 16, 1992, Ser. No. 2,690
Term of patent 14 years
U.S. Cl. D6—339



355,776
STOOL
Glendon R. Good, 2000 Second St., Berkeley, Calif. 94710
Filed Jul. 1, 1993, Ser. No. 10,165
Term of patent 14 years
U.S. Cl. D6—349



355,777
VEHICLE SEAT
Seiji Emoto, Huntington Beach, Calif., assignor to Isuzu Motors Limited, Tokyo, Japan
Filed Oct. 21, 1991, Ser. No. 780,745
Term of patent 14 years
U.S. Cl. D6—356



355,778
CHAIR
Richard S. Klein, Los Angeles, Calif., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Apr. 29, 1993, Ser. No. 7,720
Term of patent 14 years
U.S. Cl. D6—366



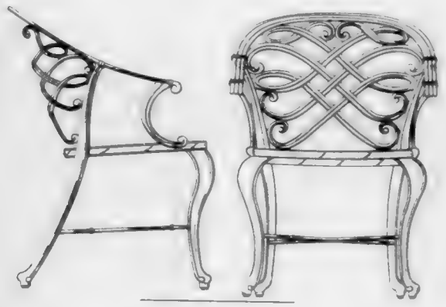
355,779
BEACH CHAIR
Boaz Tribelsky, Los Angeles, Calif., assignor to Eric Hart, Tarzana, Calif., a part interest
Filed Nov. 15, 1993, Ser. No. 15,329
Term of patent 14 years
U.S. Cl. D6—368



355,780
CHAIR
Ronald C. Noll, Lyndhurst, Ohio, assignor to Cardinal American Corporation, Ohio
Filed Oct. 27, 1993, Ser. No. 14,660
Term of patent 14 years
U.S. Cl. D6—372



355,781
CHAIR FRAME
Herbert C. Saiger, Troy, Ohio, assignor to Crown Leisure Products, Inc., Owosso, Mich.
Filed Feb. 3, 1992, Ser. No. 829,332
Term of patent 14 years
U.S. Cl. D6—376



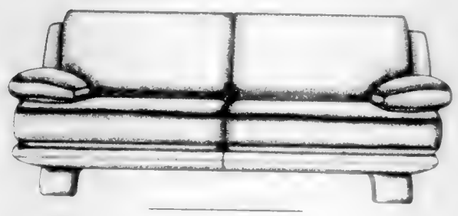
355,782
PATIO LOVESEAT
Jeffrey A. Weiss, 222 Hemlock Dr., McMurray, Pa. 15317
Filed Oct. 13, 1992, Ser. No. 367
The portion of the term of this patent subsequent to Jan. 18, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—376



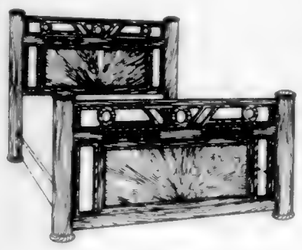
355,783
BENCH
Ronald C. Noll, Lyndhurst, Ohio, assignor to Cardinal American Corporation, Ohio
Filed Oct. 27, 1993, Ser. No. 14,658
Term of patent 14 years
U.S. Cl. D6—381



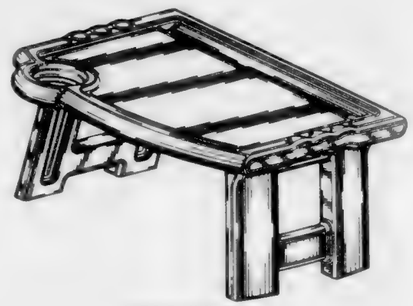
355,784
SOFA
Pasquale Natuzzi, Santeramo In Colle, and Arcangelo Scarati, Taisano, both of Italy, assignors to Industrie Natuzzi, Spa, Bari, Italy
Filed Dec. 15, 1993, Ser. No. 16,445
Term of patent 14 years
U.S. Cl. D6—381



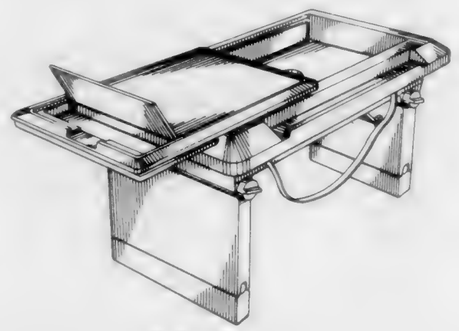
355,785
BED
H. Thomas Keller, High Point, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Feb. 23, 1993, Ser. No. 5,109
Term of patent 14 years
U.S. Cl. D6—393



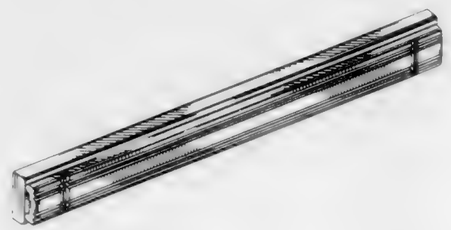
355,786
LAP TRAY
Stacy L. Wolff, Akron, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 14, 1994, Ser. No. 107,478
Term of patent 14 years
U.S. Cl. D6—406



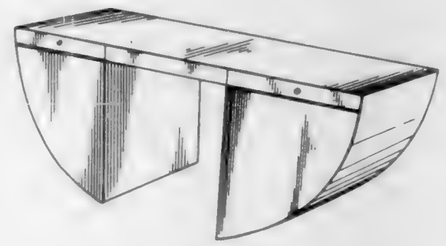
355,787
PORTABLE TABLE
Steven P. Rae, 4359 Highway 138, Oregon, Wis. 53575
Filed Mar. 21, 1994, Ser. No. 20,235
Term of patent 14 years
U.S. Cl. D6—406



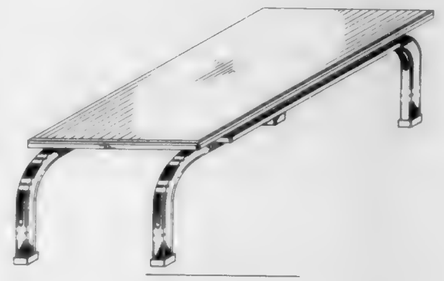
355,788
TEXTILE DISPLAY HANGER
Cecil R. Irvin, 7721 Jacobo NE., Albuquerque, N. Mex. 87109
Filed Sep. 29, 1993, Ser. No. 13,715
Term of patent 14 years
U.S. Cl. D6—410



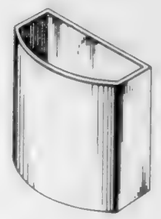
355,789
DESK
Rose Tarlow, 8454 Melrose Pl., Los Angeles, Calif. 90069
Filed Aug. 19, 1993, Ser. No. 11,977
Term of patent 14 years
U.S. Cl. D6—428



355,790
TV/VCR HOLDER
Dennis J. Dwyer, Greenfield, Mass., assignor to J. H. Smith Co., Inc., Greenfield, Mass.
Filed Mar. 8, 1993, Ser. No. 5,619
Term of patent 14 years
U.S. Cl. D6—449



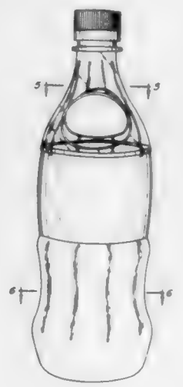
355,791
REMOTE CONTROL HOLDER
Lillian D. Briley, 888 N. Grand Ave., NW., Atlanta, Ga. 30318
Continuation-in-part of Ser. No. 15,470, Nov. 18, 1993. This application Mar. 18, 1994, Ser. No. 20,063
Term of patent 14 years
U.S. Cl. D6—449



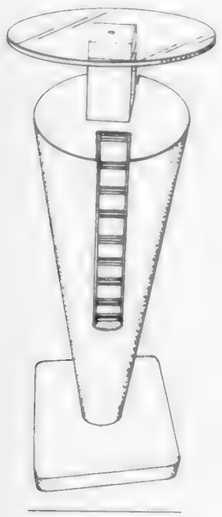
355,792
MULTI-PURPOSE DISPLAY STAND
Robert L. White, 809 Lear La., New Lenox, Ill. 60451
Filed May 1, 1992, Ser. No. 877,608
Term of patent 14 years
U.S. Cl. D6—450



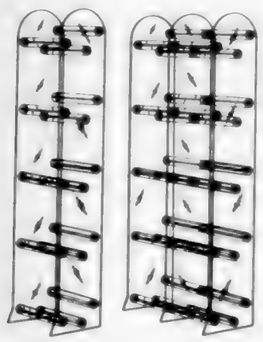
355,793
CONTOUR BOTTLE MERCHANDISER AND DISPLAY COOLER
Paul L. Flum, St. Louis, Mo., assignor to Paul Flum Ideas, Inc., St. Louis, Mo.
Filed Jan. 26, 1993, Ser. No. 4,072
Term of patent 14 years
U.S. Cl. D6—450



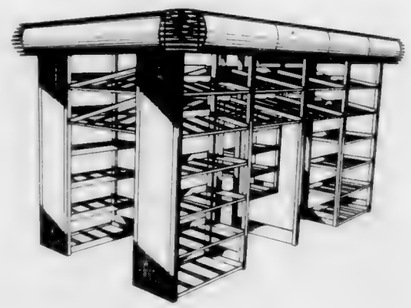
355,794
CONICAL DISPLAY
Karen Wenzel-Murphy, Yardley, Pa., and Stan Kao, Bloomfield, N.J., assignors to Kinney Shoe Corporation, New York, N.Y.
Filed Nov. 17, 1992, Ser. No. 1,582
Term of patent 14 years
U.S. Cl. D6—455



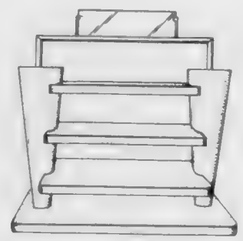
355,795
TOWER RACK
David M. Stravitz, 16 Park Ave., Ste. 14A, New York, N.Y. 10016
Filed Dec. 13, 1993, Ser. No. 16,334
Term of patent 14 years
U.S. Cl. D6—465



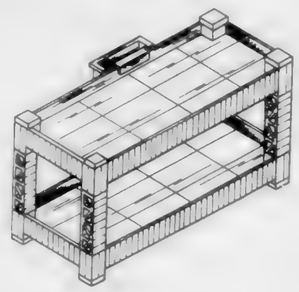
355,796
MERCHANDISE DISPLAY STAND
Rafael T. Bustos, Alpharetta, and Joseph M. Battaglia, Douglasville, both of Ga., assignors to L&P Property Management Company, Chicago, Ill.
Filed Jan. 24, 1994, Ser. No. 17,849
Term of patent 14 years
U.S. Cl. D6—470



355,797
DISPLAY RACK WITH DUAL CONICAL ENDS
Karen Wenzel-Murphy, Yardley, Pa., and Stan Kao, Bloomfield, N.J., assignors to Kinney Shoe Corporation, New York, N.Y.
Filed Nov. 17, 1992, Ser. No. 1,598
Term of patent 14 years
U.S. Cl. D6—474



355,798
STACKABLE INDUSTRIAL SHELVING
Charles R. Goetz, Carnegie, Pa., assignor to Alco Industries, Inc., Valley Forge, Pa.
Filed Aug. 17, 1992, Ser. No. 930,293
Term of patent 14 years
U.S. Cl. D6—479



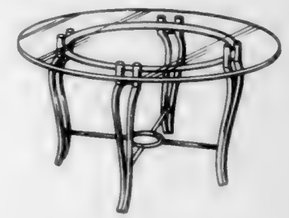
355,799
ADJUSTABLE TABLE
Donato D'Urbino, and Paolo Lomazzi, both of Milan, Italy, assignors to NAOS S.R.L., Firenze, Italy
Filed Sep. 30, 1993, Ser. No. 13,705
Claims priority, application Italy, Apr. 1, 1993, FI/93/0/20
Term of patent 14 years
U.S. Cl. D6—482



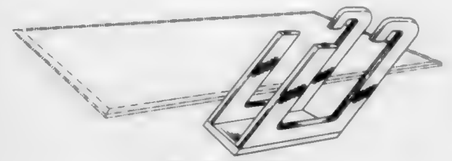
355,800
TABLE
Marshall B. Ward, High Point, N.C., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Apr. 29, 1993, Ser. No. 7,718
Term of patent 14 years
U.S. Cl. D6—484



355,801
TABLE
Richard S. Klein, Los Angeles, Calif., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Sep. 1, 1993, Ser. No. 12,410
Term of patent 14 years
U.S. Cl. D6—487



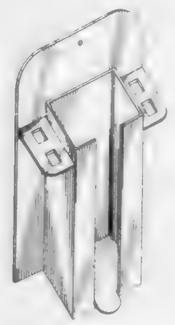
355,802
TABLE BASE
Mikhail Loznikov, 2007 Balboa St., San Francisco, Calif. 94121
Filed Dec. 21, 1993, Ser. No. 16,663
Term of patent 14 years
U.S. Cl. D6—495



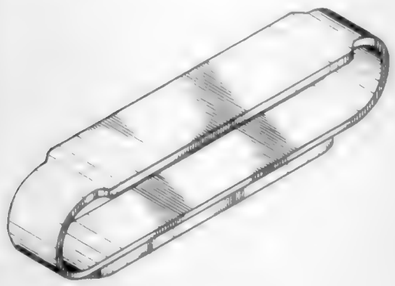
355,803
PANEL FOR PATIO FURNITURE
Glen D. Kemnitz, Gallatin, Tenn., assignor to Sunbeam Corporation, Fort Lauderdale, Fla.
Continuation of Ser. No. 962,495, Oct. 15, 1992. This application Nov. 30, 1992, Ser. No. 2,102
Term of patent 14 years
U.S. Cl. D6—502



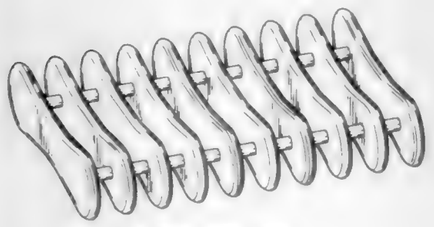
355,804
COMBINED TOOTHPASTE TUBE CONTAINER AND TOOTHBRUSH HOLDER
Joseph D. Crivelli, 107 E. Mt. Pleasant Ave., Livingston, N.J. 07039
Filed Apr. 9, 1993, Ser. No. 6,870
Term of patent 14 years
U.S. Cl. D6—530



355,805
SOAP HOLDER
Tony Warren, 134 W. 58th St. #304, New York, N.Y. 10019
Filed Jul. 8, 1993, Ser. No. 10,460
Term of patent 14 years
U.S. Cl. D6—536



355,806
SOAP HOLDER
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139, and Steven E. Greenhut, 6368 NW. 23rd Way, Boca Raton, Fla. 33496
Filed Aug. 18, 1993, Ser. No. 11,964
Term of patent 14 years
U.S. Cl. D6—536



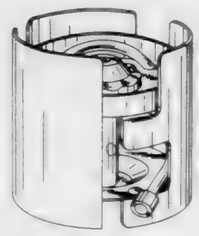
355,807
TRACTION MAT
John O'Rourke, 360 Roses Mill Rd., Milford, Conn. 06460
Filed Jan. 31, 1994, Ser. No. 18,143
Term of patent 14 years
U.S. Cl. D6—582



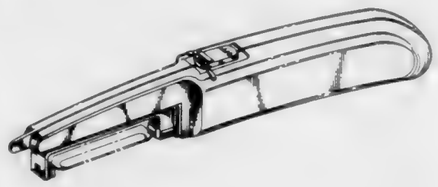
355,808
TEA KETTLE
Sam Lebowitz, Shelter Island, N.Y., assignor to Wilton Industries, Inc.
Filed Jan. 25, 1993, Ser. No. 4,009
The portion of the term of this patent subsequent to Feb. 14, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—302



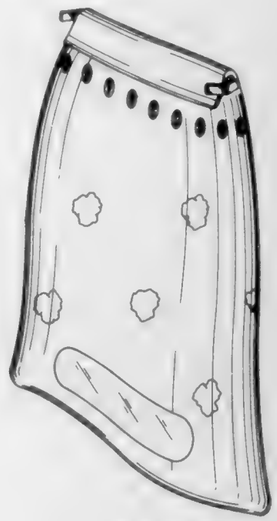
355,809
BACKPACKER'S LIQUID FUEL STOVE
Rolf Kothrade, Weinfelden, Switzerland, assignor to Aktiengesellschaft SIGG Aluminium-und Metallwarenfabrik, Frauenfeld, Switzerland
Filed Mar. 1, 1993, Ser. No. 5,288
Claims priority, application Switzerland, Sep. 1, 1992, DM/023.791
Term of patent 14 years
U.S. Cl. D7—337



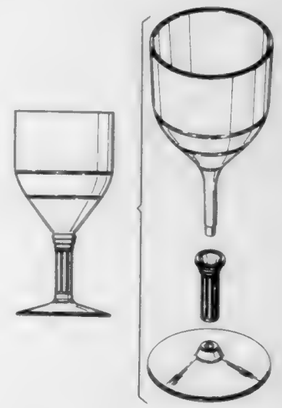
355,810
VEGETABLE PEELER
David C. Belongia, West Bend, Wis., and William C. Cesaroni, Glenview, Ill., assignors to The West Bend Company, West Bend, Wis.
Filed Jul. 9, 1993, Ser. No. 10,529
Term of patent 14 years
U.S. Cl. D7—372



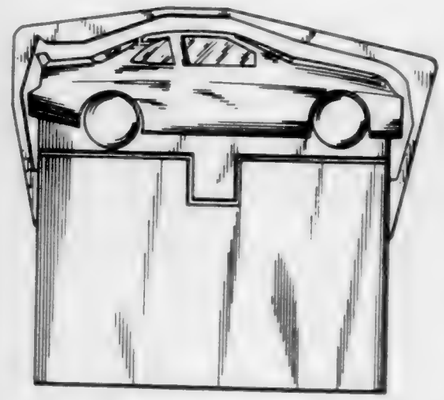
355,811
AIR POPCORN POPPER COVER
Janice L. Chwalik, 18430 Hannan, New Boston, Mich. 48164
Filed May 21, 1992, Ser. No. 886,176
Term of patent 14 years
U.S. Cl. D7—387



355,812
BEVERAGE GLASS WITH A STEM AND BASE
Stephen DuBow, P.O. Box 7861, Newport Beach, Calif. 92660
Filed Sep. 24, 1993, Ser. No. 13,457
Term of patent 14 years
U.S. Cl. D7—527



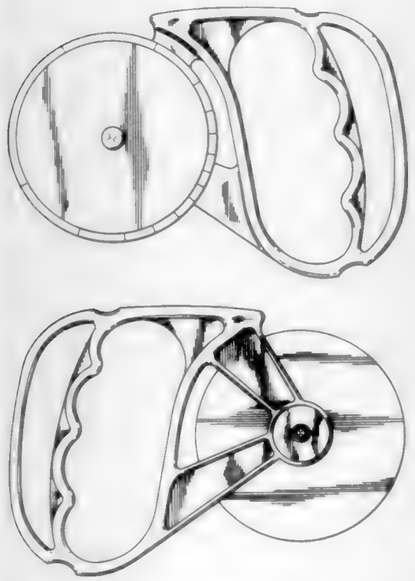
355,813
COOLER
David K. Vance, 1215 Apt. #306, Kelston Pl., Charlotte, N.C. 28212
Filed Aug. 2, 1993, Ser. No. 11,322
Term of patent 14 years
U.S. Cl. D7—606



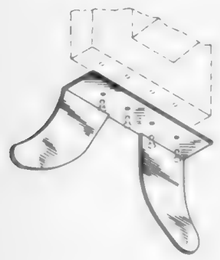
355,814
FOOD STORAGE CONTAINER
Terry L. VanValkenburg, Elk River, Minn.; Bradley W. Andress, Hudson, Wis.; Gregg M. Davis, and John W. Koenig, both of Columbus, Ohio, assignors to Plastics, Inc., St. Paul, Minn.
Filed Mar. 22, 1993, Ser. No. 6,084
The portion of the term of this patent subsequent to Sep. 27, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—629



355,815
PIZZA CUTTER
Ron La Gro, Snowmass, Colo., assignor to LaGro Design, Aspen, Colo.
Filed Dec. 2, 1992, Ser. No. 2,163
Term of patent 14 years
U.S. Cl. D7—694



355,816
TRIMMER ATTACHMENT
Stephen C. Ash, 130 E. Iris Ave., McAllen, Tex. 78501
Filed Nov. 17, 1993, Ser. No. 15,412
Term of patent 14 years
U.S. Cl. D8—1



355,817
BUSH CUTTER
Hideyuki Nakadachi, Shizuoka, Japan, assignor to Fuji Robin Kabushiki Kaisha, Numazu, Japan
Filed Sep. 27, 1993, Ser. No. 13,521
Claims priority, application Japan, Aug. 31, 1993, 5-26379
Term of patent 14 years
U.S. Cl. D8—8



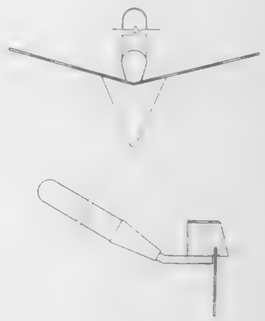
355,818
BUSH CUTTER
Hideyuki Nakadachi, Shizuoka, Japan, assignor to Fuji Robin Kabushiki Kaisha, Numazu, Japan
Filed Nov. 17, 1993, Ser. No. 15,457
Claims priority, application Japan, Sep. 13, 1993, 5-27751
Term of patent 14 years
U.S. Cl. D8—8



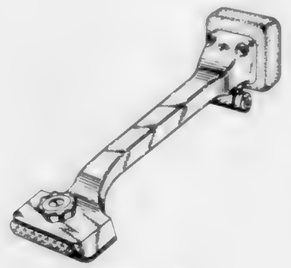
355,819
SHOVEL
Scott A. Price, 2202 B Ivy, Kirkland AFB, N. Mex. 87118
Filed Apr. 2, 1993, Ser. No. 6,625
Term of patent 14 years
U.S. Cl. D8—10



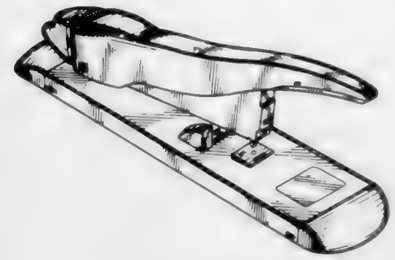
355,820
FURROW GRADING IMPLEMENT
Marty R. Tollison, Rte. 1 Box 4990, Pell City, Ala. 35125
Filed Mar. 18, 1994, Ser. No. 20,050
Term of patent 14 years
U.S. Cl. D8—11



355,821
VINYL AND CARPET KICKER
Stephen L. Kruskamp, Fair Oaks, Calif., assignor to Gary K. Wood, Carmichael, Calif., a part interest
Filed Apr. 14, 1993, Ser. No. 7,011
Term of patent 14 years
U.S. Cl. D8—15



355,822
STAPLER
Robert S. Smith, 1468 Rimcrest Ct., Bonita, Calif. 91902
Filed May 17, 1993, Ser. No. 8,392
Term of patent 14 years
U.S. Cl. D8—50



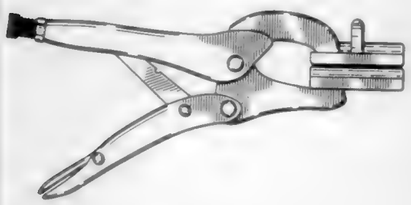
355,823
COMBINED HUB PULLER AND UNIVERSAL JOINT PUSHER TOOL
Denis Dumas, 674 St. Joseph E., Levis, Quebec G6V-1J4, and Michel Caron, 2312 Marie-Victorin, Sillery, Quebec G1T-2W4, both of Canada
Filed Jul. 28, 1992, Ser. No. 920,630
Claims priority, application Canada, Jun. 29, 1992, 29-06-92-3
Term of patent 14 years
U.S. Cl. D8—51



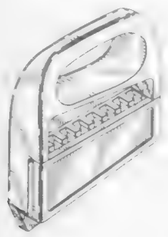
355,824
HANDLE FOR HOLDING AND REMOTELY ACTUATING AN AEROSOL CONTAINER
Thomas J. Smrt, 9716 S. Grant Highway, Marengo, Ill. 60152
Filed Nov. 19, 1993, Ser. No. 15,537
Term of patent 14 years
U.S. Cl. D8—51



355,825
TOOL FOR RESTORING CURVATURE TO ITEMS OF SHEET METAL CONSTRUCTION
Thomas E. Moyer, R.R. 5, Box 933, Altoona, Pa. 16601
Filed Jun. 29, 1993, Ser. No. 10,102
Term of patent 14 years
U.S. Cl. D8—52



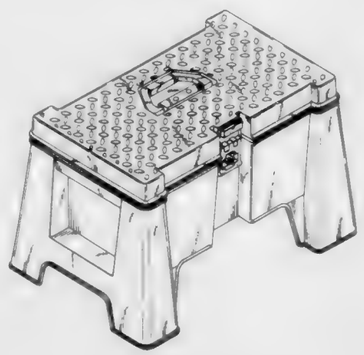
355,826
TOOL HOLDER
Jessie Chow, No. 18, Hou Juan Road, Taichung, Taiwan, Prov. of China
Filed Jul. 23, 1993, Ser. No. 11,017
Term of patent 14 years
U.S. Cl. D8—71



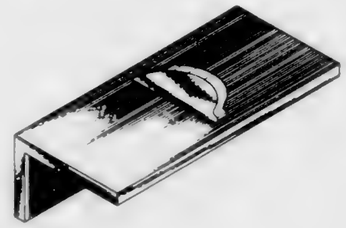
355,827
MAGNETIC DISH
Chien-Tu Liu, P.O. Box 96-173, Taipei, Taiwan, Prov. of China
Filed Aug. 11, 1993, Ser. No. 11,631
Term of patent 14 years
U.S. Cl. D8—71



355,828
SINGLE-STEP TOOL BOX
Thomas Dickinson, and Bradley D. Gale, both of St. Louis, Mo., assignors to Contico International, Inc., St. Louis, Mo.
Filed Nov. 22, 1993, Ser. No. 15,572
Term of patent 14 years
U.S. Cl. D8—71



355,829
CORNER SHAPING FILE
Charles L. Kotlarz, R.R. 1 Box 346F, Van, Tex. 75790
Filed Apr. 9, 1993, Ser. No. 6,927
Term of patent 14 years
U.S. Cl. D8—90



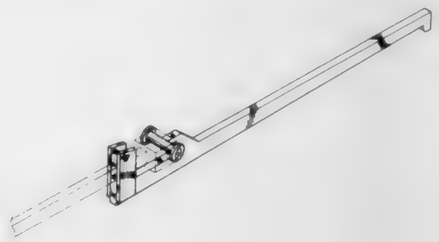
355,830
CRIMPING TOOL HANDLE
Gennaro L. Pecora; Gregg S. Gordon, and Marc A. Larochelle, all of Manchester, N.H., assignors to Burndy Corporation, Norwalk, Conn.
Filed Apr. 24, 1992, Ser. No. 873,553
Term of patent 14 years
U.S. Cl. D8—107



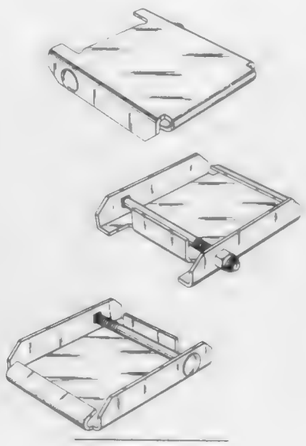
355,831
HANDLE
Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Judith Aston, P.O. Box 3568, Incline Village, Nev. 89450
Filed Apr. 26, 1993, Ser. No. 7,523
Term of patent 14 years
U.S. Cl. D8—107



355,832
EXTENSION HANDLE FOR A TRACK SWITCH TOOL
James R. Downey, P.O. Box 21, Farmersville, Ill. 62533
Filed Jun. 3, 1993, Ser. No. 9,024
Term of patent 14 years
U.S. Cl. D8—107



355,833
CASTER PAD
Lyn Seaquist, 25472 Calle Jardin, San Juan Capistrano, Calif. 92675
Filed Apr. 14, 1993, Ser. No. 7,124
Term of patent 14 years
U.S. Cl. D8—374



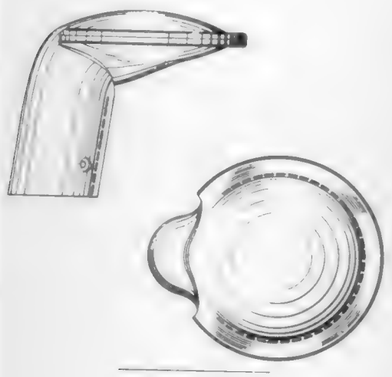
355,834
KNOB
Robert Chieda, Wheaton, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Aug. 3, 1993, Ser. No. 11,353
Term of patent 14 years
U.S. Cl. D8—305



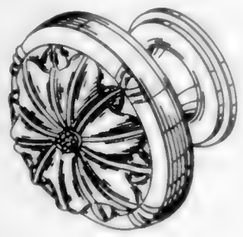
355,835
PULL
Robert Chieda, Wheaton, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Aug. 3, 1993, Ser. No. 11,363
Term of patent 14 years
U.S. Cl. D8—305



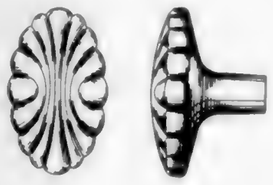
355,836
SADDLEHORN GEARSHIFT KNOB
Paul W. Gilson, 236 S. Highway 24, Buena Vista, Colo. 81211
Filed Oct. 29, 1993, Ser. No. 14,632
Term of patent 14 years
U.S. Cl. D8—305



355,837
KNOB
Robert Chieda, Wheaton, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Aug. 3, 1993, Ser. No. 11,366
Term of patent 14 years
U.S. Cl. D8—310



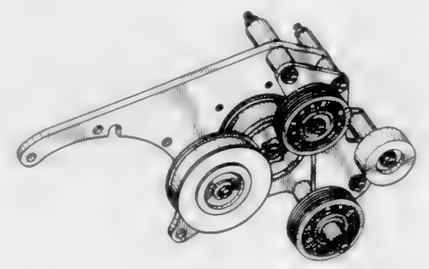
355,838
KNOB
Robert Chieda, Wheaton, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Aug. 3, 1993, Ser. No. 11,362
Term of patent 14 years
U.S. Cl. D8—312



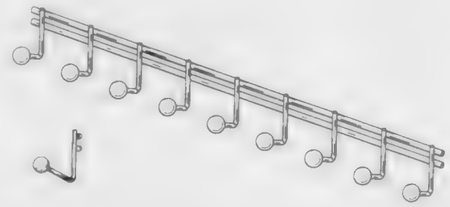
355,839
PULL
Robert Chieda, Wheaton, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Aug. 3, 1993, Ser. No. 11,367
Term of patent 14 years
U.S. Cl. D8—317



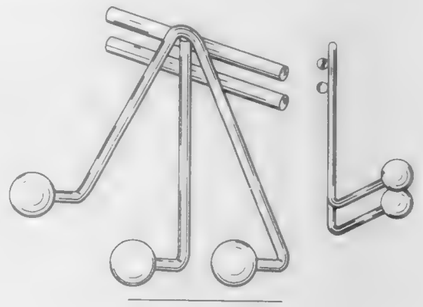
355,840
BRACKET AND PULLEY UNIT
Francis G. Carroll, 428 Lathrop Ave., Apt. A., Boonton, N.J. 07005
Filed Sep. 28, 1982, Ser. No. 951,709
Term of patent 14 years
U.S. Cl. D8—360



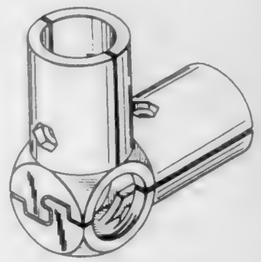
355,841
RACK
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139, and Steven E. Greenhut, 6368 NW. 23rd Way, Boca Raton, Fla. 33496
Filed Aug. 18, 1993, Ser. No. 11,957
Term of patent 14 years
U.S. Cl. D8—372



355,842
RACK
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139, and Steven E. Greenhut, 6368 NW. 23rd Way, Boca Raton, Fla. 33496
Filed Aug. 18, 1993, Ser. No. 11,962
Term of patent 14 years
U.S. Cl. D8—372



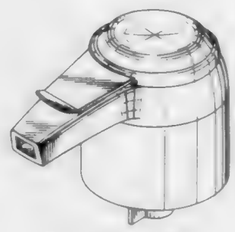
355,843
SHELF JOINT
Yuji Kuwata, Shizuoka, Japan, assignor to Yazaki Industrial Chemical Co. Ltd., Chizuoka, Japan
Filed Sep. 30, 1992, Ser. No. 954,071
Term of patent 14 years
U.S. Cl. D8—382



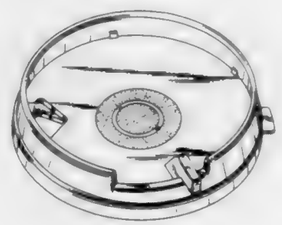
355,844
BOTTLE
Keith H. Bishop, River Vale, N.J., and Hervé Pennaneac'h, Verneuil sur Avre, France, assignors to Schering Corporation, Kenilworth, N.J.
Filed Jun. 2, 1993, Ser. No. 9,065
Claims priority, application France, Dec. 3, 1992, 92 7378
Term of patent 14 years
U.S. Cl. D9—300



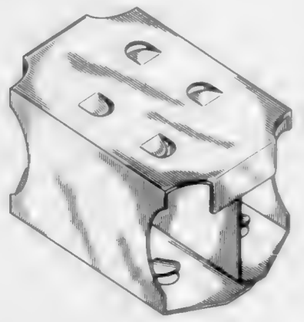
355,845
PUMP-ACTION DISPENSER
Anthony Wass, Stamford, England, assignor to The English Glass Company Limited, United Kingdom
Filed Feb. 18, 1992, Ser. No. 844,681
Claims priority, application United Kingdom, Aug. 16, 1991, 2016707
Term of patent 14 years
U.S. Cl. D9—448



355,846
CUP LID
Melvin L. Denney, Sugar Land, and Srinivas Nishtala, Houston, both of Tex., assignors to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Sep. 29, 1992, Ser. No. 952,771
Term of patent 14 years
U.S. Cl. D9—449



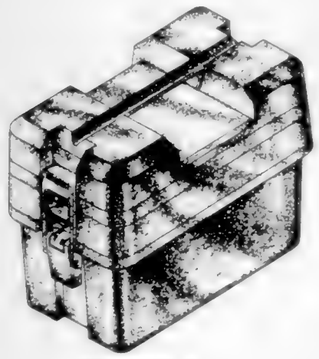
355,847
COLLAPSIBLE TUMBLER SLEEVE
Bradley P. Woolaway, Savona, N.Y., assignor to Corning Incorporated, Corning, N.Y.
Filed Jul. 19, 1993, Ser. No. 11,252
Term of patent 14 years
U.S. Cl. D9—346



355,848
PACKAGE FOR A WAFER FOR THE WELDING AND/OR CUTTING OF PLASTIC TUBES
Ivars V. Ivansons, Newark; Valdis Ivansons, and Dudley W. C. Spencer, both of Wilmington, all of Del., assignors to Denco, Inc., Wilmington, Del.
Filed Jan. 18, 1994, Ser. No. 17,601
Term of patent 14 years
U.S. Cl. D9—415



355,849
PORTABLE STORAGE CONTAINER
David A. Trower; Fred P. Ritchie, both of Waterloo, and Bryan J. Stow, Cedar Falls, all of Iowa, assignors to Waterloo Industries, Inc., Waterloo, Iowa
Filed Aug. 31, 1993, Ser. No. 12,423
Term of patent 14 years
U.S. Cl. D9—424



355,850
PACKING CONTAINER
Kwang-Bong Lee, Seoul, Rep. of Korea, assignor to Lotte Confectionery Co., Ltd., Seoul, Rep. of Korea
Filed Jan. 13, 1993, Ser. No. 3,671
Term of patent 14 years
U.S. Cl. D9—428



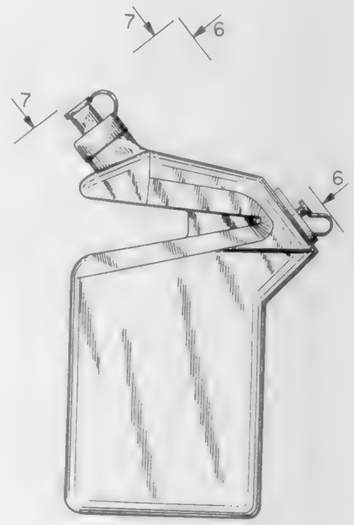
355,851
TWO LITER BOTTLE CARRYING HANDLE
Henry C. Otterbein, 653 Hidden Point La., Cincinnati, Ohio 45230
Filed Sep. 17, 1993, Ser. No. 13,080
Term of patent 14 years
U.S. Cl. D9—434



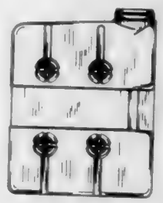
355,852
BOTTLE
Bruno Wicki, Wohlen, Switzerland, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Sep. 3, 1993, Ser. No. 12,535
Claims priority, application United Kingdom, Mar. 5, 1993, 2029617
Term of patent 14 years
U.S. Cl. D9—522



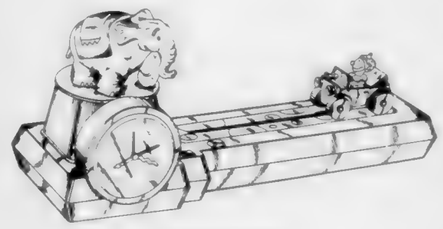
355,853
SPLASHLESS LIQUID POURING CONTAINER
Donald H. Schmitt; Michael J. Schmitt, and Anthony L. Schmitt, all of P.O. Box 53, St. Cloud, Minn. 56302
Continuation-in-part of Ser. No. 801,116, Dec. 2, 1991, Pat. No. Des. 333,980, which is a continuation-in-part of Ser. No. 898,758, Jun. 15, 1992. This application Mar. 15, 1993, Ser. No. 5,892
Term of patent 14 years
U.S. Cl. D9—524



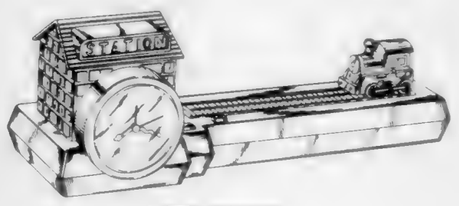
355,854
CONTAINER
Richard D. Baron, 1308 Hawthorne St., Zephyrhills, Fla. 33540; Malcolm C. Smith, 2115 Stewart Dr., Dade City, Fla. 33515; Carl R. Spoeth, 12412 Cobblestone Dr., Bayonet Point, Fla. 34667, and Steven A. Garbee, 411 Hickory La., Seffner, Fla. 33584
Division of Ser. No. 567,349, Aug. 14, 1990, Pat. No. Des. 340,866. This application May 3, 1993, Ser. No. 7,735
Term of patent 14 years
U.S. Cl. D9—528



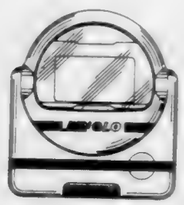
355,855
CIRCUS CLOCK
Curtis L. Dawson, Oxnard, Calif., assignor to With Design In Mind, Chatsworth, Calif.
Filed Mar. 5, 1993, Ser. No. 5,577
Term of patent 14 years
U.S. Cl. D10—7



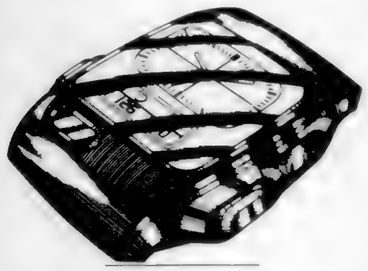
355,856
TRAIN CLOCK
Curtis L. Dawson, Oxnard, Calif., assignor to With Design in Mind, Chatsworth, Calif.
Filed Mar. 5, 1993, Ser. No. 5,546
Term of patent 14 years
U.S. Cl. D10—11



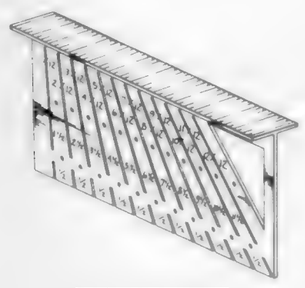
355,857
DIGITAL ALARM TIMEPIECE
John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Feb. 5, 1993, Ser. No. 4,415
Term of patent 14 years
U.S. Cl. D10—15



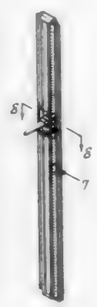
355,858
WRIST WATCH WITH ELECTRONIC SPHYGMONANOMETER
Syoichi Sugita, Wako, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 8, 1993, Ser. No. 10,463
Term of patent 14 years
U.S. Cl. D10—31



355,859
RAFTER AND GABLE-END MARKING TEMPLATE
John F. Schroeder, 300 Third Ave., Winder, Ga. 30680
Filed Jun. 2, 1993, Ser. No. 9,092
Term of patent 14 years
U.S. Cl. D10—64



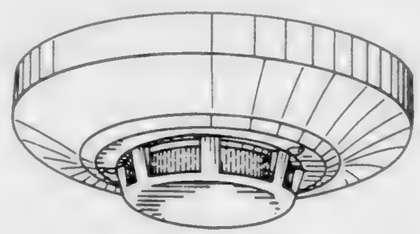
355,860
STADIOMETER
Marvin S. Lund, 5322 Frost Point Cir., Prior Lake, Minn. 55372
Filed Oct. 25, 1993, Ser. No. 14,582
Term of patent 14 years
U.S. Cl. D10—70



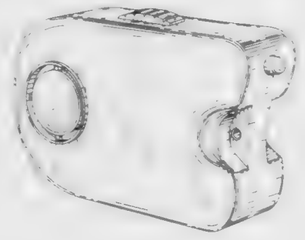
355,861
ELECTRONIC VOLTAGE TESTER INSTRUMENT
Kevin P. Walsh, P.O. Box 57373, New Orleans, La. 70157
Continuation-in-part of Ser. No. 945,338, Sep. 15, 1992. This application Jul. 30, 1993, Ser. No. 11,245
Term of patent 14 years
U.S. Cl. D10—78



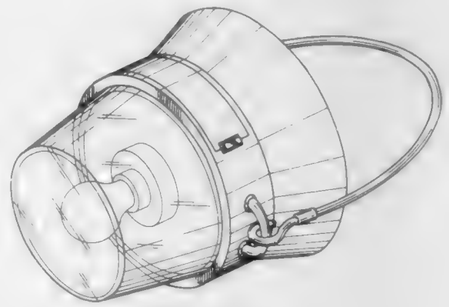
355,862
HOUSING FOR A SMOKE DETECTOR
Lee D. Tice, Bartlett, and Eric W. Anderson, St. Charles, both of Ill., assignors to Pittway Corporation, Chicago, Ill.
Filed May 25, 1993, Ser. No. 8,721
Term of patent 14 years
U.S. Cl. D10—106



355,863
PERSONAL SAFETY ALARM
David A. Collins, Hot Springs, Ark., assignor to DAC Technologies of America, Little Rock, Ark.
Filed May 2, 1994, Ser. No. 22,153
Term of patent 14 years
U.S. Cl. D10—106



355,864
WARNING LIGHT FOR USE ON TOWED BOATS
John A. Lantz, 820 Westview Dr., Marion, Iowa 52302-4634
Filed Mar. 28, 1994, Ser. No. 20,467
Term of patent 14 years
U.S. Cl. D10—114



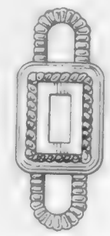
355,865
RELIGIOUS HOLIDAY BASKET
Quincy Stingley, 4034 W. 21st Pl., Chicago, Ill. 60623
Filed Mar. 25, 1991, Ser. No. 653,120
Term of patent 14 years
U.S. Cl. D11—121



355,866
EXPANSION BRACELET
Julia R. Prout, Coventry, R.I., assignor to Textron Inc., Providence, R.I.
Filed Jun. 7, 1993, Ser. No. 9,119
Term of patent 14 years
U.S. Cl. D11—25



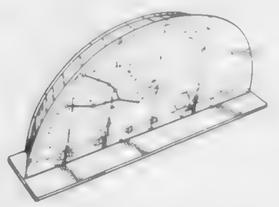
355,867
JEWELRY SETTING
Pepi Kelman, 812 S. Robertson Blvd., Los Angeles, Calif. 90035
Filed Dec. 28, 1993, Ser. No. 16,769
Term of patent 14 years
U.S. Cl. D11—91



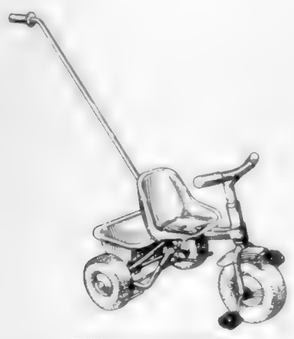
355,868
SOCK FLOWER
Caroline S. Brooks, 5804C-700th St. SW., Lynnwood, Wash. 98036
Filed Mar. 23, 1993, Ser. No. 6,662
Term of patent 14 years
U.S. Cl. D11—117



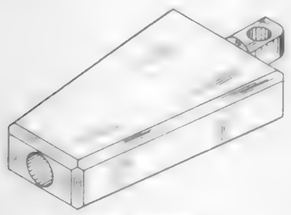
355,869
CONSTELLATION SCULPTURE
Delmar L. Hepperly, Jr., Upper Darby, Pa., assignor to Delmar Designs, Inc., Ridley Park, Pa.
Filed May 2, 1994, Ser. No. 22,126
Term of patent 14 years
U.S. Cl. D11—157



355,870
TRICYCLE
Michel Dieudonne, Saint Laurent, France, assignor to Etablissements Maurice Charton, S.A., Saint-Laurent-En-Grandvaux, France
Filed Jul. 13, 1993, Ser. No. 10,635
Claims priority, application WIPO, Jan. 14, 1993, DM/024,922
Term of patent 14 years
U.S. Cl. D12—112



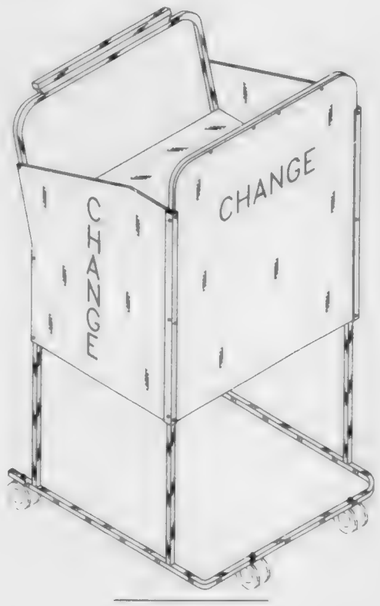
355,871
MOTORCYCLE KICKSTART PEDAL
Allan D. Schermeister, 4587 Aptos Ave., San Jose, Calif. 95111
Filed Apr. 9, 1993, Ser. No. 6,949
Term of patent 14 years
U.S. Cl. D12—125



355,872
BICYCLE CHAINGUARD
Paul Haney, and William Rieger, both of Dayton, Ohio, assignors to Huffy Corporation, Miamisburg, Ohio
Filed Dec. 29, 1993, Ser. No. 16,912
Term of patent 14 years
U.S. Cl. D12—127



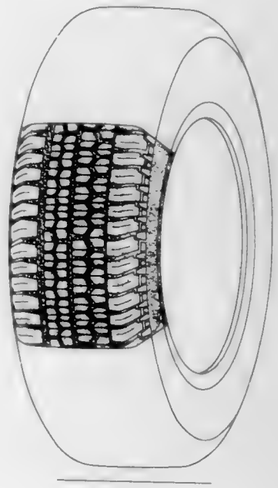
355,873
CHANGE STROLLER
Linton Mathews, 6621 Cowboy Trail, Las Vegas, Nev. 89121, and Philip M. Stephens, 1624 S. Palm St., #34, Las Vegas, Nev. 89104
Filed Aug. 16, 1993, Ser. No. 11,864
Term of patent 14 years
U.S. Cl. D12—129



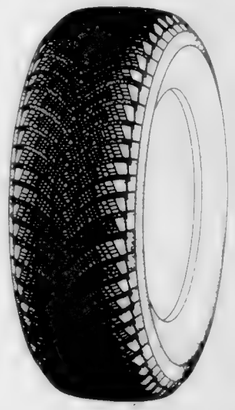
355,874
BABY STROLLER
David G. Nelson, 6009 Elm Street, Vancouver, BC V6N 1A8, Canada
Filed Oct. 12, 1993, Ser. No. 14,036
Term of patent 14 years
U.S. Cl. D12—129



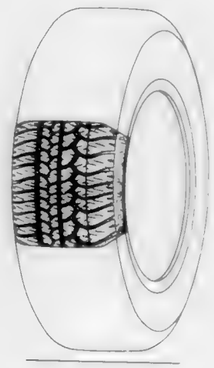
355,875
VEHICLE TIRE
William B. Allison, Cuyahoga Falls, and Dennis E. Bible, Stow, both of Ohio, assignors to General Tire, Inc., Akron, Ohio
Filed Oct. 19, 1993, Ser. No. 14,336
Term of patent 14 years
U.S. Cl. D12—148



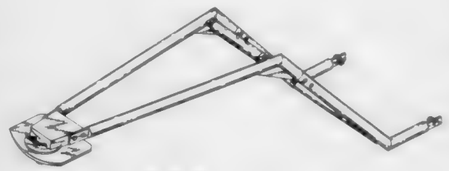
355,876
TIRE
Franz Diensthuber, Schonau, Austria, assignor to Semperit Reifen Aktiengesellschaft, Traiskirchen, Austria
Filed Jul. 13, 1993, Ser. No. 10,588
Claims priority, application Austria, Jan. 28, 1993, MU-261/93
Term of patent 14 years
U.S. Cl. D12—151



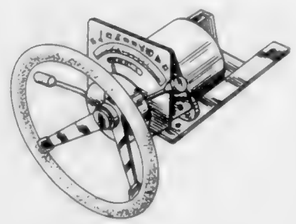
355,877
VEHICLE TIRE
William B. Allison, Cuyahoga Falls, and Dennis E. Bible, Stow, both of Ohio, assignors to General Tire, Inc., Akron, Ohio
Filed Oct. 19, 1993, Ser. No. 14,334
Term of patent 14 years
U.S. Cl. D12—147



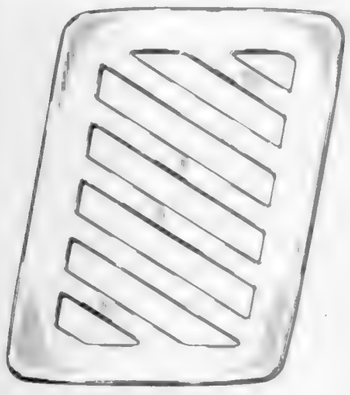
355,878
VEHICLE TOWING BAR
William K. Jenkins, 8200 Jantzen Rd. - Space 6, Modesto, Calif. 95357, and Ronald L. Bonzi, 1105 Durant St., Modesto, Calif. 95350
Filed Sep. 22, 1993, Ser. No. 13,342
Term of patent 14 years
U.S. Cl. D12—162



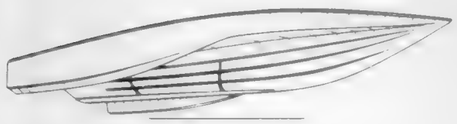
355,879
STEERING WHEEL CONFIGURATION
Wade O. Winblad, Hayward, Calif., assignor to Atari Games Corporation, Milpitas, Calif.
Continuation-in-part of Ser. No. 888,375, May 22, 1992. This application Nov. 20, 1992, Ser. No. 1,833
Term of patent 14 years
U.S. Cl. D12—176



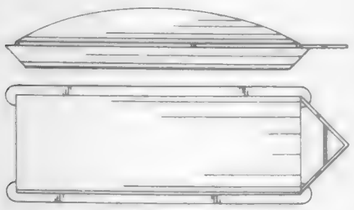
355,880
VEHICLE WINDOW COVER
Blaine A. Roberts, P.O. Box 2110, Chico, Calif. 95927
Filed May 24, 1993, Ser. No. 8,656
Term of patent 14 years
U.S. Cl. D12—183



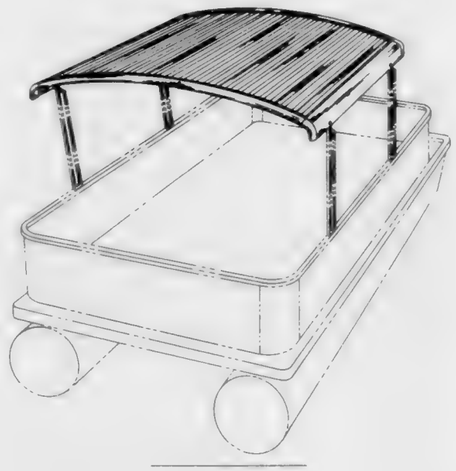
355,881
BOAT HULL
Arthur E. Carlson, 6442 Cantilles Ave., Cypress, Calif. 90630
Filed Sep. 28, 1993, Ser. No. 13,597
Term of patent 14 years
U.S. Cl. D12—314



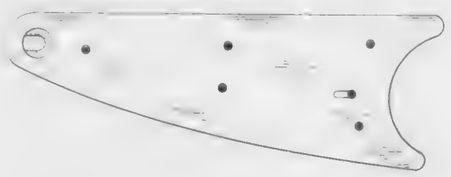
355,882
FLOATABLE CARGO TRANSPORT APPARATUS
David K. Aubut, 1 Campbell Pl.; Dennis W. Baldwin, 114 Park St., both of Barre, Vt. 05641, and Gary M. Ritchie, P.O. Box 225, Montpelier, Vt. 05601
Filed Oct. 18, 1993, Ser. No. 14,270
Term of patent 14 years
U.S. Cl. D12—316



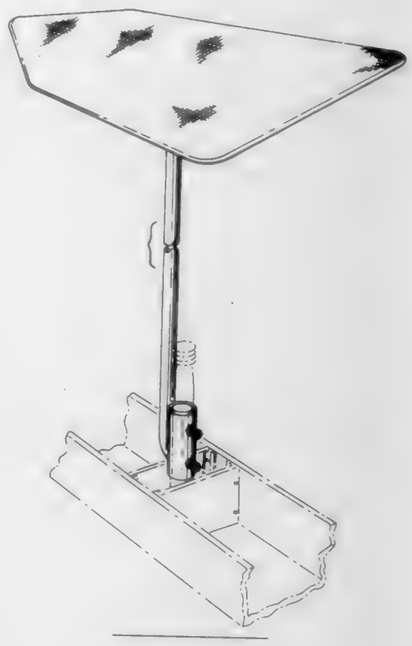
355,883
BOAT TOP
Terry J. Simpkins, Carlsbad, Calif., assignor to Harris-Kayot, Inc., Fort Wayne, Ind.
Filed Oct. 13, 1993, Ser. No. 14,126
Term of patent 14 years
U.S. Cl. D12—317



355,884
CHAIN GUARD FOR PERSONALIZED WATERCRAFT
Phillip E. Schlangen, and Raymond J. Buresch, both of Minneapolis, Minn., assignors to Hydro-Bikes, Inc., Minneapolis, Minn.
Filed Oct. 18, 1993, Ser. No. 14,220
Term of patent 14 years
U.S. Cl. D12—317



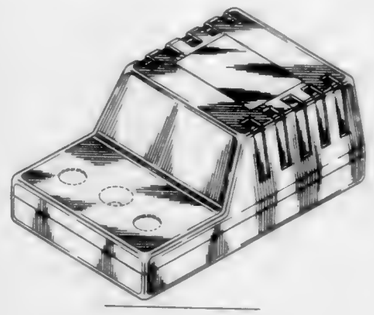
355,885
SKI BOAT AWNING
Eugene Della, 1469 Montgomery Dr., Vista, Calif. 92084
Filed Aug. 27, 1993, Ser. No. 12,275
Term of patent 14 years
U.S. Cl. D12—317



355,886
STOWABLE BOARDING APPARATUS
Albert E. Finn, Marblehead, Mass., assignor to Indikon Company, Inc., Cambridge, Mass.
Filed Oct. 28, 1993, Ser. No. 14,695
Term of patent 14 years
U.S. Cl. D12—317

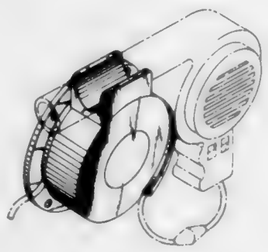


355,887
POWER SUPPLY HOUSING
Charles E. Rodeffer, and Randy L. Sperry, both of Burlington, Iowa, assignors to Winegard Company, Burlington, Iowa
Filed Feb. 14, 1994, Ser. No. 18,734
Term of patent 14 years
U.S. Cl. D13—110



355,888
ELECTRIC GROUNDING STUD
John Deleo, 107 Sun Valley Dr., Southington, Conn. 06489
Filed Aug. 30, 1993, Ser. No. 12,329
Term of patent 14 years
U.S. Cl. D13—133

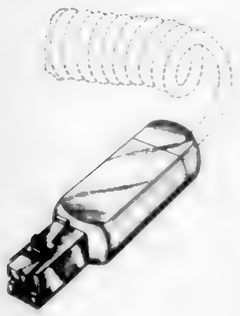
355,889
POWER CORD RETRACTOR
Joseph A. Salvati, and Norma Salvati, both of 9 Crescent La., Putnam Valley, N.Y. 10579
Filed Feb. 1, 1993, Ser. No. 4,475
Term of patent 14 years
U.S. Cl. D13—140



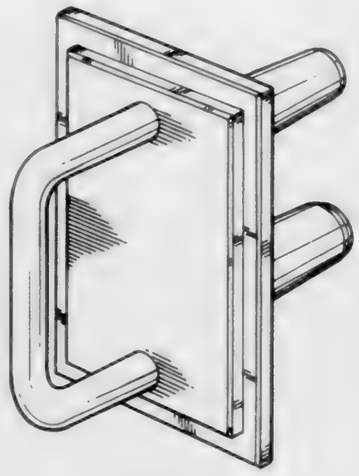
355,890
ROTATABLE MULTIPLE ELECTRICAL OUTLET POWER STAKE
Mark S. Lentz, Indianapolis, Ind., assignor to Woods Industries, Inc., Carmel, Ind.
Filed Sep. 20, 1993, Ser. No. 13,127
Term of patent 14 years
U.S. Cl. D13—143



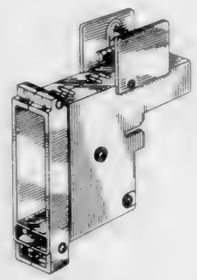
355,891
TELEPHONE CORD ROTARY CONNECTOR
Albert Ditzig, and Mark Ditzig, both of Hoffman Estates, Ill., assignors to Telephone Products, Inc., Wheeling, Ill.
Continuation-in-part of Ser. No. 647,005, Jan. 29, 1991, Pat. No. Des. 338,654. This application Jun. 11, 1993, Ser. No. 10,262
Term of patent 14 years
U.S. Cl. D13—147



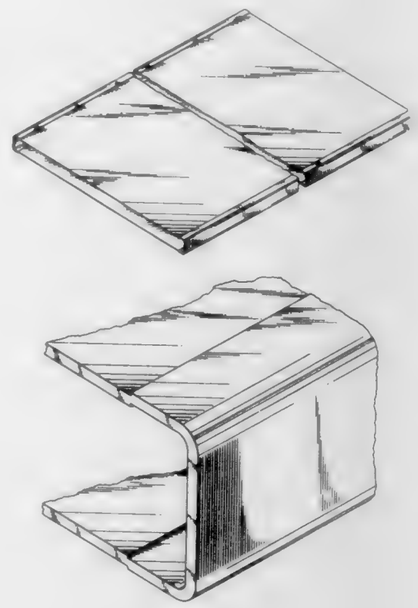
355,892
PANEL JACK DUST CAP
Thomas E. Pyzik, Naugatuck, Conn., assignor to Omega Engineering, Inc., Stamford, Conn.
Filed May 19, 1993, Ser. No. 8,604
Term of patent 14 years
U.S. Cl. D13—156



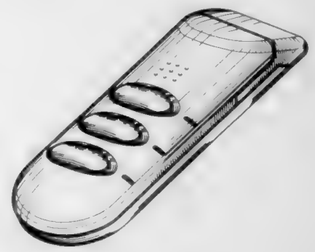
355,893
FUSED ELECTRICAL POWER DISCONNECT
David R. Marach, Marengo; Conrad Alfaro, Chicago, and Lawrence Happ, Mundelein, all of Ill., assignors to Cooper Industries, Inc., Houston, Tex.
Division of Ser. No. 788,731, Nov. 5, 1991. This application Dec. 13, 1993, Ser. No. 16,384
The portion of the term of this patent subsequent to Feb. 21, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—160



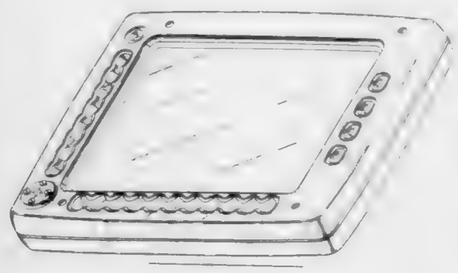
355,894
CIRCUIT CARD TUBING
Eric Yeomans, Lindsay, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 9, 1994, Ser. No. 18,563
Term of patent 14 years
U.S. Cl. D13—182



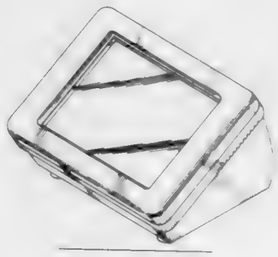
355,895
MOBILETELEPHONE CONTROL MODULE
Leonid Soren, Lincolnwood, and George M. Korycan, McHenry, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 16, 1992, Ser. No. 870,037
Term of patent 14 years
U.S. Cl. D14—240



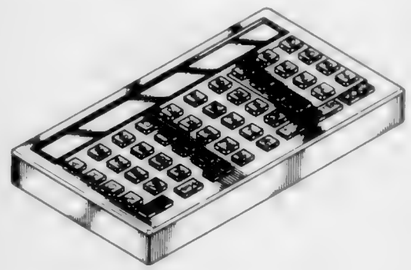
355,896
DIALOG TERMINAL
Philippe Gaultier, Le Chesnay, France, assignor to Sextant Avionique, Meudon La Foret, France
Filed Oct. 23, 1992, Ser. No. 1,151
Claims priority, application France, Apr. 23, 1992, 92 2597
Term of patent 14 years
U.S. Cl. D14—100



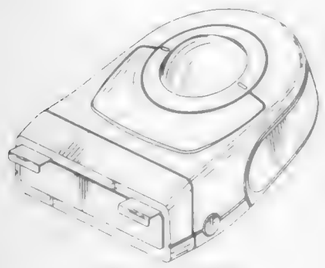
355,897
COMPUTER TERMINAL
Masafumi Nakanishi, and Muneo Satoh, both of Oizumi, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Aug. 10, 1993, Ser. No. 11,602
Claims priority, application Japan, Feb. 15, 1993, 5-4205
Term of patent 14 years
U.S. Cl. D14—100



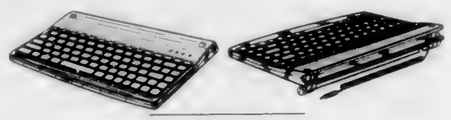
355,898
HAND HELD COMPUTER
John Verderame, 306 Pinebrook Place, Manchester, N.H. 03109
Filed Aug. 30, 1993, Ser. No. 12,298
Term of patent 14 years
U.S. Cl. D14—100



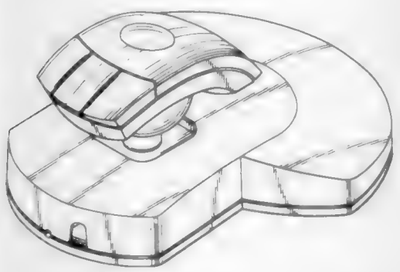
355,899
COMBINED POINTING DEVICE AND COUPLING ASSEMBLY
Mike M. Paull; Michael D. Nelson; Claire H. Beliard; Domenic S. Giuntoli; Robert C. Evans, III, all of Seattle, and William P. Stiles, Bothell, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.
Filed Oct. 30, 1992, Ser. No. 974
Term of patent 14 years
U.S. Cl. D14—114



355,900
COMPUTER PALM MOUSE
Johan O. Hilbrink, Blue Ash, Ohio; Donald W. Carr, Birmingham, Mich., and Francis J. McFadden, Beavercreek, Ohio, assignors to AT&T Global Information Solutions Company (fka NCR Corporation), Dayton, Ohio
Filed Jan. 29, 1993, Ser. No. 4,251
Term of patent 14 years
U.S. Cl. D14—114

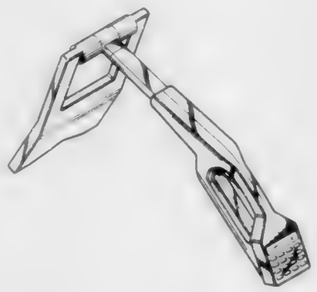


355,901
COMPUTER MOUSE
Paul E. Bradley, Woodside, Calif., assignor to Logitech, Inc., Fremont, Calif.
Filed Aug. 6, 1993, Ser. No. 11,532
Term of patent 14 years
U.S. Cl. D14—114

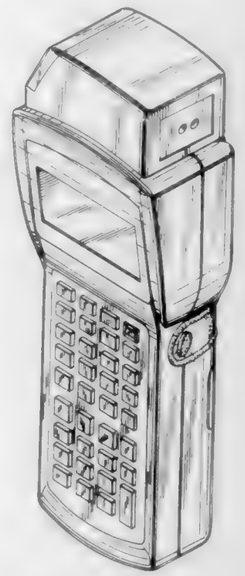


355,902
KEYBOARD FOR ELECTRONIC COMPUTER
Masaaki Iino, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Jun. 29, 1993, Ser. No. 10,066
Claims priority, application Japan, Mar. 22, 1993, 5-7794
Term of patent 14 years
U.S. Cl. D14—115

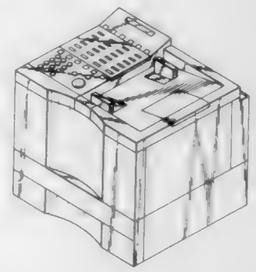
355,903
ELECTRONIC SCANNER FOR RETRIEVING STORED DATA FROM THE SIDEWALL OF A TIRE
Richard S. Pollack, Boulder, and Gene R. Starkey, Niwot, both of Colo., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 3, 1993, Ser. No. 7,885
Term of patent 14 years
U.S. Cl. D14—116



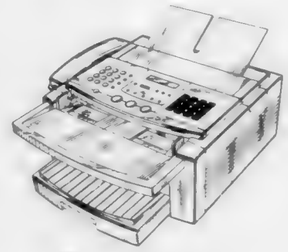
355,904
OPTICAL SCANNER
Jerome Swartz, Old Field, N.Y., and David M. Kirkeby, Fullerton, Calif., assignors to Symbol Technologies, Inc., Bohemia, N.Y.
Filed Oct. 25, 1993, Ser. No. 15,362
Term of patent 14 years
U.S. Cl. D14—116



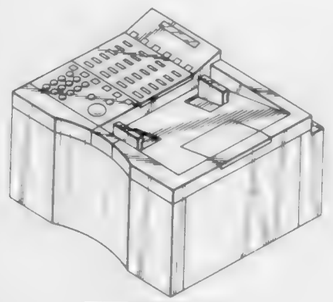
355,905
FACSIMILE TRANSMITTER-RECEIVER
Motoaki Takeuchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 22, 1993, Ser. No. 15,558
Term of patent 14 years
U.S. Cl. D14—118



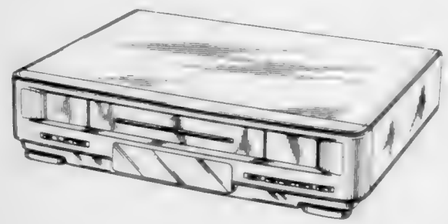
355,906
FACSIMILE
Tsutomu Yoshihara, Ayase, and Hideki Narushima, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 22, 1993, Ser. No. 15,560
Claims priority , application Japan, May 24, 1993, 5-15061
Term of patent 14 years
U.S. Cl. D14—118



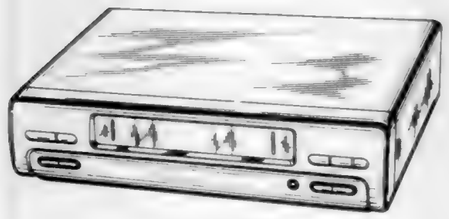
355,907
FACSIMILE TRANSMITTER-RECEIVER
Motoaki Takeuchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 22, 1993, Ser. No. 15,604
Claims priority, application Japan, May 24, 1993, 5-15062
Term of patent 14 years
U.S. Cl. D14—118



355,908
VIDEO TAPE RECORDER
Masami Takahashi, Ehime, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 10, 1993, Ser. No. 9,314
Claims priority, application Japan, Jan. 8, 1993, 5-209
Term of patent 14 years
U.S. Cl. D14—135



355,909
VIDEO TAPE RECORDER
Noriyuki Shinohara, and Koji Yukikado, both of Ehime, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 29, 1993, Ser. No. 10,067
Claims priority, application Japan, Jan. 8, 1993, 5-203
Term of patent 14 years
U.S. Cl. D14—135



355,910
TELEPHONE HANDSET TOP FOR MOBILE CELLULAR TELEPHONE
Phillip E. Lindeman, Roselle, Ill., assignor to Motorola, Schaumburg, Ill.
Filed Mar. 12, 1993, Ser. No. 5,932
Term of patent 14 years
U.S. Cl. D14—138



355,911
TELEPHONE RECEIVER
Takao Nakayama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 8, 1993, Ser. No. 16,137
Term of patent 14 years
U.S. Cl. D14—148



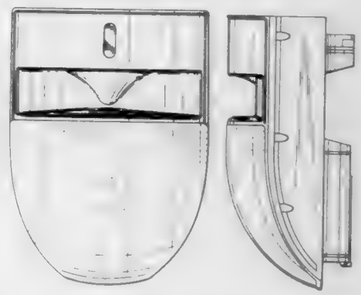
355,912
CORDLESS TELEPHONE
James Wicks, Hoboken, N.J., and Ichiro Hino, Kanagawa, Japan, assignors to Sony Electronics, Inc., Park Ridge, N.J.
Filed Jan. 5, 1994, Ser. No. 17,058
Term of patent 14 years
U.S. Cl. D14—148



355,913
STEREO HEADPHONES WITH TRANSMITTER
Man L. Chong, Hong Kong, Hong Kong, assignor to Telean Technologies Limited, Shatin, Hong Kong
Filed Mar. 25, 1993, Ser. No. 6,288
Claims priority, application United Kingdom, Sep. 26, 1992, 2026055
Term of patent 14 years
U.S. Cl. D14—168



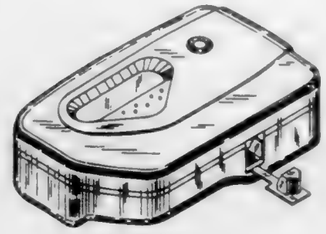
355,914
LOUDSPEAKER
Michael D. G. Jewitt; Graeme V. Foy, both of Worthing, and Allen Boothroyd, Cambridge, all of United Kingdom, assignors to Canon Audio Limited, Woking, United Kingdom
Filed Jan. 11, 1993, Ser. No. 3,609
Claims priority, application United Kingdom, Aug. 21, 1992, 2025162
Term of patent 14 years
U.S. Cl. D14—210



355,915
COMBINED MICROPHONE AND MOUNT
Shiu L. Chan, Los Altos Hills, Calif., assignor to Ess Technology, Inc., Fremont, Calif.
Filed Jul. 1, 1993, Ser. No. 10,299
Term of patent 14 years
U.S. Cl. D14—225



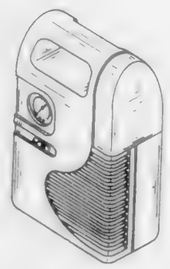
355,916
PHONE LINE TEST SET
David T. Wathen, Woodland Hills, Calif., assignor to Harris Corporation, Melbourne, Fla.
Filed Jun. 30, 1993, Ser. No. 10,232
Term of patent 14 years
U.S. Cl. D14—240



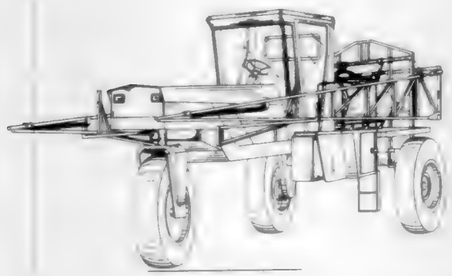
355,917
TELEPHONE HANDSET
Anthony J. Grewe, Holmdel, N.J.; Larry A. Marcus, Fishers; William J. McLaughlin, Indianapolis, both of Ind.; David C. Stowers, Nutley, and Michael P. Zambelli, Livingston, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Nov. 24, 1993, Ser. No. 15,676
Term of patent 14 years
U.S. Cl. D14—248



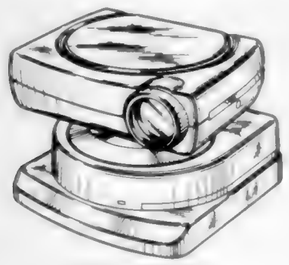
355,918
AIR COMPRESSOR
Lee-Jung Wang, 84 Chuan Tzu Ching, Ma Tou, Tainan Shien, Taiwan, Prov. of China
Filed Mar. 1, 1994, Ser. No. 19,416
Term of patent 14 years
U.S. Cl. D15—9



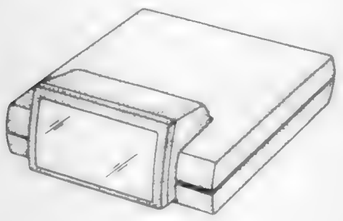
355,919
COMBINED AGRICULTURAL-SPRAYER AND APPLICATOR
Roger L. Larson, Waconia, and Norman A. Bauer, Watertown, both of Minn., assignors to Ag-Chem Equipment Co., Inc., Minnetonka, Minn.
Filed May 3, 1993, Ser. No. 7,887
Term of patent 14 years
U.S. Cl. D15—13



355,920
STILL VIDEO CAMERA FOR A PERSONAL COMPUTER
Toru Shinano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 13, 1993, Ser. No. 10,586
Claims priority, application Japan, Jan. 14, 1993, 5-770
Term of patent 14 years
U.S. Cl. D16—202



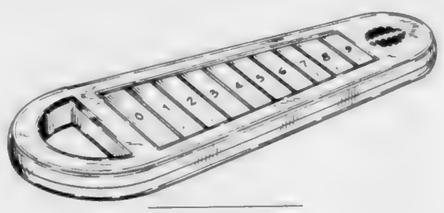
355,921
CAMERA MODULE FOR A PERSONAL COMPUTER
Paul E. Crouch, Freehold; Pratod V. Kasbekar, Belford; Bernard T. Lee, Tinton Falls; Thomas L. Stahly, Howell; David C. Stowers, Nutley, and Michael P. Zambelli, Livingston, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Sep. 7, 1993, Ser. No. 12,597
Term of patent 14 years
U.S. Cl. D16—202



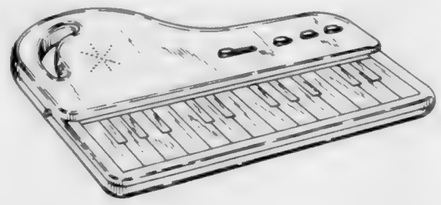
355,922
BENDABLE SPECTACLE TEMPLE
Richard Hirschman, Albertson, N.Y., assignor to Hudson Optical Corporation, Bohemia, N.Y.
Filed Feb. 1, 1994, Ser. No. 18,184
Term of patent 14 years
U.S. Cl. D16—335



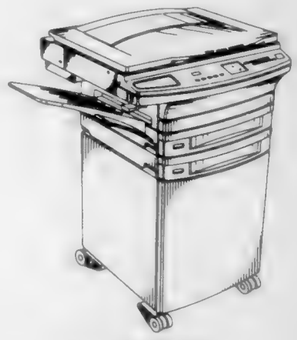
355,923
ELECTRONIC KEYBOARD
Richard B. Slater, Mequon, Wis., assignor to Hal Leonard Publishing Corporation, Milwaukee, Wis.
Filed Jun. 18, 1993, Ser. No. 9,644
Term of patent 14 years
U.S. Cl. D17—1



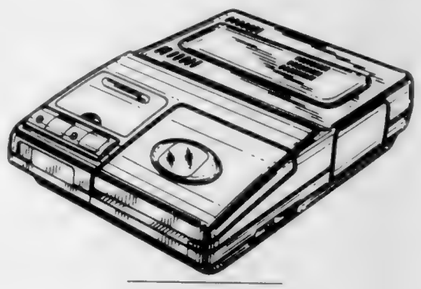
355,924
ELECTRONIC KEYBOARD
Richard B. Slater, Mequon, Wis., assignor to Hal Leonard Publishing Corporation, Milwaukee, Wis.
Filed Jun. 18, 1993, Ser. No. 9,680
Term of patent 14 years
U.S. Cl. D17—1



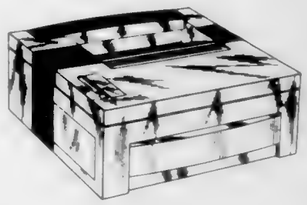
355,925
REPRODUCING MACHINE
Susan L. Saunders, Rochester; William T. Clark, III, West Henrietta, both of N.Y., and Takeshi Matsubara, Yokohama, Japan, assignors to Xerox Corporation, Stamford, Conn.
Filed Feb. 12, 1993, Ser. No. 4,773
Term of patent 14 years
U.S. Cl. D18—39



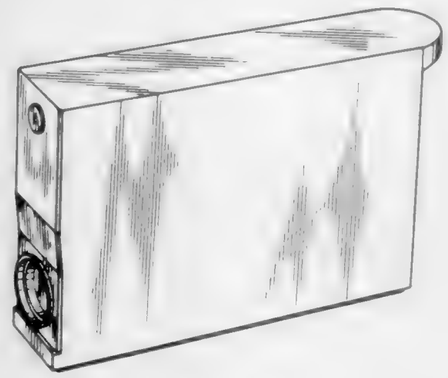
355,926
VIDEO PRINTER
Akinari Mouri, and Michio Tanabe, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Aug. 26, 1993, Ser. No. 12,255
Claims priority, application Japan, Feb. 26, 1993, 5-5700
Term of patent 14 years
U.S. Cl. D18—50



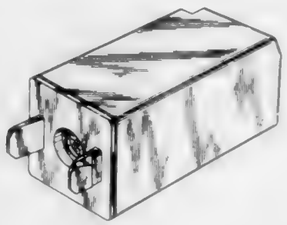
355,927
LASER BEAM PRINTER
Toshimi Chiba, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 9, 1993, Ser. No. 15,147
Claims priority, application Japan, May 12, 1993, 5-13791
Term of patent 14 years
U.S. Cl. D18—55



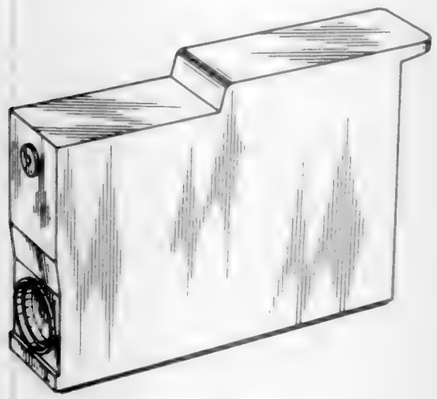
355,928
INK CARTRIDGE FOR PRINTER
Hiroyuki Tokuda, Yokohama; Tetsuya Sekine, Kawasaki; Masahiko Higuma, Togane; Tsutomu Abe, Isehara, and Masami Ikeda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 1, 1993, Ser. No. 15,853
Claims priority, application Japan, Jun. 7, 1993, 5-17101
Term of patent 14 years
U.S. Cl. D18—56



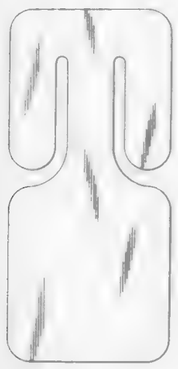
355,929
INK CARTRIDGE FOR PRINTER
Hidemi Kubota, Komae; Toshihiko Ujita, Yamato; Kenjiro Watanabe, Tokyo; Torachika Osada, Yokohama, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1993, Ser. No. 10,096
Claims priority, application Japan, Dec. 29, 1992, 4-38913
The portion of the term of this patent subsequent to Jul. 5, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



355,930
INK CARTRIDGE FOR PRINTER
Hiroyuki Tokuda, Yokohama; Tetsuya Sekine, Kawasaki; Masahiko Higuma, Togane; Tsutomu Abe, Isehara, and Masami Ikeda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 1, 1993, Ser. No. 15,863
Claims priority, application Japan, Jun. 7, 1993, 5-17104
Term of patent 14 years
U.S. Cl. D18—56



355,931
PAPER CLIP
Israel Levi, Haifa, Israel, assignor to Promor B.M. Israeli Company, Tel Aviv, Israel
Filed Dec. 20, 1991, Ser. No. 812,358
Claims priority, application Israel, Aug. 15, 1991, 18237
Term of patent 14 years
U.S. Cl. D19—65



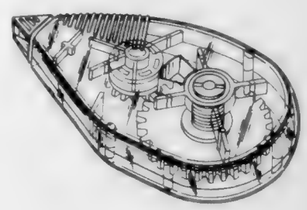
355,932
COMBINED WRITING INSTRUMENT AND CHANGEABLE INDICIA
Giorgio D. Beffa, Via Torino, No. 110, I-10040 San Gillio, Turin, Italy
Filed Feb. 12, 1993, Ser. No. 4,771
Term of patent 14 years
U.S. Cl. D19—36



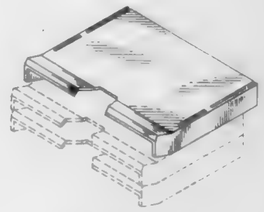
355,933
COMBINATION WRITING INSTRUMENT AND BOOKMARK
Steven J. Collins, 68 Fox Run, Cranston, R.I. 02921
Filed Jan. 18, 1994, Ser. No. 17,618
Term of patent 14 years
U.S. Cl. D19—36



355,934
COMBINED HOLDER AND DISPENSER FOR CORRECTION TAPE
Youzi Oga, and Yoshinobu Yamashita, both of Osaka, Japan, assignors to Fuji Kagakushi Kogyo Co., Ltd., Osaka, Japan
Division of Ser. No. 665,134, Feb. 28, 1991. This application Feb. 1, 1993, Ser. No. 4,298
Claims priority, application Japan, Aug. 28, 1990, 2-28949; Aug. 28, 1990, 2-28950; Feb. 19, 1991, 3-4414; Feb. 19, 1991, 3-4415
Term of patent 14 years
U.S. Cl. D19—69



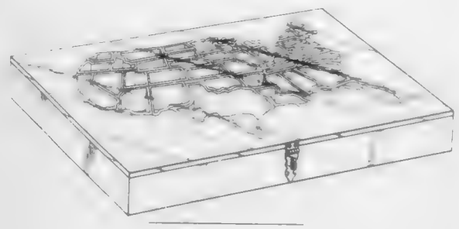
355,935
STACKING FILING TRAY
Shih-Ming Hwang, No. 11, Alley 12, Lane 7, Ching Tyan Street, Taipei, Taiwan, Prov. of China
Filed Feb. 11, 1993, Ser. No. 6,425
Term of patent 14 years
U.S. Cl. D19—92



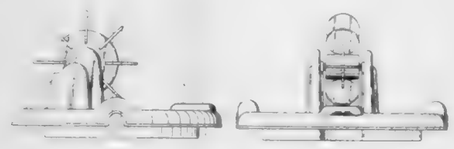
355,936
BALL PROJECTOR
Melvin L. Boyd, Columbus, Miss., assignor to Lan-Cor, Inc., Brooksville, Miss.
Filed Oct. 20, 1993, Ser. No. 14,340
Term of patent 14 years
U.S. Cl. D21—2



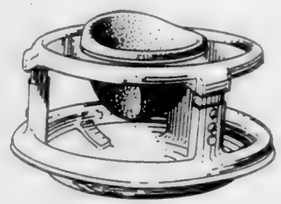
355,937
COMBINED CONTAINER AND PUZZLE
Leonard Harkins, Jr., 9123 Township Dr., Hiram, Ga. 30141
Filed Sep. 30, 1993, Ser. No. 13,147
Term of patent 14 years
U.S. Cl. D21—55



355,938
TOY SAND WHEEL
Moriya Kino, Yokohama, Japan, assignor to Royal Co., Ltd., Tokyo, Japan
Filed Dec. 29, 1993, Ser. No. 16,919
Term of patent 14 years
U.S. Cl. D21—59



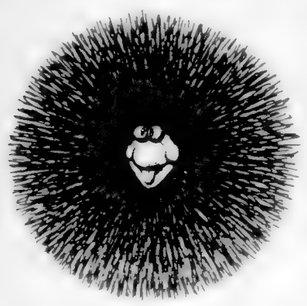
355,939
CHILD'S EXERCISER/ROCKER
Paul K. Meeker, Hiram; William R. Gibson, Canton, and John C. Riedl, Oakwood, all of Ohio, assignors to Lisco, Inc., Tampa, Fla.
Filed Sep. 30, 1993, Ser. No. 13,687
Term of patent 14 years
U.S. Cl. D21—66



355,940
COMBINED TOY TUBULAR BEAM AND BLOCKS
Kenneth P. Glynn, Raritan Township, Hunterdon County, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.
Filed Mar. 28, 1994, Ser. No. 20,540
Term of patent 14 years
U.S. Cl. D21—108



355,941
FIGURE TOY
Rodger Johnson, Rolling Hills Estates, Calif., assignor to Hung Hing Plastic Factory Limited, Kowloon, Hong Kong
Filed Nov. 15, 1993, Ser. No. 15,403
Term of patent 14 years
U.S. Cl. D21—168



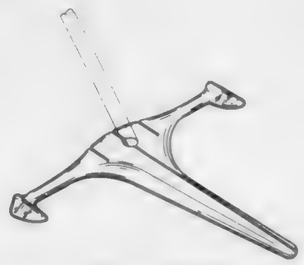
355,942
EXERCISE BIKE
Mu-Chuan Wu, No. 462-7, Chung Shan Road, Hsi Kang Hsiang, Tainan Hsien, Taiwan, Prov. of China
Filed Feb. 8, 1994, Ser. No. 18,497
Term of patent 14 years
U.S. Cl. D21—194



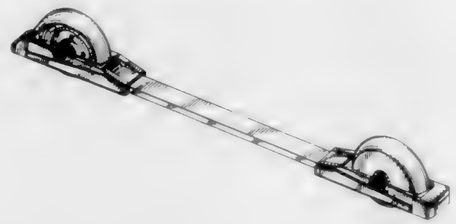
355,943
GOLF BALL
Lauro C. Cadorniga, Piedmont, S.C., assignor to Dunlop Slazenger Corporation, Greenville, S.C.
Filed Feb. 17, 1993, Ser. No. 4,972
Term of patent 14 years
U.S. Cl. D21—205



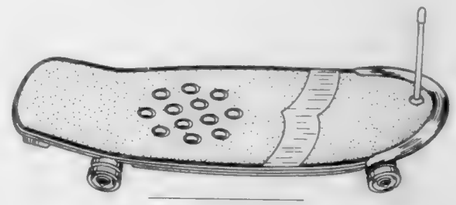
355,944
GOLF CLUB PUTTER HEAD
Christopher J. Bendo, 12203 Roxbury, Tucumsea, Ontario N8N 4M8, Canada
Filed May 24, 1993, Ser. No. 8,654
Term of patent 14 years
U.S. Cl. D21—219



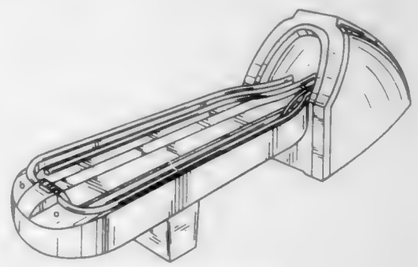
355,945
GRASS SKI
Akira Homma, Tokamachi, Japan, assignor to Homma Kagaku Kabushiki Kaisha, Tokamachi, Japan
Filed Apr. 30, 1993, Ser. No. 7,703
Claims priority, application Japan, Feb. 24, 1993, 5-5151
Term of patent 14 years
U.S. Cl. D21—227



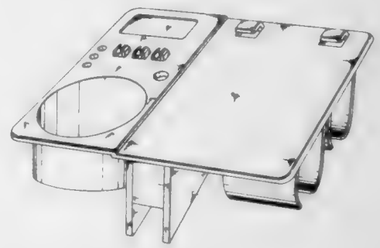
355,946
COMBINED SKATEBOARD AND RADIO AND CASSETTE TAPE PLAYER
Heung H. Park, 14730 Willow Creek La., Chino Hills, Calif. 91709
Filed Aug. 6, 1993, Ser. No. 13,202
Term of patent 14 years
U.S. Cl. D21—227



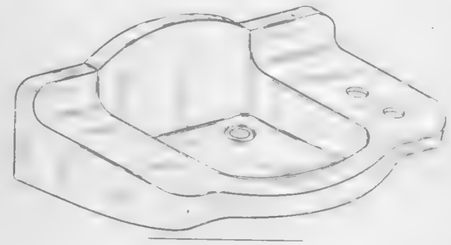
355,947
BALL RETURN RACK
Tae S. Kang, Seoul, Rep. of Korea, assignor to Daesaeng Corporation, Seoul, Rep. of Korea
Filed Oct. 26, 1993, Ser. No. 14,655
Claims priority, application Rep. of Korea, Jun. 2, 1993, 93-10581
Term of patent 14 years
U.S. Cl. D21—233



355,948
GOLF ACCESSORY FOR A GOLF CART HOLDER
Ching-Chang Wu, No. 35-1, Jih Hsin Street, Tu Cheng Hsiang, Taipei Hsien, Taiwan, Prov. of China
Filed Feb. 25, 1994, Ser. No. 19,245
Term of patent 14 years
U.S. Cl. D21—234



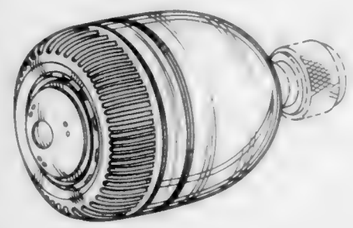
355,949
DESIGN FOR SINK
John Laughton, Polegate, England, assignor to American Standard Inc., Piscataway, N.J.
Filed Sep. 16, 1993, Ser. No. 13,057
Claims priority, application United Kingdom, Jun. 25, 1993, 2032006; Jun. 25, 1993, 2032007; Jun. 25, 1993, 2032008
Term of patent 14 years
U.S. Cl. D23—284



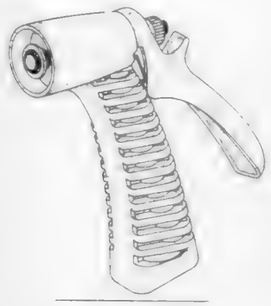
355,950
BASIN
Seijiro Kawamura, and Noriko Yoshii, both of Fukuoka, Japan, assignors to Toto Ltd., Kitakyushu, Japan
Filed Mar. 31, 1992, Ser. No. 862,236
Claims priority, application Japan, Oct. 4, 1991, 30016
Term of patent 14 years
U.S. Cl. D23—293.1



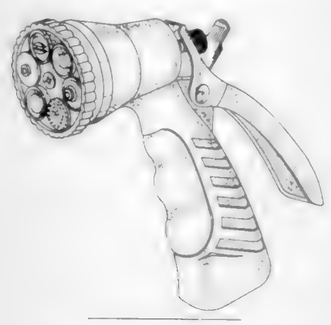
355,951
SHOWER HEAD
Arik Ran, New York, N.Y., assignor to Brass-Craft Manufacturing Company, Southfield, Mich.
Filed Nov. 3, 1993, Ser. No. 15,004
Term of patent 14 years
U.S. Cl. D23—213



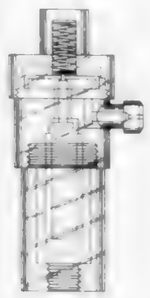
355,952
HOSE NOZZLE
Chin Y. Wang, No. 1, Lane 288, Sec. 1, Lu Ho Rd., Lu Kang Chen, Changhua Hsien, Taiwan, Prov. of China
Filed Apr. 26, 1994, Ser. No. 21,928
Term of patent 14 years
U.S. Cl. D23—223



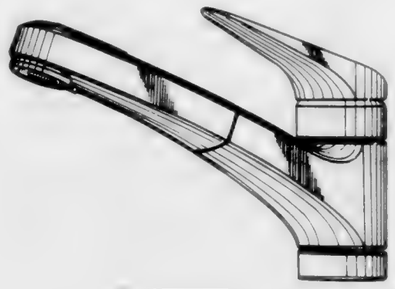
355,953
HOSE NOZZLE
Chin Y. Wang, No. 1, Lane 288, Sec. 1, Lu Ho Rd., Lu Kang Chen, Changhua Hsien, Taiwan, Prov. of China
Filed May 2, 1994, Ser. No. 22,137
Term of patent 14 years
U.S. Cl. D23—223



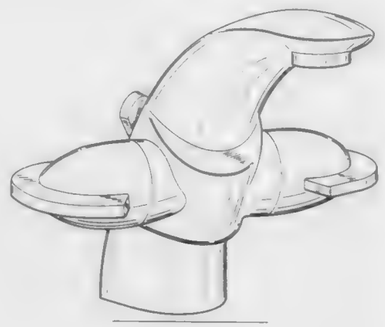
355,954
TRANSPARENT CHLORINE GAS REGULATOR
Jonathan S. Powell, 5094 Tip Top Rd., Mariposa, Calif. 95338
Filed Jan. 14, 1994, Ser. No. 17,470
Term of patent 14 years
U.S. Cl. D23—235



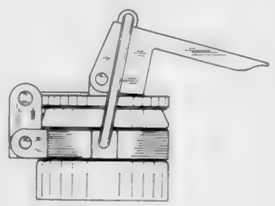
355,955
FAUCET
Philippe Chretien, Dietlikon, Switzerland, assignor to KWC AG, Unterkulm, Switzerland
Filed May 27, 1993, Ser. No. 8,805
Claims priority, application WIPO, Dec. 2, 1992, DM/024 579
Term of patent 14 years
U.S. Cl. D23—238



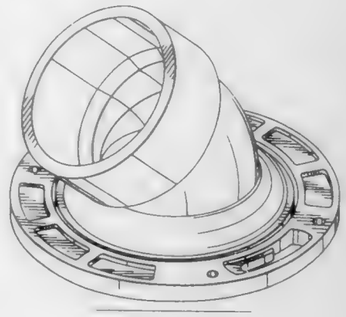
355,956
FAUCET
Franz W. Jans, Roedermark, Germany, assignor to Jado Bathroom & Hardware Manufacturing Co., Camarillo, Calif.
Filed May 21, 1993, Ser. No. 8,650
Term of patent 14 years
U.S. Cl. D23—241



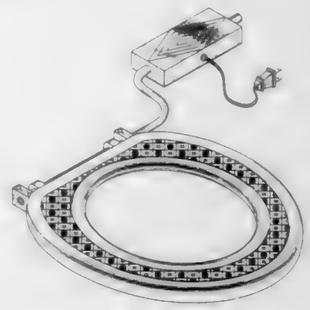
355,957
SEALING CAP
Anders H. Flater, Highland Park, Ill., assignor to Trans-Mex Corporation, Highland Park, Ill.
Filed Mar. 4, 1993, Ser. No. 5,430
Term of patent 14 years
U.S. Cl. D23—260



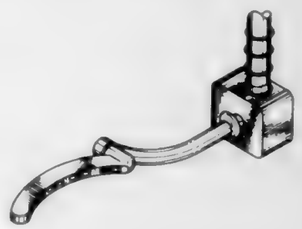
355,958
WATER CLOSET MOUNTING FLANGE
James E. Teskey, Barrie, Canada, assignor to Canplas Industries Ltd., Barrie, Canada
Continuation of Ser. No. 935,381, Aug. 25, 1992. This application May 16, 1994, Ser. No. 22,996
Term of patent 14 years
U.S. Cl. D23—263



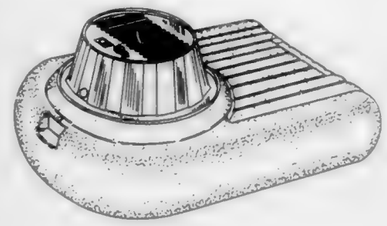
355,959
VENTILATED TOILET SEAT
Harry Kaiser, 12209 S. Graystone, Norwalk, Calif. 90650
Filed Apr. 19, 1993, Ser. No. 7,298
Term of patent 14 years
U.S. Cl. D23—311



355,960
TOILET VENTILATOR
Louis A. Galasso, and Angelina C. Galasso, both of 28 Apple Ave., Bellmawr, N.J. 08031
Filed Jun. 24, 1993, Ser. No. 9,802
Term of patent 14 years
U.S. Cl. D23—311



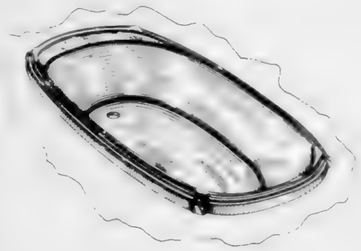
355,961
VAPORIZER
Joseph M. Cunning, Cohasset, Mass., assignor to Holmes Products Corp.
Filed Apr. 2, 1993, Ser. No. 6,784
Term of patent 14 years
U.S. Cl. D23—360



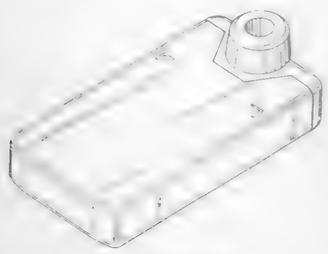
355,962
AIR CLEANER
Bernard Chiu, Wellesley, Mass.; Richard M. O'Grady, Southington, Conn., and Jui-Shang Wang, Taipei, , assignors to Duracraft Corp., Whitinsville, Mass.
Filed Aug. 20, 1993, Ser. No. 12,008
Term of patent 14 years
U.S. Cl. D23—364



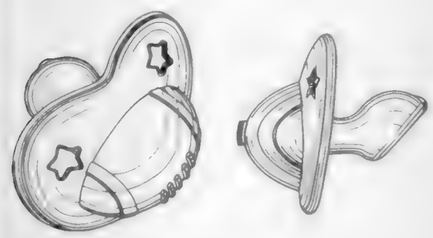
355,963
BATHTUB
Anna-Pia K. Formgren, Paris, France, and William C. McKeone, Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Continuation-in-part of Ser. No. 792,048, Nov. 8, 1991. This application Oct. 9, 1992, Ser. No. 959,508
Term of patent 14 years
U.S. Cl. D23—277



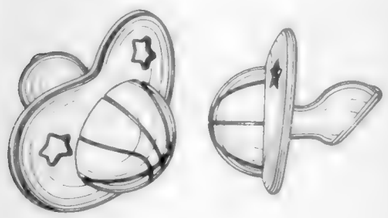
355,964
CAPSULE FOR HOUSING ELECTRO-MEDICAL EQUIPMENT FOR RADIO-DIAGNOSIS OR THE LIKE
Per Nelvig, Sundsvall, Sweden, assignor to Regam Medical Systems AB, Sundsvall, Sweden
Filed Sep. 18, 1992, Ser. No. 948,925
Claims priority, application Sweden, Mar. 27, 1992, 92-0721
Term of patent 14 years
U.S. Cl. D24—158



355,965
PACIFIER
Susan Harrison, Wichita Falls, Tex.; David W. Crossley, Woonsocket, R.I.; Michael S. Bernstein, Natick, and Michael I. Lerner, Brookline, both of Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Continuation-in-part of Ser. No. 631,031, Dec. 20, 1990, abandoned. This application May 7, 1991, Ser. No. 696,524
Term of patent 14 years
U.S. Cl. D24—195



355,966
PACIFIER
Susan Harrison, Wichita Falls, Tex.; David W. Crossley, Woonsocket, R.I.; Michael S. Berostein, Natick, and Michael I. Lerner, Brookline, both of Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Continuation-in-part of Ser. No. 635,321, Dec. 28, 1990, abandoned. This application May 7, 1991, Ser. No. 696,525
Term of patent 14 years
U.S. Cl. D24—195



D 355,967
Patent Not Issued For This Number

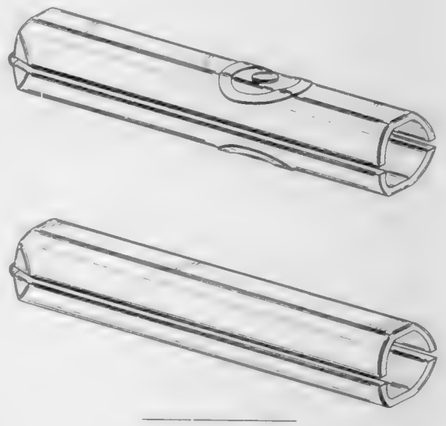
355,968
DEPILATOR
Peter Schneider, Königstein, and Peter Eckart, Frankfurt/M. both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany
Filed Jan. 26, 1993, Ser. No. 4,073
Claims priority, application Hague Agreement, Jul. 30, 1992, DMA/001858
Term of patent 14 years
U.S. Cl. D24—133



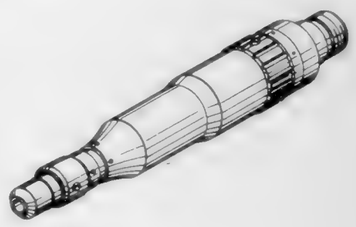
355,969
DEPILATOR
Peter Schneider, Königstein, and Peter Eckart, Frankfurt/M. both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany
Filed Jan. 26, 1993, Ser. No. 4,149
Claims priority, application Hague Agreement, Jul. 30, 1992, DMA/001858
Term of patent 14 years
U.S. Cl. D24—133



355,970
CULTURETTE SLEEVE FOR BREAKING AN AMPOULE
James F. Monthony, Baltimore; Dwight Livingston, Towson; David M. Betit, Frederick, all of Md., and Albert Lopez, El Paso, Tex., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Jun. 28, 1993, Ser. No. 10,072
Term of patent 14 years
U.S. Cl. D24—133



355,971
DENTAL HANDPIECE
Moshe Meller, 448 Sayre Dr., Princeton, N.J. 08540
Filed Jul. 28, 1993, Ser. No. 11,180
Term of patent 14 years
U.S. Cl. D24—152



355,972
ADAPTER FOR MOUNTING ABUTMENT PARTS FOR USE IN ORAL IMPLANTOLOGY
Leif Broberg, Göteborg, and Anders Holmén, Hovås, both of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden
Filed Apr. 28, 1993, Ser. No. 7,642
Claims priority, application Sweden, Oct. 28, 1992, 92-2224
Term of patent 14 years
U.S. Cl. D24—156



355,973
BLOOD FILTER
Tomonori Ijiri, Tokyo, and Masahide Murakoshi, Nakai, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1993, Ser. No. 11,444
Claims priority, application Japan, Feb. 10, 1993, 5-3388
Term of patent 14 years
U.S. Cl. D24—162



355,974
HAIRBAND
Helen E. Jahn, 1107 11th Ct., Jupiter, Fla. 33477
Continuation-in-part of Ser. No. 10,235, Jun. 30, 1993, abandoned. This application Dec. 21, 1993, Ser. No. 16,651
Term of patent 14 years
U.S. Cl. D28—41



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF FEBRUARY, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. F. Klinzing Co., Inc.: *See—*
Hoppman, David P.; and Daleiden, Kelvin L., 5,392,731, Cl. 119-14.030.

A.M.R.P. Handels AG: *See—*
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AB Volvo: *See—*
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ABB Patent GmbH: *See—*
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Abbott Laboratories: *See—*
Edwards, Carla; and Lartey, Paul A., 5,393,743, Cl. 514-29.000.

Abboud, Frank E.; Muray, Andrew J.; and Berglund, C. Neil, to ETEC Systems, Inc. Dose modulation and pixel deflection for raster scan lithography. 5,393,987, Cl. 250-492.220.

Abe, Hiroyuki: *See—*
Aoyagi, Yoshio; and Abe, Hiroyuki, 5,394,384, Cl. 369-32.000.

Abe, Motonobu: *See—*
Irie, Shoichiro; Abe, Motonobu; and Akiyama, Norihito, 5,393;214, Cl. 425-81.100.

Abe, Nobuaki, to NEC Corporation. Control system for semiconductor circuit testing system. 5,394,348, Cl. 364-580.000.

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Abeille, Pierre: *See—*
Juncker, Richard; and Abeille, Pierre, 5,392,507, Cl. 29-603.000.

Abrahams, Louis: *See—*
Hutchins, Burleigh M.; Dunlap, Raymond R.; Conklin, Timothy J.; Swanson, Bruce A.; Petracca, John; Abrahams, Louis; and Kimball, Ronald A., 5,393,420, Cl. 210-198.200.
Hutchins, Burleigh M.; Dunlap, Raymond R.; Conklin, Timothy J.; Swanson, Bruce A.; Petracca, John; Abrahams, Louis; and Kimball, Ronald A., 5,393,434, Cl. 210-656.000.

ABT, Inc.: *See—*
Stegall, Lannie L., 5,393,171, Cl. 405-119.000.

Abu-Hadid, Mahmoud M.: *See—*
Mayers, George L.; Razeq, Jafar; and Abu-Hadid, Mahmoud M., 5,393,737, Cl. 514-12.000.

Abukawa, Masahiro, to Splice Sleeve Japan, Ltd. Mortar grouting type connector for reinforcing bars. 5,392,582, Cl. 52-726.100.

Aburada, Masaki: *See—*
Amagaya, Sakae; Fujiwara, Tadami; Aburada, Masaki; Nagasawa, Michio; and Oyama, Tsutomu, 5,393,740, Cl. 514-17.000.

Acco USA, Inc.: *See—*
Hubbell, John W., 5,393,154, Cl. 402-4.000.

Ackermann, Jean; Banner, David; Gubernator, Klaus; Hadvary, Paul; Hilpert, Kurt; Muller, Klaus; Labler, Ludvik; Schmid, Gerard; Tschopp, Thomas B.; Wessel, Hans P.; and Wirz, Beat, to Hoffmann-La Roche Inc. Guanidine derivatives. 5,393,760, Cl. 514-323.000.

Acme Steel Company: *See—*
Buckner, Steve, 5,392,809, Cl. 137-488.000.

Actron Manufacturing Company: *See—*
Cervas, Robert A., 5,394,093, Cl. 324-556.000.

Adachi, Makoto, to Sharp Kabushiki Kaisha. Method and apparatus for two-channel recording of video signals. 5,394,276, Cl. 360-36.200.

Adam, Gerard: *See—*
Le Baut, Guillaume; Babingui, Jean-Paul; Robert-Piessard, Sylvie; Renard, Pierre; Caignard, Daniel-henri; Renaud de la Faverle, jean-Francois; and Adam, Gerard, 5,393,775, Cl. 514-456.000.

Adams, Gerald C.; Lawson, Jimmie B.; and Morgenthaler, Lee N., to Shell Oil Company. Acid stimulation process for production from subterranean formations. 5,392,859, Cl. 166-300.000.

Adams, James L. Seat cover. 5,392,469, Cl. 4-245.200.

Adams, Robert P.: *See—*
Nelson, Alfred M.; and Adams, Robert P., 5,392,976, Cl 226-38.000.

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Morgenstern, Todd A.; and Dewey, James D., 5,393,249, Cl. 439-668.000.

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Adkins, Claude N., Jr.; and Marie, Blane P. Duckbill valve for a tracheostomy tube that permits speech. 5,392,775, Cl. 128-207.160.

Adrian, Andrew: *See—*
Korovesis, Danny N.; Brake, James D.; and Adrian, Andrew, 5,394,162, Cl. 343-703.000.

Adtec Co., Ltd.: *See—*
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Advance Biofactures of Curacao, N.V.: *See—*
Stern, Harold; and Yee, David, 5,393,792, Cl. 514-777.000.

Advanced Composite Audio, Inc.: *See—*
Hathaway, Dana B.; and Nile, Lawrence B., 5,394,478, Cl. 381-154.000

Advanced Micro Devices, Inc.: *See—*
Anjum, Mohammed; Burki, Ibrahim K.; and Christian, Craig W., 5,393,676, Cl. 437-24.000.

Adwest Engineering Limited: *See—*
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Bidare, Srinivas R., 5,394,505, Cl. 392-379.000.

Aerospatiale Societe Nationale Industrielle: *See—*
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Agency of Industrial Science & Technology: *See—*
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Matsumoto, Hirokazu, 5,394,240, Cl. 356-349.000.
Niino, Hiroyuki; and Yabe, Akira, 5,393,576, Cl. 427-554.000.

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Agro-Kanesho Co., Ltd.: *See—*
Nanjo, Katsumi; Kariya, Akinori; Henmi, Shinya; Fujii, Hideyo; and Usui, Syuichi, 5,393,754, Cl. 514-227.200.

Agur, Enno E.: *See—*
Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Mahabadi, Hadi K.; and Agur, Enno E., 5,393,630, Cl. 430-105.000.

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Johnson, Charles L., 5,393,926, Cl. 84-610.000.

Ahl, David K; Merz, Eric A.; Struczewski, Timothy G.; Swanson, Roger M.; and Rittberg, George F., to Xerox Corporation. Sheet gripping mechanism. 5,393,047, Cl. 271-277.000.

Ahrens, Allan F.; and Rosen, Harold A., to Hughes Aircraft Company. Spacecraft bus regulation using solar panel position. 5,394,075, Cl. 320-39.000.

Ahroni, Joseph M. Plug-in type lamp assembly with locked-on lamp base and reflector. 5,394,315, Cl. 362-226.000.

Aihara, Naoki: *See—*
Yoshimura, Shuji; Kakuma, Satoshi; Aihara, Naoki; Aso, Yasuhiro; and Murayama, Masami, 5,394,396, Cl. 370-60.000

Aikens, Andrew J., to Xerox Corporation. Customer schedulable machine quality adjust. 5,394,251, Cl. 358-500.000.

AIL Systems, Inc.: *See—*
Cohen, Leonard D., 5,394,117, Cl. 331-47.000.

Air Products and Chemicals, Inc.: *See—*
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Moore, Robert B.; Hegarty, William P.; Studer, David W.; and Tirados, Edward J., 5,392,594, Cl. 60-39.020.

Airheads, General Partnership: *See—*
Hall, Walter L., 5,392,681, Cl. 84-413.000.

Aisan Kogyo Kabushiki Kaisha: *See—*
Kondo, Seiji; and Kato, Yoshihiro, 5,392,804, Cl. 137-202.000

Aishin AW Co., Ltd.: *See—*
Okada, Takayuki; Taga, Yutaka; Hojo, Yasuo; Tabata, Atsushi; Kaigawa, Masato; Moroto, Shuzo; Inuzuka, Takeshi; Hattori, Masashi; and Takeshita, Yoshito, 5,393,275, Cl. 477-81.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Nomura, Yoshihisa; and Nishii, Michiharu, 5,393,137, Cl. 303-100.000
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Ajinomoto Co., Inc.: *See—*
Kataoka, Takehiko; Yasaki, Akihiko; Kishimoto, Shinichi; and Kato, Toshihisa, 5,393,915, Cl. 560-41.000.
Kira, Ikuo; Watanabe, Kazuhiro; Nakanishi, Eiji; Ban, Hiroshi; Onishi, Norimasa; and Suzuki, Takayuki, 5,393,664, Cl 435-156.000
Syoji, Masataka; Toyota, Kozo; Eguchi, Chikahiko; Yoshimoto, Ryoto; Koyama, Yoshikatsu; Domoto, Hideki; and Kamimura, Akira, 5,393,890, Cl. 546-80.000.
Tujimoto, Nobuharu; Kikuchi, Yoshimi; Kurahashi, Osamu; and Kawahara, Yoshiko, 5,393,671, Cl. 435-252.800.

Akamata, Kazundo: *See—*
Omura, Yutaka; and Akamata, Kazundo, 5,393,600, Cl. 428-284.000.

Akeley, Kurt; and Foran, James, to Silicon Graphics, Inc. Apparatus and method for controlling storage of display information in a computer system. 5,394,170, Cl. 345-189.000.

Akesaka, Toshio, to Kabushiki Kaisha Iseki Kaihatsu Koki. Conveyor 5,392,897, Cl. 198-604.000

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Akhavan-Tafti, Hashem, to Lumigen, Inc. Polymeric phosphonium salts providing enhanced chemiluminescence from 1,2-dioxetanes 5,393,469, Cl. 252-700.000.

Akiba, Masaru: *See—*
Ozeki, Takafumi; Akiba, Masaru; Kimura, Shuichi; Nodera, Nobuo; and Tsurufuji, Tomoyoshi, 5,392,556, Cl. 43-22.000.
Akiyama, Norihito: *See—*
Irie, Shoichiro; Abe, Motonobu; and Akiyama, Norihito, 5,393,214, Cl. 425-81.100.
AKS, Incorporated: *See—*
Stengel, Alfred, III, 5,392,921, Cl. 209-17.000.
Akzo Nobel nv: *See—*
Freese, Karl-Heinz; and Gunter, Gerhard, 5,393,390, Cl. 204-131.000.
Akzo N.V.: *See—*
Combourieu, Michel; Laigle. Jean-Claude; and Simbille, Nadine, 5,393,759, Cl. 514-320.000.
Alaburda, Richard: *See—*
Catano, Albert J.; and Alaburda, Richard, 5,394,017, Cl. 307-66.000.
Alasafi, Khaldoun: *See—*
Schiessle, Edmund; Alasafi, Khaldoun; and Gutohrlein, Ralf, 5,394,082, Cl. 324-207.220.
Albemarle Corporation: *See—*
Azarnia, Farah D., 5,393,806, Cl. 523-400.000.
Alberts, Heinrich: *See—*
Korte, Siegfried; Alberts, Heinrich; Bohmer, Branislav; Karstens, Werner; Koch, Wolfgang; Poersch-Panke, Hans-Gunter; and Szablikowski, Klaus, 5,393,845, Cl. 525-369.000.
Alcan International Limited: *See—*
Cesaroni, Anthony J.; and Fulton, Clarence W., 5,392,625, Cl. 72-57.000
Alcare Co., Ltd.: *See—*
Shiono, Katsuaki, 5,393,303, Cl. 602-27.000.
Alcatel Network Systems, Inc.: *See—*
Ries, Gordon W., 5,394,416, Cl. 372-26.000.
Alcon Laboratories, Inc.: *See—*
Dassanayake, Nissanke L.; Schlitzer, Ronald L.; and Park, Joonsup, 5,393,491, Cl. 422-28.000.
Alcorn, George E.: *See—*
Maldanis, Algert J.; Courts, Robert I.; and Alcorn, George E., 5,392,953, Cl. 221-97.000.
Alexander, Gordon O. Vehicle attachment for transporting snowmobiles. 5,393,191, Cl. 414-537.000.
Alfaro, Rafael C.: *See—*
Mignardi, Michael A.; and Alfaro, Rafael C., 5,393,706, Cl. 437-226.000.
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Arctic Icewater, Inc.: *See—*
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Pettit, George R.; Cichacz, Zbigniew A.; and Herald, Cherry L., 5,393,897, Cl. 549-267.000.
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Asano, Ichiro; Takeda, Kenji; Oie, Tsutomu; and Koike, Hideki, to Horiba, Ltd. Hydrocarbon analyzer and method of analyzing hydrocarbon. 5,392,634, Cl. 73-23.420.
Asano, Kazuya: *See—*
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Asano, Keiichi, to Nissan Motor Co., Ltd. Automotive trunk lid with stop lamp. 5,394,311, Cl. 362-80.000.
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Ascom Timeplex Trading AG: *See—*
Ross, Floyd E., 5,394,402, Cl. 370-94.100.
Ash, Carlton E.; Yelton, Harold D.; Decker, Owen H.; and Geibel, Jon F., to Phillips Petroleum Company. Poly(arylene sulfide) fibrid particles and process for their preparation. 5,393,865, Cl. 528-388.000
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Ashmore, John W.: *See—*
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Irie, Shoichiro; Abe, Motonobu; and Akiyama, Norihito, 5,393,214, Cl. 425-81.100.

Aslan, Edward E.: *See—*
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Barrington, Terrence K.; Carrico, Sandra L.; Davison, Joseph W., Johnson, Randolph W.; Mardis, Scott A.; and Raiman, Steven D., 5,394,540, Cl. 395-500.000.
Bartley, Paul L.; Francis, Ron A.; and Kerr, Claire T., 5,394,124, Cl. 333-227.000.
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Britton, Barry K.; and Leung, Wai-Bor, 5,394,031, Cl. 326-38.000.
Burack, John J., Holland, William R., and Simchock, Frederick, 5,394,504, Cl. 385-139.000.
Cadet, Gardy; and Valdes, Jorge L., 5,392,635, Cl. 73-24.010.
Chapman, James S., 5,392,510, Cl. 29-837.000.
Dickinson, Alexander G., 5,394,361, Cl. 365-189.040.
Fischell, Sarah T.; Freire, Roberto S.; Moe, Warren R.; Munson, Gary A.; and Russell, Teresa L., 5,394,463, Cl. 379-201.000.
Garland, Stuart M., 5,394,461, Cl. 379-106.000.
Hanson, Thomas C.; and Moleres, Richard P., 5,394,464, Cl. 379-201.000.
Hinterlong, Stephen J.; Novotny, Robert A.; and Sasian-Alvarado, Jose M., 5,394,498, Cl. 385-115.000
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Kasturia, Sanjay, 5,394,116, Cl. 331-34.000.
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Kremer, Wilhelm, 5,394,389, Cl. 370-16.100.
Marchman, Herschel M., 5,394,500, Cl. 385-123.000.
Nagel, Jonathan A.; and Bahsoun, Samia M., 5,394,265, Cl. 359-341.000.
Schneider, Martin V.; Trambarulo, Ralph F.; and Tran, Cuong, 5,394,159, Cl. 343-700.0MS.
Scott, Robert E., 5,394,392, Cl. 370-24.000.
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Atkinson, William A., Jr. Bowling pin setting mechanism and scissor arms 5,393,269, Cl 473-73.000.

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Kreis, Gundolf; and Timm, Heinrich, 5,393,095, Cl. 280-781.000.

Audy, Jonathan M., to Analog Devices, Inc. Electrically trimmable resistor ladder. 5,394,019, Cl. 327-525.000.

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Auger, Perry W.: *See—*
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Freiberger, Norbert; Glaser, Wolfgang; Wolschner, Bernd; and Zikeli, Stefan, 5,393,225, Cl. 432-103.000.

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Luciani, Sabatino; and Lumini, Antonio, 5,392,506, Cl. 29-596.000

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Azuma, Tsutomu; and Taketomi, Yojiro, to Toto, Ltd. Liquid soap supplying device having a middle height supplementing port 5,392,965, Cl. 222-396.000.

B & B Equipment, Inc.: *See—*
Crouch, G. William, 5,392,587, Cl. 53-248.000.

B. Braun Medical, Inc.: *See—*
Horzewski, Michael J., 5,392,778, Cl. 128-657.000.

B. F. Goodrich Company, The: *See—*
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Weisend, Norbert A., Jr.; Fahrner, Alan J.; and Hohenshil, Robert N., 5,393,014, Cl. 244-134.00A.

Babcock & Wilcox Company, The: *See—*
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Babingui, Jean-Paul: *See—*
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Nagel, Jonathan A.; and Bahsoun, Samia M., 5,394,265, Cl. 359-341.000.

Bailey, Brent: *See—*
Lanni, Frederick; Taylor, D. Lansing; and Bailey, Brent, 5,394,268, Cl. 359-386.000.

Bailey, J. Milton: *See—*
McCleer, Patrick J.; Bailey, J. Milton; and Lawler, Jack S., 5,394,321, Cl. 363-131.000.

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Ross, Richard J., 5,392,860, Cl. 166-376.000.

Baker, Michael: *See—*
Suchdev, Lakhbir S.; Bringhurst, Rory B.; and Baker, Michael, 5,394,039, Cl. 310-51.000.

Balaban, Murat O.; Marshall, Maurice R.; and Wicker, Louise, to University of Florida. Inactivation of enzymes in foods with pressurized CO_2. 5,393,547, Cl. 426-330.000.

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Lindenmuth, Karl E., 5,392,864, Cl. 172-811.000.

Baldwin, Dianne K. Pierced earlobe shield. 5,392,617, Cl. 63-12.000.

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Shofner, Frederick M.; Baldwin, Joseph C.; Kacenas, Benjamin M.; and Chu, Youe-T., 5,394,480, Cl. 382-1.000.

Bales, James E.; and Hoskins, Michael J., to Electronic Decisions Inc Acoustic charge transport device buffered architecture. 5,394,003, Cl. 257-416.000.

Ball Corporation: *See—*
Frame, Wayne W., 5,393,971, Cl. 250-208.200.
Roller, Kent G.; Scott, Bradley A.; and LeBlanc, Timothy C., 5,393,440, Cl. 252-25.000.

Ball, Randel H.; and Hall, Stephen E. Telephone call screening and answering device. 5,394,445, Cl. 379-67.000.

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Kira, Ikuo; Watanabe, Kazuhiro; Nakanishi, Eiji; Ban, Hiroshi, Onishi, Norimasa; and Suzuki, Takayuki, 5,393,664, Cl. 435-156.000.

Bane, Robert F. Anchor with drive pin and threadable bolt. 5,393,179. Cl. 411-60.000.

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Patel, Ramesh N.; Liu, Mark; Banerjee, Amit; and Szarka, Laszlo J., 5,393,663, Cl. 435-118.000.

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Bantz, David F.; Bauchot, Frederick J.; Huang, Chia-Chi; Lanne, Fabien P.; Natarajan, Kadathur S.; and Wetterwald, Michelle M., to International Business Machines Corporation. Frequency hopping pattern assignment and control in multiple autonomous collocated radio networks. 5,394,433, Cl. 375-202.000.

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Barden, Neville G.: *See—*
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Bareuter, Gerd; Fernandez, Carlos; and Tetlow, Jack, to Unifoam A.G Manufacture of polymeric foam. 5,393,361, Cl. 156-78.000.

Barnard, James L. Process for the biological treatment of wastewater 5,393,427, Cl. 210-605.000.

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Baroncelli, Arturo: *See—*
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Barr, Robert K.: *See—*
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Barrett, Roger: *See—*
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Barrio, Jorge R.: *See—*
Satyamurthy, Nagichettiar; Barrio, Jorge R.; Bishop, Allyson J.; and Namavari, Mohammad, 5,393,908, Cl. 556-87.000.

Bartelt, Robert J.: *See—*
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Barth-Elemy, Pierre: *See—*
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Barth, James T., to Eljer Manufacturing, Inc. Flexible double wall vent pipe. 5,393,260, Cl. 454-44.000.

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Bartley, Paul L.; Francis, Ron A.; and Kerr, Claire T., to AT&T Corp Dielectric spacing means for microwave sheet metal cavities 5,394,124, Cl. 333-227.000

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McCann, James D.; Bartley, Russell L.; Vandagriff, Randy D.; and Mullins, Randal L., 5,394,177, Cl. 347-7.000

Bartmann, Ekkehard: *See—*
Wachtler, Andreas; Geelhaar, Thomas; Hittich, Reinhard; Bartmann, Ekkehard; Krause, Joachim; and Poetsch, Eike, 5,393,459, Cl. 252-299.630.

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Besecke, Siegmund; Deckers, Andreas; and Lauke, Harald, 5,393,917, Cl. 560-181.000.
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Closs, Friedrich; Frey, Thomas; Funhoff, Dirk; Siemensmeyer, Karl; Ringsdorf, Helmut; Haarer, Dietrich; and Strohriegl, Peter, 5,393,626, Cl. 430-56.000
Deckers, Andreas; Guentherberg, Norbert; and Niessner, Norbert, 5,393,817, Cl. 524-269.000.
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Lange, Arno; Bach, Volker; Grund, Clemens; Reichelt, Helmut, and Richter, Paul, 5,393,308, Cl. 8-639.000.
Massonne, Klemens; and Fischer, Martin, 5,393,874, Cl 534-556.000.
Niessner, Norbert; and Guentherberg, Norbert, 5,393,836, Cl. 525-67.000
Schmied, Bernhard; Hoeffken, Hans W.; Hornberger, Wilfried; and Bernard, Harald, 5,393,873, Cl. 530-328.000.
Weiser, Juergen; Reuther, Wolfgang; and Hahn, Erwin, 5,393,828, Cl. 525-25.000.
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BASF Corporation: *See—*
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BASF Lacke+Farben Aktiengesellschaft: *See—*
Schwarte, Stephan; Dangschat, Manfred; Reimann, Manfred; and Westermann, Carlos, 5,393,570, Cl. 427-388.400.

Basmajian, George A. Card organizer for file folders. 5,393,157, Cl. 402-79.000.

Bateman, James: *See—*
Dietz, Frederick, Jr.; Unger, Neil; and Bateman, James, 5,394,503, Cl. 385-135.000

Batt, Douglas G.; Galbraith, William; and Simon, Paul M., to Du Pont Merck Pharmaceutical Company, The. Immunoassay reagents and methods for detecting brequinar and analogs. 5,393,891, Cl 546-170.000.

Batten, Keith G.: *See—*
Hodson, Lynton C.; Winstanley, Graeme J.; Hodson, Grant D.; Barden, Neville G.; Joyce, Mervyn J.; and Batten, Keith G., 5,392,660, Cl. 73-862.393.

Bauchot, Frederick J.: *See—*
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Bauer, Charles L.; and Bowman, Wayne A., to Eastman Kodak Company. Thermally processable imaging element including an adhesive interlayer comprising a polymer having pyrrolidone functionality 5,393,649, Cl. 430-523.000.

Bauer, David J.; Barnes, Kenneth J.; and DiSalvo, Anthony J. Invisible seam deployment door installation with stabilized air bag deployment opening construction. 5,393,088, Cl. 280-728.00A.

Bauer, Gerhard: *See—*
Bott, Kaspar; Bauer, Gerhard; and Haeberle, Karl, 5,393,904, Cl 558-7.000.

Bauer, Mark E.: *See—*
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Bauerfeind GmbH & Co.: *See—*
Bauerfeind, Hans B.; and Scheuermann, Rainer, 5,393,300, Cl 602-4.000.

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Baumann, Hanns U. Modular reinforcement cages for ductile concrete frame members and method of fabricating and erecting the same 5,392,580, Cl. 52-660.000.

Baumann, Karl-Heinz: *See—*
Wunsche, Martin; Gotz, Hans; Schwede, Wolfgang; Baumann, Karl-Heinz; and Hesse, Guido, 5,393,093, Cl. 280-756.000.

Baumeister, Philip; Fischer, Dennis; and Trost, David, to Coherent, Inc. Optical coating for reflecting visible and longer wavelength radiation having grazing incidence angle. 5,394,501, Cl. 385-125.000.

Bay, Adam G.: *See—*
DeWitt, Robert D.; Bay, Adam G.; and Paraday, Tibor, 5,393,396, Cl. 204-206.000.

Bay Mills Limited: *See—*
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Bayer Aktiengesellschaft: *See—*
Eckel, Thomas; Wittmann, Dieter; Fennhoff, Gerhard; Schoeps, Jochen; Ott, Karl-Heinz; and Jakob, Wolfgang, 5,393,835, Cl. 525-67.000
Fischer, Reiner; Krebs, Andreas; Lieb, Folker; Ruther, Michael; Stetter, Jorg; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,393,729, Cl. 504-128.000
Schwarz, Max; Grutze, Joachim; Hildebrand, Dietrich; Wolff, Joachim; and Stohr, Frank-Michael, 5,393,307, Cl. 8-549.000

Bayer, Herbert: *See—*
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Bayerl, Eugen: *See—*
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Bayley, Denise R.: *See—*
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Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Mahabadi, Hadi K.; and Agur, Enno E., to Xerox Corporation. Melt mixing processes. 5,393,630, Cl. 430-105.000.

Beach, David L.: *See—*
Carney, Michael J.; and Beach, David L., 5,393,720, Cl. 502-117.000

Beal, David G.: *See—*
Hill, Fletcher L.; Jurestovsky, Nancy R.; and Beal, David G., 5,394,543, Cl. 395-575.000.

Beale, Aldon E. Method and apparatus for lifting a vehicle load cover. 5,393,117, Cl. 296-100.000

Bear Archery, Inc.: *See—*
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Bear, Thomas; and Jordan, Robert. Modular electronic gaming system. 5,393,074, Cl. 273-440.000.

Beard, Bryce P., III; Kluttz, James W.; and Roberts, Edgar P., Jr. Apparatus and method for determining projectile impact locations. 5,393,064, Cl. 273-181.00R.

Beardsley, Gary S.; and Schein, Lawrence B., to International Business Machines Corporation. Method for reducing high quality electrophotographic images. 5,394,226, Cl. 355-277.000.

Bearss, James G.: *See—*
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Beatty, David A.: *See—*
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Beatty, William E.: *See—*
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Beaudoin, Cecile: *See—*
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Bechtel, Friend K.; Allen, James R.; and Uskoski, Daniel A. Dielectric sensor. 5,394,097, Cl. 324-687.000

Beck, Niels J., to Servojet Electric Systems, Ltd. Expanding cloud fuel injecting system. 5,392,745, Cl. 123-295.000.

Beck, Scott A.: *See—*
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Beckemeier, Mark A.: *See—*
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Becton, Dickinson and Company: *See—*
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Pitner, J. Bruce; and Hoke, Randal A., 5,393,514, Cl. 424-7.100.
Richardson, Kim L.; and Quickel, Gregory D., 5,393,250, Cl. 439-825.000

Bedard, Alfred J., Jr.; Churnside, James H.; and Nishiyama, Randall T., to United States of America, Commerce. Apparatus and method for reducing acoustic or electromagnetic energy in the vicinity of a source. 5,393,940, Cl. 181-210.000

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Beer, Douglas C.: *See—*
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Beer, Ekkehard; and Schad, Alfred, to Hoechst Aktiengesellschaft. Cup-like package with cover film of plastic. 5,392,986, Cl 229-125.350.

Beers, Albert A.: *See—*
Hesch, Harold E.; Beers, Albert A.; and Smith, Stephen W., 5,392,717, Cl. 105-404.000.

Beeuwkes, Reinier, III. Self retained stapled construction. 5,393,184, Cl 411-469.000.

Behr-Thomson-Dehnstoffregler GmbH Co.: *See—*
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Noah, Michael; and Schmidtberger, Rudolf, 5,393,659, Cl. 435-7.940

Behrmann, Lawrence A., to Schlumberger Technology Corporation. Apparatus and method for determining an optimum phase angle for phased charges in a perforating gun to maximize distances between perforations in a formation. 5,392,857, Cl. 166-297.000.

Beilfuss, Wolfgang: *See—*
Eggensperger, Heinz; Bernd, Lower; Mohr, Michael; Goroncy-Bermes, Peter; and Beilfuss, Wolfgang, 5,393,789, Cl 514-674.000

Beitz, David W.: *See—*
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Beizermann, Michel, to Socamel S.A. Device for the transport and distribution of meal trays, including integral microwave oven for re-heating the latter. 5,393,960, Cl. 219-729.000.

Belcher, Donald K., to Harris Corporation. High impedance low-distortion linear amplifier. 5,394,113, Cl. 330-260.000.

Bell Atlantic Network Services, Inc.: *See—*
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Bell, Bruce M.; and Butler, Steven W., to Transidyne General Corporation. Package for a device having a sharp cutting edge. 5,392,910, Cl. 206-363.000.

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Bell, James: *See—*
Swamy, Deepak N.; Estes, Scott; and Bell, James, 5,392,980, Cl 228-119.000.

Bell, Lloyd D.: *See—*
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Bellini, Peter: *See—*
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Bellmatic, Ltd.: *See—*
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Beloit Technologies, Inc.: *See—*
Jones, Richard D., 5,392,930, Cl. 209-674.000.
Jones, Richard D.; Bielagus, Joseph B.; and Lynn, J. Darrell, 5,392,931, Cl. 209-674.000

Belsan, Jay S., to Storage Technology Corporation. Disk drive array memory system having instant format capability. 5,394,532, Cl. 395-425.000

Bend Research, Inc.: *See—*
Edlund, David J., 5,393,325, Cl. 95-56.000.
Long, Roger H., 5,392,559, Cl. 43-121.000.

Benda, John A.; and Parasco, Aristotle, to United Technologies Corporation. Method for performing multiple beam laser sintering employing focussed and defocussed laser beams. 5,393,482, Cl. 419-1.000.

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Benedek, George B.: *See—*
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Bening, Robert C.: *See—*
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Benjamin, Trudy L.: *See—*
Lowe, David J.; Benjamin, Trudy L.; and Eaton, William S., 5,394,485, Cl. 382-47.000.

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Benoit, Remy; and Sauter, Hubert, to BASF Aktiengesellschaft. Preparation of o-iminooxymethylbenzoic acid. 5,393,920, Cl. 562-440.000

Benson, Anthony B., to Tecnol Medical Products, Inc. Telemetry pouch. 5,392,973, Cl. 224-208.000.

Benson, Glenn A.; Herman, Peter M.; and Luoma, Richard W., to International Business Machines Corp. Direct access storage device having a stable ball bearing cage design. 5,394,284, Cl. 360-99.080.

Bentz, Hanne; Thompson, Andrea Y.; Armstrong, Rosa; and Rosen, David M., to Celtrix Pharmaceuticals, Inc. Use of bone morphogenetic protein in synergistic combination with TGF-β for bone repair 5,393,739, Cl. 514-12.000.

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Deschamps, Bernard F.; Macuga, Henry J.; and Cox, Stuart S., to Eclipse Manufacturing Inc. Electrical fixture hanger. 5,393,026, Cl. 248-343.000
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Dewey, James D.: *See—*
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Dietz, David H.; and Campbell, Walter R., to Foster Wheeler Energy Corporation. Fludized bed combustion system and process for operating same. 5,392,736, Cl. 122-4.00D.
Dietz, Frederick, Jr.; Unger, Neil; and Bateman, James, to Data Switch Corporation. Optical fiber connection monitoring apparatus, patch panel control system and method of using same. 5,394,503, Cl 385-135.000.
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Dokonal, Jindrich. Variable duration rotary valve. 5,392,743, Cl 123-190.800.
Dolan, James J. Continuous silver float casting of steel sheet or plate. 5,392,843, Cl. 164-485.000.
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Donahue, Deborah. Support for side-lying premature infants. 5,392,785, Cl. 128-869.000.
Donahue, J. Paul; and Zolkos, John, to J. Paul Donahue DBA Donahue International. Insect trap. 5,392,560, Cl. 43-122.000.
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Drew, L. Edward, II; Viklund, Mark C.; Frye, Richard H.; Gibson, Charles F.; and Shonbeck, Barry S., to Markem Corporation. Pad transfer printing method. 5,392,706, Cl. 101-170.000.
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Drozdyk, Lorri P.; French, Roger H.; Hang, Kenneth W.; and Halliyal, Arvind, to Du Pont de Nemours, E. I., and Company. Light-absorbing dielectric compositions. 5,393,465, Cl. 252-518.000.
Drulias, Dean; and Davis, Loretta. Disposable toothbrush. 5,392,482, Cl. 15-104.940.
Drummond, Jameson M. Liquid cooled shock absorber. 5,392,886, Cl 188-322.190.
Drury, Donald R. Wallpaper trimmer. 5,392,676, Cl. 83-455.000.
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Du, Sing-Long. Transmission power testing bar of cable television system. 5,393,246, Cl. 439-482.000.
Dubach, Werner F., to Createchnic Ag. Snap hinge closure with security ring. 5,392,938, Cl. 215-254.000
DuBois, Thomas D.; Tranjan, Farid M.; and Bobbio, Stephen M., to University of North Carolina at Charlotte, The. Ionic modification of organic resins and photoresists to produce photoactive etch resistant compositions. 5,393,642, Cl. 430-271.000.
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du Chaffaut, Benoit A.; and Boulet, Jean, to Institut Francias du Petrole. Device for remotely operating and assembly comprising a bean/needle system, and use thereof in a drill string. 5,392,867, Cl. 175-38.000

Ducheshe, Claude A. Lifesaving apparatus. 5,393,254, Cl. 441-118.000.

Ducote, Edgar A. Axle assembly and configuration. 5,392,872, Cl. 180-24.010

Dudek, Kenneth P.; and White, Vincent A., to General Motors Corporation. Motor vehicle engine control method. 5,394,331, Cl. 364-431.050

Duffy, James J., to Ford Motor Company. Hydraulic reaction variable assist power steering system. 5,392,875, Cl. 180-132.000

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Dunn, Albert J.; and Carson, Oliver S., to Shorts Missile Systems Limited. Control systems for moving bodies. 5,393,011, Cl. 244-3.210.

Dunn, Albert J., to Shorts Missile Systems Limited. Control systems for moving bodies. 5,393,012, Cl. 244-3.230.

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Dymax Corporation: *See*—
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E. Beaudrey & Cie: *See*—
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Killian, Michael L., 5,393,950, Cl. 219-110.000.
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Ebetino, Frank H.; Buckingham, Kent W.; and McOsker, Jocelyn E., to P&G Pharmaceuticals, Inc. Bicyclic diphosphonate compounds, pharmaceutical compositions, and methods for treating abnormal calcium and phosphate metabolism. 5,393,746, Cl. 514-80.000.

ECC International Limited: *See*—
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Fillipova, Irina V., to RTD Corporation. Preparation of stable aqueous emulsions of water-insoluble particles. 5,393,461, Cl. 252-314.000.
Filous, Pavel: *See—*
Bednarsky, Kurt; Filous, Pavel; Bayerl, Eugen; and Herzog, Karl, 5,394,273, Cl. 359-823.000.
Fina Technology, Inc.: *See—*
Ewen, John A.; and Malbari, Shabbir A., 5,393,851, Cl. 526-153.000.
Finazzo, Michael J.: *See—*
Attwood, Brian E.; and Finazzo, Michael J., 5,394,319, Cl. 363-20.000.
Finkelstein, Ira: *See—*
Eisenbarth, Christoph; Finkelstein, Ira; McGhie, Dennis; and Panofsky, Edward, 5,394,486, Cl. 382-57.000.
Finkl, Anthony W. Catalyst for improving the combustion and operational qualities of hydrocarbon fuels. 5,393,723, Cl. 502-341.000.
Finmeccanica S.p.A. - Ramo Aziendale Alenia: *See—*
Gatti, Alfredo; and Gerbi, Luigi, 5,392,991, Cl. 239-265.290.
Finnigan Corporation: *See—*
Hail, Mark E.; and Mylchreest, Iain C., 5,393,975, Cl. 250-288.000.
Fischell, Sarah T.; Freire, Roberto S.; Moe, Warren R.; Munson, Gary A.; and Russell, Teresa L., to AT&T Corp. Telephone call processing arrangement based on calling and called party telephone services. 5,394,463, Cl. 379-201.000.
Fischer, Dennis: *See—*
Baumeister, Philip; Fischer, Dennis; and Trost, David, 5,394,501, Cl. 385-125.000.
Fischer, John G.: *See—*
Roth, Robert A.; and Fischer, John G., 5,393,206, Cl. 417-313.000.
Fischer, Kenneth A., Sr.; Landay, David L.; Greer, Frederick R.; Pratt, Kenneth W.; and Pratt, Michael K., to Mohawk Sports, Inc. Exercise apparatus. 5,393,285, Cl. 482-108.000.
Fischer, Martin: *See—*
Massonne, Klemens; and Fischer, Martin, 5,393,874, Cl. 534-556.000.
Fischer, Michael, to Grinnell Corporation,. Fire protection nozzle. 5,392,993, Cl. 239-522.000.
Fischer, Reiner; Krebs, Andreas; Lieb, Folker; Ruther, Michael; Stetter, Jorg; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., to Bayer Aktiengesellschaft. 3-aryl-pyrone derivatives. 5,393,729, Cl. 504-128.000.
Fitch, Jon T.: *See—*
Witek, Keith E.; Fitch, Jon T.; and Mazure, Carlos A., 5,393,681, Cl. 437-40.000.
Fitzpatrick, Brian J., to North America Philips Corporation. Materials for II-VI lasers. 5,394,422, Cl. 372-45.000.
Fixemer, Richard: *See—*
Fixemer, Richard A., 5,392,863, Cl. 172-6.000.
Fixemer, Richard A., to Fixemer, Richard; Siebert, Louis; and Ham, Howard, a part interest. Guidance system for an agricultural implement. 5,392,863, Cl. 172-6.000.
Flakee Mills, Inc.: *See—*
Bailey, Richard G.; and Leggott, Merton R., 5,392,529, Cl. 34-266.000.
Flamme, Burkhard, to Ewald Dorken AG. Dip-coating method for protecting chromatized or passivated zinc coatings on steel or the like. 5,393,611, Cl. 428-450.000.
Flanigen, Edith M.: *See—*
Skeels, Gary W.; and Flanigen, Edith M., 5,393,718, Cl. 502-66.000.
Flawa Schweitzer Verbandstoff-und Wattefabriken AG: *See—*
Gerhartl, Gerd W. P., 5,392,533, Cl. 36-43.000.
Fleischer, Ulrich: *See—*
Conzelmann, Gerhard; Fiedler, Gerhard; and Fleischer, Ulrich, 5,394,032, Cl. 326-38.000.
Fleishman, Roc V.: *See—*
Idland, Carsten H.; Popovich, John M.; and Fleishman, Roc V., 5,392,473, Cl. 4-541.100.
Flory, Lloyd E.: *See—*
White, Gregory R.; Webber, Larry R.; Anderson, Dean S.; Flory, Lloyd E.; and Steeby, Jon A., 5,393,277, Cl. 477-108.000.
Flower, Robert W., to Johns Hopkins University, The. Methods and apparatus for improved visualization of choroidal blood flow and aberrant vascular structures in the eye using fluorescent dye angiography. 5,394,199, Cl. 351-206.000.
Flum, Alan: *See—*
Zampini, Michael A.; and Flum, Alan, 5,394,477, Cl. 381-119.000.
FMC Corporation: *See—*
Vegega, Alexander M.; and Manissero, Claudio E., 5,393,781, Cl 514-557.000
Focke & Co. (GmbH & Co.): *See—*
Focke, Heinz; and Granz, Helmut, 5,392,905, Cl. 206-266.000.
Focke, Heinz; and Granz, Helmut, to Focke & Co. (GmbH & Co.). Hinge-lid pack, especially for cigarettes. 5,392,905, Cl. 206-266.000.
Fogarty, Thomas J.; Howell, Thomas A.; Mollenauer, Kenneth H.; and Monfort, Michelle Y., to Fogarty, Thomas J. Adhesive tape strip. 5,392,783, Cl. 128-687.000.
Folci, Giovanni A., to Black & Decker Inc. Saw. 5,392,675, Cl. 83-100.000.
Foley, Joseph M.: *See—*
Miksic, Boris A.; Tzou, Tsi-Zong; and Foley, Joseph M., 5,393,457, Cl. 252-194.000.
Folkins, Jeffrey J.: *See—*
Hart, Steven C.; Hubble, Fred F., III; Hammond, Thomas J.; Folkins, Jeffrey J.; and Martin, James P., 5,394,223, Cl 355-212.000.
Food Engineering Corporation: *See—*
Burgess, Ralph D.; Martin, David; and Wucherpfennig, Fredrick D., 5,392,898, Cl. 198-750.000.
Foodco Corporation: *See—*
Bushnell, Andrew H.; Clark, Reginald W.; Dunn, Joseph E.; and Lloyd, Samuel W., 5,393,541, Cl. 426-237.000.
Foppe, Joseph: *See—*
Brotcke, Paul; and Foppe, Joseph, 5,392,814, Cl. 137-899.000.
Foran, James: *See—*
Akeley, Kurt; and Foran, James, 5,394,170, Cl. 345-189.000.
Foran, Michael T.; Leake, Craig H.; Philbin, Michael T.; and Trzasko, Peter T., to National Starch and Chemical Investment Holding Corporation. Water resistant high amylose corrugating adhesive with improved runnability. 5,393,336, Cl. 106-213.000.
Forbes, Martin L.: *See—*
Head, Paul A.; Allshouse, James R.; and Forbes, Martin L., 5,392,757, Cl. 124-86.000.
Ford, David F.: *See—*
Bunn, Arthur H.; Anson, James H.; and Ford, David F., 5,393,540, Cl. 426-231.000.
Ford, James J., Jr.; Beitz, David W.; and Nagle, Michael J., Jr., to Tema Systems, Inc. Apparatus for providing multiple samples of material from a moving conveyor. 5,392,659, Cl. 73-863.530.
Ford, Michael E., to Air Products and Chemicals, Inc. Poly(vinylammonium formate). 5,393,842, Cl. 525-328.200.
Ford Motor Company: *See—*
Duffy, James J., 5,392,875, Cl. 180-132.000.
Hamburg, Douglas R.; and Logothetis, Eleftherios M., 5,392,599, Cl. 60-274.000.
Huang, Matthew, 5,394,328, Cl. 364-669.000.
Kepner, Charles M., 5,394,341, Cl. 364-551.010.
Korovesis, Danny N.; Brake, James D.; and Adrian, Andrew, 5,394,162, Cl. 343-703.000.
Rao, V. Durga N.; and Kabat, Daniel M., 5,392,692, Cl. 92-246.000.
Sarmast, Syed H.; Herbert, Gerald F.; and Hodge, Charles F., 5,393,128, Cl. 301-37.340.
Forman, Roger A.; and Thaler, Eric G., to General Electric Company Opening of capsule inside sealed lamp. 5,394,056, Cl. 313-547.000.
Forneri, Jean-Marc, to Skis Rossignol S.A. Shaped ski having non-rectangular cross section. 5,393,085, Cl. 280-602.000.
Forrester, Glenn C., to Intoximeters, Inc. Method and apparatus for testing gases, particularly breath alcohol. 5,393,495, Cl. 422-83.000.

Forster, Cornelia J.: *See—*
Bender, Paul E.; Christensen, Siegfried B., IV; Esser, Klaus M.; Forster, Cornelia J.; Ryan, Michael D.; and Simon, Philip L., 5,393,788, Cl. 514-616.000

Forster Inc.: *See—*
Merino, Darrell; and Thibault, James, 5,393,051, Cl. 273-29.00B

Fort, Chris. Bifurcated keyboard arrangement. 5,393,150, Cl. 400-489.000

Fortuna-Werke Maschinenfabrik GmbH: *See—*
Wedeniwski, Horst J., 5,392,566, Cl. 451-5.000.

Foss, Kevin A.; Guss, Theodore; Paul, Darin R.; and Sherwood, Robert E., to Continental Plastic Containers, Inc. Plastic container with a completely sealed handle. 5,392,950, Cl. 220-771.000.

Foster, Clark B.: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,393,497, Cl. 422-103.000.

Foster, Mark J.: *See—*
Fakhruddin, Saifuddin T.; Foster, Mark J.; Hovey, Scott A.; Walker, James L.; and Vanderheyden, Randy J., 5,394,527, Cl. 395-275.000

Foster Wheeler Energy Corporation: *See—*
Dietz, David H.; and Campbell, Walter R., 5,392,736, Cl. 122-4.00D

Fournier, Christian, to Fournier S.A. Device for connecting a draining and/or insulating screen within a trench. 5,393,363, Cl. 156-157.000.

Fournier S.A.: *See—*
Fournier, Christian, 5,393,363, Cl. 156-157.000.

Fox, Carol A.: *See—*
Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Mahabadi, Hadi K.; and Agur, Enno E., 5,393,630, Cl. 430-105.000.

Fox, Larry G. Apparatus and method for adjustably supporting furnishings on a wall surface. 5,392,934, Cl. 211-94.000.

Foxboro Company, The: *See—*
Hansen, Peter D., 5,394,322, Cl. 364-148.000.

Framatome: *See—*
Guiroy, Jean J.; and Thouvenot, Remi, 5,394,448, Cl. 376-260.000.

Frame, Wayne W., to Ball Corporation. Radiation detector and charge transport device for use in signal processing systems having a stepped potential gradient means. 5,393,971, Cl. 250-208.200.

France Telecom Etablissement Autonome de Droit Public (Centre National d'Etudes des Telecommunications): *See—*
Morin, Francois; and le Contellec, Michel, 5,394,258, Cl. 359-59.000.

Francis, Gaylord L.: *See—*
Bagley, Rodney D.; Francis, Gaylord L.; and Herczog, Andrew, 5,393,499, Cl. 422-174.000.

Francis, Ron A.: *See—*
Bartley, Paul L.; Francis, Ron A.; and Kerr, Claire T., 5,394,124, Cl. 333-227.000

Frank, Kurt: *See—*
Laue, Klaus-Bernhard; Mielich, Karl; Frank, Kurt; Schmid, Werner; Soyer, Wolfgang; Kuppel, Hans-Joachim; Kegel, Hellmut; Lucas, Bernhard; and Projahn, Ulrich, 5,392,750, Cl. 123-509.000

Franklin, Harry C. Cabinet mounting harness. 5,393,025, Cl. 248-317.000.

Franz, Joachim: *See—*
Vonderscher, Jacky; Franz, Joachim; Steiger, Michel; and Hornung, Karl, 5,393,738, Cl. 514-12.000

Fraser, David: *See—*
Gratzel, Michael; Fraser, David; Zakeeruddin, Shaik M.; and Nazeeruddin, Mohammed K., 5,393,903, Cl. 556-137.000.

Fratelli BUZZI SpA: *See—*
Lagache, Philippe; and Boussekey, Bernard, 5,393,000, Cl 241-228.000

Frazier, Charles H. Method and apparatus for inspection of gears. 5,392,644, Cl. 73-162.000

Freeburg, Thomas A., to Motorola, Inc. Networked satellite and terrestrial cellular radiotelephone systems. 5,394,561, Cl. 455-13.100.

Freeman, H. Bruce. Hydrogen monitoring apparatus. 5,392,661, Cl. 73-866.000

Freeman, Michael B.; Paik, Yi H.; Simon, Ethan S.; and Swift, Graham, to Rohm and Haas Company. Production of polysuccinimide by thermal polymerization of maleamic acid. 5,393,868, Cl. 528-480.000.

Freer, Edgar P. Micromachining system and method. 5,392,502, Cl. 29-52.000

Freese, Karl-Heinz, and Gunter, Gerhard, to Akzo Nobel nv. Treatment and recycling of overspray from the spray application of waterborne coatings. 5,393,390, Cl. 204-131.000.

Freiberger, Norbert; Glaser, Wolfgang; Wolschner, Bernd; and Zikeli, Stefan, to Austrian Energy & Environment SGP/Waagner Biro GmbH; and Lenzing Aktiengesellschaft. Rotating tube heat treatment installation, in particular rotating tubular kiln, with indirect heat feed or dissipation. 5,393,225, Cl. 432-103.000.

Freire, Roberto S.: *See—*
Fischell, Sarah T.; Freire, Roberto S.; Moe, Warren R.; Munson, Gary A.; and Russell, Teresa L., 5,394,463, Cl. 379-201.000.

French, Roger H.: *See—*
Drozdyk, Lorri P.; French, Roger H.; Hang, Kenneth W.; and Halliyal, Arvind, 5,393,465, Cl. 252-518.000.

Frey, Jeffrey A.; Nick, Jeffrey M.; and Swanson, Michael D., to International Business Machines Corporation. Clearing data objects used to maintain state information for shared data at a local complex when at least one message path to the local complex cannot be recovered 5,394,542, Cl. 395-575.000.

Frey, Thomas: *See—*
Closs, Friedrich; Frey, Thomas; Funhoff, Dirk; Siemensmeyer, Karl; Ringsdorf, Helmut; Haarer, Dietrich; and Strohriegl, Peter, 5,393,626, Cl. 430-56.000.

Friary, Richard J., to Schering Corporation. Substituted imidazobenzazepines. 5,393,753, Cl. 514-214.000.

Frick, Hans-Jorg; and Kunkel, Peter, to Ivoclar AG, Firma. Mixing capsule for dental compositions. 5,392,904, Cl. 206-219.000.

Friedman, Steven J.; Furse, Gillian; Hargrove, Karen A.; Joy, Joseph M.; Myhrvold, Nathan P.; Shrivastava, Sunita; and Yuval, Gideon A., to Microsoft Corporation. Luminance sensitive palette. 5,394,518. Cl. 395-131.000.

Fritz Schafer Gesellschaft mit beschrankter Haftung: *See—*
Schafer, Gerhard, 5,392,926, Cl. 209-546.000.

Fritzberg, Alan R.: *See—*
Vanderheyden, Jean-Luc; Fritzberg, Alan R.; Bugaj, Joseph E.; Su, Fu-Min; and Venkatesan, Prasanna, 5,393,512, Cl. 424-1.530.

Froschl, Hermann; Oberdorfer, Ralf; and Zitz, Alfred, to VOEST-ALPINE Bergtechnik Gesellschaft m.b.H. Anchor bolt drilling and setting device. 5,392,869, Cl. 175-118.000.

Fruchey, Olan S.: *See—*
Kvakovszky, George; Vicari, Richard; Fruchey, Olan S.; Tafesh, Ahmed M.; and Hilton, Charles B., 5,393,860, Cl. 528-172.000.
Tafesh, Ahmed M.; Fruchey, Olan S.; and Hilton, Charles B., 5,393,924, Cl. 564-138.000.

Fry, George E. Squirrel proof bird feeder. 5,392,732, Cl. 119-57.900

Fry, Scott M.: *See—*
Chliwnyj, Alex; Graves, David C.; Fry, Scott M.; Nylander-Hill, Pamela R.; Torab, Habib M.; and Wright, Will A., 5,394,280, Cl 360-77.120.

Frye, Richard H.: *See—*
Drew, L. Edward, II; Viklund, Mark C.; Frye, Richard H.; Gibson, Charles F.; and Shonbeck, Barry S., 5,392,706, Cl. 101-170.000

Fu, Horng-Sen; Tasch, Al F., Jr.; and Chatterjee, Pallab K., to Texas Instruments Incorporated. Method of making semiconductor having improved interlevel conductor insulation. 5,393,690, Cl. 437-53.000

Fuchs, Gerhard: *See—*
Ehle, Joachim; and Fuchs, Gerhard, 5,393,037, Cl. 266-144.000.

Fuchs Technology AG: *See—*
Ehle, Joachim; and Fuchs, Gerhard, 5,393,037, Cl. 266-144.000.

Fuji Electric Co., Ltd.: *See—*
Fukuzawa, Akira; Sakuraya, Kazuyuki; Watanabe, Toshiaki; Yamazaki, Motoo; Morita, Tadashi; Take, Tatsuo; and Fujita, Michiru, 5,394,432, Cl. 373-156.000.
Nakamura, Yoichi; Mori, Nobuyoshi; and Nogami, Sumitaka, 5,393,627, Cl. 430-59.000.

Fuji Electrochemical Co., Ltd.: *See—*
Yamamoto, Hiroyasu; Konuma, Takayuki; Shika, Akira; Suzuki, Hiroyoshi; Katouno, Masanori; and Sato, Kaori, 5,394,011, Cl. 257-693.000.

Fuji Oil Company, Limited: *See—*
Mori, Urara; Morinaga, Satoru; Kiyama, Tsukasa; Miyabe, Masaaki; and Yamaguchi, Masayuki, 5,393,554, Cl. 426-662.000.

Fuji Photo Film Co., Ltd.: *See—*
Hoshi, Satoshi, 5,393,651, Cl. 430-526.000.
Kamata, Kazuo, 5,394,211, Cl. 354-217.000.
Kato, Eiichi; Kasai, Seishi; and Ishii, Kazuo, 5,393,625, Cl 430-49.000
Kawai, Hiroshi, 5,393,653, Cl. 430-569.000.
Makino, Yoshihiko; Terashima, Kaoru; Kitani, Toru; and Hora, Naofumi, 5,393,493, Cl. 422-56.000
Sasaki, Hirotomo; Mifune, Hiroyuki; and Fujimori, Toru, 5,393,655, Cl. 430-603.000.
Suga, Yasushi; Nakajima, Kenji; Kobayashi, Kiyoshi; and Miyamoto, Kimiaki, 5,393,571, Cl. 427-420.000.
Suzuki, Motoi; and Inoue, Yuji, 5,394,216, Cl. 354-324.000.
Suzuki, Yuji, 5,393,476, Cl. 264-169.000.
Toda, Satoru; Yasuda, Tomokazu; and Tamoto, Koji, 5,393,648, Cl. 430-522.000.
Wakata, Yuichi; and Niitsu, Chiyomi, 5,393,640, Cl. 430-262.000.

Fuji Photo Optical Co., Ltd.: *See—*
Morizumi, Masaaki, 5,394,212, Cl. 354-271.100.

Fuji Xerox Co., Ltd.: *See—*
Fukunaga, Hideki; Ueki, Nobuaki; Otoma, Hiromi; and Nakayama, Hideo, 5,394,425, Cl. 372-46.000.
Irobe, Kou, 5,394,224, Cl. 355-219.000
Nukada, Katsumi; Daimon, Katsumi; Sakaguchi, Yasuo; Yamasaki, Kazuo; Iijima, Masakazu; Takahashi, Michiaki; Koseki, Kazuhiro; Imai, Akira; Mashimo, Kiyokazu; Ishii, Toru; Ojima, Fumio; Nishikawa, Masayuki; and Igarashi, Ryosaku, 5,393,629, Cl. 430-76.000
Nukada, Katsumi; and Daimon, Katsumi, 5,393,881, Cl 540-141.000.

Fujigami, Makoto: *See—*
Yokota, Tomohiro; Nishitani, Fumio; Ogawara, Hiroshi; Kubo, Akihito; and Fujigami, Makoto, 5,394,255, Cl. 359-49.000.

Fujii, Hideyo: *See—*
Nanjo, Katsumi; Kariya, Akinori; Henmi, Shinya; Fujii, Hideyo; and Usui, Syuichi, 5,393,754, Cl. 514-227.200.

Fujii, Kenichi: *See—*
Kawasaki, Noboru; Sasagawa, Katsuyoshi; Suzuki, Toshiyuki; and Fujii, Kenichi, 5,393,607, Cl. 428-334.000.

Fujii, Syuitsu, to Adtec Co., Ltd. High frequency plasma power source and impedance matching device for supplying power to a semiconductor processing apparatus. 5,394,061, Cl. 315-111.210.

Fujii, Toshiro; Kitayama, Hiromi; and Iwama, Kazuaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Axial multi-piston compressor having rotary suction valve. 5,393,205, Cl. 417-269.000.

Fujimori, Toru: *See—*
Sasaki, Hirotomo; Mifune, Hiroyuki; and Fujimori, Toru, 5,393,655, Cl. 430-603.000.

Fujimoto, Hiroyuki: *See—*
Masuyama, Toshio; Suzuki, Masami; and Fujimoto, Hiroyuki, 5,392,873, Cl. 180-68.500.

Fujimoto, Tadashi, to Juki Corporation. Sheet medium dispensing apparatus having a recess to permit buckling of a lowermost sheet. 5,393,045, Cl. 271-23.000.

Fujimoto, Tsuyoshi, to Sumitomo Electric Industries, Ltd. Brake fluid pressure control apparatus. 5,393,133, Cl. 303-119.200.

Fujino, Kenji: *See—*
Matsunaga, Tsuyoshi; Fujino, Kenji; Sugahara, Takashi; and Kan, Hiroaki, 5,392,849, Cl. 165-167.000.

Fujirebio Inc.: *See—*
Matsumoto, Masakatsu; Watanabe, Nobuko; Mori, Eiko; Ishihara, Miwa; Yamaura, Tetsuaki; Aoyama, Misao; Ikawa, Hiroshi; and Kobayashi, Hisako, 5,393,780, Cl. 514-543.000.

Fujisaki, Tatsuo, to Canon Kabushiki Kaisha. Device for stabilizing images. 5,394,207, Cl. 354-70.000.

Fujisawa, Eiji: *See—*
Marumoto, Motoi; Fujisawa, Eiji; and Shono, Hiroaki, 5,393,822, Cl. 524-496.000.

Fujisono, Kenji: *See—*
Kawasaki, Keiko; Sumitani, Kazuo; Igi, Yoso; Tahira, Fumiaki; and Fujisono, Kenji, 5,394,399, Cl. 370-84.000.

Fujita, Junichi; Okazaki, Hiroyuki; Kiura, Mitsuo; and Yoshida, Yoshiaki, to Osaka Gas Company Limited. Method of absorbing electromagnetic waves. 5,394,149, Cl. 342-1.000.

Fujita, Koki: *See—*
Kitahata, Sumio; Kuwahara, Nobuhiro; Fujita, Koki; Hara, Koji; Majima, Keiichi; Teshima, Shin-ichi; and Hayashi, Yuzo, 5,393,660, Cl. 435-22.000.

Fujita, Makio; Goto, Fumio; Ogawa, Tetsuo; Ishii, Akio; Gocho, Tomohiro; Yamabe, Narimasa; Miyazaki, Ichiro; Saito, Masaaki; and Sasa, Yoshihiro, to Niigata Engineering Co., Ltd.; and Nippon Hodo Co., Ltd. Method for controlling the thickness of pavement and setting the conditions for automatic control of the leveling machine. 5,393,167, Cl. 404-84.100.

Fujita, Michiru: *See—*
Fukuzawa, Akira; Sakuraya, Kazuyuki; Watanabe, Toshiaki; Yamazaki, Motoo; Morita, Tadashi; Take, Tatsuo; and Fujita, Michiru, 5,394,432, Cl. 373-156.000.

Fujita, Yuuji: *See—*
Kato, Takeshi; Fujita, Yuuji; Mizuishi, Kenichi; Kawata, Atumi; and Itoh, Hiroyuki, 5,394,490, Cl. 385-14.000.

Fujitsu Limited: *See—*
Horikoshi, Yuzo; Yamagishi, Yasuo; and Sawatari, Norio, 5,393,631, Cl. 430-108.000.
Kawamoto, Satoru, 5,394,373, Cl. 365-230.060
Kawasaki, Keiko; Sumitani, Kazuo; Igi, Yoso; Tahira, Fumiaki; and Fujisono, Kenji, 5,394,399, Cl. 370-84.000.
Kondo, Makoto; and Sekiguchi, Hiroshi, 5,392,730, Cl. 117-102.000.
Nakajima, Jun; and Yazaki, Masatomo, 5,394,548, Cl. 395-650.000.
Sakamoto, Kiichi, 5,393,988, Cl. 250-492.220.
Seyama, Yoshihiko; and Shimizu, Yutaka, 5,393,484, Cl. 419-37.000.
Sobue, Mamoru; and Shimizu, Katsuya, 5,394,038, Cl. 327-432.000.
Suzuki, Toshiya; Ohba, Takayuki; Jinnouchi, Shimpei; and Murakami, Seishi, 5,393,565, Cl. 427-255.200.
Watanabe, Mitsuo; Sato, Shinichi; Kawai, Hiroaki; and Shinoda, Ichiro, 5,393,968, Cl. 235-462.000.
Yoshimura, Shuji; Kakuma, Satoshi; Aihara, Naoki; Aso, Yasuhiro; and Murayama, Masami, 5,394,396, Cl. 370-60.000.

Fujitsu VLSI Limited: *See—*
Sobue, Mamoru; and Shimizu, Katsuya, 5,394,038, Cl. 327-432.000.

Fujiwara, Masaaki: *See—*
Sakamoto, Hironori; Ito, Akira; Fujiwara, Masaaki; and Nojima, Toshio, 5,394,120, Cl. 330-2.000.

Fujiwara, Tadami: *See—*
Amagaya, Sakae; Fujiwara, Tadami; Aburada, Masaki; Nagasawa, Michio; and Oyama, Tsutomu, 5,393,740, Cl. 514-17.000.

Fujiwara, Yoshio: *See—*
Abe, Tetsuya; Fukuda, Toshio; and Fujiwara, Yoshio, 5,393,725, Cl. 503-227.000.

Fukasawa, Atsushi: *See—*
Kawabe, Manabu; Sato, Takuro; Kato, Toshio; Kawahashi, Akiyoshi; and Fukasawa, Atsushi, 5,394,434, Cl. 375-205.000.

Fukatani, Yasunobu: *See—*
Kajitani, Koji; Takeuchi, Hiroshi; Fukatani, Yasunobu; Teramae, Hiroshi; and Asada, Masaaki, 5,392,888, Cl. 192-70.160.

Fukatsu, Norihiko: *See—*
Yamaguchi, Shu; Fukatsu, Norihiko; and Kimura, Hideo, 5,393,400, Cl. 204-413.000.

Fukaya, Tomoji; Shibata, Masahiro; Suzuki, Kazunori; Nakae, Makoto; Nakano, Syuichi; and Suzuki, Masatoshi, to Nippondenso Co., Ltd. Oxygen sensor. 5,393,397, Cl. 204-424.000.

Fukuda, Bunjiro: *See—*
Nakano, Koh; Sato, Keiji; and Fukuda, Bunjiro, 5,393,355, Cl. 148-306.000.

Fukuda, Toshio: *See—*
Abe, Tetsuya; Fukuda, Toshio; and Fujiwara, Yoshio, 5,393,725, Cl. 503-227.000.

Fukuda, Tsunehiko: *See—*
Nakagawa, Shizue; Fukuda, Tsunehiko; Kawase, Masahiro; and Yamazaki, Iwao, 5,393,869, Cl. 530-324.000.

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Gomez Anton, Ma Rosa; F. de Pierola, Ines; Morales Lujan, Elena; and Molina Lorenzo, Ma Jesus, to Universidad Nacional de Educacion A Distancia. Hydrogels of heterocyclic polymer, method of obtaining them, and their use as insoluble pH-regulating pellets. 5,393,853, Cl. 526-263.000.
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Umeda, Nobuyoshi; Seo, Toshio; Nagamori, Yuzirou; Matsuoka, Kenichi; and Gomi, Shingo, 5,392,632, Cl. 73-3.000
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Steiner, Karl; Meinecke, Albrecht; and Goncalves, Rui, 5,393,384, Cl. 162-359.100
Gong, Jun-jin; Park, Hyun-woo; and Back, Hyun-gi, to Samsung Electronics Co., Ltd. Square computation circuit. 5,394,350, Cl. 364-753.000.
Gonya, Stephen G.; Lake, James K.; Long, Randy C.; and Wild, Roger N., to International Business Machines Corporation. High temperature, lead-free, tin based solder composition. 5,393,489, Cl. 420-561.000
Gooch, Guy M.: *See—*
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Goodwin, Daniel E.: *See—*
Handlin, Dale L., Jr.; Goodwin, Daniel E.; Willis, Carl L.; St. Clair, David J.; Wilkey, John D.; Modic, Michael J.; and Stevens, Craig A., 5,393,843, Cl. 525-332.800.

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Cooper, James N.; and Harrop, Nicholas J., 5,392,810, Cl. 137-512.100.
Goroncy-Bermes, Peter: *See—*
Eggensperger, Heinz; Bernd, Lower; Mohr, Michael; Goroncy-Bermes, Peter; and Beilfuss, Wolfgang, 5,393,789, Cl. 514-674.000.
Gorris, Johannes J. H. M.: *See—*
Seifert, Eberhard; and Gorris, Johannes J. H. M., 5,392,817, Cl. 139-25.000
Gory, John D.: *See—*
Xitco, Mark J., Jr.; Gory, John D.; Perkins, Kerry M.; Monroe, Marshall M.; and Redmann, William G., 5,392,735, Cl. 119-712.000.
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Fujita, Makio; Goto, Fumio; Ogawa, Tetsuo; Ishii, Akio; Gocho, Tomohiro; Yamabe, Narimasa; Miyazaki, Ichiro; Saito, Masaaki; and Sasa, Yoshihiro, 5,393,167, Cl. 404-84.100.
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Satomi, Yasuhiko; Itoh, Seiichi; Watanabe, Isao; Goto, Toru; and Sekihara, Shoji, 5,392,967, Cl. 222-509.000.
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Wunsche, Martin; Gotz, Hans; Schwede, Wolfgang; Baumann, Karl-Heinz; and Hesse, Guido, 5,393,093, Cl. 280-756.000.
Gou, Da-Ming: *See—*
Chen, Ching-Shih; Gou, Da-Ming; and Shieh, Woan-Ru, 5,393,912, Cl. 558-161.000
Goulait, David J. K.; and Thomas, Dennis A., to Proctor & Gamble Company, The. Non-abrasive skin friendly mechanical fastening system. 5,392,498, Cl. 24-452.000.
Gould Inc.: *See—*
DeWitt, Robert D.; Bay, Adam G.; and Paraday, Tibor, 5,393,396, Cl. 204-206.000
Gould, William W. Concrete anchoring bolt. 5,392,573, Cl. 52-165.000.
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Grabowski, Daniel; and Van Kammen, John, to Steelcase Inc. Drawer with convertible filing support system. 5,393,136, Cl. 312-184.000.
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Coombs, Peter M.; and Seay, James R., 5,393,042, Cl. 270-53.000.
Graham, John M. Method of supplying a higher pressure reserve air supply for air brake system. 5,393,130, Cl. 303-57.000.
Graham Packaging Corporation: *See—*
Prevot, Roger M.; and Semersky, Frank E., 5,392,937, Cl. 215-1.00C.
Grange, Jeffrey J., to Hewlett-Packard Company. Printhead servicing apparatus with pivotal servicing lever. 5,394,178, Cl. 347-32.000.
Granz, Helmut: *See—*
Focke, Heinz; and Granz, Helmut, 5,392,905, Cl. 206-266.000.
Grapes, Thomas F.; and Miller, Charles M., to Westinghouse Electric Corp. Transport/stacker module for improving sorting throughout of a mail processing system. 5,392,894, Cl. 198-367.000.
Grarovsky, Boris, to Julie Associates, Inc. Electronic static neutralizer device. 5,394,293, Cl. 361-221.000
Gratzel, Michael; Fraser, David; Zakeeruddin, Shaik M.; and Nazeeruddin, Mohammed K., to Asulab S.A. Mono, bis or tris(substituted 2,2'-bipyridine) iron, ruthenium, osmium or vanadium complexes and their methods of preparation. 5,393,903, Cl. 556-137.000.
Graumann, Jurgen, to Felix Schoeller jr. Papierfabriken GmbH & Co. KG. Dye diffusion thermal transfer carrier material. 5,393,726, Cl. 503-227.000.
Graves, David C.: *See—*
Chliwnyj, Alex; Graves, David C.; Fry, Scott M.; Nylander-Hill, Pamela R.; Torab, Habib M.; and Wright, Will A., 5,394,280, Cl 360-77.120
Gray, S. David: *See—*
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Grayson, Basil T., to Shell Research Limited. Fungicidal compositions. 5,393,770, Cl. 514-383.000.
Green Bay Packaging, Inc.: *See—*
Passamoni, Phillip L., 5,392,919, Cl. 206-576.000.
Green, David T.; Bolanos, Henry; and Ratcliff, Keith, to United States Surgical Corporation. Surgical stapler apparatus. 5,392,979, Cl. 227-179.000.
Green, James A., II; and Young, Donald C., to Union Oil Company of California. Oligomeric thiocarbonates. 5,393,778, Cl. 514-512.000.
Green, Lawrence D.: *See—*
Snipes, Terry L.; Schick, Jeffrey C.; Miller, Everett T.; and Green, Lawrence D., 5,392,722, Cl. 111-174.000.
Green, Michael P. Roofing handroller. 5,393,289, Cl. 492-13.000.
Greenblatt, Martha; and Feng, Shouhua, to Rutgers, The State University of New Jersey. Humidity sensor with nasicon-based proton-conducting electrolyte. 5,393,404, Cl. 204-430.000.
Greenfield, Sherwood S., to Powerflor, Inc. Pedestal module for raised floor and raised floor. 5,392,571, Cl. 52-126.200.
Greenfield, Walter; Kearns, Edward G.; and Kemble, James E., to DiaSys Corporation. Apparatus for drawing fluid sample, components thereof, and slide assembly for use therewith. 5,393,494, Cl. 422-68/1.000
Greer, Carol S.: *See—*
Reed, Peter E.; and Greer, Carol S., 5,393,380, Cl. 162-168.200.
Greer, Dana J.: *See—*
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Greer, Frederick R.: *See—*
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Gregori, Marco: *See—*
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Gregory Construction Company: *See—*
Gregory, David B., 5,392,583, Cl. 52-741.100
Gregory, David B., to Gregory Construction Company. Method of restoring standing seam and like lapped metal roofs consisting of side-by-side panels having side edges which overlap. 5,392,583, Cl 52-741.100.
Greifzu, Manfred: *See—*
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Greis, Dietmar; and Mayer, Walter, to Schubert & Salzer Maschinenfabrik AG. Process and device for the constitution of a yarn end reserve winding on yarn packages of a textile machine. 5,393,002, Cl. 242-18.0EW.
Grenga, John J.; and Eannarino, Richard P. Lamp reflector. 5,394,317, Cl. 362-347.000.
Grenot, Thierry: *See—*
Brisson, Jacques; Caillemer, Jean; and Grenot, Thierry, 5,394,393, Cl. 370-60.000.
Greyhawk Systems, Inc.: *See—*
Cheng, Liang T., 5,394,254, Cl. 359-42.000.
Grim, Tracy E. Vacuum formed conformable shoe. 5,392,534, Cl 36-88.000.
Grimminger, Wolf: *See—*
Carcasona, Alfons; Grimminger, Wolf; Hietala, Pentti; Zaeske, Helga; and Witthohn, Klaus, 5,393,898, Cl. 552-262.000.
Grinnell Corporation,: *See—*
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Grinsteiner, James J.: *See—*
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Grisel, Alain: *See—*
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Grobbelaar, Johannes R., to Reunert Mechanical Systems Limited. Transmitting rotary power. 5,393,270, Cl. 474-5.000.
Grollier, Jean F., to L'Oreal. Photostable filtering cosmetic composition. 5,393,515, Cl. 424-47.000.
Groom, Bryan. Ware support apparatus. 5,393,226, Cl. 432-258.000
Grosclaude, Gary V.; and Bachmann, Andrew G., to Dymax Corporation. Two-component coating formulation. 5,393,800, Cl. 522-28.000
Gross, Martin; and Wilde, Eugen, to E.G.O. Elektro-Gerate Blanc u. Fischer. Heater with a pretensioned heating element. 5,393,958, Cl. 219-464.000.
Groves, Doyle J.: *See—*
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Grubbs, Michael R., to Sara Lee Knit Products. Self-supporting textile package. 5,392,912, Cl. 206-451.000.
Grumman Aerosace Corp.: *See—*
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Grund, Clemens: *See—*
Lange, Arno; Bach, Volker; Grund, Clemens; Reichelt, Helmut; and Richter, Paul, 5,393,308, Cl. 8-639.000.
Grunert, Kurt A.; and Beatty, William E., to Eaton Corporation. Circuit breaker with improved magnetic trip assembly. 5,394,126, Cl. 335-42.000.
Grunthaner, Frank J.: *See—*
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Grutze, Joachim: *See—*
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Gubernator, Klaus: *See—*
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Gudaitis, Algird M., to Hewlett-Packard Company. Virtual right leg drive and augmented right leg drive circuits for common mode voltage reduction in ECG and EEG measurements. 5,392,784, Cl 128-696.000
Guenther, Derek P., to Photmetrics, Ltd. Electrical access to a hermetically sealed chamber using a printed circuit board. 5,393,931, Cl. 174-52.300.
Guentherberg, Norbert: *See—*
Deckers, Andreas; Guentherberg, Norbert; and Niessner, Norbert, 5,393,817, Cl. 524-269.000
Niessner, Norbert; and Guentherberg, Norbert, 5,393,836, Cl. 525-67.000
Gueret, Jean-Louis H., to L'Oreal. Polymeric synthetic material which has an antiseptic and/or antioxidant action and process for the manufacture of the said material. 5,393,809, Cl. 524-35.000.

Guess, Ronald W.: *See—*
Janke, Donald E.; Szynal, Joseph M.; Guess, Ronald W.; Bradley, Greg A.; and Carnal, Randall L., 5,394,291, Cl. 361-155.000.
Guiley, C. Dale: *See—*
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Guiroy, Jean J.; and Thouvenot, Remi, to Framatome. Method and device for processing elements activated by irradiation with a view to their removal. 5,394,448, Cl. 376-260.000.
Gulotta, Joseph A.; Krumwiede, John F.; Kutilek, Luke A.; Longobardo, Anthony V.; and Heithoff, Robert B., to PPG Industries, Inc. Dark gray, infrared absorbing glass composition and coated glass for privacy glazing. 5,393,593, Cl. 428-220.000.
Gumpel, Paul, to H. Schwer GmbH Edelstahl-Fittings. Pipe connection having a cutting ring. 5,393,109, Cl. 285-382.700.
Gunatillake, Pathiraja: *See—*
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Gundersen, Helge G., to Nycomed Imaging AS. Contrast medium comprising superparamagnetic or ferromagnetic particles capable of increasing viscosity after administration. 5,393,525, Cl. 424-9.000.
Gunsberger, Sherry B.: *See—*
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Gunter, Gerhard: *See—*
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Gupta, Dev V.; and Hong, Kyung-Yeop, to Integrated Network Corporation. Performance monitoring for loops. 5,394,145, Cl. 341-73.000
Gurney, Walter T.: *See—*
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Guss, Theodore: *See—*
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Gustafson, Ake. Core chuck for coil winding. 5,393,001, Cl. 242-7.140.
Gustavsson, Bo: *See—*
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Gutenberger, Gerd, deceased: *See—*
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Gutenberger, Thomas, heir: *See—*
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Guth, Jean-Louis: *See—*
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Guth, Jerome; and Philbois, Nathalie, to Sollac. Method for butt welding at least two metal sheets. 5,393,956, Cl. 219-121.640
Guth, Joseph E.: *See—*
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Gutohrlein, Ralf: *See—*
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H Lundbeck A/S: *See—*
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H Schwer GmbH Edelstahl-Fittings: *See—*
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Haarer, Dietrich: *See—*
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Haber, Terry M.; Smedley, William H.; and Foster, Clark B., to Habley Medical Technology Corporation. Device for containing and opening a glass ampule and for transferring liquid within the ampule to a container. 5,393,497, Cl. 422-103.000
Habib, Mohammad M.; and Dahlberg, Arthur J., to Chevron Research and Technology Company. Hydrocarbon conversion processes and catalysts used therein. 5,393,410, Cl. 208-111.000.
Habley Medical Technology Corporation: *See—*
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Hach Company: *See—*
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Hache, Nathalie: *See—*
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Hackett, Andrew, to Thomson Consumer Electronics. Method of measuring the noise in an active video image and device for implementing the method. 5,394,192, Cl. 348-619.000.
Hackett, Robert C., to Linvatec Corporation. Releasable universal blister package for elongated surgical devices. 5,392,909, Cl. 206-363.000.
Hadgis, George A., to Eastman Kodak Company. Method and apparatus for the detection of dot-matrix printed text so as to improve optical character recognition. 5,394,482, Cl. 382-9.000.
Hadvary, Paul: *See—*
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Haeberle, Karl: *See—*
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Hageman, Martin P., to Kelley Company, Inc. Return-to-dock-level mechanism for a dockboard having a hydraulic holddown. 5,392,481. Cl. 14-71.100.
Hagen, Gerry A.; Burlone, Dominick A.; and Wilson, Phillip E., to BASF Corporation. Apparatus for spinning different colored filaments from a single spinneret. 5,393,219, Cl. 425-382.200.
Hagenberg, Ferdinand: *See—*
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Hagenberg, Hendrikus; and Hagenberg, Ferdinand, to Hagenberg Projekten B.V. Assembly of mouthpiece, stopper and lock for shutting off a pipe mouth. 5,392,816, Cl. 138-89.000
Hagenberg Projekten B.V.: *See—*
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Hagihara, Hideaki; Okuda, Masakiyo; and Takata, Souichi, to Sharp Kabushiki Kaisha. Paper feeder. 5,393,044, Cl. 271-10.000.
Hagiwara, Haruo: *See—*
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Hagiwara, Yoshiyuki; Jinno, Osamu; Kitamura, Takeshi; Kuramoto, Akio; Kawai, Yukio; Yamaguchi, Kenichi; and Kahuta, Hirotaka, to Taiho Kogyo Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Metal gasket with base plate having coatings of diverse thicknesses 5,393,076, Cl. 277-235.00A
Hagstrom, Ulf: *See—*
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Hahn, Eric: *See—*
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Hahn, Erwin: *See—*
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Hahn, Gerald D.: *See—*
Malick, Adrien; Feindt, Hans H.; and Hahn, Gerald D., 5,393,527. Cl. 435-7.100.
Hail, Mark E.; and Mylchreest, Iain C., to Finnigan Corporation; and Analytica of Branford, Inc. Electrospray ion source and interface apparatus and method. 5,393,975, Cl. 250-288.000.
Hain, Matthew: *See—*
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Haines, William C. Visual aid system. 5,393,232, Cl. 434-415.000.
Haka, Raymond J., to General Motors Corporation. Powertrain and control having a plurality of accumulators. 5,393,273, Cl 475-129.000.
Hakiel, Zbigniew: *See—*
Zeller, John J.; Brown, Robert C.; Hakiel, Zbigniew; Hoy, Allan T.; and Stewart, Arthur M., 5,393,589, Cl. 428-192.000.
Halberstadt, Louis; Mertinooke, Peter E.; Perry, Joseph V.; and Muessel, Dan C., to Amesbury Industries, Inc. Method and apparatus for extruding a low density thermoplastic foam. 5,393,796, Cl 521-134.000.
Haley, Charla S.; and Sanchez, William L., to Hercules Incorporated. Flame retardant, light stable composition. 5,393,812, Cl. 524-91.000.
Hall, John: *See—*
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Hall, John C.; and Risner, Paul F., to REB Manufacturing Co., Inc Underfloor extendible ramp for vehicles. 5,393,192, Cl. 414-537.000
Hall, John T., to Hughes Aircraft Company. Imaging apparatus for providing a composite digital representation of a scene within a field of regard. 5,394,520, Cl. 395-135.000.
Hall, Stephen E.: *See—*
Ball, Randel H.; and Hall, Stephen E., 5,394,445, Cl. 379-67.000.
Hall, Walter L., to Airheads, General Partnership. Drum tuning device 5,392,681, Cl. 84-413.000.
Halliburton Company: *See—*
Harris, Phillip C.; and Heath, Stanley J., 5,393,810, Cl. 524-56.000.
Laramay, Steve B.; and Norman, Lewis R., 5,393,439, Cl. 507-211.000
Laurel, David F.; and Rolen, Steven N., 5,392,852, Cl. 166-153.000.
Hallinan, E. Ann; Husa, Robert K.; and Peterson, Karen B., to G. D Searle & Co. Substituted dibenzoxazepine compounds for the treatment of convulsions, ischemia and other diseases responsive to prostaglandin-E_2 antagonists. 5,393,747, Cl. 514-80.000.
Halliyal, Arvind: *See—*
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Halsey, Keith D.: *See—*
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Halvorson, Malcolm: *See—*
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Ham, Howard: *See—*
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Hamamatsu Photonics K.K.: *See—*
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Hamburg, Douglas R.; and Logothetis, Eleftherios M., to Ford Motor Company. Engine air/fuel control with adaptive correction of ego sensor output. 5,392,599, Cl. 60-274.000.

Hamilton, Kenneth B. Alternative pickup truck tailgate. 5,393,115, Cl. 296-52.000.

Hamilton, Robert H.; Doyle, Thomas J.; and Brooks, Phillip R., to TPI, Inc. Telecommunications booth and method of use. 5,393,964, Cl. 235-381.000.

Hamlin, Michael T.: *See—*
Mazzola, Mario; Hamlin, Michael T.; Cromer, Richard I.; and Costantini, John, 5,392,513, Cl. 29-889.100.

Hammerton, David A.; and Kromberger, Karlheinz, to Rohm and Haas Company. Monocarboxylic acid powder coating curing systems 5,393,846, Cl. 525-374.000.

Hammond, Thomas J.: *See—*
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Han, Gwang M., to Hyundai Electronics Industries Co., Ltd. Pulse write driver circuit. 5,394,363, Cl. 365-189.010.

Hanai, Yoshihiro: *See—*
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Hanatsuka, Mitsuhiro, to Hitachi, Ltd. Database management system and method of extending system functions. 5,394,546, Cl. 395-600.000.

Handlin, Dale L., Jr.; Goodwin, Daniel E.; Willis, Carl L.; St. Clair, David J.; Wilkey, John D.; Modic, Michael J.; and Stevens, Craig A., to Shell Oil Company. Butadiene polymers having terminal functional groups. 5,393,843, Cl. 525-332.800

Hang, Kenneth W.: *See—*
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Hanhijarvi, Hannu: *See—*
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Hankey, Dana L.: *See—*
Allison, Kevin W.; Hankey, Dana L.; Stadnicar, Edward, Jr.; and Roberts, Gordon J., 5,393,558, Cl. 427-126.200.

Hanna, John E., to Motorola, Inc. Circuit and method of zero generation in a real-time filter. 5,394,036, Cl. 327-552.000.

Hannah, Scott C.; and Yanda, David J. Process for preparing fat free frozen french fry style potatoes. 5,393,544, Cl. 426-250.000.

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Hannoosh, Mitchell M.; and Hannoosh, James G., 5,392,801, Cl. 135-65.000.

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Masse, Michael A.; Mancinelli, Paul A.; Erickson, James R.; Dillman, Steven H.; Bening, Robert C.; and Hansen, David R., 5,393,818, Cl. 524-270.000.

Hansen, Frederick M.: *See—*
Kroll, Richard E.; Tamburrini, Vincent; and Hansen, Frederick M., 5,392,578, Cl. 52-506.100.

Hansen, Mark C.: *See—*
Lippmann, Raymond; Nelson, James E.; Schnars, Michael J.; Chintyan, James R.; Hansen, Mark C.; Aralis, James M.; and Bohac, Frank J., Jr., 5,394,344, Cl. 364-571.020.

Hansen, Peter D., to Foxboro Company, The. Self-tuning controller that extracts process model characteristics. 5,394,322, Cl. 364-148.000.

Hansen, William G.: *See—*
Allen, Thomas E.; Hansen, William G.; and Hildreth, Edward D., Jr., 5,393,224, Cl. 431-266.000.

Hanson, Jerome S. Trash separation receptacle. 5,392,942, Cl. 220-404.000.

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Hantle, Edward A., to General Motors Corporation. Fuel pump for motor vehicle. 5,393,203, Cl. 417-203.000.

Hanzawa, Toyoharu, to Olympus Optical Co., Ltd. Stereomicroscope. 5,394,267, Cl. 359-376.000.

Hara, Koji: *See—*
Kitahata, Sumio; Kuwahara, Nobuhiro; Fujita, Koki; Hara, Koji; Majima, Keiichi; Teshima, Shin-ichi; and Hayashi, Yuzo, 5,393,660, Cl. 435-22.000.

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Komachi, Hiroshi, 5,394,318, Cl. 362-420.000.

Haraguchi, Kazunori: *See—*
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Cipolla, Thomas M.; Coteus, Paul W.; and Hardell, William R., Jr., 5,394,121, Cl. 333-124.000.

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Friedman, Steven J.; Furse, Gillian; Hargrove, Karen A.; Joy, Joseph M.; Myhrvold, Nathan P.; Shrivastava, Sunita; and Yuval, Gideon A., 5,394,518, Cl. 395-131.000.

Harmon, Daryl L.: *See—*
Scarola, Kenneth; Jamison, David S.; Manazir, Richard M.; Rescorl, Robert L.; and Harmon, Daryl L., 5,394,447, Cl. 376-259.000.

Harmon, Samuel R.; and Johnson, Gilbert E. Crankbait storage apparatus. 5,392,557, Cl. 43-57.100.

Harris Corporation: *See—*
Belcher, Donald K., 5,394,113, Cl. 330-260.000

Harris, Jerry G., to Taligent, Inc. Polymorphic graphic device. 5,394,523, Cl. 395-162.000.

Harris, Phillip C.; and Heath, Stanley J., to Halliburton Company Method and composition for breaking crosslinked gels. 5,393,810, Cl. 524-56.000

Harrison, Howard J., to Kensey Nash Corporation. Sterile packaging including a tray and a holder for a intravascular guide-wire and a vascular puncture closure system 5,392,918, Cl. 206-571.000

Harrop, Nicholas J.: *See—*
Cooper, James N.; and Harrop, Nicholas J., 5,392,810, Cl. 137-512.100.

Harsa, Clarence J.: *See—*
Minarczyk, Michael M.; Nerone, Louis R.; Oberle, Joseph C.; Ronald, Brian M.; Harsa, Clarence J.; and Thomas, Edward J., 5,394,062, Cl. 315-129.000.

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Hartley, A. L.: *See—*
Smith, Ronnie; and Hartley, A. L., 5,392,985, Cl. 229-125.000.

Hartmann, Achim: *See—*
Blumel, Siegfried; Hartmann, Achim; Thumm, Hans; Luginsland, Hans-Hermann; and Rosendahl, Franz, 5,393,510, Cl. 423-610.000.

Hartmann & Braun: *See—*
Rolski, Andrezej M.; and Zochbauer, Michael, 5,394,058, Cl. 313-637.000.

Hartmann, Ulrich: *See—*
Swidersky, Hans-Walter; Rudolph, Werner; Hartmann, Ulrich; Moewius, Frank; Radonz, Veronika; and Meisel, Manfred, 5,393,506, Cl. 423-301.000.

Haruyama, Mitsuru: *See—*
Mukai, Baietsu, 5,393,119, Cl. 297-217.000.

Harwood, Ronald P. Transformer housing system. 5,394,133, Cl. 336-107.000.

Harwood, Walter T.: *See—*
Moral, Leonardo D.; Rodriguez, Horace C.; Samson, Ronald M.; and Harwood, Walter T., 5,394,305, Cl. 361-776.000.

Hase, Takakazu: *See—*
Kanda, Kazunori; Ichinose, Yoshifumi; Arimatsu, Seiji; Konishi, Katsuji; and Hase, Takakazu, 5,393,637, Cl. 430-138.000.

Hasegawa, Keiichi: *See—*
Mori, Hiroyuki; Hasegawa, Keiichi; Watada, Masaharu; and Oshitani, Masahiko, 5,393,616, Cl. 429-59.000.

Hasegawa, Koyo, to Canon Kabushiki Kaisha. Magneto-optic recording apparatus and method therefor. 5,394,380, Cl. 369-13.000.

Haselkorn, Michael H.: *See—*
Engel, William K.; Goade, James C.; Haselkorn, Michael H.; and Sherman, Donald H., 5,392,693, Cl. 92-248.000.

Hashimoto, Akira; and Tanitsu, Katsuya, to Tokyo Ohka Kogyo Co., Ltd. Coating solution for forming composite metal oxide film and process for making same. 5,393,907, Cl. 556-28.000.

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Hashimoto, Naoyuki: *See—*
Kishimoto, Yasuhiro; Hashimoto, Naoyuki; and Hattori, Hitoshi, 5,394,221, Cl. 355-208.000.

Hashimoto, Shigeo; and Kawasaki, Shogo, to C. Uyemura & Co., Ltd Etching rate determining method and apparatus. 5,393,369, Cl. 156-626.000.

Hashizume, Satoshi: *See—*
Sano, Atsunori; Hashizume, Satoshi; and Tsurumoto, Hiroyuki, 5,393,876, Cl. 536-18.500.

Hassard, Geoffrey J.; and Hassard, Irene G. Diverse multiple article organizing apparatus. 5,392,923, Cl. 211-13.000.

Hassard, Irene G.: *See—*
Hassard, Geoffrey J.; and Hassard, Irene G., 5,392,923, Cl. 211-13.000.

Hasse, Frank D.: *See—*
Cook, Kenneth J.; Roth, Thomas C.; Hasse, Frank D.; and Mathie, Gerald W., 5,393,177, Cl. 408-147.000.

Hassler, Leslie A.: *See—*
Ziskovsky, Joseph R.; and Hassler, Leslie A., 5,392,527, Cl. 33-542.000.

Hasty, Byron E.; and Carbona, John A., to CH Administration, Inc. Portable scale. 5,393,935, Cl. 177-45.000.

Hatanaka, Katsunori; Sakai, Kunihiro; Oguchi, Takahiro; Yamano, Akihiko; and Shido, Shunichi, to Canon Kabushiki Kaisha. Multiple microprobe arrays for recording and reproducing encoded information. 5,394,388, Cl. 369-126.000.

Hathaway, Dana B.; and Nile, Lawrence B., to Advanced Composite Audio, Inc. Low frequency sound generation system for use in vehicular passenger compartments. 5,394,478, Cl. 381-154.000.

Hatorah, Aish: *See—*
LeVine, David A., 5,392,601, Cl. 60-293.000.

Hattori, Hitoshi: *See—*
Kishimoto, Yasuhiro; Hashimoto, Naoyuki; and Hattori, Hitoshi, 5,394,221, Cl. 355-208.000.

Hattori, Masashi: *See—*
Okada, Takayuki; Taga, Yutaka; Hojo, Yasuo; Tabata, Atsushi; Kaigawa, Masato; Moroto, Shuzo; Inuzuka, Takeshi; Hattori, Masashi; and Takeshita, Yoshito, 5,393,275, Cl. 477-81.000.

Hattori, Toshio: *See—*
Ishihara, Hidetoshi; Hayashi, Shoichi; Ueda, Atsushi; Asaoka, Hiroyuki; Hagiwara, Haruo; and Hattori, Toshio, 5,392,480, Cl. 8-159.000.

Hattori, Yoshiteru; Asano, Kazuya; and Misu, Susumu, to Brother Kogyo Kabushiki Kaisha. Printing device having opening and shutting mechanism. 5,393,152, Cl. 400-691.000.

Hatzikos, George H.: *See—*
Apelian, Minas R.; Fung, Anthony S.; Hatzikos, George H.; Kennedy, Clinton R.; Lee, Chung-Hur; Kiliany, Thomas R.; Ng, Poh K.; and Pappal, David A., 5,393,717, Cl. 502-52.000.

Hatzinikolas, Michael A.; and Pacholok, Robert M., to Fero Holdings Ltd. Masonry connector. 5,392,581, Cl. 52-712.000.

Haun, Edward C.: *See—*
Sechrist, Paul A.; Lomas, David A.; and Haun, Edward C., 5,393,415, Cl. 208-161.000.

Hauptli, Ronald A., to Welch Allyn, Inc. Binocular ophthalmoscope with mirror adjustment. 5,394,201, Cl. 351-221.000.

Hauser, Ray, to Agri-Fab, Inc. Heavy duty hydrostatic transaxle having parallel pump motor dual-reduction and driven-axle shafts. 5,392,670, Cl. 74-606.00R.

Hausmann, Wolfgang: *See—*
Nix, Hans F.; and Hausmann, Wolfgang, 5,394,085, Cl. 324-231.000.

Havens, Dale I.; and von Kaler, Roland L., to Tecumseh Products Company. Bevel gear load balance in a hydrostatic transmission. 5,392,603, Cl. 60-327.000.

Haverkamp Begemann, Aris P.; and van Hattum, Ernestus J. M., to Promech Sorting Systems B.V. Sorting apparatus for CD, Micro-cassette and video tape or similar article. 5,392,927, Cl. 209-583.000

Haviv, Joseph. Swimming exercise and training apparatus. 5,393,280, Cl. 482-56.000.

Hawkes, Timothy R.: *See—*
Cox, John M.; Bellini, Peter; Barrett, Roger; Ellis, Russell M.; and Hawkes, Timothy R., 5,393,732, Cl. 504-197.000.

Hayafuji, Norio: *See—*
Takemi, Masayoshi; Hayafuji, Norio; and Susaki, Wataru, 5,394,417, Cl. 372-45.000.

Hayano, Kohji: *See—*
Ishikawa, Masahiko; Hayano, Kohji; Mori, Shinichi; Yamashita, Masayuki; Ueda, Osamu; and Moriga, Namiki, 5,394,014, Cl. 257-790.000.

Hayase, Kenji: *See—*
Taniguchi, Yasutaka; Morita, Takao; Tanaka, Tadao; Hayase, Kenji; and Tani, Masanori, 5,393,087, Cl. 280-707.000.

Hayashi, Naoki: *See—*
Furuya, Takashi; and Hayashi, Naoki, 5,393,445, Cl. 252-62.540.

Hayashi, Shoichi: *See—*
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Cueman, Michael K.; Keramati, Bahram; Sogoian, George C.; Kaehler, John J.; Tuck, Paul B.; Clark, James W.; and Hayashi, Steven R., 5,392,623, Cl. 72-11.000.

Hayashi, Yoshiaki: *See—*
Inoue, Hiroki; Sakaguchi, Iwao; Numano, Katsutoshi; Kishimoto, Toshiaki; Hayashi, Yoshiaki; and Ito, Keisuke, 5,393,899, Cl. 552-212.000.

Hayashi, Yuzo: *See—*
Kitahata, Sumio; Kuwahara, Nobuhiro; Fujita, Koki; Hara, Koji; Majima, Keiichi; Teshima, Shin-ichi; and Hayashi, Yuzo, 5,393,660, Cl. 435-22.000.

Hayashida, Tatekazu, to Tsuden Kabushiki Kaisha. Electronic car bumper. 5,394,292, Cl. 361-179.000.

Hayata, Terunobu: *See—*
Ikeda, Michio; Suzuki, Miho; Takeyama, Norio; and Hayata, Terunobu, 5,393,394, Cl. 204-158.200.

Hayden, Douglas L.: *See—*
Thurston, George M.; Hayden, Douglas L.; Taratuta, Victor G.; Peetermans, Joyce A.; and Benedek, George B., 5,392,776, Cl. 128-633.000.

Hayden, James D.: *See—*
Pfiester, James R.; and Hayden, James D., 5,393,689, Cl. 437-52.000.

Hazaki, Eiichi: *See—*
Okura, Akimitsu; Sato, Mitsugu; Yamada, Osamu; Naksizumi, Yasushi; and Hazaki, Eiichi, 5,393,977, Cl. 250-306.000.

Hazama, Kiyoaki; Miyazaki, Takemi; and Kaedeoka, Noriyuki, to Konica Corporation. Easy-film-loading camera. 5,394,213, Cl. 354-288.000.

Hazzard, William M. Power-driven wrench apparatus. 5,392,671, Cl. 81-57.130.

Head, Paul A.; Allshouse, James R.; and Forbes, Martin L., to Indian Industries, Inc. Cable guard. 5,392,757, Cl. 124-86.000.

Health Research, Inc.: *See—*
Mayers, George L.; Razeq, Jafar; and Abu-Hadid, Mahmoud M., 5,393,737, Cl. 514-12.000.

Hearl, Eugene V.: *See—*
Taylor, Stevie E., 5,393,069, Cl. 273-411.000.

Heat Pipe Technology, Inc.: *See—*
Khanh, Dinh, 5,394,040, Cl. 310-64.000.

Heath, Stanley J.: *See—*
Harris, Phillip C.; and Heath, Stanley J., 5,393,810, Cl. 524-56.000

Hecht, Michael H.: *See—*
Kaiser, William J.; Grunthaner, Frank J.; Hecht, Michael H.; and Bell, Lloyd D., 5,393,698, Cl. 437-184.000.

Hedges, Allan: *See—*
Shieh, Wen; Dailey, Timothy; and Hedges, Allan, 5,393,880, Cl. 536-103.000.

Hedrick, Joseph R.: *See—*
Paulsen, Craig A.; Pease, Logan L.; Bertram, William K.; Carmean, Wes F.; Hedrick, Joseph R.; and Chilton, Ward W., 5,393,067, Cl. 273-292.000.

Hedstrand, David M.; and Tomalia, Donald A., to Dow Chemical Company, The. Polymer blend containing a modified dense star polymer or dendrimer and a matrix polymer. 5,393,795, Cl. 521-134.000.

Hedstrand, David M.; and Tomalia, Donald A., to Dow Chemical Company, The. Small cell foams containing a modified dense star polymer or dendrimer as a nucleating agent. 5,393,797, Cl. 521-134.000.

Hedstrom Corporation: *See—*
Cunard, Joel C.; and Boudreau, Robert J., 5,393,268, Cl. 472-120.000.

Hefner, Bill B., Jr.: *See—*
Yost, William T.; Welch, Christopher S.; Joe, Edmond J.; and Hefner, Bill B., Jr., 5,393,980, Cl. 250-306.000.

Hegarty, William P.: *See—*
Moore, Robert B.; Hegarty, William P.; Studer, David W.; and Tirados, Edward J., 5,392,594, Cl. 60-39.020.

Hegler, Ralph-Peter; and Hegler, Wilhelm, to Hegler, Wilhelm. Apparatus for the manufacture of a plastic pipe having transverse profile features. 5,393,211, Cl. 425-149.000.

Hegler, Wilhelm: *See—*
Hegler, Ralph-Peter; and Hegler, Wilhelm, 5,393,211, Cl. 425-149.000.

Heidbreder, Glen R.: *See—*
Knaell, Kenneth K.; and Heidbreder, Glen R., 5,394,151, Cl. 342-25.000.

Heikkila-Hoikka, Marjaana: *See—*
Pohjala, Esko; Heikkila-Hoikka, Marjaana; Nikander, Hannu; and Hanhijarvi, Hannu, 5,393,748, Cl. 514-89.000.

Heiligman, Randy B., to UltraPure Systems, Inc. Method of making coffee using water filtration device. 5,393,548, Cl. 426-433.000.

Heinrich, Jurgen: *See—*
Bottcher, Jurgen; Ganz, Rudolf; Heinrich, Jurgen; Heinz, Otto; Herrimann, Rudiger; Schelter, Heinrich, deceased; and Simmerl, Matthias, 5,392,848, Cl. 165-164.000.

Heinrich, Karl; Bruning, Hans-Joachim; and Gebauer, Elke, to Hoechst Aktiengesellschaft. Non-woven solidified by means of a melt binder 5,393,601, Cl. 428-287.000.

Heinsohn, George E.: *See—*
Deans, John R.; Heinsohn, George E.; and Link, Bernard A., 5,393,435, Cl. 210-714.000.

Heinz, Otto: *See—*
Bottcher, Jurgen; Ganz, Rudolf; Heinrich, Jurgen; Heinz, Otto; Herrimann, Rudiger; Schelter, Heinrich, deceased; and Simmerl, Matthias, 5,392,848, Cl. 165-164.000.

Heinzelman, Bert D.; Lamond, Donald R.; and Moldauer, John, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Multi-level bristle tuft toothbrush. 5,392,483, Cl. 15-167.100.

Heithoff, Robert B.: *See—*
Gulotta, Joseph A.; Krumwiede, John F.; Kutilek, Luke A.; Longobardo, Anthony V.; and Heithoff, Robert B., 5,393,593, Cl. 428-220.000.

Heitz, Marie-Paule: *See—*
Branca, Quirico; Heitz, Marie-Paule; Neidhart, Werner; Stadler, Heinz; Vieira, Eric; and Wostl, Wolfgang, 5,393,875, Cl. 536-17.200.

Heizmann, Friedrich: *See—*
Gleim, Gunter; Heizmann, Friedrich; and Link, Hermann, 5,394,023, Cl. 327-73.000.

Helena Chemical Company: *See—*
Roberts, Johnnie R., 5,393,791, Cl. 514-762.000.

Helene Curtis, Inc.: *See—*
Dowell, Teresa J.; Newell, Gerald P.; and Zeffren, Eugene, 5,393,519, Cl. 424-70.110.

Hellmann, Joachim: *See—*
Buchwald, Hans; Hellmann, Joachim; Raszkowski, Boleslaus; Barth-Elemy, Pierre; and Paulus, Mireille, 5,393,442, Cl. 252-54.000.

Hellmich, Mark R.: *See—*
Strumwasser, Felix; and Hellmich, Mark R., 5,393,667, Cl 435-200.000.

Helm, Francois-Louis, Nicole Lelouvier wife Helm, legal representatives: *See—*
Darges, Bernard; Helm, Jean-Francois, deceased; and Helm wife Gauthier, Veronique, legal representative, 5,394,118, Cl. 332-170.000.

Helm, Jean-Francois, deceased: *See—*
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Darges, Bernard; Helm, Jean-Francois, deceased; and Helm wife Gauthier, Veronique, legal representative, 5,394,118, Cl. 332-170.000.

Helming, Walter: *See—*
Pedemonte, Ronald P.; and Helmling, Walter, 5,393,884, Cl. 544-189.000

Helton, Ronald H.: *See—*
Bridges, Russell P.; Golan, James R.; Helton, Ronald H.; Lange, Stephen J.; Madil, Michael J.; and Nease, Michael G., 5,393,360, Cl. 156-73.300

Hemesath, Gerhard: *See—*
Konig, Rolf; and Hemesath, Gerhard, 5,392,999, Cl. 241-194.000.

Hemmati, Farhad, to Comsat Corporation. Bison compatible modem codec for digital information communication system. 5,394,439, Cl 375-242.000

Hemmie, Dale L.; and Brown, Charles L., to Conifer Corporation. MMDS/TTFS bi-directional over-the-air transmission system and method therefor. 5,394,559, Cl. 455-5.100.

Henderson, D. Austin, Jr.; Card, Stuart K.; and Maxwell, John T., III, to Xerox Corporation. User interface with multiple workspaces for sharing display system objects. 5,394,521, Cl. 395-158.000.

Henkel Corporation: *See—*
Carlson, Lawrence R.; and Johnson, Philip M., 5,393,447, Cl. 252-101.000.
Kozak, William G.; and Topping, Joseph C., 5,393,416, Cl. 210-96.100.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Huver, Thomas; Nicolaisen, Christian; and Camp, Susanne, 5,393,826, Cl. 524-722.000
Poethkow, Joerg; Upadek, Horst; and Smulders, Eduard, 5,393,455, Cl. 252-174.250.

Henley, John B., Sr. Shutter assembly system with individually removable components. 5,392,561, Cl. 49-74.100.

Henmi, Shinya: *See—*
Nanjo, Katsumi; Kariya, Akinori; Henmi, Shinya; Fujii, Hideyo; and Usui, Syuichi, 5,393,754, Cl. 514-227.200.

Henn, Arthur R.: *See—*
Cribb, Richard M.; Henn, Arthur R.; and Wohl, Martin H., 5,393,928, Cl. 174-36.000

Herald, Cherry L.: *See—*
Pettit, George R.; Cichacz, Zbigniew A.; and Herald, Cherry L., 5,393,897, Cl. 549-267.000.

Herbert, Gerald F.: *See—*
Sarmast, Syed H.; Herbert, Gerald F.; and Hodge, Charles F., 5,393,128, Cl. 301-37.340.

Herbstman, Sheldon; and Cadorette, Constance A., to Texaco Inc. Motor fuel detergent additives-hydrocarbyloxypolyether allophonate esters of 2-hydroxy ethane. 5,393,914, Cl. 560-29.000.

Hercules Incorporated: *See—*
Haley, Charla S.; and Sanchez, William L., 5,393,812, Cl. 524-91.000
Pudney, Ian A.; Stubbs, Brian M.; and Welch, Malcolm J., 5,393,338, Cl. 106-238.000.

Herczog, Andrew: *See—*
Bagley, Rodney D.; Francis, Gaylord L.; and Herczog, Andrew, 5,393,499, Cl. 422-174.000.

Herman, Peter M.: *See—*
Benson, Glenn A.; Herman, Peter M.; and Luoma, Richard W., 5,394,284, Cl. 360-99.080.

Herman, Stephen, to Philips Electronics North America Corporation. Method and apparatus for performing dynamic gamma contrast control. 5,394,195, Cl. 348-675.000

Hermsen, Eric J.: *See—*
Schneider, Pina; Hermsen, Eric J.; and Siano, Frank S., 5,394,466, Cl. 379-399.000

Hernandez, Cynthia L.; and Husted, David W., to Hoover Universal, Inc. Vehicle seat assembly with integral belt restraint and seat back dump feature. 5,393,123, Cl. 297-378.120.

Herndon, James A.: *See—*
Burson, Bob O.; and Herndon, James A., 5,392,753, Cl. 123-600.000.

Herrimann, Rudiger: *See—*
Bottcher, Jurgen; Ganz, Rudolf; Heinrich, Jurgen; Heinz, Otto; Herrimann, Rudiger; Schelter, Heinrich, deceased; and Simmerl, Matthias, 5,392,848, Cl. 165-164.000

Herrmann, Horst: *See—*
Dietze, Werner; Haar, Hans-Peter; Herrmann, Horst; Knoll, Dieter; and Reiser, Wolfgang, 5,393,391, Cl. 204-153.100.

Herrmann, Reinhold: *See—*
Trautwein, Karl-Heinz; Herrmann, Reinhold; and Nuebel, Karl-Heinz, 5,394,302, Cl. 361-728.000.

Herrmann, Sigrid; and Landau, Uwe, to Schott Glaswerke. Electrolytic process for extracting high purity platinum from platinum alloys 5,393,388, Cl. 204-109.000.

Herrmann, Sigrid; and Landau, Uwe, to Schott Glaswerke. Electrolytic process for obtaining high purity platinum from contaminated platinum. 5,393,389, Cl. 204-109.000.

Herron, Norman: *See—*
Corbin, David R.; Herron, Norman; and Thorn, David L., 5,393,509, Cl. 423-465.000.

Herron, William L., to General Electric Company. Offset hinge flapper valve. 5,392,812, Cl. 137-527.800.

Herzog, Karl: *See—*
Bednarsky, Kurt; Filous, Pavel; Bayerl, Eugen; and Herzog, Karl, 5,394,273, Cl. 359-823.000

Herzog nee Kress, Siglinde: *See—*
Wekenmann, Guido, deceased; Herzog nee Kress, Siglinde; and Petrikat, Axel, 5,393,567, Cl. 427-372.200.

Hesch, Harold E.; Beers, Albert A.; and Smith, Stephen W., to Trinity Industries, Inc. Railway car. 5,392,717, Cl. 105-404.000.

Hesse, Guido: *See—*
Wunsche, Martin; Gotz, Hans; Schwede, Wolfgang; Baumann, Karl-Heinz; and Hesse, Guido, 5,393,093, Cl. 280-756.000.

Hettinger, William P., to Ashland Oil, Inc. Combination magnetic separation, classification and attrition process for renewing and recovering particulates. 5,393,412, Cl. 208-120.000.

Hewlett-Packard Company: *See—*
Grange, Jeffrey J., 5,394,178, Cl. 347-32.000.
Gudaitis, Algird M., 5,392,784, Cl. 128-696.000.
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Kelly, Gar P.; Renstrom, Brian J.; and Christensen, K. Trent, 5,392,963, Cl. 222-325.000.
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Hanatsuka, Mitsuhiro, 5,394,546, Cl. 395-600.000.
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Heinrich, Karl; Bruning, Hans-Joachim; and Gebauer, Elke, 5,393,601, Cl. 428-287.000.
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Holbrook, Richard H.; and Keener, Wendell E., to Martin Marietta Energy Systems, Inc. Lid design for low level waste container. 5,392,946, Cl. 220-651.000
Holladay, Thomas M.; and Eschbach, Reiner, to Xerox Corporation. Hybrid quantization method for color document reproduction. 5,394,252, Cl. 358-533.000.
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Irobe, Kou, to Fuji Xerox Co., Ltd. Image forming apparatus having an electrically conductive member for wiping a light transmitting belt-life photosensitive body. 5,394,224, Cl. 355-219.000.
Irowi-Insektenschutz-Rollgitter GmbH: *See*—
Wildt, Adolf, 5,392,835, Cl. 160-269.000.
Irvine, Kenneth: *See*—
Edmond, John A.; Dmitriev, Vladimir; and Irvine, Kenneth, 5,393,993, Cl. 257-77.000.
Isaka, Kazuo: *See*—
Mouri, Akihiro; Katayama, Masato; Isaka, Kazuo; and Fukui, Tetsuro, 5,393,638, Cl. 430-201.000.
Ise Kanagata Kogyo Kabushiki Kaisha: *See*—
Hashimoto, Kazuhiro; and Nakagawa, Katsumi, 5,393,262, Cl. 454-155.000
Isenberg, John F., Jr.: *See*—
Elko, David A.; Isenberg, John F., Jr.; Meritt, Allan S.; Moore, Brian B.; Nick, Jeffrey M.; Shepard, William C.; Surman, David H.; and Swanson, Michael D., 5,394,554, Cl. 395-800.000.
Ishibashi, Koichi: *See*—
Yakabe, Masahiro; Suzuki, Satoshi; Degawa, Sadao; Murayama, Shigeki; Ishibashi, Koichi; Nakashima, Ikuo; and Sakai, Koji, 5,393,378, Cl. 162-61.000.
Ishibashi, Takashi: *See*—
Saito, Toranosuke; Ishibashi, Takashi; Kawabata, Eiji; Tanaka, Masato; and Kimura, Toshio, 5,393,332, Cl. 106-21.00R.
Ishibe, Nobuyuki; Martin, Charles W.; and Tran, Tien K., to Dow Chemical Company, The. Polymers of haloperfluoro and perfluoro ethers. 5,393,852, Cl. 526-247.000.
Ishida, Koji: *See*—
Inoue, Hiroaki; Uomi, Kazuhisa; and Ishida, Koji, 5,394,491, Cl. 385-16.000.
Ishigaya, Shoji; and Fushimi, Isao, to Star Micronics Co., Ltd. Sounding apparatus with surface mounting terminals. 5,394,479, Cl. 381-188.000.
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Ishihara, Kazuya: *See*—
Uramoto, Shinichi; Matsumura, Tetsuya; Yoshimoto, Masahiko; Ishihara, Kazuya; and Segawa, Hiroshi, 5,394,355, Cl. 365-104.000.
Ishihara, Mitsuhira: *See*—
Nagai, Takaji; Sawauchi, Toshiki; and Ishihara, Mitsuhira, 5,392,567, Cl. 51-8.000.
Ishihara, Miwa: *See*—
Matsumoto, Masakatsu; Watanabe, Nobuko; Mori, Eiko; Ishihara, Miwa; Yamaura, Tetsuaki; Aoyama, Misao; Ikawa, Hiroshi; and Kobayashi, Hisako, 5,393,780, Cl. 514-543.000.
Ishihara, Toshinobu: *See*—
Takeda, Yoshihumi; Ishihara, Toshinobu; and Ohsaki, Hiromi, 5,393,815, Cl. 524-262.000.
Ishii, Akio: *See*—
Fujita, Makio; Goto, Fumio; Ogawa, Tetsuo; Ishii, Akio; Gocho, Tomohiro; Yamabe, Narimasa; Miyazaki, Ichiro; Saito, Masaaki; and Sasa, Yoshihiro, 5,393,167, Cl. 404-84.100.
Ishii, Kazuo: *See*—
Kato, Eiichi; Kasai, Seishi; and Ishii, Kazuo, 5,393,625, Cl. 430-49.000.
Ishii, Mariko: *See*—
Ishii, Takayuki; Kasano, Makiko; Yasunaga, Tae; Ishii, Mariko; Sugimoto, Mamoru; Tomita, Kenkichi; Miyata, Takeshi; and Tanaka, Makoto, 5,393,742, Cl. 514-23.000.
Ishii, Takashi: *See*—
Hisaoka, Yasushi; Yamane, Yoshio; Murakami, Hidenobu; Kinoshita, Yoshimi; Tobuse, Hiroaki; Yoshida, Kazuo; Ishii, Takashi; and Koizumi, Hiroshi, 5,393,255, Cl. 445-3.000
Ishii, Takayuki; Kasano, Makiko; Yasunaga, Tae; Ishii, Mariko; Sugimoto, Mamoru; Tomita, Kenkichi; Miyata, Takeshi; and Tanaka, Makoto, to MECT Corporation. Preparation for treating renal disease. 5,393,742, Cl. 514-23.000.
Ishii, Tatsuya; and Shinohara, Tatsuo, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device containing junction field effect transistor. 5,393,998, Cl. 257-256.000.
Ishii, Toru: *See*—
Nukada, Katsumi; Daimon, Katsumi; Sakaguchi, Yasuo; Yamasaki, Kazuo; Iijima, Masakazu; Takahashi, Michiaki; Koseki, Kazuhiro; Imai, Akira; Mashimo, Kiyokazu; Ishii, Toru; Ojima, Fumio; Nishikawa, Masayuki; and Igarashi, Ryosaku, 5,393,629, Cl. 430-76.000.
Ishii, Toshiaki: *See*—
Mizuno, Masamoto; and Ishii, Toshiaki, 5,393,941, Cl. 187-293.000.
Ishikawa, Masahiko; Hayano, Kohji; Mori, Shinichi; Yamashita, Masayuki; Ueda, Osamu; and Moriga, Namiki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device improved in light shielding property and light shielding package. 5,394,014, Cl. 257-790.000.
Ishikawa, Shuichi; and Sakamoto, Junshi, to NSK Ltd. Rolling bearing unit for sensing rotational speed. 5,393,146, Cl. 384-448.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaishi: *See*—
Yakabe, Masahiro; Suzuki, Satoshi; Degawa, Sadao; Murayama, Shigeki; Ishibashi, Koichi; Nakashima, Ikuo; and Sakai, Koji, 5,393,378, Cl. 162-61.000.
Ishimura, Tamihiro; and Miyamoto, Sampei, to Oki Electric Industry Co., Ltd. Semiconductor memory with improved transfer gate drivers. 5,394,374, Cl. 365-230.060.
Ishiura, Kazushige: *See*—
Kinoshita, Satoshi; Takamatsu, Hideo; Ishiura, Kazushige; Masuda, Haruhisa; and Taniguchi, Shunro, 5,393,837, Cl. 525-92.000.
Ishiwari, Kazuo: *See*—
Tamura, Yoshihiro; Hidetoshi, Hara; Nakao, Yuichi; and Ishiwari, Kazuo, 5,394,232, Cl. 355-327.000.
Ishizaki, Masatoshi: *See*—
Hirose, Susumi; Ishizaki, Masatoshi; Funawatashi, Yoshimitsu; and Funakawa, Yukihiro, 5,392,798, Cl. 134-167.00R.
ISIS International Inc.: *See*—
McDougall, Gregory J., 5,392,528, Cl. 34-97.000.
Isozaki, Tadaaki: *See*—
Okabe, Nobuhiro; Isozaki, Tadaaki; and Suzuki, Yoshiichi, 5,393,460, Cl. 252-299.650.
ISP Investments Inc.: *See*—
Minnock, Francis B.; and Taylor, Paul D., 5,393,888, Cl. 548-554.000.
Tseng, Susan Y.; Wolf, Philip F.; and Burlant, William J., 5,393,825, Cl. 524-548.000.
Tseng, Susan Y.; and Wolf, Philip F., 5,393,854, Cl. 526-264.000.
Itani, Hitoshi: *See*—
Yabushita, Shunichi; and Itani, Hitoshi, 5,393,467, Cl. 252-511.000.
Itaya, Masahiko; Nakagoshi, Hiroyuki; and Sasaki, Tsutomu, to Nippon Steel Corporation. Electrostatic printing apparatus. 5,394,176, Cl 347-128.000.
Ito, Akira: *See*—
Sakamoto, Hironori; Ito, Akira; Fujiwara, Masaaki; and Nojima, Toshio, 5,394,120, Cl. 330-2.000.
Ito, Keisuke: *See*—
Incue, Hiroki; Sakaguchi, Iwao; Numano, Katsutoshi; Kishimoto, Toshiaki; Hayashi, Yoshiaki; and Ito, Keisuke, 5,393,899, Cl. 552-212.000.
Ito, Kenichi: *See*—
Ogawa, Kinya; Ito, Kenichi; Hirasawa, Yoichi; Oshima, Takao; and Sakai, Seiji, 5,393,312, Cl. 47-58.000.
Ito, Kideki: *See*—
Ogino, Yoshio; and Ito, Kideki, 5,392,780, Cl. 128-670.000.
Ito, Makoto: *See*—
Kuramochi, Kaoru; Ito, Makoto; and Kitaura, Kiichiro, 5,392,729, Cl. 117-20.000.
Ito, Sadao: *See*—
Satoh, Munetaka; Ito, Sadao; and Nawa, Hiroshi, 5,393,028, Cl 248-429.000.
Ito, Toshio; and Sakata, Miwa, to Oki Electric Industry Co., Ltd. Radiation-sensitive resin composition. 5,393,641, Cl. 430-270.000.
Ito, Yoshikazu: *See*—
Egashira, Noritaka; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Kutsukake, Masaki; and Imoto, Kazunobu, 5,393,727, Cl. 503-227.000.
Ito, Yuji: *See*—
Honda, Yuuji; Kajino, Yuichi; Kawai, Takayoshi; Ito, Yuji; and Samukawa, Katsuhiko, 5,392,845, Cl. 165-12.000.
Ito, Yutaka; Sakuta, Toshiyuki; and Nasu, Takumi, to Hitachi, Ltd.; and Texas Instruments Incorporated. Semiconductor integrated circuit device. 5,394,008, Cl. 257-666.000.

Itoh, Hiroyuki: *See—*
Kato, Takeshi; Fujita, Yuuji; Mizuishi, Kenichi; Kawata, Atumi; and Itoh, Hiroyuki, 5,394,490, Cl. 385-14.000
Itoh, Kazunori; and Kumano, Masafumi, to Ricoh Company, Ltd.; and Ricoh Research Institute of General Electronics, Co., Ltd. Electron-beam heating apparatus and heating method thereof. 5,393,953, Cl. 219-121.340.
Itoh, Seiichi: *See—*
Satomi, Yasuhiko; Itoh, Seiichi; Watanabe, Isao; Goto, Toru; and Sekihara, Shoji, 5,392,967, Cl. 222-509.000.
It's A Wrap!: *See—*
Clarke-Bolling, Patricia; and Will, Debra, 5,392,983, Cl. 229-87.190.
ITT Corporation: *See—*
Borofka, Robert P., 5,394,153, Cl. 342-20.000.
Stavale, Anthony E., 5,392,503, Cl. 29-426.500.
Ittel, Steven D.; and Shih, Hsiang, to Du Pont de Nemours, E. I., and Company. Air gap spinning process for aramids. 5,393,477, Cl 264-184.000.
Ivoclar AG, Firma: *See—*
Frick, Hans-Jorg; and Kunkel, Peter, 5,392,904, Cl. 206-219.000
Rheinberger, Volker; Salz, Ulrich; and Burtscher, Peter, 5,393,516, Cl. 424-52.000.
Iwaki Electronics Co. Ltd.: *See—*
Yamamoto, Hiroyasu; Konuma, Takayuki; Shika, Akira; Suzuki, Hiroyoshi; Katouno, Masanori; and Sato, Kaori, 5,394,011, Cl. 257-693.000.
Iwama, Kazuaki: *See—*
Fujii, Toshiro; Kitayama, Hiromi; and Iwama, Kazuaki, 5,393,205, Cl. 417-269.000
Iwamoto, Norikazu, to Nippon Paint Co., Ltd. Curable composition containing polyepoxide and polycarbodiimide. 5,393,839, Cl. 525-111.000
Iwamura, Goro; Kinoshita, Hiroshi; and Kometani, Asako, to Dainippon Ink and Chemicals, Inc. Thermosetting resin composition 5,393,855, Cl. 526-269.000.
Iwasaki, Hiroyuki, and Yokoyama, Yukio, to NEC Corporation. Portable radio with coplanar ground and atenna conductive films formed on the inner surface of the case. 5,394,160, Cl. 343-702.000.
Iwasaki, Masahito, to Koito Manufacturing Co., Ltd. Vehicular headlamp having uniform appearance. 5,394,310, Cl. 362-61.000
Iwashita, Shinichi, to NEC Corporation. Row decoder for driving word line at a plurality of points thereof. 5,394,375, Cl. 365-230.060.
Iwata, Koichi: *See—*
Matsuura, Yuki; Ueoka, Isao; Iwata, Koichi; Kawabe, Hiromitsu; and Natsume, Yoshitaka, 5,393,612, Cl. 428-458.000.
Iwata, Teruo; Tsuji, Toshihide; Matsumoto, Shuji; and Tonomura, Katsuaki, to Hochiki Kabushiki Kaisha. Firefighting double-nozzle deluge gun and control method thereof. 5,392,990, Cl. 239-232.000.
Izawa, Kaoru: *See—*
Hirai, Jun; and Izawa, Kaoru, 5,394,474, Cl. 381-63.000.
Izawa, Yosuke; and Okumura, Naoji, to Matsushita Electric Industrial Co., Ltd. Gain control circuit and gradation correcting apparatus. 5,394,194, Cl. 384-672.000.
Izumi, Hyogo. Method of seasoning lumber. 5,392,530, Cl. 34-404.000.
Izumi, Tetsuro: *See—*
Ohta, Yoshihiko; and Izumi, Tetsuro, 5,394,248, Cl. 358-335.000.
J.F. Jelenko & Co.: *See—*
Volpe, Constantino M., 5,392,842, Cl. 164-284.000.
J & L Specialty Products Corporation: *See—*
Matway, Roy J.; McGuire, Michael F.; and Mehta, Jay, 5,393,487, Cl. 420-43.000.
J.M. Voith & GmbH: *See—*
Schiel, Christian, 5,392,701, Cl. 100-93.0RP.
Steiner, Karl; Meinecke, Albrecht; and Goncalves, Rui, 5,393,384, Cl. 162-359.100
J. Paul Donahue DBA Donahue International: *See—*
Donahue, J. Paul; and Zolkos, John, 5,392,560, Cl. 43-122.000.
Jackson, Philip, to E. Beaudrey & Cie. Water intake, in particular for industrial installations. 5,393,418, Cl. 210-159.000.
Jacob, Adir, to MDT Corporation. Process for dry sterilization of medical devices and materials. 5,393,490, Cl. 422-22.000
Jacobs, Martin I.: *See—*
Banfield, Donald L.; Rocha, Gerald F.; Jacobs, Martin I.; and Kenney, Randall B., 5,393,585, Cl. 428-100.000.
Jacobs Suchard AG: *See—*
Kurtzahn, Frithjof; and Thime, Lutz, 5,392,958, Cl. 222-105.000.
Jacobsen, Stephen C.; Mladejovsky, Michael G.; and Wood, John E., to University of Utah Research Foundation. Sliding contact mechanical/electrical displacement transducer. 5,394,070, Cl. 318-568.160.
Jacquault, Patrick: *See—*
Di Martino, Jean-Louis; Jacquault, Patrick; Millet, Jean-Louis; and Paturat, Jacques, 5,393,492, Cl. 422-62.000.
Jadrich, Bradley S.; and Bridges, Mark E., to Eastman Kodak Company. Leadscrew coupler. 5,392,662, Cl. 74-89.150.
Jaffa, David, to Precision Screen Machines, Inc. Flood bar and squeegee for printing apparatus. 5,392,705, Cl. 101-123.000.
Jakob, Wolfgang: *See—*
Eckel, Thomas; Wittmann, Dieter; Fennhoff, Gerhard; Schoeps, Jochen; Ott, Karl-Heinz; and Jakob, Wolfgang, 5,393,835, Cl. 525-67.000
James, Mark R.; and Thomson, Gordon A., to Zeneca, Limited. Composition, process and use. 5,393,750, Cl. 514-184.000.
Jameson, M. Phillip: *See—*
Slepetys, Richard A.; and Jameson, M. Phillip, 5,393,340, Cl. 106-484.000.
Jamison, David S.: *See—*
Scarola, Kenneth; Jamison, David S.; Manazir, Richard M.; Rescorl, Robert L.; and Harmon, Daryl L., 5,394,447, Cl 376-259.000
Jan, Deng-Yang; and Wood, Brian, to UOP. Hydrocracking process using a controlled porosity catalyst. 5,393,409, Cl. 208-108.000.
Janello, Thomas A.; Loesch, Richard W.; and Wade, Gary M., to General Tire, Inc. Protective barrier for tire sidewall. 5,392,830, Cl 152-543.000
Jang, Guy A.: *See—*
Caudle, Norman E.; Jang, Guy A.; and Johnsen, Ronald A., 5,392,807, Cl. 137-316.000.
Janke, Donald E.; Szynal, Joseph M.; Guess, Ronald W.; Bradley, Greg A.; and Carnal, Randall L., to Whirlpool Corporation. Relay energizing circuit. 5,394,291, Cl. 361-155.000.
Janow, Richard H., to AT&T Corp. Large-screen display system 5,394,198, Cl. 348-744.000.
Jansen, Cornelis M.: *See—*
Colson, Wendell B.; Anthony, James M.; Oberg, Brad H.; Hoffmann, Brian M.; Williams, Eric N.; Swiszcz, Paul G.; and Jansen, Cornelis M., 5,392,832, Cl. 160-84.070.
Jansen, Edward D.: *See—*
Truc, James A.; Brown, Robert D.; and Jansen, Edward D., 5,392,548, Cl. 40-159.200.
Japan PMC Corporation: *See—*
Nakamura, Katsunori; Nagao, Kazuki; and Monobe, Masayuki, 5,393,337, Cl. 106-238.000.
Japan Radio Co., Ltd.: *See—*
Sakamoto, Hironori; Ito, Akira; Fujiwara, Masaaki; and Nojima, Toshio, 5,394,120, Cl. 330-2.000.
Japan Tobacco, Inc.: *See—*
Imai, Hiroaki, 5,392,586, Cl. 53-234.000.
Jaquet Orthopedie S.A.: *See—*
Mata, Jacques; and Wagenknecht, Marcel, 5,393,161, Cl 403-133.000.
Jarvis, Jack D. Device for connecting an elongated handle to a bull float plate. 5,393,168, Cl. 404-97.000.
Jaszka, Daniel J.: *See—*
Buckholtz, Harry F.; and Jaszka, Daniel J., 5,393,503, Cl 423-55.000.
Javaherian, Hossein: *See—*
White, Vincent A.; and Javaherian, Hossein, 5,392,598, Cl 60-274.000.
Jayakumar, Raghavan: *See—*
Xu, Bu-Xin; Jayakumar, Raghavan; and Wollan, John J., 5,394,130, Cl. 335-216.000.
Jebco Packaging Systems, Inc.: *See—*
Buchanan, Jerry E., 5,392,589, Cl. 53-412.000.
Jeco Company Limited: *See—*
Nishida, Toru; and Kobayashi, Naoki, 5,394,288, Cl. 361-31.000.
Jee, Sung N. Method and apparatus for detecting the motion variation of a projectile. 5,393,974, Cl. 250-222.100.
Jenne, Helmut, to BASF Aktiengesellschaft. Heat-sealable plastic film. 5,393,592, Cl. 428-213.000.
Jennings, Earle W., III; and Landers, George H., to Infinite Technology Corporation. Programmable logic device. 5,394,030, Cl 326-41.000.
Jennings, Kurt L.; Cirillo, James R.; and Cardinal, James M., to General Motors Corporation. Fiber optic inline connector with hermaphroditic alignment and lock means. 5,394,494, Cl. 385-58.000.
Jennings, Ray. Leaked water collection pan for evaporative cooler 5,392,944, Cl. 220-571.000.
Jeong, Jae S., to Goldstar Co., Ltd. Multicolored electric field light emitting device with protruded electrode. 5,394,004, Cl. 257-431.000.
Jeoung, Hyo Y.: *See—*
Hwang, Cheol; and Jeoung, Hyo Y., 5,392,491, Cl. 15-322.000.
Jersey Farms Corp.: *See—*
Arcadipane, Pat, 5,393,551, Cl. 426-585.000.
Jezuit, Melissa A.: *See—*
Letwin, Bruce W.; and Jezuit, Melissa A., 5,393,657, Cl. 435-6.000
JGC Corporation: *See—*
Nakayama, Takashi; Umino, Hiroshi; Sakakura, Yasuyuki; and Takahashi, Kiyoshi, 5,393,429, Cl. 210-634.000.
Jiles, David C., to Iowa State University Research Foundation, Inc Magnetic imaging system for display of local variations of magnetic properties in magnetic material. 5,394,083, Cl. 324-223.000.
Jinno, Keishi: *See—*
Yagi, Sakai; and Jinno, Keishi, 5,393,248, Cl. 439-595.000.
Jinno, Osamu: *See—*
Hagiwara, Yoshiyuki; Jinno, Osamu; Kitamura, Takeshi; Kuramoto, Akio; Kawai, Yukio; Yamaguchi, Kenichi; and Kahuta, Hirotaka, 5,393,076, Cl. 277-235.00A.
Jinnouchi, Shimpei: *See—*
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Jinzaki, Yoshinobu: *See—*
Berard, Michel V.; Eisenmann, Pierre; Jinzaki, Yoshinobu; and Dubourg, Isabelle M., 5,394,345, Cl. 364-571.030.
Jo, Sung J., to SGS-Thomson Microelectronics, Pte Ltd. Parallel phone detection circuit. 5,394,465, Cl. 379-377.000.
Jobst, Lothar, to BHS Corrugated Maschinen- und Anlagenbau GmbH Method and apparatus for producing sheets of corrugated cardboard with a variable format. 5,393,294, Cl. 493-342.000.
Joe, Edmond J.: *See—*
Yost, William T.; Welch, Christopher S.; Joe, Edmond J.; and Hefner, Bill B., Jr., 5,393,980, Cl. 250-306.000.

Johansson, Eric T.; Ritson, Carl; and Rubsamen, Reid M., to Aradigm. Method and apparatus for releasing a controlled amount of aerosol medication over a selectable time interval. 5,392,768, Cl. 128-200.140.
Johenning, John B., to Strata Flotation, Inc. Waterbed with supplemental support. 5,392,478, Cl. 5-462.000.
John Mezzalingua Assoc. Inc.: *See—*
Szegda, Andrew, 5,393,244, Cl. 439-394.000.
Johns Hopkins University, The: *See—*
Flower, Robert W., 5,394,199, Cl. 351-206.000.
Johnsen, Ronald A.: *See—*
Caudle, Norman E.; Jang, Guy A.; and Johnsen, Ronald A., 5,392,807, Cl. 137-316.000.
Johnson, Bruce E.: *See—*
Palmer, Duane E.; Johnson, Bruce E.; Brodeur, David L.; and Chiles, William E., 5,392,655, Cl. 73-861.350.
Johnson, Charles G.: *See—*
Wang, Yiming; McCarthy, Monica; Gerhardt, Terry D.; and Johnson, Charles G., 5,393,582, Cl. 428-34.200.
Johnson, Charles L., to Ahead, Inc. Virtual music system. 5,393,926, Cl. 84-610.000
Johnson, Deborah F.: *See—*
Krakowiak, Krzysztof E.; Tarbet, Bryon J.; An, Haoyun; Johnson, Deborah F.; and Bruening, Ronald L., 5,393,892, Cl. 549-214.000
Johnson, Dwight N. Toilet flush control assembly and methods 5,392,470, Cl. 4-325.000.
Johnson, Emeric W., to Newnes Machine Ltd. Cable clamp. 5,392,496, Cl. 24-136.00R.
Johnson, Eric A.; and Dell'Acqua, Ernani, to Solchem Italiana S.p.A. Composition active against botulism. 5,393,545, Cl. 426-268.000.
Johnson, Gilbert E.: *See—*
Harmon, Samuel R.; and Johnson, Gilbert E., 5,392,557, Cl 43-57.100.
Johnson, Philip M.: *See—*
Carlson, Lawrence R.; and Johnson, Philip M., 5,393,447, Cl. 252-101.000.
Johnson-Rabbett, Becky L. Medical glove holder. 5,392,974, Cl 224-253.000
Johnson, Randolph W.: *See—*
Barrington, Terrence K.; Carrico, Sandra L.; Davison, Joseph W.; Johnson, Randolph W.; Mardis, Scott A.; and Raiman, Steven D., 5,394,540, Cl. 395-500.000.
Johnson, Robert A.; McInnes, Ian D.; Quinn, Robert D.; and Temus, Charles J., to Pacific Nuclear Systems, Inc. Impact limiter for spent nuclear fuel transportation cask. 5,394,449, Cl. 376-272.000.
Johnson, Roy A.: *See—*
Kraft, Roger E.; Mercer, Merlin F.; and Johnson, Roy A., 5,393,264, Cl. 462-6.000.
Johnston Pump/General Valve Inc.: *See—*
Smith, Gordon M.; and Van Der Wiel, Hans M., 5,392,813, Cl 137-599.000
Jones, Allan S.; Mills, David E.; and Winnik, Mitchell A., to Eastman Chemical Company. Naphthalenedicarboxylic acid containing polymer compositions having reduced fluorescence. 5,393,862, Cl 528-298.000
Jones, Allen M., to Williams International Corporation. Shielded self-molding package for an electronic component. 5,394,304, Cl 361-765.000.
Jones, Howard C., to Eaton-Williams Group Limited. Steam-raising system. 5,392,739, Cl. 122-451.00R.
Jones, Jeremy O.: *See—*
Coghlan, Brian A.; and Jones, Jeremy O., 5,394,536, Cl 395-425.000
Jones, Pat: *See—*
McCall, Gene W.; and Jones, Pat, 5,392,475, Cl. 5-18.100.
Jones, Ray L., to Paul-Munroe Hydraulics Inc. Apparatus for analyzing oil well production fluid. 5,394,339, Cl. 364-510.000.
Jones, Richard D., to Beloit Technologies, Inc. Adjustable bar screen 5,392,930, Cl. 209-674.000.
Jones, Richard D.; Bielagus, Joseph B.; and Lynn, J. Darrell, to Beloit Technologies, Inc. Adjustable bar screen. 5,392,931, Cl. 209-674.000.
Jordan, Neil W.; Eccard, Wayne E.; and Schwartz, James R., to Procter & Gamble Company, The. Personal cleansing stamped synbar containing alkyl glyceryl ether sulfonate and acyl isethionate. 5,393,449, Cl. 252-121.000.
Jordan, Robert: *See—*
Bear, Thomas; and Jordan, Robert, 5,393,074, Cl. 273-440.000.
Josephson, Gregg R.; and Bauer, Mark E., to Lattice Semiconductor Corporation. Sense amplifiers and sensing methods. 5,394,037, Cl 327-51.000.
Joslin, David E., to Hughes Aircraft Company. Diode laser bar assembly. 5,394,426, Cl. 372-50.000.
Jossens, Lawrence W.: *See—*
Zones, Stacey I.; Holtermann, Dennis L.; Jossens, Lawrence W.; Santilli, Donald S.; and Rainis, Andrew, 5,393,407, Cl 208-46.000.
Jou, Jwo-huei: *See—*
Chang, Shyh-Ming; Lee, Yu-Chi; Yu, Hsiu-Mei; Yang, Li-Hui; and Jou, Jwo-huei, 5,393,697, Cl. 437-183.000.
Journee, Maurice, to Journee, Paul S.A. Screen wiper apparatus including controlled means for varying the wiping force. 5,392,485, Cl 15-250.200.
Journee, Paul S.A.: *See—*
Journee, Maurice, 5,392,485, Cl. 15-250.200.
Joy, Joseph M.: *See—*
Friedman, Steven J.; Furse, Gillian; Hargrove, Karen A.; Joy, Joseph M.; Myhrvold, Nathan P.; Shrivastava, Sunita; and Yuval, Gideon A., 5,394,518, Cl. 395-131.000.
Joyce, Mervyn J.: *See—*
Hodson, Lynton C.; Winstanley, Graeme J.; Hodson, Grant D.; Barden, Neville G.; Joyce, Mervyn J.; and Batten, Keith G., 5,392,660, Cl. 73-862.393
Joyce, Ronald S.; and Obermann, George, to Eaton Corporation. Adjustment mechanism for pressure switch. 5,393,945, Cl. 200-81.00R.
JTE, Inc.: *See—*
Elmore, J. Thomas; Veatch, Alan; and Clements, William C., 5,392,572, Cl. 52-144.000.
Ju, Kochan: *See—*
Chen, Mao-Min; Ju, Kochan; Robertson, Neil L.; and Wang, Po-Kang, 5,393,376, Cl. 156-643.000.
Judd, Wendell, to Technology Development Corp. Method for recycling papermaking sludge. 5,392,721, Cl. 110-346.000.
Juengel, Robert R.: *See—*
Shieh, Chiung-Huei; Farr, William A.; McElwain, Thomas E.; Taylor, Roscoe W.; Patterson, William J.; Denstaedt, Glenn E., Juengel, Robert R.; and Laube, Stephen G., 5,393,821, Cl. 524-495.000
Jujo Paper Co., Ltd.: *See—*
Satake, Toshimi; Nagai, Tomoaki; and Yokoyama, Miyuki, 5,393,443, Cl. 252-62.000.
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Fujimoto, Tadashi, 5,393,045, Cl. 271-23.000.
Julie Associates, Inc.: *See—*
Grarovsky, Boris, 5,394,293, Cl. 361-221.000.
Jun, Young K.; Ra, Sa K.; Kim, Dong W.; Seo, Hyun H.; Kim, Sung C.; and Kim, Jun K., to Goldstar Electron Co., Ltd. Methods of patterning and manufacturing semiconductor devices. 5,393,373, Cl 156-630.000.
Juncker, Richard; and Abeille, Pierre, to Schlumberger Industries, Inc. Method of positioning magnetic heads on a turntable. 5,392,507, Cl 29-603.000
Junkel, Eric F., to Circulair, Inc. Automatic breadmaking machine 5,392,695, Cl. 99-328.000.
Junkosha Co. Ltd.: *See—*
Yagihashi, Hideo, 5,393,929, Cl. 174-36.000.
Jurestovsky, Nancy R.: *See—*
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Juri, Tatsuro: *See—*
Iketani, Akira; Matsumi, Chiyoko; and Juri, Tatsuro, 5,394,275, Cl. 360-35.100.
Kabat, Daniel M.: *See—*
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Kabushiki Kaisha Daikin Seisakusho: *See—*
Kajitani, Koji; Takeuchi, Hiroshi; Fukatani, Yasunobu; Teramae, Hiroshi; and Asada, Masaaki, 5,392,888, Cl. 192-70.160.
Kabushiki Kaisha Iseki Kaihatsu Koki: *See—*
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Akesaka, Toshio, 5,393,172, Cl. 405-141.000.
Kabushiki Kaisha Kitaharaseisakusho: *See—*
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Kabushiki Kaisha Komatsu Seisakusho: *See—*
Yamaguchi, Yoshihiro; Satoh, Hitoshi; and Shintani, Toshiya, 5,393,952, Cl. 219-121.500.
Kabushiki Kaisha Shinkawa: *See—*
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Kabushiki Kaisha Sugino Machine: *See—*
Hirose, Susumi; Ishizaki, Masatoshi; Funawatashi, Yoshimitsu; and Funakawa, Yukihiro, 5,392,798, Cl. 134-167.00R
Kabushiki Kaisha Tominaga Jyushi Kogyosho: *See—*
Tominaga, Kazutoshi, 5,392,733, Cl. 119-165.000.
Kabushiki Kaisha TOPCON: *See—*
Koike, Hirotami, 5,393,976, Cl. 250-310.000.
Kabushiki Kaisha Toshiba: *See—*
Atsumi, Shigeru, 5,394,077, Cl. 323-223.000.
Honda, Masami; Kawabata, Kazuaki; and Takada, Masaaki, 5,393,241, Cl. 439-248.000.
Ikeda, Michio; Suzuki, Miho; Takeyama, Norio; and Hayata, Terunobu, 5,393,394, Cl. 204-158.200.
Matsubara, Toshio, 5,394,514, Cl. 395-115.000
Ohira, Yoshifumi, 5,394,188, Cl. 348-327.000.
Shimoda, Kenji; Tsurufusa, Hideo; Yoda, Shinji; and Fuse, Kazuyoshi, 5,394,249, Cl. 358-335.000.
Tanaka, Tomoharu; and Shirota, Riichiro, 5,394,372, Cl 365-226.000.
Tazawa, Hiroshi; Takubo, Chiaki; Tsuboi, Yoshiharu; and Sasaki, Mamoru, 5,394,010, Cl. 257-686.000
Tsuji, Kazuhiro; and Sahoda, Masayuki, 5,394,111, Cl. 330-9.000
Yamaguchi, Yoshiko; and Ohshima, Yoichi, 5,394,001, Cl. 257-315.000.
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
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Kabushiki Kaisha Yutaka: *See—*
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Kacenas, Benjamin M.: *See—*
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Kachmitter, James L.: *See—*
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Kadomura, Shingo: *See—*
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Kaedeoka, Noriyuki: *See—*
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Kaehler, John J.: *See—*
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Kagami, Akihiko, to NEC Corporation. Semiconductor memory device incorporating redundancy memory cells having parallel test function. 5,394,369, Cl. 365-200.000
Kahn, Leonard R. Anti-copy system utilizing audible and inaudible protection signals. 5,394,274, Cl. 360-27.000.
Kahuta, Hirotaka: *See—*
Hagiwara, Yoshiyuki; Jinno, Osamu; Kitamura, Takeshi; Kuramoto, Akio; Kawai, Yukio; Yamaguchi, Kenichi; and Kahuta, Hirotaka, 5,393,076, Cl. 277-235.00A.
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Kainuma, Takashi, to Kaitec Co., Ltd. Method of manufacturing a printing plate. 5,392,711, Cl. 101-401.100.
Kaiser, William J.; Grunthaner, Frank J.; Hecht, Michael H.; and Bell, Lloyd D., to California Institute of Technology. Method for fabricating semiconductor devices. 5,393,698, Cl. 437-184.000.
Kaitec Co., Ltd.: *See—*
Kainuma, Takashi, 5,392,711, Cl. 101-401.100.
Kajino, Yuichi: *See—*
Honda, Yuuji; Kajino, Yuichi; Kawai, Takayoshi; Ito, Yuji; and Samukawa, Katsuhiko, 5,392,845, Cl. 165-12.000.
Kajitani, Hiroshi, to NEC Corporation. Magnetic head loading/unloading mechanism with a ramp having an oscillating function. 5,394,281, Cl. 360-105.000
Kajitani, Koji; Takeuchi, Hiroshi; Fukatani, Yasunobu; Teramae, Hiroshi; and Asada, Masaaki, to Kabushiki Kaisha Daikin Seisakusho. Modular clutch construction. 5,392,888, Cl. 192-70.160.
Kaju, Sadayoshi, to Ohno Co., Ltd. Tufting machine and method for producing design in carpeting and the like. 5,392,723, Cl. 112-80.230.
Kako, Hajime: *See—*
Azuma, Tadahiro; and Kako, Hajime, 5,392,748, Cl. 123-417.000.
Kakuma, Satoshi: *See—*
Yoshimura, Shuji; Kakuma, Satoshi; Aihara, Naoki; Aso, Yasuhiro; and Murayama, Masami, 5,394,396, Cl. 370-60.000.
Kakuta, Yoshiyuki: *See—*
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Kalawsky, Roy S., to British Aerospace plc. Integrated real and virtual environment display system. 5,394,517, Cl. 395-129.000.
Kali-Chemie Aktiengesellschaft: *See—*
Swidersky, Hans-Walter; Rudolph, Werner; Hartmann, Ulrich; Moewius, Frank; Radonz, Veronika; and Meisel, Manfred, 5,393,506, Cl. 423-301.000.
Kalin, Jonathan, to Rehrig-Pacific Company, Inc. Crate apparatus with adjustable lid. 5,392,915, Cl. 206-503.000.
Kalinski, Robert J.: *See—*
Alpern, Marvin; Simons, Teresa M.; Cerwin, Robert; Kalinski, Robert J.; and O'Toole, Michael D., 5,392,917, Cl. 206-570.000.
Kaliszewski, Mary S.: *See—*
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Kamata, Kazuo, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film package. 5,394,211, Cl. 354-217.000.
Kameda, Takashi; Kataoka, Shigenori; and Noma, Koichi, to Kawasaki Jukogyo Kabushiki Kaisha. Apparatus for treating infectious medical wastes with microwaves and hot air. 5,393,500, Cl. 422-186.000.
Kamimura, Akira: *See—*
Syoji, Masataka; Toyota, Kozo; Eguchi, Chikahiko; Yoshimoto, Ryoto; Koyama, Yoshikatsu; Domoto, Hideki; and Kamimura, Akira, 5,393,890, Cl. 546-80.000.
Kamiya, Masaomi: *See—*
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Kamon, Kazuya, to Mitsubishi Denki Kabushiki Kaisha. Exposure apparatus employing a photomask. 5,393,623, Cl. 430-5.000.
Kan, Hiroaki: *See—*
Matsunaga, Tsuyoshi; Fujino, Kenji; Sugahara, Takashi; and Kan, Hiroaki, 5,392,849, Cl. 165-167.000
Kanda, Kazunori; Ichinose, Yoshifumi; Arimatsu, Seiji; Konishi, Katsuji; and Hase, Takakazu, to Nippon Paint Co., Ltd. Photosensitive composition for offset printing comprising a binder, a photosensitive substance and a microgel made from an acrylic resin having carboxyl groups as the emulsifier. 5,393,637, Cl. 430-138.000.
Kanda, Masahiro: *See—*
Kato, Tetsuo; and Kanda, Masahiro, 5,393,583, Cl. 428-36.920.
Kane, John R., to Motorola, Inc. Nationwide satellite message delivery system. 5,394,560, Cl. 455-12.100.
Kane, Ronald E. Bombardier game with housing for sighting a target and supporting releasable bombs. 5,393,068, Cl. 273-351.000.
Kanner, Rowland W.; and Davis, Richard M., to Ryder International Corporation. Instrument for obtaining bore type tissue sampling. 5,392,790, Cl. 128-753.000.
Kano, Ikushi: *See—*
Koyama, Toru; Takasaki, Hirokazu; Suzuki, Hiroshi; Mukoh, Akio; Kano, Ikushi; and Koide, Toshiyuki, 5,393,805, Cl. 523-400.000.
Kansei Corporation: *See—*
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Kantz, Joseph C.: *See—*
DiNicola, Paul D.; Kantz, Joseph C.; Rahim, Omar M.; Rice, David A.; and Ruddick, Edward M., 5,394,524, Cl. 395-163.000.
Kanzaki Paper Mfg. Co., Ltd.: *See—*
Okada, Kiyomi; and Matoba, Gensuke, 5,393,560, Cl. 427-150.000.
Saito, Toranosuke; Ishibashi, Takashi; Kawabata, Eiji; Tanaka, Masato; and Kimura, Toshio, 5,393,332, Cl. 106-21.00R.
Kao, Wei-Wen, to Zexel USA Corp. Correcting GPS position in a hybrid naviation system. 5,394,333, Cl. 364-450.000.
Kaplan, Uri, to Ormat Turbines (1965) Ltd. Method of and apparatus for reducing the pressure of a high pressure combustible gas. 5,392,605, Cl. 60-657.000.
Kapoor, Ashok K.: *See—*
Rostoker, Michael D.; Pasch, Nicholas F.; and Kapoor, Ashok K., 5,393,712, Cl. 437-238.000.
Kapulnik, Yoram: *See—*
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Kariya, Akinori: *See—*
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Karl Suss America, Incorporated: *See—*
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Karpinski, Andrew J. Piezoelectric transducer drive. 5,394,021, Cl. 327-108.000.
Karrer, Friedrich, to Ciba-Geigy Corporation. Carbamic acid derivatives. 5,393,885, Cl. 548-124.000.
Karstens, Werner: *See—*
Korte, Siegfried; Alberts, Heinrich; Bohmer, Branislav; Karstens, Werner; Koch, Wolfgang; Poersch-Panke, Hans-Gunter; and Szablikowski, Klaus, 5,393,845, Cl. 525-369.000
Karterman, Don S. Air actuated amusement drinking device for mounting on a beverage container. 5,393,258, Cl. 446-71.000.
Karvinen, Mikko; Kerttula, Reima; Laapotti, Jorma; and Pajula, Juhani, to Valmet Paper Machinery Inc. Compact press section with closed draw of the web in a paper machine. 5,393,383, Cl. 162-274.000.
Kasahara, Kenichi, to NEC Corporation. Surface emitting semiconductor laser. 5,394,423, Cl. 372-45.000.
Kasai, Seishi: *See—*
Kato, Eiichi; Kasai, Seishi; and Ishii, Kazuo, 5,393,625, Cl 430-49.000.
Kasai, Shozo; Tohbo, Yozo; Nikaido, Norio; and Sugawara, Hirofumi, to Canon Kabushiki Kaisha. Motor-driven vertical type injection molding apparatus. 5,393,210, Cl. 425-145.000.
Kasano, Makiko: *See—*
Ishii, Takayuki; Kasano, Makiko; Yasunaga, Tae; Ishii, Mariko; Sugimoto, Mamoru; Tomita, Kenkichi; Miyata, Takeshi; and Tanaka, Makoto, 5,393,742, Cl. 514-23.000.
Kasei Optonix: *See—*
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Kasper, James J., to Watteredge-Uniflex, Inc. Flexible jumper and method of making. 5,393,951, Cl. 219-117.100.
Kasturia, Sanjay, to AT&T Corp. Fractional phase shift ring oscillator arrangement. 5,394,116, Cl. 331-34.000.
Kataoka, Shigenori: *See—*
Kameda, Takashi; Kataoka, Shigenori; and Noma, Koichi, 5,393,500, Cl. 422-186.000.
Kataoka, Takehiko; Yasaki, Akihiko; Kishimoto, Shinichi; and Kato, Toshihisa, to Ajinomoto Co., Inc. Method of preparing α-L-aspartyl-L-phenylalanine methyl ester or its hydrochloride salt. 5,393,915, Cl. 560-41.000.
Katayama, Masatake: *See—*
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Katayama, Masato: *See—*
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Katayama, Satoshi: *See—*
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Kato, Eiichi; Kasai, Seishi; and Ishii, Kazuo, to Fuji Photo Film Co., Ltd. Electrophotolithographic printing plate precursor. 5,393,625, Cl. 430-49.000.
Kato, Heizaburo, to Sankyo Seisakusho Co. Coil material supply apparatus for an intermittent feed device. 5,392,977, Cl. 226-118.000.

Kato, Shigeki: *See—*
Uematsu, Hiroshi; Ando, Hiroyuki; Yoneyama, Tsutomu; Takeuchi, Nobuyoshi; and Kato, Shigeki, 5,394,154, Cl. 342-165.000.
Kato, Takeshi; Fujita, Yuuji; Mizuishi, Kenichi; Kawata, Atumi; and Itoh, Hiroyuki, to Hitachi, Ltd. Semiconductor device having an optical waveguide interposed in the space between electrode members. 5,394,490, Cl. 385-14.000.
Kato, Tetsuo; and Kanda, Masahiro, to Yazaki Corporation. Connector. 5,393,583, Cl. 428-36.920.
Kato, Toshihisa: *See—*
Kataoka, Takehiko; Yasaki, Akihiko; Kishimoto, Shinichi; and Kato, Toshihisa, 5,393,915, Cl. 560-41.000.
Kato, Toshio: *See—*
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Kato, Yoshihiro: *See—*
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Katoh, Kazunori: *See—*
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Katouno, Masanori: *See—*
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Kaukeinen, Joseph Y.; Stelter, Eric C.; and Guth, Joseph E., to Eastman Kodak Company. Method and apparatus for forming a composite dry toner image. 5,394,230, Cl. 355-326.00R.
Kawabata, Eiji: *See—*
Saito, Toranosuke; Ishibashi, Takashi; Kawabata, Eiji; Tanaka, Masato; and Kimura, Toshio, 5,393,332, Cl. 106-21.00R.
Kawabata, Hitoshi: *See—*
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Kawabata, Kazuaki: *See—*
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Kawabe, Hiromitsu: *See—*
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Kawabe, Manabu; Sato, Takuro; Kato, Toshio; Kawahashi, Akiyoshi; and Fukasawa, Atsushi, to Oki Electric Industry Co., Ltd. Code-division multiple-access demodulator with improved interference cancellation. 5,394,434, Cl. 375-205.000.
Kawahara, Masafumi, to Sharp Kabushiki Kaisha. Bubble detecting apparatus for medical infusion device. 5,392,638, Cl. 73-61.490.
Kawahara, Takayuki, to Sanden Corporation. Wobble plate type refrigerant compressor. 5,393,204, Cl. 417-269.000
Kawahara, Yoshiko: *See—*
Tujimoto, Nobuharu; Kikuchi, Yoshimi; Kurahashi, Osamu; and Kawahara, Yoshiko, 5,393,671, Cl. 435-252.800.
Kawahashi, Akiyoshi: *See—*
Kawabe, Manabu; Sato, Takuro; Kato, Toshio; Kawahashi, Akiyoshi; and Fukasawa, Atsushi, 5,394,434, Cl. 375-205.000
Kawai, Hiroaki: *See—*
Watanabe, Mitsuo; Sato, Shinichi; Kawai, Hiroaki; and Shinoda, Ichiro, 5,393,968, Cl. 235-462.000.
Kawai, Hiroshi, to Fuji Photo Film Co., Ltd. Method for preparing a silver halide emulsion and a silver halide color photographic light-sensitive material containing the emulsion. 5,393,653, Cl. 430-569.000.
Kawai, Takayoshi: *See—*
Honda, Yuuji; Kajino, Yuichi; Kawai, Takayoshi; Ito, Yuji; and Samukawa, Katsuhiko, 5,392,845, Cl. 165-12.000.
Kawai, Yoshihiko: *See—*
Sasabe, Minoru; Kawai, Yoshihiko; Kikuchi, Yoshiteru; Takaoka, Toshio; Seno, Hiromi; Furuta, Chikayashi; and Nagatsuka, Toshio, 5,393,403, Cl. 204-422.000.
Kawai, Yukio: *See—*
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Kawaike, Kazuhiko: *See—*
Noda, Masami; Ikeguchi, Takashi; Anzai, Shunichi; Kawaike, Kazuhiko; and Takehara, Isao, 5,393,198, Cl. 415-115.000
Kawakami, Takahiro: *See—*
Ogawa, Akira; and Kawakami, Takahiro, 5,394,081, Cl 324-174.000
Kawakami, Takayoshi, to Mitsubishi Denki Kubushiki Kaisha. Hybrid integrated circuit device having burn-in testing means. 5,393,991, Cl 257-48.000.
Kawamoto, Satoru, to Fujitsu Limited. Semiconductor memory having a high-speed address decoder. 5,394,373, Cl. 365-230.060.
Kawano, Norio: *See—*
Ohe, Takeo; and Kawano, Norio, 5,393,421, Cl. 210-223.000.
Kawano, Teiji; and Yokota, Mitsuru. Maleimide polymers and contact lenses from such polymers. 5,393,803, Cl. 523-107.000.
Kawasaki, Hisao: *See—*
Olowolafe, Johnson O.; Kawasaki, Hisao; and Lee, Chii-Chang, 5,393,703, Cl. 437-197.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Kameda, Takashi; Kataoka, Shigenori; and Noma, Koichi, 5,393,500, Cl. 422-186.000.
Kawasaki, Keiko; Sumitani, Kazuo; Igi, Yoso; Tahira, Fumiaki; and Fujisono, Kenji, to Fujitsu Limited. Communication control system. 5,394,399, Cl. 370-84.000.
Kawasaki, Noboru; Sasagawa, Katsuyoshi; Suzuki, Toshiyuki; and Fujii, Kenichi, to Mitsui Toatsu Chemicias, Inc. Laminated transparent plastic material and polymerizable monomer. 5,393,607, Cl 428-334.000.
Kawasaki, Shogo: *See—*
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Kawasaki Steel Corporation: *See—*
Marumoto, Motoi; Fujisawa, Eiji; and Shono, Hiroaki, 5,393,822, Cl. 524-496.000.
Nakano, Koh; Sato, Keiji; and Fukuda, Bunjiro, 5,393,355, Cl. 148-306.000.
Yukumoto, Masao; Ozawa, Michiharu; Shibuya, Kiyoshi, Moriwaki, Saburo; and Sato, Toru, 5,392,837, Cl. 164-417.000.
Kawase, Masahiro: *See—*
Nakagawa, Shizue; Fukuda, Tsunehiko; Kawase, Masahiro; and Yamazaki, Iwao, 5,393,869, Cl. 530-324.000.
Kawata, Atumi: *See—*
Kato, Takeshi; Fujita, Yuuji; Mizuishi, Kenichi; Kawata, Atumi, and Itoh, Hiroyuki, 5,394,490, Cl. 385-14.000.
Kaynar Technologies, Inc.: *See—*
Hinton, Dennis L., 5,393,183, Cl. 411-432.000.
Kazama, Keizo; Tanaka, Kiichiro; Takahashi, Eiji; and Nakao, Michio, to Obayashi Corporation. Control system for cable crane. 5,392,935, Cl. 212-155.000.
Kazama, Toshio, to NHK Spring Co., Ltd. Electroconductive contact probe with intermediately supported, spring urged converging needles having parallel free ends. 5,394,099, Cl. 324-754.000
Kearns, Edward G.: *See—*
Greenfield, Walter; Kearns, Edward G.; and Kemble, James E., 5,393,494, Cl. 422-68/1.000.
Keber, Franci: *See—*
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Keener, Wendell E.: *See—*
Holbrook, Richard H.; and Keener, Wendell E., 5,392,946, Cl 220-651.000.
Kegel, Hellmut: *See—*
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Keller, Wilhelm A. Method for the advance of a plurality of rods, in particular for manually operated dispensing appliances. 5,392,956, Cl. 222-1.000.
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Killian, Michael L., to Eaton Corporation. Electrode displacement monitoring and control. 5,393,950, Cl. 219-110.000.
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Kim, Dong W.: *See—*
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Kim, Richard C.: *See—*
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Kim, Yong-je, to Samsung Electronics Co., Ltd. Low-band conversion chrominance signal processing apparatus and method therefor 5,394,197, Cl. 348-708.000
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Hudson, Robert L., 5,393,831, Cl. 525-55.000.
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Kishi, Takao: *See—*
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Kita, Ronald A.; Tremblay, Sylvia C.; and Lynch, Thomas M., to Digital Equipment Corporation. Method and apparatus for generating tests for structures expressed as extended finite state machines 5,394,347, Cl. 364-578.000.
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Kitta, Mayumi, to NEC Corporation. Arrangement for predicting a branch target address in the second iteration of a short loop. 5,394,530, Cl. 395-375.000.
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Klein, Michael F., to Sun Microsystems, Inc. Fully testable chip having self-timed memory arrays. 5,394,403, Cl. 371-21.100.
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Knecht, John, to Stone Container Corporation. Scoring apparatus. 5,393,295, Cl. 493-403.000.
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Knowles, Jonathan; Penttila, Merja; Teeri, Tuula; Nevalainen, Helena M. K.; and Lehtovaara-Helenius, Paivi, to Oy Alko AB. DNA, vectors and transformed hosts encoding *Trichoderma reesei* endoglucanase I. 5,393,670, Cl. 435-252.330.
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Koetzle, A. Richard. High temperature flashpoint, stable cleaning composition. 5,393,451, Cl. 252-170.000.
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Koh, Wei; and Kuipers, Wayne D., to Grumman Aerosace Corp. Method for forming multilayer indium bump contacts. 5,393,696, Cl. 437-183.000.
Kohn, Erhard, to Siemens Corporate Research, Inc. HEMT structure. 5,393,990, Cl. 257-12.000
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Koike, Hirotami, to Kabushiki Kaisha TOPCON. Apparatus for displaying a sample image. 5,393,976, Cl. 250-310.000
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Uramoto, Shinichi; Matsumura, Tetsuya; Yoshimoto, Masahiko; Ishihara, Kazuya; and Segawa, Hiroshi, 5,394,355, Cl. 365-104.000.

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Iketani, Akira; Matsumi, Chiyoko; and Juri, Tatsuro, 5,394,275, Cl. 360-35.100.
Izawa, Yosuke; and Okumura, Naoji, 5,394,194, Cl. 384-672.000.
Kobayashi, Yasuhiro; and Matsuda, Kenichi, 5,393,994, Cl. 257-84.000.
Nagai, Tetsuya; and Yamazaki, Katsuyuki, 5,394,395, Cl. 370-60.000.
Nakamori, Hiroshi; and Kono, Kazunori, 5,393,110, Cl. 292-216.000.
Nitta, Yoshiaki; Haraguchi, Kazunori; Kobayashi, Shigeo; Okamura, Kazuhiro; and Ohta, Akira, 5,393,622, Cl. 429-223.000.
Okutani, Norio; and Maruyama, Teruo, 5,393,201, Cl. 417-16.000.
Sato, Shigehiro, 5,394,245, Cl. 356-369.000.
Shigeta, Teruaki; and Nishiura, Takeshi, 5,394,204, Cl. 353-31.000
Umekage, Yasuhiro; Sakai, Shinichi; Watanabe, Yoshiaki; Morikawa, Hisashi; and Mihara, Makoto, 5,393,961, Cl. 219-757.000
Urushibata, Kenichi, 5,393,007, Cl. 242-532.000.
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Matsuura, Yuki; Ueoka, Isao; Iwata, Koichi; Kawabe, Hiromitsu; and Natsume, Yoshitaka, to Sumitomo Electric Industries, Ltd.; and Nippondenso Co., Ltd. Insulated wire. 5,393,612, Cl. 428-458.000.

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Ma, Sheau-Hwa; and Matthews, Andrew E., 5,393,580, Cl. 428-29.000.

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Toyoda, Takashi; Hosono, Yasuji; Funato, Takashi; Yazaki, Takao; Egashira, Akihiko; Matuno, Takumi; and Chiba, Tokmi, 5,393,603, Cl. 428-316.600.

Matway, Roy J.; McGuire, Michael F.; and Mehta, Jay, to J & L Specialty Products Corporation. Steel alloy having improved creep strength. 5,393,487, Cl. 420-43.000.

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Mavag Verfahrenstechnik AG: *See—*
Meier, Hans P., 5,393,142, Cl. 366-274.000.

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Mayer, Steven T.; Feikert, John H.; Kachmitter, James L.; and Pekala, Richard W., to University of California, Regents of the. Cell separator for use in bipolar-stack energy storage devices. 5,393,619, Cl. 429-152.000.

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Mayers, George L.; Razeq, Jafar; and Abu-Hadid, Mahmoud M., to Health Research, Inc. Cytotoxic drug conjugates for treatment of neoplastic diseases. 5,393,737, Cl. 514-12.000.

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Mazda Motor Corporation: *See—*
Bota, Keiji; Yoshimura, Hiroshi; and Kurisu, Kenji, 5,393,279, Cl. 477-143.000.
Matsubara, Taiji; and Yamagata, Naoyuki, 5,392,751, Cl 123-559.100.
Teramoto, Takafumi; Takano, Eiji; Uchida, Hiroyasu; Morimoto, Kenji; and Fukuma, Tsutomu, 5,392,740, Cl. 123-3.000.

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Girault, Jean-Louis; Mazieres, Philippe; and Tranier, Jean-Pierre, 5,392,609, Cl. 62-25.000.

Mazo, James E.: *See—*
Ayanoglu, Ender; Dagdeviren, Nuri R.; Mazo, James E.; and Saltzberg, Burton R., 5,394,437, Cl. 375-222.000.

Mazure, Carlos A.: *See—*
Witek, Keith E.; Fitch, Jon T.; and Mazure, Carlos A., 5,393,681, Cl. 437-40.000.

Mazzola, Mario; Hamlin, Michael T.; Cromer, Richard I.; and Costantini, John, to General Electric Co. Steampath and process of retrofitting a nozzle thereof. 5,392,513, Cl. 29-889.100.

McCabe, Francis J. Access door eliminator for curtain fire dampers 5,393,263, Cl. 454-257.000.

McCall, Gene W.; and Jones, Pat. Extensible article of furniture. 5,392,475, Cl. 5-18.100.

McCann, James D.; Bartley, Russell L.; Vandagriff, Randy D.; and Mullins, Randal L., to Scitex Digital Printing, Inc. Four inch fluid system. 5,394,177, Cl. 347-7.000.

McCarthy, Joseph; and Hochstein, Peter A. Lighted locks for firearms. 5,392,552, Cl. 42-70.070.

McCarthy, Monica: *See—*
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McCartney-Hoy, Peter J. Computerized training device for learning to play a piano. 5,392,682, Cl. 84-470.00R

McCleer, Patrick J.; Bailey, J. Milton; and Lawler, Jack S., to Electric Power Research Institute, Inc. Quasi square-wave back-EMF permanent magnet AC machines with five or more phases. 5,394,321, Cl 363-131.000.

McCombie, Jay C., to Chrysler Corporation. Ionization misfire detection apparatus and method for an internal combustion engine 5,392,641, Cl. 73-117.300.

McDonald Brian: *See—*
Shaw, Robert K.; and McDonald Brian, 5,392,763, Cl. 126-512.000.

McDonald, Ritchie P.; and Beer, Douglas C., to CAE Machinery, Ltd. Apparatus and method for loading of logs. 5,392,829, Cl. 144-356.000.

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Sanchez, Lloyd E., 5,393,604, Cl. 428-325.000.

McDougall, Gregory J., to ISIS International Inc. Hair dryers. 5,392,528, Cl. 34-97.000.

McElwain, Thomas E.: *See—*
Shieh, Chiung-Huei; Farr, William A.; McElwain, Thomas E.; Taylor, Roscoe W.; Patterson, William J.; Denstaedt, Glenn E.; Juengel, Robert R.; and Laube, Stephen G., 5,393,821, Cl. 524-495.000.

McEntee, Kathy, to Tucker Housewares. Mixing bowl. 5,392,948, Cl 220-669.000.

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Nelson, John A.; Kirby, David B.; Roy, Phalguni S.; Wuepper, John L.; Cur, Nihat O.; Schmaltz, Allen C.; Deaner, John L.; and McGath, Terry L., 5,392,610, Cl. 62-77.000.

McGean-Rohco, Inc.: *See—*
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McGhie, Dennis: *See—*
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McGuire, Michael F.: *See—*
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McInnes, Ian D.: *See—*
Johnson, Robert A.; McInnes, Ian D.; Quinn, Robert D.; and Temus, Charles J., 5,394,449, Cl. 376-272.000.

McIntosh, Michael P.: *See—*
Danielson, Craig T.; Kishi, Gregory T.; McIntosh, Michael P.; Mery, Hector E.; and Rockwell, Scott M., 5,394,069, Cl 318-371.000.

McIntyre, Iain A.: *See—*
Zucker, Oved S. F.; McIntyre, Iain A.; Solone, Paul J.; and Giorgi, David, 5,394,415, Cl. 372-26.000.

McKay, Jack W., Jr. Ball bat with concentrated weight load and method of making same. 5,393,055, Cl. 273-72.00A.

McKee, Joseph L.: *See—*
Erdman, David D.; Monroe, Kevin T.; Edwards, Bryan T.; and McKee, Joseph L., 5,394,497, Cl. 385-78.000.

McKenna, Paul A. Universal beverage container lid. 5,392,949, Cl. 220-712.000.

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Mc Kittrick, Brian A.: *See—*
Neustadt, Bernard R.; Lindo, Neil A.; and Mc Kittrick, Brian A., 5,393,755, Cl. 514-233.200.

McLane, John A.: *See—*
Doran, Thomas I.; McLane, John A.; Okabe, Masami; Scalone, Michelangelo; and Uskokovic, Milan R., 5,393,900, Cl. 552-505.000.
McLaury, Loren L., to Micron Semiconductor, Inc. VRAM having isolated array sections for providing write functions that will not affect other array sections. 5,394,172, Cl. 345-200.000.
McLean, Michael J.; Holland, David; Garman, Andrew J.; and Sheppard, Robert C., to Zeneca Limited. Linkers for the synthesis of multiple oligonucleotides in seriatim from a single support attachment. 5,393,877, Cl. 536-25.300.
McLellan, Edward J. Controlled, high-power laser oscillator. 5,394,428, Cl. 372-95.000.
McMahon, Jo Ann: *See—*
Martin, Richard L.; McMahon, Jo Ann; and Oude Alink, Bernardus A., 5,393,464, Cl. 252-389.230
McMahon, Rebecca S.: *See—*
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McMinn, Ted S.; Marshall, Dana A.; and Meyer, Danny D., to Cutting Edge Optronics, Inc. Housing for a slab laser pumped by a close-coupled light source. 5,394,427, Cl. 372-70.000.
McNally, William P. Heat-activated flue damper actuator. 5,393,221, Cl. 431-20.000.
McNulty, William J.: *See—*
Makal, John M.; Lien, Wayne W.; and McNulty William J., 5,393,240, Cl. 439-187.000.
McOsker, Jocelyn E.: *See—*
Ebetino, Frank H.; Buckingham, Kent W.; and McOsker, Jocelyn E., 5,393,746, Cl. 514-80.000.
McQueen, Robert W.: *See—*
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MDT Corporation: *See—*
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Means, Stephen C., to Elder, Stephen M.; and Dixon, Donna R., a part interest. Nail clipper. 5,392,518, Cl. 30-28.000
Meconi, Reinhold: *See—*
Hoffmann, Hans-Rainer; Klein, Robert P.; Meconi, Reinhold; Cordes, Gunter; and Wolff, Hans M., 5,393,529, Cl. 424-445.000.
MECT Corporation: *See—*
Ishii, Takayuki; Kasano, Makiko; Yasunaga, Tae; Ishii, Mariko; Sugimoto, Mamoru; Tomita, Kenkichi; Miyata, Takeshi; and Tanaka, Makoto, 5,393,742, Cl. 514-23.000.
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Mei, Shaw-Ning; Schepis, Dominic J.; and Yapsir, Andrie S., to International Business Machines Corporation. Self protective decoupling capacitor structure. 5,394,294, Cl. 361-275.300.
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Meier, Robert C.; Luse, Ronald E.; and Mahany, Ronald L., to Norand Corporation. Radio frequency local area network. 5,394,436, Cl. 375-202.000
Meija, Gordon F.; Rizzardo, Ezio; Brandwood, Arthur; Gunatillake, Pathiraja; and Schindhelm, Klaus H., to Commonwealth Scientific and Industrial Research Organisation; and Unisearch Limited. Polyurethane or polyurethane-urea elastomeric compositions. 5,393,858, Cl. 528-61.000.
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Meisel, Manfred: *See—*
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Mendez, Richard O. Air shutoff valve for a hopper gun. 5,393,034, Cl. 251-148.000.
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Menzel, Thomas: *See—*
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Merand, Yves: *See—*
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Eipper, Konrad; Gutenberger, Gerd, deceased; Gutenberger, Thomas, heir; and Partusch, Georg, 5,393,111, Cl. 293-109.000.
Schiessle, Edmund; Alasafi, Khaldoun; and Gutohrlein, Ralf, 5,394,082, Cl. 324-207.220.
Wunsche, Martin; Gotz, Hans; Schwede, Wolfgang; Baumann, Karl-Heinz; and Hesse, Guido, 5,393,093, Cl. 280-756.000.
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Merck Patent Gesellschaft Mit Beschrankter Haftung: *See—*
Wachtler, Andreas; Geelhaar, Thomas; Hittich, Reinhard; Bartmann, Ekkehard; Krause, Joachim; and Poetsch, Eike, 5,393,459, Cl. 252-299.630.
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Merino, Darrell; and Thibault, James, to Forster Inc. Adjustable net. 5,393,051, Cl. 273-29.00B.
Meritt, Allan S.: *See—*
Elko, David A.; Isenberg, John F., Jr.; Meritt, Allan S.; Moore, Brian B.; Nick, Jeffrey M.; Shepard, William C.; Surman, David H.; and Swanson, Michael D., 5,394,554, Cl. 395-800.000.
Merrick, William. Storage holder device. 5,392,913, Cl. 206-454.000.
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Mery, Hector E.: *See—*
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Merz, Eric A.: *See—*
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Meshberg, Philip. Atomizing pump. 5,392,962, Cl. 222-321.000.
Messner, Michael: *See—*
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Meyer, Danny D.: *See—*
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Meyer, Hans U. Capacitive position sensor including a scale with integral topographical features which effect the mutual capacitance between cursor electrodes. 5,394,096, Cl. 324-686.000.
Meyer, Jeanne: *See—*
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Meyer, Rich B., Jr.: *See—*
Ness, Jeffrey V.; Cimler, B. Melina; Meyer, Rich B., Jr.; and Vermeulen, Nicolaas M. J., 5,393,672, Cl. 436-94.000.
Meyrueix, Paul; Temblay, Gerard; and Vernhes, Jean P., to Schlumberger Technologies, Inc. Apparatus including electro-optical material for use in testing a circuit having voltage-bearing elements proximate a surface of a body. 5,394,098, Cl. 324-750.000.
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Microelectronics and Computer Technology Corporation: *See—*
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Micron Semiconductor, Inc.: *See—*
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Mathews, Viju K., 5,393,694, Cl. 437-72.000.
McLaury, Loren L., 5,394,172, Cl. 345-200.000.
Westmoreland, Donald L.; and Sandhu, Gurtej S., 5,393,564, Cl. 427-248.100.
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Mathews, Viju K.; Dennison, Charles H.; Fazan, Pierre; Maddox, Roy; and Ditali, Akram, 5,393,683, Cl. 437-42.000.
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Migny, Philippe, to Securite et Signalisation. Display device. 5,394,167, Cl. 345-147.000.
Mihara, Makoto: *See—*
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Mikus, Thomas: *See—*
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Miller, Charles M.: *See—*
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Miller, Jack V. Process for manufacturing optical fibers. 5,393,470, Cl 264-1.290.
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Miller, William H., to Du Pont Merck Pharmaceutical Company, The. 5H-[1,2]benzisothiazolo[2,3-a]quinoline-5-ones and analogs as antiinflammatory agents. 5,393,756, Cl. 514-250.000.
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Millier, Laurent, to Compagnie Generale des Etablissements Michelin - Michelin & Cie. Method and device for applying a plurality of threads to a support with the aid of flexible teeth. 5,393,364, Cl. 156-177.000.
Milliken Research Corporation: *See—*
Hyslop, David M., 5,394,183, Cl. 348-88.000.
Mills, David E.: *See—*
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Thoen, Bradford K., 5,394,071, Cl. 318-610.000

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Huffman, John W.; and Mui, Paul K., 5,394,227, Cl. 355-285.000

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Maker, Paul D.; and Muller, Richard E., 5,393,634, Cl. 430-1.000

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Blaszczak, Larry C.; Munroe, John E.; and Spry, Douglas O., 5,393,882, Cl. 540-205.000.

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Hisaoka, Yasushi; Yamane, Yoshio; Murakami, Hidenobu; Kinoshita, Yoshimi; Tobuse, Hiroaki; Yoshida, Kazuo; Ishii, Takashi; and Koizumi, Hiroshi, 5,393,255, Cl. 445-3.000.

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Okajima, Kengo; Wakamatsu, Hiroyuki; Murakami, Tsugio; and Saitoh, Hiroyuki, 5,393,724, Cl. 502-402.000

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Corey, Paul F.; and Musho, Matthew K., 5,393,615, Cl. 429-43.000.

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Clawson, Lawrence G.; and Musil, Joseph E., 5,393,501, Cl. 422-187.000

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Mohr, Peter B.; and Myers, Wendell B., 5,393,209, Cl. 418-202.000.

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Konishi, Motofumi; Sugita, Shigeru; Naba, Takashi; and Amemiya, Masami, 5,393,962, Cl. 235-375.000.

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Nagai, Tetsuya; and Yamazaki, Katsuyuki, to Matsushita Electric Industrial Co., Ltd.; and Kokusai Denshin Denwa Co., Ltd. Cell delay addition circuit. 5,394,395, Cl. 370-60.000.

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Satake, Toshimi; Nagai, Tomoaki; and Yokoyama, Miyuki, 5,393,443, Cl. 252-62.000

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Yamakage, Yasuhiro; and Nagamachi, Shinji, 5,393,985, Cl. 250-398.000

Nagamori, Yuzirou: *See*—
Umeda, Nobuyoshi; Seo, Toshio; Nagamori, Yuzirou; Matsuoka, Kenichi; and Gomi, Shingo, 5,392,632, Cl. 73-3.000.

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Tanaka, Takaaki; Suzuki, Toshinobu; and Nagano, Chikara, 5,394,271, Cl. 359-656.000.

Nagao, Kazuki: *See*—
Nakamura, Katsunori; Nagao, Kazuki; and Monobe, Masayuki, 5,393,337, Cl. 106-238.000.

Nagasawa, Michio: *See*—
Amagaya, Sakae; Fujiwara, Tadami; Aburada, Masaki; Nagasawa, Michio; and Oyama, Tsutomu, 5,393,740, Cl. 514-17.000.

Nagatsuka, Toshio: *See*—
Sasabe, Minoru; Kawai, Yoshihiko; Kikuchi, Yoshiteru; Takaoka, Toshio; Seno, Hiromi; Furuta, Chikayashi; and Nagatsuka, Toshio, 5,393,403, Cl. 204-422.000.

Nagel, Jonathan A.; and Bahsoun, Samia M., to AT&T Corp. In-line two-stage erbium doped fiber amplifier system with in-band telemetry channel. 5,394,265, Cl. 359-341.000.

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Cook, James A.; and Nagle, David P., 5,392,514, Cl. 29-889.710

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Ford, James J., Jr.; Beitz, David W.; and Nagle, Michael J., Jr., 5,392,659, Cl. 73-863.530.

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Naito, Masaru: *See*—
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Nakada, Hitoshi, to Pioneer Electronic Corporation. Organic electroluminescence device. 5,393,614, Cl. 428-690.000.

Nakae, Makoto: *See*—
Fukaya, Tomoji; Shibata, Masahiro; Suzuki, Kazunori; Nakae, Makoto; Nakano, Syuichi; and Suzuki, Masatoshi, 5,393,397, Cl. 204-424.000

Nakagawa, Katsumi: *See*—
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Nakagoshi, Hiroyuki: *See*—
Itaya, Masahiko; Nakagoshi, Hiroyuki; and Sasaki, Tsutomu, 5,394,176, Cl. 347-128.000.

Nakahata, Seiji; Matsuura, Takahiro; Sogabe, Kouichi; and Yamakawa, Akira, to Sumitomo Electric Industries, Ltd. Aluminum nitride sintered body and method of preparing the same. 5,393,715, Cl 501-98.000

Nakaishi, Akio: *See*—
Shinoki, Takanori; Nakaishi, Akio; and Yamamoto, Michio, 5,393,872, Cl. 528-310.000.

Nakaizumi, Yasushi: *See*—
Okura, Akimitsu; Sato, Mitsugu; Yamada, Osamu; Nakaizumi, Yasushi; and Hazaki, Eiichi, 5,393,977, Cl. 250-306.000.

Nakajima, Hideki, to Shimano Inc. Brake structure for a reel. 5,393,005, Cl. 242-289.000.

Nakajima, Hirofumi: *See*—
Kuwana, Ichiro; Ueda, Koichi; and Nakajima, Hirofumi, 5,394,525, Cl. 395-164.000.

Nakajima, Jun; and Yazaki, Masatomo, to Fujitsu Limited. Multi-media scheduling system. 5,394,548, Cl. 395-650.000.

Nakajima, Kenji: *See*—
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Nakamori, Hiroshi; and Kono, Kazunori, to Matsushita Electric Industrial Co., Ltd. Cover opening/closing device. 5,393,110, Cl. 292-216.000.

Nakamura, Eitaro; and Ueki, Kazunori, to Nippon Zeon Co., Ltd Electron beam-crosslinkable plastisol. 5,393,801, Cl. 522-79.000.

Nakamura, Katsunori; Nagao, Kazuki; and Monobe, Masayuki, to Japan PMC Corporation. Rosin emulsion sizing agent, paper sized therewith and method of sizing using the same. 5,393,337, Cl. 106-238.000

Nakamura, Kazushige: *See*—
Ikezue, Tatsuya; and Nakamura, Kazushige, 5,393,628, Cl. 430-59.000.

Nakamura, Kenji, to Canon Kabushiki Kaisha. Optical communication system and transmitting apparatus for use therein. 5,394,261, Cl. 359-180.000.

Nakamura, Yohji: *See*—
Casey, Richard G.; Nakamura, Yohji; and Toyokawa, Kazuharu, 5,394,484, Cl. 382-37.000.

Nakamura, Yoichi; Mori, Nobuyoshi; and Nogami, Sumitaka, to Fuji Electric Co., Ltd. Photoconductor for electrophotography. 5,393,627, Cl. 430-59.000.

Nakanishi, Eiji: *See*—
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Nakanishi Metal Works Co., Ltd.: *See*—
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Nakano, Hirofumi: *See*—
Oyagi, Yashichi; and Nakano, Hirofumi, 5,393,344, Cl. 118-244.000.

Nakano, Koh; Sato, Keiji; and Fukuda, Bunjiro, to Kawasaki Steel Corporation. Low-iron loss grain oriented electromagnetic steel sheet and method of producing the same. 5,393,355, Cl. 148-306.000.

Nakano, Masako, to NEC Corporation. Carry lookahead circuit for semiconductor integrated circuit. 5,394,352, Cl. 364-787.000.

Nakano, Syuichi: *See*—
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Nakao, Michio: *See*—
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Nakao, Yuichi: *See*—
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Nakashima, Takashi: *See*—
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Nakayama, Hideo: *See*—
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Nakayama, Makota: *See*—
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Nakayama, Takashi; Umino, Hiroshi; Sakakura, Yasuyuki; and Takahashi, Kiyoshi, to JGC Corporation; and Mitsubishi Petrochemical Co., Ltd. Liquid-liquid contactor. 5,393,429, Cl. 210-634.000.

Nakazawa, Ryoji, to Sony Corporation. Video light apparatus. 5,394,063, Cl. 315-159.000.

Nakazima, Nobuko: *See*—
Furukawa, Akira; and Nakazima, Nobuko, 5,393,633, Cl. 430-114.000.

Nalcioglu, Orhan: *See*—
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Nalco Chemical Company: *See*—
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Namavari, Mohammad: *See*—
Satyamurthy, Nagichettiar; Barrio, Jorge R.; Bishop, Allyson J.; and Namavari, Mohammad, 5,393,908, Cl. 556-87.000

Namiki, Takeshi: *See*—
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Nanjo, Katsumi; Kariya, Akinori; Henmi, Shinya; Fujii, Hideyo; and Usui, Syuichi, to Agro-Kanesho Co., Ltd. Organophosphorus compounds, and insecticides, acaricides and nematocides containing same. 5,393,754, Cl. 514-227.200.

Narda Microwave Corp., The: *See*—
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Narita, Susumu: *See*—
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Narita, Toshiharu: *See*—
Takase, Muneaki; Narita, Toshiharu; and Komatsu, Toshihiko, 5,393,889, Cl. 544-357.000.

Nasu, Takumi: *See*—
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Nasuta, Anthony T., Jr.; and Brown, Dale H., to Westinghouse Electric Corp. Apparatus and method for weighing moving objects. 5,393,939, Cl. 177-145.000

Natarajan, Kadathur S.: *See*—
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National Cathode Corp.: *See*—
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National Research Institute for Metals: *See*—
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National Semiconductor Corporation: *See*—
Davis, Craig M., 5,394,114, Cl. 331-1.00A
Llewellyn, William D., 5,394,079, Cl. 323-315.000
Mitros, Jozef C., 5,394,101, Cl. 324-769.000.

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Natsume, Yoshitaka: *See*—
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Natwig, Gary S.: *See*—
Young, John S.; Ericson, Robert B.; and Natwig, Gary S., 5,393,932, Cl. 174-84.00R

Naue/Johnson Controls Engineering GmbH & Co., KG: *See*—
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Navarro, Francisco; Valdez, Manuel; and Buendia, Jose M., to Machine Masters, Inc. Tortilla transfer guide and method for transferring tortillas. 5,392,696, Cl. 99-339.000.

Nawa, Hiroshi: *See*—
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Nazeeruddin, Mohammed K.: *See*—
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Nease, Michael G.: *See*—
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Abe, Nobuaki, 5,394,348, Cl. 364-580.000.
Iwasaki, Hiroyuki; and Yokoyama, Yukio, 5,394,160, Cl. 343-702.000.
Iwashita, Shinichi, 5,394,375, Cl. 365-230.060
Kagami, Akihiko, 5,394,369, Cl. 365-200.000
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Gundersen, Helge G., 5,393,525, Cl. 424-9.000

Nylander-Hill, Pamela R.: *See—*
Chliwnyj, Alex; Graves, David C.; Fry, Scott M.; Nylander-Hill, Pamela R.; Torab, Habib M.; and Wright, Will A., 5,394,280, Cl. 360-77.120.

Nyman, Per, to Siemens Elema AB. Controllable intracardial electrode device. 5,392,791, Cl. 128-772.000

O.T.R. S.r.l.: *See—*
Fabrizio, Rigo, 5,392,890, Cl. 194-209.000.

Obasih, Kemakolam M.; and Briske, James R., to General Electric Company. Superconducting switch thermal interface for a cryogenless superconducting magnet. 5,394,129, Cl. 335-216.000.

Obayashi Corporation: *See—*
Kazama, Keizo; Tanaka, Kiichiro; Takahashi, Eiji; and Nakao, Michio, 5,392,935, Cl. 212-155.000.

Oberdorf, Klaus: *See—*
Wingert, Horst; Sauter, Hubert; Bayer, Herbert; Oberdorf, Klaus; Lorenz, Gisela; and Ammermann, Eberhard, 5,393,782, Cl. 514-599.000

Oberdorfer-Bogel, Rainer, to WAP Reinigungssysteme GmbH & Co. Electronically commutated motor for dust exhausters, vacuum cleaners and similar devices. 5,394,041, Cl. 310-64.000.

Oberdorfer, Ralf: *See—*
Froschl, Hermann; Oberdorfer, Ralf; and Zitz, Alfred, 5,392,869, Cl. 175-118.000.

Oberg, Brad H.: *See—*
Colson, Wendell B.; Anthony, James M.; Oberg, Brad H.; Hoffmann, Brian M.; Williams, Eric N.; Swiszcz, Paul G.; and Jansen, Cornelis M., 5,392,832, Cl. 160-84.070.

Oberle, Joseph C.: *See—*
Minarczyk, Michael M.; Nerone, Louis R.; Oberle, Joseph C.; Ronald, Brian M.; Harsa, Clarence J.; and Thomas, Edward J., 5,394,062, Cl. 315-129.000.

Obermann, George: *See—*
Joyce, Ronald S.; and Obermann, George, 5,393,945, Cl. 200-81.00R.

O'Brien, Benedict B.; Burns, Brent E.; and Geen, John A., to Northrop Grumman Corporation. Micromachined accelerometer gyroscope. 5,392,650, Cl. 73-517.00A.

O'Brien, Daniel B.: *See—*
Stock, Anthony P.; O'Brien, Daniel B.; and Sloan, James A., 5,393,166, Cl. 404-14.000

Occidental Chemical Corporation: *See—*
Buckholtz, Harry F.; and Jaszka, Daniel J., 5,393,503, Cl. 423-55.000

Ochiai, Masami: *See—*
Hirata, Toichi; Sugiyama, Genroku; and Ochiai, Masami, 5,392,539, Cl. 37-348.000

Ochiai, Toru; Mochizuki, Masahiro; Ikeda, Soichi; and Sato, Katsuhiro, to Nikon Corporation. Image reading apparatus. 5,394,205, Cl. 353-101.000.

O'Connell, Donald L. Unitary multi-tiered display device with axis encircling article receiving portions. 5,393,112, Cl. 294-143.000.

Octel Communications Corporation: *See—*
Olson, Peter D.; and Kendall, Burton N., 5,394,460, Cl. 379-67.000.

Oculon Corporation: *See—*
Thurston, George M.; Hayden, Douglas L.; Taratuta, Victor G.; Peetermans, Joyce A.; and Benedek, George B., 5,392,776, Cl. 128-633.000.

Oddou, Christophe O.: *See—*
Sirat, Jacques A.; and Oddou, Christophe O., 5,394,191, Cl. 348-571.000.

O'Donnell, Robert F. Composite holders for keys and knives. 5,392,622, Cl. 70-456.00R.

Oelsch, Jurgen: *See—*
Hans, Helmut; and Oelsch, Jurgen, 5,394,283, Cl. 360-98.070.

Oertley, Thomas E., to Caterpillar Inc. Fastening plate for sprocket segments. 5,393,134, Cl. 305-57.000.

Oftebro, Reidar: *See—*
Pettersen, Erik O.; Larsen, Rolf O.; Borretzen, Bernt; Dornish, John M.; and Oftebro, Reidar, 5,393,741, Cl. 514-23.000.

Ogawa, Akira; and Kawakami, Takahiro, to Kansei Corporation. Rotary pulse generator. 5,394,081, Cl. 324-174.000.

Ogawa, Kinya; Ito, Kenichi; Hirasawa, Yoichi; Oshima, Takao; and Sakai, Seiji, to Shin-Etsu Chemical Co. Ltd. Agent for prevention of salt damage of plants and a method of preventing salt damage of plants using the same. 5,393,312, Cl. 47-58.000.

Ogawa, Tetsuo: *See—*
Fujita, Makio; Goto, Fumio; Ogawa, Tetsuo; Ishii, Akio; Gocho, Tomohiro; Yamabe, Narimasa; Miyazaki, Ichiro; Saito, Masaaki; and Sasa, Yoshihiro, 5,393,167, Cl. 404-84.100.

Ogawara, Hiroshi: *See—*
Yokota, Tomohiro; Nishitani, Fumio; Ogawara, Hiroshi; Kubo, Akihito; and Fujigami, Makoto, 5,394,255, Cl. 359-49.000.

Ogino, Yoshio; and Ito, Kideki, to Nihon Kogden Corporation. Apparatus for measuring biological signal. 5,392,780, Cl. 128-670.000.

Oguchi, Takahiro: *See—*
Hatanaka, Katsunori; Sakai, Kunihiro; Oguchi, Takahiro; Yamano, Akihiko; and Shido, Shunichi, 5,394,388, Cl. 369-126.000.

Oh, Tae-Sik, to Samsung Electron Devices Co., Ltd. Shadow mask frame assembly. 5,394,052, Cl. 313-405.000.

Ohanesian, Harout O. Vertical blinds with curtain attachment. 5,392,833, Cl. 160-89.000.

Ohba, Takayuki: *See—*
Suzuki, Toshiya; Ohba, Takayuki; Jinnouchi, Shimpei; and Murakami, Seishi, 5,393,565, Cl. 427-255.200.

Ohe, Takeo; and Kawano, Norio, to Nippon Zoki Pharmaceutical Co., Ltd. Apparatus for activating silicic acid in water. 5,393,421, Cl 210-223.000

Ohira, Yoshifumi, to Kabushiki Kaisha Toshiba. High voltage stabilizing circuit for use in color television receivers. 5,394,188, Cl. 348-327.000.

Ohkase, Wataru, to Tokyo Electron Sagami Kabushiki Kaisha. Semiconductor wafer processing apparatus. 5,393,349, Cl. 118-725.000.

Ohlstein, Eliot H.: *See—*
Yue, Tian-Li; Ohlstein, Eliot H.; and Feuerstein, Giora Z., 5,393,772, Cl. 514-410.000.

Ohno Co., Ltd.: *See—*
Kaju, Sadayoshi, 5,392,723, Cl. 112-80.230.

Ohrn, Carl O.: *See—*
Christensen, Jan A.; and Ohrn, Carl O., 5,392,727, Cl. 114-91.000.

Ohsaki, Hiromi: *See—*
Takeda, Yoshihumi; Ishihara, Toshinobu; and Ohsaki, Hiromi, 5,393,815, Cl. 524-262.000.

Ohsawa, Keiji, to Nikon Corporation. Device for detecting focus at different areas of an image field. 5,393,969, Cl. 250-201.800.

Ohshima, Yoichi: *See—*
Yamaguchi, Yoshiko; and Ohshima, Yoichi, 5,394,001, Cl. 257-315.000.

Ohta, Akira: *See—*
Nitta, Yoshiaki; Haraguchi, Kazunori; Kobayashi, Shigeo; Okamura, Kazuhiro; and Ohta, Akira, 5,393,622, Cl. 429-223.000.

Ohta, Takashi: *See—*
Inagaki, Shinji; Fukushima, Yoshiaki; Ohta, Takashi; and Okada, Akane, 5,393,329, Cl. 96-131.000.

Ohta, Yoshihiko; and Izumi, Tetsuro, to Victor Company of Japan, Ltd. Magnetic recording apparatus and magnetic reproducts apparatus with generator for distinguishable signal made discriminations informations words. 5,394,248, Cl. 358-335.000.

Ohta, Yutaka; Katayama, Masatake; and Moroga, Isao, to Shin-Etsu Handotai Kabushiki Kaisha. Method of making a SOI film having a more uniform thickness in a SOI substrate. 5,393,370, Cl. 156-626.000.

Ohuchi, Mitsurou, to NEC Corporation. Memory access control circuit with automatic access mode determination circuitry with read-modify-write and write-per-bit operations. 5,394,535, Cl. 395-425.000.

Ohyama, Masachika; Fuse, Tetsuo; Sakai, Motohiro; and Mori, Kazuyuki, to Oshiodenki Kabushiki Kaisha. Metallic vapor discharge lamp and a method for curing paints and inks therewith. 5,394,059, Cl. 313-639.000.

Oida, Sadao; Miyaoka, Takeo; Tajima, Yawara; Konosu, Toshiyuki; Takeda, Noriko; and Yasuda, Hiroshi, to Sankyo Company, Limited Anti-fungal triazole derivatives. 5,393,769, Cl. 514-383.000.

Oie, Tsutomu: *See—*
Asano, Ichiro; Takeda, Kenji; Oie, Tsutomu; and Koike, Hideki, 5,392,634, Cl. 73-23.420.

Oji Yuki Goseishi Co., Ltd.: *See—*
Toyoda, Takashi; Hosono, Yasuji; Funato, Takashi; Yazaki, Takao; Egashira, Akihiko; Matuno, Takumi; and Chiba, Tokmi, 5,393,603, Cl. 428-316.600.

Ojima, Fumio: *See—*
Nukada, Katsumi; Daimon, Katsumi; Sakaguchi, Yasuo; Yamasaki, Kazuo; Iijima, Masakazu; Takahashi, Michiaki; Koseki, Kazuhiro; Imai, Akira; Mashimo, Kiyokazu; Ishii, Toru; Ojima, Fumio; Nishikawa, Masayuki; and Igarashi, Ryosaku, 5,393,629, Cl. 430-76.000.

Ojima, Juji, to NHK Spring Co., Ltd. Slow-acting rotary device. 5,392,884, Cl. 188-293.000.

Ojima, Juji, to NHK Spring Co., Ltd. Torsion bar for slow-acting rotation shaft device. 5,393,160, Cl. 403-120.000.

Oka, Michio: *See—*
Fukumoto, Atsushi; and Oka, Michio, 5,394,381, Cl. 369-13.000.

Okabe, Masami: *See—*
Doran, Thomas I.; McLane, John A.; Okabe, Masami; Scalone, Michelangelo; and Uskokovic, Milan R., 5,393,900, Cl. 552-505.000.

Okabe, Nobuhiro; Isozaki, Tadaaki; and Suzuki, Yoshiichi, to Showa Shell Sekiyu Kabusyiki Kaisha. Liquid crystal composition, and element and device using the same. 5,393,460, Cl. 252-299.650.

Okada, Akane: *See—*
Inagaki, Shinji; Fukushima, Yoshiaki; Ohta, Takashi; and Okada, Akane, 5,393,329, Cl. 96-131.000.

Okada, Kazuhiro. Detector for force, acceleration or magnetism with respect to components in multi-dimensional directions. 5,392,658, Cl. 73-862.043.

Okada, Kiyomi; and Matoba, Gensuke, to Kanzaki Paper Mfg. Co., Ltd. Method for preparing a heat-sensitive recording material. 5,393,560, Cl. 427-150.000.

Okada, Takayuki; Taga, Yutaka; Hojo, Yasuo; Tabata, Atsushi; Kaigawa, Masato; Moroto, Shuzo; Inuzuka, Takeshi; Hattori, Masashi; and Takeshita, Yoshito, to Toyota Jidosha Kabushiki Kaisha; and Aishin AW Co., Ltd. Shift control system for manually shiftable automatic transmission. 5,393,275, Cl. 477-81.000.

Okajima, Kengo; Wakamatsu, Hiroyuki; Murakami, Tsugio; and Saitoh, Hiroyuki, to Tosoh Corporation. Process for removing oxidizable substance or reducible substance, composite containing metal oxide or hydroxide, and process for production thereof. 5,393,724, Cl. 502-402.000

Okajima, Mitsuhiro: *See—*
Sakae, Kazuhisa; Echigoya, Kouki; and Okajima, Mitsuhiro, 5,393,861, Cl. 528-265.000.

Okamoto, Hiromu, to Tokyo Kogyo Boyeki Shokai, Ltd. Heated tube with a braided electric heater. 5,394,507, Cl. 392-480.000.

Okamoto, Kozo: *See—*
Kitano, Yoshio; and Okamoto, Kozo, 5,393,959, Cl. 219-619.000.

Okamura, Kazuhiro: *See—*
Nitta, Yoshiaki; Haraguchi, Kazunori; Kobayashi, Shigeo; Okamura, Kazuhiro; and Ohta, Akira, 5,393,622, Cl. 429-223.000.

Okazaki, Hiroyuki: *See—*
Fujita, Junichi; Okazaki, Hiroyuki; Kiura, Mitsuo; and Yoshida, Yoshiaki, 5,394,149, Cl. 342-1.000.

O'Kennedy, Maura P.; Sway-Tin, Min; Yagley, Martin G.; and Lee, Anson, to Chrysler Corporation. Oxygen heater sensor diagnostic routine. 5,392,643, Cl. 73-118.100.

Oki Electric Industry Co., Ltd.: *See—*
Ishimura, Tamihiro; and Miyamoto, Sampei, 5,394,374, Cl. 365-230.060.
Ito, Toshio; and Sakata, Miwa, 5,393,641, Cl. 430-270.000.
Kawabe, Manabu; Sato, Takuro; Kato, Toshio; Kawahashi, Akiyoshi; and Fukasawa, Atsushi, 5,394,434, Cl. 375-205.000.
Miyamoto, Sampei, 5,394,368, Cl. 365-200.000.

Oksman, Juhani: *See—*
Chen, Xiao H.; and Oksman, Juhani, 5,394,391, Cl. 370-18.000.

Oku, Kazutoshi; and Hirosue, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device with an elevated bonding pad. 5,394,013, Cl. 257-786.000.

Okuda, Masakiyo: *See—*
Hagihara, Hideaki; Okuda, Masakiyo; and Takata, Souichi, 5,393,044, Cl. 271-10.000.

Okuda, Tetsuro: *See—*
Yamada, Hirohito; Okuda, Tetsuro; and Torikai, Toshitaka, 5,394,429, Cl. 372-96.000.

Okuma, Toshiyuki: *See—*
Miyoshi, Tatsuya; Okuma, Toshiyuki; Yamashita, Masaaki; Watanabe, Toyofumi; and Kosaka, Norio, 5,393,605, Cl. 428-327.000.

Okumura, Naoji: *See—*
Izawa, Yosuke; and Okumura, Naoji, 5,394,194, Cl. 384-672.000.

Okumura, Yoshinori: *See—*
Motonami, Kaoru; and Okumura, Yoshinori, 5,393,688, Cl. 437-52.000.

Okura, Akimitsu; Sato, Mitsugu; Yamada, Osamu; Nakaizumi, Yasushi; and Hazaki, Eiichi, to Hitachi, Ltd. Charged particle beam apparatus and it's operating method. 5,393,977, Cl. 250-306.000.

Okutani, Norio; and Maruyama, Teruo, to Matsushita Electric Industrial Co., Ltd. Synchronous rotating apparatus for rotating a plurality of shafts. 5,393,201, Cl. 417-16.000.

Okuwaki, Shigeru; and Tomimura, Yukio, to Borg-Warner Automotive, Inc.; and Toyota Jidosha Kabushiki Kaisha. Chain belt wherein link plates holding load block member are shaped to avoid contact with adjacent load block members. 5,393,272, Cl. 474-213.000.

Oliff, David B.: *See—*
Burrows, Ronald W.; Oliff, David B.; and Philip, James B., Jr., 5,393,654, Cl. 430-584.000.

Olowolafe, Johnson O.; Kawasaki, Hisao; and Lee, Chii-Chang, to Motorola, Inc. Process for forming a conductive layer for semiconductor devices. 5,393,703, Cl. 437-197.000.

Olry, Pierre; Coupe, Dominique; and DuPont, Philippe, to Societe Europeenne de Propulsion. Process for the manufacture of a fibrous preform formed of refractory fibers for producing a composite material article. 5,392,500, Cl. 28-168.000.

Olsen, Duane A., to New Horizons Diagnostics Corporation. Immunoassay method for the rapid identification of detergent treated antigens. 5,393,658, Cl. 435-7.360.

Olsen, Raymond E.: *See—*
Clark, Ron; Olsen, Raymond E.; and Goble, E. Marlowe, 5,393,302, Cl. 623-13.000.

Olson, David M.: *See—*
Maley, Dale C.; Olson, David M.; and Shinogle, Ronald D., 5,392,811, Cl. 137-514.000.

Olson, Peter D.; and Kendall, Burton N., to Octel Communications Corporation. Voice processing systems connected in a cluster 5,394,460, Cl. 379-67.000.

Olthafer, John: *See—*
West, Floyd D.; Olthafer, John; Ungs, Mark S.; and Noon, David R., 5,392,836, Cl. 160-273.100.

Olympus Optical Co., Ltd.: *See—*
Hanzawa, Toyoharu, 5,394,267, Cl. 359-376.000.
Matsuura, Keisuke, 5,394,307, Cl. 362-16.000.
Ono, Katsuya; and Shiraiwa, Masaru, 5,394,499, Cl. 385-119.000.
Sakurada, Takefumi; Tani, Naoaki; Sugaya, Takumi; Rokutan, Takao; Oshiba, Mitsuo; and Shirai, Akira, 5,394,385, Cl 369-44.230.
Tanaka, Takaaki; Suzuki, Toshinobu; and Nagano, Chikara. 5,394,271, Cl. 359-656.000.

Omura, Yutaka; and Akamata, Kazundo, to Kuraray Co., Ltd. Highly flexible leather-like sheet material and process for producing the same. 5,393,600, Cl. 428-284.000.

Onallan, Maher: *See—*
Payer, Wolfgang; Onallan, Maher; Materne, Winfried; and Sobbe, Andreas, 5,393,473, Cl. 264-117.000.

O'Neil, Michael J. Plumb bob and cooperating reel. 5,392,522, Cl 33-393.000.

Ong, Shauchi: *See—*
Hu, Limin; and Ong, Shauchi, 5,394,382, Cl. 369-32.000.

Onicon Incorporated: *See—*
Feller, Murray F., 5,392,657, Cl. 73-861.770.

Onishi, Noriaki: *See—*
Yamada, Nobuaki; Hirai, Toshiyuki; Onishi, Noriaki; and Koozaki, Shuichi, 5,394,256, Cl. 359-51.000.

Onishi, Norimasa: *See—*
Kira, Ikuo; Watanabe, Kazuhiro; Nakanishi, Eiji; Ban, Hiroshi; Onishi, Norimasa; and Suzuki, Takayuki, 5,393,664, Cl. 435-156.000.

Ono, Katsuya; and Shiraiwa, Masaru, to Olympus Optical Co., Ltd. Observation system with an endoscope. 5,394,499, Cl. 385-119.000

Ono, Takashi; and Ueno, Yasuhide, to Canon Kabushiki Kaisha. Data communication apparatus. 5,394,406, Cl. 371-32.000.

Ooka, Masataka: *See—*
Konno, Hidetoshi; Ooka, Masataka; Takeda, Hirofumi; and Sakamoto, Hiroshi, 5,393,823, Cl. 524-507.000

Oosaka, Manabu: *See—*
Kumagai, Ryohei; Hiiro, Kaoru; Shimizu, Harumi; Oosaka, Manabu; and Takahashi, Tooru, 5,394,481, Cl. 382-8.000.

Opalport Electronics Limited: *See—*
Clegg, Andrew S., 5,394,089, Cl. 324-427.000.

Oppenlaender, Knut: *See—*
Fikentscher, Rolf; Oppenlaender, Knut; Dix, Johannes P.; Sager, Wilfried; Vogel, Hans-Henning; Barthold, Klaus; and Elfers, Guenther, 5,393,463, Cl. 252-344.000.

Oprescu, Florin, to Apple Computer, Inc. Method and apparatus for unique address assignment, node self-identification and topology mapping for a directed acyclic graph. 5,394,556, Cl. 395-800.000.

Optical Communications Corporation: *See—*
Lill, Thomas M., 5,394,442, Cl. 375-369.000.

Orbital Engine Company Pty. Limited: *See—*
Watson, Stephen J.; Leighton, Sam R.; and Czwienczek, Peter W., 5,392,828, Cl. 141-330.000.

Organ Needle Co., Ltd.: *See—*
Takei, Yoshitsugu; and Kojima, Tsutomu, 5,392,725, Cl. 112-222.000.

Orii, Katsumi, to Temtech Kabushikigaisha. Continuous cell charger 5,394,074, Cl. 320-15.000.

O'Riordan, Michael. Vibratory plow assembly. 5,392,541, 'Cl. 37-468.000.

Orlando, Paul T.: *See—*
Patrick, John L.; Orlando, Paul T.; and Mastandrea, Nicholas J., 5,394,086, Cl. 324-318.000.

Ormat Turbines (1965) Ltd.: *See—*
Kaplan, Uri, 5,392,605, Cl. 60-657.000.

Orosei, Mario, to Conti Complett S.p.A. Device for turning hosiery items inside out with high operating reliability. 5,392,970, Cl. 223-39.000.

Orschek, Edward J.; Smith, Myron L.; and Walker, Dale C., to General Electric Company. Locomotive traction motor control system. 5,392,716, Cl. 105-61.000.

Orschek, Edward J., to General Electric Company. Vehicle parking brake detection and warning system. 5,394,137, Cl. 340-453.000.

Ortiz-Rivas, Arturo A. Railroad turnout frog with continuous running surface. 5,393,019, Cl. 246-468.000.

Osaka Gas Company Limited: *See—*
Fujita, Junichi; Okazaki, Hiroyuki; Kiura, Mitsuo; and Yoshida, Yoshiaki, 5,394,149, Cl. 342-1.000.
Pelrine, Ronald E., 5,392,715, Cl. 104-138.200.

Osaka Sanso Kogyo Ltd.: *See—*
Sasabe, Minoru; Kawai, Yoshihiko; Kikuchi, Yoshiteru; Takaoka, Toshio; Seno, Hiromi; Furuta, Chikayashi; and Nagatsuka, Toshio, 5,393,403, Cl. 204-422.000.

Osaka Titanium Co., Ltd.: *See—*
Kuramochi, Kaoru; Ito, Makoto; and Kitaura, Kiichiro, 5,392,729, Cl. 117-20.000.

Oschmann, Jacobus M.: *See—*
Rice, David A.; Oschmann, Jacobus M.; Valovage, Edward M.; and Viggiano, Marc J., 5,393,967, Cl. 235-454.000.
Oshiba, Mitsuo: *See—*
Sakurada, Takefumi; Tani, Naoaki; Sugaya, Takumi; Rokutan, Takao; Oshiba, Mitsuo; and Shirai, Akira, 5,394,385, Cl. 369-44.230.
Oshima, Takao: *See—*
Ogawa, Kinya; Ito, Kenichi; Hirasawa, Yoichi; Oshima, Takao; and Sakai, Seiji, 5,393,312, Cl. 47-58.000.
Oshiodenki Kabushiki Kaisha: *See—*
Ohyama, Masachika; Fuse, Tetsuo; Sakai, Motohiro; and Mori, Kazuyuki, 5,394,059, Cl. 313-639.000.
Oshitani, Masahiko: *See—*
Mori, Hiroyuki; Hasegawa, Keiichi; Watada, Masaharu; and Oshitani, Masahiko, 5,393,616, Cl. 429-59.000.
OSi Specialties, Inc.: *See—*
Chen, Ming J.; and Chaves, Antonio, 5,393,330, Cl. 106-2.000.
Mui, Jeffrey Y. P.; and Bowman, Mark P., 5,393,910, Cl 556-414.000
Osinga, Theo: *See—*
Theunissen, Joseph P. H.; and Osinga, Theo, 5,393,507, Cl. 223-332.000
Otis Elevator Company: *See—*
Boyce, Robert C.; and Spaner, Michael A., 5,392,879, Cl 187-393.000.
Otoma, Hiromi: *See—*
Fukunaga, Hideki; Ueki, Nobuaki; Otoma, Hiromi; and Nakayama, Hideo, 5,394,425, Cl. 372-46.000.
O'Toole, Michael D.: *See—*
Alpern, Marvin; Simons, Teresa M.; Cerwin, Robert; Kalinski, Robert J.; and O'Toole, Michael D., 5,392,917, Cl. 206-570.000.
O'Toole, Michael P.: *See—*
Dauplaise, David L.; and O'Toole, Michael P., 5,393,827, Cl. 524-801.000.
Ott, Karl-Heinz: *See—*
Eckel, Thomas; Wittmann, Dieter; Fennhoff, Gerhard; Schoeps, Jochen; Ott, Karl-Heinz; and Jakob, Wolfgang, 5,393,835, Cl. 525-67.000
Oude Alink, Bernardus A.: *See—*
Martin, Richard L.; McMahon, Jo Ann; and Oude Alink, Bernardus A., 5,393,464, Cl. 252-389.230.
Ouellette, Francis G.: *See—*
Briggs, Oliver G.; Langille, Donald S.; and Ouellette, Francis G., 5,392,720, Cl. 110-264.000.
Oval Engineering Co.,Ltd.: *See—*
Umeda, Nobuyoshi; Seo, Toshio; Nagamori, Yuzirou; Matsuoka, Kenichi; and Gomi, Shingo, 5,392,632, Cl. 73-3.000.
Owens-Illinois Glass Container Inc.: *See—*
Nickey, George A.; Moore, John K.; and Tipping, Mark R., 5,392,928, Cl. 209-643.000
Oxley, Donald W.: *See—*
Courts, Howard R.; and Oxley, Donald W., 5,394,537, Cl 395-425.000
Oy Alko AB: *See—*
Knowles, Jonathan; Penttila, Merja; Teeri, Tuula; Nevalainen, Helena M. K.; and Lehtovaara-Helenius, Paivi, 5,393,670, Cl. 435-252.330.
Oyagi, Yashichi; and Nakano, Hirofumi, to Nippon Steel Corporation. Apparatus for molten metal plating. 5,393,344, Cl. 118-244.000.
Oyama, Tsutomu: *See—*
Amagaya, Sakae; Fujiwara, Tadami; Aburada, Masaki; Nagasawa, Michio; and Oyama, Tsutomu, 5,393,740, Cl. 514-17.000.
Ozawa, Michiharu: *See—*
Yukumoto, Masao; Ozawa, Michiharu; Shibuya, Kiyoshi; Moriwaki, Saburo; and Sato, Toru, 5,392,837, Cl. 164-417.000.
Ozawa, Osamu; and Kitami, Tetsu, to Yokohama Rubber Co., Ltd., The. Chlorinated polyethylene rubber composition containing a 2,4,6-trimercapto-1,3,5-triazine dicyclohexylamine salt. 5,393,844, Cl. 525-333.900.
Ozawa, Yoichi: *See—*
Kitamura, Takashi; Lawson, David F.; Morita, Koichi; and Ozawa, Yoichi, 5,393,721, Cl. 502-154.000.
Ozeki, Takafumi; Akiba, Masaru; Kimura, Shuichi; Nodera, Nobuo; and Tsurufuji, Tomoyoshi, to Daiwa Seiko, Inc. Reel leg fixing device for fishing rod. 5,392,556, Cl. 43-22.000
P&G Pharmaceuticals, Inc.: *See—*
Ebetino, Frank H.; Buckingham, Kent W.; and McOsker, Jocelyn E., 5,393,746, Cl. 514-80.000.
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Romano, Camille. Composition and method for detecting counterfeit paper currency. 5,393,556, Cl. 427-7.000.
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Rush, William B.; and Wagner, Jeffrey F. Heated intake manifold for four stroke outboard motor. 5,392,742, Cl. 123-184.610.
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Sayers, Leland D., 5,392,574, Cl. 52-217.000.
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Takehara, Isamu, 5,394,045, Cl. 310-184.000.
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Kondo, Makoto; and Sekiguchi, Hiroshi, 5,392,730, Cl. 117-102.000
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Yokota, Tomohiro; Nishitani, Fumio; Ogawara, Hiroshi; Kubo, Akihito; and Fujigami, Makoto, 5,394,255, Cl. 359-49.000
Sell, Michael: *See—*
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Prevot, Roger M.; and Semersky, Frank E., 5,392,937, Cl. 215-1.00C.
Semiconductor Systems, Inc.: *See—*
Hurtig, Roy E., 5,392,989, Cl. 239-119.000.
Sen, Ashish; Tani, Katsuya; and Katoh, Kazunori, to Dow Chemical Company, The. Process for coagulation and washing of polybenzazole fibers. 5,393,478, Cl. 264-203.000.
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Sensis Corporation: *See—*
Rice, David A.; Oschmann, Jacobus M.; Valovage, Edward M.; and Viggiano, Marc J., 5,393,967, Cl. 235-454.000.
Sensormatic Electronics Corporation: *See—*
Anderson, Luis; and Stiepel, Norbert M., 5,394,184, Cl. 348-151.000.
Stiepel, Norbert M.; Anderson, Luis; and Thompson, Edwin S., 5,394,209, Cl. 354-81.000.
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Jun, Young K.; Ra, Sa K.; Kim, Dong W.; Seo, Hyun H.; Kim, Sung C.; and Kim, Jun K., 5,393,373, Cl. 156-630.000
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Girot, Pierre; and Boschetti, Eoisto, 5,393,430, Cl. 210-635.000.
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Pasquini, Pierre; and Nuns, Jacques, 5,393,954, Cl. 219-121.520.
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Beck, Niels J., 5,392,745, Cl. 123-295.000.
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Severson, Frederick E.; and Quinn, Patrick A. Automatic initialization in a model railroad motor control system. 5,394,068, Cl. 318-280.000.
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Deken, Arthur D.; and Sewell, Cody L., 5,392,868, Cl. 175-62.000.
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Riddle, Laurence R.; Sewell, John M.; and Kurtz, Paul H., 5,394,376, Cl. 367-1.000.
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Seyffert, Kenneth W., to Environmental Procedures, Inc. Shale shaker and screen. 5,392,925, Cl. 209-405.000.
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Seymour, Timothy H. Continuous bulk unloader/reclaimer. 5,393,187, Cl. 414-141.100.
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Jo, Sung J., 5,394,465, Cl. 379-377.000.
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Alini, Roberto; Rezzi, Francesco; Vai, Gianfranco; and Gregori, Marco, 5,394,112, Cl. 330-256.000.
Ghezzi, Paolo; Pio, Federico; and Riva, Carlo, 5,393,684, Cl 437-43.000.
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Shaffer, James E.: *See—*
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Shah, Chandrakant S.: *See—*
Thota, Hamsa A. P.; Rebstock, Don A.; and Shah, Chandrakant S., 5,393,546, Cl. 426-276.000.
Shah, Navnit H.: *See—*
Infeld, Martin H.; Malick, A. Waseem; Shah, Navnit H.; and Phuapradit, Wantanee, 5,393,765, Cl. 514-365.000.
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Adachi, Makoto, 5,394,276, Cl. 360-36.200.
Fukumoto, Takahiro, 5,394,360, Cl. 365-185.000.
Hagihara, Hideaki; Okuda, Masakiyo; and Takata, Souichi, 5,393,044, Cl. 271-10.000.
Hotta, Yasuhiro, 5,394,371, Cl. 365-94.000.
Kawahara, Masafumi, 5,392,638, Cl. 73-61.490.
Sugita, Jun; Morita, Kazushige; Katayama, Satoshi; Sugimura, Hiroshi; Nishigaki, Satoshi; and Emoto, Kazuhiro, 5,393,636, Cl 430-137.000.
Wada, Masahiko; and Imai, Shigeki, 5,394,538, Cl. 395-425.000.
Yamada, Nobuaki; Hirai, Toshiyuki; Onishi, Noriaki; and Koozaki, Shuichi, 5,394,256, Cl. 359-51.000
Yoshinouchi, Atsushi; Morita, Tatsuo; and Tsuchimoto, Shuhei, 5,393,986, Cl. 250-492.210.
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Shau, Jeng-Ge; and Shau, Jeng-Jye, 5,393,970, Cl. 250-206.200.
Shaw, John D. Method of producing wollastonite & ceramic bodies containing wollastonite. 5,393,472, Cl. 264-63.000.
Shaw, Robert K.; and McDonald Brian, to Majco Building Specialties, L.P. Gas burner system. 5,392,763, Cl. 126-512.000
Sheckler, John C.: *See—*
Lomas, David A.; Cetinkaya, Ismail B.; Niewiedzal, Steven; Sheckler, John C.; and Sechrist, Paul A., 5,393,414, Cl. 208-161.000
Shell Oil Company: *See—*
Adams, Gerald C.; Lawson, Jimmie B.; and Morgenthaler, Lee N., 5,392,859, Cl. 166-300.000.
Bernardi, Louis A., Jr.; Lau, Hon C.; and Cole, David A., 5,392,855, Cl. 166-278.000.
Handlin, Dale L., Jr.; Goodwin, Daniel E.; Willis, Carl L.; St. Clair, David J.; Wilkey, John D.; Modic, Michael J.; and Stevens, Craig A., 5,393,843, Cl. 525-332.800.
Himes, Glenn R.; Spence, Bridget A.; Hoxmeier, Ronald J.; and Chin, Steven S., 5,393,841, Cl. 525-314.000
Masse, Michael A.; Mancinelli, Paul A.; Erickson, James R.; Dillman, Steven H.; Bening, Robert C.; and Hansen, David R., 5,393,818, Cl. 524-270.000.
Vinegar, Harold J.; De Rouffignac, Eric P.; Glandt, Carlos A.; Mikus, Thomas; and Beckemeier, Mark A., 5,392,854, Cl. 166-271.000.
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Grayson, Basil T., 5,393,770, Cl. 514-383.000
Shelton, Mark R.: *See—*
Zima, George C.; Williams, T. Hugh; and Shelton, Mark R., 5,393,905, Cl. 554-70.000.
Shen, Ju: *See—*
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Shepard, William C.: *See—*
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Shepherd, James P.: *See—*
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Sheppard, Robert C.: *See—*
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Sheridan, Thomas L. Continuously engaged tangential driving tool. 5,393,036, Cl. 254-100.000.
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Sherwood Medical Company: *See—*
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Sherwood, Robert E.: *See—*
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Shiao, J. S.: *See—*
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Shibasaki, Masao: *See—*
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Shibata, Masahiro: *See—*
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Shibata, Yoshinori: *See—*
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Shieh, Chiung-Huei; Farr, William A.; McElwain, Thomas E.; Taylor, Roscoe W.; Patterson, William J.; Denstaedt, Glenn E.; Juengel, Robert R.; and Laube, Stephen G., to Cabot Corporation. Carbon blacks. 5,393,821, Cl. 524-495.000.
Shieh, Wen; Dailey, Timothy; and Hedges, Allan, to American Maize-Products Company. Cyclodextrin refining process. 5,393,880, Cl 536-103.000.
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Chen, Ching-Shih; Gou, Da-Ming; and Shieh, Woan-Ru, 5,393,912, Cl. 558-161.000.
Shields, Richard A., Jr.: *See—*
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Shiells, James E., to United States of America, Army. Armor applique 5,392,687, Cl. 89-36.170.
Shigeta, Teruaki; and Nishiura, Takeshi, to Matsushita Electric Industrial Co., Ltd. Projection type image display device. 5,394,204, Cl. 353-31.000.
Shih, Hsiang: *See—*
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Shikanai, Nobuo; Sanpei, Tetsuya; Yako, Kazunori; Hirabe, Kenji; and Kunisada, Yasunobu, to NKK Corporation. Method for producing abrasion-resistant steel having excellent surface property. 5,393,358, Cl 148-541.000
Shikata, Shin-ichi, to Sumitomo Electric Industries, Ltd. MIS electrode forming process. 5,393,680, Cl. 437-40.000.
Shimada, Kazutoshi, to Canon Kabushiki Kaisha. Electronic device. 5,394,166, Cl. 345-98.000.
Shimadzu Corporation: *See—*
Yamakage, Yasuhiro; and Nagamachi, Shinji, 5,393,985, Cl. 250-398.000.
Shimano Inc.: *See—*
Nakajima, Hideki, 5,393,005, Cl. 242-289.000.
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Shimizu, Katsuya: *See—*
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Shimoda, Kenji; Tsurufusa, Hideo; Yoda, Shinji; and Fuse, Kazuyoshi, to Kabushiki Kaisha Toshiba. Multisystem adaptable type signal processing and recording/reproducing apparatus. 5,394,249, Cl. 358-335.000.
Shin-Etsu Chemical Co. Ltd.: *See—*
Ogawa, Kinya; Ito, Kenichi; Hirasawa, Yoichi; Oshima, Takao; and Sakai, Seiji, 5,393,312, Cl. 47-58.000.
Shimizu, Toshihide; and Watanabe, Mikio, 5,393,857, Cl. 526-918.000.
Takeda, Yoshihumi; Ishihara, Toshinobu; and Ohsaki, Hiromi, 5,393,815, Cl. 524-262.000.
Shin-Etsu Handotai Kabushiki Kaisha: *See—*
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Shinjo, Keisuke, to NEC Corporation. Method for wire routing of a semiconductor integrated circuit and apparatus for implementing the same. 5,394,337, Cl. 364-490.000.
Shinoda, Ichiro: *See—*
Watanabe, Mitsuo; Sato, Shinichi; Kawai, Hiroaki; and Shinoda, Ichiro, 5,393,968, Cl. 235-462.000
Shinoda, Sumio, to Daicel Chemical Industries, Ltd. Process for producing acetic acid or methyl acetate and catalyst therefor. 5,393,919, Cl. 560-239.000.
Shinogle, Ronald D.: *See—*
Maley, Dale C.; Olson, David M.; and Shinogle, Ronald D., 5,392,811, Cl. 137-514.000.
Shinohara, Hirofumi; and Amishiro, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. Module cell generating device for a semiconductor integrated circuit. 5,394,338, Cl. 364-491.000.
Shinohara, Tatsuo: *See—*
Ishii, Tatsuya; and Shinohara, Tatsuo, 5,393,998, Cl. 257-256.000.
Shinoki, Takanori; Nakaishi, Akio; and Yamamoto, Michio, to Teijin Limited. Sheetlike wholly aromatic polyamide shaped article and a method for producing the same. 5,393,872, Cl. 528-310.000
Shintani, Toshiya: *See—*
Yamaguchi, Yoshihiro; Satoh, Hitoshi; and Shintani, Toshiya, 5,393,952, Cl. 219-121.500.
Shiono, Katsuaki, to Alcare Co., Ltd. Attachment for leg and foot joint. 5,393,303, Cl. 602-27.000.
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Shipp, John I., to Apollo Camera, L.L.C. Video imaging systems and method using a single interline progressive scanning sensor and sequential color object illumination. 5,394,187, Cl. 348-269.000
Shirai, Akira: *See—*
Sakurada, Takefumi; Tani, Naoaki; Sugaya, Takumi; Rokutan, Takao; Oshiba, Mitsuo; and Shirai, Akira, 5,394,385, Cl. 369-44.230
Shiraiwa, Masaru: *See—*
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Shirota, Hironao, to Seiko Epson Corp. Docking system for enhancing computer functionality. 5,394,552, Cl. 395-750.000.
Shirota, Riichiro: *See—*
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Shoesmith, Roy; and Kittson, Mark O., to Bay Mills Limited. Process for reinforcing paving. 5,393,559, Cl. 427-136.000.
Shofner, Frederick M.; Baldwin, Joseph C.; Kacenas, Benjamin M.; and Chu, Youe-T., to Zellweger Uster, Inc. Topological map maker 5,394,480, Cl. 382-1.000.
Shonbeck, Barry S.: *See—*
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Shono, Hiroaki: *See—*
Marumoto, Motoi; Fujisawa, Eiji; and Shono, Hiroaki, 5,393,822, Cl. 524-496.000.
Shono, Seita, to Canon Kabushiki Kaisha. Image processing capable of handling multi-level image data without deterioration of image quality in highlight areas. 5,394,250, Cl. 358-455.000.
Shorts Missile Systems Limited: *See—*
Dunn, Albert J.; and Carson, Oliver S., 5,393,011, Cl. 244-3.210
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Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, to Yozan Inc. Absolute value circuit. 5,394,107, Cl. 327-354.000.
Shou, Lee W. Mask for use in fire accidents. 5,392,465, Cl. 2-7.000.
Showa Shell Sekiyu Kabusyiki Kaisha: *See—*
Okabe, Nobuhiro; Isozaki, Tadaaki; and Suzuki, Yoshiichi, 5,393,460, Cl. 252-299.650.
Shrivastava, Sunita: *See—*
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Siddik, Zahid H.: *See—*
Khokhar, Abdi R.; and Siddik, Zahid H., 5,393,909, Cl. 556-137.000
Siebert, Alan R.; and Guiley, C. Dale, to B. F. Goodrich Company, The. Modification of vinyl ester resins with reactive liquid polymers. 5,393,850, Cl. 525-531.000.
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Fixemer, Richard A., 5,392,863, Cl. 172-6.000.
Siegel, John H., to Vinatroics Division. One-way valve. 5,392,769, Cl. 128-201.280.
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Barthel, Herbert; and Hohn, Jochen, 5,394,409, Cl. 371-62.000.
Becker, Steffen; Schmitt-Landsiedel, Doris; and Keitel-Schulz, Doris, 5,394,034, Cl. 326-39.000.
Horst, Hendel, 5,394,127, Cl. 335-78.000.
Lang, Alfred, 5,393,996, Cl. 257-210.000.
Neuhaus, Klaus; Panzer, Klaus; and Stockmann, Michael, 5,394,419, Cl. 372-38.000.
Rattner, Manfred, 5,393,296, Cl. 601-2.000.

Rau, Peter, 5,394,398, Cl. 370-60.100.
Siemens Corporate Research, Inc.: *See—*
Kohn, Erhard, 5,393,990, Cl. 257-12.000.
Siemens Elema AB: *See—*
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Siemensmeyer, Karl: *See—*
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Signode Corporation: *See—*
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Sika Chemie GmbH: *See—*
Wekenmann, Guido, decease'd; Herzog nee Kress, Siglinde; and Petrikat, Axel, 5,393,567, Cl. 427-372.200.
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Bray, Walter T., Jr.; and Stewart, Theresa, 5,392,532, Cl. 36-11.500
Steyr-Daimler-Puch AG: *See—*
Bilgeri, Elmar, 5,392,714, Cl. 102-522.000.
Stickle, Dean. Edger sanding tool. 5,392,569, Cl. 51-523.000.
Stiepel, Norbert M.; Anderson, Luis; and Thompson, Edwin S., to Sensormatic Electronics Corporation. Surveillance device with eyeball assembly and pivotably mountable carriage assembly 5,394,209, Cl. 354-81.000.
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Stock, Anthony P.; O'Brien, Daniel B.; and Sloan, James A., to Target Recycling Inc. Reflective marker from recyclable material 5,393,166, Cl. 404-14.000
Stockmann, Michael: *See—*
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Stockner, Alan R.; Cagle, Billy J.; Grinsteiner, James J.; and Hower, Martin J., to Caterpillar Inc. Hydraulically-actuated fuel injector system having separate internal actuating fluid and fuel passages. 5,392,749, Cl. 123-470.000.
Stoddard, Gregory J.: *See—*
Khouri, Farid F.; and Stoddard, Gregory J., 5,393,833, Cl. 525-64.000.
Stohr, Frank-Michael: *See—*
Schwarz, Max; Grutze, Joachim; Hildebrand, Dietrich; Wolff, Joachim; and Stohr, Frank-Michael, 5,393,307, Cl. 8-549.000
Stoklosa, Stanley J.: *See—*
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Stoltz, Klas; and Gustavsson, Bo, to Fargklamman Svenska AB. Theft-deterrent device for use with theft-attractive articles. 5,392,620, Cl. 70-57.100
Stoltzfus, John. Bullnose corner cleaning tool. 5,392,484, Cl. 15-235.700.
Stone Container Corporation: *See—*
Knecht, John, 5,393,295, Cl. 493-403.000.
Stoner, Eugene M., to Ares, Inc. Automatic cannon with carbioid-shaped shell chamber path. 5,392,685, Cl. 89-9.000.
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Belsan, Jay S., 5,394,532, Cl. 395-425.000.
Hill, Fletcher L.; Jurestovsky, Nancy R.; and Beal, David G., 5,394,543, Cl. 395-575.000.
Sundaram, Ramesh, 5,394,285, Cl. 360-121.000.
Stradal, John A.; and Underwood, Gary L., to Red Arrow Products Company Inc. Process for producing hydroxyacetaldehyde 5,393,542, Cl. 426-241.000.
Strand, Steinar J.: *See—*
Pahr, Per O.; Strand, Steinar J.; and Solhjell, Erik, 5,394,277, Cl. 360-53.000.
Strasser, Siegfried: *See—*
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Johenning, John B., 5,392,478, Cl. 5-462.000.
Strauss, Dietmar: *See—*
Braun, Helmut; Strauss, Dietmar; Klein, Peter; and Valtwies, Stefan, 5,393,266, Cl. 464-67.000.
Strenkoski, Leon F.: *See—*
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Stricklen, Gary A., to Precision Welding Technologies, Inc. Gas shielding apparatus for welding. 5,393,949, Cl. 219-74.000.
Striebel, John S. Dental floss for brace wearers and the like. 5,392,794, Cl. 132-324.000.
Strigle, Ralph F., Jr.: *See—*
Powell, Clarence; Powell, Duane; and Strigle, Ralph F., Jr., 5,393,314, Cl. 55-233.000.
Stringfellow, Bruce; and Mitchell, Mike, to International Business Machines Corporation. Task spawning responsive to relational database conditions and operations. 5,394,549, Cl. 395-650.000.
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Closs, Friedrich; Frey, Thomas; Funhoff, Dirk; Siemensmeyer, Karl; Ringsdorf, Helmut; Haarer, Dietrich; and Strohriegl, Peter, 5,393,626, Cl. 430-56.000.
Strong, Richard M.: *See—*
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Ahl, David K; Merz, Eric A.; Struczewski, Timothy G.; Swanson, Roger M.; and Rittberg, George F., 5,393,047, Cl. 271-277.000
Strumwasser, Felix; and Hellmich, Mark R. Eucaryotic NAD cyclases 5,393,667, Cl. 435-200.000.
Stuart, John W., to Pacific Gas and Electric Company. Gradational tube bundle flow conditioner for providing a natural flow profile to facilitate accurate orifice metering in fluid filled conduits. 5,392,815, Cl. 138-37.000.
Stubbs, Brian M.: *See—*
Pudney, Ian A.; Stubbs, Brian M.; and Welch, Malcolm J., 5,393,338, Cl. 106-238.000.
Stubbs, Graham S.: *See—*
Buynak, William J.; Leonard, Eugene; Stubbs, Graham S.; and Budai, Karoly, 5,394,470, Cl. 380-5.000
Studer, David W.: *See—*
Moore, Robert B.; Hegarty, William P.; Studer, David W.; and Tirados, Edward J., 5,392,594, Cl. 60-39.020.
Sturm, Joseph, to Thyssen Stahl Aktiengesellschaft. Optical beam divider for a laser beam. 5,394,270, Cl. 359-636.000.
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Blumenhopf, Todd A.; Spector, Thomas; Averett, Devron R., Morrison, Robert W., Jr.; Bigham, Eric C.; and Styles, Virgil L., 5,393,883, Cl. 544-124.000.
Su, Fu-Min: *See—*
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Suchdev, Lakhbir S.; Bringhurst, Rory B.; and Baker, Michael, to Ryobi Outdoor Products Inc. Electric motor mount having vibration damping. 5,394,039, Cl. 310-51.000.
Sudo, Kazuhisa; Tanaka, Mitsuo; Imai, Chikara; Suzuki, Koji; Sohmiya, Norimasa; and Takahashi, Sadao, to Ricoh Company, Ltd. Image forming apparatus capable of forming an erasable image. 5,394,231, Cl. 355-326.00R.
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Suga, Yasushi; Nakajima, Kenji; Kobayashi, Kiyoshi; and Miyamoto, Kimiaki, to Fuji Photo Film Co., Ltd. Curtain coating method for eliminating sagging at high flow rates. 5,393,571, Cl. 427-420.000
Sugahara, Takashi: *See—*
Matsunaga, Tsuyoshi; Fujino, Kenji; Sugahara, Takashi; and Kan, Hiroaki, 5,392,849, Cl. 165-167.000.
Sugano, Yukiyasu, to Sony Corporation. Magnetron sputtering apparatus. 5,393,398, Cl. 204-298.110.
Sugawara, Hirofumi: *See—*
Kasai, Shozo; Tohbo, Yozo; Nikaido, Norio; and Sugawara, Hirofumi, 5,393,210, Cl. 425-145.000.
Sugawara, Kenji, to Kabushiki Kaisha Shinkawa. Bonding wire inspection apparatus and method. 5,394,246, Cl. 356-394.000.
Sugawara, Yasushi: *See—*
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Sugimoto, Masahiko: *See—*
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Sugimura, Hiroshi: *See—*
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Konishi, Motofumi; Sugita, Shigeru; Naba, Takashi; and Amemiya, Masami, 5,393,962, Cl. 235-375.000.
Sugiura, Masami, to NEC Corporation. Indication device. 5,394,165, Cl. 345-82.000.
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Sugiyama, Tatsuo; and Maeda, Kenji, to Asahi Glass Company Ltd. Glass plate bend-shaping apparatus and method of bend-shaping a glass plate. 5,393,316, Cl. 65-106.000.
Suguro, Masahiro: *See—*
Mori, Akio; Sato, Akiyoshi; Suguro, Masahiro; and Nakayama, Makota, 5,393,934, Cl. 174-257.000.
Sukegawa, Osamu: *See—*
Watanabe, Takahiko; and Sukegawa, Osamu, 5,394,308, Cl 362-31.000.
Sulzbach, Frank C., to Texas Instruments Incorporated. Method for forming light absorbing aluminum nitride films by ion beam deposition. 5,393,574, Cl. 427-530.000.
Sulzer Brothers Limited: *See—*
Seifert, Eberhard; and Gorris, Johannes J. H. M., 5,392,817, Cl. 139-25.000.
Sulzer-Escher Wyss GmbH: *See—*
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Sumimoto Chemical Company, Limited: *See—*
Inoue, Hiroki; Sakaguchi, Iwao; Numano, Katsutoshi; Kishimoto, Toshiaki; Hayashi, Yoshiaki; and Ito, Keisuke, 5,393,899, Cl. 552-212.000.
Sumitani, Kazuo: *See—*
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Sumitomo Electric Industries, Ltd.: *See—*
Fujimoto, Tsuyoshi, 5,393,133, Cl. 303-119.200.
Matsuura, Yuki; Ueoka, Isao; Iwata, Koichi; Kawabe, Hiromitsu, and Natsume, Yoshitaka, 5,393,612, Cl. 428-458.000.
Nakahata, Seiji; Matsuura, Takahiro; Sogabe, Kouichi; and Yamakawa, Akira, 5,393,715, Cl. 501-98.000.
Shikata, Shin-ichi, 5,393,680, Cl. 437-40.000.
Tsuzuki, Yasushi; Awazu, Tomoyuki; and Yamakawa, Akira, 5,394,015, Cl. 264-65.000.
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Sumitomo Rubber Industries, Ltd.: *See—*
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Summerfelt, Scott R., to Texas Instruments Incorporated. Pb/Bi-containing high-dielectric constant oxides using a non-P/Bi-containing perovskite as a buffer layer. 5,393,352, Cl. 148-33.300.
Summers, James H.: *See—*
Emrick, Samuel L.; DeWitt, Jimmie E.; and Summers, James H., 5,394,545, Cl. 395-600.000
Summers, John D., to Du Pont de Nemours, E. I., and Company. Wet-etchable random polyimide copolymer for multichip module applications. 5,393,864, Cl. 528-353.000
Sun, Hsiao H.: *See—*
Burger, Mark E.; and Sun, Hsiao H., 5,394,487, Cl. 382-61.000
Sun Microsystems, Inc.: *See—*
Chesley, Gilman; Gastinel, Jean A.; and Cerauskis, Fred, 5,394,541, Cl 395-550.000
Deering, Michael F., 5,394,202, Cl. 353-7.000
Klein, Michael F., 5,394,403, Cl. 371-21.100
Loo, Mike C., 5,394,009, Cl. 257-666.000.
Sundaram, Ramesh, to Storage Technology Corporation. Multi-track longitudinal, metal-in-gap head. 5,394,285, Cl. 360-121.000
Sundstrom, Ray D.: *See—*
Chun, Christopher K. Y.; and Sundstrom, Ray D., 5,394,108, Cl. 327-335.000
Supron, Steven A.: *See—*
Silverberg, Morton, Salancy, William A., and Supron, Steven A., 5,392,704, Cl 101-92.000.
Surber, Tim: *See—*
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Surman, David H.: *See—*
Elko, David A.; Isenberg, John F., Jr.; Meritt, Allan S.; Moore, Brian B.; Nick, Jeffrey M.; Shepard, William C.; Surman, David H.; and Swanson, Michael D., 5,394,554, Cl. 395-800.000
Susaki, Wataru: *See—*
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Suska, James F.: *See—*
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Sutherland, Danny R.: *See—*
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Sutton, David L.: *See—*
Howard, Thomas J., Jr.; and Sutton, David L., 5,392,568, Cl 451-357.000.
Sutton, David M., to British Gas PLC. Thermoelectric sensor. 5,393,222, Cl. 431-80.000.
Sutton, Donald G., to Lanfield Holdings Limited. Launching mechanism. 5,392,755, Cl. 124-5.000.
Suyama, Motohiro; and Kinoshita, Katsuyuki, to Hamamatsu Photonics K.K. Imaging device with high speed shuttering. 5,393,972, Cl 250-214.0VT
Suzuki, Hideo, to Bellmatic, Ltd. Magnetic rolling system having rollers with laminated ply units disposed therein. 5,392,702, Cl. 100-163.00R
Suzuki, Hiroshi: *See—*
Koyama, Toru; Takasaki, Hirokazu; Suzuki, Hiroshi; Mukoh, Akio Kano, Ikushi; and Koide, Toshiyuki, 5,393,805, Cl. 523-400.000
Suzuki, Hiroyoshi: *See—*
Yamamoto, Hiroyasu; Konuma, Takayuki; Shika, Akira; Suzuki, Hiroyoshi; Katouno, Masanori; and Sato, Kaori, 5,394,011, Cl. 257-693.000
Suzuki Kabushiki Kaisha: *See—*
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Suzuki, Kazunori: *See—*
Fukaya, Tomoji; Shibata, Masahiro; Suzuki, Kazunori; Nakae, Makoto; Nakano, Syuichi; and Suzuki, Masatoshi, 5,393,397, Cl 204-424.000.
Suzuki, Koji: *See—*
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Suzuki, Masami: *See—*
Masuyama, Toshio; Suzuki, Masami; and Fujimoto, Hiroyuki, 5,392,873, Cl. 180-68.500.
Suzuki, Masatoshi; Tanaka, Hideaki; and Matsushima, Yuichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Optical pulse generator. 5,394,260, Cl. 359-158.000.

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Fukaya, Tomoji; Shibata, Masahiro; Suzuki, Kazunori; Nakae, Makoto; Nakano, Syuichi; and Suzuki, Masatoshi, 5,393,397, Cl 204-424.000.
Suzuki, Miho: *See*—
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Suzuki, Motoi; and Inoue, Yuji, to Fuji Photo Film Co., Ltd. Automatic processing apparatus. 5,394,216, Cl. 354-324.000.
Suzuki, Satoshi: *See*—
Yakabe, Masahiro; Suzuki, Satoshi; Degawa, Sadao; Murayama, Shigeki; Ishibashi, Koichi; Nakashima, Ikuo; and Sakai, Koji, 5,393,378, Cl. 162-61.000.
Suzuki, Seiko; Tsuchitani, Shigeki; Miki, Masayuki; and Matsumoto, Masahiro, to Hitachi, Ltd. Capacitance type accelerometer. 5,392,651, Cl. 73-517.00R.
Suzuki, Takayuki: *See*—
Kira, Ikuo; Watanabe, Kazuhiro; Nakanishi, Eiji; Ban, Hiroshi; Onishi, Norimasa; and Suzuki, Takayuki, 5,393,664, Cl 435-156.000.
Suzuki, Toshinobu: *See*—
Tanaka, Takaaki; Suzuki, Toshinobu; and Nagano, Chikara, 5,394,271, Cl. 359-656.000.
Suzuki, Toshiya; Ohba, Takayuki; Jinnouchi, Shimpei; and Murakami, Seishi, to Fujitsu Limited. Method for deposition of a refractory metal nitride and method for formation of a conductive film containing a refractory metal nitride. 5,393,565, Cl. 427-255.200.
Suzuki, Toshiyuki: *See*—
Kawasaki, Noboru; Sasagawa, Katsuyoshi; Suzuki, Toshiyuki; and Fujii, Kenichi, 5,393,607, Cl. 428-334.000.
Suzuki, Yoshiichi: *See*—
Okabe, Nobuhiro; Isozaki, Tadaaki; and Suzuki, Yoshiichi, 5,393,460, Cl. 252-299.650.
Suzuki, Yoshiyuki, to NEC Corporation. Semiconductor thin film transistor with gate controlled offset portion. 5,393,992, Cl. 257-69.000.
Suzuki, Yuji, to Fuji Photo Film Co., Ltd. Method for producing cellulose ester film. 5,393,476, Cl. 264-169.000.
Svanqvist, Tord O. S.: *See*—
Kyytsonen, Markku; and Svanqvist, Tord O. S., 5,393,008, Cl 242-541.100.
Swamy, Deepak N.; Estes, Scott; and Bell, James, to Dell USA, L.P. Method and apparatus for reworking ball grid array packages to allow reuse of functional devices. 5,392,980, Cl. 228-119.000.
Swan Corporation, The: *See*—
Buonaura, Anthony; and Moore, John W., 5,393,808, Cl 523-514.000.
Swanson, Bruce A.: *See*—
Hutchins, Burleigh M.; Dunlap, Raymond R.; Conklin, Timothy J.; Swanson, Bruce A.; Petracca, John; Abrahams, Louis; and Kimball, Ronald A., 5,393,420, Cl. 210-198.200.
Hutchins, Burleigh M.; Dunlap, Raymond R.; Conklin, Timothy J.; Swanson, Bruce A.; Petracca, John; Abrahams, Louis; and Kimball, Ronald A., 5,393,434, Cl. 210-656.000.
Swanson, Larry S.; and Burns, Lawrence J. Gynecological speculum 5,392,764, Cl. 128-3.000.
Swanson, Michael D.: *See*—
Elko, David A.; Isenberg, John F., Jr.; Meritt, Allan S.; Moore, Brian B.; Nick, Jeffrey M.; Shepard, William C.; Surman, David H.; and Swanson, Michael D., 5,394,554, Cl. 395-800.000.
Frey, Jeffrey A.; Nick, Jeffrey M.; and Swanson, Michael D., 5,394,542, Cl. 395-575.000.
Swanson, Roger M.: *See*—
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Swantick, Steven J.: *See*—
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Sway-Tin, Min: *See*—
O'Kennedy, Maura P.; Sway-Tin, Min; Yagley, Martin G.; and Lee, Anson, 5,392,643, Cl. 73-118.100.
Swearingen, Bruce D., to Smith International, Inc. Flow control sub for hydraulic expanding downhole tools. 5,392,862, Cl. 166-386.000.
Swedlow, David B.; Mannheimer, Paul D.; and Warring, Jessica A., to Nellcor, Inc. Oximeter sensor with perfusion enhancing. 5,392,777, Cl. 128-633.000.
Swerdloff, Stuart; Mackie, Thomas R.; and Holmes, Timothy, to Wisconsin Alumni Research Foundation. Verification system for radiation therapy. 5,394,452, Cl. 378-65.000.
Swidersky, Hans-Walter; Rudolph, Werner; Hartmann, Ulrich; Moewius, Frank; Radonz, Veronika; and Meisel, Manfred, to Kali-Chemie Aktiengesellschaft. Method for the manufacturing of alkali monofluorophosphate. 5,393,506, Cl. 423-301.000.
Swift, Graham: *See*—
Freeman, Michael B.; Paik, Yi H.; Simon, Ethan S.; and Swift, Graham, 5,393,868, Cl. 528-480.000.
Swilik, Robert C., Jr.; and Beck, Scott A., to Carrier Corporation. Blower mounting arrangement for forced air furnace. 5,392,761, Cl. 126-99.00R.
Swiszcz, Paul G.: *See*—
Colson, Wendell B.; Anthony, James M.; Oberg, Brad H.; Hoffmann, Brian M.; Williams, Eric N.; Swiszcz, Paul G.; and Jansen, Cornelis M., 5,392,832, Cl. 160-84.070.
Symbiosis Corporation: *See*—
Slater, Charles R.; Kortenbach, Jurgen A.; and Starkey, John, 5,392,789, Cl. 128-751.000.
Symbol Technologies, Inc.: *See*—
Bravman, Richard; and Wang, Ynjiun P., 5,393,965, Cl 235-383.000.
Syoji, Masataka; Toyota, Kozo; Eguchi, Chikahiko; Yoshimoto, Ryoto, Koyama, Yoshikatsu; Domoto, Hideki; and Kamimura, Akira, to Ajinomoto Co., Inc. Piperidine derivatives and hypotensives containing the same. 5,393,890, Cl. 546-80.000.
Syrek, Gerald M., to Eastman Kodak Company. Stackable container for premoistened wipes. 5,392,945, Cl. 220-608.000.
Szablikowski, Klaus: *See*—
Korte, Siegfried; Alberts, Heinrich; Bohmer, Branislav; Karstens, Werner; Koch, Wolfgang; Poersch-Panke, Hans-Gunter; and Szablikowski, Klaus, 5,393,845, Cl. 525-369.000.
Szabo, Jean-Louis; and Daniel, Georges, to Commissariat a l'Energie Atomique. Apparatus for the simultaneous selective detection of neutrons and X or gamma photons and detection system using said apparatus. 5,393,981, Cl. 250-367.000.
Szarka, Laszlo J.: *See*—
Patel, Ramesh N.; Liu, Mark; Banerjee, Amit; and Szarka, Laszlo J., 5,393,663, Cl. 435-118.000.
Szegda, Andrew, to John Mezzalingua Assoc. Inc. Twist-on coaxial cable end connector with internal post. 5,393,244, Cl. 439-394.000
Szynal, Joseph M.: *See*—
Janke, Donald E.; Szynal, Joseph M.; Guess, Ronald W.; Bradley, Greg A.; and Carnal, Randall L., 5,394,291, Cl. 361-155.000.
T & N Technology Limited: *See*—
Copeland, Michael M.; and Slee, Roger H., 5,392,511, Cl 29-888.100.
Tabata, Atsushi: *See*—
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Tackitt, Douglas J.: *See*—
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Tafesh, Ahmed M.; Fruchey, Olan S.; and Hilton, Charles B., to Hoechst Celanese Corporation. Method for the preparation of arylalkanolamineacylates. 5,393,924, Cl. 564-138.000.
Tafesh, Ahmed M.: *See*—
Kvakovszky, George; Vicari, Richard; Fruchey, Olan S.; Tafesh, Ahmed M.; and Hilton, Charles B., 5,393,860, Cl. 528-172.000
Taga, Yutaka: *See*—
Okada, Takayuki; Taga, Yutaka; Hojo, Yasuo; Tabata, Atsushi; Kaigawa, Masato; Moroto, Shuzo; Inuzuka, Takeshi; Hattori, Masashi; and Takeshita, Yoshito, 5,393,275, Cl. 477-81.000
Tahira, Fumiaki: *See*—
Kawasaki, Keiko; Sumitani, Kazuo; Igi, Yoso; Tahira, Fumiaki; and Fujisono, Kenji, 5,394,399, Cl. 370-84.000.
Tai, Chun-Ya L. Vegetable and fruit juice processor and safety device thereof. 5,392,699, Cl. 99-492.000.
Taiho Kogyo Co., Ltd.: *See*—
Hagiwara, Yoshiyuki; Jinno, Osamu; Kitamura, Takeshi; Kuramoto, Akio; Kawai, Yukio; Yamaguchi, Kenichi; and Kahuta, Hirotaka, 5,393,076, Cl. 277-235.00A.
Taiwan Semiconductor Manufacturing Company: *See*—
Hsu, Shung-Liang; Lin, Mou-Shiung; and Lei, Ming-Dar, 5,393,691, Cl. 437-60.000.
Liang, Mong-Song, 5,393,687, Cl. 437-46.000.
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Wu, Lin-June, 5,393,692, Cl. 437-69.000.
Yeh, Wei-kun; Shiao, J. S.; and Chiang, A. M., 5,393,686, Cl 437-45.000.
Yoo, Chue-San; and Lin, Ting-Hwang, 5,393,685, Cl. 437-44.000
Tajima, Yawara: *See*—
Oida, Sadao; Miyaoka, Takeo; Tajima, Yawara; Konosu, Toshiyuki; Takeda, Noriko; and Yasuda, Hiroshi, 5,393,769, Cl 514-383.000.
Takada, Masaaki: *See*—
Honda, Masami; Kawabata, Kazuaki; and Takada, Masaaki, 5,393,241, Cl. 439-248.000.
Takahara, Hideki, to Sony Corporation. Modulation/demodulation apparatus and information processing apparatus. 5,394,259, Cl 359-142.000.
Takahashi, Eiji: *See*—
Kazama, Keizo; Tanaka, Kiichiro; Takahashi, Eiji; and Nakao, Michio, 5,392,935, Cl. 212-155.000.
Takahashi, Kiyoshi: *See*—
Nakayama, Takashi; Umino, Hiroshi; Sakakura, Yasuyuki; and Takahashi, Kiyoshi, 5,393,429, Cl. 210-634.000.
Takahashi, Michiaki: *See*—
Nukada, Katsumi; Daimon, Katsumi; Sakaguchi, Yasuo; Yamasaki, Kazuo; Iijima, Masakazu; Takahashi, Michiaki; Koseki, Kazuhiro; Imai, Akira; Mashimo, Kiyokazu; Ishii, Toru; Ojima, Fumio; Nishikawa, Masayuki; and Igarashi, Ryosaku, 5,393,629, Cl. 430-76.000
Takahashi, Michiharu: *See*—
Naito, Yoshiyuki; and Takahashi, Michiharu, 5,394,150, Cl 342-4.000
Takahashi, Osamu: *See*—
Takamatsu, Atsushi; Takahashi, Osamu; and Arai, Hiroaki, 5,394,269, Cl. 359-580.000.

Takahashi, Sadao: *See*—
Sudo, Kazuhisa; Tanaka, Mitsuo; Imai, Chikara; Suzuki, Koji; Sohmiya, Norimasa; and Takahashi, Sadao, 5,394,231, Cl. 355-326.00R.
Takahashi, Tooru: *See*—
Kumagai, Ryohei; Hiiro, Kaoru; Shimizu, Harumi; Oosaka, Manabu; and Takahashi, Tooru, 5,394,481, Cl. 382-8.000.
Takai, Mamoru, to Megasoft, Inc. Data transmitting method. 5,394,438, Cl. 375-286.000.
Takamatsu, Atsushi; Takahashi, Osamu; and Arai, Hiroaki, to Central Glass Company, Ltd. Reflectance reducing film and method of forming same on glass substrate. 5,394,269, Cl. 359-580.000.
Takamatsu, Hideo: *See*—
Kinoshita, Satoshi; Takamatsu, Hideo; Ishiura, Kazushige; Masuda, Haruhisa; and Taniguchi, Shunro, 5,393,837, Cl. 525-92.000.
Takano, Eiji: *See*—
Teramoto, Takafumi; Takano, Eiji; Uchida, Hiroyasu; Morimoto, Kenji; and Fukuma, Tsutomu, 5,392,740, Cl. 123-3.000.
Takano, Kazuhiko, to Sanyo Electric Co., Ltd. Noodle making machine with a plurality of interchangeable feed units. 5,393,212, Cl. 425-186.000.
Takano, Kazuya; Kojima, Hiroshi; and Ushijima, Takao, to Bridgestone Corporation. Vibration isolator with a diaphragm in a side wall. 5,393,041, Cl. 267-140.140.
Takaoka, Toshio: *See*—
Sasabe, Minoru; Kawai, Yoshihiko; Kikuchi, Yoshiteru; Takaoka, Toshio; Seno, Hiromi; Furuta, Chikayashi; and Nagatsuka, Toshio, 5,393,403, Cl. 204-422.000.
Takasaki, Hirokazu: *See*—
Koyama, Toru; Takasaki, Hirokazu; Suzuki, Hiroshi; Mukoh, Akio, Kano, Ikushi; and Koide, Toshiyuki, 5,393,805, Cl. 523-400.000.
Takase, Akihiko: *See*—
Yanagi, Junichirou; Ashi, Yoshihiro; Kozaki, Takahiko; Takase, Akihiko; and Nakashima, Takashi, 5,394,397, Cl. 370-60.100.
Takase, Muneaki; Narita, Toshiharu; and Komatsu, Toshihiko, to Zenyaku Kogyo Kabushiki Kaisha. Water soluble bis-dioxopiperazine derivatives. 5,393,889, Cl. 544-357.000.
Takata Corporation: *See*—
Furukawa, Koichi; and Yoshimura, Kazuo, 5,393,943, Cl. 200-61.45M.
Tanaka, Yoshihiko; and Chikaraishi, Tsuneo, 5,393,091, Cl. 280-733.000.
Takata, Souichi: *See*—
Hagihara, Hideaki; Okuda, Masakiyo; and Takata, Souichi, 5,393,044, Cl. 271-10.000.
Takatori, Sunao; Kumagai, Ryohei; Matsumoto, Koji; and Yamamoto, Makoto, to Yozan Inc. Neural network-type data processing system recognizing a predetermined shape using inhibitory connections 5,394,510, Cl. 395-22.000.
Takatori, Sunao: *See*—
Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, 5,394,107, Cl. 327-354.000.
Take, Tatsuo: *See*—
Fukuzawa, Akira; Sakuraya, Kazuyuki; Watanabe, Toshiaki; Yamazaki, Motoo; Morita, Tadashi; Take, Tatsuo; and Fujita, Michiru, 5,394,432, Cl. 373-156.000.
Takeda Chemical Industries, Ltd.: *See*—
Nakagawa, Shizue; Fukuda, Tsunehiko; Kawase, Masahiro; and Yamazaki, Iwao, 5,393,869, Cl. 530-324.000.
Sendai, Michiyuki; and Miwa, Tetsuo, 5,393,751, Cl. 514-210.000.
Takeda, Hirofumi: *See*—
Konno, Hidetoshi; Ooka, Masataka; Takeda, Hirofumi; and Sakamoto, Hiroshi, 5,393,823, Cl. 524-507.000.
Takeda, Kenji: *See*—
Asano, Ichiro; Takeda, Kenji; Oie, Tsutomu; and Koike, Hideki, 5,392,634, Cl. 73-23.420.
Takeda, Noriko: *See*—
Oida, Sadao; Miyaoka, Takeo; Tajima, Yawara; Konosu, Toshiyuki; Takeda, Noriko; and Yasuda, Hiroshi, 5,393,769, Cl. 514-383.000.
Takeda, Yoshihumi; Ishihara, Toshinobu; and Ohsaki, Hiromi, to Shin-Etsu Chemical Co., Ltd. Silazane-based, heat resistant, dielectric coating compositions. 5,393,815, Cl. 524-262.000.
Takehara, Isamu, to Seiko Instruments Inc. Brushless motor. 5,394,045, Cl. 310-184.000.
Takehara, Isao: *See*—
Noda, Masami; Ikeguchi, Takashi; Anzai, Shunichi; Kawaike, Kazuhiko; and Takehara, Isao, 5,393,198, Cl. 415-115.000.
Takehara, Nobuyoshi, to Canon Kabushiki Kaisha. Method of making solar cell. 5,393,695, Cl. 437-180.000.
Takei, Yoshitsugu; and Kojima, Tsutomu, to Organ Needle Co., Ltd. Sewing machine needle and method for manufacturing same. 5,392,725, Cl. 112-222.000.
Takemi, Masayoshi; Hayafuji, Norio; and Susaki, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor laser producing visible light. 5,394,417, Cl. 372-45.000.
Takeo, Hiroshi: *See*—
Murai, Nobuyuki; Shirato, Masayuki; Takeo, Hiroshi; and Tanaka, Hidetoshi, 5,393,866, Cl. 528-403.000.
Takeshita, Yoshito: *See*—
Okada, Takayuki; Taga, Yutaka; Hojo, Yasuo; Tabata, Atsushi; Kaigawa, Masato; Moroto, Shuzo; Inuzuka, Takeshi; Hattori, Masashi; and Takeshita, Yoshito, 5,393,275, Cl. 477-81.000
Taketomi, Yojiro: *See*—
Azuma, Tsutomu; and Taketomi, Yojiro, 5,392,965, Cl 222-396.000.
Takeuchi, Hiroshi: *See*—
Kajitani, Koji; Takeuchi, Hiroshi; Fukatani, Yasunobu; Teramae, Hiroshi; and Asada, Masaaki, 5,392,888, Cl. 192-70.160.
Takeuchi, Nobunari; Lee, Tekken; Shimizu, Kaoru; and Horiguchi, Tsuneo, to Ando Electric Co., Ltd.; and Nippon Telegraph and Telephone Corporation. Apparatus for measuring distortion position of optical fiber. 5,394,235, Cl. 356-73.100.
Takeuchi, Nobuyoshi: *See*—
Uematsu, Hiroshi; Ando, Hiroyuki; Yoneyama, Tsutomu; Takeuchi, Nobuyoshi; and Kato, Shigeki, 5,394,154, Cl. 342-165.000.
Takeyama, Norio: *See*—
Ikeda, Michio; Suzuki, Miho; Takeyama, Norio; and Hayata, Terunobu, 5,393,394, Cl. 204-158.200.
Takubo, Chiaki: *See*—
Tazawa, Hiroshi; Takubo, Chiaki; Tsuboi, Yoshiharu; and Sasaki, Mamoru, 5,394,010, Cl. 257-686.000.
Taligent, Inc.: *See*—
Harris, Jerry G., 5,394,523, Cl. 395-162.000.
Tamburrini, Vincent: *See*—
Kroll, Richard E.; Tamburrini, Vincent; and Hansen, Frederick M., 5,392,578, Cl. 52-506.100
Tamoto, Koji: *See*—
Toda, Satoru; Yasuda, Tomokazu; and Tamoto, Koji, 5,393,648, Cl 430-522.000.
Tampella Power Corporation: *See*—
Alliston, Michael G.; and Sinn, Brian T., 5,393,315, Cl. 55-269.000.
Tamura, Yoshihiro; Hidetoshi, Hara; Nakao, Yuichi; and Ishiwari, Kazuo, to Tokyo Industries, Inc. Electrophotographic color printing method. 5,394,232, Cl. 355-327.000.
Tamura, Yukio: *See*—
Murata, Yoshinori; Goto, Yukio; Tamura, Yukio; and Mouri, Ryoji, 5,393,213, Cl. 425-205.000.
Tanaka, Hideaki: *See*—
Suzuki, Masatoshi; Tanaka, Hideaki; and Matsushima, Yuichi, 5,394,260, Cl. 359-158.000.
Tanaka, Hidetoshi: *See*—
Murai, Nobuyuki; Shirato, Masayuki; Takeo, Hiroshi; and Tanaka, Hidetoshi, 5,393,866, Cl. 528-403.000.
Tanaka, Kiichiro: *See*—
Kazama, Keizo; Tanaka, Kiichiro; Takahashi, Eiji; and Nakao, Michio, 5,392,935, Cl. 212-155.000
Tanaka, Makoto: *See*—
Ishii, Takayuki; Kasano, Makiko; Yasunaga, Tae; Ishii, Mariko; Sugimoto, Mamoru; Tomita, Kenkichi; Miyata, Takeshi; and Tanaka, Makoto, 5,393,742, Cl. 514-23.000.
Tanaka, Masaharu: *See*—
Kyushima, Tatsuo; and Tanaka, Masaharu, 5,393,278, Cl. 477-120.000.
Tanaka, Masato: *See*—
Saito, Toranosuke; Ishibashi, Takashi; Kawabata, Eiji; Tanaka, Masato; and Kimura, Toshio, 5,393,332, Cl. 106-21.00R.
Tanaka, Mitsuo: *See*—
Sudo, Kazuhisa; Tanaka, Mitsuo; Imai, Chikara; Suzuki, Koji; Sohmiya, Norimasa; and Takahashi, Sadao, 5,394,231, Cl. 355-326.00R.
Tanaka, Tadao: *See*—
Taniguchi, Yasutaka; Morita, Takao; Tanaka, Tadao; Hayase, Kenji; and Tani, Masanori, 5,393,087, Cl. 280-707.000.
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Sasaki, Takayoshi; and Tanimoto, Masaki, to Daido Metal Company, Ltd. Method of surface-treating a half sliding bearing and apparatus for same 5,393,395, Cl. 204-198.000.
Tanaka, Takaaki; Suzuki, Toshinobu; and Nagano, Chikara, to Olympus Optical Co., Ltd. Optical system for microscopes. 5,394,271, Cl 359-656.000.
Tanaka, Tomoharu; and Shirota, Riichiro, to Kabushiki Kaisha Toshiba. Semiconductor memory device having charge-pump system with improved oscillation means. 5,394,372, Cl. 365-226.000.
Tanaka, Yoshihiko; and Chikaraishi, Tsuneo, to Takata Corporation Inflatable seatbelt system. 5,393,091, Cl. 280-733.000.
Tandberg Data A/S: *See*—
Pahr, Per O.; Strand, Steinar J.; and Solhjell, Erik, 5,394,277, Cl 360-53.000.
Pahr, Per O.; and Rubas, Ladislav, 5,394,278, Cl. 360-66.000
Tang, Pao-Yun: *See*—
Chang, San-Wen; Tang, Pao-Yun; and Ho, Shyuan-Jeng, 5,393,359, Cl. 156-64.000
Tani, Katsuya: *See*—
Sen, Ashish; Tani, Katsuya; and Katoh, Kazunori, 5,393,478, Cl 264-203.000.
Tani, Masanori: *See*—
Taniguchi, Yasutaka; Morita, Takao; Tanaka, Tadao; Hayase, Kenji; and Tani, Masanori, 5,393,087, Cl. 280-707.000.
Tani, Naoaki: *See*—
Sakurada, Takefumi; Tani, Naoaki; Sugaya, Takumi; Rokutan, Takao; Oshiba, Mitsuo; and Shirai, Akira, 5,394,385, Cl 369-44.230.
Taniguchi, Hirokazu: *See*—
Kondo, Hitoshi; Taniguchi, Hirokazu; and Sakai, Yuzo, 5,393,816, Cl. 524-267.000.
Taniguchi, Shunro: *See*—
Kinoshita, Satoshi; Takamatsu, Hideo; Ishiura, Kazushige; Masuda, Haruhisa; and Taniguchi, Shunro, 5,393,837, Cl. 525-92.000
Taniguchi, Yasutaka; Morita, Takao; Tanaka, Tadao; Hayase, Kenji; and Tani, Masanori, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha.

Fluid active suspension apparatus and operation control method therefor. 5,393,087, Cl. 280-707.000.

Tanimoto, Masaki: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Sasaki, Takayoshi; and Tanimoto, Masaki, 5,393,395, Cl. 204-198.000

Tanitsu, Katsuya: *See—*
Hashimoto, Akira; and Tanitsu, Katsuya, 5,393,907, Cl. 556-28.000.

Taniyama, Yoshihiko. Expandable storage container system. 5,392,906, Cl. 206-311.000.

Tao, Xuefeng T., to Cummins Engine Company, Inc. System for detection of low power in at least one cylinder of a multi-cylinder engine. 5,392,642, Cl. 73-117.300.

Tapematic U.S.A., Inc.: *See—*
Perego, Luciano, 5,393,181, Cl. 414-416.000.

Tappan, Daniel C.: *See—*
Crowther, William R.; Lackey, Stanley A., Jr.; Levin, C. Philip; and Tappan, Daniel C., 5,394,394, Cl. 370-60.000

Taratuta, Victor G.: *See—*
Thurston, George M.; Hayden, Douglas L.; Taratuta, Victor G.; Peetermans, Joyce A.; and Benedek, George B., 5,392,776, Cl. 128-633.000

Tarbet, Bryon J.: *See—*
Krakowiak, Krzysztof E.; Tarbet, Bryon J.; An, Haoyun; Johnson, Deborah F.; and Bruening, Ronald L., 5,393,892, Cl. 549-214.000.

Target Recycling Inc.: *See—*
Stock, Anthony P.; O'Brien, Daniel B.; and Sloan, James A., 5,393,166, Cl. 404-14.000.

Tarozzi, Richard A., to Binney & Smith Inc. Easel. 5,393,030, Cl 248-460.000.

Tarr, Bryan D.; and Bixby, Steven H., to Nurture, Inc. Fat substitute. 5,393,550, Cl. 426-573.000.

Tasch, Al F., Jr.: *See—*
Fu, Horng-Sen; Tasch, Al F., Jr.; and Chatterjee, Pallab K., 5,393,690, Cl. 437-53.000.

Taylor, D. Lansing: *See—*
Lanni, Frederick; Taylor, D. Lansing; and Bailey, Brent, 5,394,268, Cl. 359-386.000.

Taylor, Lynn P.: *See—*
Maher, Timothy R.; le Blanc, Pieter W. C. J.; and Taylor, Lynn P., 5,393,207, Cl. 417-423.700.

Taylor, Paul D.: *See—*
Minnock, Francis B.; and Taylor, Paul D., 5,393,888, Cl. 548-554.000.

Taylor, Roland S.: *See—*
Zizelman, James; Volo, Corrine A.; Taylor, Roland S.; and Rock, Jeffrey A., 5,392,994, Cl. 239-533.900

Taylor, Roscoe W.: *See—*
Shieh, Chiung-Huei; Farr, William A.; McElwain, Thomas E.; Taylor, Roscoe W.; Patterson, William J.; Denstaedt, Glenn E.; Juengel, Robert R.; and Laube, Stephen G., 5,393,821, Cl. 524-495.000.

Taylor, Stevie E., to Hearl, Eugene V., a part interest. Retractable backboard suspended not support. 5,393,069, Cl. 273-411.000.

Tazawa, Hiroshi; Takubo, Chiaki; Tsuboi, Yoshiharu; and Sasaki, Mamoru, to Kabushiki Kaisha Toshiba. Semiconductor assembly having laminated semiconductor devices. 5,394,010, Cl. 257-686.000.

TDK Corporation: *See—*
Satoh, Jun-ichi; Koga, Keiji; and Nishizawa, Akinori, 5,393,584, Cl 428-64.000.

Techint-Compagnia Tecnica Internazionale S.p.A.: *See—*
Cristiani, Giancarlo, 5,392,628, Cl. 72-253.100

Technau, Manfred: *See—*
Weichart, Helmut; and Technau, Manfred, 5,394,379, Cl 367-163.000

Technological Resources Pty, Ltd.: *See—*
Boyle, Alan, 5,392,654, Cl. 73-761.000.

Technology Development Corp.: *See—*
Judd, Wendell, 5,392,721, Cl. 110-346.000

Tecnol Medical Products, Inc.: *See—*
Benson, Anthony B., 5,392,973, Cl. 224-208.000.

Tecumseh Products Company: *See—*
Havens, Dale I.; and von Kaler, Roland L., 5,392,603, Cl. 60-327.000.

Tee-Lok Corporation: *See—*
Black, William H., Jr., 5,392,908, Cl. 206-321.000

Teeri, Tuula: *See—*
Knowles, Jonathan; Penttila, Merja; Teeri, Tuula; Nevalainen, Helena M. K.; and Lehtovaara-Helenius, Paivi, 5,393,670, Cl. 435-252.330.

Teijin Limited: *See—*
Shinoki, Takanori; Nakaishi, Akio; and Yamamoto, Michio, 5,393,872, Cl. 528-310.000.

Tekni-Plex Inc.: *See—*
Reskow, Daniel W., 5,393,539, Cl. 426-124.000.

Tektronix, Inc.: *See—*
Bernard, Kyle L., 5,394,185, Cl. 348-192.000.

Telco Creations, Inc.: *See—*
Lee, Stephen, 5,393,259, Cl. 446-298.000.

Teledyne Industries, Inc.: *See—*
Morris, Gilbert V., 5,393,348, Cl. 118-668.000.

Telefonaktiebolaget L M Ericsson: *See—*
Djuphammar, Hakan O.; Nilsson, Sven E.; and Hagstrom, Ulf, 5,394,459, Cl. 379-15.000.

Tellier, Pierre: *See—*
Krempf, Gerard; Collier, Bertrand; Tellier, Pierre; and Pleuvry, Jean-Pierre, 5,393,508, Cl. 423-407.000.

Tema Systems, Inc.: *See—*
Ford, James J., Jr.; Beitz, David W.; and Nagle, Michael J., Jr., 5,392,659, Cl. 73-863.530.

Temblay, Gerard: *See—*
Meyrueix, Paul; Temblay, Gerard; and Vernhes, Jean P., 5,394,098, Cl. 324-750.000.

Temtech Kabushikigaisha: *See—*
Orii, Katsumi, 5,394,074, Cl. 320-15.000.

Temus, Charles J.: *See—*
Johnson, Robert A.; McInnes, Ian D.; Quinn, Robert D.; and Temus, Charles J., 5,394,449, Cl. 376-272.000.

Teramae, Hiroshi: *See—*
Kajitani, Koji; Takeuchi, Hiroshi; Fukatani, Yasunobu; Teramae, Hiroshi; and Asada, Masaaki, 5,392,888, Cl. 192-70.160.

Teramoto, Takafumi; Takano, Eiji; Uchida, Hiroyasu; Morimoto, Kenji; and Fukuma, Tsutomu, to Mazda Motor Corporation. Gas fuel engine. 5,392,740, Cl. 123-3.000.

Terashima, Hideki: *See—*
Kuwahara, Yoriyuki; Terashima, Hideki; Hikosaka, Yoshiyasu, Hanai, Yoshihiro; and Kishita, Mitsuyoshi, 5,394,431, Cl. 373-8.000

Terashima, Kaoru: *See—*
Makino, Yoshihiko; Terashima, Kaoru; Kitani, Toru; and Hora, Naofumi, 5,393,493, Cl. 422-56.000.

Terrill, Kyle W.: *See—*
Lien, Chuen-Der; Terrill, Kyle W.; and Choi, Jeong Y., 5,393,677, Cl. 437-28.000.

Teshima, Shin-ichi: *See—*
Kitahata, Sumio; Kuwahara, Nobuhiro; Fujita, Koki; Hara, Koji, Majima, Keiichi; Teshima, Shin-ichi; and Hayashi, Yuzo, 5,393,660, Cl. 435-22.000.

Tesmer, Erhard: *See—*
Wachtel, Ursula; Schweikhardt, Friedrich; and Tesmer, Erhard, 5,393,532, Cl. 424-476.000.

Tetlow, Jack: *See—*
Bareuter, Gerd; Fernandez, Carlos; and Tetlow, Jack, 5,393,361, Cl. 156-78.000.

Teutsch, Erich O.; and Coyle, Dennis J., to General Electric Company. Modular tubular extrusion head and a process for extruding tubular articles. 5,393,216, Cl. 425-133.100.

Texaco Inc.: *See—*
Herbstman, Sheldon; and Cadorette, Constance A., 5,393,914, Cl. 560-29.000

Texas Instruments Incorporated: *See—*
Anderson, Douglas W., 5,394,262, Cl. 359-196.000.
Courts, Howard R.; and Oxley, Donald W., 5,394,537, Cl. 395-425.000
Fu, Horng-Sen; Tasch, Al F., Jr.; and Chatterjee, Pallab K., 5,393,690, Cl. 437-53.000.
Horner, Thomas G., 5,394,330, Cl. 364-431.030.
Ito, Yutaka; Sakuta, Toshiyuki; and Nasu, Takumi, 5,394,008, Cl. 257-666.000.
Malhi, Satwinder, 5,393,999, Cl. 257-289.000.
Mignardi, Michael A.; and Alfaro, Rafael C., 5,393,706, Cl. 437-226.000.
Peterson, James L., 5,394,002, Cl. 257-321.000.
Rountree, Robert N., 5,394,370, Cl. 365-201.000.
Sulzbach, Frank C., 5,393,574, Cl. 427-530.000.
Summerfelt, Scott R., 5,393,352, Cl. 148-33.300.

Textilma AG: *See—*
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TGTBT/Pasco Holdings, Inc. Gen. Partnership: *See—*
Sprecher, Peter; Weidersatz, John; and Gaon, David, 5,392,698, Cl. 99-443.00C

Thaler, Eric G.: *See—*
Forman, Roger A.; and Thaler, Eric G., 5,394,056, Cl. 313-547.000.

Thaler, Warren A.; Zushma, Stephen; and Schlosberg, Richard H., to Exxon Research and Engineering Company. Two-cycle oil additive. 5,393,441, Cl. 252-51.50A.

Thayer, William J., III, to United States of America, Air Force. Uniform droplet generator. 5,392,988, Cl. 239-102.200.

Therabel Research S.A./N.V.: *See—*
Liegeois, Jean-Francois F.; and Delarge, Jacques E., 5,393,752, Cl. 514-211.000.

Thermo-Kinetics Industries, Inc.: *See—*
Chambers, John E.; and Brenner, David C., 5,393,327, Cl. 95-273.000.

Theunissen, Joseph P. H.; and Osinga, Theo, to Unilever Patent Holdings B.V. Silicate products. 5,393,507, Cl. 223-332.000.

Thibault, James: *See—*
Merino, Darrell; and Thibault, James, 5,393,051, Cl. 273-29.00B.

Thime, Lutz: *See—*
Kurtzahn, Frithjof; and Thime, Lutz, 5,392,958, Cl. 222-105.000.

Thimineur, Raymond J.: *See—*
Raleigh, William J.; Thimineur, Raymond J.; and Stokloss, Stanley J., 5,393,452, Cl. 252-174.150.

Thoen, Bradford K., to MTS Systems Corportion. Control network with on-line iteration and adaptive filter. 5,394,071, Cl. 318-610.000.

Thomas, Audrey C.: *See—*
Thomas, Harvey P.; Thomas, Audrey C.; and Carr, Daniel A., 5,393,963, Cl. 235-379.000.

Thomas, Danny L.; and Bishop, Clinton L., to Dayco Products, Inc. Toothed belts formed mainly of thermoplastic material and method of making. 5,392,831, Cl. 156-138.000.

Thomas, Dennis A.: *See—*
Goulait, David J. K.; and Thomas, Dennis A., 5,392,498, Cl. 24-452.000.

Thomas, Edward J.: *See—*
Minarczyk, Michael M.; Nerone, Louis R.; Oberle, Joseph C.; Ronald, Brian M.; Harsa, Clarence J.; and Thomas, Edward J., 5,394,062, Cl. 315-129.000

Thomas, Harvey P.; Thomas, Audrey C.; and Carr, Daniel A., to Company Chex, Inc. Check authorization system and process. 5,393,963, Cl. 235-379.000.

Thomas, Michael W.: *See—*
Correnti, Joseph A.; Pipitone, Ralph M.; and Thomas, Michael W., 5,394,547, Cl. 395-650.000.

Thomas, Rudy V.; and Pfeiffer, Robert C., to AlliedSignal Inc. Seat belt height adjuster. 5,393,098, Cl. 280-801.200.

Thometzek, Peter; and Christ, Heinrich, to Ferro Italia S.r.l. Free-flowing, chemically resistant color granulates, their preparation and use. 5,393,714, Cl. 501-29.000.

Thompson, Andrea Y.: *See—*
Bentz, Hanne; Thompson, Andrea Y.; Armstrong, Rosa; and Rosen, David M., 5,393,739, Cl. 514-12.000.

Thompson, Dennis D.: *See—*
Simon, Robert C., Jr.; Tolkacz, Joseph M.; Swantick, Steven J.; Thompson, Dennis D.; and Tackitt, Douglas J., 5,394,327, Cl. 364-424.010.

Thompson, Edwin S.: *See—*
Stiepel, Norbert M.; Anderson, Luis; and Thompson, Edwin S., 5,394,209, Cl. 354-81.000.

Thomson Consumer Electronics: *See—*
Burklin, Helmut; and De Vito, Mario, 5,394,286, Cl. 360-121.000.
Hackett, Andrew, 5,394,192, Cl. 348-619.000.

Thomson-CSF: *See—*
Antoine, Jacques; Clairgironnet, Jean-Marc; and Vejus, Patrick, 5,394,186, Cl. 348-262.000.
Brisson, Jacques; Caillemer, Jean; and Grenot, Thierry, 5,394,393, Cl. 370-60.000
Darges, Bernard; Helm, Jean-Francois, deceased; and Helm wife Gauthier, Veronique, legal representative, 5,394,118, Cl. 332-170.000.
Huignard, Jean-Pierre; Ayrai, Jean-Luc; and Puech, Claude, 5,394,412, Cl. 372-9.000.
Robert, Philippe, 5,394,196, Cl. 348-699.000.

Thomson, Gordon A.: *See—*
James, Mark R.; and Thomson, Gordon A., 5,393,750, Cl 514-184.000.

Thorn, David L.: *See—*
Corbin, David R.; Herron, Norman; and Thorn, David L., 5,393,509, Cl. 423-465.000.

Thorpe, David: *See—*
De Vos, Rik; Thorpe, David; and Van Essche, Gonda, 5,393,799, Cl. 521-157.000.

Thorson, John L.; and Anderson, Norman E., to Mixer Systems, Inc. Mixing blade mounting assembly. 5,393,139, Cl. 366-65.000.

Thota, Hamsa A. P.; Rebstock, Don A.; and Shah, Chandrakant S., to Rich-SeaPak Corporation. Method for two phase conveyance of a product. 5,393,546, Cl. 426-276.000.

Thouvenot, Remi: *See—*
Guiroy, Jean J.; and Thouvenot, Remi, 5,394,448, Cl. 376-260.000

Three Bond Co., Ltd.: *See—*
Horikawa, Fumihiro, 5,393,802, Cl. 522-81.000.

Thumm, Hans: *See—*
Blumel, Siegfried; Hartmann, Achim; Thumm, Hans; Luginsland, Hans-Hermann; and Rosendahl, Franz, 5,393,510, Cl 423-610.000.

Thurston, George M.; Hayden, Douglas L.; Taratuta, Victor G.; Peetermans, Joyce A.; and Benedek, George B., to Oculon Corporation. Method and apparatus for detecting cataractogenesis. 5,392,776, Cl. 128-633.000.

Thyssen Industrie AG: *See—*
Bornemann, Hans-Joachim, 5,393,141, Cl. 366-149.000.

Thyssen Stahl Aktiengesellschaft: *See—*
Sturm, Joseph, 5,394,270, Cl. 359-636.000.

Tice, Colin M.: *See—*
Lange, Barry C.; Ashmore, John W.; Wissinger-Cornille, Jane; and Tice, Colin M., 5,393,735, Cl. 504-254.000.

Tiede, Merlin G.; Kool, Dennis J.; and Lew, Kenneth E., to Amway Corporation. Ultraviolet lamp assembly for water purification. 5,393,419, Cl. 210-192.000.

Tiller, Robert G.: *See—*
Holbrook, Marcia J.; Bonilla, Robb D.; and Tiller, Robert G., 5,394,316, Cl. 362-294.000.

Tim-Bar Coproration: *See—*
Propst, Charles, 5,393,566, Cl. 427-348.000.

Time Warner Interactive Group, Inc.: *See—*
Klappert, Walter R.; and La Jole, Michael L., 5,394,182, Cl. 348-10.000.

Timm, Heinrich: *See—*
Kreis, Gundolf; and Timm, Heinrich, 5,393,095, Cl. 280-781.000.

Tingey, Sheldon N. Illuminated fishing lure apparatus. 5,392,555, Cl. 43-17.600.

Tipping, Mark R.: *See—*
Nickey, George A.; Moore, John K.; and Tipping, Mark R., 5,392,928, Cl. 209-643.000.

Tirados, Edward J.: *See—*
Moore, Robert B.; Hegarty, William P.; Studer, David W.; and Tirados, Edward J., 5,392,594, Cl. 60-39.020.

Tisbo, Cosmo N.: *See—*
Tisbo, Peter M.; and Tisbo, Cosmo N., 5,393,135, Cl. 312-9.480.

Tisbo, Peter M.; and Tisbo, Cosmo N., to Custom Plastics, Inc. Compact disc storage rack. 5,393,135, Cl. 312-9.480.

Tobin, Thomas M.: *See—*
Black, Alistair D.; and Tobin, Thomas M., 5,394,106, Cl 327-107.000.

Tobuse, Hiroaki: *See—*
Hisaoka, Yasushi; Yamane, Yoshio; Murakami, Hidenobu; Kinoshita, Yoshimi; Tobuse, Hiroaki; Yoshida, Kazuo; Ishii, Takashi, and Koizumi, Hiroshi, 5,393,255, Cl. 445-3.000.

Toda, Satoru; Yasuda, Tomokazu; and Tamoto, Koji, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,393,648, Cl 430-522.000.

Toedter, Peter K., to AST Research, Inc. Apparatus and method for reducing bending stress on an electrical cable using a freely rotatable bushing. 5,394,297, Cl. 361-683.000.

Tohbo, Yozo: *See—*
Kasai, Shozo; Tohbo, Yozo; Nikaido, Norio; and Sugawara, Hirofumi, 5,393,210, Cl. 425-145.000.

Tokuden Co., Ltd.: *See—*
Kitano, Yoshio; and Okamoto, Kozo, 5,393,959, Cl. 219-619.000.

Tokunoh, Futoshi: *See—*
Nakagawa, Tsutomu; Tokunoh, Futoshi; and Niinobu, Kouji, 5,393,995, Cl. 257-147.000.

Tokyo Electron Limited: *See—*
Ushijima, Mitsuru, 5,393,624, Cl. 430-30.000.

Tokyo Electron Sagami Kabushiki Kaisha: *See—*
Ohkase, Wataru, 5,393,349, Cl. 118-725.000.

Tokyo Industries, Inc.: *See—*
Tamura, Yoshihiro; Hidetoshi, Hara; Nakao, Yuichi; and Ishiwari, Kazuo, 5,394,232, Cl. 355-327.000.

Tokyo Kogyo Boyeki Shokai, Ltd.: *See—*
Okamoto, Hiromu, 5,394,507, Cl. 392-480.000.

Tokyo Ohka Kogyo Co., Ltd.: *See—*
Hashimoto, Akira; and Tanitsu, Katsuya, 5,393,907, Cl. 556-28.000

Tolkacz, Joseph M.: *See—*
Simon, Robert C., Jr.; Tolkacz, Joseph M.; Swantick, Steven J.; Thompson, Dennis D.; and Tackitt, Douglas J., 5,394,327, Cl. 364-424.010.

Tomalia, Donald A.: *See—*
Hedstrand, David M.; and Tomalia, Donald A., 5,393,795, Cl 521-134.000.
Hedstrand, David M.; and Tomalia, Donald A., 5,393,797, Cl 521-134.000.

Tomimura, Yukio: *See—*
Okuwaki, Shigeru; and Tomimura, Yukio, 5,393,272, Cl 474-213.000

Tominaga, Kazutoshi, to Kabushiki Kaisha Tominaga Jyushi Kogyosho. Box-shaped toilet for pet animals. 5,392,733, Cl. 119-165.000

Tomita, Kenkichi: *See—*
Ishii, Takayuki; Kasano, Makiko; Yasunaga, Tae; Ishii, Mariko; Sugimoto, Mamoru; Tomita, Kenkichi; Miyata, Takeshi; and Tanaka, Makoto, 5,393,742, Cl. 514-23.000.

Tono, Hideo; and Naito, Masaru, to Kasei Optonix. Color picture tube with the fluorescent film of the red emission component having a mixture of europium activated rare earth oxide phosphors. 5,394,055, Cl. 313-467.000.

Tonomura, Katsuaki: *See—*
Iwata, Teruo; Tsuji, Toshihide; Matsumoto, Shuji; and Tonomura, Katsuaki, 5,392,990, Cl. 239-232.000

Toon, Donald A., to Solinst Canada Ltd. Plugging system for boreholes. 5,392,853, Cl. 166-187.000

Topping, Joseph C.: *See—*
Kozak, William G.; and Topping, Joseph C., 5,393,416, Cl. 210-96.100

Topy Kogyo Kabushiki Kaisha: *See—*
Kuwahara, Yoriyuki; Terashima, Hideki; Hikosaka, Yoshiyasu; Hanai, Yoshihiro; and Kishita, Mitsuyoshi, 5,394,431, Cl. 373-8.000.

Torab, Habib M.: *See—*
Chliwnyj, Alex; Graves, David C.; Fry, Scott M.; Nylander-Hill, Pamela R.; Torab, Habib M.; and Wright, Will A., 5,394,280, Cl 360-77.120.

Toray Thiokol Co., Ltd.: *See—*
Sakae, Kazuhisa; Echigoya, Kouki; and Okajima, Mitsuhiro, 5,393,861, Cl. 528-265.000.

Torikai, Toshitaka: *See—*
Yamada, Hirohito; Okuda, Tetsuro; and Torikai, Toshitaka, 5,394,429, Cl. 372-96.000

Tornero, Roger; and Gray, S. David. Decking suspension fabric and method. 5,393,596, Cl. 428-229.000.

Tosoh Corporation: *See—*
Okajima, Kengo; Wakamatsu, Hiroyuki; Murakami, Tsugio; and Saitoh, Hiroyuki, 5,393,724, Cl. 502-402.000.

Toto, Ltd.: *See—*
Azuma, Tsutomu; and Taketomi, Yojiro, 5,392,965, Cl 222-396.000.

Tournier, Herve : *See—*
Schneider, Michel; Tournier, Herve ; Hyacinthe, Roland; Guillot, Christian; and Lamy, Bernard, 5,393,530, Cl. 424-450.000.

Townsend, John A. Automobile armrest apparatus for presenting restraint system. 5,393,097, Cl. 280-801.100.

Toyo Boseki Kabushiki Kaisha: *See*—
Kitahata, Sumio; Kuwahara, Nobuhiro; Fujita, Koki; Hara, Koji; Majima, Keiichi; Teshima, Shin-ichi; and Hayashi, Yuzo, 5,393,660, Cl. 435-22.000.
Toyoda Gosei Co., Ltd.: *See*—
Ueno, Masato; and Maeno, Takashi, 5,393,040, Cl. 267-140.130.
Toyoda, Takashi; Hosono, Yasuji; Funato, Takashi; Yazaki, Takao; Egashira, Akihiko; Matuno, Takumi; and Chiba, Tokmi, to Oji Yuki Goseishi Co., Ltd. Laminated resin sheet and process for producing the same. 5,393,603, Cl. 428-316.600.
Toyokawa, Kazuharu: *See*—
Casey, Richard G.; Nakamura, Yohji; and Toyokawa, Kazuharu, 5,394,484, Cl. 382-37.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Hagiwara, Yoshiyuki; Jinno, Osamu; Kitamura, Takeshi; Kuramoto, Akio; Kawai, Yukio; Yamaguchi, Kenichi; and Kahuta, Hirotaka, 5,393,076, Cl. 277-235.00A.
Kyushima, Tatsuo; and Tanaka, Masaharu, 5,393,278, Cl. 477-120.000.
Nagai, Toshinari, 5,392,600, Cl. 60-274.000.
Okada, Takayuki; Taga, Yutaka; Hojo, Yasuo; Tabata, Atsushi; Kaigawa, Masato; Moroto, Shuzo; Inuzuka, Takeshi; Hattori, Masashi; and Takeshita, Yoshito, 5,393,275, Cl. 477-81.000.
Okuwaki, Shigeru; and Tomimura, Yukio, 5,393,272, Cl. 474-213.000.
Toyota, Kozo: *See*—
Syoji, Masataka; Toyota, Kozo; Eguchi, Chikahiko; Yoshimoto, Ryoto; Koyama, Yoshikatsu; Domoto, Hideki; and Kamimura, Akira, 5,393,890, Cl. 546-80.000.
TPI, Inc.: *See*—
Hamilton, Robert H.; Doyle, Thomas J.; and Brooks, Phillip R., 5,393,964, Cl. 235-381.000.
Traitler, Helmut: *See*—
Chmiel, Oliver; Raetz, Eric; and Traitler, Helmut, 5,393,538, Cl 426-35.000
Trambarulo, Ralph F.: *See*—
Schneider, Martin V.; Trambarulo, Ralph F.; and Tran, Cuong, 5,394,159, Cl. 343-700.0MS
Tran, Cuong: *See*—
Schneider, Martin V.; Trambarulo, Ralph F.; and Tran, Cuong, 5,394,159, Cl. 343-700.0MS
Tran, Thanh N.: *See*—
Lundy, Daniel E.; Barr, Robert K.; and Tran, Thanh N., 5,393,643, Cl. 430-281.000.
Tran, Tien K.: *See*—
Ishibe, Nobuyuki; Martin, Charles W.; and Tran, Tien K., 5,393,852, Cl. 526-247.000.
Tranier, Jean-Pierre: *See*—
Girault, Jean-Louis; Mazieres, Philippe; and Tranier, Jean-Pierre, 5,392,609, Cl. 62-25.000.
Tranjan, Farid M.: *See*—
DuBois, Thomas D.; Tranjan, Farid M.; and Bobbio, Stephen M., 5,393,642, Cl. 430-271.000.
Transidyne General Corporation: *See*—
Bell, Bruce M.; and Butler, Steven W., 5,392,910, Cl. 206-363.000.
Traspuesto-Miguel, Francisco J., to Plasticos Dik, S.A. Base for aerials. 5,393,159, Cl. 403-91.000.
Traub Aktiengesellschaft: *See*—
Sonnek, Werner, 5,392,501, Cl. 29-27.00C.
Trautwein, Karl-Heinz; Herrmann, Reinhold; and Nuebel, Karl-Heinz, to Robert Bosch GmbH. Ignition coil for internal combustion engines. 5,394,302, Cl. 361-728.000.
Tremblay, Sylvia C.: *See*—
Kita, Ronald A.; Tremblay, Sylvia C.; and Lynch, Thomas M., 5,394,347, Cl. 364-578.000.
Trico Products Corporation: *See*—
Hojnacki, George, 5,392,486, Cl. 15-250.160.
Trinity Industries, Inc.: *See*—
Hesch, Harold E.; Beers, Albert A.; and Smith, Stephen W., 5,392,717, Cl. 105-404.000.
Troiani, Vincent F.; and Gaughan, Edward W., to Westinghouse Air Brake Company. Electro-pneumatic freight brake control system. 5,393,129, Cl. 303-3.000.
Trost, David: *See*—
Baumeister, Philip; Fischer, Dennis; and Trost, David, 5,394,501, Cl. 385-125.000
Trouve, Gerard, to Societe Anonyme Societe D'Exploitation De Produits Pour Les Industries Chimiques S.E.P.P.I.C. Film-forming product for coating solid forms, process for its manufacture and products coated with this film-forming product. 5,393,333, Cl 106-149.000.
Truc, James A.; Brown, Robert D.; and Jansen, Edward D., to Pakon, Inc. Slide mount with pin lock registration. 5,392,548, Cl. 40-159.200.
TRW Inc.: *See*—
Charns, Stuart; and Hill, Bruce R., 5,393,092, Cl. 280-743.00R.
Senn, Robert H.; and Record, Loren E., 5,394,420, Cl. 372-39.000.
TRW Technar Inc.: *See*—
Manandhar, Saroj; and Su, Long T., 5,393,944, Cl. 200-61.45R.
TRW United Carr GmbH & Co. KG: *See*—
Kraus, Willibald, 5,392,822, Cl. 140-123.600.
Trzasko, Peter T.: *See*—
Foran, Michael T.; Leake, Craig H.; Philbin, Michael T.; and Trzasko, Peter T., 5,393,336, Cl. 106-213.000.
Tsai, Chiu-Hsiung: *See*—
Yao, Shin-Chuan; Wu, Jong-Fu; Cheng, Kun-Lin; Tsai, Chiu-Hsiung; Koong, Farn-Ping; Chuang, Kun-Lung; Yao, Shu-Lan; and Liu, Chin-Liu, 5,393,569, Cl. 427-387.000.
Tsai, John C., to Excel Precision Inc. Ambient air refracture index measuring device. 5,394,244, Cl. 356-361.000.
Tsai, Sen-Su: *See*—
Chen, Hsing-Yao; and Tsai, Sen-Su, 5,394,054, Cl. 313-414.000.
Tsao, Kuey Y., to Integrated Sensor Technologies Inc. Electronic tire gauge. 5,394,343, Cl. 364-558.000.
Tschopp, Thomas B.: *See*—
Ackermann, Jean; Banner, David; Gubernator, Klaus; Hadvary, Paul; Hilpert, Kurt; Muller, Klaus; Labler, Ludvik; Schmid, Gerard; Tschopp, Thomas B.; Wessel, Hans P.; and Wirz, Beat, 5,393,760, Cl. 514-323.000.
Tseng, Dennis, to Silitek Corporation. Trackball supporting device. 5,394,169, Cl. 345-167.000.
Tseng, Susan Y.; Wolf, Philip F.; and Burlant, William J., to ISP Investments Inc. Films and extrusions of cured crosslinked vinyl lactam polymer and method of preparation. 5,393,825, Cl. 524-548.000.
Tseng, Susan Y.; and Wolf, Philip F., to ISP Investments Inc. Colorless, purified polymerizable composition useful for the production of crosslinked polyvinylpyrrolidone. 5,393,854, Cl. 526-264.000.
Tsuboi, Yoshiharu: *See*—
Tazawa, Hiroshi; Takubo, Chiaki; Tsuboi, Yoshiharu; and Sasaki, Mamoru, 5,394,010, Cl. 257-686.000
Tsubouchi, Kazuo: *See*—
Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Masu, Kazuya, 5,393,699, Cl. 437-187.000.
Tsuchimoto, Shuhei: *See*—
Yoshinouchi, Atsushi; Morita, Tatsuo; and Tsuchimoto, Shuhei, 5,393,986, Cl. 250-492.210.
Tsuchitani, Shigeki: *See*—
Suzuki, Seiko; Tsuchitani, Shigeki; Miki, Masayuki; and Matsumoto, Masahiro, 5,392,651, Cl. 73-517.00R.
Tsuden Kabushiki Kaisha: *See*—
Hayashida, Tatekazu, 5,394,292, Cl. 361-179.000.
Tsugaya, Hitoshi: *See*—
Tsuyumoto, Michio; Sugimoto, Masahiko; Maeda, Yasushi; and Tsugaya, Hitoshi, 5,393,432, Cl. 210-640.000.
Tsui, Cyrus Y.; Shen, Ju; Cheng, Chanchi J.; and Hsu, Ming C., to Lattice Semiconductor Corporation. Structure and method for implementing hierarchical routing pools in a programmable logic circuit. 5,394,033, Cl. 326-41.000.
Tsuji, Kazuhiro; and Sahoda, Masayuki, to Kabushiki Kaisha Toshiba. Operational amplifier with junction field effect transistors as input transistor pair. 5,394,111, Cl. 330-9.000.
Tsuji, Toshihide: *See*—
Iwata, Teruo; Tsuji, Toshihide; Matsumoto, Shuji; and Tonomura, Katsuaki, 5,392,990, Cl. 239-232.000.
Tsukida, Robert S.: *See*—
White, Thomas W.; Saxon, Edward W.; and Tsukida, Robert S., 5,394,446, Cl. 376-245.000.
Tsukikawa, Yasuhiko, to Mitsubishi Denki Kabushiki Kaisha. Charge pump circuit having an improved charge pumping efficiency 5,394,365, Cl. 365-189.090.
Tsumura & Co.: *See*—
Amagaya, Sakae; Fujiwara, Tadami; Aburada, Masaki; Nagasawa, Michio; and Oyama, Tsutomu, 5,393,740, Cl. 514-17.000.
Tsurufuji, Tomoyoshi: *See*—
Ozeki, Takafumi; Akiba, Masaru; Kimura, Shuichi; Nodera, Nobuo; and Tsurufuji, Tomoyoshi, 5,392,556, Cl. 43-22.000.
Tsurufusa, Hideo: *See*—
Shimoda, Kenji; Tsurufusa, Hideo; Yoda, Shinji; and Fuse, Kazuyoshi, 5,394,249, Cl. 358-335.000.
Tsurumoto, Hiroyuki: *See*—
Sano, Atsunori; Hashizume, Satoshi; and Tsurumoto, Hiroyuki, 5,393,876, Cl. 536-18.500
Tsutsumi, Hidemi, to Mitsui Mining Company, Limited. Steam generator for a steam bath. 5,392,738, Cl. 122-39.000.
Tsuyumoto, Michio; Sugimoto, Masahiko; Maeda, Yasushi; and Tsugaya, Hitoshi, to Ministry of International Trade and Industry. Separating membrane of polyion complex. 5,393,432, Cl. 210-640.000
Tsuzuki, Yasushi; Awazu, Tomoyuki; and Yamakawa, Akira, to Sumitomo Electric Industries, Ltd. Method of producing sintered silicon nitrides. 5,394,015, Cl. 264-65.000.
Tubaki, Tatsuo; Kakuta, Yoshiyuki; and Kishi, Takao, to Yoshino Kogyosho Co., Ltd. Suckback drain valve for a liquid jet blower. 5,392,959, Cl. 222-109.000.
Tucholski, Gary R.: *See*—
Weiss, Victor H.; Langbehn, John G.; Laird, Dean A.; Tucholski, Gary R.; and Prok, Robert A., 5,393,618, Cl. 429-90.000.
Tuck, Paul B.: *See*—
Cueman, Michael K.; Keramati, Bahram; Sogoian, George C.; Kaehler, John J.; Tuck, Paul B.; Clark, James W.; and Hayashi, Steven R., 5,392,623, Cl. 72-11.000.
Tucker Housewares: *See*—
McEntee, Kathy, 5,392,948, Cl. 220-669.000.
Tujimoto, Nobuharu; Kikuchi, Yoshimi; Kurahashi, Osamu; and Kawahara, Yoshiko, to Ajinomoto Co., Inc. Mutant *Escherichia coli* capable of enhanced L-glutamic acid production. 5,393,671, Cl. 435-252.800.
Tunewell Technology Limited: *See*—
Rimmer, Phillip J., 5,394,065, Cl. 315-277.000.

Tveten, Allan B.: *See*—
Dandridge, Anthony; Yurek, Aileen; and Tveten, Allan B., 5,394,378, Cl. 367-149.000.
Tweed, David G.: *See*—
Phillipps, Patrick G.; Epstein, Paul; and Tweed, David G., 5,392,781, Cl. 128-680.000.
Tyhy, Gary; Pizey, Gordon; and Simbandumwe, Jean-Paul, to Rancan Fertilizer Systems, Inc. On board weighing system for a vehicle. 5,393,936, Cl. 177-138.000.
Tzikas, Athanassios; and Carisch, Claudia, to Ciba-Geigy Corporation. Dye mixtures, processes for their preparation and their use. 5,393,306, Cl. 8-543.000.
Tzou, Tsi-Zong: *See*—
Miksic, Boris A.; Tzou, Tsi-Zong; and Foley, Joseph M., 5,393,457, Cl. 252-194.000.
UAB Research Foundation: *See*—
Urry, Dan W., 5,393,602, Cl. 428-290.000.
Ubaldo, John: *See*—
Ubaldo, Richard; and Ubaldo, John, 5,394,161, Cl. 343-702.000.
Ubaldo, Richard; and Ubaldo, John. Path finder/tracker system. 5,394,161, Cl. 343-702.000.
Ube Industries, Ltd.: *See*—
Inaba, Yukio; Yamamoto, Tomohiko; Koga, Genji; Noguchi, Hideki; and Funatsu, Joji, 5,393,319, Cl. 71-27.000.
Uchida, Hiroyasu: *See*—
Teramoto, Takafumi; Takano, Eiji; Uchida, Hiroyasu; Morimoto, Kenji; and Fukuma, Tsutomu, 5,392,740, Cl. 123-3.000.
Uchida, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Flip-flop circuit having diagnostic function. 5,394,404, Cl. 371-22.500.
Uchiyama, Kunio: *See*—
Arakawa, Fumio; Narita, Susumu; and Uchiyama, Kunio, 5,394,558, Cl. 395-800.000.
Ueda, Atsushi: *See*—
Ishihara, Hidetoshi; Hayashi, Shoichi; Ueda, Atsushi; Asaoka, Hiroyuki; Hagiwara, Haruo; and Hattori, Toshio, 5,392,480, Cl. 8-159.000.
Ueda, Koichi: *See*—
Kuwana, Ichiro; Ueda, Koichi; and Nakajima, Hirofumi, 5,394,525, Cl. 395-164.000.
Ueda, Osamu: *See*—
Ishikawa, Masahiko; Hayano, Kohji; Mori, Shinichi; Yamashita, Masayuki; Ueda, Osamu; and Moriga, Namiki, 5,394,014, Cl. 257-790.000.
Ueki, Kazunori: *See*—
Nakamura, Eitaro; and Ueki, Kazunori, 5,393,801, Cl. 522-79.000.
Ueki, Nobuaki: *See*—
Fukunaga, Hideki; Ueki, Nobuaki; Otoma, Hiromi; and Nakayama, Hideo, 5,394,425, Cl. 372-46.000.
Uematsu, Hiroshi; Ando, Hiroyuki; Yoneyama, Tsutomu; Takeuchi, Nobuyoshi; and Kato, Shigeki, to Honda Giken Kogyo Kabushiki Kaisha. High-frequency signal generator and radar module. 5,394,154, Cl. 342-165.000.
Ueno, Hideo; Sakuragi, Shoji; and Niwa, Akihiko, to Brother Kogyo Kabushiki Kaisha. Tape printing device for printing characters and frames. 5,393,147, Cl. 400-65.000.
Ueno, Masato; and Maeno, Takashi, to Toyoda Gosei Co., Ltd. Hydraulic damping device. 5,393,040, Cl. 267-140.130.
Ueno, Yasuhide: *See*—
Ono, Takashi; and Ueno, Yasuhide, 5,394,406, Cl. 371-32.000.
Ueoka, Isao: *See*—
Matsuura, Yuki; Ueoka, Isao; Iwata, Koichi; Kawabe, Hiromitsu; and Natsume, Yoshitaka, 5,393,612, Cl. 428-458.000.
Uesugi, Fumihiko; and Kishida, Shunji, to NEC Corporation. Method for forming a patterned layer by selective chemical vapor deposition. 5,393,577, Cl. 427-586.000.
Ugo, Renato, to C.E.S.E.C. Centro Europeo Studi Economici e Chimici Srl. Process for recovering noble metals from solutions deriving from the treatment of nuclear fuels. 5,393,322, Cl. 75-344.000.
Ultralite Technology Incorporated: *See*—
Iacono, Steven J.; and Catanzaro, Robert S., 5,393,405, Cl. 205-72.000.
UltraPure Systems, Inc.: *See*—
Heiligman, Randy B., 5,393,548, Cl. 426-433.000.
Umeda, Nobuyoshi; Seo, Toshio; Nagamori, Yuzirou; Matsuoka, Kenichi; and Gomi, Shingo, to Oval Engineering Co.,Ltd. Small volume prover. 5,392,632, Cl. 73-3.000.
Umekage, Yasuhiro; Sakai, Shinichi; Watanabe, Yoshiaki; Morikawa, Hisashi; and Mihara, Makoto, to Matsushita Electric Industrial Co., Ltd. Air cooling fan arrangement in a microwave heating device. 5,393,961, Cl. 219-757.000.
Umino, Hiroshi: *See*—
Nakayama, Takashi; Umino, Hiroshi; Sakakura, Yasuyuki; and Takahashi, Kiyoshi, 5,393,429, Cl. 210-634.000.
Underwood, Gary L.: *See*—
Stradal, John A.; and Underwood, Gary L., 5,393,542, Cl. 426-241.000.
Ungar, Daniel E.: *See*—
Mott, Richard B.; Waldman, Charles G.; and Ungar, Daniel E., 5,393,982, Cl. 250-370.060.
Unger, Neil: *See*—
Dietz, Frederick, Jr.; Unger, Neil; and Bateman, James, 5,394,503, Cl. 385-135.000.
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Yoon, InBae. Multifunctional devices for use in endoscopic surgical procedures and methods therefor. 5,392,787, Cl. 128-898.000.

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Yost, William T.; Welch, Christopher S.; Joe, Edmond J.; and Hefner, Bill B., Jr., to United States of America, National Aeronautics and Space Administration. Quality monitor and monitoring technique employing optically stimulated electron emmission. 5,393,980, Cl 250-306.000

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ZAP Paintball Corporation: *See*—
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Ziemer, James N.; Rosenbaum, John M.; and Eiden, Kristine L., to Chevron Research and Technology Company. Process for the stabilization of lubricating oil base stocks. 5,393,408, Cl. 208-57.000.

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Zilbershtein, Michael. Endotracheal tube set for anesthesia having a valve and valve position indicator for single or double lung ventilation. 5,392,772, Cl. 128-205.240

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Zima, George C.; Williams, T. Hugh; and Shelton, Mark R., to Eastman Chemical Company. Purification of amido-carboxylic acids. 5,393,905, Cl. 554-70.000.

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Zones, Stacey I.; Holtermann, Dennis L.; Jossens, Lawrence W.; Santilli, Donald S.; and Rainis, Andrew, to Chevron Research Company. Hydrocarbon conversion utilizing a low-aluminum boron beta zeolite. 5,393,407, Cl. 208-46.000.

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TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Yamazaki, Shusuke; Katagami, Yoshinori; and Shinozaki, Tomoyasu, Re. 34,867, Cl. D23-351.000.

Katagami, Yoshinori: *See—*
Yamazaki, Shusuke; Katagami, Yoshinori; and Shinozaki, Tomoyasu, Re. 34,867, Cl. D23-351.000.

Kim, Jin H., to Samsung Electronics Co., Ltd. Apparatus for quick starting tape in video cassette recorders. Re. 34,869, Cl. 360-85.000.

Samsung Electronics Co., Ltd.: *See—*
Kim, Jin H., Re. 34,869, Cl. 360-85.000.

Shinozaki, Tomoyasu: *See—*
Yamazaki, Shusuke; Katagami, Yoshinori; and Shinozaki, Tomoyasu, Re. 34,867, Cl. D23-351.000.

Vander Stel, Louis M.; and Vander Stel, Polly A. Built-in infants seat for vehicles. Re. 34,868, Cl. 297-238.000.

Vander Stel, Polly A.: *See—*
Vander Stel, Louis M.; and Vander Stel, Polly A., Re. 34,868, Cl 297-238.000.

Yamazaki, Shusuke; Katagami, Yoshinori; and Shinozaki, Tomoyasu, to Kabushiki Kaisha Toshiba. Air Conditioner. Re. 34,867, Cl. D23-351.000.

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TO WHOM

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Freeman, Jerre M. Buoyancy intraocular lens device. B1 1,031,640, 2-28-95, Cl. 623-6.000

Hennig, Eberhard; Klie, Jurgen; and Wellendorf, Klaus, to Rudolf Hell GmbH. Method for partially smoothing retouch in electronic color reproduction. B1 4,516,155, 2-28-95, Cl. 358-531.000.

Karabin, Richard F.: *See—*
Valko, Joseph T.; and Karabin, Richard F., B1 5,074,979, Cl. 204-181.700.

Klie, Jurgen: *See—*
Hennig, Eberhard; Klie, Jurgen; and Wellendorf, Klaus, B1 4,516,155, Cl. 358-531.000.

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Rudolf Hell GmbH: *See—*
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Texas Instruments Incorporated: *See—*
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Utah Medical Products, Inc.: *See—*
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Valko, Joseph T.; and Karabin, Richard F., to PPG Industries, Inc. Cationic resin containing blocked isocyanate groups suitable for use in electrodeposition. B1 5,074,979, 2-28-95, Cl. 204-181.700.

Wallace, William D., to Utah Medical Products, Inc. Medical pressure sensing and display system. B1 5,004,472, 2-28-95, Cl. 606-194.000.

Wellendorf, Klaus: *See—*
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Aktiebolaget Astra: *See—*
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Aktiengesellschaft SIGG Aluminium-und Metallwarenfabrik: *See—*
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Alco Industries, Inc.: *See—*
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White, Robert L. Multi-purpose display stand. 355,792, 2-28-95, Cl D6-450.000.
Wicki, Bruno, to Lever Brothers Company, Division of Conopco, Inc Bottle. 355,852, 2-28-95, Cl. D9-522.000.
Wicks, James; and Hino, Ichiro, to Sony Electronics, Inc. Cordless telephone. 355,912, 2-28-95, Cl. D14-148.000.
Wilton Industries, Inc.: *See—*
Lebowitz, Sam, 355,808, Cl. D7-302.000.
Winblad, Wade O., to Atari Games Corporation. Steering wheel configuration. 355,879, 2-28-95, Cl. D12-176.000.

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Winegard Company: *See*—
Rodeffer, Charles E.; and Sperry, Randy L., 355,887, Cl. D13-110.000.
With Design In Mind: *See*—
Dawson, Curtis L., 355,855, Cl. D10-7.000.
Dawson, Curtis L., 355,856, Cl. D10-11.000.
Wolff, Stacy L., to Rubbermaid Incorporated. Lap tray. 355,786, 2-28-95, Cl. D6-406.000
Wolff, Stacy L.: *See*—
Chin, Henry Y.; Dillon, Robert; and Wolff, Stacy L., 355,772, Cl D6-333.000
Wood, Gary K.: *See*—
Kruskamp, Stephen L., 355,821, Cl. D8-15.000.
Woods Industries, Inc.: *See*—
Lentz, Mark S., 355,890, Cl. D13-143.000.
Woolaway, Bradley P., to Corning Incorporated. Collapsible tumbler sleeve. 355,847, 2-28-95, Cl. D9-346.000.
Wu, Ching-Chang. Golf accessory for a golf cart holder. 355,948, 2-28-95, Cl. D21-234.000.
Wu, Mu-Chuan. Exercise bike. 355,942, 2-28-95, Cl. D21-194.000.
Xerox Corporation: *See*—
Saunders, Susan L.; Clark, William T., III; and Matsubara, Takeshi, 355,925, Cl. D18-39.000.
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Yazaki Industrial Chemical Co. Ltd.: *See*—
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Yeomans, Eric, to International Business Machines Corporation. Circuit card tubing. 355,894, 2-28-95, Cl. D13-182.000.
Yoshihara, Tsutomu; and Narushima, Hideki, to Canon Kabushiki Kaisha. Facsimile. 355,906, 2-28-95, Cl. D14-118.000.
Yoshii, Noriko: *See*—
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Sun, Jin Ran, 355,763, Cl. D3-291.000.
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Zambelli, Michael P.: *See*—
Crouch, Paul E.; Kasbekar, Pratod V.; Lee, Bernard T.; Stahly, Thomas L.; Stowers, David C.; and Zambelli, Michael P., 355,921, Cl. D16-202.000.
Grewe, Anthony J.; Marcus, Larry A.; McLaughlin, William J., Stowers, David C.; and Zambelli, Michael P., 355,917, Cl. D14-248.000.

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Bear Creek Gardens, Inc.: *See*—
Evers, Hans, 9,064, Cl. 12.000.
Evers, Hans, 9,065, Cl. 15.000.
Carmi, P. J., to Milestone Agriculture Inc. Fern plant named Orlando. 9,067, 2-28-95, Cl. 88.300.
Evers, Hans, to Bear Creek Gardens, Inc. Hybrid tea rose plant named TANalephar. 9,064, 2-28-95, Cl. 12.000.
Evers, Hans, to Bear Creek Gardens, Inc. Hybrid tea rose plant named Tanilyks. 9,065, 2-28-95, Cl. 15.000
Jacobsen, Peter, to Paul Ecke Ranch. Poinsettia plant 'PJ 3112'. 9,066, 2-28-95, Cl. 86.400.
Milestone Agriculture Inc.: *See*—
Carmi, P. J., 9,067, Cl. 88.300
Olesen, Mogens; and Olesen, Pernille, to Weeks Wholesale Rose Grower, Inc. Shrub rose plant named Poulskov. 9,062, 2-28-95, Cl. 1.000.
Olesen, Mogens; and Olesen, Pernille, to Weeks Wholesale Rose Grower, Inc. Miniature rose plant named Poulclaus. 9,063, 2-28-95, Cl. 10.000
Olesen, Pernille: *See*—
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Paul Ecke Ranch: *See*—
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Weeks Wholesale Rose Grower, Inc.: *See*—
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CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 28, 1995

NOTE.—First number, class; second number, subclass; third number, patent number

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566.1 5,392,474

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61.76 5,392,639
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118.1 5,392,643
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861.77 5,392,657
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863.53 5,392,659
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CLASS 83
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659.1 5,393,377

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273.1 5,392,836
348 5,392,839

CLASS 162

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268 5,392,882
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605 5,393,427
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125 5,392,985
125.35 5,392,986

CLASS 235

375 5,393,962
379 5,393,963
381 5,393,964
383 5,393,965
440 5,393,966
454 5,393,967
462 5,393,968

CLASS 238

10 E 5,392,987

CLASS 239

102.2 5,392,988
119 5,392,989
232 5,392,990
265.29 5,392,991
296 5,392,992
522 5,392,993
533.9 5,392,994
585.4 5,392,995
654 5,392,996

CLASS 241

5 5,392,997
79.1 5,392,998
194 5,392,999
228 5,393,000

CLASS 242

7.14 5,393,001
18 OEW 5,393,002
35.5 A 5,393,003
268 5,393,004
289 5,393,005
295 5,393,006
532 5,393,007
541.1 5,393,008
559.3 5,393,009
613.5 5,393,010

CLASS 244

3.21 5,393,011
3.23 5,393,012
118.5 5,393,013
134 A 5,393,014
135 A 5,393,015
138 R 5,393,016
158 R 5,393,017
173 5,393,018

CLASS 246

468 5,393,019

CLASS 248

68.1 5,393,020
71 5,393,021
95 5,393,022
97 5,393,023
313 5,393,024
317 5,393,025
343 5,393,026
353 5,393,027
429 5,393,028
447 5,393,029
460 5,393,030
516 5,393,031

CLASS 249

61 5,393,032
155 5,393,033

CLASS 250

201.8 5,393,969
206.2 5,393,970
208.2 5,393,971
214 VT 5,393,972
221 5,393,973
222.1 5,393,974
288 5,393,975
306 5,393,977
5,393,980
310 5,393,976
353 5,393,978
367 5,393,981
370.06 5,393,982
382 5,393,979
396 ML 5,393,983
5,393,984
398 5,393,985
492.21 5,393,986
492.22 5,393,987
5,393,988
551 5,393,989

CLASS 251

148 5,393,034
205 5,393,035

CLASS 252

7 5,393,437
8 5,393,438
25 5,393,440
51.5 A 5,393,441
54 5,393,442
62 5,393,443
62.3 ZT 5,393,444
62.54 5,393,445
90 5,393,446
101 5,393,447
109 5,393,448
121 5,393,449
170 5,393,450
5,393,451
174.15 5,393,452
174.18 5,393,453
174.23 5,393,454
174.25 5,393,455
180 5,393,456
194 5,393,457
299.01 5,393,458
299.63 5,393,459
299.65 5,393,460
314 5,393,461
315.5 5,393,462
344 5,393,463
389.23 5,393,464
511 5,393,467
518 5,393,465
549 5,393,466
550 5,393,468
700 5,393,469

CLASS 254

100 5,393,036

CLASS 257

12 5,393,990
48 5,393,991
69 5,393,992
77 5,393,993
84 5,393,994
147 5,393,995
210 5,393,996
232 5,393,997
256 5,393,998
289 5,393,999
301 5,394,000
315 5,394,001
321 5,394,002
416 5,394,003
431 5,394,004
461 5,394,005
506 5,394,006
544 5,394,007
666 5,394,008
5,394,009
686 5,394,010
693 5,394,011
739 5,394,012
786 5,394,013
790 5,394,014

CLASS 264

1.29 5,393,470
60 5,393,471
63 5,393,472
65 5,394,015
117 5,393,473
163 5,393,474
167 5,393,475
169 5,393,476
184 5,393,477
203 5,393,478
219 5,393,479
315 5,393,480
516 5,393,481

CLASS 266

45 5,393,038
144 5,393,037
261 5,393,039

CLASS 267

140.13 5,393,040
140.14 5,393,041

CLASS 270

53 5,393,042

CLASS 271

[illegible] 5,393,043
10 5,393,044
23 5,393,045
220 5,393,046
277 5,393,047

CLASS 273

1.5 A 5,393,049
1.5 R 5,393,048
29 A 5,393,050
29 B 5,393,051
32 B 5,393,052
34 A 5,393,053
58 H 5,393,054
72 A 5,393,055
79 5,393,056
85 CP 5,393,057
87.4 5,393,058
118 D 5,393,059
138 R 5,393,060
143 R 5,393,061
153 R 5,393,062
160 5,393,063
181 R 5,393,064
192 5,393,065
236 5,393,066
292 5,393,067
351 5,393,068
411 5,393,069
434 5,393,070
5,393,071
5,393,072
5,393,073
440 5,393,074
459 5,393,075

CLASS 277

235 A 5,393,076

CLASS 280

7.13 5,393,077
11.22 5,393,078
37 5,393,079
47.26 5,393,080
47.27 5,393,081
291 5,393,082
414.1 5,393,083
442 5,393,084
602 5,393,085
5,393,086
707 5,393,087
728 A 5,393,088
5,393,090
728 B 5,393,089
733 5,393,091
743 R 5,393,092
756 5,393,093
775 5,393,094
781 5,393,095
788 5,393,096
801.1 5,393,097
801.2 5,393,098

CLASS 283

91 5,393,099
115 5,393,100

CLASS 285

3 5,393,101
24 5,393,102
31 5,393,103
40 5,393,104
47 5,393,105
158 5,393,106

322 5,393,107
368 5,393,108
382.7 5,393,109

CLASS 290

55 5,394,016

CLASS 292

216 5,393,110

CLASS 293

109 5,393,111

CLASS 294

143 5,393,112
170 5,393,113

CLASS 296

36 5,393,114
52 5,393,115
65.1 5,393,116
100 5,393,117
147 5,393,118

CLASS 297

217 5,393,119
238 Re.34,868
306 5,393,120
329 5,393,121
354.13 5,393,122
378.12 5,393,123
411.35 5,393,124
411.36 5,393,125
452.56 5,393,126

CLASS 299

37 5,393,127

CLASS 301

37.34 5,393,128

CLASS 303

3 5,393,129
57 5,393,130
100 5,393,131
116.1 5,393,132
119.2 5,393,133

CLASS 305

57 5,393,134

CLASS 307

66 5,394,017
134 5,394,018

CLASS 310

51 5,394,039
64 5,394,040
5,394,041
68 B 5,394,042
90 5,394,043
90.5 5,394,044
184 5,394,045
254 5,394,046
316 5,394,047
5,394,048
328 5,394,049

CLASS 312

9.48 5,393,135
184 5,393,136
332 5,393,137

CLASS 313

112 5,394,050
403 5,394,051
405 5,394,052
414 5,394,053
5,394,054
467 5,394,055
547 5,394,056
635 5,394,057
637 5,394,058
639 5,394,059

CLASS 315

39.51 5,394,060
111.21 5,394,061
129 5,394,062
159 5,394,063
209 R 5,394,064
277 5,394,065
366 5,394,066
411 5,394,067

CLASS 318

280 5,394,068
371 5,394,069
568.16 5,394,070
610 5,394,071

CLASS 320

2 5,394,073
15 5,394,074
39 5,394,075

CLASS 323

222 5,394,076
223 5,394,077
313 5,394,078
315 5,394,079
5,394,080

CLASS 324

174 5,394,081
207.22 5,394,082
223 5,394,083
225 5,394,084
231 5,394,085
318 5,394,086
5,394,087
322 5,394,088
427 5,394,089
464 5,394,090
5,394,091
5,394,092
556 5,394,093
5,394,094
674 5,394,095
686 5,394,096
687 5,394,097
750 5,394,098
754 5,394,099
758 5,394,100
769 5,394,101
772 5,394,102

CLASS 326

38 5,394,031
5,394,032
5,394,103
39 5,394,034
41 5,394,030
5,394,033

CLASS 327

51 5,394,037
72 5,394,035
73 5,394,023
107 5,394,106
108 5,394,021
140 5,394,020
143 5,394,104
160 5,394,024
176 5,394,022
335 5,394,108
354 5,394,107
432 5,394,038
511 5,394,029
525 5,394,019
530 5,394,025
531 5,394,105
536 5,394,026
5,394,027
544 5,394,028
552 5,394,036

CLASS 329

300 5,394,109
304 5,394,110

CLASS 330

2 5,394,120
9 5,394,111
256 5,394,112
260 5,394,113

CLASS 331

1 A 5,394,114
4 5,394,115
34 5,394,116
47 5,394,117

CLASS 332

170 5,394,118

CLASS 333

35 5,394,119
124 5,394,121
156 5,394,122
189 5,394,123
227 5,394,124
5,394,125

CLASS 335

42 5,394,126
78 5,394,127
126 5,394,128
216 5,394,129
5,394,130
5,394,131
232 5,394,132

CLASS 336

107 5,394,133

CLASS 337

398 5,394,134

CLASS 340

426 5,394,135
439 5,394,136
453 5,394,137
463 5,394,138
541 5,394,139
825.44 5,394,140
854.4 5,394,141
981 5,394,142

CLASS 341

63 5,394,143
67 5,394,144
73 5,394,145
118 5,394,146
161 5,394,147
162 5,394,148

CLASS 342

1 5,394,149
4 5,394,150
20 5,394,153
25 5,394,151
40 5,394,152
165 5,394,154
192 5,394,155
353 5,394,156
360 5,394,157
457 5,394,158

CLASS 343

700 MS 5,394,159
702 5,394,160
5,394,161
703 5,394,162
771 5,394,163
831 5,394,164

CLASS 345

82 5,394,165
98 5,394,166
147 5,394,167
156 5,394,168
167 5,394,169
189 5,394,170
200 5,394,172
213 5,394,171

CLASS 346

139 R 5,394,174

CLASS 347

7 5,394,177
32 5,394,178
70 5,394,179
77 5,394,180
92 5,394,181
116 5,394,175
128 5,394,176
257 5,394,173

CLASS 348

10 5,394,182
88 5,394,183
151 5,394,184
192 5,394,185
262 5,394,186
269 5,394,187
327 5,394,188
402 5,394,189
411 5,394,190
571 5,394,191
619 5,394,192
668 5,394,193
675 5,394,195
699 5,394,196
708 5,394,197
744 5,394,198

CLASS 351

206 5,394,199
212 5,394,200
221 5,394,201

CLASS 353

7 5,394,202
13 5,394,203
31 5,394,204
101 5,394,205

CLASS 354

21 5,394,206
70 5,394,207
75 5,394,208
81 5,394,209
195.12 5,394,210
217 5,394,211
271.1 5,394,212
288 5,394,213
5,394,214
319 5,394,215
324 5,394,216
430 5,394,217

CLASS 355

55 5,394,218
77 5,394,219
92 5,394,220
208 5,394,221
5,394,222
212 5,394,223
219 5,394,224
259 5,394,225
277 5,394,226
285 5,394,227
299 5,394,228
309 5,394,229
326 R 5,394,230
5,394,231
327 5,394,232

CLASS 356

5.01 5,394,233
71 5,394,234
73.1 5,394,235
311 5,394,236
328 5,394,237
342 5,394,238
345 5,394,239
349 5,394,240
350 5,394,241
5,394,242
352 5,394,243
361 5,394,244
369 5,394,245
394 5,394,246
429 5,394,247

CLASS 358

335 5,394,248
5,394,249
455 5,394,250
500 5,394,251
531 B1 4,516,155
533 5,394,252

CLASS 359

15 5,394,253
42 5,394,254
49 5,394,255
51 5,394,256
59 5,394,258
107 5,394,257
142 5,394,259
158 5,394,260
180 5,394,261
196 5,394,262
227 5,394,263
270 5,394,264
341 5,394,265
376 5,394,267
386 5,394,268
574 5,394,266
580 5,394,269
636 5,394,270
656 5,394,271
744 5,394,272
823 5,394,273

CLASS 360

27 5,394,274
35.1 5,394,275
36.2 5,394,276
53 5,394,277
66 5,394,278
72.1 5,394,279
77.12 5,394,280
85 Re.34,869
96.5 5,394,282
98.07 5,394,283
99.08 5,394,284
105 5,394,281
121 5,394,285
5,394,286

CLASS 361

18 5,394,287
31 5,394,288
42 5,394,289
146 5,394,290
155 5,394,291
179 5,394,292
221 5,394,293
275.3 5,394,294
303 5,394,295
659 5,394,296
683 5,394,297
704 5,394,298
705 5,394,299
720 5,394,301
728 5,394,302
737 5,394,300
749 5,394,303
765 5,394,304
776 5,394,305
809 5,394,306

CLASS 362

16 5,394,307
31 5,394,308
35 5,394,309
61 5,394,310
80 5,394,311
103 5,394,312
119 5,394,313
216 5,394,314
226 5,394,315
294 5,394,316
347 5,394,317
420 5,394,318

CLASS 363

20 5,394,319
60 5,394,320
131 5,394,321

CLASS 364

148 5,394,322
167.01 5,394,323
402 5,394,324
421 5,394,325
424.01 5,394,327
424.05 5,394,326
426.01 5,394,329
431.03 5,394,330
431.05 5,394,331
449 5,394,332
450 5,394,333
470 5,394,334
474.21 5,394,335
479 5,394,336
490 5,394,337
491 5,394,338
510 5,394,339
550 5,394,340
551.01 5,394,341
558 5,394,342
5,394,343
571.02 5,394,344
571.03 5,394,345
578 5,394,346
5,394,347
580 5,394,348
669 5,394,328
725 5,394,349
753 5,394,350
786 5,394,351
787 5,394,352

CLASS 365

49 5,394,353
51 5,394,354
94 5,394,371
104 5,394,355
177 5,394,356
182 5,394,357
5,394,358
185 5,394,359
5,394,360
189.01 5,394,362
5,394,363
5,394,364
189.04 5,394,361
189.09 5,394,365
195 5,394,366
5,394,367
200 5,394,368
5,394,369
201 5,394,370
226 5,394,372
230.06 5,394,373
5,394,374
5,394,375

CLASS 366

64 5,393,138
65 5,393,139
75 5,393,140
149 5,393,141
274 5,393,142

CLASS 367

1 5,394,376
149 5,394,377
5,394,378
163 5,394,379

CLASS 369

13 5,394,380
5,394,381
32 5,394,382
5,394,383
5,394,384
44.23 5,394,385
44.28 5,394,386
111 5,394,387
126 5,394,388

CLASS 370

16.1 5,394,389
17 5,394,390
18 5,394,391
24 5,394,392
60 5,394,393
5,394,394
5,394,395
5,394,396
60.1 5,394,397
5,394,398
84 5,394,399
85.1 5,394,400
85.5 5,394,401
94.1 5,394,402

CLASS 371

21.1 5,394,403
22.2 B1 4,410,987
22.5 5,394,404
27 5,394,405
32 5,394,406
37.1 5,394,407
57.2 5,394,408
62 5,394,409
70 5,394,410

CLASS 372

5 5,394,411
[illegible] 5,394,412
10 5,394,413
22 5,394,414
26 5,394,415
5,394,416
38 5,394,418
5,394,419
39 5,394,420
45 5,394,417
5,394,421
5,394,422
5,394,423
46 5,394,424
5,394,425
50 5,394,426
70 5,394,427
95 5,394,428
96 5,394,429
107 5,394,430

CLASS 373

8 5,394,431
156 5,394,432

CLASS 375

202 5,394,433
5,394,436
205 5,394,434
206 5,394,435
222 5,394,437
242 5,394,439
265 5,394,440
286 5,394,438
327 5,394,441
369 5,394,442
371 5,394,443
374 5,394,444

CLASS 376

245 5,394,446
259 5,394,447
260 5,394,448
272 5,394,449

CLASS 377

49 5,394,450

CLASS 378

34 5,394,451
65 5,394,452
86 5,394,453
5,394,454
98.3 5,394,455
162 5,394,456
5,394,457

CLASS 379

1 5,394,458
15 5,394,459
67 5,394,445
5,394,460
106 5,394,461
142 5,394,462
201 5,394,463
5,394,464
377 5,394,465
399 5,394,466
438 5,394,467
453 5,394,468

CLASS 380

4 5,394,469
5 5,394,470
23 5,394,471

CLASS 381

1 5,394,472
36 5,394,473
63 5,394,474
68.2 5,394,475
104 5,394,476
119 5,394,477
154 5,394,478
188 5,394,479

CLASS 382

1 5,394,480
8 5,394,481
9 5,394,482
34 5,394,483
37 5,394,484
47 5,394,485
57 5,394,486
61 5,394,487

CLASS 383

21 5,393,143

CLASS 384

45 5,393,144
124 5,393,145

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672 5,394,194

CLASS 385

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14 5,394,489
5,394,490
16 5,394,491
33 5,394,492
35 5,394,493
58 5,394,494
59 5,394,495
70 5,394,496
78 5,394,497
115 5,394,498
119 5,394,499
123 5,394,500
125 5,394,501
134 5,394,502
135 5,394,503
139 5,394,504

CLASS 392

379 5,394,505
395 5,394,506
480 5,394,507

CLASS 395

2.38 5,394,508
13 5,394,509
22 5,394,510
27 5,394,511
51 5,394,512
80 5,394,513
115 5,394,514
5,394,515
119 5,394,516
129 5,394,517
131 5,394,518
5,394,519
135 5,394,520
158 5,394,521
159 5,394,522
162 5,394,523
163 5,394,524
164 5,394,525
200 5,394,526
275 5,394,527
325 5,394,528
375 5,394,529
5,394,530
425 5,394,531
5,394,532
5,394,533
5,394,534
5,394,535
5,394,536
5,394,537
5,394,538
5,394,539
500 5,394,540
550 5,394,541
575 5,394,542
5,394,543
5,394,544
600 5,394,545
5,394,546
650 5,394,547
5,394,548
5,394,549
700 5,394,550
725 5,394,551
750 5,394,552
800 5,394,553
5,394,554
5,394,555
5,394,556
5,394,557
5,394,558

CLASS 400

65 5,393,147
120.01 5,393,148
208 5,393,149
489 5,393,150
642 5,393,151
691 5,393,152

CLASS 401

146 5,393,153

CLASS 402

4 5,393,154
31 5,393,155
36 5,393,156
79 5,393,157
5,393,158

CLASS 403

91 5,393,159
120 5,393,160
133 5,393,161
154 5,393,162
171 5,393,163
271 5,393,164
301 5,393,165

CLASS 404

14 5,393,166
84.1 5,393,167
97 5,393,168

CLASS 405

25 5,393,169
79 5,393,170
119 5,393,171
141 5,393,172
151 5,393,173

CLASS 407

51 5,393,174

CLASS 408

56 5,393,175
105 5,393,176
147 5,393,177

CLASS 409

234 5,393,178

CLASS 411

60 5,393,179
369 5,393,182
432 5,393,183
469 5,393,184
475 5,393,186
510 5,393,185

CLASS 414

141.1 5,393,187
276 5,393,188
301 5,393,189
409 5,393,180
416 5,393,181
420 5,393,190
537 5,393,191
5,393,192
540 5,393,193
546 5,393,194
749 5,393,195
790.2 5,393,196

CLASS 415

68 5,393,197
115 5,393,198

CLASS 416

189 5,393,199
223 A 5,393,200

CLASS 417

16 5,393,201
19 5,393,202
203 5,393,203
269 5,393,204
5,393,205
313 5,393,206
423.7 5,393,207

CLASS 418

54 5,393,208
202 5,393,209

CLASS 419

1 5,393,482
10 5,393,483
37 5,393,484
41 5,393,485
66 5,393,486

CLASS 420

43 5,393,487
95 5,393,488
561 5,393,489

CLASS 422

22 5,393,490
28 5,393,491
56 5,393,493
62 5,393,492
68/1 5,393,494
83 5,393,495
101 5,393,496
103 5,393,497
112 5,393,498
174 5,393,499
186 5,393,500
187 5,393,501
261 5,393,502
292 5,393,504

CLASS 423

55 5,393,503
228 5,393,505
301 5,393,506
407 5,393,508
465 5,393,509
610 5,393,510
718 5,393,511

CLASS 424

1.53 5,393,512
5 5,393,513
7.1 5,393,514
9 5,393,524
5,393,525
47 5,393,515
52 5,393,516
60 5,393,517
[illegible] 5,393,518
70.11 5,393,519
70.12 5,393,521
70.13 5,393,520
[illegible] 5,393,522
191.1 5,393,523
195.1 5,393,526
436 5,393,528
445 5,393,529
450 5,393,530
466 5,393,531
476 5,393,532
553 5,393,534
678 5,393,535

CLASS 425

81.1 5,393,214
112 5,393,536
129.1 5,393,215
133.1 5,393,216
145 5,393,210
149 5,393,211
185 5,393,217
186 5,393,212
205 5,393,213
238 5,393,218
382.2 5,393,219

CLASS 426

1 5,393,537
35 5,393,538
124 5,393,539
231 5,393,540
237 5,393,541
241 5,393,542
242 5,393,543
250 5,393,544
268 5,393,545
276 5,393,546
330 5,393,547
433 5,393,548
564 5,393,549
573 5,393,550
585 5,393,551
637 5,393,552
655 5,393,553
662 5,393,554

CLASS 427

2.19 5,393,533
2.28 5,393,555
7 5,393,556
10 5,393,557
126.2 5,393,558
136 5,393,559
150 5,393,560
163.2 5,393,561
248.1 5,393,562
5,393,563
5,393,564
255.2 5,393,565
348 5,393,566
372.2 5,393,567
385.5 5,393,568
387 5,393,569
388.4 5,393,570
420 5,393,571
523 5,393,572
528 5,393,573
530 5,393,574
540 5,393,575
554 5,393,576
586 5,393,577

CLASS 428

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9 5,393,579
29 5,393,580
34.1 5,393,581
34.2 5,393,582
36.92 5,393,583
[illegible] 5,393,584
100 5,393,585
116 5,393,586
5,393,587
175 5,393,588
192 5,393,589
195 5,393,590
209 5,393,591
213 5,393,592
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224 5,393,594
225 5,393,595
229 5,393,596
242 5,393,597
247 5,393,598
284 5,393,599
5,393,600
287 5,393,601
290 5,393,602
316.6 5,393,603
325 5,393,604
327 5,393,605
332 5,393,606
334 5,393,607
352 5,393,608
357 5,393,609
447 5,393,610
450 5,393,611
458 5,393,612
553 5,393,613
690 5,393,614

CLASS 429

43 5,393,615
59 5,393,616
5,393,617
90 5,393,618
152 5,393,619
192 5,393,620
5,393,621
223 5,393,622

CLASS 430

1 5,393,634
5 5,393,623
30 5,393,624
49 5,393,625
56 5,393,626
59 5,393,627
5,393,628
76 5,393,629
105 5,393,630
108 5,393,631
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114 5,393,633
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137 5,393,636
138 5,393,637
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254 5,393,639
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523 5,393,649
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526 5,393,651
533 5,393,652
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584 5,393,654
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619 5,393,656

CLASS 431

10 5,393,220
20 5,393,221
80 5,393,222
258 5,393,223
266 5,393,224

CLASS 432

103 5,393,225
258 5,393,226

CLASS 433

74 5,393,227
88 5,393,228
118 5,393,229

CLASS 434

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254 5,393,230
410 5,393,231
415 5,393,232

CLASS 435

[illegible] 5,393,657
7.1 5,393,527
7.36 5,393,658
7.94 5,393,659
22 5,393,660
34 5,393,661
38 5,393,662
118 5,393,663
156 5,393,664
172.3 5,393,665
183 5,393,666
200 5,393,667
240.23 5,393,668
240.3 5,393,669
252.33 5,393,670
252.8 5,393,671

CLASS 436

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171 5,393,673
177 5,393,674

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24 5,393,676
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31 5,393,678
34 5,393,679
40 5,393,680
5,393,681
41 5,393,682
42 5,393,683
43 5,393,684
[illegible] 5,393,685
45 5,393,686
46 5,393,687
48 5,393,233
52 5,393,688
5,393,689
53 5,393,690
60 5,393,691
69 5,393,692
5,393,693
72 5,393,694
180 5,393,695
183 5,393,696
5,393,697
184 5,393,698
187 5,393,699
5,393,700
193 5,393,701
195 5,393,702
197 5,393,703
203 5,393,704
217 5,393,705
226 5,393,706
5,393,707
228 5,393,708
5,393,709
5,393,710
231 5,393,711
238 5,393,712

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76 5,393,235
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157 5,393,238
180 5,393,239
187 5,393,240
248 5,393,241
364 5,393,242
369 5,393,243
394 5,393,244
477 5,393,245
482 5,393,246
567 5,393,247
595 5,393,248
668 5,393,249
825 5,393,250

CLASS 440

59 5,393,251
88 5,393,252

CLASS 441

32 5,393,253
118 5,393,254

CLASS 445

3 5,393,255

CLASS 446

15 5,393,256
27 5,393,257
71 5,393,258
298 5,393,259

CLASS 451

5 5,392,566
357 5,392,568

CLASS 452

144 5,393,261

CLASS 454

44 5,393,260
155 5,393,262
257 5,393,263

CLASS 455

5.1 5,394,559
12.1 5,394,560
13.1 5,394,561
158.5 5,393,713
186.1 5,394,562

CLASS 462

[illegible] 5,393,264
24 5,393,265

CLASS 464

67 5,393,266
156 5,393,267

CLASS 472

120 5,393,268

CLASS 473

73 5,393,269

CLASS 474

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96 5,393,271
213 5,393,272

CLASS 475

129 5,393,273

CLASS 477

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81 5,393,275
91 5,393,276
108 5,393,277
120 5,393,278
143 5,393,279

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57 5,393,281
70 5,393,282
106 5,393,284
108 5,393,285
130 5,393,286
142 5,393,287

CLASS 483

1 5,393,288

CLASS 492

13 5,393,289
16 5,393,290

CLASS 493

76 5,393,292
116 5,393,291
341 5,393,293
342 5,393,294
403 5,393,295

CLASS 501

29 5,393,714
98 5,393,715
141 5,393,716

CLASS 502

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113 5,393,719
117 5,393,720
154 5,393,721
327 5,393,722
341 5,393,723
402 5,393,724

CLASS 503

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5,393,727

CLASS 504

117 5,393,728
128 5,393,729
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139 5,393,731
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215 5,393,733
5,393,734
254 5,393,735

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CLASS 507

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63 5,393,745
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331 5,393,762
333 5,393,763
357 5,393,764
365 5,393,765
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381 5,393,767
5,393,768
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5,393,770
394 5,393,771
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452 5,393,774
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486 5,393,776
502 5,393,777
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543 5,393,780
557 5,393,781
561 5,393,784
599 5,393,782
616 5,393,788
622 5,393,785
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674 5,393,789
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777 5,393,792

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CLASS 521

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134 5,393,795
5,393,796
5,393,797
149 5,393,798
157 5,393,799

CLASS 522

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79 5,393,801
81 5,393,802

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5,393,807
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531 5,393,824
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575 5,393,787
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44 5,393,830
55 5,393,831
57 5,393,832
64 5,393,833
67 5,393,835
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92 5,393,837
98 5,393,838
111 5,393,839
159 5,393,840
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328.2 5,393,842
332.8 5,393,843
333.9 5,393,844
369 5,393,845
374 5,393,846
403 5,393,847
425 5,393,848
5,393,849
531 5,393,850

CLASS 526

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247 5,393,852
263 5,393,853
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918 5,393,857

CLASS 528

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61 5,393,858
172 5,393,860
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298 5,393,862
308.4 5,393,863
5,393,871
310 5,393,872
353 5,393,864
388 5,393,865
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412 5,393,867
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CLASS 536

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28.2 5,393,878
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103 5,393,880

CLASS 540

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205 5,393,882

CLASS 544

124 5,393,883
189 5,393,884
357 5,393,889

CLASS 546

[illegible] 5,393,890
170 5,393,891

CLASS 548

124 5,393,885
356.5 5,393,886
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554 5,393,888

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5,393,896

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227 5,393,906

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CLASS 564

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CLASS 601

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134 5,393,298
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CLASS 602

[illegible] 5,393,300
27 5,393,303

CLASS 604

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194 [illegible] 5,004,472

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13 5,393,302

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616 355,750
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228 355,759
260 355,760
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324 355,767
327 355,768
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335 355,773
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339 355,775
349 355,776
356 355,777
366 355,778
368 355,779
372 355,780
376 355,781
355,782
381 355,783
355,784
393 355,785
406 355,786
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410 355,788
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355,806
D9— 300 355,844
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387 355,811
527 355,812
606 355,813
629 355,814
694 355,815
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355,818
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11 355,820
15 355,821
50 355,822
51 355,823
52 355,825
71 355,826
355,827
355,828
90 355,829
107 355,830
355,831
355,832
305 355,834
355,835
355,836
310 355,837
312 355,838
317 355,839
360 355,840
372 355,841
355,842
374 355,833
382 355,843
448 355,845
449 355,846
522 355,852
524 355,853
528 355,854
D10— 7 355,855
11 355,856
15 355,857
31 355,858
64 355,859
70 355,860
78 355,861
106 355,862
355,863
114 355,864
D11— 25 355,866
91 355,867
117 355,868
121 355,865
157 355,869
D12— 112 355,870
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127 355,872
129 355,873
355,874
147 355,877
148 355,875
151 355,876
162 355,878
176 355,879
183 355,880
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316 355,882
317 355,883
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162 355,973
195 355,965
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D28— 41 355,974
55 355,937
59 355,938
66 355,939
108 355,940
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194 355,942
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219 355,944
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PATENTS

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